

INCH - POUND

MIL-PRF-49078A(CR)

9 October 1997

SUPERSEDING

MIL-H-49078 (EL)

23 February 1977

## PERFORMANCE SPECIFICATION

## HANDSET H-250( )/U

This specification is approved by the Communications 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 covers a type of communications handset, designated Handset H-250( )/U. (See 6.1)

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are referenced in Section 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned they must meet all specified requirements as cited in Section 3 and Section 4 of this specification, whether or not they are listed.

2.2 Government documents.

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

AMSC N/A

FSC 5965

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2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

## SPECIFICATIONS

## DEPARTMENT OF DEFENSE

MIL-C-55116/1 - Connector, Plug, Five Pin Audio, Crimp Sleeve Terminals, Wire Strain Relief ,U-229

2.3 Order of precedence. If the event of conflict between the text of this document and the references cited, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 Design, materials, and manufacturing processes. Unless otherwise specified, the design, materials, and manufacturing process selection is the prerogative of the contractor as long as all articles submitted to the government fully meet the operating, interface, ownership and support, and operating environment requirements specified.

3.2 Operating requirements. Each handset shall provide the following functional, operational, and performance capabilities.

3.2.1 Transmit/Receive. Transmit and receive intelligible, distortion-free (95%) voice signals without interference (for instance, buzzing, rattling, screeching, or other spurious sounds); incorporate a means to reduce the masking effect of ambient noise upon transmissions; transmit and receive speech clearly and uniformly over the entire range of operating frequencies indicated on Figure 1 for the response limit curves.

