TD-3 MICROWAVE RADIO

J68386G AND J68386H TRANSMITTER-RECEIVER BAYS

COMMON EQUIPMENT TESTS USING KRUSE 52011 IF/RF TEST SET

PRELIMINARY CHECKS

This appendix supplements Section 411-502-500.

It is reissued to add a caution to be observed in Hot Standby/Space Diversity bays.

It provides procedures for making preliminary checks on the microwave generator frequency and 40-MHz oscillator and shift modulator using Kruse 52011 IF/RF Test Set.

Caution 1: These tests are performed on an out-of-service basis. Obtain a release from the designated control office; then remove the channel from service as directed by local practice.

Caution 2: On Hot Standby/Space Diversity equipped bays, consult Section 411-600-500 for forced switching procedures to remove service from BOTH the transmitter and receiver. Exercise extra caution during the tests since service will be present in some waveguide and IF cabling within this bay.

CHART A

MICROWAVE GENERATOR FREQUENCY CHECK

The following is a check of the frequency of the microwave generator. Repeater station bays use a single generator for both the transmitter and receiver. Main station bays provide separate generators for the transmitter and receiver.

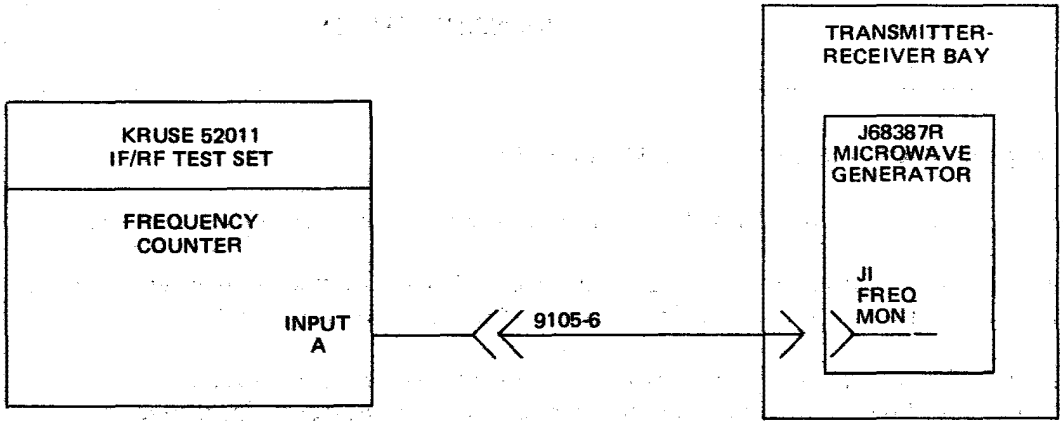
Caution: Operating the microwave generator without the front cover of the bay may change the temperature of the generator and therefore its output frequency. Replace the cover as soon as the frequency check is completed.

APPARATUS:

1—Kruse 52011 IF/RF Test Set
1—P-48Q352 Adjusting Tool

CHART A (Cont)

STEP	PROCEDURE
1	Prepare for testing in accordance with Fig. 1.



COUNTER CONTROL SETTINGS

CONTROL	POSITION
RESOLUTION	1
ATTENUATOR	X1

Measuring Microwave Generator Frequency
Fig. 1

2 Observe frequency on counter.

Requirement: Within the limits shown in the following:

Table A — Repeater Station Microwave Generator Frequencies

Table B — Main Station Transmitter Microwave Generator Frequencies

Table C — Main Station Receiver Microwave Generator Frequencies

If the requirement is not met, adjust the FREQ ADJ control to bring the frequency to within 10 Hz of nominal. (See Fig. 2 for adjusting location.)

Note: The P-48Q352 adjusting tool has a slight detuning effect on the oscillator frequency. Adjust the control to within ±10Hz of the oscillator output frequency with the tool inserted in the control. Remove the tool and note the frequency shift. Readjust, taking the shift into account, so that the ±10 Hz requirement is met when the tool is removed.

CHART A (Cont)

