

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

Storage Serviceability Standard for USAECOM Materiel

RADIO SET AN/ARC-51BX

**Headquarters, Department of the Army, Washington, D.C.
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SECTION I. INTRODUCTION

1. Purpose. This bulletin provides a storage serviceability standard which establishes uniform criteria for determining the acceptability of the items designated herein, for continued storage and/or issue, on the condition that all specifications and requirements applicable to the items have been met previously at the time of receipt from new procurement or after repair, overhaul, or rebuild a CONUS depot maintenance shop.

2. Scope. This bulletin applies to all activities engaged in the receipt, storage and issue of USAECOM Radio Set AN/ARC-51BX hereinafter referred to as the radio set, listed in appendix B with the applicable Federal stock numbers (FSN).

3. General. It is the Army's objective to attain and maintain a constant materiel readiness status for materiel in depot stocks. The scope of such an objective is of such magnitude that only general guidelines are provided by section VIII, chapter 3, of TM 743-200 for the quality evaluation of materiel in the custody of supply and storage activities. This standard supplements TM 743-200-1 by providing

a systematic procedure for storage cyclic inspection of the materiel and indicates the limiting degree of deterioration, damage, unsatisfactory storage practices, and other characteristics which are acceptable. It also establishes the basis for identifying materiel requiring segregation, remedial care and preservation, or reclassification action. Applicable requirements of the standard may be used for performing receipt and preshipment quality control inspections.

4. Definitions. *a.* Definitions for the majority of specialized terms used herein can be found in MIL-STD-109.

b. Definitions for other specialized terms are as follows:

(1) *Storage serviceability standard.* A written procedure providing storage methods and standards and prescribing the necessary requirements for the surveillance of materiel in storage.

(2) *Storage quality level (SQL).* That quality level applicable to storage sampling inspection expressed in terms of percent defective or defects

per hundred units, whichever is applicable, specified for a given group of defects of a product. It is the maximum allowable accidental departure from specification requirements which can be tolerated.

5. Reporting of Supply Bulletin Improvements. The reporting of errors, omissions, and recom-

mendations for improving this publication by the individual user is encouraged. Reports shall be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to U.S. Army Electronics Command ATTN: AMSEL-MA-AC, Fort Monmouth, NJ. 07703.

SECTION II. STORAGE AND SPECIAL INSTRUCTIONS

6. Preservation, Packaging, and Packing. Preservation, packaging, and packing of the radio set shall be in accordance with the requirements listed in appendix C. All items shall be preserved and packaged in accordance with MIL-STD-726C; packing shall conform to the requirements specified in MIL-P-55585(EL).

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

8. Storage. *a. Type.* The preferred type of storage environment for the radio set is a controlled humidity warehouse or heated warehouse.

b. Age Control. The radio set will be issued on a first-in-first-out (FIFO) basis by date of manufacture, or date of rebuild. The dates can be established from the original government procurement contract

number or the rebuild lot number.

c. Shelf Life. The radio set is subject to deterioration during storage and is required to be inspected and tested as specified in appendix D.

d. Tests. All test requirements for the radio set along with the Federal stock numbers of each unit are given in appendix B.

e. Precautionary Actions. When the radio set is being prepared for storage or issue be sure that there are enough personnel and sufficient moving apparatus available to eliminate the possibility of damage to the equipment or injury to the personnel.

9. Disposition of Rejected Materiel. Rejected materiel will be tagged and reclassified into the proper condition code in accordance with AR 725-50. For other than new material all defective units in a lot shall be repaired, or disposition requested in accordance with AMC and depot procedures.

APPENDIX A REFERENCES

MIL-B-117 MIL-P-55585(EL)	Interior Packaging, Bags, Sleeves and Tubing Packing and Marking Requirements for Southeast Asia and Stratcom and Preparation Delivery Requirements of Electronic Equipment and Components
MIL-STD-109B MIL-STD-726C TM 743-200-1 MIL-STD-129D	Quality Assurance Terms and Definitions Packaging Requirements Code Storage and Materiels Handling Marking for Shipment and Storage

APPENDIX B FEDERAL STOCK NUMBERS AND TEST REQUIREMENTS

Type	FSN	Publication	Test Requirements
RECEIVER-TRANSMITTER RT-742(*)/ARC-51BX Radio Set Control	5821482-3927	TM 11-5820-518-35	Paragraphs 6-5 and 6-6
C-4677/ARC-51X Radio Set Control	5820482-3700	TM 11-5820-518-35	Paragraph 6-7
C-6287/ARC-51BX Bench Tests	5821-082-3928 N/A	TM 11-5820-518-35 SB 740-5821-91406	Paragraph 6-8 APPENDIX D

*Denotes all models of a particular equipment are covered in this bulletin.

APPENDIX C

PRESERVATION, PACKAGING, AND PACKING

1. Preservation and Packaging. Preservation and packaging shall be level A or C as specified.

a. Level A.

(1) *Cleaning.* Each radio set shall be cleaned in accordance with the applicable procedure of MIL-P-116.

(2) *Drying.* Each radio set shall be dried in accordance with the applicable procedure of MIL-P-116.

(3) *Preservation application.* None required.

(4) *Unit packaging.* Unit packaging shall be in accordance with the methods prescribed in MIL-P-116 as specified herein.

(a) *Technical literature.* Technical literature shall be packaged method IC-1 of MIL-P-116.

(b) *Radio Receiver-Transmitter RT-702/ARC-51X or Radio Receiver-Transmitter RT-742()/ARC-51BX.* Each radio receiver-transmitter shall be individually packaged method 1A-14 as follows: Cushion the unit on all surfaces with cells or pads or both fabricated from fiberboard conforming to PPP-F-320, type CF, class domestic, variety SW, grade 275, designed to protect all projections and absorb the shock of impact in handling and transit. Place the cushioned unit within a close-fitting fiberboard box conforming to PPP-B-636, type CF, class domestic, variety SW, grade 275. Close the box with tape conforming to PPP-T-5. Blunt all corners of the box and cover any exterior stapling or stitching with tape conforming to PPP-T-45. Place the box within a close-fitting barrier bag fabricated of material conforming to MIL-B-131, class 1. Exhaust the excess air from the bag and heat-seal the closure. Place the sealed bag with contents within a close-fitting fiberboard box conforming to PPP-B-636, type CF, class weather-resistant, grade W5c. Cover any interior stapling or stitching of the box with tape conforming to PPP-T-45. Close the box in accordance with the appendix of the box specification.

