

INCH-POUND

MIL-R-49304 (CR)

20 September 1988

MILITARY SPECIFICATION  
RADIO SET: AN/PRC-126

This specification is approved for use within Communication-Electronics Command, Department of the Army and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes the performance, design, test, manufacture and acceptance requirements for the handheld radio set AN/PRC-126

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards and handbooks. The following specifications, standards and handbooks form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

MILITARY

MIL-P-116	Preservation, Methods of
MIL-T-704	Treatment and painting of Material
MIL-H-9890	Hardware, Individual Load Carrying Equipment,
MIL-M-13231	Marking of Electronic Items and Hardware, Miscellaneous
MIL-F-14072	Finishes for ground signal equipment
MIL-T-28800	Test Equipment for Use with Electrical and Electronic Equipment, Genreal Specification for
MIL-C-43734	Cloth, Duck, Nylon, 9 oz.
MIL-B-43826	Belt, Individual Equipment, Lc-2

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to Commander, US Army Communications-Electronics Command, ATTN: AMSEL-ED-TO, Fort Monmouth, New Jersey 07703-9990 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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MIL-S-43829	Suspenders, Individual Equipment Belt, Lc-1
MIL-C-46168	Coating, Aliphatic Polyurethane, Chemical Agent Resistant (CARC)
MIL-H-49078	Handset H-250()/U
MIL-B-49430/7	Batteries, Non-Rechargeable, Lithium Sulfur Dioxide (BA-5588/U)

STANDARDSMILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-109	Quality Assurance Terms and Definitions
MIL-STD-129	Marking for shipment and storage
MIL-STD-252	Wire Equipment, Classification of Visual and Mechanical Defect
MIL-STD-454	Standard General Requirements for Electronic Equipments
MIL-STD-461	Electromagnetic Interference Characteristics Requirements for Equipment, Subsystem and System
MIL-STD-462	Electromagnetic Interference Characteristics, Measurement of
MIL-STD-470	Maintainability Program Requirements for Systems and Equipments
MIL-STD-471	Maintainability Demonstration
MIL-STD-781	Reliability Test Exponential Distribution
MIL-STD-785	Reliability Program for Systems and Equipment Development and Production
MIL-STD-810	Environmental Test Methods and Engineering Guidelines
MIL-STD-882	System Safety Program Requirements
MIL-STD-1472	Human Engineering Design Criteria for Military Systems, Equipment and Facilities

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HANDBOOKS

MIL-HDBK-217 Reliability prediction of electronic equipment  
 MIL-HDBK-472 Maintainability Predictions

2.1.2 Other Government documents, drawings and publications. The following other Government documents, drawings and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

OTHERS

NACSIM-5100A Compromising Emanations, Laboratory Test  
 (Confidential) Requirements, Electromagnetic(U). 1 Jul 81,  
 Amendment 1, 30 Sep 81

NACSEM-5112 NONSTOP Evaluation Techniques(U). Apr 75  
 (Secret) With Amendments 1, 2, & 3.

CSEEB-XX Communications Security Equipment Engineering Bulletin

DRAWINGSSIGNAL CORPS

A3056562 Radio Set AN/PRC-126  
 A3056563 Receiver-Transmitter  
 SC-C-135894 AT-892/PRC Antenna  
 A3056568 Antenna, Short  
 SM-D-889337 Handset H-250()/U  
 A3056567 Carrying Pouch  
 A3056584 KYV-2A Interface-Mechanical  
 A3056585 KYV-2A Interface-Electrical  
 A3056583 Battery Housing

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer).

2.2 Order of precedence. In the event of conflict between the text of this specification and the references cited herein (except for associated detail specification, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supercede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Item Definition. The AN/PRC-126 is a combination radio transmitter and radio receiver set that can be hand carried and operated from a self-contained power source and antenna. The Radio Set also includes a handset, carrying pouch, and two antennas.

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3.1.1 Interface Definition. The radio set shall interface electrically and mechanically with wide band COMSEC equipment KYV-2A. The interface shall be in accordance with CSEEB-XX.

3.2 First Article. When specified (see 6.2), prior to submission of any completed radio sets for acceptance, the contractor shall furnish first articles for determination of compliance to this document. Examination and testing shall be as specified herein. Approval of the first articles by the procuring activity shall not relieve the contractor of his obligation to supply a product that conforms to this document. Any changes or deviations of production units from the first articles shall be subject to the approval of the contracting officer.

3.3 General Requirements.

3.3.1 Finish. The radio set shall be finished in accordance with the requirements of MIL-T-704 and MIL-C-46168. The finished coat shall be Type II Green 383 in accordance with MIL-C-46168. Final finish coating is applied at a minimum of 0.0018 inches dry in two coats.

3.3.2 Marking. Clear, concise and durable marking shall be provided for all controls, switches, test points and other components as necessary. Markings shall conform to MIL-M-13231.

3.3.3 Workmanship. Workmanship shall be in accordance with requirement 9 of MIL-STD-454.

3.3.4 External connections. External connections shall be made to the front panel of the radio set.

3.3.5 Covers and seals. Covers for this radio set shall incorporate captive hardware. Seals or sealing surfaces shall be capable of 100 open and close cycles without loss of leakage resistance, and with no seal maintenance other than gasket replacement as required by visual inspection.

3.3.6 Reverse polarity protection. The design shall incorporate mechanical and electrical reverse polarity protection.

3.3.7 Soldering. Soldering shall be in accordance with requirement 5 of MIL-STD-454.

3.4 Technical Characteristics. The receiver-transmitter shall be of plug-in modular construction, consisting of an RF/IF module and a Synthesizer/Audio module. The radio set shall comprise a complete operating radio communications terminal, as listed under item below. This receiver-transmitter shall be capable of very high frequency (VHF) frequency modulation (FM) voice communications in the 30 to 88 megahertz (MHz) range, [actual 30.000 to 87.975 MHz].

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Item		Quantity
A3056563	Receiver-Transmitter	1
A3056568	Antenna, Short	1
A3056567	Carrying Pouch	1
A3056583	Battery Case	1
AT-892/PRC	Antenna per SC-C-135894	1
H-250()/U	Handset per MIL-H-49078	1

Batteries, BA-1588/U, BB-588/U, and BA-5588/U (MIL-B-49430/7) may be used with the radio set. Batteries are not required to be furnished with First Article or production radio sets unless otherwise specified.

3.4.1 Receiver-transmitter. The RT shall be a one-piece unit consisting of a control head with electronic module section attached directly beneath, and a separate, detachable battery compartment that fastens to the electronic module section by means of two externally-mounted quick-release Nielsen-type fasteners. Operators while wearing NBC and cold weather protective gear must be able to change batteries. Provision for a separate detachable security module (KYV-2A) shall be made such that this module shall be installed between the electronic module and the battery compartment.

All external controls shall be located on the control head of the RT unit. The PTT switch shall be located for ease of operation by both left and right-handed operators. An internal microphone/speaker shall be located on the front surface near the top of the RT unit. The antenna attachment point shall be located on the left top of the control head of the RT unit. An eyelet shall be provided on one corner of the top edge of the equipment for use with a lanyard. The case shall be designed for extremely harsh field usage. Since the operators of this equipment can be expected to be taking such actions as falling to the ground, rolling over and crawling, the case shall be designed so that there are no sharp edges or protrusions that could cause injury or discomfort or in any way hinder freedom of movement or individual use of weapons.

3.4.1.1 Controls and indicators. The following operating controls shall be provided on the external surface of the RT control head.

- (a) Push-to-talk Switch
- (b) Volume Control/Power On-Off Switch.
- (c) Squelch Disable Switch (The switch shall not remain in the squelch off position unless manually held down in SQUELCH DIS position).
- (d) Audio Phone/Mic Connector, 6 Pin, Compatible with U-229/U.
- (e) Microphone/Speaker
- (f) Channel Selector Switch (10 position)
- (g) Frequency Readout Display
- (h) Antenna Coupler Bandswitch (6 positions)
- (i) Antenna Connector Compatible with AT-892/PRC
- (j) SET and INC frequency programming switches

3.4.1.2 Communication range. The reliable communication range between two radio sets using the AT-892/PRC antenna shall be 3 km over rolling, slightly wooded terrain. The short antenna shall provide communication up to 500 meters.

