L MULTIPLEX TERMINALS

COMMON EQUIPMENT

SUPERGROUP CONNECTOR

C1-TYPE—OUT-OF-SERVICE TESTS

PURPOSE OF TESTS

(a) To verify that the C1 supergroup connector meets its passband requirements.

(b) To adjust the loss equalizer, if used.

(c) To measure and, if necessary, adjust the gain of the C1 supergroup connector.

REASON FOR REISSUE

To change the method of adjusting the C1 supergroup connector. Arrows are used to indicate significant changes. *Equipment Test Lists are not affected.*

SYNOPSIS

The C1 supergroup connector (Fig. 1) is used to connect the output of a supergroup demodulator to the input of a supergroup modulator for retransmission of an entire 60-channel supergroup without further steps of frequency translation. High-pass and low-pass filters are used to eliminate frequencies outside the 312- to 552-kHz supergroup frequency band.

The supergroup connector has a nominal gain of 3 dB which can be adjusted by the GAIN control on the supergroup amplifier. An option is provided for inserting a 929A loss equalizer (Fig. 2).

There are two types of the C1 supergroup connector, J68799E and J68799F, commonly referred to as Series E and Series F. Series F has sufficient space for mounting the 929A loss equalizer; Series E requires an additional supporting panel.

Heretofore, distortion introduced by supergroup bandpass filters in the preceding LMX transmitting and receiving circuits precluded more than two supergroup connectors from being placed in tandem. Significant differences in pilot levels could accumulate. With the 929A loss equalizer option, up to four supergroup connectors may be placed in tandem. The 929A unit equalizes the five translated group pilot points within the basic supergroup band.

▶METHOD OF TESTING

First, the passband of the supergroup connector is tested, then the loss equalizer (if used) is adjusted, and finally, the overall gain of the supergroup connector is adjusted.◀
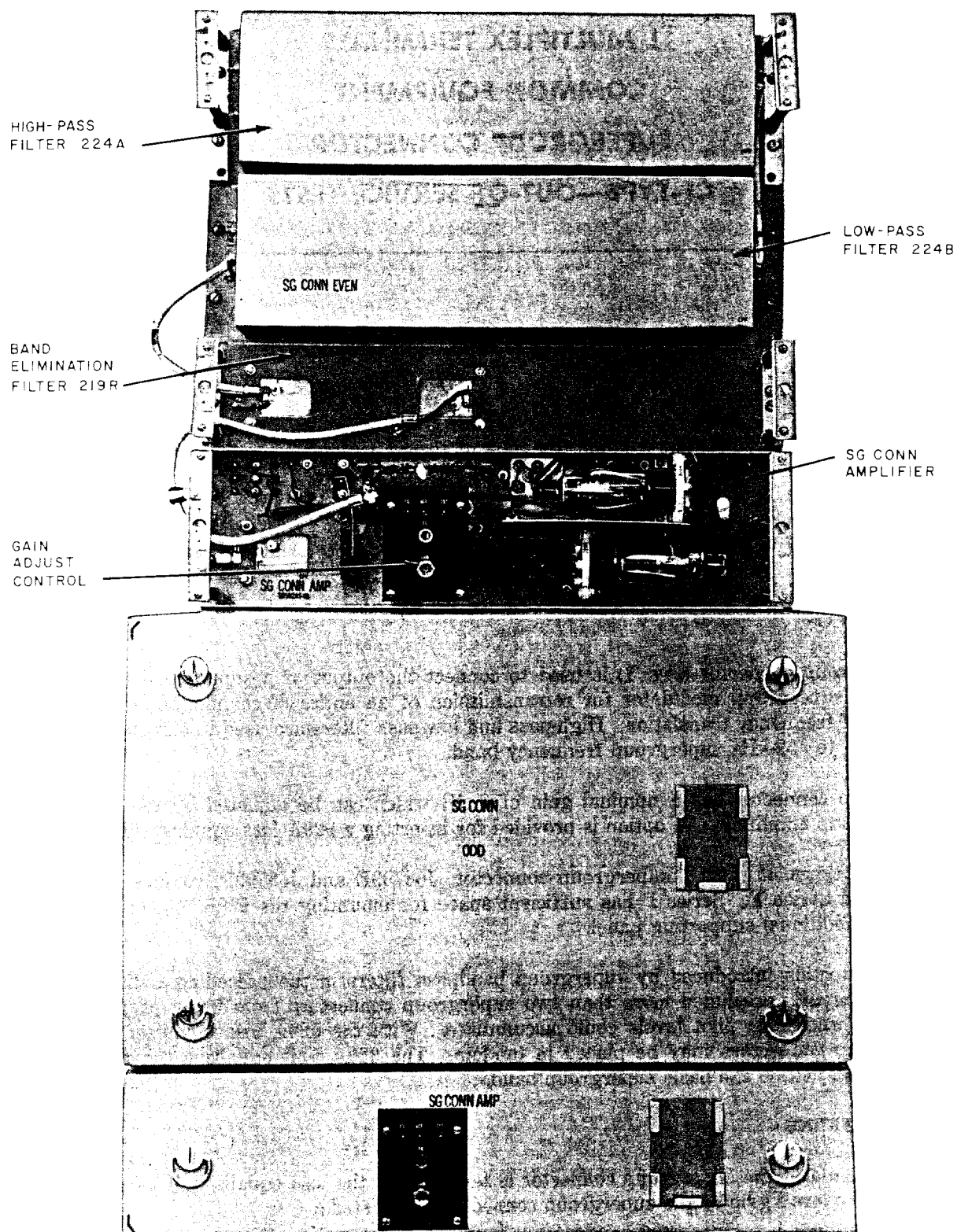
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HIGH-PASS
FILTER 224A

