

CONTRACT, LEASE, AGREEMENT CONTROL FORM

Date: 04/22/2021

Contract/Lease Control #: C21-3070-PS

Procurement#: ITN PS 33-20

Contract/Lease Type: AGREEMENT

Award To/Lessee: WILLIAMS COMMUNICATIONS, INC.

Owner/Lessor: OKALOOSA COUNTY

Effective Date: 04/20/2021

Expiration Date: UPON COMPLETION OF PROJECT

Description of: PROJECT 25 PUBLIC SAFETY NETWORK

Department: PS

Department Monitor: MADDOX

Monitor's Telephone #: 850-651-7170

Monitor's FAX # or E-mail: PMADDOX@MYOKALOOSA.COM

Closed:

Cc: BCC RECORDS



WILLCOM-01

CRYSTAL

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

9/22/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Earl Bacon Agency, Inc. Post Office Box 12039 Tallahassee, FL 32317	CONTACT NAME:		
	PHONE (A/C, No, Ext): (850) 878-2121	FAX (A/C, No): (850) 878-2128	
E-MAIL ADDRESS:			
INSURER(S) AFFORDING COVERAGE		NAIC #	
INSURER A : Travelers Property Casualty Company of America		25674	
INSURED Williams Communications Inc / Williams Communications NC, LLC Radio Communications Co. 5046 Tennessee Capital Blvd. Tallahassee, FL 32303	INSURER B : The Phoenix Insurance Company		25623
	INSURER C : Insurance Company of the West		27847
	INSURER D :		
	INSURER E :		
	INSURER F :		

COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR	X		6303S30678A	8/1/2021	8/1/2022	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 EMP BEN AGG \$ 3,000,000
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS ONLY			BA2N887187	8/1/2021	8/1/2022	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> EXCESS LIAB DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			CUP0L031534	8/1/2021	8/1/2022	EACH OCCURRENCE \$ 10,000,000 AGGREGATE \$ 10,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N <input type="checkbox"/> N/A If yes, describe under DESCRIPTION OF OPERATIONS below			WFL5003263	1/1/2021	1/1/2022	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C	Workers Compensation			WFL5006152	1/1/2021	1/1/2022	Per Statute 500,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Okaloosa County and its respective agents, consultants, servants, and employees are Additional Insured with Respect to General Liability, as required by contract. Coverage is primary. **30 Day Notice of Cancellation applies.

CONTRACT#: C21-3070-PS
WILLIAMS COMMUNICATIONS, INC.
PROJECT 25 PUBLIC SAFETY NETWORK
EXPIRES: UPON COMPLETION OF PROJECT

CERTIFICATE HOLDER

CAI

Okaloosa County Board of County Commissioners 1250 N Eglin Pkwy #100 Shalimar, FL 32579	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

ACORD 25 (2016/03)

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C21-3070-PS



GREAT AMERICAN
INSURANCE GROUP

CINCINNATI, OHIO

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, Williams Communications, Inc.

as principal, and the **GREAT AMERICAN INSURANCE COMPANY**, a corporation organized under the laws of the State of Ohio and duly authorized to transact business in the State of Florida as Surety, are held and firmly bound unto Okaloosa County Board of County Commissioners

as Obligee, in the sum of Twenty-Five Million Fifty-One Thousand Seven-Hundred Forty-Two and 36/100

Dollars (\$25,051,742.36) for the payment whereof well and truly to be made the Principal and Surety bind themselves, their heirs, executors, administrator, successors, and assigns, jointly and severally, firmly by these presents.

SIGNED, sealed and dated this 5th day of May, 2021

WHEREAS the Principal and the Obligee have entered into a written contract, hereinafter called the Contract, a copy of which is or may be attached hereto, dated the 9th day of April, 2021 for Project 25 Public Safety Radio Network Equipment and Installation

NOW, THEREFORE, the condition of the foregoing obligation is such that if the Principal shall indemnify the Obligee for all loss that the Obligee may sustain by reason of the Principals failure to complete the work in accordance with the terms of the contract, then this obligation shall be void; otherwise it shall remain in force.

PROVIDED, HOWEVER, it shall be a condition precedent to any right of recovery hereunder that, in event of any default on the part of the Principal, a written statement of the particular facts showing the date and nature of such default shall be immediately given by the Obligee to the Surety and shall be forwarded by registered mail to the Surety at its Administrative Office at 301 E. Fourth Street, Cincinnati, Ohio 45202.

AND PROVIDED FURTHER, that no action, suit or proceeding, except as hereinafter set forth, shall be had or maintained against the Surety on this instrument unless the same be brought or instituted and process served upon the Surety within twelve months after completion of the work mentioned in said contract, whether such work be completed by the Principal, Surety or Obligee; and if there is any maintenance or guarantee period provided in the contract for which said Surety is liable, the Surety's liability under that maintenance or guarantee period shall be limited to twelve (12) months after completion of the work, and any action, suit or proceeding shall be brought within six months after completion of the maintenance or guarantee period.

Williams Communications, Inc.

Principal

GREAT AMERICAN INSURANCE COMPANY

By: Hays Amos
Hays Amos 000

By: Van A. Madsen
Van A. Madsen, Attorney-in-Fact



Perf Bond F9608D-(3/11)

Inst. #3455127 Bk: 3546 Pg: 3078
Page 1 of 3 Recorded: 5/14/2021 11:51 AM
RECORDING ARTICLE V: \$12.00 RECORDING: \$15.00

DEPUTY CLERK kmorgan
JD PEACOCK II CLERK OF COURTS,
OKALOOSA COUNTY, FLORIDA

GREAT AMERICAN INSURANCE COMPANY®

Administrative Office: 301 E 4TH STREET • CINCINNATI, OHIO 45202 • 513-369-5000 • FAX 513-723-2740

The number of persons authorized by this power of attorney is not more than SEVEN

No. 0 20577

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the GREAT AMERICAN INSURANCE COMPANY, a corporation organized and existing under and by virtue of the laws of the State of Ohio, does hereby nominate, constitute and appoint the person or persons named below, each individually if more than one is named, its true and lawful attorney-in-fact, for it and in its name, place and stead to execute on behalf of the said Company, as surety, any and all bonds, undertakings and contracts of suretyship, or other written obligations in the nature thereof; provided that the liability of the said Company on any such bond, undertaking or contract of suretyship executed under this authority shall not exceed the limit stated below.

	Name	Address	Limit of Power
VAN A. MADSEN	RICHARD K. PRESSLEY	ALL OF	ALL
WILLIAM A. MESSER		TALLAHASSEE, FLORIDA	\$100,000,000
ROBERT K. BACON			
ROBERT J. NYLEN			
PHILLIP E. BACON			
JOHN R. NYLEN, JR.			

This Power of Attorney revokes all previous powers issued on behalf of the attorney(s)-in-fact named above.

IN WITNESS WHEREOF the GREAT AMERICAN INSURANCE COMPANY has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this 25th day of JANUARY, 2018.

Attest

GREAT AMERICAN INSURANCE COMPANY



My L C. B.
Assistant Secretary

David C. Kitchin
Divisional Senior Vice President

STATE OF OHIO, COUNTY OF HAMILTON - ss:

DAVID C. KITCHIN (877-377-2405)

On this 25th day of JANUARY, 2018, before me personally appeared DAVID C. KITCHIN, to me known, being duly sworn, deposes and says that he resides in Cincinnati, Ohio, that he is a Divisional Senior Vice President of the Bond Division of Great American Insurance Company, the Company described in and which executed the above instrument; that he knows the seal of the said Company; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by authority of his office under the By-Laws of said Company, and that he signed his name thereto by like authority.



Susan A. Kohorst
Notary Public, State of Ohio
My Commission Expires 05-18-2020

Susan A Kohorst

This Power of Attorney is granted by authority of the following resolutions adopted by the Board of Directors of Great American Insurance Company by unanimous written consent dated June 9, 2008.

RESOLVED: That the Divisional President, the several Divisional Senior Vice Presidents, Divisional Vice Presidents and Divisional Assistant Vice Presidents, or any one of them, be and hereby is authorized, from time to time, to appoint one or more Attorneys-in-Fact to execute on behalf of the Company, as surety, any and all bonds, undertakings and contracts of suretyship, or other written obligations in the nature thereof; to prescribe their respective duties and the respective limits of their authority; and to revoke any such appointment at any time.

RESOLVED FURTHER: That the Company seal and the signature of any of the aforesaid officers and any Secretary or Assistant Secretary of the Company may be affixed by facsimile to any power of attorney or certificate of either given for the execution of any bond, undertaking, contract of suretyship, or other written obligation in the nature thereof, such signature and seal when so used being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

CERTIFICATION

I, STEPHEN C. BERAHA, Assistant Secretary of Great American Insurance Company, do hereby certify that the foregoing Power of Attorney and the Resolutions of the Board of Directors of June 9, 2008 have not been revoked and are now in full force and effect.

Signed and sealed this 5th day of May, 2021.



My L C. B.
Assistant Secretary



WILLCOM-01

NICHOLE

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

4/22/2021

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PRODUCER Earl Bacon Agency, Inc. Post Office Box 12039 Tallahassee, FL 32317	CONTACT NAME:	
	PHONE (A/C, No, Ext): (850) 878-2121	FAX (A/C, No): (850) 878-2128
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A: Travelers Property Casualty Company of America	25674
INSURED Williams Communications Inc / Williams Communications NC, LLC Radio Communications Co. 8035-C Chapel Hill Rd Cary, NC 27513	INSURER B: The Phoenix Insurance Company	25623
	INSURER C: Insurance Company of the West	27847
	INSURER D:	
	INSURER E:	
	INSURER F:	

COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

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INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EE Benefits Liabilit			ZLP71M83097	8/1/2020	8/1/2021	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Per occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 EMP BEN AGG \$ 3,000,000
B	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			BA2N887187	8/1/2020	8/1/2021	COMBINED SINGLE LIMIT (Per accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> EXCESS LIAB DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			CUP0L031534	8/1/2020	8/1/2021	EACH OCCURRENCE \$ 10,000,000 AGGREGATE \$ Gen'l Aggregate \$ 10,000,000
C	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> If yes, describe under DESCRIPTION OF OPERATIONS below		N/A	WFL5003263	1/1/2021	1/1/2022	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C	<input checked="" type="checkbox"/> Workers' Compensatio			WFL5006152	1/1/2021	1/1/2022	per statute 500,000
A	<input checked="" type="checkbox"/> Cyber Liability			ZPL91M84575	8/1/2020	8/1/2021	5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
RE: Radio Communications Company, 8035 Chapel Hill Road, Cary, NC 27513

CONTRACT#: C21-3070-PS
WILLIAMS COMMUNICATIONS, INC.
PROJECT 25 PUBLIC SAFETY NETWORK
EXPIRES: UPON COMPLETION OF PROJECT

CERTIFICATE HOLDER

CANC

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

Okaloosa County Board of County Commissioners
320 N Wilson St.
Crestview, FL 32536

AUTHORIZED REPRESENTATIVE

**PROCUREMENT/CONTRACT/LEASE
INTERNAL COORDINATION SHEET**

Procurement/Contract/Lease Number: TBD 33-20 Tracking Number: 4292-21
Procurement/Contractor/Lessee Name: Williams Communications Grant Funded: YES ___ NO X
Purpose: Project 25 Public Safety Radio Network
Date/Term: _____ 1. GREATER THAN \$100,000
Department #: _____ 2. GREATER THAN \$50,000
Account #: _____ 3. \$50,000 OR LESS
Amount: \$25,051,742.36
Department: PS Dept. Monitor Name: Maddox

Purchasing Review

Procurement or Contract/Lease requirements are met:
DeRita Mason Date: 4-7-21
Purchasing Manager or designee Jeff Hyde, DeRita Mason, Jessica Darr, Angela Etheridge

2CFR Compliance Review (if required)

Approved as written: no federal bids Grant Name: _____
Date: _____
Grants Coordinator _____

Risk Management Review

Approved as written: see email attached Date: 4-10-21
Risk Manager or designee Lisa Price

County Attorney Review

Approved as written: see email attached Date: 4-13-21
County Attorney Lynn Hoshihara, Kerry Parsons or Designee

Department Funding Review

Approved as written: _____ Date: _____

IT Review (if applicable)

Approved as written: _____ Date: _____

C21-3070-KS



Board of County Commissioners Purchasing Department

State of Florida

Date: February 19, 2021

OKALOOSA COUNTY PURCHASING DEPARTMENT
NOTICE OF AWARD
ITN PS 33-20

Project 25 Public Safety Radio Network

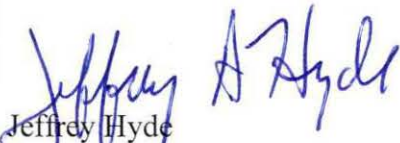
Okaloosa County would like to thank all businesses which submitted responses to Project 25 Safety Radio Network.

After in-depth examination of all responses in accordance with the County's Purchasing Manual, the County announces its intent to award the contract/purchase order to the following:

Williams Communications, Inc.
5046 Tennessee Capital Blvd.
Tallahassee, FL 32303

Any person/entity desiring to file a procurement protest must meet all the standards and criteria in accordance with Section 31 of the Okaloosa County Purchasing Manual. Failure to file a protest within the time prescribed in Section 31.02 of the Okaloosa County Purchasing Manual, shall constitute a waiver of protest proceedings.

Respectfully,


Jeffrey Hyde
Purchasing Manager

DeRita Mason

From: Lisa Price
Sent: Monday, April 12, 2021 10:59 AM
To: DeRita Mason
Subject: RE: Williams Contract

This is approved by Risk for insurance purposes.

Lisa Price
Public Records & Contracts Specialist
302 N Wilson Street, Suite 301
Crestview, FL. 32536
(850) 689-5979
lprice@myokaloosa.com



"Kindness is the language which the deaf can hear and the blind can see"
Mark Twain

For all things Wellness please visit:
<http://www.myokaloosa.com/wellness>

Due to Florida's very broad public records laws, most written communications to or from county employees regarding county business are public records, available to the public and media upon request. Therefore, this written e-mail communication, including your e-mail address, may be subject to public disclosure.

From: DeRita Mason <dmason@myokaloosa.com>
Sent: Friday, April 9, 2021 4:08 PM
To: Lynn Hoshihara <lhoshihara@myokaloosa.com>
Cc: Lisa Price <lprice@myokaloosa.com>
Subject: Williams Contract
Importance: High

Good afternoon,
Please review and approve the attached.
We are on a deadline with this and need to get it approved ASAP.
Thank you,

DeRita Mason

DeRita Mason

From: Lynn Hoshihara
Sent: Tuesday, April 13, 2021 8:05 AM
To: DeRita Mason
Subject: Re: Williams Contract

The Williams contract is approved as to legal sufficiency.

Lynn M. Hoshihara
County Attorney
Okaloosa County, Florida

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From: DeRita Mason
Sent: Tuesday, April 13, 2021 8:37:30 AM
To: Lynn Hoshihara
Subject: Williams Contract

Lynn,
Did you get a chance to review and approve the Williams contract I sent over last Friday?
If so, can you please just send an email that it is legally approved?
Thank you,

DeRita Mason



DeRita Mason, CPPB, NIGP-CPP
Senior Contracts and Lease Coordinator
Okaloosa County Purchasing Department
5479A Old Bethel Road
Crestview, Florida 32536
(850) 689-5960
dmason@myokaloosa.com

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PROJECT 25 PUBLIC SAFETY RADIO NETWORK PURCHASE AGREEMENT

THIS PROJECT 25 PUBLIC SAFETY RADIO NETWORK PURCHASE AGREEMENT (“Agreement”) is made and entered into 20 day of April, 2021 (“Effective Date”), by and between **OKALOOSA COUNTY, FLORIDA**, a political subdivision of the State of Florida, by and through its **Board of County Commissioners**, (“Buyer”), and **WILLIAMS COMMUNICATIONS, INC.**, a Florida corporation (“Seller”), together referred to as the “Parties”.

WHEREAS, Buyer, whose address is 1250 N. Eglin Parkway, Suite 100, Shalimar, Florida 32549, desires to acquire a Project 25 trunked Phase II radio communications system (the “System”) to replace Buyer’s multiple radio systems;

WHEREAS, Seller, whose address is 5046 Tennessee Capital Blvd., Tallahassee, Florida 32303, is an authorized dealer for radio and public safety communications systems and related products and services, including L3Harris and Aviat branded products, and desires to provide Buyer the System and related design, installation, and maintenance services;

WHEREAS, Buyer previously issued its ITN PS 33-20, titled Project 25 Public Safety Radio Network, dated May 18, 2020 (the “ITN”), and in response to the ITN, Seller submitted its Proposal, including Technical Response, dated August 14, 2020 (the “Proposal”);

WHEREAS, Seller was recommended as one of two vendors to enter into the next phase of the procurement process for concurrent negotiation of final and best offers;

WHEREAS, the Parties have engaged in negotiations pursuant to the ITN, and Buyer desires to purchase the System from Seller, as set forth in the Proposal (as modified by Seller’s “Addendum WCI-#1, dated April 6, 2021), and this Agreement; and

WHEREAS, time is of the essence as the Buyer is on an older VHF Radio System for Emergency Communications that is subject to fail.

NOW, THEREFORE, for and in consideration of the mutual promises contained herein and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, it is mutually agreed as follows:

SECTION 1. DEFINITIONS:

In addition to terms as are defined throughout this Agreement, the following definitions apply:

- A. “**Acceptance Tests**” shall mean the testing procedures set forth in the Statement of Work to determine whether the System has met the System specifications set forth in the Statement of Work or as mutually agreed upon in writing by the Parties.
- B. “**Change Order**” shall mean a written modification to the Total Agreement Price, Project Schedule or other Agreement terms which is signed by both Parties.
- C. “**Detailed Design Documents**” shall mean those documents delivered by Seller to Buyer at the conclusion of the Detailed Design Review.
- D. “**Documentation Deliverables**” shall mean the standard commercial quality manuals to be furnished by the Seller to the Buyer pursuant to the terms hereof and the Statement of Work.
- E. “**System Infrastructure**” shall mean the microwave and dispatch radio equipment, consoles, control stations, basestation repeaters, antennas, network servers, switches, towers, tower shelters, and related devices and accessories included in the System, as detailed in the Statement of Work.
- F. “**End User Equipment**” shall mean the mobile and portable radio units, and related devices and accessories as detailed in the Statement of Work.
- G. “**System Infrastructure Maintenance Services**” shall mean those System Infrastructure and Software maintenance services described in Exhibit 6, and as priced in Exhibit 1, to this Agreement. Maintenance Services excludes End User Equipment and End User Equipment Software.
- H. “**Project Schedule**” shall mean the schedule attached to the Statement of Work or otherwise mutually agreed upon by the Parties in writing for the delivery of the System Infrastructure, End User Equipment and Software and the performance of the Services.
- I. “**Project Sites**” shall mean those sites where any construction work is performed or any System Infrastructure is installed.
- J. “**Responsibility Matrix**” shall mean the table included in the Statement of Work attached to this Agreement and depicting the roles and responsibilities of the Parties.
- K. “**Services**” or “**Work**” shall mean the design, staging, installation, training, and maintenance services to be provided by Seller to Buyer as included in the Statement of Work. “Services” or “Work” does not include Software design or

programming, but does include installation of the Software as licensed by third parties, including L3Harris Technologies, Inc.

- L. “**Software**” shall mean the proprietary computer software and/or firmware owned and licensed by L3Harris, pursuant to the terms of the Software License.
- M. “**Software License**” shall mean those software licenses published by third parties, including L3Harris, for the Software incorporated into the System.
- N. “**Statement of Work**” shall mean the description of the Work to be performed by Seller to deliver the System Infrastructure and End User Equipment, install the System and provide the Services, all as described in those Exhibits included with the Statement of Work attached to this Agreement. The Statement of Work (“**SOW**”) includes the ITN, as responded to in the Proposal, and as the Proposal is amended by Seller’s “Addendum WCI-#1,” dated April 6, 2021 (as used in this Agreement, the term “Proposal” includes Seller’s Proposal as amended by Seller’s Addendum WCI-#1, except where expressly indicated otherwise).
- O. “**Total Agreement Price**” shall mean the price of the System Infrastructure, End User Equipment, the Software License and the Services to be furnished by Seller to Buyer pursuant to the terms set forth in the Statement of Work.
- P. “**Warranty Period**” shall mean the following: (1) as to System Infrastructure and its Software, including System Infrastructure installation Services, the three (3) year period immediately following Acceptance; and (2) as to End User Equipment and its Software, the five (5) year period immediately following Acceptance.

SECTION 2. SCOPE OF WORK:

- A. Seller shall furnish, deliver and install the System Infrastructure, End User Equipment, and Software for the System, along with the Documentation Deliverables and Services in accordance with the terms of the Statement of Work and this Agreement. Seller shall comply with all applicable laws, including OSHA and other applicable safety codes governing the Services, as well as Buyer’s Standard Contract Clauses as set forth in the ITN.
- B. Seller agrees to secure at Seller’s own expense all personnel necessary to carry out Seller’s obligations under this Agreement. All Services shall be performed by the Seller or under its supervision, and all personnel engaged in performing the Services by Seller shall be fully qualified and, if required, authorized or permitted under state and local law to perform such Services. Seller warrants that all Services shall be performed by skilled and competent personnel to the highest professional standards in the field.
- C. Seller expressly understands and agrees that the Seller is and shall in all respects be considered an independent contractor. Seller shall exercise control over the means and manner in which it and its employees perform the Work, and in all respects the Seller’s relationship and the relationship of its employees to Buyer shall be that of an independent contractor and not as employees or agents of the Buyer. Seller does not have the power or authority to bind the Buyer in any promise, agreement or representation. Seller shall not pledge the Buyer’s credit or make it a guarantor of payment or surety for any contract, debt, obligation, judgment, lien or any form of indebtedness.

SECTION 3. PROJECT MANAGEMENT AND PLANNING:

- A. **Project Managers.** Seller shall designate a Project Manager who will lead the Seller team for the System installation project and other Services and Work described in this Agreement (the “Project”) and will serve as Buyer’s primary point-of-contact for Seller’s project team and the official liaison between Seller’s project team and Buyer. Buyer shall designate a Project Manager to function as the single point-of-contact and official liaison between Seller’s Project Manager and the Buyer.
- B. **Project Schedule and Completion Dates.** The Project completion dates are as described in the “Project Schedule” included in the attached Statement of Work. Updates to the start dates and durations will be mutually agreed upon in writing by the Parties or as otherwise provided herein.
- C. **Project Kick-off Meeting.** Promptly after the Effective Date of the Agreement, the Seller’s Project Manager shall schedule a Project Kick-Off Meeting, the timing and location of which will be mutually agreed upon by Seller and Buyer. The objectives of this meeting include introduction of all project participants, review of the roles of the project participants, review of the overall project scope and objectives, review of the resource and scheduling requirements and review of current install site status.
- D. **Site Visits.** Following the Effective Date of the Agreement, the Buyer shall provide Seller with access to all Buyer-owned or operated Project Sites upon reasonable notice to allow Seller to thoroughly examine each Site and to perform the Detailed Design Review, to prepare a schedule of preparatory work required for each site and a timeline for completion of the preparatory work at each site.

- E. Site Conditions.** Buyer shall identify and disclose to Seller any and all conditions at current Buyer-owned Project Sites of which Buyer is aware that may affect the Work to be performed by Seller. Seller shall be required to perform due diligence of each Project Site. The Seller has proposed a System design utilizing certain undeveloped land sites owned by third parties, in conjunction with Buyer owned or operated or controlled sites. The System design and Total Agreement Price are based on certain assumptions by Seller as to such Project Sites, as further captured in the Proposal materials included with the SOW. Seller shall be responsible for undertaking a site survey for the limited purpose of assessing the suitability of the undeveloped sites for construction of the tower configuration as assumed in the Proposal. In the event that the features or characteristics of the assumed Project Sites are inconsistent with Seller's assumptions in the Proposal, Seller will be entitled to seek a Change Order mutually acceptable to the parties. The Buyer shall not be responsible for existing site conditions affecting tower construction at these undeveloped land sites, which conditions should have reasonably been discovered through Seller's site diligence to assess feasibility. Buyer remains responsible for subterranean features that exceed the assumptions identified in the SOW. Seller shall not be held responsible for any latent defects discovered at the identified sites and such defects shall be resolved in accordance with Section 7D below.
- F. Detailed Design Review.** If provided for in the Statement of Work or mutually agreed by the Parties, a Detailed Design Review ("DDR") phase may commence after the Effective Date of the Agreement, and conclude at a mutually acceptable time. During the DDR, Seller's Project Manager will meet with Buyer's project team on one or multiple occasions to review the System design, technical data, and site specific information to confirm and to refine the System. At the conclusion of the DDR, Seller will provide Buyer with documentation for review and approval by Buyer (the "Detailed Design Documents"). Buyer shall have thirty (30) days to conduct its review of the above documents. Approval of Detailed Design Documents by the Buyer shall not be unreasonably withheld, conditioned or delayed.
- G. System Implementation Communications.** The Parties shall establish a plan that defines regular meetings, reporting structure, and other communications activities, including working sessions that may be needed throughout the term of this Agreement to plan sub-tasks, including at a minimum: (a) formal monthly reports to Buyer's Project Manager concerning work in progress and accomplishments (b) one or more DDR meetings to communicate the final engineering design; (c) periodic status meetings at which the Parties' Project Managers and other project participants will provide updates; (d) conference calls with each Party's project teams to discuss tasks, assign responsibility, and establish schedules; and (e) workshops or working sessions that may be needed to plan subtasks.
- H. Buyer Approvals.** Buyer will review and respond with reasonable promptness to all submittals requiring its approval under this Agreement. For all such submittals or other items Buyer will provide the Seller with either; (i) written notification of Buyer's approval, or (ii) a written notification of conditional approval subject to Seller providing prompt correction of any noted deficiency, or (iii) in the case of a submittal that does not meet the requirements of the Agreement, a written notification of Buyer's disapproval. Buyer's disapproval notification will be provided with reasonable detail to sufficiently advise Seller of the basis on which the submittal was determined to be unacceptable.
- I. Subcontracting.** Upon Buyer's approval, Seller may subcontract any portion of Work to be performed by Seller hereunder provided that Seller shall remain responsible for such subcontracted Work. Buyer reserves the right to accept or reject the selection of a particular subcontractor and to inspect all facilities of any subcontractors in order to make a determination as to the capability of the subcontractor to perform properly under this Agreement. Seller shall submit all proposed subcontractors to the Buyer for approval prior to the commencement of work performed by those subcontractors.

SECTION 4. OBLIGATIONS FOR SYSTEM IMPLEMENTATION:

- A. Project Management and Implementation Plan.** Buyer and Seller each agree to perform their respective tasks and obligations pertaining to permits and licenses, Project Site surveys, general Project Site-related responsibilities, general System Infrastructure-related responsibilities, and Project Site-specific responsibilities as set forth in the Statement of Work, and in a timely fashion in accordance with the Project Schedule, or as otherwise agreed upon by the Parties.
- B. Access.** Buyer shall provide safe access, at no cost to Seller, to all owned, leased, or licensed Project Sites at reasonable times, and with an escort (if required) at no charge, upon reasonable prior notification from Seller. Buyer shall ensure sufficient room, within reason, for machinery or vehicles used by Seller. Buyer shall issue temporary identification cards to Seller's personnel and its authorized subcontractors, if required, for access to the Project Sites.

- C. **Modifications to Sites.** Any Project Sites where Seller will operate and perform System installation under the terms of this Agreement must be approved by Buyer, which approval shall not be unreasonably withheld, delayed or conditioned. Should Buyer direct modification of the Project Sites, or the features and characteristics of the Project Sites that affects Seller's cost or schedule or System performance, or which alters the Detailed Design Documents, the Parties agree that such change shall entitle Seller to seek a Change Order and each Party shall attempt, in good faith to fully negotiate and execute such Change Order.

Seller has included certain coverage performance standards and certain microwave path assumptions with the Proposal. During the DDR, Seller will work with Buyer to (1) inspect and study microwave paths compared to path assumptions, and (2) undertake a study resulting in updated coverage performance standards based on final Project Site locations. In the event that a Project Site location is changed from the assumptions stated in the Proposal, Seller and Buyer will work cooperatively to determine an acceptable new site location. As to any Project Site location change, Seller will undertake to meet the same System coverage performance stated in the Proposal, as may be updated with the DDR. Seller anticipates minor location changes will not impact System coverage. The Seller will perform an updated coverage analysis following site change to validate that the contracted guarantees can be met with the new site location. In the event that Project Site locations significantly change beyond Seller's reasonable control and fall significantly short of achieving the System coverage performance stated in the Proposal, the parties will work cooperatively and in good faith to negotiate and execute a Change Order. Subject to the foregoing provisions of this section, in the event the Seller fails to meet the guaranteed coverage levels during the coverage acceptance test plan and additional sites are required to meet the coverage requirements, the System Infrastructure and related services required for the additional sites will be provided at no additional cost to the Buyer.

- D. **Preparatory Work on Sites and Permitting.** As stated in the Responsibility Matrix, Seller shall have the responsibility to pursue an assignable option to acquire, by lease or purchase, certain third-party owned sites for the System, and Buyer shall have the responsibility to acquire by lease, purchase, easement, or otherwise all rights and access to selected sites or additional real estate as may be required, including exercise of those real estate options arranged by Seller. Seller will present Buyer with Seller's due diligence assessment on such third-party owned sites, as described above. Buyer will determine, in its sole discretion, whether to exercise the option on such third-party owned sites, based on Seller's assessment of such third-party owned sites. Buyer also shall be responsible for paying all utility charges to the appropriate utility for providing utility services to the System installation areas in excess of those estimated values for utility connection services as included in the SOW. Seller is responsible for obtaining necessary zoning and other special permitting and government approvals for the development of the real property at the Project Sites, as well as the engineering associated with the same. Seller is also responsible for the engineering and drawings to obtain the building permits required for vertical construction of System Infrastructure at the Project Sites. The Parties agree to mitigate the need for modification to the extent practical. If any unanticipated modifications to Project Site design become necessary due to subterranean conditions or other conditions that could not be reasonably determined by a site walk, Seller and Buyer will negotiate an extension of time for any impacted activities and/or an equitable adjustment to the Agreement Price to maintain the Project Schedule, as applicable.
- E. **Towers, Power and Backhaul.** Seller is responsible for providing tower structures and foundation at the new Project Sites, along with associated hardware, lighting, and safety systems and appurtenances. For existing tower upgrades and new tower sites, Seller will coordinate delivery of 120/240 VAC power to power the System, with Seller providing -48 VDC power supply, as further described in the SOW. Buyer is responsible for establishing all necessary utility accounts for utility services to the Project Sites. As may be set forth in the SOW, Seller will utilize Buyer's existing fiber optic network as a secondary mode of backhaul for the System. Seller will evaluate grounding and bonding conditions of wiring at existing tower sites, and report findings and recommendations to Buyer, who will determine whether new grounding will be performed at existing tower sites. The Parties will negotiate a Change Order in the event Buyer requests Seller to install new grounding and bonding at existing sites. Seller is responsible for all grounding of tower equipment at new tower sites.
- F. **Frequency FCC Licensing.** Seller or a third-party contractor on behalf of Seller will be responsible for obtaining all Federal Communications Commission frequency licenses for the System, as further set forth in the SOW. Seller will coordinate with Buyer or Buyer's agent in support of the acquisition of frequency licenses. The Parties recognize that certain System Infrastructure cannot be ordered from manufacturers until frequencies are finalized, and the timing of such System Infrastructure orders may impact the Project Schedule.

- G. Federal Aviation Administration (FAA) Approvals and FCC Approvals.** Seller will complete all FAA forms as necessary for obtaining all FAA approvals of newly-constructed or modified towers, as applicable. Seller will also prepare all forms necessary for Buyer to obtain FCC Antenna Structure Registration (ASR). Seller is responsible for any necessary FCC, NEPA, SHPO filings and other environmental studies supporting the ASR, except that Buyer remains responsible for additional costs estimated at \$75,000.00 for each phase II environmental survey and site assessment if required, subject to Project Site change as set forth in Section 4C of this Agreement. Buyer is solely responsible for any corresponding fees to historical organizations related to Project Sites estimated at \$20,000.00.
- H. Preservation of Proprietary Rights.** Seller, as well as the manufacturer of System Infrastructure and End User Equipment, and licensor of Software, own, as applicable, all of their respective proprietary rights in the System Infrastructure, End User Equipment, and Software, without restriction or transfer by this Agreement. Buyer will not modify, disassemble, decompile, reverse engineer, create derivative works from, distribute, sublicense, sell or export the Software. All intellectual property developed, originated or prepared by Seller in connection with the Services remain vested exclusively with Seller, subject to Seller's license to Buyer to use, display, and reproduce all System-related designs, drawings, layouts, floorplans, and building permit files delivered by Seller to Buyer for the Projects Sites.
- I. Insurance.** Seller shall obtain and maintain those insurance coverages set forth in the ITN, as included in Exhibit 7.
- J. Software License.** All Software supplied by Seller with the System Infrastructure or End User Equipment shall be supplied subject to the applicable manufacturer and/or firmware provider licensing terms and conditions, as published by such third parties, including the L3Harris Software license terms included in Exhibit 4. Buyer is responsible for complying with such Software Licenses at all times.

SECTION 5. DELIVERY, TITLE AND RISK OF LOSS:

- A.** Seller shall ship the System Infrastructure to Buyer at Seller's expense on the dates set forth in the Project Schedule. Buyer will not accept deliveries of System Infrastructure earlier than as scheduled in the Project Schedule, except as Buyer authorizes in writing in advance of such delivery. Partial deliveries shall be permitted. Deliveries are subject to delays in inventory and parts availability and other shipment delays by Seller's suppliers beyond the reasonable control of Seller.
- B.** Upon delivery to the Statement of Work designated destination, title to each portion of the System Infrastructure and End User Equipment and all risk of loss or damage shall pass to Buyer, subject to Acceptance of the System. Seller shall remain responsible until Acceptance of the System for loss or damage resulting from the willful misconduct or negligent acts or omissions of Seller, its employees, agents, and subcontractors. Prior to Acceptance, Seller shall keep the System Infrastructure and End User Equipment fully insured for the total amount of all monies then due to Seller with respect to this Agreement. Title to the Software will not pass to Buyer, but is instead licensed to Buyer as described herein. Seller shall ship goods in accordance with the project's needs consistent with the Statement of Work and this Agreement. All goods shall be suitably packaged to secure lowest transportation costs, while conforming with requirements of common carriers and any other applicable specifications. Seller's count or weight shall be final and conclusive on shipments not accompanied by packing slips.
- C.** If Buyer fails to take delivery of any of the System Infrastructure or End User Equipment in accordance with the Project Schedule, and such delay is not attributable to Seller's delay, Buyer shall be responsible for storage costs of all such items. Seller is otherwise responsible for System Infrastructure and End User Equipment storage costs required until completion and Acceptance of the System. Buyer shall have the right to inspect and test the goods at any time prior to shipment and final inspection. Factory staging will take place as may be set forth in the SOW.

SECTION 6. PRICE AND INVOICING:

Subject to changes resulting in price adjustments, as authorized in this Agreement, and subject to the estimated values included with the Proposal, the Total Agreement Price to be paid by Buyer to Seller is **Twenty-Five Million Fifty-One Thousand Seven-Hundred Forty-Two U.S. Dollars and 36/100 (\$25,051,742.36)**. Included in this Total Agreement Price is the purchase price of Seven Million Six Hundred Eighty-Six Thousand Two-Hundred Fifty-Seven U.S. Dollars and 98/100 (\$7,686,257.98) for the End User Equipment. Variations on the quantities and types of End User Equipment units may occur; provided however, if Buyer reduces End User Equipment purchases by more than ten percent (10%) (by dollar amount using the above-stated End User Equipment purchase price), Seller may modify End User Equipment pricing discounts. Maintenance Services for the first twelve (12) months following Acceptance are included in the Total Agreement Price. Software License fees are included in the Total Agreement Price. Any additional

or out-of-scope services requested by Buyer and accepted by Seller shall be billed by Seller at the rates and unit pricing set forth in the Statement of Work, if any, or as otherwise mutually agreed by the Parties. Seller's invoices shall reference this Agreement and be submitted to: Okaloosa County Purchasing Department., 5479A Old Bethel Road, Crestview, Florida 32536, or via electronic mail communication as may be authorized by Buyer. The Total Agreement Price is exclusive of applicable sales, use or other taxes, all of which will be paid by Buyer except as exempt by law.

SECTION 7. CHANGES AND ADDITIONS:

- A. Hardware Changes.** In the event of any change in the System Infrastructure or End User Equipment as a result of requirements by any federal, state, or local government, an equitable adjustment in the price shall be made to reflect any added cost and expense of such change and the Agreement shall be modified by the Parties via Change Order.
- B. Buyer Requested Changes.** Buyer may request changes in or additions to the Work or in the time or place of performance of the Work under this Agreement. All requested changes in or additions to the work, including changes in time frames or place of performance must be in writing and signed by both Parties as a Change Order. If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the Work under this Agreement, Seller or Buyer shall be entitled to an equitable adjustment, by change order, in the Total Agreement Price, the Project Schedule, or both. Any such adjustment in the Total Agreement Price or Project Schedule shall be mutually satisfactory to Buyer and Seller, using the unit pricing and rates set forth in the SOW, as applicable. Price increases and/or extensions of time shall not be binding unless and until evidenced by a fully-signed Change Order.
- C. Delays In Performance.** To the extent that Buyer fails to timely perform its obligations under the Responsibility Matrix or otherwise under this Agreement, and such failure has a material impact on the cost of Work performed by Seller under the Agreement and/or the schedule, the Parties agree that Seller shall be entitled to an equitable adjustment to the Project Schedule, the Total Agreement Price, or both and that a Change Order shall be agreed to by the Parties. Immaterial delays in the Project Schedule attributed to factors beyond the Buyer or Seller's control shall not be grounds for a change to the Total Agreement Price; material delays may be grounds for adjustment to the Total Agreement Price, as stated in Section 9 below.
- D. Concealed Conditions.** If, following Buyer's acceptance of the Detailed Design Documents, Seller encounters a concealed condition, of which it could not have reasonably been made aware, at one or more Project Sites, then the Parties agree to work together to determine the best course of action and agree to negotiate in good faith a Change Order and an equitable adjustment to the Project Schedule and/or Total Agreement Price.
- E. Product Discontinuance.** Subject to its obligation to fulfill its obligations set forth in this Agreement, Seller reserves the right to change any product covered by the Agreement, due to manufacturer discontinuance, provided that Seller agrees to make available to the Buyer a functionally equivalent replacement product to the product discontinued. No products shall be provided with published dates of discontinuance at the time of Seller's delivery of such product to Buyer.
- F. Frequency Changes.** In the event that, after all commercially reasonable efforts and due diligence have been expended, Buyer's licensed frequencies negatively impact the System due to interference that could not reasonably be determined during the frequency licensing process, it shall be treated as an excusable delay event pursuant to the Excusable Delays section of this Agreement for which an extension to the Project Schedule, and equitable adjustment to the Total Agreement Price, shall be granted following the parties' good-faith discussion of the same. Seller will provide technical assistance to Buyer, at Buyer's cost, in obtaining new licensed frequencies. Seller shall, at Buyer's cost, diligently and expeditiously prepare and provide to Buyer a System redesign for its review and approval, including all price and schedule changes. In the event that Buyer and Seller cannot mutually agree on the equitable adjustment to Total Agreement Price or the System redesign, either party may then terminate the Agreement on thirty (30) days written notice, subject to Section 15 hereof governing effects of termination.

SECTION 8. PAYMENTS:

- A.** The Total Agreement Price shall be paid by the Buyer to Seller as follows:

A-1. System Infrastructure:

1. Ten percent (10%) of the Total Agreement Price (excluding the aggregate price of the End User Equipment included in the Total Agreement Price) shall be due upon execution of this Agreement;

2. Twenty percent (20%) of the Total Agreement Price (excluding the aggregate price of the End User Equipment included in the Total Agreement Price) shall be due at the time of the first System Design Review meeting;
3. Twenty percent (20%) of the Total Agreement Price (excluding the aggregate price of the End User Equipment included in the Total Agreement Price) shall be due upon each Site Construction completion on a per site basis (20% / 12 sites);
4. Ten percent (10%) of the Total Agreement Price (excluding the aggregate price of the End User Equipment included in the Total Agreement Price) shall be due upon delivery of System Infrastructure equipment to the Project Sites in accordance with the Project Schedule.
5. Fifteen percent (15%) of the Total Agreement Price (excluding the aggregate price of the End User Equipment included in the Total Agreement Price) shall be due upon substantial completion of the System Infrastructure installation;
6. Ten percent (10%) of the Total Agreement Price (excluding the aggregate price of the End User Equipment included in the Total Agreement Price) shall be due upon completion of System Acceptance Testing;
7. Fifteen percent (15%) of the Total Agreement Price (excluding the aggregate price of the End User Equipment included in the Total Agreement Price) shall be due upon final Acceptance of the System.

A-2. End User Equipment:

The purchase price of each unit of End User Equipment actually received by Buyer, based on unit pricing set forth in Addendum WCI-#1, shall be due upon delivery to Buyer of units on a per unit basis, in accordance with the payment terms of Section 8B below.

- B. Payment Dates.** The Payments associated with all above events shall be due forty-five (45) days following Buyer's receipt of Seller's invoice that has been approved by Buyer. Buyer shall notify Seller of any non-approval of Seller's invoice within twenty (20) days of receipt, so that Seller can correct such invoice as applicable and resubmit to Buyer for payment within thirty (30) days of resubmission. The Florida Prompt Payment Act, F.S., Sec. 218.70, governs payment and late pay penalties.
- C. Other Amounts.** Maintenance Services following the first year after Acceptance are in addition to the Total Agreement Price, and shall be invoiced and paid as set forth Exhibit 6, based on the pricing set forth in Exhibit 1. Maintenance Services following the first year after Acceptance are billed annually in advance of services rendered. Any other amounts due Seller hereunder shall be due thirty (30) days following Buyer's receipt of invoice.

SECTION 9. EXCUSABLE DELAYS:

- A.** Seller shall not be liable for delays in delivery or failure to perform due directly or indirectly to: (1) causes beyond Seller's reasonable control, (2) Acts of God, acts (including failure to act) of any governmental authority (de jure or de facto), wars (declared or undeclared), riots, revolutions, strikes or other labor disputes, fires, floods, sabotage, nuclear incidents, earthquakes, hurricanes, storms, epidemics, pandemics, (3) Seller's inability to timely obtain necessary materials, items, components or services from suppliers or manufacturers, or (4) the failure of the Buyer to perform its obligations hereunder in a timely manner. The foregoing shall apply even though any of such causes exists at the time of signature of the Agreement by Seller or occurs after delays in Seller's performance of its obligations due to other reasons.
- B.** Buyer shall not be liable for delays or failure to perform due directly or indirectly to: (1) causes beyond Buyer's reasonable control, (2) Acts of God, acts (including failure to act) of any governmental authority other than Buyer (de jure or de facto), wars (declared or undeclared), riots, revolutions, strikes or other labor disputes, fires, floods, sabotage, nuclear incidents, earthquakes, hurricanes, storms, epidemics, pandemics, (3) Buyer's inability to timely obtain necessary materials, items, components or services from suppliers or manufacturers, or (4) the failure of the Seller to perform its obligations hereunder in a timely manner. The foregoing shall apply even though any of such causes exists at the time of signature of the Agreement by Buyer or occurs after delays in Buyer's performance of its obligations due to other reasons.

In the event of any delay or failure excused by this Section Excusable Delays, Seller or Buyer shall as soon as practical notify the other party and shall at the same time, or at the earliest practical date after such notice, specify the revised delivery and performance dates. In the event of such delay, the time of delivery or of performance shall be extended for a reasonable time period. If Seller determines that such Excusable Delay event unavoidably impacts the cost of Services or goods sold under this Agreement, Seller may seek an appropriate equitable adjustment to the Total Agreement Price, with detailed written support provided to Buyer. Buyer may grant or deny Seller's request, and if denied, the parties will expeditiously undertake to resolve the dispute within thirty (30) days following the denial. If, following such good faith

efforts by the parties to resolve the dispute, Buyer continues to deny Seller's request for an equitable adjustment, Seller may terminate this Agreement, subject to the advance written notice terms of Section 15 below.

SECTION 10. TESTING AND ACCEPTANCE:

- A.** As applicable to the System Infrastructure, Seller shall notify Buyer that the System is ready for Acceptance Tests at least fourteen (14) days before commencement of the Acceptance Tests, and shall contemporaneously provide Buyer with Acceptance Test procedures, as approved by the buyer in the process outlined in the ITN, if not already supplied. Buyer and Seller shall jointly commence the Acceptance Tests on a mutually agreeable date and a representative of Seller and a representative of Buyer shall sign off on the form provided as part of the test procedure whether each item of the test was passed or failed. If the System does not fulfill the requirements of the Acceptance Tests, Seller shall correct the defects at no additional cost to Buyer as soon as practicable. Upon correction of the defects the Acceptance Tests for the applicable part of the System shall be repeated in accordance with the procedures set forth in this Section. Successful completion of the Acceptance Test is the sole criterion for technical System acceptance. Final system acceptance shall occur when the System Infrastructure and Software for the System, and Documentation Deliverables have been furnished, delivered, installed, and the Acceptance Tests have been passed, and the System Infrastructure and Software have operated in all material respects in accordance with the System requirements set forth in the SOW, as may be amended by Change Order, for a period of 30 consecutive days. End User Equipment shall be deemed accepted upon Buyer's receipt at a Buyer approved facility. Minor deficiencies or variances in the System that do not materially impair its operation as a whole (as determined by Buyer) will not postpone Acceptance, and will instead be addressed by Seller through punch list corrections. Seller is not responsible for System performance deficiencies caused by ancillary equipment or software not furnished by Seller under this Agreement, or improper use or unapproved alterations by Buyer, and such deficiencies will not postpone Acceptance.
- B.** Notwithstanding the Acceptance Testing of the System set forth in subsection (A) above, if Buyer commences use of any portion of the System for its intended purpose, prior to System Acceptance, the applicable portion of the System shall be deemed accepted by Buyer, subject to completion of the 30 consecutive day performance period stated in Section 10A above. However, the System shall not be deemed accepted by Buyer prior to System Acceptance, if Buyer's pre-Acceptance use is limited to any of the following uses, as mutually agreed in writing by the Parties: (i) training or incremental testing, or (ii) emergency disaster response during a declared state of emergency. The pre-Acceptance use scenarios set forth in the preceding sentence shall not operate to expand the warranty terms or Seller's warranty obligations hereunder. The final payment for the applicable portion of the System shall be due and payable within thirty (30) days of such acceptance and associated invoice. The use of the applicable portion of the System for its intended purpose shall be deemed to have occurred when Buyer commences to use and rely primarily on the applicable portion of the System for its communications, except where the logistical buildout of the System requires the decommissioning of the Buyers existing communication system prior to System Acceptance. Seller remains responsible for all contractual obligations and correction of any deficiencies related to portions of the System accepted for beneficial use. In the event a part, but not all, of the System is accepted due to beneficial use, then the associated payment and warranty terms associated with that portion of the System shall be negotiated at that time. Entire System Acceptance by beneficial use shall be deemed to occur when a majority of System users are using the System for its intended purpose, subject to completion of the 30 consecutive day performance period stated above; in such event, the Warranty Period as to the entire System is deemed to commence. Buyer will not withhold final Acceptance payment on the basis of less than a majority of System users having cutover onto the System.
- C.** As used in the Agreement, the term "Acceptance Date" shall mean and "Acceptance" of the System shall be deemed to occur upon the earlier of: (1) the date on which the System is deemed accepted pursuant to subsection (A) above, or (2) the date on which the System is deemed accepted pursuant to subsection (B) above

SECTION 11. COVERAGE AND INTERFERENCE:

Guarantees and warranties concerning System coverage or the distance at which usable radio signals will be transmitted and received by System Infrastructure and End User Equipment are as specifically expressed in Seller's Proposal, as may be modified by the mutual agreement of the Parties in a Change Order. Radio system coverage and performance are subject to degradation due to anomalous propagation and interference beyond the reasonable control of Seller. Seller cannot be responsible for degradation or disruption of service caused by operation of other radio systems or by natural phenomena or other interference over which the Seller has no reasonable control. In the event

of a case of degradation due to interference by an outside party, or reconfiguration of frequencies is otherwise required, Seller will provide engineering support to Buyer at Buyer's expense to support Buyer's efforts in resolving the interference issue with the outside party. While every effort will be made to minimize any radio signal interference experienced on a site, any additional time or costs that are incurred by Seller in investigating and eliminating interference problems that are not caused by defects in the System Infrastructure or End User Equipment, or from incumbent licensed operations that should have reasonably been identified during the FCC licensing process, and after such investigative services are requested by Buyer in writing, shall be the subject an equitable adjustment to the Total Agreement Price and/or the Project Schedule. During testing, Seller will not be responsible or penalized for signal interference as long as the System is properly configured in accordance with the Statement of Work and the proper due diligence was performed to mitigate interference from incumbent licensed operation during the FCC licensing process. Buyer acknowledges that no backup channels are available in the event a certain channel or channels encounters an unacceptable level of interference. Mitigating seasonally occurring signal interference that is not observable during testing is not within the scope of this Agreement. Seller is responsible for performing intermodulation studies for the proposed and existing frequencies at each site, and ensuring the proposed frequency plan does not introduce the potential for third order intermodulation products. Mitigating any third or fifth order Intermodulation hits resulting from high-level carriers not originating at the site is not within the scope of this Agreement.

SECTION 12. WARRANTIES AND MAINTENANCE:

- A.** Subject to the terms of this Agreement, Seller warrants for the Warranty Period that the Services shall be free from defects in material and workmanship and shall conform to the System specifications set forth under this Agreement. Buyer acknowledges that Seller is not the manufacturer of the System Infrastructure or End User Equipment, nor is Seller the licensor of the Software, and therefore, all such System Infrastructure, End User Equipment, and Software remain subject to applicable manufacturer and/or licensor warranties. Harris and Aviat branded products included with the System are delivered and warranted in accordance with Harris and Aviat respective published terms and conditions and warranties, including, without limitation, the terms attached as Exhibit 5. Any and all warranty claims must be made within thirty (30) days of discovery of a defect and are conclusively deemed waived unless made within the Warranty Period. All Services shall be delivered free and clear of all labor, material and mechanic's liens and any other encumbrances whatsoever, which might be occasioned by or permitted to be created by Seller, its subcontractors or material sellers. Buyer may demand lien waivers.
- B.** During the Warranty Period, if any component of the System Infrastructure, End User Equipment or portion of the installation Services fails to meet the foregoing warranties, Seller's sole obligation and Buyer's exclusive remedy under this warranty shall be the correction by Seller of the failure at Seller's option, and subject to manufacturer warranty coverage: (1) by repairing any defective component of the System Infrastructure or End User Equipment, or (2) by furnishing any necessary repaired or replacement parts, or (3) by the redoing of the faulty installation. Any such failure, or the repair or replacement of the defective component or the redoing of any installation, shall not extend the Warranty Period. All warranty labor must be performed by an authorized service group approved by Seller either at its place of business, or at the Buyer's location for fixed location equipment, should Seller determine that it is not feasible to return the fixed location equipment to Seller's authorized service group. Buyer agrees to look solely to the System Infrastructure and End User Equipment manufacturer or Software licensor for any and all warranty claims regarding defects with such System Infrastructure, End User Equipment, and Software. Software updates, patches, and corrections are dependent upon Software licensor release of same for Buyer's use.
- C.** The warranty obligations shall not apply to: (1) System Infrastructure, End User Equipment, or components thereof which are normally consumed in operation, or (2) defects which are the result of improper storage, use, or installation, maintenance or repair performed by other than Seller, or (3) System Infrastructure or End User Equipment which has been subjected to any other kind of misuse or detrimental exposure or has been involved in an accident, or (4) System Infrastructure or End User Equipment or installations altered or repaired by any party other than Seller without Seller's prior written consent, or (5) used equipment required by Buyer.
- D.** Buyer is purchasing certain Maintenance Services for System Infrastructure and System Infrastructure Software, as set forth in Exhibit 6. Software maintenance is dependent on software programming from the Software licensor, including L3Harris.
- E.** THE WARRANTIES AND REMEDIES SET FORTH IN THIS SECTION AND IN EXHIBIT 5 HERETO CONSTITUTE THE ONLY WARRANTIES WITH RESPECT TO THE SYSTEM INFRASTRUCTURE, END

USER EQUIPMENT, SOFTWARE AND SERVICES AND THE BUYER'S EXCLUSIVE REMEDIES IN THE EVENT SUCH WARRANTIES ARE BREACHED. THEY ARE IN LIEU OF ALL OTHER WARRANTIES WHETHER WRITTEN, ORAL, EXPRESS, IMPLIED, OR STATUTORY INCLUDING, WITHOUT LIMITATION, THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, SUCH WARRANTIES BEING DISCLAIMED BY SELLER. EXCEPT FOR THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT AND THE STATEMENT OF WORK, SELLER FURTHER DISCLAIMS ANY WARRANTY REGARDING THE USE OF THE SYSTEM, ITS DESIGN OR CONDITION, ITS NON-INFRINGEMENT OF ANY PATENT OR INTELLECTUAL PROPERTY, ITS QUALITY, CAPACITY, OR WORKMANSHIP, OR CONFORMITY OF THE SYSTEM TO ANY LAW RULE, REGULATION OR SPECIFICATION.

SECTION 13. INDEMNIFICATION:

Each Party (the "Indemnifying Party") shall be responsible for and agrees to indemnify, hold harmless and defend the other Party and its boards, commissions, agencies, officers and employees (the "Indemnified Party") from and against all liability, losses, damages, costs or expenses which the Indemnified Party may sustain, incur or be required to pay by reason of third party claims, demands and causes of action for damages resulting from personal injuries, loss of life or damage to tangible property to the extent resulting from the willful misconduct or negligent acts or omissions of Indemnifying Party. Indemnified Party agrees to notify Indemnifying Party in writing as soon as practical of any third party claim, demand or cause of action for which Indemnified Party will request indemnification. Indemnified Party will provide the necessary information and assistance to defend or settle such claim, demand or cause of action and the Indemnifying Party shall control the defense. The Indemnifying Party shall engage counsel reasonably acceptable to the Indemnified Party. The Indemnifying Party shall not settle any lawsuit or claim in a manner that adversely affects the rights of the Indemnified Party, without the Indemnified Party's prior written consent. The obligations of each Party under this paragraph shall survive the expiration or termination of this Agreement. Seller will not indemnify or defend claims for infringement of intellectual property associated with third-party manufactured System Infrastructure, End User Equipment, or third-party licensed Software. Nothing in this Section 13 shall waive Buyer's sovereign immunity.

SECTION 14. LIMITATION OF LIABILITY:

- A. Except for either Party's liability to third parties for such Party's willful misconduct or negligent acts or omissions as more particularly described in the Indemnification Section of this Agreement (which, as to Seller's liability, shall not exceed Seller's applicable insurance coverage required by this Agreement), the total liability of either Party, including Seller's subcontractors or suppliers, for all claims of any kind for any loss or damage, whether in Agreement, warranty, tort (including negligence or infringement), strict liability or otherwise, arising out of, connected with, or resulting from the performance or non-performance of this Agreement or from the sale, delivery, installation, technical direction of installation, resale, repair, replacement, licensing or use of any System Infrastructure, End User Equipment, Software or the furnishing of any Service, shall not exceed the amount paid by Buyer allocable to the particular item of System Infrastructure, End User Equipment, Software or Service which gives rise to the claim. Except as to title and the exception stated above in this Section 14A, any such liability shall terminate upon the expiration of the Warranty Period.
- B. WITHOUT LIMITING SELLER'S WARRANTY OBLIGATIONS SET FORTH IN SECTION 12, IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, INDIRECT, CONSEQUENTIAL, PUNITIVE, EXEMPLARY, LIQUIDATED DAMAGES, INCLUDING BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM LOSS OF USE, LOSS OF DATA, LOSS OF USE OF THE SYSTEM INFRASTRUCTURE, END USER EQUIPMENT, OR ANY OTHER EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR DOWNTIME COSTS, LOSS OF PROFITS OR LOSS OF BUSINESS OR REVENUE, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY, STATUTE OR ANY OTHER THEORY OR FORM OF ACTION, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Nothing in this limitation of liability shall limit the Buyer's right to the proceeds of the Surety Bond for Performance in the event Seller fails to fully perform or complete the Agreement.

SECTION 15. TERM, DEFAULT, TERMINATION, AND REMEDIES:

- A. The term of this Agreement shall commence upon the Effective Date of this Agreement and shall run through the Acceptance Date, or when this Agreement is terminated, except that those terms and conditions of this Agreement applicable to the System Infrastructure Maintenance Services shall continue while the Systems Equipment Maintenance Agreement (Exhibit 6) remains active.
- B. Buyer may, upon sixty (60) days advance written notice to Seller, terminate this Agreement for convenience, subject to payment to Seller for all Services rendered. In the event of a material breach of this Agreement by Seller which shall continue for (thirty 30) or more days after written notice to Seller of such breach (including a reasonably detailed statement of the nature of such breach), Buyer shall be entitled to avail itself cumulatively of any and all remedies available at law or in equity (provided such remedies are not otherwise limited under the terms of this Agreement) and either: (1) suspend performance of its payment obligations under the Agreement for as long as the breach continues uncorrected; or (2) terminate this Agreement by written notice to Seller if the breach remains uncorrected.
- C. In the event of: (1) any failure by Buyer for thirty (30) or more days to make any payment when due, or (2) any other material breach of this Agreement by Buyer which shall continue for (thirty 30) or more days after written notice to Buyer of such breach (including a reasonably detailed statement of the nature of such breach), Seller shall be entitled to avail itself cumulatively of any and all remedies including without limitation the right to resell unpaid goods that are still in the possession of the Seller (provided such remedies are not otherwise limited under the terms of this Agreement) and either: (1) suspend performance of its obligations to deliver the Services for as long as the breach remains uncorrected; or (2) terminate this Agreement by written notice to Buyer if the breach remains uncorrected.
- D. In the event Buyer terminates this Agreement, all finished and unfinished System Infrastructure, End User Equipment, and Documentation Deliverables produced or made available by Seller for Buyer under this Agreement shall become the property of Buyer, and Seller shall be entitled to receive compensation in accordance with the terms of this Agreement for any such System Infrastructure, End User Equipment, and Documentation Deliverables. In the event Seller terminates this Agreement, Buyer shall compensate Seller for: (1) all Services performed and System Infrastructure and End User Equipment delivered prior to the effective date of the termination; and (2) reimbursable expenses then due. Other than the compensation due to Seller as set forth above in this section, the Seller shall not be entitled to receive compensation for anticipated professional fees, profit, general and administrative overhead expenses or for any other anticipated income or expense which may be associated with services which are terminated, suspended, eliminated, or cancelled. Under no circumstances shall the compensation due under this section exceed the Total Agreement Price. Seller shall be reimbursed by Buyer for all restocking fees, freight, handling fees, storage and any other expenses the Seller incurs in the returning of goods purchased for use in this Agreement to their vendors upon the termination of this Agreement by the Buyer for any reason other than material breach of this Agreement by Seller.

SECTION 16. CONFIDENTIALITY:

- A. During the term of this Agreement, it is anticipated that one party (hereafter the “Disclosing Party”) may disclose to the other party (hereafter the “Receiving Party”) information which the Disclosing Party considers proprietary trade secrets and confidential, including such information exempt from applicable public records laws. Accordingly, with respect to any specification, drawings, sketches, models, samples, tools, technical information, confidential business information or data, in written or other tangible form which: (1) has been designated in writing by the Disclosing Party as confidential or proprietary, or (2) is of the type that the Receiving Party customarily treats as confidential or proprietary, and which is furnished by the Disclosing Party to the Receiving party in contemplation of or under this Agreement (hereinafter “Information”), the Receiving Party shall treat such Information, for a period of five (5) years after the Effective Date of this Agreement, as confidential information with the same degree of care as the Receiving Party affords to confidential information of its own, or for trade secret or proprietary information exempted from public records law, and shall not reproduce any such Information, in whole or in part, except as specifically authorized in writing by the Disclosing Party or as required by applicable public records laws.
- B. The provisions of the preceding subsection shall not apply to any Information which:
 1. Is or shall become publicly available without breach of this Section, on the part of the Receiving Party;
 2. Is already known or independently developed by the Receiving Party prior to receipt from the Disclosing Party;
 3. Is rightfully obtained by the Receiving Party from third parties without restriction; or
 4. Is required to be disclosed under Florida law, or by appropriate governmental or judicial order provided that Receiving Party gives Disclosing Party prior written notice of such order and assists Disclosing Party in taking reasonable actions to restrict such order.

SECTION 17. NOTICES:

Notices and other communications between the parties shall be transmitted in writing by certified mail or nationally recognized overnight courier service to the Parties at the addresses set forth on the first page of this Agreement, and shall be deemed effective upon receipt by the receiving party.

SECTION 18. ORDER OF PRECEDENCE:

The Statement of Work and the following Exhibits are expressly incorporated herein by reference and, together with this Agreement, constitute the Agreement Documents. In the event of a conflict among or between the Agreement Documents, the documents shall control in the order of precedence set forth below:

1. Amendments to this Agreement, including Change Orders
2. This Agreement (not including the Exhibits and documents listed below)
3. **Exhibit 1** – Seller’s “Addendum WCI-#1,” dated April 6, 2021 (included in full with the Statement of Work)
4. **Exhibit 2** – Seller’s Proposal, including Technical Response, dated August 14, 2020 (incorporated by reference in the Statement of Work)
5. **Exhibit 3** – Buyer’s ITN PS 33-20, titled Project 25 Public Safety Radio Network, dated May 18, 2020 (incorporated by reference in the Statement of Work)
6. **Exhibit 7** – General Services Insurance Requirements
7. **Exhibit 4** – L3Harris Software License
8. **Exhibit 5** – L3Harris Terms and Conditions of Sale and Limited Warranty
9. **Exhibit 6** – Systems Equipment Maintenance Agreement

Any Purchase Order issued by the Buyer with Terms and Conditions contained therein shall not affect or alter the terms of this Agreement or the Exhibits to this Agreement.

SECTION 19. PUBLIC RECORDS:

Any record created by either party in accordance with this Agreement shall be retained and maintained in accordance with the public records law, Florida Statutes, Chapter 119. Seller must comply with the public records laws, Florida Statute chapter 119, as applicable to Seller’s Services under this Agreement. Specifically Seller must:

- A. Keep and maintain public records required by Buyer to perform the Service.
- B. Upon request from Buyer’s custodian of records, provide Buyer with a copy of the requested public records or allow the public records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in chapter 119 Florida Statutes or as otherwise provided by law.
- C. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the Services if Seller does not transfer the public records to Buyer.
- D. Upon completion of the Services, transfer, at no cost, to Buyer all public records in possession of Seller or keep and maintain public records required by Buyer to perform the service. If Seller transfers all public records to the Buyer upon completion of the Agreement, Seller shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If Seller keeps and maintains public records upon completion of the Agreement, Seller shall meet all applicable requirements for retaining the public records. All public records stored electronically must be provided to Buyer, upon the request from the Buyer’s custodian of records, in a format that is compatible with the information technology systems of the Buyer.

IF THE SELLER HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE SELLER’S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT OKALOOSA COUNTY RISK MANAGEMENT DEPARTMENT 302 N. WILSON St., CRESTVIEW, FL 32536 PHONE: (850) 689-5977 riskinfo@myokaloosa.com.

SECTION 20. TAXES AND ASSESSMENTS:

Seller agrees to pay all sales, use, or other taxes, assessments and other similar charges when due now or in the future, required by any local, state or federal law, including but not limited to such taxes and assessments as may from time to

time be imposed by the Buyer in accordance with this Agreement. Seller further agrees that it shall protect, reimburse and indemnify Buyer from and assume all liability for its tax and assessment obligations under the terms of the Agreement.

The Buyer is exempt from payment of Florida state sales and use taxes. The Seller shall not be exempted from paying sales tax to its suppliers for materials used to fulfill contractual obligations with the Buyer, nor is the Seller authorized to use the Buyer's tax exemption number in securing such materials. The Seller shall be responsible for payment of its own and its share of its employees' payroll, payroll taxes, and benefits with respect to this Agreement.

SECTION 21. MISCELLANEOUS:

The entire agreement of the parties is contained herein and this Agreement supersedes any and all oral agreements and negotiations between the parties relating to the subject matter hereof. The parties expressly agree that this Agreement shall not be amended in any fashion except in a writing(s) executed by authorized representatives of both parties. The invalidity, in whole or in part, of any Section or part of any Section of this Agreement shall not affect the validity of the remainder of such Section or the Agreement. No term of this Agreement may be waived except in a writing signed by the party waiving enforcement. No term of this Agreement shall be deemed to be waived by reason of any failure to previously enforce such term. Section headings are inserted for convenience only and shall not be used in any way to construe the meaning of terms used in this Agreement. Those terms which, by their nature, are intended to survive this Agreement shall so survive the termination or expiration of this Agreement.

It is expressly understood and agreed to by the parties hereto that Florida law shall govern this Agreement and any dispute arising out of or relating to this Agreement. Venue for any legal proceedings arising out of or related to this Agreement shall be instituted in the state or federal courts of Leon County, Florida, or such other neutral location mutually agreed to by the Parties. Prior to instituting any legal proceeding to enforce the terms of this Agreement, the Parties shall first attempt to resolve any dispute through mediation, which shall be conducted with a Florida certified mediator. In the event that any legal proceeding is commenced by either Party hereto against the other Party arising out of or related to this Agreement, the prevailing Party shall be entitled to recover its reasonable attorneys' fees and court costs from the non-prevailing Party. Notwithstanding the foregoing, the terms of the L3Harris published conditions of sale shall control over the terms of the statements above in this Paragraph. EACH PARTY IRREVOCABLY AND UNCONDITIONALLY WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LEGAL ACTION ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY.

This Agreement shall not be assigned nor any interest or obligation in this Agreement transferred by either Party without the written consent of the other Party, which shall not be unreasonably withheld or delayed. Notwithstanding the above, Seller may assign this Agreement, without consent, (a) in whole or in part, to an affiliate or subsidiary or (b) in the event of a change of controlling ownership interest (either directly or indirectly) in Seller or in the event of merger, recapitalization, consolidation, other business combination or sale of all or substantially all of the assets of Seller. In addition, Seller may also assign or transfer, without consent, claims for money due or to become due Seller from Buyer under this Agreement to a bank, trust company or other financial institution. Seller shall promptly provide to Buyer notice of any such permitted assignment or transfer without consent.

IN WITNESS WHEREOF, Buyer and Seller hereby executed this Agreement, including all of its Exhibits:

**OKALOOSA COUNTY
BOARD OF COUNTY COMMISSIONERS**

WILLIAMS COMMUNICATIONS, INC.

By: *Carolyn N. Ketchel*
Title: Chairman, Carolyn N. Ketchel
Date: 04/20/21

By: *[Signature]*
Title: President
Date: 4/9/2021

Attest: *[Signature]*
County Clerk, JD Peacock II



STATEMENT OF WORK
(inclusive of Exhibits 1, 2, and 3 to the Project 25 Public Safety Radio Network Purchase Agreement)

TABLE OF CONTENTS

1. **Exhibit 1** -- Seller's "Addendum WCI-#1," dated April 6, 2021
2. **Exhibit 2** -- Seller's Proposal, including Technical Response, dated August 14, 2020¹
3. **Exhibit 3** -- Buyer's ITN PS 33-20, titled Project 25 Public Safety Radio Network, dated May 18, 2020²

¹ Due to page volume, Seller's entire Proposal including Technical Response, dated August 14, 2020, is not attached in full to this Statement of Work, but is instead incorporated by reference. The point-by-point response to the ITN, as included in Seller's Proposal, is attached to this SOW. Reference to Seller's Proposal is deemed to include Seller's Proposal as amended by Seller's "Addendum WCI-#1" dated April 6, 2021.

² Due to page volume, Buyer's entire ITN is not attached in full to this Statement of Work, but is instead incorporated by reference.

EXHIBIT 4

L3HARRIS SOFTWARE LICENSE AGREEMENT

This License Agreement (“Agreement”) is made on April ___, 2021 (the “Effective Date”) between **L3Harris Technologies, Inc.**, a Delaware Corporation, through its Communication Systems Segment, (“LICENSOR” or “L3Harris”) with offices at 221 Jefferson Ridge Parkway, Lynchburg, VA 24501 and **OKALOOSA COUNTY, FLORIDA, a political subdivision of the State of Florida, by and through its Board of County Commissioners**, whose address is 1250 N. Eglin Parkway, Suite 100, Shalimar, Florida 32549 (“LICENSEE”). LICENSOR is the owner of certain wireless communications software programs and LICENSEE desires to obtain a license from LICENSOR to use such wireless communications programs.

1.0 Definitions.

- 1.1 “Designated Systems”: Means the L3Harris system(s), products, and Designated Terminals purchased by Buyer and identified in the Primary Agreement for which the Licensed Programs and documentation are intended to be used.
- 1.2 “Designated Terminals”: Means the LICENSOR’S Terminals purchased by LICENSEE.
- 1.3 “Licensed Programs”: The term Licensed Programs shall mean the wireless communications computer programs in software or firmware supplied under this Agreement by LICENSOR in binary object code format to the LICENSEE (stand alone or in conjunction with the purchase of a LICENSOR wireless communications system.) Licensed Programs shall also include all other material related to the Licensed Programs supplied by LICENSOR to LICENSEE hereunder, and which may be in machine readable or printed form, including but not limited to user documentation and/or manuals.
- 1.4 “Open Source Software”: Means software with either freely obtainable source code, license for modification, or permission for free distribution.
- 1.5 “Open Source Software License”: The terms or conditions under which the Open Source Software is licensed.
- 1.6 “Primary Agreement”: The agreement to which this exhibit is attached.
- 1.7 “Third Party Software Products”: Shall mean programs that are not developed by LICENSOR which are licensed/purchased by LICENSOR for inclusion in its products.

2.0 License Grant for Licensed Programs.

- 2.1 Subject to the terms of this License Agreement and the performance by Licensee of its obligations hereunder, LICENSOR hereby grants to Licensee, and Licensee hereby accepts from LICENSOR, (a) a personal, non-transferable, non-exclusive, perpetual, limited license to use the Licensed Programs in object code format only and (b) install and execute such Licensed Programs on Licensee’s equipment and (c) which are to be used for internal business purposes only. All licensed programs under this License Agreement shall only be used in conjunction with the Designated System. This license does not transfer any right, title, or interest in the Licensed Programs. The license granted authorizes Licensee to use the Licensed Programs in object code format and does not grant any rights to source code.
- 2.2 LICENSEE will not reproduce, modify, or make derivative works of the Licensed Programs, except that LICENSEE may make one archival, and one inactive backup, copy of the Licensed Programs. In addition, LICENSEE, its agents, consultants and/or its subcontractors will not attempt to reverse engineer, decompile, or reverse-compile any software contained in the Licensed Programs and any attempt to do so shall be a material breach of this License Agreement. With respect to the Licensed Programs, LICENSEE will not alter, deface, discard, or erase any media, documentation, or LICENSOR or Third Party Licensor’s trademarks or proprietary rights notices.
- 2.3 Third Party Software Products may be subject to additional license terms, which, if applicable, are set out in Product Specific License Terms delivered with each product. Additional To the extent applicable, LICENSEE shall comply with any additional Third Party Software Product license terms.
- 2.4 If the Software licensed under this License Agreement contains or is derived from Open Source Software, the terms and conditions governing the use of such Open Source Software are in the Open Source Software Licenses of the copyright owner and not this License Agreement and, to the extent applicable, LICENSEE will comply with the Open Source Software License terms. If there is a conflict between the terms and conditions of this License Agreement and the terms and conditions of the Open Source Software Licenses governing Licensee’s use of the Open

Source Software, the terms and conditions of the license grant of the applicable Open Source Software Licenses will take precedence over the license grants in this License Agreement. If requested by Licensee, L3Harris will use commercially reasonable efforts to: (i) determine whether any Open Source Software is provided under this License Agreement; (ii) identify the Open Source Software and provide Licensee a copy of the applicable Open Source Software License (or specify where that license may be found).

3.0 Protection and Security of Licensed Programs.

LICENSEE acknowledges and agrees that the Licensed Programs and any materials and/or documentation related thereto, and any portion thereof, supplied by LICENSOR hereunder are proprietary and confidential to LICENSOR or applicable third party licensors and are a valuable commercial asset of LICENSOR or their third party owners. LICENSEE also acknowledges and agrees that LICENSOR and/or the third party licensors have and shall retain all proprietary rights in their respective portions of the Licensed Programs and any materials and/or documentation related thereto. LICENSEE (i) shall respect such proprietary rights, (ii) shall protect LICENSOR and any third party licensor's proprietary rights at least to the extent that it protects its own proprietary information, or such (iii) shall not use the Licensed Programs nor any materials or documentation related thereto except for the purposes for which they are being made available as set forth in this Agreement and (iv) shall not reproduce, print, disclose, or otherwise make said Licensed Programs or materials and/or documentation related thereto available to any third party, in whole or in part, in whatever form, except as permitted in the terms of this Agreement.

4.0 Warranty

Seller warrants, for the greater of a period of one year or, if a longer warranty period for the product containing the Licensed Program is set forth in a Primary Agreement, the longer warranty period shall apply commencing with the date of Licensee's acceptance of their Designated System, that any Licensed Program furnished to Licensee under this License Agreement shall be capable of successfully operating on the Designated System in accordance with the logic defined in the operator's manuals when the system is supplied with correct input data. If, on the basis of evidence submitted to LICENSOR within the term of this warranty, it is shown that any Licensed Program does not meet this warranty, LICENSOR will, at its option, either correct the defect or error in the Licensed Program, free of charge, or make available to Licensee a substitute program. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, implied or statutory. **NO IMPLIED OR STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, SHALL APPLY, ALL OF WHICH ARE EXPRESSLY DISCLAIMED BY LICENSOR.**

Licensed Programs which have been developed or are owned by a third party licensor and which are sublicensed by LICENSOR to LICENSEE hereunder shall be warranted to LICENSEE only to the extent that the licensor of such sublicensed programs warrants such sublicensed programs to LICENSOR.

In the event that the Licensed Programs do not conform to the representation above, LICENSEE's sole remedy and LICENSOR's sole and exclusive liability shall be to replace such Licensed Programs with the then current released version of such Licensed Programs.

5.0 Limitation of Liability.

5.1 THE LIMITATION OF LIABILITY PROVISION IN THE PRIMARY AGREEMENT SHALL GOVERN THIS LICENSE AGREEMENT AND SECTION 5.2 SHALL NOT APPLY. IF THERE IS NO LIMITATION OF LIABILITY PROVISION IN THE PRIMARY AGREEMENT, SECTION 5.2 SHALL APPLY.

5.2 IN NO EVENT WILL LICENSOR AND/OR ANY THIRD PARTY LICENSOR(S) BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY DAMAGES RESULTING FROM LOSS OF USE, LOSS OF DATA, LOSS OF PROFITS OR LOSS OF BUSINESS, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY OR ANY OTHER THEORY OR FORM OF ACTION, EVEN IF LICENSOR AND/OR ITS THIRD PARTY LICENSOR(S) HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. LICENSOR'S AND THIRD PARTY LICENSORS', LIABILITY IN CONTRACT, TORT OR OTHERWISE ARISING OUT OF OR IN CONNECTION WITH THIS LICENSE AGREEMENT OR THE USE OF THE LICENSED PROGRAMS SHALL NOT EXCEED THE TOTAL COMPENSATION PAID TO LICENSOR BY LICENSEE FOR THE PRODUCTS CONTAINING THE LICENSED PROGRAMS.

6.0 Term and Termination.

6.1 LICENSOR reserves the right, in addition to any other remedies it may retain in this License Agreement or may be entitled to in law or equity (including immediate injunctive relief and repossession of all non-embedded Licensed Programs and documentation), to terminate this License Agreement at any time prior to the expiration of any Term in the event LICENSEE breaches any material term or condition or fails to perform or observe any obligations or covenants of this License Agreement and such failure and/or breach is not remedied within thirty (30) days of written notice from LICENSOR.

6.2 Within thirty (30) days after termination or expiration of this License Agreement, LICENSEE will return to LICENSOR all confidential material including but not limited to all copies, partial copies, and/or modified copies (if any) of Licensed Programs and any equipment owned by LICENSOR in LICENSEE's possession.

7.0 Assignment/Transfer.

This License Agreement, the licenses granted hereunder and the Licensed Programs provided to LICENSEE under this License Agreement may not be assigned, sub-licensed, or otherwise transferred by LICENSEE to any third party without LICENSOR's prior written consent, except that this license may be assigned if the Products containing the Licensed Programs are transferred but the new owner or user of the Products may only use the Licensed Programs in accordance with terms of this License Agreement. Subject to the foregoing, any assignee hereunder shall be subject to all of the terms, conditions and provisions of this License Agreement. Any attempt by LICENSEE to assign, sub-license, or transfer the Licensed Programs, or any of the rights or duties contained in this Agreement, without LICENSOR's prior written consent shall be void.

8.0 Severability.

If any term or provision of the License Agreement is determined by a court or government agency of competent jurisdiction to be invalid under any applicable statute or rule of law, such provision(s) are, to that extent, deemed omitted, but this License Agreement and the remainder of its provision shall otherwise remain in full force and effect.

9.0 Waiver.

No waiver will be implied from conduct or failure to enforce rights. No waiver will be effective unless in writing signed on behalf of the party against whom the waiver is asserted.

10.0 Compliance with Laws.

Licensee acknowledges that the Licensed Programs are subject to the laws and regulations of the United States and Licensee will comply with all applicable laws and regulations, including export laws and regulations of the United States. Licensee will not, without the prior authorization of L3Harris and the appropriate governmental authority of the United States, in any form export or re-export, sell or resell, ship or reship, or divert, through direct or indirect means, any item or technical data or direct or indirect products sold or otherwise furnished to any person within any territory for which the United States Government or any of its agencies at the time of the action, requires an export license or other governmental approval. Violation of this provision is a material breach of this Agreement.

11.0 Governing Law.

This License Agreement will be governed by the laws of the United States to extent that they apply and otherwise to the laws of the State of New York. The terms of the U.N. Convention on Contracts for the International Sale of Goods do not apply. The parties expressly agree that the Uniform Computer Information Transactions Act ("UCITA") applicable in any jurisdiction shall not apply to this Agreement.

12.0 U.S. Government.

If Licensee is the U.S. Government, the Licensed Programs and documentation qualify as "commercial items," as that term is defined at Federal Acquisition Regulation ("FAR") (48 C.F.R.) 2.101, consisting of "commercial computer software" and "commercial computer software documentation" as such terms are used in FAR 12.212. Consistent with FAR 12.212, and notwithstanding any other FAR or other contractual clause to the contrary in any agreement into which the Agreement may be incorporated, Customer may provide to Government end user or, if the Agreement is direct, Government end user will acquire, the software and documentation with only those rights set forth in the Agreement. Use of either the software or documentation or both constitutes agreement by the Government

that the software and documentation are "commercial computer software" and "commercial computer software documentation," and constitutes acceptance of the rights and restrictions herein.

13.0 Agreement.

This License Agreement may be part of a Primary Agreement between LICENSOR and LICENSEE for the purchased products by LICENSEE from LICENSOR. The Primary Agreement and this License Agreement contain the full understanding of the parties with respect to the subject matter hereof and which supersede all prior understandings and writings relating thereto and which shall become binding on the Effective Date of this License Agreement. No waiver, consent, modification, amendment, or change to the terms of this License Agreement shall be binding unless agreed to in a writing signed by LICENSEE and LICENSOR. If there is any conflict between the terms of the Primary Agreement and this License Agreement as to the Licensed Programs, the terms of this License Agreement will prevail.

14.0 Notices.

Notices shall be provided as set forth in the Primary Agreement. In the event there is no notice provision in the Primary Agreement, notices and other communications between the parties shall be transmitted in writing by certified mail or nationally recognized overnight courier service.

15.0 Survival.

Sections 2.2, 3, 5, 6, 8, 9, 11, and 13 of this License Agreement shall survive termination of this License Agreement.

[End of Document]

EXHIBIT 5

L3HARRIS TECHNOLOGIES, INC. PRODUCTS TERMS AND CONDITIONS OF SALE

1. WARRANTY.

A. L3Harris Technologies, Inc., formerly Harris Corporation, a Delaware Corporation, acting through its Communication Systems Segment (hereinafter "Company") warrants to the original purchaser for use (hereinafter "End User") that the Company's Public Safety and Professional Communications products (hereinafter "Company Products") manufactured by or for Company shall be free from all defects in material, workmanship and title; and shall conform with all of the Company Product's published specifications. With respect to all Company Products that are not manufactured by Company (the "Vendor Products"), Company gives no warranty, and only the warranty, if any, given by the manufacturer of the Vendor Products shall apply. Rechargeable batteries are excluded from this warranty but are warranted under a separate Rechargeable Battery Warranty (ECR-7048).

B. Company's obligations set forth in Paragraph C below shall apply only to Company Product failures to meet the above warranties occurring within the following periods of time from the date of sale to the Buyer or later date of acceptance as set forth in a primary agreement to which these warranty terms are attached, and are conditioned on End User's giving written notice to Company within thirty (30) days of such occurrence:

1. for fuses and non-rechargeable batteries, operable on arrival only.
2. for service parts, ninety (90) days.
3. for mobile and portable radios ("Subscriber Units"), sixty (60) months.
4. for radio accessories, one (1) year.
5. for infrastructure equipment, including site controllers, switches, sync equipment, base stations, and dispatch consoles, thirty-six (36) months.
6. for all other Company Products of Company's manufacture, one (1) year.

C. If any Company Product fails to meet the foregoing warranties, Company shall correct the failure at its option: (i) by repairing any defective or damaged part or parts thereof, or (ii) by replacing the failed Company Products with equivalent new or refurbished Company Products. Any repaired or replacement part furnished hereunder shall be warranted for the remainder of the warranty period of the Company Products in which it is installed. Where such failure cannot be corrected by Company's reasonable efforts, the parties will negotiate an equitable adjustment in price. Labor to perform warranty service will be provided at no charge during the warranty period only for the Company Products covered under Paragraph B.3, B.4 and B.6. To be eligible for no-charge labor, service must be performed at Company's factory (for OpenSky® Company Products only), by an Authorized Service Center (ASC) or other service provider approved by Company in writing to make the specific repairs, either at its place of business during normal business hours, for mobile or portable radio Company Products, or at the End User's location, for fixed location Company Products. Service on fixed location Company Products more than thirty (30) miles from the Service Center or other approved Servicer's place of business will include a charge for transportation. Company shall pay all freight charges relating to the return and shipment of the defective Company Products and the repaired or replacement Company Products to and from the Company designated location. If it is determined that the Company Products are not under warranty, End User shall pay all freight charges related to the return and shipment of the Company Products and the repaired or replacement Company Products to and from the Company designated location as well as all authorized charges for the repair or replacement of the defective Company Product.

D. Company's obligations under Paragraph C shall not apply to any Company Product, or part thereof, which

1. has a defect that is not reported during the applicable Company Product warranty period stated above;
2. is disassembled, modified, altered or repaired other than pursuant to Company's written instructions or other written approval by Company;
3. is not installed, operated or maintained in accordance with written instructions provided by Company;
4. has its serial number removed or altered;
5. is not properly stored or suffers detrimental exposure or is treated with abuse, negligence or other improper treatment; or
6. is damaged in an accident or in a natural disaster (earthquake, storm, flood, fire or other natural disaster).

E. The preceding paragraphs set forth the exclusive remedies for claims based upon defects in or nonconformity of the Company Product, whether the claim is in contract, warranty, tort (including negligence), strict liability or otherwise and however instituted. Upon the expiration of the warranty period, all such liability shall terminate. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER ORAL, WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. NO IMPLIED OR STATUTORY

WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT, PUNITIVE OR EXEMPLARY DAMAGES

2. LIMITATIONS OF LIABILITY.

A. THE TOTAL LIABILITY OF COMPANY, INCLUDING ITS SUBCONTRACTORS AND SUPPLIERS, ON ANY AND ALL CLAIMS WHETHER IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE OR PATENT INFRINGEMENT) OR OTHERWISE, ARISING OUT OF, CONNECTED WITH, OR RESULTING FROM THE PERFORMANCE OR NON-PERFORMANCE OF ANY AGREEMENT RESULTING HEREFROM OR FROM THE MANUFACTURE, SALE, DELIVERY, RESALE, REPAIR, REPLACEMENT OR USE OF ANY COMPANY PRODUCT(S) OR THE FURNISHING OF ANY SERVICE, SHALL NOT EXCEED THE PRICE ALLOCABLE TO THE COMPANY PRODUCT(S) OR SERVICE WHICH GIVES RISE TO THE CLAIM. EXCEPT AS TO TITLE ANY SUCH LIABILITY SHALL TERMINATE UPON THE EXPIRATION OF THE APPLICABLE WARRANTY PERIOD SPECIFIED IN THE ABOVE ARTICLE ENTITLED "WARRANTY".

B. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE OR PATENT INFRINGEMENT) OR OTHERWISE, SHALL COMPANY, OR ITS SUBCONTRACTORS OR SUPPLIERS, BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, INDIRECT, PUNITIVE OR EXEMPLARY DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFIT OR REVENUES, LOSS OF USE OF THE COMPANY PRODUCT(S) OR ANY ASSOCIATED GOODS OR EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR REPLACEMENT POWER, DOWNTIME COSTS OR CLAIMS OF BUYER'S CUSTOMERS FOR SUCH DAMAGES. IF BUYER TRANSFERS TITLE TO, OR LEASES THE COMPANY PRODUCT(S) SOLD HEREUNDER TO, OR OTHERWISE PERMITS OR SUFFERS USE BY, ANY THIRD PARTY, BUYER SHALL OBTAIN FROM SUCH THIRD PARTY A PROVISION AFFORDING COMPANY AND ITS SUBCONTRACTORS AND SUPPLIERS THE PROTECTIONS OF THIS ARTICLE 2.

3. PATENTS.

A. Company warrants that the Company Product(s) furnished hereunder, and any part thereof, shall be delivered free of a rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, Company at its expense shall defend, or may settle, any suit or proceeding against Buyer so far as based on a claimed infringement which breaches this warranty. In case any such Company Product(s), or any part thereof, is in such suit held to constitute such an infringement and the use of said Company Product(s) or part is enjoined, Company shall, at its expense and option, either procure for Buyer the right to continue using said Company Product(s) or part, or replace same with an non-infringing Company Product(s), or modify same so it becomes non-infringing, or remove said Company Product(s) and refund the purchase price (less reasonable depreciation for use and any transportation costs separately paid by Buyer). The foregoing states the entire liability of Company for patent infringement by said Company Product(s) or any part thereof, and is subject to the limitations of liability set forth in the article entitled "Limitations of Liability" above.

B. The preceding paragraph shall not apply to any Company Product(s) or parts manufactured to Buyer's or its Customer's design, or to the use of any Company Product(s) or part furnished hereunder in conjunction with any other product in a combination not furnished by Company as a part of this transaction. As to any such Company Product(s), part, use or combination, Company assumes no liability whatsoever for patent infringement.

4. DELAYS.

Company shall not be liable for delays in delivery or performance or for failure to manufacture or deliver or perform due to (i) causes beyond its reasonable control, or (ii) acts of God, acts of Buyer, acts of civil or military authority, governmental priorities, strikes or other labor disturbances, floods, epidemics, war, riot, acts of terrorism, delays in transportation or car shortages, or (iii) inability on account of causes beyond the reasonable control of Company or its suppliers to obtain necessary materials, components, services, or facilities. In the event of any such delay, the date of delivery or of performance shall be extended for a period equal to the time lost by reason of the delay.

5. GENERAL.

A. Buyer is solely responsible for obtaining and complying with any necessary permits and licenses from the Federal Communications Commission, or any other Federal, State or local governmental authority, related to the purchase, installation, erection and operation of any Company Product(s) purchased hereunder.

B. The provisions of these conditions of sale are for the benefit of the parties named hereto and not for any other person. The delegation or assignment by Buyer of any or all of its duties or rights hereunder without Company's prior written consent shall be void.

C. All intellectual property rights and other information relating to the Company Products, including but not limited to all copyrights, patents, trade secrets, technology inventions, trade names trademarks, service marks, and other commercial symbols and goodwill (collectively, the "Intellectual Property Rights"), shall remain the exclusive property of Harris Corporation or its affiliates (collectively Harris Corporation) or its or their third party licensors, as applicable. A perpetual, nonexclusive, non-transferable, fully paid license is granted by Company which gives the Buyer the right to use the software embedded in the Company Product(s) manufactured by Company, and any modifications thereof, only for Buyer's use of the Company Products. The license granted hereunder may not be assigned or transferred without the prior written consent of the Company.

D. The invalidity, in whole or in part, of any Article or paragraph hereof shall not affect the validity of the remainder of such Article or paragraph.

E. The validity, performance and all matters relating to the interpretation and effect of these conditions of sale and any amendment hereto shall be governed by the laws of the State of Florida, without regard to its rules pertaining to conflict of laws. The terms and provisions of the United Nations and Vienna Conventions on Contracts for the International Sale of Goods shall not apply to a transaction governed by these conditions of sale and any amendment hereto.

EXHIBIT 6
SYSTEMS EQUIPMENT MAINTENANCE AGREEMENT

This Systems Equipment Maintenance Agreement (“Maintenance Agreement”) is entered into on April __, 2021 (the “Effective Date”), by and between Williams Communications, Inc., a Florida corporation with an address of 5046 Tennessee Capital Blvd., Tallahassee, FL 32303 (“Company”), and Okaloosa County, Florida, a political subdivision of the State of Florida, by and through its Board of County Commissioners, with an address of 1250 N. Eglin Parkway, Shalimar, FL 32579 (“Client”). Company and Client are each a “Party” and collectively referred to as the “Parties”.

Whereas, Client is the legal owner or has legal control of, or is purchasing, certain land mobile radio System Infrastructure components, as defined in the primary Agreement to which this Maintenance Agreement is an Exhibit (the “Equipment”), which Equipment is located at Client’s facilities in and surrounding Okaloosa County, Florida (“Client Facilities”).

Whereas, Company is in the business of providing maintenance, inspection and repair services for such Equipment, and desires and is willing to inspect, maintain and repair the Equipment and represents it is capable of providing the necessary personnel and materials required for inspecting, maintaining and repairing the Equipment, both at Client Facilities and at Company’s service maintenance facility locations (“Company Facilities”).

Whereas, Client desires the Equipment be maintained in good working order by the Company, including conducting periodic inspections, scheduled repairs and replacements of parts as needed with respect to the Equipment, and emergency repairs as may be necessary.

Now, therefore, in consideration of the mutual covenants and conditions set forth herein, and other good and valuable consideration, the receipt of which is hereby acknowledged, and intending to be legally bound, the Parties agree as follows:

1. **Maintenance Services.** During the Term of this Maintenance Agreement, Company shall provide to the Client the maintenance, inspection, and repair services generally described below, and as provided in the primary Agreement (Project 25 Public Safety Radio Network Purchase Agreement), particularly Exhibit 1 included with the Statement of Work (“SOW”) to the Agreement, (collectively referred to in this Maintenance Agreement as the “Maintenance Services”):
 - A. Inspect and maintain all of the System Infrastructure Equipment identified in the primary Agreement on an annual basis, as prescribed in the owner's maintenance manual provided by the Equipment manufacturer with respect to each piece of Equipment, or as may otherwise be agreed upon by the Parties in writing.
 - B. Make all adjustments, tuning, programming, repairs and replacements to the Equipment as may be determined to be necessary to keep the Equipment in good working order based upon Company’s inspections of the Equipment. Preventive maintenance shall be performed on all infrastructure equipment at a minimum of once per year.
 - C. Company will provide those software maintenance services for the Equipment that Company is authorized to provide by third-party software licensors, including L3Harris software maintenance services as identified in the SOW. All other software maintenance services delivered remotely by the software licensor, such as firmware releases, updates and security patches, will be provided directly by such licensor, with installation support by Company.
 - D. Make or provide any repair or replacement of parts as may be necessary for the normal operation of the Equipment. Replaced parts shall be returned to the County within 45 days of the failure occurring.
 - E. Company shall provide 24x7 remote diagnostics monitoring, and respond to Client’s requests for repairs in accordance with the Severity Level response requirements set forth in the SOW. Company shall immediately notify Client upon an event impacting system performance.
 - F. All adjustments and/or repairs that are identified as being required based on Company’s inspection and maintenance of the Equipment will be performed at the time of the inspection or as soon thereafter as reasonably possible, subject to the response time requirements set forth in the SOW.
 - G. Subject to the response time requirements set forth in the SOW, all Maintenance Services shall be performed during Regular Business Hours (8:00 a.m. to 5:00 p.m., Monday through Friday) as set forth in the SOW. All Maintenance Services on System Infrastructure Equipment shall be performed during Regular Business

Hours at Client Facilities. There are no restrictions on working hours for critical issues impacting system performance as set forth in the SOW.

- H. When requested by Client, a copy of an inspection report shall be completed, signed and submitted to the Client after the inspection. Copies of reports regarding the Maintenance Services shall be furnished by Company to any legal authority or other party as may be required by applicable law. Monthly reports shall be made available of service calls and inspection results.
 - I. Company may, in its discretion, have the Maintenance Services performed by subcontractors who are not Company employees, but who are qualified to perform the Maintenance Services in accordance with the terms hereof, as determined by Company. Company must receive approval from the Client prior to engaging with subcontractors.
 - J. Company may discontinue providing Maintenance Services on any or all of the Equipment if Company is unable to obtain an adequate supply of spare parts and supplies required to perform the Maintenance Services with respect to such Equipment, due to causes beyond Company's control.
2. **Demand Services.** Installation, removal, or reinstallation of Equipment not associated with repair or maintenance efforts as described in Section 1 above (otherwise outside the scope of this Agreement), as well as service work made necessary because of Client's abuse, neglect, or use of Equipment in a manner not authorized by the Equipment manufacturers, shall be considered "Demand Services," and shall be performed as requested by Client, and accepted by Company. For clarity, Demand Services include natural disaster recovery services during a declared state of emergency. As used in this Maintenance Agreement, "Maintenance Services" shall include "Demand Services" unless otherwise stated herein.
3. **Rates and Fees**
- A. Fees for Maintenance Services other than Demand Services performed by Company shall be as set forth in the primary Agreement and the SOW.
 - B. Rates for Demand Services shall be as separately quoted by Company to Client in the event Demand Services are requested, based on the labor rates included with the SOW to the primary Agreement.
 - C. In addition to the compensation for Maintenance Services, Company will charge and Client agrees to pay for any materials and parts used and/or provided by Company pursuant to its performance of the Maintenance Services, except for (i) those materials and parts costs incurred during the Warranty Period, and (ii) such costs that are covered by applicable warranty as set forth in the primary Agreement. Prices for materials and parts for the Equipment shall be at the price listed by Company and supplied to Client, or, if not listed by Company, the manufacturer list price less 20% contract discount, plus any freight, transportation and taxes, F.O.B. Origin. Equipment and related parts pricing and availability are subject to change by manufacturer. If requested by the Client in writing, Company will furnish an estimate of the cost of parts to be replaced prior to such replacement. The parts used by Company to perform Maintenance Services hereunder will either be new or equivalent to new. Title to parts shall pass to Client when the parts are installed by Company in the Equipment, or delivered to Client's Facilities, whichever is earlier.
 - D. Any cost or expense for any special or expedited delivery or shipping requested by Client shall be borne by Client.
 - E. Should Client remove the Equipment from Client's Facilities to another location, Company reserves the right to increase its rates and fees for continued Maintenance Services under this Maintenance Agreement, based upon the distance and any costs associated with providing the Maintenance Services.
4. **Term.** Company is committed to maintaining the Equipment for a period of 20 years, subject to the terms of this Maintenance Agreement. The initial term of this Maintenance Agreement shall be fifteen (15) years from the Effective Date (the "Initial Term"), unless terminated earlier as provided in this Maintenance Agreement. Company will undertake best efforts to provide Maintenance Services for years 16 through 20, based on product availability. Unless either party notifies the other party of its intent not to renew the term of this Maintenance Agreement within sixty (60) days prior to the expiration of the Initial Term, the term of this Maintenance Agreement shall automatically renew for successive one (1) year terms, without awaiting Client purchase order.

At least ninety (90) days prior to the end of the Initial Term or any subsequent renewal term, Company will forward to Client the new rates, if any, for the Maintenance Services that will take effect.

5. Invoices and Payment Terms.

- A. Company shall submit annual invoices to Client for Maintenance Services as set forth in the primary Agreement, and on a monthly basis for Demand Services, itemizing all goods and services billed, with any annual fees to be billed in advance of the annual services being rendered. Client shall pay each invoice within 30 days of the date of the invoice, with late payment and associated penalties governed by the Florida Prompt Payment Act. In the event Client defaults on its payment obligations hereunder, Client agrees that it shall also be responsible for and liable to Company for all costs incurred by Company in collection of such outstanding amounts, including reasonable attorneys' fee.
- B. Client shall pay all federal, state, local sales and other taxes which are levied or imposed by reason of the Maintenance Services or any parts or materials provided by Company under this Maintenance Agreement, except as Client may validate tax exemption.

6. Client Responsibilities.

- A. Client agrees to pay Company for all Maintenance Services, the first year of which, following Acceptance under the primary Agreement, is included in the Total Agreement Price defined in the primary Agreement. Client agrees to purchase from or provide to Company such parts, supplies, and other materials as may be necessary and reasonable in order to maintain the Equipment in good working order and to make necessary repairs to the Equipment as identified in the list of spares included in the contract. Client acknowledges and agrees that the satisfactory performance of Equipment and any Maintenance Services performed by Company will depend upon the quality and suitability of parts and materials used and, therefore, Client shall be fully responsible for any failure or dissatisfaction arising from any of the Maintenance Services performed using materials or parts not purchased from or recommended by the Company. Company is not responsible for third party parts and equipment obsolescence or unavailability, although Company will undertake all reasonable commercial efforts to give notice of discontinued parts.
- B. To the extent Company performs Maintenance Services at the Client Facilities, Client shall without any charge to Company provide all reasonable facilities and assistance for the safety and convenience of the Company's employees and representatives (including power, lighting, heating and cooling).
- C. On-site response times are based on the assumption that the Client Facilities are accessible by normal transportation methods and vehicles. On-site response time requirements exclude site locations that require extensive drive time due to abnormal traffic conditions or site locations where specialized vehicles are required. In addition, Client is responsible to ensure that all necessary clearances, escorts, or other special requirements have been met in advance to allow technicians prompt access to any equipment requiring service that may be located in a secured or limited access area of Client Facilities.
- D. Client is responsible for maintaining compliance with all Equipment warranties and associated firmware or software licenses, as published by the third party manufacturers and licensors, as well as frequency licenses and permits for the radio systems.
- E. During the Term and for six (6) months thereafter, Client shall not solicit or recruit Company's personnel or contractors.

7. Warranty; Warranty Disclaimer

- A. Company represents and warrants to Client that the Maintenance Services provided hereunder shall be performed by qualified personnel in a professional and workmanlike manner in accordance with the requirements of this Maintenance Agreement. Client acknowledges that Company is not the manufacturer of the Equipment or related parts, or licensor of associated Equipment firmware or software, and therefore, all Equipment and associated firmware or software remain subject to applicable manufacturer and/or licensor terms and conditions, including any warranties issued by such manufacturers. All warranty coverage for replacement parts or equipment furnished as part of Maintenance Services shall be solely between Client and the applicable manufacturer issuing the warranty. Company makes no representation or warranty concerning

radio system coverages, interferences, or the distance at which usable radio signals will be transmitted and received.

- B. WITH RESPECT TO REPAIRS PERFORMED ON THE EQUIPMENT, COMPANY WARRANTS THE SAME TO BE FREE OF DEFECTS IN MATERIALS OR WORKMANSHIP FOR SIXTY (60) DAYS FROM THE DATE OF REPAIR. THIS WARRANTY COVERS THE PARTS THAT WERE REPAIRED OR REPLACED DURING THE REPAIR AND THE LABOR ASSOCIATED WITH THE REPAIR OR REPLACEMENT. CLIENT SHALL NOTIFY COMPANY WITHIN SUCH SIXTY (60) DAY PERIOD OF ANY CLAIM PURSUANT HERETO. IN THE EVENT OF A BREACH OF THE FOREGOING WARRANTY, THE SOLE LIABILITY OF COMPANY AND THE SOLE REMEDY OF CLIENT SHALL BE THE REPAIR OR REPLACEMENT OF THE PART, OR RE-PERFORMANCE OF THE SERVICE, WHICH PROVED TO BE DEFECTIVE. THE FOREGOING WARRANTY CONSTITUTES THE SOLE LIABILITY OF COMPANY AND THE SOLE REMEDY OF CLIENT FOR DEFECTIVE MATERIALS OR WORKMANSHIP, WHETHER ARISING UNDER CONTRACT, TORT, STRICT LIABILITY OR OTHER FORM OF ACTION.
- C. COMPANY HAS NOT MADE AND DOES NOT MAKE, TO CLIENT OR OTHERS ANY REPRESENTATION, WARRANTY OR COVENANT, EXPRESS OR IMPLIED, WITH RESPECT TO THE EQUIPMENT, NOR WITH RESPECT TO THE EQUIPMENT'S MANUFACTURE, DESIGN, CONDITION, DURABILITY, SUITABILITY, FITNESS FOR USE, OR MERCHANTABILITY, AND COMPANY SHALL NOT BE RESPONSIBLE IN ANY MANNER FOR ANY PATENT OR LATENT DEFECTS IN THE EQUIPMENT OR ANY DAMAGES ARISING THEREFROM.
- D. COMPANY SPECIFICALLY DISCLAIMS ALL OTHER EXPRESS OR IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

8. **Termination**

- A. Client may terminate this Maintenance Agreement at any time without cause, by providing written notice of termination to the other party at least ninety (90) days prior to the effective date of termination. No termination of this Maintenance Agreement shall relieve Client of making payments due for Maintenance Services rendered through, or Equipment or parts ordered by Client as of, the effective date of termination.
- B. Either party may terminate this Maintenance Agreement at any time in the event of a material breach by the other party that remains uncured after: (i) in the event of a monetary breach, twenty (20) calendar days following written notice thereof; and (ii) in the event of a non-monetary breach, thirty (30) days following written notice thereof. Such termination shall be effective immediately and automatically upon the expiration of the applicable notice period, without further notice or action by either party. Termination shall be in addition to any other remedies that may be available to the non-breaching party. No termination of this Maintenance Agreement shall relieve Client of making payment for Maintenance Services rendered through, or Equipment or parts ordered by Client as of, the effective date of termination.

EXHIBIT 7
GENERAL SERVICES INSURANCE REQUIREMENTS – w/CYBER LIABILITY

CONTRACTORS INSURANCE

1. The Contractor shall not commence any work in connection with this Agreement until he has obtained all required insurance and the certificate of insurance has been approved by the Okaloosa County Risk Manager or designee.
2. All insurance policies shall be with insurers authorized to do business in the State of Florida and having a minimum rating of A, Class X in the Best Key Rating Guide published by A.M. Best & Co. Inc.
3. All insurance shall include the interest of all entities named and their respective officials, employees & volunteers of each and all other interests as may be reasonably required by Okaloosa County. The coverage afforded the Additional Insured under this policy shall be primary insurance. If the Additional Insured have other insurance that is applicable to the loss, such other insurance shall be on an excess or contingent basis. The amount of the company's liability under this policy shall not be reduced by the existence of such other insurance.
4. With the exception of Workers' Compensation policies, the County shall be shown as an Additional Insured with a Waiver of Subrogation on the Certificate of Insurance on all Workers Compensation Certificates of Insurance.
5. The County shall retain the right to reject all insurance policies that do not meet the requirement of this Agreement. Further, the County reserves the right to change these insurance requirements with 60-day notice to the Contractor.
6. The County reserves the right at any time to require the Contractor to provide copies of any insurance policies to document the insurance coverage specified in this Agreement.
7. Any subsidiaries used shall also be required to obtain and maintain the same insurance requirements as are being required herein of the Contractor.
8. Any exclusions or provisions in the insurance maintained by the Contractor that excludes coverage for work contemplated in this agreement shall be deemed unacceptable and shall be considered a breach of contract.

WORKERS' COMPENSATION INSURANCE

1. The Contractor shall secure and maintain during the life of this Agreement Workers' Compensation insurance for all of his employees employed for the project or any site connected with the work, including supervision, administration or management, of this project and in case any work is sublet, with the approval of the County, the Contractor shall require the Subcontractor similarly to provide Workers' Compensation insurance for all employees employed at the site of the project, and such evidence of insurance shall be furnished to the County not less than ten (10) days prior to the commencement of any and all sub-contractual Agreements which have been approved by the County.
2. Contractor must be in compliance with all applicable State and Federal workers' compensation laws, including the U.S. Longshore Harbor Workers' Act or Jones Act, if applicable.
3. No class of employee, including the Contractor himself, shall be excluded from the Workers' Compensation insurance coverage. The Workers' Compensation insurance shall also include Employer's Liability coverage.
4. A Waiver of Subrogation is required to be shown on all Workers Compensation Certificates of Insurance.

BUSINESS AUTOMOBILE LIABILITY

Coverage must be afforded for all Owned, Hired, Scheduled, and Non-Owned vehicles for Bodily Injury and Property Damage in an amount not less than \$1,000,000 (One Million Dollars) combined single limit each accident. If the contractor does not own vehicles, the contractor shall maintain coverage for Hired & Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Policy. Contractor must maintain this insurance coverage throughout the life of this Agreement.

COMMERCIAL GENERAL LIABILITY INSURANCE

1. The Contractor shall carry Commercial General Liability insurance against all claims for Bodily Injury, Property Damage and Personal and Advertising Injury caused by the Contractor.
2. Commercial General Liability coverage shall include the following:
 - 1.) Premises & Operations Liability
 - 2.) Bodily Injury and Property Damage Liability
 - 3.) Independent Contractors Liability
 - 4.) Contractual Liability
 - 5.) Products and Completed Operations Liability
3. Contractor shall agree to keep in continuous force Commercial General Liability coverage for the length of the contract.

CYBER LIABILITY

The Contractor shall carry Cyber Liability insurance coverage for third party liability. Coverage will include ID Theft Monitoring, Credit Monitoring (if necessary) & Notification. Coverage must be afforded for negligent retention of data as well as notification and related costs for actual or alleged breaches of data.

INSURANCE LIMITS OF LIABILITY

The insurance required shall be written for not less than the following, or greater if required by law and shall include Employer’s liability with limits as prescribed in this contract:

	<u>LIMIT</u>
1. Workers’ Compensation	
1.) State	Statutory
2.) Employer’s Liability	\$500,000 each accident
2. Business Automobile	\$1,000,000 each accident
	(A combined single limit)
3. Commercial General Liability	\$1,000,000 each occurrence
	Bodily Injury & Property Damage
	\$1,000,000 each occurrence Products and completed operations
4. Personal and Advertising Injury	\$1,000,000 each occurrence
5. Cyber Liability	\$1,000,000 per claim

NOTICE OF CLAIMS OR LITIGATION

The Contractor agrees to report any incident or claim that results from performance of this Agreement. The County representative shall receive written notice in the form of a detailed written report describing the incident or claim within ten (10) days of the Contractor’s knowledge. In the event such incident or claim involves injury and/or property damage to a third party, verbal notification shall be given the same day the Contractor becomes aware of the incident or claim followed by a written detailed report within ten (10) days of verbal notification.

INDEMNIFICATION & HOLD HARMLESS

To the fullest extent permitted by law, Contractor shall indemnify and hold harmless the County, its officers and employees from liabilities, damages, losses, and costs including but not limited to reasonable attorney fees, to the extent caused by the negligence, recklessness, or wrongful conduct of the Contractor and other persons employed or utilized by the Contractor in the performance of this contract.

CERTIFICATE OF INSURANCE

1. Certificates of insurance indicating the project name and number and evidencing all required coverage must be submitted not less than 10 days prior to the commencement of any of the work. The certificate holder(s) shall be as follows: Okaloosa County Board of County Commissioners, 302N Wilson St., Crestview, Florida, 32536.
2. The contractor shall provide a Certificate of Insurance to the County with a thirty (30) day prior written notice

- of cancellation; ten (10) days' prior written notice if cancellation is for nonpayment of premium.
3. In the event that the insurer is unable to accommodate the cancellation notice requirement, it shall be the responsibility of the contractor to provide the proper notice to the County. Such notification shall be in writing by registered mail, return receipt requested, and addressed to the Okaloosa County Purchasing Department at 5479-A Old Bethel Road, Crestview, FL 32536.
 4. In the event the contract term goes beyond the expiration date of the insurance policy, the contractor shall provide the County with an updated Certificate of insurance no later than ten (10) days prior to the expiration of the insurance currently in effect. The County reserves the right to suspend the contract until this requirement is met.
 5. The certificate shall indicate if coverage is provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the certificate will show a retroactive date, which should be the same date of the initial contract or prior.
 6. All certificates shall be subject to Okaloosa County's approval of adequacy of protection.
 7. All deductibles or self-insured retentions (SIRs), whether approved by Okaloosa County or not, shall be the Contractor's full responsibility.
 8. In no way will the entities listed as Additional Insured be responsible for, pay for, be damaged by, or limited to coverage required by this schedule due to the existence of a deductible or SIR.

GENERAL TERMS

Any type of insurance or increase of limits of liability not described above which, the Contractor required for its own protection or on account of statute shall be its own responsibility and at its own expense.

Any exclusions or provisions in the insurance maintained by the contractor that excludes coverage for work contemplated in this contract shall be deemed unacceptable and shall be considered breach of contract.

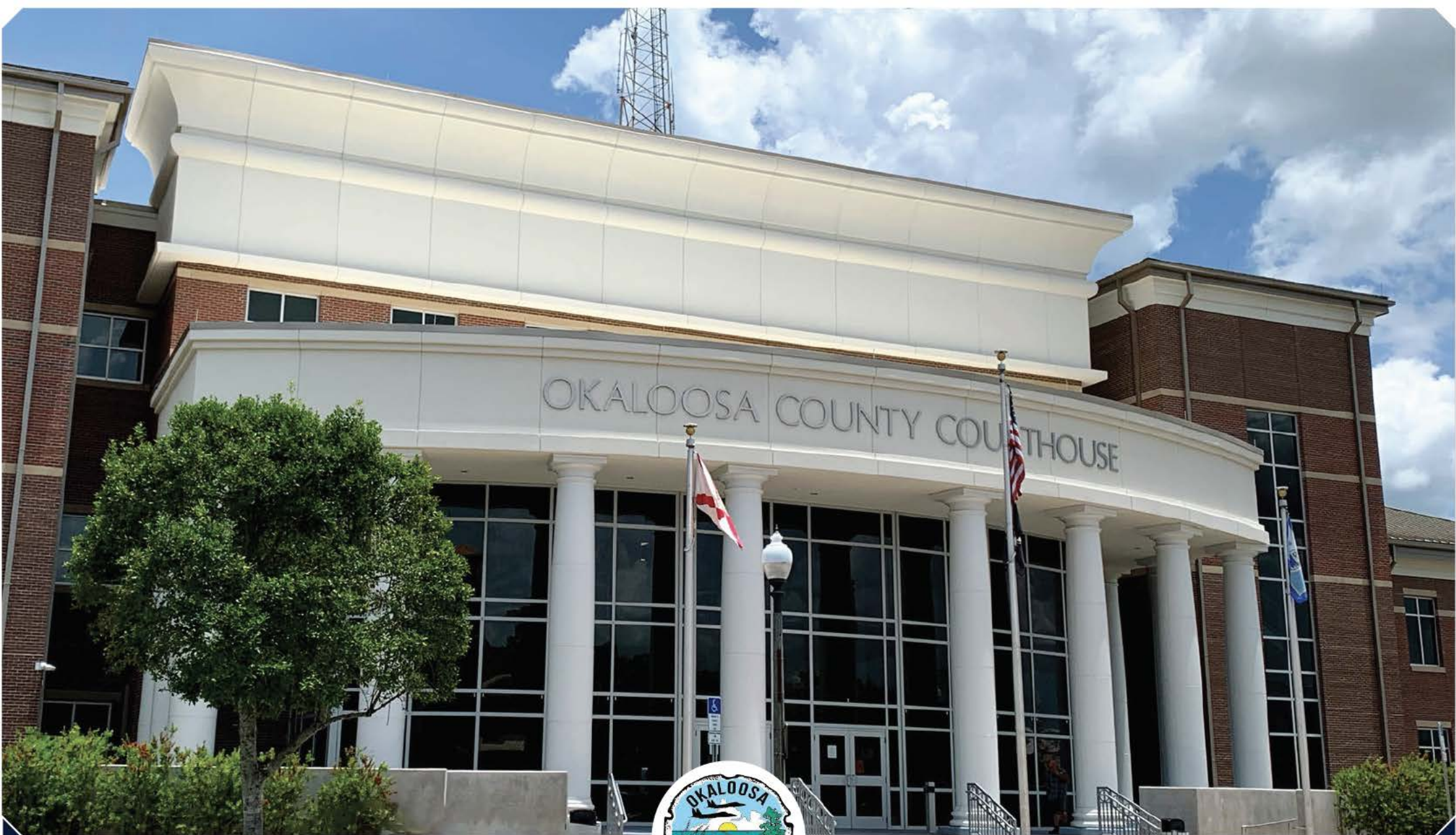
The carrying of the insurance described shall in no way be interpreted as relieving the Contractor of any responsibility under this contract.

Should the Contractor engage a subcontractor or sub-subcontractor, the same conditions will apply under this Agreement to each subcontractor and sub-subcontractor.

The Contractor hereby waives all rights of subrogation against Okaloosa County and its employees under all the foregoing policies of insurance.

EXCESS/UMBRELLA INSURANCE

The Contractor shall have the right to meet the liability insurance requirements with the purchase of an EXCESS/UMBRELLA insurance policy. In all instances, the combination of primary and EXCESS/UMBRELLA liability coverage must equal or exceed the minimum liability insurance limits stated in this Agreement. An Excess liability policy must be submitted indicating which policy it applies to.



ADDENDUM WCI-# 1

PROJECT 25 PUBLIC SAFETY RADIO NETWORK

April 6TH 2021





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ADDENDUM WCI-# 1

ADDENDUM WCI- #1

January 5th, 2021

ITN PS 33-20

PROJECT 25 PUBLIC SAFETY RADIO NETWORK

This addendum is to amend the Williams Communications, Inc Project 25 Public Safety Radio Network Technical response of 8/14/20.

During Negotiations with Okaloosa County several design requirements were clarified and/or value added resulting in corresponding cost impacts with the addition of an 8th channel at all sites, revising the site count from 11 to 12, add a 30db in-building coverage area on the beach, changing all towers to be Self Support (SS) towers designed to add one carrier capacity, adjusting subscriber radio quantities and type of radio. Options are provided for the addition of 1GHz microwave capacity, tower capacity to support a 2nd and 3rd carriers, per unit programming radios, per unit trade in values for individual models of vendor equipment on the current system and provide subscriber equipment warranty and maintenance costs for years 1-20 both annual and biennial service maintenance plans.

The following provisions of the Williams communications response are hereby amended as follows:

1. **Executive Summary page 3.** Coverage Portable Talk out graphic depicts old site locations and is removed in its entirety. During negotiations, it was agreed to remove the Destin Lease Site and add 2 additional sites (*Destin Airport and Okaloosa Island Water*) to enhance the In-building coverage for that area. The below graphic depicts the 11-site system and thus is no longer relevant.



- a. **Executive Summary page 3.** The following verbiage is added to the Okaloosa P25 Coverage Guarantee Table based upon the BAFO option for enhanced in-building coverage on the beach: *"Portable radio coverage of 95% in 30 dB buildings with 95 percent reliability within the boundaries identified in Coverage Prediction plots provided in BAFO submission. DAQ 3.4."*
- c. **Executive Summary page 4.** Replace System Block Diagram (11 sites) in its entirety and replace with attachment A: System Block Diagram (12 sites). *The 12-site design changed the Destin site to be Destin Airport and added 12th site "Okaloosa Island Water" as a Government Owned site.*
- d. **Executive Summary page 11.** The Site Acquisition Map (11 sites) is deleted in its entirety. *The 12-site design changed the Destin site to be Destin Airport and added 12th site "Fort Walton PD" as a Government Owned site.*



2. System Description page 3. The verbiage under **WILLIAMS HAS PROPOSED A L3HARRIS FULLY REDUNDANT SYSTEM CONSISTING OF:**

- › VIDA Premiere Core
- › 11 Site, 7 Channel System
- › 2 Geo-geographically separated control points (EOC and Crestview)
- › 22 Symphony consoles at 5 locations
- › 12 at EOC
- › 4 at Crestview
- › 2 at Fort Walton Beach PD
- › 2 at Niceville PD
- › 2 at Valparaiso
- › 25 BeOn Licenses
- › XG-15 Portable
- › XG-25 Portable
- › XL185 Portable
- › XG25 mobile radios
- › XG-75 Mobile
- › XL-200 Mobile
- › Single Key AES included on all radios at no cost
- › Tait Analog over IP for VHF overlay
- › Aviat Microwave backhaul

Is replaced with the below correction, based upon the BAFO option for 12 sites and 1 additional channel:

VIDA Premiere Core

- › **12 Site, 8 Channel System**
- › *2 Geo-geographically separated control points (EOC and Crestview)*
- › *22 Symphony consoles at 5 locations*
- › *12 at EOC*
- › *4 at Crestview*
- › *2 at Fort Walton Beach PD*
- › *2 at Niceville PD*
- › *2 at Valparaiso*
- › *25 BeOn Licenses*
- › *XG-15 Portable*
- › *XG-25 Portable*
- › *XL185 Portable*
- › *XG25 mobile radios*
- › *XG-75 Mobile*
- › *XL-200 Mobile*
- › *Single Key AES included on all radios at no cost*
- › *Tait Analog over IP for VHF overlay*
- › *Aviat Microwave backhaul*



ADDENDUM WCI

- a. System Description page 5. Replace System Block Diagram (11 sites) in its entirety and replace with **attachment A: System Block Diagram (12 sites)**. *The 12-site design changed the Destin site to be Destin Airport and added 12th site "Fort Walton PD" as a Government Owned site.*
- b. System Description page 7. The Site Acquisition Map (11 sites) is deleted in its entirety. *The 12-site design changed the Destin site to be Destin Airport and added 12th site "Fort Walton PD" as a Government Owned site.*
- c. System Description page 11. **HARRIS 7 CHANNEL RF SITE INCLUDING CONTROL POINT.** *Header needs to change from "7 Channel" to "8 Channel" RF Site, based on the BAFO option for 8 channels.*
- d. System Description page 18. Coverage Portable Talk out graphic depicts old site locations and removed in its entirety.
- e. System Description page 18. The following verbiage is added to the Okaloosa P25 Coverage Summary Table based upon the BAFO option for enhanced in-building coverage on the beach: *"Portable radio coverage of 95% in 30 dB buildings with 95 percent reliability within the boundaries identified in Coverage Prediction plots provided in BAFO submission. DAQ 3.4."*
- f. System Description page 23. During Negotiations it was decided by the county to expand the system from 7 to 8 channels. Page 23 explains this Expansion option and since it was included during the BAFO, this page is no longer relevant and is deleted. The combiners have not changed and will be in all 12 sites. All 12 sites will be 8 channels and be fully populated with RF cards. The multi-coupler at all 12 sites will support 16 channels. In accordance with the BAFO the microwave system is sized for a minimum of 300 Mbps based on the availability of 60 MHz frequencies being available for all the channels.
- g. System Description pages 24-59. Microwave Network. As discussed above, based off tower location and height changes, Replace MW Design Sheets, pages 24 to 59 with **Attachment B: Microwave Design**.
- h. System Description, Coverage: (System Reports: Radio/Paging - Talk-In /Talk-Out and Coverage Plots - Radio/Paging) As discussed above, based off tower location and height changes, Replace Coverage Propagation Section Pgs. 1 to 40 in their entirety with the **Attachment C: new 12 site design Coverage Propagation**.
- i. System Description, Coverage Acceptance Test Plans. As discussed above, based off tower location and height changes, and the new 30db building option on the beach: Replace Coverage Acceptance Test (9 pages) in its entirety with **Attachment D: CATP**



j. System Description, Project Schedule. As discussed above , based off tower location and height changes , and the new 30db building option on the beach; the project schedule is replaced in it's entirety with the updated version 20201210 Okaloosa County P23 Project Schedule. **Attachment E: Project Schedule**

3. **Total Proposal Cost, Pgs. 1 to 33.** Replace pages 1 to 33 in their entirety with BAFO pricing sheets submitted 11/24/20. **Attachment F: BAFO Pricing Pages** Below are a summary of BAFO pricing changes :

- a. Increase channel count from 7ch to 8ch
- b. Crestview Tower changed from 400' Guyde to 300 SST
Destin Lease site removed
Fort Walton Tower changed from 180'SST to 250'SST
Holt Tower changed from 400' Guyde to 300 SST
Blackman Tower changed from 400' Guyde to 300 SST
Almarante Tower changed from 400' Guyde to 300 SST
Added Destin Airport Tower site
Added Fort Walton PD site
Added 1 Cell carrier to all Tower steel and foundation designs
- c. Portable Radio qty changed from 1047 to 1450
Portable Radio model changed from XG-25p to high tier XL-185p.
Portable Radio Accessories added per BAFO department breakdown
Added 31 Bank Chargers
- d. Mobile Radio qty changed from 771 to 875
- e. Console Radios qty changed from 31 to 30

4. **Optional Scope Adjustments from ITN Requirements that May be Purchased**

a. Provide additional microwave capacity on each hop to increase support 1 Gbps at a reliability of 99.99% for increase in capacity. Assume availability of 60 MHz channels.



b. Provide additional tower capacity to support a 2nd and 3rd cellular carriers incrementally, per individual tower, in addition to the first cellular carrier and the ITN 50% growth requirement. Assume the above-listed antenna/line configuration for each carrier. This should be inclusive of any system discounts applied.

- 300' SST with 2 cellular carriers EST = [REDACTED]
- 300' SST with 3 cellular carriers EST = [REDACTED]
- 250' SST with 2 cellular carriers EST = [REDACTED]
- 250' SST with 3 cellular carriers EST = [REDACTED]



ADDENDUM WCI

180' SST with 2 cellular carriers EST = \$5,500.00
180' SST with 3 cellular carriers EST = \$31,519.00
150' SST with 2 cellular carriers EST = \$4,102.00
150' SST with 3 cellular carriers EST = \$28,280.00

- c. Per unit cost of reprogramming any radio units any existing equipment subscriber units the vendor currently has deployed in Okaloosa County that will work on the new system. **\$65.00 per for reprogramming**
- d. Per unit trade in values for individual models of vendor equipment models currently deployed in Okaloosa County. **\$100.00 per unit**
- e. Provide subscriber equipment warranty and maintenance costs for years 1-20 for an annual service maintenance plan. Attach spreadsheet. **See 20 year service plan in BAFO pricing pages**
- f. Provide subscriber equipment warranty and maintenance costs for years 1-20 for a biennial service maintenance plan. Attach spreadsheet. **See 20 year service plan in BAFO pricing pages**
- g. BeOn PTT: BeOn is an application that extends the capabilities of your LMR network to smartphones, tablets and PCs—providing PTT communications far beyond the boundaries of regional radio systems, and opening up affordable PTT communications to new user groups. BeOn keeps you connected to your LMR system anywhere you have a cellular data signal, Wi-Fi® or other data connectivity, and provides a direct connection to the backbone of your LMR system—fully supporting the features of a P25 radio network. **WCI has included 25 BeOn licenses in our base proposal . Additional Licenses can be purchased at the contract rate of \$251.25 each.**
- h. High Velocity Data: a dedicated channel that provide better bandwidth for GPS data packets. The Proposed XL-185 portable radios include P25 GPS Tier 2 Location Services. Tier 2 Location Services support a more complex application protocol that enables an SU's GPS location information to be routed to a host device on a fixed network. Used with both conventional and trunked systems, Tier 2 Location Services enable bi-directional data exchange between SUs and the LSHS and more advanced control over when and how the SU sends its location information.
- i. Fleet Management : Enable Fleet provides a single source of information, allowing you to have your radio configuration experts together in one centralized location to manage your entire fleet of mobile and portable radios. Group-based management of both the radio configuration and firmware from one site, provides economies of scale that have previously been unachievable because of the considerable in field expertise required to manage a radio fleet.

KEYFEATURES

- a. - Accurate and reliable fleet information
- b. - Consistent installation results
- c. - Cost-effective, easy in-field programming
- d. - Automated client-server updates and fleet status display
- e. - File attachment support for installation auditing
- f. - Cloud, multi-tenant cloud, and on-premise hosting options
- g. - Securely manage your fleet from anywhere(using cloud hosting)
- h. - Import/export and reporting capabilities
- i. - Best practice configuration management



SECTION: 2

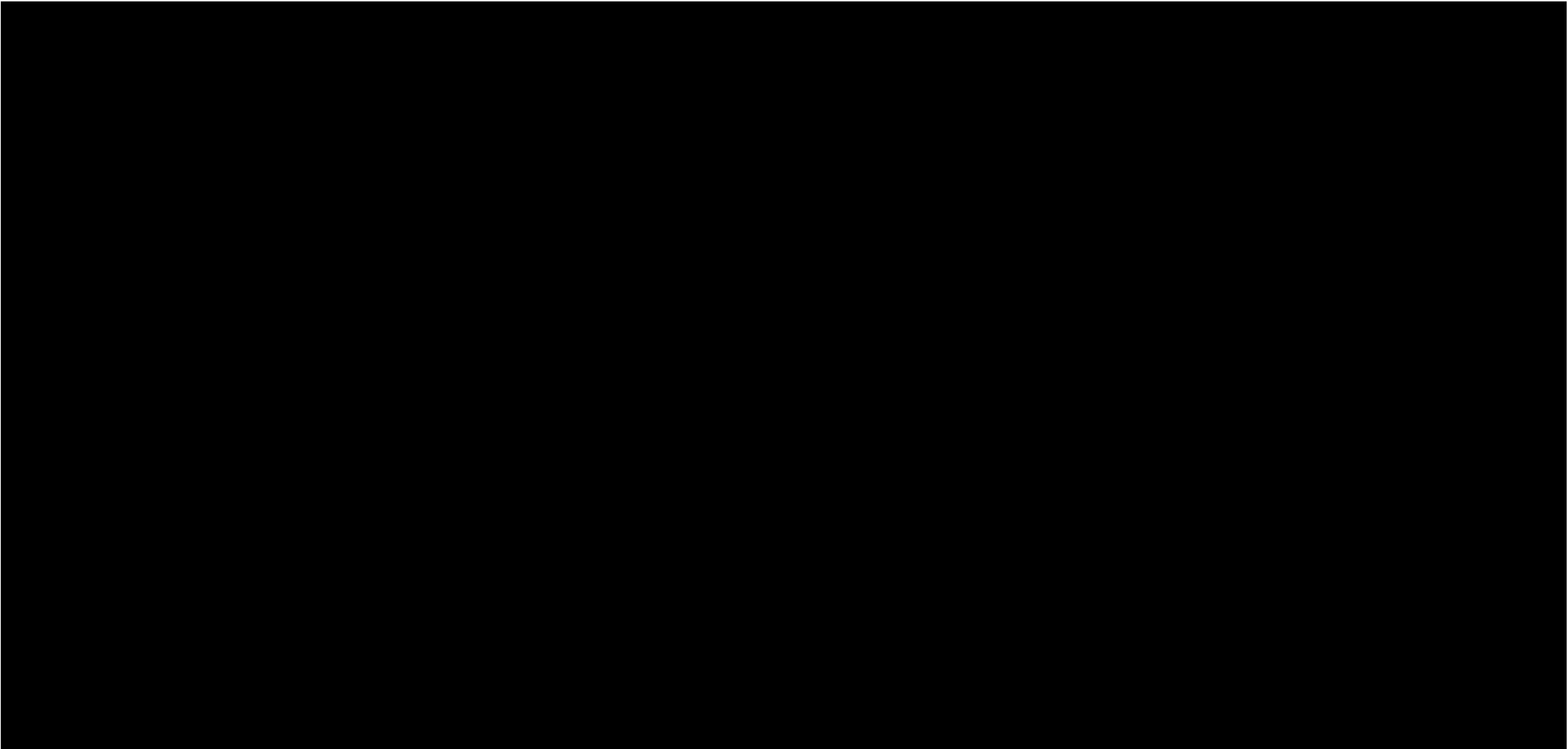
System Block Diagram



WILLIAMS
COMMUNICATIONS, INC.
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE

P25 PHASE 2 800MHZ SIMULCAST TRUNKED RADIO SYSTEM





SECTION : 3

Microwave Design



WILLIAMS
COMMUNICATIONS, INC.
WIRELESS TECHNOLOGIES

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III. SYSTEM DESIGN

A. SYSTEM TOPOLOGY

The network configured as eleven (12) 6GHz links with and without frequency diversity. The network located in Okaloosa County, FL.

FIGURE 1 SYSTEM TOPOLOGY



B. LINK DESIGN

The earth's terrain along the selected routes is modeled from 1/3 arc second (10m), NED Terrain Data and is shown with obstruction height margin (based on NLCD database) added above terrain to allow for possible signal blocking surface features such as buildings, trees and/or other ground clutter. The obstruction heights need to be field verified.

The link profiles are shown with clearance criteria for main antennas of 1.0 F1@ K=1.33 and 0.3 F1@ K=0.67, 0.6F1@ K=1.33 for Space Diversity.

The primary path design criteria is to provide 99.999% one-way Annual Availability with 300 Mbps throughput. The preliminary calculations are made using the Vigants-Barnett multipath model, the Crane rain model with



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public city rain data, adaptive modulation and typical radio parameters with 10⁻⁶ BER receiver threshold. The RF designs result in calculated RSL values of +/- 2dB.

C. DESIGN SUMMARY

An indoor radio architecture selected to reduce maintenance cost. RFS high performance single polarity antennas selected. The 6' has a survival wind load rating of 155 mph. Waveguide lengths are based on the antenna centerlines plus 40ft for horizontal run.

For the targeted throughput, the 6 GHz link exceeds 99.999% one-way availability utilizing 6' category A antennas. When operating in normal optimal conditions, >99.99% of the time, the link will provide 1 Gbps at 1024 QAM.

Note: All throughputs are stated as L1 with 64 byte frames.



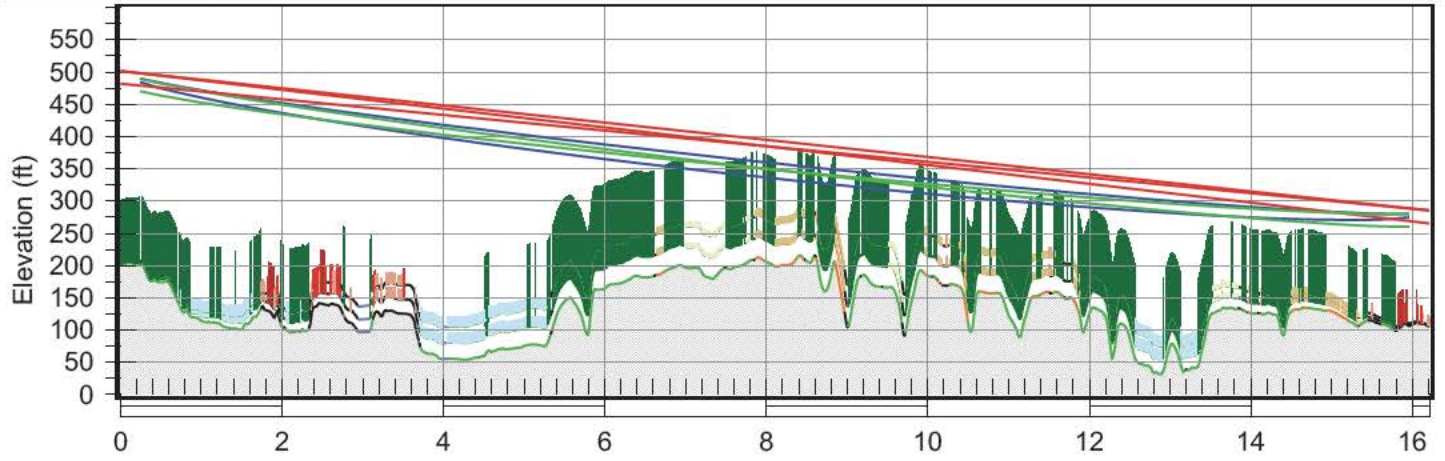


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III. Design Details





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	12 Crestview 300	01 EOC
TX channel assignments	1h 6197.24V 5h 6315.84H	1I 5945.20V 5I 6063.80H
Climatic factor	2.50	
Terrain roughness (ft)	46.00	
C factor	2.79	
Average annual temperature (F)	67.31	
Fade occurrence factor (Po)	1.819E-001	
SD improvement factor	45.19	45.19
Effective frequency spacing (MHz)	118.60	118.60
FD improvement factor	33.73	33.73
Quad diversity improvement factor	81.01	81.01

	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	30.50	30.50	-51.25	-51.25	64.16	65.87	-41.71	-41.71	9.82	9.82	9.82	9.82
2048QAM 491 Mbps	32.50	32.50	-55.00	-55.00	66.16	67.87	-39.71	-39.71	15.57	15.57	15.57	15.57
1024QAM 454 Mbps	33.50	33.50	-57.75	-57.75	67.16	68.87	-38.71	-38.71	19.32	19.32	19.32	19.32
512QAM 403 Mbps	35.00	35.00	-61.50	-61.50	68.66	70.37	-37.21	-37.21	24.57	24.57	24.57	24.57
256QAM 344 Mbps	36.50	36.50	-65.00	-65.00	70.16	71.87	-35.71	-35.71	29.57	29.57	29.57	29.57
128QAM 301 Mbps	37.00	37.00	-71.00	-71.00	70.66	72.37	-35.21	-35.21	36.07	36.07	36.07	36.07

	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.0526	99.0526	99.6811	99.6811			99.6811	99.6811	99.6811	99.6811
2048QAM 491 Mbps	99.7480	99.7480	99.9152	99.9152			99.9152	99.9152	0.2341	0.2341
1024QAM 454 Mbps	99.8937	99.8937	99.9642	99.9642			99.9642	99.9642	0.0490	0.0490
512QAM 403 Mbps	99.9884	99.9884	99.9961	99.9961			99.9961	99.9961	0.0319	0.0319
256QAM 344 Mbps	99.9988	99.9988	99.9996	99.9996			99.9996	99.9996	0.0035	0.0035
128QAM 301 Mbps	99.9999	99.9999	99.9999	99.9999			99.9999	99.9999	0.0004	0.0004

Multipath fading method - Vigants - Barnett



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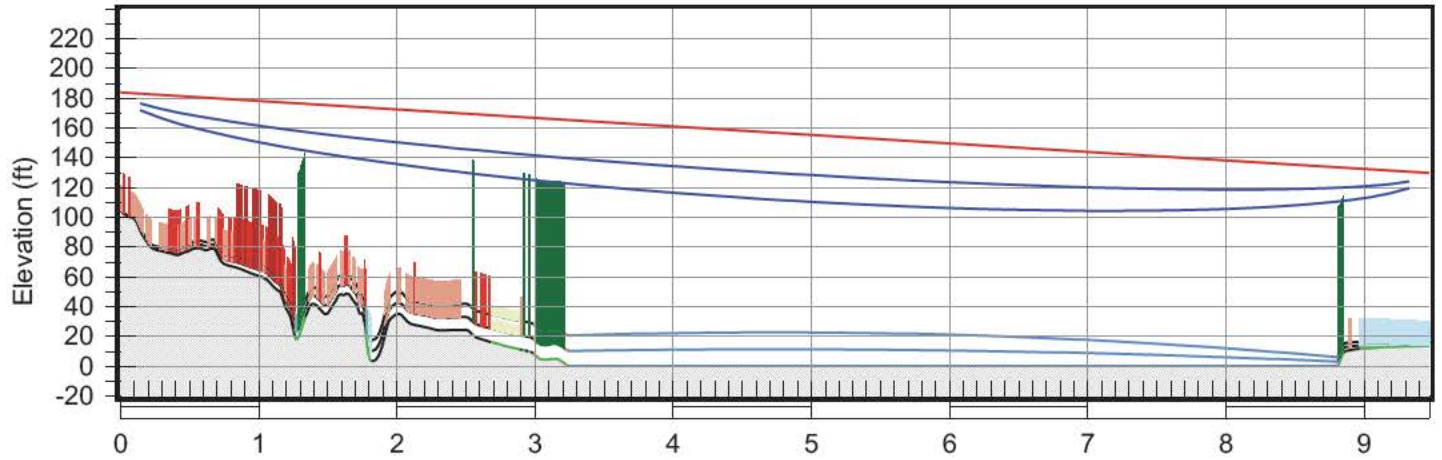
	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	63.58	63.78	-31.46	-31.46	19.79	19.79	19.25	19.25
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	64.08	64.28	-30.96	-30.96	24.04	24.04	23.03	23.03
1024QAM 454 Mbps	29.50	29.50	-57.75	-57.75	65.58	65.78	-29.46	-29.46	28.29	28.29	26.37	26.37
512QAM 403 Mbps	30.50	30.50	-61.50	-61.50	66.58	66.78	-28.46	-28.46	33.04	33.04	29.18	29.18
256QAM 344 Mbps	31.00	31.00	-65.00	-65.00	67.08	67.28	-27.96	-27.96	37.04	37.04	30.82	30.82
128QAM 301 Mbps	31.50	31.50	-71.00	-71.00	67.58	67.78	-27.46	-27.46	43.54	43.54	34.71	34.71

	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.9247	99.9247	99.9748	99.9748			99.9748	99.9748	99.9748	99.9748
2048QAM 491 Mbps	99.9691	99.9691	99.9896	99.9896			99.9896	99.9896	0.0149	0.0149
1024QAM 454 Mbps	99.9850	99.9850	99.9950	99.9950			99.9950	99.9950	0.0054	0.0054
512QAM 403 Mbps	99.9920	99.9920	99.9973	99.9973			99.9973	99.9973	0.0023	0.0023
256QAM 344 Mbps	99.9944	99.9944	99.9981	99.9981			99.9981	99.9981	0.0008	0.0008
128QAM 301 Mbps	99.9978	99.9978	99.9993	99.9993			99.9993	99.9993	0.0011	0.0011

Multipath fading method - Vigants - Barnett



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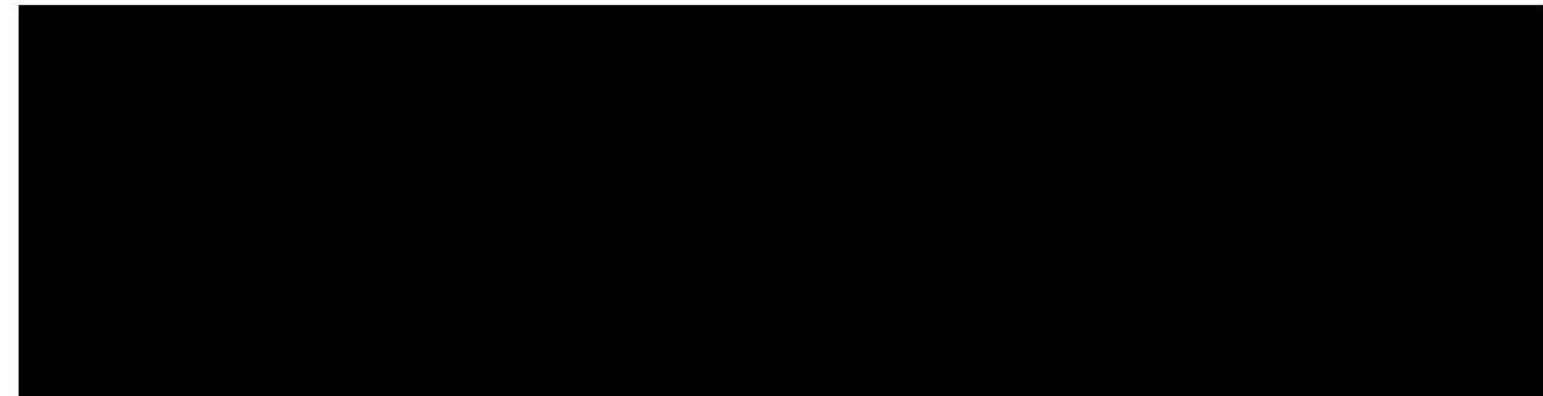
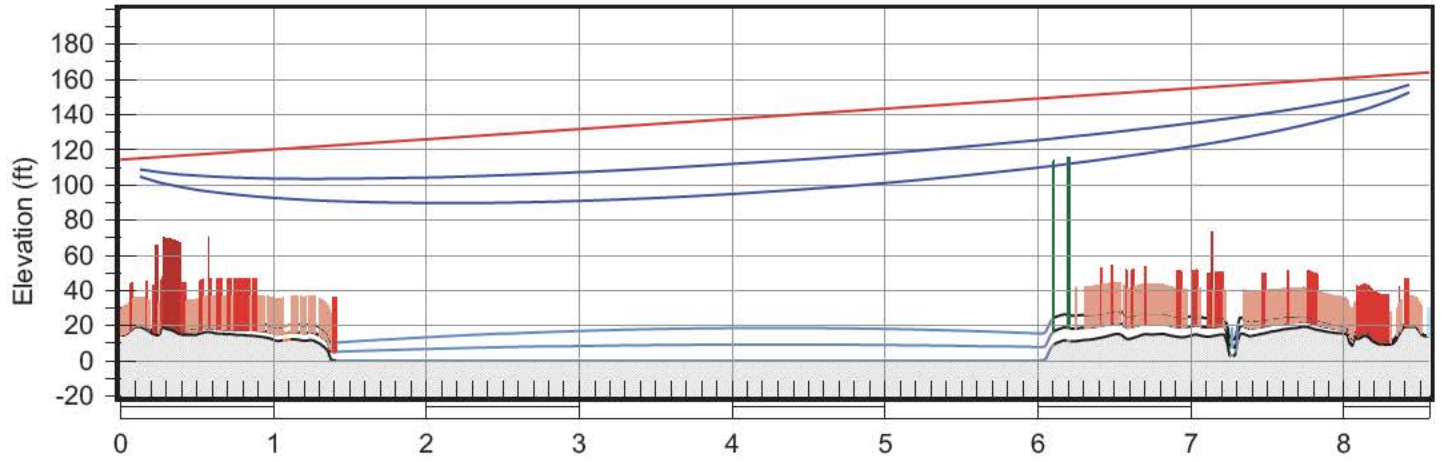
	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	64.11	63.58	-31.73	-31.73	19.52	19.52	19.37	19.37
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	64.61	64.08	-31.23	-31.23	23.77	23.77	23.49	23.49
1024QAM 454 Mbps	29.50	29.50	-57.75	-57.75	66.11	65.58	-29.73	-29.73	28.02	28.02	27.44	27.44
512QAM 403 Mbps	30.50	30.50	-61.50	-61.50	67.11	66.58	-28.73	-28.73	32.77	32.77	31.42	31.42
256QAM 344 Mbps	31.00	31.00	-65.00	-65.00	67.61	67.08	-28.23	-28.23	36.77	36.77	34.19	34.19
128QAM 301 Mbps	31.50	31.50	-71.00	-71.00	68.11	67.58	-27.73	-27.73	43.27	43.27	38.97	38.97

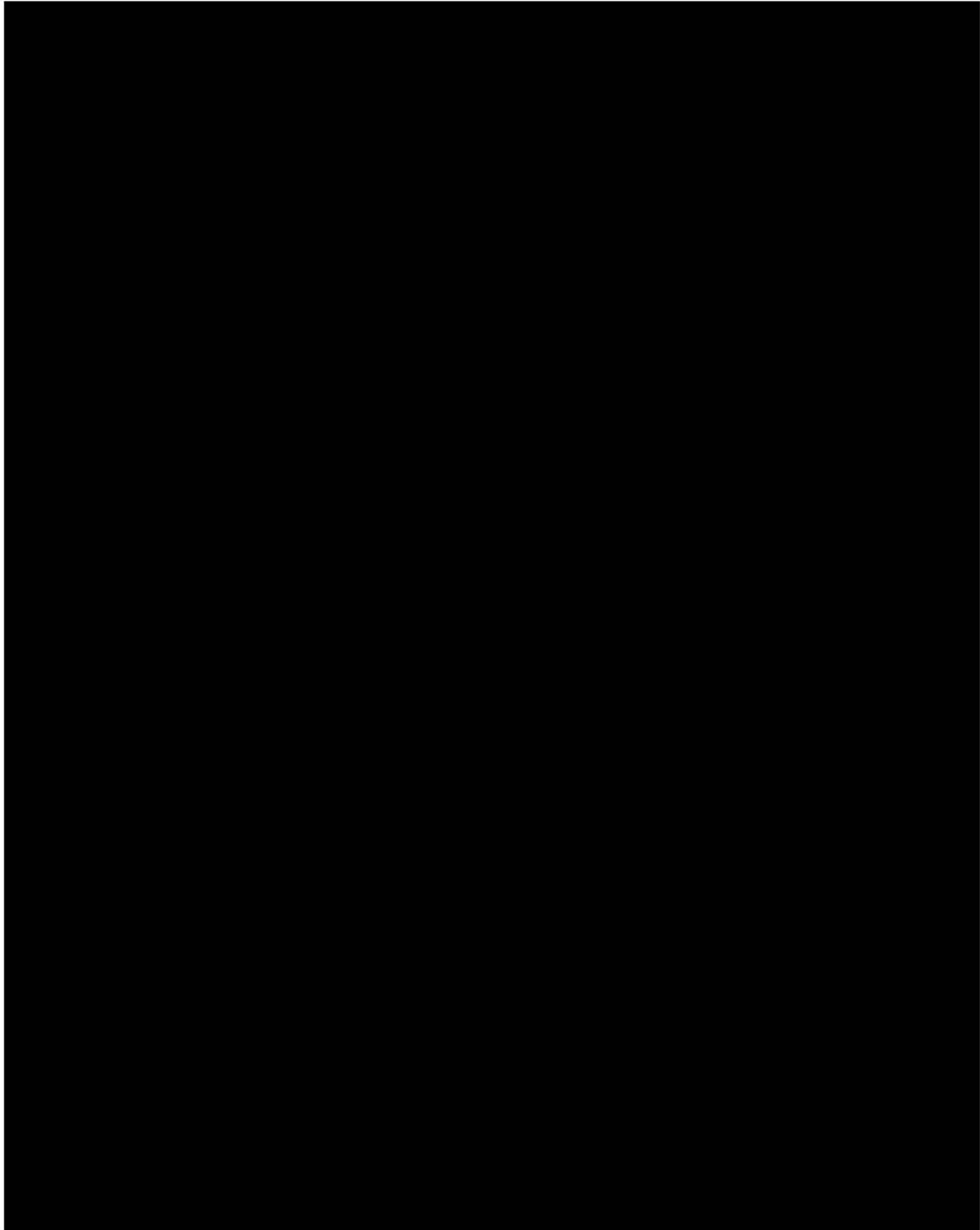
	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.8668	99.8668	99.9548	99.9548			99.9548	99.9548	99.9548	99.9548
2048QAM 491 Mbps	99.9491	99.9491	99.9827	99.9827			99.9827	99.9827	0.0279	0.0279
1024QAM 454 Mbps	99.9782	99.9782	99.9926	99.9926			99.9926	99.9926	0.0099	0.0099
512QAM 403 Mbps	99.9907	99.9907	99.9968	99.9968			99.9968	99.9968	0.0042	0.0042
256QAM 344 Mbps	99.9946	99.9946	99.9982	99.9982			99.9982	99.9982	0.0013	0.0013
128QAM 301 Mbps	99.9982	99.9982	99.9994	99.9994			99.9994	99.9994	0.0012	0.0012

Multipath fading method - Vigants - Barnett



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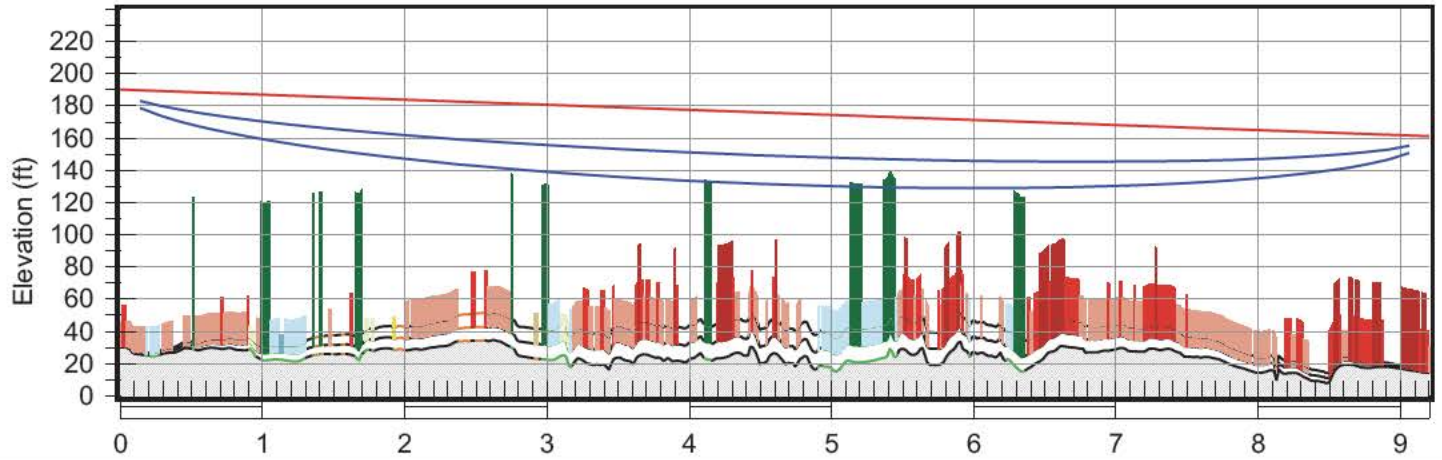
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4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	63.38	63.09	-32.06	-32.06	19.19	19.19	19.05	19.05
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	63.88	63.59	-31.56	-31.56	23.44	23.44	23.16	23.16
1024QAM 454 Mbps	29.50	29.50	-57.75	-57.75	65.38	65.09	-30.06	-30.06	27.69	27.69	27.12	27.12
512QAM 403 Mbps	30.50	30.50	-61.50	-61.50	66.38	66.09	-29.06	-29.06	32.44	32.44	31.09	31.09
256QAM 344 Mbps	31.00	31.00	-65.00	-65.00	66.88	66.59	-28.56	-28.56	36.44	36.44	33.86	33.86
128QAM 301 Mbps	31.50	31.50	-71.00	-71.00	67.38	67.09	-28.06	-28.06	42.94	42.94	38.64	38.64

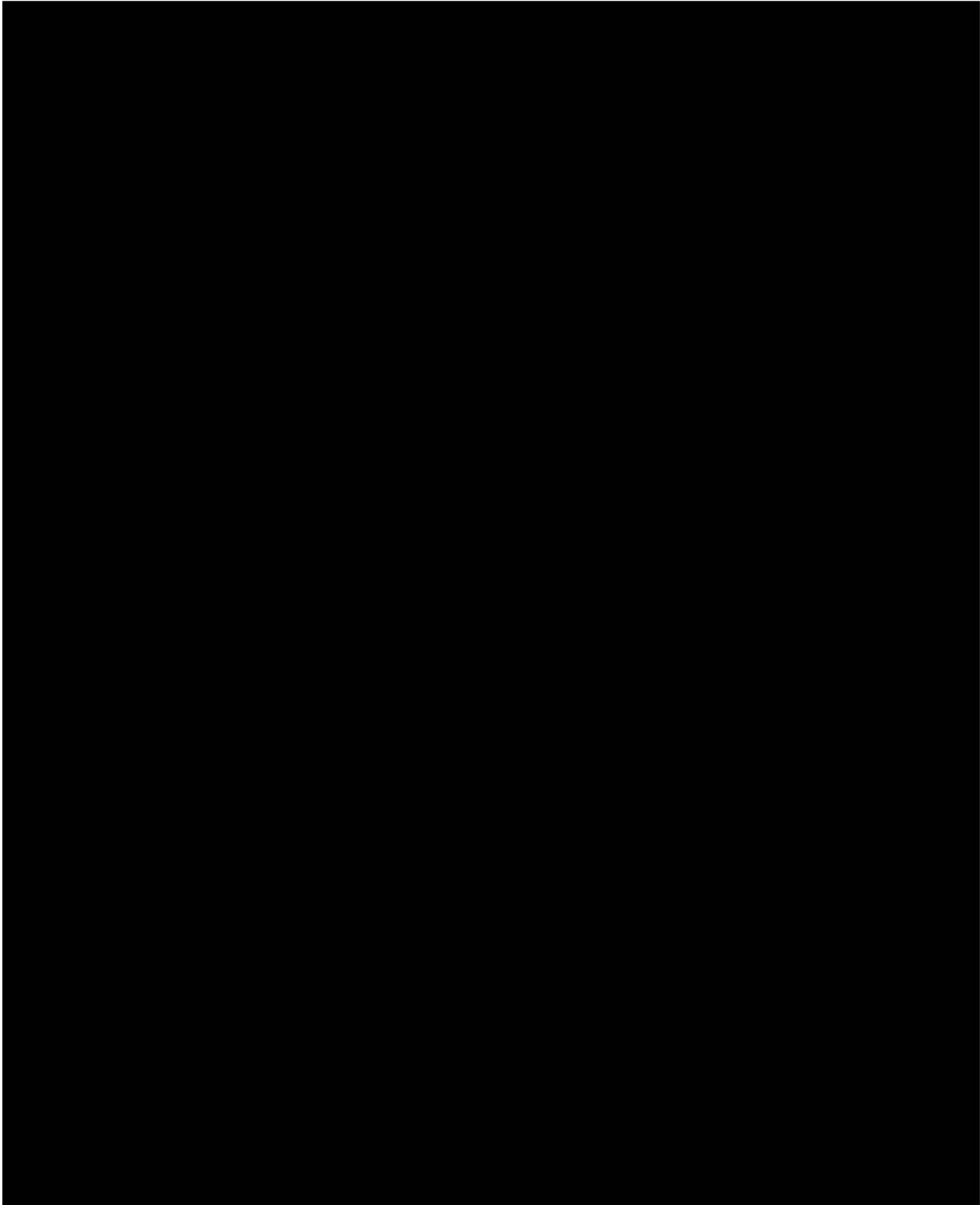
	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.8947	99.8947	99.9642	99.9642			99.9642	99.9642	99.9642	99.9642
2048QAM 491 Mbps	99.9597	99.9597	99.9863	99.9863			99.9863	99.9863	0.0221	0.0221
1024QAM 454 Mbps	99.9828	99.9828	99.9942	99.9942			99.9942	99.9942	0.0079	0.0079
512QAM 403 Mbps	99.9927	99.9927	99.9975	99.9975			99.9975	99.9975	0.0033	0.0033
256QAM 344 Mbps	99.9958	99.9958	99.9986	99.9986			99.9986	99.9986	0.0011	0.0011
128QAM 301 Mbps	99.9986	99.9986	99.9995	99.9995			99.9995	99.9995	0.0010	0.0010

Multipath fading method - Vigants - Barnett



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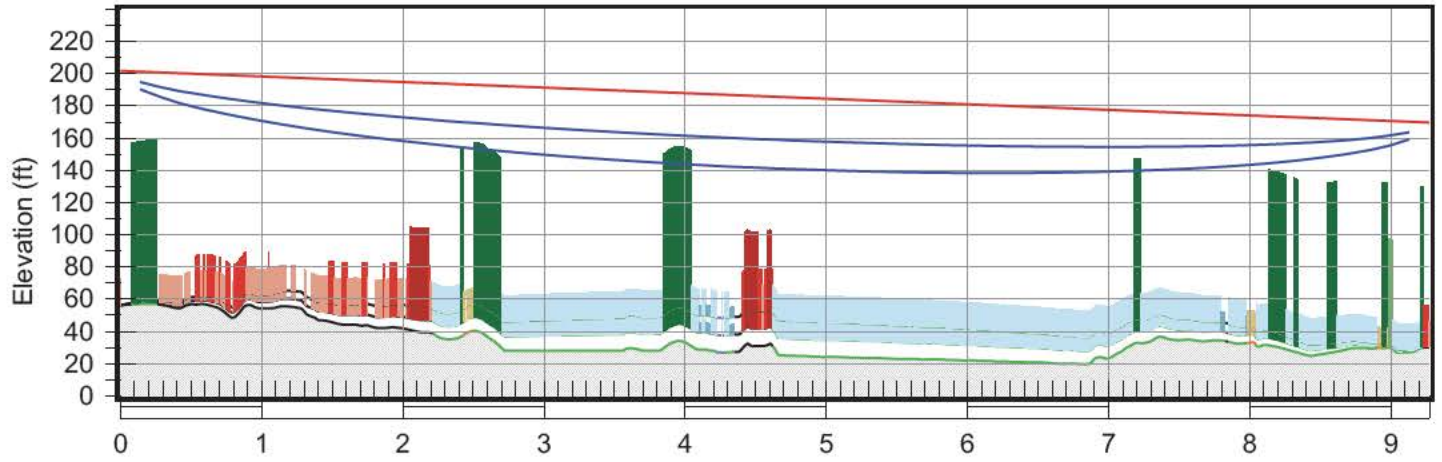
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4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	62.95	63.14	-33.08	-33.08	18.17	18.17	18.06	18.06
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	63.45	63.64	-32.58	-32.58	22.42	22.42	22.21	22.21
1024QAM 454 Mbps	29.50	29.50	-57.75	-57.75	64.95	65.14	-31.08	-31.08	26.67	26.67	26.23	26.23
512QAM 403 Mbps	30.50	30.50	-61.50	-61.50	65.95	66.14	-30.08	-30.08	31.42	31.42	30.37	30.37
256QAM 344 Mbps	31.00	31.00	-65.00	-65.00	66.45	66.64	-29.58	-29.58	35.42	35.42	33.36	33.36
128QAM 301 Mbps	31.50	31.50	-71.00	-71.00	66.95	67.14	-29.08	-29.08	41.92	41.92	38.37	38.37

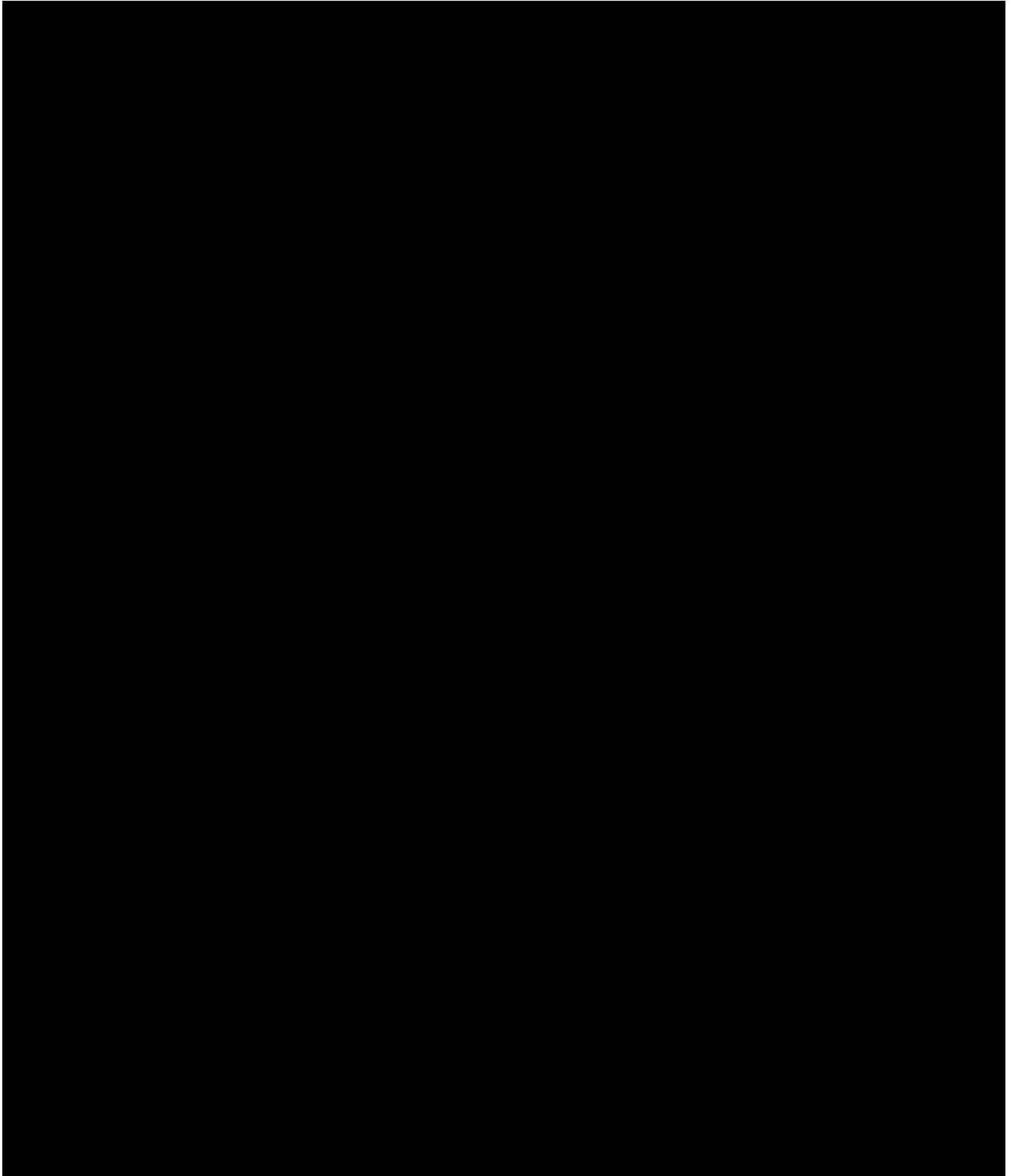
	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.8381	99.8381	99.9449	99.9449			99.9449	99.9449	99.9449	99.9449
2048QAM 491 Mbps	99.9384	99.9384	99.9790	99.9790			99.9790	99.9790	0.0341	0.0341
1024QAM 454 Mbps	99.9744	99.9744	99.9913	99.9913			99.9913	99.9913	0.0123	0.0123
512QAM 403 Mbps	99.9895	99.9895	99.9964	99.9964			99.9964	99.9964	0.0052	0.0052
256QAM 344 Mbps	99.9943	99.9943	99.9981	99.9981			99.9981	99.9981	0.0016	0.0016
128QAM 301 Mbps	99.9982	99.9982	99.9994	99.9994			99.9994	99.9994	0.0013	0.0013

Multipath fading method - Vigants - Barnett



MICROWAVE NETWORK







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	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	63.16	63.24	-32.83	-32.83	18.42	18.42	18.30	18.30
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	63.66	63.74	-32.33	-32.33	22.67	22.67	22.44	22.44
1024QAM 454 Mbps	29.50	29.50	-57.75	-57.75	65.16	65.24	-30.83	-30.83	26.92	26.92	26.45	26.45
512QAM 403 Mbps	30.50	30.50	-61.50	-61.50	66.16	66.24	-29.83	-29.83	31.67	31.67	30.57	30.57
256QAM 344 Mbps	31.00	31.00	-65.00	-65.00	66.66	66.74	-29.33	-29.33	35.67	35.67	33.52	33.52
128QAM 301 Mbps	31.50	31.50	-71.00	-71.00	67.16	67.24	-28.83	-28.83	42.17	42.17	38.49	38.49

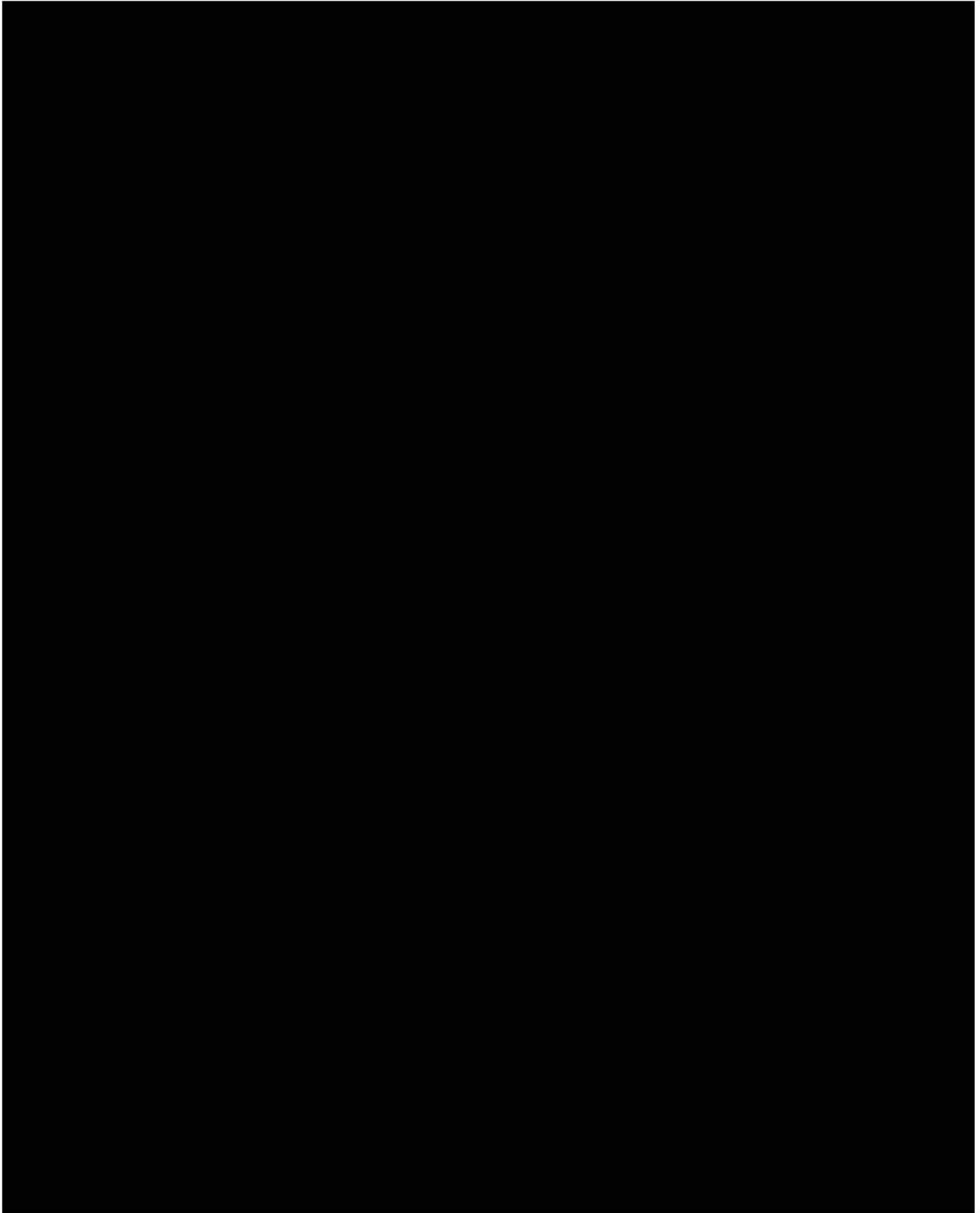
	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.8427	99.8427	99.9466	99.9466			99.9466	99.9466	99.9466	99.9466
2048QAM 491 Mbps	99.9401	99.9401	99.9796	99.9796			99.9796	99.9796	0.0331	0.0331
1024QAM 454 Mbps	99.9750	99.9750	99.9915	99.9915			99.9915	99.9915	0.0119	0.0119
512QAM 403 Mbps	99.9897	99.9897	99.9965	99.9965			99.9965	99.9965	0.0050	0.0050
256QAM 344 Mbps	99.9943	99.9943	99.9981	99.9981			99.9981	99.9981	0.0016	0.0016
128QAM 301 Mbps	99.9982	99.9982	99.9994	99.9994			99.9994	99.9994	0.0013	0.0013

Multipath fading method - Vigants - Barnett



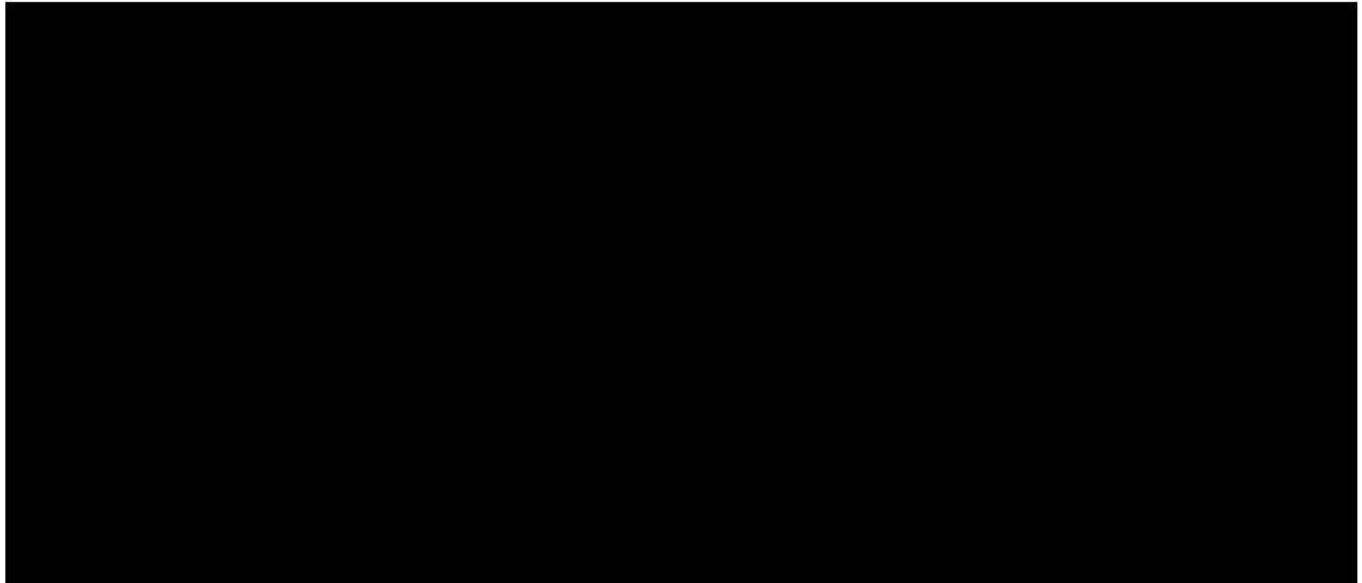
MICROWAVE NETWORK







MICROWAVE NETWORK



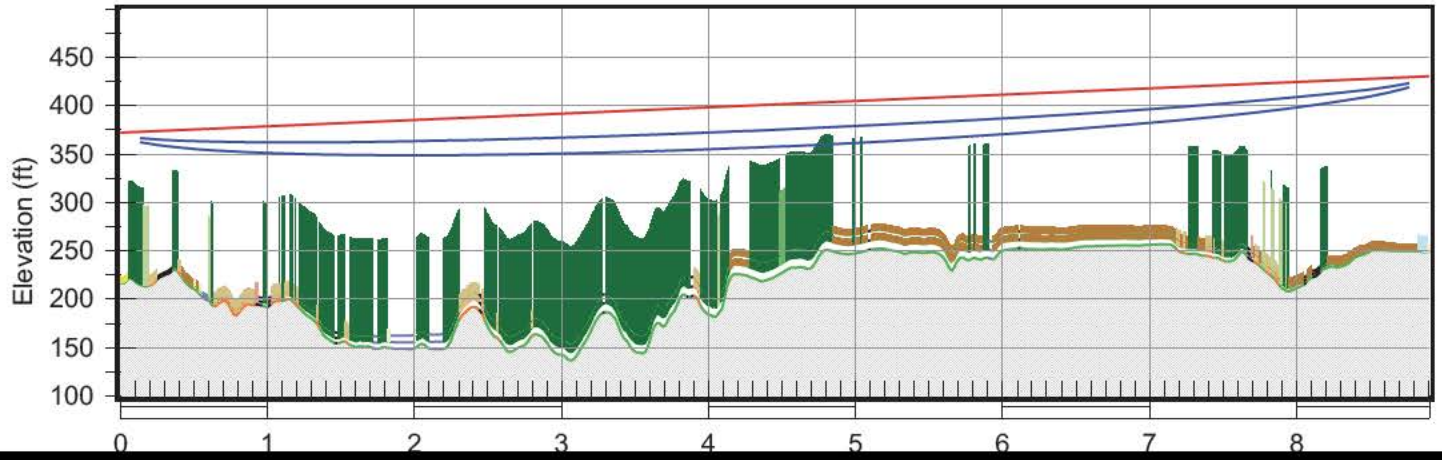
	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	30.50	30.50	-51.25	-51.25	64.87	64.16	-40.67	-40.67	11.01	11.01	11.01	11.01
2048QAM 491 Mbps	32.50	32.50	-55.00	-55.00	66.87	66.16	-38.67	-38.67	16.76	16.76	16.76	16.76
1024QAM 454 Mbps	33.50	33.50	-57.75	-57.75	67.87	67.16	-37.67	-37.67	20.51	20.51	20.51	20.51
512QAM 403 Mbps	35.00	35.00	-61.50	-61.50	69.37	68.66	-36.17	-36.17	25.76	25.76	25.76	25.76
256QAM 344 Mbps	36.50	36.50	-65.00	-65.00	70.87	70.16	-34.67	-34.67	30.76	30.76	30.76	30.76
128QAM 301 Mbps	37.00	37.00	-71.00	-71.00	71.37	70.66	-34.17	-34.17	37.26	37.26	37.26	37.26

