

**TYPE N1 CARRIER TELEPHONE SYSTEM — TERMINAL EQUIPMENT
GROUP UNIT LINE-UP — RECEIVING
INDIVIDUAL CARRIER OUTPUT**

This section is reissued to include the latest information for measuring the channel carrier output of a receiving group unit.

The purpose of this test is to measure the carrier power of each channel and to determine the slope at the receiving group unit output. Normally the measurements are made with the system out of service and the output of the receiving group unit terminated in 135 ohms as shown in Figs. 1(a) and 1(b). When necessary, bridged measurements may be made as shown in Figs. 2(a) and 2(b) for an approximate slope computation when investigating trouble on a system in service.

When measuring on working systems caution should be exercised to avoid causing hits on systems carrying SAGE or telegraph transmissions.

APPARATUS:

- 1 — KS-15538, L1, L2 or L3 Carrier Frequency Voltmeter
- 1 — W20D Cord (used for connecting CFVM to the switching jacks)
- 1 — ED-92717-30 G4 Adapter (135-ohm termination)

MEASUREMENTS WITH UNIT TERMINATED IN 135 OHMS

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.
2	Remove one group connector from either J13 or J14.
3	Plug the ED-92717-30 G4 adapter in the vacant switching jack to terminate the group unit in 135 ohms.
4	Remove the remaining group connector from either J13 or J14.
5	Operate the selector switch of the carrier frequency voltmeter to GR OUT.

STEP	PROCEDURE												
6	Connect the carrier frequency voltmeter to the ED-92717-30 G4 adapter using the W20D cord.												
7	<p>Measure the channel carrier level of each channel at the frequencies given in Table I and record on the proper form in the Form E-4558 series. The individual channel level will depend upon the number of channels in use in the system. The measurement on each channel for fully and partially equipped systems should be within the requirements given below.</p> <p>(a) The reading on the meter should be —</p> <p>Requirements:</p> <table data-bbox="597 699 1235 919"> <thead> <tr> <th data-bbox="597 699 764 741">NUMBER OF CHANNELS IN USE</th> <th data-bbox="1027 699 1235 741">INDIVIDUAL CHANNEL CARRIER LEVEL</th> </tr> </thead> <tbody> <tr> <td data-bbox="656 762 699 783">All</td> <td data-bbox="1019 762 1235 783">-5.5 ±8.0 dbm</td> </tr> <tr> <td data-bbox="662 793 693 814">10</td> <td data-bbox="1019 793 1235 814">-4.5 ±8.0 dbm</td> </tr> <tr> <td data-bbox="675 825 696 846">8</td> <td data-bbox="1019 825 1235 846">-3.5 ±8.0 dbm</td> </tr> <tr> <td data-bbox="675 856 696 877">6</td> <td data-bbox="1019 856 1235 877">-2.5 ±8.0 dbm</td> </tr> <tr> <td data-bbox="675 888 696 909">4</td> <td data-bbox="1019 888 1235 909">-0.5 ±8.0 dbm</td> </tr> </tbody> </table> <p>(b) The difference in levels between adjacent channels in the system should not exceed —</p> <p>Requirement:</p> <p style="text-align: center;">5 db</p> <p>Note: It is possible that the measurement on channel 1 may not meet this limit under certain conditions. In these cases, <i>at the discretion of the Transmission Engineer</i>, channel 1 may be replaced with channel 13, or the limits for channel 1 may be relaxed an additional 5 db.</p>	NUMBER OF CHANNELS IN USE	INDIVIDUAL CHANNEL CARRIER LEVEL	All	-5.5 ±8.0 dbm	10	-4.5 ±8.0 dbm	8	-3.5 ±8.0 dbm	6	-2.5 ±8.0 dbm	4	-0.5 ±8.0 dbm
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8	<p>Determine the receiving group unit output slope using the method described in Section 362-400-510.</p> <p>Requirements:</p> <ol style="list-style-type: none"> (1) Each of the plotted individual channel carrier levels should be within approximately ±3.0 db of the computed slope line ($Y_0 - Y_{12}$). (2) The computed slope should be within approximately ±3.0 db of the output slope as specified by the circuit layout cord. <p>Note: The Transmission Engineer should be notified if the requirements cannot be met on initial line-up. On subsequent routine measurements the effect of temperature on carrier slopes or other natural causes may prevent the requirements from being met. In these cases the tests will be considered acceptable if the difference in slope variations between the receiving group unit output and the preceding locally powered repeater point does not exceed ±0.5 db.</p>												

