
TYPE N1, O, AND ON CARRIER TELEPHONE SYSTEMS
SCHEDULE A AND B PROGRAM CHANNEL UNIT (J98703W)
CARRIER OUTPUT, ADJUSTMENT, AND CARRIER LEAK TEST

The purpose of this section is to provide procedures for adjusting the channel carrier power, measuring the oscillator frequency, and measuring the carrier leak for schedule A and B program channel unit (J98703W) in the N1 carrier terminal. Requirements are also given for in-service output measurements at the M2 jack. The information given in this section is for use in initial lineup and trouble-location tests.

This section is reissued to add a set of minimum requirements for the frequency counter used in the channel oscillator frequency measurement. The list of recommended frequency counters has been updated to include currently available models. Arrows normally used to indicate changes have been omitted. This reissue affects the Equipment Test List.

The carrier for each channel is supplied in the carrier-frequency subassembly of the channel unit. It is generated in the carrier oscillator and applied to the modulator where it is combined with the voice frequencies. The resulting frequencies are applied to the transmitting group unit.

The carrier power for each channel unit tested in the extender is adjusted to provide the required system slope at the output of the group transmitting unit, as indicated in Table A. It is important to make these adjustments with the group transmitting unit terminated in 135 ohms. The carrier power is adjusted to the same value for each channel at the output of the carrier oscillator. The system slope is provided by a slope network in the transmitting group unit.

APPARATUS:

1—Hewlett-Packard Frequency Counter, Model 5216A (Mfr Disc.), 5381A, 5382A E/W option 001, 5383A E/W option 001, 5300B main frame E/W option 001 and counter module 5301A, or any frequency counter which meets the following minimum requirements:

- (1) Frequency range of 50 Hz to 350 kHz
- (2) Accuracy of 1 count in 1,000,000 (1 in 10^6)
- (3) Sensitivity of 0.1 volt (100 mV)
- (4) Input impedance of 10K Ω (minimum).

1—Hewlett-Packard 400-Type Vacuum Tube Voltmeter (VTVM)

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

APPARATUS CONT:

- 1—KS-15538 Carrier-Frequency Voltmeter (CFVM), List 4 or equivalent, calibrated according to the section covering the specific meter used
- 1—J98703BM-1 Channel Unit Extender
- 1—ED-92717-30, G4 Adapter
- 1—Hewlett-Packard Adapter 10110A (BNC connector-to-double binding post), or equivalent
- 1—W20D Cord
- 1—W2DW Cord
- 1—W1AG Cord
- 1—W1Y Cord

STEP

PROCEDURE

Caution: If these tests are to be made on a working system, remove the system from service.

- 1 Energize the CFVM and allow adequate time for the meter to stabilize.
- 2 Remove the connector from switching jack J15.
- 3 Terminate the group transmitting unit in 135 ohms by inserting the ED-92717-30, G4 adapter into jack J15. Figure 1 shows the jack arrangement at the output of the group transmitting unit.
- 4 Remove the connector from switching jack J16.
- 5 Operate the SELECTOR switch on the CFVM to the GR OUT position.
- 6 Using the W20D cord, connect the CFVM to the ED-92717-30, G4 adapter. See Fig. 2 for the test arrangement.
- 7 Check that the noise potentiometer on the group transmitter is turned to the extreme counterclockwise position. (The 408A electron tubes in the noise generator should be replaced with PTS-54 vacuum tube substitution plugs.)
- 8 Remove the channel unit under test from the terminal mounting and insert it into the J98703BM-1 channel unit extender. Reestablish connections to the terminal.

Caution: All other plug-in units in the terminal under test should be in place in the terminal mounting.