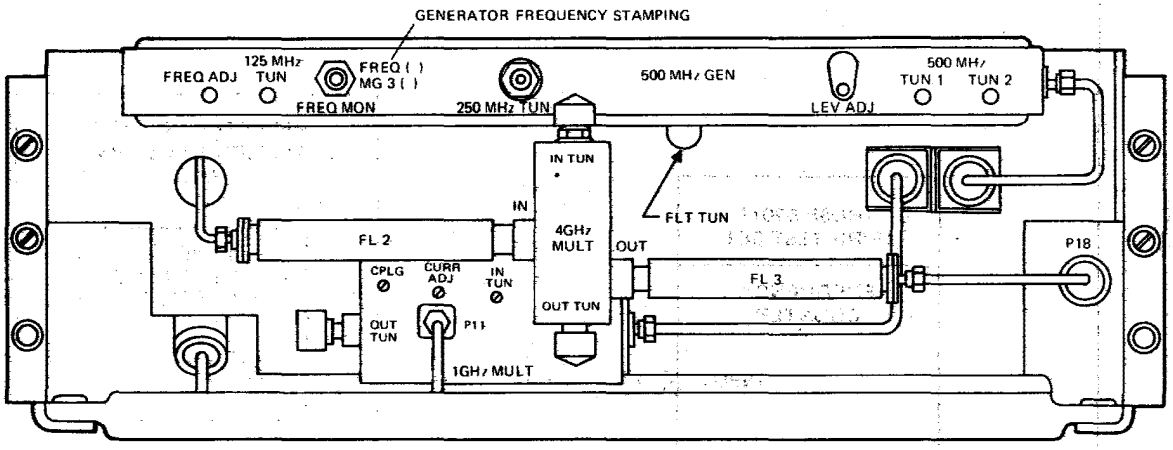
STEP	PROCEDURE
	 **Microwave Generator Unit — Front View** **Fig. 2**
3	If unable to meet the requirement, refer to Section 411-502-504, J68387R Microwave Generator and 4-GHz Multiplier.
4	Disconnect the cable at the FREQ MON jack.

CHART B

40-MHz OSCILLATOR AND SHIFT MODULATOR CHECK

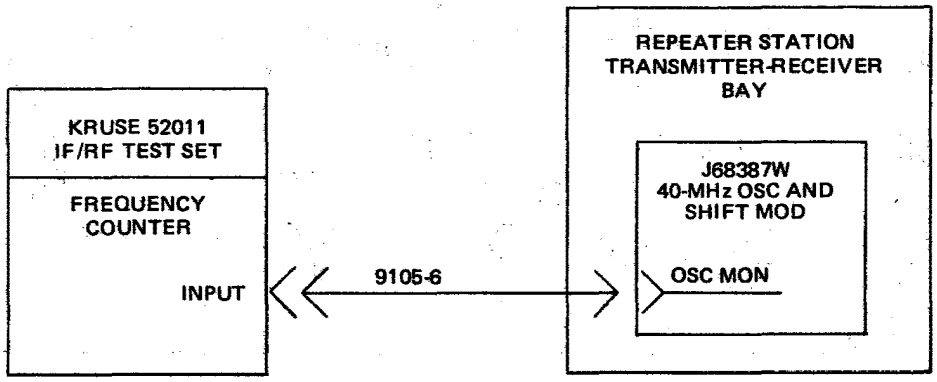
APPARATUS:

1—Kruse 52011 IF/RF Test Set
1—P-48Q352 Adjusting Tool

STEP	PROCEDURE
	Notes: *1.* This chart applies only to a repeater station bay. Main station bays do not contain 40-MHz oscillators and shift modulators. *2.* The checks in Charts 1 and 3, in main section, must be completed before proceeding with this chart.
1	Make the test connections shown in Fig. 3.

CHART B (Cont)

STEP	PROCEDURE



COUNTER CONTROL SETTINGS

CONTROL	POSITION
RESOLUTION	1
ATTENUATOR	X1

Measuring Frequency of 40-MHz Oscillator and Shift Modulator
Fig. 3

2 Observe the frequency indicated by the counter.

Requirement: 40 MHz ±400 Hz (limits: 39,999,600 to 40,000,400 Hz)

If the requirement is not met, adjust the FREQ control for 40 MHz ±50 Hz (limits: 39,999,950 to 40,000,050 Hz). (See Fig. 4 for adjusting location.)

3 Remove the test cable from the OSC MON jack.

4 Select SHIFT MOD OUT control on the meter panel and read the panel meter.

Requirement: 70 ±2.

If the requirement is not met, adjust the PWR ADJ control on the 40-MHz oscillator until the requirement is met.

CHART B (Cont)	
STEP	**PROCEDURE**
5	Select SHIFT OSC control on the meter panel and record the meter indication on the control.
6	Select SHIFT MOD BIAS control on the meter panel and record the meter indication on the control.
7	If the requirements of Steps 2 and 4 cannot be met, check the 40-MHz oscillator and shift modulator in accordance with Section 411-502-503.

