
RESTORATION TRUNKS FOR MMX-2C AND L4 CARRIER
TESTS
MULTIMASTERGROUP TRUNK ARRANGEMENTS
COMMON EQUIPMENT
ANALOG MULTIPLEX TERMINAL EQUIPMENT

Multimastergroup trunks (SD-50740) are provided in L4 main stations to interconnect L4 lines, MMX-2C terminal equipment, and restoration patch bays. Multimastergroup trunk jacks appear in the following bays located in an L4 main station: restoration patch, line transmitting, line receiving, control connecting, and MMX-2C terminal.

This section is reissued to add information on 269D amplifier troubles and to include reference to interbuilding trunks. Arrows are used to indicate significant changes. **Equipment Test Lists are not affected.**

A multimastergroup trunk bay ED-50846 mounts the panels that include the 269D amplifiers, cable equalizers, 544-kHz high-pass filters, 11.648-MHz band-elimination filters, preemphasis and de-emphasis networks, and pads for the multimastergroup trunk circuits. Each panel in the multimastergroup trunk bay is marked as to the L4 system, L4 line, or MMX-2C terminal to which the trunk is connected.

The tests in this section must be made with the restoration clear of service. Be sure the appropriate restoration switches are not operated.

The only adjustments required in the trunk circuits are the gain adjustments of the 269D amplifiers. The gain of each amplifier may be adjusted from the front of the restoration trunk bay.

Caution 1: Take care to locate the proper amplifier before making any gain adjustment.

Caution 2: The 269D amplifiers manufactured prior to December 15, 1969 had potentiometers wired so that counterclockwise operation increased the gain.

In case of trouble which indicates that individual equipment units of a trunk circuit being tested should be checked, refer to SD-50740. **Be sure to replace any plugs removed during testing.**

Note: When signal tracing to locate trouble, remember that the band is flat only at certain jacks as indicated in Fig. 1 through 9. The cable and/or cable equalizers cause slope across the band at other points in the trunks.

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

Charts 1 through 9 provide test procedures for individual trunks. Chart 10 provides a test procedure for the 269D amplifier as a separate unit. The trunks checked in Charts 1 through 6 *may* be associated, on a permanent basis, with zero-loss trunks. If this be the case, the associated zero-loss trunks should be checked in accordance with Chart 7 at the same time that the tests prescribed in Charts 1 through 6 are performed.

◆An interbuilding trunk (SD-50745-01) may be used with the trunks shown in Fig. 1 through 6, 8, and 9 in this section.◆

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APPARATUS:

The tests in this section require suitable transmission test 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, into 75-ohm circuits, signals between 500 kHz and 18 MHz at powers between -10 and -50 dBm.

Receiving test equipment capable of detecting, from 75-ohm circuits, signals between 500 kHz and 18 MHz at powers between -10 and -50 dBm.

CHART 1

TRANSMITTING RESTORATION TRUNK FOR REGULAR OR SPARE MMX-2

- | STEP | PROCEDURE |
|------|---|
| 1 | Remove the plug connecting the RSTN OUT and RSTN TRK IN jacks in the appropriate transmitting mastergroup bank in the MMX-2C terminal. |
| 2 | Terminate the RSTN OUT jack with a 75-ohm terminating plug. |
| 3 | Set up and calibrate the sending test equipment to produce a 564-kHz signal at -40 dBm. |
| 4 | Set up and calibrate the receiving test equipment for a 75-ohm measurement of 564 kHz at -29 dBm. |
| 5 | Make patches designated (1) and (2) in Fig. 1. |
| 6 | Measure and record the power at the MMX OUT (regular) or SP MMX OUT (spare) jack in the restoration patch bay. |
| | Requirement: -29.0 dBm \pm 0.5 dB. |
| 7 | Proceed with Step 11 if the requirement of Step 6 is met. Otherwise, adjust the gain of the appropriate 269D amplifier in the multimastergroup trunk bay. |
| | Note: Amplifier gain controls are designated CKT 1 ADJ through CKT 4 ADJ for the four trunk circuits in a J68877CA panel. |
| | Requirement: -29.0 dBm \pm 0.0 dB. |
| 8 | Proceed with Step 11 if the requirement of Step 7 is met. Otherwise, measure the gain of the 269D amplifier in accordance with Chart 10. |
| | Requirement: The amplifier gain shall be adjustable to 16.6 dB at 564 kHz. |
| 9 | Proceed with Step 10 if the requirement in Step 8 is met. Otherwise, replace the amplifier and repeat Steps 3 through 7, as required. |

