ANALOG MULTIPLEX TERMINAL EQUIPMENT

COMMON EQUIPMENT

GROUP CONNECTORS

B3 GROUP CONNECTOR OUT-OF-SERVICE TESTS

The tests in this section should be performed before a B3 group connector is placed in service and in case of trouble.

Equipment Test Lists are affected.

A group connector (Fig. 1) connects the basic group band from a receiving L multiplex (LMX) group demodulator to an LMX transmitting group modulator and provides the proper gain. B3 group connectors can be used also to interconnect a type A or type C N3/L junction and an LMX terminal. A bandpass filter eliminates signals outside the basic group band: 60 to 108 kHz.

CHART PAGE

APPARATUS:

The tests in this section require suitable transmission measuring equipment. Refer to Section 356-010-500 and select, from available equipment, sending and receiving units having the following capabilities:

Sending test equipment capable of delivering, to 135-ohm circuits, signals between 60 and 108 kHz at 0 to -13.5 dBm

Receiving test equipment capable of detecting, from 135-ohm circuits, signals between 60 and 108 kHz at -40 to -75 dBm.

2W24A Cord

3P20B Cords.

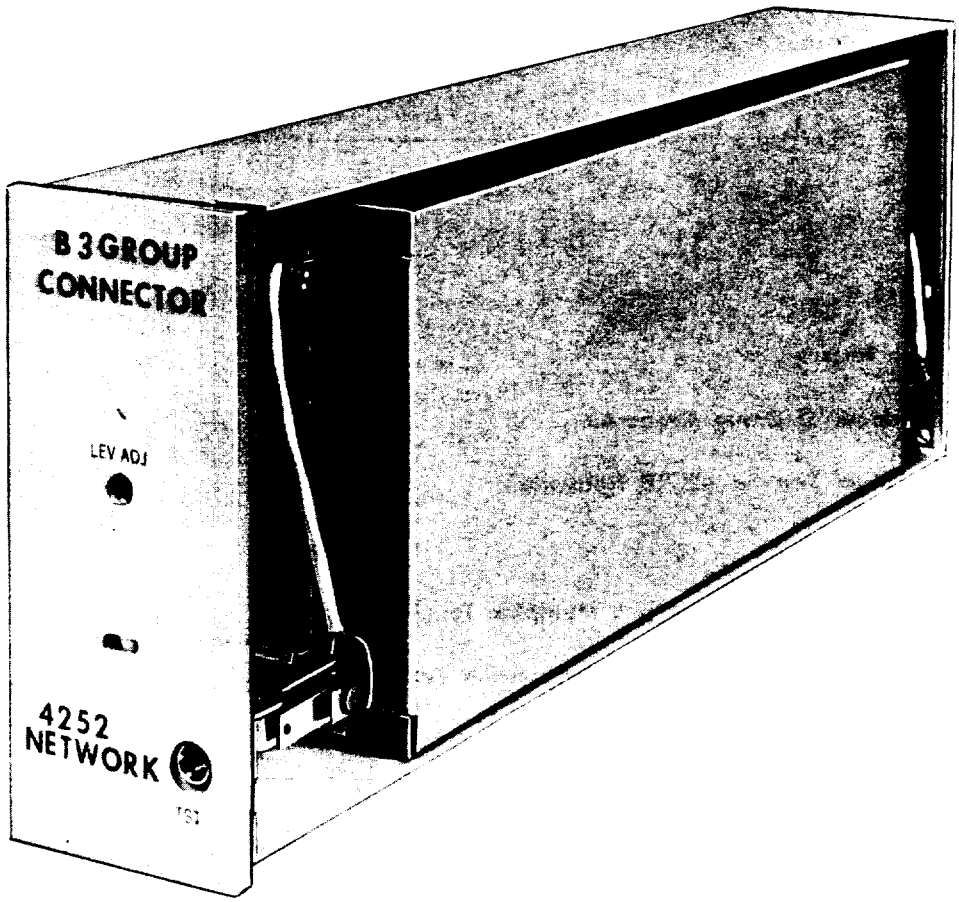


Fig. 1—B3 Group Connector

CHART 1

INITIAL TESTS

STEP	PROCEDURE

A. Prepare for Tests

1 Determine from office records the ***receiving*** group and the ***transmitting*** group served by a group connector used between L multiplex terminals ***or*** the N3 carrier and L multiplex terminal equipment served by a group connector used with an N3/L junction.