J68387W
Fig. 4

TABLE A

REPEATER STATION

MICROWAVE GENERATOR FREQUENCIES

RECEIVER		MICROWAVE GENERATOR LOW-FREQUENCY OSCILLATOR	
FREQUENCY (MHz)	CHANNEL	NOMINAL FREQUENCY (MHz)	LIMITS (MHz)
3730	1A	120.0000	119.999880 — 120.000120
3770	1B	118.7500	118.749881 — 118.750119
3810	2A	122.5000	122.499878 — 122.500122
3850	2B	121.2500	121.249879 — 121.250121
3890	3A	120.6250	120.624879 — 120.625121
3930	3B	119.3750	119.374881 — 119.375119
3970	4A	123.1250	123.124877 — 123.125123
4010	4B	121.8750	121.874878 — 121.875122
4050	5A	125.6250	125.624874 — 125.625126
4090	5B	124.3750	124.374876 — 124.375124
4130	6A	128.1250	128.124872 — 128.125128
4170	6B	126.8750	126.874873 — 126.875127
3710	7A	119.3750	119.374881 — 119.375119
3750	7B	118.1250	118.124882 — 118.125118
3790	8A	121.8750	121.874878 — 121.875122
3830	8B	120.6250	120.624879 — 120.625121
3870	9A	120.0000	119.999880 — 120.000120
3910	9B	118.7500	118.749881 — 118.750119
3950	10A	122.5000	122.499878 — 122.500122
3990	10B	121.2500	121.249879 — 121.250121
4030	11A	125.0000	124.999875 — 125.000125
4070	11B	123.7500	123.749876 — 123.750124
4110	12A	127.5000	127.499872 — 127.500128
4150	12B	126.2500	126.249874 — 126.250126

TABLE B

MAIN STATION

TRANSMITTER MICROWAVE GENERATOR FREQUENCIES

TRANSMITTER		GENERATOR OUTPUT (MHz)	MICROWAVE GENERATOR LOW-FREQUENCY OSCILLATOR	
FREQUENCY (MHz)	CHANNEL		FREQUENCY (MHz)	LIMITS (MHz)
3710	7A	3780	118.1250	118.124882 — 118.125118
3730	1A	3800	118.7500	118.749881 — 118.750119
3750	7B	3820	119.3750	119.374881 — 119.375119
3770	1B	3840	120.0000	119.999880 — 120.000120
3790	8A	3860	120.6250	120.624879 — 120.625121
3810	2A	3880	121.2500	121.249879 — 121.250121
3830	8B	3900	121.8750	121.874878 — 121.875122
3850	2B	3920	122.5000	122.499878 — 122.500122
3870	9A	3800	118.7500	118.749881 — 118.750119
3890	3A	3820	119.3750	119.374881 — 119.375119
3910	9B	3840	120.0000	119.999880 — 120.000120
3930	3B	3860	120.6250	120.624879 — 120.625121
3950	10A	3880	121.2500	121.249879 — 121.250121
3970	4A	3900	121.8750	121.874878 — 121.875122
3990	10B	3920	122.5000	122.499878 — 122.500122
4010	4B	3940	123.1250	123.124877 — 123.125123
4030	11A	3960	123.7500	123.749876 — 123.750123
4050	5A	3980	124.3750	124.374876 — 124.375124
4070	11B	4000	125.0000	124.999875 — 125.000125
4090	5B	4020	125.6250	125.624874 — 125.625126
4110	12A	4040	126.2500	126.249874 — 126.250126
4130	6A	4060	126.8750	126.874873 — 126.875127
4150	12B	4080	127.5000	127.499872 — 127.500128
4170	6B	4100	128.1250	128.124872 — 128.125128

TABLE C

MAIN STATION

RECEIVER MICROWAVE GENERATOR FREQUENCIES

RECEIVER		MICROWAVE GENERATOR LOW FREQUENCY OSCILLATOR OUTPUT	
FREQUENCY (MHz)	CHANNEL	NOMINAL FREQUENCY (MHz)	LIMITS (MHz)
3730	1A	118.7500	118.749881 — 118.750119
3770	1B	120.0000	119.999880 — 120.000120
3810	2A	121.2500	121.249879 — 121.250121
3850	2B	122.5000	122.499878 — 122.500122
3890	3A	119.3750	119.374881 — 119.375119
3930	3B	120.6250	120.624879 — 120.625121
3970	4A	121.8750	121.874878 — 121.875122
4010	4B	123.1250	123.124877 — 123.125123
4050	5A	124.3750	124.374876 — 124.375124
4090	5B	125.6250	125.624874 — 125.625126
4130	6A	126.8750	126.874873 — 126.875127
4170	6B	128.1250	128.124872 — 128.125128
3710	7A	118.1250	118.124882 — 118.125118
3750	7B	119.3750	119.374881 — 119.375119
3790	8A	120.6250	120.624879 — 120.625121
3830	8B	121.8750	121.874878 — 121.875122
3870	9A	118.7500	118.749881 — 118.750119
3910	9B	120.0000	119.999880 — 120.000120
3950	10A	121.2500	121.249879 — 121.250121
3990	10B	122.5000	122.499878 — 122.500122
4030	11A	123.7500	123.749876 — 123.750124
4070	11B	125.0000	124.999875 — 125.000125
4110	12A	126.2500	126.249874 — 126.250126
4150	12B	127.5000	127.499872 — 127.500128