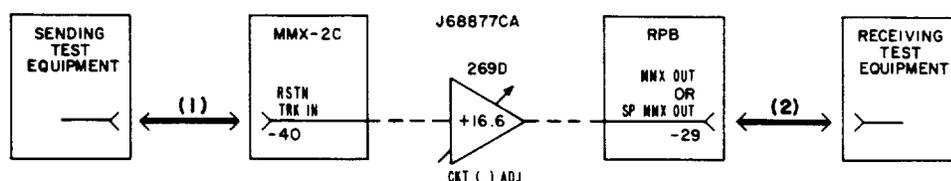


Fig. 1—Transmitting Restoration Trunk for Regular or Spare MMX-2

CHART 1 (Contd)

STEP	PROCEDURE
10	Continue signal tracing to locate the trouble and repeat Steps 3 through 7, as required. Note: Trouble exists in the trunk circuit external to the amplifier.
11	Repeat Steps 3 through 5 for a test signal of 17.548 MHz.
12	Measure the power at the MMX OUT or SP MMX OUT jack in the restoration patch bay. Requirement: -29 dBm \pm 1 dB.
13	Proceed with Step 14 if the requirement of Step 12 is met. Otherwise, adjust the gain of the 269D amplifier to obtain indications as close as possible to -29 dBm in Steps 6 and 12.
14	Remove all test equipment connected during testing.
15	Replace all plugs removed during testing.
16	Check that all front-panel indicators are normal at the restoration patch bay.

CHART 2**RECEIVING RESTORATION TRUNK FOR REGULAR OR SPARE MMX-2**

STEP	PROCEDURE
Caution: Before making this test, make certain the restoration is clear-of-service and the associated restoration switches are not operated.	
1	Remove the plug connecting the RSTN TRK OUT and RSTN SW IN jacks in the appropriate receiving mastergroup bank in the MMX-2C terminal.
2	Set up and calibrate the sending test equipment to produce a 564-kHz signal at -29 dBm.
3	Set up and calibrate the receiving test equipment for a 75-ohm measurement of 564-kHz at -23 dBm.
4	Make patches designated (1) and (2) in Fig. 2.
5	Measure and record the power at the RSTN TRK OUT jack in the MMX-2C terminal. Requirement: -23.1 dBm \pm 0.5 dB.

CHART 2 (Contd)

STEP	PROCEDURE
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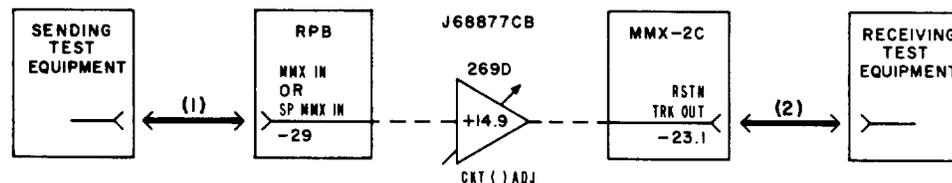


Fig. 2—Receiving Restoration Trunk for Regular or Spare MMX-2

- 6 Proceed with Step 10 if the requirement of Step 5 is met. Otherwise, adjust the gain of the appropriate 269D amplifier in the multimastergroup trunk bay.

Note: Amplifier gain controls are designated CKT 1 ADJ through CKT 4 ADJ for the four trunk circuits in a J68877CB panel.

Requirement: $-23.1 \text{ dBm} \pm 0.0 \text{ dB}$.

- 7 Proceed with Step 10 if the requirement of Step 6 is met. Otherwise, measure the gain of the 269D amplifier in accordance with Chart 10.

Requirement: The amplifier gain shall be adjustable to 14.9 dB at 564 kHz.

- 8 Proceed with Step 9 if the requirement of Step 7 is met. Otherwise, replace the amplifier and repeat Steps 2 through 6, as required.

- 9 Continue signal tracing to locate the trouble and repeat Steps 2 through 6, as required.

Note: Trouble exists in the trunk circuit external to the amplifier.

- 10 Repeat Steps 2 through 4 for a test signal of 17.548 MHz.

- 11 Measure the power at the RSTN TRK OUT jack in the MMX-2C terminal.

Requirement: $-23.1 \text{ dBm} \pm 1.0 \text{ dB}$.

- 12 Proceed with Step 13 if the requirement of Step 11 is met. Otherwise, adjust the gain of the 269D amplifier to obtain indications as close as possible to -23.1 dBm in Steps 5 and 11.

- 13 Remove all test equipment connected during testing.

- 14 Replace all plugs removed during testing.

CHART 2 (Contd)

STEP	PROCEDURE
15	Check that all front-panel indicators are normal at the restoration patch bay.

CHART 3
RESTORATION TRUNK IN FOR REGULAR L4 LINE

This trunk circuit connects the restoration patch bay to a line receiving bay for a regular L4 line or to a control connecting bay as shown in Fig. 3.