At B3 group connector bay,

2 Locate the B3 group connector to be tested.

Caution: Verify that the group connector to be tested is out of service before proceeding.

3 Check that the correct group connector is installed.

Note: Three arrangements of the B3 group connector (SD-51596) are available: the 4252A, 4252B, and 4252C networks (Fig. 2). The 4252A network is the primary group connector; the 4252B network includes a 104.08-kHz band elimination filter; and the 4252C network includes a 976A delay equalizer. Six connectors can be mounted in a group connector shelf ED-52426 in group connector bay J68941L, AG, or AH.

At rear of group connector shelf,

4 Check that the input signal cable is connected to terminals 1 and 2 on the plug for the group connector to be tested.

5 Check that the output signal cable is connected to terminals 7 and 8 on the plug.

Note: The B3 group connector is passive. Power connections are not required.

B. Check Bandpass of Group Connector

Note: For a group connector that is connected via a group distribution frame (Fig. 3), perform the applicable test procedure in Section 356-005-501.

6 Proceed to Step 7 for a group connector used between L multiplex terminals, proceed to Step 20 for a group connector used in an N3-to-L transmission path, ***or*** proceed to Step 35 for a group connector used in an L-to-N3 transmission path.

L-to-L Transmission Path

At receiving group bank,

7 Apply an 83-kHz test signal at -5.0 dBm to the GR CONN IN jack (LMX-2) ***or*** at -4.0 dBm to the GDF IN jack on the receiving patch unit in the group bank shelf (LMX-3).

CHART 1 (Cont)

