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DETAIL SPECIFICATION

TELEPHONE EQUIPMENT, SOUND POWERED TELEPHONE HANDSET, HEADSET – CHEST SET, AND HEADSET – CHEST SET, NOISE ATTENUATING

Comments, suggestions, or questions on this document should be addressed to: Commander, Naval Sea Systems Command, ATTN: SEA 05S, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard DC 20376-5160 or emailed to CommandStandards@navy.mil, with the subject line "Document Comment". Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil.

AMSC N/A FSC 5965

DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
1333 ISAAC HULL AVE SE
WASHINGTON NAVY YARD DC 20376-0001

IN REPLY REFER TO
4121
Ser 05H/074
JAN 1 9 2016

From: Commander, Naval Sea Systems Command
(SEA 05, CHENG)

Subj: CHENG'S INTENT FOR IMPLEMENTATION OF TELEPHONE EQUIPMENT, SOUND POWERED TELEPHONE HANDSET, HEADSET, AND HEADSET-NOISE ATTENUATING

Ref: (a) MIL-DTL-15514G, Telephone Equipment, Sound Powered Telephone Handset, Headset, and Headset-Noise Attenuating

1. Purpose. MIL-DTL-15514G has been revised to promote greater competition for the acquisition of sound powered telephone equipment.

2. Discussion. The DoD procurement activity (DLA-CC) indicated to NAVSEA that there is a significant demand level for these items creating high priority backorders. This revision allows DLA to relieve these backorders for over 200 weapon system platforms. Items covered in this specification have historically been provided through a single manufacturer; however, other companies have expressed interest in manufacturing these items. This revision enables competition for production of these items, thus improving the potential for cost savings to the Navy. Sound powered telephones are essential to all Navy afloat platforms, and this updated specification allows continued use in current and future acquisitions.

3. Action. NAVSEA requires the installation and maintenance of sound powered telephones, and will provide continued technical assistance for shipboard use. This specification will be employed as a contractual resource for new construction acquisition, and in procurement on operational platforms through the Naval Supply System Command (NAVSUP) and the Defense Logistics Agency (DLA).

4. Point of Contact. For information pertaining to MIL-DTL-15514G, please contact the Technical Warrant Holder, Jeffrey Paige, SEA 05H5, commercial (202)781-5370, email: jeffrey.paige@navy.mil.

L. B. FULLER
By direction

Affixed to: MIL-DTL-15514G

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

1. SCOPE

1.1 Scope. This specification covers sound powered telephone handsets, headset-chest sets, and headset-chest sets, noise attenuating, for naval shipboard and shore use.

1.2 Classification. Telephone subsets are of the following types as specified (see 6.2):

a. Type H-200/U – Headset – chest set.

b. Type H-202/U – Headset – chest set, noise attenuating.

c. Type H-203/U – Handset.

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL SPECIFICATIONS

TT-P-645	-	Paint, Alkyd Type, Formula Number 84

FEDERAL STANDARDS

FED-STD-595/27038	-	Colors Used In Government Procurement, Black #27038

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-S-901	-	Shock Tests, H.I. (High-Impact) Shipboard Machinery, Equipment, and Systems, Requirements for
MIL-DTL-5541	-	Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-DTL-15024	-	Plates, Tags, and Bands for Identification of Equipment, General Specification for
MIL-DTL-15090	-	Enamel, Equipment, Light Gray (Navy Formula No. 111)
MIL-DTL-16878	-	Wire, Electrical, Insulated, General Specification for
MIL-T-24649	-	Telephone, Hardware, Sound Powered, General Specification for
MIL-PRF-39014	-	Capacitor, Fixed, Ceramic Dielectric (General Purpose), Established Reliability and Non-Established Reliability, General Specification for

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-108	-	Definitions of and Basic requirements for Enclosures for Electric and Electronic Equipment
MIL-STD-130	-	Identification Marking of U.S. Military Property

MIL-STD-167-1	-	Mechanical Vibrations of Shipboard Equipment (Type I – Environmental and Type II – Internally Excited)
MIL-STD-202	-	Electronic and Electrical Component Parts
MIL-STD-889	-	Dissimilar Metals
MIL-STD-1472	-	Human Engineering

DEPARTMENT OF DEFENSE HANDBOOK

MIL-HDBK-454	-	General Guidelines for Electronic Equipment

(Copies of these documents are available online at http://quicksearch.dla.mil.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

NAVAL SEA SYSTEMS COMMAND (NAVSEA) DRAWINGS

432-8612563	-	Head Set/Chest Set, Sound Powered, Type H-200/U Design and Assembly

(Copies of this document are available from the applicable repositories listed in S0005-AE-PRO-010/EDM, which can be obtained online via Technical Data Management Information System (TDMIS) at https://mercury.tdmis.navy.mil/. Copies of this document may also be obtained from the Naval Ships Engineering Drawing Repository (NSEDR) online at https://199.208.213.105/webjedmics/index.jsp. To request an NSEDR account for drawing access, send an email to NNSY_JEDMICS_NSEDR_HELP_DESK@navy.mil.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ASA S1.15	-	Measurement Microphones – Part 2: Primary Method for Pressure Calibration of Laboratory Standard Microphones by the Reciprocity Technique
ANSI/ASA S3.2	-	Method for Measuring the Intelligibility of Speech over Communication Systems
ANSI/ASA S3.7	-	Method for Coupler Calibration of Earphones
IPC J-STD-001	-	Requirements for Soldered Electrical and Electronic Assemblies
IPC J-STD-004	-	Requirements for Soldering Fluxes with Amendment 1
IPC J-STD-006	-	Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications

(Copies of these documents are available online at http://webstore.ansi.org/.)

ASTM INTERNATIONAL

ASTM B26/B26M	-	Standard Specification for Aluminum-Alloy Sand Castings
ASTM B209	-	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B545	-	Standard Specification for Electrodeposited Coatings of Tin

ASTM D2000	-	Standard Classification System for Rubber Products in Automotive Applications
ASTM D5948	-	Standard Specification for Molding Compounds, Thermosetting

(Copies of these documents are available online at www.astm.org.)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. (IEEE)

IEEE 269-2010	-	IEEE Standard Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets

(Copies of this document are available online at http://www.ieee.org/.)

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MW 1000	-	Magnet Wire

(Copies of this document are available online at www.nema.org.)

SAE INTERNATIONAL

AS7928	-	Terminals, Lug: Splices, Conductor: Crimp Style, Copper, General Specification for

(Copies of these documents are available online at www.sae.org.)

UNDERWRITERS LABORATORIES, INC. (UL)

UL 62	-	Flexible Cords and Cables

(Copies of this document are available online at www.comm-2000.com.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

3.2 General requirements. See 6.10 for information on applicable requirements, in addition to the requirements specified herein. Whenever the guidance of MIL-HDBK-454 conflicts with a requirement of this specification, the requirement of this specification shall take precedence.

3.2.1 New technology. Equipment manufactured in accordance with this document may utilize new technology provided form, fit, and function are maintained. The equipment manufactured incorporating new technology must meet or exceed the requirements of this document (see 6.5).

3.2.2 Sound powered telephone requirements. The sound powered telephones shall provide high intelligibility, ruggedness, reliability, simplicity, and ease of maintenance and operation. The sound powered telephone sets shall function to provide communication completely independent of any external electrical energy. Compliance shall be by inspection as specified in 4.5.3.

3.2.3 Salt fog. The sound powered telephone sets shall be capable of withstanding the salt fog test as specified in 4.5.5 without evidence of physical damage or corrosion. Water shall not have entered into the cavities behind the diaphragm, or into the electrical connections. In addition, all parts shall function satisfactorily after the material is reassembled. The sound powered telephone sets shall show no change of characteristics in excess of 1.5 decibels (dB) from the actual values originally determined for the sets, as determined by the acoustic and frequency response tests for two sound powered units on a network as specified in 3.10.1 and 3.10.2.

3.2.4 Shock. Sound powered telephone sets shall be capable of withstanding the shock test as specified in 4.5.6 with no evidence of physical or electrical defects, except minor chipping or scratches. Upon completion of the test, there shall be no evidence of physical or electrical defects. The sound powered telephone sets shall show no change of characteristics in excess of 1.5 dB from the actual values originally determined for the sets, as determined by the acoustic and frequency response tests for two sound powered units on a network as specified in 3.10.1 and 3.10.2.

