

AMENDMENT NO.: 4
Land Mobile FM or PM Communications Equipment
State Term Contract No.: 725-500-12-1

This Amendment No. 4 ("Amendment"), is effective as of June 30, 2016, to the Land Mobile FM or PM Communications Equipment, State Term Contract No. 725-500-12-1 ("Contract"), between the **State of Florida, Department of Management Services** ("Department") and **Contractor name** ("Contractor") collectively referred to herein as the "Parties." All capitalized terms used herein shall have the meaning assigned to them in the Contract, unless otherwise defined:

WHEREAS the Department awarded the above referenced Contract to provide Land Mobile FM or PM Communications Equipment; and

WHEREAS the Parties agreed that the Contract may be amended by mutual agreement pursuant to incorporated ITB Section 4.42 "Modification of Terms" of the Contract; and

WHEREAS the Parties agree to renew the Contract as provided in Section 6.0 "Renewal" of the Contract; and

THEREFORE, in consideration of the mutual promises contained below, and other good and valuable consideration, receipt and sufficiency of which are hereby acknowledged, the Parties agree to the following:

Contract Amendment.

- a. The following Contract sections are added:

14.0 Cooperation with Inspector General.

Pursuant to subsection 20.055(5), F.S., Contractor, and any subcontractor to the Contractor, understand and will comply with their duty to cooperate with the Inspector General in any investigation, audit, inspection, review, or hearing. Upon request of the Inspector General or any other authorized State official, the Contractor shall provide any type of information the Inspector General deems relevant to the Contractor's integrity or responsibility. Such information may include, but shall not be limited to, the Contractor's business or financial records, documents, or files of any type or form that refer to or relate to the Contract. The Contractor shall retain such records for five years after the expiration of the Contract, or the period required by the General Records Schedules maintained by the Florida Department of State (available at: <http://dos.myflorida.com/library-archives/records-management/general-records-schedules/>), whichever is longer. The Contractor agrees to reimburse the State for the reasonable costs of investigation incurred by the Inspector General or other authorized State official for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the State which results in the suspension or debarment of the Contractor. Such costs shall include, but shall not be limited to: salaries of investigators, including overtime; travel and lodging expenses; and expert witness and documentary fees.

15.0 Subcontractors.

The Contractor shall not subcontract any work under the Contract without prior written consent of the Department. The Contractor is fully responsible for satisfactory completion of all subcontracted work. The Department supports diversity in its procurements and contracts, and requests that Contractors offer subcontracting opportunities to certified woman-, veteran-, and minority-owned small businesses. The Contractor may contact the

- b. The following Contract sections are amended:

2.19 Access to Public Records

- (1) If, under this Contract, the Contractor is providing services, the Department may unilaterally cancel the Contract for refusal by the Contractor to allow access to all public records, including documents, papers, letters, or other material made or received by the Contractor in conjunction with the Contract, unless the records are exempt from s. 24(a) of Art. I of the State Constitution and section 119.07(1), Florida Statutes.
- (2) If, under this Contract, the Contractor is providing services and is acting on behalf of a public agency as provided by section 119.0701(1)(b), Florida Statutes, the Contractor shall:
 - (a) Keep and maintain public records that ordinarily and necessarily would be required by the public agency in order to perform the service.
 - (b) Provide the public with access to public records on the same terms and conditions that the public agency would provide the records and 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.
 - (d) Meet all requirements for retaining public records and transfer, at no cost, to the public agency all public records in possession of the Contractor upon termination of the Contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the public agency.

Protection of Trade Secrets or Other Confidential Information

- (1) If the Contractor considers any portion of materials made or received in the course of performing the Contract ("contract-related materials") to be trade secret under section 812.081, Florida Statutes, or otherwise confidential under Florida or federal law, the Contractor must clearly designate that portion of the materials as "confidential" when submitted to the Department.
- (2) If the Department receives a public records request for contract-related materials designated by the Contractor as "confidential," the Department will provide only the portions of the contract-related materials not designated as "confidential." If the requester asserts a right to examine contract-related materials designated as "confidential," the Department will notify the Contractor. The Contractor will be responsible for responding to and resolving all claims for access to contract-related materials it has designated "confidential."
- (3) If the Department is served with a request for discovery of contract-related materials designated "confidential," the Department will promptly notify the Contractor about the request. The Contractor will be responsible for filing the appropriate motion or objection in response to the request for discovery. The Department will provide

materials designated “confidential” only if the Contractor fails to take appropriate action, within timeframes established by statute and court rule, to protect the materials designated as “confidential” from disclosure.

- (4) The Contractor shall protect, defend, and indemnify the Department for claims, costs, fines, and attorney’s fees arising from or relating to its designation of contract-related materials as “confidential.”

Retention of Records

Contractor shall retain sufficient documentation to substantiate claims for payment under the Contract, and all other records made in relation to the Contract, for five (5) years after expiration or termination of the Contract.

3.16.1 Diversity Reporting.

The State of Florida supports its diverse business community by creating opportunities for woman-, veteran-, and minority-owned small businesses to participate in procurements and contracts. The Department encourages supplier diversity through certification of woman-, veteran-, and minority-owned small business enterprises, and provides advocacy, outreach, and networking through regional business events. For additional information, please contact the Office of Supplier Diversity (OSD) at osdinfo@dms.myflorida.com.

Upon request, the Contractor shall report to the Department its spend with business enterprises certified by the OSD. These reports must include the time period covered, the name and Federal Employer Identification Number of each business enterprise utilized during the period, commodities and contractual services provided by the business enterprise, and the amount paid to the business enterprise on behalf of each Customer purchasing under the Contract.

II. Contract Renewal. Pursuant to Section 6.0 of the Contract, State Term Contract No. 725-500-12-1 is renewed for a period of one (1) year at the same terms and conditions, with a Contract expiration date of June 29, 2017.

III. Conflict. To the extent any of the terms of this Amendment conflict with the terms of the Contract, the terms of this Amendment shall control.

IV. Warrant of Authority. Each person signing this Amendment warrants that he or she is duly authorized to do so and to bind the respective party.

V. Effect. Unless otherwise modified by this Amendment, all terms and conditions contained in the Contract shall continue in full force and effect.

**State of Florida,
Department of Management Services**

**Contractor:
[Contractor Name]**

By: _____
Name: Erin Rock
Title: Deputy Secretary

By: _____
Name:
Title:

Date:

Date:

**AMENDMENT 3
STATE OF FLORIDA DEPARTMENT OF MANAGEMENT SERVICES
STATE TERM CONTRACT NUMBER 725-500-12-1
ASSIGNMENT**

This ASSIGNMENT (the "Assignment") of the above-referenced state term contract, ("Contract"), effective the date of full execution between First Communications, hereinafter "Assignor", having its principal office at 234 Blountstown Highway, Tallahassee, Florida 32304, and Mobile Communications of North Florida, LLC dba First Communications, hereinafter "Assignee", having its principal office at 234 Blountstown Highway, Tallahassee, FL 32304, and the State of Florida Department of Management Services hereinafter "Department" having its principal office at 4050 Esplanade Way, Tallahassee, Florida 32399 (collectively, the "Parties").

RECITALS

- I. Assignor entered into the Contract with the Department;
- II. Assignor wishes to assign all of its rights, duties and obligations under the Contract to the Assignee; and
- III. Assignor and Assignee guarantee Assignee's complete qualification, under the original solicitation that resulted in the Contract, to have been a bidder and to maintain itself as a contractor thereon.

The Parties agree as follows:

- 1. The above recitals II-III are true, incorporated by reference as if fully stated herein, and intended by the Assignee and the Assignor to induce the Department to enter into this Assignment.
- 2. Assignor and Assignee agree to the Assignment of the Contract.
- 3. Assignee accepts the assignment of all of Assignor's obligations, responsibilities and duties under the Contract and all of Assignor's rights, titles and interest in and to the Contract.
- 4. The Parties agree that this Assignment of the Contract establishes a new contractual relationship between the Department and Assignee and extinguishes all obligations between Assignor and Department, except as set forth in this Assignment.
- 5. The Department consents to the Assignment.
- 6. Assignor acknowledges that Assignor is liable for the obligations of the Assignor created under the Contract prior to the Assignment of the Contract and is secondarily liable for the obligations of the Assignee under section 4.29 of the Contract.
- 7. The Department does not release Assignor from any claims or remedies it may have against Assignor under the Contract.
- 8. To the extent any of the terms of this Assignment conflict with the terms of the Contract, the terms of this Assignment shall control. All other terms of the Contract remain in full force and effect.

9. Each person signing this Assignment warrants that he or she is duly authorized to do so and to bind the respective party.

IN WITNESS WHEREOF, the parties set their hands and seals as of the date first above written by their duly authorized representatives.

**State of Florida
Department of Management Services**

By: _____

Name: Erin Rock

Title: Deputy Secretary

Date: _____

**First Communications
(FEIN# 59-3133880)**

By: _____

Name: _____

Title: _____

Date: _____

**Mobile Communications of North Florida, LLC dba First Communications
(FEIN#: 46-3325861)**

By: _____

Name: _____

Title: _____

Date: _____

**Amendment 2
Contract Renewal 1
To State Term Contract 725-500-12-1
Land Mobile FM or PM Communications Equipment**

This Amendment ("Amendment") effective, as of June 30, 2014, to the Land Mobile FM or PM Communications Equipment Contract, No. 725-500-12-1 ("Contract") is effective between the State of Florida, Department of Management Services ("Department" or "Customer") and ("Contractor"). Department and Contractor are collectively referred to herein as the "Parties." All capitalized terms used herein shall have the meaning assigned to them in the Contract, unless otherwise defined herein.

1.0 CONTRACT RENEWAL

The contract is hereby renewed for two years pursuant to Section 6.0 thereof. The new contract expiration date is June 29, 2016.

2.0 CONFLICT

To the extent any of the terms of this Agreement conflict with the terms of the Contract, the terms of this Agreement shall control. All other terms of the Contract remain in full force.

3.0 WARRANTY OF AUTHORITY

Each person signing this Agreement warrants that he or she is duly authorized to do so and to bind the respective party.

4.0 REPLACEMENT CONTRACT.

A replacement contract may be established for these services prior to the expiration of this renewed contract. The replacement contract shall supersede and cause early termination of this renewed contract number 725-500-12-1.

**State of Florida,
Department of Management Services**

Contractor

By: _____

By: _____

**Name: Kelley J. Scott
Director of State Purchasing and
Title: Chief Procurement Officer**

Name: _____

Title: _____

Date: _____

Date: _____

AMENDMENT 1
TO
State Term Contract No.: 725-500-12-1
Land Mobile FM or PM Communications Equipment

This Amendment, effective as of the last date signed below, by and between the State of Florida, Department of Management Services (Department), Division of State Purchasing (Division), an agency of the State of Florida with offices at 4050 Esplanade Way, Tallahassee, Florida 32399-0950, and (Contractor), amends State Term Contract No. 725-500-12-1 (Contract).

I. REPORTING REQUIREMENTS

Section 5.8, (Contract Reporting Requirements) of ITB No. 09-725-500-A is superseded and entirely replaced with the following:

5.8 Contract Reporting Requirements

Each Contractor shall submit a sales report on a Quarterly basis. Reporting periods coincide with the State Fiscal Year:

- Quarter 1- (July-September)
- Quarter 2 - (October-December)
- Quarter 3 - (January-March)
- Quarter 4 - (April-June)

Each Quarterly Sales Report must be in Excel format and shall include:

Contractor's Name and contact information as required on the Department of Management Services "Contract Quarterly Report"

- Detail of time period covered by included data
- Total sales including detail of list price and contract price
- Transaction detail will include:

Part Number/SKU	Your product part number if applicable
Item / Service Name	Given name of Item or Service
MFG	Manufacturer, Publisher, Service Provider
Item Category	Description of the product category, according to attached table
Item Subcategory	Additional grouping for item
Product Description	Additional detail for item
Customer Name	State Agencies, Universities, Political Subdivisions, Other Eligible Users
UNSPSC Code	United Nations Standard Products and Services Code® (Not until separate written request by the Department)
Florida Commodity Code	Florida Commodity Code
UOM	Unit of Measure
UOM Description	Description of unit of measure
Volume Quantity	Number of items/services purchased/provided
Order Date	Order date
Date Delivered	Delivered date to customer
Purchase Type	Purchase Order, Payment Card, Other
List Price	List price (Market + fee contracts use market price)
Contract Price	Contracted price with state per contract terms
Additional Fields	Any new information related to your company's products/services

Failure to provide quarterly and annual sales reports, including no sales, within 30 calendar days following the end of each quarter (January, April, July, and October) and/or contract year may result in the contract supplier being found in default and termination of the contract by the Department. Upon request, the Contractor shall report to the Department, spend with certified and other minority business enterprises. Reports must include the period covered, the name, minority code and Federal Employer Identification Number of each minority vendor utilized during the period, commodities and services provided by the minority business enterprise, and the amount paid to each minority vendor on behalf of each purchasing agency ordering under the terms of this contract. Initiation and submission of the Contract Sales Summaries are to be the responsibility of the Contractor without prompting or notification by the Contract Manager. The Contractor will submit the completed Contract Sales Summary forms by email to the Contract Manager.

II. CONFLICT

To the extent any of the terms of this Agreement conflict with the terms of the Contract, the terms of this Agreement shall control. All other terms of the Contract remain in full force.

III. WARRANTY OF AUTHORITY

Each person signing this Agreement warrants that he or she is duly authorized to do so and to bind the respective party.

State of Florida,
Department of Management Services

Contractor Name:

By: _____ By: _____

Name: Kelley J. Scott

Name: _____

Title: Director of State Purchasing and
Chief Procurement Officer

Title: _____

Date: _____ Date: _____

Approved as to form and legality

By: _____

Office of the General Counsel

Date

**CONTRACT BETWEEN
FLORIDA DEPARTMENT OF MANAGEMENT SERVICES
AND
CONTRACTOR**

Contract No.: 725-500-12-1

This Contract is by and between the State of Florida, Department of Management Services (Department), Division of State Purchasing (Division), an agency of the State of Florida with offices at 4050 Esplanade Way, Tallahassee, Florida 32399-0950, and Contractor.

Whereas, the Contractor replied to the Division's Invitation to Bid ("ITB"), No.: ITB 09-725-500-A – Land Mobile FM or PM Communications Equipment, and the Department awarded to the Contractor pursuant to the terms and conditions of the ITB;

Accordingly, and in consideration of the mutual promises contained in the Contract documents, the Department and the Contractor do hereby enter into this Contract No.: 725-500-12-1.

1.0 NAME OF PROJECT

Land Mobile FM or PM Communications Equipment

2.0 SUMMARY OF THE CONTRACTUAL SERVICES / SCOPE OF WORK

Land Mobile FM or PM Communications Equipment, this state term contract includes the purchase of public-safety grade two-way voice radios (Category 1 or Category 2), and non-public safety two-way voice radios (Category 3), as well as dispatch consoles, RF Control Stations, Vehicular Repeaters, and radio equipment batteries and accessories.

3.0 SUMMARY OF PENALTY FOR FAILURE OF CONTRACTOR TO MEET TERMS & CONDITIONS

The primary penalties for failure to meet the Terms and Conditions include Termination for Convenience, Section 4.22, and Termination for Cause, Section 4.23 of ITB 09-725-500-A.

4.0 EFFECTIVE DATE

This Contract shall begin on July 1, 2011 or on the last date in which it is signed by all parties, whichever is later.

5.0 EXPIRATION DATE

This Contract shall expire June 30, 2014, unless cancelled earlier in accordance with its terms.

6.0 RENEWAL

Upon mutual written agreement, the Department and the Contractor may renew Contract No. 725-500-12-1 for up to Three (3) years pursuant to the provision of PUR 1000 Section 26 and per Section 1.2 of ITB 09-725-500-A.

7.0 INTELLECTUAL PROPERTY

The parties do not anticipate that any intellectual property will be developed as a result of this Contract.

8.0 PREFERRED PRICE

The Contractor agrees to submit to the Department, at least annually, an affidavit from an authorized representative attesting that the Contractor is in compliance with the preferred pricing provision in Section 4(b) of form PUR 1000.

9.0 EMPLOYMENT VERIFICATION

Contractor agrees that it will enroll and participate in the federal E-Verify Program for Employment Verification under the terms provided in the "Memorandum of Understanding" governing the program. Contractor further agrees to provide to the Agency, within thirty days of the effective date of this contract, documentation of such enrollment in the form of a copy of the E-Verify "Edit Company Profile" screen", which contains proof of enrollment in the E-Verify Program (this page can be accessed from the "Edit Company Profile" link on the left navigation menu of the E-Verify employer's homepage). Contractor further agrees that it will require each subcontractor that performs work under this Contract to enroll and participate in the E-Verify Program within ninety days of the effective date of this Contract or within ninety days of the effective date of the contract between the Contractor and the subcontractor, whichever is later. The Contractor shall obtain from the subcontractor(s) a copy of the "Edit Company Profile" screen indicating enrollment in the E-Verify Program and make such record(s) available to the Agency upon request. Contractor further agrees to maintain records of its participation and compliance with the provisions of the E-Verify program, including participation by its subcontractors as provided above, and to make such records available to the Agency or other authorized state entity consistent with the terms of the Memorandum of Understanding.

10.0 CONTRACT DOCUMENTS

The Contractor responded to the Department's ITB No. 09-725-500-A, titled LAND MOBILE FM OR PM COMMUNICATIONS EQUIPMENT. The Department has determined to accept the Contractor's bid and to enter into this Contract in accordance with the terms and conditions of the solicitation. The specific items awarded to Contractor, and the maximum rates Contractor may charge Customers, are identified on the attached Price Sheet.

Accordingly, and in consideration of the mutual promises contained in the Contract documents, the Department and the Contractor do hereby enter into this Contract, which is a state term contract authorized by section 287.042(2)(a) of the Florida Statutes (2001). The term of the Contract is effective from the last date signed below until June 30, 2014. The Contract consists of the following documents, which, in case of conflict, shall have priority in the order listed, and which are hereby incorporated as if fully set forth:

- Any written amendments to the Contract
- This Contract document, including Price Sheet
- Original Invitation to Bid solicitation document
- Any written Addendums issued during solicitation period
- Contractor's Invitation to Bid submittal documents
- Any purchase order under the Contract

11.0 CONTRACT MANAGEMENT

The Department employee who is primarily responsible for maintaining the Contract administration file shall be as follows:

Trey Collins, CPPB, FCCM

Purchasing Analyst
Department of Management Services
Division of State Purchasing
4050 Esplanade Way, Suite 360
Tallahassee, FL 32399-0950
(850) 488-9996 (Voice)
(850) 414-6122 (Fax)
trey.collins@dms.myflorida.com

The Department may appoint a different Contract Administrator, which shall not constitute an amendment to the Contract, by sending written notice to the Contractor. Any communication to the Department relating to the Contract shall be addressed to the Contract Administrator.

12.0 VENDOR CERTIFICATION REGARDING SCRUTINIZED COMPANIES LISTS

In executing this Contract, the Contractor certifies that it is not listed on either 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. Pursuant to section 287.135(5), F.S., the Contractor agrees the Department may immediately terminate this Contract for cause if the Contractor is found to have submitted a false certification or if the Contractor is placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List during the term of the Contract.

13.0 WARRANT OF AUTHORITY

Each person signing this Amendment warrants that he or she is duly authorized to do so and to bind the respective party.

**State of Florida,
Department of Management Services:**

Contractor:

By: _____

By: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Approved as to form and legality

By: _____
Office of the General Counsel

Date



**Invitation to Bid
(ITB)
for
Land Mobile FM or PM Communications Equipment**

ITB No. 09-725-500-A

**ITB Issue Date: January 12, 2011
Responses Due: March 8, 2011**

**Refer ALL Inquiries to:
Trey Collins
Purchasing Analyst
Division of State Purchasing
Department of Management Services
4050 Esplanade Way, Suite 360
Tallahassee, FL 32399**

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Performance Characteristics: 12.5 kHz – Category 2

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Performance Characteristics: 12.5 kHz – Category 1

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Performance Characteristics: 25 kHz - Category 1

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Section 1.0
Introduction

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1.1 Background

The State of Florida, Department of Management Services, Division of State Purchasing provides centralized statewide contracts for commodities and services for use by all state agencies, political sub-divisions (such as municipalities, cities, towns, schools, universities, etc.), and others authorized by Florida Statute to use state contracts. State Purchasing has determined that in order to assist Eligible Users in meeting the Federal Communications Commission (FCC) mandate regarding the migration to narrowband or narrowband-equivalent technology, (the first requirements begin on January 1, 2011), a new contract for products meeting the specifications outlined within this Invitation to Bid is needed.

The contract resulting from this solicitation, if any, will provide efficiency and economy for state agencies and other eligible users (OEUs) by providing a product/services and price schedule from one or more awarded providers. The resultant contract may be a multiple award; however, the State reserves the right to award the entire contract, to a single Contractor. This ITB and subsequent contract, **does not guarantee** any level of business to the awarded supplier(s).

A non-mandatory vendor pre-bid conference will be held as noted in the Event Timeline in Section 1.5. The State will use this opportunity to address general questions related to the submittal process. Technical questions may be asked during the scheduled meeting; however, any questions related to specifications or requirements of the solicitation must be addressed through the question and answer process as detailed in Section 3.8 in order to receive an official response.

The awarded supplier(s) will receive Direct Orders (DO), Purchase Orders (PO) or purchasing credit card orders (P-Card) directly from the Customer.

This solicitation includes the following Commodity Codes (description is to the right) and components thereof:

- 725-500 Radios, Two-way, Base Station Control
- 725-520 Radios, Two-way, Portable/Persona, Public Safety
- 725-522 Radios, Two-way, Portable, Personal, Utility
- 725-560 Radios, Two-way, Land Mobile Public Safety
- 725-562 Radios, Two-way, Land Mobile Utility
- 725-040 Antennas and Accessories (Radio Only)

1.2 Purpose and Scope

The State of Florida, Department of Management Services, Division of State Purchasing, invites interested Bidders to submit proposals in accordance with these solicitation documents. The purpose of this solicitation is to establish a three-year (36 month) State Term Contract with the option for three (3) one (1) year renewals in accordance with section 287.057 (14)(a.), Florida Statutes (F.S.), for the purchase of Land Mobile FM or PM Communications Equipment. The contract term is anticipated to begin on or about April 18, 2011.

The intent is to obtain the most cost effective products for the State of Florida, while maximizing the quality and level of service. Qualified companies must have

the capability to provide these products in all respects, in accordance with the solicitation documents and to the satisfaction of the Department.

1.3 Product and Service Offerings

Products available under this Contract are set forth in Section 6 of this solicitation. These offerings may be updated during the Contract term to incorporate new Product and Service offerings, price revisions, and to discontinue items no longer offered by Contractor. Offering updates must be submitted and approved as outlined in Sections 5.15 and 5.16 of this solicitation.

1.4 Contact Information

The primary contact for this solicitation is:

Trey Collins
Purchasing Analyst
State Purchasing, Department of Management Services
4050 Esplanade Way, Suite 360
Tallahassee, FL 32399-0950
Office: (850) 488-9996 (850) 414-6122 (facsimile)
Trey.Collins@dms.myflorida.com

1.5 Event Timeline

Respondents should review and become familiar with the Event Timeline. The dates and times of each activity within the Timeline may be subject to change. It is the responsibility of the Respondent to check for any changes. All changes to the Timeline will be made through an addendum to this solicitation and posted within the Vendor Bid System (http://vbs.dms.state.fl.us/vbs/main_menu).

Event	Time (EDT)	Date
ITB Release		January 12, 2011
Vendor Bid Conference – Non Mandatory 4050 Esplanade Way, Room 101 Tallahassee, FL 32399 <u>Conference Call Information</u> Call number: 1-888-808-6959; Conference Code: 4881086 <i>*SUNCOM Conferencing Service will only accept the first 120 callers</i>	2:00 PM	January 25, 2011
Deadline for Questions Submitted by email to LandMobileCommEgp@dms.myflorida.com	2:00 PM	February 1, 2011
Answers to Respondents Questions Posted		February 22, 2011
ITB Submission Deadline	2:00 PM	March 8, 2011
Posting of Intent to Award		March 29, 2011
Contract Start Date		On or about April 18, 2011

THE OFFICIAL SOLICITATION CLOSING TIME SHALL BE AS REFLECTED IN SECTION 1.5, TIMELINE.

It is strongly recommended to submit your solicitation response as early as possible. You should allow time to receive any requested assistance and to

receive verification of your submittal; waiting until the last hours of the solicitation could impact the timely submittal of your response.

Section 2.0
GENERAL INSTRUCTIONS TO RESPONDENTS [PUR1001 (10/06)]

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- 2.21 LIMITATION ON VENDOR CONTACT WITH AGENCY DURING SOLICITATION PERIOD.**

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2.1 Definitions. The definitions found in s. 60A-1.001, F.A.C. shall apply to this agreement. The following additional terms are also defined:

- (a) "Buyer" means the entity that has released the solicitation. The "Buyer" may also be the "Customer" as defined in the PUR 1000 if that entity meets the definition of both terms.
- (b) "Procurement Officer" means the Buyer's contracting personnel, as identified in the Introductory Materials.
- (c) "Respondent" means the entity that submits materials to the Buyer in accordance with these Instructions.
- (d) "Response" means the material submitted by the respondent in answering the solicitation.
- (e) "Timeline" means the list of critical dates and actions included in the Introductory Materials.

2.2 General Instructions. Potential respondents to the solicitation are encouraged to carefully review all the materials contained herein and prepare responses accordingly.

2.3 Electronic Submission of Responses. Respondents are required to submit responses electronically. For this purpose, all references herein to signatures, signing requirements, or other required acknowledgments hereby include electronic signature by means of clicking the "Submit Response" button (or other similar symbol or process) attached to or logically associated with the response created by the respondent within MyFloridaMarketPlace. The respondent agrees that the action of electronically submitting its response constitutes:

- an electronic signature on the response, generally,
- an electronic signature on any form or section specifically calling for a signature, and
- an affirmative agreement to any statement contained in the solicitation that requires a definite confirmation or acknowledgement.

2.4 Terms and Conditions. All responses are subject to the terms of the following sections of this solicitation, which, in case of conflict, shall have the order of precedence listed:

- Technical Specifications,
- Special Conditions and Instructions,
- Instructions to Respondents (PUR 1001),
- General Conditions (PUR 1000), and
- Introductory Materials.

The Buyer objects to and shall not consider any additional terms or conditions submitted by a respondent, including any appearing in documents attached as part of a respondent's response. In submitting its response, a respondent agrees that any additional terms or conditions, whether submitted intentionally or inadvertently, shall have no force or effect. Failure to comply with terms and conditions, including those specifying information that must be submitted with a response, shall be grounds for rejecting a response.

2.5 Questions. Respondents shall address all questions regarding this solicitation to the Procurement Officer. Questions must be submitted via the Q&A Board within MyFloridaMarketPlace and must be RECEIVED NO LATER THAN the time and date

reflected on the Timeline. Questions shall be answered in accordance with the Timeline. All questions submitted shall be published and answered in a manner that all respondents will be able to view. Respondents shall not contact any other employee of the Buyer or the State for information with respect to this solicitation. Each respondent is responsible for monitoring the MyFloridaMarketPlace site for new or changing information. The Buyer shall not be bound by any verbal information or by any written information that is not contained within the solicitation documents or formally noticed and issued by the Buyer's contracting personnel. Questions to the Procurement Officer or to any Buyer personnel shall not constitute formal protest of the specifications or of the solicitation, a process addressed in paragraph 19 of these Instructions.

2.6 Conflict of Interest. This solicitation is subject to chapter 112 of the Florida Statutes. Respondents shall disclose with their response the name of any officer, director, employee or other agent who is also an employee of the State. Respondents shall also disclose the name of any State employee who owns, directly or indirectly, an interest of five percent (5%) or more in the respondent or its affiliates.

2.7 Convicted Vendors. A person or affiliate placed on the convicted vendor list following a conviction for a public entity crime is prohibited from doing any of the following for a period of 36 months from the date of being placed on the convicted vendor list:

- submitting a bid on a contract to provide any goods or services to a public entity;
- submitting a bid on a contract with a public entity for the construction or repair of a public building or public work;
- submitting bids on leases of real property to a public entity;
- being awarded or performing work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and
- transacting business with any public entity in excess of the Category Two threshold amount (\$35,000) provided in section 287.017 of the Florida Statutes.

2.8 Discriminatory Vendors. An entity or affiliate placed on the discriminatory vendor list pursuant to section 287.134 of the Florida Statutes may not:

- submit a bid on a contract to provide any goods or services to a public entity;
- submit a bid on a contract with a public entity for the construction or repair of a public building or public work;
- submit bids on leases of real property to a public entity;
- be awarded or perform work as a contractor, supplier, sub-contractor, or consultant under a contract with any public entity; or
- transact business with any public entity.

2.9 Respondent's Representation and Authorization. In submitting a response, each respondent understands, represents, and acknowledges the following (if the respondent cannot so certify to any of following, the respondent shall submit with its response a written explanation of why it cannot do so).

- The respondent is not currently under suspension or debarment by the State or any other governmental authority.
- To the best of the knowledge of the person signing the response, the respondent, its affiliates, subsidiaries, directors, officers, and employees are not currently under investigation by any governmental authority and have not in the last ten (10) years

- been convicted or found liable for any act prohibited by law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract.
- Respondent currently has no delinquent obligations to the State, including a claim by the State for liquidated damages under any other contract.
 - The submission is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive response.
 - The prices and amounts have been arrived at independently and without consultation, communication, or agreement with any other respondent or potential respondent; neither the prices nor amounts, actual or approximate, have been disclosed to any respondent or potential respondent, and they will not be disclosed before the solicitation opening.
 - The respondent has fully informed the Buyer in writing of all convictions of the firm, its affiliates (as defined in section 287.133(1)(a) of the Florida Statutes), and all directors, officers, and employees of the firm and its affiliates for violation of state or federal antitrust laws with respect to a public contract for violation of any state or federal law involving fraud, bribery, collusion, conspiracy or material misrepresentation with respect to a public contract. This includes disclosure of the names of current employees who were convicted of contract crimes while in the employ of another company.
 - Neither the respondent nor any person associated with it in the capacity of owner, partner, director, officer, principal, investigator, project director, manager, auditor, or position involving the administration of federal funds:
 - Has within the preceding three years been convicted of or had a civil judgment rendered against them or is presently indicted for or otherwise criminally or civilly charged for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state, or local government transaction or public contract; violation of federal or state antitrust statutes; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; or
 - Has within a three-year period preceding this certification had one or more federal, state, or local government contracts terminated for cause or default.
 - The product offered by the respondent will conform to the specifications without exception.
 - The respondent has read and understands the Contract terms and conditions, and the submission is made in conformance with those terms and conditions.
 - If an award is made to the respondent, the respondent agrees that it intends to be legally bound to the Contract that is formed with the State.
 - The respondent has made a diligent inquiry of its employees and agents responsible for preparing, approving, or submitting the response, and has been advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, act or other conduct inconsistent with any of the statements and representations made in the response.
 - The respondent shall indemnify, defend, and hold harmless the Buyer and its employees against any cost, damage, or expense which may be incurred or be caused by any error in the respondent's preparation of its bid.
 - All information provided by, and representations made by, the respondent are material and important and will be relied upon by the Buyer in awarding the Contract. Any misstatement shall be treated as fraudulent concealment from the

Buyer of the true facts relating to submission of the bid. A misrepresentation shall be punishable under law, including, but not limited to, Chapter 817 of the Florida Statutes.

2.10 Manufacturer's Name and Approved Equivalents. Unless otherwise specified, any manufacturers' names, trade names, brand names, information or catalog numbers listed in a specification are descriptive, not restrictive. With the Buyer's prior approval, the Contractor may provide any product that meets or exceeds the applicable specifications. The Contractor shall demonstrate comparability, including appropriate catalog materials, literature, specifications, test data, etc. The Buyer shall determine in its sole discretion whether a product is acceptable as an equivalent.

2.11 Performance Qualifications. The Buyer reserves the right to investigate or inspect at any time whether the product, qualifications, or facilities offered by Respondent meet the Contract requirements. Respondent shall at all times during the Contract term remain responsive and responsible. In determining Respondent's responsibility as a vendor, the agency shall consider all information or evidence which is gathered or comes to the attention of the agency which demonstrates the Respondent's capability to fully satisfy the requirements of the solicitation and the contract.

Respondent must be prepared, if requested by the Buyer, to present evidence of experience, ability, and financial standing, as well as a statement as to plant, machinery, and capacity of the respondent for the production, distribution, and servicing of the product bid. If the Buyer determines that the conditions of the solicitation documents are not complied with, or that the product proposed to be furnished does not meet the specified requirements, or that the qualifications, financial standing, or facilities are not satisfactory, or that performance is untimely, the Buyer may reject the response or terminate the Contract. Respondent may be disqualified from receiving awards if respondent, or anyone in respondent's employment, has previously failed to perform satisfactorily in connection with public bidding or contracts. This paragraph shall not mean or imply that it is obligatory upon the Buyer to make an investigation either before or after award of the Contract, but should the Buyer elect to do so, respondent is not relieved from fulfilling all Contract requirements.

2.12 Public Opening. Responses shall be opened on the date and at the location indicated on the Timeline. Respondents may, but are not required to, attend. The Buyer may choose not to announce prices or release other materials pursuant to s. 119.071(1)(b), Florida Statutes. Any person requiring a special accommodation because of a disability should contact the Procurement Officer at least five (5) workdays prior to the solicitation opening. If you are hearing or speech impaired, please contact the Buyer by using the Florida Relay Service at (800) 955-8771 (TDD).

2.13 Electronic Posting of Notice of Intended Award. Based on the evaluation, on the date indicated on the Timeline the Buyer shall electronically post a notice of intended award at http://fcn.state.fl.us/owa_vbs/owa/vbs_main_menu. If the notice of award is delayed, in lieu of posting the notice of intended award the Buyer shall post a notice of the delay and a revised date for posting the notice of intended award. Any person who is adversely affected by the decision shall file with the Buyer a notice of protest within 72 hours after the electronic posting. The Buyer shall not provide tabulations or notices of award by telephone.

2.14 Firm Response. The Buyer may make an award within sixty (60) days after the date of the opening, during which period responses shall remain firm and shall not be withdrawn. If award is not made within sixty (60) days, the response shall remain firm until either the Buyer awards the Contract or the Buyer receives from the respondent written notice that the response is withdrawn. Any response that expresses a shorter duration may, in the Buyer's sole discretion, be accepted or rejected.

2.15 Clarifications/Revisions. Before award, the Buyer reserves the right to seek clarifications or request any information deemed necessary for proper evaluation of submissions from all respondents deemed eligible for Contract award. Failure to provide requested information may result in rejection of the response.

2.16 Minor Irregularities/Right to Reject. The Buyer reserves the right to accept or reject any and all bids, or separable portions thereof, and to waive any minor irregularity, technicality, or omission if the Buyer determines that doing so will serve the State's best interests. The Buyer may reject any response not submitted in the manner specified by the solicitation documents.

2.17 Contract Formation. The Buyer shall issue a notice of award, if any, to successful respondent(s), however, no contract shall be formed between respondent and the Buyer until the Buyer signs the Contract. The Buyer shall not be liable for any costs incurred by a respondent in preparing or producing its response or for any work performed before the Contract is effective.

2.18 Contract Overlap. Respondents shall identify any products covered by this solicitation that they are currently authorized to furnish under any state term contract. By entering into the Contract, a Contractor authorizes the Buyer to eliminate duplication between agreements in the manner the Buyer deems to be in its best interest.

2.19 Public Records. Article 1, section 24, Florida Constitution, guarantees every person access to all public records, and Section 119.011, Florida Statutes, provides a broad definition of public record. As such, all responses to a competitive solicitation are public records unless exempt by law. Any respondent claiming that its response contains information that is exempt from the public records law shall clearly segregate and mark that information and provide the specific statutory citation for such exemption.

2.20 Protests. Any protest concerning this solicitation shall be made in accordance with sections 120.57(3) and 287.042(2) of the Florida Statutes and chapter 28-110 of the Florida Administrative Code. Questions to the Procurement Officer shall not constitute formal notice of a protest. It is the Buyer's intent to ensure that specifications are written to obtain the best value for the State and that specifications are written to ensure competitiveness, fairness, necessity and reasonableness in the solicitation process.

Section 120.57(3)(b), F.S. and Section 28-110.003, Fla. Admin. Code require that a notice of protest of the solicitation documents shall be made within seventy-two hours after the posting of the solicitation.

Section 120.57(3)(a), F.S. requires the following statement to be included in the solicitation: "Failure to file a protest within the time prescribed in section 120.57(3), Florida Statutes, shall constitute a waiver of proceedings under Chapter 120, Florida Statutes."

Section 28-110.005, Fla. Admin. Code requires the following statement to be included in the solicitation: "Failure to file a protest within the time prescribed in Section 120.57(3), Florida Statutes, or failure to post the bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes."

2.21 Limitation on Vendor Contact with Agency During Solicitation Period.

Respondents to this solicitation or persons acting on their behalf may not contact, between the release of the solicitation and the end of the 72-hour period following the agency posting the notice of intended award, excluding Saturdays, Sundays, and state holidays, any employee or officer of the executive or legislative branch concerning any aspect of this solicitation, except in writing to the procurement officer or as provided in the solicitation documents. Violation of this provision may be grounds for rejecting a response.

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SECTION 3.0

SPECIAL INSTRUCTIONS TO RESPONDENTS

Special Instructions to respondents contained in this section may supersede or supplement general instructions to respondents contained in Section 2, (PUR 1001).

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3.1 Additional Definitions

The definitions found in rule 60A-1.001, F.A.C., shall apply to this agreement. The following additional terms are also defined:

- a) **“Authorized Dealer”** means an agent/reseller/dealer/subcontractor authorized by the Manufacturer, in writing, to provide products and/or services under the DIRECT SUPERVISION of the Manufacturer. The Contractor/Manufacturer is responsible for all liability, terms and conditions within the contract. If an agent is authorized to conduct business on behalf of the Manufacturer and the agent is to receive compensation from the Manufacturer for its services, then any dispute between the Manufacturer and the agent shall be resolved between the Manufacturer and the agent. The State of Florida is not a party to any agreement entered into between the Manufacturer and its agent(s).
- b) **“Department”** means the Florida Department of Management Services. The Department will be a party to the Contract. “State Purchasing,” a division within the Department’s Support Program, is responsible for administration of this solicitation and will be responsible for day-to-day administration of the Contract. State Purchasing may be reached at 4050 Esplanade Way, Suite 360, Tallahassee, FL 32399-0950, or via links posted at <http://www.myflorida.com/myflorida/business/index.html>.
- c) **“Eligible Users”** as defined in 60A-1.005, F.A.C., means all governmental agencies, which have a physical presence within the State of Florida and any independent, nonprofit college or university that is located within the State of Florida and is accredited by the Southern Association of Colleges and Schools.
- d) **“ITB”** means an Invitation to Bid. In this type of solicitation, in addition to responsible and responsive considerations, price is the primary determining factor for award. Negotiations are **NOT** a part of the solicitation process for this bid type.
- e) **“Mandatory”** - The Terms “must”, “shall”, “will”, “is required,” identify a mandatory item or factor (as opposed to “desirable”). Failure to meet a mandatory item or factor MAY result in the rejection of the Respondent’s/bidder’s proposal.
- f) **“Manufacturer”** means the entity that holds the trademark in the identified brand name.
- g) **“Manufacturer’s Price List”** means the most recent document published by the Manufacturer that details products available, model numbers, options, and prices for each.
- h) **“Operating Software”** means those routines, whether or not identified as program products that reside in the equipment and are required for the equipment to perform its intended function(s), and which interface the

operator, other Contractor-supplied programs, and user programs to the Equipment.

- i) **“Responsible Bidder”** means a bidder who has the capability in all respects to perform fully the contract requirements, and the experience, integrity, perseverance, reliability, capacity, facilities, equipment, and credit which will assure good faith performance.
- j) **“Responsive Bidder” or “Responsive Proposal”** means an offer or proposal that conforms in all material respects to the requirements set forth in the Request for Proposal. Material respects of a Request for Proposal include, but are not limited to price, quality, quantity, or delivery requirements.
- k) **“State”** means the State of Florida and its agencies.

3.2 Order of Events

Respondents will review and become familiar with the Event Timeline and solicitation documents, submit any questions to the Contact in Section 1.4 by email before the date and time specified in the Event Timeline, submit required documents, develop cost savings structures for the products and services proposed, and submit final responses on CD as detailed in Section 3.9.

The Event Timeline gives the date and time (where applicable) for major activities in the solicitation. See Section 1.5 of this solicitation document for the Event Timeline.

3.3 Order of Precedence

Potential respondents to the solicitation are encouraged to carefully review all the materials contained herein and prepare responses accordingly. In the event any conflict exists between the Special and General Instructions, those instructions specified in the Special Instructions shall prevail.

All responses are subject to the terms of the following sections of this ITB, which, in case of conflict, shall have the order of precedence listed:

- Introduction, Section 1
- Technical Specifications, Section 6
- Special Instructions to Respondents, Section 3
- Special Contract Conditions, Section 5
- General Instruction to Respondents (PUR 1001), Section 2
- General Contract Conditions (PUR 1000), Section 4
- Price Sheets, Section 7
- Other Forms, Attachments and Worksheets, Section 7

3.4 Who May Respond

Fully capable manufacturers who meet the Technical Specifications and which possesses the financial capability, experience and personnel resources to provide products and services of the scope and breadth described in this ITB may respond to this solicitation. **PLEASE NOTE: There shall be one and only one bidder per manufacturer.**

Manufacturers may use their distributor network to fulfill the requirements of the Contract. However, in each and every case, the manufacturer, not the distributor, will be held accountable for performance under the Contract and shall be the focal point for all performance issues.

The State Agencies and Eligible Users retain the right to request additional information pertaining to the Respondent's ability and qualifications to accomplish all services described in this ITB as deemed necessary during the ITB or after contract award.

The Department will accept responses from responsive and responsible Respondents that are in good standing with the State of Florida, meet product and services specifications and possess the financial capability, experience, and personnel resources to provide equipment and services of the scope and breadth described within this Invitation to Bid. Respondents must meet all requirements including, but not limited to, the following:

- Respondent must be the primary Manufacturer of Land Mobile FM or PM Communication Equipment.
- Respondents may provide any or all of the following in order to meet the varying needs of the State's Eligible Users in accordance with solicitation requirements outlined in Section 6 of this document:
 - Base Stations/Repeaters (VHF-HB, UHF, 700/800 MHz)
 - Mobiles/Portables (VHF-HB, UHF, 700/800 MHz)
 - Portable Accessories, including batteries, speakers, mikes, chargers, cases, clips, etc.
 - Vehicular Repeaters (VHF-HB, UHF, 700/800 MHz)
 - Control Stations
 - Dispatch Consoles
 - Other (see Section 6 for additional included items)
- Respondents **must** be a registered vendor in the MyFloridaMarketPlace (MFMP) Vendor Registration system to do business with the State of Florida. If you are not already a registered vendor, you may view registration information as well as other pertinent information at: <https://vendor.myfloridamarketplace.com/vms-web/spring/login?execution=e2s1>
- Respondents **must** be registered with the Florida Department of State - Division of Corporations. To check your registration or to register with the Division of Corporations, please go to: www.sunbiz.org.
- Only Respondents that are capable of Electronic Invoicing through MyFloridaMarketPlace may respond to this solicitation. See Section 7 to view the MyFloridaMarketPlace Electronic Invoicing Requirements.

- Respondents **must** be current with all MyFloridaMarketPlace (MFMP) transaction fees per Section 287.057(23), Florida Statutes, and 60A-1, Florida Administrative Code (F.A.C.).

3.5 MyFloridaMarketPlace (MFMP) ITB Overview

MyFloridaMarketPlace is the State of Florida's online eProcurement system for buyers and vendors. The system streamlines interactions between vendors and state government entities, is a source for centralized procurement activities, and provides the tools to support world-class procurement for the State of Florida.

3.6 MFMP Sourcing Tool

This solicitation will NOT be conducted using the MyFloridaMarketPlace Sourcing Tool ("Sourcing Tool"). All documents and addendums for this solicitation will be posted on the Vendor Bid System (VBS) and on State Purchasing's website at: http://dms.myflorida.com/media/purchasing/state_term_contract_files/itb_09_725_500_a

3.7 Email Notification

Respondents are reminded that the Vendor Bid System's email notifications are an option provided to respondents as a courtesy. The State of Florida is not under any obligation to provide, and does not guarantee, that respondents will receive email notifications concerning any posting, amendment, or close of solicitations (ITBs).

Vendors are responsible to check the Vendor Bid System for information and updates concerning solicitations at:

http://myflorida.com/apps/vbs/vbs_main_menu.

3.8 Questions and Comments from Respondents

The Department will facilitate a question and answer period in accordance with the Event Timeline in Section 1.5. Questions and comments will not be collected via the Q&A Board within the MFMP Sourcing Tool, but MUST BE SUBMITTED TO THE FOLLOWING EMAIL ADDRESS:

LandMobileCommEqp@dms.myflorida.com

Questions shall be received no later than the time and date reflected on the Event Timeline in Section 1.5. The Department will provide responses to the questions according to the Event Timeline as a solicitation addendum via the Vendor Bid System. All submitted questions will be published exactly as submitted along with the Department's response. Please limit submissions to one (1) question or comment per submission. Be sure to include your company's name with your submission.

3.9 Response Information

For this solicitation only, responses will **NOT** be accepted on-line via the MyFloridaMarketPlace Sourcing Tool located at:

<https://sourcing.myfloridamarketplace.com>.

This section negates the electronic response requirement in Section 2.3.

Respondents shall submit their solicitation response on one (1) CD and include one (1) identical copy (a total of two (2) CDs), sent or delivered in a sealed

envelope to the Contact listed in Section 1.4. The outer packaging of mailed CDs and documents shall clearly state: Solicitation Title (Land Mobile FM or PM Communication Equipment), Number (ITB No. 09-725-500-A), and the Solicitation Responses Due Date and Time from the Event Timeline in Section 1.5 of the solicitation.

Please Note: Faxed or e-mailed responses will not be accepted, and responses submitted other than via CD as described will be deemed non-responsive.

The CD shall include all appropriate pricing, documents, forms, files, exhibits, and information as detailed in Section 3.9 and Section 7. If no method of submission is indicated for required or requested documents or files, or if instructions to mail a specific document, form, file, or sample are provided, then those specific documents, forms, files, or samples shall be mailed to the attention of the Contact in Section 1.4 of the solicitation.

Each Respondent is responsible for ensuring that its response and all associated documents are submitted by the proper date and time in accordance with the Event Timeline, Section 1.5. Dun and Bradstreet reports must also be delivered to the address noted in Section 1.4. Failure to provide all requested information within the response package by the date and time specified may result in rejection of the response.

The Response Preparation Checklist included within this solicitation does not relieve the Respondent of responsibility for ensuring that all requirements of the solicitation are included with the submittal.

THE OFFICIAL SOLICITATION CLOSING TIME SHALL BE AS REFLECTED IN SECTION 1.5, EVENT TIMELINE.

It is strongly recommended that you submit your bid as early as possible. You should allow time to receive any requested assistance and to receive verification of your submittal; waiting until the last hours of the solicitation could impact the timely submittal of your bid.

3.9.1 Price Sheet Responses

Price Sheet Responses will be submitted in the locations and formats provided in the Price Sheets, Section 7.0.1.

All Prices will be in U.S. Dollars, (\$USD; e.g., \$99,999.99); all Discounts shall be a Percentage off MSRP to the one-hundredth decimal place (%; e.g., 99.99%); all Florida Prices listed shall be the ceiling price for the State of Florida Eligible Users. Respondents are encouraged to provide additional discount levels for volume or aggregate purchases. The Respondent shall include in the Price for each Commodity offered: any profit, administrative charges, environmental fees, handling charges, shipping charges, delivery charges to any point within the State of Florida, warranty charges, and any other charges or fees necessary to deliver the product according to the requirements, specifications, terms, and conditions, exclusive of taxes.

The Respondent may offer only the product(s) available that meet or exceed the solicitation's requirements, specifications, terms, and conditions. Should a Respondent submit a Response containing a product that does not meet or exceed the solicitation's requirements, specifications, terms, and conditions, that offer will be disqualified as non-responsive. The Department in its sole discretion shall determine the acceptability of a commodity or contractual service offered.

The Price Sheet will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide a compliant Price Sheet in the solicitation Response may result in rejection of the Response.**

3.9.2 Alternate Responses

Respondent may not submit more than one offer for each listed Communication Equipment product. Additional, optional equipment that supports the primary product must be clearly identified in your response as (a) line item(s), listed directly under the row where the primary product is identified.

3.9.3 Savings/Price Reductions

Respondent shall submit one (1) completed Savings/Price Reductions form (Section 7.0.2) with their Response containing the required savings information for each Commodity offered and a method for the Department to verify the savings information provided. The Savings/Price Reductions form will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the Savings/Price Reductions form with the Response may result in rejection of the Response.**

3.9.4 Ordering Instructions

Respondent shall submit one (1) completed Ordering Instructions form (Section 7.0.3) with their response, identifying persons responsible for taking orders for any resultant contract. The Ordering Instructions form will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the Ordering Instructions form with the Response may result in rejection of the Response.**

3.9.5 Sample Contract Page

This document is for informational purposes only. The actual contract document will be sent to vendors upon contract award. See Section 7.1.7 – (Contract) PLEASE NOTE: This document is provided for reference purposes and is not required to be submitted as part of a solicitation response. However, should the department determine to make award, submittal of this document shall be required. Any submitted original(s) will be maintained by the Department of Management Services.

3.9.6 Certification Table

Respondent shall submit one (1) completed and signed Certification Table form (Section 7.0.4) which certifies the Vendor's response to each statement listed. Answers must be indicated by either a "Yes" or "No"

response. Responses are not subject to negotiation on this solicitation, and **any “No” response may result in the rejection of the entire proposal.** The Certification Table form must be signed and submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the signed Certification Table form with the Response may result in rejection of the Response.**

3.9.7 Contact Information

Respondent shall submit one (1) completed Contact Information form (Section 7.0.5) with their Response identifying the primary and alternate persons responsible for answering questions about the Response and administering the Contract, if awarded. The Contact Information form will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the Contact Information form with the Response may result in rejection of the Response.**

3.9.8 Certification of Drug-Free Workplace

Respondent shall submit one (1) completed Certification of Drug-Free Workplace Program form (Section 7.0.6) with their Response certifying that the Respondent's company has implemented a drug free workplace program. The Drug Free Workplace form will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the Drug Free Workplace form with the Response may result in rejection of the Response.**

3.9.9 State of Florida Vendor Responsibility Questionnaire

Respondent shall submit one (1) completed State of Florida Vendor Responsibility Questionnaire (Section 7.0.7) with their Response answering all questions within the form and notarizing any parts that require a notarization. The Vendor Responsibility Questionnaire will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the State of Florida Vendor Responsibility questionnaire with the Response may result in rejection of the Response.**

3.9.10 Emergency Situations

Respondent shall submit one (1) completed Emergency Situations form (Section 7.0.8) with their Response identifying persons responsible for answering questions and assisting with order placement during emergency situations. The Emergency Situations form will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the Emergency Situations form with the Response may result in rejection of the Response.**

3.9.11 Authorized Dealers

Respondents may allow authorized dealers, as defined in Section 3.1, to provide products and services on their behalf by submitting one (1) completed Authorized Dealer form (Section 7.0.9) for each dealer/reseller the Respondent wishes to authorize to sell the Respondent's proposed products, if awarded. Respondents must provide all contact information for authorized dealers/resellers and shall be responsible for the oversight and reporting of all sales on Respondent's contract, if awarded. Dealers

receiving orders on behalf of the Contractor are required to register in MyFloridaMarketPlace and with the Division of Corporations. All authorized dealers shall be under the **DIRECT SUPERVISION** of the awarded vendor and shall follow all contract requirements.

Respondents are encouraged to utilize Certified Minority Business Enterprise (CMBE) dealers. Respondent shall identify any CMBE dealers on the Authorized Dealer Form. If no dealer/resellers are authorized as part of the vendor's proposal, Respondent shall indicate "None" on the form. Authorized Dealers form will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the Authorized Dealer form with the Response may result in rejection of the Response.**

3.9.12 References

Respondent shall submit a minimum of three (3) governmental references for Land Mobile FM or PM Communications Equipment sold in the last twenty-four (24) months. References provided should support the Contractor's ability to meet the needs of the Agency and the "Eligible Users" within the State of Florida. References must complete the form set forth in Section 7.0.10. References shall include the following: the name of the agency, university, city, county or school board; contact information; a statement indicating the specific products or services; and where it was purchased. Failure to supply the required documentation may result in disqualification of the proposal.

The State of Florida will contact the references regarding the products/services provided. The References form will be submitted to the Department via CD in accordance with Section 3.9. **Failure to provide the References form with the Response may result in rejection of the Response.**

3.9.13 Manufacturer's Authorization Form

Manufacturer's Authorization form (Section 7.0.11) will be submitted to the Department via CD in accordance with Section 3.9. **Failure to submit a Manufacturer's Authorization form may result in the rejection of the response or the elimination of eligibility for that product.**

3.10 Basis for Award

The Department intends to make multiple awards statewide to the lowest priced responsive and responsible Respondent(s) by the categories within the Technical Specification class. Multiple awards may be made to Respondents within ten percent (10%) of the lowest bidder for a Category.

The Department reserves the right to make awards as determined to be in the best interest of the State of Florida, and to accept or reject any and all offers, or separable portions, and to waive any minor irregularity, technicality, or omission if the Department determines that doing so will serve the State of Florida's best interest.

Note: Eligible Users utilizing the Contract, if awarded, shall be encouraged to conduct business with the lowest total cost awarded Contractor per Category.

3.11 Estimated Sales

The Department anticipates state agency and other eligible user annual spend to be approximately \$5 million. The State believes that the potential for additional sales may actually be higher; however, Respondents are reminded that these figures do not represent any guarantee on the number of orders or continued spend by the agencies or other eligible users. The figures provided here should only be used as a guideline for preparing your response and should not be construed as representing actual commitment figures under the contract.

To assist vendors, eligible users were surveyed to determine anticipated annual spend for the next 1 – 5 years in the following categories. **Please Note: Anticipated purchases do not constitute a guarantee of any purchase, but are provided simply to assist vendors with their response.** Fifty-five entities responded to the survey with the following results.

3,387	Option 1 Radios	(Includes MIL – STD- 810D, 810E or 810F Standards)
7,900	Option 2 Radios	(does not include MIL Standards)
869	Option 3 Radios	(Utility use, Non-Public Safety standards)
459	Base Stations/Repeaters	(VHF-HB, UHF, 700/800 MHz)
11,558	Mobiles/Portable	(VHF-HB, UHF, 700/800 MHz)
18,595	Portable Accessories	including batteries, speakers, mikes, chargers, cases, clips, etc.
66	Vehicular Repeaters	(VHF-HB, UHF, 700/800 MHz)
327	Control Stations	
124	Dispatch Consoles	

3.12 Addenda to the ITB Documents

The Department reserves the right to issue addenda to this ITB. Notice of any addenda will be posted within the Vendor Bid System (VBS). Such notice, if required, will contain the appropriate details for identifying and/or reviewing the formal changes to this ITB. Each Respondent is responsible for monitoring the site for new or changing information concerning this ITB.