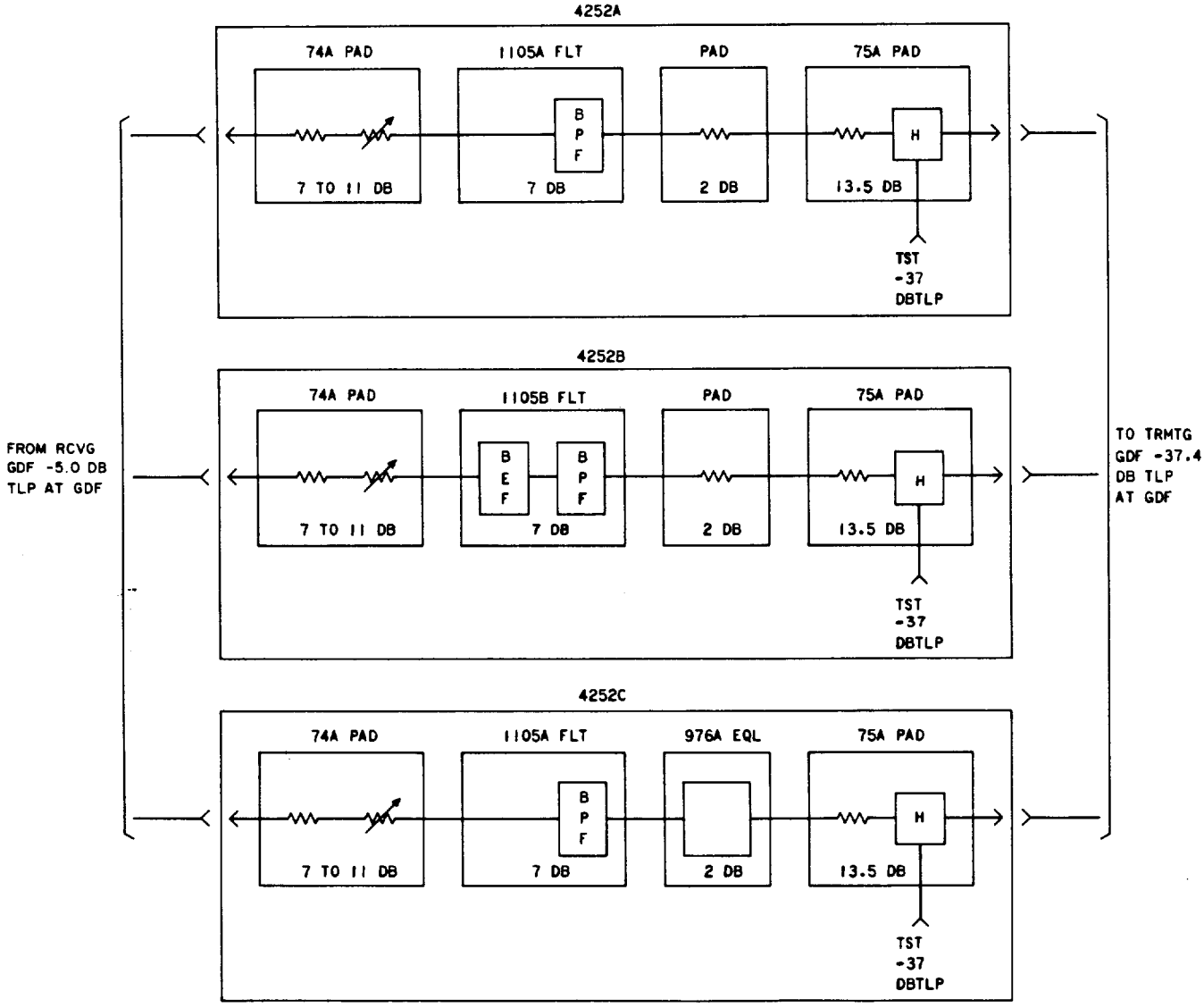
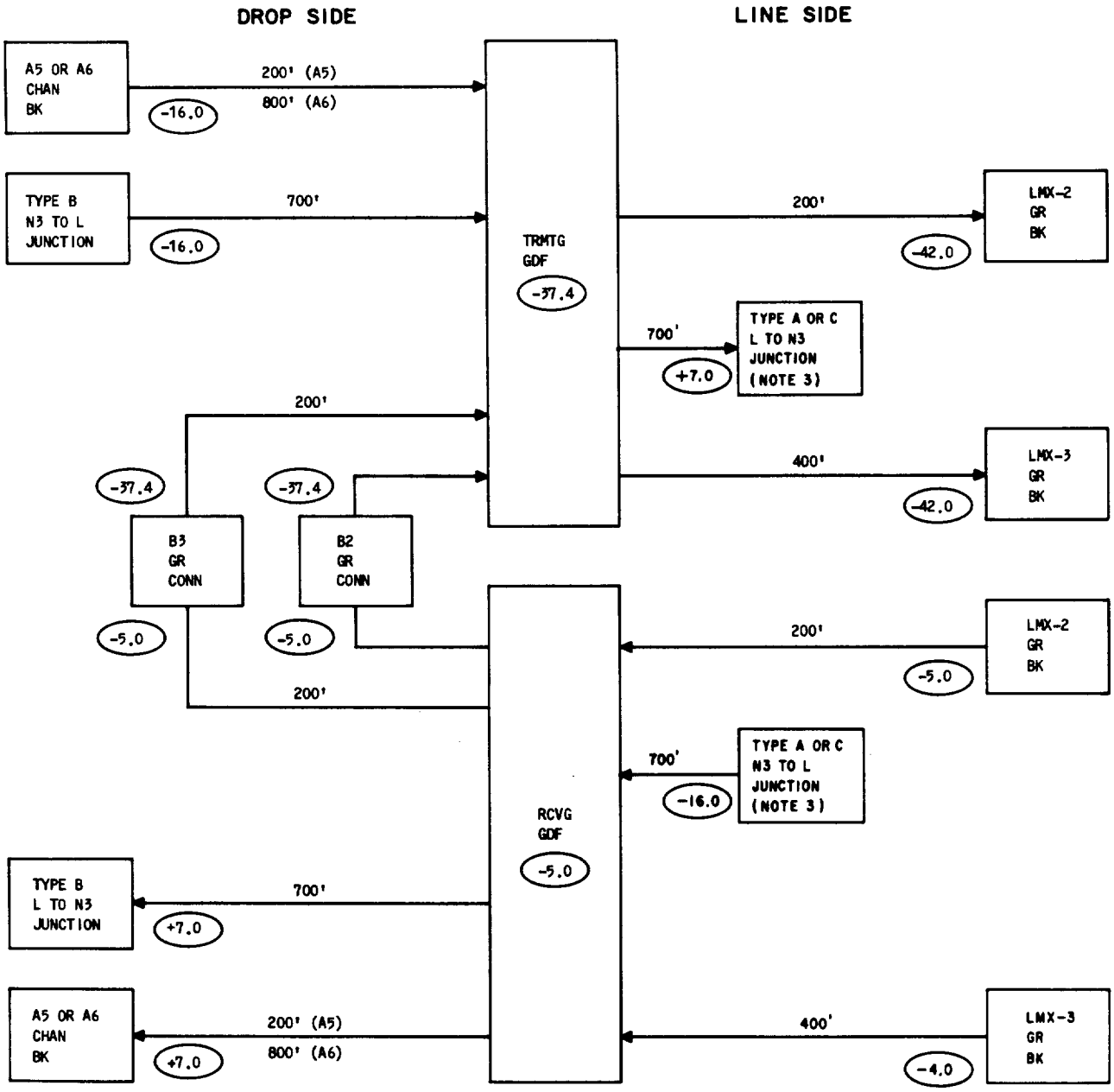


