

MIL-H-49078(EL)

23 February 1977  
 SUPERSEDING  
 (See Section 6)

## MILITARY SPECIFICATION

## HANDSET H-250( )/U

This specification is approved for use by the 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. This specification covers one type of dynamic handset with a noise cancelling microphone; designated as Handset H-250( )/U. (See 6.1)

## 2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

## SPECIFICATIONS

## FEDERAL

T-T-871	Twine, Fibrous Cotton
NN-P-71	Pallet, Materials-handling, Wood
QQ-S-781	Strapping, Steel, Flat and Seals

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 Electronics Command, ATTN: DRSEL-RD-TS-S, Fort Monmouth, N.J. 07703 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or letter.

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## SPECIFICATIONS

## FEDERAL

PPP-B-566	Box, Folding, Paperboard
PPP-B-585	Box, Wood, Wirebound
PPP-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner
PPP-B-636	Boxes, Fiber
PPP-B-640	Box, Fiberboard, Corrugated, Triple Wall
PPP-B-676	Box, Setup
PPP-C-795	Cushioning material, Plastic Film
PPP-C-843	Cushioning material, Cellulosic
PPP-C-1797	Cushioning material, Polypropylene Foam
PPP-F-320	Fiberboard, Corrugated and Solid Sheet Stock
PPP-S-760	Strapping, Nonmetallic (and Connectors)
PPP-T-97	Tape, Pressure-Sensitive Adhesive

## MILITARY

MIL-P-116	Preservation-packaging, Methods of
MIL-P-11268	Parts, Materials, and Processes Used in Electronic Equipment
MIL-M-13231	Marking of Electronic Items
MIL-F-14072	Finishes for Ground Electronic Equipment

## STANDARDS

## MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-147	Palletized and Containerized Unit Loads
MIL-STD-202	Test Methods for Electronic and Electrical Component Parts
MIL-STD-252	Wired Equipment, Classification of Visual and Mechanical Defect
MIL-STD-454	Standard General Requirements for Electronic Equipment
MIL-STD-810	Environmental Test Methods

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## DRAWINGS

## ELECTRONICS COMMAND

SC-GL-58877	Gages for Connector U-182( )/U
DL-SM-B-627649	Handset H-250( )/U
SC-D-621083	Microphone and Earphone Test Chamber

## NAVY

SK-N-864	Simulated Gun Blast Producing Equipments
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(Copies of documents required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer).

2.2 Other publications. - The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

## AMERICAN NATIONAL STANDARDS INSTITUTE

S3.7 - Coupler Calibration of Earphones  
 S1.10 - Calibration of Microphones  
 S1.12 - Specifications for Laboratory Standard Microphones

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.)

## INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

258 - Test Procedure for Close-Talking Pressure-Type Microphones

(Application for copies should be addressed to the IEEE Order Dept., 445 Hoes Lane, Piscataway, N.J. 08854)

## 3. REQUIREMENTS

3.1 First Article. - When specified in the contract or purchase order the contractor shall furnish sample units for first article inspection and approval (See 4.3).

3.2 Construction. - The equipment shall be constructed in accordance with the requirements of this Specification and Drawing and Data List DL-SM-B-627649 (including the requirements for parts, materials and processes thereon) (See 4.4).

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3.3 Parts, materials and processes; general. - In addition to the requirements of this specification, the requirements of MIL-P-11268, including the selection requirements therein, shall apply (See 4.4).

3.4 Finish. - The equipment shall be finished in accordance with MIL-F-14072 and the equipment drawings (See 4.4)

3.5 Marking. - Marking shall conform to Specification MIL-M-13231 (See 4.4).

3.6 Performance characteristics.

3.6.1 Pull and Jerk. - The equipment shall withstand 18 pounds of tension and a four pound jerk between the connector and the handset without damage. The cord shall not pull out from the handset by more than 1/32 inch. (See 4.7.2.1).

3.6.2 Insulation resistance. - The insulation resistance between connector pins A and D, A and C, and between pin A and all external metal parts shall be not less than 10 megohms. (See 4.7.2.2)

3.6.3 Operation. - The equipment shall transmit and receive intelligible voice signals without buzzing, rattling or other spurious sounds. Transmission shall be possible only with the push-to-talk switch depressed. (See 4.7.2.3)

3.6.4 Microphone. (See 4.7.2.4)

3.6.4.1 Response. - The minimum power output of the microphone shall be -56 dBm (0.63 millivolts across 150 ohms) with a 1000 Hz sound pressure input of 28 dynes per square centimeter. The frequency response in the range of 300 to 7000 Hz shall fall within the envelope of Figure 1.