(c) *Radio Set Control C-4677/ARC-51X or Radio Set Control C-6287/ARC-51BX.* Each radio set control shall be individually packaged method 1A-14 as follows: Wrap each unit with barrier material conforming to MIL-B-121, type II, class 2. Seal the wrap with tape conforming to PPP-T-45, type 111, grade A. Cushion each unit by wrapping in a minimum of two full layers of cushioning material conforming to PPP-C-843, type II, class B, designed to protect all projections and to absorb the shock of impact in handling and transit. Place the cushioned unit within a close-fitting fiberboard box conforming to PPP-B-636, type CF, class domestic,

variety SW, grade 275. Close the box with tape conforming to PPP-T-45. Blunt all corners of the box and cover any exterior stapling or stitching with tape conforming to PPP-T-45. Place the box within a close-fitting barrier bag fabricated of material conforming to MIL-B-131, class 1. Exhaust the excess air from the bag and heat-seal the closure. Place the sealed bag with contents within a close-fitting fiberboard box conforming to PPP-B-636, type CF, class weather-resistant, grade W5c. Cover any interior stapling or stitching of the box with tape conforming to PPP-T-45. Close the box in accordance with the appendix of the box specification.

(d) *Mounting MT-2659/ARC.* Each mounting shall be individually packaged method 111 as follows: Cushion the mounting by wrapping in paperboard conforming to PPP-P-291, type 1, and secure with gummed paper tape conforming to PPP-T-45, type 111, grade A. Place the cushioned item within a close-fitting box conforming to PPP-B-636, type CF, class weather resistant, grade W5c. Close the box in accordance with the appendix of the box specification.

(e) *Cooler, Air, Electronic Equipment HD-615/ARC-51X.* Each external blower shall be individually packaged method IC-1 as follows: Cushion the item by wrapping in paperboard conforming to PPP-P-291, type 1, and secure with gummed paper tape conforming to PPP-T-45, type 111, grade A. Place the item within a close-fitting bag conforming to MIL-B-117, type 11, class c and heat seal the closure. Place the bagged item within a close-fitting box conforming to PPP-B-36, W5c or MIL-B-43014. Close the box in accordance with the appendix of the box specification.

(f) *Indicator, Standing Wave Ratio ID-1003/ARC.* Each indicator shall be individually packaged method IIc as follows: Wrap the indicator with barrier material conforming to MIL-B-121, type II, class 2 and secure with gummed paper tape conforming to PPP-T-45, type 111, grade A. Cushion the indicator by wrapping in cellulosic cushioning material conforming to PPP-C-843, type 111, class B. Place the cushioned item within a closefitting barrier bag fabricated of material conforming to MIL-B-131, class 1. Exhaust the excess air from the bag and heat seal the closure.

(g) *Radio Set AN/ARC-51X or Radio Set AN/ARC-51BX.* Components of each radio set shall be packaged in accordance with the procedures specified in (b) through (f) above; and shall be consolidated within a close-fitting box conforming to

PPP-B-636, grade W5c. Place the technical literature, packaged as specified in (a) above, on top of the contents, directly under the lid of the box. Close the box in accordance with the appendix of the box specification.

b. Level C. The radio sets shall be packaged in a manner that will afford adequate protection against physical and environmental damage during shipment, handling, limited intransit storage.

2. Packing. Packing shall be level A, B, or C as specified. Shipping containers for all levels shall be capable of stacking and supporting superimposed loads during shipment and storage without damaging the container(s) or its contents.

a. Level A.

(1) *Palletized load.* A quantity of radio sets packaged as specified in 1 above, shall be placed on a pallet, load type 1, conforming to MIL-STD-147 except that the pallet shall be softwood conforming to NN-P-71, type IV, size 2. A fiberboard cap shall be employed over the load having two sides extending down the stacked load at least 12 inches to accommodate marking requirements. The cap shall be fabricated of fiberboard conforming to PPP-F-320, class weather-resistant, W5s or V3c. The load shall be "bonded" to the pallet by strapping.

(2) *Less than palletized had.* When quantities per destination are less than a pallet load, the item packaged as specified in 1 above, shall be waterproofed, with tape conforming to PPP-T-76, in accordance with the taping requirements of the box specification. A quantity of the waterproofed containers shall be packed within a close-fitting box conforming to PPP-B-601, oversea type; PPP-B-621, style 4, class 2; or PPP-B-585, style 2 or 3, class 3. When the gross weight exceeds 200 pounds, or the container length and width is 48 x 24 inches or more and the weight exceeds 100 pounds, 3 x 4 inch skids, laid flat, shall be applied in accordance with the requirements of the container specification, or if not specified in the specification, in a manner which will adequately support the item and facilitate the use of

material handling equipment. Closure and strapping shall be in accordance with the applicable container specification or appendix thereto except that metal strapping shall conform to QQ-S-781, type 1, class B.

b. Level B.

(1) *Palletized load.* A quantity of radio sets, packaged as specified in 1 above, shall be palletized as specified in a (1) above.

(2) *Less than palletized load.* When quantities per destination are less than a pallet load, a quantity of radio sets, packaged as specified in 1 above, shall be packed within a close-fitting fiberboard box conforming to PPP-B-640, class 2, style E, or PPP-B-636, type CF, class weather-resistant, variety DW. The gross weight of boxes conforming to PPP-B-640 shall not exceed 250 pounds. When the gross weight exceeds 200 pounds, or the container length and width is 48 x 24 inches or more and the weight exceeds 100 pounds, containers will be pallet-mounted on pallets conforming to NN-P-71, type IV. Closure shall be in accordance with the appendix of the applicable box specification. Reinforcing shall be pressure-sensitive filament tape banding or non-metallic strapping conforming to PPP-T-97, type IV and PPP-S-760, type 11, respectively; selection of the material and application shall be in accordance with the appendix of the applicable box specification.

c. Level C.