Fig. 2—Block Diagram of B3 Group Connectors



NOTES:
1. LEVELS ARE EXPRESSED IN DBTLP.
2. ALL INTERCONNECTING CABLE IS TYPE 761.
3. TERMINAL CONNECTIONS ARE REVERSED BECAUSE GROUP CONNECTORS ARE REQUIRED.

Fig. 3—Group Connector Connected via Group Distribution Frame

CHART 1 (Cont)

STEP	PROCEDURE
	At transmitting group bank,
8	Measure and record the 83-kHz signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack on the transmitting patch unit in the group bank shelf (LMX-3). ***Note:*** Nominal signal power at the test jack is -42.0 dBm. The GR CONN OUT jack (LMX-2) must be terminated in 135 ohms for this measurement.
	At receiving group bank,
9	Repeat Step 7 using a 63-kHz test signal.
	At transmitting group bank,
10	Measure the 63-kHz signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack (LMX-3). ***Requirement:*** 63-kHz signal power is within ±0.5 dB of the 83-kHz signal power recorded in Step 8.
11	Proceed to Step 14 if the requirement is met. Otherwise, proceed to Step 12.
12	Replace the group connector.
13	Repeat Steps 7 through 11 with the new group connector.
	At receiving group bank,
14	Repeat Step 7 using a 107-kHz test signal.
	At transmitting group bank,
15	Measure the 107-kHz signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack (LMX-3). ***Requirement:*** 107-kHz signal power is within ±0.5 dB of the 83-kHz signal power recorded in Step 8.
16	Proceed to Step 19 if the requirement is met. Otherwise, proceed to Step 17.
17	Replace the group connector.
18	Repeat Steps 7 through 16, as required.
19	Proceed to Part C for a 4252B network. Otherwise, proceed to Chart 2.

CHART 1 (Cont)

STEP	PROCEDURE

N3-to-L Transmission Path

Note: This transmission path is shown in the upper part of Fig. 4.

20 Determine from office records the N3-to-L modulator, the group connector, and the LMX transmitting group in the transmission path to be tested.

Note: An N3-to-L modulator J99331AA and an associated group connector serve N3 carrier channel group 1. Another N3-to-L modulator and an associated group connector serve N3 carrier channel group 2.

At N3-to-L junction,

21 Withdraw the N3-to-L modulator far enough to remove from the plug in the shelf.

Note: The modulator ***must*** be removed from the plug to prevent double termination of the sending equipment which will be connected to terminals on the rear of the plug.

22 Apply an 83-kHz test signal at -13.5 dBm to terminals 5 and 12 on the plug for the modulator removed.

Note: Test connections are shown in Fig. 5.