3.6.4.2 Distortion. - Total harmonic distortion shall not exceed 5 percent over the frequency range of 300 to 3500 Hz.

3.6.4.3 Impedance. - The output impedance of the microphone shall be 150 ohms  $\pm$  10 percent at 1000 Hz.

3.6.4.4 Signal to noise ratio. - The ratio of signal to noise shall be not less than 17 dB.

3.6.5 Earphone. (See 4.7.2.5)

3.6.5.1 Response. - The acoustic output of the earphone shall be not less than 104 or greater than 110 dB above a 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 terminals. In the range of 3500 to 9000 Hz, the response shall not exceed 110 dB.

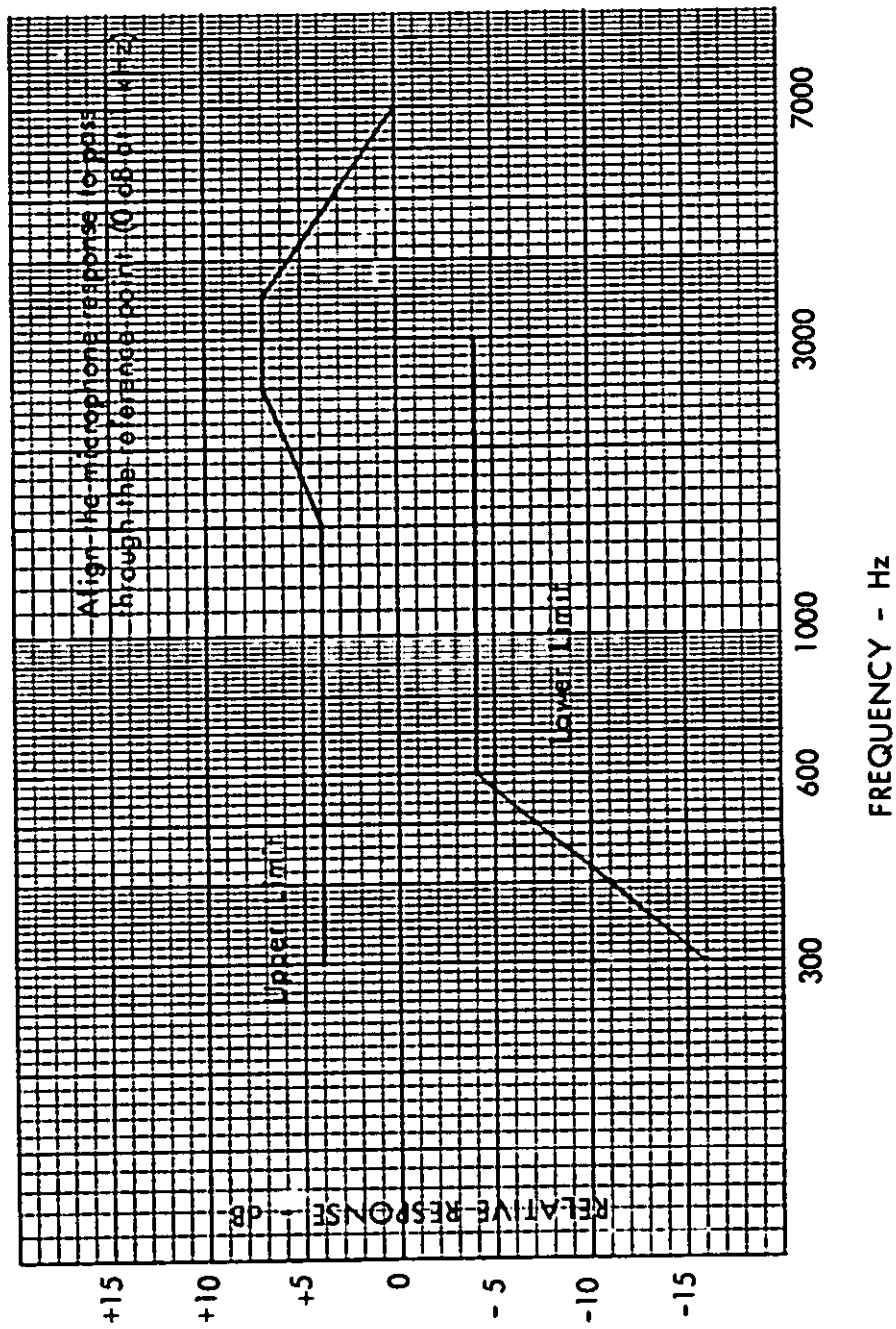


Figure 1 Microphone Response Limit Curves

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3.6.5.2 Distortion. - The acoustic output of the earphone shall have no more than 5 percent total harmonic distortion at any frequency in the range of 20 to 3500 Hz.

3.6.5.3 Overload. - The earphone shall show no more than 3 dB change from its original response curve, after being subjected to the test specified in 4.7.2.3.3.

3.6.5.4 Impedance. - The input impedance of the earphone at 1000 Hz shall be 1000 ohms plus or minus 10 percent.

3.6.6 Push to talk switch (see 4.7.2.6).

3.6.6.1 Make-break sequence. - The microphone contacts shall make before the control contacts make. The control contacts shall break before the microphone contacts break.

