

MILITARY SPECIFICATION

HEADSET-MICROPHONE, HEADSET-ELECTRICAL, HEADSET-NONELECTRICAL
(HEARING PROTECTIVE TYPE, HIGH AMBIENT NOISE LEVELS)
GENERAL SPECIFICATION FOR

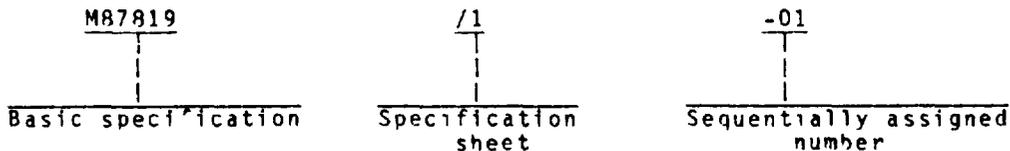
This specification is approved for use by the Department of the Air Force, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the requirements for headset-microphone, headset-electrical, and headset-nonelectrical with single band headband. These items are used in high ambient noise level applications. The headset-microphone has as component parts, two H-143/AIC (19 ohm) earphone elements and one M-101/AIC dynamic noise canceling microphone element mounted in a noise protective shell. The headset-electrical is without microphone and the headset-nonelectrical is for hearing protection only. The term "product(s)" shall be used interchangeably for headset-microphone, headset-electrical, and headset-nonelectrical and shall be used when referring to any of the articles covered in this specification.

1.2 Classification.

1.2.1 Military part number. The products specified herein (see 3.1) shall be identified by military part numbers which shall consist of the basic specification number, slash number of the specification sheet, and a sequentially assigned number as shown in the following example:



2. APPLICABLE DOCUMENTS

2.1 Government specifications and standards. Unless otherwise specified, the following specifications, standards, and handbooks, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation, form a part of this specification to the extent specified herein.

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

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to Electronic Support Division AFLC, 2750 ABW/ES, Gentile AF Station, Dayton, OH 45444, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

MIL-H-87819(USAF)

SPECIFICATIONS

FEDERAL

- L-P-1183 - Plastic Molding Material, Acrylonitrile Butadiene Styrene (ABS) Rigid.
- QQ-S-571 - Solder, Tin Alloy, Tin-Lead Alloy, and Lead Alloy.
- QQ-S-781 - Strapping, Steel, and Seals.
- PPP-B-601 - Boxes, Wood, Cleated Plywood.
- PPP-B-621 - Box, Wood, Nailed and Lock-corner.
- PPP-B-636 - Box, Shipping, Fiberboard.

MILITARY

- MIL-T-152 - Treatment, Moisture and Fungus Resistant, Of Communications, Electronic and Associated Electrical Equipment.
- MIL-P-116 - Preservation, Method Of.
- MIL-I-4997 - Insulating and Jacketing Compounds For Use In Cords, Cordages, And Cables.
- MIL-C-55668 - Cord, Electrical, Audio, Subminiature (Retractable And Straight).
- MIL-F-14072 - Finishes for Ground Electronic Equipment
- MIL-E-25670/2 - Earphone Element, H-143/AIC.
- MIL-M-26542/4 - Microphone Element, M-101/AIC.
- MIL-F-14256 - Flux, Soldering, Liquid (Rosin Base).
- MIL-F-21840 - Fastener Tapes, Hook and Pile, Synthetic.
- MIL-P-26514 - Polyurethane Foam, Rigid or Flexible, For Packaging.
- MIL-H-87819/1 - Headset-Microphone, Hearing Protective Type High Ambient Noise Level, 105-125 dB, M87819/1-01.
- MIL-H-87819/2 - Headset-Electrical, Hearing Protective Type High Ambient Noise Level, 105-125 dB, M87819/2-01.
- MIL-H-87819/3 - Headset, Nonelectrical, Hearing Protective Type High Ambient Noise Level, 105-125 dB, M87819/3-01.

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 Unit Loads.
- MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
- MIL-STD-454 - Standard General Requirements for Electronic Equipment.
- MIL-STD-794 - Part And Equipment, Procedures for Packaging And Packing of.
- MIL-STD-810 - Environmental Test Methods and Engineering Guidelines.
- MIL-STD-1285 - Marking of Electrical and Electronic Parts.
- MIL-STD-45662 - Calibration Systems Requirement.

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DOD adopted shall be the issue listed in the current DODISS and the supplement thereto, if applicable.

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI S3.5-1969 - Methods for the Calculation of the Articulation Index.

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

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern.

3.2 Qualification. Products furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.5 and 6.3).

3.3 Materials. Materials shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the product to meet the performance requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

3.3.1 Solder. Solder shall conform to composition Sn60 of QQ-S-571. The solder flux shall conform to type R of MIL-F-14256.

3.3.2 Adhesives. Water soluble adhesives shall not be used.

3.3.3 Earcup shells and microphone protective shield. Earcup shells and microphone protective shield shall be made of ABS as specified in L-P-1183, type II and the color shall be lusterless black. If the earcup or microphone protective shield is constructed of more than one piece, the pieces shall be permanently joined together. All seams shall be smooth.

