

TD-3 MICROWAVE RADIO
J68386G AND J68386H TRANSMITTER-RECEIVER BAYS
TESTS USING KRUSE 52011 IF/RF TEST SET
29A AND 30A INTEGRATED CIRCUIT – REPLACEMENT

This appendix supplements Section 411-506-505.

It contains the procedures to be followed in checking and replacing, if necessary, the 29A or 30A integrated circuit when trouble is experienced with a unit. The tests in Section 411-506-501 should be done before performing any of the procedures given in this appendix. If the trouble is associated with the 29A integrated circuit, begin with Chart 1, in main section.

If the trouble is associated with the 30A integrated circuit, begin with Chart 2, in main section.

Note: Spares are not normally provided for the circuits tested in this appendix.

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

Caution 2: When removing and replacing waveguide units, care should be exercised to prevent foreign matter from entering the waveguide. Handle all types of waveguide carefully in order to prevent damage to the mating surfaces. When connecting waveguide units, flange mating surfaces must be carefully aligned and all screws tightened securely to prevent RF leakage.



Warning: DO NOT leave energized waveguides unterminated. The RF power density that may be encountered is potentially hazardous to the eyes and body tissue.

CHART A

29A INTEGRATED CIRCUIT – TEST AND CALIBRATION

APPARATUS:

1—Krusse 52011 IF/RF Test Set

STEP	PROCEDURE
1	Remove the termination from TEST port of the 29A integrated circuit.

CHART A (Cont)

STEP	PROCEDURE										
2	<p>Connect test apparatus to TEST port as shown in Fig. 1. Remove drive to the IF limiter-carrier resupply circuit and make sure that the normal bay cable connection between that circuit and the If driver-amplifier is made.</p> <div style="text-align: center;"> </div> <p style="text-align: center;">PREPARATION FOR TEST</p> <ol style="list-style-type: none"> Operate controls on the test set as follows, allowing 15 minutes warm-up. Connect power meter head to CAL OUT jack. Depress DBM CAL key and adjust its control for +10.00 dBm reading. Depress ZERO key and adjust its control for 00.00 ± .01 reading. Depress DBM 50 ohm key. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>UNIT</th> <th>CONTROL</th> <th>POSITION</th> </tr> </thead> <tbody> <tr> <td rowspan="3">4020 POWER METER</td> <td>LEVEL</td> <td>10 dB/V</td> </tr> <tr> <td>GROUNDING</td> <td>INT</td> </tr> <tr> <td>OFFSET</td> <td>MIDSCALE</td> </tr> </tbody> </table> <p style="text-align: center;">29A Test and Calibration Test Setup Fig. 1</p> <ol style="list-style-type: none"> Adjust ATT control on the 29A integrated circuit for maximum power at TEST port. Adjust GAIN control on the IF driver-amplifier for +9 dBm at TEST port. Remove test apparatus from TEST port on the 29A integrated circuit and replace the termination. Readjust ATT control on the 29A integrated circuit for maximum TWT IN meter indication. <i>Requirement: Between 85 and 95.</i> <p>If the requirement is met, the TWT IN detector circuit in the 29A integrated circuit is functioning properly.</p> <p>If the requirement is not met, recalibrate the 29A integrated circuit by performing Steps 7, 8, and 9.</p> <ol style="list-style-type: none"> Adjust the TUNE 1 and TUNE 2 controls in the 29A integrated circuit for maximum transmitter power as indicated by the TRMTR OUT meter indication. If the TWT IN meter indication is off-scale, adjust the MON ADJ control on the 29A for an on-scale indication and check that the ATT control has been adjusted for maximum TWT IN indication. <p><i>Note: The MON ADJ control may have been secured at the factory with Glyptol. If so, it will be necessary to break the seal.</i></p> <ol style="list-style-type: none"> Adjust MON ADJ control to obtain a TWT IN indication of 90. If the requirement cannot be met by recalibrating, replace the 29A integrated circuit as directed in Chart 5, in the main section. <p><i>Note: Before replacing the circuit, make sure that the problem does not lie in some other portion of the bay, ie, the meter circuit or the bay wiring.</i></p>	UNIT	CONTROL	POSITION	4020 POWER METER	LEVEL	10 dB/V	GROUNDING	INT	OFFSET	MIDSCALE
UNIT	CONTROL	POSITION									
4020 POWER METER	LEVEL	10 dB/V									
	GROUNDING	INT									
	OFFSET	MIDSCALE									