3.6.6.2 Actuating force. - As installed in the equipment, the force necessary to operate the switch shall be between two and four pounds. The force necessary to hold the switch in the actuated position shall be one half the operating force plus or minus twenty percent.

3.6.6.3 Endurance. - The switch shall be capable of 2,000,000 make-break operations when tested in accordance with 4.7.2.6.3.

3.7 Environmental. - The equipment shall meet the following environmental conditions.

3.7.1 Temperature.

3.7.1.1 Low. - During and after testing as specified in 4.8.1.1, the equipment shall meet the requirements of 3.6.4.1 and 3.6.5.1 with no more than a 3 dB change in response.

3.7.1.2 High. - During and after testing as specified in 4.8.1.2, the equipment shall meet the requirements of 3.6.4.1 and 3.6.5.1 with no more than a 3 dB change in response.

3.7.2 Humidity. - The equipment shall exhibit no physical damage such as corrosion, rust, blistering, swelling or deterioration of parts and materials, and shall meet the requirements of 3.6.4.1 and 3.6.5.1 during the operating times specified in 4.8.2.

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3.7.3 Altitude (Elevation). - The equipment shall meet the requirements of 3.6.4.1 and 3.6.5.1 with no more than a 5 dB change in frequency response at altitudes up to 10,000 feet above sea level after storage at 50,000 feet above sea level.

3.7.4 Leakage (Immersion). - The equipment shall meet the requirements of 3.6.2, 3.6.4.1 and 3.6.5.1 following the test of 4.8.4. There shall be no evidence of water leakage into the switch and terminal board compartments.

3.7.5 Blast. - The equipment shall meet the requirements of 3.6.4.1 and 3.6.5.1 with no more than a 3 dB change in frequency response following thirty rounds of blast at a peak pressure of 9.5 pounds per square inch (psi).

3.7.6 Vibration. - The equipment shall meet the requirements of 3.6.2, 3.6.4.1 and 3.6.5.1 following the tests of 4.8.6.

3.7.7 Shock, drop. - The equipment shall meet the requirements of 3.6.4.1 and 3.6.5.1 with no more than a 3dB change in frequency response and there shall be no evidence of physical damage following the tests of 4.8.7.

3.7.8 Bounce, loose cargo. - The equipment shall meet the requirements of 3.6.4.1 and 3.6.5.1 following the test of 4.8.8.

3.7.9 Salt fog. - After the salt fog test of 4.8.9, the equipment, when examined visually with the aid of a 10-power magnifier, shall show no evidence of degradation, such as flaking, pitting, blistering or loosening of finish or metal surface, or exfoliation (see 6.6) of metal. Electrical operation is not required.

3.7.10 Dust. - The equipment shall meet the requirements of 3.6 following the tests of 4.8.10.

3.7.11 Fungus. - The equipment shall show no evidence of viable fungus or corrosion when subjected to the test specified in 4.8.11. Corrosion is any visible degradation that can be attributed to flaky, pitted, blistered, or otherwise loosened finish of metal surface.

3.7.12 Reflectance. - The sixty degree specular gloss of any external surface shall not exceed ten percent (See 6.4.7).

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3.8 Interchangeability. - Like units, assemblies, subassemblies and replaceable parts shall conform to Requirement 7 of MIL-STD-454 (See 4.9).

3.9 Workmanship. - The equipment shall be manufactured and assembled in accordance with Requirement 9 of MIL-STD-454 (See 4.6).

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection. - Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor 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 specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

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

a. First Article inspection (See 4.3). Does not include preparation for delivery.

b. Inspections covered by subsidiary documents (See 4.4).

c. Quality conformance inspections.

(1) Quality conformance inspection of equipment before preparation for delivery (See 4.5).

(2) Quality conformance inspection of preparation for delivery (See 4.10).

4.3 First Article. - Unless otherwise specified in the contract or purchase order, the First Article inspection shall be performed by the contractor.

4.3.1 First Article units. - The contractor shall furnish thirteen First Article units of Handset H-250( )/U.



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4.3.2 First Article inspection. - The First Article inspection shall consist of the inspections specified in subsidiary documents covering the items listed in 4.4, and the inspections specified for Group A, Group B and Group C (See Tables I,II,III respectively). The inspection shall be performed in the following order: 4.4, Group A and Group B for all units; and Group C as specified in Table III. After completion of Group C environmental tests, conforming units shall be reinspected and shall pass all Group A inspection.

4.3.3 First Article data. - The First Article test plan and test report shall be furnished as required in the contract or purchase order.

4.3.4 Failures. - One or more failures shall be cause for refusal to grant first article approval.

4.4 Inspections covered by subsidiary documents: The following shall be inspected under the applicable subsidiary document as part of the inspection required by this specification, and the inspection requirement specified in the contract or purchase order.

