TMC SPECIFICATION			**NO. S** -808
REV:			
COMPILED:	**CHECKED:**	**APPD:**	**SHEET** 1 **OF** 6
TITLE:			

PRODUCTION TEST PROCEDURE

FOR

TMC MODELS TTRR 1 thru 4

TMC SPECIFICATION

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TITLE: PRODUCTION TEST PROCEDURE FOR TMC MODELS TTRR 1 thru 4

The TTRR SERIES is a group of plug-in modules. Each module is a complete receiver front end consisting of: three AGC controlled RF, crystal oscillator, buffer, and mixer stages. TTRR-1 covers the tuning range from 2 to 4 MC: TTRR-2 covers 4 to 8 MC: TTRR-3 covers 8 to 16 MC: and TTRR-4 covers 16 to 32 MC. The modules are designed for FIXED-TUNED operation although the crystal frequency may be "pulled" slightly to correct for grinding errors. Two panel selected crystals may be plugged into the socket (XY 101; 102) directly or into a miniature oven (oc-100) which plugs into (XY 101; 102). Crystal frequencies and ovens are specified by the customer. Frequency control is 1.75 MC above the operating frequency. Up to 16 MC this is accomplished by a fundamental mode crystal. Above 16 MC the crystal frequency is 1/2 the injection frequency and the buffer becomes a doubler.

A. EQUIPMENT REQUIRED

1. Signal Generator measurements 82 or equivalent.
2. Oscilloscope Tektronix 545 or equivalent.
3. Schematic diagrams CK-683, 684, 685, 686.
4. 1.75 MC test set with cable or TTR-10 or SMR- or TTR-40 with card extender (AX436).
5. Frequency counter, H-P model 524 C or equivalent.

B. PRELIMINARY INSPECTION

1. Remove covers (MS 3378 and MS 3377) and inspect for mechanical defects.
2. Check for wiring defects especially the oven supply cable ends as this cable may have 110 VAC applied in operation.
3. Check the transistor orientation; since the transistors are 4 lead units, they may not be lined up with the white spot on the board indicating tab position.

C. PROCEDURE

1. Install crystals in oven (OC-100) or socket (XY 1, XY 2) as specified by customer.
2. Connect unit to power. This is done by connecting plug of test set to edge connector on board or installing unit in card extender in TTR-10 or similar unit.
3. Check oscillator output on wiper of switch with oscilloscope voltage shall be at least 3 volts P-P.

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4. On TTRR-4 Units, capacitor 432 must be adjusted for the correct harmonic of the crystal frequency. This is done by connecting oscilloscope to TP 2 and turning screw F until the pattern at figure 1 is seen. Be careful not to adjust for any of the patterns in figure 2.

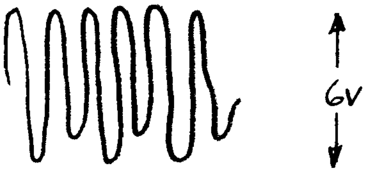
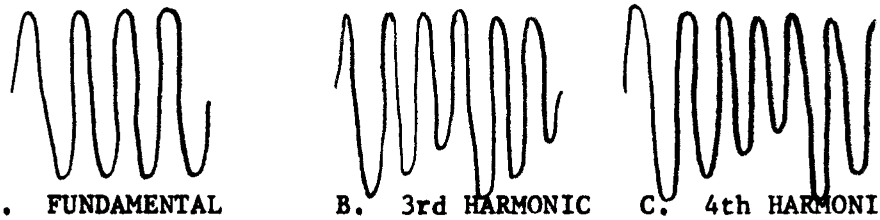


FIGURE 1 - 2nd HARMONIC



A. FUNDAMENTAL B. 3rd HARMONIC C. 4th HARMONIC

FIGURE 2

5. On TTRR-1, 2, or 3 voltage at TP 2 shall be .6 or more volts P-P and the wave form shall be similar to fig. 2A. Record RF operating frequency and channel on front panel frequency nameplate. Note: crystal frequency is 1.75 MC above operating frequency.
6. Measure crystal operating frequency by attaching counter to TP-2. The correct frequency must be obtained with some setting of the RECEIVER CLARIFIER control, otherwise the crystal is off tolerance. On units employing ovens, apply correct oven voltage (as marked on side of oven) and allow 15 to 30 minutes for crystals to reach operating frequency. Crystal clamp (MS 3446) must be in place for this measurement when oven is not used. After measuring frequency, disable oscillator by removing crystals or switching F-1 -- F-2 switch to unused position.
7. Install leftside plate (MS 3378) to cover printed wiring side of board.

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8. Connect white shielded cable of test cable to signal generator or when testing with extension card, connect signal generator to antenna jack of equipment. Output of signal generator should be 100 MV RMS unmodulated on specified frequency.
9. Connect oscilloscope to stator of capacitor A. Set vertical sensitivity on scope to maximum and sweep to show 10 cycles of signal.
10. Adjust screw A for maximum indication on scope.
    NOTE: In this and the following adjustments it will be necessary to readjust scope sensitivity as resonance is reached.
11. Connect scope to stator of capacitor CV 15, adjust sensitivity to maximum and tune screw B for maximum indication.
12. Readjust screw A as the scope probe puts some capacitance across the circuit being measured which will cause the circuit to be detuned when it is removed.
13. Proceed as above through capacitors C and D each time returning to the previous ones to peak them up again.
14. Connect scope probe to TP-1, lower signal generator output to 1 uv and peak screws A through D for maximum output.
15. Reactivate crystal oscillator, put scope probe on TP-3 (any of the leads on TP-3 will do) and adjust screw F for maximum output. Wave form here will be approximately as shown in figure 3.

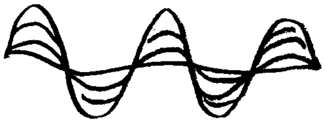

FIGURE 3

16. With 1 uv input output signal level should be .400 ± .1 volts peak to peak.
17. Replace right side plate (MS 3377). Final peaking should be done with module in place in the unit. This completes testing.

REVISION SHEET

THE TECHNICAL MATERIEL CORP.
MAMARONECK NEW YORK

LIST NO.

DATE	REV.	SHEET	EMN #	DESCRIPTION	APP.

TMC FORM MLR-1 2-65—AINS.

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REV:

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THE TECHNICAL MATERIEL CORPORATION

MAMARONECK N. Y.

TTRR - _____ TEST DATA SHEET

Seriel No.______________________

Mfg. No.______________________

Mechanical______________________ ok

Wiring______________________ ok

Transistor Orientation______________________ ok

Injection at TP-2______________________ volts peak to peak

Signal at TP-3 with 1 uv at Input__________ volts peak to peak

Frequency and Channel on Frequency Nameplate ______ MC & ________MC

CH_____

Date______________________

Tester______________________