3.4 Design and construction.

3.4.1 Earphone elements. When specified (see 3.1), the earphone elements shall be type H-143/AIC in accordance with MIL-E-25670/2.

3.4.2 Microphone elements. When specified (see 3.1), the microphone elements shall be type M-101/AIC in accordance with MIL-M-26542/4.

3.4.3 Cable and cord assemblies. When specified (see 3.1), the cable and cord assemblies shall conform to MIL-C-55668 and this specification. Insulating and jacket compounds for cords shall comply to MIL-I-4997.

3.4.4 Headset-microphone, headset-electrical, and headset-nonelectrical. The configuration for products covered by this specification shall be as specified (see 3.1).

3.4.5 Finish. The final finish shall be in accordance with MIL-F-14072, type II (sheltered). The final color shall be lusterless black. The earcup shells, microphone protective shield, headband pads, vinyl and polyurethane parts shall be black.

3.4.6 Fungus. The contractor shall certify that the materials meet the requirements of fungus inert materials of MIL-STD-454, or be treated in accordance with MIL-T-152, or the equipment shall be tested in accordance with method 508 of MIL-STD-910.

3.4.7 Metals. The metals used shall be of the proper alloy and hardness necessary to provide the required strength and rigidity with maximum strength to weight ratio. The metals shall be of a corrosion resistant type or shall be treated in accordance with MIL-F-14072, type II (sheltered).

3.4.8 Earphone element mounting. At the option of the manufacturer, the element may be mounted in the earcup by plastic foam in such a manner that the element and cup shall be easy to assemble and disassemble. The earphone may be placed into the inner fill foam (split to accept earphone).

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3.4.9 Fillers. The material used for the earcup filler shall be polyurethane foam per MIL-P-26514, type I, class 2, ether, minimum density of 3 lbs/ft³. The color is optional and shall not be treated in any manner to cause skin irritation. At the option of the manufacturer, the filler may have a cavity to accept and retain the earphone. The fillers shall be designed so they can be removed from the earcup cavities so that the earphone elements may be replaced without damage to the fillers and the earcup. The filler material shall not be glued to the earcup.

3.4.10 Temper foam. The foam filler for the earcushion and the microphone protective shield cushion shall be of the visco-elastic type of medium density.

3.4.11 Earcup shells and microphone protective shield cushions. The cushions shall not be cemented to the cup or shell; however, it shall remain attached during normal usage. No treatments used to process the device shall cause skin irritation. The cushion shall not decrease the openings of the earcup or shield. The cushion shall form a seal around eyeglasses and shall not allow any appreciable ambient noise to leak into the inner chamber of the earcup or shield. Earcup and microphone protective shell cushions shall be covered with polyurethane film .015 inch (0.39 mm) thick, ether type, matte finish, and black color.

3.4.12 Headband and headband parts. The headband shall be single band and slide adjustable with a positive locking knurled thumbscrew.

3.4.13 Headband. The headband adjustment mechanism shall be the manufacturer's option so long as envelope requirements are maintained. Provisions shall be made for the overhead cord through the headband pad.

3.4.14 Sliding action. The sliding action on the headband assembly used for positioning the earcup over the ears shall be smooth and uniform throughout the entire extension distance. There shall be no protruding hardware or excess wire to entangle with the microphone protective shield or straps. Positive locking shall be accomplished by tightening the thumbscrew.

3.4.15 Cord, cable assemblies, and connectors. There shall be one cable assembly provided for the headset-microphone, one cable assembly provided for the headset-electrical, and no cable assembly provided for the headset-nonelectrical. The main cable assembly for the headset-microphone shall contain the overhead cord with terminals for the earphones; a branch for the microphone connection, approximately 14 inches (355.6 mm) long, which will terminate within the microphone protective shield; and a U-174 connector shall be installed approximately 28 inches (711.2 mm) from the earcup as the main terminal of the cable assembly. The main cord for the headset-electrical shall contain the overhead cord with molded terminals for the earphones. The cable assembly shall be terminated with a U-174 connector as the main terminal approximately 28 inches (711.2 mm) from the earcup.

3.4.16 Microphone and microphone protective shield assembly. When specified (see 3.1), the microphone and microphone protective shield assembly shall be provided. This assembly shall be permanently attached to the left earcup with an adjustable nylon strap. The microphone protective shield assembly shall be positioned on the face via hook and pile fastening tapes in accordance with MIL-F-21840 affixed to the right-hand nylon strap and the right earcup.

3.5 Performance characteristics.

3.5.1 Earphone. The earphone shall be H-143/AIC in accordance with MIL-E-25670/2.

3.5.2 Microphone. The microphone shall be M-101/AIC in accordance with MIL-M-26542/4.

3.5.3 Acoustic quality. When tested as specified in 4.7.2, there shall be no buzzing, rattles, or other spurious noises which would impair the quality of the reproduced signal.

3.5.4 Attenuation. When tested as specified in 4.7.3, the attenuation of each earcup shall be greater than the minimum limits shown on figure 1. Excursions through the limit shall not exceed 3 dB or 1/10 octave in width.