(1) *Palletized load.* Q quantity of radio sets, packaged as specified in 1 above, shall be palletized as specified in a (1) above, except that the fiberboard caps shall be class domestic.

(2) *Less than palletized bad.* When quantities per destination are less than a pallet load, a quantity of radio sets, packaged as specified in 1 above, shall be packed as specified in b (2) above, except that the fiberboard boxes shall conform to PPP-B-640 and PPP-B-636, class 1 and class domestic, respectively, and reinforcing shall not be required for boxes conforming to PPP-B-636.

APPENDIX D

STORAGE QUALITY ASSURANCE PROVISIONS

1. Index Number. The fourdigit index number of this storage quality assurance provision (SQAP) (reserved for future use in automatic data processing) will be assigned when available,

2. Federal Stock Number. Each item listed in appendix B, with its Federal stock number is subject to the provisions of this SQAP.

3. Definitions. Special terms used in this SQAP are defined as follows:

a. Acceptance Quality Level (AQL). The nominal value expressed in terms of percent defective or defects per 100 units, whichever is applicable, specified for a given group of defects of a product. It is the maximum allowable accidental departure from specification requirements which can be tolerated.

b. Storage Quality Level (SQL). That quality level applicable to storage sampling inspection expressed in terms of percent defective or defects per 100

units, whichever is applicable, specified for a given group of defects of a product. It is the maximum allowable accidental departure from specification requirements which can be tolerated.

c. Defect. Any nonconformance of the unit of product with specified requirements.

d. Defective Unit. A unit of product which contains one or more defects.

e. Critical Defect. A defect that judgement and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending on the product performance of the tactical function of a major end item such as a ship, aircraft, tank, missile, or space vehicle.

f. Major Defect. A defect other than critical that could result in failure, or materially reduce the usability of the product for its intended purpose.

g. Minor Defect. A defect that does not materially reduce the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

h. Mechanical-Visual Inspection. An inspection by visual means to observe the item and/or packaging and packing to detect deficiencies. Mechanical-visual inspection may require disassembly.

i. Technical Inspection. A complete functional inspection, including disassembly, where required, and performance testing and/or laboratory testing.

4. Specifications, Technical Manuals, and Other Documents. The following documents of the latest issue in effect, contain inspection and testing information, data, and instructions applicable to these quality assurance provisions.

<i>Publication</i>	<i>Title</i>
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7,8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
AR-725-50	Requisitioning, Receipt, and Issue System.
MIL-P-116	Preservation, Methods of.
MIL-P-11268	Parts, Materials and Processes Used in Electronic Communication Equipment.
MIL-M-13231	Marking of Electronic Items.
MIL-STD-105D	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-109B	Quality Assurance Terms and Definitions, Marking for Shipment and Storage.
MIL-STD-129D	Identification Marking of U.S. Military Property.
MIL-STD-130C	Identification Marking of U.S. Military Property.
MIL-STD-252A	Wired Equipment, Classification of Visual and Mechanical Defects.
MIL-STD-726C	Packaging Requirements Code.
SCL-T-0020A	Testing of Radio Set AN/ARC-51BX for Army Aircraft Bench, Preflight and Flight Tests.
TB SIG 355-1	Depot Inspection Standard for Repaired Signal Equipment.

<i>Publication</i>	<i>Title</i>
TB SIG 355-2	Depot Inspection Standard for Refinishing Repaired Signal Equipment.
TB SIG 355-3	Depot Inspection Standard for Moisture and Fungus Resistant Treatment.
TB SIG 355-4	Depot Inspection Standard for Balancing Rotating Parts and Assemblies.
TB 750-236	Calibration Requirements for the Maintenance of Army Material.
TM 38-750	Army Equipment Record Procedures.
TM 11-5820-518-20	Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Radio Sets AN/ARC-51X and AN/ARC-51BX.
TM 11-5820-518-35	DS, GS, and Depot Maintenance Manual: Radio Sets AN/ARC-51X and AN/ARC-51BX.
TM 11-5820-518-35P	DS, GS, and Depot Maintenance Repair Parts and Special Tools Lists: Radio Sets AN/ARC-51BX Including Receiver Transmitter RT-742B/ARC-51BX.

5. Other Directives.

<i>Publication</i>	<i>Title</i>
AR 795-17	General Policies and Principles for Furnishing Army Material on a Grant Aid Basis.
AR 79.5-204	General Policies and Principles for Furnishing Defense Articles and Services on a Sale or Loan Basis.

6. Inspection Criteria. a. Lot Criteria.

(1) *Lot definition.* A lot is defined as a group of like items from which a sample is to be drawn and inspected to determine conformance with the acceptability criteria. The following are examples:

(a) A group of like items in storage which was received in a shipment with the following identical markings.

- 1 Purchase order number.
- 2 Data packaged or packed.
- 3 Depot certification stamp and date.

(b) A group of like items repaired or rebuilt by the Maintenance Division in one production run.

(2) *Lot formation.* The items shall be assembled into identifiable lots. Each lot shall as far as practicable, consist of units of product of a single type, grade, class, size, and composition manufactured, repaired, or rebuilt at the same time and stored under the same conditions. It is recommended that equipment from different limited production buys be placed in different lots and that the equipment serial numbers, by limited production buy, be used as lot information criteria.

(3) *Lot size.* The lot size is the total number of individual like items in the lot that is to be inspected.

b. Sampling Procedure.

(1) *Sample selection.* Select samples of material in a way which will assure that each unit in the lot has an equal chance of being selected. Biased methods, such as selecting items from the same position in a container, pallet or stack: taking items all from

one location; or selecting items that appear defective, will not be utilized.