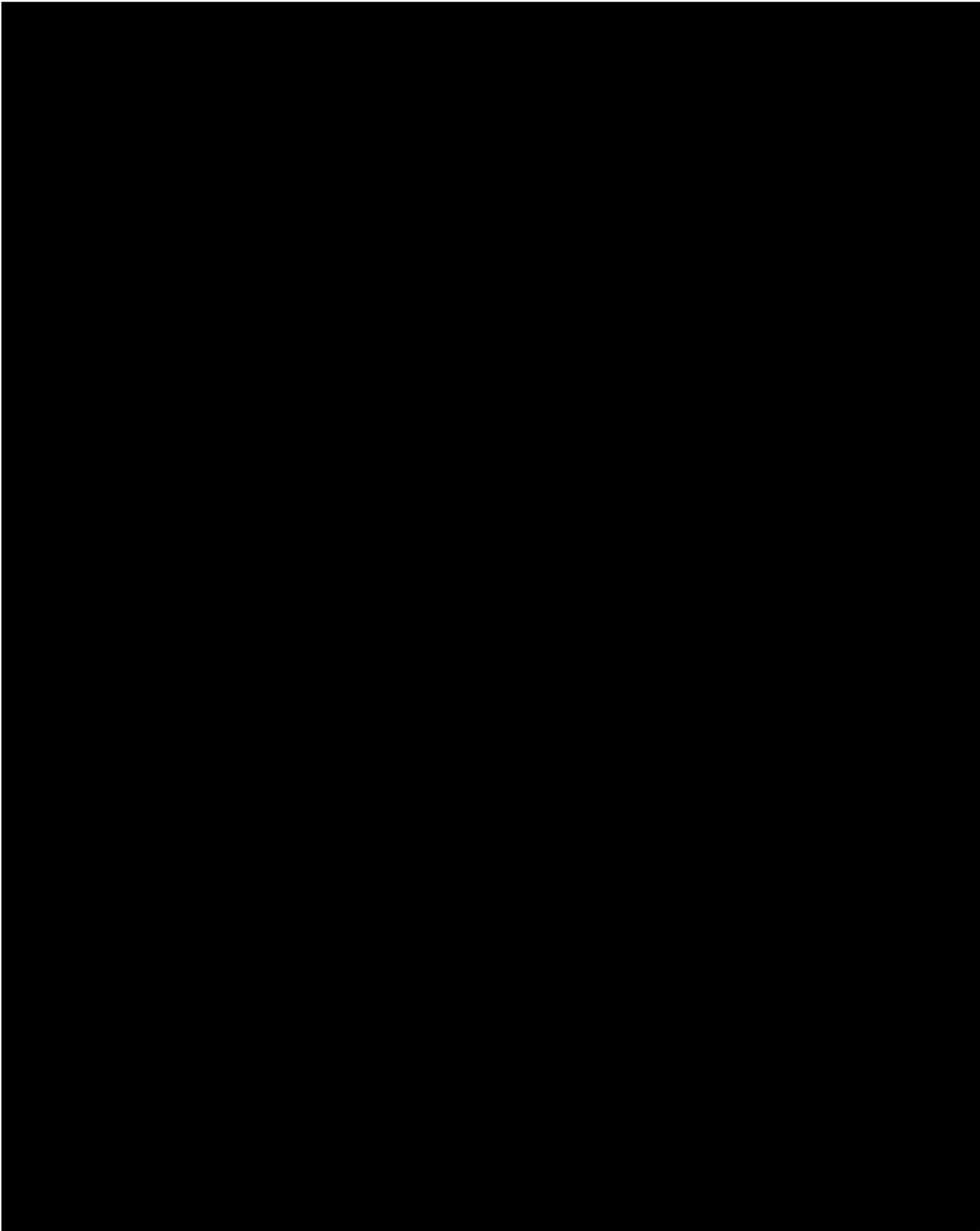
	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	98.9493	98.9493	99.6452	99.6452			99.6452	99.6452	99.6452	99.6452
2048QAM 491 Mbps	99.7206	99.7206	99.9056	99.9056			99.9056	99.9056	0.2604	0.2604
1024QAM 454 Mbps	99.9235	99.9235	99.9742	99.9742			99.9742	99.9742	0.0685	0.0685
512QAM 403 Mbps	99.9929	99.9929	99.9976	99.9976			99.9976	99.9976	0.0234	0.0234
256QAM 344 Mbps	99.9993	99.9993	99.9997	99.9997			99.9997	99.9997	0.0022	0.0022
128QAM 301 Mbps	99.9999	99.9999	99.9999	99.9999			99.9999	99.9999	0.0002	0.0002

Multipath fading method - Vigants - Barnett



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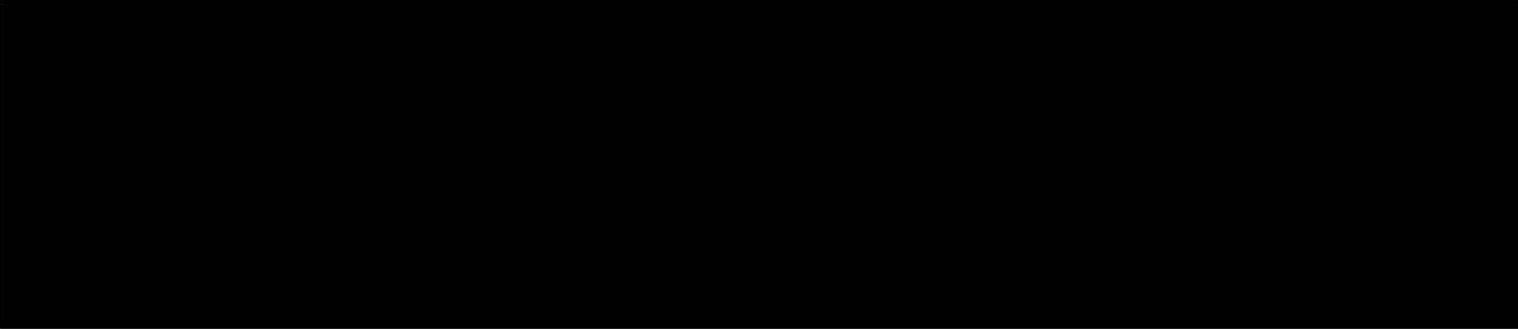
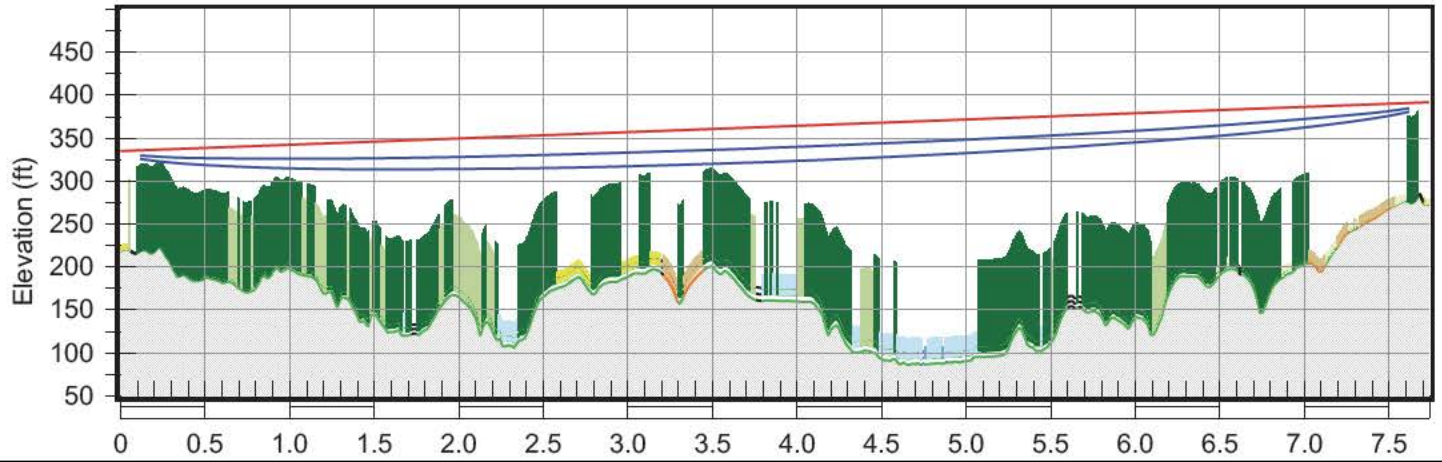
	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	63.63	63.26	-32.00	-32.00	19.25	19.25	18.76	18.76
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	64.13	63.76	-31.50	-31.50	23.50	23.50	22.59	22.59
1024QAM 454 Mbps	29.50	29.50	-57.75	-57.75	65.63	65.26	-30.00	-30.00	27.75	27.75	26.00	26.00
512QAM 403 Mbps	30.50	30.50	-61.50	-61.50	66.63	66.26	-29.00	-29.00	32.50	32.50	28.93	28.93
256QAM 344 Mbps	31.00	31.00	-65.00	-65.00	67.13	66.76	-28.50	-28.50	36.50	36.50	30.66	30.66
128QAM 301 Mbps	31.50	31.50	-71.00	-71.00	67.63	67.26	-28.00	-28.00	43.00	43.00	34.61	34.61

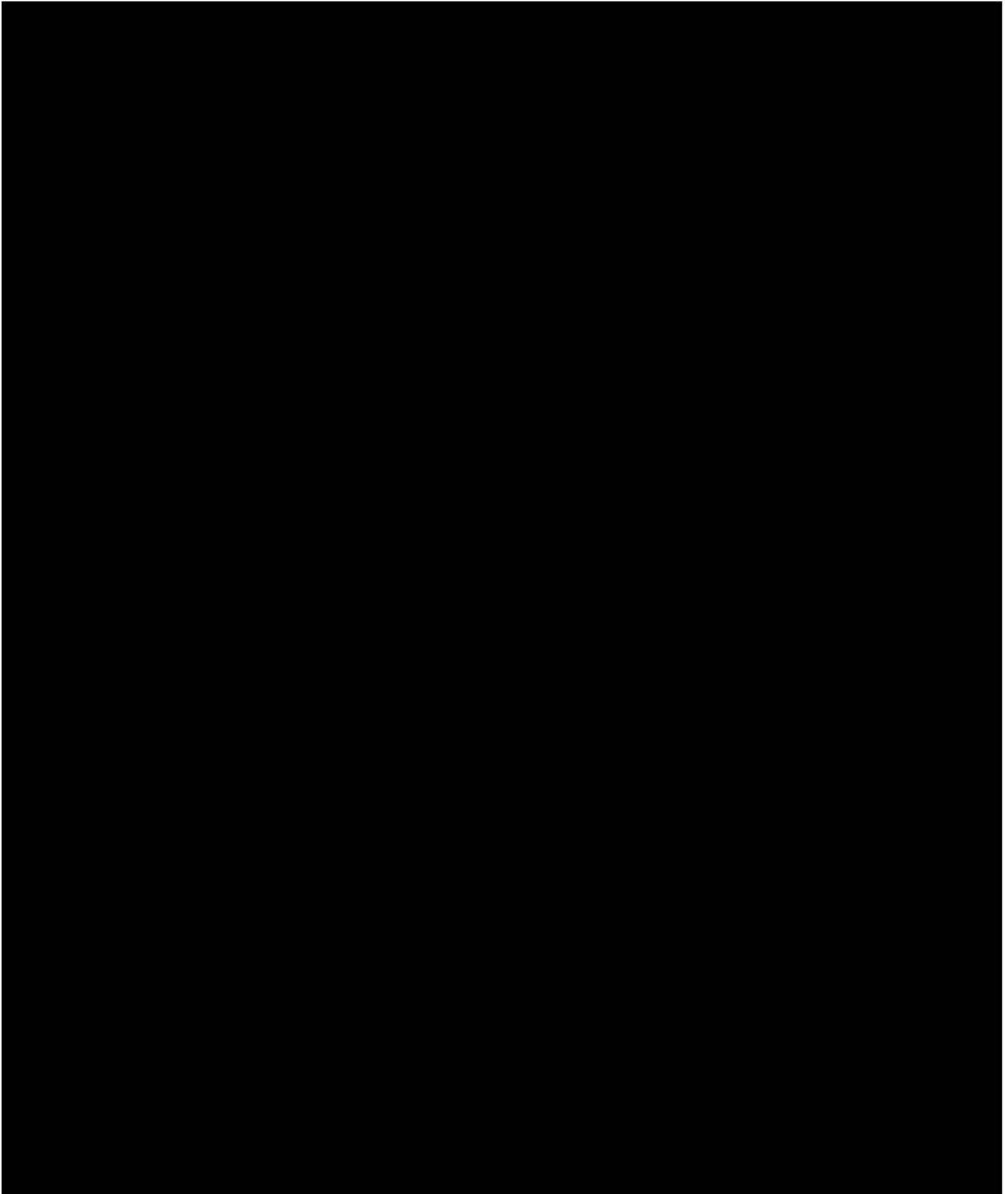
	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.9187	99.9187	99.9729	99.9729			99.9729	99.9729	99.9729	99.9729
2048QAM 491 Mbps	99.9669	99.9669	99.9890	99.9890			99.9890	99.9890	0.0161	0.0161
1024QAM 454 Mbps	99.9843	99.9843	99.9948	99.9948			99.9948	99.9948	0.0058	0.0058
512QAM 403 Mbps	99.9918	99.9918	99.9973	99.9973			99.9973	99.9973	0.0025	0.0025
256QAM 344 Mbps	99.9944	99.9944	99.9981	99.9981			99.9981	99.9981	0.0009	0.0009
128QAM 301 Mbps	99.9978	99.9978	99.9993	99.9993			99.9993	99.9993	0.0011	0.0011

Multipath fading method - Vigants - Barnett



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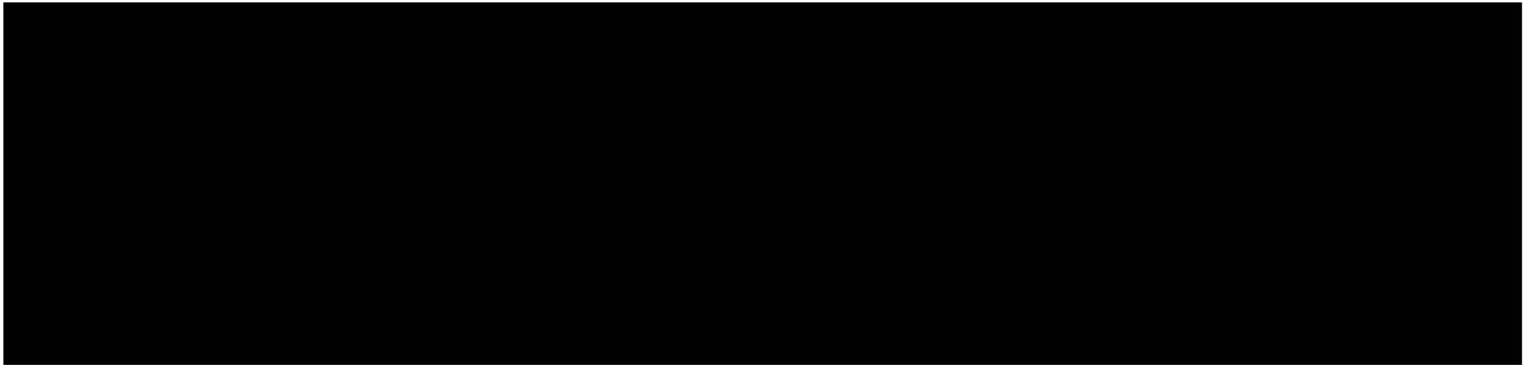
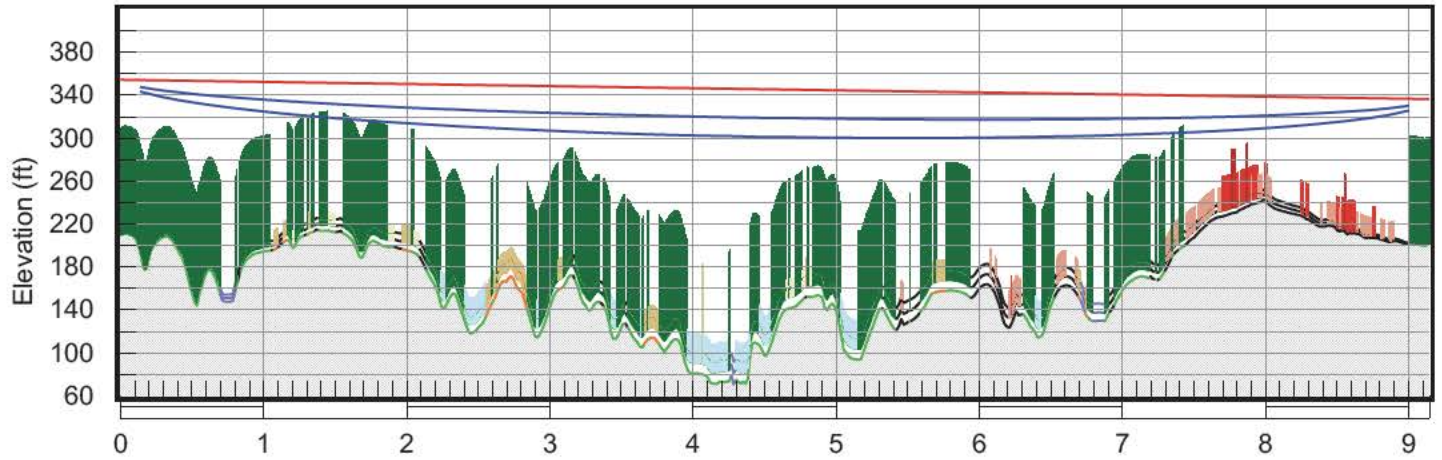
	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	64.16	64.14	-29.34	-29.34	21.91	21.91	20.92	20.92
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	64.66	64.64	-28.84	-28.84	26.16	26.16	24.29	24.29
1024QAM 454 Mbps	29.00	29.00	-57.75	-57.75	65.66	65.64	-27.84	-27.84	29.91	29.91	26.80	26.80
512QAM 403 Mbps	29.00	29.00	-61.50	-61.50	65.66	65.64	-27.84	-27.84	33.66	33.66	28.66	28.66
256QAM 344 Mbps	29.00	29.00	-65.00	-65.00	65.66	65.64	-27.84	-27.84	37.16	37.16	29.92	29.92
128QAM 301 Mbps	29.00	29.00	-71.00	-71.00	65.66	65.64	-27.84	-27.84	43.16	43.16	33.63	33.63

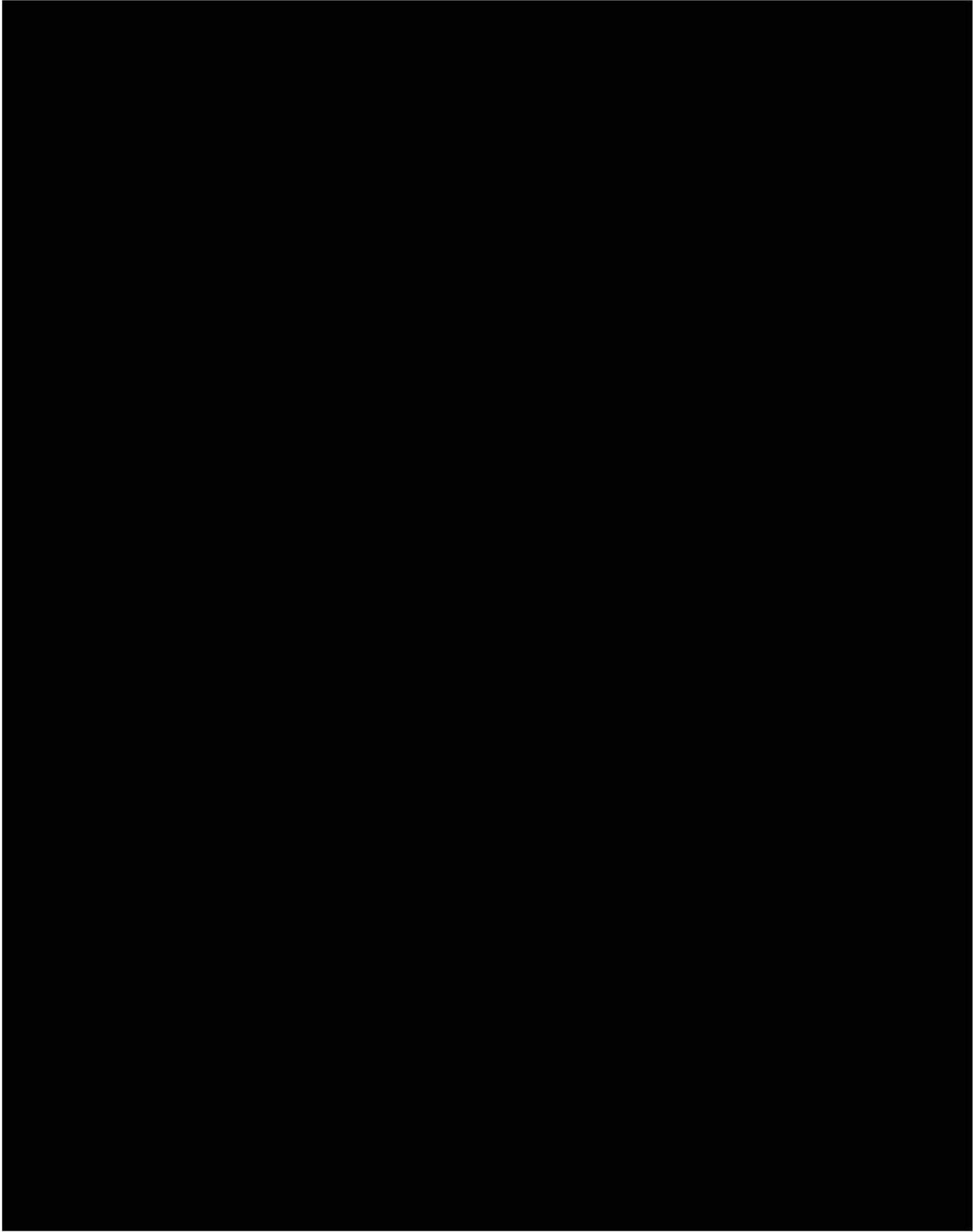
	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.9817	99.9817	99.9939	99.9939			99.9939	99.9939	99.9939	99.9939
2048QAM 491 Mbps	99.9919	99.9919	99.9973	99.9973			99.9973	99.9973	0.0034	0.0034
1024QAM 454 Mbps	99.9953	99.9953	99.9984	99.9984			99.9984	99.9984	0.0011	0.0011
512QAM 403 Mbps	99.9969	99.9969	99.9990	99.9990			99.9990	99.9990	0.0005	0.0005
256QAM 344 Mbps	99.9977	99.9977	99.9992	99.9992			99.9992	99.9992	0.0003	0.0003
128QAM 301 Mbps	99.9990	99.9990	99.9997	99.9997			99.9997	99.9997	0.0004	0.0004

Multipath fading method - Vigants - Barnett



MICROWAVE NETWORK







MICROWAVE NETWORK

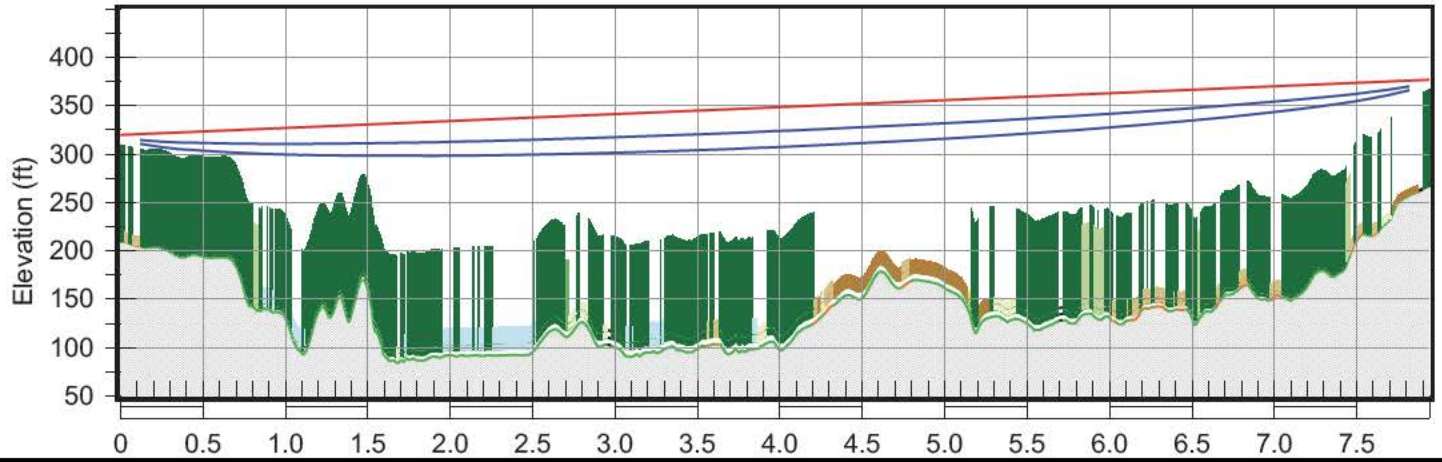
	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	63.78	63.92	-31.42	-31.42	19.83	19.83	19.24	19.24
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	64.28	64.42	-30.92	-30.92	24.08	24.08	22.97	22.97
1024QAM 454 Mbps	29.50	29.50	-57.75	-57.75	65.78	65.92	-29.42	-29.42	28.33	28.33	26.23	26.23
512QAM 403 Mbps	30.50	30.50	-61.50	-61.50	66.78	66.92	-28.42	-28.42	33.08	33.08	28.92	28.92
256QAM 344 Mbps	31.00	31.00	-65.00	-65.00	67.28	67.42	-27.92	-27.92	37.08	37.08	30.47	30.47
128QAM 301 Mbps	31.50	31.50	-71.00	-71.00	67.78	67.92	-27.42	-27.42	43.58	43.58	34.31	34.31

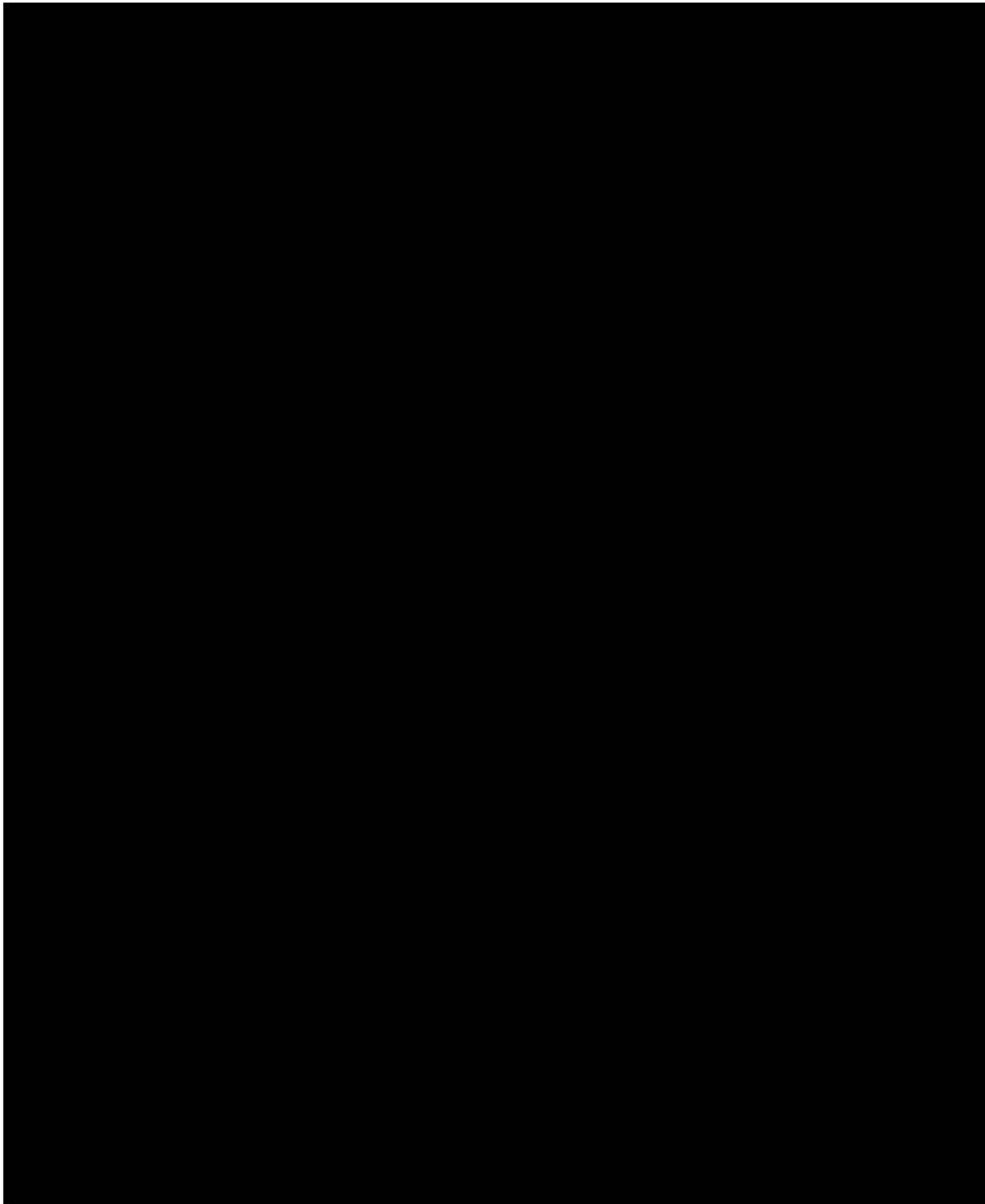
	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.9501	99.9501	99.9833	99.9833			99.9833	99.9833	99.9833	99.9833
2048QAM 491 Mbps	99.9793	99.9793	99.9931	99.9931			99.9931	99.9931	0.0098	0.0098
1024QAM 454 Mbps	99.9898	99.9898	99.9966	99.9966			99.9966	99.9966	0.0035	0.0035
512QAM 403 Mbps	99.9944	99.9944	99.9981	99.9981			99.9981	99.9981	0.0015	0.0015
256QAM 344 Mbps	99.9960	99.9960	99.9987	99.9987			99.9987	99.9987	0.0005	0.0005
128QAM 301 Mbps	99.9984	99.9984	99.9995	99.9995			99.9995	99.9995	0.0008	0.0008

Multipath fading method - Vigants - Barnett



MICROWAVE NETWORK







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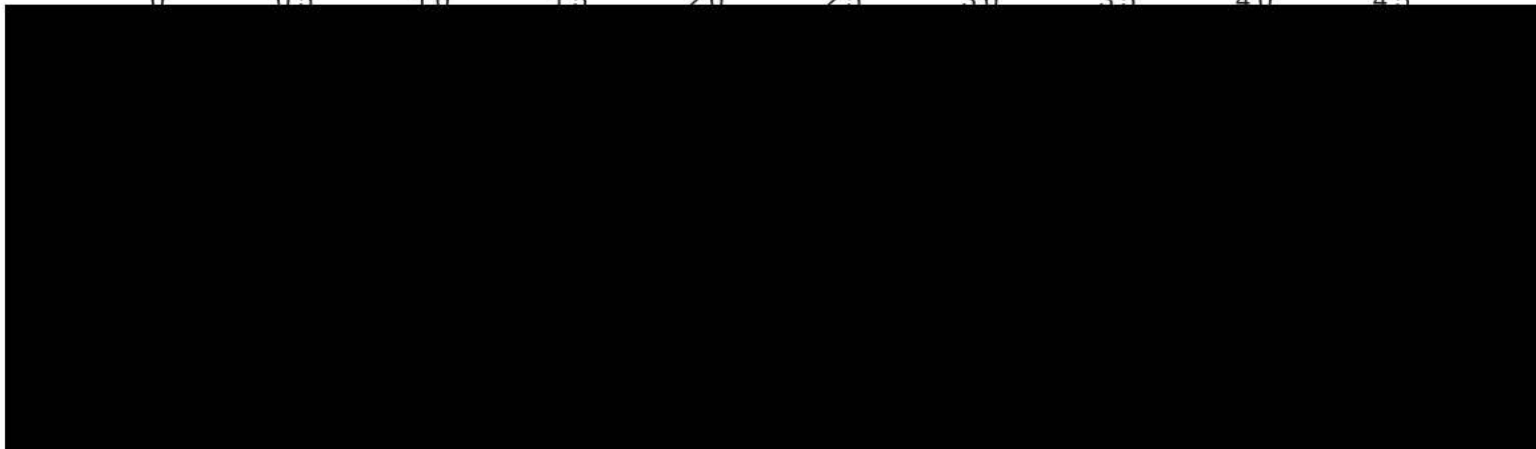
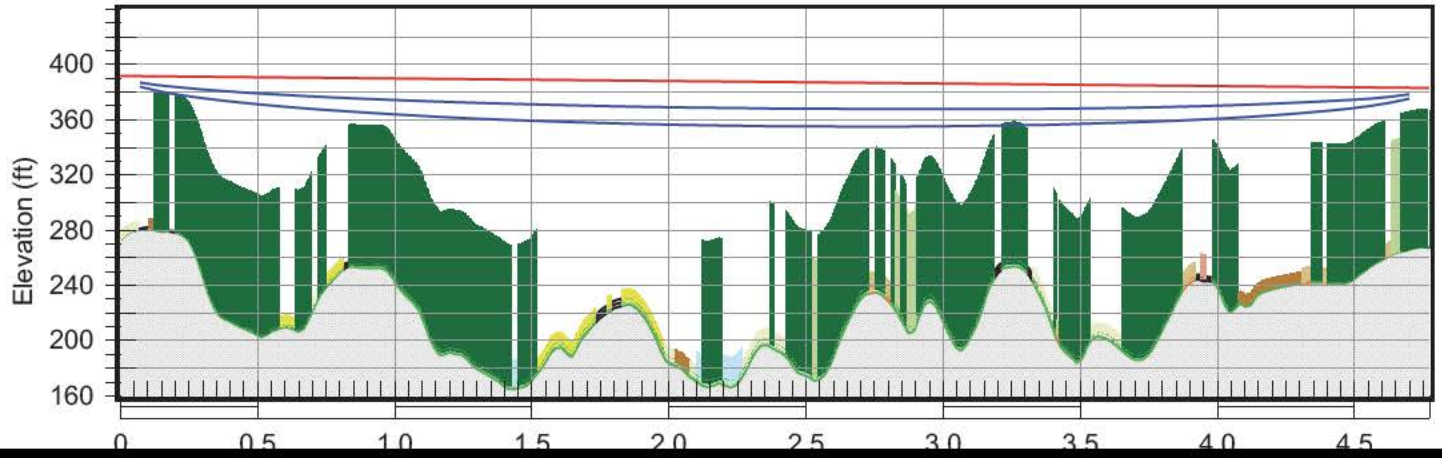
	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	27.50	27.50	-51.25	-51.25	64.27	64.27	-29.34	-29.34	21.91	21.91	20.96	20.96
2048QAM 491 Mbps	28.00	28.00	-55.00	-55.00	64.77	64.77	-28.84	-28.84	26.16	26.16	24.37	24.37
1024QAM 454 Mbps	29.00	29.00	-57.75	-57.75	65.77	65.77	-27.84	-27.84	29.91	29.91	26.91	26.91
512QAM 403 Mbps	29.00	29.00	-61.50	-61.50	65.77	65.77	-27.84	-27.84	33.66	33.66	28.80	28.80
256QAM 344 Mbps	29.00	29.00	-65.00	-65.00	65.77	65.77	-27.84	-27.84	37.16	37.16	30.09	30.09
128QAM 301 Mbps	29.00	29.00	-71.00	-71.00	65.77	65.77	-27.84	-27.84	43.16	43.16	33.81	33.81

	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.9781	99.9781	99.9927	99.9927			99.9927	99.9927	99.9927	99.9927
2048QAM 491 Mbps	99.9903	99.9903	99.9968	99.9968			99.9968	99.9968	0.0041	0.0041
1024QAM 454 Mbps	99.9944	99.9944	99.9981	99.9981			99.9981	99.9981	0.0014	0.0014
512QAM 403 Mbps	99.9964	99.9964	99.9988	99.9988			99.9988	99.9988	0.0007	0.0007
256QAM 344 Mbps	99.9973	99.9973	99.9991	99.9991			99.9991	99.9991	0.0003	0.0003
128QAM 301 Mbps	99.9989	99.9989	99.9996	99.9996			99.9996	99.9996	0.0005	0.0005

Multipath fading method - Vigants - Barnett

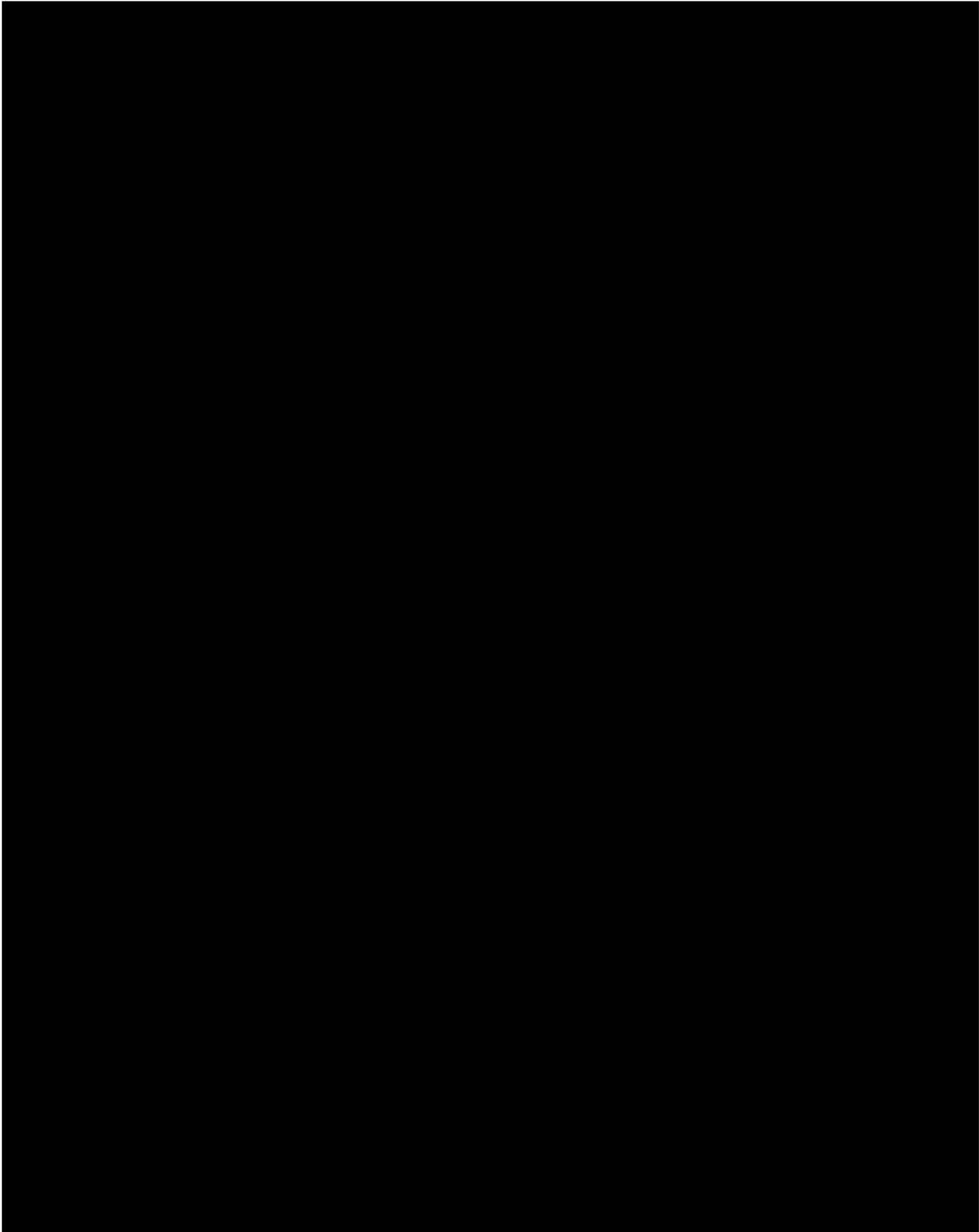


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MICROWAVE NETWORK





MICROWAVE NETWORK

	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
4096QAM 534 Mbps	26.00	26.00	-51.25	-51.25	62.64	62.69	-26.58	-26.58	24.67	24.67	22.68	22.68
2048QAM 491 Mbps	26.00	26.00	-55.00	-55.00	62.64	62.69	-26.58	-26.58	28.42	28.42	25.14	25.14
1024QAM 454 Mbps	26.00	26.00	-57.75	-57.75	62.64	62.69	-26.58	-26.58	31.17	31.17	26.74	26.74
512QAM 403 Mbps	26.00	26.00	-61.50	-61.50	62.64	62.69	-26.58	-26.58	34.92	34.92	28.22	28.22
256QAM 344 Mbps	26.00	26.00	-65.00	-65.00	62.64	62.69	-26.58	-26.58	38.42	38.42	29.21	29.21
128QAM 301 Mbps	26.00	26.00	-71.00	-71.00	62.64	62.69	-26.58	-26.58	44.42	44.42	32.77	32.77

	Worst month multipath		Annual multipath		Annual rain		Total annual		Time in mode (%)	
4096QAM 534 Mbps	99.9951	99.9951	99.9984	99.9984			99.9984	99.9984	99.9984	99.9984
2048QAM 491 Mbps	99.9974	99.9974	99.9991	99.9991			99.9991	99.9991	0.0008	0.0008
1024QAM 454 Mbps	99.9982	99.9982	99.9994	99.9994			99.9994	99.9994	0.0003	0.0003
512QAM 403 Mbps	99.9987	99.9987	99.9996	99.9996			99.9996	99.9996	0.0002	0.0002
256QAM 344 Mbps	99.9990	99.9990	99.9997	99.9997			99.9997	99.9997	0.0001	0.0001
128QAM 301 Mbps	99.9996	99.9996	99.9999	99.9999			99.9999	99.9999	0.0002	0.0002

Multipath fading method - Vigants - Barnett



SECTION : 4

Coverage Maps



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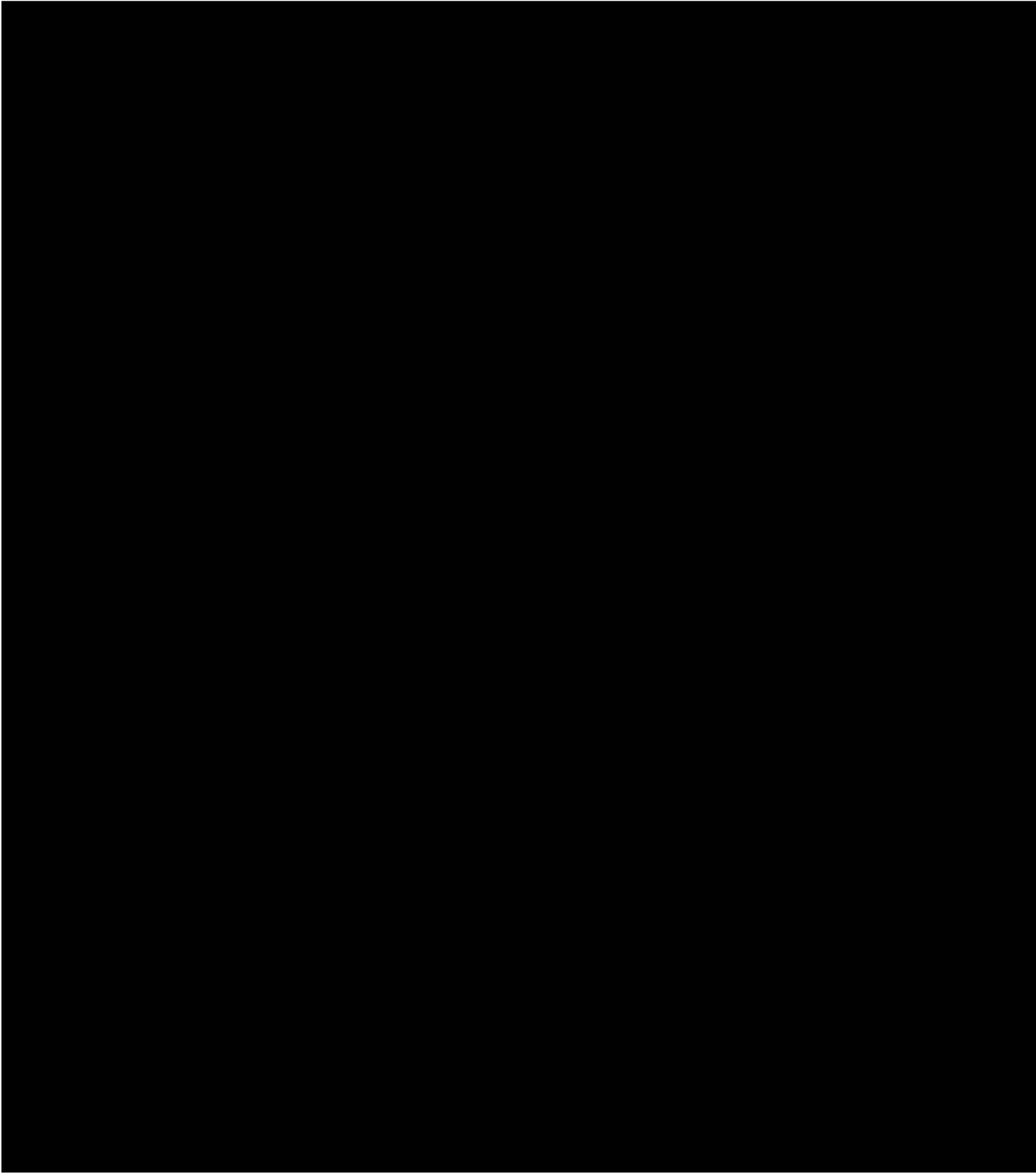


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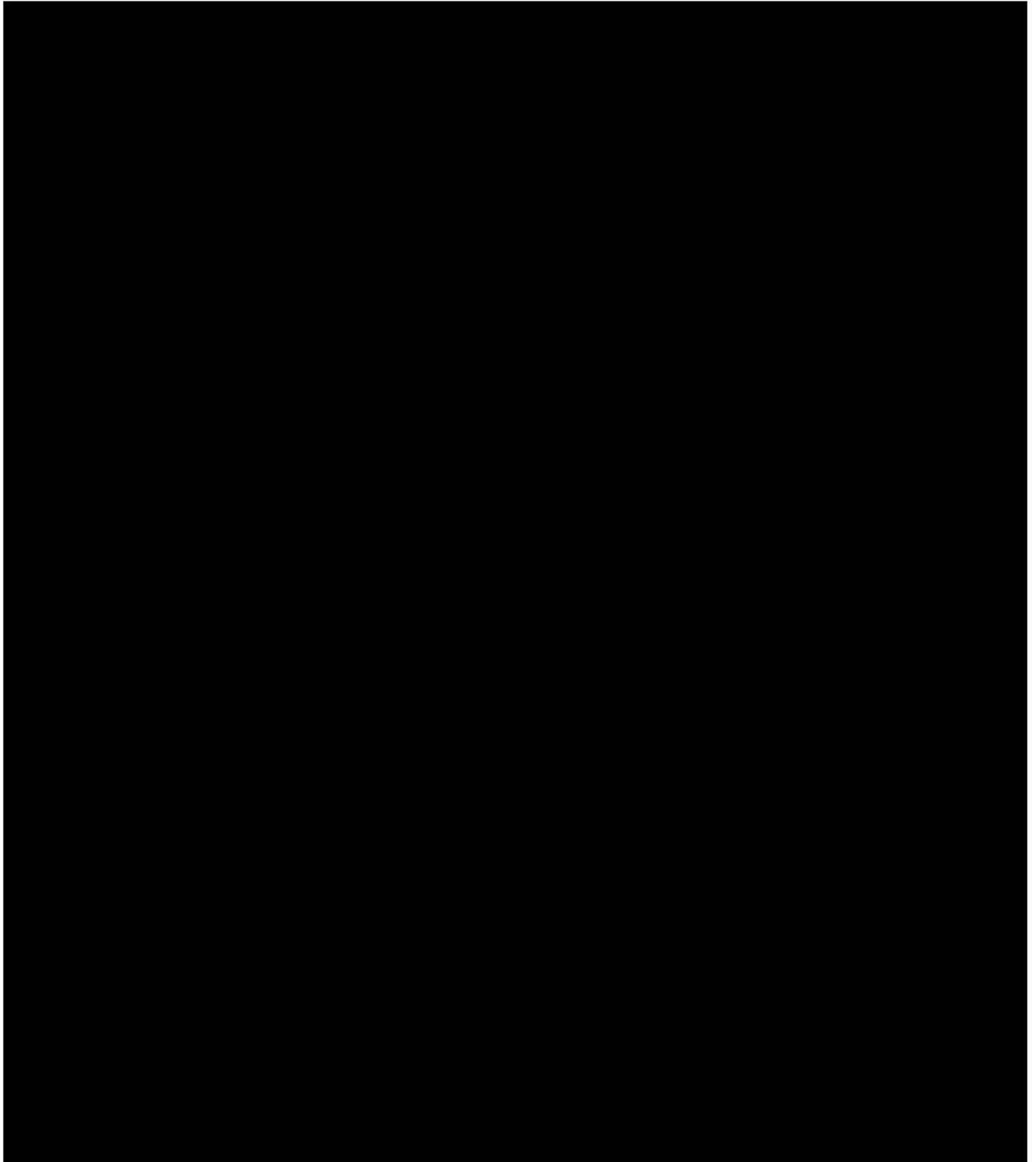


SYSTEM REPORTS: TALK-IN





SYSTEM REPORTS: TALK-IN





SECTION: 5

C.A.T.P.



WILLIAMS
COMMUNICATIONS, INC.
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE



Coverage Acceptance Test
Procedures
Boat Mounted Mobile Voice Quality
for
Okaloosa County, Florida

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1. BOAT MOUNTED MOBILE RADIO TO/TB AUDIO QUALITY TEST

This Acceptance Test Procedure (ATP) is used by Williams Communications, Inc (WCI) for verification of mobile coverage based on the evaluation receive audio. The criteria used to for scoring receive audio is Delivered Audio Quality (DAQ) as defined in on TSB-88-C.

This ATP is in conformance the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C, titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance applicable to both analog voice and digital voice systems. These DAQ definitions are provided in Table 1.

Table 1 - Delivered Audio Quality Scale Definitions

Delivered Audio Quality	Subjective Performance Description
DAQ 5.0	Speech easily understood.
DAQ 4.5	Speech easily understood. Infrequent Noise/Distortion.
DAQ 4.0	Speech easily understood. Occasional Noise/Distortion.
DAQ 3.4	Speech understandable with repetition only rarely required. Some Noise/Distortion.
DAQ 3.0	Speech understandable with slight effort. Occasional repetition required due to Noise/Distortion.
DAQ 2.0	Understandable with considerable effort. Frequent repetition due to Noise/Distortion.
DAQ 1.0	Unusable, speech present but unreadable.

This ATP verifies RF coverage throughout Okaloosa County as defined in the RFP. At each test location, as close to the center of each grid as possible, a test call will be placed from the mobile radio to a dispatch console (an inbound call), and a corresponding test call will be placed from the dispatch console (outbound call). The inbound and outbound test call for each location will be graded using the DAQ definitions in Table 1. Scores that equal or exceed the County's specified DAQ 3.4 are considered acceptable (PASS), and those lower than DAQ 3.4 are considered not acceptable and (FAIL).

Grids will be defined as described in the RFP, jointly determined by WCI and Okaloosa County.

1.1. TEST EQUIPMENT AND PREPARATION

Radios, delivered on the contract, will be used for the voice quality test. The mobile radio will be mounted in a boat for testing.

Prior to performing the tests, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test transmitter. WCI shall provide all test equipment necessary to perform the site audits.

1.2. TEST PLANNING

Grids will be defined as described in the RFP, jointly determined by WCI and Okaloosa County.

Testing will be performed in the grids assigned to the boat mounted mobile area.

1.3. GRADING OF TEST LOCATIONS

To reduce the time required for this coverage test, a single Base team can support multiple Field teams, and multiple Field and Base teams may be used.

The DAQ voice quality test requires two representatives from WCI and Okaloosa County. One representative from WCI and one from Okaloosa County will be the Field team, will travel to the agreed upon location within a test grid and perform the inbound calls, and grade the outbound calls using mobile radio. The second WCI and County representatives will be the Base team, will remain at the dispatch position location, grade the inbound calls, and perform the outbound calls. To reduce the time required for this coverage test, a single Base team can support multiple Field teams.

At each test grid location, the mobile (inbound) and the dispatch position location to mobile user (outbound) test calls are performed.

Each of the four representatives grade the test call using the criteria defined for DAQ3.4 of "Speech understandable with repetition only rarely required. Some Noise/Distortion" and then record the test score for each test location using the template contained in Table 3. PASS or FAIL determination is made separately for the inbound and outbound calls at each location. For each call direction, a test location is deemed to PASS if it meets or exceeds the County's requirement for DAQ 3.4 voice quality from both graders. If both graders agree that the voice quality does not meet the defined DAQ 3.4 criteria, then that test location fails for the direction being graded. If a score differs between testers at a location that results in a failing score from only one tester, that location will need to be tested again to determine the cause of the discrepancy. If the discrepancy cannot be rectified, then that grid will be set aside for discussion and evaluation.

1.4. TEST ANALYSIS AND ACCEPTANCE

The data logged by the representatives on the grading template is then analyzed to determine whether the individual test grid meets the DAQ 3.4 definition for the required level of coverage within that grid.

The Mobile voice quality test is deemed to meet the coverage requirements if, for each bounded service area and building loss category in Table 2, the percentage of test grids that receive a PASS score equals or exceeds the County's minimum % Validated CPC Service Area Reliability acceptance criteria that is shown.

Table 2 - Coverage Service Area and Acceptance Criteria

Mobile Service Area Definition	Mobile Coverage	% Validated CPC Service Area Reliability Acceptance Criteria
Okaloosa County Mobile Boat Mounted	Outdoor	95%

1.5. RESULTS PRESENTATION

A test report is provided that includes:

- the number of test grids
- the location tested within each grid
- a copy of the Table 3, inbound or outbound grading template used by each grader
- the PASS/FAIL score for each test grid/location for each call direction
- the % PASS calculation for the service area
- a statement of overall test acceptance or failure of coverage.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	



Coverage Acceptance Test
Procedures
Portable Voice Quality
for
Okaloosa County, Florida

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1. PORTABLE RADIO TO/TB AUDIO QUALITY TEST

This Acceptance Test Procedure (ATP) is used by Williams Communications, Inc (WCI) for verification of portable coverage based on the evaluation receive audio. The criteria used to for scoring receive audio is Delivered Audio Quality (DAQ) as defined in on TSB-88-C.

This ATP is in conformance the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C, titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance applicable to both analog voice and digital voice systems. These DAQ definitions are provided in Table 1.

Table 1 - Delivered Audio Quality Scale Definitions

Delivered Audio Quality	Subjective Performance Description
DAQ 5.0	Speech easily understood.
DAQ 4.5	Speech easily understood. Infrequent Noise/Distortion.
DAQ 4.0	Speech easily understood. Occasional Noise/Distortion.
DAQ 3.4	Speech understandable with repetition only rarely required. Some Noise/Distortion.
DAQ 3.0	Speech understandable with slight effort. Occasional repetition required due to Noise/Distortion.
DAQ 2.0	Understandable with considerable effort. Frequent repetition due to Noise/Distortion.
DAQ 1.0	Unusable, speech present but unreadable.

This ATP verifies RF coverage throughout Okaloosa County as defined in the RFP. At each test location, as close to the center of each grid as possible, a test call will be placed from the portable radio to a dispatch console (an inbound call), and a corresponding test call will be placed from the dispatch console (outbound call). The inbound and outbound test call for each location will be graded using the DAQ definitions in Table 1. Scores that equal or exceed the County's specified DAQ 3.4 are considered acceptable (PASS), and those lower than DAQ 3.4 are considered not acceptable and (FAIL).

Grids will be defined as described in the RFP, jointly determined by WCI and Okaloosa County.

1.1. TEST EQUIPMENT AND PREPARATION

Radios, delivered on the contract, will be used for the voice quality test. The portable radio will be worn on the belt and equipped with a shoulder-mounted speaker/microphone. Four portable radio configurations (Outdoor, 12db, 20db, 30db) will be provided and used for testing:

Standard unmodified portable radios will be used when testing portable in the "Portable Outdoors" Okaloosa County service area.

Portable radios that have been modified with the insertion of a 12 dB attenuator will be used when testing in the "Portable 12-dB Buildings" Okaloosa County service area.

Portable radios that have been modified with the insertion of a 20 dB attenuator will be used when testing in the "Portable 20-dB Buildings" Okaloosa County service area.

Portable radios that have been modified with the insertion of a 30 dB attenuator will be used when testing in the "Portable 30-dB Buildings" Okaloosa County service area.

Prior to performing the tests, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test transmitter. WCI shall provide all test equipment necessary to perform the site audits.

1.2. TEST PLANNING

Grids will be defined as described in the RFP, jointly determined by WCI and Okaloosa County.

Each grid will be assigned coverage type (Outdoor, 12db, 20db or 30dB). Testing will be performed using the appropriately modified portable radio that matches the grid coverage type that has been assigned.

All test calls will be made with the portable operator at street level outside any vehicle or other enclosure such as buildings, tunnels, underpasses, underground garages, or other man made obstructive areas where radio coverage is not planned or expected.

1.3. GRADING OF TEST LOCATIONS

To reduce the time required for this coverage test, a single Base team can support multiple Field teams, and multiple Field and Base teams may be used.

The DAQ voice quality test requires two representatives from WCI and Okaloosa County. One representative from WCI and one from Okaloosa County Florida will be the Field team, will travel to the agreed upon location within a test grid, step out of and away from the vehicle, and perform the inbound calls, and grade the outbound calls using the attenuated or un-attenuated portable based on the level of coverage required within the test grid. The second WCI and County representatives will be the Base team, will remain at the dispatch position location, grade the inbound calls, and perform the outbound calls. To reduce the time required for this coverage test, a single Base team can support multiple Field teams.

At each test grid location, the portable (inbound) and the dispatch position location to portable user (outbound) test calls are performed.

Each of the four representatives grade the test call using the criteria defined for DAQ3.4 of "Speech understandable with repetition only rarely required. Some Noise/Distortion" and then record the test score for each test location using the template contained in Table 3, Table 4, Table 5 or Table 6 depending on the test location. PASS or FAIL determination is made separately for the inbound and outbound calls at each location. For each call direction, a test location is deemed to PASS if it meets or exceeds the County's requirement for DAQ 3.4 voice quality from both graders. If both graders agree that the voice quality does not meet the defined DAQ 3.4 criteria, then that test location fails for the direction being graded. If a score differs between testers at a location that results in a failing score from only one tester, that location will need to be tested again to determine the cause of the discrepancy. If the discrepancy cannot be rectified, then that grid will be set aside for discussion and evaluation.

1.4. TEST ANALYSIS AND ACCEPTANCE

The data logged by the representatives on the grading template is then analyzed to determine whether the individual test grid meets the DAQ 3.4 definition for the required level of coverage within that grid.

The portable voice quality test is deemed to meet the coverage requirements if, for each bounded service area and building loss category in Table 2, the percentage of test grids that receive a PASS score equals or exceeds the County's minimum % Validated CPC Service Area Reliability acceptance criteria that is shown.

Table 2 - Coverage Service Area and Acceptance Criteria

Portable Service Area Definition	Portable Coverage	% Validated CPC Service Area Reliability Acceptance Criteria
Okaloosa County Florida boundary	Outdoor	95%
Okaloosa County Florida boundary	Outdoor (Highway 85, SR 123, SR 293, SR 285)	97%
Okaloosa County Florida boundary	12 dB Building Loss	95%
Okaloosa County Florida boundary	20 dB Building Loss	95%
Okaloosa County Florida boundary	30 dB Building Loss	95%

1.5. RESULTS PRESENTATION

A test report is provided that includes:

- the number of test grids
- the location tested within each grid
- a copy of the Table 3,4,5 and 6 inbound or outbound grading template used by each grader
- the PASS/FAIL score for each test grid/location for each call direction
- the % PASS calculation for the service area
- a statement of overall test acceptance or failure of coverage.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments:	_____



Coverage Acceptance Test
Talk-In BER Data Collection
for
Okaloosa County Florida

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1. TALK-IN BIT ERROR RATE (BER) TEST

This Acceptance Test Procedure (ATP) is used by Williams Communications, Inc. for RF coverage verification based on Talk-In Bit Error Rate (BER) measurements. This procedure provides an accurate, statistically valid, repeatable, objective, and cost-effective method to verify all Okaloosa County coverage requirements are met.

This ATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance applicable to both analog voice and digital voice systems.

TSB-88-C also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. Williams Communications, Inc. has proposed a Bounded Area design for Okaloosa County as defined in TSB- 88-C wherein coverage predictions are made out to the boundary of the defined service area and coverage is verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test.

RF coverage using this ATP is verified by measuring talk-out (base to mobile) BER throughout the County's defined bounded service area, and calculating the percentage of measurements that are equal or better than a BER of 2.4% required to support the County's specified CPC of DAQ 3.4.

2. *SETUP*

Williams Communications, Inc.' TYPHON wireless testing system is utilized to measure BER. TYPHON consists of mobile radios, a GPS receiver to provide accurate position information for each measured data point, a computer with an internal clock that coordinates and records the test data, roof mounted antennas, and variable attenuators for use when portable coverage is being tested.

We use our TYPHON wireless testing system to measure BER. TYPHON connects to a voter/base station at a distributed control point in the system and includes a GPS receiver to provide accurate time information for each measured data point and a computer with an internal clock that coordinates and records the test data.

Another TYPHON unit is mounted inside the test vehicle (Passenger car) connected to the test radios with its external antenna mounted on the vehicle's roof top. No other equipment is installed on the roof of the test vehicle.

When testing portable coverage, a variable attenuator installs in the test vehicle between the radio and the external antenna to simulate portable operations on for both outdoor and indoor operation. For portable outdoor coverage verification, the variable attenuator is set to the appropriate level to account for portable body losses. For portable indoor coverage verification, the variable attenuator will be set to account for the portable body losses plus the loss of the building category being evaluated

The TYPHON equipment will be mounted inside the test vehicle with an external antenna(s) mounted on the outside and centrally located on the vehicle's roof, with no other equipment installed on the roof. Attenuation will be adjusted for each of the coverage areas (Portable Outdoor, 12dB Buildings, 20 dB Buildings, 30 dB Buildings and Offshore) to ensure proper BER data is collected.

Prior to taking BER measurements, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test transmitter. Williams Communications, Inc. shall provide all test equipment necessary to perform the audits.

3. DRIVE ROUTE PLANNING

TSB-88-C recommends coverage verification measurements at a statistically significant number of random test locations, uniformly distributed throughout the service area. To accomplish this, the service area is divided by a grid pattern as an aid to the development of a drive test route with an approximately equal distance traveled in each grid.

Grids will be defined as described in the RFP, jointly determined by WCI and Okaloosa County. The grid pattern is overlaid onto street maps and a drive test route determined that will pass through all accessible grids (i.e. have roads) within the County's defined service area boundary. The drive route should pass through each grid at least once but not more than twice, as far as is practically possible. The defined drive route should not pass through tunnels, underpasses, underground garages, or other man-made obstructive areas where radio coverage is not planned or expected. If a drive route passes through any of these areas, the TYPHON unit is disabled to prevent the collection of data in these areas.

BER measurements will be made in all accessible grids within the County's defined service area boundary. Test measurements along the drive route that are outside of the County's service area boundary will not be counted. Any areas or accessible grids within the service area boundary that the County decides not to test will have coverage scored as a PASS in the reliability calculations.

4. DATA MEASUREMENTS

With the test vehicle in motion along the drive route, the mobile in the test vehicle transmits the data sequences on a working channel, and measurements of this signal are collected from the base station at each site. The software in the TYPHON laptop computer will automatically measure and record the data sequences that will be used to determine the BER for each measurement point along the drive route.

The GPS time of the start and stop (ON and OFF) for each transmission, as well as the vehicle position for each transmission, will be recorded in the test vehicle. These start and stop times will identify the corresponding portions of the base station receive data to be used in the analysis.

5. DATA ANALYSIS AND ACCEPTANCE

All BER measurement data records collected from the drive test within the defined service area boundary are post-processed and used in the final analysis.

For each service area, the minimum acceptable signal level at a portable radio is shown in Table 1 (e.g., portable body loss, excess signal required to penetrate each random building category). Measurements that have a BER of less or equal to 2.4% are recorded as Pass; the remainders are recorded as FAIL.

Table 1 - Coverage Service Area, BER, and Acceptance Criteria

Service Area	Scenario	% Validated CPC Service Area Reliability Acceptance Criteria
Okaloosa County Portable Outdoor	BER 2.4% or less	95%
Okaloosa County Portable Indoor 12 dB Buildings	BER 2.4% or less	95%
Okaloosa County Portable Indoor 20 dB Buildings	BER 2.4% or less	95%
Okaloosa County Portable Indoor 30 dB Buildings	BER 2.4% or less	95%
Okaloosa County Mobile + 10 miles offshore	BER 2.4% or less	95%

6. RESULTS PRESENTATION

The data records are plotted on a map showing the test grids, the areas tested and the test results. Different pen colors are used to show ranges of measured BER. A test report is also provided that summarizes the test results.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	-



Coverage Acceptance Test
Talk-Out BER Data Collection
for
Okaloosa County Florida

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1. TALK-OUT BIT ERROR RATE (BER) TEST

This Acceptance Test Procedure (ATP) is used by Williams Communications, Inc. for RF coverage verification based on Bit Error Rate (BER) measurements. This procedure provides an accurate, statistically valid, repeatable, objective, and cost-effective method to verify all Okaloosa County coverage requirements are met.

This ATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance applicable to both analog voice and digital voice systems.

TSB-88-C also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. Williams Communications, Inc. has proposed a Bounded Area design for Okaloosa County as defined in TSB- 88-C wherein coverage predictions are made out to the boundary of the defined service area and coverage is verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test.

RF coverage using this ATP is verified by measuring talk-out (base to mobile) BER throughout the County's defined bounded service area, and calculating the percentage of measurements that are equal or better than a BER of 2% required to support the County's specified CPC of DAQ 3.4.

2. *SETUP*

Williams Communications, Inc.' TYPHON wireless testing system is utilized to measure BER. TYPHON consists of mobile radios, a GPS receiver to provide accurate position information for each measured data point, a computer with an internal clock that coordinates and records the test data, roof mounted antennas, and variable attenuators for use when portable coverage is being tested.

The TYPHON equipment will be mounted inside the test vehicle (standard passenger vehicle for single BER measurements, or SUV/van for multiple BER measurements) with an external antenna(s) mounted on the outside and centrally located on the vehicle's roof, with no other equipment installed on the roof. Attenuation will be adjusted for each of the coverage areas (Portable Outdoor, 12dB Buildings, 20 dB Buildings, 30 dB Buildings and Offshore) to ensure proper BER data is collected.

Prior to taking BER measurements, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test transmitter. Williams Communications, Inc. shall provide all test equipment necessary to perform the audits.

3. DRIVE ROUTE PLANNING

TSB-88-C recommends coverage verification measurements at a statistically significant number of random test locations, uniformly distributed throughout the service area. To accomplish this, the service area is divided by a grid pattern as an aid to the development of a drive test route with an approximately equal distance traveled in each grid.

Grids will be defined as described in the RFP, jointly determined by WCI and Okaloosa County. The grid pattern is overlaid onto street maps and a drive test route determined that will pass through all accessible grids (i.e. have roads) within the County's defined service area boundary. The drive route should pass through each grid at least once but not more than twice, as far as is practically possible. The defined drive route should not pass through tunnels, underpasses, underground garages, or other man-made obstructive areas where radio coverage is not planned or expected. If a drive route passes through any of these areas, the TYPHON unit is disabled to prevent the collection of data in these areas.

BER measurements will be made in all accessible grids within the County's defined service area boundary. Test measurements along the drive route that are outside of the County's service area boundary will not be counted. Any areas or accessible grids within the service area boundary that the County decides not to test will have coverage scored as a PASS in the reliability calculations.

4. DATA MEASUREMENTS

Each radio system base station site transmits the data sequences on a working channel, and measurements of this signal are collected with the TYPHON equipment mounted inside the test vehicle as it is driven along the defined test drive route. The software in the TYPHON laptop computer will automatically measure and record the data sequences that will be used to determine the BER for each measurement point along the drive route.

5. DATA ANALYSIS AND ACCEPTANCE

All BER measurement data records collected from the drive test within the defined service area boundary are post-processed and used in the final analysis.

For each service area, the minimum acceptable signal level at a portable radio is shown in Table 1 (e.g., portable body loss, excess signal required to penetrate each random building category). Measurements that have a BER 2.4% or less are recorded as Pass; the remainders are recorded as FAIL.

Table 1 - Coverage Service Area, BER, and Acceptance Criteria

6.

Service Area	Scenario	% Validated CPC Service Area Reliability Acceptance Criteria
Okaloosa County Portable Outdoor	BER 2.4% or less	95%
Okaloosa County Portable Indoor 12 dB Buildings	BER 2.4% or less	95%
Okaloosa County Portable Indoor 20 dB Buildings	BER 2.4% or less	95%
Okaloosa County Portable Indoor 30 dB Buildings	BER 2.4% or less	95%
Okaloosa County Mobile + 10 miles offshore	BER 2.4% or less	95%

7. RESULTS PRESENTATION

The data records are plotted on a map showing the test grids, the areas tested and the test results. Different pen colors are used to show ranges of measured BER. A test report is also provided that summarizes the test results.

Results	(Pass/Fail)	_____
Tester:	_____	Date: _____
Comments:	_____	



SECTION : 6

Project Schedule



WILLIAMS
COMMUNICATIONS, INC.
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE



SECTION: 7

Responsibilities Matrix



WILLIAMS
COMMUNICATIONS, INC
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE

WBS	Task_Name
1	Okaloosa County P25 Phase II Radio Communications System Project Schedule
1.1	Contract Award / Notice to Proceed (NTP)
1.1.1	NTP - WCI designates Implementation Team
1 2	Detailed Design Reviews
1 2.1	Preliminary Design Review
1 2.1.1	Internal Project Review Meetings
1 2.1.2	Project Kick-off and Planning Session with Customer
1 2.1.3	Perform Review of Existing Dispatch Sites
1 2.1.4	Site Suitability Assessment for Collocated and Green Field Sites
1 2.1.5	Site Suitability Re-Assessment (If Needed)
1 2.1.6	MW Path Survey
1 2.1.7	Prepare Preliminary Design Review (PDR) Documentation
1 2.1.8	Customer PDR
1 2.1.9	Customer Approves PDR
1 2.2	Contract Design Review (CDR)
1 2.2.1	Create CDR Documentation
1 2.2.2	Customer CDR
1 2.2.3	Final CDR Documentation submitted to Okaloosa County for Sign-off
1 2.2.4	Okaloosa County CDR Approval
1 2.2.5	Completion of Radio System CDR
1 3	Procurement Process
1 3.1	Factory Order
1 3.1.1	Place orders on factory for RF Infrastructure Equipment
1 3.1.2	Place orders on factory for Dispatch Equipment
1 3.1.3	Place orders on factory for Simulcast VHF Paging subsystem
1 3.1.4	Place orders on factory for Subscriber Equipment
1 3.1.5	Place orders on factory for MW Equipment
1 3.1.6	Place orders on factory for Antenna Subsystems
1 3.2	Site Civil Equipment
1 3.2.1	Green Field Civil Equipment Ordering
1 3.2.1.1	Order Green Field Site Towers
1 3.2.1.2	Order Green Field Site Shelter, Generator, Fuel Tanks
1 3.2.1.3	Order DC Power plant
1 3.2.1.4	Order Combiners and any Frequency Dependent Equipment
1 3.3	Manufacturing Process
1 3.3.1	Manufacture 12-site P25 Radio System
1 3.3.2	Manufacture Dispatch Consoles
1 3.3.3	Manufactures Simulcast VHF Paging Subsystem
1 3.3.4	Manufacture Subscriber Equipment
1 3.3.5	Manufacture 12-site MW Radio System
1 3.3.6	Manufacture Antenna Subsystems
1 3.3.7	Manufacture Towers
1 3.3.8	Manufacture Shelters
1 3.3.9	Manufacture Generators
1 3.3.10	Manufacture Fuel Tanks
1 3.3.11	Manufacture DC Power Plant
1 3.4	Factory Staging and Shipping
1 3.4.1	P25 Radio and Dispatch Staging
1 3.4.1.1	Assemble P25 System
1 3.4.1.2	Run factory staging test
1 3.4.1.3	Break down and pack for shipping
1 3.4.1.4	Radio System Factory Staging Shipment Completed
1 3.4.2	MW Subsystem Staging
1 3.4.2.1	Assemble MW System
1 3.4.2.2	Run factory staging test
1 3.4.2.3	Break down and pack for shipping
1 3.4.2.4	MW System Factory Staging Shipment Completed
1 3.4.3	VHF Simulcast Paging Subsystem Staging
1 3.4.3.1	Assemble VHF Paging Subsystem System
1 3.4.3.2	Run factory staging test

1 3.4.3.3	Break down and pack for shipping
1 3.4.3.4	VHF Simulcast Paging Factory Staging Shipment Completed
1 3.4.4	DC Power Subsystem Staging
1 3.4.4.1	<i>Assemble DC Power Subsystem System</i>
1 3.4.4.2	Run factory staging test
1 3.4.4.3	Break down and pack for shipping
1 3.4.4.4	DC Power Factory Staging Shipment Completed
1 3.5	Equipment Delivery and Inventory
1 3.5.1	Deliver Subscriber Products to Williams Facility
1 3.5.2	Inventory Subscriber Equipment
1 3.5.3	Customer Inventory Subscriber Equipment
1 3.5.4	Deliver Antenna Subsystems Williams Facility
1 3.5.5	Deliver MW Equipment to Williams Facility
1 3.5.6	Inventory MW equipment
1 3.5.7	Inventory DC Power Plant Equipment
1 3.6	Green Field Sites
1 3.6.1	Deliver Equipment to Okaloosa County Sites
1 3.6.1.1	Deliver RF equipment to Sites
1 3.6.1.2	Deliver MW Equipment to Sites
1 3.6.1.3	Deliver VHF Simulcast Paging to Sites
1 3.6.1.4	Deliver DC Power Plant
1 3.6.1.5	Deliver Antenna Subsystems to Sites
1 3.7	New System Licensing and Site Lease/Permits
1 3.7.1	New System Licensing and Site Lease/Permits
1 3.7.1.1	Sites Locked Down
1 3.7.1.2	County Approval to use Green Sites
1 3.7.1.2.1	EOC Site Secure
1 3.7.1.2.2	Destin Site Secure
1 3.7.1.2.3	Florosa Site Secure
1 3.7.1.2.4	Fort Walton Site Secure
1 3.7.1.2.5	Holt Site Secure
1 3.7.1.2.6	Baker Site Secure
1 3.7.1.2.7	Blackman Site Secure
1 3.7.1.2.8	Laurel Hill Site Secure
1 3.7.1.2.9	Alamrante Site Secure
1 3.7.1.2.10	Dorcas Site Secure
1 3.7.1.2.11	Crestview Site Secure
1 3.7.1.2.12	Fort Walton PD Site Secure
1 3.7.2	Antenna Structural Registration Due Diligence (ASR, NEPA, SHPO,FAA) Green Fields
1 3.7.2.1	EOC ASR Due Diligence
1 3.7.2.2	Destin ASR Due Diligence
1 3.7.2.3	Florosa ASR Due Diligence
1 3.7.2.4	Fort Walton ASR Due Diligence
1 3.7.2.5	Holt Due ASR Diligence
1 3.7.2.6	Baker Due ASR Diligence
1 3.7.2.7	Blackman ASR Due Diligence
1 3.7.2.8	Laurel Hill ASR Due Diligence
1 3.7.2.9	Alamrante ASR Due Diligence
1 3.7.2.10	Dorcas Due ASR Diligence e
1 3.7.2.11	Crestview Due ASR Diligence
1 3.7.2.12	Fort Walton PD Due ASR Diligence
1 3.7.4	FCC Frequency Licensing
1 3.7.4.1	License Coordination
1 3.7.4.2	Frequencies Approved
1 3.7.5	Provide Site Plan and Drawing package to Planning and Zoning Department, Q&A and Public Hearings
1 3.7.5.1	Application Submitted to AHJ Planning and Zoning
1 3.7.5.1.1	EOC Zoning App Submitted
1 3.7.5.1.2	Destin Zoning App Submitted
1 3.7.5.1.3	Florosa Zoning App Submitted

1 3.7.5.1.4	Fort Walton Zoning App Submitted
1 3.7.5.1.5	Holt Zoning App Submitted
1 3.7.5.1.6	Baker Zoning App Submitted
1 3.7.5.1.7	Blackman Zoning App Submitted
1 3.7.5.1.8	Laurel Hill Zoning App Submitted
1 3.7.5.1.9	Alamrante Zoning App Submitted
1 3.7.5.1.1	Dorcas Zoning App Submitted
1 3.7.5.1.1	Crestview Zoning App Submitted
1 3.7.5.1.1	Fort Walton PD Zoning App Submitted
1 3.7.5.2	AHJ Planning and Zoning Dept. Approval
1 3.7.5.2.1	EOC Zoning App Approved
1 3.7.5.2.2	Destin Zoning App Approved
1 3.7.5.2.3	Florosa Zoning App Approved
1 3.7.5.2.4	Fort Walton Zoning App Approved
1 3.7.5.2.5	Holt Zoning App Approved
1 3.7.5.2.6	Baker Zoning App Approved
1 3.7.5.2.7	Blackman Zoning App Approved
1 3.7.5.2.8	Laurel Hill Zoning App Approved
1 3.7.5.2.9	Alamrante Zoning App Approved
1 3.7.5.2.1	Dorcas Zoning App Approved
1 3.7.5.2.1	Crestview Zoning App Approved
1 3.7.5.2.1	Fort Walton PD Zoning App Approved
1 3.7.5.3	Apply for AHJ Building Permit (BP)
1 3.7.5.3.1	EOC BP Submitted
1 3.7.5.3.2	Destin BP Submitted
1 3.7.5.3.3	Florosa BP Submitted
1 3.7.5.3.4	Fort Walton BP Submitted
1 3.7.5.3.5	Holt BP Submitted
1 3.7.5.3.6	Baker BP Submitted
1 3.7.5.3.7	Blackman BP Submitted
1 3.7.5.3.8	Laurel Hill BP Submitted
1 3.7.5.3.9	Alamrante BP Submitted
1 3.7.5.3.10	Dorcas BP Submitted
1 3.7.5.3.11	Crestview BP Submitted
1 3.7.5.3.12	Fort Walton PD BP Submitted
1 3.7.5.4	AHJ Planning and Zoning Dept. Approval
1 3.7.5.4.1	EOC BP Approved
1 3.7.5.4.2	Destin BP Approved
1 3.7.5.4.3	Florosa BP Approved
1 3.7.5.4.4	Fort Walton BP Approved
1 3.7.5.4.5	Holt BP Approved
1 3.7.5.4.6	Baker BP Approved
1 3.7.5.4.7	Blackman BP Approved
1 3.7.5.4.8	Laurel Hill BP Approved
1 3.7.5.4.9	Alamrante BP Submitted
1 3.7.5.4.1	Dorcas BP Approved
1 3.7.5.4.1	Crestview BP Approved
1 3.7.5.4.1	Fort Walton PD BP Approved
1 3.7.6	Shore Power
1 3.7.6.1	EOC Shore Power Ordered and Delivered
1 3.7.6.2	Destin Shore Power Ordered and Delivered
1 3.7.6.3	Florosa Shore Power Ordered and Delivered
1 3.7.6.4	Fort Walton Shore Power Ordered and Delivered
1 3.7.6.5	Holt Shore Power Ordered and Delivered
1 3.7.6.6	Baker Shore Power Ordered and Delivered
1 3.7.6.7	Blackman Shore Power Ordered and Delivered
1 3.7.6.8	Laurel Hill Shore Power Ordered and Delivered
1 3.7.6.9	Alamrante Shore Power Ordered and Delivered
1 3.7.6.10	Dorcas Shore Power Ordered and Delivered
1 3.7.6.11	Crestview Shore Power Ordered and Delivered
1 3.7.6.12	Fort Walton PD Shore Power Ordered and Delivered

1.4	Site Development (Construction)
1.4.1	Green Field Site - EOC (Team 1)
1.4.1.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.1.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.1.3	Cure Foundation
1.4.1.4	Construct Shelter and Fuel Tank Foundations
1.4.1.5	Cure Foundations
1.4.1.6	Construct Ground System Around Shelter and Tower
1.4.1.7	Trench Underground Electrical Services
1.4.1.8	Install Electrical System (H-Frame)
1.4.1.9	Install Tower (180'SS)
1.4.1.10	Set Shelter/Generator On Pad
1.4.1.11	Install LP Tank
1.4.1.12	Shore Power Delivered
1.4.1.13	Start Up Generator
1.4.1.14	Building Power Up
1.4.1.15	Install Cable Bridge
1.4.1.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.1.17	Final Site Clean Up
1.4.1.18	Landscaping
1.4.1.19	Complete Initial Inspection and Punch List
1.4.1.20	Complete Final Inspection
1.4.1.21	Green Field Site - EOC - Site Acceptance
1.4.2	Green Field Site - Florosa (Team 1)
1.4.2.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.2.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.2.3	Cure Foundation
1.4.2.4	Construct Shelter and Fuel Tank Foundations
1.4.2.5	Cure Foundations
1.4.2.6	Construct Ground System Around Shelter and Tower
1.4.2.7	Trench Underground Electrical Services
1.4.2.8	Install Electrical System (H-Frame)
1.4.2.9	Install Tower (180'SS)
1.4.2.10	Set Shelter/Generator On Pad
1.4.2.11	Install LP Tank
1.4.2.12	Shore Power Delivered
1.4.2.13	Start Up Generator
1.4.2.14	Building Power Up
1.4.2.15	Install Cable Bridge
1.4.2.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.2.17	Final Site Clean Up
1.4.2.18	Landscaping
1.4.2.19	Complete Initial Inspection and Punch List
1.4.2.20	Complete Final Inspection
1.4.2.21	Green Field Site - Florosa - Site Acceptance
1.4.3	Green Field Site - Fort Walton (Team 1)
1.4.3.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.3.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.3.3	Cure Foundation
1.4.3.4	Construct Shelter and Fuel Tank Foundations
1.4.3.5	Cure Foundations
1.4.3.6	Construct Ground System Around Shelter and Tower
1.4.3.7	Trench Underground Electrical Services
1.4.3.8	Install Electrical System (H-Frame)
1.4.3.9	Install Tower (180'SS)
1.4.3.10	Set Shelter/Generator On Pad
1.4.3.11	Install LP Tank
1.4.3.12	Shore Power Delivered
1.4.3.13	Start Up Generator
1.4.3.14	Building Power Up
1.4.3.15	Install Cable Bridge

1.4.3.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.3.17	Final Site Clean Up
1.4.3.18	Landscaping
1.4.3.19	Complete Initial Inspection and Punch List
1.4.3.20	Complete Final Inspection
1.4.3.21	Green Field Site - Fort Walton - Site Acceptance
1.4.4	Green Field Site - Holt (Team 2)
1.4.4.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.4.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.4.3	Cure Foundation
1.4.4.4	Construct Shelter and Fuel Tank Foundations
1.4.4.5	Cure Foundations
1.4.4.6	Construct Ground System Around Shelter and Tower
1.4.4.7	Trench Underground Electrical Services
1.4.4.8	Install Electrical System (H-Frame)
1.4.4.9	Install Tower (400'Guyed)
1.4.4.10	Set Shelter/Generator On Pad
1.4.4.11	Install LP Tank
1.4.4.12	Shore Power Delivered
1.4.4.13	Start Up Generator
1.4.4.14	Building Power Up
1.4.4.15	Install Cable Bridge
1.4.4.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.4.17	Final Site Clean Up
1.4.4.18	Landscaping
1.4.4.19	Complete Initial Inspection and Punch List
1.4.4.20	Complete Final Inspection
1.4.4.21	Green Field Site - Holt - Site Acceptance
1.4.5	Green Field Site - Baker (Team 1)
1.4.5.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.5.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.5.3	Cure Foundation
1.4.5.4	Construct Shelter and Fuel Tank Foundations
1.4.5.5	Cure Foundations
1.4.5.6	Construct Ground System Around Shelter and Tower
1.4.5.7	Trench Underground Electrical Services
1.4.5.8	Install Electrical System (H-Frame)
1.4.5.9	Install Tower (300'SS)
1.4.5.10	Set Shelter/Generator On Pad
1.4.5.11	Install LP Tank
1.4.5.12	Shore Power Delivered
1.4.5.13	Start Up Generator
1.4.5.14	Building Power Up
1.4.5.15	Install Cable Bridge
1.4.5.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.5.17	Final Site Clean Up
1.4.5.18	Landscaping
1.4.5.19	Complete Initial Inspection and Punch List
1.4.5.20	Complete Final Inspection
1.4.5.21	Green Field Site - Baker - Site Acceptance
1.4.6	Green Field Site - Blackman (Team 2)
1.4.6.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.6.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.6.3	Cure Foundation
1.4.6.4	Construct Shelter and Fuel Tank Foundations
1.4.6.5	Cure Foundations
1.4.6.6	Construct Ground System Around Shelter and Tower
1.4.6.7	Trench Underground Electrical Services
1.4.6.8	Install Electrical System (H-Frame)
1.4.6.9	Install Tower (400'Guyed)
1.4.6.10	Set Shelter/Generator On Pad

1.4.6.11	Install LP Tank
1.4.6.12	Shore Power Delivered
1.4.6.13	Start Up Generator
1.4.6.14	Building Power Up
1.4.6.15	Install Cable Bridge
1.4.6.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.6.17	Final Site Clean Up
1.4.6.18	Landscaping
1.4.6.19	Complete Initial Inspection and Punch List
1.4.6.20	Complete Final Inspection
1.4.6.21	Green Field Site - Blackman - Site Acceptance
1.4.7	Green Field Site - Laurel Hill (Team 1)
1.4.7.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.7.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.7.3	Cure Foundation
1.4.7.4	Construct Shelter and Fuel Tank Foundations
1.4.7.5	Cure Foundations
1.4.7.6	Construct Ground System Around Shelter and Tower
1.4.7.7	Trench Underground Electrical Services
1.4.7.8	Install Electrical System (H-Frame)
1.4.7.9	Install Tower (300'SS)
1.4.7.10	Set Shelter/Generator On Pad
1.4.7.11	Install LP Tank
1.4.7.12	Shore Power Delivered
1.4.7.13	Start Up Generator
1.4.7.14	Building Power Up
1.4.7.15	Install Cable Bridge
1.4.7.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.7.17	Final Site Clean Up
1.4.7.18	Landscaping
1.4.7.19	Complete Initial Inspection and Punch List
1.4.7.20	Complete Final Inspection
1.4.7.21	Green Field Site - Laurel Hill - Site Acceptance
1.4.8	Green Field Site - Almarante (Team 2)
1.4.8.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.8.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.8.3	Cure Foundation
1.4.8.4	<i>Construct Shelter and Fuel Tank Foundations</i>
1.4.8.5	Cure Foundations
1.4.8.6	Construct Ground System Around Shelter and Tower
1.4.8.7	Trench Underground Electrical Services
1.4.8.8	Install Electrical System (H-Frame)
1.4.8.9	Install Tower (400'Guyed)
1.4.8.10	Set Shelter/Generator On Pad
1.4.8.11	Install LP Tank
1.4.8.12	Shore Power Delivered
1.4.8.13	Start Up Generator
1.4.8.14	Building Power Up
1.4.8.15	Install Cable Bridge
1.4.8.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.8.17	Final Site Clean Up
1.4.8.18	Landscaping
1.4.8.19	Complete Initial Inspection and Punch List
1.4.8.20	Complete Final Inspection
1.4.8.21	Green Field Site - Almarante - Site Acceptance
1.4.9	Green Field Site - Dorcas (Team 1)
1.4.9.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.9.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.9.3	Cure Foundation
1.4.9.4	Construct Shelter and Fuel Tank Foundations
1.4.9.5	Cure Foundations

1.4.9.6	Construct Ground System Around Shelter and Tower
1.4.9.7	Trench Underground Electrical Services
1.4.9.8	Install Electrical System (H-Frame)
1.4.9.9	Install Tower (300'SS)
1.4.9.10	Set Shelter/Generator On Pad
1.4.9.11	Install LP Tank
1.4.9.12	Shore Power Delivered
1.4.9.13	Start Up Generator
1.4.9.14	Building Power Up
1.4.9.15	Install Cable Bridge
1.4.9.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.9.17	Final Site Clean Up
1.4.9.18	Landscaping
1.4.9.19	Complete Initial Inspection and Punch List
1.4.9.20	Complete Final Inspection
1.4.9.21	Green Field Site - Dorcas - Site Acceptance
1.4.10	Green Field Site - Crestview (team 2)
1.4.10.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.10.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.10.3	Cure Foundation
1.4.10.4	Construct Shelter and Fuel Tank Foundations
1.4.10.5	Cure Foundations
1.4.10.6	Construct Ground System Around Shelter and Tower
1.4.10.7	Trench Underground Electrical Services
1.4.10.8	Install Electrical System (H-Frame)
1.4.10.9	Install Tower (400'Guyed)
1.4.10.10	Set Shelter/Generator On Pad
1.4.10.11	Install LP Tank
1.4.10.12	Shore Power Delivered
1.4.10.13	Start Up Generator
1.4.10.14	Building Power Up
1.4.10.15	Install Cable Bridge
1.4.10.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.10.17	Final Site Clean Up
1.4.10.18	Landscaping
1.4.10.19	Complete Initial Inspection and Punch List
1.4.10.20	Complete Final Inspection
1.4.10.21	Green Field Site - Crestview - Site Acceptance
1.4.10	Green Field Site - Destin (team 1)
1.4.10.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.10.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.10.3	Cure Foundation
1.4.10.4	Construct Shelter and Fuel Tank Foundations
1.4.10.5	Cure Foundations
1.4.10.6	Construct Ground System Around Shelter and Tower
1.4.10.7	Trench Underground Electrical Services
1.4.10.8	Install Electrical System (H-Frame)
1.4.10.9	Install Tower (400'Guyed)
1.4.10.10	Set Shelter/Generator On Pad
1.4.10.11	Install LP Tank
1.4.10.12	Shore Power Delivered
1.4.10.13	Start Up Generator
1.4.10.14	Building Power Up
1.4.10.15	Install Cable Bridge
1.4.10.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.10.17	Final Site Clean Up
1.4.10.18	Landscaping
1.4.10.19	Complete Initial Inspection and Punch List
1.4.10.20	Complete Final Inspection
1.4.10.21	Green Field Site - Destin - Site Acceptance
1.4.10	Green Field Site - Fort Walton PD (team 2)

1.4.10.1	Access Road, Silt Fence, Site Clearing and Grading
1.4.10.2	Construct Tower Foundation (dig, Inspected, poured)
1.4.10.3	Cure Foundation
1.4.10.4	Construct Shelter and Fuel Tank Foundations
1.4.10.5	Cure Foundations
1.4.10.6	Construct Ground System Around Shelter and Tower
1.4.10.7	Trench Underground Electrical Services
1.4.10.8	Install Electrical System (H-Frame)
1.4.10.9	Install Tower (400'Guyed)
1.4.10.10	Set Shelter/Generator On Pad
1.4.10.11	Install LP Tank
1.4.10.12	Shore Power Delivered
1.4.10.13	Start Up Generator
1.4.10.14	Building Power Up
1.4.10.15	Install Cable Bridge
1.4.10.16	Complete Site Civils (Gravel, Fence, Weed Barrier, etc.)
1.4.10.17	Final Site Clean Up
1.4.10.18	Landscaping
1.4.10.19	Complete Initial Inspection and Punch List
1.4.10.20	Complete Final Inspection
1.4.10.21	Green Field Site - Fort Walton PD - Site Acceptance
1.5	Dispatch Site Review
1.5.1	Okaloosa County EOC
1.5.1.1	Perform Grounding Upgrade (I if needed)
1.5.2	Crestview Dispatch
1.5.2.1	Perform Grounding Upgrade (I if needed)
1.5.3	Fort Walton Beach PD Dispatch
1.5.3.1	Perform Grounding Upgrade (I if needed)
1.5.4	Niceville PD Dispatch
1.5.4.1	Perform Grounding Upgrade (I if needed)
1.5.5	Valparaiso Dispatch
1.5.5.1	Perform Grounding Upgrade (I if needed)
1.6	Radio System Implementation, Optimization, Functional and Acceptance Testing
1.6.1	Sites Install, Optimization and Functional Test
1.6.1.1	EOC
1.6.1.1.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1.6.1.1.2	Install DC Power System in shelter
1.6.1.1.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1.6.1.1.4	Install Primary Core
1.6.1.1.5	Install Distributed Control Point (DCP)
1.6.1.1.6	Install MW and Test Each Circuit
1.6.1.1.7	Ground All Equipment
1.6.1.1.8	Connect to Combiner/Polyphaser/Cable Entry Port
1.6.1.1.9	Integrate Alarms
1.6.1.1.10	Set Levels at RF Site
1.6.1.1.11	Complete Initial Inspection and Punch List
1.6.1.1.12	Green Field Site - EOC- Installation Complete
1.6.1.2	Destin
1.6.1.2.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1.6.1.2.2	Install DC Power System in shelter
1.6.1.2.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1.6.1.2.4	Ground All Equipment
1.6.1.2.5	Connect to Combiner/Polyphaser/Cable Entry Port
1.6.1.2.6	Integrate Alarms
1.6.1.2.7	Set Levels at RF Site
1.6.1.2.8	Install MW and Test Each Circuit
1.6.1.2.9	Complete Initial Inspection and Punch List
1.6.1.2.10	Green Field Site - Destin - Installation Complete
1.6.1.3	Florosa
1.6.1.3.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1.6.1.3.2	Install DC Power System in shelter

1 6.1.3.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.3.4	Ground All Equipment
1 6.1.3.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.3.6	Integrate Alarms
1 6.1.3.7	Set Levels at RF Site
1 6.1.3.8	Install MW and Test Each Circuit
1 6.1.3.9	Complete Initial Inspection and Punch List
1 6.1.3.10	Green Field Site - Florosa - Installation Complete
1 6.1.4	Holt
1 6.1.4.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.4.2	Install DC Power System in shelter
1 6.1.4.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.4.4	Ground All Equipment
1 6.1.4.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.4.6	Integrate Alarms
1 6.1.4.7	Set Levels at RF Site
1 6.1.4.8	Install MW and Test Each Circuit
1 6.1.4.9	Complete Initial Inspection and Punch List
1 6.1.4.10	Green Field Site - Holt- Installation Complete
1 6.1.5	Fort Walton
1 6.1.5.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.5.2	Install DC Power System in shelter
1 6.1.5.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.5.4	Ground All Equipment
1 6.1.5.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.5.6	Integrate Alarms
1 6.1.5.7	Set Levels at RF Site
1 6.1.5.8	Install MW and Test Each Circuit
1 6.1.5.9	Complete Initial Inspection and Punch List
1 6.1.5.10	Green Field Site - Fort Walton - Installation Complete
1 6.1.6	Blackman
1 6.1.6.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.6.2	Install DC Power System in shelter
1 6.1.6.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.6.4	Ground All Equipment
1 6.1.6.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.6.6	Integrate Alarms
1 6.1.6.7	Set Levels at RF Site
1 6.1.6.8	Install MW and Test Each Circuit
1 6.1.6.9	Complete Initial Inspection and Punch List
1 6.1.6.10	Green Field Site - Fort Walton - Installation Complete
1 6.1.7	Baker
1 6.1.7.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.7.2	Install DC Power System in shelter
1 6.1.7.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.7.4	Ground All Equipment
1 6.1.7.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.7.6	Integrate Alarms
1 6.1.7.7	Set Levels at RF Site
1 6.1.7.8	Install MW and Test Each Circuit
1 6.1.7.9	Complete Initial Inspection and Punch List
1 6.1.7.10	Green Field Site - Baker - Installation Complete
1 6.1.8	Almarante
1 6.1.8.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.8.2	Install DC Power System in shelter
1 6.1.8.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.8.4	Ground All Equipment
1 6.1.8.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.8.6	Integrate Alarms
1 6.1.8.7	Set Levels at RF Site
1 6.1.8.8	Install MW and Test Each Circuit

1 6.1.8.9	Complete Initial Inspection and Punch List
1 6.1.8.10	Green Field Site - Almarante - Installation Complete
1 6.1.9	Laurel Hill
1 6.1.9.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.9.2	Install DC Power System in shelter
1 6.1.9.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.9.4	Ground All Equipment
1 6.1.9.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.9.6	Integrate Alarms
1 6.1.9.7	Set Levels at RF Site
1 6.1.9.8	Install MW and Test Each Circuit
1 6.1.9.9	Complete Initial Inspection and Punch List
1 6.1.9.10	Green Field Site - Laurel Hill - Installation Complete
1 6.1.10	Crestview
1 6.1.10.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.10.2	Install DC Power System in shelter
1 6.1.10.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.10.4	Install Back-up Core
1 6.1.10.5	Install Distributed Control Point (DCP)
1 6.1.10.6	Ground All Equipment
1 6.1.10.7	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.10.8	Integrate Alarms
1 6.1.10.9	Set Levels at RF Site
1 6.1.10.1	Install MW and Test Each Circuit
1 6.1.10.1	Complete Initial Inspection and Punch List
1 6.1.10.1	Green Field Site - Crestview - Installation Complete
1 6.1.11	Dorcas
1 6.1.11.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.11.2	Install DC Power System in shelter
1 6.1.11.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.11.4	Ground All Equipment
1 6.1.11.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.11.6	Integrate Alarms
1 6.1.11.7	Set Levels at RF Site
1 6.1.11.8	Install MW and Test Each Circuit
1 6.1.11.9	Complete Initial Inspection and Punch List
1 6.1.11.1	Green Field Site - Dorcas - Installation Complete
1 6.1.11	Fort Walton PD
1 6.1.11.1	Install 800/VHF and Microwave Antennas & Associated Equipment
1 6.1.11.2	Install DC Power System in shelter
1 6.1.11.3	Install New 7-ch P25 800MHz and VHF Equipment, RF Base Stations, and Combiners
1 6.1.11.4	Ground All Equipment
1 6.1.11.5	Connect to Combiner/Polyphaser/Cable Entry Port
1 6.1.11.6	Integrate Alarms
1 6.1.11.7	Set Levels at RF Site
1 6.1.11.8	Install MW and Test Each Circuit
1 6.1.11.9	Complete Initial Inspection and Punch List
1 6.1.11.1	Green Field Site - Fort Walton PD - Installation Complete
1 6.2	Dispatch Install, Optimization and Functional Test
1 6.2.1	ECO
1 6.2.1.1	Install 12 Symphony Consoles
1 6.2.1.2	Connect to MW/Fiber Network
1 6.2.1.3	Install 12 Backup Radios
1 6.2.1.4	Program Console with Templates
1 6.2.1.5	Optimize Consoles
1 6.2.1.6	Install Interfaces & Upgraded Logging Recorder
1 6.2.1.7	Complete Initial Inspection
1 6.2.1.8	Complete Punch list
1 6.2.1.9	Complete Final Inspection
1 6.2.1.10	Okaloosa County EOC Dispatch Center -Installation Complete
1 6.2.2	Crestview Dispatch

1 6.2.2.1	Install 4 Symphony Consoles
1 6.2.2.2	Connect to MW/Fiber Network
1 6.2.2.3	Install 4 Backup Radios
1 6.2.2.4	Program Console with Templates
1 6.2.2.5	Optimize Consoles
1 6.2.2.6	Install Interfaces & Upgraded Logging Recorder
1 6.2.2.7	Complete Initial Inspection
1 6.2.2.8	Complete Punch list
1 6.2.2.9	Complete Final Inspection
1 6.2.2.10	Crestview Dispatch Center - Installation Complete
1 6.2.3	Fort Walton Beach PD Dispatch
1 6.2.3.1	Install 2 Symphony Consoles
1 6.2.3.2	Connect to MW/Fiber Network
1 6.2.3.3	Install 2 Backup Radios
1 6.2.3.4	Program Console with Templates
1 6.2.3.5	Optimize Consoles
1 6.2.3.6	Install Interfaces & Upgraded Logging Recorder
1 6.2.3.7	Complete Initial Inspection
1 6.2.3.8	Complete Punch list
1 6.2.3.9	Complete Final Inspection
1 6.2.3.10	Fort Walton Beach PD Dispatch Center -Installation Complete
1 6.2.4	Niceville PD Dispatch
1 6.2.4.1	Install 2 Symphony Consoles
1 6.2.4.2	Connect to MW/Fiber Network
1 6.2.4.3	Install 2 Backup Radios
1 6.2.4.4	Program Console with Templates
1 6.2.4.5	Optimize Consoles
1 6.2.4.6	Install Interfaces & Upgraded Logging Recorder
1 6.2.4.7	Complete Initial Inspection
1 6.2.4.8	Complete Punch list
1 6.2.4.9	Complete Final Inspection
1 6.2.4.10	Niceville PD Dispatch Center - Installation Complete
1 6.2.5	Valparaiso Dispatch
1 6.2.5.1	Install 2 Symphony Consoles
1 6.2.5.2	Connect to MW/Fiber Network
1 6.2.5.3	Install 2 Backup Radios
1 6.2.5.4	Program Console with Templates
1 6.2.5.5	Optimize Consoles
1 6.2.5.6	Install Interfaces & Upgraded Logging Recorder
1 6.2.5.7	Complete Initial Inspection
1 6.2.5.8	Complete Punch list
1 6.2.5.9	Complete Final Inspection
1 6.2.5.10	Valparaiso Dispatch Center - Installation Complete
1 6.3	Functional Testing
1 6.3.1	Run Functional/System Test at each site
1 6.3.2	Verify Site Alarms
1 6.3.3	Run MW Pre FTP
1 6.3.4	Run Functional/System Test at Each Dispatch Center
1 6.3.5	Coverage Spot Test Validation
1 6.3.6	Resolve Punch List Items
1 6.3.7	Infrastructure Functional Test Completed
1 6.4	Acceptance Testing
1 6.4.1	Infrastructure Final Acceptance Testing (FATP)
1 6.4.1.1	Run ATP at EOC Dispatch
1 6.4.1.2	Run MW ATP at Each Site
1 6.4.1.3	Run ATP at Each Site
1 6.4.1.4	Resolve Punch List Items
1 6.4.1.5	Infrastructure Acceptance Testing Completed
1 6.4.1.6	ATP Sign-Off
1 6.4.2	Coverage Verification Testing (CVT)
1 6.4.2.1	In-Buildings Testing

1 6.4.2.2	Perform Non-Automated Subjective - DAQ (Voice Quality) Drive Test
1 6.4.2.3	Perform Automated Objective Mobile Drive (Signal/BER) Test
1 6.4.2.4	Perform Boat CVT Testing
1 6.4.2.5	Prepare CVT Documentation
1 6.4.2.6	Submit CVT documentation to Okaloosa County
1 6.4.2.7	Sign-off CVT
1.7	Cutover to New System
1.7.1	Executive Cutover
1.7.2	Cutover Signoff
1.7.3	30-Day Operational Test
1.7.3.1	Start 30-Day Test
1.7.3.2	30-Day Test Signoff
1.7.3.3	Certificate of Completion- Start of Warranty
1 8	Okaloosa County Approval to Dismantle Old System
1 8.1	Remove old system
1 9	Radio/Console Personality and Programming
1 9.1	Fleet Mapping and Personality
1 9.1.1	Create Fleet Map Baseline
1 9.1.2	Prepare P25 Fleet Map Workshop
1 9.1.3	P25 Fleet Map Workshop
1 9.1.4	Fleet Mapping and Personality Development
1 9.1.5	Fleet Map and Radio Personalities Approval
1 9.2	Console Template
1 9.2.1	Request Photos of Current Console Layouts
1 9.2.2	Provide Photos of Console Layout
1 9.2.3	Prepare Console Template Workshop
1 9.2.4	Console Template Workshop
1 9.3	Radio Preparation/Programming
1 9.3.1	Test and Prepare Radios for Programming, distribution, and coordinate accessories
1 9.3.2	Develop Existing Mobile and Portable Programming Schedule
1 9.3.3	Program New mobiles and Portables at Williams Facility
1 9.4	Mobile Installation
1 9.4.1	Develop Mobile Installation/Vehicle Delivery Schedule for radios being replaced
1 9.4.2	Mobile Installs by agreed upon schedule
1 9.4.3	Mobile Installation Complete
1.10	Install Control Stations (31)
1.11	Training
1.11.1	Technical Training
1.11.1.1	Technical Staff Training
1.11.1.2	Network Management Training
1.11.2	User Training/Operator Training
1.11.2.1	Train the Trainer Session (50 people)
1.11.2.2	Portable/Mobile User Training (40 2-hr sessions with 25 people)
1.11.2.3	Distribute Portable Radios, Accessories, etc. at Training
1.11.2.4	Dispatcher Training
1.11.2.5	Supervisor Console Configuration Training
1.11.3	System Documentation
1.11.3.1	Submit System Documentation
	END



SECTION: 8

Pricing Pages



WILLIAMS
COMMUNICATIONS, INC.
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE

800 MHz P25 Phase II Summary Page



Okaloosa County, FL

System Components	Cost
SYSTEM INFRASTRUCTURE COSTS SUBTOTAL	\$ 20,390,034.38
TOTAL SYSTEM INFRASTRUCTURE DISCOUNT	\$ (3,024,550.00)
SUBSCRIBER USER EQUIPMENT WITH DISCOUNTS SUBTOTAL	\$ 7,686,257.98
TOTAL FINAL COST =	\$ 25,051,742.36
TOTAL SYSTEM MAINTENANCE COSTS (15 years)	\$ 8,965,615.31

Summary Sheet


This worksheet summarizes all of the previous pricing worksheets to derive a Total Project Cost.

P25 System Primary Core		
P25 System Secondary Core		
P25 Simulcast Control System Main		
P25 Simulcast Control System Backup		
P25 Simulcast Sites EOC (DCP)		
P25 Simulcast Sites Crestview (DCP)		
P25 Simulcast Sites Florosa		
P25 Simulcast Sites Fort Walton		
P25 Simulcast Sites Holt		
P25 Simulcast Sites Baker		
P25 Simulcast Sites Blackman		
P25 Simulcast Sites Laurel Hill		
P25 Simulcast Sites Almarante		
P25 Simulcast Sites Dorcas		
P25 Simulcast Sites Destin Airport		
P25 Simulcast Sites Fort Walton PD		
Network Management Systems		
Console System EOC		
Console System Crestview		
Console System Fort Walton PD		
Console System Niceville PD		
Console System Valparaiso		
Services		


Facilities and Infrastructure	
Spares and Test Equipment	
System shall be enabled for GPS, OTAP, and FDMA high velocity data.	
Include SmartCop API integration for GPS	
Provide additional microwave capacity on each hop to increase support 1 Gbps at a reliability of 99.99% for increase in capacity	
Total Proposed System Turnkey Cost (Before Cost Adjustments)	

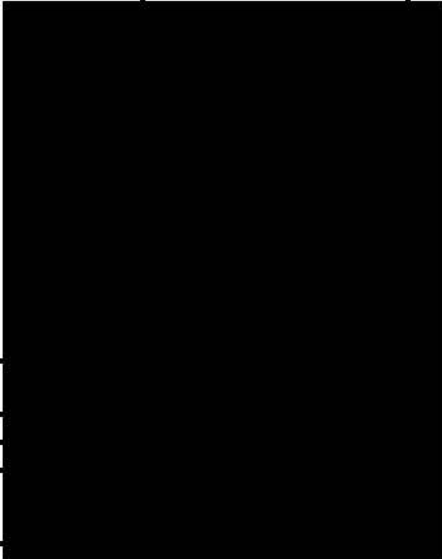


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 System Primary Core < EOC >				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Master Network Core Controller (Geo-Redundant) Harris VIDA Premier Core Talkpaths (278) P25 Talkpaths (14) Console Talkpaths (264) Logging Recorder Interface LICENSE, SQL SERVER 2016 STD, BASE 4CORE LICENSE, CONSOLE LICENSE, CONSOLE TALKPATH LICENSE, P25 SITE LICENSE, P25 TIER 11-17 SITES LICENSE, P25 SITE TALKPATH LICENSE, NETWORK FIRST SITE LICENSE, NETWORK FIRST TALKPATH LICENSE, TRANSCODER TALKPATH LICENSE, NSS, IP LOGGING RECORDER LICENSE, VMWARE, VCENTER, FOUNDATION LICENSE, VMWARE, VCENTER, FOUNDATION, 3YR LICENSE, SUMS, ENDPOINT LICENSE, SUMS, CORE LICENSE, HOST SECURITY, AV, EPO, QTY 51-100 LICENSE, ENM P-RTU, + 3 YR SUPP, BASE LICENSE, ENM P-RTU, +3YR SUPP, GEO-HA	1	\$	
2	Switch, LAN, WAN Network Equipment	1	\$	

**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 System Secondary Core <Crestview>				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Master Network Core Controller (Geo-Redundant) Harris VIDA Premier Core <i>Talkpaths (278)</i> <i>P25 Talkpaths (14)</i> <i>Console Talkpaths (264)</i> <i>Logging Recorder Interface</i> <i>LICENSE, SQL SERVER 2016 STD, BASE 4CORE</i> <i>LICENSE, CONSOLE</i> <i>LICENSE, CONSOLE TALKPATH</i> <i>LICENSE, P25 SITE</i> <i>LICENSE, P25 TIER 11-17 SITES</i> <i>LICENSE, P25 SITE TALKPATH</i> <i>LICENSE, NETWORK FIRST SITE</i> <i>LICENSE, NETWORK FIRST TALKPATH</i> <i>LICENSE, TRANSCODER TALKPATH</i> <i>LICENSE, NSS, IP LOGGING RECORDER</i> <i>LICENSE, VMWARE, VCENTER, FOUNDATION</i> <i>LICENSE, VMWARE, VCENTER, FOUNDATION, 3YR</i> <i>LICENSE, SUMS, ENDPOINT</i> <i>LICENSE, SUMS, CORE</i> <i>LICENSE, HOST SECURITY, AV, EPO, QTY 51-100</i> <i>LICENSE, ENM P-RTU, + 3 YR SUPP, BASE</i> <i>LICENSE ENM P-RTU + 3YR SUPP, GEO HA</i>	1	\$	
2	Switch LAN WAN Network Equipment	1	\$	
5				
6				
7				




**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Control System - Main <EOC>		Name: (Insert respondent name)			
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Discount Percent	Sub-Total
1	Not Required with Harris Virtualized Distributed Control Points				
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
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31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46				Total	


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Control System - Backup <Insert Site Location>		Name: (Insert respondent name)			
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Discount Percent	Sub-Total
1	Not Required with Harris Virtualized Distributed Control Points				
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
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34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46				Total	


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Sites EOC Site (DCP)				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Control Point <i>Harris Virtualized IP Distributed Control Point Primary Site Licens and Software</i>	1	\$	
4	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
5	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
6	Antenna Systems: <i>RFS TX Antenna1 RFS TX Antenna2 RFS RX Antenna Comblent TX 4 CH combiner Comblent TTA M/C</i>	1	\$	
7	Site Development Work <i>Clear & Grade, Up to 50ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
8	12 X 20 Communications Shelter	1	\$	
9	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
10	Tower and foundation <i>Saber 180' SST Site Elevation = 98 feet 2 cellular carrier and 50% growth</i>	1	\$	
11	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
12	DC Power and Accessories	1	\$	


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Sites Crestview Site (DCP)				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Control Point <i>Harris Virtualized IP Distributed Control Point</i> <i>Primary Site Licens and Software</i>	1	\$	
4	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
5	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
6	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
7	Site Development Work <i>Clear & Grade, Up to 750ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
8	12 X 20 Communications Shelter	1	\$	
9	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
10	Tower and foundation <i>Saber 300' SST</i> <i>Site Elevation = 200 feet</i> <i>2 cellular carrier and 50% growth</i>	1	\$	
11	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
12	DC Power and Accessories	1	\$	


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Sites Florosa Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
5	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
6	Site Development Work <i>Clear & Grade, Up to 100ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
7	12 X 20 Communications Shelter	1	\$	
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
9	Tower and foundation <i>Saber 180' SST</i> <i>Site Elevation = 43 feet</i> <i>2 cellular carrier and 50% growth</i>	1	\$	
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
11	DC Power and Accessories	1	\$	


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Sites Fort Walton Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
4	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
6	Site Development Work <i>Clear & Grade, Up to 10ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
7	12 X 20 Communications Shelter	1	\$	
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
9	Tower and foundation <i>Saber 250' SST</i> <i>Site Elevation = 56 feet</i> <i>2 cellular carrier and 50% growth</i>	1	\$	
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
11	DC Power and Accessories	1	\$	


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Sites Holt Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
5	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
6	Site Development Work <i>Clear & Grade, Up to 130ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
7	12 X 20 Communications Shelter	1	\$	
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
9	Tower and foundation <i>Saber 300' SST</i> <i>Site Elevation = 190 feet</i> <i>2 cellular carrier and 50% growth</i>	1	\$	
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
11	DC Power and Accessories	1	\$	

**Appendix B - Pricing Workbook
Okaloosa County, FL**


P25 Simulcast Sites Baker Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
4	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
6	Site Development Work <i>Clear & Grade, Up to 300ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
7	12 X 20 Communications Shelter	1	\$	
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
9	Tower and foundation <i>Saber 300' SST</i> <i>Site Elevation = 246 feet</i> <i>2 cellular carrier and 50% growth</i>	1	\$	
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
11	DC Power and Accessories	1	\$	

**Appendix B - Pricing Workbook
Okaloosa County, FL**


P25 Simulcast Sites Blackman Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
4	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
6	Site Development Work <i>Clear & Grade, Up to 100ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
7	12 X 20 Communications Shelter	1	\$	
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
9	Tower and foundation <i>Saber 300' SST</i> <i>Site Elevation = 210 feet</i> <i>2 cellular carrier and 50% growth</i>	1	\$	
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
11	DC Power and Accessories	1	\$	

\$1,106,494.14


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Sites Laurel Hill Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
4	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
6	Site Development Work <i>Clear & Grade, Up to 300ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
7	12 X 20 Communications Shelter	1	\$	
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
9	Tower and foundation <i>Saber 300' SST</i> <i>Site Elevation = 279 feet</i> 2 cellular carrier and 50% growth	1	\$	
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
11	DC Power and Accessories	1	\$	


**Appendix B - Pricing Workbook
Okaloosa County, FL**

P25 Simulcast Sites Almarante Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
4	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
6	Site Development Work <i>Clear & Grade, Up to 220ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
7	12 X 20 Communications Shelter	1	\$	
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
9	Tower and foundation <i>Saber 300' SST</i> <i>Site Elevation = 266 feet</i> <i>2 cellular carrier and 50% growth</i>	1	\$	
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
11	DC Power and Accessories	1	\$	


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P25 Simulcast Sites Dorcas Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>	1	\$	
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>	1	\$	
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>	1	\$	
4	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>	8	\$	
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>	1	\$	
6	Site Development Work <i>Clear & Grade, Up to 100ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>	1	\$	
7	12 X 20 Communications Shelter	1	\$	
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank	1	\$	
9	Tower and foundation <i>Saber 300' SST</i> <i>Site Elevation = 210 feet</i> <i>2 cellular carrier and 50% growth</i>	1	\$	
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems	1	\$	
11	DC Power and Accessories	1	\$	


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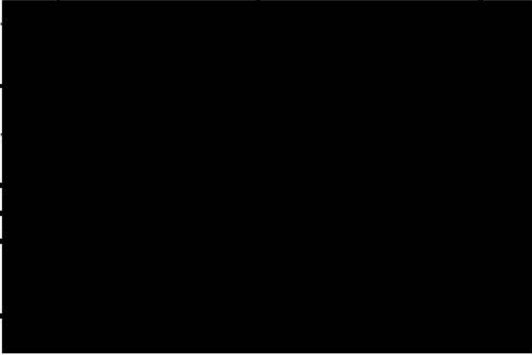
P25 Simulcast Sites Destin Airport				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller <i>Harris IP Simulcast Network Sentry</i>			
2	Switch, LAN, WAN Network Equipment <i>Harris IP Simulcast Network Equipment</i>			
3	Sync Equipment <i>Harris IP Simulcast Transmit Site Common Equipment</i>			
5	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>			
5	Antenna Systems: <i>RFS TX Antenna1</i> <i>RFS TX Antenna2</i> <i>RFS RX Antenna</i> <i>Comblent TX 4 CH combiner</i> <i>Comblent TTA M/C</i>			
6	Site Development Work <i>Clear & Grade, Up to 500ft Access Road, Site Area, Erosion Control, Elevated Shelter and Generator Foundation , Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>			
7	12 X 20 Communications Shelter			
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank			
9	Tower and foundation <i>Saber 150' SST</i> <i>Site Elevation = 13 feet</i> <i>2 cellular carrier and 50% growth</i>			
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems			
11	DC Power and Accessories			

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P25 Simulcast Sites Fort Walton PD Site				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Site Controller Harris IP Simulcast Network Sentry			
2	Switch, LAN, WAN Network Equipment Harris IP Simulcast Network Equipment			
3	Sync Equipment Harris IP Simulcast Transmit Site Common Equipment			
5	Trunked Base Stations (8 Channels) <i>Harris Mastr V Linear Simulcast 800MHz Base Stations , DC Power Supplies</i>			
5	Antenna Systems: RFS TX Antenna1 RFS TX Antenna2 RFS RX Antenna Comblent TX 4 CH combiner Comblent TTA M/C			
6	Site Development Work <i>Clear & Grade, Up to 50ft Access Road, Site Area, Erosion Control, Shelter and Generator Foundation, Generator Installation, Shelter Installation, Electrical run up to 200 yards, Grounding, Telco / Fiber, Fencing , Landscaping, Tower Foundation, Tower Erection, and 2-Way and Microwave Installation</i>			
7	12 X 20 Communications Shelter			
8	Cummins 50kW, 60HZ, Standby, Natural Gas/Propane Genset, 1,000 gallon tank			
9	Tower and foundation <i>Saber 180' SST Site Elevation = 10 feet 2 cellular carrier and 50% growth</i>			
10	Aviat Eclipse Microwave Indoor Equipment and Antenna Systems			
11	DC Power and Accessories			

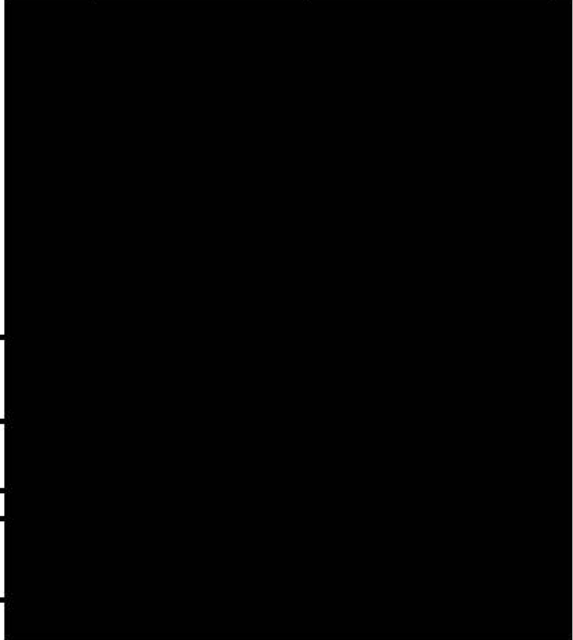
**Appendix B - Pricing Workbook
Okaloosa County, FL**

Network Management System				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Network Control and Management System Harris Enhanced Enterprise Network Manager All in one Network Management Monitoring & Reporting Platform VM Ware resides on V DA GEO Location Cores			
2	Global Management System (SITE GATE) Combined management system for all proposed systems			
3				
4				




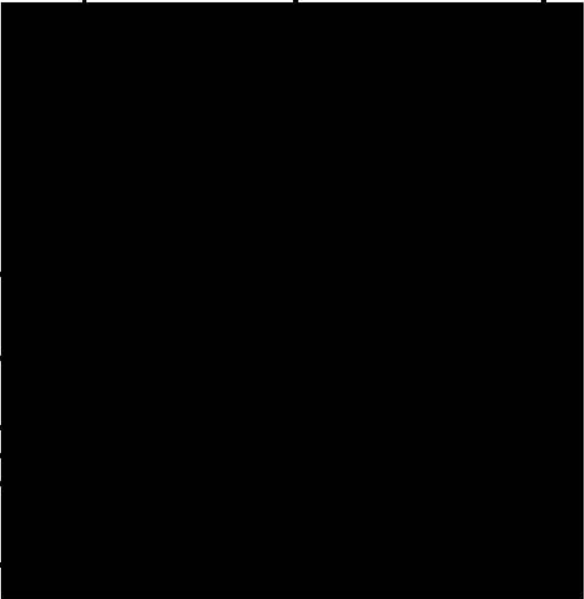
**Appendix B - Pricing Workbook
Okaloosa County, FL**

Console System EOC				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Harris Symphony Premier Bundle Dispatch Console includes L CENSE AES AND DES LEVEL ENCRYPT ON L CENSE CONVENT ONAL CONTROLS L CENSE PAG NG CAPAB L TY L CENSE ADVANCED PAG NG SPEAKER NANO SYMPHONY MON TOR 22 N CLASS NON-TOUCHSCREEN HD CABLE D SPLAYPORT TO DV -D 10FT MOUSE OPT CAL USB SCROLL WHEEL KEYBOARD 104 KEY USB S NGLE FOOTSW TCH USB SYMPHONY DESK M C DB9 JACK BOX 6 W RE Adapter 6 Wire Jackbox to Headset HEADSET OVER-THE HEAD SOL D BOOM License Vocoder			
2	Conventional Channel Gateways Harris Network First Conventional Interoperability Gateway Conventional Site Router with Cisco 1921			
3	Desktop Station,CS-7000,Local Control -Backup Radio			




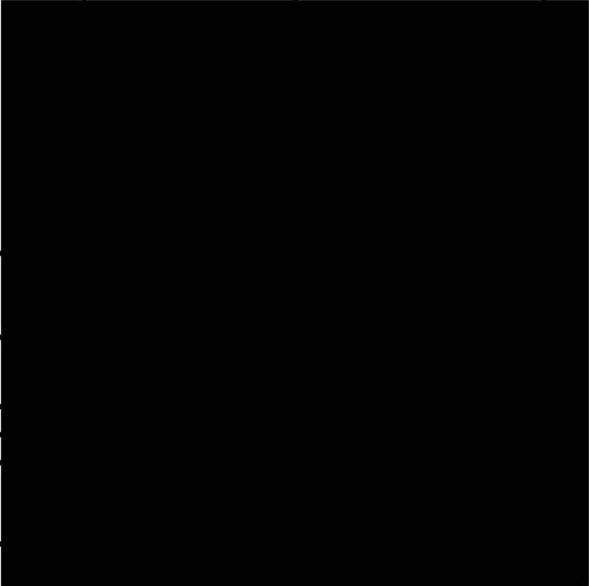
**Appendix B - Pricing Workbook
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Console System Crestview				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Harris Symphony Premier Bundle Dispatch Console includes LICENSE AES AND DES LEVEL ENCRYPT ON LICENSE CONVENTIONAL CONTROLS LICENSE PAGING CAPABILITY LICENSE ADVANCED PAGING SPEAKER NANO SYMPHONY MONITOR 22 IN CLASS NON-TOUCHSCREEN HD CABLE DISPLAYPORT TO DVI-D 10FT MOUSE OPTICAL USB SCROLL WHEEL KEYBOARD 104 KEY USB SINGLE FOOTSWITCH USB SYMPHONY DESK M/C DB9 JACK BOX 6 WIRE Adapter 6 Wire Jackbox to Headset HEADSET OVER-THE HEAD SOLID BOOM License Vocoder			
2	Conventional Channel Gateways Harris Network First Conventional Interoperability Gateway Conventional Site Router with Cisco 1921			
3	Desktop Station,CS-7000,Local Control -Backup Radio			




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Console System Fort Walton				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Harris Symphony Premier Bundle Dispatch Console includes 1 LICENSE AES AND DES LEVEL ENCRYPT ON 1 LICENSE CONVENTIONAL CONTROLS 1 LICENSE PAGING CAPABILITY 1 LICENSE ADVANCED PAGING SPEAKER NANO SYMPHONY MONITOR 22 IN CLASS NON-TOUCHSCREEN HD CABLE DISPLAYPORT TO DV-D 10FT MOUSE OPTICAL USB SCROLL WHEEL KEYBOARD 104 KEY USB SINGLE FOOTSWITCH USB SYMPHONY DESK M/C DB9 JACK BOX 6 WIRE Adapter 6 Wire Jackbox to Headset HEADSET OVER-THE HEAD SOLID BOOM License Vocoder			
2	Conventional Channel Gateways Harris Network First Conventional Interoperability Gateway Conventional Site Router with Cisco 1921			
3	Desktop Station,CS-7000,Local Control -Backup Radio			




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Console System Niceville				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Harris Symphony Premier Bundle Dispatch Console includes L CENSE AES AND DES LEVEL ENCRYPT ON L CENSE CONVENT ONAL CONTROLS L CENSE PAG NG CAPAB L TY L CENSE ADVANCED PAG NG SPEAKER NANO SYMPHONY MON TOR 22 N CLASS NON-TOUCHSCREEN HD CABLE D SPLAYPORT TO DV -D 10FT MOUSE OPT CAL USB SCROLL WHEEL KEYBOARD 104 KEY USB S NGLE FOOTSW TCH USB SYMPHONY DESK M C DB9 JACK BOX 6 W RE Adapter 6 Wire Jackbox to Headset HEADSET OVER-THE HEAD SOL D BOOM License Vocoder			
2	Conventional Channel Gateways Harris Network First Conventional Interoperability Gateway Conventional Site Router with Cisco 1921			
3	Desktop Station,CS-7000,Local Control -Backup Radio			



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Console System Valparaiso				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Harris Symphony Premier Bundle Dispatch Console includes L CENSE AES AND DES LEVEL ENCRYPT ON L CENSE CONVENT ONAL CONTROLS L CENSE PAG NG CAPAB L TY L CENSE ADVANCED PAG NG SPEAKER NANO SYMPHONY MON TOR 22 N CLASS NON-TOUCHSCREEN HD CABLE D SPLAYPORT TO DV -D 10FT MOUSE OPT CAL USB SCROLL WHEEL KEYBOARD 104 KEY USB S NGLE FOOTSW TCH USB SYMPHONY DESK M C DB9 JACK BOX 6 W RE Adapter 6 Wire Jackbox to Headset HEADSET OVER-THE HEAD SOL D BOOM License Vocoder			
2	Conventional Channel Gateways Harris Network First Conventional Interoperability Gateway Conventional Site Router with Cisco 1921			
3	Desktop Station,CS-7000,Local Control -Backup Radio			





800 MHz P25 Phase II Subscriber Equipment - Cover Page

Including Optional Scope Adjustment from ITN Requirements Intended to be Purchased/Clarified


Subscriber Equipment Details - Attach additional pages as necessary.	Cost
Extend subscriber warranty through year 5 for initial radios purchased for all equipment.	
All radios shall be equipped with OTAP, AES encryption, and for radio management	
Confirm that the County shall be able to reduce the total subscriber quantities by up to 10% without a reduction in any line-item or incentive discounts provided	
Vendor shall provide the line-item discount for additional subscribers and accessories purchased after system acceptance for a minimum of 5 additional years after system acceptance for all County system users. Same as indicated below.	
Vendor shall identify the commitment for any longer-term discounts beyond 5 years to at least 15 years for all County System Users. Should be definitive i.e. % off list or additional percent of state contract	
Confirm that features purchased as a one-time purchase (feature or license) shall not be converted to a subscription service in the future unless there is no cost for such conversion.	
Identify any features purchased as a one-time purchase that will be a subscription service in the future purchases.	
Radio management system proposed for County and cost of the system initially and annually.	
Williams--- Portables will be XL-185P portables. Provide the per-unit price reduction for an XL-185P portable to be replaced with a XL-95P portable if this option is desired without penalty. Total 1,450	
EMS Portables (40): Higher Tier radio w/ antenna (IP68) Standard shoulder mic Two- 12+ hour batteries with charger AES Encryption OTAP Enabled Radio Management Enabled Standard color case	\$
Fire Department Portables: (505) Higher Tier radio w/ antenna (IP68) Fire rated shoulder mic Two- 12+ hour batteries with charger Intrinsically safe batteries/radio configuration OTAP Enabled Radio Management Enabled Hi-Visibility color case - The mic or the radio case under the jacket?	\$
Law Enforcement/Corrections Portables: (735) Higher Tier radio w/ antenna (IP68) Standard shoulder mic Two- 12+ hour batteries with charger AES Encryption GPS Enabled (All Police plus Jail transport officers 625) OTAP Enabled Radio Management Enabled Standard color case	\$
Emergency Management/Beach Safety Portables (70): Higher Tier radio w/ antenna (IP68) Standard shoulder mic Two- 12+ hour batteries with charger OTAP Enabled Radio Management Enabled Standard color case	\$
Non-Public Safety Portables (100): These may go to a lower tier of radio Higher Tier radio w/ antenna (IP68) Two- 12+ hour batteries with charger OTAP Enabled Radio Management Enabled Standard color case	\$
Console Radios (30) - Installation and programming included assuming new antenna/line on building rooftop	\$
Mobile Vehicle Radios (875) (model specified in ITN). All antennas, installation and programming included.	\$
Bank Chargers (31)	\$
INITIAL SUBSCRIBER USER EQUIPMENT TOTAL WITH DISCOUNT	\$ 7,686,257.98
Optional Scope Adjustment from ITN Requirements that may be Purchased	
Per unit cost of reprogramming any radio units any existing equipment subscriber units the vendor currently has deployed in Okaloosa County that will work on the new system	\$65.00 per for reprogramming
Per unit trade in values for individual models of vendor equipment models currently deployed in Okaloosa County	\$100.00 per unit


**Appendix B - Pricing Workbook
Okaloosa County, FL**

Portable Radios EMS				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	PORTABLE,XL-185P 7/800MHZ, PKP,BLK,US	40	\$	
	OPERAT ON LOAD N FOG PERSONAL TY	40	\$	
	FEATURE P25 PHASE 2 TDMA	40	\$	
	FEATURE, SINGLE-KEY AES ENCRYPTION	40	\$	
	FEATURE S NGLE-KEY DES ENCRYPT ON	40	\$	
	FEATURE PACKAGE P25 TRUNK NG	40	\$	
	FEATURE PROF LE OTAP	40	\$	
	FEATURE S NGLE BAND 7/800	40	\$	
	BATTERY L - ON H -CAPAC TY 4800MAH	80	\$	
	ANTENNA WH P 1/4 WAVE 762-870MHZ	40	\$	
	CASE NYLON BLACK BELT LOOP D-SW VEL	40	\$	
	CHARGER 1-BAY XL-185P	40	\$	
	SPEAKER M CROPHONE EMER BUTTON	40	\$	
	Unit Total=		\$	
				EMS XL-185


Portable Radios Fire Dept.				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	PORTABLE,XL-185P 7/800MHZ, PKP,BLK,US	505	\$	
	OPERAT ON LOAD N FOG PERSONAL TY	505	\$	
	FEATURE P25 PHASE 2 TDMA	505	\$	
	FEATURE, SINGLE-KEY AES ENCRYPTION	505	\$	
	FEATURE S NGLE-KEY DES ENCRYPT ON	505	\$	
	FEATURE PACKAGE P25 TRUNK NG	505	\$	
	FEATURE PROF LE OTAP	505	\$	
	FEATURE S NGLE BAND 7/800	505	\$	
	BATT L - ON 4800 H -CAP HAZLOC RAD O C1	1010	\$	
	ANTENNA WH P 1/4 WAVE 762-870MHZ	505	\$	
	CASE NYLON BLACK BELT LOOP D-SW VEL	505	\$	
	CHARGER 1-BAY XL-185P	505	\$	
	SPEAKER M C 500F XL-185P	505	\$	
	Unit Total=		\$	
				FD XL-185

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Portable Radios Law Enforcement				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	PORTABLE,XL-185P 7/800MHZ, PKP,BLK,US	735	\$	
	OPERAT ON LOAD N FOG PERSONAL TY	735	\$	
	FEATURE P25 PHASE 2 TDMA	735	\$	
	FEATURE, SINGLE-KEY AES ENCRYPTION	735	\$	
	FEATURE S NGLE-KEY DES ENCRYPT ON	735	\$	
	FEATURE PACKAGE P25 TRUNK NG	735	\$	
	FEATURE PROF LE OTAP	735	\$	
	FEATURE S NGLE BAND 7/800	735	\$	
	BATTERY L - ON H -CAPAC TY 4800MAH	1470	\$	
	ANTENNA WH P 1/4 WAVE 762-870MHZ	735	\$	
	CASE NYLON BLACK BELT LOOP D-SW VEL	735	\$	
	CHARGER 1-BAY XL-185P	735	\$	
	SPEAKER M CROPHONE EMER BUTTON	735	\$	
	Unit Total=		\$	
Law Enforcement XL-185				

Portable Radios Emergency Management/Beach Safety Portables				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	PORTABLE,XL-185P 7/800MHZ, PKP,BLK,US	70	\$	
	OPERAT ON LOAD N FOG PERSONAL TY	70	\$	
	FEATURE P25 PHASE 2 TDMA	70	\$	
	FEATURE, SINGLE-KEY AES ENCRYPTION	70	\$	
	FEATURE S NGLE-KEY DES ENCRYPT ON	70	\$	
	FEATURE PACKAGE P25 TRUNK NG	70	\$	
	FEATURE PROF LE OTAP	70	\$	
	FEATURE S NGLE BAND 7/800	70	\$	
	BATTERY L - ON H -CAPAC TY 4800MAH	140	\$	
	ANTENNA WH P 1/4 WAVE 762-870MHZ	70	\$	
	CASE NYLON BLACK BELT LOOP D-SW VEL	70	\$	
	CHARGER 1-BAY XL-185P	70	\$	
	SPEAKER M CROPHONE EMER BUTTON	70	\$	
	Unit Total=		\$	
Emergency Management/Beach Safety Portables XL-185				


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Portable Radios Non-Public Safety				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	PORTABLE,XL-185P 7/800MHZ, PKP,BLK,US	100	\$	
	OPERAT ON LOAD N FOG PERSONAL TY	100	\$	
	FEATURE P25 PHASE 2 TDMA	100	\$	
	FEATURE, SINGLE-KEY AES ENCRYPTION	100	\$	
	FEATURE S NGLE-KEY DES ENCRYPT ON	100	\$	
	FEATURE PACKAGE P25 TRUNK NG	100	\$	
	FEATURE PROF LE OTAP	100	\$	
	FEATURE S NGLE BAND 7/800	100	\$	
	BATTERY L - ON H -CAPAC TY 4800MAH	200	\$	
	ANTENNA WH P 1/4 WAVE 762-870MHZ	100	\$	
	CASE NYLON BLACK BELT LOOP D-SW VEL	100	\$	
	CHARGER 1-BAY XL-185P	100	\$	
		Unit Total=	\$	
	Non-Public Safety Portables XL-185			

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Okaloosa County, FL**

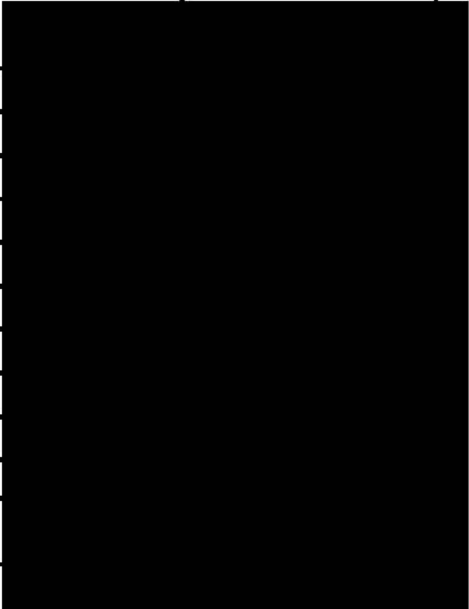
Mobile Radios <All Users>				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	MOBILE XG-25M 700/800 MHZ 35W	875	\$	
2	Feature 512 Systems/Groups	875	\$	
3	Feature P25 Phase 2 TDMA	875	\$	
4	FEATURE SINGLE-KEY AES ENCRYPTION	875	\$	
5	Feature Single-Key DES Encryption	875	\$	
6	Feature Package P25 Trunking	875	\$	
7	Kit Accessories XG-25M	875	\$	
8	Microphone Standard XG-25M	875	\$	
9	Antenna Element 700/800 2dB Low Profile	875	\$	
10	Antenna Base Standard Roof Mnt Low Loss	875	\$	
11				
12	Services: Programming and Installation (Dash Mount)	875	\$	

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Consolette Stations <All Users>				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	MOBILE,XG-75M/M7300,764-870MHZ,HALF DPLX	30	\$	
2	Feature Max(1024+) System/Groups	30	\$	
3	FEATURE SINGLE-KEY AES ENCRYPT ON	30	\$	
4	Feature Single-Key DES Encryption	30	\$	
5	Feature Package P25 Trunking	30	\$	
6	Desktop Station,CS-7000,Local Control	30	\$	
7	Control Unit CH721 Scan Front Mount	30	\$	
8	Microphone Desktop	30	\$	
9	Antenna 700/800MHz 6.5 dB Gain Yagi	30	\$	
10				
11	Services: Programming and Installation	30	\$	
12				

Services (Systemwide)				
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Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	System Installation, Optimization, and Programming	1	\$	
2	Project Management	1	\$	
3	System Engeneering	1	\$	
4	Training	1	\$	
5	Talk Group & Personality Development	1	\$	
6	Decommission of Old Equipment	1	\$	
7				
8				
9				
10				
11				
12				




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Facilities and Infrastructure				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	Tait ASIP VHF Simulcast Paging System (All Sites) <i>TB9400 Single 100Wattsatt Chassis Assembly</i> <i>TB9400 P25 Reciter 148-174MHz</i> <i>TB94 Linear PA 148-174M 100Watts</i> <i>TB9000 Power Management Unit DC48volts with Aux12volts</i> <i>Central Voter</i> <i>Simulcast Enable</i> <i>IP Networking Satellite</i> <i>TN9100 Subrack Multi-Gateways, 5 capacity</i> <i>TN9100 P25 console gateway reciter with DES</i> <i>TB9000 Power Management Unit DC48volts with Aux12volts</i> <i>Service Advantage Year 1</i> <i>Antenna-VHF 150/160m-6 dB/9dB DB224A</i> <i>Antenna-Side Mount Kit-Db224/2</i>	1	\$	
2	New site land acquisition for Greenfield sites	3	\$	
3	Site Acquisition Services <i>2-C</i> <i>FAA/ASAC</i> <i>FCC</i> <i>Title</i> <i>Utility Coordination</i> <i>NEPA/THPO/SHPO</i> <i>Tribal Fees</i> <i>Phase 1 Environmental Assessment</i>	12	\$	
4	Logging Recorder Upgrade <i>Upgrade from ALS.x - Verint Recording Public Safety Integration Package</i>	1	\$	



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Spares				
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total
1	RFU EHP RU600v4 F TR L6 GHz 5925-6425 MHz	2	\$	
2	RFU MP RU600v4 F TR 5 8-L6-U6 GHz 5725-7125 MHz	4	\$	
3	FAN TRAY K T RU600v4 (2 Fan Trays per Kit)	3	\$	
4	DAC GE3 G GAB T ETHERNET SW TCH CARD	3	\$	
5	NUE 2RU FAN CARD	3	\$	
6	NODE PROTECT ON CARD H GH OUTPUT	3	\$	
7	ECL PSE NODE CONTROLLER CARD SER AL MGMT V2	2	\$	
8	RAC 70 QPSK-4096QAM NO XP C ACM	4	\$	
9	AUX ALARM /O CARD	2	\$	
10	CABLE PROT / BR DGE NG GE3 D RECT F T 500mm (037-579461-500 REV A)	2	\$	
11	SFP OPT G GE 850nm MMF LC 550m 0 to 70C (LM28-C3S-TC-N)	2	\$	
12	CABLE F BRE OPT CS OUTDOOR MULT -MODE 50/125 OM2 2XLC TO 2XLC 5M NO GLAND	2	\$	
13	Cable GPS Ant Outdoor 100ft/Netclock	1	\$	
14	ROUTER 2921 AC L3 SW TCH MDL NO ENCRYPT	1	\$	
15	Router 1921 Advanced Security AC Power	1	\$	
16	Power Supply 120VAC 60Hz 12/24VDC	1	\$	
17	Switch Cisco 2960	1	\$	
18	K T MTG HDWR C SCO 2960 MASTR /V CAB	1	\$	
19	Cable GPS Antenna 50ft	1	\$	
20	ANTENNA 1574-1606 MHz W TH MOUNT	1	\$	
21	Filter, Surge Protector, 800-2500MHz	1	\$	
22	Station MASTR V P25T 700MHz	1	\$	
23	Power Amplifier Linear 700 MHz	1	\$	
24	Busbar HPA/PS MASTR V	1	\$	
25	Power Supply 110-240V AC MASTR V	1	\$	
39	Power Supply Shelf, 1st Position	1	\$	
40	CABLE DC POWER 48 N	1	\$	
41	Processor Baseband Module MASTR V	1	\$	
42	Cable Assembly RF RG223 BNC/SMA 5ft	1	\$	
43	PANEL XCONNECT MASTR V	1	\$	
44	Cable Xconnect-Baseband Shelf #1	1	\$	
16	Kit Cable Ch #1 2 9 10 17 18 MASTR V P	1	\$	
17	Cable Assembly RF RG223 BNC/SMA 4ft	1	\$	
18	SW SYMPHONY PC APP & W N 10 MAGE	1	\$	
19	CONSOLE BUNDLE FOUNDAT ON W N10	1	\$	
20	SPEAKER NANO SYMPHONY	1	\$	
21	BMR12H	1	\$	
22	BMR12O	1	\$	
23	BMR10-OT1 5	1	\$	
24	BMR12HT125	1	\$	
25	TX combiner	1	\$	
39	TTA M/C	1	\$	
40				
41				
42				
43				
44				
45				
46				

**Appendix B - Pricing Workbook
Okaloosa County, FL**

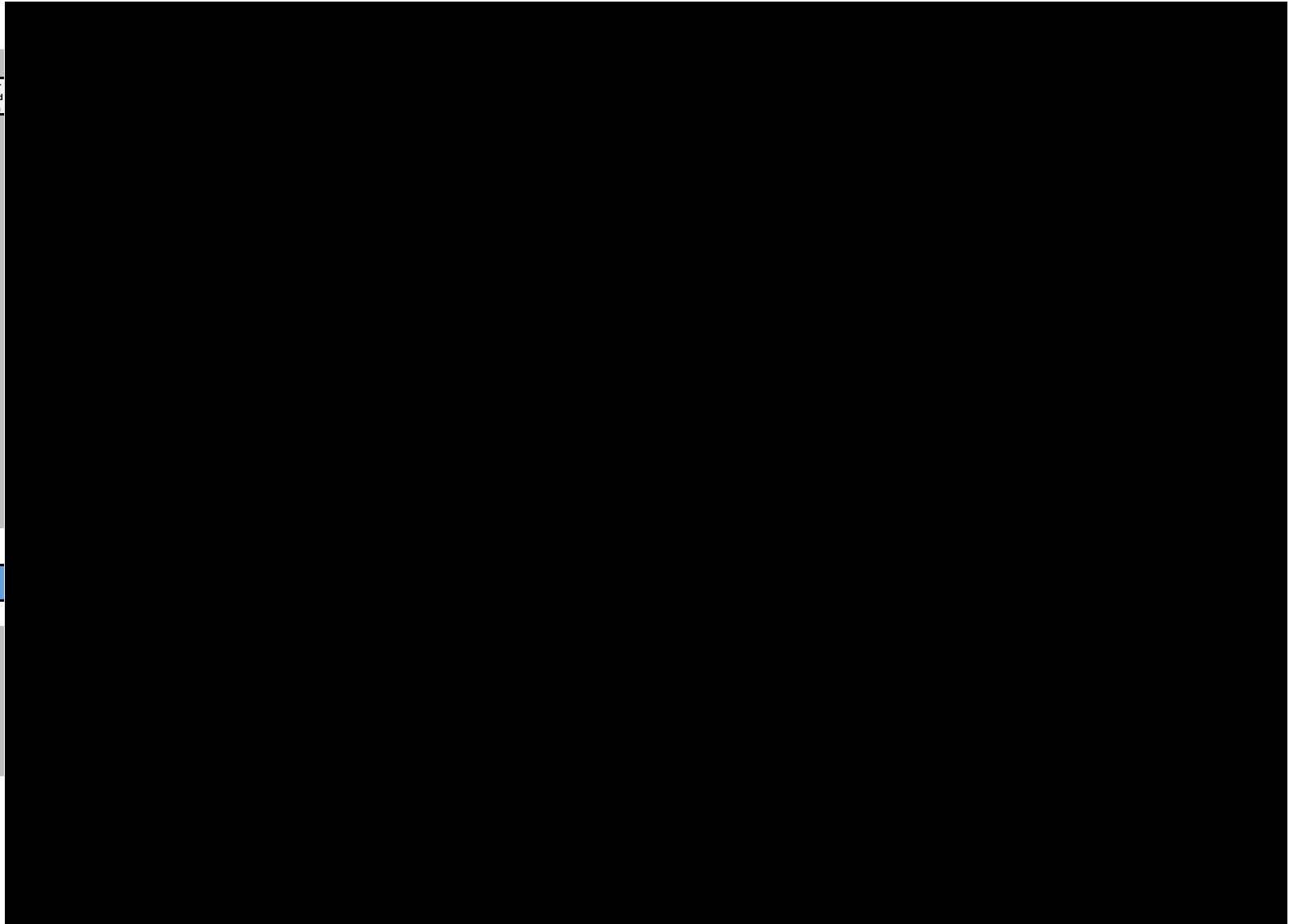
	Spares			
Item	Description	Estimated Qty / Hours	Unit Price / Hourly Rate	Sub-Total

Total 20 Year Cost of Ownership		
Item	Service Description	Year Includ Warra
	P25 System Upgrade Agreement Hardware and Software	
2	Remote echnical Support	
3	System Mon toring	
4	System Dispatch Service	
5	Field echnical Support	
6	Equipment Annual Preventive Maintenance	
7	Equipment Parts Replacement	
8	Microwave Service	
9	Security Update Service includes antivirus, security patches	
0	ower and S te maintenance (Gen. owr,Compound)	
11	Discount	
Total 20 Year Cost of Ownership		


Note: Year 1 begins upon system acceptance.

System 15 Year Total = \$

	Extended Warranty Subscribers (Per Unit \$49.00)
2	Subscriber Preventive Maintenance Plan 1 year interval (Per Subscriber)
3	Subscriber Preventive Maintenance Plan 2 year interval (Per Subscriber)
3	Subscriber Accidental damage replacement Plan (Per Subscriber)



**Appendix B - Pricing Workbook
Okaloosa County, FL**

Hardware Refresh System components		
Item	Description	Qty
1	SERVER, DELL R640, PREMIER	2
2	SERVER, DELL R440, VMT	1
3	KIT, NET SENTRY, CNTL/DATA, DC PWR, WIN10	11
4	Dispatch CONSOLE, BUNDLE, PREMIER	22
5	ROUTER, C881-K9, ADV IP SVC	2
6	ROUTER, ISR4221/K9	9
7	FIREWALL, ASA5506-X W/SEC+/ANYCON-25USR	2
8	SWITCH, C3650-24TS-L, DC, LANBASE	22
9	ROUTER, ISR4321	2
10	SWITCH, CATALYST 3650 24P IP	2
11	ROUTER, ISR4321, APPX LIC	2



TECHNICAL RESPONSE

PROJECT 25 PUBLIC SAFETY RADIO NETWORK

AUGUST 14TH 2020





WILLIAMS
COMMUNICATIONS, INC
WIRELESS TECHNOLOGIES

August 14, 2020
Okaloosa County Purchasing
Jeffrey A. Hyde, Purchasing Manager
5479A Old Bethel Road
Crestview, FL 32536

Dear Mr. Hyde:

On behalf of Williams Communications, Inc. a Florida-owned and operated wireless critical communications company since 1959, we greatly appreciate this opportunity to provide Okaloosa County with our enclosed response to the County's ITN PS 33-20, Public Safety Radio Network. It is our belief that the proposal submitted herein will provide the most reliable public safety radio network that meets or exceeds Okaloosa's current and future priorities for critical first responder communications.

Our collective team of project managers, engineers, system design professionals, local real estate acquisition, and legal professionals, have worked tirelessly these past few months to put together an exceptional custom solution for Okaloosa County. Our proposal ensures that each of the county's ITN requirements and priorities for coverage, sustainability, governance, redundancy, and capacity are met.

As an authorized L3Harris solutions provider, the Williams' proposal offers an L3Harris fully compliant eleven site, seven channel, geo-diverse distributed control point system with twenty-two (22) L3Harris symphony consoles for dispatch, and L3Harris portable and mobile radios, equipped with single key AES encryption (at no cost to Okaloosa) for Okaloosa County's first response personnel. What this means for Okaloosa first responders is that this proposal offers a highly redundant, fail-safe system that provides for clear, reliable, interoperable voice and data communications across all of Okaloosa county's public safety's agencies and divisions. One system, one device, one voice.

Partnering with L3Harris, a long-standing American-based, Florida headquartered, global leader in technology solutions, brings an additional level of resources and system reliability to Okaloosa County. L3Harris provides solutions for American space, defense, public safety, and tactical communications. Because of our long-standing relationship with L3Harris, our systems engineers, technical, and service personnel are certified in all aspects of L3Harris public safety solutions systems and equipment. Williams has the knowledge, experience, and a solid reputation in critical communication systems and have supported Florida's first responders for more than 60 years. Many of our personnel and business partners live and work in and around Okaloosa County. We have a vested interest in you and ensuring your long-standing and future success.

We look forward to discussing our proposal more in-depth and appreciate the opportunity to participate in this ITN and provide the best solution, at the best value, to the Okaloosa County community.

Best Regards,

Bryan Kocher
President, Williams Communications, Inc.

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* THIS RESPONSE TO ITN PS 33-20 INCLUDES CONFIDENTIAL TRADE SECRET AND COMPETITIVELY SENSITIVE INFORMATION, EXEMPT FROM DISCLOSURE AS PUBLIC RECORD, INCLUDING DISCLOSURE TO OTHER RESPONDENTS TO THIS ITN, PURSUANT TO FLORIDA STATUTES, SECTIONS 812.081 AND 815.04. WILLIAMS COMMUNICATIONS DESIGNATES THOSE PORTIONS OF THIS RESPONSE THAT ARE CONFIDENTIAL AND WHICH SHOULD BE REDACTED WHEN PRODUCING ANY COPY OF THIS RESPONSE AS PERMITTED BY FLORIDA LAW. WILLIAMS COMMUNICATIONS PROHIBITS DISCLOSURE OF ANY UNREDACTED COPY OF THIS RESPONSE AS PART OF A PUBLIC RECORD DISCLOSURE OR AS PART OF ANY DISCLOSURE (WRITTEN OR VERBAL) TO A COMPETING RESPONDENT TO THIS ITN PS 33-20. WILLIAMS COMMUNICATIONS REQUESTS THAT OKALOOSA COUNTY EXERCISE ITS STATUTORY DUTY TO SAFEGUARD THE CONFIDENTIAL AND EXEMPT INFORMATION AS DESIGNATED IN THIS RESPONSE. THE CONFIDENTIAL DESIGNATIONS IN THIS RESPONSE ARE WITHOUT EXCLUSION OR LIMITATION OF ANY OTHER INFORMATION IN THIS RESPONSE THAT IS DEEMED CONFIDENTIAL AND EXEMPT FROM FLORIDA PUBLIC RECORDS LAWS.



INVITATION TO NEGOTIATE (ITN) & RESPONDENT'S ACKNOWLEDGEMENT

ITN TITLE:
Project 25 Public Safety Radio Network

ITN NUMBER:
ITN PS 33-20

ISSUE DATE: May 18, 2020 at 8:00 A.M.

PRE-PROPOSAL MEETING : June 11, 2020 at 9:00 A.M.

LAST DAY FOR QUESTIONS: ITN OPENING June 18, 2020 at 3:00 P.M.

DATE & TIME: July 17, 2020 at 3:00 P.M.

NOTE: PROPOSALS RECEIVED AFTER THE PROPOSAL OPENING DATE & TIME WILL NOT BE CONSIDERED.

Okaloosa County, Florida solicits your company to submit a proposal on the above referenced goods or services. All terms, specifications and conditions set forth in this ITN are incorporated into your response. A proposal will not be accepted unless all conditions have been met. All proposals must have an authorized signature in the space provided below. All envelopes containing sealed proposals must reference the "ITN Title", "ITN Number" and the "ITN Due Date & Time". Okaloosa County is not responsible for lost or late delivery of proposals by the U.S. Postal Service or other delivery services used by the respondent. Neither faxed nor electronically submitted proposals will be accepted. Proposals may not be withdrawn for a period of ninety (90) days after the proposal opening unless otherwise specified.

RESPONDENT ACKNOWLEDGEMENT FORM BELOW MUST BE COMPLETED, SIGNED, AND RETURNED AS PART OF YOUR RESPONSE. RESPONSES WILL NOT BE ACCEPTED WITHOUT THIS FORM, SIGNED BY AN AUTHORIZED AGENT OF THE RESPONDENT.

COMPANY NAME Williams Communications, Inc.

MAILING ADDRESS 5046 Tennessee Capital Blvd

CITY, STATE, ZIP Tallahassee Fl, 32303

FEDERAL EMPLOYER'S IDENTIFICATION NUMBER (FEIN): 59-0908637

TELEPHONE NUMBER: 850251-0191 EXT: _____ FAX: 850-575-0346

EMAIL: bkocher@wmscom.com

I CERTIFY THAT THIS PROPOSAL IS MADE WITHOUT PRIOR UNDERSTANDING, AGREEMENT, OR CONNECTION WITH ANY OTHER RESPONDENT SUBMITTING A PROPOSAL FOR THE SAME MATERIALS, SUPPLIES, EQUIPMENT OR SERVICES, AND IS IN ALL RESPECTS FAIR AND WITHOUT COLLUSION OR FRAUD. I AGREE TO ABIDE BY ALL TERMS AND CONDITIONS OF THIS PROPOSAL AND CERTIFY THAT I AM AUTHORIZED TO SIGN THIS PROPOSAL FOR THE RESPONDENT.

AUTHORIZED SIGNATURE:  TYPED OR PRINTED Bryan Kocher

NAME

TITLE: President DATE 8/7/20

NOTICE TO RESPONDENTS

ITN PS 33-20

Notice is hereby given that the Board of County Commissioners of Okaloosa County, FL, will accept sealed proposals until **3:00 PM (CST)** on **July 17, 2020**, for **Project 25 Public Safety Radio Network**.

Interested respondents desiring consideration shall provide one (1) original hard copy and one (1) electronic copy on thumb drive of their Invitation to Negotiate (ITN) response with the respondent's areas of expertise identified. Submissions shall be portrait orientation, unbound, and 8 ½" x 11" where practical.

The hard copy original must have original signatures in blue ink.

Proposal documents are available for download by accessing the Okaloosa County website at <http://www.co.okaloosa.fl.us/purchasing/home> then accessing the link "View Current Solicitations" or by accessing the Florida Purchasing Group website at <https://www.bidnetdirect.com/florida>

[A mandatory pre-proposal meeting will be held at 9:00 a.m. \(CST\), June 11, 2020 at the Okaloosa County Administration Building, Training Room, 1st Floor, 1250 Elgin Parkway N., Shalimar, FL 32579, with site visits scheduled immediately afterwards.](#)

Submittals must be delivered to the Okaloosa County Purchasing Department at the address listed below no later 3:00 PM on July 17, 2020 in order to be considered. All proposals received after the stated time and date will be returned unopened and will not be considered. All submittals must be in sealed envelopes reflecting on the outside thereof "**Project 25 Public Safety Radio Network**". Failure to clearly mark the outside of the envelope as set forth herein shall result in the submittal not being considered.

The County reserves the right to award to the firms submitting a responsive proposal with a resulting negotiated agreement that is most advantageous and in the best interest of Okaloosa County, and to waive any irregularity or technicality in proposals received. Okaloosa County shall be the sole judge of the solicitation and the resulting negotiated agreement that is in its best interest and its decision will be final.

NOTE: Crestview, FL is not a next day guaranteed delivery location by most delivery services. Respondents using mail or delivery service assume all risk of late or non-delivery.

All submittals should be addressed as follows:

ITN PS 33-20
Project 25 Public Safety Radio Network
Okaloosa County Purchasing Department
5479A Old Bethel Road
Crestview, FL 32536

Jeffrey A. Hyde
Purchasing Manager

Date

OKALOOSA COUNTY
BOARD OF COUNTY COMMISSIONERS

Robert A. "Trey" Goodwin, III
Chairman

DRUG-FREE WORKPLACE CERTIFICATION

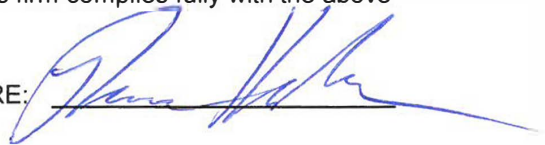
THE BELOW SIGNED RESPONDENT CERTIFIES that it has implemented a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under quote a copy of the statement specified in subsection 1.
4. In the statement specified in subsection 1, notify the employees that, as a condition of working on the commodities or contractual services that are under quote, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on, or require the satisfactory participation in, drug abuse assistance or rehabilitation program if such is available in employee's community, by any employee who is convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign this statement, I certify that this firm complies fully with the above requirements.

DATE:

SIGNATURE:



COMPANY: Williams Communications, Inc.

NAME: Bryan Kocher

(Typed or Printed)

ADDRESS: 5046 Tennessee Capital Blvd.

Tallahassee, FL 32303

TITLE: President

E-MAIL: bkocher@wmscom.com

PHONE
NO.:

850-385-1121

CONFLICT OF INTEREST DISCLOSURE FORM

For purposes of determining any possible conflict of interest, all respondents, must disclose if any Okaloosa Board of County Commissioner, employee(s), elected officials(s), or if any of its agencies is also an owner, corporate officer, agency, employee, etc., of their business.

Indicate either "yes" (a county employee, elected official, or agency is also associated with your business), or "no". If yes, give person(s) name(s) and position(s) with your business.

YES:

NO:

NAME(S)

POSITION(S)

FIRM NAME: Williams Communications, Inc.

BY (PRINTED): Bryan Kocher

BY (SIGNATURE): 

TITLE: President

ADDRESS: 5096 Tennessee Capital Blvd Tallahassee FL, 32303

PHONE NO.: 850-385-1121

E-MAIL: BKocher@wms.com.com

DATE: 8/17/2020

FEDERAL E-VERIFY COMPLIANCE CERTIFICATION

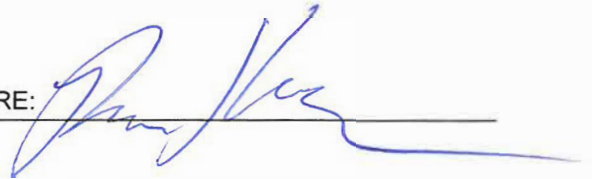
In accordance with Okaloosa County Policy and Executive Order Number 11-116 from the office of the Governor of the State of Florida, Respondent hereby certifies that the U.S. Department of Homeland Security's E-Verify system will be used to verify the employment eligibility of all new employees hired by the respondent during the contract term, and shall expressly require any subcontractors performing work or providing services pursuant to the contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term; and shall provide documentation such verification to the COUNTY upon request.

As the person authorized to sign this statement, I certify that this company complies/will comply fully with the above requirements.

DATE:

8/6/2020

SIGNATURE:



COMPANY: Williams Communications, Inc. NAME: Bryan Kocher

ADDRESS: 5046 Tennessee Capital Blvd. TITLE: President

Tallahassee, FL 32303

E-MAIL: bkocher@wmscom.com

PHONE NO. 850-385-1121

CONE OF SILENCE CLAUSE

The Board of County Commissioners have established a solicitation silence policy (**Cone of Silence**) that prohibits oral and written communication regarding all formal solicitations for goods and services (ITB, RFP, ITQ, ITN, and RFQ) or other competitive solicitation between the bidder (or its agents or representatives) or other entity with the potential for a financial interest in the award (or their respective agents or representatives) regarding such competitive solicitation, and any County Commissioner or County employee, selection committee member or other persons authorized to act on behalf of the Board including the County's Architect, Engineer or their sub-consultants, or anyone designated to provide a recommendation to award a particular contract, other than the Purchasing Department Staff..

The period commences from the time of advertisement until contract award.

When the solicitation silence period is in effect, no oral or written communication is allowed regarding the solicitation between prospective respondents and members of the Board of County Commissioners, the County Administrator, county employees or members of the Board Approved Review Committee. All questions or requests for information regarding the solicitation **MUST** be directed to the designated Purchasing Representative listed in the solicitation.

Any information thought to affect the committee or staff recommendation submitted after bids are due, should be directed to the Purchasing Director or an appointed representative. It shall be the Purchasing Director decision whether to consider this information in the decision process.

Any violation of this policy shall be grounds to disqualify the respondent from consideration during the selection process.

All respondents must agree to comply with this policy by signing the following statement and including it with their submittal.

I  representing Williams Communications, Inc.
Signature Company Name

On this 7 day of August ~~2019~~²⁰ hereby agree to abide by the County's "**Cone of Silence Clause**" and understand violation of this policy shall result in disqualification of my proposal/submittal.

RECYCLED CONTENT FORM

RECYCLED CONTENT INFORMATION

1. Is the material in the proposal: Virgin or Recycled _____ (Check the applicable blank).
If recycled, what percentage _____ %

Product
Describe on: _____

2. Is your product packaged and/or shipped in material containing recycled content?

Yes No _____

Specify: Cardboard Boxes or Wood

3. Is your product recyclable after it has reached its intended end use?

Yes _____ No

Specify: _____

The above is not applicable if there is only a personal service involved with no product involvement.

Name of Respondent:

Williams Communications, Inc.

E-Mail:

Bkocher@amscom.com

INDEMNIFICATION AND HOLD HARMLESS

Respondent shall indemnify and hold harmless the County, its officers and employees from liabilities, damages, losses, and costs including but not limited to reasonable attorney fees, to the extent caused by the negligence, recklessness, or intentional wrongful conduct of the Respondent and other persons employed or utilized by the Respondent in the performance of this Agreement.

Williams Communications, Inc.
Respondent's Company Name

5046 Tennessee Capital Blvd Tallahassee, FL 32303

Physical Address

5046 Tennessee Capital Blvd Tallahassee, FL 32303

Mailing Address

850-385-1121

Phone Number

Cellular Number

Date


Authorized Signature – Manual

Bryan Kocher

Authorized Signature – Typed

President

Title

850-575-0346

FAX Number

After-Hours Number(s)

COMPANY DATA

Respondent's Company Name: Williams Communications, Inc.

Physical Address & Phone #:

5046 Tennessee Capital Blvd.
Tallahassee, FL 32303

850-385-1121

Contact Person (Typed-Printed): Bryan Kocher

Phone #: 850-385-1121

Cell #:

Email: bkocher@wmscom.com

Federal ID or SS #: 59-0908637

DUNS #: 00-442-5385

Respondent's License #:

Fax #: 850-575-0346

Emergency #'s After Hours,
Weekends & Holidays: 844-HELP-WCI

SYSTEM FOR AWARD MANAGEMENT (OCT 2016)

(a) Definitions. As used in this provision.

“Electronic Funds Transfer (EFT) indicator” means a four-character suffix to the unique entity identifier. The suffix is assigned at the discretion of the commercial, nonprofit, or Government entity to establish additional System for Award Management records for identifying alternative EFT accounts (see subpart 32.11) for the same entity.

“Registered in the System for Award Management (SAM) database” means that.

(1) The Offeror has entered all mandatory information, including the unique entity identifier and the EFT indicator, if applicable, the Commercial and Government Entity (CAGE) code, as well as data required by the Federal Funding Accountability and Transparency Act of 2006 (see subpart 4.14) into the SAM database;

(2) The offeror has completed the Core, Assertions, and Representations and Certifications, and Points of Contact sections of the registration in the SAM database;

(3) The Government has validated all mandatory data fields, to include validation of the Taxpayer Identification Number (TIN) with the Internal Revenue Service (IRS). The offeror will be required to provide consent for TIN validation to the Government as a part of the SAM registration process; and

(4) The Government has marked the record “Active”.

“Unique entity identifier” means a number or other identifier used to identify a specific commercial, nonprofit, or Government entity. See www.sam.gov for the designated entity for establishing unique entity identifiers.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the SAM database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The Offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation “Unique Entity Identifier” followed by the unique entity identifier that identifies the Offeror’s name and address exactly as stated in the offer. The Offeror also shall enter its EFT indicator, if applicable. The unique entity identifier will be used by the Contracting Officer to verify that the Offeror is registered in the SAM database.

(c) If the Offeror does not have a unique entity identifier, it should contact the entity designated at www.sam.gov for establishment of the unique entity identifier directly to obtain one. The Offeror should be prepared to provide the following information:

- (1) Company legal business name.
- (2) Tradestyle, doing business, or other name by which your entity is commonly recognized.
- (3) Company Physical Street Address, City, State, and Zip Code.
- (4) Company Mailing Address, City, State and Zip Code (if separate from physical).
- (5) Company telephone number.
- (6) Date the company was started.
- (7) Number of employees at your location.
- (8) Chief executive officer/key manager.
- (9) Line of business (industry).
- (10) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the SAM database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) Offerors may obtain information on registration at <https://www.acquisition.gov>.

Offerors SAM information:

Entity Name: Williams Communications, Inc.
Entity Address: 5046 Tennessee Capital Blvd Tallahassee, FL 32303
Duns Number: 00-442-5385
CAGE Code: _____

ADDENDUM ACKNOWLEDGEMENT

ITN PS 33-20

Acknowledgment is hereby made of the following addenda (identified by number) received since issuance of solicitation:

<u>ADDENDUM NO.</u>	<u>DATE</u>
#1	June 5 th , 2020
#2	June 17 th , 2020
#3	July 17 th , 2020

NOTE: Prior to submitting the response to this solicitation, it is the responsibility of the respondent to confirm if any addenda have been issued. If such addenda have been issued, acknowledge receipt by noting number(s) and date(s) above.

LOBBYING - 31 U.S.C. 1352, as amended

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements
(To be submitted with each bid or offer exceeding \$100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Contractor, Williams Communications, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.

 _____ Signature of Contractor's Authorized Official

President _____ Name and Title of Contractor's Authorized Official

8-7-2020 _____ Date

Government Debarment & Suspension

Instructions

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out in accordance with these instructions.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person(s) to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Orders 12549, at Subpart C of OMB 2 C.F.R. Part 180 and 3000.332. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the System for Award Management (SAM) database.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge

and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph (5) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

**Certification Regarding Debarment, Suspension,
Ineligibility and Voluntary Exclusion
Lower Tier Covered Transactions**

The following statement is made in accordance with the Privacy Act of 1974 (5 U.S.C. § 552(a), as amended). This certification is required by the regulations implementing Executive Orders 12549, Debarment and Suspension, and OMB 2 C.F.R. Part 180, Participants' responsibilities. The regulations were amended and published on August 31, 2005, in 70 Fed. Reg. 51865-51880.

[READ INSTRUCTIONS ON PREVIOUS PAGE BEFORE COMPLETING CERTIFICATION]

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal or State department or agency;
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal

Bryan Kocher, President

Printed Name and Title of Authorized Representative


Signature

8-7-2020
Date

VENDORS ON SCRUTINIZED COMPANIES LISTS

By executing this Certificate Williams Communications, Inc., the bid proposer, certifies that it is not: (1) listed on the Scrutinized Companies that Boycott Israel List, created pursuant to section 215.4725, Florida Statutes, (2) engaged in a boycott of Israel, (3) listed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to section 215.473, Florida Statutes, or (4) engaged in business operations in Cuba or Syria. Pursuant to section 287.135(5), Florida Statutes, the County may disqualify the bid proper immediately or immediately terminate any agreement entered into for cause if the bid proposer is found to have submitted a false certification as to the above or if the Contractor is placed on the Scrutinized Companies that Boycott Israel List, is engaged in a boycott of Israel, has been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria, during the term of the Agreement. If the County determines that the bid proposer has submitted a false certification, the County will provide written notice to the bid proposer. Unless the bid proposer demonstrates in writing, within 90 calendar days of receipt of the notice, that the County's determination of false certification was made in error, the County shall bring a civil action against the bid proposer. If the County's determination is upheld, a civil penalty shall apply, and the bid proposer will be ineligible to bid on any Agreement with a Florida agency or local governmental entity for three years after the date of County's determination of false certification by bid proposer.

As the person authorized to sign this statement, I certify that this firm complies fully with the above requirements.

DATE: 8-7-2020

SIGNATURE: 

COMPANY: Williams Communications, Inc.

NAME: Bryan Kocher
(Typed or Printed)

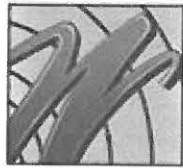
ADDRESS: 5046 Tennessee Capital Blvd.

TITLE: President

Tallahassee, FL 32303

E-MAIL: bkocher@wmscom.com

PHONE NO.: 850-385-1121



WILLIAMS
COMMUNICATIONS, INC
WIRELESS TECHNOLOGIES

**SUMMARY OF
DRUG FREE WORKPLACE POLICY**

Effective: 2/1/2006

This Company requires all employees to report to work without any alcohol or illegal, mind altering or unauthorized controlled substances (drugs) in their systems. We also will not tolerate employees manufacturing, using, selling, possessing, distributing, dispensing or making arrangements to distribute illegal drugs or other unauthorized controlled substances while at work or on Company property or otherwise engaged in Company duties. Further, outside conduct which affects your work, our relationship with co-workers, or the public, or reflects badly on the Company is prohibited. Violation of these rules will subject you to discipline, including discharge.

In order to enforce these rules, we reserve the right to require employees to submit at any time to urinalysis, blood, breath, or other tests to determine the presence of prohibited substances. We will utilize confirmation tests and careful collection and testing procedures to ensure that we obtain an accurate result. We also reserve the right to search for prohibited substances in desks, cabinets, toolboxes, vehicles, bags or any other property at the Company or in its vehicles. Failure to consent to search or display for visual inspection will be grounds for termination of reason for denial of access to Company premises by any others. Searches of employee's personal property will take place only in the employee's presence. All searches under this policy will occur with the utmost discretion and consideration of the employees involved. Refusal to cooperate with the Company in any investigation will result in discipline, including discharge.

The Company's drug testing policy is designed to conform with drug-free workplace program requirements set forth in Section 440.102, Florida Statutes, and Rule 38F-9 of the Department of labor and Employment Security, Division of Workers' Compensation. Employees, as a condition of employment, are required to abide by this policy. The Company will conduct drug tests in the following circumstances:

A. Application for Employment. Job applicants must submit to a drug test as part of the application process. Refusal to submit or a positive confirmed drug test may be used as a basis for refusal to hire the applicant.



