

4 May 1979

## MILITARY SPECIFICATION

## HEADSET-MICROPHONE KIT MK-1974( )/VRC

This specification is approved for use by the Communications Research and Development 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 Headset-Microphone Kit designated as Headset-Microphone Kit MK-1974( )/VRC, designed to fit armored vehicle crewman helmets used in Tank XM1. (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

## MILITARY

MIL-P-11268	Parts, Materials, and Processes Used in Electronics Equipment
MIL-M-13231	Marking of Electronic Items
MIL-F-14072	Finishes for Ground Electronic Equipment
MIL-T-45542	Tool Sets, Shop Sets and Kits (Hardware Installation Modification and Maintenance Tool) Both Common and Special: Packaging and Packing of

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding General, US Army Communications Research and Development Command, ATTN: DRDCO-CM-DM, Fort Monmouth, NJ 07703 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

## STANDARDS

## MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
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

## DRAWINGS

## ELECTRONICS COMMAND

DL-B-4001120	Headset-Microphone Kit MK-1974( )/VRC
SC-D-621083	Microphone and Earphone Test Chamber
SC-GL-579850	Mechanical Gages for Connector, Plug U-229/U

## 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

S3.7-1973	- Coupler Calibration of Earphones
S1.10-1966	- Calibration of Microphones
S1.12-1972	- Specifications for Laboratory Standard Microphones

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 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, NJ 08854.)

## 3. REQUIREMENTS

3.1 First Article. When specified in the contract or purchase order, the contractor shall furnish First Article units in accordance with 4.3.

3.2 Construction. The equipment shall be constructed in accordance with the requirements of this Specification and Drawing and Data List DL-B-4001120 (including the requirements for parts, materials and processes thereon) (See 4.4).

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 Headset-Microphone Kit MK-1974( )/VRC. (See 4.7.2.1)

3.6.1.1 Impedance. The earphone impedance measured at Pins E and F of the 6 Pin connector shall be 500 ohms  $\pm$  20 percent.

3.6.1.2 Insulation Resistance. The insulation resistance between Pins A and E, A and B, A and C, A and D and A and F of the 6 Pin connector, and between all Pins and any external metal parts shall be not less than 10 megohms. During the test, the push-to-talk switch shall be locked in the "listen" position and the microphone plug disconnected.

3.6.1.3 Operation. The equipment shall transmit and receive intelligible voice signals without buzzing, rattling or other spurious sounds.

3.6.2 Microphone M-138/G. (See 4.7.2.2)

3.6.2.1 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 3500 Hz shall fall within the envelope of Figure 1.

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

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

3.6.2.4 Signal to Noise Ratio. The ratio of signal to noise shall be not less than 15 dB.

3.6.2.5 Dielectric Strength and Insulation Resistance. There shall be no evidence of breakdown when the microphone is subjected to a DC voltage of 100 volts applied for 10 seconds between the terminals of the microphone and the external metal parts. The insulation resistance shall be not less than ten megohms between these points.

3.6.3 Earphone (See 4.7.2.3).

3.6.3.1 Response. The acoustic output of the earphone shall be not less than 105 dB above a reference level of 0.0002 dyne per square centimeter when 1 milliwatt rms power at 1000 Hz is applied to the earphone terminals. The response of the earphone between 100 and 1000 Hz shall not deviate from the 1000 Hz response by more than +1.5 and -2.5 dB. The response of the earphone between 1000 and 3500 Hz shall not deviate from the 1000 Hz response by more than  $\pm$ 5 dB.