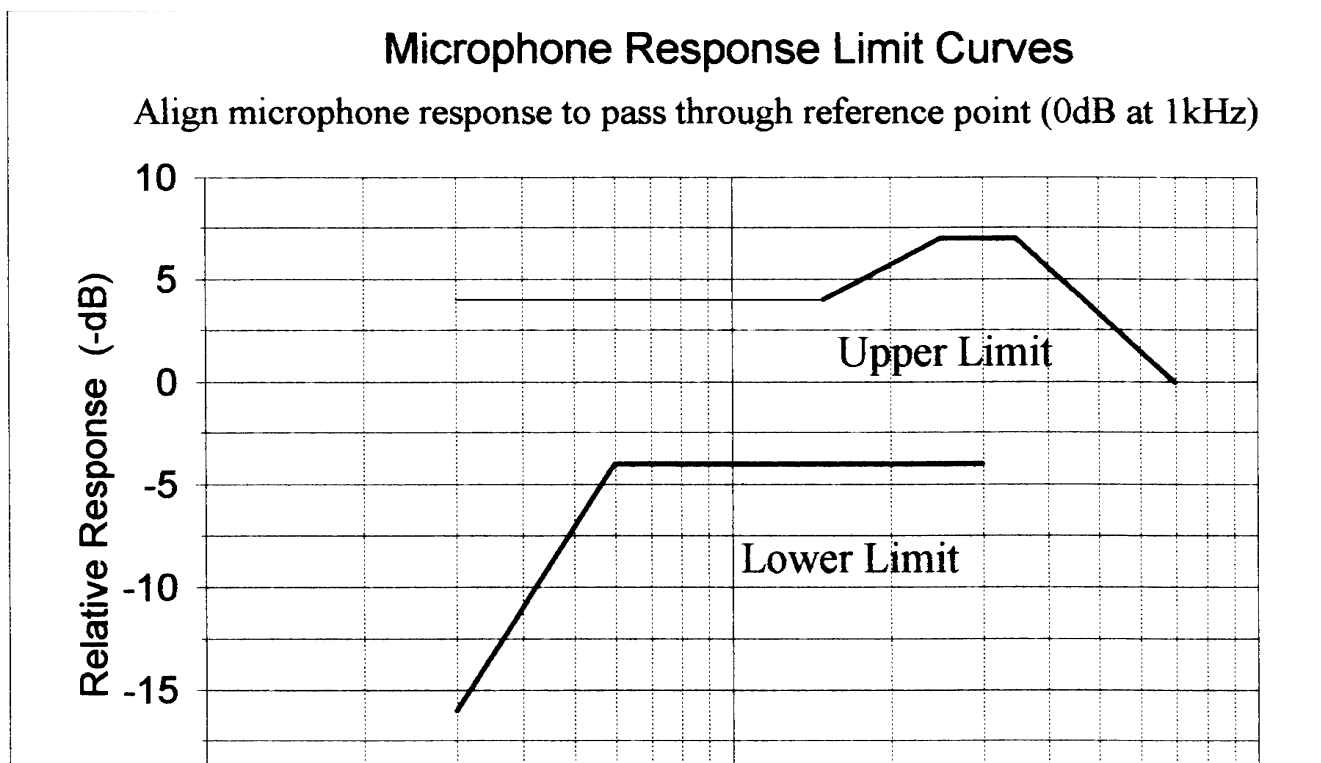


Figure 1. Microphone Response Limit Curves.

Connect a handset under test through a suitable audio amplifier, having essentially flat response in the audio frequency range and which provides side tone approximately 20 dB below the talk level, to another handset. Conduct a two-way conversation between handsets. Measure clarity of the communications against the following criteria:

- a. Minimum output of the microphone of -56 dBm with a 1000 Hz sound pressure input of 28 dynes per square centimeter.
- b. Total harmonic distortion of the microphone not to exceed 5% over the frequency range of 300 to 3500 Hz.
- c. Output impedance of the microphone as measured at the handset interconnection of 150 ohms  $\pm$  15% at 1000 Hz.
- d. Signal-to-noise ratio of the microphone not less than 17 dB.
- e. Acoustic output of the earphone not less than 104 or greater than 112 dB above the reference level of 0.0002 dyne per square centimeter when 1 milliwatt at frequencies in the range of 20 to 3500 Hz is applied to the earphone circuits. In the range of 3500 to 9000 Hz, the response not greater than 110 dB.
- f. Acoustic output of the earphone no more than 5% total harmonic distortion at any frequency between 100 and 3500 Hz.
- g. Earphone shows no more than a 3 dB change from its original response curve when operated at a 300 milliwatt level, 1000 Hz, for a period of 8 hours. Handsets subjected to this requirement shall not be delivered on the contract.

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h. Output impedance of the earphone at 1000 Hz of 1000 ohms  $\pm$  10 %.

3.2.2 Control switch (push to talk). Shall allow operator positive-controlled transmissions. This shall be verified by the microphone circuit closing before the control circuit closes and the control circuit opening before the microphone circuit opens.

3.2.3 Ease of operation. Shall allow easy holding and activation with one hand utilizing gloves. The physical force necessary to actuate the transmit mechanism with one hand shall be between two and four pounds.

3.2.4 Accessibility and retention. Provide means integral to the handset for personal retention compatible with operator clothing or other (for instance, pockets, belts, etc.) when the handset is not in use and ready operator accessibility under normal field operations. The retention device will ensure fastening to operator clothing by being able to withstand a minimum of 12 pounds of pressure perpendicular to the longitudinal axis without distortion or loss of retention.

3.2.5 Camouflage. The handset shall be black and not reflective. Reflectance shall not exceed ten percent at different points on the handset surface using a 60 degree glossmeter.

3.2.6 Identification. Prominently display the handset designator, H-250( )/U, on the outer surface of the handset in permanent, easily visible, straight simple letters and numbers.

3.2.7 Pin Out. The five pin audio connector, U-229A/U, shall be wired accordingly: D-A Microphone Circuit, C-A Control Circuit, B-A Audio Input Circuit (Earphone), E Open. Refer to schematic diagram, Figure 2, provided for internal connection guidance.

3.3 Interface requirements. Each handset shall accommodate the following inputs and interfaces.

3.3.1 Handset/transceiver interconnection. The handset shall be terminated with a U-229A/U connector and mate with either the U-183/U or U-228/U. (Refer to MIL-C-55116/1 for dimensions only.)

