830E NETWORK

DESCRIPTION

1. GENERAL

1.01 This section describes the 830E network. This LBO (line building out) network is used in the E6 repeater on nonloaded links not requiring terminal balance at the far end, e.g., trunks to a PBX equipped with stations only or on CO-station links.

1.02 The 830E LBO network matches the impedance of nonloaded cable to that of the gain unit (831-type network) in the E6 repeater and also equalizes the loss-frequency distortion of nonloaded cable. The network mounts in either the NETWORK A or NETWORK B position of the E6 repeater. The network is adjusted by means of 10 shorting screws and two potentiometers.

2. EQUIPMENT DESCRIPTION

2.01 The 830E network is contained in a plastic case and measures 3.2 inches wide, 1.3 inches high, and 4.9 inches deep. It is mounted, face up, in one of the network positions of the E6 repeater chassis and is secured by four screws on the chassis connector block. These screws provide the required electrical connection between the network and the repeater. The face of the network incorporates the adjusting screws, potentiometers, and pin jacks. See Fig. 1.

3. CIRCUIT DESCRIPTION

3.01 The circuit arrangement of the 830E network is shown in Fig. 2. Terminals 1 through 4 connect to the E6 repeater. The pin jacks L are used to substitute a 4097B network for the built-in inductances L2-L6 during lineup.

3.02 The 830E network is a passive network including a subnetwork made up of inductors L1-L6, resistors R1 and R3, and capacitor C3. This subnetwork converts the nonloaded cable impedance to a resistace and equalizes the cable loss.

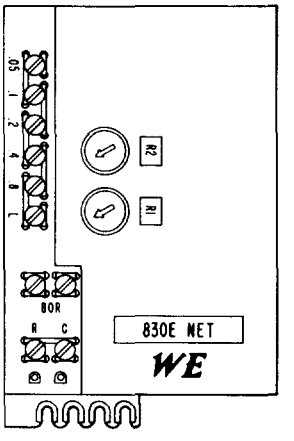

Fig. 1—830E Network

3.03 The transformer (T1) and capacitors C1 and C2 match the resulting impedance to the image impedance of the E6 gain unit while maintaining dc continuity. Inductor L7 enhances the impedance match above the voice-frequency band to ensure stability.

3.04 A low-loss high-frequency subnetwork composed of transformer T2, resistors R2 and R6, and capacitor C4 improves the impedance match on cables with long total length of bridge taps.

3.05 The building-out resistors R4 and R5 are used to add dc resistance when the total loop resistance is less than 400 ohms.

3.06 The in-service loss of the 830E network at 1 kHz is approximately 6.5 dB with 0 BOR and 7.5 dB with 150-ohm BOR. It varies with the settings of the adjustable elements.