TYPE N2 CARRIER TELEPHONE SYSTEM
TRANSMITTING AND RECEIVING GROUP UNITS
INDIVIDUAL CARRIER OUTPUT — TRANSMITTING

The carrier frequencies generated in the various channel units are combined in the line terminating unit and amplified in the transmitting group unit. The output of the transmitting group unit is fed through the line terminating unit, which contains the transmitting span pad, to the transmitting cable pair.

This section provides two procedures for measuring the individual carriers at the output of a transmitting group unit. Bridging measurements may be made on a system in service; however, these measurements may be relatively inaccurate because the line tends to present a poor impedance. Terminated measurements are preferred when accuracy is required. Terminated measurements are made by inserting a 10-db transmitting span pad into the line terminating unit (between the switching jacks and the cable), and then proceeding exactly as in the bridged measurement. The 10-db span pad provides a good load impedance and still transmits enough signal to regulate the repeatered line. Thus, crosstalk and noise difficulties usually produced while making terminated measurements are ***not*** encountered.

If a transmitting span pad of 6 db or greater is already in the line terminating unit (see front of unit or the layout card), the bridged measurement will be sufficiently accurate. A schematic of the jack arrangement at the output of the transmitting group unit when making this measurement is shown in Fig. 1.

Caution should be exercised, when measuring on working systems, to avoid causing hits on systems carrying SAGE, telegraph, or other data transmissions.

APPARATUS:

KS-15538, List 1, 2, or 3 Carrier Frequency Voltmeter
38F 10-db Span Pad
P2DH Cord (9-pin plug to banana plug)

MEASUREMENTS WITH UNIT TERMINATED IN A 10-DB SPAN PAD

If the system is in service, it must be removed from service before this test is made.

STEP	PROCEDURE
1	Energize the carrier frequency voltmeter and allow 20 minutes for it to warm up. Calibrate the set according to the procedure described in the section covering the KS-15538 carrier frequency voltmeter. Steps 2, 3, and 4 should be executed as quickly as possible to avoid changes in repeater gains.
2	Remove the line terminating unit.
3	Remove the transmitting span pad (upper span pad) and replace with the 38F span pad.

STEP	PROCEDURE
4	Replace the line terminating unit.
5	Operate the selector switch of the carrier frequency voltmeter to VM-BAL 135 Ω BRG.
6	Check that both connectors are in J1 and J2.
7	Remove the connector from J1.
8	Connect the carrier frequency voltmeter to the switching jack with the P2DH cord as shown in Fig. 2.
9	Measure the channel carrier power for each channel at the frequencies given in Table A and record on Form E-4558-6.
10	Determine the output slope using the method described in Section 362-400-510. ***Requirement 1:*** Each of the plotted individual channel carrier powers shall be within ±1.0 db of the computed slope line ($Y_0 - Y_{12}$) plotted on Form E-4558-6. ***Requirement 2:*** The computed slope shall be within ±1.0 db of the specified slope equalizer value (see layout card).
11	Remove the P2DH cord and replace the connector in the switching jack J1. Steps 12 and 13 should be executed as quickly as possible.
12	Remove the line terminating unit and replace the original transmitting span pad.
13	Replace the line terminating unit.

BRIDGED MEASUREMENT

This measurement may be made if the system cannot be removed from service.

STEP	PROCEDURE
1	Energize the carrier frequency voltmeter and allow 20 minutes for the set to stabilize. Calibrate the set according to the procedure described in the section covering the KS-15538 carrier frequency voltmeter.
2	Operate the selector switch of the carrier frequency voltmeter to VM-BAL 135 Ω BRG.
3	Check that both connectors are in J1 and J2.
4	Remove the connector from J1.
5	Connect the carrier frequency voltmeter to the switching jack with the P2DH cord as shown in Fig. 2.
6	Measure the channel carrier power for each channel at the frequencies given in Table A and record on Form E-4558-6.
7	Determine the output slope using the method described in Section 362-400-510. ***Requirement 1:*** Each of the plotted individual channel carrier powers shall be within ±2.0 db of the computed slope line ($Y_0 - Y_{12}$) plotted on Form E-4558-6. ***Requirement 2:*** The computed slope shall be within ±2.0 db of the specified slope equalizer value (see layout card).
8	Remove the P2DH cord and replace the connector in the switching jack J1.