3.2.5 Random drop. There shall be no evidence of breaking, cracking, or other physical or electrical damage to the sound powered telephone sets when the sound powered telephone sets are tested as specified in 4.5.7. Upon completion of the tests specified in 4.5.7 the sound powered telephone sets shall show no change of characteristics in excess of 1.5 dB from the actual values originally determined for the sets, as determined by the acoustic and frequency response tests for two sound powered units on a network as specified in 3.10.1 and 3.10.2.

3.2.6 Interchangeability and standardization. The common parts specified in sections 3.5.1, 3.6.1, 3.7.1, 3.8.1, and referenced figures shall be functionally and dimensionally interchangeable across all manufactures of sound powered equipment. In addition, all parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable.

3.2.7 Designation and marking. Identification plates shall be provided as part of the equipment. The identification plates shall be in accordance with MIL-DTL-15024. Compliance shall be by inspection as specified in 4.5.28. Unless otherwise specified (see 6.2), identification plates shall include the following information:

a. Sound powered handset (or headset)
b. Type designation
c. Stock number
d. Manufacturer's name
e. Contract or order number

3.3 Electrical requirements.

3.3.1 Insulation resistance. The insulation resistance of sound powered telephone sets shall be greater than 10 megohms when subjected to the test as specified in 4.5.8.

3.3.2 Operational switch. The switch shall be a non-locking, normally open, spring return switch designed and located to permit ready operation with either the thumb or finger. The switch shall have one set of make contacts. The switch button shall be constructed of nickel plated brass, and insulated from the switch and the electrical circuit. Button and switch assemblies shall show no undue pitting of the contacts, bending of springs, or failure of parts after 100,000 cycles of operation when tested as specified in 4.5.9 and 4.5.10.

3.3.2.1 Push-to-talk switch. The headset-chest set switch shall connect the microphone transducer to the external circuit when in the closed (depressed) position as depicted in figure 1 or figure 2.

3.3.2.2 Push-to-operate switch. The handset switch shall connect the microphone transducer and receive transducer from the external circuit when in the closed (depressed) position as depicted in figure 3.

3.3.3 Wiring. Wiring employed in the wiring of the assembly shall be verified in accordance with 4.5.3 and shall conform to the following:

3.3.3.1 Insulated wire. Insulated wire shall be in accordance with MIL-DTL-16878.

3.3.3.2 Magnet wire. Magnet wire shall be in accordance with NEMA MW 1000.

3.3.3.3 Flexible cord. Unless otherwise approved (see 6.5), flexible cords shall be of Type SJOOW in accordance with UL 62.

3.3.3.4 Internal wire leads. Wire leads internal to the transducers shall be attached to the coils and other internal components and terminals or case by soldering, welding, brazing, or other method (e.g., lead-sweating of nylon-coated wires) in such a manner as to provide adequate electrical connection and mechanical strength.

3.3.4 Capacitor. Unless otherwise approved (see 6.5), capacitors used in the construction of sound powered telephone equipment shall be in accordance with MIL-PRF-39014 when tested in accordance with 4.5.3.

3.4 Materials. Unless otherwise specified herein, 3.4.1 through 3.4.7 shall be verified in accordance with 4.5.3.

3.4.1 Wire terminals. Solderless wire terminals or lugs in accordance with SAE-AS7928 are preferred; a commercial terminal or lug satisfying all the requirements herein will be acceptable. Wire subject to breakage at the connection shall be provided with terminals that grip the wire insulation. Wires soldered to terminals shall comply with 3.4.6.

3.4.2 Recycled, recovered, environmentally preferable, or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs (see 6.8).

3.4.3 Toxicity. When evaluated in accordance with 4.5.4 (the Health Hazard Assessment [HHA]), the item shall have no adverse effect on the health of personnel when used for its intended purpose (see 4.5.4 and 6.9).

3.4.4 Pure tin (see 6.7). The use of pure tin, as an underplate or final finish, is prohibited both internally and externally. Tin content of microphone and microphone assembly components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass. For additional information on this matter, refer to ASTM B545.

3.4.5 Metals. All metal parts, other than current-carrying parts, shall be of corrosion-resistant material or shall be suitably protected to resist corrosion.

3.4.5.1 Aluminum. Aluminum shall be in accordance with ASTM B26/B26M; alloy 2024, temper T4 of ASTM B209; alloy 5052, temper T4 of ASTM B209; or other materials specifically approved by the procuring activity (see 6.5).

3.4.5.2 Corrosion-resistant steel. Corrosion-resistant steel shall be in accordance with American Iron and Steel Institute (AISI) Types 302, 304, or 316.

3.4.5.3 Non-corrosion resistant material. The use of non-corrosion resistant steel alloys, except where specifically required for electronic purposes, should be kept to a minimum. If used, non-corrosion resistant steels shall be coated or metallurgically processed to resist corrosion.

3.4.5.4 Dissimilar metals. Selection of metals for use in electronic equipment should be made in accordance with the requirements of MIL-STD-889. Where the requirements herein preclude the insulation of incompatible metal combinations as identified in MIL-STD-889 from one another, specific attention should be paid to isolate the combination, by plating, coating, or isolating the contact surface from exterior environments.

3.4.6 Solder connections. The soldered electrical connections shall be manufactured and inspected in accordance with Class 2 or Class 3 guidelines of J-STD-001. Solder and solder flux shall be in accordance with J-STD-004 and J-STD-006 respectively.

3.4.7 Plastics. Unless otherwise approved (see 6.5), the material for all molded structural parts (excluding the coil forms and other internal parts) shall be a phenolic material in accordance with ASTM D5948 Type CFI-5.

3.5 Sound powered transducers – detailed design. Unless otherwise specified herein, 3.5.1 through 3.5.7 shall be verified in accordance with 4.5.3.

3.5.1 Sound powered transducer interchangeability.

3.5.1.1 H-200/U headset transducers. The H-200/U headset-chest set receiver and microphone transducers shall be physically interchangeable with the receiver and microphone transducers shown in NAVSEA drawing 432-8612563.

3.5.1.2 H-202/U headset transducers. The H-202/U headset-chest set receiver and microphone transducers shall be physically interchangeable with the receiver and microphone transducers shown in NAVSEA drawing 432-8612563.

3.5.1.3 H-203/U handset transducers. The H-203/U handset receiver and microphone transducers shall be of a common design, function bi-directionally (will function as a receiver or transmitter), and be physically interchangeable with the transducer.

3.5.2 Sound powered transducers. Electrical connections between the sound powered transducer and the circuit contact in the shell shall be made by fine silver-plated, spring-tensioned contacts (plating shall be not less than 0.025 mm [0.001 inch] thick), or other materials as specifically approved by the command or agency concerned (see 6.5).

3.5.2.1 Construction. The sound powered transducer shall consist of the necessary permanent magnet, armature, coils, and diaphragm assembly with all parts, other than the exterior of the diaphragm assembly, enclosed in a dust-proof housing.

3.5.2.2 Replaceable. The sound powered transducers shall be designed so that they may be quickly replaced in their shells without the use of special tools, disturbing any electrical wiring, prevent exposure of the armature assembly to foreign matter, and prevent phase changes when replacing the transducer.

3.5.2.3 Electrical contacts. Electrical contact connections between the sound powered transducer and the circuit contact in the shell shall be plated, spring-tensioned contacts capable of meeting the requirements of this specification (plating shall be not less than 0.025 mm [0.001 inch] thick), or other materials as specifically approved by the command or agency concerned (see 6.5).

3.5.3 Magnetic material. The magnetic material shall be selected for its retentivity and corrosion-resistant properties. The permanent magnets shall be held in place in the transducer by a positive mechanical device.

3.5.4 Internal connection. Internal connections of the transducer shall be soldered as specified in 3.4.6.

3.5.5 Impedance. The impedance of the sound powered transducers shall be of the following values when measured as specified in 4.5.11:

Transducer	Ohms
Headset receivers	1,069±107
H-203/U handset microphone or receiver	1,000±100
Headset microphones	110±15

3.5.6 Transducer output voltage. When the microphone transducer is tested as specified in 4.5.12, the output voltage of the transducer shall be 25±2 millivolts. The audible output of the receiver transducer shall comply with 3.10.1 when tested as specified in 4.5.14 and 4.5.15.

3.5.7 Armature stability. The stability of the armature shall be such that, when pressed against either pole piece, it shall not strike to the opposite pole piece upon release when tested as specified in 4.5.16.

