L MULTIPLEX TERMINALS

LMX-2

CARRIER AND PILOT SUPPLY

SUPERGROUP CARRIER

TUNED DISTRIBUTION CIRCUIT TESTS AND ADJUSTMENTS

Carrier frequencies for supergroups D25 through D28 are produced in four modulators. Each modulator receives two input signals:

(a) The 1040-kHz filtered output of the 80-kHz harmonic generator

(b) The appropriate carrier frequency from the distribution bus of supergroups 15 through 18.

The tuned distribution circuit for supergroups D25 through D28 reduces spurious frequencies and minimizes crosstalk and interference resulting from common modulator coupling through the 1040-kHz distribution bus.

The output of the 124-kHz harmonic generator and the output of the D supergroup modulators are connected to individual distribution modules (Fig. 1), where they are selected by one half-section of a supergroup carrier supply filter, amplified, refiltered by the second half-section of the carrier filter, and reamplified by the power amplifier for connection to the supergroup distribution buses.

A parallel-tuned circuit consisting of L40 and C85 connected to ground at the output of the 1040-kHz filter presents a low impedance to all frequencies except 1040 kHz. Three series-tuned circuits consisting of L37 through L39 and C82 through C84 present high impedance to all frequencies except 1040 kHz. A parallel-tuned circuit consisting of L41 and C86 presents a high impedance at 4216 kHz, the second harmonic of the 2108-kHz carrier of supergroup 17. A 4216-kHz signal entering the modulator for supergroup D27 results in an undesired product at 3176 kHz. A parallel-tuned circuit consisting of L36 and C81 presents a high impedance to 4836 kHz in the output of the modulator for supergroup D25. An undesired 2756-kHz signal results from the third harmonic of 1612 kHz (4836 kHz) and the second harmonic of 1040 kHz (2080 kHz).

The tuned distribution circuit for supergroups D25 through D28 is located at the right side of frame C of the J68857C carrier supply unit (see Fig. 1). To gain access to the distribution circuit, remove the coverplate assembly. The KS-19355, List 3 adjusting tool, to be used on inductors L37, L38, and L39, is mounted on the rear of the coverplate. L36, L40, and L41 will be adjusted with a small nonmetallic screwdriver.

Note 1: Pin jacks COM 1, Q14, Q15, and Q16 (shown in Fig. 1 and 2) have been omitted in later models of the distribution amplifier and do not apply to tests in this section.

Note 2: The procedures in this section are to be applied upon installation and thereafter ***only*** if crosstalk or interference is reported in channels associated with supergroups D25 through D28, or when the requirements in Section 356-270-503 cannot be met. No observation of crosstalk should be made at the carrier supply test panel.

This section is reissued to include instructions for gain adjustment of the new model (ED-50113-30G) distribution amplifier having a continuous attenuator. Change arrows are used to indicate major changes. ***Equipment Test Lists are not affected.***

