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MILITARY SPECIFICATION

INTERCOMMUNICATION SETS, AN/AIC-4 AND AN/AIC-4A

This specification has been approved by the Departments of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 Scope.- The equipment covered by this specification shall be designed to provide the pilot and radio operator with selective control of electronic equipments aboard an aircraft and to provide selective interphone communications and some radio facilities for crew members.

1.2 Classification.- The equipment covered by this specification shall be of the following types and shall consist of the following units in the quantities as specified in the bid request or contract:

AN/AIC-4 interphone-radio control set

Item	Unit	Nomenclature	Mounting	Weight in pounds
1	Pilot's control unit	C-172/AIC-4	Surface	2.8
2	Pilot's control unit	C-242/AIC-4	Console	1.7
3	Pilot's control unit	C-242A/AIC-4	Console (Panel edge lighting)	1.7
4	Interphone control (pilot)	C-510/AIC-4	Console	1.7
5	Interphone control (pilot)	C-510A/AIC-4	Console (Panel edge lighting)	2.0
6	Operator's control unit	C-174/AIC-4	Surface	1.4
7	Control unit (operator)	C-387/AIC-4	Console	1.7
8	Control unit (operator)	C-387A/AIC-4	Console	1.7
9	Control unit (operator)	C-387B/AIC-4	Console (Panel edge lighting)	1.7
10	Station control unit	C-173/AIC-4	Surface	1.3
11	Amplifier, interphone (including mounting MT-740/U)	AM-40/AIC or AM-40A/AIC	MT-740/U	10.7

AN/AIC-4A interphone-radio control set

1	Interphone control (pilot)	C-737/AIC-4A	Console	2.0
2	Amplifier, interphone (including mounting MT-740/U)	AM-40/AIC or AM-40A/AIC	MT-740/U	10.7
3	Interphone control (operator)	C-736/AIC-4A	Console	1.7
4	Interphone control (station)	C-735/AIC-4A	Console	1.5

2. APPLICABLE SPECIFICATIONS, STANDARDS, DRAWINGS, AND PUBLICATIONS

2.1 The following specifications and drawings, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein:

SPECIFICATIONS

Military

MIL-A-5618	Amplifier, Interphone, AM-40/AIC (for Aircraft)
MIL-B-5423	Boots; Toggle Switch
MIL-C-6781	Control Panel; Aircraft Equipment, Rack or Console Mounted
MIL-E-5400	Electronic Equipment, Airborne, General Specification for
MIL-E-5556	Enamel; Camouflage, Quick Drying
MIL-E-7894	Electric Power, Aircraft Characteristics of
MIL-I-6181	Interference Limits and Tests; Aircraft Electrical and Electronic Equipment
MIL-R-5757	Relays, Hermetically Sealed, Electronic and Communication Equipment, General Specification for
MIL-T-5422	Testing; Environmental, Aircraft Electronic Equipment
JAN-P-658	Packaging and Packing of Electrical Equipment and Spare Parts (Electronic, Electrical, and Electro-Mechanical)
JAN-T-152	Treatment, Moisture- and Fungus-Resistant, of Communications, Electronic, and Associated Electrical Equipment; General Process for

U. S. Air Force

71-5094	Identification Marking of Aircraft Radio and Radar Equipment
7225	Fastener; Control Panel, Aircraft Equipment

Bureau of Aeronautics

EI-111	Installation Specification for the Electric Console
EI-207	Control Panels, Electrical and Electronic Equipment, Rack or Console Mounted, Installation of
EP-133	Airborne Console Control Equipment
SR-197	Nomenclature and Nameplates for Electronic and Associated Equipment

DRAWINGS

Air Force-Navy Aeronautical Standard Drawings

AN3219	Knob - Pointer, Small
AND10400	Numerals and Letters - Aircraft Instrument Dial, Standard Form of

Bureau of Aeronautics Drawings

52A1D28-1	Pilot's Control Units C-172/AIC-4 and C-242/AIC-4

E-1023	Operator's Control Unit C-174/AIC-4
E-1024	Station Control Unit C-173/AIC-4
E-1108	Test Layout AN/AIC-4
E-1518	Operator's Console Control Unit C-387/AIC-4
E-1733	Pilot's Console Control Unit C-510/AIC-4
50A1A20	Control Unit C-387B/AIC-4 External Wiring Diagram
50A1A21	Interphone Control C-510A/AIC-4 External Wiring Diagram
50A1A25	Pilot's Control Unit C-242A/AIC-4 External Wiring Diagram
51A1C42	C-735/AIC-4A Interphone Control
51A1C48	C-736/AIC-4A Interphone Control
51A1D55	C-737/AIC-4A Interphone Control
52A1H28-2	AN/AIC-4A Interphone-Typical External Wiring Diagram
52A1C44-1	AM-40A/AIC Amplifier, Interphone, Schematic
52A1C44-2	AM-40A/AIC Amplifier, Interphone, Outline Dimensions