(2) *Sample size.* Use table I, MIL-STD-105D to obtain the sample size utilizing the storage quality level shown in (3) below.

(3) *Storage quality levels (SQL).*

(a) Mechanical-visual inspection: Critical SQL 1.0 percent; major SQL 2.5 percent; minor SQL 10 percent.

(b) Electrical: Critical SQL 1.0 percent; major SQL 2.5 percent.

(c) Preservation, packaging, packing, and marking major SQL 4.0 percent; minor SQL 10 percent.

(d) The acceptance or reject number for the above SQL shall be the same as those shown for comparable acceptance quality levels (AQL) in table II-A of MIL-STD-105D.

c. Inspection Requirements. The following mechanical-visual inspection shall be performed:

(1) Inspect equipment covers and front panels for condition of finish and panel markings.

(2) Inspect for dents, punctures, or warped areas.

(3) Inspect springlock fasteners and receptacles.

(4) Inspect external surfaces for loose or missing screws or washers.

(5) Inspect receptacles for condition of pins, contacts, mounting, and for foreign particles.

(6) Inspect air filters and air outlet.

(7) Operate all controls through all their positions. (Do not disturb screwdriver adjustments). Controls shall operate smoothly with no binding. Control knobs shall be tight on their shafts with no missing or loose hardware.

(8) Check for meter damage and broken indicator glass on radio set control and reflectometer.

(9) Inspect all exposed metal surfaces for rust and corrosion.

(10) Inspect safety wiring on the wingnut fasteners on the mounting.

(11) Check the mechanical action of the switches and knobs. They shall move smoothly, free of binding and scraping on the radio set control.

(12) Inspect handles for looseness and defects.

(13) Check the pressure indicator. There shall be 3 to 5 psi internal air pressure in the receiver-transmitter.

(14) Remove and inspect the air filter.

(15) Inspect solder connections for missing solder, cold solder, insufficient solder, excessive solder, and improper wrap.

(16) Inspect for illegible, incorrect, or missing markings.

(17) Inspect the equipment for applicable modification work orders (MWO) a listing of current modification work orders will be found in DA Pam 310-7.

modification work orders (MWO) a listing of current modification work orders will be found in DA Pam 310-7.

d. Bench Test Requirements. Bench tests are required to assure that the equipment operates satisfactorily and has not been damaged in shipping and handling. Radio Sets AN/ARC-51X and AN/ARC-51BX in storage for a period of time are subject to deterioration and bench tests shall be conducted on all items before shipment. The test equipment required to test the radio set is listed in table D-1.

NOTE

Equivalent test equipment may be substituted.

Table D-1. Test Equipment and Accessories

Equipment	QTY Reqd	Applicable Literature
Vacuum Tube Voltmeter TS-505/U	1	TM 11-6625-239-12
RF Wattmeter AN/URM-120	1	TM 11-6625-446-15
Audio Oscillator TS-382D/U	1	TM 11-6625-261-12
Headset H-101 A/U	1	TM 11-5965-215-15
Signal Generator AN/USM-44A	1	TM 11-6625-508-10
Power Supply, 27.5 watts dc 12.25 amperes	1	
Any Type Automotive Tire Pump	1	
Air Gauge	1	
Oscilloscope OS-8C/U	1	TM 11-1214A
Audio Wattmeter TS-585D/U	1	TM 11-5017
Audio VTVM ME-30/U	1	TM 11-6625-230-12
Maintenance Kit, Electronic Equipment MK-731/ARC-51X	1	TM 11-6625-564-12
Impedance Adapter MX-1074/URM-25C	1	TM 11-5551C
Transfer Oscillator Hewlett Packard Model 540B	1	TB 9-6625-336-50
Resistor, 110 ohms, 1 watt	1	
Resistor, 42.2 ohms, 1 watt	1	
Resistor, 150 ohm, 1 watt	1	
Resistor, 1 to 1.5 K, 1 watt	1	

(1) *Input requirements.*

(a) *Electrical power.* The AN/ARC-51(X) Radio Set has been designed for reliable operation when provided dc electric power having the characteristics required in MIL-STD-704; however, for the purpose of the test required herein the power shall be 305 watts at 27.5 volts \pm 0.5 volts dc.

(b) *Air pressure.* A source of air, 3 to 6 psi such as provided from a tire pump is required to pressurize the Receiver-Transmitters RT-742/ARC-51BX and RT-742B/ARC-51BX.

(2) *Pressurization check.* With the RT-742/ARC-51BX and RT-742B/ARC-51BX covers in place, pressurize with air to 6 psi. Check pressure after standing for 24 hours at the same temperature and al-

titude. Pressure loss shall not exceed 4 pounds per square inch.

(3) *Electrical tests.* Interconnect the Receiver-Transmitter RT-742/ARC-51BX or RT-742B/ARC-51BX and the control C-6287/ARC-51X for the Bench Tests as shown in figure 1, 2, and 3 as required. Use a RF Wattmeter AN/URM-43A or equivalent in place of an antenna. Unless otherwise specified use "VOL" and "SENS" controls in the maximum position only.

(4) *Transmitter tests.* For Receiver-Transmitter RT-742/ARC-51BX use procedure (a), for Receiver-Transmitter RT-742B/ARC-51BX use procedure (b).

(a) Turn on the radio by setting the power switch on the control to the T/R position. Allow the set to warm up for approximately 5 minutes before beginning the tests.

(b) Connect the equipment as shown in figure 1, and allow a 5 minute warm up period. The RT-742B/ARC-51BX has a duty cycle of 5 minutes transmit and 10 minutes receive. During transmit operation, observe this duty cycle ratio. Connect the VTVM (ME-30/U) on the + 10V scale to A6J2, turn the control head frequency to 399.9 MHz on the power amplifier. Key the transmitter and adjust C6-Z1, C12-Z2 and C18-Z3 on the RF preamplifier for maximum voltage on the VTVM. Next connect the VTVM to A6J3 and adjust C5-Z1 trimmer on the power amplifier for maximum voltage. Adjust C14-Z2 trimmer for maximum power out and unkey. Connect the VTVM with the positive lead to A6J7 and the negative lead to A6J6 on the power amplifier with the transmitter unkeyed.

