

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

Serial Number: 1989
Model Number: MLSP-8020BD
Time: 11:01:23 AM
Date: 2/16/2018
Minimum Frequency: 8000.000 MHz
Maximum Frequency: 20000.000 MHz
Frequency Step Size: 0.001 MHz
External 100 MHz PLL Reference Frequency: 10 MHz
Maximum RF Level (Min.): 8.0 dBm
Maximum RF Level (Max.): 18.0 dBm
Minimum Operating Temperature: 0 Degrees C.
Maximum Operating Temperature: 60 Degrees C.
MLSP Firmware Version: 3.0 Mar 28 2013
MLWI Sales Order #: 18\*0123
MLWI Outline Drawing #: 181-001 B

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. MLSP support CD Rom (1 per lot)
4. J1 mating connector (1 per unit)
5. J1 connector pins (14 per unit)
6. MLSP 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

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 8000 MHz to 20000 MHz in 10 MHz Steps \*\*\*\*\*

Serial Number: 1989  
Model Number: MLSP-8020BD  
Time: 8:27:22 AM  
Date: 2/16/2018  
Minimum Frequency: 8000 MHz  
Maximum Frequency: 20000 MHz  
Temperature: +33.0C Deg. C  
NOVO State: UnLocked  
Power Supply Spec: +5.0 VDC +/- 0.25 V @ < 375 mA  
Power Supply Spec: +15.0 VDC +/- 0.50 V @ < 1800 mA  
Accuracy Tested to: +/-0.002 MHz

Begin Frequency Lock Test from 8000 MHz to 20000 MHz in 10 MHz Steps

Total Frequency Errors: 0

Finish Time: 8:28:19 AM

Begin Random Frequency Lock Test from 8000 MHz to 20000 MHz (1000 Frequencies)

Total Random Frequency Errors: 0

Finish Time: 8:29:06 AM

Internal Power Supply Voltage Readings:

+2.5V = +2.5V Pass  
+3.3V = +3.2V Pass  
+5.0V = +5.0V Pass  
-5.0V = -4.8V Pass  
+6.75V = +6.7V Pass  
+12.0V = +12.0V Pass  
+13.5V = +13.4V Pass  
100 MHz PLL V = +6.2V Pass  
YIG PLL V = +6.3V Pass

External Power Supply Voltage and Current Readings:

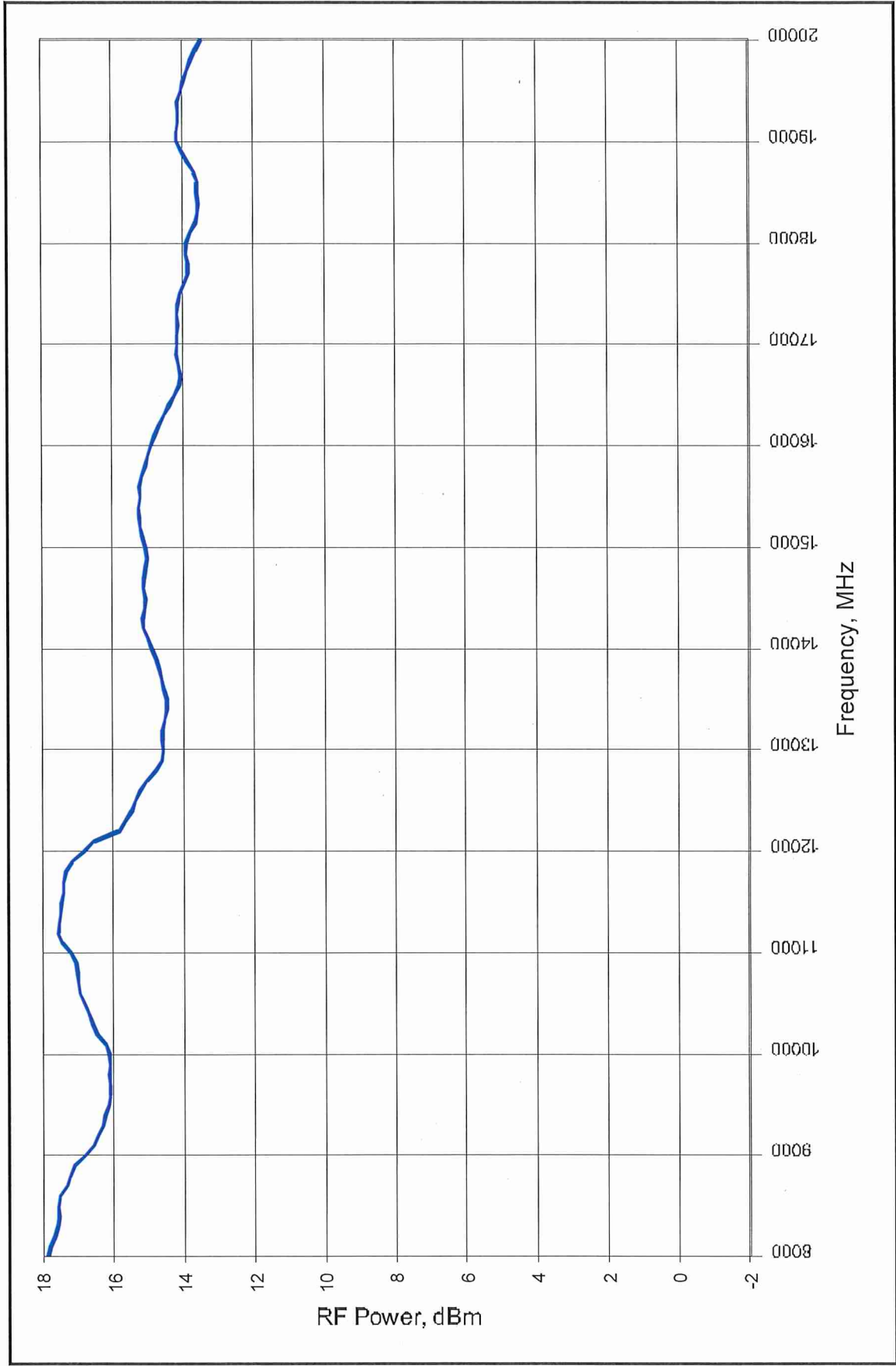
+5.0 VDC Voltage = 5.011V Pass  
+5.0 VDC Current = 311mA Pass  
+15.0 VDC Voltage = 14.997V Pass  
+15.0 VDC Current = 1713mA Pass

