L4 CARRIER
REPEATERS
TESTS
MONITORING OSCILLATOR ASSEMBLY
FREQUENCY AND OUTPUT POWER

In the L4 system, monitoring oscillator assemblies are used at the repeater locations to provide monitoring (identifying) tones which are inserted at the inputs to the repeaters. These tones can be monitored at the control center and are used to identify the repeater and to aid in determining the repeater performance. Each assembly consists of a 66-type oscillator and a 4103A distribution network.

There are two groups of 66-type oscillator units available. One group consists of 16 oscillators (coded 66A, 66B, etc.) with their frequencies located 4 kHz apart in the 18.500- to 18.560-MHz band. The other group consists of 21 oscillators (coded 66AA, 66BB, etc.) with their frequencies located 3 kHz apart in the 18.500- to 18.560-MHz band. Each oscillator is crystal controlled and provides a precise, stable output signal at its assigned frequency and power level.

The 4103A distribution network splits the output of the 66-type oscillator into four outputs. The power level of each of the outputs is adjustable by an associated individual adjustment control on the 4103A network.

This section is reissued, in chart form, to include test procedures for using the J68906B test set (Chart 1) and to revise the test procedures for using the J68899A test set (Chart 2). Arrows are used to indicate changes.

The purpose of this section is to provide procedures for conducting frequency and output power adjustment range tests on the monitoring oscillator assembly.

CHART **PAGE**

CHART 1

MONITORING OSCILLATOR ASSEMBLY TEST USING THE J68906B TEST SET

APPARATUS:

♦J68906B L4 Line Repeater Test Set (Section 103-459-000)

Receiving test equipment capable of detecting signals from 18.500 MHz through 18.560 MHz (frequency accuracy ±50 Hz) at power levels from -20 dBm to -50 dBm (level accuracy ±0.1 dB).

STEP	PROCEDURE
1	At the rear of the test set, operate the power switch to the ON position. ***Requirement:*** The power-on indicating lamp shall light.
2	Ensure that the LINE switch on the repeater power supply is in the off position and that the associated indicating lamp is extinguished.
3	On the control panel, set the MON OSC TST (PWR) key to the NORM position (see Fig. 2). ***Note:*** The setting of controls or patches not mentioned have no effect on the test.
4	Install the monitoring oscillator assembly in the mounting position designated 66-TYPE OSC & 4103A NET.
5	On the control panel, set the MON OSC TST (PWR) key to the ON position.
6	Set the receiving test equipment to measure the assigned frequency of the 66-type oscillator under test at a power of approximately -23 dBm. ***Note:*** Refer to Table A for the 66-type oscillator code numbers and their assigned frequencies.
7	Patch the J4 [or A(J4) or A (see Fig. 1)] output jack of the 4103A network to the input of the receiving test equipment [see patch (1) in Fig. 1].
8	Tune the receiving test equipment for maximum meter indication.
9	Observe the frequency-indicating dials on the test equipment. ***Requirement:*** Nominal frequency of the oscillator under test ±500 Hz.
10	On the 4103A network, set the ADJ A control (fully clockwise) for maximum output.

CHART 1 (Cont)

STEP	PROCEDURE

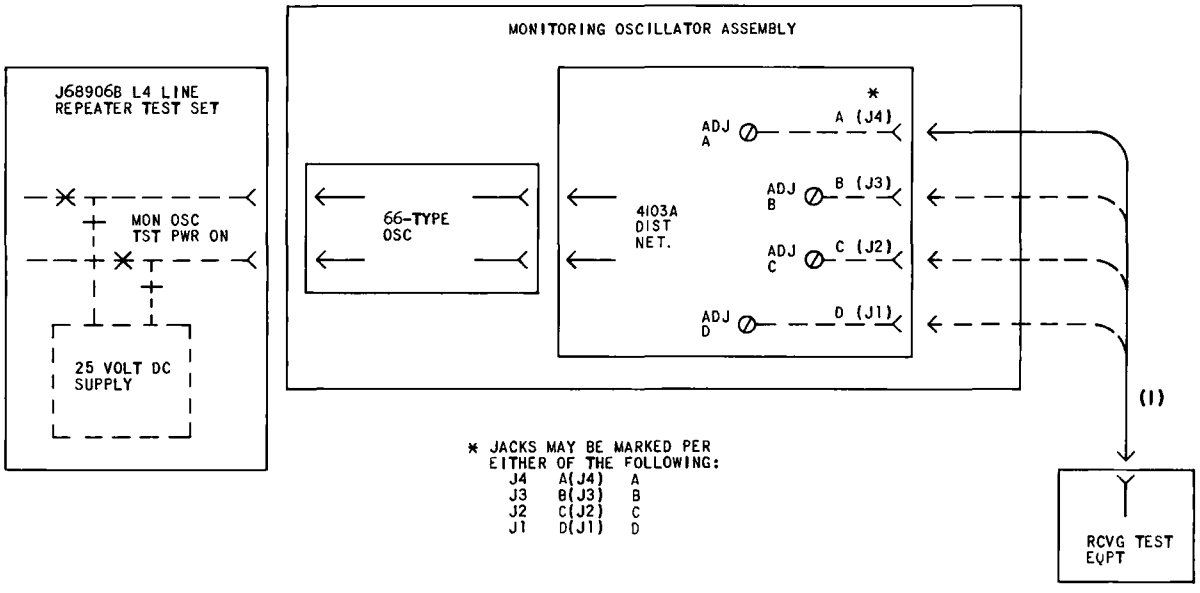

Fig. 1—Monitoring Oscillator Assembly—Test Arrangements

11 Measure the power output.

Requirement: Codes 66A through 66S: -22 dBm minimum
Codes 66AA through 66BA: -24 dBm minimum.