CAUTION

There is 420 volts on A6J6 and J7 with respect to ground while the transmitter is keyed. The VTVM must be isolated from ground.

(c) After the connections are made, key the transmitter and adjust A6R11 V4 bias potentiometer on the power amplifier for 1.5 volts across A6J6 and J7. Unkey and disconnect the VTVM. Starting at indent 39 on the ten megacycle control proceed to 22 checking for power at each position, go back to 39 and perform the power check for the whole and tenth megacycle position. This checks all transmitter Xtals.

(5) *Power output.* Refer to figure 1 and connect the RF Wattmeter to the antenna jack J-13 of the Receiver-Transmitter unit using an approximate length of (10 feet of RG-9/V) cable. At each frequency listed in table D-2, observe that the frequency selection is symmetrically displayed in the read out windows of the control unit. Key the transmitter and observe that the transmitter output as read on the RF Wattmeter, is at least 16 watts. Also note that the average output for the 19 channels shall be at least 20 watts.

Table D-2. List of Test Frequencies

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	225.1	10	314.6
2	233.8	11	321.1
Guard	243.0	12	339.7
3	250.6	13	345.4
4	258.6	14	356.5
5	268.2	15	365.4
6	270.6	16	372.5
7	283.4	17	382.6
8	291.3	18	399.9
9	306.2		

(6) *Sidetone tests.* For Receiver-Transmitter RT-742/ARC-51BX use procedure (a) for Receiver-Transmitter RT-752B/ARC-51BX use procedure (b). Refer to figure 1.

(a) Using not less than 3 widely separate frequencies, key the transmitter and talk into the microphone. The audio output power is 100 milliwatts. Listen to the sidetone output at the headset H-101A/U to check for normal audio level characteristics. If questionable, check for proper operation by feeding a 100 Hz signal into the DUM MIC Jack with Audio Oscillator TS-382D/U, at a level of 3 db below clipping (or 70% of clipping). The sidetone output should be indicated as not less than 14 milliwatts at 30 percent modulation.

(b) Same as (a) above. When the signal input level on the audio oscillator is adjusted to 3 db below clipping the wattmeter shall read 100 milliwatts. If the wattmeter does not read 100 milliwatts, adjust R42 (located on the audio module) until 100 milliwatts is obtained. The sidetone output should be indicated as not less than 14 milliwatts at 30 percent modulation.

(7) *Modulation tests.* For Receiver-Transmitter RT-742/ARC-51BX use procedure (a), for Receiver-Transmitter RT-742B/ARC-51BX use procedure (b).

(a) Refer to figure 2 and connect the test equipment as shown. Set the function switch of the control unit to T/R + G position and allow the equipment to warm up for at least 5 minutes. Adjust the audio

oscillator for an output of 1000 Hz and a signal level of 2.73 volts (17 DBM) at test point "A" as read on the VTVM. Connect the VTVM to test point "B" the voltage shall read 0.39 volts (ODBM). Key the transmitter by operating the CW switch and adjust the modulation gain control R20, located on the modulator and audio subassembly IA4, to the point at which the modulation pattern just reaches the clipping level as viewed on the oscilloscope OS-8C/U.

(b) Refer to figure 1 and connect the test equipment as shown. Set the function switch on the control unit to T/R+G position and allow the equipment to warm up for at least 5 minutes. Adjust the audio oscillator for an output of 1000 Hz and a signal level of 0.8 volts. With the control head frequency set at 304.7 MHz key the transmitter by operating the CW switch. The modulation meter shall read between 80 percent to 95 percent. If the modulation meter does not read these percentages adjust A4PI on the modulator and audio module for approximately 85 percent modulation.

(8) *Transient protection circuit.* To check the transient protection circuit when testing the RT-742B/ARC-51BX, connect a 1K to 1.5K ohms, 1-watt resistor from ground to the top of the power diode CR2, main frame, under the power amplifier and listen for the sound of the blower motor lugging. If it lugs, the transient protection circuit is good. If it does not, reject the radio set as Q1 is shorted.

(9) *Receiver tests.* Unless otherwise specified herein, the receiver tests shall include those to be made at approximately each of the extreme and mid-point frequencies available and also the guard channel frequency. All tests should be made using manual control C-4677/ARC-51 X or preset control C-6287/ARC-51BX, set to the T/R + G position and given at least a 5 minute warm up period. With the equipment connected as shown in figure 3 the following alignment procedure will be used when bench testing the RT-742B/ARC-51BX.

(a) Adjust the signal generator for a 1,000 microvolt input modulated 30 percent at 1,000 Hz. With a frequency of 304.7 MHz adjust A4R21 on the audio modulator for 100 milliwatts output across 150 ohms impedance. The audio level for the main receiver is now set.

(b) Adjust the signal generator for 1.5 to 2 microvolts output modulated 30 percent at 1,000 Hz and re-peak the generator to 304.7 MHz. Slowly turn A3R50 on 3rd IF amplifier until squelch opens (threshold). Squelch level of the main receiver is now set.

(c) Connect the VTVM to measure DC volts at AIJ2 of the RF preamplifier. Increase the output of the signal generator until the voltage begins to rise. This shall occur between 50 and 150 microvolt.

If the voltage does not rise adjust A3R31 on the third IF amplifier to achieve the above results. The adjustment of the main receiver AVC is now complete.

(d) Adjust the signal generator for 1,000 microvolt 243.00 MHz modulated 30 percent at 1,000 Hz, and with the switches of the control box set at GD XMIT and TR + G position, adjust A4R20 on the audio modulator for 100 milliwatts across 150 ohms. The audio level of the guard receiver is now set.

(e) Adjust the signal generator for 1.8 to 2.2 microwatt output modulated 30 percent at 1,000 Hz and re-peak the signal generator to 243 MHz. Slowly turn A7R51 on the guard receiver to open the squelch. The squelch level of the guard receiver is now set.