<u>Item</u>	<u>Where required</u>
Construction	3.2
Parts, materials and processes-general	3.3
Finish	3.4
Marking	3.5

4.5 Quality conformance inspection of equipment before preparation for delivery. - The contractor shall perform the inspection specified in 4.4, 4.5.1 through 4.5.4. This does not relieve the contractor of his responsibility for performing any additional inspection which is necessary to control the quality of the product and to assure compliance with all specification requirements.

4.5.1 Group A inspection. - Each unit on contract or purchase order shall be inspected for conformance to the inspections specified in Table I. Discrete lots shall be formed from units that pass this inspection. Factors of lot composition not defined herein or in the contract or purchase order, shall be in accordance with MIL-STD-105. Each lot shall be subject to sampling inspection, utilizing the procedures of MIL-STD-105, using the general inspection levels and AQLs indicated in Table I.

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4.5.1.1 Order of inspection within Group A. - Group A inspection shall be performed in an order satisfactory to the Government except that the operational inspection shall be last.

Table I. Group A inspection

Inspection	Req Para	Insp Para	AQL	
			Major	Minor
Visual & Mechanical	3.9	4.6	1%	4%
Electrical				
Ins Resistance	3.6.2	4.7.2.2	1%	*
Operation	3.6.3	4.7.2.3	1%	*
Microphone				
Response	3.6.4.1	4.7.2.4.1	1%	*
Impedance	3.6.4.3	4.7.2.4.3	1%	*
Earphone				
Response	3.6.5.1	4.7.2.5.1	1%	*
Impedance	3.6.5.4	4.7.2.5.4	1%	*

\* All electrical and operational defects are considered major.

4.5.2 Group B Inspection. - Group B inspection shall normally be performed on inspection lots that have passed Group A inspection and on samples selected from units that have been subjected to and met the Group A inspection. This inspection shall conform to Table II and to the special inspection levels of Table I of MIL-STD-105.

4.5.2.1 Group B Sampling Plans. - The Group B sampling plans for the AQLs listed in Table II shall be Inspection Level S-4.

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4.5.2.2 Order of Inspection Within Group B. - Group B inspection shall be performed in an order satisfactory to the government.

Table II Group B inspection

Inspection	Req Para	Insp Para	AQL
Pull and Jerk	3.6.1	4.7.2.1	4.0%
Make-break sequence	3.6.6.1	4.7.2.6.1	4.0%
Actuating force	3.6.6.2	4.7.2.6.2	2.5%
Interchangeability	3.8	4.9	6.5%
Microphone Distortion	3.6.4.2	4.7.2.4.2	4.0%
Earphone Distortion	3.6.5.2	4.7.2.5.2	4.0%(for the group)
Overload	3.6.5.3	4.7.2.5.3	

4.5.3 Group C Inspection. - Group C inspection shall be performed on units that have passed Group A and Group B inspection. The inspection shall consist of the inspections specified in Table III. Samples shall be selected in accordance with 4.5.3.1.

4.5.3.1 Sampling for Group C inspection. - For Subgroup I, two samples each of the Handset shall be selected at random from each 500 units or fraction thereof produced. Each sample shall be tested to all tests of the Subgroup. For Subgroup II, six samples shall be selected at random from each 1000 units or fraction thereof produced. One sample shall be tested against each test. For Subgroup III, five samples shall be selected at random from each 2000 units or fraction thereof produced. One sample shall be tested against each test. The first samples of each test subgroup shall be selected from the first production lot.

4.5.3.2 Group C Failures. - Actions required relative to Group C failures shall be as specified in the contract or purchase order.

4.5.4 Reinspection of Conforming Group C Sample Units. - Unless otherwise specified, sample units which have been subjected to and passed Group C inspection may be accepted on contract provided all damage is repaired and the sample units are resubjected to and pass Group A and Group B inspection.

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Table III Group C inspection

Inspection	Req Para	Insp Para
Subgroup I		
Signal to Noise	3.6.4.4	4.7.2.4.4
Leakage(Immersion)	3.7.4	4.8.4
Reflectance	3.7.12	4.8.12
Subgroup II		
Temperature	3.7.1	4.8.1
Humidity	3.7.2	4.8.2
Altitude	3.7.3	4.8.3
Vibration	3.7.6	4.8.6
Shock, drop	3.7.7	4.8.7
Pounce	3.7.8	4.8.8
Subgroup III		
Endurance	3.6.6.3	4.7.2.6.3
Elast	3.7.5	4.8.5
Salt fog	3.7.9	4.8.9
Dust	3.7.10	4.8.10
Fungus	3.7.11	4.8.11

4.6 Visual and mechanical. - The equipment shall be examined for compliance with 3.9. Classification of defects shall be in accordance with MIL-STD-252.

4.7 Performance requirements.

4.7.1 Test equipment. -

- a. Vacuum tube voltmeter VTVM. - Ballantine model 300 VTVM or equal.
- b. Sound source. - Artificial Voice in accordance with IEEE Standard 258.
- c. Audio oscillator. - General Radio Company type 1304-B or equal.
- d. Standard microphone. - Shall be a Laboratory-Type microphone in accordance with ANSI S1.12, calibrated by the reciprocity method in accordance with ANSI S1.10.