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

3. REQUIREMENTS

3.1 General.- The materials, component parts, mechanical assemblies, and workmanship used in the construction of this equipment shall be in accordance with Specification MIL-E-5400, except where amended by this specification, the contract, or in writing by the procuring activity. Whenever the requirements of Specification MIL-E-5400 conflict with the interchangeability requirements of previous equipments, the interchangeability requirements shall govern.

3.2 General design requirements.-

3.2.1 General.- This equipment shall meet all the general design requirements as specified in Specification MIL-E-5400. AN/AIC-4 console-type control panels shall be in accordance with Specification EP-133. AN/AIC-4A units shall meet the requirements of Specification MIL-C-6781.

3.2.2 Installed weight.- The installed weight of each control unit shall be not greater than that listed in paragraph 1.2. Installed weight shall include disconnect plugs, cable clamps, and for surface-mounted units, the mounting, but shall not include interconnecting cable, microphone, or headset.

3.2.3 Stability.- The control units shall operate with optimum performance for 50 hours, continuously or intermittently, without necessity of readjustment of any controls which are nonaccessible during flight.

3.2.4 Operating life.-

3.2.4.1 Reliable operating life.- The control units shall have a reliable operating life of at least 500 hours without requiring removal for bench servicing. Parts requiring servicing or replacement at the end of this interval to renew this service life shall be specified by the manufacturer.

3.2.4.2 Total operating life.- The control units shall have a minimum total operating life of 2,000 hours with reasonable servicing and replacement of parts. Parts requiring replacement within this interval and the life of such parts shall be specified by the manufacturer.

test impedances as follows:

3.2.5 Interconnecting cabling.- The control units shall be designed to operate with unshielded power and control cables. If some shielding is necessary to meet the interference requirements of Specification MIL-I-6181, preference shall be given to the shielding of individual wires rather than complete cables. Reasonable precautions (such as the inclusion of a filter) shall be taken to prevent the unshielded wires of the interconnecting cables from producing fields of intensity in excess of the limits given in Specification MIL-I-6181. Continuous ground wires shall not be required between units. Each unit shall have the ground connection brought out on one terminal pin for grounding exterior to the unit.

3.2.6 Cables and connectors.- Cables and connectors for AN/AIC-4 units shall be in accordance with the requirements of Specification MIL-E-5400. Completed interconnecting cables are not required under this specification. Cables and connectors for AN/AIC-4A units shall be in accordance with the requirements of Specification MIL-C-6781. All necessary connectors, cable clamps, ferrules, adapters, or other fittings required for fabrication of all cables shall be specified but not supplied by the contractor. Wire for cable fabrication shall not be supplied; however, cable make-up specifying size wire, necessary shielding, and other pertinent data shall be furnished. All connector inserts shall be melamine, or equivalent.

3.2.7 Console controls.- AN/AIC-4A console controls shall be in accordance with Specification MIL-C-6781. The brilliance of the lamp shall be controlled externally, and this control shall not be part of the control unit.

3.2.8 Components.- Miniature and subminiature components shall be used where practicable.

3.2.9 Relays.- Relays shall be in accordance with the requirements of Specifications MIL-E-5400 and MIL-R-5757 and the following.

3.2.9.1 Operating temperature.- When connected to 31 volts dc for a period of 4 hours in an ambient temperature of 60°C, the temperature rise in the armature winding shall not exceed the accepted safe limits for the type of insulating materials used.

3.2.9.2 Vibration.- When in a nonoperating condition, all normally closed contacts shall remain closed, and there shall be no noticeable motion of the relay armature when viewed with a standard stroboscope while the relay is vibrated in any direction at amplitudes as great as 0.03 inches (0.06 total excursion) at any frequency between 10 to 55 cps.

3.2.9.3 When operated on 17 volts dc, the operated contact shall remain closed and the armature shall remain firmly sealed to the armature stop, under the conditions of vibrations described in paragraph 3.2.9.2.