3.3.2 Operations range. Means for connecting the handset to the transceiver shall be retractile for safety, measuring no longer than fifteen inches retracted and between six and eight feet in length fully extended. Use Whitney Blake part number 9-5133-32-92 or equal.

3.3.3 Weight. Weigh no more than two pounds, including any physical means of connection to the transceiver.

3.3.4 Outline dimensions. Refer to Figure 3. The mechanism for attaching the handset to clothing or other shall be 2.0+ .125 inches in length, 0.503 inch maximum in width and 0.031 inch maximum spacing from the body of the handset.

3.3.5 Earphone thickness. Earphone thickness shall be a maximum of 0.9 inch. at its thickest part (see figure 3).

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3.4 Ownership and support requirements. Each handset shall possess the following life cycle ownership characteristics.

3.4.1 Reliability. Perform at least 2,000,000 transmit/receive operations without failure.

3.4.2 Safety. The handset mechanical components shall be free of hazardous burrs, nicks, sharp edges, foreign materials, or other imperfections posing physical danger to operators. Handset electrical components shall be free from exposed, frayed, unsecured, or otherwise improperly protected circuits posing electrical danger to operators.

3.5 Operating environment requirements. Each handset shall operate under the following environmental conditions without damage or loss of performance: (All temperatures have a tolerance of plus and minus 5°F).

3.5.1 Low temperature. The handset shall show no more than 3 dB change in response from its original measurement when operating at the temperature of -40°F after being stored at temperature of -67°F for 4 hours. Handsets subjected to this requirement shall not be delivered on the contract.

3.5.2 High temperature. The handset shall show no more than 3 dB change in response from its original measurement when operating at the temperature of 149°F after being stored at temperature of 158°F for 2 hours. Handsets subjected to this requirement shall not be delivered on the contract.

3.5.3 Humidity. Subject handset to natural cyclic high humidity conditions under randomly varied temperatures between 79°F and 95°F with the relative humidity randomly varied between 79 and 100 % over a 24 hour period. Stabilize the test article at ambient conditions for another 24 hours. Subsequent to humidity response, the handset shall perform as described in paragraph 3.2.1 a & e. Handsets subjected to this requirement shall not be delivered on the contract.

3.5.4 Altitude. The handset shall be capable of being stored at 50,000 feet for 1 hour and then subjected to an altitude of 10,000 for two hours. Following storage, the handset shall perform as described in paragraph 3.2.1 a & e.

3.5.5 Leakage. The handset shall be capable of being immersed into three feet of water for at least two hours. The handset should be removed, dried and meet requirements in accordance with 3.2.1 a & e within 24 hours. Handsets subjected to this requirement shall not be delivered on the contract.

3.5.6 Blast. The handset shall meet the requirements of 3.2.1 a & e with no more than a 3 dB change in response from its original measurement when subjected to 30 blast impulses at a peak pressure of 9.5 pounds per square inch. Handsets subjected to this requirement shall not be delivered on the contract.

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3.5.7 Vibration. The handset shall meet the requirements of 3.2.1 a & e with no more than 3 dB change in response from its original measurement when subjected to a simple harmonic motion having an amplitude of 0.03 inches (0.06 inches maximum excursion). While varying frequency between the limits of 10 to 55 Hertz (Hz). Handsets subjected to this requirement shall not be delivered on the contract.

3.5.8 Shock.. The handset, stabilized at -40°F, shall meet the requirements of 3.2.1 a & e with no more than 3 dB change in response from its original measurement after being dropped from a height of six feet onto a concrete surface. Handsets subjected to this requirement shall not be delivered on the contract.

3.5.9 Bounce. Place a handset onto a suitable plywood-covered package tester test bed (recommend marine plywood because of its durability; secure the plywood to prevent “oilcanning” of the wood surface). Subject the test article to a circular synchronous mode at 300 rpm for a duration of no less than 45 minutes. Subsequent to the test, the handset shall meet the requirements of 3.2.1 a & e. Handsets subjected to this requirement shall not be delivered on the contract.

