SIGNAL CORPS
REPAIR STANDARD
Amendment 1, 3 March 1954
Amendment 2, 29 November 1955
Amendment 3, 24 February 1956
Amendment 4, 11 May 1956
Amendment 5, 17 August 1956

NO. REP-135
ISSUE NO. 3

REPAIRED EQUIPMENT STANDARD

FOR

RADIO RECEIVER AND TRANSMITTER BC-1306

PROJECT 4422D

17 August 1953

SIGNAL CORPS ENGINEERING LABORATORIES
FORT MONMOUTH, N. J.

REP-135

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SIGNAL CORPS
REPAIR STANDARD

NO. REP-135
ISSUE NO. 3
AMENDMENT NO. 5
17 August 1956

SIGNAL CORPS
REPARIED EQUIPMENT STANDARD
FOR
RADIO RECEIVER AND TRANSMITTER BC-1306

Page 9, Paragraph 2, of Test Data Sheet for Radio Transmitter Portion; change:

"MCW emission" to read: "CW emission".

DJB/mls

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SIGNAL CORPS
REPAIR STANDARD

NO. REP-135
ISSUE NO. 3
AMENDMENT NO. 4
11 May 1956

SIGNAL CORPS
REPAIRED EQUIPMENT STANDARD
FOR
RADIO RECEIVER AND TRANSMITTER
BC-1306

1. Page 3, Paragraph III.B, add:

"9. Vibrator Power Unit PE-237 or Dynamotor DY-88/GRC, 1 each".

2. Page 6, Paragraph IV.C.10.c, add:

"When making this test, Dynamotor DY-88/GRC or Vibrator Power Unit PE-237 must be used."

3. Page 7, Test Data Sheet, under General Conditions, add:

"6. Set the Transmitter ANT SELECTOR switch at position 1."

"7. Set the Transmitter ANT TUNING control to center position."

4. Page 9, Test Data Sheet, paragraph 1, change:

"500 volt (400 cycle Mod)" to read
"500 (0.45 v input at 400 cps)".

"425 volt (400 cycle Mod)" to read
"425 (0.45 v input at 400 cps)".

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SIGNAL CORPS
REPAIR STANDARD

NO. REP-135
ISSUE NO. 3
AMENDMENT NO. 3
24 February 1956

SIGNAL CORPS
REPAIRED EQUIPMENT STANDARD
FOR
RADIO RECEIVER AND TRANSMITTER BC-1306

1. Page 2, Paragraph III. A-3: Delete:

Distortion Meter TS-723/U, 3F1722-5.4

2. Page 8, Test 6: Delete:

"Maximum indistorted Power Output 10% at 18.4 v."

Add: "5. Power output shall not be less than 18.5 volts (85 MW)."

HO/fea

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SIGNAL CORPS
REPAIR STANDARD

NO. REP-135
ISSUE NO. 3
AMENDMENT NO. 2
29 NOVEMBER 1955

SIGNAL CORPS
REPAIRED EQUIPMENT STANDARD
FOR
RADIO RECEIVER AND TRANSMITTER BC-1306

Page 4, paragraph IV C-2

delete " . . . . become progressively less."

Insert " . . . . indicate less on pos 2 and 3 than on pos 1, and less on position 5 and 6 than on position 4. Pos 4 shall indicate less than pos 1."

Page 8: Test Data Sheet

delete: paragraph 14

Page 9: Test Data Sheet para 2

delete: "Pos 4 - less than pos 3"

Insert: "Pos 4 - less than pos 1"

HRO/jea

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SIGNAL CORPS
REPAIR STANDARD

NO. REP-135
ISSUE NO. 3
AMENDMENT NO. 1
3 MARCH 1954

SIGNAL CORPS
REPAIRED EQUIPMENT STANDARD
FOR
RADIO RECEIVER AND TRANSMITTER BC-1306

1. Delete test No. 1, page 7 in its entirety and substitute the following table:

Sensitivity (uv)	Frequency	Input	Measured Value
Standard Noise Output 2 volts Sensitivity Control at High Position	3800 KC	5 uv	_____uv
	5200 KC	5 uv	_____uv
	6400 KC	5 uv	_____uv
Sensitivity Control	High to Medium	Not Less Than H to 1	_____
Ratios at 5200 KC	Medium to Low	Not Less Than 20 to 1	_____

2. Amend Test 6, page 8 to read as follows:

Maximum Undistorted Power Output	10% at 17.3 volts Minimum	_____V

3. Delete test No. 11, page 3 in its entirety and substitute the following table:

	Frequency	Dial Reading
Calibration and Resetability:	3800 KC ±30 KC	_____KC
PHONE-CW-NET-CAL	5200 KC ±30 KC	_____KC
Switch Set to CAL.	6400 KC ±30 KC	_____KC

Copy 1

There shall be not more than 5 KC difference in dial reading when the above frequencies are approached from clockwise and counterclockwise directions.