3.2.10 Controls - finger clearance.- The component parts shall be arranged on panels to give maximum finger clearance for the manipulation of controls.

3.2.11 Knob - pointer.- Selector switch pointer knobs on AN/AIC-4 equipment shall be in accordance with Drawing AN3219, with control shafts flattened for their use and the knob set screws used on the flattened side.

3.2.12 Switch position cover stops.- If required, stops shall be provided for specified switch positions. Such stops for rotary-selector type switches shall consist of a plate held in place by two small machine screws, or other suitable device, covering the designated switch position, acting as a stop for the knob with which it is used, preventing operation of the switch to the position covered until the plate or device is removed, and not interfering in any manner with the operation of the switch to the other positions not covered. All sharp edges or projections that might cut the operator's hand or glove shall be removed from the cover plates and mounting screws. Provisions shall be made within each unit for stowing all switch position cover stops when they are not in use on the front panel.

3.2.13 Front panels.- Front panels of control units shall be so designed as to prevent water getting into the unit through the panel if it should be subjected to direct incident rain even when the cover plates specified in paragraph 3.2.12 above are removed. Approved boots conforming to Specification MIL-B-5423 shall be installed on toggle switches.

3.2.14 Moisture condensation drainage.- One 1/8-inch diameter hole shall be drilled in each of the four corners of the side on which the AN receptacle is mounted on the control unit.

3.2.15 Service conditions.- The AN/AIC-4 control units shall operate satisfactorily under any of the service conditions specified in Specification MIL-E-5400. The AN/AIC-4A control units shall meet the requirements of Specification MIL-C-6781.

3.2.16 Power requirements.- Each control and each intercommunication set shall not require power for operation other than from the following source, with characteristics as defined in Specification MIL-E-7894 with the exceptions as noted herein, nor require power in excess of the amount indicated:

D-C source - 28 volts

Each control	AN/AIC-4	AN/AIC-4A
0.2 amp	2.2 amp	2.7 amp

3.2.16.1 Voltage limits.- The equipment shall be designed to meet the performance requirements specified herein for the following voltage limits.

3.2.16.1.1 D-C limits.- The voltage limits shall be 24 to 29 volts for specified performance; however, the equipment must also operate from 17 to 24 volts with reduced performance permitted.

3.2.16.2 Grounded input.- The equipment shall be so designed that the negative of the d-c power source may be grounded externally.

3.2.16.3 Power-source transients.- The equipment shall not be damaged when subjected to the applicable power-source transients, and shall automatically resume normal operation at the expiration of the transient condition.

3.2.17 Moisture and fungus resistant treatment.- Equipments shall be fungus proofed by selection of parts and materials as nonnutrient for fungus, or the parts and materials shall be so treated prior to their use in the equipment that over-all spraying of the equipment is not necessary. Over-all spraying of the equipment, in accordance with Specification JAN-T-152, shall be made in the event selection of parts and materials described above is not possible.

3.2.18 Interchangeability.- The interchangeability requirements, as specified in Specification MIL-E-5400, shall be extended to require interchangeability of units and component parts of this equipment with the latest model of any previously produced equipments. Such interchangeability shall be measured against a model, manufacturing drawings, or other technical information as provided by the procuring activity for that purpose. Should the interchangeability requirements conflict with any requirements of the general specification, the interchangeability requirements of this specification shall govern.

3.2.19 Provisions for maintenance and field testing.- Provisions for maintenance and operational check-out tests shall meet the requirements of Specification MIL-E-5400.

3.2.20 Performance.-

3.2.20.1 Audio characteristics.- The audio characteristics of the control units shall be in accordance with the requirements set forth for the Interphone Amplifier AM-40/AIC or AM-40A/AIC in Specification MIL-A-5618, except as specifically modified in this specification.

3.2.20.2 Continuity of circuits.- Each conductor in each control unit shall be checked for continuity before acceptance. Continuity checks shall include tests to insure that all grounded terminals or shields measure less than 0.1 ohm to the case of the equipment under test.

3.2.20.3 Insulation resistance.- The insulation resistance of each conductor in each control unit shall measure 1 megohm or higher to ground, using a 500-volt insulation resistance tester. The insulation resistance of terminated conductors shall be considered as meeting this requirement if the total resistance to ground of the conductor and terminating resistor in parallel measures within ±10 percent of the nominal resistance value of the terminating resistance.