(f) Adjust A3R46 on the guard receiver so that the audio output as read on the audio wattmeter TS-585 D/U does not vary more than ± 3 db when the signal generator is varied from 10 to 100,000 microvolt. Adjustment of guard receiver AVC is now complete.

(10) *Sensitivity tests.* With the equipment connected as shown in figure 3, adjust the "SENS" and/or "VOL" knobs of the control box to the extreme clockwise positions. Modulate the signal generator 30 percent at 1,000 Hz. Adjust the signal level of the signal generator to 4.2 microvolt output to the main receiver or 5.0 microvolt to the guard receiver. The resulting receiver audio output shall be at least 14 milliwatts and the signal-plus-noise to noise ratio shall be at least 10 db. If these results are not obtained, check the receiver sensitivity resistor A3R34 making sure it is adjusted maximum clockwise and repeat the above tests. Reject the equipment if the required test results are not obtained.

(11) *Squelch tests.*

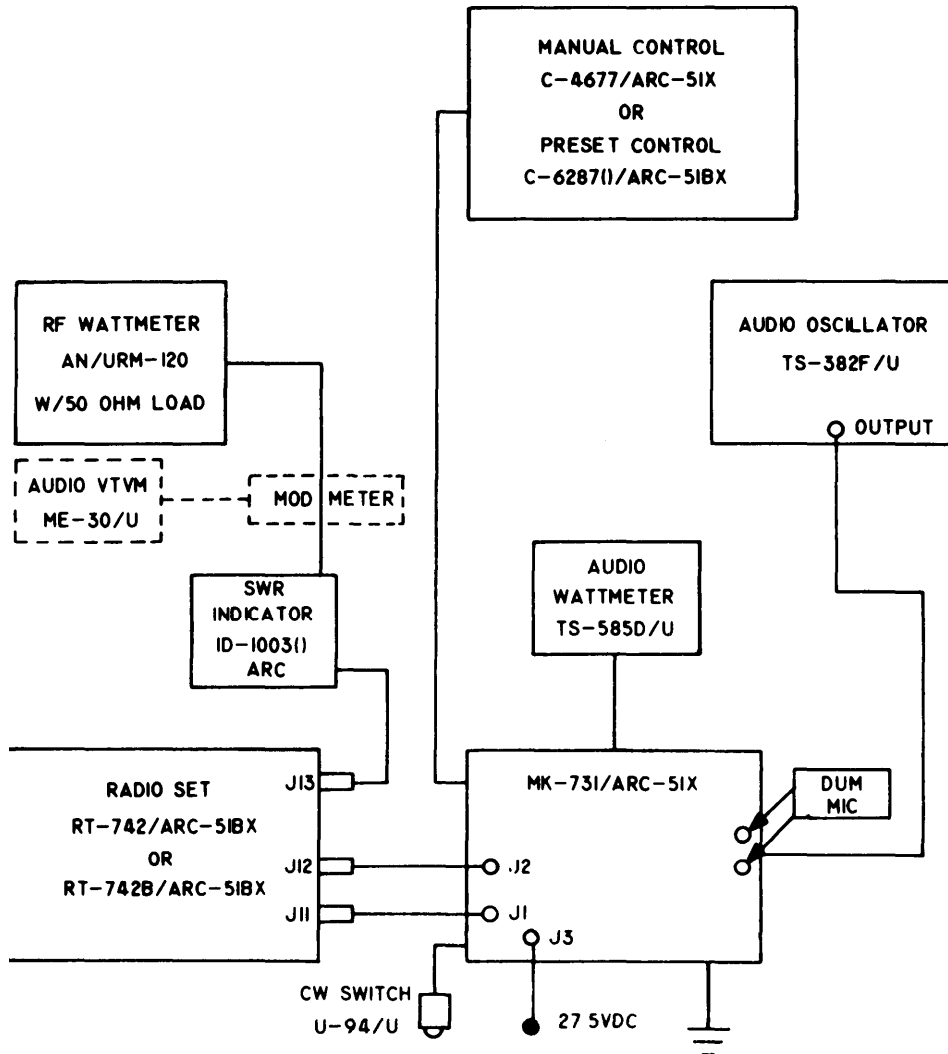
(a) *Main receiver tests.* With the equipment connected as shown in figure 3, adjust the signal generator for minimum output. Check that the squelch opens and closes with operation of the SQ DISABLE switch on the control box. With the SQ DISABLE switch in the OFF position, increase the output of the signal generator to the point which just opens the squelch. The signal level shall be between 1 and 3 microvolt. If these results cannot be obtained, adjust the signal generator output to the level which produces a 6 db signal-plus-noise to noise ratio and adjust the receiver squelch resistor A3R50 for squelch threshold. Reject the equipment if this adjustment cannot be made.

(b) *Guard receiver tests.* With the equipment connected as shown in figure 3, adjust the signal generator frequency to the receiver guard channel frequency (243.00 MHz). With the main receiver squelch operative and the signal generator adjusted for minimum output, the receiver audio output

shall be squelched. Increase the signal generator output to a point which just opens the squelch. The signal level shall be between 1 and 4 microvolt. If these results are not obtained, adjust the signal generator output to the level which produces a 6 db signal-plus-noise to noise ratio and adjust the receiver squelch resistor A7R51 for squelch threshold. Reject the equipment if this adjustment cannot be

made.

(c) A VC characteristic check. With the equipment connected as shown in figure 3, vary the signal generator input level from 10 to 100,000 microvolts. The audio output shall not vary more than ± 3 db from the 1,000 microvolt reference value. The same check shall be made for the guard receiver and the same values shall apply.



NOTE:
 EQUIPMENT SHOWN IN DASHED LINES
 IS TO BE ADDED WHEN TESTING THE
 RT-742B/ARC-51BX DURING MODULATION TEST E L 740-5820-91-006-SB-1

Figure 1. Equipment and test units for making power output and sidetone measurements.