3.6 Type H-200/U headset-chest set – detailed design. Unless otherwise approved (see 6.5), the sound powered telephone headset, type H-200/U, shall be in accordance with NAVSEA drawing 432-8612563. Unless otherwise specified herein, 3.6.1 through 3.6.9.1 shall be verified in accordance with 4.5.3.

3.6.1 Headset. Each headset shall consist of the following:

a. Two sound powered receiver assemblies including transducers

b. One sound powered microphone transducer

c. One headband assembly

d. One microphone support

e. One transmitter assembly (includes microphone housing, push-to-talk switch, and mouthpiece)

f. One chest plate and junction box (includes neck strap, terminals, and capacitors)

g. One cord and plug (includes the plug and external circuit, transceiver, and both receiver cords)

3.6.2 Sound powered transducers. The sound powered transducers shall comply with the applicable requirements of 3.5. Full side tone shall be provided in the receiver transducers. Interconnection of the sound powered transducers shall be as shown on figure 1.

3.6.3 Headband assembly. The headband shall be a single band, slide adjustable with a positive locking mechanism. The adjustment shall be smooth and uniform throughout the entire adjustment range. The headband shall permit rotation of the receivers about both a horizontal and vertical axis parallel to the plane of the diaphragm. The mounting axis of the receiver assembly shall pass through approximately the center of gravity of the completed assembly. Any metal parts of the headband shall not come into contact with the user's skin. Headband sizing shall be in accordance with the anthropometry data of MIL-STD-1472. The headband shall be padded and designed to preclude operator discomfort. Testing shall be as specified in 4.5.25.

3.6.3.1 Acoustic seal. The headband shall produce a force on the receiver assemblies (see 3.6.6) sufficient to provide optimum acoustic seal (see 3.6.6.2). The spring loading of the headband shall maintain the optimum acoustic seal over a spread of 135 to 160 mm (5.3 to 6.3 inches) when tested as specified in 4.5.25.

3.6.3.2 Elasticity. The headband shall show no permanent set or loss of elasticity when tested as specified in 4.5.25.

3.6.3.3 Spread force. The force required to spread the headband from rest to 160 mm (6.3 inches) shall not exceed 11.1 newtons (2.5 pounds) when tested in accordance with 4.5.25.

3.6.3.4 Weight. The completed headset assembly, including two sound powered receiver assemblies and headband, exclusive of cords, shall weigh not more than 0.48 kilograms (1.06 pounds).

3.6.4 Microphone support. The microphone support shall permit the microphone assembly to be adjusted vertically and horizontally to within 13 mm (0.5 inch) of the user's mouth. The microphone support shall maintain the position of the microphone assembly in the relationship to the user's mouth. Locking devices on the supporting bracket shall be captive.

3.6.5 Transmitter assembly. The transmitter assembly shall consist of a microphone transducer (see 3.5), microphone housing, and a push-to-talk switch.

3.6.5.1 Microphone housing. The microphone housing shall provide a protective enclosure for the microphone transducer and an acoustic mouth piece. The microphone transducer shall be easily replaceable without the use of special tools.

3.6.5.2 Push-to-talk switch. The push-to-talk switch shall be as specified in 3.3.2.1.

3.6.5.3 Acoustic mouth piece. The acoustic mouth piece shall be constructed from a neoprene rubber in accordance with ASTM D2000, designed to prevent injury to the user, and shall exclude external noise from the microphone transducer.

3.6.6 Receiver assembly. The receiver assembly shall consist of a receiver transducer (see 3.5), a receiver shell, and earcushions. The receiver assembly shall be easily replaceable in the headband (see 3.6.3) by the user without the use of tools. The receiver transducer shall be easily replaceable in the receiver assembly by the user without the use of special tools.

3.6.6.1 Receiver shell. The receiver shell shall provide for the interconnection of the receiver transducers, suitable housing for the receiver transducers, and earcushions.

3.6.6.2 Earcushions. The earcushion shall form a seal around the arm of eye-glasses, and shall attenuate external noise at least 2 dB when tested as specified in 4.5.26. The earcushions shall not be cemented to the receiver shell; however, they shall remain attached during normal use.

3.6.7 Cord and plug. The pull test on any cord to junction box connection shall show no signs of loosening or other mechanical damage when tested in accordance with 4.5.27.

3.6.7.1 Plug. The external circuit plug shall be the Type H-39A in accordance with MIL-T-24649.

3.6.7.2 External circuit cord. The flexible external cord between the junction box and plug shall be within 76 mm (3 inches) of 6.1 meters (20 feet) in length and of the Type SJOOW18/2 in accordance with UL 62.

3.6.8 Chest plate assembly. The chest plate assembly shall include an aluminum mounting plate that shall support the mounting of the junction box (see 3.6.9), identification plate, aluminum supporting bracket for the microphone (see 3.6.4), and neck strap. A means shall be provided for attaching the ends of the neck strap to the chest plate, where either end can be readily detached from the chest plate by the user.

3.6.8.1 Material. The aluminum plate and support brackets shall be constructed of aluminum alloys as specified in 3.4.5.1.

3.6.8.2 Coatings. The aluminum plate and support brackets shall be chemically pretreated in accordance with MIL-DTL-5541 Type 2, Class 1A. It shall then be primed with a single coat of a material conforming to TT-P-645 or, and a single top coat of enamel conforming to MIL-DTL-15090 Class 2, or coated with a polyester urethane powder. The color shall be black, color No. 27038, in accordance with Fed-Std-595.

3.6.8.3 Neck strap. The neck strap material shall be nylon or orlon, and shall be constructed in accordance with NAVSEA drawing 432-8612563.

3.6.9 Junction box. The junction box shall be in accordance with NAVSEA drawing 432-8612563. Two capacitors and suitable screw terminals for the cord connections shall be provided inside the cover. Four flexible rubber protrusions at least 25 mm (1 inch) long, designed to accommodate the two receiver cords, a transmitter cord, and the external circuit cord, shall be an integral part of the junction box. The junction box and external components shall meet the applicable requirements when tested in accordance with the splashproof section of MIL-STD-108.

3.6.9.1 Material. The junction box shall be constructed from neoprene rubber in accordance with ASTM D2000 of a type and class that will meet all the requirements stated herein.

3.7 Type H-202/U headset – chest set, noise attenuating – detailed design. Unless otherwise specified herein, 3.7.1 through 3.7.4 shall be verified in accordance with 4.5.3.

3.7.1 Headset. Unless otherwise approved (see 6.5), the sound powered telephone headset – chest set, Type H-202/U, shall be in accordance with NAVSEA drawing 432-8612563, and meet all the requirements for a Type H-200/U headset-chest set except as specified in this section. Each Type H-202/U headset shall consist of the following:

a. Two sound powered, noise attenuating receiver assemblies, including transducers
b. One sound powered microphone transducer
c. One headband assembly
d. One microphone support
e. One transmitter assembly (includes microphone housing, push-to-talk switch, and mouthpiece)
f. One chest plate and junction box (includes neck strap, terminals, and capacitors)
g. One cord and plug (includes the plug and external circuit, transceiver, and both receiver cords)

3.7.2 Sound powered transducers. Full side tone shall be provided in the receiver transducers. Interconnection of the sound powered transducers shall be as shown on figure 2.

3.7.3 Receiver shells. The receiver units shall be housed in noise attenuating shells consisting of hard plastic cups lined with sound absorbing materials. The shells shall be provided with removable, washable, nonabsorbent, cushioned rings that will provide optimum sealing around the ears.

3.7.4 Weight. The completed H-202/U headset assembly, including two sound powered receiver assemblies in noise attenuating shells (see 3.7.3), and headband, exclusive of cords, shall weigh not more than 0.6 kilograms (1.31 pounds).

3.8 Type H-203/U handset – detailed design. Unless otherwise specified herein, 3.8.1 through 3.8.5.3 shall be verified in accordance with 4.5.3.

3.8.1 Handset. Unless otherwise approved (see 6.5), the sound powered telephone handset, Type H-203/U, shall be in accordance with figure 4. The sound powered telephone handset, Type H-203/U, shall consist of the following:

a. One sound powered receiver transducer
b. One sound powered microphone transducer
c. One handle assembly
d. One mouthpiece
e. One ear cap
f. One retractable cord

3.8.2 Sound powered transducer. Full side tone shall be provided in the receiver transducer. Interconnection of the sound powered transducers shall be as shown on figure 3.