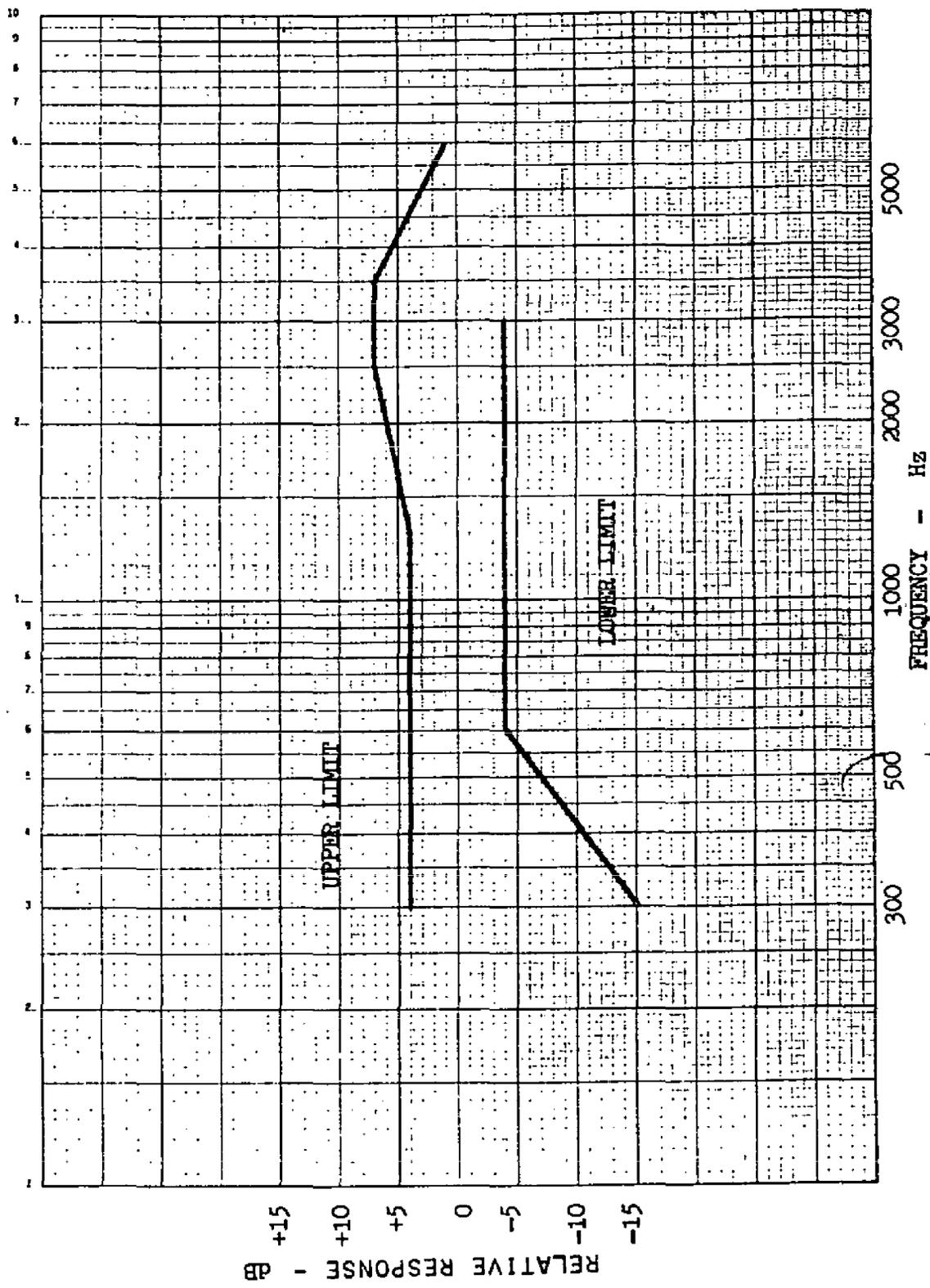


Figure 1 Microphone Response Limit Curves

3.6.3.2 Distortion. The acoustic output of the earphone shall have no more than 5 percent total harmonic distortion at any frequency in the range of 100 to 3500 Hz.

3.6.3.3 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.

3.6.3.4 Dielectric Strength and Insulation Resistance. The insulation between the earphone terminals and exposed metal parts shall withstand 100 volts DC for 10 seconds without breakdown. The insulation resistance shall exceed ten megohms between the indicated points.

3.6.3.5 Impedance. The input impedance of the earphone at 1000 Hz shall be 1000 ohms plus or minus 15 percent.

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 3.6.1.1, 3.6.1.2, 3.6.1.3, 3.6.2.1 and 3.6.3.1 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 3.6.1.1, 3.6.1.2, 3.6.1.3, 3.6.2.1 and 3.6.3.1 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 3.6.1.1, 3.6.1.2, 3.6.1.3, 3.6.2.1 and 3.6.3.1 during the operating times specified in 4.8.2 with no more than a 3 dB change in response.

