TYPE O AND ON CARRIER TELEPHONE SYSTEMS—TERMINALS AND JUNCTIONS

GROUP UNIT LINEUP—TRANSMITTING

GROUP TRANSMITTING CARRIER OUTPUT—TERMINALS

This section provides procedures to measure the output of the O or ON group transmitting amplifier at a terminal and to adjust the OUT potentiometer, if necessary, to meet the requirements.

This section is reissued to include the use of a line-matching transformer with the VTVM. Figures 1 and 2 have been changed to show the difference between OA carrier measurements and those for OB, OC, or OD. Since this issue is a general revision, arrows ordinarily used to indicate changes have been omitted. This reissue does ***not*** affect the Equipment Test List.

The HP11004A line-matching transformer isolates the unbalanced VTVM from the balanced test line, and provides 135 or 600Ω output from a 600Ω input. The impedance-matching feature is required in OB, OC, OD, and ON systems to match the 600Ω VTVM to the 135Ω line, and ***all*** systems require the isolation feature.

The transmitting amplifier in the group transmitting unit amplifies the two carriers and their four associated sidebands to the proper line level.

When the group transmitting unit is lined up, the group must be out of service. The unit extender is needed if adjustment of the group transmitting circuit is required. Both X and Y wiring are in all group transmitting circuits. When it is necessary to have additional range to drop levels for coordination, the X wiring must be removed.

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APPARATUS:

1—KS-15538, List 4 Carrier Frequency Voltmeter (CFVM), or equivalent

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

1—W2DW Cord

APPARATUS CONT:

4—P1M Cords

1—386B Plug (135 ohms)

1—262B Plug (600 ohms)

1—J98705AY-1 Unit Extender

1—Hewlett-Packard 11004A Line-Matching Transformer

CHART 1

O CARRIER—GROUP TRANSMITTING UNIT OUTPUT (FIG. 1)

STEP	PROCEDURE

Note: Determine whether the group transmitting unit is connected to an OA system or to an OB, OC, or OD system. Three test values are required:

A. Initial Lineup

B. Recorded Value

C. Routine Maintenance Value

A. Initial Lineup

Note: If the group under test is located in a new terminal, perform Steps 1 through 6. If the group under test is being added to a working terminal, perform Steps 7 through 11.

1 Ground all channel T jacks on the group under test.

2 Terminate the EQ jack in 135 ohms (386B plug) if the group transmitting unit is connected to an OB, OC, or OD system. If the unit is connected to an OA system, terminate the EQ jack in 600 ohms (262B plug).

3 If the group under test is OB, remove the OC and OD group transmitting units; if OC, remove OB and OD; and if OD, remove OB and OC. This procedure is necessary to prevent measuring the combined outputs.

4 Connect the VTVM equipped with matching transformer to the EQ BRDG jacks.

5 Measure the carrier.

CHART 1 (Cont)

STEP	PROCEDURE

Requirement:

TYPE SYSTEM	NUMBER OF TWIN CHANNEL UNITS	TEST LEVEL	READJUST LEVEL
OA	2	+6.0 to +10.0 dB	+8.0 dB
	1	+4.0 to +8.0 dB	+6.0 dB
OB, OC, or OD	2	0.0 to+4.0 dB	+2.0 dB
	1	−2.0 to +2.0 dB	0.0 dB

Note: Adjust the OUT potentiometer located on the group transmitting unit under test until the requirement is met.

6 Remove the 135-ohm (386B plug) or 600-ohm (262B plug) termination and the T jack grounds; and then perform Test B.

7 Ground all channel T jacks on the group under test.

8 Set the CFVM to the appropriate carrier frequency, using Table A. The impedance switch should be at 600Ω for OA carrier; 135Ω for OB, OC, or OD.

9 Connect the CFVM to the EQ BRDG jacks.

10 Measure the carrier.

Requirement:

TYPE SYSTEM	TEST LEVEL	READJUST LEVEL
OA	+4.0 to +8.0 dB	+6.0 dB
OB, OC, or OD	−2.0 to +2.0 dB	0.0 dB

CHART 1 (Cont)

STEP	PROCEDURE

Note: Adjust the OUT potentiometer located on the group transmitting unit under test until the requirement is met.