3.5.5 Articulation. When tested as specified in 4.7.4, the articulation index score shall be not less than 0.5.

3.5.6 Strain relief. When the product is tested as specified in 4.7.5, there shall be no slippage of the cord or cable assembly out of the plug.

3.5.7 Shock - drop. When tested as specified in 4.7.6, there shall be no evidence of physical or electrical defects to the product, except minor chipping or scratches. Following the test, the acoustic quality shall be as specified in 3.5.3.

3.5.8 Fungus. When tested as specified in 4.7.7, the product shall show no evidence of mechanical failure. There shall be no flaking or peeling.

3.5.9 Vibration. When tested as specified in 4.7.8, there shall be no loose parts or evidence of mechanical failure, and the acoustic quality in accordance with 3.5.3 shall be met.

3.5.10 Temperature. When tested as specified in 4.7.9, there shall be no parts cracked or deformed due to extreme temperature and the acoustic quality in accordance with 3.5.3 shall be met.

3.5.11 Temperature shock. When tested as specified in 4.7.10, there shall be no cracked or deformed parts due to extreme heat, and the acoustic quality in accordance with 3.5.3 shall be met.

3.5.12 Humidity. When tested as specified in 4.7.11, there shall be no failure due to moisture or corrosion, and the acoustic quality in accordance with 3.5.3 shall be met.

3.5.13 Shock. When tested as specified in 4.7.12, there shall be no failure due to broken or deformed parts, and the acoustic quality in accordance with 3.5.3 shall be met.

3.5.14 Salt fog. When tested as specified in 4.7.13, there shall be no failure due to corrosion, and the acoustic quality in accordance with 3.5.3 shall be met.

3.6 Marking. Marking shall be in accordance with MIL-STD-1285 and shall include the following:

- a. Contract number
- b. Part number (e.g., M87819/1-01)
- c. Federal supply code for manufacturers (FSCM) or manufacturer's name and part number
- d. National stock number

3.7 Workmanship. The products shall be processed in such a manner as to be uniform in quality and shall be free from loose or deposited foreign materials and other defects that will affect life, serviceability, or appearance.

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.

4.1.1 Test equipment and inspection facilities. The contractor shall establish and maintain a calibration system in accordance with MIL-STD-45662.

