

(September 2021)

PERFORMANCE CRITERIA
FOR

SECTION 27 32 00

VOICE COMM TERMINAL EQUIPMENT
09/21

TABLE OF CONTENTS

GENERAL

1.1 REFERENCE

2.1 DESCRIPTION & MATERIALS

3.1 SUBMITTALS

3.2 QUALITY ASSURANCE

3.3 STANDARDS DEVIATIONS

3.4 DELIVERY, STORAGE AND PROTECTION

3.5 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

3.6 WARRANTY

3.7 OPERATIONS AND MAINTENANCE (O & M)

GENERAL

This Performance Criteria (PC) specifies the installation and quality of voice communication terminal equipment.

1.1 REFERENCES

1.1.1 Unified Facilities Criteria (UFC)

Contractor must comply with the following:

- A. UFC 1-200-01 General Building Requirements
- B. UFC 3-501-01 Electrical Engineering
- C. UFC 3-580-01 Telecom Building Cabling Systems Planning and Design
- D. UFC 4-010-06 Cybersecurity
- E. UFC 4-510-01 Military Medical Facilities

1.1.2 Military Standard

- A. MIL-STD 1691 Construction and Material Schedule for Medical, Dental, Veterinary and Medical Research Laboratories

1.1.3 National Fire Protection Association (NFPA)

- A. NFPA 99 Healthcare Facilities Code
- B. NFPA 101 Life Safety Code

1.1.4 Military Health System Standards

- A. Defense Health Agency Standards
 - 1. Building Control Systems Categorization Memorandum
 - 2. Cyber Security Controls for Physically Isolated Systems
 - 3. Cyber Security Controls for Medical Community of Interest (MEDCOI)
- B. Department of Defense Standards
 - 1. Department of Defense Instruction (DoDI) Number 8500.01
 - 2. Department of Defense Instruction (DoDI) Number 8510.01
 - 3. Department of Defense Instruction (DoDI) Number 8530.01

1.1.5 Federal Communications Commission (FCC)

- A. FCC Approved RF Communicating Device

1.1.6 Other Standards

- A. Reserved for future

2.1 DESCRIPTION & MATERIALS

All requirements within the MIL-STD-1691 JSN descriptions must be met, as well as the performance guidelines listed in the following descriptions.

2.1.1 General

- A. System and materials used must be UL listed and labeled; must be suitable for the environment in which they are installed.
- B. Provide cabling and other balance of system components in accordance with the manufacturer's recommendations and UFGS 27 10 00 – Building Telecommunications Cabling System.
- C. All products that have interoperability capable hardware (i.e., internal storage, data transmission via wireless, ethernet, of USB to PC or server connectivity) must meet DoDI and/or Cybersecurity requirements.
- D. System must be non-proprietary.

2.1.2 Telephone IP

- A. Fully featured business class IP phone supporting Power over Ethernet (PoE).
- B. Connects directly to an internet telephone service provider or to an IP private branch exchange (PBX).
- C. Dual Switched Ethernet ports for connecting a computer behind the phone, reducing cabling costs.
- D. Wideband audio for unsurpassed voice clarity and enhanced speaker quality.
- E. Supports both Session Initiation Protocol (SIP) and Smart Phone Control Protocol (SPCP).
- F. Uses Standard encryption protocols to perform highly secure remote provisioning and unobtrusive in-service software upgrades. Remote provisioning tools include detailed performance measurement and troubleshooting features and saves service providers the time and expense of managing, preloading, and reconfiguring customer premise equipment.
- G. Data Networking:
 1. MAC address (IEEE 802.3).
 2. IPv4 (RFC 791).
 3. Address Resolution Protocol (ARP).
 4. Dynamic Host Configuration Protocol (DHCP) client (RFC 2131).
 5. Internet Control Message Protocol (ICMP) (RFC 792).
 6. TCP (RFC 793).
 7. User Datagram Protocol (UDP) (RFC 768).
 8. Real-Time Transport Protocol (RTP) (RFC 1889,1890).
 9. Real-Time Control Protocol (RTCP) (RFC 1889).
 10. Differentiated Services (DiffServ) (RFC 2475).
 11. Type of service (ToS) (RFC 791, 1349).
 12. VLAN tagging 802.1p/Q: Layer 2 quality of service (QoS).
 13. Simple Network Time Protocol (SNTP) (RFC 2030).
- H. Voice Gateway:
 1. SIP version 2 (RFC 3261, 3262, 3263, 6264).
 2. SIP proxy redundancy: dynamic via DNS SRV, A records.
 3. Reregistration with primary SIP proxy server.
 4. SIP support in NAT networks (including STUN).
 5. SIPFrag (RFC 3420).
 6. Secure (encrypted) calling via SRTP.
 7. Codec name assignment.
 8. Voice algorithms: 6.711 (A-law and u-law), G.726 (16/24/32/40 kbps), G.729A, and G.722.
 9. Dynamic payload support.
 10. Adjustable audio frames per packet.
 11. Dual-tone multifrequency (DTMF), in-band and out-of-band (RFC 2833) (SIP INFO).
 12. Flexible dial plan support with interdigit timers.
 13. VMWI – Voicemail Waiting Indicator, via NOTIFY, SUBSCRIBE.
 14. Caller ID support (name and number).

