
TL-1 MICROWAVE RADIO
RECEIVER TESTS
BASEBAND AMPLIFIER GAIN ADJUSTMENT

This section contains the recommended out-of-service tests for the receiver IF and baseband unit.

This section is reissued to add test information for TL-1 receivers that may now be equipped with either of the following:

- (a) The modulator-preamplifier unit (J99296AA-2, List 3) with the receiver IF and baseband unit (J99296G-2)

- (b) The modulator-preamplifier unit (J99296AA-2, List 3) with the IF amplifier unit (J99351E-1) and the FM receiver unit (J99351J-1).

Since this is a general revision, change arrows ordinarily used have been omitted.

This reissue does not affect the Equipment Test List.

If the receiver baseband output level is out of limits as determined by measurement of the 2600-Hz pilot level (Section 409-303-501) and all the receiver checks of Section 409-302-501 are satisfactory, the trouble may be in the preceding transmitter or it may be a more obscure trouble in the receiver IF and baseband unit. The following out-of-service tests, using a frequency-modulated signal from the TL test set, will distinguish between these possibilities and confirm whether the receiver IF and baseband unit is operating satisfactorily. Section 409-306-500 outlines the procedures for removing and restoring service on nondiversity and diversity systems.

CHART	PAGE
1—J99262G Receiver IF and Baseband Unit Test	2
2—J99296G Receiver IF and Baseband Unit Test	2
3—J99351E IF Amplifier Unit and J99351J FM Receiver Unit Test	4

APPARATUS:

- 1—J99262AA TL Test Set (portable)

CHART 1

J99262G RECEIVER IF AND
BASEBAND UNIT TEST

This is an out-of-service test. Be certain that the radio channel is removed from service as specified in Section 409-306-500.

STEP	PROCEDURE
1	Remove the patch cord between the PRE AMPL IN jack of the IF and baseband unit and jack J3 of the 1A receiver modulator.
2	Arrange the portable test set to send the frequency-modulated signal into the IF and baseband unit by patching from the 66/74 MC OUT jack into the ATTEN jack, setting 30 dB in the ATTENUATOR, and patching from the ATTEN jack to the PRE AMPL IN jack of the IF unit.
3	Patch the RCVR OUT jack to the test set VM IN jack with the voltmeter INPUT switch set on RCVR GAIN. Requirement: +10.0 dBm \pm 0.2 dB Note: If this requirement is not met, readjust the RCVR GAIN potentiometer to give an output of +10.0 dBm. Inability to make this adjustment indicates that the IF and baseband unit must be replaced. Refer to Section 409-306-506.
4	Remove all test connections and restore original patching to all units.

CHART 2

J99296G RECEIVER IF AND
BASEBAND UNIT TEST

This is an out-of-service test. Be certain that the radio channel is removed from service as specified in Section 409-306-500.

STEP	PROCEDURE
1	Remove the patch cord between the IF IN jack of the IF and baseband unit and the PREAMP OUT jack of the modulator-preamplifier.

CHART 2 (Cont)

- | STEP | PROCEDURE |
|------|---|
| 2 | Arrange the TL test set to send the frequency-modulated signal into the IF and baseband unit by patching from the 66/74 MC OUT jack into the ATTEN jack, setting 12 dB in the ATTENUATOR, depressing the 66/74 MC button, and patching from the remaining ATTEN jack to the IF IN jack of the IF unit (Fig. 1). |
| 3 | Patch the RCVR OUT jack to the TL test set VM IN jack with the INPUT switch set on RCVR GAIN. Set the RANGE DBM switch to the +10 position. |
- Requirement:** +9.8 to +10.2 dBm