3.2.20.4 Isolation between audio circuits.- The isolation between any two audio frequency circuits of the equipment shall be at least 32 db when the circuits are not directly interconnected, except through the isolating resistors in the radio receiver output circuits. Isolation measurements shall be made with the equipments interconnected as indicated on Drawing E-1108, between 9 and 11 volts rms at 1,000 cps impressed on the energized circuit and a low range, high-impedance vacuum tube voltmeter connected across the normal termination of the pick-up circuit.

3.2.21 Panel lettering.- Lettering on AN/AIC-4 panels shall be white and nonreflecting. It shall consist of enamel conforming to Specification MIL-E-5556, or shall provide delineation of proven value used on control boxes of conventional design. The wording shall be clearly and concisely indicative of function. The type characters shall conform to Drawing AND10400, or may be compressed commercial Gothic. The height of the characters shall be determined by the purpose, according to the following plan:

Purpose	Height in inches
Name of control unit or panel	1/4
Identification of control	3/16
Positions of control - jack markings	1/8

Lettering and markings on AN/AIC-4A panels shall conform to the requirements of Specification MIL-C-6781.

3.2.22 Identification of product.-

3.2.22.1 Nameplates.- Nameplates and nomenclature shall be in accordance with the requirements of the individual Services as specified in Specification 71-5094 for the Air Force, and Specification SR-197 for the Navy.

3.3 Detailed design requirements.-

3.3.1 Amplifier, interphone, AM-40/AIC or AM-40A/AIC.- The interphone amplifier shall be in accordance with Specification MIL-A-5618.

3.3.2 Control units performance description.- Control units shall be designed to provide the following basic communication and operating features for aircraft crew members.

3.3.2.1 C-172/AIC-4 and C-242/AIC-4 control units.- These control units shall be primarily used by the pilot and shall fulfill the following functions:

(a) Permit selection of transmission on interphone, VHF radio in AN/AIC-4, UHF radio in AN/AIC-4A or HF radio.

(b) Permit selection of the audio outputs from VHF or UHF and HF radio receivers separately or simultaneously.

(c) Permit limited range volume control of radio communication receiver audio output into headsets.

(d) Permit separate limited range volume control of interphone output into headsets.

(e) Permit limited range sensitivity adjustment for HF radio receiver.

(f) Changes and additions to these functions as shown on the latest drawing revision.

(g) Permit immediate transfer of headphones from normal to alternate connection by a simple switch operation.

3.3.2.2 C-510/AIC-4 control unit.- This control unit shall be primarily used by the pilot and shall fulfill the following functions:

(a) Provide identical operating features as described in paragraph 3.3.2.1, (a) through (f), inclusive, with the addition of selection of the audio output of a SONO radio receiver either separately or simultaneously with the audio outputs from the VHF or HF radio receivers.

3.3.2.3 C-174/AIC-4 and C-387/AIC-4 control units.- These control units shall be primarily used by the radio operator and shall fulfill the following functions:

(a) Permit selection of transmission on interphone, VHF (UHF) radio, or HF radio.

(b) Permit selection of the audio output from VHF or UHF, HF, or SONO receivers, or to an OUT position. Mixing of these signals is not required.

receiver must be made by adjustment of

(c) Permit limited range volume control of radio communication receiver audio output into headsets.

(d) Permit separate, limited range volume control of interphone output into headsets.

(e) Provide microphone and headset jack connections to the control unit (for C-174/AIC-4 only).

(f) Changes and additions to above functions as shown on the latest drawing revisions.

3.3.2.4 C-173/AIC-4 control unit.- This control unit shall be primarily used by crew members, other than the pilot, co-pilot, and radio operator, and shall fulfill the following functions:

(a) Permit selection of transmission of VHF or UHF radio, or interphone.

(b) Permit selection of the audio output from the VHF or UHF radio receiver, or to an OUT position.

(c) Permit limited range volume control of radio-communication receiver audio output into headsets.

(d) Permit separate, limited range volume control of interphone output into headsets.

(e) Provide microphone and headset jack connections to the control unit.

(f) Changes and additions to above functions as shown on the latest drawing revisions.