WILLIAMS COMMUNICATIONS, INC

WIRELESS TECHNOLOGIES

5046 TENNESSEE CAPITOL BLVD, TALLAHASSEE FLORIDA 32303
SALES & ADMINISTRATION: 850-385-1121 FAX: 850-575 0346

CREDIT INFORMATION

Williams Communications, Inc. was incorporated in the State of Florida on January 1st, 1959 and consists of six office locations:

- 5046 Tennessee Capital Blvd Tallahassee, Florida 32303
- 7029-6 Commonwealth Blvd Jacksonville, Florida 32220
- 701 Ashley Street Crestview, Florida 32536
- 309 Dodd Blvd SE, Suite 300 Rome, Georgia 30161
- 11191 43rd ST North, Unit A Clearwater, FL 33762
- 840 Hillcrest Industrial Blvd Macon, GA 31204

OFFICERS Bryan Kocher, President, 4555 Plaza Way , St Pete Beach, FL 33706
Hilarie Giraldi, Secretary, 5046 Tennessee Capital Blvd., Tallahassee, FL 32303
Hays Amos, Chief Operations Officer, 3046 Shamrock N., Tallahassee, FL 32309

A/P CONTACT Hays Amos, COO 850-385-1121
MarJean Christiansen 850-385-1121

BANK: PRIME MERIDIAN BANK Account Number: 100110010996
1471 Timberlane Rd 100110015219
Tallahassee, FL 32312
Contact: Chris Jensen, VP 850-907-2300
Fax: 850-907-2391
email: cjensen@primemeridianbank.com

FL SALES TAX EXEMPTION: 80-8016610493-2
GA SALES TAX EXEMPTION: 308-428788
NC SALES TAX EXEMPTION: 601266124
FEDERAL I.D. #: 59-0908637
D-U-N-S Number: 00-442-5385
E-Verify 378422 - Dec 13, 2010
NAICS-811213

TRADE REFERENCES

Power Products Unlimited, Inc. Brooking Industries
Acct 01-WILLCOM email accounting@brookingindustries.com
Email: holly@powerproducts.com St. Augustine FL 32092
Phone (770) 740-9400 Phone: (888) 439-1925
FAX (770) 569-1844

Wells Fargo Leasing Sound-Off Signal
603-0025659-000 Phone: (616)896-7100
Phone 1-866-497-6661 Fax: (616) 896-1226
Fax (888)241-4382

Mercedes-Benz Financial Services
Acct 7004017072001
Phone (800)654-6222

I CERTIFY THIS INFORMATION TO BE TRUE AND CORRECT /s/ Hays Amos _____

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule, but this waiver applies only with respect to bodily injury arising out of the operations described in the Schedule where you are required by a written contract to obtain this waiver from us.

This endorsement shall not operate directly or indirectly to benefit anyone not named in the Schedule. The premium for this endorsement is shown in the Schedule.

Schedule

- 1. () Specific Waiver

Name of Person or Organization

- (X) Blanket Waiver

Any person or organization for whom the named insured has agreed by written contract to furnish this waiver.

- 2. Operations: ALL GEORGIA OPERATIONS

- 3. Premium

The premium charge for this endorsement shall be 2 percent of the premium developed on payroll in connection with work performed for the above person(s) or organization(s) arising out of the operations described.

- 4. Minimum Premium
- 5. Advance Premium

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated. (The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective 01/01/2020 Policy No. WFL 5006152 10

Endorsement No.

Insured WILLIAMS COMMUNICATIONS INC

Premium \$ INCL.

Insurance Company INSURANCE COMPANY OF THE WEST

Countersigned By _____

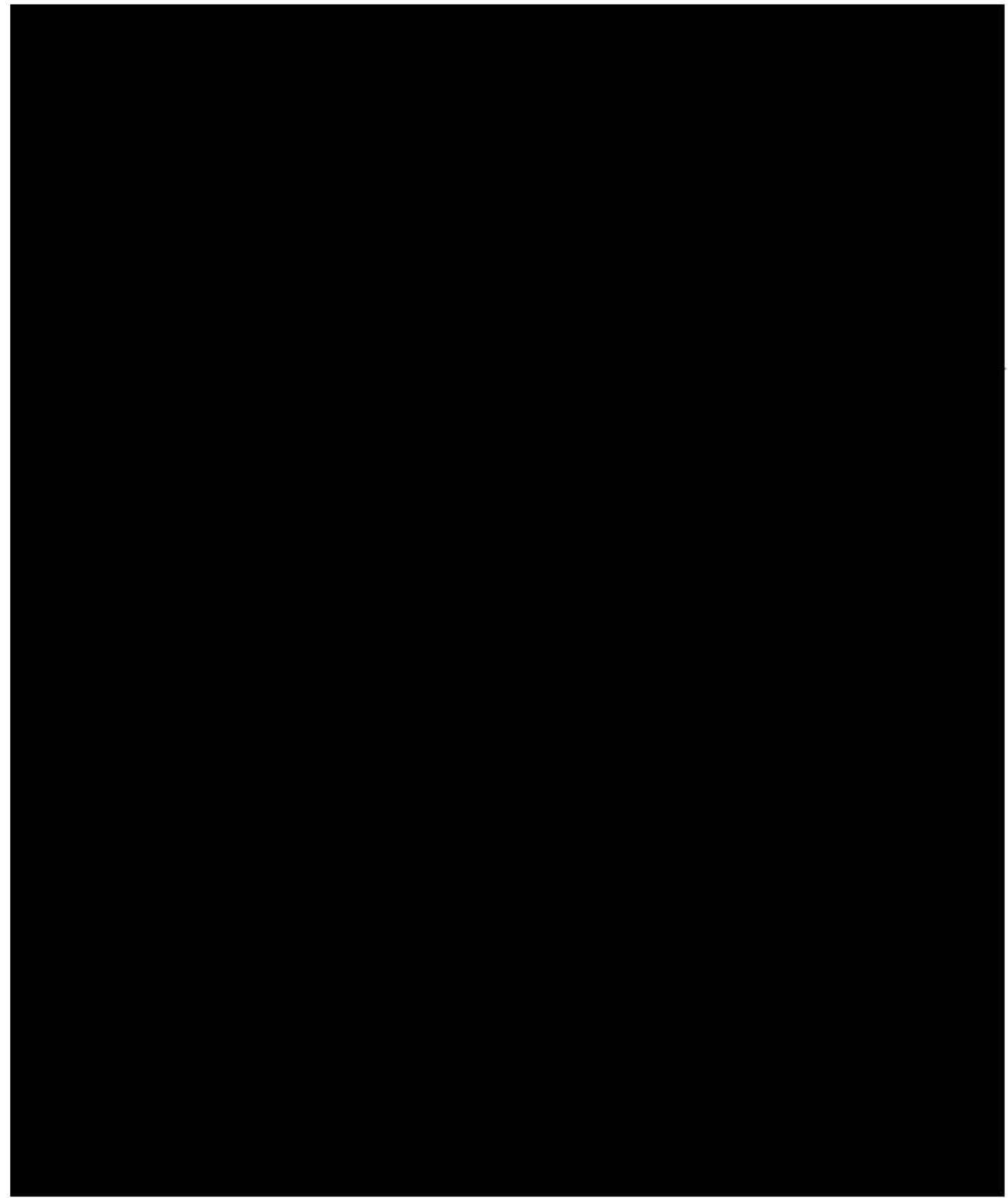
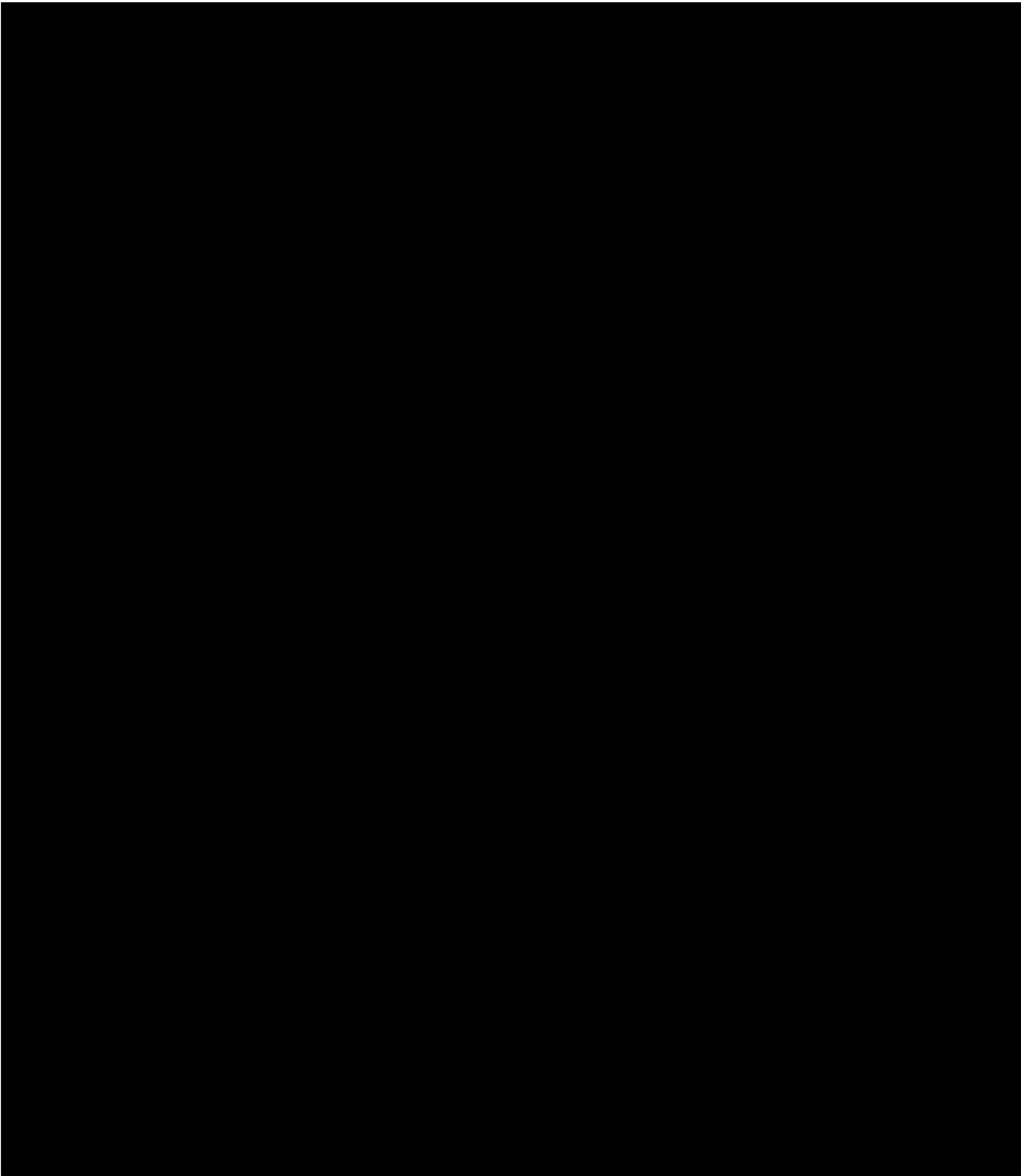


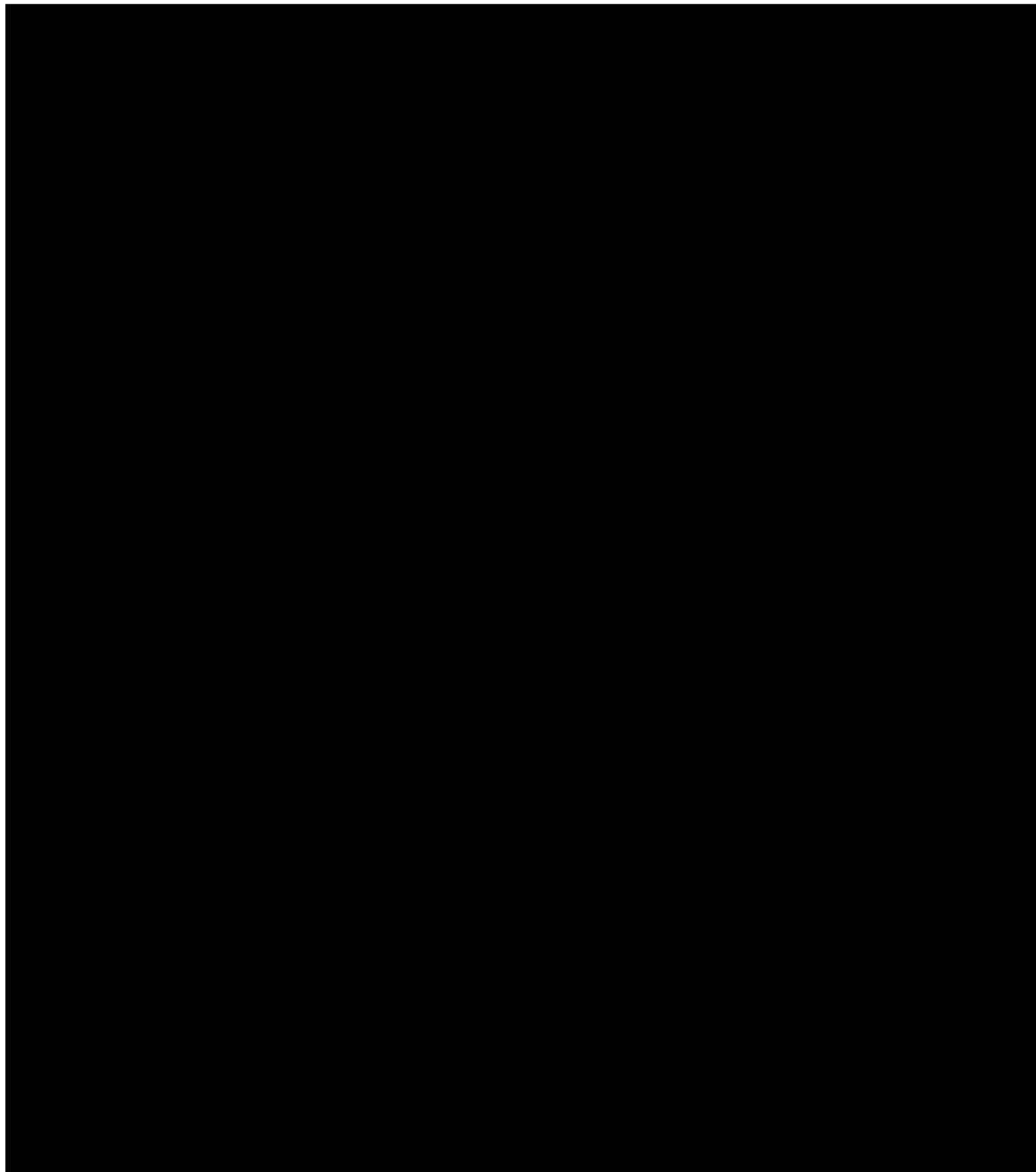
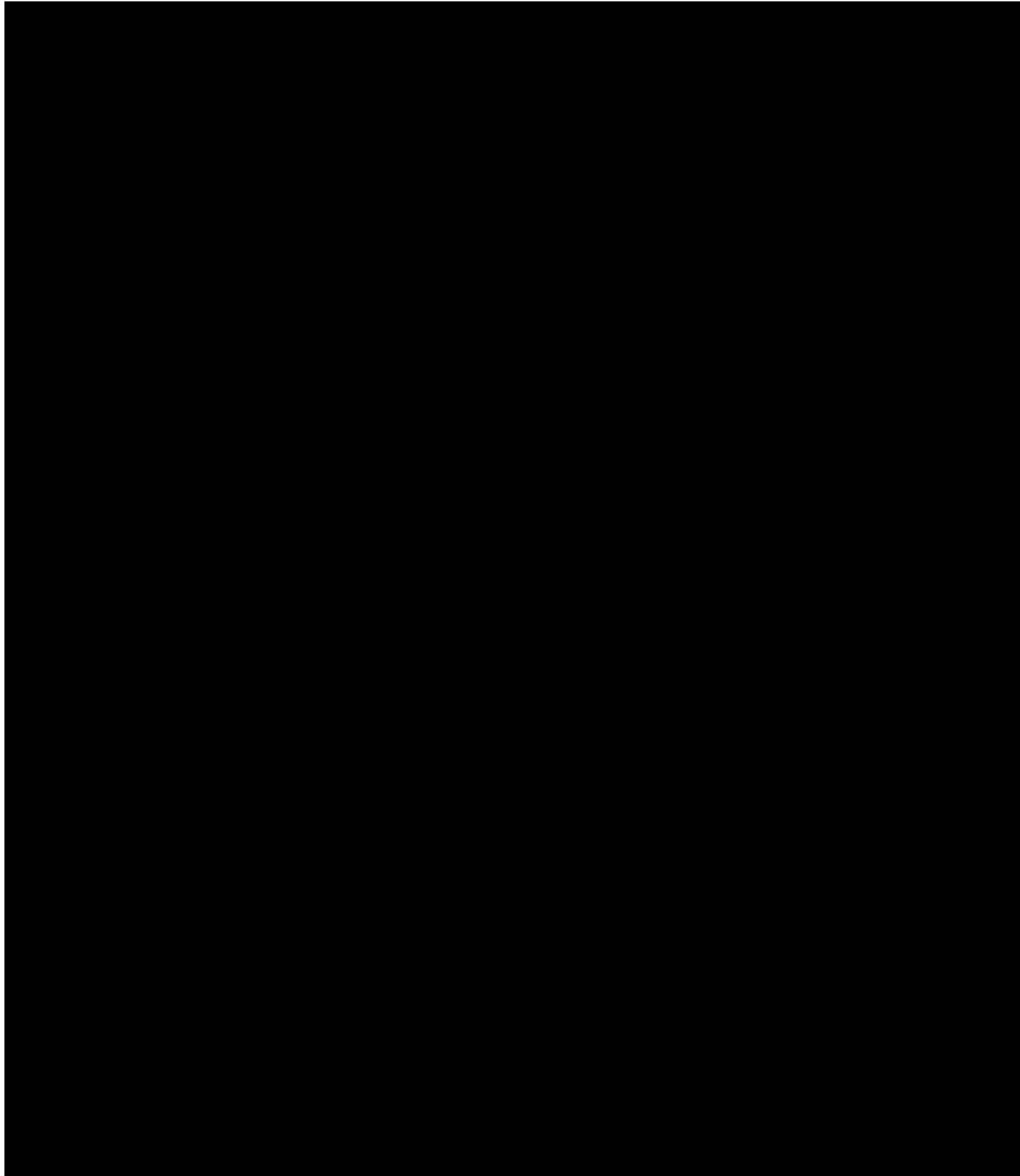
EXECUTIVE SUMMARY

PROJECT 25 PUBLIC SAFETY RADIO NETWORK
AUGUST 14TH 2020

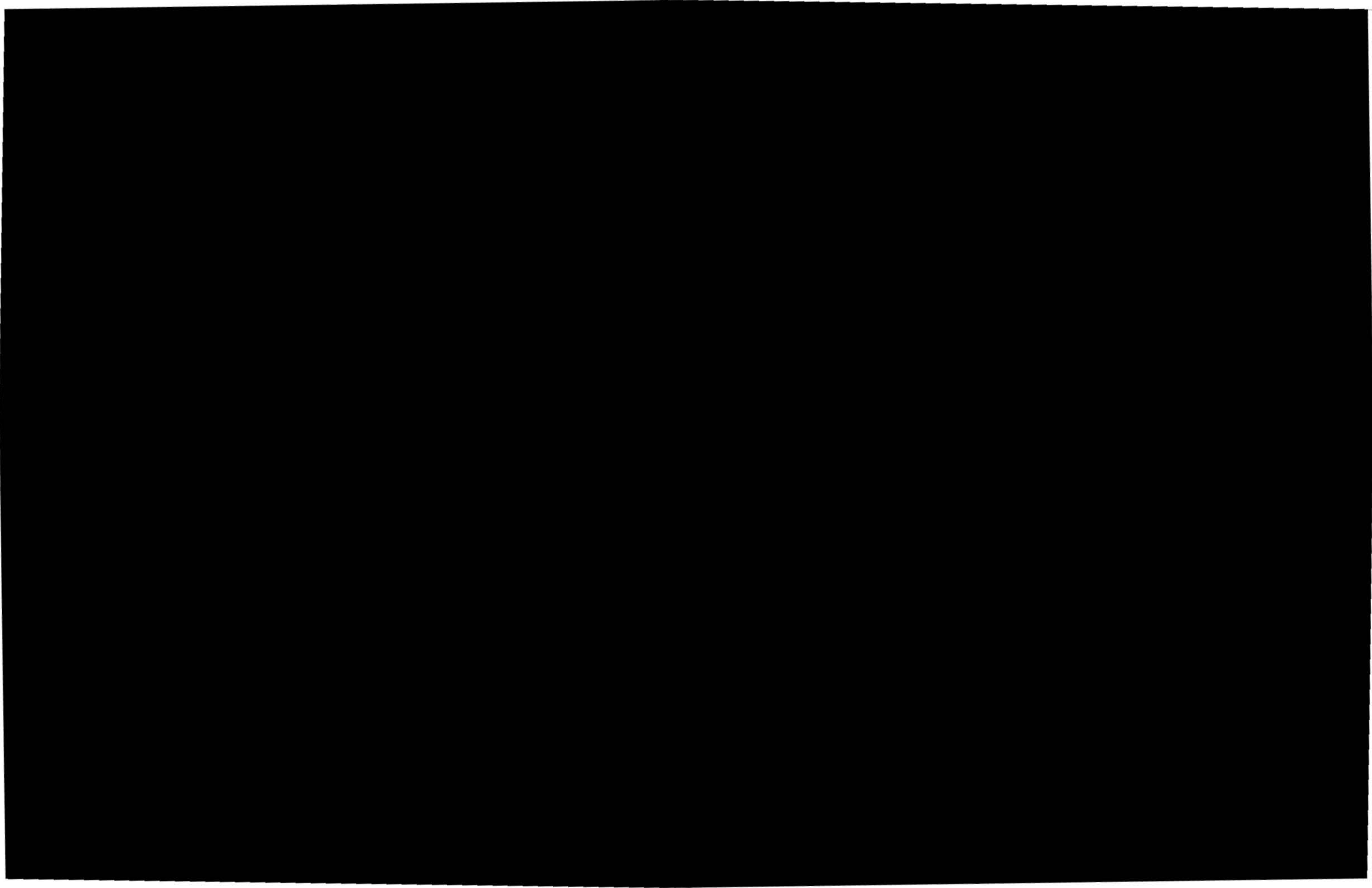


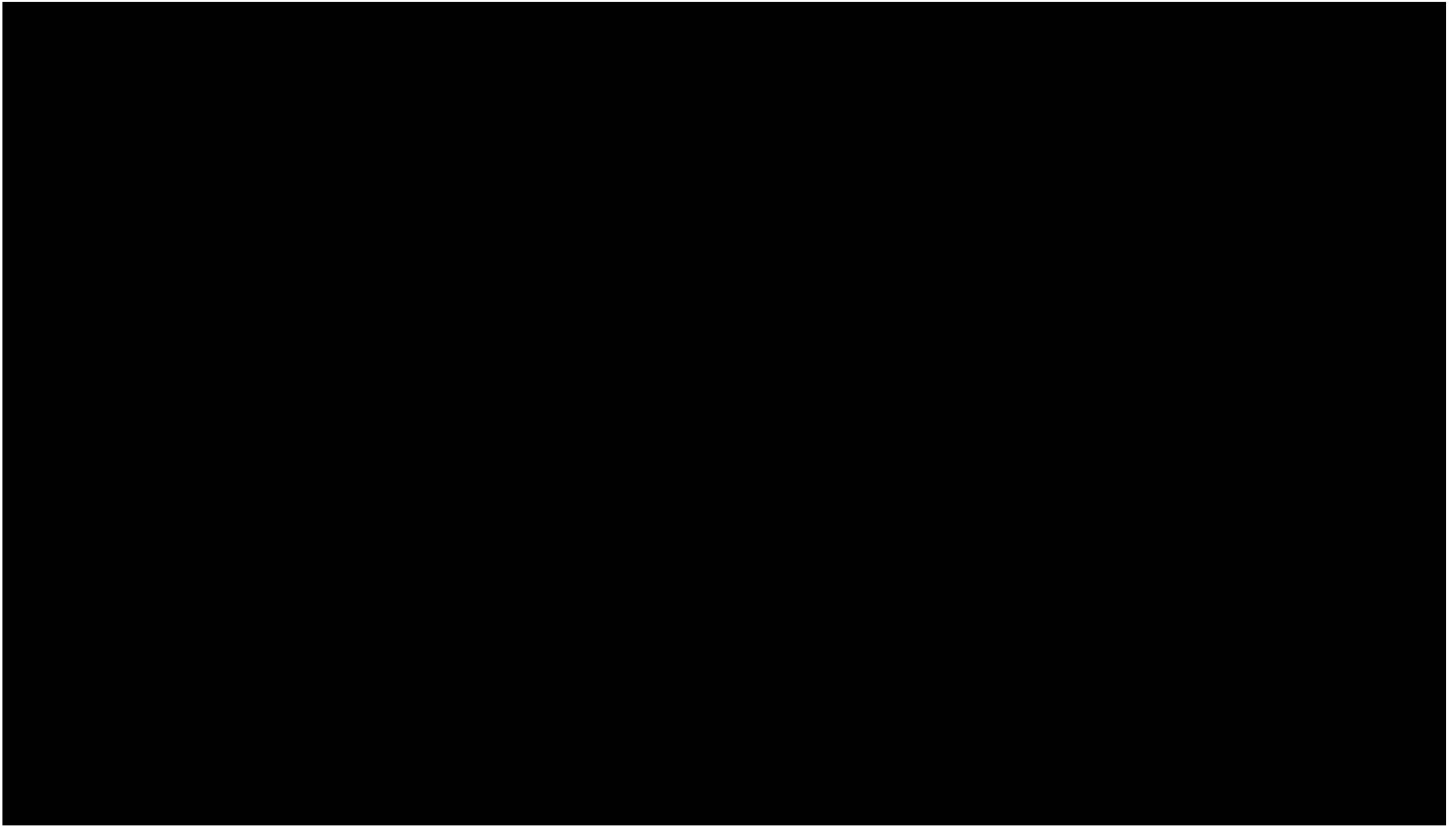
CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE

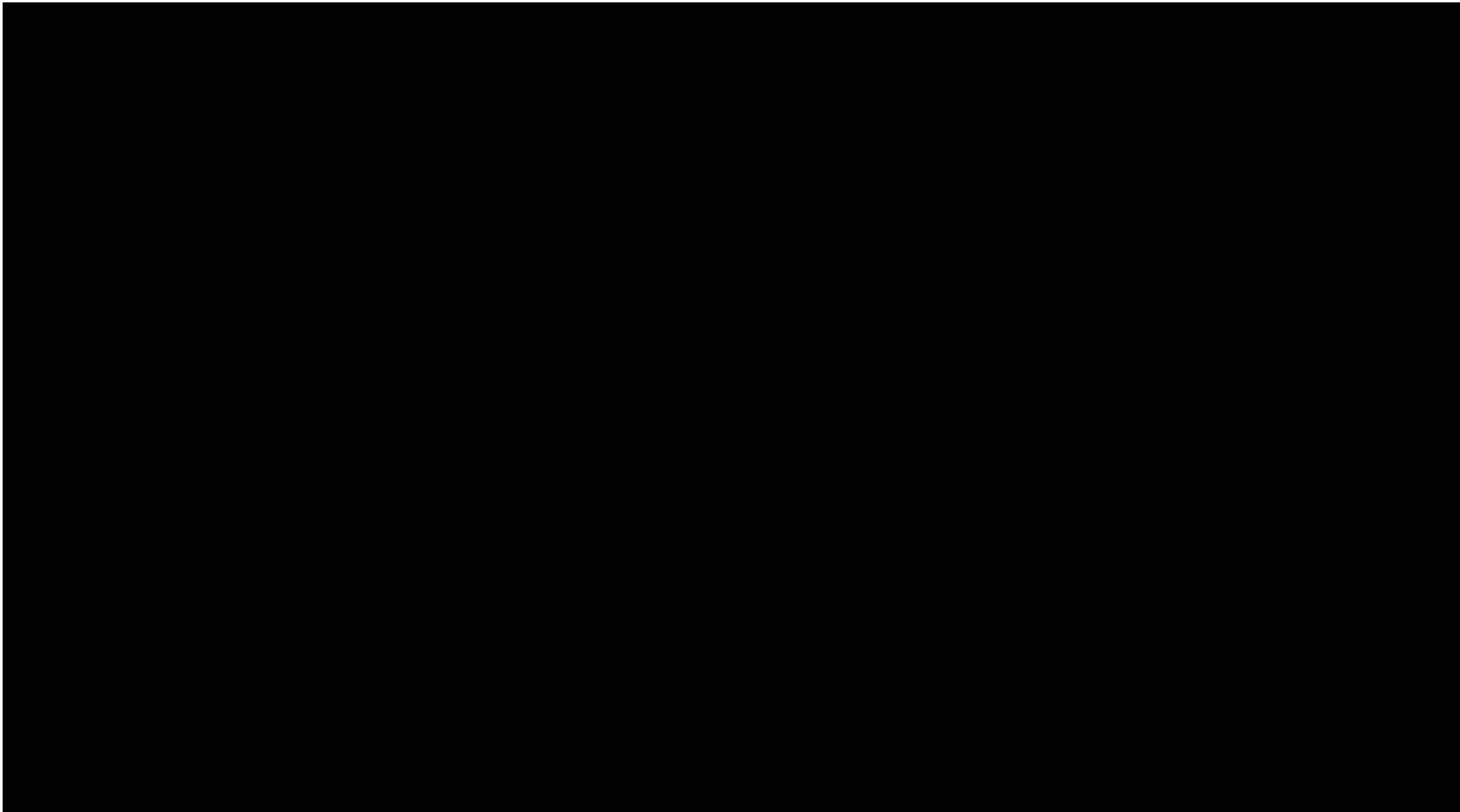


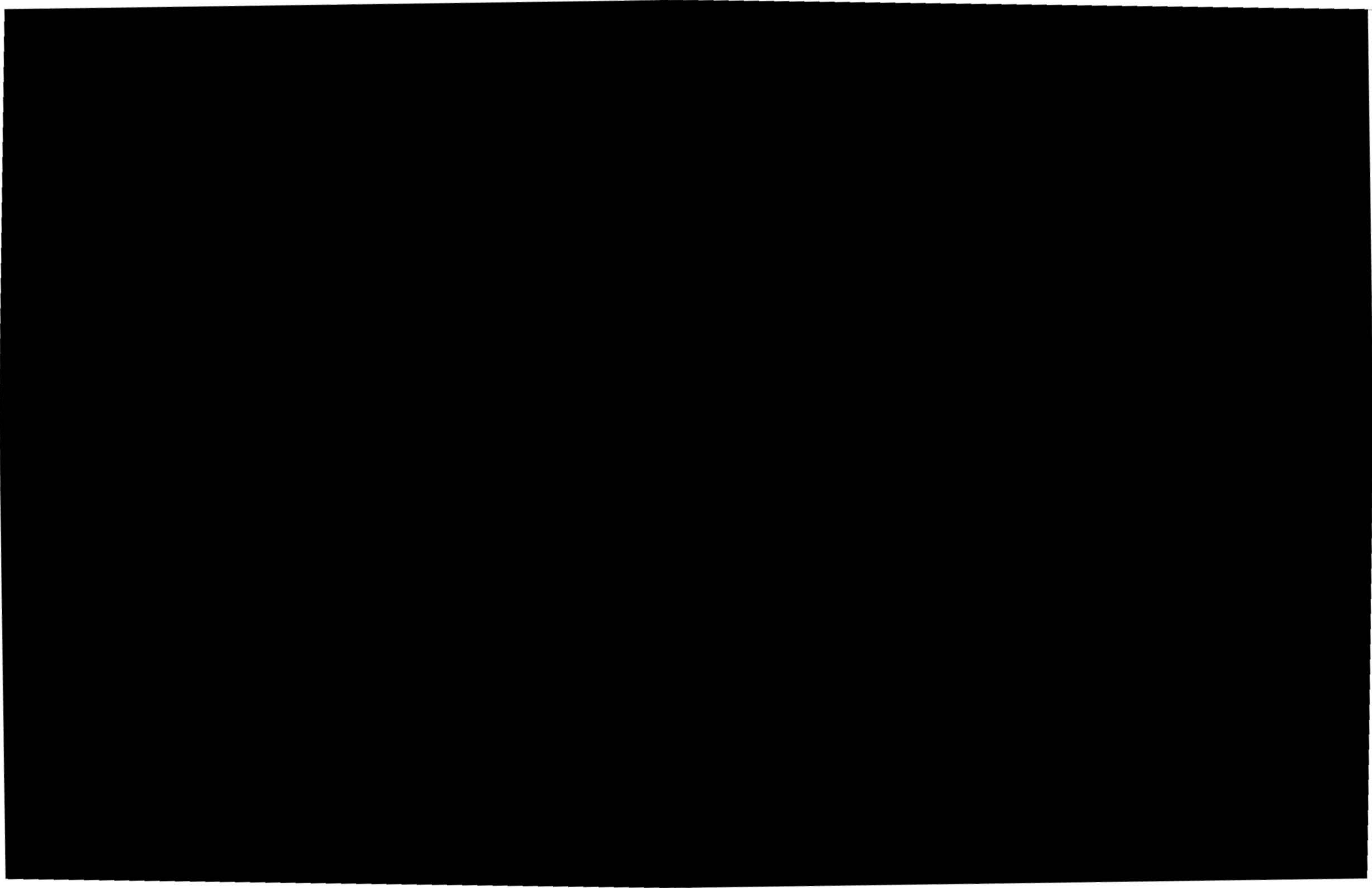












EXCEEDING YOUR EXPECTATIONS





QUALIFICATIONS & REFERENCES

PROJECT 25 PUBLIC SAFETY RADIO NETWORK
AUGUST 14TH 2020



WILLIAMS
COMMUNICATIONS, INC
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE



Williams Qualifications

In today's world, the field of communications is constantly evolving, becoming faster, more reliable, more efficient and cost-effective. Williams Communications, Inc. (Williams), organized in 1959 and headquartered in Tallahassee, Florida, combines an old school work ethic with newer age technology.

Williams, with over 80 employees, provides the depth of experience needed to deliver an innovative solution grounded in an efficient functional system design and implemented by highly trained and experienced technicians. Our relationships with leading vendors ensure we can offer the highest quality products selected specifically to deliver a custom solution producing the highest level of safety.

By offering turn-key solutions, technical expertise and on-time delivery, we continue to satisfy our customers and exceed their expectations. Our team constantly receives accolades from our customers for being knowledgeable and able to explain issues clearly, for being on time and efficient while fixing issues, and for our level of professional demeanor while on-site. A smooth transition is highly desirable when changing to new technology. We work directly with your technicians throughout the process, ensuring they are confident and capable of using the system proficiently when every Okaloosa Countynd counts. The strength and quality of our solutions means you can be assured that Williams will stand behind our work. Our team members have the knowledge, experience, and tools to guarantee your satisfaction. Just ask



PROJECT EXPERIENCE

WILLIAMS' PROJECT HIGHLIGHTS

BAY COUNTY, FL – HARRIS P25 PHASE II 700/800MHZ RADIO SYSTEM

- Turn key project (Radio, Dispatch, Towers, Shelters)
- 9 sites (4 existing, 3 green field, 2 co-location)
- Microwave backhaul loop redundancy
- BeOn Premier Server
- 24 Symphony Consoles
- 2,500+ new portable and mobile radios program/install

TALQUIN ELECTRIC COOPERATIVE - L3HARRIS P25 TIER III UHF RADIO SYSTEM, QUINCY, FL

- P25 Tier III System Installation
- 200_ mobile and portable radios program/installation
- 4 AVTEC Consoles

MONROE COUNTY, GA - P25 PHASE II 700/800MHZ RADIO SYSTEM

- 3 site Add onto Macon-Bibb P25
- Microwave backhaul loop redundancy
- 5 Symphony Consoles
- 400+ new portable and mobile radios program/installation
- E911 Airbus Phone Switch System (7 channels)
- 5 call taker positions
- SMS Text to 911

MACON-BIBB, MACON GA - E911 PHONE SYSTEM

- E911 Airbus Phone System (14 channels)
- 13 call taker positions

OTHER MAJOR PROJECT HIGHLIGHTS

- City of New York/Mayor's Office of Citywide Engineering Communications
- Maine State Communications Network
- New York Statewide Wireless Network
- Savannah NEC Microwave
- Miami NEC Microwave

BACKGROUND/TRAINING

- UNIVERSITY OF HARTFORD
- MBA, Marketing
- GETTYSBURG COLLEGE
- BA, History
- Colonel (Ret.) - Secretary of the Air Force Acquisition/ Contracting
- (SAF/AQC)
- Project Management
- Professional (PMP) Certified
- Implemented the Florida State Law Enforcement Radios
- System (SLERS) statewide 800MHz voice and 700MHz data radio systems
- Extensive experience managing and directing highly technical staff and complex projects through full cycle systems development and delivery
- Contract negotiation and contract changes, including RFPs, business plans, proposal work statements, specifications, operating budgets and financial terms and conditions of contracts

Critical path scheduling, baseline control, change control, risk management, corrective action, knowledge management, and project records management process development



Ken Steere
SR PROJECT MANAGER



Project Management Institute

THIS IS TO CERTIFY THAT

Kenneth W Steere, Jr

HAS BEEN FORMALLY EVALUATED FOR DEMONSTRATED EXPERIENCE, KNOWLEDGE AND PERFORMANCE IN ACHIEVING AN ORGANIZATIONAL OBJECTIVE THROUGH DEFINING AND OVERSEEING PROJECTS AND RESOURCES AND IS HEREBY BESTOWED THE GLOBAL CREDENTIAL

Project Management Professional

IN TESTIMONY WHEREOF, WE HAVE SUBSCRIBED OUR SIGNATURES UNDER THE SEAL OF THE INSTITUTE

Peter Monkhouse

Peter Monkhouse - Chair, Board of Directors

Mark A. Langley

Mark A. Langley - President and Chief Executive Officer



PMP® Number 1309648

PMP® Original Grant Date 31 December 2009

PMP® Expiration Date 30 December 2020





PROJECT EXPERIENCE

WILLIAMS' PROJECT HIGHLIGHTS

PASCO COUNTY, FL - P25 PHASE II 800MHZ RADIO SYSTEM

- Turn key project
- 10 sites (3 existing, 6 green field, 1 collocation)
- P25 system backwards compatible with the existing EDACS system
- Microwave backhaul loop redundancy
- BeOn Premier Server
- 19 Symphony Consoles
- 2,500+ new portable and mobile radios program/installation

CSX RAILROAD POLICE, EASTERN US

- Replaced all CSX radios with Unity multiband radios
- Created Universal radio profile that included all systems and agencies CSX PD needed access to from Illinois to Florida

MISSISSIPPI STATE UNIVERSITY P25 SYSTEM (REBANDING)

- P25 System Installation
- 1400 mobile and portable radios programming and installation

MACON-BIBB, MACON GA P25 SYSTEM

- 1500+ mobile and portable radios programming and installation

OTHER MAJOR PROJECT HIGHLIGHTS

- MedHOK Healthcare solutions, Tampa, FL - Configuration Manager
- HSBC Technology and Services Inc, Tampa, FL - Senior Project Manager
- HSBC Technology and Services Inc, Tampa, FL - Project Manager
- WellCare Health plans, Tampa, FL - Project Manager
- John Hancock Financial, Boston, MA - Systems Analyst

BACKGROUND/TRAINING

Cristina has over 15 years of experience leading project teams to deliver high quality, on-time, customized solutions to clients in the Healthcare, Financial and Public Safety Industries.

UNIVERSITY OF SOUTH FLORIDA, MBA

UNIVERSITY OF SOUTH FLORIDA, MS,
Entrepreneurship in Applied Technologies

GEORGE WASHINGTON UNIVERSITY,

Master Certificate in Project Management

UNIVERSITY OF SOUTH FLORIDA, BA,
Management Information Systems

PROJECT MANAGEMENT INSTITUTE, Certified
Project Management Professional

- Proficient in Scope Management, Change Management, Vendor and Customer Engagement/ Management, and resource demand analysis and allocation



Cristina Girardi
PROJECT MANAGER



Project Management Institute

THIS IS TO CERTIFY THAT

Cristina Girardi

HAS BEEN FORMALLY EVALUATED FOR DEMONSTRATED EXPERIENCE, KNOWLEDGE AND PERFORMANCE
IN ACHIEVING AN ORGANIZATIONAL OBJECTIVE THROUGH DEFINING AND OVERSEEING PROJECTS AND
RESOURCES AND IS HEREBY BESTOWED THE GLOBAL CREDENTIAL

Project Management Professional (PMP)[®]

IN TESTIMONY WHEREOF, WE HAVE SUBSCRIBED OUR SIGNATURES UNDER THE SEAL OF THE INSTITUTE



Randall T. Black • Chair, Board of Directors



Sunil Prachara • President and Chief Executive Officer



PMP[®] Number 497770
PMP[®] Original Grant Date 01 December 2007
PMP[®] Expiration Date 30 November 2020





PROJECT EXPERIENCE

SYSTEM DESIGN

- BAY COUNTY, FL** - 9 Site, 12 Channel, Harris P25 800MHz Trunked Radio System
- PASCO COUNTY, FL** - 10 Site, 8 Channel Harris P25 800MHz Trunked Radio System. 22 Symphony Console positions
- ATLANTIC COUNTY, NJ** - EDACS Simulcast and Wide area System design and implementation
- COLLIER COUNTY, FL** - EDACS Simulcast System redesign and implementation with one site addition
- HILLSBOROUGH COUNTY, FL** - EDACS Simulcast System redesign and implementation
- MARYLAND EASTERN SHORE INTEROP NETWORK (MESIN), MD** – IP Interoperability System design and implementation
- MIAMI DADE COUNTY, FL** - Designed and implemented the original EDACS Simulcast System
- PASCO COUNTY, FL** - EDACS Simulcast System Y2K upgrade
- ST TAMMANY, LA** - EDACS Simulcast System redesign and implementation

BACKGROUND/TRAINING

- SYRACUSE UNIVERSITY
- BS, Physics
- Retired from Harris Corporation
- Transition into the LMR business in 1995 as System and Implementation Engineer
- Harris Project Completion Specialist
 - Brought in at the end of projects to validate system implementation and resolve issues
- Chief Engineer on Open Sky
- Overseeing a team of five engineers
- Extensive experience in designing and implementing large, complex, multi-site implementations



Daniel Dominguez

LEAD SYSTEM TECH



PROJECT EXPERIENCE

INSTALLATION

STATE OF FLORIDA – Trunked, digital and encrypted 800 MHz radio system covering the entire state, from Key West to Pensacola

LEVY COUNTY, FL IMPLEMENTATION - staging, configuration, installation, and dispatcher training

BAKER COUNTY, FL IMPLEMENTATION – staging, configuration, installation and dispatcher training

PASCO COUNTY, FL - EDACS Simulcast System Y2K upgrade

BAKER JAIL VHF SYSTEM INSTALLATION - staging, configuration, and installation

AGENCY MOBILE INSTALLATIONS – installation of radio and transmitter in vehicles

OKALOOSA COUNTY SYMPHONY DISPATCH SOLUTION – installation of 15 Harris Symphony Consoles

DISPATCH/SWITCH

JRCC -BUR TRANSITION FOR JRCC DISPATCH CENTER CONSOLE UPGRADE

HOMELAND SECURITY -Florida National Guard MOBILE RADIO PROGRAMMING

MAINTENANCE/NETWORK

PASCO CO, ALARM WIRING, NETWORK SENTRY CONFIG, TX/RX CONNECTIONS, SYSTEM TROUBLESHOOTING

WAYNE, NJ P25 STATION ALIGNMENTS

HARRISON, MS M3 STATION BASELINE

BACKGROUND/TRAINING

Daniel Dominguez has more than 20 years of experience

Education

- BBA Information Systems, Kaplan University
- AA General Studies, University of Phoenix

Training

- NEC Training
- Open Sky Radio System
- EDACS System Maintenance
- Unity Radio Training
- RAPTR Training
- P25 SOF Aircraft SET-UP
- Orlando, Florida - Harris's Network Operation Center
- Basic Data/Communications Maintenance
- Ground Radio Intermediate Repair
- Electronic Maintenance Technician
- Electronic Technology



PROJECT EXPERIENCE

INSTALLATION

SPALDING COUNTY, GA - Installation and turn up of 5-Site Harris simulcast P25 system and installation and turn up of Harris dispatch consoles.

GORDON COUNTY, GA - Installation of 6-channel VHF Conventional Harris MASTR-III simulcast and Harris MASTR-III multisite P25 systems and installation of Zetron dispatch center.

CALHOUN COUNTY, FL - Lead technician for staging and installation of UHF Conventional P25 site system, and Zetron consoles.

DISPATCH/SWITCH

WALTON COUNTY, FL - Lead technician for staging, configuration, and installation of Zetron consoles.

BAKER COUNTY, FL - Lead technician for staging, configuration, and installation of Zetron consoles.

LAFAYETTE COUNTY, FL - Lead technician staging and configuration Zetron consoles.

MAINTENANCE/NETWORK

STATE OF FLORIDA

- Support Technician – 2005-2012
- Nextel public safety terminal radio rebanding efforts: 2010, 2011, Lead field support for 2012 and 2013
- Nextel tower site rebanding 2010
- Nextel ITN009 mutual aid: Lead technician for staging, delivery, installation, and testing MASTR-III site equipment
- Sites staging, delivery, and installation of equipment
Annual preventative maintenance and repair of Harris portables and mobiles 2006-2011, Lead technician, 2012, 2013.

BACKGROUND/TRAINING

With over 15 years experience testing and troubleshooting systems and equipment, Mr. Willis has detailed training in the following areas:

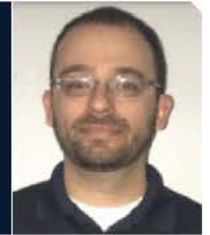
- NEC Training
- Network Engineering
- Management Certificate
- Pro-Tech Radar Certificate
- P25 System Maintenance
- RF Test & Troubleshooting
- MASTR-V Station
- Maintenance
- Electronic Technical Training
- Emergency response experience includes disaster response initiatives for technical assistance after Hurricanes Katrina, Ivan, and Rita
- Provided instruction for proper use and operation of dispatch consoles, mobile, portable and control stations
- Coordination of customer support and response times to maintain peak operational capacity

Collaboration with engineers on State of Florida site development, implementation and coverage testing



Matt Rizzo

SYSTEM ADM N STRAT ON SPEC AL ST



PROJECT EXPERIENCE

MONROE COUNTY, GA

- P25 Radio System Cutover- PM
- Lead Programmer for all terminal equipment (mobiles, portables, control stations) and their programming, coding, personality development, County Agency assignment, training (Approximately 200 portables and 150 mobiles county-wide)
- Managed radio inventory, assignment, programming, coding, personality development, training, data collection and spreadsheets
- 911 Console design with talkgroup/module layout and operational training
- Facilitated cutover to new P25 System, and radio billing between Harris and Monroe County

CSX RAILROAD POLICE

- 10 Divisions in 23 States (7 Completed trained and issued) 130 Unity Portables
- Obtain programming information from CSX MOU's with various PO's ISO's, field test all information collected
- Fleet mapping strategies for successful programming and issuing of new radio equipment; provided user training
- Program multiple P25 Trunked systems into each of the 10 divisions of CSX Police Radios across the East Coast

STATE REBANDING FOR NORTH FLORIDA

- Rebanding efforts (2010-11, 2012, 2013) of all state radios for Florida
- Responsible for administration including billing, training, tech scheduling, programming, coding, collection of programming sheets (1 for Each Radio) for 9,000-10,000 radios in 3-4 months with 14-16 programming technicians per rebanding effort

FLOYD COUNTY, GA

- P25 Radio System Cutover - PM
- Programmer for all terminal equipment (mobiles, portables, control stations) and their programming, coding, personality development, County Agency assignment, training (Approximately 900 portables and 400 mobiles county-wide)
- Managed radio inventory, assignment, programming, coding, personality development, training, data collection, and spreadsheets.

BACKGROUND/TRAINING

Extensive experience facilitating fleet mapping workshops and creating personalities. Creation and development of training materials for hands-on user training classes.

Implementation of SOPs, talk group mapping, dispatch configuration and personality development

- Pro-Tech Radar Certification
- Anritsu Line Sweeping Certification
- Ceragon Microwave Training
- Open Sky Site Equipment Maintenance
- P25 System Maintenance



PROJECT EXPERIENCE

INSTALLATION

SPALDING COUNTY, GA - Installation and turn up of 5-Site Harris simulcast P25 system and installation and turn up of Harris dispatch consoles.

GORDON COUNTY, GA - Installation of 6-channel VHF Conventional Harris MASTR-III simulcast and Harris MASTR-III multisite P25 systems/installation of Zetron dispatch center.

FLOYD COUNTY, GA - Installation and implementation of 10-site P25 Harris MASTR-V simulcast system, Harris Maestro dispatch consoles, Harris VIP consoles, and control stations for Fire Department, EMS, Police Department, Sheriff Department, Jail and Public Works.

DISPATCH/SWITCH

LAFAYETTE COUNTY, FL - Lead technician staging and configuration of Zetron consoles.

LIBERTY COUNTY, FL - Lead technician for staging, configuration and installation of Zetron consoles, and dispatcher training.

LEVY COUNTY, FL - Lead technician for staging, configuration and installation of Zetron consoles, and dispatcher training.

MAINTENANCE/NETWORK

STATE OF FLORIDA

- Support Technician – 2006-Present
- Nextel public safety terminal radio rebanding efforts in 2010, 2011, 2012 and 2013
- Nextel ITN009 mutual aid: Installation and testing
- MASTR-III site equipment
- Annual preventative maintenance and repair of Harris portables and mobiles 2006-2014

BACKGROUND/TRAINING

With over 15 years experience testing and troubleshooting systems and equipment, Mr. Welch has detailed training in the following areas:

- NEC Training
- Network Engineering and Management Certificate
- Pro-Tech Radar Certificate
- P25 System Maintenance
- RF Test & Troubleshooting
- MASTR-V Station Maintenance
- Electronic Technical training
- Hurricane Ivan first response for validation of operation of Phase 5 towers
- In depth experience with Harris public safety mobile and portable radios including programming, code load, testing, annual maintenance and component-level repairs
- Collaboration on State of Florida site development, implementation and coverage testing and Miami-Dade county-wide dispatch console implementation

SAFETY MANAGER – Harris serves as Williams Safety Manager, updating training, providing information to staff on safety in the working environment. Additionally, he implements a Vehicle Fleet Safety Plan.



PROJECT EXPERIENCE

INSTALLATION

- **CHALMETTE REFINERY, LA** Install one 3-channel site. Conduct PMs on two EDACS Systems
- **CALHOUN, FL** Stage and install two, 3-site voter systems for Police and Fire Departments.
- **GORDON COUNTY, GA** Stage and install a two-site, 6-channel simulcast system.
- **HICKORY, NC** Install and align three Harris P25 channels, two Open Sky channels and an Open Sky Cell Site.
- **SAVANNAH, GA** 6 site NEC Microwave System . The network is configured as a 3 site 1+0 ring network with 3 spur links located in Savannah, Georgia.

DISPATCH/SWITCH

- **LEBANON COUNTY, PA** Technical support for two EDACS Simulcast Sites
- **MOBILE, AL** Upgrade seven sites to SitePro and SIM from GETC's Site Controller
- **WALTON COUNTY, FL** Installation of IPC T5 switch; seven IPC console.
- **GORDON COUNTY, GA** Design and install Zetron MAX-D dispatch system (5 positions)
- **OKALOOSA COUNTY, FL** Uninstall, move and reinstall CEC Provoice and 10 consoles to new dispatch center. Install CEC switch, 10 consoles and one remote console
- **WALTON COUNTY, FL** Install IPC T5 switch, seven IPA console
- **SAINT TAMMANY PARISH, LA** Install four-position EDACS Dispatch Center
- **FORT POLK, LA** Update switch to support P25 system; technical support of P25 system

MAINTENANCE & REPAIR

- **LEBANON COUNTY, PA** Technical support for two EDACS Simulcast Sites
- **MOBILE, AL** Upgrade seven sites to SitePro and SIM from GETC's Site Controller

BACKGROUND/TRAINING

P25 System Maintenance and Administration

NEC Training

HARRIS Equipment:

- Open Sky Site Equipment Maintenance
- Simulcast System Maintenance
- Trunked System Maintenance
- Overview of Florida System
- MASTR-III Station Maintenance

EDACS Equipment:

- Master Technician
- Mobile/Portable Maintenance



EXPERIENCE

TALLAHASSEE CORPORATE HEADQUARTERS SERVICE FACILITY

- Daily oversight of service facility including scheduling, on-call services and standard maintenance and repairs
- Coordination of installation bay that services emergency vehicles for city, county, state and federal agencies
- Responsible for electronic troubleshooting and repair as well as electrical and mechanical support
- Speed Measurement and Certification
- Manage and facilitate speed measurement certification department.
- Manage parts inventory, ordering process and vendor relations
- Attend special events, conferences and product demos highlighting new products and technology
- Develop customer partnerships and ensure delivery of world class customer service
- Arrange training opportunities and manage technician certifications
- Quality Assurance on all vehicular repairs and installations
- Respond to State and Agency solicitations with terms and pricing
- Contract customer management and scheduling
- Subcontractor relations with vendors providing an array of products and services:
 - Graphics
 - Window Tint
 - Detailers
 - Truck Accessories
 - Paint and Body work

BACKGROUND/TRAINING

- TALLAHASSEE COMMUNITY COLLEGE
Law Enforcement
- EVEREST UNIVERSITY
Criminal Justice
- Fred Pryor Learning Solutions
Manager/ Supervisory courses
- Emergency Vehicle Technician - Certified
- APCO Speed Measurement and Radar Laser Certification
- 911 EP Authorized Service Technician
- Auto License Plate Recognition
- Watchguard Technologies (Body Camera, In-Car Video & Evidence Management Solutions)
- Panasonic Arbitrator Camera Systems



Steve Bode

DIRECTOR OF ENGINEERING WILLIAMS TEAM MEMBER 2020



WILLIAMS PROJECT EXPERIENCE

- **BAY COUNTY, FL - P25 PHASE II 800MHZ RADIO SYSTEM**
 - Turn key project
 - 9 sites (5 existing, 3 green field, 1 collocation)
 - P25 system backwards compatible with the existing EDACS system
 - Microwave backhaul loop redundancy
 - BeOn Premier Server
 - 2,500+ new portable and mobile radios program/installation

BACKGROUND/TRAINING

- Over 30 years of experience designing and deploying public safety communications and utility critical communication systems.
- UNIVERSITY OF KANSAS, BSEE

OTHER PROJECT EXPERIENCE

- **MIAMI-DADE COUNTY, FL - P25 PHASE II 800MHZ RADIO SYSTEM**
 - Turn key project
 - SIMULCAST COVERAGE DESIGN
 - 20 sites (18 existing, 2 collocation)
 - P25 system backwards compatible with the existing EDACS system
 - 75 DISPATCH CONSOLES
 - 22,000+ new portable and mobile radios program/installation
 - System supports miami-dade so and several other local and federal agencies in the miami dade county area
- **ST MARY'S COUNTY, MD - P25 PHASE II 800MHZ RADIO SYSTEM**
 - Turn key project
 - SIMULCAST COVERAGE DESIGN
 - 13 sites (4 existing, 9 greenfield)
 - P25 system backwards compatible with the existing EDACS system
 - 20 DISPATCH CONSOLES
 - 4,5000+ new portable and mobile radios program/installation
 - FIRE PAGING SYSTEM INTEGRATION WITH P25 SYSTEM.
- **OKLAHOMA CITY- P25 PHASE I 800MHZ RADIO SYSTEM**
 - Turn key project
 - SIMULCAST COVERAGE DESIGN
 - 13 sites (4 existing, 13 greenfield)
 - 30 DISPATCH CONSOLES
 - 4,000+ new portable and mobile radios program/installation



John Rioux

SYSTEMS MANAGER



INSTALL PROGRAMMING AND TESTING LOCATION

- **STATE OF FLORIDA (SLERS)** - radio rebanding (2012 - 2013), rebanded the Department of Corrections SLERS radios in Phases 4 & 5 of the SLERS radio system.
- **WALTON COUNTY, FL** - Lead the swap and programming effort to exchange Walton County's older M/A-Com radios for newer XG-75 portables and M7300 mobiles. Produced accurate recordings of radio exchange; radio programming and coding. Liaison between service center, vendor and Walton County Sheriff's Office.

RADIO PROGRAMMING

- **CSX RAILROAD, VA** - Unity portables
- **FLORIDA NATIONAL GUARD** - Motorola portables
- **CITY OF TALLAHASSEE** - Unity portables
- **FLORIDA DEPARTMENT OF LAW ENFORCEMENT** - Various Harris portables and mobiles
- **FLOYD COUNTY, GA** - Acted as lead technician for Williams and on-site liaison to Harris Corporation.
- **CALHOUN, LEON, & WALTON COUNTIES, FL** - Developed drive routes using DeLorme Street Atlas based on 1/2 mile x 1/2 mile grid system developed over the county for radio frequency coverage testing.

BACKGROUND/TRAINING

- GEORGIA INSTITUTE OF TECHNOLOGY
- B.S. Civil Engineering
- BERRY COLLEGE - MBA
- Manage and maintain WCI's radio repair lab and radios intake process
- Provide end-user technical support to WCI's State of Florida, county law enforcement and public safety radio customers
- Processing of new Harris, L3Harris, ICOM, Kenwood, and other public safety grade radio and pager orders

END USER TRAINING

- CSX Railroad
- Liberty County Sheriff
- Lafayette County Sheriff
- Leon County Sheriff SWAT
- Pensacola State College
- Floyd County Sheriff



Jason Richards

SERVICE CENTER MANAGER



INSTALLATION

- **FLOYD COUNTY, GA** – Trunked, digital and encrypted 800 MHz radio system P25 system with dispatch consoles and 24/7 support.
- **GORDON COUNTY, GA** - staging, configuration, installation, and dispatcher training.
- **CAMDEN COUNTY, GA** – staging, configuration, installation and dispatcher training.
- **MACON, GA** - staging, configuration, and installation..

DISPATCH/SWITCH

- MANAGED THE SYSTEM UPGRADE FOR FLOYD COUNTY
- INSTALLING AND MANAGING SYSTEM UPGRADE FOR CAMDEN COUNTY

MAINTENANCE/NETWORK

- 24/7 SYSTEM MANAGEMENT OF FLOYD COUNTY
- INSTALL AND MAINTAIN ALL OF ZETRON 911 IN GORDON COUNTY
- ASSISTED ON THE SYSTEM INSTALL OF NEW ZETRON IN FRANKLIN COUNTY FL

BACKGROUND/TRAINING

- UNITED STATES NAVY RESERVE
Senior Enlisted Leader

EDUCATION

- Okaloosa County SOUTHERN UNIVERSITY
Graduate certificate, Project Management
- Okaloosa County SOUTHERN UNIVERSITY
Master of Business administration,
Human resource management

TRAINING

- Omnitronics Training
- Max Dispatch System
- EDACS System Maintenance
- MASTR V Station Training
- NEC Training
- Regional Network Manager
- CJIS Training
- Basic Data/Communications Maintenance
- Ground Radio Intermediate Repair
- Electronic Technology



Past Performance

Williams Communications, Inc. is highly focused on the customer relationships we have built over 80 years. We assist customers in the planning, design, development, and implementation of new communication backhaul systems and/or upgrades to existing systems. We also provide maintenance and support services for systems we have implemented, as well, as systems implemented by other companies. Given the wide range of services we provide, our maintenance contracts range from mobile and portable radio maintenance, speedometer and radar certifications, to full communications systems.

Listed in the following sections are some of our active system maintenance contracts followed by a sample of current systems projects and projects implemented within the past (10) years nationwide. These reflect our experience in installing new sites/systems and/or upgrading existing infrastructure.



Our Goals



- › Design advanced, secure, reliable solutions that provide the most benefit and prepare our customers for the future.
- › Maximize your investment by leveraging existing infrastructure and equipment while incorporating the newest technology.
- › Create fail safe solutions to ensure critical communications will always be heard.
- › Eliminate single points of failure to provide the highest level of safety possible for all users.
- › Exceed the customer's expectations with a quality system delivered on time and on budget.
- › Work with proven industry leaders in all aspects of technology. Even our competitors see the advancement and have made their own investments in our relationships.

Our partnership continues long after the installation is completed. We provide ongoing service and maintenance for many of our partners years after the system is launched. We stand behind our products, service, reliability, and response.



Current Efforts

- › **Monroe County, GA** – Addition of three (3) new P25 sites, System Installation, Fleet mapping and Personality Development, Radio Programming and Installation.
- › **SLERS, FL** – Addition of three (3) new sites to the state system, staging, installation and system's acceptance testing.
- › **CSX Railroad (Eastern USA)** – BeOn iPhone push-to-talk integration to RF Networks and Multi-Band Unity Portable Personality Development and Programming across the Eastern USA (from New York to Florida).
- › **Mississippi State University, MS** – Sprint Rebanding of 1100 radios and Installation and Testing of Digital four (4) site P25 System, including the addition of a new shelter to the existing four (4) site infrastructure.
- › **United States Marine Corps: Albany, GA** – Two (2) Site P25 System Installation, Grounding, Antenna Installations, Dispatch Console Installations and Testing.
- › **United States Marine Corps: Cherry Point, NC** – Four (4) Site P25 System Installation, Grounding, Antenna Installations, Dispatch Console Installations and Testing.
- › **Macon-Bibb County, GA** – P25 System Infrastructure Inspection and Red-lining, Radio Personalities Development and Programming, Dispatch Console Audio Levels, and 1450 Radios.
- › **Talquin Electric Cooperative, Tallahassee, FL** – Installation of a five (5) site, three (3) Channel L3Harris P25 system. Over 200 users.
- › **Pasco County, FL** – We have completed the contract for the new Pasco County radio system. This is a ten (10) site, 8 channel 800 MHz simulcast P25 system with two (2) distributed control points, an loop-protected NEC microwave system with approximately 3,000 users.
- › **Bay County, FL** - We have been awarded the contract for the new Bay County radio system. This is a nine (9) site, 12 channel 800 MHz simulcast P25 Phase 2 system with two (2) distributed control points, an loop-protected NEC microwave system with approximately 2,500 users.
- › **Camden County, GA** - 4 sites VHF with L3Harris ASIP and a NEC microwave Backhaul.
- › **Okaloosa County, FL** - 15 Symphony Dispatch Positions tying into their Legacy Motorola Smartnet system
- › **Okaloosa County Energy** - Daniel two channel low band LMR, Alcatel MDR-8000 Microwave hops, Exalt Microwave site infrastructure, substations fiber support, dispatch equipment. All necessary call outs for systems failures as well as a yearly Preventative maintenance on all communication parts to include but not exclusive to antenna sweeps and line testing, functionality testing, testing of all channels and circuits on the RF as well as the microwave system.



Completed Projects and Past Support Assignments

- > **ALABAMA Mobile County** - SIM | SitePro | ProVoice upgrade Montgomery County
- > **CONNECTICUT Hartford County** - EDACS technical support | EDACS IMC Switch | System testing | Multiple upgrades | Re-banding
- > **FLORIDA Statewide Law Enforcement Radio System (SLERS)**
 - Coverage tested | Phase 4 and 5: Installation & maintenance | SIM SitePro upgrade | EDACS EA upgrade | Console installation | EAE upgrade | Multiple frequency plan upgrades | Re-banding
 - Full system deployment & support: Baker | Bradford | Franklin | Levy | Walton & Okaloosa counties
- > **Pasco County** - Re-banding | Replaced three-site GPS simulcast system
- > **Calhoun County** - Engineered and deployed P25 conventional system | Provided pre-design consultative services
- > **Okaloosa County** - 15 Symphony dispatch consoles and redundant cores
- > **GEORGIA Spalding County**
 - P25 800 MHz 5-Site development and Installation, with 4 new sites and 1 existing site upgrade
 - First 800 MHz P25 system Deployment in GA | First system upgraded to P25 Phase II in GA | 2 site OpenSky data overlay
- > **Kings Bay Naval Base**
 - Interoperability Control Station installation so Base could talk in SLERS System in Florida.
- > **Floyd County**
 - P25 800 MHz 10-Site Simulcast System deployment and implementation, with 9 green field sites and 1 brown field
- > **Gordon County**
 - VHF Conventional Simulcast Multi-Site System development and implementation
 - 3-Site VHF with 1 new Conventional Simulcast, 1 existing Conventional Simulcast, and 1 new Multi-Site site
- > **Sandy Springs** - Zetron IP Fire Station Alerting System
- > **LOUISIANA City of New Orleans** - Provided hurricane Katrina recovery and support | City-wide EDACS system communication support Post-hurricane dispatch system relocation | Re-banding
- > **Saint Tammany** - Installed and upgraded EDACS dispatch center | Re-banding | Site alignments | Trouble shooting
- > **Fort Polk** - Re-banding | Expanded P25 system | Incorporated Garrison | NSC upgrade | New site | New consoles Installed 200 mobiles | 600 portables | Managed site | Site engineering | Engineered fiber-optic network
- > **AEP | American Electric Power** - Radio support of AEP trouble shooting problems with the M725
- > **MARYLAND Cecil County** - EA simulcast system | Technical support
- > **MICHIGAN Lansing County** - EDACS simulcast system | Technical support



Completed Projects and Past Support Assignments

- › **Oakland County** - Site management | System Trouble shooting | Inventory control
- › **MISSOURI Kansas City** - Re-banding | Mutual aid | Back-to-back project | Staged | Installed | Tested
- › **NEW YORK State of New York** - System Site Management | Technical support
- › **PENNSYLVANIA Lebanon County** - EDACS simulcast sites | Technical support
- › **VIRGINIA Rockingham** - Site alignments | Troubleshooting
- › **WISCONSIN City of Milwaukee** - PC site management | Technical support
- › **Ozaukee** - Troubleshooting | System upgrades | Technical support
- › **Florida Panhandle** - Hurricane Michael Recovery and Support Efforts
- › **Alachua County Jail** - Single site L3Harris P25 with Telex dispatch consoles



The Communications Team supporting Hurricane Michael Relief Efforts -Bay County Florida



Georgia Southern University, Statesboro, GA

Georgia Southern identified the need to enhance communications for more than 400 users in multiple departments while still providing interoperability with public safety. They were seeking technology that would provide additional talk capacity and extended coverage to support remote campus locations. They wanted an IP architecture that would allow them visibility of the system health and management of their radio



“We selected the Harris/L3Harris P25 communications system specifically because the technology is standards based , scalable and will support our needs for years to come .”

Sam Robinson, GSU System Administrator

fleet. The Harris/L3Harris TN9300 Solution provides them with the ability to run reports of radio user usage and the ability to enable and disable users if needed providing them control of their network. Utilizing the TDMA technology provided maximum spectrum efficiency for the increased talk capacity.

GSU also had the requirement to integrate

communications of this network with the GSU Campus Police 700/800MHz users and provide a dispatch solution. To meet this requirement, Williams Communications provided a two-position IP console solution located at the GSU Campus Police allowing them to monitor radio users and provide interoperability as needed.

Solution:

- › L3Harris UHF Tier 3 Single Site Trunked network
- › Four channels TN9300
- › 2 position dispatch console
- › 400+ radio subscribers

Williams continues to provide service and maintenance for this system.

Contact

Sam Robinson
Assistant Director Telecommunications, Life Safety
Technologies and Planning &Construction 1330
Southern Drive, Statesboro, GA 30458
Phone: 912.5666.3204



Talquin Electric, Quincy, FL

Talquin Electric is headquartered in Quincy, Florida and serves a 2,600 square mile territory that covers four counties in Northwest Florida. The Electric Co-op works in water, waste water, and electric. They have approximately 190 employees, 110 vehicles, and plenty of radio traffic.



“Our staff can communicate with one another, and it has improved efficiency. The L3Harris system has improved the way that we work and the way we communicate with our employees.”

Dane Clemons - Director of Technology, Talquin Electric

Talquin partnered with Williams Communications and selected an open standard, L3Harris P25 Tier 3 solution. The system is composed of 5 sites, 107 mobile radios and 60 portable radios. They increased the number of available channels, allowing dispatch to talk with different teams as needed.

Talquin had a 30 year old system that was no longer reliable. After their old system was

narrowbanded, several of their channels had too much static and could not really be used. This left them with one usable channel. Tracy Bensley, General Manager of Talquin Electric Cooperative, described the issue this way, “With water, waste water, and electric, we need several different channels so we can split those groups up. Not having multiple channels available was a big problem.”

Solution:

- › 5 site P25 Tier 3 Voice and Data network
- › 107 mobile radios and 60 portable radios
- › Increased worker safety with Man Down, Lone Worker and GPS functionality
- › AVL interface with outage management system

Contact

Dane Clemons
Director of Information Technology and Communications
Talquin Electric Cooperative, Inc. Talquin Water & Wastewater, Inc.



[WATCH VIDEO](#)



Floyd County, Georgia

The citizens of Floyd County voted to purchase a modern county-wide 800 MHz digital voice communications system that would be compatible with the Georgia Statewide Communications Interoperability Plan (SCIP) and the Georgia Office of Homeland Security Area 6 Regional Strategic Plan. This new system was designed to improve public safety communications by expanding and improving the current coverage



Floyd County requested an APCO P25 compliant new 800 MHz digital simulcast trunked radio network capable of meeting current and future communication needs, both reliably and functionally.

area, improving voice quality, and making more channels available while providing seamless coverage throughout the region. The system was needed to place all government and public safety agencies on one radio system which would allow for interoperability at the local and regional levels. Ultimately, the new system would provide for better coordination during a disaster, and will meet the FCC's narrowbanding requirement while

resolving all current radio communication issues. This P25 solution delivered the reliability and functionality needed for increased safety.

Solution:

- › Ten (10) Sites
- › Ten (10) Channels
- › 800 MHz P25IP GPS simulcast system
- › Eleven (11) new Symphony console positions

Guaranteed Coverage:

- › 95% coverage for mobile at DAQ 4.0
- › 95% coverage for portable outdoor at DAQ 3.4
- › 92% coverage for portable 6dB indoor at DAQ 3.4
- › Coverage for portable 25 dB indoor at DAQ 3.4 for critical buildings

Williams continues to provide service and maintenance for this system.

Contact

Tim Herrington EMA Director
409 E. 12th Street Rome, GA 30161
Phone: 706.236.5002



Gordon County, Georgia

Gordon County embarked on the task of developing a new radio communications system to support mission critical communications within the County. Identified priorities included increased coverage, infrastructure reliability and hardening in mitigation of natural and man



Infrastructure for the Future: Gordon County will be able to use their infrastructure investment irrelevant of frequency band or technology.

made disasters and heightened terrorist activities and compliance with the FCC's mandated narrowbanding requirements. Williams' solution was the result of careful and meticulous planning and research. "Due to the narrowbanding of frequencies, constructing more towers created better coverage". This allows for maximum interoperability between Gordon and surrounding counties, so emergency services and authorities to freely communicate with other state agencies without interference. Gordon County now has the most up-to-date and modernized level of digital communication.

Solution:

- › 8 Harris VHF MASTR III base station repeaters and simulcast equipment configured each of 2 Simulcast RF Sites
- › 5 position Zetron console dispatch
- › An Analog Simulcast Control Point to be housed at Fire Tower Road
- › New 230' tower at Fire Tower Road
- › New Alcatel-Lucent Microwave System
- › New VHF portable and mobile radios and programming of existing radios

Williams continues to provide service and maintenance for this system.

Contact

Courtney Taylor, EMA Director
4543 Fairmount Highway Calhoun, GA 30701
Phone: 706.602.2905
Fax: 706.602.3740



Macon-Bibb County, Georgia

The City of Macon, Georgia has taken the first step to give its first responders an interoperable communication system that will seamlessly connect Macon police and fire departments and the Bibb County Sheriff's Office. The new system will easily accommodate future growth, and integrate



"Modernization of our legacy communications system called for a cutting-edge yet standards-based system to deliver necessary voice and data capability and true interoperability to our first responders." Chief Administrative Officer, City of Macon

with new technologies such as LTE (Long-Term Evolution) networks. "The Harris solution proved to be the most fault tolerant option to give Macon's public safety agencies the reliability connectivity and functionality they need." Interoperability is provided with the neighboring county agencies (Monroe and Peach) through use of an intelligent interoperability gateway and the use of full spectrum mobile and portable radios.

The new BeOn mobile application lets the Sheriff and Fire Chief monitor emergencies wherever they are, even out of state.

Solution:

- › Three (3) Site, 800 MHz P25 simulcast system
- › 12 Channels (P25)
- › 700 Unity XG-100 full-spectrum mobile and portable multiband radios that operate on VHF, UHF, 700/800 MHz frequency bands
- › Open Sky overlay supporting a multi-tier mobile data solution enabling constant data connectivity
- › 13 Maestro IP Dispatch Consoles and supports approximately 1,200 users

Williams continues to provide service and maintenance for this system.

Contact

Chris Land
Radio System Administrator
200 Cherry Street Macon, GA 31201
478.621.6413



Pasco County, Florida

Pasco County has shared a long history of achievements with Williams and has revealed insight into the "Pasco Way". They truly know how to balance state of the art communications with the cost savings benefits. The current EDACS system is a perfect example of responsible use of tax dollars, providing taxpayers millions of dollars in savings. Harris's APCO P25 Phase II Simulcast System, chosen as their communications solution,



"Pasco intended to obtain a system that would give them flexibility to grow and change as future communication needs emerge. Mission accomplished."

Denis Fodi, County Radio System Manager

incorporates the same longevity, reliability, and cost savings that we have come to expect from the Pasco Way. By keeping the existing coverage footprint, Pasco was able to cost-effectively enhance the coverage area throughout the County. There would be no loss of service – only increased coverage. Maximizing coverage included adding four new sites and reusing

three existing sites, which facilitated easier communication with Pinellas, Polk, Okaloosa County and Hernando Counties. Coverage is more than just a number!

Solution:

- › Ten (10) sites (3 existing and 7 new)
- › Eight (8) channel P25 Phase II 800 MHz simulcast system
- › Twenty One (21) Symphony Dispatch consoles

Guaranteed Coverage:

- › 98% portable on the street county-wide coverage
- › 95% portable mandatory in-building coverage

Williams continues to provide maintenance and support for this system.

On July 14, 2015, Pasco awarded Williams Communications, Inc. with the Project 25 Phase II Radio Communications system project.

Contact

Todd Bayley, Chief Information Officer
75666 State St.
New Port Richey, FL 34654
727.847.8101
tbayley@pascocountyflorida.net



Putnam County, Florida

Okaloosa County saw the need to upgrade their current console situation. After going out to RFP they decided on the L3 Harris Symphony consoles. Williams Communications was selected as the vendor to deliver this system to Okaloosa County. The approach was simple; update their consoles with the road map of upgrading the rest of the system in the years to come. With the investment in the Symphony Consoles, we also



“We have been extremely happy with the service and installation work Williams Communications has provided”

Putnam County Chief Deputy Joseph Wells

purchased the VIDA CORE. This gives them the backbone to a radio system upgrade. With the Network First Gateway we are able to migrate them at their own pace. All the components used on the Symphony console will be reusable once Okaloosa County moves to 800MHz P25 Phase 2.

Along with the Symphony Consoles Okaloosa County has begun to utilize the Push to talk over Cellular; BeOn. This is the only point to point fully Encrypted (AES 256 Bit). This will serve as another bridge to bring their radio system coverage to another level while they work towards a full system upgrade.

Solution:

- › Symphony Consoles
- › 8 Main PSAP location, 7 at the Backup PSAP
- › Two redundant VIDA CORES
- › BeOn PTT over LTE server (30+) licenses expandable up to 5000 users

Contact

Colonel Joseph Wells
Chief Deputy Putnam County Sheriff's Office
130 Oriole Griffin Blvd Palatka, Putnam County,
Florida 32177 USA
Phone: 386-329-0815



Walton County Sheriff's Office, Florida

The State of Florida's Statewide Law Enforcement Radio System (SLERS) is a trunked, digital, and encrypted 800 MHz radio system covering the entire state. All State of Florida law enforcement and public safety agencies are utilizing this system. County Sheriff's Offices, municipal police departments, and other authorized public safety organizations have the option of becoming a SLERS partner, thus improving their



Agencies eligible to be part of the 800 MHz system have their own virtual private radio system and are able to communicate with State agencies when required.

communications capabilities. Leveraging the existing State investment and adding three more sites was the best value and best coverage with the technology available for their public safety users. Equipment is P25 ready, so a switch over to a stand-alone P25 system, can be a phased, planned approach. "This is a cost-effective way to promote public safety. The SLERS system provides better communication over a wider range to allow first responders to work together to save lives."

Solution:

- › Expanded current 4 site system by adding 3 additional sites for a total of 7 sites
- › Eight (8) Channel RF sites
- › Eleven (11) position Zetron console system
- › Over 900 users county-wide
- › P25/EDACS

Williams continues to provide service and maintenance for this system.

Contact

Audie Rowell
Major
752 Triple G. Road DeFuniak Springs, FL 32433
Phone: 850.892.8111



Customer Testimonials



"Anybody can sell a radio,
but it's Williams that makes the difference"



SHERIFF GORDON SMITH
BRADFORD COUNTY, FLORIDA



"It is not only the advanced technology Williams offers, it is the individuals they have installing and maintaining the technology that puts them a cut above the rest!"



- TODD BAYLEY, C.I.O.
PASCO COUNTY, FL



"Throughout the process (of implementing a new system with Williams Communications, Inc.), we truly felt that we were partners and not just a customer. In my many years of dealing with other vendors on similar projects, I can honestly say this had not been the case in the past and was a most welcome surprise."



- MIKE SMITH, E911 DIRECTOR
NEWTON COUNTY, GA
COVINGTON-NEWTON COUNTY, GA



"Floyd County officials had to respond quickly to damaging storms of major impact areas," stated Floyd County Emergency Management Agency Director Scotty Hancock. "Of the recorded 8,400 push-to-talk calls made on our new Harris communication system, during a three-hour period, there were no communication issues reported. When you work with Williams Communications, you receive highly trained staff who are prompt and professional."



- SCOTTY HANCOCK, CHAIRMAN COUNTY COMMISSION
FLOYD COUNTY, GA

ANALOG SIMULCAST OVER IP (AS-IP)

Integrated Voice And Paging Solution

L3Harris Analog Simulcast over IP is a compact and resilient network solution for voice and paging. AS-IP reduces the total cost of ownership by providing advanced functionality with less equipment, better coverage on a single frequency and the ability to expand as organizational needs change.

The system can act standalone or as an analog simulcast overlay added to new or existing L3Harris P25 networks. Designed to provide wide-area coverage through multiple transmitters using a single frequency, AS-IP allows the addition of a console gateway to connect the system to a dispatch solution. Capabilities can also be expanded through Enable Suite applications or other standard third-party analog equipment.

L3Harris AS-IP uses significantly less equipment than typical analog simulcast networks and enhances efficiencies and resiliency by building voting and site control into the TB9400 base station.

The AS-IP network portfolio incorporates the 9400 series of portable and mobile radios, delivering a cost-efficient solution that can grow with customers' needs for both analog and P25 capabilities.



COST-EFFICIENT WIDE-AREA COVERAGE

KEY BENEFITS

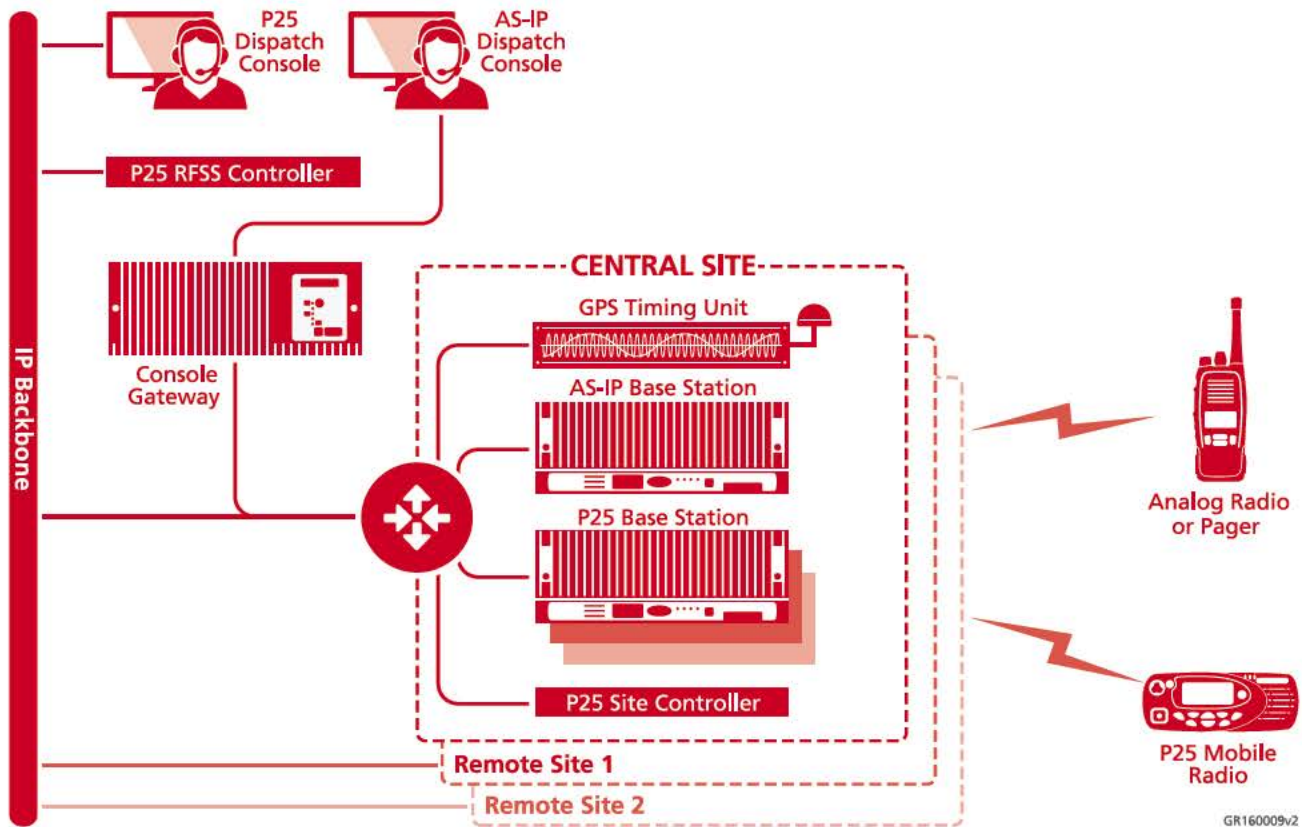
- > Improves coverage by acting as a standalone or analog simulcast overlay to new or existing L3Harris P25 networks
- > Requires less equipment than a typical analog simulcast network
- > Eases path to migration by utilizing the latest 9400 product series within L3Harris P25 networks for Phase 1 and Phase 2 operations
- > Increases efficiencies and resilience with voting and site controls
- > Console gateway can be added to connect to a dispatch solution



AS-IP Analog Simulcast overlay on P25 networks

The L3Harris AS-IP system employs the same 9400 series products found in L3Harris P25 networks for Phase 1 and Phase 2 linear simulcast operation, allowing full reuse of the AS-IP hardware platform and licenses when users are ready to migrate to a P25 solution.

Furthermore, the L3Harris AS-IP trunking can complement a P25 network by adding an analog simulcast overlay to a P25 trunking or P25 conventional solution, allowing analog voice and paging applications for legacy analog radio users, such as mutual-aid channels.



Technical specifications are subject to change without notice.
Product sales are subject to applicable U.S. export control laws.

Analog Simulcast Over IP (AS-IP)

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L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



1025 W. NASA Boulevard
Melbourne, FL 32919



L3HARRIS™
FAST. FORWARD.

BeOn® MOBILE **APPLICATION**

Public Safety's Most Advanced P25
Push-To-Talk Application



CONNECT EASILY AND AFFORDABLY

Public safety's most advanced P25 Push-To-Talk application

Public safety agencies and utility companies rely on the Land Mobile Radio's Push-To-Talk (PTT) capabilities as a primary means for transmitting voice communications. BeOn is an application that extends the capabilities of your LMR network to smartphones, tablets and PCs—providing PTT communications far beyond the boundaries of regional radio systems, and opening up affordable PTT communications to new user groups.

BeOn keeps you connected to your LMR system anywhere you have a cellular data signal, Wi-Fi® or other data connectivity, and provides a direct connection to the backbone of your LMR system—fully supporting the features of a P25 radio network. This enables BeOn to have the same PTT user experience, fleet management and security experience as the P25 system—simplifying management with only a single system to maintain.





**FAST, INTUITIVE ACCESS
TO KEY FEATURES**

**MOST ADVANCED FEATURE
SET ON THE MARKET**

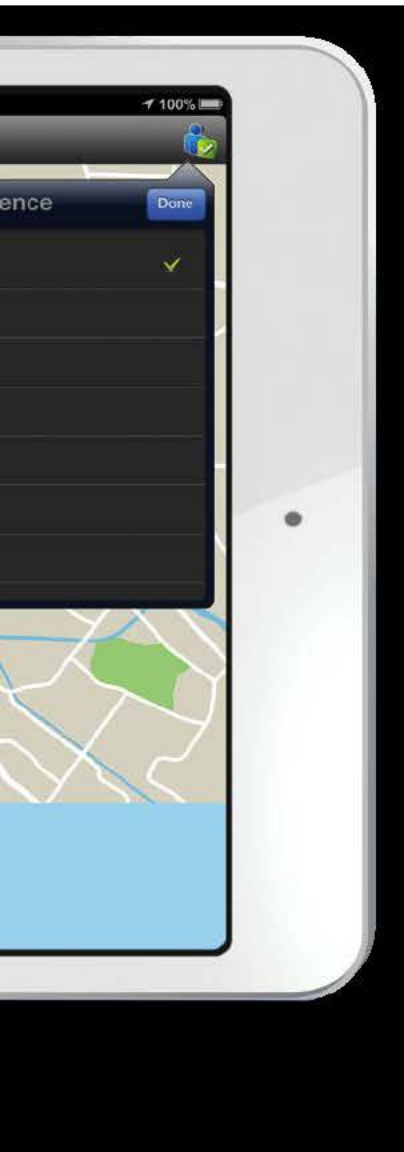
- > Display location of LMR radios
- > Full AES end-to-end encryption
- > Group voice call
- > Individual voice call
- > Distress indication
- > Announcement group calls
- > Instant recall / call logging
- > Console / supervisory override
- > Talkgroup scanning
- > Late call entry
- > P25 confirmed call
- > Priority / preemptive support
- > P25 OTAR key management
- > Console patch / simulselect
- > Group location
- > User presence indication
- > Location privacy
- > BeOn text messaging



EXTEND LMR COVERAGE BEYOND REGIONAL BOUNDARIES



BeOn offers an economical path to P25 through the use of legacy system gateways.



The BeOn application can be an essential enhancement to P25 and legacy network systems.

BeOn allows users to maintain a full set of advanced LMR features on an ordinary smartphone, and will work anywhere in the world where Wi-Fi® or cellular data service is available—regardless of the carrier.

This advanced Push-To-Talk application is supported on iOS™, Android™ and Windows®, and is integrated into the L3Harris XL-185P and XL-200P LTE Land Mobile Radios. This extends the range of the XL portables' coverage and allows users to leverage broadband to improve situational awareness.

BeOn can quickly be added to existing L3Harris VIDA® networks as a core service, or deployed on legacy and non-L3Harris LMR networks via gateways.

By utilizing the capacity of broadband networks, BeOn helps divert traffic from narrowband communications, providing an additional level of redundancy for those systems while reducing traffic load on the LMR system.



PUBLIC SAFETY LTE



LEGACY DEVICES AND SYSTEMS



BeOn ENABLED DEVICES



P25 DEVICES AND SYSTEMS



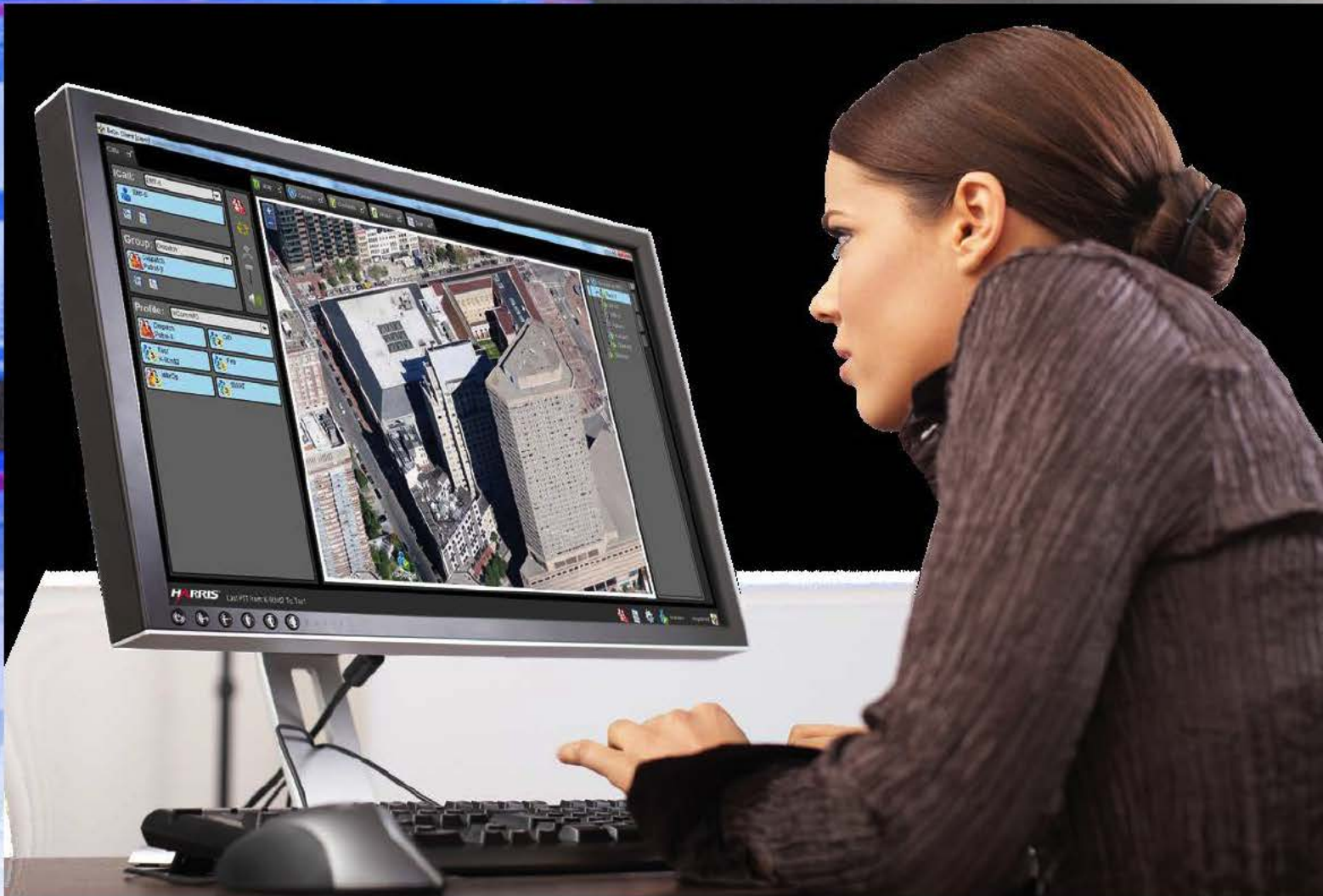
STAY CONNECTED WITHOUT BREAKING THE BANK

Command staff and administrators can stay in touch with LMR network activities using PCs and mobile devices.

Behind a desk or behind a screen at incident command, BeOn Windows Client allows users to stay in full, direct contact with their LMR system without investing in additional, more-costly equipment. BeOn runs as an application on PCs and smartphones, but it looks like an LMR radio to your system.

This makes BeOn the perfect solution for administrators needing to communicate or track location of team members, without adding the expense of an additional LMR radio.

BeOn is a broadband PTT tool built from the ground up to support the P25 LMR feature set.



TRULY INTEGRATED P25 EXPERIENCE

Most advanced P25 PTT application on the market



THIS FEATURE-RICH APPLICATION DELIVERS FAR MORE THAN JUST PUSH-TO-TALK CAPABILITY.

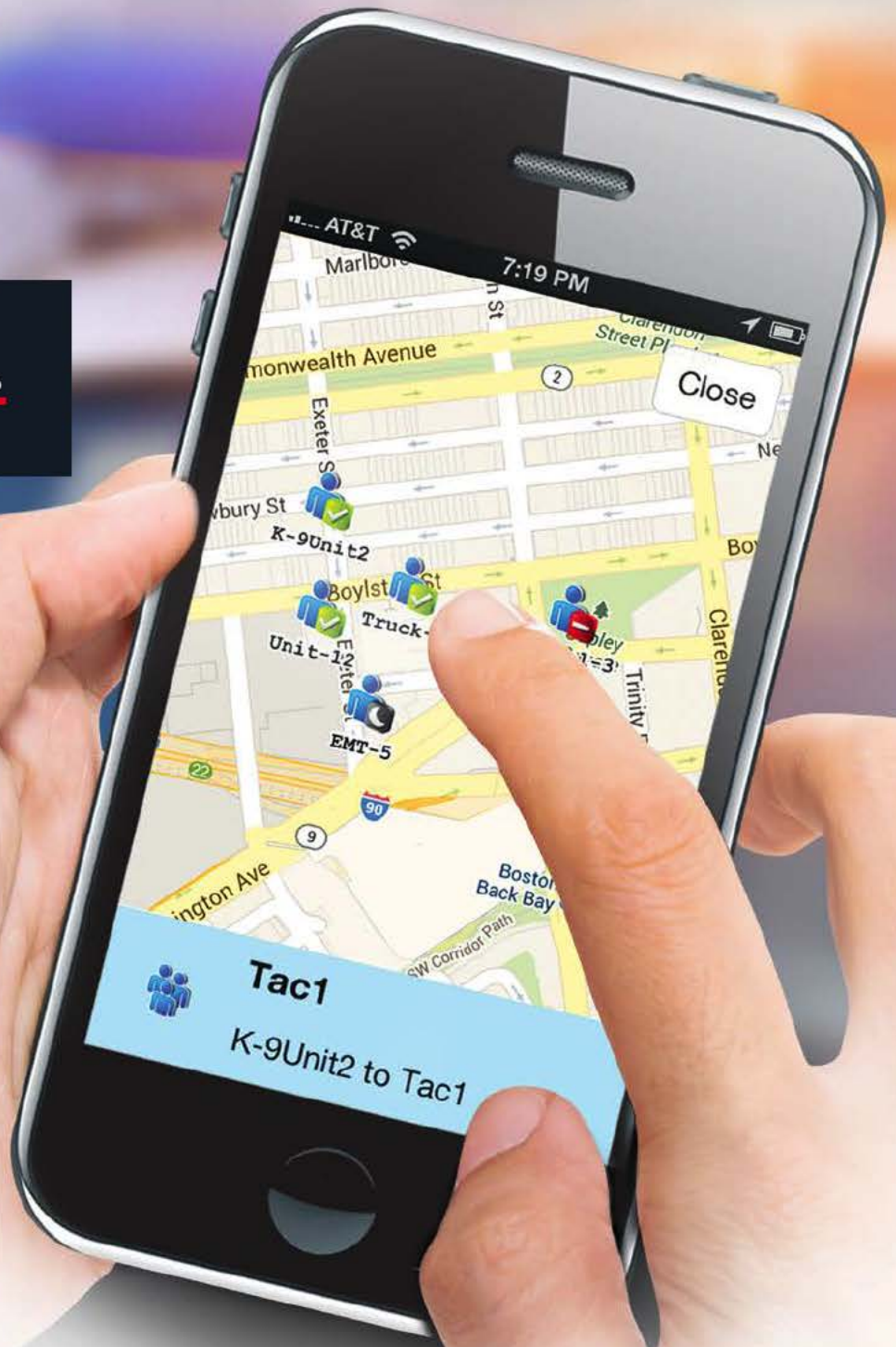
BeOn is an integrated part of the L3Harris solution. BeOn is more secure, using the same encryption keys for radios and smartphones, making it easier to manage and maintain—only one database of users and one console to access both radios and smartphones.

BeOn harnesses converged LMR and LTE technologies to connect group communications between P25 systems and broadband networks.

BeOn users can exchange text messages and pass real-time location and presence information between connected team members. The application also enhances security by sharing same encryption keys between radios and smartphones.

P25 AMBE VOCODER	✓	✓
Group, individual and confirmed calls	✓	✓
Distress calls	✓	✓
Priority and preemption	✓	✓
256-bit AES encryption	✓	✓
Late call entry	✓	✓
Featured dispatch capabilities	✓	✓
Patch and Simulselect	✓	✓

FAST. FORWARD.



BeOn® Mobile Application
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Non-Export Controlled Information

L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.





CS7000 CONTROL STATION FOR XG-75M AND M5300

POWERFUL AND RELIABLE COMMUNICATIONS

The CS7000 is a compact, state-of-the-art control station that provides dual-band half-duplex operation with an XG-75M, single-band half-duplex operation with an M5300, and 700/800 MHz, VHF 50W, UHF-L, and UHF-H frequencies with an XG-75M and 800 and 900 MHz frequencies with an M5300. The unit supports multiple operating modes, including OpenSky® digital operation, Enhanced Digital Access Communication System (EDACS®) or ProVoice™ trunked modes, P25 digital trunked mode, P25 digital conventional mode, and conventional analog mode.

FEATURES

Reliable access to the sophisticated data capabilities of Harris' OpenSky trunked wireless voice and data network.

P25 digital conventional or trunked capabilities for interoperability with other critical communications users.

Up to 1,024 different combinations of trunked systems/groups and up to 1,024 conventional channels.

Includes critical communications features Emergency and Dynamic Regroup as standard in the M5300/XG-75M to deliver advanced performance.

Features, profiles, and system updates are software-defined and can be reprogrammed over the air.

USER INTERFACES

The CS7000 can be operated locally with the full capabilities of its radio and CH-721 Control Unit. Additionally, the CS7000 can provide a Controller Area Network (CAN) interface that supports up to four SP-721 Desksets, which allow remote users to operate the CS7000 on a first-come, first-served basis. The SP-721 Deskset is a digital Remote Controller based on the CH-721 Control Unit, so it provides the same user interface as the CH-721.

Alternatively, the CS7000 can be operated using one of two Remote Control Systems. One is a Standard Tone Remote Control over a two-wire or four-wire telephone line interface

and the other is a Voice-over-Internet Protocol (VoIP) Remote Control System over an Ethernet network. These Remote Control Systems allow remote selection and operation on up to 16 pre-programmed system/group combinations as well as control unit button functions.

SECURE COMMUNICATIONS

Optional password protection and AES are available for maximum security. Harris radios operate the most advanced vocoder on a private wireless Intranet that provides maximum voice channel capacity.

GENERAL SPECIFICATIONS

Dimensions (H x W x D):

Desktop (excludes rubber feet)
3.5 x 17 x 13.1 in.
(8.9 x 43.2 x 33.3 cm)

Rack Mount

3.5 x 17 x 13.1 in.
(8.9 x 43.2 x 33.3 cm)

Weight:

Without Transceiver: 18 lb (8.2 kg)
With Transceiver: 24 lb (11 kg)

System Voltage:

110-120 VAC, 50/60 Hz
220-240 VAC, 50/60 Hz

Maximum Current:

4.0 Amps

Mounting:

19-inch rack mount

Programming:

- Over-the-Air Programming
- USB Interface to the radio's programming serial port
- Web browser-based CS7000 configuration through an Ethernet interface

Options and Accessories:

- Remote Interface Module for connectivity to third-party Remote Controllers
- Advanced Encryption Standard (AES)
- DES Encryption
- Over-the-Air Rekeying (OTAR)
- 7 dBd (9dBi) Directional Antenna (N-type Connector)

About Harris Corporation

Harris Corporation is a leading technology innovator that creates mission-critical solutions that connect, inform and protect the world. The company's advanced technology provides information and insight to customers operating in demanding environments from ocean to orbit and everywhere in between. Harris has approximately \$8 billion in annual revenue and supports customers in 125 countries through four customer-focused business segments: Communication Systems, Space and Intelligence Systems, Electronic Systems, and Critical Networks.

CONTROLLER SUPPORT

SP-721 Deskset Controllers

Local Remote CS7000 with an OpenSky radio

Local Remote CS7000 with a P25/EDACS/Analog radio

VoIP Remote Controllers

Local Remote CS7000 with either mode radio

Tone Remote Controllers

Local Remote CS7000 with either mode radio

*A Local Remote CS7000 using a remote mount radio can support up to five SP-721 or CH-721

Number of Supported Controllers

Up to four SP-721 or CH-721*

Up to four SP-721 or CH-721 in Parallel Mode*

Up to 21 Model 24-66 VoIP Remote Controllers

Number of Remote Controllers limited by telephone line loss

EXTERNAL CONNECTIONS

The CS7000 contains an internal power supply and internal speaker. It requires connections only to an external N-type antenna, AC power, and desk mic. The CS7000 also has a USB interface to the radio's serial port for radio programming. Additionally, the Local/Remote CS7000 includes a CAN interface, a balanced 600-ohm telephone line interface for standard Tone Remote Control, and an Ethernet interface for a VoIP Remote Control and CS7000 configuration.

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature:

Local Control Unit @ 50% duty cycle: -22 to +104°F (-30 to +40°C)

Local Control Unit @ 20% duty cycle: -22 to +140°F (-30 to +60°C)

Local Remote Unit @ 50% duty cycle: +32 to +104°F (0 to +40°C)

Local Remote Unit @ 20% duty cycle: +32 to +140°F (0 to +60°C)

Storage Temperature: -40 to 140°F (-40 to +60°C)

SAFETY APPROVALS

UL 60950-1

CSA 22.2

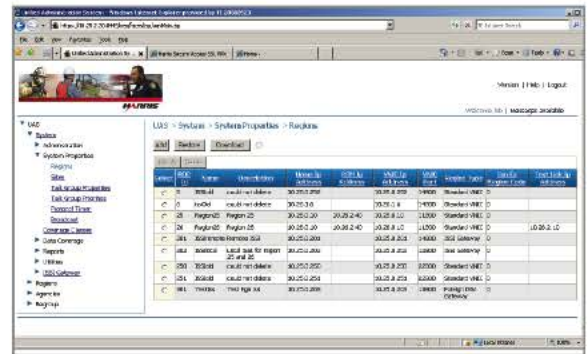
Please refer to the appropriate XG-75M or M5300 data sheet for additional specifications.

Technical specifications are subject to change without notice. Product sales are subject to applicable U.S. export control laws.

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The Unified Administration System

- Is an IP-based network administration tool built on web-based technology
- Allows dynamic talkgroup setup for interoperability
- Provides user class-based security management



The Unified Administration System (UAS) provides an open system interface to the difficult radio system task known as Fleet Mapping. Fleet Mapping is performed through different levels of administration classified as Resource Pooling, Resource Allocation, or Resource Provisioning. The design of the UAS eases the burden of radio system administrators by providing a tool with intuitive interfaces, integrity checking, and utilities. Customizable security schemes allow operation privileges to be defined on a user basis.

The UAS is implemented using a 3-tier approach consisting of the Network Administration Server (NAServer), the Network Provisioning Server (NPServer), and a Relational Database Management System (RDBMS). Access to the UAS is via a commercial off-the-shelf (COTS) web browser that has network connectivity to the system. The UAS is the centralized access point from which the system is administered. It is an integrated real-time administration tool based on a client-server architecture that allows simultaneous access by multiple authenticated users at any VIDA® core or remote location. Authenticated users administer

network elements including IP broadcast domains, voice gateways, end users, and mobile radios.

The UAS application is installed as a virtual machine package on the VIDA Application Server (VAS) as part of a VIDA Premier or VIDA Unite core.

Key Features

The UAS provides administrative access to the system in the form of one of the following:

- Radio System Administration
- Resource Pooling
- Resource Allocation
- Resource Provisioning

System Administration

System Administration refers to the tasks of security management such as managing administration user accounts, establishing regions within the system, and configuring voice group coverage for the system.

Resource Pooling

Resource Pooling refers to the task of establishing public and private domains of resources within the system. An example of this is establishing a domain of voice

group priority classes from which lower level administrators may draw to establish their localized fleet maps. This model of drawing from established pools of resources helps to maintain data integrity throughout the system.

Resource Allocation

Resource allocation refers to the task of assigning ranges, or sub-domains, of resources from the established pools to a lower-level administrator. An example of this is allocating a range, or ranges, of IP addresses to a lower-level administrator who could then assign the addresses to network elements within their localized domain.

Resource Provisioning

Resource Provisioning refers to the task of dynamically provisioning elements within a low-level administrator's domain with attributes from the ranges of available resources allocated previously. An example of this is assigning a radio a list of available voice groups which are provisioned real-time based on the previously established personality of the end user.

OpenSky®

Harris' OpenSky Wireless Private Network is a fully interoperable digital trunked communications network for public safety, utility, federal, transit, and industrial markets. OpenSky is a complete end-to-end Voice over Internet Protocol (VoIP) solution and employs packet technology to provide integrated voice and data. The OpenSky radio network is the only private land mobile radio communications system that provides clean integration of data messaging with trunked digital voice on the same RF channel. Integrated voice and data over Time Division Multiple Access (TDMA) allows users to perform multiple communication functions at the same time on one radio. The use of TDMA quadruples call capacity by allowing four simultaneous voice calls per 25 kHz channel.

NetworkFirst®

Public safety communications in today's world face unprecedented challenges. More than ever, Homeland Security and Situation Readiness depend heavily on effective communication among federal, state, county, and local agencies. Harris' NetworkFirst answers the call for an emergency communications network that provides local, regional, state, and even nationwide connectivity. NetworkFirst uses cost-effective Internet Protocol (IP) packet switched technologies to provide a fast, cost-effective means of achieving multi-agency interoperability, regardless of radio type, frequency, or mode. NetworkFirst creates the most technologically advanced permanent communications network available in the industry today, providing a technology backbone that is extremely flexible, allowing communications requirements to expand – without a wholesale system changeout.

P25^{IP}

Harris' P25^{IP} (P25 to the power of IP) is the first completely Internet Protocol (IP)-based conventional mobile radio communications system developed for users requiring the secure digital voice and data capabilities of Project 25 (P25). P25^{IP} is part of a portfolio of solutions that Harris offers for wide-area communication systems – each of which is capable of meeting the communications requirements of public safety, public service, and first responders. Within the Harris portfolio, the P25^{IP} network provides an excellent fit for those agencies which have lower user densities (few users covering larger geographic areas) but still require feature-rich secure voice and data communications. P25^P is also particularly appropriate for users operating with non-exclusive VHF and UHF frequencies. For federal users, P25^P meets the Congressional and NTIA mandates for the narrowband (12.5 kHz) migration.

General Specifications for the VIDA Application Server

Dimensions (Chassis) (H x W x D):

1.74 x 16.75 x 28.12 in. (42.8 x 434 x 736.3 mm)

Shipping Weight (approximate):

41 lb (18.6 kg) fully configured

Hardware (VIDA Application Server)

System:

E5-2640 processor

Memory per server:

128 GB

Available Disk Space (on Storage Array Network):

12 x 600 GB, 10K drives

Peripherals per server:

Four 1-Gb Ethernet ports

Software:

VMware® virtualization software

Windows Server® 2012 Datacenter

Linux® Red Hat®

Harris VIDA Management application software, including Regional Network Manager, Unified Administration System, Active Directory, System Management Service, Activity Warehouse, Network Key Management Facility, and Device Manager

Real-time software, including VNIC, Transcoder, and optional ISSI Gateway, eData Gateway, and Encompass Gateway applications

Environmental

AC Power:

100-240 VAC, 50/60 Hz

Maximum Current Consumption:

10A

Operating Environment:

+50 to +95°F (+10 to +35°C), 10 to 80% relative humidity, non-condensing

Non-operating Environment:

-40 to +149°F (-40 to +65°C), 5 to 95% relative humidity

Heat Dissipation:

2891 BTU/h maximum

Regulatory Data

Meets or exceeds the following specifications:

Safety:

IEC60950, UL/CSA-60950, EN60950

RFI/EMI:

FCC Class A, Part 15 47 CFR, EN55022, CISPR 22

Immunity:

EN55024

Certifications:

Safety:

cULus Mark, TUV GS Mark, CE Mark, S-Mark, CCC, GOST

EMC:

CE Mark (93/68/EEC), FCC authorized Class A, ICES, VCCI, BSMI, EK, CTICK, MIC, CCC, GOST





HARRIS MASTR[®] V DCP SIMULCAST SYSTEM

VHF, UHF, 700, 800, 900 MHz

COST-EFFECTIVE WIDE-AREA COVERAGE

KEY BENEFITS

Cost-effective way to increase coverage for systems with limited available frequencies

Continuous overlapping coverage enhances user-mobility

P25 Phase 1 and Phase 2 ready. Software upgradeable to P25 Phase 2

Remote capabilities for timing, setup, status, alignment verification and alarms

The Harris Distributed Control Point (DCP) Simulcast System provides an end-to-end digital solution based on the proven MASTR V hardware platform. It provides unmatched flexibility for those seeking large-scale, multiple-agency connectivity in coverage areas too large for a single, centralized transmitter.

WIDE-AREA COVERAGE

MASTR V Simulcast Systems provide a reliable solution for wide-area coverage demands in frequency-constrained systems. Where there is a need to extend coverage to multiple agencies in a common territory, the MASTR V DCP Simulcast System from Harris is a flexible and proven solution to deliver increased capacity to enhance a customer's critical-communications needs.

STANDARDIZED PLATFORM

- VIDA[®] Network Sentry for status and alarming
- Mini-mobility Exchange (MME) data handling
- Redundant GPS time base receivers
- Optional Intrusion Detection System
- Redundant Ethernet switches
- Router connectivity to VIDA network
- MASTR V Control Shelf and Modules
- Power supply units: 115 VAC or -48 VDC
- Linear Mode Transmitters for improved RF system performance

PROVEN MASTR V PLATFORM

GENERAL

Size (Base Station)	4 channels per 5 Rack Unit Shelf
Open Rack Dimensions	86.0 H x 20.5 W x 19.295 D in (218 H x 52 W x 49 D cm)
Cabinet Dimensions	86.0 H x 23.0 W x 31.5 D in (218 H x 58 W x 80 D cm)
Power	90-230 VAC or -48 VDC
Ambient Temperature Range	-22° F to +140° F (-30° C to +60° C)
Humidity	90% @ 122° F (+50° C)
Altitude	Operational: Up to 15,000 ft (4,572 m) Shippable: Up to 50,000 ft (15,240 m)

TRANSMITTER

	VHF	UHF	700	800	900
Frequency Range (MHz)	150-174	380-400 403-430 450-470 470-494 494-520	764-776	851-870	935-941
Rated Power Output (W)	100	100	100	100	100
RF Output Impedance (ohm)	50	50	50	50	50
Conducted Spurious and Harmonic Emissions (dBc)	<-86	<-86	<-70	<-70	<-70
Frequency Stability (ppm)	<0.1	<0.1	<0.1	<0.1	<0.1
Channel Spacing (kHz)	12.5	12.5	12.5	12.5	12.5
Synthesizer Step Size (kHz)	1.25	1.25	6.25	6.25	6.25

RECEIVER

	VHF	UHF	700	800	900
Frequency Range (MHz)	150-174	380-400 403-430 450-470 470-494 494-520	799-817	806-824	896-902
Sensitivity, TIA-P25 (dBm)	<-118	<-118	<-119	<-119	<-119
RF Output Impedance (ohm)	50	50	50	50	50
Intermodulation Rejection, TIA-P25 (dB)	>80	>80	>80	>80	>80
Spurious and Image Rejection (dB)	≥90	≥90	≥90	≥90	≥90
Frequency Stability (ppm)	<0.1	<0.1	<0.1	<0.1	<0.1
Channel Spacing (kHz)	12.5	12.5	12.5	12.5	12.5
Synthesizer Step Size (kHz)	1.25	1.25	6.25	6.25	6.25

OPERATIONAL MODES

Mode	Modulation	Emission Designator
P25 Phase 1	C4FM	8K00F2D/8K00F1E*
P25 Linear Simulcast	WCQPSK	9K70D1W
P25 Phase 2	HDQPSK	9K80D7W

REGULATORY DATA

Frequency Range (MHz)	Power Output (Adjustable) (W)	FCC Type Acceptance Number	Applicable FCC Rules	Industry Canada Certification Number	Applicable Industry Canada Rules	NTIA Certification Number
150-174	10-100	OWDTR-0065-E	22, 80, 90	3636B-0065	RSS-119	J/F 12/09628
380-400	10-100	NA	NA	NA	NA	J/F 12/09628
406.1-420	10-100	NA	NA	NA	NA	J/F 12/09628
420-430	10-100	OWDTR-0129-E	90	3636B-0129	RSS-119	NA
450-470	10-100	OWDTR-0130-E	22, 80, 90	3636B-0130	RSS-119	NA
470-494	10-100	OWDTR-0100-E	90	NA	NA	NA
494-512	10-100	OWDTR-0101-E	90	NA	NA	NA
764-776	10-100	OWDTR-0057-E	90	3636B-0057	RSS-119	NA
851-869	10-100	OWDTR-0053-E	90	3636B-0053	RSS-119	NA
935-940**	10-100	OWDTR-0156-E	90	3636B-0156	RSS-119	NA

*VHF, 420-430, 450-470, 935-940

**Pending regulatory approval

About Harris Corporation

Harris Corporation is a leading technology innovator, solving customers' toughest mission-critical challenges by providing solutions that connect, inform and protect. Harris supports government and commercial customers around the world.

Learn more at harris.com.

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HARRIS® TECHNOLOGY TO CONNECT,
INFORM AND PROTECT™

MASTR® V BASE STATION

VHF, UHF, 700, 800, 900 MHz

The L3Harris MASTR V Base Station features an IP-based architecture engineered to scale with each organization's critical communication needs as they change over time.

The MASTR V Base Station provides trunked communications to incorporate P25 digital voice and data. Compliant with the P25 CAI, this linear simulcast solution employs an on-board voice encoder/decoder to translate digital voice for immediate access through a user's existing network.

MASTR V delivers significant IP-based enhancements including seamless integration of COTS data applications

and devices. It supports more economical routing and backhaul of network information and critical data redundancy.

The L3Harris MASTR V Base Station has a user-friendly software interface for easy setup, field upgrades and remote programming. Its compact, integrated hardware design allows up to eight channels per cabinet and simplifies maintenance and servicing.



PROVEN, FUTURE-PROOF P25 PLATFORM

KEY BENEFITS

- > Scalable Internet Protocol (IP) network
- > Secure digital trunked voice and data
- > Supports Project 25 Common Air Interface (P25 CAI)
- > Seamless integration of Commercial-Off-The-Shelf (COTS) applications and equipment
- > Simplified user interface with compact and integrated hardware footprint

GENERAL	
Size (Base Station)	4 Channels per 5 Rack Unit Shelf
Open Rack Dimensions	86.0 H x 20.5 W x 19.295 D in (218 H x 52 W x 49 D cm)
Cabinet Dimensions	86.0 H x 23.0 W x 31.5 D in (218 H x 58 W x 80 D cm)
Power	90-230 VAC or -48 VDC
Ambient Temperature Range	-22° to +140°F (-30° to +60°C)
Humidity	90% @ 122° F (+50°C)
Altitude	Operational: Up to 15,000 ft (4,572 m) Shippable: Up to 50,000 ft (15,240 m)

TRANSMITTER					
	VHF	UHF	700	800	900
Frequency Range (MHz)	150-174	380-400 403-430 450-470 470-494 494-520	764-776	851-870	935-941
Rated Power Output (W)	100	100	100	100	100
RF Output Impedance (ohm)	50	50	50	50	50
Conducted Spurious and Harmonic Emissions (dBc)	<-86	<-86	<-70	<-70	<-70
Frequency Stability (ppm)	<0.1	<0.1	<0.1	<0.1	<0.1
Channel Spacing (kHz)	12.5	12.5	12.5	12.5	12.5
Synthesizer Step Size (kHz)	1.25	1.25	6.25	6.25	6.25

RECEIVER					
	VHF	UHF	700	800	900
Frequency Range (MHz)	150-174	380-400 403-430 450-470 470-494 494-520	799-817	806-824	896-902
Sensitivity, TIA-P25 (dBm)	<-118	<-118	<-119	<-119	<-119
RF Output Impedance (ohm)	50	50	50	50	50
Intermodulation Rejection, TIA-P25 (dB)	>80	>80	>80	>80	>80
Spurious and Image Rejection (dB)	≥90	≥90	≥90	≥90	≥90
Frequency Stability (ppm)	<0.1	<0.1	<0.1	<0.1	<0.1
Channel Spacing (kHz)	12.5	12.5	12.5	12.5	12.5
Synthesizer Step Size (kHz)	1.25	1.25	6.25	6.25	6.25

OPERATIONAL MODES			
Mode	Modulation	Bit Rate (kbps)	Emission Designator
P25 Phase 1	C4FM	9.6	8K00F1D/8K00F1E*
P25 Phase 1 Simulcast HVD-FDMA	WCQPSK	9.6	9K70D1W
P25 Phase 2	H-DQPSK	12	9K80D7W
HVD-TDMA	DQPSK	19.2	18KD1W, 12K5D1W

Technical specifications are subject to change without notice.
Product sales are subject to applicable U.S. export control laws.

L3Harris MASTR® V Base Station
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REGULATORY DATA						
Frequency Range (MHz)	Power Output (Adjustable) (W)	FCC Type Acceptance Number	Applicable FCC Rules	Industry Canada Certification Number	Applicable Industry Canada Rules	NTIA Certification Number
150-174	10-100	OWDTR-0065-E	22, 80, 90	3636B-0065	RSS-119	J/F 12/09628
380-400	10-100	N/A	N/A	N/A	N/A	J/F 12/09628
406.1-420	10-100	N/A	N/A	N/A	N/A	J/F 12/09628
420-430	10-100	OWDTR-0129-E	90	3636B-0129	RSS-119	N/A
450-470	10-100	OWDTR-0130-E	22, 80, 90	3636B-0130	RSS-119	N/A
470-494	10-100	OWDTR-0100-E	90	N/A	N/A	N/A
494-512	10-100	OWDTR-0101-E	90	N/A	N/A	N/A
769-775	10-100	OWDTR-0159-E	90	3636B-0159	RSS-119	N/A
851-869	10-100	OWDTR-0158-E	90	3636B-0158	RSS-119	N/A
935-940	10-100	OWDTR-0156-E	90	3636B-0156	RSS-119	N/A

*VHF: 420-430, 450-470, 935-940



1025 W. NASA Boulevard
Melbourne, FL 32919



PSPC TECHNICAL ASSISTANCE CENTER

When critical communication systems malfunction, customers need fast, responsive support to get equipment back up and running. The L3Harris Public Safety and Professional Communications (PSPC) Technical Assistance Center (TAC) provides industry-leading expertise and critical product support.

With their choice of Priority or Preferred TAC support, customers get real-time maintenance, programming and troubleshooting guidance from L3Harris product specialists and engineers.

Priority TAC services are available around-the-clock and all-year-round. Coverage includes fixed-site equipment, mobiles and portables. Preferred TAC customers are provided with toll-free assistance for all PSPC equipment during regular business hours, with a commitment for return call or email within 24 hours.

A variety of technical online products are available to enhance Priority and Preferred support, giving customers access to product information, technical knowledge bases and latest software upgrades.



TECHNICAL EXPERTS AVAILABLE AROUND-THE-CLOCK

KEY BENEFITS

- > Technical assistance available 24/7, 365 days a year
- > On-call experts help customers rapidly resolve issues
- > Easy online access to product knowledge base and technical information
- > Variety of service options tailored to business needs

PSPC TECHNICAL ASSISTANCE CENTER

Priority TAC Support

Priority TAC Support links customers access with technical experts 24 hours per day, 7 days a week, including holidays. If on-site support is needed, TAC will coordinate the effort with L3Harris personnel.

Priority TAC support services

- > Guaranteed callback within 2 hours, or 1 hour for system off-the-air emergencies
- > Coverage for L3Harris PSPC mobiles, portables and system configurations including OpenSky®, P25 and EDACS®
- > Level 3 and Level 4 support for resolution of complex issues
- > Pricing options are based on system complexity, with annual and multi-year agreements available
- > Subscriptions to Tech-Link support services are included

Call or email the PSPC Technical Assistance Center for priority TAC support pricing.

Preferred TAC Support

Preferred TAC Support is accessible to all L3Harris customers from 8 a.m. to 5 p.m. EST, Monday through Friday, excluding holidays. Specialists provide Level 1 and Level 2 Help Desk guidance and troubleshooting for product operations, programming and maintenance.

Each customer issue and its resolution is logged, stored and categorized within a state-of-the-art tracking and knowledge system, giving TAC specialists a dynamic search tool for quick, efficient issue resolution.

Preferred TAC support services

- > Technical assistance for L3Harris PSPC mobiles, portables, accessories, trunked and conventional system
- > First-in, first-out service with commitment to contact customers by phone or email by the next business day
- > Toll-free service throughout all North American time zones
- > State-of-the-art tracking system gives customers easy access to call status

Telephone:

1-800-528-7711 in the U.S. and Canada
+1-434-385-2400 Worldwide

Email: PSPC_TAC@L3Harris.com

Enhanced Technical Service Options

Customers can choose from the following digital services to tailor Priority and Preferred coverage for more specific needs:

Tech-Link support services

This website service offers electronic retrieval and exchange of technical information, along with rapid access to product information and expert assistance. Subscribers can use this service to:

- > Access and search technical libraries
- > Read current software release notes
- > Request technical assistance from TAC

Technical service memos and important product notifications

This time-critical solution provides subscribers with email updates on use, maintenance and service of L3Harris PSPC products. Customers are also alerted to new downloads available on Tech-Link. Email notifications are sent to subscribers announcing materials available for download from the Tech-Link website.

Field feature encryption upgrades

As customer needs and requirements grow, L3Harris radio capabilities can also expand. Field Feature Encryption allows users to selectively upgrade terminals to better match latest operational and budgetary demands.

PSPC Technical Assistance Center

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1025 W. NASA Boulevard
Melbourne, FL 32919

SECURITY UPDATE MANAGED SERVICES (SUMS+)

ENHANCE SECURITY WITH AUTOMATED PATCHES

With multiple operating systems to maintain and new software vulnerabilities exposed daily, protecting your infrastructure is critical. That's why you need a way to assess, deploy and manage security patches efficiently. Security Update Managed Services (SUMS+) addresses that need with an automated patch process.



SUMS+ works to continually acquire, test, package and distribute multiple patch policies at once, removing considerable patch management overhead.

How does it work? The SUMS+ automation agent continuously monitors and reports endpoint state, including patch levels,

to a management server. This agent also compares endpoint compliance against defined policies, such as mandatory patch levels.

Your organization can quickly create a report showing which endpoints need updates and then distribute them within minutes. IT administrators can safely and rapidly patch Windows®, Linux® and UNIX® operating systems without domain-specific knowledge or expertise.

Once deployed, SUMS+ works to continually reassess the endpoint status to confirm successful installation and to update the management server in real time.



KEY BENEFITS

- > Automates the updates that can secure your system
- > Predictable annual cost helps you avoid surprises and budget effectively
- > Operating System patches are pre-tested with VIDA® systems for continuity of mission-critical communication services

SUMS+ PROVIDES THE IMPORTANT UPDATES YOU NEED

SUMS+ is available as part of a L3Harris Managed Services plan. It's designed to provide and continually apply periodic security updates.

- > Continually manages patches for multiple operating systems and applications across hundreds of endpoints
- > Reduce security and compliance risk by slashing remediation cycles from weeks to days and hours
- > Gain greater visibility into patch compliance with flexible, real-time monitoring and reporting
- > Provide up-to-date visibility and control from a single management console

SOFTWARE RELEASE NOTES

Each software update includes Software Release Notes. These technical documents detail the following:

- > Product Vulnerability Alert (PVA) resolution or mitigation information
- > Software and hardware compatibility and information, where applicable

TELEPHONE SUPPORT

The Technical Assistance Center (TAC) in Lynchburg, Virginia provides telephone support for installation from 8 a.m. to 5 p.m. (ET), Monday through Friday, excluding Holidays.

U.S. and Canada: 1-800-528-7711 | Worldwide: +1-434-385-2400

SUBSCRIPTION OPTIONS

SUMS+ subscriptions can be purchased as part of a L3Harris Managed Services plan on an annual basis or through discounted multi-year plans. Fees are based on the size and complexity of the customer's system.

YEARLY SUBSCRIPTION

The single-year commitment is paid annually. The plan allows the first-time buyer to discover the investment value of L3Harris Managed Services and SUMS+ without making a long-term commitment.

MULTI-YEAR SINGLE INSTALLMENT

This plan offers a significant discount for a one-time payment covering several years of L3Harris Managed Services with SUMS+.

MULTI-YEAR ANNUAL PAYMENT

The fixed annual fee for a multi-year commitment option complements long-term planning with a predictable cost over the term of the contract.



Technical specifications are subject to change without notice.
Product sales are subject to applicable U.S. export control laws.

SECURITY UPDATE MANAGED SERVICES (SUMS+)

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SOFTWARE MANAGED SERVICES

KEEP YOUR SYSTEM CURRENT AND YOUR TEAM CONNECTED

Your radio system represents a major investment. It's the lifeblood of teams in the field. One way to keep your system up to date and working at peak performance is with software updates managed by L3Harris.



Software Managed Services (SMS) provides periodic updates so you can take advantage of new features and functions—even leverage new technology platforms.

Occasionally, SMS updates require modification, upgrade or replacement of hardware or operating systems to make use of the SMS update. To enable new features, additional licenses may need to be purchased from L3Harris; however, SMS also provides some new features at no charge.

SMS provides you with a cost-effective alternative to premature system replacement—it's easy to build into your annual budget. *Maximize efficiency while making costs more predictable.*



KEY BENEFITS

- > Regular updates keep your system current so you can take full advantage of today's technology
- > With a fixed monthly or annual fee, you can maintain your communications system without costly surprises
- > Software updates also provide access to new features, functions and options

SOFTWARE MANAGED SERVICES: TODAY'S WAY TO STAY CURRENT

- > Periodic software releases for system and programming components
- > Software release notes and features summary with each release
- > System configuration audit upon enrollment
- > Configuration audit kept current with software releases provided by L3Harris
- > Current release provided upon enrollment
- > Software installation support from the Technical Assistance Center
- > Support Service account on the Tech-Link web page
- > Software replacement services if media are corrupt or damaged
- > Enhancement for existing features
- > Updates to earlier generations of software enable you to access new licensed features

SOFTWARE RELEASE NOTES

Each software update includes Software Release Notes. These technical documents detail the following:

- > Enhancements or new features included within the software release
- > Installation instructions
- > Software and hardware compatibility and information, where applicable

TELEPHONE SUPPORT

The Technical Assistance Center (TAC) in Lynchburg, Virginia provides telephone support for installation from 8 a.m. to 5 p.m. (ET), Monday through Friday, excluding Holidays.

U.S. and Canada: 1-800-528-7711 | Worldwide: +1-434-385-2400

SUBSCRIPTION OPTIONS

SMS subscriptions can be purchased on either an annual or multi-year basis as part of a L3Harris Managed Services plan.

YEARLY SUBSCRIPTION

The single-year commitment is paid annually. The plan allows the first-time buyer to discover the investment value of SMS without making a long-term commitment.

MULTI-YEAR SINGLE INSTALLMENT

This plan offers a significant discount for a one-time payment covering several years of SMS.

MULTI-YEAR ANNUAL PAYMENT

Get a fixed annual fee for a multi-year commitment which improves long-term planning with a predictable cost over the term of the contract.



Technical specifications are subject to change without notice.
Product sales are subject to applicable U.S. export control laws.

SOFTWARE MANAGED SERVICES

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SYMPHONY™

DISPATCH SOLUTION

The Symphony Dispatch Console combines the Symphony Dispatch Platform with advanced application software to support 24-hour mission-critical operations. A unique hardware design supports the reliability needed for emergency responses. Advanced digital audio technology delivers high capacity and secure end-to-end communications.

Symphony simplifies complex dispatch center operations through a logical user interface. Dispatchers arrange their most utilized functions in a customized interface to maximize productivity.

Multiple screen configurations can be created for specific scenarios ranging from crisis situations to shift changes.

Patented Baton™ technology allows agencies to integrate their CAD

application to display 95% of Symphony's functionality using only 10% of their screen. An embedded web browser for VIDA® apps enables dispatchers to access servers to disable lost or stolen radios or view real-time radio traffic across the system.

Symphony's innovative hardware design allows a simple, flexible mechanical configuration for mounting in a rack, under a desk, as a desktop unit or for mobile installations.



A CLEAR VIEW OF THE FULL OPERATIONAL PICTURE

KEY BENEFITS

- > Capable of combining over 1,000 communication modules at a single dispatch solution
- > Industry-leading capacity for active call, patch and simulselect calls and integrated telephony support
- > Integrated Instant Recall Recorder for up to 24 hours of call history
- > Supports trunked and conventional operations

GENERAL SPECIFICATIONS*

Processor Type:
Intel® Dual Core™ i7 Ivy Bridge processor

Operating System:
Microsoft® Windows® 10 Enterprise 64-bit

Typical Dimensions (H x W x D):
Computer:
1.75 x 16.75 x 10.5 in
(4.5 x 42.5 x 26.6 cm)

Display:
Touchscreen capable from 19 to 48 inches

Input Voltage:
110-240 VAC, 50-60Hz, nominal

Operating Temperature:
+32 to 104°F (0 to +40°C)

Storage Temperature:
-22 to +185°F (-30 to +85°C)

MTBF:
10 years

RoHS Compliant

UL Certified

*Requires System Release SR10A or newer

SYMPHONY DISPATCH PLATFORM (ENCLOSURE)

19-inch rack mount compatible metal housing

1RU (1.75 in) height

Front panel display, access, connections and controls for:

Power	USB Accessories
DisplayPort™ (Video)	Solid-state Drive (SSD)
Auxiliary Audio Input	Backup Radio Switch
Auxiliary Audio Output	

EXTERNAL INTERFACES

Two 10/100/1000-Gigabit Ethernet ports with RJ45

7 USB 2.0 ports (excluding Audio Subsystem)

7 USB 1.1 ports for audio accessories

6 local Digital Inputs

5 local Solid-state Relay Outputs

AUDIO SUBSYSTEM

One 10/100 DSP-driven Ethernet Extender Interface with RF45 connector

Operator and Supervisor Headsets interfaced via DB-9F connectors on rear panel

Desk Microphone interface via DB-9F connector on rear panel

8 Speaker interface with ¼-inch TRS jacks on rear panel for audio connections

Analog Call Director interface via RJ45 connector on rear panel

Analog Backup Radio interface via DB-9 Male connector on rear panel and mode selection switch mounted on front panel

Analog Building Intercom interface via RJ45 connector on rear panel

Two Auxiliary Audio Inputs via 3.5-mm TRS jack on rear panel

Two Auxiliary Ethernet DSP Extender ports on rear panel

VIDEO

Two DisplayPort Video Connections (can drive up to 4 monitors)

STORAGE

Externally accessible and removable solid-state drive

Product performance note: The performance of any L3Harris console (Symphony Dispatch Console) with any third-party hardware (including computers) other than L3Harris recommended or approved hardware is not guaranteed by L3Harris Technologies nor will L3Harris Technologies offer any software or other corrections to improve the performance of the L3Harris console with such third-party hardware.

Technical specifications are subject to change without notice. Product sales are subject to applicable U.S. export control laws.

Symphony™ Dispatch Solution

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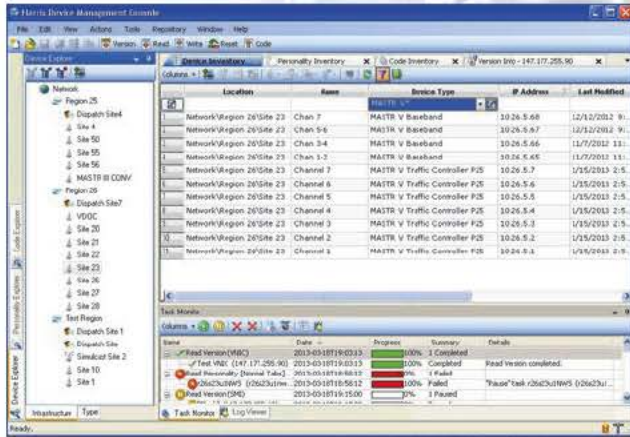
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L3HARRIS™
FAST. FORWARD.

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VIDA[®] DEVICE MANAGER

CENTRALIZED DEVICE CONFIGURATOR

ADVANCED MANAGEMENT FOR MAXIMUM DEVICE PERFORMANCE

The Voice, Interoperability, Data, and Access (VIDA) Device Manager is a Windows[®]-based application that facilitates the loading of code updates and personalities to many devices throughout the VIDA network. It centralizes and provides a common interface for this function. With Device Manager, these tasks are simplified with Windows menus and controls that provide consistency across the devices. Device Manager supports NetworkFirst[®], P25^{IP}, and OpenSky[®] systems.

FEATURES

Device Manager maintains information in databases, facilitating the gathering of historical activities, validation checking, and the secure storage of data.

The Repository maintains a history of activities performed upon devices, personalities, and code instances. History viewers facilitate browsing activities per device, personality, code instance, or all events within a specific time period.

Device Manager allows importing network infrastructure data from the VIDA IP Scheme spreadsheet or from the Regional Network Manager (RNM).

Assess similarities and differences between personalities or devices using interactive comparison grids and System Snapshots.

NETWORK OR LOCAL MODES

VIDA Device Manager can be operated in either a Network Mode or a Local Mode. In Network Mode, the software resides on the Regional Site Manager Professional (RSM Pro), Regional Site Manager (RSM) or the Centralized Site Manager (CSM) for P25^{IP} systems. Software and personalities can be sent over the VIDA network to remote devices in this mode of operation. In Local Mode, the software is loaded onto a laptop and can be used to interface directly to a device or, if network connectivity is available, interface via the radio network. VIDA Device Manager provides both Ethernet and serial interfaces in order to support these modes.

EXPLORERS AND INVENTORIES

Explorers facilitate the navigation of audits and checks, devices, personalities, and code within the system by organizing information into hierarchical nodes. Inventories facilitate sorting, grouping, and filtering of data and display details such as device hostnames and IP addresses, personality names, and code file versions corresponding to the nodes selected in Explorers.

APPLICATION EXECUTION CONTROL

Access to Device Manager can be controlled via Microsoft[®] Windows group membership. Through the use of the VIDA Active Directory product, local machine groups are associated with domain groups in Microsoft Active Directory[®].

GENERAL SPECIFICATIONS

PC Requirements

The PC must use one of the supported Microsoft® Windows® operating systems noted below and must have 50 MB of free hard drive space to install the VIDA Device Manager. Additional space may be required for prerequisites such as Microsoft.NET Framework 3.5 SP1 (500 MB), Microsoft .NET Framework 4.0 or 4.5 (2GB), Microsoft SQL Server® 2008 R2 Express SP2 (1GB), and the Microsoft Sync Framework 2.1 (20 MB). For viewing reports, Internet Explorer® 6.0 (or later) or Firefox® 4.0 (or later) browsers are recommended.

Operating Systems Supported

- Windows Server® 2008 R2, or 2012 R2 (used by RSM, RSM Pro, and CSM)
- Windows Vista® (Ultimate, Enterprise, and Business Editions) SP1
- Windows 7, 8.1

DEVICES SUPPORTED

Infrastructure Devices

Centralized Network Manager (CNM)	XL-200P
Consoles (Symphony™, C3 Maestro ^{IP} , and V ^{IP})	XG-75P
Centralized Site Manager (CSM)	XG-25P
eData Gateway	P7300
Inter Sub-System Interconnect Gateway (ISSI)	P5500
MASTR® III DSP Module	P5400
MASTR V Baseband	P5300
MASTR V Baseband Module	P5200
MASTR V Traffic Controller P25	XG-75M
MASTR V Traffic Controller P25 Conventional	XG-25M
Mini-Mobility Exchange (MME)	M7300
Network Key Management Facility (KMF)	M7200
Network Sentry (NWS)	M5300
Regional Network Manager (RNM)	CH-721 Control Head
Regional Site Manager (RSM)	
Regional Site Manager Professional (RSM Pro)	
Site Manager Interface (SMI)	
SiteLink SP (for SitePro Hardware)	
SiteLink TC (for MASTR V Traffic Controller P25 Hardware)	
SitePro P25	
SitePro P25 Conventional	
Unified Audio Card (UAC)	
VIDA Transcoder	
Voice Network Interface Controller (VNIC)	

Subscriber Devices

XL-200P
XG-75P
XG-25P
P7300
P5500
P5400
P5300
P5200
XG-75M
XG-25M
M7300
M7200
M5300
CH-721 Control Head

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About Harris Corporation

Harris Corporation is a leading technology innovator that creates mission-critical solutions that connect, inform and protect the world. The company's advanced technology provides information and insight to customers operating in demanding environments from ocean to orbit and everywhere in between. Harris has approximately \$8 billion in annual revenue and supports customers in 125 countries through four customer-focused business segments: Communication Systems, Space and Intelligence Systems, Electronic Systems, and Critical Networks.

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XG-15P PORTABLE

Two-Way P25-Capable Radio

The L3Harris XG-15P is a cost-effective, two-way portable delivering outstanding voice quality in challenging environments. Weighing in at 13.8 ounces with a Li-Ion battery, the XG-15P is one of the lightest P25-capable radios available today.



This dual-mode, narrowband/wideband portable features a software-defined architecture, supporting seamless in-field upgrades to different operating modes, including P25 Phase 2 trunking. The XG-15P features include a compact, ergonomic design, with knobs and keypad buttons designed to protect from impact and incidental contact, while remaining easy to use wearing gloves.

IP54 rated for protection against dust and water, the XG-15P secures communications through single-key AES encryption and Encryption Lite. An AMBE+2™ vocoder reduces distortions and ambient noise to provide clear communications. The portable also has an instant recall feature to avoid repetition by replaying only the last transmission received.

Every L3Harris XG-15P includes an antenna, single-bay charger, Li-Ion battery and belt clip. Radio packages can be customized for P25 conventional, P25 Phase 1 trunking and P25 Phase 2 trunking.



**RUGGED DESIGN.
POWERFUL, CLEAR AUDIO**

KEY BENEFITS

- > Outstanding audio quality even in noisy environments
- > Lightweight and ergonomic design
- > Software-defined architecture supports in-field updates
- > IP54 rated for protection from dust and water
- > P25 conventional and trunking options are available

SPECIFICATIONS FOR: XG-15P PORTABLE TWO-WAY RADIO

GENERAL	
Radio Models	Full keypad (dot matrix LCD and DTMF keypad)
Dimensions (H x W x D): Without antenna, battery and knobs	5.37 x 2.44 x 1.67 in (136.5 x 62.0 x 42.5 mm)
Weight: Without antenna and battery	85 oz (241.87 g)
Housing Colors	Gray
Environmental	
Relative Humidity	90% @ 122°F (+50°C)
Vibration	9.2 G (per U.S. Forest Service)
Drop Shock	1.0 meter drop to concrete (per TIA-603-C)
Ingress Protection	IP54
Operating Temperature*	-22° to +140°F (-30° to +60°C)
Storage Temperature**	-40° to +176°F (-40° to +80°C)
Altitude	
Operational	15,000 feet (4,572 meters)
In Transit	50,000 feet (15,240 meters)
Electrical	
Input Voltage	7.5 VDC (nominal)
Safety	RoHS compliant

*Extremely low temperatures adversely affect battery life

**Store batteries at +25°C ± 5°C

TRANSMITTER			
Frequency Bands	VHF	UHF	700/800 MHz
Frequency Ranges (MHz)	136-174	440-512	768-776, 798-806, 806-816, 851-861
Rated RF Power (W)	5	5	3 (trunk and talkaround)
Frequency Stability (-30° to +60°C, +25°C ref)	±1.5 ppm	±1.5 ppm	±1.5 ppm
Frequency Separation (MHz)	Full Bandwidth	Full Bandwidth	NA
Modulation Deviation (kHz)	5.0 (wideband*) 2.5 (narrowband)	5.0 (wideband*) 2.5 (narrowband)	2.5, 4, or 5 FM
FM Hum and Noise Companion Receiver (dB)	53 (wideband*) 51 (narrowband)	51 (wideband*) 47 (narrowband)	44 (700 MHz) 47 (800 MHz NPSpac) 48 (800 MHz non-NPSpac)
Spurious and Harmonics (dBm / dBc)	-38/-75	-51/-88	-36.5/71.5
Audio Response (dB)	+1/-3	+1/-3	+1/-3 dB
Audio Distortion (1 kHz tone): @ 3 kHz deviation @ 2.4 kHz deviation @ 1.5 kHz deviation	0.6% (wideband) N/A 0.7% (narrowband)	0.5% (wideband) N/A 0.7% (narrowband)	1% (800 MHz non-NPSpac) 1% (800 MHz NPSpac) 1% (700 MHz)
Project 25 Modulation Fidelity	0.8%	1.4%	1%
Project 25 Adjacent Channel Power (dBc)	74	72	73

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

REGULATORY DATA						
Frequency Range	RF Output	Frequency Stability	FCC Type Acceptance No.	Applicable FCC Rules	Industry Canada Certification No.	Applicable Industry Canada Rules
136-174 MHz	0.5-5 W	1.5 ppm	OWDTR-0067-E	22, 80, 90	3636B-0067	RSS-119
768-861 MHz	3 W	1.5 ppm	OWDTR-0134-E	90	3636B-0134	RSS-119

To be provided upon receipt of FCC, Industry Canada, and European type approvals for UHF. This equipment is subject to the FCC rules. The equipment will comply with the appropriate rules before delivery to the buyer.

SPECIFICATIONS FOR: XG-15P PORTABLE TWO-WAY RADIO

RECEIVER			
Frequency Bands	VHF	UHF	700/800 MHz
Frequency Ranges (MHz)	136-174	440-512	768-776, 851-861
Frequency Separation (MHz)	Full Bandwidth	Full Bandwidth	N/A
Channel Spacing (kHz)	25/30 (wideband*) 12.5/15 (narrowband)	25 (wideband*) 12.5 (narrowband)	12.5, 25, PLL steps
Frequency Stability (-30° to +60°C, +25°C ref)	±1.5 ppm	±1.5 ppm	±1.5 ppm
Sensitivity: @ 12 dB SINAD (µV / dBm)	0.2/-121 (wideband*) 0.2/-121 (narrowband)	0.2/-121 (wideband*) 0.2/-121 (narrowband)	0.21/-121 (700 MHz) 0.22/-120 (800 MHz NPSPAC) 0.21/-121 (800 MHz non-NPSPAC)
Adjacent Channel Selectivity: @ 25 kHz (dB) @ 12.5 kHz (dB)	82 (wideband*) 70 (narrowband)	77 (wideband*) 69 (narrowband)	75 (800 MHz non-NPSPAC) 67 (700 MHz)
Offset Channel Selectivity: @ NPSPAC (dB)	NA	NA	30
Intermodulation (dB)	79	78	75
Spurious and Image Rejection (dB)	83	79	90
FM Hum and Noise (dB)	54 (wideband*) 47 (narrowband)	53 (wideband*) 49 (narrowband)	45 (700 MHz) 52 (800 MHz NPSPAC) 54 (800 MHz non-NPSPAC)
Audio Output - Rated (mW)	500	500	500
Audio Distortion @ Rated Power (%)	1.5	1.2	1.5
Project 25 Reference Sensitivity: @ 5% BER (µV / dBm)	0.22/-120	0.22/-120	0.23/-120
Project 25 Adjacent Channel Rejection (dB)	67	64	64

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

ENVIRONMENTAL STANDARD			
Applicable MIL-STD	Parameter	Methods	Procedure / Categories
MIL-STD-810G*	Low pressure	500.5	1, 2
	High temperature	501.5	1, 2
	Low temperature	502.5	1, 2
	Temperature shock	503.5	1
	Solar radiation	505.5	2
	Blowing rain	506.5	1
	Humidity	507.5	2
	Salt fog	509.5	1
	Blowing dust	510.5	1
	Vibration (minimum integrity)	514.6	1, Category 24
	Vibration (basic transportation)	514.6	1, Category 4
	Shock (functional / basic)	516.6	1
	Shock (transit drop)	516.6	4
	IEC 60529	Dust protected and splashing water	IP54
U.S. Forest Service	Vibration (10-60 Hz)	USDA LMR Standard Section 2.15	
TIA-603-C	Shock (1-meter drop)	Paragraph 3.3.5.3	

*Also meets equivalent superseded MIL-STD-810D, E and F

ENCRYPTION	
Encryption Algorithms	Voice encryption: single-key AES / DES and encryption lite (ARC4) Control channel encryption: 128-bit AES (LLA)

BATTERIES				
Type	Dimensions (H x W x D)	Weight	Life	Capacity (mAh)
Li-Ion	4.42 x 2.44 x 0.83 in	5.1 oz. (145 g)	10 hours @ 5% Tx, 5% Rx, and 90% standby	2400

SPECIFICATIONS FOR: XG-15P PORTABLE TWO-WAY RADIO

ACCESSORIES

The XG-15P offers a full complement of accessories for operation in extreme conditions.

Audio Accessories

The XG-15P can be used with a wide variety of audio accessories including speaker microphones, headsets, and covert audio accessories to provide a complete user-gear solution. Covert audio kits are available in black or beige, and in 2-wire or 3-wire configurations with earpiece, microphone and PTT.



Speaker Microphone



Fire Speaker Microphone



3-Wire Mini-Lapel Microphone

Carrying Cases

Every XG-15P radio package ships with a standard belt clip. Optional accessories include a premium belt loop to create a low-profile, integrated carrying option, or a premium leather holster for attaching to a belt or wearing with the premium leather shoulder strap.



Nylon Carrying Case



Belt Clip



Leather Carrying Case

Adapters

The XG-15P can be used with two types of adapters: Bluetooth® Adapter and GPS Adapter. The Bluetooth Adapter allows the radio to interface with L3Harris Bluetooth accessories. The GPS Adapter enables the radio to transmit a user's geographic location to dispatchers to provide quick and accurate position tracking. With a GPS Adapter, there is no need for an external GPS speaker microphone.



GPS Adapter



Bluetooth Adapter

Additional Accessories Available

Antennas, Bluetooth speaker microphones, Bluetooth covert earpieces, Lithium batteries, PC programming software, and cables are available.

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XG-15P Portable

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XG-25M MOBILE

VHF, UHF, 700/800 MHz

The economical and feature-rich L3Harris XG-25M Mobile delivers exceptional audio and secure, reliable mission-critical communications. This P25 Phase 2 capable mobile is an ideal choice for first responders and utilities who want just one radio to manage their migration needs.



Designed for use on P25 and L3Harris legacy platforms, the XG-25M also supports EDACS®, ProVoice™ and OpenSky® systems. This flexible solution supports wideband and narrowband channels and has a software-defined architecture for in-field upgrades to additional modes including P25 trunking.

An oversized speaker and AMBE+2™ vocoder provide loud, clear audio without distortion in a wide range of emergency scenarios.

The ruggedized XG-25M exceeds durability tests, holding both a MIL-STD-810G certification and IP54 rating for protection against dust and splashing water.

An oversized front-mount control unit display and large, easy-to-read buttons simplifies the XG-25M user experience. Bluetooth® supports seamless connectivity through a variety of accessories. Standard security capabilities include choice of single-key AES or DES.



MULTIMODE INTEROPERABLE COMMUNICATIONS

KEY BENEFITS

- > Economical choice for P25 Phase 2 migration
- > Supports wideband and narrowband communications
- > Future-ready, software-defined architecture
- > Loud, clear audio without distortion
- > Ruggedized to MIL-STD-810G and IP54 standards


SPECIFICATIONS FOR: XG-25M MOBILE RADIO-VHF, UHF, 700/800 MHZ

GENERAL	
Dimensions (includes knobs but not space for mounting bracket and cables)	2.8 H x 7.24 W x 7.9 D in (7.1 H x 18.4 W x 20.0 D cm)
Weight (without brackets)	5.9 lbs (2.6 kg)
Environmental Specifications	
Relative Humidity	90% @ 122°F (+50°C)
Operating Temperature	-22° to +140°F (-30° to +60°C)
Storage Temperature	-40° to +176°F (-40° to +80°C)
Altitude Operational In Transit	15,000 ft (4,572 m) 50,000 ft (15,240 m)
Electrical	
DC Supply Voltage Operating Range Full Performance Overall Operating Range	13.6 VDC ± 10% (normal range per TIA-603) 13.6 VDC ± 20%
DC Supply Current Requirements Transmit (50 W) Receive Standby Receive	15 amps maximum 1.4 amps maximum 4.0 amps maximum (with 15 W external speaker output power)
Safety	
RoHS Compliant	
Programming	
Field PC Programmable	

TRANSMITTER			
Typical Performance Specifications	VHF	UHF	700 / 800 MHz
Frequency Ranges (MHz)	136-174	378-430	764-776, 794-805, 806-825, 851-870
Rated RF Power (W)	50	50	30-35
Frequency Stability (-30°C to + 60°C, +25°C Ref) (ppm)	±1.5	±1.5	±1.5
Frequency Separation (MHz)	38 (full bandwidth)	92 (full bandwidth)	NA
Modulation Deviation (kHz)	5.0 (wideband*) 2.5 (narrowband)	5.0 (wideband*) 2.5 (narrowband)	2.5, 4 or 5 FM
FM Hum and Noise Companion Receiver (dB)	49 (wideband*) 45 (narrowband)	49 (wideband*) 45 (narrowband)	49 (wideband*) 45 (narrowband) 49 (NPSPEC)
Spurious and Harmonics (dBm/dBc)	-43 / -90	-47 / -94	-52 / -97
Audio Response (dB)	Meets TIA-603-C Section 3.2.6	Meets TIA-603-C Section 3.2.6	Meets TIA-603-C Section 3.2.6
Audio Distortion (1 kHz tone) @ 3 kHz deviation @ 2.4 kHz deviation @ 1.5 kHz deviation	1% (wideband*) NA 1% (narrowband)	1% (wideband*) NA 1% (narrowband)	1% (800 MHz non-NPSPEC) 1% (800 MHz NPSPEC) 1% (700 MHz)
Project 25 Modulation Fidelity (%)	<5	<5	<5
Project 25 Adjacent Channel Power (dBc)	>67	>67	>67

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

REGULATORY DATA							
Frequency Range (MHz)	RF Output (W)	Frequency Stability (ppm)	FCC Type Acceptance Number	Applicable FCC Rules	Industry Canada Certification Number	Applicable Industry Canada Rules	NTIA Certification Number
136-174	50	±1.5	OWDTR-0075-E	22, 80, 90	3636B-0075	RSS-119, RSS-210	J/F 12/10037
378-470	50	±1.5	OWDTR-0077-E	22, 80, 90	3636B-0077	RSS-119, RSS-210	NA
769-869	35	±1.5	OWDTR-0076-E	90	3636B-0076	RSS-119, RSS-210	NA

 For VHF and UHF models

Technical specifications are subject to change without notice. Product sales are subject to applicable U.S. export control laws.

SPECIFICATIONS FOR: XG-25M MOBILE RADIO—VHF, UHF, 700/800 MHZ

RECEIVER			
Typical Performance Specifications	VHF	UHF	700 / 800 MHz
Frequency Range (MHz)	136-174	378-470	764-776, 851-870
Frequency Separation (MHz)	38 (full bandwidth)	92 (full bandwidth)	NA
Channel Spacing (kHz)	25 (wideband*) 12.5 (narrowband)	25 (wideband*) 12.5 (narrowband)	25 (wideband*) 12.5 (narrowband)
Frequency Stability (-30°C to +60°C, +25°C Ref) (ppm)	±1.5	±1.5	±1.5
Sensitivity (12 dB SINAD) (µV / dBm)	0.25/-119.0 (wideband*) 0.25/-119.0 (narrowband*)	0.25/-119.0 (wideband*) 0.25/-119.0 (narrowband*)	0.19/-121.5 (700 MHz) 0.19/-121.5 (800 MHz NPSPAC) 0.19/-121.5 (800 MHz non-NPSPAC)
Selectivity			
@ 12.5 kHz (dB)	60	60	60
@ 15 kHz (dB)	60	60	60
@ 25 kHz (dB)	75	75	75
Intermodulation (dB)	>77	>77	>77
Spurious and Image Rejection (dB)	>80	>80	>80
Rated Audio Output			
Internal Speaker	8 ohm rated at 3 W	8 ohm rated at 3 W	8 ohm rated at 3 W
Optional External Speaker	4 ohm rated at 15 W	4 ohm rated at 15 W	4 ohm rated at 15 W
Audio Distortion @ Rated Audio	<3%	<3%	<3%
Project 25 Reference Sensitivity @ 5% BER (µV / dBm)	0.22/-120	0.25/-119	0.22/-120
Project 25 Adjacent Channel Rejection (dB)	>60	>60	>60

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz.

ENVIRONMENTAL STANDARD			
Applicable MIL-STD	Parameter	Methods	Procedure/Categories
MIL-STD-810G*	Low pressure	500.5	1, 2
	High temperature	501.5	1, 2
	Low temperature	502.5	1, 2
	Temperature shock	503.5	1-B
	Solar radiation	505.5	2
	Blowing rain	506.5	1
	Humidity	507.5	2
	Salt fog	509.5	1
	Blowing dust	510.5	1
	Vibration (minimum integrity)	514.6	1, Category 4
	Vibration (basic transportation)	514.6	1, Category 24
	Shock (functional/basic)	516.6	1
	Shock (transit drop)	516.6	4
TIA-603-C	Vibration stability	Paragraph 2.3.4 and 3.3.4	
U.S. Forest Service	Vibration (10-60 Hz)	Paragraph 2.15	
IEC 60529	Dust tight and water jets	IP54	

*Also meets equivalent superseded MIL-STD-810D, E and F

DIGITAL OPERATION		
Protocol	ProVoice™	P25
Vocoding Method	AMBE+2™ Enhanced Full Rate	AMBE+2 Enhanced Full Rate & Enhanced Half Rate
Signaling Rate (kbps)	9.6	Phase 1: 9.6 Phase 2: 12
Modulation	GFSK	Phase 1 TX: C4FM, RX: C4FM & WCQPSK Phase 2 Control Channel TX: C4FM, RX: C4FM & WCQPSK Phase 2 Working Channel TX: HCPM, RX: HDQPSK

ENCRYPTION	
Encryption Algorithms	Voice Encryption: Single-key AES/DES, Multiple-key AES/DES, DES-OFB, Encryption Lite (ARC4)*, 256-bit AES P25, 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Encryption Keys	128 keys (64 AES, 64 DES)

*Interoperates with commonly available ARC4 encryption algorithms.

SPECIFICATIONS FOR: XG-25M MOBILE RADIO—VHF, UHF, 700/800 MHZ

ACCESSORIES

The XG-25M offers accessories that operate under the range of conditions experienced by first responders, utility workers and public service users.

Control Units

The XG-25M comes standard with a CH-25 front-mount control unit. A conversion kit is available for remote mounting. The control unit is a Scan (limited keypad) model with a 4-line, 12-character alphanumeric display. The unit supports P25, 800 MHz EDACS and ProVoice, and OpenSky trunking operation.



CH-25 Control Unit

Microphones

Harris offers a standard microphone and a desktop microphone for use with the XG-25M. These microphones provide the high-quality audio needed by users to keep operations efficient.



Standard Microphone



Desktop Microphone

Additional Accessories Available

Antennas, front-mounting kit, bracket, PC programming software and cables are available

XG-25M Mobile

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L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



1025 W. NASA Boulevard
Melbourne, FL 32919

XG-25P PORTABLE

VHF, UHF, 700/800 MHz

The L3Harris XG-25P delivers exceptional audio and secure, reliable mission-critical communications. This budget-friendly, feature-rich portable is P25 Phase 2 capable, an ideal choice for organizations who want just one radio to manage their migration needs.

Designed for first responder and utility users on P25 and L3Harris legacy platforms, the XG-25P also supports EDACS®, ProVoice™ and OpenSky® systems. This flexible solution supports wideband and narrowband channels and has a software-defined architecture for in-field upgrades to new modes and capabilities.

An oversized speaker and AMBE+2™ vocoder combine for crisp, loud audio without distortion despite noisy environments. The ruggedized XG-25P exceeds extreme durability tests and is MIL-STD-810G certified. Equipped with a simplified interface for ease of use, the portable's knobs and keypad buttons are also highly responsive to gloved-hand operation.

Standard security capabilities include choice of single-key AES and DES encryption.



SUPERIOR AUDIO, P25 PHASE 2 CAPABLE

KEY BENEFITS

- > Economical choice for P25 Phase 2 migration
- > Supports wideband and narrowband communications
- > Future-proof with software-defined architecture
- > Loud, clear audio without distortion
- > Ruggedized to meet MIL-STD-810G standards

SPECIFICATIONS FOR: XG-25P PORTABLE-VHF, UHF, 700/800 MHZ

GENERAL		
Radio Models		
Full Keypad	Dot matrix LCD and DTMF keypad	
Partial Keypad	Dot matrix LCD and limited keypad	
Dimensions (without antenna, battery, and knobs)		
Height	5.89 (in)	149.6 (mm)
Width	2.44 (in)	62.0 (mm)
Depth	1.86 (in)	47.2 (mm)
Weight (without antenna and battery)		
Portable	9.9 (oz)	281.5 (g)
Housing Color		
Black		
Environmental Specifications		
Relative Humidity	90% @ 122°F (+50°C)	
Vibration	5 G (per U.S. Forest Service)	
Drop Shock	1.0 meter drop to concrete (per TIA-603-C)	
Ingress Protection	IP66	
Operating Temperature ¹	-22° to +140°F	-30° to +60°C
Storage Temperature*	-40° to +176°F	-40° to +80°C
*Store batteries at the following temperatures:		
Li-Ion	-40° to +176°F	-40° to +80°C
Li-Polymer	-22° to +176°F	-30° to +80°C
NiMH	-40° to +176°F	-40° to +80°C
Altitude		
Operational	15,000 (ft)	4,572 (m)
In Transit	50,000 (ft)	15,240 (m)
Electrical		
Input Voltage	7.5 VDC (nominal)	
Safety		
RoHS compliant		

¹Extremely low temperatures adversely affect battery life.

TRANSMITTER			
Typical Performance Specifications	VHF	UHF	700 / 800
Frequency Range (MHz)	136-174	378-470	764-776, 794-805, 806-825, 851-870
Rated RF Power (W)	1.0-5.0	5	3
Frequency Stability (-30° to +60°C, +25°C Ref) (ppm)	±1.5	±1.5	±1.5
Frequency Separation (MHz)	38 (full bandwidth)	92 (full bandwidth)	NA
Modulation Deviation (kHz)	5.0 (wideband*) 2.5 (narrowband)	5.0 (wideband*) 2.5 (narrowband)	2.5, 4, or 5 FM
FM Hum and Noise Companion Receiver (dB)	49 (wideband*) 45 (wideband*)	49 (narrowband) 44 (narrowband)	44 (700 MHz) 47 (800 MHz NPSPAC) 46 (800 MHz non-NPSPAC)
Spurious and Harmonics (dBm / dBc)	-42 / -80	-36 / 73	-55 / 90
Audio Response (dB)	+1 / -3	+1 / -3	+1 / -3
Audio Distortion (1 kHz tone)			
@ 3 kHz deviation	1% (wideband*)	1% (wideband*)	1% (800 MHz non-NPSPAC)
@ 2.4 kHz deviation	NA	NA	1% (800 MHz NPSPAC)
@ 1.5 kHz deviation	1% (narrowband)	1% (narrowband)	1% (700 MHz)
Project 25 Modulation Fidelity (%)	1	1.5	1.5
Project 25 Adjacent Channel Power (dBc)	71.5	67	72

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz.

REGULATORY DATA							
Frequency Range (MHz)	RF Output (W)	Frequency Stability (ppm)	FCC Type Acceptance Number	Applicable FCC Rules	Industry Canada Certification Number	Applicable Industry Canada Rules	NTIA Certification Number
136-174	5.0	±1.5	OWDTR-0139-E	22, 80, 90	3636B-0139	RSS-119, RSS-210	J / F 12 / 10038
378-470	5.0	±1.5	OWDTR-0141-E	22, 80, 90	3636B-0141	RSS-119, RSS-210	J / F 12 / 10038
769-869	3.0	±1.5	OWDTR-0140-E	90	3636B-0140	RSS-119, RSS-210	NA

SPECIFICATIONS FOR: XG-25P PORTABLE-VHF, UHF, 700/800 MHZ

RECEIVER			
Typical Performance Specifications	VHF	UHF	700 / 800 MHz
Frequency Range (MHz)	136-174	378-470	764-776, 851-870
Frequency Separation (MHz)	38 (full bandwidth)	92 (full bandwidth)	NA
Channel Spacing (kHz)	25 (wideband*) 12.5 / 15 (narrowband)	25 (wideband*) 12.5 / 15 (narrowband)	12.5, 25, PLL Steps
Frequency Stability (-30 to +60°C, +25°C Ref) (ppm)	±1.5	±1.5	±1.5
Sensitivity (12 dB SINAD) (µV / dBm)	0.25 / -119.0 (wideband*) 0.30 / -117.5 (narrowband)	0.25 / -119.0 (wideband*) 0.30 / -117.5 (narrowband)	0.21 / -120.5 (700 MHz) 0.21 / -120.5 (800 MHz NPSPAC) 0.21 / -120.5 (800 MHz non-NPSPAC)
Project 25 Adjacent Channel Rejection @12.5 kHz (dB)	62	62	62
Offset Channel Selectivity @ NPSPAC (dB)	NA	NA	25
Selectivity @12.5 kHz (dB)	67	60	66 (700 MHz)
@15 kHz (dB)	72	NA	NA
@25 kHz (dB)	78	72	77 (800 MHz non-NPSPAC)
Intermodulation (dB)	78	75	78
Spurious and Image Rejection (dB)	82	73	82
FM Hum and Noise (dB)	54 (wideband*) 51 (narrowband)	54 (wideband*) 48 (narrowband)	49 (700 MHz) 53 (800 MHz NPSPAC) 54 (800 MHz non-NPSPAC)
Rated Audio Output (mW)	500	500	500
Audio Distortion	1 % @ rated power	1 % @ rated power	1 % @ rated audio output power
Project 25 Reference Sensitivity @ 5% BER (µV / dBm):	0.22 / -120.0	0.22 / -120.0	0.22 / -120.0

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz.

ENVIRONMENTAL STANDARD			
Standard	Parameter	Methods	Procedure / Categories
MIL-STD-810G*	Low Pressure	500.5	1,2
	High Temperature	501.5	1,2
	Low Temperature	502.5	1,2
	Temperature Shock	503.5	1-B
	Contamination by Fluids	504.1	2
	Solar Radiation	505.5	2
	Blowing Rain	506.6	1
	Humidity	507.4	
	Salt Fog	509.5	
	Blowing Dust	510.5	1
	Blowing Sand	510.5	2
	Vibration (Minimum Integrity)	514.6	1, Category 24
	Vibration (Basic Transportation)	514.6	1, Category 4
	Shock (Functional/Basic)	516.6	1
	Shock (Transit Drop)	516.6	4
IEC 60529	Dust-tight, Powerful Water Jets	IP66	
U.S. Forest Service	Vibration (10-60 Hz)	USDA LMR Standard Section 2.15	
TIA-603-C	Shock (1-meter drop)	Paragraph 3.3.5.3	

*Also meets equivalent superseded MIL-STD-810D, E and F.

DIGITAL OPERATION			
Protocol	OpenSky (700 / 800 MHz)	ProVoice	P25
Vocoding Method	AMBE+2 Half Rate & Enhanced Half Rate	AMBE + 2 Enhanced Full Rate	AMBE + 2 Enhanced Full Rate & Enhanced Half Rate
Signaling Rate (kbps)	19.2 & 9.6	9.6	9.6
Modulation	4-Level GFSK & M4FM	GFSK	Phase1 TX: C4FM, RX: C4FM & WCQPSK Phase 2 TX: HCPM, RX: WCQPSK

ENCRYPTION	
Encryption Algorithms	Voice Encryption: Single-key AES/DES, Multiple-key AES/DES, DES-OFB, Encryption Lite (ARC4)*, 256-bit AES P25, 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Encryption Keys per Radio	Capable of storing 128 keys (64 AES, 64 DES)

*Interoperates with commonly available ARC4 encryption algorithms.

Technical specifications are subject to change without notice. Product sales are subject to applicable U.S. export control laws.

SPECIFICATIONS FOR: XG-25P PORTABLE-VHF, UHF, 700/800 MHZ

BATTERIES

Type	Dimensions (H x W x D)	Weight	Life (@5% Tx, 5% Rx, and 90% standby)	Capacity (mAh)
Li-Ion	4.42 x 2.44 x 0.83 in	5.1 oz (145 g)	10 hours	2400
Li-Polymer	4.42 x 2.44 x 0.83 in	6.6 oz (187 g)	16 hours	3600
NiMH	4.42 x 2.44 x 0.83 in	9.5 oz (270 g)	10 hours	2400

ACCESSORIES

L3Harris offers a full complement of XG-25P accessories ruggedized for operations in extreme conditions.

Audio Accessories

The XG-25P can be used with a wide variety of audio accessories to provide a complete user-gear solution for industrial, public safety, utility and transportation workers. Heavy-duty and lightweight headsets are available with in-ear or over-the-ear hearing protection, flexible boom microphones with noise reduction technology and standard PTTs. The XG-25P is also compatible with Bone Conducting Skull Headsets and Throat Microphone/Headset Kits. Covert audio kits are available in black or beige and in 2 or 3-wire configurations with earpiece, microphone and PTT.



Speaker Microphone



Tactical Headset



3-Wire Mini-Lapel Microphone

Carrying Cases

L3Harris versatile, low-profile carrying cases easily integrate with the XG-25P. Options include nylon carrying cases, a standard belt clip, premium belt loop and a premium leather holster with a back clip. In addition, a premium leather holster is available for attaching to a belt or wearing with the premium leather shoulder strap..



Nylon Carrying Case



Belt Clip



Leather Carrying Case

Adapters

Addition of a GPS Adapter allows the XG-25P to transmit the user's geographic location to dispatchers, providing fast, accurate position tracking.



GPS Adapter

Additional Accessories Available

Antennas, Bluetooth® speaker microphones and covert earpieces, PC programming software and cables are also available.

XG-25P PORTABLE

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L3HARRIS™
FAST. FORWARD.

1025 W. NASA Boulevard
Melbourne, FL 32919

XG-75M MOBILE RADIO

VHF, UHF, 700/800 MHz

Designed for mission-critical communications in challenging environments, the L3Harris XG-75M delivers tough, reliable performance and exceptionally clear audio quality.

Providing secure voice and data through end-to-end digital encryption, this mobile radio supports wideband and narrowband communications. It is P25 Phase 2 capable, with a software-defined architecture allowing field updates to new capabilities.

The XG-75M combines robust components and an AMBE+2™ vocoder to control distortion and provide best-in-class audio in extremely noisy, harsh environments. The XG-75M can also be customized for unique needs with options for GPS position

tracking, Over-the-Air Programming and FIPS for enhanced, 256-bit AES encryption.

The multimode XG-75M is ideal for organizations requiring one radio to manage their migration needs. Designed for P25 platforms as well as legacy L3Harris platforms, this mobile supports P25, EDACS®, ProVoice™ and OpenSky®.

The XG-75M is a member of the family of field-proven, reliable and rugged L3Harris mobiles, with durable construction to withstand demanding environments.



**BEST-IN-CLASS AUDIO
AND DURABILITY IN
EXTREME CONDITIONS**

KEY BENEFITS

- > Rugged construction and advanced audio components for top performance in demanding environments
- > Multimode operation for seamless P25 migration from legacy platforms
- > Familiar and durable controls for easy operation
- > GPS, OTAP, system, scan and handheld control unit options available

SPECIFICATIONS FOR: XG-75M MOBILE RADIO

GENERAL			
Frequency Bands	VHF (110 W)	VHF (50 W)	UHF & 700/800 MHz (30 W)
Dimensions (H x W x D):			
Radio (only)	2.4 x 6.9 x 11.0 in (61 x 175 x 279 mm)	2.0 x 6.9 x 9.2 in (50 x 175 x 233 mm)	2.0 x 6.9 x 9.2 in (50 x 175 x 233 mm)
Radio and Control Unit (with knobs)	2.4 x 6.9 x 12.3 in (60 x 175 x 311 mm)		
Control Unit (remote)	2.4 x 7.0 x 4.0 in (60 x 175 x 100 mm)		
Weight:			
Remote Mount	7.55 lb (3.42 kg)	—	—
Front Mount	5.9 lb (2.68 kg)	—	5.9 lb (2.68 kg)
Remote Mount (transceiver only)	5.25 lb (2.38 kg)	—	5.25 lb (2.38 kg)
Control Head (CH-721)	1.25 lb (0.57 kg)	—	1.25 lb (0.57 kg)
Construction:			
Control Unit (only)	High impact plastic		
Transceiver (only)	Cast metal		
Speaker	Weather-resistant external, 15 W		
Mounting	Front or remote mount available		
Environmental:			
Relative Humidity	90% @ 122°F (+50°C)		
Ambient Temperature Range	-22 to +140°F (-30 to +60°C)		
Altitude	15,000 feet (4,572 meters)		
Electrical System Voltage	10.8 to 16.3* VDC negative ground		
DC Supply Current:			
Transmit (110 W)	25 amps max, 23 amps typical		
Transmit	15 amps max, 11 amps typical		
Receive (includes CH-721)	4 amps max (with 15 W speaker output)		
Standby	1.1 amps typical		
Duty Cycle	TIA/EIA-603		
Operation	12 VDC negative ground		
Safety	RoHS compliant		
Programming	Field PC programmable		

*Not to exceed 14.3 V above +50°C for motorcycle applications

TRANSMITTER			
Frequency Bands	VHF	UHF	700/800 MHz
Frequency Ranges (MHz)	136-174	378-430, 440-512	764-776, 794-806, 806-825, 851-869
Rated Power Output (W)	8-50, 50-110	8-50	30 (35 EDACS/P25 800 MHz)
RF Output Impedance (ohm)	50	50	50
Frequency Stability (ppm)	±2.0	±1.5	±1.5
Modulation Deviation (kHz)	±5.0 (wideband*) ±2.5 (narrowband)	±5.0 (wideband*) ±2.5 (narrowband)	±5.0 (wideband) ±2.5 (narrowband) ±4.0 (NIPSPAC)
FM Hum and Noise Companion Receiver (dB)	52 (wideband*) 46 (narrowband)	52 (wideband*) 46 (narrowband)	47 (wideband) 41 (narrowband)
Spurious and Harmonics (dBm)	<-20	<-20	<-20
Audio Response (dB)	+1/-3, 300-2500 Hz	+1/-3, 300-2500 Hz	+1/-3, 300-2500 Hz
Audio Distortion (1 kHz tone):			
@ 2.5 kHz deviation	<5.0%	<5.0%	<5.0%
@ 1.0 kHz deviation	<2.0%	<2.0%	<2.0%
Adjacent Channel Power (dBc):			
C4FM @ 6 kHz (bw)	>67 >70 (wideband*) >60 (narrowband)	>67 >70 (wideband*) >60 (narrowband)	>67 >70 (wideband) >60 (narrowband)

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

REGULATORY DATA							
Frequency Range (MHz)	RF Output (W)	Frequency Stability (ppm)	FCC Type Acceptance No.	Applicable FCC Rules	Industry Canada Certification No.	Applicable Industry Canada Rules	NTIA Certification Number
136-174	50	2.0	OWDTR-0055-E	22, 80, 90	3636B-0055	RSS-119	J/F 12/9968
136-174	110	2.0	OWDTR-0056-E	90	3636B-0056	RSS-119	NA
406-470	50	1.5	OWDTR-0061-E	90	3636B-0061	RSS-119	J/F 12/9968
764-806	30	1.5	OWDTR-0132-E	90	3636B-0132	RSS-119	NA
806-870	35	1.5	OWDTR-0132-E	90	3636B-0132	RSS-119	NA

SPECIFICATIONS FOR: XG-75M MOBILE RADIO

RECEIVER			
Frequency Bands	VHF	UHF	700/800 MHz
Frequency Ranges (MHz)	136-174	378-430, 440-512	764-776, 851-870
RF Input Impedance (ohm)	50	50	50
Channel Spacing (kHz)	12.5/25	12.5/25	12.5/25
Frequency Stability (ppm)	±2.0	±1.5	±1.5
Sensitivity (12 dB SINAD) (µV / dBm)	0.25/-119.0	0.25/-119.0	0.25/-119.0
5% BER (typical)	>0.35/-118	>0.35/-118	>0.35/-118
Adjacent Channel Selectivity: @ 25 kHz (dB) @ 12.5 kHz (dB)	>85 >70	>80 >70	>80 >70
Intermodulation (dB)	>80	>80	>80 (typical)
Spurious Image Rejection (dB)	>90 (except 2nd image)	>90 (except 2nd image)	>90 (except 2nd image)
FM Hum and Noise (dB)	>50 (wideband*) >46 (narrowband)	>50 (wideband*) >46 (narrowband)	>47 (wideband) >40 (narrowband)
Audio Response (dB)	+1/-3, 300-2500 Hz	+1/-3, 300-2500 Hz	+1/-3, 300-2500 Hz
Audio Distortion @ 15 W	<2% distortion	<2% distortion	<2% distortion
Adjacent Channel Interference Power Ratio (dB) C4FM	>60	>60	>60

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

ENVIRONMENTAL STANDARD			
Applicable MIL-STD	Parameter	Methods	Procedure / Categories
MIL-STD-810G*	Low pressure	500.5	1, 2
	High temperature	501.5	1, 2
	Low temperature	502.5	1, 2
	Temperature shock	503.5	1-B
	Solar radiation	505.5	2
	Blowing rain	506.5	1
	Humidity	507.5	2
	Salt fog	509.5	1
	Blowing dust	510.5	1
	Vibration (minimum integrity)	514.6	1, Category 4
	Vibration (basic transportation)	514.6	1, Category 24
TIA-603-C	Shock (functional / basic)	516.6	1
	Shock (transit drop)	516.6	4
TIA-603-C	Vibration stability	Paragraph 2.3.4 and 3.3.4	
US Forest Service	Vibration (10-60 Hz)	Paragraph 2.15	
IEC 60529	Dust tight and water jets	IP65**	

*Also meets equivalent superseded MIL-STD-810D, E and F

**CH-100 and CH-721 control units meet IP65 / MIL-STD-810, XG-75M radio unit meets IP55

DIGITAL OPERATION				
Protocol	P25 Phase 1 / Phase 2	OpenSky® (700/800 MHz)	ProVoice™	TIA/EIA-603
Vocoding Method	AMBE+2™ enhanced full rate, enhanced half rate	AMBE+2™ half rate, enhanced half rate	AMBE+2™ enhanced full rate	N/A
Signaling Rate (kbps)	9.6 and 12	19.2 and 9.6	9.6	Analog
Modulation	Phase1 TX: C4FM, RX: C4FM and WCQPSK Phase 2 TX: HCPM, RX: WCQPSK	4-level GFSK and M4FM	GFSK	FM
Data Communication Mode	Half duplex	Half duplex	Half duplex	Half duplex

ENCRYPTION	
Encryption Algorithms	Voice Encryption: Single-key AES / DES, Multiple-key AES / DES, DES-OFB, Encryption Lite (ARC4)* 256-bit AES P25, 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Encryption Techniques	Non-linear product / block transformation

*Interoperates with commonly available ARC4 encryption algorithms

SPECIFICATIONS FOR: XG-75M MOBILE RADIO

ADVANCED COMMUNICATION FEATURES	
Over-the-Air Programming	Allows quick reprogramming of radio features and user profiles, and simplifies changes and additions to communication protocols.
GPS	Provides dispatchers with fast, accurate unit location information via P25 or OpenSky networks.
OpenSky Trunking	A secure, integrated voice and data communications system which leverages the power of Internet Protocol and packet technology to deliver powerful Open Data applications to users.