STEP	PROCEDURE
Channel Carrier Output	
9	Tune the CFVM to the frequency of the channel carrier, as shown in Table A.
10	Adjust the MOD potentiometer for the output power indicated in Table A, according to the required slope shown on the carrier layout card. See Fig. 3 for the location of the MOD potentiometer. A simplified schematic of the oscillator and modulator circuit is shown in Fig. 4.
11	Using the W2DW cord, connect the VTVM between jack M2 and chassis ground. Measure the carrier power and record on form E-4559 for future reference.
Maintenance Requirement at M2 Jack: Value recorded in Step 11 ± 0.5 dB, with the extender used or with the channel unit in place in the terminal mounting.	
Note: If the channel unit is replaced, the extender should be used and the MOD potentiometer should be adjusted for the M2 jack carrier power recorded on form E-4559 in Step 11.	
Carrier Leak Test	
12	For channel units with modified regulators, using the W1Y cord, connect test point TP7 to chassis ground. For older channel units with original regulators, using the W1AG cord, connect jack M1 to chassis ground. (See Fig. 3 and 4.)
13	Using the VTVM, measure the carrier leak at the M2 jack.
Requirement: The measured carrier power should be at least 18 dB lower than the power recorded on form E-4559 in Step 11.	
Channel Oscillator Frequency	
14	Remove the connection between jack M1 or test point TP7 and chassis ground.
15	Remove the VTVM and, using the W2DW cord and 10110A adapter, connect the electronic counter between the M2 jack and chassis ground.
16	Energize the frequency counter. Use a gate time of one second and measure the oscillator frequency.
Requirement: The frequency of 208 kHz, ± 30 Hz, HGT (channel 6 oscillator). The frequency of 96 kHz, ± 30 Hz, LGT (channel 6 oscillator).	
17	If the requirements of Step 16 are not met, replace the channel unit and repeat Steps 8 through 16.
18	If the requirements of Step 16 are met, remove all test connections from the channel unit. Disconnect the extender and replace the channel unit in the terminal mounting.

TABLE A
CHANNEL CARRIER OUTPUT POWER (J98703W)

CHAN NO.	CAR FREQ KHZ	HIGH GROUP TRANSMIT										
		CARRIER SLOPE IN DB										
		0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
6	208	+6.2	+6.1	+5.9	+5.6	+5.4	+5.2	+5.0	+4.8	+4.6	+4.6	+4.6
CHAN NO.	CXR FREQ KHZ	LOW GROUP TRANSMIT										
		CARRIER SLOPE IN DB										
		0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
6	96	-2.8	-2.7	-2.6	-2.5	-2.4	-2.4	-2.3	-2.3	-2.4	-2.5	-2.6

Note: Measured at the output of the group transmit unit, with the group transmit unit terminated in 135 ohms per Step 2.

