
TD-3 MICROWAVE RADIO
J68386A AND J68386B TRANSMITTER-RECEIVER BAY
RECEIVER TESTS
USING KRUSE 52011 IF/RF TEST SET
NOISE FIGURE

This appendix describes the procedures for measuring the noise figure of a radio receiver. The noise figure test should be performed in accordance with the Equipment Test List. However, if trouble has been experienced with the receiver modulator and IF preamplifier, such as diode changes, modulator, and/or preamplifier replacement, the noise figure should be measured.

The preliminary checks in Section 411-402-500 must be completed before performing the tests in this appendix. The recommended maintenance interval for the tests in the appendix is given in the Equipment Test List.

Caution: These tests are 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.

RECEIVER NOISE FIGURE TEST

In the following procedure the receiver noise figure is measured without the use of a noise lamp. The receiver is set up in conjunction with the IF amplifier, IF bandpass filter, and power meter in the test set so that the inherent noise in the receiver, in the absence of any signal, will give a prescribed reading on the power meter. The gain of the overall test setup is then checked by inserting into the receiver a known RF carrier power and measuring the resulting IF output power. An out-of-limit noise figure is indicated by an out-of-limit power indication when the RF carrier is inserted.

APPARATUS:

1—Kruse 52011 IF/RF Test Set

STEP

PROCEDURE

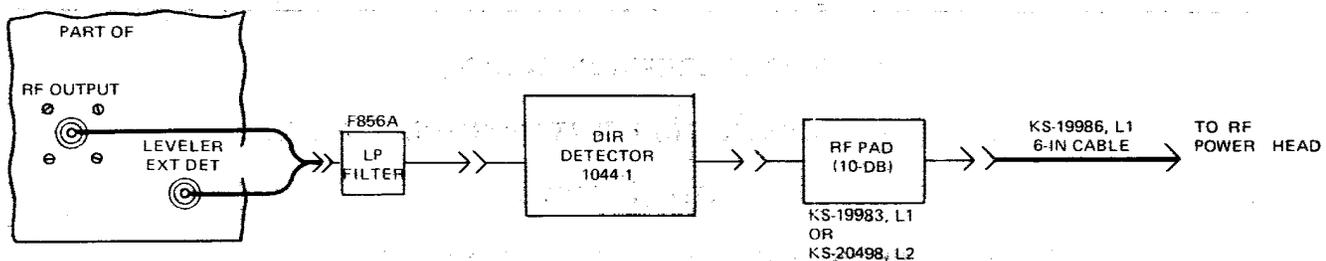
1. Remove the KS-19748, L3 flexible waveguide ahead of the 1322-type receiver bandpass filter and install a 24A transducer on the filter. Terminate the drop arm of Z1.
2. Connect test setup as shown in Fig. 1.

NOTICE

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STEP	PROCEDURE
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RF Oscillator Output Power Adjustment
Fig. 1

- 3 Set the RF oscillator to the CW mode and set the frequency to the receiver channel frequency (stamped on the front of the control panel door).
 - 4 Note the calibrated loss of the 30-dB RF pad at 4 GHz. Add the calibrated loss to -28.0 dBm and adjust the RF output of the oscillator to obtain the resultant power.
Example: If the calibrated loss is 29.6 dB, adjust the output to obtain -28.0 dBm + 29.6 dB = +1.6 dBm.
 - 5 Remove the RF carrier by turning the RF oscillator line switch to the OFF position.
 - 6 Connect option (X) as shown in Exhibit 1. Make sure that all coaxial connections are tight.
 - 7 Operate the bay AGC pushbutton to the AGC position (lamp in switch should be extinguished).
 - 8 Remove the IF cable from the IF IN jack on the AGC amplifier. (This ensures that the IF main amplifier gain will be at maximum.)
 - 9 Adjust the step attenuator to obtain -10.0 dBm.
- Note:* If this power is varying, check the coaxial connections and waveguide joints for tightness in the receiver front end section.
- 10 Connect option (Z).
 - 11 Adjust the RF oscillator frequency control to obtain 70 ± 0.5 MHz on the counter.
 - 12 Remove option (Z) and connect option (Y).
 - 13 Measure the power.

Requirement: Between -1.4 dBm and $+2.6$ dBm for bays equipped with the J68387P receiver modulator. Between -5.4 and $+2.6$ dBm for bays equipped with the J68387C receiver modulator.