3.3.2.5 C-737/AIC-4A, C-736/AIC-4A, and C-735/AIC-4A control units.- Console control panels C-737/AIC-4A, C-736/AIC-4A, and C-735/AIC-4A shall conform to Specification MIL-C-6781, shall contain fastening devices in accordance with Specification 7225, and shall be capable of mounting in accordance with Specification EI-207. Console control panels C-737/AIC-4A and C-736/AIC-4A shall be designed to provide the same basic communication and operating features as control units C-510/AIC-4 (paragraph 3.3.2.2) and C-387/AIC-4 (paragraph 3.3.2.3), respectively. Console control C-735/AIC-4A shall be designed to provide the same basic communication and operating features as control unit C-173/AIC-4 (paragraph 3.3.2.4), except that microphone and headset jack connections are not required.

3.3.2.6 C-387A/AIC-4 control unit.- This control unit shall meet all of the requirements for the C-387/AIC-4 unit, except that a Mallory L-600 pad shall be used for R-207, a 720-ohm resistor for R-206, and the position of the volume-control panel holes shall be changed in accordance with Mercury Electric Company Drawing 104514.

3.3.2.7 C-242A/AIC-4, C-510A/AIC-4, and C-387B/AIC-4 control units.- Console control panels C-242A/AIC-4, C-510A/AIC-4, and C-387B/AIC-4 shall provide the same basic communication and operating features as controls C-242/AIC-4, C-510/AIC-4, and C-387/AIC-4, respectively, except that requirements of Specification MIL-C-6781 for edge-lighting shall be met. The units shall be capable of mounting in accordance with Specification EI-111. Fastening devices in accordance with Specification 7225 shall not be used.

3.3.3 Applicable drawings.- All control units shall be produced in accordance with the information included in the most recent approved issue of the drawings listed in paragraph 2.1.2.

3.3.4 Physical dimensions and weight of control units.- All control units shall be assembled in aluminum boxes, having the same configuration, dimensions, location of mounting holes and snap slides, etc, as shown on the applicable drawing listed in paragraph 2.1.2. Each control unit shall meet these requirements within sufficiently close limits to be interchangeable mechanically with all equipments of prior manufacture. Weights of equipments shall not exceed the weights listed in paragraph 1.2.

3.3.5 Connections to control units.- All connections to control units shall be made through standard AN receptacles of the types specified on the schematic drawings listed in paragraph 2.1.2. The C-737/AIC-4A and C-736/AIC-4A control units shall have the same pin connections and be electrically interchangeable with control units C-501A/AIC-4 and C-387B/AIC-4 as shown in Drawings 50A1A21 and 50A1A20.

3.3.6 Location of receptacles and jacks.- All receptacles shall be mounted on the control units in the locations shown on the drawings listed in paragraph 2.1.2. Subsequent control units may provide alternate positions for certain receptacles and jacks as approved by the procuring activity, but the design shall be such that the modified control units are interchangeable with control units of prior manufacture.

3.3.7 Wiring of components.- Each control unit shall be wired according to the applicable schematic diagram as listed in paragraph 2.1.2, except for the addition of panel lighting circuits in C-242A/AIC-4, C-510A/AIC-4, C-387B/AIC-4, and all AN/AIC-4A units and deletion of microphone and headset jacks and wiring in the C-735/AIC-4A unit. Subsequent models may include the procuring activity's approved modifications of circuits and arrangement of components, but changes in design shall be made in a manner which permits interchangeability with control units of prior manufacture.

3.3.8 Wiring to receptacles.- The circuit connections to the various receptacles shall be exactly as shown on the schematic drawings listed in paragraph 2.1.2 or as indicated in paragraph 3.3.5. Subsequent control units which include the procuring activity's approved modifications may add circuit connections to receptacle pins which are shown unused in the above drawings but, in no case, shall the type of circuit connected to any pin be changed from that shown on these drawings.

3.3.9 Basic system layout.- Drawing E-1108 sets forth the basic system connections for the AN/AIC-4 and AN/AIC-4A interphone-radio control sets. Connection equivalent to the layout shown on Drawing E-1108 shall be used for all tests required to indicate compliance with design parameters as specified herein.

3.3.9.1 Test terminal strip.- All external connections shall be brought out to test terminal strip (TTS on Drawing E-1108) for use in checking the continuity of all circuits involved. Connections as shown on Drawing E-1108, or as specified herein, shall be made to the test terminal strip. All terminals to which connections are not shown on Drawing E-1108, or which are not specified as a part of the associated measurements, shall remain unconnected.

3.3.9.2 Position of controls during test.- The proper position for all controls on the various components of the AN/AIC-4 and AN/AIC-4A interphone-radio control sets during measurements specified herein are shown on Drawing E-1108. If any variations from the control positions specified above are included as a part of specific measurements, all controls shall be reset to the positions shown on Drawing E-1108 before proceeding with the next measurement.