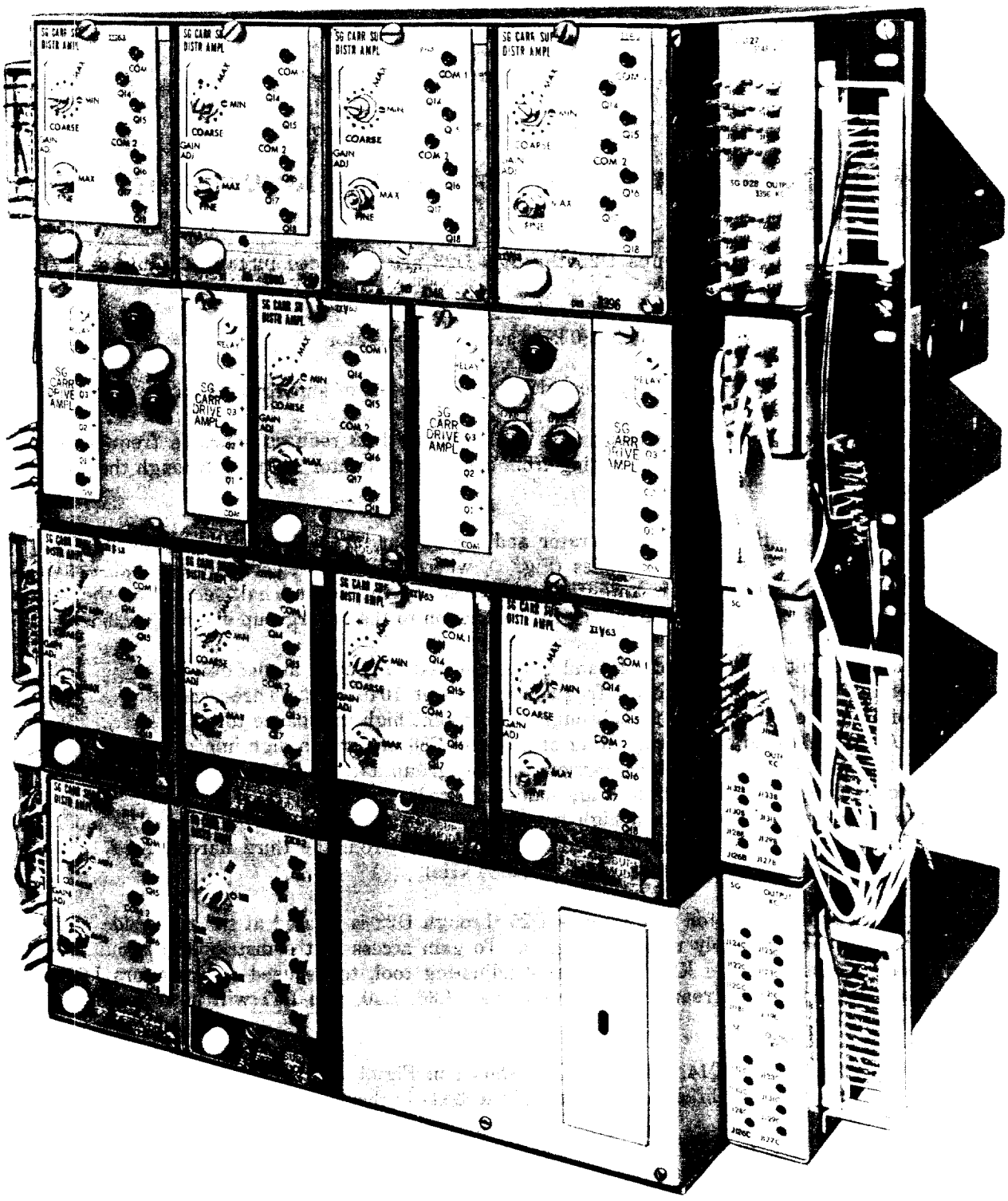

Fig. 1—J68857C Supergroup Carrier Supply Unit—Front View

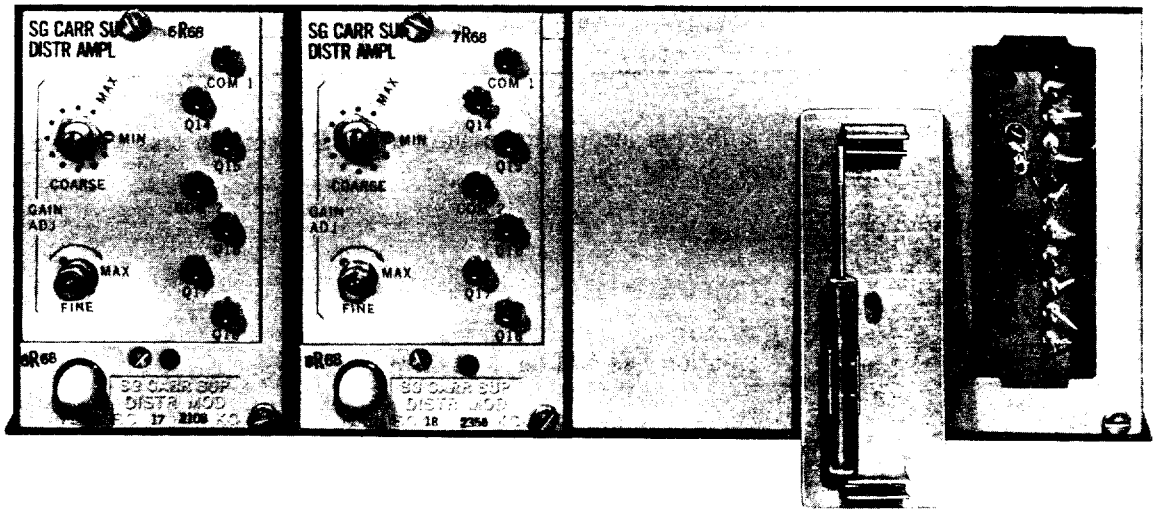

Fig. 2—D Supergroup Tuned Distribution Circuit

APPARATUS:

Transmission measuring equipment. Refer to Section 356-010-500 and select, from available equipment, a receiving unit having the following capabilities:

Receiving test equipment capable of detecting, from 75-ohm circuits, signals between 2542 and 3402 kHz at levels between −20 dBm and 0 dBm.

