

\*\*\*\*\* MLMS Main Test Menu Final Test Data Summary \*\*\*\*\*

Serial Number: 0064
Model Number: MLMS-4010B
Time: 2:54:58 PM
Date: 11/21/2018
Minimum Frequency: 4000.000 MHz
Maximum Frequency: 10000.000 MHz
Frequency Step Size: 0.001 MHz
External 100 MHz PLL Reference Frequency: 10.0 MHz
Maximum RF Level (Min.): 10.0 dBm
Maximum RF Level (Max.): 18.0 dBm
Minimum Operating Temperature: 0 Degrees C.
Maximum Operating Temperature: 60 Degrees C.
MLMS Firmware Version: 3.0 Feb 20 2018
MLWI Sales Order #: 21\*0027
MLWI Outline Drawing #: 211-001 A

Final Test Data Check Point Status:

Config data file backup = Pass
Coarse Cal file = Pass
Fine Cal file = Pass
Xtal Oscillator Cal file = Pass
Frequency Lock test file = Pass
RF Max Power test file = Pass
Harmonics test file = Pass
Random Spur test file = Pass
Switching Speed test file = Pass
Phase Noise test file = Pass
NOVO Locked = Pass
Unit Health = Pass
Xtal SN Exists = Pass
Last Self Test = Pass
Full Cal Status = Pass
Coarse Cal = Pass
Fine Cal = Pass
PLL Locked Status = Pass
MLWI Job # = Pass
MLWI Drawing # = Pass
Current Self Test Run = Pass

Pass - Unit is Ready to Ship

Label unit per outline drawing listed above.
Fill out all paperwork and submit to QA for inspection.
Copy all paperwork to include in shipping box.

SHIPPING CHECKLIST:

- 1. Labeled unit with SMA connector protectors installed
2. USB cable (1 per unit)
3. MLMS support CD Rom (1 per lot)
4. J1 mating connector (1 per unit)
5. J1 connector pins (9 per unit)
6. MLMS quick start guide (1 per lot)
7. Copy of completed C of C
8. Copy of test data packet (1 per unit)
9. Copy of outline drawing (1 per unit)
10. Copy of completed Packing list (1 per unit)

Check box

Horizontal lines for check boxes corresponding to the shipping checklist items.

Notes:

Place labeled unit into anti-static pouch.
Place CD and USB cables in a separate large anti-static pouch.
Staple bags with J1 mating items to paperwork.
Box and ship product.

Initials: \_\_\_\_\_

Date: \_\_\_\_\_

\*\*\*\*\* Frequency Lock Test from 4000.000 MHz to 10000.000 MHz in 10 MHz Steps \*\*\*\*\*

Serial Number: 0064  
Model Number: MLMS-4010B  
Time: 11:27:15 AM  
Date: 11/21/2018  
Minimum Frequency: 4000.000 MHz  
Maximum Frequency: 10000.000 MHz  
Temperature: +44.6C Deg. C  
NOVO State: UnLocked  
Power Supply Spec: +5.0 VDC +/- 0.25 V @ < 550 mA  
Power Supply Spec: +15.0 VDC +/- 0.50 V @ < 500 mA  
Accuracy Tested to: +/-0.002 MHz

Begin Frequency Lock Test from 4000.000 MHz to 10000.000 MHz in 10 MHz Steps

Total Frequency Errors: 0

Finish Time: 11:27:42 AM

Begin Random Frequency Lock Test from 4000.000 MHz to 10000.000 MHz (1000 Frequencies)

Total Random Frequency Errors: 0

Finish Time: 11:28:26 AM

Internal Power Supply Voltage Readings:

+2.5V = +2.5V Pass  
+3.3V = +3.3V Pass  
+5.0V = +5.0V Pass  
-5.0V = -5.0V Pass  
+6.75V = +6.7V Pass  
+13.5V = +13.4V Pass  
100 MHz PLL V = +1.7V Pass  
YIG PLL V = +7.0V Pass

External Power Supply Voltage and Current Readings:

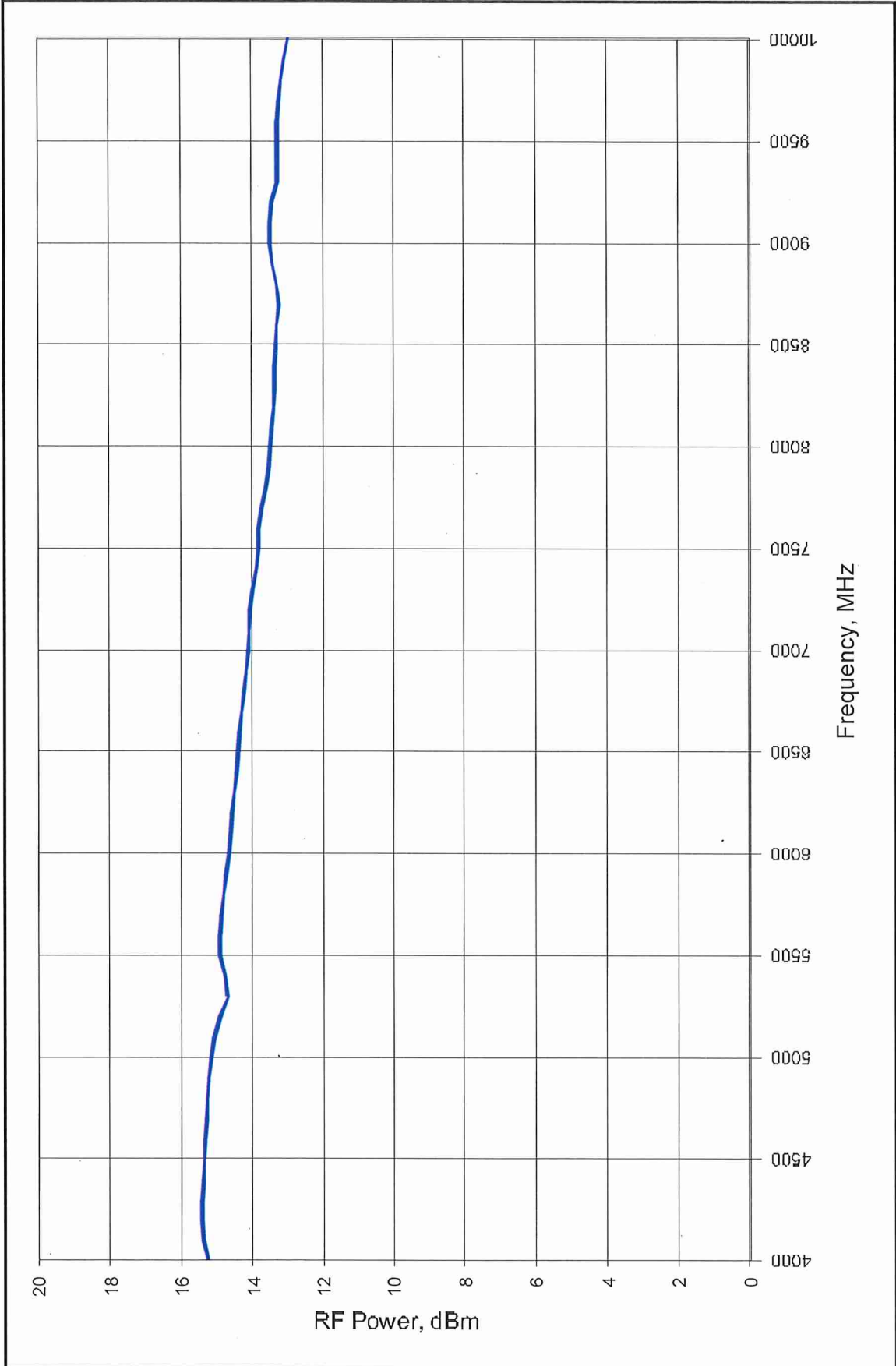
+5.0 VDC Voltage = 5.002V Pass  
+5.0 VDC Current = 503mA Pass  
+15.0 VDC Voltage = 14.997V Pass  
+15.0 VDC Current = 411mA Pass