12 On the 4103A network, set the ADJ A control (fully counterclockwise) for minimum output.

13 Measure the power output.

Requirement: Codes 66A through 66S: -40 dBm maximum
Codes 66AA through 66BA: -42 dBm maximum.

14 Readjust the ADJ A control for a -32.5 dBm indication on the receiving test equipment.

15 If the monitoring oscillator assembly is being prepared for installation at a specific location, obtain from office records the required output signal power and readjust the ADJ A control as required.

16 Repeat Steps 6 through 15 for the other three outputs of the 4103A network.◆

CHART 2

MONITORING OSCILLATOR ASSEMBLY TEST USING THE J68899A TEST SET

APPARATUS:

J68899A Main Station Repeater Test Set

STEP	PROCEDURE
1	Set the test set switches and controls as follows:

SWITCH DESIGNATION	SWITCH POSITION
Wave Analyzer	
LINE-PUSH ON/OFF	ON (switch will light)
BANDWIDTH — HZ	3000
RECEIVER MODE	AM/AFC
IMPEDANCE — Ω	TERMINATED
Attenuator Panel	
All four controls	0
Test Control Panel	
PWR ON	ON (switch will light)
LINE/M-STA	M-STA
3 DB-A	IN
3 DB-B	OUT
BASIC REPEATER	MEAS
REGULATING REPEATER	MEAS
MODE	TRMSN

2	Connect plug P1 of the 66-type oscillator under test to the test set MAIN STA BAT OUT jack via the adapter cord (ED-50601-20, Group 4).
3	Set the FREQUENCY RANGE—MHZ and FREQUENCY TUNING controls on the wave analyzer to the approximate design frequency of the oscillator under test. ***Note:*** Refer to Table A for 66-type oscillator code numbers and assigned frequencies.
4	Set the REFERENCE LEVEL—DBM control on the wave analyzer to -30.

CHART 2 (Cont)	
STEP	**PROCEDURE**
5	Set the amplitude RANGE—DB control to 0.
6	Using an appropriate patch cord, connect output J4 [or A(J4) or A] of the 4103A network to the MEAS jack on the test set control panel.
7	Using the FREQUENCY TUNING controls, tune for a power level indication on the wave analyzer meter and then observe the frequency display portion of the wave analyzer. ***Requirement:*** The assigned frequency of the oscillator ±500 Hz.
8	On the 4103A network, set the ADJ A control (fully clockwise) for maximum output. ***Requirement:*** Codes 66A through 66S: -22 dBm minimum Codes 66AA through 66BA: -24 dBm minimum.
9	On the 4103A network, set the ADJ A control (fully counterclockwise) for minimum output. ***Requirement:*** Codes 66A through 66S: -40 dBm maximum Codes 66AA through 66BA: -42 dBm maximum.
10	Readjust the ADJ A control for -32.5 dBm output indication on the wave analyzer.
11	If the monitoring oscillator assembly is being prepared for installation at a specific location, obtain from office records the required output signal power and readjust the ADJ control as required.
12	Repeat Steps 3 through 11 for each of the remaining three outputs.

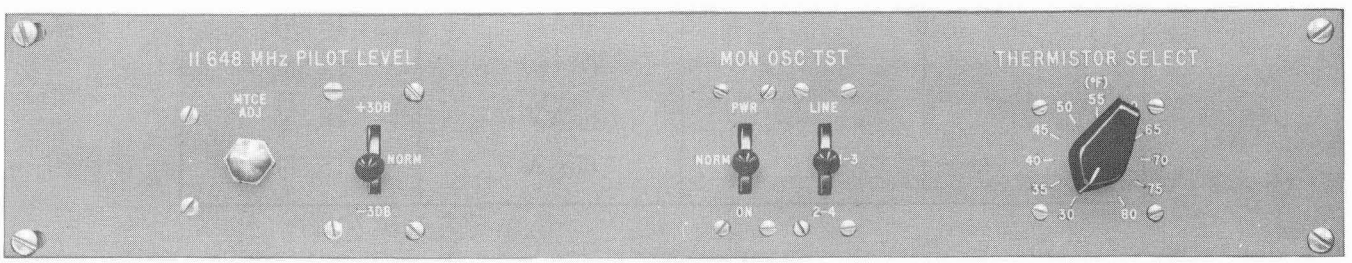

Fig. 2—Control Panel—J68906B Test Set

TABLE A

66-TYPE MONITORING OSCILLATOR

16-FREQUENCY GROUP		21-FREQUENCY GROUP	
UNIT CODE NO.	OUTPUT FREQUENCY (MHZ)	UNIT CODE NO.	OUTPUT FREQUENCY (MHZ)
66A	18.500	66AA	18.500
66B	18.504	66AB	18.503
66C	18.508	66AC	18.506
66D	18.512	66AD	18.509
66E	18.516	66AE	18.512
66F	18.520	66AF	18.515
66G	18.524	66AG	18.518
66H	18.528	66AH	18.521
66J	18.532	66AJ	18.524
66K	18.536	66AK	18.527
66L	18.540	66AL	18.530
66M	18.544	66AM	18.533
66N	18.548	66AN	18.536
66P	18.552	66AP	18.539
66R	18.556	66AR	18.542
66S	18.560	66AS	18.545
		66AT	18.548
		66AU	18.551
		66AW	18.554
		66AY	18.557
		66BA	18.560