In the first case, the trunk appears on the LINE CONN IN jack in the restoration path bay and on the RSTN TRK OUT jack in the line receiving bay. A plug connects this RSTN TRK OUT jack to the adjacent RSTN IN jack.

In the second case, the trunk appears on the TERM SW IN jack in the restoration patch bay and on the RSTN OUT jack in the control connecting bay. A plug connects this RSTN OUT jack to the adjacent B jack of the 223C coaxial switch for an L4 receive line.

STEP	PROCEDURE
1	Remove the plug connecting the RSTN TRK OUT and RSTN IN jacks in the line receiving bay or the RSTN OUT and B jacks in the control connecting bay.
2	Set up and calibrate the sending test equipment to produce a 564-kHz signal at -29 dBm.
3	Set up and calibrate the receiving test equipment for a 75-ohm measurement at -22 dBm.
4	Make patches designated (1) and (2) in Fig. 3.
5	Measure and record the power at the RSTN TRK OUT jack (line receiving bay) or at the RSTN OUT jack (control connecting bay).
	Requirement: -22.0 dBm \pm 0.5 dB.
6	Proceed with Step 11 if the requirement of Step 5 is met. Otherwise, adjust the gain of the second 269D amplifier by means of the ADJ 2 or ADJ REG 2 control in the appropriate panel in the multimastergroup trunk bay.

Note: Amplifier gain controls are designated ADJ 1 and ADJ 2 for each of the two regular line trunk circuits in a J68877CC panel. A J68877CE panel includes a transmitting

CHART 3 (Contd)

STEP	PROCEDURE
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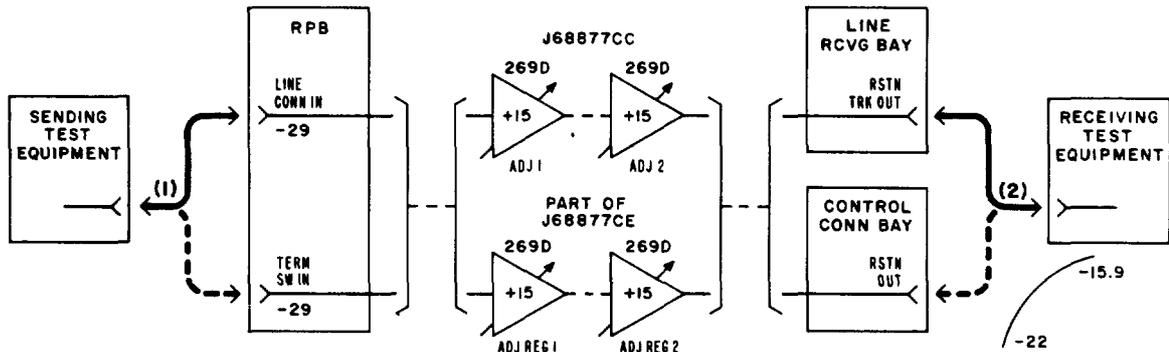


Fig. 3—Restoration Trunk In for Regular L4 Line

restoration trunk for one spare L4 line and for one regular L4 line. Amplifier gain controls are designated ADJ REG 1 and ADJ REG 2 for the regular line trunk circuit.

Requirement: $-22.0 \text{ dBm} \pm 0.0 \text{ dB}$.

- 7 Proceed with Step 11 if the requirement of Step 6 is met. Otherwise, adjust the gain of the first 269D amplifier by means of the ADJ 1 or ADJ REG 1 control.

Requirement: $-22.0 \text{ dBm} \pm 0.0 \text{ dB}$.

- 8 Proceed with Step 11 if the requirement of Step 7 is met. Otherwise, measure the gain of the two 269D amplifiers in the trunk circuit under test in accordance with Chart 10.

Requirement: The gain of each amplifier shall be adjustable to 15 dB at 564 kHz.

- 9 Proceed with Step 10 if the requirement of Step 8 is met. Otherwise, replace the defective amplifier and repeat Steps 2 through 7, as required.

- 10 Continue signal tracing to locate the trouble and repeat Steps 2 through 7, as required.

Note: Trouble exists in the trunk circuit external to the amplifiers.

- 11 Set up and calibrate the sending test equipment to produce a 17.548-MHz signal at -29 dBm.

- 12 Set up and calibrate the receiving test equipment for a 75-ohm measurement of 17.548 MHz at -15.9 dBm.

