

DATE 12/30/51  
SH. 1 OF 7

TMC, 1 SPECIFICATION NO. S-180

COMPILED BY  
A.J.J.

TITLE: TESTING OF MODEL RSA-2 FOR PRODUCTION

JOB 170

APPROVED KZ  
AJJ

Page Issue A C .

COMPLETE INSTRUCTIONS FOR THE PRODUCTION TESTING OF  
MODEL RSA-2

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1. (a). PURPOSE:

The Model RSA-2 is an integral portion of a remote control system which permits a local operator to master a receiver located at some remote point. This is accomplished by means of audio tone carriers emanating from and adjusted at the control position (Model RSC-2) and transmitted through the Model RSA-2 and to the Model RSD-2 at the remote position.

It is the purpose of the Model RSA-2 to prevent instantaneous (such as fading) or long term transmission losses from effecting the operation of the Model RSD-2.

(b). DESCRIPTION:

Obviously, to accomplish its purpose, the Model RSA-2 must be an amplifier of the A.V.C. type. This is done by amplifying and rectifying a portion of the tone output voltage and returning the resultant D.C. potential as a gain controlling bias to the variable transconductance input amplifiers. The final result is so effective that variations in tone input in the order of 100 to 1 cause an output change of less than 2 to 1.

It is equally important that the harmonic distortion incurred in passing through the Model RSA-2 be extremely small so that new and disruptive tones do <sup>not</sup> appear as a result of the Model RSA-2's presence in the circuit. For this reason, well balanced push-pull circuits are used throughout.

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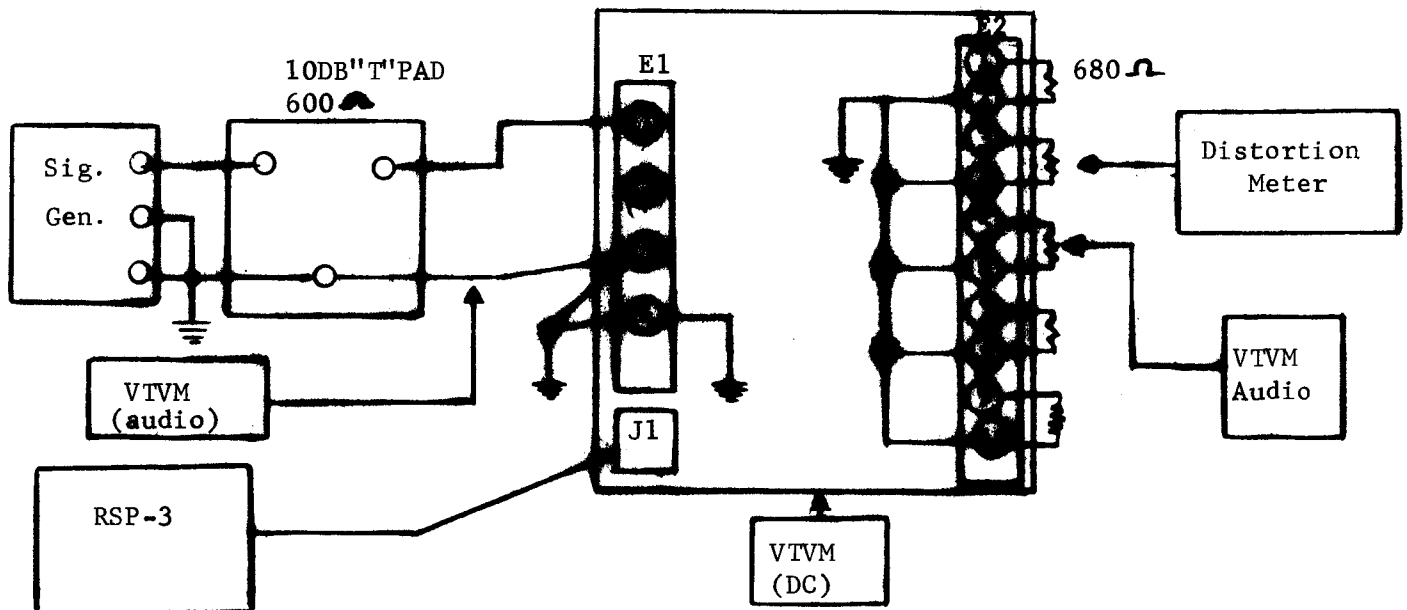
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**2. TEST EQUIPMENT REQUIRED:**

- (a). 1-Audio Signal Gnerator: Hewlett Packard 200 or equivalent.  
2-AC-VTVM'S: DAVEN 170 or equivalent.
- (b). 1-'SCOPE: ~~TELETRONIX~~ 541 or equivalent.
- (c). 1-V. T. V. M: HP-410B or equivalent.
- (d). 1-RSP-2 with necessary power cord and interconnecting cable.
- (e). 1-Distortion Meter: Barker & Williamson or equivalent.
- (f). 5-680 ohm  $\pm$  10%, 1 watt composition resistors.