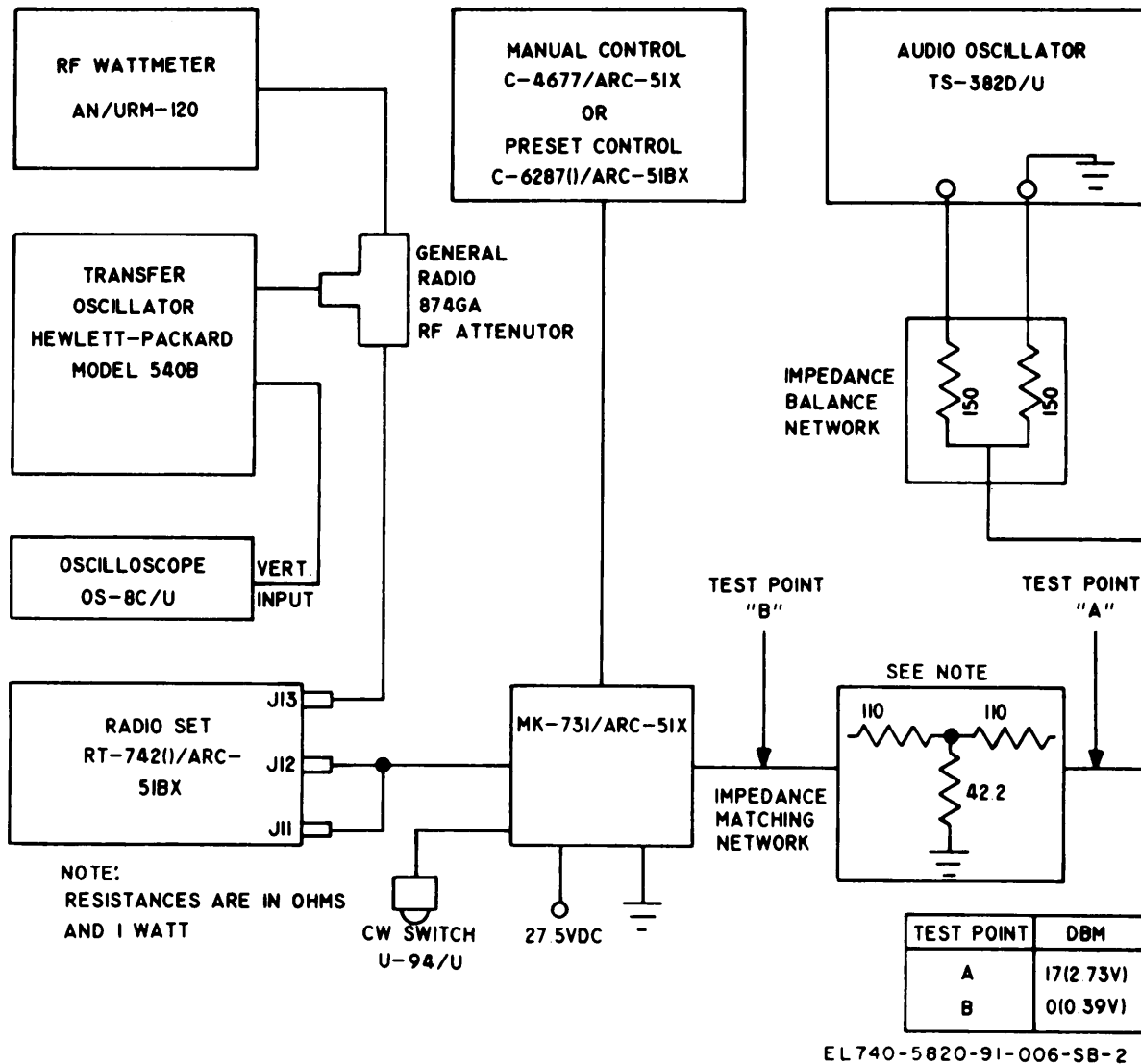


Figure 2. Equipment and test units for making modulation measurements.

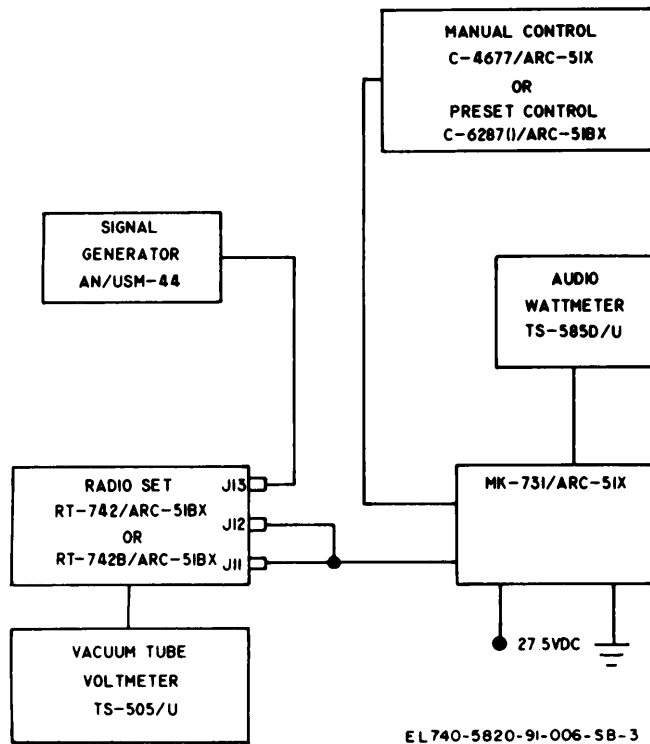


Figure 3. Equipment and test units for making sensitivity measurements.

e. Defect Classification.

(1) Mechanical-visual.

(a) *Critical*. Refer to the definition of a critical defect.

(b) *Major*.