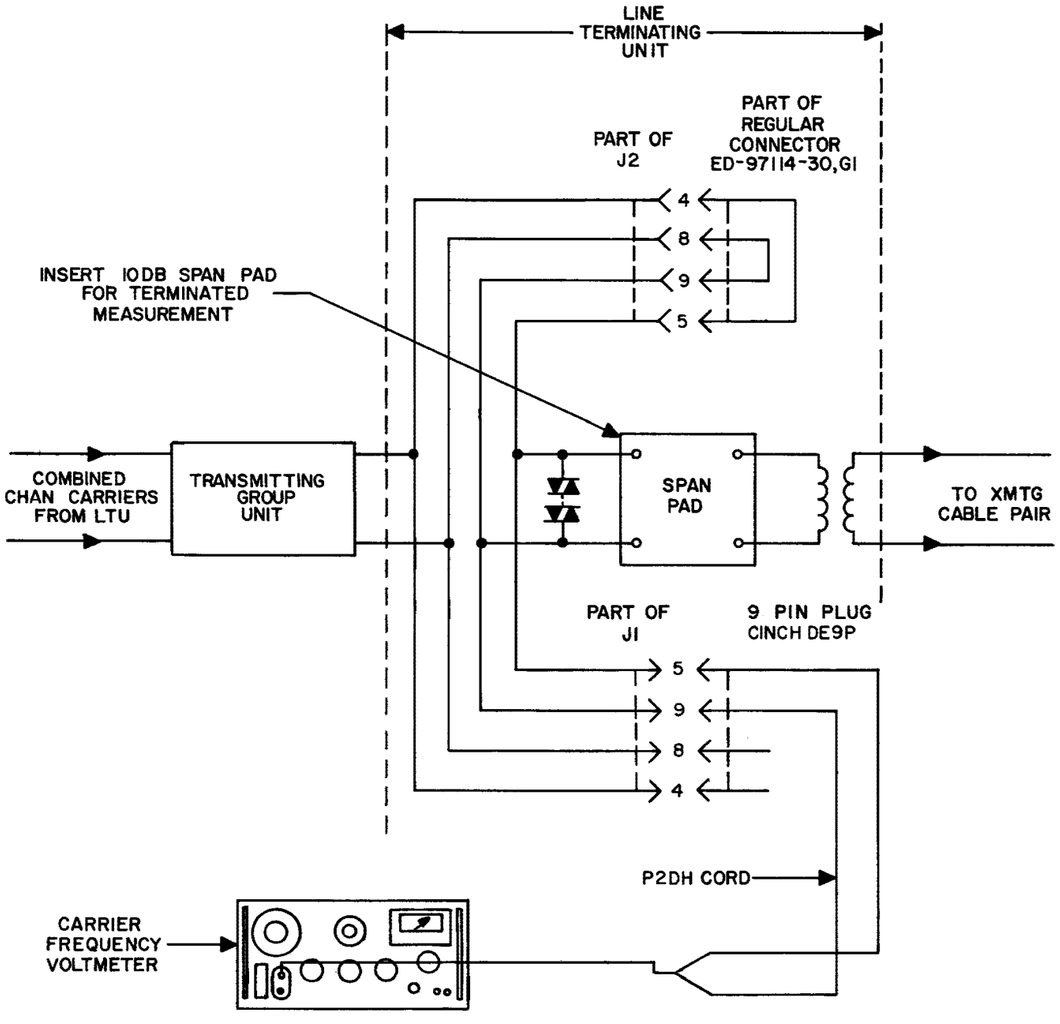


Fig. 1 – Jack Arrangements — Measurements of Individual Carrier Power

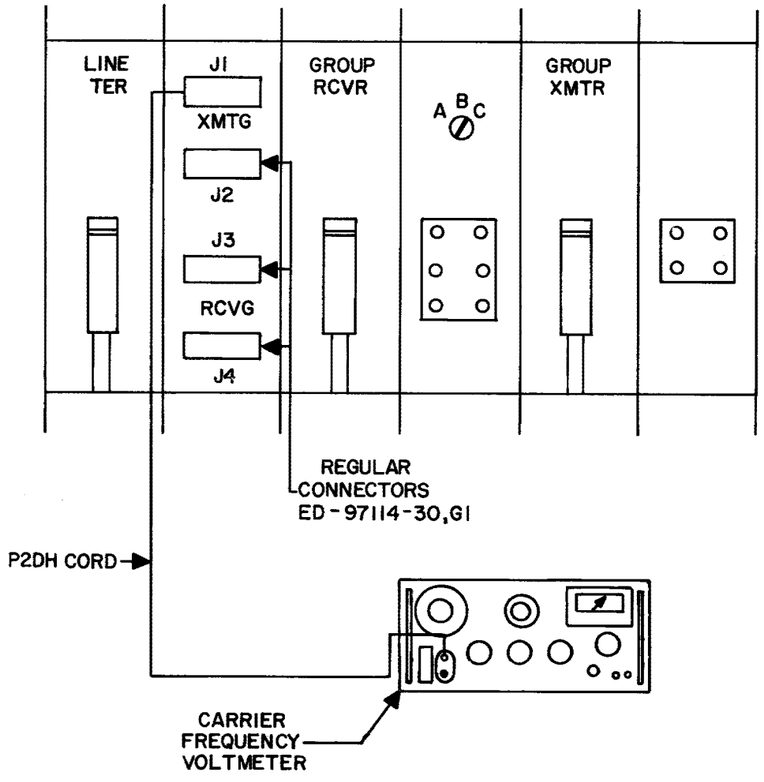
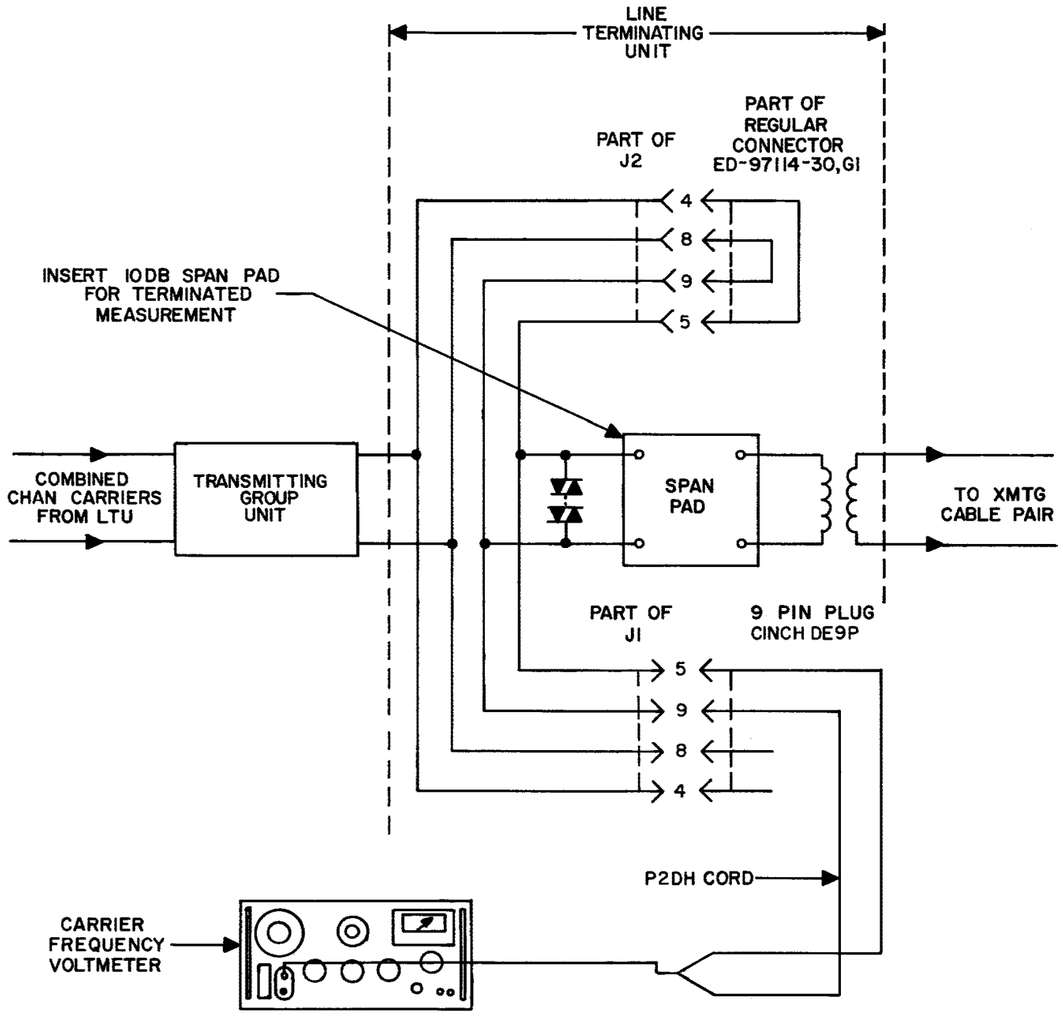


Fig. 2 – Test Setup

Fig. 1 and 2

TABLE A		
N Channel Carrier Frequencies		
CHANNEL NUMBER	LOW GROUP	HIGH GROUP
	kc	
1	136	168
2	128	176
3	120	184
4	112	192
5	104	200
6	96	208
7	88	216
8	80	224
9	72	232
10	64	240
11	56	248
12	48	256
13	40	264



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