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3.4.1.3 Hours of operation. The RT with the BA-5588/U shall be capable of 70 continuous hours of operation under an operating duty cycle of 1 minute transmit, 1 minute receive, and 8 minutes standby. This duty cycle shall be defined as the standard duty cycle for the purpose of quality assurance testing. Battery life shall be the only limitation barring continuous operation under standard duty cycle conditions. The radio set shall incorporate a power saving circuit that will deactivate nonessential portions of the RT for a nominal 200 millisecond (ms) (150 ms in COMSEC mode) period and then reactivate for a nominal 20 ms (50 ms in COMSEC mode) listening period. The total cycle shall be 220 ms maximum, but the listening period shall not be less than 45 ms in COMSEC mode. Normal operation of the RT shall be returned upon receipt of an incoming signal or activation of the PTT switch.

3.4.1.4 Modulation. The RT shall be designed for the transmission and reception of frequency-modulated (FM) radio frequency (RF) signals. The nominal frequency deviation shall be 8 kHz, with a maximum deviation of 10 kHz. With the appropriate ancillary equipment attached, the radio set shall receive and transmit wideband data signals with a deviation of 11 kHz peak-to-peak ( $\pm 5$  kHz nominal).

3.4.1.5 Frequency. The RT shall incorporate the following design features.

3.4.1.5.1 Accuracy. The overall frequency accuracy of the RT shall be within 25 parts per million (ppm) ( $\pm 0.0025$  percent) when measured at the highest operating frequency.

3.4.1.5.2 Channel Selection. The digital frequency synthesizer shall be capable of providing operation throughout the frequency range from 30 MHz to 88 MHz, with the provision for operator selection of any channel frequency in 25 kHz increments.

3.4.1.5.3 Preset Memory. A nonvolatile preset channel(s) memory shall be provided with the capacity to store ten channels simultaneously. A channel switch shall be provided on the RT control head for operator selection of ten preset channels. The ten channels shall be presettable to any standard frequency within the 30-MHz to 88-MHz operating frequency range. Presetting of channel frequencies shall be a selection procedure accessible to the operator, without breaking the watertight integrity of the radio set.

3.4.1.5.4 Frequency Readout. A frequency readout display to enable the operator to make frequency selection for presetting the CHANNEL memory, and to inform the operator of the frequency of a preset CHANNEL selection during normal operation. The display shall be readable over the range of  $-40^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ . This display shall be located on the front surface of the RT control head. Depressing the SET button shall light the display. The display lighting average level shall be 0.03 to 0.10 foot-Lamberts. Between 350 and 950 nanometers, no more than one percent of the total energy shall be above 700 nanometers.

3.4.1.5.5 Antenna Switching. A manual antenna bandswitch control on the RT control head to allow the operator the flexibility of presetting operating channels over the complete 30-MHz to 88-MHz frequency range while maintaining the proper impedance matching with the antenna. The RT shall generate an audible tone to warn the operator if the bandswitch is set to an incorrect position. When the bandswitch is set to the correct position, the warning tone shall be disabled.

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3.4.1.5.6 Degraded Channels. The receiver shall be voltage tuned with a control voltage derived from the frequency synthesizer. No more than 25 degraded channels shall be allowed, and these shall be subject to the following conditions: no more than 25 channels shall require an RF input greater than 0.3 microvolts (closed circuit) to establish 10 decibel (dB) SINAD at the receiver audio output. Of these 25 channels, no more than 10 channels shall require an RF input greater than 1.0 microvolts to establish 10 dB SINAD at the receiver audio output.

3.4.2 Receiver. The design of the receiver shall be such that the IF bandwidth will accept a signal modulated at a nominal deviation of  $\pm 8$  kHz with a maximum modulating frequency of 3 kHz. In the wideband secure-speech mode, the IF bandwidth will accept a signal modulated at a 16 kB/s data rate.

3.4.2.1 Sensitivity. The sensitivity of the receiver shall be such that a signal of 0.3 microvolts or less (closed circuit), modulated with 1000 Hz at 8 kHz deviation, will produce a 10 dB SINAD (signal-plus-noise-plus-distortion to noise-plus-distortion) ratio measured at a receiver audio output and shall produce at least one-half of specified audio output power. The sensitivity of the receiver in the wideband secure-speech mode shall be such that a 1.8 microvolt (closed circuit) signal, modulated with 8000 Hz at 5 kHz (nominal) deviation, shall produce a 10-dB SINAD ratio measured at a wideband secure-speech audio output and shall produce at least one-half of the specified output voltage level. Wideband secure-speech tests are not required during burn-in and reliability testing.

#### 3.4.2.2 Squelch Sensitivity.

(a) A squelch circuit shall be incorporated in the receiver to eliminate noise during standby periods. This circuit shall feature internally-adjustable threshold sensitivity. Maximum threshold sensitivity shall be 0.3 microvolts (closed circuit) using a test signal of 8 kHz deviation at 1000 Hz.

(b) It shall not be possible to lock out the audio on a 5 microvolt (closed circuit) on-channel signal with the squelch control adjusted to any position.

3.4.2.3 Adjacent channel selectivity and desensitization. The output of the radio receiver shall be terminated in a standard output load. Two signal generators shall be equally coupled to the receiver antenna input terminals through a suitable matching network. Signal generator No. 1 shall be adjusted on channel for 12 dB SINAD, frequency-modulated 8 kHz at 1000 Hz. Signal generator No. 2, frequency-modulated 8 kHz at 400 Hz, shall be tuned first to the high and then to the low alternate channel ( $\pm 50$  KHz). Its signal level shall be adjusted until the SINAD is decreased to 6 dB. Its signal selectivity shall be specified as the ratio, expressed in dB, of the amplitude of signal No. 2 to signal No. 1. If the ratio for the high-side alternate channel is different from the ratio for the low-side adjacent channel, the smaller ratio, expressed in dB, shall be used in specifying selectivity. For the specified channel separation, the alternate channel rejection shall be at least 65 dB.

3.4.2.4 Response to spurious signals. Spurious response attenuation and IF rejection shall be at least 80 dB relative to the specified receiver sensitivity, except for the following.

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3.4.2.4.1 Image rejection. The receiver shall attenuate signals on the image frequencies at least 80 dB relative to the specified receiver sensitivity except between the operating frequencies of 51 to 58 MHz the limit is 70 dB.

3.4.2.4.2 Intermodulation attenuation. The receiver shall attenuate intermodulation products at least 66 dB relative to receiver sensitivity

3.4.2.5 Audio power output. At an RF input signal level of 1.0 mV (closed circuit), with 8 kHz deviation at 1000 Hz, the receiver shall be capable of delivering a minimum of 100 milliwatts (mW) at less than 10 percent distortion to a load equivalent to the speaker's internal impedance. When the volume control is set to its CCW position the audio power output shall be zero.

3.4.2.6 Audio frequency response. Audio-frequency response shall not vary more than +1 or -6 dB from 300 to 3000 Hz relative to the response at 1000 Hz. Wideband secure-speech frequency response shall not vary more than +1 or -3 dB at 20 Hz, and  $\pm 1$  dB at 100 Hz and +1, -6.5 dB at 10 kHz, and +1, -8dB at 12 kHz relative to the response at 1000 Hz.

3.4.2.7 Hum and noise ratio. The hum and noise level in the unsquelched condition shall be at least 35 dB below rated audio power output. In the squelched condition, it shall be at least 50 dB below rated audio power output. This ratio is a measure of residual audio output to rated audio output and shall be taken at a signal level of 1 mV (closed circuit), with and without modulation of 8 kHz deviation at 1000 Hz.

3.4.2.8 Limiting. A limiter circuit shall be provided such that with an on-channel signal applied with nominal deviation at 1000 Hz and varying in amplitude from 0.8 microvolts to 50 mV (closed circuit), the receiver audio output shall not vary more than 3 dB.

3.4.2.9 Receiver response time.

(a) The normal-mode squelched receiver attack time (squelch release time) shall be defined as the time required for the narrowband audio output to reach 90 percent of steady state level, as measured from time when a test signal (synchronized with the falling edge of chopped B+) of 0.5 microvolt (closed circuit), modulated at 8 kHz deviation with 1000 Hz, is applied to the receiver input. The receiver attack time shall not exceed 220 ms. The receiver shall be in the squelched mode prior to application of the test signal.

(b) Wideband (COMSEC) receiver attack time shall be defined as the time required for the wideband audio output to reach 90 percent of steady-state level measured from rising edge of chopped B+ (KYV-2 Synchronization signal) with a test signal of 0.5 microvolt (closed circuit), modulated at 8 kHz deviation with 1000 Hz, has been applied to the receiver input. The receiver attack time shall not exceed 15 ms.

3.4.3 Transmitter. The design of the transmitter shall be such that its performance requirements will be met throughout the specified RT frequency range.