Finish Time: 11:28:28 AM

Total Errors: 0

Pass

### Maximum RF Output Power vs. Frequency



Max Levelled Pwr: No dBm    Min Levelled Pwr: N/A dBm    Levelled Pwr Set: Max dBm    Level Flatness Spec: +/-2.0 dB

Print

\*\*\*\*\* Harmonic Test from 4000.000000 MHz to 10000.000000 MHz in 100 MHz Steps \*\*\*\*\*

Model Number: MLMS-4010B  
Serial Number: 0064  
Time: 11:31:39 AM  
Date: 11/21/2018  
Minimum Frequency: 4000.000000 MHz  
Maximum Frequency: 10000.000000 MHz  
Current Unit Temperature: +43.5C Deg. C  
Harmonic Spec Level (In Band): -12.0 dBc

Frequency	Level	Harm #	Status
4000 MHz	-25 dBc	3	PASS
4100 MHz	-23 dBc	2	PASS
4200 MHz	-24 dBc	2	PASS
4300 MHz	-24 dBc	2	PASS
4400 MHz	-22 dBc	2	PASS
4500 MHz	-22 dBc	2	PASS
4600 MHz	-24 dBc	2	PASS
4700 MHz	-25 dBc	2	PASS
4800 MHz	-27 dBc	2	PASS
4900 MHz	-28 dBc	2	PASS
5000 MHz	-29 dBc	2	PASS
5100 MHz	-30 dBc	3	PASS
5200 MHz	-30 dBc	3	PASS
5300 MHz	-31 dBc	2	PASS
5400 MHz	-29 dBc	2	PASS
5500 MHz	-29 dBc	2	PASS
5600 MHz	-32 dBc	3	PASS
5700 MHz	-32 dBc	3	PASS
5800 MHz	-31 dBc	2	PASS
5900 MHz	-30 dBc	2	PASS
6000 MHz	-27 dBc	2	PASS
6100 MHz	-28 dBc	2	PASS
6200 MHz	-27 dBc	2	PASS
6300 MHz	-25 dBc	2	PASS
6400 MHz	-24 dBc	2	PASS
6500 MHz	-25 dBc	2	PASS
6600 MHz	-24 dBc	2	PASS
6700 MHz	-24 dBc	2	PASS
6800 MHz	-24 dBc	2	PASS
6900 MHz	-25 dBc	2	PASS
7000 MHz	-26 dBc	2	PASS
7100 MHz	-27 dBc	2	PASS
7200 MHz	-27 dBc	2	PASS
7300 MHz	-28 dBc	2	PASS
7400 MHz	-27 dBc	2	PASS
7500 MHz	-26 dBc	2	PASS
7600 MHz	-26 dBc	2	PASS
7700 MHz	-26 dBc	2	PASS
7800 MHz	-27 dBc	2	PASS
7900 MHz	-28 dBc	2	PASS
8000 MHz	-29 dBc	2	PASS
8100 MHz	-29 dBc	2	PASS
8200 MHz	-29 dBc	2	PASS
8300 MHz	-29 dBc	2	PASS
8400 MHz	-29 dBc	2	PASS
8500 MHz	-33 dBc	2	PASS
8600 MHz	-35 dBc	2	PASS
8700 MHz	-35 dBc	2	PASS
8800 MHz	-39 dBc	3	PASS
8900 MHz	-45 dBc	2	PASS
9000 MHz	-39 dBc	2	PASS
9100 MHz	-35 dBc	2	PASS
9200 MHz	-33 dBc	2	PASS
9300 MHz	-36 dBc	2	PASS
9400 MHz	-36 dBc	2	PASS
9500 MHz	-35 dBc	2	PASS
9600 MHz	-32 dBc	2	PASS
9700 MHz	-29 dBc	2	PASS
9800 MHz	-27 dBc	2	PASS
9900 MHz	-27 dBc	2	PASS
10000 MHz	-26 dBc	2	PASS