15. Third-party call control (RFC 3725).
- I. Provisioning, Administration, and Maintenance:**
1. Integrated web server provided web-based administration and configuration.
 2. Telephone keypad configuration via display menu/navigation.
 3. Automated provisioning and upgrade via HTTPS, HTTP, TFTP.
 4. Asynchronous notification of upgrade availability via NOTIFY.
 5. Nonintrusive in-service upgrades.
 6. Report generation and event logging.
 7. Statistics transmitted in BYE messaging.
 8. Syslog and debug server records: configurable per line.
- J. Power Supply:**
1. Power supply models: PA100-NA, PA100-EU, PA100-UK, and PA100-AU.
 2. Switching type (100-240V) automatic.
 3. DC output voltage: +5 VDC at 2.0A maximum.
 4. Power adapter: 100-240V 50-60 Hz (26-34 VA) AC input.
- K. Physical Interfaces:**
1. Two 10/100Base-T RJ-45 Ethernet ports (IEEE 802.3).
 2. Handset: RJ-9 connector.
 3. Built-in speakerphone and microphone.
 4. Headset 2.5mm jack.

2.1.3 Telephone IP Waterproof

- A. Power Supply:**
1. Current: Minimum 20mA DC; Maximum 60mA DC.
 2. Voltage: 24V DC to 60V DC (not polarity sensitive).
 3. Signaling: DTMF.
- B. Environmental:**
1. Operating temperature range: -40 to +60 degrees C; -40 to +140 degrees F.
 2. Relative humidity: to 95%, no condensation.
- C. Model 256-001:**
1. Enclosure: Non-metallic.
 2. Dimensions (H x W x D): 13.5-inch x 9.7-inch x 7.4-inch.
 3. Weight: 8.2 lbs.
- D. Ringer Level (avg. @ 2 ft.):**
1. Door Open: 91 dBA SPL.
 2. Door Closed: 84 dBA SPL.
- E. Safety of information Technology Equipment: UL/CSA 60950**
- F. Enclosures for Electrical Equipment: UL 50, Type NEMA 3R.**

2.1.4 Telephone Conferencing System

- A. Superior wideband acoustics with the first two-element speaker in a conference phone; allows the phone to capture the full voice spectrum without have to compromise with a single-element speaker.**
- B. Expanded room coverage with support for daisy chaining multiple units.**
- C. Session Initiation Protocol (SIP) signaling.**
- D. Codec Support: G.711, G.729 (a and ab), G.722, and Internet Low Bitrate Codec (iLBC).**
- E. Device authentication and signaling encryption using Transport Layer Security (TLS) with Advanced Encryption Standard 128 (AES-128).**
- F. Media Encryption using Secure Real-Time Transport Protocol (SRTP) with AES-128.**
- G. Superior Wideband Acoustics:**
1. 160 Hz to 20 kHz, +/-3 dB.
 2. The latest in wideband codecs for maximum voice bandwidth.
 3. Enhanced speech quality and speaker recognition.
 4. 92-dB SPL peak output.
- H. Expanded Room Coverage:**
1. 160-degree conical pattern provides even coverage of listening area.
 2. Four Hemi-Cardioid microphones are spaced so that they combine to provide a 180-degree pick-up pattern around the device. Speech is captured at the same level at all points around the phone.

3. Ability to grow to fit a variety of room needs:
 - a. Small Office (base unit).
 - b. Standard Conference Room (base unit and 2 wired or wireless extension microphones).
 - c. Boardroom (daisy chaining two base units).
 - d. Large Boardroom (daisy chaining two base units and 2 wired or wireless extension microphones).
- I. Security: Supports device authentication through 802.1.1x supplicant (TLS) and SRTP.

