

REMOTE OFFICE TEST LINE (ROTL) CONTROL PANEL E6 REPEATER ADJUSTMENT

1. GENERAL

1.01 The ROTL Control Panel (RCP) has a cut-through feature which extends the leads of the trunk selected for testing to jack T, R, (also jack T1, R1 if the 4-wire cut-through option is provided) on the RCP for manual transmission testing. This feature can be utilized only with the ROTL which is connected directly to the RCP.

1.02 Any loss in the cut-through path is compensated for by an 831A or B gain unit, which is part of a dedicated E6 repeater. This allows transmission measurements to be made at the RCP without correcting for access path loss. Two dedicated E6 repeaters are required when the RCP is connected directly to a ROTL which is capable of cutting through 4-wire trunks. A block diagram of cut-through compensation is shown in Fig. 1.

2. APPARATUS

- 2.01 One 22A Milliwatt Reference Meter (22A MRM) J94022A (or equivalent)
- 2.02 One 36A Auxiliary Attenuator
- 2.03 One 71B Milliwatt Reference Generator (71B MRG)
- 2.04 One low resistance patching cord, 6 feet long, equipped with a 310 plug on one end and appropriate type of plug, test clips, etc, for connecting to incoming T and R leads.
- 2.05 One 3P6G cord, consisting of a P3E cord, 6 feet long, equipped with a 310 plug on each end.
- 2.06 Two 6-inch straps with KS-6278 test clips, or equivalent (for strapping pins on the 831 gain unit connector).

2.07 Blocking and insulating tools as required.

3. 831A OR B GAIN UNIT

3.01 The 831 gain unit (831A or B) is a transistorized, series-negative-impedance converter connected in a bridge-T configuration with a similar shunt converter. The shunt network, however, must be removed from the circuit by opening adjustment screws. The negative impedance of the converter is varied by changing only resistances in its network. The network adjustment for the series converter consists of nine screws labeled A to J. Each screw shorts out one resistor of a string of resistors connected in series. Each resistor has approximately twice as much resistance as the preceding one. The series converter is connected to the line through a 9:1 line transformer. This gives a minimum line adjustment of approximately 4.44 ohms, which corresponds to 0.0321 dB for a 600-ohm circuit or 0.0214 dB for a 900-ohm circuit. For further details of the 831A and B gain units, refer to Section 332-206-100.

4. ADJUSTMENT PROCEDURES

4.01 The general procedure for cut-through compensation adjustment will be to access an average trunk (i.e., a trunk having average cross-office loss) via ROTL cut-through to a quiet termination, strap out the gain unit, apply a tone and measure the loss, adjust the gain unit to compensate for the loss measured, and then make a second measurement to confirm that the adjustment is correct. Compensation adjustment will differ slightly depending on the type of office ROTL involved. Basically, the difference will be in the access point of the average trunk. The following sections should be used to determine the trunk and modifier information for the average trunk in the office.

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SECTION 201-838-701

SECTION	TYPE OF OFFICE	226-829-700	Step-by-Step Small ROTL
216-780-000	No. 1 Crossbar		
218-743-000	No. 5 Crossbar Expanded ROTL	4.02	For details of commanding the ROTL for cut-through, refer to Section 201-838-101.
220-462-000	Crossbar Tandem		
226-831-000	Step-by-Step Expanded ROTL	4.03	Use the following procedure for adjusting the 831A or B gain unit(s).