Number of Failures: 0

Finish Time: 11:40:56 AM

Harmonic Readings complete

Pass

\*\*\*\*\* Random Spur Test from 4000.000 MHz to 10000.000 MHz \*\*\*\*\*

Serial Number: 0064  
Model Number: MLMS-4010B  
Time: 12:01:01 PM  
Date: 11/21/2018  
Minimum Frequency: 4000.000 MHz  
Maximum Frequency: 10000.000 MHz  
Analyzer Frequency Span Tested: 2 kHz to 2000 MHz - or Max span = 1.9 \* CF if <=1000 MHz  
Spur Level Spec <=: -60.0 dBc  
Number of Frequencies Tested: 25  
Temperature: +41.4C Deg. C  
NOVO State: UnLocked

Random Frequency	Status
Frequency Tested = 9749.440903 MHz	Pass
Frequency Tested = 9987.216870 MHz	Pass
Frequency Tested = 7328.160682 MHz	Pass
Frequency Tested = 4147.769279 MHz	Pass
Frequency Tested = 8344.302864 MHz	Pass
Frequency Tested = 8666.063850 MHz	Pass
Frequency Tested = 7806.084085 MHz	Pass
Frequency Tested = 6184.151310 MHz	Pass
Frequency Tested = 4743.936649 MHz	Pass
Frequency Tested = 7396.852773 MHz	Pass
Frequency Tested = 6918.202193 MHz	Pass
Frequency Tested = 8228.522648 MHz	Pass
Frequency Tested = 7665.248934 MHz	Pass
Frequency Tested = 4122.966514 MHz	Pass
Frequency Tested = 8461.473411 MHz	Pass
Frequency Tested = 7920.626702 MHz	Pass
Frequency Tested = 7075.867254 MHz	Pass
Frequency Tested = 6998.718001 MHz	Pass
Frequency Tested = 7809.516454 MHz	Pass
Frequency Tested = 5169.994294 MHz	Pass
Frequency Tested = 8975.784360 MHz	Pass
Frequency Tested = 7288.886956 MHz	Pass
Frequency Tested = 8287.439856 MHz	Pass
Frequency Tested = 4018.894483 MHz	Pass
Frequency Tested = 4989.367485 MHz	Pass

Total Spur Errors: 0

Finish Time: 12:33:14 PM  
Test Completed  
Pass

\*\*\*\*\* Switching Speed Test from 4000.0 to 10000.0 MHz in 100 1000 MHz & Full Band Steps \*\*\*\*\*

Model Number: MLMS-4010B  
 Serial Number: 0064  
 Time: 1:10:37 PM  
 Date: 11/21/2018  
 Minimum Frequency: 4000.000 MHz  
 Maximum Frequency: 10000.000 MHz  
 Current Unit Temperature: +35.7C Deg. C  
 Switching Speed Spec:  
 For a 100 MHz Step: 1.0 mS (Frequencies <500 MHz = 2.0 mS)  
 For a 1000 MHz Step: 2.0 mS  
 For a Full Band Step: 3.0 mS  
 For 25 Random Jumps - Max Time Range: 1.0 to 3.0 mS

Frequency Step	Meas. Speed	Status
100 MHz Step Up =	0.8 mS	Pass
100 MHz Step Down =	0.7 mS	Pass
1000 MHz Step Up =	1.2 mS	Pass
1000 MHz Step Down =	1.5 mS	Pass
Full band Step Up =	2.1 mS	Pass
Full band Step Down =	2.2 mS	Pass