STEP

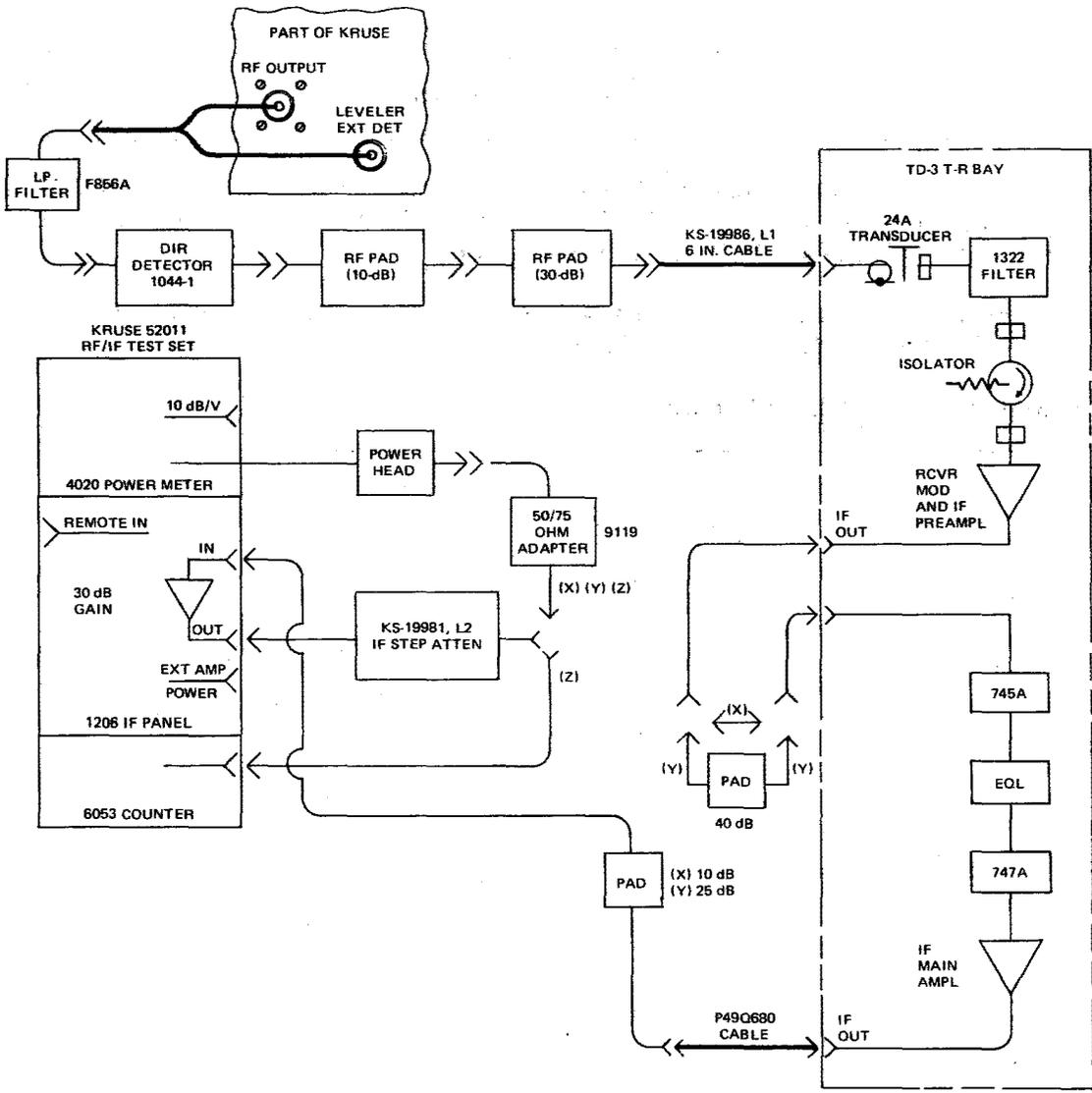
PROCEDURE

Note: These powers correspond to maximum and minimum noise figures of 9 dB and 5 dB for bays equipped with the J68387P receiver modulators and 13 dB and 5 dB for bays equipped with the J68387C receiver modulators.

If this requirement is met, proceed with Step 15. If it is not met, refer to Section 411-404-503 (J68387P) or 411-404-504 (J68387C).

14 Restore all connections to normal.

**SECTION 411-404-505PT
APPENDIX 1**



PREPARATION FOR TEST

1. Allowing 5 minutes warm-up, operate controls on the test set as follows:

UNIT	CONTROL	POSITION
5000A SWEEPER WITH 5013-() PLUG-IN	F-1 START	
	MARKER 1	
	MARKER 2-Fc	
	MARKER 3	
	F-2 STOP	
	VERNIER	MAX CCW
	RF LEVEL	CCW
	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.

Exhibit 1