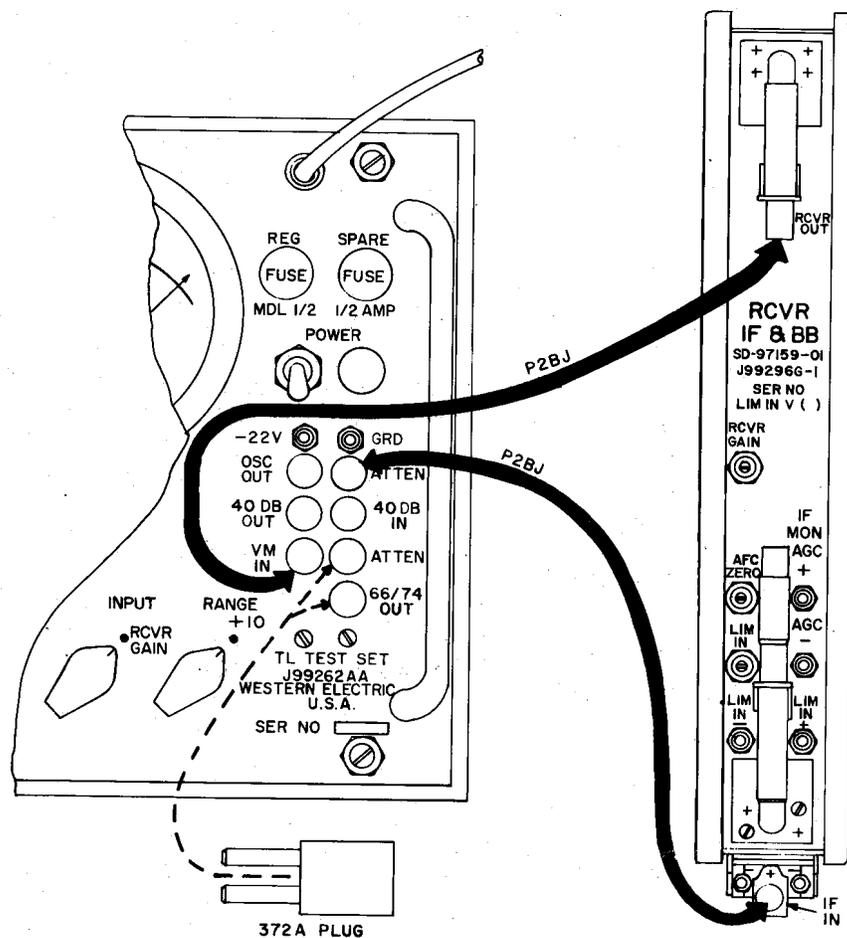


Fig. 1—Receiver IF and Baseband Unit—Test Connection Illustration

CHART 2 (Cont)

STEP	PROCEDURE
------	-----------

Note: If this requirement is not met, readjust the RCVR GAIN control to give an output of +10.0 dBm. Inability to make this adjustment indicates that the IF and baseband unit must be replaced. Refer to Section 409-306-506.

- | | |
|---|--|
| 4 | Remove the test cords and replace the original patching from the modulator-preamplifier to the IF and baseband unit. |
|---|--|
-

CHART 3
**J99351E IF AMPLIFIER UNIT AND
J99351J FM RECEIVER UNIT TEST**

This is an out-of-service test. Be certain that the radio channel is removed from service as specified in Section 409-306-500.

STEP	PROCEDURE
------	-----------

- | | |
|---|--|
| 1 | Remove the patch cord connection to the PREAMP OUT jack on the modulator-preamplifier. |
| 2 | Arrange the TL test set to send the frequency-modulated signal into the IF amplifier and FM receiver units by patching from the 66/74 MC OUT jack into the ATTEN jack. |
| 3 | Set 12 dB in the ATTENUATOR and depress the 66/74 MC button. |
| 4 | Use a P2DE test cord to patch from the remaining ATTEN jack to the cable disconnected in Step 1. See Fig. 2. |
| 5 | Patch the RCVR OUT jack to the TL test set VM IN jack with the INPUT switch set on RCVR-GAIN. Set the RANGE DBM switch to the +10 position. |

Requirement: +9.8 to +10.2 dBm

Note: If this requirement is met, proceed to Step 11.

- | | |
|---|--|
| 6 | Adjust the BB GAIN control on the FM receiver unit to give an output of +10.0 dBm. |
|---|--|

Note 1: The indication on the TL test set should increase with a clockwise rotation of the BB GAIN control. If the indication decreases with a clockwise rotation of the BB GAIN control, rotate the control to the fully counterclockwise position and then adjust it clockwise to obtain 10.0 dBm. Proceed to Step 11.

CHART 3 (Cont)

STEP

PROCEDURE

Note 2: If it is not possible to obtain +10.0 dBm, proceed to Step 7.