CHART B

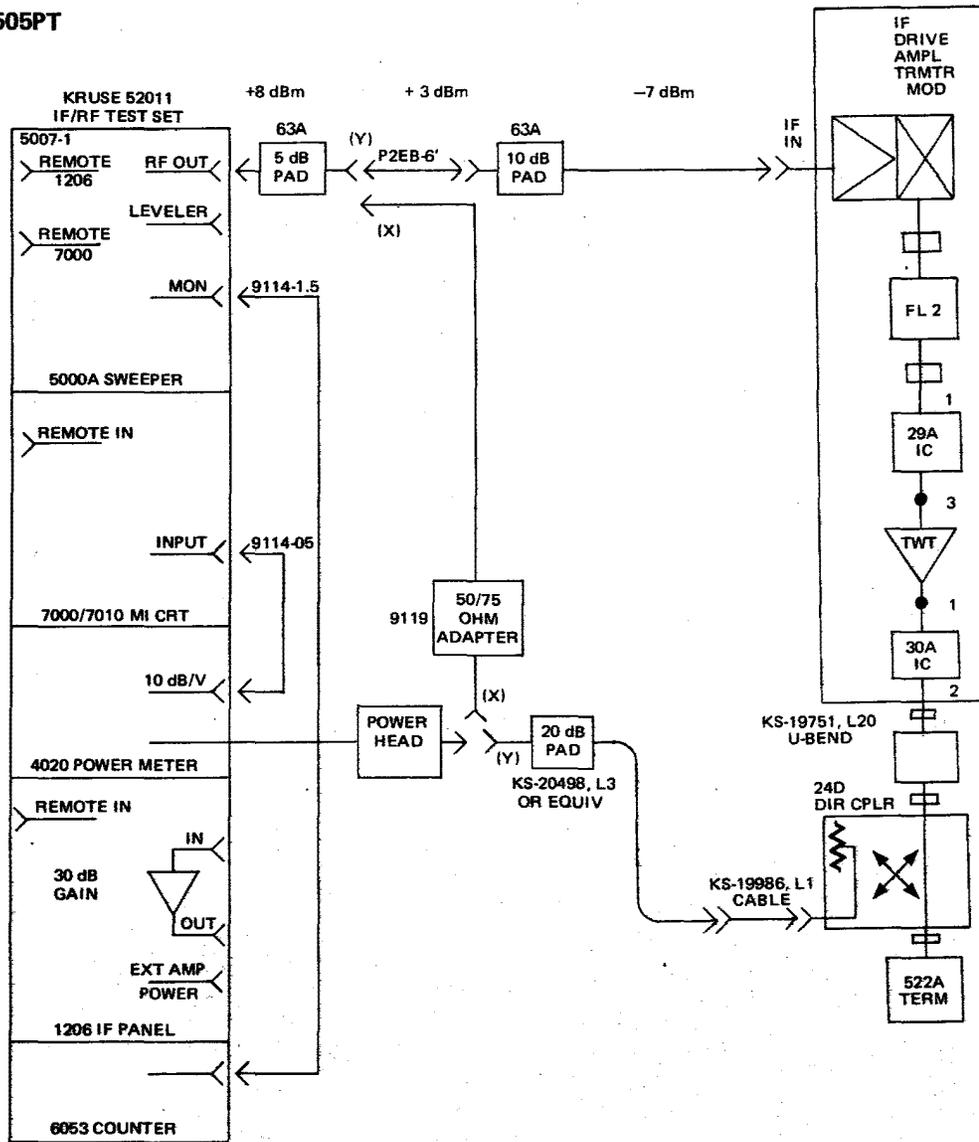
30A INTEGRATED CIRCUIT TEST

APPARATUS:

- 1—Kruse 52011 IF/RF Test Set
- 1—KS-14510, L1 Volt-Ohm-Milliammeter

STEP	PROCEDURE
1	Disconnect the P14 plug from the IF driver-amplifier input jack in order to remove drive to the transmitter. This prevents hazardous RF power from radiating from unterminated ports in the transmitter.
2	<p>Prepare transmitter for test in accordance with Fig. 2.</p> <div style="text-align: center;"> </div> <p style="text-align: center;">Preparing Transmitter For Test Fig. 2</p>
3	Set up the test set in accordance with Fig. 3.
4	Adjust 29A IC ATT control for a power meter indication equal to +34 dBm minus the calibrated loss of the 24D directional coupler and RF pad.
5	<p>Operate the KS-14510, L1 volt-ohm-milliammeter to the 3-volt scale and connect the test leads to terminals A (negative) and G (positive). Adjust the MON ADJ control for a meter indication between 0.7 and 0.9 volt. If such an indication is possible, the detector circuit in the 30A integrated circuit is operating properly. If adjustment cannot produce the required voltage indication, replace the 30A integrated circuit as directed in Chart 5, in main section.</p> <p><i>Note:</i> Before replacing the circuit, make sure that the problem does not lie in some other part of the bay, ie, the alarm circuit, the meter circuit, or bay wiring.</p>

SECTION 411-506-505PT
APPENDIX 2



PREPARATION FOR TEST

1. Operate controls on the test set as follows, allowing 5 minutes warm-up.

UNIT	CONTROL	POSITION
5000A SWEEPER WITH 50007-1 IF PLUG-IN	F-1 START	55 MHz
	MARKER 1	61 MHz
	MARKER 2-Fc	70 MHz
	MARKER 3	79 MHz
	F-2 Stop	85 MHz
	VERNIER	MAX CCW
	RF LEVEL	+8 dBm
	1 kHz	OFF
	LEVELER	INT
	RETRACE	ON
	RECUR-TRIG-LINE	RECUR
	MODE	CW
	Fc ± ΔF VERNIER	MAX CW
	SWEEP SECONDS	.01
SWEEP SECONDS VERNIER	MAX CW	
EXT/INT'L SWEEP (REAR)	INT'L	
4020 POWER METER	LEVEL	10 DB/V
	GROUNDING	INT
	OFFSET	MID-SCALE
COUNTER	ATTENUATOR	X1
	RESOLUTION	1K
	EXT/INT (REAR)	INT

2. Connect power meter head to CAL OUT jack. Depress DBM CAL key and adjust its control for +10.00 dBm reading. Depress ZERO key and adjust its control for 00.00 ± .01 reading. Depress DBM 75 ohm key.
3. Establish option (X) and adjust sweeper RF LEVEL control for +3 dBm power meter reading.
4. Connect option (Y).

**30A Test Setup
Fig. 3**