B3 GROUP CONNECTOR

DESCRIPTION

COMMON EQUIPMENT

ANALOG MULTIPLEX TERMINAL EQUIPMENT

CONTENTS PAGE

1. INTRODUCTION

1.01 A group connector is a one-way circuit used to connect the output of an L multiplex group demodulator to the input of an L multiplex group modulator. It enables the retransmission of an entire group (12 channels between 60 and 108 kHz) without using additional multiplex equipment. Without a connector, each channel in the group would have to be translated to voice frequency before retransmission could be effected. Three generations of L multiplex group connectors are available. This section describes the B3 group connector. Information on earlier designs, designated B1 and B2, can be found in other sections of the 356-020 series of practices.

1.02 This section is reissued to add information on use of the B3 connectors with N3/L junctions, and to delete the references. Arrows are used to indicate significant changes.

1.03 The B3 group connector is designed for general application with the L-type multiplex equipment and can be used with all vintages of LMX equipment. The connector is passive and the basic form provides filtering to remove signals outside the basic group band (60 through 108 kHz) and level control to deliver a signal to the group modulator at the proper transmission level. The B3 connector can also be equipped with delay equalization for special services and band-elimination filtering for group pilot blocking. The connector is coded as apparatus and is available in three configurations:

- 4252A—The basic B3 connector without pilot blocking or delay equalization
- 4252B—Basic B3 connector with pilot blocking
- 4252C—Basic B3 connector with delay equalization.

In each configuration the components are assembled in a single plug-in unit (Fig. 1), which can be inserted into a connector shelf designed for its use.

2. CIRCUIT DESCRIPTION

2.01 The three configurations of the B3 group connector are shown in simplified schematic form in Fig. 2. The 74A pad at the input provides impedance matching and an adjustable pad with an approximate range of 0 through 4.5 dB. The adjustable pad compensates for the loss of both the input and the output cables. The 75A pad at the output of each configuration provides impedance matching and a hybrid-derived test jack that can be used on an in-service basis without affecting transmission.

2.02 In the 4252A connector the output of the 74A pad is applied to an 1105A bandpass filter and a pad. The bandpass filter passes the basic group band, 60 through 108 kHz, and provides the required out-of-band attenuation. The pad provides 2 dB of loss, equal to the loss of the delay equalizer used in the 4252C connector, and thus enables the overall loss to be the same in all three configurations. The insertion loss of the bandpass filter is shown in Fig. 3.

2.03 The 4252B connector is used where pilot blocking is required and, except for the filter, is the same as the 4252A. The output of the 74A pad is applied first to the band-elimination section and then to the bandpass section of an 1105B filter unit. The band-elimination section rejects the 104.08-kHz pilot frequency by more than 50 dB, yet has a flat loss of only 0.4 dB over the rest of the group band.

2.04 Delay equalization is required in the connector when wideband data is to be transmitted because data signals are impaired by delay distortion. The 4252C connector has a 976A equalizer following the bandpass filter. The equalizer has a flat loss of 2 dB.

3. EQUIPMENT DESCRIPTION

3.01 All codes of B3 group connectors are 6 inches high, 2.5 inches wide, and 17 inches long. The 4252A and 4252B connectors each weigh approximately 6 pounds. The 4252C connector, which contains the delay equalizer, weighs approximately 9 pounds.

3.02 The B3 connectors are plug-in units and mount into shelves designed for their use. The shelves, which contain positions for up to eight group connectors, are designed for use in a B3A group connector bay J68941L. This bay, provided specifically for B3 connectors, is 7 feet high and 23 inches wide. It can be equipped with 12 connector shelves and has a capacity of 96 one-way group connectors. It also has provision for an optional miscellaneous jack mounting. The bay has no shop wiring; all connections are made via blue ribbon connectors at the rear of the group connector shelves. Cabling from the blue ribbon connectors to the group distribution frame is done when the shelf is installed.