3.8.3 Size and shape. The handset shall closely follow the size and shape as specified on figure 4. Minor changes in dimensions may be made to fit individual molding techniques. The handset shall be compatible in fit with handset holder Type Z-33 in accordance with MIL-T-24649.

3.8.4 Handle assembly. The handle assembly shall house the sound powered transducers, push-to-operate switch, mouth piece and ear cap, capacitor, and screw terminals for internal connection of components. Interconnection of the components shall be as specified on figure 3. The handset cradle shall be a smooth surface without any notable molding seams on the cradle that could cause operator discomfort when holding the handset. The handle assembly shall be inspected as specified in 4.5.3.

3.8.4.1 Push-to-operate switch. The push-to-operate switch shall be as specified in 3.3.2.2.

3.8.4.2 Mouth piece. The mouth piece shall be constructed to direct the user's voice toward the microphone transducer, prevent injury to the user, and exclude external noise from the microphone transducer. It shall provide locking features to prevent rotation of the mouthpiece to ensure proper orientation of the mouthpiece opening.

3.8.4.3 Ear cap. The ear cap shall be constructed to direct the output of the receiver transducer to the user's ear and provide a seal between the user's ear and the handset.

3.8.4.4 Retainment rings. The retainment rings securing the mouthpiece or ear piece and the transducers to the handset shall be made of metal and painted to match the color of the handset. The retainment ring shall allow the replacement of the transducers without the need of tools.

3.8.5 Retractable cord. Each handset shall be provided with a non-kinking, retractable, two-conductor retractile cord. The cord shall be insulated with a natural rubber compound encased in a Buna S jacket which is vulcanized in a helical spring coil form to produce a cord which will extend and retract freely. The length of the coiled portion of the cord shall be approximately 0.3 meters (1 foot) retracted, and not less than 1.5 meters (5 feet) extended. In addition to the coiled portion, there shall be a 100 mm (4 inch) straight portion at each end. The cord shall enter the handle assembly through a suitable stuffing gland nut. The cord shall be mechanically secured within the handle shell by a crimp type lug or other equally effective means, so as not to depend on solder for mechanical strength. Compliance shall be by inspection as specified in 4.5.27.

3.8.5.1 Conductor. Each conductor shall be equivalent to 511 circular mils (no. 23 AWG). It shall consist of 21 strands of no. 36 AWG tinned soft cadmium copper alloy, having a 1 percent nominal content of cadmium. It shall be bunch-stranded with a lay not exceeding 19 mm (0.75 inch).

3.8.5.2 Conductor color. The color of the insulation on the two conductors of the two-conductor cord shall be black and white.

3.8.5.3 Jacket. The cabled conductors shall be jacketed with a smooth, dense, Buna compound or Buna S natural rubber blend compound. The amount of natural rubber in the jacket compound shall not exceed 25 percent by weight of the total Buna S and natural rubber in the compound. The jacketing compound shall contain an approved type of sun proofing wax in the jacket after vulcanization. The average diameter of the two-conductor cord shall be 5.6 mm (0.22 inch) ±0.25 mm (0.01 inch).

3.9 Workmanship. Workmanship shall be in accordance with standard manufacturing practices and inspected during the manufacturing process for compliance. Compliance shall be by inspection as specified in 4.5.3. As a minimum, workmanship shall include the following practices:

a. Wires and cables should be positioned or protected to avoid contact with rough or irregular surfaces and sharp edges, and to avoid damage to conductors or adjacent parts.

b. There shall be no evidence of burns, abrading, or pinch marks in the insulation that could cause short circuits or leakage, and clearance between wires or cables and heat generating parts should be sufficient to minimize deterioration of the wires or cables.

c. After fabrication, parts and assembled equipment should be cleaned of smudges; loose, spattered, or excess solder; weld metal; metal chips and mold release agents; or any other foreign material which might detract from the intended operation, function, or appearance of the equipment.

d. Screws, nuts, and bolts should show no evidence of cross threading, mutilation, or detrimental or hazardous burrs, and should be firmly secured.

3.10 Acoustic performance.

3.10.1 Acoustic response. Acoustic response tests shall be performed on two configurations; the first configuration will connect two sound powered sets in parallel on a line, and the second configuration will connect ten sound powered sets in parallel on a line.

3.10.1.1 Handset. The acoustic response with ten units on the line shall not be more than 16 dB below the acoustic response level measured with two units on the line when tested as specified in 4.5.14.

3.10.1.2 Headset-chest set. The acoustic response with ten units on the line shall not be more than 6 dB below the acoustic response level measured with two units on the line when tested as specified in 4.5.15.

3.10.2 Frequency response. The overall frequency response for two sound powered telephone sets of the same type operating in parallel shall be a minimum of one octave wide at 90 dB re 20 micropascal, and the response shall exceed 99 dB re 20 micropascal at least once between the 1,100 and 1,700 Hertz (Hz) range when tested as specified in 4.5.17.

3.10.3 Magnetic stability, endurance, immersion, temperature, and vibration. Sound powered telephone sets, when subjected to the tests specified in 4.5.18 through 4.5.22, shall show no mechanical derangement or damage, or change of characteristics in excess of 1.5 dB from the actual values originally determined for the sets, as determined by the acoustic and frequency response tests for two sound powered units on a network as specified in 3.10.1 and 3.10.2.

3.10.4 Overload. When the sound powered telephone sets are subjected to the overload test specified in 4.5.23 there shall be no rattling or other evidence of the armatures striking the pole pieces.

3.10.5 Speech intelligibility. The speech intelligibility of the sound powered telephone sets shall enable the listener to repeat correctly at least 85 percent of the information received when tested as specified in 4.5.24. The speech intelligibility test shall also be performed after the immersion test (see 4.5.20), vibration test (see 4.5.22), and overload test (see 4.5.23).

3.10.6 Microphone output level. When the sound powered telephone sets are subjected to the microphone output test as specified in 4.5.12, the measured voltage across the shunt resistance shall meet the requirements of table I.

TABLE I. Average transducer response (in dB re 25 millivolts root mean square).

Warble tone band (see 4.5.13.3)	**H-200/U**	**H-202/U**	**H-203/U**
500 – 2,500 Hz	0 to 12 dB	0 to 12 dB	0 to 12 dB

4. VERIFICATION

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

a. First article inspection (see 4.5.3).

b. Conformance inspection (see 4.4).

4.2 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in 4.5.1 and 4.5.2.

4.3 First article inspection. Ten sound powered telephone handsets or headsets of each type shall be subjected to all the applicable examinations and tests as specified in table II. Examinations and tests shall be performed, in general, in the order listed. The sound powered telephone sets subjected to the first article inspection shall be tested in accordance with 4.5.

4.4 Conformance inspection. Conformance inspection shall include applicable items in table II and shall be as specified in table III. The telephone equipment shall conform to all requirements of this specification. See 6.10 for further information on MIL-HDBK-454. Whenever the guidance of MIL-HDBK-454 conflicts with a requirement of this specification, the requirement of this specification shall take precedence.

4.4.1 Lot. For the purpose of conformance inspection, a lot is defined as all the sound powered telephone sets of the same type, produced in one facility, using the same production processes and materials, and being offered for delivery at one time.

4.4.2 Sampling for conformance inspection. As a minimum, the contractor shall randomly select a sample quantity from each lot of completed sound powered telephone sets in accordance with table III, and inspect and test them in accordance with table II. Sound powered telephone sets for Group A inspection shall be selected in accordance with table III sampling plan A. The telephone sets for Group B inspection shall be selected in accordance with table III sampling plan B. Telephone sets for Group C inspection shall be selected in accordance with table III sampling plan C. If one or more defects are found in any sample, the entire lot represented by the sample shall be rejected. The contractor has the option of screening 100 percent of the lot for defective characteristic(s) or providing a new lot which shall be inspected and retested in accordance with the sampling plans contained herein.

TABLE II. First article and conformance inspection.

Group A		
Inspection	**Requirement**	**Verification**
General requirements	3.10.2	4.5.3
Designation and marking	3.2.7	4.5.28
Insulation resistance	3.3.1	4.5.8

TABLE II. First article and conformance inspection – Continued.