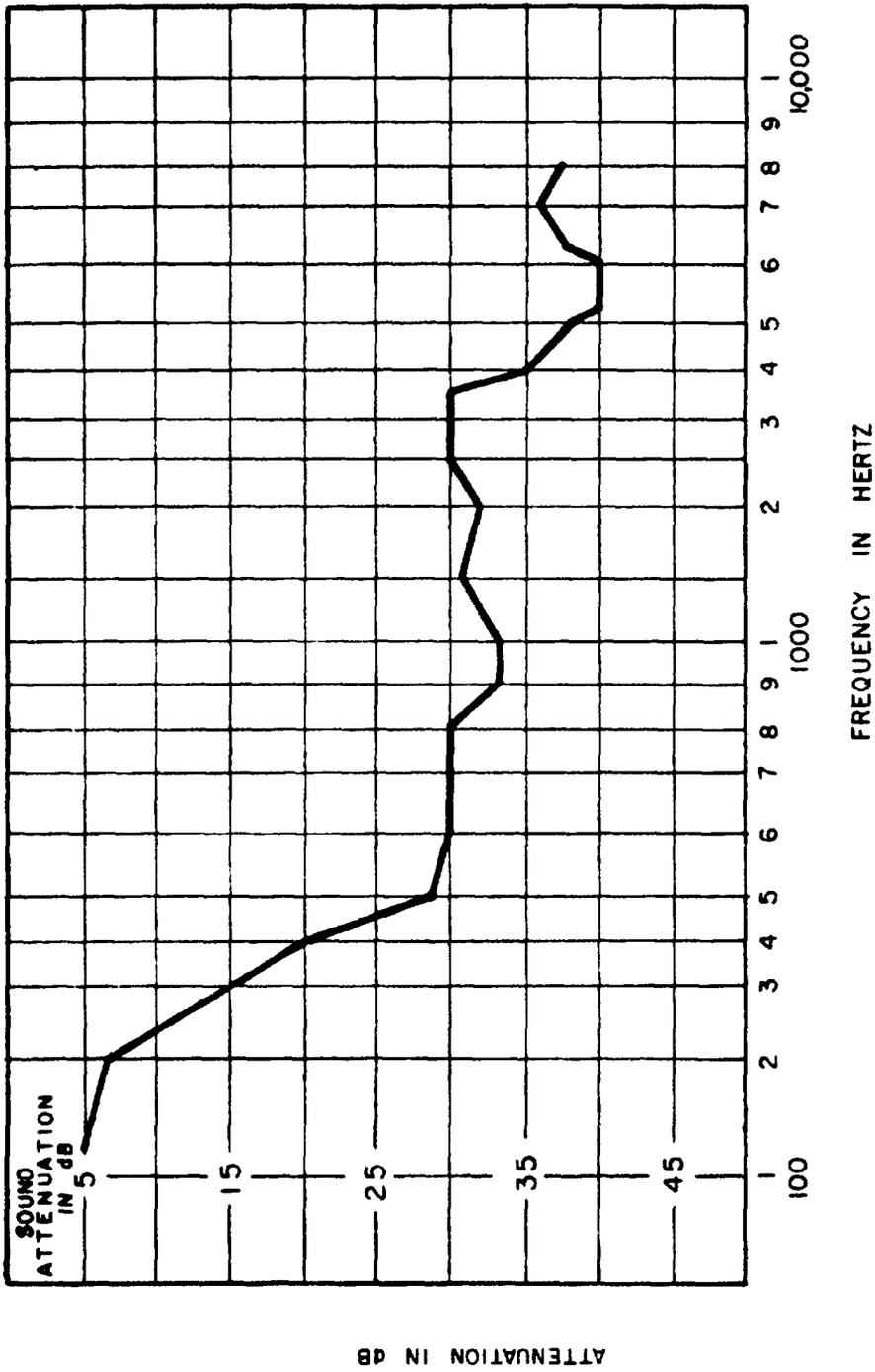


FIGURE 1. Attenuation minimum limit curve.

4.1.1.1 Sound chamber. The sound chamber shall provide a diffuse field within 8 inches (203.2 mm) around the subject head.

4.1.1.2 Attenuation measurement device. The equipment utilized for the measurement of noise attenuation characteristics shall consist of (as a minimum) a multichannel Fast Fourier Transform (FFT) analyzer.

4.1.1.3 Test microphone. The test microphone shall have linear response and shall be mounted at the entrance of the ear canal with the ear canal blocked.

4.1.1.4 Reference microphone. The reference microphone shall be a Bruel and Kjaer 4165 and it shall be mounted in the test chamber 4.0 ±.5 inches (101.6 mm ±12.7 mm) above the subject head located centrally between the ears and facing forward relative to the dummy head.

4.1.1.5 Sound source. The sound source shall be a random noise generator with white noise filtering capable of creating white noise at a sound pressure level of 90 ±3 dB between the range of 40 to 8,000 Hz.

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

- a. Components inspection (see 4.4).
- b. Qualification inspection (see 4.5).
- c. Quality conformance inspection (see 4.6).

4.3 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-202.

4.4 Components inspection. Components inspection shall consist of certification supported by verifying inspection and test data that the components listed in table I, used in fabricating the products, are in accordance with the applicable referenced documents, and have been obtained from a manufacturer listed on the applicable qualified products list (QPL) for that item.

TABLE I. Components inspection.

Component	Requirement paragraph	Applicable document
Earphone elements, H-143/AIC	3.3.1	MIL-H-25670/2
Microphone element, M-101/AIC	3.3.2	MIL-M-26542/4

4.5 Qualification inspection. Qualification inspection shall be performed at a laboratory acceptable to the Government (see 6.3) on sample units produced with equipment and procedures normally used in production.

4.5.1 Sample size. Six units shall be subjected to qualification inspection.

4.5.2 Inspection routine. The sample shall be subjected to the inspections specified (see 3.1). All sample units shall be subjected to the inspections of group I. The sample shall then be divided equally into two groups and subjected to the inspections for their particular group.

4.5.3 Failures. One or more failures in group I, II, or III (see 3.1) shall be cause for refusal to grant qualification approval.

4.5.4 Retention of qualification. To retain qualification, the contractor shall forward a report at 24-month intervals to the qualifying activity. The qualifying activity shall establish the initial reporting date. The report shall consist of:

- a. A summary of the results of the tests performed for inspection of product for delivery, group A (see 3.1), indicating as a minimum the number of lots that have passed and the number that have failed. The results of tests of all reworked lots shall be identified and accounted for.
- b. A summary of the results of tests performed for periodic inspection, group C (see 3.1), including the number and mode of failures. The summary shall include results of all periodic inspection tests performed and completed during the 24-month period. If the summary of the test results indicates nonconformance with specification requirements, and corrective action acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the qualified products list.

Failure to submit the report within 30 days after the end of each 24-month period may result in loss of qualification for the product. In addition to the periodic submission of inspection data, the contractor shall immediately notify the qualifying activity at any time during the 24-month period that the inspection data indicates failure of the qualified product to meet the requirements of this specification.

In the event that no production occurred during the reporting period, a report shall be submitted certifying that the company still has the capabilities and facilities necessary to produce the item. If during two consecutive reporting periods there has been no production, the manufacturer may be required, at the discretion of the qualifying activity, to submit his qualified products to testing in accordance with the qualification inspection requirements and the reason for no production.

4.6 Quality conformance inspection.

4.6.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A, B, and C inspections (see 3.1).

4.6.1.1 Inspection lot. An inspection lot shall consist of all products of the same type, produced under essentially the same conditions, and offered for inspection at one time.

