TYPE N1, O, AND ON CARRIER TELEPHONE SYSTEMS
OVERALL CHANNEL LINE-UP – TRANSMISSION AND SIGNALING
CHANNEL NET GAIN AND EXPANDOR OUTPUT CHECK

The adjustable REC attenuator at the expandor output is provided for adjusting the channel net gain. If possible, the adjustment should be made with channel units in their terminal mountings. The channel net gain can vary between off-hook and on-hook conditions. These tests are made with the channel off-hook.

Whenever the expandor net loss is adjusted, the expandor output should first be checked as covered in this section. If the output is out of limits, corrective action should be taken before readjusting the REC potentiometer.

If any tubes have been changed, the channel net gain should be adjusted, measured again one week after channel alignment, and readjusted to the required net gain. If no tubes were changed, the channel net gain should be measured and readjusted the day after alignment. This is done to correct for drift in net gain due to channel unit temperature change and initial aging of new tubes. This recheck also provides an opportunity to locate and clear intermittent troubles.

Spare channels wired for 2-wire operation should be either terminated or the REC potentiometer adjusted to obtain a reading of —10 dbm on the TMS at the patching bay. This will prevent singing due to an improper termination on the hybrid network.

This section is reissued to simplify the expandor output measurement and to institute correction for channel net gain drift due to temperature and initial tube aging. Due to extensive changes, arrows normally used to indicate changes have been omitted.

The purpose of this test is to measure and adjust the channel net gain.

APPARATUS:

1 — Transmission Measuring Set (TMS), Type 40, 13A, 21A, or equivalent
1 — Hewlett-Packard 400-Type Vacuum Tube Voltmeter (VTVM)

STEP	PROCEDURE
	A. Initial Adjustment
	Note: Remove the channel from service before performing this test.
	At Transmitting Terminal
1	Place channel in an off-hook condition either through the use of a 2B signaling test set, by opening the M lead and connecting M jack to —40V jack, or by other suitable means.

STEP	PROCEDURE
2	Patch a 1000-cycle test tone to MOD IN jacks, or equivalent VF IN jacks, at patching bay. Use proper test tone power as follows: 2-wire operation: 0 dbm 4-wire operation: −16 dbm (−16 and +7 offices) 4-wire operation: −13 dbm (−13 and +4 offices) *Note:* In −13 and +4 offices, a 3-db pad is wired in the transmit pair between the patching bay and the carrier terminal.
3	If jack appearances are not available, remove channel unit from terminal and reconnect using channel unit test stand. Patch 1000-cycle test tone to VF IN jacks of channel unit test stand using the following test power: 2-wire operation: 0 dbm 4-wire operation: −16 dbm
	At Receiving Terminal
4	Connect a calibrated TMS at patching bay as follows: 2-wire operation: MOD IN jack (or equivalent VF OUT jack) 4-wire operation: DEMOD OUT jack (or equivalent VF OUT jack)
5	Adjust REC potentiometer for proper level as follows: 2-wire operation: Value shown on circuit layout card 4-wire operation: +4.0 dbm or +7.0 dbm, as required *Note:* Readjust the channel net gain with the REC potentiometer one week after channel alignment if tubes were changed, and one day after realignment if no tubes were changed.
	B. Routine Maintenance
	Note: If it becomes necessary to readjust the channel net gain, the expandor output should be checked first. If the expandor output is within limits, the channel net gain may be readjusted. If the expandor output is out of limits, the channel should be cleared of trouble, realigned, and then readjusted to the required net gain. Refer to Section 362-305-501 for expandor output line-up and maintenance limits.

STEP	PROCEDURE
1	Turn REC potentiometer on face of channel unit for maximum gain (maximum clockwise position). Check expandor output. *Note:* Before adjusting the REC potentiometer, double check to be sure that the proper channel in the proper system has been located.
2	For 4-wire operation: Connect TMS at DEMOD OUT jack (or equivalent VF OUT jack) and measure expandor output. For 2-wire operation (or alternate method for 4-wire operation): Terminate expandor output using 262B plug (600 ohms) at MOD IN jack (or equivalent VF OUT jack). Measure expandor output at E1-E2 jacks on face of channel unit using VTVM. This procedure may be used as an alternate method for 4-wire channels after terminating the DEMOD OUT jack using 262B plug.