2.1.5 Telephone Low Vision

- A. Amplifies incoming sounds up to 53 decibels and outgoing speech up to 15 decibels.
- B. Extra loud ringer volume (100 dBA).
- C. Built-in speakerphone and strobe ring signaler.
- D. 3-level speech output control adjusts outgoing voice volume up to 12 dB.
- E. Digital clarity power incorporates hearing aid technology for clearer call quality.
- F. Ergonomic volume and tone control.
- G. Remote diagnostic service programs phone at the touch of a button.
- H. Assist talking keypad.
- I. 2.5mm and 3.5mm audio jack for headset, neckloop, t-hook silhouette, or patch cord and bedshaker ports.
- J. TIA-1083 compliant for hearing aid compatibility.
- K. TIA-4953 certified for mild, moderate and severe hearing loss.
- L. 9 one-touch memory dial buttons: 2 emergency, 6 standard and 1 for customer service.
- M. Line power and AC power.

3.1 SUBMITTALS

3.1.1 Submittals required for government review

- A. **Submittal requirements are outlined in [Division 01] [PWS SOW] []**
- B. [Product Information must include manufacturer's installation instructions, sizing (including required clearance for access and maintenance), utility requirements, isometric drawings, tagged floorplans showing placement for count accountability and accessories/options/consumables list.]
- C. **All submittals require Government approval prior to procurement. Submit all listed items herein, with information sufficient to show full compliance with the criteria. Submit all product selections for review and approval, including but not limited to materials, finishes, colors, options, accessories, and complimentary products. Provide for review all warranties and service contracts and any available extended warranty or service options.**
- D. Samples: Furnish material samples and full range of color selection options for all items that offer material and color selections.
- E. Submit and highlight all applicable options for Government review for all items which optional accessories are provided.
- F. [Joint Interoperability Test Command (JTIC) Approval Documentation.]

3.2 QUALITY ASSURANCE

3.2.1 Materials and Equipment

- A. Materials and equipment must be standard products of a manufacturer regularly engaged in the manufacture of products which are of a similar material, design, and workmanship and are offered for sale on the commercial market through advertisements, manufacturer's catalogs, or sales brochures. The products must have been in commercial or industrial use under similar circumstances and of similar size for 2 years prior to selection for approval/procurement. Products must be supportable for at least three years after government acceptance.

3.2.2 Alternative Service Record

- A. Products having less than a 2-year field service record will be acceptable if a certified record of the manufacturer's factory or laboratory tests demonstrating performance compliance is provided to the Contracting Officer.

3.2.3 Service Support

- A. Equipment items must be supported by service organizations located near the equipment installation, able to service the equipment on a regular basis and respond to emergency calls throughout the warranty period.

3.2.4 Manufacturer's Nameplate

A. Each item of equipment must have an attached nameplate that is securely affixed in a conspicuous space. A nameplate listing only the name of the distributing agent is not acceptable. The nameplate must contain the following fields in English:

1. Manufacturer's name and address
2. Model and Serial Number
3. Item's utility ranges and/or capacities
4. Voltage, amperage, and applicable Underwriters Laboratory (UL) or Conformité Européenne (CE) rating if electrically powered
5. Date of manufacture

3.2.5 Factory Inspection

A. Arrange and perform all quality control and quality assurance inspections required by the technical sections of the criteria, unless otherwise specified. Report these inspections in the daily report to the Government inspector.

3.2.6 Product Qualifications

A. The products specified in the technical sections of this criteria establish standards for each item.

3.2.7 Design Parameters

A. It is not the intention of this Criteria to limit consideration to products of specific manufacturers. The product standards establish the characteristics for which submitted items of equipment will be reviewed and approved by the Government. Equipment furnished must meet each of the following parameters specified in the technical sections:

1. Size of equipment
2. Function of equipment
3. Standard and listed accessories and options
4. Equipment controls and performance of equipment
5. Construction of equipment
6. Finish

3.3 STANDARDS DEVIATIONS

3.3.1 Reporting and Submission for Approval

A. Submit for approval a record of deviations from the standards listed in section (3.2.7.A.) established for each specified product, before ordering equipment.

3.4 DELIVERY, STORAGE AND PROTECTION

3.4.1 Packaging and Transporting

A. Each unit of equipment must be placed in a substantial shipping container or crate for safe transportation to final destination. The shipping container or crate for heavy equipment must be on skid construction to facilitate handling by lift equipment.

3.4.2 Packing List

A. Clearly and legibly indicate on exterior of each container or crate the shipping address and a brief description of contents. Fasten to outside of container a packing list and complete instructions for uncrating equipment and setting it in place. Protect such information in a weatherproof envelope.

