TMC SPECIFICATION				NO. S 1088
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COMPILED: RJE	CHECKED:	APPD:		SHEET 1 OF 10
TITLE:				
typed by vab 3/21/66				

AUTOMATION

TEST PROCEDURE

FOR

DDRR-5K, 5L, 5M RECEIVING SET, RADIO

INTRODUCTION

The DDRR-5K, DDRR-5L, DDRR-5M are the TECHNIMATIC tuned receiving systems that can be tuned from any remote point, via a radio circuit of land line to any of its operating frequencies and operating modes automatically by means of pre-cut tape, manual selection, or by punched card.

The DDRR-5's consist of the following automated units:

RTTD-1 (decoder)
HFRR-2
HFSR-1
MCGA-1
RTMU-2

All the above modular units are enclosed in a standard 19" rack mounted configuration.

This specification covers the operational check of the overall DDRR-5 specifications cover the testing of individual units that comprise the system.

NOTE: Before testing these units for remote controlled functions, it is most important that the following be accomplished:

a. The DDRR-5's have been tested as receivers, and that each has complied with all specifications contained within QA-2013 (DDR-5K, 5L, 5M Test Procedure)

b. All Ledex controlled and Servo controlled units have been previously aligned with their appropriate test jigs.

I. EQUIPMENT REQUIRED:

1. Manual bit selection test jig.
2. Test cable as provided on the above test jig.
3. VOM-Simpson #260 or equivalent.
4. RTPD (Programmer)
5. RTID-1 (Read-Out)

II. PRELIMINARY CHECK-OUT:

1. Mechanical Check
   a. Defective panels, proper action of slides, etc.
2. Interconnecting Cable Check
   a. Proper hook-up of cables as outlined cable diagram CK1010.
   b. Proper routing, freedom from snags.

III. PRELIMINARY OPERATIONS:

1. Set controls on DDR as follows:

NOTE: Only that below Ledex and Servo controlled modular units need be positioned.

MODULAR UNIT	SWITCH OR CONTROL	POSITION
HFRR-2	Band Switch	Band #1
	Tune Capacitor	2.8 MC
HFSR-1	MC Switch	2 MC
	100 KC Switch	"0"
	10 KC Switch	"0"
	1 KC Switch	"0"
	.1 KC Switch	"0"
RTTD-1	AC Power ON/OFF	OFF
RTMU-2	AC Power ON/OFF	OFF

IV. SYSTEM TEST PROCEDURE:

1. Remove P-4004 from RTTD-1 and replace with cable leading from Bit Selection test jig.

2. On Bit Selection test jig, press button on right hand side. Power will then be applied to the RTTD-1 The red "TUNE" and amber "DECODER READY" lamps will light. Also, multi-vibrator relays K-4008 and K-4016 will operate.

3. Observe on the manual Bit selector that there are seven (7) buttons. The first five are numbered consectively, and represent bits 1 through 5 of the binary code used to control the system. The sixth button is GREEN and, when pressed, allows simultaneous transmission of the selected bits to the RTTD-1 The last button is RED and is the "RESET" button.

4. On the manual Bit Selector, press buttons 1, 2 and 5. This will position the master Ledex in the RTTD-1 to the MC deck, frequencies 2 through 16. Once this is accomplished, the slave Ledex, which is attached, and driving the MC shaft, may be activated. Using the code below, and observing the nixie lights on the HFSR-1 for change, step the slave Ledex from positions 2 through 16.

POSITION	SLAVE CODE
16	4
15	5
14	3 5
13	4 5
12	2 4 5
11	3 4 5
10	3 4
9	2 3 4 5
8	2 3 5
7	2 3 4
6	2 4
5	2 3
4	3
3	2
2	2 5

5. After the 16 MC position is reached, it will be necessary to re-position the master Ledex in the RTTD-1 in order to step through positions 17 through 31 MC. The code for this group is BITS 1 and 5. Using the below code, position the slave Ledex in each of its 17 to 31 MC steps.

POSITION	SLAVE CODE
31	4
30	5
29	3 5
28	4 5
27	2 4 5
26	3 4
25	3 4 5
24	2 3 4 5
23	2 3 5
22	2 3 4
21	2 4
20	2 3
19	3
18	2
17	2 5

6. To test the 100 KC DECK slave Ledex, position master Ledex in RTTD-1 by inserting code bits 1, 4 and 5. Using the code below, step the 100 KC slave Ledex from the 0 through 9 positions.

POSITION	SLAVE CODE
9	3 4 5
8	2 3 4
7	2 3 5
6	2 4 5
5	3 4
4	2 3
3	2 5
2	4
1	3
0	2

7. To test the 10 KC DECK, position master Ledex with code 1 and 4. Then step slave Ledex for 0 through 9 positions using the same slave code as used on the 100 KC DECK.

8. To test the 1 KC DECK, position master Ledex with code 1, 2, 3 and 5. Then step slave Ledex from 0 through 9 using the same slave code as used on the 100 KC DECK.

9. To test the 1 KC DECK position master Ledex with code 1 3 and 5. Then step slave Ledex from 0 through 9 using the same slave code as used on the 100 KC DECK.

10. The successful completion of Steps #4 through #9 will conclude the testing of the frequency selection deck of the HFSR-1.

11. To test the IF BANDWIDTH selector, insert code 1, 2, 3, 4 and 5 to position the master Ledex. Then using the below listed slave code, step the Ledex from 1 KC DSB through 7.5 KC L.

POSITION	SLAVE CODE
7.5 L	2 4 5
7.5 U	3 4
3.5 L	2 3
3.5 U	2 5
15	4
6	3
1	2

NOTE: BOTH CHANNEL "A" AND CHANNEL "B" IF BANDWIDTH SELECTOR SWITCHED RESPOND SINULTANEOUSLY.