CHART 3 (Contd)

STEP	PROCEDURE
13	Make patches designated (1) and (2) in Fig. 3.
14	Measure and record the power at the RSTN TRK OUT jack (line receiving bay) or at the RSTN OUT jack (control connecting bay). Requirement: -15.9 dBm \pm 1.0 dB.
15	Proceed with Step 16 if the requirement of Step 14 is met. Otherwise, adjust the gain of the second 269D amplifier by means of the ADJ 2 or ADJ REG 2 control in the appropriate panel in the multimastergroup trunk bay to obtain indications as close as possible to nominal in Steps 5 and 14.
16	Remove all test equipment connected during testing.
17	Replace all plugs removed during testing.
18	Check that all front-panel indicators are normal at the restoration patch bays.

CHART 4

RESTORATION TRUNK OUT FOR REGULAR L4 LINE

STEP	PROCEDURE
1	Remove the plug connecting the OB jack of a transmit line 223B coaxial switch and the adjacent RSTN IN jack in the control connecting bay.
2	Terminate the OB jack with a 75-ohm terminating plug.
3	Set up and calibrate the sending test equipment to produce a 564-kHz signal at -49.5 dBm.
4	Set up and calibrate the receiving test equipment for a 75-ohm measurement of 564 kHz at -29 dBm.
5	Make patches designated (1) and (2) in Fig. 4.
6	Measure and record the power at the LINE CONN OUT jack in the restoration patch bay. Requirement: -29.0 dBm \pm 0.5 dB.

CHART 4 (Contd)

STEP	PROCEDURE
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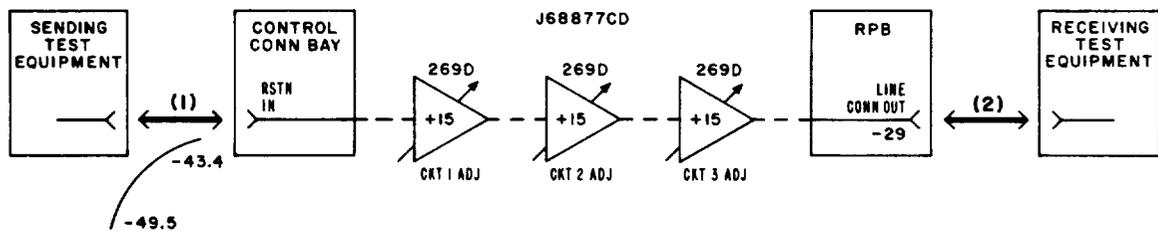


Fig. 4—Restoration Trunk Out of Regular L4 Line

- 7 Proceed with Step 12 if the requirement of Step 6 is met. Otherwise, adjust the gain of the third 269D amplifier by means of the CKT 3 ADJ control in the appropriate panel in the multimastergroup trunk bay.

Note: Amplifier gain controls are designated CKT 1 ADJ through CKT 3 ADJ for the three amplifiers in the trunk circuit in a J68877CD panel.

Requirement: $-29.0 \text{ dBm} \pm 0.0 \text{ dB}$.

- 8 Proceed with Step 12 if the requirement of Step 7 is met. Otherwise, adjust the gain of the second and first 269D amplifiers, in turn.

Requirement: $-29.0 \text{ dBm} \pm 0.0 \text{ dB}$.

- 9 Proceed with Step 12 if the requirement of Step 8 is met. Otherwise, measure the gain of the three 269D amplifiers in the trunk circuit under test in accordance with Chart 10.

Requirement: The gain of each amplifier shall be adjustable to 15 dB at 564 kHz.

- 10 Proceed with Step 11 if the requirement of Step 9 is met. Otherwise, replace the defective amplifier and repeat Steps 3 through 8, as required.

- 11 Continue signal tracing to locate the trouble and repeat Steps 3 through 8, as required.

Note: Trouble exists in the trunk circuit external to the amplifiers.

- 12 Set up and calibrate the sending test equipment to produce a 17.548-MHz signal at -43.4 dBm .

- 13 Set up and calibrate the receiving test equipment for a 75-ohm measurement of 17.548 MHz at -29 dBm .

CHART 4 (Contd)