4. Test 7, page 10 delete ±.05% for all frequencies and add ±0.1% for all frequencies.

GB/1s

ARMY, FT. MONMOUTH, NJ. MON 1120-54

PREFACE

Signal Corps Repair Standards (formerly Signal Corps Repaired Equipment Requirements) are prepared by the Maintenance Engineering Branch, Procurement-Maintenance Engineering Division, Signal Corps Engineering Laboratories, and cover various items of signal equipments which are subject to repair, test and inspection. These repair standards are documents which set forth the specific repair requirements and test standards to be applied to the individual equipments being repaired and tested.

Signal Corps Repair Standards are prepared for the specific use of the fifth echelon Signal Repair Shops in repairing and determining the quality and acceptability of repaired signal equipments covered by these standards. The use of Signal Corps Repair Standards is recommended as a guide and reference for any agency having occasion to repair, test or inspect an item of signal equipment for which a repair standard has been prepared.

Signal Corps Repair Standard No. REP-1001 is a general standard and is subsidiary to any individual standard prepared. No individual standard is to be considered complete in itself, but is to be used in conjunction with Signal Corps Repair Standard No. REP-1001, "General Standards for Repaired Signal Equipment."

Reports of any discrepancies or any other constructive comments bearing upon this repair standard are invited. A series of Comments and/or Notes pages will be found in the back of this standard which are designed to facilitate reporting any inaccuracies noted. All such reports or comments as well as requests for additional copies, should be addressed to:

COMMANDING OFFICER
Signal Corps Engineering Laboratories, SIGEL-PMM-3
Fort Monmouth, New Jersey.

TABLE OF CONTENTS

REPAIRED EQUIPMENT STANDARD FOR RADIO RECEIVER AND TRANSMITTER BC-1306

I. STATEMENT COVERING APPLICABILITY

This repair standard covers inspection requirements to be used in determining the quality and acceptability of repaired Radio Receiver and Transmitter BC-1306. This must be used in conjunction with Signal Corps Repair Standard No. REP-1009, Radio Receivers (AM), General Standards which form a part of this standard. Its use is mandatory in the Maintenance Divisions of Signal Depots and the Signal Sections of General Depots. The use, insofar as limitations of test and calibration equipment permit, is highly recommended for all Signal Repair organizations.

II. APPLICABLE REFERENCES

A. Repair Standards. Applicable paragraphs of the repair standards listed below form a part of this standard:

	Title	Number
1.	General Standards for Repaired Signal Equipment	REP-1001
2.	Class "C" Receiver and Low Power Transmitter Vacuum Tubes	REP-242

B. Technical Publications. The following technical publications form a part of this standard to the extent referenced herein:

	Title	Number
1.	Radio Set SCR-694-C	TM 11-230C
2.	Radio Receiver and Transmitter BC-1306	TM 11-4009
3.	Radio Set AN/TRC-2	TM 11-2603

NOTE: All applicable Modification Work Orders pertaining to this equipment shall be performed.

III. TEST AND ADDITIONAL EQUIPMENT

The following equipments, or suitable equivalents of known accuracy, will be employed in determining compliance with the requirements of this Signal Corps Repair Standard and will be capable of conforming to their respective Repair Standards:

A. Test Equipment

	Equipment	Stock Number	Number Used	REP
1.	Electronic Multimeter ME-6( )/U	3F8100-3	1	-
2.	Signal Generator TS-465/U	3F3868	1	-
3.	Distortion Meter TS-723/U	3F1722-5.4	1	-
4.	Audio Oscillator TS-382A/U	3F4325-382A	1	-
5.	Oscilloscope OS-8A/U	3F3665-8	1	-
6.	Frequency Meter TS-174/U	3F4325-174	1	-
7.	RF Ammeter	3F1002-12	1	-

B. Additional Equipment

	Equipment	Stock Number	Number Used	REP
1.	Power Unit PP-327-(†)	-	1	699
2.	Key J-45	3Z3445	1	-

	Equipment	Stock Number	Number Used	REP
3.	110 mmfd capacitor, ±10%, mica, 500 vdcw	3K2056021 (use 2)	1	-
4.	10.5 ohm non-inductive resistor, ±10%, 20 w	3RC75CE390J (4 reg in parallel)	1	-
5.	Crystal CR-2/U, 1900 kc	2X105-1900		-
6.	Crystal CR-2/U, 3200 kc	2X105-3200	1	-
7.	4,000 ohm ±10%, 1 watt (may be series and/or parallel combinations)	3RC30BF392K	1	-
8.	25 mfd, 25 vdcw, capacitor	3DB25-90	1	-

NOTE: The use of Power Unit PP-327/GRC-9Y (AC Power Supply) is highly recommended for these tests. However, in the event it is not available, Vibrator Power Unit PE-237 (DC Power Supply) should be used but a continued check on the output voltages supplied is advisable due to poor regulation.

