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Test Procedure for Test Oscillator Boxes.

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## 1 Introduction

The following Test Procedure describes the test of proper operation of the Test Oscillator Boxes.

s/n S1103740

Tested by PBS

## 2 Test Equipment

- Voltmeter
- Oscilloscope
- Stanford Research SR785 analyzer
- RF Power Meter HP E4418A or Agilent N1914A
- Board Schematics—D1100663

## 3 Tests

*The Test Oscillators use the Low Noise Power Module (D0901846-D).*

- 1) **Verify the proper current draw.** Using a bench DC supply apply +- 24Volts to P7 and +- 17 Volts to P6 of the low noise power Module (D0901846-D). Measure the current draw of the board.

+24 Volt current 0.1 A Nom.                      -24 Volt current 0.0 A Nom.

+17 Volt current 1.091A                      less than 1.1 A

-17 Volt current 0.056A                      less than 0.01 A

- 2) **On the low noise power module check the voltage on TP 1-13.**

TP1 (+17V) 22.99V                      TP2 (-17V) -23.19V

TP3 , 4 ( GND )                      TP5 (+ 5V) 5.06V

TP6 (-15V ) \_\_\_ -14.995V\_\_\_                      TP7 (+24V ) \_\_\_ 23.068V\_\_\_\_\_

TP8 ( GND )    TP9 ( -24V ) \_\_\_ -23.173V\_\_\_\_\_

TP10 ( GND )    TP11 (+15V ) \_\_\_ 15.001V\_\_\_\_\_

TP12 (+VREF ) \_\_\_ 9.9996V\_\_\_\_\_              TP13 (-VREF) \_-9.9984V\_\_\_\_\_

**3) If TP 1 , 2 , 7 , 9 and 8 are correct then TP14 ( OK ) should be Logic high ~3Volts.      Confirm. \_\_\_ X \_\_\_\_\_**

**4) The noise on TP 12, 13, 11 and 6 should be measured with a SR785 using an rms power spectrum.**

TP12 noise \_\_\_ 10.3 nVrms/sqrt Hz\_\_\_\_\_ less than 20 nVrms/sqrt Hz at 140 Hz

TP13 noise \_\_\_ 12.85 nVrms/sqrt Hz\_\_\_\_\_ less than 20 nVrms/sqrt Hz at 140 Hz

TP11 noise \_\_\_ 10.55 nVrms/sqrt Hz\_\_\_\_\_ less than 20 nVrms/sqrt Hz at 140 Hz

TP6 noise \_\_\_ 20.89 nVrms/sqrt Hz\_\_\_\_\_ \_ less than 30 nVrms/sqrt Hz at 140 Hz.

This concludes the test of the power supply. Now test the crystal oscillators.

**5) With the frequency control input grounded measure the RF output with a RF Power meter. The nominal output level is 12 dBm +/- 2dBm.**

RF Output levels (dBm)

OSC1	OSC2	OSC3	OSC4
-----	11.40	11.34	10.63

5) **Apply a dc voltage to the frequency control input.** Measure the output frequency as a function of input voltage. The frequency change is typically 50 ppm for +/- 10 volt input.

Oscillator 1 frequency change for 10 Volt input change \_\_\_\_\_ ppm

Oscillator 2 frequency change for 10 Volt input change \_\_\_\_\_ ppm.

Oscillator 3 frequency change for 10 Volt input change \_\_\_\_\_ ppm.

Oscillator 4 frequency change for 10 Volt input change \_\_\_\_\_ ppm

Oscillator 1, Center Frequency = ----- MHz

Frequency	----	----	----	----	----
Voltage	10	9	8	7	6
Voltage	1	2	3	4	5
Frequency	----	----	----	----	----
Frequency	----	----	----	----	----
Voltage	-1	-2	-3	-4	-5
Voltage	-10	-9	-8	-7	-6
Frequency	----	----	----	----	----

Oscillator 2, Center Frequency = 22.993 746 MHz

Frequency	1402	1732	2041	2331	2602
Voltage	10	9	8	7	6
Voltage	1	2	3	4	5
Frequency	3615	3460	3282	3079	2852
Frequency	3857	3951	4030	4095	4149
Voltage	-1	-2	-3	-4	-5
Voltage	-10	-9	-8	-7	-6
Frequency	4313	4290	4263	4231	4194

Oscillator 3, Center Frequency = 24.516 324 MHz

Frequency	3872	4250	4596	4911	5197
Voltage	10	9	8	7	6
Voltage	1	2	3	4	5
Frequency	6198	6051	5879	5680	5453
Frequency	6431	6522	6598	6663	6716
Voltage	-1	-2	-3	-4	-5
Voltage	-10	-9	-8	-7	-6
Frequency	6888	6862	6833	6800	6762

Oscillator 4, Center Frequency = 24.482 876 MHz

Frequency	0868	1143	1399	1642	1871
Voltage	10	9	8	7	6
Voltage	1	2	3	4	5
Frequency	2761	2623	2464	2283	2085
Frequency	2973	3050	3112	3159	3192
Voltage	-1	-2	-3	-4	-5
Voltage	-10	-9	-8	-7	-6
Frequency	3252	3227	3211	3220	3214