3.13 Initial Determination of Responsiveness

The Department shall review eligible (“responsible and responsive”) responses. Responses that do not meet the minimum requirements of this solicitation; or fail to provide all required information, documents, or materials may be rejected as non-responsive. Respondents whose responses, past performance, or current status with the State that do not reflect the capability, integrity or reliability to fully, and in good faith, perform the requirements of the Contract, may be rejected. The Department reserves the right to determine which responses meet the requirements of this solicitation, and which Respondents are responsive and responsible. **This paragraph is in addition to, and shall not be construed to limit or override, any right or remedy available to the Department in Section 2 (PUR 1001) or Section 4 (PUR 1000).**

Failure to comply with each of the requirements listed below may result in the response being deemed non-responsive and therefore may not receive further

consideration in this ITB process. The Requirements include but are not limited to the following:

Initial Responsiveness Checklist	
1.	Did the Respondent submit its reply <u>before</u> the indicated deadline?
2.	Did the Respondent submit a detailed pricing structure indicating the minimum percentage discount?
3.	Did the Respondent submit a Supplier Qualifier Report (SQR) from Dun & Bradstreet (D&B)? (See Section 3.14)
4.	Has the Respondent met the requirement for having no Conflicts of Interest? (See PUR 1001, Section 2.6)
5.	Does the Respondent comply with the requirement for not being placed on the Convicted Vendor list for committing a public entity crime within the last 36 months? (See Section 2.7)
6.	Does the Respondent comply with the requirement for not being placed on the Discriminatory Vendor List per Section 287.134, F.S.? (See Section 2.8)
7.	Is the Respondent on the Suspended Vendor List?
8.	Does the Respondent have any open Complaints to Vendor? (DMS will determine if open complaints would prevent a vendor from being considered)
9.	Did the Respondent submit all forms, reports, or documents identified within the solicitation as required, and submit product and pricing information?
10.	Is the Respondent a registered vendor in the MFMP Vendor Registration System?
11.	Is the Respondent properly registered with the Department of State, Division of Corporations?
12.	Does the Respondent owe any MFMP transaction fees?

3.14 Initial Determination of Responsible Respondents

The Department shall review responsive offers. Responses that do not meet all requirements of the solicitation or fail to provide all required information, documents, or materials may be rejected as non-responsive. Respondents whose Responses, past performance, or current status do not reflect the capability, integrity, or reliability to fully and in good faith perform the requirements of this Contract may be rejected as non-responsible. The Department reserves the right to determine which Responses meet the requirements of this solicitation, and which Respondents are responsive and responsible.

Financials (Supplier Qualifier Report):

Each Respondent is required to provide information regarding its “Financial and Industry Standing and Strength” in order to demonstrate that it is financially stable, in good standing with creditors and manufacturers, and has the resources necessary to perform the services outlined in this ITB on a state-wide basis. The State requires each Respondent to provide a Supplier Qualifier Report (SQR) prepared by Dun & Bradstreet (D&B), in accordance with the instructions below. The SQR is a standard report that details financial and operational capabilities. This report must be submitted to the Department **prior to the proposal opening**

date and time. Each Respondent will be responsible for the cost and timely submission of this report.

The prospective Contractor will request the SQR from D&B at:

<https://sor.dnb.com/sor/jsp/forms/SOF.jsp?SORTAG1=JQ37hS4r&SORTAG2=i58Gjk4x>

- Enter the ITB number in the text field entitled “Enter your ITB Number” and select “Submit.”
- Enter your company’s Dun Number. (If you do not know your company’s Dun number, you may use the search feature to find it.)
- Confirm Registration
- Enter payment method and information and complete registration. The cost of the preparation of the D&B report shall be the responsibility of the Respondent.

Respondents are advised to allow a minimum of ten (10) business days for D&B to process a report request. If the Department does not receive an SQR from D&B prior to the opening date and time of the solicitation but one is submitted as part of a Respondent’s Response, the Respondent shall be required to demonstrate that it requested the SQR after the posting date of the ITB and that the SQR was requested for this particular solicitation. Once the process is complete, a copy of the report will be provided to the Department and an identical report will be sent to the Respondent. If the Department does not receive a report or cannot determine on the face of the document that the SQR is that of the proposing entity, then the Department may reject the Respondent’s Response. It is the responsibility of the Respondent to ensure the timely submission of a D&B report to the Department prior to the opening date of the proposals.

Note: If your company is not eligible for a Dun and Bradstreet report (privately held), please include financial statements for the last three years, in accordance with Generally Accepted Accounting Principles.

3.15 Electronic Posting of Intent to Award

Offers shall be opened on the date and time indicated on the Event Timeline (“Timeline”), and thereafter evaluated. After the evaluation is completed, the Department shall electronically post a notice of intent to award on the Vendor Bid System on the date indicated on the Timeline. If the award is delayed, in lieu of posting it on the date indicated on the Timeline, the Department shall post a notice of the delay and a revised date for posting the ranking or notice of intent to award. Any person who is adversely affected by the decision shall file with the Department a notice of protest within 72 hours after the electronic posting (see Section 2.20 of the General Instructions (PUR 1001) for more information on protests). The Department shall not provide reply rankings or notices of award by telephone.

3.16 State Objectives

Within thirty (30) calendar days following award of the Contract, the successful Respondent shall submit plans addressing each of the State’s five (5) objectives listed below, to the extent applicable to the items / services covered by this solicitation.

3.16.1 Diversity

The State of Florida is committed to supporting its diverse business industry and population through ensuring participation by minority-, women-, and service-disabled veteran business enterprises in the economic life of the state. The State of Florida Mentor Protégé Program connects minority-, women-, and service-disabled veteran business enterprises with private corporations for business development mentoring. We strongly encourage firms doing business with the State of Florida to consider this initiative. For more information on the Mentor Protégé Program, please contact the Office of Supplier Diversity at (850) 487-0915.

The state is dedicated to fostering the continued development and economic growth of small, minority-, women-, and service-disabled veteran business enterprises. Participation by a diverse group of Vendors doing business with the state is central to this effort. To this end, it is vital that small, minority-, women-, and service-disabled veteran business enterprises participate in the state's procurement process as both Contractors and sub- contractors in this solicitation. Small, minority-, women-, and service-disabled veteran business enterprises are strongly encouraged to contribute to this solicitation.

The Contractor shall submit documentation addressing diversity and describing the efforts being made to encourage the participation of small, minority-, women-, and service-disabled veteran business enterprises

Information on Certified Minority Business Enterprises (CMBE) and Certified Service-Disabled Veteran Business Enterprises (CSDVBE) is available from the Office of Supplier Diversity at:

http://dms.myflorida.com/other_programs/office_of_supplier_diversity_osd/.

Quarterly Reports of revenue paid to certified W/MBE and certified SDVBE contractors (agents or subcontractors) as a result of any award shall be provided to the Agency Purchasing Office by the Prime Contractor on an Agency by Agency (or other eligible user) level.

3.16.2 Environmental Considerations

Florida Governor Charlie Crist signed Executive Order 07-126, titled "Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government"; Executive Order 07-127, "Immediate Actions to Reduce Greenhouse Gas Emissions within Florida"; and Executive Order 07-128, "Florida Governor's Action Team on Energy and Climate Change."

The State supports and encourages initiatives to protect and preserve our environment. The Prime Contractor shall submit as part of any response the Prime Contractor's plan to support the procurement of products and materials with recycled content. The Prime Contractor shall also provide a plan for reducing and or handling of any hazardous waste generated by Prime Contractor's company. Reference Rule 62-730.160, Florida Administrative Code. It is a requirement of the Florida Department of Environmental Protection that a generator of hazardous waste materials that exceeds a

certain threshold must have a valid and current Hazardous Waste Generator Identification Number. This identification number shall be submitted as part of Prime Contractor's explanation of its company's hazardous waste plan and shall explain in detail its handling and disposal of this waste.

Describe what efforts your company (as Contractor) will take to encourage the participation and support of these and other environmental programs.

3.16.3 Certification of Drug-Free Workplace Program

The State supports and encourages initiatives to keep the workplaces of Florida's Suppliers and Prime Contractors drug free. Section 287.087 of the Florida Statutes provides that, where identical tie responses are received, preference shall be given to a response received from a Respondent that certifies it has implemented a drug-free workforce program. If applicable, Respondent shall certify that the Respondent has a drug-free workplace program using the "Certification of Drug-Free Workplace" as provided in Sourcing Tool for this solicitation. The Prime Contractor shall describe how it will address the implementation of a drug free workplace in offering the items of the solicitation. Certification shall be submitted (in the Sourcing Tool) using the form in Section 7.07 and as outlined in.

3.16.4 Products Available from the Blind or Other Handicapped (RESPECT)

The State supports and encourages the gainful employment of citizens with disabilities. It is expressly understood and agreed that any articles that are the subject of, or required to carry out, this Contract shall be purchased from a nonprofit agency for the blind or for the severely handicapped that is qualified pursuant to Chapter 413, Florida Statutes, in the same manner and under the same procedures set forth in Section 413.036(1) and (2), Florida Statutes; and for purposes of this Contract the person, firm, or other business entity carrying out the provisions of this Contract shall be deemed to be substituted for the state agency insofar as dealings with such qualified nonprofit agency are concerned. Additional information about the designated nonprofit agency and the products it offers is available at <http://www.respectofflorida.org>.

The Respondent shall describe how it will address the use of RESPECT in offering the items of the solicitation.

3.16.5 Prison Rehabilitative Industries and Diversified Enterprises, Inc. (PRIDE)

The State supports and encourages the use of Florida correctional work programs. It is expressly understood and agreed that any articles which are the subject of, or required to carry out, this Contract shall be purchased from the corporation identified under Chapter 946, F.S., in the same manner and under the same procedures set forth in Section 946.515(2), and (4), F.S.; and for purposes of this Contract the person, firm, or other business entity carrying out the provisions of this Contract shall be deemed to be substituted for this agency insofar as dealings with such corporation are concerned. Additional information about PRIDE and the products it offers is available at <http://www.pride-enterprises.org/>.

The Prime Contractor shall describe how it will address the use of PRIDE in offering the items of the solicitation.

3.17 Firm Response

The Department may make an award within one hundred eighty (180) days after the date of the opening, during which period responses shall remain firm and shall not be withdrawn. If award is not made within one hundred eighty (180), the response shall remain firm until either the Department awards the Contract or the Department receives from the Respondent written notice that the response is withdrawn. Any response that expresses a shorter duration may, at the Buyer's sole discretion, be accepted or rejected.

3.18 Lobbying

The Service Provider or Respondent shall not lobby the legislative, judicial, or executive branches, or any State Agency about any aspect of this Contract during the procurement process (i.e. from the time the Contract is advertised to the execution of the Contract) associated with the Contract. Violation of this restriction may be cause for disqualification from the procurement process. Respondents are advised that the following will be included in the Contract for these services:

In accordance with Section 216.347, Florida Statutes, and as provided herein, the Service Provider or Contractor may not expend any State funds for the purpose of lobbying the legislature, the judicial branch, the executive branch, or any State Agency.

4.0 GENERAL CONTRACT CONDITIONS (PUR 1000) REV. 10/06)

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4.1. Definitions. The definitions contained in s. 60A-1.001, F.A.C. shall apply to this agreement. The following additional terms are also defined:

(a) “Contract” means the legally enforceable agreement that results from a successful solicitation. The parties to the Contract will be the Customer and Contractor.

(b) “Customer” means the State agency or other entity identified in a contract as the party to receive commodities or contractual services pursuant to a contract or that orders commodities or contractual services via purchase order or other contractual instrument from the Contractor under the Contract. The “Customer” may also be the “Buyer” as defined in the PUR 1001 if it meets the definition of both terms.

(c) “Product” means any deliverable under the Contract, which may include commodities, services, technology or software.

(d) “Purchase order” means the form or format a Customer uses to make a purchase under the Contract (e.g., a formal written purchase order, electronic purchase order, procurement card, contract or other authorized means).

4.2. Purchase Orders. In contracts where commodities or services are ordered by the Customer via purchase order, Contractor shall not deliver or furnish products until a Customer transmits a purchase order. All purchase orders shall bear the Contract or solicitation number, shall be placed by the Customer directly with the Contractor, and shall be deemed to incorporate by reference the Contract and solicitation terms and conditions. Any discrepancy between the Contract terms and the terms stated on the Contractor’s order form, confirmation, or acknowledgement shall be resolved in favor of terms most favorable to the Customer. A purchase order for services within the ambit of section 287.058(1) of the Florida Statutes shall be deemed to incorporate by reference the requirements of subparagraphs (a) through (f) thereof. Customers shall designate a contract manager and a contract administrator as required by subsections 287.057(15) and (16) of the Florida Statutes.

4.3. Product Version. Purchase orders shall be deemed to reference a manufacturer’s most recently release model or version of the product at the time of the order, unless the Customer specifically requests in writing an earlier model or version and the contractor is willing to provide such model or version.

4.4. Price Changes Applicable only to Term Contracts. If this is a term contract for commodities or services, the following provisions apply.

(a) Quantity Discounts. Contractors are urged to offer additional discounts for one time delivery of large single orders. Customers should seek to negotiate additional price concessions on quantity purchases of any products offered under the Contract. State Customers shall document their files accordingly.

(b) Best Pricing Offer. During the Contract term, if the Customer becomes aware of better pricing offered by the Contractor for substantially the same or a smaller quantity of a product outside the Contract, but upon the same or similar terms of the Contract, then at the discretion of the Customer the price under the Contract shall be immediately reduced to the lower price.

(c) Sales Promotions. In addition to decreasing prices for the balance of the Contract term due to a change in market conditions, a Contractor may conduct sales promotions involving price reductions for a specified lesser period. A Contractor shall submit to the Contract Specialist documentation identifying the proposed (1) starting and ending dates of the promotion, (2) products involved, and (3) promotional prices compared to then-authorized prices. Promotional prices shall be available to all Customers. Upon approval, the Contractor shall provide conspicuous notice of the promotion.

(d) Trade-In. Customers may trade-in equipment when making purchases from the Contract. A trade-in shall be negotiated between the Customer and the Contractor. Customers are obligated to actively seek current fair market value when trading equipment, and to keep accurate records of the process. For State agencies, it may be necessary to provide documentation to the Department of Financial Services and to the agency property custodian pursuant to Chapter 273, F.S.

(e) Equitable Adjustment. The Customer may, in its sole discretion, make an equitable adjustment in the Contract terms or pricing if pricing or availability of supply is affected by extreme and unforeseen volatility in the marketplace, that is, by circumstances that satisfy all the following criteria: (1) the volatility is due to causes wholly beyond the Contractor's control, (2) the volatility affects the marketplace or industry, not just the particular Contract source of supply, (3) the effect on pricing or availability of supply is substantial, and (4) the volatility so affects the Contractor that continued performance of the Contract would result in a substantial loss.

4.5. Additional Quantities. For a period not exceeding ninety (90) days from the date of solicitation award, the Customer reserves the right to acquire additional quantities up to the amount shown on the solicitation but not to exceed the threshold for Category Two at the prices submitted in the response to the solicitation.

4.6. Packaging. Tangible product shall be securely and properly packed for shipment, storage, and stocking in appropriate, clearly labeled, shipping containers and according to accepted commercial practice, without extra charge for packing materials, cases, or other types of containers. All containers and packaging shall become and remain Customer's property.

4.7. Inspection at Contractor's Site. The Customer reserves the right to inspect, at any reasonable time with prior notice, the equipment or product or plant or other facilities of a Contractor to assess conformity with Contract requirements and to determine whether they are adequate and suitable for proper and effective Contract performance.

4.8. Safety Standards. All manufactured items and fabricated assemblies subject to operation under pressure, operation by connection to an electric source, or operation involving connection to a manufactured, natural, or LP gas source shall be constructed and approved in a manner acceptable to the appropriate State inspector. Acceptability customarily requires, at a minimum, identification marking of the appropriate safety standard organization, where such approvals of listings have been established for the type of device offered and furnished, for example: the American Society of Mechanical Engineers for pressure vessels; the Underwriters Laboratories and/or National Electrical Manufacturers' Association for electrically operated assemblies; and the American Gas Association for gas-operated assemblies. In addition, all items furnished shall meet all

applicable requirements of the Occupational Safety and Health Act and state and federal requirements relating to clean air and water pollution.

4.9. Americans with Disabilities Act. Contractors should identify any products that may be used or adapted for use by visually, hearing, or other physically impaired individuals.

4.10. Literature. Upon request, the Contractor shall furnish literature reasonably related to the product offered, for example, user manuals, price schedules, catalogs, descriptive brochures, etc.

4.11. Transportation and Delivery. Prices shall include all charges for packing, handling, freight, distribution, and inside delivery. Transportation of goods shall be FOB Destination to any point within thirty (30) days after the Customer places an Order. A Contractor, within five (5) days after receiving a purchase order, shall notify the Customer of any potential delivery delays. Evidence of inability or intentional delays shall be cause for Contract cancellation and Contractor suspension.

4.12. Installation. Where installation is required, Contractor shall be responsible for placing and installing the product in the required locations at no additional charge, unless otherwise designated on the Contract or purchase order. Contractor's authorized product and price list shall clearly and separately identify any additional installation charges. All materials used in the installation shall be of good quality and shall be free of defects that would diminish the appearance of the product or render it structurally or operationally unsound. Installation includes the furnishing of any equipment, rigging, and materials required to install or replace the product in the proper location. Contractor shall protect the site from damage and shall repair damages or injury caused during installation by Contractor or its employees or agents. If any alteration, dismantling, excavation, etc., is required to achieve installation, the Contractor shall promptly restore the structure or site to its original condition. Contractor shall perform installation work so as to cause the least inconvenience and interference with Customers and with proper consideration of others on site. Upon completion of the installation, the location and surrounding area of work shall be left clean and in a neat and unobstructed condition, with everything in satisfactory repair and order.

4.13. Risk of Loss. Matters of inspection and acceptance are addressed in s. 215.422, F.S. Until acceptance, risk of loss or damage shall remain with the Contractor. The Contractor shall be responsible for filing, processing, and collecting all damage claims. To assist the Contractor with damage claims, the Customer shall: record any evidence of visible damage on all copies of the delivering carrier's Bill of Lading; report damages to the carrier and the Contractor; and provide the Contractor with a copy of the carrier's Bill of Lading and damage inspection report. When a Customer rejects a product, Contractor shall remove it from the premises within ten days after notification or rejection. Upon rejection notification, the risk of loss of rejected or non-conforming product shall remain with the Contractor. Rejected product not removed by the Contractor within ten days shall be deemed abandoned by the Contractor, and the Customer shall have the right to dispose of it as its own property. Contractor shall reimburse the Customer for costs and expenses incurred in storing or effecting removal or disposition of rejected product.

4.14. Transaction Fee. The State of Florida has instituted MyFloridaMarketPlace, a statewide eProcurement System ("System"). Pursuant to section 287.057(23), Florida

Statutes (2002), all payments shall be assessed a Transaction Fee of one percent (1.0%), which the Contractor shall pay to the State, unless exempt pursuant to 60A-1.032, F.A.C.

For payments within the State accounting system (FLAIR or its successor), the Transaction Fee shall, when possible, be automatically deducted from payments to the Contractor. If automatic deduction is not possible, the Contractor shall pay the Transaction Fee pursuant to Rule 60A-1.031(2), F.A.C. By submission of these reports and corresponding payments, Contractor certifies their correctness. All such reports and payments shall be subject to audit by the State or its designee.

Contractor shall receive a credit for any Transaction Fee paid by the Contractor for the purchase of any item(s) if such item(s) are returned to the Contractor through no fault, act, or omission of the Contractor. Notwithstanding the foregoing, a Transaction Fee is non-refundable when an item is rejected or returned, or declined, due to the Contractor's failure to perform or comply with specifications or requirements of the agreement.

Failure to comply with these requirements shall constitute grounds for declaring the Contractor in default and recovering procurement costs from the Contractor in addition to all outstanding fees. **CONTRACTORS DELINQUENT IN PAYING TRANSACTION FEES MAY BE SUBJECT TO BEING REMOVED FROM THE DEPARTMENT OF MANAGEMENT SERVICES' VENDOR LIST AS PROVIDED IN RULE 60A-1.006, F.A.C.**

4.15. Invoicing and Payment. Invoices shall contain the Contract number, purchase order number if applicable, and the appropriate vendor identification number. The State may require any other information from the Contractor that the State deems necessary to verify any purchase order placed under the Contract.

At the State's option, Contractors may be required to invoice electronically pursuant to guidelines of the Department of Management Services. Current guidelines require that Contractor supply electronic invoices in lieu of paper-based invoices for those transactions processed through the system. Electronic invoices shall be submitted to the Customer through the Ariba Supplier Network (ASN) in one of the following mechanisms – EDI 810, cXML, or web-based invoice entry within the ASN.

Payment shall be made in accordance with sections 215.422 and 287.0585 of the Florida Statutes, which govern time limits for payment of invoices. Invoices that must be returned to a Contractor due to preparation errors will result in a delay in payment. Contractors may call (850) 413-7269 Monday through Friday to inquire about the status of payments by State Agencies. The Customer is responsible for all payments under the Contract. A Customer's failure to pay, or delay in payment, shall not constitute a breach of the Contract and shall not relieve the Contractor of its obligations to the Department or to other Customers.

4.16. Taxes. The State does not pay Federal excise or sales taxes on direct purchases of tangible personal property. The State will not pay for any personal property taxes levied on the Contractor or for any taxes levied on employees' wages. Any exceptions to this paragraph shall be explicitly noted by the Customer in the special contract conditions section of the solicitation or in the Contract or purchase order.

4.17. Governmental Restrictions. If the Contractor believes that any governmental restrictions have been imposed that require alteration of the material, quality, workmanship or performance of the products offered under the Contract, the Contractor shall immediately notify the Customer in writing, indicating the specific restriction. The

Customer reserves the right and the complete discretion to accept any such alteration or to cancel the Contract at no further expense to the Customer.

4.18. Lobbying and Integrity. Customers shall ensure compliance with Section 11.062, FS and Section 216.347, FS. The Contractor shall not, in connection with this or any other agreement with the State, directly or indirectly (1) offer, confer, or agree to confer any pecuniary benefit on anyone as consideration for any State officer or employee's decision, opinion, recommendation, vote, other exercise of discretion, or violation of a known legal duty, or (2) offer, give, or agree to give to anyone any gratuity for the benefit of, or at the direction or request of, any State officer or employee. For purposes of clause (2), "gratuity" means any payment of more than nominal monetary value in the form of cash, travel, entertainment, gifts, meals, lodging, loans, subscriptions, advances, deposits of money, services, employment, or contracts of any kind. Upon request of the Customer's Inspector General, or other authorized State official, the Contractor shall provide any type of information the Inspector General deems relevant to the Contractor's integrity or responsibility. Such information may include, but shall not be limited to, the Contractor's business or financial records, documents, or files of any type or form that refer to or relate to the Contract. The Contractor shall retain such records for the longer of (1) three years after the expiration of the Contract or (2) the period required by the General Records Schedules maintained by the Florida Department of State (available at: <http://dliis.dos.state.fl.us/barm/genschedules/gensched.htm>). The Contractor agrees to reimburse the State for the reasonable costs of investigation incurred by the Inspector General or other authorized State official for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the State which results in the suspension or debarment of the Contractor. Such costs shall include, but shall not be limited to: salaries of investigators, including overtime; travel and lodging expenses; and expert witness and documentary fees. The Contractor shall not be responsible for any costs of investigations that do not result in the Contractor's suspension or debarment.

4.19. Indemnification. The Contractor shall be fully liable for the actions of its agents, employees, partners, or subcontractors and shall fully indemnify, defend, and hold harmless the State and Customers, and their officers, agents, and employees, from suits, actions, damages, and costs of every name and description, including attorneys' fees, arising from or relating to personal injury and damage to real or personal tangible property alleged to be caused in whole or in part by Contractor, its agents, employees, partners, or subcontractors, provided, however, that the Contractor shall not indemnify for that portion of any loss or damages proximately caused by the negligent act or omission of the State or a Customer.

Further, the Contractor shall fully indemnify, defend, and hold harmless the State and Customers from any suits, actions, damages, and costs of every name and description, including attorneys' fees, arising from or relating to violation or infringement of a trademark, copyright, patent, trade secret or intellectual property right, provided, however, that the foregoing obligation shall not apply to a Customer's misuse or modification of Contractor's products or a Customer's operation or use of Contractor's products in a manner not contemplated by the Contract or the purchase order. If any product is the subject of an infringement suit, or in the Contractor's opinion is likely to become the subject of such a suit, the Contractor may at its sole expense procure for the Customer the right to continue using the product or to modify it to become non-infringing. If the Contractor is not reasonably able to modify or otherwise secure the Customer the right to continue using the product, the Contractor shall remove the product and refund the Customer the

amounts paid in excess of a reasonable rental for past use. The customer shall not be liable for any royalties.

The Contractor's obligations under the preceding two paragraphs with respect to any legal action are contingent upon the State or Customer giving the Contractor (1) written notice of any action or threatened action, (2) the opportunity to take over and settle or defend any such action at Contractor's sole expense, and (3) assistance in defending the action at Contractor's sole expense. The Contractor shall not be liable for any cost, expense, or compromise incurred or made by the State or Customer in any legal action without the Contractor's prior written consent, which shall not be unreasonably withheld.

4.20. Limitation of Liability. For all claims against the Contractor under any contract or purchase order, and regardless of the basis on which the claim is made, the Contractor's liability under a contract or purchase order for direct damages shall be limited to the greater of \$100,000, the dollar amount of the contract or purchase order, or two times the charges rendered by the Contractor under the purchase order. This limitation shall not apply to claims arising under the Indemnity paragraph contain in this agreement.

Unless otherwise specifically enumerated in the Contract or in the purchase order, no party shall be liable to another for special, indirect, punitive, or consequential damages, including lost data or records (unless the contract or purchase order requires the Contractor to back-up data or records), even if the party has been advised that such damages are possible. No party shall be liable for lost profits, lost revenue, or lost institutional operating savings. The State and Customer may, in addition to other remedies available to them at law or equity and upon notice to the Contractor, retain such monies from amounts due Contractor as may be necessary to satisfy any claim for damages, penalties, costs and the like asserted by or against them. The State may set off any liability or other obligation of the Contractor or its affiliates to the State against any payments due the Contractor under any contract with the State.

4.21. Suspension of Work. The Customer may in its sole discretion suspend any or all activities under the Contract or purchase order, at any time, when in the best interests of the State to do so. The Customer shall provide the Contractor written notice outlining the particulars of suspension. Examples of the reason for suspension include, but are not limited to, budgetary constraints, declaration of emergency, or other such circumstances. After receiving a suspension notice, the Contractor shall comply with the notice and shall not accept any purchase orders. Within ninety days, or any longer period agreed to by the Contractor, the Customer shall either (1) issue a notice authorizing resumption of work, at which time activity shall resume, or (2) terminate the Contract or purchase order. Suspension of work shall not entitle the Contractor to any additional compensation.

4.22. Termination for Convenience. The Customer, by written notice to the Contractor, may terminate the Contract in whole or in part when the Customer determines in its sole discretion that it is in the State's interest to do so. The Contractor shall not furnish any product after it receives the notice of termination, except as necessary to complete the continued portion of the Contract, if any. The Contractor shall not be entitled to recover any cancellation charges or lost profits.

4.23. Termination for Cause. The Customer may terminate the Contract if the Contractor fails to (1) deliver the product within the time specified in the Contract or any extension, (2) maintain adequate progress, thus endangering performance of the Contract, (3) honor

any term of the Contract, or (4) abide by any statutory, regulatory, or licensing requirement. Rule 60A-1.006(3), F.A.C., governs the procedure and consequences of default. The Contractor shall continue work on any work not terminated. Except for defaults of subcontractors at any tier, the Contractor shall not be liable for any excess costs if the failure to perform the Contract arises from events completely beyond the control, and without the fault or negligence, of the Contractor. If the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is completely beyond the control of both the Contractor and the subcontractor, and without the fault or negligence of either, the Contractor shall not be liable for any excess costs for failure to perform, unless the subcontracted products were obtainable from other sources in sufficient time for the Contractor to meet the required delivery schedule. If, after termination, it is determined that the Contractor was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Customer. The rights and remedies of the Customer in this clause are in addition to any other rights and remedies provided by law or under the Contract.

4.24. Force Majeure, Notice of Delay, and No Damages for Delay. The Contractor shall not be responsible for delay resulting from its failure to perform if neither the fault nor the negligence of the Contractor or its employees or agents contributed to the delay and the delay is due directly to acts of God, wars, acts of public enemies, strikes, fires, floods, or other similar cause wholly beyond the Contractor's control, or for any of the foregoing that affect subcontractors or suppliers if no alternate source of supply is available to the Contractor. In case of any delay the Contractor believes is excusable, the Contractor shall notify the Customer in writing of the delay or potential delay and describe the cause of the delay either (1) within ten (10) days after the cause that creates or will create the delay first arose, if the Contractor could reasonably foresee that a delay could occur as a result, or (2) if delay is not reasonably foreseeable, within five (5) days after the date the Contractor first had reason to believe that a delay could result. **THE FOREGOING SHALL CONSTITUTE THE CONTRACTOR'S SOLE REMEDY OR EXCUSE WITH RESPECT TO DELAY.** Providing notice in strict accordance with this paragraph is a condition precedent to such remedy. No claim for damages, other than for an extension of time, shall be asserted against the Customer. The Contractor shall not be entitled to an increase in the Contract price or payment of any kind from the Customer for direct, indirect, consequential, impact or other costs, expenses or damages, including but not limited to costs of acceleration or inefficiency, arising because of delay, disruption, interference, or hindrance from any cause whatsoever. If performance is suspended or delayed, in whole or in part, due to any of the causes described in this paragraph, after the causes have ceased to exist the Contractor shall perform at no increased cost, unless the Customer determines, in its sole discretion, that the delay will significantly impair the value of the Contract to the State or to Customers, in which case the Customer may (1) accept allocated performance or deliveries from the Contractor, provided that the Contractor grants preferential treatment to Customers with respect to products subjected to allocation, or (2) purchase from other sources (without recourse to and by the Contractor for the related costs and expenses) to replace all or part of the products that are the subject of the delay, which purchases may be deducted from the Contract quantity, or (3) terminate the Contract in whole or in part.

4.25. Changes. The Customer may unilaterally require, by written order, changes altering, adding to, or deducting from the Contract specifications, provided that such changes are within the general scope of the Contract. The Customer may make an equitable

adjustment in the Contract price or delivery date if the change affects the cost or time of performance. Such equitable adjustments require the written consent of the Contractor, which shall not be unreasonably withheld. If unusual quantity requirements arise, the Customer may solicit separate bids to satisfy them.

4.26. Renewal. Upon mutual agreement, the Customer and the Contractor may renew the Contract, in whole or in part, for a period that may not exceed 3 years or the term of the contract, whichever period is longer. Any renewal shall specify the renewal price, as set forth in the solicitation response. The renewal must be in writing and signed by both parties, and is contingent upon satisfactory performance evaluations and subject to availability of funds.

4.27. Purchase Order Duration. Purchase orders issued pursuant to a state term or agency contract must be received by the Contractor no later than close of business on the last day of the contract's term to be considered timely. The Contractor is obliged to fill those orders in accordance with the contract's terms and conditions. Purchase orders received by the contractor after close of business on the last day of the state term or agency contract's term shall be considered void.

Purchase orders for a one-time delivery of commodities or performance of contractual services shall be valid through the performance by the Contractor, and all terms and conditions of the state term or agency contract shall apply to the single delivery/performance, and shall survive the termination of the Contract.

Contractors are required to accept purchase orders specifying delivery schedules exceeding the contracted schedule even when such extended delivery will occur after expiration of the state term or agency contract. For example, if a state term contract calls for delivery 30 days after receipt of order (ARO), and an order specifies delivery will occur both in excess of 30 days ARO and after expiration of the state term contract, the Contractor will accept the order. However, if the Contractor expressly and in writing notifies the ordering office within ten (10) calendar days of receipt of the purchase order that Contractor will not accept the extended delivery terms beyond the expiration of the state term contract, then the purchase order will either be amended in writing by the ordering entity within ten (10) calendar days of receipt of the contractor's notice to reflect the state term contract delivery schedule, or it shall be considered withdrawn.

The duration of purchase orders for recurring deliveries of commodities or performance of services shall not exceed the expiration of the state term or agency contract by more than twelve months. However, if an extended pricing plan offered in the state term or agency contract is selected by the ordering entity, the contract terms on pricing plans and renewals shall govern the maximum duration of purchase orders reflecting such pricing plans and renewals.

Timely purchase orders shall be valid through their specified term and performance by the Contractor, and all terms and conditions of the state term or agency contract shall apply to the recurring delivery/performance as provided herein, and shall survive the termination of the Contract.

Ordering offices shall not renew a purchase order issued pursuant to a state term or agency contract if the underlying contract expires prior to the effective date of the renewal.

4.28. Advertising. Subject to Chapter 119, Florida Statutes, the Contractor shall not publicly disseminate any information concerning the Contract without prior written approval from the Customer, including, but not limited to mentioning the Contract in a press release or other promotional material, identifying the Customer or the State as a reference, or otherwise linking the Contractor's name and either a description of the Contract or the name of the State or the Customer in any material published, either in print or electronically, to any entity that is not a party to Contract, except potential or actual authorized distributors, dealers, resellers, or service representative.

4.29. Assignment. The Contractor shall not sell, assign or transfer any of its rights, duties or obligations under the Contract, or under any purchase order issued pursuant to the Contract, without the prior written consent of the Customer. In the event of any assignment, the Contractor remains secondarily liable for performance of the contract, unless the Customer expressly waives such secondary liability. The Customer may assign the Contract with prior written notice to Contractor of its intent to do so.

4.30. Antitrust Assignment. The Contractor and the State of Florida recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the State of Florida. Therefore, the contractor hereby assigns to the State of Florida any and all claims for such overcharges as to goods, materials or services purchased in connection with the Contract.

4.31. Dispute Resolution. Any dispute concerning performance of the Contract shall be decided by the Customer's designated contract manager, who shall reduce the decision to writing and serve a copy on the Contractor. The decision shall be final and conclusive unless within twenty one (21) days from the date of receipt, the Contractor files with the Customer a petition for administrative hearing. The Customer's decision on the petition shall be final, subject to the Contractor's right to review pursuant to Chapter 120 of the Florida Statutes. Exhaustion of administrative remedies is an absolute condition precedent to the Contractor's ability to pursue any other form of dispute resolution; provided, however, that the parties may employ the alternative dispute resolution procedures outlined in Chapter 120.

Without limiting the foregoing, the exclusive venue of any legal or equitable action that arises out of or relates to the Contract shall be the appropriate state court in Leon County, Florida; in any such action, Florida law shall apply and the parties waive any right to jury trial.

4.32. Employees, Subcontractors, and Agents. All Contractor employees, subcontractors, or agents performing work under the Contract shall be properly trained technicians who meet or exceed any specified training qualifications. Upon request, Contractor shall furnish a copy of technical certification or other proof of qualification. All employees, subcontractors, or agents performing work under the Contract must comply with all security and administrative requirements of the Customer and shall comply with all controlling laws and regulations relevant to the services they are providing under the Contract. The State may conduct, and the Contractor shall cooperate in, a security background check or otherwise assess any employee, subcontractor, or agent furnished by the Contractor. The State may refuse access to, or require replacement of, any personnel for cause, including, but not limited to, technical or training qualifications, quality of work, change in security status, or non-compliance with a Customer's security or other requirements. Such approval shall not relieve the Contractor of its obligation to perform all

work in compliance with the Contract. The State may reject and bar from any facility for cause any of the Contractor's employees, subcontractors, or agents.

4.33. Security and Confidentiality. The Contractor shall comply fully with all security procedures of the United States, State of Florida and Customer in performance of the Contract. The Contractor shall not divulge to third parties any confidential information obtained by the Contractor or its agents, distributors, resellers, subcontractors, officers or employees in the course of performing Contract work, including, but not limited to, security procedures, business operations information, or commercial proprietary information in the possession of the State or Customer. The Contractor shall not be required to keep confidential information or material that is publicly available through no fault of the Contractor, material that the Contractor developed independently without relying on the State's or Customer's confidential information, or material that is otherwise obtainable under State law as a public record. To insure confidentiality, the Contractor shall take appropriate steps as to its personnel, agents, and subcontractors. The warranties of this paragraph shall survive the Contract.

4.34. Contractor Employees, Subcontractors, and Other Agents. The Customer and the State shall take all actions necessary to ensure that Contractor's employees, subcontractors and other agents are not employees of the State of Florida. Such actions include, but are not limited to, ensuring that Contractor's employees, subcontractors, and other agents receive benefits and necessary insurance (health, workers' compensations, and unemployment) from an employer other than the State of Florida.

4.35. Insurance Requirements. During the Contract term, the Contractor at its sole expense shall provide commercial insurance of such a type and with such terms and limits as may be reasonably associated with the Contract. Providing and maintaining adequate insurance coverage is a material obligation of the Contractor. Upon request, the Contractor shall provide certificate of insurance. The limits of coverage under each policy maintained by the Contractor shall not be interpreted as limiting the Contractor's liability and obligations under the Contract. All insurance policies shall be through insurers authorized or eligible to write policies in Florida.

4.36. Warranty of Authority. Each person signing the Contract warrants that he or she is duly authorized to do so and to bind the respective party to the Contract.

4.37. Warranty of Ability to Perform. The Contractor warrants that, to the best of its knowledge, there is no pending or threatened action, proceeding, or investigation, or any other legal or financial condition, that would in any way prohibit, restrain, or diminish the Contractor's ability to satisfy its Contract obligations. The Contractor warrants that neither it nor any affiliate is currently on the convicted vendor list maintained pursuant to section 287.133 of the Florida Statutes, or on any similar list maintained by any other state or the federal government. The Contractor shall immediately notify the Customer in writing if its ability to perform is compromised in any manner during the term of the Contract.

4.38. Notices. All notices required under the Contract shall be delivered by certified mail, return receipt requested, by reputable air courier service, or by personal delivery to the agency designee identified in the original solicitation, or as otherwise identified by the Customer. Notices to the Contractor shall be delivered to the person who signs the Contract. Either designated recipient may notify the other, in writing, if someone else is designated to receive notice.

4.39. Leases and Installment Purchases. Prior approval of the Chief Financial Officer (as defined in Section 17.001, F.S.) is required for State agencies to enter into or to extend any lease or installment-purchase agreement in excess of the Category Two amount established by section 287.017 of the Florida Statutes.

4.40. Prison Rehabilitative Industries and Diversified Enterprises, Inc. (PRIDE). Section 946.515(2), F.S. requires the following statement to be included in the solicitation: "It is expressly understood and agreed that any articles which are the subject of, or required to carry out, the Contract shall be purchased from the corporation identified under Chapter 946 of the Florida Statutes (PRIDE) in the same manner and under the same procedures set forth in section 946.515(2) and (4) of the Florida Statutes; and for purposes of the Contract the person, firm, or other business entity carrying out the provisions of the Contract shall be deemed to be substituted for the agency insofar as dealings with such corporation are concerned." Additional information about PRIDE and the products it offers is available at <http://www.pridefl.com>.

4.41. Products Available from the Blind or Other Handicapped. Section 413.036(3), F.S. requires the following statement to be included in the solicitation: "It is expressly understood and agreed that any articles that are the subject of, or required to carry out, this contract shall be purchased from a nonprofit agency for the Blind or for the Severely Handicapped that is qualified pursuant to Chapter 413, Florida Statutes, in the same manner and under the same procedures set forth in section 413.036(1) and (2), Florida Statutes; and for purposes of this contract the person, firm, or other business entity carrying out the provisions of this contract shall be deemed to be substituted for the State agency insofar as dealings with such qualified nonprofit agency are concerned." Additional information about the designated nonprofit agency and the products it offers is available at <http://www.respectofflorida.org>.

4.42. Modification of Terms. The Contract contains all the terms and conditions agreed upon by the parties, which terms and conditions shall govern all transactions between the Customer and the Contractor. The Contract may only be modified or amended upon mutual written agreement of the Customer and the Contractor. No oral agreements or representations shall be valid or binding upon the Customer or the Contractor. No alteration or modification of the Contract terms, including substitution of product, shall be valid or binding against the Customer. The Contractor may not unilaterally modify the terms of the Contract by affixing additional terms to product upon delivery (e.g., attachment or inclusion of standard preprinted forms, product literature, "shrink wrap" terms accompanying or affixed to a product, whether written or electronic) or by incorporating such terms onto the Contractor's order or fiscal forms or other documents forwarded by the Contractor for payment. The Customer's acceptance of product or processing of documentation on forms furnished by the Contractor for approval or payment shall not constitute acceptance of the proposed modification to terms and conditions.

4.43. Cooperative Purchasing. Pursuant to their own governing laws, and subject to the agreement of the Contractor, other entities may be permitted to make purchases at the terms and conditions contained herein. Non-Customer purchases are independent of the agreement between Customer and Contractor, and Customer shall not be a party to any transaction between the Contractor and any other purchaser.

State agencies wishing to make purchases from this agreement are required to follow the provisions of s. 287.042(16)(a), F.S. This statute requires the Department of Management Services to determine that the requestor's use of the contract is cost-effective and in the best interest of the State.

4.44. Waiver. The delay or failure by the Customer to exercise or enforce any of its rights under this Contract shall not constitute or be deemed a waiver of the Customer's right thereafter to enforce those rights, nor shall any single or partial exercise of any such right preclude any other or further exercise thereof or the exercise of any other right.

4.45. Annual Appropriations. The State's performance and obligation to pay under this contract are contingent upon an annual appropriation by the Legislature.

4.46. Execution in Counterparts. The Contract may be executed in counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

4.47. Severability. If a court deems any provision of the Contract void or unenforceable, that provision shall be enforced only to the extent that it is not in violation of law or is not otherwise unenforceable and all other provisions shall remain in full force and effect.

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SECTION 5.0
SPECIAL CONDITIONS

Note: Special Contract Conditions in Section 5 will supersede and supplement General Contract Conditions (PUR 1000) contained in Section 4.

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5.1 Purchasing Card Program

The State of Florida has implemented a purchasing card program, using the Visa platform. Contractors may receive payment from state agencies by the purchasing card in the same manner as other Visa purchases. Visa acceptance is mandatory but is not the exclusive method of payment. The State reserves the right to change the platform as necessary. The State will not fill out any contractor forms or contracts in association with the Contractor accepting a purchasing card payment. Contractors are not allowed to charge a fee for accepting a purchasing card payment. Surcharges or convenience fees are prohibited. Fees should not be charged for using a purchasing card unless the fees are charged for all methods of payment (cash, check, debit cards, vouchers, etc.), and must be approved by the Customer prior to order acceptance.

On-line billing or payment systems maintained by the Contractor will not store the cardholder's account number and expiration date for re-use. Cardholders will provide the Contractor with card account information at each transaction.

5.2 Product Acceptance

"Acceptance and Accepted" means, with respect to each Deliverable, that the resulting services provided by the Contractor have been fully acknowledged in writing by the Eligible User as to meeting the specified requirements established in the Contract or Agreement.

Section 215.422, F.S., states that "Approval and inspection of goods or services shall take no longer than 5 working days unless the bid specifications, purchase order, or contract specifies otherwise."

The Land Mobile FM or PM Communications Equipment contract allows additional time for acceptance of a product or service in order to account for special customizations, product testing, or vendor installations. Any special conditions must be expressed in writing either on the PO (purchase order), DO (Direct Order), or in a SOW (statement of work) that is attached to the PO/DO and the vendor must have agreed to any special acceptance time frames in advance.

5.3 Contract Service Requirements

Requests by State Agencies and Eligible Users for Product Literature, Price Lists, and Specifications must be provided within five (5) working days after receipt of written request, at no charge to the State Agencies or Other Users. However, the Department reserves the right to review and approve all Product Literature, Price Lists, and promotional materials before distribution to State Agencies and Other Users.

Awarded contractor(s) shall have a single point of contact for customer support. This individual may support multiple Users and respond to Users calls and/or emails within twenty-four (24) hours. Customer Support contact information shall be provided on the Ordering Instructions form. The Contractor(s) shall make all Users of the contract aware of its existence at the time of order to ensure that contractual pricing is utilized.

Contractor(s) shall provide toll-free customer service phone support from 7:00 AM (EST) to 6:00 PM (EST) Monday through Friday, except for National and State

recognized holidays. TDD (Telecommunication Device for the Deaf) access must be made available during the above customer service operating hours.

Contractor(s) shall provide an after-hours contact number for use by Users for emergency orders after standard customer service operating hours.

5.4 Performance Standards

The Contractor must warrant that all work performed complies with customary, reasonable, and prudent standards of care in accordance with the industry. Additional performance standards/requirements may be requested in the Eligible User's P.O./D.O. or S.O.W. If the level of performance is not to industry standard, the Department, in its sole discretion, may consider such failure as a default. Except as expressly stated in this section, there are no warranties, expressed or implied. The Contractor disclaims any implied warranties of merchantability and fitness for a particular purpose.

5.5 Intellectual Property

Unless specifically addressed in the contracts or attachments thereto, intellectual property rights to preexisting property will remain with the vendor. Unless specifically addressed in the Purchase Order or attachment thereto, intellectual property rights to all property created or otherwise developed by vendor for the purchasing agency will be owned by the State of Florida through the agency at the end of the purchase order.

5.6 Confidential Information

Each party may have access to confidential information made available by the other. The Parties agree that each party shall protect such confidential information in the same manner as it protects its own confidential information of like kind. Disclosure of any confidential information received by the State of Florida will be governed by the provisions of the Florida Public Records Act, Chapter 119, Florida Statutes.

5.7 Delivery

Pricing shall include inside delivery, F.O.B. Destination, to the ordering agency within 30 days after receipt of purchase order and shall be subject to the acceptance criteria previously stated in Section 5.2.

5.8 Contract Reporting Requirements

The Contractor shall be responsible to report sales data to the Contract Manager on a quarterly basis using the (State Term Contract) STC Quarterly Report Form in Section 7.1.2 of the ITB. The State of Florida is not a party to the contractual relationship between the Contractor and their resellers therefore; the Contractor is responsible for all reporting (including reseller sales, if any) and must report any and all sales to State Agencies and Eligible Users each quarter.

- The following data must be reported to the Contract Manager on a quarterly contract basis: Report shall include:
 - Contractor Name and FEIN number
 - Contact Information
 - Reporting Period
 - Total dollar value of purchases per quarter as noted on the form.

- Sales must be broken down by Agency name and Other Eligible User name and must indicate whether the sales were recorded as a P-Card sale or paid by Warrant.
 - Total dollar value of purchases per quarter.
 - Minority Business Spend shall be included in the same report on the tab marked CMBE Spend Report.
- Financial Viability Statement. Contractor shall provide a copy of their Dun and Bradstreet report and shall be responsible to immediately notify the Contract Manager of any changes in the company's financial status that would affect the Contractor's ability to fulfill their contract obligations with the State.

Failure to provide quarterly sales reports, including providing a report when there have been no sales, within thirty (30) calendar days following the end of each quarter (January, April, July and October) may result in the contract supplier being found in default and may cause termination of the contract.

Submission of the Contract Sales Summaries shall be the responsibility of the Contractor without prompting or notification by the Contract Manager. The Contractor will submit the completed Contract Sales Summary report by email to the Contract Manager.

5.9 Business Review Meetings

In order to maintain the partnership between the Department and the Contractor, each quarter the Department may request a Business Review meeting. The business review meeting may involve, but is not be limited to, the following:

- Review of Contractor performance
- Review of minimum required reports
- Review of continuous improvement plans

The Department encourages Contractors to identify opportunities to generate lower costs. A continuous improvement effort, consisting of various ideas to enhance business efficiencies, may be discussed at the Business Review meetings or as identified.

5.10 Implementation of Contract

In order to streamline the procurement process and provide ease of use for state agency buyers, the Contractor **may** provide its catalog data electronically using the State's eProcurement system through a "punch-out" solution in which the Agency accesses the Contractor's website directly from the system, rather than the system maintaining the Contractor's data. This solution must allow the Agency to reach the Contractor's site, browse for Contracted items only, and return to the system with a list of items ready to be inserted into a requisition. Returned product information must include, but is not limited to, Contractor name, brand/manufacturer, SKU, product name, brief description (for supplies, include what machine product is for), recycled content flag, approved green product flag, certifying green label / standard, unit of measure, and price. To help determine if a Punch-Out solution is a viable option, a Punch-Out Capability Questionnaire is provided in Section 7.1.6.

If the Contractor does not choose to provide a punch-out catalog, the Contractor may provide a Line-Item catalog or Ordering Instructions. A sample of a Line-Item Catalog is provided for review in Section 7.1.5. All awarded contractors must make their

awarded products and prices available on the Contractor's Florida Specific website as required in Section 5.13, Contractor's State Contract Webpage.

The Contractor will have up to sixty (60) days, after contract award, to establish a State Contract punch-out website or a Line Item Catalog, if applicable. The MyFloridaMarketPlace ("MFMP") third-party Service Provider is responsible for working with Contractor to assist in the implementation of a punch-out solution with the eProcurement System or a Line-Item Catalog in Aravo. To accomplish this conversion, the awarded Contractor shall provide requested information directly to the Service Provider in the format required by the Service Provider. No costs or expenses associated with providing this information shall be charged to the Department, State Agencies, Eligible Users, or Service Provider.

Contractor punch-out solution must meet the following requirements:

- The solution must conform to cXML 1.0 or 1.1 standards.
- The solution must conform to the technical specifications and implementation requirements provided by the Department of Management Service's MFMP third party provider, and the Contractor must work with the third party provider to ensure successful integration of the punch-out solution into the system
- The solution must have the capability to provide only those products awarded under the Contract, and block any non-Contract item(s) from being added to the requisition.
- The punch-out site must provide the Contract Manager, or designee, the ability to audit catalog items and prices and must provide a method to download loaded items and prices into an Excel file format. Audit time and date shall be determined by the Contract Manager and shall occur at random intervals.

(Note: Contractors who currently have e-commerce capabilities should already have the ability to do a punch-out site.) Additional information about Punch-Out catalogs may be found on the DMS website at: http://dms.myflorida.com/business_operations/state_purchasing/myflorida_marketplace/mfmp_buyers/myflorida_marketplace_toolkit/mfmp_punchout_catalogs_einvoicing.

5.11 Contractor's State Contract Webpage

The Contract resulting from this solicitation will become a public document. State Purchasing uses its web page to distribute State Term Contract and product information to eligible users and other interested entities.

The Contractor shall, within thirty (30) days after the date of award, develop and maintain a Florida Contract web page on the Internet to post approved Contract information, which shall include pricing, percentage discounts, terms, catalogs, ordering instructions, descriptive information, list of products that meet the State of Florida's approved green product labels / standards, and product pictures. The Home Page must be compatible with the most recent version of browser software being used by the Department. As of the writing of this solicitation, Internet Explorer 7.0 is the Department's Internet browser standard. The Department intends to upgrade to new browser versions as they become available and fully tested, at its discretion. The Universal Resource Locator (URL) for the Internet Home Page must be listed in the space provided on the Ordering Instructions page of the solicitation.

No costs or expenses associated with providing this information shall be charged to the State.

The State Contract vendor supplied web site must have the following requirements:

- Specify that the web page is for the State of Florida
- Contract Number and Beginning and Ending Contract Dates
- State of Florida approved Contract pricing;
- Detailed item descriptions, item numbers, unit of measure;
- Robust search engine capabilities;
- Authorized Dealers (approved by the Department), if any;
- Additional links or information to access product literature of awarded items;
- Additional links to the vendor's home page, the history of the company, etc.;
- Additional links to access technical product literature of awarded items;
- Servicing dealers with current contact information;
- Offer photos of awarded products (where applicable);
- List of products that meet the State of Florida's approved green product labels / standards;
- When possible, provide indicators of recycled product and minority manufactured products; and;
- Universal Resource Locator (URL) for the Internet Page must be supplied to the Department and approved prior to the implementation of the Contract.

Additional mandates include:

- If unauthorized information is discovered on the State Contract Web Page, the Contractor's link may be immediately disconnected and the Contractor shall be liable for any incorrect or unauthorized purchases.
- Access to the Contractor's State Contract Web Page, or to links or documents on that Web Page, shall not require a password.
- Contractor's State Contract Web Page shall be compatible with the current version of browser software used by State Purchasing.
- Barring unexpected technological interruptions or forces of nature, frequent or consistent web page inaccessibility may be grounds for contract termination.

Contractors should note that the US Federal Trade Commission's Guides to the Use of Environmental Marketing Claims (Green Guides) regulate how companies label and advertise using environmental claims / terms. See [Environmental marketing claims](#) (16 C.F.R. Part 260) for details. It is the Contractor's responsibility to accurately identify their products that meet the State of Florida's approved green product labels / standards (e.g., Energy Star, Green Seal) in their electronic catalog, punch-out site and on State Contract web page. Failure to accurately represent green products may result in the Contractor's immediate removal from the contract.

5.12 Electronic Invoicing

Notwithstanding any provision of the contract, the contractor may supply electronic invoices in lieu of paper-based invoices for those transactions processed through the State's eProcurement system. Electronic invoices shall be submitted to the agency through the Ariba Supplier Network (ASN) in one of the following mechanisms – cXML, EDI 810 or web-based invoice entry within the ASN.

For the purposes of this section, the contractor warrants and represents that it is authorized and empowered to and hereby grants the State and the State's third party eProcurement provider, the right and license to use, reproduce, transmit, distribute and publicly display within the system the information outlined above. In addition, the contractor warrants and represents that it is authorized and empowered to and hereby grants the State, and the third party provider, the right and license to reproduce and display within the system the contractor's trademarks, system marks, logos, trade dress or other branding designation that identifies the products made available by the contractor under the contract. If the contractor is not the manufacturer, it shall be the contractor's responsibility to obtain authorization from the manufacturer to comply with the provisions of this section, including securing any intellectual property rights of the manufacturer.

Additional information regarding e-Invoicing may be found on the DMS website at: http://dms.myflorida.com/business_operations/state_purchasing/myflorida_marketplace/mfmp_buyers/myflorida_marketplace_toolkit/mfmp_punchout_catalogs_einvoicing.

5.13 Requests for Quotes

Additional quotes are not required for equipment in Categories 1 and 2; however, quotes are required for Category 3 items. Customers have the option to initiate a request for quotes (RFQ) in Categories 1 and 2. Quotes are an oral or written request for written pricing or service information from a Contractor/Authorized Dealer for products available under the Contract from that Contractor. If Eligible Users utilize a RFQ, they shall create and maintain written records of oral and written requests, as well as records of quotes received. Quotes shall be in writing but otherwise informal, and need not be received or posted publicly or at a particular time or place. A Customer shall initiate a sufficient number of requests to obtain a minimum of three quotes, and shall place its purchase order with the Contractor quoting the lowest price, unless the Customer documents in writing that the lowest price quote would not result in best value.

5.14 Price Adjustments

Proposed discounts shall be firm against decrease for the life of the contract. Requests for price increase/decrease may be submitted to the State if there is a documented change in cost. The State reserves the right to accept or reject requests within thirty (30) days after receipt of request. Price increases may be requested by the Contractor by using the STC Change Form in Section 7.1.3 in this solicitation document. Price change requests are subject to the Producer Price Index (PPI) for Industry: "Communications Equipment Manufacturing", as published by the U.S. Bureau of Labor Statistics. The rate adjustments will be based on the PPI (Series ID PCU3342). The Contractor may offer price reductions at any time and the State may request a reduction in price any time the PPI shows de-escalation in costs.

The last published non-preliminary Producer Price Index for the month prior to the award/anniversary date of the contract will be the reference date for the beginning (old) PPI Index. The most recent published Producer Price Index prior to the contract year to be priced will establish the reference data for the New PPI Index.

All requests for price adjustments must be substantiated by manufacturer's certification of cost or other documentation and approved by the State of Florida'

Contract Administrator prior to implementation. The maximum net rate percentage increase per twelve (12) month period shall not exceed the PPI allowable amount or 3%, whichever is less.

