TYPE N AND ON2 CARRIER TELEPHONE SYSTEMS
DEVIATION REGULATOR
OUT-OF-SERVICE LINE-UP PROCEDURE — METHOD A OR B
CHECK AND ADJUSTMENT OF INDIVIDUAL CHANNEL CARRIER GAIN

The deviation regulator gain frequency characteristics are controlled by the twelve individual carrier powers on the high-frequency line. In this series of twelve tests the output of each of the twelve channel "pick-off" filters is adjusted to feed the proper levels to the computer circuit. The gain of the regulator at each carrier frequency is determined from selective input and output measurements made with the regulator in its mean condition. An illustration of the circuits involved in the test, and the arrangement of test equipment is shown in Fig. 1.

APPARATUS:

200CD Oscillator
REG TST Cord
BYPASS Plug
CFVM, with W20C Cord
VTVM, with W2DW Cord

PREPARATION FOR TESTS

STEP	PROCEDURE
1	Turn the ADJ potentiometers on the four deviation regulator control amplifiers maximum counterclockwise.
2	Insert the SHORTING plugs supplied with the deviation regulator into the TERM SL, TERM BU, TERM CU, and TERM QU jacks.
3	Insert the DUMMY plugs supplied with the deviation regulator into the SLOPE TST, BULGE TST, CUBIC TST, and QUARTIC TST jacks.
4	Remove the CONNECTOR plug from jack J1.
5	Insert the BYPASS plug into jack J1.
6	Remove the CONNECTOR plug from jack J2.
7	Insert the REG TST cord into jack J2.
8	Connect the 200CD oscillator 600-ohm balanced output to the REG TST cord plug which was inserted into jack J2. Energize the oscillator and allow 20 minutes for it to warm up.

CHECK AND ADJUSTMENT OF INDIVIDUAL CARRIER GAIN

STEP	PROCEDURE
1	Energize the CFVM and allow 20 minutes for it to stabilize. Calibrate the set according to Section A702.591, E40.666.
2	Using a W20C cord, connect the CFVM to the jacks on the REG TST cord connector plug.
3	Using a W2DW cord, or equivalent, connect the lower (ground) INPUT terminal of the VTVM to the chassis ground; and connect the upper (hot) INPUT terminal of the VTVM to terminal 3 (middle terminal) on the output potentiometer of the channel pick-off filter under test. See Table A.
4	***Beginning with channel 2*** adjust the 200CD oscillator frequency control to the frequency required for the channel filter under test. The oscillator settings for each of the twelve frequencies used in the test are also given in Table A.
5	Set the VTVM selector switch to the −20 db position and adjust the 200CD oscillator output for a reading of −30 db on the meter.
6	Tune the fine-frequency control on the 200CD oscillator for a maximum (peak) reading on the VTVM. Readjust the 200CD oscillator output, if necessary, to keep the VTVM meter reading on scale.
7	Turn the CFVM selector switch to the W-E OUT position (deviation regulator output); and tune the set to the frequency of the channel filter under test. See Table A.
8	Adjust the 200CD oscillator output for a reading of 0 dbm on the CFVM. ***Note:*** Step 9 must be followed when the Method A line-up procedure is being used; otherwise proceed to Step 10.
9	Adjust the OUTPUT potentiometers on the channel pick-off filter under test as follows: (a) Loosen the locknut on the OUTPUT potentiometer of the channel pick-off filter. (b) Adjust the OUTPUT potentiometer for a reading of −20.0 db on the VTVM. (c) Tighten the locknut on the OUTPUT potentiometer of the channel pick-off filter.

TABLE A

CHANNEL FILTER	FREQUENCY IN KC
2	176
3	184
4	192
5	200
6	208
7	216
8	224
9	232
10	240
11	248
12	256
13	264

STEP	PROCEDURE
10	Turn the selector switch on the CFVM to the W-E IN position. The reading, now indicated, on the CFVM should be within — ***Requirement:*** ±1.0 db of the value shown in Table B for the channel under test.
11	Repeat Steps 1 through 10 of the Test Procedure for each of the twelve individual carrier frequencies. (a) If the limits are exceeded on any measurement, replace the line and pick-off amplifier plug-in unit (AMP). The entire sequence of tests must be repeated if the amplifier is replaced. (b) If the limits are still exceeded, check for trouble in one of the shape networks. A method for locating trouble in the shape networks is described in Section 362-506-505. The entire sequence of tests must be repeated after any network is replaced.