IV. REQUIREMENTS

A. General Receiver Test Conditions. The receiver tests shall be performed in accordance with Signal Corps Repair Standard No. REP-1009, Radio Receivers (AM), General Standards.

B. General Transmitter Test Conditions

1. Tests will be made in a screened room.

2. A phantom antenna, consisting of a 110 mmfd capacitor, a 10.5 ohm, 20 watt non-inductive resistor and the RF ammeter in series, connected to the ANT post and ground.

3. The audio signal generator connected to the microphone jack through a 25 mfd capacitor, as shown in Figure 29, page 28 of Technical Manual TM 11-4009.

4. Key J-45 connected to the KEY jack.

5. A 1900 kc crystal in the A crystal circuit and a 3200 kc crystal in the B crystal circuit.

6. The ANT SELECTOR switch at position 1.

7. The POWER switch at HIGH.

8. The MO-CRYSTALS switch at MO.

9. The frequency control at 5200 kc.

C. Detailed Transmitter Tests

1. Transmitter Power Output. The power output shall have values not less than shown on the Test Data Sheet.

2. ANT SELECTOR switch. With the emission switch at CW and the POWER switch on HIGH rotate the ANT SELECTOR switch through the six positions. The output shall become progressively less.

3. Modulation Capability PHONE

a. Return ANT SELECTOR switch to position 1.

b. Connect the oscilloscope as outlined in paragraph 26e and f of TM 11-4009.

c. Set the emission switch to PHONE.

d. The results shall be as shown on the Test Data Sheet.

4. Modulation Capability, MCW. With the audio oscillator off and the emission switch at MCW, the results shall be as indicated on the Test Data Sheet.

5. Keying. With the emission switch at CW, there shall be no tendency of "chopping off" of characters at the speed listed on the Test Data Sheet.

6. Frequency Range

a. Replace the oscilloscope with the frequency meter.

b. The frequency range shall be as indicated on the Test Data Sheet.

7. Calibration. The calibration shall be checked at the crystal check points and be within the tolerances as shown on the Test Data Sheet.

8. Resetability. When approaching the check frequency from either direction the calibration shall be within the limits shown on the Test Data Sheet.

9. Sidetone

a. Connect the oscilloscope to the PHONE jack of the receiver in parallel with the 4000 ohm load and the AC voltmeter.

b. Connect the audio oscillator to the horizontal terminals of the oscilloscope.

c. Set the emission switch to PHONE and MCW as required.

d. The sidetone output shall be as listed on the Test Data Sheet.

10. Standby Check

a. Place emission switch to MCW.

b. Place the SEND-STANDBY-OFF switch at STANDBY.

c. Depress the KEY and hold down for remainder of this test.

d. There shall be no output from the transmitter, but the receiver shall be operating.

e. Set the SEND-STANDBY-OFF switch to SEND. There shall be immediate output from the transmitter, and the receiver shall be disabled.

TEST DATA SHEET
FOR
RADIO RECEIVER PORTION OF
RADIO RECEIVER AND TRANSMITTER BC-1306

General Conditions

1. Dummy Antenna 110 mmfd capacitor in series with the high side of the signal generator.

2. Output Load 4000 ohms across Phone Jack 51-1 or Phone Jack 51-2.

3. Standard Output 6.3 volts.

4. Supply Voltage 115 v AC to Vibrator Power Unit PE-327-(†).

5. RF signal modulation 400 cps at 30%.

NOTE: Output impedance switch must be set to the 4000 ohm position.