3.7.3 Altitude (Elevation). The equipment shall meet the requirements of 3.6.2.1 and 3.6.3.1 with no more than a 5 dB change in frequency response at altitudes up to 15,000 feet above sea level after storage at 50,000 feet above sea level. (See 4.8.3)

3.7.4 Immersion. The equipment shall meet the requirements of 3.6.1.1, 3.6.1.2, 3.6.1.3, 3.6.2.1 and 3.6.3.1 following immersion in three feet of water for 2 hours. (See 4.8.4)

- 3.7.5 Blast. The equipment shall meet the requirements of 3.6.2.1 and 3.6.3.1 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). (See 4.8.5).
- 3.7.6 Vibration. The equipment shall meet the requirements of 3.6.2.1 and 3.6.3.1 following the Tests of 4.8.6.
- 3.7.7 Shock, Drop. The equipment shall meet the requirements of 3.6.1.3, 3.6.2.1 and 3.6.3.1 following the tests of 4.8.7.
- 3.7.8 Bounce, Loose Cargo. The equipment shall meet the requirements of 3.6.1.3 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 of metal surface, or exfoliation (see 6.6) of metal. Electrical operation is not required.
- 3.8 Switch Life. The switch shall be capable of 100,000 complete cycles of operation when testing as specified in 4.9.
- 3.9 Interchangeability. Like units, assemblies, subassemblies and replaceable parts shall conform to Requirement 7 of MIL-STD-454 (See 4.10).
- 3.10 Workmanship. The equipment shall be manufactured and assembled in accordance with Requirement 9 of MIL-STD-454 and the applicable portions of MIL-P-11268 (See 4.6).
- 3.11 Safety. The equipment shall not pose any safety hazard to personnel throughout the equipments life cycle.

#### 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 Inspections. The inspection requirements specified herein are classified as follows:

- a. First Article inspection (See 4.3). Does not include packaging.
- b. Inspections covered by subsidiary documents (See 4.4).
- c. Quality Conformance inspections.

(1) Quality conformance inspection of equipment before packaging (See 4.5).

(2) Quality conformance inspection of packaging (See 4.11).

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 six (6) First Article units of the complete Headset-Microphone Kit MK-1974( )/VRC and six (6) units each of the microphones and earphones.

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 and 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 IV. 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. Failure to meet one or more requirements of section 3 above 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 Packaging.

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. The Government will review and evaluate the contractor's inspection procedures and examine the contractor's inspection records. In addition, the Government, at its discretion, may perform all or any part of the specified inspection to verify the contractor's compliance with specified requirements (see 6.4). Test equipment for Government verification inspection shall be made available by the contractor.

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 AQL(s) indicated in Table I.

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	3.10	4.6	1%	4%
Headset-microphone				
Impedance	3.6.1.1	4.7.2.1.1	1%	*
Ins Resistance	3.6.1.2	4.7.2.1.2	1%	*
Operational	3.6.1.3	4.7.2.1.3	1%	*
Microphone				
Impedance	3.6.2.3	4.7.2.2.3	1%	*
Diel and Ins Res	3.6.2.5	4.7.2.2.5	1%	*
Earphone				
Diel and Ins Res	3.6.3.4	4.7.2.3.4	1%	*
Impedance	3.6.3.5	4.7.2.3.5	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 an 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 AQL(s) listed in Table II shall be Inspection Level S-4.

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
Interchangeability	3.9	4.10	6.5%
Microphone			
Response	3.6.2.1	4.7.2.2.1	4.0%
Distortion	3.6.2.2	4.7.2.2.2	(for the group)
Earphone			
Response	3.6.3.1	4.7.2.3.1	4.0%
Distortion	3.6.3.2	4.7.2.3.2	(for the group)

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 microphone, earphone and headset-microphone shall be selected at random from each 500 units or fraction thereof produced. For Sub-group II, five samples of the headset-microphone shall be selected at random from each 1000 units or fraction thereof produced. High temperature, low temperature, humidity, shock and bounce tests shall be performed, one test per sample. In addition, two samples each of the microphone and earphone shall be selected from each 1000 units or fraction thereof produced. One sample each shall be subjected to the Altitude test and the other to the Vibration test. For Subgroup III, one sample each of the microphone and earphone (Blast test) and one sample headset-microphone (salt fog and switch life) shall be selected at random from each 5000 units or fraction thereof produced. The first samples of each test subgroup shall be selected from the first production lot.

4.5.3.2 Order of Inspection Within Group C. Group C inspection shall be performed in any order which is satisfactory to the Government.

4.5.3.3 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.