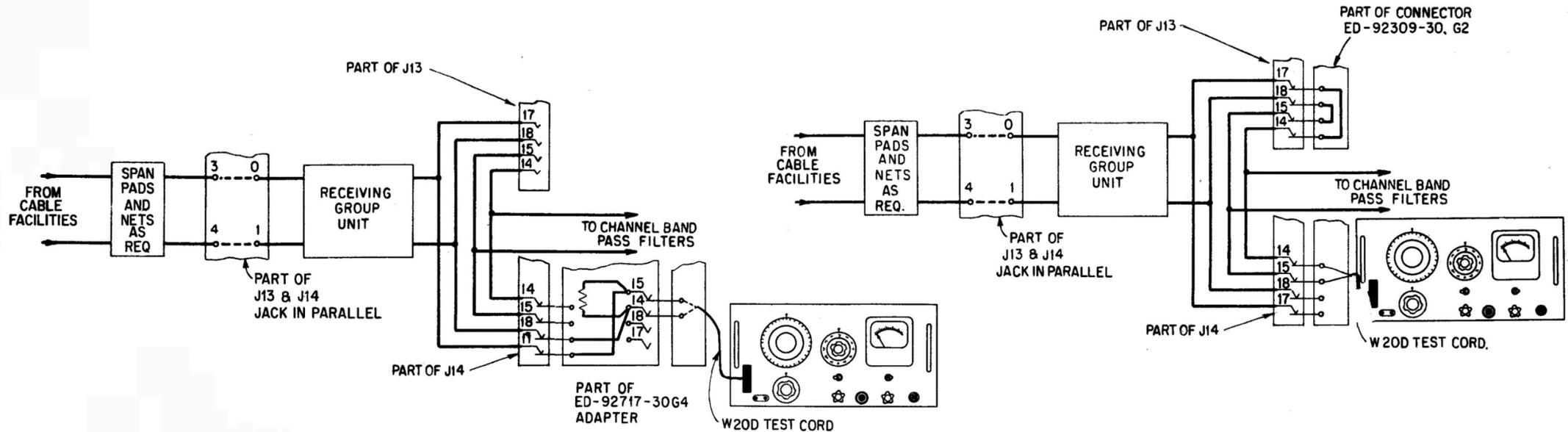
STEP	PROCEDURE
9	Remove the test set connections.
10	Replace one group connector in the vacant switching jack (J13 or J14).
11	Remove the ED-92717-30 G4 adapter from the other switching jack and replace the second group connector.

BRIDGED MEASUREMENTS

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	Check that both connector plugs are in place in the J13 and J14 jacks. Remove one of the connector plugs.
3	Connect the carrier frequency voltmeter to the vacant J jack with a W20D cord.
4	Operate the voltmeter selector switch to the GR OUT position.
5	Measure the channel carrier level for each channel at the frequencies given in Table I and record for future reference.
7	Disconnect the carrier frequency voltmeter and insert a connector plug in the vacant J jack.

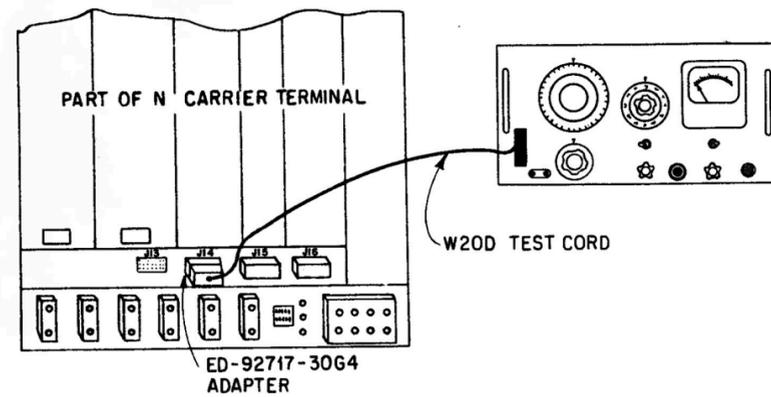
TABLE I
CHANNEL CARRIER FREQUENCIES AT RECEIVING GROUP UNIT OUTPUT

Channel Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Frequency in Kc	168	176	184	192	200	208	216	224	232	240	248	256	264

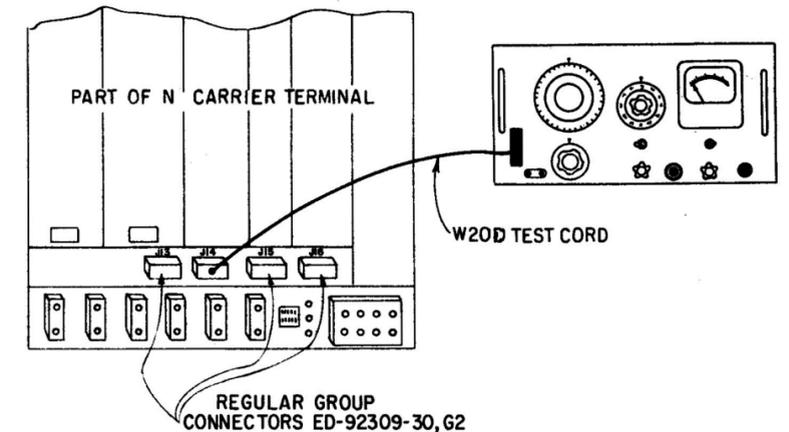


MEASUREMENT OF INDIVIDUAL CARRIER POWER
TERMINATED MEASUREMENT
FIG. 1(b)

MEASUREMENT OF INDIVIDUAL CARRIER POWER
BRIDGED MEASUREMENT
FIG. 2(b)



TEST SETUP FOR MEASUREMENT WITH
135 OHM TERMINATION
FIG. 1(a)



TEST SETUP FOR BRIDGED MEASUREMENT
FIG. 2(a)

MEASUREMENT OF INDIVIDUAL CARRIER OUTPUT RECEIVING GROUP UNIT