

## TL MICROWAVE RADIO GENERAL INFORMATION PERIODIC TEST INTERVALS

### 1. GENERAL

**1.01** This section outlines the initial and suggested periodic routine tests for the TL Radio System. Detailed procedures and test requirements are given in the individual sections. Sections listed apply to TL systems with or without diversity.

**1.02** This section is reissued to correct a reference and to add a note in Table A. This reissue does not affect the Equipment Test List.

**1.03** Results of routine tests and data taken following repair or adjustment should be recorded on the E-4957 record card illustrated in Fig. 1. It is important that these cards be kept near the equipment since they provide valuable reference information for locating trouble or for predicting the onset of trouble. This history card should be examined carefully following each routine to determine if there are any trends in the data which would indicate a possible trouble condition before the next routine. Such an analysis should

prove particularly valuable for minimizing "T" troubles on nondiversity systems.

**1.04** Form E-4957 is available only in package units of 100 forms. Orders should be placed for multiples of 100 and worded as follows: (Quantity) Form E-4957. Each company must authorize its local Western Electric distributing house to stock the new forms because they will not be stocked automatically.

**1.05** A separate control center log for recording net loss variations is shown in Fig. 2.

### 2. MAINTENANCE ROUTINES

**2.01** Table A lists suggested test intervals, adjustments, and sections required to maintain a TL Radio System. The tests should be performed in the order in which they appear in Table A.

**2.02** All monthly routine tests are in-service tests and are performed at the control station. All quarterly routine tests are performed on an in-service basis.

409— POINT SECTION	TEST	REQUIREMENTS	DATE										
			FSD	MEAS									
<b>TRMTR BB AMPL (NOTE 1)</b>													
304-503	BIAS	6.8 — 7.2 VDC	12										
<b>ACTIVITY TESTS (NOTE 2)</b>													
302-500	RCVR KLYSTRON	<80 % DIP MA	60										
302-500	TRMTR KLYSTRON	<80 % DIP MA	60										
<b>POWER SUPPLY (CONTROL GAIN)</b>													
308-501	KLYSTRON REG	<0.1V CHANGE	3										
308-501	-20V IF REG	<0.1V CHANGE	3										
<b>DIVERSITY SWITCH (PILOT MONITOR CHECKS)</b>													
312-501	REG PIL TON LEV	5.5 — 10 VDC	12										
312-501	DIV PIL TON LEV	5.5 — 10 VDC	12										
310-502	ORDER WIRE IN	-20 — -24 DBM	20										
WHEN DATA IS TAKEN FOLLOWING UNIT REPLACEMENT, INDICATE SERIAL NUMBER OF NEW UNIT.													
TEST OPERATOR:													
NOTE 1: Record initial reading prior to adjustment.													
NOTE 2: Under Activity Tests, record the minimum BO cathode and transmitter cathode currents.													

(BACK VIEW)

409— POINT SECTION	TEST	REQUIREMENTS	DATE											
			FSD	MEAS	MEAS	MEAS	MEAS	MEAS	MEAS	MEAS	MEAS			
<b>METER AND CONTROL PANEL</b>														
308-501	SELECTOR SWITCH	- 400	365 — 435 VDC	600										
308-501		- 200	180 — 220 VDC	600										
308-501		BAT	21.1 — 29.2VDC	30										
308-501		- 20	19 — 21 VDC	30										
306-502		RCVR	AFC	12 — 20VDC	30									
306-502			CR1	0.4 — 1.2MA	6									
306-502			CR2	0.4 — 1.2MA	6									
306-503			AGC	(SEE FIG.1) VDC	6									
302-501			XMTR	CATH	33 — 50MA	60								
304-501				RF PWR	-1.0 — +6.0DBM	+6								
302-501		CATH	33 — 50MA	60										
306-502		FREQ IF	0±7μA	±50										
308-501	FIL J1-J2	5.7 — 6.3 VDC	12											
WHEN DATA IS TAKEN FOLLOWING UNIT REPLACEMENT, INDICATE SERIAL NUMBER OF NEW UNIT.														

(FRONT VIEW)

Fig. 1—TL Radio—Test Record Data (E-4957)

TL RADIO SYSTEM CONTROL CENTER LOG MONTHLY CHECK OF NET LOSS VARIATIONS						
SYSTEM _____			REFERENCE: SECTION 409-303-501			
DATE	RCVR AMPL OUT (REQ=0 ±3 DBM)	VF LINE CONTRIBUTION (NOTE 1)	NET DUE TO RADIO (NOTE 2)	ALLOWABLE DUE TO RADIO (NOTE 3)	OPERATOR INITIALS	
EXAMPLE	+ 2.0	+1.25	+ 0.75	±1.25		
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
INITIAL REF AMPLITUDE (STA I KEY DEPRESSED) _____						
NOTES: 1. DIFFERENCE BETWEEN CURRENT AND INITIAL REFERENCE AMPLITUDE WITH STA I KEY DEPRESSED (SEE SECTION 409-303-501). 2. CURRENT RCVR AMPL OUT READING ± VF LINE CONTRIBUTION. 3. SEE REQUIREMENTS FOR NET LOSS OR GAIN-FREQUENCY CHARACTERISTIC IN SECTION 409-303-501.						
REMARKS:						

Fig. 2—Typical Routine Test Form

TABLE A

TEST	ROUTINE INTERVAL					REFER TO SECTION
	INITIAL	MONTHLY	QUARTERLY	ANNUALLY	AS REQUESTED	
Portable Test Set	X	X				104-440-500
Routine Measurement of Loop Pilot Transmission*	X	X				409-303-501
Meter Indications*	X		X			409-302-501
Level Check of Liquid in Vapor Phase Cooler †	X			X		◆ 409-305-500 ◆
Power Supply Voltage Checks and Adjustments	X		X			409-308-501
Filament Activity Tests	X		X			409-302-501
Transmitter Baseband Amplifier Bias Check	X		X			409-304-503
Transmitter Frequency	X		X			409-304-501
Transmitter Linearity					X	409-304-501
Transmitter Deviation	X				X	409-304-502
Receiver Routine AFC Alignment Check	X		X			409-306-502
Alarm Circuit Checks	X		X			409-310-501
Alarm Encoder	X		X			409-310-503
Order Wire and Alarm — Level and Frequency Adjustments	X		X			409-310-502
Diversity Switch Performance Checks	X		X			409-312-501

\* These tests should be repeated and recorded after completing the routine.

◆ † When a klystron is changed because of failure or routine maintenance, the vapor phase cooler should be checked as shown in Section 409-305-500.◆