STEP	PROCEDURE
14	Make patches designated (1) and (2) in Fig. 4.
15	Measure and record the power at the LINE CONN OUT jack in the restoration patch bay. Requirement: -29 dBm \pm 1 dB.
16	Proceed with Step 17 if the requirement of Step 15 is met. Otherwise, adjust the gain of the first 269D amplifier by means of the CKT 1 ADJ control to obtain indications as close as possible to -29 dBm in Steps 6 and 15. Note: Steps 17 through 20 provide checks of the filters included in the trunk circuit to block L4 line pilot signals.
17	Apply a 512-kHz \pm 10 Hz test signal of -20 dBm at the RSTN IN jack in the control connecting bay. Requirement: Less than -60 dBm (-61 dBm is less than -60 dBm).
18	Proceed with Step 19 if the requirement of Step 17 is met. Otherwise, check the 544-kHz high-pass filter in the multimastergroup trunk bay and then repeat Step 17. Note: The 758B filter offers a loss of at least 70 dB at 512 kHz.
19	Repeat Step 17 for a test signal of 11.648 MHz \pm 200 Hz. Requirement: Less than -60 dBm.
20	Proceed with Step 21 if the requirement of Step 19 is met. Otherwise, check the 11.648-MHz band-elimination filter and then repeat Step 19. Note: The 792A filter offers a loss of at least 60 dB at 11.648 MHz.
21	Remove all test equipment connected during testing.
22	Replace all plugs removed during testing.
23	Check that all front-panel indicators are normal at the restoration patch bay.

CHART 5

TRANSMITTING RESTORATION TRUNK FOR SPARE L4 LINE

STEP	PROCEDURE
1	Remove the plug connecting the RSTN TRK OUT and RSTN SIG IN jacks in the line transmitting bay for a spare L4 line.
2	Set up and calibrate the sending test equipment to produce a 564-kHz signal at -29 dBm.
3	Set up and calibrate the receiving test equipment for a 75-ohm measurement at -43 dBm.
4	Make patches designated (1) and (2) in Fig. 5.
5	Measure and record the power at the RSTN TRK OUT jack in the line transmitting bay for the spare L4 line. Requirement: -43.1 dBm \pm 0.5 dB.
6	Proceed with Step 10 if the requirement of Step 5 is met. Otherwise, adjust the gain of the 269D amplifier in the multimastergroup trunk bay. Note: The amplifier gain control is designated ADJ SP for the spare line trunk in a J68877CE panel. Requirement: -43.1 dBm \pm 0.0 dB.
7	Proceed with Step 10 if the requirement of Step 6 is met. Otherwise, measure the gain of the 269D amplifier in accordance with Chart 10. Requirement: The amplifier gain shall be adjustable to 15.1 dB at 564 kHz.
8	Proceed with Step 9 if the requirement of Step 7 is met. Otherwise, replace the amplifier and repeat Steps 2 through 6, as required.
9	Continue signal tracing to locate the trouble and repeat Steps 2 through 6, as required.

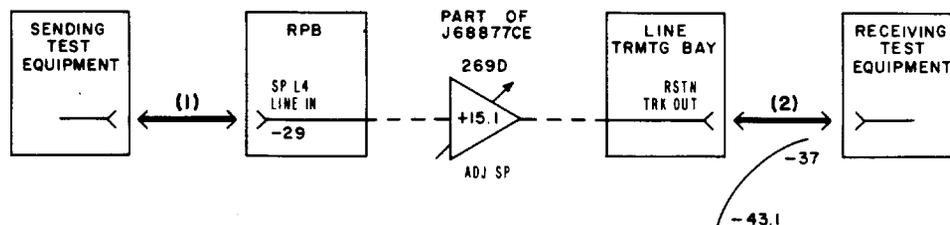


Fig. 5—Transmitting Restoration Trunk for Spare L4 Line

CHART 5 (Contd)

STEP	PROCEDURE
	<i>Note:</i> Trouble exists in the trunk circuit external to the amplifier.
10	Repeat Steps 2 through 4 for a test signal of 17.548 MHz.
11	Measure the power at the RSTN TRK OUT jack in the line transmitting bay.
	<i>Requirement:</i> -37 dBm \pm 1 dB.
12	Proceed with Step 13 if the requirement of Step 11 is met. Otherwise, adjust the gain of the 269D amplifier to obtain indications as close as possible to nominal in Steps 5 and 11.
13	Remove all test equipment connected during testing.
14	Replace all plugs removed during testing.
15	Check that all front-panel indicators are normal at the restoration patch bay.

CHART 6

RECEIVING RESTORATION TRUNK FOR SPARE L4 LINE

STEP	PROCEDURE
1	Remove the plug connecting the RSTN SIG OUT and RSTN TRK IN jacks in the line receiving bay for the spare L4 line.
2	Set up and calibrate the sending test equipment to produce a 564-kHz signal at -27.2 dBm.
3	Set up and calibrate the receiving test equipment for a 75-ohm measurement of the test signal at -29 dBm.
4	Make patches designated (1) and (2) in Fig. 6.
5	Measure and record the power at the SP L4 LINE OUT jack in the restoration patch bay.
	<i>Requirement:</i> -29.0 dBm \pm 0.5 dB.
6	Proceed with Step 10 if the requirement of Step 5 is met. Otherwise, adjust the gain of the 269D amplifier in the multimastergroup trunk bay.