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### 3.4.3.1 Radio frequency power output.

(a) The RF power delivered to a 50-ohm load with the antenna coupler bypassed, shall be 1.0 Watt minimum when the input voltage is set to 14.5 volts DC.

(b) Additionally, the transmitter, when utilizing an external power source, shall be capable of continuous power output specified above for a period of one-half hour, without damage or performance degradation. The current drain during continuous transmission shall not increase over initial transmitter current drain by more than 10 percent. The transmitter shall be protected from damage due to antenna mismatch caused by an infinite voltage standing wave ratio (VSWR) presented at the antenna connection.

3.4.3.2 Spurious and harmonic radiation. All spurious and harmonic radiations shall be attenuated at least 50 dB below the RF carrier level, with the exception of the second and third harmonics, which shall be attenuated at least 40 dB. Spurious radiations of no more than -43 dBC (reference to carrier level) may be present when operation between 40 and 46 MHz.

3.4.3.3 Frequency accuracy. The carrier frequency accuracy shall meet the requirements specified in 3.4.1.5.1.

3.4.3.4 Audio-frequency harmonic distortion. Audio-frequency harmonic distortion shall not exceed 10 percent at 7-kHz deviation, with a modulating frequency of 1000 Hz. In the wideband secure-speech mode, audio-frequency harmonic modulation distortion shall not exceed 10 percent at 5 kHz deviation, with a modulation frequency of 8000 Hz.

3.4.3.5 Audio-frequency response. Audio-frequency response shall not vary more than +1 or -4 dB from 300 to 3000 Hz relative to the response at 1000 Hz. Wideband secure-speech audio-frequency response shall not vary more than +1, -3 dB at 20 Hz;  $\pm 1$  dB at 100 Hz; +1, -2 dB at 10 kHz; and +1, -3 dB at 12 KHz, relative to the response at 1000 Hz.

3.4.3.6 Modulation limiting. A limiter or clipper circuit shall be provided to permit 8 kHz deviation under normal speech level, but prevent the transmitter modulation from exceeding 10 kHz deviation at an audio-frequency input level 20 dB greater than the level for 8 kHz, when tested within the specified audio range of 300 to 3000 Hz.

3.4.3.7 Low-pass audio filter. The transmitter shall incorporate a low-pass audio filter or other device, which shall be installed between the modulation limiter and the modulated stage. At 5 KHz, the attenuation shall be at least 7 dB greater than the attenuation at 1000 Hz. At audio frequencies above 15 kHz, the attenuation shall be at least 28 dB greater than the attenuation at 1000 Hz.

3.4.3.8 Frequency modulation hum and noise level. The ratio of residual FM (with microphone input disabled) to a modulation of 8 kHz deviation at 1000 Hz, shall be 35 dB or greater, as measured in a base bandwidth of 300 to 3000 Hz.

3.4.3.9 Tone modulation. The radio set shall transmit a 150-Hz ( $\pm 2$  Hz) tone signal, 2.5 to 3.5 kHz deviation, to ensure compatibility with radios designed to operate on tone-operated squelch. Tone shall be disabled when the KYV-2A is attached.

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3.4.3.10 System end-of-message (EOM) delay time. When operated with a KYV-2A in the secure mode, the RT shall provide a delay of 100 to 150 milliseconds between the release of the PTT switch and the transfer from transmit mode to receive mode, to allow transmission of an EOM after release of the PTT.

3.4.3.11 Operational Test. The radio set shall be operationally tested using a battery, antenna, and handset, to verify the functions of all controls including channel programming and operation of the LCD display.

3.4.4 Antenna. The radio set shall incorporate as standard an AT-892/PRC antenna, which is the standard PRC-77 and PRC-25 antenna. This antenna shall be flexible and 3 feet long, and is intended for long range use (3 km). A short antenna A3056568, which is a flexible, helical antenna, 7.2 to 7.6 inches in length, and intended for short range (500 meter) communications, shall also be included. The short antenna shall be covered with a nongloss insulating material whose color shall be nonreflective black. The RT shall provide a 50-ohm RF output for compatibility with standard RF test equipment and 50-ohm antenna systems.

3.4.5 Battery life. The radio set shall be designed to operate with, and provide the required hours of operation using, batteries described in paragraph 3.4, which specify 16.0 volts operating capability ( $V_{OC}$ ) to 11.0 volts end of life ( $V_{EOL}$ ). With the BA-5588/U Battery Per MIL-B-49430/7 a demonstrated life of 70 hours shall be obtained. The maximum average current drain shall be 51 mA maximum when averaged over the standard duty cycle of 10% receive, 10% transmit, and 80% standby.

#### 3.4.6 Audio transducers.

3.4.6.1 Audio Transducer, External. When the radio set uses its H-250 external handset, the internal speaker/microphone shall be muted.

3.4.6.2 Audio transducer, internal. An internal speaker/microphone shall be provided to allow the operator to use the RT without a handset. This speaker/microphone shall provide push-to-talk capability and a "hands-free" monitoring capability.

3.4.7 Carrying Bag. The radio shall be supplied with a carrying bag that is capable of being affixed to the Individual Equipment Belt (IEB) and Individual Equipment Belt Suspenders specified in MIL-B-43826 and MIL-S-43829. A Keeper with Slide, Type 10, per MIL-H-9890, shall be used to attach the carrying bag to the IEB and IEB Suspenders. In addition to carrying the radio, the carrying bag must be able to carry a spare battery, a handset, and both the long and short antennas. The radio must be operational in the carrying bag, and all operational controls must be accessible to the operator. The carrying bag shall meet the fungus requirement of MIL-STD-810, Method 508.3, Section I Table 508.3-1, Grade 2 (slight growth). The material and color of the carrying bag shall be in accordance with MIL-C-43734.

3.5 Environmental. The radio set shall meet the requirements specified herein after exposure to environmental conditions as follows:

### 3.5.1 High Temperature.

3.5.1.1 Temperature operating. When tested as specified in 4.6.1, the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4 at an operating temperature of +55 °C.

3.5.1.2 Temperature storage. When tested as specified in 4.6.1, the radio shall withstand storage at +71 °C.

### 3.5.2 Low Temperature.

3.5.2.1 Temperature operating. When tested as specified in 4.6.1, the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4 at an operating temperature of -40 °C.

3.5.2.2 Temperature storage. When tested as specified in 4.6.1, the radio shall withstand storage at -57 °C.

3.5.3 Humidity. When tested as specified in 4.6.1, the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4.

3.5.4 Altitude. When tested as specified in 4.6.2, the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4 at an altitude of 10,000 feet. The radio shall withstand exposure to an altitude of 15,000 feet, non-operating.

3.5.5 Vibration. After being tested, non-operating as specified in 4.6.3 the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4. The radio shall experience no mechanical damage which affects its electrical and mechanical operation.

3.5.6 Drop test. After being tested, non-operating as specified in 4.6.4 the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4. The radio shall experience no mechanical damage which affects its electrical and mechanical operation.

3.5.7 Immersion. After being tested, non-operating as specified in 4.6.5 the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4. The radio shall be submerged in water at a minimum depth of 3 feet for 2 hours. Inspection shall be started within two minutes after removal from the water.

3.5.8 Fungus. When tested as specified in 4.6.6 the radio shall meet the fungus requirement of MIL-STD-810, Method 508.3, Section I, Table 508.3-1, Grade 0 (no growth). The carrying bag shall meet the requirement of Table 508.3-1 Grade 2 (slight growth).

3.5.9 Salt Fog. After being tested, non-operating as specified in 4.6.7 the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4. The radio shall show no corrosion as evidenced by any visible degradation that can be attributed to flaky, pitted, blistered, or otherwise loosened finish on the surfaces of the radio. There shall be no mechanical damage that affects the electrical and mechanical operation of the radio.

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3.5.10 Sand and Dust. After being tested, non-operating as specified in 4.6.8 the radio shall meet the requirements of 3.4.2.1, 3.4.2.5, 3.4.3.1, 3.4.3.3 and 3.4.3.4. There shall be no mechanical damage that affects the electrical and mechanical operation of the radio.

3.5.11 Safety and Health. The radio shall not present safety/health hazards to operating/maintenance personnel during the radio's life cycle, and shall be in accordance with Requirement 1 of MIL-STD-454. There shall be no radioactive items or devices used in the radio.

3.5.11.1 Personnel Hazards. Personnel hazards shall be kept to a minimum. The criteria of MIL-T-28800 shall be made applicable for tasks and efforts such as the selection of parts, the complete manufacturing and assembly process, and any product baseline configuration changes that may be implemented during the course of the contract. Verification that compliance with this requirement has been achieved shall be a thorough visual inspection (See 4. 7.1).