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e. Sound pressure calibration. - Mount the standard microphone concentrically and flush in a baffle having the same shape as the cap of the H-250 microphone housing. Mount the baffle and standard microphone coaxially and  $\frac{1}{4}$  inch away from the sound source. Adjust and record the audio oscillator input to the sound source to obtain 28 dynes per square centimeter (as measured at the standard microphone output) at the frequencies of 300, 400, 500, 600, 800, 1000, 1200, 1500, 2000, 2500, 3000, 3500, 4000, 5000, 6000 and 7000 Hz as a minimum.

f. Distortion. - Hewlett Packard Distortion Analyzer model 330C or equal.

#### 4.7.2 Methods of inspection. -

##### 4.7.2.1 Pull and Jerk. -

a. Attach the handset to a fixed object and suspend an eighteen pound weight from the connector. After 15 minutes, remove the weight and visually examine the assembly for damage. Subject the equipment to the operation test and determine compliance with 3.6.1 and 3.6.3.

b. With the handset attached to a fixed object, attach a four pound weight to the straight portion of the cord below the handset in such a manner as to allow the weight a twelve inch free fall. Release the weight twelve times. Repeat at the connector end. Subject the equipment to the operation test and determine compliance with 3.6.1 and 3.6.3.

4.7.2.2 Insulation resistance. - The assembly shall be tested in accordance with Method 302, test condition B, of MIL-STD-202 to meet the requirements of 3.6.2. There shall be no evidence of arcing or insulation breakdown during the test.

4.7.2.3 Operation. - Connect the 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 the handsets and determine compliance with 3.6.3.

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4.7.2.4 Microphone.

4.7.2.4.1 Response. - The microphone under test, in its housing, shall be mounted coaxially and  $\frac{1}{4}$  inch from the calibrated sound source. Terminate the microphone under test with a 150 ohm non-inductive resistor. Apply a constant sound pressure level of 28 dynes per square centimeter at the frequencies cited in 4.7.1.e and measure the output voltage with a VTVM to determine compliance with 3.6.4.1.

4.7.2.4.2 Distortion. - Repeat the tests of 4.7.2.4.1 except that the constant sound pressure level shall be 125 dB above a reference level of .0002 dynes per square centimeter. Measure total harmonic distortion for compliance with 3.6.4.2.

4.7.2.4.3 Impedance. - Repeat the test of 4.7.2.4.1 except that the sound pressure level at 1000 Hz shall be adjusted to that level which produces .001 volts at the open circuit output terminals of the microphone under test. Holding the sound pressure level constant, connect a decade resistance box to the microphone terminals and adjust its value until the output voltage is .0005 volts. The decade resistance setting shall comply with 3.6.4.3.

4.7.2.4.4 Signal to noise ratio. -

a. Tests shall be performed in a suitable acoustical environment similar to that shown in Drawing SC-D-621083.

b. The Noise source shall consist of nine separately generated audio frequencies as shown in Table IV with their relative sound pressure levels. The Noise source shall be located as far away from the microphone as is practicable and on a line coincident with the central plane of the microphone. By means of a calibrated standard microphone, adjust the Noise output for a sound pressure of 115 dB above 0.0002 dynes per square centimeter as measured at the standard microphone.

c. The Signal source shall consist of seven separately generated audio frequencies as shown in Table V with their relative sound pressure levels. The Signal source shall be adjusted to supply a sound pressure level of 115 dB above 0.0002 dynes per square centimeter to a standard microphone positioned coaxially one quarter inch away from the sound source.

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d. With the microphone under test positioned in place of the standard microphone (one quarter inch from the Signal source) activate the Signal source and measure the output voltage across a 150 ohm non-inductive resistor with a VTVM. Shut off the Signal source, activate the Noise source and measure the microphone output voltage. The difference in the microphone output with Signal input and the microphone output with Noise input, in dB, shall meet the requirement of 3.6.4.4.

Table IV Noise Spectrum

Frequency in Hz	Sound Pressure in dB Relative to Sound Pressure at 130 Hz
40	0
70	0
130	0
300	-5
600	-9
1000	-13
2000	-17
3000	-19
4000	-21

Table V Signal Spectrum

Frequency in Hz	Sound Pressure in dB Relative to Sound Pressure at 130 Hz
130	0
300	+7
600	+8
1000	+5
2000	-3
3000	-7
4000	-9

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4.7.2.5 Earphone.

4.7.2.5.1 Response. - Constant-available-power frequency response measurements shall be made at 20, 30, 45, 70, 100, 150, 200, 300, 450, 700, 1000, 1500, 2000, 2700, 3500, 5000, 7000, and 9000 Hz. Response measurements shall be made in accordance with ANSI S3.7 in a Type-1 Earphone Coupler except that the coupling weight shall be one kilogram. Determine compliance with 3.6.5.1.

