TMC SPECIFICATION

NO. S-874

REV: 0 A B C

COMPILED: RdeV | CHECKED: PEL | APPD: [signature] | SHEET 1 OF 10

TITLE:

typed by mtp 11/17/64

TEST PROCEDURE

FOR

STR-2B and STR-2C

A. EQUIPMENT REQUIRED

1. VOM Simpson Model 260 or equivalent.
2. Audio Signal Generator - HP200, or equivalent.
3. 4 ohm Loudspeaker.
4. HP 410 VTVM, or equivalent.
5. HP 606A RF Signal Generator, or equivalent.
6. TEKTRONIX Scope, Type 581 or equivalent.
7. One pair of ear phones (600 ohms).
8. Ballantine Model 314 A-C VTVM, or equivalent.
9. Schematic CK817.
10. Step Attenuator, 50 ohms, TELONIC Model TG 950, or equivalent.
11. 600 ohms resistor - 1 watt; 47 ohm resistor - 1/2 watt.
12. Frequency Counter - HP 524C, or equivalent.
13. BNC "T" adapter UG-274A/U.
14. Test Procedure S-808.
15. AX-436 Extension Module.

B. WARNING

This unit is a Solid State Device. Any indiscriminate resistance measurement may harm this unit. Make resistance measurement only where and when so indicated.

C. PRELIMINARY

1. All RF modules should be pre-tested per TMC S-808 before being installed into this unit. Install the customer specified RF module into this unit.

C. PRELIMINARY - Cont'd

2. Inspect the unit for mechanical imperfections such as loose screws, imperfect printed circuit boards, cold solder joints etc.

3. With the ohmmeter d-c setting in the + position, measure 130 ohms ±10% from Pin #11 on the AF board to GND. With the ohmmeter d-c setting in the minus (-) position, measure 200 ohms ±10% from Pin #14 on the AF board to GND.

D. POWER

1. Connect the unit to an a-c outlet.

2. Connect a 600 ohm 1 watt resistor between terminals 3 & 5 on TB1501, and a 4 ohm loudspeaker between terminals 9 & 10 on TB1501.

3. Set the power switch to ON. The white light should go on.

4. With the HP VTVM measure +12V ±5% from Pin #11 on the audio board to GND, from Pin #7 on the IF board to GND, and from Pin #1 on the RF board to GND. Also measure -12V ±5% from Pin #14 on the audio board to GND, from Pins #8 & 14 on the IF board to GND, and from Pin #8 on the RF board to GND.

5. Connect the a-c Ballantine between Pin #11 on the AF board to GND. The a-c noise measured should not exceed 1 mv.

6. Repeat Step #5 for Pin #14 on the audio board.

7. Make sure that the removal of the a-c line fuse makes the respective voltages disappear.

8. Measure 115V a-c with the Simpson between Pins #10 & 9 on the RF board.

E. RECEIVER AUDIO CHECK

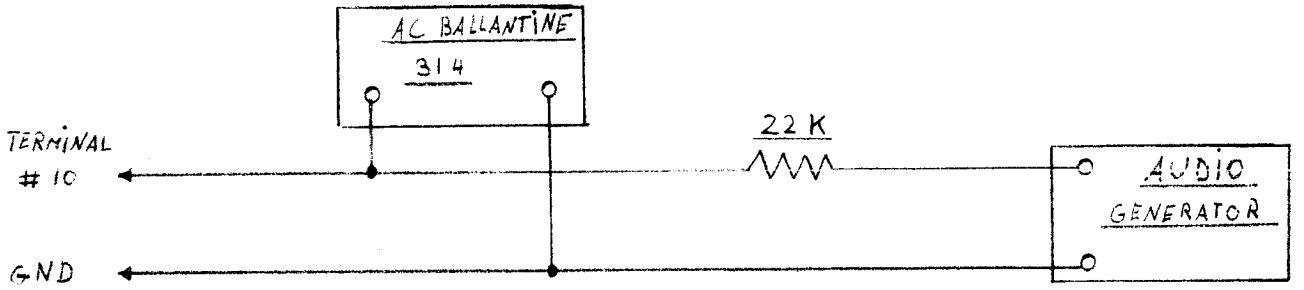
1. Set the SQUELCH control on the rear apron to maximum clockwise.