Details on how this PPI has historically performed can be found at the Bureau of Labor Statistics web site and following the below steps:

- Go to BLS website: <http://www.bls.gov/ppi/#data>
- Click on the PPI Databases link
- Select "Industry Data (one screen)"
- Box 1 - Type "3342" in the "Select an Industry" box and click the adjacent "Find" button.
- Box 2 - Select "3342--3342" for "Communications equipment mfg" in the "Select One or More Products" box
- Box 3 - Click the "Get Data" button. A table similar to the one shown below will be created.

Series Id: PCU3342--3342--

Industry: Communications equipment mfg

Product: Communications equipment mfg

Base Date: 198512

Download:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	111.4	110.9	110.7	110.4	110.1	110.1	110.2	110.2	110.3	110.2	110.2	110.2	110.4
2001	110.4	110.4	110.4	108.5	108.6	108.5	108.1	107.6	107.8	107.8	107.7	107.7	108.6
2002	107.5	106.6	106.5	105.7	105.6	105.3	104.3	104.5	104.5	103.6	103.5	102.8	105.0
2003	102.7	101.9	102.8	102.7	102.6	102.1	101.0	101.1	101.4	100.5	100.9	100.9	101.7
2004	100.7	98.6	98.6	98.5	98.6	98.2	97.9	98.3	97.9	97.3	97.9	97.8	98.4
2005	97.5	97.3	97.4	97.5	97.4	97.2	97.1	97.0	96.6	96.6	96.5	96.4	97.0
2006	95.7	96.1	95.9	96.0	96.0	96.1	95.8	96.0	96.1	95.8	95.8	95.3	95.9
2007	95.5	95.7	95.9	95.8	95.8	95.8	95.8	95.8	95.8	95.9	95.8	95.8	95.8
2008	96.2	96.9	96.8	96.9	97.2	97.1	97.3	97.3	97.3	97.2	97.4	97.4	97.1
2009	97.5	97.2	97.2	97.2	97.1	97.1	97.2	97.1	97.2	97.2	97.2	97.2	97.2
2010	97.2	97.1	97.1	96.7(P)	96.6(P)	96.8(P)	97.1(P)						

P : Preliminary. All indexes are subject to revision four months after original publication.

Example:

Index at time of request.....97.2
 Divided by index at time base price was set97.5
 Equals (De-Escalation Rate).....< 0.9969 >

To determine the new discount percent:

New PPI / Old PPI = Price Escalation/De-escalation Rate (rounded to the four decimal points). Then take Old Price Discount % / Price Escalation/De-escalation Rate = New Price Discount % (rounded to two decimal points).

Calculation:

$97.2 \div 97.5 = .9969$ (which equates to a Price De-escalation Rate of 99%)

$25\% \div 99.00\% = 25.25\%$ (New Price Discount Percent)

Any increases/decreases approved during the term of the contract shall become effective no later than thirty (30) days after approval of the request.

The Department may, in its sole discretion, make an equitable adjustment in the Contract terms and/or pricing if pricing or availability of supply is affected by extreme and unforeseen volatility in the marketplace, that is, by circumstances that satisfy all of the following criteria: (1) the volatility is due to causes wholly beyond the Contractor's control, (2) the volatility affects the marketplace or industry, not just the particular Contract source of supply, (3) the effect on pricing or availability of supply is substantial, and (4) the volatility so affects the Contractor that continued performance of the Contract would result in a substantial loss.

5.15 Contract Revisions

Revisions to product offerings or pricing, must be approved by the Department prior to advertisement, implementation, or removal. Requests for revision shall be submitted in writing to the Contract Manager for review and approval. Revision requests must be submitted to the Contract Manager on the STC Change Form in Section 7.1.3.

5.16 New Product Additions

New products within the scope of this solicitation may be considered for addition to the contract. All requests for review shall be made in writing and shall include product literature and pricing (in Excel format with a copy provided on CD). New products may not be marketed as approved products prior to written approval from the Contract Manager. New Product addition requests must be submitted to the Contract Manager using the STC Change Form in Section 7.1.3.

5.17 Purchase Orders

In contracts where commodities or services are ordered by the Customer via purchase order, Contractor shall not deliver or furnish products until a Customer transmits a purchase order. All purchase orders shall bear the Contract or solicitation number, shall be placed by the Customer directly with the Contractor, and shall be deemed to incorporate by reference the Contract and solicitation terms and conditions. Any discrepancy between the Contract terms and the terms stated on the Contractor's order form, confirmation, or acknowledgement shall be resolved in favor of terms most favorable to the Customer. A purchase order for services within the ambit of section 287.058(1) of the Florida Statutes shall be deemed to incorporate by reference the requirements of subparagraphs (a) through (f) thereof. Customers shall designate a contract manager and a contract administrator as required by subsections 287.057(15) and (16) of the Florida Statutes.

5.18 Authorized Dealers

Respondents may allow authorized dealers, as defined in Section 3.4, to provide products and services on their behalf using the Authorized Dealer Form indicated in Section 7.0.9. Respondents are encouraged to utilize Certified Minority Business Enterprise (CMBE) dealers. Respondent shall identify any CMBE dealers on the Authorized Dealer Form. Each dealer named will be responsible for product delivery and service for any orders received as well as providing assistance to Eligible Users. Dealers receiving orders on behalf of the Contractor are required to register in MyFloridaMarketPlace and with the Division of Corporations. All authorized dealers shall be under the DIRECT SUPERVISION of the awarded vendor and shall follow all contract requirements.

5.19 Compliance with Laws

The Contractor shall comply with all laws, rules, codes, ordinances, and licensing requirements that are applicable to the conduct of its business, including those of Federal, State, and local agencies having jurisdiction and authority. By way of non-exhaustive example, Chapter 287, Florida Statutes and Chapter 60A, Florida Administrative Code govern the Contract. By way of further non-exhaustive example, the Contractor shall comply with section 247A(e) of the Immigration and Nationalization Act, the Americans with Disabilities Act, and all prohibitions against discrimination on the basis of race, religion, sex, creed, national origin, handicap, marital status, or veteran's status. Violation of such laws shall be grounds for Contract termination.

5.20 Environmental Standards

Florida Governor Charlie Crist signed Executive Order 07-126, titled "Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government"; Executive Order 07-127, "Immediate Actions to Reduce Greenhouse Gas Emissions within Florida"; and Executive Order 07-128, "Florida Governor's Action Team on Energy and Climate Change."

The State supports and encourages initiatives to protect and preserve our environment. The Respondent shall submit as part of any response the Respondent's plan to support the procurement of products and materials with recycled content, and the intent of Section 287.045, Florida Statutes. The Respondent shall also provide a plan for reducing and or handling of any hazardous waste generated by Respondent's company. Reference Rule 62-730.160, Florida Administrative Code. It is a requirement of the Florida Department of Environmental Protection that a generator of hazardous waste materials that exceeds a certain threshold must have a valid and current Hazardous Waste Generator Identification Number. This identification number shall be submitted as part of Respondent's explanation of its company's hazardous waste plan and shall explain in detail its handling and disposal of this waste.

Describe what efforts your company (as Contractor) will take to encourage the participation and support of these and other environmental programs.

5.20.1 Florida Climate Friendly Products

Contractors are encouraged to propose products that meet the Florida approved green product labels/standards.

Under the leadership of Florida Governor Charlie Crist, the Department of Management Services (DMS) encourages the purchase of environmentally preferable products (EPPs) by Florida governmental entities where possible. Upon award, Contractors will be encouraged to submit a list of their qualifying products for review and posting to the Florida Climate Friendly Products List. The current list can be viewed at the following DMS website link:

http://dms.myflorida.com/business_operations/state_purchasing/vendor_information/state_contracts_agreements_and_price_lists/florida_climate_friendly_preferred_products_list

The Florida Climate Friendly Products List includes state contract approved products that have received one or more of the following certifications, labels, and standards:

[California Energy Commission \(CEC\) Appliance Efficiency Regulations](#)

[California Environmentally Preferred Products Guide](#)

[California State Agency Buy Recycled Program \(SABRC\)](#)

[Electronic Product Environmental Assessment Tool \(EPEAT\)](#)

[Energy Star](#)

[EPA Comprehensive Procurement Guidelines \(CPG\)](#)

[EPA SmartWay and SmartWay Elite](#)

[EPA WaterSense](#)

[Forest Stewardship Council \(FSC\)](#)

[Green Seal](#)

[Greenguard](#)

[MDBC's Cradle to Cradle Silver Certification \(or higher\)](#)

[Minnesota Green Guardian EPP Guide](#)

[NEMA Premium](#)

[RoHS](#)

[SCS \(Scientific Cert. Sys.\) / NSF International](#)

[Terra Choice / Ecologo](#)

[US Federal Energy Management Program \(FEMP\)](#)

[USDA Organic Label](#)

5.20.2 Energy Star Compliant

The Federal Environmental Protection Agency (EPA) encourages the manufacturer of energy efficient computer hardware, and the State supports this initiative. The Department prefers that all Products offered under the Contract be Energy Star compliant and bear the EPA Energy Star Logo.

5.21 Packaging

Tangible Product(s) shall be securely and properly packed for shipment, storage, and stocking in appropriate, clearly labeled, shipping containers and according to accepted commercial practice, without extra charge for packing materials, cases, or other types of containers. All containers and packaging shall become and remain the property of the Eligible User.

5.22 Manufacturer's Name and Approved Equivalents

Unless otherwise specified, any manufacturer's names, trade names, brand names, information and/or catalog numbers listed in a specification are descriptive, not restrictive. With the Department's prior approval, the Contractor may offer any Product that meets or exceeds the applicable specifications. The Contractor shall demonstrate comparability, including appropriate catalog materials, literature, specifications, test data, etc. The Department shall determine in its sole discretion whether a Product is acceptable as an equivalent.

5.23 Title to Deliverables

For the purpose of this section, a "Product" is any deliverable furnished under the Contract, including but not limited to (1) components of the hardware environment; (2) printed materials, (3) third party software, (4) programs and programming modifications, customizations, tools, data, modules, and components and (5) any tangible or intangible properties embedded therein. A product is "existing" if it is a tangible or intangible licensed product that exists before Contract work begins (the Contractor shall bear the burden of proving that a product existed before work began). A product is "custom" if it is any product, preliminary or final that is created under the Contract for the Department by the Contractor or its employees, subcontractors, or agents.

5.24 Software License Grant

Where a Product requires or includes software or where software is acquired on a licensed basis, the following terms shall constitute the license grant.

- Scope: Licensee is granted a non-exclusive perpetual license to use, execute, reproduce, display, perform, or merge the Product within its business enterprise in the United States up to the maximum licensed capacity identified on the Purchase Document. The Product may be accessed, used, executed, reproduced, displayed, or performed up to the capacity measured by the applicable licensing unit identified on the Purchase Document (e.g. payroll size, number of employees, CPU, MIPS, MSU, concurrent user, workstation, etc.). Licensee shall have the right to use and distribute modifications and customizations of the Product to and for use by anyone otherwise licensed to use the Product, provided that any modifications, however extensive, shall not diminish licensor's proprietary title or interest. This paragraph grants no license, right, or interest in any trademark, trade name, or service mark.
- Term: The license term shall begin the date the Product is accepted as noted in Section 5.2. Where a license involves licensee's right to copy a previously licensed and accepted master copy, the term shall begin the date the Purchase Document is executed.
- Documentation: Upon request, the Contractor shall deliver to the licensee at the Contractor's expense (1) one master electronic copy and one hard copy of Product documentation or (2) one master electronic copy and hard copies of the Product documentation by type of license in the following amounts, unless otherwise agreed: for individual/named user, one copy per license; for concurrent users, ten copies per site; for processing capacity, ten copies per site. The master electronic copy shall be in either CD-ROM, DVD format, or other agreeable format and usable without conversion (for example, if a unit has only a CD-ROM drive, software shall be provided on

a CD-ROM). The Contractor hereby grants the Eligible User a perpetual license right to make, reproduce (including downloading electronic copies), and distribute, either electronically or otherwise, copies of Product documentation as necessary to enjoy full use of the Product in accordance with the terms of the license.

- Technical Support and Maintenance: Licensee may elect the technical support and maintenance ("Maintenance") set forth in the Contract by giving written notice to the Contractor any time during the Contract term. Maintenance shall include, at a minimum, (1) providing error corrections, patches, updates, revisions, fixes, upgrades, and new releases to licensee, and (2) Help Desk assistance accessible via toll-free or local telephone call or on-line. The Contractor shall maintain the Products so as to provide licensee with the ability to use the Products in accordance with the Product documentation, without significant functional downtime to ongoing operations during the Maintenance term. The Eligible Users shall not be required to purchase Maintenance for use of the Product, and the Department's license shall not be invalidated for refusal to purchase Maintenance. The Maintenance term(s) and any renewals are independent of the Contract term. The Eligible User may discontinue Maintenance at the end of any current Maintenance term upon notice to the Contractor. If the Eligible User does not initially acquire, or discontinues Maintenance, the Eligible User may at any later time reinstate Maintenance without any penalties. The Eligible User may pay a reinstatement fee, if during the time of the lapse, bug fixes, patches or other updates occurred that would be necessary in order to bring the User's product up to the current standard.
- Restricted Use by Third Parties: Outsourcers, facilities management, service bureaus, or other services retained by licensee shall have the right to use the Product to maintain licensee's operations, including data processing, provided that (1) licensee gives notice to the Contractor of such third party, site of intended use of the Product, and means of access, (2) the third party has executed, or agrees to execute, the Product manufacturer's standard nondisclosure or restricted use agreement, which agreement shall be accepted by the Contractor, and (3) the third party shall maintain a logical or physical partition within its computer system to restrict access to the program to that portion solely dedicated to beneficial use for licensee. Licensee shall not be liable for any third party's compliance or noncompliance with the terms of the nondisclosure agreement, nor shall the nondisclosure agreement create or impose any liabilities on the State or the licensee. Any third party with whom a licensee has a relationship for a State function or business activity shall have the temporary right to use Product (e.g. Java applets), provided that such use shall be limited to the period during which the third party is using the Product for the function or activity.
- Archival Backup: Licensee may use and copy the Product and related documentation in connection with reproducing a reasonable number of copies for archival backup and disaster recovery procedures.

- Source Code Escrow: If either the Product manufacturer/developer or the Contractor offer source code or source code escrow to any other commercial customer, or if either entity seeks bankruptcy protection, then the Contractor shall either (1) provide licensee with source code for the Product, (2) place the source code in a third-party escrow arrangement with a designated escrow agent, which shall be identified to the Department, and which shall be directed to release the deposited source code in accordance with a standard escrow agreement acceptable to the Department, or (3) certify to the Department that the Product manufacturer/developer has named the State, acting by and through the Department, and the licensee, as named beneficiaries of an established escrow arrangement with its designated escrow agent, which shall be identified to the Department and licensee, and which shall be directed to release the deposited source code in accordance with the terms of escrow. Source code, as well as any corrections or enhancements, shall be updated for each new release of the Product in the same manner as provided above and such updated shall be certified in writing to the Department. The Contractor shall identify the escrow agent upon commencement of the Contract term and shall certify annually that the escrow remains in effect in compliance with the terms of this paragraph. The State may release the source code to licensees under the Contract which have licensed Product or obtained services, and which may use the copy of the source code to maintain the Product.
- Confidentiality: The Product is a trade secret, copyrighted and proprietary Product. Licensee and its employees shall not disclose or otherwise distribute or reproduce any Product to anyone other than as authorized under the Contract. Licensee shall not remove or destroy any of the Contractor's proprietary markings.
- Restricted Use: Except as expressly authorized by the terms of license, licensee shall not copy the Product; cause or permit reverse compilation or reverse assembly of the Product or any portion; or export the Product in violation of any U.S. Department of Commerce export administration regulations.
- Proof of License: The Contractor shall provide to each licensee that issues a Purchase Document either (1) the Product developer's certified license confirmation certificates in the name of the licensee or (2) a written confirmation from the proprietary owner accepting the Product invoice as a proof of license. The Contractor shall submit a sample certificate, or alternative confirmation, which shall be in a form acceptable to the licensee.
- Audit of Licensed Usage: The Contractor may periodically audit, no more than annually and at its expense, use of licensed Product at any site where a copy resides provided that (1) the Contractor gives licensee at least thirty days written advance notice, (2) the audit is conducted during the licensee's normal business hours, (3) the audit is conducted by an independent auditor chosen by mutual agreement of the licensee and Contractor as follows: the Contractor shall recommend a minimum of three auditing/accounting firms, from which the licensee shall select one; in no case shall the Business

Software Alliance, Software Publishers Association, or Federation Against Software Theft be recommended by the Contractor or used; directly or indirectly, to conduct audits, (4) the Contractor and licensee shall designate a representative who shall be entitled to participate, who shall mutually agree on audit format, and who shall be entitled to copies of all reports, data, or information obtained from the audit, and (5) if the audit shows that the licensee was not in compliance, the licensee shall purchase additional licenses or capacities necessary to bring it into compliance and shall pay for the unlicensed capacity at the Contract price then in effect or, if none, then at the Contractor's U.S. commercial list price. Once such additional licenses and capacities are purchased, licensee shall be deemed to have been in compliance retroactively, and licensee shall have no further liability of any kind for the unauthorized use of the Product.

- **Bankruptcy:** The Contractor is subject to the terms of section 365(n) of the United States Bankruptcy Code ("Code") if the licensor files a bankruptcy petition. Licensor's failure to perform its continuing obligations shall constitute a material breach of the Contract excusing performance by the licensee. Upon request, the licensor shall furnish licensee any intellectual property, as defined in the Code, and any embodiment of that intellectual property held by the licensor. If licensee must hire third parties to perform support, maintenance, or development tasks previously performed by licensor, the licensee may provide intellectual property to such third-parties without violating non-disclosure or exclusivity provisions.

5.25 Warranty

Contractor warrants that all Products furnished under the Contract shall be free of defective material and workmanship, and shall otherwise perform in accordance with required performance criteria, for a period of not less than one (1) year from the date of acceptance. Warranty repairs shall be completed within the time specified in any support level requirements. If it is likely that the time for repairs will exceed the specified time, the Contractor shall provide equivalent loaner equipment upon request. Loaner equipment shall be provided at no cost, including shipment to the Eligible User's location and return of loaner equipment to the Contractor.

5.26 Warranty of No Hardstop/Passive License Monitoring

Unless a State Agency or Eligible User is otherwise specifically advised to the contrary in writing at the time of order and prior to purchase, the Contractor hereby warrants and represents that the Product and all Upgrades do not and will not contain any computer code that would disable the Product or Upgrades or impair in any way its operation based on the elapsing of a period of time, exceeding an authorized number of copies, advancement to a particular date or other numeral, or other similar self-destruct mechanisms (sometimes referred to as "time bombs," "time locks," or "drop dead" devices) or that would permit Contractor to access the Product to cause such disablement or impairment (sometimes referred to as a "trap door" device). Contractor agrees that in the event of a breach or alleged breach of this provision that Eligible User shall not have an adequate remedy at law, including monetary damages, and that Eligible User shall consequently be entitled to seek a temporary restraining order, injunction, or other form of equitable relief against the continuance of such breach, in addition to any and all remedies to which Authorized User shall be entitled.

5.27 Preferred Price

The Contractor agrees to submit at least annually an affidavit from an authorized representative attesting that the Contractor is in compliance with the preferred pricing provision in Section 4.4 (b).

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SECTION 6.0
TECHNICAL SPECIFICATIONS

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6.1. SCOPE AND CLASSIFICATION

6.1.1. Scope

- 6.1.1.1. The purpose of this document is to establish the technical specifications necessary to permit State and local agencies to procure public-safety grade two-way voice radios (Category 1 or Category 2), and non-public safety two-way voice radios (Category 3), as well as dispatch consoles, RF Control Stations, Vehicular Repeaters, and radio equipment batteries and accessories. The radio categories are described in Attachment 1, page 165.
- 6.1.1.2. These radios are intended to be used for public-safety law enforcement and non-law enforcement agencies land-mobile-radio applications.
- 6.1.1.3. These radios are analog narrowband (12.5 kHz) channel spacing except 700/800 MHz is at 25 kHz channel spacing, and digital Project 25 (P25) compliant, Phase I (12.5 kHz) radios for all bands. *The analog radios are needed until everyone migrates to a P25 system.*

6.1.2. Classification

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- 6.1.2.3. Ultra-High Frequency (UHF) Band. For the purposes of this specification the UHF Band is the radio frequency spectrum between 450 and 470 MHz.
- 6.1.2.4. 700/800 MHz Band. For the purposes of this specification the 700/800 Band is the radio frequency spectrum between 753 and 870 MHz.
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6.1.2.11. Analog and Digital Dispatch Console

6.1.2.12. Radio Batteries/Accessories

6.1.3. **Definitions and Acronyms**

6.1.3.1. AC – Alternating Current.

6.1.3.2. ANSI – American National Standards Institute.

6.1.3.3. Cloning - The copying of the radio programming from one radio to another to create identically operating radios.

6.1.3.4. CTCSS – Continuous Tone Controlled Squelch System (See TIA-603-D).

6.1.3.5. CDCSS – Continuous Digital Controlled Squelch System

6.1.3.6. dB – Decibel.

6.1.3.7. DTMF – Dual-Tone Multiple-Frequency.

6.1.3.8. EIA – Electronic Industries Alliance. Formerly the Electronic Industries Association.

6.1.3.9. FM – Frequency Modulation.

6.1.3.10. FM Hum and Noise – The ratio of suppression of frequency modulated hum and noise

6.1.3.11. Hz – Hertz.

6.1.3.12. IEC – International Electrotechnical Commission.

6.1.3.13. LED- Light Emitting Diode.

6.1.3.14. LCD – Liquid Crystal Display.

6.1.3.15. LLRU – Lowest Level Replacement Unit.

6.1.3.16. MHz – Megahertz.

6.1.3.17. PCM – Pulse Code Modulation.

6.1.3.18. PTT – Push-To-Talk.

6.1.3.19. SINAD – Signal to Noise and Distortion Ratio.

6.1.3.20. TIA – Telecommunications Industry Association.

- 6.1.3.21. UHF – Ultra-High Frequency
- 6.1.3.22. VHF – Very-High Frequency
- 6.1.3.23. VSWR – Voltage Standing Wave Ratio

6.2. APPLICABLE REGULATIONS AND STANDARDS

6.2.1. The United States Code of Federal Regulations

- 6.2.1.1. The vendor, and all equipment supplied by the vendor shall comply with The United States Code of Federal Regulations, Title 47 – Telecommunication, Chapter 1 – Federal Communications Commission Parts 2 and 90.

6.2.2. Telecommunications Industry Association and DMS Standards

- 6.2.2.1. TIA-603 Revision D, Land Mobile FM or PM – Communications Equipment – Measurement and Performance Standards.
- 6.2.2.2. All radio products shall conform to the Department of Management Services' (DMS) Technical Specifications as defined in performance characteristics.
- 6.2.2.3. All radio equipment performance specifications listed below shall be met using TIA-603 Revision D measurement test procedures. The only exceptions shall be environmental specifications that must be met using MIL-STD-810 procedures.
- 6.2.2.4. The DMS radio performance specifications are presented in table form in Attachment 1 at the end of this document.
- 6.2.2.5. TIA-102 – Project 25 Series Documents.

6.2.3. United States Military Standards

- 6.2.3.1. MIL-STD-810, Environmental Engineering Considerations and Laboratory Test methods and standards identified in these technical specifications.
- 6.2.3.2. Category 1 products, except Base Stations Repeaters and RF Control Stations, require MIL-STD-810 compliance; the vendor shall comply with the current version of MIL-STD-810, Revision G, of October 2008, including Change Notices. If the vendor is unable to comply with Revision G, they may, as an alternative, comply with Revision F, or Revision E, including change Notices.
- 6.2.3.3. Specific MIL-STD-810 test methods and standards, listed below for each type of equipment (Category 1), shall be used in place of any corresponding specific TIA-603-D environmental standards to

ensure that robust, rugged Public Safety Grade radios and associated equipment are procured.

- 6.2.3.4. For any TIA-603-D environmental parameter where a MIL-STD-810 test method and standard is not specified below, the TIA-603-D standard shall be applied. For example, base stations are not required to meet any MIL-STD-810 test methods and standards. They will therefore be required to meet all TIA-603-D environmental standards.

6.2.4. Vendor Specification Compliance Verification

- 6.2.4.1. At any time during the bid review process or the contract period, at the request of State Purchasing, the vendor shall provide a certification letter written on the manufacturer's letterhead stating compliance with one or more technical specifications listed in any of the above referenced regulations and standards or as listed below.
- 6.2.4.2. At any time during the bid review process or the contract period, at the request of State Purchasing, the vendor shall provide sufficient certified test data to support compliance with one or more technical specifications listed in any of the above referenced regulations and standards or as listed below. The test data shall be submitted under a transmittal letter written on manufacturer's letterhead.
- 6.2.4.3. At any time during the bid review process or the contract period, the vendor, at the request of State Purchasing, shall submit an evaluation unit, at no cost to State Purchasing, for any of the bid products.

6.3. TECHNICAL REQUIREMENTS

6.3.1. Interpretation

- 6.3.1.1. If a vendor believes a conflict may exist within these technical specifications or the supporting regulations and standards they may bring it to the attention of State Purchasing, whereupon State Purchasing will determine whether a conflict does exist.
- 6.3.1.2. If a conflict does exist, State Purchasing is solely responsible for determining the resolution of the conflict.

6.4. Analog Base Station/Repeater Radios

6.4.1. General

- 6.4.1.1. **Configuration.** Each base station radio shall support conventional and trunked analog 2-way voice communications as a completely integral unit. Plug-in style mobile radios and add-on power supplies are not permitted. Each integral base station unit shall consist of the following major components.

- 6.4.1.2. **Interchangeability.** All equipment of the same and/or like models shall be supplied so that direct interchangeability between radios, antennas, audio circuits, power cables, and accessories can be accomplished without electrical, physical, firmware, or software modification.
- 6.4.1.3. **Accessory Connections.** External accessory electrical connectors shall be provided as an integral part of the radio and accessory. Connectors shall be provided for, at a minimum, the antenna, audio circuits, power, remote speaker-microphone, and software programmer. Subject to the approval of State Purchasing some connectors may be ganged to share an interface.
- 6.4.1.3.1. **Mounting.** Each radio shall be provided with provisions for mounting in both four post racks and cabinets and two post relay racks. All necessary mounting flanges and hardware shall be included. Each radio shall support installation in a 19" wide rack or cabinet.
- 6.4.1.3.2. **Chassis Assembly.** Each radio shall be contained within an enclosed chassis assembly that protects the internal circuitry from physical damage and protects a radio maintainer from accidental shock. No exposed terminations such as uncovered terminal blocks or screw lugs shall be permitted. The only exception shall be a chassis ground lug. The chassis assembly shall also provide easy access to internal circuitry for servicing while installed in a rack or cabinet.
- 6.4.1.3.3. **Cabling and Installation Kit.** Each radio shall be provided with a complete cabling and installation kit for installing the radio and accessories in a rack or cabinet. This kit shall include but not be limited to mounting hardware for the radio and accessories and all cabling necessary to interconnect the radio and accessories.
- 6.4.1.3.4. **Duty-Cycle.** Each radio shall support a continuous duty cycle for 24 hours. This duty cycle shall permit the radio to be operated with its transmitter and power amplifier energized at full power for the entire 24 hours without damage to the radio.
- 6.4.1.3.5. **Ambient Operational Temperature Range:** Each radio shall operate in an ambient temperature range of -30 degrees Celsius to +60 degrees Celsius. All base station radio specifications in this document are referenced to +25 degrees Celsius.
- 6.4.1.3.6. **Antenna Interface.** Each radio shall include a single industry standard coaxial connector to support simplex operation. An integral transmitter-receiver RF relay shall be used to support simplex operation via this single antenna connection.

6.4.1.4. Remote Radio Interfacing and Control

- 6.4.1.4.1. **Audio Interface.** Each radio shall support both a 2 wire and a 4 wire audio circuit interface. The input audio interface shall provide a 600 Ohm load and support audio levels between -20 and 10 dBm. The output audio interface shall provide an adjustable audio level between -20 and 0 dBm when presented with a 600 Ohm load. Both the audio input and output interfaces shall meet or exceed TIA 603-D audio fidelity specifications.
- 6.4.1.4.2. **Tone Control.** Each radio shall support remote inband-audio tone control via the audio interface. The tone control functions shall be programmable and include but not be limited to transmitter keying, CTCSS circuit disabling to monitor the received audio before transmitting, and carrier operated switching to support voter operation.
- 6.4.1.4.3. **E&M Signaling.** Each radio shall support remote out-of-band E&M signaling via a 4 wire interface compatible with industry standard PCM channel-banks. The E&M signaling functioning shall include but not be limited to transmitter keying via the E-lead and carrier operated switching via the M-lead to support voter operation.
- 6.4.1.4.4. **Local Radio Control.** Each radio shall include a remote microphone with a PTT switch. A separate speaker shall also be provided that may be an integral part of the radio or mounted externally. All necessary mounting hardware for the remote microphone and external speaker shall be provided. An external, front-panel control shall be provided to mute the received audio and also to adjust the received audio volume.
- 6.4.1.4.5. **Status Indicators.** Illuminated indicators shall be provided on the front of the radio to indicate the following functions at a minimum.
 - 6.4.1.4.5.1. Power-on condition.
 - 6.4.1.4.5.2. Transmitter energized condition.
 - 6.4.1.4.5.3. Internal alarm condition.
- 6.4.1.4.6. **VSWR Monitoring Circuit.** Each radio shall be provided with a VSWR monitoring circuit that monitors the VSWR during transmission and detects a high VSWR condition. When a high VSWR condition is detected by the circuit, the transmitter shall automatically reduce power to a level that will not damage the radio when transmitting continuously into any high VSWR condition. When a low VSWR condition has

been reestablished, the radio shall resume operation at the original power setting.

- 6.4.1.4.7. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform to TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling.
- 6.4.1.4.8. **CTCSS.** Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS. The tone-controlled squelch shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. In local control an automatic switch shall be included to permit receive audio monitoring of the channel by a radio user prior to transmitting. This switch shall be separate from the PTT control. Radios shall support identical or different receive and transmit CTCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.
- 6.4.1.4.9. **Squelch Tail Elimination.** Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.
- 6.4.1.4.10. **Transmitter Time-Out Timer.** Each radio shall contain an integral, internal time-out timer to prevent inadvertent keying of the transmitter for an extended period of time. The time-out timer shall inhibit the transmitter when the radio transmission exceeds a predetermined length of time not to exceed 120 seconds. Provisions shall be included to permit the operator to reinitiate transmission immediately following transmitter inhibiting by the time-out timer.
- 6.4.1.4.11. **Two-Tone Paging (Crew Alerting).** Each radio should support industry standard two-tone paging including at a minimum the Motorola "Quick-Call" and General Electric "Type 99" two-tone formats.

- 6.4.1.4.12. **Automatic FCC Station Identification.** Each base station shall include provisions to automatically identify itself at programmed intervals in accordance with FCC rules. Purchaser will provide the station information when a procurement order is initiated.

6.4.1.5. **Radio Programming**

- 6.4.1.5.1. Each radio shall be programmable. Programming shall permit specific user profiles to be stored in each radio to facilitate operation by different user groups. Programmed parameter memory shall be non-volatile so that no settings are lost when the radio is powered off or when the radio is momentarily disconnected from its power source. The last channel selected shall appear as the selected channel after the radio is turned back on.
- 6.4.1.5.2. Parameters that shall be programmable and stored include but are not limited to channel number, channel frequency, CTCSS encode and decode tones, two-tone paging encode and decode tones and all configurable radio operation settings.
- 6.4.1.5.3. When a procurement order is initiated by Purchaser the order will include a list of parameter configurations that the vendor shall program in each radio at no cost to Purchaser. The intent is to ensure that radios are ready for use upon delivery.
- 6.4.1.5.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated.
- 6.4.1.5.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.
- 6.4.1.5.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each

radio procurement order. The vendor shall also provide the software upon request from Purchaser.

- 6.4.1.5.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers and testing facilities throughout the state.

6.4.2. Base Station/Repeater Radio Power

- 6.4.2.1. Each radio shall be powered from a 120 Volt, 60 Hz, AC source.
- 6.4.2.2. Each radio shall include an integrated 120 Volt AC power supply that provides all necessary AC and DC voltage and current requirements for the radio and any accessories. The power supply shall be a non-linear, high-frequency, switching power supply design.
- 6.4.2.3. The power supply design shall support continuous duty operation at full transmit power without adversely effecting any of the transmitter or receiver specifications stated below.
- 6.4.2.4. Unintentional radiated and conducted emissions by a radio while transmitting or receiving must also not adversely effect the performance of an identical radio, powered from the same 120 Volt AC source and operating next to it in the same rack or an adjacent rack.
- 6.4.2.5. The 120 Volt AC power interface shall be field replaceable by mechanical methods (no soldering). Integrated 120 Volt AC line fuses shall be accessible without opening the chassis.

6.4.3. Analog Base Station/Repeater VHF High-Band Performance Characteristics: 12.5 kHz- Category 1

6.4.3.1. Transmitter Performance Characteristics

- 6.4.3.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.3.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.3.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 60 Watts output RF power.

- 6.4.3.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 45 dB.

6.4.3.2. Receiver Performance Characteristics

- 6.4.3.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.3.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.3.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.4.3.2.4. The adjacent channel rejection ratio shall meet or exceed 80 dB.
- 6.4.3.2.5. The spurious response rejection ratio shall meet or exceed 100 dB.
- 6.4.3.2.6. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.4.4. Analog Base Station/Repeater VHF High-Band Performance Characteristics: 12.5 kHz – Category 2

6.4.4.1. Transmitter Performance Characteristics

- 6.4.4.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.4.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.4.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 60 Watts output RF power.
- 6.4.4.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.4.4.2. Receiver Performance Characteristics

- 6.4.4.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.4.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.4.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.4.4.2.4. The adjacent channel rejection ratio shall meet or exceed 45 dB.
- 6.4.4.2.5. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.4.4.2.6. The intermodulation rejection ratio shall meet or exceed 75 dB.

**6.4.5. Analog Base Station/Repeater VHF High-Band Performance
Characteristics: 12.5 kHz – Category 3**

6.4.5.1. Transmitter Performance Characteristics

- 6.4.5.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.5.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.5.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 Watts output RF power.
- 6.4.5.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.4.5.2. Receiver Performance Characteristics

- 6.4.5.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.5.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.

- 6.4.5.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.4.5.2.4. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.4.5.2.5. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.4.5.2.6. The intermodulation rejection ratio shall meet or exceed 70 dB.

**6.4.6. Analog Base Station/Repeater UHF Band Performance Characteristics:
12.5 kHz – Category 1**

6.4.6.1. Transmitter Performance Characteristics

- 6.4.6.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.6.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.6.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 Watts output RF power.
- 6.4.6.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 45 dB.

6.4.6.2. Receiver Performance Characteristics

- 6.4.6.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.6.2.2. Radios shall be able to receive over an “as needed” VHF, UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.6.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.4.6.2.4. The adjacent channel rejection ratio shall meet or exceed 70 dB.
- 6.4.6.2.5. The spurious response rejection ratio shall meet or exceed 100 dB.

- 6.4.6.2.6. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.4.7. Analog Base Station/Repeater UHF Band Performance Characteristics: 12.5 kHz – Category 2

6.4.7.1. Transmitter Performance Characteristics

- 6.4.7.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.7.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.7.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 Watts output RF power.
- 6.4.7.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.4.7.2. Receiver Performance Characteristic

- 6.4.7.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.7.2.2. Radios shall be able to receive over “as needed” VHF, UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.7.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.4.7.2.4. The adjacent channel rejection ratio shall meet or exceed 45 dB.
- 6.4.7.2.5. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.4.7.2.6. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.4.8. Analog Base Station/Repeater UHF Band Performance Characteristics:12.5 kHz – Category 3

6.4.8.1. **Transmitter Performance Characteristics**

- 6.4.8.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.8.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.8.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 Watts output RF power.
- 6.4.8.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.4.8.2. **Receiver Performance Characteristics**

- 6.4.8.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.8.2.2. Radios shall be able to receive over an “as needed” VHF, UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.8.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.4.8.2.4. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.4.8.2.5. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.4.8.2.6. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.4.9. **Analog Base Station/Repeater 700/800 MHz Band Performance Characteristics: 25 kHz - Category 1**

6.4.9.1. **Transmitter Performance Characteristics**

- 6.4.9.1.1. **Radios shall be able to** transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.9.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.

- 6.4.9.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 75 Watts output RF power.
- 6.4.9.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 45 dB.

6.4.9.2. Receiver Performance Characteristics

- 6.4.9.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.9.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.9.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.4.9.2.4. The adjacent channel rejection ratio shall meet or exceed 75 dB.
- 6.4.9.2.5. The spurious response rejection ratio shall meet or exceed 90 dB.
- 6.4.9.2.6. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.4.10. Analog Base Station/Repeater 700/800 MHz Band Performance Characteristics: 25 kHz- Category 2

6.4.10.1. Transmitter Performance Characteristics

- 6.4.10.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.10.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.10.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 75 Watts output RF power.
- 6.4.10.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 45 dB.

6.4.10.2. Receiver Performance Characteristics

- 6.4.10.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.10.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.10.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.4.10.2.4. The adjacent channel rejection ratio shall meet or exceed 75 dB.
- 6.4.10.2.5. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.4.10.2.6. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.4.11. Analog Base Station/Repeater 700/800 MHz Band Performance Characteristics: 25 kHz- Category 3

6.4.11.1. Transmitter Performance Characteristics

- 6.4.11.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.11.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.11.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 Watts output RF power.
- 6.4.11.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.4.11.2. Receiver Performance Characteristics

- 6.4.11.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.4.11.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.

- 6.4.11.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.4.11.2.4. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.4.11.2.5. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.4.11.2.6. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.5. Analog Mobile Radios

6.5.1. General

- 6.5.1.1. **Configurations.** Each mobile radio shall support conventional and trunked analog 2-way voice communications in one of two configurations as listed below.
- 6.5.1.2. **Trunk Mount Configuration.** Trunk mounted radios shall include an integrated transmitter and receiver package with a separate control unit. The integrated transmitter and receiver package shall be suitable for mounting in a vehicle trunk or crew cab or other area occupied by vehicle passengers. Each trunk mount radio shall support a single separate control unit. Optionally, trunk mount radios must also support separate dual control heads. Separate external remote speakers and separate remote microphones shall also be included with each control unit. Power and antenna connections shall be provided on the integrated transmitter and receiver package only.
- 6.5.1.3. **Dash Mount Configuration.** Dash mounted radios shall include an integrated transmitter, receiver, and control unit package. A separate external remote speaker and separate remote microphone shall also be included. Power and antenna connections shall also be provided.
- 6.5.1.4. **Interchangeability.** All equipment of the same and/or like models shall be supplied so that direct interchangeability between radios, antennas, remote speakers, remote microphones, and cables and accessories can be accomplished without electrical, physical, firmware, or software modification.
- 6.5.1.5. **Accessory Connections.** External locking accessory electrical connectors shall be provided as an integral part of the radio or control unit and the accessory. Connectors shall be provided for, at a minimum, the antenna, remote speaker, remote microphone, power, and a software programmer. Subject to the approval of State Purchasing some connectors may be ganged to share an interface.

- 6.5.1.6. **Cabling and Installation Kit.** Each trunk or dash mount radio shall be provided with a complete cabling and installation kit for installing and powering the radio, control head(s), remote microphone(s), and remote speaker(s). All connectors for, including but not limited to, control unit(s), power, antenna, microphone(s), and external speaker(s) shall be locking type so that vibration cannot disengage the connection. Minimum cable lengths for any cable in the kit that interfaces with a trunk mount radio shall be 20 feet, including but not limited to power, control head, and external speaker cables.
- 6.5.1.7. **Trunk Mount Dimensions.** Each trunk mount radio package shall measure no larger than 4.5" high by 8" wide by 15" deep. Each separate control head shall measure no larger than 4.5" high by 8" wide by 4" deep.
- 6.5.1.8. **Dash Mount Dimensions.** Each dash mount radio shall measure no larger than 4.5" high by 8" wide by 15" deep including control head.
- 6.5.1.9. **Weight.** Each radio shall weigh a maximum of 15 pounds including a separate control head and external speaker.
- 6.5.1.10. **Housing.** Each radio shall be contained within a weather and impact resistant housing.
- 6.5.1.11. **Duty Cycle.** Each radio shall support an operational duty cycle of 1 minute transmit, and 4 minutes receive per 5 minutes. This 20-80 percent, per 5 minutes, duty cycle shall be supported for a minimum continuous period of 8 hours.
- 6.5.1.12. **Ambient Operational Temperature Range:** Each radio shall operate in an ambient temperature range of -30 degrees Celsius to +60 degrees Celsius. All mobile radio specifications in this document are referenced to +25 degrees Celsius.
- 6.5.1.13. **External Controls.** Each radio shall support the following minimum number of control functions, each accessible from separate controls on the outside of the control unit or dash mount radio package (including remote speaker-microphone). All controls must be able to function as intended when actuated while wearing appropriate protective gloves. Subject to the approval of State Purchasing, some functions may be ganged on shared external controls.
 - 6.5.1.13.1. Power on-off.
 - 6.5.1.13.2. Push-to-talk.
 - 6.5.1.13.3. Receive audio volume control.
 - 6.5.1.13.4. Channel selection.

- 6.5.1.13.5. Receive audio noise squelch sensitivity control.
- 6.5.1.13.6. Receive audio monitoring selection with CTCSS enabled.
- 6.5.1.13.7. Multiple-channel monitor (SCAN) controls.
- 6.5.1.13.8. DTMF selection.
- 6.5.1.14. **Display.** Each control unit or dash mount radio package shall include a 12 character alpha-numeric LCD display. The display shall facilitate radio usage and assist in the operation of external controls. The display shall be illuminated momentarily when any external control is actuated.
- 6.5.1.15. **Remote Microphone.** Each control unit or dash mount radio package shall include a handheld microphone with a PTT switch. Each microphone shall be detachable by the user.
- 6.5.1.16. **External Remote Speaker.** Each control unit or dash mount radio package shall include a separate external remote speaker. The speaker audio power and distortion specifications are listed below under receiver characteristics.
- 6.5.1.17. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform to TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation.
- 6.5.1.18. **CTCSS.** Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS. The tone-controlled squelch shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. An automatic switch shall be included to permit receive audio monitoring of the channel by a radio user prior to transmitting. This switch shall be separate from the Push-to-talk control. Radios shall support identical or different receive and transmit CTCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.
- 6.5.1.19. **CTCSS with Multiple-Channel Operation.** When multiple-channel radio operation requires CTCSS on more than one channel, the CTCSS encode and decode tones in each radio shall be automatically switched by channel selection. When switching

between channels that require CTCSS operation and channels that require audio noise squelch operation the mode of squelch operation shall be automatically switched by channel selection.

- 6.5.1.20. **Squelch Tail Elimination.** Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.
- 6.5.1.21. **Transmitter Time-Out Timer.** Each radio shall contain an integral, internal time-out timer to prevent inadvertent keying of the transmitter for an extended period of time. The time-out timer shall inhibit the transmitter when the radio transmission exceeds a predetermined adjustable length of time not to exceed 120 seconds. Provisions shall be included to permit the operator to reinitiate transmission immediately following transmitter inhibiting by the time-out timer.
- 6.5.1.22. **Multiple-Channel Monitoring.** Each radio shall support multiple-channel monitoring or “scanning.” The three modes of scanning shall be supported as discussed below. The radios shall support scanning a minimum of 500 channels for VHF high band, UHF and 700/800 MHz radios.
- 6.5.1.23. **Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. If the channel being monitored is not the programmed priority channel, the radio shall continue to scan the priority channel for the presence of a voice signal at such a rate that audio intelligibility is not seriously impaired. The presence of a voice signal on the priority channel shall cause the priority channel audio to be heard through the speaker with no loss of priority audio information. While the priority channel is being received the radio shall cease sampling the non-priority channel(s).
- 6.5.1.24. **Non-Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. While the voice signal is being received the radio shall cease sampling other channels. When the voice signal terminates, the radio shall resume sequential sampling after a suitable amount of time to ensure complete audio reception of the received voice signal.
- 6.5.1.25. **Radio Programming**
 - 6.5.1.25.1. Each radio shall be programmable. Programming shall permit specific user profiles to be stored in each radio to facilitate operation by different user groups. Programmed parameter

memory shall be non-volatile so that no settings are lost when the radio is powered off or when the radio is momentarily disconnected from its power source. The last channel selected shall appear as the selected channel after the radio is turned back on. The last selected scan mode shall also reinitiate after the radio is turned back on. The mobile shall be able to be cloned via portable radio.

- 6.5.1.25.2. Parameters that shall be programmable and stored include but are not limited to channel number, channel frequency, CTCSS encode and decode tones, priority channel number and frequency, multiple channel scan settings and all configurable radio operation settings.
- 6.5.1.25.3. When a procurement order is initiated by the Purchaser, the order will include a list of parameter configurations that the vendor shall program in each radio at no cost to the Purchaser. The intent is to ensure that radios are ready for use upon delivery.
- 6.5.1.25.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated.
- 6.5.1.25.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.
- 6.5.1.25.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.
- 6.5.1.25.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers.

6.5.2. Optional General Accessories

- 6.5.2.1. When a procurement order is initiated, the Purchaser may elect to purchase the following general accessories.
- 6.5.2.2. **Remote DTMF Microphone.** Each control unit or dash mount radio package shall include a handheld DTMF touchpad microphone with a PTT switch. Each DTMF microphone shall be detachable by the user.
- 6.5.2.3. **Dual Control Units.** Each trunk mount radio configuration shall support dual separate control units. These control units may be daisy chained or individually connected to the trunk mount unit.
- 6.5.2.4. **VHF, UHF and 700/800 MHz Vehicular Repeaters.** Each radio equipped as a vehicular repeater shall support operation as a full-duplex in-band or cross-band repeater. Full-duplex operation shall permit simultaneous reception and transmission on separate channels without compromising any of the radio performance specifications listed below. The vendor shall specify and provide any necessary filtering and duplexer equipment required to maintain transmitter and receiver performance. The following in-band and cross-band combinations shall be supported by mobile vehicular repeaters. The Purchaser will provide the vendor with the specific combination to be implemented when a procurement order is initiated.
 - 6.5.2.4.1. **Other Accessories.** These accessories include headsets, antennas, detachable cords, intercoms, jackboxes, panels/cables, etc.
 - 6.5.2.4.2. VHF high-band in-band repeating.
 - 6.5.2.4.3. UHF in-band repeating.
 - 6.5.2.4.4. VHF high-band to UHF cross-band repeating.
 - 6.5.2.4.5. 700/800 MHz in-band repeating.
 - 6.5.2.4.6. 700 MHz to 800 MHz cross-band repeating.

6.5.3. Mobile Radio Power

- 6.5.3.1. Each mobile radio shall be powered from a 12 Volt DC source.
- 6.5.3.2. **Vehicle Ignition Sensing.** Each radio shall include provisions to operate with or without ignition sensing. Without ignition sensing, the radio shall be installed such that the radio power supply is isolated from the vehicle starting circuit, always providing power to the radio. With ignition sensing, the radio shall be disconnected from the radio power supply during vehicle ignition or when the vehicle is powered off. Ignition control may be accomplished internally or with an external relay. The radio operational modes

and programming shall not be affected in either operational mode (with or without ignition sensing). The operational mode will be selected by the Purchaser when a procurement order is initiated.

- 6.5.3.3. **Power-Line Filter.** Each radio shall include a power-line filter to reduce power-line noise emissions such as alternator noise. Installation provisions shall permit the installation of this filter at the end of the power cable that terminates at the battery.

6.5.4. **Mobile Radio Equipment Environmental Specifications**

All mobile radio equipment and accessories shall comply with the following specific MIL-STD-810 test methods and Standards. Each subsystem, including but not limited to, integrated transmitter and receiver units, separate control units, cabling harnesses, and microphones shall meet all of the following environmental specifications (Category 1 radios only).

6.5.4.1. **Rain**

- 6.5.4.1.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 506.5, Rain, Procedure 1 for rain and blowing rain.
- 6.5.4.1.2. **MIL-STD-810, Revision F.** As an alternative to the above rain test, all radio equipment and accessories shall comply with Revision F, Test Method 506.4, Rain, Procedure 1 for rain and blowing rain.

6.5.4.2. **Salt Fog**

- 6.5.4.2.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 509.5, Salt Fog, Procedure 1 (aggravated screening).
- 6.5.4.2.2. **MIL-STD-810, Revision F.** As an alternative to the above salt fog test, all radio equipment and accessories shall comply with Revision F, Test Method 509.4, Salt Fog, Procedure 1.

6.5.4.3. **Sand and Dust**

- 6.5.4.3.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 510.5, Sand and Dust, Procedure 1 for blowing dust.
- 6.5.4.3.2. **MIL-STD-810, Revision F.** As an alternative to the above sand and dust test, all radio equipment and accessories shall comply with Revision F, Test Method 510.4, Sand and Dust, Procedure 1 for blowing dust.

6.5.4.4. **Vibration**

6.5.4.4.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 514.6, Vibration, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).

6.5.4.4.2. **MIL-STD-810, Revision F.** As an alternative to the above vibration test, all radio equipment and accessories shall comply with Revision F, Test Method 514.5, Vibration, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).

6.5.4.5. **Physical Shock**

6.5.4.5.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 516.6, Shock, Procedure 1 for functional shock.

6.5.4.5.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with Revision F, Test Method 516.5, Shock, Procedure 1 for functional shock.

6.5.4.6. **High Temperature**

6.5.4.6.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 501.5, High Temperature, Procedure II for operations.

6.5.4.6.2. **MIL-STD-810, Revision F.** As an alternative to the above high temperature test, all radio equipment and accessories shall comply with Revision F, Test Method 501.4, High Temperature, Procedure II for operations.

6.5.4.7. **Humidity**

6.5.4.7.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 507.5, Humidity, Procedure 1 (induced and natural) for humidity.

6.5.4.7.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with Revision F, Test Method 507.4, Humidity, Procedure 1 (induced and natural) for humidity.

6.5.5. **Analog Mobile VHF High-Band Performance Characteristics: 12.5 kHz-Category 1**

6.5.5.1. **Transmitter Performance Characteristics**

6.5.5.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

- 6.5.5.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.5.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 Watts output RF power.
- 6.5.5.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 44 dB.

6.5.5.2. Receiver Performance Characteristics

- 6.5.5.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.5.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.5.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.5.5.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.5.5.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.5.5.2.6. The adjacent channel rejection ratio shall meet or exceed 63 dB.
- 6.5.5.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.5.5.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.5.6. Analog Mobile VHF High-Band Performance Characteristics: 12.5 kHz-Category 2

6.5.6.1. Transmitter Performance Characteristics

- 6.5.6.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.6.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.6.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 Watts output RF power.
- 6.5.6.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.5.6.2. Receiver Performance Characteristics

- 6.5.6.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.6.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.6.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.5.6.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.5.6.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.5.6.2.6. The adjacent channel rejection ratio shall meet or exceed 45 kHz for 12.5 kHz.
- 6.5.6.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.5.6.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.5.7. Analog Mobile VHF High-Band Performance Characteristics: 12.5 kHz-Category 3

6.5.7.1. Transmitter Performance Characteristics

- 6.5.7.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.7.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.7.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 40 Watts output RF power.
- 6.5.7.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 30 dB.

6.5.7.2. Receiver Performance Characteristics

- 6.5.7.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.7.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.7.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.5.7.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.5.7.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.5.7.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB for 12.5 kHz.
- 6.5.7.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.

- 6.5.7.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 70 dB.

6.5.8. Analog Mobile UHF Band Performance Characteristics: 12.5 kHz- Category 1

6.5.8.1. Transmitter Performance Characteristics

- 6.5.8.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.8.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.8.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 watts for 12.5 kHz.
- 6.5.8.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 39 dB.

6.5.8.2. Receiver Performance Characteristics

- 6.5.8.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.8.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.8.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.5.8.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.5.8.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.

- 6.5.8.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 65 dB.
- 6.5.8.2.7. The spurious response rejection ratio shall meet or exceed 75 dB for 12.5 kHz.
- 6.5.8.2.8. The intermodulation ratio shall receive with a minimum ratio of 75 dB for 12.5 kHz.

6.5.9. Analog Mobile UHF Band Performance Characteristics: 12.5 kHz- Category 2

6.5.9.1. Transmitter Performance Characteristics

- 6.5.9.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.9.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.9.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 watts for 12.5 kHz.
- 6.5.9.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.5.9.2. Receiver Performance Characteristics

- 6.5.9.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.9.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.9.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.

- 6.5.9.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.5.9.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.5.9.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 45 dB.
- 6.5.9.2.7. The spurious response rejection ratio shall meet or exceed 75 dB for 12.5.
- 6.5.9.2.8. The intermodulation ratio shall receive with a minimum ratio of 75 dB for 12.5 kHz.

6.5.10. Analog Mobile UHF Band Performance Characteristics: 12.5 kHz - Category 3

6.5.10.1. Transmitter Performance Characteristics

- 6.5.10.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.10.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.10.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 watts for 12.5 kHz.
- 6.5.10.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 30 dB.

6.5.10.2. Receiver Performance Characteristics

- 6.5.10.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.5.10.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread

that will be provided to the vendor when a procurement order is initiated.

- 6.5.10.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.5.10.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.5.10.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.5.10.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 40 dB.
- 6.5.10.2.7. The spurious response rejection ratio shall meet or exceed 70 dB for 12.5 kHz.
- 6.5.10.2.8. The intermodulation ratio shall receive with a minimum ratio of 70 dB for 12.5.

6.5.11. Analog Mobile 700/800MHz Band Performance Characteristics: 25 kHz – Category 1

6.5.11.1. Transmitter Performance Characteristics

- 6.5.11.1.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 500 channels when a procurement order is initiated.
- 6.5.11.1.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.11.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 30 Watts output RF power for 700 MHz and 35 watts for 800 MHz.
- 6.5.11.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 40 dB.

6.5.11.2. Receiver Performance Characteristics

- 6.5.11.2.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 500 channels when a procurement order is initiated.
- 6.5.11.2.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.
- 6.5.11.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.25 uV at the receiver RF input.
- 6.5.11.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.5.11.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.5.11.2.6. The adjacent channel rejection ratio shall meet or exceed 75 dB.
- 6.5.11.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.5.11.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.5.12. Analog Mobile 700/800MHz Band Performance Characteristics: 25 kHz-Category 2

6.5.12.1. Transmitter Performance Characteristics

- 6.5.12.1.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 200 channels when a procurement order is initiated.
- 6.5.12.1.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.5.12.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 30 Watts output RF power for 700 MHz and 35 watts for 800 MHz.

- 6.5.12.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.5.12.2. Receiver Performance Characteristics

- 6.5.12.2.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 200 channels when a procurement order is initiated.
- 6.5.12.2.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.
- 6.5.12.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.25 uV at the receiver RF input.
- 6.5.12.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.5.12.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.5.12.2.6. The adjacent channel rejection ratio shall meet or exceed 75 dB.
- 6.5.12.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.5.12.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.5.13. Analog Mobile 700/800MHz Band Performance Characteristics: 25 kHz-Category 3

6.5.13.1. Transmitter Performance Characteristics

- 6.5.13.1.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 50 channels when a procurement order is initiated.
- 6.5.13.1.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to receive over an "as needed" 700/800 MHz frequency spread that will be

provided to the vendor when a procurement order is initiated.

6.5.13.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 30 Watts output RF power for 700 MHz and 35 watts for 800 MHz.