CHART 6 (Contd)

STEP

PROCEDURE

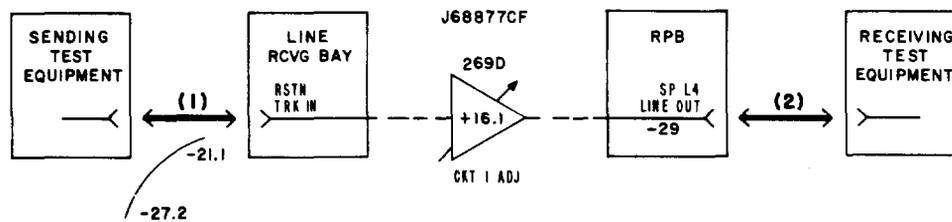


Fig. 6—Receiving Restoration Trunk for Spare L4 Line

Note: The amplifier gain control is designated CKT 1 ADJ for the trunk circuit in a J68877CF panel.

Requirement: -29.0 dBm \pm 0.0 dB.

- 7 Proceed with Step 10 if the requirement of Step 6 is met. Otherwise, measure the gain of the 269D amplifier in accordance with Chart 10.

Requirement: The amplifier gain shall be adjustable to 16.1 dB at 564 kHz.

- 8 Proceed with Step 9 if the requirement of Step 7 is met. Otherwise, replace the amplifier and repeat Steps 2 through 6, as required.

- 9 Continue signal tracing to locate the trouble and repeat Steps 2 through 6, as required.

Note: Trouble exists in the trunk circuit external to the amplifier.

- 10 Set up and calibrate the sending test equipment to produce a 17.548-MHz signal at -21.1 dBm.

- 11 Repeat Steps 3 and 4 for a test signal of 17.548 MHz.

- 12 Measure the power at the SP L4 LINE OUT jack in the restoration patch bay.

Requirement: -29 dBm \pm 1 dB.

- 13 Proceed with Step 14 if the requirement of Step 12 is met. Otherwise, adjust the gain of the 269D amplifier to obtain indications as close as possible to -29 dBm in Steps 5 and 12.

Note: Steps 14 through 17 provide checks of the filters included in the trunk circuit to block L4 line pilot signals.

CHART 6 (Contd)

STEP	PROCEDURE
14	Apply a 512-kHz ± 10 Hz test signal of -20 dBm at the RSTN TRK IN jack in the line receiving bay. Requirement: Less than -60 dBm (-61 dBm is less than -60 dBm).
15	Proceed with Step 16 if the requirement of Step 14 is met. Otherwise, check the 554-kHz high-pass filter in the multimastergroup trunk bay and then repeat Step 14. Note: The 758B filter offers a loss of at least 70 dB at 512 kHz.
16	Repeat Step 14 for a test signal of 11.648 MHz ± 200 Hz. Requirement: Less than -60 dBm.
17	Proceed with Step 18 if the requirement of Step 16 is met. Otherwise, check the 11.648-MHz band-elimination filter and then repeat Step 16. Note: The 792A filter offers a loss of at least 60 dB at 11.648 MHz.
18	Remove all test equipment connected during testing.
19	Replace all plugs removed during testing.
20	Check that all front-panel indicators are normal at the restoration patch bay.

CHART 7
ZERO-LOSS TRUNK

STEP	PROCEDURE
1	Set up and calibrate the sending test equipment to produce a 564-kHz signal at -29 dBm.
2	Set up and calibrate the receiving test equipment for a 75-ohm measurement of 564 kHz at -29 dBm.
3	Make patches designed (1) and (2) in Fig. 7. Note: The TRK IN and TRK OUT jacks of a zero-loss trunk circuit may be in different restoration patch bays.
4	Measure and record the power at the TRK OUT jack.

CHART 7 (Contd)

STEP	PROCEDURE
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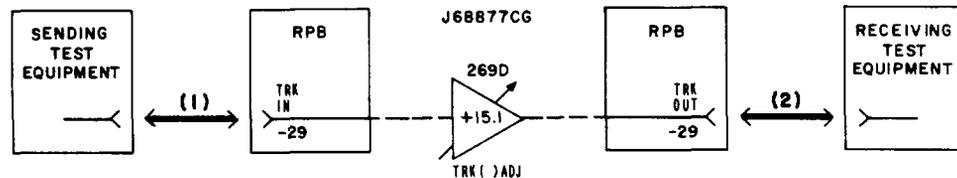


Fig. 7—Zero-Loss Trunk

Requirement: -29.0 dBm \pm 0.5 dB.

- 5 Proceed with Step 9 if the requirement of Step 4 is met. Otherwise, adjust the gain of the 269D amplifier in the multimastergroup trunk bay.