3.3.10 Net gain through system.- With the complete system connected as set forth in paragraph 3.3.9 of this specification, the following requirements shall be met by adjustment of the controls on the AM-40/AIC interphone amplifier unit as described herein.

3.3.10.1 ICS circuit gain.- The following requirements shall be met:

(a) Test terminal 9 shall be connected to ground.

(b) One volt rms at 1,000 cps shall be applied from test terminal 6 to ground.

(c) "AMPLIFIER GAIN" control (P1) on the AM-40/AIC or AM-40A/AIC amplifier shall be adjusted, as required, to produce 10 volts output when measured from test terminals 18, 19, or 20 to ground.

(d) When 1 volt rms at 1,000 cps is applied successively from test terminals 7 or 8 to ground, with test terminals 10 or 11 connected to ground, respectively, and without changing the adjustment of the "AMPLIFIER GAIN" control, the voltage measured for test terminals 18, 19, or 20 to ground shall remain between 9.9 and 10.1 volts.

(e) With the same adjustment of the "AMPLIFIER GAIN" control, 1 volt rms at 1,000 cps applied between test terminals 29 and 30, and test terminals 26, 27, and 28 strapped together, the voltage measured from test terminals 18, 19, or 20 to ground shall remain between 9.9 and 10.1 volts.

(f) With the same adjustment of the "AMPLIFIER GAIN" control, 1 volt rms at 1,000 cps applied between test terminals 35 and 36, and test terminals 32, 33, and 34 strapped together, the voltage measured from test terminals 18, 19, or 20 to ground shall remain between 9.9 and 10.1 volts.

3.3.10.2 Radio output circuit gain.- The following requirements shall be met after the adjustment described in paragraph 3.3.10.1 of this specification has been completed and the system layout returned to normal. Jumper straps shall be connected across terminals 1, 2, and 3 of terminal strip E-101 for these measurements:

(a) Ten volts rms at 1,000 cps shall be applied from test terminal 1 to ground.

(b) The "RADIO INPUT LEVEL" control (P2) on the AM-40/AIC or AM-40A/AIC amplifier shall be adjusted, as required, to produce 10 volts output when measured from test terminal 18 to ground.

(c) Under the same conditions, the voltage from test terminals 19 and 20 to ground shall measure between 9.8 and 10 volts.

(d) When 10 volts rms at 1,000 cps is applied successively from test terminals 2, 3, 4, and 5 to ground without changing the adjustment of the "RADIO INPUT LEVEL" control, the voltage measured from test terminal 18 to ground shall remain between 9 and 11 volts.

(e) Under the same conditions as described in preceding subparagraph (d), when input voltage is applied from test terminal 2 to ground, between 9 and 11 volts shall be measured from test terminal 19 to ground when the "RECEIVER" control switch on the C-174/AIC-4 operator's control unit, C-387/AIC-4 operator's control unit, C-387A/AIC-4 control unit, C-387B/AIC-4 control unit, or C-736/AIC-4A interphone control is operated to "HF."

(f) Under the same conditions as described in preceding subparagraph (d), when input voltage is applied from test terminal 5 to ground, between 9 and 11 volts shall be measured from test terminal 19 to ground when the "RECEIVER" control switch on the C-174/AIC-4 operator's control unit, C-387/AIC-4 operator's control unit, C-387A/AIC-4 control unit, C-387B/AIC-4 control unit, or C-736/AIC-4A interphone control is operated to "SONO."

3.3.11 Volume controls.- The volume controls which are a part of the interphone-radio control sets AN/AIC-4 or AN/AIC-4A, and C-736/AIC-4A and C-735/AIC-4A units associated therewith shall provide the following ranges of control. "Range of Control" shall be determined by measuring the reduction in net gain through the associated circuits in the system when the control is varied from the maximum clockwise position to the maximum counterclockwise position under the test conditions set forth in paragraph 3.3.10 of this specification.

3.3.11.1 ICS volume controls.- The maximum loss introduced by the "ICS VOL" control on all units shall be between 8 and 12 db.

3.3.11.2 Radio volume controls.- "RADIO VOL" controls shall comply with the following requirements:

(a) C-172/AIC-4, C-242/AIC-4, C-242A/AIC-4, C-510/AIC-4, C-510A/AIC-4, and C-737/AIC-4A:

22 to 26 db maximum loss introduced.