11 Remove the T jack grounds and then perform Test B.

B. Recorded Value

Note: This test immediately follows the initial lineup adjustment.

12 Connect the VTVM equipped with matching transformer to the OUT jack of the group transmitting unit under test.

13 Measure the carrier and record the reading. This reading will be used for maintenance of the group transmitting unit.

Note: The range of readings that may be expected is listed below; however, the expected range may be exceeded because of line impedance variations.

TYPE SYSTEM	EXPECTED RANGE
OA	+8.5 to +13.0 dB
OB, OC, or OD	+2.5 to +7.0 dB

C. Routine Maintenance Value

14 Connect the VTVM equipped with matching transformer to the OUT jack of the group transmitting unit under test.

15 Measure the carrier.

Requirement: Recorded value ±2.0 dB

Note: If this requirement is not met, adjust the OUT potentiometer until the recorded value is measured.

16 Remove all test connections.

CHART 2

ON CARRIER—GROUP TRANSMITTING UNIT OUTPUT (FIG. 2)

STEP	PROCEDURE
	A. Initial Lineup
1	Ground all working channel T jacks on the group under test.
2	Connect the VTVM equipped with matching transformer to the OUT jack located on the face of the group transmitting unit.
3	Measure the carrier.
	Requirement:

NUMBER OF TWIN CHANNEL UNITS	TEST LEVEL	READJUST LEVEL
2	+3.0 to +4.5 dB	+4.0 dB
1	+1.5 to +2.5 dB	+2.0 dB

Note: Adjust the OUT potentiometer located on the group transmitting unit under test until the requirement is met.

4	Remove all T jack grounds and test connections.

CHART 3

O AND ON CARRIER—GROUP TRANSMITTING UNIT—TROUBLE LOCATION TEST

STEP	PROCEDURE
1	Test tubes in accordance with Section 362-110-503.
2	Measure individual carriers at the OUT jack of the group transmitting unit with a CFVM arranged for 135-ohm bridging. Refer to Table A for O carrier frequencies and to Table B for ON carrier frequencies.
	Requirement: +8.5 ±1.5 dB

CHART 3 (Cont)

STEP	PROCEDURE
3	Measure the group carrier leak at the OUT jack of the group transmitting unit with a CFVM arranged for 135-ohm bridging. ***Note:*** The CFVM should be tuned to the modulating carrier frequency when the group carrier leak is measured. Refer to Table C. ***Requirement:*** -15 dB maximum
4	Measure the group transmitting unit signaling tone output at the OUT jack with a CFVM arranged for 135-ohm bridging. When channel 2 signaling tone is measured channel 3 signaling tone must be off, and vice versa. ***Requirement:*** +0.5 ±2.0 dB

TABLE A

O CARRIER FREQUENCIES

GROUP	TERMINAL TYPE	CARRIER FREQ (kHz)
OA	LGT HGT	6 or 14 24 or 32
OB	LGT HGT	44 or 52 64 or 72
OC	LGT HGT	84 or 92 104 or 112
OD	LGT HGT	124 or 132 144 or 152

TABLE B

ON CARRIER FREQUENCIES

TERMINAL TYPE	GROUP	CARRIER FREQ (kHz)
ON1 Low Group	1 2 3 4 5	124 or 132 104 or 112 84 or 92 64 or 72 44 or 52
ON1 High Group	1 2 3 4 5	172 or 180 192 or 200 212 or 220 232 or 240 252 or 260
ON2 Low Group	1 2 3 4 5 6	120 or 128 104 or 112 88 or 96 72 or 80 56 or 64 40 or 48
ON2 High Group	1 2 3 4 5 6	176 or 184 192 or 200 208 or 216 224 or 232 240 or 248 256 or 264

TABLE C

O AND ON MODULATING CARRIER FREQUENCIES

ON TERMINAL	TYPE OSCILLATOR J98705H (SD-95154-01)	GROUP NUMBER	FREQ (kHz)	
			CARR L OSC	CARR H OSC
ON1	List 4	1	316	—
	List 5	2	296	—
	List 3	2	—	296
	List 3	3	276	—
	List 1	4	—	256
	List 1	5	236	—
ON2	List 5	1	—	312
	List 5	2	296	—
	List 3	2	—	296
	List 6	3	—	280
	List 6	4	264	—
	List 7 or 8	5	—	248
	List 7 or 8	6	232	—