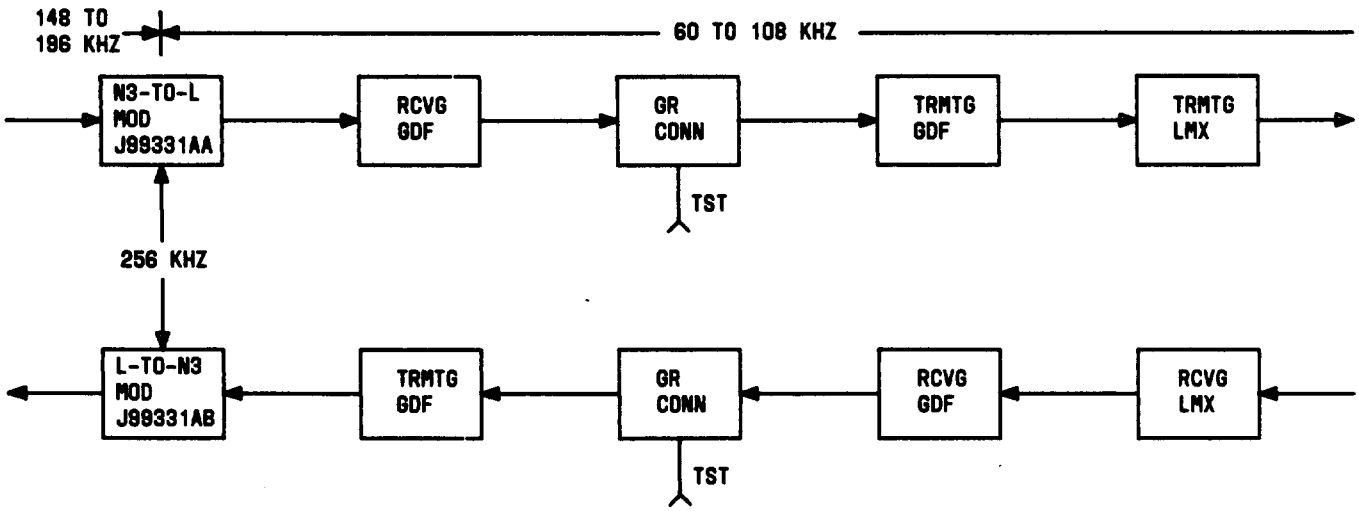


Fig. 4—Group Connectors Used With N3/L Junctions

CHART 1 (Cont)

STEP	PROCEDURE

At transmitting group bank,

23 Measure and record the 83-kHz signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack on the transmitting patch unit in the group bank shelf (LMX-3).

Note: Nominal signal power at the test jack is -50.5 dBm. The GR CONN OUT jack (LMX-2) must be terminated in 135 ohms for this measurement.

At N3-to-L junction,

24 Repeat Step 22 using a 63-kHz test signal.

At transmitting group bank,

25 Measure the 63-kHz signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack (LMX-3).

Requirement: 63-kHz signal power is within ±0.5 dB of the 83-kHz signal power recorded in Step 23.