4.7.2.5.2 Distortion. - Total harmonic distortion shall be measured at the frequencies cited in 4.7.2.5.1, in accordance with the procedures of ANSI S3.7, to meet the requirements of 3.6.5.2.

4.7.2.5.3 Overload. - Operate the earphone at a 300 milliwatt level, 1000 Hz, for a period of 8 hours. Repeat the Response tests at the 1 milliwatt level for compliance with 3.6.5.3.

4.7.2.5.4 Impedance. - Using the procedures described in ANSI S3.7, measure the impedance at 1000 Hz for compliance with 3.6.5.4.

4.7.2.6 Push-to-talk switch.

4.7.2.6.1 Make-break sequence. - Connect suitable low current lamp indicating circuits to pins A and C of the connector (control circuit) and to pins A and D of the connector (microphone circuit). Slowly operate and release the push-to-talk switch and determine compliance with 3.6.6.1.

4.7.2.6.2 Actuating force. - With an indicating circuit as in 4.7.2.6.1, hold the handset in a vise and actuate and hold the switch in the operating position with a spring scale. Determine compliance with 3.6.6.2.

4.7.2.6.3 Endurance. - Connect a resistive load in series with 24 volts DC between connector pins A and C (control circuit) and adjust the load to one half ampere. Operate the switch to full travel and off at a rate not to exceed 60 cycles per minute for a total of 2,000,000 cycles. At the conclusion of the test, determine compliance with 3.6.6.1, 3.6.6.2 and 3.6.6.3.



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#### 4.8 Environmental conditions.

##### 4.8.1 Temperature.

4.8.1.1 Low. - The equipment shall be tested in accordance with Method 502.1, Procedure 1 of MIL-STD-810. The storage temperature shall be minus 55°C, maintained for four hours, and the operating temperature shall be minus 40°C. Prior to, during and following the test, the equipment shall meet the requirements of 3.7.1.1.

4.8.1.2 High. - The equipment shall be tested in accordance with Method 501.1, Procedure 1 of MIL-STD-810. The storage temperature shall be 70°C, maintained for two hours and the operating temperature shall be 65°C. Prior to, during and following the test, the equipment shall meet the requirements of 3.7.1.2.

4.8.2 Humidity. - The equipment shall be tested in accordance with Method 507.1, Procedure II of MIL-STD-810, with measurements made during the last five hour period of each cycle. Prior to, during and following the test, the equipment shall meet the requirements of 3.7.2.

4.8.3 Altitude. - The equipment shall be tested in accordance with Method 500.1, Procedure 1 of MIL-STD-810 except that the pressure in Step 2 shall first be raised to 50,000 feet above sea level. Prior to, during and following the test, the equipment shall meet the requirements of 3.7.3.

4.8.4 Leakage (Immersion). - The equipment shall be tested in accordance with Method 512.1, Procedure 1 of MIL-STD-810 and meet the requirements of 3.7.4 prior to and following the test.

4.8.5 Elast. - Mount the microphone or earphone element under test on the carriage of the Simulated Gun Blast Producing Equipment in accordance with U.S. Navy Drawing SK-N-864 with the front edge of the element in the test plane and with its axis coincident with that of the explosion chamber. Subject the element to 30 rounds of blast at a peak pressure of 9.5 psi. Determine compliance with 3.7.5.

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4.8.6 Vibration. - The equipment shall be tested in accordance with Method 201 of MIL-STD-202. Determine compliance with 3.7.6.

4.8.7 Shock, drop. - The equipment, at a temperature of  $-40^{\circ}\text{C}$ , shall be dropped twelve times from a height of six feet onto a concrete floor. Prior to and following the test, the equipment shall meet the requirements of 3.7.7. Mechanical damage shall be limited to surface abrasions only.

4.8.8 Bounce, loose cargo. - The equipment shall be tested in accordance with Method 514.2, Procedure XI, Part 2 of MIL-STD-810 except that the equipment shall lay at random on the test table and no reorientation shall occur at the half hour periods. Prior to and following the test, the equipment shall meet the requirements of 3.7.8.

4.8.9 Salt fog. - The equipment shall be subjected to the salt fog test specified in Method 509.1, Procedure 1 of MIL-STD-810. No corrosion products shall be deposited on the test item by the facility. Inability of the equipment to meet the requirements of 3.7.9 shall constitute failure of this test.

4.8.10 Dust. - The equipment shall be tested in accordance with Method 510.1, Procedure 1 of MIL-STD-810. Prior to and following the test, the equipment shall meet the requirements of 3.7.10.

4.8.11 Fungus. - The equipment shall be subjected to the fungus test specified in Method 508.1, Procedure 1 of MIL-STD-810. There shall be abundant growth colonization on 50 percent or more of the area of the control item after 14 and 28 days. No cleaning of the equipment is permitted for 72 hours prior to the fungus test. Handling, prior to and during testing, shall be accomplished without contamination of the equipment. Inability of the equipment to meet the requirements of 3.7.11 shall constitute failure of this test.

