

P1 CARRIER TELEPHONE SYSTEM
SYSTEM LINE-UP AND MAINTENANCE
NONREGULATED REPEATER SYSTEMS LINE-UP

1.00 INTRODUCTION

1.01 A P1 carrier system may require repeaters that are nonregulated, regulated in one direction of transmission only, or regulated in both directions. If a repeater is nonregulated in one direction, that direction is treated as a non-regulated repeater. The regulated direction is treated as covered in Section 363-103-504.

1.02 After completing the preparation for system line-up, go to the repeater nearest the central office.

**2.00 CENTRAL OFFICE TO REMOTE
TERMINAL DIRECTION**

Install Repeater

2.01 Install the repeater nearest the central office.

2.02 Connect power supply wiring to repeater and adjust power supply.

2.03 Check board E for network code and read voltage across the following screw terminals on that board:

Network	Screw Terminals	Negative Lead to
800AU	11 and 12	12
800AA	26 and 27	27

Note: Make this measurement with board E inserted. If power over the cable is used, the 800BB board (board A) must also be inserted.

Requirement: 21.5 to 23.5 volts dc

If requirement cannot be met, refer to Section 167-275-301 or 167-275-302, Station Systems Power Plant, J86463A or B, respectively. If power over the cable is used and requirement cannot be met, replace the 800BB board, check wiring on board E, check the carrier line to the central office, and check central office power over-the-cable circuit until trouble is found.

Total Carrier Power Output

2.04 Connect the carrier line toward the central office to binding posts 9 and 10 on the 386A apparatus case terminal block (7 and 8 REV).

2.05 Check the test set batteries.

2.06 Turn REC switch to DET 600Ω position.

2.07 Connect the receive cord from the REC jack on test set to HGT LINE test points, binding posts 13 (GRD) and 14 (HGT LINE) on the 386A terminal block; black to 13, red to 14 (13 and 12 REV).

2.08 Turn DET SENS-db switch to +10 position.

2.09 Add reading on DECIBEL meter to setting of DET SENS-db switch. This is the measured repeater output power.

2.10 Refer to the P1 Carrier Record and select the proper output power for the present temperature.

- 2.11 Compare value in 2.10 with value measured in 2.09. If these values differ by more than 1 db, change IN pad on board B (board J REV) until the difference is 1 db or less. Make a note to notify the engineer of the change at the end of system line-up.
- 2.12 Record this output power, the pad values, and the engineer's estimated output power for other temperature ranges on the Repeater Information Card (see Fig. 1).

		SYSTEM <i>1 REP 1</i>	
		HI GRP	LO GRP
TRSG TO	CO	<input checked="" type="checkbox"/>
	REM	<input checked="" type="checkbox"/>
IN. PAD		<i>.2</i>	<i>.4</i>
OUT. PAD		<i>.0</i>	<i>.0</i>
LINE LEVEL	TRSG <i>±.8</i>	} 25° <i>±.6</i>	} 25°
	REC <i>-.20</i>		
OUT. POWER -REG. -VOLTS	MID <i>±.7</i>	<i>±.4</i>	
	20°F <i>±.8</i>	<i>±.6</i>	
	100°F <i>±.6</i>	<i>±.2</i>	
ED-97018-30,			
G- <i>R2, A1, E1, F1, H1, K1.</i>			

Fig. 1 — Repeater Information Card

Total Carrier Power Input

- 2.13 Move the red lead of the receive cord from binding post 14 (HGT LINE) (12 REV) to binding post 12 (LGT LINE) (14 REV).
- 2.14 Connect a 600-ohm resistor between binding posts 13 and 14 (12 and 13 REV).
- 2.15 On test set, change REC switch to DET HI-IMP position.
- 2.16 Change DET SEN-db switch to obtain a DECIBEL meter reading between 0 and -10.

- 2.17 Add the reading on DECIBEL meter to the setting of DET SENS-db switch. This is the measured repeater input power. Record this value and the present temperature on the Repeater Information Card.
- 2.18 Disconnect the receive cord and the terminating resistor from the repeater.
- 2.19 Connect the carrier line toward the remote terminal to binding posts 7 and 8 on the 386A apparatus case terminal block (9 and 10 REV).

- 2.20 Close the 386A apparatus case cover temporarily.
- 2.21 Repeat 2.00 through 2.20 for all other non-regulated repeaters of the system.

3.00 INSTALL AND LINE UP TERMINALS

- 3.01 After the last repeater has been lined up, proceed to the nearest remote terminal location and install terminal in 386A apparatus case.
- 3.02 Adjust the terminal (see Sections 363-101-100 through 363-101-509).
- 3.03 Measure the transmitted and received carrier power at the remote terminal as covered in 2.00 through 3.07 of Section 363-103-502.

- 3.04 Connect the carrier line to binding posts 9 and 10 of 386A apparatus case terminal block. Do not connect the voice-frequency circuit at this time. Proceed to each remote terminal in turn and follow procedure of 3.01 through 3.03 at each terminal; leave a 600-ohm resistor connected to binding posts 7 and 8 of each remote terminal.

4.00 REMOTE TO CENTRAL OFFICE DIRECTION

- 4.01 Proceed to the repeater nearest the remote terminals.