3.5.11.2 Edge Rounding Exposed. Exposed edges and corners shall be rounded sufficiently to minimize laceration/puncture hazards, The design goal being a minimum radius of 0.04 inch (1 mm) for edges and a minimum of 0.5 inch (12.7 mm) for corners.

3.5.11.3 Radioactive Materials. Radioactive materials shall not be used (e.g. Luminous dials/markings, electron tubes, surge arrestors and lenses).

3.5.12 Human Engineering. The design and construction of the AN/PRC-126 will permit satisfactory operation and maintenance with minimum demands on manpower and manpower skill requirements. The radio set and accessories shall have been designed for efficient man-machine-relationships using sections 5.3.10, 5.4, 5.4.1, 5.5, 5.6, 5.11.1.1 and 5.11.1.5 of MIL-STD-1472 to the maximum extent possible.

3.6 Electromagnetic Interference (EMI). The radio shall comply with the following electromagnetic interference requirements of MIL-STD-461 and the EMI statement of work:

\*CE06

CS03

RE02

\*\*\*RS03

\*\*CS04

RE02.1

\*\*\*RS03.1

RE03

\* All harmonics and spurious radiations shall be attenuated at least 50 dB below the RF carrier level, with the exception of the second and third harmonics, which shall be attenuated at least 40 dB.

\*\* The limit at A of figure 9 of MIL-STD-461 shall be 80 dB except between the operating frequencies of 51 to 88 MHz the image response shall be 70 dB.

\*\*\* The radio shall not malfunction, or exhibit undesirable response or degraded performance beyond the specified tolerance provided in the specified performance, when immersed in the following electric field:

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FREQUENCY RANGE	INTENSITY	MODULATION CHARACTERISTICS
0.01 - 2 MHz	1 V/M	AM, 50%, 1 KHz tone
2 - 30 MHz (1)	5 V/M	AM, 50%, 1 KHz tone
30 - 76 MHz	10 V/M	FM, $\pm 8$ KHz deviation, 1 KHz tone
76 - 400 MHz (1)	10 V/M	AM, 50%, 1 KHz tone
0.2 - 2 GHz	10 V/M	Pulse, 1 usec pulse width, 800 pps
2 - 12.4 GHz	5 V/M	Pulse, 1 usec pulse width, 800 pps

- (1) In receive mode the on channel input signal to the RT shall be -70 dB mW when the RS03 source signal (radiated energy) falls on the intermediate frequency (IF) or the fundamental and harmonics of the local oscillator plus or minus the IF.

3.6.1 Occupied Bandwidth. The radio power spectrum shall be such that 99% of the power output is contained within a bandwidth of 25 kHz.

3.7 Interchangeability. Like units, assemblies, and replaceable parts shall conform to requirement 7 of MIL-STD-454. Replaceable assemblies, subassemblies, and/or modules shall be interchangeable without alignment/realignment.

3.8 Reliability, Availability, & Maintainability.

a. The radio set shall have a specified upper test Mean Time Between Failures (MTBF) of at least 2000 hours over the specified environmental range (exclusive of normal battery life). For the purpose of determining MTBF, a failure is defined as any malfunction that the operator cannot remedy, by adjustment using the controls or by replacing the battery, within 5 minutes, and that causes or may cause: inability to commence operation, cessation of operation, or performance capability of the system below designated levels; serious damage to the system by continued operation; or serious personnel safety hazards. Simultaneous related malfunctions are considered as one failure.

b. The Mean-Time-To-Repair (MTTR) shall be no greater than the indicated time for the following maintenance categories:

Organizational Support	5 minutes
Intermediate Forward Support	10 minutes
Intermediate Rear Support	30 minutes

c. The radio shall have readily accessible test points, and shall be constructed to provide protection against interactive failures between modules/subassemblies.

3.8.1 Reliability prediction. A reliability prediction shall be performed in accordance with MIL-STD-785 and section 2 of MIL-HDBK-217. The prediction shall assume a +55 °C external ambient air temperature, consider temperature rises within the electronic enclosures and modules and assume a "Ground Mobile" environment.

3.8.2 Maintainability. The radio set shall be constructed to provide ease of maintenance, accessibility and replacement of all modules and parts as primary design considerations. Maintenance and repair shall be accomplished to the maximum extent practicable when the system is operational.

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3.8.2.1 Maintainability program plan. A maintainability plan shall be prepared in accordance with MIL-STD-470.

3.8.2.2 Maintainability prediction. A maintainability prediction shall be performed in accordance with Procedure III of MIL-HDBK-472, at each of the three levels of maintenance.

3.8.2.2.1 Organizational level. Corrective maintenance shall be limited to replacement of the battery and antennas.

3.8.2.2.2 Intermediate level. Corrective maintenance shall be limited to replacement of plug-in modules and the frame/panel assembly.

3.9 Burn-in. Prior to submission to the specified first article and quality conformance inspections, each radio set shall be subjected to burn-in as specified in 4.2.3.1.

3.10 Dimensions. The dimensions of the RT in its case, including controls, connectors, and battery compartments, but excluding battery compartment attachment fastener, shall be no larger than 25.32 cm (9.97 inches) in length by 9.6 cm (3.78 inches) in width by 3.86 cm (1.52 inches) in depth.

3.11 Weight. The complete RT, including long antenna and BA-5588/U shall weigh no more than 1475 grams (52 ounces).

3.12 TEMPEST. The equipment shall comply with the requirements of NACSIM 5100A, NACSEM-5112 and the COMSEC Statement of Work.

3.13 COMSEC. The radio set shall be COMSEC compatible in accordance with the COMSEC Statement of Work. The KYV-2A interface shall be in accordance with drawings A3056584 and A3056585.

#### 4.0 Quality assurance provisions

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the document, where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractors overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

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4.1.2 Government Verification. All quality assurance operations performed by the contractor will be subject to Government verification at any time. Verification will include (a) surveillance of the operations to determine that practices, methods and procedures of the written system description are being properly applied, (b) Government production inspection to measure quality of products to be offered for acceptance, and (c) Government product inspection of delivered products to assure compliance with all requirements specified herein. Failure of the contractor to promptly correct deficiencies discovered by him, or of which he is notified, shall be cause for suspension of acceptance until corrective action has been made or until conformance of the product to prescribed criteria has been demonstrated.

4.1.3 Quality Assurance Terms and Definitions. Quality Assurance Terms used in this specification shall be as defined in MIL-STD-109.

4.2. Classification of inspections. The inspection requirements specified herein are classified as follows:

- (a) First article inspection (see 4.2.1.1)
- (b) Quality conformance inspection of equipment before packaging (see 4.2.3)
- (c) Packaging inspection (see 4.13)

4.2.1 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in this specification.

4.2.1.1 First article inspection. The first articles inspection shall consist of the inspections specified in Table I. Note that all 28 units shall be subjected to Burn-In and Group A & B tests; of this lot of 28 units, 15 units shall further undergo Group C & D tests as shown in Table I and the remaining 13 units upon passing Group A & B tests, shall be used for the Government-performed operational tests.

4.2.1.2 Government Operational Test. The Government will conduct an operational test to determine if the radio meets applicable sections of the requirements of section 3. This test will be performed by soldiers in a mission environment.

4.2.2 Visual/Mechanical Inspections. The items identified in Table I and Table III shall be inspected to determine conformance to the requirements specified herein prior to inspection of preparation for delivery. Radio sets shall be given a thorough mechanical and visual inspection to determine that the quality of all materials and workmanship is in compliance with the requirements specified herein and MIL-STD-454 Requirements 5 and 9. Particular attention shall be made to the following.

- (a) Completeness.
- (b) Nameplates, identification marking and labels.
- (c) Ease of operation of all front panel controls, switches and connectors.
- (d) Finishes.
- (e) Welded joints, if any.
- (f) Solder joints.
- (g) The fit of components in their respective positions.
- (h) Battery compartment fasteners.
- (i) Fit and condition of seals.
- (j) Other visual defects.

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4.2.2.1 Inspection Covered by Subsidiary Documents. The subsidiary documents listed in Table II are applicable as part of the inspection of the equipment before preparation for delivery.

