

OVER-THE-HORIZON RADIO SYSTEMS
ITTL 12A-1 OVER-THE-HORIZON RADIO SYSTEM
NUS 3298 RECEIVER
NUS 3306 DUAL IF COMBINER
TEST AND ADJUSTMENT

These tests require the system receivers to be operated in dual diversity and the receiver under test to be removed from service as described in Section 403-413-301. The IF dual combiners require no power and can be removed from the receiver for testing if desired.

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APPARATUS:

- 1—J68337F FM Test Set
- 2—ED 63941-11 G65 Cords, identical length
- 2—Coaxial Cables, 3-ft., 75-ohm type RG59/U, equipped with BNC connectors, identical lengths
- 1—Dual Combiner Test Set
- 1—KS-14510 Volt-Ohm-Milliammeter

CHART 1

COMBINER TESTS

STEP	PROCEDURE
1	Remove the power plug from the IF combiner under test.
2	On the 37F FM test set, make the following control adjustments:

CHART 1 (Cont)

STEP

PROCEDURE

CONTROL	POSITION
MV	1
OSC	ON
OSC TUNE	70 MC
POWER	ON

- 3 Arrange the test equipment as shown in Fig. 1A.
- 4 Temporarily operate the MTR key on the FM test set to CW and adjust the OSC LEV control for a test set meter indication of +3 dBm.
- 5 Set the volt-ohm-milliammeter (VOM) to the 0.3-volt range and insert the test leads in the IF combiner black test jacks.

Requirement 1: The voltmeter indication should be 0 volts ± 5 millivolts.

Requirement 2: The FM test set meter indication should be no lower than -3 dBm.

Note 1: If necessary, transpose the test leads to obtain a positive meter deflection.

Note 2: If these requirements are not met, adjust the IF combiner capacitor C15 to obtain a voltmeter indication of 0 volts. Failure to meet the requirements is an indication of IF combiner hybrid component trouble.

- 6 Move the VOM test leads to the green test points on the combiner.

Requirement: The VOM indication should be at least 60 millivolts.

Note 1: If necessary, transpose the test leads to obtain a positive meter deflection.

Note 2: This is a test of the AGC circuit components.

- 7 Arrange the test equipment as shown in Fig. 1B.

- 8 Move the VOM test leads to the black test jacks on the combiner.

Requirement: The voltmeter indication should be greater than 35 millivolts. **Record** the indicated value.

Note 1: If necessary, transpose the test leads to obtain a positive meter deflection.

CHART 1 (Cont)

STEP	PROCEDURE
	<p><i>Note 2:</i> This is a test of the phase detector circuit components.</p>
9	<p>Arrange the test equipment as shown in Fig. 1C. Transpose the voltmeter test leads.</p> <p>Requirement: A positive meter indication (opposite in polarity from that recorded in Step 8) should be obtained with a value within 10 millivolts of that obtained in Step 8.</p> <p><i>Note:</i> This is a test of the combiner automatic phase detector components.</p>
10	<p>If the combiner under test is to be placed in service, mount the combiner in the receiver with all cables disconnected. Further adjustment of the combiner may be necessary to compensate for minor irregularities of receiver components. Refer to Chart 2 of these instructions.</p>

CHART 2
COMBINER REPLACEMENT

STEP	PROCEDURE
1	<p>Mount the combiner in the NUS 3298 receiver. Leave all cables and the power cord disconnected.</p>
2	<p>Record the receiver DUAL COMBINER APC MONITOR meter indication.</p> <p>Requirement:</p> <p>The meter indication must be 0.</p> <p><i>Note:</i> Any meter indication other than 0 is due to meter error.</p> <p>If the meter error is greater than one division, the meter should be replaced.</p>
3	<p>Connect all cables and the power cord to the combiner.</p> <p>Note: The following tests <i>must be</i> made with normal received signals applied to the two receiver input terminals.</p>
4	<p>Disconnect the cable at the IN jack on the left IF main amplifier. Observe the DUAL COMBINER APC MONITOR meter indication.</p>

CHART 2 (Cont)