4.6.1.2 Group A inspection. Group A inspection shall consist of the inspection specified (see 3.1).

4.6.1.2.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection level II. The acceptable quality level (AQL) shall be 1 percent for major defects and 4 percent for minor defects. Major and minor defects shall be as defined in MIL-STD-105. (Classification of major and minor defects for visual and mechanical examination is shown in table II.)

4.6.1.2.2 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.1.3 Group B inspection. Group B inspection shall consist of the inspections specified (see 3.1) and shall be made on sample units which have been subjected to and have passed group A inspection.

4.6.1.3.1 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105 for special inspection level S-1. The AQL shall be 2.5 percent defective.

4.6.1.3.2 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.1.3.3 Disposition of sample units. Sample units which have passed the group B inspection may be delivered on the contract if the lot is accepted and the sample units are still within specified electrical tolerances.

4.6.1.4 Periodic inspection. Periodic inspection shall consist of group C. Except where the results of these inspections show noncompliance with the applicable requirements (see 4.6.1.5.4), delivery of products which have passed groups A and B shall not be delayed pending results of these periodic inspections.

4.6.1.5 Group C inspection. Group C inspection shall consist of the inspections specified (see 3.1). Group C inspection shall be made on sample units selected from inspection lots which have passed groups A and B inspections.

4.6.1.5.1 Sampling plan. Three samples shall be selected once each month, or every 1,000 units, whichever occurs first.

4.6.1.5.2 Failures. If one or more sample units fail to pass group C inspection, the sample shall be considered to have failed.

4.6.1.5.3 Disposition of sample units. Sample units which have been subjected to group C inspection shall not may be delivered on the contract or purchase order.

4.6.1.5.4 Noncompliance. If a sample fails to pass group C inspection (see 3.1), the manufacturer shall notify the preparing activity and the cognizant inspection activity of such failure and take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which were manufactured under essentially the same materials and processes, and which are considered subject to the same failure. Acceptance and shipment of the product shall be discontinued until corrective action that is acceptable to the preparing activity has been taken. After the corrective action has been taken, group C inspection shall be repeated on additional sample units (all inspections, or the inspection which the original sample failed, at the option of the preparing activity.) Groups A and B inspections (see 3.1) may be reinstated, however, final acceptance and shipment shall be withheld until the group C inspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure shall be furnished to the cognizant inspection activity and the preparing activity.

4.6.2 Inspection of packaging. The sampling and inspection of the preservation and interior pack marking shall be in accordance with the groups A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification and the marking requirements of MIL-STD-129.

4.7 Methods of inspection.

4.7.1 Visual and mechanical inspections. Products shall be examined to verify that the materials, design, construction, physical dimensions, marking, and workmanship are in accordance with the applicable requirements (3.3, 3.4, 3.6, and 3.7). Defects shall be classified as specified in table II.

4.7.2 Acoustic quality (see 3.5.3). A constant voltage having a value of 1.5 ± 0.1 volts rms shall be applied at the proper contacts of the connector such that the voltage will be applied to the voice coil terminals of the earphone elements and the voltage shall be continuously varied from 100 to 4,500 Hz and back to 100 Hz.

4.7.3 Attenuation (see 3.5.4). With the headset installed as illustrated in figure 2 and adjusted to simulate proper fit, the test equipment shall be configured to provide the functions indicated to supply sound and sample both open exposed and attenuated noise levels within the sound chamber. The subject dummy head used shall be a 95th percentile dummy head fitted with latex artificial skin to simulate the human head. A human subject's head may be used in lieu of the artificial head and may be an aid in assuring proper fit during the sampling sequence. The reference spectrum shall be white noise at 90 ± 3 dB from 40 to 8,000 Hz. This spectrum is illustrated on figure 3. The spectrum shall be sampled and compared to the reference spectrum. This comparison signal will be utilized to equalize the signal which is

