

SIGNAL CORPS REPAIRED EQUIPMENT REQUIREMENTS  
FOR  
RADIO RECEIVERS BC-312-(\*) AND BC-342-(\*)

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**A. APPLICABLE SPECIFICATIONS:**

A-1. The current issues of the following specifications and technical publications form a part of this specification.

A-1a. Signal Corps specification No. 72-135, General Requirements for Repaired Signal Equipment.

A-1b. U. S. Army specification No. 71-914-A, Radio Receivers BC-312-(\*) and BC-342-(\*). Only to the extent referenced herein.

A-1c. Signal Corps tentative specification No. 71-2202-A, Moisture and Fungus Resistant Treatment of Signal Corps Ground Signal Equipment.

A-1d. Any existing modification work orders pertaining to the equipment.

A-1e. Any existing moisture and fungus proofing instructions pertaining to the equipment.

**B. APPLICATION:**

B-1. This specification covers inspection requirements to be used in determining the quality and acceptability of repaired Radio Receivers BC-312-(\*) and BC-342-(\*).

**C. TEST EQUIPMENT:**

C-1. Test Equipment shall be such as to provide satisfactory inspection meeting the requirements of this specification.

C-1a. A Signal Generator with calibrated output, covering at least the range of frequency from 1.5 to 18 megacycles. The generator shall have provision for 30% modulation of the output signal at an audio frequency of 400 cycles.

C-1b. A 4000 ohm output meter capable of reading small a-c voltages. The output meter included in Test Equipment IE-9-(\*) or Test Sets I-56-(\*) is satisfactory.

C-1c. A radio transmitter in good operating condition capable of transmitting voice and CW over the operating frequencies of the

receiver under test, shall be utilized in performing the operational test. Signals from an established transmitter meeting FCC requirements may be used in lieu of the test transmitter when such a signal is available with sufficient signal strength and of proper frequency.

C-ld. A dummy antenna consisting of a 50 micromicrofarad capacitor.

C-le. A headset, Headset HS-30-(\*) or Headset P-19-(\*) is satisfactory.

C-lf. A Loudspeaker LS-3.

#### D. VISUAL AND MECHANICAL REQUIREMENTS:

D-1. Cleaning: The equipment shall be thoroughly cleaned and shall be free from superfluous particles of solder, rust, corrosion and all other foreign materials. Welds shall be thoroughly cleaned of flux, scale and oxidation products.

D-2. Soldering: Soldering shall be neatly done. Flux other than rosin or rosin and alcohol shall not be used. Wherever practicable, the excess flux shall be removed with alcohol or other suitable solvent after soldering. Solder shall not have crystallized, been inadequately heated or over-heated. The applied solder shall feather out to a thin edge, indicating proper flowing and wetting action. Where insulating material is subjected to heating during the soldering operation, it shall be undamaged and the parts fastened thereto shall not have become loosened.

D-3. Material used shall conform to the requirements in specification No. 71-914-A except that wire color coding need not be followed.

D-4. Wiring and parts shall be fastened and supported in a manner conforming to specification No. 71-914-A.

D-5. Straps and Cables: Straps, cables, and cable lacing shall not be frayed, cut, broken or otherwise damaged.

D-6. Plug-In Devices: Plug-in devices shall seat firmly and make good contact.

D-7. Controls and Moving Parts: Controls and control circuits shall be checked for correct operation. All controls shall turn easily and smoothly without binding, scraping, cutting or excessive lost motion. All switches shall snap firmly into each position. All dial locks shall fasten dials securely with little exertion. All relays shall operate correctly, contacts shall make and break in correct sequence.

D-8. Markings: Markings indicating functions, calibration, etc., of switches, controls, etc., shall be correct and legible.

D-9. Finishes: Finishes shall conform to the requirements in specification No. 71-914-A. There shall be no bare spots, corrosion, flaking, or peeling. Touching up of finish is acceptable.

D-10. Applicable modification work orders shall be complied with.

D-11. Applicable moisture and fungus proofing instructions shall be complied with.

E. ELECTRICAL REQUIREMENTS:

E-1. Standard Conditions: Unless otherwise specified, all electrical tests shall be made under the following conditions:

E-1a. The supply voltage shall be 14 volts D.C. for BC-312-A,C,D,E, F,G,J,L,M, and N; 28 volts D.C. for BC-312-HX and NX; and 120 volts A.C. for BC-342-(\*).

E-1b. The Radio Receiver shall be tested in a screened room.

E-1c. The signal generator shall be connected to the antenna terminal of the receiver thru the 50 mmf capacitor.

E-1d. The output meter shall be connected across the SPEAKER 2ND AUDIO Jack.

E-1e. The OFF-M.V.C.-A.V.C. switch shall be set at M.V.C.

E-1f. The C.W.-OSC switch shall be set at OFF.

E-1g. The crystal phasing control shall be set at OUT.