Test	Specified Value		Measured Value
1. Sensitivity (uv)			
Standard noise output 2 volts	3800 kc	5 uv	_____uv
	5200 kc	5 uv	_____uv
	6400 kc	5 uv	_____uv
2. CW Sensitivity		Bandwidth	
	3800 kc	3 uv	_____uv
	5200 kc	3 uv	_____uv
	6400 kc	3 uv	_____uv

3. Selectivity:	Input	Bandwidth	
Standard input 5 microvolts at 5200 kc	10 uv	3 to 6 kc	___kc
	50 uv	7.5 to 11 kc	___kc
	500 uv	12 to 20 kc	___kc
	5000 uv	15 to 30 kc	___kc

Test	Specified Value	Measured Value
4. Image rejection ratio		
Standard	3800 kc 500 : 1 min	____: 1
input 10	5200 kc 500 : 1 min	____: 1
microvolts	6400 kc 500 : 1 min	____: 1
6. Maximum undistorted Power Output	10% at 18.4 v	____v
10. Frequency Range		
At least	3770 kc thru 6530 kc	__kc thru __kc
11. Calibrations and Resetability:	Frequency	
PHONE-CW-NET-CAL switch set to CAL	3800 kc ±30 kc 5200 kc ±30 kc 6400 kc ±30 kc	

12. CW Oscillator

With receiver tuned to the incoming signal the beat note shall be 400 cycles or higher. Detuning the receiver slightly shall produce a zero beat note.

Input signal		
5200 kc	Zero beat shall be obtained. 400 cycle note or higher when tuned to input signal	_____zero beat _____cycles

14. Special Tests

Sensitivity Switch Ratio

With the PHONE-CW-NET-Cal switch at PHONE, the Signal Generator set at 5.2 megacycles, the receiver resonated to this frequency and the VOLUME control set for standard output (6.3 volts) the signal input shall be not more than shown in the following table for each setting of the Sensitivity switch.

Sensitivity Switch	Signal Generator Output	
HIGH	10 μ volts	_____μ v
MED	50 μ volts	_____μ v
LOW	1000 μ volts	_____μ v

TEST DATA SHEET
FOR
RADIO TRANSMITTER PORTION
RADIO RECEIVER AND TRANSMITTER BC-1306

Test	Specified Value	Measured Value

1. Transmitter Power Output (5200 kc)

Operating voltage	Power Switch	Emission Switch	Output	
500 volt (Aud. Osc. off)	HIGH	CW	1.23 amps (16 w)	___amp
500 volt (Aud Osc. off)	MED	CW	1 amp (10.5 w)	___amp
500 volt (Aud. Osc. off)	LOW	CW	0.8 amp (6.7 w)	___amp
500 (400 cycle Mod.)	HIGH	PHONE	0.61 amps (4 w)	___amp
425 volt (Aud. Osc. off)	MED	CW	0.9 amps (8.5 w)	___amp
425 volt (400 cycle Mod.)	MED	PHONE	0.58 amps (3.5 w)	___amp

2. Antenna Selector Switch

MCW emission Power Switch on HIGH. 500 volts operating voltage	Pos. 1 - 1.23 amps min	____amp
	Pos. 2 - less than pos. 1	____amp
	Pos. 3 - less than pos. 2	____amp
	Pos. 4 - less than pos. 3	____amp
	Pos. 5 - less than pos. 4	____amp
	Pos. 6 - less than pos. 5	____amp

3. Modulation Capability, PHONE

Input - 1000 cps	Input - 0.45 v max (Modulation required 100%	_____v

Test	Specified Value	Measured Value
4. Modulation Capability, MCW		
	between 60% and 110%	____%
5. Keying	25 words per minute	MO_____w/m Xtal A_____w/m Xtal B_____w/m
6. Frequency Range (MO)	Minimum Range	
	3775 kc to 6525 kc	PHONE__kc to __kc MCW___kc to ___kc
7. Calibration		
	3800 kc ±.05%	_____kc
	4000 kc ±.05%	_____kc
	5200 kc ±.05%	_____kc
	6000 kc ±.05%	_____kc
	6200 kc ±.05%	_____kc
	6400 kc ±.05%	_____kc
8. Resetability		
	3 dial divisions at all Freq.	3800 kc_____ 5200 kc_____ 6400 kc_____
9. Sidetone		
4000 ohm output impedance	PHONE-4.24 v min output	____v
	MCW-4.24 v min output	____v
	600 to 850 cycles	____cycles
10. Standby Check		
	STANDBY - Zero output from transmitter but receiver operating	____
	SEND - Normal output with no noticable time lag. Receiver disabled	____

	Test	Specified Value	Measured Value Rec	Trans
15.	Operation Check			
	Quality of Signals (Voice and CW)	3800 kc Satisfactory	_____	_____
		5200 kc Satisfactory	_____	_____
		6400 kc Satisfactory	_____	_____
	Sidetone	Satisfactory	_____	_____
	Visual tuning	Function properly	_____	_____
	Controls	Function properly	_____	_____
	Vibration	No effect	_____	_____

Tests listed in REP-1009 but which do not appear on this Test Data Sheet do not apply to Radio Receiver and Transmitter BC-1306.

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REPAIR STANDARD

NO. REP - _____
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COMMENTS AND / OR NOTES