TABLE II. INSPECTION COVERED BY SUBSIDIARY DOCUMENTS

Safety	MIL-STD-454
Marking	MIL-M-13231
Printed Wiring Assemblies	MIL-STD-454
Wiring and Cabling	MIL-STD-454
Securing of parts	MIL-STD-454
Finish, Protective	MIL-F-14072
Soldering	MIL-STD-454
Workmanship	MIL-STD-454
Assemblies, Modules, Sections	MIL-STD-252

4.2.3 Quality Conformance Inspection. This inspection shall consist of the inspection specified in Table III.

4.2.3.1 Burn-in. Prior to Quality Conformance Inspection, every deliverable radio set shall be subjected to a 48-hour burn-in with the last 24 hours being failure free. The burn-in shall be conducted per MIL-STD-781C for ground vehicular equipment, except that the temperature range shall be -40 °C to +55°C. Vibration shall be NAVMAT P-9492 Type Profile for 10 minutes prior to temperature cycling. Radios shall be electrically monitored during vibration.

4.2.3.2 Group A Inspections. Each unit shall be inspected for conformance to the inspections specified in Table III. Discrete lots shall be formed from units that pass this inspection. Factors of lot composition not defined herein shall be IAW MIL-STD-105. Each lot shall be subject to sampling inspection, utilizing procedures and the general inspection levels of MIL-STD-105 and an AQL of 1 percent for all electrical inspections. The AQL for visual and mechanical inspections shall be 4 percent for major defects and 10 percent for minor defects (major and minor defects are defined in MIL-STD-105 and MIL-STD-252). Defects in all inspections other than visual and mechanical shall be considered major. Group A inspection specified in Table III may be performed in any order.

4.2.3.3 Group B Inspections. Group B inspections shall be performed on inspection lots that have passed Group A inspection. Group B inspections are specified in Table III. This inspection shall conform to the special inspection levels of Table I of MIL-STD-105. The Group B AQL shall be 4 percent and the inspection level shall be S-4 per MIL-STD-105.

4.2.3.4 Group C Inspections. These inspections shall be performed IAW the applicable procedures of MIL-STD-810. EMI inspection shall be performed IAW MIL-STD-462.

Group C inspection shall be performed on units that have passed Group A and Group B inspection. Group C inspections shall be the inspections of Table III. Sample units that have been subjected to and have passed group C inspection may be accepted on the contract provided that any damage incurred is repaired and the sample units are resubjected to and pass Group A.



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TABLE I. FIRST ARTICLE TEST (FAT) INSPECTION

GROUP	TEST REQ'MT	INSP. TEST REQ'MT	INSP PARA	NO OF UNITS	AQL(%)
	Burn-In Test	3.9	4.2.3.1	All	
A	Visual/Mechanical Including subsidiary documents	3.3	4.2.2	All	1
	Sensitivity	3.4.2.1	4.5.2	All	
	Squelch Sensitivity	3.4.2.2(a,b)	4.5.3	All	1
	Selectivity	3.4.2.3	4.5.4	All	1
	Response to Spurious	3.4.2.4	4.5.5	All	1
	Audio Power Output	3.4.2.5(a,b)	4.5.6	All	1
	Audio Frequency Response	3.4.2.6	4.5.7	All	1
	Hum and Noise	3.4.2.7	4.5.8	All	1
	Limiting	3.4.2.8	4.5.9	All	1
	RF Power Output	3.4.3.1	4.5.10	All	1
	Spurious and Harmonic Radiation	3.4.3.2	4.5.11	All	1
	Frequency Accuracy	3.4.3.3	4.5.12	All	1
	Audio Distortion	3.4.3.4	4.5.13	All	1
	Audio Frequency Response	3.4.3.5	4.5.14	All	1
	Modulation Limiting	3.4.3.6	4.5.15	All	1
	Lowpass Audio Filter	3.4.3.7	4.5.16	All	1
	FM Hum and Noise	3.4.3.8	4.5.17	All	1
	Tone Modulation	3.4.3.9	4.5.18	All	1
	Battery Life	3.4.5	4.5.19	All	1
	Supply Line Voltage	3.4.5	4.5.20	All	1
	Antenna	3.4.4	4.5.21	All	1
	Audio Transducer, Internal	3.4.6.2	4.5.22	All	1
	Audio Transducer External	3.4.6.1	4.5.23	All	1
	Receive Response Time	3.4.2.9	4.5.27	All	1
	EOM Delay Time	3.4.3.10	4.5.28	All	1
	Operational Test	3.4.3.11	4.5.24	All	1
	Frequency Readout	3.4.1.5.4	4.5.29	All	1
	Frequency Range	3.4.1.5.2	4.5.25	All	1
	Channel Spacing	3.4.1.5.2	4.5.26	All	1
	COMSEC	3.13	4.12	All	
	Safety and Health	3.5.11	4.7	1	
	Human Engineering	3.5.12	4.11	1	
B	Immersion	3.5.7	4.6.5	All	1
	Interchangeability	3.7	4.9	All	1

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TABLE I FIRST ARTICLE TEST (FAT) INSPECTION - Continued

GROUP TEST REQ'MT	INSP. TEST REQ'MT	INSP PARA	UNITS TO BE TESTED
C Subgroup I			
High Temperature	3.5.1	4.6.1	1, 2, 3
Low Temperature	3.5.2	4.6.1	1, 2, 3
Humidity	3.5.3	4.6.1	1, 2, 3
Altitude	3.5.4	4.6.2	1, 2, 3
C Subgroup II			
Vibration	3.5.5	4.6.3	4
Drop	3.5.6	4.6.4	5
Maintainability	3.8b	4.4	5
C Subgroup III			
Fungus	3.5.8	4.6.6	6
Salt Fog	3.5.9	4.6.7	7
Sand and Dust	3.5.10	4.6.8	7
C Subgroup IV			
Electromagnetic Interference	3.6	4.8	8
TEMPEST	3.12	4.10	8
Occupied Bandwidth	3.6.1	4.8.1	8
D Reliability	3.8a	4.3.1	9-15
Govt. Operational Test		4.2.1.1	16-28

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TABLE III. QUALITY CONFORMANCE INSPECTION OF PRODUCTION EQUIPMENT

GROUP TEST REQ'MT	INSP. TEST REQ'MT	INSP PARA	NO OF UNITS	FREQ
Burn-In Test	3.9	4.2.3.1	All	
A * Visual/Mechanical	3.3	4.2.2	All	
Sensitivity	3.4.2.1	4.5.2	All	
Squelch Sensitivity	3.4.2.2a	4.5.3	All	
Audio Power Output	3.4.2.5	4.5.6	All	
Audio Frequency Response	3.4.2.6	4.5.7	All	
Hum and Noise	3.4.2.7	4.5.8	All	
Limiting	3.4.2.8	4.5.9	All	
RF Power Output	3.4.3.1a	4.5.10	All	
Frequency Accuracy	3.4.3.3	4.5.12	All	
Audio Distortion	3.4.3.4	4.5.13	All	
Audio Frequency Response	3.4.3.5	4.5.14	All	
Modulation Limiting	3.4.3.6	4.5.15	All	
Lowpass Audio Filter	3.4.3.7	4.5.16	All	
FM Hum and Noise	3.4.3.8	4.5.17	All	
Tone Modulation	3.4.3.9	4.5.18	All	
Battery Life	3.4.5	4.5.19	All	
Audio Transducer External	3.4.6.1	4.5.22	All	
Operational Test	3.4.3.11	4.5.24	All	
Frequency Readout	3.4.1.5.4	4.5.29	All	
Frequency Range	3.4.1.5.2	4.5.25	All	
Chan Spacing	3.4.1.5.2	4.5.26	All	
COMSEC	3.13	4.12	All	
* Including subsidiary documents				
B Immersion	3.5.7	4.6.5	##	
Interchangeability	3.7	4.9	##	
Receive Response Time	3.4.2.9	4.5.27	##	
EOM Delay Time	3.4.3.10	4.5.28	##	
Frequency Readout	3.4.1.5.4	4.5.29	##	
## Inspection to be performed on selected sample units.				
C Subgroup I				
High Temperature	3.5.1	4.6.1	2	Every
Low Temperature	3.5.2	4.6.1		two (2)
Humidity	3.5.3	4.6.1		months
Altitude	3.5.4	4.6.2		
C Subgroup II				
Vibration	3.5.5	4.6.3	2	Every
Drop	3.5.6	4.6.4		two (2)
				months

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TABLE III QUALITY CONFORMANCE INSPECTION OF PRODUCTION EQUIPMENT - Continued.