ACCESSORIES

XG-75M accessories are designed for top performance in extreme conditions.

Control Units

L3Harris offers multiple Control Units to meet special requirements. All are available in front or remote mount configurations.

The CH721 Control Unit has a 3-line, 8-character alphanumeric display, with models available in Scan, which has a limited keyboard, and System, which has a full keyboard allowing advanced operations without a DTMF microphone. Both Control Unit models support P25, 800 MHz EDACS, ProVoice and OpenSky trunking operation.

The HHC-731 Handheld Controller provides the advanced features of the CH-721 System Control Unit, including siren and light bar control. This solution is ruggedized to meet a full range of environmental specifications, and supports P25, 800 MHz EDACS, ProVoice and OpenSky trunking operations. The HHC-731's 3-line, 8-character alphanumeric display is backlit for use in low-light areas. Its compact design makes it ideal for covert operations and space-constrained environments.



CH-721 Scan



CH-721 System



HHC-731

Microphones

L3Harris offers a versatile line of microphones for the XG-75M radio. Engineered with robust components, they deliver the high-quality audio first responders need for mission-critical operations. Options include a standard mic with an angled or a straight connector, noise-canceling mic, desktop microphone and dual control unit microphones.



Noise Canceling Mic



DTMF Microphone



Desktop Microphone

Additional Accessories

A number of other antennas, remote mounting kits, desktop control station, motorcycle kits (30 and 50 W only), PC programming software and cables are also available.

Technical specifications are subject to change without notice.
Product sales are subject to applicable U.S. export control laws.

XG-75M Mobile Radio

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Non-Export Controlled Information

L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



1025 W. NASA Boulevard
Melbourne, FL 32919

XG-75Pe PORTABLE

UHF-H, 700/800 MHz

The L3Harris XG-75Pe Portable delivers the high reliability and secure communications demanded by operations in extreme conditions. Ideal for organizations wanting just one radio to manage all their migration needs, this flexible solution supports legacy L3Harris platforms, P25 EDACS®, ProVoice™ and OpenSky®.



Equipped with an enlarged speaker, dual microphone, AMBE+2™ and Active Noise Cancellation, the XG-75Pe delivers clear audio despite noisy, congested environments.

The portable is also future-ready with wideband and narrowband channels and a software-defined architecture allowing field upgrades to new operating modes, including P25 Phase 2 trunking.

Designed for ease of use, the XG-75Pe features a three-position A-B-C switch on the top of the radio for direct access to 48 talkgroups and channels. Knobs and buttons are ruggedized to protect from impact and are shaped for error-free, gloved-hand operation. Instant recall feature replays last transmissions received, preventing missed communications.

Single-key AES encryption, single-key DES encryption and Encryption lite are standard. Optional features are available for IP68 immersion, Underwriters Laboratories C1D1 certification for HAZLOC use and FIPS advanced 256-bit AES encryption.

RUGGED, RELIABLE PERFORMANCE IN HARSH CONDITIONS

KEY BENEFITS

- > Multimode solution supporting legacy L3Harris platforms, P25 EDACS, ProVoice and OpenSky
- > Software-defined architecture for in-field updates to new capabilities
- > Clear, distortion-free audio despite loud, harsh environments
- > Optional features include IP68 immersion and UL certification for C1D1 HAZLOC use

SPECIFICATIONS FOR: XG-75Pe PORTABLE-UHF-H, 700/800 MHZ

GENERAL	
Radio Models	
Full Keypad	Dot matrix LCD and DTMF keypad
Partial Keypad	Dot matrix LCD and limited keypad
Dimensions (H x W x D): (without antenna, battery, and knobs)	5.89 H x 2.44 W x 1.86 D in (149.6 H x 62.0 W x 47.2 D mm)
Weight (without antenna and battery)	10.4 oz (294.5 g)
Housing Colors	Midnight Black, Black-Gray, and Black-Yellow
Environmental Specifications	
Relative Humidity	95% @ 140°F (+60°C)
Vibration	9.2G (per U.S. Forest Service)
Drop Shock	1.5 meter drop to concrete (exceeds TIA-603-C)
Immersion ¹	2 meters for 4 hours in accordance with MIL-STD-810G / IP68 (per IEC60529)
Operating Temperature ²	-22° to +140°F (-30° to +60°C)
Storage Temperature	-40° to +176°F (-40° to +80°C)
Store batteries at the following temperatures:	
Li-Ion	-40° to + 176°F (-40° to +80°C)
Li-Polymer	-22° to +176°F (-30° to +80°C)
NiMH	-40° to + 176°F (-40° to +80°C)
Altitude	
Operational	15,000 ft (4,572 m)
In Transit	50,000 ft (15,240 m)
Electrical	
Input Voltage	7.5 VDC (nominal)
Safety	
HAZLOC Options	UL certified to ANSI / TIA-4950, ANSI / ISA 12.12.01, CAN / CSA-C22.2 No. 157-92, CAN / CSA-C22.2 No. 213-15 standards as suitable for use in Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1 hazardous locations; Class I, Division 2, Groups A, B, C, and D or non-hazardous (unclassified) locations only
RoHS compliant	

¹Optional feature

²Extremely low temperatures adversely affect battery life

TRANSMITTER		
Typical Performance Specifications	UHF-H	700/800
Frequency Range (MHz)	450-522	769-775, 799-805, 806-816, 851-861
Rated RF Power (W)	5	3 (Trnk & Talkaround)
Frequency Stability (-30°C to +60°C, +25°C Ref) (ppm)	±0.3	±0.6
Frequency Separation (MHz)	Full Bandwidth	Full Bandwidth (within 700 or 800 MHz band)
Modulation Deviation (kHz)	5.0 (wideband*) 2.5 (narrowband)	5.0 (wideband*), 4.0 (NPSPAC) 2.5 (narrowband)
FM Hum and Noise Companion Receiver (dB)	51.5 (wideband*) 47.5 (narrowband)	44 (700 MHz) 47 (800 MHz NPSPAC) 48 (800 MHz non-NPSPAC)
Spurious and Harmonics (dBm / dBc)	-51.5/88.5	-55/90
Audio Response (dB)	+1/-3	+1/-3
Audio Distortion (1 kHz tone):		
@ 3 kHz deviation	1% (wideband)	1% (800 MHz non-NPSPAC)
@ 2.4 kHz deviation	NA	1% (800 MHz NPSPAC)
@ 1.5 kHz deviation	1% (narrowband)	1% (700 MHz)
Project 25 Modulation Fidelity (%)	1.4	1
Project 25 Adjacent Channel Power (dBc)	72	73

*UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

REGULATORY DATA						
Frequency Range (MHz)	RF Output (W)	Frequency Stability (ppm)	FCC Type Acceptance Number	Applicable FCC Rules	Industry Canada Certification Number	Applicable Industry Canada Rules
450-522	5	0.2	OWDTR-0131-E	22, 80, 90	3636B-0131	RSS-119
769-775, 799-805, 806-816, 851-861	3	0.2	OWDTR-0074-E	90	3636B-0074	RSS-119

SPECIFICATIONS FOR: XG-75Pe PORTABLE-UHF-H, 700/800 MHZ

RECEIVER		
Typical Performance Specifications	UHF	700/800 MHz
Frequency Range (MHz)	450-522	769-775, 851-861
Frequency Separation (MHz)	Full Bandwidth	Full Bandwidth (within 700 or 800 MHz band)
Channel Spacing (kHz)	25 (wideband*) 12.5 (narrowband)	25 (wideband*) 12.5 (narrowband)
Frequency Stability (-30°C to +60°C, +25 °C Ref) (ppm)	±1.5	±1.5
Sensitivity (12 dB SINAD) (µV / dBm)	-121.0 (wideband*) -121.0 (narrowband)	0.25/-119.0
Adjacent Channel Selectivity: @ 25 kHz (dB) @ 12.5 kHz (dB)	77 (wideband*) 69 (narrowband)	75 (800 MHz non-NPSPAC) 67 (700 MHz)
Intermodulation (dB)	78	75
Spurious and Image Rejection (dB)	80	>80
FM Hum and Noise (dB)	53.5 (wideband**) 49.5 (narrowband)	44 (700 MHz) 53 (800 MHz NPSPAC) 54 (800 MHz wideband*)
Audio Output (mW)	500 rated (3800 max)	500 rated (3800 max)
Audio Distortion @ Rated Power (%)	1.5 (wideband*) 1.5 (narrowband)	1.5
Project 25 Reference Sensitivity @ 5% BER (µV / dBm)	0.22/-120.0	0.22/-120
Project 25 Adjacent Channel Rejection (dB)	63.5	64

*UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

ENVIRONMENTAL STANDARD			
Standard	Parameter	Methods	Procedure / Categories
MIL-STD-810G*	Low Pressure	500.5	1,2
	High Temperature	501.5	1,2
	Low Temperature	502.5	1,2
	Temperature Shock	503.5	1-B
	Solar Radiation	505.5	2
	Blowing Rain	506.5	1
	Humidity	507.5	2
	Salt Fog	509.5	1
	Blowing Dust	510.5	1
	Immersion**	512.5	1
	Vibration (Minimum Integrity)	514.6	1, Category 24
	Vibration (Basic Transportation)	514.6	1, Category 4
	Shock (Functional / Basic)	516.6	1
Shock (Transit Drop)	516.6	4	
IEC 60529	Dust tight, Continuous Immersion	IP68	
U.S. Forest Service	Vibration (10-60 Hz)	USDA LMR Standard Section 2.15	
TIA-603-C***	Shock (1-meter drop)	Paragraph 3.3.5.3	

*Also meets equivalent superseded MIL-STD-810D, E and F

**XG-75Pe immersion model only. Available option that must be ordered. Additional certification for water intrusion with water depth of 2 meters for 4 hours

***Environmental test certification of 1.5-meter drop shock to concrete using parameters of TIA-603-C 1.0-meter drop shock with additional height

DIGITAL OPERATION			
Protocol	OpenSky (700/800 MHz)	ProVoice	P25
Vocoding Method	AMBE+2™ Half Rate & Enhanced Half Rate	AMBE+2 Enhanced Full Rate	AMBE+2 Enhanced Full Rate & Enhanced Half Rate
Signaling Rate (kbps)	19.2 & 9.6	9.6	9.6
Modulation	4-Level GFSK & M4FM	GFSK	Phase1 TX: C4FM, RX: C4FM & WCQPSK Phase 2 TX: HCPM, RX: WCQPSK

SPECIFICATIONS FOR: XG-75Pe PORTABLE-UHF-H, 700/800 MHZ

ENCRYPTION	
Encryption Algorithms	Voice Encryption: Single-key AES / DES, Multiple-key AES / DES, DES-OFB, Encryption Lite (ARC4)* 256-bit AES P25, 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Encryption Keys per Radio	Capable of storing 128 keys (64 AES, 64 DES)

*Interoperates with commonly available ARC4 encryption algorithms.

BATTERIES				
Type	Dimensions (H x W x D)	Weight	Life (@5% Tx, 5% Rx, and 90% standby)	Capacity (mAh)
Li-Ion	4.42 x 2.44 x 0.83 in	5.1 oz. (145 g)	10 hours	2400
Li-Polymer	4.42 x 2.44 x 0.83 in	6.6 oz (187 g)	16 hours	3600
NiMH	4.42 x 2.44 x 0.83 in	9.5 oz (270 g)	10 hours	2400

ACCESSORIES

The XG-75Pe offers a full complement of accessories.

Audio Accessories

Heavy-duty and lightweight headsets are available with in-ear or over-the-ear hearing protection, flexible boom microphones with noise-reduction technology and standard or remote PTTs. The XG-75Pe can also be used with Bone Conducting Skull Headsets and Throat Microphone / Headset Kits. Covert audio kits are available in black and beige and in 2 or 3-wire configurations with ear piece, microphone and PTT.



Speaker Microphone



Fire Speaker Microphone



Tactical Headset



3-Wire Mini-Lapel Microphone

Carrying Cases

Low-profile, integrated options include a standard belt clip and belt loop. A premium leather holster is also available for attaching to a belt or wearing with a leather shoulder strap.



Nylon Carrying Case



Belt Clip



Leather Carrying Case

Chargers

L3Harris offers a variety of chargers for the XG-75Pe radio including Single-Bay, Multi-Bay and Vehicular Charger for in-car charging. All charger options quickly and safely charge battery packs in approximately 1 to 4 hours.



Single-Bay Charger



Multi-Bay Charger



Vehicular Charger

Additional Accessories Available

Antennas, Bluetooth® speaker microphones and covert earpieces, Public Safety speaker microphones, Lithium batteries, PC programming software and cables are available.

Technical specifications are subject to change without notice.
Product sales are subject to applicable U.S. export control laws.

XG-75Pe Portable Radio

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1025 W. NASA Boulevard
Melbourne, FL 32919

XL-150P

Converged Single-Band P25 Land Mobile Radio with LTE

SPECIFICATIONS FOR: XL-150 PORTABLE RADIO

GENERAL			
Full Keypad	TFT LCD w/DTMF keypad, navigation cluster, soft keys		
Dimensions w/Battery (H x W x D)	5.8 x 2.3 x 1.4 in (148.0 x 60.0 x 36.0 mm)		
Weight	w/ Battery, Antenna and LTE Modem 18.2 oz (516 g)	w/Battery and Antenna 16.2 oz (464 g)	w/o Battery and Antenna 10.4 oz (296 g)
Housing Color	Midnight Black		
Interfaces:	320 x 178 pixels, 1.8 inch transfective LCD, 16-bit color with backlight		
Front Display	128 x 32 pixels, OLED 1.1 inch multi-color backlight, sunlight readable		
Top Display	Backlight, 3 soft keys, 5-way navigation key, full DTMF keypad		
Keypad	Large PTT button, on/off knob, volume knob, red emergency button,		
Buttons	16-position top-mounted rotary knob, 2-position concentric switch,		
Tx/Rx Indicator	4-position toggle switch, 3 programmable side buttons Multi-colored LEDs		
Channel/Talkgroup Capacity	1,250 total conventional channels and 13,824 total talkgroups		
Radio Programming	Firmware, personalities and feature set over Wi-Fi		
Transceiver	Supported Bands VHF, UHF or 700/800 MHz, and LTE (optional)	Channel Capacity 12,500 (1,250 per mission plan)	
Environmental:	5% @ 140°F (+60°C), 95% @ 122°F (+50°C)		
Relative Humidity	USDA LMR Standard, Section 2.15 and MIL-STD-810G, Test Method 514.6		
Vibration	1.5 meter drop to concrete (exceeds TIA-603-D)		
Drop Shock	IP65		
Ingress Rating	-22° to +140°F (-30° to +60°C)		
Operating Temperature ¹	-40° to +176°F (-40° to +80°C)		
Storage Temperature ²	Operational 15,000 feet (4,572 meters)		
Altitude	In Transit 40,000 feet (12,192 meters)		
Electrical Input Voltage	7.5 VDC (nominal)		
GPS/GNSS Specifications:	P25 standard Tier 2		
Channels	52		
Tracking Sensitivity (dBm)	-166 (GPS), -163 (GLONASS)		
Acquisition Sensitivity (dBm)	-146 (GPS)		
Cold Start w/-130 dBm input	<35 seconds		
Hot Start w/-130 dBm input	<1 second		
Safety: RoHS Compliant			

¹ Extreme low temperatures adversely affect battery life

² Store batteries at +25°C ± 5°C



The XL-150P is AT&T & Verizon Certified and FirstNet Ready™, and is the only Land Mobile Radio in its class with built-in LTE option, Wi-Fi®, Bluetooth® and GPS. This single-band, highly-affordable solution delivers industry-leading, loud, clear audio powered by advanced noise cancellation technologies and a 1.5 watt/4 watt max amplifier with woofer and tweeter speakers. The XL-150P features a full keypad, encrypted voice and data and includes antenna, battery, belt clip and single-bay charger.

LMR TRANSMITTER

Frequency Bands	VHF	UHF	700/800 MHz	900 MHz
Frequency Ranges (MHz)	136- 74	378-522	768-776, 798-806, 806-816, 851-861	896-902, 935-944
Rated RF Power/Talkaround (W)	1-6	1-5	0.5-3	0.5-3.5
Frequency Stability (-30 to +60°C)	±1.0 ppm	±1.0ppm	±1.0 ppm	±1.0 ppm
Modulation Limiting (kHz)	L2.5, 4, 5 (FM)	2.5, 4, 5 (FM)	2.5, 4, 5 (FM)	2.5, 4, 5 (FM)
Audio Response (dB)	+1/-3	+1/-3	+1/-3	+1/-3
Spurious and Harmonics (dBc)	-80 (FCC Part 90)	-80 (FCC Part 90)	-80 (FCC Part 90)	-80 (FCC Part 90)
FM Hum and Noise Companion Receiver (dB): @ 25 kHz @ 12.5 kHz	70 47	60 47	55 45	55 45
Audio Distortion (%)	<1.25	<1.25	<1.25	<1.25
Project 25 Modulation Fidelity (%)	1.0	1.0	1.0	1.0
Project 25 Adjacent Channel Power (dBc)	>71	>71	>71	>70

REGULATORY DATA

Frequency Range	RF Output	Frequency Stability	FCC Type Acceptance No.	Applicable FCC Rules	NTIA Cert. No.
136 - 174 MHz	6 W	±1.0 ppm	OWDTR-0133-E	22, 74, 80, 90	SPS-217 49/1
378 - 522 MHz	4 W	±1.0 ppm	OWDTR-0133-E	22, 74, 80, 91	SPS-217 49/1
768 - 776 MHz	3 W	±1.0 ppm	OWDTR-0133-E	90	
798 - 806 MHz	3 W	±1.0 ppm	OWDTR-0133-E	90	
806 - 816 MHz	3 W	±1.0 ppm	OWDTR-0133-E	90	
806 - 825 MHz	3 W	±1.0 ppm	OWDTR-0145-E	90	
851 - 861 MHz	3 W	±1.0 ppm	OWDTR-0133-E	90	
851 - 869 MHz	3 W	±1.0 ppm	OWDTR-0145-E	90	
896 - 901 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	
901 - 902 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	
940 - 941 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	
935 - 940 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	
941 - 944 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	
2402 - 2460 MHz	VHF single band	0.2 W	N/A	OWDTR-0133-E	15
	UHF single band	0.2 W	N/A	OWDTR-0133-E	15
	RB single band	0.2 W	N/A	OWDTR-0133-E	15
	NRB single band	0.2 W	N/A	OWDTR-0145-E	15
5180 - 5825 MHz	VHF single band	.01 W	N/A	OWDTR-0133-E	15
	UHF single band	.01 W	N/A	OWDTR-0133-E	15
	RB single band	.01 W	N/A	OWDTR-0133-E	15
	NRB single band	.01 W	N/A	OWDTR-0145-E	15

LMR RECEIVER				
Frequency Bands	VHF	UHF	700/800 MHz	900 MHz
Frequency Ranges (MHz): Option 1 (US) Option 2 (International)	136-174 136-174	378-522 378-522	768-776, 851-861 763-776, 851-870	935-944 935-944
Channel Spacing (kHz)	25 (wideband), 12.5 (narrowband), 6.25 equiv (TDMA P25 Phase 2)		25 (wideband), 12.5 (narrowband), 6.25 equiv (TDMA P25 Phase 2)	
Frequency Stability (-30 to +60°C)	±1.0 ppm	±1.0 ppm	±1.0 ppm	±1.0 ppm
Sensitivity (dBm): @ 12 dB SINAD	-122	-121	-121 (700 MHz) -120 (800 MHz)	-120 (900 MHz)
Project 25 Reference Sensitivity (dBm): @ 5% BER	-122	-121	-120.5	-120.5
Analog Selectivity (dB): @ 25 kHz @ 12.5 kHz	77 71	77 70	74 64	74 64
Project 25 Adjacent Channel Rejection (dB)	66.2	62.2	62	62
Offset Channel Selectivity (dB): @ NPSPAC	NA	NA	30	30
Intermodulation (dB)	80	81	77	77
Spurious and Image Rejection (dB)	90	87	80	80
FM Hum and Noise (dB): @ 25 kHz @ 12.5 kHz	-60 -55	-60 -53	-55 -50	-55 -50
Audio Output - Rated/Max (mW)	1500/4000	1500/4000	1500/4000	1500/4000
Audio Distortion @ Rated Power (%)	1.1	1.1	1.1	1.1

BROADBAND	
LTE Protocol	3GPP Release 11, Category 12, Power Class 3 UE with support for QoS QCI (Factory-installed option only)
LTE Option	FCC ID: N7NEM75S 4G LTE Bands: B2, B4, B5, B12, B13, B14, B17, B29*, B30*, B66 3G Bands: B2, B5 Carrier Certification: FirstNet, AT&T, Verizon
Wi-Fi	802.11 b/g/n 2.4 GHz and 5 GHz; supports 24 preconfigured and 8 user configured networks
Bluetooth	Bluetooth 4.0 (128-bit encryption)

*Downlink only for Carrier Aggregation

DIGITAL OPERATION		
Protocol	ProVoice™	P25
Vocoding Method	AMBE +2™ enhanced full rate	AMBE +2 enhanced full rate and enhanced half rate
Signaling Rate (kbps)	9.6	9.6
Modulation	GFSK	Phase 1 Tx: C4FM, Rx: C4FM and WCQPSK
L3Harris Failsoft operation	Switch to site trunking mode (for L3Harris infrastructure) or P25 conventional	

ENCRYPTION	
Encryption Algorithms	Voice Encryption: Single-key AES/DES, Encryption Lite (ARC4), 256-bit AES P25, 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Standards	FIPS 197

BATTERIES			
Type	Dimensions (H x W x D)	Weight	Capacity (mAh)
Li-Ion	3.0 x 2.3 x 0.9 in	4.8 oz (136 g)	3100

ACCESSORIES

Speaker Microphones

L3Harris offers a versatile line of speaker microphones for the XL-150P. In addition, a premium leather holster is available for attaching to a belt or wearing with the premium leather shoulder strap.



Standard Mic



Revo NC2 Speaker Mic



Advanced Bluetooth Speaker Mic



500 Fire-Rated Speaker Mic

Chargers

The XL-150P comes bundled with a single-bay charger.



Single-Bay Charger

Additional Accessories Available

Bluetooth speaker microphones, Bluetooth covert earpieces, standard speaker microphones, Lithium Ion battery, PC programming software and cables, other subminiature surveillance accessories, and antennas.

Technical specifications are subject to change without notice.
Product sales are subject to applicable U.S. export control laws.

XL-150P Converged Single-Band P25 Land Mobile Radio with LTE

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XL-185M/XL-200M

Single-band and Multiband P25 Mobile Radios

GENERAL		
Dimensions (H x W x D):		
Radio Only	2.0 x 6.9 x 9.7 in (49 x 174 x 230.5 mm)	
Radio and Control Unit (includes knobs)	2.4 x 6.9 x 12.8 in (60 x 175 x 320.7 mm)	
Control Unit (Remote) (includes knobs)	2.4 x 6.9 x 4.0 in (60 x 175 x 72.2 mm)	
Weight:		
Remote Mount Radio	5.0 lbs (2.3 kg)	
Control Unit (Remote Mount)	1.3 lbs (0.6 kg)	
Front Mount Radio with Control Unit	7.0 lbs (3.2 kg)	
Channel/Talkgroup Capacity	12,500 (1,250 per mission plan—up to 10 mission plans)	
Radio Programming	Firmware, personalities and feature set over Wi-Fi	
Control Unit	18-bit color LCD 480 pixels x 220 pixels 3.3-inch color LCD with up to 3 lines of text 5 programmable favorites buttons Separate volume and channel selector knobs Built-in speaker Single DIN sizing 2 USB-C ports (1 for microphone)	
Speakers:	Two channels of 15 W of audio (< 3% distortion) on both the radio body and control head	
External, 15 W	Built-in Control Head Speaker	
Internal, 3 W		
Environmental Specifications:		
Relative Humidity	Per MIL-STD-810G	
Ambient Temperature Range ¹	-22°F to +140°F (-30°C to 60°C)	
Altitude:		
Operational	15,000 ft (4,572 m)	
In-Transit	50,000 ft (15,240 m)	
Electrical:		
System Voltage	10.8 to 16.6 VDC negative ground	
Standby Current Drain	1 A	
Receive Current Drain	2 A	
Current Drain @ 35W TX	10 A	
Current Drain @ 50W TX	15 A	
GPS/GNSS:	XL Mobile without LTE Core Connectivity Module	XL Mobile with LTE Core Connectivity Module
	P25 standard tier 2 and L3Harris in-band	
Channels	52	72
GNSS Constellations Supported	2	4
Tracking Sensitivity	-165 dBm (GPS), -163 dBm (GLONASS)	-160 dBm (GPS & GLONASS)
Acquisition Sensitivity	-146 dBm (GPS)	-160 dBm (GPS & GLONASS)
Cold Start	< 35 seconds	26 seconds
Hot Start	< 1 second	1.5 seconds
Features		Accelerometer for location tracking / dead reckoning in GPS-challenged environments



The single-band XL-185M and multiband XL-200M P25 mobile radios deliver audio excellence through an ergonomic digital microphone and advanced noise cancellation technology enabling you to be heard in noisy environments. Designed for the unique demands of Public Safety and Utilities, the XL FAMILY of mobile radios is LTE ready and features standard Wi-Fi®, Bluetooth® and GPS. These advanced mobile radios meet MIL-STD-810G tests to operate in extremely rugged conditions and are easy to use with a high-visibility 3.3-inch color LCD display, 8 programmable buttons and simple menu access.

¹ For CCM equipped devices in the Australian and New Zealand markets, the recommended Ambient Temperature Range specification is -30°C to +45°C per the RCM directive for internal temperature limits for telecom equipment.

LMR TRANSMITTER

Frequency Bands (MHz)	VHF	UHF	700/800	900
Frequency Range (US)	136-174	378-522	768-776, 798-806, 806-816, 851-861	896-902, 935-944
Frequency Range (Int'l)	136-174	378-522	763-776, 793-806, 806-825, 851-870	896-902, 935-944
Modulation Limiting (kHz)	2.5, 5 (FM)			5 (FM)
Audio Response	Meets TIA-603-D Section 3.2.6			
Spurious and Harmonics (dBc)	< -75, FCC Part 90	< -70, FCC Part 90	< -75, FCC Part 90	< -75, FCC Part 90
FM Hum and Noise (dB @ 12.5 kHz)	45.0			
FM Hum and Noise (dB @ 25 kHz)	47.0			
Audio Distortion (%)	< 3.0			
P25 Modulation Fidelity (%)	< 3.00			
Frequency Stability (ppm)	±1.5			
P25 Adjacent Power (dB)	> 67	> 67 @ 50 W (378-512 MHz) > 67 @ 25 W (512-522 MHz)	> 67	> 67
Channel Spacing (kHz)	12.5, 25			12.5
Conducted Emissions (dBc)	-75	-70	-75	-75
Radiated Emissions	Meets TIA/EIA-603-D 3.2.12			

LMR RECEIVER

Frequency Bands	VHF	UHF	700/800	900
Frequency Range (U.S.)	136-174	378-522	768-776, 851-861	935-944
Frequency Range (Int'l)	136-174	378-522	763-776, 851-870	935-944
Channel Spacing (kHz)	12.5, 25			12.5
Sensitivity (12 dB SINAD)	-119 dBm			
P25 Sensitivity (5% BER)	-119 dBm			
Adjacent Channel Rejection @ 25 kHz (dB)	77	78	76	NA
Adjacent Channel Rejection @ 12.5 kHz (dB)	72	70	70	70
P25 Adjacent Channel Rejection @ 12.5 kHz (dB)	60	60	60	60
Intermodulation Distortion (dB)	77	78	75	75
FM Hum and Noise @ 12.5 kHz (dB)	49	47	45	45
FM Hum and Noise @ 25 kHz (dB)	50	50	47	NA
Rated Audio Output	2 channels of 15 W RMS into 4 Ohm			
Audio Distortion	< 3.0% @ rated power			
Stability (ppm)	+/- 1.5			
Spurious Rejection (dB)	92	90	88 74 (771.3-772.3)	88
Selectivity (dB)	NA	NA	20 (NPSPAC Only)	NA

BROADBAND

LTE Protocol	3GPP Release 11, Category 12, Power Class 3 UE with support for QoS QCI
North America LTE Option	FCC ID: N7NEM75S 4G LTE Bands: B2, B4, B5, B12, B13, B14, B17, B29*, B30*, B66 3G Bands: B2, B5
International LTE Option (In selected countries)	4G LTE Bands: B1, B3, B5, B7, B8, B28 3G Bands: B1, B5, B8
Wi-Fi	802.11ac 2.4 GHz and 5 GHz; supports up to 10 client devices
Bluetooth	Bluetooth 4.0 (128-bit encryption)

*Downlink only for Carrier Aggregation

ENVIRONMENTAL STANDARD

Applicable Standard	Parameter	Methods	Procedure/Categories
MIL-STD-810G*	Low Pressure	500.5	1,2
	High Temperature	501.5	1,2
	Low Temperature	502.5	1,2
	Temperature Shock	503.5	1-B
	Solar Radiation	505.5	1/A1
	IP65 (Control Unit)	506.5	1,3
	IP54 (Radio)	506.5	3
	Humidity	507.5	2
	Salt Fog	509.5	1
	Blowing Dust	510.5	1,2
	Vibration (Basic Transportation)	514.6	1, Category 4
	Vibration (Minimum Integrity)	514.6	1, Category 24
	Shock (Crash Hazard)	516.6	5
	Shock (Bench Handling)	516.6	6
U.S. Forest Service	Vibration (10-60 Hz)	Paragraph 2.15	
IEC 60529	Dust-tight and Water Jets	IP65 (Control Unit)	Table 2, Par. 13.4 Table 3, Par. 14.2.5

*Also meets equivalent superseded MIL-STD-810D, E and F

DIGITAL OPERATION

Protocol	P25	ProVoice™
Vocoding Method	AMBE+2™ Enhanced Full Rate & Enhanced Half Rate	AMBE+2™ Enhanced Full Rate
Signaling Rate (kbps)	9.6	9.6
Modulation	Phase 1 TX: C4FM, RX: C4FM & WCQPSK Phase 2 TX: HCPM, RX: WCQPSK	GFSK
L3Harris Failsoft Operation	Switch to site Trunking Mode (for L3Harris infrastructure) or P25 Conventional	

ENCRYPTION

Encryption Algorithms	Voice Encryption: Single-key AES/DES Multiple-key AES/DES DES-OFB Encryption Lite (ARC4) 256-bit AES P25 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Encryption Keys	128 keys (128 AES, 64 DES), store up to 5 UKEKs per radio
Encryption Keying	L3Harris Key Loader, P25 Conventional and Trunked Over-the-Air-Rekeying (OTAR) for respective UKEKs

REGULATORY DATA

Frequency Range	RF Output (W)	Frequency Stability	FCC Type Acceptance ID	Applicable FCC Rule	Industry Canada ID	Applicable Industry Canada Rule
136-174	50.0		OWDTR-0161-E	90	3636B-0161	RSS-119
378-522	50.0		OWDTR-0161-E	90	3636B-0161	RSS-119
763-776, 793-806	30.0	0.1	OWDTR-0161-E	90	3636B-0161	RSS-119
806-825, 851-870	35.0	0.1	OWDTR-0161-E	90	3636B-0161	RSS-119
896-901	35.0	0.1	OWDTR-0161-E	90	3636B-0161	RSS-119
935-944	35.0	0.1	OWDTR-0161-E	90, 101	3636B-0161	RSS-119
Emissions Designators	16K0F3E, 16K0F1D, 16K0F1E, 14K0F3E, 14K0F1D, 14K0F1E, 11K0F3E, 11K7F1D, 11K7F1E, 7K10F1D, 7K10F1E, 8K40F1D, 8K40F1E, 8K10DXW, 18K5F1W, 12K9F1W					

ACCESSORIES

Microphone: Tough, ergonomic digital microphone enabling noise cancellation

Keypad Mobile Microphone: Rugged handheld microphone with 12-button alphanumeric keypad, 5-way controller to provide the functions of the radio control head in the palm of the hand and noise cancellation

Desktop Cabinet: Supports desktop deployment of the XL Mobile Radio in front-mount, remote mount and control head only configurations

External Speaker: Light, compact and carefully tuned for the human voice, the XL-185M/XL-200M external speakers deliver loud and clear mission-critical voice in an easy-to-mount enclosure

Technical specifications are subject to change without notice.
Product sales are subject to applicable U.S. export control laws.

XL-185M/XL-200M Single-band and Multiband P25 Mobile Radios

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L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



1025 W. NASA Boulevard
Melbourne, FL 32919

XL-185P PORTABLE

Converged LTE Land Mobile Radio

The L3Harris XL-185P is the industry's leading converged single-band Land Mobile Radio (LMR) with LTE. Situational Awareness is front and center as you combine crystal clear audio over your P25 radio system and data sharing capabilities on nationwide broadband networks. With industry-leading technology at your fingertips, you have more ways and more places to connect.

Engineered for top performance in severe conditions, the XL-185P is an ideal, economical choice for Public Safety and Utility workers. The XL-185P delivers industry-leading, loud audio powered by a 1.5 watt/4 watt max amplifier with woofer and tweeter speakers—and advanced noise cancellation technologies suppressing audio feedback to provide clear communications through a wide range of conditions.

The portable features a ruggedized aluminum I-beam frame and meets MIL-STD-810G for durability, including Method 511.5 for explosive atmospheres and Method 504.1 for contamination by fluids, so it can be scrubbed with cleansers and biological sanitizers.

Compact and lightweight, the XL-185P fits naturally into users' hands, with controls shaped for fast, easy, gloved-hand operation. The color-coded display and easy-access A-B-C-D switching allows fast identification and selection of priority talk groups. First Responders also avoid missing critical calls through the portable's ability to instantly recall and replay received audio.

The XL-185P supports a choice of encryption methods for secure communications, including single-key AES.



ADVANCED CONNECTIVITY IN EXTREME ENVIRONMENTS

KEY BENEFITS

- > AT&T & Verizon Certified and FirstNet Ready™
- > Loud and clear audio with advanced noise cancellation
- > Ruggedized to meet stringent MIL-spec standards
- > Built-in Wi-Fi®, Bluetooth® and GPS
- > Secure voice and data encryption
- > Intuitive and easy to use

SPECIFICATIONS FOR: XL-185P PORTABLE RADIO

GENERAL			
Radio Models: Full Keypad Partial Keypad	TFT LCD w/DTMF keypad, navigation cluster, soft keys TFT LCD w/partial keypad, navigation cluster, soft keys		
Dimensions w/Battery (H x W x D)	5.8 x 2.3 x 1.4 in (148.0 x 60.0 x 36.0 mm)		
Weight	w/ Battery, Antenna and LTE Modem 18.2 oz (516 g)	w/Battery and Antenna 16.2 oz (464 g)	w/o Battery and Antenna 10.4 oz (296 g)
Housing Colors	Midnight Black, High-Visibility Yellow and High-Visibility Green		
Interfaces: Front Display Top Display Keypad Buttons Tx/Rx Indicator	320 x 178 pixels, 1.8 inch transfective LCD, 16-bit color with backlight 128 x 32 pixels, OLED 1.1 inch multi-color backlight, sunlight readable Backlight, 3 soft keys, 5-way navigation key, full DTMF keypad Large PTT button, on/off knob, volume knob, red emergency button, 16-position top-mounted rotary knob, 2-position concentric switch, 4-position toggle switch, 3 programmable side buttons Multi-colored LEDs		
Channel/Talkgroup Capacity	1,250 total conventional channels and 13,824 total talkgroups		
Radio Programming	Firmware, personalities and feature set over Wi-Fi		
Transceiver	Supported Bands VHF, UHF, 700/800 MHz or 900 MHz, and LTE (optional)	Channel Capacity 12,500 (1,250 per mission plan)	
Environmental: Relative Humidity Vibration Drop Shock Immersion ¹	5% @ 140°F (+60°C), 95% @ 122°F (+50°C) USDA LMR Standard, Section 2.15 and MIL-STD-810G, Test Method 514.6 1.5 meter drop to concrete (exceeds TIA-603-D) 2 meters for 4 hours in accordance with MIL-STD-810G/IP68		
Operating Temperature ²	-22° to +140°F (-30° to +60°C)		
Storage Temperature ³	-40° to +176°F (-40° to +80°C)		
Altitude	Operational 15,000 feet (4,572 meters)	In Transit 40,000 feet (12,192 meters)	
Electrical Input Voltage	7.5 VDC (nominal)		
GPS/GNSS Specifications: Channels Tracking Sensitivity (dBm) Acquisition Sensitivity (dBm) Cold Start w/-130 dBm input Hot Start w/-130 dBm input	P25 standard Tier 2 and L3Harris in-band 52 -166 (GPS), -163 (GLONASS) -146 (GPS) <35 seconds <1 second		
Safety: Hazardous Location Options RoHS Compliant			

¹ Optional feature

² Extreme low temperatures adversely affect battery life

³ Store batteries at +25°C ± 5°C

LMR TRANSMITTER				
Frequency Bands	VHF	UHF	700/800 MHz	900 MHz*
Frequency Ranges (MHz) Option 1 (US)	136-174	378-522	768-776, 798-806, 806-816, 851-861	896-902, 935-944
Option 2 (International)	136-174	378-522	763-776, 793-806, 806-825, 851-870	896-902, 935-944
Rated RF Power/Talkaround (W)	1-6	1-5	0.5-3	0.5-3.5
Frequency Stability (-30 to +60°C)	±1.0 ppm	±1.0ppm	±1.0 ppm	±1.0 ppm
Modulation Limiting (kHz)	2.5, 4, 5 (FM)	2.5, 4, 5 (FM)	2.5, 4, 5 (FM)	2.5, 4, 5 (FM)
Audio Response (dB)	+1/-3	+1/-3	+1/-3	+1/-3
Spurious and Harmonics (dBc)	-80 (FCC Part 90)	-80 (FCC Part 90)	-80 (FCC Part 90)	-80 (FCC Part 90)
FM Hum and Noise Companion Receiver (dB): @ 25 kHz @ 12.5 kHz	70 47	60 47	55 45	55 45
Audio Distortion (%)	<1.25	<1.25	<1.25	<1.25
Project 25 Modulation Fidelity (%)	1.0	1.0	1.0	1.0
Project 25 Adjacent Channel Power (dBc)	>71	>71	>71	>70

*Configurations supporting the three (3) 700, 800 and 900 MHz frequency bands do not support 768-776 MHz/763-776 MHz talkaround

SPECIFICATIONS FOR: XL-185P PORTABLE RADIO

REGULATORY DATA							
Frequency Range	RF Output	Frequency Stability	FCC Type Acceptance No.	Applicable FCC Rules	Industry Canada Certification No.	Applicable Industry Canada Rules	NTIA Cert. No.
136 - 174 MHz	6 W	±1.0 ppm	OWDTR-0150-E	22, 74, 80, 90	3636B-0150	RSS-119	SPS-217 49/1
378 - 522 MHz	5 W	±1.0 ppm	OWDTR-0149-E	22, 74, 80, 91	3636B-0149	RSS-119	SPS-217 49/1
768 - 776 MHz	3 W	±1.0 ppm	OWDTR-0147-E & OWDTR-0148-E	90	3636B-0147	RSS-119	
798 - 806 MHz	3 W	±1.0 ppm	OWDTR-0147-E & OWDTR-0148-E	90	3636B-0147	RSS-119	
806 - 816 MHz	3 W	±1.0 ppm	OWDTR-0147-E	90	3636B-0147	RSS-119	
806 - 825 MHz	3 W	±1.0 ppm	OWDTR-0148-E	90	3636B-0148	RSS-119	
851 - 861 MHz	3 W	±1.0 ppm	OWDTR-0147-E	90	3636B-0147	RSS-119	
851 - 869 MHz	3 W	±1.0 ppm	OWDTR-0148-E	90	3636B-0148	RSS-119	
896 - 901 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	3636B-0143	RSS-119	
901 - 902 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	3636B-0143	RSS-119	
940 - 941 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	3636B-0143	RSS-119	
935 - 940 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	3636B-0143	RSS-119	
941 - 944 MHz	3 W	±1.0 ppm	OWDTR-0143-E	90, 24D, 101	3636B-0143	RSS-119	
2402 - 2460 MHz	VHF single band	0.2 W	N/A	OWDTR-0150-E	15	3636B-0150	RSS-119
	UHF single band	0.2 W	N/A	OWDTR-0149-E	15	3636B-0149	RSS-119
	RB single band	0.2 W	N/A	OWDTR-0147-E	15	3636B-0147	RSS-119
	NRB single band	0.2 W	N/A	OWDTR-0148-E	15	3636B-0148	RSS-119
5180 - 5825 MHz	VHF single band	.01 W	N/A	OWDTR-0150-E	15	3636B-0150	RSS-119
	UHF single band	.01 W	N/A	OWDTR-0149-E	15	3636B-0149	RSS-119
	RB single band	.01 W	N/A	OWDTR-0147-E	15	3636B-0147	RSS-119
	NRB single band	.01 W	N/A	OWDTR-0148-E	15	3636B-0148	RSS-119

*Configurations supporting the three (3) 700, 800 and 900 MHz frequency bands do not support 768-776 MHz/763-776 MHz talkaround

LMR RECEIVER				
Frequency Bands	VHF	UHF	700/800 MHz	900 MHz
Frequency Ranges (MHz): Option 1 (US) Option 2 (International)	136-174 136-174	378-522 378-522	768-776, 851-861 763-776, 851-870	935-944 935-944
Channel Spacing (kHz)	25 (wideband), 12.5 (narrowband), 6.25 equiv (TDMA P25 Phase 2)		25 (wideband), 12.5 (narrowband), 6.25 equiv (TDMA P25 Phase 2)	
Frequency Stability (-30 to +60°C)	±1.0 ppm	±1.0 ppm	±1.0 ppm	±1.0 ppm
Sensitivity (dBm): @ 12 dB SINAD	-122	-121	-121 (700 MHz) -120 (800 MHz)	-120 (900 MHz)
Project 25 Reference Sensitivity (dBm): @ 5% BER	-122	-121	-120.5	-120.5
Analog Selectivity (dB): @ 25 kHz @ 12.5 kHz	77 71	77 70	74 64	74 64
Project 25 Adjacent Channel Rejection (dB)	66.2	62.2	62	62
Offset Channel Selectivity (dB): @ NPSPAC	NA	NA	30	30
Intermodulation (dB)	80	81	77	77
Spurious and Image Rejection (dB)	90	87	80	80
FM Hum and Noise (dB): @ 25 kHz @ 12.5 kHz	-60 -55	-60 -53	-55 -50	-55 -50
Audio Output - Rated/Max (mW)	1500/4000	1500/4000	1500/4000	1500/4000
Audio Distortion @ Rated Power (%)	1.1	1.1	1.1	1.1

BROADBAND	
LTE Protocol	3GPP Release 11, Category 12, Power Class 3 UE with support for QoS QCI
North America LTE Option	FCC ID: N7NEM75S 4G LTE Bands: B2, B4, B5, B12, B13, B14, B17, B29*, B30*, B66 3G Bands: B2, B5 Carrier Certification: FirstNet, AT&T, Verizon
International LTE Option (In selected countries)	4G LTE Bands: B1, B3, B5, B7, B8, B28 3G Bands: B1, B5, B8
Wi-Fi	802.11 b/g/n 2.4 GHz and 5 GHz; supports 24 preconfigured and 8 user configured networks
Bluetooth	Bluetooth 4.0 (128-bit encryption)

*Downlink only for Carrier Aggregation

SPECIFICATIONS FOR: XL-185P PORTABLE RADIO

DIGITAL OPERATION		
Protocol	ProVoice™	P25
Vocoding Method	AMBE +2™ enhanced full rate	AMBE +2 enhanced full rate and enhanced half rate
Signaling Rate (kbps)	9.6	9.6
Modulation	GFSK	Phase 1 Tx: C4FM, Rx: C4FM and WCQPSK
L3Harris Failsoft operation	Switch to site trunking mode (for L3Harris infrastructure) or P25 conventional	

ENCRYPTION	
Encryption Algorithms	Voice Encryption: Single-key AES/DES, Multiple-key AES/DES, DES-OFB, Encryption Lite (ARC4), 256-bit AES P25, 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Encryption Keys per Radio	Capable of storing 128 keys (128 AES, 64 DES), store up to 5 UKEKs per radio
Keying	L3Harris Key Loader, Over-the-Air Rekeying (OTAR) for respective UKEKs, Motorola KVL 3000+/4000
Standards	FIPS 140-2, FIPS 197

BATTERIES			
Type	Dimensions (H x W x D)	Weight	Capacity (mAh)
Li-Ion	3.0 x 2.3 x 0.9 in	4.8 oz (136 g)	3100

ACCESSORIES

Headsets

The XL-185P can be used with a wide variety of headsets and covert audio accessories to provide a complete user-gear solution for the industrial, Public Safety, Utility and Transportation markets. Heavy-duty and lightweight headsets are available with in-ear or over-the-ear hearing protection, flexible boom microphones with noise-reduction technology, and standard or remote PTTs. In addition, the XL-185P can be used with Bone Conducting Skull Headsets and Throat Microphone/Headset Kits. Covert audio kits are available in black or beige, 2-wire or 3-wire configurations with ear-piece, microphone and PTT.



3-Wire Mini-Lapel Microphone



Tactical Headset

Speaker Microphones

L3Harris offers a versatile line of speaker microphones for the XL-185P. In addition, a premium leather holster is available for attaching to a belt or wearing with the premium leather shoulder strap.



Standard Mic



Revo NC2 Speaker Mic



Advanced Bluetooth Speaker Mic



500 Fire-Rated Speaker Mic

Chargers

L3Harris offers a variety of chargers for the XL-185P including Single-Bay, 2-Bay, Multi-Bay and a Vehicular Charger for in-car charging. The chargers are designed to quickly and safely charge battery packs in approximately 1 to 4 hours.



Single-Bay Charger



2-Bay Charger



Multi-Bay Charger*



Vehicular Charger*

Additional Accessories Available

Bluetooth speaker microphones, Bluetooth covert earpieces, standard speaker microphones, Lithium Ion battery, PC programming software and cables, other subminiature surveillance accessories, and antennas.

*Accessories unavailable in Brazil

Technical specifications are subject to change without notice. Product sales are subject to applicable U.S. export control laws.

XL-185P PORTABLE

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FAST. FORWARD.

1025 W. NASA Boulevard
Melbourne, FL 32919

XL-200P PORTABLE

Converged LTE Land Mobile Radio

The L3Harris XL-200P is the industry's leading converged multiband Land Mobile Radio (LMR) with LTE. Situational Awareness is front and center as you combine crystal clear audio over your P25 radio system and data sharing capabilities on nationwide broadband networks. With industry-leading technology at your fingertips, you have more ways and more places to co

Designed from the ground up, the XL-200P is engineered for audio excellence. It combines a powerful 1.5/4.0 watt max amplifier and custom speakers with advanced noise cancellation technology to suppress feedback, delivering clear communications in a wide range of noisy environments.

Compact and ergonomic, the portable's shape is based on extensive research, resulting in a radio that fits naturally in users' hands. Controls are shaped and arranged for ease of use and optimum performance, including accessory connections.

With its ruggedized aluminum I-beam frame and tough seals, the XL-200P is built to operate in severe environments. This radio meets MIL-STD-810G for durability, including Method 511.5 for explosive atmospheres and Method 504.1 for contamination by fluids, so it can be scrubbed with cleansers and biological sanitizers.

The XL-200P supports a choice of encryption methods for secure communications, including single-key AES.



EXCEPTIONAL COMMUNICATIONS IN SEVERE ENVIRONMENTS

KEY BENEFITS

- > AT&T & Verizon Certified and FirstNet Ready™
- > Loud and clear audio with advanced noise cancellation
- > Ruggedized to meet stringent MIL-spec standards
- > Built-in Wi-Fi®, Bluetooth® and GPS
- > Secure voice and data encryption
- > Intuitive and easy to use

SPECIFICATIONS FOR: XL-200P PORTABLE FULL-SPECTRUM MULTIBAND RADIO

GENERAL			
Radio Models: Full Keypad Partial Keypad	TFT LCD w/DTMF keypad, navigation cluster, soft keys TFT LCD w/partial keypad, navigation cluster, soft keys		
Dimensions w/Battery (H x W x D)	5.8 x 2.3 x 1.4 in (148.0 x 60.0 x 36.0 mm)		
Weight	w/ Battery, Antenna and LTE Modem 18.2 oz (516 g)	w/Battery and Antenna 16.2 oz (464 g)	w/o Battery and Antenna 10.4 oz (296 g)
Housing Colors	Midnight Black, High-Visibility Yellow and High-Visibility Green		
Interfaces: Front Display Top Display Keypad Buttons Tx / Rx Indicator	320 x 178 pixels, 1.8 inch transfective LCD, 16-bit color with backlight 128 x 32 pixels, 1.1 inch multi-color backlight, sunlight readable Backlight, 3 soft keys, 5-way navigation key, full DTMF keypad Large PTT button, on/off knob, volume knob, red emergency button, 16-position top-mounted rotary knob, 2-position concentric switch, 4-position toggle switch, 3 programmable side buttons Multi-colored LEDs		
Channel / Talkgroup Capacity	1,250 total conventional channels and 13,824 total talkgroups		
Radio programming	Firmware, personalities and feature set over Wi-Fi		
Transceiver	Supported Bands VHF, UHF and 700/800 MHz and LTE (optional)	Channel Capacity 12,500 (1,250 per mission plan)	
Environmental: Relative Humidity Vibration Drop Shock Immersion ¹	5% @ 140°F (+60°C), 95% @ 122°F (+50°C) USDA LMR Standard, Section 2.15 and MIL-STD-810G, Test Method 514.6 1.5 meter drop to concrete (exceeds TIA-603-D) 2 meters for 4 hours in accordance with MIL-STD-810G/IP68		
Operating Temperature²	-22° to +140°F (-30° to +60°C)		
Storage Temperature³	-40° to +176°F (-40° to +80°C)		
Altitude	Operational 15,000 feet (4,572 meters)	In Transit 40,000 feet (12,192 meters)	
Electrical Input Voltage	7.5 VDC (nominal)		
GPS/GNSS Specifications: Channels Tracking Sensitivity (dBm) Acquisition Sensitivity (dBm) Cold Start w/-130 dBm input Hot Start w/-130 dBm input	P25 standard Tier 2 and L3Harris in-band 52 -166 (GPS), -163 (GLONASS) -146 (GPS) <35 seconds <1 second		
Safety: Hazardous Location Options RoHS Compliant	Approved for use in the U.S. and Canada in Class I, Division 2 Groups A, B, C and D hazardous locations		

¹ Optional feature

² Extreme low temperatures adversely affect battery life and audio power/ distortion

³ Store batteries at +25°C ± 5°C

LMR TRANSMITTER			
Frequency Bands	VHF*	UHF*	700/800 MHz
Frequency Ranges (MHz): Option 1 (U.S.)	136-174	378-522	768-776, 798-806, 806-816, 851-861
Option 2 (International)	136-174	378-522	763-776, 793-806, 806-825, 851-870
Rated RF Power/Talkaround (W)	1-6	1-5	0.5-3
Frequency Stability (-30 to +60°C)	±1.0 ppm	±1.0 ppm	±1.0 ppm
Modulation Limiting (kHz)	2.5, 4, 5 (FM)	2.5, 4, 5 (FM)	2.5, 4, 5 (FM)
Audio Response (dB)	+1/-3	+1/-3	+1/-3
Spurious and Harmonics (dBc)	-80 (FCC Part 90)	-80 (FCC Part 90)	-80 (FCC Part 90)
FM Hum and Noise Companion Receiver (dB): @ 25 kHz @ 12.5 kHz	70 47	60 47	55 45
Audio Distortion (%)	<1.25	<1.25	<1.25
Project 25 Modulation Fidelity (%)	1.0	1.0	1.0
Project 25 Adjacent Channel Power (dBc)	>71	>71	>71

*Full-spectrum multiband VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

SPECIFICATIONS FOR: XL-200P PORTABLE FULL-SPECTRUM MULTIBAND RADIO

REGULATORY DATA							
Frequency Range	RF Output	Frequency Stability	FCC Type Acceptance No.	Applicable FCC Rules	Industry Canada Certification No.	Applicable Industry Canada Rules	NTIA Cert. No.
136-174 MHz	6 W	±1.0 ppm	OWDTR-0133-E, OWDTR-0145-E	22, 74, 80, 90	3636B-0133, 3636B-0145	RSS-119	SPS-217 49/1
378-522 MHz	5 W	±1.0 ppm	OWDTR-0133-E, OWDTR-0145-E	22, 74, 80, 90	3636B-0133, 3636B-0145	RSS-119	SPS-217 49/1
768-776 MHz	3 W	±1.0 ppm	OWDTR-0133-E, OWDTR-0145-E	90	3636B-0133, 3636B-0145	RSS-119	
798-806 MHz	3 W	±1.0 ppm	OWDTR-0133-E, OWDTR-0145-E	90	3636B-0133, 3636B-0145	RSS-119	
806-816 MHz	3 W	±1.0 ppm	OWDTR-0133-E	90	3636B-0133	RSS-119	
806-825 MHz	3 W	±1.0 ppm	OWDTR-0145-E	90	3636B-0145	RSS-119	
851-861 MHz	3 W	±1.0 ppm	OWDTR-0133-E	90	3636B-0133	RSS-119	
851-869 MHz	3 W	±1.0 ppm	OWDTR-0145-E	90	3636B-0133	RSS-119	
2402-2480 MHz	0.2 W	N/A	OWDTR-0133-E, OWDTR-0145-E	15	3636B-0133, 3636B-0145	RSS-119	
5180-5825 MHz	0.1 W	N/A	OWDTR-0133-E, OWDTR-0145-E	15	3636B-0133, 3636B-0145	RSS-119	

LMR RECEIVER			
Frequency Bands	VHF	UHF	700/800 MHz
Frequency Ranges (MHz): Option 1 (U.S.) Option 2 (International)	136-174 136-174	378-522 378-522	768-776, 851-861 763-776, 851-870
Channel Spacing (kHz)	25 (wideband*), 12.5 (narrowband), 6.25 equiv (TDMA P25 Phase 2)		
Frequency Stability (-30 to +60°C)	±1.0 ppm	±1.0 ppm	±1.0 ppm
Sensitivity (dBm): @ 12 dB SINAD	-122	-121	-121 (700 MHz) -120 (800 MHz)
Project 25 Reference Sensitivity (dBm): @ 5% BER	-122	-121	-120.5
Analog Selectivity (dB): @ 25 kHz @ 12.5 kHz	77 71	77 70	74 64
Project 25 Adjacent Channel Rejection (dB)	66.2	62.2	62
Offset Channel Selectivity (dB): @ NPSPAC	N/A	N/A	30
Intermodulation (dB)	80	81	77
Spurious and Image Rejection (dB)	90	87	80
FM Hum and Noise (dB): @ 25 kHz @ 12.5 kHz	-60 -55	-60 -53	-55 -50
Audio Output - Rated / Max (mW)	1500/4000	1500/4000	1500/4000
Audio Distortion @ Rated Power (%)	1.1	1.1	1.1

*Full-spectrum multiband VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz

ENVIRONMENTAL STANDARD			
Applicable MIL-STD	Parameter	Methods	Procedure/Categories
MIL-STD-810G*	Low pressure	500.5	1, 2
	High temperature	501.5	1, 2
	Low temperature	502.5	1, 2
	Temperature shock	503.5	1
	Solar radiation	505.5	1
	Contamination by fluids	504.1	2
	Rain	506.5	1, 3
	Humidity	507.5	2
	Salt fog	509.5	1
	Blowing dust and sand	510.5	1, 2
	Explosive atmosphere	511.5	1
	Immersion in water**	512.5	1
	Vibration (minimum integrity)	514.6	1, Category 24
	Vibration (basic transportation)	514.6	1, Category 4
	Shock (functional/basic)	516.6	1
	Shock (transit drop)	516.6	4
	Shock (bench handling)	516.6	6
IEC 60529	Dust-tight, continuous immersion in water**		IP68

*Also meets equivalent superseded MIL-STD-810D, -E and -F

**Optional feature

BROADBAND	
LTE Protocol	3GPP Release 11, Category 12, Power Class 3 UE with support for QoS QCI
North America LTE Option	FCC ID: N7NEM75S 4G LTE Bands: B2, B4, B5, B12, B13, B14, B17, B29*, B30*, B66 3G Bands: B2, B5 Carrier Certification: FirstNet, AT&T, Verizon
International LTE Option (In selected countries)	4G LTE Bands: B1, B3, B5, B7, B8, B28 3G Bands: B1, B5, B8
Wi-Fi	802.11 b/g/n 2.4 GHz and 5 GHz; supports 24 preconfigured and 8 user configured networks
Bluetooth	Bluetooth 4.0 (128-bit encryption)

*Downlink only for Carrier Aggregation

SPECIFICATIONS FOR: XL-200P PORTABLE FULL-SPECTRUM MULTIBAND RADIO

DIGITAL OPERATION		
Protocol	ProVoice™	P25
Vocoding Method	AMBE+2™ enhanced full rate	AMBE+2 enhanced full rate and enhanced half rate
Signaling Rate (kbps)	9.6	9.6
Modulation	GFSK	Phase 1 Tx: C4FM, Rx: C4FM and WCQPSK
L3Harris Failsoft operation	Switch to site trunking mode (for L3Harris infrastructure) or P25 conventional	

ENCRYPTION	
Encryption Algorithms	Voice Encryption: Single-key AES/DES, Multiple-key AES/DES, DES-OFB, Encryption Lite (ARC4), 256-bit AES P25, 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Encryption Keys per Radio	Capable of storing 128 keys (128 AES, 64 DES)
Keying	L3Harris Key Loader, Over-the-Air Rekeying (OTAR), Motorola KVL 3000+/4000
Standards	FIPS 140-2, FIPS 197

BATTERIES			
Type	Dimensions (H x W x D)	Weight	Capacity (mAh)
Li-Ion	3.0 x 2.3 x 0.9 in	4.8 oz (136 g)	3100

ACCESSORIES

The XL-200P is available with a selection of dependable L3Harris accessories that operate in a range of environments. Several are shown below.

Headsets

The XL-200P can be used with a wide variety of headsets and covert audio accessories to provide a complete user-gear solution for the industrial, Public Safety, Utility, and Transportation markets. Heavy-duty and lightweight headsets are available with in-ear or over-the-ear hearing protection, flexible boom microphones with noise-reduction technology, and standard or remote PTTs. In addition, the XL-200P can be used with Bone Conducting Skull Headsets and Throat Microphone/Headset Kits. Covert audio kits are available in black or beige, 2-wire or 3-wire configurations with ear-piece, microphone and PTT.



3-Wire Mini-Lapel Microphone



Tactical Headset

Speaker Microphones

L3Harris offers a versatile line of speaker microphones for the XL-200P.



Standard Mic



REVO NC2 Speaker Mic



Advanced Bluetooth Speaker Mic



500 Fire-Rated Speaker Mic

Chargers

L3Harris offers a variety of chargers for the XL-200P: Single-Bay, 2-Bay, Multi-Bay and a Vehicular Charger for in-car charging. The chargers are designed to quickly and safely charge battery packs in approximately 1 to 4 hours.



Single-Bay Charger



2-Bay Charger



Multi-Bay Charger*



Vehicular Charger*

Additional Accessories Available

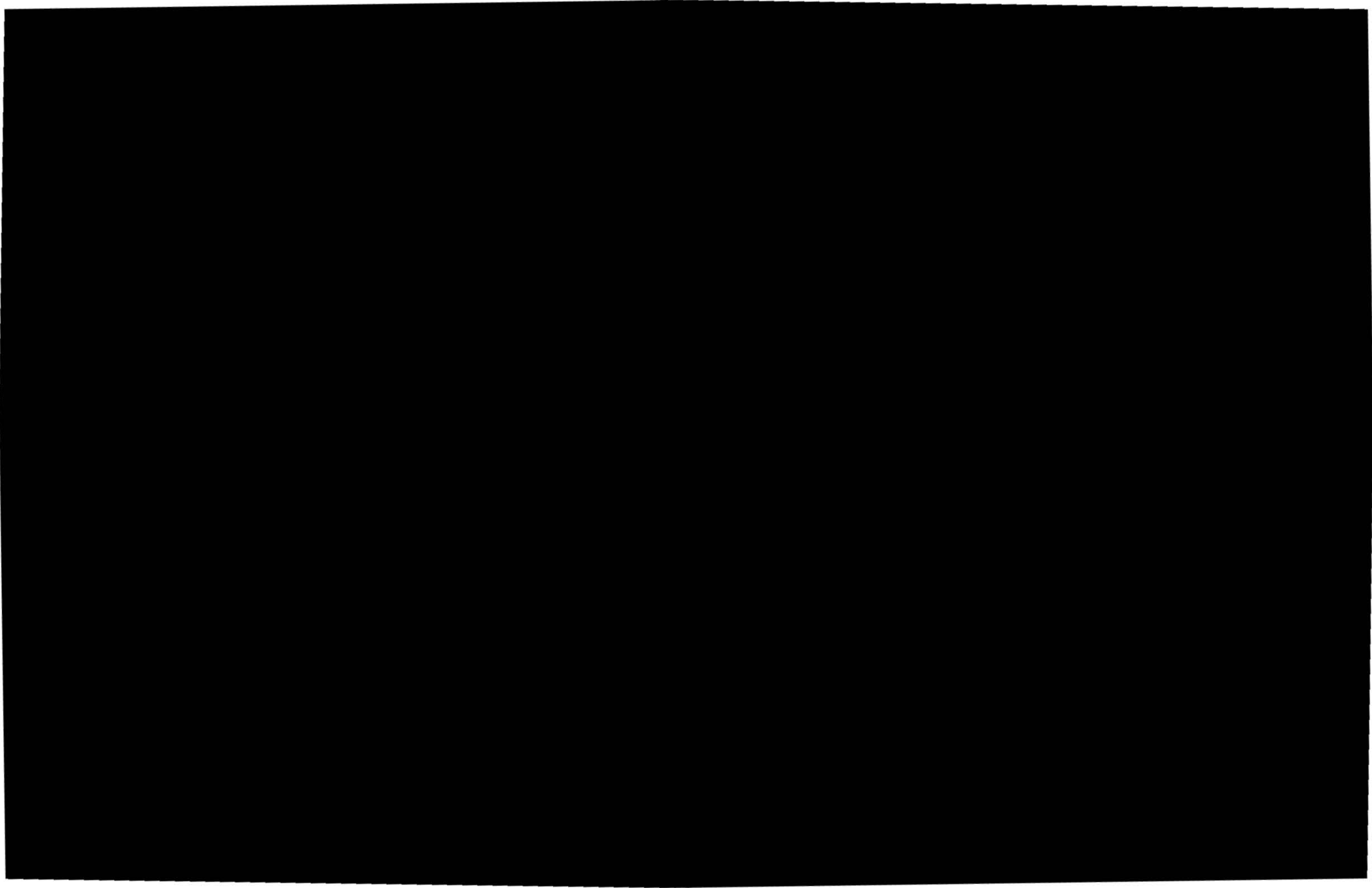
Bluetooth speaker microphones, Bluetooth covert earpieces, standard speaker microphones, Lithium Ion battery, PC programming software and cables, other subminiature surveillance accessories, and antennas.

*Accessories unavailable in Brazil

Technical specifications are subject to change without notice. Product sales are subject to applicable U.S. export control laws.

Non-Export Controlled Information

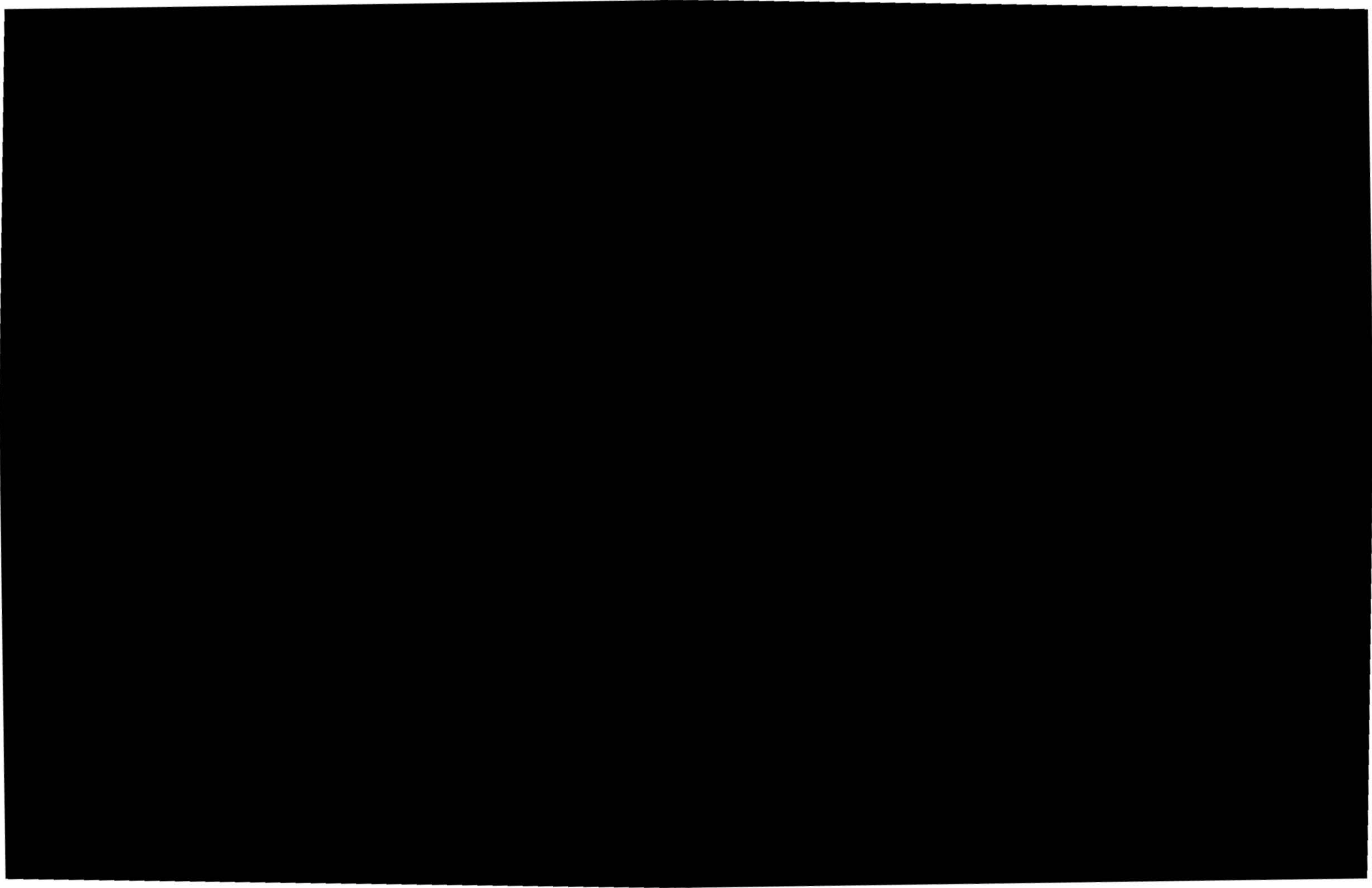
L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.

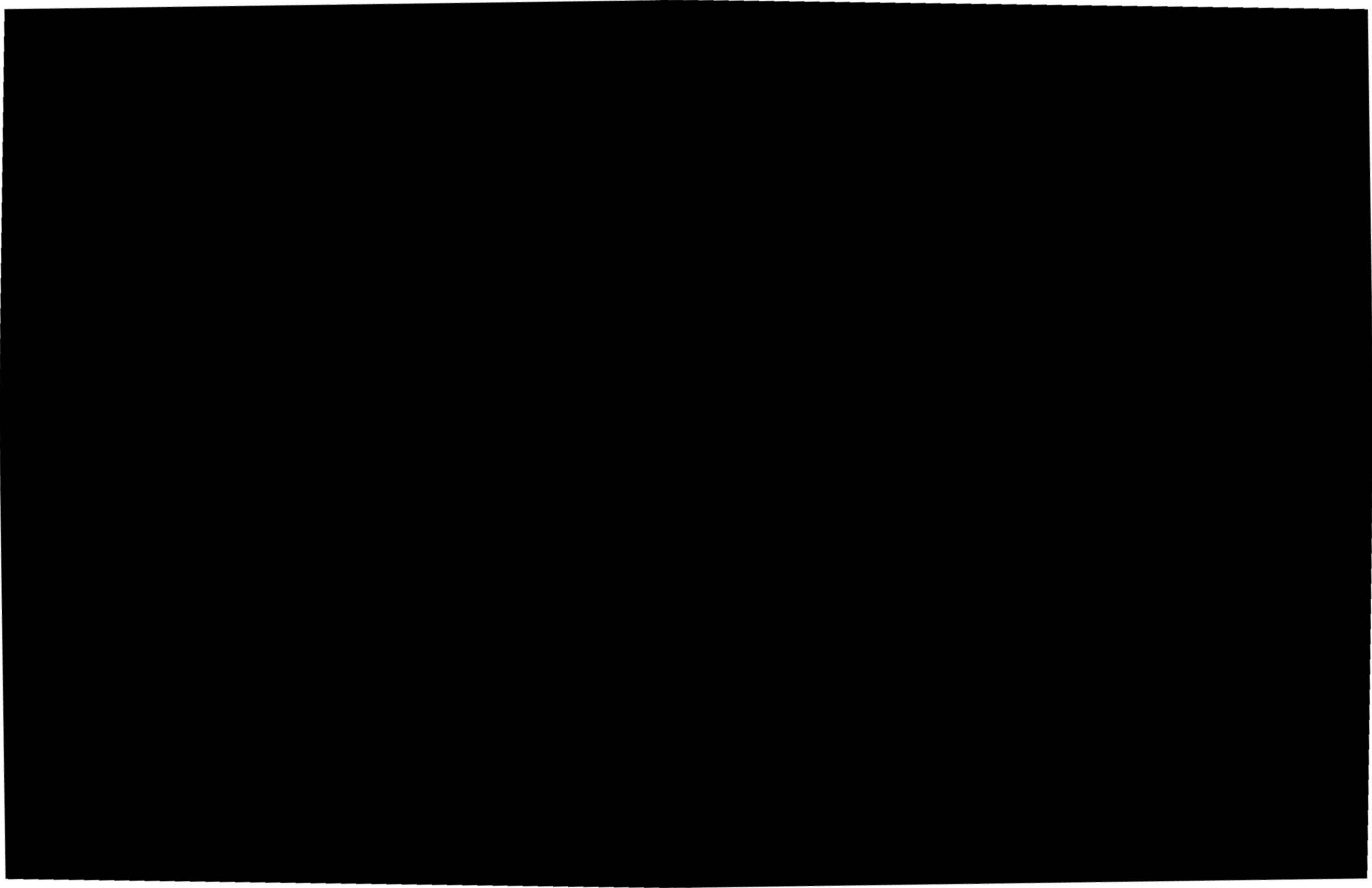


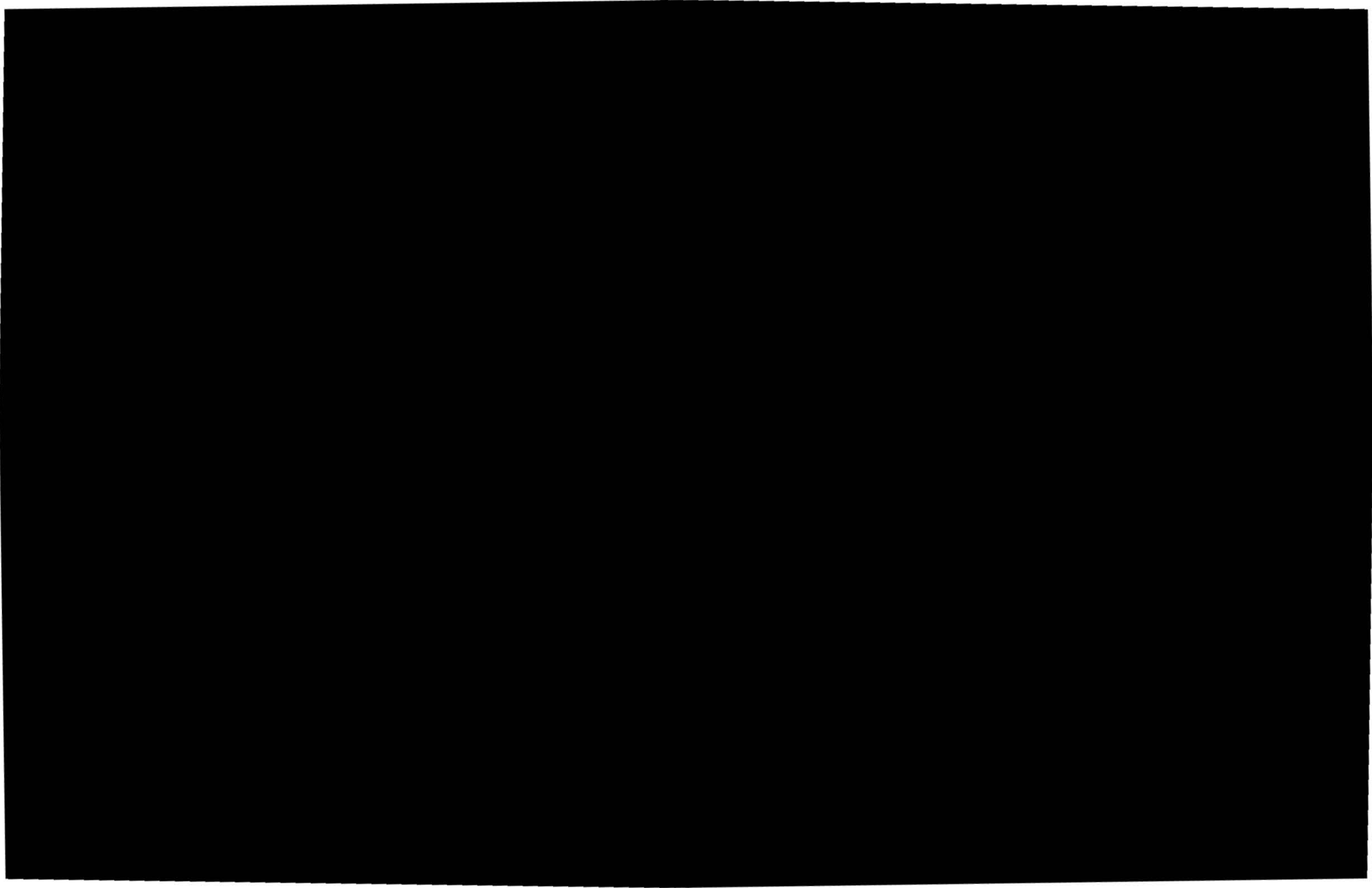
EXCEEDING YOUR EXPECTATIONS

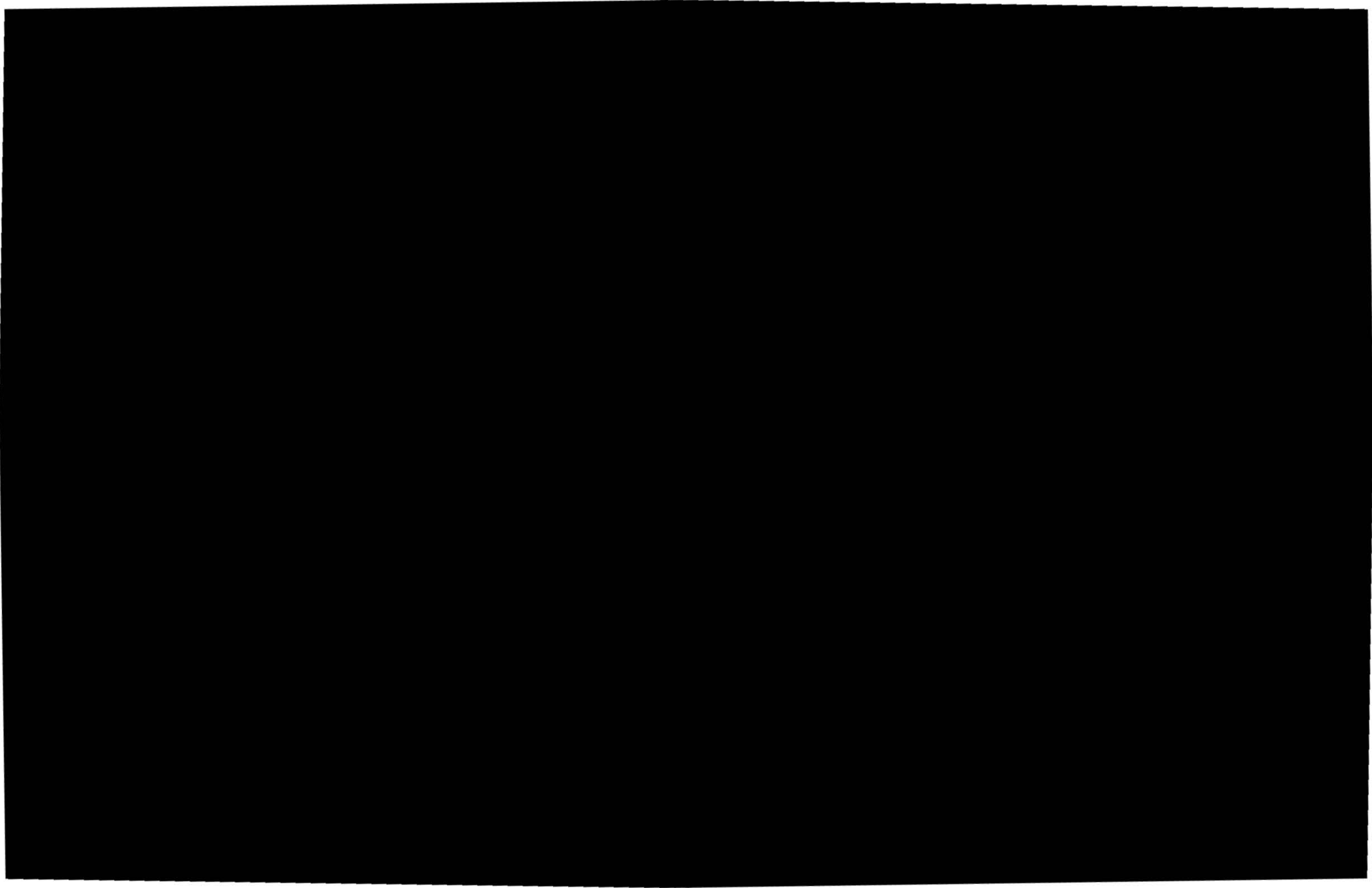


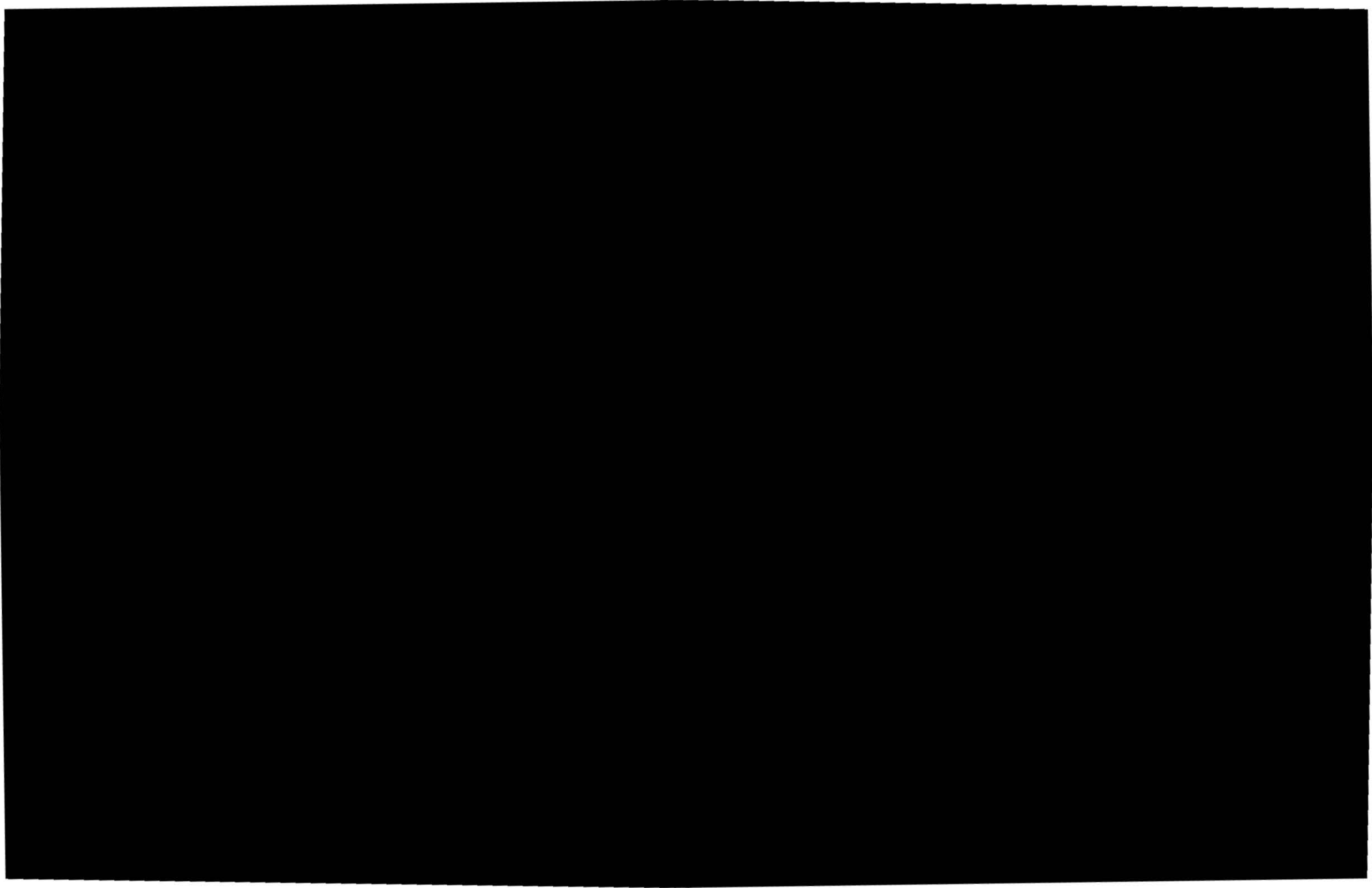
SYSTEM REPORTS: TALK-IN	2
MOBILE TALK-IN TRUNK MOUNTED ANTENNA	17
MOBILE TALK-OUT TRUNK MOUNTED ANTENNA	18
PORTABLE TALK-IN HIP LEVEL 1/2 WAVE ANTENNA	19
PORTABLE TALK-OUT HIP LEVEL 1/2 WAVE ANTENNA	20
PORTABLE TALK-IN HIP LEVEL 1/2 WAVE ANTENNA 12DB	21
PORTABLE TALK-OUT HIP LEVEL 1/2 WAVE ANTENNA 12DB	22
PORTABLE TALK-IN HIP LEVEL 1/2 WAVE ANTENNA 20DB	23
PORTABLE TALK-OUT HIP LEVEL 1/2 WAVE ANTENNA 20DB	24
PORTABLE TALK-IN HIP LEVEL 1/2 WAVE ANTENNA HIGHWAY BOUNDARY	25
PORTABLE TALK-OUT HIP LEVEL 1/2 WAVE ANTENNA HIGHWAY BOUNDARY	26
SYSTEM REPORTS: PAGING	27
PAGER TALK-OUT HIP LEVEL	35
PAGER TALK-OUT HIP LEVEL IN-BUILDING 12DB	36
PAGER TALK-OUT HIP LEVEL NORTH SYSTEM	37
PAGER TALK-OUT HIP LEVEL NORTH SYSTEM 12DB	38
PAGER TALK-OUT HIP LEVEL SOUTH SYSTEM	39
PAGER TALK-OUT HIP LEVEL SOUTH SYSTEM 12DB	40

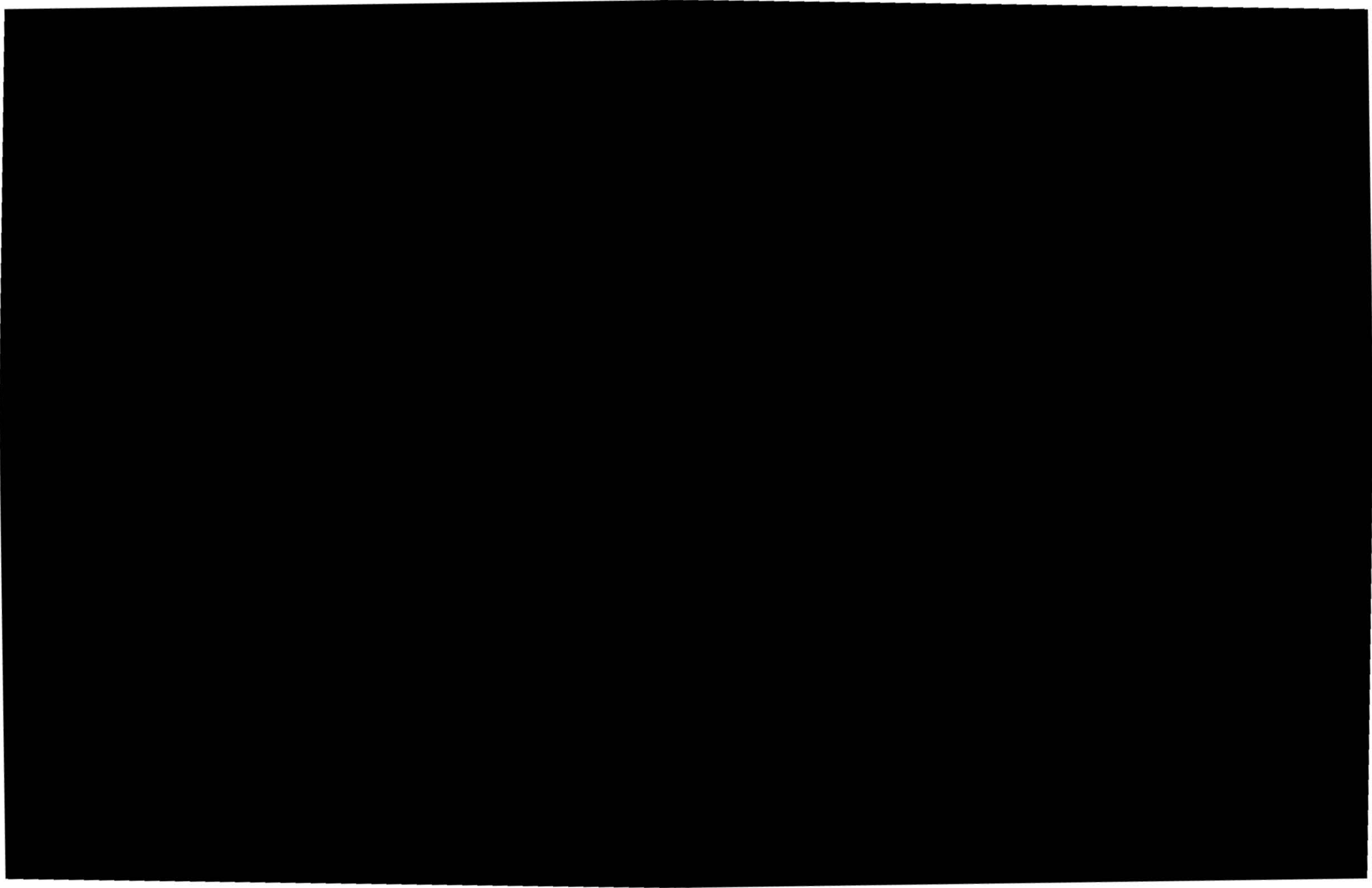


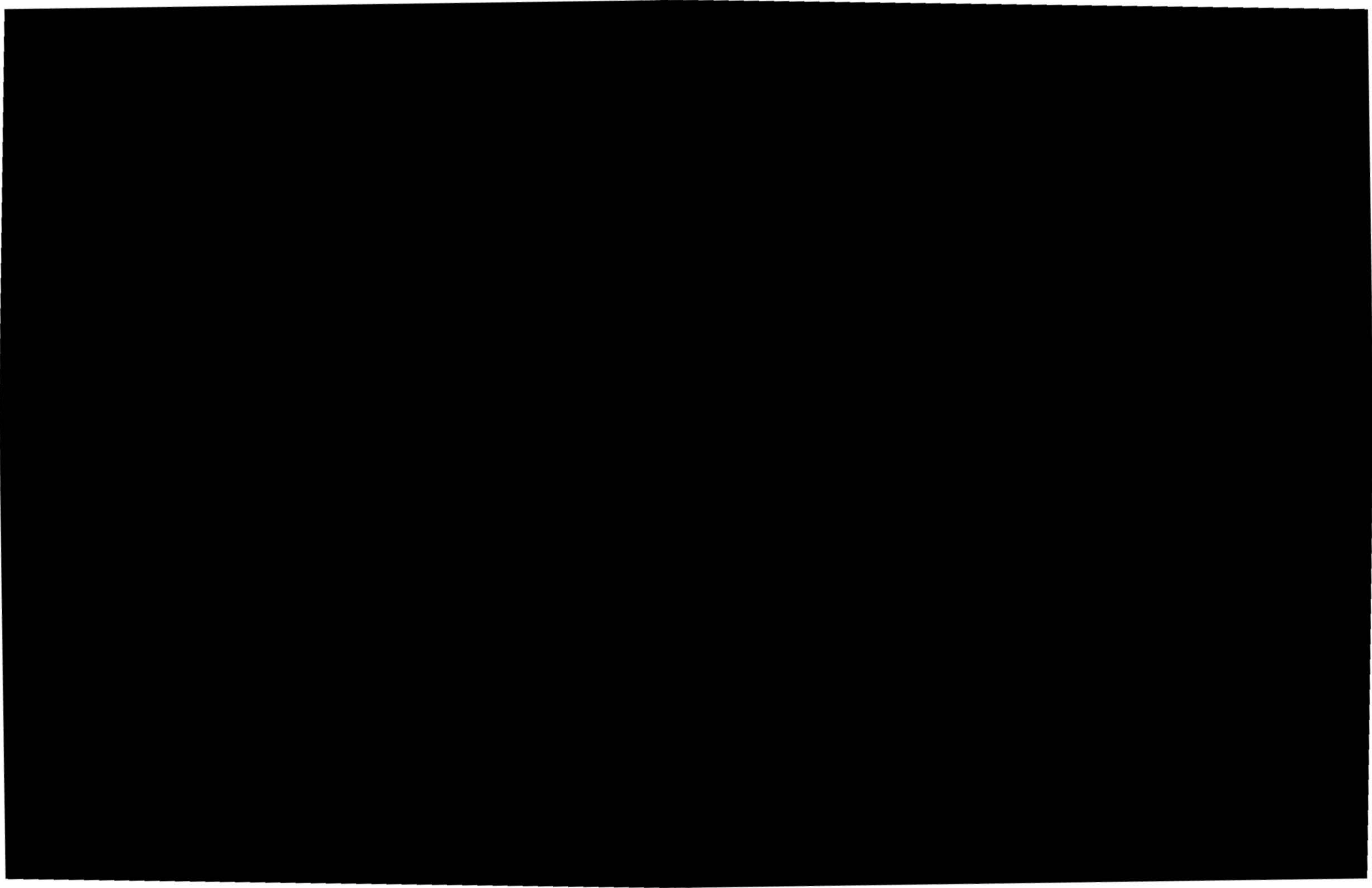


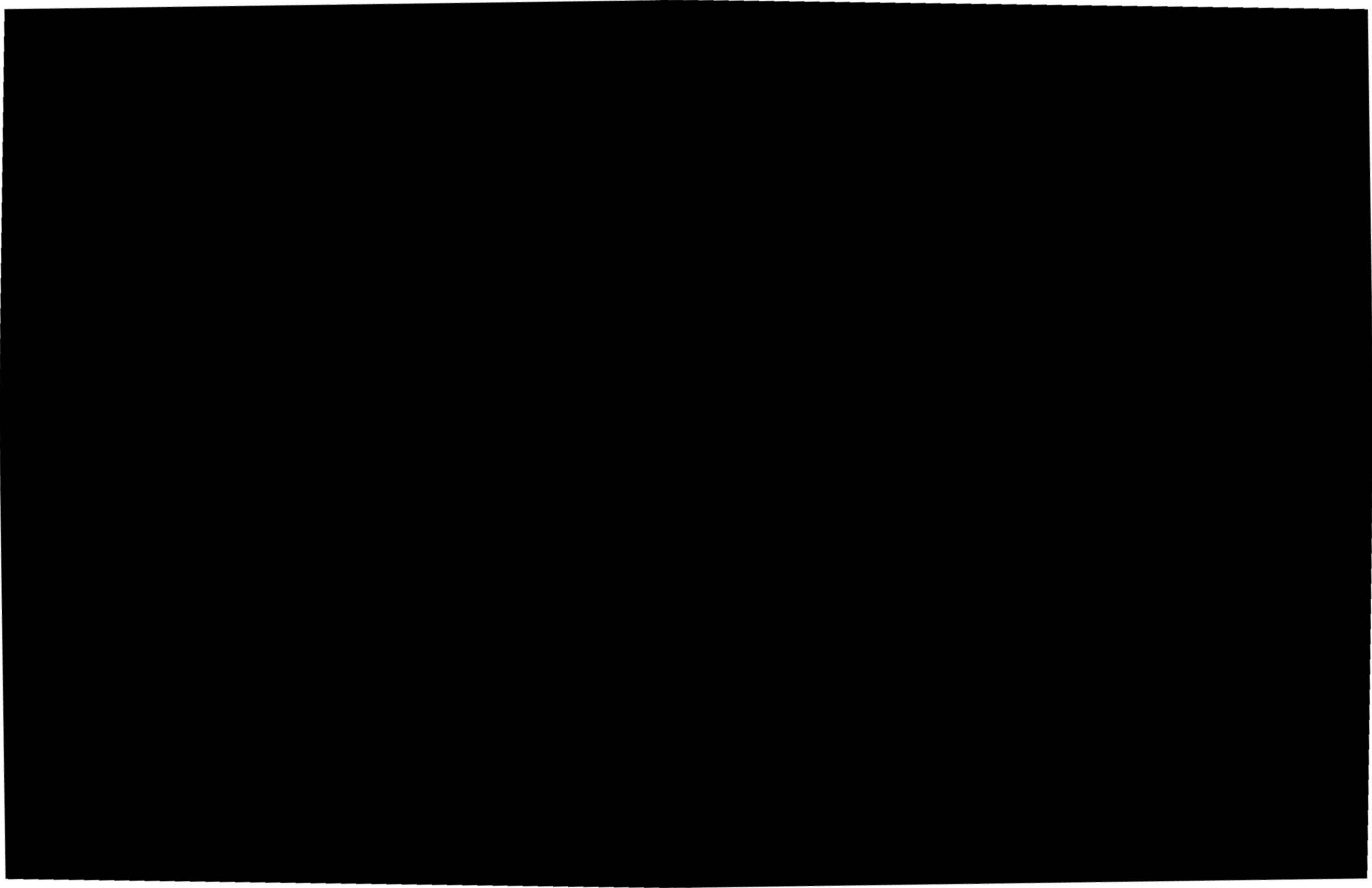


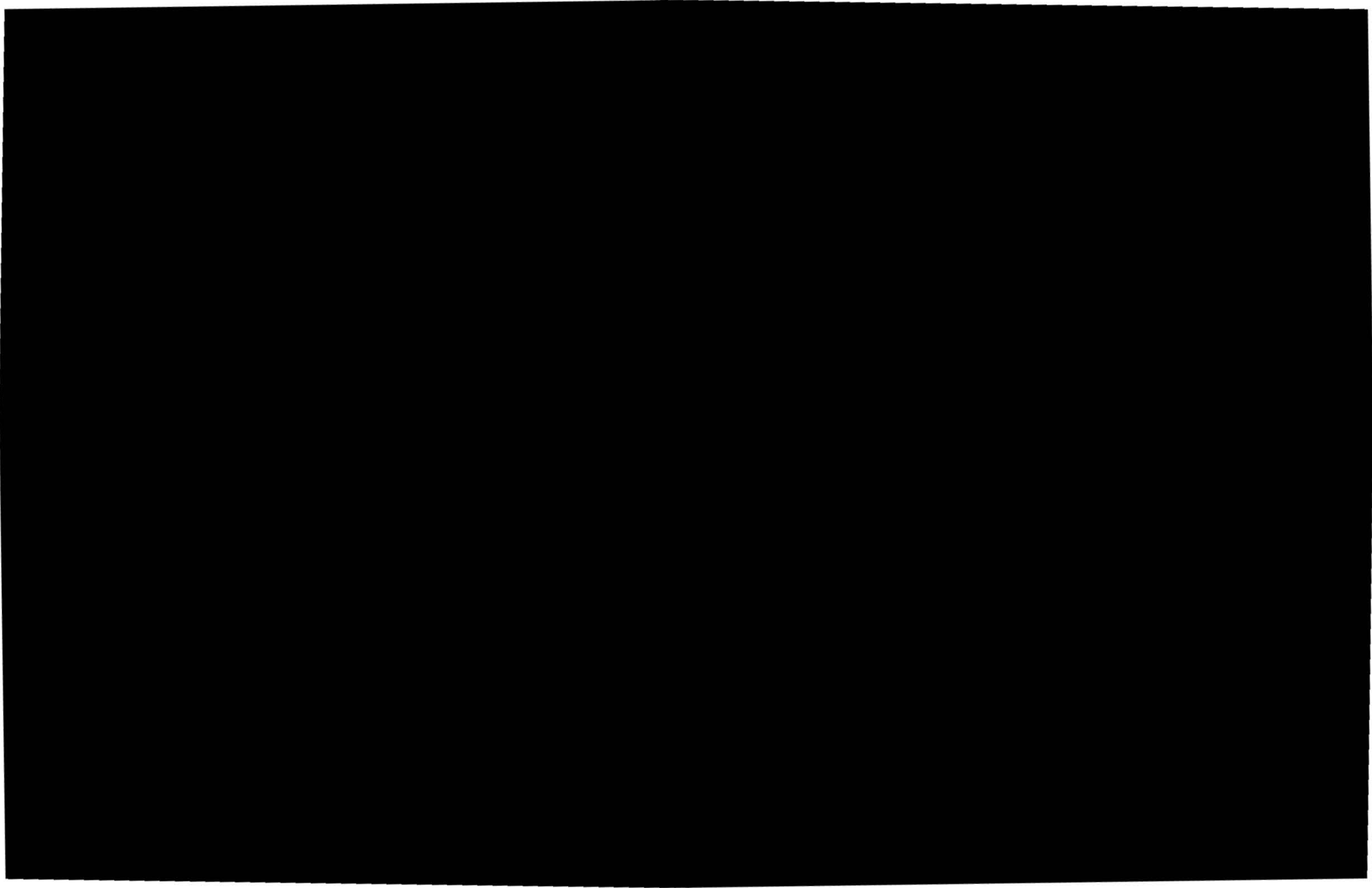


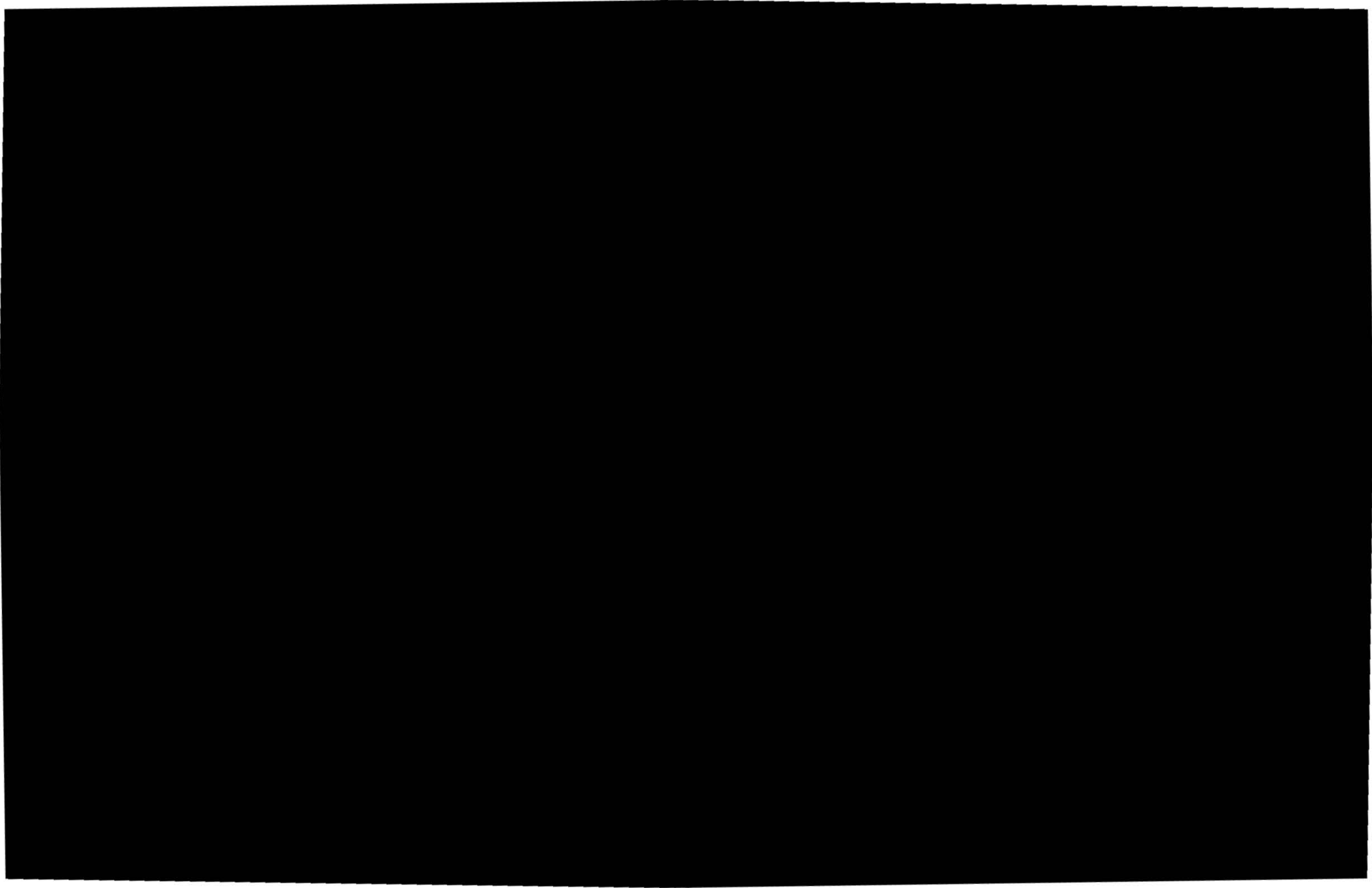


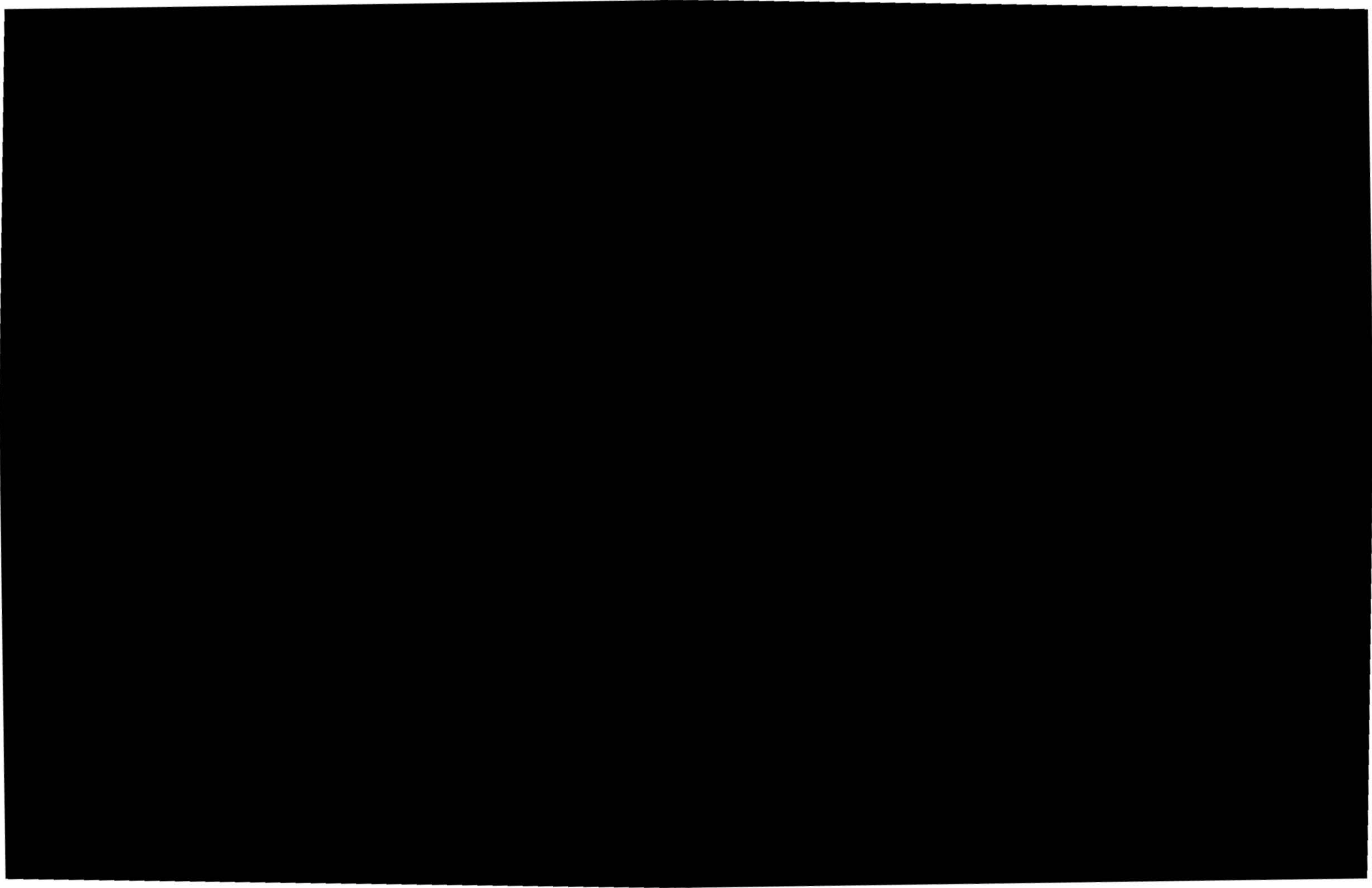


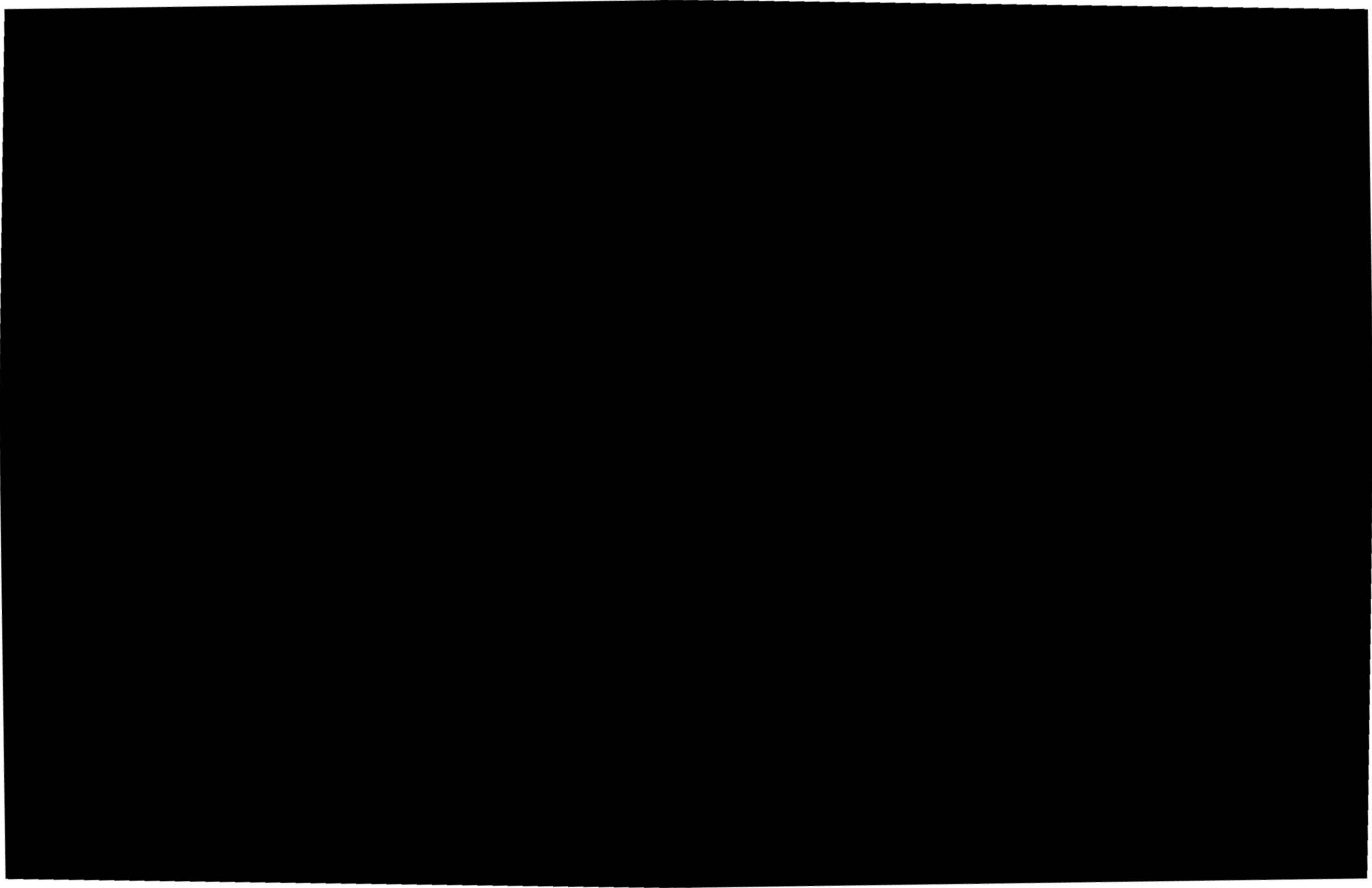


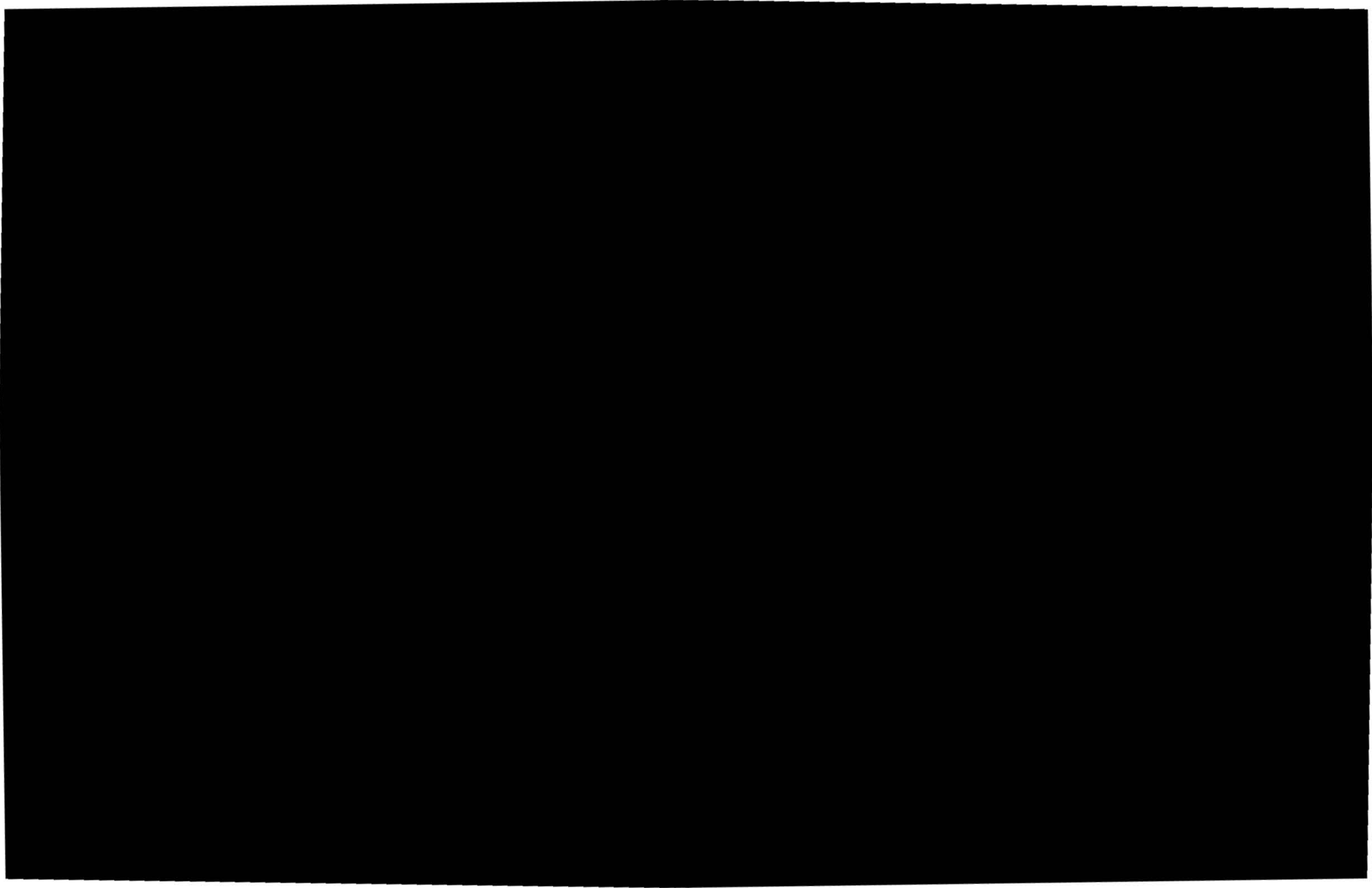


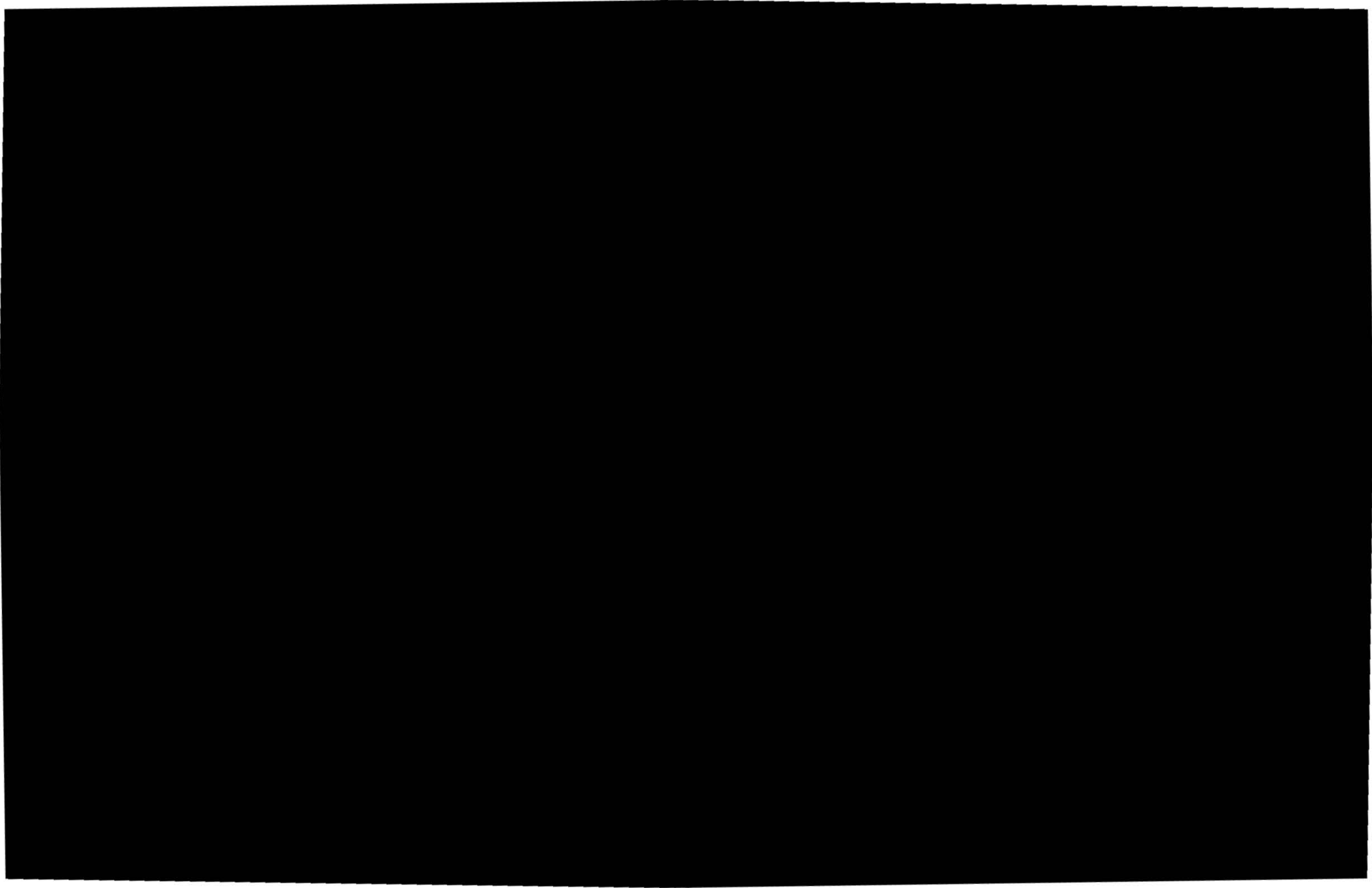


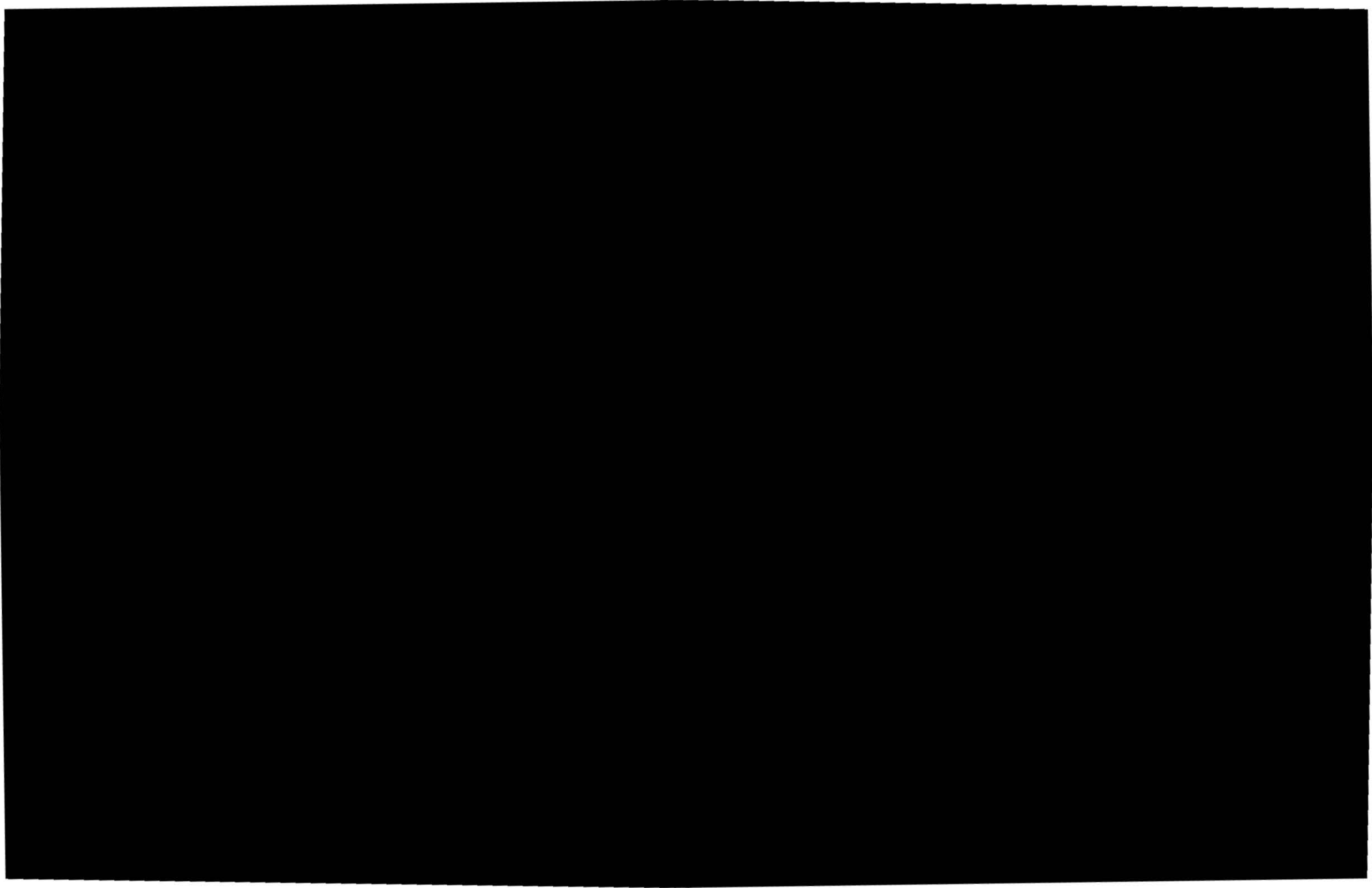


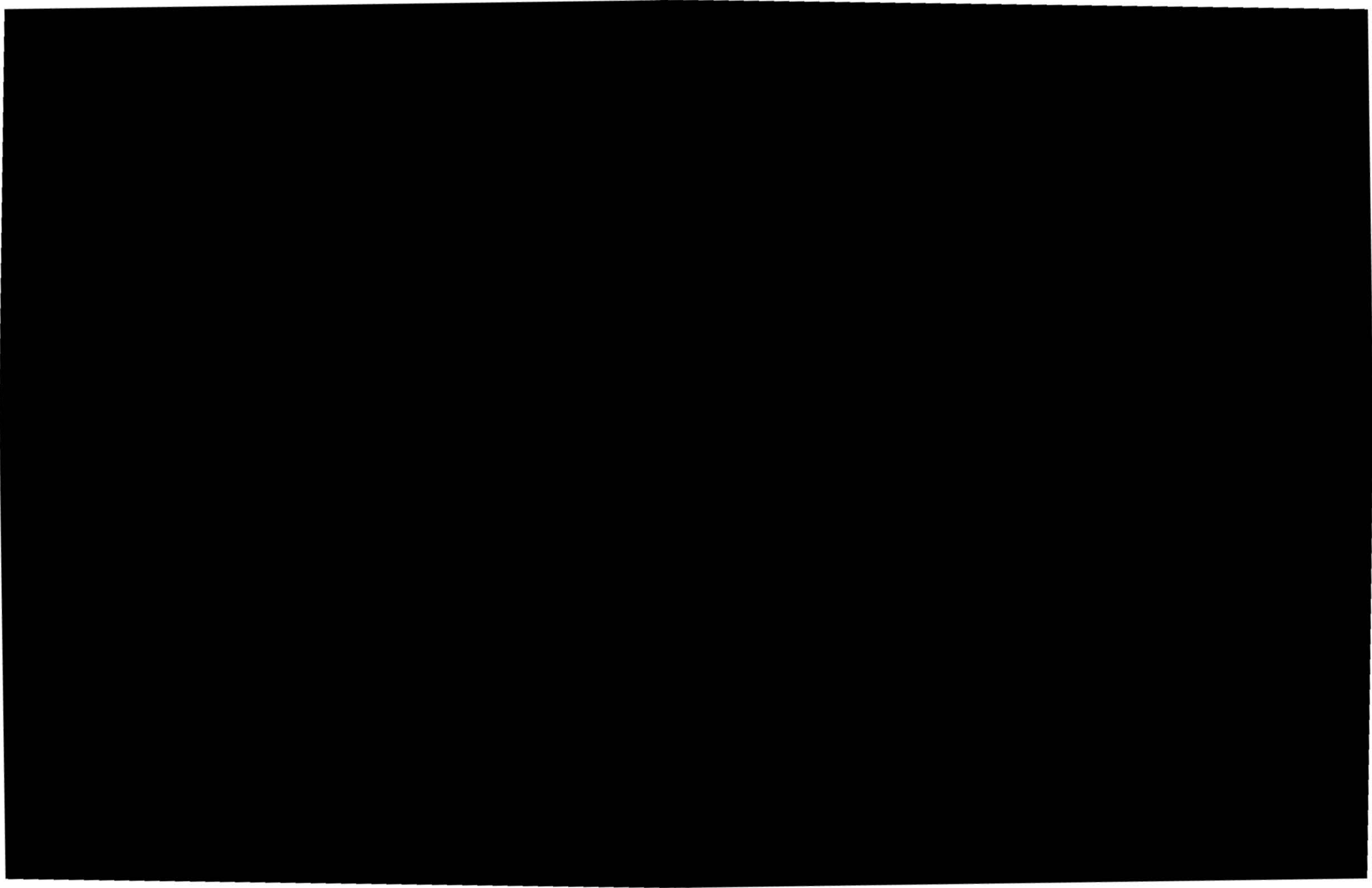














Coverage Acceptance Test
Talk-Out BER Data Collection
for
Okaloosa County Florida

1. BIT ERROR RATE (BER) TEST

This Acceptance Test Procedure (ATP) is used by Williams Communications, Inc. for RF coverage verification based on Bit Error Rate (BER) measurements. This procedure provides an accurate, statistically valid, repeatable, objective, and cost-effective method to verify all Okaloosa County coverage requirements are met.

This ATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance applicable to both analog voice and digital voice systems.

TSB-88-C also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. Williams Communications, Inc. has proposed a Bounded Area design for Okaloosa County as defined in TSB- 88-C wherein coverage predictions are made out to the boundary of the defined service area and coverage is verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test.

RF coverage using this ATP is verified by measuring talk-out (base to mobile) BER throughout the County's defined bounded service area, and calculating the percentage of measurements that are equal or better than a BER of 2% required to support the County's specified CPC of DAQ 3.4.

2. Setup

Williams Communications, Inc.' TYPHON wireless testing system is utilized to measure BER. TYPHON consists of mobile radios, a GPS receiver to provide accurate position information for each measured data point, a computer with an internal clock that coordinates and records the test data, roof mounted antennas, and variable attenuators for use when portable coverage is being tested.

The TYPHON equipment will be mounted inside the test vehicle (standard passenger vehicle for single BER measurements, or SUV/van for multiple BER measurements) with an external antenna(s) mounted on the outside and centrally located on the vehicle's roof, with no other equipment installed on the roof. Attenuation will be adjusted for each of the coverage areas (Portable Outdoor, 12dB Buildings, 20 dB Buildings, Offshore) to ensure proper BER data is collected.

Prior to taking BER measurements, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test transmitter. Williams Communications, Inc. shall provide all test equipment necessary to perform the audits.

3. Drive Route Planning

TSB-88-C recommends coverage verification measurements at a statistically significant number of random test locations, uniformly distributed throughout the service area. To accomplish this, the service area is divided by a grid pattern as an aid to the development of a drive test route with an approximately equal distance traveled in each grid.

Williams Communications, Inc. recommends a 1/2 mile by 1/2 mile grid pattern to obtain an even or uniform distribution of approximately 755 grids throughout the County's service area. The grid pattern is overlaid onto street maps and a drive test route determined that will pass through all accessible grids (i.e. have roads) within the County's defined service area boundary. The drive route should pass through each grid at least once but not more than twice, as far as is practically possible. The defined drive route should not pass through tunnels, underpasses, underground garages, or other man-made obstructive areas where radio coverage is not planned or expected. If a drive route passes through any of these areas, the TYPHON unit is disabled to prevent the collection of data in these areas.

BER measurements will be made in all accessible grids within the County's defined service area boundary. Test measurements along the drive route that are outside of the County's service area boundary will not be counted. Any areas or accessible grids within the service area boundary that the County decides not to test will have coverage scored as a PASS in the reliability calculations.

4. Data Measurements

Each radio system base station site transmits the data sequences on a working channel, and measurements of this signal are collected with the TYPHON equipment mounted inside the test vehicle as it is driven along the defined test drive route. The software in the TYPHON laptop computer will automatically measure and record the data sequences that will be used to determine the BER for each measurement point along the drive route.

5. Data Analysis and Acceptance

All BER measurement data records collected from the drive test within the defined service area boundary are post-processed and used in the final analysis.

For each service area, the minimum acceptable signal level at a portable radio is shown in Table 1 (e.g., portable body loss, excess signal required to penetrate each random building category). Measurements that have a BER 2.4% or less are recorded as Pass; the remainders are recorded as FAIL.

Table 1 - Coverage Service Area, BER, and Acceptance Criteria

6.

Service Area	Scenario	% Validated CPC Service Area Reliability Acceptance Criteria
Okaloosa County Portable Outdoor	BER 2.4% or less	95%
Okaloosa County Portable Indoor 12 dB Buildings	BER 2.4% or less	95%
Okaloosa County Portable Indoor 20 dB Buildings	BER 2.4% or less	95%
Okaloosa County Mobile + 10 miles offshore	BER 2.4% or less	95%

7. Results Presentation

The data records are plotted on a map showing the test grids, the areas tested and the test results. Different pen colors are used to show ranges of measured BER. A test report is also provided that summarizes the test results.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	-



Coverage Acceptance Test
Talk-In BER Data Collection
for
Okaloosa County Florida

1. Talk-In BIT ERROR RATE (BER) TEST

This Acceptance Test Procedure (ATP) is used by Williams Communications, Inc. for RF coverage verification based on Talk-In Bit Error Rate (BER) measurements. This procedure provides an accurate, statistically valid, repeatable, objective, and cost-effective method to verify all Okaloosa County coverage requirements are met.

This ATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance applicable to both analog voice and digital voice systems.

TSB-88-C also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. Williams Communications, Inc. has proposed a Bounded Area design for Okaloosa County as defined in TSB- 88-C wherein coverage predictions are made out to the boundary of the defined service area and coverage is verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test.

RF coverage using this ATP is verified by measuring talk-out (base to mobile) BER throughout the County's defined bounded service area, and calculating the percentage of measurements that are equal or better than a BER of 2.4% required to support the County's specified CPC of DAQ 3.4.

2. Setup

Williams Communications, Inc.' TYPHON wireless testing system is utilized to measure BER. TYPHON consists of mobile radios, a GPS receiver to provide accurate position information for each measured data point, a computer with an internal clock that coordinates and records the test data, roof mounted antennas, and variable attenuators for use when portable coverage is being tested.

We use our TYPHON wireless testing system to measure BER. TYPHON connects to a voter/base station at a distributed control point in the system and includes a GPS receiver to provide accurate time information for each measured data point and a computer with an internal clock that coordinates and records the test data.

Another TYPHON unit is mounted inside the test vehicle (Passenger car) connected to the test radios with its external antenna mounted on the vehicle's roof top. No other equipment is installed on the roof of the test vehicle.

When testing portable coverage, a variable attenuator installs in the test vehicle between the radio and the external antenna to simulate portable operations on for both outdoor and indoor operation. For portable outdoor coverage verification, the variable attenuator is set to the appropriate level to account for portable body losses. For portable indoor coverage verification, the variable attenuator will be set to account for the portable body losses plus the loss of the building category being evaluated

The TYPHON equipment will be mounted inside the test vehicle with an external antenna(s) mounted on the outside and centrally located on the vehicle's roof, with no other equipment installed on the roof. Attenuation will be adjusted for each of the coverage areas (Portable Outdoor, 12dB Buildings, 20 dB Buildings, Offshore) to ensure proper BER data is collected.

Prior to taking BER measurements, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test transmitter. Williams Communications, Inc. shall provide all test equipment necessary to perform the audits.

3. Drive Route Planning

TSB-88-C recommends coverage verification measurements at a statistically significant number of random test locations, uniformly distributed throughout the service area. To accomplish this, the service area is divided by a grid pattern as an aid to the development of a drive test route with an approximately equal distance traveled in each grid.

Williams Communications, Inc. recommends a 1/2 mile by 1/2 mile grid pattern to obtain an even or uniform distribution of grids throughout the County's service area. The grid pattern is overlaid onto street maps and a drive test route determined that will pass through all accessible grids (i.e. have roads) within the County's defined service area boundary. The drive route should pass through each grid at least once but not more than twice, as far as is practically possible. The defined drive route should not pass through tunnels, underpasses, underground garages, or other man-made obstructive areas where radio coverage is not planned or expected. If a drive route passes through any of these areas, the TYPHON unit is disabled to prevent the collection of data in these areas.

BER measurements will be made in all accessible grids within the County's defined service area boundary. Test measurements along the drive route that are outside of the County's service area boundary will not be counted. Any areas or accessible grids within the service area boundary that the County decides not to test will have coverage scored as a PASS in the reliability calculations.

4. Data Measurements

With the test vehicle in motion along the drive route, the mobile in the test vehicle transmits the data sequences on a working channel, and measurements of this signal are collected from the base station at each site. The software in the TYPHON laptop computer will automatically measure and record the data sequences that will be used to determine the BER for each measurement point along the drive route.

The GPS time of the start and stop (ON and OFF) for each transmission, as well as the vehicle position for each transmission, will be recorded in the test vehicle. These start and stop times will identify the corresponding portions of the base station receive data to be used in the analysis.

5. Data Analysis and Acceptance

All BER measurement data records collected from the drive test within the defined service area boundary are post-processed and used in the final analysis.

For each service area, the minimum acceptable signal level at a portable radio is shown in Table 1 (e.g., portable body loss, excess signal required to penetrate each random building category). Measurements that have a BER of less or equal to 2.4% are recorded as Pass; the remainders are recorded as FAIL.

Table 1 - Coverage Service Area, BER, and Acceptance Criteria

Service Area	Scenario	% Validated CPC Service Area Reliability Acceptance Criteria
Okaloosa County Portable Outdoor	BER 2.4% or less	95%
Okaloosa County Portable Indoor 12 dB Buildings	BER 2.4% or less	95%
Okaloosa County Portable Indoor 20 dB Buildings	BER 2.4% or less	95%
Okaloosa County Mobile + 10 miles offshore	BER 2.4% or less	95%

6. Results Presentation

The data records are plotted on a map showing the test grids, the areas tested and the test results. Different pen colors are used to show ranges of measured BER. A test report is also provided that summarizes the test results.

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	-



Coverage Acceptance Test Signal Strength Data Collection for Okaloosa County Florida

1. SIGNAL STRENGTH TEST

This Acceptance Test Procedure (ATP) is used by Williams Communications, Inc (WCI) for RF coverage verification based on signal strength measurements. This procedure provides an accurate, statistically valid, repeatable, objective, and cost-effective method to verify all Okaloosa County coverage requirements are met.

This ATP is in conformance with the Telecommunications Industry Association (TIA) Telecommunications Systems Bulletin TSB-88-C titled "Wireless Communications Systems - Performance in Noise and Interference-Limited Situations - Recommended Methods for Technology-Independent Modeling, Simulation, and Verification". TSB-88-C has defined Channel Performance Criterion (CPC) as the specified minimum design performance level in a faded channel, and provides a set of Delivered Audio Quality (DAQ) CPCs that define subjective voice quality performance applicable to both analog voice and digital voice systems.

TSB-88-C also defines a service area as a boundary of the geographic area of concern for a user, and states that Validated CPC Service Area Reliability shall be determined by the percentage of test locations in the bounded service area that meet or exceed the specified CPC. WCI has proposed a Bounded Area design for Okaloosa County as defined in TSB-88-C wherein coverage predictions are made out to the boundary of the defined service area and coverage is verified throughout the service area out to the boundary through the performance of a Validated CPC Service Area Reliability test.

RF coverage using this ATP is verified by measuring talk-out (base to mobile) signal strength throughout the County's defined bounded service area, and calculating the percentage of measurements that equal or exceed a signal level at a trunk mounted antenna connected to the Mobile radio to support the County's specified CPC. Threshold levels for DAQ3.4 will be used to present percent pass for both mobile and portable.

2. Setup

WCI' TYPHON wireless testing system is utilized to measure coverage performance. TYPHON uses Gazelle test receiver manufactured by Berkley Varitronics, known throughout the industry as reliable, accurate test devices that produce repeatable measurement results and is in conformance with industry standards. The accuracy of test measurements is maximized through periodic calibration of the TYPHON system and by virtue of its integral automated hardware and software that minimizes the likelihood of procedural errors. TYPHON consists of four Panther units with industrial grade measurement receivers to provide RSSI data for a single or multiple sites, a GPS receiver to provide accurate position information for each measured data point, a computer with an internal clock that coordinates and records the test data, and a roof mounted antenna.

Prior to taking signal strength measurements, each site must be audited to verify that the radio system is operating properly. The audits will verify the antenna configuration, the power into the antenna, the antenna installation, and the frequency of the test Transmitter. WCI shall provide all test equipment necessary to perform the audits.

3. Drive Route Planning

TSB-88-C recommends coverage verification measurements at a statistically significant number of random test locations, uniformly distributed throughout the service area. To accomplish this, the service area is divided by a grid pattern as an aid to the development of a drive test route with an approximately equal distance traveled in each grid.

WCI will collect data throughout the county using the RFP's recommended grid size. The grid pattern is overlaid onto street maps and a drive test route determined that will pass through all accessible grids (i.e. have roads) within the County's defined service area boundary. The drive route should pass through each grid at least once but not more than twice, as far as is practically possible. The defined drive route should not pass through tunnels, underpasses, underground garages, or other man-made obstructive areas where radio coverage is not planned or expected. If a drive route passes through any of these areas, the TYPHON unit is disabled to prevent the collection of data in these areas.

Signal strength measurements will be made in all accessible grids within the County's defined service area boundary. Test measurements along the drive route that are outside of the County's service area boundary will not be counted. Any areas or accessible grids within the service area boundary that the County decides not to test will have coverage scored as a PASS in the reliability calculations.

4. Data Measurements

All data is collected with the TYPHON equipment mounted inside the test vehicle (standard passenger vehicle) with an external antenna mounted on the outside and centrally located on the vehicle's roof, with no other equipment installed on the roof.

The TYPHON equipment, will be configured in the '40 Wave Distance Average' mode. With the test vehicle in motion along the drive route, a local mean signal measurement is made every 40 wavelength distance traveled.

5. Data Analysis and Acceptance

All measurement data records collected from the drive test within the defined service area boundary are post-processed, with data records recorded every 0.1-mile (typically) used in the final analysis.

For each service area, the minimum acceptable signal level at a portable radio is shown in Table 1 (e.g., portable body loss, excess signal required to penetrate each random building category). Points that equal or exceed the threshold value are recorded as PASS and those below are recorded as FAIL.

The radio system coverage is deemed to meet the coverage requirements if, the ratio of the number of PASS points to the total number of tested points in the service area equals or exceeds the minimum % Validated CPC Service Area Reliability acceptance criteria that is shown.

Table 1 - Coverage Service Area, Signal Level, and Acceptance Criteria

Service Area	Scenario	% Validated CPC Service Area Reliability Acceptance Criteria
Okaloosa County Portable Outdoor	Portable DAQ3.4	95%
Okaloosa County Portable Indoor 12 dB Buildings	Portable DAQ3.4	95%
Okaloosa County Portable Indoor 20 dB Buildings	Portable DAQ3.4	95%
Okaloosa County + 10 miles offshore	Mobile DAQ3.4	95%

Results	(Pass/Fail) _____
Tester: _____	Date: _____
Comments: _____	



DS18994. October 31, 2019

700 MHz, 800 MHz Ceramic Transmit Combiner with Integrated Antenna Power Monitor

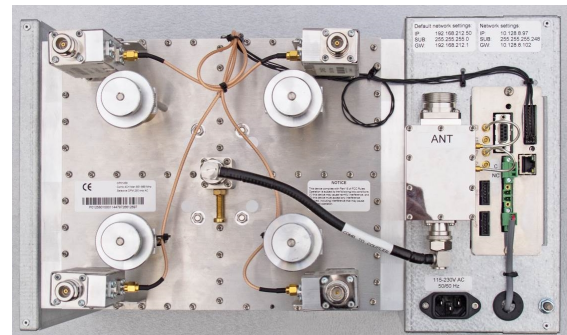
Available in the 700 MHz, 800 MHz, and 900 MHz public safety bands.

The combiner features a compact 6RU form which includes the integrated frequency selective antenna power monitor (DPM) in the base 4 channel configuration

The antenna power monitor is integrated in the unit and is Ethernet / SNMP / SYSLOG enabled providing information such as: forward power, reflected power, antenna VSWR, heat sink temperature.

The integrated DPM enables easy factory or field tuning using only the base station radio and a PC.

SNMP alarm and SYSLOG will be generated upon high antenna VSWR and high temperature. All alarms are user configured through Ethernet or SNMP.



4 Ch. Combiner & Digital Power Monitor

The base configuration is 4 channels with DPM and it can be expanded by 2 channels or 4 channels.

700 MHz and 800 MHz can be combined within the same system i.e. 4 channels 700 MHz and 2 channels 800 MHz.

All modules are broad band and symmetrical.

Combilent

Ryttermarken 5, 3520 Farum, Denmark
sales@combilent.com www.combilent.com

TX RX Systems

8625 Industrial Parkway, Angola, NY 1400, USA
sales@txrx.com www.txrx.com



DS18994. October 31, 2019

<u>Part number</u>	<u>Description</u>	<u>Power supply</u>
CP02261	4 CH, 763-776 MHz, DPM	AC
CP02262	4 CH, 763-776 MHz, DPM	DC
CP01243	2 CH expansion, 763-776 MHz	-
CP01242	4 CH expansion, 763-776 MHz	-
CP02263	4 CH, 851-869 MHz, DPM	AC
CP02264	4 CH, 851-869 MHz, DPM	DC
CP01245	4 CH expansion, 851-869 MHz	-
CP01246	2 CH expansion, 851-869 MHz	-
CP01288	4 CH, 935-941 MHz, DPM	AC
CP02260	4 CH, 935-941 MHz, DPM	DC
CP02225	4 CH expansion, 935-941 MHz	-
CP02224	2 CH expansion, 935-941 MHz	-

<u>Specification</u>	<u>Combiner</u>	<u>Specification</u>	<u>Power Monitor (DPM)</u>
700 MHz Model	763-776 MHz	Power supply	110V/230VAC or -48VDC
800 MHz Model	851-869 MHz	Interfaces	Integrated web-server
900 MHz Model	935-941 MHz	Inputs	SNMP v2C
Minimum spacing	150 kHz	Functions and alarms	Temperature sensors
Input power	100 W / ch	Features	Cavity tuning assist
Insertion loss	See table below	Alarm output	Forward power (per cavity)
Tx-Tx isolation	>60 dB		Reflected power (per cavity)
Input return loss	>20 dB		Antenna VSWR (per cavity)
Output return loss	>10 dB		Heat sink temperature (3 pcs.)
Operating temp.	-30°C to 60°C		SNTP
Connectors, inputs	N-female		Firmware update
Connector, output	7-16 female		Factory test data
Dimensions, 4 ch	19", 6U, 14" deep		Dry contact alarm
Dimensions, 2 ch	19", 3U, 14" deep		
Weight, 4 ch	50 lbs		
Weight, 2 ch	25 lbs		
Drawings	CP02260/02261/02262/02263/02264/01288:		
	CP01243/01246/02224		
	CP01242/01245/02225		

Insertion loss

No. of ch / spacing	150 kHz	300 kHz	400 kHz	500 kHz	1 MHz
4 ch	3.4 dB	3.0 dB	2.9 dB	2.8 dB	2.7 dB
6 ch (4+2)	3.7 dB	3.2 dB	3.1 dB	3.0 dB	2.8 dB
8 ch (4+4)	4.2 dB	3.4 dB	3.1 dB	3.0 dB	2.8 dB
10 ch (4+4+2)	4.5 dB	3.6 dB	3.3 dB	3.2 dB	3.0 dB

Combilent

Ryttermarken 5, 3520 Farum, Denmark
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TX RX Systems

8625 Industrial Parkway, Angola, NY 1400, USA
sales@txrx.com www.txrx.com



Spark-ignited generator set

45–100 kW Standby
EPA emissions



Description

Cummins® generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary Standby applications.

Features

Gas engine - Rugged 4-cycle Cummins QSJ5.9G spark-ignited engine delivers reliable power. The electronic air/fuel ratio control provides optimum engine performance and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Control system - The PowerCommand® 1.1 electronic control is standard equipment and provides total generator set system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance. The PowerCommand 2.3 control is also optional and is UL 508 Listed and provides AmpSentry™ protection.

Cooling system - Standard cooling package provides reliable running at up to 50 °C (122 °F) ambient temperature.

Enclosures - The aesthetically appealing enclosure incorporates special designs that deliver one of the quietest generators of its kind. Aluminium material plus durable powder coat paint provides the best anti-corrosion performance. The generator set enclosure has been evaluated to withstand 180 MPH wind loads in accordance with ASCE7 -10. The design has hinged doors to provide easy access for service and maintenance.

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

Model	Natural gas		Propane		Data sheets
	Standby		Standby		
	kW	kVA	kW	kVA	
C45 N6	45	56	45	56	NAD-6093-EN
C50 N6	50	63	50	63	NAD-6094-EN
C60 N6	60	75	60	75	NAD-6095-EN
C70 N6	70	88	70	88	NAD-6096-EN
C80 N6	80	100	80	100	NAD-6097-EN
C100 N6	100	125	100	125	NAD-6098-EN

Generator set specifications

Governor regulation class	ISO8528 Part 1 Class G3
Voltage regulation, no load to full load	± 1.0%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	± 0.25% @ 60 Hz
Radio frequency emissions compliance	Meets requirements of most industrial and commercial applications

Engine specifications

Design	Naturally aspirated or turbocharged (varies by generator set model)
Bore	102.1 mm (4.02 in.)
Stroke	119.9 mm (4.72 in.)
Displacement	5.9 liters (359 in ³)
Cylinder block	Cast iron, in-line 6 cylinder
Battery capacity	850 amps at ambient temperature of 0 °F to 32 °F (-18 °C to 0 °C)
Battery charging alternator	52 amps
Starting voltage	12 volt, negative ground
Lube oil filter type(s)	Spin-on with relief valve
Standard cooling system	50 °C (122 °F) ambient cooling system
Rated speed	1800 rpm

Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	Direct coupled, flexible disc
Insulation system	Class H per NEMA MG1-1.65
Standard temperature rise	120 °C (248 °F) Standby
Exciter type	Torque match (shunt) with PMG as option
Alternator cooling	Direct drive centrifugal blower
AC waveform Total Harmonic Distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3%

Available voltages

1-phase	3-phase				
• 120/240	• 120/208	• 120/240	• 277/480	• 347/600	• 127/220

Generator set options

Fuel system

- Single fuel - natural gas or propane vapor, field selectable
- Dual fuel – natural gas and propane vapor auto changeover
- Low fuel gas pressure warning

Engine

- Engine air cleaner
- Shut down – low oil pressure
- Extension – oil drain
- Engine oil heater

Alternator

- 120 °C temperature rise alternator
- 105 °C temperature rise alternator
- PMG
- Alternator heater, 120 V
- Reconnectable full 1 phase output alternator

Control

- AC output analog meters
- Stop switch – emergency
- Auxiliary output relays (2)
- Auxiliary configurable signal inputs (8) and relay outputs (8)

Electrical

- One, two or three circuit breaker configurations
- 80% rated circuit breakers
- 100% rated LSI circuit breakers
- Battery charger

Enclosure

- Sound Level 1 or Level 2 enclosure, sandstone or green color
- Weather protective enclosure with muffler installed, green color
- Winter protective enclosure, green color

Cooling system

- Shutdown – low coolant level
- Warning – low coolant level
- Extension – coolant drain
- Coolant heater options:
 - <4 °C (40 °F) – cold weather
 - <-17 °C (0 °F) – extreme cold

Exhaust system

- Exhaust connector NPT
- Exhaust muffler mounted

Generator set application

- Base barrier – elevated genset
- Battery rack, standard battery
- Battery rack, larger battery
- Radiator outlet duct adapter

Warranty

- Base warranty – 2 year/1000 hours, Standby
- 3 year Standby warranty options
- 5 year Standby warranty options

Generator set accessories

- Coolant heaters – 1000 W/1500 W
- Battery rack, standard/larger battery
- Battery heater kit
- Engine oil heater
- Remote control displays
- Auxiliary output relays (2)
- Auxiliary configurable signal inputs (8) and relay outputs (8)
- Annunciator – RS485
- Remote monitoring device – PowerCommand 500/550
- Battery charger – stand-alone, 12 V
- Circuit breakers
- Enclosure Sound Level 1 to Sound Level 2 upgrade kit
- Base barrier – elevated generator set
- Mufflers – industrial, residential or critical
- Alternator PMG
- Alternator heater

Control system PowerCommand 1.1



PowerCommand control is an integrated generator set control system providing voltage regulation, engine protection, operator interface and isochronous governing (optional). Major features include:

- Battery monitoring and testing features and smart starting control system.
- Standard PCCNet interface to devices such as remote annunciator for NFPA 110 applications.
- Control boards potted for environmental protection.
- Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower™ PC-based service tool available for detailed diagnostics.

Operator/display panel

- Manual off switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating generator set running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -40 °C to +70 °C
- Bargraph display (optional)

AC protection

- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload

Engine protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown

- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown

Alternator data

- Line-to-Line and Line-to-neutral AC volts
- 3-phase AC current
- Frequency
- Total kVa

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Engine speed

Other data

- Generator set model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)

Digital governing (optional)

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 2-phase Line-to-Line sensing
- Configurable torque matching

Control functions

- Time delay start and cooldown
- Cycle cranking
- PCCNet interface
- (2) Configurable inputs
- (2) Configurable outputs
- Remote emergency stop
- Automatic Transfer Switch (ATS) control
- Generator set exercise, field adjustable

Options

- Auxiliary output relays (2)
- Remote annunciator with (3) configurable inputs and (4) configurable outputs
- PMG alternator excitation
- PowerCommand 500/550 for remote monitoring and alarm notification (accessory)
- Auxiliary, configurable signal inputs (8) and configurable relay outputs (8)
- Digital governing
- AC output analog meters (bargraph)
 - Color-coded graphical display of:
 - 3-phase AC voltage
 - 3-phase current
 - Frequency
 - kVa
- Remote operator panel
- PowerCommand 2.3 control with AmpSentry protection

Ratings definitions

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

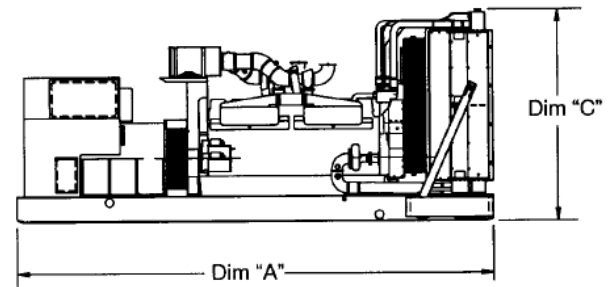
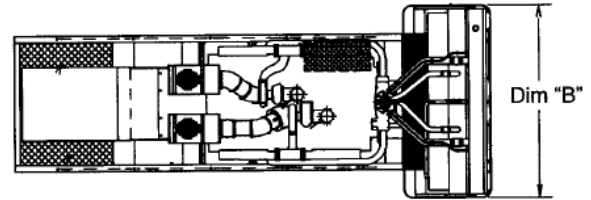
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only. See respective model data sheet for specific model outline drawing number.





Do not use for installation design

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set weight* kg (lbs.)
Open set				
C45 N6	2489 (98)	1016 (40)	1473 (58)	989 (2180)
C50 N6	2489 (98)	1016 (40)	1473 (58)	989 (2180)
C60 N6	2489 (98)	1016 (40)	1473 (58)	1103 (2431)
C70 N6	2489 (98)	1016 (40)	1473 (58)	1111 (2449)
C80 N6	2489 (98)	1016 (40)	1473 (58)	1173 (2587)
C100 N6	2489 (98)	1016 (40)	1473 (58)	1233 (2719)
Weather protective enclosure				
C45 N6	2489 (98)	1016 (40)	1473 (58)	1070 (2359)
C50 N6	2489 (98)	1016 (40)	1473 (58)	1070 (2359)
C60 N6	2489 (98)	1016 (40)	1473 (58)	1184 (2610)
C70 N6	2489 (98)	1016 (40)	1473 (58)	1192 (2628)
C80 N6	2489 (98)	1016 (40)	1473 (58)	1255 (2766)
C100 N6	2489 (98)	1016 (40)	1473 (58)	1315 (2898)
Sound attenuated enclosure Level 1				
C45 N6	3023 (119)	1016 (40)	1473 (58)	1114 (2455)
C50 N6	3023 (119)	1016 (40)	1473 (58)	1114 (2455)
C60 N6	3023 (119)	1016 (40)	1473 (58)	1227 (2706)
C70 N6	3023 (119)	1016 (40)	1473 (58)	1236 (2724)
C80 N6	3023 (119)	1016 (40)	1473 (58)	1298 (2862)
C100 N6	3023 (119)	1016 (40)	1473 (58)	1358 (2994)
Sound attenuated enclosure Level 2				
C45 N6	3454 (136)	1016 (40)	1473 (58)	1127 (2485)
C50 N6	3454 (136)	1016 (40)	1473 (58)	1127 (2485)
C60 N6	3454 (136)	1016 (40)	1473 (58)	1241 (2736)
C70 N6	3454 (136)	1016 (40)	1473 (58)	1249 (2754)
C80 N6	3454 (136)	1016 (40)	1473 (58)	1312 (2892)
C100 N6	3454 (136)	1016 (40)	1473 (58)	1372 (3024)
Winter protective enclosure				
C45 N6	3701 (146)	1016 (40)	1473 (58)	1152 (2535)
C50 N6	3701 (146)	1016 (40)	1473 (58)	1152 (2535)
C60 N6	3701 (146)	1016 (40)	1473 (58)	1266 (2786)
C70 N6	3701 (146)	1016 (40)	1473 (58)	1275 (2804)
C80 N6	3701 (146)	1016 (40)	1473 (58)	1337 (2942)
C100 N6	3701 (146)	1016 (40)	1473 (58)	1397 (3074)

* Weights above are average. Actual weight varies with product configuration.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	<p>The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.</p>		<p>The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies.</p>
<p>International Building Code</p>	<p>The generator set is certified to International Building Code (IBC) 2012.</p>		<p>All low voltage models are CSA certified to product class 4215-01.</p>
	<p>This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.</p>	<p>U.S. EPA</p>	<p>Engine certified to U.S. EPA SI Stationary Emission Regulation 40 CFR, Part 60.</p>

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

Our energy working for you.™





Penetrator™ Antenna, 806-869, 15.5dBi, Dual

The novel side fed dipole design of these antennas provides 6 dBd, 8 dBd, 10 dBd or 12 dBd omnidirectional gain with 63 MHz bandwidth. They feature constant beamtilt, heavy null fill, and have been VSWR tested. Depending upon the specific required area of coverage, horizontal patterns O, A, B, D or H are available.

FEATURES / BENEFITS

- ➔ High gain maximizes ERP
- ➔ Heavy null fill enhances close in coverage
- ➔ Customized beamtilt minimizes interference to and from adjacent systems
- ➔ Various patterns available to efficiently cover target area



BMR+ Series

Technical Features

ELECTRICAL SPECIFICATIONS

Horizontal Pattern		Directional
Frequency Range	MHz	806 869
Horizontal Beamwidth	deg	Dual
Electrical Downtilt	deg	0 75
Gain	dBi (dBd)	15 5 (13 4)
Vertical Beamwidth	deg	5 0
1st Null Fill	dB	ncluded
Null Fill	dB	ncluded
Front-To-Back Ratio	dB	Bi Directional
Polarization		Vertical
VSWR		< 1 5 1
Impedance	Ohms	50 0
Maximum Power Input	W	500 0
Lightning Protection		Top Rod Grounded to Base Mount

GENERAL SPECIFICATIONS

Antenna Type		Penetrator
--------------	--	------------

MECHANICAL SPECIFICATIONS

Connector Type		N Female
Connector Location		Bottom
Weight	kg (lb)	25 (55)
Weight with B1 Bracket	kg (lb)	39 (87)
Mount Type		Bracket
Mounting Hardware		B1 Bracket (included)
Rated Wind Speed	km/h (mph)	225 (140)
Rated Wind Speed Comment		*
Overall Length	m (ft)	3 96 (13)
Diameter	mm (in)	168 3 (6 625)
Radiating Element Material		Aluminum
Element Housing Material		Fiberglass
Max Wind Loading Area	m ² (ft ²)	0 66 (7 17)
Survival Wind Speed	km/h (mph)	225 (140)
Wind Speed Comment		*

PACKAGING INFORMATION

Shipping Weight	kg (lb)	37 7 (83)
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NOTES

[*Note*]		* Up to a maximum height of 500 ft 250 ft max height rating is 150mph
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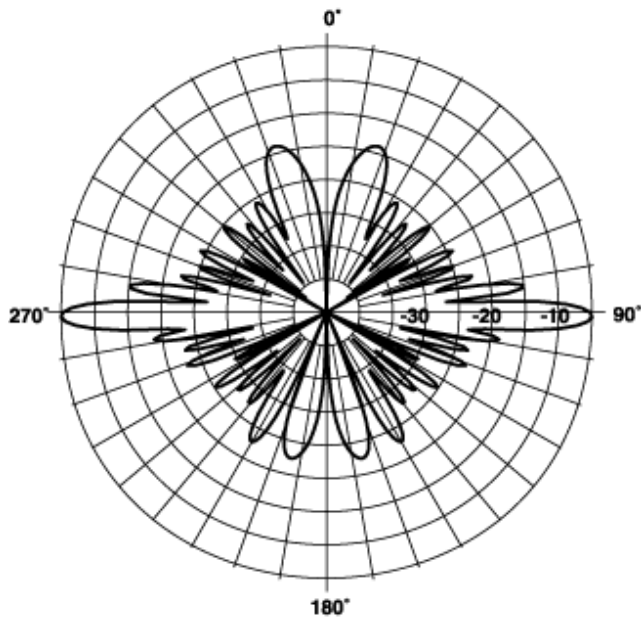


Penetrator™ Antenna, 806-869, 15.5dBi, Dual

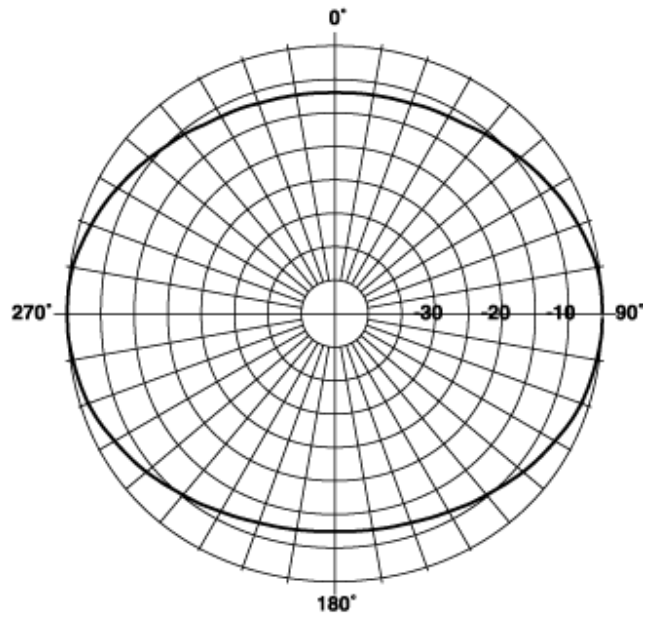
External Document Links

RFS B1 Bracket Installation Instruction

Notes



Vertical Pattern



Horizontal Pattern



Penetrator™ Antenna, 806-869, 12.1dBi, 360deg

The novel side fed dipole design of these antennas provides 6 dBd, 8 dBd, 10 dBd or 12 dBd omnidirectional gain with 63 MHz bandwidth. They feature constant beamtilt, heavy null fill, and have been VSWR tested. Depending upon the specific required area of coverage, horizontal patterns O, A, B, D or H are available.

FEATURES / BENEFITS

- ➔ High gain maximizes ERP
- ➔ Heavy null fill enhances close in coverage
- ➔ Customized beamtilt minimizes interference to and from adjacent systems
- ➔ Various patterns available to efficiently cover target area



BMR+ Series

Technical Features

ELECTRICAL SPECIFICATIONS

Horizontal Pattern		OmniDirectional
Frequency Range	MHz	806 869
Horizontal Beamwidth	deg	360
Electrical Downtilt	deg	0 75
Gain	dBi (dBd)	12 1 (10)
Vertical Beamwidth	deg	5 0
1st Null Fill	dB	ncluded
Null Fill	dB	ncluded
Front-To-Back Ratio	dB	Omni
Polarization		Vertical
VSWR		< 1 5 1
Impedance	Ohms	50 0
Maximum Power Input	W	500 0
Lightning Protection		Top Rod Grounded to Base Mount

GENERAL SPECIFICATIONS

Antenna Type		Penetrator
--------------	--	------------

MECHANICAL SPECIFICATIONS

Connector Type		N Female
Connector Location		Bottom
Weight	kg (lb)	25 (55)
Weight with B1 Bracket	kg (lb)	39 (87)
Mount Type		Bracket
Mounting Hardware		B1 Bracket (included)
Rated Wind Speed	km/h (mph)	225 (140)
Rated Wind Speed Comment		*
Overall Length	m (ft)	3 96 (13)
Diameter	mm (in)	168 3 (6 625)
Radiating Element Material		Aluminum
Element Housing Material		Fiberglass
Max Wind Loading Area	m ² (ft ²)	0 66 (7 17)
Survival Wind Speed	km/h (mph)	225 (140)
Wind Speed Comment		*

PACKAGING INFORMATION

Shipping Weight	kg (lb)	37 7 (83)
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NOTES

[*Note*]		* Up to a maximum height of 500 ft 250 ft max height rating is 150mph
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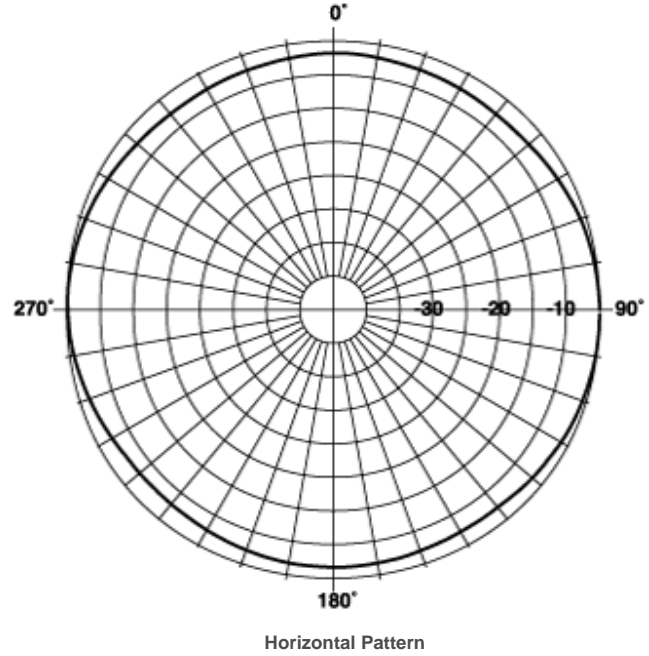
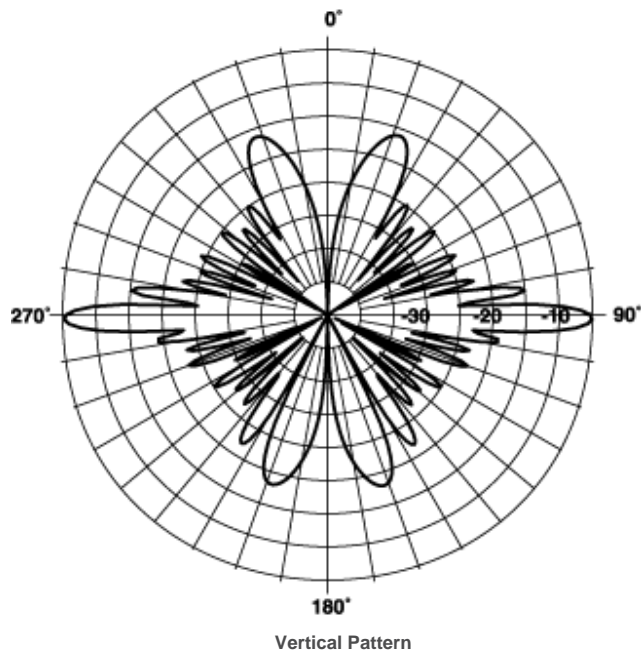


Penetrator™ Antenna, 806-869, 12.1dBi, 360deg

External Document Links

RFS B1 Bracket Installation Instruction

Notes





Penetrator™ Antenna, 806-869, 17.5dBi, Dual

The novel side fed dipole design of these antennas provides 6 dBd, 8 dBd, 10 dBd or 12 dBd omnidirectional gain with 63 MHz bandwidth. They feature constant beamtilt, heavy null fill, and have been VSWR tested. Depending upon the specific required area of coverage, horizontal patterns O, A, B, D or H are available.

FEATURES / BENEFITS

- ➔ High gain maximizes ERP
- ➔ Heavy null fill enhances close in coverage
- ➔ Customized beamtilt minimizes interference to and from adjacent systems
- ➔ Various patterns available to efficiently cover target area



BMR+ Series

Technical Features

ELECTRICAL SPECIFICATIONS

Horizontal Pattern		Directional
Frequency Range	MHz	806 869
Horizontal Beamwidth	deg	Dual
Electrical Downtilt	deg	0 75
Gain	dBi (dBd)	17 5 (15 4)
Vertical Beamwidth	deg	3 5
1st Null Fill	dB	ncluded
Null Fill	dB	ncluded
Front-To-Back Ratio	dB	Bi Directional
Polarization		Vertical
VSWR		< 1 5 1
Impedance	Ohms	50 0
Maximum Power Input	W	500 0
Lightning Protection		Top Rod Grounded to Base Mount

GENERAL SPECIFICATIONS

Antenna Type		Penetrator
--------------	--	------------

MECHANICAL SPECIFICATIONS

Connector Type		N Female
Connector Location		Bottom
Weight	kg (lb)	42 (92)
Weight with B1 Bracket	kg (lb)	56 (124)
Mount Type		Bracket
Mounting Hardware		B1 Bracket (included)
Rated Wind Speed	km/h (mph)	225 (140)
Rated Wind Speed Comment		*
Overall Length	m (ft)	6 1 (20)
Diameter	mm (in)	168 3 (6 625)
Radiating Element Material		Aluminum
Element Housing Material		Fiberglass
Max Wind Loading Area	m² (ft²)	1 04 (11 2)
Survival Wind Speed	km/h (mph)	225 (140)
Wind Speed Comment		*

PACKAGING INFORMATION

Shipping Weight	kg (lb)	61 3 (135)
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NOTES

[*Note*]		* Up to a maximum height of 500 ft
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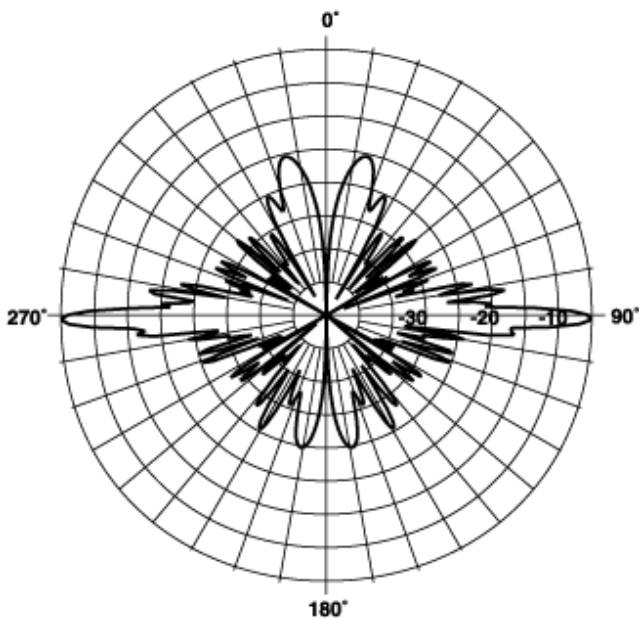


Penetrator™ Antenna, 806-869, 17.5dBi, Dual

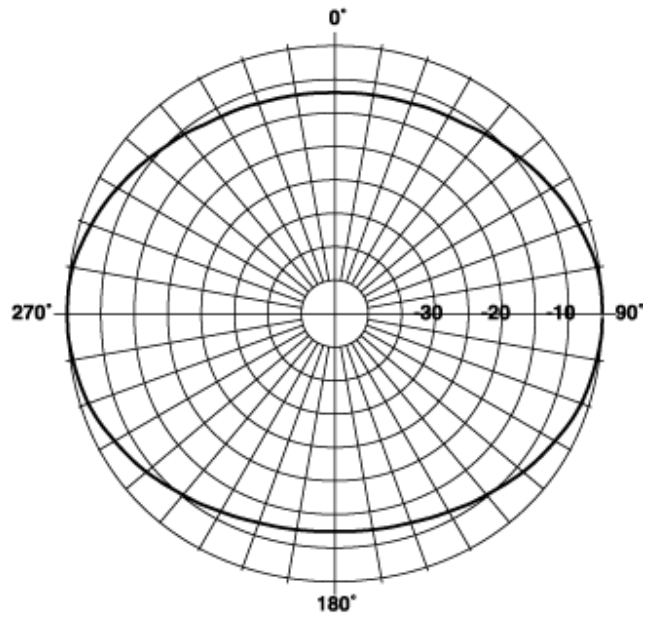
External Document Links

RFS B1 Bracket Installation Instruction

Notes



Vertical Pattern



Horizontal Pattern



Penetrator™ Antenna, 806-869, 14.1dBi, 360deg

The novel side fed dipole design of these antennas provides 6 dBd, 8 dBd, 10 dBd or 12 dBd omnidirectional gain with 63 MHz bandwidth. They feature constant beamtilt, heavy null fill, and have been VSWR tested. Depending upon the specific required area of coverage, horizontal patterns O, A, B, D or H are available.