LOW-PASS
FILTER 224B

SG CONN EVEN

BAND
ELIMINATION
FILTER 219R

SG CONN
AMPLIFIER

GAIN
ADJUST
CONTROL

SG CONN AMP

ODD

SG CONN AMP

Fig. 1—J68799F C1 Universal Supergroup Connector

APPARATUS

Sending Test Equipment (STE) (Section 356-010-500):

Frequency: 315 to 550 kHz

Power: −28 dBm

Impedance: 75 ohms, unbalanced

Receiving Test Equipment (RTE) (Section 356-010-500):

Frequency: 315 to 550 kHz

Power: −25 to −45 dBm

Impedance: 75 ohms, unbalanced

P2BJ Cords (for 75-ohm patches)

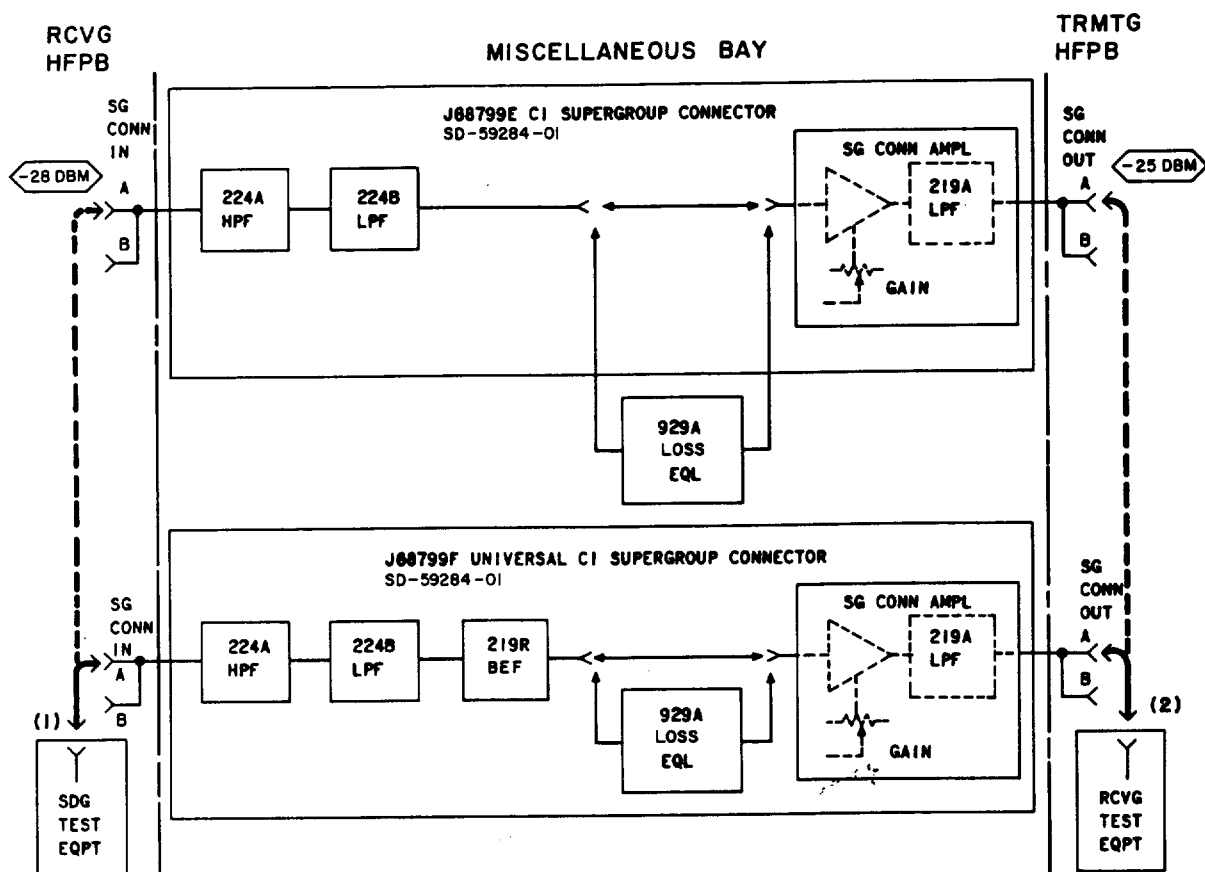| STEP	PROCEDURE
	At the supergroup connector office:
1	Ensure that the equipment to be tested is out of service.
2	If a 929A loss equalizer is used, set the HIGH and LOW controls to the 0 position.
	BANDPASS TEST
3	Adjust the RTE as follows: Impedance: 75 ohms, unbalanced Frequency: 315.92 kHz Power: −25 dBm.
4	Adjust the STE as follows: Impedance: 75 ohms, unbalanced Frequency: 315.92 kHz Power: −28 dBm.
5	Connect the STE to the SG CONN IN A jack [patch (1), Fig. 2].
6	Connect the RTE to the SG CONN OUT A jack [patch (2), Fig. 2].
7	Measure and record the power at the SG CONN OUT A jack. *Requirement:* −25 dBm ±0.2 dB