4. OTHER CONSIDERATIONS

4.01 Group pilot blocking in the group connector is a departure from previous equipment arrangements. LMX-1 and LMX-2 terminals provide space for this option in every transmitting group; LMX-3 terminals do not. There are several reasons for the change. Group pilot blocking is not required when the received LMX group connects to channel bank equipment. Pilot blocking for group 1 is used at a group connector point on a selective basis when sectionalization of supergroups is required. The group 1 pilot becomes the supergroup pilot for the next supergroup section; blocking and reinserting the pilot prevents a previous group failure from affecting the following supergroup section. Because of such limited use, significant space and cost savings are achieved by providing the blocking function in the group connector only when needed, rather than requiring plug-in space and wiring in every LMX transmitting group.

4.02 The pilot blocking filter in the 4252B network has a notch in the filter that also attenuates adjacent 104-kHz carrier signals about 6 dB. Since N3 carrier systems use a 104-kHz carrier, B3 connectors equipped with the 4252B network should not be used to interconnect LMX terminals and N3/L junction equipment.

4.03 The 4252C network is used when wideband data is transmitted. This network provides delay equalization but does not provide pilot blocking because data is not transmitted in group 1. Group 1 has excessive delay distortion and cannot be used for data transmission.

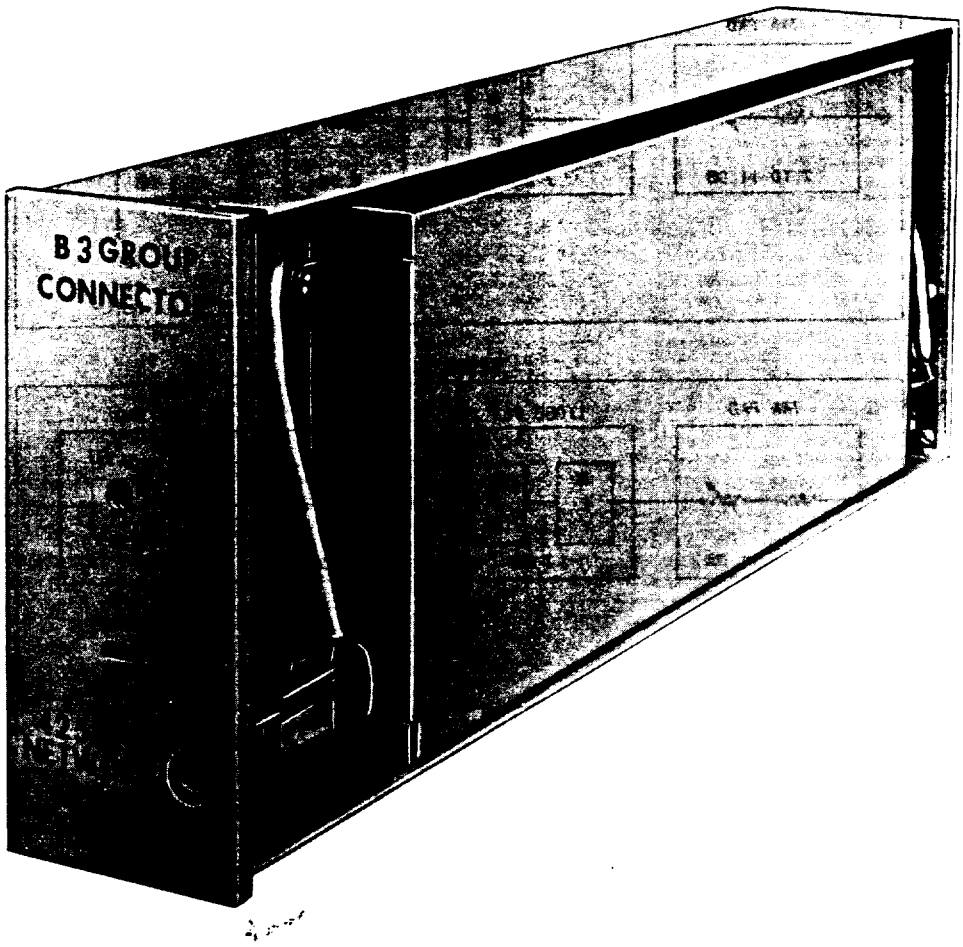

Fig. 1—B3 Group Connector

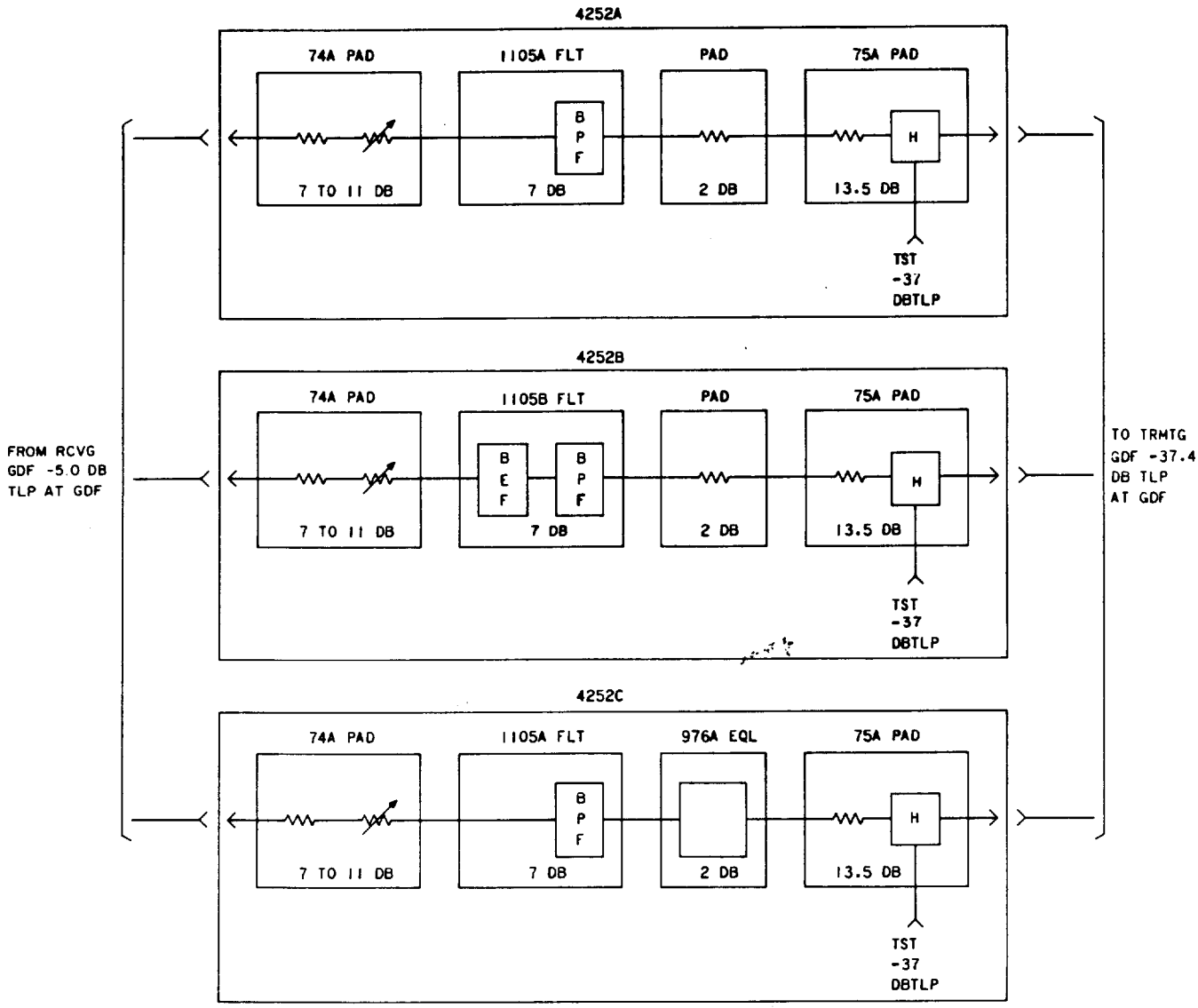

Fig. 2—B3 Group Connector, Simplified Schematic

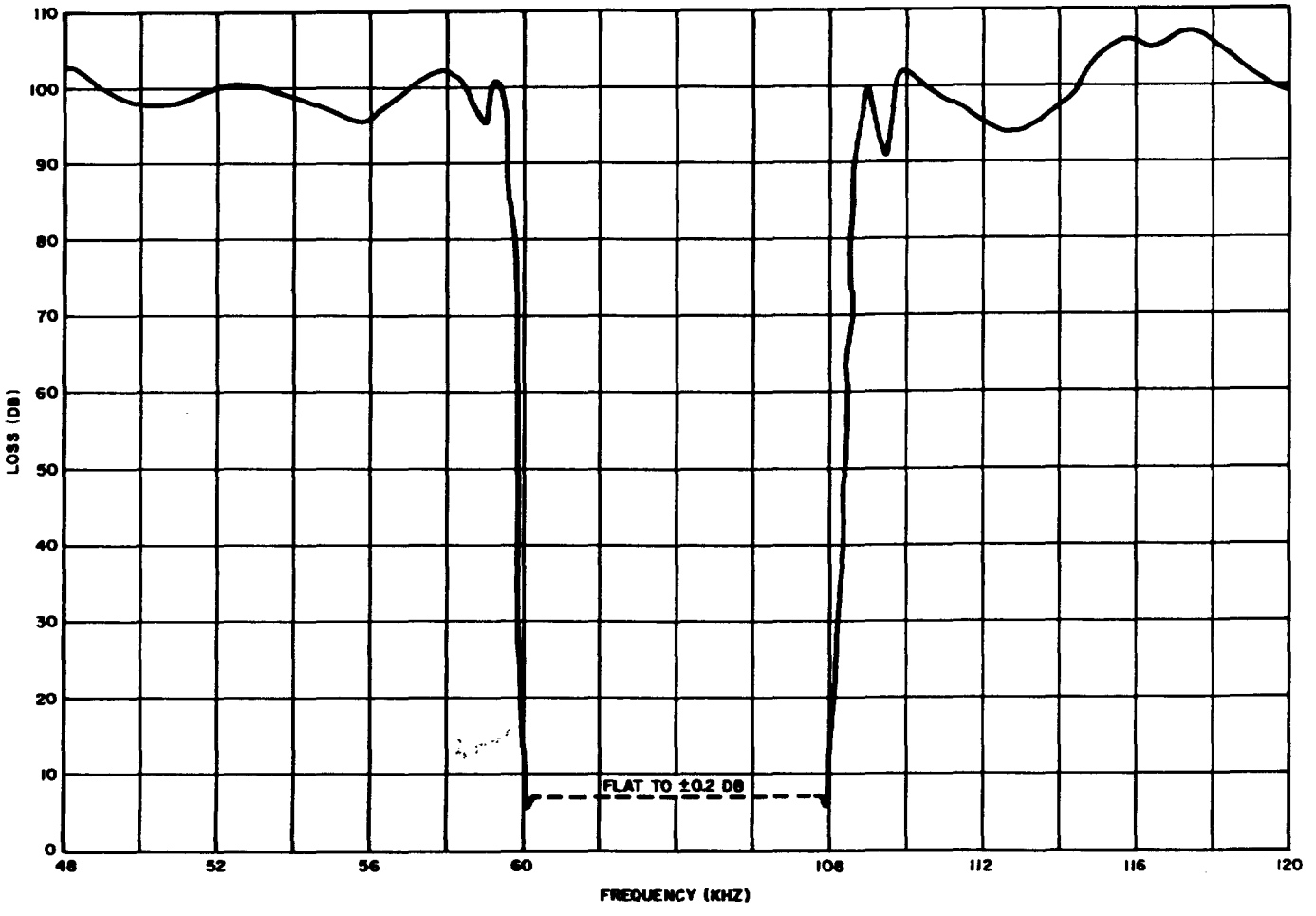

Fig. 3—4252( ) B3 Group Connector, Typical Loss Characteristic