In addition, the following are required:

Attenuator such as KS-13964, 14A, or Siemens Rel 3D 112b

P43R350 Cable Assembly

KS-19355, List 3 Tool (for adjustment only)

Small Nonmetallic Screwdriver (for adjustment only)

STEP	PROCEDURE
	Note: Before performing the following steps, inspect the D25 through D28 distribution buses to verify that all unused bus taps are terminated with 75-ohm terminating resistor plugs.
	ALIGNMENT TEST
1	Prepare the RTE (receiving test equipment) for a 75-ohm terminated measurement of 2652 kHz at approximately −11.0 dBm.
2	Remove a termination from a tap of the D25 distribution bus.

STEP	PROCEDURE
3	Connect the RTE through a 75-ohm attenuator having a 30-dB insertion loss to the SG D25 through bus [patches (1) and (2), Fig. 3].
4	Read the RTE meter indication. ***Requirement:*** −11.0 dBm ***Note:*** The level at the distribution bus will be +19 dBm.
5	▶If the requirement of Step 4 is met, proceed to Step 6. If it is not met, adjust the COARSE and FINE GAIN ADJ or GAIN ADJ control (Fig. 4 and 5) as applicable to meet the requirement.◀
6	Tune the RTE to the highest meter indication in the range of 2756 kHz ±6 kHz. ***Requirement:*** −50.0 dBm or less (−51.0 dBm is less).
7	Tune the RTE to the highest meter indication in the range of 2548 kHz ±6 kHz. ***Requirement:*** −50.0 dBm or less.
8	Remove a termination from a tap of the D27 distribution bus.
9	Remove patch (2) and connect the RTE to the SG D27 distribution bus [patch (4), Fig. 3].
10	Tune the RTE to 3148 kHz.
11	Read the RTE meter indication. ***Requirement:*** −11.0 dBm
12	▶If the requirement of Step 11 is met, proceed to Step 13. If it is not met, adjust the COARSE and FINE GAIN ADJ or GAIN ADJ controls (Fig. 4 and 5) as applicable to meet the requirement.◀
13	Tune the RTE to the highest meter indication in the range of 3176 kHz ±6 kHz. ***Requirement:*** −61.0 dBm or less
14	If the requirements of Steps 6, 7, and 13 are met, the tuned distribution circuit is satisfactory and no alignment is required. Proceed to Step 18.
15	If the requirement of Step 6, 7, or 13 is not met, check output transistors Q17 and Q18 of both related supergroups (for example, supergroups 15 and D25) as prescribed in Section 356-270-505.
16	If a distribution amplifier is replaced, repeat the applicable steps of Steps 1 through 13.