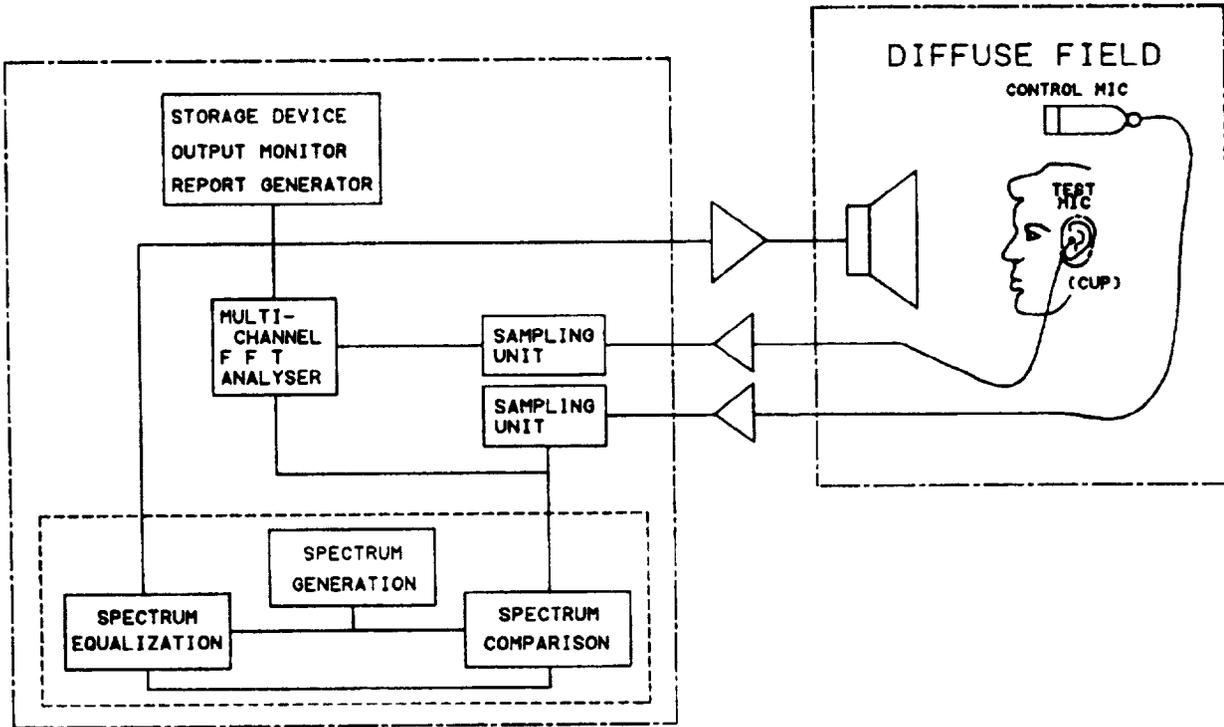


FIGURE 2. Typical test configuration.

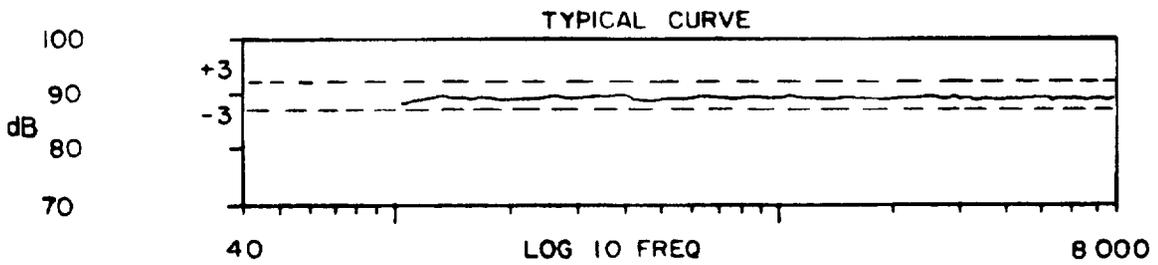


FIGURE 3. Noise spectrum limits.

injected into the sound chamber. Spectrum sampling shall continue until the spectrum is equalized to the reference spectrum throughout the range of 40 to 8,000 Hz and at a sound pressure level (SPL) of 90 \pm 3 dB. When the injected noise spectrum at the control microphone is fully equalized and at the proper noise level, sampling shall begin. Sampling shall occur for both the control microphone and test microphone in 16 Hz increments between 125 and 4,000 Hz and 40 Hz increments between 4,000 and 8,000 Hz. The control microphone and test microphone levels shall be recorded as well as the differential level between the control microphone and the test microphone. Sampling shall be conducted for both earcups of each test sample unit. Each level shall be stored for each individual test increment to be utilized in report generation. To establish a calculated average attenuation/frequency chart, this cycle shall be repeated a minimum of 3 times. The attenuation test report shall consist of a control microphone frequency spectrum chart, a test microphone frequency spectrum for each earcup and a calculated average attenuation/frequency chart (for both earcups) for each test sample unit. The calculated average attenuation/frequency chart shall be checked for compliance with the requirements of 3.5.4.

4.7.4 Articulation (see 3.5.5). The articulation test shall be performed in a test noise field generated by a white noise generator capable of providing a uniform energy per cycle within \pm 7 dB from 100 Hz to 6,000 Hz at a sound pressure level of 120 dB above 0.0002 dynes per square centimeter. The test shall be conducted with a minimum of three subjects using standard monosyllable phonetically balanced (PB) word list in accordance with ANSI S3.5-1969.

4.7.5 Strain relief (see 3.5.6). The cord conductors shall be detached from the plug. The jacket of the cord or cable assembly shall be suitably marked adjacent to the end of the plug or clamp and its position relative to the end of the plug noted. The plug shall be securely held or clamped, and a force shall be applied to the cord in a direction tending to withdraw the cord from the plug. The force shall be increased gradually to 12 pounds and held at that value for 10 seconds. A change in position of the jacket marking relative to the end of the plug shall be considered as evidence of slippage of the cord or cable assembly out of the plug.

4.7.6 Shock - drop (see 3.5.7). The assembly shall be dropped at least six times from a height of 6 feet on a concrete floor. The assembly shall strike at least once on the microphone protective shield and once on each earcup. Following the test, the assembly shall be examined for damage to the product due to breaking or cracking and the product shall be subjected to the acoustic quality test as specified in 4.7.2.