TABLE III - Group C Inspection

Inspection	Req. Para.	Insp. Para.
Subgroup I		
Signal to Noise	3.6.2.4	4.7.2.2.4
Overload	3.6.3.3	4.7.2.3.3
Immersion	3.7.4	4.8.4
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
Bounce	3.7.8	4.8.8
Subgroup III		
Blast	3.7.5	4.8.5
Salt Fog	3.7.9	4.8.9
Switch Life	3.8	4.9

TABLE IV - Order of Environmental Tests

	Number of Samples					
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Inspection						
<u>Non-damaging</u>						
Low Temperature	1					
High Temperature			1			
Altitude (elevation)	2					
Signal to Noise				1		
Overload				2		
Switch Life				3		
<u>Potentially Damaging</u>						
Salt Fog*		1				
Vibration	3					
Bounce, Loose Cargo				4		
Shock, Drop						1
Blast					1	
Humidity					2	
Immersion						2

\*Following salt fog testing, the test item shall be thoroughly washed, cleaned, dried, and refurbished before proceeding with subsequent tests.

4.6 Visual and Mechanical. The equipment shall be examined for compliance with 3.10. Classification of defects shall be as listed in 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.
- e. Sound Pressure Calibration. Mount the standard microphone concentrically and flush in a baffle having the same shape as the cap of the M-138/G 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, 1500, 2000, 2500, 3000, and 3500 Hz.
- f. Distortion. Hewlett Packard Distortion Analyzer model 330C or equal.

##### 4.7.2 Methods of Inspection.

###### 4.7.2.1 Headset-microphone (assembled).

4.7.2.1.1 Impedance. Apply a 1.0 volt, 1000 Hz Sinusoidal Signal through a decade resistance box (initially set at 500 ohms) in series with Pins E and F of the 6 Pin connector. Vary the decade resistance until the voltage across the pins as read on the VTVM is equal to the voltage across the decade resistance. The decade resistance reading shall meet the requirements of 3.6.1.1.

4.7.2.1.2 Insulation Resistance. The assembly shall be tested in accordance with Method 302, test condition A, of MIL-STD-202 to meet the requirements of 3.6.1.2. There shall be no evidence of arcing or insulation breakdown during the test.

4.7.2.1.3 Operation. Connect the headset-microphone kit assembly 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 headset-microphone assembly. Conduct a two-way conversation between the headset-microphone assemblies and determine compliance with 3.6.1.3.

4.7.2.2 Microphone M-138/G.

4.7.2.2.1 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 noninductive 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 3.6.2.1.

4.7.2.2.2 Distortion. Repeat the tests of 4.7.2.2.1 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 3.6.2.2.

4.7.2.2.3 Impedance. Repeat the test of 4.7.2.2.1 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 3.6.2.3.

4.7.2.2.4 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 V 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 VI 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.

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 ratio of the microphone output with Signal input to the microphone output with Noise input, in dB, shall meet the requirement of 3.6.2.4.

Table V 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 VI - 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

4.7.2.2.5 Dielectric Strength and Insulation Resistance. The microphone shall be tested in accordance with Method 302, Test Condition A of MIL-STD-202 and meet the Requirements of 3.6.2.5. There shall be no evidence of arcing or insulation breakdown during the test.

#### 4.7.2.3 Earphone.

4.7.2.3.1 Response. Constant-available-power frequency response measurements shall be made at 100, 300, 400, 500, 700, 1000, 1500, 2000, 2500, 3000 and 3500 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 3.6.3.1.

4.7.2.3.2 Distortion. Component harmonic distortion shall be measured at the frequencies cited in 4.7.2.3.1, in accordance with the procedures of ANSI S3.7, to meet the requirements of 3.6.3.2.

4.7.2.3.3 Overload. Operate the earphone at a 500 milliwatt level, 1000 Hz, for a period of 8 hours. Repeat the Response tests at the 1 milliwatt level for compliance with 3.6.3.3.

4.7.2.3.4 Dielectric Strength and Insulation Resistance. The earphone shall be tested in accordance with Method 302, Test Condition A of MIL-STD-202 and meet the requirement of 3.6.3.4. There shall be no evidence of arcing or insulation breakdown during the test.

4.7.2.3.5 Impedance. Using the procedures described in ANSI S3.7, measure the impedance at 1000 Hz for compliance with 3.6.3.5.