E-1h. The receiver shall be tuned to the same frequency as the signal generator.

E-1i. The ALIGN INPUT control shall be set for maximum indication on the output meter.

E-1j. The signal generator shall be set for a 400 cycle, 30 per cent modulated signal, and the modulation shall be turned on.

E-2. Sensitivity Test: The sensitivity test shall be made at the frequencies and receiver inputs indicated in the sensitivity chart, and shall be such that, with the modulation of the signal generator turned on, the VOL. control shall be adjusted to produce a 6.3 volt reading on the output meter, and with the modulation turned off, the output meter reading shall be reduced to 3.3 volts or less without changing VOL. control.

SENSITIVITY CHART

BAND	FREQUENCY (MC)	RECEIVER INPUTS (MV)
A	1.5	7.5
A	2.2	6.0
A	3.0	6.0
B	3.0	6.0
B	4.0	5.0
B	4.0	4.1
B	5.0	4.0
C	5.0	4.0

BAND	FREQUENCY (MC)	RECEIVER INPUTS (MV)
C	6.5	
C	8.0	4.0
D	8.0	4.0
D	9.5	4.0
D	11.0	4.0
E	11.0	4.0
E	12.5	4.0
E	14.0	4.0
F	14.0	4.0
F	16.0	4.0
F	18.0	5.0

E-3. Selectivity Test: The selectivity test shall be made at the frequencies listed in the selectivity chart by applying a signal into the antenna at frequencies above and below resonance of 10 times the value necessary to produce the same output at resonance. The maximum and minimum frequencies at which this output is obtained, shall not exceed the band width limits given in the selectivity chart. This test shall be made under the following conditions:

E-3a. The output of the signal generator at resonance shall be the same as in the sensitivity chart in paragraph E-2.

E-3b. The VOL. control setting shall be the same as in the sensitivity test, paragraph E-2, for the same frequency.

#### SELECTIVITY CHART

FREQUENCY (MC)	BAND WIDTH (KC)
2.2	11-20
4.0	11-20
6.5	11-20
9.5	11-20
12.5	11-20
16.0	11-20

E-4. Spurious Response: When the receiver is tuned to a spurious frequency (approximately 1880 kc.), the output meter reading shall not be greater than two times the output when the set is tuned 10 kc. away from the spurious frequency. This test shall be made under the following conditions:

E-4a. The antenna shall be shorted to ground.

E-4b. The C.W.-OSC switch shall be set to C.W. position.

E-4c. The VOL. control shall be set to maximum position.

E-4d. The ALIGN INPUT control and CW-OSC ADJUST shall be adjusted to produce maximum indication on the output meter when the receiver is detuned 10 kes. off the spurious frequency.

E-5. Automatic Volume Control Test: The automatic volume control test shall be made with the signal generator set at 1500 kcs., with the OFF-MVC-AVC switch in the AVC position and the VOL control in maximum position.

E-5a. With the signal generator output increased from 7 to 700 microvolts, the output meter shall indicate an increase in output.

E-5b. With the signal generator output increased from 700 to 7000 microvolts, the output meter shall indicate less than 30 per cent increase in voltage output.

E-5c. With the signal generator output decreased from 7000 to 700 microvolts, the output meter shall indicate less than 30 per cent decrease in voltage output.

E-5d. With 1 volt input, the output meter reading shall be decreased when the antenna post is shorted to ground. When the short is removed, the output meter needle shall swing back more slowly and to a greater value than when the same test is made with the OFF-MVC-AVC switch on the MVC position.

E-6. The receiver shall be tested for dial deviation at the frequencies given in the sensitivity chart. The amount of deviation at any frequency shall be less than one division of the dial on bands A and B, less than two divisions of the dial on bands C and D and less than three divisions of the dial on bands E and F. The backlash shall not be more than fifteen vernier divisions at 2.2 mcs.

E-7. Operational Test: Radio Receivers BC-312-(\*) and BC-342-(\*) shall be given an operational test to determine that the equipment is functioning properly. This test shall be performed utilizing the test radio transmitter. Signals received by the set under test shall be clear and intelligible. Extraneous noises, intermittent or microphonic conditions shall not be present when the set under test is tapped several times with a padded mallet to simulate vibration.

F. NOTES:

F-1. This copy of this specification is suitable for local reproduction by any blueprinting process.

F-2. Additional copies of this specification may be obtained upon request to:

Chief, Maintenance Branch, FMSCL-PMMS  
Production and Maintenance Division  
Signal Corps Engineering Laboratories  
Fort Monmouth, New Jersey.

G. SUPERSEDURES:

G-1. This specification supersedes the following published specifications:

REP-2

G-1a. Signal Corps tentative specification No. REP-2, dated 27 February 1945, re Inspection Requirements for Repaired Radio Receivers BC-312-(\*) and BC-342-(\*).

G-1b. Amendment No. 1 to Signal Corps tentative specification No. REP-2, dated 4 April 1945.