4.8.12 Reflectance. - Using a Gardner Laboratory, Bethesda, Maryland, Portable 60 Degree Glossmeter, or equal, make ten measurements at different points on the plastic surface of the equipment. Average the ten readings to determine compliance with 3.7.12.

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4.9 Inspection for dimensional interchangeability. - The dimensions listed below shall be gaged to determine conformance to the physical interchangeability requirement of 3.8. When a dimension is not within specified or design limits, it shall be considered a major defect.

Connector (U-182/U) shall be inspected using gages per SC-GL-58877.

4.10 Quality conformance inspection of preparation for delivery. - Preparation for delivery shall be inspected in accordance with MIL-P-116 to determine conformance to the requirement of Section 5.

4.11 Rough handling test (preparation for delivery). - When rough handling test in accordance with MIL-P-116 is required by the contract, the operational test of 4.7.2.3 shall be conducted to determine freedom from malfunction caused by rough handling.

## 5. PACKAGING

5.1 Preservation. - Preservation shall be level A, B or Commercial as specified (See 6.2).

### 5.1.1 Level A.

5.1.1.1 Cleaning. - Each Handset H-250/U shall be cleaned in accordance with process C-1 of MIL-P-116.

5.1.1.2 Drying. - Each Handset H-250/U shall be dried in accordance with the applicable procedure of MIL-P-116.

5.1.1.3 Preservative application. - No preservative required.

5.1.1.4 Unit packing. - Each Handset H-250/U shall be individually unit packed method III as follows: Secure the cord to the handset with twine conforming to T-T-871, 3 ply. Cushion each handset by wrapping with cushioning material conforming to PPP-C-843, type II, class E or PPP-C-795 or PPP-C-1797. Place the cushioned item within a close-fitting paperboard box conforming to PPP-B-566, variety 2, process II, style II or PPP-B-676, type I, variety 2. Close the box in accordance with the appendix of the applicable specification.

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5.1.2 Level B. - Cleaning, drying, preservative application, and unit packing shall be as specified in 5.1.1.

5.1.3 Commercial preservation. - Items shall be given the best degree of protection employed by the supplier to afford protection against corrosion, deterioration, and damage during shipment. When unit pack quantities are not specified in the contract or order, the unit pack shall contain that quantity used as the supplier standard. However, the contents of the unit pack shall not exceed 50 pieces or 25 pounds. Items weighing over 10 pounds shall be individually packed.

5.2 Packing. - Packing shall be level A, B or Commercial, as specified (See 6.2). Shipping containers for level A and B shall be capable of stacking and supporting superimposed loads during shipment and storage without damaging the container(s) or its contents.

5.2.1 Level A. - A quantity of Handset H-250/U, unit packed as specified in 5.1, shall be packed within a close-fitting box conforming to PPP-E-601, overseas type; PPP-E-621, style 4, class 2; or PPP-B-585, style 2 or 3, class 3. When the gross weight exceeds 200 pounds, or the container length and width is 48 x 24 inches or more and the weight exceeds 100 pounds, 3 x 4 inch skids, laid flat, shall be applied in accordance with the requirements of the container specification, or if not specified in the specification, in a manner which will adequately support the item and facilitate the use of material handling equipment. Closure and strapping shall be in accordance with the applicable container specification or appendix thereto except that metal strapping shall conform to QQ-S-781, type I, finish A.

5.2.1.1 Unitization. - Palletization shall be required when: containers specified in 5.2.1 do not require skids; quantities per destination comprise a pallet load; and container size permits use of one of the pallet patterns of MIL-STD-147. A quantity of containers packed as specified in 5.2.1, except that container strapping may be omitted, shall be placed on a pallet, load type I, conforming to MIL-STD-147. The pallet shall conform to NN-P-71, type IV, group I or II woods. The load shall be "bonded" to the pallet by strapping conforming to QQ-S-781, type I, finish A, or shrink film.

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5.2.2 Level E. - A quantity of Handset H-250/U, unit packed as specified in 5.1, shall be packed within a close-fitting fiberboard box conforming to PPP-B-640, class 2, style E, or PPF-E-636, type CF, class weather-resistant. The gross weight of boxes conforming to PPP-B-640 shall not exceed 250 pounds. Closure shall be in accordance with the appendix of the applicable box specification. Reinforcing shall be by pressure-sensitive filament tape banding or nonmetallic strapping conforming to PPP-T-97 and PPP-S-760, respectively; selection of the material and application shall be in accordance with the appendix of the applicable box specification. When the gross weight exceeds 200 pounds, or the container length and width is 48 x 24 inches or more and the weight exceeds 100 pounds, containers will be pallet-mounted on pallets conforming to NN-P-71, group I or II woods. The load shall be "bonded" to the pallet by strapping conforming to QQ-S-781, type I, finish A, or shrink film. When a single unit is shipped to a single destination no packing is required; the unit container shall serve as the shipping container. Reinforcing shall be as specified above.