4.7.7 Fungus (see 3.5.8). At the option of the contractor, the contractor shall certify that the materials meet the requirements of MIL-STD-454 for fungus resistant materials, or test method 510 of MIL-STD-810 shall be performed. Upon completion of the test the surface shall be examined for flaking and peeling.

4.7.8 Vibration (see 3.5.9). The headset or headset-microphone shall be tested in accordance with test method 201 of MIL-STD-202. Upon completion of the test the acoustic quality test in accordance with 4.7.2 and the visual and mechanical examination in accordance with 4.7.1 shall be performed.

4.7.9 Temperature (see 3.5.10). The headset or headset-microphone shall be tested in accordance with MIL-STD-810, method 501.1, procedure 1 with a storage temperature of -55°C and an operating temperature of -40°C and MIL-STD-810, method 502.1, procedure 1 with a storage temperature of $+70^{\circ}\text{C}$ and an operating temperature of $+65^{\circ}\text{C}$. Upon completion of the test the acoustic quality test in accordance with 4.7.2 and the visual and mechanical examination in accordance with 4.7.1 shall be performed.

4.7.10 Temperature shock (see 3.5.11). The headset or headset-microphone shall be tested in accordance with method 503 of MIL-STD-810. Upon completion of the test the acoustic quality test in accordance with 4.7.2 and the visual and mechanical examination in accordance with 4.7.1 shall be performed.

4.7.11 Humidity (see 3.5.12.1). The headset or headset-microphone shall be tested in accordance with method 103 of MIL-STD-202, test condition B. Upon completion of the test the acoustic quality test in accordance with 4.7.2 and the visual and mechanical examination in accordance with 4.7.1 shall be performed.

TABLE II. Classification of defects for visual and mechanical examination.

Defect type	Classification	
	Major	Minor
Dimensions	Dimensions not as specified.	---
Materials and finish	Materials not as specified. Wrong or incomplete finish. Large amount of flaking, peeling, or chipping of finish.	Scratches, cuts, abrasions, etc., causing exposure of base metal, or relatively small amounts of flaking, peeling, chipping.
Parts	Missing parts. Inoperative, improperly assembled, or defective parts which could cause failure. Wrong parts.	Defective parts which would reduce efficiency of use, but not cause failure in service. Cracks or chipped surfaces having no effect on the functioning, assembly, maintenance, or life.
Marking	Marking missing, illegible, or incorrect.	Markings dirty or smudged, but legible
Foreign objects	Any metallic foreign object not firmly attached ^{1/} which could cause a short circuit or acoustical malfunction. Any nonmetallic foreign object such as insulation, dirt, or phenolic chips which could cause acoustical malfunction.	Any metallic or nonmetallic foreign object which affects appearance but which could not cause acoustical malfunction.
Soldering	Improper wrap - Less than 1/2 turn. Unsoldered joint - Solder not applied where intended. Insufficient solder - Minimum dimension of solder bridge less than twice the diameter of the wire or less than 3/32 inch, whichever is greater. Entire area of contact between wire and terminal not joined by solder bridge. Cold solder joint - Chalky appearance, lacks metallic luster, presents rough "pileup" appearance; movement of wire or solder upon pick application. Rosin joint - Presence of excess rosin; relative movement of wire or solder upon pick application. Insulation in terminal hole - Solder over insulation; no appearance of visible wire contour.	Improper wrap - 1/2 turn or more, but less than one turn. Excess solder - Buildup solder on joint greater than necessary for good soldering, usually resulting in obliteration of wire contour. Cold solder joint - Chalky appearance, lacks metallic luster, presents rough "pileup" appearance; no relative action between wire and solder upon pick application.
Wiring	Broken strands - More than 20 percent; except in a 7-strand conductor, more than 2 broken strands. Insulation burned, abraded, pinched, or deteriorated between two or more conductors, resulting in a potential short circuit. Taut wire - Wire exhibits no slack and subsequent breakage may occur due to stress on terminal or part. Insulation frayed to the extent that a potential short circuit exists.	Broken strands - 20 percent or less. In a 7-strand conductor, 2 broken strands. Insulation burned, abraded, pinched, or deteriorated, with exposure of bare wire, but short circuit not possible. Taut wire - Slight stress on conductor, but no possibility of subsequent breakage.

^{1/} Foreign objects that cannot be dislodged by the moderate application of pressure with a pick or spud shall be considered to be firmly attached.

4.7.12 Shock (see 3.5.13). The headset or headset-microphone shall be tested in accordance with test method 213 of MIL-STD-202, test condition A. Upon completion of the test the acoustic quality test in accordance with 4.7.2 and the visual and mechanical examination in accordance with 4.7.1 shall be performed.

4.7.13 Salt fog (see 3.5.14). The headset or headset-microphone shall be tested in accordance with test method 101 of MIL-STD-202, test condition B. Upon completion of the test the acoustic quality test in accordance with 4.7.2 and the visual and mechanical examination in accordance with 4.7.1 shall be performed.

5. PACKAGING

5.1 Preservation. Preservation shall be level A, B or C, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning. Products shall be cleaned in accordance with MIL-P-116, process C-1.