FEATURES / BENEFITS

- ➔ High gain maximizes ERP
- ➔ Heavy null fill enhances close in coverage
- ➔ Customized beamtilt minimizes interference to and from adjacent systems
- ➔ Various patterns available to efficiently cover target area



BMR+ Series

Technical Features

ELECTRICAL SPECIFICATIONS

Horizontal Pattern		OmniDirectional
Frequency Range	MHz	806 869
Horizontal Beamwidth	deg	360
Electrical Downtilt	deg	0 75
Gain	dBi (dBd)	14 1 (12)
Vertical Beamwidth	deg	3 5
1st Null Fill	dB	ncluded
Null Fill	dB	ncluded
Front-To-Back Ratio	dB	Omni
Polarization		Vertical
VSWR		< 1 5 1
Impedance	Ohms	50 0
Maximum Power Input	W	500 0
Lightning Protection		Top Rod Grounded to Base Mount

GENERAL SPECIFICATIONS

Antenna Type		Penetrator
--------------	--	------------

MECHANICAL SPECIFICATIONS

Connector Type		N Female
Connector Location		Bottom
Weight	kg (lb)	42 (92)
Weight with B1 Bracket	kg (lb)	56 (124)
Mount Type		Bracket
Mounting Hardware		B1 Bracket (included)
Rated Wind Speed	km/h (mph)	225 (140)
Rated Wind Speed Comment		*
Overall Length	m (ft)	6 1 (20)
Diameter	mm (in)	168 3 (6 625)
Radiating Element Material		Aluminum
Element Housing Material		Fiberglass
Max Wind Loading Area	m² (ft²)	1 04 (11 2)
Survival Wind Speed	km/h (mph)	225 (140)
Wind Speed Comment		*

PACKAGING INFORMATION

Shipping Weight	kg (lb)	61 3 (135)
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NOTES

[*Note*]		* Up to a maximum height of 500 ft
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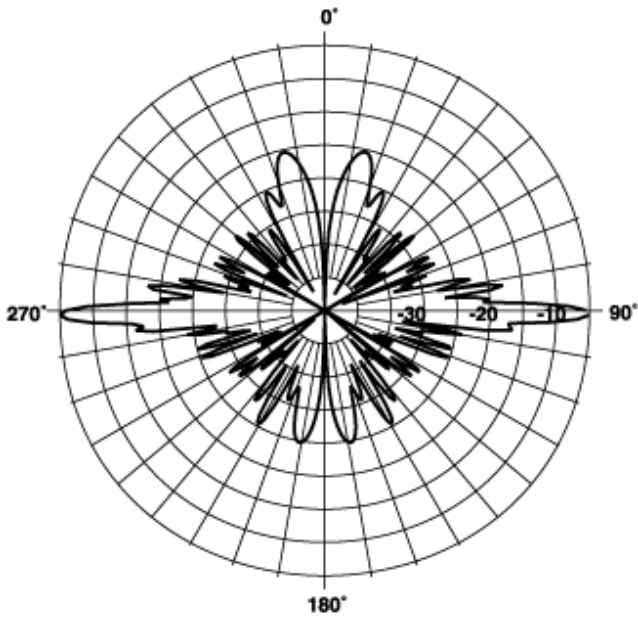


Penetrator™ Antenna, 806-869, 14.1dBi, 360deg

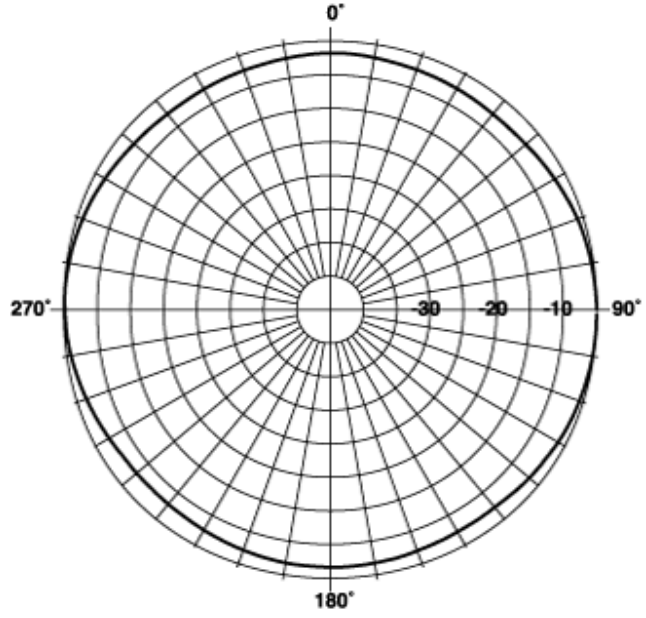
External Document Links

RFS B1 Bracket Installation Instruction

Notes



Vertical Pattern



Horizontal Pattern

095008-000 Revision R, July 2016

**Broad Band Gain Antenna
DB224**

PRODUCT DESCRIPTION

The DB224 is a heavy duty, light weight, high gain antenna. It is suitable for mounting to the top or on the side of a tower. Clamps for top mounting are supplied with the antenna; an additional side mount kit (DB5001) must be ordered for side mounting.

ELECTRICAL DESIGN

The antenna is a four stack collinear array designed to provide high gain, broad bandwidth and minimum pattern distortion. A binary cable harness is used to ensure equal inphase power distribution to all radiating elements.

OPTIONAL RADIATION PATTERN

The DB224 can be used as an omnidirectional antenna having a gain of 6 dBd or as an elliptical pattern antenna having a maximum gain of 9 dBd. An omni pattern is achieved when the four dipole elements are spaced evenly, every 90° around the mast (Figures 1 and 2). An elliptical pattern is obtained when all four dipole elements are positioned in a line (collinear) along the mast. When top mounted, the omni and elliptical models provide radiation patterns as shown in Figure 3. When side mounted, the two models provide significantly different radiation patterns (see SIDE MOUNTING and Figure 4). The antenna can be changed in the field from one pattern to the other using ordinary hand tools.

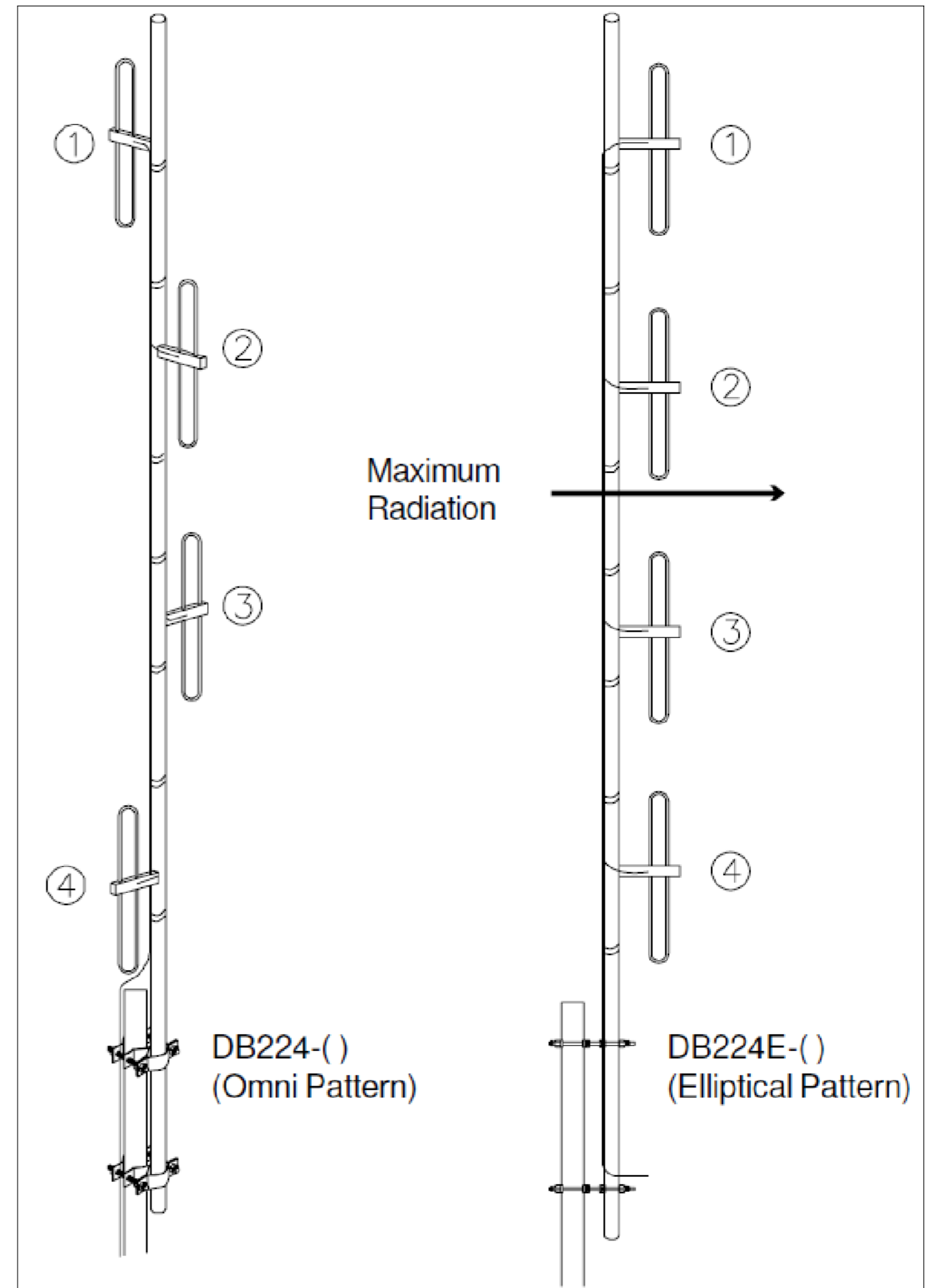


Figure 1. Dipole Alignment

SAFETY NOTICE

The installation, maintenance, or removal of an antenna requires qualified, experienced personnel. CommScope installation instructions are written for such installation personnel. Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment.

CommScope disclaims any liability or responsibility for the results of improper or unsafe installation practices.

It is recommended that transmit power be turned off when the field installation is performed. Follow all applicable safety precautions as shown on this page.

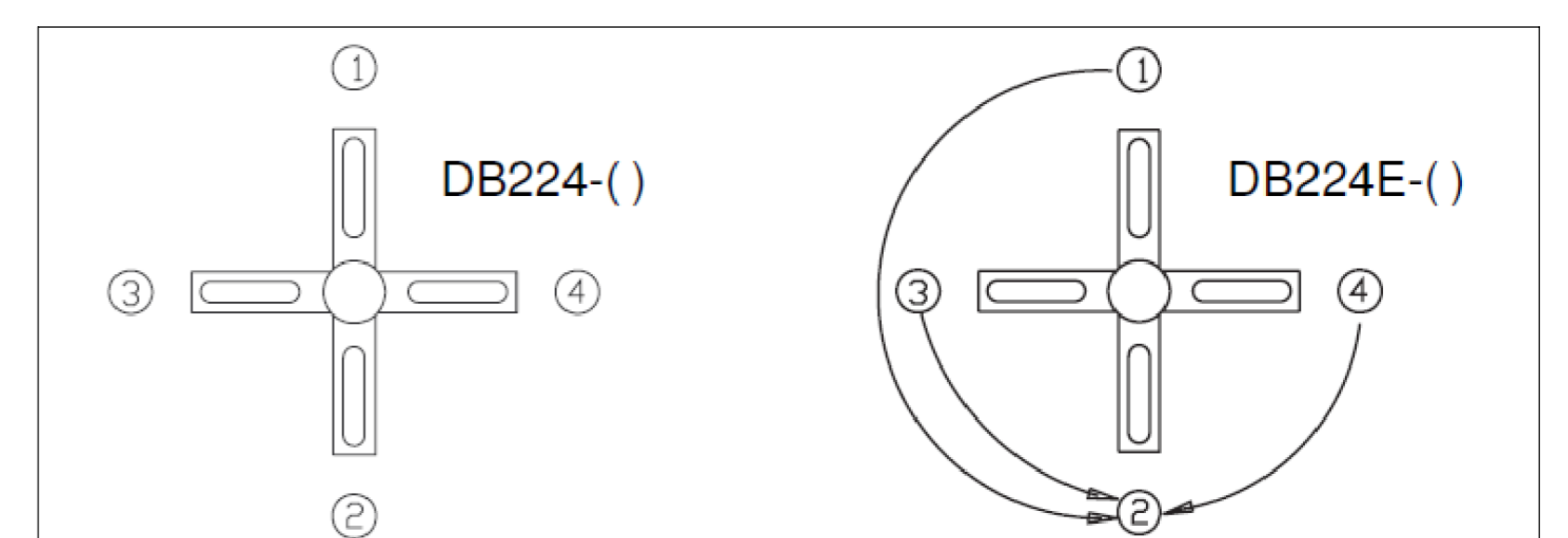


Figure 2. Top View Dipole Alignment
(continued on page 2)



Do not install near power lines. Power lines, telephone lines, and guy wires look the same. Assume any wire or line can electrocute you.



Do not install on a wet or windy day or when lightning or thunder is in the area. Do not use metal ladder.



Wear shoes with rubber soles and heels. Wear protective clothing including a long-sleeved shirt and rubber gloves.

(Continued from page 1)

TWO PIECE MAST

For ease of handling and to facilitate shipment, the mast is made in two sections. Assembly of the sections is quite simple and requires only the use of ordinary hand tools. The unique center splice assures proper alignment.

LIGHTNING PROTECTION

The aluminum mast with a pointed cap provides a positive low resistance discharge path to the tower or ground system, thus affording superior protection against lightning damage. All radiators are operated at DC ground to provide further protection against lightning and static buildup.

DUAL ANTENNAS

Dual antenna models are available which include two independent antennas on a common mast, each with a separate feed line terminated at the bottom of the mast. One antenna is isolated from the other by 30 dB. Model DB224S-() consists of two omnidirectional antennas, each having a gain of 3 dBd.

SIDE MOUNTING

When the DB224-() and DB224E-() antennas are mounted to the side of a tower the horizontal radiation pattern necessarily becomes distorted. The patterns shown below indicate the typical pattern shape of the antenna side mounted on a tower with an 18" to 24" face using the DB5001 Side Mount Kit.

The DB5001 Side Mount Kit positions the antenna approximately 18" from the tower and consists of an upper sway brace, lower bracket (both galvanized) and the necessary hardware for attaching the bracket to round tower members up to 3" OD, or angular members up to 2" on a side. Other size clamps can be supplied on special order.

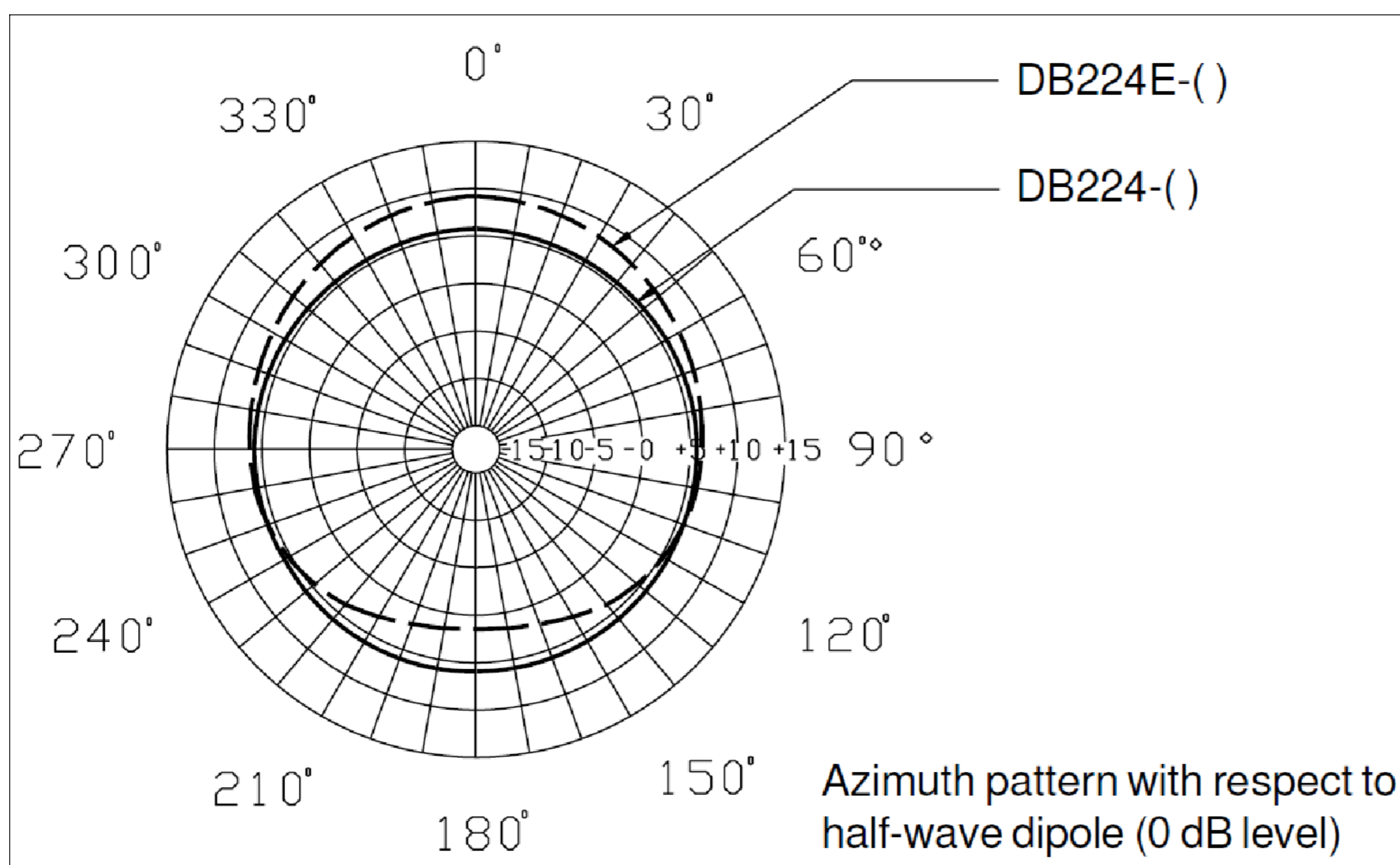


Figure 3. Radiation Patterns for Top Mounted DB224-() and DB224E-() Antennas.

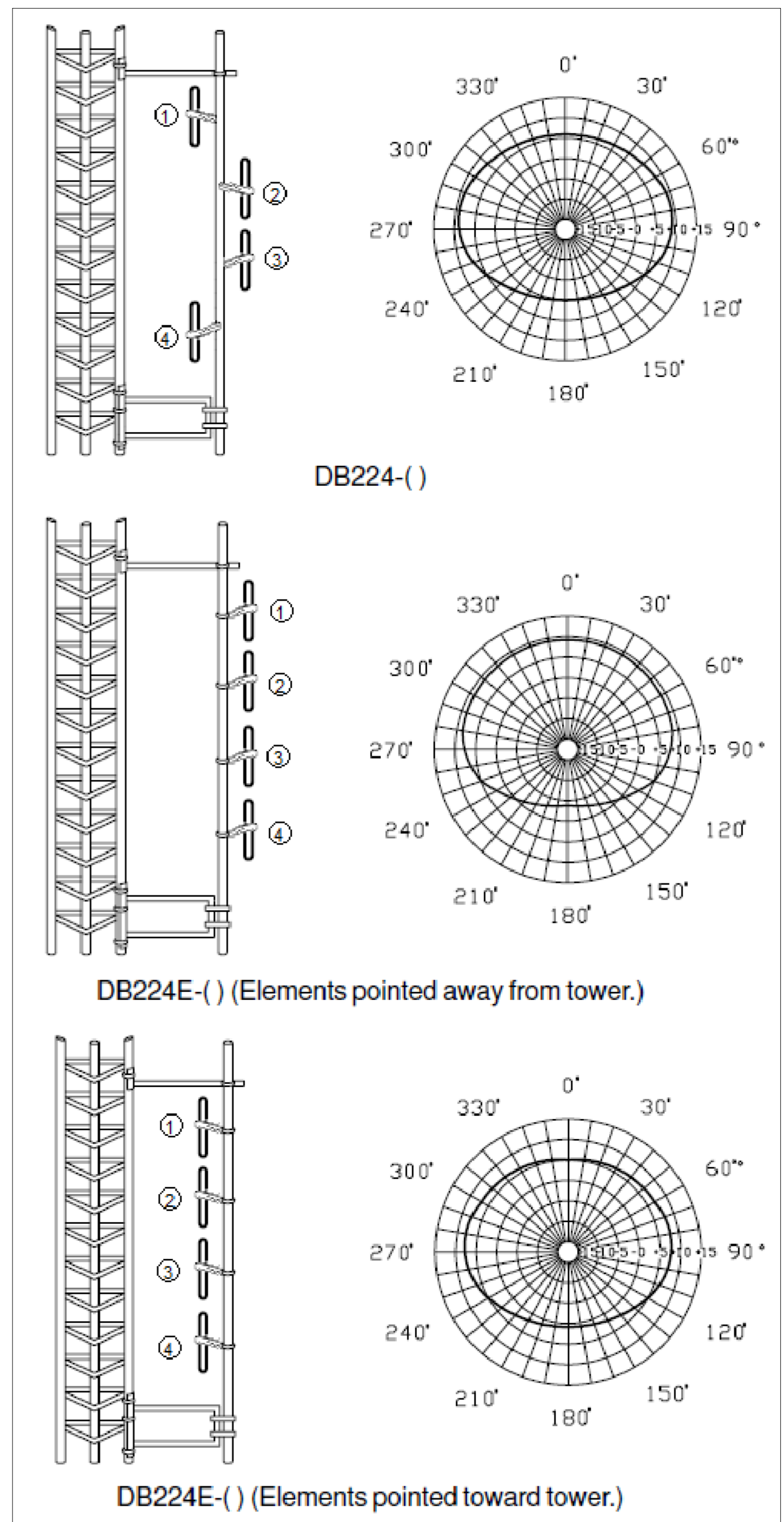


Figure 4. Radiation Patterns (continued on page 3)

(Continued from page 2)

INSTALLATION PROCEDURE

1. After removing the antenna from the shipping box, inspect it to be sure all parts are on hand and that there is no physical damage.
2. Inspect the antenna feed assembly output connector to determine that it mates with the end of your station transmission line. Do not remove any connectors or cables from the antenna feed assembly since they are all a part of the antenna.
3. Verify that the frequency to which the antenna has been tuned is the frequency on which your radio system is to operate.
4. Slip the mast sections together and position the bands as shown in Figure 5. Tighten the bands securely; the recommended tightening torque is 45-60 in-lbs. Then, join the connectors, making the connections snug, but do not apply heavy force with pliers. Carefully wrap Vapor-Wrap® around the connection to seal out moisture problems. Secure the connectors to the mast with several wraps of tape (see Figure 5).
5. Attach the furnished DB365 mounting clamps to the bottom of the antenna mast at the designated locations. Mount the antenna on the tower with the bottom dipole above and facing away from the tower.
6. A check of the antenna VSWR as measured at the antenna is recommended at this point. Note this measurement carefully, and record it for future reference.
7. After checking the VSWR at the antenna, connect the station transmission line to the antenna; make the connection snug, but do not apply heavy force with pliers. To avoid moisture problems, carefully wrap Vapor-Wrap® around the connection, smoothing it into the cracks and over the outer jackets of the transmission line. Failure to waterproof the cable connection can result in improper operation of your antenna. Properly secure the feeder cable and antenna transmission line to the tower in the best position to avoid physical damage to the cable.
8. After the antenna and transmission line installation has been completed, a careful check should be made to ensure that:
 - All mechanical connections have been securely made.
 - The antenna is mounted on the proper leg of the tower with sufficient physical clearance.
 - All connections have been carefully wrapped with Vapor-Wrap® to prevent moisture problems.

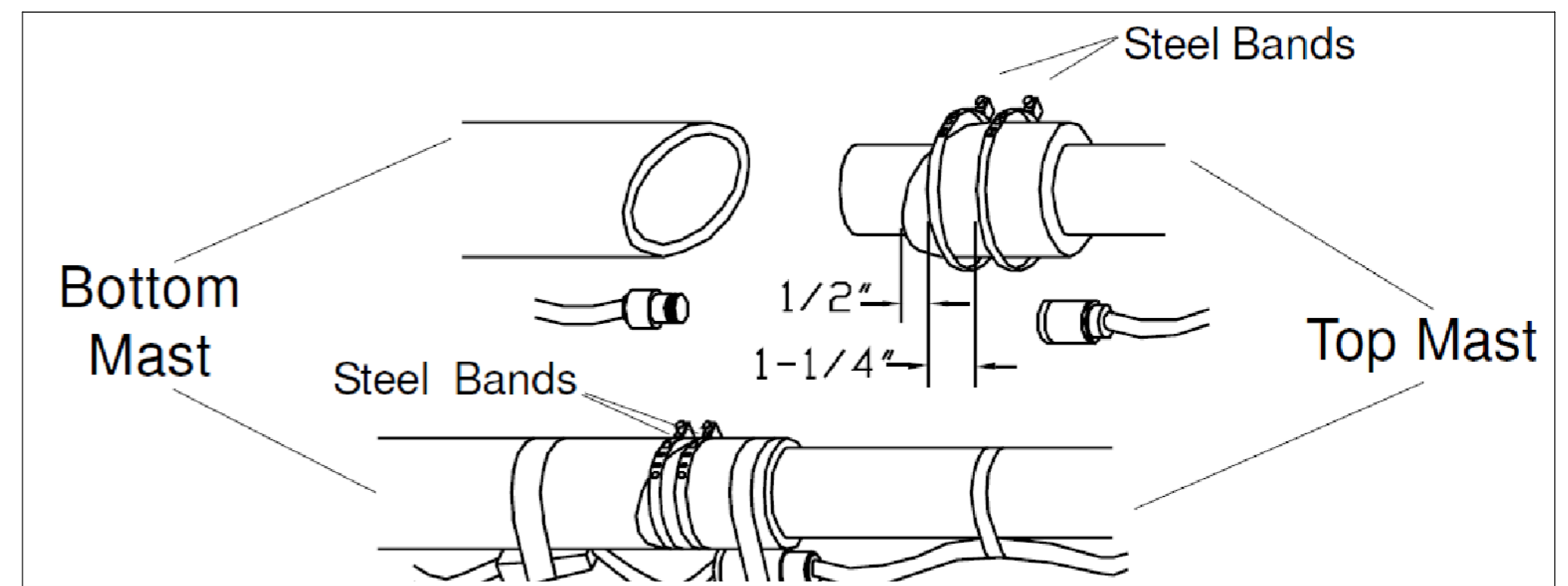


Figure 5. Joining the Mast Sections

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Tower Top Amplifier System

The Combilent Tower Top Amplifier (TTA) system is designed specifically to Harris specifications and includes the TTA and Receiver Multicoupler. Redundant quadrature coupled low noise amplifiers delivers high reliability and the TTA form factor sets new standards in size and weight. Features include:

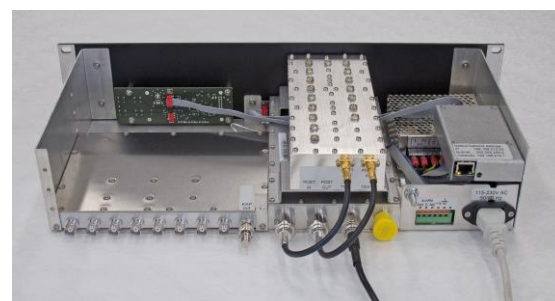
- System includes TTA and the Receiver Multi-Coupler (RMC).
- Redundant high performance redundant quadrature-coupled low noise amplifier (LNA)
- 110dB isolation in 700 MHz and 800 MHz Tx-bands
- New compact, lightweight TTA form factor with integrated surge protection
- RMC includes power supply and alarm interface to BTS base station and signaling interface to the TTA.
- Test modes in both the TTA and the RMC allowing antenna and feeder sweeping and LNA gain testing
- Application is for compensating imbalance between up-link and down-link when the cable loss exceeds 1.5dB.
- DC back-up (+12V) connection integrated in RMC



TTA



RMC (front view)



RMC (back view)

COMBILENT USA Inc.

System Specification

The TTA system is designed for 18dB system gain with a 4dB feeder loss, but is capable of up to 25dB of gain if the feeder loss is greater than 4dB

Part Numbers

CP00732
 CP00918
 CP01102

Description

TTA 799 - 816MHz
 RMC 809.5 - 815.5MHz AC
 8-port RMC expansion 793-824MHz

TTA / RMC system

Frequency 799 - 816MHz
Bandwidth 3,6,9,12,18MHz
Selectivity >110dB above 851MHz
 >110dB below 776MHz
Gain 25dB (@ 4dB feeder)
Noise figure < 2.2dB (@ 4dB feeder)
IIP3 > 2dBm (@ 4dB feeder)

Specification

Frequency 799 - 816MHz
Gain 25dB
Noise figure < 2dB
Integrated test port 40dB coupler
IIP3 +15dBm
Return loss, all ports 17dB min
Surge protection 8x20 μ s, 20kA. All ports
Operating temp. -30°C to +60°C
Enclosure IPX5
Connectors, all ports N-female
Dimensions 9.5" x 4" x 4"
Weight 8 lbs

TTA

Specification

Frequency 809.5 - 815.5MHz
Bandwidth 3,6,9,12,18MHz
Gain 4dB (Res/Dis gain settings = 0)
Reserve gain att. 0 to -15dB in 1dB steps
Distribution att. 0 to -15dB in 1dB steps
Noise figure 6dB (at max gain)
OIP3 +24dBm (at max gain)
Outputs 8 + 1 high gain expansion port
Outputs BNC female
Test port (front) BNC female
Test cable (rear) N female
TTA connector N female
Return loss 17dB min (all RF ports)
Alarm Form C contact / Ethernet
Control Display, web server, SNMP
Power 90-230V AC, 25W
DC back-up +12V, 3A
Operating temp. -10°C to 60°C
Dimensions 19", 2U, 8" deep
Weight 12 lbs
Test modes LNA bypass
 LNA input to 50 ohm load
 Antenna sweep

RMC including post filter



CompactLine Antenna, Ultra High Performance, Single Polarized, 6 ft

Product Description
(Under phasing out, Replaced by SB6-W60BC)

RFS CompactLine® and CompactLine® Easy Antennas are designed for short-haul microwave systems in all common frequency ranges from 6 GHz to 80 GHz. They are typically deployed in dense urban areas, metropolitan and suburban locations, aggregation points. They are especially optimized to integrated radios to reduce costs, installation complexity and time.

Features/Benefits

- Sizes ranging from 0.3 m (1 ft) to 1.8 m (6 ft)
- Frequencies ranging from 5.925 GHz to 80 GHz with support for three wideband frequency ranges (5.925-7.125, 7.125-8.5 and 10.0-11.7 GHz) to reduce antenna requirements and simplify logistics
- Single (SB and SC) and dual-polarized (SBX and SCX) models with the ability to upgrade from single to dual polarization and change frequencies in the field
- Low-profile design to reduce transportation requirements, wind load and antenna weight
- Simplified mounting design to accelerate installation
- CompactLine EASY models are extra light and easy to transport, deploy and upgrade
- Hardcover radomes
- Tested and validated ultra-high (ETSI EN 302 217 Class 3, FCC Class A) electrical performance
- Support for winds up to 250 km/h (155 mph) and even 320 km/h (195 mph) for SB1/SBX1
- An optional sway bar for antennas 1 m (3 ft) and larger for added assurance in case mistakes are made during installation



Antenna

Technical Features

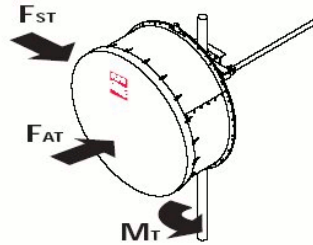
Product Type	Point to point antennas
Frequency, GHz	5.925 - 7.125
Diameter, ft (m)	6 (1.8)
Profile	CompactLine
Reflector	1-part
Swaybar	1: (1.9 m x Ø60 mm)
optional Swaybar	1: SMA-SK-6 (1.9 m x Ø60 mm)
Performance	Ultra High
Polarization	Single
Regulatory Compliance	ETSI EN 302217 Range 1 Class 3
3dB beamwidth, (degrees)	1.8
Antenna Input	CPR137G
Low Band Gain, dBi	38
Mid Band Gain, dBi	38.8
High Band Gain, dBi	39.4
F/B Ratio, dB	65
XPD, dB	30
Max VSWR / R L, dB	1.3 (17.7)
Elevation Adjustment, degrees	± 5
Azimuth Adjustment, degrees	± 5
Polarization Adjustment, degrees	± 5
Radome	rigid
Antenna color	White RAL 9010
Mounting Pipe Diameter minimum, mm (in)	114 (4.5)
Mounting Pipe Diameter maximum, mm (in)	114 (4.5)
Approximate Weight, kg (lb)	90 (198)
Survival Windspeed, km/h (mph)	200 (125)
Operational Windspeed, km/h (mph)	200 (125)
Further Accessories	SMA-SKO-UNIVERSAL-L : Universal sway bar fixation kit

All information contained in the present datasheet is subject to confirmation at time of ordering

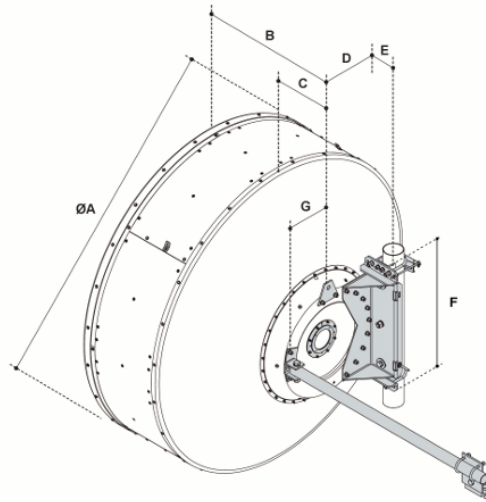
CompactLine Antenna, Ultra High Performance, Single Polarized, 6 ft

All values @ Survival Wind Speed

F_{ST} Side force max, N (lb)	3352 (754)
F_{AT} Fa Axial force max, N (lb)	6769 (1522)
M Torque max., Nm (lb*ft)	3125 (2305)



Dimensions	mm (in)
ØA	1900 (74.8)
B	910 (35.8)
C	362 (14.3)
D @ Mounting pipe Ø 219 (8.5):	not applicable
D @ Mounting pipe Ø 114 (4.5):	416 (16.4)
D @ Mounting pipe Ø 89 (3.5):	not applicable
D @ Mounting pipe Ø 48 (1.9):	not applicable
E	83 (3.3)
F	785 (30.9)
G	not applicable
H	not applicable



Notes

no notes

Documentation

- Reflector Installation [RPE \(IQ-Link format\)](#)
- Feed Installation [RPE \(Pathloss format\)](#)
- [RPE \(PDF format\)](#)

All information contained in the present datasheet is subject to confirmation at time of ordering



DISPATCH CONSOLE SYSTEM

PROJECT 25 PUBLIC SAFETY RADIO NETWORK
AUGUST 14TH 2020

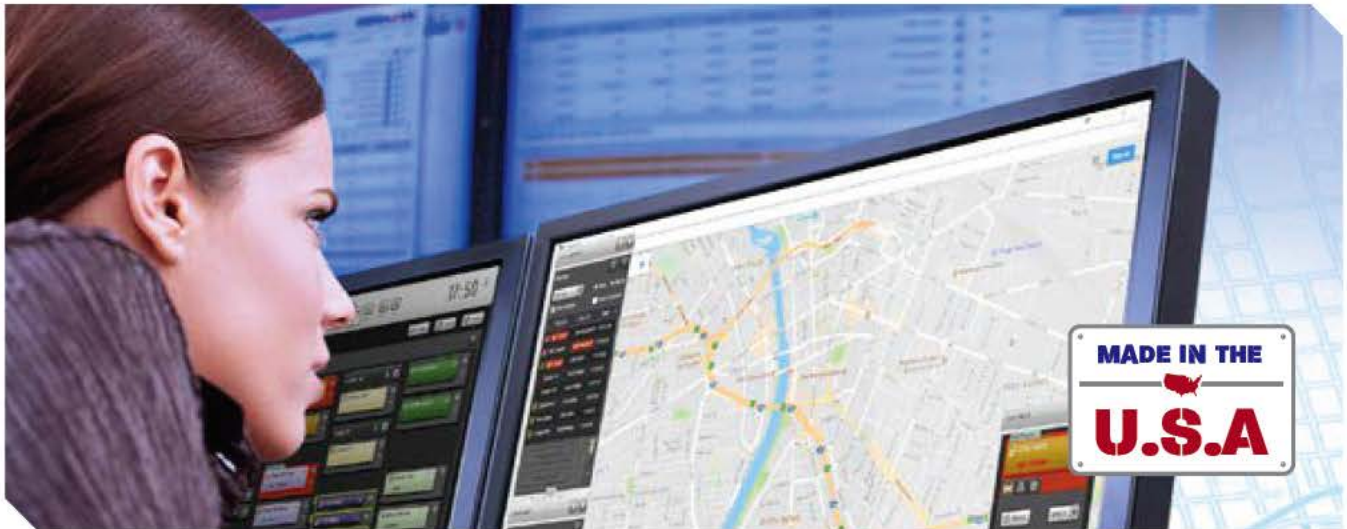


WILLIAMS
COMMUNICATIONS, INC
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE



SYMPHONY CONSOLES



22 SYMPHONY DISPATCH CONSOLES

- › 12 at County's Emergency Communications Center (911 Center)
- › 4 at City of Crestview
- › 2 at City of Fort Walton Beach Police
- › 2 at City of Niceville Police
- › 2 at City of Valparaiso Police

SINGLE RACK UNIT PRODUCT WITH TWO PRIMARY SUBASSEMBLIE :

- › Embedded PC
- › Audio Processor (Audio Box)

SINGLE RACK UNIT PRODUCT WITH TWO PRIMARY SUBASSEMBLIE S:

- › Solid State Industrial-Grade PC (COM Express ETXpress Type 6 computer)
- › Windows 8.1/10 operating system

FRONT-MOUNT, FIELD REPLACEABLE 64 GB SSD HARD DRIVE

FUNCTIONAL SUPPORT FOR:

- › Up to 1,024 Modules
- › 3 Module Sizes (with up to 14 different colors)
- › 16 Different Workspace Tabs
- › 32 Predefined Simulselects
- › 16 Active Patches of 15 Groups
- › 16 User Setups
- › 8 Speaker Capability
- › 24-hour Instant Recall Recorder
- › Single Button for Last Call Replay
- › Embedded Web Browser
- › Encryption (AES & DES)
- › Telephony Interface: Call Director (analog) or SIP (digital)



SYMPHONY CONSOLES



A DISPATCH EXPERIENCE DESIGNED BY YOU

The Symphony full-screen application allows agencies to optimize the user interface to match their communication workflow. Symphony innovations like the Select Bar ensure that critical communications and features are always accessible, prominent and persistent.

FOCUS ON WHAT IS IMPORTANT TO YOU

Customize your screen with multi-tabbed modules that let you assign audio to the headset and up to eight speakers, replay calls and handle emergency calls. All personalized just for you.





SYMPHONY CONSOLE EQUIPMENT

MONITOR / TOUCH SCREEN PANEL



SELECT SPEAKER



UNSELECT SPEAKER



DESK MIC



HEADSET
(OPTIONAL)

SYMPHONY DISPATCH PLATFORM



FOOTSWITCH

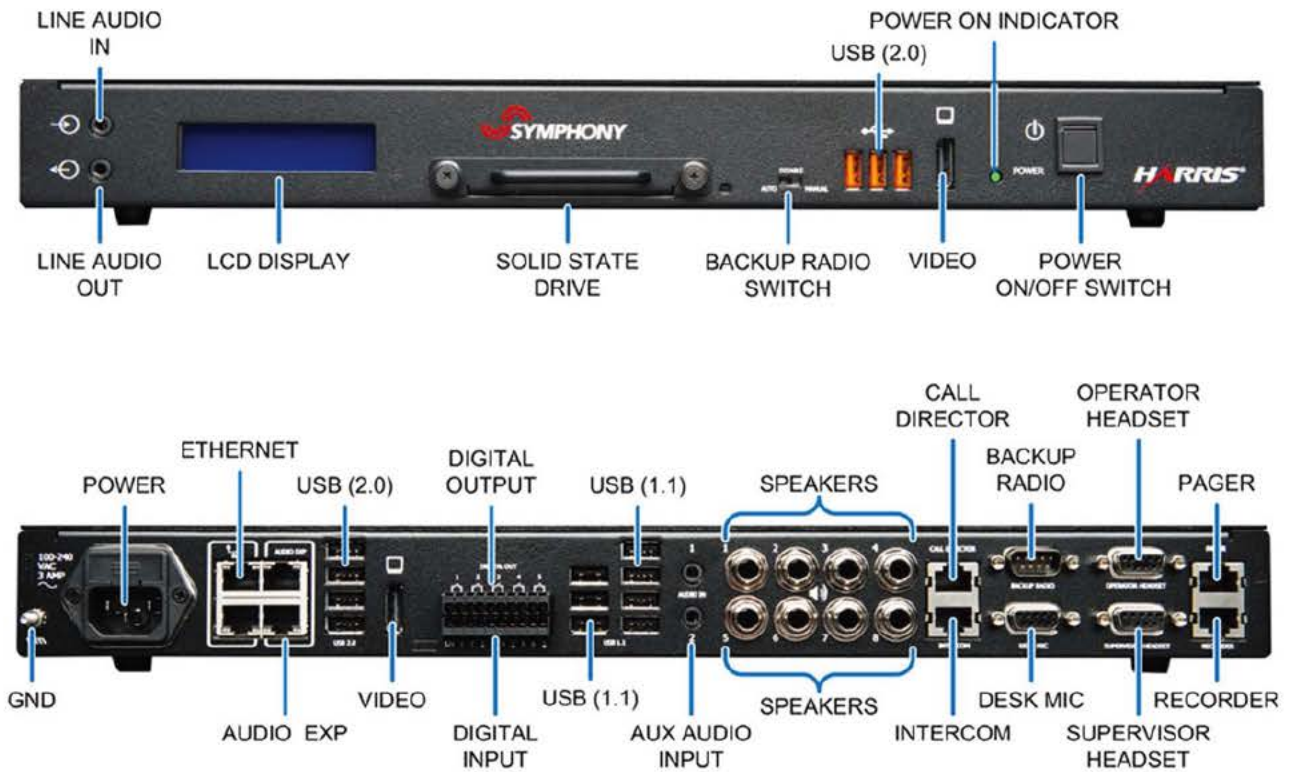


KEYBOARD





SYMPHONY CONSOLES



SYMPHONY'S INNOVATIVE HARDWARE DESIGN

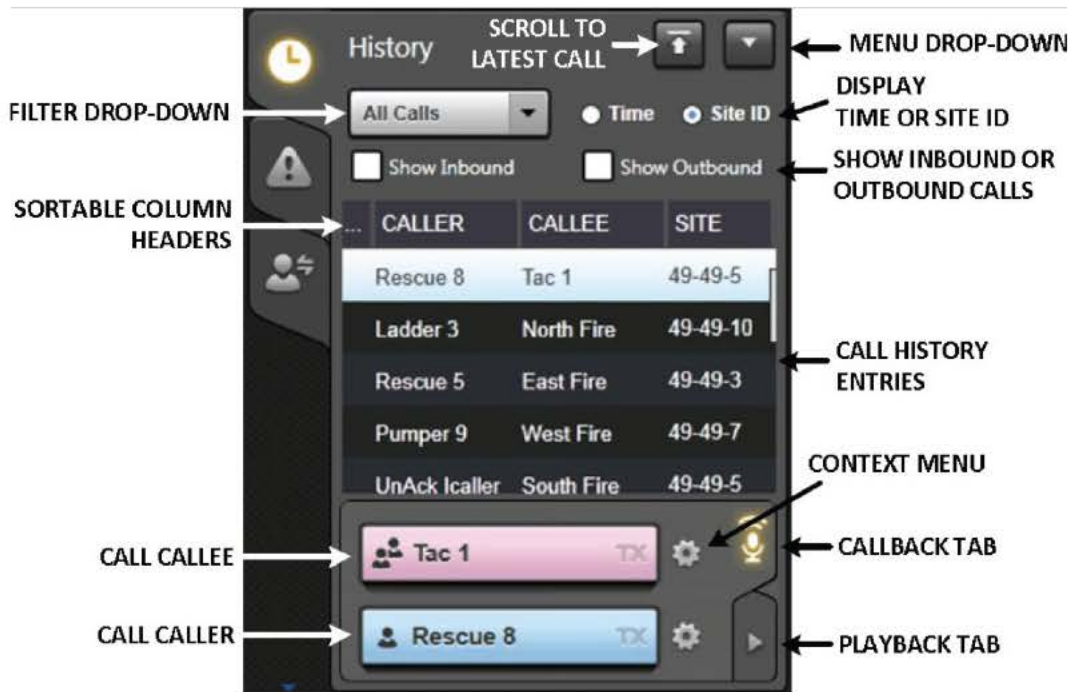
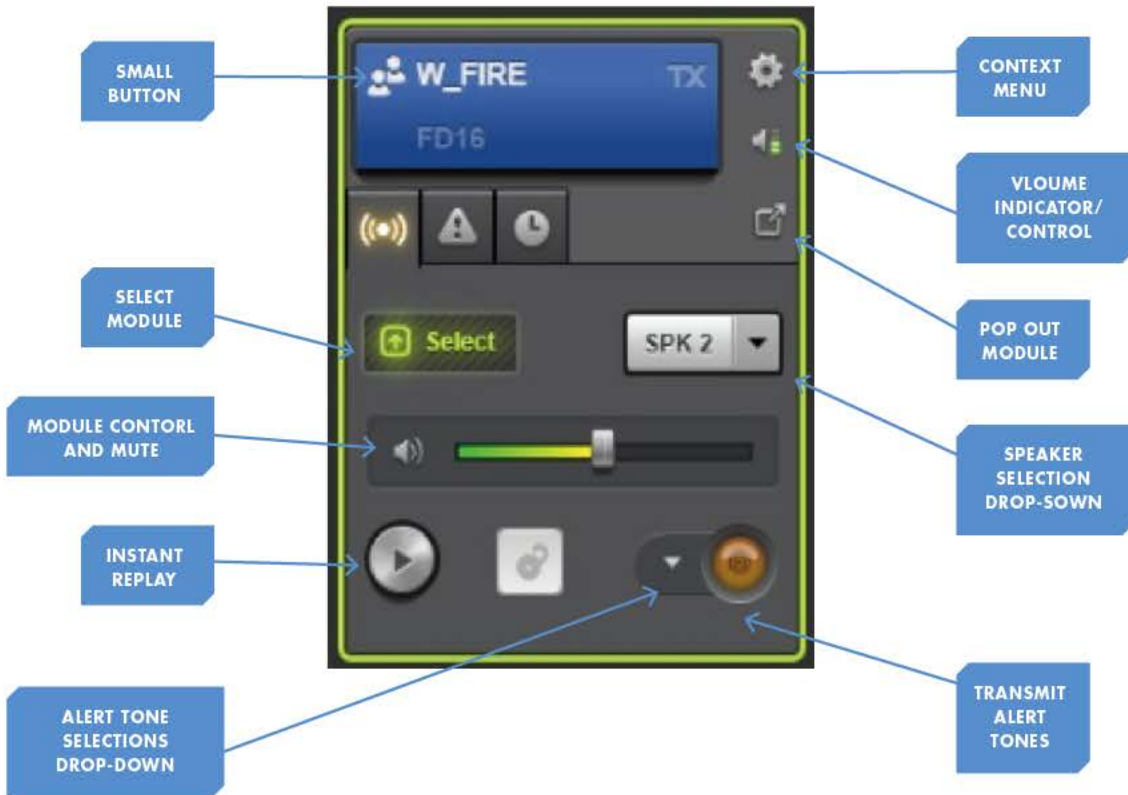
- › 2 Dual Display Port Outputs
- › Operator and Supervisor Jack Box Ports
- › 7 USB 2.0 Inputs
- › 7 USB 1.1 Inputs
- › Dual NICs
- › 8 Speaker Capacity
- › Local I/O Ports
 - 6 Discrete Inputs
 - 5 Relay Outputs

SYMPHONY CONSOLES





SYMPHONY CONSOLES



EXCEEDING YOUR EXPECTATIONS





PROJECT MANAGEMENT PLAN



WILLIAMS
COMMUNICATIONS, INC.
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE

Project Management Plan

Introduction

This section describes how Williams Communications, Inc. will manage the Project 25 Public Safety Radio Network Project implementation for Okaloosa County, FL. (OKALOOSA).

Project Management Methodology

Williams Communications understands that an effective Project Management methodology will improve project performance and will provide OKALOOSA with consistent results and outstanding satisfaction. Equally important, is a commitment to quality and continual improvement in order to maintain execution excellence in a dynamic, competitive business climate. Williams Communications embraces these concepts.

Our Project Management approach incorporates the key process groups as defined by the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBOK): Initiating, Planning, Executing, Monitoring & Controlling, and Closing. After the initiation of the project, the project manager will lead the team through the planning effort which includes finalization of the project plan and system design. Upon design sign-off, project execution will start and the Project Manager will execute the signed-off project plan for the duration of the project. Monitoring and controlling will happen throughout the project's execution. The project manager will track and monitor key project activities during each phase, ensuring that the project schedule, scope and cost are not negatively impacted.

As part of monitoring and controlling process, the project manager will also be providing project status updates to OKALOOSA along with documenting/managing pending actions and reported issues and monitoring identified risks. Milestones and dependencies are clearly defined so there is transparency and assurance that the next phase will not start until milestones are met and sign-off from OKALOOSA is received. Project closing processes will take place after OKALOOSA has accepted the new system and include delivery of final documentation to OKALOOSA and the start of the warranty period.

Williams divides the Critical Radio System Implementation into four overlapping phases, as shown below. Stage gates are set to allow for a disciplined, informed, and documented transition from one phase to the next.

<u>Williams Communications Project Phases</u>	<u>Stage Gates</u>
1. Proposal	Contract Award
2. Planning and Design	Contract Design Review (CDR) Sign-off
3. Production & Installation	Optimization and Internal Testing
4. Acceptance Testing	System Acceptance Sign-off
5. Cutover & Close Out	Warranty Start

In addition to PMI project management standards, Williams Communications has the following process/standards in place to ensure proper project documentation, control and quality is achieved:

- Defined documentation standards to ensure consistency across projects and to help deliver consistent results. Templates, checklists, and forms are shared.

- Quality Control processes/mechanisms, such as project reviews, status reports, actions/issues/risk logs, change control, etc., are defined and are performed according to an agreed upon schedule/frequency to ensure project expectations – schedule, cost, scope, and customer satisfaction – are managed and achieved.
- Training – consistent with PMI, Williams Communications believes Project Managers should be well versed not only in the PM discipline, but also in all our general business processes and leadership skills. To that end, Williams Communications has defined a set of training / skill development areas in order to equip our Project Managers with the wide range of skills needed to effectively manage projects.

We believe that our dedication to continuous improvement will ensure our methodology continues to mature, providing a higher level of implementation performance for OKALOOSA.

The Implementation Management Team

Williams Communications understands the importance of establishing a cohesive and qualified project team, as well as, the importance of effective communication between management and technical teams. For the OKALOOSA P25 System Upgrade project, we have carefully selected the individuals that possess the skills and experience necessary to provide OKALOOSA with an implementation process that will meet, and at times exceed, your expectations.

Williams Communications' Implementation Management team brings over 100 years of combined experience in implementing successful projects. Employees are allocated based on availability at the time of contract award. Should the named individuals be working on another project at the time of OKALOOSA's contract award, we will select another, equally experienced, professionally trained individual for the OKALOOSA project. He or she will be introduced at contract award.

Implementation Management Team Roles and Responsibilities

Mr. Ken Steere, PMP, Project Manager (PM)

Mr. Steere will be responsible for the successful project implementation and the fulfillment of contractual obligations. He will be the primary contact for the OKALOOSA's Designated Representative. Mr. Steere shall bear full responsibility for supervising and coordinating the installation and deployment of the communications system. He will be responsible for development and acceptance of the Project Management Plan, managing the execution of the project against that plan, and overseeing the day-to-day project activities, deliverables, and milestones completion. In addition, he will be responsible for developing schedules, scheduling customer and internal team meetings, monitoring progress, providing the necessary reports on progress, and taking the actions needed to ensure timely schedule compliance. He will also be responsible for overall project cost and processing of any contract changes. After contract execution, Mr. Steere will convene a project planning session with the OKALOOSA's representatives to discuss all required steps for the implementation of the OKALOOSA P25 System Upgrade project.

The Project Manager will represent Williams Communications and have the authority to act for it and supervise all project activities.

Mr. Steve Bode, Director of Engineering

Mr. Bode will have full technical responsibility for the P25 System Upgrade design and ensuring that the system is installed in accordance with the approved system design. Mr. DeNoon will participate in all design review meetings, provide technical support to the Project Manager, and will be supported by other system field engineers from Williams Communications throughout the project. Mr. DeNoon will participate in the factory staging and system alignment and will supervise the development and execution of the Acceptance Test Plan, and guide the project team through the processes and procedures necessary to prove that the system performs as specified in the contract.

Mr. John DeNoon, System Engineer (SE)

Mr. DeNoon will have full technical responsibility for the P25 System Upgrade design and ensuring that the system is installed in accordance with the approved system design. Mr. DeNoon will participate in all design review meetings, provide technical support to the Project Manager, and will be supported by other system field engineers from Williams Communications throughout the project. Mr. DeNoon will participate in the factory staging and system alignment and will supervise the development and execution of the Acceptance Test Plan, and guide the project team through the processes and procedures necessary to prove that the system performs as specified in the contract.

Mr. DeNoon will provide technical As-Built drawings and system manuals as needed.

John Rioux, Site Manager (SM)

Mr. Rioux will be responsible for coordinating the installation, testing and acceptance of the P25 System Upgrade system. He will report directly to our Project Manager and will also be a local day-to-day contact for OKALOOSA's Designated Representative. He will provide on-site supervision of the installation teams, coordinate the work among installers and subcontractors, and work with OKALOOSA's organizations associated with the project. He will initiate appropriate activities to ensure the system is installed according to the contract, schedule, and specifications. In association with representatives of OKALOOSA and our Florida Training Manager, the site manager will assist with the coordination of the training schedule. He will be responsible for the day-to-day communications with OKALOOSA's Designated Representative concerning logistical needs (building access, safety, job site communications etc.).

Mr. Rioux will also be the on-site point of contact for coordinating on-site subcontractors' activities and inspect subcontractors' installations ensuring that they meet system design and quality standards on a daily basis. Any deviations will be addressed daily and/or reported to the Project Manager.

Mr. Tal Whiddon, Florida Training Manager (TM)

Mr. Whiddon will be the single point of contact for all aspects of training and will coordinate with the OKALOOSA's Designated Representative regarding training. He will ensure all paperwork, verification and certification forms will be completed and submitted to OKALOOSA.

Training site locations will be coordinated with OKALOOSA to ensure a proper and appropriate training environment. Documentation (both in-progress and finalized) on all Training phases will be presented to OKALOOSA upon completion of each phase.

Mr. Whiddon will be responsible for planning and coordinating all training to take place for the OKALOOSA.

Project Responsibilities

The following statements define the respective general responsibilities of Williams Communications and OKALOOSA during the implementation of the OKALOOSA P25 System Upgrade Network.

Williams Communications will provide the following:

1. A certified Project Manager (PM) to work with OKALOOSA for project implementation and deployment of the system design. The PM will at minimum:
 - Generate meeting minutes for each project meeting no later than 5 business days from the meeting
 - Produce a running log of project issues and punch list items
 - Provide written monthly status reports
 - Set up and manage the project team
 - Identify, track and manage risks, actions, and issues
 - Schedule and coordinate all OKALOOSA P25 System Upgrade Project related customer meetings
 - Manage and coordinate of all system integration, installation, optimization, and testing activities
 - Coordinate migration and cutover planning and execution
2. A Senior System Engineer (SE) who will be responsible for designing and testing the overall system. The SE will at minimum:
 - Create documents for the Customer Design Review
 - Develop block diagrams, system level diagrams, and rack diagrams.
 - Conduct final system design and review
 - Prepare acceptance testing
 - Prepare final system documentation
 - Assist in the resolution of technical problems
 - Provide implementation support
3. A Site Manager who will be responsible to be the PM's right hand and eyes on the ground and will serve as the on the ground OKALOOSA contact. The SM will at minimum:
 - Assist with identification, tracking and management of risks, actions, and issues
 - Assist with coordination and oversight of all system integration, installation, optimization, and testing activities
 - Manage subcontractors and inspect subcontractor deliverables
4. Equipment purchasing and installation services as described in this submittal.
5. Identification of the efforts required by the OKALOOSA's team.
6. Engineering services to define site AC/DC power loads, BTU calculations, and site connectivity requirements for the sites.
7. As-built drawings as required for final site layout and project documentation at the end of the project.
8. Required studies and surveys to determine the potential for interference.
Note: Williams Communications will not be responsible for interference introduced at the repeater sites resulting from the installation of equipment by others.
9. All required testing equipment.
10. All miscellaneous materials needed for installation.

OKALOOSA will be responsible for the following:

1. Assign an authorized representative to represent OKALOOSA. The Designated Representative will be the primary point-of-contact for Williams Communications and its team on all radio system details.
2. Work with the Williams Communications' Project Manager to incorporate OKALOOSA's tasks into the overall project schedule.

Note: The project schedule will highlight interdependencies.

3. Participate in all scheduled project review meetings and status meetings.
4. Provide facilities for meetings and training as applicable.
5. Review, approve and administer change control procedures that may be needed.
6. Review, approve and/or provide corrections for meeting minutes and draft reports submitted by the Williams Communications Project Manager in a timely manner.
7. Provide access to equipment locations for Williams Communications and its authorized subcontractors.

Note: At times, extended workdays may be required to complete tasks and minimize conflicts with OKALOOSA's operations.

8. Obtain temporary IDs and passes for the Williams Communications team, as required, for access throughout the OKALOOSA sites.
9. Provide timely responses to issues related to project progress.
10. Approve and release payments in a timely manner for project deliverables.
11. Provide Final sign-off upon Final System Acceptance.

Project Process and Guidelines

Preparation

Upon Contract Award, the Project Manager, System Engineer and Site Manager will meet to review all pertinent documentation from the proposal team. The implementation team will receive copies of the specification, proposal, equipment list, contract, addenda and will obtain all of the internal sign-off needed to begin the project. Project team skill-set requirements will be identified, and experienced resources will be assigned by the Project Manager. The project team will be engaged for the internal design review meeting.

Internal Design Review

The Williams Communications System Engineer will schedule an internal design review meeting during which time the technical personnel, including subcontractors, will review the key design specifications and the proposed solutions. He will review the proposed equipment list to ensure design integrity and compliance to the final contract. Issues and ambiguities will be noted for review and finalization at the Contract Design Review (CDR) meeting. After the Internal Design Review meeting, the Project Manager will request the Microwave Path Survey to be completed.

Project Kick-off and Initial Planning Session

The Project Kick-off and Initial Planning Session meeting will be scheduled upon Contract Award. Our implementation team will meet with OKALOOSA's representatives at an agreed upon location. At this meeting, the two teams will review the key design, schedule elements of the project and will identify any items that need to be clarified and corrected. Site preparation activities and the task ownership will be identified. In addition, the two teams will finalize and update the user equipment lists. Contract change order documents will be initiated to reflect any changes requested.

Contract Design Review

Our implementation team will meet with OKALOOSA's representatives at an agreed upon location for the Contract Design Review (CDR) meeting. At this meeting, the two teams will review all updated documents. Final versions will be provided to OKALOOSA. OKALOOSA shall provide signature sign-off on the final documents proceeding CDR meeting to trigger the manufacturing and field integration processes. Williams Communications will provide the following documents at a minimum at the time of the CDR:

- Network and Subsystem Block Drawings
- Infrastructure, Console and Network Element Parameters
- Console and MNC/NMS Database Parameters/Design
- Physical Site Requirements/Facilities/Tower Loading
- Mobile installations in vehicles including mounting plates, bulkhead cabling, antenna details and antenna placement.
- Final Site Configuration Design
- Software Version Control/Equipment Hardware and Software Roadmaps
- Antenna Subsystems
- Failure Mode Analysis/System Availability
- Preliminary Factory and Field ATPs
- Final Coverage ATP
- Preliminary Cutover Plan/Migration Strategy/Downtime Requirements
- Operations, Administration, Installation, and Maintenance Manuals for all OKALOOSA owned subsystems
- Change Orders
- Spares Equipment List and Pricing Matrix
- Revised Statement of Work (if modified)

Site Material Procurement

With OKALOOSA's approval, the Williams Communications Project Manager will direct the project team to begin placing orders to our vendors and subcontractors. Shipments will be coordinated with the vendors based on the project schedule to ensure availability of parts as they are needed on site. While the manufacturing process is taking place, the Williams Communications Project Manager will work with OKALOOSA's Designated Representative to make the necessary decisions to submit necessary permits.

Project Schedule

A proposal schedule has been included with this submittal. The work schedule illustrates project management responsibilities with manufacturing, staging, optimization, cutover, system acceptance, and finally the beginning of the warranty period.

The project schedule is in the form of a Gantt chart produced using Microsoft Project. The key tasks and milestones, along with the work breakdown structure tasks and assignments, are shown to provide a quick understanding of the timing and required interrelationships for a successful implementation. The Williams Communications Project Manager will review the project activities progress with the OKALOOSA's Designated Representative during the project status meetings every 14 days. At the Contract Design Review (CDR), a more precise, comprehensive implementation schedule will be presented and finalized.

Controlling and Monitoring

The Williams Communications Project Manager will hold internal weekly project status meeting and will compare planned work to actual work completed prior to the weekly status meeting with

OKALOOSA. During critical path activities, more frequent internal check points may be needed and will be scheduled accordingly. Actions, Issues, and risks will be monitored and updated daily throughout the project duration.

Communications Management Plan

The Communications Management Plan lays out the process/procedures Williams Communications will be following to effectively capture how communications will be managed during the OKALOOSA P25 System Upgrade Project implementation.

The plan describes the periodic and the scheduled communications occurring between Williams Communications and OKALOOSA. This plan covers when and how frequently meetings will take place, the roles and responsibilities of the parties participating in the meetings or receiving status reports, and the frequency and content of planned scheduled meetings. The Communications Plan is an integral part of the overall Project Management Plan and will be used to provide guidance during the OKALOOSA P25 System Upgrade Project implementation.

Sample quality control documents used to ensure that proper communication and documentation are being followed throughout the project, have been included in this submittal under the QA/QC Process tab. These documents include: Action, Issues, and Risk Logs; Meeting Agenda and Minutes; Change Request Form and Change Request Log; and Project Status Report.

Project Team Contact and Escalation

Below is the Contact Information Matrix for the project team. Included in the matrix is the escalation point for each team member. If there is an issue that may place the project or a portion of the project at risk, and no response is received within the time frames provided in the Communications Process in this document, the escalation contact shall be contacted.

Note: The sample Project Team Contact and Escalation Matrix below contains sample data. This information will be filled with the project stakeholders including the implementation team assigned to work on OKALOOSA P25 System Upgrade Project upon contract award. A detailed Communications Plan will be provided at the Project Kick-off.

Name	Title	Company	Contact	Role	Escalation	Title	Contact
Joe Smith	Project Manager	Williams Communications	916-555-5555 jsmith@wms.com.com	Implementation Team	Tony Walker	Manager	916-555-1111 twalker@wms.com.com
Jane Doe	System Admin	OKALOOSA	916-555-5556	Change Request Approver	Ricky Davis	General Manger	916-222-5518

Communication Process

As part of the communication process, the OKALOOSA P25 System Upgrade Project will utilize the following methods to ensure information is managed and distributed to all stakeholders. Williams Communications Project Manager shall be the primary point of contact between OKALOOSA and Williams Communications.

Email/Phone Calls: All emails shall be responded within 24hrs. All voicemails shall be responded by the end of the day in which they were received. All critical e-mails needing timely response shall be followed up with a phone call to the person receiving the email. Critical matters shall be addressed in the same day or have an update of the steps being taken to address the issue in a timely matter sent to the requester by the end of the day. This process applies to Williams Communications and to OKALOOSA for the duration of the project.

Status Meetings: There will be two types of status meetings taking place during the duration of the project:

1. Weekly Project Status meetings internal to the Williams Communications technical implementation team and subcontractors to discuss assignments, activities, and to share information. Internal meetings may be scheduled daily during critical path activities.
2. Bi-Weekly Project Status meetings with technical implementation team and the OKALOOSA Designated Representatives. Date and time for the first weekly status meeting will be agreed upon with OKALOOSA at the Project Kick-off meeting. The Williams Project Manager shall be responsible for coordination of the bi-weekly status meetings. An updated schedule shall be provided as an agenda item for all bi-weekly status meetings between OKALOOSA and Williams Communications.

Meeting Agenda/Minutes: Meeting Agendas shall be sent out by the Williams Communications Project Manager prior to meetings, and includes at minimum the following:

1. Schedule review
2. Status of deliverables
3. Planed activities
4. Issues and Risk items
5. Action/Punch List items

Meeting minutes shall be sent out by the Williams Communications Project Manager within three (3) days of the respective meeting. Minutes shall be distributed to a pre-approved OKALOOSA recipients' list that may include contacts not part of the project implementation team. Sample Meeting Agenda and Meeting Minutes Template included in this submittal under the QA/QC Process tab.

Actions/Issues/Risk Logs: A live document will be kept by the Williams Communications Project Manager that will track, monitor, and control punch list items. This document will be updated daily as issues/actions/risks are added or addressed. The Williams Communications Project Manager will keep items up to date. An item will be considered closed only after verification by the person who requested the action or reported the issue. If responsibility for resolving an item is transferred to another person or group, a new entry shall be added to the punch list and the original entry shall be appropriately noted. The Williams Communications Project Manager will be responsible to communicate when actions/issues are completed/addressed and are ready to be verified. The actions/punch lists/logs will include at minimum the following:

1. Sequential punch list item number

2. Date identified
3. Item description
4. The party responsible for resolution
5. Expected resolution date
6. Resolution date
7. Full details about how each punch list item was resolved and tested
8. Notes about the item

Status Reports: Monthly status reports will be produced by the Williams Communications Project Manager to provide information on the status and progress of the project. The monthly report will be provided in draft format to OKALOOSA by the fifth business day after the end of the month. OKALOOSA will review and provide comments and/or corrections if applicable. A final Status Report will then be submitted to distribution list and saved in the project centralized document repository. At a minimum the status report will contain: Project status on major activities, status of major issues and risks, status of major action items, and planned activities for the next period. A Sample Project Status Report template has been provided in this document under the QA/QC Process tab.

The Williams Communications Project Manager shall provide other reports related to the system or its implementation as reasonably requested by OKALOOSA.

Communication Schedule

The following chart describes the initial planned communications that Williams Communications Implementation Team and OKALOOSA staff are responsible for, or are to participate in. Other impromptu meetings may occur as needed.

Definitions:

Weekly – One occurrence each week

Bi-Weekly – One occurrence every other week (or twice per month is recommended)

Monthly – Once occurrence each month

Project Team – Project Manager, System Engineer, Site Manager, and Subcontractors (when applicable)

Type of Information	Prepared By/ Chaired By	Distribution List/ Participants	Purpose of Communication	Frequency	Transmittal Method
<ul style="list-style-type: none"> • <i>Project Schedule</i> 	<ul style="list-style-type: none"> • <i>Williams Communications Project Manager</i> 	<ul style="list-style-type: none"> • <i>Project Team OKALOOSA Representatives</i> 	<ul style="list-style-type: none"> • <i>Document and monitor key tasks milestones and assigned resources</i> 	<ul style="list-style-type: none"> • <i>As Needed</i> 	<ul style="list-style-type: none"> • <i>Email</i>
<ul style="list-style-type: none"> • <i>Kick Off Meeting</i> 	<ul style="list-style-type: none"> • <i>Williams Communications Project Manager</i> 	<ul style="list-style-type: none"> • <i>Project Team OKALOOSA Representatives</i> 	<ul style="list-style-type: none"> • <i>Clarify goals and objectives individual roles and responsibilities interdependencies</i> • <i>Review project scope risks deliverables schedule staffing and communications</i> 	<ul style="list-style-type: none"> • <i>Once at project start-up</i> 	<ul style="list-style-type: none"> • <i>Meeting at OKALOOSA Facility (TBD)</i>

Type of Information	Prepared By/ Chaired By	Distribution List/ Participants	Purpose of Communication	Frequency	Transmittal Method
<ul style="list-style-type: none"> Customer Design Review/ Contract Design Review Meeting 	<ul style="list-style-type: none"> Williams Communications Project Manager 	<ul style="list-style-type: none"> Project Team OKALOOSA Representatives 	<ul style="list-style-type: none"> Review Project Design Approach/Documents Sign-off Project Design 	<ul style="list-style-type: none"> Twice before equipment is ordered 	<ul style="list-style-type: none"> Meeting at OKALOOSA Facility (TBD)
<ul style="list-style-type: none"> Internal Status Meeting 	<ul style="list-style-type: none"> Williams Communications Project Manager 	<ul style="list-style-type: none"> Project Team 	<ul style="list-style-type: none"> Discuss status issues and concerns related to the Project 	<ul style="list-style-type: none"> Weekly 	<ul style="list-style-type: none"> Conference Call Meeting
<ul style="list-style-type: none"> Customer Status Meeting 	<ul style="list-style-type: none"> Williams Communications Project Manager 	<ul style="list-style-type: none"> Project Team OKALOOSA Representatives 	<ul style="list-style-type: none"> Discuss status issues and concerns related to the Project 	<ul style="list-style-type: none"> Bi-Weekly 	<ul style="list-style-type: none"> Conference Call Meeting
<ul style="list-style-type: none"> Status Report 	<ul style="list-style-type: none"> Williams Communications Project Manager 	<ul style="list-style-type: none"> Project Team OKALOOSA Representatives 	<ul style="list-style-type: none"> Report project progress milestones status risks and issues etc. 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> Email
<ul style="list-style-type: none"> Change Requests 	<ul style="list-style-type: none"> Williams Communications Project Manager 	<ul style="list-style-type: none"> Project Team OKALOOSA Representatives 	<ul style="list-style-type: none"> Communicate receive approval and document status of all change requests. 	<ul style="list-style-type: none"> As Needed 	<ul style="list-style-type: none"> Email Meeting

The Williams Communications Project Manager will review the Communications Management Plan with OKALOOSA during the CDR meeting and will make any needed changes to ensure timely distribution of information during the duration of the project.

Risk Management

Williams Communications Project Manager, along with the OKALOOSA Designated Representative, will identify potential risks and will analyze, evaluate, rate and develop a mitigation plan for each risk. Risks will be communicated and monitored throughout the duration of the project during the weekly status meeting. The Risk Log will be kept current by the Project Manager. Sample Risk Log included in this submittal under QA/QC Process tab.

Down Time Communications

Williams Communications understands how important is to prevent any down time during implementation. No action that could diminish the capabilities of the current system will be taken without direct authorization from key OKALOOSA' personnel. The cutover plan will minimize diminished capabilities, but if down time is required, the proceedings will be scheduled at a time that will result in the least possible impact to OKALOOSA operations. The following will be sent out in writing to the OKALOOSA Designated Representative if a down time is required:

- The nature of the work that will cause the unavoidable interruption
- The nature of the interruption
- The duration of the interruption
- A detailed statement of the scope and sequence of the work to be performed during the interruption

Quality Assurance/Quality Control Plan

The Quality Assurance/Quality Control (QA/QC) plan for the OKALOOSA P25 System Upgrade project shall be provided during the CDR meeting for review, and a final plan will be provided by the CDR meeting. The plan shall address all stages of the project, including, but not limited to:

1. Procurement

2. System design
3. Installation
4. Implementation
5. Testing
6. Cutover

The QA/QC Plan shall specifically describe the plans and procedures that ensure the proposed system is designed in accordance with the standards and requirements described in the OKALOOSA RFP. Tasks have been included in the proposed OKALOOSA P25 System Upgrade project schedule to ensure that quality standards are followed, and that OKALOOSA is satisfied with site development and system installation prior to acceptance/sign-off. At the end of each site equipment installation, the OKALOOSA Designated Representative and the Williams Communications Site Manager shall complete an initial inspection and gather any punch list items that need to be completed prior to the final inspection and sign-off. Here is a sample of what will be inspected:

The final QA/QC plan shall address the following project tasks at a minimum:

1. Design analysis and verification
 - a. The system design review
 - b. System design documentation
2. Site inspection
 - a. Grounding and bonding
3. Equipment staging
4. Material shipping, receiving, and storage
 - a. Equipment inspection and inventory
5. Steps of inspection throughout the implementation process
 - a. Before installing electronic equipment:
 - i. deliver equipment to site
 - ii. check grounding
 - iii. confirm circuit breaker availability
 - iv. confirm outlet has the correct voltage (110vs 220)
 - v. confirm where equipment is to be installed
 - vi. install the rack, ground the rack
 - vii. power the rack
 - viii. run interconnects
 - ix. install any equipment not pre-installed in the rack.
 - b. After installation of electronic equipment:
 - i. Power up the equipment
 - ii. run functional test
 - iii. run Pre-ATP test
 - iv. execute ATP with the customer
 - v. record medium and minor impact punch list items and address punch list items during burn in period
 - c. Before installation of antennas
 - i. MW rack should be in final position
 - ii. confirm enough entry ports are available
 - iii. verify shelter and tower bus bars are properly grounded
 - iv. assemble antennas
 - v. deliver antennas and coax to the site
 - vi. rig the tower
 - vii. run cables and install antennas

- viii. run antenna sweeps
 - ix. connect to dehydrator
 - d. After installation of antennas
 - i. Align antennas
- 6. As-built documentation
 - a. redline CDR Drawings according to final installation
 - b. deliver final As-built to the customer.
- 7. Final acceptance
 - a. Execute ATP
 - b. Provide ATP Sign-off and approval to proceed with 30 day burn in
 - c. Successful completion of 30 day burn in period
 - d. Final System Acceptance sign off

Change Control Process

Williams Communications understands OKALOOSA's emphasis on due diligence in order to minimize or stop scope creep. We also understand the importance of following a solid change control process so changes to the project scope, milestones/timelines, deliverables and resources are formerly defined, evaluated and approved prior to implementation.

There are five (5) key processes that shall take place in the event of a Change Request:

- Submission and receipt of change request
- Review and logging of change request
- Evaluation of the change request
- Approval/Rejection of change request
- Implementation and closure of change

Changes can be originated internally by the project team or externally by OKALOOSA. Following is the Williams Communications Change Control Process:

Internal or External Changes with no impact to scope, schedule, or budget: These are changes considered to be "cost of implementing a project" and do not negatively impact the project. An example would be switching the order of execution of planned tasks in order to accommodate an equipment delivery delay. The Williams Communications Project Manager will have authority to approve or reject these types of changes, and will have authority to exercise control over the manner of execution of the work in order to fulfill the contract requirements. The Williams Communications Project Manager may approve minor changes in the work to facilitate installations and resolve unforeseen difficulties. The Williams Communications Project Manager will not have the authority to approve changes that increase the cost or time to complete the work, nor changes that alter the functionality or intent of the installs. The Williams Communications Project Manager shall notify OKALOOSA of any changes required and will include the reason for the change, the change description, and impacted phase of the project. All changes, independent of impact to project constraints, will be logged and tracked in the Change Request Log.

Internal Changes with impact to scope, schedule, or budget: These are changes identified by the project team post CDR and that will impact at least one of the project's constraints (scope, schedule, and / or budget). Example would be a defective part/equipment that needs to be replaced and won't arrive until after the Production and Installation Phase is scheduled to complete. The Williams Communications Project Manager will fill out a Change Control Document containing the change description, reason / benefit for the change request, respective impact to each of the constraint areas, detailed steps needed to implement the change and any supporting

documentation (if applicable). The Change Control Form will then be submitted to the OKALOOSA Designated Representative for review and approval. A Change Control meeting may be set up as needed to review the change and/or request clarifications. All changes, independent of impact to project constraints, will be logged and tracked in the Change Request Log.

External Changes with impact to scope, schedule, or budget: These are changes identified by OKALOOSA post CDR and that will impact at least one of the project's constraints (scope, schedule, and / or budget). An example would be the need, or want, to add an additional site. In this scenario, OKALOOSA Designated Representative would fill out a Change Control Form including the requested change description, reason / benefit for the change request, and any supporting documentation applicable. S/he will then submit the form to the Williams Communications Project Manager for evaluation. Upon the receipt of the change request, the Project Manager will review the change with the System Engineer to identify the impact to the project constraint areas, and will define the detailed steps needed to implement the change. The filled Change Control Form will then be returned to the OKALOOSA Designated Representative for review and approval. A Change Control meeting may be set up as needed in order to review the change and or request clarifications during the evaluation process. All changes, independent of impact to project constraints, will be logged and tracked in the Change Request Log.

Upon agreement of the change requested, timelines for the approved change will be developed along with a failover plan, if applicable, and will be reviewed with all parties. The Williams Communications Project Manager will be responsible for updating the project schedule and implementing the approved change. Once implemented, the Change Request Form shall become a part of the project scope as permanent record and will be added to the project document repository. Any deviation from the system design shall be subject to project change control procedures and will not be undertaken until approved by OKALOOSA.

A sample Change Request Form and a sample Change Request Log have been provided in this submittal under the QA/QC Process tab.

Materials and Workmanship

Williams Communications takes pride in its installation work. Materials and workmanship shall be the best of their respective kinds, as defined by industry standards, free of defects, and all materials shall be new and unused, unless otherwise specified. Attention to installation details and work area cleanliness are treated as much as a priority as ensuring the system is working properly.

Where the name of a concern or manufacturer is mentioned on drawings or in specifications in reference to a required service or product, and no qualifications or specification of such is included, then the material specifications, details of manufacture, finish, etc., shall be in accordance with manufacturer's standard practice, direction or specifications.

Williams Communications shall not make substitutes unless prior approval has been obtained from OKALOOSA's Designated Representative. In making requests for substitutions, Williams Communications Systems Engineer shall list the particular system, product, or material he wishes to substitute, the justification for such a request, and the amount he will add or deduct from the subcontract sum if the substitution is authorized.

Williams Communications shall be responsible for procurement and supply of all materials to complete the equipment installations as required.

Verification of Existing Conditions

Before starting any installation, Williams Communications Site Manager shall examine existing work, or work performed by others, to which its work is to adjoin or be applied to and shall report to OKALOOSA's Designated Representative of any conditions that will prevent satisfactory accomplishment of the installations.

Installation

Installation will be scheduled to begin after all site preparation work is completed and in coordination with the backbone equipment delivery scheduled following staging. The Williams Communications Site Manager will coordinate site access with the OKALOOSA Designated Representative.

To ensure standard, high quality radio equipment installations, Williams Communications will utilize factory-trained, highly experienced technicians to install the OKALOOSA's P25 System Upgrade Radio Communications System equipment. Williams Communications' Project Manager will lead the Implementation phase and be the primary point of contact for OKALOOSA. Williams Communications Site Manager will coordinate on-the-ground installation efforts and subcontractors tasks and will provide daily updates to Project Manager. Post implementation and system acceptance phases, factory-trained technicians will maintain OKALOOSA's P25 System Upgrade Radio Communications System.

Safety Guidelines

Williams Communications and its employees shall comply with all safety standards, accident prevention regulations and environmental regulations promulgated by federal, state or local authorities having jurisdiction, and shall at all times conduct all operations under the contract in a manner to avoid the risk of bodily harm to any persons and the risk of damage to any property, equipment or material. Such parties shall also comply with any safety programs and/or rules promulgated by OKALOOSA and/or the State of Florida. Williams shall continuously inspect all work, materials and equipment to discover any conditions that might involve such risks and shall be responsible for discovery, determination and correction of any such conditions, and shall continue to be responsible until all work, including warranty work, is completed.

Williams Communications shall achieve consistency with, and participate in, OKALOOSA's site safety program and rules. In the event of a conflict between Williams Communications' and OKALOOSA's safety requirements, the more stringent requirement shall apply.

Williams Communications shall adhere to all OSHA rules, regulations and adoptions. In the event a hazard is identified, Williams Communications shall submit a hazard analysis outlining the identified hazard and how we plan to work safely under the condition.

Any and all accidents are to be reported to the Williams Communications Project Manager immediately upon occurrence. Williams Communications shall provide OKALOOSA a copy of all "Injury Investigation" reports for all injuries that receive medical treatment within twenty-four (24) hours of the injury.

Electro Magnetic Emissions

Williams Communications acknowledges all or portions of the work may involve possible exposure of their employees, agents, invitees, licensees and other visitors to the jobsite to electro-magnetic energy ("EME") while performing work under the contract. Williams Communications, Subcontractors, and all of their respective employees, agents, invitees, licensees, and other

authorized representatives who are performing services under the contract will comply with all ANSI and any other applicable EME standards, rules or regulations, including, but not limited to those rules or regulations imposed or suggested by OKALOOSA, if any.

Work Breakdown Structure

Williams Communications has established the Work Breakdown Structure (WBS) in the proposed Project Schedule which includes Task Descriptions, Resource Name responsible for completion of work task and Finish Date scheduled for completion. Attached the OKALOOSA WBS Estimated Man-power Hours Table showing the hours estimated for OKALOOSA to complete the task and a short description of the OKALOOSA work effort. Williams has made assumptions of the number of OKALOOSA people involved in the task effort, this will be reviewed and discussed at the Kick-off Meeting and adjusted in the WBS submission 21 days after the Contract Design Review. There are three general categories used to group the efforts Design, Test and Training. For planning purposes, the general category hours breakdown is as follows:

Category	Extended OKALOOSA Hours	% of Total Work
Design	381	22%
Test	708	41%
Training	646	37%
Totals	1735	

END

Project Management Plan

Introduction

This section describes how Williams Communications, Inc. will manage the Project 25 Public Safety Radio Network Project implementation for Okaloosa County, FL. (OKALOOSA).

Project Management Methodology

Williams Communications understands that an effective Project Management methodology will improve project performance and will provide OKALOOSA with consistent results and outstanding satisfaction. Equally important, is a commitment to quality and continual improvement in order to maintain execution excellence in a dynamic, competitive business climate. Williams Communications embraces these concepts.

Our Project Management approach incorporates the key process groups as defined by the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBOK): Initiating, Planning, Executing, Monitoring & Controlling, and Closing. After the initiation of the project, the project manager will lead the team through the planning effort which includes finalization of the project plan and system design. Upon design sign-off, project execution will start and the Project Manager will execute the signed-off project plan for the duration of the project. Monitoring and controlling will happen throughout the project's execution. The project manager will track and monitor key project activities during each phase, ensuring that the project schedule, scope and cost are not negatively impacted.

As part of monitoring and controlling process, the project manager will also be providing project status updates to OKALOOSA along with documenting/managing pending actions and reported issues and monitoring identified risks. Milestones and dependencies are clearly defined so there is transparency and assurance that the next phase will not start until milestones are met and sign-off from OKALOOSA is received. Project closing processes will take place after OKALOOSA has accepted the new system and include delivery of final documentation to OKALOOSA and the start of the warranty period.

Williams divides the Critical Radio System Implementation into four overlapping phases, as shown below. Stage gates are set to allow for a disciplined, informed, and documented transition from one phase to the next.

<u>Williams Communications Project Phases</u>	<u>Stage Gates</u>
1. Proposal	Contract Award
2. Planning and Design	Contract Design Review (CDR) Sign-off
3. Production & Installation	Optimization and Internal Testing
4. Acceptance Testing	System Acceptance Sign-off
5. Cutover & Close Out	Warranty Start

In addition to PMI project management standards, Williams Communications has the following process/standards in place to ensure proper project documentation, control and quality is achieved:

- Defined documentation standards to ensure consistency across projects and to help deliver consistent results. Templates, checklists, and forms are shared.

Project Management Plan

Introduction

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Change Request

Project Name:	OKALOOSA Project 25 Public Safety Radio Network Project	Change Number:	CR001
Project Sponsor:		Date of Request:	xx/xx/1

Change Name	
--------------------	--

Description of Change:

Reason for Change:

Effect on Deliverables (including a list of any affected deliverables):

Effect on Schedule (including Estimated Completion Date for this change):

Effect on Project Scope and Budget:			
Item Description	Quantity	Cost	Total Cost
Total Change Request Cost:			

Effect of NOT Approving this Change:

Reason for Rejection (if applicable):

Project Sponsor:

Approved

Signature: _____

Rejected

Title: _____ **Date:** _____

OKALOOSA Project 25 Public Safety Radio Network Implementation Monthly Status Report

Project Name:	OKALOOSA P25 Radio System Upgrade
Sponsor:	
Report Type:	Monthly Status Report
For Period:	Month Year
Project Manager:	

EXECUTIVE SUMMARY

Overall Summary	Prior Status	Green	Current Status	Green
Green	The project is within 20% variance of the currently approved baseline for budget and schedule.			
Yellow	The project has exceeded 20% variance of the currently approved baseline for budget and/or schedule.			
Red	The project is at risk of termination, or at risk of not substantially meeting the business objectives established.			
<p>Summary</p> <p>Major activities completed:</p> <ol style="list-style-type: none"> 1) Xxx 2) Xxx <p>Major activities planned for the upcoming month:</p> <ol style="list-style-type: none"> 1) Xxx 2) Xxx 				

SCHEDULE MANAGEMENT

Summary	Prior Status	Green	Current Status	Green	
Green	Variance to schedule within 10%				
Yellow	Variance to schedule equals or exceeds 10%, but within 20%				
Red	Variance to schedule equals or exceeds 20%				
No critical path delays known at this time.					
Project Start Date	Original Baseline End Date	Current Revised End Date	% Schedule Variance	Ahead Behind	Estimated Completion Date

SCOPE MANAGEMENT

Summary			
Change Control Log Summary			
Change #	Description	Action: Approve/Reject	Action Date
Comments:			
Deliverable Acceptance Log Summary			
Deliverable #	Description	Action: Approve/Reject	Action Date
Comments:			

RISK/ISSUE MANAGEMENT

Summary			
Only High Impact Risks and Issues are reported in this section.			
Risk Management Log Summary			
Risk #	Description	Action	Action Date
Comments:			
Issue Management Log Summary			
Issue #	Description	Action	Action Date
Comments:			

MEETING AGENDA



Meeting/Project Name:	OKALOOSA Project 25 Pub c Safety Radio Network Project Status Meeting		
Date of Meeting: (MM/DD/YYYY)		Time:	
Meeting Facilitator:		Location:	

1. Meeting Objective
Project Status Reporting

2. Invited			
Name	Attendance	Name	Attendance
	Required		Optional
	Required		Required
	Required		Required
	Optional		Required

3. Meeting Agenda		
Topic	Owner	Time
1. Project Schedule Review	WCI PM	10 min
2. Project Logs Review/Updates	WCI PM	15 min
a. Actions Log		
b. Issues Log		
c. Risks Log		
d. Change Log		
3. Q&A	A	5 min

4. Pre-work/Preparation (documents/handouts to bring, reading materials, etc.)	
Description	Prepared by
To be distributed 24 hrs prior to Meeting	

MEETING MINUTES



Meeting/Project Name:	OKALOOSA Project 25 Public Safety Radio Network Project Status Meeting		
Date of Meeting: (MM/DD/YYYY)		Meeting Duration:	e.g. 2:00pm-2:25pm
Meeting Facilitator:		Location:	

1. Meeting Objective	
Project Status Reporting	

2. Attendance at Meeting			
Name	Attendance	Name	Attendance
	Required/Absent		Optional/Absent
	Required/Present		Required/Absent
	Required/Present		Optional/Absent
	Optional/Absent		Optional/Absent

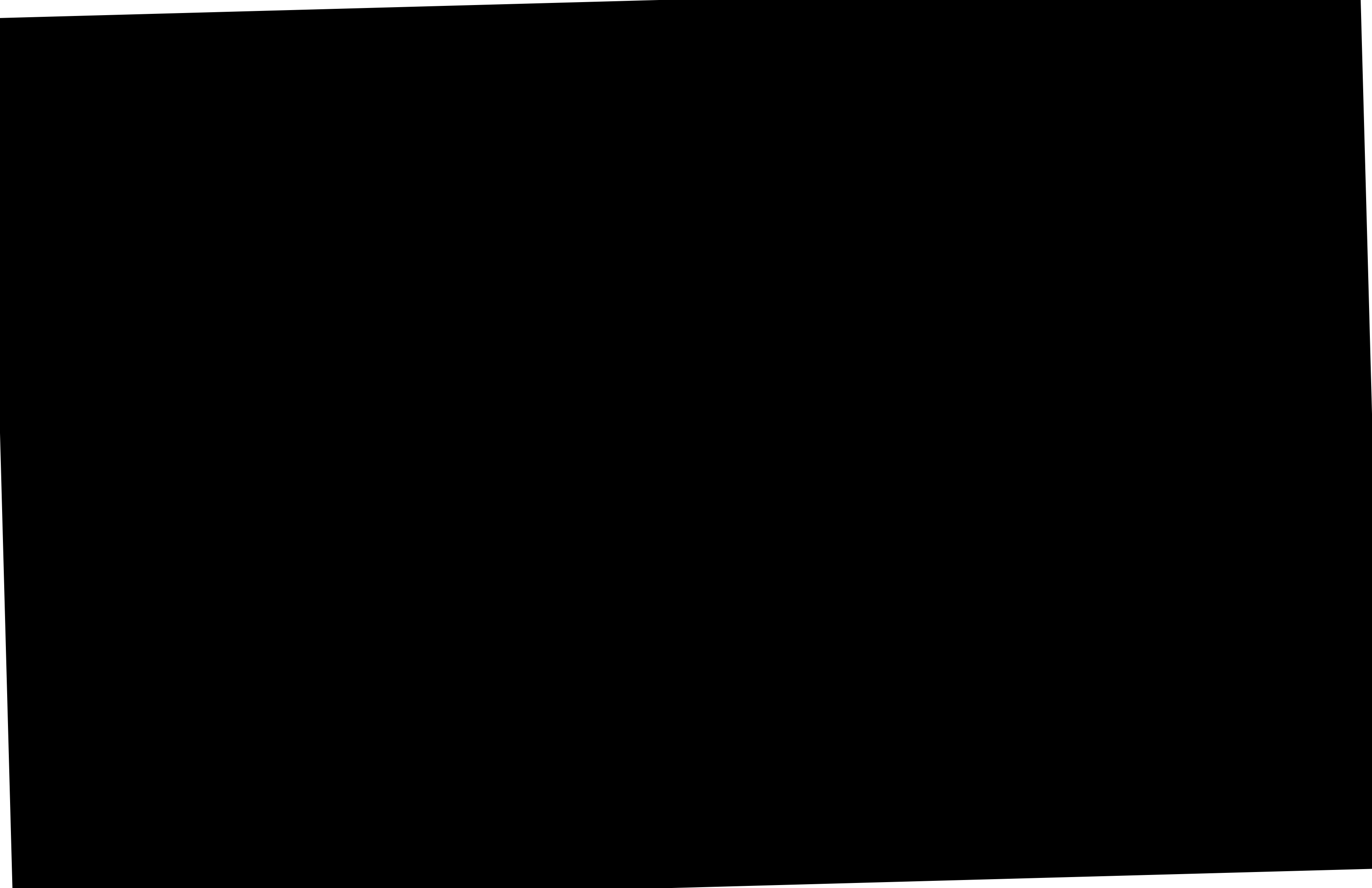
3. Agenda and Notes, Decisions, Issues		
Topic	Owner	Time
1. Project Schedule Review	WCI PM	
a. Project progress for past period . xxx		5 min
b. Project activities planned for next period . xxx		
2. Project Logs Review/Updates	WCI PM	
a. Actions Log . Major Actions Completed . Major Actions due in next period . New Actions		15 min
b. Issues Log . No new issues identified		
c. Risks Log . No new risks identified		
d. Change Log . No new changes identified		
3. Q&A/Discussion/Other Topics		5 min
a. Topic 1 . Details (1) Action		



PROJECT SCHEDULE

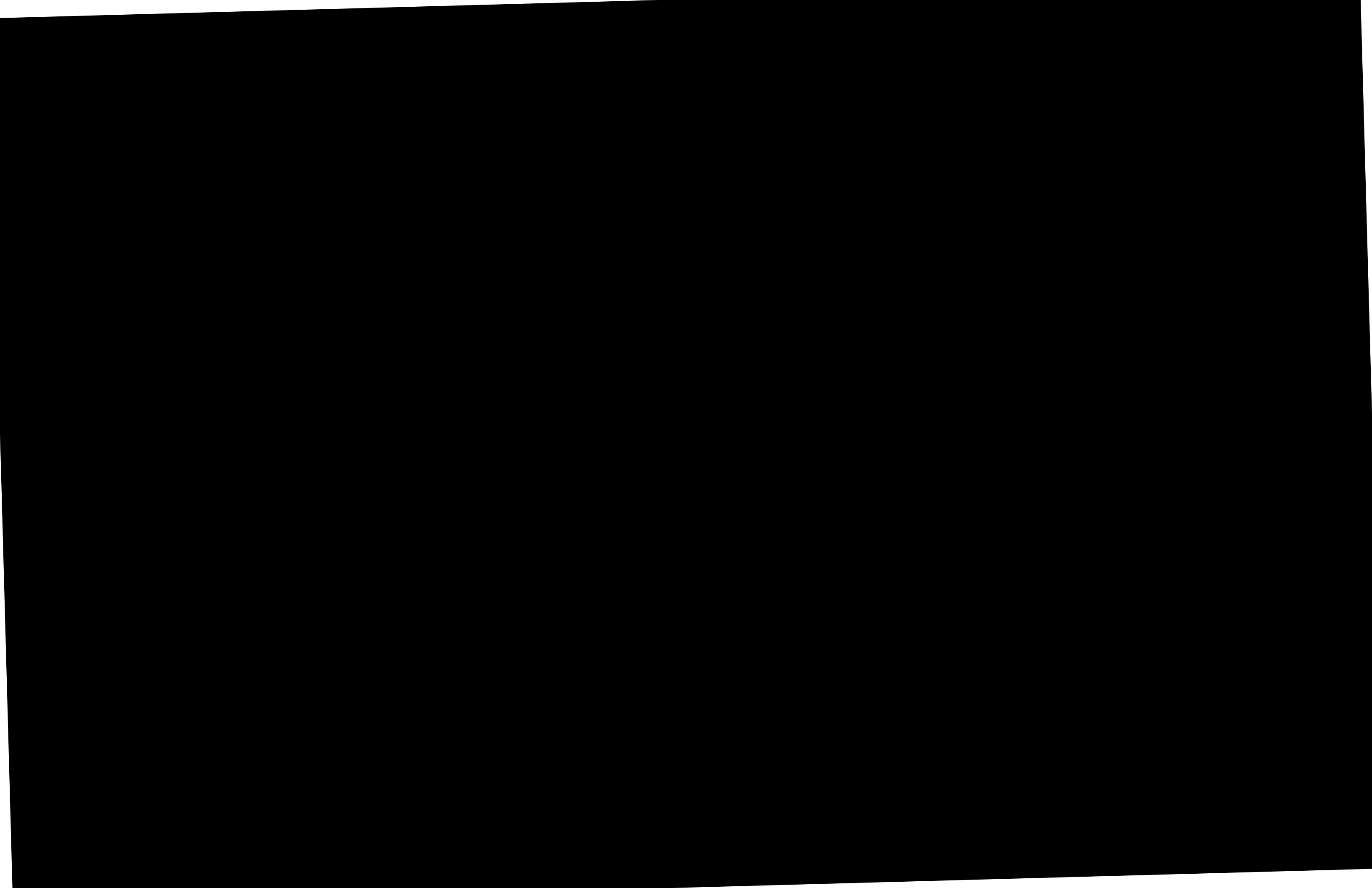


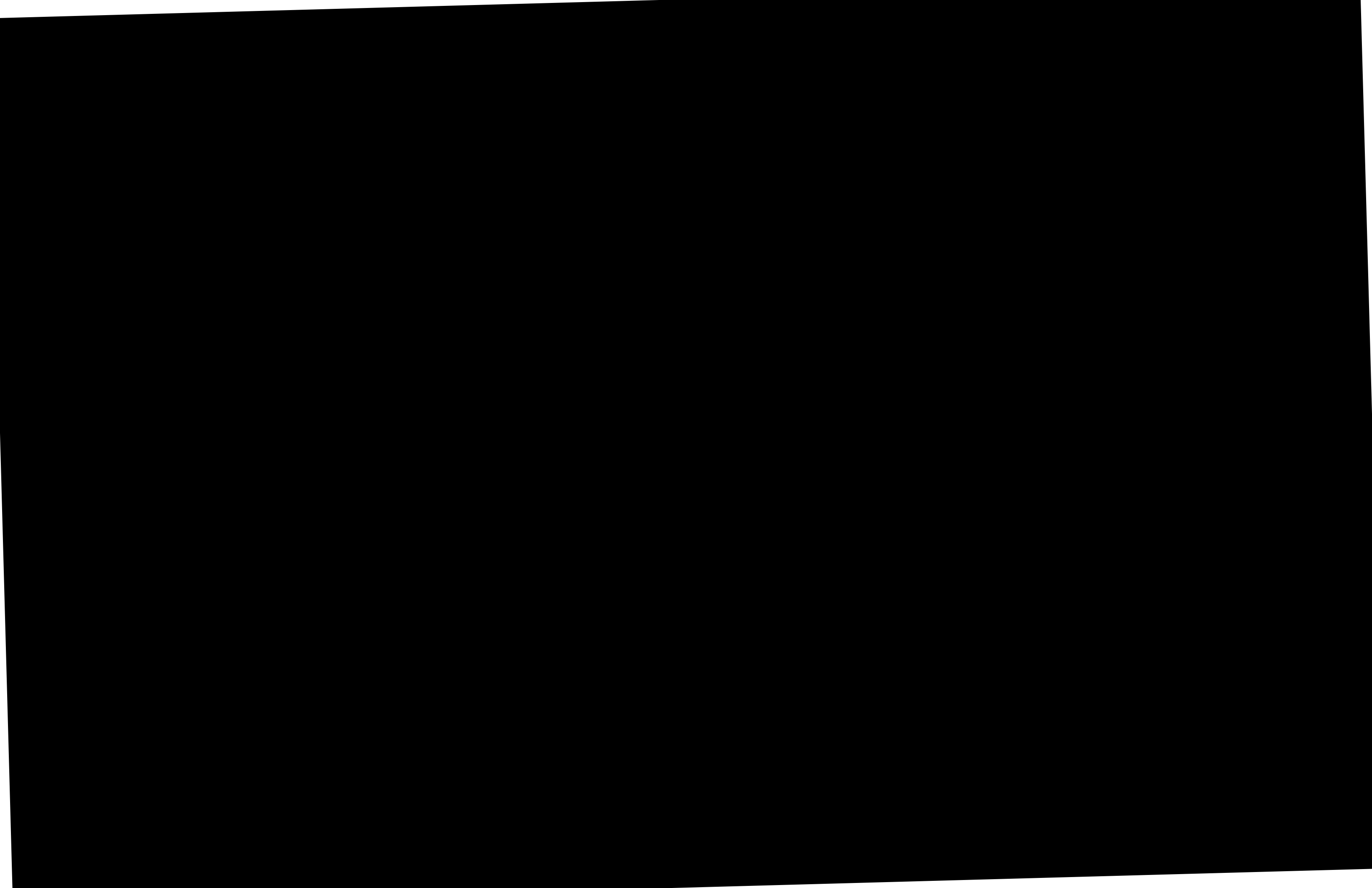
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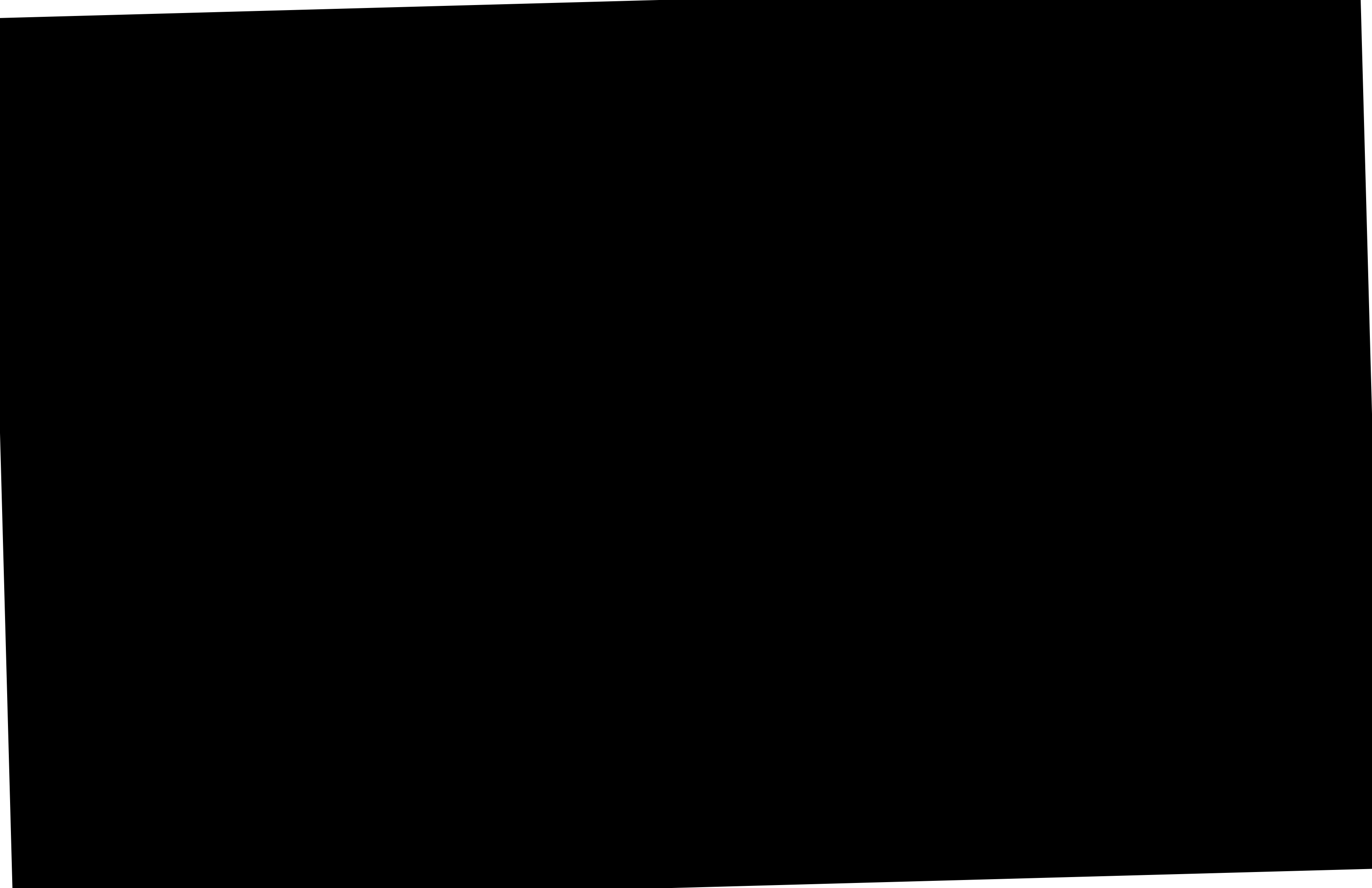






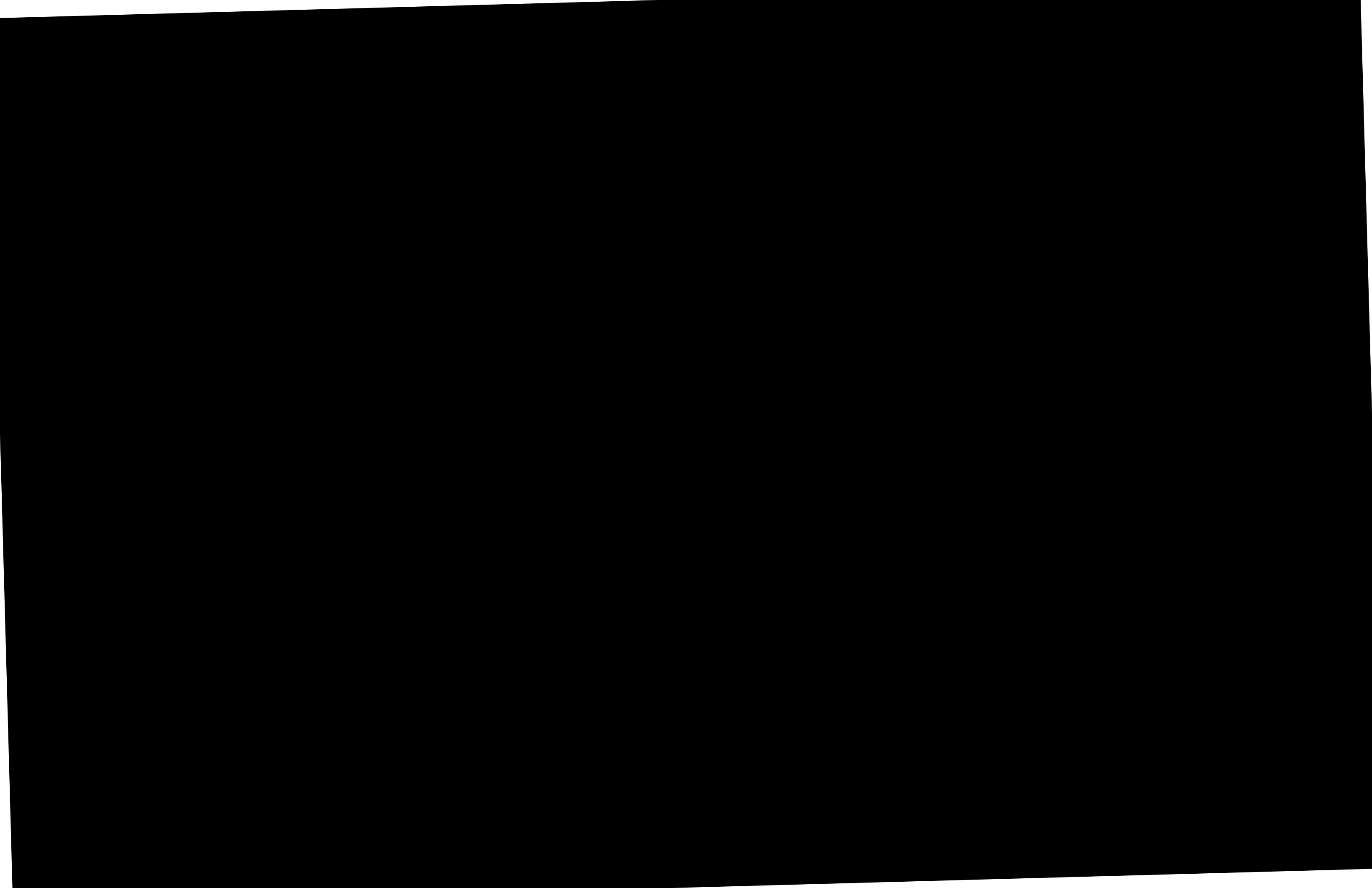


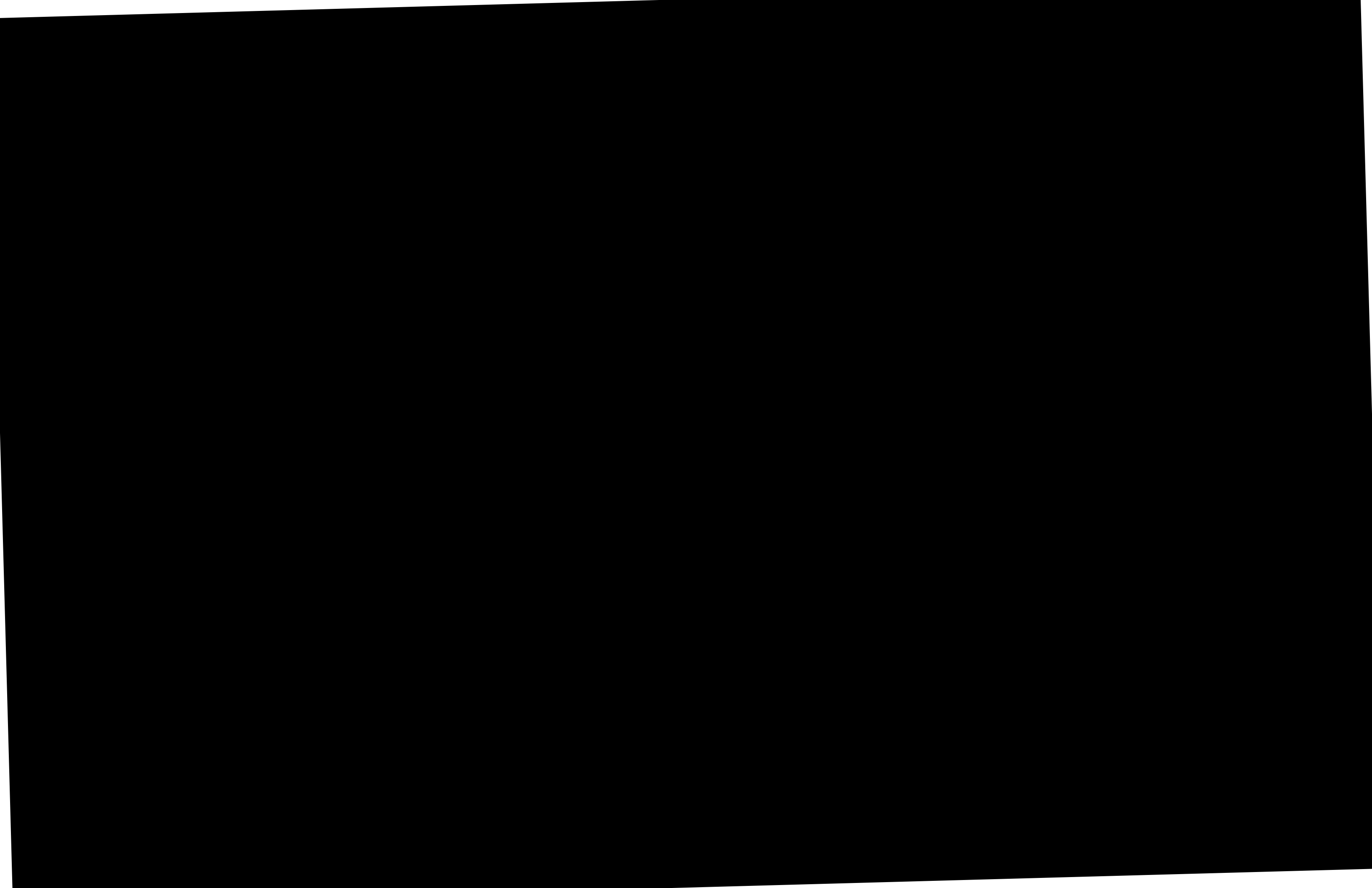




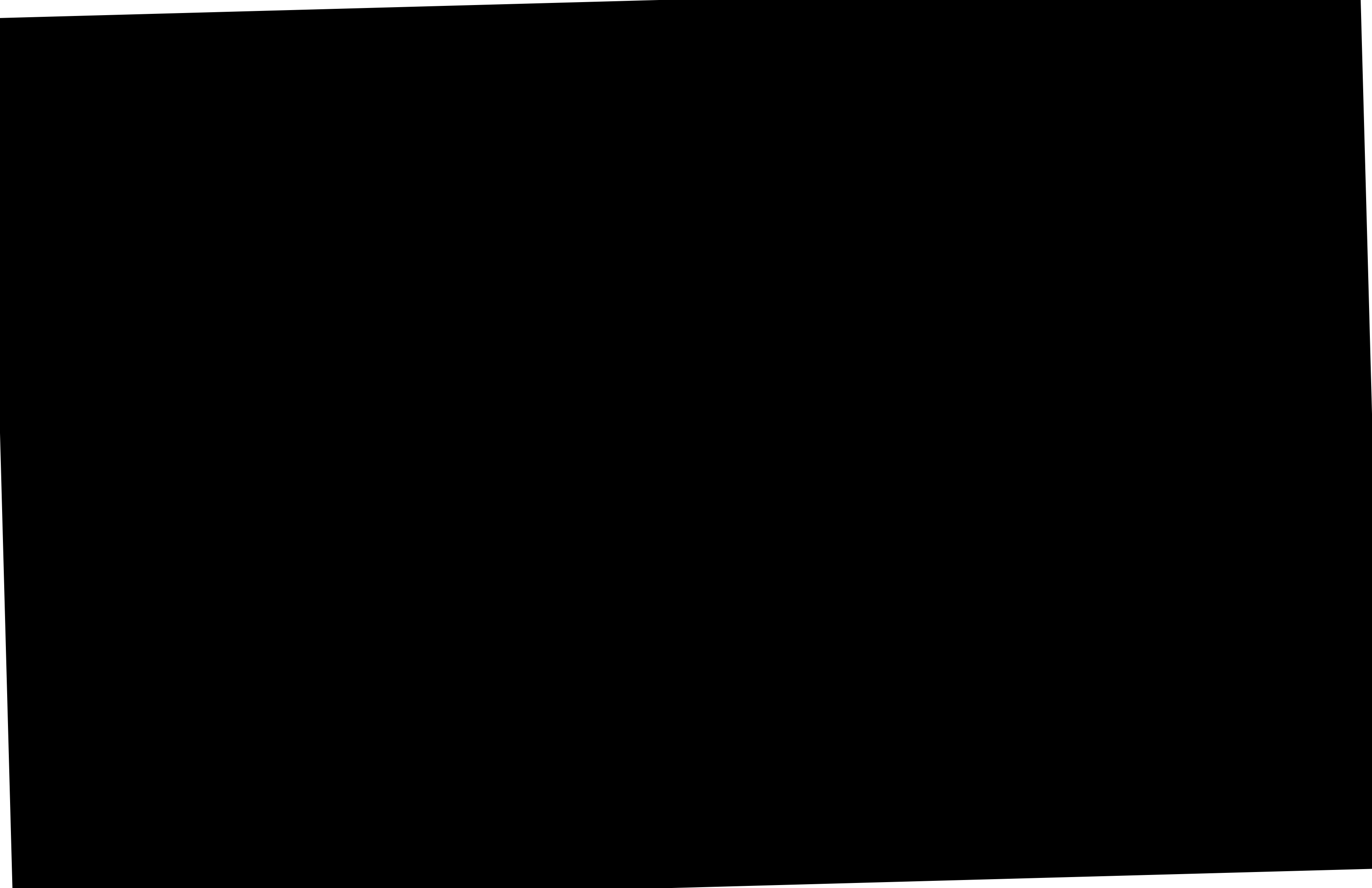






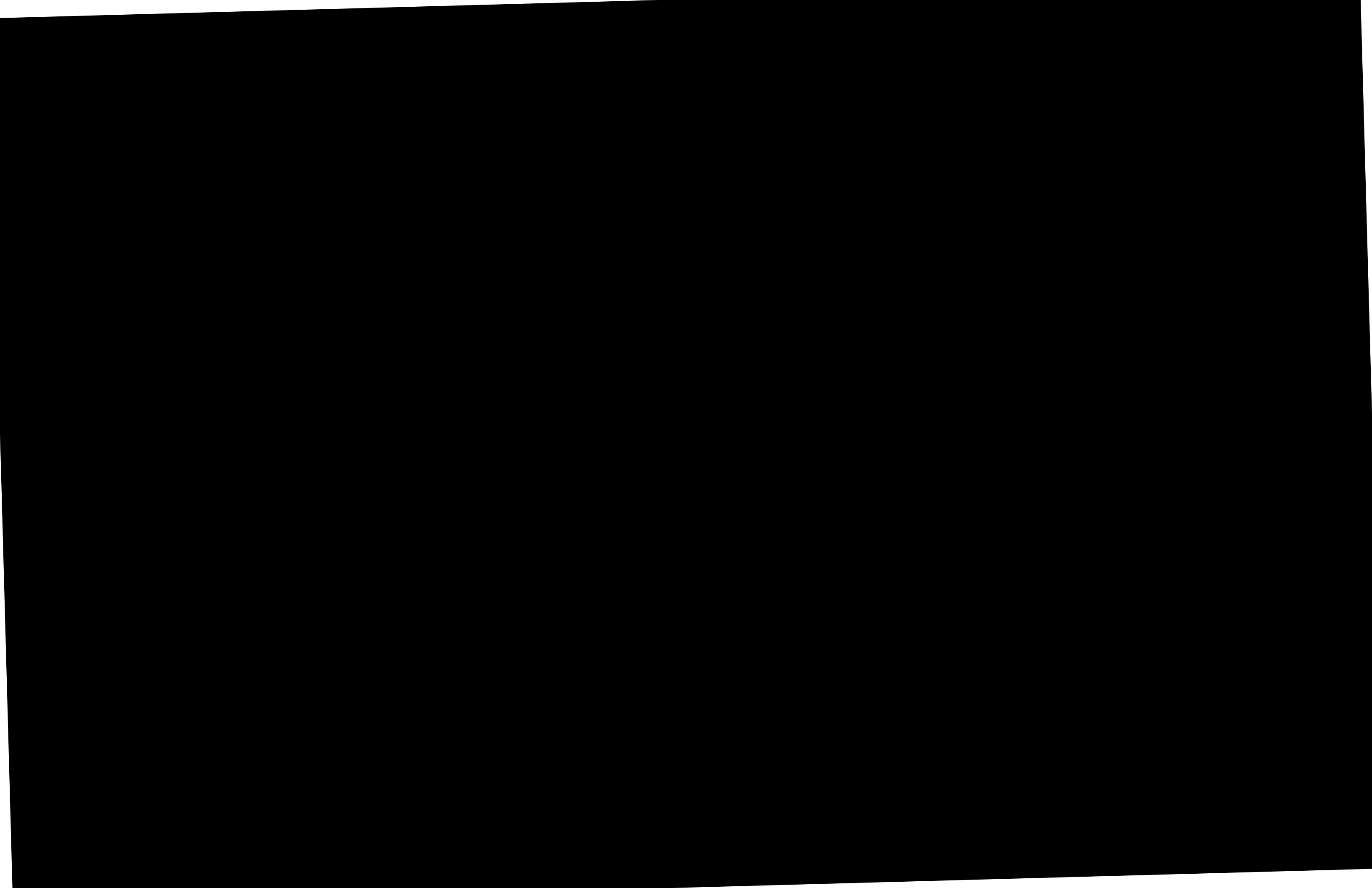


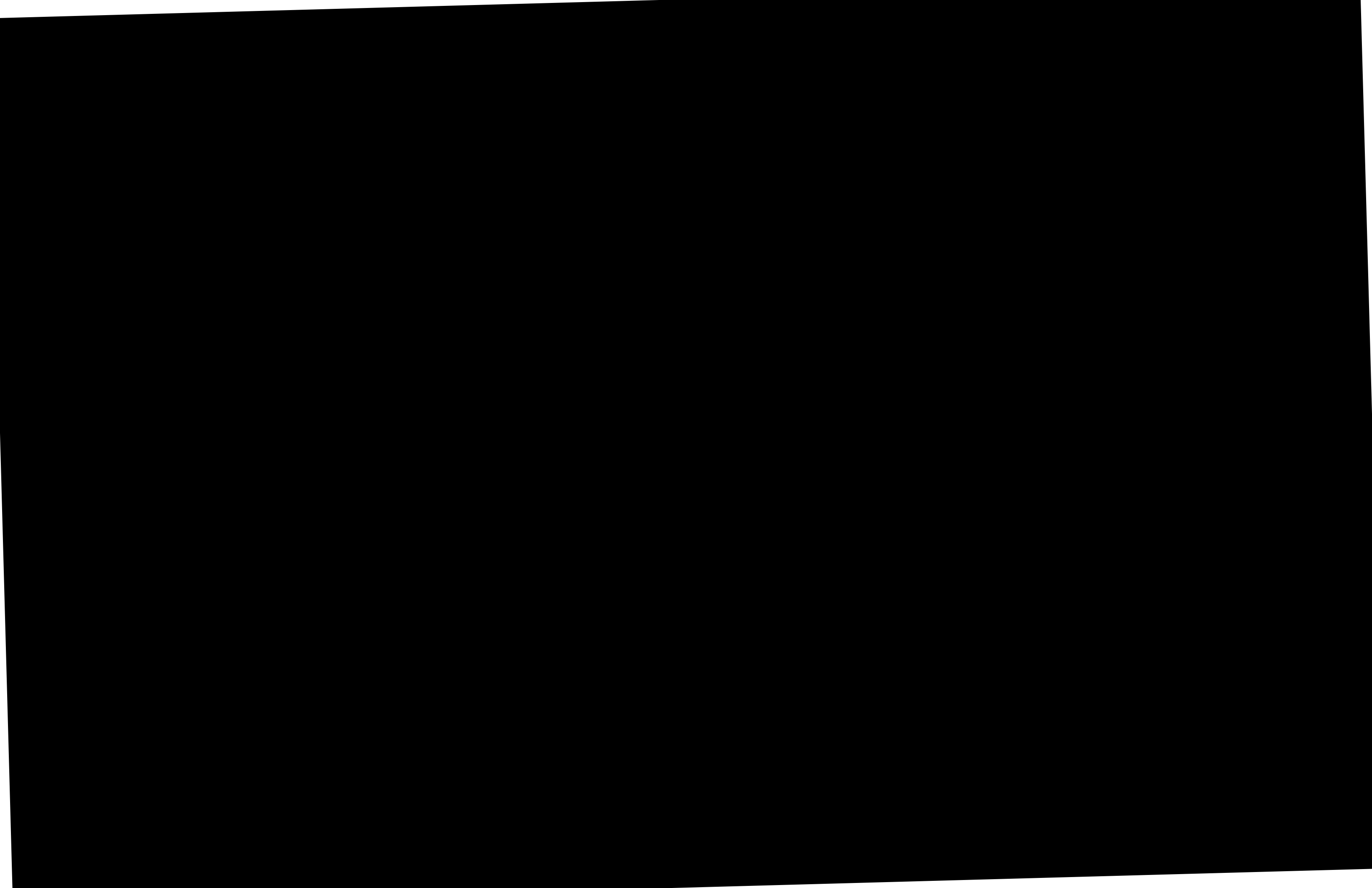




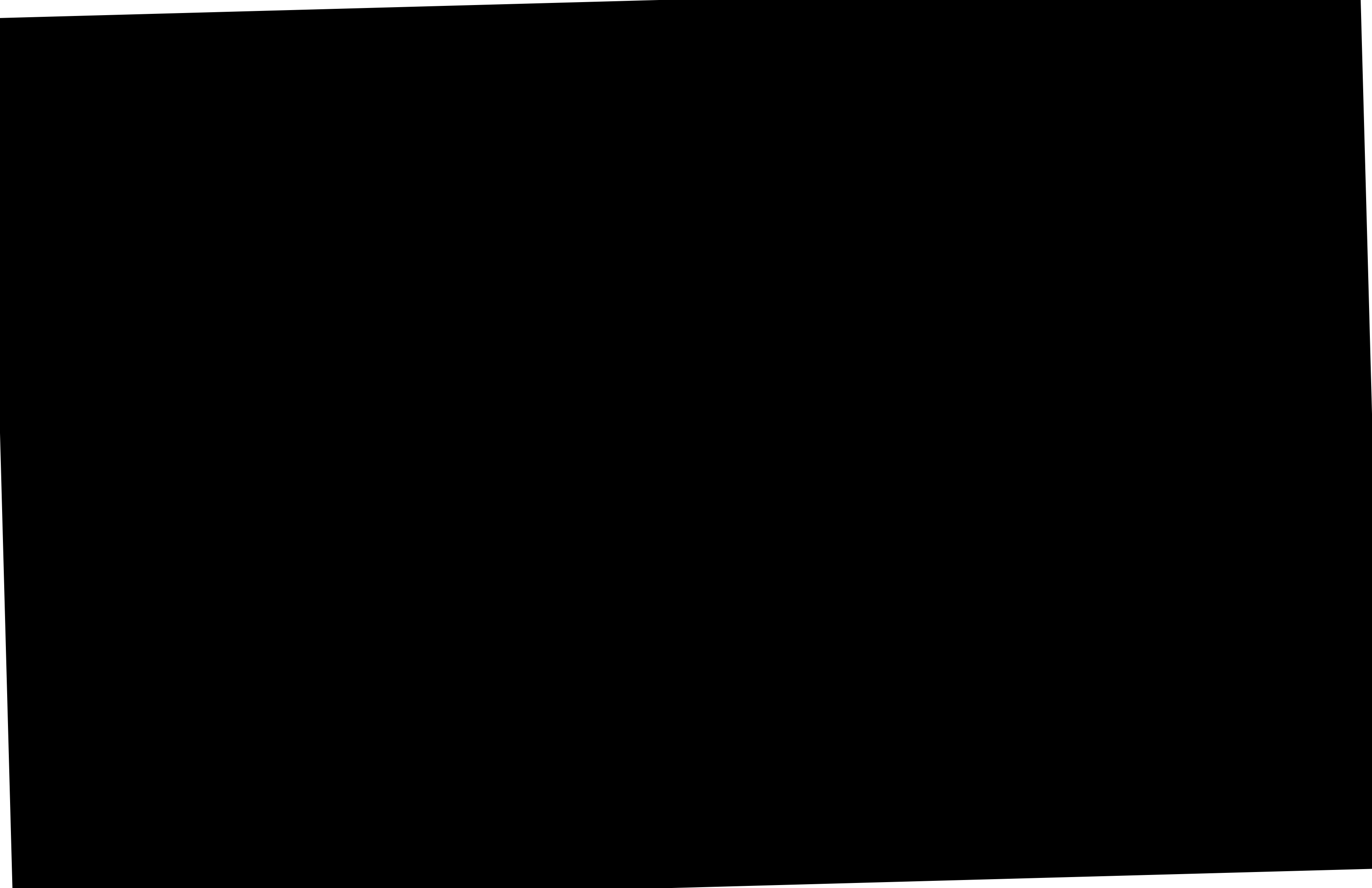








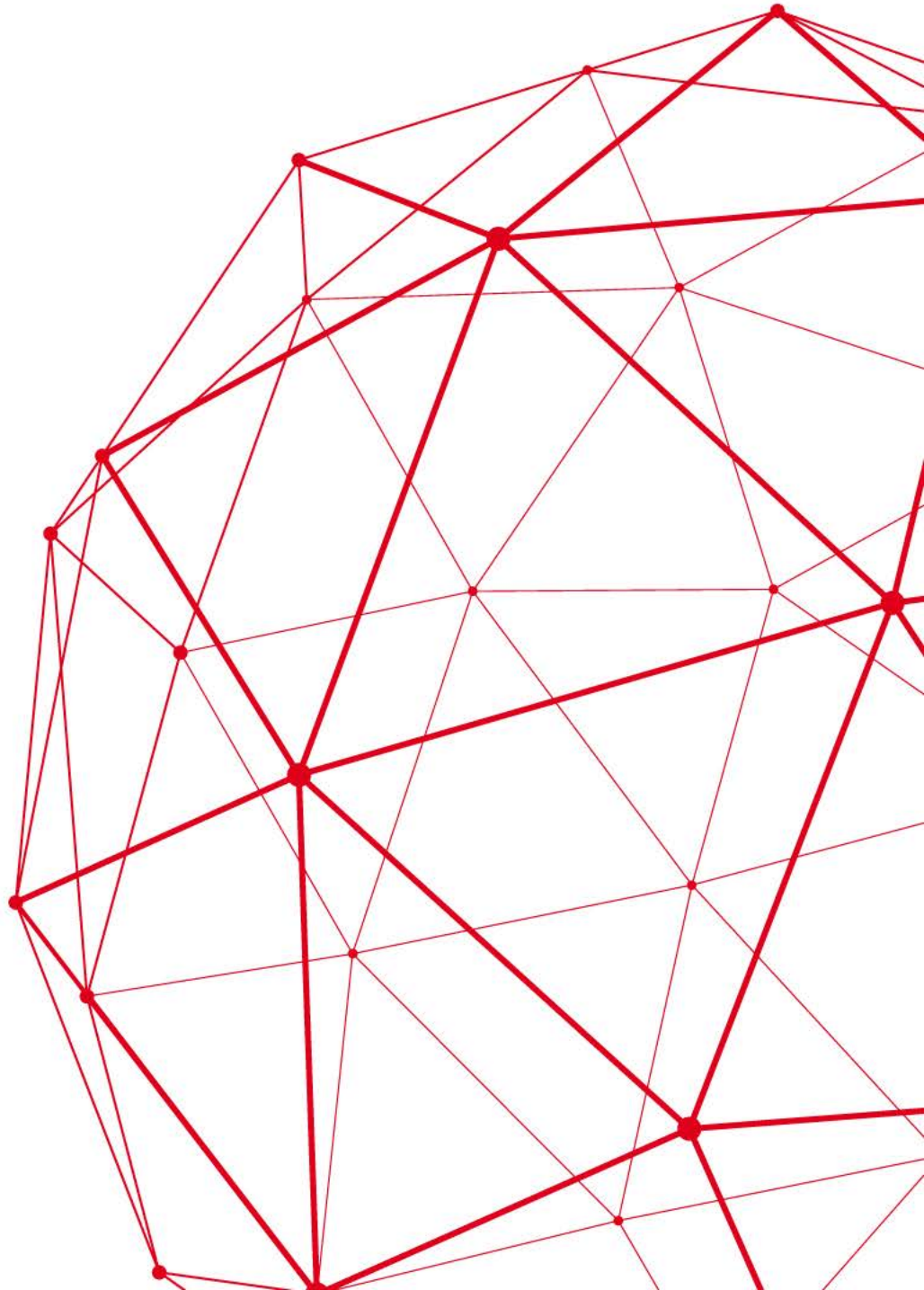








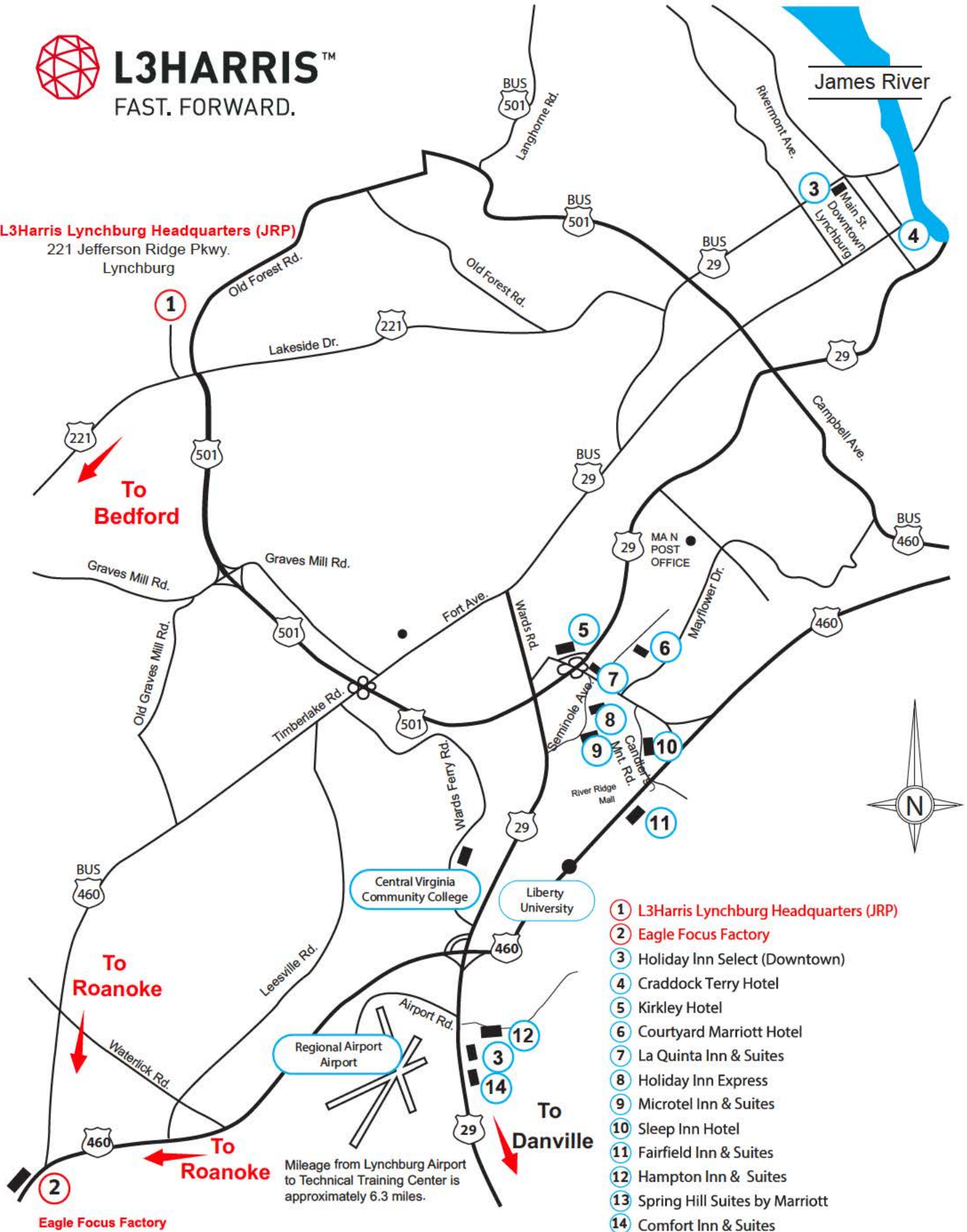
2020
TRAINING
CATALOG





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L3Harris Lynchburg Headquarters (JRP)
221 Jefferson Ridge Pkwy.
Lynchburg



Mileage from Lynchburg Airport to Technical Training Center is approximately 6.3 miles.

- ① L3Harris Lynchburg Headquarters (JRP)
- ② Eagle Focus Factory
- ③ Holiday Inn Select (Downtown)
- ④ Craddock Terry Hotel
- ⑤ Kirkley Hotel
- ⑥ Courtyard Marriott Hotel
- ⑦ La Quinta Inn & Suites
- ⑧ Holiday Inn Express
- ⑨ Microtel Inn & Suites
- ⑩ Sleep Inn Hotel
- ⑪ Fairfield Inn & Suites
- ⑫ Hampton Inn & Suites
- ⑬ Spring Hill Suites by Marriott
- ⑭ Comfort Inn & Suites

TRAINING DEPARTMENT MISSION

To deliver high-quality, performance-based training that gives our customers the knowledge and skills to effectively operate, manage and self-maintain their Harris communications network.



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2020 TECHNICAL TRAINING CATALOG

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2020 TECHNICAL TRAINING CATALOG

Introduction

Mission Statement

Our mission is to deliver high-quality, performance-based training that gives our customers the knowledge and skills to effectively operate, manage, and self-maintain their L3Harris communications network.

Purpose

This catalog is designed to provide you with information about our training services and to help you select the appropriate course of instruction for operating, managing, and maintaining your radio system. A brief description of each course is provided along with flowcharts that illustrate the recommended sequence of courses for management and maintenance training. Additionally, information is provided about L3Harris Technical University, our web-based training offering. A Training Registration Form and the 2020 Training Center Schedule are also included.

Customer Satisfaction

It is very important to the Training Team that our services meet and exceed customer expectations. To measure our performance, students complete a Class Evaluation Form after every training course. We are very proud of the fact that for greater than a decade our customer satisfaction rating has either met or exceeded our goal.

Technical Training Center

The L3Harris Technical Training Center is located at 221 Jefferson Ridge Parkway in Lynchburg, Virginia. The facility includes multiple radio systems dedicated to training, as well as well-equipped classrooms and laboratories to support hands-on training.

Training Methodology

To provide high-quality performance-based training, we develop and maintain our training courses using a systematic approach. This methodology identifies the training necessary for each job position and focuses on the performance of tasks. We design and develop training courses with explicit learning objectives and appropriate content. Training effectiveness is evaluated and the results are used to maintain and improve our training programs.

The systematic approach to training methodology also ensures that training is delivered in the most effective learning environment, such as a traditional or virtual classroom or laboratory, and a proper mixture of discussion, lecture, and hands-on training are used to provide optimal learning. In addition, we create easy-to-follow student materials that support the training and provide appropriate technical documentation.

Introduction (continued)

On-Site Training

In addition to the regularly scheduled open-enrollment courses delivered at the Technical Training Center in Lynchburg, most of the courses offered in this catalog can be conducted on site. Please refer to the *Course Listing* section of the catalog to see which courses are offered on site.

Courses can also be customized to meet specific customer training requirements. For example, we can combine training modules from the *RF Test & Troubleshooting* and *MASTR III Station Maintenance* courses into a single five-day course, which is not a standard course offering.

The customer must provide the facility and any tools and equipment needed to support the hands-on portion of the training, if conducted on-site.

On-site training prices can be found starting on page 46 of this catalog. On-site training courses are scheduled on mutually agreeable dates by the customer and L3Harris Training Manager.



More Information

For more information about our training programs, contact the Training Registrar or the Training Manager by e-mail at pspc_training@L3Harris.com or call 1-800-528-7711 (option #1).

2020 TECHNICAL TRAINING CATALOG

Course Listing

Our performance-based training focuses on three categories: management, maintenance and operation. Management training provides administrative and management personnel with the knowledge and skills to plan and manage the radio system. Maintenance training prepares a technician to perform preventive and corrective maintenance on radio system equipment. Operational training is designed for radio users and dispatchers to facilitate the transition to a new radio system.

The following table provides a list of standard training courses. The table includes the course number and the location where the training can be conducted as indicated by the course length.

P25 System Management Training	Course No.	Virtual Classroom	Training Center	On-Site
P25 Fleet Mapping Workshop	YTSN6A	-	-	4 days
Console Configuration	YTSN3H	-	-	2 days
P25 System Overview	YTSN4F	5 four-hour sessions	-	-
Unified Administration System	YTSN4G	3 four-hour sessions	-	2 days
Regional Network Manager	YTSN4H	2 four-hour sessions	-	2 days
P25 System Implementation Workshop	YTSN9N	-	5 days	-
Over-The-Air Rekeying (OTAR)	YTSN6C	-	-	1 day
ISSI Configuration & Administration	YTSN9L	-	-	1 day

P25 System Maintenance Training	Course No.	Training Center	On-Site
P25 System Maintenance	YTSN6D	7 days	7 days
Regional Network Manager	YTSN3V	2 days	2 days
Network Operation & Maintenance	YTSN3W	4 days	4 days
MASTR V Station Maintenance	YTSN8G	2 days	2 days
MASTR III Station Maintenance	YTSP3T	4½ days	3 days
P25 Simulcast System Maintenance	YTSN8H	3 days	3 days
P25 Master Technician	YTSN9T	4½ days	-

Operational Training	Course No.	Training Center	On-Site
Console Equipment Operator Training	YTSP5P	-	4 hours
User Equipment Operator Training	YTSP7R	-	2 – 8 hours
XL-200P Radio Programming & Operation	YTSN6X	2 days	2 days

2020 TECHNICAL TRAINING CATALOG

Course Listing (continued)

Core Training	Course No.	Training Center	On-Site
Introduction to Networking	YTSN2X	4½ days	4½ days
RF Test & Troubleshooting	YTSP5U	4½ days	4½ days
Advanced RF Fundamentals	YTSN3E	4½ days	4½ days
Grounding & Surge Suppression	YTSN5Y	-	2 days

Portable & Mobile Radio Maintenance Training	Course No.	Training Center	On-Site
XL-200P Radio Maintenance	YTSN4A	2 days	2 days
XL-200M Radio Maintenance	YTSN4V	2 days	2 days
OMAP Portable Radio Maintenance	YTSN8J	4½ days	4½ days
OMAP Mobile Radio Maintenance	YTSN8K	4½ days	4½ days
Mobile Radio Installation	YTSN7U	-	2 days

OpenSky System Management Training	Course No.	Training Center	On-Site
OpenSky System Administration	YTSN6E	-	3½ days
Console Configuration	YTSN3H	-	2 days
Unified Administration System	YTSN6B	-	2 days
Regional Network Manager	YTSN3V	-	2 days

OpenSky System Maintenance Training	Course No.	Training Center	On-Site
OpenSky Site Equipment Maintenance	YTSN5C	-	4 days
Regional Network Manager	YTSN3V	-	2 days
Network Operation & Maintenance	YTSN3W	-	4 days

Student Feedback

“The instructor was extremely helpful in clearly explaining a very complicated system. Great trainer who kept the class engaged.”

Course Listing (continued)

Tait-Powered DMR Tier III Training	Course No.	Training Center	On-Site
DMR Tier III Configuration & Maintenance	YTSN4J	-	5 days
DMR Tier III EnableFleet Configuration & Management	YTSN4K	-	5 days
DMR Tier III GridLink Configuration & Operation	YTSN4L	-	5 days

Tait-Powered P25 Conventional Training	Course No.	Training Center	On-Site
P25 Conventional Configuration & Maintenance	YTSN4M	-	5 days

Tait-Powered P25 Trunking Training	Course No.	Training Center	On-Site
P25 Trunking Configuration & Maintenance	YTSN4N	-	5 days
P25 Trunking EnableFleet Configuration & Management	YTSN4P	-	5 days
P25 Trunking KMF Configuration, Administration & Management	YTSN4R	-	5 days

Tait-Powered Analog Simulcast IP Training	Course No.	Training Center	On-Site
Analog Simulcast Configuration & Maintenance	YTSN4S	-	4 days



P25 System Management Training

Overview

P25 system administrators and managers have overall responsibility for defining and maintaining the system's configurable parameters. This role has evolved as radio systems have become larger and more complex. Their responsibilities include the following:

- Defining the fleet map
 - Defining wide-area roaming capabilities
 - Planning radio feature usage and personalities
 - Configuring dispatch consoles
 - Maintaining unit and group databases
 - Enabling and disabling subscriber units
 - Generating reports
 - Monitoring system performance
-

Blended Learning Approach

The recommended training program for P25 system administrators and managers uses a blended learning approach comprised of virtual classroom, traditional classroom, and asynchronous training.

Virtual classroom training is ideal for transferring knowledge when hands-on instruction isn't required and provides customers with a cost savings by eliminating travel and living expenses for the instructor and students. Additionally, we limit each virtual classroom session to four hours, allowing participants to perform their normal job duties during part of the day.

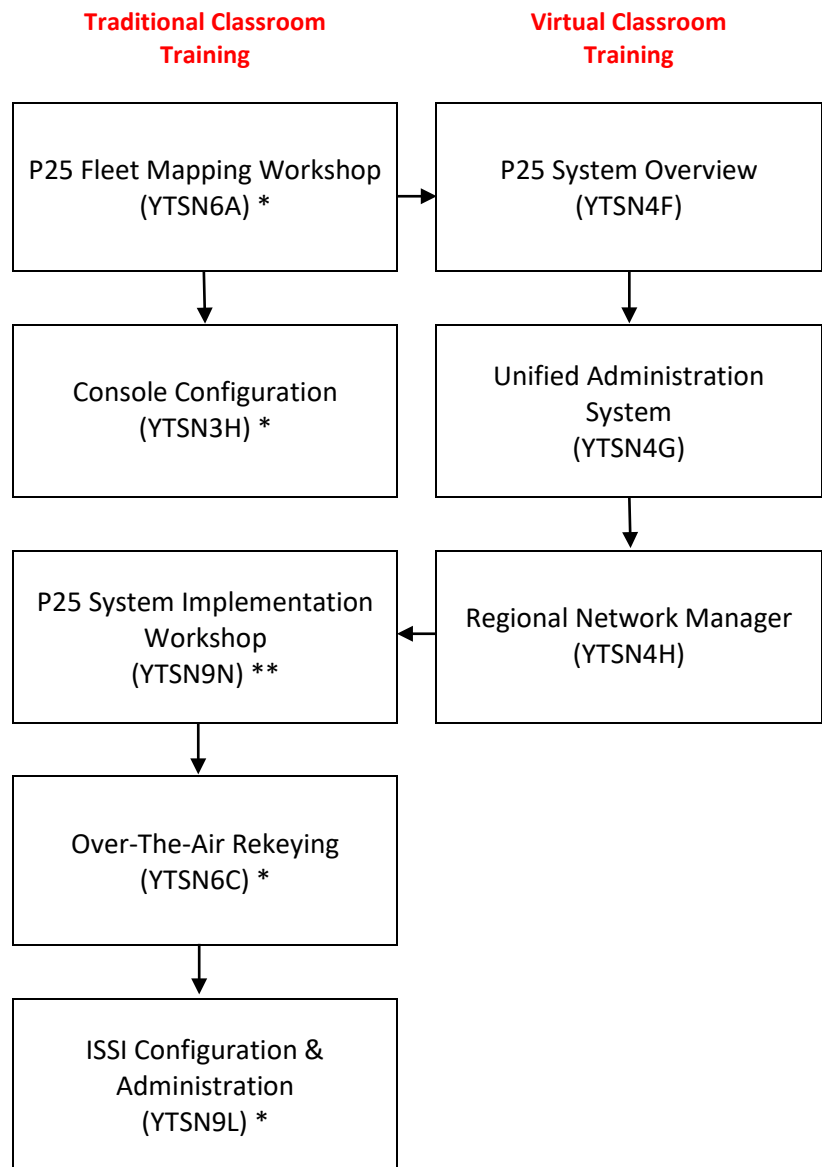
Traditional classroom training is used to conduct system planning workshops, train on special system features, and perform hands-on instruction. This training occurs at the L3Harris Technical Training Center in Lynchburg, Virginia or on-site at a customer facility.

Asynchronous training is self-paced web-based training hosted by L3Harris Technical University. It provides prerequisite training for both virtual and traditional classroom training, and provides just-in-time training on assorted subjects to assist system administrators and managers in performing their day-to-day duties.

P25 System Management Training (continued)

P25 System Management Training Program

The following figure illustrates the training program for P25 system administrators and managers, and the recommended sequence of completing the training, as applicable, using the blended learning approach.



* This course only occurs on-site at a customer facility.

** This course only occurs at the L3Harris Technical Training Center.

P25 System Management Training (continued)

P25 System Management Asynchronous Training

Students who register in the hands-on *P25 System Implementation Workshop* (YTSN9N) conducted in Lynchburg will receive one year of unlimited access to P25 System Management Asynchronous Training Package, which consists of the following training modules:

- P25 Fleet Mapping Overview
- XL-200P Radio Operation
- Symphony Console Operation
- Radio Programming Overview
- Radio Personality Manager (RPM and RPM 2)
- Advanced Access Control (AAC)
- Unified Administration System (UAS) Overview
- UAS “How to...”
- Regional Network Manager (RNM) Overview
- Active Directory
- Activity Warehouse
- Enterprise Network Manager (ENM) Overview
- Over-The-Air Programming (OTAP)
- Over-The-Air Rekeying (OTAR) Fundamentals
- OTAR “How to...”
- Inter-RF Subsystem Interface (ISSI) Fundamentals

These modules provide students with supplemental training to optimize learning during the *P25 System Implementation Workshop* and provide an on-the-job training aid. Additional self-paced training modules are added to the asynchronous training program for system administrators and managers, as developed, at no additional cost if you have an active account. The account can be renewed annually.

Bundled P25 System Manager Training Program

A person must complete multiple training courses to develop the required knowledge and skills to effectively perform day-to-day system management tasks. Attending training requires a time commitment by the employee and a financial commitment by the employer. Therefore, L3Harris offers a discount to reward our customers who are committed to training their personnel and makes it more affordable for people to complete a series of training activities to meet their responsibilities.

continued on next page

P25 System Management Training (continued)

Bundled P25 System Manager Training Program (continued)

The bundled P25 System Manager Training Program consists of one seat in the following virtual and traditional classroom courses:

- P25 System Overview (virtual classroom)
- Unified Administration System (virtual classroom)
- Regional Network Manager (virtual classroom)
- P25 System Implementation Workshop (traditional classroom and includes one year of unlimited access to the P25 System Management Asynchronous Training Package)

The total tuition if these courses are purchased individually is \$6,500.00. However, with this package you only pay \$5,850.00 for a savings of \$650.00. Use course number YTSN8L to purchase the bundled P25 System Manager Training Program.

The bundled P25 System Manager Training Program must be paid in full prior to attending the first course. Courses must be attended by the same student and must be attended within one year of purchase. The program price is not valid with any other discounts and is not retroactive.

P25 Fleet Mapping Workshop (YTSN6A)

This on-site workshop assists new customers in defining the system fleet map and planning radio personalities. The workshop begins with an abbreviated overview of the P25 system that focuses on system design and operation so that participants can make informed decisions about the fleet map. The workshop explores advantages of different talk group structures and configuration parameters (e.g., property classes, priority levels, etc.) associated with talk groups and radio users. We include discussion of other configuration options such as announcement groups and the workshop will also ensure definition of interoperability talk groups.

Did you know?

The transition to a P25 trunked radio system is facilitated by the energy and effort put into system planning during the P25 Fleet Mapping Workshop.

P25 System Management Training (continued)

Console Configuration (YTSN3H)

This on-site course provides system administrators and managers and dispatch supervisors with the knowledge and skills to configure the Symphony Dispatch Console to meet operational needs. The training includes a detailed operational overview that introduces participants to the various features and capabilities of the console. Participants will work within the Configuration Utility to explore the various settings and how these settings impact the operation of the console. With an understanding of the Configuration Utility settings, participants will have the requisite knowledge to define the parameters that best suit their operational needs.

P25 System Overview (YTSN4F)

This virtual classroom course provides system administrators and managers with an understanding of terminology, equipment, components, and operational processes associated with the P25 system. Topics include RF communication basics, VIDA network and site equipment, call processing, wide-area coverage solutions, interoperability, and much more. This course provides prerequisite knowledge for system management application training on the Unified Administration System and Regional Network Manager.

Unified Administration System (YTSN4G)

This virtual classroom course provides system administrators and managers with the knowledge to create and maintain system databases using the Unified Administration System (UAS). Course topics include logging into the UAS, establishing user accounts, navigating through the user interface, creating and changing parameter values, and adding/deleting radio users and talk groups.

The *P25 System Overview* (YTSN4F) virtual classroom course is a required prerequisite. Prior completion of the following asynchronous training courses is highly recommended: *P25 Fleet Mapping Overview*, *Unified Administration System (UAS) Overview*, and *Active Directory*.

Student Feedback

“Very good class. Instructor was challenging and knowledgeable. Highly recommend.”

P25 System Management Training (continued)

Regional Network Manager (YTSN4H)

This virtual classroom course provides system administrators and managers with the knowledge to monitor and manage the P25 system using the Regional Network Manager (RNM). Course topics include system access, monitoring the status of system equipment, identification and acknowledgement of system faults, historical views of system performance, and exploring real-time viewers.

The *P25 System Overview* (YTSN4F) virtual classroom course is a required prerequisite. Prior completion of the following asynchronous training courses is highly recommended: *Regional Network Manager (RNM) Overview* and *Active Directory*.

P25 System Implementation Workshop (YTSN9N)

This hands-on workshop allows participants to implement the knowledge acquired during prerequisite virtual classroom and asynchronous training. The workshop begins with students completing structured hands-on exercises on the Unified Administration System (UAS), Regional Network Manager (RNM), and radio programming.

Participants then divide into teams to plan, implement, and operate the Training Center's P25 radio system based on the communication requirements of an imaginary town. Activities include defining a fleet map, planning radio personalities, establishing UAS databases, configuring dispatch consoles, programming radios, and operating the system.

Since this workshop is primarily hands-on and builds upon previously acquired knowledge, it is important for students to meet the prerequisites for optimal learning and to gain the most benefit from this course.

The *P25 System Overview* (YTSN4F), *Unified Administration System* (YTSN4G) and *Regional Network Manager* (YTSN4H) virtual classroom courses are required prerequisites. Additionally, prior completion of the following asynchronous training modules is highly recommended:

- Radio Programming Overview
 - Radio Personality Manager 2 (RPM 2)
 - Advanced Access Control (AAC)
 - Symphony Dispatch Console Operation
 - XL-200P Radio Operation
-

P25 System Management Training (continued)

Over-The-Air Rekeying (YTSN6C)

This on-site course provides system administrators and managers with the knowledge and skills to manage encryption keys using the Key Management Facility (KMF) product in a P25 network. This includes defining Crypto Officer Administration classes and user privileges; managing Crypto Officer user accounts; configuring crypto nets; and rekeying talk groups, users and system keys using the Unified Administration System (UAS).

The *P25 System Overview* (YTSN4F) and *Unified Administration System* (YTSN4G) virtual classroom courses are recommended prerequisites.

ISSI Configuration & Administration (YTSN9L)

This on-site course provides system administrators and managers with the knowledge and skills to configure and implement the Inter-RF Subsystem Interface (ISSI) using the Unified Administration System (UAS). Course topics include configuring the UAS for local and foreign ISSI gateways, creating an ISSI Region, establishing System Assigned ID (SAID) ranges for foreign talk groups and users, determining shared users and talk groups available to foreign systems, and creating foreign user permission templates.

The *P25 System Overview* (YTSN4F) and *Unified Administration System* (YTSN4G) virtual classroom courses are recommended prerequisites.

Student Feedback

“The instructor was clear, knowledgeable and concise. I wish I would have had this training sooner. I would highly recommend the instructor and class to my peers and anyone else looking to understand the system.”

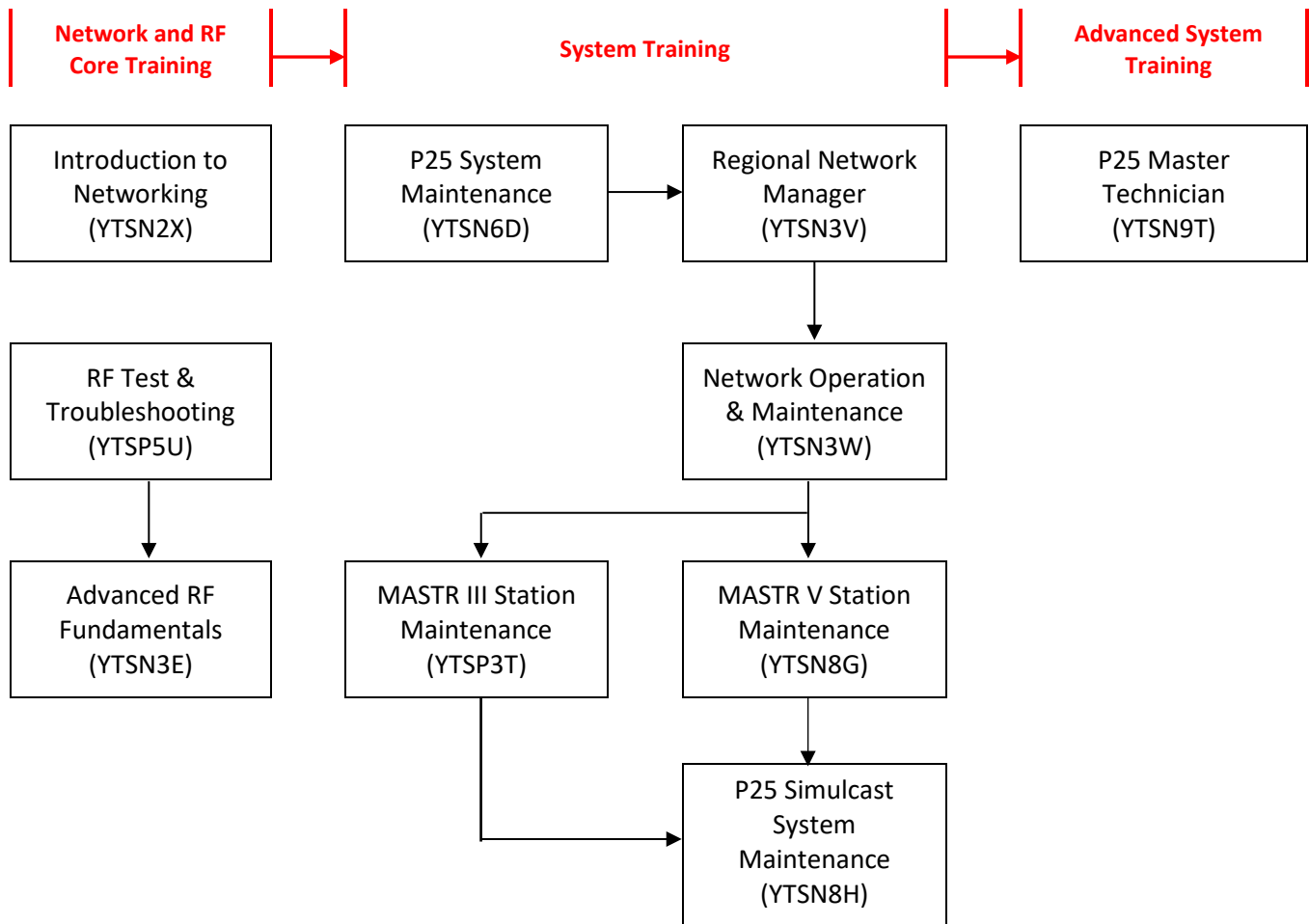
P25 System Maintenance Training

Overview

A P25 system maintenance technician must be familiar with all aspects of system operation and maintenance. This includes both site equipment and the VIDA IP network. System maintenance training provides technicians with the knowledge and skills needed to conduct preventive maintenance, troubleshoot problems, and take corrective action.

P25 System Maintenance Training Flowchart

The following flowchart illustrates the sequence and recommended courses for a P25 system maintenance technician. It is recommended that technicians begin their instruction by attending network and RF core training courses, which provide a technician with a solid foundation of IP network and RF knowledge that subsequent system and advanced network training will build upon.



P25 System Maintenance Training (continued)

Bundled P25 System Maintenance Training Program

A person must complete multiple training courses to develop the required knowledge and skills to effectively perform preventive and corrective system maintenance. Attending training requires a time commitment by the employee and a financial commitment by the employer. Therefore, L3Harris offers a training discount to reward our customers who are committed to training their personnel and makes it more affordable for people to complete a series of training activities to meet their responsibilities.

The bundled P25 System Maintenance Training Program consists of one seat in the following open-enrollment training courses attended in Lynchburg:

- P25 System Maintenance
- Regional Network Manager
- Network Operation & Maintenance

The total tuition if these courses are purchased individually is \$5,980.00. However, with this package you only pay \$5,083.00 for a savings of \$897.00. Use course number YTSN8N to purchase the bundled P25 System Maintenance Training Program.

The bundled P25 System Maintenance Training Program must be paid in full prior to attending the first course. Courses must be attended by the same student and must be attended within one year of purchase. The program price is not valid with any other discounts and is not retroactive.

P25 System Maintenance (YTSN6D)

This course provides maintenance technicians with an understanding of the terminology, equipment, and operational processes associated with the L3Harris P25 trunked radio network. It provides technicians with the basic knowledge and skills needed to conduct preventive maintenance, troubleshoot problems, and take corrective action. Course topics include an overview of P25 system operation and configurations, a comparison of P25 Phase I and Phase II operation, configuration of site equipment using VIDA Device Manager, basic radio programming, and operation and configuration of dispatch consoles. This course is a prerequisite for all other P25 system maintenance courses.

P25 System Maintenance Training (continued)

Regional Network Manager (YTSN3V)

This course provides technicians with the ability to monitor and troubleshoot the system using the Regional Network Manager (RNM). Course topics include system access, monitoring the status of system equipment, identification and acknowledgement of system faults, historical views of system performance, and exploring real-time viewers. Additionally, technicians are introduced to Activity Warehouse, a system report generating application. Completion of the *P25 System Maintenance* (YTSN6D) course is a prerequisite.

Network Operation & Maintenance (YTSN3W)

This course introduces maintenance technicians to basic networking concepts and provides them with the ability to maintain the IP network and VIDA Application Server (VAS). Topics covered include IP addressing and basic routing, database backup and storage, router and switch configuration management, VAS configuration and failover operation, and disaster recovery of network components. Completion of the *Regional Network Manager* (YTSN3V) course is a prerequisite. Additionally, the *Introduction to Networking* (YTSN2X) course is a highly-recommended prerequisite for individuals who have never had any formal network training.

MASTR V Station Maintenance (YTSN8G)

This course covers the theory of operation and maintenance procedures for the MASTR V Station used in the P25 radio system. Topics covered include station architecture, module overview, software overview, network configuration, station configuration, troubleshooting and testing. Completion of the *P25 System Maintenance* (YTSN6D) and *Network Operation & Maintenance* (YTSN3W) courses are recommended prerequisites.

MASTR III Station Maintenance (YTSP3T)

This course covers the theory of operation and maintenance procedures for the MASTR III Station that is used in either a conventional or trunked configuration. Frequency bands covered include VHF-HI, UHF, and 800 MHz. Hands-on laboratory exercises on testing and aligning RF modules, and setting station levels allow for optimal learning. This includes performing bench alignments utilizing the TQ0650 test fixture, as well as field alignments and frequency changes utilizing RF module extender cards. Prior completion of the *RF Test & Troubleshooting* (YTSP5U) and *Advanced RF Fundamentals* (YTSN5E) courses is highly recommended.

P25 System Maintenance Training (continued)

P25 Simulcast System Maintenance (YTSN8H)

This course provides technicians with the knowledge and skills to operate, maintain, and troubleshoot a P25 simulcast system. Topics include simulcast system operation and concepts, such as capture and non-capture zones and delay spread, signal flow, GPS timing synchronization and alignment, Distributed Control Point architecture and configuration, bypass operation, and system troubleshooting and replacement of failed components. Prior completion of the *P25 System Maintenance* (YTSN6D) and *MASTR V Station Maintenance* (YTSN8G) courses is a prerequisite.

P25 Master Technician (YTSN9T)

This hands-on course focuses on advanced topics and system troubleshooting techniques for experienced P25 system technicians. Procedures to monitor, analyze, and isolate problems are discussed and practiced using the Training Center's radio system. Actual faults are installed in the system to simulate typical on-the-job scenarios. At least six months of hands-on experience maintaining a P25 system, and completion of *P25 System Maintenance* (YTSN6D), *Regional Network Manager* (YTSN3V), *Network Operation & Maintenance* (YTSN3W), and either *MASTR III Station Maintenance* (YTSP3T) or *MASTR V Station Maintenance* (YTSN8G) courses are mandatory prerequisites for this training.



Operational Training

Overview

Operational training provides dispatch personnel and radio users with the knowledge and skills to operate their respective dispatch consoles and terminal products, and includes a course on radio programming.

Dispatch personnel are at the core of effective and efficient implementation of a radio system. While the time required for training is minimal, the payback is immense. A solid understanding of both console and system operation is required to effectively train dispatch personnel on the operation of a dispatch console. Therefore, our instructor conducts dispatch console operational training directly for dispatchers and their supervisors. A train-the-trainer format is not recommended.

The importance of field equipment users understanding basic system operation and the operation of their portable and/or mobile radios must not be underestimated. We offer two options for providing user equipment operator training: train-the-user and train-the-trainer.

During radio programming training, participants learn to create a radio personality that meets operational requirements and is user friendly to facilitate effective communications.

Console Equipment Operator Training (YTSP5P)

This course provides dispatchers and their supervisors with the knowledge and skills to operate the Symphony Dispatch Console. The customer's operational consoles are used during this training. The training includes a discussion on the differences between conventional and trunked radio systems, if applicable, an overview of the customer's system, and basic system operation. The training is held in small groups with no more than two people on an operating console. This maximizes the effectiveness of the hands-on portion of the training. Each training session is four hours in length.

User Equipment Operator Training (YTSP7R)

We offer two options for providing user equipment operator training: train-the-user and train-the-trainer. The train-the-user option uses our instructors to conduct training directly to field personnel on the operation of the portable and mobile radios to be used in the system. The train-the-trainer option uses our instructors to conduct training for designated customer trainers who then instruct the rest of the radio users.

continued on next page

Operational Training (continued)

User Equipment Operator Training (continued)

Each of these options has certain benefits. The train-the-user option has the following benefits:

- Our instructors are training professionals who know how to transfer knowledge and skills to adults.
- Our instructors have the technical competency to answer radio and system operational questions with accuracy and confidence.
- Our instructors are motivated to perform this task.

There are two main benefits from using the train-the-trainer approach.

- The train-the-trainer approach is more cost effective. It takes less time for L3Harris to train designated customer trainers than it does for our instructors to directly instruct all end users.
- Designated customer trainers are more knowledgeable about the daily operation of their agencies and have an established relationship with the end users.

The following topics are included in both options:

- A comparison of conventional and trunked operation, and analog and digital voice (as applicable)
- An overview of the customer's radio system
- A description of system operation including failure modes
- A discussion of radio/system coverage expectations
- A demonstration of radio operation including proper radio use
- Hands-on practice with the radios
- A discussion of basic radio care including battery maintenance

Train-the-user sessions are typically two-to-four hours in length to ensure adequate time for questions and answers. Participants are provided with high-quality, customized handouts for their respective radios for optimal learning.

Train-the-trainer sessions are typically one day in length. Customer trainers are provided with hard and soft copies of customized presentation material to allow for additional customization, if desired.

Operational Training (continued)

XL-200P Radio Programming & Operation (YTSN6X)

This course provides in-depth instruction on programming and operating the XL-200P radio for system administrators, technicians, and anyone else who needs the knowledge and skills to create a radio personality to meet operational needs. Although the course focuses on the XL-200P radio when attended at the L3Harris Technical Training Center, it is beneficial for anyone who needs to learn radio programming using the Radio Personality Manager 2 (RPM 2) application.

In this course, participants learn the process of creating a master radio personality using RPM 2. This includes creating frequency and group sets to build “systems/zones,” and selecting radio options (i.e., power-up options, display settings, alert tones, timer settings, emergency features, supervisory features, etc.). The operational impact of selecting different options is explored and the modification of existing radio personalities is addressed. The training also includes manually generating and loading encryption keys using the Key Manager application.

If conducted on site, the training can be customized based on the specific radio models used by the customer. The training will use equipment and software (e.g., radios, computers, programming cables, key loaders, etc.) provided by the customer. It is essential that at least one computer, loaded with the applicable software, is provided for every two participants for optimal learning.

Student Feedback

“Even with all our questions, the instructor kept us focused. This was a great class.”

Network & RF Core Training

Overview

L3Harris's VIDA network architecture requires radio system technicians and administrators to have a solid understanding of IP networks. The *Introduction to Networking* (YTSN2X) course provides participants with fundamental knowledge of IP networks.

RF core training provides a technician with a solid RF foundation that system and terminal product maintenance training courses will build upon. This training is applicable to any trunked or conventional system configuration and consists of the following courses:

- RF Test & Troubleshooting (YTSP5U)
 - Advanced RF Fundamentals (YTSN3E)
 - Grounding & Surge Suppression (YTSN5Y)
-

Introduction to Networking (YTSN2X)

This course is for system technicians and administrators, and anyone else who requires a solid understanding of the fundamental principles of installing and supporting networks. This course is based upon the CompTIA Network+ certification learning objectives. Topics include network media and devices; addressing and routing; network applications; network security; and network management, monitoring, and troubleshooting.

In addition to building a solid knowledge foundation of networking principles, this course will help prepare an individual to achieve CompTIA Network+ certification. This certification ensures that the successful candidate has the important knowledge and skills necessary to manage, maintain, troubleshoot, install, operate and configure basic network infrastructure.

This course is a highly-recommended prerequisite for individuals who have never had any formal network training and plan to attend the *Network Operation & Maintenance* (YTSN3W) course.

RF Test & Troubleshooting (YTSP5U)

This course is highly recommended for technicians who have never had formal training on standard tests for two-way radios. Participants learn how to conduct and interpret the results of both standard transmitter and receiver tests in accordance with the standards published by the Electronic Industries Association (EIA). Technicians will gain knowledge and experience in operating test equipment and following procedures to test two-way radios using a systematic approach to troubleshooting. Prerequisite knowledge of basic electronics, major two-way FM radio components, and common test equipment are highly recommended.

Network & RF Core Training (continued)

Advanced RF Fundamentals (YTSN3E)

This course provides technicians with the fundamental knowledge and skills needed to maintain a two-way radio system by exploring the radio's environment. This includes radio frequencies, lightning, grounding, telephone lines, and station control. The performance of the RF carrier for different frequency bands through cables, antennae, and the airway is evaluated. Technicians will learn about RF propagation and system coverage expectations, as well as problems (i.e., intermodulation, frequency congestion and desensitization) and solutions in the RF environment. Hands-on exercises include tuning cavities, combiners, and duplexers. The course also includes a discussion and hands-on exercises on telephone line characteristics and requirements with emphasis on E&M, tone, and DC station control. Prior completion of the *RF Test & Troubleshooting* (YTSP5U) course is highly recommended.

Grounding & Surge Suppression (YTSN5Y)

This course covers the bases of the L3Harris grounding and surge suppression guidelines. Topics include lightning basics; site design to minimize susceptibility to lightning damage; buried ground system components and installation techniques; exterior radio site grounding; interior single point grounding; AC and DC power system grounding; surge suppression types and proper location for maximum effectiveness; special grounding situations such as roof-tops and dispatch centers; soil resistivity testing; ground system testing; and site grounding preventive maintenance and inspection. The course includes a site visit and hands-on training with ground testing equipment to allow technicians to become familiar with the equipment and different test techniques.

Student Feedback

"Amazing instructor and has limitless knowledge. Answered all questions and concerns."

Portable & Mobile Radio Maintenance Training

Overview

Bench technicians responsible for maintaining portable and mobile radios should first complete the *RF Test & Troubleshooting* (YTSP5U) course, which is part of the RF Core Training program, and then attend applicable radio maintenance courses.

Radio maintenance courses are available on the XL family of portable and mobile radios, and portable and mobile radios that use Open Multimedia Application Platform (OMAP) microprocessors. Radios that use OMAP microprocessors, such as the XG-75P and XG-75M, have common software and similar maintenance procedures, which allows us to deliver training on the portable families of radios in one course and the mobile families of radios in a second course. Radio maintenance training is based on the field serviceability plan established for that specific radio.

XL-200P Radio Maintenance (YTSN4A)

This course provides technicians with the knowledge and skills to program, test and maintain the XL-200P portable radio in accordance with the maintenance manual. Upon completion of the training, technicians will be able to install a maintenance personality into the radio for use during standardized testing; setup and perform standard transmitter and receiver tests on the radio using a P25-capable service monitor; disassemble and reassemble the radio; install the LTE module into the radio; perform automatic test and alignment on the radio using the Cobham (Aeroflex) 3920B service monitor and Auto Test software; perform select alignments independent of the AutoTest software; and upgrade the software in the radio. This course is also applicable to the XL-185P portable radio.

XL-200M Radio Maintenance (YTSN4V)

This course will provide technicians with the knowledge and skills to maintain the XL family of mobile radios to include the XL-200M and the XL-185M. During this course, technicians will learn how to program, operate, and maintain the XL mobile radio. Hands-on exercises include programming the radio for manual testing, and conducting standard transmitter and receiver performance tests using a P25-capable test set. Radio alignment will be reviewed and conducted per the field serviceability plan of the radio using communication test equipment that supports L3Harris automatic testing and tuning. Technicians will also learn how to perform software maintenance and will be fully prepared to conduct any field maintenance on an XL mobile radio.

Portable & Mobile Radio Maintenance Training (continued)

OMAP Portable Radio Maintenance (YTSN8J)

This course provides in-depth discussion and hands-on exercises to maintain L3Harris portable radios that utilize Open Multimedia Application Platform (OMAP) microprocessors. Technicians will participate in classroom presentations and discussions on radio programming for testing as well as radio personality modification to meet specific needs. Radio disassembly will be demonstrated and discussed, and field replaceable parts and service tools will be identified. Individual radio field serviceability plans including field replaceable modules and components will be covered. Hands-on exercises include radio programming, testing, and maintenance to the level authorized by the field serviceability plan.

OMAP Mobile Radio Maintenance (YTSN8K)

This course provides in-depth discussion and hands-on exercises to maintain L3Harris mobile radios that utilize Open Multimedia Application Platform (OMAP) microprocessors. Installation of the mobile radios, including the CH721 and CH25 control units, will be discussed. Technicians will participate in classroom presentations and discussions on radio programming for testing as well as personality modification to meet specific needs. Disassembly of the radios and control units will be demonstrated and discussed, and field replaceable parts and service tools will be identified. Individual radio field serviceability plans including field replaceable modules and components will be covered. Hands-on exercises include radio wiring installation, programming, testing, and maintenance to the level authorized by the field serviceability plan.