GROUP TEST REQ'MT	INSP. TEST REQ'MT	INSP PARA	NO OF UNITS	FREQ
C Subgroup III				
Salt Fog	3.5.9	4.6.7	2	Every six (6) months
Sand and Dust	3.5.9	4.6.8		
C Subgroup IV				
Electromagnetic Interference	3.6	4.8	Inspection to be performed every six (6) months throughout production on one unit.	
Tempest	3.12	4.10	Inspection to be performed every six (6) months throughout production on one unit.	
D Reliability	3.8a	4.3.2	Inspections to be performed every month throughout production on twenty (20) sample units selected at random.	

4.2.3.5 Group D Inspections. The equipment shall be selected from production lots that have successfully passed Burn-In and Group A and B tests. Sample units that have been subjected to and have passed Group D inspection may be accepted on the contract, provided that any damage incurred is repaired and the sample units are resubjected to and pass Group A.

Equipment shall be subjected to Reliability testing IAW the requirements of MIL-STD-781. The initial Reliability test shall be conducted as part of the First Article Test specified in the contract, with subsequent Reliability tests conducted every month. Non-compliance with Group D tests shall be resolved IAW contract clauses.

4.2.3.6 Non-Conforming Environmental Sample Units. If a sample unit fails Group C inspection specified in Table III, the contractor shall immediately investigate the cause of failure and shall report to the quality assurance representative the results thereof and details of the corrective action taken to correct units that were manufactured under the same conditions with the same materials, processes and so forth. If the quality assurance representative does not consider that the corrective action will enable the product to meet the requirements specified herein, or if the contractor cannot determine the cause of failure, the matter shall be referred to the contracting officer.

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4.2.3.7 Reinspection of Sample Test Units. Sample units that have been subjected to and passed First Article and Quality Conformance Inspection may be accepted on the contract provided they are resubjected to and pass production inspection (Group A) after repair of damage.

4.3 Reliability.

4.3.1 Reliability Qualification. The contractor shall conduct a reliability qualification test on the first articles. The test shall be conducted IAW Category 2, Para 50.2, Test Plan XIVC, Appendix C of MIL-STD-781, except that the temperature range shall be as specified herein.

4.3.2 Reliability Sampling. Twenty (20) test units shall be randomly selected by the government inspector from every month of production or 300 units, whichever comes first, for testing IAW para 5.1.3 and Appendix D of MIL-STD-781, except that the temperature range shall be as specified herein.

4.3.3 Reliability Test Procedure. The detailed test conditions, procedures and methods for the test described in 4.3.1 and 4.3.2 above shall be IAW the approved reliability test procedure for the Small Unit Radio, and Para 50.2, Appendix C, Test Plan XIVC and Appendix D of MIL-STD-781 shall apply. Operation shall be representative of the operations in the field. Occurrence of pattern failures shall be cause for rejecting the lot.

4.3.4 Modes of Operation Test Parameters. The radio set shall operate continuously in an 8:1:1 standby, receive, transmit duty cycle. The contractor may use a power supply in lieu of batteries for this test procedure; however, if a power supply is used the input voltage shall be maintained at 16 Vdc for one-third of the equipment "on" cycle, at 14 Vdc for the second one-third of the equipment "on" cycle, and at 12 Vdc for the final one-third of the equipment "on" cycle. This cycling procedure is to be repeated continuously throughout the reliability test. During the test, reference measurements specified in 4.6. shall be taken daily, except that the following test frequencies shall be allocated to the radio sets on test in approximately equal proportions, with one frequency for each radio.

Test Frequency (MHz)	
Rec.	Xmit.
30.050	30.250
40.050	40.250
50.950	50.750
51.050	51.250
70.050	70.250
87.950	87.750

The temperature cycle shall be adjusted so that approximately one-half of the performance measurements are made at high temperature and one-half at low temperature. MIL-STD-781 is applicable.

4.3.5 Failure. All testing anomalies shall be recorded in the reliability test log book. The anomaly shall then be investigated and classified as either a relevant or non-relevant failure by the procuring activity. The definition of relevant and non-relevant failure may be found in MIL-STD-781 (See Fig. 1.8.1).

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4.4 Maintainability. The test unit shall be constructed to provide ease of maintenance, accessibility, and replacement of all modules and parts. Ease of maintenance, trouble-shooting, and repair shall be a primary design consideration. Maintenance and repair shall be accomplished to the maximum extent practicable when the system is operational.

4.4.1 Maintainability Demonstration. A Phase II Maintainability Demonstration shall be conducted IAW Procedure 9 of MIL-STD-471 for the levels of maintenance indicated in the contract. Unless otherwise stated, it shall be performed by contractor personnel using contractor data collection procedures.

4.5 Electrical Tests.

4.5.1 Hours of operation. Compliance with the requirements of 3.4.1.3 shall be demonstrated using a fresh battery as specified in 3.4.5.

4.5.2 Sensitivity. Compliance with the requirements of 3.4.2.1 shall be demonstrated on 25 frequencies spread across the frequency range during first article testing. For production testing, sensitivity shall be measured at the frequencies specified in para 4.3.4. Wideband secure-speech sensitivity testing shall be conducted at one frequency, 40.05 MHz.

4.5.3 Audio squelch sensitivity. Compliance with the audio squelch sensitivity requirements of 3.4.2.2 shall be performed at the same frequencies as the sensitivity requirements (4.5.2).

4.5.4 Selectivity. Compliance with the requirements of 3.4.2.3, shall be demonstrated at 40.05 MHz.

4.5.5 Response to spurious. Compliance with the requirements of 3.4.2.4, 3.4.2.4.1, and 3.4.2.4.2 shall be demonstrated at 40.05 MHz and 70.05 MHz.

4.5.6 Audio power output. Compliance with the requirements of 3.4.2.5 shall be demonstrated at 40.05 MHz.

4.5.7 Audio frequency response. Compliance with the requirements of 3.4.2.6 shall be demonstrated at 40.05 MHz.

4.5.8 Hum and noise ratio. Compliance with the requirements of 3.4.2.7 shall be demonstrated at 40.05 MHz.

4.5.9 Limiting. Compliance with the requirements of 3.4.2.8 shall be demonstrated at 40.05 MHz.

4.5.10 Radio frequency power output. Compliance with the requirements of 3.4.3.1 shall be demonstrated on the same 25 frequencies used for sensitivity measurements during first article testing. For production testing, the same 6 frequencies used in para 4.3.4 shall be used for compliance demonstration.

4.5.11 Spurious and harmonic radiation. Compliance with the requirements of 3.4.3.2 shall be demonstrated on all first article radio sets, using radiated measurements.

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4.5.12 Frequency accuracy. Compliance with the requirements of 3.4.3.3 shall be demonstrated at 87.750 MHz.

4.5.13 Audio frequency harmonic distortion. Compliance with the requirements of 3.4.3.4 shall be demonstrated at 40.25 MHz.

4.5.14 Audio frequency response. Compliance with the requirements of 3.4.3.5 shall be demonstrated at 40.25 MHz.

4.5.15 Modulation limiting. Compliance with the requirements of 3.4.3.6 shall be demonstrated at 40.25 MHz.

4.5.16 Low-pass audio filter. Compliance with the requirements of 3.4.3.7 shall be demonstrated at 40.25 MHz.

4.5.17 Frequency modulation hum and noise level. Compliance with the requirements of 3.4.3.8 shall be demonstrated at 40.25 MHz.

4.5.18 Tone modulation. Compliance with the requirements of 3.4.3.9 shall be demonstrated at 40.25 MHz.

4.5.19 Battery life. For production testing, the requirements of 3.4.5 shall be determined by measurement of the supply current of the radio set at 14.5 Vdc. For First Article testing, Battery life shall be measured by operating the radio set with a BA-5588/U battery at the 8:1:1 duty cycle and measuring the time required for the battery to discharge to 11.0 Vdc under room temperature conditions.

4.5.20 Supply line voltage. The radio set shall be operated at the voltage extremes specified in 3.4.5 and the results compared with data taken at the midpoint voltage. Reference measurements shall be used for this test and the following limits shall apply:

Test Para.	Test	
4.5.2	Sensitivity	No more than 2 dB degradation.
4.5.6	Audio Power Output	No more than 3 dB degradation.
4.5.10	Radio Frequency Power Output	No more than 3 dB degradation.
4.5.12	Transmitter Frequency Accuracy	Shall meet the requirements of 3.4.3.3
4.5.13	Audio Frequency Harmonic Distortion	Shall meet the requirements of 3.4.3.4

4.5.21 Antenna. Compliance with the requirements of 3.4.4 shall be demonstrated.

4.5.22 Audio transducer, internal. Compliance with the requirements of 3.4.6.2 shall be demonstrated.

4.5.23 Audio Transducer External. Compliance with the requirements of 3.4.6.1 shall be demonstrated.

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4.5.24 Operational Test. Compliance with the requirements of 3.4.3.11 shall be demonstrated.