O TERMINAL	TYPE OSCILLATOR J98705H (SD-95154-01)		FREQ (kHz)	
			CARR L OSC	CARR H OSC
OA	List 2		198	216
OB	List 1		236	256
OC	List 3		276	296
OD	List 4		316	336

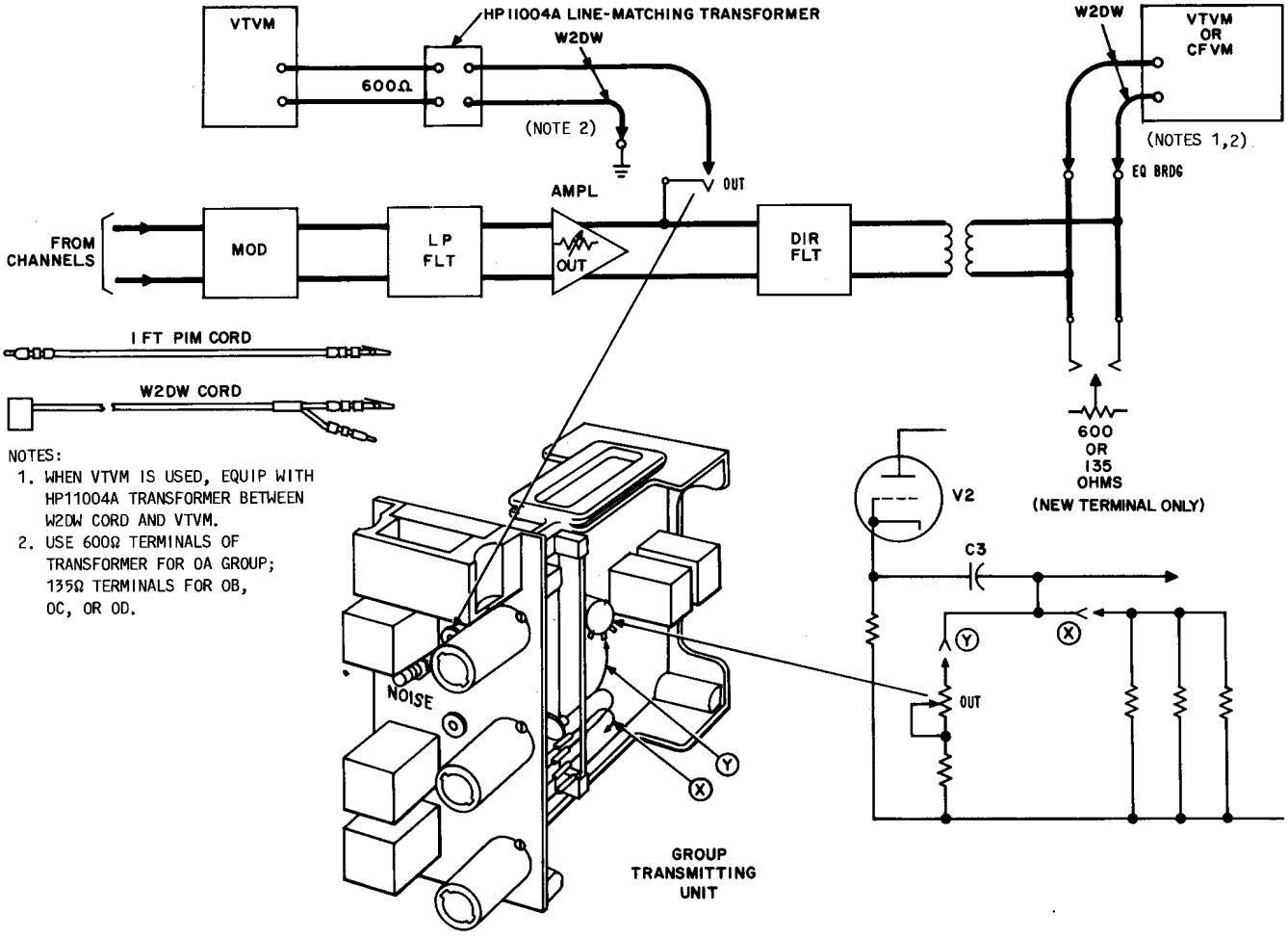

Fig. 1—O Carrier—Group Transmitting Unit Output

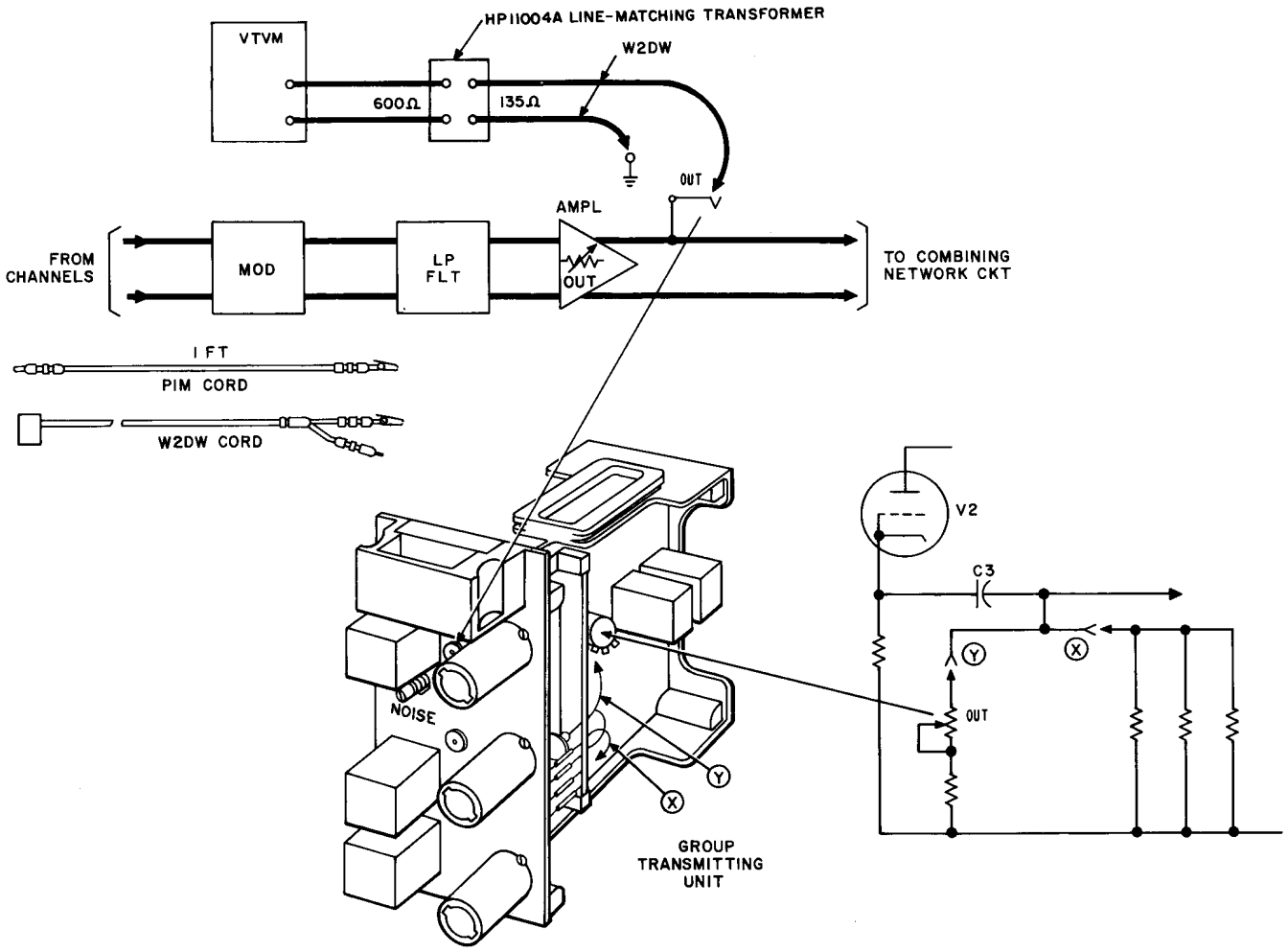

Fig. 2—ON Carrier—Group Transmitting Unit Output