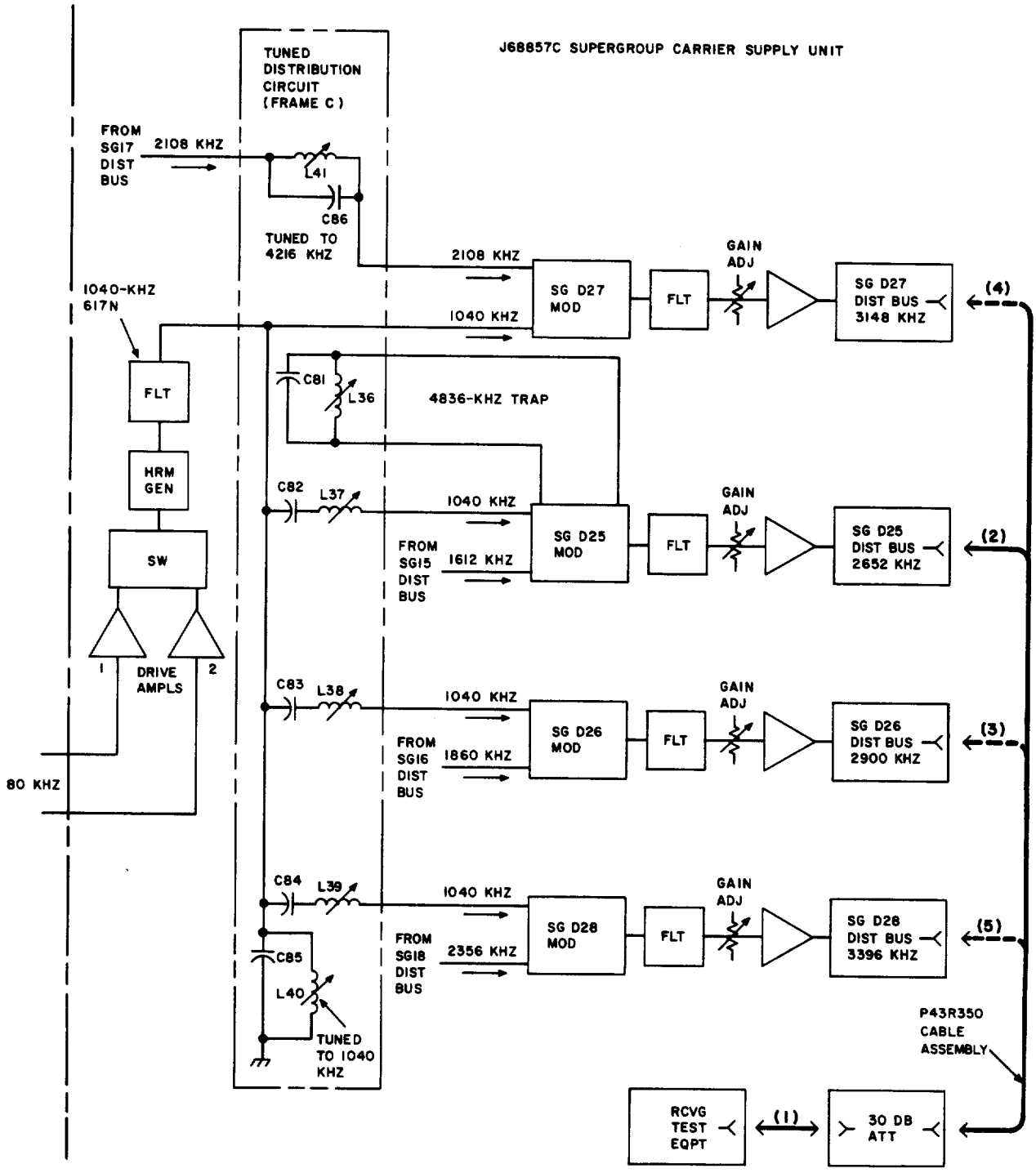

Fig. 3—Supergroup Carrier Supply—Tuned Distribution Circuit

STEP	PROCEDURE
17	If an amplifier is replaced and the requirements of Steps 6, 7, and 13 are still not met, proceed to Step 20.
18	Remove patches (1) and (4) in Fig. 3.
19	Replace the terminations removed in Steps 2 and 8.
	ALIGNMENT PROCEDURE
	D25
20	Tune the RTE to 2652 kHz.
21	Remove patch (4) and connect the RTE to the SG D25 distribution bus [patch (2), Fig. 3].
22	Measure the power at the D25 distribution bus tap.
23	Adjust inductors L37 and L40 for a maximum meter indication.
24	♦Readjust the COARSE and FINE GAIN ADJ or GAIN ADJ (Fig. 4 and 5) controls as applicable of the D25 distribution amplifier for a −11.0 dBm meter indication.♦
25	Tune the RTE to the highest meter indication in the range of 2756 kHz ±6 kHz.
26	Adjust inductor L36 for a minimum meter indication.

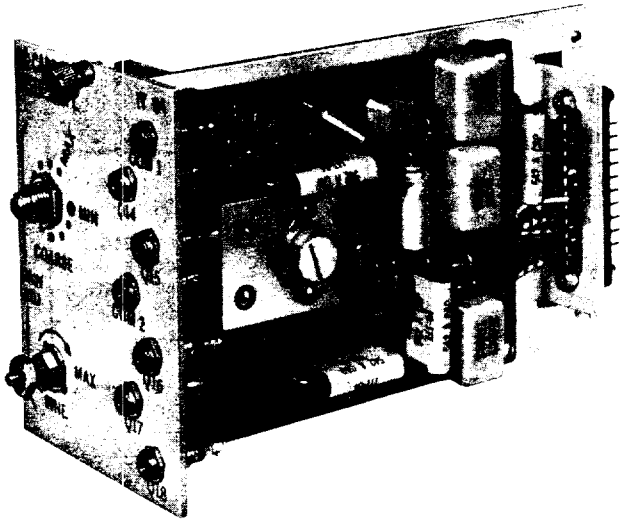

Fig. 4—Old Model Supergroup Carrier Distribution Amplifier Module Having COARSE and FINE GAIN ADJ Controls