STEP	PROCEDURE
	<p>Requirement: Meter indication must agree with indication recorded in Step 2 ± 1 meter division.</p> <p>Note: Failure to meet this requirement indicates an improperly tuned primary circuit at the combiner transformer T1.</p>
5	<p>Reconnect the cable at the IN jack on the left IF main amplifier. Disconnect the cable at the IN jack on the right IF main amplifier. Observe the DUAL COMBINER APC MONITOR meter indication.</p> <p>Requirement: The meter indication must agree with the value recorded in Step 2 ± 1 meter division.</p> <p>Note: Failure to meet this requirement indicates an improperly tuned primary circuit at the combiner transformer T1.</p>
6	<p>Reconnect all cables to the IF main amplifiers. Observe the DUAL COMBINER APC MONITOR meter and the PHASE LOCK ALARM indicating lamp on the receiver power panel for the indications of proper phase lock as described in Section 403-413-301.</p>

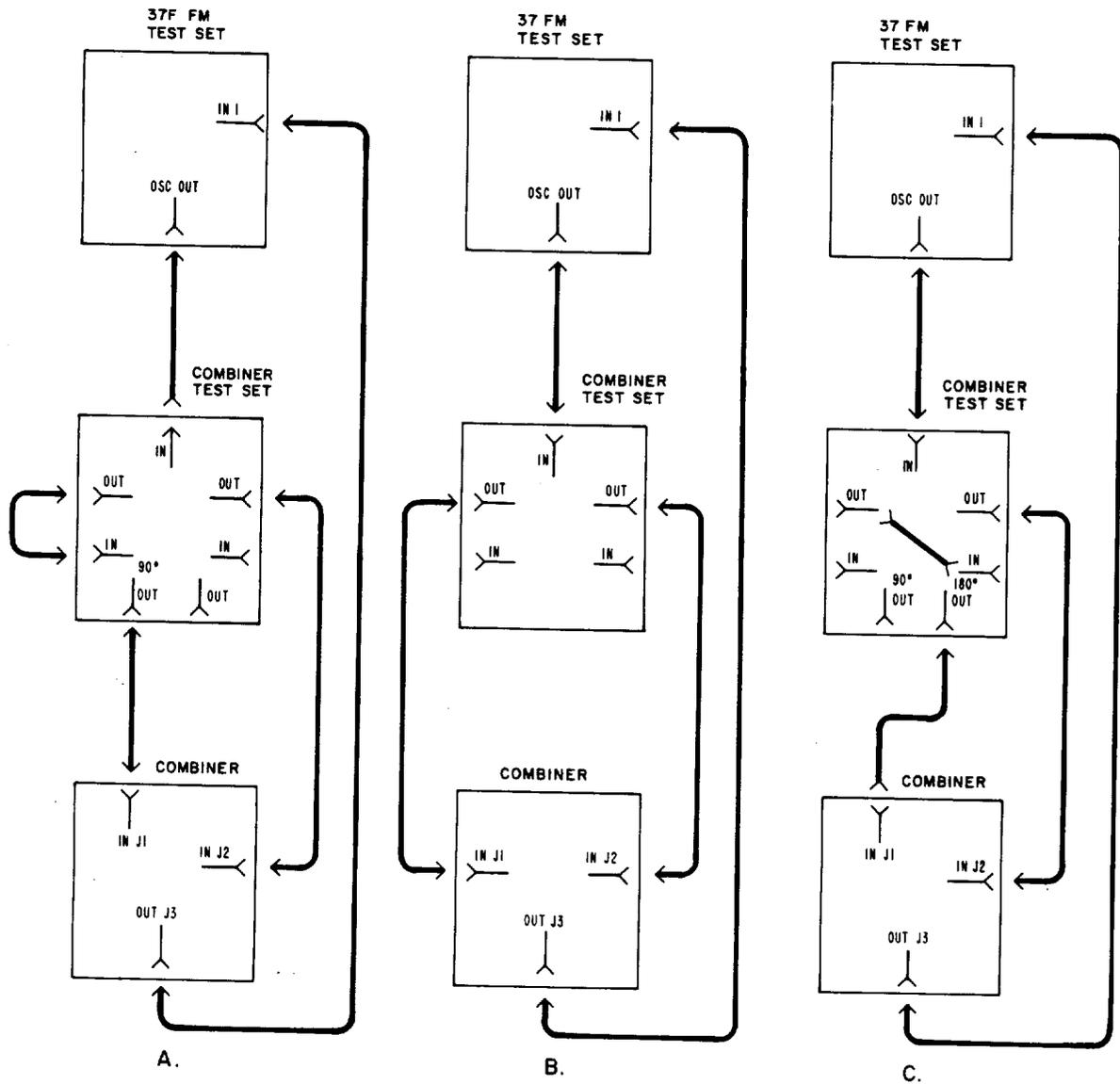


Fig. 1—IF Dual Combiner—Test Setup Diagrams