TABLE B

CHANNEL	READING IN DB
2	−0.7
3	−0.8
4	−1.1
5	−1.4
6	−1.7
7	−1.7
8	−1.7
9	−1.4
10	−1.3
11	−0.9
12	−0.7
13	−0.2

This completes the check and adjustment of the individual carrier gain. Disconnect the test equipment as follows:

STEP	PROCEDURE
1	Disconnect the 200CD oscillator, the VTVM and the CFVM.
2	Remove the REG TST cord from jack J2.
3	Insert a CONNECTOR plug into jack J2.
4	Remove the BYPASS plug from jack J1.
5	Insert a CONNECTOR plug into jack J1.
6	Leave the SHORTING and DUMMY plugs in the deviation regulator TERM and TST jacks to protect the shape network thermistors and to keep the deviation regulator in a mean condition.

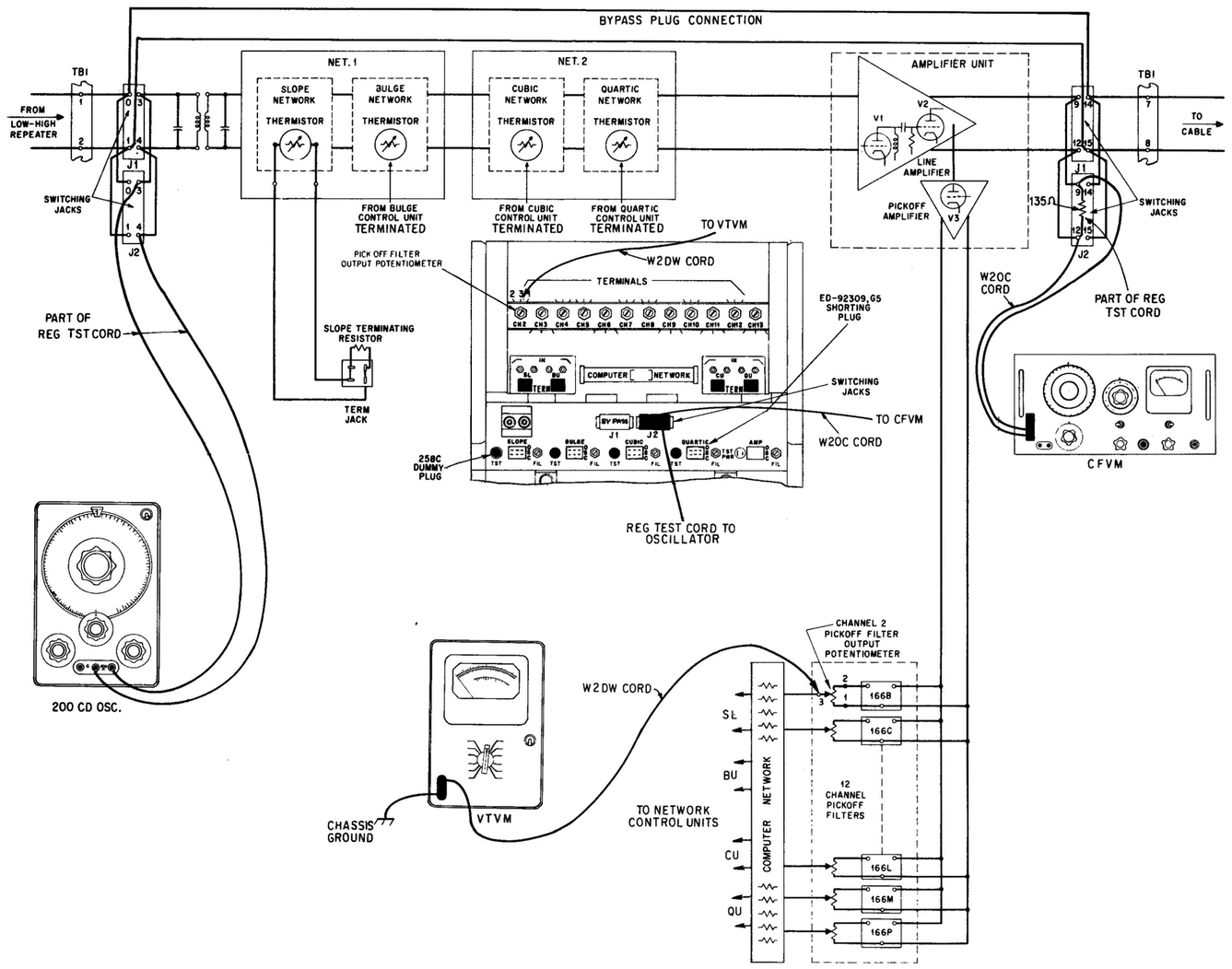

Fig. 1 – Test Set Arrangement for Checking and Adjusting the Individual Carrier Gain