5.2.2.1 Unitization. - Palletization shall be required when quantities per destination comprise a pallet load. A quantity of Handset H-250/U unit packed as specified in 5.1, shall be placed on a pallet, load type 1, conforming to MIL-STD-147. The pallet shall conform to NN-P-71, type IV, group I or II woods. A fiberboard cap shall be employed over the load having two sides extending down the stacked load at least 12 inches to accommodate marking requirements. The cap shall be fabricated of fiberboard conforming to PFP-F-320, class weather-resistant, W5s or V3c. The load shall be "bonded" to the pallet by strapping conforming to QQ-S-781, type 1, finish A, or shrink film.

5.2.3 Commercial packing. - The item shall be packed to meet carrier acceptance and safe delivery to destination at lowest rates in compliance with requirements of carrier rules and regulations applicable to the mode of transportation.

### 5.3 Marking.

5.3.1 Military marking. - In addition to any special marking required by the contract or order, interior packs and exterior shipping containers shall be marked in accordance with MIL-STD-129.

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5.3.2 Commercial marking. - In addition to any special marking required by the contract or order, interior packs and exterior shipping containers shall as a minimum be marked as follows: Noun nomenclature; National Stock Number, or part number when NSN is not given; Government contract or purchase order number; quantity; contractor's name; additional markings as may be required by the contractor's policy/procedures; exterior containers shall also be marked with the appropriate address markings. Markings may be applied by any means which provide legibility.

## 6. NOTES

6.1 Intended use. - Handset H-250( )/U utilizes a 1000 ohm ear-phone element, a 150 ohm dynamic noise cancelling microphone, a push-to-talk switch and a six foot (extended) retractile cord terminating in a 5 pin audio connector (U-182/U). It is intended for use with military man-pack radio equipment such as the AN/PRC-70 and AN/PRC-77. Handset H-250( )/U can be used in place of Handset H-189/GR.

6.2 Ordering Data. - Procurement documents should specify the following:

- a. Title, number and date of this specification and any amendment thereto.
- b. Level A, level B or Commercial preservation and packing (See Section 5).
- c. When the rough handling test is required (See 4.11).
- d. The number of First Article samples required (See 4.3.1).

6.3 Nomenclature. - 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 in accordance with the applicable clause in the contract.

## 6.4 Definitions.

6.4.1 Branching. - Branching is a connected arrangement of filaments (hyphae) formed by shoots or secondary stems growing from the main stem of filament (hypha).

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6.4.2 Exfoliation. - Exfoliation is corrosion along the grain boundaries of the metal resulting in the peeling or separating, or both, of successive layers of the metal. The appearance resembles loose book pages or onion skin peeling.

6.4.3 Growth Colonization. - Growth colonization is a mass of individual plants, generally of one species, living together; or a group of hyphae which is formed from one spore or cell and may be one individual plant. Colonization which completely covers the surface of the nutrient material constitutes abundant growth.

6.4.4 Microbial growth. - Microbial growth is the growth of very minute organisms. Such organisms, when present in large numbers, may provide a colony visible to the naked eye.

6.4.5 Sporulation. - Sporulation is the formulation of minute unicellular reproductive or dormant bodies called spores.

6.4.6 Tubular germination. Tubular germination is partial growth by the production of hyphae, which are tubular shaped fungal filaments. Tubular germination constitutes restricted individual spore growth not proceeding to colonization.

6.4.7 Specular gloss. - Refer to Federal Test Method Standard 141, Method 6101, for the definition of specular gloss.

6.5 Verification inspection. - Verification by the Government will be limited to the amount deemed necessary to determine compliance with the contract and will be limited in severity to the definitive quality assurance provisions established in this specification and the contract. The amount of verification inspection by the Government will be adjusted to make maximum utilization of the contractor's quality control system and the quality history of the product.

6.6 Supersession. - This specification supersedes that part of MIL-H-55692(EL) relating to Handset H-250( )/U.

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

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SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 22-R255
<p><b>INSTRUCTIONS:</b> This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.</p>		
SPECIFICATION <u>MIL-H-49078(EL) HANDSET H-250( )/U</u>		
ORGANIZATION		
CITY AND STATE		CONTRACT NUMBER
MATERIAL PROCURED UNDER A		
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
<p>1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?</p> <p>A. GIVE PARAGRAPH NUMBER AND WORDING.</p>		
<p>B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES</p>		
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
<p>3. IS THE SPECIFICATION RESTRICTIVE?</p> <p><input type="checkbox"/> YES      <input type="checkbox"/> NO (If "yes", in what way?)</p>		
<p>4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)</p>		
SUBMITTED BY (Printed or typed name and activity - Optional)		DATE

To detach this form, cut along this line

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