3.5.10 Salt fog. The handset shall meet the requirements of 3.2.1 a & e with no more than 3 dB change in response from its original measurement after subjected to a continuously atomized, finely divided, wet, dense salt spray mixture of 5% sodium chloride and 95% water. Uniformly distribute the salt fog over the test article at a fallout rate between 0.3 and 3ml/80cm<sup>2</sup>/hr for at least 48 hours at a constant 95°F with minimal air circulation, and then dry at ambient conditions for at least 48 hours. Handsets subjected to this requirement shall not be delivered on the contract.

3.5.11 Dust. This handset shall meet the requirements of 3.2.1 a & e with no more than 3 dB change in response from its original measurement when subjected to a temperature of at least 73°F with a relative humidity (maintained throughout the test) of no more than 30%, subject the handset to a blowing dust concentration (97 to 99% by weight) of silicon dioxide with particle size ranging from 100 to 325 microns at air velocities ranging from 300 to 1750 ft/min for at least 6 hours. Stop the test, adjust the temperature to no less than 158°F, and continue test article exposure for another 6 hours. Stop the test and allow the test article to return to ambient conditions. Remove accumulated dust from the test article by brushing, wiping or shaking. Do not remove dust by either air blast or vacuuming. This is a one time test of initial production units unless materials are change during course of production. Handsets subjected to this requirement shall not be delivered on the contract.

3.5.12 Fungus. The contractor shall certify that the material used in manufacture as fungus inert or resistant. If not, the handset shall meet the requirements of 3.2.1 a & e with no more than 3 dB change in response from its original measurement when subjected to a 28 hours fungus exposure. This is a one time test of initial production units unless materials are change during course of production.

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## 4. VERIFICATION

4.1 Verification methods. Verification of all paragraph 3 requirements shall be in accordance with a contractor submitted, government approved Inspection Plan to be submitted along with proposal.

4.1.1 Verification alternatives. The contractor may propose alternative test methods, techniques, or equipment, including the application of statistical process control, tool control, or cost-effective sampling procedures, to verify performance as long as they are equivalent to the verification procedures in this specification.

## 5. PACKAGING

5.1 For acquisition purposes, the contract or order shall specify packaging requirements (see 6.2). When DOD personnel perform material packaging, those personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. The Inventory Control Point packaging activity within the Military Department of Defense Agency, or within the Military Department's System Command, maintains packaging requirements. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES

(This section contains general or explanatory information that may be helpful, but is not mandatory)

6.1 Intended use. Handset H-250( )/U is used with military man-pack radio equipment such as the AN/PRC-70 and AN/PRC-77. Handset H-250( )/U can substitute for Handset H-189/GR. The H-250( )/U handset assembly is a disposable item.

6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number and date of this specification and any amendment.
- b. Issue of the DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2).
- c. The government approved inspection plan per paragraph 4.1
- d. What conformance verification is necessary (see 6.3).
- e. Packaging requirements (see 5.1).
- f. The parentheses in the nomenclature will be deleted or replaced by a letter identifying the particular design; for example: H-250W/U. The contractor should apply for nomenclature according to the applicable contract clause.

6.3 Conformance inspection. Affordable conformance inspection with confidence varies depending upon a number of procurement risk factors. Some of these factors include: Contractor past performance, government schedules and budget, product material and design maturity, manufacturing capital equipment and processes applied, the controlled uniformity of those

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processes, labor skill and training, and the uniformity of measuring processes and techniques. During the solicitation, contracting documents should indicate those tests desired from the inspection plan and their designated frequency based on a risk assessment for the procurement.

6.4 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided the material meets or exceeds all specified requirements and promotes economically advantageous life cycle costs.