5.1.1.2 Drying. Products shall be dried in accordance with MIL-P-116.

5.1.1.3 Preservative application. Preservatives shall not be used.

5.1.1.4 Unit packs. Each product shall be unit packed one each in accordance with submethod IA-15 of MIL-P-116 insuring compliance with the applicable requirements of that specification. The container shall conform to PPP-B-636.

5.1.1.5 Intermediate packs. Intermediate packs are not required.

5.1.2 Level B. The requirements for level B shall be as specified for level A except that submethod IC-2 of MIL-P-116 shall be as the method of preservation.

5.1.3 Level C. The level C preservation of products shall conform to the MIL-STD-794 requirements for this level.

5.2 Packing. Packing shall be level A, B or C, as specified (see 6.2).

5.2.1 Level A. Products, preserved as specified in 5.1, shall be packed in wood boxes conforming to PPP-B-601, overseas type or PPP-B-621, class 2. Closure and strapping shall be in accordance with the applicable container specification except that metal strapping shall conform to QQ-S-781, type I, finish A. The requirements for level B packing shall be used when the total quantity of a stock numbered product for a single destination does not exceed a packed volume of one cubic foot.

5.2.2 Level B. Products, preserved as specified in 5.1, shall be packed in fiberboard containers conforming to PPP-B-636, class weather resistant, style optional, special requirements. The requirements for box closure, waterproofing and reinforcing shall be in accordance with method V of the PPP-B-636 appendix.

5.2.3 Level C. Products, preserved as specified in 5.1, shall be packed in fiberboard containers conforming to PPP-B-636, class domestic, style optional, special requirements. Closures shall be in accordance with the appendix thereto.

5.2.4 Unitized loads. Unitized loads, commensurate with the level of packing specified in the contract or purchase order, shall be used whenever total quantities for shipment to one destination equal 40 cubic feet or more. Quantities less than 40 cubic feet need not be unitized. Unitized loads shall be uniform in size and quantities to the greatest extent practicable.

5.2.4.1 Level A. Products, packed as specified in 5.2.1, shall be unitized on pallets in conformance with the MIL-STD-147, load type I, with a wood cap (storage aid 5) positioned over each load.

5.2.4.2 Level B. Products, packed as specified in 5.2.2, shall be unitized as specified in 5.2.4.1 except that weather resistant fiberboard caps (storage aid 4) shall be used in lieu of wood caps.

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5.2.4.3 Level C. Products, packed as specified in 5.2.3, shall be unitized as specified in 5.2.4.2 except that the fiberboard caps shall be class domestic.

5.3 Marking. In addition to any special or other identification marking required by the contract or purchase order (see 6.2), each unit and exterior container and unitized load shall be marked in accordance with MIL-STD-129. The complete military or contractor's type or part number, as applicable (including the FSCM), shall be marked on all unit and supplementary packs in accordance with the identification marking provisions of MIL-STD-129.

5.4 General.

5.4.1 Exterior containers. Exterior containers (see 5.2.1, 5.2.2 and 5.2.3) shall be of a minimum tare and cube consistent with the protection required and shall contain equal quantities of identical stock numbered items to the greatest extent practicable.

5.4.2 Packaging inspection. The inspection of these packaging requirements shall be in accordance with 4.6.2.

6. NOTES

6.1 Intended use. Products delivered under this specification are intended for use in high ambient noise level environments. These environments are areas where the ambient noise levels are between 105 and 125 dB SPL (i.e. flight lines).

6.2 Ordering data. Acquisition documents should specify the following.

- a. Title, number, and date of this specification.
- b. Levels of preservation and packing required (see 5.1 and 5.2).
- c. If special or additional identification is required (see 5.3).

6.2.1 Packaging requirements. The preservation, packing, and marking specified herein are intended for direct shipments to the Government. However, at the option of the contractor or when so specified, the packaging provisions herein are also applicable for the preparation of products for shipment from the parts contractor to the original equipment manufacturer.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for inclusion in applicable Qualified Products List whether or not such products have actually been so listed by that date. The attention of the contractors is called to this requirement, and manufacturers are urged to have the products that they proposed to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Electronic Support Division AFLC, 2750 ABW/ES, Gentile AF Station, Dayton, OH 45444. Application for qualification tests shall be made in accordance with "Provisions Governing Qualification SD-6" (see 6.3.1).

6.3.1 Provisions governing qualification. Copies of "Provisions Governing Qualification" may be obtained upon application to Commanding Officer, Electronic Support Division AFLC, 2750 ABW/ES, Gentile AF Station Dayton, OH 45444.

6.4 Compatible metals. Compatibility of intermetallic contacting surfaces is defined as specified in MIL-F-14072

6.5 Conditions for use of level B preservation. When level B preservation is specified (see 5.1.2), this degree of protection should be used for the acquisition of products for resupply worldwide under known favorable handling, transportation and storage conditions.

Custodian:
Air Force - 85

Review activity:
DLA - ES

Agent:
DLA - ES

Preparing activity:
Air Force - 85

(Project 5965-F185)