#### 4.8 Environmental Conditions.

##### 4.8.1 Temperature (See 3.7.1)

4.8.1.1 Low. The equipment shall be tested in accordance with Method 502.1, Procedure I of MIL-STD-810. The storage temperature shall be minus 80° F, maintained for four hours, and the operating temperature shall be minus 40° F. Prior to, during, and following the test, the equipment shall meet the full specification performance of 3.6.1.2 and 3.6.1.3. Prior to and following the test, the microphone and earphone shall meet the requirements of 3.6.2.1 and 3.6.3.1 with no more than 3 dB change in response.

4.8.1.2 High. The equipment shall be tested in accordance with Method 501.1, Procedure I of MIL-STD-810. The storage temperature shall be 160° F, maintained for two hours and the operating temperature shall be 150° F. Prior to, during and following the test, the equipment shall meet the full specification performance of 3.6.1.2 and 3.6.1.3. Prior to and following the test, the microphone and earphone shall meet the requirements of 3.6.2.1 and 3.6.3.1 with no more than 3 dB change in response.

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 full specification performance of 3.6.1.2 and 3.6.1.3. Prior to and following the test, the microphone and earphone shall meet the requirements of 3.6.2.1 with no more than 3 dB change in response (See 3.7.2).

4.8.3 Altitude. The microphone and earphone shall be tested in accordance with Method 500.1, Procedure I 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 elements shall meet the requirements of 3.6.2.1 and 3.6.3.1 with no more than 5 dB change in response (see 3.7.3).

4.8.4 Immersion. The equipment shall be immersed in fresh water at ambient temperature to a depth of three feet. After a two hour immersion, remove the equipment and shake to remove excess water. Prior to and following the test, the equipment shall meet the full specification performance of 3.6.1.2, 3.6.1.3, 3.6.2.1 and 3.6.3.1 (see 3.7.4).

4.8.5 Blast. Mount the microphone or earphone element under test on the carriage of the Simulated Gun Blast Producing Equipment in accordance with US 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. Prior to and following the test, the element shall meet the requirements of 3.6.2.1 and 3.6.3.1 with no more than 3 dB change in response (see 3.7.5).

4.8.6 Vibration. The microphone and earphone elements shall be tested in accordance with Method 201A of MIL-STD-202. Mounting of the elements in the test jig shall simulate the mounting of the element in the headset-microphone assembly. Prior to and following the test, the element shall meet the full specification requirement of 3.6.2.1 and 3.6.3.1 (see 3.7.6).

4.8.7 Shock, Drop. The headset-microphone assembly 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 3.6.1.3, 3.6.2.1 and 3.6.3.1 with no more than 3 dB change in response. Mechanical damage shall be superficial only (see 3.7.7).

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 3.6.1.3 (see 3.7.8).

4.8.9 Salt Fog. The equipment shall be subjected to the salt fog test specified in Method 509.1, Procedure I 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.

4.9 Switch Life. The switch shall be tested to determine compliance with 3.8. A series circuit shall be set up including a 24 volt dc supply, a resistive load, and the switch. During the test, one-half ampere shall flow in the control circuit, and 60 milliamperes shall flow in the microphone circuit of the switch. One cycle of switch operation test shall consist of the following, in sequence:

- (a) Switch in mid-position
- (b) Switch in forward position
- (c) Switch in mid-position
- (d) Switch in back position
- (e) Switch in mid-position

4.10 Inspection for Dimensional Interchangeability. The dimensions listed below shall be gaged or measured to determine conformance to the physical interchangeability requirement of 3.9. When a listed dimension is not within specified or design limits, it shall be considered a major defect.

4.10.1 Connector, Plug, Electrical, 6 Pin. The connector shall be inspected using gages per SC-GL-579850.

4.11 Quality Conformance Inspection of Packaging. Packaging shall be inspected to determine compliance with Section 5.

## 5. PACKAGING

5.1 Packaging Requirements. Packaging requirements shall be in accordance with MIL-T-45542.

## 6. NOTES

6.1 Intended Use. Headset-Microphone Kit MK-1974( )/VRC provides communication capabilities to Control Inter-communication Set C-10456( )/VRC. The impedance of the microphone is 150 ohms, and the two earphones of 1000 ohms each present a 500 ohm impedance to the earphone circuit.

6.2 Ordering Data. Procurement documents should specify the following:

a. Title, number and date of this specification and any amendment thereto.

b. Level of preservation and packing (see Section 5).

c. 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: MK-1974W/VRC. The contractor should apply for nomenclature in accordance with the applicable clause of the contract.

6.4 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.

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

6.6 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.

Custodian: Preparing Activity

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