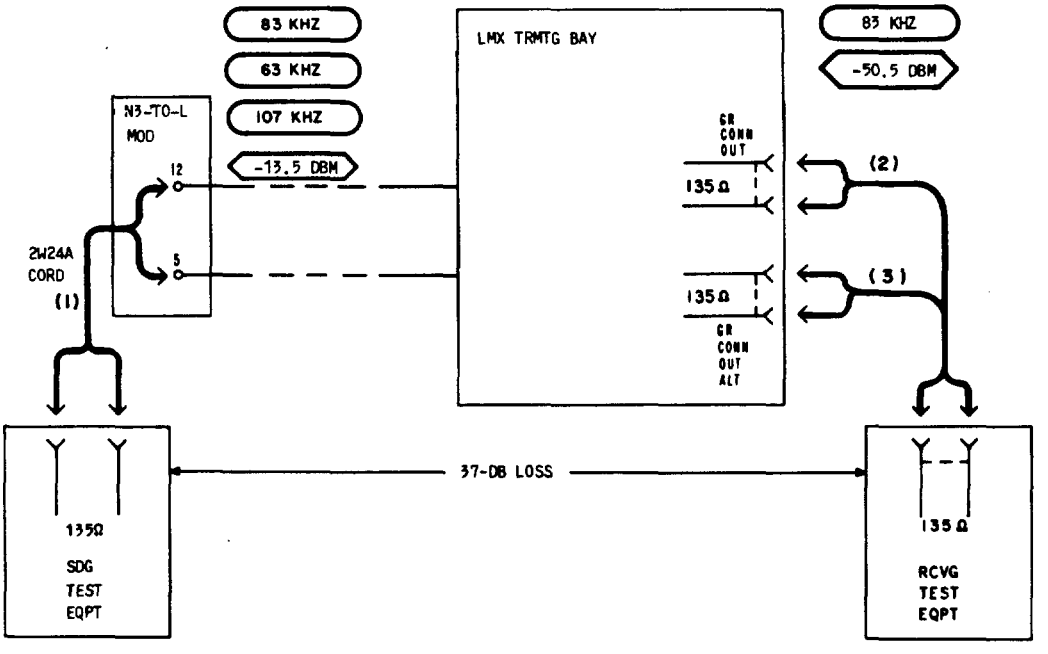


Fig. 5—Test Connections for N3-to-L Transmission Path

CHART 1 (Cont)

STEP	PROCEDURE
26	Proceed to Step 29 if the requirement is met. Otherwise, proceed to Step 27.
27	Replace the group connector.
28	Repeat Steps 22 through 26 with the new group connector.
	At N3-to-L junction,
29	Repeat Step 22 using a 107-kHz test signal.
	At transmitting group bank,
30	Measure the 107-kHz signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack (LMX-3). ***Requirement:*** 107-kHz signal power is within ±0.5 dB of the 83-kHz signal power recorded in Step 23.
31	Proceed to Step 34 if the requirement is met. Otherwise, proceed to Step 32.
32	Replace the group connector.
33	Repeat Steps 22 through 31, as required.
34	Proceed to Part C for a 4252B network. Otherwise, proceed to Chart 2.
	L-to-N3 Transmission Path
	Note: This transmission path is shown in the lower part of Fig. 4.
35	Determine from office records the LMX receiving group, the group connector, and the L-to-N3 modulator in the transmission path to be tested. ***Note:*** A group connector and an L-to-N3 modulator J99331AB serve N3 carrier channel group 1. Another group connector and an associated L-to-N3 modulator serve N3 carrier channel group 2.
	At receiving group bank,
36	Apply an 83-kHz test signal at -13.5 dBm to the appropriate GR CONN IN jack (LMX-2) ***or*** at -12.5 dBm to the GDF IN jack on the receiving patch unit in the group bank shelf (LMX-3). ***Note:*** Test connections are shown in Fig. 6.

CHART 1 (Cont)

STEP	PROCEDURE

At L-to-N3 junction,

37 Withdraw the L-to-N3 modulator far enough to remove from the plug in the shelf.

Note: The modulator ***must*** be removed from the plug to prevent double termination of the transmission path when the receiving test equipment is connected to terminals on the rear of the plug.

38 Measure and record the 83-kHz signal power at terminals 14 and 15 on the plug for the modulator removed.

Note: Nominal signal power at terminals 14 and 15 is -47.5 dBm.