STEP	PROCEDURE
1	Verify that the ROTL has been built out properly.
2	Obtain priming information for a balance test from office records or the local CAROT center.
3	At the RCP, momentarily operate LONG TERM pushbutton. <i>Note:</i> A burst of TPT will be heard.
4	Operate TUT CUT THROUGH switch.
5	Key in priming digits. <i>Note:</i> A burst of TPT will be heard.
6	Remove the 831 gain unit from its connector.
7	Open screws K and 1 through 9 (screws up).
8	At connector, temporarily strap terminal 2 to 16 and 6 to 8.
9	Connect the 22A MRM and associated 36A attenuator to the T,R jack at the RCP.
10	Set the 22A MRM FUNCTION switch to 600 or 900, as required.
11	At selected trunk, block relays, insulate contacts, etc. (as required), to open talking path between incoming T and R leads and outgoing T and R leads.
12	At the office side of the trunk, connect the 71B MRG to leads T and R.
13	Calibrate the 22A MRM per instructions on face of set. <i>Note:</i> The 22A MRM should be recalibrated every 15 minutes when in continuous use and every time it is moved. A stable and level resting place, such as the floor or an equipment cart, should always be used for the 22A MRM.
14	Adjust the REFERENCE LEVEL DBM switch on the 22A MRM and the DB-600/900 control on the 36A attenuator until the light beam on the 22A MRM indicates as near 0 as possible.

STEP

PROCEDURE

Note: The switch settings of the 36A attenuator control and the REFERENCE LEVEL DBM switch on the 22A MRM plus or minus meter indication equal the loss which must be compensated for.

- 15 Using Table A, adjust the appropriate screws on the gain unit to add the necessary compensation.

Note: Table A should be used strictly as a guide for screw adjustments since they may vary between units for the same gain values.

- 16 Remove the straps applied in Step 8.

- 17 Insert the 831 gain unit into its connector.

- 18 Set the REFERENCE LEVEL DBM switch on the 22A MRM and the 36A attenuator control to 0, and verify that the light beam on the 22A MRM is between the red lines.

Note: If the light beam is not between the red lines, using Table A readjust the 831 gain unit to bring the light beam within the red lines.

- 19a If the cut-through path is 4-wire, remove the second 831 gain unit from its connector.

- 20a Open screws K and 1 through 9 (screws up).

- 21a At connector, strap terminal 2 to 16 and 6 to 8.

- 22a Restore the talking path (T and R leads) isolated in Step 11.

- 23a Isolate a new talking path on leads T1 and R1 between the trunk relay equipment and the facility.

- 24a Move the 71B MRG connection to the T1,R1 leads at selected trunk.

- 25a Move the 22A MRM connection to jack T1,R1 at the RCP.

- 26a Repeat Steps 13 through 18.

- 27 Disconnect all test equipment.

- 28 Restore the trunk to service.

- 29 At the RCP, momentarily operate key DS on the keypad.

TABLE A
ADJUSTMENT OF 831A OR B GAIN UNIT

GAIN REQUIRED (dB)	TIGHTEN SCREWS DOWN FOR NEAREST GAIN	
	600Ω	900Ω
0.0	AEGHJ	AEGHJ
0.025	EGHJ	EGHJ
0.05	ABCDGHJ	BCDGHJ
0.075	BCDGHJ	ACDGHJ
0.10	BCDGHJ	CDGHJ
0.125	ACDGHJ	ABDGHJ
0.150	CDGHJ	BDGHJ
0.175	ABDGHJ	ADGHJ
0.20	ABDGHJ	(DGHJ)
0.225	BDGHJ	ABCGHJ
0.25	ADGHJ	BCGHJ
0.275	DGHJ	ACGHJ
0.30	ABCGHJ	CGHJ
0.325	ABCGHJ	ABGHJ
0.35	BCGHJ	(BGHJ)
0.375	ACGHJ	AGHJ
0.40	CGHJ	GHJ
0.425	ABGHJ	ABCDEFHJ
0.45	BGHJ	BCDEFHJ
0.475	BGHJ	ACDEFHJ
0.500	AGHJ	(CDEFHJ)
0.525	GHJ	ABDEFHJ
0.55	ABCDEFHJ	BDEFHJ
0.575	BCDEFHJ	DEFHJ
0.60	BCDEFHJ	(ABCEF HJ)
0.625	ACDEFHJ	BCEF HJ
0.65	CDEFHJ	ACEF HJ
0.675	ABDEFHJ	CEF HJ
0.70	BDEFHJ	ABEF HJ
0.725	ADEFHJ	(BEF HJ)
0.75	ADEFHJ	AEF HJ
0.775	DEFHJ	EF HJ
0.80	ABCEF HJ	ABCDF HJ
0.825	BCEF HJ	BCDF HJ
0.85	ACEF HJ	(ACDF HJ)
0.875	CEF HJ	CDF HJ
0.90	ABEF HJ	ABDF HJ
		BDF HJ
		(ADF HJ)
		DF HJ
		ABCF HJ
		BCF HJ
		ACF HJ