12. When the mater Ledex positions to the IF BANDSWIDTH position, it will automatically activate the servo motor in the HFRR-2 causing it to search the dial seeking a signal from the HFSR-1. When ir is found, the servo motor will stop, slowly reverse, and lock on this signal. The band and frequency this servo motor selects should correspond to that which is being read on the nixie lights of the HFSR-1. When in the SYNC MODE, the operate lamp of the HFRR-2 will light. NOTE: It should be observed that the servo motor governing the TUNE capacitor in the HFRR-2 should search and approach the desired frequency on the slide rule dial in the most direct way. Using the mid-point of any of the eight band positions as a guide, observe that if the frequency desired is to the right or left of this mid-point, the servo will approach the frequency from its previous position either right or left via the shortest route.

13. To the MCGA-1, step the master ledex around to code 1, 2 and 3. Then using the below slave code step the ledex from the "AFC" position to the "SYN" position.

POSITION	SLAVE CODE
AFC	2
SYN	4

14. When the DECODER-MEMORY Cable has been restored, place the RTTD-1 DECODER READY toggle switch to the ON position. The RED lamp directly above it will light.

15. On the RTMU-2; turn the AC POWER switch to the ON position. The white lamp above it will light.

16. Affix a test cable between the RAK and test programmer.

17. On the RTPD-1 place PROGRAMMER POWER ON/OFF toggle switch to "ON". Place PUNCH-READER POWER to ON position. Rotate rotary switch in upper right hand corner to the TAPE READER position.

18. Insert pre-programmed punched tape marked "Test Tape" into the tape reader portion of the RTKY-1 into the unit.

19. The first information from the test tape will be for positioning of the MC DECK on the HFSR-1. The first information is for 2 MC thru 16 MC the second for 16 MC thru 31 MC. By pressing the TAPE READ button on the RTPD-1 information to position the mater ledex to the 2-16 position will be fed by the tape. The MC slave Ledex will now step (reverse order) starting with 16 MC thru to 2 MC, and stop. By pressing the TAPE READ button again it will step thru from 32 MC thru 17 MC and stop.

20. The test tape is pre-programmed to actuate the following other functions sequentially. It will be necessary to press the TAPE READ button on the RTPD-1 after each function has cycled.

21. To test the read-out feature of the system, affix test cable between mark and common terminals of the RAK, AK101 terminal box and an RTID-1 read-out unit. Turn RTID-1 power switch to the "ON" position.

22. Set HFSR-1 Nixie read-outs to 2.0000.

23. After Step #22 has been accomplished advance the HFSR-1 MC selector switch from 2 MC thru 31 MC, and observe that the MC read-out unit on the RTID-1 follows in sequence corresponding to that on the HFSR-1.

24. Repeat Step 23 for the 100KC, 10KC, 1KC and .1KC positions on the HFSR-1 from "0" thru "9", observing that it corresponds to that being read-out on the appropriate position on the RTID-1.

25. Next, to check the MCGA-1 read-out on the RTID-1 step the Ledex into the "AFC" position and the "SYN" position. The RTID-1 should reflect, and read-out the appropriate positions.

26. The "IN TUNE PROCESS" lamp on the RTID-1 is checked by depressing the appropriate Equipment Select Button on the RTRS-2/6 corresponding to that RAK under the test. Then depress the TUNE button on the RTPD-1. When this has been accomplished the MABER lamp on the RTID-1 will ignite. On the RAK under test the AMBER "IN TUNE PROCESS" lamp on the RTTD-1 will also ignite.

27. Turn the ON/OFF power switch on the RTTD-1 to the OFF position and observe that the AMBER lamp on the RTID and RTTD-1 both extinguish, and the RED Fault Lamp ignites on the RTID-1.

28. Place the RAK under test in "SYNC" mode and observe that the GREEN Ready Lamp ignites and the RED Fault Lamp extinguishes.

THE TECHNICAL MATERIAL CORPORATION
MAMARONECK, N.Y.

TEST DATA SHEET
FOR
DDRR-5K, 5L, 5M

SERIAL NO.: _____

MFG. NO.: _____

PROCEDURE

1.	MC DECK responds to each 2 thru 16 code.	_____OK
2.	MC DECK responds to each 17 thru 31 code.	_____OK
3.	100 KC DECK responds to each 0 thru 9 code.	_____OK
4.	10 KC DECK responds to each 0 thru 9 code.	_____OK
5.	1 KC DECK responds to each 0 thru 9 code.	_____OK
6.	.1 KC DECK responds to each 0 thru 9 code.	_____OK
7.	Band switch aligns itself in proper band within range of frequency readout of HFSR.	
8.	Tune capacitor of HFRR-2 searchs and locks onto frequency corresponding to that being read out by nixie lights of HFSR-1.	_____OK
9.	Tune capacitor starts search in most direct route.	_____OK
10.	TEST TAPE responds the RAK to all its positions sequentially.	_____OK
11.	RTID-1 MC Nixie Responds to 2 thru 31 MC positions.	_____OK
	RTID-1 100KC Responds to 0 thru 9 MC positions.	_____OK
	RTID-1 10KC " " 0 " 9 MC "	_____OK
	RTID-1 1KC " " 0 " 9 MC "	_____OK
	RTID-1 .1KC " " 0 " 9 MC "	_____OK
	RTID-1 IN TUNE PROCESS LAMP	_____OK
	RTID-1 FAULT LAMP	_____OK
	RTID-1 READY LAMP	_____OK
12.	RTID-1 MCGA-1	_____OK

CHECKED BY: _____
DATE: _____

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