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| DATE 25 February 1965<br>SHEET 1 OF | | TMC SPECIFICATION NO. S- 930 A |
| RDV<br>COMPILED | ESL<br>CHECKED | TITLE: |
| APPROVED RDC | | typed by mpt |

TEST PROCEDURE

for

SMR-2

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

| DATE 25 February 1965 SHEET 2 OF | TMC SPECIFICATION NO. S- 930 | A |
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| RDV COMPILED / CHECKED | TITLE: TEST PROCEDURE FOR SMR-2 | |
| APPROVED | typed by mtp | |

A. EQUIPMENT REQUIRED

1. VOM Simpson Model 260 or equivalent.
2. Audio Signal Generator - HP 200.
3. 4-ohm loudspeaker.
4. HP 410 VTVM.
5. HP 606A RF Signal Generator.
6. Ballantine Model 314 A-C VTVM.
7. Schematic CK-933.
8. Step Attenuator - 50 ohms - TELONIC Model TG 950 or equivalent.
9. 600 ohms resistor - 1 watt.
10. Frequency Counter - HP 524C.
11. BNC "T" adapter UG-274A/U.
12. AX-436 Extension Module.
13. Test Procedure S-808.
14. One pair of ear phones (600 ohms).
15. Distortion Meter - BARKER & WILLIAMSON Model 410.

B. WARNING

This unit is a Solid State device. Any indiscriminate resistance measurement may harm this unit. Make resistance measurements only where and wh n so indicated.

C. PRELIMINARY

1. All RF modules should be pretested per TMC S-808 before being install d into this unit.

2. Inspect the unit f r mechanical imp rf ctions such as loose screws, print d circuit boards, cold solder joints etc.

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C. PRELIMINARY - Cont'd

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 th minus (-) position, measure 200 ohms ±10% from Pin #14 on the AF Board to GND.

4. Set oven switch S902 to EXTERNAL.

5. Short Pins #10 and #9 on the RF Board temporarily, and measure approximately 15 ohms across oven input J905.

6. Set oven switch to INTERNAL and measure infinite resistance (open) across the oven input J905. Remove the short from Pins #10 and #9.

D. POWER

1. Set the power switch S901 to OFF, function switch S1514 to SIMPLEX, channel switch S1515 to CHANNEL #1, and oven switch to INTERNAL.

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

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, and -12V ±5% from Pin #14 on audio board to GND.

5. Connect the a-c Ballantine between Pin #11 on the AF Board and GND. The a-c noise measured should not exceed 1 MV.

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

7. Connect the VTVM between Pin #7 on the IF Board and GND, and m asur +12V ±5%. When Pins #1 and #2 on TB1502 are shorted to each other, the +12V should disappear from Pin #7. When the SIMPLEX-DUPLEX switch is set t DUPLEX, the +12V should reappear n Pin #7. Return the switch to SIMPLEX, and disc n-nect the short from Pins #1 and #2.

8. R peat Step #7 f r Pin #1 on the RF Board.

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D. POWER - Cont'd

9. Connect the VTVM between Pin #8 on the IF Board and measure -12V ±5%. When Pins #1 and #2 on TB1502 are shorted to each other, the -12V should disappear from Pin #8. When the SIMPLEX-DUPLEX switch is set to DUPLEX, the -12V should reappear. Return the switch to SIMPLEX, and disconnect the short from Pins #1 and #2.

10. Repeat Step #9 for Pin #8 on the RF Board.

11. Make sure that the removal of the a-c line fuse, the B+ fuse, and the B- fuse will make the respective voltages disappear.

12. Set the oven switch to INTERNAL and measure 115 VAC with the Simpson between Pins #10 and #9 on the RF Board.

13. Set the oven switch to EXTERNAL. The voltage obtained in Step 12 should disappear. Install the customer specified RF modules into the unit.

E. RECEIVER AUDIO CHECK

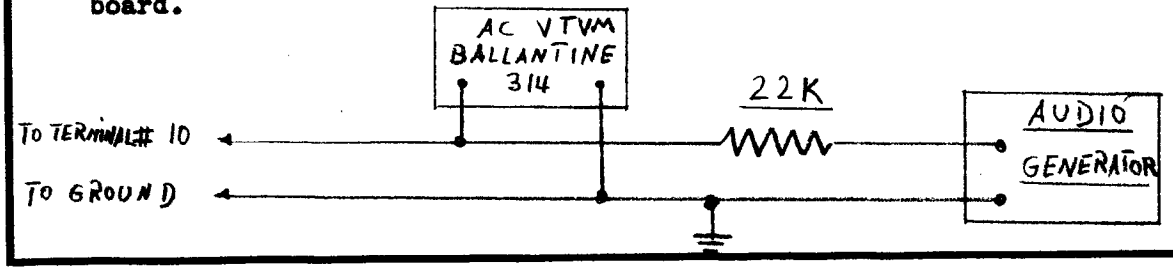
1. Set the VOLUME and LINE control on the front panel maximum cl ckwise.