6.5.13.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.5.13.2. **Receiver Performance Characteristics**

6.5.13.2.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 50 channels when a procurement order is initiated.

6.5.13.2.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.

6.5.13.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.

6.5.13.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.

6.5.13.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.

6.5.13.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB.

6.5.13.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.

6.5.13.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.6. **Analog Portable Radios**

6.6.1. **General**

6.6.1.1. **Configuration.** Each portable radio shall support conventional and trunked analog 2-way voice communications as a completely

integral unit. Each integral unit shall consist of the following major components.

- 6.6.1.1.1. Receiver and transmitter.
- 6.6.1.1.2. Speaker and microphone.
- 6.6.1.1.3. Removable antenna.
- 6.6.1.2. **Interchangeability.** All equipment of the same and/or like models shall be supplied so that direct interchangeability between radios, antennas, remote speaker-microphones, batteries, chargers, and cables and accessories can be accomplished without electrical, physical, firmware, or software modification.
- 6.6.1.3. **Accessory Connections.** External accessory electrical connectors shall be provided, as an integral part of the radio and accessory. Connectors shall be provided for, at a minimum, the antenna, drop-in battery charger, remote speaker-microphone, remote speaker-microphone-antenna, software programmer, and a vehicular charger drop-in remote speaker-microphone-antenna.
- 6.6.1.4. **Dimensions.** Each radio shall measure no larger than 10" high by 3" wide by 2" deep, including battery and not including controls and antennas.
- 6.6.1.5. **Weight.** Each radio shall weigh a maximum of 33 ounces including battery pack and antenna.
- 6.6.1.6. **Housing.** Each radio shall be contained within a weather and impact resistant housing.
- 6.6.1.7. **Duty Cycle.** Each radio shall support an operational duty cycle of 3 seconds transmit, 3 seconds receive and 54 seconds standby per minute. This 5-5-90 percent, per minute, duty cycle shall be supported by each radio for a minimum continuous period of 8 hours without changing batteries.
- 6.6.1.8. **Ambient Operational Temperature Range:** Each radio shall operate in an ambient temperature range of -30 degrees Celsius to +60 degrees Celsius. All portable radio specifications in this document are referenced to +25 degrees Celsius, excluding battery specifications.
- 6.6.1.9. **External Controls.** Each radio shall support the following minimum number of control functions, each accessible from separate controls on the outside of the radio case. All controls must be able to function as intended when actuated while wearing appropriate protective gloves.

Subject to the approval of State Purchasing, some functions may be

ganged on shared external controls.

- 6.6.1.9.1. Power on-off.
- 6.6.1.9.2. Push-to-talk.
- 6.6.1.9.3. Receive audio volume control.
- 6.6.1.9.4. Channel selection.
- 6.6.1.9.5. Receive audio noise squelch sensitivity control.
- 6.6.1.9.6. Receive audio monitoring selection with CTCSS enabled.
- 6.6.1.9.7. Multiple-channel monitor (SCAN) controls.
- 6.6.1.10. **Display.** Each radio shall include an alpha-numeric LCD display. The display shall facilitate radio usage and assist in the operation of external controls. The display shall be illuminated momentarily when any external control is actuated.
- 6.6.1.11. **VHF High Band Antennas.** Each high-band VHF portable radio shall be provided with a continuously-loaded, coil-spring type antenna. The operator-attachable antenna shall attach to the radio on the appropriate connection using an industry standard coaxial screw-on connector. BNC connectors are not permitted. To prevent inadvertent shorting, the antenna shall be covered with a dielectric coating. The antenna length shall be approximately 12 inches for low band antennas and 7 inches for high band antennas.
- 6.6.1.12. **UHF, 700/800 MHz Antennas.** Each portable radio shall be provided with a flexible one-quarter wavelength antenna. The operator-attachable antenna shall attach to the radio on the appropriate connection using an industry standard coaxial screw-on connector. BNC connectors are not permitted. To prevent inadvertent shorting, the antenna shall be covered with a dielectric coating. The antenna length shall be approximately 6 inches.
- 6.6.1.13. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation.

- 6.6.1.14. **CTCSS.** Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS. The tone-controlled squelch

shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. An external control shall be

included on the radio case to permit receive audio monitoring of the channel by a radio user prior to transmitting. This control shall be separate from the Push-to-talk control. Radios shall support identical or different receive and transmit CTCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.

- 6.6.1.15. **CTCSS with Multiple-Channel Operation.** When multiple-channel radio operation requires CTCSS on more than one channel, the CTCSS encode and decode tones in each radio shall be automatically switched by channel selection. When switching between channels that require CTCSS operation and channels that require audio noise squelch operation the mode of squelch operation shall be automatically switched by channel selection.

- 6.6.1.16. **Squelch Tail Elimination.** Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.

- 6.6.1.17. **Transmitter Time-Out Timer.** Each radio shall contain an integral, internal time-out timer to prevent inadvertent keying of the transmitter for an extended period of time. The time-out timer shall inhibit the transmitter when the radio transmission exceeds a predetermined, adjustable length of time not to exceed 120 seconds. Provisions shall be included to permit the operator to reinitiate transmission immediately following transmitter inhibiting by the time-out timer.

- 6.6.1.18. **Two-Tone Paging (Crew Alerting).** Each radio should support industry standard two-tone paging.

- 6.6.1.19. **Multiple-Channel Monitoring.** Each radio shall support multiple-channel monitoring or "scanning." Two modes of scanning shall be supported as discussed below. VHF high band, UHF radios and 700/800 MHz radios shall support scanning a minimum of 700 channels.

- 6.6.1.19.1. **Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the

speaker. If the channel being monitored is not the programmed priority channel, the radio shall continue to scan the priority channel for the presence of a voice signal at such a rate that audio intelligibility is not seriously impaired. The presence of a voice signal on the priority channel shall cause the priority channel audio to be heard through the speaker with no loss of priority audio information. While the priority channel is being received the radio shall cease sampling the non-priority channel(s).

6.6.1.19.2. **Non-Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. While the voice signal is being received the radio shall cease sampling other channels. When the voice signal terminates, the radio shall resume sequential sampling after a suitable amount of time to ensure complete audio reception of the received voice signal.

6.6.1.19.3. **Belt Clip.** Each radio shall be provided with a belt clip that interfaces with the carrying case. The belt clip shall be of a swivel-mount type to permit rapid installation and removal from the user's belt.

6.6.1.20. **Radio Programming**

6.6.1.20.1. Each radio shall be programmable. Programming shall permit specific user profiles to be stored in each radio to facilitate operation by different user groups. Programmed parameter memory shall be non-volatile so that no settings are lost when the radio is powered off or when the radio is momentarily disconnected from its battery for battery replacement. The last channel selected shall appear as the selected channel after the radio is turned back on. The last selected scan mode shall also reinitiate after the radio is turned back on. The portable shall be capable of cloning mobile radios.

6.6.1.20.2. Parameters that shall be programmable and stored include but are not limited to channel number, channel frequency, CTCSS encode and decode tones, two-tone paging encode and decode tones, priority channel number and frequency, multiple channel scan settings and all configurable radio operation settings.

6.6.1.20.3. When a procurement order is initiated by the Purchaser the order will include a list of parameter configurations that the vendor shall program in each radio at no cost to the Purchaser. The intent is to ensure that radios are ready for use upon delivery.

- 6.6.1.20.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated.
- 6.6.1.20.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.
- 6.6.1.20.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order. The vendor shall also provide the software upon request from the Purchaser.
- 6.6.1.20.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers.

6.6.2. **Optional General Accessories**

- 6.6.2.1. When a procurement order is initiated, the Purchaser may elect to purchase the following general accessories.
- 6.6.2.2. **Remote Speaker-Microphone.** Each remote speaker-microphone shall be provided as a combination unit in one handheld enclosure and shall include a push-to-talk external control. The cabling and connector necessary to attach this accessory to the radio shall be provided with this unit.
- 6.6.2.3. **Remote Speaker-Microphone-Antenna.** Each remote speaker-microphone-antenna shall be provided as a combination unit in one handheld enclosure and shall include a push-to-talk external control. The cabling and connector necessary to attach this accessory to the radio shall be provided with this unit.
- 6.6.2.4. **Other Accessories.** These accessories include headsets, carrying cases, detachable cords, intercoms, jackboxes, panels/cables, etc.

6.6.3. **Portable Radio Power**

- 6.6.3.1. **Batteries.** Each radio shall be provided with two high-capacity rechargeable batteries. Each battery shall be constructed with Nickel-metal hydride, Lithium-ion or Li-Polymer cells. Each battery shall be configured by either connection or mechanical shape to eliminate the possibility of connecting the incorrect polarity to the radio.
- 6.6.3.2. **Battery Power Rating.** Each battery shall be rated with sufficient Amp-hours to permit operation with the manufacturer's specified load for 8 hours. Each battery shall support a portable radio standard duty cycle for one minute of 3 seconds transmitting, 3 seconds receiving (with the audio output power specified below), and 54 seconds on standby. This 5-5-90 percent, per-minute, duty cycle shall be supported by each battery for a continuous 8 hour period.

6.6.4. **Optional Portable Radio Power Accessories**

When a procurement order is initiated, Purchaser may elect to purchase the following general accessories.

- 6.6.4.1. **Rapid Battery Charger.** Each radio shall be provided with a rapid battery charger. The charger circuitry shall be matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in receive or standby mode while charging the battery.
- 6.6.4.2. **Multiple Unit Rapid Battery Charger.** Each multiple unit rapid battery charger shall comply to all specifications for a rapid battery charger, as stated above, and support simultaneous rapid charging of a minimum of four batteries.
- 6.6.4.3. **Slow Battery Charger**
 - 6.6.4.3.1. Each slow battery charger shall be provided with charger circuitry that is matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in receive or standby mode while charging the battery.
 - 6.6.4.3.2. **Charger Power.** Each slow charger shall be powered from a 120 Volt AC, 60 Hz single phase source using a standard AC

plug. A visual indicator shall be included to indicate the charger is in operation.

6.6.4.3.3. **Charging Rate.** Each slow charger shall charge a discharged battery to 100% of its maximum charge within a minimum of ten hours and a maximum of 16 hours. The charging rate and charging rate control shall be matched to the battery cell technology and shall not reduce its Amp-hour rating, or the rated number of charge cycles, and shall not otherwise damage the battery.

6.6.4.3.4. **Charge Indicator.** Each slow charger shall include an indicator to display the relative charge status of the battery. The indicator shall indicate a single point charge condition on the battery charging curve, i.e., a light that illuminates or increases in intensity when the battery reaches a specified charge level.

6.6.4.4. **Multiple Unit Slow Battery Charger.** Each multiple unit slow battery charger shall comply with all specifications for a slow battery charger, as stated above, and support simultaneous slow charging of a minimum of four batteries.

6.6.4.5. **Smart Charger**

6.6.4.6. **Vehicular Charger**

6.6.4.6.1. Each radio shall be provided with a smart battery charger. The charger circuitry shall be matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in receive or standby mode while charging the battery.

6.6.4.6.2. **Charger Power.** Each smart charger shall be powered from a 120 Volt AC, 60 Hz single phase source using a standard AC plug. A visual indicator shall be included to indicate the charger is in operation.

6.6.4.6.3. **Charging Rate.** Each smart charger shall function as a rapid charger and charge a discharged battery to 90% of its maximum charge within three hours. The charging rate and charging rate control shall be matched to the battery cell technology and shall not reduce its Amp-hour rating, or the rated number of charge cycles, and shall not otherwise damage the battery.

6.6.4.6.4. **Charge Indicator.** Each smart charger shall include an indicator to display the relative charge status of the battery.

The indicator shall indicate a single point charge condition on the battery charging curve, i.e., a light that illuminates or increases in intensity when the battery reaches a specified charge level.

6.6.4.6.5. **Analyzer Functions.** Each smart charger shall also provide discharging, analyzing, conditioning and cycle testing functions that track voltage and capacity. These functions shall be used to adjust for an optimum charge profile and prolong battery life.

6.6.4.6.6. **Multiple Unit Smart Charger.** Each multiple unit smart battery charger shall comply with all specifications for a smart battery charger, as stated above, and support simultaneous smart charging of a minimum of four batteries.

6.6.4.7. **Vehicular Charger**

6.6.4.7.1. Each vehicular charger shall be provided with charger circuitry that is matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in receive or standby mode while charging the battery. The vehicular charger shall also function as a storage receptacle for the radio as installed in the vehicle.

6.6.4.7.2. **Cabling and Installation Kit.** Each vehicular charger shall be provided with a complete cabling and installation kit for installing and powering the charger. All connectors shall be locking type so that vibration does not disengage the connection.

6.6.4.7.3. **Charger Power.** Each vehicular charger shall be powered from a 12 Volt DC source. A visual indicator shall be included to indicate the charger is in operation.

6.6.4.7.4. **Charging Rate.** Each vehicular charger shall charge a discharged battery to 100% of its maximum charge within a minimum of ten hours and a maximum of 16 hours. The charging rate and charging rate control shall be matched to the battery cell technology and shall not reduce its Amp-hour rating, or the rated number of charge cycles, and shall not otherwise damage the battery.

6.6.4.7.5. **Charge Indicator.** Each vehicular charger shall include an indicator to display the relative charge status of the battery. The indicator shall indicate a single point charge condition on

the battery charging curve, i.e., a light that illuminates or increases in intensity when the battery reaches a specified charge level.

6.6.4.8. **Vehicular Charger With Remote Speaker, Microphone, and Antenna**

- 6.6.4.8.1. Each vehicular charger with remote speaker, microphone, and antenna shall be provided with charger circuitry that is matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in the transmit, receive or standby mode while charging the battery. The vehicular charger shall also function as a storage receptacle for the radio as installed in the vehicle.
- 6.6.4.8.2. **Additional Radio Interfaces.** When the radio is inserted in the vehicular charger the charger shall also automatically make connections between the radio and a mobile antenna, remote microphone, and remote speaker.
- 6.6.4.8.3. **Mobile Antenna Connection.** The vehicular charger shall be provided with an industry standard coaxial screw-on antenna connection to permit the charger to interface with a mobile mount antenna. BNC connectors are not permitted. This connection shall automatically interface with the radio when it is inserted in the charger.
- 6.6.4.8.4. **Remote Microphone.** The vehicular charger shall be provided with a remote microphone and mount. This connection shall automatically interface with the radio when it is inserted in the charger.
- 6.6.4.8.5. **Remote Speaker.** The vehicular charger shall be provided with a remote speaker and mounting kit. The remote speaker shall meet the technical specifications for a mobile radio remote speaker as specified below.
- 6.6.4.8.6. **Cabling and Installation Kit.** Each vehicular charger shall be provided with a complete cabling and installation kit for installing and powering the charger, remote microphone, and remote speaker. All connectors shall be locking type so that vibration does not disengage the connection.
- 6.6.4.8.7. **Charger Power.** Each vehicular charger shall be powered from a 12 Volt DC source. A visual indicator shall be included to indicate the charger is in operation.

- 6.6.4.8.8. **Charging Rate.** Each vehicular charger shall charge a discharged battery to 100% of its maximum charge within a minimum of ten hours and a maximum of 16 hours. The charging rate and charging rate control shall be matched to the battery cell technology and shall not reduce its Amp-hour rating, or the rated number of charge cycles, and shall not otherwise damage the battery.
- 6.6.4.8.9. **Charge Indicator.** Each vehicular charger shall include an indicator to display the relative charge status of the battery. The indicator shall indicate a single point charge condition on the battery charging curve, i.e., a light that illuminates or increases in intensity when the battery reaches a specified charge level.

6.6.5. **Portable Radio Equipment Environmental Specifications**

All portable radio equipment and accessories shall comply with the following specific MIL-STD-810 test methods and Standards (Category 1 radios only).

6.6.5.1. **Rain**

- 6.6.5.1.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 506.5, Rain, Procedure 1 for rain and blowing rain.
- 6.6.5.1.2. **MIL-STD-810, Revision F.** As an alternative to the above rain test, all radio equipment and accessories shall comply with Revision F, Test Method 506.4, Rain, Procedure 1 for rain and blowing rain.

6.6.5.2. **Salt Fog**

- 6.6.5.2.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 509.5, Salt Fog Procedure 1 (aggravated screening).
- 6.6.5.2.2. **MIL-STD-810, Revision F.** As an alternative to the above salt fog test, all radio equipment and accessories shall comply with Revision F, Test Method 509.4, Salt Fog, Procedure 1.

6.6.5.3. **Sand and Dust**

- 6.6.5.3.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 510.5, Sand and Dust, Procedure 1 for blowing dust.
- 6.6.5.3.2. **MIL-STD-810, Revision F.** As an alternative to the above sand and dust test, all radio equipment and accessories shall

comply with Revision F, Test Method 510.4, Sand and Dust, Procedure 1 for blowing dust.

6.6.5.4. Vibration

MIL-STD-810, Revision G. All radio equipment and accessories shall comply with Test Method 514.6, Vibration, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).

- 6.6.5.4.1. **MIL-STD-810, Revision F.** As an alternative to the above vibration test, all radio equipment and accessories shall comply with Revision F, Test Method 514.5, Vibration, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).

6.6.5.5. Physical Shock

- 6.6.5.5.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 516.6, Shock, Procedure 1 for functional shock.

- 6.6.5.5.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with Revision F, Test Method 516.5, Shock, Procedure 1 for functional shock.

6.6.5.6. High Temperature

- 6.6.5.6.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 501.5, High Temperature, Procedure II for operations.

- 6.6.5.6.2. **MIL-STD-810, Revision F.** As an alternative to the above high temperature test, all radio equipment and accessories shall comply with Revision F, Test Method 501.4, High Temperature, Procedure II for operations.

6.6.5.7. Humidity

- 6.6.5.7.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 507.5, Humidity, Procedure 1 (induced and natural) for humidity.

- 6.6.5.7.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with Revision F, Test Method 507.4, Humidity, Procedure 1 (induced and natural) for humidity.

6.6.6. Analog Portable VHF High-Band Performance Characteristics: 12.5 kHz-Category 1

6.6.6.1. Transmitter Performance Characteristics

- 6.6.6.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.6.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.6.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.6.6.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.6.6.2. **Receiver Performance Characteristics**

- 6.6.6.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.6.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.6.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.6.6.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.6.6.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.6.6.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 63 dB.
- 6.6.6.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.6.6.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.6.7. **Analog Portable VHF High-Band Performance Characteristics: 12.5 kHz-Category 2**

6.6.7.1. Transmitter Performance Characteristics

- 6.6.7.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.7.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.7.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.6.7.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 33 dB.

6.6.7.2. Receiver Performance Characteristics

- 6.6.7.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.7.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.7.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.6.7.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.6.7.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/-10 %.
- 6.6.7.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 45 dB.
- 6.6.7.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.

- 6.6.7.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.6.8. Analog Portable VHF High-Band Performance Characteristics: 12.5 kHz-Category 3

6.6.8.1. Transmitter Performance Characteristics

- 6.6.8.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.8.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.8.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.6.8.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 30 dB.

6.6.8.2. Receiver Performance Characteristics

- 6.6.8.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.8.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.8.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.6.8.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.6.8.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.6.8.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 40 dB.

- 6.6.8.2.7. The spurious response rejection ratio shall meet or exceed 60 dB.
- 6.6.8.2.8. The intermodulation rejection ratio shall meet or exceed 60 dB.

6.6.9. Analog Portable UHF Band Performance Characteristics: 12.5 kHz-Category 1

6.6.9.1. Transmitter Performance Characteristics

- 6.6.9.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.9.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.9.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.6.9.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 38 dB.

6.6.9.2. Receiver Performance Characteristics

- 6.6.9.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.9.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.9.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.6.9.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.

- 6.6.9.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.6.9.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.6.9.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.6.9.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.6.10. Analog Portable UHF Band Performance Characteristics: 12.5 kHz-Category 2

6.6.10.1. Transmitter Performance Characteristics

- 6.6.10.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.10.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.10.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.6.10.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.6.10.2. Receiver Performance Characteristics

- 6.6.10.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.10.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.

- 6.6.10.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.6.10.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.6.10.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.6.10.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 45 dB.
- 6.6.10.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.6.10.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.6.11. Analog Portable UHF Band Performance Characteristics:12.5 kHz-Category 3

6.6.11.1. Transmitter Performance Characteristics

- 6.6.11.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an "as needed" number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.6.11.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an "as needed" UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.11.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.6.11.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 30 dB.

6.6.11.2. Receiver Performance Characteristics

- 6.6.11.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to receive on an "as needed" number of channels that will be provided to the vendor when a procurement order is initiated.

- 6.6.11.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.11.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.6.11.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.6.11.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.6.11.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 40 dB.
- 6.6.11.2.7. The spurious response rejection ratio shall meet or exceed 60 dB.
- 6.6.11.2.8. The intermodulation rejection ratio shall meet or exceed 60 dB.

6.6.12. Analog Portable 700/800 MHz Band Performance Characteristics: 25 kHz–Category 1

6.6.12.1. Transmitter Performance Characteristics

- 6.6.12.1.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 500 channels when a procurement order is initiated.
- 6.6.12.1.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to transmit when a procurement order is initiated.
- 6.6.12.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 3 Watts output RF power.
- 6.6.12.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 40 dB.

6.6.12.2. Receiver Performance Characteristics

- 6.6.12.2.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 500 channels when a procurement order is initiated.
- 6.6.12.2.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.
- 6.6.12.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.6.12.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.6.12.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.6.12.2.6. The adjacent channel rejection ratio shall meet or exceed 70 dB.
- 6.6.12.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.6.12.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.6.13. Analog Portable 700/800 MHz Band Performance Characteristics: 25 kHz–Category 2

6.6.13.1. Transmitter Performance Characteristics

- 6.6.13.1.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 200 channels when a procurement order is initiated.
- 6.6.13.1.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.13.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 3 Watts output RF power.
- 6.6.13.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.6.13.2. Receiver Performance Characteristics

- 6.6.13.2.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 200 channels when a procurement order is initiated.
- 6.6.13.2.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.
- 6.6.13.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.6.13.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.6.13.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.6.13.2.6. The adjacent channel rejection ratio shall meet or exceed 70 dB.
- 6.6.13.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.6.13.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.6.14. Analog Portable 700/800 MHz Band Performance Characteristics: 25 kHz-Category 3

6.6.14.1. Transmitter Performance Characteristics

- 6.6.14.1.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 50 channels when a procurement order is initiated.
- 6.6.14.1.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.6.14.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 3 Watts output RF power.
- 6.6.14.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.6.14.2. Receiver Performance Characteristics

- 6.6.14.2.1. Radios operating with a 25 kHz channel spacing shall support a minimum of 50 channels when a procurement order is initiated.
- 6.6.14.2.2. Radios operating with a 25 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.
- 6.6.14.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.6.14.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.6.14.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.6.14.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.6.14.2.7. The spurious response rejection ratio shall meet or exceed 60 dB.
- 6.6.14.2.8. The intermodulation rejection ratio shall meet or exceed 60 dB.

6.7. **Project 25 (P25) Compliant Base Station/Repeater Radios**

6.7.1. **General**

- 6.7.1.1. **Configuration.** Each base station radio shall support conventional and trunked digital 2-way voice communications as a completely integral unit. Plug-in style mobile radios and add-on power supplies are not permitted. Each integral base station unit shall consist of the following major components.
 - 6.7.1.1.1. Receiver.
 - 6.7.1.1.2. Transmitter with internal power amplifier.
 - 6.7.1.1.3. Power supply.
- 6.7.1.2. **Interchangeability.** All equipment of the same and/or like models shall be supplied so that direct interchangeability between radios, antennas,

audio circuits, power cables, and accessories can be accomplished without electrical, physical, firmware, or software modification.

- 6.7.1.3. **Accessory Connections.** External accessory electrical connectors shall be provided as an integral part of the radio and accessory. Connectors shall be provided for, at a minimum, the antenna, audio circuits, power, remote speaker-microphone, and software programmer. Subject to the approval of State Purchasing some connectors may be ganged to share an interface.
- 6.7.1.4. **Mounting.** Each radio shall be provided with provisions for mounting in both four post racks and cabinets and two post relay racks. All necessary mounting flanges and hardware shall be included. Each radio shall support installation in a 19" wide rack or cabinet.
- 6.7.1.5. **Chassis Assembly.** Each radio shall be contained within an enclosed chassis assembly that protects the internal circuitry from physical damage and protects a radio maintainer from accidental shock. No exposed terminations such as uncovered terminal blocks or screw lugs shall be permitted. The only exception shall be a chassis ground lug. The chassis assembly shall also provide easy access to internal circuitry for servicing while installed in a rack or cabinet.
- 6.7.1.6. **Cabling and Installation Kit.** Each radio shall be provided with a complete cabling and installation kit for installing the radio and accessories in a rack or cabinet. This kit shall include but not be limited to mounting hardware for the radio and accessories and all cabling necessary to interconnect the radio and accessories.
- 6.7.1.7. **Duty-Cycle.** Each radio shall support a continuous duty cycle for 24 hours. This duty cycle shall permit the radio to be operated with its transmitter and power amplifier energized at full power for the entire 24 hours without damage to the radio.
- 6.7.1.8. **Ambient Operational Temperature Range:** Each radio shall operate in an ambient temperature range of -30 degrees Celsius to +60 degrees Celsius. All base station radio specifications in this document are referenced to +25 degrees Celsius.
- 6.7.1.9. **Antenna Interface.** Each radio shall include a single industry standard coaxial connector to support simplex operation. An integral transmitter-receiver RF relay shall be used to support simplex operation via this single antenna connection.
- 6.7.1.10. **Remote Radio Interfacing and Control**
 - 6.7.1.10.1. **Audio Interface.** Each radio shall support both a 2 wire and a 4 wire audio circuit interface. The input audio interface shall provide a 600 Ohm load and support audio levels between -

- 20 and 10 dBm. The output audio interface shall provide an adjustable audio level between -20 and 0 dBm when presented with a 600 Ohm load. Both the audio input and output interfaces shall meet or exceed TIA 603-D audio fidelity specifications.
- 6.7.1.10.2. **Tone Control.** Each radio shall support remote inband-audio tone control via the audio interface. The tone control functions shall be programmable and include but not be limited to transmitter keying, CTCSS/CDCSS circuit disabling to monitor the received audio before transmitting, and carrier operated switching to support voter operation.
- 6.7.1.10.3. **E&M Signaling.** Each radio shall support remote out-of-band E&M signaling via a 4 wire interface compatible with industry standard PCM channel-banks. The E&M signaling functioning shall include but not be limited to transmitter keying via the E-lead and carrier operated switching via the M-lead to support voter operation.
- 6.7.1.11. **Local Radio Control.** Each radio shall include a remote microphone with a PTT switch. A separate speaker shall also be provided that may be an integral part of the radio or mounted externally. All necessary mounting hardware for the remote microphone and external speaker shall be provided. An external, front-panel control shall be provided to mute the received audio and to adjust the received audio volume.
- 6.7.1.12. **Status Indicators.** Illuminated indicators shall be provided on the front of the radio to indicate the following functions at a minimum.
- 6.7.1.12.1. Power-on condition.
- 6.7.1.12.2. Transmitter energized condition.
- 6.7.1.12.3. Internal alarm condition.
- 6.7.1.13. **VSWR Monitoring Circuit.** Each radio shall be provided with a VSWR monitoring circuit that monitors the VSWR during transmission and detects a high VSWR condition. When a high VSWR condition is detected by the circuit, the transmitter shall automatically reduce power to a level that will not damage the radio when transmitting continuously into any high VSWR condition. When a low VSWR condition has been reestablished, the radio shall resume operation at the original power setting.
- 6.7.1.14. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during

normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling.

- 6.7.1.15. **CTCSS/DCSS.** Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS/DCSS. The tone-controlled squelch shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. In local control an automatic switch shall be included to permit receive audio monitoring of the channel by a radio user prior to transmitting. This switch shall be separate from the PTT control. Radios shall support identical or different receive and transmit CTCSS/DCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.
- 6.7.1.16. **Squelch Tail Elimination.** Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.
- 6.7.1.17. **Transmitter Time-Out Timer.** Each radio shall contain an integral, internal time-out timer to prevent inadvertent keying of the transmitter for an extended period of time. The time-out timer shall inhibit the transmitter when the radio transmission exceeds a predetermined length of time not to exceed 120 seconds. Provisions shall be included to permit the operator to reinitiate transmission immediately following transmitter inhibiting by the time-out timer.
- 6.7.1.18. **Two-Tone Paging (Crew Alerting).** Each radio should support industry standard two-tone paging including at a minimum the Motorola "Quick-Call" and General Electric "Type 99" two-tone formats.
- 6.7.1.19. **Automatic FCC Station Identification.** Each base station shall include provisions to automatically identify itself at programmed intervals in accordance with FCC rules. The Purchaser will provide the station information when a procurement order is initiated.
- 6.7.1.20. **Radio Programming**
 - 6.7.1.20.1. Each radio shall be programmable. Programming shall permit specific user profiles to be stored in each radio to facilitate operation by different user groups. Programmed parameter memory shall be non-volatile so that no settings are lost

when the radio is powered off or when the radio is momentarily disconnected from its power source. The last channel selected shall appear as the selected channel after the radio is turned back on.

- 6.7.1.20.2. Parameters that shall be programmable and stored include but are not limited to channel number, channel frequency, CTCSS/CDCSS encode and decode tones, two-tone paging encode and decode tones and all configurable radio operation settings.
- 6.7.1.20.3. When a procurement order is initiated by the Purchaser, the order will include a list of parameter configurations that the vendor shall program in each radio at no cost to the customer. The intent is to ensure that radios are ready for use upon delivery.
- 6.7.1.20.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated.
- 6.7.1.20.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.
- 6.7.1.20.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order. The vendor shall also provide the software upon request from the customer.
- 6.7.1.20.7. The programming software shall be provided with an unlimited license permitting the customer to make multiple copies for use by radio programmers.

6.7.2. Base Station/Repeater Radio Power.

- 6.7.2.1. Each radio shall be powered from a 120 Volt, 60 Hz, AC source.

- 6.7.2.2. Each radio shall include an integrated 120 Volt AC power supply that provides all necessary AC and DC voltage and current requirements for the radio and any accessories. The power supply shall be a non-linear, high-frequency, switching power supply design.
- 6.7.2.3. The power supply design shall support continuous duty operation at full transmit power without adversely effecting any of the transmitter or receiver specifications stated below.
- 6.7.2.4. Unintentional radiated and conducted emissions by a radio while transmitting or receiving must also not adversely effect the performance of an identical radio, powered from the same 120 Volt AC source and operating next to it in the same rack or an adjacent rack .
- 6.7.2.5. The 120 Volt AC power interface shall be field replaceable by mechanical methods (no soldering). Integrated 120 Volt AC line fuses shall be accessible without opening the chassis.

6.7.3. **P25 Compliant Base Station/Repeater VHF High-Band Performance Characteristics: 12.5 kHz- Category 1**

6.7.3.1. **Transmitter Performance Characteristics**

- 6.7.3.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.3.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.3.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 100 Watts output RF power.
- 6.7.3.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 40 dB.

6.7.3.2. **Receiver Performance Characteristics**

- 6.7.3.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.3.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.3.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the

receiver RF input.

6.7.3.2.4. The adjacent channel rejection ratio shall meet or exceed 60 dB.

6.7.3.2.5. The spurious response rejection ratio shall meet or exceed 90 dB.

6.7.3.2.6. The intermodulation rejection ratio shall meet or exceed 80 dB.

6.7.4. P25 Compliant Base Station/Repeater VHF High-Band Performance Characteristics: 12.5 kHz- Category 2

6.7.4.1. Transmitter Performance Characteristics

6.7.4.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.7.4.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.7.4.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 100 Watts output RF power.

6.7.4.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 40 dB.

6.7.4.2. Receiver Performance Characteristics

6.7.4.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.7.4.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.7.4.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.

6.7.4.2.4. The adjacent channel rejection ratio shall meet or exceed 60 dB.

6.7.4.2.5. The spurious response rejection ratio shall meet or exceed 80 dB.

6.7.4.2.6. The intermodulation rejection ratio shall meet or exceed 80 dB.

6.7.5. P25 Compliant Base Station/Repeater VHF High-Band Performance Characteristics: 12.5 kHz- Category 3

6.7.5.1. Transmitter Performance Characteristics

- 6.7.5.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.5.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.5.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 90 Watts output RF power.
- 6.7.5.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.7.5.2. Receiver Performance Characteristics

- 6.7.5.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.5.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.5.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.7.5.2.4. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.7.5.2.5. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.7.5.2.6. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.7.6. P25 Compliant Base Station UHF High-Band Performance Characteristics:12.5 kHz- Category 1

6.7.6.1. Transmitter Performance Characteristics

- 6.7.6.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

- 6.7.6.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.6.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 100 Watts output RF power.
- 6.7.6.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 40 dB.

6.7.6.2. Receiver Performance Characteristics

- 6.7.6.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.6.2.2. Radios shall be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.6.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.7.6.2.4. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.7.6.2.5. The spurious response rejection ratio shall meet or exceed 80 dB.
- 6.7.6.2.6. The intermodulation rejection ratio shall meet or exceed 80 dB.

6.7.7. P25 Compliant Base Station/Repeater UHF High-Band Performance Characteristics: 12.5 kHz- Category 2

6.7.7.1. Transmitter Performance Characteristics

- 6.7.7.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.7.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.7.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 100 Watts output RF power.
- 6.7.7.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 38 dB.

6.7.7.2. Receiver Performance Characteristics

- 6.7.7.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.7.2.2. Radios shall be able to receive over an “as needed” VHF UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.7.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.7.7.2.4. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.7.7.2.5. The spurious response rejection ratio shall meet or exceed 80 dB.
- 6.7.7.2.6. The intermodulation rejection ratio shall meet or exceed 80 dB.

6.7.8. P25 Compliant Base Station UHF High-Band Performance Characteristics:12.5 kHz- Category 3

6.7.8.1. Transmitter Performance Characteristics

- 6.7.8.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.8.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.8.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 90 Watts output RF power.
- 6.7.8.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 38 dB.

6.7.8.2. Receiver Performance Characteristics

- 6.7.8.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.8.2.2. Radios shall be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.

- 6.7.8.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.7.8.2.4. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.7.8.2.5. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.7.8.2.6. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.7.9. P25 Compliant Base Station/Repeater 700/800MHz Band Performance Characteristics: 12.5 kHz - Category 1

6.7.9.1. Transmitter Performance Characteristics

- 6.7.9.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.9.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.9.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 100 Watts output RF power.
- 6.7.9.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 49 dB.

6.7.9.2. Receiver Performance Characteristics

- 6.7.9.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.9.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.9.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.28 uV at the receiver RF input.
- 6.7.9.2.4. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.7.9.2.5. The spurious response rejection ratio shall meet or exceed 90 dB.

- 6.7.9.2.6. The intermodulation rejection ratio shall meet or exceed 77/80 dB.

6.7.10. P25 Compliant Base Station/Repeater 700/800MHz Band Performance Characteristics: 12.5 kHz - Category 2

6.7.10.1. Transmitter Performance Characteristics

- 6.7.10.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.10.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.10.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 100 Watts output RF power.
- 6.7.10.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 45 dB.

6.7.10.2. Receiver Performance Characteristics

- 6.7.10.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.10.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.10.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.28 uV at the receiver RF input.
- 6.7.10.2.4. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.7.10.2.5. The spurious response rejection ratio shall meet or exceed 85 dB.
- 6.7.10.2.6. The intermodulation rejection ratio shall meet or exceed 77/80 dB.

6.7.11. P25 Base Station/Repeater 700/800MHz Band Performance Characteristics: 12.5 kHz - Category 3

6.7.11.1. Transmitter Performance Characteristics

- 6.7.11.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.11.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.11.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 90 Watts output RF power.
- 6.7.11.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 38 dB.

6.7.11.2. **Receiver Performance Characteristics**

- 6.7.11.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.7.11.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.11.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.7.11.2.4. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.7.11.2.5. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.7.11.2.6. The intermodulation rejection ratio shall meet or exceed 70/80 dB.

6.8. **Project 25 (P25) Mobile Radios**

6.8.1. **General**

- 6.8.2. **Configurations.** Each mobile radio shall support conventional and trunked digital 2-way voice communications in one of two configurations as listed below.

- 6.8.2.1. **Trunk Mount Configuration.** Trunk mounted radios shall include an integrated transmitter and receiver package with a separate

control unit. The integrated transmitter and receiver package shall be suitable for mounting in a vehicle trunk or crew cab or other area occupied by vehicle passengers. Each trunk mount radio shall support a single separate control unit. Optionally, trunk mount radios must also support separate dual control heads. Separate external remote speakers and separate remote microphones shall also be included with each control unit. Power and antenna connections shall be provided on the integrated transmitter and receiver package only.

- 6.8.2.2. **Dash Mount Configuration.** Dash mounted radios shall include an integrated transmitter, receiver, and control unit package. A separate external remote speaker and separate remote microphone shall also be included. Power and antenna connections shall also be provided.
- 6.8.2.3. **Interchangeability.** All equipment of the same and/or like models shall be supplied so that direct interchangeability between radios, antennas, remote speakers, remote microphones, and cables and accessories can be accomplished without electrical, physical, firmware, or software modification.
- 6.8.2.4. **Accessory Connections.** External locking accessory electrical connectors shall be provided as an integral part of the radio or control unit and the accessory. Connectors shall be provided for, at a minimum, the antenna, remote speaker, remote microphone, power, and a software programmer. Subject to the approval of the Purchaser some connectors may be ganged to share an interface.
- 6.8.2.5. **Cabling and Installation Kit.** Each trunk or dash mount radio shall be provided with a complete cabling and installation kit for installing and powering the radio, control head(s), remote microphone(s), and remote speaker(s). All connectors for, including but not limited to, control unit(s), power, antenna, microphone(s), and external speaker(s) shall be locking type so that vibration cannot disengage the connection. Minimum cable lengths for any cable in the kit that interfaces with a trunk mount radio shall be 20 feet, including but not limited to power, control head, and external speaker cables.
- 6.8.2.6. **Trunk Mount Dimensions.** Each trunk mount radio package shall measure no larger than 4.5" high by 8" wide by 15" deep. Each separate control head shall measure no larger than 4.5" high by 8" wide by 4" deep.
- 6.8.2.7. **Dash Mount Dimensions.** Each dash mount radio shall measure no larger than 4.5" high by 8" wide by 15" deep including control head.
- 6.8.2.8. **Weight.** Each radio shall weigh a maximum of 15 pounds including a separate control head and external speaker.

- 6.8.2.9. **Housing.** Each radio shall be contained within a weather and impact resistant housing.
- 6.8.2.10. **Duty Cycle.** Each radio shall support an operational duty cycle of 1 minute transit, and 4 minutes receive per 5 minutes. This 20-80 percent, per 5 minute, duty cycle shall be supported for a minimum continuous period of 8 hours.
- 6.8.2.11. **Ambient Operational Temperature Range:** Each radio shall operate in an ambient temperature range of -30 degrees Celsius to +60 degrees Celsius. All mobile radio specifications in this document are referenced to +25 degrees Celsius.
- 6.8.2.12. **External Controls.** Each radio shall support the following minimum number of control functions, each accessible from separate controls on the outside of the control unit or dash mount radio package (including remote speaker-microphone). All controls must be able to function as intended when actuated while wearing appropriate protective gloves. Subject to the approval of State Purchasing some functions may be ganged on shared external controls.
 - 6.8.2.12.1. Power on-off.
 - 6.8.2.12.2. Push-to-talk.
 - 6.8.2.12.3. Receive audio volume control.
 - 6.8.2.12.4. Channel selection.
 - 6.8.2.12.5. Receive audio noise squelch sensitivity control.
 - 6.8.2.12.6. Receive audio monitoring selection with CTCSS enabled.
 - 6.8.2.12.7. Multiple-channel monitor (SCAN) controls.
 - 6.8.2.12.8. DTMF selection.
- 6.8.2.13. **Display.** Each control unit or dash mount radio package shall include a 12 character alpha-numeric LCD display. The display shall facilitate radio usage and assist in the operation of external controls. The display shall be illuminated momentarily when any external control is actuated.
- 6.8.2.14. **Remote Microphone.** Each control unit or dash mount radio package shall include a handheld microphone with a PTT switch. Each microphone shall be detachable by the user.
- 6.8.2.15. **External Remote Speaker.** Each control unit or dash mount radio package shall include a separate external remote speaker. The speaker audio power and distortion specifications are listed below under receiver characteristics.

- 6.8.2.16. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform to TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation.
- 6.8.2.17. **CTCSS/CDCSS.** Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS/CDCSS. The tone-controlled squelch shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. An automatic switch shall be included to permit receive audio monitoring of the channel by a radio user prior to transmitting. This switch shall be separate from the Push-to-talk control. Radios shall support identical or different receive and transmit CTCSS/CDCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.
- 6.8.2.18. **CTCSS/CDCSS with Multiple-Channel Operation.** When multiple-channel radio operation requires CTCSS/CDCSS on more than one channel, the CTCSS/CDCSS encode and decode tones in each radio shall be automatically switched by channel selection. When switching between channels that require CTCSS/CDCSS operation and channels that require audio noise squelch operation the mode of squelch operation shall be automatically switched by channel selection.
- 6.8.2.19. **Squelch Tail Elimination.** Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.
- 6.8.2.20. **Transmitter Time-Out Timer.** Each radio shall contain an integral, internal time-out timer to prevent inadvertent keying of the transmitter for an extended period of time. The time-out timer shall inhibit the transmitter when the radio transmission exceeds a predetermined adjustable length of time not to exceed 120 seconds. Provisions shall be included to permit the operator to reinitiate transmission immediately following transmitter inhibiting by the time-out timer.
- 6.8.2.21. **Multiple-Channel Monitoring.** Each radio shall support multiple-channel monitoring or "scanning." Three modes of scanning shall be supported as discussed below. The radios shall support scanning a minimum of 700 channels for VHF high band, UHF radios and 700/800 MHz radios.

6.8.2.21.1. **Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. If the channel being monitored is not the programmed priority channel, the radio shall continue to scan the priority channel for the presence of a voice signal at such a rate that audio intelligibility is not seriously impaired. The presence of a voice signal on the priority channel shall cause the priority channel audio to be heard through the speaker with no loss of priority audio information. While the priority channel is being received the radio shall cease sampling the non-priority channel(s).

6.8.2.21.2. **Non-Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. While the voice signal is being received the radio shall cease sampling other channels. When the voice signal terminates, the radio shall resume sequential sampling after a suitable amount of time to ensure complete audio reception of the received voice signal.

6.8.2.22. **Radio Programming**

6.8.2.22.1. Each radio shall be programmable. Programming shall permit specific user profiles to be stored in each radio to facilitate operation by different user groups. Programmed parameter memory shall be non-volatile so that no settings are lost when the radio is powered off or when the radio is momentarily disconnected from its power source. The last channel selected shall appear as the selected channel after the radio is turned back on. The last selected scan mode shall also reinitiate after the radio is turned back on. The mobile radio shall be able to be cloned via portable radio.

6.8.2.22.2. Parameters that shall be programmable and stored include but are not limited to channel number, channel frequency, CTCSS/CDCSS encode and decode tones, priority channel number and frequency, multiple channel scan settings and all configurable radio operation settings.

6.8.2.22.3. When a procurement order is initiated by the Purchaser the order will include a list of parameter configurations that the vendor shall program in each radio at no cost to the Purchaser. The intent is to ensure that radios are ready for use upon delivery.

6.8.2.22.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating

system shall be the date that an individual procurement order is initiated.

- 6.8.2.22.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.
- 6.8.2.22.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.
- 6.8.2.22.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers.

6.8.3. Optional General Accessories

- 6.8.3.1. When a procurement order is initiated, the Purchaser may elect to purchase the following general accessories.
- 6.8.3.2. **Remote DTMF Microphone.** Each control unit or dash mount radio package shall include a handheld DTMF touchpad microphone with a PTT switch. Each DTMF microphone shall be detachable by the user.
- 6.8.3.3. **Dual Control Units.** Each trunk mount radio configuration shall support dual separate control units. These control units may be daisy chained or individually connected to the trunk mount unit.
- 6.8.3.4. **VHF, UHF and 700/800 MHz Vehicular Repeaters.** Each radio equipped as a vehicular repeater shall support operation as a full-duplex in-band or cross-band repeater. Full-duplex operation shall permit simultaneous reception and transmission on separate channels without compromising any of the radio performance specifications listed below. The vendor shall specify and provide any necessary filtering and duplexer equipment required to maintain transmitter and receiver performance. The following in-band and cross-band combinations shall be supported by mobile vehicular repeaters. The Purchaser will provide the vendor with the specific combination to be implemented when a procurement order is initiated.
 - 6.8.3.4.1. **Other Accessories.** These accessories include headsets, antennas, detachable cords, intercoms, jackboxes, panels/cables, etc.
 - 6.8.3.4.2. VHF high-band in-band repeating.

- 6.8.3.4.3. UHF in-band repeating.
- 6.8.3.4.4. 700/800 MHz in-band repeating.
- 6.8.3.4.5. VHF high-band to UHF cross-band repeating.
- 6.8.3.4.6. 700 MHz to 800 MHz cross-band repeating.

6.8.4. **Mobile Radio Power**

- 6.8.4.1. Each mobile radio shall be powered from a 12 Volt DC source.
- 6.8.4.2. **Vehicle Ignition Sensing.** Each radio shall include provisions to operate with or without ignition sensing. Without ignition sensing, the radio shall be installed such that the radio power supply is isolated from the vehicle starting circuit, always providing power to the radio. With ignition sensing, the radio shall be disconnected from the radio power supply during vehicle ignition or when the vehicle is powered off. Ignition control may be accomplished internally or with an external relay. The radio operational modes and programming shall not be affected in either operational mode (with or without ignition sensing). The operational mode will be selected by the Purchaser when a procurement order is initiated.
- 6.8.4.3. **Power-Line Filter.** Each radio shall include a power-line filter to reduce power-line noise emissions such as alternator noise. Installation provisions shall permit the installation of this filter at the end of the power cable that terminates at the battery.

6.8.5. **Mobile Radio Equipment Environmental Specifications**

All mobile radio equipment and accessories shall comply with the following specific MIL-STD-810 test methods and Standards. Each subsystem, including but not limited to, integrated transmitter and receiver units, separate control units, cabling harnesses, and microphones shall meet all of the following environmental specifications (**Category 1 radios only**).

6.8.5.1. **Rain**

- 6.8.5.1.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 506.5, Rain, Procedure 1 for rain and blowing rain.
- 6.8.5.1.2. **MIL-STD-810, Revision F.** As an alternative to the above rain test, all radio equipment and accessories shall comply with

Revision F, Test Method 506.4, Rain, Procedure 1 for rain and blowing rain.

6.8.5.2. **Salt Fog**

6.8.5.2.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 509.5, Salt Fog, Procedure 1 (aggravated screening).

6.8.5.2.2. **MIL-STD-810, Revision F.** As an alternative to the above salt fog test, all radio equipment and accessories shall comply with Revision F, Test Method 509.4, Salt Fog, Procedure 1.

6.8.5.3. **Sand and Dust**

6.8.5.3.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 510.5, Sand and Dust, Procedure 1 for blowing dust.

6.8.5.3.2. **MIL-STD-810, Revision F.** As an alternative to the above sand and dust test, all radio equipment and accessories shall comply with Revision F, Test Method 510.4, Sand and Dust, Procedure 1 for blowing dust.

6.8.5.4. **Vibration**

6.8.5.4.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 514.6, Vibration, Procedure 1, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).

6.8.5.4.2. **MIL-STD-810, Revision F.** As an alternative to the above vibration test, all radio equipment and accessories shall comply with Revision F, Test Method 514.5, Vibration Procedure 1, Category 4 (Truck/Trailer Secured Cargo).

6.8.5.5. **Physical Shock**

6.8.5.5.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 516.6, Shock, Procedure 1 for functional shock.

6.8.5.5.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with Revision F, Test Method 516.5, Shock, Procedure 1 for functional shock.

6.8.5.6. **High Temperature**

6.8.5.6.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 501.5, High Temperature, Procedure II for operations.

6.8.5.6.2. **MIL-STD-810, Revision F.** As an alternative to the above high temperature test, all radio equipment and accessories shall comply with Revision F, Test Method 501.4, High Temperature, Procedure II for operations.

6.8.5.7. **Humidity**

- 6.8.5.7.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 507.5, Humidity, Procedure 1 (induced and natural) for humidity.
 - 6.8.5.7.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with Revision F, Test Method 507.4, Humidity, Procedure 1 (induced and natural) for humidity.
- 6.8.6. **P25 Compliant Mobile VHF High-Band Performance Characteristics: 12.5 kHz-Category 1**
- 6.8.6.1. **Transmitter Performance Characteristics**
 - 6.8.6.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
 - 6.8.6.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
 - 6.8.6.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 40 Watts output RF power.
 - 6.8.6.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 39 dB.
 - 6.8.6.2. **Receiver Performance Characteristics**
 - 6.8.6.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
 - 6.8.6.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
 - 6.8.6.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.30 uV at the receiver RF input.
 - 6.8.6.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
 - 6.8.6.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
 - 6.8.6.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.

- 6.8.6.2.7. The spurious response rejection ratio shall meet or exceed 80 dB.
- 6.8.6.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.8.7. P25 Compliant Mobile VHF High-Band Performance Characteristics: 12.5 kHz-Category 2

6.8.7.1. Transmitter Performance Characteristics

- 6.8.7.1.1. Radios operating with a 15 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.7.1.2. Radios operating with a 15 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.7.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 40 Watts output RF power.
- 6.8.7.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.8.7.2. Receiver Performance Characteristics

- 6.8.7.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.7.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.7.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.30 uV at the receiver RF input.
- 6.8.7.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.8.7.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.8.7.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.

- 6.8.7.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.8.7.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.8.8. P25 Mobile VHF High-Band Performance Characteristics: 12.5 kHz- Category 3

6.8.8.1. Transmitter Performance Characteristics

- 6.8.8.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.8.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.8.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 40 Watts output RF power.
- 6.8.8.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.8.8.2. Receiver Performance Characteristics

- 6.8.8.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.8.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.8.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.8.8.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.8.8.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.8.8.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.8.8.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.

- 6.8.8.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 70 dB.

**6.8.9. P25 Compliant Mobile UHF Band Performance Characteristics: 12.5 kHz–
Category 1**

6.8.9.1. Transmitter Performance Characteristics

- 6.8.9.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.9.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.9.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 40 Watts output RF power.
- 6.8.9.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 39 dB.

6.8.9.2. Receiver Performance Characteristics

- 6.8.9.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.9.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.9.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.8.9.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.8.9.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.8.9.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.8.9.2.7. The spurious response rejection ratio shall meet or exceed 80 dB.

- 6.8.9.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.8.10. P25 Compliant Mobile UHF Band Performance Characteristics: 12.5 kHz-Category 2

6.8.10.1. Transmitter Performance Characteristics

- 6.8.10.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.10.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.10.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 40 Watts output RF power.
- 6.8.10.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.8.10.2. Receiver Performance Characteristics

- 6.8.10.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.10.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.10.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.8.10.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.8.10.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.8.10.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.8.10.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.

- 6.8.10.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.8.11. P25 Mobile UHF Band Performance Characteristics: 12.5 kHz- Category 3

6.8.11.1. Transmitter Performance Characteristics

- 6.8.11.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.11.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.11.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 40 Watts output RF power.
- 6.8.11.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.8.11.2. Receiver Performance Characteristics

- 6.8.11.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.11.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.11.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.8.11.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.8.11.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.8.11.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 40 dB.
- 6.8.11.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.8.11.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 70 dB.

6.8.12. P25 Compliant Mobile 700/800MHz Band Performance Characteristics: 12.5 kHz – Category 1

6.8.12.1. Transmitter Performance Characteristics

- 6.8.12.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels when a procurement order is initiated.
- 6.8.12.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.12.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 30 Watts output RF power for 700 MHz and 35 watts for 800 MHz.
- 6.8.12.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.8.12.2. Receiver Performance Characteristics

- 6.8.12.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels when a procurement order is initiated.
- 6.8.12.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.
- 6.8.12.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.8.12.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.8.12.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.8.12.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.8.12.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.8.12.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.8.13. P25 Compliant Mobile 700/800MHz Band Performance Characteristics: 12.5 kHz- Category 2

6.8.13.1. Transmitter Performance Characteristics

- 6.8.13.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels when a procurement order is initiated.
- 6.8.13.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.13.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 19 Watts output RF power for 700 MHz and 35 watts for 800 MHz.
- 6.8.13.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 33 dB.

6.8.13.2. Receiver Performance Characteristics

- 6.8.13.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels when a procurement order is initiated.
- 6.8.13.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.
- 6.8.13.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.8.13.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.8.13.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.8.13.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.8.13.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.8.13.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.8.14. P25 Mobile 700/800MHz Band Performance Characteristics: 12.5 kHz- Category 3

6.8.14.1. Transmitter Performance Characteristics

- 6.8.14.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels when a procurement order is initiated.
- 6.8.14.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread (700 MHz) and 18 MHz frequency spread (800 MHz) be able to receive over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.8.14.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 19 Watts output RF power for 700 MHz and 30 watts for 800 MHz.
- 6.8.14.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 33 dB.

6.8.14.2. **Receiver Performance Characteristics**

- 6.8.14.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels when a procurement order is initiated.
- 6.8.14.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread (for 700 MHz) and 18 MHz frequency spread (for 800 MHz) when a procurement order is initiated.
- 6.8.14.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.8.14.2.4. The maximum audio output power shall be a minimum of 10 Watts of sound pressure level at each speaker provided.
- 6.8.14.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 10 %.
- 6.8.14.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.8.14.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.8.14.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.8.15. **P25 Compliant Mobile-Multiband Performance Characteristics: 12.5 kHz-Category 1**

6.8.15.1. **Transmitter Performance Characteristics**

- 6.8.15.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 700 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.15.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band and 700/800 MHz frequency spread and support a minimum of 20 MHz frequency spread for UHF when a procurement order is initiated.
- 6.8.15.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 50 Watts output RF power for VHF-HB/UHF and 35 Watts for 700/800 MHz.
- 6.8.15.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.8.15.2. **Receiver Performance Characteristics**

- 6.8.15.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 700 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.8.15.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band and 700/800 MHz frequency spread and support a minimum of 20 MHz frequency spread for UHF when a procurement order is initiated.
- 6.8.15.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.30 uV at the receiver RF input for VHF-HB/UHF and 0.25 uV for 700/800 MHz.
- 6.8.15.2.4. The maximum audio output power shall be a minimum of 12 Watts of sound pressure level at each speaker provided.
- 6.8.15.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.8.15.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.8.15.2.7. The spurious response rejection ratio shall meet or exceed 80 dB.
- 6.8.15.2.8. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 80 dB.

