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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 S1103739

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 1.395A                      less than 1.1 A

-17 Volt current 0.055A                      less than 0.01 A

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

TP1 (+17V) 22.35V                      TP2 (-17V) -23V

TP3 , 4 ( GND )                      TP5 (+ 5V) 5.01V

TP6 (-15V ) \_\_\_ -14.98V \_\_\_

TP7 (+24V ) \_\_\_ 22.36V \_\_\_\_\_

TP8 ( GND )

TP9 ( -24V ) \_\_\_ -23.08V \_\_\_\_\_

TP10 ( GND )

TP11 (+15V ) \_\_\_ 14.998V \_\_\_\_\_

TP12 (+VREF ) \_\_\_ 9.990V \_\_\_\_\_

TP13 (-VREF) \_-9.990V \_\_\_\_\_

**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 \_\_\_ 15.81 nVrms/sqrt Hz \_\_\_\_\_ less than 20 nVrms/sqrt Hz at 140 Hz

TP13 noise \_\_\_ 18.0 nVrms/sqrt Hz \_\_\_\_\_ less than 20 nVrms/sqrt Hz at 140 Hz

TP11 noise \_\_\_ 8.2 nVrms/sqrt Hz \_\_\_\_\_ less than 20 nVrms/sqrt Hz at 140 Hz

TP6 noise \_\_\_ 18.02 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  |
|-------|-------|-------|-------|
| 11.85 | 11.59 | 11.60 | 11.59 |

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 = 9.099 4762 MHz

|           |      |      |      |      |      |
|-----------|------|------|------|------|------|
| Frequency | 4703 | 4710 | 4715 | 4722 | 4727 |
| Voltage   | 10   | 9    | 8    | 7    | 6    |
| Voltage   | 1    | 2    | 3    | 4    | 5    |
| Frequency | 4756 | 4750 | 4745 | 4739 | 4733 |
| Frequency | 4767 | 4773 | 4778 | 4784 | 4789 |
| Voltage   | -1   | -2   | -3   | -4   | -5   |
| Voltage   | -10  | -9   | -8   | -7   | -6   |
| Frequency | 4815 | 4810 | 4805 | 4799 | 4795 |

Oscillator 2, Center Frequency = 24.079 268 MHz

|           |      |      |      |      |      |
|-----------|------|------|------|------|------|
| Frequency | 7102 | 7425 | 7722 | 7997 | 8250 |
| Voltage   | 10   | 9    | 8    | 7    | 6    |
| Voltage   | 1    | 2    | 3    | 4    | 5    |
| Frequency | 9159 | 9026 | 8869 | 8687 | 8480 |
| Frequency | 9357 | 9430 | 9488 | 9536 | 9575 |
| Voltage   | -1   | -2   | -3   | -4   | -5   |
| Voltage   | -10  | -9   | -8   | -7   | -6   |
| Frequency | 9698 | 9680 | 9659 | 9635 | 9608 |

Oscillator 3, Center Frequency = 24.407 975 MHz

|           |      |      |      |      |      |
|-----------|------|------|------|------|------|
| Frequency | 5968 | 6288 | 6574 | 6831 | 7062 |
| Voltage   | 10   | 9    | 8    | 7    | 6    |
| Voltage   | 1    | 2    | 3    | 4    | 5    |
| Frequency | 7872 | 7751 | 7611 | 7450 | 7268 |
| Frequency | 8063 | 8138 | 8202 | 8256 | 8302 |
| Voltage   | -1   | -2   | -3   | -4   | -5   |
| Voltage   | -10  | -9   | -8   | -7   | -6   |
| Frequency | 8453 | 8430 | 8404 | 8375 | 8341 |

Oscillator 4, Center Frequency = 24.441 384 MHz

|           |      |      |      |      |      |
|-----------|------|------|------|------|------|
| Frequency | 8922 | 9333 | 9692 | 0009 | 0289 |
| Voltage   | 10   | 9    | 8    | 7    | 6    |
| Voltage   | 1    | 2    | 3    | 4    | 5    |
| Frequency | 1262 | 1118 | 0950 | 0757 | 0538 |
| Frequency | 1487 | 1573 | 1645 | 1705 | 1755 |
| Voltage   | -1   | -2   | -3   | -4   | -5   |
| Voltage   | -10  | -9   | -8   | -7   | -6   |
| Frequency | 1916 | 1892 | 1865 | 1833 | 1797 |



