DATE	TMC SPECIFICATION NO. S 432	
PG. 1 OF 6		
COMPILED BY	TITLE: TEST PROCEDURE FOR MODEL MTB-1	JOB
APPROVED		

1. DESCRIPTION:

A. The TMC Model MTB-1 is a conservatively rated solid state general purpose transmitter providing 900 watts PEP over the frequency range of 4-28 mc.

B. The MTB-1 uses a PL-172 ceramic tube as power amplifier. Operated Class AB for linear operation. It is coupled to a pi network providing an unbalanced output of 50 Ω. This stage is neutralized to provide stable operation throughout complete frequency range.

C. The PL-172 is preceded by two Class A amplifier stages. A 6146 is used to provide drive for PL-172. This stage is also neutralized for stable operation.

D. The first amplifier is a 6BZ6 tube, its grid is terminated by a low impedance input jack (J201) 70 Ω. This tube requires approximately .5 volts for full output.

E. Feedback is used internally from PL-172 to cathode of 6146 to decrease 3rd order distortion by another -10 db.

F. An effective ALDC (Automatic Load and Drive Control) system has been included to limit high drive peaks or load changes. This can be connected externally or internally by connecting jumpers ~~X~~ J201.

G. The amplifier stages are divided into four bands:

Band I	4-8
Band II	8-16
Band III	16-20
Band IV	20-28

H. The Pi tank is divided into six bands:

Band I	4-6
Band II	6-8
Band III	8-12
Band IV	12-16
Band V	16-20
Band VI	20-28

TMC SPECIFICATION NO. S 432

TITLE: TEST PROCEDURE FOR MODEL RFB-1 JOB

APPROVED

TEST EQUIPMENT REQUIRED:

1. Measurements Corp. Model 82 RF Signal Generator
2. Vacuum Tube Voltmeter (Hewlett Packard or Equivalent)
3. Panoramic Analyzer SB-12a

PRELIMINARY TEST:

1. Inspect entire unit for bad solder connections and loose hardware.
2. Check counters and see that variable capacitors are fully meshed when counter indicates 000.
3. Check entire unit for mechanical imperfections.
4. Check entire unit for electrical imperfections.
5. Take continuity measurements between ground and various high voltage B+ points to insure there are no shorts to ground. Remove PL-172 from its socket.
6. Turn on A.C. switch and observe direction of blower rotation. Air should blow through PL-172 socket.
7. Measure A.C. filament voltage at PL-172 socket. Voltage should be 6 VAC ± 5%.
8. Turn internal voltmeter switch to "IPA BIAS" position and adjust bias control for -100 volt indication. Recheck this voltage at PL-172 socket with VTVM to insure application of bias directly to PL-172 tube.
9. Shut off A.C. power and reinsert PL-172 tube in it's socket.
10. Connect RF signal generator to input jack (J201).
11. Turn A.C. power ON.

ALIGNMENT OF R.F. TUNED CIRCUITS:

4-8 Mc BAND:

1. Set RF signal generator to 4.0 megacycles and adjust output for 1.0 VRF at J201.
2. Set driver band switch (S201) to position #1 (4-8 Mc Band).
3. Adjust trimmer capacitor (C202) to approximately half capacity.
4. Set 1st amplifier tuning capacitor (C203 and 232) to 0.5 on front panel. Turn meter switch (S204) to position 5 (1st amplifier Ep.) and tune L202 for maximum meter deflection.
5. Turn meter switch (S204) to position 6 (IPA Eg). Set IPA grid tuning capacitor (C231) to number 1 on front panel and tune L220 for maximum meter deflection. Return meter switch to position 5 (1st Ampl. Ep).
6. Set RF signal generator to 8.0 megacycles. Set 1st amplifier tuning capacitor to number 9 on front panel. Tune C202 for peak indication. Turn meter switch to position 6 (IPA Eg) and time IPA grid tuning capacitor for maximum meter deflection. Pointer should be at # 9 on front panel.
7. If this is not true, low end of band (4.0 mc) must be returned after adding or removing capacity from C231 or C203 and C232 by changing initial setting on front panel.
8. Proper meter readings at 4.0 megacycles

   E INPUT
   1st AMPLIFIER Epx
   IPA GRID Eg

Proper meter readings at 8.0 megacycles

E INPUT
1st AMPLIFIER Ep
IPA GRID Eg

8-16 Mc BAND:

1. Set 6146 (V202) neutralizing capacitor (C229) to approximately 1/4 capacity.
2. Set driver bandswitch (S201) to position number 2 (8-16 Mc Band.)
3. Set 1st Amplifier Tuning Capacitor pointer to 0.5 on front panel. Set IPA grid tuning capacitor to 0.5 on front panel. Turn meter switch to position 5 (1st Amplifier Ep) and tune L209 for maximum meter deflection.
4. Turn meter switch to position 6 (IPA Eg) and tune L223 for maximum deflection.
5. Set RF signal generator to 16.0 megacycles. Tune 1st amplifier tuning capacitor to high end of band. Tune to peak and note pointer. Pointer should be at approximately number 9 on front panel. Tune IPA grid tuning capacitor to peak indication. This pointer should also point to number 9 on front panel. If one or both pointers do not point to number 9, the low end (8.0 Mc) will have to be RETUNED after either increasing or decreasing the capacity of the 1st amplifier tuning capacitor. Retuning consists of peaking L209 and L223. Check high end of band again.
6. Proper meter readings at 8.0 megacycles

   E INPUT
   1ST AMPLIFIER Ep
   IPA GRID Eg

   Proper meter readings at 16.0 megacycles

   E INPUT
   1 ST AMPLIFIER Ep
   IPA GRID Eg

16-20 Mc BAND:

1. Set driver band switch (S201) to position number 3 (16-20 Mc Band.
2. Set 1st amplifier tuning capacitor pointer to 0.5 on front panel. Turn meter switch to position 5 (1st amplifier Ep) and tune L210 for maximum meter deflection.
3. Set IPA grid tuning capacitor to 0.5 on front panel. Turn meter switch to position 6 (IPA Eg) and tune L224 for maximum defl ction.
4. Set RF signal generator to 20.0 megacycles. Tune 1st amplifier tuning capacitor to peak at high end of band. Pointer should be at approximately 8 on front panel.
5. Tune IPA Grid Tuning Capacitor to peak indication. Pointer should be at approximately 8 on front panel. If pointers do not point to 8 the low end (16.0 Mc) of the band will have to be retuned after either increasing or decreasing the capacity of the 1st amplifier tuning capacitor. Retuning consists of peaking L210 and L224. Check high end of band again and if not yet satisfactory repeat compensation process until band is tracking properly.
6. Proper meter readings at 16.0 megacycles

   E INPUT
   1ST AMPLIFIER Ep
   IPA GRID Eg

   Proper meter readings at 20.0 megacycles

   E INPUT
   1ST AMPLIFIER Ep
   IPA GRID Eg

20-28 Mc BAND:

1. Set driver band switch to position 4.
2. Set 1st Amplifier Tuning Capacitor pointer to 0.5 on front panel. Turn meter switch to position 5 (1st Amplifier Ep) and tune L211 for maximum meter deflection.
3. Set IPA grid tuning capacitor to 0.5 on front panel. Turn meter switch to position 6 (IPA Eg) and tune L225 for maximum deflection.
4. Set RF signal generator to 28.0 megacycles. Tune 1st amplifier tuning capacitor to peak at high end of band. Pointer should be at approximately 8 on front panel.
5. Tune IPA grid tuning capacitor to peak indication. Point r should be at approximately 8 on front panel. If pointers do not point to 8 the low end of the band (20.0 Mc) will have to be retuned after either increasing or decreasing the capacity of the 1st amplifier tuning capacitor. Retuning consists of peaking L211 and L225. Check high end of band again and if not yet satisfactory repeat compensation process until band is tracking properly.
6. Proper meter readings at 20.0 megacycles

E INPUT
1ST AMPLIFIER Ep
IPA GRID Eg

Proper meter readings at 28.0 megacycles

E INPUT
1ST AMPLIFIER Ep
IPA GRID Eg

DATE 6-18-59 SH. 7 OF 7 COMPILED BY	TMC SPECIFICATION NO. S-432	
	TITLE: PRODUCTION TESTING OF MODEL RFB-1	JOB
APPROVED		

TEST REPORT SHEET

		ACCEPT
PART 1	**POWER AMPLIFIER WIRING**	
TEST A:	General Inspection	____
TEST B:	Continuity Test	____
TEST C:	Safety Switch	____
TEST D:	Filaments & Blower	____
PART 2	**RFB-1 ALIGNMENT**	
TEST A:	General Inspection	____
TEST B:	Alignment of Knobs	____
TEST C:	Alignment of 1st & Second Amplifier	____
PART 3	**RFB-1 NEUTRALIZATION**	
TEST A:	Neutralizing P.A.	____
PART 4	**RFB-1 OUTPUT**	
TEST A:	Spurious, P.A.	____
TEST B:	P.A. Efficiency	____
TEST C:	Distortion (2 tone 40 db or better)	____

Serial Number _____

Date _____

Accepted _____

Tested By _____

FORM — 100