Mobile Radio Installation (YTSN7U)

This course is designed for personnel tasked with the installation of mobile radios in a typical land vehicle, which excludes trains, buses, fuel or munitions vehicles. Course topics include installation planning and preparation; safety considerations; pre-installation tasks; installation of the antenna, cables, radio, and control head; and post-installation inspection, testing, and troubleshooting. Additionally, installers will learn about basic radio operation, and programming software applications and personalities. This course can be customized for a specific mobile radio operating in a specific system configuration.

Portable & Mobile Radio Maintenance Training (continued)

On-Site Radio Maintenance Training

Customized on-site training is available on portable and mobile terminal products including those not covered in standard courses offered in Lynchburg. This includes legacy radios such as the P7100 and M7100 models.

The customer must provide the facility, and any tools and equipment needed to support the hands-on portion of the training for on-site radio maintenance training. Contact the Training Manager for further information.



OpenSky System Management Training

Overview

OpenSky system administrators and managers have the overall responsibility for defining and maintaining the system's configurable parameters. This role has evolved as radio systems have become larger and more complex. The responsibilities include the following:

- Defining wide-area roaming capabilities
 - Planning radio feature usage and profiles/personalities
 - Configuring dispatch consoles
 - Maintaining unit and group databases
 - Enabling and disabling subscriber units
 - Generating reports
 - Monitoring system performance
-

OpenSky System Administration (YTSN6E)

This course is strongly recommended for individuals responsible for system implementation and management. It provides an understanding of terminology, equipment, components, and operational processes associated with OpenSky. The topics covered include radio personalities, system database configuration options, fleet mapping, and implementation processes.

Console Configuration (YTSN3H)

This course provides dispatch supervisors and system administrators and managers with the knowledge and skills to configure the Symphony Dispatch Console including operational functions and screen layout. Participants learn how to setup the operation and layout of the console using the applicable configuration program.

Unified Administration System (YTSN6B)

The purpose of this course is to provide system administrators and managers with the ability to create and maintain system databases using the Unified Administration System (UAS). This hands-on course requires an in-depth understanding of the job functions within the customer's organization as well as an operational understanding of the radio system. Course topics include logging into the UAS, establishing user accounts, navigating through the user interface, creating and changing parameter values, and adding/deleting radio users and talk groups. Completion of the OpenSky System Administration (YTSN6E) course is a prerequisite.

OpenSky System Management Training (continued)

Regional Network Manager (YTSN3V)

This course provides system administrators and managers with the ability to monitor and manage the system using the Regional Network Manager (RNM). Course topics include system access, monitoring the status of system equipment, identification and acknowledgement of system faults, historical views of system performance, exploring real-time viewers, and running activity and status reports on system performance.



OpenSky System Maintenance Training

Overview

An OpenSky system maintenance technician must be familiar with all aspects of system operation and maintenance. System maintenance training provides technicians with the knowledge and skills needed to conduct preventive maintenance, troubleshoot problems, and take corrective action.

OpenSky Site Equipment Maintenance (YTSN5C)

The purpose of this course is to provide technicians with the ability to troubleshoot and perform field-replaceable unit level maintenance on OpenSky high-profile and pole-mount site equipment. The equipment includes the Base Station Transceiver (BSX), Base Station Controller (BSC), High Power Amplifier (HPA) with duplexer or preselector/low noise amplifier, and associated base site backhaul and access routers. The course reviews system architecture, features, configuration, and field maintenance procedures.

Regional Network Manager (YTSN3V)

This course provides technicians with the ability to monitor and troubleshoot the system using the Regional Network Manager (RNM). Course topics include system access, monitoring the status of system equipment, identification and acknowledgement of system faults, historical views of system performance, exploring real-time viewers, and running activity and status reports on system performance.

Network Operation & Maintenance (YTSN3W)

This course introduces maintenance technicians to basic networking concepts and provides them with the ability to maintain the IP network and VIDA Application Server (VAS). Topics covered include IP addressing and basic routing, database backup and storage, router and switch configuration management, VAS configuration and failover operation, and disaster recovery of network components. Completion of the *Regional Network Manager* (YTSN3V) course is a prerequisite. Additionally, the *Introduction to Networking* (YTSN2X) course is a highly-recommended prerequisite for individuals who have never had any formal network training.

Tait-Powered DMR Tier III Training

Overview

The following three courses are recommended for network managers, communication engineers, technical support personnel, and maintenance technicians on the Tait-powered DMR Tier III system solution:

- DMR Tier III Configuration & Maintenance
- DMR Tier III EnableFleet Configuration & Management
- DMR Tier III Gridlink Configuration & Operation

Please note that on-site delivery of the *DMR Tier III EnableFleet Configuration & Management* and *DMR Tier III Gridlink Configuration & Operation* courses can each be reduced from 5 days to 2½ days if conducted consecutively with the *DMR Tier III Configuration & Maintenance* course.

DMR Tier III Configuration & Maintenance (YTSN4J)

This course provides participants with a working knowledge of setting up and supporting the operation of the Tait-powered DMR Tier III system. The course will help students become familiar with the key features of their new system. Topics include fleet management, mobile and portable radio configuration as well as network features, diagnostics, and basic maintenance.

Upon completion of this course, participants will be able to:

- Describe DMR subscriber numbering.
 - Describe DMR call features.
 - Demonstrate basic use of the subscriber unit programming software.
 - Use the programming software to configure a subscriber unit to operate on a trunked network.
 - Successfully upgrade the firmware in a subscriber unit.
 - Describe features and architecture of the TB9300.
 - Demonstrate configuration, monitoring, module replacement and testing of the TB9300.
 - Demonstrate DMR site commissioning procedures.
 - Perform fleet management tasks of the Network Management Interface.
 - Perform configuration tasks of the Network Management Interface.
 - Demonstrate operation of EnableMonitor.
-

Tait-Powered DMR Tier III Training (continued)

DMR Tier III EnableFleet Configuration & Management (YTSN4K)

This course allows students to understand key aspects of the EnableFleet system. The architecture and features of EnableFleet are introduced followed with significant practical sessions on how to manage radio configuration using the Manager and Client interfaces. A review of radio unit programming is used to create configuration templates and develop EnableFleet customization profiles.

Upon completion of this course, participants will be able to:

- Explain the fleet management features of EnableFleet.
 - Describe the data sources managed by EnableFleet.
 - Describe the features and functions of EnableFleet Manager.
 - Describe the features and functions of EnableFleet Client.
 - Define the scope of requirements for radio unit programming.
 - Use the programming software to configure a radio unit to generate a group configuration template.
 - Generate group customization profiles and perform device import to EnableFleet.
 - Perform configuration and diagnostics of DMR Mobile IP.
 - Demonstrate configuration and operation of EnableFleet Manager.
 - Demonstrate operation of EnableFleet Client.
-

DMR Tier III Gridlink Configuration & Operation (YTSN4L)

This course introduces participants to the GridLink network architecture and numbering requirements. Practical sessions allow the student to get familiar with configuration of the SCADA Gateway and TD9300 Data Terminal.

Upon completion of this course, participants will be able to:

- Explain trunking.
- Describe DMR call types.
- Describe DMR call features.
- Describe DMR subscriber numbering.

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Tait-Powered DMR Tier III Training (continued)

DMR Tier III Gridlink Configuration & Operation (continued)

- Demonstrate basic use of the subscriber unit programming software.
 - Use the programming software to configure a subscriber unit to operate on a trunked network.
 - Explain the features of the DMR Network Management Interface.
 - Perform fleet management tasks of the Network Management Interface.
 - Explain the network features and benefits of the GridLink solution.
 - Describe the architecture and features of the GridLink network.
 - Describe the available GridLink data services, and call handling mechanisms.
 - Describe channel management techniques and the application to a GridLink solution.
 - Describe the key system engineering considerations for implementing a GridLink solution on a Tait-powered DMR Tier III network.
 - Design a successful addressing scheme for GridLink.
 - Demonstrate configuration of Tait-powered GridLink system.
 - Integrate and test the GridLink solution.
-



Tait-Powered P25 Conventional Training

Overview

The *P25 Conventional Configuration & Maintenance Course* is the recommended training for network managers, communication engineers, technical support personnel, and maintenance technicians on the Tait-powered P25 conventional system solution.

P25 Conventional Configuration & Maintenance (YTSN4M)

This course provides an advanced working knowledge of the Tait-powered P25 conventional system. The course covers system monitoring, basic fault diagnostics, the configuration of replacement parts, and the replacement of faulty modules.

Upon completion of this course, participants will be able to:

- Identify the devices and modules that make up the Tait-powered P25 conventional radio system.
 - Monitor network status using Syslog and the Customer Service Software (CSS) and identify faulty devices or modules.
 - Create backups of the network configuration.
 - Exchange faulty repeater equipment (i.e., Repeater, Power Amplifier, Power Management Unit).
 - Demonstrate the correct preparation of a spare repeater and CG.
 - Demonstrate the correct procedure to upgrade the network software.
 - Demonstrate the ability to troubleshooting the network and locate the fault.
-



Tait-Powered P25 Trunking Training

Overview

The following three courses are recommended for network managers, communication engineers, technical support personnel, and maintenance technicians on the Tait-powered P25 trunking system solution:

- P25 Trunking Configuration & Maintenance
- P25 Trunking EnableFleet Configuration & Management
- P25 Trunking KMF Configuration, Administration & Management

Please note that on-site delivery of the *P25 Trunking EnableFleet Configuration & Management* and *P25 Trunking KMF Configuration, Administration & Management* courses can each be reduced from 5 days to 2½ days if conducted consecutively with the *P25 Trunking Configuration & Maintenance* course.

P25 Trunking Configuration & Maintenance (YTSN4N)

This course provides an advanced working knowledge of the Tait-powered P25 trunked system. The course covers system monitoring, basic fault diagnostics, the configuration of replacement parts, and the replacement of faulty modules.

Upon completion of this course, participants will be able to:

- Identify the devices and modules that make up the Tait-powered P25 trunked radio system.
 - Monitor network status using SNMP and identify faulty devices.
 - Monitor repeater status using the Customer Service Software (CSS) and identify faulty modules.
 - Create backups of the network configuration.
 - Exchange faulty network equipment (e.g., Universal Controllers).
 - Exchange faulty repeater equipment (i.e., Reciter, Power Amplifier, Power Management Unit).
-

P25 Trunking EnableFleet Configuration & Management (YTSN4P)

This course allows students to understand key aspects of the EnableFleet system. The architecture and features of EnableFleet are introduced followed by practical sessions on how to manage radio configuration using the manager and client interfaces. A review of radio unit programming is used to create configuration templates and develop EnableFleet customization profiles.

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Tait-Powered P25 Trunking Training (continued)

P25 Trunking EnableFleet Configuration & Management (continued)

Upon completion of this course, participants will be able to:

- Explain the fleet management features of EnableFleet.
 - Describe the data sources managed by EnableFleet.
 - Describe the features and functions of the EnableFleet Manager.
 - Describe the features and functions of the EnableFleet Client.
 - Define the scope of requirements for radio unit programming.
 - Use the programming software to configure a radio unit to generate a group configuration template.
 - Generate group customization profiles and perform device import to EnableFleet.
 - Demonstrate configuration and operation of the EnableFleet Manager.
 - Demonstrate operation of the EnableFleet Client.
-

P25 Trunking KMF Configuration, Administration & Management (YTSN4R)

This course is for customers who are implementing the Key Management Facility (KMF) on their Tait-powered P25 trunking radio system. The course includes an introduction to P25 encryption, Key Fill Device operation, and KMF configuration, operation and administration.

Upon completion of this course, participants will be able to:

- Demonstrate logging into the KMF server.
 - Carry out the initial tasks a Security Officer must complete to prepare the KMF for use by Crypto Officers.
 - Explain the effect of changing the system security settings.
 - Carry out the initial tasks a Crypto Officer must complete prepare the KMF to manage keys.
 - Create provisioning keys and provision radios.
 - Create and monitor key update tasks.
 - Manage lost or stolen radios.
 - Carry out diagnostics and manage problem radios.
 - Demonstrate backing up and restoring the database.
 - Demonstrate monitoring the KMF and retrieving log files.
-

Tait-Powered Analog Simulcast IP Training

Overview

The *Analog Simulcast Configuration & Maintenance Course* is the recommended training for network managers, communication engineers, technical support personnel, and maintenance technicians on the Tait-powered Analog Simulcast IP system solution.

Analog Simulcast Configuration & Maintenance (YTSN4S)

This course enables participants to perform key system support and maintenance tasks on the Tait-powered Analog Simulcast IP (AS-IP) system and includes TB9400 configuration and maintenance.

Upon completion of this course, participants will be able to:

- Identify the devices and modules that make up the Tait-powered Analog Simulcast radio system.
 - Monitor network status using Syslog and the web interface, and identify faulty devices or modules.
 - Create backups of the network configuration.
 - Exchange faulty repeater equipment (i.e., Reciter, Power Amplifier, Power Management Unit).
 - Demonstrate the correct preparation of a spare repeater and CG.
 - Demonstrate the correct procedure to upgrade the network software.
 - Demonstrate the ability to troubleshooting the network and locate the fault.
-



L3Harris Technical University

Overview

The importance of properly trained personnel cannot be overstated. Often, radio users, dispatchers, and technical personnel only receive training during initial implementation of a radio system. How much of this training is absorbed and retained? How many operational features are not being used correctly, if at all? How many tasks are not being performed properly? L3Harris Technical University consists of asynchronous training courses that effectively deliver ongoing training and reinforce knowledge transfer that took place during instructor-led training. Web-based training builds the confidence of personnel by improving their knowledge of system operation and skills to operate their equipment, which will enhance performance and reduce the number of trouble reports. L3Harris Technical University can also be used to augment training for new personnel due to turnover.

Benefits

The benefits of an asynchronous training approach are numerous and include the following:

- Training is accessible whenever it is needed (24 hours a day, seven days a week) from any location that has access to the Internet.
 - Courses are self-paced, highly interactive, and developed utilizing animation and other multimedia tools to help keep students engaged, which increases retention.
 - It is cost-effective, especially when student or instructor travel and living expenses associated with attending standard classroom instruction are considered.
 - Training delivery is consistent and structured to ensure learning objectives are met.
-

Available Asynchronous Training Packages

L3Harris offers the following asynchronous training packages:

- P25 System Management
- Radio Operation
- Console Operation
- Radio Programming
- BeOn Operation

Each package includes unlimited access to the training modules for one year. Additional modules are added to the training packages as developed and applicable at no additional cost if you have an active account.

L3Harris Technical University (continued)

P25 System Management Asynchronous Training Package

The P25 System Management Asynchronous Training Package is comprised of the following training modules:

- P25 Fleet Mapping Overview
- XL-200P Radio Operation
- Symphony Console Operation
- Radio Programming Overview
- Radio Personality Manager (RPM and RPM 2)
- Advanced Access Control (AAC)
- Unified Administration System (UAS) Overview
- UAS “How to...”
- Regional Network Manager (RNM) Overview
- Active Directory
- Activity Warehouse
- Enterprise Network Manager (ENM) Overview
- Over-The-Air Programming (OTAP)
- Over-The-Air Rekeying (OTAR) Fundamentals
- OTAR “How to...”
- Inter-RF Subsystem Interface (ISSI) Fundamentals

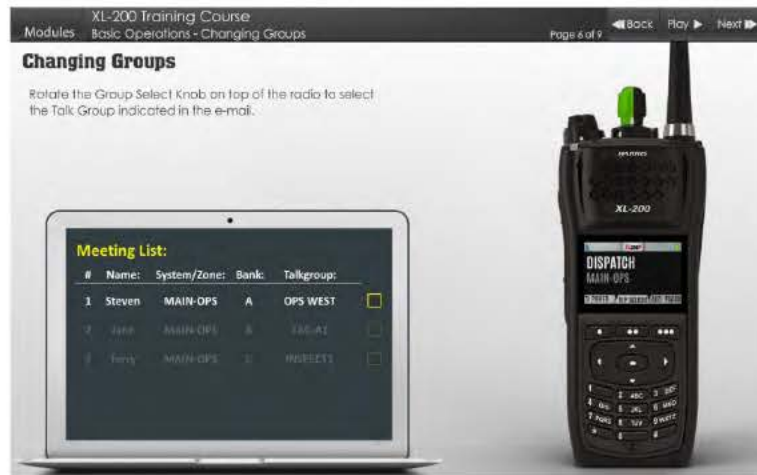
This package is automatically provided to P25 system administrators and managers who attend the *P25 System Implementation Workshop* (YTSN9N). It can also be purchased by an incumbent P25 system administrator or manager for \$1,500. Access can be renewed for a second year for \$1,000.

L3Harris Technical University (continued)

Radio Operation Asynchronous Training Package

The Radio Operation Asynchronous Training Package includes access to all radio operational courses. This is especially beneficial to end users who operate and require training on both portable and mobile radios.

The following is a screen capture from the XL-200P Radio Operation Course.



This package can be purchased for \$60 for one radio user. Contact the Training Manager by e-mail at pspc_training@L3Harris.com or call 1-800-528-7711 (option #1) for bulk pricing information.

Console Operation Asynchronous Training Package

The Console Operation Asynchronous Training Package includes access to the Symphony Dispatch Console Operation course and covers tasks such as making and receiving group calls, making and receiving individual calls, responding to emergency calls, creating patches and simulselects, and much more.

This package can be purchased for \$180 for one dispatcher. Contact the Training Manager by e-mail at pspc_training@L3Harris.com or call 1-800-528-7711 (option #1) for bulk pricing information.

Customer Feedback

"We found the training to be a very effective and easy way to efficiently inform our users on the new radios and system we deployed in early August. The ability to have a consistent message provided to our entire user base was valuable as this minimized the transition difficulties with users understanding the operational changes that come with equipment upgrades.

The tracking and reporting information was also helpful in managing the training provided. A very nice product that helps with our P25 migration."

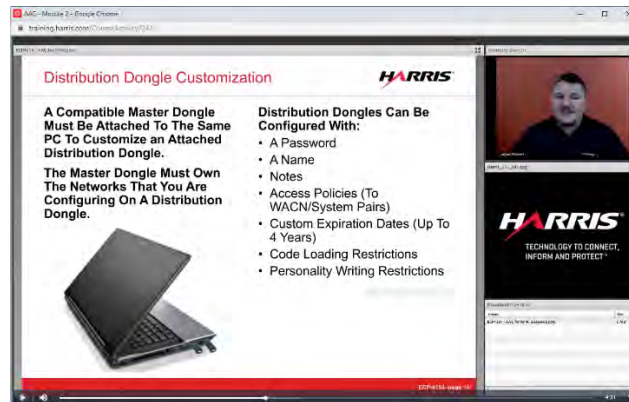
L3Harris Technical University (continued)

Radio Programming Asynchronous Training Package

The Radio Programming Asynchronous Training Package is comprised of the following training modules:

- Radio Programming Overview
- Radio Personality Manager (RPM and RPM 2)
- Advanced Access Control (AAC)

The following is a screen capture from the AAC Course.



This package can be purchased for \$200 for one technical person.

BeOn Operation Asynchronous Training Package

The BeOn Operation Asynchronous Training Package is comprised of operation courses for both Android and iOS devices. The following is a screen capture from the BeOn for iOS Operation Course.



This package can be purchased for \$1,000 for up to 100 BeOn users.

L3Harris Technical University (continued)

Learning Management System

L3Harris can provide a designated customer individual with administrative rights to the L3Harris Technical University Learning Management System so that you can directly assign specific training courses to students, monitor student activity and progress in completing courses, and generate reports.

Contact the Training Manager by e-mail at pspc_training@L3Harris.com or call 1-800-528-7711 (option #1) for more information about the requirements to access the Learning Management System.

Course Customization

L3Harris can provide a quotation to customize any radio operation training course. The cost is based on the scope of changes. Typical customization tasks include incorporating the customer's system and talk group structure, deleting radio functionality not provided or used (e.g., individual call capability), and replacing photographs with customer provided pictures.

The screenshot displays the L3Harris Learning Management System interface. At the top left is the L3Harris logo, followed by navigation links for 'Courses', 'Transcript', and 'Profile'. A user profile icon is visible in the top right corner. The main content area features a large banner for the 'Symphony Dispatch Console Operation Course'. The banner includes the text 'Basic Operation of the Harris Symphony Dispatch Console' and an image of a computer monitor displaying a software interface. Below the banner is a search bar with the placeholder text 'Search for Courses...', a 'Categories' dropdown menu, and a 'Progress' dropdown menu. At the bottom left, there is a link for 'Online Training'.

Virtual Classroom Training

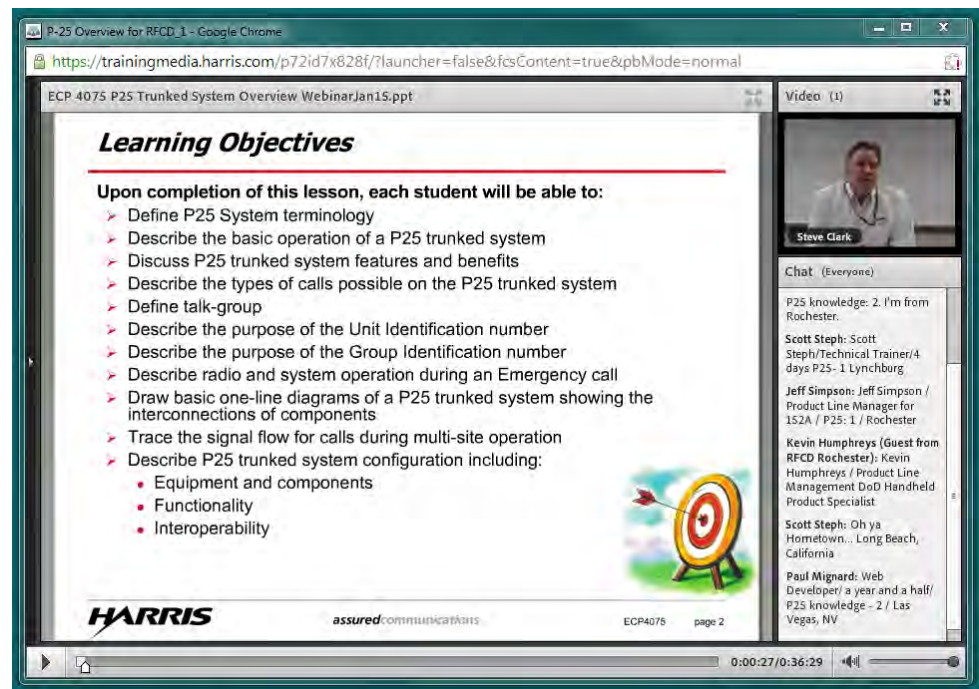
Overview

The L3Harris Technical Training Department conducts regularly scheduled open-enrollment courses and offers customized instructor-led training over the Internet using Adobe Connect. This virtual classroom environment is ideal for transferring knowledge when hands-on instruction isn't required and provides customers with a cost savings by eliminating travel and living expenses for the instructor and students. Additionally, we limit each virtual classroom session to four hours per day to allow participants to perform their normal job duties during the remainder of the day.

Adobe Connect is a feature rich solution for conducting virtual classroom instruction. Features include the following:

- The instructor can share assorted media such as PowerPoint presentations and videos, as well as radio system specific applications such as the Unified Administration System, Device Manager, and Radio Personality Manager.
- The instructor and students interact using notes, Q&A, chat, polling, and a virtual whiteboard.
- The instructor and students can share their screens.

The following is a screen capture from a virtual classroom session.



Virtual Classroom Training (continued)

Equipment Requirements

Student computers must meet the following minimum requirements:

- Microsoft Windows 7, Windows 8 or Windows 8.1 (32 bit / 64 bit), Windows 10 (64 bit)
- 1.4 GHz Intel Pentium® or faster processor
- 512 MB of RAM (1 GB recommended) for Windows 7 or 8
- Microsoft Internet Explorer 11 or later, Mozilla Firefox or Google Chrome
- Adobe Flash Player 11.2+

Audio is provided through VoIP and/or telephone.

The recommended minimum bandwidth access for student computers is 512 Kbps.

Procurement

Contact the Training Manager to discuss the content, overall length, and scheduling of the desired customized virtual classroom training course. L3Harris recommends that each day of virtual classroom instruction is limited to four hours and that the training is delivered over consecutive days, as required. For example, 16 hours of instruction is conducted over four consecutive days.

The total price for a customized virtual classroom training course is calculated based on the number of four-hour sessions. The price for each four-hour session is \$2,000. Each session may have up to 12 students and each student will be provided with an electronic copy of the presentations used during the training.

Student Feedback

"I want to thank you for the P25 Overview and UAS training that was completed this week. I want to let you know the Adobe Connect virtual version of the course was great. We were able to play L3Harris Jeopardy and take quizzes allowing everyone to test their understanding. Very professional and a lot of attention time detail was put into it to make sure we got all the instructor could fit into 16 hours. The instructor made us feel like he was actually standing in front of the class.

I really appreciate the effort and support put into making this class a success and I look forward to coordinating one of these again in the future."

Satisfied Customer

2020 TECHNICAL TRAINING CATALOG

Enrollment Information

When to Enroll

Registration for classes will be accepted until the business day before a class is scheduled to begin. However, it is a good idea to enroll as soon as possible to ensure a seat is available in the course on the dates you would like to attend.

How to Enroll

You can enroll by completing and submitting a Training Registration Form online at www.harris.com//solution/pspc-technical-training. A Training Registration Form is also included in this catalog. You can e-mail the completed registration form to pspc_training@L3Harris.com or fax the form to (434)455-6788.

Enrolling in the P25 Master Technician Course

If you are enrolling in the *P25 Master Technician* (YTSN9T) course, you must complete an application in addition to the Training Registration Form. The two-page application is included in this catalog and is also available on our web page. The application serves two purposes. It allows the instructors to verify that the student meets the prerequisites for the course, which is designed for experienced P25 technicians. Secondly, it provides information about your system, which will be factored into the training. The completed application should be submitted to the Training Registrar along with your Training Registration Form.

Enrollment Verification

Upon receipt of your completed Training Registration Form, the Training Registrar will verify space availability in the course. If space is available and the appropriate prerequisite courses have been taken, you will receive a confirmation letter.

Cancellation Policy

The Training Registrar must receive a cancellation notice at least 10 working days prior to the start of the class if you are unable to attend. A cancellation fee will be charged if a student fails to cancel his/her registration in this time frame or does not attend the course. Substitutions may be made if someone else can attend in his/her place. Substitutes must meet applicable course prerequisites. The cancellation fee will be the normal fee for the course.

Enrollment Information (continued)

Class Start & Stop Times Standard open-enrollment traditional classroom courses conducted at the L3Harris Technical Training Center begin promptly at 8:30 a.m. each day and end at approximately 4:30 p.m. On Friday, the last day of class for 4½ and 9½-day courses, training usually ends at noon to facilitate travel arrangements, unless otherwise specified in your course confirmation notice.

Standard open-enrollment virtual classroom courses are conducted from 12:30 p.m. to 4:30 p.m. (Eastern Time) each day.

Attendance Requirements Students are expected to maintain full attendance to receive a certificate of completion.

Travel & Lodging Arrangements The Training Center does not make travel arrangements for students. However, hotel information and an area map are included in an information packet, which is sent to the student once a Training Registration Form is received and the student is confirmed in the class. Hotel information is also available online at the Technical Training website.

Schedule Changes The Training Center reserves the right to make changes to the schedule and training location. If such changes are necessary, notification via e-mail, telephone, or fax will be made to the student or person making the reservation as soon as possible, normally within 10 days prior to the scheduled start of a course.

Canadian Customers Canadian customers should contact their sales representative for a quotation prior to enrolling in any standard open-enrollment course or for any on-site training.

2020 Training Schedule & Tuition

P25 System Administrative Training

Course #	Course Name	Virtual Classroom		Tuition
YTSN4F	P25 System Overview	Jan. 27 – Jan. 31 Apr. 20 – Apr. 24	Aug. 3 – Aug. 7 Oct. 19 – Oct. 23	\$1,500
YTSN4G	Unified Administration System	Feb. 3 – Feb. 5 Apr. 27 – Apr. 29	Aug. 10 – Aug. 12 Oct. 26 – Oct. 28	\$900
YTSN4H	Regional Network Manager	Feb. 6 – Feb. 7 Apr. 30 – May 1	Aug. 13 – Aug. 14 Oct. 29 – Oct. 30	\$600

Note: Virtual classroom sessions are conducted from 12:30 p.m. to 4:30 p.m. (Eastern Time Zone).

Course #	Course Name	Lynchburg, Virginia		Tuition
YTSN9N	P25 System Implementation Workshop	Feb. 24 – Feb. 28 June 1 – June 5	Aug. 31 – Sept. 4 Nov. 16 – Nov. 20	\$3,500

P25 System Maintenance Training

Course #	Course Name	Lynchburg, Virginia		Tuition
YTSN6D	P25 System Maintenance	March 3 – March 11 July 14 – July 22 December 1 – December 9		\$3,220
YTSN3V	Regional Network Manager	March 12 – March 13 July 23 – July 24 December 10 – December 11		\$920
YTSN3W	Network Operation & Maintenance	March 16 – March 19 July 27 – July 30 December 14 – December 17		\$1,840
YTSN8G	MASTR V Station Maintenance	March 30 – March 31 September 21 – September 22		\$920
YTSN8H	P25 Simulcast System Maintenance	April 1 – April 3 September 23 - September 25		\$1,380
YTSP3T	MASTR III Station Maintenance	April 6 – April 10 September 14 – September 18		\$2,300
YTSN9T	P25 Master Technician	April 13 – April 17 September 28 – October 2		\$3,150

2020 Training Schedule & Tuition (continued)

Network Core Training

Course #	Course Name	Lynchburg, Virginia	Tuition
YTSN2X	Introduction to Networking	March 23 – March 27 October 5 – October 9	\$2,300

RF Core Training

Course #	Course Name	Lynchburg, Virginia	Tuition
YTSP5U	RF Test & Troubleshooting	February 10 – February 14 August 3 – August 7	\$2,300
YTSN3E	Advanced RF Fundamentals	March 23 – March 27 August 10 – August 14	\$2,300

Portable & Mobile Radio Maintenance Training

Course #	Course Name	Lynchburg, Virginia	Tuition
YTSN4A	XL-200P Radio Maintenance	May 11 – May 12 October 5 – October 6	\$920
YTSN4V	XL-200M Radio Maintenance	May 13 – May 14 October 7 – October 8	\$920
YTSN8J	OMAP Portable Radio Maintenance	February 24 – February 28 August 24 – August 28	\$2,300
YTSN8K	OMAP Mobile Radio Maintenance	June 1 – June 5 November 2 – November 6	\$2,300

Radio Programming & Operation Training

Course #	Course Name	Lynchburg, Virginia	Tuition
YTSN6X	XL-200P Radio Programming & Operation	February 19 – February 20 August 18 – August 19	\$920

Note:

Canadian customers should contact their sales representative for a quotation prior to enrolling in a standard open-enrollment course.

2020 On-Site Training Prices

P25 System Training

Course #	Course Name	Course Length	Price per Course*
YTSN5Z	P25 System Administration	4½ days	\$22,685
YTSN6A	P25 Fleet Mapping Workshop	4 days	\$18,450
YTSN3H	Console Configuration	2 days	\$9,975
YTSN6B	Unified Administration System	2 days	\$9,975
YTSN3V	Regional Network Manager	2 days	\$9,975
YTSN6C	Over-The-Air Rekeying	1 day	\$5,700
YTSN9L	ISSI Configuration & Administration	1 day	\$5,700
YTSN6D	P25 System Maintenance	7 days	\$31,600
YTSN3W	Network Operation & Maintenance	4 days	\$18,450
YTSN8G	MASTR V Station Maintenance	2 days	\$9,975
YTSP3T	MASTR III Station Maintenance	3 days	\$14,200
YTSN8H	P25 Simulcast System Maintenance	3 days	\$14,200

Operational Training

Course #	Course Name	Course Length	Price per Course*
YTSP5P	Console Equipment Operator Training	4 hours	Call
YTSP7R	User Equipment Operator Training	2 - 8 hours	Call
YTSN6X	Radio Programming	2 days	\$9,975

Network Core Training

Course #	Course Name	Course Length	Price per Course*
YTSN2X	Introduction to Networking	4½ days	\$22,685

RF Core Training

Course #	Course Name	Course Length	Price per Course*
YTSP5U	RF Test & Troubleshooting	4½ days	\$22,685
YTSN3E	Advanced RF Fundamentals	4½ days	\$22,685
YTSN5Y	Grounding & Surge Suppression	2 days	\$9,975

continued on next page

2020 On-Site Training Prices (continued)

Portable & Mobile Radio Maintenance Training

Course #	Course Name	Course Length	Price per Course*
YTSN4A	XL-200P Radio Maintenance	2 days	\$9,975
YTSN4V	XL-200M Radio Maintenance	2 days	\$9,975
YTSN8J	OMAP Portable Radio Maintenance	4½ days	\$22,685
YTSN8K	OMAP Mobile Radio Maintenance	4½ days	\$22,685
YTSN7U	Mobile Radio Installation	2 days	\$9,975

OpenSky System Training

Course #	Course Name	Course Length	Price per Course*
YTSN6E	OpenSky System Administration	3½ days	\$18,450
YTSN3H	Console Configuration	2 days	\$9,975
YTSN6B	Unified Administration System	2 days	\$9,975
YTSN3V	Regional Network Manager	2 days	\$9,975
YTSN5C	OpenSky Site Equipment Maintenance	4 days	\$18,450
YTSN3W	Network Operation & Maintenance	4 days	\$18,450

Tait-Powered System Training

Course #	Course Name	Course Length	Price per Course*
YTSN4J	DMR Tier III Configuration & Maintenance	5 days	\$22,685
YTSN4K	DMR Tier III EnableFleet Configuration & Management	5 days	\$22,685
YTSN4L	DMR Tier III GridLink Configuration & Operation	5 days	\$22,685
YTSN4M	P25 Conventional Configuration & Maintenance	5 days	\$22,685
YTSN4N	P25 Trunking Configuration & Maintenance	5 days	\$22,685
YTSN4P	P25 Trunking EnableFleet Configuration & Management	5 days	\$22,685
YTSN4R	P25 Trunking KMF Configuration, Administration & Mgmt.	5 days	\$22,685
YTSN4S	Analog Simulcast Configuration & Maintenance	4 days	\$18,450

* The price for on-site training in the continental United States is listed in U.S. dollars. It includes materials for a maximum class size of ten (10) students and the instructor's travel and living expenses. On-site training is scheduled by the Training Manager and typically requires three months of lead time to schedule. For an on-site training quotation outside the continental United States, contact the Training Manager, except for Canadian customers who should contact their sales representative.

Technical Training Team

Customer Commitment

Our Training Team is committed to providing the highest quality training to our customers whether attending a customized on-site course or a standard course at the Technical Training Center in Lynchburg, Virginia. To ensure a successful learning experience, customer training is delivered by our technical training staff that is comprised of training professionals with extensive experience in both adult learning and telecommunications. Each instructor is certified to ensure the trainer possesses the instructional skills and technical competencies to deliver high-quality training to our customers. Instructors are also evaluated regularly and participate in a continuing instructor development program to maintain and improve their technical and instructional knowledge and skills. The following is a profile of our team members.

Frank Ober

Frank is the Training Manager. He began his training career in 1979 as a U.S. Navy instructor, training the initial crews assigned to Trident missile submarines. After leaving the Navy, Frank joined Babcock & Wilcox (B&W) as a senior reactor operator instructor. From 1989 - 1995, he managed B&W's nuclear services training group. Frank joined GE/Ericsson in 1995 and has been the training manager since 1996.

Steve Clark

Steve rejoined L3Harris in 2018 after spending 25 years in the Law Enforcement community as both a police officer and most recently as the Training Coordinator for the Law Enforcement Division at the Virginia Department of Criminal Justice Services. His law enforcement career included nine years with York Regional Police in Southern Ontario, Canada and four years with the Lynchburg Police Department in Virginia.

Bruce Eck

Bruce started his technical training career with the U.S. Navy in 1995 training personnel on nuclear reactor systems. Upon leaving the Navy, Bruce became a senior instructor for AREVA, training equipment technicians on subjects ranging from basic electronics to robotic control systems and networking. Along with his training responsibilities, Bruce is the product manager for our web-based training programs. He has an Associates of Science and Technology (AST) degree with a Nuclear specialty and a Bachelor of Science and Technology (BST) in Electro-Mechanical Studies.

Technical Training Team (continued)

Ken Frank

Ken holds a B.S. degree in Electrical Engineering and has worked in the communications business for over 20 years in product development, engineering and quality positions. Having also studied education in college, Ken feels blessed to work directly with our customers and share his knowledge of L3Harris systems through training.

Chris Jamerson

Chris joined the Technical Training Team in 2011 after graduating from college with a B.S. in Digital Arts & Design and a M.S. in the Production of Interactive Multimedia. Chris has been instrumental in the advancement of the online training content provided to our customers. By incorporating state of the art graphics, intelligent instructional design concepts, and an outside the box mindset, he creates training that captivates students while providing them with the information needed to be successful.

Todd Keller

Todd has over 25 years of experience working in the telecommunications field and specializes in network information assurance. Todd began his career in the U.S. Air Force where he served as a Communications Signals Analyst. After several field assignments, Todd was selected for instructor duty at the Center for Information Dominance in Pensacola, FL. There, he trained hundreds of multi-service military personnel and DoD civilians on RF and signals analysis techniques. He later went on to instruct a U.S. Cyber Command sponsored cyber operations and planning course. Todd holds an A.A.S. in Communications Technology and in Instructional Technology. He also holds the Air Force Master Instructor, CISSP, and Security+ certifications.

Randall Russell

Randy has over 25 years of experience in electronics and working on L3Harris radio systems. He is a veteran of the U.S. Navy, where he worked as an Electronics Technician on shipboard HYDRA communication systems. After his military service, Randy worked on EDACS modem and GPS simulcast systems for the City of New Orleans, and City of Oklahoma City, respectively, and a P25 simulcast system for the County of St. Mary's. He has achieved Master Technician status on both EDACS and P25 systems.

Technical Training Team (continued)

Scott Steph

Scott joined the Technical Training Team in 2015 after over 25 years in the information technology field as a certified trainer, network engineer, and college instructor. Scott spent 12 years designing and implementing global networks for WiTel, Autodesk Inc., and other Fortune 500 companies. Scott has a B.S. in Information Technology and his industry certifications include Network +, A+, and MCSE.

James Stinnett

James joined the Technical Training Team in 2013 after retiring from the U.S. Marine Corps (USMC). During his career as a Marine, James was responsible for the operation and maintenance of tactical radio and satellite communications systems as well as RF Spectrum Management to support military operations throughout the world. He began his training career in 2000 at the USMC Communications and Electronics School where he achieved his Senior and Master Instructor ratings. His love of teaching also led him to become a PADI Master Scuba Diver Trainer.

Training Registration Form

Date: _____

Training Course(s):

<u>Course Number</u>	<u>Course Name</u>	<u>Preferred Dates</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Student Information: (All information must be completed for registration confirmation.)

First & Last Name: _____
Organization: _____
Telephone Number: _____
E-Mail Address: _____

Person Making Reservation:

First & Last Name: _____
Organization: _____
Telephone Number: _____
E-Mail Address: _____

Method of Payment: (You must select one of the following billing options.)

1. Check or Credit Card
2. Contract
3. Invoice:
 - Does your organization require a purchase order? Yes No
 - If yes, please include the PO number: _____

Billing Address: _____
Company: _____
Attention: _____
Street Address: _____
City / State / Country: _____
Postal Code: _____

4. L3Harris Employee

All registration requests must be in writing. **One form per student please.**

Return by Mail: L3Harris Corporation OR Fax: (434)455-6788
221 Jefferson Ridge Parkway
Lynchburg, VA 24501 E-Mail: pspc_training@L3Harris.com
Attention: Training Registrar

P25 Master Technician Course Application

Thank you for enrolling in the P25 Master Technician course. Please complete this two-page application and return it to the Training Registrar along with your Training Registration Form. The instructors will use this information for course planning. One form per student is required.

Student's Name: _____

Company/Organization: _____

Telephone Number: _____

E-Mail Address: _____

Course Dates: _____

Please indicate when you took the following prerequisite courses:

Course	Dates	Location
P25 System Maintenance (YTSN6D)		
Regional Network Manager (YTSN3V)		
Network Operation & Maintenance (YTSN3W)		
MASTR III Station Maintenance (YTSP3T) or MASTR V Station Maintenance (YTSN8G)		

Please circle your choices for your shirt:

Shirt Size: S M L XL 2X Sleeve Length: Long Sleeve Short Sleeve

As a part of this course, your P25 system knowledge and troubleshooting skills will be assessed. Will your supervisor or manager want to know your results? Yes or No (please circle one)

If yes, complete the following:

Manager or Supervisor's Name: _____

Company/Organization: _____

Telephone Number: _____

E-Mail Address: _____

Please briefly describe your radio system experience including the type of system, location, duties, and responsibilities.

FAST. FORWARD.

Training Catalog 2020 - BR-TRAINING2019

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L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.





COMPLIANCE MATRIX

PROJECT 25 PUBLIC SAFETY RADIO NETWORK
AUGUST 14TH 2020



CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE



Point By Point Response

ITN Section	Description	Respondent's Statement of Compliance Select one from the drop-down list: Comply Comply with Clarification Exception	Respondent's Clarifications and Comments
1 Project Overview			
1.1.	Introduction	Comply	
1.2.	Okaloosa County Background	Comply	
1.3.	Invitation to Negotiate Overview	Comply	
1.4.	Scope of Work Summary	Comply	
1.5.	Proposals Desired	Comply	
1.5.1.	Systems Technical Requirements	Comply	
1.5.2.	Services	Comply	
1.6.	Quality Assurance and Coordination	Comply	
1.6.1.	Standards and Guidelines	Comply	
1.6.2.	P25 Standard Compliance	Comply	
1.6.3.	Frequency Coordination and Licensing	Comply	
1.6.4.	Federal Aviation Administration (if applicable)	Comply	
1.6.5.	Local, State, and Federal Environmental and Historical Requirements	Comply	
1.6.6.	Permitting	Comply	
1.6.7.	Project Management	Comply	
1.6.8.	Project Meetings	Comply	
1.6.9.	Project Staffing	Comply	
1.6.10.	Quality Assurance/Quality Control Program	Comply	
1.7.	Delivery, Storage and Handling	Comply	
1.8.	Project Submittals	Comply	
1.8.1.	Preliminary Design (45 days after notice to proceed)	Comply	
1.8.2.	Final Design (90 days after notice to proceed)	Comply	
1.8.3.	System Staging, Delivery and Installation	Comply	
1.8.4.	Final System Acceptance	Comply	
2 Instructions to Respondents			
2.1.	Overview	Comply	
2.2.	Mandatory Pre-Proposal Conference	Comply	
2.3.	Timeline Goals	Comply	
2.4.	Proposal Format	Comply	
2.5.	Competition Procedures	Comply	
2.6.	Procedures	Comply	
2.7.	Negotiation Process	Comply	
2.8.	Evaluation	Comply	
2.9.	Proposal Options	Comply	
2.10.	Alternate Proposals	Comply	
2.11.	Addenda to the Contract	Comply	
2.12.	Award of Contract	Comply	
3 Radio Communications System Requirements			
3.1.	Overview	Comply	
3.2.	Interoperability/P25 Statement of Requirements	Comply	
3.3.	System Configuration	Comply	
3.3.1.	Redundancy and Survivability	Comply	
3.3.2.	Expansion	Comply	Per Addendum # 1: Harris Premier Core Max 250 Sites , 2400 Total Talkpaths, and 100 Consoles
3.3.3.	Grade of Service	Comply	
3.4.	Site Selection	Comply	
3.5.	Coverage	Comply	
3.5.1.	Coverage Maps	Comply	
3.5.2.	Map Criteria	Comply	
3.5.3.	Coverage Model	Comply	
3.5.4.	TIA TSB-88 User Choices	Comply	
3.6.	Site Equipment	Comply	
3.6.1.	Overview	Comply	
3.6.2.	System and Site Control Equipment	Comply	The design of the Harris Simulcast Site / System Controller not only provides ALL of these features, the multi-level redundancy provides full system operation under multiple failures. The System Controller function is provided by the Control Channel Traffic Controller and all traffic controller(s) provide this function, so in the event of the control channel traffic controller failure, the next available controller is assigned this responsibility; this provides redundancy of both the Site Controller AND Control Channel function.
3.6.3.	Simulcast Equipment	Comply	
3.6.4.	Receiver Voting	Comply	
3.6.5.	Base Station Equipment	Comply	
3.6.6.	Antenna Systems	Comply	Per Addendum # 1
3.6.7.	Antenna Installation	Comply	
3.6.8.	Removal of Existing Infrastructure and Equipment	Comply	
3.7.	Network Management System	Comply	
3.7.1.	Network Management Terminal	Comply	
3.7.2.	Remote Terminal Units	Comply	
3.8.	Mobile Data	Comply	
3.9.	Backup Console/ettes	Comply	
4 Backhaul Network			
4.1.	Overview	Comply	
4.2.	Digital Microwave Network	Comply	
4.2.1.	Requirements	Comply	H.5-and I.4 The redundant power amplifiers or backup receiver shall only apply to hot stand-by spur configurations
4.2.2.	Microwave Engineering	Comply	
5 Site Development			
5.1.	General	Comply	
5.2.	Towers	Comply	
5.3.	Shelters	Comply	
5.4.	Generator and Automatic Transfer Switch	Comply	



Point By Point Response

5.4.1.	Dual-Fuel Propane/Natural Gas Generator	Comply	
5.4.2.	Automatic Transfer Switch	Comply	
5.4.3.	Dual-Fuel Propane and natural Gas System	Comply	
5.5.	DC Power	Comply	
5.6.	Site Preparation	Comply	
5.7.	Fencing	Comply	
6.	Dispatch Consoles		
6.1.	General Requirements and Features	Comply	
6.2.	Trunked Requirements	Comply with Clarification	6.M.-3- This is not a standard APCO P25 feature. However, Williams has included extra channel capacity in our design which would mitigate the likelihood that this OPTION would ever be utilized .
6.3.	Conventional Requirements	Comply	
6.4.	Paging Requirements	Comply	
6.5.	Systems Integration	Comply	
6.6.	Logging Recorder	Comply	
6.7.	Operator Position Equipment	Comply	
6.8.	Common Electronics Equipment	Comply	
7.	Warranty, Maintenance, and Support		
7.1.	Warranty	Comply	
7.2.	Maintenance	Comply	
7.2.1.	General Requirements	Comply	
7.2.2.	Maintenance Standards	Comply	
7.3.	Parts Availability	Comply	
7.4.	Spare Equipment	Comply	
7.5.	Lifecycle Cost	Comply	
8.	System Implementation, Testing, and Acceptance		
8.1.	General	Comply	
8.2.	System Installation	Comply	
8.3.	Cutover Plan	Comply	
8.4.	Staging	Comply	
8.5.	Coverage Testing	Comply	
8.6.	30-day Operational Test	Comply	
8.7.	Training	Comply	
8.8.	Final Acceptance Testing	Comply	
8.9.	As-Built Documentation	Comply	
8.10.	System Acceptance	Comply	
9.	Subscriber Environment		
9.1.	Overview	Comply	
9.2.	General Requirements	Comply	
9.2.1.	Portable Radios	Comply	
9.2.2.	Mobile Radios/Control Stations	Comply	
9.2.3.	Fleet Mapping	Comply	
9.3.	Subscriber Warranty and Maintenance	Comply	
9.3.1.	Subscriber Warranty	Comply	
9.3.2.	Subscriber Maintenance	Comply	
	Glossary of Terms and Acronyms		
Appendix A	Potential Candidate Tower Sites		
Appendix B	Coverage Requirements Map		
Appendix C	Compliance Matrix		
Appendix D	Proposal Pricing Instructions		
Attachment A	County Documents		



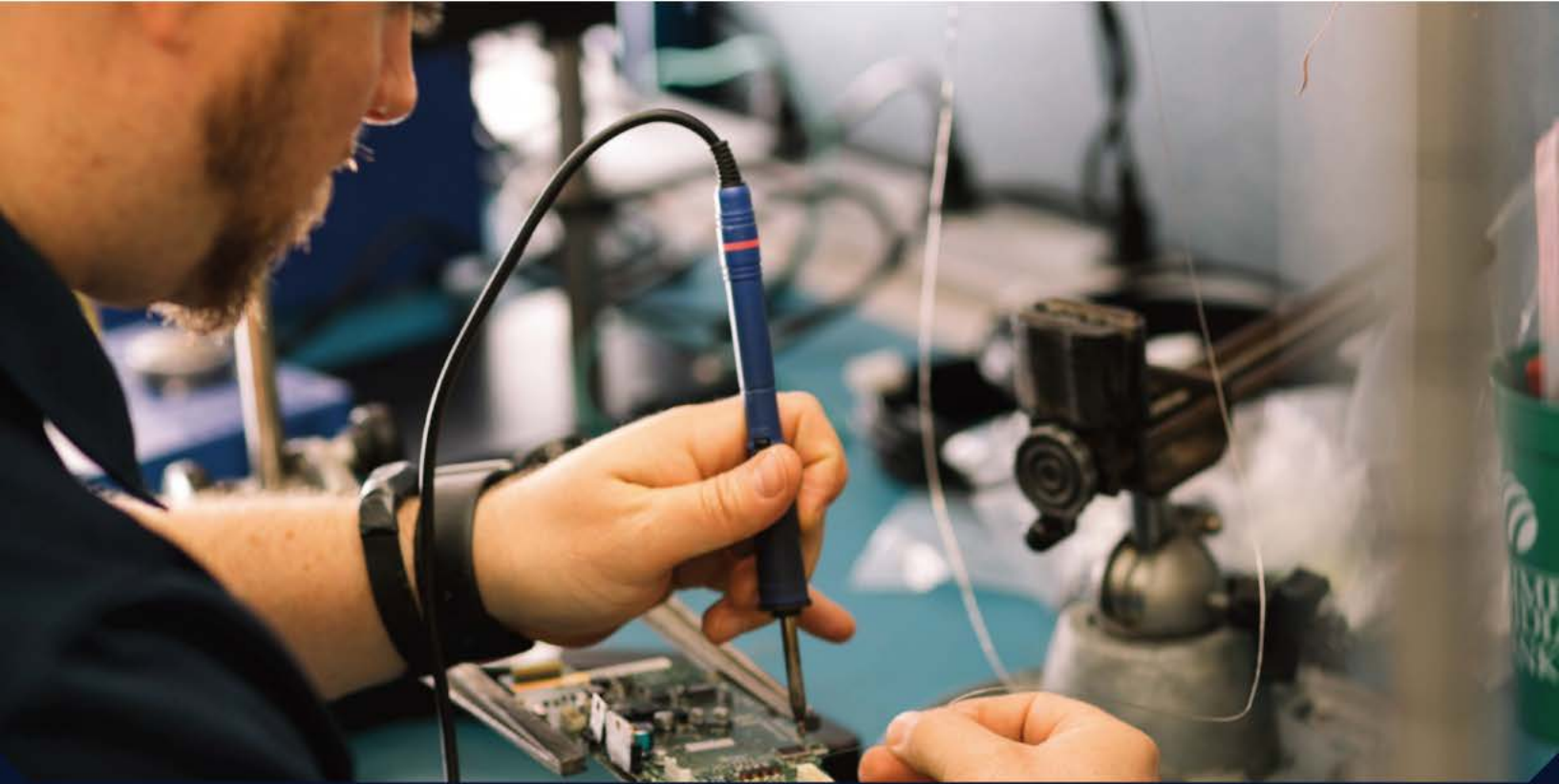
WARRANTY & MAINTENANCE

PROJECT 25 PUBLIC SAFETY RADIO NETWORK
AUGUST 14TH 2020



WILLIAMS
COMMUNICATIONS, INC.
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE



Warranty & Maintenance Plan

Critical communications networks require the support of highly skilled technicians and engineers on call every day of the year, 24x7. Since 1959, Williams Communications has been providing services to public safety agencies throughout Florida and the southeast United States. Providing excellent service requires a significant investment in human capital, processes to ensure consistent results, and active leadership of our dedicated field support team.

Williams Communications currently services the local area in and around Okaloosa County with a one-hour on-site response time. This maintenance contract with the State of Florida has been in effect for over 15 years and has never had a penalty assessed for missed service responses. This is the level of commitment to excellence that Okaloosa can expect from Williams. We have provided an extensive maintenance pricing plan that includes security updates. With Williams Communications having an office located in Crestview, we are positioned to give you the best response time and service.

We provide a one-year hardware and software warranty on all infrastructure equipment offered in this proposal. The warranty program start date is the date of system acceptance and runs concurrent for one (1) year (twelve consecutive months) on the infrastructure equipment. The warranty includes all necessary parts, labor, preventive maintenance, transportation, shipping cost to the customer, software updates, and other items normally required and/or consumed in maintaining the proposed network in order to meet original factory specifications. After final system acceptance and prior to the end of the warranty period, Williams will provide a complete system software update to the latest versions and patches including all operating systems and application software, anti-virus software, etc.



Warranty & Maintenance Plan



Did You know?

Harris is the number one supplier of tactical radios for NATO and U. S. military forces?

Our extensive service support organization has the depth to provide Okaloosa County an extended support system leveraging Harris's advanced communication systems and innovative delivery technologies. These innovations are the foundation that enabled early NASA astronauts to speak to Mission Control electronics that are the foundation for Wi-Fi and Global Positioning System space antennas that help us navigate every day.

Our strategic alliance with Harris provides Okaloosa County with access to the over 48,000 employees –including 20,000 engineers and scientists with 3000 patents – supporting customers in more than 125 countries.

Innovation has been at Harris' very core since it was founded 120 years ago and remains the driving force behind everything we do today. The people of Harris push technology boundaries every day—solving problems through creative thinking, agility and looking at problems from the customer's point of view. These traits enable us to transform communications and information technology that connects, informs and protects the world.

Today, Harris is one of the only companies concentrated exclusively on developing the trusted solutions that solve the toughest technology challenges faced by businesses and governments around the world. Harris provides advanced technology offerings that support our warfighters and first responders; electronic warfare systems that help military pilots achieve their missions; air traffic management systems that improve safety and efficiency for the flying public; and ground and space based imaging systems to improve weather forecast timing and resolution.



Warranty & Maintenance Plan

Proposed Services

Okaloosa County Plan will consist of commercial off-the-shelf equipment in order to minimize the potential for the discontinuance of hardware, and ensure the continual supply of backwards-compatible equipment. This plan allows the L3Harris P25 system to benefit from continuous improvements to system technology without breaking the bank.

CUSTOMIZED SERVICES	WARRANTY PERIOD	OPTIONAL POST-WARRANTY MAINTENANCE
Annual Infrastructure Preventive Maintenance	✓	✓
Annual Subsystem Preventive Maintenance	✓	✓
Infrastructure Corrective Maintenance	✓	✓
Software Update Installation for Infrastructure	✓	✓
Site Portal Network Monitoring	✓	✓
L3Harris Technical Assistance Center	✓	✓
Spare Parts Management	✓	✓
Maintenance Reporting	✓	✓
Tech-Link Support Service	✓	✓
Generator Maintenance	✓	✓

Warranty Support

Once the local technician makes the determination that equipment needs repair or replacement, we follow these steps.

- › Technical Support creates a support case and verifies product part numbers, serial numbers and reason for repair or return.
- › Customer Care Representative promptly reviews the request and provides an RMA number that includes replacement sales order number when applicable.
- › Defective equipment is shipped back by the Local Service Center to the manufacturer for repair and return.
- › Repaired or replaced equipment ships back to Local Service Center.
- › RMA ticket is closed and tracking database is updated.



Warranty & Maintenance Plan



24/7

**365 Days a year
Response**

**2 Hour On-site
Response**

**1 Hour On-site
Response**

Warranty Response Time

On-call Emergency Response

On-call Emergency Response is provided on a 24/7/365 basis. Upon detection of a system alarm condition requiring immediate dispatch, the local on-call technician initiates a service ticket and begins the troubleshooting process.

On-site Infrastructure Response

The nature of the proposed P25 system allows our technical personnel to leverage system tools such as the Remote Network Monitor (RNM), via a secure VPN/GRE tunnel connection to the P25 network, to troubleshoot and begin the repair process. If it is necessary for the technician to respond to the equipment location to continue repair and restore communications, the technician will arrive on-site to resume the troubleshooting process and provide resolution.

We will return system components to a fully functional state via direct on-site repair, replacement of faulty module, or replacement of the entire component. During all actions, we update the service ticket with date/time of actions taken and results of those actions until we fully resolve the problem and close the ticket.



Warranty & Maintenance Plan

Optional Remote Monitoring

The system alarms will be monitored by our Williams Network Operations Center (NOC) located in Tallahassee, Florida. Williams will use this center to monitor alarms of the core, dispatch systems and logging recorder in order to maintain and observe the health of the system. We have the ability to detect issues and promptly dispatch our local resources to correct an issue even before an end user detects it. For this service, Williams will supply a firewall VPN gateway approved by Okaloosa County and will require internet access to that gateway.



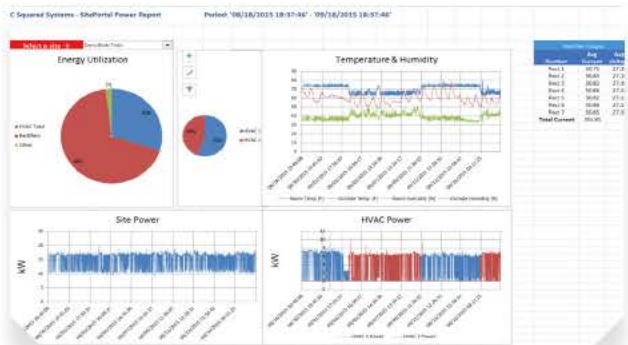
Williams delivers comprehensive monitoring services 24-hours a day by technical personnel. This service includes:

- › 24/7/365 Remote system monitoring, management and service dispatch
- › Alert tracking and analysis
- › Alarm clearing
- › Trouble report management and escalation to technical support
- › Customer notification of environmental issues
- › Summary reporting of alerts and trouble reports

SitePortal

SitePortal is vendor neutral, web-based system  for advanced remote monitoring and management of complex systems and equipment.

Williams utilizes Site Portal for our network monitoring systems, which is public safety grade situational awareness for your communications sites and systems. This system has the ability to monitor temperatures of not only each site but the temperatures of the equipment at each site. In addition, we can monitor your HVAC system or any other components requested. Additional environmental elements that can be monitored include: security, door and intrusion alarms, equipment damage, sabotage prevention & detection, fire and smoke alarms, water alarms, and site cameras. Once outside the shelter our monitoring system does not stop, we have the ability to watch the output power and performance of your entire system, along with the antenna line performance. The Site Portal GUI is very user friendly and alarms can notify by text or email. Site Portal will also provide summary reports on a monthly basis and if requested, can also be hourly.





Warranty & Maintenance Plan



Extended Support

Williams Communications currently has eight Southeast offices including our corporate headquarters, a 20,000 square foot main service and repair facility that includes a staging facility and extended resource support. Our headquarters located at 5046 Tennessee Capital Boulevard, Tallahassee, FL acts as the hub for Southeast operations. It provides regional support for the State of Florida Law Enforcement Radio System along with additional service and repair support to all offices. This allows us to house additional support equipment if needed during evacuations and mobile command support apparatus and has been used to support events like Hurricanes Irma, Matthew, and most recently Michael.

Our current staffing includes 80+ employees with extended certifications that include but not limited to PMP Certified Project Managers, System Engineers, Factory Trained Technicians across multiple manufacturers including microwave radios & MPLS. We also have E911 Certified Installers, Trainers and Design Consultants.

Spare Parts

Williams will house the recommended spare parts listed in the spare parts section in our Okaloosa County Location: Williams Communications Inc, 701 Ashley Drive, Crestview, Florida 32536.

Preventive Maintenance Services

The services provided during the warranty period and the maintenance service plan period (years 2-15) are available on a 24/7/365 basis. During the maintenance period, if any hardware component or portion of the installation service fails, Williams will repair the hardware component and supply any necessary repairs or replacement parts at no charge to Okaloosa County. This will include, but is not limited to:

- › Monthly site inspections
- › Software maintenance and upgrades
- › Troubleshooting & repair of the P25 communications system
- › Remote system monitoring
- › Local factory trained technicians and engineering field support
- › Dispatch console system support
- › Weekly system performance reports
- › Annual system tune-up and preventive maintenance including software updates
- › Network backhaul redundancy equipment



Managed Services

Standard Repair Services

The managed tier is for organizations that want to transfer day-to-day operations and maintenance of their communications system to our technology experts. Services from ASSIST and PARTNER are also included in this tier.

Standard Repair Services

Helps you budget for the unexpected—plus get fast, factory repairs from our experts.

Annual Preventive Maintenance

Includes regularly scheduled tests, checks and routine alignment of your equipment to optimize your system's performance and ensure it meets factory and FCC specifications.

SUMS+ Installation

Manages your SUMS+ installation so that your system maintains its current security posture. On-Site Corrective Maintenance

On-Site Corrective Maintenance

Provides labor to troubleshoot, repair and if necessary, remove and replace defective infrastructure equipment as agreed upon between the customer and L3Harris.

Planned Network Upgrades and Obsolescence Protection

Periodic infrastructure hardware upgrades keeps your platform compatible with system software releases and maintains functionality of your initial system while paving the way for additional features.

Enhanced Annual Preventive Maintenance

In addition to the Annual Preventive Maintenance, the MANAGED tier provides for additional maintenance tasks so that your system operates to meet your critical communications requirements.

Network Operations Center (NOC) Monitoring

Real-time 24/7/365 observation of your radio system for quick identification of existing and potential network issues, and action to correct those matters.

Cybersecurity Assessments

The L3Harris Information Assurance team focuses on the operational integrity of your network to minimize cybersecurity risks. We check your system configuration for vulnerabilities, and after your system check you receive an evaluation report that helps to:

- › Keep your configuration current with all third-party security patches
- › Guide system changes needed to close significant security gaps
- › Update and improve the cybersecurity of your critical communications infrastructure



Managed Services

System Administration

Configures the VIDA system database for RF sites, consoles, and gateways as well as administers talkgroup and unit IDs at the time of initial system deployment. L3Harris will modify database entries at your direction and add units or other resources as the system expands.

VIDA® Secure Sentry

VIDA® Secure Sentry provides policy and third-party vendor-supplied security patches to further enhance your VIDA system’s security. As viruses, malware, ransomware and Denial of Service attacks increase, maintaining your VIDA cybersecurity posture is essential to the availability of critical communications.

VIDA® Secure Sentry is released quarterly and is based on the applicable U.S. Government’s National Institute of Standards and Technology’s (NIST) guidelines for Assessments, Framework, Controls, Policy and Procedures. Governing bodies for Public Safety, Utilities and the Federal Government have all adopted the NIST framework to maintain a high level of security for their communication systems.

L3Harris applies Security Technical Implementation Guides’ recommended settings and controls and tests updates on the VIDA system to ensure application compatibility prior to making the VIDA® Secure Sentry

	Assist	Partner	Managed
Premium Technical Support (PTS)	✓	✓	✓
Security Update Management Services+ (SUMS+)	✓	✓	✓
Software Managed Services (SMS)		✓	✓
SMS Installation		✓	✓
Standard Repair Services	Available option	Available option	✓
Annual Preventive Maintenance		Available option	✓
SUMS+ Installation		Available option	✓
Planned Network Upgrades		Available option	✓
On-Site Corrective Maintenance		Available option	✓
Obsolescence Protection			✓
Enhanced Annual Preventive Maintenance			✓
Network Operations Center (NOC) Monitoring*			✓
Rapid Response Service Level Agreement (SLA)			✓
Cybersecurity Assessments			✓
System Administration			✓
VIDA® Secure Sentry		Available option	✓
VIDA® Secure Sentry Installation		Available option	✓
On Demand Services	Available option	Available option	Available option

*Enhanced and custom services available



Managed Services

SUMS PROVIDES THE IMPORTANT UPDATES YOU NEED

SUMS+ is available as part of a L3Harris Managed Services plan. It's designed to provide and continually apply periodic security updates.

- › Continually manages patches for multiple operating systems and applications across hundreds of endpoints
- › Reduce security and compliance risk by slashing remediation cycles from weeks to days and hours Gain greater visibility into patch compliance with flexible, real-time monitoring and reporting

- › Provide up-to-date visibility and control from a single management console

SOFTWARE RELEASE NOTES

Each software update includes Software Release Notes. These technical documents detail the following:

- › Product Vulnerability Alert (PVA) resolution or mitigation information
- › Software and hardware compatibility and information, where applicable

On-Site Support Service

Williams Communications will provide a 24/7/365 Call Center to support operations. Our goal is to provide prompt and effective response to technical issues. The toll-free number (800-649-5783) will handle your incoming service request, assign a case number and manage each case from inception to closure. This allows you to remain informed every step of the way.

Maintenance

It is important that any preventive maintenance activities minimize disruption to the County's radio users. In most cases, preventive maintenance activities have very little or no impact on the users. However, where any degree of service disruption may occur due to a preventive maintenance activity, we will work with the County to schedule the activity in advance. This process ensures that all preventive maintenance work completes in an agreed upon timeframe, and in a controlled manner minimizing any disruption to the users and the radio communications system. In addition to the annual comprehensive operational test and alignment of the system, we perform periodic on-going scheduled maintenance activities to ensure optimal performance for the users.

We will provide a written summary of all planned preventive maintenance activities to include a description of the type, locations, dates, and approximate times of each planned maintenance activity.



TOTAL PROPOSAL COST

PROJECT 25 PUBLIC SAFETY RADIO NETWORK

AUGUST 14TH 2020



WILLIAMS
COMMUNICATIONS, INC
WIRELESS TECHNOLOGIES

CONFIDENTIAL, PROPRIETARY & COMPETITION SENSITIVE



Harris Public Safety and Professional Communications

Products & Services Catalog

July 2020



XL-200P PORTABLES

Band: VHF, UHF, 700/800
 Product Code: XL



Midnight Black Full Keypad Black-Yellow Full Keypad Green Full Keypad

The XL-200P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Analog Conventional systems.

All XL-200P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
-----	-----------	---------------	-------------

1. Transceiver (Select Keypad Type and Frequency Range) (All models below include the P25 Conventional Operational Mode Package)

Full Keypad

C	XL-PFM1M-NA	4,030.00	PORTABLE, XL-200P, FKP, BLK, US, NA
C	XL-PFM2M-NA	4,030.00	PORTABLE, XL-200P, FKP, BLK, NRB, NA
			Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2M-INTL	4,030.00	PORTABLE, XL-200P, FKP, BLK, NRB, INTL
			Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM1Y-NA	4,030.00	PORTABLE, XL-200P, FKP, YEL, US, NA
C	XL-PFM2Y-NA	4,030.00	PORTABLE, XL-200P, FKP, YEL, NRB, NA
			Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2Y-INTL	4,030.00	PORTABLE, XL-200P, FKP, YEL, NRB, INTL
			Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM1P-NA	4,030.00	PORTABLE, XL-200P, FKP, PGRN, US, NA
C	XL-PFM2P-NA	4,030.00	PORTABLE, XL-200P, FKP, PGRN, NRB, NA
			Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2P-INTL	4,030.00	PORTABLE, XL-200P, FKP, PGRN, NRB, INTL
			Non-rebanded radios support frequencies up to 870 MHz

Frequency Range

NB	XL-PKGF1	1,500.00	FEATURE PACKAGE, ALL BANDS, V+U+7/800
NB	XL-PKGF2	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+UHF
NB	XL-PKGF3	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+7/800
NB	XL-PKGF4	1,000.00	FEATURE PACKAGE, DUAL BAND, UHF+7/800
N	XL-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N	XL-PL4K	0.01	FEATURE, SINGLE BAND, UHF
N	XL-PL4J	0.01	FEATURE, SINGLE BAND, VHF

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

Latest Products and Pricing on the Web
<https://premier.pspc.harris.com/infocenter/>



XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL



Midnight Black Partial Keypad Black-Yellow Partial Keypad Green Partial Keypad

The XL-200P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

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E/C	Model No.	List Price \$	Description
-----	-----------	---------------	-------------

**1. Transceiver (Select Keypad Type and Frequency Range) (All models below include the P25 Conventional Operational Mode Package)
 Partial Keypad**

C.....	XL-PPM1M-NA	3,830.00	PORTABLE, XL-200P, PKP, BLK, US, NA
C.....	XL-PPM2M-NA	3,830.00	PORTABLE, XL-200P, PKP, BLK, NRB, NA Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2M-INTL	3,830.00	PORTABLE, XL-200P, PKP, BLK, NRB, INTL Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM1Y-NA	3,830.00	PORTABLE, XL-200P, PKP, YEL, US, NA
C.....	XL-PPM2Y-NA	3,830.00	PORTABLE, XL-200P, PKP, YEL, NRB, NA Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2Y-INTL	3,830.00	PORTABLE, XL-200P, PKP, YEL, NRB, INTL Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM1P-NA	3,830.00	PORTABLE, XL-200P, PKP, PGRN, US, NA
C.....	XL-PPM2P-NA	3,830.00	PORTABLE, XL-200P, PKP, PGRN, NRB, NA Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2P-INTL	3,830.00	PORTABLE, XL-200P, PKP, PGRN, NRB, INTL Non-rebanded radios support frequencies up to 870 MHz

Frequency Range

NB.....	XL-PKGF1	1,500.00	FEATURE PACKAGE, ALL BANDS, V+U+7/800
NB.....	XL-PKGF2	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+UHF
NB.....	XL-PKGF3	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+7/800
NB.....	XL-PKGF4	1,000.00	FEATURE PACKAGE, DUAL BAND, UHF+7/800
N.....	XL-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N.....	XL-PL4K	0.01	FEATURE, SINGLE BAND, UHF
N.....	XL-PL4J	0.01	FEATURE, SINGLE BAND, VHF

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XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL



Midnight Black Full Keypad Black-Yellow Full Keypad Green Full Keypad

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Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
-----	-----------	---------------	-------------

1. Transceiver (Select Keypad Type and Frequency Range) (All models below include the P25 Conventional Operational Mode Package)

Full Keypad

C	XL-PFM1M-LTE	3,885.00	PORTABLE, XL-200P, FULL, MIDNT BLK, US, LTE
C	XL-PFM1Y-LTE	3,885.00	PORTABLE, XL-200P, FULL, BLK-YEL, US, LTE
C	XL-PFM2M-LTE	3,885.00	PORTABLE, XL-200P, FULL, MIDNT BLK, NRB, LTE Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2Y-LTE	3,885.00	PORTABLE, XL-200P, FULL, BLK-YEL, NRB, LTE Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2P-LTE	3,885.00	PORTABLE, XL-200P, FULL, PGRN, NRB, LTE Non-rebanded radios support frequencies up to 870 MHz

Frequency Range

NB	XL-PKGF1	1,500.00	FEATURE PACKAGE, ALL BANDS, V+U+7/800
NB	XL-PKGF2	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+UHF
NB	XL-PKGF3	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+7/800
NB	XL-PKGF4	1,000.00	FEATURE PACKAGE, DUAL BAND, UHF+7/800
N	XL-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N	XL-PL4K	0.01	FEATURE, SINGLE BAND, UHF
N	XL-PL4J	0.01	FEATURE, SINGLE BAND, VHF

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XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL



Midnight Black Partial Keypad Black-Yellow Partial Keypad Green Partial Keypad

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All XL-200P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
-----	-----------	---------------	-------------

1. Transceiver (Select Keypad Type and Frequency Range) (All models below include the P25 Conventional Operational Mode Package)

Partial Keypad

C.....	XL-PPM1M-LTE.....	3,685.00	PORTABLE, XL-200P, PART, MIDNT BLK, US, LTE
C.....	XL-PPM1Y-LTE.....	3,685.00	PORTABLE, XL-200P, PART, BLK-YEL, US, LTE
C.....	XL-PPM2M-LTE.....	3,685.00	PORTABLE, XL-200P, PART, MIDNT BLK, NRB, LTE Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2Y-LTE.....	3,685.00	PORTABLE, XL-200P, PART, BLK-YEL, NRB, LTE Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2P-LTE.....	3,685.00	PORTABLE, XL-200P, PART, PGRN, NRB, LTE Non-rebanded radios support frequencies up to 870 MHz

Frequency Range

NB.....	XL-PKGF1.....	1,500.00	FEATURE PACKAGE, ALL BANDS, V+U+7/800
NB.....	XL-PKGF2.....	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+UHF
NB.....	XL-PKGF3.....	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+7/800
NB.....	XL-PKGF4.....	1,000.00	FEATURE PACKAGE, DUAL BAND, UHF+7/800
N.....	XL-PL4L.....	0.01	FEATURE, SINGLE BAND, 7/800
N.....	XL-PL4K.....	0.01	FEATURE, SINGLE BAND, UHF
N.....	XL-PL4J.....	0.01	FEATURE, SINGLE BAND, VHF

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XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL



Midnight Black Full Keypad Black-Yellow Full Keypad Green Full Keypad

The XL-200P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-200P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (Select Keypad Type and Frequency Range) (All models below include the P25 Conventional Operational Mode Package)

Full Keypad

C	XL-PFM1M-C1D1	3,250.00	PORTABLE, XL-200P, FULL, MID BLK, US, C1D1
C	XL-PFM1Y-C1D1	3,250.00	PORTABLE, XL-200P, FULL, BLK-YEL, US, C1D1
C	XL-PFM1P-C1D1	3,250.00	PORTABLE, XL-200P, FULL, PGRN, US, C1D1
C	XL-PFM2M-C1D1	3,250.00	PORTABLE, XL-200P, FULL, MIDNT BLK, NRB, C1D1 Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2Y-C1D1	3,250.00	PORTABLE, XL-200P, FULL, BLK-YEL, NRB, C1D1 Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2P-C1D1	3,250.00	PORTABLE, XL-200P, FULL, PGRN, NRB, C1D1 Non-rebanded radios support frequencies up to 870 MHz

Frequency Range

NB	XL-PKGF1	1,500.00	FEATURE PACKAGE, ALL BANDS, V+U+7/800
NB	XL-PKGF2	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+UHF
NB	XL-PKGF3	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+7/800
NB	XL-PKGF4	1,000.00	FEATURE PACKAGE, DUAL BAND, UHF+7/800
N	XL-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N	XL-PL4K	0.01	FEATURE, SINGLE BAND, UHF
N	XL-PL4J	0.01	FEATURE, SINGLE BAND, VHF

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL



Midnight Black Partial Keypad Black-Yellow Partial Keypad Green Partial Keypad

The XL-200P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-200P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (Select Keypad Type and Frequency Range) (All models below include the P25 Conventional Operational Mode Package)

Partial Keypad

C.....	XL-PPM1M-C1D1	3,050.00	PORTABLE, XL-200P, PARTIAL, MID BLK, US, C1D1
C.....	XL-PPM1Y-C1D1	3,050.00	PORTABLE, XL-200P, PARTIAL, BLK-YEL, US, C1D1
C.....	XL-PPM1P-C1D1	3,050.00	PORTABLE, XL-200P, PART, PGRN, US, C1D1
C.....	XL-PPM2M-C1D1	3,050.00	PORTABLE, XL-200P, PART, MIDNT BLK, NRB, C1D1 Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2Y-C1D1	3,050.00	PORTABLE, XL-200P, PART, BLK-YEL, NRB, C1D1 Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2P-C1D1	3,050.00	PORTABLE, XL-200P, PART, PGRN, NRB, C1D1 Non-rebanded radios support frequencies up to 870 MHz

Frequency Range

NB.....	XL-PKGF1	1,500.00	FEATURE PACKAGE, ALL BANDS, V+U+7/800
NB.....	XL-PKGF2	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+UHF
NB.....	XL-PKGF3	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+7/800
NB.....	XL-PKGF4	1,000.00	FEATURE PACKAGE, DUAL BAND, UHF+7/800
N.....	XL-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N.....	XL-PL4K	0.01	FEATURE, SINGLE BAND, UHF
N.....	XL-PL4J	0.01	FEATURE, SINGLE BAND, VHF

For keyloader, see section 9.

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XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL



Midnight Black Full Keypad Black-Yellow Full Keypad Green Full Keypad

The XL-200P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-200P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (Select Keypad Type and Frequency Range) (All models below include the P25 Conventional Operational Mode Package)

Full Keypad

C	XL-PFM1M	2,900.00	PORTABLE, XL-200P, FULL, MIDNT BLK, US
C	XL-PFM1Y	2,900.00	PORTABLE, XL-200P, FULL, BLK-YEL, US
C	XL-PFM1P	2,900.00	PORTABLE, XL-200P, FULL, PGRN, US
C	XL-PFM2M	2,900.00	PORTABLE, XL-200P, FULL, MIDNT BLK, NRB Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2Y	2,900.00	PORTABLE, XL-200P, FULL, BLK-YEL, NRB Non-rebanded radios support frequencies up to 870 MHz
C	XL-PFM2P	2,900.00	PORTABLE, XL-200P, FULL, PGRN, NRB Non-rebanded radios support frequencies up to 870 MHz

Frequency Range

NB	XL-PKGF1	1,500.00	FEATURE PACKAGE, ALL BANDS, V+U+7/800
NB	XL-PKGF2	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+UHF
NB	XL-PKGF3	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+7/800
NB	XL-PKGF4	1,000.00	FEATURE PACKAGE, DUAL BAND, UHF+7/800
N	XL-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N	XL-PL4K	0.01	FEATURE, SINGLE BAND, UHF
N	XL-PL4J	0.01	FEATURE, SINGLE BAND, VHF

For keyloader, see section 9.

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XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL



Midnight Black Partial Keypad Black-Yellow Partial Keypad Green Partial Keypad

The XL-200P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-200P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (Select Keypad Type and Frequency Range) (All models below include the P25 Conventional Operational Mode Package)

Partial Keypad

C.....	XL-PPM1M	2,700.00	PORTABLE, XL-200P, PARTIAL, MIDNT BLK, US
C.....	XL-PPM1Y	2,700.00	PORTABLE, XL-200P, PARTIAL, BLK-YEL, US
C.....	XL-PPM1P	2,700.00	PORTABLE, XL-200P, PART, PGRN, US
C.....	XL-PPM2M	2,700.00	PORTABLE, XL-200P, PART, MIDNT BLK, NRB Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2Y	2,700.00	PORTABLE, XL-200P, PART, BLK-YEL, NRB Non-rebanded radios support frequencies up to 870 MHz
C.....	XL-PPM2P	2,700.00	PORTABLE, XL-200P, PART, PGRN, NRB Non-rebanded radios support frequencies up to 870 MHz

Frequency Range

NB.....	XL-PKGF1	1,500.00	FEATURE PACKAGE, ALL BANDS, V+U+7/800
NB.....	XL-PKGF2	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+UHF
NB.....	XL-PKGF3	1,000.00	FEATURE PACKAGE, DUAL BAND, VHF+7/800
NB.....	XL-PKGF4	1,000.00	FEATURE PACKAGE, DUAL BAND, UHF+7/800
N	XL-PL4L.....	0.01	FEATURE, SINGLE BAND, 7/800
N	XL-PL4K.....	0.01	FEATURE, SINGLE BAND, UHF
N	XL-PL4J.....	0.01	FEATURE, SINGLE BAND, VHF

For keyloader, see section 9.

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XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
2. Antenna (Select one)			
N	XL-NC5Z	110.00	ANTENNA, FLEX, HELICAL, 136-870 MHZ
N	XL-NC8E	60.00	ANTENNA, WHIP, DUAL-BAND, UHF/700/800 MHZ
N	XL-NC8D	45.00	ANTENNA, WHIP, 1/2 WAVE 762-870 MHZ
N	XL-NC8F	40.00	ANTENNA, WHIP, 1/4 WAVE, 762-870 MHZ
3. Immersible Mode (This feature upgrades the radio to Immersible operation)			
N	XL-PKGMR	240.00	OPTION, IMMERSIBLE RADIO OPERATION (applies to any Operational Mode Feature Package)
4. Operational Mode Packages*			
NB	XL-P25ED	2,000.00	FEATURE PACKAGE, P25 AND EDACS TRUNKING EDACS includes analog trunking, ProVoice™ digital trunking, Status Message, and Extended Addressing (EA). Supports 800 MHz 9600 Wideband for EDACS only. Does not support any form of EDACS on VHF/UHF
NB	XL-PKGPT	1,500.00	FEATURE PACKAGE, P25 TRUNKING Includes Phase 1 Trunking and Status Message
NB	XL-PKGED	1,500.00	FEATURE PACKAGE, EDACS TRUNKING Includes analog trunking, ProVoice™ digital trunking, and Extended Addressing (EA). Supports 800 MHz 9600 Wideband for EDACS only. Does not support any form of EDACS on VHF/UHF
N	XL-LTE-NA-UG	1,445.00	UPGRDE KIT, XL-200P, LTE, NA MODEM Provides a kitted module for fielded radios manufactured after 2/2020. If installation at a Harris facility is desired, must include Harris labor for upgrade.
N	XL-LTE-INTL-UG	1,445.00	UPGRDE KIT, XL-200P, LTE, INTL MODEM Provides a kitted module for fielded radios manufactured after 2/2020. If installation at a Harris facility is desired, must include Harris labor for upgrade.
N	XL-LTE-FACUG	1,790.00	FACTORY UPGRDE, LTE NA MODEM Provides an LTE module installed in the replacement radio for the customer's returned radio manufactured between 9/2015 and 2/2017.

***All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.**

XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL

E/C	Model No.	List Price \$	Description
4. Operational Mode Packages* (Cont'd)			
N	XL-LTE-NA-LUG	1,645.00	LEGACY UPGRDE KIT, XL-200P, LTE, NA MODEM Provides a kitted module for fielded radios manufactured between 2/2017 and 2/2020. If installation at a Harris facility is desired, must include Harris labor for upgrade.
N	XL-LTE-INTL-LUG	1,645.00	LEGACY UPGRDE KIT, XL-200P, LTE, INTL MODEM Provides a kitted module for fielded radios manufactured between 2/2017 and 2/2020. If installation at a Harris facility is desired, must include Harris labor for upgrade.
N	BM-PKGCL-XL	335.00	APP, BEON XL RADIO FAMILY BeOn Client License enabling the LTE radio to provide PTT over LTE or WiFi networks. A BeOn Server is required to enable this option.
*All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.			
5. SIM Cards			
N	XL-SV1V	10.00	BROADBAND, SIM CARD, VERIZON Removable Nano SIM that can be purchased separately and added to LTE-capable devices. A non-removable embedded SIM is included and added to LTE-capable radios manufactured after October 25, 2019
N	XL-SV1T	10.00	BROADBAND, SIM CARD, AT&T Removable Nano SIM that can be added through the product configurator
N	XL-SV1F	10.00	BROADBAND, SIM CARD, FIRSTNET Removable Nano SIM that can be added through the product configurator. Broadband Managed Services is not an option for FirstNet services. Please contact your cognizant AT&T consultant to activate devices on FirstNet.
6. Broadband Managed Services Options**			
N	SB-SV1D	10.00	BROADBAND, LINE OF SERVICE, 1 MONTH
N	SB-SV1G	13.00	BROADBAND, 1GB DATA
**An agreement will need to be executed between Harris and the end user before purchasing. The agreement can be found here:			
https://premier.pspc.harris.com/infocenter/broadband/Broadband%20managed%20service%20agreement%2020190204.pdf			
7. HazLoc Options			
N	XL-PA2A	225.00	BATTERY, LION, 3100, HAZLOC RADIO C1D2, UL This option upgrades the radio to UL Class 1 Division 2 hazardous locations. It equips the radio with the necessary markings and a UL battery. This battery is certified for use with LTE-enabled XL radios on the Verizon LTE network.
N	XL-PA4L	260.00	BATT, LION, 4800, HI-CAP, HAZLOC RADIO C1D2 This option upgrades the radio to UL Class 1 Division 2 hazardous locations. It equips the radio with the necessary markings and a UL high capacity battery.



XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL

E/C	Model No.	List Price \$	Description
8. Encryption Options*			
N	XL-PL4U	0.01	FEATURE, SINGLE-KEY DES ENCRYPTION**
N	XL-PL9E	0.01	FEATURE, SINGLE-KEY AES ENCRYPTION**
N	XL-PL8Y	0.01	FEATURE, ENCRYPTION LITE***
N	XL-PL4D	240.00	FEATURE, DES-CFB
N	XL-PKG8F	695.00	FEATURE, 256-AES, 64-DES ENCRYPTION
*Ordering multi-key AES provides full P25 CAP compliance.			
**Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.			
***Encryption Lite is standard on digital operational modes and is not available on EDACS. Encryption Lite must be selected in the Product Configurator.			
Option for AES Encrypted Radios			
N	XL-PL7J	1.00	FEATURE, FIPS 140-2 OPERATION LEVEL 1
9. Software Features			
Software Options			
N	XL-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	XL-PL8R	100.00	FEATURE, RF SAFE When option is enabled, the radio is always in RF Safe mode (0.1W) and is locked at 0.1W power
N	XL-FW2X	0.01	OPERATION, LOAD NIFOG PERSONALITY
P25 Software Options			
N	XL-PL5L	595.00	FEATURE, P25 OTAR (OVER-THE-AIR-REKEYING)
N	XL-PL9L	595.00	FEATURE, HIGH VELOCITY DATA TDMA
NB	XL-PKGPD	330.00	FEATURE PACKAGE, P25 DATA Includes MDT and Radio TextLink
N	XL-PL9N	285.00	FEATURE, TDMA CC
N	XL-PL5K	265.00	FEATURE, ProFile™ OTAP OVER-THE-AIR PRGM
N	XL-PL9K	250.00	FEATURE, VIDA ID
N	XL-PL4F	250.00	FEATURE, P25 PHASE 2, TDMA
N	XL-PL8N	250.00	FEATURE, IN-BAND GPS
N	XL-PL9F	250.00	FEATURE, P25C FALLBACK/MS FAILSOFT Required for Motorola customers using P25C Failsoft on a Motorola System. This feature is not needed for Harris-only systems
N	XL-PL9G	250.00	FEATURE, 3000 ALIASES When feature is enabled, users can write all 3000 configured aliases to the radio without incident. When feature is not enabled, users will only be able to use the I-Call list of 255 entries maximum
N	XL-PL9H	175.00	FEATURE, 250 ZONES Enable this feature if planning to configure radio with more than 50 zones. RPM2 can configure up to 250 zones; however, radio will only store the first 50 if this feature is not enabled.
N	XL-PL8M	150.00	FEATURE, EDATA
N	XL-LLA	100.00	FEATURE, LINK LAYER AUTHENTICATION
N	XL-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers

XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL

E/C	Model No.	List Price \$	Description
10. Battery (Select one)			
For best battery lifecycle quality, shipment of batteries near deployment is advised. For deployment schedules greater than 9 months, shipping batteries separately, at a later date, is recommended. Storing battery packs is not recommended because the chemicals in the battery degrade over time and this affects the functionality of the battery. Batteries that have been stored for longer than their warranty period (12 months) may become non-functional and will not be covered under the L3Harris battery warranty.			
N	XL-PA4K	175.00	BATTERY, LI-ION, HI-CAPACITY, 4800 MAH
N	XL-PA4M	205.00	BATTERY, LI-ION, HI-CAPACITY, 4800 MAH, C1D2 For use as a spare UL C1D2 high-capacity battery with XL-PA4L. Ordering this UL battery for use with a non-HazLoc radio does not produce a HazLoc radio
N	XL-PA3V	150.00	BATTERY, LI-ION, 3100 MAH
N	XL-PA4J	200.00	BATTERY, LI-ION, 3100 MAH, UL, C1D1
N	XL-PA3X	175.00	BATTERY, LI-ION, 3100 MAH, UL For use as a spare battery with UL C1D2 radio option XL-PA2A. Ordering this UL battery for use with a non-HazLoc radio does not produce a HazLoc radio. This battery is certified for use with LTE-enabled XL radios on the Verizon LTE network.

11. Chargers**Rapid Chargers**

N	XL-CH5L	245.00	CHARGER, DESKTOP, 2-BAY, XL-200P
N	XL-CH4X	170.00	CHARGER, 1-BAY
N	XL-CH4Z	15.00	KIT, RSM HANGER, 1-BAY DESK CHARGER
N	XL-CH4Y	10.00	KIT, GANG PLATE, 1-BAY DESK CHARGER
N	XL-CH5A	895.00	CHARGER, 6-BAY
N	XL-CH5B	215.00	WALL MOUNT KIT, CHARGER, 6-BAY, XL-200P
S	AT6085A	895.00	CHARGER, 12 BAY, LITHIUM, XL Charges batteries only. Does not charge radios with batteries attached

Vehicular Chargers

N	XL-CH4W	200.00	CHARGER, VC4000
N	XL-PS9X	35.00	POWER ADAPTER KIT, VC4000 CHARGER
N	XL-CH5M	1,499.00	ENH VEH CHGR, XL, STANDARD* For use with standard or Verizon LTE-equipped XL portables using standard capacity (3100 mAh) batteries.
N	XL-CH5N	1,499.00	ENH VEH CHGR, XL, HIGH CAPACITY* For use with standard or Verizon LTE-equipped XL portables using high capacity (4800 mAh) batteries.
N	XL-CH5R	1,499.00	ENH VEH CHGR, XL, HAZLOC* For use with UL C1D1 rated XL portables using the L3Harris UL C1D1 rated HazLoc battery.

*The Enhanced Vehicular Charger currently supports Standard (not LTE equipped), C1D1, and Verizon LTE XL portable models used on 700, 800, or 900 MHz systems; support for VHF/UHF bands and Global LTE models is coming soon.

XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL

E/C	Model No.	List Price \$	Description
12. Audio Accessories			
N	XL-CJ4B	225.00	ADAPTER, 6-PIN HIROSE, EXT CABLE
N	XL-AE1S	179.00	BLUETOOTH, COVERT, EARPIECE/MIC/PTT
Speaker Microphones			
N	XL-AE1T	630.00	SPKR MIC, PREMIUM, FIRE, NC
N	XL-AE1X	630.00	SPKR MIC, PREM, FIRE, NC, HI-VIS-YELLOW
N	XL-AE2W	399.00	SPEAKER MIC, 500F, XL-200P For use with all XL-200P portables, including UL C1D2 and UL C1D1 Hazardous Location rated
N	XL-AE2K	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 18 IN
N	XL-AE2J	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 25.6 IN
N	XL-AE2L	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 30 IN
N	XL-AE1V	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADVANCED
N	XL-AE2T	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADV, ANZ For use in Australia and New Zealand
N	XL-AE4B	225.00	SPEAKER MICROPHONE, EMERG BUTTON
N	XL-AE9N	195.00	SPEAKER MICROPHONE
N	XL-AE2V	190.00	SPEAKER MIC, REVO NC2, C1D2 Features passive noise cancellation, IP-68 immersion, 360-degree clothing clip, 2.5mm earphone jack, PTT/emergency buttons, and Hi/Lo volume slider switch. UL C1D2 HazLoc rating for use with UL C1D2 rated XL portables
N	XL-AE1K	65.00	EARPHONE, SPEAKER MIC, RIGHT ANGLE, 2.5MM Includes the Cable with 2.5 mm Plug, Transducer, Acoustic Tube, and Earpiece
N	XL-AE3Z	65.00	EARPHONE, LAPEL MICROPHONE For use with Speaker Mics that have an earphone jack
Surveillance Accessories			
N	XL-AE1L	825.00	SKULL MIC, W/BODY PTT & EARCUP
N	XL-AE1M	650.00	THROAT MIC, W/ACOUSTIC TUBE, BODY & RING PTT
N	XL-AE1N	600.00	THROAT MIC, W/ACOUSTIC TUBE & BODY PTT
Subminiature Remote Control Options			
The following subminiature options are not approved for use in hazardous atmospheres.			
N	XL-AE6H	215.00	MICROPHONE, MINI-LAPEL, 3-WIRE, BLACK
N	XL-AE6G	215.00	MICROPHONE, PALM, 2-WIRE, BLACK
N	XL-AE6M	215.00	MICROPHONE, PALM, 2-WIRE, BEIGE
Headsets			
N	XL-AE2A	650.00	HEADSET, IN-EAR, BOOM MIC, IN-LINE PTT
N	XL-AE2B	650.00	HEADSET, LTWT, OTH, SINGLE EAR, IN-LINE PTT
N	XL-AE2C	650.00	HEADSET, LTWT, BTH, DUAL EAR, IN-LINE PTT
N	XL-AE2D	650.00	HEADSET, LTWT, BTH, DUAL EAR, PIGTAIL PTT
N	XL-AE2E	650.00	HEADSET, LTWT, BTH, DUAL IN-EAR, IN-LINE PTT
N	XL-AE2F	650.00	HEADSET, LTWT, BTH, DUAL IN-EAR, PIGTAIL PTT
N	XL-AE2G	650.00	HEADSET, BTH, BOOM MIC, EARPIECE, W/PTT
N	XL-AE1H	650.00	HEADSET, TACTICAL, BOOM MIC, EARPIECE, W/PTT
N	XL-AE1P	600.00	HEADSET, HEAVY DUTY, BTH, W/PTT
N	XL-AE1R	600.00	HEADSET, HEAVY DUTY, OTH, W/PTT

XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL

E/C	Model No.	List Price \$	Description
13. Carrying Accessories			
N	XL-HC4A	60.00	BELT LOOP, LEATHER, PREMIUM
N	XL-HC3J	55.00	STRAP, LEATHER
N	XL-HC3L	30.00	BELT CLIP, METAL
N	XL-HC3K	20.00	STRAP, NYLON
Standard Cases			
N	XL-HC4Y	120.00	CASE, LEATHER, BLK HDW, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XL-HC4W	120.00	CASE, LEATHER, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery
N	XL-HC4V	100.00	CASE, LEATHER, W/ BELT LOOP, BLK HDW Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XL-HC6Y	65.00	CASE, LEATHER, 2.5 IN BELT LOOP, DSWIVEL, HCB For use with any XL portable radio when paired with its corresponding high capacity battery (4800 mAh)
N	XL-HC6Z	55.00	CASE, LEATHER, 3 IN BELT LOOP, HCB For use with any XL portable radio when paired with its corresponding high capacity battery (4800 mAh)
N	XL-HC4Z	60.00	CASE, LEATHER, 2.5" BELT LOOP, D-SWIVEL For use with any XL portable radio when paired with its corresponding standard capacity battery (3100 mAh)
N	XL-HC6A	50.00	CASE, LEATHER, 3" BELT LOOP For use with any XL portable radio when paired with its corresponding standard capacity battery (3100 mAh)
N	XL-HC4X	80.00	CASE, NYLON, BLK HDW, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XL-HC4U	80.00	CASE, NYLON, BLACK, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery
N	XL-HC4T	75.00	CASE, NYLON, BLACK, MOLLE STRAP Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces

XL-200P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XL

E/C	Model No.	List Price \$	Description
13. Carrying Accessories (Cont'd)			
Premium Cases			
N	XL-HC4R	200.00	CASE, LEATHER, PREMIUM, SHOULDER STRAP, LTE Only for use with XL portables that <u>have</u> the LTE option installed and using standard or UL CID2 batteries (XL-PA3V and XL-PA3X)
N	XL-HC4P	175.00	CASE, LEATHER, PREM, BELT LOOP, D-SWIVEL, LTE Only for use with XL portables that <u>have</u> the LTE option installed and using standard or UL CID2 batteries (XL-PA3V and XL-PA3X)
N	XL-HC4L	170.00	CASE, LEATHER, PREMIUM, SHOULDER STRAP Only for use with XL portables that <u>do not have</u> the LTE option installed and using standard or UL CID2 batteries (XL-PA3V and XL-PA3X)
N	XL-HC4K	145.00	CASE, LEATHER, PREMIUM, BELT LOOP, D-SWIVEL Only for use with XL portables that <u>do not have</u> the LTE option installed and using standard or UL CID2 batteries (XL-PA3V and XL-PA3X)
14. Miscellaneous			
Knob Kit			
S	14035-1948-30	25.00	KIT, GLOVE FRIENDLY KNOB COVER – VOL&CHAN
Connectors			
N	XL-ZN7V	10.00	COVER, SIDE CONNECTOR, XL-200P
Cables			
N	XL-CJ4A	230.00	CABLE, DATA INTERFACE
N	XL-CJ3A	170.00	CABLE, USB, PROGRAMMING
N	XL-CJ3B	170.00	CABLE, KVL, KEY LOADING
Warranty			
N	XL-Y1EWP	100.00	SERVICE ASSIST, EXT WARRANTY 1YR, XL200P
N	XL-Y2EWP	150.00	SERVICE ASSIST, EXT WARRANTY 2YR, XL200P
N	XL-Y3EWP	200.00	SERVICE ASSIST, EXT WARRANTY 3YR, XL200P
Australian C-Tick Certification			
N	XL-CERT1	0.01	OPTION, C-TICK CERTIFICATION
Manuals			
V	MM200XL	65.00	MANUAL, MAINT, XL SERIES
V	MM100BN	35.00	MANUAL, USER, BEON CLIENT

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XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



**Black
Full Keypad**

**Yellow
Full Keypad**

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Analog Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package) Full Keypad Multi-Band

C	XS-PFM9M-NA	3,380.00	PORTABLE, XL-185P, 7/8/9, FKP, BLK, US, NA
C	XS-PFS1M-NA	3,380.00	PORTABLE, XL-185P, 7/8, FKP, BLK, US, NA
C	XS-PFSVM-NA	3,380.00	PORTABLE, XL-185P, VHF, FKP, BLK, NA
C	XS-PFSUM-NA	3,380.00	PORTABLE, XL-185P, UHF, FKP, BLK, NA
C	XS-PFS2M-NA	3,380.00	PORTABLE, XL-185P, 7/8, FKP, BLK, NRB, NA Non-rebanded radios support frequencies up to 870 MHz
C	XS-PFS2M-INTL	3,380.00	PORTABLE, XL-185P, 7/8, FKP, BLK, NRB, INTL Non-rebanded radios support frequencies up to 870 MHz
C	XS-PFM9Y-NA	3,380.00	PORTABLE, XL-185P, 7/8/9, FKP, YEL, US, NA
C	XS-PFS1Y-NA	3,380.00	PORTABLE, XL-185P, 7/8, FKP, YEL, US, NA
C	XS-PFSVY-NA	3,380.00	PORTABLE, XL-185P, VHF, FKP, YEL, NA
C	XS-PFSUY-NA	3,380.00	PORTABLE, XL-185P, UHF, FKP, YEL, NA
C	XS-PFS2Y-NA	3,380.00	PORTABLE, XL-185P, 7/8, FKP, YEL, NRB, NA Non-rebanded radios support frequencies up to 870 MHz
C	XS-PFS2Y-INTL	3,380.00	PORTABLE, XL-185P, 7/8, FKP, YEL, NRB, INTL Non-rebanded radios support frequencies up to 870 MHz

Frequency Band Options for Multi-Band Radios

N	XS-PL4J	0.01	FEATURE, SINGLE BAND VHF
N	XS-PL4K	0.01	FEATURE, SINGLE BAND UHF
N	XS-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N	XS-PL9D	0.01	FEATURE, SINGLE BAND, 900
NB	XS-PKGF5	1,000.00	FEATURE PACKAGE, DUAL BAND, 7/800 + 900

For keyloader, see section 9.

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XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



**Green
 Full Keypad**

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Analog Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package)			
Full Keypad Multi-Band			
C.....	XS-PFM9P-NA.....	3,380.00	PORTABLE, XL-185P, 7/8/9, FKP, PGRN, US, NA
C.....	XS-PFS1P-NA.....	3,380.00	PORTABLE, XL-185P, 7/8, FKP, PGRN, US, NA
C.....	XS-PFSVP-NA.....	3,380.00	PORTABLE, XL-185P, VHF, FKP, PGRN, NA
C.....	XS-PFSUP-NA.....	3,380.00	PORTABLE, XL-185P, UHF, FKP, PGRN, NA
C.....	XS-PFS2P-NA.....	3,380.00	PORTABLE, XL-185P, 7/8, FKP, PGRN, NRB, NA Non-rebanded radios support frequencies up to 870 MHz
C.....	XS-PFS2P-INTL.....	3,380.00	PORTABLE, XL-185P, 7/8, FKP, PGRN, NRB, INTL Non-rebanded radios support frequencies up to 870 MHz

Frequency Band Options for Multi-Band Radios

N.....	XS-PL4J.....	0.01	FEATURE, SINGLE BAND VHF
N.....	XS-PL4K.....	0.01	FEATURE, SINGLE BAND UHF
N.....	XS-PL4L.....	0.01	FEATURE, SINGLE BAND, 7/800
N.....	XS-PL9D.....	0.01	FEATURE, SINGLE BAND, 900
NB.....	XS-PKGF5.....	1,000.00	FEATURE PACKAGE, DUAL BAND, 7/800 + 900

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



Black Yellow
Partial Keypad Partial Keypad

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package) Partial Keypad Multi-Band

C	XS-PPM9M-NA	3,180.00	PORTABLE, XL-185P, 7/8/9, PKP, BLK, US, NA
C	XS-PPS1M-NA	3,180.00	PORTABLE, XL-185P, 7/8, PKP, BLK, US, NA
C	XS-PPSVM-NA	3,180.00	PORTABLE, XL-185P, VHF, PKP, BLK, NA
C	XS-PPSUM-NA	3,180.00	PORTABLE, XL-185P, UHF, PKP, BLK, NA
C	XS-PPS2M-NA	3,180.00	PORTABLE, XL-185P, 7/8, PKP, BLK, NRB, NA
			Non-rebanded radios support frequencies up to 870 MHz
C	XS-PPS2M-INTL	3,180.00	PORTABLE, XL-185P, 7/8, PKP, BLK, NRB, INTL
			Non-rebanded radios support frequencies up to 870 MHz
C	XS-PPM9Y-NA	3,180.00	PORTABLE, XL-185P, 7/8/9, PKP, YEL, US, NA
C	XS-PPS1Y-NA	3,180.00	PORTABLE, XL-185P, 7/8, PKP, YEL, US, NA
C	XS-PPSVY-NA	3,180.00	PORTABLE, XL-185P, VHF, PKP, YEL, NA
C	XS-PPSUY-NA	3,180.00	PORTABLE, XL-185P, UHF, PKP, YEL, NA
C	XS-PPS2Y-NA	3,180.00	PORTABLE, XL-185P, 7/8, PKP, YEL, NRB, NA
			Non-rebanded radios support frequencies up to 870 MHz
C	XS-PPS2Y-INTL	3,180.00	PORTABLE, XL-185P, 7/8, PKP, YEL, NRB, INTL
			Non-rebanded radios support frequencies up to 870 MHz

Frequency Band Options for Multi-Band Radios

N	XS-PL4J	0.01	FEATURE, SINGLE BAND VHF
N	XS-PL4K	0.01	FEATURE, SINGLE BAND UHF
N	XS-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N	XS-PL9D	0.01	FEATURE, SINGLE BAND, 900
NB	XS-PKGF5	1,000.00	FEATURE PACKAGE, DUAL BAND, 7/800 + 900

For keyloader, see section 9.

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XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



**Green
 Partial Keypad**

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package) Partial Keypad Multi-Band			
C.....	XS-PPM9P-NA.....	3,180.00	PORTABLE, XL-185P, 7/8/9, PKP, PGRN, US, NA
C.....	XS-PPS1P-NA.....	3,180.00	PORTABLE, XL-185P, 7/8, PKP, PGRN, US, NA
C.....	XS-PPSVP-NA.....	3,180.00	PORTABLE, XL-185P, VHF, PKP, PGRN NA
C.....	XS-PPSUP-NA.....	3,180.00	PORTABLE, XL-185P, UHF, PKP, PGRN, NA
C.....	XS-PPS2P-NA.....	3,180.00	PORTABLE, XL-185P, 7/8, PKP, PGRN, NRB, NA Non-rebanded radios support frequencies up to 870 MHz
C.....	XS-PPS2P-INTL.....	3,180.00	PORTABLE, XL-185P, 7/8, PKP, PGRN, NRB, INTL Non-rebanded radios support frequencies up to 870 MHz

Frequency Band Options for Multi-Band Radios

N.....	XS-PL4J.....	0.01	FEATURE, SINGLE BAND VHF
N.....	XS-PL4K.....	0.01	FEATURE, SINGLE BAND UHF
N.....	XS-PL4L.....	0.01	FEATURE, SINGLE BAND, 7/800
N.....	XS-PL9D.....	0.01	FEATURE, SINGLE BAND, 900
NB.....	XS-PKGF5.....	1,000.00	FEATURE PACKAGE, DUAL BAND, 7/800 + 900

For keyloader, see section 9.

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XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



Black Yellow Green
Full Keypad Full Keypad Full Keypad

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package) Full Keypad Single Band

C	XS-PFS1M-C1D1	2,600.00	PORTABLE, XL-185P, 7/800, FKP, BLK, US, C1D1
C	XS-PFS1Y-C1D1	2,600.00	PORTABLE, XL-185P, 7/800, FKP, YEL, US, C1D1
C	XS-PFS1P-C1D1	2,600.00	PORTABLE, XL-185P, 7/800, FKP, PGRN, US, C1D1
C	XS-PFS2M-C1D1	2,600.00	PORTABLE, XL-185P, 7/800, FKP, BLK NRB, C1D1
			Non-rebanded radios support frequencies up to 870 MHz
C	XS-PFS2Y-C1D1	2,600.00	PORTABLE, XL-185P, 7/800, FKP, YEL, NRB, C1D1
			Non-rebanded radios support frequencies up to 870 MHz
C	XS-PFS2P-C1D1	2,600.00	PORTABLE, XL-185P, 7/800, FKP, PGRN, NRB, C1D1
			Non-rebanded radios support frequencies up to 870 MHz
C	XS-PFSVM-C1D1	2,600.00	PORTABLE, XL-185P, VHF, FKP, BLK, C1D1
C	XS-PFSVY-C1D1	2,600.00	PORTABLE, XL-185P, VHF, FKP, YEL, C1D1
C	XS-PFSVP-C1D1	2,600.00	PORTABLE, XL-185P, VHF, FKP, PGRN, C1D1
C	XS-PFSUM-C1D1	2,600.00	PORTABLE, XL-185P, UHF, FKP, BLK, C1D1
C	XS-PFSUY-C1D1	2,600.00	PORTABLE, XL-185P, UHF, FKP, YEL, C1D1
C	XS-PFSUP-C1D1	2,600.00	PORTABLE, XL-185P, UHF, FKP, PGRN, C1D1

For keyloader, see section 9.

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XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



Black Yellow Green
Full Keypad Full Keypad Full Keypad

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package)			
Full Keypad Multi-Band			
C.....	XS-PFM9M	2,250.00	PORTABLE, XL-185P, 7/8/900, FKP, BLK, US
C.....	XS-PFM9Y	2,250.00	PORTABLE, XL-185P, 7/8/900, FKP, YEL, US
C.....	XS-PFM9P	2,250.00	PORTABLE, XL-185P, 7/8/900, FKP, PGRN, US
Frequency Band Options for Multi-Band Radios			
N	XS-PL4J	0.01	FEATURE, SINGLE BAND VHF
N	XS-PL4K	0.01	FEATURE, SINGLE BAND UHF
N	XS-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N	XS-PL9D	0.01	FEATURE, SINGLE BAND, 900
NB.....	XS-PKGF5	1,000.00	FEATURE PACKAGE, DUAL BAND, 7/800 + 900

For keyloader, see section 9.

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XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



Black Yellow Green
Partial Keypad Partial Keypad Partial Keypad

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package) Partial Keypad Multi-Band

C	XS-PPM9M	2,050.00	PORTABLE, XL-185P, 7/8/900, PKP, BLK, US
C	XS-PPM9Y	2,050.00	PORTABLE, XL-185P, 7/8/900, PKP, YEL, US
C	XS-PPM9P	2,050.00	PORTABLE, XL-185P, 7/8/900, PKP, PGRN, US

Frequency Band Options for Multi-Band Radios

N	XS-PL4J	0.01	FEATURE, SINGLE BAND VHF
N	XS-PL4K	0.01	FEATURE, SINGLE BAND UHF
N	XS-PL4L	0.01	FEATURE, SINGLE BAND, 7/800
N	XS-PL9D	0.01	FEATURE, SINGLE BAND, 900
NB	XS-PKGF5	1,000.00	FEATURE PACKAGE, DUAL BAND, 7/800 + 900

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



Black Full Keypad Yellow Full Keypad Green Full Keypad

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package)			
Full Keypad Single Band			
C.....	XS-PFS1M.....	2,250.00	.....PORTABLE, XL-185P, 7/800 MHZ, FKP, BLK, US
C.....	XS-PFS1Y	2,250.00	.....PORTABLE, XL-185P, 7/800 MHZ, FKP, YEL, US
C.....	XS-PFS1P	2,250.00	.....PORTABLE, XL-185P, 7/800, FKP, PGRN, US
C.....	XS-PFS2M.....	2,250.00	.....PORTABLE, XL-185P, 7/800 MHZ, FKP, BLK, NRB Non-rebanded radios support frequencies up to 870 MHz
C.....	XS-PFS2Y	2,250.00	.....PORTABLE, XL-185P, 7/800 MHZ, FKP, YEL, NRB Non-rebanded radios support frequencies up to 870 MHz
C.....	XS-PFS2P	2,250.00	.....PORTABLE, XL-185P, 7/800, FKP, PGRN, NRB Non-rebanded radios support frequencies up to 870 MHz
C.....	XS-PFSVM.....	2,250.00	.....PORTABLE, XL-185P, VHF, FKP, BLK
C.....	XS-PFSVY	2,250.00	.....PORTABLE, XL-185P, VHF, FKP, YEL
C.....	XS-PFSVP	2,250.00	.....PORTABLE, XL-185P, VHF, FKP, PGRN
C.....	XS-PFSUM.....	2,250.00	.....PORTABLE, XL-185P, UHF, FKP, BLK
C.....	XS-PFSUY	2,250.00	.....PORTABLE, XL-185P, UHF, FKP, YEL
C.....	XS-PFSUP	2,250.00PORTABLE, XL-185P, UHF, FKP, PGRN

For keyloader, see section 9.

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XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS



Black Yellow Green
Partial Keypad Partial Keypad Partial Keypad

The XL-185P portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-185P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (Select Keypad Type) (All models below include the P25 Conventional Operational Mode Package) Partial Keypad Single Band			
C	XS-PPS1M	2,050.00	PORTABLE, XL-185P, 7/800 MHZ, PKP, BLK, US
C	XS-PPS1Y	2,050.00	PORTABLE, XL-185P, 7/800 MHZ, PKP, YEL, US
C	XS-PPS1P	2,050.00	PORTABLE, XL-185P, 7/800, PKP, PGRN, US
C	XS-PPS2M	2,050.00	PORTABLE, XL-185P, 7/800 MHZ, PKP, BLK, NRB Non-rebanded radios support frequencies up to 870 MHz
C	XS-PPS2Y	2,050.00	PORTABLE, XL-185P, 7/800 MHZ, PKP, YEL, NRB Non-rebanded radios support frequencies up to 870 MHz
C	XS-PPS2P	2,050.00	PORTABLE, XL-185P, 7/800, PKP, PGRN, NRB Non-rebanded radios support frequencies up to 870 MHz
C	XS-PPSVM	2,050.00	PORTABLE, XL-185P, VHF, PKP, BLK
C	XS-PPSVY	2,050.00	PORTABLE, XL-185P, VHF, PKP, YEL
C	XS-PPSVP	2,050.00	PORTABLE, XL-185P, VHF, PKP, PGRN
C	XS-PPSUM	2,050.00	PORTABLE, XL-185P, UHF, PKP, BLK
C	XS-PPSUY	2,050.00	PORTABLE, XL-185P, UHF, PKP, YEL
C	XS-PPSUP	2,050.00	PORTABLE, XL-185P, UHF, PKP, PGRN

For keyloader, see section 9.

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XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
2. Antenna (Select one)			
N	XS-NC5Z	110.00	ANTENNA, FLEX, HELICAL, 136-870 MHZ
N	XS-NC8E	60.00	ANTENNA, WHIP, DUAL-BAND, UHF/700/800 MHZ
N	XS-NC8F	40.00	ANTENNA, WHIP, 1/4 WAVE, 762-870 MHZ
N	XS-NC8D	45.00	ANTENNA, WHIP, 1/2 WAVE, 762-870 MHZ
N	XS-NC8L	50.00	ANTENNA, WHIP, 1/4 WAVE 762-944 MHZ For use with 700/800/900 MHz radios only
N	XS-NC8K	50.00	ANTENNA, WHIP, 1/2 WAVE 762-944 MHZ For use with 700/800/900 MHz radios only
3. Immersible Mode (This feature upgrades the radio to Immersible operation)			
N	XS-PKGMR	240.00	OPTION, IMMERSIBLE RADIO OPERATION (applies to any Operational Mode Feature Package)
4. Operational Mode Packages*			
NB	XS-P25ED	2,000.00	FEATURE PACKAGE, P25 AND EDACS TRUNKING EDACS includes analog trunking, ProVoice™ digital trunking, Status Message, and Extended Addressing (EA). Supports 800 MHz 9600 Wideband and 900 MHz 9600 Narrowband for EDACS only. Does not support EDACS VHF/UHF
NB	XS-PKGPT	1,500.00	FEATURE PACKAGE, P25 TRUNKING Includes Phase 1 Trunking and Status Message
NB	XS-PKGED	1,500.00	FEATURE PACKAGE, EDACS TRUNKING Includes analog trunking, ProVoice™ digital trunking, and Extended Addressing (EA). Supports 800 MHz 9600 Wideband and 900 MHz 9600 Narrowband for EDACS only. Does not support EDACS VHF/UHF
N	XS-LTE-NA-UG	1,445.00	UPGRADE KIT, XL-185P, LTE, NA MODEM Provides a kitted module for fielded radios manufactured after 2/2020. If installation at a Harris facility is desired, must include Harris labor for upgrade.
N	XS-LTE-INTL-UG	1,445.00	UPGRADE KIT, XL-185P, LTE, INTL MODEM Provides a kitted module for fielded radios manufactured after 2/2020. If installation at a Harris facility is desired, must include Harris labor for upgrade.

***All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.**

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
4. Operational Mode Packages* (Cont'd)			
N	XS-LTE-NA-LUG	1,645.00	LEGACY UPGRDE KIT, XL-185P, LTE, NA MODEM Provides a kitted module for fielded radios manufactured between 2/2017 and 2/2020. If installation at a Harris facility is desired, must include Harris labor for upgrade.
N	XS-LTE-INTL-LUG	1,645.00	LEGACY UPGRDE KIT, XL-185P, LTE, INTL MODEM Provides a kitted module for fielded radios manufactured between 2/2017 and 2/2020. If installation at a Harris facility is desired, must include Harris labor for upgrade.
N	BM-PKGCL-XL	335.00	APP, BEON XL RADIO FAMILY BeOn Client License enabling the LTE radio to provide PTT over LTE or WiFi networks. A BeOn Server is required to enable this option.
*All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.			
5. SIM Cards			
N	XS-SV1V	10.00	BROADBAND, SIM CARD, VERIZON Removable Nano SIM that can be purchased separately and added to LTE-capable devices. A non-removable embedded SIM is included and added to LTE-capable radios manufactured after October 25, 2019
N	XS-SV1T	10.00	BROADCAST SIM CARD, AT&T Removable Nano SIM that can be added through the product configurator
N	XS-SV1F	10.00	BROADBAND, SIM CARD, FIRSTNET Removable Nano SIM that can be added through the product configurator. Broadband Managed Services is not an option for FirstNet services. Please contact your cognizant AT&T consultant to activate devices on FirstNet.

6. Broadband Managed Services Options**

N	SB-SV1D	10.00	BROADBAND, LINE OF SERVICE, 1 MONTH
N	SB-SV1G	13.00	BROADBAND, 1GB DATA

****An agreement will need to be executed between Harris and the end user before purchasing. The agreement can be found here:**

<https://premier.pspc.harris.com/infocenter/broadband/Broadband%20managed%20service%20agreement%2020190204.pdf>

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
7. HazLoc Options			
N	XS-PA2A	225.00	BATT, LION, 3100, HAZLOC RADIO ULC1D2, LTE This option upgrades the radio to UL Class 1 Division 2 hazardous locations. It equips the radio with the necessary markings and a UL battery. This battery is certified for use with LTE-enabled XL-185P radios on the Verizon LTE network.
N	XS-PA4L	260.00	BATT, LION, 4800, HI-CAP, HAZLOC RADIO C1D2 This option upgrades the radio to UL Class 1 Division 2 hazardous locations. It equips the radio with the necessary markings and a UL high capacity battery.
8. Encryption Options*			
N	XS-PL4U	0.01	FEATURE, SINGLE-KEY DES ENCRYPTION**
N	XS-PL9E	0.01	FEATURE, SINGLE-KEY AES ENCRYPTION**
N	XS-PL8Y	0.01	FEATURE, ENCRYPTION LITE***
N	XS-PL4D	240.00	FEATURE, DES-CFB
N	XS-PKG8F	695.00	FEATURE, 256-AES, 64-DES ENCRYPTION
*Ordering multi-key AES provides full P25 CAP compliance.			
**Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.			
***Encryption Lite is standard on digital operational modes and is not available on EDACS. Encryption Lite must be selected in the Product Configurator.			
Option for AES Encrypted Radios			
N	XS-PL7J	1.00	FEATURE, FIPS 140-2 OPERATION LEVEL 1
9. Software Features			
Software Options			
N	XS-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	XS-PL8R	100.00	FEATURE, RF SAFE When option is enabled, the radio is always in RF Safe mode (0.1W) and is locked at 0.1W power
N	XS-FW2X	0.01	OPERATION, LOAD NIFOG PERSONALITY

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
9. Software Features (Cont'd)			
P25 Software Options			
N	XS-PL5L	595.00	FEATURE, P25 OTAR (OVER-THE-AIR-REKEYING)
N	XS-PL9L	595.00	FEATURE, HIGH VELOCITY DATA TDMA
NB	XS-PKGPD	330.00	FEATURE PACKAGE, P25 DATA Includes Radio TextLink
N	XS-PL9N	285.00	FEATURE, TDMA CC
N	XS-PL5K	265.00	FEATURE, ProFile™ OTAP OVER-THE-AIR PRGM
N	XS-PL9K	250.00	FEATURE, VIDA ID
N	XS-PL8N	250.00	FEATURE, IN-BAND GPS
N	XS-PL4F	250.00	FEATURE, P25 PHASE 2, TDMA
N	XS-PL9F	250.00	FEATURE, P25C FALLBACK/MS FAILSOFT Required for Motorola customers using P25C Failsoft on a Motorola System. This feature is not needed for Harris-only systems
N	XS-PL9G	250.00	FEATURE, 3000 ALIASES When feature is enabled, users can write all 3000 configured aliases to the radio without incident. When feature is not enabled, users will only be able to use the I-Call list of 255 entries maximum
N	XS-PL9H	175.00	FEATURE, 250 ZONES Enable this feature if planning to configure radio with more than 50 zones. RPM2 can configure up to 250 zones; however, radio will only store the first 50 if this feature is not enabled.
N	XS-PL8M	150.00	FEATURE, EDATA
N	XS-LLA	100.00	FEATURE, LINK LAYER AUTHENTICATION
N	XS-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
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10. Battery (Select one)

For best battery lifecycle quality, shipment of batteries near deployment is advised. For deployment schedules greater than 9 months, shipping batteries separately, at a later date, is recommended. Storing battery packs is not recommended because the chemicals in the battery degrade over time and this affects the functionality of the battery. Batteries that have been stored for longer than their warranty period (12 months) may become non-functional and will not be covered under the L3Harris battery warranty.

N	XS-PA4K	175.00	BATTERY, LI-ION, HI-CAPACITY, 4800 MAH
N	XS-PA4M	205.00	BATTERY, LI-ION, HI-CAPACITY, 4800 MAH, C1D2 For use as a spare UL C1D2 high-capacity battery with XS-PA4L. Ordering this UL battery for use with a non-HazLoc radio does not produce a HazLoc radio
N	XS-PA3V	150.00	BATTERY, LI-ION, 3100 MAH
N	XS-PA4J	200.00	BATTERY, LI-ION, 3100 MAH, UL, C1D1
N	XS-PA3X	175.00	BATTERY, LI-ION, 3100 MAH, ULC1D2, LTE For use as a spare battery with UL radio option XS-PA2A. Ordering this UL battery for use with a non-HazLoc radio does not produce a HazLoc radio. This battery is certified for use with LTE-enabled XL-185P radios on the Verizon LTE network.

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
11. Chargers			
Rapid Chargers			
N	XS-CH5L	245.00	CHARGER, DESKTOP, 2-BAY, XL-185P
N	XS-CH4X	170.00	CHARGER, 1-BAY, XL-185P
N	XS-CH4Z	15.00	KIT, RSM HANGER, 1-BAY, DESK CHARGER
N	XS-CH4Y	10.00	KIT, GANG PLATE, 1-BAY, DESK CHARGER
N	XS-CH5A	895.00	CHARGER, 6-BAY, XL-185P
N	XS-CH5B	215.00	WALL MOUNT KIT, CHARGER, 6-BAY, XL-185P
S	AT6085A	895.00	CHARGER, 12 BAY, LITHIUM, XL Charges batteries only. Does not charge radios with batteries attached
Vehicular Chargers			
N	XS-CH4W	200.00	CHARGER, VC4000
N	XS-PS9X	35.00	POWER ADAPTER KIT, VC4000 CHARGER
N	XS-CH5M	1,499.00	ENH VEH CHGR, XL, STANDARD* For use with standard or Verizon LTE-equipped XL portables using standard capacity (3100 mAh) batteries.
N	XS-CH5N	1,499.00	ENH VEH CHGR, XL, HIGH CAPACITY* For use with standard or Verizon LTE-equipped XL portables using high capacity (4800 mAh) batteries.
N	XS-CH5R	1,499.00	ENH VEH CHGR, XL, HAZLOC* For use with UL C1D1 rated XL portables using the L3Harris UL C1D1 rated HazLoc battery.

*The Enhanced Vehicular Charger currently supports Standard (not LTE equipped), C1D1, and Verizon LTE XL portable models used on 700, 800, or 900 MHz systems; support for VHF/UHF bands and Global LTE models is coming soon

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
12. Audio Accessories			
N	XS-CJ4B	225.00	ADAPTER, 6-PIN HIROSE, XL-185P, EXT CABLE
N	XS-AE1S	179.00	BLUETOOTH, COVERT, EARPIECE/MIC/PTT
Speaker Microphones			
N	XS-AE1T	630.00	SPKR MIC, PREMIUM, FIRE, NC
N	XS-AE1X	630.00	SPKR MIC, PREM, FIRE, NC, HI-VIS-YELLOW
N	XS-AE2W	399.00	SPEAKER MIC, 500F, XL-185P For use with all XL-185P portables, including UL C1D2 and UL C1D1 Hazardous Location rated
N	XS-AE2K	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 18 IN
N	XS-AE2J	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 25.6 IN
N	XS-AE2L	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 30 IN
N	XS-AE1V	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADVANCED
N	XS-AE4B	225.00	SPEAKER MICROPHONE, EMER BUTTON
N	XS-AE9N	195.00	SPEAKER MICROPHONE
N	XS-AE2V	190.00	SPEAKER MIC, REVO NC2, C1D2 Features passive noise cancellation, IP-68 immersion, 360-degree clothing clip, 2.5mm earphone jack, PTT/emergency buttons, and Hi/Lo volume slider switch. UL C1D2 HazLoc rating for use with UL C1D2 rated XL portables
N	XS-AE1K	65.00	EARPHONE, SPEAKER MIC, RIGHT ANGLE, 2.5MM Includes the Cable with 2.5 mm Plug, Transducer, Acoustic Tube, and Earpiece
N	XS-AE3Z	65.00	EARPHONE, LAPEL MICROPHONE For use with Speaker Mics that have an earphone jack

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
12. Audio Accessories (Cont'd)			
Surveillance Accessories			
N	XS-AE1L	825.00	SKULL MIC, W/BODY PTT & EARCUP, XL-185P
N	XS-AE1M	650.00	THROAT MIC, W/ACOUSTIC TUBE & BODY PTT
N	XS-AE1N	600.00	THROAT MIC, W/ACOUSTIC TUBE, BODY & RING PTT
Subminiature Remote Control Options			
The following subminiature options are not approved for use in hazardous atmospheres.			
N	XS-AE6H	215.00	MICROPHONE, MINI-LAPEL, 3-WIRE, BLACK
N	XS-AE6G	215.00	MICROPHONE, PALM, 2-WIRE, BLACK
N	XS-AE6M	215.00	MICROPHONE, PALM, 2-WIRE, BEIGE
Headsets			
N	XS-AE2A	650.00	HEADSET, IN-EAR, BOOM MIC, IN-LINE PTT
N	XS-AE2B	650.00	HEADSET, LTWT, OTH, SINGLE EAR, IN-LINE PTT
N	XS-AE2C	650.00	HEADSET, LTWT, BTH, DUAL EAR, IN-LINE PTT
N	XS-AE2D	650.00	HEADSET, LTWT, BTH, DUAL EAR, PIGTAIL PTT
N	XS-AE2E	650.00	HEADSET, LTWT, BTH, DUAL IN-EAR, IN-LINE PTT
N	XS-AE2F	650.00	HEADSET, LTWT, BTH, DUAL IN-EAR, PIGTAIL PTT
N	XS-AE2G	650.00	HEADSET, BTH, BOOM MIC, EARPIECE, W/PTT
N	XS-AE1H	650.00	HEADSET, TACTICAL, BOOM MIC, EARPIECE, W/PTT
N	XS-AE1P	600.00	HEADSET, HEAVY DUTY, BTH, W/PTT, XL-185P
N	XS-AE1R	600.00	HEADSET, HEAVY DUTY, OTH, W/PTT, XL-185P

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
13. Carrying Accessories			
N	XS-HC4A	60.00	BELT LOOP, LEATHER, PREMIUM
N	XS-HC3J	55.00	STRAP, LEATHER
N	XS-HC3L	30.00	BELT CLIP, METAL
N	XS-HC3K	20.00	STRAP, NYLON
Standard Cases			
N	XS-HC4Y	120.00	CASE, LEATHER, BLK HDW, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XS-HC4W	120.00	CASE, LEATHER, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery
N	XS-HC4V	100.00	CASE, LEATHER, W/BELT LOOP, BLK HDW Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XS-HC6Y	65.00	CASE, LEATHER, 2.5 IN BELT LOOP, DSWIVEL, HCB For use with any XL portable radio when paired with its corresponding high capacity battery (4800 mAh)
N	XS-HC6Z	55.00	CASE, LEATHER, 3 IN BELT LOOP, HCB For use with any XL portable radio when paired with its corresponding high capacity battery (4800 mAh)
N	XS-HC4Z	60.00	CASE, LEATHER, 2.5" BELT LOOP, D-SWIVEL For use with any XL portable radio when paired with its corresponding standard capacity battery (3100 mAh)
N	XS-HC6A	50.00	CASE, LEATHER, 3" BELT LOOP For use with any XL portable radio when paired with its corresponding standard capacity battery (3100 mAh)
N	XS-HC4X	80.00	CASE, NYLON, BLK HDW, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XS-HC4U	80.00	CASE, NYLON, BLACK, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery
N	XS-HC4T	75.00	CASE, NYLON, BLACK, MOLLE STRAP Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces

XL-185P PORTABLES

Band: VHF, UHF, 700/800/900
 Product Code: XS

E/C	Model No.	List Price \$	Description
13. Carrying Accessories (Cont'd)			
Premium Cases			
N	XS-HC4R	200.00	CASE, LEATHER, PREMIUM, SHOULDER STRAP, LTE Only for use with XL portables that <u>have</u> the LTE option installed and using standard or UL C1D2 batteries (XS-PA3V and XS-PA3X)
N	XS-HC4P	175.00	CASE, LEATHER, PREM, BELT LOOP, D-SWIVEL, LTE Only for use with XL portables that <u>have</u> the LTE option installed and using standard or UL C1D2 batteries (XS-PA3V and XS-PA3X)
N	XS-HC4L	170.00	CASE, LEATHER, PREMIUM, SHOULDER STRAP Only for use with XL portables that <u>do not have</u> the LTE option installed and using standard or UL C1D2 batteries (XS-PA3V and XS-PA3X)
N	XS-HC4K	145.00	CASE, LEATHER, PREMIUM, BELT LOOP, D-SWIVEL Only for use with XL portables that <u>do not have</u> the LTE option installed and using standard or UL C1D2 batteries (XS-PA3V and XS-PA3X)
14. Miscellaneous			
Cables			
N	XS-CJ4A	230.00	CABLE, DATA INTERFACE, XL-185P
N	XS-CJ3A	170.00	CABLE, USB, PROGRAMMING
N	XS-CJ3B	170.00	CABLE, KVL, KEY LOADING
Warranty			
N	XS-Y1EWP	100.00	SERVICE ASSIST, EXT WARRANTY 1YR, XL185P
N	XS-Y2EWP	150.00	SERVICE ASSIST, EXT WARRANTY 2YR, XL185P
N	XS-Y3EWP	200.00	SERVICE ASSIST, EXT WARRANTY 3YR, XL185P
Manuals			
V	MM200XL	65.00	MANUAL, MAINT, XL SERIES
V	MM100BN	35.00	MANUAL, USER, BEON CLIENT

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XL-150P PORTABLES

Band: VHF, UHF, 700/800, 900
 Product Code: XV



XL-150P

The XL-150P portables are multi-application radios that can operate on P25 Phase 1 and Phase 2 Trunking, P25 Conventional, and Analog Conventional systems.

All XL-150P orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
1. Package (All packages below include 3100 mAh Li-Ion battery, antenna, single-bay charger, belt clip, Encryption Lite, single-key AES, single-key DES, Bluetooth®, GPS, WiFi®, P25 Phase 1 and Phase 2 Trunking, P25 Conventional, and the Analog Conventional Operational Mode Package)			
Full Keypad Single Band			
C	XV-PFS9M-NA	4,600.00	PORTABLE, XL-150P, 900, FKP, BLK, US, NA Modem capability is only available as a factory install. No field upgrade available.
C	XV-PFS1M-NA	4,875.00	PORTABLE, XL-150P, 7/8, FKP, BLK, US, NA Modem capability is only available as a factory install. No field upgrade available.
C	XV-PFSVM-NA	4,875.00	PORTABLE, XL-150P, VHF, FKP, BLK, NA LTE Modem capability is only available as a factory install. No field upgrade available.
C	XV-PFSUM-NA	4,875.00	PORTABLE, XL-150P, UHF, FKP, BLK, NA Modem capability is only available as a factory install. No field upgrade available.
C	XV-PFS2M-NA	4,875.00	PORTABLE, XL-150P 7/8, FKP, BLK, NRB, NA Non-rebanded radios support frequencies up to 870 MHz. Modem capability is only available as a factory install. No field upgrade available.
C	XV-PFS9M	3,500.00	PORTABLE, XL-150P, 900, FKP, BLK, US
C	XV-PFS1M	3,745.00	PORTABLE, XL-150P, 7/800MHZ, FKP, BLK, US
C	XV-PFS2M	3,745.00	PORTABLE, XL-150P, 7/800MHZ, FKP, BLK, NRB Non-rebanded radios support frequencies up to 870 MHz
C	XV-PFSVM	3,745.00	PORTABLE, XL-150P, VHF, FKP, BLK
C	XV-PFSUM	3,745.00	PORTABLE, XL-150P, UHF, FKP, BLK

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

Latest Products and Pricing on the Web
<https://premier.pspc.harris.com/infocenter/>



XL-150P PORTABLES

Band: VHF, UHF, 700/800, 900
 Product Code: XV

E/C	Model No.	List Price \$	Description
2. Antenna			
N	XV-NC5Z	110.00	ANTENNA, FLEX, HELICAL, 136-870 MHZ
N	XV-NC8E	60.00	ANTENNA, WHIP, DUAL-BAND, UHF/700/800 MHZ
N	XV-NC8F	40.00	ANTENNA, WHIP, 1/4 WAVE, 762-870 MHZ
N	XV-NC8D	45.00	ANTENNA, WHIP, 1/2 WAVE, 762-870 MHZ
N	XV-NC8K	50.00	ANTENNA, WHIP, 1/2 WAVE, 762-944 MHZ For use only on 900 MHz portables
N	XV-NC8L	50.00	ANTENNA, WHIP, 1/4 WAVE, 762-944 MHZ For use only on 900 MHz portables
3. Operational Mode Packages*			
N	XV-LTE-NA-UG	1,445.00	UPGRADE KIT, XL-150P, LTE, NA MODEM Provides a kitted module for field installation. If installation at a Harris facility is desired, must include Harris labor for upgrade (XV-UPGRLAB)
N	XV-UPGRLAB	145.00	LABOR, HARRIS LTE MODEM INSTALLATION Provides Harris installation of XV- LTE-NA-UG Upgrade Kit.. (XV- LTE-NA-UG ordered separately.)
N	BM-PKGCL-XL	335.00	APP, BEON XL RADIO FAMILY BeOn Client License enabling the LTE radio to provide PTT over LTE or WiFi networks. A BeOn Server is required to enable this option.

***All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.**

XL-150P PORTABLES

Band: VHF, UHF, 700/800, 900
 Product Code: XV

E/C	Model No.	List Price \$	Description
4. SIM Cards			
N	XV-SV1V	10.00	BROADBAND, SIM CARD, VERIZON Removable Nano SIM that can be added through the product configurator
N	XV-SV1T	10.00	BROADBAND, SIM CARD, AT&T Removable Nano SIM that can be added through the product configurator
N	XV-SV1F	10.00	BROADBAND, SIM CARD, FIRSTNET Removable Nano SIM that can be added through the product configurator. Broadband Managed Services is not an option for FirstNet services. Please contact your cognizant AT&T consultant to activate devices on FirstNet.

5. Broadband Managed Services Options**

N	SB-SV1D	10.00	BROADBAND, LINE OF SERVICE, 1 MONTH
N	SB-SV1G	13.00	BROADBAND, 1GB DATA

****An agreement will need to be executed between Harris and the end user before purchasing. The agreement can be found here:**

<https://premier.pspc.harris.com/infocenter/broadband/Broadband%20managed%20service%20agreement%2020190204.pdf>

6. Software Features

Software Options

N	XV-PL4E	150.00	FEATURE, CONVENTIONAL VOTE SCAN
N	XV-FW2X	0.01	OPERATION, LOAD NIFOG PERSONALITY

P25 Software Options

N	XV-PL9L	595.00	FEATURE, HIGH VELOCITY DATA TDMA
N	XV-PL9N	285.00	FEATURE, TDMA CC
N	XV-PL9K	250.00	FEATURE, VIDA ID
NB	XV-PKGPD	200.00	FEATURE PACKAGE, P25 DATA Includes Radio TextLink
N	XV-PL5K	200.00	FEATURE, ProFile™ OTAP OVER-THE-AIR PRGM
N	XV-PL9F	150.00	FEATURE, P25C FALLBACK/MS FAILSOFT Required for Motorola customers using P25C Failsoft on a Motorola System. This feature is not needed for Harris-only systems
N	XV-LLA	100.00	FEATURE, LINK LAYER AUTHENTICATION
N	XV-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers

7. Battery

For best battery lifecycle quality, shipment of batteries near deployment is advised. For deployment schedules greater than 9 months, shipping batteries separately, at a later date, is recommended. Storing battery packs is not recommended because the chemicals in the battery degrade over time and this affects the functionality of the battery. Batteries that have been stored for longer than their warranty period (12 months) may become non-functional and will not be covered under the L3Harris battery warranty.

N	XV-PA4K	175.00	BATTERY, LI-ION, HI-CAPACITY, 4800 MAH
N	XV-PA3V	150.00	BATTERY, LI-ION, 3100 MAH

XL-150P PORTABLES

Band: VHF, UHF, 700/800, 900
 Product Code: XV

E/C	Model No.	List Price \$	Description
8. Chargers			
Rapid Chargers			
N	XV-CH5L	245.00	CHARGER, DESKTOP, 2-BAY, XL-150P
N	XV-CH4X	170.00	CHARGER, 1-BAY, XL-150P
N	XV-CH4Z	15.00	KIT, RSM HANGER, 1-BAY, DESK CHARGER
N	XV-CH4Y	10.00	KIT, GANG PLATE, 1-BAY, DESK CHARGER
N	XV-CH5A	895.00	CHARGER, 6-BAY, XL-150P
N	XV-CH5B	215.00	WALL MOUNT KIT, CHARGER, 6-BAY, XL-150P
S	AT6085A	895.00	CHARGER, 12 BAY, LITHIUM, XL Charges batteries only. Does not charge radios with batteries attached
Vehicular Chargers			
N	XV-CH4W	200.00	CHARGER, VC4000
N	XV-PS9X	35.00	POWER ADAPTER KIT, VC4000 CHARGER
N	XV-CH5M	1,499.00	ENH VEH CHGR, XL, STANDARD* For use with standard or Verizon LTE-equipped XL portables using standard capacity (3100 mAh) batteries.
N	XV-CH5N	1,499.00	ENH VEH CHGR, XL, HIGH CAPACITY* For use with standard or Verizon LTE-equipped XL portables using high capacity (4800 mAh) batteries.
N	XV-CH5R	1,499.00	ENH VEH CHGR, XL, HAZLOC* For use with UL C1D1 rated XL portables using the L3Harris UL C1D1 rated HazLoc battery.
*The Enhanced Vehicular Charger currently supports Standard (not LTE equipped), C1D1, and Verizon LTE XL portable models used on 700, 800, or 900 MHz systems; support for VHF/UHF bands and Global LTE models is coming soon.			
9. Audio Accessories			
N	XV-CJ4B	225.00	ADAPTER, 6-PIN HIROSE, XL-150P, EXT CABLE
N	XV-AE1S	179.00	BLUETOOTH, COVERT, EARPIECE/MIC/PTT
Speaker Microphones			
N	XV-AE1T	630.00	SPKR MIC, PREMIUM, FIRE, NC
N	XV-AE1X	630.00	SPKR MIC, PREM, FIRE, NC, HI-VIS-YELLOW
N	XV-AE2W	399.00	SPEAKER MIC, 500F, XL-150P
N	XV-AE2K	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 18 IN
N	XV-AE2J	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 25.6 IN
N	XV-AE2L	300.00	MICROPHONE, ANTENNA SPEAKER, EMRG, 30 IN

XL-150P PORTABLES

Band: VHF, UHF, 700/800, 900
 Product Code: XV

E/C	Model No.	List Price \$	Description
9. Audio Accessories (Cont'd)			
Speaker Microphones (Cont'd)			
N	XV-AE1V	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADVANCED
N	XV-AE4B	225.00	SPEAKER MICROPHONE, EMER BUTTON
N	XV-AE9N	195.00	SPEAKER MICROPHONE
N	XV-AE2V	190.00	SPEAKER MIC, REVO NC2, C1D2 Features passive noise cancellation, IP-68 immersion, 360-degree clothing clip, 2.5mm earphone jack, PTT/emergency buttons, and Hi/Lo volume slider switch.
N	XV-AE1K	65.00	EARPHONE, SPEAKER MIC, RIGHT ANGLE, 2.5MM Includes the Cable with 2.5 mm Plug, Transducer, Acoustic Tube, and Earpiece
N	XV-AE3Z	65.00	EARPHONE, LAPEL MICROPHONE For use with Speaker Mics that have an earphone jack
Surveillance Accessories			
N	XV-AE1L	825.00	SKULL MIC, W/BODY PTT & EARCUP, XL-150P
N	XV-AE1M	650.00	THROAT MIC, W/ACOUSTIC TUBE & BODY PTT
N	XV-AE1N	600.00	THROAT MIC, W/ACOUSTIC TUBE, BODY & RING PTT
Subminiature Remote Control Options			
The following subminiature options are not approved for use in hazardous atmospheres.			
N	XV-AE6H	215.00	MICROPHONE, MINI-LAPEL, 3-WIRE, BLACK
N	XV-AE6G	215.00	MICROPHONE, PALM, 2-WIRE, BLACK
N	XV-AE6M	215.00	MICROPHONE, PALM, 2-WIRE, BEIGE
Headsets			
N	XV-AE2A	650.00	HEADSET, IN-EAR, BOOM MIC, IN-LINE PTT
N	XV-AE2B	650.00	HEADSET, LTWT, OTH, SINGLE EAR, IN-LINE PTT
N	XV-AE2C	650.00	HEADSET, LTWT, BTH, DUAL EAR, IN-LINE PTT
N	XV-AE2D	650.00	HEADSET, LTWT, BTH, DUAL EAR, PIGTAIL PTT
N	XV-AE2E	650.00	HEADSET, LTWT, BTH, DUAL IN-EAR, IN-LINE PTT
N	XV-AE2F	650.00	HEADSET, LTWT, BTH, DUAL IN-EAR, PIGTAIL PTT
N	XV-AE2G	650.00	HEADSET, BTH, BOOM MIC, EARPIECE, W/PTT
N	XV-AE1H	650.00	HEADSET, TACTICAL, BOOM MIC, EARPIECE, W/PTT
N	XV-AE1P	600.00	HEADSET, HEAVY DUTY, BTH, W/PTT, XL-150P
N	XV-AE1R	600.00	HEADSET, HEAVY DUTY, OTH, W/PTT, XL-150P
10. Carrying Accessories			
N	XV-HC4A	60.00	BELT LOOP, LEATHER, PREMIUM
N	XV-HC3J	55.00	STRAP, LEATHER
N	XV-HC3L	30.00	BELT CLIP, METAL
N	XV-HC3K	20.00	STRAP, NYLON

XL-150P PORTABLES

Band: VHF, UHF, 700/800, 900
 Product Code: XV

E/C	Model No.	List Price \$	Description
10. Carrying Accessories (Cont'd)			
Standard Cases			
N	XV-HC4Y	120.00	CASE, LEATHER, BLK HDW, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XV-HC4W	120.00	CASE, LEATHER, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery
N	XV-HC4V	100.00	CASE, LEATHER, W/ BELT LOOP, BLK HDW Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XV-HC6Y	65.00	CASE, LEATHER, 2.5 IN BELT LOOP, DSWIVEL, HCB For use with any XL portable radio when paired with its corresponding high capacity battery (4800 mAh)
N	XV-HC6Z	55.00	CASE, LEATHER, 3 IN BELT LOOP, HCB For use with any XL portable radio when paired with its corresponding high capacity battery (4800 mAh)
N	XV-HC4Z	60.00	CASE, LEATHER, 2.5 IN BELT LOOP, D-SWIVEL For use with any XL portable radio when paired with its corresponding standard capacity battery (3100 mAh)
N	XV-HC6A	50.00	CASE, LEATHER, 3 IN BELT LOOP For use with any XL portable radio when paired with its corresponding standard capacity battery (3100 mAh)
N	XV-HC4X	80.00	CASE, NYLON, BLK HDW, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
N	XV-HC4U	80.00	CASE, NYLON, BLACK, BELT LOOP, D-SWIVEL Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery
N	XV-HC4T	75.00	CASE, NYLON, BLACK, MOLLE STRAP Can be used with all XL portable radio and battery combinations that <u>do not include</u> the XL high capacity battery. Case contains no reflective surfaces
Premium Cases			
N	XV-HC4R	200.00	CASE, LEATHER, PREMIUM, SHOULDER STRAP, LTE Only for use with XL portables that <u>have</u> the LTE option installed and using standard batteries (XV-PA3V)
N	XV-HC4P	175.00	CASE, LEATHER, PREM, BELT LOOP, D-SWIVEL, LTE Only for use with XL portables that <u>have</u> the LTE option installed and using standard batteries (XV-PA3V)
N	XV-HC4L	170.00	CASE, LEATHER, PREMIUM, SHOULDER STRAP Only for use with XL portables that <u>do not have</u> the LTE option installed and using standard or UL C1D2 batteries (XV-PA3V)
N	XV-HC4K	145.00	CASE, LEATHER, PREMIUM, BELT LOOP, D-SWIVEL Only for use with XL portables that <u>do not have</u> the LTE option installed and using standard or UL C1D2 batteries (XV-PA3V)

XL-150P PORTABLES

Band: VHF, UHF, 700/800, 900
 Product Code: XV

E/C	Model No.	List Price \$	Description
11. Miscellaneous			
Connectors			
N	XV-ZN7V	10.00	COVER, SIDE CONNECTOR, XL-150P
Cables			
N	XV-CJ4A	230.00	CABLE, DATA INTERFACE, XL-150P
N	XV-CJ3A	170.00	CABLE, USB, PROGRAMMING
N	XV-CJ3B	170.00	CABLE, KVL, KEY LOADING
Warranty			
N	XV-Y1EWP	100.00	SERVICE ASSIST, EXT WARRANTY 1YR, XL150P
N	XV-Y2EWP	150.00	SERVICE ASSIST, EXT WARRANTY 2YR, XL150P
N	XV-Y3EWP	200.00	SERVICE ASSIST, EXT WARRANTY 3YR, XL150P

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XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
 Product Code: EV



Black-Gray System

Black-Yellow System

Midnight Black System

The XG-75Pe portables are multi-application radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems. The portables have an A-B-C switch.

All XG-75Pe orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (All models below include the P25 Conventional Operational Mode Package)

System 768-861 MHz

C	EVXG-PF78YE	1,720.00	PORTABLE, XG-75PE, 768-861 MHZ, SYS, BLK-YEL
C	EVXG-PF78ME	1,720.00	PORTABLE, XG-75PE, 768-861 MHZ, SYS, BLACK
C	EVXG-PF78BE	1,690.00	PORTABLE, XG-75PE, 768-861 MHZ, SYS, BLK-GRY

Scan 768-861 MHz

C	EVXG-PB78YE	1,555.00	PORTABLE, XG-75PE, 768-861 MHZ, SCAN, BLK-YEL
C	EVXG-PB78ME	1,555.00	PORTABLE, XG-75PE, 768-861 MHZ, SCAN, BLACK
C	EVXG-PB78BE	1,535.00	PORTABLE, XG-75PE, 768-861 MHZ, SCAN, BLK-GRY

System 450-512 MHz

C	EVXG-PFU4YE	1,720.00	PORTABLE, XG-75PE, 450-512 MHZ, SYS, BLK-YEL
C	EVXG-PFU4BE	1,690.00	PORTABLE, XG-75PE, 450-512 MHZ, SYS, BLK-GRY

Scan 450-512 MHz

C	EVXG-PBU4YE	1,555.00	PORTABLE, XG-75PE, 450-512 MHZ, SCAN, BLK-YEL
C	EVXG-PBU4BE	1,535.00	PORTABLE, XG-75PE, 450-512 MHZ, SCAN, BLK-GRY

2. Antenna (Select one) (All antenna options are compatible with the UL radio option)

N	EV-NC8D	45.00	ANTENNA, ENHANCED, WHIP, 1/2 WAVE 762-870 MHZ
N	EV-NC8F	40.00	ANTENNA, ENHANCED, WHIP, 1/4 WAVE 762-870 MHZ
N	MAEV-NNC5X	40.00	ANTENNA, 764-870 MHZ, 1/4 WAVE, WHIP, FM
N	EV-NC7A	30.00	ANTENNA, 764-870 MHZ, 1/2 WAVE, WHIP
N	MAEV-NNC5K	30.00	ANTENNA, 764-870 MHZ, 1/2 WAVE, WHIP, FM
N	MAEV-NNC1N	25.00	ANTENNA, 440-512 MHZ, WHIP
N	MAEV-NNC5Y	25.00	ANTENNA, 470-512 MHZ, HELICAL
N	EVXG-NC1F	25.00	ANTENNA, 440-494 MHZ, HELICAL

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

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XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
 Product Code: EV



Black-Gray System Black-Yellow System Midnight Black System Tactical Green System

The XG-75P portables are multi-application radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XG-75 orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (All models below include the P25 Conventional Operational Mode Package) System 378-470 MHz

C	EVXG-PFU1Y	1,720.00	PORTABLE, XG-75, 378-470 MHZ, SYS, BLK-YEL
C	EVXG-PFU1M	1,720.00	PORTABLE, XG-75, 378-470 MHZ, SYS, MIDNT BLK
C	EVXG-PFU1G	1,720.00	PORTABLE, XG-75, 378-470 MHZ, SYS, TAC GRN
C	EVXG-PFU1B	1,690.00	PORTABLE, XG-75, 378-470 MHZ, SYS, BLK-GRY
C	EVXG-PFU2Y	2,205.00	PORTABLE, XG-75, 378-470 MHZ, SYS, 0.1W, YEL
C	EVXG-PFU2B	2,170.00	PORTABLE, XG-75, 378-470 MHZ, SYS, 0.1W, GRY

Scan 378-470 MHz

C	EVXG-PBU1Y	1,555.00	PORTABLE, XG-75, 378-470 MHZ, SCAN, BLK-YEL
C	EVXG-PBU1B	1,535.00	PORTABLE, XG-75, 378-470 MHZ, SCAN, BLK-GRY
C	EVXG-PBU2Y	1,995.00	PORTABLE, XG-75, 378-470 MHZ, SCAN, 0.1W, YEL
C	EVXG-PBU2B	1,970.00	PORTABLE, XG-75, 378-470 MHZ, SCAN, 0.1W, GRY

2. Antenna (Select one) (All antenna options are compatible with the UL radio option)

N	EVXG-NC1F	25.00	ANTENNA, 440-494 MHZ, HELICAL This antenna operates up to 470 MHz on the XG-75
N	EVXG-NC1U	25.00	ANTENNA, 403-430 MHZ, HELICAL, FM
N	EVXG-NC1L	25.00	ANTENNA, 378-430 MHZ, WHIP, FM
N	EVXG-NC5B	25.00	ANTENNA, 378-403 MHZ, HELICAL, FM

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
 Product Code: EV



Black-Gray System Black-Yellow System Midnight Black System Tactical Green System

The XG-75P portables are multi-application radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XG-75 orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (All models below include the P25 Conventional Operational Mode Package)

System 136-174 MHz

C	EVXG-PFV1Y	1,720.00	PORTABLE, XG-75, 136-174 MHZ, SYS, BLK-YEL
C	EVXG-PFV1M	1,720.00	PORTABLE, XG-75, 136-174 MHZ, SYS, MIDNT BLK
C	EVXG-PFV1G	1,720.00	PORTABLE, XG-75, 136-174 MHZ, SYS, TAC GRN
C	EVXG-PFV1B	1,690.00	PORTABLE, XG-75, 136-174 MHZ, SYS, BLK-GRY

Scan 136-174 MHz

C	EVXG-PBV1Y	1,555.00	PORTABLE, XG-75, 136-174 MHZ, SCAN, BLK-YEL
C	EVXG-PBV1B	1,535.00	PORTABLE, XG-75, 136-174 MHZ, SCAN, BLK-GRY

2. Antenna (Select one) (All antenna options are compatible with the UL radio option)

N	EVXG-NC5W	25.00	ANTENNA, 150-174- MHZ, HELICAL WIDEBAND, FM
N	EVXG-NC1C	25.00	ANTENNA, 150-162 MHZ, HELICAL, FM
N	EVXG-NC1B	25.00	ANTENNA, 136-151 MHZ, HELICAL, FM

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
 Product Code: EV

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

(IS) INTRINSICALLY SAFE APPROVALS

An accessory description followed by the symbol FM indicates that the option is approved for use with FM certified Intrinsically Safe radios.

E/C	Model No.	List Price \$	Description
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3. Immersible Mode (This feature upgrades the radio to Immersible operation.)

NMAEV-PKGMR240.00OPTION, IMMERSIBLE RADIO OPERATION (applies to any Operational Mode Feature Package)

4. Operational Mode Packages*

NBMAEV-PKGPT950.00FEATURE PACKAGE, P25 TRUNKING
 NBMAEV-PKGED950.00FEATURE PACKAGE, EDACS TRUNKING
 NBMAEV-PKGOS950.00FEATURE PACKAGE, OPENSky TRUNKING
 NBEV-P25ED1,400.00FEATURE PACKAGE, P25 TRUNKING & EDACS
 NBMAEV-PKGNT1,400.00FEATURE PACKAGE, OPENSky AND P25 TRUNKED
 NBEV-OSD1,400.00FEATURE PACKAGE, OPENSky & EDACS
 NBEV-EPO1,700.00FEATURE PACKAGE, P25T, OPENSky & EDACS

***All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.**

5. HazLoc Option (This feature upgrades the radio to Intrinsically Safe)

NEV-PA3Y225.00BATTERY, LI-ION, 2000 MAH, HAZLOC C1D1, UL This option upgrades the radio to UL Intrinsically Safe. It equips the radio with the necessary markings and certifications and a UL C1D1 battery.

6. Encryption Options*

NEV-PL4U0.01FEATURE, SINGLE-KEY DES ENCRYPTION**
 NEV-PL9E0.01FEATURE, SINGLE-KEY AES ENCRYPTION**
 NEV-PL8Y0.01FEATURE, ENCRYPTION LITE***
 NMAEV-NPL3V395.00FEATURE, 64B-DES Encryption for P25 and ProVoice
 NMAEV-NPL7M495.00FEATURE, 256B-AES Encryption for P25
 NBMAEV-PKG8F595.00FEATURE, 256-AES, 64-DES ECP Encryption (Includes 256-B AES Encryption for P25 and 64-B DES Encryption for P25 & ProVoice)
 NMAEV-NPL8D695.00FEATURE, 256-AES, OTP Encryption (Includes 256-B AES Encryption for OpenSky)
 NBMAEV-PKG8C895.00FEATURE, 256-AES, ECP & OTP, 64-DES, ECP (Includes 256-B AES Encryption for P25 & OpenSky and 64-B DES Encryption for P25 & ProVoice)

***Ordering multi-key AES provides full P25 CAP compliance.**

****Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.**

*****Encryption Lite is standard on digital operational modes and is not available for EDACS. Encryption Lite must be selected in the Product Configurator.**



XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
 Product Code: EV

(IS) INTRINSICALLY SAFE APPROVALS

An accessory description followed by the symbol FM indicates that the option is approved for use with FM certified Intrinsically Safe radios.

E/C	Model No.	List Price \$	Description
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7. Software Features

Software Options

N	EV-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	MAEV-NPL7K	110.00	FEATURE, DIRECT FREQUENCY ENTRY
N	MAEV-NPL6T	19.50	FEATURE, MDC-1200
N	EV-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.

OpenSky Software Options

N	MAEV-NPL7Y	315.00	FEATURE, OTAR, OPENSky
N	MAEV-NPL7X	250.00	FEATURE, DATA, OPENSky

ProVoice, EDACS, and P25 Software Options

N	MAEV-NPL3R	0.01	FEATURE, MAXIMUM (1024+) SYSTEMS/GROUPS*
N	MAEV-NPL5K	265.00	FEATURE, ProFile™ OVER-THE-AIR PROGRAMMING
N	MAEV-NPL7G	110.00	FEATURE, EDACS SECURITY KEY/P25 PERSONALITY LOCK
N	MAEV-NPL7N	60.00	FEATURE, RADIO TEXTLINK
N	MAEV-NPL3Y	55.00	FEATURE, STATUS MESSAGE

*1024+ systems/groups is a standard feature

ProVoice and EDACS Software Options

N	EV-PRO	250.00	FEATURE, PROVOICE (Must have Operational Mode Package containing EDACS for this upgrade)
N	MAEV-NPL3X	220.00	FEATURE, EDACS DATA

P25 Software Options

N	EV-LLA	75.00	FEATURE, LINK LAYER AUTHENTICATION
N	EV-PL8M	150.00	FEATURE, EDATA
N	MAEV-NPL7P	215.00	FEATURE, P25 DATA
N	EVXG-NPL4F	250.00	FEATURE, P25 PHASE 2, TDMA
N	EV-PL8N	150.00	FEATURE, IN-BAND GPS
N	MAEV-NPL5L	495.00	FEATURE, P25 OVER-THE-AIR-REKEYING (OTAR)

8. Battery (Select one)

For best battery lifecycle quality, shipment of batteries near deployment is advised. For deployment schedules greater than 9 months, shipping batteries separately, at a later date, is recommended. Storing battery packs is not recommended because the chemicals in the battery degrade over time and this affects the functionality of the battery. Batteries that have been stored for longer than their warranty period (12 months) may become non-functional and will not be covered under the L3Harris battery warranty.

Immersible (Must be ordered with Immersible Mode (MAEV-PKGMR))

N	MAEV-PA2U	225.00	BATTERY, LI-POLYMER, 3600 MAH
N	EV-PA4B	200.00	BATTERY, LI-ION, 2000 MAH, SPARE, HAZLOC, UL For use as a spare battery with HazLoc radio option EV-PA3Y. Ordering this IS battery for use with a non-IS radio does not produce an Intrinsically Safe radio.

XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
 Product Code: EV

(IS) INTRINSICALLY SAFE APPROVALS

An accessory description followed by the symbol FM indicates that the option is approved for use with FM certified Intrinsically Safe radios.

E/C	Model No.	List Price \$	Description
8. Battery (Select one) (Cont'd)			
N	MAEV-NPA9X	160.00	BATTERY, NIMH, 2400 MAH
N	EV-PA3R	105.00	BATTERY, LI-ION, 2400 MAH
Battery Enclosure (Optional)			
N	EV-PA3S	75.00	BATTERY, AA CLAMSHELL Enclosure for AA batteries which are not included. Lithium AA batteries are recommended for use
9. Chargers			
Desk Chargers			
N	EV-CH5X	150.00	CHARGER, 1-BAY, TRI-CHEMISTRY
N	EV-CH5A	895.00	CHARGER, 6-BAY, LI BATTERY
N	EV-CH5Y	825.00	CHARGER, 6-BAY, TRI-CHEMISTRY
N	MAEV-AE4A	100.00	WALL MOUNT KIT, CHARGER, 6-BAY, LI-ION/POLY
10. Audio Accessories			
N	EV-CJ2U	175.00	ADAPTER, XG-75, 6-PIN HIROSE
N	EV-AE1S	179.00	BLUETOOTH, COVERT, EARPIECE/MIC/PTT
Speaker Microphones			
N	EV-AE1W	630.00	SPKR MIC, PREM, FIRE, NC, XG-75P, HI-VIS YEL
N	EV-AE1U	630.00	SPEAKER MIC, PREMIUM, FIRE, NC, XG-75P
N	MAEV-NAE9R	575.00	SPEAKER MIC, GPS Includes Rubber PTT Button, Emergency Button, and GPS-only Antenna. For use with P25, OpenSky, and EDACS
N	EV-AE4K	350.00	SPEAKER MIC, RUGGED, COILED, HIROSE PORT Includes Coiled Cord, Rubber PTT Button, Emergency Button, Hirose Accessory Jack, and Watertight Accessory Connector
N	MAEV-NAE6D	300.00	SPEAKER MIC, PUBLIC SAFETY, RUGGED, FM Includes Straight Cord, Rubber PTT Button, Emergency Button, Antenna Port (Order antenna separately), and Watertight Accessory Connector
N	EV-AE1V	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADVANCED
N	EV-AE2T	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADV, ANZ For use in Australia and New Zealand

XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
 Product Code: EV

(IS) INTRINSICALLY SAFE APPROVALS

An accessory description followed by the symbol FM indicates that the option is approved for use with FM certified Intrinsically Safe radios.

E/C	Model No.	List Price \$	Description
10. Audio Accessories (Cont'd)			
Speaker Microphones (Cont'd)			
N	EV-AE4C	285.00	SPEAKER MIC, RUGGED, COILED, HI-VIS, FM Includes Yellow Rubber PTT Button, Emergency Button, Yellow Removable Grill, Accessory Jack, and Watertight Accessory Connector. Immersion Rated to 1 Meter.
N	MAEV-NAE6C	260.00	SPEAKER MIC, RUGGED, COILED, FM Includes Rubber PTT Button, Emergency Button, Coiled Cord, and Watertight Accessory Connector. Immersion Rated to 1 Meter.
N	MAEV-AE6N	175.00	SPEAKER MIC, PUBLIC SAFETY, STRAIGHT, 30 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEV-AE6L	175.00	SPEAKER MIC, STRAIGHT, 25.6 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEV-AE6M	175.00	SPEAKER MIC, PUBLIC SAFETY, STRAIGHT, 18 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEV-NAE6A	160.00	SPEAKER MIC, COILED, FM Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Coiled Cord, and Earphone Jack
N	MAEV-NAE9D	175.00	SPEAKER MIC, FM Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, and Earphone Jack
N	EV-AE1K	65.00	EARPHONE, SPEAKER MIC, RIGHT ANGLE, 2.5MM Includes the Cable with 2.5 mm Plug, Transducer, Acoustic Tube, and Earpiece
N	MAEV-NAE3Z	65.00	EARPHONE, LAPEL MICROPHONE, FM For use with Speaker Mics that have earphone jacks
11. Carrying Accessories			
N	EV-HC4A	60.00	BELT LOOP, LEATHER, PREMIUM
N	MAEV-NHC7T	35.00	BELT LOOP, LEATHER WITH SWIVEL
N	MAEV-NHC2G	20.00	BELT CLIP, Standard
Standard Cases			
N	MAEV-NHC2C	130.00	CASE, LEATHER WITH BELT LOOP
N	MAEV-NHC2D	100.00	CASE, LEATHER WITH SHOULDER STRAP
N	MAEV-NHC2A	80.00	CASE, BLACK NYLON WITH BELT LOOP
N	EV-HC3Z	75.00	CASE, NYLON, TACTICAL GREEN, MOLLE STRAP
N	MAEV-NHC2E	15.00	STRAP, LEATHER RETAINING
Premium Cases			
N	EV-HC4C	150.00	CASE, LEATHER, PREMIUM, XG75/25, SHLDER STRAP
N	EV-HC4B	170.00	CASE, LEATHER, PREMIUM, XG75/25, BELT LOOP

XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
 Product Code: EV

E/C	Model No.	List Price \$	Description
12. Miscellaneous			
Battery Charger/Analyzer/Conditioner			
V	CADEX-7400	4,100.00	ANALYZER, BATTERY, CADEX, 4-BAY Requires sleeves below
S	AA-018695-001	220.00	ADAPTER, SLEEVE FOR CADEX-7400 SYSTEM FOR NICD/NIMH BATTERIES
Adapters			
N	EV-CJ1R	179.00	ADAPTER, UDC, BLUETOOTH, XG-75P
N	EV-CJ1N	199.00	ADAPTER, UDC, GPS, XG-75P
Knob Kits			
N	EV-ZN2J	25.00	KIT, OVERSIZE KNOB, XG-75/P7300
Label Kits			
N	EV-ZN2K	115.00	KIT, LABEL, REAR, FIRE, XG-75, 16PK
N	EV-ZN2L	155.00	KIT, LABEL, REAR, EMT, XG-75, 16PK
N	EV-ZN2M	120.00	KIT, LABEL, FRONT, RED, XG-75, 20PK
N	EV-ZN2N	120.00	KIT, LABEL, FRONT, GREEN, XG-75, 20PK
N	EV-ZN2P	120.00	KIT, LABEL, FRONT, BLUE, XG-75, 20PK
N	EV-ZN2R	120.00	KIT, LABEL, FRONT, YELLOW, XG-75, 20PK
N	EV-ZN2T	120.00	KIT, LABEL, FRONT, ORANGE, XG-75, 20PK
Cables			
N	CA-023407-001	190.00	CABLE, PROGRAMMING
S	14002-0143-01	312.00	CABLE, PROGRAMMER ADAPTOR, KVL 3000+
N	MAEV-NCJ2A	230.00	CABLE, DATA INTERFACE
Warranty			
N	EV-Y1EWP	60.00	WARRANTY, EXTENDED 1 YR, PORTABLE
N	EV-Y2EWP	110.00	WARRANTY, EXTENDED 2 YR, PORTABLE
N	EV-Y3EWP	160.00	WARRANTY, EXTENDED 3 YR, PORTABLE
Industry Canada			
N	MAEV-NEC1A	5.00	OPTION, INDUSTRY CANADA
Manuals			
V	MM110-XG75	65.00	MANUAL, MAINT, XG-75, VHF
V	MM210-XG75	65.00	MANUAL, MAINT, XG-75, UHF
V	MM780-XG75	65.00	MANUAL, MAINT, XG-75, 700/800 MHZ
V	MM450-XG75	65.00	MANUAL, MAINT, XG-75PE, UHF-H
V	MM785-XG75	65.00	MANUAL, MAINT, XG-75PE, 700/800 MHZ

XG-75P AND XG-75PE PORTABLES

Band: 700/800, UHF, VHF
Product Code: EV

HAZARDOUS LOCATION (HAZLOC)

Hazardous Location radios provided by Harris are certified by Underwriters Laboratories (UL).

XG-75P and XG-75Pe radios when properly equipped with UL approved batteries and accessories are certified to ANSI/TIA-4950, ANSI/ISA 12.12.01, CAN/CSA-C22.2 No. 157-92, CAN/CSA-C22.2 No. 213-15 standards as suitable for use in Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1 hazardous locations; Class I, Division 2, Groups A, B, C, and D or non-hazardous (unclassified) locations only.

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XG-25P PORTABLES

Band: VHF, UHF, 700/800
 Product Code: DP



Scan System

The XG-25P portables are multi-application radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XG-25P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (All models below include the P25 Conventional Operational Mode Package)

System 764-870 MHz

CDPXG-PF78B..... 1,200.00PORTABLE, XG-25P, 764-870 MHZ, SYSTEM

Scan 764-870 MHz

CDPXG-PB78B 1,100.00PORTABLE, XG-25P, 764-870 MHZ, SCAN

2. Antenna (Select one)

NDP-NC8D 45.00ANTENNA, ENHANCED, WHIP, 1/2 WAVE 762-870 MHZ

NDP-NC8F 40.00ANTENNA, ENHANCED, WHIP, 1/4 WAVE 762-870 MHZ

NDP-NC5X 40.00ANTENNA, 764-870 MHZ, 1/4 WAVE WHIP

NDP-NC7A 30.00ANTENNA, 764-870 MHZ, 1/2 WAVE, WHIP

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XG-25P PORTABLES

Band: VHF, UHF, 700/800
Product Code: DP



Scan System

The XG-25P portables are multi-application radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XG-25P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (All models below include the P25 Conventional Operational Mode Package)			
System 378-470 MHz			
C.....	DPXG-PFU1B	1,200.00	PORTABLE, XG-25P, 378-470 MHZ, SYSTEM
Scan 378-470 MHz			
C.....	DPXG-PBU1B.....	1,100.00	PORTABLE, XG-25P, 378-470 MHZ, SCAN
2. Antenna (Select one)			
N	DP-NC1F	25.00	ANTENNA, 440-494 MHZ, HELICAL
N	DP-NC1U	25.00	ANTENNA, 403-430 MHZ, HELICAL
N	DP-NC5B.....	25.00	ANTENNA, 378-403 MHZ, HELICAL
N	DP-NC1L.....	25.00	ANTENNA, 378-430 MHZ, WHIP

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XG-25P PORTABLES

Band: VHF, UHF, 700/800
 Product Code: DP



Scan System

The XG-25P portables are multi-application radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XG-25P orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (All models below include the P25 Conventional Operational Mode Package)			
System 136-174 MHz			
C	DPXG-PFV1B	1,200.00	PORTABLE, XG-25P, 136-174 MHZ, SYSTEM
Scan 136-174 MHz			
C	DPXG-PBV1B	1,100.00	PORTABLE, XG-25P, 136-174 MHZ, SCAN
2. Antenna (Select one)			
N	DP-NC5W	25.00	ANTENNA, 150-174 MHZ, HELICAL WIDEBAND, FM
N	DP-NC1C	25.00	ANTENNA, 150-162 MHZ, HELICAL, FM
N	DP-NC1B	25.00	ANTENNA, 136-151 MHZ, HELICAL, FM

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XG-25P PORTABLES

Band: VHF, UHF, 700/800
 Product Code: DP

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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3. Operational Mode Packages*

NB.....DP-PKGPT	750.00	FEATURE PACKAGE, P25 TRUNKING
NB.....DP-PKGED.....	750.00	FEATURE PACKAGE, EDACS TRUNKING
NB.....DP-PKGOS.....	750.00	FEATURE PACKAGE, OPENSky TRUNKING**
NB.....DP-P25ED	1,200.00	FEATURE PACKAGE, P25 TRUNKING & EDACS
NB.....DP-PKGNT.....	1,200.00	FEATURE PACKAGE, OPENSky AND P25T**
NB.....DP-OSD	1,200.00	FEATURE PACKAGE, OPENSky AND EDACS**
NB.....DP-EPO	1,600.00	FEATURE PACKAGE, EDACS, P25T AND OPENSky**

*All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan and 512 systems/groups.

**For 700/800 MHz radios only.

4. Encryption Options*

N.....DP-PL4U	0.01	FEATURE, SINGLE-KEY-DES ENCRYPTION**
N.....DP-PL9E.....	0.01	FEATURE, SINGLE-KEY AES ENCRYPTION**
N.....DP-PL8Y	0.01	FEATURE, ENCRYPTION LITE***
N.....DP-PL3V	395.00	FEATURE, 64B-DES ENCRYPTION for P25
N.....DP-PL7M.....	495.00	FEATURE, 256B-AES ENCRYPTION for P25
N.....DP-PKG8F.....	595.00	FEATURE, 256B-AES, 64B-DES ECP ENCRYPTION for P25
NB.....DP-PL8D	695.00	FEATURE, 256-AES, OTP ENCRYPTION****
NB.....DP-PKG8C	895.00	FEATURE, 256-AES, ECP & OTP, 64-DES, ECP****

*Ordering multi-key AES provides full P25 CAP compliance.

**Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.

***Encryption Lite is standard on digital operational modes and is not available for EDACS. Encryption Lite must be selected in the Product Configurator.

****For 700/800 MHz radios only.

5. Software Features

Software Options

N.....DP-PL4E.....	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N.....DP-PL7K	110.00	DIRECT FREQUENCY ENTRY
N.....DP-PL4N	100.00	FEATURE, BLUETOOTH OPERATION
N.....DP-SP2V.....	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.

OpenSky Software Options

N.....DP-PL7Y	315.00	FEATURE, OTAR, OPENSky*
N.....DP-PL7X	250.00	FEATURE, OPENSky DATA*

*For 700/800 MHz radios only.

XG-25P PORTABLES

Band: VHF, UHF, 700/800
 Product Code: DP

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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5. Software Features (Cont'd)

ProVoice, EDACS, and P25 Software Options

N DP-PL7G 110.00 FEATURE, ESK/P25 PERSONALITY LOCK

ProVoice and EDACS Software Options

N DP-PRO 250.00 FEATURE, PROVOICE (Must have Operational Mode Package containing EDACS for this upgrade)

N DP-PL3X 220.00 FEATURE, EDACS DATA

P25 Software Options

N DP-PL7Z 0.00 FEATURE, 512 SYSTEMS/GROUPS*

N DP-PL5L 465.00 FEATURE, P25 OVER-THE-AIR REKEYING

N DP-PL5K 265.00 FEATURE, ProFile™ OTAP OVER-THE-AIR PROGRAMMING

N DP-PL4F 250.00 FEATURE, P25 PHASE 2, TDMA

N DP-PL8N 150.00 FEATURE, IN-BAND GPS

N DP-PL3R 215.00 FEATURE, MAXIMUM (1024+) SYSTEMS/GROUPS

N DP-PL7P 215.00 FEATURE, P25 DATA

N DP-PL8M 150.00 FEATURE, EDATA

N DP-LLA 75.00 FEATURE, LINK LAYER AUTHENTICATION

N DP-PL7N 60.00 FEATURE, RADIO TEXTLINK

N DP-PL3Y 55.00 FEATURE, STATUS MESSAGE

***512 systems/groups is a standard feature**

6. Battery (Select one)

For best battery lifecycle quality, shipment of batteries near deployment is advised. For deployment schedules greater than 9 months, shipping batteries separately, at a later date, is recommended. Storing battery packs is not recommended because the chemicals in the battery degrade over time and this affects the functionality of the battery. Batteries that have been stored for longer than their warranty period (12 months) may become non-functional and will not be covered under the L3Harris battery warranty.