Group B		
Inspection	**Requirement**	**Verification**
General requirements	3.2	4.5.3
Impedance	3.5.5	4.5.11
Microphone output	3.5.6	4.5.12
Acoustic insulation	3.6.6.2	4.5.26
Acoustic response	3.10.1	4.5.14, 4.5.15
Frequency response	3.10.2	4.5.17
Speech intelligibility	3.10.5	4.5.24
Last three above inspections	3.10.1, 3.10.2, 3.10.5	4.5.14, 4.5.15, 4.5.17, 4.5.24
Group C		
Inspection	**Requirement**	**Verification**
Salt fog	3.2.3	4.5.5
Salt spray	3.2.3	4.5.5.1
Shock	3.2.4	4.5.6
Random drop	3.2.5	4.5.7
Push-to-talk switch	3.3.2.1	4.5.9
Push-to-operate switch	3.3.2.2	4.5.10
Armature stability	3.5.7	4.5.16
Magnetic stability	3.10.3	4.5.18
Endurance	3.10.3	4.5.19
Immersion	3.10.3	4.5.20
Temperature	3.10.3	4.5.21
Vibration	3.10.3	4.5.22
Overload	3.10.4	4.5.23
Headband spread	3.6.3.3	4.5.25
Retractable cord	3.8.5	4.5.27

TABLE III. Sampling for conformance inspection.

Lot size	Group A	Group B	Group C
2 to 8	All	3	2
9 to 25	8	3	2
26 to 50	8	5	3
51 to 90	8	6	4
91 to 150	12	7	5
151 to 280	19	10	6
281 to 500	21	11	7
501 to 1,200	27	15	8
1,201 to 3,200	35	18	9

4.5 Test procedures.

4.5.1 Test conditions. All measurements and tests shall be made at a temperature of 73±4 degrees Fahrenheit (°F) (23±2 degrees Celsius [°C]), air pressure of 650 to 800 millimeters of mercury, and relative humidity of 50±2 percent.

4.5.2 Acoustic environment. The environment in which the acoustic response and frequency response tests are made shall be free from reflected sound waves that would affect the measured results by not greater than 2 dB at any frequency in the 200 to 8,000 Hertz (Hz) range. The maximum sound pressure level produced by ambient noise shall not exceed 0.2 Pascal root mean square (rms) at any point within 0.91 meters (3 feet) of the microphone of the telephone set when the set is mounted in the test position.

4.5.3 General examination. Completed units shall be given a thorough examination to determine conformity to the applicable requirements with respect to material, finish, workmanship, construction, assembly, dimensions, and weight. The examination shall be limited to those examinations that may be performed without disassembling the unit in such a manner that its performance, durability, or appearance would be affected.

4.5.4 Toxicity. An HHA shall be conducted to ensure conformance to 3.4.3, as specified (see 6.9). The Navy and Marine Corps Public Health Center (NMCPHC) will evaluate the telephone equipment using the administrative HHA data provided by the manufacturer/distributor to the NMCPHC.

4.5.5 Salt fog. For first article inspection, two sound powered telephone sets of each type shall be subjected to salt fog tests in accordance with MIL-STD-202, Method 101, Test Condition A. Upon completion of the salt fog test, the acoustic and frequency responses shall be measured. The sound powered telephone set shall comply with 3.2.3.

4.5.5.1 Salt spray. Each earphone under test shall be subjected to salt spray in accordance with MIL-STD-202, Method 101, Test Condition A. The sound pressure output versus frequency characteristics shall be measured as specified in 4.5.1. The earphone shall comply with 3.2.3.

4.5.6 Shock. For first article inspection, two sound powered telephone sets of each type shall be subjected to shock tests in accordance with MIL-S-901. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan C. In preparing these tests, the handset shall be mounted in a standard handset holder in accordance with MIL-T-24649, and shall be secured to the shock machine. The headset or headset-noise attenuating shall be placed within a headset stowage box, in accordance with MIL-T-24649, and secured to the table of the shock machine. The cover of the stowage box shall be fastened to prevent its opening during the test. Upon completion of the shock test the acoustic and frequency response shall be measured. The sound powered telephone set shall comply with 3.2.4.

4.5.7 Random drop. For first article inspection, two sound powered telephone sets of each type shall be dropped six times from a height of 1.25 meters (4 feet) onto a concrete floor. The sound powered telephone sets shall strike not less than once on the receiver and once on the transmitter. Upon completion of the random drop test, the acoustic and frequency response shall be measured. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan C. The sound powered telephone sets shall comply with 3.2.5.

4.5.8 Insulation resistance. The insulation resistance of the sound powered telephone sets with cord assemblies shall be measured with a high quality 50 volts direct current (VDC) megger. All transducers shall be removed during the test. Measurements shall be made between each conductor of the cord with the push-to-talk or push-to-operate switch opened and closed. The insulation resistance shall comply with 3.3.1.

4.5.9 Push-to-talk switch. The push-to-talk switch assembly shall be tested for compliance with 3.3.2.1. The push-to-talk switch shall be operated for 100,000 cycles at a rate of 60 cycles per minute. One cycle shall consist of making and breaking a current of 20 milliamperes at 115 VDC, through a pure resistive load.

4.5.10 Push-to-operate switch. The push-to-operate switch assembly shall be tested for compliance with 3.3.2.2. The push-to-operate switch shall be operated for 100,000 cycles at a rate of 60 cycles per minute. One cycle shall consist of making and breaking a current of 20 milliamperes at 115 VDC, through a pure resistive load.

4.5.11 Electrical impedance. Unless otherwise approved (see 6.5), the potential divider as shown in figure 5 shall be used in measuring the transducer impedance. A signal generator with suitable drive capability shall output the 500-2,500 warble tone as specified in 4.5.13.3 when its output is adjusted to 100 millivolts. The decade box or variable resistor shall be adjusted until the voltage readings of both meters are equal. The resulting impedance of the decade box shall be recorded as the impedance of the sound powered telephone transducer. The sound powered telephone transducer impedance shall be as specified in 3.5.5.

4.5.12 Microphone output. The microphone transducer output shall be the voltage measured across a pure resistive load equivalent to the transducer impedance (see 3.5.5). The microphone transducer shall be subjected to a steady tone of 1,000 Hz at a 100 dB sound pressure level 13 mm (0.5 inch) in front of the artificial mouth (see 4.5.13). The measured voltage shall be as specified in 3.5.6.

4.5.13 Sound source. The sound source for testing the sound powered telephone sets shall be a model head in accordance with IEEE 269-2010.

4.5.13.1 Artificial voice. The artificial voice shall provide a 100±2 dB sound pressure level output for any test frequency from 200 to 8,000 Hz with a maximum harmonic distortion of 1 percent.

4.5.13.2 Calibration. The sound pressure field produced by the artificial voice shall be calibrated by means of a standard microphone. The standard microphone shall be a pressure operated microphone that meets the requirements of ANSI S1.15 for Type L. The standard microphone shall be mounted in front of the artificial voice so that its axis is collinear with that of the voice. The microphone face shall be 13 mm (0.5 inch) from the front surface of the artificial voice. Calibration of the artificial ear shall be in accordance with IEEE 269-2010.

4.5.13.3 Warble tone. A warble tone which varies at a logarithmic rate shall be applied to the artificial voice transducer of the model head. The warble tone shall cycle approximately 5.55 times per second. The following frequency bands in Hertz shall be used:

750 – 1,250

1,250 – 1,750

1,800 – 2,600

500 – 2,500

4.5.13.4 Input sound pressure level. With the effective free field sound pressure 13 mm (0.5 inch) ahead of the artificial voice kept at an average of 100 dB, the various specified frequency bands shall be impressed, and the effective response in decibels equivalent to the free field sound pressure at the artificial ear microphone and cavity shall be recorded. The acoustic response shall comply with 3.10.1.

4.5.14 Handset acoustic response. For the handset acoustic response test, one handset shall be positioned as shown on figure 6. The receiver shall be loaded with an artificial ear (see 4.5.13). The other handset shall have its microphone open to the air with its receiver held in contact with the seating surface of the artificial ear by a constant total weight of 2.25 kilograms (5 pounds). Both push-to-operate switches shall be closed. The handset, as positioned on figure 6, shall be subjected to a warble tone (see 4.5.13.3) at a 100 dB sound pressure level; the acoustic response shall be measured across the artificial ear of the other handset. The acoustic response shall comply with 3.10.1 and 3.10.1.1 (see 3.5.6).

4.5.15 Headset acoustic response. For the headset acoustic response test each headset shall be placed on the model head in its normal operating position. One headset with its push-to-talk switch closed shall be subjected to a warble tone (see 4.5.13.3) at a 100 dB sound pressure level; the acoustic response shall be measured across the artificial ear of the other headset. The acoustic response shall comply with 3.10.1 and 3.10.1.2 (see 3.5.6).