Total Carrier Power Output

4.02 Remove carrier line from binding posts 9 and 10 (toward central office) of the 386A apparatus case at this repeater (7 and 8 REV) except when this repeater is furnished power over the cable. In this case, remove the line boards in the central office terminals.

4.03 On test set, turn REC switch to DET 600Ω position (DET HI-IMP if power over the cable).

4.04 Connect the receive cord from REC jack on test set to LGT LINE test points, binding posts 13 (GRD) and 12 (LGT LINE) on 386A apparatus case; black to 13, red to 12 (13 and 14 REV).

4.05 Add the reading on DECIBEL meter to the setting of the DET SENS-db switch and compare with power specified by engineer on P1 Carrier Record for the present temperature. This is the measured repeater output power.

Note: If power is not within 1 db of specified value, each channel must be measured separately by removing the 600-ohm resistors from binding posts 7 and 8 of the 386A terminal blocks of all but one of the remote terminals. The reading is then taken at the repeater and the procedure repeated until each channel has been measured. The engineer should then be consulted and given the readings to determine what pad changes will be necessary. Change the remote terminal output pads as instructed by the engineer and record these values on the Terminal Information Cards.

4.06 Record this output power, the pad values, and the engineer's estimated output power for other temperature ranges on the Repeater Information Card (see Fig. 2).

Total Carrier Power Input

4.07 Move the red lead of the receive cord from binding post 12 (LGT LINE) (14 REV) to binding post 14 (HGT LINE) (12 REV).

4.08 Connect a 600-ohm resistor between binding posts 13 and 12 (13 and 14 REV).

		SYSTEM 1 REP 2.....	
		HI GRP	LO GRP
TRSG TO	CO	✓.....
	REM	✓.....
IN. PAD		2.	2.
OUT. PAD		0.	0.
LINE LEVEL	TRSG +3)	} 70°	+5.) } 70°
	REC -2)		-14.)
OUT. POWER REG. -VOLTS	MID	+5.	+6.
	20°F	+7.	+7.
	100°F	t.l.	+5.
ED-97018-30,			
G-R1, A1, E1, F1, H1, K1....			

Fig. 2 — Repeater Information Card

4.09 On test set, change REC switch to DET HI-IMP position.

4.10 Change DET SENS-db switch to obtain a DECIBEL meter reading between 0 and -10.

4.11 Add the reading on DECIBEL meter to the setting of DET SENS-db switch. This is the measured repeater input power. Record this value and the present temperature on the Repeater Information Card (see Fig. 2).

4.12 Remove the receive cord and the terminating resistor from the repeater.

4.13 Reconnect the carrier line toward central office to binding posts 9 and 10 on 386A apparatus case (7 and 8 REV).

4.14 Replace the cover of the 803B connector and place desiccant in the 386A apparatus case. Close and secure the 386A apparatus case cover and terminal block cover.

4.15 Proceed to the next repeater toward the central office. If there are no other repeaters, proceed to the remote terminal and make end-to-end measurements as covered in 4.00 through 9.03 of Section 363-103-502.

Other Repeaters

Total Carrier Power Output

4.16 At this repeater, remove the carrier line toward central office from binding posts 9 and 10 on 386A apparatus case (7 and 8 REV). If this repeater is furnished power over the cable, do not remove the carrier line. See 4.02.

4.17 On test set, turn REC switch to DET 600Ω position (power over cable DET HI-IMP position).

4.18 Turn DET SENS-db switch to +10 position.

4.19 Connect receive cord from REC jack on test set to LGT LINE test points, binding posts 13 (GRD) and 12 (LGT LINE) on 386A apparatus case; black to 13, red to 12 (13 and 14 REV).

4.20 Add reading on DECIBEL meter to setting of DET SENS-db switch. This is the measured repeater output power.

4.21 Refer to the P1 Carrier Record and select the proper output power for the present temperature.

4.22 Compare value in 4.21 with the value measured in 4.20. If these values differ by more than 1 db, change input pad on board J (board B REV) until the difference is 1 db or less. Make a note to notify the engineer at the end of system line-up.

4.23 Record this output power, the pad values, and the engineer's estimated output power for other temperature ranges on the Repeater Information Card.

Total Carrier Power Input

4.24 Move the red lead of the receive cord from binding post 12 (LGT LINE) (14 REV) to binding post 14 (HGT LINE) (12 REV).

4.25 Connect a 600-ohm resistor between binding posts 13 and 12 (13 and 14 REV).

4.26 On test set, change REC switch to DET HI-IMP position.

4.27 Change DET SENS-db switch to obtain a DECIBEL meter reading between 0 and -10.

4.28 Add the reading of DECIBEL meter to the setting of DET SENS-db switch. This is the measured repeater input power. Record this value and the present temperature on the Repeater Information Card.

4.29 Disconnect the receive cord and the terminating resistor from the repeater.

4.30 Reconnect carrier line toward central office to binding posts 9 and 10 on 386A apparatus case terminal block (7 and 8 REV).

4.31 Replace the cover of the 803B connector and place desiccant in the apparatus case. Close and secure the 386A apparatus case cover and terminal block cover.

4.32 Repeat 4.16 through 4.31 for all remaining repeaters, working toward the central office.

5.00 END-TO-END MEASUREMENTS

End-to-end measurements are covered in 4.00 through 9.03 in Section 363-103-502.