2. Set the VOLUME control on the front panel maximum clockwise.

3. Set R1822 maximum clockwise.

E. RECEIVER AUDIO CHECK - cont'd

4. Set the AUDIO SIGNAL GENERATOR at 1 KC and connect to the RECEIVER IF board as shown below with the generator output at zero, and A-C VTVM across input to board.



5. Increase the AUDIO GENERATOR output until a 1 KC tone is heard through the speaker. Inserrt the phones into J1516. The 1 KC tone should disappear from the speaker and should be heard on the phones. Remove phones.

6. Rotate the SQUELCH control maximum counter-clockwise. The tone should abrubtly disappear.

7. Set the AUDIO GENERATOR output for a 10 mv reading on the Ballantine A-C VTVM. Remove meter.

8. Connect the Ballantine across terminals 3 & 5 on TB1501. The meter should read approximately 780 mv.

9. Connect the Ballantine across terminals 3 & 4 on TB1501. The meter should read exactly half the voltage obtained in Step 8. Remove meter.

10. Connect the Ballantine across R1660 on the RCVR AF printed circuit board. The meter should read approximately 1.4 volts. Leave meter connected.

11. Rotate the VOLUME control counter-clockwise. The voltage across R1660 should drop proportionately with rotation of the VOLUME control knob. Reset the VOLUME control maximum clockwise, and remove the Ballantine A-C VTVM.

F. RECEIVER IF ALIGNMENT

1. Set the RCVR sideband switch to LSB and turn R1554 & R1555 fully clockwise.

2. Connect the counter to emitter lead of Q1802 and adjust C1832 for a frequency of 1.5 ±2 cps as registered on the counter. Leave counter connected.

3. Set the RCVR sideband switch to USB/REMOTE.

4. Adjust C1834 for a frequency of 2.0 mc ±2 cps as registered on the counter. Remove the counter.

5. Connect the HP VTVM between terminal 9 on the RCVR IF printed circuit board and GND. The meter should read approximately +1.8 volts d-c. Remove meter.

6. Set the RCVR sideband switch to LSB and remove the 1.5 mc crystal Y1801.

7. Connect the Ballantine between the base of Q1802 and GND.

8. Connect the HP 606A RF GENERATOR between terminals 1 & 2 on the RCVR IF board with the generator's output control at zero.

9. Set the generator frequency at 1.75 mc ±50 cps using the frequency counter, and increase the generator output to approximately 1.0 mv. The Ballantine should indicate some voltage present at the base of Q1802.

10. Adjust C1804 and C1802 for a peak indication on the Ballantine Meter. Peak reading should be 10 mv minimum.

11. Reduce generator output to zero and remove meter.

12. DELETED

13. DELETED

F. RECEIVER IF ALIGNMENT - Cont'd

14. DELETED

15. DELETED

16. Remove the SIGNAL GENERATOR input connections.

17. Reinsert the crystal into the RF module.

18. Reinsert 1.5 mc crystal.

G. RECEIVER TESTING - OVERALL

1. Set VOLUME control on front panel to the mid-position.

2. Set SQUELCH control maximum clockwise.

3. Connect the HP 606A to the ANTENNA jack, J1502, on the rear apron of the STR-2. Set at zero output.

4. Connect the Ballantine VTVM between terminals 3 & 5 on TB1501.

5. Set the SIGNAL GENERATOR for an output of 100 m- at the operating frequency noted on the receiver converter frequency nameplate (±50 cps), and modulate 80% at 1 KC.

6. Listen to a 1 KC note (e.g. 1KC) on the speaker. Reduce signal generator output until beat note just exceeds noise.

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G. RECEIVER TESTING - OVERALL - Cont'd

7. Adjust VOLUME control for a comfortable listening level and obtain reading on the Ballantine VTVM.

8. Adjust receiver converter tuning capacitors A through E, in that order, for peak indication on the Ballantine. Signal generator output should be reduced to maintain signal level just above noise.

9. Adjust LSB ADJUST, R1554, for a peak reading, and back off slightly. Set sideband selector to USB and adjust USB ADJUST, R1555, for a peak reading, and back off slightly. Balance USB and LSB as close as possible.