N DP-PA2U 225.00 BATTERY, LI-POLYMER, 3600 MAH

N DP-PA9X 160.00 BATTERY, NIMH, 2400 MAH

N DP-PA3R 105.00 BATTERY, LI-ION, 2400 MAH

Battery Enclosure (Optional)

N DP-PA3S 75.00 BATTERY, AA CLAMSHELL Enclosure for AA batteries which are not included. Lithium AA batteries are recommended for use

7. Chargers

Desk Chargers

N DP-CH5X 150.00 CHARGER, 1-BAY, TRI-CHEMISTRY

N DP-CH5Y 825.00 CHARGER, 6-BAY, TRI-CHEMISTRY

XG-25P PORTABLES

Band: VHF, UHF, 700/800
 Product Code: DP

E/C	Model No.	List Price \$	Description
8. Audio Accessories			
N	DP-AE1S	179.00	BLUETOOTH, COVERT, EARPIECE/MIC/PTT
Speaker Microphones			
N	DP-AE1W	630.00	SPEAKER MIC, PREM, FIRE, NC, XG-25P, HI-VIS YEL
N	DP-AE1U	630.00	SPEAKER MIC, PREMIUM, FIRE, NC, XG-25P
N	DP-AE9R	575.00	SPEAKER MIC, GPS Includes Rubber PTT Button, Emergency Button, and GPS-only Antenna. For use with P25
N	DP-AE4K	350.00	SPEAKER MIC, RUGGED, COILED, HIROSE PORT Includes Coiled Cord, Rubber PTT Button, Emergency Button, Hirose Accessory Jack, and Watertight Accessory Connector
N	DP-AE1V	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADVANCED
N	DP-AE2T	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADV, ANZ For use in Australia and New Zealand
N	DP-AE4C	285.00	SPEAKER MIC, RUGGED, COILED, HI-VIS, FM Includes Yellow Rubber PTT Button, Emergency Button, Yellow Removable Grill, Accessory Jack, and Watertight Accessory Connector. Immersion Rated to 1 Meter.
N	DP-AE6C	260.00	SPEAKER MIC, RUGGED, COILED, FM Includes Rubber PTT Button, Emergency Button, and Watertight Accessory Connector. Immersion Rated to 1 Meter.
N	DP-AE6A	160.00	SPEAKER MIC, COILED FM Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, and Earphone Jack
N	DP-AE9D	175.00	SPEAKER MIC, FM Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, and Earphone Jack
N	DP-AE1K	65.00	EARPHONE, SPEAKER MIC, RIGHT ANGLE, 2.5MM Includes the Cable with 2.5 mm Plug, Transducer, Acoustic Tube, and Earpiece
N	DP-AE3Z	65.00	EARPHONE, LAPEL MICROPHONE For use with Speaker/Mics that have earphone jack
9. Carrying Accessories			
N	DP-HC4A	60.00	BELT LOOP, LEATHER, PREMIUM
N	DP-HC7T	35.00	BELT LOOP, LEATHER, WITH SWIVEL
N	DP-HC7P	20.00	BELT CLIP, METAL
Standard Cases			
N	DP-HC9L	130.00	CASE, LEATHER, W/BELT LOOP, XG-25P
N	DP-HC9S	100.00	CASE, LEATHER W/SHOULDER STRAP, XG-25P
N	DP-HC9M	80.00	CASE, NYLON, BLACK, W/BELT LOOP, XG-25P
N	DP-HC3T	80.00	CASE, NYLON, ORANGE, W/BELT LOOP, XG-25P
N	DP-HC9V	15.00	STRAP, STND, RETAINING, USE W/SHLDER STRAP
Premium Cases			
N	DP-HC4C	150.00	CASE, LEATHER, PREMIUM, XG75/25, SHLDER STRAP
N	DP-HC4B	170.00	CASE, LEATHER, PREMIUM, XG75/25, BELT LOOP

XG-25P PORTABLES

Band: VHF, UHF, 700/800
 Product Code: DP

E/C	Model No.	List Price \$	Description
10. Miscellaneous			
Battery Charger/Analyzer/Conditioner			
V	CADEX-7400	4,100.00	ANALYZER, BATTERY, CADEX, 4-BAY Requires sleeves below
S	AA-018695-001	220.00	ADAPTER, SLEEVE FOR CADEX-7400 SYSTEM FOR NICD/NIMH BATTERIES
Adapters			
N	DP-CJ1N	199.00	ADAPTER, UDC, GPS, XG-25P
Cables			
N	CA-023407-001	190.00	CABLE, PROGRAMMING
N	14002-0143-01	312.00	CABLE, PROGRAMMER ADAPTOR, KVL 3000+
N	DP-CJ2A	230.00	CABLE, DATA INTERFACE
Warranty			
N	DP-Y1EWP	60.00	WARRANTY, EXTENDED 1 YR, PORTABLE
N	DP-Y2EWP	110.00	WARRANTY, EXTENDED 2 YR, PORTABLE
N	DP-Y3EWP	160.00	WARRANTY, EXTENDED 3 YR, PORTABLE
Industry Canada			
N	DP-EC1A	5.00	OPTION, INDUSTRY CANADA
Manuals			
V	MM100DP	65.00	MANUAL, MAINTENANCE, XG-25P, VHF
V	MM400DP	65.00	MANUAL, MAINTENANCE, XG-25P, UHF-L
V	MM780DP	65.00	MANUAL, MAINTENANCE, XG-25P, 700/800 MHZ

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XG-15P PORTABLE

Band: VHF, UHF, 700/800
 Product Code: XR



XG-15P

The XG-15P portables are multi-application radios that can operate on P25 Trunking, P25 Conventional, and Analog Conventional systems.

All XG-15P orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
1. Package (All packages below include a 2400 mAh Li-Ion battery, antenna, single-bay tri-chemistry charger, metal belt clip, single-key DES, 512 systems/groups, and the Analog Conventional Operational Mode Package)			
C	XR-PF78B-C	1,095.00	PORTABLE PKG, XG-15P, 768-861 MHZ, SYSTEM, P25C Includes P25 Conventional and 764-870 MHz 1/4 wave whip antenna Please see the Package listing above for additional contents
C	XR-PFU1B-C	1,095.00	PORTABLE PKG, XG-15P, 440-512 MHZ, SYSTEM, P25C Includes P25 Conventional and 440-512 MHz whip antenna Please see the Package listing above for additional contents
C	XR-PFV1B-C	1,095.00	PORTABLE PKG, XG-15P, 136-174 MHZ, SYSTEM, P25C Includes P25 Conventional and 150-174 MHz wideband helical antenna Please see the Package listing above for additional contents
C	XR-PF78B-T	1,350.00	PORTABLE PKG, XG-15P, 768-861 MHZ, SYSTEM, P25T Includes P25 Trunking and 764-870 MHz 1/4 wave whip antenna Please see the Package listing above for additional contents
C	XR-PFU1B-T	1,350.00	PORTABLE PKG, XG-15P, 440-512 MHZ, SYSTEM, P25T Includes P25 Trunking and 440-512 MHz whip antenna Please see the Package listing above for additional contents
C	XR-PFV1B-T	1,350.00	PORTABLE PKG, XG-15P, 136-174 MHZ, SYSTEM, P25T Includes P25 Trunking and 150-174 MHz wideband helical antenna Please see the Package listing above for additional contents

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XG-15P PORTABLE

Band: VHF, UHF, 700/800
Product Code: XR



XG-15P

The XG-15P portables are multi-application radios that can operate on P25 Trunking, P25 Conventional, and Analog Conventional systems.

All XG-15P orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
1. Package (All packages below include a 2400 mAh Li-Ion battery, antenna, single-bay tri-chemistry charger, metal belt clip, single-key DES, 512 systems/groups, and the Analog Conventional Operational Mode Package)			
C.....	XR-PF78B-T-PH2	1,795.00	PORTABLE PKG, XG-15P, 768-861 MHZ, SYS, P25T, TDMA Includes P25 Phase 2 Trunking and 764-870 MHz 1/4 wave whip antenna Please see the Package listing above for additional contents
C.....	XR-PFU1B-T-PH2	1,795.00	PORTABLE PKG, XG-15P, 440-512 MHZ, SYS, P25T, TDMA Includes P25 Phase 2 Trunking and 440-512 MHz whip antenna Please see the Package listing above for additional contents
C.....	XR-PFV1B-T-PH2	1,795.00	PORTABLE PKG, XG-15P, 136-174 MHZ, SYS, P25T, TDMA Includes P25 Phase 2 Trunking and 150-174 MHz wideband helical antenna Please see the Package listing above for additional contents

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XG-15P PORTABLE

Band: VHF, UHF, 700/800
 Product Code: XR

E/C	Model No.	List Price \$	Description
2. Antennas			
N	XR-NC8D	45.00	ANTENNA, ENHANCED, WHIP, 1/2 WAVE 762-870 MHZ
N	XR-NC8F	40.00	ANTENNA, ENHANCED, WHIP, 1/4 WAVE 762-870 MHZ
N	XR-NC5X	40.00	ANTENNA, 764-870 MHZ, 1/4 WAVE WHIP
N	XR-NC5K	30.00	ANTENNA, 764-870 MHZ, 1/2 WAVE END-FED
N	XR-NC1N	25.00	ANTENNA, 440-512 MHZ, WHIP
N	XR-NC5W	25.00	ANTENNA, 150-174 MHZ, HELICAL WIDEBAND
N	XR-NC1B	25.00	ANTENNA, 136-151 MHZ, HELICAL
3. Encryption			
N	XR-PL8Y	0.01	FEATURE, ENCRYPTION LITE*
N	XR-PL9E	0.01	FEATURE, SINGLE-KEY AES ENCRYPTION
*Encryption Lite comes standard on digital operational modes. Encryption Lite must be selected in the Product Configurator. Ordering a radio without Encryption Lite provides a fully P25 CAP compliant radio.			
4. Software Features			
N	XR-PL5K	265.00	FEATURE, PROFILE™ OTAP OVER-THE-AIR PRGM
N	XR-PL8N	150.00	FEATURE, IN-BAND GPS
N	XR-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	XR-PL7G	110.00	FEATURE, ESK/P25 PERSONALITY LOCK
N	XR-LLA	75.00	FEATURE, LINK LAYER AUTHENTICATION
N	XR-PL7N	60.00	FEATURE, RADIO TEXTLINK
N	XR-PL3Y	55.00	FEATURE, STATUS MESSAGE
N	XR-PL6T	19.50	FEATURE, MDC-1200
N	XR-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.
5. Battery			
For best battery lifecycle quality, shipment of batteries near deployment is advised. For deployment schedules greater than 9 months, shipping batteries separately, at a later date, is recommended Storing battery packs is not recommended because the chemicals in the battery degrade over time and this affects the functionality of the battery. Batteries that have been stored for longer than their warranty period (12 months) may become non-functional and will not be covered under the L3Harris battery warranty.			
N	XR-PA3R	105.00	BATTERY, LI-ION, 2400 MAH
6. Chargers			
N	XR-CH5X	150.00	CHARGER, 1-BAY, TRI-CHEMISTRY
N	XR-CH5Y	825.00	CHARGER, 6-BAY, TRI-CHEMISTRY

XG-15P PORTABLE

Band: VHF, UHF, 700/800
 Product Code: XR

E/C	Model No.	List Price \$	Description
7. Audio Accessories			
Speaker Microphones			
N	XR-AE1W	630.00	SPKR MIC, PREM, FIRE, NC, XG-15P, HI-VIS YEL
N	XR-AE9R	575.00	SPEAKER MIC, GPS Includes Rubber PTT Button, Emergency Button, and GPS-only Antenna. For use with P25
N	XR-AE1V	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADVANCED
N	XR-AE2T	299.00	SPEAKER MIC, WIRELESS, BLUETOOTH, ADV, ANZ For use in Australia and New Zealand
N	XR-AE6C	260.00	SPEAKER MIC, RUGGED, COILED
N	XR-AE6A	160.00	SPEAKER MIC, COILED Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, and Earphone Jack
8. Carrying Accessories			
N	XR-HC7P	20.00	BELT CLIP, METAL
N	XR-NHC9S	100.00	CASE, STND, LEATHER W/SHOULDER STRAP KIT
N	XR-NHC9T	60.00	CASE, STND, LEATHER W/ BELT LOOP & SWIVEL
N	XR-NHC9U	45.00	CASE, STND, BLK NYLON W/BELT LOOP/SWIVEL
N	XR-NHC9V	15.00	STRAP, STND, RETAINING, USE W/SHLDER STRAP
9. Miscellaneous			
Adapters			
N	XR-CJ1R	179.00	ADAPTER, UDC, BLUETOOTH, XG-15P
N	XR-CJ1N	199.00	ADAPTER, UDC, GPS, XG-15P
Cables			
N	CA-023407-001	190.00	CABLE, PROGRAMMING
N	14002-0143-01	312.00	CABLE, PROGRAMMER ADAPTOR, KVL 3000+
Warranty			
N	XR-Y1EWP	60.00	WARRANTY, EXTENDED 1 YR, PORTABLE
N	XR-Y2EWP	110.00	WARRANTY, EXTENDED 2 YR, PORTABLE
N	XR-Y3EWP	160.00	WARRANTY, EXTENDED 3 YR, PORTABLE
Industry Canada			
N	XR-EC1A	5.00	OPTION, INDUSTRY CANADA
Manuals			
V	MM100XR	65.00	MANUAL, MAINT, XG-15P, VHF
V	MM450XR	65.00	MANUAL, MAINT, XG-15P, UHF-H
V	MM780XR	65.00	MANUAL, MAINT, XG-15P, 700/800 MHZ



P7300 PORTABLES

Band: 700/800
 Product Code: EV



P7350 P7370

The P7300 portables are multi-mode radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All P7300 orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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1. Transceiver (All models below include the P25 Conventional Operational Mode Package)

P7350

C MAEV-S7HXX 2,290.00 PORTABLE, P7350, 764-870 MHZ, SCAN

2. Antenna (Select one)

N	EV-NC8D	45.00	ANTENNA, ENHANCED, WHIP, 1/2 WAVE 762-870 MHZ
N	EV-NC8F	40.00	ANTENNA, ENHANCED, WHIP, 1/4 WAVE 762-870 MHZ
N	MAEV-NNC5X	40.00	ANTENNA, 764-870 MHZ, 1/4 WAVE, WHIP, FM
N	EV-NC7A	30.00	ANTENNA, 764-870 MHZ, 1/2 WAVE, WHIP
N	MAEV-NNC5K	30.00	ANTENNA, 764-870 MHZ, 1/2 WAVE, WHIP, FM

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

P7300 PORTABLES

Band: 700/800
 Product Code: EV

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

(IS) INTRINSICALLY SAFE APPROVALS

An accessory description followed by the symbol FM indicates that the option is approved for use with FM certified Intrinsically Safe radios.

E/C	Model No.	List Price \$	Description
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3. Immersible Mode (This feature upgrades the radio to Immersible operation.)

N	MAEV-PKGMR	240.00	IMMERSIBLE RADIO OPERATION (applies to any Operational Mode Feature Package)
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4. Operational Mode Packages*

NB	MAEV-PKGPT	950.00	FEATURE PACKAGE, P25 TRUNKING
NB	MAEV-PKGED	950.00	FEATURE PACKAGE, EDACS TRUNKING
NB	MAEV-PKGOS	950.00	FEATURE PACKAGE, OPENSky TRUNKING
NB	EV-P25ED	1,400.00	FEATURE PACKAGE, P25 TRUNKING & EDACS
NB	MAEV-PKGNT	1,400.00	FEATURE PACKAGE, OPENSky AND P25 TRUNKED
NB	EV-OSED	1,400.00	FEATURE PACKAGE, OPENSky & EDACS
NB	EV-EPO	1,700.00	FEATURE PACKAGE, P25T, OPENSky & EDACS

***All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.**

5. HazLoc Option (This feature upgrades the radio to Factory Mutual Intrinsically Safe)

N	EV-PA3Z	190.00	BATTERY, LI-ION, 2000 MAH, RADIO, FM C1D2 This option upgrades the radio to Factory Mutual Intrinsically Safe C1D2. It equips the radio with the necessary markings and certifications and an (FM) battery.
N	EV-PA4C	185.00	BATTERY, NIMH, 2400 MAH, RADIO, FM C1D2 This option upgrades the radio to Factory Mutual Intrinsically Safe C1D2. It equips the radio with the necessary markings and certifications and an (FM) battery.

6. Encryption Options

N	EV-PL4U	0.01	FEATURE, SINGLE-KEY DES ENCRYPTION*
N	MAEV-NPL3V	395.00	FEATURE, 64B-DES Encryption for P25 and ProVoice
N	MAEV-NPL7M	495.00	FEATURE, 256B-AES Encryption for P25
NB	MAEV-PKG8F	595.00	FEATURE, 256-AES, 64-DES ECP Encryption (Includes 256-B AES Encryption for P25 and 64-B DES Encryption for P25 & ProVoice)
N	MAEV-NPL8D	695.00	FEATURE, 256-AES, OTP Encryption (Includes 256-B AES Encryption for OpenSky)
NB	MAEV-PKG8C	895.00	FEATURE, 256-AES, ECP & OTP, 64-DES, ECP (Includes 256-B AES Encryption for P25 & OpenSky and 64-B DES Encryption for P25 & ProVoice)

***Single-Key DES comes standard on digital operational modes; it is not available in EDACS.**



P7300 PORTABLES

Band: 700/800
 Product Code: EV

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

(IS) INTRINSICALLY SAFE APPROVALS

An accessory description followed by the symbol FM indicates that the option is approved for use with FM certified Intrinsically Safe radios.

E/C	Model No.	List Price \$	Description
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7. Software Features

Software Options

N	EV-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	MAEV-NPL6T	19.50	FEATURE, MDC-1200
N	EV-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.

OpenSky Software Options

N	MAEV-NPL7Y	315.00	FEATURE, OTAR, OPENSKY
N	MAEV-NPL7X	250.00	FEATURE, DATA, OPENSKY

ProVoice, EDACS, and P25 Software Options

N	MAEV-NPL3R	0.00	FEATURE, MAXIMUM (1,024+) SYSTEMS/GROUPS*
N	MAEV-NPL5K	265.00	FEATURE, ProFile™ OTAP OVER-THE-AIR PROGRAMMING
N	MAEV-NPL7G	110.00	FEATURE, EDACS SECURITY KEY/P25 PERSONALITY LOCK
N	MAEV-NPL7N	60.00	FEATURE, RADIO TEXTLINK
N	MAEV-NPL3Y	55.00	FEATURE, STATUS MESSAGE

***1024+ systems/groups is a standard feature**

ProVoice and EDACS Software Options

N	EV-PRO	250.00	FEATURE, PROVOICE (Must have Operational Mode Package containing EDACS for this upgrade)
N	MAEV-NPL3X	220.00	FEATURE, EDACS DATA

P25 Software Options

N	EV-LLA	75.00	FEATURE, LINK LAYER AUTHENTICATION
N	MAEV-NPL7P	215.00	FEATURE, P25 DATA
N	EVXG-NPL4F	250.00	FEATURE, P25 PHASE 2, TDMA
N	MAEV-NPL5L	495.00	FEATURE, P25 OTAR OVER-THE-AIR REKEYING

8. Battery (Select one)

For best battery lifecycle quality, shipment of batteries near deployment is advised. For deployment schedules greater than 9 months, shipping batteries separately, at a later date, is recommended. Storing battery packs is not recommended because the chemicals in the battery degrade over time and this affects the functionality of the battery. Batteries that have been stored for longer than their warranty period (12 months) may become non-functional and will not be covered under the L3Harris battery warranty.

Immersible (Must be ordered with Immersible Mode (MAEV-PKGMR))

N	MAEV-PA2U	225.00	BATTERY, LI-POLYMER, 3600 MAH
N	MAEV-NPA9X	160.00	BATTERY, NIMH, IMMERSIBLE, 2400 MAH
N	EV-PA3R	105.00	BATTERY, LI-ION, 2400 MAH
S	BT-023406-004	230.00	BATTERY, NIMH, 2400 MAH, FM* For use as a spare battery with Intrinsically Safe radio option MAEV-NPA2A. Ordering this IS battery for use with a non-IS radio does not produce an Intrinsically Safe radio.

***FM option availability is limited to existing stock. Intent to cancel.**

Battery Enclosure (Optional)

N	EV-PA3S	75.00	BATTERY, AA CLAMSHELL Enclosure for AA batteries which are not included. Lithium AA batteries are recommended for use
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P7300 PORTABLES

Band: 700/800
 Product Code: EV

(IS) INTRINSICALLY SAFE APPROVALS

An accessory description followed by the symbol FM indicates that the option is approved for use with FM certified Intrinsically Safe radios.

E/C	Model No.	List Price \$	Description
9. Chargers			
Desk Chargers			
N	EV-CH5X	150.00	CHARGER, 1-BAY, TRI-CHEMISTRY
N	EV-CH5A	895.00	CHARGER, 6-BAY, LI BATTERY
N	EV-CH5Y	825.00	CHARGER, 6-BAY, TRI-CHEMISTRY
N	MAEV-AE4A	100.00	WALL MOUNT KIT, CHARGER, 6-BAY, LI-ION/POLY
10. Audio Accessories			
Speaker Microphones			
N	EV-AE1W	630.00	SPKR MIC, PREM, FIRE, NC, XG-75P, HI-VIS YEL
N	EV-AE1U	630.00	SPEAKER MIC, PREMIUM, FIRE, NC, XG-75P
N	MAEV-NAE9R	575.00	SPEAKER MIC, GPS Includes Rubber PTT Button, Emergency Button, and GPS-only Antenna. For use with P25, OpenSky, and EDACS
N	EV-AE4K	350.00	SPEAKER MIC, RUGGED, COILED, HIROSE PORT Includes Coiled Cord, Rubber PTT Button, Emergency Button, Hirose Accessory Jack, and Watertight Accessory Connector
N	MAEV-NAE6D	300.00	SPEAKER MIC, PUBLIC SAFETY, RUGGED, FM Includes Straight Cord, Rubber PTT Button, Emergency Button, Antenna Port (Order antenna separately), and Watertight Accessory Connector
N	EV-AE4C	285.00	SPEAKER MIC, RUGGED, COILED, HI-VIS, FM Includes Yellow Rubber PTT Button, Emergency Button, Yellow Removable Grill, Accessory Jack, and Watertight Accessory Connector. Immersion Rated to 1 Meter.
N	MAEV-NAE6C	260.00	SPEAKER MIC, RUGGED, COILED, FM Includes Rubber PTT Button, Emergency Button, Coiled Cord, and Watertight Accessory Connector. Immersion Rated to 1 Meter.
N	MAEV-AE6N	175.00	SPEAKER MIC, PUBLIC SAFETY, STRAIGHT, 30 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEV-AE6L	175.00	SPEAKER MIC, STRAIGHT, 25.6 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEV-AE6M	175.00	SPEAKER MIC, PUBLIC SAFETY, STRAIGHT, 18 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEV-NAE6A	160.00	SPEAKER MIC, COILED, FM Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Coiled Cord, and Earphone Jack

P7300 PORTABLES

Band: 700/800
 Product Code: EV

E/C	Model No.	List Price \$	Description
10. Audio Accessories (Cont'd)			
Speaker Microphones (Cont'd)			
N	MAEV-NAE9D	175.00	SPEAKER MIC, FM Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, and Earphone Jack
N	EV-AE1K	65.00	EARPHONE, SPEAKER MIC, RIGHT ANGLE, 2.5MM Includes the Cable with 2.5 mm Plug, Transducer, Acoustic Tube, and Earpiece
N	MAEV-NAE3Z	65.00	EARPHONE, LAPEL MICROPHONE, FM For use with Speaker Mics that have earphone jacks
11. Carrying Accessories			
N	EV-HC4A	60.00	BELT LOOP, LEATHER, PREMIUM
N	MAEV-NHC7T	35.00	BELT LOOP, LEATHER WITH SWIVEL
N	MAEV-NHC2G	20.00	BELT CLIP, Standard
Standard Cases			
N	MAEV-NHC2C	130.00	CASE, LEATHER WITH BELT LOOP
N	MAEV-NHC2D	100.00	CASE, LEATHER WITH SHOULDER STRAP
N	MAEV-NHC2A	80.00	CASE, BLACK NYLON WITH BELT LOOP
N	MAEV-NHC2E	15.00	STRAP, LEATHER RETAINING
Premium Cases			
N	EV-HC4C	150.00	CASE, LEATHER, PREMIUM, XG75/25, SHLDER STRAP
N	EV-HC4B	170.00	CASE, LEATHER, PREMIUM, XG75/25, BELT LOOP
12. Miscellaneous			
Battery Charger/Analyzer/Conditioner			
V	CADEX-7400	4,100.00	ANALYZER, BATTERY, CADEX, 4-BAY Requires sleeves below
S	AA-018695-001	220.00	ADAPTER, SLEEVE FOR CADEX-7400 SYSTEM FOR NICD/NIMH BATTERIES
Adapters			
N	EV-CJ1R	179.00	ADAPTER, UDC, BLUETOOTH, XG-75P
N	EV-CJ1N	199.00	ADAPTER, UDC, GPS, XG-75P
Knob Kits			
N	EV-ZN2J	25.00	KIT, OVERSIZE KNOB, XG-75/P7300
Cables			
N	CA-023407-001	190.00	CABLE, PROGRAMMING
S	14002-0143-01	312.00	CABLE, PROGRAMMER ADAPTOR, KVL 3000+
N	MAEV-NCJ2A	230.00	CABLE, DATA INTERFACE
Warranty			
N	EV-Y1EWP	60.00	WARRANTY, EXTENDED 1 YR, PORTABLE
N	EV-Y2EWP	110.00	WARRANTY, EXTENDED 2 YR, PORTABLE
N	EV-Y3EWP	160.00	WARRANTY, EXTENDED 3 YR, PORTABLE
Industry Canada			
N	MAEV-NEC1A	5.00	OPTION, INDUSTRY CANADA
Manuals			
V	MAMM-780EV	65.00	MANUAL, MAINTENANCE, P7300 SERIES (700/800 MHZ)

P7300 PORTABLES

Band: 700/800

Product Code: EV

HAZARDOUS LOCATION (HAZLOC)

Hazardous Location radios provided by Harris are certified by Factory Mutual (FM).

As of May 23, 2016, P-series (specifically P7300 and P5300) FM approved radios manufactured by Harris shall be re-classified from Intrinsically Safe Class I, Division 1, Group D; Class II, Division 1, Groups F and G; Class III Division 1; Nonincendive Class I, Division 2, Groups A, B, C, and D to Nonincendive Class I, Division 2, Groups A, B, C, and D.

The HAZLOC reclassification is not a result of a product design change by Harris, but rather an industry-wide re-classification of all FM approved radios originally certified under FM 3610:1988 standards. Harris FM approved radios are not any less safe as a result of this industry standard change.

P5500 PORTABLES

Band: UHF
Product Code: EX



The P5500 portables are multi-application radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All P5500 orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (All models below include the P25 Conventional Operational Mode Package)			
P5570 335-380 MHz			
C	EX55-PFU3B	1,400.00	PORTABLE, P5570, 335-380 MHZ, SYSTEM, Unencrypted
P5550 335-380 MHz			
C	EX55-PBU3B	1,300.00	PORTABLE, P5550, 335-380 MHZ, SCAN, Unencrypted
2. Antenna (Select one)			
N	EX-AN7B	25.00	ANTENNA, 335-380 MHZ, HELICAL
N	EX-AN7C	25.00	ANTENNA, 335-380 MHZ, 1/4 WAVE

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

P5500 PORTABLES

Band: UHF
 Product Code: EX

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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3. Operational Mode Packages*

NB	MAEX-PKGPT	750.00	FEATURE PACKAGE, P25 TRUNKING
NB	MAEX-PKGED	750.00	FEATURE PACKAGE, EDACS TRUNKING
NB	EX-P25ED	1,200.00	FEATURE PACKAGE, P25 TRUNKING & EDACS

***All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 512 systems/groups.**

4. Encryption Options

N	EX-PL4U	0.01	FEATURE, SINGLE-KEY DES ENCRYPTION*
N	MAEX-NPL3V	395.00	FEATURE, 64B-DES Encryption for P25 and ProVoice
N	MAEX-NPL7M	495.00	FEATURE, 256B-AES Encryption for P25
NB	MAEX-PKG8F	595.00	FEATURE, 256-AES, 64-DES ECP Encryption (Includes 256-B AES Encryption for P25 and 64-B DES Encryption for P25 & ProVoice)

***Single-Key DES comes standard on digital operational modes; it is not available in EDACS.**

5. Software Features

Software Options

N	EX-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	MAEX-NPL6T	19.50	FEATURE, MDC-1200
N	EX-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.

ProVoice, EDACS, and P25 Software Options

N	MAEX-NPL7Z	0.00	FEATURE, 512 SYSTEMS/GROUPS*
N	MAEX-NPL5K	265.00	FEATURE, ProFile™ OVER-THE-AIR PROGRAMMING
N	MAEX-NPL3R	215.00	FEATURE, MAXIMUM (1,024+) SYSTEMS/GROUPS
N	MAEX-NPL7G	110.00	FEATURE, EDACS SECURITY KEY/P25 PERSONALITY LOCK
N	MAEX-NPL7N	60.00	FEATURE, RADIO TEXTLINK
N	MAEX-NPL3Y	55.00	FEATURE, STATUS MESSAGE

***512 systems/groups is a standard feature**

ProVoice and EDACS Software Options

N	EX-PRO	250.00	FEATURE, PROVOICE (Must have Operational Mode Package containing EDACS for this upgrade)
N	MAEX-NPL3X	220.00	FEATURE, EDACS DATA

P25 Software Options

N	EX-LLA	75.00	FEATURE, LINK LAYER AUTHENTICATION
N	EX55-NPL4F	250.00	FEATURE, P25 PHASE 2, TDMA
N	MAEX-NPL7P	215.00	FEATURE, P25 DATA
N	MAEX-NPL5L	495.00	FEATURE, P25 OVER-THE-AIR-REKEYING (OTAR)

P5500 PORTABLES

Band: UHF
 Product Code: EX

Transceiver, Antenna, and Battery must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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6. Battery (Select one)

For best battery lifecycle quality, shipment of batteries near deployment is advised. For deployment schedules greater than 9 months, shipping batteries separately, at a later date, is recommended. Storing battery packs is not recommended because the chemicals in the battery degrade over time and this affects the functionality of the battery. Batteries that have been stored for longer than their warranty period (12 months) may become non-functional and will not be covered under the L3Harris battery warranty.

N	MAEX-NPA9X	160.00	BATTERY, NIMH, 2400 MAH
N	MAEX-PA2U	225.00	BATTERY, LI-POLYMER, 3600 MAH
N	EX-PA3R	105.00	BATTERY, LI-ION, 2400 MAH

Battery Enclosure (Optional)

N	EX-PA3S	75.00	BATTERY, AA CLAMSHELL Enclosure for AA batteries which are not included. Lithium AA batteries are recommended for use
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7. Chargers

Rapid Chargers

N	EX-CH5X	150.00	CHARGER, 1-BAY, TRI-CHEMISTRY
N	EX-CH5Y	825.00	CHARGER, 6-BAY, TRI-CHEMISTRY
N	EX-CH5A	895.00	CHARGER, 6-BAY, LI BATTERY
N	MAEX-AE4A	100.00	WALL MOUNT KIT, CHARGER, 6-BAY, LI-ION/POLY

8. Audio Accessories

Speaker Microphones

N	EX-AE1W	630.00	SPKR MIC, PREM, FIRE, NC, P55/54, HI-VIS YEL
N	EX-AE1U	630.00	SPEAKER MIC, PREMIUM, FIRE, NC, P55/54/5300
N	MAEX-NAE9R	575.00	SPEAKER MIC, GPS Includes Rubber PTT Button, Emergency Button, and GPS only Antenna. For use with P25, OpenSky, and EDACS
N	EX-AE4K	350.00	SPEAKER MIC, RUGGED, COILED, HIROSE PORT Includes Coiled Cord, Rubber PTT Button, Emergency Button, Hirose Accessory Jack, and Watertight Accessory Connector
N	MAEX-NAE6D	300.00	SPEAKER MIC, PUBLIC SAFETY, RUGGED, FM Includes Straight Cord, Rubber PTT Button, Emergency Button, Antenna Port (Order antenna separately), and Watertight Accessory Connector
N	EX-AE4C	285.00	SPEAKER MIC, RUGGED, COILED, HI-VIS, FM Includes Yellow Rubber PTT Button, Emergency Button, Yellow Removable Grill, Accessory Jack, and Watertight Accessory Connector. Immersion Rated to 1 Meter.
N	MAEX-NAE6C	260.00	SPEAKER MIC, RUGGED, COILED, FM Includes Rubber PTT Button, Emergency Button, Coiled Cord, and Watertight Accessory Connector. Immersion Rated to 1 Meter.

P5500 PORTABLES

Band: UHF
 Product Code: EX

E/C	Model No.	List Price \$	Description
8. Audio Accessories (Cont'd)			
Speaker Microphones (Cont'd)			
N	MAEX-AE6N	175.00	SPEAKER MIC, PUBLIC SAFETY, STRAIGHT, 30 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEX-AE6L	175.00	SPEAKER MIC, STRAIGHT, 25.6 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEX-AE6M	175.00	SPEAKER MIC, PUBLIC SAFETY, STRAIGHT, 18 IN. Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Earphone Jack, and Antenna Port. (Order antenna separately)
N	MAEX-NAE6A	160.00	SPEAKER MIC, COILED, FM Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, Coiled Cord, and Earphone Jack
N	MAEX-NAE9D	175.00	SPEAKER MIC, FM Includes Rubber PTT Button, Emergency Button, 2-Position Volume Control, and Earphone Jack
N	EX-AE1K	65.00	EARPHONE, SPEAKER MIC, RIGHT ANGLE, 2.5MM Includes the Cable with 2.5 mm Plug, Transducer, Acoustic Tube, and Earpiece
N	MAEX-NAE3Z	65.00	EARPHONE, LAPEL MICROPHONE, FM For use with Speaker/Mics that have earphone jacks
9. Carrying Accessories			
N	EX-HC4A	60.00	BELT LOOP, LEATHER, PREMIUM
N	MAEX-NHC7P	20.00	BELT CLIP, METAL
Cases			
N	MAEX-NHC9S	100.00	CASE, STANDARD, LEATHER WITH SHOULDER STRAP KIT
N	MAEX-NHC9T	60.00	CASE, STANDARD, LEATHER WITH BELT LOOP & SWIVEL
N	MAEX-NHC9U	45.00	CASE, STANDARD, BLACK NYLON WITH BELT LOOP & SWIVEL
N	MAEX-NHC9V	15.00	STRAP, STANDARD, RETAINING, USE WITH SHOULDER STRAP

P5500 PORTABLES

Band: UHF
 Product Code: EX

E/C	Model No.	List Price \$	Description
10. Miscellaneous			
Battery Charger/Analyzer/Conditioner			
V	CADEX-7400	4,100.00	ANALYZER, BATTERY, CADEX, 4-BAY Requires sleeves below
S	AA-018695-001	220.00	ADAPTER, SLEEVE FOR CADEX-7400 SYSTEM FOR NICD/NIMH BATTERIES
Adapters			
N	EX-CJ1R	179.00	ADAPTER, UDC, BLUETOOTH, P55/54/5300
N	EX-CJ1N	199.00	ADAPTER, UDC, GPS, P55/54/5300
Cables			
S	CA-023407-001	190.00	CABLE, PROGRAMMING
S	14002-0143-01	312.00	CABLE, PROGRAMMER ADAPTOR, KVL 3000+
N	MAEX-NCJ2A	230.00	CABLE, DATA INTERFACE
Warranty			
N	EX-Y1EWP	60.00	WARRANTY, EXTENDED 1 YR, PORTABLE
N	EX-Y2EWP	110.00	WARRANTY, EXTENDED 2 YR, PORTABLE
N	EX-Y3EWP	160.00	WARRANTY, EXTENDED 3 YR, PORTABLE
Industry Canada			
N	MAEX-NEC1A	5.00	OPTION, INDUSTRY CANADA
Manuals			
V	MM210EX	65.00	MANUAL, MAINTENANCE, P5500, UHF

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XL-200M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XZ



XL-200M Mobile with XL-CH



XL-200M Desktop Cabinet

The XL-200M mobiles are multi-mode radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-200M orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
1. Transceiver (All models below include the P25 Conventional Operational Mode Package)			
C	XZ-MPM1M	3,500.00	MOBILE, XL-200M, MULTIBAND
Frequency Band Options (Select any combination of bands)			
N	XZ-PL4J	500.00	FEATURE, VHF BAND
N	XZ-PL4K	500.00	FEATURE, UHF BAND
N	XZ-PL4L	500.00	FEATURE, 7/800 MHZ BAND
N	XZ-PL9D	500.00	FEATURE, 900 MHZ BAND
2. Antennas			
N	XZ-AN7G	250.00	ANTENNA, FLEX, HEAVY-DUTY
N	XZ-AN3H	75.00	ANTENNA, ELEMENT, 700/800, 900, 3DB
N	XZ-AN8A	210.00	ANTENNA, ELEMENT, FLEXIBLE, V/U/700/800
N	XZ-AN8D	100.00	ANTENNA, ELEMENT, 700/800 3DB
V	AN-025137-009	200.00	ANTENNA, YAGI, 900 MHZ, 10DB GAIN
V	AN-025137-010	435.00	ANTENNA, 700/800 MHZ, 6.5DB GAIN, YAGI
N	XZ-AN8H	510.00	ANTENNA, YAGI, 800 MHZ, 10DB GAIN
N	XZ-AN8J	729.00	ANTENNA, YAGI, 700 MHZ, 10DB GAIN
N	XZ-AN8K	375.00	ANTENNA, YAGI, UHF-H 470-512 MHZ, 9DB
V	AN-025137-005	230.00	ANTENNA, YAGI, UHF-H 440-480 MHZ, 10DB GAIN
V	AN-025137-004	230.00	ANTENNA, YAGI, UHF-L 406-440 MHZ, 9DB GAIN
V	AN-025137-003	230.00	ANTENNA, YAGI, UHF-L 375-403MHZ, 10DB GAIN

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XL-200M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XZ

E/C	Model No.	List Price \$	Description
2. Antennas (Cont'd)			
N	XZ-AN3L	160.00	ANTENNA, GPS, MAGNETIC MOUNT
N	XZ-AN5F	155.00	ANTENNA, GPS, ROOF MOUNT
N	XZ-AN6U	80.00	ANTENNA, BASE, STD ROOF MOUNT LOW LOSS
N	XZ-AN6W	85.00	ANTENNA, BASE, THICK ROOF MOUNT LOW LOSS
N	XZ-AN6Z	175.00	ANTENNA, BASE, STD ROOF MOUNT LOW LOSS GPS
N	XZ-AN6Y	90.00	ANTENNA, BASE, MAGNETIC MOUNT LOW LOSS
N	XZ-AN7H	100.00	MOUNT, NMO ANTENNA, MAGNETIC, HEAVY-DUTY

3. Operational Mode Packages*

NB	XZ-PKGPT	1,500.00	FEATURE PACKAGE, P25 TRUNKING Includes Status Message
NB	XZ-PKGED	1,500.00	FEATURE PACKAGE, EDACS TRUNKING Includes analog trunking, ProVoice™ digital trunking, and Extended Addressing (EA). Supports 800 MHz 9600 Wideband and 900 MHz 9600 Narrowband for EDACS only. Does not support EDACS VHF/UHF
NB	XZ-P25ED	2,000.00	FEATURE PACKAGE, P25 & EDACS TRUNKING Includes Status Message

*All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.

4. Encryption Options*

N	XZ-PL4U	0.01	FEATURE, XL200M SINGLE-KEY DES ENCRYPTION**
N	XZ-PL9E	0.01	FEATURE, XL200M SINGLE-KEY AES ENCRYPTION**
N	XZ-PL8Y	0.01	FEATURE, ENCRYPTION LITE***
N	XZ-PKG8F	695.00	FEATURE, 256-AES, 64-DES ENCRYPTION (Includes 256-B AES Encryption and 64-B DES Encryption for P25 & ProVoice)

*Ordering multi-key AES provides full P25 CAP compliance.

**Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.

***Encryption Lite is standard on digital operational modes and is not available for EDACS. Encryption Lite must be selected in the Product Configurator.

XL-200M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XZ

E/C	Model No.	List Price \$	Description
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5. Software Features

Software Options

N XZ-PL4E 240.00 FEATURE, CONVENTIONAL VOTE SCAN

ProVoice, EDACS, and P25 Software Options

N XZ-PL4W 50.00 FEATURE, CONTROL AND STATUS SERVICES

***1024 systems/groups is a standard feature**

P25 Software Options

N	..... XZ-PL5L	..... 595.00	..... FEATURE, OTAR
N	..... XZ-PL9L	..... 595.00	..... FEATURE, HIGH VELOCITY DATA TDMA
NB	..... XZ-PKGPD	..... 330.00	..... FEATURE PACKAGE, P25 DATA Includes MDT and Radio TextLink
N	..... XZ-PL9N	..... 285.00	..... FEATURE, TDMA CC
N	..... XZ-PL5K	..... 265.00	..... FEATURE, P25 OTAP PROFILE
N	..... XZ-PL9K	..... 250.00	..... FEATURE, VIDA ID
N	..... XZ-PL4F	..... 250.00	..... FEATURE, PHASE 2 TDMA
N	..... XZ-PL8M	..... 150.00	..... FEATURE, EDATA
N	..... XZ-PL8N	..... 250.00	..... FEATURE, IN-BAND GPS
N	..... XZ-PL9F	..... 250.00	..... FEATURE, P25C FALLBACK/MS FAILSOFT Required for Motorola customers using P25C Failsoft on a Motorola System. This feature is not needed for Harris-only systems
N	..... XZ-PL9G	..... 250.00	..... FEATURE, 3000 ALIASES When feature is enabled, users can write all 3000 configured aliases to the radio without incident. When feature is not enabled, users will only be able to use the I-Call list of 255 entries maximum
N	..... XZ-PL9H	..... 175.00	..... FEATURE, 250 ZONES Enable this feature if planning to configure radio with more than 50 zones. RPM2 can configure up to 250 zones; however, radio will only store the first 50 if this feature is not enabled
N	..... XZ-LLA	..... 100.00	..... FEATURE, LINK LAYER AUTHENTICATION
N	..... XZ-SP2V	..... 0.01	..... FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.

6. Control Unit (Select one)

C XZ-CP6A 1,500.00 CONTROL UNIT, XL-CH

XL-200M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XZ

E/C	Model No.	List Price \$	Description
7. Microphone (Select one)			
N	XZ-MC6B	325.00	MICROPHONE, XL-MOBILE, KEYPAD
N	XZ-MC6A	105.00	MICROPHONE, XL, STANDARD MOBILE
8. Mounting Kit			
N	XZ-MA4A	600.00	KIT, MOUNTING XL-MOBILE UNIVERSAL Front and Remote Mount
N	XZ-MA4B	153.00	BRACKET, MOUNTING, VCH
N	XZ-MA4C	68.00	BRACKET, MOUNTING, XL CONTROL HEAD
N	XZ-MA4D	50.00	KIT, MOUNTING RAIL PLATE
9. Miscellaneous			
XL-200M Desktop			
N	XZ-CA6L	650.00	CABINET, XL DESKTOP Includes desktop cabinet and power supply. The radio, control head, control head mounting bracket, cables, and accessories are all sold separately.
N	XZ-CA6M	250.00	CABLE, XL DESKTOP, ACCESSORY
N	XZ-AB2E	255.00	FOOTSWITCH, XL-MOBILE, SINGLE
N	XZ-MC6C	245.00	MICROPHONE, XL-MOBILE, DESKTOP
N	XZ-CA6R	175.00	CABLE, POWER, Y-SPLIT, DESKTOP
Additional Accessories			
N	XZ-LS6A	60.00	SPEAKER, EXTERNAL, MOBILE Requires an accessory cable
Programming and Option Cables			
N	XZ-CA6A	16.00	CABLE, XL-MOBILE, ETHERNET, 45CM
N	XZ-CA6B	42.00	CABLE, XL-MOBILE, ETHERNET, 9M
N	XZ-CA6E	325.00	CABLE, XL-MOBILE, SPEAKER & USB
N	XZ-CA6F	222.00	CABLE, XL-MOBILE, SPEAKER ACCY
N	XZ-CA6G	198.00	CABLE, XL-MOBILE, USB DATA
N	XZ-CA6H	275.00	CABLE, XL-MOBILE, ACCESSORY
N	XZ-CA6P	235.00	CABLE, XL-MOBILE, USB AND RS232
N	XZ-CA6T	225.00	CABLE, POWER, Y-SPLIT, LONG
N	XZ-CA6J	119.00	CABLE, POWER, Y-FRONT MOUNT 1-FT
N	XZ-CA6C	105.00	CABLE, POWER, VCH
N	XZ-CA6D	87.00	CABLE, POWER, XL-CH
V	W95-0118-001	20.00	CABLE, USB TYPE-A TO TYPE-C M/M

XL-200M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XZ

E/C	Model No.	List Price \$	Description
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9. Miscellaneous (Cont'd)

Warranty

N	XZ-Y1EWP	100.00	SERVICE ASSIST, EXT WARRANTY 1YR, XL200M
N	XZ-Y2EWP	150.00	SERVICE ASSIST, EXT WARRANTY 2YR, XL200M
N	XZ-Y3EWP	200.00	SERVICE ASSIST, EXT WARRANTY 3YR, XL200M

Industry Canada

N	XZ-EC1A	5.00	OPTION, INDUSTRY CANADA
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Manuals

V	MM185XT	65.00	MANUAL, MAINT, XL MOBILE For XL-185M and XL-200M
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XL-185M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XT



XL-185M Mobile with XL-CH



XL-185M Desktop Cabinet

The XL-185M mobiles are multi-mode radios that can operate on ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XL-185M orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
1. Transceiver (All models below include the P25 Conventional Operational Mode Package)			
C	XT-MPS1M	3,500.00	MOBILE, XL-185M, SINGLE BAND
C	XT-MPS1M-V	3,800.00	MOBILE, HIGH PWR DATA RADIO, SINGLE BAND
Frequency Band Options (Only One Band May Be Selected)			
N	XT-PL4J	0.01	FEATURE, VHF BAND
N	XT-PL4K	0.01	FEATURE, UHF BAND
N	XT-PL4L	0.01	FEATURE, 7/800 MHZ BAND
N	XT-PL9D	0.01	FEATURE, 900 MHZ BAND
2. Antennas			
N	XT-AN8E	90.00	ANTENNA, ELEMENT, 900, 3DB
N	XT-AN3H	75.00	ANTENNA, ELEMENT, 700/800, 900, 3DB
N	XT-AN8A	210.00	ANTENNA, ELEMENT, FLEXIBLE, V/U/700/800
N	XT-AN8D	100.00	ANTENNA, ELEMENT, 700/800 3DB
N	XT-AN8R	90.00	ANTENNA, ELEMENT, 3DB, VHF
N	XT-AN8S	140.00	ANTENNA, ELEMENT, NGP, 2DB, VHF
N	XT-AN5G	140.00	ANTENNA, ELEMENT, 1/4 0DB, VHF
N	XT-AN8B	110.00	ANTENNA, ELEMENT, 1/4, 0DB, UHF-L
N	XT-AN8T	110.00	ANTENNA, ELEMENT, 1/4, 0DB, UHF-H
N	XT-AN8C	65.00	ANTENNA, ELEMENT, LOW PROF, 0DB, UHF-H
N	XT-AN5F	155.00	ANTENNA, GPS, ROOF MOUNT
N	XT-AN3L	160.00	ANTENNA, GPS, MAGNETIC MOUNT
N	XT-AN8U	1,195.00	ANTENNA, VHF, 136-174 MHZ, 6DB, LOG PERIODIC
V	AN-025137-009	200.00	ANTENNA, YAGI, 900 MHZ, 10DB GAIN
V	AN-025137-010	435.00	ANTENNA, 700/800 MHZ, 6.5DB GAIN, YAGI

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XL-185M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XT

E/C	Model No.	List Price \$	Description
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2. Antennas (Cont'd)

N	XT-AN8H	510.00	ANTENNA, YAGI, 800 MHZ, 10DB GAIN
N	XT-AN8J	729.00	ANTENNA, YAGI, 700 MHZ, 10DB GAIN
N	XT-AN8K	375.00	ANTENNA, YAGI, UHF-H 470-512 MHZ, 9DB
V	AN-025137-005	230.00	ANTENNA, YAGI, UHF-H 440-480 MHZ, 10DB GAIN
V	AN-025137-004	230.00	ANTENNA, YAGI, UHF-L 406-440 MHZ, 9DB GAIN
V	AN-025137-003	230.00	ANTENNA, YAGI, UHF-L 375-403MHZ, 10DB GAIN
N	XT-AN6U	80.00	ANTENNA, BASE, STD ROOF MOUNT LOW LOSS
N	XT-AN6W	85.00	ANTENNA, BASE, THICK ROOF MOUNT LOW LOSS
N	XT-AN6Y	90.00	ANTENNA, BASE, MAGNETIC MOUNT LOW LOSS
N	XT-AN6Z	175.00	ANTENNA, BASE, STD ROOF MOUNT LOW LOSS GPS
N	XT-AN7H	100.00	MOUNT, NMO ANTENNA, MAGNETIC, HEAVY-DUTY

3. Operational Mode Packages*

NB	XT-PKGPT	1,500.00	FEATURE PACKAGE, P25 TRUNKING Includes Status Message
NB	XT-PKGED	1,500.00	FEATURE PACKAGE, EDACS TRUNKING Includes analog trunking, ProVoice™ digital trunking, and Extended Addressing (EA). Supports 800 MHz 9600 Wideband and 900 MHz 9600 Narrowband for EDACS only. Does not support EDACS VHF/UHF
NB	XT-P25ED	2,000.00	FEATURE PACKAGE, P25 & EDACS TRUNKING Includes Status Message

***All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.**

4. Encryption Options*

N	XT-PL4U	0.01	FEATURE, SINGLE-KEY DES ENCRYPTION**
N	XT-PL9E	0.01	FEATURE, SINGLE-KEY AES ENCRYPTION**
N	XT-PL8Y	0.01	FEATURE, ENCRYPTION LITE***
N	XT-PKG8F	695.00	FEATURE, 256-AES, 64-DES ECP Encryption (Includes 256-B AES Encryption and 64-B DES Encryption for P25 & ProVoice)

***Ordering multi-key AES provides full P25 CAP compliance.**

****Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.**

*****Encryption Lite is standard on digital operational modes and is not available for EDACS. Encryption Lite must be selected in the Product Configurator.**

XL-185M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XT

E/C	Model No.	List Price \$	Description
5. Software Features			
Software Options			
N	XT-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
ProVoice, EDACS, and P25 Software Options			
N	XT-PL4W	50.00	FEATURE, CONTROL AND STATUS SERVICES
*1024 systems/groups is a standard feature			
P25 Software Options			
N	XT-PL5L	595.00	FEATURE, OTAR
N	XT-PL9L	595.00	FEATURE, HIGH VELOCITY DATA TDMA
NB	XT-PKGPD	330.00	FEATURE PACKAGE, P25 DATA Includes MDT and Radio TextLink
N	XT-PL9N	285.00	FEATURE, TDMA CC
N	XT-PL5K	265.00	FEATURE, P25 OTAP PROFILE
N	XT-PL9K	250.00	FEATURE, VIDA ID
N	XT-PL4F	250.00	FEATURE, PHASE 2 TDMA
N	XT-PL8N	250.00	FEATURE, IN-BAND GPS
N	XT-PL9F	250.00	FEATURE, P25C FALLBACK/MS FAILSOFT Required for Motorola customers using P25C Failsoft on a Motorola System. This feature is not needed for Harris-only systems
N	XT-PL9G	250.00	FEATURE, 3000 ALIASES When feature is enabled, users can write all 3000 configured aliases to the radio without incident. When feature is not enabled, users will only be able to use the I-Call list of 255 entries maximum
N	XT-PL9H	175.00	FEATURE, 250 ZONES Enable this feature if planning to configure radio with more than 50 zones. RPM2 can configure up to 250 zones; however, radio will only store the first 50 if this feature is not enabled
N	XT-PL8M	150.00	FEATURE, EDATA
N	XT-LLA	100.00	FEATURE, LINK LAYER AUTHENTICATION
N	XT-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.
6. Control Unit (Select one)			
C	XT-CP6A	1,500.00	CONTROL UNIT, XL-CH

XL-185M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XT

E/C	Model No.	List Price \$	Description
7. Microphone (Select one)			
N	XT-MC6B	325.00	MICROPHONE, XL-MOBILE, KEYPAD
N	XT-MC6A	105.00	MICROPHONE, XL, STANDARD MOBILE
8. Mounting Kit			
N	XT-MA4A	600.00	KIT, MOUNTING XL-MOBILE UNIVERSAL (Front and Remote Mount) Includes VCH mounting bracket, XL control head mounting bracket, VCH power cable, XL-CH power cable, and XL mobile ethernet cables (45 cm and 9 m)
N	XT-MA4B	153.00	BRACKET, MOUNTING, VCH
N	XT-MA4C	68.00	BRACKET, MOUNTING, XL CONTROL HEAD
N	XT-MA4D	50.00	KIT, MOUNTING RAIL PLATE
9. Miscellaneous			
XL-185M Desktop			
N	XT-CA6L	650.00	CABINET, XL DESKTOP Includes desktop cabinet and power supply. The radio, control head, control head mounting bracket, cables, and accessories are all sold separately.
N	XT-CA6M	250.00	CABLE, XL DESKTOP, ACCESSORY
N	XT-AB2E	255.00	FOOTSWITCH, XL-MOBILE, SINGLE
N	XT-MC6C	245.00	MICROPHONE, XL-MOBILE, DESKTOP
N	XT-CA6R	175.00	CABLE, POWER, Y-SPLIT, DESKTOP
Additional Accessories			
N	XT-LS6A	60.00	SPEAKER, EXTERNAL, MOBILE
Programming and Option Cables			
N	XT-CA6A	16.00	CABLE, XL-MOBILE, ETHERNET, 45CM
N	XT-CA6B	42.00	CABLE, XL-MOBILE, ETHERNET, 9M
N	XT-CA6E	325.00	CABLE, XL-MOBILE, SPEAKER & USB
N	XT-CA6F	222.00	CABLE, XL-MOBILE, SPEAKER ACCY
N	XT-CA6G	198.00	CABLE, XL-MOBILE, USB DATA
N	XT-CA6H	275.00	CABLE, XL-MOBILE, ACCESSORY
N	XT-CA6P	235.00	CABLE, XL-MOBILE, USB AND RS232
N	XT-CA6T	225.00	CABLE, POWER, Y-SPLIT, LONG
N	XT-CA6J	119.00	CABLE, POWER, Y-FRONT MOUNT 1-FT
N	XT-CA6C	105.00	CABLE, POWER, VCH
N	XT-CA6D	87.00	CABLE, POWER, XL-CH
V	W95-0118-001	20.00	CABLE, USB TYPE-A TO TYPE-C M/M

XL-185M MOBILES

Band: VHF, UHF, 700/800, 900
 Product Code: XT

E/C	Model No.	List Price \$	Description
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9. Miscellaneous (Cont'd)

Warranty

N	XT-Y1EWP	100.00	SERVICE ASSIST, EXT WARRANTY 1YR, XL185M
N	XT-Y2EWP	150.00	SERVICE ASSIST, EXT WARRANTY 2YR, XL185M
N	XT-Y3EWP	200.00	SERVICE ASSIST, EXT WARRANTY 3YR, XL185M

Industry Canada

N	XT-EC1A	5.00	OPTION, INDUSTRY CANADA
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Manuals

V	MM185XT	65.00	MANUAL, MAINT, XL MOBILE For XL-185M and XL-200M
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UNITY® XG-100M MOBILE

Band: VHF, UHF, 700/800
 Product Code: XM



XG-100M with CH-100 Touch Screen

The Unity mobiles are full-spectrum multiband radios that can operate on EDACS®, ProVoice™, P25 Trunking, P25 Conventional, and Conventional systems.

All XG-100M orders must be placed through the Product Configurator. The following is for information only.

Transceiver, Antenna and Base, Microphone, and Mounting/Cabling Kit must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
1. Transceiver (All models below include the P25 Conventional Operational Mode Package)			
C	XM-100F	4,010.00	MOBILE, XG-100M, 136-870 MHZ, UNENCRYPTED
C	XM-100F-D01	3,510.00	MOBILE, XG-100M, 136-520 MHZ
C	XM-100F-D02	3,510.00	MOBILE, XG-100M, 136-174, 762-870 MHZ
C	XM-100F-D03	3,510.00	MOBILE, XG-100M, 380-870 MHZ
2. Antennas (Select Antenna and Base)			
N	XM-AN7G	250.00	ANTENNA, FLEX, HEAVY-DUTY, 136-870 MHZ
N	XMAN6J	225.00	ANTENNA, FLEX, MULTIBAND, 136-870 MHZ, 0 dB
N	XMAN6H	180.00	ANTENNA, ELEMENT, MULTIBAND, 136-870 MHZ, 0 dB
N	XMAN3L	160.00	ANTENNA, GPS, MAGNETIC MOUNT
N	XMAN5F	155.00	ANTENNA, GPS, ROOF MOUNT
S	AN-125001-002	80.00	ANTENNA, BASE, STANDARD ROOF MOUNT LOW LOSS
S	AN-125001-004	85.00	ANTENNA, BASE, THICK ROOF MOUNT LOW LOSS
S	AN-125001-006	175.00	ANTENNA, BASE, STANDARD ROOF MOUNT LOW LOSS GPS
S	AN-125001-008	90.00	ANTENNA, BASE, MAGNETIC MOUNT LOW LOSS
N	XM-AN7H	100.00	MOUNT, NMO ANTENNA, MAGNETIC, HEAVY-DUTY
3. Operational Mode Packages*			
NB	XM-PKGPT	1,500.00	FEATURE PACKAGE, P25 TRUNKING
NB	XM-PKGED	1,500.00	FEATURE PACKAGE, EDACS TRUNKING Supports 800 MHz 9600 Wideband
NB	XM-P25ED	2,000.00	FEATURE PACKAGE, P25 TRUNKING & EDACS Supports 800 MHz 9600 Wideband

***All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.**

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

UNITY® XG-100M MOBILE

Band: VHF, UHF, 700/800
 Product Code: XM

Transceiver, Antenna and Base, Microphone, and Mounting/Cabling Kit must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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4. Encryption Options*

N	XM-PL8Y	0.01	FEATURE, ENCRYPTION LITE**
N	XM-PL9E	0.01	FEATURE, SINGLE-KEY AES ENCRYPTION
N	XMPL4D	495.00	FEATURE, DES-CFB
N	XMPL4C	695.00	FEATURE PACKAGE, P25 ENCRYPTION (Includes AES and DES-OFB)

*Ordering multi-key AES provides full P25 CAP compliance.

**Encryption Lite is standard on digital operational modes; it is not available on EDACS. Encryption Lite must be selected in the Product Configurator.

5. Software Features

Software Options

N	XMPL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	XM-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.

ProVoice, EDACS, and P25 Options

N	XM-PL4W	50.00	FEATURE, CONTROL AND STATUS SERVICES
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ProVoice and EDACS Options

N	XMPRO	250.00	FEATURE, PROVOICE (Must have Operational Mode Package containing EDACS for this upgrade)
N	XMPL3X	215.00	FEATURE, EDACS DATA
N	XMPL7G	110.00	FEATURE, EDACS SECURITY KEY

P25 Options

N	XMPL5L	695.00	FEATURE, OTAR (P25 Trunking and P25 Conventional)
NB	XM-PKGPD	330.00	FEATURE PACKAGE, P25 DATA
N	XMPL5K	265.00	FEATURE, P25 OTAP PROFILE™
N	XMPL4F	250.00	FEATURE, PHASE II TDMA
N	XM-PL8M	150.00	FEATURE, EDATA
N	XM-PL8N	150.00	FEATURE, IN-BAND GPS
N	XM-LLA	100.00	FEATURE, LINK LAYER AUTHENTICATION

6. Control Unit (Select one)

N	XMCP9G	685.00	CONTROL UNIT, CH-721, SCAN, FRONT MOUNT
N	XMCP9H	790.00	CONTROL UNIT, CH-721, SYSTEM, FRONT MOUNT
N	XMCP9Q	1,190.00	CONTROL UNIT, CH-100, TOUCH SCREEN, FRONT MOUNT
N	XMCP9E	720.00	CONTROL UNIT, CH-721, SCAN, REMOTE MOUNT
N	XMCP9F	825.00	CONTROL UNIT, CH-721, SYSTEM, REMOTE MOUNT
N	XMCP9R	1,498.00	CONTROL UNIT, CH-100, TOUCH SCREEN, REMOTE MOUNT
N	XMZN7C	1,115.00	CONTROL UNIT, 2-6, CH-721 SCAN WITH INSTALLATION HARDWARE (Not compatible with CH-100 Control Units)
N	XMZN7D	1,220.00	CONTROL UNIT, 2-6, CH-721 SYSTEM WITH INSTALLATION HARDWARE (Not compatible with CH-100 Control Units)
N	XMZN8Z	1,893.00	CONTROL UNIT, 2-6, CH-100 TOUCH SCREEN WITH INSTALLATION HARDWARE (Not compatible with CH-721 Control Units)
N	XMCP9P	900.00	CONTROL UNIT, HHC-731
N	XMZN9G	472.78	KIT, HHC-731, INSTALLATION ACCESSORIES Includes accessories and mounting kit for radio and control head

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UNITY® XG-100M MOBILE

Band: VHF, UHF, 700/800
 Product Code: XM

Transceiver, Antenna and Base, Microphone, and Mounting/Cabling Kit must be ordered for a complete operating radio package.

E/C	Model No.	List Price \$	Description
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7. Microphone (Select one)

N	XMMC9C	205.00	MICROPHONE, DTMF
N	XMZN9F	195.00	MICROPHONE, DESKTOP
N	XM-MC9D	160.00	MICROPHONE, NOISE CANCELLING, CH-721
N	XMMC7Z	80.00	MICROPHONE, STD, CH-100, STRAIGHT CONNECTOR

8. Mounting/Cabling Kit (Select one)

N	XMZN7R	360.00	ACCESSORIES KIT, UNITY WITH CH-721 REMOTE MOUNT
N	XMZN9A	360.00	ACCESSORIES KIT, UNITY WITH CH-100 REMOTE MOUNT
N	XMZN6W	274.50	ACCESSORIES KIT, UNITY WITH CH-100/CH-721 FRONT MOUNT

9. Miscellaneous

Low Band Amplifier (Add an Amplifier, Low Band Antenna and Base, and Installation Kit to the mobile operating package for a complete operating low band radio package)

C	XM-100LPA	1,250.00	AMPLIFIER, XG-100LPA VHF LOW, 33-48 MHZ
N	XM-ZN2G	276.35	KIT, INSTALLATION XG-100LPA
S	AN-025127-100	100.00	ANTENNA, ELEMENT, 27-31 MHZ NMO DC GND*
S	AN-025127-101	100.00	ANTENNA, ELEMENT, 30-35 MHZ NMO DC GND*
S	AN-025127-102	100.00	ANTENNA, ELEMENT, 34-37 MHZ NMO DC GND*
S	AN-025127-103	100.00	ANTENNA, ELEMENT, 37-40 MHZ NMO DC GND*
S	AN-025127-104	100.00	ANTENNA, ELEMENT, 40-47 MHZ NMO DC GND*
S	AN-025127-105	100.00	ANTENNA, ELEMENT, 45-48 MHZ NMO DC GND*

***Low Band Amplifier Antenna Elements require Antenna Bases AN-125001-002 or AN-125001-004.**

Vehicular Repeater (Add a VRS, Installation Kit, and 700/800 MHz Antenna and Base to the mobile operating package for a complete operating P25 Vehicular Repeater. The radio mounting/cabling kit is not required)

C	XMV780B	6,155.00	VRS7030, P25 VEHICULAR RPTR 700/800 MHZ
N	XMNFL1A	1,995.00	FILTER, VRM, 800 MHZ Required when repeating the 800 MHz band to the 700 MHz band
N	XMFL1C	1,995.00	FILTER, VRM, 700 MHZ Required when repeating the 700 MHz band to the 800 MHz band
N	XM-ZN2E	720.00	KIT, INSTALLATION, VRS, W/CH-721 Includes accessories and mounting kit for the complete VRS package
N	XM-ZN2D	720.00	KIT, INSTALLATION, VRS, W/CH-100 Includes accessories and mounting kit for the complete VRS package
N	XMAN7F	60.00	ANTENNA, ELEMENT, 700/800 2 dB LOW PROFILE Requires an antenna base

UNITY® XG-100M MOBILE

Band: VHF, UHF, 700/800
 Product Code: XM

E/C	Model No.	List Price \$	Description
9. Miscellaneous (Cont'd)			
Motorcycle Kit			
N	XM-ZN2H	995.00	KIT, MOTORCYCLE, UNITY, W/ACCY CABLE Does not include headsets or controllers
Programming and Option Cables			
N	XMCL8B	190.00	CABLE, OPTIONS, UNITY, M7300
N	XMCL8T	115.00	CABLE, SERIAL DATA, 20 FT
N	XMCL8C	90.00	CABLE, CH-721, CH-100 OPTION CABLE
N	XMCL9M	12.56	CABLE, CH-100 USB PROGRAMMING
N	XM CJ3C	170.00	CABLE, KVL KEY LOADING
N	XM CJ3D	350.00	CABLE, KVL KEY LOADING (CH-721/HHC-731)
N	XMCL8U	180.00	CABLE, PROGRAMMING, CH-100/CH-721 FRONT CONNECTOR
Warranty			
N	XM-Y1EWM	170.00	WARRANTY, EXTENDED 1 YR, MOBILE
N	XM-Y2EWM	220.00	WARRANTY, EXTENDED 2 YR, MOBILE
N	XM-Y1XWR	300.00	WARRANTY, EXTENDED 1 YR, REPEATER
N	XM-Y2XWR	350.00	WARRANTY, EXTENDED 2 YR, REPEATER
N	XM-Y3XWR	400.00	WARRANTY, EXTENDED 3 YR, REPEATER
Industry Canada			
N	XM EC1A	5.00	OPTION, INDUSTRY CANADA
Manuals			
V	MM100XM	65.00	MANUAL, MAINTENANCE, UNITY XG-100M
V	MM400XM	25.00	MANUAL, INSTALL, UNITY XG-100M MOBILE

XG-75M/M7300 MOBILES

Band: 700/800, VHF, UHF
 Product Code: MW



Mobile with CH-721 Scan



Mobile with CH-721 System

The XG-75M/M7300 mobiles are multi-mode radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Conventional, and Conventional systems.

All XG-75M/M7300 orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
1. Transceiver (All models below include the P25 Conventional Operational Mode Package)			
C	MAMW-SDMXX	2,300.00	MOBILE, XG-75M/M7300, 764-870 MHZ, HALF DPLX, Unencrypted
C	MAMW-SUMXX	2,300.00	MOBILE, XG-75M/M7300, 440-512 MHZ, 50W
C	MAMW-SNMXX	2,300.00	MOBILE, XG-75M/M7300, 378-430 MHZ, 50W
C	MAMW-MU3B	2,300.00	MOBILE, XG-75M/M7300, 330-380 MHZ, 40W
C	MAMW-SHHXX	2,600.00	MOBILE, XG-75M/M7300, 136-174 MHZ, 110W
C	MAMW-SHMXX	2,300.00	MOBILE, XG-75M/M7300, 136-174 MHZ, 50W
2. Vehicular Repeaters			
C	MAMW-V780B	6,155.00	VRS7030 P25 VEHICULAR REPEATER, 700/800 MHZ
C	MAMW-V800B	6,155.00	VRS7020 P25 VEHICULAR REPEATER, 800 MHZ
C	MAMW-VDLXX	6,183.09	VRS7010 P25 VEHICULAR REPEATER, 700 MHZ
N	MAMW-NFL1A	1,995.00	FILTER, 800 MHZ (VRM)
N	MAMW-FL1C	1,995.00	FILTER, VRM, 700 MHZ
3. Antennas			
S	AN-125001-001	40.00	ANTENNA, BASE, STANDARD ROOF MOUNT
S	AN-125001-002	80.00	ANTENNA, BASE, STANDARD ROOF MOUNT LOW LOSS
S	AN-125001-006	175.00	ANTENNA, BASE, STANDARD ROOF MOUNT LOW LOSS GPS
S	AN-125001-003	45.00	ANTENNA, BASE, THICK ROOF MOUNT
S	AN-125001-004	85.00	ANTENNA, BASE, THICK ROOF MOUNT LOW LOSS
S	AN-125001-007	70.00	ANTENNA, BASE, MAGNETIC ROOF MOUNT
S	AN-125001-008	90.00	ANTENNA, BASE, MAGNETIC MOUNT LOW LOSS
S	AN-025137-008	510.00	ANTENNA, YAGI, 800 MHZ, 10 dB GAIN
V	AN-025137-010	435.00	ANTENNA, 700/800 MHZ YAGI, 6.5 dB
N	MAMW-NAN3L	160.00	ANTENNA, GPS, MAGNETIC MOUNT
N	MAMW-NAN5F	155.00	ANTENNA, GPS, ROOF MOUNT
S	AN-225001-003	170.00	ANTENNA, ELEMENT, 700/800 3dB ELEV FD NGP
S	AN-225001-001	90.00	ANTENNA, ELEMENT, 700/800 3dB
S	AN-225001-005	90.00	ANTENNA, ELEMENT, 700/800 5dB
S	AN-225001-004	60.00	ANTENNA, ELEMENT, 700/800 2dB LOW PROFILE

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

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<https://premier.pspc.harris.com/infocenter/>



XG-75M/M7300 MOBILES

Band: 700/800, VHF, UHF
 Product Code: MW

E/C	Model No.	List Price \$	Description
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3. Antennas (Cont'd)

S.....	AN-225003-001	110.00	ANTENNA, ELEMENT, 1/4, 0dB, UHF-L
S.....	AN-225004-001	110.00	ANTENNA, ELEMENT, 1/4, 0dB, UHF-H
S.....	AN-225004-004	65.00	ANTENNA, ELEMENT, LOW PROFILE, 0dB, UHF-H
S.....	AN-225002-001	140.00	ANTENNA, ELEMENT, 1/4 0 dB, VHF
S.....	AN-225002-003	90.00	ANTENNA, ELEMENT, 3 dB, VHF
S.....	AN-225002-004	140.00	ANTENNA, ELEMENT, NGP, 2 dB, VHF
S.....	AN-025137-011	1,195.00	ANTENNA, VHF, 136-174 MHZ, 6 dB, LOG PERIODIC
S.....	AN-225006-001	40.00	ANTENNA, ELEMENT, 136-941 MHZ

4. GPS Option

N.....	MAMW-NMK5F	525.00	GLOBAL POSITIONING SYSTEM (GPS)
N.....	MAMW-NCL8B	190.00	CABLE, OPTIONS

5. Operational Mode Packages*

NB.....	MAMW-PKGPT	1,100.00	FEATURE PACKAGE, P25 TRUNKING
NB.....	MAMW-PKGED	1,100.00	FEATURE PACKAGE, EDACS TRUNKING
NB.....	MAMW-PKGOS	1,100.00	FEATURE PACKAGE, OPENSky TRUNKING
NB.....	MAMW-PKGOD	525.00	FEATURE PACKAGE, OPENSky DATA SERVICES (Control unit is required. No voice is included.)
NB.....	MW-P25ED	1,600.00	FEATURE PACKAGE, P25 TRUNKING & EDACS
NB.....	MAMW-PKGNT	1,600.00	FEATURE PACKAGE, OPENSky & P25 TRUNKED
NB.....	MW-OSED	1,600.00	FEATURE PACKAGE, OPENSky & EDACS
NB.....	MW-EPO	2,000.00	FEATURE PACKAGE, P25T, OPENSky & EDACS

*All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 1024 systems/groups.

6. Encryption Options*

N.....	MW-PL4U	0.01	FEATURE, SINGLE-KEY-DES ENCRYPTION**
N.....	MW-PL9E	0.01	FEATURE, SINGLE-KEY AES ENCRYPTION**
N.....	MW-PL8Y	0.01	FEATURE, ENCRYPTION LITE***
NB.....	MAMW-PKG8C	895.00	FEATURE, 256-AES, ECP & OTP, 64-DES, ECP (Includes 256-B AES Encryption for P25, ProVoice, & OpenSky and 64-B DES Encryption for P25 & ProVoice)
NB.....	MAMW-PKG8F	595.00	FEATURE, 256-AES, 64-DES ECP Encryption (Includes 256-B AES Encryption and 64-B DES Encryption for P25 & ProVoice)
N.....	MAMW-NPL8D	695.00	FEATURE, 256-AES, OTP Encryption (Includes 256-B AES Encryption for OpenSky)
N.....	MAMW-NPL3V	395.00	FEATURE, 64B-DES Encryption for P25 Trunking and ProVoice
N.....	MAMW-NPL7M	495.00	FEATURE, 256B-AES Encryption for P25 and ProVoice

*Ordering multi-key AES provides full P25 CAP compliance.

**Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.

***Encryption Lite is standard on digital operational modes and is not available for EDACS. Encryption Lite must be selected in the Product Configurator.

Option for AES Encrypted Radios

NB.....	MAMW-PKGFP	1.00	FEATURE, FIPS-140-2, OPERATION SL 1
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XG-75M/M7300 MOBILES

Band: 700/800, VHF, UHF
 Product Code: MW

E/C	Model No.	List Price \$	Description
7. Software Features			
Software Options			
N	MW-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	MAMW-NPL7K	110.00	FEATURE, DIRECT FREQUENCY ENTRY
N	MAMW-NPL6T	19.50	FEATURE, MDC-1200
N	MW-SP2V	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.
OpenSky Software Options			
N	MAMW-NPL7X	250.00	FEATURE, OPENSky DATA
ProVoice, EDACS, and P25 Software Options			
N	MAMW-NPL3R	0.00	FEATURE, MAXIMUM (1,024+) SYSTEMS/GROUPS*
N	MAMW-NPL5K	265.00	FEATURE, PROFILE™ OVER-THE-AIR PROGRAMMING
N	MAMW-NPL7G	110.00	FEATURE, EDACS SECURITY KEY AND P25 PERSONALITY LOCK
N	MAMW-NPL7N	60.00	FEATURE, RADIO TEXTLINK
N	MAMW-NPL3Y	55.00	FEATURE, STATUS MESSAGE
N	MW-PL4W	50.00	FEATURE, CONTROL AND STATUS SERVICES
*1024 systems/groups is a standard feature			
ProVoice and EDACS Software Options			
N	MW-PRO	250.00	FEATURE, PROVOICE (Must have Operational Mode Package containing EDACS for this upgrade)
N	MAMW-NPL3X	215.00	FEATURE, EDACS DATA
P25 Software Options			
N	MAMW-NPL5L	495.00	FEATURE, P25 OVER-THE-AIR REKEYING (OTAR)
N	MW-PL4F	250.00	FEATURE PACKAGE, P25 PHASE 2, TDMA
N	MAMW-NPL7P	215.00	FEATURE, P25 DATA
N	MW-PL8M	150.00	FEATURE, EDATA
N	MW-PL8N	150.00	FEATURE, IN-BAND GPS
N	MW-LLA	75.00	FEATURE, LINK LAYER AUTHENTICATION
8. Control Unit (Select one)			
N	MAMW-NCP9G	685.00	CONTROL UNIT, CH-721, SCAN, FRONT MOUNT
N	MAMW-NCP9H	790.00	CONTROL UNIT, CH-721, SYSTEM, FRONT MOUNT
N	MAMW-NCP9E	720.00	CONTROL UNIT, CH-721, SCAN, REMOTE MOUNT
N	MAMW-NCP9F	825.00	CONTROL UNIT, CH-721, SYSTEM, REMOTE MOUNT
N	MAMW-NZN7C	1,115.00	CONTROL UNIT, 2-6, CH-721 SCAN WITH INSTALLATION HARDWARE
N	MAMW-NZN7D	1,220.00	CONTROL UNIT, 2-6, CH-721 SYSTEM WITH INSTALLATION HARDWARE
N	MAMW-NCP9P	900.00	CONTROL UNIT, HHC-731, XG-75M/M7300
N	MAMW-NZN9G	472.78	KIT, HHC-731, INSTALLATION ACCESSORIES
N	MAMW-ZN9W	586.58	KIT, ACC, HHC-731, HIGH POWER

XG-75M/M7300 MOBILES

Band: 700/800, VHF, UHF
 Product Code: MW

E/C	Model No.	List Price \$	Description
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8. Control Unit (Cont'd) (Select one)

Dual Control Units (Order Microphone Separately)

Order complete transceiver, first control unit, and accessories. Then order dual control options to provide a second control head, accessory cable, speaker, mounting bracket and hardware.

N	MAMW-NZN7C	1,115.00	CONTROL UNIT, DUAL CONTROL, 2-6, CH-721, SCAN WITH INSTALLATION HARDWARE
N	MAMW-NZN7D	1,220.00	CONTROL UNIT, DUAL CONTROL, 2-6, CH-721, SYSTEM WITH INSTALLATION HARDWARE

9. Microphone (Select one)

N	MW-MC9T	225.00	MICROPHONE, STD, CH-721, ANGLED CONNECTOR
N	MAMW-ZN9F	195.00	MICROPHONE, DESKTOP
N	MAMW-NMC9D	160.00	MICROPHONE, NOISE CANCELLING, CH-721 CONTROL UNIT
N	MAMW-NMC7Z	80.00	MICROPHONE, STD, STRAIGHT CONNECTOR

Dual Control Unit Microphone (Select one)

N	MAMW-NMC9D	160.00	MICROPHONE, NOISE CANCELLING, CH-721 CONTROL UNIT
N	MAMW-NMC7Z	80.00	MICROPHONE, STD, STRAIGHT CONNECTOR

10. Mounting/Cabling Kit

N	MAMW-NZN7R	360.00	ACCESSORIES, XG-75M/M7300 REMOTE MOUNT, For 50W and below
N	MAMW-NZN6W	274.50	ACCESSORIES, XG-75M/M7300 FRONT MOUNT, For 50W and below
N	MAMW-ZN9Q	433.21	ACCESSORIES, XG-75M/M7300, HIGH POWER, REM 60W and above
N	MAMW-ZN9P	760.00	KIT, INSTALLATION, VRS, 60W and above VRM, Includes accessories and mounting kit for the complete VRS package.
N	MAMW-NZN8X	720.00	KIT, INSTALLATION, VRS, 50W and below VRM, Includes accessories and mounting kit for the complete VRS package.
N	MW-ZN2E	720.00	KIT, INSTALLATION, VRS, W/CH-721 VRS Includes accessories and mounting kit for the complete VRS package

NOTE: Mounting/Cabling Kit includes Power Cable, External Speaker, Mounting Bracket(s), Mic Hanger, and Radio Control Cable.

11. Miscellaneous

Motorcycle Kit

N	MAMW-NZN7X	1,765.00	KIT, MOTORCYCLE W/ ACC CABLE, VHF/UHF
N	MAMW-NZN7Y	1,665.00	KIT, MOTORCYCLE W/O ACC CABLE, VHF/UHF
N	MAMW-NZN9H	1,765.00	KIT, MOTORCYCLE W/ACC CABLE, 700/800
N	MAMW-NZN9J	1,665.00	KIT, MOTORCYCLE W/O ACC CABLE, 700/800
V	LE-OM806HDBKTNCD	87.92	ANTENNA, 800 MHZ, BLACK BASE, STRD COAX For motorcycle applications

XG-75M/M7300 MOBILES

Band: 700/800, VHF, UHF
 Product Code: MW

E/C	Model No.	List Price \$	Description
11. Miscellaneous (Cont'd)			
Programming and Option Cables			
N	MAMW-NCL8B	190.00	CABLE, OPTIONS
N	MW-CL8E	120.00	CABLE, Y CAN, BLACK, 10 IN
N	MAMW-NCL8T	115.00	CABLE, SERIAL DATA, 20 FT
N	MAMW-NCL8C	90.00	CABLE, CH-721 OPTION CABLE
N	MAMW-NCL7R	90.00	CABLE, SERIAL PROGRAMMING, CH-721
N	MATQ-NCL8U	180.00	CABLE, PROGRAMMING, CH-721 FRONT CONNECTOR
N	MAMW-NCL9L	90.00	CABLE, SERIAL PROGRAMMING, HHC-731
N	MW-CJ3D	350.00	CABLE, KVL KEY LOADING (CH-721/HHC-731)
Additional Accessories			
S	KT-013492-002	325.00	KEYCAP KIT, SCAN, LARGE, ARROW KIT, 50 PK
S	KT-013492-001	140.00	KEYCAP KIT, SYSTEM, BLANK WHITE, CH-721, 50 PK
S	KT-013492-003	170.00	KEYCAP KIT, SYSTEM, OPTIONAL
S	FM-013327	120.00	KEYCAP KIT, SYSTEM
S	FM-013332	125.00	KEYCAP KIT, SCAN, CH-721
Warranty			
N	MW-Y1EWM	80.00	WARRANTY, EXTENDED 1 YR, MOBILE
N	MW-Y2EWM	130.00	WARRANTY, EXTENDED 2 YR, MOBILE
N	MW-Y3EWM	180.00	WARRANTY, EXTENDED 3 YR, MOBILE
N	MW-Y1XWR	300.00	WARRANTY, EXTENDED 1 YR, REPEATER
N	MW-Y2XWR	350.00	WARRANTY, EXTENDED 2 YR, REPEATER
N	MW-Y3XWR	400.00	WARRANTY, EXTENDED 3 YR, REPEATER
Industry Canada			
N	MAMW-NEC1A	15.00	OPTION, INDUSTRY CANADA
Manuals			
V	MAMM-780MW	65.00	MANUAL, MAINT, XG-75M/M7300, M5300 (700/800)
V	MM450MW	65.00	MANUAL, MAINT, XG-75M/M7300, UHF
V	MM150MW	65.00	MANUAL, MAINT, XG-75M/M7300, 136-174 MHZ, 110W
V	MAMM-100MW	65.00	MANUAL, MAINT, XG-75M/M7300, 136-174 MHZ, 50W
V	MM400MW	25.00	MANUAL, INSTALL, XG-75M/M7300
V	MAMM-785MW	65.00	MANUAL, MAINTENANCE, VRS7010 P25 VEHICULAR REPEATER

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XG-25M MOBILE

Band: VHF, UHF, 700/800
 Product Code: DM



XG-25M with Scan

The XG-25M mobiles are multi-mode radios that can operate on OpenSky®, ProVoice™, EDACS®, P25 Trunking, P25 Conventional, and Conventional systems.

All XG-25M orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
1. Transceiver (All models below include the P25 Conventional Operational Mode Package)			
C	DM-M78B	2,100.00	MOBILE, XG-25M, 700/800 MHZ, 35W
C	DM-MU1B	2,100.00	MOBILE, XG-25M, 378-470 MHZ, 50W
C	DM-MV1B	2,100.00	MOBILE, XG-25M, 136-174 MHZ, 50W
2. Antennas			
S	AN-125001-001	40.00	ANTENNA, BASE, STANDARD ROOF MOUNT
S	AN-125001-002	80.00	ANTENNA, BASE, STANDARD ROOF MOUNT LOW LOSS
S	AN-125001-003	45.00	ANTENNA, BASE, THICK ROOF MOUNT
S	AN-125001-004	85.00	ANTENNA, BASE, THICK ROOF MOUNT LOW LOSS
S	AN-125001-005	135.15	ANTENNA, BASE, STANDARD ROOF MNT GPS
S	AN-125001-006	175.00	ANTENNA, BASE, STANDARD ROOF MOUNT LOW LOSS GPS
S	AN-125001-007	70.00	ANTENNA, BASE, MAGNETIC ROOF MOUNT
S	AN-125001-008	90.00	ANTENNA, BASE, MAGNETIC MOUNT LOW LOSS
S	AN-225001-001	90.00	ANTENNA, ELEMENT, 700/800 3DB
S	AN-225001-003	170.00	ANTENNA, ELEMENT, 700/800 3 DB ELEV FD NGP
S	AN-225001-004	60.00	ANTENNA, ELEMENT, 700/800 2 DB LOW PROFILE
S	AN-225001-005	90.00	ANTENNA, ELEMENT, 700/800 5 DB
S	AN-225003-004	85.00	ANTENNA, ELEMENT, LOW PROFILE, 0 DB, UHF-L
S	AN-225004-004	65.00	ANTENNA, ELEMENT, LOW PROFILE, 0 DB, UHF-H
S	AN-225003-001	110.00	ANTENNA, ELEMENT, 1/4, 0 DB, UHF-L
S	AN-225004-001	110.00	ANTENNA, ELEMENT, 1/4, 0 DB, UHF-H
S	AN-225002-001	140.00	ANTENNA, ELEMENT, 1/4, 0 DB, VHF
S	AN-225002-003	90.00	ANTENNA, ELEMENT, 3 DB, VHF
S	AN-225002-004	140.00	ANTENNA, ELEMENT, NGP, 2 DB, VHF
S	AN-225006-001	40.00	ANTENNA ELEMENT, 136-941 MHZ
S	AN-025187-001	155.00	ANTENNA, GPS, ROOF MOUNT

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

XG-25M MOBILE

Band: VHF, UHF, 700/800
 Product Code: DM

E/C	Model No.	List Price \$	Description
3. Operational Mode Packages*			
NB.....	DM-PKGPT.....	750.00	FEATURE PACKAGE, P25 TRUNKING
NB.....	DM-PKGED.....	750.00	FEATURE PACKAGE, EDACS TRUNKING
NB.....	DM-PKGOS.....	750.00	FEATURE PACKAGE, OPENSky TRUNKING**
NB.....	DM-PKGOD.....	525.00	FEATURE PACKAGE, OPENSky DATA SERVICES**
NB.....	DM-P25ED.....	1,200.00	FEATURE PACKAGE, P25 TRUNKING & EDACS
NB.....	DM-PKGNT.....	1,200.00	FEATURE PACKAGE, OPENSky AND P25T**
NB.....	DM-OSED.....	1,200.00	FEATURE PACKAGE, OPENSky AND EDACS**
NB.....	DM-EPO.....	1,600.00	FEATURE PACKAGE, EDACS, P25T, AND OPENSky**

*All Trunking Operational Mode Packages include Emergency, Dynamic Regroup, ProScan™, Priority System Scan, and 512 systems/groups.

**For 700/800 MHz radios only.

4. GPS Option

N.....	DM-MK5F.....	500.00	GPS KIT, XG-25M
N.....	DM-CL2X.....	141.48	CABLE, OPTION, XG-25M

5. Encryption Options*

N.....	DM-PL4U.....	0.01	FEATURE, SINGLE-KEY-DES ENCRYPTION**
N.....	DM-PL9E.....	0.01	FEATURE, SINGLE-KEY AES ENCRYPTION**
N.....	DM-PL8Y.....	0.01	FEATURE, ENCRYPTION LITE***
NB.....	DM-PKG8C.....	895.00	FEATURE, 256-AES, ECP & OTP, 64-DES, ECP****
NB.....	DM-PL8D.....	695.00	FEATURE, 256-AES, OTP ENCRYPTION****
N.....	DM-PKG8F.....	595.00	FEATURE, 256-AES, 64-DES ECP ENCRYPTION (Includes 256-B AES Encryption and 64-B DES Encryption for P25 & ProVoice)
N.....	DM-PL7M.....	495.00	FEATURE, 256-AES, ECP ENCRYPTION for P25 and ProVoice
N.....	DM-PL3V.....	395.00	FEATURE, 64B-DES ENCRYPTION P25 Trunking and ProVoice

*Ordering multi-key AES provides full P25 CAP compliance.

**Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.

***Encryption Lite is standard on digital operational modes and is not available for EDACS. Encryption Lite must be selected in the Product Configurator.

****For 700/800 MHz radios only.

6. Software Features

Software Options

N.....	DM-PL4E.....	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N.....	DM-PL4N.....	100.00	FEATURE, BLUETOOTH OPERATION
N.....	DM-PL6T.....	19.50	FEATURE, MDC-1200
N.....	DM-SP2V.....	0.01	FEATURE, FEDERAL/INTERNATIONAL STANDARD This feature can only be configured for customers that are NOT FCC regulated such as Federal (NTIA) and International customers.

OpenSky Software Options

N.....	DM-PL7Y.....	315.00	FEATURE, OTAR, OPENSky*
N.....	DM-PL7X.....	250.00	FEATURE, OPENSky DATA*

*For 700/800 MHz radios only.

ProVoice, EDACS, and P25 Software Options

N.....	DM-PL7Z.....	0.00	FEATURE, 512 SYSTEMS/GROUPS*
N.....	DM-PL3R.....	215.00	FEATURE, 1024+ SYSTEMS/GROUPS
N.....	DM-PL5K.....	265.00	FEATURE, ProFile™ OVER-THE-AIR PROGRAMMING
N.....	DM-PL7P.....	215.00	FEATURE, DATA OPERATION

*512 systems/groups is a standard feature

XG-25M MOBILE

Band: VHF, UHF, 700/800
 Product Code: DM

E/C	Model No.	List Price \$	Description
6. Software Features (Cont'd)			
ProVoice and EDACS Software Options			
N	DM-PL7G	110.00	FEATURE, ESK/P25 PERSONALITY LOCK
N	DM-PL7N	60.00	FEATURE, RADIO TEXTLINK
N	DM-PL3Y	55.00	FEATURE, STATUS MESSAGE
N	DM-PL4W	50.00	FEATURE, CONTROL AND STATUS SERVICES
N	DM-PRO	250.00	FEATURE, PROVOICE (Must have Operational Mode Package containing EDACS for this upgrade)
N	DM-PL3X	220.00	FEATURE, EDACS DATA
P25 Software Options			
N	DM-PL5L	465.00	FEATURE, P25 OVER-THE-AIR REKEYING
N	DM-PL4F	250.00	FEATURE, P25 PHASE 2, TDMA
N	DM-PL8M	150.00	FEATURE, EDATA
N	DM-PL8N	150.00	FEATURE, IN-BAND GPS
N	DM-LLA	75.00	FEATURE, LINK LAYER AUTHENTICATION
7. Control Unit			
N	DM-ZN9Z	650.00	KIT, CONVERSION, CH-25 REM CTRL HD, 30 FT
8. Microphone (Select one)			
N	DM-MC9U	295.00	MICROPHONE, DESKTOP, XG-25M
N	DM-MC9V	225.00	MIC, NOISE CANCELING WITH LTW CONNECTOR
N	DM-MC9R	80.94	MICROPHONE, STANDARD, XG-25M
9. Mounting/Cabling Kit			
N	DM-ZN9X	195.00	KIT, ACCESSORIES, XG-25M
10. Miscellaneous			
Additional Accessories			
N	DM-MN1D	27.00	SPEAKER, MOBILE, 4 OHM
Programming and Option Cables			
N	DM-CL2X	141.98	CABLE, OPTION, XG-25M
N	DM-CL2Y	90.00	CABLE, PROGRAMMING, XG-25M
N	DM-CJ3D	350.00	CABLE, KVL KEY LOADING (CH-721/HHC-731)
Warranty			
N	DM-Y1EWM	80.00	WARRANTY, EXTENDED 1 YR, MOBILE
N	DM-Y2EWM	130.00	WARRANTY, EXTENDED 2 YR, MOBILE
N	DM-Y3EWM	180.00	WARRANTY, EXTENDED 3 YR, MOBILE
Industry Canada			
N	DM-EC1A	5.00	OPTION, INDUSTRY CANADA
Manuals			
V	MM100DM	65.00	MANUAL, MAINTENANCE, XG-25M, VHF
V	MM450DM	65.00	MANUAL, MAINT, XG-25M, UHF
V	MM780DM	65.00	MANUAL, MAINTENANCE, XG-25M, 700/800 MHZ
V	MM400DM	25.00	MANUAL, INSTALLATION, XG-25M

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M5300 MOBILES

Band: 800
 Product Code: HK



M5300 with CH-721 Scan



M5300 with CH-721 System

Standard hardware and software features

All M5300 orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
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1. Transceiver (All models below include the P25 Conventional Operational Mode Package)

M5300 800 MHz

C	MAHK-S8MTX	2,375.00	MOBILE, 800 MHZ, OPENSKY UTILITY
C	MAHK-S8MEX	2,375.00	MOBILE, 800 MHZ, EDACS UTILITY
C	MAHK-S8MDX	2,575.00	MOBILE, 800 MHZ, EDACS & OPENSKY UTILITY

2. Antennas

S	AN-125001-001	40.00	ANTENNA, BASE, STANDARD ROOF MOUNT
S	AN-125001-002	80.00	ANTENNA, BASE, STANDARD ROOF MOUNT LOW LOSS
S	AN-125001-006	175.00	ANTENNA, BASE, STANDARD ROOF MOUNT LOW LOSS GPS
S	AN-125001-003	45.00	ANTENNA, BASE, THICK ROOF MOUNT
S	AN-125001-004	85.00	ANTENNA, BASE, THICK ROOF MOUNT LOW LOSS
S	AN-125001-007	70.00	ANTENNA, BASE, MAGNETIC ROOF MOUNT
S	AN-125001-008	90.00	ANTENNA, BASE, MAGNETIC MOUNT LOW LOSS
S	AN-025137-008	510.00	ANTENNA, YAGI, 800 MHZ, 10 dB GAIN
N	MAHK-NAN3L	160.00	ANTENNA, GPS MAGNET MOUNT
N	MAHK-NAN5F	155.00	ANTENNA, GPS, ROOF MOUNT
S	AN-225001-001	90.00	ANTENNA, ELEMENT, 700/800 3dB
S	AN-225001-003	170.00	ANTENNA, ELEMENT, 700/800 3dB ELEV FD NGP
S	AN-225001-004	60.00	ANTENNA, ELEMENT, 700/800 2dB LOW PROFILE
S	AN-225001-005	90.00	ANTENNA, ELEMENT, 700/800 5dB

For keyloader, see section 9.

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

M5300 MOBILES

Band: 800
 Product Code: HK

E/C	Model No.	List Price \$	Description
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2. Antennas (Cont'd)

S	AN-225005-001	90.00	ANTENNA, ELEMENT, 900, 3dB
S	AN-225005-002	195.00	ANTENNA, ELEMENT, 900, 3dB, EF
S	AN-225005-003	195.00	ANTENNA, ELEMENT, 900, NGP, 3dB, EF
S	AN-225005-004	60.00	ANTENNA, ELEMENT, 900, LOW PROFILE, 3dB

3. GPS Options

N	MAHK-NMK5F	525.00	GLOBAL POSITIONING SYSTEM (GPS)
N	MAHK-NCL8B	195.00	CABLE, OPTIONS

4. Operational Mode Packages

NB	MAHK-PKUPT	750.00	FEATURE, UPGRADE TO P25 TRUNKING (Includes Analog Conventional operation, For 800 MHz only)
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5. Encryption Options

N	HK-PL4U	0.01	FEATURE, SINGLE-KEY-DES ENCRYPTION* Included with MAHK-PKUPV, MAHK-PKUPT, and MAHK-PKUPC only
N	HK-PL9E	0.01	FEATURE SINGLE-KEY AES ENCRYPTION*
NB	MAHK-PKG8C	895.00	FEATURE, 256-AES, ECP & OTP, 64-DES, ECP (Includes 256-B AES Encryption for P25, ProVoice, & OpenSky and 64-B DES Encryption for P25 & ProVoice, For 800 MHz only)
N	MAHK-NPL8D	695.00	FEATURE, 256-AES, OTP Encryption (Includes 256-B AES Encryption for OpenSky, For 800 MHz only)
NB	MAHK-PKG8F	595.00	FEATURE, 256-AES, 64-DES ECP Encryption (Includes 256-B AES Encryption and 64-B DES Encryption for P25 & ProVoice, For 800 MHz only)
N	MAHK-NPL8E	495.00	FEATURE, 128B-AES, OTP Encryption (Includes 128-B AES Encryption for OpenSky)
N	MAHK-NPL3V	395.00	FEATURE, 64B-DES Encryption for P25 and ProVoice
N	MAHK-NPL7M	495.00	FEATURE, 256B-AES Encryption for P25 and ProVoice

*Single-Key DES and Single-Key AES are available for P25 Conventional and P25 Trunked operation. Neither is available for EDACS operation.

6. Software Features

Software Options

N	HK-PL4E	240.00	FEATURE, CONVENTIONAL VOTE SCAN
N	MAHK-NPL7K	110.00	FEATURE, DIRECT FREQUENCY ENTRY
N	MAHK-NPL6T	19.50	FEATURE, MDC-1200

OpenSky Software Options

N	MAHK-NPL7X	250.00	FEATURE, OPENSky DATA
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ProVoice, EDACS, and P25 Software Options

N	MAHK-NPL7Z	0.00	FEATURE, 512 SYSTEMS/GROUPS*
N	HK-PL4W	50.00	FEATURE, CONTROL AND STATUS SERVICES
NB	MAHK-PKUPV	250.00	FEATURE, UPGRADE TO ProVoice (Must have Operational Mode Package containing EDACS for this upgrade)

*512 systems/groups is a standard feature

M5300 MOBILES

Band: 800
 Product Code: HK

E/C	Model No.	List Price \$	Description
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6. Software Features (Cont'd)

EDACS Software Options

N	MAHK-NPL5K	265.00	FEATURE, ProFile™ OVER-THE-AIR PROGRAMMING
N	MAHK-NPL3R	215.00	FEATURE, MAXIMUM (1,204+) SYSTEMS/GROUPS
N	MAHK-NPL3X	215.00	FEATURE, EDACS DATA
N	MAHK-NPL7G	110.00	FEATURE, EDACS SECURITY KEY
N	MAHK-NPL7N	60.00	FEATURE, RADIO TEXTLINK
N	MAHK-NPL3Y	55.00	FEATURE, STATUS MESSAGE

P25 Software Options

N	HK-PL5L	495.00	FEATURE, P25 OVER-THE-AIR-REKEYING (OTAR)
N	HK-PL4F	250.00	FEATURE PACKAGE, P25 PHASE 2, TDMA
N	MAHK-NPL7P	215.00	FEATURE, P25 DATA (For 800 MHz only)
N	HK-PL8M	150.00	FEATURE, EDATA
N	HK-PL8N	150.00	FEATURE, IN-BAND GPS
N	HK-LLA	75.00	FEATURE, LINK LAYER AUTHENTICATION

7. Control Unit (Select one)

N	MAHK-NCP9G	685.00	CONTROL UNIT, CH-721, SCAN, FRONT MOUNT
N	MAHK-NCP9H	790.00	CONTROL UNIT, CH-721, SYSTEM, FRONT MOUNT
N	MAHK-NCP9E	720.00	CONTROL UNIT, CH-721 SCAN, REMOTE MOUNT
N	MAHK-NCP9F	825.00	CONTROL UNIT, CH-721, SYSTEM, REMOTE MOUNT
N	MAHK-NCP9P	900.00	CONTROL UNIT, HHC-731
N	MAHK-NZN9G	472.78	KIT, HHC-731, INSTALLATION ACCESSORIES

Dual Control Units (Order Microphone Separately)

Order complete transceiver, first control unit, and accessories. Then order dual control options to provide a second control head, accessory cable, speaker, mounting bracket and hardware.

N	MAHK-NZN7C	1,115.00	CONTROL UNIT, DUAL CONTROL, 2-6, CH-721, SCAN WITH INSTALLATION HARDWARE
N	MAHK-NZN7D	1,220.00	CONTROL UNIT, DUAL CONTROL, 2-6, CH-721, SYSTEM WITH INSTALLATION HARDWARE

8. Microphone (Select one)

N	MAHK-NMC7Z	80.00	MICROPHONE, STANDARD, CH-721 CONTROL UNIT
N	MAHK-NMC9D	160.00	MICROPHONE, NOISE CANCELING, CH-721 CONTROL UNIT
N	MAHK-ZN9F	195.00	MICROPHONE, DESKTOP
N	MAHK-NMC9C	330.00	MICROPHONE, DTMF, CH-721 CONTROL UNIT

Dual Control Unit Microphone (Select one)

N	MAHK-NMC9D	160.00	MICROPHONE, NOISE CANCELLING, CH-721 CONTROL UNIT
N	MAHK-NMC7Z	80.00	MICROPHONE, STANDARD, CH-721 CONTROL UNIT

9. Mounting/Cabling Kit

N	MAHK-NZN7R	360.00	ACCESSORIES, M5300 REMOTE MOUNT
N	MAHK-NZN6W	274.50	ACCESSORIES, M5300 FRONT MOUNT

NOTE: Mounting/Cabling Kit includes Power Cable, External Speaker, Mounting Bracket(s), Mic Hanger, and Radio Control Cable.

10. Miscellaneous

Motorcycle Kit

N	MAHK-NZN9H	1,765.00	KIT, MOTORCYCLE W/ACC CABLE, 800/900
N	MAHK-NZN9J	1,665.00	KIT, MOTORCYCLE W/O ACC CABLE, 800/900
V	LE-OM806HDBKTNCD	87.92	ANTENNA, 800 MHZ, BLACK BASE, STRD COAX For motorcycle applications

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M5300 MOBILES

Band: 800

Product Code: HK

E/C	Model No.	List Price \$	Description
10. Miscellaneous (Cont'd)			
Cables			
N	MAHK-NCL8B	195.00	CABLE, OPTIONS
N	MAHK-NCL8T	185.00	CABLE, SERIAL DATA, 20 FT
N	MAHK-NCL8C	90.00	CABLE, CH-721 OPTION CABLE
N	MAHK-NCL7R	90.00	CABLE, SERIAL PROGRAMMING, M5300
N	MATQ-NCL8U	180.00	CABLE, PROGRAMMING, CH-721 FRONT CONNECTOR
N	MAHK-NCL9L	90.00	CABLE, SERIAL PROGRAMMING, HHC-731
Additional Accessories			
S	KT-013492-002	325.00	KEYCAP KIT, SCAN, LARGE, ARROW KIT, 50 PK
S	KT-013492-001	140.00	KEYCAP KIT, SYSTEM, BLANK WHITE, CH-721, 50 PK
S	KT-013492-003	170.00	KEYCAP KIT, SYSTEM, OPTIONAL
S	FM-013327	120.00	KEYCAP KIT, SYSTEM
S	FM-013332	125.00	KEYCAP KIT, SCAN, CH721
Warranty			
N	HK-Y1EWM	80.00	WARRANTY, EXTENDED 1 YR, MOBILE
N	HK-Y2EWM	130.00	WARRANTY, EXTENDED 2 YR, MOBILE
N	HK-Y3EWM	180.00	WARRANTY, EXTENDED 3 YR, MOBILE
Industry Canada			
N	MAHK-NEC1A	5.00	OPTION, INDUSTRY CANADA
Manuals			
V	MAMM-780MW	65.00	MANUAL, MAINT, XG-75M/M7300, M5300 (700/800)
V	MAMM-900HK	65.00	MANUAL, MAINT, M5300, 900 MHZ
V	MM400HK	25.00	MANUAL, INSTALL, M5300

M7200 VEHICULAR TACTICAL NETWORK (V-TAC)

Band: 700/800
 Product Code: MV



All M7200 V-TAC orders must be placed through the Product Configurator. The following is for information only.

E/C	Model No.	List Price \$	Description
1. Transceiver (Select one)			
C	MAMV-VDLXX	9,775.00	V-TAC, M7200, 764-870 MHz, Unencrypted
2. Antennas (Select one)			
S	AN-025187-001	155.00	ANTENNA, GPS, ROOF MOUNT
S	AN-225001-001	90.00	ANTENNA, ELEMENT, 700/800 3dB
S	AN-225001-003	170.00	ANTENNA, ELEMENT, 700/800 3dB ELEV FD NGP
S	AN-225001-004	60.00	ANTENNA, ELEMENT, 700/800 2dB LOW PROFILE
S	AN-225001-005	90.00	ANTENNA, ELEMENT, 700/800 5dB
3. Operational Mode Packages (Must select one operational mode for mobile operation)			
The M7200 V-TAC repeater functionality only operates in the OpenSky® protocol. The V-TAC can also support EDACS®, ProVoice™, and P25 protocols as additional options when operating in the Mobile mode.			
NB	MAMV-OS	2,040.00	FEATURE PACKAGE, OPENSKY VOICE AND DATA TRUNKING (includes P25 Conventional and Analog Conventional operation)
NB	MAMV-PKGNS	2,670.00	FEATURE PACKAGE, OPENSKY AND PROVOICE TRUNKING (includes EDACS, P25 Conventional, and Analog Conventional operation)
NB	MAMV-PT	1,830.00	FEATURE PACKAGE, P25 TRUNKING (includes P25 Conventional and Analog Conventional operation)
4. Software Features			
P25 Software Options			
N	MV-PL4F	250.00	FEATURE PACKAGE, P25 PHASE 2, TDMA
5. Control Unit			
N	MAMV-CP9F	825.00	CONTROL UNIT, CH-721, SYSTEM, REMOTE MOUNT
Dual Control Units (Order Microphone Separately)			
Order complete transceiver, first control unit, and accessories. Then order dual control options to provide a second control head, accessory cable, speaker, mounting bracket and hardware.			
N	MAMV-NZN7C	1,115.00	CONTROL UNIT, DUAL CONTROL, CH-721 SCAN
N	MAMV-NZN7D	1,220.00	CONTROL UNIT, DUAL CONTROL, CH-721 SYSTEM

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

M7200 VEHICULAR TACTICAL NETWORK (V-TAC)

Band: 700/800
 Product Code: MV

E/C	Model No.	List Price \$	Description
6. Microphone (Select one)			
N	MAMV-NMC9C	330.00	MICROPHONE, DTMF, CH-721 CONTROL UNIT
N	MAMV-NMC9D	160.00	MICROPHONE, NOISE CANCELING, CH-721 CONTROL UNIT
N	MAMV-MC7Z	80.00	MICROPHONE, STANDARD (CH-721)
Dual Control Unit Microphone (Select one)			
N	MAMV-NMC9D	160.00	MICROPHONE, NOISE CANCELING, CH-721 CONTROL UNIT
N	MAMV-MC7Z	80.00	MICROPHONE, STANDARD (CH-721)
7. Miscellaneous			
N	MAMV-NZN7W	360.00	ACCESSORIES, M7200 REMOTE MOUNT KIT
N	MAMV-NZN8J	275.00	ROCKER SWITCH OPTION, V-TAC
Programming and Option Cables			
N	MAMV-NCL7K	210.00	CABLE, FULL I/O OPTION
N	MAMV-NCL8T	115.00	CABLE, SERIAL, DATA, 20 FT
N	MAMV-NCL8R	100.00	CABLE, M7200, SERIAL PROGRAMMING
N	MAMV-NCL8C	90.00	CABLE, CH-721 OPTION CABLE
N	MAMV-NCL7R	90.00	CABLE, SERIAL PROGRAMMING, CH-721
Manuals			
V	MAMM-785MV	65.00	MANUAL, MAINTENANCE, M7200 V-TAC, 700/800 MHZ
V	MM400MV	25.00	MANUAL, INSTALL, M7200 V-TAC MOBILE

CS7000 CONTROL STATION

Product Code: MW, HK



- Standard Features:**
- OpenSky® Operation
 - P25 Trunking and Conventional
 - EDACS® Operation
 - Unity® XG-100M Full-Spectrum Multiband
 - XG-75M/M7300 Dual-Band 700/800 MHz with 35W Output Power (15W for OpenSky)
 - M5300 at 800 MHz or 900 MHz with 35W Output Power (15W for OpenSky)
 - Half-Duplex Voice and Data
 - Software Configurable
 - Over-the-Air Programming
 - TIA/EIA-232 Serial Interface or USB
 - Supports up to 5 CAN Peripherals

- Optional Features:**
- Desktop Control Unit

All CS7000 orders must be placed through the Product Configurator. The following is for information only.

CS7000 model numbers require a Unity XG-100M, XG-75M/M7300, or M5300 mobile to complete the configuration for control station operation. The CS7000 is presented in the Product Configurator as an installation option for the model and feature set of the radio being ordered.

E/C	Model No.	List Price \$	Description
N	XMZN8L	5,675.00	CONTROL STATION, CS7000, LOCAL/REMOTE CONTROL, UNITY XG-100M*
N	XMZN8K	3,240.00	CONTROL STATION, CS7000, LOCAL CONTROL, UNITY XG-100M*
N	MAMW-NZN8L	5,675.00	CONTROL STATION, CS7000, LOCAL/REMOTE CONTROL, M7300*
N	MAMW-NZN8K	3,240.00	CONTROL STATION, CS7000, LOCAL CONTROL, M7300
N	MAHK-NZN8L	5,675.00	CONTROL STATION, CS7000, LOCAL/REMOTE CONTROL, M5300
N	MAHK-NZN8K	3,240.00	CONTROL STATION, CS7000, LOCAL CONTROL, M5300*

*For CS7000 Local/Remote Control, a remote CH-721 control unit can be used for additional remote control functionality. The CS7000 does not support DDC-100 operation. Refer to the Conventional Tone Remote Controller pages herein for information on the tone remote controller and its options.

Control Units

N	MAMW-ZN9B	2,140.00	CONTROL UNIT, SP721, DESK TOP CONTROLLER
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Microphone (Select one)

N	MAHK-NMC7Z	80.00	MICROPHONE, STANDARD, CH-721 CONTROL UNIT
N	MAMW-ZN9F	195.00	MICROPHONE, DESKTOP

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

CS7000 CONTROL STATION

Product Code: MW, HK

E/C	Model No.	List Price \$	Description
Antennas			
V	AN-025137-003	230.00	ANTENNA, YAGI, UHF-L 375-403 MHZ, 10 dB GAIN
V	AN-025137-004	230.00	ANTENNA, YAGI, UHF-L 406-440 MHZ, 9 dB GAIN
V	AN-025137-005	230.00	ANTENNA, YAGI, UHF-H 440-480 MHZ, 10 dB GAIN
V	AN-025137-012	350.00	ANTENNA, YAGI, UHF-H 470-512 MHZ, 9 dB GAIN
S	AN-025137-007	729.00	ANTENNA, YAGI, 700 MHZ, 10 dB GAIN
S	AN-025137-008	510.00	ANTENNA, YAGI, 800 MHZ, 10 dB GAIN
V	AN-025137-010	435.00	ANTENNA, 700/800 MHZ YAGI, 6.5 dB
V	AN-025137-009	200.00	ANTENNA, YAGI, 900 MHZ, 10 dB GAIN
Mounting/Cabling Kit			
N	MAHK-NMA6P	290.00	BRACKET KIT, RACK MOUNT, CS7000 For use with M5300
N	MAMW-NMA6P	160.00	BRACKET KIT, RACK MOUNT, CS7000 For use with M7300
N	XMMA6P	160.00	BRACKET KIT, RACK MOUNT, CS7000 For use with Unity XG-100M
Cables			
N	MAMW-ZN9C	115.00	CABLE ASSEMBLY, CAN, 30 FT STRAIGHT-RIGHT
N	MAMW-ZN9D	265.00	CABLE ASSEMBLY, CAN, 90 FT STRAIGHT-RIGHT
N	MAMW-ZN9E	685.00	CABLE ASSEMBLY, CAN, 250 FT STRAIGHT-RIGHT
N	MAMW-NCL8B	190.00	CABLE, OPTIONS
N	MAHK-NCL8T	185.00	CABLE, SERIAL DATA, 20 FT
N	MAHK-NCL8C	90.00	CABLE, CH-721 OPTION CABLE
N	MAHK-NCL7R	90.00	CABLE, SERIAL PROGRAMMING, M5300
N	MATQ-NCL8U	180.00	CABLE, PROGRAMMING, CH-721 FRONT CONNECTOR
Manuals			
V	MAMM-07KCS	35.00	MANUAL, MAINTENANCE, OPERATOR/INSTALLATION, CS7000

RADIO PROGRAMMING

Product Code: N/A

E/C	Model No.	List Price \$	Description
Windows-Based Radio Programming Software (Cont'd)			
LD	MATQ-S3416	800.00	SERVICE, KEY MANAGER UPDATE SERVICE Annual software update services purchased in conjunction with TQS3416 Keeps your TQS3416 software current as new releases are made available. Price covers 1-year enrollment.
Over-the-Air Programming			
S	AE/LZY213771/1	10,050.00	SOFTWARE, ProFile MANAGER
Advanced Access Control			
N	SS-DF3A	450.00	DONGLE, MASTR, AAC With RPM/RPM2 license
N	SS-DF3B	450.00	DONGLE, DISTRIBUTION, AAC With RPM/RPM2 license
N	SS-DF3C	200.00	DONGLE, SECONDARY DISTRIBUTION, AAC Without RPM/RPM2 license
Device Manager			
LD	NM-SG9B	10,000.00	LICENSE, DEVICE MANAGER PREMIUM
LD	NM-SG9A	5,000.00	LICENSE, DEVICE MANAGER PRO
LD	MASS-NSG8X	5,000.00	LICENSE, DEVICE MANAGER PRO TO PREMIUM UPGRADE
S	AA-016293-001	1,439.00	ADAPTER, 16-PORT SERIAL TO USB
S	CA-016292-001	9.50	ADAPTER, CABLE, RJ45 (F) TO DB-9 (M)
Symphony Dispatch Console			
N	SS-SH4V	6,500.00	LICENSE, BASE SIP, 4 EXTENSIONS, 8 CALLS License allows the Symphony console to connect up to 4 telephone extensions and process up to 8 simultaneous calls when connected to a Cisco® Unified Call Manager or Cisco Unified Call Manager Express
N	SS-SH4U	2,500.00	LICENSE, RADIO UNIT MONITOR License allows monitoring of RUM-enabled P25 subscriber units. Requires SR10A.3 or later VIDA network
N	SS-SH5B	2,000.00	LICENSE, BASE SIP, ADD TO ENT/PREM BUNDLE License adds option UD-SH4V to Symphony Enterprise and Premier Console Bundles. Requires UD-ZM1D, UD-ZM1E, UD-ZN2A, or UD-ZN4Z
N	SS-SH4W	1,500.00	LICENSE, SIP, ADD 4 EXTENSIONS, 8 CALLS License provides capacity for 4 additional extensions and 8 additional calls. Requires License UD-SH4V
N	SS-SH4R	750.00	LICENSE, DISCREET LISTENING License allows Discreet Listening of P25 individual calls
N	SS-SH3R	250.00	LICENSE, RADIO CHECK
EDACS Security Key/P25 Personality Lock			
S	CM-013373-002	20.91	SMART CARD READER, GEMALTO PC USB TR PIV
Programming Interface Modules			
S	TQ3370	525.00	KIT, PROGRAMMING INTERFACE MODULE, 110 VAC
S	TQ3370-220	525.00	KIT, PROGRAMMING INTERFACE MODULE, 220 VAC

OPENSKY® SKYMASTR BASE STATION

Band: 800

Product Code: SK

E/C	Model No.	List Price \$	Description
Miscellaneous			
N	MASK-NCN7Q	607.00	ASSEMBLY, PUNCH BLOCK, OpenSky
N	MASK-NPS2N	1,850.00	POWER SUPPLY, OpenSky, 120/240 VAC, 12/28 VDC
NB	MASK-NSG9B	10,000.00	LICENSE, DEVICE MANAGER PREMIUM
N	MASK-AM1C	21,610.00	KIT, TOWER TOP AMPLIFIER, 700 MHZ
N	MASK-CL4B	8,029.00	KIT, COMMON EQUIPMENT, HOT STANDBY CHANNEL, 800 MHZ
N	MASK-CL6D	8,357.00	KIT, COMMON EQUIPMENT, HOT STANDBY CHANNEL, 700 MHZ
N	MASK-NTS5L	4,530.00	KIT, ALARM FOR OpenSky
N	MASK-CB1A	5,120.00	COMBINER, TX, 2 CHANNEL, 800 MHZ
N	MASK-CB1B	6,953.00	COMBINER, TX, 3 CHANNEL, 800 MHZ
N	MASK-CB1C	9,000.00	COMBINER, TX, 4 CHANNEL, 800 MHZ
N	MASK-CB1D	10,500.00	COMBINER, TX, 5 CHANNEL, 800 MHZ
N	MASK-CB1E	12,000.00	COMBINER, TX, 6 CHANNEL, 800 MHZ
N	MASK-CB1G	6,500.00	COMBINER, TX, 2 CHANNEL, 700 MHZ
N	MASK-CB1H	9,000.00	COMBINER, TX, 3 CHANNEL, 700 MHZ
N	MASK-CB1J	12,000.00	COMBINER, TX, 4 CHANNEL, 700 MHZ
N	MASK-CB1K	15,000.00	COMBINER, TX, 5 CHANNEL, 700 MHZ
N	MASK-CB1L	18,000.00	COMBINER, TX, 6 CHANNEL, 700 MHZ
N	MASK-NCB2H	7,000.00	COMBINER, 2 CHANNEL, 700 MHZ
N	MASK-NCB1S	7,500.00	COMBINER, 2 CHANNEL, 700/800 MHZ, 1-1
N	MASK-NCB2N	6,000.00	COMBINER, 2 CHANNEL, 800 MHZ
N	MASK-NCB2J	9,000.00	COMBINER, 3 CHANNEL, 700 MHZ
N	MASK-NCB1T	9,000.00	COMBINER, 3 CHANNEL, 700/800 MHZ, 1-2
N	MASK-NCB1X	9,500.00	COMBINER, 3 CHANNEL, 700/800 MHZ, 2-1
N	MASK-NCB2P	8,000.00	COMBINER, 3 CHANNEL, 800 MHZ
N	MASK-NCB2K	12,000.00	COMBINER, 4 CHANNEL, 700 MHZ
N	MASK-NCB1U	12,000.00	COMBINER, 4 CHANNEL, 700/800 MHZ, 1-3
N	MASK-NCB1Y	12,000.00	COMBINER, 4 CHANNEL, 700/800 MHZ, 2-2
N	MASK-NCB2B	11,500.00	COMBINER, 4 CHANNEL, 700/800 MHZ, 3-1
N	MASK-NCB2Q	11,000.00	COMBINER, 4 CHANNEL, 800 MHZ

MASTR® V P25^{IP} TRUNKED BASE STATION

Band: VHF, UHF, 700, 800, 900

Product Code: SV

E/C	Model No.	List Price \$	Description
N	MASV-NPM1A	2,500.00	PROCESSOR, BASEBAND, MODULE, P25 SIMULCAST
N	MASV-NCU4X	1,600.00	SWITCH, ETHERNET, REDUNDANT, MASTR V
N	CP-CU4X	1,600.00	SWITCH, ETHERNET, REDUNDANT, MASTR V For Control Point
N	MASV-NPS2P	2,295.00	POWER SUPPLY, 110-240V, AC, MASTR V
N	MASV-NPS2S	2,672.00	POWER SUPPLY, 48VDC, MASTR V
N	SV-RB3C	800.00	POWER SUPPLY SHELF
N	SV-RB3B	800.00	POWER SUPPLY SHELF, 1st POSITION
N	SV-RB3A	800.00	POWER SUPPLY SHELF, 2 ND POSITION
N	SV-RB3D	800.00	POWER SUPPLY SHELF, CAB RACK
N	SV-RB3F	800.00	POWER SUPPLY SHELF, 1st POS, CAB RACK
N	SV-RB3E	800.00	POWER SUPPLY SHELF, 2 ND POS, CAB RACK
N	MASA-SVP25	750.00	SITE INTERFACE EQUIPMENT, P25T MASTR V
C	MASV-NRF5G	647.00	PRESELECTOR, 470-512 MHZ, MASTR V
C	SV-RF5J	647.00	PRESELECTOR, 440-470 MHZ, MASTR V
C	SV-RF5H	647.00	PRESELECTOR, 406-430 MHZ, MASTR V
C	MASV-NRF5F	647.00	PRESELECTOR, 380-400 MHZ, MASTR V
C	MASV-NRF5E	647.00	PRESELECTOR, 160-170 MHZ, MASTR V
C	MASV-NRF5D	647.00	PRESELECTOR, 150-160 MHZ, MASTR V
N	MASV-NMN2B	137.00	SHIPPING OPTION, NO CABINET, MASTR V

Manuals

V	MAMM-100SV	35.00	MANUAL, INSTALLATION MASTR V P25 TRUNKING BASE STATION
V	MAMM-110SV	65.00	MANUAL, MAINTENANCE, MASTR V P25 TRUNKING SITE
V	MAMM-120SV	210.00	MANUAL, MAINTENANCE, MASTR V P25 TRUNKED SIMULCAST
V	MM120SV-IP	210.00	MANUAL, INSTALLATION, MASTR V IP SIMULCAST
V	MM130SV-IP	35.00	MANUAL, INSTAL, MASTR V IP SMLCST, DCP

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

MASTR® V P25^{IP} CONVENTIONAL BASE STATION

Band: VHF, UHF, 700, 800, 900

Product Code: SV

E/C	Model No.	List Price \$	Description
N	MASV-NCU4X	1,600.00	SWITCH, ETHERNET, REDUNDANT, MASTR V
N	CP-CU4X	1,600.00	SWITCH, ETHERNET, REDUNDANT, MASTR V For Control Point
N	MASV-NPS2P	2,295.00	POWER SUPPLY, 110-240V, AC, MASTR V
N	MASV-NPS2S	2,672.00	POWER SUPPLY, 48VDC, MASTR V
N	SV-RB3C	800.00	POWER SUPPLY SHELF
N	SV-RB3B	800.00	POWER SUPPLY SHELF, 1st POSITION
N	SV-RB3A	800.00	POWER SUPPLY SHELF, 2 ND POSITION
N	SV-RB3D	800.00	POWER SUPPLY SHELF, CAB RACK
N	SV-RB3F	800.00	POWER SUPPLY SHELF, 1st POS, CAB RACK
N	SV-RB3E	800.00	POWER SUPPLY SHELF, 2 ND POS, CAB RACK
C	MASV-NRF5G	647.00	PRESELECTOR, 470-512 MHZ, MASTR V
C	SV-RF5J	647.00	PRESELECTOR, 440-470 MHZ, MASTR V
C	SV-RF5H	647.00	PRESELECTOR, 406-430 MHZ, MASTR V
C	MASV-NRF5F	647.00	PRESELECTOR, 380-400 MHZ, MASTR V
C	MASV-NRF5E	647.00	PRESELECTOR, 160-170 MHZ, MASTR V
C	MASV-NRF5D	647.00	PRESELECTOR, 150-160 MHZ, MASTR V
N	MASV-NMN2B	137.00	SHIPPING OPTION, NO CABINET, MASTR V

Manuals

VMM100SV-CV35.00MANUAL, INSTALLATION, MASTR V P25C IP REPEATER

EXPORT CONTROL NOTE: Our products may require a validated Export License issued by the Department of Commerce prior to exporting from the United States.

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EXCEEDING YOUR EXPECTATIONS





INVITATION TO NEGOTIATE (ITN) & RESPONDENT'S ACKNOWLEDGEMENT

ITN TITLE:
Project 25 Public Safety Radio Network

ITN NUMBER:
ITN PS 33-20

ISSUE DATE: May 18, 2020 at 8:00 A.M.

PRE-PROPOSAL MEETING : June 11, 2020 at 9:00 A.M.

LAST DAY FOR QUESTIONS: June 18, 2020 at 3:00 P.M.

ITN OPENING DATE & TIME: July 17, 2020 at 3:00 P.M.

NOTE: PROPOSALS RECEIVED AFTER THE PROPOSAL OPENING DATE & TIME WILL NOT BE CONSIDERED.

Okaloosa County, Florida solicits your company to submit a proposal on the above referenced goods or services. All terms, specifications and conditions set forth in this ITN are incorporated into your response. A proposal will not be accepted unless all conditions have been met. All proposals must have an authorized signature in the space provided below. All envelopes containing sealed proposals must reference the "ITN Title", "ITN Number" and the "ITN Due Date & Time". Okaloosa County is not responsible for lost or late delivery of proposals by the U.S. Postal Service or other delivery services used by the respondent. Neither faxed nor electronically submitted proposals will be accepted. Proposals may not be withdrawn for a period of ninety (90) days after the proposal opening unless otherwise specified.

RESPONDENT ACKNOWLEDGEMENT FORM BELOW MUST BE COMPLETED, SIGNED, AND RETURNED AS PART OF YOUR RESPONSE. RESPONSES WILL NOT BE ACCEPTED WITHOUT THIS FORM, SIGNED BY AN AUTHORIZED AGENT OF THE RESPONDENT.

COMPANY NAME _____
MAILING ADDRESS _____
CITY, STATE, ZIP _____
FEDERAL EMPLOYER'S IDENTIFICATION NUMBER (FEIN): _____
TELEPHONE NUMBER: _____ EXT: _____ FAX: _____
EMAIL: _____

I CERTIFY THAT THIS PROPOSAL IS MADE WITHOUT PRIOR UNDERSTANDING, AGREEMENT, OR CONNECTION WITH ANY OTHER RESPONDENT SUBMITTING A PROPOSAL FOR THE SAME MATERIALS, SUPPLIES, EQUIPMENT OR SERVICES, AND IS IN ALL RESPECTS FAIR AND WITHOUT COLLUSION OR FRAUD. I AGREE TO ABIDE BY ALL TERMS AND CONDITIONS OF THIS PROPOSAL AND CERTIFY THAT I AM AUTHORIZED TO SIGN THIS PROPOSAL FOR THE RESPONDENT.

AUTHORIZED SIGNATURE: _____ TYPED OR PRINTED _____
NAME

TITLE: _____ DATE _____

NOTICE TO RESPONDENTS

ITN PS 33-20

Notice is hereby given that the Board of County Commissioners of Okaloosa County, FL, will accept sealed proposals until **3:00 PM (CST)** on **July 17, 2020**, for **Project 25 Public Safety Radio Network**.

Interested respondents desiring consideration shall provide one (1) original hard copy and one (1) electronic copy on thumb drive of their Invitation to Negotiate (ITN) response with the respondent's areas of expertise identified. Submissions shall be portrait orientation, unbound, and 8 ½" x 11" where practical.

The hard copy original must have original signatures in blue ink.

Proposal documents are available for download by accessing the Okaloosa County website at <http://www.co.okaloosa.fl.us/purchasing/home> then accessing the link "View Current Solicitations" or by accessing the Florida Purchasing Group website at <https://www.bidnetdirect.com/florida>

[A mandatory pre-proposal meeting will be held at 9:00 a.m. \(CST\), June 11, 2020 at the Okaloosa County Administration Building, Training Room, 1st Floor, 1250 Elgin Parkway N., Shalimar, FL 32579, with site visits scheduled immediately afterwards.](#)

Submittals must be delivered to the Okaloosa County Purchasing Department at the address listed below no later 3:00 PM on July 17, 2020 in order to be considered. All proposals received after the stated time and date will be returned unopened and will not be considered. All submittals must be in sealed envelopes reflecting on the outside thereof "**Project 25 Public Safety Radio Network**". Failure to clearly mark the outside of the envelope as set forth herein shall result in the submittal not being considered.

The County reserves the right to award to the firms submitting a responsive proposal with a resulting negotiated agreement that is most advantageous and in the best interest of Okaloosa County, and to waive any irregularity or technicality in proposals received. Okaloosa County shall be the sole judge of the solicitation and the resulting negotiated agreement that is in its best interest and its decision will be final.

NOTE: Crestview, FL is not a next day guaranteed delivery location by most delivery services. Respondents using mail or delivery service assume all risk of late or non-delivery.

All submittals should be addressed as follows:

ITN PS 33-20
Project 25 Public Safety Radio Network
Okaloosa County Purchasing Department
5479A Old Bethel Road
Crestview, FL 32536

Jeffrey A. Hyde
Purchasing Manager

Date

OKALOOSA COUNTY
BOARD OF COUNTY COMMISSIONERS

Robert A. "Trey" Goodwin, III
Chairman

Invitation to Negotiate



ITN PS 33-20

Project 25 Public Safety Radio Network

Okaloosa County, Florida

CHAIRMAN

Robert A. "Trey" Goodwin, III., Chair, District 4

OKALOOSA COUNTY COMMISSIONERS

Carolyn Ketchel, Vice Chair, District 2

Graham W. Fountain, District 1

Nathan Boyles, District 3

Charles K. Windes, Jr., District 5

COUNTY ADMINISTRATOR

John Hofstad

CLERK

JD Peacock II

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1. PROJECT OVERVIEW

1.1. INTRODUCTION

- A. Okaloosa County, Florida, (County) invites proposals from qualified vendors for the provision of an Association of Public-Safety Communications Officials (APCO) International Project 25 (P25) radio communications system to support mission-critical public safety communications within the county. The proposed communications system shall provide enhanced, two-way wireless communications capabilities to all public safety users. Proposals are requested for the following:
1. A new P25 trunked Phase II system to replace the County's multiple radio systems, including an ultra-high frequency (UHF) conventional analog system and the 800-megahertz (MHz) State Law Enforcement Radio System (SLERS) using Harris Enhanced Digital Access Communications System (EDACS) technology. The County's very-high frequency (VHF) conventional analog system will be expanded to enhance tone-and-voice paging.
 2. A new Internet Protocol (IP)-based microwave and terrestrial fiber backhaul system.
 3. New radio dispatch consoles for twenty-two (22) positions across five dispatch centers, including the County's Emergency Communications Center (911 center – 12), the City of Crestview (4), the City of Fort Walton Beach Police (2), the City of Niceville Police (2), and the City of Valparaiso Police (2). The consoles located in the cities of Fort Walton Beach, Niceville, and Valparaiso may require repositioning to the County's 911 center prior to design review. Respondents shall consider this potential relocation within their proposals.
 4. Mobile and portable subscriber radios for the County's first responders.
 5. Simulcast tone-and-voice paging.
 6. Civil work to support upgrades to new and existing radio sites, and tower upgrades to support the aforementioned communications subsystems.
- B. In addition to the above, Respondents should address in their proposals system installation and commissioning, and ongoing maintenance support, to ensure a state-of-the-art system.
- C. The proposed system will be owned by Okaloosa County. The system procurement process is being administered by Okaloosa County. For brevity, the generic term "County" used throughout the Invitation to Negotiate (ITN) refers to Okaloosa County, unless otherwise specified.

1.2. OKALOOSA COUNTY BACKGROUND

- A. Public safety agencies within Okaloosa County operate on a multitude of communications systems. These systems include the 800 MHz SLERS utilizing EDACS technology, a conventional UHF system with voted receivers, a conventional VHF system with voted receivers, and a UHF MOTOTRBO digital mobile radio (DMR) system.

1.3. INVITATION TO NEGOTIATE OVERVIEW

- A. This section provides a high-level overview of this ITN.
 - 1. Section 1, Project Overview – Provides background information and a general overview of the requirements contained in the ITN.
 - 2. Section 2, Instructions to Respondents – Provides instructions to Respondents, including, but not limited to: proposal due date, pre-proposal conference information, and evaluation criteria.
 - 3. Section 3, Radio Communications System Requirements – Provides requirements for the desired communications systems. The County requires procurement of a P25 radio system. It includes requirements for system configuration, site selection, radio frequency (RF) coverage, and site equipment. Subsections address the need for new radio dispatch consoles, network management system, and VHF tone-and-voice paging.
 - 4. Section 4, Backhaul Network – Provides requirements for a multi-protocol label switching (MPLS) backhaul network utilizing a combination of digital microwave backhaul equipment and County-owned fiber-optic connectivity.
 - 5. Section 5, Site Development – Provides requirements for site development work, including site compound preparation, site grounding, tower deployment, shelter deployment, and electrical and generator systems.
 - 6. Section 6, Dispatch Consoles – Provides requirements for the new dispatch console system and related equipment.
 - 7. Section 7, Warranty, Maintenance, and Support – Provides requirements for the warranty, extended warranty, maintenance, and support of the proposed system and subsystems.
 - 8. Section 8, System Implementation, Test and Acceptance – Provides requirements for system cutover, staging, installation, fleet mapping, coverage testing, and final acceptance.

9. Section 9, Subscriber Equipment – Provides requirements for subscriber equipment, including mobiles, portables, and control stations, as well as subscriber warranty and maintenance.
10. Glossary – Key acronyms and terms contained in the ITN.
11. Appendices
 - Appendix A: Potential Candidate Tower Site
 - Appendix B: Coverage Requirements Map
 - Appendix C: Compliance Matrix
 - Appendix D: Proposal Pricing Instructions
12. Attachment A: County Documents, including insurance requirements and proposal conditions

1.4. SCOPE OF WORK SUMMARY

- A. The selected Respondent shall provide the following project components:
 1. Furnish and install system equipment and ancillary facilities
 2. Engineering, system design, and Federal Communications Commission (FCC) licensing preparation
 3. Project management
 4. Software installation and programming
 5. Training
 6. Acceptance testing, including coverage testing
 7. Cutover plan and execution
 8. Warranty and maintenance
- B. The selected Respondent shall furnish the following complete, highly redundant, and/or fully functional systems and equipment:
 1. P25 land mobile radio (LMR) communications system, including the guarantee of system coverage and reliability
 2. MPLS backhaul network utilizing a combination of point-to-point digital microwave backhaul network with consideration given to using the County-owned fiber-optic network for alternate backhaul connections.

3. Infrastructure facilities (e.g., towers, shelters, fencing)
 4. Network management system (NMS)
 5. Subscriber mobile and portable radio equipment
- C. All equipment shall be provided in new condition and be covered by a full factory and/or manufacturer's warranty of not less than one year beginning at the time of system acceptance.
 - D. Respondents are to identify radio site locations to best meet the County's coverage requirements and provide the greatest overall operational benefit. Any proposed greenfield or existing leased locations must meet the facility requirements identified in Section 5, Site Development. The long-term cost effectiveness of new greenfield towers versus adding other existing towers to the network will be an evaluation factor.
 - E. Existing towers may require structural modifications to support the proposed new system and transitional loading. Respondents should account for the time required to remediate these towers, including time required for engineering, design, procurement, and implementation of any required modifications.
 - F. In the event additional or alternate tower sites are proposed to meet a Respondent's coverage guarantee, the response must include letters of commitment from those site and tower owners, indicating availability of tower space to accommodate the proposed facilities and antennas. Such letters also must indicate a commitment to enter into negotiations with the County for tower space or construction on greenfield sites.
 - G. Work shall be planned, coordinated, and conducted with minimal interruption of service to existing critical systems.
 - H. Proposals shall completely describe the equipment and methods that will be used to implement the system. The intent of this document is to allow the Respondent to propose the best equipment, technology, and methods available to provide state-of-the-art public safety communications systems of the highest quality and performance.
 - I. Proposals shall not be accepted that include systems or equipment within five years of the end of their respective lifecycles at the time of system acceptance. No product with published cancellation dates shall be proposed.
 - J. Proposals shall not be accepted that include systems or equipment that will no longer be supported for software, spare parts, and repair by the Respondent or manufacturer within 15 years of system acceptance. Product roadmaps must be provided.
 - K. If a product or feature included in a Respondent's proposal is no longer offered, supported, or being sold at the time of system acceptance, the selected Respondent shall offer the equivalent product or service at no additional up-front or recurring cost.

- L. In the event that requirements are stated in more than one section and appear to conflict, the more stringent requirement shall apply.

1.5. PROPOSALS DESIRED

- A. The County desires a complete turnkey solution addressing all project systems, subsystems, and components.
- B. Any requirements placed on the County throughout the project must be specifically identified in the Respondent's proposal. Any requirements required for project completion that have not been identified as a County responsibility will be the responsibility of the Respondent at no additional cost to the County.

1.5.1. *Systems Technical Requirements*

- A. This ITN seeks proposals for the construction of a countywide radio system that will include:
 1. 700 MHz or 800 MHz P25 Phase II system that will support first responders within Okaloosa County
 2. Trunked system to meet the capacity requirements of the County
 3. Tone-and-voice paging system with a standalone simulcast channel
 4. P25 dispatch consoles
 5. Construction of a microwave network utilizing MPLS routing that will provide radio system backhaul for P25 traffic at each site, with integration of the County-owned fiber-optic network, where practical, for redundant routing
 6. Purchase of P25 subscriber units (mobiles, portables, and control stations) and any necessary pagers
 7. Site construction/improvements

1.5.2. *Services*

- A. Design and engineer the P25 radio system to portable radio coverage in the four coverage areas defined in Appendix B. This includes coverage areas for portable outdoor, 12-decibel (dB) buildings, 20 dB buildings, and boat-mounted mobiles, with the portable carried on the user's belt with a radio-mounted antenna and a wired speaker/microphone.
- B. Design and engineer a microwave system to interconnect the LMR sites and 911 center, with consideration of the County-owned fiber-optic network for redundant connectivity.

- C. Conduct a structural analysis of all towers proposed for use in the system and mitigate any structural shortfalls to meet the current Telecommunications Industry Association (TIA) 222-H, *Structural Standard for Antenna Supporting Structures and Antennas*, Class III standard.

1.6. QUALITY ASSURANCE AND COORDINATION

1.6.1. *Standards and Guidelines*

- A. Respondents shall comply with the latest revisions of the following standards, rules, regulations, and industry guidelines:
 - 1. Florida Building Code (FBC)
 - 2. International Building Code (IBC)
 - 3. American National Standards Institute (ANSI)
 - 4. National Electrical Manufacturers Association (NEMA)
 - 5. Electronics Industry Association (EIA)
 - 6. Telecommunications Industry Association (TIA)
 - 7. Telecommunications Distribution Methods Manual (TDMM)
 - 8. National Electrical Code (NEC)
 - 9. Institute of Electrical and Electronics Engineers (IEEE)
 - 10. Federal Communications Commission (FCC)
 - 11. UL LLC
 - 12. American Society of Testing Materials (ASTM)
 - 13. National Fire Protection Association (NFPA) 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*
 - 14. Other contractor/industry standards
 - a. Respondents shall provide information to the County for review and approval prior to contract award.
- B. The selected Respondent shall comply with industry best practices for system installation, grounding, bonding, and transient voltage surge suppression (TVSS), as outlined in the following standards. A third-party audit shall be performed at the conclusion of the installation to verify that the installation aligns with the applied standard.
 - 1. Motorola R56®, *Standards and Guidelines for Communication Sites* (latest revision)
 - 2. Harris AE/LTZ 123 4618/1, *Grounding Guidelines*
 - 3. Equivalent (Respondents must provide details)
- C. Governing codes and conflicts: If the requirements of this specifications document conflict with those of the governing codes and regulations, then the more stringent of the two shall become applicable.
- D. If a Respondent cannot meet any of the standards or guidelines listed above, the Respondent shall list in its proposal any and all deviations for approval by the County.

- E. The selected Respondent shall identify and coordinate all necessary codes, permitting, etc., including building permits. The selected Respondent shall notify the County of any issues.
- F. The selected Respondent shall be responsible for performing a structural analysis for each tower where loading will be modified, and for advising the County where remediation will be required and the cost options for proposed modifications.

1.6.2. P25 Standard Compliance

- A. The proposed trunked radio system shall comply with the latest applicable P25 suite of standards adopted as TIA and/or ANSI documents at the time of proposal submission.
- B. The system shall be delivered in accordance with the P25 Phase II standards outlined in the ITN. If these standards change or are updated for final release, the selected Respondent shall implement the final standards at no additional charge to the County.
- C. The proposed system shall not include proprietary features that prohibit or impede the use of P25-compliant subscriber equipment provided by any equipment vendor. Any proprietary features that would be available as an option should be clearly explained.

1.6.3. Frequency Coordination and Licensing

- A. LMR Licenses: 700 MHz or 800 MHz band for the trunked radio system. The selected Respondent shall be responsible for the research and preparation of all license acquisitions to support the new system. Following approval of the preliminary design phase, the selected Respondent shall provide all modifications and applicable forms to the County for review and approval. The selected Respondent shall be responsible for evaluating frequencies in the 700 MHz and 800 MHz bands to determine the feasibility of licensing. Any proposed designs shall align with the associated restrictions of the frequency band proposed by the Respondent. For example, the use of 700 MHz or 800 MHz National Public Safety Planning Advisory Committee (NPSPAC) frequencies will need to comply with Region 9 requirements, including protection of Computer Assisted Pre-Coordination Resource & Database System (CAPRAD) allotments, responsible radiation, Florida Region 9 Interference Program (FRIP), etc. The County shall be responsible for coordination and licensing fees, if any, and signatures, as applicable.
- B. Microwave Licenses: The selected Respondent shall be responsible for all microwave frequency research, prior coordination, and preparation of all associated FCC license applications and submittals on behalf of the County. The County shall be responsible for coordination and licensing fees, if any, and signatures, as applicable.
- C. Paging License: The selected Respondent shall be responsible for the frequency research and licensing of the countywide VHF paging channels (one north and one south). The selected Respondent shall be responsible for acquiring any letters of

concurrence that may be required during the licensing process. The County shall be responsible for coordination and licensing fees, if any, and signatures, as applicable.

1.6.4. Federal Aviation Administration (if applicable)

- A. The selected Respondent shall complete Federal Aviation Administration (FAA) forms as necessary. The selected Respondent also shall complete any associated FCC Antenna Structure Registration (ASR) submittals.

1.6.5. Local, State, and Federal Environmental and Historical Requirements

- A. The selected Respondent shall be responsible for securing all approvals acquired for construction and installation activities. This shall include the preparation of all applications and exhibits in support of these approvals. The following exhibits provide examples of required approvals that will be the selected Respondent's responsibility.
 - 1. FCC Tower Notification application
 - 2. National Environmental Policy Act (NEPA) checklist and supporting documentation
 - 3. State Historic Preservation Office (SHPO) requirements
 - 4. Environmental Assessment compliant with FCC/federal requirements
 - 5. Wetland mitigation including any required credits with the Army Corp of Engineers
 - 6. Storm water mitigation plan
 - 7. Native species assessment and mitigation
 - 8. Tribal notification and mitigation, if impact identified
 - 9. Endangered species assessment and mitigation
 - 10. Floodplain assessment and mitigation
 - 11. Local newspaper posting of tower notification

1.6.6. Permitting

- A. The selected Respondent shall be responsible for all permitting activities required to complete site construction and system implementation, including building and electrical permits.
- B. The selected Respondent is responsible for identifying the Authority Having Jurisdiction (AHJ) for each proposed location.
- C. The selected Respondent shall propose designs that fall within the zoning requirements of each AHJ. For example, if a new raw-land site is proposed, the site must comply with the AHJ's tower height and setback requirements.
- D. The selected Respondent shall research all required exhibits required by each AHJ and be responsible for preparing those exhibits.
- E. The selected Respondent shall track the progress of all permit applications and seek expedited processing when possible.

- F. The selected Respondent shall respond to any comments received in response to comments from the AHJ within one week of receipt.
- G. The selected Respondent is responsible for any required certifications of permitting submittals, including engineer-sealed drawings by a Florida registered Professional Engineer (PE).
- H. The selected Respondent shall be available to represent the County at any meetings for site approval, include City Commission, County Commission, or public outreach meetings.
- I. The selected Respondent shall be responsible for preparing any exhibits required in support of zoning variances.

1.6.7. Project Management

- A. Respondents shall provide a project management plan (PMP) in their proposals that provides detail on the following: Project scope, deliverables, schedule, quality assurance/quality control (QA/QC) processes, and risk management.
- B. The PMP shall describe how the selected Respondent intends to monitor and control the installation and deployment of the proposed system and mitigate risks to ensure that the system meets the design specifications and is delivered on time.
- C. Regularly scheduled status meetings shall be established between the County's project team and the selected Respondent. The selected Respondent shall provide a schedule for these meetings subject to the County's approval.

1.6.7.1. Scheduling

- A. The selected Respondent shall develop and maintain a project schedule including tasks, milestones, start and end dates, task precursors and task owners.
- B. The schedule shall represent tasks associated with completing work and shall be updated with actual dates as tasks are completed.
- C. The updated schedule shall be provided as an agenda item for all County/Respondent status meetings.
- D. The schedule shall address the following at a minimum:
 - 1. Site surveys
 - 2. Detailed design review
 - 3. Site preparation
 - 4. Equipment manufacturing
 - 5. Factory acceptance test

6. Equipment delivery
7. System installation
8. System configuration
9. System optimization
10. Acceptance testing
11. Coverage testing
12. User training
13. Fleet map development
14. System cutover
15. System documentation development and delivery
16. System and equipment warranty

1.6.7.2. *Project Punch List*

- A. The selected Respondent shall establish and maintain a punch list, as mutually agreed to with the County, for site facilities, equipment, and acceptance tests.
- B. The punch list shall be maintained in real time and published weekly. The punch list shall include the following at a minimum:
 1. Sequential punch-list item numbers
 2. Date identified
 3. Item description
 4. Party responsible for resolution
 5. Expected resolution date
 6. Resolution date
 7. Details about how each punch-list item was resolved and tested
 8. Notes about the item
- C. The selected Respondent shall be responsible for reviewing each punch-list item and advising the County of any changes. The status of punch-list items shall be updated during each status meeting.

1.6.8. *Project Meetings*

- A. A project kickoff meeting shall be scheduled prior to the beginning of the project.
- B. Regular project status meetings shall be scheduled following contract award and the initial kickoff meeting.
- C. The selected Respondent shall be responsible for scheduling the meetings, as well as preparing meeting agendas and minutes. In addition to those identified in Section 1.6.7.1, Scheduling, above, meeting agenda items shall include, at a minimum, the following items:
 1. Schedule review

2. Status of deliverables
3. Risk items
4. Changes
5. Action-item assignments

1.6.9. *Project Staffing*

- A. Project staffing shall be managed by the selected Respondent based on workload and the level of effort required throughout the implementation/installation process; however, the positions identified below shall be staffed throughout the duration of the project and shall not be changed without prior approval of the County.
- B. Respondent's Project Manager
 1. The selected Respondent's project manager shall be the primary point of contact between the County and the Respondent.
 2. Respondent's project manager shall: bear full responsibility for supervising and coordinating the installation and deployment of the communications system; be responsible for development and acceptance of the PMP; manage the execution of the project against that plan; and oversee the day-to-day project activities, deliverables, and milestone completions.
 3. Respondent's project manager shall be responsible for coordination of the regular project status meetings.
- C. Respondent's Project Engineer
 1. The selected Respondent's project engineer shall have the primary responsibility for managing the system design and ensuring that the system is installed in accordance with the approved system design.
 2. Any deviation from the system design shall be subject to project change control procedures and shall not be undertaken until approved by the County.
 3. Respondent's project engineer shall ensure the development of block diagrams, system-level diagrams, and rack diagrams to assist the installation team in completing the system installation.
 4. The project engineer also shall supervise the development and execution of the acceptance test plan (ATP) and coverage acceptance test plan (CATP), as well as guide the County's project team through the processes and procedures necessary to prove that the system performs as specified in the contract. No test plan shall be executed until approved by the County.

1.6.10. Quality Assurance/Quality Control Program

- A. The selected Respondent shall include a QA/QC plan. The QA/QC plan shall be submitted for review during preliminary design as described in this section. The plan shall address all stages of the project, including at a minimum:
 - 1. Procurement
 - 2. System design
 - 3. Installation
 - 4. Implementation
 - 5. Testing
 - 6. Cutover
- B. The QA/QC plan shall specifically describe the plans and procedures that ensure the proposed system is designed in accordance with the standards and requirements described in this specifications document.
- C. The QA/QC plan shall be included as part of the PMP developed by the project manager.
- D. The QA/QC plan shall be an integral part of the project and include County personnel as part of the review-and-approval process for all deliverables and submittals.
- E. The proposed QA/QC plan shall address the following project tasks at a minimum:
 - 1. Design analysis and verification
 - 2. RF coverage analysis and verification
 - 3. Design changes and document control
 - 4. Material shipping, receiving, and storage
 - 5. Site preparation (if required)
 - 6. Field installation and inspection
 - 7. Equipment inventory and tracking
 - 8. System testing and validation
 - 9. Software regression testing
 - 10. Deficiency reporting and correction
 - 11. Implementation and cutover
 - 12. Training and certification

1.7. DELIVERY, STORAGE AND HANDLING

- A. The selected Respondent shall be responsible for the storage of equipment following shipment from staging. All costs associated with the storage shall be the responsibility of the selected Respondent. The County shall not be liable for equipment or material stored onsite prior to system acceptance.

1.8. PROJECT SUBMITTALS

- A. Key project deliverables and submittals are outlined below and are described in further detail throughout this specifications document.
- B. All project submittals shall be subject to review and approval by the County and its engineer/consultant.
- C. All submittals shall be provided in hard copy, properly bound, and in electronic format on a universal serial bus (USB) flash drive. The quantity of hard copies required shall vary for each type of submittal and shall be determined by the County prior to submission.
- D. All submittals shall include a cover letter or letter of transmittal, signed, dated, and fully describing the contents of the submittal.
- E. For the duration of the project, the selected Respondent shall provide a Web-based portal or File Transfer Protocol (FTP) site for sharing and exchanging project documents.

1.8.1. *Preliminary Design (45 days after notice to proceed)*

- A. The selected Respondent shall submit the preliminary design package 45 days after receiving the notice to proceed. The preliminary design package shall include the following:
 - 1. QA/QC plan
 - 2. Detailed project schedule
 - 3. System-level block diagrams
 - 4. Patching schedules and termination details for all cabling necessary for a complete record of the installation
 - 5. Radio and microwave channel plans
 - 6. Microwave path engineering report(s)
 - 7. Equipment room overview drawings
 - 8. Equipment rack/cabinet elevation drawings
 - 9. Tower profile drawings indicating antenna-mounting locations
 - 10. Detailed lists of materials for each site
 - 11. 30-day operational test plan
 - 12. CATP

1.8.2. *Final Design (90 days after notice to proceed)*

- A. The contract design review (CDR) shall occur no sooner than 90 days after the selected Respondent receives the notice to proceed, unless the County agrees to an earlier date, or before the proposed sites acquisition can be validated and the County provides confirmation.

- B. The CDR shall be delayed until proposed sites in the Respondent's design can be validated, acquired and finalized.
- C. The selected Respondent shall submit the final design package no earlier than 90 days after receiving notice to proceed, which shall include the following:
 - 1. Any updates to previously submitted design information
 - 2. Cutover plan
 - 3. System operation and maintenance manuals for all equipment
 - 4. Factory test data
 - 5. Site installation drawings
 - 6. Structural analyses and results
 - 7. A detailed preliminary staging acceptance test plan (SATP) outlining a comprehensive series of tests that will demonstrate proof of performance and readiness for shipment
- D. The final SATP shall be submitted no later than 15 business days before the testing begins and shall be approved no later than five business days before the testing begins.

1.8.3. *System Staging, Delivery and Installation*

- A. System staging shall not occur earlier than the final CDR approval or site validation and acquisition unless agreed to by the County.
- B. System staging must be performed in the United States.
- C. The selected Respondent shall submit a bill of materials/packing list with two copies for each shipment of equipment. The packing list shall include the following information at a minimum for each component included in the packaging:
 - 1. Manufacturer
 - 2. Model
 - 3. Serial number
 - 4. Unique identification of the package containing the item
- D. All items shipped by the Respondent or its suppliers will include the above information in a barcode format.

1.8.4. *Final System Acceptance*

- A. The selected Respondent shall submit a detailed final acceptance test plan (FATP) that outlines a comprehensive series of tests that will demonstrate proof of performance and readiness for final acceptance by the County/Owner.

- B. The final FATP shall be submitted no later than 15 business days before the testing begins and shall be approved by the County before it is considered finalized. A preliminary FATP shall be submitted with the Respondent's proposal.
- C. The selected Respondent shall submit three final and complete sets of as-built documentation, including the following:
 - 1. Documentation index
 - 2. Field test reports, with dates and actual readings
 - 3. Coverage test reports
 - 4. Warranty documentation
 - 5. Detailed list of materials for each site
 - 6. A copy of all red-line documents for each site prior to issuance of the as-built documentation
 - 7. As-built system-level block diagrams
 - 8. As-built site drawings, including all cabling and terminations
 - 9. Site layout drawings, as appropriate
 - 10. Tower drawings showing any new installations

2. INSTRUCTIONS TO RESPONDENTS

2.1. OVERVIEW

- A. Proposals must be received by 3:00 p.m. Central Time (CT) on July 17, 2020.
- B. Respondents shall submit a bound original and nine bound copies of the proposal to the County. Each package also shall include a copy of the proposal in electronic format on a USB flash drive. The front of the package shall be marked "Proposal for County of Okaloosa Radio Communications System." Proposals shall be addressed to:

OKALOOSA COUNTY P25 RADIO SYSTEM PROPOSAL

Attention: Jeffrey A. Hyde
Purchasing Manager
Okaloosa County Purchasing
5479A Old Bethel Road
Crestview, FL 32536

- C. Respondents may submit questions to the County in either written or electronic format (email). The County will provide answers to any questions received. Oral responses shall not be binding on the County.
- D. The County's contact for submission of technical questions is:

Attention: Jeffrey A. Hyde
Purchasing Manager
Okaloosa County Purchasing

5479A Old Bethel Road
Crestview, FL 32536

Phone: 850-689-5960

Email: Jeffrey Hyde at: jhyde@myokaloosa.com

E. Respondents shall submit questions by 3:00 p.m. CT on June 18, 2020.

2.2. MANDATORY PRE-PROPOSAL CONFERENCE

A. A mandatory pre-proposal conference will be held on June 11, 2020, at 9:00 a.m. CT. The conference will be held at the Okaloosa County Administration Building, Training Room – 1250 N Eglin Parkway – 1st Floor, Shalimar, FL 32579.

B. Respondents may submit questions to the County in either written or electronic format (email). Questions must be received at least five days prior to the pre-proposal conference for them to be addressed at the conference. During the conference, the County shall provide answers to any questions received and hold an open discussion regarding the project. Oral responses during the conference shall not be binding on the County.

C. The County contact for submission of technical questions is the same as listed above.

D. Following the conference, all attendees shall be provided with a copy of the sign-in sheet, questions, and responses.

E. Following the pre-proposal conference, a familiarization tour of existing tower sites and the 911 center(s) will be conducted. It is anticipated that the tours will require the remainder of the day to complete. For logistical purposes, a head count of personnel planning to view each site is requested and should be submitted to the County's contact at least five business days in advance of the tour date. Some site facilities have limited space and challenging access; thus, vendors are encouraged to limit the number of persons who will need to spend time at each site.

2.3. TIMELINE GOALS

- A. While the County is not obligated to comply with the following timeline, it intends to comply with the following schedule, which may be changed in the County’s sole discretion.

Table 1: Schedule of Events

Event	Date and Time
Solicitation Issued	May 18, 2020
Pre-proposal Conference	June 11, 2020, from 9:00 a.m. – 10:00 a.m. CT
Site Walks	June 11, 2020, from 10:00 a.m. – 5:00 p.m. CT
Written Questions Due	June 18, 2020 at 3:00 p.m. CT
Response/Addendum Issued	As required, no later than June 18, 2020
Proposals Due	July 17, 2020, at 3:00 p.m. CT
Evaluation of Proposals	July 17, 2020 through August 10, 2020 Oral interviews may be scheduled for August 20, 2020
Negotiation and Contract Award	Negotiations are anticipated to occur in September and October 2020

2.4. PROPOSAL FORMAT

- A. Respondents shall complete the compliance matrix provided in Appendix C. Failure to respond to any item in the compliance matrix may cause the proposal to be rejected.
- B. Respondents shall adhere to the proposal format provided below, organized by section.
1. Section 1 – Cover letter and non-collusion affidavit
 2. Section 2 – Table of contents
 3. Section 3 – Executive summary
 4. Section 4 – Qualifications

All Respondents shall provide in their proposals, and upon request by the County, information that describes their experience and qualifications concerning similar projects, including at a minimum:

- a. Descriptions of the Respondent’s qualifications
- b. Resumes of key personnel and subcontractors
- c. Supplementary information

- d. A list of five systems/solutions of similar size and complexity, successfully completed by the Respondent, including:
 - i. Name of the system/solution
 - ii. Location
 - iii. Contact person
 - iv. Contact telephone number

Note: These references will be contacted. Failure of a reference to respond may count against a Respondent's final score. Respondents are urged to contact references and request their prompt response.
5. Section 5 – Description of the system/solution, including equipment, software, design, and services to be provided
 - a. Radio communications system, including RF coverage predictions
 - b. Dispatch console
 - c. Tower construction, including proposed plan for conducting structural analyses and remediation for existing towers where necessary
 - d. Microwave backhaul connectivity with consideration of fiber-optic network connectivity as an option
 - e. System management systems
 - f. System event-monitoring systems
 - g. Additional subsystems (if applicable)
 - h. Detailed equipment specification sheets for all proposed equipment
 - i. System design information, including a complete detailed description, block diagrams, equipment layouts, and equipment lists necessary to provide a complete and comprehensive description
6. Section 6 – Dispatch console system
7. Section 7 – Preliminary project schedule with detailed Gantt chart
8. Section 8 – Training programs and additional information not covered in other sections
9. Section 9 – Point-by-point compliance matrix

Respondents shall provide compliance statements in the spreadsheet found in Appendix C: Compliance Matrix for each outline level of this ITN. Respondents shall provide a response to every section with which they do not comply. Compliance statements are limited to three choices:

- a. **COMPLY:** The proposal meets or exceeds the specified requirement. When using this statement, a Respondent is confirming that it is providing the equipment and/or service associated with that paragraph.

- b. **COMPLY WITH CLARIFICATION:** The proposal does not meet the exact stated requirement; however, it meets a substantial portion, or meets the intent, of the requirement. Respondents must provide a detailed explanation when using this statement.
 - c. **EXCEPTION:** The proposal does not meet the specified requirements. Respondents must provide a detailed explanation when using this statement.
 - d. **CAPABLE vs ENABLED.** Any time a proposer uses the word “capable” it must use the following language to distinguish if the feature or function is “capable/enabled” (at no additional cost) or “capable/ extra cost” (cost should be provided in the pricing section).
10. Section 10 – System and subsystem warranty information to include: a list of maintenance plans and alternate tiers available, spare parts list, and 15-year cost-of-ownership information.
11. Section 11 – Total proposal cost and detailed pricing breakdown
- a. Respondents shall provide total proposal cost and itemized pricing for both equipment and services using the pricing forms provided in Appendix D: Proposal Pricing Forms, to the greatest extent possible. Costs for optional items also shall be provided on the forms. Each line item shall indicate the Respondent’s list cost and discount offered. Costs for services must include the hourly rate and the total number of hours. Costs for OPTIONAL items also shall be provided. Alternate proposals shall be provided with a separate set of proposal pricing forms.
 - b. The cost utilized for proposal evaluation purposes shall include up-front capital costs and the 15-year cost-of-ownership, including maintenance costs, system update costs, and tower lease costs.
 - c. Pricing shall be valid for a period of not less than 12-months from the date of submittal.
12. Section 12 – Documentation of financial responsibility and stability

2.5. COMPETITION PROCEDURES

- A. The ITN is a competitive negotiation process that is used when the scope of the project is not clearly defined and the County has determined that negotiations may be necessary to receive the best value. A short list of acceptable Respondents will be created for follow-on concurrent negotiations. The County reserves the right to create a short list of Respondents to whom the County wishes to enter negotiations.

2.6. PROCEDURES

- A. Receipt of Responses. Send responses to Okaloosa County Purchasing, 5479A Old Bethel Road, Crestview, FL 32536. Responses received after the deadline will not be considered.
- B. Public opening and listing of all responses received.
- C. An evaluation committee shall meet to evaluate each response in accordance with the requirements of this ITN.
- D. A short list of respondents will be selected to go forward into final evaluation.
- E. Once the short list of Respondents is selected, further information may be requested and clarifications sought on responses.
- F. Short-list Respondents may be requested to make additional written submissions with oral presentation/demonstration/samples on-site or through a hybrid approach using a webinar to the Evaluation Committee. The tentative location for the oral presentation/demonstration/sample presentation will be the Okaloosa County Administration Building, 1250 Eglin Parkway N., Shalimar, FL 32579.
- G. Negotiations will be conducted with best and final offers requested and reviewed.
- H. The evaluation committee shall recommend to the Board of County Commissioners the response or responses which the Evaluation Committee deems to be in the best interest of the County.

2.7. NEGOTIATION PROCESS

- A. Vendors selected for the negotiation process will be selected from those who submit responses to this ITN. Selection of vendors for this phase will be based on the respective Respondent's scores on the criteria outlined in the Evaluation section. Selected Respondents chosen to enter into the negotiation phase of this ITN will be notified.
- B. During the negotiation process, Respondents shall be expected to provide responses in writing to questions or requests of clarification from the Okaloosa County Purchasing Department.
- C. As a part of the evaluation process, the evaluation committee may schedule presentations from the short list of Respondents selected for the negotiation phase. A standard to follow during the presentations along with time limits will be given to the short-list respondents. Respondent(s) will be expected to follow the presentation standard and a set time limit. Presentation slides containing trade secret or business confidential information will be clearly marked for redaction. The scoring criteria for this

phase may be different from the original scoring criteria and shall be provided to all short-listed Respondents prior to the presentations.

- D. Presentations will require Respondent(s) to present information related to the product, implementation, configuration, and services. Failure of a Respondent to furnish the product(s) and/or service(s) to meet the specified requirements during the demonstration may result in rejection of the Respondent's response. The successful demonstration of the Respondent's product(s) and/or service(s) does not constitute acceptance by the County.

2.8. EVALUATION

- A. The County, along with an evaluation committee, shall evaluate proposals based on numerous criteria, including:
 - 1. ITN compliance and willingness to accept the County's contract terms (10%)
 - 2. Vendor experience and demonstrated ability to perform the services described (10%)
 - 3. Cost of equipment, services and lifecycle costs (20%)
 - 4. Capability, features, and functionality (10%)
 - 5. System design (20%)
 - 6. Warranty, maintenance, and support (10%)
 - 7. Quality of work as verified by references (10%)
 - 8. Demonstrated history of providing similar services to comparable entities (10%)
 - 9. Any other factors the evaluation committee deems relevant

Percentages noted for selected criteria elements may be consolidated into similar categories of criteria such as overall design or overall Respondent capabilities.

2.9. PROPOSAL OPTIONS

- A. Requirements described as an "OPTION" or "OPTIONAL" refer to features or equipment that may or may not be purchased by the County, or items whose quantities are not determined yet. It is not the Respondent's option to respond to these requirements; therefore, a Respondent is required to respond to all OPTIONAL requirements to the greatest extent possible.

2.10. ALTERNATE PROPOSALS

- A. In the event that a Respondent has a technological solution that does not meet the exact requirements in this specifications document, the Respondent may offer more than one proposal, as long as each proposal fully addresses the intent of the requirements set forth in this document.
- B. Alternate proposals shall be submitted separately under a different cover from the base proposal and clearly marked "ALTERNATE PROPOSAL."

- C. The Respondent shall comply with the same submittal instructions in Section 2.4, Proposal Format.

2.11. ADDENDA TO THE CONTRACT

- A. During the proposal period, the County may issue written addenda to change or correct the specifications as issued. Such changes or corrections shall be included in the work and/or materials covered by the proposal, and such addenda shall become part of the specifications and contract.

2.12. AWARD OF CONTRACT

The County intends to award a contract(s) that includes each identified system component. However, the County specifically reserves the following rights, consistent with procuring a system that best meets the needs of the County and system users:

- A. The County reserves the right to accept or reject any and all proposals, or any portion thereof, to waive any informalities or irregularities, and to award this bid, in whole or in part, in the best interest of the County.
- B. The County reserves the right to accept all or part of any proposal, depending solely upon the requirements and needs of the County.
- C. The County reserves the right to seek clarifications regarding any proposal submitted, or specific aspects of any proposal, prior to contract award. After seeking such clarifications, the County shall allow the Respondent an opportunity to provide the requested clarification.
- D. The County reserves the right to adjust item quantities and/or reconfigure the communications system in the best interest of the County subsequent to contract award.
- E. The County may request an interview with and/or oral presentation from any firms that submit a proposal. These meetings provide opportunity for the County to ask questions and for the Respondent to clarify its proposal or demonstrate its product/solution.
- F. If multiple contracts are awarded, in lieu of a turnkey contract, the County may:
 - 1. Negotiate additional scope of work to designate one of the selected Respondents as the project's prime contractor.
 - 2. Or allow one of the selected Respondents to provide system integration or prime contractor services, provided that the selected Respondent has submitted a separate proposal for those services.

- G. The County reserves the right to delay evaluation and award for up to 12 months following the receipt of proposals. All proposals must be valid for a period of not-less-than one year following submittal.

3. RADIO COMMUNICATIONS SYSTEM REQUIREMENTS

3.1. OVERVIEW

- A. Respondents shall propose complete systems as described below. Requirements for each system are described herein and are delineated throughout this specifications document according to trunked system requirements.
 - 1. Primary Simulcast System – 700/800 MHz P25 – The digital simulcast system must consider the radio site in Appendix A: Potential Candidate Tower Site, along with any other radio site locations identified by the Respondent, and integrate them into a standalone system with a controller owned and operated by Okaloosa County. Multiple simulcast cells will be considered if there are licensable frequencies to meet the system loading requirements. The system must seamlessly integrate all sites such that end users can roam freely throughout the service area without interruption of service or the need to manually select sites. The system must utilize the latest system platform at the time of system acceptance. The system must meet the coverage and capacity needs of Okaloosa County. The system must be expandable to allow for additional capacity and features.
 - 2. Tone-and-Voice Simulcast Paging – The system must provide geographical coverage to meet the needs of first responders for tone-and-voice paging. Respondents shall propose a simulcast paging system utilizing one frequency covering those areas south of Eglin Air Force Base and a second frequency covering those areas north of Eglin Air Force Base. The system must be compatible with fielded VHF tone and voice pagers. As an OPTION, Respondents may propose an integrated digital voice paging solution utilizing the P25 infrastructure with compatible P25 pagers (e.g., Unication G5 pager or equivalent). For the integrated digital voice paging option, Respondents shall base their proposal on 200 pagers.
- B. These systems shall provide mobile, portable, and paging coverage throughout the county as described in Section 3.5, Coverage, below

3.2. INTEROPERABILITY/P25 STATEMENT OF REQUIREMENTS

- A. The proposed radio system shall comply with the latest applicable P25 suite of standards adopted as TIA, ANSI, and/or Electronics Industry Alliance (EIA) documents at the time of proposal submission. These standards establish technical parameters that allow compatibility and interoperability of digital radio equipment from different manufacturers.
- B. By stating compliance with a level-two heading in the Statement of Requirements (SoR), a Respondent claims compliance with all applicable level-three requirements in the SoR.

If a Respondent is not compliant with a requirement, the Respondent shall identify the requirement by number and name and provide a detailed explanation of why the proposed system does not meet the requirement.

3.3. SYSTEM CONFIGURATION

3.3.1. *Redundancy and Survivability*

- A. The proposed radio communications systems are intended to support mission-critical operations; therefore, a high degree of redundancy and survivability is required. A network topology utilizing fault tolerance shall be incorporated to the greatest extent possible through a distributed and/or redundant architecture.
- B. Geographic redundancy is required for all system elements in which failure would result in a major failure of the system; single points of failure are not acceptable. Such elements include, but are not limited to, the following:
 - 1. System controllers and fixed site equipment
 - a. System servers
 - b. Simulcast controllers
 - c. Network components, switches, and routers
 - 2. Simulcast controllers and voting equipment
 - 3. Backhaul network – Reversible ring, monitored hot standby (MHSB), or ad-hoc routing
 - 4. Power systems
 - 5. Network management and fault reporting systems
- C. The system shall include several modes of degraded operation, known as failure modes. The system shall maintain communications in the event of a system failure. Additionally, the system shall switch to a failure mode gracefully. Failure modes shall include the following scenarios, at a minimum:
 - 1. Loss of single site
 - 2. Loss of multiple sites
 - 3. Loss of system/console controller
 - 4. Loss of simulcast controller
 - 5. Loss of a frequency channel due to interference
 - 6. Loss of multiple channels due to wideband interference
 - 7. Loss of a repeater station due to an equipment failure
- D. Respondents shall provide a description of each failure mode and describe how communications are affected by the failure.
- E. Equipment shall be proposed with redundant power supplies and network interfaces.

- F. Network routers and switches shall have a sufficient number of spare ports to accommodate all equipment connected to a failed network router or switch.

3.3.2. *Expansion*

- A. The systems shall be expandable by adding additional hardware and/or software to increase coverage, capacity or features. Where possible, Respondents shall propose equipment such that the system can be easily expanded by a minimum factor of 20 percent. For example, if a transmitter combiner requires five ports for the system design, a six-port combiner should be provided for ready expansion.
- B. The system shall be expandable to meet the capacities listed below through the addition of hardware and/or software. Replacement of the system and site control equipment to meet this requirement shall not be acceptable.
 - 1. Total frequency channels – 28
 - 2. Total sites – 30
 - 3. Unit identifications (IDs) – 20,000
 - 4. Affiliated users – 5,000
 - 5. Talkgroups – 2,000
 - 6. Dispatch positions – 20
- C. The system shall include all required licenses to meet the capacities without any additional costs incurred.
 - 1. Total frequency channels – Proposed total plus 20 percent
 - 2. Total sites – Proposed total plus 20 percent
 - 3. Unit IDs – 10,000
 - 4. Affiliated users – Proposed total plus 50 percent
 - 5. Talkgroups – 1,000
 - 6. Dispatch positions – Proposed total plus 20 percent

3.3.3. *Grade of Service*

- A. The measure of traffic-loading capacity for any trunked system is defined by grade of service (GoS). GoS is used to measure the probability that a radio call will not gain immediate access to a radio channel, but rather be placed in a busy queue for later processing when a voice channel becomes available. For example, a GoS of 2 percent represents that 98 percent of the radio calls attempted on the system are processed immediately, and 2 percent are placed into the user queue.
- B. The proposed system shall meet a GoS of 1 percent, with 90 percent of units that are placed in queue receiving a channel grant within two seconds. Respondents shall use the following information in developing their designs:
 - 1. Assume 1,000 active users on the system

2. Assume five calls per unit per hour
 3. Assume a four-second call duration.
- C. If a Respondent's proposed system contains multiple subsystems or cells, an additional loading increase shall be included to account for calls that involve talkgroups on two or more cells. Respondents shall provide calculations and explain justifications.
- D. Respondents shall submit traffic-engineering studies in their proposals describing how their proposed system designs meet this criterion. The traffic-engineering study shall describe the methodology used in developing the study, along with any assumptions.

3.4. SITE SELECTION

- A. Respondents shall determine the number and location of sites needed to provide the required coverage. Respondents shall determine the radio sites that provide the best combination of coverage and value for the County. Respondents shall perform mandatory site visits prior to submitting their proposals to ensure a full understanding of each site's condition.
- B. The number and location of sites within a Respondent's design are the Respondent's responsibility.
- C. Government, utility, and/or commercial sites for lease may be proposed, as well as greenfield sites that would be owned by the County. However, it is the County's desire to consider the long-term cost/value factor when evaluating designs.
- D. It will be the responsibility of a Respondent to ensure that the identified frequencies are licensable at the proposed locations. It is also a Respondent's responsibility to perform due diligence with the tower or landowner to determine availability of the site to accommodate the proposed antennas (lease) and/or tower and shelter (greenfield), as well as associated costs, zoning, and planning restrictions. Availability and associated costs related to these sites must be documented and included in the Respondent's proposal.
- E. For any leased locations, Respondents shall include a system lifecycle cost of \$3,000 per month for tower sites north of Eglin Air Force Base and \$4,000 per month for tower sites south of Eglin Air Force Base over the expected 15-year lifecycle of the system, with a 3 percent annual escalation. The lease cost will be factored into the evaluation. A lower monthly payment will be considered if a Respondent can guarantee a lease cost less than the above listed costs per month with written confirmation from the tower owner.

3.5. COVERAGE

- A. The radio system shall be designed to provide highly reliable coverage within the geographical boundaries of Okaloosa County while meeting licensing restrictions and requirements for 700/800 MHz systems regarding out-of-county signal propagation.
- B. Coverage design, implementation, and testing for the system shall adhere to the TIA Telecommunications Systems Bulletin (TSB)-88-D, *Wireless Communications Systems Performance in Noise-Limited Situations*, latest version.
- C. Channel Performance Criteria (CPC)
 - 1. RF coverage is defined as the digital bit error rate (BER) that provides an audio signal that delivers a minimum delivered audio quality (DAQ) score of 3.4 for both outbound (talk-out) and inbound (talk-in) communications.
 - 2. TIA defines DAQ 3.4 as “speech understandable with repetition only rarely required,” which is the minimum acceptable level for public safety communications.
- D. The radio and paging systems must provide coverage as described below:
 - 1. The system should provide mobile radio coverage of 95 percent within the county boundary with 95 percent reliability.
 - a. Trunk-mounted antennas should be assumed for all mobile coverage calculations.
 - 2. The radio system shall provide portable radio coverage of 95 percent outdoors with 95 percent reliability within the boundaries identified in Appendix B: Coverage Requirements Map.
 - a. Portable configuration is with the radio on the hip in both transmit and receive modes using a wired speaker microphone with a radio-mounted antenna.
 - 3. The radio system shall provide portable radio coverage of 95 percent in 12 dB buildings with 95 percent reliability within the boundaries identified in Appendix B: Coverage Requirements Map.
 - a. Portable configuration is with the radio on the hip in both transmit and receive modes using a wired speaker microphone with a radio-mounted antenna.
 - 4. The radio system shall provide portable radio coverage of 95 percent in 20 dB buildings with 95 percent reliability within the boundaries identified in Appendix B: Coverage Requirements Map.