**3. GENERAL INSTRUMENT LAYOUT:**

Set up as follows:



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4. INITIAL RAPID CHECKS:

- (a). Set and maintain the line potential at 115VAC. throughout the entire test.
- (b). Observe if pilot light is on.
- (c). Make quick check of  $B_1$  at R13 to determine if an unusually heavy drain exists due to a wiring error. (Should be between 270 and 290 volts.

5. TEST INSTRUCTIONS:

- (a). Proceed as outlined in Test Sequence and Procedure (Part 6, to follow).
- (b). Fill in blanks on Report Sheet, rejecting those units which do not meet the specifications stated herein.
- (c). Sign Report Sheet and submit it to your supervisor.

6. TEST SEQUENCE AND PROCEDURE:

Test 1.--Power Check:

Using a V.T.V.M. check B+ on each end of R13--

Accept for B1: 270 to 290 volts

Accept for B2: 68 to 85 volts

Test 2.--A.V.C. Action Check:

- (a). Set up as shown in Part 3.
- (b). Set R23 near its midpoint.
- (c). Rotate R1 and R17 fully clockwise.
- (d). Connect each of the five loads ( to points 1 and 2, 3 and 4, etc. of board E2), as shown in part 3.
- (e). Vary the signal input to the RSA-2 from 1 volt down to .01 volt, at 1000 cps.

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Acceptable outputs at any one of the five loads:

With 1 volt in -- 5 to 6.5 volts (R.M.S.)

With .01 volt in -- 2.0 to 3.5 volts (R.M.S.)

Test 3 -- Meter Check:

With an input of .78 volts the front panel meter must read 0 DBM with meter switch at "Red"; adjust R32 until this condition is met , then reduce input to -10 DBM; switch meter to "Green", meter must read between -12 DBM and -8 DBM.

Test 4 -- Control Check:

- (a). Rotation of R1 should cause M1 to drop off. After this test return R1 to its full clockwise position.
- (b). Rotation of R17 should cause the output to drop off. After this test set R17 to a position which results in **3.0 V. output** across each load on E2 with an input of .5 V. at E1; Lock Control.

Test 5 -- Distortion Check:

- (a). Set the input level for .5 volts; Meter Switch at "Red".
- (b). Measure the distortion at about 400 cps and 2.8 Kcs. Less distortion will be found to exist at the higher frequency. Rotate R23 until a balance point is found where the lower frequency distortion is least but the higher frequency distortion is still not excessive, complete by locking the control.
- (c). The distortion at either frequency must not exceed .8%. This figure includes the distortion inherent in the signal generator and the distortion meter.

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TEST DATA SHEET FOR MODEL RSA-2

MFG. NO. \_\_\_\_\_

SERIAL NO. \_\_\_\_\_

PARA.

4. a. Line Voltage at Power Supply Input \_\_\_\_\_ VAC (115V)
6. Test I. Power Check \_\_\_\_\_ B1 \_\_\_\_\_ VDC (270-290V)  
B2 \_\_\_\_\_ VDC (68-85V)
6. Test II. A.V.C. Circuit Check \_\_\_\_\_ Input Output  
1VAC \_\_\_\_\_ VAC (5-6.5V)  
.01VAC \_\_\_\_\_ VAC (2-3.5V)
6. Test III. Meter Calibration \_\_\_\_\_ DBM (-12 to -8DBM)
6. Test IV. Control Check \_\_\_\_\_ Input Level \_\_\_\_\_ VAC (.5V)  
Gain Level \_\_\_\_\_ VAC (3V)
6. Test V. Distortion Check \_\_\_\_\_ 400CPS \_\_\_\_\_ %  
(MAX. 8%)  
2.8KCS \_\_\_\_\_ %  
(MAX. 8%)

Tester \_\_\_\_\_

Date \_\_\_\_\_ -

MODEL

RSA-2

REVISION SHEET

5-180

DATE	REV.	PAGE	ITEM	DESCRIPTION	REMARKS	APP
11-30	A	ALL	GEN.	REVISED & RETYPED WAS RSA-1	KZ	AST
1/3	B	5	-	Test 2(e) " at 1000 cps" added	KZ	AST
1/3	B	6	-	Test 2; was 4 to 5 Volts was 1.8 to 2.8 Volts		
1/3	B	6	-	Test 3 : was -2DBM and + 2DBM		
1/3	B	6	-	Test 5: meter switch at "red" added		
11/25/64	C	----	13005	Revised shts.4,5,7 per EMN	P.L.K. L.S.	