At receiving group bank,

39 Repeat Step 36 using a 63-kHz test signal.

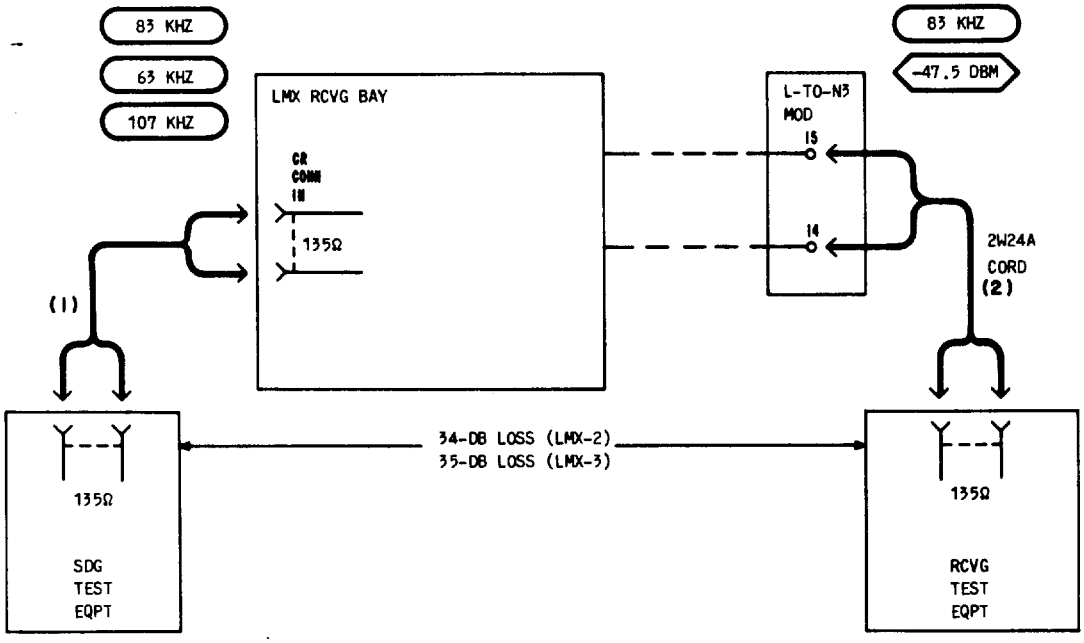


Fig. 6—Test Connections for L-to-N3 Transmission Path

CHART 1 (Cont)

STEP	PROCEDURE

At L-to-N3 junction,

40 Measure the 63-kHz signal power at terminals 14 and 15 on the plug.

Requirement: 63-kHz signal power is within ±0.5 dB of the 83-kHz signal power recorded in Step 38.

41 Proceed to Step 44 if the requirement is met. Otherwise, proceed to Step 42.

42 Replace the group connector.

43 Repeat Steps 36 through 41 with the new group connector.

At receiving group bank,

44 Repeat Step 36 using a 107-kHz test signal.

At L-to-N3 junction,

45 Measure the 107-kHz signal power at terminals 14 and 15 on the plug.

Requirement: 107-kHz signal power is within ±0.5 dB of the 83-kHz signal power recorded in Step 38.

46 Proceed to Step 49 if the requirement is met. Otherwise, proceed to Step 47.

47 Replace the group connector.

48 Repeat Steps 36 through 46, as required.

49 Proceed to Part C for a 4252B network. Otherwise, proceed to Chart 2.

C. Pilot Elimination Test for 4252B Network

Note: The 4252B network includes a band elimination filter that blocks the 104.08-kHz group pilot signal.

At receiving group bank,

50 Measure and record the 104.08-kHz pilot signal power at the GR DEM OUT A jack (LMX-2) ***or*** at the DEM OUT jack (LMX-3).

Note: Nominal pilot signal power is -25.0 dBm at the GR DEM OUT A jack and -24.0 dBm at the DEM OUT jack.

CHART 1 (Cont)

STEP	PROCEDURE
	At transmitting group bank,
51	Remove the 104.08-kHz pilot signal.
	Note: For LMX-2, remove the insert pilot unit and substitute a thru pilot unit. For LMX-3, operate the pilot switch on the transmitting patch unit.
52	Measure the 104.08-kHz pilot signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack (LMX-3).
	Requirement: Pilot signal power is at least 45 dB lower than the power recorded in Step 50.
53	Proceed to Step 56 if the requirement is met. Otherwise, proceed to Step 54.
54	Replace the group connector.
55	Repeat Parts B and C with the new group connector.
56	Restore the 104.08-kHz pilot signal removed in Step 51.
57	Perform the loss tests in Chart 2 for the group connector under test.

CHART 2

LOSS TESTS

STEP	PROCEDURE
1	Proceed to Part A for a group connector used between L multiplex terminals, proceed to Part B for a group connector used in an N3-to-L transmission path, ***or*** proceed to Part C for a group connector used in an L-to-N3 transmission path.
	A. Group Connector Used Between L Multiplex Terminals
	At receiving group bank,
2	Apply a 100-kHz test signal at -5.0 dBm to the GR CONN IN jack (LMX-2) ***or*** at -4.0 dBm to the GDF IN jack (LMX-3).
	At transmitting group bank,
3	Measure the 100-kHz signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack (LMX-3).

CHART 2 (Cont)

STEP	PROCEDURE

Note: This measurement is made for LMX-2 to check the continuity of the transmission path from the receiving group bank to the transmitting group bank. No adjustment is provided at the LMX-2 terminals. For an LMX-3 terminal, attenuators in the receiving patch unit and the transmitting patch unit are strapped at time of installation per Section 356-350-000.

Requirement: -42.0 dBm ±0.1 dB.