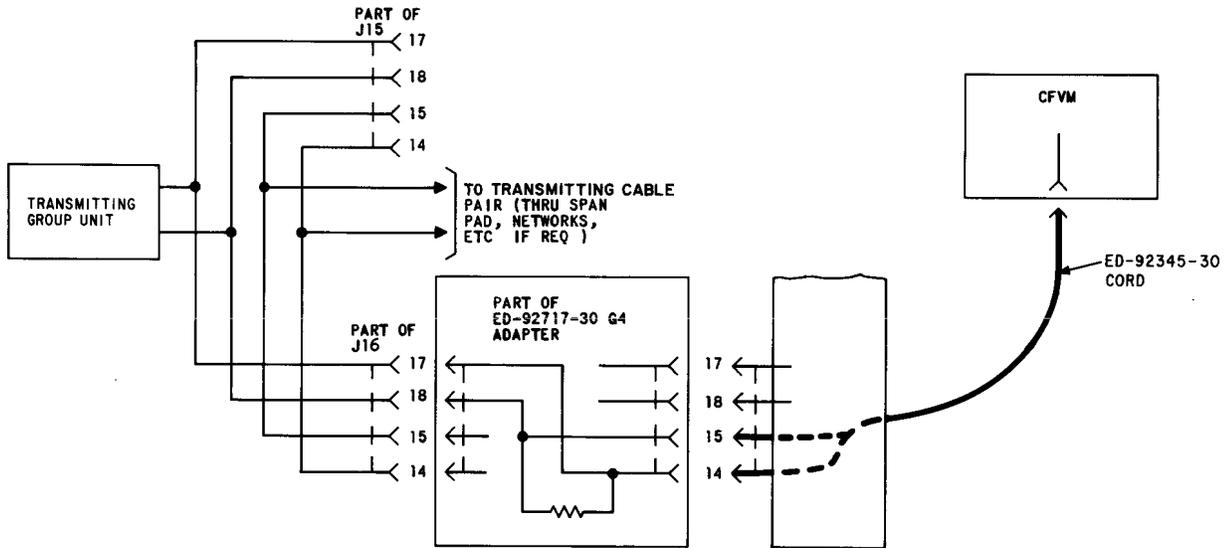


Fig. 1—Jack Arrangement at Output of Group Transmitting Unit

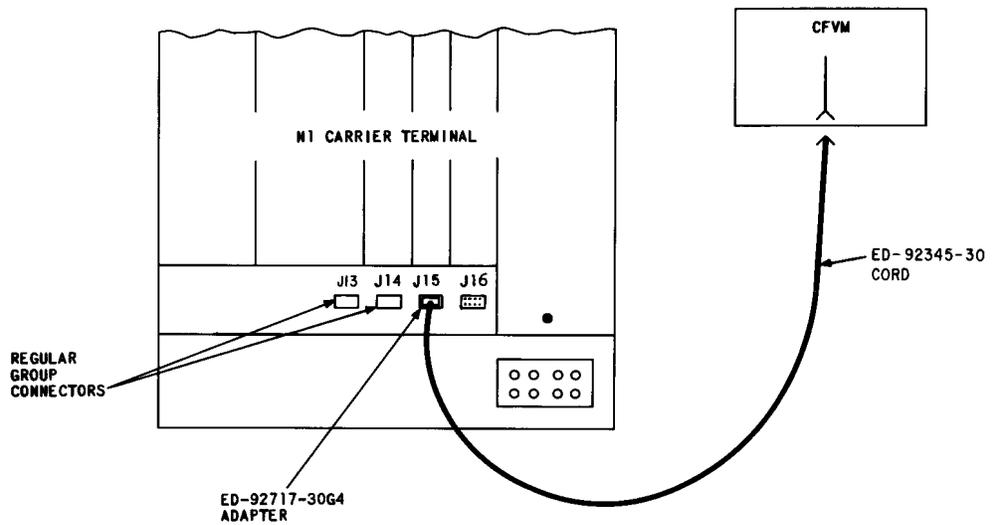


Fig. 2—Test Arrangement—Terminated Measurements at Group Transmitting Unit Output

NOTES:

1. UNITS WITH ORIGINAL REGULATORS
2. UNITS WITH MODIFIED REGULATORS

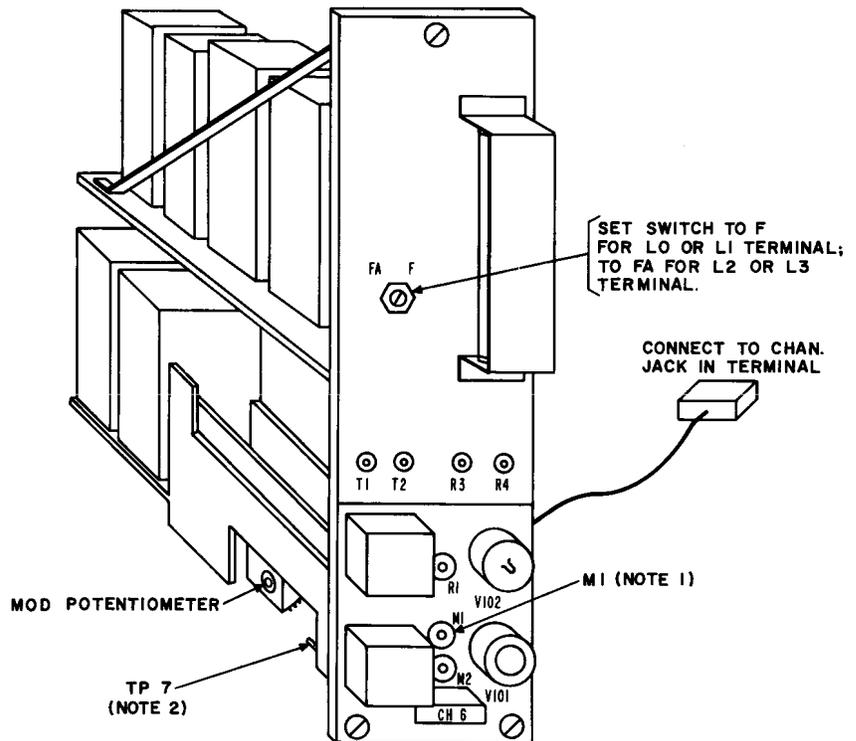


Fig. 3—Setup for Lineup Tests

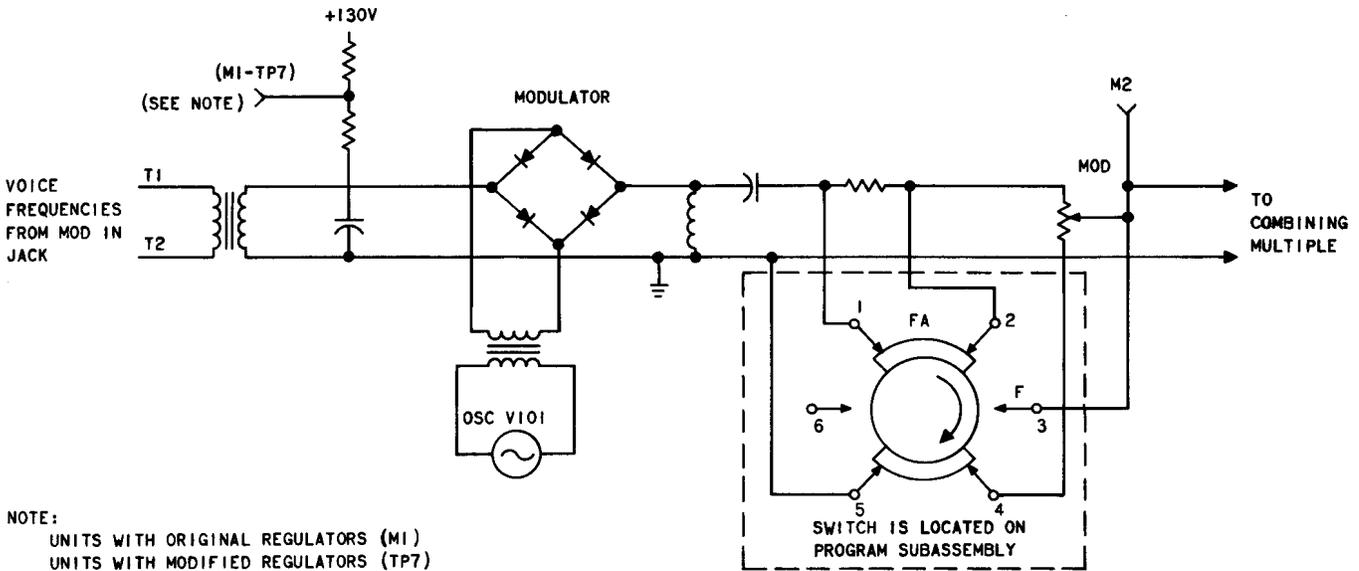


Fig. 4—Transmitting Section of Schedule A and B Program Channel Unit