4.5.16 Armature stability. The sound powered transducer, completely assembled except for the cover, shall be tested for compliance with 3.5.7 by pressing the armature against each pole piece and releasing.

4.5.17 Frequency response. Frequency response tests shall be conducted using the same test equipment and input sound pressure level as that specified in 4.5.13.4. However, in lieu of the warble tones specified in 4.5.13.3, the audio signal frequency shall be swept through 500 to 4,000 Hz, and the acoustical response shall be recorded using audio frequency semi logarithmic graph paper. The resulting response curve shall be within the octave limit and output threshold as outlined with figure 7 to determine compliance with 3.10.2.

4.5.18 Magnetic stability. For first article inspection, two sound powered telephone sets of each type shall be subjected to three successive discharges from a 10 microfarad capacitor charged to 130 volts. The test shall then be repeated with the direction of the discharge reversed. Upon completion of the magnetic stability test, the acoustic and frequency response shall be measured. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan C. The sound powered telephone set shall comply with 3.10.3.

4.5.19 Endurance. For first article inspection, two sound powered telephone sets of each type, that are switch operated, shall be connected to a source of voltage with a frequency that varies over the band from 500 to 2,500 Hz. The input shall be adjusted to deliver 10 millivolt-amperes at the peak frequency (taken from a representative single frequency response curve) of the receiver units. The receiver assembly shall be loaded with an artificial ear (see 4.5.13). The above excitation shall continue for 48 consecutive hours. A check of the excitation shall be made periodically by measuring the output of the receiver units on the artificial ear. Upon completion of the endurance test, the acoustic and frequency response shall be measured. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan C. The sound powered telephone set shall comply with 3.10.3.

4.5.20 Immersion. For first article inspection, two sound powered telephone sets of each type shall be immersed for 10 minutes in tap water to a depth of 150 mm (6 inches). After removal, the telephone shall be shaken vigorously to remove superfluous moisture. After shaking off superfluous moisture, the telephone shall be operative. The receiver assemblies, transmitter assemblies, and sound powered transducers shall then be removed from their shells. The parts shall be shaken vigorously to remove moisture, the exposed surfaces wiped dry, and the telephone shall be reassembled. After the sound powered telephone is reassembled, telephone sets shall be tested to meet the requirements of 3.10.1, 3.10.2, and 3.10.5. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan C. The sound powered telephone set shall comply with 3.10.3.

4.5.21 Temperature. For first article inspection, two sound powered telephone sets of each type shall be subjected to the following test for the effect of temperature variation; five cycles of temperature change from -40 to +170.6 °F (-40 to +77 °C) starting at room temperature and finishing at the same temperature. The units shall be placed in a temperature of -40 °F (-40 °C) and permitted to remain in this temperature for 1 hour. They shall then be removed, permitted to return to room temperature by natural means, then placed in an oven at +170.6 °F (+77 °C) for 1.5 hours, and again permitted to return to room temperature. At the conclusion of the five cycles, the instruments shall stand at room temperature for 12 hours. Upon completion of the temperature test, the acoustic and frequency response shall be measured. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan C. The sound powered telephone sets shall comply with 3.10.3.

4.5.22 Vibration. For first article inspection, two sound powered telephone sets of each type, without line cords, shall be subjected to the vibration test for vital equipment in accordance with MIL-STD-167-1. Upon completion of the vibration test, the telephone sets shall be tested to meet the requirements of 3.10.1, 3.10.2, and 3.10.5. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan C. The sound powered telephone sets shall comply with 3.10.3.

4.5.23 Overload. For first article inspection, two sound powered telephone sets of each type shall be tested for compliance with 3.10.4 with a source of voltage having a frequency that varies over the band of 500 to 2,500 Hz. The voltage of the source shall be adjusted to provide 10 milliwatts into a pure resistance load equal in value to the specified impedance of the receiver and microphone transducers in parallel. The telephone shall then be substituted for the load resistance, and the artificial ear (see 4.5.13) placed in close proximity to (1) the receiver assembly and (2) the transmitter assembly. Upon completion of the overload test, the telephone sets shall be tested to meet the requirements of 3.10.1, 3.10.2, and 3.10.5. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan C. The results of the test shall comply with 3.10.4.

4.5.24 Speech intelligibility. For first article inspection, three sound powered telephone sets of the same type shall be interconnected for normal operation, separated by 91.5 meters (300 feet) of #22 AWG wire (twisted pair). One talker and two listeners shall conduct a monosyllabic word intelligibility test in accordance with ANSI/ASA S3.2. For conformance inspection, the quantity for testing shall be in accordance with table III sampling plan B. The results of the test shall comply with 3.10.5.

4.5.25 Headband spread. The headband assembly shall be set at the midpoint of its adjustment, with the headband assembly in its normal resting position. The distance between the receiver assembly pivot points shall be measured. The headband assembly shall be spread 140 mm (5.5 inches) measured at the receiver assembly pivot points; the force required to spread the headband shall be not greater than 11.1 newtons (2.5 pounds). The headband assembly shall be spread from the normal resting position to 305 mm (12 inches) measured from the receiver pivot points, for 200 cycles. One cycle shall consist of spreading the headband assembly from rest to 305 mm (12 inches) and return to rest. At the end of 200 cycles, the distance between the receiver assembly pivots shall be measured. The measurement shall be not greater than 6.5 mm (0.25 inch) of the initial measurement. Upon completion of the above test, the headband shall comply with 3.6.3.

4.5.26 Acoustic insulation of headset earcushions. The acoustic insulation test of the headset earcushions shall be conducted in an acoustically treated room. A model head (see 4.5.13) and standard microphone (see 4.5.13.2) shall be positioned 1.25 meters (4 feet) from the sound source, with the artificial ear and microphone on the same axis. The artificial ear and microphone shall be calibrated to provide equal response to frequencies between 100 and 2,000 Hz. The headset shall be placed on the model head forming a good seal between the artificial ears and the headset. The ambient sound pressure level and the sound pressure level of the model head shall be measured; the difference in the two measurements shall be the acoustic insulation of the sound powered telephone headset. The sound powered telephone shall be subjected to a warble tone in accordance with 4.5.13.3. The acoustic insulation shall comply with 3.6.6.2.

4.5.27 Retractable cord. The retractable cord shall be mechanically secured to the handset in a manner that each conductor shall withstand a pull of 22.25 newtons (5 pounds) without becoming detached before solder is applied. The retractable cord shall comply with 3.6.7.

4.5.28 Inspection of designation and marking. All sample sound powered telephone sets shall be inspected for designation and marking and shall comply with 3.2.7.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

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

6.1 Intended use. The sound powered telephone equipment covered by this specification is intended primarily for naval shipboard use as follows:

a. Type H-200/U – Headset – chest set – General use.

b. Type H-202/U – Headset – chest set, noise attenuating – Special, for use in areas having high ambient noise levels.

c. Type H-203/U – Handset – General use, primarily for one-to-one talking.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.

b. Type and quantity of equipment required (see 1.2).

c. Whether first article inspection is required (see 3.1).

d. Whether stock number is to be entered on the identification plate (see 3.2.7).

e. Packaging requirements (see 5.1).

6.3 First article. When a first article inspection is required, specific guidance whether the item(s) should be a preproduction sample, a first article sample, a first production item, a sample selected from the first 10 production items, or a standard production item from the contractor's current inventory, as well as the number of items to be tested as specified in 4.3 should be provided. Specific instructions regarding arrangements for examinations, approval of first article test results, and disposition of first articles should be included in the acquisition documents. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples of first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.3.1 First article samples. First article samples that have passed the first article inspection specified in 3.1 are not to be considered for shipboard installation regardless of the degree of refurbishment required. Unless otherwise directed by NAVSEA, the samples that have passed the first article inspection are to be retained by the first article test facility for future reference.

6.4 Provisioning. Provisioning Technical Documentation (PTD), spare parts, and repair parts should be furnished as specified in the contract.

6.4.1 Repair parts. When ordering spare parts or repair parts for the equipment covered by this specification, the contract should state that such spare parts and repair parts should meet the same requirements and quality assurance provisions as the parts used in the manufacture of the equipment. Packaging for such parts should also be specified.

6.5 NAVSEA approval and direction. Deviations from specified materials, procedures, and requirements, and selection of specific alternative materials and procedures require NAVSEA approval or direction. Requests should include supporting documentation.