6.9. **P25 Compliant Portable Radios**

6.9.1. General

- 6.9.1.1. **Configuration.** Each portable radio shall support conventional and trunked digital 2-way voice communications as a completely integral unit. Each integral unit shall consist of the following major components.
 - 6.9.1.1.1. Receiver and transmitter.
 - 6.9.1.1.2. Speaker and microphone.
 - 6.9.1.1.3. Removable antenna.
- 6.9.1.2. **Interchangeability.** All equipment of the same and/or like models shall be supplied so that direct interchangeability between radios, antennas, remote speaker-microphones, batteries, chargers, and cables and accessories can be accomplished without electrical, physical, firmware, or software modification.
- 6.9.1.3. **Accessory Connections.** External accessory electrical connectors shall be provided, as an integral part of the radio and accessory. Connectors shall be provided for, at a minimum, the antenna, drop-in battery charger, remote speaker-microphone, remote speaker-microphone-antenna, software programmer, and a vehicular charger drop-in remote speaker-microphone-antenna.
- 6.9.1.4. **Dimensions.** Each radio shall measure no larger than 10" high by 3" wide by 2" deep, including battery and not including controls and antennas.
- 6.9.1.5. **Weight.** Each radio shall weigh a maximum of 33 ounces including battery pack and antenna.
- 6.9.1.6. **Housing.** Each radio shall be contained within a weather and impact resistant housing.
- 6.9.1.7. **Duty Cycle.** Each radio shall support an operational duty cycle of 3 seconds transmit, 3 seconds receive and 54 seconds standby per minute. This 5-5-90 percent, per minute, duty cycle shall be supported by each radio for a minimum continuous period of 8 hours without changing batteries.
- 6.9.1.8. **Ambient Operational Temperature Range:** Each radio shall operate in an ambient temperature range of -30 degrees Celsius to +60 degrees Celsius. All portable radio specifications in this document are referenced to +25 degrees Celsius, excluding battery specifications.
- 6.9.1.9. **External Controls.** Each radio shall support the following minimum number of control functions, each accessible from separate controls on the outside of the radio case. All controls must be able to function as intended when actuated while wearing appropriate protective gloves. Subject to the approval of State Purchasing, some functions may be ganged on shared external controls.

- 6.9.1.9.1. Power on-off.
- 6.9.1.9.2. Push-to-talk.
- 6.9.1.9.3. Receive audio volume control.
- 6.9.1.9.4. Channel selection.
- 6.9.1.9.5. Receive audio noise squelch sensitivity control.
- 6.9.1.9.6. Receive audio monitoring selection with CTCSS\CDCSS enabled.
- 6.9.1.9.7. Multiple-channel monitor (SCAN) controls.
- 6.9.1.10. **Display.** Each radio shall include an alpha-numeric LCD display. The display shall facilitate radio usage and assist in the operation of external controls. The display shall be illuminated momentarily when any external control is actuated.
- 6.9.1.11. **High Band Antennas.** Each high-band VHF portable radio shall be provided with a continuously-loaded, coil-spring type antenna. The operator-attachable antenna shall attach to the radio on the appropriate connection using an industry standard coaxial screw-on connector. BNC connectors are not permitted. To prevent inadvertent shorting, the antenna shall be covered with a dielectric coating.
- 6.9.1.12. **UHF / 700 and 800 MHz Antennas.** Each UHF and 700/800 MHz portable radio shall be provided with a flexible one-quarter wavelength antenna. The operator-attachable antenna shall attach to the radio on the appropriate connection using an industry standard coaxial screw-on connector. BNC connectors are not permitted. To prevent inadvertent shorting, the antenna shall be covered with a dielectric coating.
- 6.9.1.13. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation.
- 6.9.1.14. **CTCSS/ CDCSS.** Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS/CDCSS. The tone-controlled squelch shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. An external control shall be included on the radio case to permit receive audio monitoring of the channel by a radio user prior to transmitting. This

control shall be separate from the Push-to-talk control. Radios shall support identical or different receive and transmit CTCSS/CDCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.

- 6.9.1.15. **CTCSS/CDCSS with Multiple-Channel Operation.** When multiple-channel radio operation requires CTCSS/CDCSS on more than one channel, the CTCSS/CDCSS encode and decode tones in each radio shall be automatically switched by channel selection. When switching between channels that require CTCSS/CDCSS operation and channels that require audio noise squelch operation the mode of squelch operation shall be automatically switched by channel selection.
- 6.9.1.16. **Squelch Tail Elimination.** Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.
- 6.9.1.17. **Transmitter Time-Out Timer.** Each radio shall contain an integral, internal time-out timer to prevent inadvertent keying of the transmitter for an extended period of time. The time-out timer shall inhibit the transmitter when the radio transmission exceeds a predetermined, adjustable length of time not to exceed 120 seconds. Provisions shall be included to permit the operator to reinitiate transmission immediately following transmitter inhibiting by the time-out timer.
- 6.9.1.18. **Two-Tone Paging (Crew Alerting).** Each radio should support industry standard two-tone paging including at a minimum the Motorola "Quick-Call" and General Electric "Type 99" two-tone formats.
- 6.9.1.19. **Multiple-Channel Monitoring.** Each radio shall support multiple-channel monitoring or "scanning." Three modes of scanning shall be supported as discussed below. The radios shall support scanning a minimum of 700 channels for VHF-HB/UHF and 700/800 MHz.
- 6.9.1.20. **Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. If the channel being monitored is not the programmed priority channel, the radio shall continue to scan the priority channel for the presence of a voice signal at such a rate that audio intelligibility is not seriously impaired. The presence of a voice signal on the priority channel shall cause the priority channel audio to be heard through the speaker with no loss of priority audio information. While the priority channel is being received the radio shall cease sampling the non-priority channel(s).
- 6.9.1.21. **Non-Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. While the voice signal is being received the radio shall cease sampling other channels. When the voice signal terminates, the radio shall resume sequential sampling

after a suitable amount of time to ensure complete audio reception of the received voice signal.

- 6.9.1.22. **Belt Clip.** Each radio shall be provided with a belt clip that interfaces with the carrying case. The belt clip shall be of a swivel-mount type to permit rapid installation and removal from the user's belt.

6.9.2. Radio Programming

- 6.9.2.1. Each radio shall be programmable. Programming shall permit specific user profiles to be stored in each radio to facilitate operation by different user groups. Programmed parameter memory shall be non-volatile so that no settings are lost when the radio is powered off or when the radio is momentarily disconnected from its battery for battery replacement. The last channel selected shall appear as the selected channel after the radio is turned back on. The last selected scan mode shall also reinitiate after the radio is turned back on. The portable shall be able to clone a mobile radio.
- 6.9.2.2. Parameters that shall be programmable and stored include but are not limited to channel number, channel frequency, CTCSS/CDCSS encode and decode tones, two-tone paging encode and decode tones, priority channel number and frequency, multiple channel scan settings and all configurable radio operation settings.
- 6.9.2.3. When a procurement order is initiated by Purchaser the order will include a list of parameter configurations that the vendor shall program in each radio at no cost to Purchaser. The intent is to ensure that radios are ready for use upon delivery.
- 6.9.2.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated.
- 6.9.2.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.
- 6.9.2.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.
- 6.9.2.7. The programming software shall be provided with an unlimited license permitting Purchaser to make multiple copies for use by radio programmers.

6.9.3. Optional General Accessories

6.9.3.1. Portable Radio Power

- 6.9.3.1.1. When a procurement order is initiated Purchaser may elect to purchase the following general accessories.
- 6.9.3.1.2. **Remote Speaker-Microphone.** Each remote speaker-microphone shall be provided as a combination unit in one handheld enclosure and shall include a push-to-talk external control. The cabling and connector necessary to attach this accessory to the radio shall be provided with this unit.
- 6.9.3.1.3. **Remote Speaker-Microphone-Antenna.** Each remote speaker-microphone-antenna shall be provided as a combination unit in one handheld enclosure and shall include a push-to-talk external control. The cabling and connector necessary to attach this accessory to the radio shall be provided with this unit.
- 6.9.3.1.4. **Other Accessories.** These accessories include headsets, carrying cases, detachable cords, intercoms, jackboxes, panels/cables, etc.

6.9.3.2. Portable Radio Power

- 6.9.3.2.1. **Batteries.** Each radio shall be provided with two high-capacity rechargeable batteries. Each battery shall be constructed with Nickel-metal hydride or Lithium-ion cells. Each battery shall be configured by either connection or mechanical shape to eliminate the possibility of connecting the incorrect polarity to the radio.
- 6.9.3.2.2. **Battery Power Rating.** Each battery shall be rated with sufficient Amp-hours to permit operation with the manufacturer's specified load for 8 hours. Each battery shall support a portable radio standard duty cycle for one minute of 3 seconds transmitting, 3 seconds receiving (with the audio output power specified below), and 54 seconds on standby. This 5-5-90 percent, per-minute, duty cycle shall be supported by each battery for a continuous 8 hour period.

6.9.4. Optional Portable Radio Power Accessories

When a procurement order is initiated the Purchaser may elect to purchase the following general accessories.

- 6.9.4.1. **Rapid Batter Charger.** Each radio shall be provided with a rapid battery charger. The charger circuitry shall be matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in receive or standby mode while charging the battery.
- 6.9.4.2. **Multiple Unit Rapid Battery Charger.** Each multiple unit rapid battery charger shall comply with all specifications for a rapid battery charger, as stated above, and support simultaneous rapid charging of a minimum of four batteries.
- 6.9.4.3. **Slow Battery Charger**
- 6.9.4.3.1. Each slow battery charger shall be provided with charger circuitry that is matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in receive or standby mode while charging the battery.
- 6.9.4.3.2. **Charger Power.** Each slow charger shall be powered from a 120 Volt AC, 60 Hz single phase source using a standard AC plug. A visual indicator shall be included to indicate the charger is in operation.
- 6.9.4.3.3. **Charging Rate.** Each slow charger shall charge a discharged battery to 100% of its maximum charge within a minimum of ten hours and a maximum of 16 hours. The charging rate and charging rate control shall be matched to the battery cell technology and shall not reduce its Amp-hour rating, or the rated number of charge cycles, and shall not otherwise damage the battery.
- 6.9.4.3.4. **Charge Indicator.** Each slow charger shall include an indicator to display the relative charge status of the battery. The indicator shall indicate a single point charge condition on the battery charging curve, i.e., a light that illuminates or increases in intensity when the battery reaches a specified charge level.
- 6.9.4.3.5. **Multiple Unit Slow Battery Charger.** Each multiple unit slow battery charger shall comply with all specifications for a slow battery charger, as stated above, and support simultaneous slow charging of a minimum of four batteries.
- 6.9.4.4. **Smart Charger**
- 6.9.4.4.1. Each radio shall be provided with a smart battery charger. The charger circuitry shall be matched to the battery cell technology.

The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in receive or standby mode while charging the battery.

6.9.4.4.2. **Charger Power.** Each smart charger shall be powered from a 120 Volt AC, 60 Hz single phase source using a standard AC plug. A visual indicator shall be included to indicate the charger is in operation.

6.9.4.4.3. **Charging Rate.** Each smart charger shall function as a rapid charger and charge a discharged battery to 90% of its maximum charge within three hours. The charging rate and charging rate control shall be matched to the battery cell technology and shall not reduce its Amp-hour rating, or the rated number of charge cycles, and shall not otherwise damage the battery.

6.9.4.4.4. **Charge Indicator.** Each smart charger shall include an indicator to display the relative charge status of the battery. The indicator shall indicate a single point charge condition on the battery charging curve, i.e., a light that illuminates or increases in intensity when the battery reaches a specified charge level.

6.9.4.4.5. **Analyzer Functions.** Each smart charger shall also provide discharging, analyzing, conditioning and cycle testing functions that track voltage and capacity. These functions shall be used to adjust for an optimum charge profile and prolong battery life.

6.9.4.5. **Multiple Unit Smart Charger.** Each multiple unit smart battery charger shall comply with all specifications for a smart battery charger, as stated above, and support simultaneous smart charging of a minimum of four batteries.

6.9.4.6. **Vehicular Charger**

6.9.4.6.1. Each vehicular charger shall be provided with charger circuitry that is matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in receive or standby mode while charging the battery. The vehicular charger shall also function as a storage receptacle for the radio as installed in the vehicle.

6.9.4.6.2. **Cabling and Installation Kit.** Each vehicular charger shall be provided with a complete cabling and installation kit for installing and powering the charger. All connectors shall be locking type so that vibration does not disengage the connection.

- 6.9.4.6.3. **Charger Power.** Each vehicular charger shall be powered from a 12 Volt DC source. A visual indicator shall be included to indicate the charger is in operation.
- 6.9.4.6.4. **Charging Rate.** Each vehicular charger shall charge a discharged battery to 100% of its maximum charge within a minimum of ten hours and a maximum of 16 hours. The charging rate and charging rate control shall be matched to the battery cell technology and shall not reduce its Amp-hour rating, or the rated number of charge cycles, and shall not otherwise damage the battery.
- 6.9.4.6.5. **Charge Indicator.** Each vehicular charger shall include an indicator to display the relative charge status of the battery. The indicator shall indicate a single point charge condition on the battery charging curve, i.e., a light that illuminates or increases in intensity when the battery reaches a specified charge level.
- 6.9.4.7. **Vehicular Charger With Remote Speaker, Microphone, and Antenna**
- 6.9.4.7.1. Each vehicular charger with remote speaker, microphone, and antenna shall be provided with charger circuitry that is matched to the battery cell technology. The charger shall provide a physical receptacle in which to insert the battery with or without the radio attached. The receptacle shall include a drop-in style automatic electrical connection between the charger and the battery. The charger shall permit operation of the radio in the transmit, receive or standby mode while charging the battery. The vehicular charger shall also function as a storage receptacle for the radio as installed in the vehicle.
- 6.9.4.7.2. **Additional Radio Interfaces.** When the radio is inserted in the vehicular charger the charger shall also automatically make connections between the radio and a mobile antenna, remote microphone, and remote speaker.
- 6.9.4.7.3. **Mobile Antenna Connection.** The vehicular charger shall be provided with an industry standard coaxial screw-on antenna connection to permit the charger to interface with a mobile mount antenna. BNC connectors are not permitted. This connection shall automatically interface with the radio when it is inserted in the charger.
- 6.9.4.7.4. **Remote Microphone.** The vehicular charger shall be provided with a remote microphone and mount. This connection shall automatically interface with the radio when it is inserted in the charger.
- 6.9.4.7.5. **Remote Speaker.** The vehicular charger shall be provided with a remote speaker and mounting kit. The remote speaker shall meet the technical specifications for a mobile radio remote

speaker as specified below.

- 6.9.4.7.6. **Cabling and Installation Kit.** Each vehicular charger shall be provided with a complete cabling and installation kit for installing and powering the charger, remote microphone, and remote speaker. All connectors shall be locking type so that vibration does not disengage the connection.
- 6.9.4.7.7. **Charger Power.** Each vehicular charger shall be powered from a 12 Volt DC source. A visual indicator shall be included to indicate the charger is in operation.
- 6.9.4.7.8. **Charging Rate.** Each vehicular charger shall charge a discharged battery to 100% of its maximum charge within a minimum of ten hours and a maximum of 16 hours. The charging rate and charging rate control shall be matched to the battery cell technology and shall not reduce its Amp-hour rating, or the rated number of charge cycles, and shall not otherwise damage the battery.
- 6.9.4.7.9. **Charge Indicator.** Each vehicular charger shall include an indicator to display the relative charge status of the battery. The indicator shall indicate a single point charge condition on the battery charging curve, i.e., a light that illuminates or increases in intensity when the battery reaches a specified charge level.

6.9.5. **P25 Compliant Portable Radio Equipment Environmental Specifications**

All portable radio equipment and accessories shall comply with the following specific MIL-STD-810 test methods and Standards (Category 1 only radios).

6.9.5.1. **Rain**

- 6.9.5.1.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 506.5, Rain, Procedure 1 for rain and blowing rain.
- 6.9.5.1.2. **MIL-STD-810, Revision F.** As an alternative to the above rain test, all radio equipment and accessories shall comply with Revision F, Test Method 506.4, Rain, Procedure 1 for rain and blowing rain.

6.9.5.2. **Salt Fog**

- 6.9.5.2.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 509.5, Salt Fog, Procedure 1 (aggravated screening).
- 6.9.5.2.2. **MIL-STD-810, Revision F.** As an alternative to the above salt fog test, all radio equipment and accessories shall comply with Revision F, Test Method 509.4, Salt Fog, Procedure 1.

6.9.5.3. Sand and Dust

- 6.9.5.3.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 510.5, Sand and Dust, Procedure 1 for blowing dust.
- 6.9.5.3.2. **MIL-STD-810, Revision F.** As an alternative to the above sand and dust test, all radio equipment and accessories shall comply with Revision F, Test Method 510.4, Sand and Dust, Procedure 1 for blowing dust.

6.9.5.4. Vibration

- 6.9.5.4.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 514.6, Vibration, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).
- 6.9.5.4.2. **MIL-STD-810, Revision F.** As an alternative to the above vibration test, all radio equipment and accessories shall comply with Revision F, Test Method 514.5, Vibration, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).

6.9.5.5. Physical Shock

- 6.9.5.5.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 516.6, Shock, Procedure 1 for functional shock.
- 6.9.5.5.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with Revision F, Test Method 516.5, Shock, Procedure 1 for functional shock.

6.9.5.6. High Temperature

- 6.9.5.6.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 501.5, High Temperature, Procedure II for operations.
- 6.9.5.6.2. **MIL-STD-810, Revision F.** As an alternative to the above high temperature test, all radio equipment and accessories shall comply with Revision F, Test Method 501.4, High Temperature, Procedure II for operations.

6.9.5.7. Humidity

- 6.9.5.7.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 507.5, Humidity, Procedure 1 (induced and natural) for humidity.
- 6.9.5.7.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with

Revision F, Test Method 507.4, Humility, Procedure 1 (induced and natural) for humility.

6.9.6. P25 Compliant Portable VHF High-Band Performance Characteristics: 12.5 kHz- Category 1

6.9.6.1. Transmitter Performance Characteristics

- 6.9.6.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.6.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.6.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.9.6.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 39 dB.

6.9.6.2. Receiver Performance Characteristics

- 6.9.6.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.6.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.6.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.25 uV at the receiver RF input.
- 6.9.6.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.6.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.9.6.2.6. Radios operating with a 15 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.9.6.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.9.6.2.8. The intermodulation rejection ratio shall meet or exceed 73 dB.

**6.9.7. P25 Portable VHF High-Band Performance Characteristics: 12.5 kHz-
Category 2**

6.9.7.1. Transmitter Performance Characteristics

- 6.9.7.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.7.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.7.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.9.7.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 37 dB.

6.9.7.2. Receiver Performance Characteristics

- 6.9.7.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.7.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.7.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.25 uV at the receiver RF input.
- 6.9.7.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.7.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.9.7.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.9.7.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.9.7.2.8. The intermodulation rejection ratio shall meet or exceed 73 dB.

**6.9.8. P25 Portable VHF High-Band Performance Characteristics: 12.5 kHz-
Category 3**

6.9.8.1. Transmitter Performance Characteristics

- 6.9.8.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.8.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.8.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.9.8.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.9.8.2. Receiver Performance Characteristics

- 6.9.8.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.8.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.8.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.9.8.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.8.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.9.8.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 40 dB.
- 6.9.8.2.7. The spurious response rejection ratio shall meet or exceed 60 dB.
- 6.9.8.2.8. The intermodulation rejection ratio shall meet or exceed 50 dB.

6.9.9. P25 Compliant Portable UHF Band Performance Characteristics:12.5 kHz – Category 1

6.9.9.1. Transmitter Performance Characteristics

- 6.9.9.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.9.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.9.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.9.9.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 39 dB.

6.9.9.2. **Receiver Performance Characteristics**

- 6.9.9.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.9.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.9.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.32 uV at the receiver RF input.
- 6.9.9.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.9.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.9.9.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.9.9.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.9.9.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.9.10. **P25 Compliant Portable UHF Band Performance Characteristics:12.5 kHz – Category 2**

6.9.10.1. **Transmitter Performance Characteristics**

- 6.9.10.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.10.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.10.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.9.10.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 37 dB.

6.9.10.2. Receiver Performance Characteristics

- 6.9.10.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 200 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.10.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.10.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.32 uV at the receiver RF input.
- 6.9.10.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.10.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.9.10.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.9.10.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.9.10.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.9.11. P25 Portable UHF Band Performance Characteristics: 12.5 kHz– Category 3

6.9.11.1. Transmitter Performance Characteristics

- 6.9.11.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.11.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.11.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 4 Watts output RF power.
- 6.9.11.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 37 dB.

6.9.11.2. **Receiver Performance Characteristics**

- 6.9.11.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 50 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.11.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.9.11.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.9.11.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.11.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.9.11.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 40 dB.
- 6.9.11.2.7. The spurious response rejection ratio shall meet or exceed 60 dB.
- 6.9.11.2.8. The intermodulation rejection ratio shall meet or exceed 50 dB.

6.9.12. **P25 Compliant Portable 700/800 MHz Band Performance Characteristics – 12.5 kHz – Category 1**

6.9.12.1. **Transmitter Performance Characteristics**

- 6.9.12.1.1. Radios shall be able to transmit on a minimum of 500 when a procurement order is initiated.
- 6.9.12.1.2. Radios shall be able to transmit over a minimum of 24 kHz for 700 MHz frequency spread and a minimum of 18 kHz for 800 MHz frequency spread when a procurement order is initiated.
- 6.9.12.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 3 Watts output RF power.
- 6.9.12.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.9.12.2. **Receiver Performance Characteristics**

- 6.9.12.2.1. Radios shall be able to receive a minimum of 500 channels when a procurement order is initiated.
- 6.9.12.2.2. Radios shall be able to receive a minimum of 24 MHz for 700 MHz frequency spread and a minimum of 18 MHz for 800 MHz frequency spread when a procurement order is initiated.
- 6.9.12.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.25 uV at the receiver RF input.
- 6.9.12.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.12.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.9.12.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.9.12.2.7. The spurious response rejection ratio shall meet or exceed 72 dB.
- 6.9.12.2.8. The intermodulation rejection ratio shall meet or exceed 72 dB.

6.9.13. **P25 Compliant Portable 700/800 MHz Band Performance Characteristics: 12.5 kHz – Category 2**

6.9.13.1. **Transmitter Performance Characteristics**

- 6.9.13.1.1. Radios shall be able to transmit a minimum of 200 channels when a procurement order is initiated.
- 6.9.13.1.2. Radios shall be able to transmit a minimum of 24 MHz for 700 MHz frequency spread and a minimum of 18 MHz for 800 MHz frequency spread when a procurement order is initiated.
- 6.9.13.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 3 Watts output RF power.

- 6.9.13.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB

6.9.13.2. Receiver Performance Characteristics

- 6.9.13.2.1. Radios shall be able to receive a minimum of 200 channels when a procurement order is initiated.
- 6.9.13.2.2. Radios shall be able to receive a minimum of 24 MHz for 700 MHz frequency spread and a minimum of 18 MHz for 800 MHz frequency spread when a procurement order is initiated.
- 6.9.13.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.25 uV at the receiver RF input.
- 6.9.13.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.13.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.9.13.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.9.13.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.9.13.2.8. The intermodulation rejection ratio shall meet or exceed 72 dB.

6.9.14. P25 Portable 700/800 MHz Band Performance Characteristics: 12.5 kHz – Category 3

6.9.14.1. Transmitter Performance Characteristics

- 6.9.14.1.1. Radios shall be able to transmit a minimum of 50 channels when a procurement order is initiated.
- 6.9.14.1.2. Radios shall be able to transmit a minimum of 24 MHz for 700 MHz frequency spread and a minimum of 18 MHz for 800 MHz frequency spread when a procurement order is initiated.
- 6.9.14.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 3 Watts output RF power.
- 6.9.14.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.9.14.2. Receiver Performance Characteristics

- 6.9.14.2.1. Radios shall be able to receive a minimum of 50 channels when a procurement order is initiated.

- 6.9.14.2.2. Radios shall be able to receive a minimum of 24 MHz for 700 MHz frequency spread and a minimum of 18 MHz for 800 MHz frequency spread when a procurement order is initiated.
- 6.9.14.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.9.14.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.14.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.9.14.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.9.14.2.7. The spurious response rejection ratio shall meet or exceed 60 dB.
- 6.9.14.2.8. The intermodulation rejection ratio shall meet or exceed 50 dB.

6.9.15. P25 Compliant Portable Multi-Band Performance Characteristics: 12.5 kHz-Category 1

6.9.15.1. Transmitter Performance Characteristics

- 6.9.15.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 700 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.15.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band and 700/800 MHz frequency spread and a minimum of 20 MHz for UHF frequency spread when a procurement order is initiated.
- 6.9.15.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 5 Watts output RF power for VHF-HB/UHF and a minimum of 3.0 Watts RF output power for 700/800 MHz.
- 6.9.15.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 47 dB for VHF-HB/UHF and 48 dB for 700/800 MHz.

6.9.15.2. Receiver Performance Characteristics

- 6.9.15.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 700 channels when a procurement order is initiated.
- 6.9.15.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an

“as needed” VHF High-Band and 700/800 MHz frequency spread and a minimum of 20 kHz frequency spread for UHF when a procurement order is initiated.

- 6.9.15.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.23 μ V at the receiver RF input for VHF-HB, 0.21 μ V for UHF and 0.25 for 700/800 MHz.
- 6.9.15.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.15.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 3 %.
- 6.9.15.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 65 dB.
- 6.9.15.2.7. The spurious response rejection ratio shall meet or exceed 70 dB for VHF-HB and 700/800 MHz, and 75 dB for UHF.
- 6.9.15.2.8. The intermodulation rejection ratio shall meet or exceed 72 dB for VHF-HB, 73 dB for UHF and 74 for 700/800 MHz.

6.9.16. P25 Compliant Portable Multi-Band Performance Characteristics: 12.5 kHz-Category 2

6.9.16.1. Transmitter Performance Characteristics

- 6.9.16.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 700 channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.9.16.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band and 700/800 MHz frequency spread and a minimum of 20 MHz for UHF frequency spread when a procurement order is initiated.
- 6.9.16.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 5 Watts output RF power for VHF-HB/UHF and a minimum of 3.0 Watts RF output power for 700/800 MHz.
- 6.9.16.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 34 dB for VHF-HB/UHF and 40 dB for 700/800 MHz.

6.9.16.2. Receiver Performance Characteristics

- 6.9.16.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 700 channels when a procurement order is initiated.

- 6.9.16.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band and 700/800 MHz frequency spread and a minimum of 20 kHz frequency spread for UHF when a procurement order is initiated.
- 6.9.16.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.25 uV at the receiver RF input.
- 6.9.16.2.4. The maximum audio output power shall be a minimum of 0.5 Watts of sound pressure level.
- 6.9.16.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.9.16.2.6. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.9.16.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.9.16.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.10. P25 Compliant Radio Frequency Control Stations

6.10.1. General

- 6.10.1.1. **Configuration.** Each radio frequency (RF) control station shall support conventional digital 2-way simplex voice communications as a completely integral unit. Plug-in style mobile radios and add-on power supplies are not permitted. Each integral RF Control Station unit shall consist of the following major components.
 - 6.10.1.1.1. Receiver.
 - 6.10.1.1.2. Variable output transmitter with internal power amplifier.
 - 6.10.1.1.3. Power supply.
 - 6.10.1.1.4. Remote desktop microphone and speaker interface.
- 6.10.1.2. **Interchangeability.** All equipment of the same and/or like models shall be supplied so that direct interchangeability between radios, antennas, audio circuits, power cables, and accessories can be accomplished without electrical, physical, firmware, or software modification.
- 6.10.1.3. **Accessory Connections.** External accessory electrical connectors shall be provided, as an integral part of the radio and accessory. Connectors shall be provided for, at a minimum, the antenna, audio circuits, power, remote desktop speaker and microphone, and software

programmer. Subject to the approval of the Purchaser some connectors may be ganged to share an interface.

- 6.10.1.4. **Mounting.** Each radio shall be provided with provisions for mounting in both four post racks and cabinets and two post relay racks. All necessary mounting flanges and hardware shall be included. Each radio shall support installation in a 19" wide rack or cabinet.
- 6.10.1.5. **Chassis Assembly.** Each radio shall be contained within an enclosed chassis assembly that protects the internal circuitry from physical damage and protects a radio maintainer from accidental shock. No exposed terminations such as uncovered terminal blocks or screw lugs shall be permitted. The only exception shall be a chassis ground lug. The chassis assembly shall also provide easy access to internal circuitry for servicing while installed in a rack or cabinet.
- 6.10.1.6. **Cabling and Installation Kit.** Each radio shall be provided with a complete cabling and installation kit for installing the radio and accessories in a rack or cabinet. This kit shall include but not be limited to mounting hardware for the radio and accessories and all cabling necessary to interconnect the radio and accessories.
- 6.10.1.7. **Duty-Cycle.** Each radio shall support an operational duty cycle of 10-10-80 per 5 minutes. This 20-80 percent, per 5 minute, duty cycle for shall be supported for a minimum continuous period of 8 hours.
- 6.10.1.8. **Ambient Operational Temperature Range:** Each radio shall operate in an ambient temperature range of -30 degrees Celsius to +60 degrees Celsius. All base station radio specifications in this document are referenced to +25 degrees Celsius.
- 6.10.1.9. **Antenna Interface.** Each radio shall include a single industry standard coaxial connector to support simplex operation. An integral transmitter-receiver RF relay shall be used to support simplex operation via this single antenna connection.
- 6.10.1.10. **Remote Radio Interfacing and Control**
- 6.10.1.11. **Audio Interface.** Each radio shall support both a 2 wire and a 4 wire audio circuit interface. The input audio interface shall provide a 600 Ohm load and support audio levels between -20 and 10 dBm. The output audio interface shall provide an adjustable audio level between -20 and 0 dBm when presented with a 600 Ohm load. Both the audio input and output interfaces shall meet or exceed TIA 603-D audio fidelity specifications.
 - 6.10.1.11.1. **Tone Control.** Each radio shall support remote in-band audio tone control via the audio interface. The tone control functions shall be programmable and include but not be limited to transmitter keying, CTCSS/CDCSS circuit disabling to monitor the received audio before transmitting, and carrier operated switching to support voter operation.

- 6.10.1.11.2. **E&M Signaling.** Each radio shall support remote out-of-band E&M signaling via a 4 wire interface compatible with industry standard PCM channel-banks. The E&M signaling functioning shall include but not be limited to transmitter keying via the E-lead and carrier operated switching via the M-lead to support voter operation.
- 6.10.1.12. **Local Radio Control.** Each radio shall include a remote desktop microphone and speaker. This equipment shall include a PTT switch, receive audio speaker, receive audio mute and volume control, and receive audio monitoring switch to bypass the squelch before transmitting. The minimum cable lengths for the microphone and speaker shall be 20 feet.
- 6.10.1.13. **Status Indicators.** Illuminated indicators shall be provided on the front of the radio to indicate the following functions at a minimum.
- 6.10.1.13.1. Power-on condition.
 - 6.10.1.13.2. Transmitter energized condition.
 - 6.10.1.13.3. Internal alarm condition.
- 6.10.1.14. **VSWR Monitoring Circuit.** Each radio shall be provided with a VSWR monitoring circuit that monitors the VSWR during transmission and detects a high VSWR condition. When a high VSWR condition is detected by the circuit, the transmitter shall automatically reduce power to a level that will not damage the radio when transmitting continuously into any high VSWR condition. When a low VSWR condition has been reestablished, the radio shall resume operation at the original power setting.
- 6.10.1.15. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling.
- 6.10.1.16. **CTCSS/CDCSS.** Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS/CDCSS. The tone-controlled squelch shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. In local control an automatic switch shall be included to permit receive audio monitoring of the channel by a radio user prior to transmitting. This

switch shall be separate from the PTT control. Radios shall support identical or different receive and transmit CTCSS/CDCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.

- 6.10.1.17. **Squelch Tail Elimination.** Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.
- 6.10.1.18. **Transmitter Time-Out Timer.** Each radio shall contain an integral, internal time-out timer to prevent inadvertent keying of the transmitter for an extended period of time. The time-out timer shall inhibit the transmitter when the radio transmission exceeds a predetermined length of time not to exceed 120 seconds. Provisions shall be included to permit the operator to reinitiate transmission immediately following transmitter inhibiting by the time-out timer.
- 6.10.1.19. **Two-Tone Paging (Crew Alerting).** Each radio should support industry standard two-tone paging including at a minimum the Motorola "Quick-Call" and General Electric "Type 99" two-tone formats.
- 6.10.1.20. **Radio Programming**
 - 6.10.1.20.1. Each radio shall be programmable. Programming shall permit specific user profiles to be stored in each radio to facilitate operation by different user groups. Programmed parameter memory shall be non-volatile so that no settings are lost when the radio is powered off or when the radio is momentarily disconnected from its power source. The last channel selected shall appear as the selected channel after the radio is turned back on.
 - 6.10.1.20.2. Parameters that shall be programmable and stored include but are not limited to channel number, channel frequency, CTCSS/CDCSS encode and decode tones, two-tone paging encode and decode tones and all configurable radio operation settings.
 - 6.10.1.20.3. When a procurement order is initiated by the Purchaser the order will include a list of parameter configurations that the vendor shall program in each radio at no cost to the Purchaser. The intent is to ensure that radios are ready for use upon delivery.
 - 6.10.1.20.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated.

- 6.10.1.20.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.
- 6.10.1.20.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.
- 6.10.1.20.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers.

6.10.2. RF Control Station Radio Power.

- 6.10.2.1. Each radio shall be powered from a 120 Volt, 60 Hz, AC source.
- 6.10.2.2. Each radio shall include an integrated 120 Volt AC power supply that provides all necessary AC and DC voltage and current requirements for the radio and any accessories. The power supply shall be a non-linear, high-frequency, switching power supply design.
- 6.10.2.3. The power supply design shall support 10-10-80 duty cycle at full transmit power without adversely effecting any of the transmitter or receiver specifications stated below.
- 6.10.2.4. Unintentional radiated and conducted emissions by a radio while transmitting or receiving must also not adversely effect the performance of an identical radio, powered from the same 120 Volt AC source and operating next to it in the same rack or an adjacent rack.
- 6.10.2.5. The 120 Volt AC power interface shall be field replaceable by mechanical methods (no soldering). Integrated 120 Volt AC line fuses shall be accessible without opening the chassis.

6.10.3. P25 Compliant Control Station VHF High-Band Performance Characteristics: 12.5 kHz – Category 1

6.10.3.1. Transmitter Performance Characteristics

- 6.10.3.1.1. Radios shall be able to transmit on an "as needed" number of channels that will be provided to the vendor when a procurement order is initiated.

- 6.10.3.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.3.1.3. Radios shall transmit at 40 Watts output RF power, over a 20-80 duty cycle. Each radio shall also support variable output power via software configuration and operate over a minimum 3 dB range.
- 6.10.3.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 39 dB.

6.10.3.2. Receiver Performance Characteristics

- 6.10.3.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.3.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.3.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.30 uV at the receiver RF input.
- 6.10.3.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.
- 6.10.3.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.10.3.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.10.3.2.7. The spurious response rejection ratio shall meet or exceed 80 dB.
- 6.10.3.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.10.4. P25 Compliant Control Station VHF High-Band Performance Characteristics: 12.5 kHz – Category 2

6.10.4.1. Transmitter Performance Characteristics

- 6.10.4.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.4.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.10.4.1.3. Radios shall transmit at 40 Watts output RF power, over a 20-80 duty cycle. Each radio shall also support variable output power via software configuration and operate over a minimum 3 dB range.

6.10.4.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.10.4.2. Receiver Performance Characteristics

6.10.4.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.10.4.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.10.4.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.30 uV at the receiver RF input.

6.10.4.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.

6.10.4.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.

6.10.4.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.

6.10.4.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.

6.10.4.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.10.5. P25 Control Station VHF High-Band Performance Characteristics: 12.5 kHz – Category 3

6.10.5.1. Transmitter Performance Characteristics

6.10.5.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.10.5.1.2. Radios shall be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.10.5.1.3. Radios shall transmit at 40 Watts output RF power, over a 20-80 duty cycle. Each radio shall also support variable output power via software configuration and operate over a minimum 3 dB range.

- 6.10.5.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 32 dB.

6.10.5.2. Receiver Performance Characteristics

- 6.10.5.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.5.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.5.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.10.5.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.
- 6.10.5.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.10.5.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.10.5.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.10.5.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.10.6. P25 Compliant Control Station UHF Band Performance Characteristics: 12.5 kHz- Category 1

6.10.6.1. Transmitter Performance Characteristics

- 6.10.6.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.6.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.6.1.3. Radios shall transmit at 40 Watts output RF power, over a 20-80 duty cycle. Each radio shall also support variable output power via software configuration and operate over a minimum 3 dB range.
- 6.10.6.1.4. Radio shall transmit with a minimum FM hum and noise ratio of 39 dB.

6.10.6.2. Receiver Performance Characteristics

- 6.10.6.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.6.2.2. Radios shall be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.6.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.10.6.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.
- 6.10.6.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.10.6.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.10.6.2.7. The spurious response rejection ratio shall meet or exceed 80 dB.
- 6.10.6.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.10.7. P25 Compliant Control Station UHF Band Performance Characteristics: 12.5 kHz- Category 2

6.10.7.1. Transmitter Performance Characteristics

- 6.10.7.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.7.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.7.1.3. Radios shall transmit at 40 Watts output RF power, over a 20-80 duty cycle. Each radio shall also support variable output power via software configuration and operate over a minimum 3 dB range.
- 6.10.7.1.4. Radio shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.10.7.2. Receiver Performance Characteristics

- 6.10.7.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

- 6.10.7.2.2. Radios shall be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.7.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.10.7.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.
- 6.10.7.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.10.7.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.10.7.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.10.7.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.10.8. P25 Control Station UHF Band Performance Characteristics: 12.5 kHz- Category 3

6.10.8.1. Transmitter Performance Characteristics

- 6.10.8.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.8.1.2. Radios shall be able to transmit over an “as needed” UHF frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.8.1.3. Radios shall transmit at 40 Watts output RF power, over a 20-80 duty cycle. Each radio shall also support variable output power via software configuration and operate over a minimum 3 dB range.
- 6.10.8.1.4. Radio shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.10.8.2. Receiver Performance Characteristics

- 6.10.8.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.8.2.2. Radios shall be able to receive over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.

- 6.10.8.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.
- 6.10.8.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.
- 6.10.8.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.10.8.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB.
- 6.10.8.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.10.8.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.10.9. P25 Compliant Control Station 700/800MHz Band Performance Characteristics: 12.5 kHz – Category 1

6.10.9.1. Transmitter Performance Characteristics

- 6.10.9.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.9.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.9.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 19 Watts output RF power for 700 MHz and 30 watts for 800 MHz.
- 6.10.9.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.10.9.2. Receiver Performance Characteristics

- 6.10.9.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.9.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.9.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.10.9.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.

- 6.10.9.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.10.9.2.6. The adjacent channel rejection ratio shall meet or exceed 63 dB.
- 6.10.9.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.
- 6.10.9.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB

6.10.10. P25 Compliant Control Station 700/800MHz Band Performance Characteristics: 12.5 kHz – Category 2

6.10.10.1. Transmitter Performance Characteristics

- 6.10.10.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.10.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.10.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 19 Watts output RF power for 700 MHz and 30 watts for 800 MHz.
- 6.10.10.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.10.10.2. Receiver Performance Characteristics

- 6.10.10.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.10.10.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.10.10.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.10.10.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.
- 6.10.10.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.10.10.2.6. The adjacent channel rejection ratio shall meet or exceed 60 dB.

6.10.10.2.7. The spurious response rejection ratio shall meet or exceed 75 dB.

6.10.10.2.8. The intermodulation rejection ratio shall meet or exceed 75 dB.

6.10.11. P25 Control Station 700/800MHz Band Performance Characteristics: 12.5 kHz – Category 3

6.10.11.1. Transmitter Performance Characteristics

6.10.11.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.10.11.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.

6.10.11.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 18 Watts output RF power for 700 MHz and 30 watts for 800 MHz.

6.10.11.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.

6.10.11.2. Receiver Performance Characteristics

6.10.11.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.10.11.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.10.11.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.50 uV at the receiver RF input.

6.10.11.2.4. The maximum audio output power shall be a minimum of 5 Watts of sound pressure level at each speaker provided.

6.10.11.2.5. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.

6.10.11.2.6. The adjacent channel rejection ratio shall meet or exceed 40 dB.

6.10.11.2.7. The spurious response rejection ratio shall meet or exceed 70 dB.

6.10.11.2.8. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.11. P25 Compliant Vehicular Repeaters

6.11.1. **General** Supports trunking and conventional systems.

6.11.1.1. **Housing.** Each radio shall be contained within a weather and impact resistant housing.

6.11.1.2. **Duty Cycle.** Each radio shall support an operational duty cycle of 1 minute transmit, and 4 minutes receive per 5 minutes. This 20-80 percent, per 5 minute, duty cycle shall be supported for a minimum continuous period of 8 hours.

6.11.1.3. **Ambient Operational Temperature Range:** Each radio shall operate in an ambient temperature range of -30 degrees Celsius to +60 degrees Celsius. All mobile radio specifications in this document are referenced to +25 degrees Celsius.

6.11.1.4. **External Controls.** Each radio shall support the following minimum number of control functions, each accessible from separate controls on the outside of the control unit or dash mount radio package (including remote speaker-microphone). All controls must be able to function as intended when actuated while wearing appropriate protective gloves.

6.11.1.4.1. Power on-off.

6.11.1.4.2. Push-to-talk.

6.11.1.4.3. Receive audio volume control.

6.11.1.4.4. Channel selection.

6.11.1.4.5. Receive audio noise squelch sensitivity control.

6.11.1.4.6. Receive audio monitoring selection with CTCSS enabled.

6.11.1.4.7. Multiple-channel monitor (SCAN) controls.

6.11.1.4.8. DTMF selection.

6.11.1.5. **Display.** Each control unit or dash mount radio package shall include a 12 character alpha-numeric LCD display. The display shall facilitate radio usage and assist in the operation of external controls. The display shall be illuminated momentarily when any external control is actuated.

6.11.1.6. **Remote Microphone.** Each control unit or dash mount radio package shall include a handheld microphone with a PTT switch. Each microphone shall be detachable by the user.

6.11.1.7. **External Remote Speaker.** Each control unit or dash mount radio package shall include a separate external remote speaker. The speaker audio power and distortion specifications are listed below under receiver characteristics.

- 6.11.1.8. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation.
- 6.11.1.9. **CTCSS/CDCSS.** Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS/CDCSS. The tone-controlled squelch shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. An automatic switch shall be included to permit receive audio monitoring of the channel by a radio user prior to transmitting. This switch shall be separate from the Push-to-talk control. Radios shall support identical or different receive and transmit CTCSS/CDCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.
- 6.11.1.10. **CTCSS/CDCSS with Multiple-Channel Operation.** When multiple-channel radio operation requires CTCSS/CDCSS on more than one channel, the CTCSS/CDCSS encode and decode tones in each radio shall be automatically switched by channel selection. When switching between channels that require CTCSS/CDCSS operation and channels that require audio noise squelch operation the mode of squelch operation shall be automatically switched by channel selection.
- 6.11.1.11. **Squelch Tail Elimination.** Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.
- 6.11.1.12. **Transmitter Time-Out Timer.** Each radio shall contain an integral, internal time-out timer to prevent inadvertent keying of the transmitter for an extended period of time. The time-out timer shall inhibit the transmitter when the radio transmission exceeds a predetermined adjustable length of time not to exceed 120 seconds. Provisions shall be included to permit the operator to reinitiate transmission immediately following transmitter inhibiting by the time-out timer.
- 6.11.1.12.1. **Multiple-Channel Monitoring.** Each radio shall support multiple-channel monitoring or "scanning." Three modes of scanning shall be supported as discussed below. The radios shall support scanning a minimum of 700 channels for VHF high band, UHF, and 700/800 MHz radios.
- 6.11.1.12.2. **Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels.

When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. If the channel being monitored is not the programmed priority channel, the radio shall continue to scan the priority channel for the presence of a voice signal at such a rate that audio intelligibility is not seriously impaired. The presence of a voice signal on the priority channel shall cause the priority channel audio to be heard through the speaker with no loss of priority audio information. While the priority channel is being received the radio shall cease sampling the non-priority channel(s).

- 6.11.1.12.3. **Non-Priority Scan Mode.** In this mode, each radio shall be able to sequentially sample a programmed number of receive channels. When a voice signal becomes present on any sampled channel, the audio shall be heard through the speaker. While the voice signal is being received the radio shall cease sampling other channels. When the voice signal terminates, the radio shall resume sequential sampling after a suitable amount of time to ensure complete audio reception of the received voice signal.

6.11.1.13. **Radio Programming**

- 6.11.1.13.1. Each radio shall be programmable. Programming shall permit specific user profiles to be stored in each radio to facilitate operation by different user groups. Programmed parameter memory shall be non-volatile so that no settings are lost when the radio is powered off or when the radio is momentarily disconnected from its power source. The last channel selected shall appear as the selected channel after the radio is turned back on. The last selected scan mode shall also reinitiate after the radio is turned back on.
- 6.11.1.13.2. Parameters that shall be programmable and stored include but are not limited to channel number, channel frequency, CTCSS/CDCSS encode and decode tones, priority channel number and frequency, multiple channel scan settings and all configurable radio operation settings.
- 6.11.1.13.3. When a procurement order is initiated by the Purchaser the order will include a list of parameter configurations that the vendor shall program in each radio at no cost to the Purchaser. The intent is to ensure that radios are ready for use upon delivery.
- 6.11.1.13.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated.

- 6.11.1.13.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.
- 6.11.1.13.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.
- 6.11.1.13.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers and testing facilities throughout the state.
- 6.11.1.13.8. **Vehicular Repeaters.** Each radio equipped as a vehicular repeater shall support operation as a full-duplex in-band or cross-band repeater. Full-duplex operation shall permit simultaneous reception and transmission on separate channels without compromising any of the radio performance specifications listed below. The vendor shall specify and provide any necessary filtering and duplexer equipment required to maintain transmitter and receiver performance. The following in-band and cross-band combinations shall be supported by mobile vehicular repeaters. The Purchaser will provide the vendor with the specific combination to be implemented when a procurement order is initiated.
- 6.11.1.13.9. VHF high-band in-band repeating.
- 6.11.1.13.10. UHF in-band repeating.
- 6.11.1.13.11. 700/800 MHz in-band repeating.
- 6.11.1.13.12. VHF high-band to UHF cross-band repeating.
- 6.11.1.13.13. 700 MHz to 800 MHz cross-band repeating.

6.11.2. **Optional General Accessories**

- 6.11.2.1. When a procurement order is initiated State Purchasing may elect to purchase the following general accessories.
- 6.11.2.2. **Remote DTMF Microphone.** Each control unit or dash mount radio package shall include a handheld DTMF touchpad microphone with a PTT switch. Each DTMF microphone shall be detachable by the user.

- 6.11.2.3. **Dual Control Units.** Each trunk mount radio configuration shall support dual separate control units. These control units may be daisy chained or individually connected to the trunk mount unit.

6.11.3. **Vehicular Radio Power**

- 6.11.3.1. Each mobile radio shall be powered from a 12 Volt DC source.
- 6.11.3.2. **Vehicle Ignition Sensing.** Each radio shall include provisions to operate with or without ignition sensing. Without ignition sensing, the radio shall be installed such that the radio power supply is isolated from the vehicle starting circuit, always providing power to the radio. With ignition sensing, the radio shall be disconnected from the radio power supply during vehicle ignition or when the vehicle is powered off. Ignition control may be accomplished internally or with an external relay. The radio operational modes and programming shall not be affected in either operational mode (with or without ignition sensing). The operational mode will be selected by the Purchaser when a procurement order is initiated.
- 6.11.3.3. **Power-Line Filter.** Each radio shall include a power-line filter to reduce power-line noise emissions such as alternator noise. Installation provisions shall permit the installation of this filter at the end of the power cable that terminates at the battery.

6.11.4. **Vehicular Radio Equipment Environmental Specifications**

All mobile radio equipment and accessories shall comply with the following specific MIL-STD-810 test methods and Standards. Each subsystem, including but not limited to, integrated transmitter and receiver units, separate control units, cabling harnesses, and microphones shall meet all of the following environmental specifications (**Category 1 radios only**).

6.11.4.1. **Rain**

- 6.11.4.1.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 506.5, Rain, Procedure 1 for rain and blowing rain.
- 6.11.4.1.2. **MIL-STD-810, Revision F.** As an alternative to the above rain test, all radio equipment and accessories shall comply with Revision F, Test Method 506.4, Rain, Procedure 1 for rain and blowing rain.

6.11.4.2. **Salt Fog**

- 6.11.4.2.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 509.5, Salt Fog, Procedure 1 (aggravated screening).
- 6.11.4.2.2. **MIL-STD-810, Revision F.** As an alternative to the above salt fog test, all radio equipment and accessories shall comply with Revision F, Test Method 509.4, Salt Fog, Procedure 1.

6.11.4.3. Sand and Dust

- 6.11.4.3.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 510.5, Sand and Dust, Procedure 1 for blowing dust.
- 6.11.4.3.2. **MIL-STD-810, Revision F.** As an alternative to the above sand and dust test, all radio equipment and accessories shall comply with Revision F, Test Method 510.4, Sand and Dust, Procedure 1 for blowing dust.

6.11.4.4. Vibration

- 6.11.4.4.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 514.6, Vibration, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).
- 6.11.4.4.2. **MIL-STD-810, Revision F.** As an alternative to the above vibration test, all radio equipment and accessories shall comply with Revision F, Test Method 514.5, Vibration, Procedure 1, Category 4 (Truck/Trailer Secured Cargo).

6.11.4.5. Physical Shock

- 6.11.4.5.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 516.6, Shock, Procedure 1 for functional shock.
- 6.11.4.5.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with Revision F, Test Method 516.5, Shock, Procedure 1 for functional shock.

6.11.4.6. High Temperature

- 6.11.4.6.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 501.5, High Temperature, Procedure II for operations.
- 6.11.4.6.2. **MIL-STD-810, Revision F.** As an alternative to the above high temperature test, all radio equipment and accessories shall comply with Revision F, Test Method 501.4, High Temperature, Procedure II for operations.

6.11.4.7. Humidity

- 6.11.4.7.1. **MIL-STD-810, Revision G.** All radio equipment and accessories shall comply with Test Method 507.5, Humidity, Procedure 1 (induced and natural) for humidity.
- 6.11.4.7.2. **MIL-STD-810, Revision F.** As an alternative to the above shock test, all radio equipment and accessories shall comply with

Revision F, Test Method 507.4, Humility, Procedure 1 (induced and natural) for humility.

6.11.5. P25 Compliant VRS VHF High-Band Performance Characteristics:12.5 kHz-Category 1

6.11.5.1. Transmitter Performance Characteristics

- 6.11.5.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.5.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.5.1.3. Radios shall be able to transmit output before filters power rating of a minimum of 0.1-2 Watts output RF power.
- 6.11.5.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 37 dB.

6.11.5.2. Receiver Performance Characteristics

- 6.11.5.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.5.2.2. Radios operating with a 15 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.5.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.32 uV at the receiver RF input.
- 6.11.5.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.11.5.2.5. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.11.5.2.6. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.11.5.2.7. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.11.6. P25 Compliant VRS VHF High-Band Performance Characteristics:12.5 kHz-Category 2

6.11.6.1. Transmitter Performance Characteristics

- 6.11.6.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.6.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.6.1.3. Radios shall be able to transmit output before filters power rating of a minimum of 0.1-2 Watts output RF power.
- 6.11.6.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 37 dB.

6.11.6.2. Receiver Performance Characteristics

- 6.11.6.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.6.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.6.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.32 uV at the receiver RF input.
- 6.11.6.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.11.6.2.5. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.11.6.2.6. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.11.6.2.7. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.11.7. P25 VRS VHF High-Band Performance Characteristics:12.5 kHz- Category 3

6.11.7.1. Transmitter Performance Characteristics

- 6.11.7.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

- 6.11.7.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to transmit over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.7.1.3. Radios shall be able to transmit output before filters power rating of a minimum of 0.1-2 Watts output RF power.
- 6.11.7.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 30 dB.

6.11.7.2. **Receiver Performance Characteristics**

- 6.11.7.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.7.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 24 MHz frequency spread be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.7.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.11.7.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.11.7.2.5. The adjacent channel rejection ratio shall meet or exceed 55 dB.
- 6.11.7.2.6. The spurious response rejection ratio shall meet or exceed 65 dB.
- 6.11.7.2.7. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 70 dB.

6.11.8. **P25 Compliant VRS UHF Band Performance Characteristics: 12.5 kHz-Category 1**

6.11.8.1. **Transmitter Performance Characteristics**

- 6.11.8.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.8.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over

an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.11.8.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 0.1-2 Watts output RF power.

6.11.8.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 37 dB.

6.11.8.2. Receiver Performance Characteristics

6.11.8.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.11.8.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.11.8.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.32 uV at the receiver RF input.

6.11.8.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.

6.11.8.2.5. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.

6.11.8.2.6. The spurious response rejection ratio shall meet or exceed 70 dB.

6.11.8.2.7. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.11.9. P25 Compliant VRS UHF Band Performance Characteristics: 12.5 kHz-Category 2

6.11.9.1. Transmitter Performance Characteristics

6.11.9.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.11.9.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.11.9.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 0.1-2 Watts output RF power.

- 6.11.9.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 37 dB.

6.11.9.2. Receiver Performance Characteristics

- 6.11.9.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.9.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.9.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.32 uV at the receiver RF input.
- 6.11.9.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.11.9.2.5. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 60 dB.
- 6.11.9.2.6. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.11.9.2.7. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 75 dB.

6.11.10. P25 VRS UHF Band Performance Characteristics: 12.5 kHz- Category 3

6.11.10.1. Transmitter Performance Characteristics

- 6.11.10.1.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.10.1.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.10.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 0.1-2 Watts output RF power.
- 6.11.10.1.4. Radios operating with a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 35 dB.

6.11.10.2. Receiver Performance Characteristics

- 6.11.10.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of six channels and be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.10.2.2. Radios operating with a 12.5 kHz channel spacing shall support a minimum 20 MHz frequency spread be able to transmit over an “as needed” UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.10.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.
- 6.11.10.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.11.10.2.5. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum adjacent channel rejection ratio of 55 dB.
- 6.11.10.2.6. The spurious response rejection ratio shall meet or exceed 65 dB.
- 6.11.10.2.7. Radios operating with a 12.5 kHz channel spacing shall receive with a minimum intermodulation rejection ratio of 65 dB.

6.11.11. P25 Compliant VRS 700/800MHz Band Performance Characteristics: 12.5 kHz- Category 1

6.11.11.1. Transmitter Performance Characteristics

- 6.11.11.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.11.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.11.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 0.25-1 Watts output RF power.
- 6.11.11.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 33 dB.

6.11.11.2. Receiver Performance Characteristics

- 6.11.11.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

- 6.11.11.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.11.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.32 uV at the receiver RF input.
- 6.11.11.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.
- 6.11.11.2.5. The adjacent channel rejection ratio shall meet or exceed 60 dB.
- 6.11.11.2.6. The spurious response rejection ratio shall meet or exceed 70 dB.
- 6.11.11.2.7. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.11.12. P25 Compliant VRS 700/800MHz Band Performance Characteristics: 12.5 kHz- Category 2

Transmitter Performance Characteristics

- 6.11.12.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.12.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.12.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 0.25-1 Watt output RF power.
- 6.11.12.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 33 dB.

6.11.12.2. Receiver Performance Characteristics

- 6.11.12.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.
- 6.11.12.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.11.12.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.32 uV at the receiver RF input.
- 6.11.12.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.

6.11.12.2.5. The adjacent channel rejection ratio shall meet or exceed 60 dB.

6.11.12.2.6. The spurious response rejection ratio shall meet or exceed 70 dB.

6.11.12.2.7. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.11.13. P25 VRS 700/800MHz Band Performance Characteristics: 12.5 kHz – Category 3

6.11.13.1. Transmitter Performance Characteristics

6.11.13.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.11.13.1.2. Radios shall be able to transmit over an “as needed” 700/800 MHz frequency spread that will be provided to the vendor when a procurement order is initiated.

6.11.13.1.3. Radios shall be able to transmit with a full-power rating of a minimum of 0.25-1 Watt output RF power.

6.11.13.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 30 dB.

6.11.13.2. Receiver Performance Characteristics

6.11.13.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.