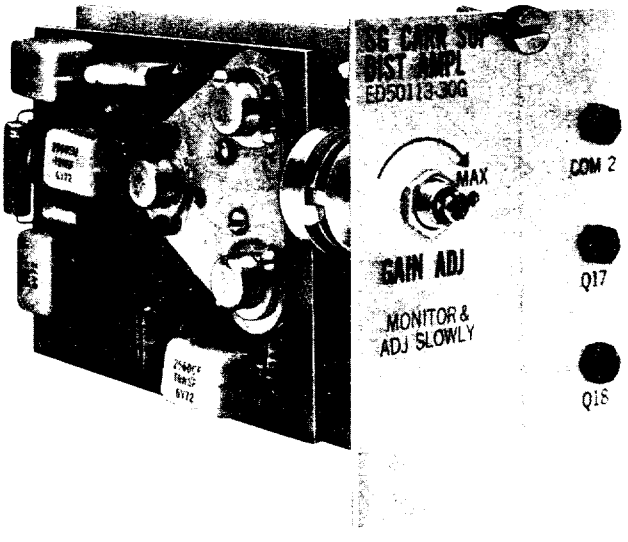

Fig. 5—♦New Model Supergroup Carrier Distribution Amplifier Module Having Continuous "T" Pad GAIN ADJ Control♦

STEP	PROCEDURE
27	Repeat Steps 22, 23, and 24.
28	Repeat Step 25.
	Requirement: −50 dBm or less
29	Repeat Step 25 at a frequency of 2548 kHz ±6 kHz.
	Requirement: −50 dBm or less
30	If the requirement of Step 29 is met, proceed with Step 31. If the requirement is not met, a slight readjustment of L36 may equalize the response at 2548 and 2756 kHz so that the requirements of both Steps 28 and 29 may be met.
31	Remove patch (2) in Fig. 3.
32	Replace the distribution bus terminations.
	D26
33	Tune the RTE to 2900 kHz.
34	Remove a termination from a tap of the D26 distribution bus.
35	Connect the RTE to the SG D26 distribution bus [patch (3), Fig. 3].
36	Read the RTE meter indication.
	Requirement: −11.0 dBm
37	If the requirement of Step 36 is met, proceed to Step 38. If it is not met, perform the following steps: (a) Adjust L38 to obtain a meter indication of −11.0 dBm or greater (−10.0 dBm is greater). (b) ◆Readjust the COARSE and FIND GAIN ADJ or GAIN ADJ (Fig. 4 and 5) controls as applicable on the D26 supergroup distribution amplifier to obtain a meter indication of −11.0 dBm.◆
38	Remove patch (3) in Fig. 3.
39	Replace the distribution bus termination.
	D27
40	Remove a termination from a tap of the D27 distribution bus.
41	Connect the RTE to the SG D27 distribution bus [patch (4), Fig. 3].

STEP	PROCEDURE
42	Tune the RTE to the highest meter indication in the range of 3176 kHz ±6 kHz. ***Requirement:*** −61.0 dBm or less (−62 dBm is less).
43	If the requirement of Step 42 is met, proceed to Step 44. If it is not met, adjust L41 to obtain a meter reading of −61.0 dBm or less.
44	Tune the RTE to 3148 kHz.
45	Read the RTE meter indication. ***Requirement:*** −11.0 dBm
46	◗If the requirement of Step 45 is met, proceed to Step 47. If it is not met, adjust the COARSE and FINE GAIN ADJ or GAIN ADJ (Fig. 4 and 5) control as applicable on the D27 distribution amplifier to obtain a meter indication of −11.0 dBm.◖
47	Remove patch (4) in Fig. 3.
48	Replace the distribution bus terminations. ***D28***
49	Tune the RTE to 3396 kHz.
50	Remove a termination from a tap of the D28 distribution bus.
51	Connect the RTE to the SG D28 distribution bus [patch (5), Fig. 3].
52	Read the RTE meter indication. ***Requirement:*** −11.0 dBm
53	If the requirement of Step 52 is met, proceed to Step 54. If it is not met, perform the following steps: (a) Adjust L39 to obtain a meter indication of −11.0 dBm or greater (−10.0 dBm is greater). (b) ◗Adjust the COARSE and FINE GAIN ADJ or GAIN ADJ (Fig. 4 and 5) controls as applicable on the D28 distribution amplifier to obtain a meter indication of −11.0 dBm.◖
54	Remove patch (5) in Fig. 3.
55	Replace the distribution bus terminations.