6.6 Sub-contracted material and parts. The packaging requirements of referenced documents listed in section 2 do not apply when material and parts are acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.7 Tin whisker growth (see 3.4.4). The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers. For additional information on this matter, refer to ASTM B545.

6.8 Environmentally preferable material (see 3.4.2). Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website http://www.epa.gov/osw/hazard/wastemin/priority.htm. Included in the EPA list of 31 priority chemicals are cadmium, lead, and mercury. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see 3.4.2).

6.9 Toxicity evaluation. The NMCPHC requires sufficient information to permit an HHA of the product. Upon completion of the HHA, a copy will be provided by the NMCPHC to the Government for evaluation.

6.10 General guidelines for electronic equipment (see 3.2, 3.2.6, 3.4.1, 3.9, and 4.4). The contractor may use MIL-HDBK-454 for further information.

6.11 Subject term (key word) listing.

Cord

Earcushions

Microphone

Plug

Receiver

Transducers

Wire

6.12 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes. Items manufactured to this revision are fully interchangeable with the items manufactured to the previous revision.

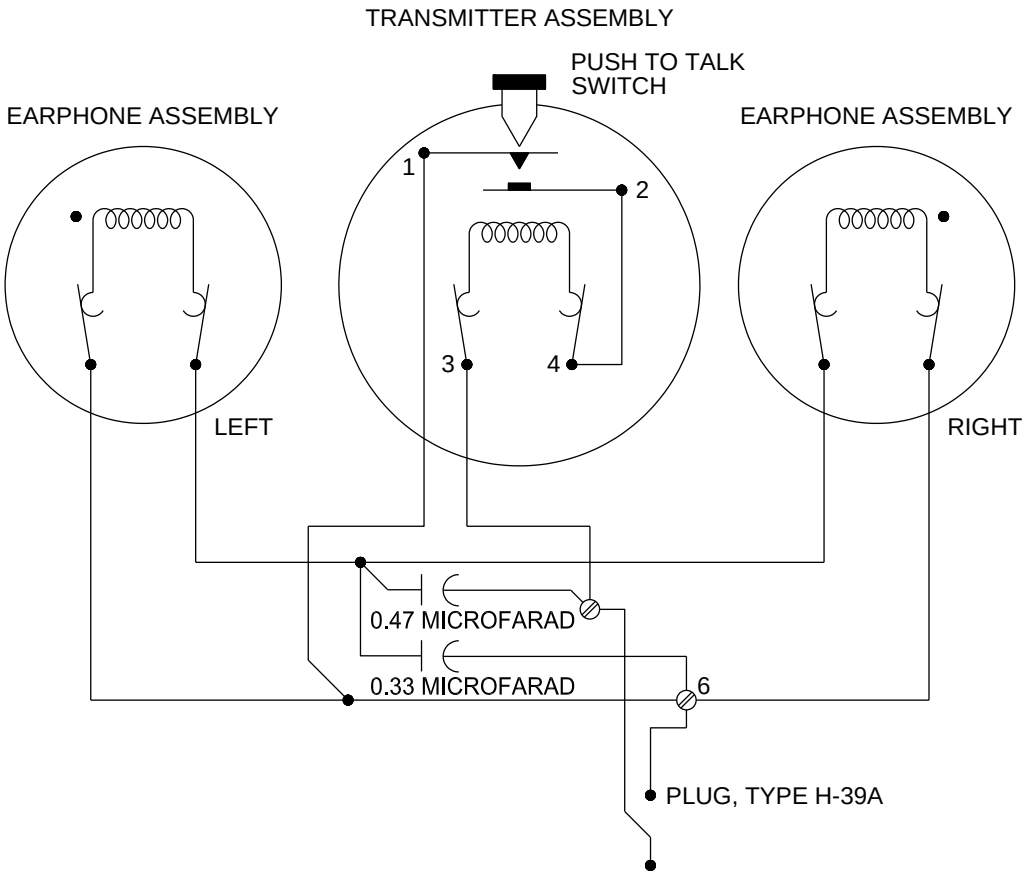

FIGURE 1. H-200/U interconnection.

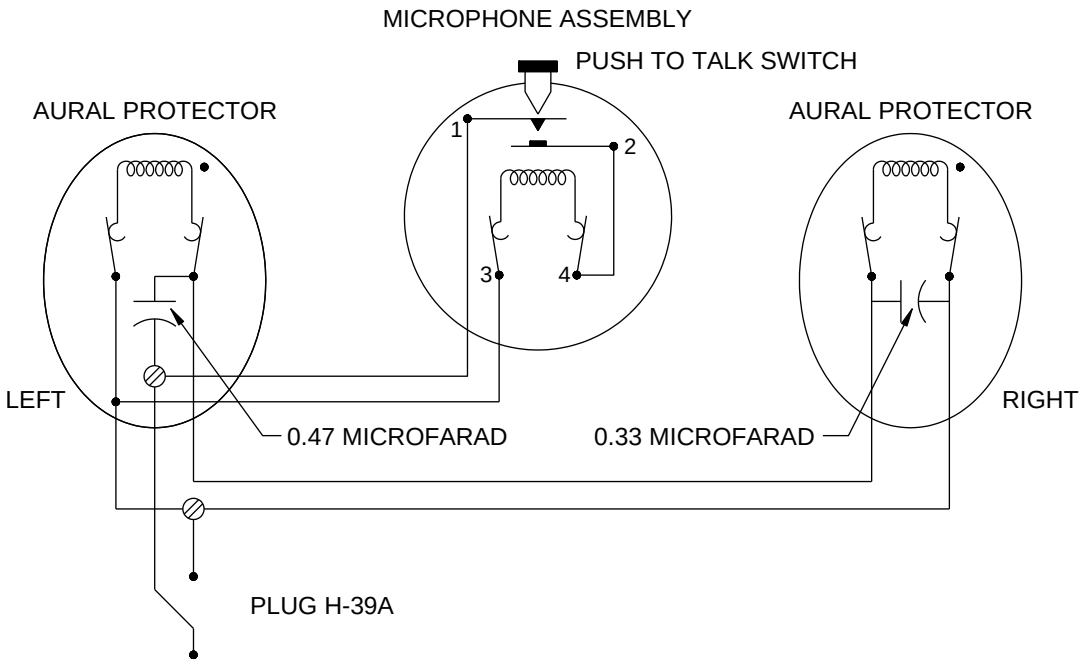

FIGURE 2. H-202/U interconnection.

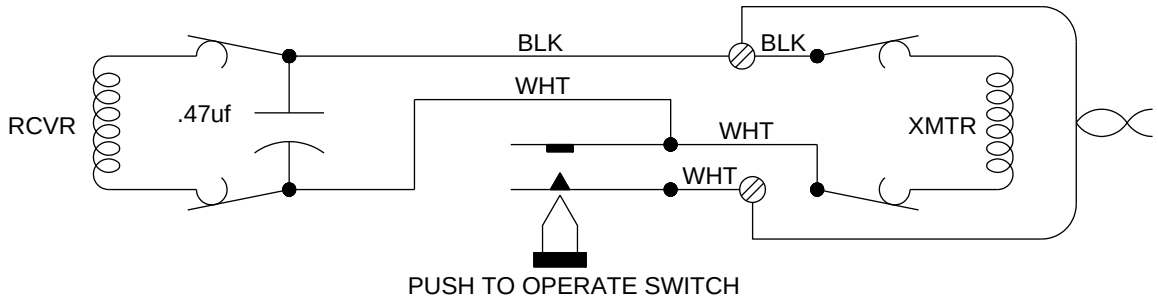

FIGURE 3. H-203/U interconnection.