6.11.13.2.2. Radios shall be able to receive over an “as needed” 700/800 MHz Band frequency spread that will be provided to the vendor when a procurement order is initiated.

6.11.13.2.3. The radio receiver audio output shall achieve a minimum of 12 dB SINAD using a reference sensitivity of 0.35 uV at the receiver RF input.

6.11.13.2.4. The audio distortion with maximum audio output power shall be less than or equal to +/- 5 %.

6.11.13.2.5. The adjacent channel rejection ratio shall meet or exceed 55 dB.

6.11.13.2.6. The spurious response rejection ratio shall meet or exceed 65 dB.

6.11.13.2.7. The intermodulation rejection ratio shall meet or exceed 70 dB.

6.12. P25 Compliant Dispatch Consoles- Category 1

6.12.1. General

6.12.1.1. **Applications/features.** The dispatch console is to be P25 complaint with the following summary features: Independent and simultaneous operation of primary communications consoles and remote control consoles; Supervisory control; Parallel transmit/busy indicator and transmit lock-out; Minimum speaker audio volume control; Intercom operation; Cross-patch operation; Standard control functions; Headset switching; Channel Functions, including call indicator, transmit switch indicator; mute switch indicator; select switch indicator; transmit busy indication; Transmit Supervisory Control, Speakers, Speaker Volume Control, Microphone; Clock and Metering; Intercom Switch; Monitor Switch; Alert Tone Switch; Unselected Speaker All-Mute; Simultaneous Channel Section; Cross Patch Switch and Indicator; Pedal Foot Switch; Cross Muting; Keyed Channel Interlocks; Headset Jack; Headset; Headset Radio/Telephone Interface; Utility Switch; and ID features.

6.12.1.2. The dispatch console must integrate telephony and radio, call handling, monitoring and logging functions into a single operator interface.

6.12.1.3. **Features:** The systems must have dispatch application controls radio, paging and telephone operations and allows for desktop configuration, as well as integration of 9-1-1 radio dispatch. The consoles shall also provide for integration of 9-1-1 and mapping, instant recall recorder and fire station alerting. In addition, the console shall be able to patch radio to telephone and radio to radio for at least 24 frequencies.

6.12.2. **MINIMUM SPECIFICATIONS:** At a minimum, the dispatch consoles shall meet the minimum specifications:

END-TO-END	
Frequency Response	9.5
Hum and Noise	50 dB below rated output on any port
Cross Talk	Less than -65 dB at 0 dB transmit level
Level Control	Digital AGC Microphone: -60 to -22 dBm Receive Line: -60 to +11 dBm
TRANSMIT LINE OUTPUTS	
Signal to Noise	50 dBm minimum
Audio Output	+10 dBm minimum into a 600 ohms load
Audio Distortion	2% or less throughout compression
Line Output	Adjustable from -60 to +11 dBm
Output Impedance	600 ohms
Compression	Increase of 30 dB, the output shall not increase > 3 dB
RECEIVER LINE INPUTS	
Compression	With an audio increase of 30 dB, the output shall not increase > 3 dB
Threshold of Compression	

Frequency Response	-25 dBm at 1 kHz, adjustable
Signal to Noise	+1, -3 dB, 300 to 3000 Hz (1kHz reference)
Audio Distortion	55 dB minimum
Input Impedance	2% maximum
Call Light Sensitivity	Selectable 600 ohms or bridging -30 dBm (nominal)
Power Input	110-240 VAC, 60 Hz, 1.6 Amp max

Transmit (Telephone to Radio)	
Sensitivity	-30 dBm
Attach Time	20 msec (nominal)
Frequency Response	+1, -3 dB, 300 to 3000 Hz (1kHz reference)
Output Level	Commensurate with console system input requirements
Distortion	Less than 5% at rated output
Compression	With an audio increase of 30 dB, the output shall not increase > 3 dB

Receive (Radio to Telephone)	
Sensitivity	-25 dBm
Attach Time	20 msec (nominal)
Frequency Response	+1, -3 dB, 300 to 3000 Hz (1kHz reference)
Output Level	+10 dBm (adjustable)
Distortion	Less than 5% at rated output (+10 dBm)
Compression	With an audio increase of 30 dB, the output shall not increase > 3 dB

6.12.3. **Configuration.** Each console shall support conventional and trunked circuits, both analog and digital. Each integral unit shall consist of the following major components.

6.12.3.1. Personal Computer.

6.12.3.2. Monitor.

6.12.3.3. Microphone.

6.12.3.4. Mouse and keyboard.

6.12.3.5. Software.

6.12.3.6. Instant Recall Recorder.

6.12.3.7. Single foot pedal switch.

6.12.4. **OPTIONAL GENERAL ACCESSORIES.**

When a procurement order is initiated, the Purchaser may elect to purchase the following general accessories.

- 6.12.4.1. Dual-Pedal foot switch.
- 6.12.4.2. Desktop gooseneck microphone.
- 6.12.4.3. Jackbox.
- 6.12.4.4. Headset.
- 6.12.4.5. Logging Recorders by channel capacity.
- 6.12.4.6. 9-1-1 and Mapping
- 6.12.4.7. Console Furniture.
- 6.12.4.8. Other Accessories.

6.13. **Batteries and Accessories**

6.13.1. **General**

6.13.2. **Scope and Classification**

- 6.13.2.1. The following specification covers rechargeable batteries as indicated below.
- 6.13.2.2. **Rechargeable** - Two-way radio batteries.

6.13.3. **Portable Radio Power**

- 6.13.3.1. **Batteries.** Each rechargeable radio battery shall be high-capacity, and shall be constructed with Nickel-metal hydride, Lithium-ion or Li-Polymer cells. Each battery shall be configured by either connection or mechanical shape to eliminate the possibility of connecting the incorrect polarity to the radio.
- 6.13.3.2. **Battery Power Rating.** Each battery shall be rated with sufficient Amp-hours to permit operation with the manufacturer's specified load for 8 hours. Each battery shall support a portable radio standard duty cycle for one minute of 3 seconds transmitting, 3 seconds receiving (with the audio output power specified below), and 54 seconds on standby. This 5-5-90 percent, per-minute, duty cycle shall be supported by each battery for a continuous 8 hour period.
- 6.13.3.3. **Vendor Radios Approved Under This Contract.** Vendors portable radios approved under this contract are authorized to offer their portable batteries to the Purchaser under this contract. Third-party

vendors are also authorized to offer portable batteries to the Purchaser.

6.13.4. Applicable Publications and Laws

The following publications (issue in effect on date of Invitation to Bid) and laws shall form a part of this specification:

6.13.4.1. Florida Statutes:

6.13.4.1.1. American National Standards Institute (ANSI), Inc. Standards

6.13.4.1.2. No. C18.1 - Specifications for Dry Cells and Batteries.
(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018)

6.13.5. Requirements

6.13.5.1. **General:** Cells and batteries supplied in accordance with this specification shall conform to the requirements of Section 403.7192, Florida Statutes, and where applicable, ANSI C18.1.

6.13.5.2. **Configuration:** Type of batteries products, and prices are to be included in the bid specification sheet.

6.13.5.3. **Product Description:** An acceptable product is defined as one that:

6.13.5.4. Is made of materials, design, capacity, functional characteristics and size within the range as herein specified.

6.13.5.5. Where applicable, successfully completes test and performance requirements listed in ANSI C18-1.

6.13.5.6. **Qualification:** When requested, bidders of all brands of dry cell non-rechargeable batteries, shall submit a letter from the manufacturer certifying that the items are equal to or exceed the performance requirements listed in ANSI C18.1. All rechargeable batteries shall be equivalent to those manufactured as original equipment for 2-way portable/personal radios, mobile radios, pagers, dictation equipment, flashlights etc. When requested, bidders of all rechargeable battery brands shall submit certification and may be required to provide proof that the rechargeable batteries are from the original equipment manufacturer (OEM) or equivalent.

6.13.5.7. **Appearance, Serviceability or Safety of the User in Normal Intended Use:** Batteries having any of the following defects shall be considered as not complying with this requirement: Loose terminals, spring clips or plug-in terminals that do not make and maintain positive connections to the external circuit, corrosion of terminals, loose or broken seals, leaking or distorted containers.

- 6.13.5.8. **Technical Documentation For Bid Evaluation:** If bidding other than the make(s) and model(s) specified, technical documentation shall be provided to demonstrate compliance with the following requirements: Size, volts, NEDA number, chemical system, rating (or classification), terminals, milliampere-hour (MAH), and recharging rate (where applicable to the product(s) bid). Manufacturer's specification sheet(s) or technical publication(s) are acceptable to demonstrate compliance with the above requirements. Individual specifications and requirements must be addressed; a general statement such as "complies with all requirements" is not acceptable. Products bid must meet or exceed all specifications.

6.13.6. Other Accessories.

When a procurement order is initiated, the Purchaser may elect to purchase other accessories for mobile and portable radios and other radio equipment, such as listed below (not all inclusive). These items may be offered from the vendor or a third party vendor.

- 6.13.6.1. Headset
- 6.13.6.2. Detachable Cords
- 6.13.6.3. Intercom
- 6.13.6.4. Panels/cables
- 6.13.6.5. Jackbox
- 6.13.6.6. Other items offered by the vendor

6.14. Requirements

6.14.1. Sampling and Inspection

- 6.14.2. **Random Samples:** Samples of delivered items may be selected at random and tested for compliance with these specifications.

6.14.3. Preparation for Delivery

- 6.14.3.1. Packing: All items shall be packed to ensure safe delivery to destination at lowest rates.
- 6.14.3.2. Toxics in Packaging: Packaging shall comply with the requirements of Florida Statute 403.7191.
- 6.14.3.3. Marking for Shipment: Each container shall be marked to include the following:
 - 6.14.3.3.1. Description of Item
 - 6.14.3.3.2. Name of Vendor

- 6.14.3.3.3. State Contract and Purchase Order Numbers. Each case, as well as each individual carton inside of case, shall be dated with date of manufacture.

6.14.4. Notes

- 6.14.4.1. Commodities procured under this specification shall not deviate from those originally contracted for without written approval from the State Purchasing.
- 6.14.4.2. This specification shall, until revised or rescinded by State Purchasing, apply to each future purchase and contract for the commodities described herein.
- 6.14.4.3. It is the intent of the State of Florida to encourage the use of commodities containing recycled content. Bidders are encouraged to report such availability to State Purchasing for determination of price preference eligibility according to Section 287.045, Florida Statutes.

6.15. PRODUCT MODIFICATIONS AND REVISIONS

6.15.1. Modifications and Revisions During The Contract Period

- 6.15.1.1. **Product Line Changes.** If during the contract period the manufacturer modifies any product bid under this contract then the vendor must inform State Purchasing immediately. The notification must include any pertinent information regarding changes in the product's technical specifications. State Purchasing will then determine if the modified product is still compliant with the technical specifications. If State Purchasing determines that it is compliant then the vendor will supply the new product at no additional cost for the remainder of the contract period. If State Purchasing determines that the modified product is not compliant then the vendor will continue to supply the original product. If the original product is no longer available then the product will be treated as a cancelled product as described below.
- 6.15.1.2. **Software Revisions.** If during the contract period the manufacturer modifies the programming software then the vendor must inform State Purchasing immediately. The new software will be delivered with each new procurement order and include change notices for all applicable manuals at no cost to the Purchaser.
- 6.15.1.3. **Firmware Revisions.** If during the contract period the manufacturer modifies the firmware in any radio product then the vendor shall inform State Purchasing immediately. Change notices for all applicable manuals will be delivered with each new procurement order at no cost to the Purchaser.
- 6.15.1.4. **Interchangeability Impact.** If during the contract period the manufacturer releases a firmware revision for a radio product that the Purchaser has already procured, the Purchaser will determine which, if

any, radios will require programming of the revision to maintain interchangeability among current and future radios. If Purchaser determines that some or all associated radios require programming, the Purchaser may elect to perform the programming themselves or require the vendor to perform the reprogramming in the field or at the factory, at no cost to the Purchaser.

6.15.1.5. **Documentation Updates.** If during the contract period the manufacturer modifies any manual or training materials then the vendor shall inform State shall contact the Purchasing immediately. Change notices, errata sheets, or replacement documents for all previously delivered manuals shall be delivered to the Purchaser at no cost.

6.15.1.6. **Release Notices and Application Notices.** If during the contract period the manufacturer publishes any new release notices or application notices then the vendor shall inform State Purchasing immediately. Copies of all notices shall be delivered to the Purchaser at no cost.

6.15.2. **Product Cancelled During Contract Period**

6.15.2.1. During the contract period if the manufacturer discontinues the manufacturing of a compliant product then the manufacturer shall supply another compliant product at no additional cost to the Purchaser.

6.15.2.2. If another compliant product is supplied, the vendor shall provide manuals at no cost to the Purchaser.

6.15.2.3. If the manufacturer is unable to provide another compliant product then State Purchasing may elect to terminate the contract for convenience.

6.15.3. **NEW PRODUCTS**

6.15.3.1. Vendors with approved category products in this contract may request to add new products (in the same category) to the State contract during the contract period. The new products must meet the minimum technical specifications as defined by State Purchasing. A new vendor may request to add new products at the start of a renewed or extended contract.

6.16. **WARRANTY PERIOD MAINTENANCE AND SERVICE CONTRACT**

6.16.1. **Manufacturer's Warranty**

All equipment including material used in this bid shall be guaranteed by the vendor against mechanical, electrical, and workmanship defects. The warranty covers all parts and accessories against defects in materials and workmanship while under normal use and service by the Purchaser. Parts shall include but not be limited to all products, all product subsystem LLRUs disassembled by trained maintenance personnel, and all product accessories. In the event defects become evident within the warranty period, the vendor shall furnish replacement parts and materials at no additional cost to the Purchaser, including shipping costs. The vendor shall be

liable to the Purchaser for supply of information and material necessary for mandatory revisions determined by the manufacturer at no additional cost to the Purchaser for the duration of the warranty period.

The duration of the warranty period shall be a minimum of one (1) year for infrastructure equipment and two (2) years for terminal equipment, except for expendable items. The warranty period shall commence on the date of System Acceptance.

6.16.2. **Warranty Repairs**

During the manufacturer's warranty period, the vendor shall provide the necessary labor and transportation to maintain the equipment at peak system performance. The vendor shall provide replacement parts and materials and qualified personnel to service the equipment at the sites work within one (1) hour after notification of Category 1 and Category 2 equipment failure. Equipment shall not be out of service in excess of four (4) hours after notification of equipment failure. This warranty period maintenance shall be on a working hour basis as follows:

24 hours per day, seven days per week.

Except the vendor shall not be liable if failure to perform the working hours provisions arise out of cause beyond the control and without the fault or negligence of the Contractor (acts of God, the public enemy, fires, floods, strikes, freight embargoes, etc.).

The vendor must provide at least next day service to restore Category 3 equipment.

6.16.3. **Optional Maintenance Service Contract**

The vendor's bid shall contain one year and three – year optional maintenance service contract to cover the new equipment beyond the manufacturer's warranty period. The vendor will clearly state the optional service costs per radio unit, such as base station repeater, terminal unit, etc. The maintenance contract shall begin on the date of warranty period maintenance expiration.

During this period, the maintenance requirements and conditions shall be identical to the warranty period maintenance described in Section 6.17.1.

6.17. **SPECIFICATION COMPLIANCE MATRIX**

6.17.1. As part of the bid process the vendor must complete the following specification compliance matrix and submit it with their bid. The vendor is required to complete only un-shaded cells in the vendor compliance column. For each cell in the vendor compliance column the vendor shall enter one of three phrases as listed below. The vendor may elect to add notes in the note column as necessary.

6.17.2. **Compliant.** If the vendor enters the phrase "compliant" in a matrix cell they are indicating that the product they are bidding is fully compliant with the referenced specification section and all sub-sections. *Submit a product technical specification sheet for each compliant product that the vendor requests to be part of this contract. The specification sheet must contain all source information per DMS*

Radio Performance specifications (Attachment 1) to include MILSTD for Category 1 products (except Base Station Repeater and RF Control Station). Any incomplete product specification sheets will not be considered.

- 6.17.3. **Not-Compliant.** If the vendor enters the phrase “not-compliant” in a matrix cell they are indicating that the product they are bidding is not compliant with the specification.
- 6.17.4. **No bid.** If the vendor enters the phrase “No bid” in a matrix cell they are indicating that they not bidding a product to meet the associated specification. This phrase should be used in particular if the vendor is not bidding a product for a “not-required equipment” item.
- 6.17.5. The following specification compliance matrix includes only specification sections that require the vendor to indicate compliance. The required/non-required equipment column indicates which products are required for a successful bid. Vendors may also elect to bid non-required equipment. However, bids for non-required equipment items will not affect the bid evaluation process.
- 6.17.6. The vendor may reproduce the matrix in hard copy or electronically for submission with their bid package.

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.2	APPLICABLE REGULATIONS AND STANDARDS			
6.2.1	FCC Regulations	Required		
6.2.2.1	TIA 603-D Standard	Required		
6.2.2.2	DMS Technical Standards	Required		
6.2.2.3	TIA 603-D Test Procedures	Required		
6.2.3	MIL-STD-810 Rev G or Rev F (Category I)	Required		
6.2.4.1	Provide Certification Letter	Required		
6.2.4.2	Provide Certified Test Data	Required		
6.2.4.3	Provide Evaluation Unit	Required		
6.3	TECHNICAL REQUIREMENTS			
6.4	Analog Base Station/Repeater Radios			
6.4.1.1	Configuration	Required		
6.4.1.2	Interchangeability	Required		
6.4.1.3	Accessory Connections	Required		
6.4.1.3.1	Mounting	Required		
6.4.1.3.2	Chassis Assembly	Required		
6.4.1.3.3	Cabling and Installation Kit	Required		
6.4.1.3.4	Duty Cycle	Required		
6.4.1.3.5	Ambient Temperature	Required		
6.4.1.3.6	Antenna Interface	Required		
6.4.1.4.	Remote Radio Interface and Control	Required		
6.4.1.4.4	Local Radio Control	Required		
6.4.1.4.5	Status Indicators	Required		
6.4.1.4.6	VSWR Monitoring Circuit	Required		
6.4.1.4.7	Receive Audio Noise Squelch	Required		
6.4.1.4.8	CTCSS	Required		
6.4.1.4.9	Squelch Tail Elimination	Required		
6.4.1.4.10	Transmitter Time-Out Timer	Required		
6.4.1.4.11	Two-Tone Paging (Crew Alerting)	Required		
6.4.1.4.12	Automatic FCC Station Identification	Required		
6.4.1.5	Radio Programming	Required		
6.4.2.1	120V 60 Hz AC Power Source	Required		
6.4.2.2	Power Supply Design	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.4.2.3	Full-Power Operation	Required		
6.4.2.4	Power Supply Related Emissions	Required		
6.4.2.5	Power Supply Interface	Required		
6.4.3	Analog Base Station/Repeater VHF HB: 12.5 kHz- Category 1			
6.4.3.1.1	TX "as needed" number of TX channels	Required		
6.4.3.1.2	TX "as needed" TX Frequency Spread	Required		
6.4.3.1.3	TX RF Power	Required		
6.4.3.1.4	TX Hum and Noise	Required		
6.4.3.2.1	RX "as needed" number of RX channels	Required		
6.4.3.2.2	RX "as needed" RX Frequency Spread	Required		
6.4.3.2.3	RX sensitivity	Required		
6.4.3.2.4	RX adjacent channel rejection	Required		
6.4.3.2.5	RX spurious response rejection	Required		
6.4.3.2.6	RX intermodulation rejection	Required		
6.4.4	Analog Base Station/Repeater VHF HB: 12.5 kHz- Category 2			
6.4.4.1.1	TX "as needed" number of TX channels	Required		
6.4.4.1.2	TX "as needed" TX Frequency Spread	Required		
6.4.4.1.3	TX RF Power	Required		
6.4.4.1.4	TX Hum and Noise	Required		
6.4.4.2.1	RX "as needed" number of RX channels	Required		
6.4.4.2.2	RX "as needed" RX Frequency Spread	Required		
6.4.4.2.3	RX sensitivity	Required		
6.4.4.2.4	RX adjacent channel rejection	Required		
6.4.4.2.5	RX spurious response rejection	Required		
6.4.4.2.6	RX intermodulation rejection	Required		
6.4.5	Analog Base Station/Repeater VHF HB: 12.5 kHz- Category 3			
6.4.5.1.1	TX "as needed" number of TX channels	Required		
6.4.5.1.2	TX "as needed" TX Frequency Spread	Required		
6.4.5.1.3	TX RF Power	Required		
6.4.5.1.4	TX Hum and Noise	Required		
6.4.5.2.1	RX "as needed" number of RX channels	Required		
6.4.5.2.2	RX "as needed" RX Frequency Spread	Required		
6.4.5.2.3	RX sensitivity	Required		
6.4.5.2.4	RX adjacent channel rejection	Required		
6.4.5.2.5	RX spurious response rejection	Required		
6.4.5.2.6	RX intermodulation rejection	Required		
6.4.6	Analog Base Station/Repeater UHF HB: 12.5 kHz- Category 1			
6.4.6.1.1	TX "as needed" number of TX channels	Required		
6.4.6.1.2	TX "as needed" TX Frequency Spread	Required		
6.4.6.1.3	TX RF Power	Required		
6.4.6.1.4	TX Hum and Noise	Required		
6.4.6.2.1	RX "as needed" number of RX channels	Required		
6.4.6.2.2	RX "as needed" RX Frequency Spread	Required		
6.4.6.2.3	RX sensitivity	Required		
6.4.6.2.4	RX adjacent channel rejection	Required		
6.4.6.2.5	RX spurious response rejection	Required		
6.4.6.2.6	RX intermodulation rejection	Required		
6.4.7	Analog Base Station/Repeater UHF HB: 12.5 kHz- Category 2			
6.4.7.1.1	TX "as needed" number of TX channels	Required		
6.4.7.1.2	TX "as needed" TX Frequency Spread	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.4.7.1.3	TX RF Power	Required		
6.4.7.1.4	TX Hum and Noise	Required		
6.4.7.2.1	RX "as needed" number of RX channels	Required		
6.4.7.2.2	RX"as needed" RX Frequency Spread	Required		
6.4.7.2.3	RX sensitivity	Required		
6.4.7.2.4	RX adjacent channel rejection	Required		
6.4.7.2.5	RX spurious response rejection	Required		
6.4.7.2.6	RX intermodulation rejection	Required		
6.4.8	Analog Base Station/Repeater UHF HB: 12.5 kHz- Category 3			
6.4.8.1.1	TX "as needed" number of TX channels	Required		
6.4.8.1.2	TX "as needed" TX Frequency Spread	Required		
6.4.8.1.3	TX RF Power	Required		
6.4.8.1.4	TX Hum and Noise	Required		
6.4.8.2.1	RX "as needed" number of RX channels	Required		
6.4.8.2.2	RX"as needed" RX Frequency Spread	Required		
6.4.8.2.3	RX sensitivity	Required		
6.4.8.2.4	RX adjacent channel rejection	Required		
6.4.8.2.5	RX spurious response rejection	Required		
6.4.8.2.6	RX intermodulation rejection	Required		
6.4.9	Analog Base Station/Repeater 700/800 MHz Band: 25 kHz - Category 1			
6.4.9.1.1	TX "as needed" number of TX channels	Required		
6.4.9.1.2	TX "as needed" TX Frequency Spread	Required		
6.4.9.1.3	TX RF Power	Required		
6.4.9.1.4	TX Hum and Noise	Required		
6.4.9.2.1	RX "as needed" number of RX channels	Required		
6.4.9.2.2	RX"as needed" RX Frequency Spread	Required		
6.4.9.2.3	RX sensitivity	Required		
6.4.9.2.4	RX adjacent channel rejection	Required		
6.4.9.2.5	RX spurious response rejection	Required		
6.4.9.2.6	RX intermodulation rejection	Required		
6.4.10	Analog Base Station/Repeater 700/800 MHz Band: 25 kHz - Category 2			
6.4.10.1.1	TX "as needed" number of TX channels	Required		
6.4.10.1.2	TX "as needed" TX Frequency Spread	Required		
6.4.10.1.3	TX RF Power	Required		
6.4.10.1.4	TX Hum and Noise	Required		
6.4.10.2.1	RX "as needed" number of RX channels	Required		
6.4.10.2.2	RX"as needed" RX Frequency Spread	Required		
6.4.10.2.3	RX sensitivity	Required		
6.4.10.2.4	RX adjacent channel rejection	Required		
6.4.10.2.5	RX spurious response rejection	Required		
6.4.10.2.6	RX intermodulation rejection	Required		
6.4.11	Analog Base Station/Repeater 700/800 MHz Band: 25 kHz - Category 3			
6.4.11.1.1	TX "as needed" number of TX channels	Required		
6.4.11.1.2	TX "as needed" TX Frequency Spread	Required		
6.4.11.1.3	TX RF Power	Required		
6.4.11.1.4	TX Hum and Noise	Required		
6.4.11.2.1	RX "as needed" number of RX channels	Required		
6.4.11.2.2	RX"as needed" RX Frequency Spread	Required		
6.4.11.2.3	RX sensitivity	Required		
6.4.11.2.4	RX adjacent channel rejection	Required		
6.4.11.2.5	RX spurious response rejection	Required		
6.4.11.2.6	RX intermodulation rejection	Required		
6.5	Analog Mobile Radios			

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.5.1.2	Trunk Mount	Required		
6.5.1.3	Dash Mount	Required		
6.5.1.4	Interchangeability	Required		
6.5.1.5	Accessory Connections	Required		
6.5.1.6	Cabling and Installation Kit	Required		
6.5.1.7	Trunk Mount Dimensions	Required		
6.5.1.8	Dash Mount Dimensions	Required		
6.5.1.9	Weight	Required		
6.5.1.10	Housing	Required		
6.5.1.11	Duty Cycle	Required		
6.5.1.12	Ambient Temperature	Required		
6.5.1.13	External Controls			
6.5.1.14	Display	Required		
6.5.1.15	Remote Microphone	Required		
6.5.1.16	External Remote Speaker	Required		
6.5.1.17	Receive Audio Noise Squelch	Required		
6.5.1.18	CTCSS	Required		
6.5.1.19	CTCSS with Multiple-Channel Operation	Required		
6.5.1.20	Squelch Tail Elimination	Required		
6.5.1.21	Transmitter Time-Out Timer	Required		
6.5.1.22	Multiple-Channel Monitoring	Required		
6.5.1.25	Radio Programming	Required		
6.5.2.2	Remote DTMF Microphone	Required		
6.5.2.3	Dual Control Units	Required		
6.5.2.4	VHF, UHF and 700/800 MHz Vehicular Repeaters	Required		
6.5.3.1	12 VDC Power source	Required		
6.5.3.2	Vehicle Ignition Sensing	Required		
6.5.3.3	Power-Line Filter	Required		
6.5.4	Subsystem MIL-STD Compliance	Required		
6.5.4.1	MIL-STD-810G 506.4 Rain, Procedure 1. Alternative MIL-STD-810F 506.3 Rain, Procedure 1	Required		
6.5.4.2	MIL-STD-810G 509.4 Salt Fog, Procedure 1. Alternative MIL-STD-810F 509.3 Salt Fog, Procedure 1.	Required		
6.5.4.3	MIL-STD-810G 510.4 Sand and Dust, Procedure 1. Alternative MIL-STD-810F 510.3 Sand and Dust, Procedure 1	Required		
6.5.4.4	MIL-STD-810G 514.5 Vibration, Procedure 1, Category 4. Alternative MIL-STD-810F 514.4 Vibration, Procedure 1, Category 4	Required		
6.5.4.5	MIL-STD-810G 516.5 Physical Shock, Procedure 1. Alternative MIL-STD-810F 516.4, Procedure 1	Required		
6.5.4.6	MIL-STD-810G 501.5 High Temperature, Procedure II. Alternative MIL-STD-810F 501.4 High Temperature, Procedure II.	Required		
6.5.4.7	MIL-STD-810G 507.5 Humidity, Procedure I. Alternative MIL-STD-810F 507.4 High Humidity, Procedure I.	Required		
6.5.5	Analog Mobile VHF High-Band: 12.5 kHz-Category 1			
6.5.5.1.1	TX "as needed" number of TX channels	Required		
6.5.5.1.2	TX "as needed" TX Frequency Spread	Required		
6.5.5.1.3	TX RF Power	Required		
6.5.5.1.4	TX Hum and Noise	Required		
6.5.5.2.3	RX sensitivity	Required		
6.5.5.2.4	RX audio output power	Required		
6.5.5.2.5	RX audio distortion	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.5.5.2.6	RX adjacent channel rejection	Required		
6.5.5.2.7	RX spurious response rejection	Required		
6.5.5.2.8	RX intermodulation rejection	Required		
6.5.6	Analog Mobile VHF High-Band: 12.5 kHz- Category 2			
6.5.6.1.1	TX "as needed" number of TX channels	Required		
6.5.6.1.2	TX "as needed" TX Frequency Spread	Required		
6.5.6.1.3	TX RF Power	Required		
6.5.6.1.4	TX Hum and Noise	Required		
6.5.6.2.3	RX sensitivity	Required		
6.5.6.2.4	RX audio output power	Required		
6.5.6.2.5	RX audio distortion	Required		
6.5.6.2.6	RX adjacent channel rejection	Required		
6.5.6.2.7	RX spurious response rejection	Required		
6.5.6.2.8	RX intermodulation rejection	Required		
6.5.7	Analog Mobile VHF High-Band: 12.5 kHz- Category 3			
6.5.7.1.1	TX "as needed" number of TX channels	Required		
6.5.7.1.2	TX "as needed" TX Frequency Spread	Required		
6.5.7.1.3	TX RF Power	Required		
6.5.7.1.4	TX Hum and Noise	Required		
6.5.7.2.3	RX sensitivity	Required		
6.5.7.2.4	RX audio output power	Required		
6.5.7.2.5	RX audio distortion	Required		
6.5.7.2.6	RX adjacent channel rejection	Required		
6.5.7.2.7	RX spurious response rejection	Required		
6.5.7.2.8	RX intermodulation rejection	Required		
6.5.8	Analog Mobile UHF Band Performance Characteristics: 12.5 kHz- Category 1			
6.5.8.1.1	TX "as needed" number of TX channels	Required		
6.5.8.1.2	TX "as needed" TX Frequency Spread	Required		
6.5.8.1.3	TX RF Power	Required		
6.5.8.1.4	TX Hum and Noise	Required		
6.5.8.2.1	RX "as needed" number of RX channels	Required		
6.5.8.2.2	RX "as needed" RX Frequency Spread	Required		
6.5.8.2.3	RX audio output power	Required		
6.5.8.2.4	RX audio distortion	Required		
6.5.8.2.5	RX sensitivity	Required		
6.5.8.2.6	RX adjacent channel rejection	Required		
6.5.8.2.7	RX spurious response rejection	Required		
6.5.8.2.8	RX intermodulation rejection	Required		
6.5.9	Analog Mobile UHF Band: 12.5 kHz- Category 2			
6.5.9.1.1	TX "as needed" number of TX channels	Required		
6.5.9.1.2	TX "as needed" TX Frequency Spread	Required		
6.5.9.1.3	TX RF Power	Required		
6.5.9.1.4	TX Hum and Noise	Required		
6.5.9.2.1	RX "as needed" number of RX channels	Required		
6.5.9.2.2	RX "as needed" RX Frequency Spread	Required		
6.5.9.2.3	RX sensitivity	Required		
6.5.9.2.4	RX audio output power	Required		
6.5.9.2.5	RX audio distortion	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.5.9.2.6	RX adjacent channel rejection	Required		
6.5.9.2.7	RX spurious response rejection	Required		
6.5.9.2.8	RX intermodulation rejection	Required		
6.5.10	Analog Mobile UHF Band: 12.5 kHz- Category 3			
6.5.10.1.1	TX “as needed” number of TX channels	Required		
6.5.10.1.2	TX “as needed” TX Frequency Spread	Required		
6.5.10.1.3	TX RF Power	Required		
6.5.10.1.4	TX Hum and Noise	Required		
6.5.10.2.1	RX “as needed” number of RX channels	Required		
6.5.10.2.2	RX “as needed” RX Frequency Spread	Required		
6.5.10.2.3	RX sensitivity	Required		
6.5.10.2.4	RX audio output power	Required		
6.5.10.2.5	RX audio distortion	Required		
6.5.10.2.6	RX adjacent channel rejection	Required		
6.5.10.2.7	RX spurious response rejection	Required		
6.5.10.2.8	RX intermodulation rejection	Required		
6.5.11	Analog Mobile 700/800 MHz Band : 12.5 kHz- Category 1			
6.5.11.1.1	TX “as needed” number of TX channels	Required		
6.5.11.1.2	TX “as needed” TX Frequency Spread	Required		
6.5.11.1.3	TX RF Power	Required		
6.5.11.1.4	TX Hum and Noise	Required		
6.5.11.2.1	RX “as needed” number of RX channels	Required		
6.5.11.2.2	RX “as needed” RX Frequency Spread	Required		
6.5.11.2.3	RX sensitivity	Required		
6.5.11.2.4	RX audio output power	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.5.11.2.5	RX audio distortion	Required		
6.5.11.2.6	RX adjacent channel rejection	Required		
6.5.11.2.7	RX spurious response rejection	Required		
6.5.11.2.8	RX intermodulation rejection	Required		
6.5.12	Analog Mobile 700/800 MHz Band: 12.5 kHz- Category 2			
6.5.12.1.1	TX “as needed” number of TX channels	Required		
6.5.12.1.2	TX “as needed” TX Frequency Spread	Required		
6.5.12.1.3	TX RF Power	Required		
6.5.12.1.4	TX Hum and Noise	Required		
6.5.12.2.1	RX “as needed” number of RX channels	Required		
6.5.12.2.2	RX “as needed” RX Frequency Spread	Required		
6.5.12.2.3	RX sensitivity	Required		
6.5.12.2.4	RX audio output power	Required		
6.5.12.2.5	RX audio distortion	Required		
6.5.12.2.6	RX adjacent channel rejection	Required		
6.5.12.2.7	RX spurious response rejection	Required		
6.5.12.2.8	RX intermodulation rejection	Required		
6.5.13	Analog Mobile 700/800 MHz Band: 12.5 kHz- Category 3			
6.5.13.1.1	TX “as needed” number of TX channels	Required		
6.5.13.1.2	TX “as needed” TX Frequency Spread	Required		
6.5.13.1.3	TX RF Power	Required		
6.5.13.1.4	TX Hum and Noise	Required		
6.5.13.2.1	RX “as needed” number of RX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.5.13.2.2	RX“as needed” RX Frequency Spread	Required		
6.5.13.2.3	RX sensitivity	Required		
6.5.13.2.4	RX audio output power	Required		
6.5.13.2.5	RX audio distortion	Required		
6.5.13.2.6	RX adjacent channel rejection	Required		
6.5.13.2.7	RX spurious response rejection	Required		
6.5.13.2.8	RX intermodulation rejection	Required		
6.6	Analog Portable Radios			
6.6.1.1	Configuration	Required		
6.6.1.2	Interchangeability	Required		
6.6.1.3	Accessory Connections	Required		
6.6.1.4	Dimensions	Required		
6.6.1.5	Weight	Required		
6.6.1.6	Housing	Required		
6.6.1.7	Duty Cycle	Required		
6.6.1.8	Ambient Temperature	Required		
6.6.1.9	External Controls	Required		
6.6.1.10	Display	Required		
6.6.1.11	VHF Antennas	Required		
6.6.1.12	UHF, 700/800 Antennas	Required		
6.6.1.13	Receive Audio Noise Squelch	Required		
6.6.1.14	CTCSS	Required		
6.6.1.15	CTCSS with Multiple-Channel Operation	Required		
6.6.1.16	Squelch Tail Elimination	Required		
6.6.1.17	Transmitter Time-Out Timer	Required		
6.6.1.18	Two-Tone Paging (Crew Alerting)	Required		
6.6.1.19	Multiple-Channel Monitoring	Required		
6.6.1.19.3	Belt Clip	Required		
6.6.1.20	Radio Programming	Required		
6.6.2.2	Remote Speaker-Microphone	Required		
6.6.2.3	Remote Speaker-Microphone-Antenna	Required		
6.6.3.1	Battery type and quantity	Required		
6.6.3.2	Battery Power Rating	Required		
6.6.4.1	Rapid Battery Charger	Required		
6.6.4.2	Multiple Unit Rapid Battery Charger	Not-Required		
6.6.4.3	Slow Battery Charger	Not-Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.6.4.4	Multiple Unit Slow Battery Charger	Not-Required		
6.6.4.5	Smart Charger	Not-Required		
6.6.4.6.6	Multiple Unit Smart Charger	Not-Required		
6.6.4.7	Vehicular Charger	Not-Required		
6.6.4.8	Vehicular Charger with Remote Speaker, Microphone, and Antenna	Not-Required		
6.6.5.1	MIL-STD-810G 506.4 Rain, Procedure 1. Alternative MIL-STD-810F 506.3 Rain, Procedure 1	Required		
6.6.5.2	MIL-STD-810G 509.4 Salt Fog, Procedure 1. Alternative MIL-STD-810F 509.3 Salt Fog, Procedure 1.	Required		
6.6.5.3	MIL-STD-810G 510.4 Sand and Dust, Procedure 1. Alternative MIL-STD-810F 510.3 Sand and Dust, Procedure 1	Required		
6.6.5.4	MIL-STD-810G 514.5 Vibration, Procedure 1, Category 4. Alternative MIL-STD-810F 514.4 Vibration, Procedure 1, Category 4	Required		
6.6.5.5	MIL-STD-810G 516.5 Physical Shock, Procedure 1. Alternative MIL-STD-810F 516.4, Procedure 1	Required		
6.6.5.6	MIL-STD-810G 501.5 High Temperature, Procedure II. Alternative MIL-STD-810F 501.4 High Temperature, Procedure II.	Required		
6.6.5.7	MIL-STD-810G 507.5 Humidity, Procedure I. Alternative MIL-STD-810F 507.4 High Humidity, Procedure I.	Required		
6.6.6	Analog Portable VHF High-Band: 12.5 kHz-Category 1			
6.6.6.1.1	TX “as needed” number of TX channels	Required		
6.6.6.1.2	TX “as needed” TX Frequency Spread	Required		
6.6.6.1.3	TX RF Power	Required		
6.6.6.1.4	TX Hum and Noise	Required		
6.6.6.2.1	RX Number of RX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.6.6.2.2	RX Frequency Spread	Required		
6.6.6.2.3	RX sensitivity	Required		
6.6.6.2.4	RX audio output power	Required		
6.6.6.2.5	RX audio distortion	Required		
6.6.6.2.6	RX adjacent channel rejection	Required		
6.6.6.2.7	RX Spurious response rejection	Required		
6.6.6.2.8	RX Intermodulation Rejection	Required		
6.6.7	Analog Portable VHF High-Band: 12.5 kHz-Category 2			
6.6.7.1.1	TX “as needed” number of TX channels	Required		
6.6.7.1.2	TX “as needed” TX Frequency Spread	Required		
6.6.7.1.3	TX RF Power	Required		
6.6.7.1.4	TX Hum and Noise	Required		
6.6.7.2.1	RX Number of RX channels	Required		
6.6.7.2.2	RX Frequency Spread	Required		
6.6.7.2.3	RX sensitivity	Required		
6.6.7.2.4	RX audio output power	Required		
6.6.7.2.5	RX audio distortion	Required		
6.6.7.2.6	RX adjacent channel rejection	Required		
6.6.7.2.7	RX Spurious response rejection	Required		
6.6.7.2.8	RX Intermodulation Rejection	Required		
6.6.8	Analog Portable VHF High-Band: 12.5 kHz-Category 3			
6.6.8.1.1	TX “as needed” number of TX channels	Required		
6.6.8.1.2	TX “as needed” TX Frequency Spread	Required		
6.6.8.1.3	TX RF Power	Required		
6.6.8.1.4	TX Hum and Noise	Required		
6.6.8.2.1	RX Number of RX channels	Required		
6.6.8.2.2	RX Frequency Spread	Required		
6.6.8.2.3	RX sensitivity	Required		
6.6.8.2.4	RX audio output power	Required		
6.6.8.2.5	RX audio distortion	Required		
6.6.8.2.6	RX adjacent channel rejection	Required		
6.6.8.2.7	RX Spurious response rejection	Required		
6.6.8.2.8	RX Intermodulation Rejection	Required		
6.6.9	Analog Portable UHF Band: 12.5 kHz-Category 1			
6.6.9.1.1	TX “as needed” number of TX channels	Required		
6.6.9.1.2	TX “as needed” TX Frequency Spread	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.6.9.1.3	TX RF Power	Required		
6.6.9.1.4	TX Hum and Noise	Required		
6.6.9.2.1	RX Number of RX channels	Required		
6.6.9.2.2	RX Frequency Spread	Required		
6.6.9.2.3	RX sensitivity	Required		
6.6.9.2.4	RX audio output power	Required		
6.6.9.2.5	RX audio distortion	Required		
6.6.9.2.6	RX adjacent channel rejection	Required		
6.6.9.2.7	RX Spurious response rejection	Required		
6.6.9.2.8	RX Intermodulation Rejection	Required		
6.6.10	Analog Portable UHF Band: 12.5 kHz-Category 2			
6.6.10.1.1	TX “as needed” number of TX channels	Required		
6.6.10.1.2	TX “as needed” TX Frequency Spread	Required		
6.6.10.1.3	TX RF Power	Required		
6.6.10.1.4	TX Hum and Noise	Required		
6.6.10.2.1	RX Number of RX channels	Required		
6.6.10.2.2	RX Frequency Spread	Required		
6.6.10.2.3	RX sensitivity	Required		
6.6.10.2.4	RX audio output power	Required		
6.6.10.2.5	RX audio distortion	Required		
6.6.10.2.6	RX adjacent channel rejection	Required		
6.6.10.2.7	RX Spurious response rejection	Required		
6.6.10.2.8	RX Intermodulation Rejection	Required		
6.6.11	Analog Portable UHF Band: 12.5 kHz-Category 3			
6.6.11.1.1	TX “as needed” number of TX channels	Required		
6.6.11.1.2	TX “as needed” TX Frequency Spread	Required		
6.6.11.1.3	TX RF Power	Required		
6.6.11.1.4	TX Hum and Noise	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.6.11.2.1	RX Number of RX channels	Required		
6.6.11.2.2	RX Frequency Spread	Required		
6.6.11.2.3	RX sensitivity	Required		
6.6.11.2.4	RX audio output power	Required		
6.6.11.2.5	RX audio distortion	Required		
6.6.11.2.6	RX adjacent channel rejection	Required		
6.6.11.2.7	RX Spurious response rejection	Required		
6.6.11.2.8	RX Intermodulation Rejection	Required		
6.6.12	Analog Portable 700/800 MHz Band: 25 kHz- Category 1			
6.6.12.1.1	TX “as needed” number of TX channels	Required		
6.6.12.1.2	TX “as needed” TX Frequency Spread	Required		
6.6.12.1.3	TX RF Power	Required		
6.6.12.1.4	TX Hum and Noise	Required		
6.6.12.2.1	RX Number of RX channels	Required		
6.6.12.2.2	RX Frequency Spread	Required		
6.6.12.2.3	RX sensitivity	Required		
6.6.12.2.4	RX audio output power	Required		
6.6.12.2.5	RX audio distortion	Required		
6.6.12.2.6	RX adjacent channel rejection	Required		
6.6.12.2.7	RX Spurious response rejection	Required		
6.6.12.2.8	RX Intermodulation Rejection	Required		
6.6.13	Analog Portable 700/800 MHz Band: 25 kHz- Category 2			
6.6.13.1.1	TX “as needed” number of TX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.6.13.1.2	TX “as needed” TX Frequency Spread	Required		
6.6.13.1.3	TX RF Power	Required		
6.6.13.1.4	TX Hum and Noise	Required		
6.6.13.2.1	RX Number of RX channels	Required		
6.6.13.2.2	RX Frequency Spread	Required		
6.6.13.2.3	RX sensitivity	Required		
6.6.13.2.4	RX audio output power	Required		
6.6.13.2.5	RX audio distortion	Required		
6.6.13.2.6	RX adjacent channel rejection	Required		
6.6.13.2.7	RX Spurious response rejection	Required		
6.6.13.2.8	RX Intermodulation Rejection	Required		
6.6.14	Analog Portable 700/800 MHz Band: 25 kHz- Category 3			
6.6.14.1.1	TX “as needed” number of TX channels	Required		
6.6.14.1.2	TX “as needed” TX Frequency Spread	Required		
6.6.14.1.3	TX RF Power	Required		
6.6.14.1.4	TX Hum and Noise	Required		
6.6.14.2.1	RX Number of RX channels	Required		
6.6.14.2.2	RX Frequency Spread	Required		
6.6.14.2.3	RX sensitivity	Required		
6.6.14.2.4	RX audio output power	Required		
6.6.14.2.5	RX audio distortion	Required		
6.6.14.2.6	RX adjacent channel rejection	Required		
6.6.14.2.7	RX Spurious response rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.6.14.2.8	RX Intermodulation Rejection	Required		
6.7	Project 25 Compliant (P25) Base Station/Repeater Radios			
6.7.1.1	Configuration	Required		
6.7.1.2	Interchangeability	Required		
6.7.1.3	Accessory Connections	Required		
6.7.1.4	Mounting	Required		
6.7.1.5	Chassis Assembly	Required		
6.7.1.6	Cabling and Installation Kit	Required		
6.7.1.7	Duty Cycle	Required		
6.7.1.8	Ambient Temperature	Required		
6.7.1.9	Antenna Interface	Required		
6.7.1.10	Remote Radio Interface and Control	Required		
6.7.1.11	Local Radio Control	Required		
6.7.1.12	Status Indicators	Required		
6.7.1.13	VSWR Monitoring Circuit	Required		
6.7.1.14	Receive Audio Noise Squelch	Required		
6.7.1.15	CTCSS/CDCSS	Required		
6.7.1.16	Squelch Tail Elimination	Required		
6.7.1.17	Transmitter Time-Out Timer	Required		
6.7.1.18	Two-Tone Paging (Crew Alerting)	Required		
6.7.1.19	Automatic FCC Station Identification	Required		
6.7.1.20	Radio Programming	Required		
6.7.2.1	120V 60 Hz AC Power Source	Required		
6.7.2.2	Power Supply Design	Required		
6.7.2.3	Full-Power Operation	Required		
6.7.2.4	Power Supply Related Emissions	Required		
6.7.2.5	Power Supply Interface	Required		
6.7.3	P25 Compliant Base Station/Repeater VHF High-Band: 12.5 kHz- Category 1			
6.7.3.1.1	TX “as needed” number of TX channels	Required		
6.7.3.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.3.1.3	TX RF Power	Required		
6.7.3.1.4	TX Hum and Noise	Required		
6.7.3.2.1	RX “as needed” number of RX channels	Required		
6.7.3.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.3.2.3	RX sensitivity	Required		
6.7.3.2.4	RX adjacent channel rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.7.3.2.5	RX spurious response rejection	Required		
6.7.3.2.6	RX intermodulation rejection	Required		
6.7.4	P25 Compliant Base Station/Repeater VHF High-Band: 12.5 kHz- Category 2			
6.7.4.1.1	TX “as needed” number of TX channels	Required		
6.7.4.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.4.1.3	TX RF Power	Required		
6.7.4.1.4	TX Hum and Noise	Required		
6.7.4.2.1	RX “as needed” number of RX channels	Required		
6.7.4.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.4.2.3	RX sensitivity	Required		
6.7.4.2.4	RX adjacent channel rejection	Required		
6.7.4.2.5	RX spurious response rejection	Required		
6.7.4.2.6	RX intermodulation rejection	Required		
6.7.5	P25 Compliant Base Station/Repeater VHF High-Band: 12.5 kHz- Category 3			
6.7.5.1.1	TX “as needed” number of TX channels	Required		
6.7.5.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.5.1.3	TX RF Power	Required		
6.7.5.1.4	TX Hum and Noise	Required		
6.7.5.2.1	RX “as needed” number of RX channels	Required		
6.7.5.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.5.2.3	RX sensitivity	Required		
6.7.5.2.4	RX adjacent channel rejection	Required		
6.7.5.2.5	RX spurious response rejection	Required		
6.7.5.2.6	RX intermodulation rejection	Required		
6.7.6	P25 Compliant Base Station UHF Band:12.5 kHz- Category 1			
6.7.6.1.1	TX “as needed” number of TX channels	Required		
6.7.6.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.6.1.3	TX RF Power	Required		
6.7.6.1.4	TX Hum and Noise	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.7.6.2.1	RX “as needed” number of RX channels	Required		
6.7.6.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.6.2.3	RX sensitivity	Required		
6.7.6.2.4	RX adjacent channel rejection	Required		
6.7.6.2.5	RX spurious response rejection	Required		
6.7.6.2.6	RX intermodulation rejection	Required		
6.7.7	P25 Compliant Base Station UHF Band:12.5 kHz- Category 2			
6.7.7.1.1	TX “as needed” number of TX channels	Required		
6.7.7.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.7.1.3	TX RF Power	Required		
6.7.7.1.4	TX Hum and Noise	Required		
6.7.7.2.1	RX “as needed” number of RX channels	Required		
6.7.7.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.7.2.3	RX sensitivity	Required		
6.7.7.2.4	RX adjacent channel rejection	Required		
6.7.7.2.5	RX spurious response rejection	Required		
6.7.7.2.6	RX intermodulation rejection	Required		
6.7.8	P25 Compliant Base Station UHF Band:12.5 kHz- Category 3			
6.7.8.1.1	TX “as needed” number of TX channels	Required		
6.7.8.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.8.1.3	TX RF Power	Required		
6.7.8.1.4	TX Hum and Noise	Required		
6.7.8.2.1	RX “as needed” number of RX channels	Required		
6.7.8.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.8.2.3	RX sensitivity	Required		
6.7.8.2.4	RX adjacent channel rejection	Required		
6.7.8.2.5	RX spurious response rejection	Required		
6.7.8.2.6	RX intermodulation rejection	Required		
6.7.9	P25 Compliant Base Station/Repeater 700/800 MHz Band: 12.5 kHz - Category 1			
6.7.9.1.1	TX “as needed” number of TX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.7.9.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.9.1.3	TX RF Power	Required		
6.7.9.1.4	TX Hum and Noise	Required		
6.7.9.2.1	RX “as needed” number of RX channels	Required		
6.7.9.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.9.2.3	RX sensitivity	Required		
6.7.9.2.4	RX adjacent channel rejection	Required		
6.7.9.2.5	RX spurious response rejection	Required		
6.7.9.2.6	RX intermodulation rejection	Required		
6.7.10	P25 Compliant Base Station/Repeater 700/800 MHz Band: 12.5 kHz - Category 2			
6.7.10.1.1	TX “as needed” number of TX channels	Required		
6.7.10.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.10.1.3	TX RF Power	Required		
6.7.10.1.4	TX Hum and Noise	Required		
6.7.10.2.1	RX “as needed” number of RX channels	Required		
6.7.10.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.10.2.3	RX sensitivity	Required		
6.7.10.2.4	RX adjacent channel rejection	Required		
6.7.10.2.5	RX spurious response rejection	Required		
6.7.10.2.6	RX intermodulation rejection	Required		
6.7.11	P25 Compliant Base Station/Repeater 700/800 MHz Band: 12.5 kHz - Category 3			
6.7.11.1.1	TX “as needed” number of TX channels	Required		
6.7.11.1.2	TX “as needed” TX Frequency Spread	Required		
6.7.11.1.3	TX RF Power	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.7.11.1.4	TX Hum and Noise	Required		
6.7.11.2.1	RX “as needed” number of RX channels	Required		
6.7.11.2.2	RX “as needed” RX Frequency Spread	Required		
6.7.11.2.3	RX sensitivity	Required		
6.7.11.2.4	RX adjacent channel rejection	Required		
6.7.11.2.5	RX spurious response rejection	Required		
6.7.11.2.6	RX intermodulation rejection	Required		
6.8	Project 25 (P25) Mobile Radios			
6.8.2.1	Trunk Mount Configuration	Required		
6.8.2.2	Dash Mount Configuration	Required		
6.8.2.3	Interchangeability	Required		
6.8.2.4	Accessory Connections	Required		
6.8.2.5	Cabling and Installation Kit	Required		
6.8.2.6	Trunk Mount Dimensions	Required		
6.8.2.7	Dash Mount Dimensions	Required		
6.8.2.8	Weight	Required		
6.8.2.9	Housing	Required		
6.8.2.10	Duty Cycle	Required		
6.8.2.11	Ambient Temperature	Required		
6.8.2.12	External Controls			
6.8.2.13	Display	Required		
6.8.2.14	Remote Microphone	Required		
6.8.2.15	External Remote Speaker	Required		
6.8.2.16	Receive Audio Noise Squelch	Required		
6.8.2.17	CTCSS\CDCSS	Required		
6.8.2.18	CTCSS\CDCSS with Multiple-Channel Operation	Required		
6.8.2.19	Squelch Tail Elimination	Required		
6.8.2.20	Transmitter Time-Out Timer	Required		
6.8.2.21	Multiple-Channel Monitoring	Required		
6.8.2.22	Radio Programming	Required		
6.8.3.2	Remote DTMF Microphone	Required		
6.8.3.3	Dual Control Units	Required		
6.8.3.4	VHF and UHF, 700/800 MHz Vehicular Repeaters	Required		
6.8.4.1	12 VDC Power source	Required		
6.8.4.2	Vehicle Ignition Sensing	Required		
6.8.4.3	Power-Line Filter	Required		
6.8.5.	Subsystem MIL-STD Compliance	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.8.5.1	MIL-STD-810G 506.4 Rain, Procedure 1. Alternative MIL-STD-810F 506.3 Rain, Procedure 1	Required		
6.8.5.2	MIL-STD-810G 509.4 Salt Fog, Procedure 1. Alternative MIL-STD-810F 509.3 Salt Fog, Procedure 1.	Required		
6.8.5.3	MIL-STD-810G 510.4 Sand and Dust, Procedure 1. Alternative MIL-STD-810F 510.3 Sand and Dust, Procedure 1	Required		
6.8.5.4	MIL-STD-810G 514.5 Vibration, Procedure 1, Category 4. Alternative MIL-STD-810F 514.4 Vibration, Procedure 1, Category 4	Required		
6.8.5.5	MIL-STD-810G 516.5 Physical Shock, Procedure 1. Alternative MIL-STD-810F 516.4, Procedure 1	Required		
6.8.5.6	MIL-STD-810G 501.5 High Temperature, Procedure II. Alternative MIL-STD-810F 501.4 High Temperature, Procedure II.	Required		
6.8.5.7	MIL-STD-810G 507.5 Humidity, Procedure I. Alternative MIL-STD-810F 507.4 High Humidity, Procedure I.	Required		
6.8.6.	P25 Mobile VHF High-Band: 12.5 kHz- Category 1			
6.8.6.1.1	TX “as needed” number of TX channels	Required		
6.8.6.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.6.1.3	TX RF Power	Required		
6.8.6.1.4	TX Hum and Noise	Required		
6.8.6.2.1	RX “as needed” number of RX channels	Required		
6.8.6.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.6.2.3	RX sensitivity	Required		
6.8.6.2.4	RX audio output power	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.8.6.2.5	RX audio distortion	Required		
6.8.6.2.6	RX adjacent channel rejection	Required		
6.8.6.2.7	RX Spurious response rejection	Required		
6.8.6.2.8	RX intermodulation rejection	Required		
6.8.7	P25 Compliant Mobile VHF High-Band: 12.5 kHz- Category 2			
6.8.7.1.1	TX “as needed” number of TX channels	Required		
6.8.7.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.7.1.3	TX RF Power	Required		
6.8.7.1.4	TX Hum and Noise	Required		
6.8.7.2.1	RX “as needed” number of RX channels	Required		
6.8.7.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.7.2.3	RX sensitivity	Required		
6.8.7.2.4	RX audio output power	Required		
6.8.7.2.5	RX audio distortion	Required		
6.8.7.2.6	RX adjacent channel rejection	Required		
6.8.7.2.7	RX Spurious response rejection	Required		
6.8.7.2.8	RX intermodulation rejection	Required		
6.8.8	P25 Compliant Mobile VHF High-Band: 12.5 kHz- Category 3			
6.8.8.1.1	TX “as needed” number of TX channels	Required		
6.8.8.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.8.1.3	TX RF Power	Required		
6.8.8.1.4	TX Hum and Noise	Required		
6.8.8.2.1	RX “as needed” number of RX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.8.8.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.8.2.3	RX sensitivity	Required		
6.8.8.2.4	RX audio output power	Required		
6.8.8.2.5	RX audio distortion	Required		
6.8.8.2.6	RX adjacent channel rejection	Required		
6.8.8.2.7	RX Spurious response rejection	Required		
6.8.8.2.8	RX intermodulation rejection	Required		
6.8.9	P25 Compliant Mobile UHF Band: 12.5 kHz- Category 1			
6.8.9.1.1	TX “as needed” number of TX channels	Required		
6.8.9.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.9.1.3	TX RF Power	Required		
6.8.9.1.4	TX Hum and Noise	Required		
6.8.9.2.1	RX “as needed” number of RX channels	Required		
6.8.9.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.9.2.3	RX sensitivity	Required		
6.8.9.2.4	RX audio output power	Required		
6.8.9.2.5	RX audio distortion	Required		
6.8.9.2.6	RX adjacent channel rejection	Required		
6.8.9.2.7	RX Spurious response rejection	Required		
6.8.9.2.8	RX intermodulation rejection	Required		
6.8.10	P25 Compliant Mobile UHF Band: 12.5 kHz- Category 2			
6.8.10.1.1	TX “as needed” number of TX channels	Required		
6.8.10.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.10.1.3	TX RF Power	Required		
6.8.10.1.4	TX Hum and Noise	Required		
6.8.10.2.1	RX “as needed” number of RX channels	Required		
6.8.10.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.10.2.3	RX sensitivity	Required		
6.8.10.2.4	RX audio output power	Required		
6.8.10.2.5	RX audio distortion	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.8.10.2.6	RX adjacent channel rejection	Required		
6.8.10.2.7	RX Spurious response rejection	Required		
6.8.10.2.8	RX intermodulation rejection	Required		
6.8.11	P25 Compliant Mobile UHF Band: 12.5 kHz- Category 3			
6.8.11.1.1	TX “as needed” number of TX channels	Required		
6.8.11.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.11.1.3	TX RF Power	Required		
6.8.11.1.4	TX Hum and Noise	Required		
6.8.11.2.1	RX “as needed” number of RX channels	Required		
6.8.11.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.11.2.3	RX sensitivity	Required		
6.8.11.2.4	RX audio output power	Required		
6.8.11.2.5	RX audio distortion	Required		
6.8.11.2.6	RX adjacent channel rejection	Required		
6.8.11.2.7	RX Spurious response rejection	Required		
6.8.11.2.8	RX intermodulation rejection	Required		
6.8.12	P25 Compliant Mobile 700/800 MHz Band: 12.5 kHz – Category 1			
6.8.12.1.1	TX “as needed” number of TX channels	Required		
6.8.12.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.12.1.3	TX RF Power	Required		
6.8.12.1.4	TX Hum and Noise	Required		
6.8.12.2.1	RX “as needed” number of RX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.8.12.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.12.2.3	RX sensitivity	Required		
6.8.12.2.4	RX audio output power	Required		
6.8.12.2.5	RX audio distortion	Required		
6.8.12.2.6	RX adjacent channel rejection	Required		
6.8.12.2.7	RX Spurious response rejection	Required		
6.8.12.2.8	RX intermodulation rejection	Required		
6.8.13	P25 Compliant Mobile 700/800 MHz Band: 12.5 kHz – Category 2			
6.8.13.1.1	TX “as needed” number of TX channels	Required		
6.8.13.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.13.1.3	TX RF Power	Required		
6.8.13.1.4	TX Hum and Noise	Required		
6.8.13.2.1	RX “as needed” number of RX channels	Required		
6.8.13.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.13.2.3	RX sensitivity	Required		
6.8.13.2.4	RX audio output power	Required		
6.8.13.2.5	RX audio distortion	Required		
6.8.13.2.6	RX adjacent channel rejection	Required		
6.8.13.2.7	RX Spurious response rejection	Required		
6.8.13.2.8	RX intermodulation rejection	Required		
6.8.14	P25 Compliant Mobile 700/800 MHz Band: 12.5 kHz – Category 3			
6.8.14.1.1	TX “as needed” number of TX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.8.14.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.14.1.3	TX RF Power	Required		
6.8.14.1.4	TX Hum and Noise	Required		
6.8.14.2.1	RX “as needed” number of RX channels	Required		
6.8.14.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.14.2.3	RX sensitivity	Required		
6.8.14.2.4	RX audio output power	Required		
6.8.14.2.5	RX audio distortion	Required		
6.8.14.2.6	RX adjacent channel rejection	Required		
6.8.14.2.7	RX Spurious response rejection	Required		
6.8.14.2.8	RX intermodulation rejection	Required		
6.8.15	P25 Compliant Mobile-Multiband: 12.5 kHz-Category 1			
6.8.15.1.1	TX “as needed” number of TX channels	Required		
6.8.15.1.2	TX “as needed” TX Frequency Spread	Required		
6.8.15.1.3	TX RF Power	Required		
6.8.15.1.4	TX Hum and Noise	Required		
6.8.15.2.1	RX “as needed” number of RX channels	Required		
6.8.15.2.2	RX “as needed” RX Frequency Spread	Required		
6.8.15.2.3	RX sensitivity	Required		
6.8.15.2.4	RX audio output power	Required		
6.8.15.2.5	RX audio distortion	Required		
6.8.15.2.6	RX adjacent channel rejection	Required		
6.8.15.2.7	RX Spurious response rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.8.15.2.8	RX intermodulation rejection	Required		
6.9	P25 Compliant Portable Radios			
6.9.1.1	Configuration	Required		
6.9.1.2	Interchangeability	Required		
6.9.1.3	Accessory Connections	Required		
6.9.1.4	Dimensions	Required		
6.9.1.5	Weight	Required		
6.9.1.6	Housing	Required		
6.9.1.7	Duty Cycle	Required		
6.9.1.8	Ambient Temperature	Required		
6.9.1.9	External Controls	Required		
6.9.1.10	Display	Required		
6.9.1.11	VHF Antennas	Required		
6.9.1.12	UHF, 700\800 MHz Antennas	Required		
6.9.1.13	Receive Audio Noise Squelch	Required		
6.9.1.14	CTCSS\CDCSS	Required		
6.9.1.15	CTCSS\CDCSS with Multiple-Channel Operation	Required		
6.9.1.16	Squelch Tail Elimination	Required		
6.9.1.17	Transmitter Time-Out Timer	Required		
6.9.1.18	Two-Tone Paging (Crew Alerting)	Required		
6.9.1.19	Multiple-Channel Monitoring	Required		
6.9.1.20	Priority Scan Mode	Required		
6.9.1.21	Non-Priority Scan Mode	Required		
6.9.2	Radio Programming	Required		
6.9.3.1.2	Remote Speaker-Microphone	Required		
6.9.3.1.3	Remote Speaker-Microphone-Antenna	Required		
6.9.3.2.1	Battery type and quantity	Required		
6.9.3.2.2	Battery Power Rating	Required		
6.9.4.1	Rapid Battery Charger	Required		
6.9.4.2	Multiple Unit Rapid Battery Charger	Not-Required		
6.9.4.3	Slow Battery Charger	Not-Required		
6.9.4.5	Multiple Unit Slow Battery Charger	Not-Required		
6.9.4.4	Smart Charger	Not-Required		
6.9.4.5	Multiple Unit Smart Charger	Not-Required		
6.9.4.6	Vehicular Charger	Not-Required		
6.9.4.7	Vehicular Charger with Remote Speaker, Microphone, and Antenna	Not-Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.9.5.1	MIL-STD-810G 506.4 Rain, Procedure 1. Alternative MIL-STD-810F 506.3 Rain, Procedure 1	Required		
6.9.5.2	MIL-STD-810G 509.4 Salt Fog, Procedure 1. Alternative MIL-STD-810F 509.3 Salt Fog, Procedure 1.	Required		
6.9.5.3	MIL-STD-810G 510.4 Sand and Dust, Procedure 1. Alternative MIL-STD-810F 510.3 Sand and Dust, Procedure 1	Required		
6.9.5.4	MIL-STD-810G 514.5 Vibration, Procedure 1, Category 4. Alternative MIL-STD-810F 514.4 Vibration, Procedure 1, Category 4	Required		
6.9.5.5	MIL-STD-810G 516.5 Physical Shock, Procedure 1. Alternative MIL-STD-810F 516.4, Procedure 1	Required		
6.9.5.6	MIL-STD-810G 501.5 High Temperature, Procedure II. Alternative MIL-STD-810F 501.4 High Temperature, Procedure II.	Required		
6.9.5.7	MIL-STD-810G 507.5 Humidity, Procedure I. Alternative MIL-STD-810F 507.4 High Humidity, Procedure I.	Required		
6.9.6	P25 Compliant Portable VHF High-Band: 12.5 kHz- Category 1			
6.9.6.1.1	TX “as needed” number of TX channels	Required		
6.9.6.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.6.1.3	TX RF Power	Required		
6.9.6.1.4	TX Hum and Noise	Required		
6.9.6.2.1	Number of RX channels	Required		
6.9.6.2.2	RX Frequency Spread	Required		
6.9.6.2.3	RX sensitivity	Required		
6.9.6.2.4	RX audio output power	Required		
6.9.6.2.5	RX audio distortion	Required		
6.9.6.2.6	RX adjacent channel rejection	Required		
6.9.6.2.7	RX Spurious response rejection	Required		
6.9.6.2.8	RX Intermodulation Rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.9.7	P25 Compliant Portable VHF High-Band: 12.5 kHz-Category 2			
6.9.7.1.1	TX “as needed” number of TX channels	Required		
6.9.7.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.7.1.3	TX RF Power	Required		
6.9.7.1.4	TX Hum and Noise	Required		
6.9.7.2.1	Number of RX channels	Required		
6.9.7.2.2	RX Frequency Spread	Required		
6.9.7.2.3	RX sensitivity	Required		
6.9.7.2.4	RX audio output power	Required		
6.9.7.2.5	RX audio distortion	Required		
6.9.7.2.6	RX adjacent channel rejection	Required		
6.9.7.2.7	RX Spurious response rejection	Required		
6.9.7.2.8	RX Intermodulation Rejection	Required		
6.9.8	P25 Compliant Portable VHF High-Band: 12.5 kHz- Category 3			
6.9.8.1.1	TX “as needed” number of TX channels	Required		
6.9.8.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.8.1.3	TX RF Power	Required		
6.9.8.1.4	TX Hum and Noise	Required		
6.9.8.2.1	Number of RX channels	Required		
6.9.8.2.2	RX Frequency Spread	Required		
6.9.8.2.3	RX sensitivity	Required		
6.9.8.2.4	RX audio output power	Required		
6.9.8.2.5	RX audio distortion	Required		
6.9.8.2.6	RX adjacent channel rejection	Required		
6.9.8.2.7	RX Spurious response rejection	Required		
6.9.8.2.8	RX Intermodulation Rejection	Required		
6.9.9	P25 Compliant Portable UHF High-Band: 12.5 kHz- Category 1			
6.9.9.1.1	TX “as needed” number of TX channels	Required		
6.9.9.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.9.1.3	TX RF Power	Required		
6.9.9.1.4	TX Hum and Noise	Required		
6.9.9.2.1	Number of RX channels	Required		
6.9.9.2.2	RX Frequency Spread	Required		
6.9.9.2.3	RX sensitivity	Required		
6.9.9.2.4	RX audio output power	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.9.9.2.5	RX audio distortion	Required		
6.9.9.2.6	RX adjacent channel rejection	Required		
6.9.9.2.7	RX Spurious response rejection	Required		
6.9.9.2.8	RX Intermodulation Rejection	Required		
6.9.10	P25 Compliant Portable UHF High-Band: 12.5 kHz- Category 2			
6.9.10.1.1	TX “as needed” number of TX channels	Required		
6.9.10.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.10.1.3	TX RF Power	Required		
6.9.10.1.4	TX Hum and Noise	Required		
6.9.10.2.1	Number of RX channels	Required		
6.9.10.2.2	RX Frequency Spread	Required		
6.9.10.2.3	RX sensitivity	Required		
6.9.10.2.4	RX audio output power	Required		
6.9.10.2.5	RX audio distortion	Required		
6.9.10.2.6	RX adjacent channel rejection	Required		
6.9.10.2.7	RX Spurious response rejection	Required		
6.9.10.2.8	RX Intermodulation Rejection	Required		
6.9.11	P25 Compliant Portable UHF High-Band: 12.5 kHz- Category 3			
6.9.11.1.1	TX “as needed” number of TX channels	Required		
6.9.11.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.11.1.3	TX RF Power	Required		
6.9.11.1.4	TX Hum and Noise	Required		
6.9.11.2.1	Number of RX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.9.11.2.2	RX Frequency Spread	Required		
6.9.11.2.3	RX sensitivity	Required		
6.9.11.2.4	RX audio output power	Required		
6.9.11.2.5	RX audio distortion	Required		
6.9.11.2.6	RX adjacent channel rejection	Required		
6.9.11.2.7	RX Spurious response rejection	Required		
6.9.11.2.8	RX Intermodulation Rejection	Required		
6.9.12	P25 Compliant Portable 700/800 MHz Band: 12.5 kHz – Category 1			
6.9.12.1.1	TX “as needed” number of TX channels	Required		
6.9.12.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.12.1.3	TX RF Power	Required		
6.9.12.1.4	TX Hum and Noise	Required		
6.9.12.2.1	Number of RX channels	Required		
6.9.12.2.2	RX Frequency Spread	Required		
6.9.12.2.3	RX sensitivity	Required		
6.9.12.2.4	RX audio output power	Required		
6.9.12.2.5	RX audio distortion	Required		
6.9.12.2.6	RX adjacent channel rejection	Required		
6.9.12.2.7	RX spurious response rejection	Required		
6.9.12.2.8	RX intermodulation rejection	Required		
6.9.13	P25 Compliant Portable 700/800 MHz Band: 12.5 kHz – Category 2			
6.9.13.1.1	TX “as needed” number of TX channels	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.9.13.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.13.1.3	TX RF Power	Required		
6.9.13.1.4	TX Hum and Noise	Required		
6.9.13.2.1	Number of RX channels	Required		
6.9.13.2.2	RX Frequency Spread	Required		
6.9.13.2.3	RX sensitivity	Required		
6.9.13.2.4	RX audio output power	Required		
6.9.13.2.5	RX audio distortion	Required		
6.9.13.2.6	RX adjacent channel rejection	Required		
6.9.13.2.7	RX spurious response rejection	Required		
6.9.13.2.8	RX intermodulation rejection	Required		
6.9.14	P25 Portable 700/800 MHz Band: 12.5 kHz – Category 3			
6.9.14.1.1	TX “as needed” number of TX channels	Required		
6.9.14.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.14.1.3	TX RF Power	Required		
6.9.14.1.4	TX Hum and Noise	Required		
6.9.14.2.1	Number of RX channels	Required		
6.9.14.2.2	RX Frequency Spread	Required		
6.9.14.2.3	RX sensitivity	Required		
6.9.14.2.4	RX audio output power	Required		
6.9.14.2.5	RX audio distortion	Required		
6.9.14.2.6	RX adjacent channel rejection	Required		
6.9.14.2.7	RX spurious response rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.9.14.2.8	RX intermodulation rejection	Required		
6.9.15	P25 Compliant Portable - Multiband: 12.5 kHz-Category 1			
6.9.15.1.1	TX “as needed” number of TX channels	Required		
6.9.15.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.15.1.3	TX RF Power	Required		
6.9.15.1.4	TX Hum and Noise	Required		
6.9.15.2.1	Number of RX channels	Required		
6.9.15.2.2	RX Frequency Spread	Required		
6.9.15.2.3	RX sensitivity	Required		
6.9.15.2.4	RX audio output power	Required		
6.9.15.2.5	RX audio distortion	Required		
6.9.15.2.6	RX adjacent channel rejection	Required		
6.9.15.2.7	RX Spurious response rejection	Required		
6.9.15.2.8	RX intermodulation rejection	Required		
6.9.16	P25 Compliant Portable - Multiband: 12.5 kHz-Category 2			
6.9.16.1.1	TX “as needed” number of TX channels	Required		
6.9.16.1.2	TX “as needed” TX Frequency Spread	Required		
6.9.16.1.3	TX RF Power	Required		
6.9.16.1.4	TX Hum and Noise	Required		
6.9.16.2.1	Number of RX channels	Required		
6.9.16.2.2	RX Frequency Spread	Required		
6.9.16.2.3	RX sensitivity	Required		
6.9.16.2.4	RX audio output power	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.9.16.2.5	RX audio distortion	Required		
6.9.16.2.6	RX adjacent channel rejection	Required		
6.9.16.2.7	RX Spurious response rejection	Required		
6.9.16.2.8	RX intermodulation rejection	Required		
6.10	P25 Compliant RF Control Stations			
6.10.1.1	Configuration	Required		
6.10.1.2	Interchangeability	Required		
6.10.1.3	Accessory Connections	Required		
6.10.1.4	Mounting	Required		
6.10.1.5	Chassis Assembly	Required		
6.10.1.6	Cabling and Installation Kit	Required		
6.10.1.7	Duty Cycle	Required		
6.10.1.8	Ambient Temperature	Required		
6.10.1.10	Remote Radio Control	Required		
6.10.1.12	Local Radio Control	Required		
6.10.1.14	VSWR Monitoring Circuit	Required		
6.10.1.15	Receive Audio Noise Squelch	Required		
6.10.1.16	CTCSS\CDCSS	Required		
6.10.1.17	Squelch Tail Elimination	Required		
6.10.1.18	Transmitter Time-Out Timer	Required		
6.10.1.21	Two-Tone Paging (Crew Alerting)	Required		
6.10.1.20	Radio Programming	Required		
6.10.2	RF Control Station Radio Power	Required		
6.10.3	P25 Compliant RF Control Stations VHF High-Band: 12.5 kHz- Category 1			
6.10.3.1.1	TX “as needed” number of TX channels	Required		
6.10.3.1.2	TX “as needed” TX Frequency Spread	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.10.3.1.3	TX RF Power	Required		
6.10.3.1.4	TX Hum and Noise	Required		
6.10.3.2.1	Number of RX channels	Required		
6.10.3.2.2	RX Frequency Spread	Required		
6.10.3.2.3	RX sensitivity	Required		
6.10.3.2.4	RX audio output power	Required		
6.10.3.2.5	RX audio distortion	Required		
6.10.3.2.6	RX adjacent channel rejection	Required		
6.10.3.2.7	RX Spurious response rejection	Required		
6.10.3.2.8	RX intermodulation rejection	Required		
6.10.4	P25 Compliant RF Control Stations VHF High-Band: 12.5 kHz- Category 2			
6.10.4.1.1	TX “as needed” number of TX channels	Required		
6.10.4.1.2	TX “as needed” TX Frequency Spread	Required		
6.10.4.1.3	TX RF Power	Required		
6.10.4.1.4	TX Hum and Noise	Required		
6.10.4.2.1	Number of RX channels	Required		
6.10.4.2.2	RX Frequency Spread	Required		
6.10.4.2.3	RX sensitivity	Required		
6.10.4.2.4	RX audio output power	Required		
6.10.4.2.5	RX audio distortion	Required		
6.10.4.2.6	RX adjacent channel rejection	Required		
6.10.4.2.7	RX Spurious response rejection	Required		
6.10.4.2.8	RX intermodulation rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.10.5	P25 Compliant RF Control Stations VHF High-Band: 12.5 kHz- Category 3			
6.10.5.1.1	TX “as needed” number of TX channels	Required		
6.10.5.1.2	TX “as needed” TX Frequency Spread	Required		
6.10.5.1.3	TX RF Power	Required		
6.10.5.1.4	TX Hum and Noise	Required		
6.10.5.2.1	Number of RX channels	Required		
6.10.5.2.2	RX Frequency Spread	Required		
6.10.5.2.3	RX sensitivity	Required		
6.10.5.2.4	RX audio output power	Required		
6.10.5.2.5	RX audio distortion	Required		
6.10.5.2.6	RX adjacent channel rejection	Required		
6.10.5.2.7	RX Spurious response rejection	Required		
6.10.5.2.8	RX intermodulation rejection	Required		
6.10.6	P25 Compliant RF Control Stations UHF Band: 12.5 kHz- Category 1			
6.10.6.1.1	TX “as needed” number of TX channels	Required		
6.10.6.1.2	TX “as needed” TX Frequency Spread	Required		
6.10.6.1.3	TX RF Power	Required		
6.10.6.1.4	TX Hum and Noise	Required		
6.10.6.2.1	Number of RX channels	Required		
6.10.6.2.2	RX Frequency Spread	Required		
6.10.6.2.3	RX sensitivity	Required		
6.10.6.2.4	RX audio output power	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.10.6.2.5	RX audio distortion	Required		
6.10.6.2.6	RX adjacent channel rejection	Required		
6.10.6.2.7	RX Spurious response rejection	Required		
6.10.6.2.8	RX intermodulation rejection	Required		
6.10.7	P25 Compliant RF Control Stations UHF Band: 12.5 kHz-Category 2			
6.10.7.1.1	TX “as needed” number of TX channels	Required		
6.10.7.1.2	TX “as needed” TX Frequency Spread	Required		
6.10.7.1.3	TX RF Power	Required		
6.10.7.1.4	TX Hum and Noise	Required		
6.10.7.2.1	Number of RX channels	Required		
6.10.7.2.2	RX Frequency Spread	Required		
6.10.7.2.3	RX sensitivity	Required		
6.10.7.2.4	RX audio output power	Required		
6.10.7.2.5	RX audio distortion	Required		
6.10.7.2.6	RX adjacent channel rejection	Required		
6.10.7.2.7	RX Spurious response rejection	Required		
6.10.7.2.8	RX intermodulation rejection	Required		
6.10.8	P25 Compliant RF Control Stations UHF Band: 12.5 kHz-Category 3			
6.10.8.1.1	TX “as needed” number of TX channels	Required		
6.10.8.1.2	TX “as needed” TX Frequency Spread	Required		
6.10.8.1.3	TX RF Power	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.10.8.1.4	TX Hum and Noise	Required		
6.10.8.2.1	Number of RX channels	Required		
6.10.8.2.2	RX Frequency Spread	Required		
6.10.8.2.3	RX sensitivity	Required		
6.10.8.2.4	RX audio output power	Required		
6.10.8.2.5	RX audio distortion	Required		
6.10.8.2.6	RX adjacent channel rejection	Required		
6.10.8.2.7	RX Spurious response rejection	Required		
6.10.8.2.8	RX intermodulation rejection	Required		
6.10.9	P25 Compliant RF Control Stations 700/800 MHz Band:12.5 kHz– Category 1			
6.10.9.1.1	TX “as needed” number of TX channels	Required		
6.10.9.1.2	TX “as needed” TX Frequency Spread	Required		
6.10.9.1.3	TX RF Power	Required		
6.10.9.1.4	TX Hum and Noise	Required		
6.10.9.2.1	Number of RX channels	Required		
6.10.9.2.2	RX Frequency Spread	Required		
6.10.9.2.3	RX sensitivity	Required		
6.10.9.2.4	RX audio output power	Required		
6.10.9.2.5	RX audio distortion	Required		
6.10.9.2.6	RX adjacent channel rejection	Required		
6.10.9.2.7	RX Spurious response rejection	Required		
6.10.9.2.8	RX intermodulation rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.10.10	P25 Compliant RF Control Stations 700/800 MHz Band:12.5 kHz– Category 2			
6.10.10.1.1	TX “as needed” number of TX channels	Required		
6.10.10.1.2	TX “as needed” TX Frequency Spread	Required		
6.10.10.1.3	TX RF Power	Required		
6.10.10.1.4	TX Hum and Noise	Required		
6.10.10.2.1	Number of RX channels	Required		
6.10.10.2.2	RX Frequency Spread	Required		
6.10.10.2.3	RX sensitivity	Required		
6.10.10.2.4	RX audio output power	Required		
6.10.10.2.5	RX audio distortion	Required		
6.10.10.2.6	RX adjacent channel rejection	Required		
6.10.10.2.7	RX Spurious response rejection	Required		
6.10.10.2.8	RX intermodulation rejection	Required		
6.10.11	P25 Compliant RF Control Stations 700/800 MHz Band:12.5 kHz– Category 3			
6.10.11.1.1	TX “as needed” number of TX channels	Required		
6.10.11.1.2	TX “as needed” TX Frequency Spread	Required		
6.10.11.1.3	TX RF Power	Required		
6.10.11.1.4	TX Hum and Noise	Required		
6.10.11.2.1	Number of RX channels	Required		
6.10.11.2.2	RX Frequency Spread	Required		
6.10.11.2.3	RX sensitivity	Required		
6.10.11.2.4	RX audio output power	Required		
6.10.11.2.5	RX audio distortion	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.10.11.2.6	RX adjacent channel rejection	Required		
6.10.11.2.7	RX Spurious response rejection	Required		
6.10.11.2.8	RX intermodulation rejection	Required		
6.11	P25 Compliant Vehicular Repeaters			
6.11.1.1	Housing	Required		
6.11.1.2	Duty Cycle	Required		
6.11.1.3	Ambient Temperature	Required		
6.11.1.4	External Controls	Required		
6.11.1.5	Display	Required		
6.11.1.6	Remote Microphone	Required		
6.11.1.7	External Remote Speaker	Required		
6.11.1.8	Receive Audio Noise Squelch	Required		
6.11.1.9	CTCSS\CDCSS	Required		
6.11.1.10	CTCSS\CDCSS with Multiple-Channel Operation	Required		
6.11.1.11	Squelch Tail Elimination	Required		
6.11.1.12	Transmitter Time-Out Timer	Required		
6.11.1.12.1	Multiple-Channel Monitoring	Required		
6.11.1.12.3	Radio Programming	Required		
6.11.3	Vehicular Radio Power	Required		
6.11.3.2	Vehicle Ignition Sensing	Required		
6.11.3.2	Power-Line Filter	Required		
6.11.4	Subsystem MIL-STD Compliance	Required		
6.11.4.1	MIL-STD-810G 506.4 Rain, Procedure 1. Alternative MIL-STD-810F 506.3 Rain, Procedure 1	Required		
6.11.4.2	MIL-STD-810G 509.4 Salt Fog, Procedure 1. Alternative MIL-STD-810F 509.3 Salt Fog, Procedure 1.	Required		
6.11.4.3	MIL-STD-810G 510.4 Sand and Dust, Procedure 1. Alternative MIL-STD-810F 510.3 Sand and Dust, Procedure 1	Required		
6.11.4.4	MIL-STD-810G 514.5 Vibration, Procedure 1, Category 4. Alternative MIL-STD-810F 514.4 Vibration, Procedure 1, Category 4	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.11.4.5	MIL-STD-810G 516.5 Physical Shock, Procedure 1. Alternative MIL-STD-810F 516.4, Procedure 1	Required		
6.11.4.6	MIL-STD-810G 501.5 High Temperature, Procedure II. Alternative MIL-STD-810F 501.4 High Temperature, Procedure II.	Required		
6.11.4.7	MIL-STD-810G 507.5 Humidity, Procedure I. Alternative MIL-STD-810F 507.4 High Humidity, Procedure I.	Required		
6.11.5	P25 Compliant VRS-Vehicular Repeaters VHF High-Band: 12.5 kHz- Category 1			
6.11.5.1.1	TX “as needed” number of TX channels	Required		
6.11.5.1.2	TX “as needed” TX Frequency Spread	Required		
6.11.5.1.3	TX RF Power	Required		
6.11.5.1.4	TX Hum and Noise	Required		
6.11.5.2.1	Number of RX channels	Required		
6.11.5.2.2	RX Frequency Spread	Required		
6.11.5.2.3	RX sensitivity	Required		
6.11.5.2.4	RX audio distortion	Required		
6.11.5.2.5	RX adjacent channel rejection	Required		
6.11.5.2.6	RX Spurious response rejection	Required		
6.11.5.2.7	RX intermodulation rejection	Required		
6.11.6	P25 Compliant VRS-Vehicular Repeaters VHF High-Band: 12.5 kHz- Category 2			
6.11.6.1.1	TX “as needed” number of TX channels	Required		
6.11.6.1.2	TX “as needed” TX Frequency Spread	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.11.6.1.3	TX RF Power	Required		
6.11.6.1.4	TX Hum and Noise	Required		
6.11.6.2.1	Number of RX channels	Required		
6.11.6.2.2	RX Frequency Spread	Required		
6.11.6.2.3	RX sensitivity	Required		
6.11.6.2.4	RX audio distortion	Required		
6.11.6.2.5	RX adjacent channel rejection	Required		
6.11.6.2.6	RX Spurious response rejection	Required		
6.11.6.2.7	RX intermodulation rejection	Required		
6.11.7	P25 Compliant VRS-Vehicular Repeaters VHF High-Band: 12.5 kHz- Category 3			
6.11.7.1.1	TX “as needed” number of TX channels	Required		
6.11.7.1.2	TX “as needed” TX Frequency Spread	Required		
6.11.7.1.3	TX RF Power	Required		
6.11.7.1.4	TX Hum and Noise	Required		
6.11.7.2.1	Number of RX channels	Required		
6.11.7.2.2	RX Frequency Spread	Required		
6.11.7.2.3	RX sensitivity	Required		
6.11.7.2.4	RX audio distortion	Required		
6.11.7.2.5	RX adjacent channel rejection	Required		
6.11.7.2.6	RX Spurious response rejection	Required		
6.11.7.2.7	RX intermodulation rejection	Required		
6.11.8	P25 Compliant VRS-Vehicular Repeaters UHF Band: 12.5 kHz- Category 1			