4.5.25 Frequency Range. Compliance with the requirements of 3.4.1.5.2 shall be determined by observing that frequencies over the range of 30.000 to 87.975 MHz can be programmed with the radio set.

4.5.26 Channel Spacing. Compliance with the requirements of 3.4.1.5.2 shall be determined by observing that the channel increments are 25 kHz during programming of frequencies.

4.5.27 Receive response time. Compliance with the requirements of 3.4.2.9 shall be demonstrated at 40.05 MHz.

4.5.28 EOM Delay Time. Compliance with the requirements of 3.4.10 shall be demonstrated at 40.05 MHz.

4.5.29 Frequency Display. Compliance with the requirements of 3.4.1.5.4 shall be demonstrated for Group "A" testing by observing that the display is readable and is lighted by depressing the "SET" button. For Group "B" testing the sample units shall be measured to determine compliance with the light level requirement of 3.4.1.5.4. During First Article testing the light spectrum of one unit shall be measured to determine compliance with 3.4.1.5.4.

4.6 Environmental Conditions. Where reference measurements are required for a particular environmental test, the following performance tests shall be performed at an operating frequency of 40.05 MHz:

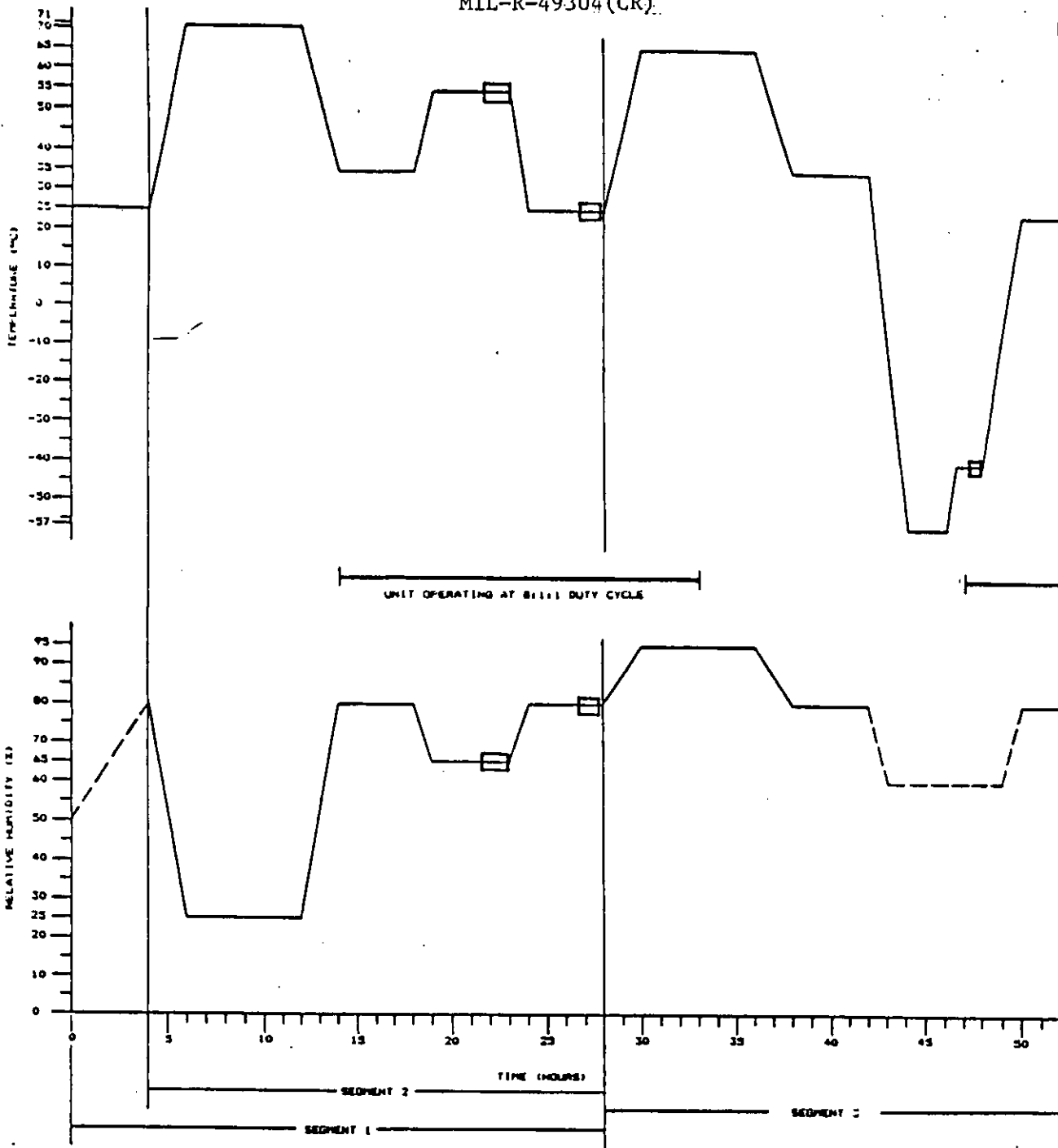
Test Para.	Test	
4.5.2	Sensitivity	No more than 3 dB degradation.
4.5.6	Audio Power Output	Shall meet the requirements of 3.4.2.5
4.5.10	Radio Frequency Power Output	No more than 1 dB degradation.
4.5.12	Transmitter Frequency Accuracy	Shall meet the requirements of 3.4.3.3
4.5.13	Audio Frequency Harmonic Distortion	Shall meet the requirements of 3.4.3.4

4.6.1 Combined Temperature and Humidity. Subject the radio to the combined temperature/humidity test of figure I for compliance with 3.5.1.1, 3.5.1.2, 3.5.2.1, 3.5.2.2 and 3.5.3. Evidence of physical damage such as corrosion, rust, blistering, swelling or deterioration of parts, shall be cause for failure.

4.6.2 Altitude. Subject the radio, not in its carrying case, to the requirements of MIL-STD-810, Method 500.2 Procedure I (10,000 feet operating) and II (15,000 feet non-operating). The radio shall meet the requirements of 3.5.4



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TEST CYCLING SEQUENCE

SEGMENT	NO. OF TIMES CYCLED THRU SEGMENT	ELECTRICAL TEST CONDITION	NO. OF ELECTRICAL TESTS
1	1	25°C, 80% RH	1
2	3	55°C, 65% RH	1
3	1	-40°C	1
2	4	25°C, 80% RH	1
3	1	-40°C	1
2	4	55°C, 65% RH	1
3	1	-40°C	1

FIGURE 1. Combined temperature and humidity test cycle

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### 4.6.3 Vibration.

a. Part I (Loose Cargo). Subject the radio to the requirements of MIL-STD-810, Method 514.3 Test Procedure II Category 3. The radio, non-operating in its transit carrying pouch with dummy battery and battery case installed, but without the antenna and handset, shall be installed on a plywood package tester bed and subjected to a total of 3 hours test time, 36 minutes on each of five faces (not including the top). Upon completion the radio shall meet the requirements of 3.5.6.

b. Part II (Basic Transportation, Ground Mobile and Marine). Subject the radio, non-operating with dummy battery and battery case installed, but without the antenna and handset, and not in its transit carrying pouch, to the requirements of MIL-STD-810, Method 514.3 Figure 514.3.-1 random vibration profile. The radio shall be tested for 3 hours in each axis for a total of 9 hours. The profile of figure 514.3-1 shall be extended from 5 to 500 Hz for a total GRMS of 1.08. The radio shall meet the requirements of 3.5.5 upon completion of the test.

4.6.4 Drop. Subject the radio, non-operating with dummy battery and battery case installed, in its transit carrying pouch, without the antenna and handset, to the requirements of MIL-STD-810, Method 516.3, Procedure IV and Table 516.3 II. The radio shall be dropped from a height of 4 feet onto a surface of 2 inch thick plywood backed by concrete, to impact once on each face, corner, and edge for a total of 26 drops. Upon completion the radio shall meet the requirements of 3.5.6.

4.6.5 Immersion. (See 3.5.7) This test shall be performed IAW Method 512.2, Section I & II of MIL-STD-810. After wiping the exterior surfaces, the test item shall be visually examined for evidence of water infiltration.

4.6.6 Fungus. (See 3.5.8) After disassembling the radio to the board level, subject the radio and its transit carrying pouch, but less the antenna and handset, to the requirements of MIL-STD-810, Method 508.3, Section II. After a minimum of 28 days exposure, the radio shall be visibly inspected and shall meet the requirements of 3.5.8.