3.4.3 Protection

A. Properly protect all materials and equipment from injury and damage during storage, installation, and acceptance.

3.5 INSTALLATION, VERIFICATION AND ACCEPTANCE TESTING

3.5.1 Qualifications of Installers and Inspectors

- A. If required by product warranty, use installers that are approved and licensed by the manufacturer. When required to complete installation, all electricians and plumbers used must be bonded and licensed in the project's jurisdiction.
- B. [Company specializing in installing the products specified in this section must have a minimum 5 years of documented experience.]
- C. [Company specializing in installing the products specified in this section must be within 200 miles or 4 hours travel time.]

3.5.2 Installation, Operation, Testing and Certification

- A. Products must be delivered in manufacturer's original packaging with manufacturer's installation instructions. Include clearly marked project reference.
- B. Prior to installation, thoroughly examine the equipment, materials, and components for both visual defects and conformance with criteria.
- C. Install all equipment in compliance with manufacturer's written instructions and installation procedures.
- D. After installation, the equipment must be inspected and tested under operating conditions. If the equipment fails an inspection or test, such defects/failures must be corrected. Upon correction of defects/failures, inspect and retest all affected functions related directly and indirectly to the defect or failure. Corrections, replacement, and retesting must be made at no additional expense to the Government.
- E. Provide all items necessary to make equipment fully functional.
- F. Provide appropriately trained personnel to energize, commission, inspect, electrical safety check, calibrate, certify, and provide all required technical testing for equipment and systems. Contractor must provide documentation, test reports and certification documentation attesting that the equipment is properly installed, functional, safe, calibrated, and ready for its intended use.
- G. An equipment item will be considered defective if it cannot be made to meet all established criteria consistent with the activities listed in section (F).
- H. Provide two sets of special tools, software, and any other item/s for each equipment [item] [item type] if required for maintenance and/or future reconfiguration of the item.
- I. Contractor to supply all start-up supplies for medical equipment for a fully operational installation. Contractor must supply to the Government a listing of all needed supplies for ongoing equipment operation for each item of equipment requiring additional supplies for operation.
- J. Engage a factory-authorized service representative to train Government's staff and maintenance personnel to adjust, operate, and maintain medical equipment.
- K. [Confirm functionality of required interfaces to other systems and networks.]

3.6 WARRANTY

3.6.1 Minimum Requirements

- A. Warranty requirements are outlined in [Division 01] [PWS SOW] [___].
- B. [Provide manufacturer's written warranty for all items listed. Provide warranty for a minimum of (1) year against defects in materials and workmanship. Warranty must provide for material, labor and all associated replacement and/or repair costs required to provide for a fully operational equipment replacement or repair. Submit manufacturers and installers standard service contract beyond the warranty period for Government review. Warranty must be transferrable to the final owner without risk of being voided. All warranty certification and documentation must be provided to the final owner after date of acceptance.]
- C. Provide routine warranty service in accordance with manufacturer's warranty requirements, for a period of [12 months (minimum)] [___] after the open for business date. Perform work during regular working hours. Perform service only by factory trained personnel. Maintain a maintenance log of all service orders performed during the warranty period.

3.7 OPERATIONS AND MAINTENANCE (O & M)

3.7.1 Provide the following to the final owner

- A. Provide O & M data for all FFE-LVS as outlined in [Division 01] [PWS SOW] [___].

- B. Upon completion of equipment installation, furnish [two (2)] copies of operators/service/maintenance manuals for each type of equipment which will require service or maintenance
- C. Each manual must contain operating instructions and information required for performing periodic maintenance on the equipment. Each service manual must include an illustrated parts breakdown which identifies each part of the unit with manufacturer's part number, wiring diagrams, and a list of necessary service parts, tools, and equipment needed to support maintenance requirements.
- D. Accessory Catalogs: Upon completion of the Project, furnish two copies of the manufacturer's catalogs containing optional accessory items available for all equipment relative to the procured equipment/system delivered herein.
- E. Provide instruction video for cleaning and maintenance, when available.
- F. Provide cleaning requirements for all items to prevent void of warranty.
- G. [Provide contact information for Repair Technician or Emergency Repair Company]
- H. Provide contact information to [Logistics, Pharmacy, Laboratory, and Biomedical Equipment Services.]
- I. Train designated staff in the operation and maintenance of the provided equipment/system. Provide two training sessions for equipment/system users and two training sessions for maintenance personnel scheduled to accommodate shift work. [Provide training certificates that can be executed up to eleven months after the system is installed, in order to provide a refresher course for each group of trainees.] Provide DVD copy of the training with the O & M data.

--End of Section--