At B3 group connector bay,

4 Adjust the LEV ADJ control on the group connector under test to meet the requirement.

At transmitting group bank,

5 Remove the receiving test equipment.

At B3 group connector bay,

6 Measure the 100-kHz signal power at the TST jack on the front of the group connector.

Note: Nominal transmission level at the TST jack is -37.0 dBm.

7 Record the adjusted test signal power value on the front of the group connector.

Note: This ***adjusted*** test signal power value can be used for reference during in-service tests per Section 356-020-505.

8 Proceed to Step 27.

B. Group Connector Used in N3-to-L Transmission Path

Note: Test connections are shown in Fig. 5. The N3 carrier signals are transmitted 20 dB below transmission level. The N3 message signals are transmitted 8.5 dB below transmission level. The 104.08-kHz group pilot signal ***must*** be inserted at the transmitting LMX terminal in the N3-to-L transmission path.

At N3-to-L junction,

9 Withdraw the N3-to-L modulator far enough to remove from the plug in the shelf.

10 Apply a 100-kHz test signal at -13.5 dBm to terminals 5 and 12 on the plug for the N3-to-L modulator removed.

CHART 2 (Cont)

STEP	PROCEDURE

At transmitting group bank,

11 Measure the 100-kHz signal power at the GR CONN OUT ALT jack (LMX-2) ***or*** at the GDF OUT ALT jack (LMX-3).

Note: This measurement is made for LMX-2 to check the continuity of the transmission path from the N3-to-L junction to the transmitting group bank. No adjustment is provided at the LMX-2 terminal. For an LMX-3 terminal, attenuators in the transmitting patch unit are strapped at time of installation per Section 356-350-000.

Requirement: -50.5 dBm ±0.1 dB.

At B3 group connector bay,

12 Adjust the LEV ADJ control on the group connector under test to meet the requirement.

At transmitting group bank,

13 Remove the receiving test equipment.

At B3 group connector bay,

14 Measure the 100-kHz signal power at the TST jack on the front of the group connector.

Note: Nominal transmission level at the TST jack is -37.0 dBm, and nominal test signal power is -45.5 dBm.

15 Record the adjusted test signal power value on the front of the group connector.

Note: This ***adjusted*** test signal power value can be used for reference during in-service tests per Section 356-020-505.

At N3-to-L junction,

16 Remove the sending test equipment.

17 Insert the modulator into the plug in the shelf.

18 Proceed to Step 27.

C. Group Connector Used in L-to-N3 Transmission Path

Note: Test connections are shown in Fig. 6. The N3 carrier signals are transmitted 20 dB below transmission level. The N3 message signals are transmitted 8.5 dB below transmission level.

CHART 2 (Cont)

STEP	PROCEDURE

At receiving group bank,

19 Apply a 100-kHz test signal at -13.5 dBm to the appropriate GR CONN IN jack (LMX-2) ***or*** at -12.5 dBm to the GDF IN jack on the receiving patch unit in the group bank shelf (LMX-3).

At L-to-N3 junction,

20 Withdraw the L-to-N3 modulator far enough to remove from the plug in the shelf.

21 Measure the 100-kHz signal power at terminals 14 and 15 on the plug for the modulator removed.

Note: This measurement is made for LMX-2 to check the continuity of the transmission path to the L-to-N3 junction. No adjustment is provided at the LMX-2 terminal. For an LMX-3 terminal, attenuators in the receiving patch unit are strapped at time of installation per Section 356-350-000.

Requirement: -47.5 dBm ±0.1 dB.

22 Adjust the LEV ADJ control on the group connector under test to meet the requirement.

At L-to-N3 junction,

23 Remove the receiving test equipment.

24 Insert the modulator into the plug in the shelf.

At B3 group connector bay,

25 Measure the 100-kHz signal power at the TST jack on the front of the group connector.

Note: Nominal transmission level at the TST jack is -37.0 dBm, and nominal test signal power is -45.5 dBm.

26 Record the adjusted test signal power value on the front of the group connector.

Note: This ***adjusted*** test signal power value can be used for reference during in-service tests per Section 356-020-505.

27 Remove all test equipment.

Caution: Check that the locking bar is in place across the front of the group connector shelf. This bar prevents accidental removal of a group connector when the test cord is removed.