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.11.8.1.1	TX “as needed” number of TX channels	Required		
6.11.8.1.2	TX “as needed” TX Frequency Spread	Required		
6.11.8.1.3	TX RF Power	Required		
6.11.8.1.4	TX Hum and Noise	Required		
6.11.8.2.1	Number of RX channels	Required		
6.11.8.2.2	RX Frequency Spread	Required		
6.11.8.2.3	RX sensitivity	Required		
6.11.8.2.4	RX audio distortion	Required		
6.11.8.2.5	RX adjacent channel rejection	Required		
6.11.8.2.6	RX Spurious response rejection	Required		
6.11.8.2.7	RX intermodulation rejection	Required		
6.11.9	P25 Compliant VRS-Vehicular Repeaters UHF Band: 12.5 kHz-Category 2			
6.11.9.1.1	TX “as needed” number of TX channels	Required		
6.11.9.1.2	TX “as needed” TX Frequency Spread	Required		
6.11.9.1.3	TX RF Power	Required		
6.11.9.1.4	TX Hum and Noise	Required		
6.11.9.2.1	Number of RX channels	Required		
6.11.9.2.2	RX Frequency Spread	Required		
6.11.9.2.3	RX sensitivity	Required		
6.11.9.2.4	RX audio distortion	Required		
6.11.9.2.5	RX adjacent channel rejection	Required		
6.11.9.2.6	RX Spurious response rejection	Required		
6.11.9.2.7	RX intermodulation rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.11.10	P25 Compliant VRS-Vehicular Repeaters UHF Band: 12.5 kHz- Category 3			
6.11.10.1.1	TX “as needed” number of TX channels	Required		
6.11.10.1.2	TX “as needed” TX Frequency Spread	Required		
6.11.10.1.3	TX RF Power	Required		
6.11.10.1.4	TX Hum and Noise	Required		
6.11.10.2.1	Number of RX channels	Required		
6.11.10.2.2	RX Frequency Spread	Required		
6.11.10.2.3	RX sensitivity	Required		
6.11.10.2.4	RX audio distortion	Required		
6.11.10.2.5	RX adjacent channel rejection	Required		
6.11.10.2.6	RX Spurious response rejection	Required		
6.11.10.2.7	RX intermodulation rejection	Required		
6.11.11	P25 Compliant VRS-Vehicular Repeaters 700/800 MHz Band:12.5 kHz– Category 1			
6.11.11.1.1	TX “as needed” number of TX channels	Required		
6.11.11.1.2	TX “as needed” TX Frequency Spread	Required		
6.11.11.1.3	TX RF Power	Required		
6.11.11.1.4	TX Hum and Noise	Required		
6.11.11.2.1	Number of RX channels	Required		
6.11.11.2.2	RX Frequency Spread	Required		
6.11.11.2.3	RX sensitivity	Required		
6.11.11.2.4	RX audio distortion	Required		
6.11.11.2.5	RX adjacent channel rejection	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.11.11.2.6	RX Spurious response rejection	Required		
6.11.11.2.7	RX intermodulation rejection	Required		
6.11.12	P25 Compliant VRS-Vehicular Repeaters 700/800 MHz Band:12.5 kHz– Category 2			
6.11.12.1.1	TX “as needed” number of TX channels	Required		
6.11.12.1.2	TX “as needed” TX Frequency Spread	Required		
6.11.12.1.3	TX RF Power	Required		
6.11.12.1.4	TX Hum and Noise	Required		
6.11.12.2.1	Number of RX channels	Required		
6.11.12.2.2	RX Frequency Spread	Required		
6.11.12.2.3	RX sensitivity	Required		
6.11.12.2.4	RX audio distortion	Required		
6.11.12.2.5	RX adjacent channel rejection	Required		
6.11.12.2.6	RX Spurious response rejection	Required		
6.11.12.2.7	RX intermodulation rejection	Required		
6.11.13	P25 Compliant VRS-Vehicular Repeaters 700/800 MHz Band:12.5 kHz– Category 3			
6.11.13.1.1	TX “as needed” number of TX channels	Required		
6.11.13.1.2	TX “as needed” TX Frequency Spread	Required		
6.11.13.1.3	TX RF Power	Required		
6.11.13.1.4	TX Hum and Noise	Required		
6.11.13.2.1	Number of RX channels	Required		
6.11.13.2.2	RX Frequency Spread	Required		
6.11.13.2.3	RX sensitivity	Required		

Spec. Number	Subject	Required/ Non-Required	Vendor Compliance	Notes
6.11.13.2.4	RX audio distortion	Required		
6.11.13.2.5	RX adjacent channel rejection	Required		
6.11.13.2.6	RX Spurious response rejection	Required		
6.11.13.2.7	RX intermodulation rejection	Required		
6.12	P25 Compliant Dispatch Consoles- Category 1			
6.12.1	General - Applications and features	Required		
6.12.2	Minimum Specifications	Required		
6.12.3	Configuration	Required		
6.12.3.1	Personal Computer	Required		
6.12.3.3	Monitor	Required		
6.12.3.4	Mouse and keyboard	Required		
6.12.3.5	Software	Required		
6.12.3.6	Instant Recall Recorder	Required		
6.12.3.7	Single foot pedal switch	Required		
6.12.4	Optional General Accessories	Not Required		
6.13	Batteries and Accessories			
6.13.2	General – Scope and Classification	Required		
6.13.3	Portable Radio Power			
6.13.6	Other Accessories	Not Required		
6.13.6.1	Headset	Not Required		
6.13.6.2	Detachable Cords	Not Required		
6.13.6.3	Intercom	Not Required		
6.13.6.4	Panels/cables	Not Required		
6.13.6.5	Jackbox	Not Required		
6.13.6.6	Other items	Not Required		

Attachment 1

6.18. Department of Management Services (DMS) Radio Performance Specifications

This attachment provides a summary of the technical specifications that products must meet or exceed including base station repeaters, mobile and portable radios (including multiband mobiles and portables), RF control stations, vehicular repeaters and dispatch consoles.

The radio technical standards either meet or exceed TIA 603-D and TIA-102.

Category 1 standard radio meets or exceeds TIA 603-D. This option is for public safety personnel who operate in a fully public, expansive environment while responding to imminent threat to life and/or protection of property situations. Category 1 radio meets or exceeds TIA-603 standards, Class A.

Category 2 standard radio is for public safety personnel that operate in a contained environment, such as found in a correctional institution. These personnel respond to imminent threat to life and/or protection of property, are augmented by relatively close proximity of other officers, and have secondary means of communications. Category 2 radio shall meet TIA-603 standards, Class A.

Category 3 standard radio meets or exceeds TIA 603-D, Class B (non-public safety personnel).

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	Type	Analog Base Station Repeater Radios								
	Band	VHF High Band			UHF			700/800 MHz		
	Channel Spacing	12.5 kHz			12.5 kHz			25 kHz		
	Information Source	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3
Receiver	Sensitivity	0.35uV	0.35uV	0.50uV	0.35uV	0.35uV	0.50uV	0.35uV	0.35uV	0.50uV
Receiver	Adjacent Channel Rejection Ratio	80dB	45dB	40dB	70dB	45dB	40dB	75dB	75dB	40dB
Receiver	Spurious Response Rejection Ratio	100dB	75dB	70dB	100dB	75dB	70dB	90dB	75dB	70dB
Receiver	Intermodulation Rejection Ratio	75dB	75dB	70dB	75dB	75dB	70dB	75dB	75dB	70dB
Receiver	Audio Power Per Speaker	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Receiver	Audio Distortion at Full Power	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Receiver	Number of Channels	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed
Receiver	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	FM Hum and Noise	45dB	34dB	34dB	45dB	34dB	34dB	45dB	45dB	35dB
Transmitter	Power Output	60 W	60 W	50 W	50 W	50 W	50 W	75 W	75 W	50 W
Transmitter	Number of Channels	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed
Transmitter	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	Continuous Duty Cycle	Yes	Yes	N/A	Yes	Yes	N/A	Yes	Yes	N/A

Table A-1: Analog Base Station Repeater Radio Performance Characteristics

	Type	Analog Mobile Radios		
	Band	VHF High Band	UHF	700/800 MHz

	Channel Spacing	12.5 kHz			12.5 kHz			25 kHz		
	Information Source	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3
Receiver	Sensitivity	0.35uV	0.35uV	0.50uV	0.35uV	0.35uV	0.50uV	0.25uV	0.25uV	0.50uV
Receiver	Adjacent Channel Rejection Ratio	63dB	45dB	40dB	65dB	45dB	40dB	75dB	75dB	40dB
Receiver	Spurious Response Rejection Ratio	75dB	75dB	70dB	75dB	75dB	70dB	75dB	75dB	70dB
Receiver	Intermodulation Rejection Ratio	75dB	75dB	70dB	75dB	75dB	70dB	75dB	75dB	70dB
Receiver	Audio Power Per Speaker	10 W	10 W	10 W	10 W	10 W	10 W	10 W	10 W	10 W
Receiver	Audio Distortion at Full Power	+/-5%	+/-10%	+/-10%	+/-5%	+/-10%	+/-10%	+/-5%	+/-10%	+/-10%
Receiver	Number of Channels	500	200	50	500	200	50	500	200	50
Receiver	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	FM Hum and Noise	44dB	34dB	30dB	39dB	34dB	30dB	40dB	35dB	35dB
Transmitter	Power Output	50 W	50 W	40 W	50 W	50 W	50 W	30/35 W	30/35 W	30/35 W
Transmitter	Number of Channels	500	200	50	500	200	50	500	200	50
Transmitter	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18

*MIL-STD-810 required.

Table A-2: Analog Mobile Radios Performance Characteristics

	Type	<i>Analog Portable Radios</i>								
	Band	VHF High Band			UHF			700/800 MHz		
	Channel Spacing	12.5 kHz			12.5 kHz			25 kHz		
	Information Source	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3

Receiver	Sensitivity	0.35uV	0.35uV	0.50uV	0.35uV	0.35uV	0.50uV	0.35uV	0.35uV	0.50uV
Receiver	Adjacent Channel Rejection Ratio	63dB	45dB	40dB	60dB	45dB	40dB	70dB	70dB	40dB
Receiver	Spurious Response Rejection Ratio	70dB	70dB	60dB	70dB	70dB	60dB	70dB	70dB	60dB
Receiver	Intermodulation Rejection Ratio	70dB	70dB	60dB	70dB	70dB	60dB	70dB	70dB	60dB
Receiver	Audio Power Per Speaker	0.5 W	0.5 W	0.5W	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W
Receiver	Audio Distortion at Full Power	+/-5%	+/-10%	+/-10%	+/-5%	+/-10%	+/-10%	+/-5%	+/-10%	+/-10%
Receiver	Number of Channels	500	200	50	500	200	50	500	200	50
Receiver	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	FM Hum and Noise (analog)	34dB	33dB	30dB	38dB	34dB	30dB	40dB	35dB	35dB
Transmitter	Power Output	4 W	4 W	4 W	4 W	4 W	4 W	3 W	3 W	3 W
Transmitter	Number of Channels	500	200	50	500	200	50	500	200	50
Transmitter	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18

*MIL-STD-810 required.

Table A-3: Analog Portable Radios Performance Characteristics

	Type	<i>P25 Compliant Base Station Repeater Radios</i>								
	Band	VHF High Band			UHF			700/800 MHz		
	Channel Spacing	12.5 kHz			12.5 kHz			12.5 kHz		
	Information Source	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3
Receiver	Digital Sensitivity, 5% Bit Error Rate	0.35uV	0.35uV	0.50uV	0.35uV	0.35uV	0.50uV	0.28uV	0.28uV	0.50uV
Receiver	Adjacent Channel Rejection Ratio	60dB	60dB	40dB	60dB	60dB	40dB	60dB	60dB	40dB
Receiver	Spurious Response Rejection Ratio	90dB	80dB	70dB	80dB	80dB	70dB	90dB	85dB	70dB

Receiver	Intermodulation Rejection Ratio	80dB	80dB	70dB	80dB	80dB	70dB	77/80dB	77/80dB	70/80dB
Receiver	Audio Power Per Speaker	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Receiver	Audio Distortion at Full Power	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Receiver	Number of Channels	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed
Receiver	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	FM Hum and Noise (analog)	40dB	40dB	34dB	40dB	38dB	38dB	49dB	45dB	38dB
Transmitter	Power Output	100 W	100 W	90 W	100 W	100 W	90 W	100 W	100 W	90 W
Transmitter	Number of Channels	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed	As Needed
Transmitter	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	Continuous Duty Cycle	Yes	Yes	N/A	Yes	Yes	N/A	Yes	Yes	N/A

Table A-4: P25 Compliant Base Station Repeater Radio Performance Characteristics

	Type	<i>P25 Compliant Mobile Radios</i>								
	Band	VHF High Band			UHF			700/800 MHz		
	Channel Spacing	12.5 kHz			12.5 kHz			12.5 kHz		
	Information Source	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3
Receiver	Digital Sensitivity, 5% Bit Error Rate	0.30uV	0.30uV	0.50uV	0.35uV	0.35uV	0.50uV	0.35uV	0.35uV	0.50uV
Receiver	Adjacent Channel Rejection Ratio	60dB	60dB	40dB	60dB	60dB	40dB	60dB	60dB	40dB
Receiver	Spurious Response Rejection Ratio	80dB	75dB	70dB	80dB	75dB	70dB	75dB	75dB	70dB

Receiver	Intermodulation Rejection Ratio	75dB	75dB	70dB	75dB	75dB	70dB	75dB	75dB	70dB
Receiver	Audio Power Per Speaker	10 W	10 W	10 W	10 W	10 W	10 W	10 W	10 W	10 W
Receiver	Audio Distortion at Full Power	+/-3%	+/-3%	+/-10%	+/-3%	+/-3%	+/-10%	+/-3%	+/-3%	+/-10%
Receiver	Number of Channels	500	200	50	500	200	50	500	200	50
Receiver	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	FM Hum and Noise (analog)	39dB	34dB	34dB	39dB	34dB	34dB	34dB	33dB	33dB
Transmitter	Power Output	40 W	40 W	40 W	40 W	40 W	40 W	30/35 W	19/35 W	19/30 W
Transmitter	Number of Channels	500	200	50	500	200	50	500	200	50
Transmitter	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18

***MIL-STD-810 required.
Characteristics**

Table A-5: P25 Compliant Mobile Radios Performance

	Type	<i>P25 Compliant Multi-Band Mobile Radios</i>		
	Band	VHF High Band	UHF	700/800 MHz
	Channel Spacing	12.5 kHz	12.5 kHz	12.5 kHz
	Information Source	DMS Cat. 1*	DMS Cat. 1*	DMS Cat. 1*
Receiver	Digital Sensitivity, 5% Bit Error Rate	0.30uV	0.30uV	0.25uV
Receiver	Adjacent Channel Rejection Ratio	60dB	60dB	60dB
Receiver	Spurious Response Rejection Ratio	80dB	80dB	80dB
Receiver	Intermodulation Rejection Ratio	80dB	80dB	80dB
Receiver	Audio Power Per Speaker	12 W	12 W	12 W
Receiver	Audio Distortion at Full Power	+/-3%	+/-3%	+/-3%
Receiver	Number of Channels	700	700	700

Receiver	Frequency Spread (MHz)	24	20	24/18
Transmitter	FM Hum and Noise (analog)	34dB	34dB	34dB
Transmitter	Power Output	50 W	50 W	35 W
Transmitter	Number of Channels	700	700	700
Transmitter	Frequency Spread (MHz)	24	20	24/18

***MIL-STD-810 required.
Characteristics**

Table A-6: P25 Compliant Multi-Band Mobile Radios Performance

	Type	<i>P25 Compliant Portable Radios</i>								
	Band	VHF High Band			UHF			700/800 MHz		
	Channel Spacing	12.5 kHz			12.5 kHz			12.5 kHz		
	Information Source	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3
Receiver	Digital Sensitivity, 5% Bit Error Rate	0.25uV	0.25uV	0.50uV	0.32uV	0.32uV	0.50uV	0.25uV	0.25uV	0.50uV
Receiver	Adjacent Channel Rejection Ratio	60dB	60dB	40dB	60dB	60dB	40dB	60dB	60dB	40dB
Receiver	Spurious Response Rejection Ratio	70dB	70dB	60dB	70dB	70dB	60dB	72dB	70dB	60dB
Receiver	Intermodulation Rejection Ratio	73dB	73dB	50dB	70dB	70dB	50dB	72dB	72dB	50dB
Receiver	Audio Power Per Speaker	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W
Receiver	Audio Distortion at Full Power	+/-3%	+/-3%	+/-5%	+/-3%	+/-3%	+/-5%	+/-3%	+/-3%	+/-5%
Receiver	Number of Channels	500	200	50	500	200	50	500	200	50
Receiver	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	FM Hum and Noise (analog)	39dB	37dB	34dB	39dB	37dB	37dB	35dB	34dB	34dB
Transmitter	Power Output	4 W	4 W	4 W	4 W	4 W	4 W	3 W	3 W	3 W

Transmitter	Number of Channels	500	200	50	500	200	50	500	200	50
Transmitter	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18

*MIL-STD-810 required.

Table A-7: P25 Compliant Portable Radios Performance Characteristics

	Type	<i>P25 Compliant Multi-Band Portable Radios</i>					
	Band	VHF High Band		UHF		700/800 MHz	
	Channel Spacing	12.5 kHz		12.5 kHz		12.5 kHz	
	Information Source	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 1*	DMS Cat. 2
Receiver	Digital Sensitivity, 5% Bit Error Rate	0.23uV	0.25uV	0.21uV	0.25uV	0.25uV	0.25uV
Receiver	Adjacent Channel Rejection Ratio	65dB	60dB	65dB	60dB	65dB	60dB
Receiver	Spurious Response Rejection Ratio	70dB	70dB	75dB	70dB	70dB	70dB
Receiver	Intermodulation Rejection Ratio	72dB	70dB	73dB	70dB	74dB	70dB
Receiver	Audio Power Per Speaker	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W
Receiver	Audio Distortion at Full Power	+/-3%	+/-5%	+/-3%	+/-5%	+/-3%	+/-5%
Receiver	Number of Channels	700	700	700	700	700	700
Receiver	Frequency Spread (MHz)	24	24	20	20	24/18	24/18
Transmitter	FM Hum and Noise (analog)	47dB	34dB	47dB	34dB	48dB	40dB
Transmitter	Power Output	5 W	5 W	5 W	5 W	3 W	3 W
Transmitter	Number of Channels	700	700	700	700	700	700
Transmitter	Frequency Spread (MHz)	24	24	20	20	24/18	24/18

*MIL-STD-810 required.

Table A-8: P25 Compliant Multi-Band Portable Radios Performance Characteristics

	Type	P25 Compliant Radio Frequency Control Stations								
	Band	VHF High Band			UHF			700/800 MHz		
	Channel Spacing	12.5 kHz			12.5 kHz			12.5 kHz		
	Information Source	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1	DMS Cat. 2	DMS Cat. 3
Receiver	Digital Sensitivity, 5% Bit Error Rate	0.30uV	0.30uV	0.50uV	0.35uV	0.35uV	0.50uV	0.35uV	0.35uV	0.50uV
Receiver	Adjacent Channel Rejection Ratio	60dB	60dB	40dB	60dB	60dB	40dB	63dB	60dB	40dB
Receiver	Spurious Response Rejection Ratio	80dB	75dB	70dB	80dB	75dB	70dB	75dB	75dB	70dB
Receiver	Intermodulation Rejection Ratio	75dB	75dB	70dB	75dB	75dB	70dB	75dB	75dB	70dB
Receiver	Audio Power Per Speaker	5W	5 W	5 W	5W	5 W	5 W	5W	5 W	5 W
Receiver	Audio Distortion at Full Power	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%
Receiver	Number of Channels	500	200	50	500	200	50	500	200	50
Receiver	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	FM Hum and Noise (analog)	39dB	34dB	32dB	39dB	35dB	35dB	34dB	34dB	34dB
Transmitter	Power Output	40 W	40 W	40 W	40 W	40 W	40 W	19/30 W	19/30 W	18/30 W
Transmitter	Number of Channels	500	200	50	500	200	50	500	200	50
Transmitter	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	Duty Cycle	20-80	20-80	20-80	20-80	20-80	20-80	20-80	20-80	20-80

Table A-9: P25 Compliant Radio Frequency Control Stations Performance Characteristics

	Type	P25 Compliant Vehicular Repeaters								
	Band	VHF High Band			UHF			700/800 MHz		
	Channel Spacing	12.5 kHz			12.5 kHz			12.5 kHz		
	Information Source	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3	DMS Cat. 1*	DMS Cat. 2	DMS Cat. 3
Receiver	Digital Sensitivity, 5% Bit Error Rate	0.32uV	0.32uV	0.35uV	0.32uV	0.32uV	0.35uV	0.32uV	0.32uV	0.35uV
Receiver	Adjacent Channel Rejection Ratio	60dB	60dB	55dB	60dB	60dB	55dB	60dB	60dB	55dB
Receiver	Spurious Response Rejection Ratio	70dB	70dB	65dB	70dB	70dB	65dB	70dB	70dB	65dB
Receiver	Intermodulation Rejection Ratio	75dB	75dB	70dB	75dB	75dB	65dB	70dB	70dB	70dB
Receiver	Audio Power Per Speaker	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Receiver	Audio Distortion at Full Power	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%	+/-5%
Receiver	Number of Channels	6	6	6	6	6	6	6	6	6
Receiver	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18
Transmitter	FM Hum and Noise (analog)	37dB	37dB	30dB	37dB	37dB	35dB	33dB	33dB	30dB
Transmitter	Power Output	0.1-2 W	0.1- 2 W	0.1-2 W	0.1-2 W	0.1-2 W	0.1-2 W	0.25-1 W	0.25-1 W	0.25-1 W
Transmitter	Number of Channels	6	6	6	6	6	6	6	6	6
Transmitter	Frequency Spread (MHz)	24	24	24	20	20	20	24/18	24/18	24/18

*MIL-STD-810 required.

Table A-10: P25 Compliant Vehicular Repeaters Performance Characteristics

6.19 SAMPLING, INSPECTION AND TESTING

6.19.1 General

- 6.19.1.1 The manufacturer is responsible for documenting all factory inspections and tests of products that are to be provided to State Purchasing.
- 6.19.1.2 At anytime, State Purchasing may request that the manufacturer provide the documentation associated with an inspection and or test of a product. This documentation shall be provided to State Purchasing at no cost to State Purchasing.

6.19.2 First Article Sampling, Inspection, and Testing

- 6.19.2.1 Prior to shipment of a procurement order, State Purchasing or its representative may travel to the factory and request that a random sample or samples be pulled from the order and re-inspected and re-tested. The testing will be conducted at no cost to State Purchasing.
- 6.19.2.2 If a random sample or samples fail inspection or testing the entire order shall be re-inspected and re-tested. All failed products will be replaced with products that are compliant with the specifications.

6.19.3 Field Testing

- 6.19.3.1 Upon receipt of a procurement order State Purchasing may select a random sample or samples and perform an inspection and test of the product(s) to verify the specifications.
- 6.19.3.2 If the random sample or samples fail the State Purchasing inspection or test, the product will be returned to the manufacturer for factory re-inspection and or re-testing. State Purchasing may decide to witness this factory re-inspection and or re-testing.
- 6.19.3.3 If a failure is verified at the factory, the entire procurement order shall be returned to the manufacturer for replacement, at no cost to State Purchasing.
- 6.19.3.4 Any replacement orders are also subject to the same testing specifications listed above.

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SECTION 7.0

Forms, Attachments, Worksheets, and Exhibits

Contents

These documents can be downloaded at:

http://dms.myflorida.com/media/purchasing/state_term_contract_files/itb_09_725_500_a

7.0 Forms, Attachments, and Worksheets

- 7.0.1 Price Sheet (Section 3.9.1)
- 7.0.2 Savings/Price Reductions (Section 3.9.3)
- 7.0.3 Ordering Instructions (Section 3.9.4)
- 7.0.4 Certification Table (Section 3.9.6)
- 7.0.5 Contact Information (Section 3.9.7)
- 7.0.6 Certification of Drug-Free Workplace Program (PUR 7009)(Section 3.9.8)
- 7.0.7 State of Florida Vendor Responsibility Questionnaire (Section 3.9.9)
- 7.0.8 Emergency Situations Form (Section 3.9.10)
- 7.0.9 Authorized Dealer Form (Section 3.9.11)
- 7.0.10 References (Section 3.9.12)
- 7.0.11 Manufacturer's Authorization Form (Section 3.9.13)

7.1 Exhibits

- 7.1.1 Instructions to Vendors
- 7.1.2 STC Quarterly Report Form
- 7.1.3 STC Change Form
- 7.1.4 MyFloridaMarketPlace Electronic Invoicing Requirements
- 7.1.5 Sample Aravo Template for Line Item Catalogs
- 7.1.6 Punch-out Capability Questionnaire
- 7.1.7 Sample Contract Page
- 7.1.8 FCC 04-292
- 7.1.9 Law Enforcement Communications Plan, July 2009
- 7.1.10 Preferred Pricing Affidavit
- 7.1.11 Preferred Pricing Letter
- 7.1.12 Response Preparation Checklist

7.2 Other Documents Needed

- 7.2.1 Dun and Bradstreet SQR Report
- 7.2.2 Additional Documentation (i.e. Product brochures, if requested)

LAND MOBILE FM OR PM COMMUNICATIONS EQUIPMENT

ITB NO. 09-725-500-A

SOLICITATION ADDENDA

ADDENDUM NO. 1

State of Florida
Department of Management Services

INVITATION TO BID (ITB) No. 09-725-500-A Land Mobile FM or PM Communications Equipment January 28, 2010

Please Note: This Addendum No. 1 does not need to be returned with the Response.