1 Damage due to handling or storage (crushed, deformed, or broken).

2 Soldering defects as listed in MIL-STD-252A.

3 Solderless connection: defects as listed in MIL-STD-252A.

4 Cabling and wiring defects as listed in MIL-STD-252A.

5 Hardware: defects as listed in MIL-STD-252A.

6 Foreign objects: defects as listed in MIL-STD-252A.

7 Potential shorts: defects as listed in MIL-STD-252A.

8 Finish: defects as listed in MIL-STD-252A.

9 Marking defects as listed in MIL-STD-252A.

10 Parts: defects as listed in MIL-STD-252A.

11 Contacts: defects as listed in MIL-STD-252A.

12 Plating painting or MFP missing.

13 Dimensional: a dimensional defect which directly affects interchangeability, assembly, or operation.

(c) *Minor*.

1 Soldering defects as listed in MIL-STD-

252A.

2 Solderless connectors: defects as listed in MIL-STD-252A.

3 Cabling and wiring defects as listed in MIL-STD-252A.

4 Hardware defects as listed in MIL-STD-252A.

5 Finish: defects as listed in MIL-STD-252A.

6 Marking defects as listed in MIL-STD-252A.

7 Parts: defects as listed in MIL-STD-252A.

8 Contacts: defects as listed in MIL-STD-252A.

(2) *Electrical*.

(a) *Critical*. Refer to the definition of a critical defect.

(b) *Major*. Any electrical defect, other than critical, that does not meet the requirements specified for each item shall be considered a major defect.

(c) *Minor*. None. All electrical defects shall be considered critical or major, as applicable.

(3) *Packaging and marking major*.

(a) Use of improper or defective material.

(b) Quantity of unit package not as specified.

(c) Incorrect packaging method supplied.

(d) Cushioning or padding omitted.

(e) Cushioning or padding inadequate for the protection of the barrier material from projections, sharp edges, or other similar features of the item.

(f) Cushioning inadequate for the physical and mechanical protection of the item.

(g) Unsealed, punctured, or improperly sealed barrier bag, wrap, or envelope.

(h) Stock number omitted, incorrect, or illegible.

(i) Nomenclature omitted, incorrect, or illegible.

(j) Marking of quantity of items in package omitted, incorrect, or illegible.

(k) Different stock-numbered items in the same unit package.

(4) *Packaging and marking, minor*.

(a) Item not properly blocked or braced within the unit package to prevent movement.

(b) Packaging material damaged.

(c) Conforming or cushioning wraps are not snug fitting and contain voids.

(d) Air not expelled from barrier before sealing.

(e) Any item of marking information other than (3), (h), (i), and (j), above listed under major defects omitted, incorrect, or illegible.

(5) *Packing and marking, major*.

(a) Use of improper or defective material.

(b) Quantity in pack not as specified.

- (c) Gross weight in excess of specified amount.
 - (d) Box closure not as specified.
 - (e) Type, grade, class, and style at the shipping container not as specified.
 - (f) Strapping omitted (when required).
 - (g) strapping inadequate or incorrectly applied (when required).
 - (h) Items not adequately blocked, braced, or cushioned within the shipping container to prevent movement or damage.
 - (i) Shipping documents or packing list omitted.
 - (j) Stock number omitted, incorrect, or illegible.
 - (k) Nomenclature omitted, incorrect, or illegible.
 - (l) Marking of quantities of items in pack omitted, incorrect, or illegible.
 - (m) Destination marking omitted, incorrect, or illegible.
 - (n) Special marking or labeling(when required) omitted, incorrect, or illegible.
 - (o) Oversea code marking (when required) omitted, incorrect, or illegible.
- (6) Packing and marking, minor.
- (a) Unsealed carton.
 - (b) Defective taping or sealing of carton.
 - (c) Any other box defect, which may be considered minor by definition of MIL-STD-105D.
 - (d) Any item of required marking information other than in (5), (j), through (o) above listed under major defects omitted, incorrect, or illegible.
- f. Calibration of Measuring and Test Equipment. All measuring and test equipment shall have been calibrated and certified within its prescribed period before use. Certification shall be affixed in such a way as to preclude any altering or tampering.
- g. Storage Inspection Records. Results of inspections and tests shall be recorded on data sheets and a copy attached to each unit.
7. Inspection Frequency. a. Controlled humidity warehouse: 60 months.
- b. Heated warehouse: 36 months.
 - c. Unheated warehouse: 18 months.

8. Type of Storage. Controlled humidity warehouse or heated warehouse.

9. Other Instructions. a. *Rejected Lots.* Each rejected lot shall be tagged and reclassified into the proper condition code in accordance with AR 725-50. For other than new material, all defective units in a lot shall be repaired, or disposition requested in accordance with AMC and depot procedures.

b. *Repackaging of Samples Inspected.* Restore the packaging of the samples inspected and accepted to the level of the lot from which the samples were drawn.

10. Special Requirements. If the subject items are allocated for Foreign Military Sales, Grant Aid. or Loan, the following additional requirements must be met:

a. *Policies and Special Conditions:*

<i>Publication</i>	<i>Title</i>
AR 795-17	General Policies and Principles for Furnishing Army Material on a Grant Aid Basis.
AR 795-204	General Policies and Principles for Furnishing Defense Articles and Services on a Sale or Loan Basis.
DD Form 1513	offer and Acceptance

NOTE

Special terms, conditions and agreements with the customer country, and shown on DD Form 1513, must be complied with as well as any special instructions from the responsible commodity command.

b. *Basic Issue List Items (BILI).* The BILI deck normally furnished to the depots by USAECOM BILI Office, Lexington Blue Grass Army Depot, Lexington, Ky. Office symbol AMSEL-MA-AM-IL shall be used.

c. *Level A Packaging and Packing.* Level A packaging and packing is mandatory for Foreign Military Sales and Grant Aid shipments.

d. *Depot Documentation.* Depot documentation of final acceptance shall be furnished to the ECOM quality check team prior to ECOM inspection.

By Order of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff

Official:

VERNE L. BOWERS,
Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12-34 (qty rqr block No. 52), requirements for Storage, Serviceability. Standards, SB 740-series.

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