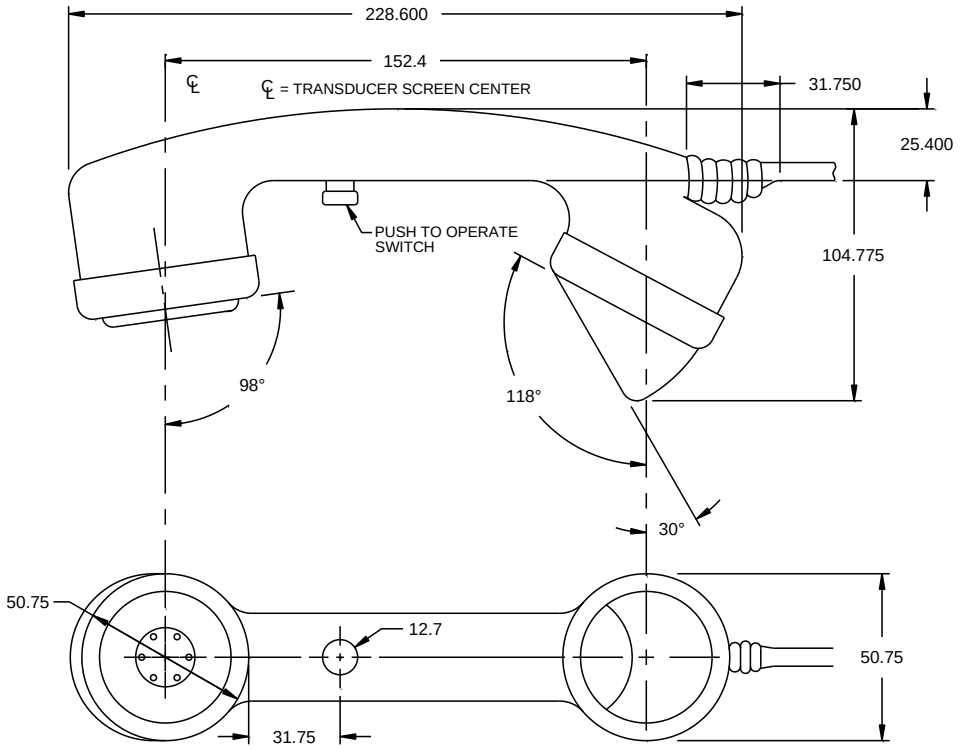

FIGURE 4. H-203/U dimensions (in millimeters).

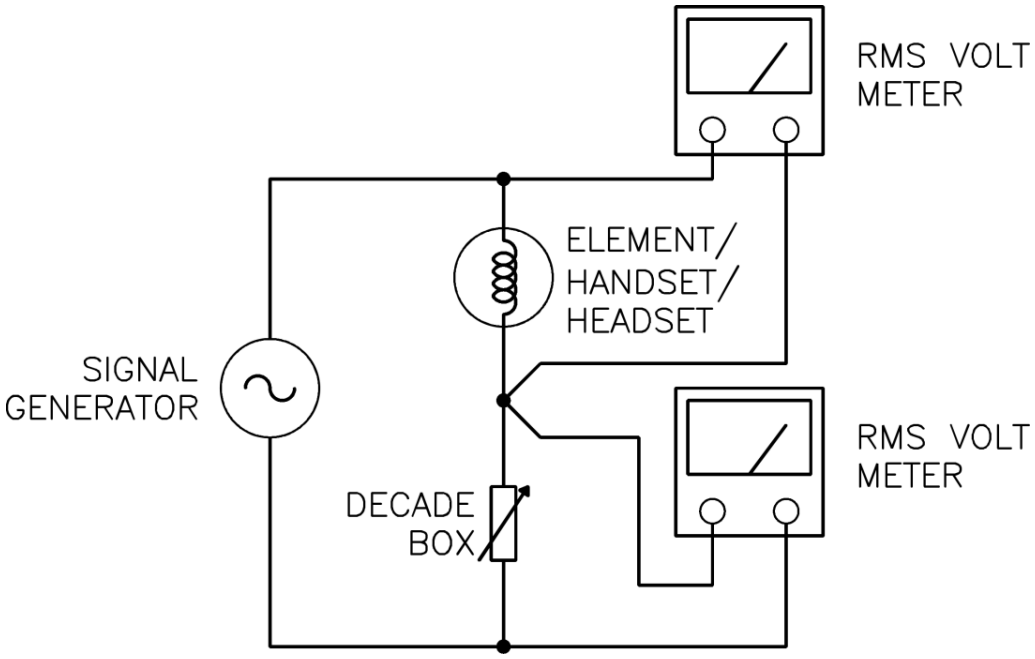

FIGURE 5. Electrical impedance test circuit.

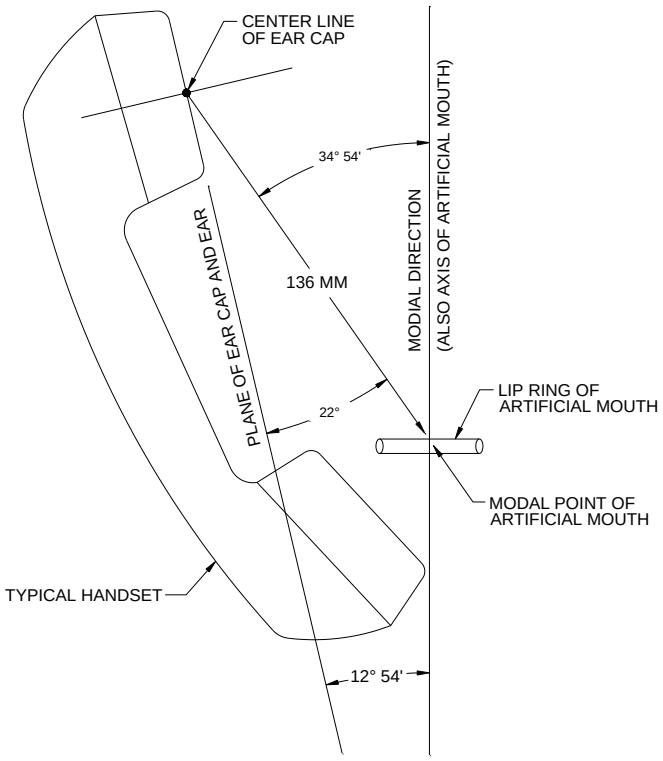

FIGURE 6. Handset test setup.

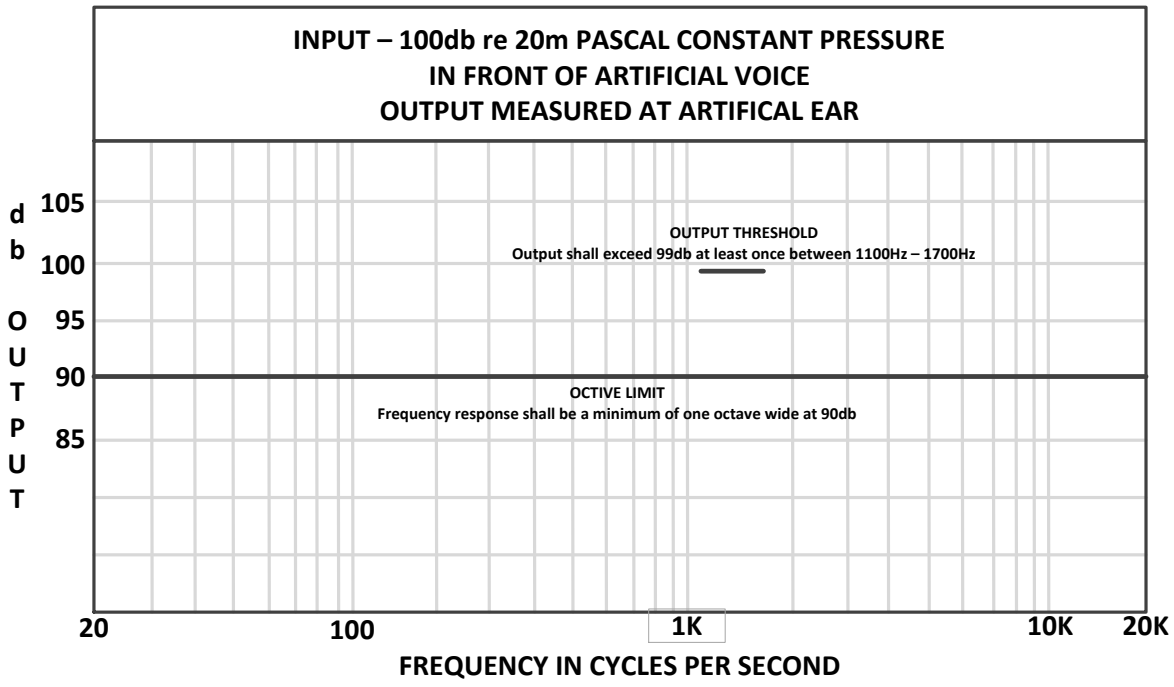

FIGURE 7. Overall frequency response minimum limits.

Custodian:
Navy – SH

Preparing activity:
Navy – SH
(Project 5965-2014-003)

Review activity
DLA – CC
Navy – MC

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.