The following section is stricken from the ITB in its entirety:

5.13 Requests for Quotes

Additional quotes are not required for equipment in Categories 1 and 2; however, quotes are required for Category 3 items. Customers have the option to initiate a request for quotes (RFQ) in Categories 1 and 2. Quotes are an oral or written request for written pricing or service information from a Contractor/Authorized Dealer for products available under the Contract from that Contractor. If Eligible Users utilize a RFQ, they shall create and maintain written records of oral and written requests, as well as records of quotes received. Quotes shall be in writing but otherwise informal, and need not be received or posted publicly or at a particular time or place. A Customer shall initiate a sufficient number of requests to obtain a minimum of three quotes, and shall place its purchase order with the Contractor quoting the lowest price, unless the Customer documents in writing that the lowest price quote would not result in best value.

The following changes are made to these sections of the ITB:

6.18.1.1. The purpose of this document is to establish the technical specifications necessary to permit State and local agencies to procure public-safety grade two-way voice radios (Category 1 or Category 2), and non-public safety two-way voice radios (Category 3), as well as dispatch consoles, RF Control Stations, Vehicular Repeaters, and radio equipment batteries and accessories. The radio categories are described in Attachment 1, ~~page 165~~ **Section 6.18.**

6.16.3. Optional Maintenance Service Contract

The vendor's bid shall contain one year and three – year optional maintenance service contract to cover the new equipment beyond the manufacturer's warranty period. The vendor will clearly state the optional service costs per radio unit, such as base station repeater, terminal unit, etc. The maintenance contract shall begin on the date of warranty period maintenance expiration.

During this period, the maintenance requirements and conditions shall be identical to the warranty period maintenance described in Section ~~6.17.1~~ **6.16.1.**

6.17.6. The vendor may reproduce the matrix in hard copy or electronically for submission with their bid package. A copy of the matrix can be downloaded by clicking the link included in Section 3.6; the matrix is posted under "Forms, Attachments, and Worksheets". This matrix will be submitted in accordance with Section 3.9.

Section 7.0

Forms, Attachments, Worksheets, and Exhibits

Contents

These documents can be downloaded at:

http://dms.myflorida.com/media/purchasing/state_term_contract_files/itb_09_725_500_a

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- 7.0.6 Certification of Drug-Free Workplace Program (PUR 7009)(Section 3.9.8)
- 7.0.7 State of Florida Vendor Responsibility Questionnaire (Section 3.9.9)
- 7.0.8 Emergency Situations Form (Section 3.9.10)
- 7.0.9 Authorized Dealer Form (Section 3.9.11)
- 7.0.10 References (Section 3.9.12)
- 7.0.11 Manufacturer's Authorization Form (Section 3.9.13)
- 7.0.12 Specification Compliance Matrix (Section 3.9.14)**

7.1 Exhibits

- 7.1.1 Instructions to Vendors
- 7.1.2 STC Quarterly Report Form
- 7.1.3 STC Change Form
- 7.1.4 MyFloridaMarketPlace Electronic Invoicing Requirements
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- 7.1.9 Law Enforcement Communications Plan, July 2009
- 7.1.10 Preferred Pricing Affidavit
- 7.1.11 Preferred Pricing Letter
- 7.1.12 Response Preparation Checklist

7.2 Other Documents Needed

- 7.2.1 Dun and Bradstreet SQR Report
- 7.2.2 Additional Documentation (i.e. Product brochures, if requested)

The following sections are added to the ITB:

3.9.14 Specification Compliance Matrix

Respondent must complete the Specification Compliance Matrix (Section 7.0.12) as detailed in **Section 6.17**. The Specification Compliance Matrix will be submitted to the Department via CD in accordance with Section 3.9. A copy of the matrix can be downloaded by clicking the link found in Section 3.6; the matrix is posted under “Forms, Attachments, and Worksheets”. **Failure to submit a Specification Compliance Matrix may result in rejection of the response.**

5.28 Employment Eligibility Verification

Contractor agrees that it will enroll and participate in the federal E-Verify Program for Employment Verification under the terms provided in the “Memorandum of Understanding” governing the program. Contractor further agrees to provide to the Agency, within thirty days of the effective date of this contract/amendment/extension, documentation of such enrollment in the form of a copy of the E-Verify “Edit Company Profile” screen”, which contains proof of enrollment in the E-Verify Program (this page can be accessed from the “Edit Company Profile” link on the left navigation menu of the E-Verify employer’s homepage).

Contractor further agrees that it will require each subcontractor that performs work under this contract to enroll and participate in the E-Verify Program within ninety days of the effective date of this contract/amendment/extension or within ninety days of the effective date of the contract between the Contractor and the subcontractor, whichever is later. The Contractor shall obtain from the subcontractor(s) a copy of the “Edit Company Profile” screen indicating enrollment in the E-Verify Program and make such record(s) available to the Agency upon request.

Contractor further agrees to maintain records of its participation and compliance with the provisions of the E-Verify program, including participation by its subcontractors as provided above, and to make such records available to the Agency or other authorized state entity consistent with the terms of the Memorandum of Understanding.

**Addendum No. 2
Q&A Responses**

ADDENDUM NO. 2

**State of Florida
Department of Management Services**

**INVITATION TO BID (ITB) No. 09-725-500-A
Land Mobile FM or PM Communications Equipment**

February 22, 2011

**Contained herein are the responses to the questions submitted through the email address provided in Section 3.8.
If you choose to print this document, please be advised that the print parameters for this document are set for legal size paper (8½ x 14).**

Please Note: This Addendum No. 2 does not need to be returned with the Response.

#	Question Received Date & Time	Question	Response	Submitted By
1	Thursday, January 13, 2011 12:44 PM	My question was can speaker microphones be bid under the Section 6.13.6 .6 “Other items offered by vendor”?	Speaker microphones may be offered per Section 6.13.6.6 of this ITB.	Tomorrow D-tection, Inc.
2	Monday, January 31, 2011 4:48:40 PM	6.8.2.1 Will every mobile installation require a dual control head? Can a single remote control head be offered?	The intent of this ITB is to offer a single control head.	Datron World Communications, Inc.
3	Monday, January 31, 2011 4:50:54 PM	6.8.2.13 Are 12 alphanumeric characters mandatory? Can a radio with less number of alphanumeric characters be offered?	Radios must have a minimum of 12 alphanumeric characters for this ITB.	Datron World Communications, Inc.

4	Monday, January 31, 2011 4:52:29 PM	6.8.3.4 This section implies that every mobile radio must have a vehicular repeater. Is this the intent of the state or should this be moved to the vehicular repeater section?	Every mobile is not required to have a vehicular repeater.	Datron World Communications, Inc.
5	Monday, January 31, 2011 4:55:09 PM	P-25 PORTABLE RADIOS 6.9.1.18 Is two-tone paging a requirement for P-25 radios? There is no P-25 Standard that outlines paging. There is unit to unit call and group call standards in P-25.	Two-tone paging is not required for P25 radios.	Datron World Communications, Inc.
6	Monday, January 31, 2011 4:58:03 PM	P-25 PORTABLE RADIOS 6.9.3.2.1 Is Lithium Polymer acceptable as battery chemistry in addition to Li Ion and Ni MH?	Lithium Polymer is an acceptable battery chemistry per Section 6.13.3.1 of this ITB.	Datron World Communications, Inc.
7	Monday, January 31, 2011 4:58:32 PM	6.8.2.13 Are 12 alphanumeric characters mandatory? Can a radio with less number of alphanumeric characters be offered?	Please see the response provided to Question 3.	Datron World Communications, Inc.
8	Monday, January 31, 2011 6:31:24 PM	(1) 6.4.1.3.3. Cabling and Installation Kit. Each radio shall be provided with a complete cabling and installation kit for installing the radio and accessories in a rack or cabinet. This kit shall include but not be limited to mounting hardware for the radio and accessories and all cabling necessary to interconnect the radio and accessories. Question: Is the state going to provide Hardware Specifications for racks and cabinets for said hardware? There is not a standard for cabinets and relay racks can have a few different types of fasteners depending on manufacturer.	The cabling and installation kit is needed to install the base repeater/station to the purchaser's cabinet or rack. Since each application may be different, hardware specification is not required for this ITB.	Midland

9	Monday, January 31, 2011 6:31:24 PM	(2) 6.4.1.4.4. Local Radio Control. Each radio shall include a remote microphone with a PTT switch. A separate speaker shall also be provided that may be an integral part of the radio or mounted externally. All necessary mounting hardware for the remote microphone and external speaker shall be provided. An external, front-panel control shall be provided to mute the received audio and also to adjust the received audio volume. Question; What is meant by Remote Microphone?	Section 6.4.1.4.4 refers to a local microphone at the base station/repeater.	Midland
10	Monday, January 31, 2011 6:31:24 PM	(3) 6.4.1.4.7. Receive Audio Noise Squelch. Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform to TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling. Question: What is meant by highlighted sentence?	The last sentence of Section 6.4.1.4.7 has been deleted from this ITB. See Addendum 3.	Midland
11	Monday, January 31, 2011 6:31:24 PM	(4) 6.4.3.1.1. Radios shall be able to transmit on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated. Question: Is there going to be a minimum number of channels required? This statement used through out the document.	Base repeater/station requires one channel. Mobile and portable radios require minimum channels, including 500 for Category 1 radios, 200 for Category 2 radios, and 50 for Category 3 radios.	Midland

12	Monday, January 31, 2011 6:31:24 PM	(5) 6.4.3.1.2. Radios shall be able to transmit over an “as needed” VHF High- Band frequency spread that will be provided to the vendor when a procurement order is initiated. Question: This is vague, the standard VHF High Band is from 136 MHZ to 174 MHZ. We are just trying to zero in what is needed.	This ITB requires the standard VHF-HB frequency spread of 136 MHz to 174 MHz.	Midland
13	Monday, January 31, 2011 6:31:24 PM	(6) 6.4.3.2.1. Radios shall be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated. Question: Is there going to be a minimum number of channels required? This statement used through out the document.	Please see the response provided to Question 11.	Midland
14	Monday, January 31, 2011 6:31:24 PM	(7) 6.4.3.2.2. Radios shall be able to receive over an “as needed” VHF High-Band frequency spread that will be provided to the vendor when a procurement order is initiated. Question: Again this is vague; the standard VHF High Band is from 136 MHZ to 174 MHZ.	Please see the response provided to Question 12.	Midland
15	Monday, January 31, 2011 6:31:24 PM	(8) 6.7.1.1. Configuration. Each base station radio shall support conventional and trunked digital 2-way voice communications as a completely integral unit. Plug-in style mobile radios and add-on power supplies are not permitted. Each integral base station unit shall consist of the following major components. Question: Is Trunking required for all P25 Base Stations/ Repeaters?	P25 base repeater/station may be used in a conventional or trunked mode.	Midland

16	Monday, January 31, 2011 6:31:24 PM	(9) 6.7.1.6. Cabling and Installation Kit. Each radio shall be provided with a complete cabling and installation kit for installing the radio and accessories in a rack or cabinet. This kit shall include but not be limited to mounting hardware for the radio and accessories and all cabling necessary to interconnect the radio and accessories. Question: Is the State going to provide Hardware Specifications for racks and cabinets for said hardware? There is not any standard for cabinets and relay racks can have a few different types of fasteners depending on manufacturer.	The cabling and installation kit is needed to install the base repeater/station to the purchaser's cabinet or rack. Since each application may be different, hardware specification is not required for this ITB.	Midland
17	Monday, January 31, 2011 6:31:24 PM	(10) 6.7.1.14. Receive Audio Noise Squelch. Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling. Question: What is meant by highlighted sentence?	The last sentence of Section 6.7.1.14 has been deleted from this ITB. See Addendum 3.	Midland

18	Monday, January 31, 2011 6:31:24 PM	(11) 6.10.1.12. Local Radio Control. Each radio shall include a remote desktop microphone and speaker. This equipment shall include a PTT switch, receive audio speaker, receive audio mute and volume control, and receive audio monitoring switch to bypass the squelch before transmitting. The minimum cable lengths for the microphone and speaker shall be 20 feet. Question: Is this a correct statement? More than 5-6 feet would be considered "Remote Control". Especially when this radio supports E&M and Tone Control.	The minimum cable length for the microphone and speaker shall be five feet. See Addendum 3.	Midland
19	Monday, January 31, 2011 6:31:24 PM	(12) 6.10.1.15. Receive Audio Noise Squelch. Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling. Question: What is meant by highlighted sentence?	The last sentence of Section 6.10.1.15 has been deleted from this ITB. See Addendum 3.	Midland

20	Tuesday, February 01, 2011 9:46:39 AM	In reference to ITB No. 09-725-500A, Harris is submitting the following question: Please clarify how the state will evaluate bidders' discount levels; specifically, please describe the scenario in which the state would award a sole source for a commodity contract. For example, if Vendor A offers a 20% discount on an item and Vendor B offers 31% discount, will Vendor A's item be excluded from the contract?	In accordance with Section 3.10 , award will be based on <u>lowest price</u> , not percentage discount off list price.	Harris Corp
21	Tuesday, February 01, 2011 10:30:26 AM	1. Section 6.4.1.1 states the following: "the radio shall support conventional and trunked analog 2-way voice communications." Will you please clarify if you want the vendor to provide two quotes, one for conventional and one for trunked? This requirement is repeated throughout the ITB in Sections 6.5.1.1, 6.6.1.1, 6.7.1.1, 6.8.2, and 6.9.1.1.	Using 7.0.1 Price Sheet, Respondents are to provide two price sheets, one for conventional and one for trunked radio systems. Respondents should clearly label each price sheet. See clarification to Section 3.9.1 in Addendum 3.	Motorola Solutions
22	Tuesday, February 01, 2011 10:30:26 AM	2. Section 6.4.1.5.5 states the following: "One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order." Will the State please remove this Section? If not removed, this will result in an unnecessary expense and many more radio interface devices than are actually needed by the end-user. We suggest that the better way to handle this requirement is to have the end-user purchase radio interface devices on an as needed basis, using pricing provided in the vendor's supplied list of options. This requirement is repeated throughout the ITB in Sections 6.5.1.25.5, 6.6.1.20.5, 6.7.1.20.5, 6.8.2.22.5, 6.9.2.5, 6.10.1.20.5, and 6.11.1.13.5.	The requirements of Sections 6.4.1.5.5, 6.5.1.25.5, 6.6.1.20.5, 6.7.1.20.5, 6.8.2.22.5, 6.9.2.5, 6.10.1.20.5, and 6.11.1.13.5 have been removed from this ITB. See Addendum 3.	Motorola Solutions

23	Tuesday, February 01, 2011 10:30:26 AM	3. Section 6.4.1.5.6 states the following regarding programming software: “one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.” Will the State please remove this Section? If not removed, this will result in an unnecessary expense and many more copies of radio programming software than are actually needed by the end-user. We suggest that the better way to handle this requirement is to have the end-user purchase the radio programming software on an as needed basis, using pricing provided in the vendor’s supplied list of options. This requirement is repeated throughout the ITB in Sections 6.5.1.25.6, 6.6.1.20.6, 6.7.1.20.6, 6.8.2.22.6, 6.9.2.6, 6.10.1.20.6, and 6.11.1.13.6.	The requirements of Sections 6.4.1.5.6, 6.5.1.25.6, 6.6.1.20.6, 6.7.1.20.6, 6.8.2.22.6, 6.9.2.6, 6.10.1.20.6, and 6.11.1.13.6 have been removed from this ITB. See Addendum 3.	Motorola Solutions
24	Tuesday, February 01, 2011 10:30:26 AM	4. Section 6.4.1.5.7 states the following: “The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers and testing facilities throughout the state.” Since this is a fairly broad statement, will the State please add the following underlined sentence to this paragraph? <u>Additional copies will only be distributed to radio programmers operating within the agency or entity who purchased the programming software.</u> This requirement is repeated throughout the ITB in Sections 6.5.1.25.7, 6.6.1.20.7, 6.7.1.20.7, 6.8.2.22.7, 6.9.2.7, 6.10.1.20.7, and 6.11.1.13.7.	The requirements of Sections 6.4.1.5.7, 6.5.1.25.7, 6.6.1.20.7, 6.7.1.20.7, 6.8.2.22.7, 6.9.2.7, 6.10.1.20.7, and 6.11.1.13.7 have been removed from this ITB. See Addendum 3.	Motorola Solutions
25	Tuesday, February 01, 2011 10:30:26 AM	5. Sections 6.4.6.2.2, 6.4.7.2.2, and 6.4.8.2.2 reference both VHF and UHF. Should VHF be removed from these Sections?	Sections 6.4.6.2.2, 6.4.7.2.2, and 6.4.8.2.2 refer only to UHF. See clarification to these sections in Addendum 3.	Motorola Solutions

26	Tuesday, February 01, 2011 10:30:26 AM	6. Sections 6.4.9.1.2, 6.4.9.2.2, 6.4.10.1.2, 6.4.10.2.2, 6.4.11.1.2, and 6.4.11.2.2 require that the analog base station/repeater be capable of transmitting and receiving analog in the 700 MHz band. Can the State please confirm that the FCC allows analog transmissions in the 700 MHz band?	Per Florida's 700 MHz Public Safety Interoperability Channel Plan, "Mobile and portable transmitters may have analog modulation capability only as a secondary mode in addition to its primary digital mode. Mobile and portable transmitters that only operate on the low power channels designated in §§90.531(b)(3), 90.531(b)(4), are exempt from this digital modulation requirement." See §90.535 of FCC Rules for additional information.	Motorola Solutions
27	Tuesday, February 01, 2011 10:30:26 AM	7. Sections 6.5.1.1 and 6.8.2 both state "in one of two configurations as listed below", where "below" refers to trunk mount and dash mount configurations. Is the State requesting that the vendor provide pricing for either trunk mount or dash mount configurations, but not both?	Please see the response provided to Question 21.	Motorola Solutions
28	Tuesday, February 01, 2011 10:30:26 AM	8. Section 6.5.5.1.4 requests that "a 12.5 kHz channel spacing shall transmit with a minimum FM hum and noise ratio of 44 dB." Will the State please consider revising this specification to a minimum FM hum and noise ratio of 40 dB?	Section 6.5.5.1.4 standard is based on established minimum technical specifications in the Law Enforcement Communications Plan dated July, 2009.	Motorola Solutions
29	Tuesday, February 01, 2011 10:30:26 AM	9. Sections 6.7.1.14, 6.7.1.15, 6.7.1.16, 6.7.1.18, 6.7.3.1.4, 6.7.4.1.4, and 6.7.5.1.4 are specifications included in the P25 (digital) base station/repeater portion of the ITB, however, these represent analog specifications. Will you please remove these specifications since they do not apply to P25 (digital) base station/repeaters?	Sections 6.7.1.14, 6.7.1.15, 6.7.1.16, 6.7.1.18, 6.7.3.1.4, 6.7.4.1.4, and 6.7.5.1.4 have been removed from the ITB. See Addendum 3.	Motorola Solutions
30	Tuesday, February 01, 2011 10:30:26 AM	10. Sections 6.7.3.2.3, 6.7.4.2.3, and 6.7.5.2.3 are specifications included in the P25 (digital) base station/repeater portion of the ITB, however, these represent analog receiver sensitivity specifications. Will you please revise these specifications to reflect P25 (digital) receiver sensitivity specifications? For example, for C4FM the radio receiver shall achieve a minimum 5% Bit Error Rate (BER) using a reference sensitivity of -118 dBm at the receiver RF input.	Sections 6.7.3.2.3, 6.7.4.2.3, and 6.7.5.2.3 have been revised. See Addendum 3.	Motorola Solutions

31	Tuesday, February 01, 2011 10:30:26 AM	11. Section 6.8.13.1.3 specifies 19 Watts of output RF power for the 700MHz mobile radio. Typically this specification is 30 Watts. Is 19 Watts correct? This requirement is repeated throughout the ITB in Sections 6.8.14.1.3, 6.10.9.1.3, 6.10.10.1.3, and 6.10.11.1.3.	While the typical maximum specification allowed by FCC Rule in the 700 MHz band is 30 watts, the minimum RF power requirement is 19 watts for 700 MHz in this ITB.	Motorola Solutions
32	Tuesday, February 01, 2011 10:30:26 AM	12. Section 6.16.2 includes very stringent requirements for response and repair times and we recommend that this Section be removed. The burden to support this level of response and repair will add additional costs to the equipment provided via this contract. Most end-users who utilize this contract will not require such aggressive response and repair times and would prefer lower priced equipment that is not burdened by this requirement. We suggest that the most efficient way to handle this requirement is to have the end-user purchase the level of response they require via a maintenance contract after the equipment has been procured. That way, the end-user will only pay for the exact amount of response and repair that they desire.	Section 6.16.2 requirements have been revised. See Addendum 3.	Motorola Solutions
33	Tuesday, February 01, 2011 12:46:52 PM	6.5.1.1. Configurations. Each mobile radio shall support conventional and trunked analog 2-way voice communications in one of two configurations as listed below. In Section 6.5.1.1 you list “support conventional and trunked analog 2-way voice”. What format of trunked analog are you requiring?	The trunked analog mobile radio requires a single control head.	Icom America, Inc.

34	Tuesday, February 01, 2011 12:54:44 PM	6.8.2.21. Multiple-Channel Monitoring. Each radio shall support multiple-channel monitoring or “scanning.” Three modes of scanning shall be supported as discussed below. The radios shall support scanning a minimum of 700 channels for VHF high band, UHF radios and 700/800 MHz radios. In this section, you are calling for “scanning a minimum of 700 channels”. You are calling for 500 channel radios in the specifications (see example below). Is this a misprint? 6.8.6.2.1. Radios operating with a 12.5 kHz channel spacing shall support a minimum of 500 channels and be able to receive on an “as needed” number of channels that will be provided to the vendor when a procurement order is initiated.	Each radio shall be capable of multiple channel monitoring to include 500 channels for Category 1 radios, 200 channels for Category 2 radios, and 50 channels for Category 3 radios.	Icom America, Inc.
35	Tuesday, February 01, 2011 12:55:06 PM	Can a provision be made to insure that battery bidders are involved in a Battery Recycling & Battery Labeling Program? (as per the Florida State Statute (Mercury-Containing and Rechargeable Battery Management Act (P.L.104-142))	While this solicitation does not require Respondents provide a description of any recycling and returns program, in accordance with Section 5.19, Respondents are required to comply with all federal and state laws.	Williams Communications, Inc.
36	Tuesday, February 01, 2011 12:56:39 PM	Can a provision be made to insure that bidders have a Battery Recycling & Battery Returns Program – at no cost to the State of Florida. (See www.rbrc.org)	Please see the response provided to Question 35.	Williams Communications, Inc.
37	Tuesday, February 01, 2011 12:57:23 PM	Can a provision be made for the Bidder to be compliant on Lithium Ion Transportation Safety? (Vendors shall certify that all batteries containing lithium ion and / or lithium polymer cells will be packaged and labeled to meet all U.S. DOT safety regulations.)	In accordance with Section 5.19, Respondents are required to comply with all federal and state laws.	Williams Communications, Inc.

38	Tuesday, February 01, 2011 12:58:09 PM	Can a provision be made for the Bidder to have a Emergency Response Delivery Capability ? (Vendors shall supply a written plan to deliver batteries within 24 hours to support all Florida state agencies In the event of an emergency or natural disaster. It is suggested, but not required, that vendors are able to maintain a stocking location in Florida to better support this capability.)	This information was not specified and is not required to respond to the ITB.	Williams Communications, Inc.
39	Tuesday, February 01, 2011 12:58:45 PM	Can a provision be made for the Bidder to include a listing for Battery Cell Performance? (Cell Specification) - (Vendors shall include in their bid response for each battery, cell specifications supplied by the battery cell manufacturer. The cell specification shall include data showing cell capacity and cycle life. During the term of the contract, vendors shall supply batteries with capacity and cycle life specifications that are greater than or equal to the specifications submitted in their bid response.)	This information was not specified and is not required to respond to the ITB.	Williams Communications, Inc.
40	Tuesday, February 01, 2011 12:59:19 PM	Can a provision be made for Intrinsically Safe Batteries be certified through FM Approvals? (The FM approval certificate should be part of the bid package. Self-certified batteries will not be accepted.)	This information was not specified and is not required to respond to the ITB.	Williams Communications, Inc.
41	Tuesday, February 01, 2011 12:59:53 PM	For Bidders of products manufactured outside the U.S., where the manufacturer has no stateside facility and relies on Master Distributors, will you allow the Master Distributor to bid? (i.e. Williams Communications, Inc. has held the DMS State of Florida battery contract for 5 years and is not a manufacturer, but a Master Distributer).	Please see changes made to Section 3.4 in Addendum 3.	Williams Communications, Inc.

42	Tuesday, February 01, 2011 1:00:24 PM	Some of Gov. Scott's initiatives for the state are focused on economic growth in FL and creating and keeping jobs in Florida. As this ITB is written, there is nothing that gives weight to Florida based companies. It allows for companies nation-wide to bid. Allowing anyone from anywhere to bid, will take income away from our state and be a disservice to our state, foregoing local support and local jobs. Will more consideration be given to Florida based companies, whether they are authorized dealers or manufacturers?	The Department encourages Florida based vendors to bid and offer the best price possible as section 287.057(1)(a), F.S., requires the Department to base its evaluation of the bids received on the best price or lowest cost to the state. Pursuant to rule 60A1.011, F.A.C., the Department does intent to grant a preference to Florida based vendors in the event of a tie bid situation.	Williams Communications, Inc.
43	Tuesday, February 01, 2011 1:00:33 PM	6.9.2.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system. The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated. This requirement specifies the most recent Microsoft OS. Most customers are still using MS Windows XP as opposed to the brand new MS Windows 7. Is Windows XP still acceptable?	The customer will determine the radio programming software at the date of the procurement order; therefore, a radio programming software exception is allowed in this ITB. See Addendum 3 for clarification.	Icom America, Inc.
44	Tuesday, February 01, 2011 1:00:52 PM	If a manufacturer chooses not to bid, and requests a Florida authorized dealer to bid on their behalf, how will this be handled by DMS?	Please see the response provided to Question 41.	Williams Communications, Inc.
45	Tuesday, February 01, 2011 1:01:33 PM	An addendum should be added to require minimum battery specifications and prior testing of the battery before DMS accepts an aftermarket product. An inferior battery with lacking specifications will jeopardize equipment performance and risk the lives of our public safety officers.	The minimum battery specifications are listed in Sections 6.6.3, 6.9.3.2, and 6.13.3 of this ITB.	Williams Communications, Inc.
46	Tuesday, February 01, 2011 1:02:03 PM	If a manufacturer has no conduit for bidding purposes, can they appoint an authorized dealer to bid their products?	Please see the response provided to Question 41.	Williams Communications, Inc.

47	Tuesday, February 01, 2011 1:06:52 PM	6.8.5.1. Rain 6.8.5.1.1. MIL-STD-810, Revision G. All radio equipment and accessories shall comply with Test Method 506.5, Rain, Procedure 1 for rain and blowing rain. 6.8.5.1.2. MIL-STD-810, Revision F. As an alternative to the above rain test, all radio equipment and accessories shall comply with Revision F, Test Method 506.4, Rain, Procedure 1 for rain and blowing rain. Is IP-57 for water immersion acceptable in place of MIL-STD-810?	This ITB requires Military Standard 810 (MIL-STD-810).	Icom America, Inc.
48	Tuesday, February 01, 2011 1:12:03 PM	For Trunk Mount configurations of the mobile radios, is it acceptable for the control head unit to meet the MIL-STD requirements or does the control head AND the remotely mounted transceiver deck unit need to both meet the MIL-STD?	Both control head and the radio shall meet or exceed MIL-STD-810.	Icom America, Inc.
49	Tuesday, February 01, 2011 1:16:16 PM	6.5.1.1. Configurations. Each mobile radio shall support conventional and trunked analog 2-way voice communications in one of two configurations as listed below. Do these radios have to support both “conventional and trunked analog” in the same radio? This would be very expensive for any users that are not planning on using the radio on a trunked radio system.	Please see the response provided to Question 21.	Icom America, Inc.

50	Tuesday, February 01, 2011 1:25:49 PM	The specifications in this ITB contains no language for consideration of any 6.25 KHz digital radio technologies, as referenced in the FCC's Report & Order #3 of December, 2004 for Part 90 Narrow Banding. That R&O and subsequent Report & Orders issued in both 2009 and 2010, encourage all Part 90 VHF and UHF licensees to migrate to 6.25 KHz radio systems by January, 2013. Since this contract will span multiple years and will be the main tool for Florida State agencies and many other co-users to move to narrow band radios and systems, what is the plan for the State of Florida to migrate to 6.25 KHz after 2012?	This information is not required to respond to this ITB.	Icom America, Inc.
51	Tuesday, February 01, 2011 1:26:27 PM	Can a provision be made for the Bidder to have a Emergency Response Delivery Capability? – (Vendors shall supply a written plan to deliver batteries within 24 hours to support all Florida state agencies In the event of an emergency or natural disaster. It is required that vendors maintain a stocking location in Florida to better support this capability.)	Please see the response provided to Question 38.	Williams Communications, Inc.
52	Tuesday, February 01, 2011 1:26:59 PM	If a manufacturer chooses not to bid, and requests a Florida authorized distributor to bid on their behalf, how will this be handled by DMS?	Please see the response provided to Question 41.	Williams Communications, Inc.
53	Tuesday, February 01, 2011 1:27:39 PM	If a manufacturer has no conduit for bidding purposes, can they appoint an authorized distributor or dealer to bid their products?	Please see the response provided to Question 41.	Williams Communications, Inc.

54	Tuesday, February 01, 2011 1:28:17 PM	Some of Gov. Scott's initiatives for the state are focused on economic growth in FL and creating and keeping jobs in Florida. As this ITB is written, there is nothing that gives weight to Florida based companies. It allows for companies domestic and foreign to bid. Allowing anyone to bid will take income away from our state and be a disservice to our state, foregoing local support and local jobs. Will more weight be given to Florida based companies, whether they are authorized dealers or manufacturers?	Please see the response provided to Question 42.	Williams Communications, Inc.
55	Tuesday, February 01, 2011 1:31:45 PM	Is the State and the OMS aware that the ITB does not include any consideration for the inclusion of 6.25 KHz capability for radios manufactured after January 1,2013 as noted in the FCC Report & Order issued on June 30, 2010 in response to as petition filed by NPTSC on Narrow Banding? According to that R&O, all radios manufactured after 12/31/12 are required to have 6.25 KHz spacing capabilities in addition to 12.5 KHz.	This information is not required to respond to this ITB.	Icom America, Inc.
56	Tuesday, February 01, 2011 1:36:28 PM	The SLEERS Statewide 800 MHz Radio System is an EDACS Radio Technology that is not P25 capable or P25 interoperable. There are no known plans at this time to migrate the SLEERS system to P25 (Phase 1 or Phase 2). How will the many state and local agencies using this EDACS trunked system communicate with the folks that will be using the P25 radios that are included as part of this ITB? There appears to be no EDACS included in this ITB.	This information is not required to respond to this ITB.	Icom America, Inc.
57	Tuesday, February 01, 2011 1:40:23 PM	It was stated at the pre-bid conference that DHS and other grants require P25 radios. Is the State and DMS aware that DHS Grant Funding is no longer exclusively committed to P25 only radio technology and, in fact, permits the use of grant funds for other digital two-way radio platforms?	This information is not required to respond to this ITB.	Icom America, Inc.

58	Tuesday, February 01, 2011 1:42:43 PM	A provision in the ITB radio specifications mandates that all portable and mobile radios be capable of 12.5 KHz analog conventional and analog trunking. This provision seems in conflict with the needs of those State agencies who do not employ analog trunking as part of the radio system.	Since some agencies still have analog radios, the intent of the ITB is to offer P25 radios along with narrowband analog radios in either a trunked or conventional mode.	Icom America, Inc.
59	Tuesday, February 01, 2011 1:55:59 PM	In reviewing the general specifications for base station and repeaters, our engineering group found that many of the specifications seem to be written to favor a particular manufacturer or group of manufacturers. Many of the items do not have a direct impact on the functionality and performance of the base station or repeater equipment. Some of these requirements include: • Chassis Assembly –no exposed terminations such as uncovered terminal blocks or screw lugs shall be permitted. • Antenna Interface – an integral antenna switch is required. • Hand Microphone – a CTCSS hand microphone requirement. • Tone Control – must be built in and integral to the unit. • Two-Tone Paging (Crew Alerting) – as a standard built in feature All of these items can be supplied and are available, but are simply not built in or standard items. This makes it very difficult for some of us to bid on these items.	The purpose of this ITB is to achieve interoperability, and Respondents should offer the general specifications for base station/repeater as listed in this ITB, as well as meet the minimum specifications for the base station/repeater.	Icom America, Inc.
60	Tuesday, February 01, 2011 1:58:23 PM	Please justify the omission of several important digital two-way radio technologies, including NXDN, MotoTRBO and DMR from consideration in this bid? Why has the State of Florida chosen to arbitrarily set technical specifications for equipment it will accept for this contract rather than allow products from the various manufacturers to receive consideration by the various agencies who will be using the equipment?	The scope of this ITB is to achieve interoperability with P25 Standards.	Icom America, Inc.

ADDENDUM NO. 3

State of Florida
Department of Management Services

INVITATION TO BID (ITB) No. 09-725-500-A
Land Mobile FM or PM Communications Equipment
February 22, 2011

Please Note: This Addendum No. 3 does not need to be returned with the Response.

The following sections are stricken from the ITB in their entirety:

- ~~6.4.1.5.5 — A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.~~
- ~~6.4.1.5.6. — The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order. The vendor shall also provide the software upon request from Purchaser.~~
- ~~6.4.1.5.7. — The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers and testing facilities throughout the state.~~
- ~~6.5.1.25.5. — A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.~~
- ~~6.5.1.25.6. — The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.~~
- ~~6.5.1.25.7. — The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers.~~
- ~~6.6.1.20.5. — A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a~~

~~minimum of one radio interface device shall be provided with each radio procurement order.~~

- ~~6.6.1.20.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order. The vendor shall also provide the software upon request from the Purchaser.~~
- ~~6.6.1.20.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers.~~
- ~~6.7.1.14. Receive Audio Noise Squelch. Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling.~~
- ~~6.7.1.15. CTCSS/DCSS. Each radio shall contain an integral encoder/decoder to allow for its usage in a 2-way radio CTCSS/DCSS. The tone-controlled squelch shall be compatible with the normal receiver squelch function and adjustable sensitivity. The frequencies used for the tone-controlled squelch shall be as specified in TIA-603-D. In local control an automatic switch shall be included to permit receive audio monitoring of the channel by a radio user prior to transmitting. This switch shall be separate from the PTT control. Radios shall support identical or different receive and transmit CTCSS/DCSS tones. Specific tone frequencies will be provided to the vendor when a procurement order is initiated.~~
- ~~6.7.1.16. Squelch Tail Elimination. Each radio shall be provided with circuitry designed to inhibit extraneous noise or squelch tail at the end of a transmission. The elimination of squelch tail noise shall be incorporated in both the transmitter and the receiver.~~
- ~~6.7.1.18. Two Tone Paging (Crew Alerting). Each radio should support industry standard two-tone paging including at a minimum the Motorola "Quick-Call" and General Electric "Type 99" two-tone formats.~~
- ~~6.7.1.20.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.~~

- ~~6.7.1.20.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order. The vendor shall also provide the software upon request from the customer.~~
- ~~6.7.1.20.7. The programming software shall be provided with an unlimited license permitting the customer to make multiple copies for use by radio programmers.~~
- ~~6.7.3.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 40 dB.~~
- ~~6.7.4.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 40 dB.~~
- ~~6.7.5.1.4. Radios shall transmit with a minimum FM hum and noise ratio of 34 dB.~~
- ~~6.8.2.22.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.~~
- ~~6.8.2.22.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.~~
- ~~6.8.2.22.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers.~~
- ~~6.9.2.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.~~
- ~~6.9.2.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.~~
- ~~6.9.2.7. The programming software shall be provided with an unlimited license permitting Purchaser to make multiple copies for use by radio programmers.~~
- ~~6.10.1.20.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One~~

~~radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.~~

~~6.10.1.20.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.~~

~~6.10.1.20.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers.~~

~~6.11.1.13.5. A radio interface device, including any necessary cabling shall be provided to connect the radio to a computer. The computer interface shall use either the RS-232 serial interface standard or the Universal Serial Bus (USB) standard. One radio interface device shall be provided for every 10 radios ordered, however, a minimum of one radio interface device shall be provided with each radio procurement order.~~

~~6.11.1.13.6. The programming software shall be provided via Microsoft compatible electronic media or via download from the manufacturer's website. If necessary, download login access must be provided. If electronic media is used one copy shall be provided for every 10 radios ordered, however, a minimum of one compact disk shall be provided with each radio procurement order.~~

~~6.11.1.13.7. The programming software shall be provided with an unlimited license permitting the Purchaser to make multiple copies for use by radio programmers and testing facilities throughout the state.~~

The following changes are made to these sections of the ITB:

3.4 Who May Respond

Fully capable ~~Manufacturer~~ **Manufacturers and Manufacturer's Authorized Dealer(s)** who meet the Technical Specifications and which possesses the financial capability, experience and personnel resources to provide products and services of the scope and breadth described in this ITB may respond to this solicitation. **PLEASE NOTE: There shall be one and only one bidder per manufacturer. Manufacturers may authorize multiple dealers/distributors to respond to this solicitation.**

Note: Failure of an Authorized Dealer to submit a Manufacturer's Authorization Form with their response in accordance with Section 3.9.13 may result in the rejection of the response or the elimination of eligibility for that product.

In accordance with Section 5.18, Authorized Dealers, Manufacturers awarded the Contract may use their distributor network to fulfill the requirements of the Contract. However, in each and every case, the manufacturer, not the distributor, will be held accountable for performance under the Contract and shall be the focal point for all performance issues. **For Manufacturer's Authorized Dealer(s) who bid and are awarded the Contract, Section 5.18 does not apply, and the Contractor will not be permitted to partner with other Authorized Dealers to fulfill the requirements of the Contract.**

The State Agencies and Eligible Users retain the right to request additional information pertaining to the Respondent's ability and qualifications to accomplish all services described in this ITB as deemed necessary during the ITB or after contract award.

The Department will accept responses from responsive and responsible Respondents that are in good standing with the State of Florida, meet product and services specifications and possess the financial capability, experience, and personnel resources to provide equipment and services of the scope and breadth described within this Invitation to Bid. Respondents must meet all requirements including, but not limited to, the following:

- ~~Respondent must be the primary Manufacturer of Land Mobile FM or PM Communication Equipment.~~
- Respondents may provide any or all of the following in order to meet the varying needs of the State's Eligible Users in accordance with solicitation requirements outlined in Section 6 of this document:
 - Base Stations/Repeaters (VHF-HB, UHF, 700/800 MHz)
 - Mobiles/Portables (VHF-HB, UHF, 700/800 MHz)
 - Portable Accessories, including batteries, speakers, mikes, chargers, cases, clips, etc.
 - Vehicular Repeaters (VHF-HB, UHF, 700/800 MHz)
 - Control Stations
 - Dispatch Consoles
 - Other (see Section 6 for additional included items)
- Respondents **must** be a registered vendor in the MyFloridaMarketPlace (MFMP) Vendor Registration system to do business with the State of Florida. If you are

not already a registered vendor, you may view registration information as well as other pertinent information at: <https://vendor.myfloridamarketplace.com/vms-web/spring/login?execution=e2s1>

- Respondents **must** be registered with the Florida Department of State - Division of Corporations. To check your registration or to register with the Division of Corporations, please go to: www.sunbiz.org.
- Only Respondents that are capable of Electronic Invoicing through MyFloridaMarketPlace may respond to this solicitation. See Section 7 to view the MyFloridaMarketPlace Electronic Invoicing Requirements.
- Respondents **must** be current with all MyFloridaMarketPlace (MFMP) transaction fees per Section 287.057(23), Florida Statutes, and 60A-1, Florida Administrative Code (F.A.C.).

3.9.1 Price Sheet Responses

Price Sheet Responses will be submitted in the locations and formats provided in the Price Sheets, Section 7.0.1.

All Prices will be in U.S. Dollars, (\$USD; e.g., \$99,999.99); all Discounts shall be a Percentage off MSRP to the one-hundredth decimal place (%; e.g., 99.99%); all Florida Prices listed shall be the ceiling price for the State of Florida Eligible Users. Respondents are encouraged to provide additional discount levels for volume or aggregate purchases. The Respondent shall include in the Price for each Commodity offered: any profit, administrative charges, environmental fees, handling charges, shipping charges, delivery charges to any point within the State of Florida, warranty charges, and any other charges or fees necessary to deliver the product according to the requirements, specifications, terms, and conditions, exclusive of taxes.

The Respondent may offer only the product(s) available that meet or exceed the solicitation's requirements, specifications, terms, and conditions. Should a Respondent submit a Response containing a product that does not meet or exceed the solicitation's requirements, specifications, terms, and conditions, that offer will be disqualified as nonresponsive. The Department in its sole discretion shall determine the acceptability of a commodity or contractual service offered.

The Price Sheet will be submitted to the Department via CD in accordance with Section 3.9. **Respondents will provide two price sheets, one for conventional and one for trunked radio systems. Respondents should clearly label each price sheet. Failure to provide a compliant Price Sheet in the solicitation Response may result in rejection of the Response.**

3.9.13 Manufacturer's Authorization Form

Manufacturer's Authorization form (Section 7.0.11) will be submitted to the Department via CD in accordance with Section 3.9. **Failure to submit a Manufacturer's Authorization Form may result in the rejection of the response or the elimination of eligibility for that product.**

Note: To be considered eligible for award, Authorized Dealers must submit the Manufacturer's Authorization Form (7.0.11) completed by the manufacturer to

certify that the Respondent is authorized to provide products and services on behalf of the manufacturer.

5.18 Authorized Dealers

Respondents **Manufacturers awarded the Contract** may allow authorized dealers, as defined in Section 3.4, to provide products and services on their behalf using the Authorized Dealer Form indicated in Section 7.0.9. Respondents **Awarded Manufacturers** are encouraged to utilize Certified Minority Business Enterprise (CMBE) dealers. Respondent **Awarded Manufacturers** shall identify any CMBE dealers on the Authorized Dealer Form. Each dealer named will be responsible for product delivery and service for any orders received as well as providing assistance to Eligible Users. Dealers receiving orders on behalf of the Contractor are required to register in MyFloridaMarketPlace and with the Division of Corporations. All authorized dealers shall be under the DIRECT SUPERVISION of the awarded vendor and shall follow all contract requirements.

For Authorized Dealers who bid and are awarded the Contract, Section 5.18 does not apply, and the Contractor will not be permitted to partner with other Authorized Dealers to fulfill the requirements of the Contract.

- 6.4.1.4.7. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform to TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. ~~Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling.~~
- 6.4.6.2.2. Radios shall be able to receive over an “as needed” ~~VHF~~, UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.7.2.2. Radios shall be able to receive over “as needed” ~~VHF~~, UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.4.8.2.2. Radios shall be able to receive over an “as needed” ~~VHF~~, UHF Band frequency spread that will be provided to the vendor when a procurement order is initiated.
- 6.7.1.14. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver

mode of operation. ~~Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling.~~

- 6.7.3.2.3. The radio **VHF-HB base station/repeater** receiver audio output shall achieve a minimum of 12 dB SINAD **5% Bit Error Rate (BER)** using a reference **digital receiver** sensitivity of 0.35 uV at the receiver RF input. **Section 6.18 also reflects the 5% BER for all P25 radios in this ITB.**
- 6.7.4.2.3. The radio **VHF-HB base station/repeater** receiver audio output shall achieve a minimum of 12 dB SINAD **5% Bit Error Rate (BER)** using a reference **digital receiver** sensitivity of 0.35 uV at the receiver RF input. **Section 6.18 also reflects the 5% BER for all P25 radios in this ITB.**
- 6.7.5.2.3. The radio **VHF-HB base station/repeater** receiver audio output shall achieve a minimum of 12 dB SINAD **5% Bit Error Rate (BER)** using a reference **digital receiver** sensitivity of 0.50 uV at the receiver RF input. **Section 6.18 also reflects the 5% BER for all P25 radios in this ITB.**
- 6.9.2.4. The radio programming software shall be directly compatible with the most recent version of the Microsoft personal computer operating system, **or as specified by the Customer in their purchase order.** The date to be used for determining the most recent version of the Microsoft personal computer operating system shall be the date that an individual procurement order is initiated.
- 6.10.1.12. **Local Radio Control.** Each radio shall include a remote desktop microphone and speaker. This equipment shall include a PTT switch, receive audio speaker, receive audio mute and volume control, and receive audio monitoring switch to bypass the squelch before transmitting. The minimum cable lengths for the microphone and speaker shall be 20 **five (5)** feet.
- 6.10.1.15. **Receive Audio Noise Squelch.** Each radio shall be equipped with a receiver squelch circuit that can automatically mute the received audio in the absence of an incoming signal. The circuit shall be comparator-based and compare a carrier automatic gain control signal with a threshold sensitivity that the operator can adjust during normal radio operation. The circuit shall include a noise compensator to squelch audio when only burst noise is present. The carrier squelch sensitivity shall conform with TIA-603-D and be adjustable over a minimum of 6 dB of sound pressure level starting from the maximum squelch sensitivity setting, in any receiver mode of operation. ~~Receive audio noise squelching shall also support remote interfacing and voter operation via tone control or E&M signaling.~~
- 6.14.2. **Random Samples:** **Vendors are not required to submit sample products with their bid response. However, the Department reserves the right to request samples** ~~Samples of delivered items may be selected at random and tested for compliance with these specifications~~ **throughout the term of the Contract.**

6.16.2. **Warranty Repairs**

During the manufacturer's warranty period, the vendor shall provide the necessary labor and transportation to maintain the equipment at peak system performance. The vendor shall provide replacement parts and materials and qualified personnel to service the equipment ~~at the sites work within one (1) hour~~ **twenty-four (24) hours** after notification of Category 1 and Category 2 equipment failure. ~~Equipment shall not be out of service in excess of four (4) hours after notification of equipment failure.~~ This warranty period maintenance shall be on a working hour basis as follows:

24 hours per day, seven days per week.

Except the vendor shall not be liable if failure to perform the working hours provisions arise out of cause beyond the control and without the fault or negligence of the Contractor (acts of God, the public enemy, fires, floods, strikes, freight embargoes, etc.).

The vendor must provide at least next day service to restore Category 3 equipment.

ADDENDUM NO. 4

State of Florida
Department of Management Services

INVITATION TO BID (ITB) No. 09-725-500-A
Land Mobile FM or PM Communications Equipment
March 2, 2011

Please Note: This Addendum No. 4 does not need to be returned with the Response.

The following changes are made to these sections of the ITB:

1.5 Event Timeline

Respondents should review and become familiar with the Event Timeline. The dates and times of each activity within the Timeline may be subject to change. It is the responsibility of the Respondent to check for any changes. All changes to the Timeline will be made through an addendum to this solicitation and posted within the Vendor Bid System (http://vbs.dms.state.fl.us/vbs/main_menu).

Event	Time (EDT)	Date
ITB Release		January 12, 2011
Vendor Bid Conference – Non Mandatory 4050 Esplanade Way, Room 101 Tallahassee, FL 32399 <u>Conference Call Information</u> Call number: 1-888-808-6959; Conference Code: 4881086 <i>*SUNCOM Conferencing Service will only accept the first 120 callers</i>	2:00 PM	January 25, 2011
Deadline for Questions Submitted by email to LandMobileCommEgp@dms.myflorida.com	2:00 PM	February 1, 2011
Answers to Respondents Questions Posted		February 22, 2011
ITB Submission Deadline	2:00 PM	March 8 17 , 2011
Posting of Intent to Award		March 29 April 12, 2011
Contract Start Date		On or about April 18 26, 2011

THE OFFICIAL SOLICITATION CLOSING TIME SHALL BE AS REFLECTED IN SECTION 1.5, TIMELINE.

It is strongly recommended to submit your solicitation response as early as possible. You should allow time to receive any requested assistance and to receive verification of your submittal; waiting until the last hours of the solicitation could impact the timely submittal of your response.

3.6 MFMP Sourcing Tool

This solicitation will NOT be conducted using the MyFloridaMarketPlace Sourcing Tool ("Sourcing Tool"). All documents and addendums for this solicitation will be posted on the Vendor Bid System (VBS) and on State Purchasing's website at:

http://dms.myflorida.com/media/purchasing/state_term_contract_files/itb_09_725_500_a

http://dms.myflorida.com/media/purchasing/state_term_contract_files/itb_09_725_500_a

3.9.1 Price Sheet Responses

Price Sheet Responses will be submitted in the locations and formats provided in the Price Sheets, Section 7.0.1.

All Prices will be in U.S. Dollars, (\$USD; e.g., \$99,999.99); all Discounts shall be a Percentage off MSRP to the one-hundredth decimal place (%; e.g., 99.99%); all Florida Prices listed shall be the ceiling price for the State of Florida Eligible Users. Respondents are encouraged to provide additional discount levels for volume or aggregate purchases. The Respondent shall include in the Price for each Commodity offered: any profit, administrative charges, environmental fees, handling charges, shipping charges, delivery charges to any point within the State of Florida, warranty charges, and any other charges or fees necessary to deliver the product according to the requirements, specifications, terms, and conditions, exclusive of taxes.

The Respondent may offer only the product(s) available that meet or exceed the solicitation's requirements, specifications, terms, and conditions. Should a Respondent submit a Response containing a product that does not meet or exceed the solicitation's requirements, specifications, terms, and conditions, that offer will be disqualified as nonresponsive. The Department in its sole discretion shall determine the acceptability of a commodity or contractual service offered.

The Price Sheet will be submitted to the Department via CD in accordance with Section 3.9. Respondents will provide two price sheets, one for conventional and one for trunked radio systems. Respondents should clearly label each price sheet. **Failure to provide a compliant Price Sheet in the solicitation Response may result in rejection of the Response.**

Respondents offering additional configurations for equipment listed in the Price Sheet, which still meet the technical specifications of this solicitation, may submit other configurations on a separate Price Sheet. Respondents may reproduce the Price Sheet using MS Excel, as long as the Respondent includes the same format and fields provided in the original Price Sheet (Attachment 7.0.1).

- 6.1.2.2. Very High Frequency (VHF) High Band. For the purposes of this specification the VHF High Band is the radio frequency spectrum between ~~150~~ **136** and 174 MHz.

7.0.1 Price Sheet (Section 3.9.1)

To view changes made to the Price Sheet, follow the link provided in Section 3.6. Changes to the Price Sheet are highlighted in **red**.

ADDENDUM NO. 5

State of Florida
Department of Management Services

INVITATION TO BID (ITB) No. 09-725-500-A
Land Mobile FM or PM Communications Equipment
March 9, 2011

Please Note: This Addendum No. 5 does not need to be returned with the Response.

The following changes are made to this section of the ITB:

5.14 Price Adjustments

Proposed discounts shall be firm against decrease for the life of the contract. Requests for price increase/decrease may be submitted to the State if there is a documented change in cost. The State reserves the right to accept or reject requests within thirty (30) days after receipt of request. Price increases may be requested by the Contractor by using the STC Change Form in Section 7.1.3 in this solicitation document. Price change requests are subject to the Producer Price Index (PPI) for Industry: "Communications Equipment Manufacturing", as published by the U.S. Bureau of Labor Statistics. The rate adjustments will be based on the PPI (Series ID PCU3342). The Contractor may offer price reductions at any time and the State may request a reduction in price any time the PPI shows de-escalation in costs.

The last published non-preliminary Producer Price Index for the month prior to the award/anniversary date of the contract will be the reference date for the beginning (old) PPI Index. The most recent published Producer Price Index prior to the contract year to be priced will establish the reference data for the New PPI Index.

All requests for price adjustments must be substantiated by manufacturer's certification of cost or other documentation and approved by the State of Florida's Contract Administrator prior to implementation. The maximum net rate percentage increase per twelve (12) month period shall not exceed the PPI allowable amount or 3%, whichever is less.

Details on how this PPI has historically performed can be found at the Bureau of Labor Statistics web site and following the below steps:

- Go to BLS website: <http://www.bls.gov/ppi/#data>
- Click on the PPI Databases link
- Select "Industry Data (one screen)"
- Box 1 - Type "3342" in the "Select an Industry" box and click the adjacent "Find" button.
- Box 2 - Select "3342--3342" for "Communications equipment mfg" in the "Select One or More Products" box
- Box 3 - Click the "Get Data" button. A table similar to the one shown below will be created.

Series Id: PCU3342--3342--
Industry: Communications equipment mfg
Product: Communications equipment mfg
Base Date: 198512

Download:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	111.4	110.9	110.7	110.4	110.1	110.1	110.2	110.2	110.3	110.2	110.2	110.2	110.4
2001	110.4	110.4	110.4	108.5	108.6	108.5	108.1	107.6	107.8	107.8	107.7	107.7	108.6
2002	107.5	106.6	106.5	105.7	105.6	105.3	104.3	104.5	104.5	103.6	103.5	102.8	105.0
2003	102.7	101.9	102.8	102.7	102.6	102.1	101.0	101.1	101.4	100.5	100.9	100.9	101.7
2004	100.7	98.6	98.6	98.5	98.6	98.2	97.9	98.3	97.9	97.3	97.9	97.8	98.4
2005	97.5	97.3	97.4	97.5	97.4	97.2	97.1	97.0	96.6	96.6	96.5	96.4	97.0
2006	95.7	96.1	95.9	96.0	96.0	96.1	95.8	96.0	96.1	95.8	95.8	95.3	95.9
2007	95.5	95.7	95.9	95.8	95.8	95.8	95.8	95.8	95.8	95.9	95.8	95.8	95.8
2008	96.2	96.9	96.8	96.9	97.2	97.1	97.3	97.3	97.3	97.2	97.4	97.4	97.1
2009	97.5	97.2	97.2	97.2	97.1	97.1	97.2	97.1	97.2	97.2	97.2	97.2	97.2
2010	97.2	97.1	97.1	96.7(P)	96.6(P)	96.8(P)	97.1(P)						

P : Preliminary. All indexes are subject to revision four months after original publication.

Example:

Index at time of request.....97.2
 Divided by index at time base price was set97.5
 Equals (De-Escalation Rate).....< 0.9969 >

To determine the new discount percent:

New PPI / Old PPI = Price Escalation/De-escalation Rate (rounded to the four decimal points). Then take Old Price Discount % / Price Escalation/De-escalation Rate = New Price Discount % (rounded to two decimal points).

Calculation:

97.2 ÷ 97.5 = .9969 (which equates to a Price De-escalation Rate of 99%)

25% ÷ 99.00% = 25.25% (New Price Discount Percent)

Any increases/decreases approved during the term of the contract shall become effective no later than thirty (30) days after approval of the request.

Calculation:

New PPI / Old PPI = Percent Increase or Decrease

For example:

New PPI = 103.0

Old PPI = 100.0

Calculation: 103.0 / 100.0 = 1.03 or 3 percent increase

This calculation shows that the base price should be increased by 3.0 percent.

Any increases/decreases approved during the term of the contract shall become effective no later than thirty (30) days after approval of the request.

The Department may, in its sole discretion, make an equitable adjustment in the Contract terms and/or pricing if pricing or availability of supply is affected by extreme and unforeseen volatility in the marketplace, that is, by circumstances that satisfy all of the following criteria: (1) the volatility is due to causes wholly beyond the Contractor's control, (2) the volatility affects the marketplace or industry, not just the particular Contract source of supply, (3) the effect on pricing or availability of supply is substantial, and (4) the volatility so affects the Contractor that continued performance of the Contract would result in a substantial loss.