Note: Amplifier gain controls are designated TRK () ADJ for each of the three trunk circuits in a J68877CG panel.

Requirement: -29.0 dBm \pm 0.0 dB.

- 6 Proceed with Step 9 if the requirement of Step 5 is met. Otherwise, measure the gain of the 269D amplifier in accordance with Chart 10.

Requirement: The amplifier gain shall be adjustable to 15.1 dB at 564 kHz.

- 7 Proceed with Step 8 if the requirement of Step 6 is met. Otherwise, replace the amplifier and repeat Steps 1 through 5, as required.

- 8 Continue signal tracing to locate the trouble and repeat Steps 1 through 5, as required.

Note: Trouble exists in the trunk circuit external to the amplifier.

- 9 Repeat Steps 1 through 3 for a test signal of 17.548 MHz.

- 10 Measure the power at the TRK OUT jack in the restoration patch bay.

Requirement: -29 dBm \pm 1 dB.

- 11 Proceed with Step 12 if the requirement of Step 10 is met. Otherwise, adjust the gain of the 269D amplifier to obtain indications as close as possible to -29 dBm in Steps 4 and 10.

- 12 Remove all test equipment connected during testing.

CHART 7 (Contd)

STEP	PROCEDURE
13	Check that all front-panel indicators are normal at the restoration patch bays.

CHART 8

RECEIVING TEST LINE OUT TRUNK FOR MMX-2

STEP	PROCEDURE
<p>Note: This trunk circuit is provided for the three regular mastergroup banks but is not provided for the spare receiving mastergroup bank of an MMX-2C terminal.</p>	
1	Remove the plug connecting the OA jack of the coaxial switch and the adjacent TST TRK IN jack in the receiving bay of an MMX-2C terminal.
2	Set up and calibrate the sending test equipment to produce a 564-kHz signal at -23.1 dBm.
3	Set up and calibrate the receiving test equipment for a 75-ohm measurement of 564 kHz at -29 dBm.
4	Make patches designated (1) and (2) in Fig. 8.
5	Measure and record the power at the appropriate TST LINE OUT jack in the restoration patch bay.

Requirement: If trunk cable length is *less* than 312 feet: $-29.0 \text{ dBm} \pm 0.3 \text{ dB}$.
If trunk cable length is *more* than 312 feet: $-29.0 \text{ dBm} \pm 0.9 \text{ dB}$.

- 6 Proceed with Step 7 if the requirement of Step 5 is met. Otherwise, check the cable equalizers in the trunk circuit. Continue signal tracing to locate the trouble and repeat Steps 2 through 5.

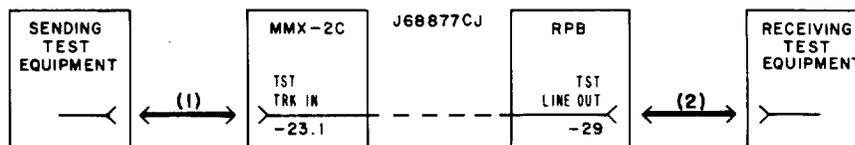


Fig. 8—Receiving Test Line Out Trunk for MMX-2

CHART 8 (Contd)

STEP	PROCEDURE
7	Proceed with Step 8 if trunk cable length is <i>less</i> than 312 feet. Proceed with Step 10 if trunk cable length is <i>more</i> than 312 feet.
8	Apply a test signal of 17.548 MHz at -23.1 dBm at the TST TRK IN jack in the MMX-2C terminal. Requirement: -29 dBm \pm 1 dB.
9	Proceed with Step 10 if the requirement of Step 8 is met. Otherwise, continue signal tracing to locate the trouble and repeat Step 8.
10	Remove all test equipment connected during testing.
11	Replace all plugs removed during testing.
12	Check that all front-panel indicators are normal at the restoration patch bay.

CHART 9**RECEIVING TEST LINE OUT TRUNK FOR L4**

STEP	PROCEDURE
1	Remove the plug connecting the OA jack of a 223C receiving line termination coaxial switch and the adjacent TST TRK IN jack in the control connecting bay.
2	Set up and calibrate the sending test equipment to produce 564-kHz signal at -20.9 dBm.
3	Set up and calibrate the receiving test equipment for a 75-ohm measurement of 564 kHz at -29 dBm.
4	Make patches designated (1) and (2) in Fig. 9.
5	Measure and record the power at the appropriate TST LINE OUT jack in the restoration patch bay. Requirement: -29.0 dBm \pm 0.3 dB.
6	Proceed with Step 8 if the requirement of Step 5 is met. Otherwise, check the cable equalizers and de-emphasis network in the trunk circuit and continue signal tracing to locate the trouble.