6.5 Subject term (key word) listing.

Audio communications

Portable radio

Transmitter/Receiver unit

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodian:  
Army - CR

Preparing Activity:  
Army - CR

Project No. 5965-0263



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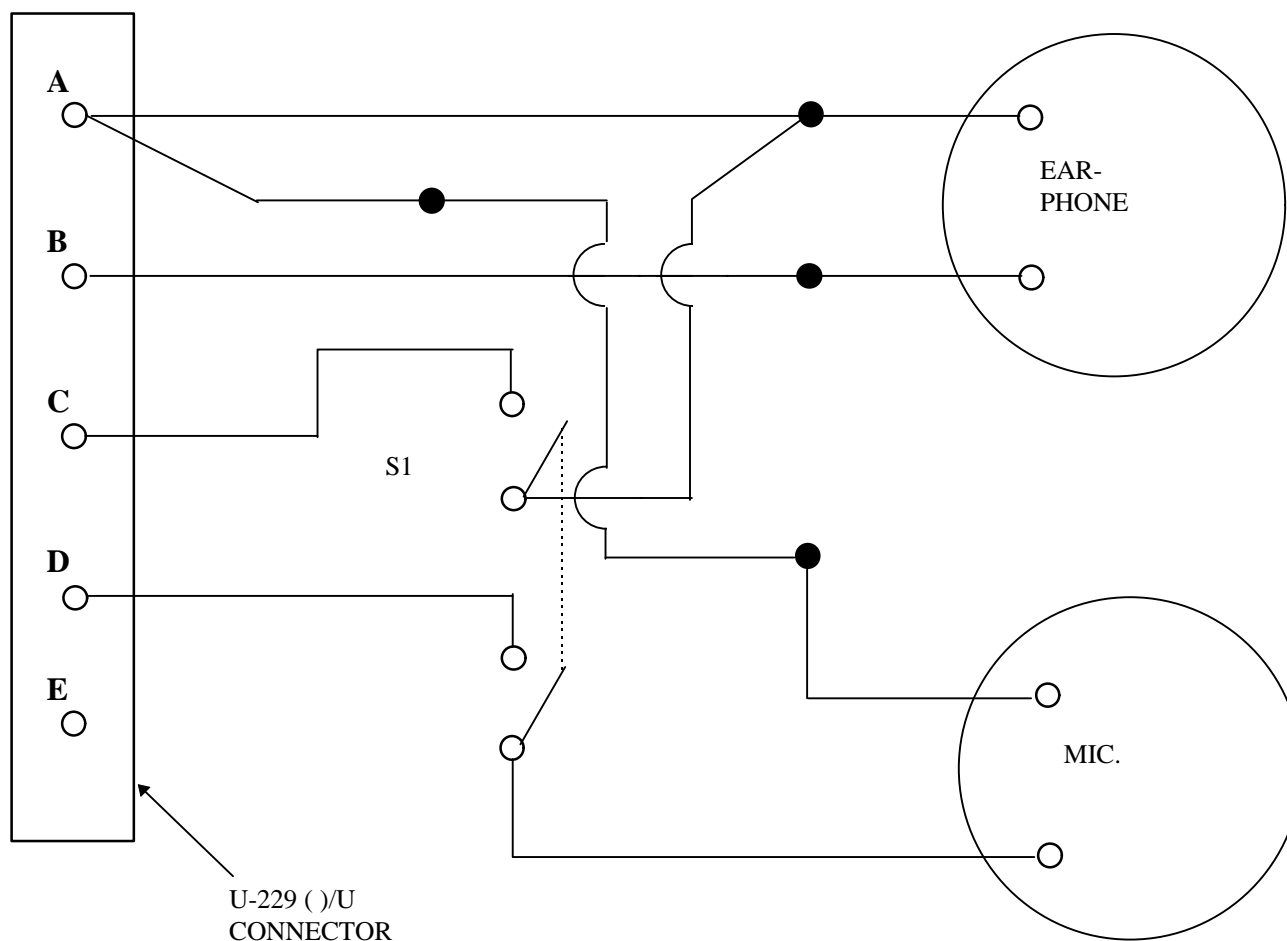
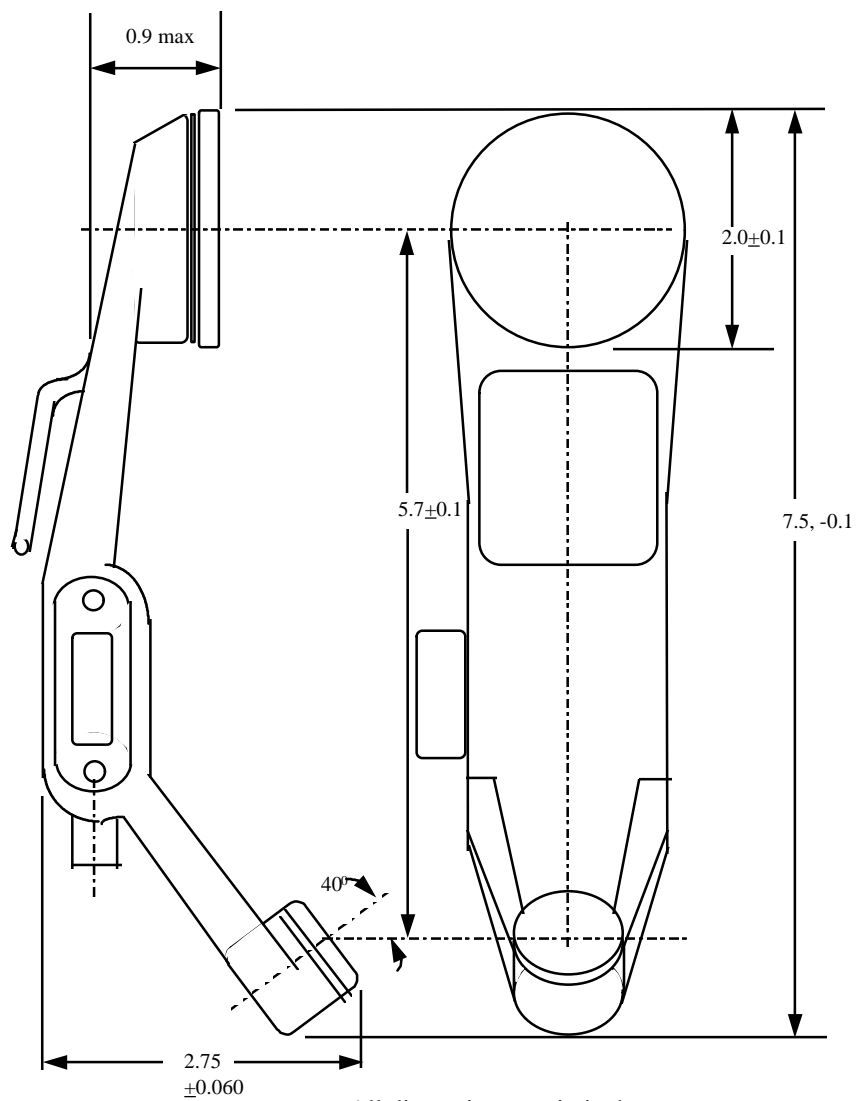


Figure 2: **H-250 Schematic**

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All dimensions are in inches.

Figure 3. Outline Dimensions.

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

### INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of 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.

### I RECOMMEND A CHANGE:

**1. DOCUMENT NUMBER**  
ML-PRF-49078A

**2. DOCUMENT DATE (YYMMDD)**  
971009

**3. DOCUMENT TITLE**  
Handset H-250( )/U

**4. NATURE OF CHANGE** (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

### 5. REASON FOR RECOMMENDATION

### 6. SUBMITTER

a. NAME (Last, First, Middle initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)

7. DATE SUBMITTED (YYMMDD)

(1) Commercial

(2) AUTOVON  
(If applicable)

### 8. PREPARING ACTIVITY

a. NAME  
US Army Communications-Electronics Command

b. TELEPHONE (Include Area Code)

(1) Commercial  
(732) 532-9139

(2) AUTOVON  
992-9139

c. ADDRESS (Include Zip Code)  
ATTN: AMSEL-LC-LEO-E-EP  
Fort Monmouth, NJ 07703-5023

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