10. Noise Limiter -

a. Set noise limiter switch to OFF.

b. Connect scope to terminals 3 & 5 on TB1501.

c. Adjust scope to obtain suitable sine wave on scope.

d. Reduce t/cm to 5 seconds/cm.

e. Observe amplitude of signal in cm.

f. Hit the base of Q1803 sharply several times in rapid order with a screwdriver. At the same time, observe amplitude of signal increase considerably.

g. Set noise limiter switch to ON, and be sure that amplitude of signal does not decrease to a smaller value than the amplitude obtained in Step "e".

h. Hit the base of Q1803 sharply several times with a screwdriver. At the same time, observe that the amplitude of the signal increases only slightly. Disconnect the scope and remove short across CR1805.

11. Signal + Noise-to-Noise Ratio -

a. Set the signal generator for an output of 3 μv at the operating frequency ±50 cps noted on the receiver converter frequency nameplate, and modulate 30% at 1 KC.

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G. RECEIVER TESTING - OVERALL - Cont'd

11. Signal + Noise-to-Noise Ratio -

b. Readjust R1822 to obtain .78V on the Ballantine.

c. Disconnect the signal generator from the STR-2 and observe the new reading. The difference in DB is the Signal + Noise-to-noise ration, and should be a minimum of 15 DB.

d. Set Squelch control to trigger at 3 uv input at antenna.

12. IF Output -

a. Connect a47 ohm load resistor across J1535, and measure 2 mv across.

13. Total Harmonic Distortion -

a. Setting of Distortion Meter - Distortion Frequency 200 to 2K.

b. Range - 10 CAL.

c. Connect the Distortion Meter across the 600 ohm line and calibrate the meter to read -10 db.

d. Set range to -20 db and adjust frequency and amplitude to obtain a minimum reading.

e. Repeat Step "d" for the -30 db and -40 db range. The total harmonic distortion should be no more than 6%. Disconnect the Distortion Meter.

14. Dynamic Range -

a. In gradual steps, increase output of Signal Generator from 3u V to .1 volt. The output on the Ballantine should not vary more than 10 DB.

15. Audio Response -

a. Set the Signal Generator for an output of 3μv at the operating frequency ±50 cps noted on the receiver converter name plate. (no modulation)

b. Connect the scope to the emitter of Q1803 and observe the amplitude of the signal.

G. RECEIVER TESTING - OVERALL - Cont'd

15. Audio Response -

c. Set the Signal Generator to a lower frequency until the amplitude of the signal is approximately 1/3 from the amplitude observed in Step "b".

d. Set the Signal Generator to external a-c modulation and modulate 30% at 1KC.

e. Read the output on the A-c Ballantine meter and use this reading as a 0 db reference point.

f. Change audio generator frequency down to 300cps and up to 3KC. The change in audio output as measured on the Ballantine should not be more than ±4 db.

THE TECHNICAL MATERIEL CORP.
MAMARONECK, N.Y.

TEST DATA SHEET - STR-2

SERIAL NO.:_____

MFG. NO.:_____

Mechanical_____OK

Wiring_____OK

D-c Power_____OK

RECEIVER - OVERALL

3 uv modulated 30% at 1 KC into antenna results in_____mv audio output.

LSB and USB adjust_____OK

$\frac{S+N}{N}$ Ratio_____db

Dynamic Range (90 db) results in_____db change in audio output.

Total Harmonic Distortion_____%

Audio Response:_____db

IF output_____mv

Noise Limiter_____OK

Squelch set to trigger at _____uv.

DATE:_____

TESTER:_____

TTRR-_____ MFG. NO:_____ FREQ:_____

REVISION SHEET

THE TECHNICAL MATERIEL CORP.
MAMARONECK NEW YORK

S-874
LIST NO.

DATE	REV.	SHEET	EMN #	DESCRIPTION	APP.
12/30/64		1 of	10	0= ORIGINAL RELEASE FOR PRODUCTION.	
5/4/66	A	all	16180	Revised per EMN	
11/3/66	B	4	17195	Revised per EMN	
1/20/67	C	8,10	17714	Revised per EMN	