

**TYPE N2 CARRIER TELEPHONE SYSTEM  
CHANNEL MODEM UNIT  
VOICE-FREQUENCY INPUT AND OUTPUT TESTS**

The voice frequencies from the compressor or transmitting voice-frequency amplifier are fed into the modulator which translates the voice frequencies into one of 12 carrier frequency channels for transmission over the carrier frequency line. At the receiving end, after the channel band filter selects its carrier frequency channel from the receiving group unit, the demodulator translates the information back to voice frequencies for transmission to the expander or receiving voice-frequency amplifier. In this test, a 1000-cycle test tone is applied to the channel at the transmitting end, and the level of the test tone is checked both at the input to the modulator at the transmitting terminal and at the output of the demodulator at the receiving terminal.

The purposes of these tests are as follows:

- (a) To insure that the compressor or voice-frequency amplifier is supplying the required voice-frequency level to the modulator.
- (b) To insure that the demodulator is transmitting the required level to the expander or voice-frequency amplifier.

Where test jack appearances are not available in a patching bay or test board, the N2 terminal test stand will be required at the transmitting terminal for inserting the 1000-cycle test tone.

**APPARATUS:**

Hewlett-Packard Model 400-type Vacuum Tube Voltmeter (VTVM)  
W2DW Cord  
N2 Terminal Test Stand

**(A) INPUT TEST AT THE TRANSMITTING TERMINAL**

Remove the channel from service before performing this test.

STEP	PROCEDURE						
1	<p>Patch a 1000-cycle test tone to the MOD IN or equivalent VF IN jacks at the channel patch jack bay. Use the proper test tone power as follows:</p> <p style="margin-left: 40px;">-16 dbm (-16 and +7 offices) -13 dbm (-13 and +4 offices)</p> <p>If jack appearances are not available, the compandor unit must be removed from the terminal and reconnected using the N2 terminal test stand. Then the 1000-cycle test tone is patched to the COMP IN jacks of the terminal test stand using test tone power as shown:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%; text-align: center;">TEST TONE POWER</th> <th style="text-align: center;">TERMINAL TEST STAND</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0 dbm</td> <td>Patch to MW IN jack; patch -16 dbm jack to COMP IN jack.</td> </tr> <tr> <td style="text-align: center;">-16 dbm</td> <td>Patch to COMP IN jack.</td> </tr> </tbody> </table>	TEST TONE POWER	TERMINAL TEST STAND	0 dbm	Patch to MW IN jack; patch -16 dbm jack to COMP IN jack.	-16 dbm	Patch to COMP IN jack.
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STEP	PROCEDURE
2	<p>Using W2DW cord, connect 400-type VTVM to MI-MG jacks of modem unit, and measure voice-frequency level at modulator input.</p> <p><b>Caution:</b> <i>VTVM ground terminal shall be connected to MG jack.</i></p> <p><b>Requirement:</b> +16.3 to +17.3 db</p> <p>If this measurement is not within the requirements, replace the compandor.</p>
<b>(B) OUTPUT TEST AT THE RECEIVING TERMINAL</b>	
STEP	PROCEDURE
1	<p>Using W2DW cord, connect the 400-type VTVM to the DO-DG jacks of the modem unit, and measure the voice-frequency output of the demodulator.</p> <p><b>Caution:</b> <i>VTVM ground terminal shall be connected to DG jack.</i></p> <p><b>Requirement:</b> -4.0 to -6.0 db</p> <p>If this measurement is not within the above requirement, replace either the modem at the receiving terminal or at the transmitting terminal or both as required to clear trouble. This procedure assumes that the modem carrier level measurements specified in Section 362-806-501 are within limits.</p>