Frequency Step (MHz)	Step Size (MHz)	Meas. Speed	Status
Random Jump From 4000.0 To 4828.0	828.0	1.3 mS	Pass
Random Jump From 4828.0 To 7798.0	2970.0	1.6 mS	Pass
Random Jump From 7798.0 To 8209.0	411.0	1.2 mS	Pass
Random Jump From 8209.0 To 8804.0	595.0	1.3 mS	Pass
Random Jump From 8804.0 To 6893.0	-1911.0	1.0 mS	Pass
Random Jump From 6893.0 To 7204.0	311.0	1.4 mS	Pass
Random Jump From 7204.0 To 7063.0	-141.0	0.7 mS	Pass
Random Jump From 7063.0 To 8820.0	1757.0	1.5 mS	Pass
Random Jump From 8820.0 To 4835.0	-3985.0	2.0 mS	Pass
Random Jump From 4835.0 To 8977.0	4142.0	2.0 mS	Pass
Random Jump From 8977.0 To 8451.0	-526.0	1.1 mS	Pass
Random Jump From 8451.0 To 4776.0	-3675.0	1.9 mS	Pass
Random Jump From 4776.0 To 7369.0	2593.0	1.5 mS	Pass
Random Jump From 7369.0 To 8983.0	1614.0	1.6 mS	Pass
Random Jump From 8983.0 To 7211.0	-1772.0	1.7 mS	Pass
Random Jump From 7211.0 To 4123.0	-3088.0	1.9 mS	Pass
Random Jump From 4123.0 To 4062.0	-61.0	0.7 mS	Pass
Random Jump From 4062.0 To 9837.0	5775.0	2.2 mS	Pass
Random Jump From 9837.0 To 8491.0	-1346.0	1.5 mS	Pass
Random Jump From 8491.0 To 4892.0	-3599.0	1.9 mS	Pass
Random Jump From 4892.0 To 5143.0	251.0	1.0 mS	Pass
Random Jump From 5143.0 To 9742.0	4599.0	2.1 mS	Pass
Random Jump From 9742.0 To 9076.0	-666.0	1.3 mS	Pass
Random Jump From 9076.0 To 8732.0	-344.0	1.1 mS	Pass
Random Jump From 8732.0 To 9651.0	919.0	1.2 mS	Pass

Number of Failures: 0

Finish Time: 1:19:19 PM

Switching Speed Readings complete

Pass

\*\*\*\*\* Phase Noise Test from 4000.000 MHz to 10000.000 MHz in 600 MHz Steps \*\*\*\*\*

Model Number: MLMS-4010B  
Serial Number: 0064  
Time: 2:41:35 PM  
Date: 11/21/2018  
Minimum Frequency: 4000.000 MHz  
Maximum Frequency: 10000.000 MHz  
Number of Frequencies Tested: 11  
Current Unit Temperature: +36.5C Deg. C

Phase Noise Spec @ Offset:

@ 100 Hz = -70.0 dBc/Hz  
@ 1.0 kHz = -88.0 dBc/Hz  
@ 10.0 kHz = -90.0 dBc/Hz  
@ 100 kHz = -116.0 dBc/Hz  
@ 1.0 MHz = -142.0 dBc/Hz  
@ 10.0 MHz = -150 dBc/Hz

Correlation = 1

Measured:

Frequency	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz	10 MHz	Status	RF Power
4000.002	-86.6	-102.4	-105.9	-121.0	-147.3	-164.7	Pass	9.82 dBm
4600.003	-86.3	-101.7	-103.7	-121.1	-148.3	-166.2	Pass	9.62 dBm
5200.003	-88.1	-100.7	-103.0	-122.2	-149.3	-166.7	Pass	9.40 dBm
5800.003	-83.6	-100.0	-101.5	-122.0	-149.9	-166.8	Pass	9.14 dBm
6400.004	-85.1	-99.2	-100.9	-123.0	-150.2	-166.6	Pass	8.52 dBm
7000.004	-85.2	-98.7	-99.8	-123.1	-150.4	-165.8	Pass	7.75 dBm
7600.004	-82.9	-97.8	-98.5	-123.3	-150.8	-165.9	Pass	8.16 dBm
8200.005	-83.1	-97.3	-97.5	-123.5	-150.7	-165.6	Pass	7.57 dBm
8800.005	-79.2	-96.4	-96.2	-122.8	-150.2	-165.1	Pass	6.94 dBm
9400.005	-82.3	-94.9	-94.2	-122.1	-151.1	-166.3	Pass	6.58 dBm
10000.006	-79.6	-95.7	-95.0	-124.0	-150.9	-167.1	Pass	6.36 dBm

Number of Failures: 0

Finish Time: 2:46:43 PM

Phase Noise Readings Complete

Pass