(b) C-173/AIC-4, C-174/AIC-4, C-387/AIC-4, C-387A/AIC-4, C-387B/AIC-4, C-735/AIC-4A, and C-736/AIC-4A "L" pads:

(1) Minimum insertion loss to be 0.1 db.

(2) Maximum insertion loss to be 24 db ±20 percent.

(3) To work into a load of 600 ohms (from moving arms to ground).

(4) To maintain a line impedance of 600 ohms ±20 percent.

(5) Insertion loss to vary linearly with angular rotation ±20 percent.

3.3.12 Semivariable level control ranges.- The following requirements shall be met.

3.3.12.1 Radio receiver output adjustments.- When the strap connections between terminals 1, 2, and 3; and between 4, 5, and 6 on terminal strip E-101, on pilot's control units C-172/AIC-4, C-242/AIC-4, C-510/AIC-4, or C-737/AIC-4A are removed, the net gain through the associated receiver output circuits shall be reduced by 4.0 to 6.0 db.

3.3.12.2 ICS-radio background level adjustment.- Under the same circuit conditions as set forth in paragraph 3.3.10.2(b) of this specification, when test terminal 9 is grounded the net gain in the associated receiver output circuit shall be reduced as indicated in the table below depending upon the connections between the terminals on terminal strip E-101 in the pilot's control unit C-172/AIC-4, C-242/AIC-4, C-510/AIC-4, or C-737/AIC-4A.

Connections between terminals on terminal strip E-101	Reduction in net gain of receiver output circuit
None	4.0 to 6.0 db
Connect term. 7 to term. 8	7.5 to 10.5 db
Connect term. 8 to term. 9	11.0 to 15.0 db

3.3.12.3 Jumper strap removal or connection.- When tests are completed, jumper straps shall be removed or connected as indicated in paragraph 3.3.14.

3.3.13 Sensitivity control.- The sensitivity control indicated as a component of the pilot's control unit C-172/AIC-4, C-242/AIC-4, or C-510/AIC-4 shall be provided with a horizontal dial projecting through the top of the front panel and so designed that the full range of the control shall be available in 10 uniform steps, each step to be designated by a numeral visible on the portion of the dial face which projects through the panel. The resistance range of the sensitivity control shall be as follows when measured by any standard method between pins U and V on the receptacle which is part of the pilot's control unit C-172/AIC-4, C-242/AIC-4, or C-510/AIC-4:

Stamps on control dial	Resistance value
1 (maximum resistance)	500 to 600 ohms
10 (minimum resistance)	0 to 10 ohms

The foregoing also applies to the C-737/AIC-4A control unit, except that on this unit the sensitivity control shaft shall project vertically through the front panel and shall be provided with a round knob, 10 uniform detent positions each one designated by a numeral, and an index position to indicate which position is in use.

3.3.14 Jumper straps.- Each C-172/AIC-4, C-242/AIC-4, C-510/AIC-4, and C-737/AIC-4A control unit shall be delivered with connecting straps between terminals 4, 5, and 6 of terminal board E-101 only. No connecting straps shall be supplied for terminals 1, 2, 3, and 7, 8, 9.

3.3.15 Workmanship.- Workmanship used in the construction of this equipment shall be in accordance with the requirements of Specification MIL-E-5400.

4. SAMPLING, INSPECTION, AND TEST PROCEDURES

4.1 Classification of tests.- The inspection and testing of this equipment shall be classified as follows:

(a) Contractors tests: Contractors tests are those tests conducted by the contractor on a model to determine that the equipment complies to the best of his knowledge and belief with all applicable requirements.

(b) Preproduction tests are those tests accomplished on samples which are representative of the production of the item after the award of contract, to determine that the production meets the requirements of this specification.

(c) Inspection tests: Inspection tests are those tests accomplished on the equipment manufactured and submitted for acceptance under contract.

4.2 Contractors tests.- The contractor shall conduct tests on one or more sample equipments as necessary to determine that the design of the equipments as proposed by the contractor will meet the requirements of this specification. Contractor's tests shall be conducted in accordance with the approved Preproduction test procedure. The data obtained by the contractor in conducting these tests shall be included with the design data submitted with the Preproduction test model. The Government Inspector and the procuring activity shall be advised when tests are to be conducted so that a procuring activity representative may witness or supervise the test if so desired. Contractors not having laboratory facilities to satisfactorily conduct all tests shall either obtain the services of a commercial testing laboratory or receive written approval from the procuring activity to omit that portion of the tests. As a result of the Contractor's tests, the procuring activity may decide to omit certain portions of the Preproduction tests which will duplicate the Contractor's tests; however, in conducting Preproduction tests the procuring activity may elect to repeat any test previously conducted by the contractor if deemed necessary.