2. Set the power switch to the ON position.

3. Set the SQUELCH control maximum clockwise.

4. Connect a 600 ohm 1 watt resistor between terminals 6 and 8 on TB1502, and a 4-ohm loudspeaker between terminals 11 and 12 on TB1502.

5. Set the AUDIO SIGNAL GENERATOR at 1 KC and connect to the RECEIVER IF Board as shown below with generator output at zero, and AC VTVM across input to board.



E. RECEIVER AUDIO CHECK - Cont'd

6. Increase the audio generator output until a 1 KC tone is heard through the speaker. Insert the phones into J1516. The 1 KC tone should disappear from the speaker and should be heard on the phones. Remove phones.

7. Rotate the SQUELCH control maximum counter-clockwise. The tone should abruptly disappear.

8. Set the audio generator output for a 10 mv reading on the Ballantine A-C VTVM. Remove meter.

9. Connect the Ballantine across terminals 6 and 8 on TB1502. The meter should read approximately 780 mv.

10. Connect the Ballantine across terminals 6 and 7 on TB1502. Th m ter should read exactly half the voltage obtained in Step 10. Remove meter.

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

12. Rotate the VOLUME control counter-clockwise. The voltage across R1660 should drop proportionately with rotation of the VOLUME control know. 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 fr qu ncy of 2.0 mc ±2 cps as r gistered on the Count r. Remove the counter.

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F. RECEIVER IF ALIGNMENT - Cont'd

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

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

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

8. 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.

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

10. Reinsert 1.5 mc crystal.

11. Remove HP 606A RF GENERATOR from terminals 1 and 2 of IF board, and connect generator to antenna BNC, and Ballantine to 600 ohm line terminals.

12. Insert an RF TTRR head, one which has already been tuned, and set 606A to TTRR heads receiving frequency, modulated by 1kc,

13. Set the 606A GENERATOR output to 3 mv and adjust R1834 (10K VAR. RESISTOR) to read approximately 1.65V DC on terminal 9 (AGC line terminal) of IF board. Use Simpson 260 or HP 410B to measure the AGC voltage. Ballantine should indicate approximately .70, slight adjustment of R1834 may be necessary to obtain .70.

14. Increase 606A GENERATOR output voltage to 100 mv. Adjust R1841 to give you approximately 1.0V on the Ballantine meter.

15. Return 606A GENERATOR voltage back to 3 uv and observe Ballantine meter indication. If meter indicates less than .17V readjust R1834 to give you optimum condition. It may be necessary to adjust back and forth between R1841 and R1834 until a satisfactory condition of AGC is obtained.

16. Remove the signal generator and Ballantine connections.

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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 apr n of the SMR-2. Set at zero output.

4. Connect the Ballantine VTVM between terminals 6 & 8 on TB1502.

5. Set the signal generator for an output of 100 uv 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. 1 KC) on the speaker. Reduce signal generator output until beat note just exceeds noise.

7. Adjust VOLUME control for a comfortable listening level and obtain a r ading 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. Set Sideband Selector to LSB and adjust LSB ADJUST, R1554, for a peak reading, and back of slightly. Set sideband selector to USB and adjust USB ADJUST, R1555, for a peak reading, and back of slightly.

10. Signal + Noise-to-Noise Ratio -

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

b. R adjust R1822 to obtain .78V n the Ballantine.

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G. RECEIVER TESTING - OVERALL

10. c. Disconnect the signal generator from the SMR-2 and observe th new reading. The difference in DB is the Signal + Noise-to-Noise Ratio, and should be a minimum of 10 db.

11. 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 calibrat 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.

12. Dynamic Range -

a. In gradual steps, increase output of signal generator to .1 volt. The output on the Ballantine should not vary more than ±5 db.

13. Audio Response -

a. Set the signal generator for an output of 3 uv and 30% modulation at the operating frequency +1.5 KC noted on the receiver converter name plat .

b. Set USB-LSB switch to LSB.

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

d. Change audio generator frequency down to 300 cps and up to 3 KC. Th change in audio output as measur d on the Ballantine sh uld not be more than 3 db.

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THE TECHNICAL MATERIEL CORP.
MAMARONECK, N.Y.

TEST DATA SHEET - SMR-2

SERIAL NO.:_____

MFG. NO.:_____

Mechanical_____OK

Wiring_____OK

D-c Power_____OK

RECEIVER - OVERALL

3 uv modulated 30% at 3 KC into antenna results in _____ mv audio output.

LSB and USB adjust_____OK

Signal + Noise-to-Noise Ratio -

Sensitivity_____DB

Dynamic Range (100 db) results in_____db change in audio output.

Total harmonic distortion_____%

Audio Response: 300-3000 cycles_____DB

AF/RF Meter Adjustment_____OK

DATE:_____

TESTER:_____

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# REVISION SHEET

THE TECHNICAL MATERIEL CORP.
MAMARONECK NEW YORK

S-930
LIST NO.

| DATE | REV. | SHEET | EMN # | DESCRIPTION | APP. |
|---|---|---|---|---|---|
| 3/3/65 | | 1 of 9 | | O=ORIGINAL RELEASE FOR PRODUCTION. | |
| 3/2/67 | A | 6 | 17911 | Revised per EMN | aw |