

DATE 5/4/61

SH. 1 OF 6

COMPILED BY
A.R. Faiola

TMC SPECIFICATION NO. S558/D

TITLE: Production Testing of TMC Model TTG-2. JOB

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A.R.F.

1. INTRODUCTION:

A. The TTG is a Tone Generator designed to generate Audio and R.F. signals. For test purposes, it may be divided into two sections.

1. The Audio Oscillator and Amplifier Section.
2. The R.F. Oscillator and Amplifier Section.

B. The Audio Oscillator and Amplifier Section:

This section generates two audio tones at approximately 935 and 2805 cps. These tones may be used separately or together as the operator desires. Switching the tones OFF or ON is accomplished by removing or applying plate voltage to the amplifier stages following the oscillators. The oscillators, are of the Wein Bridge type and the frequency of the oscillation is determined by frequency determining networks, which are an integral part of the oscillator circuit. The output of each tone amplifier is coupled to a filter, whose bandpass frequency is 935 cps for tone #1 and 2805 cps for tone #2. These filters insure a relatively distortion free audio tone. The overall output, after the tones are combined (if a two tone test signal is used), is controlled by a 600 ohm "T" pad. The output impedance will be 600 ohms at all times.

C. The R.F. Oscillator and Amplifier Section:

This section generates two R.F. tones at 1.999 kcs and 2.001 kcs. These two tones may also be used independently or together as in the audio section. The

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switching is accomplished in the same manner. The oscillator is a Modified Pierce type. The output amplitude of these oscillators is adjusted by variable coupling capacitor between the oscillator and amplifier of each stage. The level is set so that both outputs are equal in amplitude after the plate of each amplifier is tuned to resonance. This tuning is done by L-502 for tone #1, and L-503 for tone #2. After alignment, the level controls should not be touched again as the output of these oscillators are required to have a fixed output amplitude.

2. TEST INSTRUCTIONS:

- A. Proceed as outlined in Test Sequence and Procedure below.
- B. Fill in blanks on report sheet, rejecting those units that do not meet the specifications.

3. TEST SEQUENCE AND PROCEDURE:

PART 1. MECHANICAL INSPECTION.

- A. Inspect the unit for obvious mechanical imperfections.
- B. Inspect the unit for obvious electrical errors.
- C. Carefully inspect the unit for loose screws at critical points.. Most carefully inspect for loose screws on grounding points such as tube socket nut straps and ground lugs.

PART 2. PRELIMINARY TEST AND AUDIO SECTION TEST:

- A. Connect unit to power line and energize the set.
- B. Observe: All filaments and pilot lamp illuminated.

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<div style="text-align: center;"> <p>C. Measure B+ at pin 6 of V500 and V501. Voltage must fall between 130V and 165V.</p> <p>D. Observe whether B+ drops out at terminal 2 of T504 when "Audio Tone Selector" switch (S502) is in the "Tone 1" position.</p> <p>E. Observe whether B+ drops out at terminal 2 of T503 when S502 is in the "Tone 2" position.</p> <p>F. With S502 in "Two Tone" position B+ should be present at Terminal 2 of both T503 and T504.</p> <p>G. With S502 in "OFF" position, no B+ should appear at either T503 or T504.</p> <p>H. With S502 in "Tone 1" position, measure B+ at top end of R527. Reading should be 200±10VDC. Check top end of R528. No B+ should be present. Change S502 to "Tone 2" position and measure B+ at top end of R528. Reading should be 200 ±10VDC. Check top end of R527. No B+ should be present.</p> <p>I. Place ground lug on terminal 3 for unbalanced output connection. Connect AC VTVM and Panoramic Sonic Analyzer (LP-1a) to output terminal strip E500, terminals 1 and 3; set R524 and R518 to maximum, S502 to "Tone 1" position and adjust regeneration control, (R501) until an indication is observed on VTVM.</p> </div> <div style="margin-top: 20px;"> <p>* Lamp</p> <p>** Frequency Determining Element</p> </div> <div style="margin-top: 20px;"> <p><u>NOTE:</u> It may be necessary to try several BI-102-3's, before the oscillator will perform properly. Adjust control on NF-104-935(Z500)** for peak indication on VTVM. Observe analyzer and adjust R501 for</p> </div>		

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minimum second harmonic distortion without affecting oscillator "starting." This distortion, as viewed on the analyzer, should be at least -55 db down. Recheck Z500 for peak on VTVM. Adjust Tone 1 level control (R518) for 1 VAC on VTVM. Tighten lock on R501 and R518. Remove ground lug from terminal 3 on E500 and place on terminal 2 for balanced output connection. Place the ground lead of the VTVM on terminal 2 of E500. A voltage of .5 VAC should be observed on terminal 1 and 3.

- J. Place ground lug on terminal 3 for unbalanced output connection. Connect AC VTVM and panoramic Sonic Analyzer (LP-1a) to output terminal strip E500, terminals 1 and 3; set R519 to maximum, S502 to "Tone 2" and adjust degeneration control (R513) until an indication is observed on VTVM. Adjust control on NF-104-2805(Z501)* for peak indication on VTVM. Observe ANALYZER and adjust R513 for minimum second harmonic distortion without affecting oscillator "Starting". The note in set "J" applied to this step also. The distortion should be better than 55 DB down. Recheck Z501 for peak on VTVM. Adjust tone 2 level control (R519) for 1.0 VAC on VTVM. Tighten lock on R513 and R519.

*Frequency Determining Element

- K. Set S502 on "Two Tone" position and recheck distortion on analyzer.

PART 3. R.F. OSCILLATOR AND AMPLIFIER SECTION TEST.

- A. Connect R.F. VTVM to the R.F. output jack(J501). Set "RF Tone Selector" switch(S501) to "Tone 1" position and measure B+ voltage on Pin 1 of V504. Voltage should be 120 ± 10 VDC.

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Check pin 1 of V505. No voltage should be present.

Set C520 to maximum and tune L502 for maximum reading on RF VTVM. Tighten lock nut on L502 slug. Set C520 for 0.5 VRF output.

- B. Set S501 to "Tone 2" position and measure B+ voltage on pin 1 of V505. Voltage should be $120 \pm 10\text{VDC}$. Check pin 1 of V504. No voltage should be present. Set C521 to maximum and tune L503 for maximum reading on RF VTVM. Tighten lock nut on L503 slug. Set C521 for 0.5 VRF output. Connect analyzer with mixer, to R.F. output jack and examine tones. Distortion products should be at least 60 db below tones.

- C. Set S501 to two tone position. Voltage reading should be .6-.8V.

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THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, N.Y.

TEST DATA SHEET FOR TTG

	ACCEPT	REJECT
1. Mechanical Inspection	_____	_____
2. Audio CK-Tone 1-935 cps	_____	_____
Audio CK-Tone 2-2805 cps	_____	_____
3. Tone Level of Tone 1	_____	_____
Tone Level of Tone 2	_____	_____
4. Distortion Check Tone 1	_____	_____
Distortion Check Tone 2	_____	_____
5. RF Oscillator and Amplifier	_____	_____
RF Oscillator Output Tone 1	_____	_____
RF Oscillator Output Tone 2	_____	_____
6. Distortion of RF Output	_____	_____

SERIAL NO. _____

MFG. NO. _____

DATE _____

TESTED BY _____