4.3 Preproduction tests.-

4.3.1 Sampling instructions.- Preproduction test samples shall consist of one equipment representative of the production equipment to be supplied under the contract. Preproduction tests shall be conducted at a laboratory designated by the procuring activity.

4.3.2 Scope of tests.- Preproduction tests shall include all tests deemed necessary to determine that the model meets all the requirements of this specification and the contract. Preproduction tests shall include testing in accordance with Specification MIL-T-5422. Test data to be supplied by the contractor shall include data obtained by the contractor in testing to comply with Specification MIL-T-5422.

4.3.3 Accessory material and design data.- Accessory material and design data to be supplied with the preproduction model shall be in accordance with the requirements of Specification MIL-E-5400.

4.3.4 Presubmission testing.- No item, part, or complete equipment shall be submitted by the contractor until it has been previously tested and inspected by the contractor and found to comply to the best of his knowledge and belief with all applicable requirements. The design data submitted by the contractor for the preproduction model shall indicate its physical and electrical characteristics and other necessary test data which will establish that the equipment meets all the requirements of this specification.

4.3.5 Model acceptance.- Acceptance of the preproduction model shall be by the procuring activity upon satisfactory completion of all tests. No additional equipments shall be delivered prior to the approval of the preproduction model. Prefabrication of any equipments prior to the approval of the preproduction model is at the contractor's own risk. The approved preproduction model will be returned to the contractor for his use in the fabrication and testing of the equipment to be submitted for acceptance under the contract. The preproduction model shall not be considered as one of the equipments under the contract; however, it may be reworked by the contractor and submitted for acceptance as a production equipment.

4.4 Inspection tests.-

4.4.1 General.- Unless otherwise specified, contractor's records of all inspection work and tests, giving the results of tests required to determine compliance with the requirements and tests specified herein, shall be kept complete and shall be available to the Government representative at all times. The record or report of inspection and tests shall be signed or approved by a responsible person specifically assigned by the contractor. Contractors not having laboratory testing facilities satisfactory to the Government shall engage the services of a commercial testing laboratory capable of conducting tests to determine compliance with all the requirements and tests in the specification, and acceptable to the Government.

4.4.2 Tests.- Inspection tests shall consist of the following two groups of tests:

(a) Individual tests: Individual tests shall be conducted on each equipment submitted for acceptance under the contract.

(b) Sampling tests: Sampling tests shall be conducted on a quantity as approved by the procuring activity. Samples shall be selected by the Government Inspector and shall first have passed the Individual tests. Sampling tests shall be more extensive than the Individual tests, and may include any of the tests listed under Preproduction tests which are deemed necessary by the Inspector to determine that production equipment continues to be equivalent in performance and construction to the approved preproduction model.

4.5 Test procedures.- The procedures and methods for conducting both Preproduction tests and Inspection tests shall be prepared by the contractor and sent to the procuring activity for approval. The right is reserved by the procuring activity or the Government Inspector to modify the tests or require any additional tests deemed necessary to determine compliance with the requirements of this specification or the contract.

5. PREPARATION FOR DELIVERY

5.1 General.- All major units and parts of the equipment shall be packaged, packed, and marked for shipment in accordance with the requirements of Specification JAN-P-658.

6. NOTES

6.1 Intended use.- This equipment is intended to provide the pilot and radio operator with selective control of electronic equipments aboard an aircraft, and to provide the crew members with selective interphone communications and some radio facilities.

6.2 Test values.- Normal and limiting values of performance data shall be determined at input voltages of 26.5 volts dc and 115 volts ac. These data are to be used in testing the equipment at installation points for compliance with minimum acceptable standards of performance.

6.3 Precedence.- When the requirements of the contract, this specification or applicable subsidiary specifications are in conflict, the following precedence shall apply.

6.3.1 Contract.- The contract shall have precedence over any specification.

6.3.2 This specification.- This specification shall have precedence over all applicable subsidiary specifications. Any deviation from this specification, unless modified by the contract, or from any subsidiary specifications, unless modified by this specification or the contract, shall be specifically approved in writing by the procuring activity.

> NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

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Navy - Bureau of Aeronautics
Air Force