Fig. 2—◆C1 Supergroup Connector—J68799E and F—Patching Diagram◀

STEP	PROCEDURE
8	If the requirement of Step 7 is *not* met, adjust the GAIN control on the SG CONN AMPL panel to meet the requirement.
9	If the requirement of Step 8 *cannot* be met,
	(a) Locate and repair the trouble.
	(b) Repeat Step 7.
10	Adjust the RTE frequency to 433 kHz.
11	Adjust the STE to deliver 433 kHz at −28 dBm.
12	Measure the power at the SG CONN OUT A jack.
	Requirement: Within +0.3 to −1.3 dB of the value recorded in Step 7 for 315.92 kHz

STEP	PROCEDURE
13	Repeat Steps 10 through 12 at a frequency of 549 kHz. *Requirement:* Within +0.6 to −1.0 dB of the value recorded in Step 7 for 315.92 kHz.

14	▶If the requirements of Steps 12 and 13 are *not* met,
	
	  (a) Locate and repair the trouble.
	
	  (b) Repeat Steps 3 through 13.
	
	LOSS EQUALIZER ADJUSTMENT

15	If a 929A loss equalizer is used, adjust the LOW and HIGH controls on the unit to the position determined by the number of the supergroup to be applied at the SG CONN IN A jack (Table A). If the loss equalizer is not used, perform Steps 16, 25, and 26. **TABLE A** **929A EQUALIZER — NOMINAL SETTINGS**

SUPERGROUP NO.		1	2 OR 12	3 OR 13	4 OR 14	5 OR 15	6 OR 16	7 OR 17	8 OR 18	9	10	25	26	27	28
929A EQL SETTINGS	LOW	2	1	0	1	3	4	4	6	7	8	6	4	4	4
	HIGH	9	3	5	4	5	7	7	7	7	8	7	9	9	9

STEP	PROCEDURE
16	Remove patch (1), Fig. 2.
17	Connect the SG CONN IN A jack to the SG DEM OUT A jack. *At the originating office:*
18	Measure and record the power at the GR BK OUT B jack for the Group-1, -3, and -5 pilots (315.92, 411.92, and 507.92 kHz, respectively) associated with the supergroup connector under test. *At the supergroup connector office:*
19	Measure and record the power at the SG CONN OUT A jack for the Group-1, -3, and -5 pilots. *Requirement:* The spread between pilot power for Groups 1, 3, and 5, is within 0.2 dB of that measured in Step 18.

STEP	PROCEDURE
20	If the requirement of Step 19 is *not* met, adjust the 929A loss equalizer LOW and HIGH controls to meet the requirement. *Note:* The LOW and HIGH controls provide approximately 0.2-dB variation per switch position at the Group-1 and Group-5 pilot frequencies, respectively. **GAIN ADJUSTMENT**
21	Check the incoming supergroup pilot (Group 1) with the multiplex measuring set. *Requirement:* 0 $\pm$0.05 dB (-48 $\pm$0.05 dBm)
22	If the requirement of Step 21 is *not* met, adjust the SG OUTPUT control on the associated receiving supergroup regulated amplifier to meet the requirement.
23	Measure the Group-1 pilot power (315.92 kHz) at the SG CONN OUT A jack. *Requirement:* -45 $\pm$0.2 dBm
24	If the requirement of Step 23 is *not* met, adjust the GAIN control on the SG CONN AMPL panel to meet the requirement.
25	Remove patch (2), Fig. 2.
26	Restore service to normal.
27	Tag the adjusted supergroup connector (noting the 929A loss equalizer LOW and HIGH control settings, etc.) as required locally.◀