TABLE A (Cont)

ADJUSTMENT OF 831A OR B GAIN UNIT

GAIN REQUIRED (dB)	TIGHTEN SCREWS DOWN FOR NEAREST GAIN	
	600 Ω	900 Ω
0.925	ABEFHJ	CFHJ (ABFHJ)
0.95	BEFHJ	BFHJ
0.975	AEFHJ	AFHJ (FHJ)
1.00	EFHJ	ABCDEHJ
1.025	ABCFHJ	BCDEHJ
1.05	BCDFHJ	ACDEHJ (CDEHJ)
1.075	ACDFHJ	ABDEHJ
1.10	CDFHJ	BDEHJ
1.125	ABDFHJ	ADEHJ (DEHJ)
1.15	ABDFHJ	ABCEHJ
1.175	BDFHJ	BCEHJ
1.20	ADFHJ	ACEHJ (GEHJ)
1.225	DFHJ	ABEHJ
1.25	ABCFHJ	BEHJ
1.275	BCFHJ	AEHJ (EHJ)
1.30	ACFHJ	ABCDHJ
1.325	CFHJ	BCDHJ
1.35	ABFHJ	CDHJ
1.375	ABFHJ or BFHJ (Note 2)	ABDHJ
1.40	BFHJ	BDHJ (ADHJ)
1.425	AFHJ	DHJ
1.45	FHJ	ABCHJ
1.475	ABCDEHJ	BCHJ (ACHJ)
1.50	BCDEHJ	CHJ

Note 1: Settings in parentheses give gains between adjacent settings and can be used for moving one step from initial setting.

Note 2: Settings ABFHJ and BFHJ give gains equidistantly from the desired 1.35 dB gain.

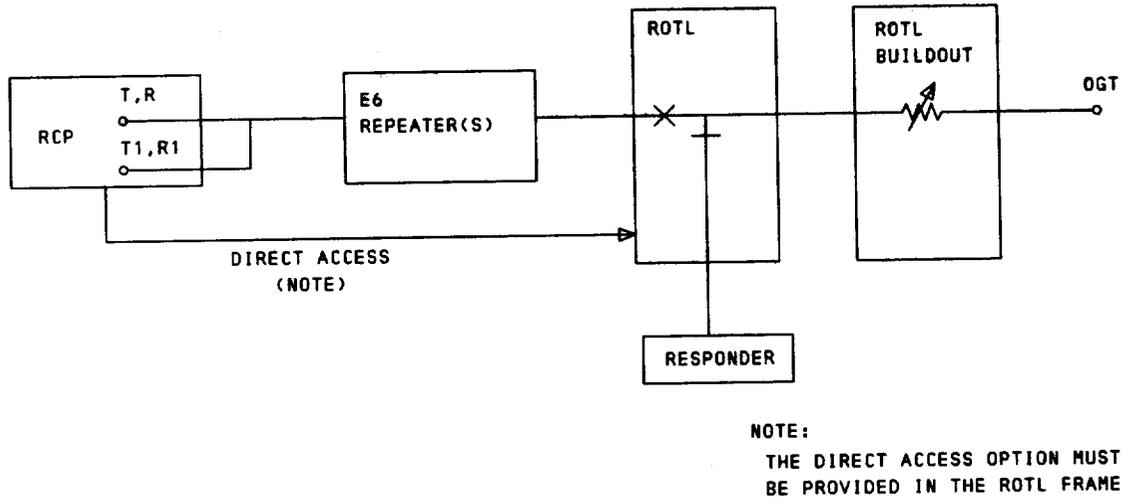


Fig. 1—RCP Cut-Through Compensation Block Diagram