CHART 9 (Contd)

STEP	PROCEDURE
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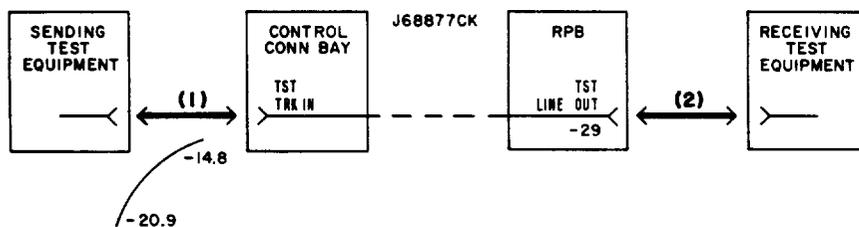


Fig. 9—Receiving Test Line Out Trunk for L4

- 7 Repeat Steps 2 through 5.
- 8 Apply a test signal of 17.548 MHz at -14.8 dBm at the TST TRK IN jack in the control connecting bay.
Requirement: -29 dBm \pm 1 dB.
- 9 Proceed with Step 10 if the requirement of Step 8 is met. Otherwise, continue signal tracing to locate the trouble and repeat Step 8.
- 10 Remove all test equipment connected during testing.
- 11 Replace all plugs removed during testing.
- 12 Check that all front-panel indicators are normal at the restoration patch bay.

CHART 10

MEASURING GAIN OF 269D AMPLIFIER

STEP	PROCEDURE
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- 1 Locate the panel containing the amplifier to be tested.

◆**Note:** The 269D amplifiers in the restoration trunks can be a source of trouble if any of the following conditions exists.

- (a) Using a 269D amplifier manufactured before November 1972.

CHART 10 (Contd)

STEP

PROCEDURE

(b) Applying reversed input voltage polarity to the RTN and -25 terminals (Fig. 10) for a period of time.

(c) Operating the amplifier with an input voltage greater than -26.5 volts.

Damaged 269D amplifiers which are drawing excessive current can be located by touching the front panels to determine which amplifiers are producing excessive heat.⚡

- 2 Remove the four screws holding this panel in the multimastergroup trunk bay.
- 3 Remove the connectors at the sides of the panel, if required, to permit withdrawal of the panel.
- 4 Carefully withdraw the panel far enough so that the connectors on the amplifier can be reached. (See Fig. 10).
- 5 Remove the connectors from the amplifier input and output jacks.

Note: Take care not to short the power input terminals on the amplifier.

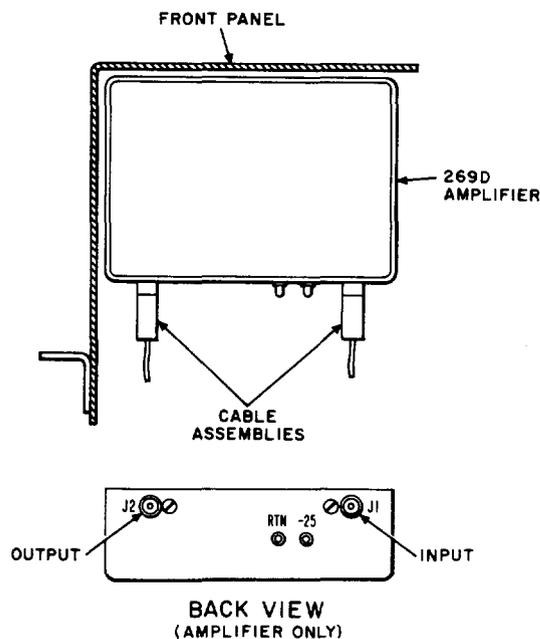


Fig. 10—Connections to 269D Amplifier

CHART 10 (Contd)

STEP	PROCEDURE
6	Set up and calibrate the sending test equipment to produce a 564-kHz signal at -30 dBm.
7	Set up and calibrate the receiving test equipment for a 75-ohm measurement of 564 kHz at approximately -15 dBm.
8	Connect the sending test equipment to amplifier input jack J1.
9	Connect the receiving test equipment to amplifier output jack J2.
10	Measure and, if necessary, adjust the amplifier gain to the proper value for the amplifier under test.
11	Record the amplifier gain at 564 kHz.
12	Repeat Steps 6 through 9 for a test signal of 17.548 MHz.
	Requirement: Amplifier gain at 17.548 MHz shall be within ± 0.5 dB of gain at 564 kHz recorded in Step 11.
	Note: Replace the amplifier and repeat this test procedure if the requirement is not met.
13	Remove the test equipment connections.
14	Replace the connectors on the amplifier jacks.
15	Replace the four screws and replace any connectors removed from the sides of the trunk circuit panel.