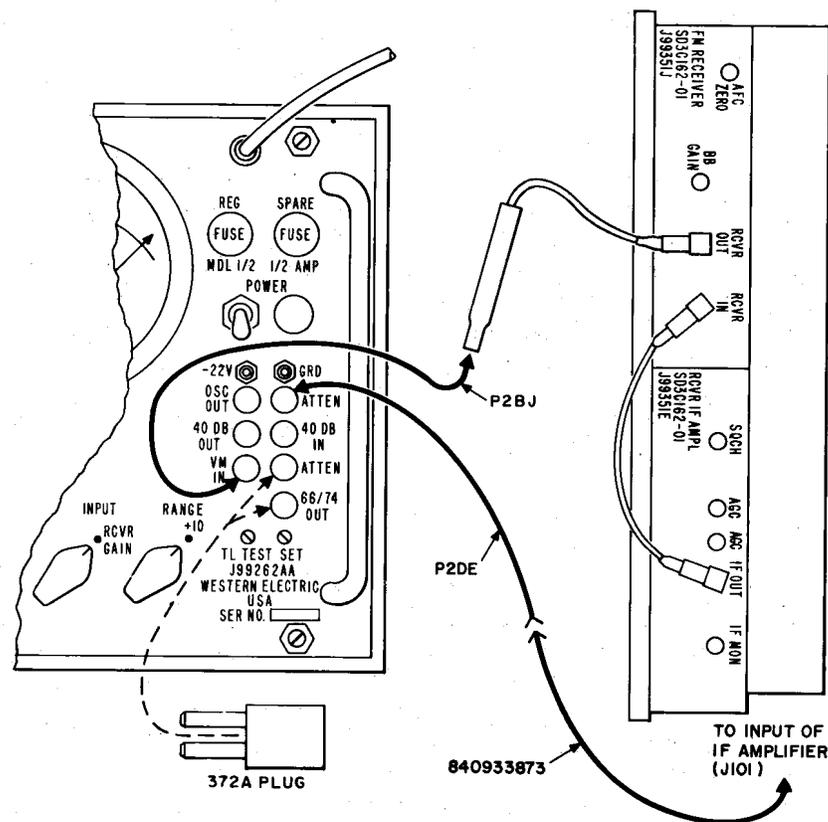


Fig. 2—IF Amplifier and FM Receiver—Test Connection Illustration

- 7 Remove the P2DE test cord connected in Step 4 and use a P2BJ cable with a 190A adapter to patch from the ATTN jack to the RCVR IN jack on the FM receiver unit.
- 8 Set 0 dB in the ATTENUATOR on the TL test set.

Requirement: +9.8 to +10.2 dBm

CHART 3 (Cont)

STEP	PROCEDURE
	<p><i>Note 1:</i> If the requirement is not met, check the squelch circuit. It may have operated. In order to prevent the squelch circuit from operating, it will be necessary to perform one of the following.</p> <ul style="list-style-type: none">(a) If there is a received signal, connect normal patching from the modulator-preamplifier unit to the 1075A filter.(b) If there is no received signal, connect a patch cord from the IF MON jack on the IF amplifier unit to the IF IN jack on the back of the IF amplifier unit. <p><i>Note 2:</i> If the requirement is still not met, adjust the BB GAIN control to obtain +10.0 dBm. The indication on the TL test set should increase with a clockwise rotation of the BB GAIN control. If the indication decreases with a clockwise rotation of the BB GAIN control, rotate the control to the fully counterclockwise position and then adjust it clockwise to obtain 10.0 dBm. Inability to make this adjustment indicates that the FM receiver must be replaced. Refer to Section 409-306-506.</p>
9	<p>Reconnect the original patching from the IF amplifier unit to the FM receiver unit and connect the equipment as shown in Fig. 2. Set 18 dB into the ATTENUATOR on the TL test set.</p> <p>Requirement: +9.8 to +10.2 dBm</p> <p><i>Note:</i> If the requirement is not met, adjust the BB GAIN control to obtain +10.0 dBm. The indication on the TL test set should increase with a clockwise rotation of the BB GAIN control. If the indication decreases with a clockwise rotation of the BB GAIN control, rotate the control to the fully counterclockwise position and then adjust it clockwise to obtain 10.0 dBm. If this adjustment cannot be made, the IF amplifier must be replaced. Refer to Section 409-306-506.</p>
10	<p>If the requirement of Step 9 was met and the specified output of Step 6 was not obtained, replacement of the 1075A filter is indicated. Refer to Section 409-306-506.</p>
11	<p>Remove all test connections and restore original patching to all units.</p>