4.6.7 Salt Fog. After pretesting the radio, subject the radio, not in its transit carrying pouch, to the requirements of MIL-STD-810, Method 509.2, for 48 hours continuous exposure to the salt fog solution. Upon removal the radio shall be dried for 48 hours and shall meet the requirements of 3.5.9.

4.6.8 Sand and Dust. Subject the radio to the requirements of MIL-STD-810, Method 510.2, Procedures I (Dust) and II (Sand). The radio non-operating with dummy battery and battery case installed, but not in its transit carrying pouch shall be subjected to the specific tests as follows:

(a) For Procedure I, the wind velocity shall be greater than 300 feet per minute and less than 1750 feet per minute. The dust concentration shall be 0.3 grams  $\pm$  0.2 grams per cubic foot. The time shall be 1 hour minimum per face for 6 hours total.

(b) For Procedure II the wind velocity shall be greater than 3540 feet per minute and less than 5700 feet per minute. The sand concentration shall be 0.033 grams  $\pm$  0.0075 grams per cubic foot. The time duration shall be 90 minutes

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minimum per face for a maximum of 9 hours. Upon completion the radio shall meet the requirement of 3.5.10.

4.7 Safety and Health. The contractor shall document design actions introduced to facilitate compliance with requirements of 3.5.11. Compliance with the safety and health requirements will be determined by inspections and by observations during first article test program by Government safety personnel and by observation during Government conducted first article test program.

4.7.1 Visual and Mechanical Inspection. An inspection shall be performed to verify compliance with those portions of 3.5.11 which can be determined visually.

4.7.2 SEL Form 1183. An inspection shall be performed, on one unit only, during First Article Testing, using SEL form 1183, to verify compliance with 3.5.11.

4.8 Electromagnetic Interferences (EMI). The radio shall be tested for compliance with the requirements in 3.6, using approved test methods of MIL-STD-462, as implemented by a contractor-prepared, Government-approved Test Plan.

4.8.1 Occupied Bandwidth. Compliance with the requirements of 3.6.1 shall be determined by measurement of the output spectrum of the radio set when transmitting a 3 kHz audio tone at the maximum deviation of the radio set. The sidebands of the spectrum shall be analyzed to determine compliance.

4.9 Interchangeability. Compliance with the requirements of 3.7 shall be verified. Electrical interchangeability shall be operationally verified in accordance with inspection paragraphs 4.5.2, 4.5.6, 4.5.10, 4.5.12, and 4.5.13 at an operating frequency of 40.05 MHz.

4.10 TEMPEST. The equipment shall be tested to demonstrate compliance with the requirements of NACSIM-5100A and NACSEM 5112 in accordance with a TEMPEST Test Plan prepared by the contractor. The contractor shall submit the test plans to the procuring activity for approval. Approval must be granted prior to commencement of testing.

4.11 Human Engineering. Compliance with the Human Engineering requirements will be determined by inspection and observations during first article test program and by observation during the Government conducted first article test program.

4.12 COMSEC. COMSEC compliance shall be verified by inspection to the mechanical requirements described by drawing A3056584. Electrical compliance shall be verified by use of an interface connector in accordance with drawing A3056585 during test to ensure that the connector is correctly wired. In addition for First Article Testing, tests shall be conducted with the secure module to verify VINSON compatibility and the requirements of the COMSEC Statement of Work.

4.13 Packaging Inspection. Packaging inspection requirements specified herein are classified as follows:

- (a) First Article Inspection of Packaging.
- (b) Quality Conformance Inspection of Packaging.

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4.13.1 First Article Inspection of Packaging. When specified in the contract, First Article inspection of packaging shall be in accordance with the Unit Pack Design Validation Requirements of MIL-P-116

4.13.2 Quality Conformance Inspection of Packaging.

4.13.2.1 Materials Inspection. All materials used in packaging shall be inspected in accordance with the applicable material specification.

4.13.2.2 Preservation Inspection. Inspection of preservation and interior markings shall be in accordance with group A and B quality conformance inspection requirements of MIL-P-116. Lot formation and sampling procedures shall be as specified therein.

4.13.2.3 Packaging inspection. Inspection of packing and the marking for shipment and storage, shall consist of the examinations specified in Table IV, "PACKING INSPECTION PROVISIONS". Lot formation shall consist of all packs made of the same materials during an identifiable period and submitted at one time for acceptance. Sampling procedures shall be in accordance with MIL-STD-105, using a single sampling plan and Acceptable Quality Level of 4.0 percent defective.

Table IV. PACKING INSPECTION PROVISIONS.

NO	CHARACTERISTIC	METHOD OF INSPECTION
101	Intermediate container not as specified	Visual
102	Improper closure of intermediate container	Visual
103	Shipping containers not in accordance with specification	Visual
104	Excessive cube	Visual
105	Improper blocking and bracing	Visual
106	Closure not in accordance with specification	Visual
107	Weight and size exceed container limitations	Weight Measure
108	Strapping not in accordance with specification, incorrectly applied, omitted	Visual
109	Marking omitted, incorrect, or illegible	Visual

## 5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with Special Packaging Instruction AG00000551.

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5.2 Marking. Marking shall be in accordance with MIL-STD-129.

## 6. NOTES

6.1 Intended use. This radio set is intended to be a lightweight, reliable, hand-held, transceiver whose purpose is to facilitate command and control and security at various facilities and levels. It is intended to provide reliable communications between two AN/PRC-126 Radio Sets at ranges up to 3.0 km, with standard antenna under average conditions.

6.2 Ordering data. Purchaser should exercise any desired options offered herein, and procurement documents should specify the following:

### 6.2.1 Acquisition.

- (a) Title, number and date of this specification.
- (b) Issue of DOISS to be cited in the solicitation
- (c) MIL-STD-461A, Notice 4 shall be used for EMI requirements in 3.6.
- (d) MIL-STD-462, Notice 3 shall be used for EMI tests in 4.2.3.4 and 4.8.
- (e) MIL-STD-810D shall be used for environmental requirements and tests in 3.4.7, 3.5.8, 4.2.3.4, 4.6.2, 4.6.3, 4.6.4, 4.6.5, ,4.6.7 and 4.6.8.
- (f) MIL-STD-781C shall be used for reliability tests in 4.2.3.5, 4.3.1, 4.3.2, 4.3.3, 4.3.4 and 4.3.5
- (g) MIL-STD-1452C shall be used for human engineering requirements of 3.5.12.
- (h) MIL-STD-785B shall be used for reliability prediction in 3.8.5
- (i) MIL-STD-470A shall be used for maintainability program plan in 3.8.2.1.
- (j) MIL-STD-471A shall be used for maintainability demonstration in 4.4.1.
- (k) When first article is required (see 3.2).
- (l) Level A or B Preservation and packing (see section 5).
- (m) When first article inspection rough handling tests are required.
- (n) When first article packaging inspection reports require Acquisition Activity approval prior to production unit packing.

6.2.2 Data requirements. The required data items are listed on Form 1423, Contract Data Requirements Lists (CDRL).

6.3 First articles. The first articles shall be examined and tested for approval at the contractor's plant or at an independent commercial testing laboratory acceptable to the procuring activity. First article tests shall be witnessed by a Government representative of the procuring activity.

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6.4 Level B Preservation. When level B preservation is specified, this level of protection will only be used under known favorable conditions during transportation, storage, and handling.

6.5 Environmental. Environmental pollution prevention measures are contained in the packaging material specifications referenced herein. Refer to material specifications or preparing activity for recommended disposability methods.

6.7 Subject term (key word) listing.

Receiver-transmitter  
30 to 88 MHz  
FM

Custodian:  
Army-CR

Preparing activity  
Army - CR  
(Project 5820-A850)

**INSTRUCTIONS:** In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

**NOTE:** This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

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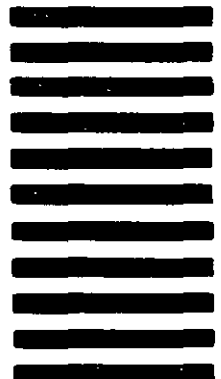
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**STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL***(See Instructions - Reverse Side)*1. DOCUMENT NUMBER  
MIL-R-49304(CR)2. DOCUMENT TITLE  
Radio Set: AN/PRC-126

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

VENDOR

USER

MANUFACTURER

OTHER (Specify): \_\_\_\_\_

b. ADDRESS (Street, City, State, ZIP Code)

## 5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

## 6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)