- a. Portable configuration is with the radio on the hip in both transmit and receive modes using a wired speaker microphone with a radio-mounted antenna.
5. The system should provide boat-mounted mobile radio coverage of 95 percent within the boundaries identified in Appendix B: Coverage Requirements Map.
 - a. Boat-mounted antennas should be assumed for all mobile coverage calculations with an antenna mounted 3-feet above ground level.
6. System coverage should be at DAQ 3.4 or better, per TIA TSB-88-D definitions of DAQ. The County will not allow for grid re-testing in the case of a single failed grid. Grid retesting (re-try) will only be allowed in the case of human error or test equipment failure.
7. The tone-and-voice paging system shall provide pager radio coverage of 95 percent in 12 dB buildings with 95 percent reliability for all land areas identified with 12 dB and 20 dB coverage for the primary trunked system within the boundaries identified in Appendix B: Coverage Requirements Map. Expectation is that the same site locations as the radio system will be used for paging.
8. System coverage should ensure a 97 percent passing rate on portable radios operating outdoors along Highway 85, State Route (SR) 123, SR 293, and SR 285.

3.5.1. Coverage Maps

- A. Respondents shall include a detailed description of the propagation models used and the assumptions made in preparation of the maps. A brief description of the methodology the software used to calculate coverage also shall be included in the proposal narrative.
- B. Respondents shall submit both talk-out and talk-in system composite coverage maps for all proposed design configurations. The maps shall be clearly labeled and shall show link budget calculations for each of the following:
 1. Mobile radios – Standard dash- or trunk-mount, with antenna mounted on the trunk
 2. Portable radios – Standard portable radio outdoors with $\frac{1}{2}$ wavelength antenna:
 - a. Talk-out to a portable radio on hip with a swivel belt clip
 - b. Talk-in from a portable radio at hip level with a swivel belt clip
 3. Portable radios – Standard portable radio indoors
 - a. Talk-out to a portable radio on hip with a swivel belt clip, with 12 dB of building loss
 - b. Talk-in from a portable radio at hip with swivel belt clip, with 12 dB of building loss
 - c. Talk-out to a portable radio on hip with swivel belt clip, with 20 dB of building loss

- d. Talk-in from a portable radio at hip with swivel belt clip with 20 dB of building loss
- 4. Pagers – Tone-and-voice pager in street
 - a. Talk-out to a pager on hip with belt clip in street
 - b. Talk-out to a pager on hip with belt clip with 12 dB building penetration margin
- C. Coverage shall be depicted using a light transparent color or cross-hatching for those areas that meet or exceed the minimum coverage reliability threshold.
- D. All maps must clearly delineate the difference between areas with coverage predicted to be equal to or greater than DAQ 3.4 and areas that do not meet this coverage requirement. Respondents shall include the effects of simulcast interference in all coverage maps.
- E. Coverage maps must include sufficient detail to allow another party to duplicate the predicted coverage utilizing propagation software. This information must include a complete link budget calculating the minimum signal threshold (in dBm) required to obtain the performance depicted.
- F. At least one set of maps depicting mobile and portable (in a 12 dB building) radio coverage shall be provided showing coverage extending outside the service area, although the County acknowledges this is not guaranteed coverage. These maps will show the extent of interoperability coverage outside the service area.
- G. Coverage maps shall be provided in the proposal in two formats:
 - 1. 11-inch x 17-inch (minimum), full-color, hardcopy format
 - 2. In PDF file format on USB flash drive

3.5.2. *Map Criteria*

- A. All maps shall include a background layer suitable for County reference (e.g., topographic map, roads, rivers). Link budgets shall be provided, clearly defining the following minimum information relating to each map and each site:
 - 1. Base station/repeater RF power output
 - 2. Antenna gain
 - 3. Antenna model
 - 4. Antenna mounting height and azimuth
 - 5. Antenna down tilt (if applicable)
 - 6. Transmit power and effective radiated power (ERP)
 - 7. Receiver sensitivity
 - 8. Transmit and receive antenna heights
 - 9. Combiner/multicouplers/tower-top amplifier (TTA) gains/losses of each
 - 10. Transmission line lengths and line loss
 - 11. Mobile and portable antenna height for talk-out and talk-in

12. Mobile and portable RF output power
13. Configuration of field units (e.g., talk-out to portable inside 12 dB-loss buildings)
14. Simulcast timing parameters (if applicable)
15. Signal strength thresholds (in decibels referenced to one milliwatt or dBm)

- B. Thirty-meter U.S. Geological Survey (USGS), National American Datum (NAD)-83 terrain elevation data shall be used for coverage simulations. Alternatively, three arc-second data may be used where 30-meter data is not available.

3.5.3. Coverage Model

- A. Respondents shall employ a suitable coverage prediction model using appropriate terrain and land-cover data for the county environment. (Reference TIA TSB-88, latest revision, for guidelines.)

3.5.4. TIA TSB-88 – User Choices

A. User Choices

1. 700/800 MHz system
 - a. Minimum of ten voice paths for trunking
 - b. One frequency channel for control in a trunking design
2. P25 compliance

B. Service Area

1. The service area is the defined geographical area of the county and specific locations identified in Appendix B: Coverage Requirements Map.
2. The target device, usage, and location are:
 - a. Mobile radios: Standard dash- or trunk-mount, with antenna mounted in the center of the trunk
 - b. Portable radios: Standard portable radio on hip with swivel belt clip
 - i. Outbound (talk-out) from the transmitter to a portable radio on hip
 - ii. Inbound (talk-in) to the transmitter from a portable radio on hip
 - c. Basic network coverage for mobile radios shall be designed to accommodate vehicles traveling at speeds up to 75 miles per hour
 - i. This criterion is to be applied to the coverage areas defined in this Section, 3.5, Coverage, and to the coverage maps as defined in Section 3.5.2, Map Criteria, above

- C. CPC: Minimum CPC – BER that provides a minimum DAQ 3.4
- D. Reliability Design Target: The CPC reliability design target is a service area probability of 95 percent
- E. Terrain Profile Extraction Method: map-to-grid method
- F. Interference Calculation Method: Monte Carlo Simulation method
- G. Metaphors to Describe the Plane of the Service Area: Tiled method
- H. Required Service Area Reliability: 95 percent
- I. Willingness to Accept a Lower Area Reliability to Obtain a Frequency: The County is not willing to accept lower area reliability in order to obtain a frequency.
- J. Adjacent Channel Drift Confidence Factor: Confidence that combined drift due to desired and adjacent channel stations will not cause degradation: 95 percent
- K. Conformance Test Confidence Level: 99 percent
- L. Sampling Error Allowance
 - 1. True value error: ± 1 percent
 - 2. Number of subsamples: 50
- M. Pass/Fail Criterion: “Greater than” test
- N. Treatment of Inaccessible Grids: All inaccessible grids will be eliminated from the calculation

3.6. SITE EQUIPMENT

3.6.1. *Overview*

- A. All site equipment supplied shall be new, of high quality, designed to provide high reliability to support mission-critical communications, and in current production. The site equipment, or RF infrastructure, consists of the following components:
 - 1. System and site control equipment
 - 2. Simulcast equipment
 - 3. Receiver voting
 - 4. Transmitters
 - 5. Receivers
 - 6. Combiners/multicouplers
 - 7. Antenna systems

3.6.2. *System and Site Control Equipment*

- A. The system and site control equipment shall be capable of controlling all voice and data channels in the proposed system. The control equipment may use a distributed or centralized architecture.
- B. The control equipment shall fully support APCO P25 functional requirements, features, and performance objectives as outlined in Section 3.2, Interoperability/P25 Statement of Requirements, above, including the common air interface (CAI).
- C. Respondents shall fully describe the manner in which the proposed system and site controllers function and operate (if used).
- D. Because the system and site control equipment are critical to the network, placement of the equipment at a secure, highly stable location is of the utmost importance. Respondents shall carefully consider the location for this equipment.
- E. Respondents shall define backhaul bandwidth requirements for each backhaul link within the network.

3.6.3. *Simulcast Equipment*

- A. The selected Respondent shall provide all necessary simulcast components and signal-processing elements that are required to optimize voice quality in coverage overlap areas.
- B. Non-captured overlap areas with delay spreads in excess of those required to meet the DAQ objective shall be minimized inside the service area.
- C. Simulcast systems shall operate without the need for frequent manual optimization and system/subsystem alignment. All alignments and adjustments shall be automated where possible (e.g., signal-conditioning adjustments for channel banks, signal launch times at sites).

3.6.4. *Receiver Voting*

- A. Receiver voting equipment shall monitor all receivers in the simulcast system and select the best signal for processing and rebroadcast through the network.

3.6.5. *Base Station Equipment*

- A. General
 - 1. Base station equipment shall be solid state in design and function with standard site conditions for temperature, altitude, and humidity.

2. Equipment shall have alarm contact interfaces to provide status to a separate alarm system.
 3. The units shall be as compact as possible, with mounting configurations for standard relay racks or cabinets.
- B. Prior to implementation, the selected Respondent shall perform the following studies at each site:
1. Intermodulation analysis – The selected Respondent shall consider equipment from all tenants located at the proposed site. The Respondent will be responsible for gathering the required information from the tower owner and/or any co-located tenants.
 2. Maximum Permissible Exposure (MPE) study (per latest revision of Office of Engineering & Technology [OET] Bulletin 65) – The selected Respondent shall consider equipment from all tenants located at the proposed site, per FCC license information.
 3. The selected Respondent shall gather the site data needed for these studies.
- C. The selected Respondent shall resolve all issues predicted during the intermodulation analysis and MPE studies. If an intermodulation problem is identified following implementation and within 12 months after final acceptance, the selected Respondent shall resolve the issue without degrading system coverage or performance, at no cost to the County.
- D. Respondents shall include detailed specification sheets for all proposed equipment in their proposals.
- E. All base stations shall be installed with all available modes of operation and software options, including those modes of operation that are not otherwise required for system operation as designed. For example, base stations shall include the ability to dynamically operate in the frequency division multiple access (FDMA) or time division multiple access (TDMA) modes, and support frequency modulation (FM) operation.

3.6.6. *Antenna Systems*

- A. Respondents shall propose all antenna system equipment necessary for a complete design.
- B. Antennas shall be appropriate to provide the required coverage and meet applicable FCC rules and regulations.
- C. Transmission line type and length shall be constructed of copper and appropriate to provide the required coverage. Antenna line shall be of the type to withstand at least 20

- years of prolonged exposure to the environment in Okaloosa County without degradation.
- D. Respondents shall fully describe expansion capacity for combiner and multicoupler systems.
 - E. Respondents shall include detailed specification sheets for all proposed equipment, including, at a minimum: antennas, receiver multicouplers, transmitter combiners, and TTAs (if applicable) in their proposals.
 - F. If applicable, TTAs shall be accompanied by a test line for troubleshooting purposes.
 - G. Antenna systems shall be designed with sufficient redundancy so that a failure to any one component in the transmission system will not disable the entire site.
 - H. Both transmit and receive antennas shall be equipped with power monitors that automatically report antenna or line faults.
 - I. Receive antenna systems shall be configured in a diversity configuration that allows complete receive antenna system redundancy that will not result in a reduction of channels in the event one receive antenna becomes inoperable.

3.6.7. *Antenna Installation*

- A. Antennas and cable shall be provided and installed by the selected Respondent. Antennas shall be fed with the coaxial cable specified below.
- B. The selected Respondent shall supply, install, and make operational the antennas specified.
- C. The selected Respondent shall install antennas at the appropriate height and direction specified by the County or County's representative and the selected Respondent's engineer.
- D. Vertical transmission line shall be supported by an appropriate system designed to securely attach antenna transmission lines when installed on tower structures.
- E. Antennas shall be installed in accordance with the manufacturer's requirements.
- F. Tower lighting cables shall not be bundled along with transmission lines or other conductors anywhere within cable ladders or the building interior.
- G. Each transmission line run shall have entry port boots (inside and/or outside), lightning protectors and associated mounting brackets, and any additional jumpers required by the site-specific RF configuration. Some manufacturers provide transmission line kits, which

- include the main line connectors, top and bottom jumpers, line grounding kits (typically three per line), hoist grips, and weatherproofing materials.
- H. Transmission lines shall be anchored to the tower using hardware recommended by the transmission line manufacturer for that type of tower.
 - 1. Spacing of anchoring hardware is determined by the line manufacturer and is dependent on the type and size of the line.
 - 2. Hangers and/or angle adapters typically are provided for every three feet of line, including any ice bridge paths. No snap-on style hanger kits shall be utilized.
 - 3. Clamps and hardware shall be corrosion resistant.
 - I. Cables shall be secured to the tower with the appropriate cable hangers and hardware. The selected Respondent shall not use tie wraps, wire wraps, pieces of wire, tape, or similar temporary material to secure cables on the tower.
 - J. Cables shall be secured to the tower by the use of hanger kits supplied by the tower contractor. Such hangers shall be used in the quantity and attached in the manner specified in this document.
 - K. An ice bridge with a cable support system may be utilized at the communications shelter point of entry.
 - L. The transmission line support system shall run to the highest-mounted antenna and allow for two times the identified cable requirements in the contract drawings.
 - M. The selected Respondent shall install and run RF jumpers from the RF surge protectors to the radio equipment.
 - N. Transmission lines shall be identified in a permanent manner using metal tags (or equivalent method) located at the antenna, at the bottom of the tower, at the shelter cable entrance, and inside the shelter or building.

3.6.8. Removal of Existing Infrastructure and Equipment

- A. The selected Respondent shall be responsible for the decommissioning, removal, and disposal of legacy equipment from existing County sites. This shall occur no earlier than the completion of system cutover.

3.7. NETWORK MANAGEMENT SYSTEM

- A. This section provides specifications and requirements for an integrated monitoring-and-control system for local and remote site facilities and equipment. The network management system (NMS) is used to provide remote indication of status, alarms, and

analog values, and to provide remote control relay operations. Some of the terminals may be required to manage or provision different subsystems in the network. Respondents shall provide a description of their NMS, including capabilities and available options.

- B. System Alarms: The NMS shall acquire, process, and display information in an integrated and uniform fashion for a variety of critical systems. Alarms on major components that allow for Simple Network Management Protocol (SNMP) will be displayed via the NMS. Devices that have an option for SNMP must be properly configured to allow for transport back to the NMS. The following devices should be monitored:
1. Trunked simulcast radio system
 2. Tone-and-voice simulcast paging
 3. Local and remote site facilities
 4. Primary and backup power systems to include generator
 5. Microwave, leased line, and data networks
- C. Site Alarms: Any change in the state of site equipment shall induce an alarmed state. Equipment monitored shall include, at a minimum:
1. Surge arrestors
 2. Transfer switch (normal or bypass state)
 3. Power fail
 4. Heating, ventilation, and air-conditioning (HVAC)
 5. Smoke detector
 6. Intrusion detection
 7. High temperature
 8. Low temperature
 9. High humidity
 10. Uninterruptible power supply (UPS)/direct current (DC) power fail
 11. UPS/DC power state (normal or bypass)
 12. Generator (including generator run, low fuel, high temperature, fail, etc.)
 13. Generator not in automatic mode
 14. Floor water/flood alarm

In order to reduce false alarms, all alarm contacts normally shall be closed when no alarm is present. Any device that can send alarms via IP methods should be provided instead of contact closures.

- D. NMS components include network management terminals (NMTs) and remote terminal units (RTUs).
- E. Historical Reports: Respondents shall describe the equipped capabilities the system will provide to generate reports for system historical data, including the following search fields for user-specific date ranges:

1. System capacity/GoS
2. Number of busies
3. Number of affiliated users
4. Affiliated subscriber IDs
5. Affiliation history of individual subscriber IDs
6. Subscriber registrations/de-registrations
7. Denied registration attempts

3.7.1. *Network Management Terminal*

- A. The NMT shall provide primary processing, display, and control of information to and from a variety of RTU locations. System status and alarm conditions shall be displayed. The system shall provide the ability to remotely access the system to check the operational status of the system and to view alarms.
- B. The NMT shall be installed at a “to be determined” location of the County’s choosing.
- C. The NMT shall meet the following general requirements:
 1. Expandable software and hardware architecture shall be easily updated by adding software modules and hardware boards.
 2. Hardware and software platforms shall be personal computer (PC)-based using current versions of hardware and software.
 3. Both graphic and tabular displays shall provide instantaneous and comprehensive network status information.
 4. The NMT shall provide full archiving and control functions.
 5. Multiple alarm protocols for higher-level NMSs shall be mediated by the NMT.
 6. The NMT shall be designed to monitor a large cross section of equipment so that it can consolidate multiple alarm systems, rather than just poll alarms from RTU locations.
 7. The NMT must perform full management functions with a local terminal.
 8. The NMT shall provide email notification of alarms.
 9. The NMT shall provide alarm filtration and consolidation.
 10. A Web browser interface shall be provided for common management functions. Functions that cannot be displayed for remote access shall be listed in the proposal response.

11. A secure Web browser interface shall be provided to monitor alarms and perform control and management functions via Intranet or Internet.

D. NMTs/RTUs Communications Protocol(s)

1. Respondents shall fully describe all protocols used or supported.
2. Respondents shall identify which of the following protocols are supported, either standard or as an option:
 - a. American Standard Code for Information Interchange (ASCII)
 - b. SNMP and version
3. Proprietary protocols may be acceptable, provided that all requirements are met.

E. Standard Features: Respondent's solution shall include the following features:

1. Respondents shall provide programmable display screens including the following:
 - a. System Summary: High-level screen summary window with links to other screens
 - b. Change of State: Summary of points that have changed state from alarm to normal or normal to alarm
 - c. Standing Alarms: Summary of all points in alarm condition
 - d. Programmable Alarm Windows: Allowing logical grouping of alarms, such as by type or site
2. Respondents shall provide for the graphic depiction of the network allowing annunciation and point selection via icons:
 - a. Nested-tree depiction of the network with drill-down capability
 - b. Capability to drive external display devices
3. Programmable console environment, including:
 - a. Database definition
 - b. Screen colors
 - c. Alarm summary formats
 - d. Blink attributes
 - e. Pager alarm formats
 - f. Audible alert formats
4. Status Points – The following status types shall be supported:
 - a. Simple status: Contact open or closed
 - b. Change detect: Simple status plus change detect since last scan

5. Control Points – The following relay control types shall be supported:
 - a. Direct control
 - b. Select before operate
 - c. Batch: Control multiple relays with a single operation
6. Analog points – Display the value of a monitored quantity such as temperature, fuel level, voltage standing wave ratio (VSWR), etc.
7. Time stamp indicating date and time of message within 0.5 seconds
8. Conditional assignable text messages (minimum 256 characters) for each point to be issued on a change of state or alarm
9. Alarm qualification – On a point basis, programmable delay before alarm is issued
10. Alarm deactivation – On a point basis, the ability for the operator to deactivate an alarm to inhibit additional annunciation
11. Alarm history
 - a. Logging of all alarms to disk and printer (selectable)
 - b. Minimum history log of 500,000 entries
12. Email support – Text message of alarm sent to email lists
13. Ping interrogator – To confirm that servers, routers, and IP-based equipment are physically present on the network
14. Editor – Providing point configuration utilities to create and edit point databases
15. Security – Multiple levels of username and password protection to all for flexible system management
16. Reports – Respondents shall define the reports that are available. Respondents shall describe how trend analysis is supported and how current system status is reported. The system shall be able to provide comprehensive planning and analysis, and shall have a flexible user interface.

3.7.2. Remote Terminal Units

- A. RTUs shall be provided in sufficient quantities to monitor the entire network, including:
 1. Trunked and conventional radio network components
 2. Site facilities including shelter, tower, lighting, power, and generator
 3. Microwave radios, channel banks, etc.

4. Simulcast paging transmitters (if equipped)
 5. Data network equipment, including routers, switches, etc.
 6. Remote access to all data and provisioning aspects of the system
 7. Other miscellaneous equipment
- B. RTUs shall be fully compatible with NMTs supplied and provide complementary functionality wherever necessary to provide a complete working system.
- C. RTUs shall support the following points:
1. Status/alarms – 48 minimum, expandable to 256
 2. Control outputs – 8 minimum, expandable to 32
 3. Analog inputs – 8 minimum, expandable to 16
- D. RTUs shall support time stamp and system time synchronization.
- E. Terminations for all points shall be provided on suitable terminal blocks providing ease of installation, testing, and maintenance.
- F. Respondents will submit as a part of the proposal a cloud diagram showing each NMS server and terminal in the system. This diagram will show how to remotely access each terminal for any of the NMS, including a proposed IP scheme.
- 3.8. MOBILE DATA
- A. Respondents should include the ability to utilize the P25 backbone to support third-party data applications, including at a minimum such applications as mobile data, subscriber unit global positioning system (GPS), over-the-air programming (OTAP), over-the-air rekeying (OTAR), and fire station alerting.
- 3.9. BACKUP CONSOLETTES
- A. Respondents shall provide backup consolettes for each console position. Respondents will provide details regarding the interface between the consolettes and the consoles. The design of the consolette system shall include all necessary cabling, surge protection, and antennas.
4. BACKHAUL NETWORK
- 4.1. OVERVIEW
- A. Respondents shall propose a microwave backhaul system that provides loop protection to all connected radio sites and the Okaloosa County 911 center. Spur sites connected with hot standby shall be authorized when paths do not support loop protection.

- B. Consideration shall be made for providing redundant backhaul leveraging the County-owned fiber-optic network. Respondents shall coordinate fiber-optic network availability to their proposed sites and to the 911 center and shall evaluate the merits of using this network where available as an option.
- C. Respondents shall provide MPLS routers at each location. Network routing shall leverage MPLS for alternate routing and traffic engineering capabilities to optimize network performance. Respondents shall provide all traffic engineering associated with optimizing the MPLS network. Respondents shall configure layer 2 and layer 3 tunnels in support of other County applications that will traverse the network. All MPLS equipment must be fully fault-tolerant and redundant, with the failure of any card not impairing or reducing system functionality. All MPLS routers shall include an additional 100 percent of available ports beyond those required for system deployment.
- D. Respondents shall propose a detailed backhaul plan. The plan shall include, at a minimum, path-loss calculations and annual availability for each path, as well as an overall network topology.
- E. The County does not have existing microwave equipment that will be leveraged in the new system design.

4.2. DIGITAL MICROWAVE NETWORK

- A. The digital microwave network shall consist of the following components:
 - 1. Point-to-point digital microwave radios
 - 2. Microwave antennas
 - 3. Antenna systems
 - 4. Alarms
 - 5. NMS

4.2.1. Requirements

- A. The digital microwave backhaul network shall consist of monitored ring-protected point-to-point licensed microwave hops. Monitored hot standby (MHSB) shall be permitted if paths are not available for ring-protection.
- B. Microwave terminal equipment shall include transmitter, receiver, modem, power supply, automatic switching device, multiplexer, service channel(s), and all associated interconnections to provide a complete and functional system.
- C. The radio shall deliver two-frequency, full-duplex operation. Space diversity configurations are acceptable, if necessary, to meet reliability requirements.
- D. The network shall support MPLS routing to support seamless integration and ad hoc routing with landline-based Ethernet connections.

E. Capacity

1. Each hop shall be equipped for the proposed IP radio network requirements.
2. Each hop shall deliver a minimum payload capacity of 155 megabits per second (Mbps) or more, as required to serve the proposed network.

F. Performance Objectives

1. Each microwave hop shall be designed to meet or exceed end-to-end annual reliability performance (BER = 10^{-3}) of 99.995 percent at the required capacity.
2. Each microwave hop shall be designed to meet or exceed end-to-end annual quality performance (BER = 10^{-6}) of 99.999 percent at the required capacity.
3. The mean time between failures (MTBF) for the proposed MHSB transceiver equipment shall exceed 25 years.
4. Adaptive modulation shall be included but shall not negate the requirement to meet the required capacity at the defined performance objectives.

G. Frequency

1. The selected Respondent shall be responsible for all microwave frequency research, prior coordination, and preparation of all associated FCC license applications and submittals on behalf of the County.
2. The County shall be responsible for coordination fees and licensing fees, if any, and signatures, if applicable.
3. Respondents shall propose the most appropriate licensed frequency band for each hop based on the requirements and FCC Part 101 regulations. Operation in the 6 gigahertz (GHz) licensed frequency band is preferred.

H. Transmitter

1. Respondents shall provide transmit output power referenced to the antenna port.
2. Transmit output power shall be software adjustable.
3. Automatic transmit power control (ATPC) shall be available.
4. A switch from the main transmitter to the standby transmitter shall not result in a system outage. Respondents shall describe expected switchover time.

5. Radios shall be equipped with redundant power amplifiers. Switching between power amplifiers shall not result in a system outage.

I. Receiver

1. Respondents shall provide a guaranteed receiver threshold.
2. Respondents shall provide performance criteria of the proposed radios for the following:
 - a. Co-channel interference
 - b. Adjacent-channel interference
 - c. Dispersive fade margin
3. The receiver shall be designed to ensure that the receiver with the better performance is operational at any given moment. Respondents shall equip radios with a 10:1 split to prevent frequent switching.
4. Transfer to the backup receiver shall not result in a system outage.

J. Antenna System

1. Microwave antennas shall be compatible with the radio frequency bands and conform to applicable FCC requirements. Solid parabolic-type, Category A antennas shall be used in accordance with FCC Part 101.115.
2. A pressurized elliptical waveguide shall be used. Connectors shall be standard, premium-type, and compatible with antenna and radio and in accordance with latest revision of the ANSI/TIA-222 interfaces. Tower-mounted outdoor units (ODUs) shall not be proposed.
3. All mounting brackets, connectors, and other hardware shall be supplied as necessary for a complete installation.
4. An automatic dehydrator/pressurization system shall be provided to maintain at least 5- pounds per square foot gauge (psig) positive pressure of conditioned air in the elliptical waveguide and antenna feed unit. Individual pressure gauges on a distribution manifold shall be provided for each line.
5. All installed antenna/transmission lines shall be purged, pressure tested, and tested for low VSWR using return loss measurements. The minimum acceptable return loss shall be a VSWR of 1.5:1 and return loss of 14 dB.
6. All RF paths shall be tested to demonstrate proper antenna alignment by measuring the net path loss between sites, as measured at the equipment rack interface.

7. All antenna sweep testing results shall be documented and provided in the as-built documentation at each site.

K. Microwave NMS (MNMS)

1. Respondents shall fully describe alarm, monitor, and control capabilities of the microwave terminal equipment, including capacity for external alarms (e.g., door alarms, generator).
2. Respondents shall define each alarm to the MNMS, and define the alarm protocol, e.g., SNMP v.3 or dry contact closure.
3. The County prefers to have alarm and control capabilities for microwave equipment integrated into the NMS for the P25 trunked system; see Section 3.7, Network Management System. Respondents shall fully describe the nature of the interface between the systems and how to provision the microwave or MPLS paths.

L. Power

1. A DC power subsystem, as detailed in Section 5.5, DC Power, shall be provided for each microwave terminal.

4.2.2. *Microwave Engineering*

- A. The selected Respondent shall conduct physical path surveys following notice to proceed to assure that all proposed paths meet proper clearance criteria.
- B. The selected Respondent also shall conduct mandatory visits at all sites and notify the County/Owner of any site modifications necessary for the microwave hop.
- C. The selected Respondent shall provide antenna centerline mounting height recommendations, based upon the information gathered during the physical path surveys and site visits.
- D. Respondents shall include fade margin calculations with the proposal, showing the preliminary antenna sizes, system gains, and system losses.
- E. Radomes shall be provided for each microwave antenna.
- F. The equipment shall be type-accepted for licensing under Part 101 of the FCC Rules and Regulations.

5. SITE DEVELOPMENT

5.1. GENERAL

- A. Respondents shall consider reuse of existing County sites, the site from the candidate site list in Appendix A: Potential Candidate Tower Site, new leased sites, and new raw-land sites as they develop a design. Site selection that will support the required system performance while minimizing costs is desired. Proposals shall include items such as shelter, generator, and site development to support the radio site as appropriate to the sites being recommended.
- B. Respondents shall perform due diligence in verifying all proposed site data for inclusion in the proposed radio system. A Respondent is responsible for all work and costs associated with the locations proposed, except for tower modification costs.
- C. Respondents shall be responsible for ensuring all radio sites are brought up to the latest revision of Motorola R56 or equivalent. Respondents must identify any specific enhancements required to existing radio sites during the mandatory site visits. If Respondents identify leased tower locations, any associated work required to upgrade those sites to Motorola R56, or equivalent, must be included.
- D. Respondents shall identify and propose any additional work necessary to bring radio sites to the latest revision of Motorola R56 or equivalent for new or existing sites, including, at a minimum:
 - 1. Towers
 - 2. Shelters
 - 3. Backup power
 - 4. Site preparation
 - 5. Fencing
- E. For the 45-day design, the selected Respondent shall provide detailed drawings, including all structures and foundations, sealed by a professional engineer registered in the State of Florida.
 - 1. Detailed drawings containing dimensions shall be provided that show all system components and locations.
 - 2. Drawings and/or specifications shall describe any auxiliary equipment.
 - 3. Manufacturer slick sheets of all equipment used also shall be provided.

F. Code Compliance

1. Installation of all electrical equipment, power distribution, lighting assemblies, and associated wiring shall comply with the most recent edition of the NEC and Occupational Safety and Health Administration (OSHA) regulations.
2. All electrical equipment shall be listed or approved by UL.
3. The selected Respondent, and any subcontractor employed by the Respondent, shall comply with all local codes and industry best practices and guidelines stipulated in Section 1.6.1, Standards and Guidelines.

G. The selected Respondent shall assume total responsibility for maintaining liability insurance covering the following items:

1. Project design
2. Implementation
3. Licenses
4. Shipping
5. Receiving
6. All required site work
7. Any items required for Respondent or any required subcontractors

H. Prior to any excavations, the selected Respondent or its subcontractor(s) shall follow appropriate procedures outlined at the following website: www.call811.com.

I. The selected Respondent shall coordinate with utility companies for all utility-related items, such as electrical service hookups and disconnects.

J. Concrete

1. For all foundations and concrete work, the selected Respondent or its subcontractor(s) shall provide to the project engineer a test sample of each mix of concrete demonstrating that it has been tested for compliance with the foundation specifications set forth by the requisite site engineer. Written reports certifying the strength of the concrete shall accompany each test cylinder.
2. If any concrete used in the foundation does not meet specifications, the selected Respondent or its subcontractor(s) shall remove the foundation and pour a new foundation using compliant materials, at no expense to the County/Owner.

K. The selected Respondent shall ensure any proposed leased locations meet the following standards:

1. Tower, shelter, and generator rated for sustained and Vult wind loading consistent with the Florida Building Code requirements for a Risk Category IV structure, and ANSI/TIA-222 Rev H for a Class III tower.
 2. New dedicated 12-foot x 20-foot equipment shelter compliant with Section 5.3, Shelters. Use of an existing shared shelter will not be permitted.
 3. New, dedicated, 50-kilowatt (kW) dual-fuel propane/natural gas generator with associated automatic transfer switch (ATS) and fuel tank appropriately sized for a minimum 72-hour runtime compliant with Section 5.4, Generator and Automatic Transfer Switch.
 4. Upgrade of sites to meet Motorola R56, or equivalent, including the subterranean grounding system (if required).
 5. Modifications to compound to accommodate the shelter, generator, and fuel tank as described above.
 6. Coordination of power delivery with a dedicated utility meter.
 7. DC power system as described in Section 5.5, DC Power.
- L. The selected Respondent is responsible for all regulatory approvals, permitting, and zoning requirements with the proposed locations, including preparation of all exhibits required to obtain such approvals consistent with Sections 1.6.5, Local, State, and Federal Environmental and Historical Requirements, and 1.6.6, Permitting.

5.2. TOWERS

A. General

1. If the Respondent determines that additional towers are required, or existing towers must be replaced or modified, the Respondent shall propose required solutions.
2. Any tower manufacturer supplying a tower(s) for this system shall guarantee structural integrity of the tower for a period of not less than 20 years from the date of acceptance.
3. The Respondent shall propose tower heights to achieve the required coverage levels and achieve microwave path requirements.

B. Tower Loading

1. The tower and foundation shall be designed for all proposed equipment, legacy equipment, appurtenances, ancillary equipment, and initial antenna loading, plus 50

percent future antenna system growth, without addition to or modification of the finished tower or foundation.

2. The proposed tower structure shall be designed and installed in accordance with ANSI/TIA-222 Rev H standard for a Class III structure.
3. The tower shall be rated for sustained and Vult wind loading consistent with the Florida Building Code requirements for a Risk Category IV structure.

C. Proposed towers shall include the following:

1. Ice Bridge – A 24-inch, open mesh-type, horizontal transmission-line ice bridge, extending from the tower cable ladder to the equipment building, including 24 four-inch-diameter line entry ports, shall be provided.
2. Transmission Line Support – A vertical transmission line support system shall be provided to securely attach the antenna transmission lines. Holes shall be provided in the tower support members, tower hanger adapter plates, or separate ladder structures to allow installation of cable hangers and bolt-in cable hangers at maximum three-foot intervals. The mounting holes shall be precision punched or drilled, and sufficiently separated to accommodate the snap-in or bolt-in hangers.
3. Climbing Access – A ladder, beginning at a point at least ten feet off the ground, shall be provided as an integral part of the tower to permit access by authorized personnel. The tower shall be equipped with an OSHA-approved anti-fall safety device in accordance with the latest revision of ANSI/TIA-222. This device must not interfere with the climber's ease of reach by hand or foot from one rung of the ladder to the next, either going up or coming down. Two safety climbing belts shall be supplied with each new tower.
4. Lighting (as applicable)
 - a. Tower lighting shall be supplied, as required, by the applicable determination as issued by the FAA for this project, and shall be fully compliant with FAA AC 70/7460-1K, latest revision.
 - b. The system control circuitry shall provide synchronization and intensity control of the obstruction lighting system and shall monitor the overall integrity of the lighting system for component failure or improper operation.
 - c. The selected Respondent or its subcontractor(s) shall wire all alarms to the provided Type 66 block located in the communications shelter or equipment room. All alarms shall be clearly labeled.
5. A lightning ground rod shall be installed at the very top of the tower to extend at least two feet above the top of the tower or lighting fixture.

6. Labeling shall be clearly provided near the base of all new towers for the following:
 - a. Make
 - b. Model
 - c. Serial number
 - d. Tower height
 - e. Latitude and longitude
 - f. FAA and FCC identification numbers (if applicable)

D. Construction

1. All welding must be done in the factory prior to the galvanizing process. Field welding is not acceptable.
2. The tower shall be constructed of high-strength steel. All components and hardware shall be hot-dip galvanized with a zinc coating after fabrication, in accordance with latest revision of the ANSI/TIA-222 standards. A zinc coating shall be permanently fused to the steel, both inside and outside, so that all surfaces are protected and no painting is required for rust protection.
3. Prior to galvanization, each piece of steel and every weld must be deburred and smooth finished.

E. Final Testing and Acceptance – Upon completion of the work, documentation detailing final inspection and testing shall be submitted, documenting the following:

1. Steel structure
 - a. Vertical alignment and plumbness
 - b. All bolts tight and torqued to specification
 - c. No damaged or missing structural members
 - d. All surface scratches and damage to the galvanization repaired
 - e. No signs of stress or vibration
 - f. All climbing ladders and other devices installed correctly
 - g. Labels and tags
2. Foundation
 - a. Concrete finish shall exhibit no cracks or blemishes
 - b. Grouting, if used, shall have drain holes if the tower uses hollow leg construction or monopole design
 - c. Backfilling and grading shall be conducted
3. Grounding shall meet applicable standards such as Motorola R56; items include the following, at a minimum:

- a. Verify lugs and exothermic welds
 - b. Test and record ground resistance
 - c. Install lightning ground rod at top of tower
4. Ice Bridge – Install per tower manufacturer specifications
5. Lighting and controls
 - a. Inspect conduit and wiring installation
 - b. Verify proper lamp operation
 - c. Verify alarm contact operation
 - d. Verify labeling
6. Photographs
 - a. Overall structure from north, east, south, and west
 - b. Footers
 - c. Grounding

5.3. SHELTERS

A. General

1. Respondents shall propose a new or used equipment shelter at new site locations and where existing shelters are deemed inadequate. If used shelters are proposed, the Respondent shall ensure that the used shelters meet the same specifications as a new shelter, as specified within this ITN.
2. The shelter shall be a prefabricated, preassembled shelter. The shelter can be constructed from concrete and/or aggregate materials.

B. Size

1. Shelter dimensions shall be determined by the selected Respondent dependent upon final design. Legacy and proposed systems shall use up to 60 percent of the floor space, leaving a minimum of 40 percent for future expansion.
2. Minimum shelter size shall be 12-foot x 20-foot, with a minimum interior height of nine feet.

- C. Foundation – The foundation for the shelter shall consist of concrete piers or a poured concrete slab constructed by the selected Respondent or subcontractor that will properly support and secure the shelter. Foundation drawings recommended by the shelter manufacturer shall be the criteria by which the foundation is constructed.

D. Flooring

1. Respondents shall propose a structure where the floor or solid foundation features a minimum uniform load rating of 200 pounds per square foot with no more than 3,000 pounds over any four-square-foot area, unless additional load rating is required for batteries. This rating shall be increased in sections as necessary to support heavyweight equipment. If the shelter is delivered with the floor already assembled, the floor shall exhibit a minimum 90 pounds per square foot uniform live load capacity while the building is being lifted.
2. Floors shall be insulated to a minimum R-11 rating. Insulation shall be secured in place to prevent shifting during construction and transportation.
3. Exterior covering of the floor shall be included to prevent rodent penetration.
4. The floor shall be covered by a high-quality, industrial/commercial-grade asphalt or vinyl tile. All edges shall be covered by wall molding.

E. Walls

1. The shelter shall be rated for sustained and Vult wind loading consistent with the Florida Building Code requirements for a Risk Category IV structure.
2. Walls shall withstand the effects of bullets or other projectiles equivalent to a 30.06 high-power rifle load fired from a distance of 50 feet, with no penetration to the inner cavity of the wall. No interior damage shall be sustained, including to insulation, interior walls, etc.
3. The outside walls shall be finished concrete or an aggregate composition.
4. A wall feed-through with 12 four-inch openings shall be provided on the tower side of the building to accommodate elliptical waveguide and coaxial transmission lines. The openings shall be properly booted to provide a good weather seal. The wall feed-through shall be bonded to the site ground system per guidelines specified in Section 1.6.1, Standards and Guidelines.
5. The inside walls shall be finished with minimum $\frac{5}{8}$ -inch plywood (or equivalent) to allow mounting of panels, blocks, etc., and trimmed with coordinated molding.
6. High-performance insulation shall provide a minimum insulation factor of R-11.

F. Roof

1. The building roof shall support a minimum 100-pounds-per-square-foot uniform live load.

2. The roof is to be pitched to facilitate water runoff.
3. The shelter roof shall withstand the impact of ice falling from the adjacent tower without suffering any damage or shall otherwise be protected from such damage. Respondents are to describe in their proposals how this requirement will be met.
4. High-performance insulation shall provide a minimum insulation factor of R-19.

G. Doors

1. Shelters shall have one 42-inch by 84-inch insulated door, with three stainless steel tamper-proof hinges, passage-style lever handle, deadbolt lockset, and fiberglass weather hood or awning. The door shall be equipped with a hydraulic door closer.
2. The exterior door shall be of aluminum or steel (stainless or galvanized) construction with a finish to match the building finish.
3. The door shall withstand the effects of bullets or other projectiles equivalent to a 30.06 high-power rifle load fired from a distance of 50 feet, with no penetration to the inner cavity of the door. No interior damage shall be sustained, including to insulation, interior walls, etc.
4. The door sill shall be of stepped construction to prevent rainwater from entering the shelter at the bottom of the door or from around the door frame. The door frame shall have a weather seal around the door to limit air and water intrusion.
5. Locks shall be constructed of non-corroding materials, and shelter locks shall be keyed alike for shelters. Four keys shall be provided to the County/Owner.

H. Finishing

1. Respondents shall describe the interior and exterior finishes. Color and finishes shall be selected by the County from samples provided by the selected Respondent or its subcontractor.
2. All joints shall be sealed with a compressible, resilient sealant.

I. Alternating Current (AC) Power System

1. The selected Respondent shall deliver the building complete with a 200-ampere-capacity, 240-volt, single-phase electrical panel box with a ground bar.
2. This panel shall be equipped with a 200-ampere-capacity main circuit breaker used to supply power for all electrical functions related to the site.
3. Overall panel size shall be determined by the need to provide the number of individual breakers required, plus a reserve of at least six 240-volt slots.

4. Breakers for shelter air conditioning will be of the bolt-down, not snap-in, type.
 5. Receptacles
 - a. Each radio equipment unit (or rack) shall be supplied with two 20-ampere circuits, each terminated at a typical NEMA 5-20 receptacle. Receptacles shall be mounted to the side of the overhead cable tray.
 - b. Service receptacles shall be mounted on the walls at six-foot intervals or less.
 - c. One weatherproof ground fault interrupter (GFI) exterior power receptacle shall be provided with each shelter, to be mounted near air-conditioning units.
 - d. Each receptacle shall be fed from an individual breaker. The feeding breaker shall be identified at the receptacle and the receptacle shall be identified at the breaker. All breakers or circuits shall be rated at 20 amperes, unless otherwise noted.
- J. Power Line Surge Suppression
1. An AC surge protector shall be provided and installed inside the shelter.
 2. An acceptable unit shall be an in-line type such as the AC Data Systems "integrated load center." An alternate unit must meet or exceed all capabilities of this model unit.
 3. Minimum surge protector requirements:
 - a. Built-in redundancy of dual stages per phase with filtering
 - b. Surge energy shunted to ground, not to neutral
 - c. Front panel indicator lamps
 - d. Remote/local status contacts
 - e. Fusible link protected so as not to interrupt power
 - f. Field replacement protection blocks or fuses, if needed
 - g. UL-listed components
 - h. 45 kiloamperes (kA)-per-phase ANSI C62.1 8/20 waveform
 - i. Electromagnetic interference/radio frequency interference (EMI/RFI) filtering per MIL-STD-220
 - j. Capable of handling the full 240-volt, 200-ampere capacity of the electrical system

K. Wiring Methods

1. All wiring noted on the site drawings or otherwise included by the selected Respondent shall be installed in conduit or ductwork. Where no protection method is specified, conduit shall be used.
2. All conduits and ducts shall be securely surface-mounted and supported by approved clamps, brackets, or straps as applicable, and held in place with properly selected screws. No wiring shall be embedded inside any walls, floor, or ceiling. Entrance power, outside light, air-conditioning outlet, and telecommunications are the only wiring that may penetrate shelter walls or floor.
3. All wire raceways, conduits, etc. are to be mechanically joined and secured.
4. Flexible steel conduit or armored cable shall protect wiring connected to motors, fans, etc., and other short runs where rigid conduit is not practical.
5. Unless otherwise specified, all power wiring shall be a minimum #12 American wire gauge (AWG)-size solid copper conductors with insulation rated for 600 volts AC (VAC).

L. Portable Generator Support

1. The shelter shall have an external generator power connector for portable generator support. The selected Respondent shall provide an Appleton connector, or equivalent, on the outside of the shelter on the short wall closest to the shelter door, or where possible.

M. Light Fixtures

1. Ceiling-mounted, four-foot, fluorescent light fixtures (two 40-watt [W] bulbs per fixture) with RFI ballasts shall be supplied for the equipment shelters. A sufficient quantity of light fixtures shall be supplied to provide a uniform light level throughout the building of 150-foot candles at four feet above the floor.
2. Light fixtures shall be fed as a gang from a common breaker and controlled by an on/off switch near the door.

N. Outdoor Lighting

1. An exterior 100-W, wall-mounted, motion-controlled light shall be mounted on the front entrance of the shelter.
2. The exterior lighting system shall be fed from a separate, appropriately rated breaker and light switch by the door.

O. HVAC

1. Respondents shall provide an HVAC system for each shelter proposed. Respondents shall propose dual air-conditioning units with lead lag controller. Each air-conditioning unit shall be sized for 100 percent of the building's required cooling capacity, as determined by British thermal unit (BTU) analysis.
2. The selected Respondent shall perform BTU analysis (heat-load calculations) for all shelter equipment during preliminary design to verify HVAC system size. All calculations shall include a 50 percent expansion factor, and all assumptions regarding power consumption, duty factor, and heat loading shall be thoroughly explained.
3. Each unit shall be capable of maintaining an inside ambient temperature range between 65 and 85 degrees (°) Fahrenheit (F). Each unit shall be sized to maintain temperatures inside the shelter at 70° F when exterior temperatures go as high as 100° F.
4. The HVAC system shall be controlled by a wall-mounted thermostat. The thermostat shall turn the heater on when the temperature inside the shelter drops to 65° F and off when it rises to 68° F. It shall turn on the air-conditioner when the interior temperature reaches 78° F and off when the temperature drops below 75° F. Thermostat control shall be adjustable within the range of 45° to 85° F.

P. Antenna Cable Conduit Entry: A bulkhead panel shall be supplied to accommodate coaxial transmission lines between ½-inch and 1⁵/₈-inch diameter elliptical waveguides. A minimum of 12 transmission lines shall be accommodated with four-inch openings. The building manufacturer shall seal the conduits into the wall to assure that they are watertight.

Q. Cable Tray: All shelters shall be equipped with cable trays. The selected Respondent shall install a minimum 18-inch-wide cable-tray system above the equipment.

R. Shelters shall be supplied with an FM200 (or equivalent) automated fire suppression system.

S. Shelters shall be supplied with an approved eye-wash station and first-aid kit.

5.4. GENERATOR AND AUTOMATIC TRANSFER SWITCH

This section provides specifications and requirements for standby power systems to supply electrical power in the event that the normal supply fails. Standby power systems shall consist of a liquid-cooled engine, an AC alternator, and system controls with all necessary accessories for a complete operating system, including at a minimum the items as specified.

- A. Respondents shall provide an emergency generator system at each new radio communications site for backup power, sized appropriately for the maximum shelter breaker panel supply current with a minimum capacity of 50 kW. For existing sites where a generator may be reused, an assessment of sufficiency should be completed and any recommended enhancements proposed.
- B. Respondents shall perform electrical-loading analysis for shelter equipment, including HVAC subsystems, during preliminary design to verify generator size and fuel-tank capacity. All electrical-loading calculations shall include a 50 percent expansion factor, and all assumptions regarding power consumption and duty factor shall be thoroughly explained.
For the purpose of the proposal, Respondents shall assume the following:
1. Single phase
 2. 60 Hertz (Hz) operating frequency
 3. 0.8 power factor
 4. Dual fuel supporting both propane and natural gas
 5. Minimum 72-hour runtime
- C. In the event of a commercial power outage, the emergency generator shall provide power to the entire shelter without a system outage.
- D. Quality Assurance – The system shall be supplied by a manufacturer that has been regularly engaged in the production of engine-alternator sets, ATSS, and associated controls for a minimum of ten years, thereby identifying one source of supply and responsibility.
- E. The generator system and all accessories and ancillary equipment shall comply with the following standards:
1. NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*
 2. NFPA 55, *Compressed Gases and Cryogenic Fluids Code*
 3. NFPA 70, *National Electrical Code*, with particular attention to Article 700, “Emergency Systems”
 4. NFPA 110, *Standard for Emergency and Standby Power Systems*, requirements for Level 1 Emergency Power Supply System
 5. NFPA 101, *Life Safety Code*[®]
 6. ANSI/NEMA MG 1, *Motors and Generators*
 7. ANSI/NEMA 250-2018, *Enclosures for Electrical Equipment (1000 Volts Maximum)*
- F. Labeling and Identification – All wiring harnesses and connectors shall be clearly identified by number and function according to the associated schematic diagrams and documentation provided by the Respondent.

G. Factory Testing

1. Before shipment of the equipment, the generator set shall be tested under rated load for performance and proper functioning of control and interfacing circuits. Tests shall include:
 - a. Verification that all safety shutdowns are functioning properly
 - b. Verification of single-step load pick-up, per NFPA 110-1996, paragraph 5-13.2.6
 - c. Verification of transient and voltage-dip responses and steady-state voltage and speed (frequency) checks
 - d. Full load test for a minimum of one hour
2. The selected Respondent shall provide complete report(s) of all testing performed.

H. Startup and Checkout

1. The supplier of the electricity-generating plant and associated items covered herein shall provide factory-trained technicians to check the completed installation and to perform an initial startup inspection to include:
 - a. Ensuring that the engine starts (both hot and cold) within the specified timeframe
 - b. Verifying that engine parameters are within specification
 - c. Verification of no-load frequency and voltage adjustment (if required)
 - d. Testing of all generator automatic shutdowns
 - e. Performing a simulation of power failure to test generator startup and the ability of the ATS to pick up building load correctly
 - f. Returning to commercial power and testing the generator and ATS to demonstrate correct cycling to normal commercial power
 - g. Performing a load test, for a minimum of one hour, of the generator, to ensure full-load frequency and voltage is within specification when using building load
 - h. Testing and verifying all remote indicators and controls
2. The selected Respondent shall provide complete report(s) of all testing performed.

5.4.1. *Dual-Fuel Propane/Natural Gas Generator*

- A. The prime mover shall be a liquid-cooled, dual-fuel engine supporting both propane and natural gas. Natural gas shall be the primary fuel source, with propane only utilized in the event of a disruption to the natural gas source. The switch from natural gas to propane shall be automatic.
- B. The engine shall have a sufficient horsepower rating to drive the generator to full output power without a gear box between the engine and generator.
- C. The engine shall have a battery-charging DC alternator with a solid-state voltage regulator.

- D. The generator shall meet temperature-rise standards for Class H insulation, operating within Class F standards for extended life.
- E. The alternator shall have internal thermal-overload protection and an automatic-reset field circuit breaker.
- F. One-step load acceptance shall be 100 percent of the generator set nameplate rating, and shall meet the requirements of NFPA 110, paragraph 5-13.2.6.
- G. The electricity-generating plant shall be mounted with vibration isolators on a welded-steel base that shall permit suitable mounting to any level surface.
- H. A main-line-output circuit breaker carrying the UL mark shall be factory installed.
 - 1. Form C auxiliary contacts rated at 250-volt AC/10 amperes shall be provided to allow remote sensing of the breaker status.
 - 2. A system utilizing manual-reset field circuit breakers and current transformers is unacceptable.
- I. An alternator strip heater shall be installed to prevent moisture condensation from forming on the alternator windings.
- J. Controls
 - 1. All engine alternator controls and instrumentation shall be designed, built, wired, tested, and shock-mounted in a NEMA 1 enclosure mounted to the generator set by the manufacturer. It shall contain panel lighting, a fused DC circuit to protect the controls and a +/- 5 percent voltage-adjusting control.
 - 2. The generator set shall contain a complete two-wire automatic engine start-stop control that starts the engine on closing contacts and stops the engine on opening contacts.
 - 3. A programmable cyclic cranking limiter shall be provided to open the starting circuit after four attempts if the engine has not started within that time. Engine control modules must be solid-state plug-in type for high reliability and easy service.
 - 4. The panel shall include:
 - a. Analog meters to monitor:
 - i. AC voltage
 - ii. AC current
 - iii. AC frequency

- b. Phase selector switch
 - c. Emergency stop switch
 - d. Audible alarm
 - e. Battery charger fuse
 - f. Programmable engine control
 - g. Monitoring module
5. The programmable module shall include:
- a. Manual on/off/auto switch
 - b. Four light-emitting diode (LED) status lights to indicate:
 - i. Not in Automatic Mode
 - ii. Alarm Active
 - iii. Generator Running
 - iv. Generator Ready
6. The module shall display all pertinent unit parameters including:
- a. Generator Status – on/off/auto
 - b. Instrumentation – Real-time readouts of the following engine and alternator analog values:
 - i. Oil pressure
 - ii. Coolant temperature
 - iii. Fuel level
 - iv. DC battery voltage
 - v. Run-time hours
 - c. Alarm Status
 - i. High or low AC voltage
 - ii. High or low battery voltage
 - iii. High or low frequency
 - iv. High or low oil pressure
 - v. Low water level
 - vi. High or low water temperature
 - vii. High and pre-high engine temperature
 - viii. High, low, and critical-low fuel levels (where applicable)
 - ix. Over crank
 - x. Over speed
 - xi. Unit not in automatic mode

K. Unit Accessories

1. Weather-protective enclosure
 - a. The generator set shall be factory enclosed in a heavy-gauge steel enclosure constructed with 12-gauge corner posts, uprights, and headers.
 - b. The enclosure shall be coated with electrostatically applied powder paint, baked, and finished to manufacturer's specifications.
 - c. The enclosure shall have large, hinged doors to allow access to the engine, alternator, and control panel.
2. The exhaust silencer(s) shall be provided of the size recommended by the manufacturer and shall be of critical grade.
3. The generator set shall include an automatic dual-rate battery charger manufactured by the generator set supplier. The battery charger shall be factory installed on the generator set. Due to line-voltage-drop concerns, a battery charger mounted in the transfer switch is unacceptable.
4. A heavy-duty, lead-acid, 12-volt DC battery shall be provided by the generator set manufacturer. The generator set shall have a frame suitable for mounting the battery and shall include all connecting battery cables.

5.4.2. *Automatic Transfer Switch*

- A. The ATS shall be compatible with the generator set so as to maintain system compatibility and local service responsibility for the complete emergency power system.
- B. Representative production samples of the ATS supplied shall have demonstrated through tests the ability to withstand at least 10,000 mechanical operation cycles. One operation cycle is defined as the electrically operated transfer from normal to emergency and back to normal.
- C. Wiring must comply with NEC table 373-6(b). The manufacturer shall furnish schematic and wiring diagrams for the ATS proposed and a typical wiring diagram for the entire system.
- D. Ratings and Performance
 1. The ATS shall be adequately sized to match the generator and shelter electrical systems.

2. The ATS shall be a two-pole design rated for 600-VAC, 200-amperes continuous operation in ambient temperatures of -20° F (-29° Celsius [C]) to +140 degrees F (+60° C).
3. The operating mechanism shall be a single operating coil design, electrically operated, and mechanically held in position.
4. A provision shall be supplied to be able to manually operate the switch in the event of logic or electrical coil failure.

E. Controls

1. A solid-state under-voltage sensor shall monitor all phases of the normal source and provide adjustable ranges for field adjustments for specific application needs.
 - a. Pick-up and drop-out settings shall be adjustable from a minimum of 70 percent to a maximum of 95 percent of nominal voltage.
 - b. A utility-sensing interface shall be used, stepping down system voltage of 120/240 VAC single phase to 24 VAC, helping to protect the printed circuit board from voltage spikes and increasing personnel safety when troubleshooting.
2. Controls shall signal the generator set to start in the event of a power interruption.
 - a. A solid-state time-delay start, adjustable from 0.1 to 10 seconds, shall delay this signal to avoid nuisance start-ups on momentary voltage dips or power outages.
3. Controls shall transfer the load to the generator set after it reaches proper voltage.
 - a. Adjustable from 70–90 percent of system voltage.
 - b. Adjustable from 80–90 percent of system frequency.
 - c. A solid-state time delay, adjustable from 5 seconds to 3 minutes, shall delay this transfer to allow the generator to warm up before application of load.
 - d. There shall be a switch to bypass this warm-up timer when immediate transfer is required.
4. Controls shall retransfer the load to the line after normal power restoration.
 - a. A return-to-utility timer, adjustable from 1 to 30 minutes, shall delay this transfer to avoid short-term normal power restoration.
5. The operating power for transfer and retransfer shall be obtained from the source to which the load is being transferred.

6. Controls shall signal the generator to stop after the load retransfers to normal.
 - a. A solid-state engine cool-down timer, adjustable from 1 to 30 minutes, shall permit the engine to run unloaded to cool down before shutdown.
 - b. Should the utility power fail during this time, the switch shall immediately transfer back to the generator.
7. The transfer switch shall have a time-delay-neutral feature to provide a time delay, adjustable from 0.1 to 10 seconds, during the transfer in either direction, during which time the load is isolated from both power sources. This allows residual voltage components of motors or other inductive loads (such as transformers) to decay before completing the switching cycle.
8. A switch shall be provided to bypass all transition features when immediate transfer is required.
9. The transfer switch shall have an in-phase monitor, which allows the switch to transfer between live sources if their voltage waveforms become synchronous within 20 electrical degrees within 10 seconds of the transfer-initiation signal.
 - a. If the in-phase monitor will not allow such a transfer, the control must default to time-delay-neutral operation.
10. Front-mounted controls shall include a selector switch to provide for a NORMAL TEST mode with full use of time delays; FAST TEST mode that bypasses all time delays to allow for testing the entire system in less than one minute; or AUTOMATIC mode to set the system for normal operation.
 - a. The controls shall provide bright lamps to indicate the transfer switch position in either UTILITY (white) or EMERGENCY (red). A third lamp is needed to indicate STANDBY OPERATING (amber). These lights must be energized from the utility source or the generator set.
 - b. The controls shall provide a manually operated handle to allow for manual transfer. This handle must be mounted inside the lockable enclosure and be accessible only to authorized personnel.
 - c. The controls shall provide a safety disconnect switch to prevent load transfer and automatic engine start while performing maintenance. This switch also shall be used for manual transfer switch operation.
 - d. The controls shall provide LED status lights to give a visual readout of the operating sequence including:
 - i. Utility on

- ii. Engine warmup
- iii. Standby ready
- iv. Transfer to standby
- v. In-phase monitor
- vi. Time-delay neutral
- vii. Return to utility
- viii. Engine cool down
- ix. Engine minimum run

5.4.3. *Dual-Fuel Propane and Natural Gas System*

- A. Respondents shall provide a complete fuel system including tank(s) and all associated piping, valves, controls, etc.
- B. Above-ground tanks shall be bulletproof or protected.
- C. Tank and fuel system components shall be sized to provide a minimum of 72 hours of run time at full load.
- D. Clear access shall be provided for refueling.
- E. Controls and Monitoring Equipment
 - 1. Fuel capacity gauge with low-fuel-level alarm contact closure
 - 2. Multi-valve for filling, pressure relief, and gauging
- F. Respondents shall provide any required plumbing to extend the natural gas connection from the generator to the utility provider demarcation.

5.5. DC POWER

- A. Respondents shall provide a -48 VDC power system to support P25 equipment, microwave equipment, and ancillary site equipment at existing and proposed sites used in the Respondent's system design.
- B. Respondents shall provide dedicated 220-VAC/30-ampere circuits for each pair of rectifiers on the DC plant and provide electrical connections and grounding to the DC plant.
- C. The selected Respondent shall perform electrical-loading analysis for shelter equipment, radio system equipment, and microwave equipment, excluding HVAC subsystems, during preliminary design to verify the DC system size required. All assumptions regarding power consumption and duty factor shall be thoroughly explained.

- D. Respondents shall appropriate distribution breakers and circuits for DC power to each designated row of equipment racks. Equipment installed within those racks shall be immediately accessible to the DC power source.
- E. The DC power system shall utilize a modular fault tolerant design with N+1 redundancy of rectifiers. The system shall include no single points of failure.
- F. QA
 - 1. Electrical components, devices, and accessories shall be listed and labeled, as defined in NEC, by a qualified testing agency, and marked for its intended location and application.
 - 2. UL compliance shall be listed and labeled under UL 1778 by a nationally recognized testing laboratory (NRTL).
 - 3. NFPA compliance shall identify UPS components as suitable for installation in computer rooms according to NFPA 75, *Standard for the Fire Protection of Information Technology Equipment*.
- G. Performance Requirements
 - 1. Input
 - a. Single-phase, three-wire
 - b. Voltage: 120/240 V nominal
 - c. Frequency: 50/60 Hz +/- 3 Hz
 - 2. Output
 - a. Capacity: Assumed at 1,000 amperes, to be finalized during the design phase
 - b. Voltage: -24/-48 VDC, 12 VDC, and 120 VAC
 - 3. Minimum Duration of Supply – If the DC power system is the sole backup energy source, duration of the supply is eight hours. Respondents shall assume 50 percent average base station/repeater usage (transmit and receive) for eight-hour runtime calculations. Respondents also shall ensure four hours of DC runtime under 100 percent load.
 - 4. EMI Emissions – Comply with FCC Rules and Regulations and with Title 47 of the Code of Federal Regulations (CFR), Part 15 for Class A equipment.
 - 5. Electronic Equipment – Solid-state devices using hermetically sealed semiconductor elements. Devices include rectifier-charger, inverter, and system controls.

6. Surge Suppression – Protect internal DC components from surges that enter at each AC power input connection and protect controls and output components.

H. Tests and Inspections

1. Comply with manufacturer's written instructions.
2. Inspect interiors of enclosures, including the following:
 - a. Integrity of mechanical and electrical connections
 - b. Component type and labeling verification
 - c. Ratings of installed components
3. Test manual and automatic operational features, as well as system-protection and alarm functions.
4. Provide inspection reports.

- I. Demonstration: Train County's maintenance personnel to adjust, operate, and maintain the DC power system.

- J. Respondents shall supply an inverter system to supply AC-only equipment housed within the shelter. The inverter system shall meet the following requirements:

1. Output
 - a. Capacity: Assumed at 100 amperes, to be finalized during the design phase
 - b. Voltage: 120 VAC
2. Fully redundant modular design with N+1 redundancy and no single points of failure
3. Electrical wiring to wall-mounted AC distribution panel

5.6. SITE PREPARATION

- A. The selected Respondent shall perform all preparations for site improvements as necessary. Work includes the following at a minimum:

1. Protecting existing plants and grass to remain
2. Removing existing plants and grass as necessary
3. Clearing and grubbing
4. Stripping and stockpiling topsoil
5. Removing above- and below-grade site improvements
6. Disconnecting, capping or sealing, and removing site utilities
7. Temporary erosion and sedimentation control measures
8. Access road development

- B. The following Construction Specifications Institute (CSI) standard sections are referenced, but are not included in this specifications document:
1. Division 1 Section, *Temporary Facilities and Controls* – for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and temporary erosion and sedimentation control procedures
 2. Division 1 Section, *Execution Requirements* – for verifying utility locations and for recording field measurements
 3. Division 1 Section, *Selective Demolition* – for partial demolition of buildings or structures undergoing alterations
 4. Division 2 Section, *Building Demolition* – for demolition of buildings, structures, and site improvements
 5. Division 2 Section, *Tree Protection and Trimming* – for protecting trees remaining onsite that are affected by site operations
 6. Division 2 Section, *Earthwork* – for soil materials, excavating, backfilling, and site grading
 7. Division 2 Section, *Lawns and Grasses* – for finish grading including preparing and placing planting soil mixes and testing of topsoil material
- C. The selected Respondent or its subcontractor(s) shall comply with local guidelines for erosion and sedimentation (E&S) control.
- D. Respondents shall carefully examine and study existing conditions, difficulties, and utilities affecting execution of work. Later claims for additional compensation due to additional labor, equipment, or materials required due to difficulties encountered or underground water conditions will not be considered.
- E. The selected Respondent shall verify that existing plant life to remain and clearing limits are clearly tagged, identified, and marked in such a manner as to ensure the safety of said plant life throughout construction operations.
- F. Protection
1. The selected Respondent shall protect and maintain benchmark, monument, property corner, and other reference points, reestablishing them by registered professional surveyor if disturbed or destroyed, at no cost to the County.
 2. The selected Respondent shall locate and identify existing utilities that are to remain and protect them from damage, reestablishing them if disturbed or destroyed, at no cost to the County.
 3. The selected Respondent shall protect trees, plant growth, and features to remain as final landscape. Branches or roots of any trees that are to remain shall not be disturbed. Adequate guards, fences, lighting, warning signs and similar items shall be provided and maintained as required.

4. The selected Respondent shall install protection such as fencing, boxing of tree trunks, or other measures as approved by the project engineer.
5. The selected Respondent shall conduct operations with minimum interference to public or private accesses and facilities, maintain ingress and egress at all times, and clean or sweep any roadways daily or as required by the governing authority. At such times as deemed necessary by the County, dust control shall be provided by water-sprinkling systems or equipment provided by the Respondent or its subcontractor(s).
6. When appropriate, the selected Respondent shall provide traffic control as required, in accordance with contract documents, the U.S. Department of Transportation "Manual of Uniform Traffic Control Devices" and the Florida Department of Transportation requirements.

G. Clearing

1. The selected Respondent shall clear areas required for access to the site and execution of work.
2. Unless otherwise indicated, the selected Respondent shall remove trees, shrubs, grass, other vegetation, improvements, or obstructions interfering with the installation of new construction. Removal includes digging out stumps, roots, and root material. Depressions caused by clearing and grubbing operations are to be filled to sub-grade elevation to avoid water pooling. Satisfactory fill material shall be placed in horizontal layers not exceeding eight inches loose depth, and thoroughly compacted per fill requirements of this section and CSI Division 2, *Site Construction*, Section 02200.
3. The selected Respondent shall remove grass, trees, plant life, stumps, and all other construction debris from the site to a location that is suitable for handling such material according to state laws and regulations.

H. Demolition: The selected Respondent shall remove existing pavement, utilities, curbing, and shrubbery as necessary for construction of improvements.

I. Topsoil Excavation

1. The selected Respondent shall strip topsoil from areas that are to be filled, excavated, landscaped, or regraded to such a depth that it prevents intermingling with underlying subsoil or questionable material.
2. The selected Respondent shall stockpile topsoil in storage piles in areas not scheduled for construction, job trailer location, or equipment laydown, or where directed by the project engineer. Storage piles shall be constructed to freely drain surface water. Storage piles shall be covered as required to prevent windblown dust. Unsuitable soil shall be disposed of as specified for waste material, unless otherwise

desired by the County. Excess topsoil shall be removed from the site by the selected Respondent or its subcontractor(s).

3. Final topsoil coatings shall consist of organic soil applied in depth of not less than six inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects greater than two inches in diameter, as well as weeds, roots, and other objectionable material.

J. Access Roads

1. A 12-foot-wide access road shall be provided from the closest navigable roadway to the fence gate at new sites. For existing access roads, Respondents shall evaluate sufficiency and propose improvements where necessary.
2. Roadbeds shall be prepared, rolled, and provided with six inches of aggregate base course.
3. Roads shall be graded appropriately for proper drainage and minimal erosion.
4. Roads shall be sufficient to support all vehicles required for construction, system maintenance, and emergency services consistent with AHJ requirements.

5.7. FENCING

A. The selected Respondent shall provide chain-link fencing around the perimeter of all new proposed sites.

B. Framework: Type I or Type II steel pipe

1. Type I – Schedule 40 steel pipe with 1.8 ounces of zinc coating per square foot of surface area conforming to ASTM F1083.
2. Type II – Pipe manufactured from steel conforming to ASTM A569. External surface triple coated per ASTM F1234. Type II pipe shall demonstrate the ability to resist 1,000 hours of exposure to salt spray with a maximum of five percent red rust in a test conducted in accordance with ASTM B117.
3. All coatings are to be applied inside and out after welding.
4. Unless otherwise noted, Type II framework shall be provided.
5. Pipe shall be straight, true to section and conform to the following weights:

Table 2: Type I and Type II Steel Pipe Specifications

Pipe Size Outside Diameter (O.D.)	Type I Weight (Lbs./Ft.)	Type II Weight (Lbs./Ft.)
1 ⁵ / ₈ "	2.27	1.84
2"	2.72	2.28
2 ¹ / ₂ "	3.65	3.12
3"	5.79	4.64
3 ¹ / ₂ "	7.58	5.71
4"	9.11	6.56
6 ⁵ / ₈ "	18.97	N/A

C. Fabric

1. Aluminized fabric shall be manufactured in accordance with ASTM A491 and coated before weaving with a minimum of 0.4 ounces of aluminum per square foot of surface area. The steel wire and coating shall conform to ASTM A817. Fabric shall be nine-gauge wire woven in a two-inch diamond mesh. The top selvage shall be twisted and barbed. The bottom selvage shall be knuckled.
2. Zinc-coated fabric shall be galvanized after weaving with a minimum of 1.2 ounces of zinc per square foot of surface area, and shall conform to ASTM A392, Class I. Fabric shall be nine-gauge wire woven in a two-inch diamond mesh. The top selvage shall be twisted and barbed. The bottom selvage shall be knuckled.

D. Fence Posts

Table 3: Fence Post Specifications

Fence Posts Type I II		
Fabric Height	Line Post O.D.	Terminal Post O.D.
Under 6'	2"	2 ¹ / ₂ "
6'-9'	2 ¹ / ₂ "	3"
9'-12'	3"	4"

E. Gate Posts

Table 4: Gate Posts Specifications

Gate Posts Type II		
Single Gate Width	Double Gate Width	Post O.D. Type II
Up to 6'	Up to 12'	3"
7' to 12'	13' to 25'	4"

F. Rails and Braces: 1⁵/₈-inch outside diameter (O.D.)

G. Gates: Frame assembly of two-inch O.D. pipe (Type I or Type II) with welded joints. Weld areas shall be repaired with zinc-rich coating applied per manufacturer's directions. The fence fabric shall match the fence posts, gateposts, and gates. Gate accessories, hinges, latches, center stops, keepers, and necessary hardware shall be of a quality required for industrial and commercial application. Latches shall permit padlocking. Respondents shall provide one padlock for each gate with three keys for each padlock. All padlocks shall be keyed alike.

H. Installation

1. General – Fence installation shall conform to ASTM F567, *Standard Practice for Installation of Chain-Link Fence*.
2. Height – Fence height shall be as indicated on contract drawings. If no height is indicated, the fence shall be seven-feet high, plus one foot for barbed wire.
3. Post Spacing – Line posts shall be uniformly spaced between angle points at intervals not exceeding ten feet.
4. Bracing – Gate and terminal posts shall be braced back to adjacent line posts with horizontal brace rails and diagonal truss rods.
5. Top Rail – The top rail shall be installed through the line post loop caps, connecting sections with sleeves to form a continuous rail between terminal posts.
6. Fencing shall have a bottom rail instead of a tension wire.
7. Fabric – The fabric shall be pulled taut with the bottom selvage two inches above grade. The fabric shall be fastened to the terminal posts with tension bars threaded through mesh and secured with tension bands at maximum 15-inch intervals. The fabric shall be tied to the line posts and top rails with tie wires spaced at a maximum

of 12 inches on posts and 24 inches on rails. The fabric shall be attached to the bottom rail with top rings at maximum 24-inch intervals.

8. Barbed Wire – Barbed wire shall be anchored to the terminal extension arms, pulled taut and firmly installed in the slots of the line post extension arms.
9. Valleys – Should the fence cross a ditch or drainage swell, $\frac{3}{8}$ -inch diameter aluminum alloy rods shall be driven vertically 18 inches into the ground on four-inch centers and woven through the fence fabric to provide security for these areas.
10. Vegetation stop and aggregate shall be applied to the entire compound area (the area inside the fencing) and six inches beyond the fencing. Vegetation stop shall be constructed with weed barrier geotextile and aggregate shall be applied three inches in depth and consist of American Association of State Highway and Transportation Officials (AASHTO) #10 coarse aggregate.

6. DISPATCH CONSOLES

6.1. GENERAL REQUIREMENTS AND FEATURES

- A. Respondents shall provide pricing for 22 state-of-the-art, IP-controlled radio consoles across five dispatch locations.
- B. The dispatch console is a critical link for public safety personnel. It is here that the dispatch operator must relay critical information from the public to public safety personnel in the field. At times, the dispatcher may be in stressful conditions with lives at risk. It is imperative that the dispatch console be laid out in a manner that results in the operation of such consoles being second nature to the dispatch personnel. The dispatch console shall provide the operator with as much information as necessary without the screen being cluttered and shall be easily navigated to perform necessary functions. Features of the console shall include the below at a minimum.
 1. Dispatch console equipment (operator positions) shall be designed to be placed on existing furniture and provide operators with an ergonomic design that permits ease of operation over extended periods, typically 8 to 12 hours for each operator.
 2. Console positions shall be able to acoustically cross-mute channels to eliminate acoustic feedback between operators.
 3. The screen display shall be designed so that all dispatching functions shall be operable from one display.
 4. The screen display shall be very flexible, enabling authorized personnel to determine which functions are available at each operator position.

5. New features and screen configurations shall be supported through software programming and not hardware reconfiguration.
6. Capability to program, store, retrieve, and edit multiple custom operator screens and configurations for each operator position shall be provided.
7. Operator screen configurations and alias database shall be stored locally or on a centrally located server.
8. The dispatch console shall display an alias name on screen when a unit with a radio ID stored in the alias database is transmitting.
9. Operator positions shall have the ability to decrypt and encrypt secure voice communications. Channels shall have a distinctive icon if encryption is being used for that channel. All consoles shall be configured to provide end-to-end Advanced Encryption Standard (AES) encryption to personnel in the field.
10. Upon activation of an emergency alarm by field units, dispatch positions shall provide an audible alert, display calling unit ID, and provide a visual alert of an emergency activation.
11. Operators shall have the ability to utilize a headset, foot pedal, or stationary gooseneck-type microphone for transmitting audio.
12. The capability to converse on the telephone utilizing the same operator headset that is used for radio conversations shall be provided.
13. Instant recall shall be provided allowing the operator to review and verify his or her recent traffic. Playback shall be available at the operator position.

6.2. TRUNKED REQUIREMENTS

- A. Dispatch consoles shall be compatible with a proposed P25 trunked radio system. Dispatch consoles shall directly interface with single- and multisite trunked system controllers and shall allow interoperability between trunked and non-trunked channels in the system.
- B. Dispatch consoles shall be able to monitor and transmit on all proposed trunked systems. Backward compatibility with the existing trunked system for ease of cutover is desired, but not required.
- C. Dispatch consoles shall be equipped with an instant transmit switch for each talkgroup displayed.

- D. In a trunked system with radio IDs, the push-to-talk (PTT) ID of the unit calling shall appear in addition to a call indicator. After the call is completed, the unit's PTT ID shall remain displayed until another call is received.
- E. To aid dispatchers in a busy system, a list of the last 15 radio IDs shall be available in a "recent calls" list.
- F. Dispatch equipment shall include an instant transmit switch for each conventional repeater channel and/or base station.
- G. On conventional resources capable of operating on multiple frequencies/modes, a control/indicator shall be provided to select the desired transmit frequency/mode (select channel). The select-channel function shall cause the associated channel to switch frequencies/modes. Once a channel has been selected, the operator shall be able to transmit on this channel by pressing the footswitch or transmit button.
- H. A transmit-audio-level meter shall be provided that indicates the level of transmitted voice. This meter also shall indicate the level of receive audio present on the selected channel.
- I. Operator positions shall have the ability to independently set each channel's volume level. Minimum audio levels shall be capable of being set to avoid missed calls.
- J. A control/indicator shall be provided to allow the operator to mute or unmute audio from unselected channels. Selected audio and unselected audio shall be audible from separate speakers.
- K. A control/indicator shall be provided that enables the operator to select multiple channels, which in turn gives the dispatcher the ability to broadcast to several channels at once.
- L. Operators shall have the ability to patch two or more conventional repeaters and/or base stations together so that users may communicate directly. Operator positions shall be equipped such that a minimum of eight simultaneous patches shall be available.
- M. To enhance dispatcher effectiveness in a PTT ID system, the various display modes available shall interact as follows:
 - 1. An operator shall have the capability of setting up (and subsequently knocking down) an emergency call from the dispatch console position.
 - 2. An OPTION shall be provided to allow private communication between a dispatch console operator and a radio user. Once the operator is involved in a private call on a specific resource, the operator shall not receive audio from another radio attempting to call on that same resource.

3. An OPTION shall be provided that assigns priority to associated talkgroups. The dispatcher shall have the choice between normal preset priority and tactical priority, with tactical being the second-highest priority for a talkgroup in a system.
- N. In the cases of multi-talkgroup transmit or talkgroup patch, the use of more than one trunked repeater shall not be allowed; the talkgroups shall be merged onto a single repeater to conserve repeaters.
- O. It shall be possible to temporarily mute unselected talkgroups. The unselected audio will un-mute automatically after a programmable preset time. Mute shall be 20 dB minimum.
- P. Dispatch consoles shall have the capability to patch together two or more talkgroups so that users may communicate directly.
- Q. If the dispatcher attempts to make a call on a trunked radio system connected to the dispatch consoles and all trunked channels are busy, visual and audible alerts will be initiated at the dispatch consoles.

6.3. CONVENTIONAL REQUIREMENTS

- A. Dispatch equipment shall include an instant transmit switch for each conventional repeater channel and/or base station.
- B. On conventional resources capable of operating on multiple frequencies/modes, a control/indicator shall be provided to select the desired transmit frequency/mode (select channel). The select-channel function shall cause the associated channel to switch frequencies/modes. Once a channel has been selected, the operator shall be able to transmit on this channel by pressing the footswitch or transmit button.
- C. A transmit-audio-level meter shall be provided that indicates the level of transmitted voice. This meter also shall indicate the level of receive audio present on the selected channel.
- D. Operator positions shall have the ability to independently set each channel's volume level. Minimum audio levels shall be capable of being set to avoid missed calls.
- E. A control/indicator shall be provided to allow the operator to mute or unmute audio from unselected channels. Selected audio and unselected audio shall be audible from separate speakers.
- F. A control/indicator shall be provided that enables the operator to select multiple channels, which in turn gives the dispatcher the ability to broadcast to several channels at once.

- G. Operators shall have the ability to patch two or more conventional repeaters and/or base stations together so that users may communicate directly. Operator positions shall be equipped such that a minimum of eight simultaneous patches shall be available.
- H. To aid dispatchers in a busy system, a list of the last 15 radio IDs shall be available in a "recent calls" list.

6.4. PAGING REQUIREMENTS

- A. Consoles shall support current signaling methods as well the proposed paging format. Additional features shall be described.
- B. Respondents shall describe the following paging formats supported:
 - 1. Quick Call I
 - 2. Quick Call II
 - 3. Dual-tone multi-frequency (DTMF)
 - 4. MDC-1200 selective call
 - 5. Trunking call alert
 - 6. Post Office Code Standardization Advisory Group (POCSAG) 512/1200/2400 bits
- C. Preprogrammed pages and groups shall be created and modified using the console alias database program.
- D. A manual page feature shall be provided.
- E. A visible indication shall be given when each page ends.
- F. A list of standard pages shall be created to enable the operator to select or stack pages to be sent to multiple recipients.
- G. An instant page feature shall allow operators to send multiple pages with the single press of a button.
- H. Consoles shall be capable of transmitting at least three distinctive alert tones indicating to field units the priority or type of dispatch to follow.

6.5. SYSTEMS INTEGRATION

- A. The console system shall integrate with a minimum of 20 conventional channels utilized by the County at the 911 center.
- B. The dispatch console system shall support interfaces with the Smart Cop computer-aided dispatch (CAD) system in use by Okaloosa County to provide the ability for the CAD system to display the radio system unit ID, user alias, and talkgroup information.

- C. The dispatch console system shall support connections to both existing resources and conventional resources as determined by the County.

6.6. LOGGING RECORDER

- A. Respondents shall propose a logging recorder solution that will interface with the County's existing Verint® Audiolog utilized for 911 telephony and radio. The proposal must include any required upgrades necessary to the Verint logging recorder for integration with the proposed radio system. The proposed solution must provide a single Verint portal that can access both radio traffic and telephony.
- B. The County's Verint Audiolog is managed by Replay Systems. The selected Respondent shall subcontract with Replay Systems for any required updates or integration to the logging recorder.
- C. The logging recorder shall be provided for each talkgroup used for primary dispatch and select tactical talkgroups, as well as selected receive audio and the operator's transmit audio for each dispatch position. The recorder shall support recording the maximum number of proposed simultaneous talk paths, plus audio from the four console positions at the dispatch centers.
- D. The County desires a logging recorder link that will support a direct connection without requiring a conventional interface. Respondents must include any required application program interface (API) associated with completing the connection. Respondents shall identify within their proposals all requirements necessary to complete the interface.

6.7. OPERATOR POSITION EQUIPMENT

- A. All equipment supplied for use by the dispatch operators shall be capable of withstanding the 24 hours a day, 7 days a week (24 x 7) environment of today's dispatch centers.
- B. All equipment supplied for use by the dispatch operators shall be integrated into the existing console furniture at the dispatch locations.
- C. Operator position display monitors will be, at a minimum, 19-inch liquid crystal display (LCD) or LED screens, with resolution of 1920 x 1080 or better.
- D. Keyboards shall be a standard 101-key keyboard.
- E. Operator functions shall be executed by positioning a screen pointer (cursor) over the appropriate icon and pressing the mouse button, or by touching the monitor screen.
- F. A high-quality gooseneck-type microphone shall be provided for each operator position.
- G. Headset jacks shall be provided that enable the operator to hear select audio via a headset and allow the operator to respond via a microphone attached to the headset.

The headset plug inserted into the jack shall automatically disconnect the console's microphone and mute the select speakers.

- H. Optional pricing for wireless headsets shall be provided by the Respondents.
- I. A heavy-duty footswitch shall be provided to allow the operator to key the selected channel hands-free.
- J. If PCs are supplied, they shall be capable of providing a graphical user interface (GUI) using the Microsoft® Windows 10 operating system, be capable of local-area network (LAN) client-server architecture for network access, and be capable of supporting multiple Microsoft® Windows 10-compliant applications.
- K. PCs supplied shall be based on present state-of-the-art PC technology.

6.8. COMMON ELECTRONICS EQUIPMENT

- A. The common electronics equipment shall contain all equipment necessary to route audio and control signals between the dispatch operator positions and the proposed P25 system.
- B. The common electronics equipment shall be capable of controlling the proposed P25 trunked system.
- C. The common electronics equipment shall be capable of controlling the channels required/proposed.
- D. The common electronics equipment shall not have a single point of failure. Redundant cards and power supplies shall be used when feasible.
- E. The common electronics equipment shall be connected to the radio system directly; RF control stations shall not be used as primary connection to the radio system.
- F. The common electronics equipment shall be capable of receiving alarm information from distant communications sites and displaying this information on the dispatch screen.
- G. The common electronics equipment shall allow for a remote dispatch position. This remote dispatch position shall be connected via a local area network/wide area network (LAN/WAN) connection.

7. WARRANTY, MAINTENANCE, AND SUPPORT

7.1. WARRANTY

- A. The proposed communications system shall have a warranty period of one year. The one-year warranty period shall commence upon final acceptance.

- B. All services identified in Section 7.2, Maintenance, shall be included within the warranty period.
- C. Respondents shall provide a single toll-free telephone number that answers 24 x 7, 365 days a year, for service requests and warranty claims.
- D. Respondents shall state in their proposals the name, address, and capabilities of the service facility(ies) providing warranty service.
- E. The following procedures shall be followed during the warranty period:
 - 1. Warranty maintenance shall be performed 24 hours a day with no additional charges for work on critical infrastructure outside of normal 8:00 a.m. to 5:00 p.m. business hours.
 - 2. The service facility shall provide prompt repair service, with service personnel arriving onsite within two hours after a service request by the County and returning the system to service within four hours after a service request by the County.
 - 3. On-call County technical personnel shall be notified when service personnel have been dispatched and be given the opportunity to accompany the warranty provider.
 - 4. The County shall be provided with written documentation indicating the cause of the service outage, the resolution, and all post-repair testing procedures to ensure proper operation. In the event County-owned spares are used to complete the repair, the model and serial number of both the defective unit and the spare shall be noted in the documentation.
 - 5. For all equipment needing factory or depot repairs, a comprehensive tracking system shall be put in place by the selected Respondent to track units to and from the factory/depot.

7.2. MAINTENANCE

- A. The selected Respondent shall maintain and repair all systems, equipment, hardware, and software throughout the implementation, migration, and warranty periods. The County reserves the right to have technical staff onsite to witness, and if desired, assist in the maintenance and troubleshooting procedures. This does not relieve the selected Respondent from its warranty and maintenance responsibilities as defined in this document.

7.2.1. *General Requirements*

- A. The approach to maintenance of this system shall be one of preventive maintenance.
- B. Comprehensive maintenance services shall be proposed for each system.

- C. Maintenance plans should be based on the quantities of equipment included in the proposed system. Plans shall include yearly pricing for years 2 through 15 following system acceptance (year one is provided under warranty). Pricing shall be broken out according to each of the services defined below. These plans shall include:
1. Fixed equipment onsite service
 - a. Two-hour response time, four-hour restoration time
 2. Fixed equipment mail-in board repair
 - a. Emergency response: next day
 3. All fixed equipment maintenance plans shall provide 24-hour system support so that users can dial one toll-free number to report problems and/or receive technical support.
 4. The selected Respondent's staff will dispatch the proper technician in the prescribed response time to resolve the problem, if Respondent is unable to resolve the problem through telephone consultation.
 5. Maintenance plans shall include a semiannual preventive-maintenance check to include a retune of all RF components, including base stations, subscriber radios, and microwave radios. The retune should restore components to the manufacturer specifications.
 6. Maintenance plans shall include 24 x 7 system monitoring and dispatch services.
 7. Maintenance plans shall include the regular update of antivirus software on all servers and workstations.
 8. OPTION – Respondents shall propose a tower maintenance package for any new raw-land sites. The tower maintenance package shall include all activities that may be required to maintain the proposed tower locations, including but not limited to annual inspections, light changes, painting, guy-wire tensioning, and treatment for rust.
 9. OPTION – Respondents shall include a radio compound maintenance package for any new raw-land sites or sites where new shelters have been proposed. The compound maintenance shall include all activities that may be required to maintain the proposed radio site compound, including but not limited to annual testing of the subterranean grounding system, treatment of weeds, ensuring adequate gravel cover of compound, and providing preventive maintenance of the equipment shelter. .
 10. OPTION – Respondents shall include a generator maintenance package for any sites where new generators are proposed. The generator maintenance package shall

include all activities that may be required to maintain the proposed generators, including but not limited to annual inspections, facilitation of weekly testing, regular as-needed refueling, oil changes, and tune-ups.

7.2.2. *Maintenance Standards*

- A. Replacement parts used in repairs shall be equal in quality and ratings to the original parts.
- B. Equipment shall be maintained in a clean condition. Oil, dust, and other foreign substances shall be removed on a routine basis.
- C. Equipment and system performance shall be maintained at the level initially described in these equipment and systems specifications. The service organization shall maintain records to confirm this has been done at intervals defined by the County.
- D. Respondents shall provide only factory-trained and -authorized maintenance personnel.
- E. If fixed equipment or a fixed equipment module fails more than twice during the acceptance test or twice during the first year, the Respondent shall meet with the County to discuss and explain such failures. If, in the opinion of the County, these failures indicate that the equipment is potentially prone to continuing failures, the selected Respondent shall replace it at no cost to the County.
- F. Automatic system alerts generated via email or short message service (SMS) and sent to maintenance personnel that indicate system impairment shall constitute an actionable event requiring technician response.

7.3. PARTS AVAILABILITY

- A. From the date of final acceptance to the seventh anniversary of the date of final acceptance, the selected Respondent shall maintain replacement parts for all delivered equipment.
- B. In the event the selected Respondent plans to discontinue stocking any part required for maintenance after the seventh anniversary of final acceptance, the Respondent shall send written notice to the County 24 months prior to the date of discontinuance, to allow for last-time buys and replenishment.
- C. In the event the selected Respondent plans to discontinue manufacturing any part required for maintenance, the Respondent shall notify the County within one week following the publication of the cancellation notice. The manufacturer shall sufficiently stock the parts to be made available to the County for a minimum period of five years following cancellation.

- D. All parts ordered on a priority basis shall be delivered within 24 hours after placing an order. Respondents shall provide year-round, 24-hour ordering facilities via telephone, Internet, email, and fax service.

7.4. SPARE EQUIPMENT

- A. Respondents shall propose recommended spare parts for the system, subsystems, and individual equipment in their proposals.
- B. The list of spare parts shall include the following, at a minimum:
 - 1. Any vendor-identified field-replaceable units (FRUs)
 - 2. Any infrastructure component that does not have FRUs that can cause a critical failure if it were to fail; e.g., base station antennas and other non-modular components
 - 3. Power supplies
 - 4. Spares for less-critical items
- C. The list shall include items that will rapidly and completely restore all critical system functionality with the least amount of effort, e.g., board replacement instead of troubleshooting to the component level when a critical unit has failed.
- D. The quantities of spares in the list shall be appropriately sized to accommodate equipment quantities in the system.
- E. The list shall define the primary equipment category each spare kit supports, e.g., transceiver board for a repeater, interface board for a console, etc.
- F. The system engineering design documentation shall include a narrative on the Respondent's ability to replace failed units from stock, as well as the process and timing to repair, replace, and return failed units delivered for repair.
- G. System engineering design documentation also shall include the lifecycle of equipment, parts, and other maintenance support for the system.
- H. Spares shall be included in any system update to keep them current.

7.5. LIFECYCLE COST

- A. Respondents shall propose an extended warranty for additional years beyond the initial warranty, renewable on an annual basis. Pricing shall be provided for years 2 through 15 following system acceptance.
- B. Respondents shall propose a complete hardware and software maintenance package that provides a complete cost of ownership for the system(s) being offered to the County. The package should include system release updates, and hardware updates for those

components that reach end of life (EOL) within the support period. Costs associated with the cost of ownership should be provided for years 2 through 15 following system acceptance.

- C. Respondents shall fully describe the terms and conditions of the extended maintenance plan in their proposals.

8. SYSTEM IMPLEMENTATION, TESTING, AND ACCEPTANCE

8.1. GENERAL

- A. The selected Respondent shall attend biweekly project and construction meetings as deemed necessary by the County prior to and during installation. Additional meetings may be scheduled at the discretion of the County.
- B. If any changes in the overall timeline occur, the selected Respondent shall update the project schedule for discussion during these project meetings.
- C. The selected Respondent shall provide written minutes of all meetings no later than five business days after the meeting.

8.2. SYSTEM INSTALLATION

- A. Installation shall include a complete, tested system to include placement of associated cabling, appropriate system layout, and terminal connections. The selected Respondent shall provide associated power supplies and any other hardware, adapters, and/or connections to deliver a complete operable system to the County at the time of acceptance.
- B. All installations shall be performed by factory-authorized or Respondent-affiliated service shops. Other shops or installers may be used upon mutual agreement between the County and Respondent. Qualified, adequately trained personnel familiar with this type of work shall perform all installations. Respondents shall provide the names of the service shops, their qualifications, a description of their certified training on the proposed system, a summary of their experience and a list of five references (minimum) for each proposed shop.
- C. Prior to the start of system installation, the selected Respondent shall participate in a mandatory project site survey with the County or County's representative to confirm actual equipment location within each space. At that time, the exact equipment locations shall be determined and documented by the selected Respondent.
- D. The selected Respondent shall coordinate with others, as appropriate, to confirm that any preparation work that affects the installation of the base station equipment, such as tower work, coring, bracing, conduit, electrical, etc., is complete before final inspection.

- E. The selected Respondent shall provide and pay for all materials necessary for the execution and completion of all work. Unless otherwise specified, all materials incorporated into the permanent work shall be new and shall meet the requirements of this specifications document. All materials furnished and work completed shall be subject to inspection by the County or the County's representative.
- F. Equipment supplied as spare equipment shall not be used for installation of the proposed system. All spare equipment shall be supplied in an unused condition.
- G. All equipment and devices shall be cleaned internally and externally, and all damaged finishes shall be repaired.
- H. Worksites shall be left neat and be broom swept upon completion of work each day. All shelter floors will be cleaned thoroughly, and all scuff marks and abrasions shall be removed prior to acceptance. All trash shall be removed weekly.
- I. Inspection
 - 1. The County shall conduct an inspection of the installations upon substantial completion. Any deficiencies shall be documented on a single punch list and provided to the Respondent for resolution.
 - 2. Final acceptance testing shall not commence until all punch-list items are resolved.

8.3. CUTOVER PLAN

- A. The selected Respondent shall be responsible for planning and coordinating the implementation of all equipment, subsystems, and the overall system.
- B. Execution of the cutover plan shall ensure that new systems are brought online with minimum interruption to all existing systems and communications.
- C. During final design, the selected Respondent shall deliver a preliminary cutover plan describing how the radio system will be phased into a fully operational system.
 - 1. The selected Respondent shall successfully complete all tests and training prior to the actual cutover of systems.
 - 2. The selected Respondent shall provide the necessary labor to cutover from existing systems to the new system.
 - 3. The plan shall include the schedule and procedures associated with the transition of each operational user group. The plan shall specifically address how the existing users will begin using the new system with minimal operational impact.

4. The plan shall provide detailed component or subsystem cutover plans, and specifically delineate between systems that affect and do not affect ongoing operations.
5. The plan shall include contingencies.
6. The County reserves the right to approve and change the cutover plan as it relates to any or all system components.

8.4. STAGING

- A. Each individual assembly or equipment unit shall undergo factory testing prior to shipment.
- B. Standard factory test documentation, documenting the tests performed and indicating successful completion of testing, shall be submitted to the County.
- C. System Staging
 1. The complete system shall be staged and tested at the factory, in the United States, to the greatest extent practical. The intent of the staging tests is to demonstrate to the County that the system is ready for shipment and installation. The selected Respondent shall provide travel expense coverage for three County personnel and two engineer/consultants to participate in the SATP.
 2. The selected Respondent shall provide all necessary technical personnel and test equipment to conduct staging tests. All deviations, anomalies, and test failures shall be resolved at the selected Respondent's expense.
 3. The selected Respondent shall use an approved SATP. It is expected that a preliminary SATP has been performed and all tests have been successful before the County witnesses the official SATP. The SATP shall be signed and dated by the selected Respondent and County representatives and engineers/consultants following completion of all tests. All tests in the SATP shall be marked as either pass, fail, or pass qualify.
 4. Failed tests shall be documented, corrected, and retested. All defective components shall be replaced and retested. Defective components that cannot be corrected shall be replaced at the expense of the selected Respondent.
 5. Retest of individual failed SATP tests or the entire plan shall be at the County's discretion.
 6. The fully executed and completed SATP document shall be provided to the County.

7. Major subsystems, such as the microwave system, may be tested at a different facility, at a different time, from the radio system. However, all items identified above shall apply if the subsystems are staged at different locations and times.

8.5. COVERAGE TESTING

- A. Respondents shall submit a preliminary CATP with their proposals. The final CATP shall be submitted during the final design stage of the project.

B. CATP

1. The CATP shall be consistent with the procedures and guidelines outlined in TIA TSB-88, latest revision.
2. Retries only will be allowed if there is a proven equipment failure.
3. Coverage testing shall commence only after the radio system is fully tested and aligned. Changes to the system by the selected Respondent that could potentially change coverage shall require retesting of coverage at the County's discretion, and at no cost to the County.
4. The selected Respondent shall perform two types of coverage testing. Each type of test will include an inbound test and an outbound test. Both types of testing shall be complementary and serve to fully verify that coverage requirements are met both technically and operationally.
 - a. Automated objective mobile drive testing
 - b. Non-automated subjective DAQ testing (intelligibility testing)
5. In the interest of avoiding large system dead spots, the failure of five or more adjoining grids shall deem the coverage test a failure. Retesting of the entire coverage area shall only be performed after the selected Respondent has demonstrated corrective action to address the coverage gap.
6. Test Configurations
 - a. Testing configurations for the objective and subjective testing shall represent typical operating configurations to the greatest extent possible, using portable and mobile radio equipment to be used with the system.
 - b. Automated Objective Mobile Drive Testing

- i. The selected Respondent shall test both the signal level and BER, as applicable, at a statistically significant number of test locations throughout the county utilizing automated test equipment.
 - ii. Both outbound (talk-out) and inbound (talk-in) BER testing shall be conducted.
 - iii. The County requires BER testing conducted at a failure rate of two percent for FDMA and 2.4 percent for TDMA.
 - iv. For testing purposes, the county shall be divided into $\frac{1}{4}$ -square-mile bins ($\frac{1}{2}$ -mile by $\frac{1}{2}$ -mile). The selected Respondent or its subcontractor(s) may subdivide grids if necessary.
 - v. The selected Respondent shall complete the “estimate of proportions” test identified in TSB-88 to validate that $\frac{1}{2}$ -mile by $\frac{1}{2}$ -mile grids yield a sufficient number of test points to achieve statistical significance, accounting for inaccessible grids. If there are an insufficient number of grids, then smaller grid sizes shall be proposed.
 - vi. Inaccessible grids shall not count as either a pass or fail in the statistical analysis.
 - vii. The selected Respondent shall not be allowed to retest any failed grids without authorization from the County.
 - viii. The selected Respondent shall develop a link budget to ensure that the receiver utilized in the automated drive testing receives the equivalent signal strength of the specified coverage configuration (i.e., portable radio worn at hip level). The selected Respondent shall utilize attenuators to properly account for gains and losses of the testing setup, plus any required in-building losses.
 - ix. All test equipment must be calibrated prior to testing, and signal losses through each component must be tested.
 - x. The selected Respondent shall provide an NMO adaptor to test signal losses through the testing antenna port and cable.
- c. Non-automated Subjective DAQ Testing
- i. Non-automated subjective DAQ coverage testing shall be conducted using typical portable radios supplied with the system.
 - ii. Talk-out and talk-in performance shall be documented.
 - iii. The selected Respondent shall provide a standardized test form for testing.
 - iv. Retries are not permitted.
 - v. Automatic audio capture shall be an acceptable method of completing this test and is preferred if available.
- d. The selected Respondent shall guarantee coverage for both subjective and objective drive testing at the levels specified.

- e. Both the objective and subjective tests must independently yield a ratio of passing grids to total grids tested greater than the mandated coverage percentages.

8.6. 30-DAY OPERATIONAL TEST

- A. The selected Respondent shall perform a 30-calendar day operational test of the system to ensure that all hardware and software defects have been corrected prior to entering final proof-of-performance testing. The fully integrated operation of the system, including all individual subsystems, shall be demonstrated during these tests. The tests shall be designed to demonstrate the reliability, long-term stability, and maintainability of the systems. A failure of any critical component of the system during this test will cause the test to restart after the repair is completed. The selected Respondent and the County shall agree on what constitutes a critical failure prior to commencing this test.
- B. The selected Respondent shall provide a 30-day operational test plan during the preliminary design phase.

8.7. TRAINING

- A. The selected Respondent shall develop and conduct training programs to allow personnel to become knowledgeable with the system, subsystems, and individual equipment.
- B. The selected Respondent shall provide complete and comprehensive system management training for up to 12 staff charged with managing the system. This training shall include the following, at a minimum:
 - 1. System theory of operation
 - 2. Monitoring and managing the system's performance (system manager level)
 - 3. System monitoring techniques
 - 4. Writing and printing system reports
- C. The selected Respondent shall provide complete and comprehensive operational training for up to 20 user agency dispatchers on the provided dispatch console systems. This training shall include the following, at a minimum:
 - 1. Setup and use of all functional elements and features included in the consoles
 - 2. All GUI elements, manipulation, function, and use
 - 3. Patching and multiple talkgroup operation
 - 4. Use of headsets, microphones, speakers, and mouse controls
- D. The selected Respondent shall provide operator train-the-trainer for up to 50 end user personnel on the proper operation and care of assigned mobile and portable radio equipment. This training shall include the following, at a minimum:

1. Proper microphone technique
 2. Button, knob, and keypad functionality as programmed for that agency
 3. Proper battery maintenance
 4. Screen icon interpretation and meaning
- E. Respondents shall fully describe all proposed training programs in their proposals detailing how the Respondent intends to provide training. The training description shall include the following:
1. A list of all subjects with a description of each
 2. Class materials to be provided by the Respondent
 3. Number of classes
 4. Class duration
 5. Need for recurring training
 6. Class size
 7. Class cost
- F. All operator training shall be conducted at “to be determined” locations within Okaloosa County. System management training shall be provided on the Okaloosa County system where practical. Technical training requiring lab and live system training may be scheduled at the selected Respondent’s training facility. The selected Respondent shall coordinate with the County regarding the number of attendees and schedule at least one month prior to the first scheduled class.
- G. Classes shall be scheduled as near to system cutover as possible. The selected Respondent shall work with the County to develop the schedule.
- H. The selected Respondent shall provide all instructional materials, including printed manuals, audiovisual presentations, interactive self-paced PC programs, and complete equipment operating instructions for all technical and operational training classes.
1. Actual and/or exact model and series of equipment being delivered shall be made available for hands-on use and operation during training.
 2. All instructional materials shall be subject to the approval of the County and shall become property of the County.
 3. Additional training courseware and related media to be used in future academy training and refresher training shall be provided in a reproducible format with no limitation on the number of copies to be reproduced for training use. At least one hard copy and an electronic copy (on compact disc [CD] or USB stick) of all materials shall be provided.

8.8. FINAL ACCEPTANCE TESTING

A. Prior to final acceptance testing, the selected Respondent shall verify and document that all equipment, hardware, and software are upgraded to the latest factory revision including subscribers. Multiple revision levels among similar equipment are not acceptable. An FATP may not proceed without an agreed-upon final acceptance plan. This plan will be submitted to the County at least 45 days before testing. No testing may begin without County approval of the plan. The County shall be given two weeks written notice that the system is ready for final acceptance testing.

B. FATP

1. The selected Respondent shall use the completed and approved FATP. It is expected that a preliminary FATP has been performed and all tests have been successful before the County witnesses the official FATP. The FATP shall be signed and dated by the selected Respondent and County representatives following completion of all tests. All tests in the FATP shall be marked as either pass, fail, or pass qualify.
2. The selected Respondent shall provide all necessary technical personnel and test equipment to conduct FATP tests. All deviations, anomalies, and test failures shall be resolved at the selected Respondent's expense.
3. Failed tests shall be documented, corrected, and retested. All defective components shall be replaced and retested. Defective components that cannot be corrected shall be replaced at the selected Respondent's expense.
4. Retest of individual failed FATP tests or the entire plan shall be at the County's discretion.
5. The fully executed and completed FATP document shall be provided to the County.

8.9. AS-BUILT DOCUMENTATION

A. At the completion of the installation phase, the selected Respondent shall provide complete as-built documentation as outlined below:

1. Equipment provided
2. Plan and elevation drawings of all equipment, including antennas on towers
3. Cabling and terminations
4. Block and system-level diagrams
5. Programming
6. Setup and alignment information
7. Successfully completed, signed, and dated SATP

8.10. SYSTEM ACCEPTANCE

- A. The County shall deem the system ready for final acceptance following successful completion and approval of the following:
 - 1. Final design submittals
 - 2. SATP
 - 3. System installation
 - 4. Final inspection and punch-list resolution
 - 5. As-built documentation
 - 6. FATP, including CATP
 - 7. 30-day operational test completion
 - 8. Training

9. SUBSCRIBER EQUIPMENT

9.1. OVERVIEW

- A. Subscriber equipment includes all 700/800 MHz band, non-fixed user equipment, such as:
 - 1. 1,047 portable radios
 - 2. 771 mobile radios
 - 3. 31 control stations
- B. There are an estimated 1,818 subscriber radios (portable and mobile) that will need to be replaced across primary system users to ensure compliance with a P25 700/800 MHz system. While the County intends to directly purchase all subscribers required for system deployment, subscriber radio proposals submitted in response to this solicitation must permit direct purchasing by any municipality, local government, or public safety entity on the Okaloosa County system, at the discounted pricing levels provided.
- C. Given the large number of subscriber radio replacements required, Respondents are encouraged to provide competitive pricing and bulk-purchase discounts and incentives.
- D. Respondents shall provide unit pricing for all user subscriber equipment and accessories. Pricing information shall be provided for the full range of installation configurations offered by the Respondent, with the specific installation costs for each.
- E. Respondents shall provide an LMR-over-cellular network solution as an OPTION to the County. Pricing shall include all needed equipment, labor, project management, and licensing for the proposed solution. A minimum of 100 user licenses is sought, with pricing for additional blocks of licenses.

9.2. GENERAL REQUIREMENTS

- A. All subscriber equipment shall be of high quality and intended to provide high reliability under heavy use in severe environments. Equipment shall be type-accepted by the FCC in accordance with the Commission's Part 90 Rules and Regulations.
- B. All subscriber equipment shall meet MIL-STD-810 C, D, E, and F.
- C. All subscriber equipment shall be software programmable.
- D. All subscriber equipment shall support the following operating modes:
 - 1. Conventional analog FM network
 - 2. Conventional analog FM off-network (talkaround)
 - 3. Conventional P25 Phase I network
 - 4. Conventional P25 Phase I off-network (talkaround)
 - 5. Trunked P25 Phase II network (if a P25 Phase II network is proposed)
- E. All equipment shall be programmed for operation on the proposed system that will be procured through this ITN.
- F. Respondents shall propose a comprehensive subscriber maintenance program that includes provisions for subscriber repair and preventive maintenance on annual and biannual schedules.

9.2.1. *Portable Radios*

- A. Respondents shall provide pricing for portable radios in the pricing forms found in Appendix D: Proposal Pricing Instructions. There are approximately 1,047 portable radios on the system that will need to be replaced. All portables shall be included under Model 2 (see description below) for the purposes of the proposal; however, unit pricing shall be included for the other models as well as all available feature sets. The municipality, local government, or public safety entity will select the desired model and feature(s).
- B. Respondents shall include unit programming.
- C. As an OPTION, Respondents shall propose radios certified as intrinsically safe.
- D. Respondents shall provide the highest-tier product available, highly reliable, and intended for mission-critical operations. Pricing shall be provided for a minimum of three models:
 - 1. Model 1: Basic model, typically identified with no keypad or display
 - 2. Model 2: Mid-range model, typically identified with limited keypad and display
 - 3. Model 3: Advanced model, typically identified with full keypad and display

E. Features

1. Full compliance with P25 features and operation
2. PTT button
3. Top-mounted on/off volume knob
4. Talkgroup/channel selector
5. Emergency button, protected from inadvertent activation
6. Alphanumeric display (on applicable models), minimum of eight characters
7. Transmit indicator
8. OPTIONAL – OTAP and associated fixed equipment
9. OPTIONAL – OTAR and associated fixed equipment
10. OPTIONAL – Subscriber radio GPS and associated fixed equipment
11. OPTIONAL – Noise cancellation

F. Battery

1. Respondents shall provide pricing for a battery sized to support a 12-hour shift.
2. Respondents shall propose batteries certified as intrinsically safe as an OPTION.
3. Batteries shall provide a minimum operational use of eight hours based on a 5-5-90 duty cycle.
4. Recharge time to full capacity shall not exceed one hour.
5. Lithium-ion batteries are required.
6. Respondents shall provide detailed specifications for all batteries proposed, including the following, at a minimum:
 - a. Battery life
 - b. Total battery lifecycle expectancy
 - c. Recharge time
 - d. Dimensions
 - e. Weight
 - f. Warranty

G. Accessories: Respondents shall provide, as a base proposal, 275 wired remote speaker microphones for law enforcement with a standard swivel case and single charger. OPTIONAL pricing for all accessories, including the following, shall be provided at a minimum:

1. AES encryption
2. Data cables
3. Battery chargers

- a. Single-bay battery charger
 - b. Multiple-bay battery charger
 - c. Vehicular charger
 4. Alternate antennas
 5. Remote speaker microphone
 6. Remote speaker microphone with antenna
 7. Wireless remote speaker microphone
 8. Large/rugged remote speaker microphone for high-noise environments
 9. Headset
 - a. Wired
 - b. Wireless/Bluetooth
 10. Carrying cases/belt clips
- H. Respondents shall provide detailed equipment specifications for all proposed portables and accessories, including the following information:
1. Radio dimensions
 2. Radio weight with battery
 3. Antenna type
 4. Frequency channel capacity
 5. General features, transmit/receive parameters, and mechanical specifications
- I. Multiband portable radios
1. As an OPTION, Respondents shall provide multiband portable radios capable of operating in the following frequency bands:
 - a. VHF: 136–174 MHz
 - b. UHF: 380–520 MHz
 - c. 700/800 MHz: 762–870 MHz
 2. Respondents shall provide detailed specifications for radios and all accessories.

9.2.2. *Mobile Radios/Control Stations*

- A. Respondents shall provide pricing for mobile radios and control stations in the pricing forms found in Appendix D: Proposal Pricing Instructions. There are approximately 771 mobiles and 31 control station radios on the system that will need to be replaced. All mobile radios and control stations shall be included as dash-mount Model 2 (mid-tier) for the purposes of the proposal; however, unit pricing shall be included for remote mounts, as well as all available configurations and feature sets.
- B. Pricing shall include installation and programming.

- C. Respondents shall provide pricing for a minimum of three tiers with the base proposal cost at the mid-tier.
- D. Mobile radios shall be supplied complete with microphone, external speaker, cables, fusing, mounting hardware, coaxial cable, and antennas to provide for a complete installation.
- E. Control station radios shall be supplied complete with desk microphone, speaker, cables, coaxial cable, and omnidirectional antennas to provide for a complete installation.
- F. OPTIONAL: Control station configurations shall be offered with both a desk set console setup with built-in power supply and as a mobile radio with a DC power supply.
- G. Respondents shall provide pricing for dash-mounted units and remote-mounted units.
- H. Features
 - 1. Full compliance with P25 features and operation
 - 2. Remote speaker microphones
 - 3. Front-mounted on/off volume knob
 - 4. Talkgroup/channel selector
 - 5. Emergency button, protected from inadvertent activation
 - 6. Alphanumeric display
 - 7. Transmit indicator
 - 8. Dash- and remote-mount configurations
 - 9. OPTIONAL – OTAP and associated fixed equipment
 - 10. OPTIONAL – OTAR and associated fixed equipment
 - 11. OPTIONAL – Subscriber radio GPS and associated fixed equipment
 - 12. OPTIONAL – Noise cancellation
 - 13. OPTIONAL – Control station combiners for configurations supporting 4/8/12/16/32 ports
- I. Accessories: Respondents shall provide OPTIONAL pricing for all accessories, including the following, at a minimum:
 - 1. AES encryption
 - 2. Cables
 - a. Data cables
 - b. Extension cables
 - c. Adapters
 - d. Power cables
 - 3. Antennas
 - 4. External speakers

5. Public address kits
 6. Remote speaker microphones
 7. Desktop microphone (control stations only)
 8. GPS functionality and associated fixed network hardware
 9. Mobile data interface
- J. Respondents shall provide detailed equipment specifications for all proposed mobiles and accessories, including the following information:
1. Radio dimensions
 2. Radio weight with battery
 3. Antenna type
 4. Frequency channel capacity
 5. General features, transmit/receive parameters, and mechanical specifications
- K. Multiband mobile radios
1. As an OPTION, Respondents shall provide multiband mobile radios capable of operating in the following frequency bands:
 - a. VHF: 136 – 174 MHz
 - b. UHF: 380 – 520 MHz
 - c. 700/800 MHz: 762 – 870 MHz
 2. Respondents shall provide detailed specifications for radios and all accessories.

9.2.3. *Fleet Mapping*

- A. The selected Respondent shall develop the actual fleet map with input and direction from the County. The fleet map shall contain at a minimum:
1. Talkgroup ID
 2. Agency
 3. Emergency actions
 4. Encryption capability
 5. Roaming capability
 6. Priority
 7. Scan
- B. The selected Respondent also shall develop subscriber unit programming templates. These templates shall have the basic features and functions defined for a particular subscriber unit and user type. Templates shall be developed on a per-agency basis.
- C. Once the fleet map and templates are approved and completed, the selected Respondent shall use these for installation of subscriber units and for further

configuration of the system. The selected Respondent shall submit these with the final as-built documentation.

9.3. SUBSCRIBER WARRANTY AND MAINTENANCE

9.3.1. *Subscriber Warranty*

- A. Respondents shall offer a subscriber radio warranty that commences on final acceptance of the County's P25 system or upon delivery of the radios, whichever is later; any subsequent purchases shall include warranty periods of at least one year that co-terminate with the warranty or maintenance periods of any previously purchased radios, unless otherwise agreed by the purchasing entity. The warranty shall include the repair of any radio that fails due to manufacturer defects within the warranty period, at no additional cost to the owning agency.

9.3.2. *Subscriber Maintenance*

- A. Respondents shall offer subscriber maintenance plans on a recurring fee structure to provide added services and coverage beyond the initial warranty period. Respondents shall provide pricing in the pricing forms found in Appendix D: Proposal Pricing Instructions for the following subscriber maintenance packages:
 1. Extended warranty beyond the initial warranty period for failures that occur due to manufacturer defects or normal wear and tear
 2. Preventive maintenance plan to restore the radios to the manufacturer's specifications at the following recurring intervals:
 - a. One year
 - b. Two years
 3. Accidental damage replacement plan to cover the repair or replacement of radios that have failed due to accidental damage, at no additional cost to the owning agency
- B. Respondents shall offer subscriber maintenance pricing on a per-request fee structure to provide added services and coverage beyond the initial warranty period. Respondents shall provide pricing in the pricing forms found in Appendix D: Proposal Pricing Instructions for the following subscriber maintenance services:
 1. Factory repair of a radio that has failed due to manufacturer defects or normal wear and tear
 2. Preventive maintenance to restore the radios to the manufacturer's specifications
 3. Factory repair of a radio that has failed due to accidental damage

4. Programming of a radio to update the radio's programming parameters
5. Programming of a radio to update the radio's firmware (firmware purchased separately)

GLOSSARY OF TERMS AND ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
AC	Alternating current
agency	Term that applies generically to any local, state, federal entity or organization, such as: a department, division, city/town, or bureau. Includes: government, quasi-government and private groups
ANSI	American National Standards Institute
APCO	Association of Public-Safety Communications Officials–International
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing Materials
ATPC	Automatic transmit power control
ATS	Automatic transfer switch
AWG	American wire gauge
backhaul	The transporting of radio communications traffic between distributed sites (typically access points) and more centralized points of presence.
bandwidth	The capacity of a channel to carry signals. The amount of spectrum required to transmit a signal without distortion or loss of information.
BER	Bit error rate; a measure of the number of errors in received transmissions when compared to the original transmission, frequently expressed as a percentage.
bit	Binary digit
BTU	British thermal unit
CAI	Common air interface
CATP	Coverage acceptance test plan
C	Celsius
CFR	Code of Federal Regulations
channel	The route through which a message is sent. A connection between initiating and terminating nodes of a circuit. A single path provided by a transmission

	medium via an electrical separation, such as by frequency or frequency pairs.
communications	Information transfer among or between users. In public safety communications, the ability of public safety agencies to talk across agencies.
connectivity	The complete path between two terminals.
conventional	A radio system with dedicated, single-purpose channels (can be shared between several users with different operational needs; e.g., fire and police). A user must select the specific channel to be used.
coverage	The geographic area included within the range of a wireless radio system.
CPC	Channel performance criterion
CSI	Construction Specifications Institute
CSSI	Console subsystem interface
DAQ	Delivered audio quality
dB	Decibel
dBm	Decibel referenced to one milliwatt. (zero dBm)
DC	Direct current
digital	Radio transmission method that replaces analog systems and transmits its signal in binary 1s and 0s the same as a computer. One major difference is that digital signals do not degrade gradually the way analog signals do as the distance between the transmitter and receiver increases.
DS-0	A basic digital signaling rate of 64 kilobits per second (kbps), corresponding to the capacity of one voice-frequency-equivalent channel. The DS-0 rate, and its equivalents E-0 and J-0, form the basis for the digital multiplex transmission hierarchy in telecommunications systems used in North America.
DS-1	Digital Signal, Level 1
DTMF	Dual-tone multi-frequency
EIA	Electronic Industries Alliance
EMI	Electromagnetic interference

encryption	The reversible transformation of data from the original (plain text) format to a difficult-to-interpret format as a mechanism for protecting its confidentiality, integrity and sometimes its authenticity. Encryption uses an encryption algorithm and one or more encryption keys.
ERP	Effective radiated power
F	Fahrenheit
FAA	Federal Aviation Administration
FATP	Final acceptance test plan
FCC	Federal Communications Commission
FDMA	Frequency division multiple access
first responders	The first professionals called to an incident or emergency that provides immediate support services during prevention, response, and recovery operations.
FM	Frequency Modulation; a signal transmission with constant signal strength, where the center frequency varies in proportion to the voice being transmitted. FM signals are not susceptible to most interference sources. Radio systems operating on FM are being replaced by digital systems.
frequency	The number of cycles or events of a periodic process in a unit of time.
frequency bands	The spectrum of transmission space where mobile radio systems operate in the United States. They are (from low to high): High HF (25-29.99 MHz) Low VHF (30-50 MHz) High VHF (150-174 MHz) Low UHF (450-470 MHz) UHF TV Sharing (470-512 MHz) 700 MHz (764-776 and 794-806 MHz) 800 MHz (806-869 MHz) 2.4 GHz 4.9 GHz
FRU	Field replaceable unit
gateway	A device that can transparently interconnect radio audio paths so that agencies can patch into each other's radio channels in real time. This can be done at the baseband level or using IP. A gateway provides interconnection between two networks with different communications protocols.

GFI	Ground fault interrupter
GHz	Gigahertz (1 billion hertz)
GoS	Grade of service
GPS	Global Positioning System; a U.S. satellite system that lets persons or systems determine their position with extreme accuracy using GPS receivers.
GUI	Graphical user interface
HVAC	Heating, ventilation, and air conditioning
Hz	Hertz (same as cycles per second)
ID	Identification
IEEE	Institute of Electrical and Electronic Engineers
infrastructure	Dedicated telecommunications networks; the hardware and software needed to complete and maintain a public safety communications system.
interference	Extraneous energy, from natural or man-made sources, that impedes the reception of desired RF signals.
interoperability	The ability of diverse systems and organizations to work together (interoperate). In public safety, the ability of personnel to exchange voice and data communications with staff from other agencies, on demand and in real time.
intranet	A private computer network that uses Internet technologies to share an organization's information or operational systems with its employees in a secure manner.
IP	Internet Protocol
ISSI	Inter-RF subsystem interface
ITN	Invitation to Negotiate
kHz	Kilohertz (1000 hertz)
kVA	Kilovolt ampere
kW	Kilowatts
LAN	Local-area network

LCD	Liquid crystal display
LED	Light-emitting diode
LMR	Land mobile radio; a public or private radio service providing two-way communication, service paging and radio signaling on land.
Mbps	Megabits per second (1 million bits per second)
MHSB	Monitored hot standby
MHz	Megahertz (1 million hertz)
modem	An acronym for modulator/demodulator, which is a device that translates digital signals coming from a computer into analog signals that can be transmitted over standard telephone lines. The modem also translates the analog signals back into digital signals that a computer can understand.
MPE	Maximum permissible exposure
MTBF	Mean time between failures
NAD	National American Datum
NEBS	Network Equipment Building System
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NiMH	Nickel-metal hydride
NMI	Network management interface
NMS	Network management system
NMT	Network management terminal
NPSPAC	National Public Safety Planning Advisory Committee
NRTL	Nationally recognized testing laboratory
O.D.	Outside diameter
OET	Office of Engineering & Technology

OSHA	Occupational Safety and Health Administration
OTAP	Over-the-air programming
PC	Personal computer
P25 or APCO 25	Project 25; a suite of standards for digital radio communications for use by federal, state/province and local public safety agencies in North America to enable them to communicate with other agencies and mutual-aid response teams in emergencies.
psig	Pounds per square inch gauge
PTT	Push to talk
Public safety spectrum	Specific bands of frequencies set aside by the FCC for use by public safety agencies. They are: Low Band (25-50 MHz) VHF High Band (150-174 MHz) 220 MHz Band (220-222 MHz) UHF Band (450-470 MHz) 700 MHz Band (764-776 and 794-806 MHz) 800 MHz Band (806-824 and 851-869 MHz) 4.9 GHz Band
QA/QC	Quality assurance/quality control
R56	Motorola installation guide; <i>Standards and Guidelines for Communication Sites</i>
receiver	The component(s) of a radio device that converts the radio waves into audible signals.
repeater	A special receiver/transmitter combination that receives a signal on one frequency and retransmits a new signal on another frequency, usually within the same frequency band, sometimes referred to as a relay station.
Respondent	Any individual or entity bidding on the right to supply products and services in response to this ITN.
RF	Radio frequency
RFI	Radio frequency interference
RTU	Remote terminal unit

SATP	Staging acceptance test plan
Selected Respondent	Any individual or entity selected from among all Respondents to supply products and services in response to this ITN.
SoR	Statement of requirements
spectrum	The range of electromagnetic radio frequencies that can be decomposed into frequency components, used in the transmission of sound, data and television.
subscriber	User/customer on a network.
subscriber unit	User's equipment (usually a mobile or portable radio)
talkgroup	An assigned talk path similar to a channel on a conventional system.
TDMA	Time division multiple access
TDMM	Telecommunications Distribution Methods Manual
Telco	Telecommunications company
TIA	Telecommunications Industry Association
trunked	A radio system with a group of channels available and assigned as needed to specific "groups" or operations. The channels are programmed for automatic system assignment while in use, and then released for other users. A trunked system maximizes channel utilization.
TSB	Telecommunications Systems Bulletin
TTA	Tower-top amplifier
turnkey	Entire system with hardware and software assembled and installed by a vendor and sold as a package.
TVSS	Transient voltage surge suppression
UHF	Ultra-high frequency
UL	Global safety certification company; formerly known as Underwriters Laboratories
UPS	Uninterruptible power supply
USGS	U.S. Geological Survey

VHF	Very-high frequency
VSWR	Voltage standing wave ratio
Voting receiver	Multiple remote receivers tied together through a comparator device at a transmitter site to improve portable coverage; signal strength is compared from each receiver, and the best receiver becomes the receiver during a specific transmission.
WAN	Wide-area network
WBS	Work breakdown structure

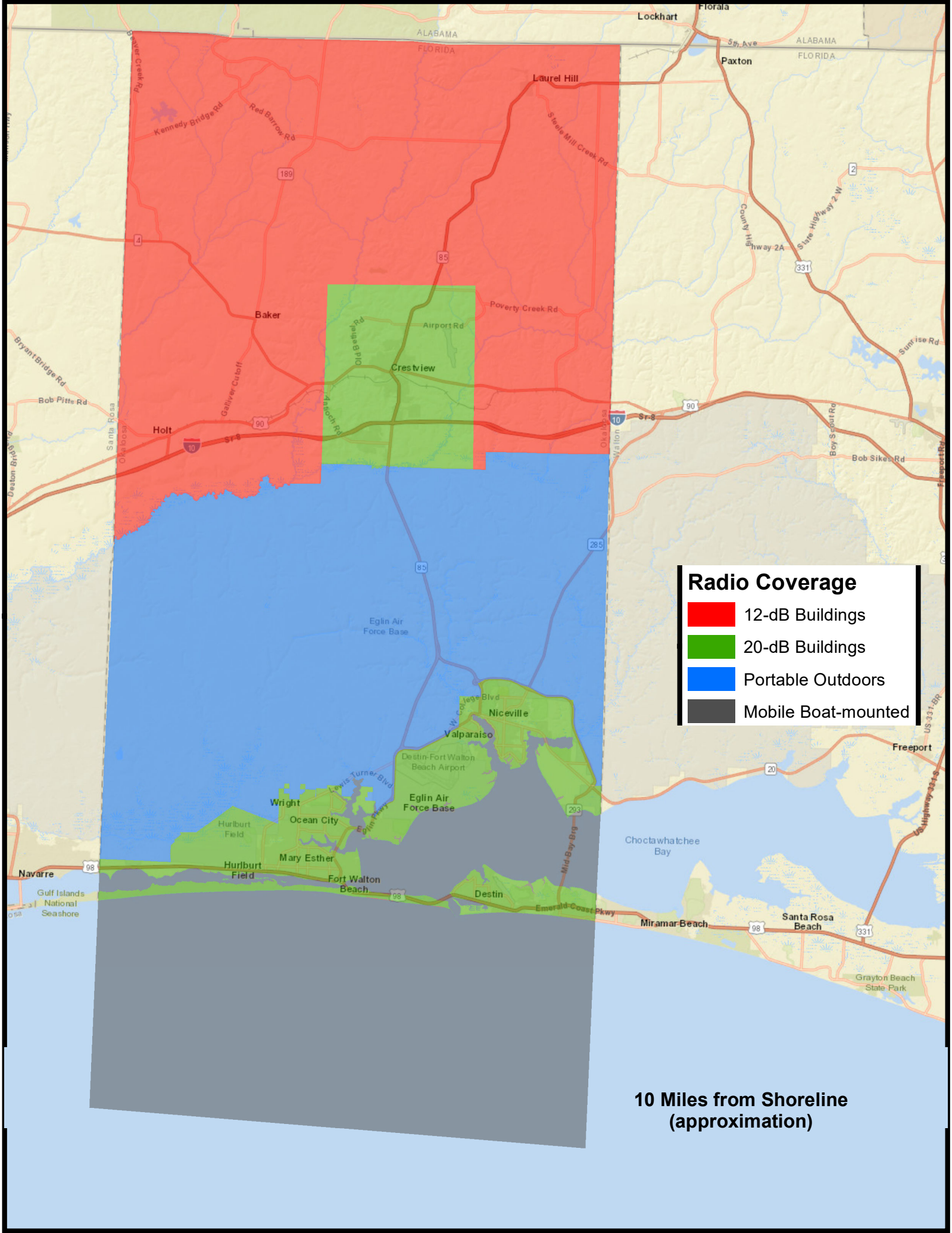
APPENDIX A: POTENTIAL CANDIDATE TOWER SITES

The following table summarizes candidate sites for consideration by Respondents. Please note that vetting has not been performed for these locations, and Respondents must independently verify their feasibility for use in the new system.

Site Name	Latitude	Longitude	ASR	Site Owner	Notes
Destin (Rooftop)	30-24-5.9	86-25-41.9	N/A	1 Water Place	Existing SLERS site with rooftop lease by the City of Destin
Ocean City	30-25-25.9	86-39-59.6	1231933	Ft. Walton Communications	Existing SLERS site
Nelson Point Rd	30-29-57.2	86-26-34.6	1294682	Pinnacle Towers	Existing SLERS / UHF site
Crestview	30-43-56.6	86-36-5.8	1222087	SBA Towers	Existing SLERS site
Harold	30-42-0	86-48-13	1033737	Ft. Walton Communications	Existing SLERS site
Laurel Hill	30-53-53.5	86-31-32.4	1233372	SBA Properties	Existing SLERS site
Shalimar	30-26-43.3	86-34-54.7	1203550	Verizon Wireless	Existing VHF site
Florosa Water Tank	30-24-55.2	86-45-52.6	N/A	City of Florosa	Existing VHF / UHF site
Holt Water Tank	30-41-39	86-44-43.2	N/A	City of Holt	Existing VHF / UHF site
Crestview DOT	30-45-40.8	86-34-17.8	1058430	State of Florida	Existing VHF / UHF site
Baker Water Tank	30-50-43.3	86-40-32.9	N/A	City of Baker	Existing VHF / UHF site
Laurel Hill Water Tank	30-57-3.9	86-28-34.7	N/A	City of Laurel Hill	Existing VHF / UHF site
Denton Blvd	30-26-20.3	86-37-31.8	1026862	Verizon Wireless	Existing UHF site

Site Name	Latitude	Longitude	ASR	Site Owner	Notes
Niceville Range Rd. Water Tank	30-29-20.2	86-25-22.9	1275692	SBA Towers	Existing UHF site
Destin Water Tank	30-23-41.9	86-29-43.8	N/A	City of Destin	Existing UHF site
Holt SOF	30-41-56.1	86-45-7	1058429	State of Florida	Government-owned Site
Okaloosa County School Board	30-27-3.7	86-34-16.8	1200585	Okaloosa County School Board	School Board-owned Site

APPENDIX B: COVERAGE REQUIREMENTS MAP



Radio Coverage

- 12-dB Buildings
- 20-dB Buildings
- Portable Outdoors
- Mobile Boat-mounted

10 Miles from Shoreline (approximation)

APPENDIX C: COMPLIANCE MATRIX

The Compliance Matrix is provided below for review. A separate Excel spreadsheet will be provided for completion.

ITN Section	Description	Respondent's Statement of Compliance Select one from the drop down list: Comply Comply with Clarification Exception	Respondent's Clarifications and Comments
1	Project Overview		
1.1.	Introduction		
1.2.	Okaloosa County Background		
1.3.	Invitation to Negotiate Overview		
1.4.	Scope of Work Summary		
1.5.	Proposals Desired		
1.5.1.	Systems Technical Requirements		
1.5.2.	Services		
1.6.	Quality Assurance and Coordination		
1.6.1.	Standards and Guidelines		
1.6.2.	P25 Standard Compliance		
1.6.3.	Frequency Coordination and Licensing		
1.6.4.	Federal Aviation Administration (if applicable)		
1.6.5.	Local, State, and Federal Environmental and Historical Requirements		
1.6.6.	Permitting		
1.6.7.	Project Management		
1.6.8.	Project Meetings		

ITN Section	Description	Respondent's Statement of Compliance Select one from the drop down list: Comply Comply with Clarification Exception	Respondent's Clarifications and Comments
1.6.9.	Project Staffing		
1.6.10.	Quality Assurance/Quality Control Program		
1.7.	Delivery, Storage and Handling		
1.8.	Project Submittals		
1.8.1.	Preliminary Design		
1.8.2.	Final Design		
1.8.3.	System Staging, Delivery and Installation		
1.8.4.	Final System Acceptance		
2	Instructions to Respondents		
2.1.	Overview		
2.2.	Mandatory Pre-Proposal Conference		
2.3.	Timeline Goals		
2.4.	Proposal Format		
2.5.	Competition Procedures		
2.6.	Procedures		
2.7.	Negotiation Process		
2.8.	Evaluation		
2.9.	Proposal Options		
2.10.	Alternate Proposals		
2.11.	Addenda to the Contract		
2.12.	Award of Contract		

ITN Section	Description	Respondent's Statement of Compliance Select one from the drop down list: Comply Comply with Clarification Exception	Respondent's Clarifications and Comments
3	Radio Communications System Requirements		
3.1.	Overview		
3.2.	Interoperability/P25 Statement of Requirements		
3.3.	System Configuration		
3.3.1.	Redundancy and Survivability		
3.3.2.	Expansion		
3.3.3.	Grade of Service		
3.4.	Site Selection		
3.5.	Coverage		
3.5.1.	Coverage Maps		
3.5.2.	Map Criteria		
3.5.3.	Coverage Model		
3.5.4.	TIA TSB-88 – User Choices		
3.6.	Site Equipment		
3.6.1.	Overview		
3.6.2.	System and Site Control Equipment		
3.6.3.	Simulcast Equipment		
3.6.4.	Receiver Voting		
3.6.5.	Base Station Equipment		
3.6.6.	Antenna Systems		

ITN Section	Description	Respondent's Statement of Compliance Select one from the drop down list: Comply Comply with Clarification Exception	Respondent's Clarifications and Comments
3.6.7.	Antenna Installation		
3.6.8.	Removal of Existing Infrastructure and Equipment		
3.7.	Network Management System		
3.7.1.	Network Management Terminal		
3.7.2.	Remote Terminal Units		
3.8.	Mobile Data		
3.9.	Backup Consolettes		
4	Backhaul Network		
4.1.	Overview		
4.2.	Digital Microwave Network		
4.2.1.	Requirements		
4.2.2.	Microwave Engineering		
5	Site Development		
5.1.	General		
5.2.	Towers		
5.3.	Shelters		
5.4.	Generator and Automatic Transfer Switch		
5.4.1.	Dual-Fuel Propane/Natural Gas Generator		
5.4.2.	Automatic Transfer Switch		
5.4.3.	Dual-Fuel Propane and Natural Gas System		

ITN Section	Description	Respondent's Statement of Compliance Select one from the drop down list: Comply Comply with Clarification Exception	Respondent's Clarifications and Comments
5.5.	DC Power		
5.6.	Site Preparation		
5.7.	Fencing		
6	Dispatch Consoles		
6.1.	General Requirements and Features		
6.2.	Trunked Requirements		
6.3.	Conventional Requirements		
6.4.	Paging Requirements		
6.5.	Systems Integration		
6.6.	Logging Recorder		
6.7.	Operator Position Equipment		
6.8.	Common Electronics Equipment		
7	Warranty, Maintenance, and Support		
7.1.	Warranty		
7.2.	Maintenance		
7.2.1.	General Requirements		
7.2.2.	Maintenance Standards		
7.3.	Parts Availability		
7.4.	Spare Equipment		
7.5.	Lifecycle Cost		
8	System Implementation, Testing, and Acceptance		

ITN Section	Description	Respondent's Statement of Compliance Select one from the drop down list: Comply Comply with Clarification Exception	Respondent's Clarifications and Comments
8.1.	General		
8.2.	System Installation		
8.3.	Cutover Plan		
8.4.	Staging		
8.5.	Coverage Testing		
8.6.	30-day Operational Test		
8.7.	Training		
8.8.	Final Acceptance Testing		
8.9.	As-Built Documentation		
8.10.	System Acceptance		
9	Subscriber Equipment		
9.1.	Overview		
9.2.	General Requirements		
9.2.1.	Portable Radios		
9.2.2.	Mobile Radios/Control Stations		
9.2.3.	Fleet Mapping		
9.3.	Subscriber Warranty and Maintenance		
9.3.1.	Subscriber Warranty		
9.3.2.	Subscriber Maintenance		
	Glossary of Terms and Acronyms		

ITN Section	Description	Respondent's Statement of Compliance Select one from the drop down list: Comply Comply with Clarification Exception	Respondent's Clarifications and Comments
Appendix A	Potential Candidate Tower Sites		
Appendix B	Coverage Requirements Map		
Appendix C	Compliance Matrix		
Appendix D	Proposal Pricing Instructions		
Attachment A	County Documents		

APPENDIX D: PROPOSAL PRICING INSTRUCTIONS

The Pricing Workbook, a separate Excel document, has been developed to foster conformity of Respondents' pricing proposals and aid in evaluation of these proposals. The price sheets are designed to provide justification for a Respondent's pricing proposal and evaluation criteria.

Detailed line item pricing for all material and services is requested. Respondents may add lines to the worksheets to accommodate their in-depth pricing details in support of their project approach.

The sum of the costs provided on the sheets shall total the cost of a Respondent's proposal before any incentive discounts are applied.

Any optional equipment or services shall be clearly marked "OPTIONAL" so as not to be included in the project cost calculation.

A separate worksheet should be generated for each tower site and equipment location, including, but not limited to, the core controllers, simulcast cell controllers, each site where RF equipment is located, and dispatch locations.

Antenna systems for LMR and microwave systems should be listed on the worksheet page for that site. Additional lines may be inserted as needed.

Subscriber pricing sheets shall include the full list of radios, software options, and accessories included within a Respondent's base proposal. Separate sheets shall be provided for any alternate radio models, options, and accessories not included in a Respondent's base proposal.

The 15-year cost of ownership should include all services available from the Respondent.

ATTACHMENT A: COUNTY DOCUMENTS

County documents can be found on the pages that follow; many will need to be returned with a Respondent's proposal. Respondents should review the documents carefully.

- General Services Insurance Requirements – w/Cyber Liability
- General Proposal Conditions, including:
 - Drug-Free Workplace Certification
 - Conflict of Interest Disclosure Form
 - Federal E-Verify Compliance Certification
 - Cone of Silence Clause
 - Recycled Content Form
 - Indemnification and Hold Harmless
 - Company Data
 - System for Award Management
 - Addendum Acknowledgement
 - Lobby – 31 U.S.C. 1352, as amended
 - Government Debarment & Suspension
 - Vendors on Scrutinized Companies List
- Exhibit B – Standard Contract Clauses

GENERAL SERVICES INSURANCE REQUIREMENTS – w/CYBER LIABILITY

BOND

A performance bond in the amount of 100% of the awarded contract amount will be required before contract execution.

CONTRACTORS INSURANCE

1. The Contractor shall not commence any work in connection with this Agreement until he has obtained all required insurance and the Okaloosa County Risk Manager or designee has approved the certificate of insurance.
2. All insurance policies shall be with insurers authorized to do business in the State of Florida and having a minimum rating of A, Class X in the Best Key Rating Guide published by A.M. Best & Co. Inc.
3. All insurance shall include the interest of all entities named and their respective officials, employees & volunteers of each and all other interests as may be reasonably required by Okaloosa County. The coverage afforded the Additional Insured under this policy shall be primary insurance. If the Additional Insured have other insurance that is applicable to the loss, such other insurance shall be on an excess or contingent basis. The amount of the company's liability under this policy shall not be reduced by the existence of such other insurance.
4. With the exception of Workers' Compensation policies, the County shall be shown as an Additional Insured with a Waiver of Subrogation on the Certificate of Insurance.
5. The County shall retain the right to reject all insurance policies that do not meet the requirement of this Agreement. Further, the County reserves the right to change these insurance requirements with 60-day notice to the Contractor.
6. The County reserves the right at any time to require the Contractor to provide copies of any insurance policies to document the insurance coverage specified in this Agreement.
7. Any subsidiaries used shall also be required to obtain and maintain the same insurance requirements as are being required herein of the Contractor.
8. Any exclusions or provisions in the insurance maintained by the Contractor that excludes coverage for work contemplated in this agreement shall be deemed unacceptable and shall be considered a breach of contract.

WORKERS' COMPENSATION INSURANCE

1. The Contractor shall secure and maintain during the life of this Agreement Workers' Compensation insurance for all of his employees employed for the project or any site connected with the work, including supervision, administration or management, of this

project and in case any work is sublet, with the approval of the County, the Contractor shall require the Subcontractor similarly to provide Workers' Compensation insurance for all employees employed at the site of the project, and such evidence of insurance shall be furnished to the County not less than ten (10) days prior to the commencement of any and all sub-contractual Agreements which have been approved by the County.

2. Contractor must comply with all applicable State and Federal workers' compensation laws, including the U.S. Longshore Harbor Workers' Act or Jones Act, if applicable.
3. No class of employee, including the Contractor himself, shall be excluded from the Workers' Compensation insurance coverage. The Workers' Compensation insurance shall also include Employer's Liability coverage.
4. A Waiver of Subrogation is required to be shown on all Workers Compensation Certificates of Insurance.

BUSINESS AUTOMOBILE LIABILITY

Coverage must be afforded for all Owned, Hired, Scheduled, and Non-Owned vehicles for Bodily Injury and Property Damage in an amount not less than \$1,000,000 (One Million Dollars) combined single limit each accident. If the contractor does not own vehicles, the contractor shall maintain coverage for Hired & Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Policy. Contractor must maintain this insurance coverage throughout the life of this Agreement.

COMMERCIAL GENERAL LIABILITY INSURANCE

1. The Contractor shall carry Commercial General Liability insurance against all claims for Bodily Injury, Property Damage and Personal and Advertising Injury caused by the Contractor.
2. Commercial General Liability coverage shall include the following:
 - 1.) Premises & Operations Liability
 - 2.) Bodily Injury and Property Damage Liability
 - 3.) Independent Contractors Liability
 - 4.) Contractual Liability
 - 5.) Products and Completed Operations Liability
3. Contractor shall agree to keep in continuous force Commercial General Liability coverage for the length of the contract.

CYBER LIABILITY

The Contractor shall carry Cyber Liability insurance coverage for third party liability. Coverage will include ID Theft Monitoring, Credit Monitoring (if necessary) & Notification. Coverage must be

afforded for negligent retention of data as well as notification and related costs for actual or alleged breaches of data.

INSURANCE LIMITS OF LIABILITY

The insurance required shall be written for not less than the following, or greater if required by law and shall include Employer's liability with limits as prescribed in this contract:

	<u>LIMIT</u>
1. Workers' Compensation	
1.) State	Statutory
2.) Employer's Liability	\$500,000 each accident
2. Business Automobile	\$1,000,000 each accident (A combined single limit)
3. Commercial General Liability	\$1,000,000 each occurrence Bodily Injury & Property Damage \$1,000,000 each occurrence Products and completed operations
4. Personal and Advertising Injury	\$1,000,000 each occurrence
5. Cyber Liability	\$1,000,000 per claim

NOTICE OF CLAIMS OR LITIGATION

The Contractor agrees to report any incident or claim that results from performance of this Agreement. The County representative shall receive written notice in the form of a detailed written report describing the incident or claim within ten (10) days of the Contractor's knowledge. In the event such incident or claim involves injury and/or property damage to a third party, verbal notification shall be given the same day the Contractor becomes aware of the incident or claim followed by a written detailed report within ten (10) days of verbal notification.

INDEMNIFICATION & HOLD HARMLESS

To the fullest extent permitted by law, Contractor shall indemnify and hold harmless the County, its officers and employees from liabilities, damages, losses, and costs including but not limited to reasonable attorney fees, to the extent caused by the negligence, recklessness, or wrongful conduct of the Contractor and other persons employed or utilized by the Contractor in the performance of this contract.

CERTIFICATE OF INSURANCE

1. Certificates of insurance indicating the project name and number and evidencing all required coverage must be submitted not less than 10 days prior to the commencement

of any of the work. The certificate holder(s) shall be as follows: Okaloosa County, 5479A Old Bethel Road, Crestview, Florida, 32536.

2. The contractor shall provide a Certificate of Insurance to the County with a thirty (30) day prior written notice of cancellation; ten (10) days' prior written notice if cancellation is for nonpayment of premium.
3. In the event that the insurer is unable to accommodate the cancellation notice requirement, it shall be the responsibility of the contractor to provide the proper notice to the County. Such notification shall be in writing by registered mail, return receipt requested, and addressed to the Okaloosa County Purchasing Department at 5479-A Old Bethel Road, Crestview, FL 32536.
4. In the event the contract term goes beyond the expiration date of the insurance policy, the contractor shall provide the County with an updated Certificate of insurance no later than ten (10) days prior to the expiration of the insurance currently in effect. The County reserves the right to suspend the contract until this requirement is met.
5. The certificate shall indicate if coverage is provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the certificate will show a retroactive date, which should be the same date of the initial contract or prior.
6. All certificates shall be subject to Okaloosa County's approval of adequacy of protection.
7. All deductibles or self-insured retentions (SIRs), whether approved by Okaloosa County or not, shall be the Contractor's full responsibility.
8. In no way will the entities listed as Additional Insured be responsible for, pay for, be damaged by, or limited to coverage required by this schedule due to the existence of a deductible or SIR.

GENERAL TERMS

Any type of insurance or increase of limits of liability not described above which, the Contractor required for its own protection or on account of statute shall be its own responsibility and at its own expense.

Any exclusions or provisions in the insurance maintained by the contractor that excludes coverage for work contemplated in this contract shall be deemed unacceptable and shall be considered breach of contract.

The carrying of the insurance described shall in no way be interpreted as relieving the Contractor of any responsibility under this contract.

Should the Contractor engage a subcontractor or sub-subcontractor, the same conditions will apply under this Agreement to each subcontractor and sub-subcontractor.

The Contractor hereby waives all rights of subrogation against Okaloosa County and its employees under all the foregoing policies of insurance.

EXCESS/UMBRELLA INSURANCE

The Contractor shall have the right to meet the liability insurance requirements with the purchase of an EXCESS/UMBRELLA insurance policy. In all instances, the combination of primary and EXCESS/UMBRELLA liability coverage must equal or exceed the minimum liability insurance limits stated in this Agreement. An Excess liability policy must be submitted indicating which policy it applies to.

GENERAL PROPOSAL CONDITIONS

1. PRE-PROPOSAL ACTIVITY

Except as provided in this section, respondents are prohibited from contacting or lobbying the County, County Administrator, Commissioners, County staff, and Selection Committee members, or any other person authorized on behalf of the County related or involved with the solicitation. All inquiries on the scope of work, specifications, additional requirements, attachments, terms and general conditions or instructions, or any issue must be directed in writing, by US mail or email to:

Okaloosa County Purchasing Department
5479A Old Bethel Road
Crestview, FL 32536
Email: dmason@myokaloosa.com
(850) 689-5960

All questions or inquiries must be received no later than the last day for questions (reference ITN & Respondent's Acknowledgement form). Any addenda or other modification to the bid documents will be issued by the County five (5) days prior to the date and time of bid closing, as a written addenda distributed to all prospective respondents by posting to the Florida Online Bid System (Florida Purchasing Group) and the Okaloosa County Web Site.

To access the Florida Online Bid System go to: <https://www.bidnetdirect.com/florida> . To access the Okaloosa County Web Site go to: <http://www.myokaloosa.com/purchasing/current-solicitations>.

Such written addenda or modification shall be part of the proposal documents and shall be binding upon each respondent. Each respondent is required to acknowledge receipt of any and all addenda in writing and submit with their proposal. No respondent may rely upon any verbal modification or interpretation.

- 2. PREPARATION OF PROPOSAL** – The proposal form is included with the proposal documents. Additional copies may be obtained from the County. The respondent shall submit originals and proposal forms in accordance with the public notice.

All blanks in the proposal documents shall be completed by printing in ink or by typewriter in both words and numbers with the amounts extended, totaled and the proposal signed. A proposal price shall be indicated for each section, proposal item, alternative, adjustment unit price item, and unit price item listed therein, or the words "No Proposal", "No Change", or "Not Applicable" entered. No changes shall be made to the phraseology of the form or in the items mentioned therein. In case of any discrepancy between the written amount and the numeric figures, the written amount shall govern. Any proposal which contains any omissions, erasures, alterations, additions, irregularities of any kind, or items not called for which shall in any manner fail to conform to the conditions of public notice inviting proposals may be rejected.

A proposal submitted by a corporation shall be executed in the corporate name by the president or a vice president or other corporate officer who has legal authority to sign.

A proposal submitted by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature). The official address of the partnership shall be shown below the signature.

A proposal submitted by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown below the signature.

A proposal submitted by an individual shall show the respondent's name and official address.

A proposal submitted by a joint venture shall be executed by each joint venture in the manner indicated on the proposal form. The official address of the joint venture must be shown below the signature.

All signatures shall be in blue ink. All names shall be typed or printed below the signature.

The proposal shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the form. The address and telephone # for communications regarding the proposal shall be shown.

If the respondent is an out-of-state corporation, the proposal shall contain evidence of respondent's authority and qualification to do business as an out-of-state corporation in the State of.

- 3. INTEGRITY OF PROPOSAL DOCUMENTS** – Respondents shall use the original Proposal documents provided by the Purchasing Department and enter information only in the spaces where a response is requested. Respondents may use an attachment as an addendum to the Proposal documents if sufficient space is not available. Any modifications or alterations to the original proposal documents by the respondent, whether intentional or otherwise, will constitute grounds for rejection of a proposal. Any such modifications or alterations that a respondent wish to propose must be clearly stated in the respondent's response in the form of an addendum to the original proposal documents.
- 4. SUBMITTAL OF PROPOSAL** – A proposal shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to proposal and shall be enclosed in an opaque sealed envelope plainly marked with the project title (and, if applicable, the designated portion of the project for which the proposal is submitted), the name and address of the respondent, and shall be accompanied by the proposal security and other required documents. It is the respondent's responsibility to assure that its

proposal is delivered at the proper time and place. Offers by telegram, facsimile, or telephone will **NOT** be accepted.

Note: Crestview is not a next day delivery site for overnight carriers.

5. **MODIFICATION & WITHDRAWAL OF PROPOSAL** – A proposal may be modified or withdrawn by an appropriate document duly executed in the manner that a proposal must be executed and delivered to the place where proposals are to be submitted prior to the date and time for the opening of proposals.

If within 24 hours after proposals are opened any respondent files a duly signed written notice with the County and promptly thereafter demonstrates to the reasonable satisfaction of the County that there was a material substantial mistake in the preparation of its proposal, that respondent may withdraw its proposal, and the proposal security may be returned. Thereafter, if the work is re-proposal, that respondent will be disqualified from 1) further purposing on the work, and 2) doing any work on the contract, either as a subcontractor or in any other capacity.

6. **PROPOSALS TO REMAIN SUBJECT TO ACCEPTANCE** – All proposals will remain subject to acceptance or rejection for ninety (90) calendar days after the day of the proposal opening, but the County may, in its sole discretion, release any proposal and return the proposal security prior to the end of this period.
7. **IDENTICAL TIE BIDS** – In cases of identical procurement responses, the award shall be determined either by lot or on the basis of factors deemed to serve the best interest of the County. In the case of the latter, there must be adequate documentation to support such a decision.
8. **CONDITIONAL & INCOMPLETE PROPOSALS** – Okaloosa County specifically reserves the right to reject any conditional proposal and proposals which make it impossible to determine the true amount of the proposal.
9. **PROPOSAL PRICE** – The proposal price shall include all equipment, labor, materials, permit(s), freight, taxes, required insurance, Public Liability, Property Damage and Workers' Compensation, etc. to cover the finished work called for.
10. **ADDITION/DELETION OF ITEM** – The County reserves the right to add or delete any item from this proposal or resulting contract when deemed to be in the County's best interest.
11. **SPECIFICATION EXCEPTIONS** – Specifications are based on the most current literature available. Respondent shall clearly list any change in the manufacturer's specifications which conflict with the proposal specifications. Respondent must also explain any deviation from the proposal specification in writing, as a foot note on the applicable proposal page and enclose a copy of the manufacturer's specifications data detailing the changed item(s) with their proposal. Failure of the respondent to comply with these provisions will result in

respondents being held responsible for all costs required to bring the equipment in compliance with proposal specifications.

12. APPLICABLE LAWS & REGULATIONS – All applicable Federal and State laws, County and municipal ordinances, orders, rules and regulations of all authorities having jurisdiction over the project shall apply to the proposal throughout, and they will be deemed to be included in the contract the same as though they were written in full therein.

13. DISQUALIFICATION OF RESPONDENTS - Any of the following reasons may be considered as sufficient for the disqualification of a respondent and the rejection of its proposal:

- a. Submission of more than one proposal for the same work from an individual, firm or corporation under the same or different name.
- b. Evidence that the respondent has a financial interest in the firm of another respondent for the same work.
- c. Evidence of collusion among respondents. Participants in such collusion will receive no recognition as respondents for any future work of the County until such participant has been reinstated as a qualified respondent.
- d. Uncompleted work which in the judgment of the County might hinder or prevent the prompt completion of additional work if awarded.
- e. Failure to pay or satisfactorily settle all bills due for labor and material on former contracts in force at the time of advertisement of proposals.
- f. Default under previous contract.
- g. Listing of the respondent by Local, State or Federal Government on its barred/suspended vendor list.

14. AWARD OF CONTRACT

Okaloosa County Review – A selection committee will review all proposals and will participate in the Recommendation to Award.

The contract shall be awarded to the responsible and responsive respondent whose proposal is determined to be the most advantageous to the County, taking into consideration the price and other criteria set forth in the invitation to negotiate. The County reserves the right to reject any and all proposals or to waive any irregularity or technicality in proposals received. The County shall be the sole judge of the proposal and the resulting negotiated agreement that is in its best interest and its decision shall be final.

Okaloosa County reserves the right to waive any informalities or reject any and all proposals, in whole or part, to utilize any applicable state contracts in lieu of or in addition to this proposal and to accept the proposal that in its judgment will best serve the interest of the County.

Okaloosa County specifically reserves the right to reject any conditional proposals and proposals which make it impossible to determine the true amount of the proposal. Each item must be proposal separately and no attempt is to be made to tie any item or items to any other item or items.

15. **PAYMENTS** – The respondent shall be paid upon submission of invoices and approval of acceptance by Okaloosa County Board of County Commissioners, Finance Department, 101 E. James Lee Blvd, Crestview, FL 32536, for the prices stipulated herein for articles delivered and accepted. Invoices must show Contract number.
16. **DISCRIMINATION** – An entity or affiliate who has been placed on the discriminatory vendor list may not submit a proposal on a contract to provide goods or services to a public entity, may not submit a proposal on a contract with a public entity for the construction or repair of a public building or public work, may not submit proposals on leases of real property to a public entity, may not award or perform work as a contractor, supplier, subcontractor, or consultant under contract with any public entity, and may not transact business with any public entity.
17. **PUBLIC ENTITY CRIME INFORMATION** – Pursuant to Florida Statute 287.133, a respondent may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in s. [287.017](#) for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list.
18. **CONFLICT OF INTEREST** – The award hereunder is subject to the provisions of Chapter 112, Florida Statutes. All respondents must disclose with their proposals the name of any officer, director, or agent who is also a public officer or an employee of the Okaloosa Board of County Commissioners, or any of its agencies. Furthermore, all respondents must disclose the name of any County officer or employee who owns, directly or indirectly, an interest of five percent (5%) or more in the firm or any of its branches.

Note: For respondent's convenience, this certification form is enclosed and is made a part of the proposal package.
19. **REORGANIZATION OR BANKRUPTCY PROCEEDINGS** – Proposals will not be considered from respondents who are currently involved in official financial reorganization or bankruptcy proceedings.
20. **INVESTIGATION OF RESPONDENT** – The County may make such investigations, as it deems necessary to determine the stability of the respondent to perform the work and that there is no conflict of interest as it relates to the project. The respondent shall furnish to the

Owner any additional information and financial data for this purpose as the County may request.

- 21. CONE OF SILENCE CLAUSE** – The Okaloosa County Board of County Commissioners has established a solicitation silence policy (**Cone of Silence Clause**) that prohibits oral and written communication regarding all formal solicitations for goods and services (formal bids, Request for Proposals, Requests for Qualifications, Invitations to Negotiate) issued by the Board through the County Purchasing Department. The period commences from the date of advertisement until award of contract.

All communications shall be directed to the Purchasing Department -see attached form.

Note: For respondent's convenience, this certification form is enclosed and is made a part of the bid package.

- 22. REVIEW OF PROCUREMENT DOCUMENTS** – Per Florida Statute 119.071(1)(b)2. sealed bids, proposals, or replies received by the County pursuant to a competitive solicitation are exempt from public disclosure until such time as the County provides notice of an intended decision or until 30 days after opening the bids, proposals, or final replies, whichever is earlier.
- 23. COMPLIANCE WITH FLORIDA STATUTE 119.0701** – The Respondent shall comply with all the provisions of section 119.0701, Florida Statutes relating to the public records which requires, among other things, that the Respondent: (a) Keep and maintain public records; (b) Provide the public with access to public records on the same terms and conditions that the public agency would provide the records; (c) ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and (d) Meet all requirements for retaining public records and transfer, at no cost, to the public agency all public records in possession of the respondent upon termination of the contract.
- 24. PROTECTION OF RESIDENT WORKERS** – The Okaloosa County Board of County Commissioners actively supports the Immigration and Nationality Act (INA) which includes provisions addressing employment eligibility, employment verifications, and nondiscrimination. Under the INA, employers may hire only persons who may legally work in the United States (i.e., citizens and nationals of the U.S.) and aliens authorized to work in the U.S. The employer must verify the identity and employment eligibility of anyone to be hired, which includes completing the Employment Eligibility Verifications. The respondent shall establish appropriate procedures and controls so no services or products under the Contract Documents will be performed or manufactured by any worker who is not legally eligible to perform such services or employment. Okaloosa County reserves the right to request documentation showing compliance with the requirements.

Respondents doing construction business with Okaloosa County are required to use the Federal Government Department of Homeland Security's website and use the E-Verify

Employment Eligibility Verifications System to confirm eligibility of all employees to work in the United States.

25. **SUSPENSION OR TERMINATION FOR CONVENIENCE** – The County may, at any time, without cause, order Respondent in writing to suspend, delay or interrupt the work in whole or in part for such period of time as the County may determine, or to terminate all or a portion of the Contract for the County’s convenience. Upon such termination, the Contract Price earned to the date of termination shall be paid to Respondent, but Respondent waives any claim for damages, including loss of profits arising out of or related to the early termination. Those Contract provisions which by their nature survive final acceptance shall remain in full force and effect. If the County orders a suspension, the Contract price and Contract time may be adjusted for increases in the cost and time caused by suspension, delay or interruption. No adjustment shall be made to the extent that performance is, was or would have been so suspended, delayed or interrupted by reason for which Respondent is responsible; or that an equitable adjustment is made or denied under another provision of this Contract.
26. **FAILURE OF PERFORMANCE/DELIVERY** – In case of default by the respondent, the County after due notice (oral or written) may procure the necessary supplies or services from other sources and hold the respondent responsible for difference in cost incurred. Continuous instances of default shall result in cancellation of the contract and removal of the respondent from the proposal list for duration of one (1) year, at the option of the County.
27. **AUDIT** – If requested, respondent shall permit the County or its authorized representative to inspect all data and records of respondent relating to its performance and its subcontracts under this contract from the date of the contract through and until three (3) years after the expiration of contract. Respondent shall permit access to premises and employees with adequate notice and during reasonable hours for the purpose of examining and assessing controls in place over the work they perform for the County.
28. **EQUAL EMPLOYMENT OPPORTUNITY; NON-DISCRIMINATION** – Respondent shall not discriminate against any employee or an applicant for employment because of race, color, religion, gender, sexual orientation, national origin, age, familial status or handicap.
29. **NON-COLLUSION** – Respondent certifies that it has entered into no agreement to commit a fraudulent, deceitful, unlawful or wrongful act, or any act which may result in an unfair advantage over other respondents. See Florida Statute 838.22.
30. **UNAUTHORIZED ALIENS/PATRIOT’S ACT** – The knowing employment by respondent or its subcontractors of any alien not authorized to work by the immigration laws is prohibited and shall be a default of the contract. In the event that the respondent is notified or becomes aware of such default, the respondent shall take steps as are necessary to terminate said employment with 24 hours of notification or actual knowledge that an alien is being employed. Respondent’s failure to take such steps as are necessary to terminate the employment of any said alien within 24 hours of notification or actual knowledge that an alien is being employed shall be grounds for immediate termination of the contract. Respondent

shall take all commercially reasonable precautions to ensure that it and its subcontractors do not employ persons who are not authorized to work by the immigration laws.

- 31. TITLE VI SOLICITATION NOTICE** – The Okaloosa County Board of County Commissioners, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.
- 32. FEDERAL REGULATIONS** – The parties agree to comply with the Federal Regulations as set forth in Exhibit B, which is expressly incorporated herein as part of the Agreement.
- 33. CERTIFICATE OF GOOD STANDING FOR STATE OF FLORIDA** – Florida Statute 607.1501 requires that all vendors who wish to do business in the State of Florida be licensed to do business through the Department of State of Florida and be in good standing with the State of Florida. As such, to do business with Okaloosa County a vendor must provide a Certificate of Good Standing with their bid/proposal package to the County. For more information on doing business in the State of Florida, please refer to the Florida Department of State. The website to register is <https://dos.myflorida.com/sunbiz>.
- 34.** The following documents shall be submitted with the bid packet. Failure to submit all required forms might result in your submittal being deemed non-responsive:

 - a. Drug-Free Workplace Certification Form
 - b. Conflict of Interest
 - c. Federal E-Verify
 - d. Cone of Silence Form
 - e. Recycled Content Form
 - f. Indemnification and Hold Harmless
 - g. Company Data
 - h. System of Awards Management
 - i. Addendum Acknowledgement
 - j. Certification Regarding Lobbying
 - k. Governmental Debarment & Suspension
 - l. Vendors on Scrutinized Companies List
 - m. Certificate of Good Standing

DRUG-FREE WORKPLACE CERTIFICATION

THE BELOW SIGNED RESPONDENT CERTIFIES that it has implemented a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under quote a copy of the statement specified in subsection 1.
4. In the statement specified in subsection 1, notify the employees that, as a condition of working on the commodities or contractual services that are under quote, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on, or require the satisfactory participation in, drug abuse assistance or rehabilitation program if such is available in employee's community, by any employee who is convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign this statement, I certify that this firm complies fully with the above requirements.

DATE: _____

SIGNATURE: _____

COMPANY: _____

NAME: _____

(Typed or Printed)

ADDRESS: _____

TITLE: _____

E-MAIL: _____

PHONE
NO.: _____

FEDERAL E-VERIFY COMPLIANCE CERTIFICATION

In accordance with Okaloosa County Policy and Executive Order Number 11-116 from the office of the Governor of the State of Florida, Respondent hereby certifies that the U.S. Department of Homeland Security's E-Verify system will be used to verify the employment eligibility of all new employees hired by the respondent during the contract term, and shall expressly require any subcontractors performing work or providing services pursuant to the contact to likewise utilize the U.S. Department of Homeland Securities E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term; and shall provide documentation such verification to the COUNTY upon request.

As the person authorized to sign this statement, I certify that this company complies/will comply fully with the above requirements.

DATE: _____

SIGNATURE: _____

COMPANY: _____

NAME: _____

ADDRESS: _____

TITLE: _____

E-MAIL: _____

PHONE NO. _____

CONE OF SILENCE CLAUSE

The Board of County Commissioners have established a solicitation silence policy (**Cone of Silence**) that prohibits oral and written communication regarding all formal solicitations for goods and services (ITB, RFP, ITQ, ITN, and RFQ) or other competitive solicitation between the bidder (or its agents or representatives) or other entity with the potential for a financial interest in the award (or their respective agents or representatives) regarding such competitive solicitation, and any County Commissioner or County employee, selection committee member or other persons authorized to act on behalf of the Board including the County's Architect, Engineer or their sub-consultants, or anyone designated to provide a recommendation to award a particular contract, other than the Purchasing Department Staff..

The period commences from the time of advertisement until contract award.

When the solicitation silence period is in effect, no oral or written communication is allowed regarding the solicitation between prospective respondents and members of the Board of County Commissioners, the County Administrator, county employees or members of the Board Approved Review Committee. All questions or requests for information regarding the solicitation **MUST** be directed to the designated Purchasing Representative listed in the solicitation.

Any information thought to affect the committee or staff recommendation submitted after bids are due, should be directed to the Purchasing Director or an appointed representative. It shall be the Purchasing Director decision whether to consider this information in the decision process.

Any violation of this policy shall be grounds to disqualify the respondent from consideration during the selection process.

All respondents must agree to comply with this policy by signing the following statement and including it with their submittal.

I _____ representing _____
Signature **Company Name**

On this _____ day of _____ 2019 hereby agree to abide by the County's "**Cone of Silence Clause**" and understand violation of this policy shall result in disqualification of my proposal/submittal.

RECYCLED CONTENT FORM

RECYCLED CONTENT INFORMATION

1. Is the material in the proposal: Virgin _____ or Recycled _____ (Check the applicable blank).
If recycled, what percentage _____ %

Product

Description: _____

2. Is your product packaged and/or shipped in material containing recycled content?

Yes _____ No _____

Specify: _____

3. Is your product recyclable after it has reached its intended end use?

Yes _____ No _____

Specify: _____

The above is not applicable if there is only a personal service involved with no product involvement.

Name of Respondent: _____

E-Mail: _____

INDEMNIFICATION AND HOLD HARMLESS

Respondent shall indemnify and hold harmless the County, its officers and employees from liabilities, damages, losses, and costs including but not limited to reasonable attorney fees, to the extent caused by the negligence, recklessness, or intentional wrongful conduct of the Respondent and other persons employed or utilized by the Respondent in the performance of this Agreement.

Respondent's Company Name

Authorized Signature – Manual

Physical Address

Authorized Signature – Typed

Mailing Address

Title

Phone Number

FAX Number

Cellular Number

After-Hours Number(s)

Date

COMPANY DATA

Respondent's Company Name: _____

Physical Address & Phone #: _____

Contact Person (Typed-Printed): _____

Phone #: _____

Cell #: _____

Email: _____

Federal ID or SS #: _____

DUNS #: _____

Respondent's License #: _____

Fax #: _____

Emergency #'s After Hours,
Weekends & Holidays: _____

SYSTEM FOR AWARD MANAGEMENT (OCT 2016)

(a) Definitions. As used in this provision.

“Electronic Funds Transfer (EFT) indicator” means a four-character suffix to the unique entity identifier. The suffix is assigned at the discretion of the commercial, nonprofit, or Government entity to establish additional System for Award Management records for identifying alternative EFT accounts (see [subpart 32.11](#)) for the same entity.

“Registered in the System for Award Management (SAM) database” means that.

(1) The Offeror has entered all mandatory information, including the unique entity identifier and the EFT indicator, if applicable, the Commercial and Government Entity (CAGE) code, as well as data required by the Federal Funding Accountability and Transparency Act of 2006 (see [subpart 4.14](#)) into the SAM database;

(2) The offeror has completed the Core, Assertions, and Representations and Certifications, and Points of Contact sections of the registration in the SAM database;

(3) The Government has validated all mandatory data fields, to include validation of the Taxpayer Identification Number (TIN) with the Internal Revenue Service (IRS). The offeror will be required to provide consent for TIN validation to the Government as a part of the SAM registration process; and

(4) The Government has marked the record “Active”.

“Unique entity identifier” means a number or other identifier used to identify a specific commercial, nonprofit, or Government entity. See www.sam.gov for the designated entity for establishing unique entity identifiers.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the SAM database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The Offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation “Unique Entity Identifier” followed by the unique entity identifier that identifies the Offeror’s name and address exactly as stated in the offer. The Offeror also shall enter its EFT indicator, if applicable. The unique entity identifier will be used by the Contracting Officer to verify that the Offeror is registered in the SAM database.

(c) If the Offeror does not have a unique entity identifier, it should contact the entity designated at www.sam.gov for establishment of the unique entity identifier directly to obtain one. The Offeror should be prepared to provide the following information:

- (1) Company legal business name.
- (2) Tradestyle, doing business, or other name by which your entity is commonly recognized.
- (3) Company Physical Street Address, City, State, and Zip Code.
- (4) Company Mailing Address, City, State and Zip Code (if separate from physical).
- (5) Company telephone number.
- (6) Date the company was started.
- (7) Number of employees at your location.
- (8) Chief executive officer/key manager.
- (9) Line of business (industry).
- (10) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the SAM database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) Offerors may obtain information on registration at <https://www.acquisition.gov> .

Offerors SAM information:

Entity Name: _____

Entity Address: _____

Duns Number: _____

CAGE Code: _____

LOBBYING - 31 U.S.C. 1352, as amended

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements
(To be submitted with each bid or offer exceeding \$100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.

_____ Signature of Contractor's Authorized Official

_____ Name and Title of Contractor's Authorized Official

_____ Date

Government Debarment & Suspension

Instructions

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out in accordance with these instructions.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person(s) to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Orders 12549, at Subpart C of OMB 2 C.F.R. Part 180 and 3000.332. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the System for Award Management (SAM) database.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge

and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph (5) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

**Certification Regarding Debarment, Suspension,
Ineligibility and Voluntary Exclusion
Lower Tier Covered Transactions**

The following statement is made in accordance with the Privacy Act of 1974 (5 U.S.C. § 552(a), as amended). This certification is required by the regulations implementing Executive Orders 12549, Debarment and Suspension, and OMB 2 C.F.R. Part 180, Participants' responsibilities. The regulations were amended and published on August 31, 2005, in 70 Fed. Reg. 51865-51880.

[READ INSTRUCTIONS ON PREVIOUS PAGE BEFORE COMPLETING CERTIFICATION]

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal or State department or agency;
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal

Printed Name and Title of Authorized Representative

Signature

Date

VENDORS ON SCRUTINIZED COMPANIES LISTS

By executing this Certificate _____, the bid proposer, certifies that it is not: (1) listed on the Scrutinized Companies that Boycott Israel List, created pursuant to section 215.4725, Florida Statutes, (2) engaged in a boycott of Israel, (3) listed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to section 215.473, Florida Statutes, or (4) engaged in business operations in Cuba or Syria. Pursuant to section 287.135(5), Florida Statutes, the County may disqualify the bid proper immediately or immediately terminate any agreement entered into for cause if the bid proposer is found to have submitted a false certification as to the above or if the Contractor is placed on the Scrutinized Companies that Boycott Israel List, is engaged in a boycott of Israel, has been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria, during the term of the Agreement. If the County determines that the bid proposer has submitted a false certification, the County will provide written notice to the bid proposer. Unless the bid proposer demonstrates in writing, within 90 calendar days of receipt of the notice, that the County's determination of false certification was made in error, the County shall bring a civil action against the bid proposer. If the County's determination is upheld, a civil penalty shall apply, and the bid proposer will be ineligible to bid on any Agreement with a Florida agency or local governmental entity for three years after the date of County's determination of false certification by bid proposer.

As the person authorized to sign this statement, I certify that this firm complies fully with the above requirements.

DATE: _____

SIGNATURE: _____

COMPANY: _____

NAME: _____
(Typed or Printed)

ADDRESS: _____

TITLE: _____

E-MAIL: _____

PHONE NO.: _____

Exhibit B – Standard Contract Clauses

Title VI Clauses for Compliance with Nondiscrimination Requirements

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts And Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor’s obligations under this contract and the Nondiscrimination Acts And Authorities on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts And Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor’s noncompliance with the Non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. Cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination In Federally-Assisted Programs of The Department of Transportation—Effectuation of Title VI of The Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Federal Fair Labor Standards Act (Federal Minimum Wage)

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part time workers.

The [*contractor | consultant*] has full responsibility to monitor compliance to the referenced statute or regulation. The [*contractor | consultant*] must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division

Occupational Safety and Health Act of 1970

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

E-Verify

Enrollment and verification requirements.

- (1) If the Contractor is not enrolled as a Federal Contractor in E-Verify at time of contract award, the Contractor shall-
 - a. Enroll. Enroll as a Federal Contractor in the E-Verify Program within thirty (30) calendar days of contract award;
 - b. Verify all new employees. Within ninety (90) calendar days of enrollment in the E-Verify program, begin to use E-Verify to initiate verification of employment eligibility of all new hires of the Contractor, who are working in the United States, whether or not assigned to the contract, within three (3) business days after the date of hire (but see paragraph (b)(3) of this section); and,

- c. Verify employees assigned to the contract. For each employee assigned to the contract, initiate verification within ninety (90) calendar days after date of enrollment or within thirty (30) calendar days of the employee's assignment to the contract, whichever date is later (but see paragraph (b)(4) of this section.)
 - (2) If the Contractor is enrolled as a Federal Contractor in E-Verify at time of contract award, the Contractor shall use E-Verify to initiate verification of employment eligibility of
 - a. All new employees.
 - i. Enrolled ninety (90) calendar days or more. The Contractor shall initiate verification of all new hires of the Contractor, who are working in the United States, whether or not assigned to the contract, within three (3) business days after the date of hire (but see paragraph (b)(3) of this section); or
 - b. Enrolled less than ninety (90) calendar days. Within ninety (90) calendar days after enrollment as a Federal Contractor in E-Verify, the Contractor shall initiate verification of all new hires of the contractor, who are working in the United States, whether or not assigned to the contract, within three (3) business days after the date of hire (but see paragraph (b)(3) of this section); or
 - ii. Employees assigned to the contract. For each employee assigned to the contract, the Contractor shall initiate verification within ninety (90) calendar days after date of contract award or within thirty (30) days after assignment to the contract, whichever date is later (but see paragraph (b)(4) of this section.)
- (3) If the Contractor is an institution of higher education (as defined at 20 U.S.C. 1001(a)); a State of local government or the government of a Federally recognized Indian tribe, or a surety performing under a takeover agreement entered into with a Federal agency pursuant to a performance bond, the Contractor may choose to verify only employees assigned to the contract, whether existing employees or new hires. The Contractor shall follow the applicable verification requirements of (b)(1) or (b)(2), respectively, except that any requirement for verification of new employees applies only to new employees assigned to the contract.
- (4) Option to verify employment eligibility of all employees. The Contractor may elect to verify all existing employees hired after November 6, 1986 (after November 27, 2009, in the Commonwealth of the Northern Mariana Islands), rather than just those employees assigned to the contract. The Contractor shall initiate verification for each existing employee working in the United States who was hired after November 6, 1986 (after November 27, 2009, in the Commonwealth of the Northern Mariana Islands), within one hundred eighty (180) calendar days of-
 - i. Enrollment in the E-Verify program; or
 - ii. Notification to E-Verify Operations of the Contractor's decision to exercise this option, using the contract information provided in the E-Verify program Memorandum of Understanding (MOU)
- (5) The Contractor shall comply, for the period of performance of this contract, with the requirements of the E-Verify program MOU.

- i. The Department of Homeland Security (DHS) or the Social Security Administration (SSA) may terminate the Contractor's MOU and deny access to the E-Verify system in accordance with the terms of the MOU. In such case, the Contractor, will be referred to a suspension or debarment official.
- ii. During the period between termination of the MOU and a decision by the suspension or debarment official whether to suspend or debar, the contractor is excused from its obligations under paragraph (b) of this clause. If the suspension or debarment official determines not to suspend or debar the Contractor, then the Contractor must reenroll in E-Verify.
- iii. Web site. Information on registration for and use of the E-Verify program can be obtained via the Internet at the Department of Homeland Security Web site: <http://www.dhs.gov/E-Verify>.
Individuals previously verified. The Contractor is not required by this clause to perform additional employment verification using E-Verify for any employee –
 - (a) Whose employment eligibility was previously verified by the Contractor through the E-Verify program;
 - (b) Who has been granted and holds an active U.S. Government security clearance for access to confidential, secret, or top secret information in accordance with the National Industrial Security Program Operating Manual; or
 - (c) Who has undergone a completed background investigation and been issued credentials pursuant to Homeland Security Presidential Directive (HSPD)-12. Policy for a Common Identification Standard for Federal Employees and Contractors.

Subcontracts. The Contractor shall include the requirements of this clause, including this paragraph € (appropriately modified for identification of the parties in each subcontract that –

- (1) Is for-(i) Commercial and noncommercial services (except for commercial services that are part of the purchase of a COTS item (or an item that would be a COTS item, but for minor modifications), performed by the COTS provider, and are normally provided for that COTS item); or
(ii) Construction;
- (2) Has a value of more than \$3,500; and
- (3) Includes work performed in the United States.