CD95163-01
Issue 3A
Appendix 1B
Dwg. Issue 4B

COMMON SYSTEMS "N1" & "O1" CARRIER TELEPHONE CHANNEL TEST STAND CKT. AND CONNECTING CORD TESTING AND MAINTENANCE

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Equipment Note 201 was added.

All other headings under Changes, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2161-JFR-LP

COMMON SYSTEMS "N1" & "O1" CARRIER TELEPHONE CHANNEL TEST STAND CKT. AND CONNECTING CORD. TESTING AND MAINTENANCE

CHANGES

B. CHANGES IN APPARATUS

B.1 Removed	Replaced by
1 - Cond (C1) 0.1µf KS-13814, L2.	1 - Cond (C1) .01µf KS-13814, L2.
1 - Cond (C5) 0.1µf KS-13814, L2.	1 - Cond (C5) 0.1µf KS-13814, L4.
1 - Res (R12) 3600Ω KS-13490, L1.	1 - Res (R12) 1000Ω KS-13492, L1.
1 - Res (R11) 3600Ω KS-13490, L1.	
1 - Jack-KS-14523,L3. (FIL ACT GRD)	

D. DESCRIPTION OF CIRCUIT CHANGES

D.01 "O" was changed to "O1" in the second line of the drawing title.

D.02 On the (S1) switch (N1-O NORM) and (O TERM) were changed to read (N1-O1 NORM) and (O1 TERM) respectively.

D.03 The jack designation (O CH) was changed to (O1 CH).

D.04 The 2W-4W (TERM) jack designation was changed to (EQ OUT).

D.05 The 2W-4W (CHAN) jack designation was changed to (V.F. IN).

D.06 The 4W (TERM) jack designation was changed to read (EQ IN).

D.07 The 4W (CHAN) jack designation was changed to read (V.F. OUT).

D.08. The designation (FIL ACT-40V) jack was changed to (-40V).

D.09 "D1" wiring and "EU" cabling has been indicated.

D.10 Note 201 which read, "The placement of apparatus and arrangement of wiring shall be in accordance with wiring plan ED-92669-01", was removed.

All other headings, under changes, no change.

1. PURPOSE OF CIRCUIT

1.1 The channel unit test stand is a portable circuit designed for testing an "N1" or "O1" channel unit which is removed from its socket in the terminal frame re-establishing power and transmission connections by means of a flexible connecting cord.

2. WORKING LIMITS

2.1 None.

3. FUNCTIONS

3.1 To provide power and transmission connections between the terminal frame and channel unit test stand.

3.2 To provide means for connecting an "N1" or "O1" channel unit to the channel unit test stand.

3.3 To provide means for signaling and transmission testing of the "N1" or "O1" channel unit.

3.4 To provide means for connecting the channel carrier output to the channel carrier input through an adjustable gain amplifier.

4. CONNECTING CIRCUITS

4.1 N1 channel unit under test.

4.2 O1 channel unit under test.

4.3 Type N1 terminal frame.

4.4 Type O1 terminal frame.

DESCRIPTION OF OPERATION

5. GENERAL

5.1 Due to the compactness of the "N1" and "O1" carrier telephone systems it is impossible to test an "N1" or "O1" channel unit while in place. The channel unit test stand was designed to permit the removal of a channel unit from its place in the terminal frame and the connection of this channel unit into its socket on the channel unit test stand. A connecting cord supplies power and transmission from the channel unit socket on the terminal frame to the channel unit test stand socket. A high-frequency amplifier is included in the channel unit test stand to compensate for the difference in levels between the channel carrier modulator output and demodulator input.

Jacks are provided in the transmission and "E" and "M" signaling leads for test purposes. Two jacks (EG) and (EB) are provided in the "E" signaling lead to permit signaling transmission tests to be made either over the carrier system or between the carrier equipment and the switchboard. The (EG) jack would be used normally, but when an alarm condition has arisen within Type "01" Carrier which has operated the Alarm and Busy test circuit within the "01" system it will be necessary to use the (EB) jack to make the signaling tests. When the "E" signaling lead supplies battery toward the switchboard as on some through circuit arrangements it is necessary to use the (EB) jack in place of the (EG) jack for signaling tests. 2 wire (2W) (EQ OUT) and 4 wire (4W) (V.F. IN) input jacks are provided in the channel unit stand for checking the circuit in both directions. Also 4 wire (EQ IN) and VF OUT) output jacks are provided for checking the circuit in both directions.

In the amplifier circuit is a 10 position switch (S1). When the switch is set on position (01 TER) the "01" channel unit is terminated in 140 ohms (R1) to ground. When in position (N1-01 NORM) the carrier modulator and demodulator of the "N1" or "01" channel units are connected to the test plug in the Normal manner. In position (N1(FA)LOOP) the "N1" modulator is looped to the demodulator through the amplifier without any shunt resistance across the amplifier grid circuit. In position (N1(F)LOOP) the modulator is again looped to the demodulator through the two-stage amplifier with the 876 ohm shunt resistance (R2) across the grid circuit.

4 pin jacks, (AMP OUT), (GRD), (+130V), and (-40V) are included for test purposes. The (AMP OUT) jack is for checking the amplifier output. The (G) test jack is connected directly to ground for making ground connections. The (+130V) jack is connected to +130 volts in series with a 10,000 ohm resistor (R10) to prevent an accidental ground which would blow the +130 volt fuse. This jack is used to check the presence of +130 volts. Another jack (-40V) is connected in the -40 volt line. This jack has a 1000 ohm resistance (R12) in series with it. This jack is used for a rough check of the -40 volt potential.

A 3/4 ampere fuse (-40V) is provided in the -40 volt power supply lead and a 1/8 ampere fuse (+130V) in the +130 volt power supply lead to protect the Type N1 and 01 terminal frame power supply for the other channels when an accidental ground is placed on the unit undergoing test.

5.2 The amplifier included in the channel unit stand is a two-stage resistance coupled high frequency amplifier, the second stage employing a cathode follower. The input impedance of the amplifier is 25,000 ohms, with provision for an 876 ohm shunt. The output impedance is around 135 ohms. This results in a high upper frequency limit. Power is supplied to the amplifier through the connecting cord, (Fig. 2). A potentiometer (GAIN) in the input of the amplifier controls the amplifier gain.

6. OPERATION

6.1 In order to test either an "N1" or "01" channel unit it must be removed from its socket in the terminal frame. A ten foot connecting cord (FIG. 2) is connected between the Test Plug of the channel unit test stand and the channel unit socket in the terminal frame. The channel unit being tested is connected to the "N1" channel unit jack if it is an "N1" channel unit, or to the "01" channel unit jack if it is an 01 channel unit. When the channel unit is connected to the channel unit test stand, it is supplied power from the terminal frame by means of the connecting cord. Transmission through the channel unit will be as though the channel unit were connected directly to the terminal frame.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 2210-GJN-PGE-XM