Finish Time: 8:29:08 AM

Total Errors: 0

Pass

### Maximum RF Output Power vs. Frequency



Max Levelled Pwr: N/A dBm    Min Levelled Pwr: N/A dBm    Levelled Pwr Set: Max dBm    Level Flatness Spec: +/-3.0 dB

Print

\*\*\*\*\* Harmonic Test from 8000.000000 MHz to 20000.000000 MHz in 100 MHz Steps \*\*\*\*\*

Model Number: MLSP-8020BD  
Serial Number: 1989  
Time: 10:46:05 AM  
Date: 2/16/2018  
Minimum Frequency: 8000.000000 MHz  
Maximum Frequency: 20000.000000 MHz  
Current Unit Temperature: +30.5C Deg. C  
Harmonic Spec Level (In Band): -12.0 dBc

Frequency	Level	Harm #	Status
8000 MHz	-16 dBc	2	PASS
8100 MHz	-16 dBc	2	PASS
8200 MHz	-16 dBc	2	PASS
8300 MHz	-17 dBc	2	PASS
8400 MHz	-16 dBc	2	PASS
8500 MHz	-12 dBc	2	PASS
8600 MHz	-12 dBc	2	PASS
8700 MHz	-13 dBc	2	PASS
8800 MHz	-13 dBc	2	PASS
8900 MHz	-12 dBc	2	PASS
9000 MHz	-14 dBc	2	PASS
9100 MHz	-17 dBc	2	PASS
9200 MHz	-17 dBc	2	PASS
9300 MHz	-18 dBc	2	PASS
9400 MHz	-17 dBc	2	PASS
9500 MHz	-18 dBc	2	PASS
9600 MHz	-18 dBc	2	PASS
9700 MHz	-16 dBc	2	PASS
9800 MHz	-15 dBc	2	PASS
9900 MHz	-16 dBc	2	PASS
10000 MHz	-15 dBc	2	PASS
10100 MHz	-15 dBc	2	PASS
10200 MHz	-15 dBc	2	PASS
10300 MHz	-15 dBc	2	PASS
10400 MHz	-16 dBc	2	PASS
10500 MHz	-16 dBc	2	PASS
10600 MHz	-17 dBc	2	PASS
10700 MHz	-20 dBc	2	PASS
10800 MHz	-22 dBc	2	PASS
10900 MHz	-27 dBc	2	PASS
11000 MHz	-23 dBc	2	PASS
11100 MHz	-18 dBc	2	PASS
11200 MHz	-17 dBc	2	PASS
11300 MHz	-17 dBc	2	PASS
11400 MHz	-17 dBc	2	PASS
11500 MHz	-16 dBc	2	PASS
11600 MHz	-14 dBc	2	PASS
11700 MHz	-14 dBc	2	PASS
11800 MHz	-13 dBc	2	PASS
11900 MHz	-12 dBc	2	PASS
12000 MHz	-13 dBc	2	PASS
12100 MHz	-15 dBc	2	PASS
12200 MHz	-18 dBc	2	PASS
12300 MHz	-19 dBc	2	PASS
12400 MHz	-21 dBc	2	PASS
12500 MHz	-21 dBc	2	PASS
12600 MHz	-20 dBc	2	PASS
12700 MHz	-20 dBc	2	PASS
12800 MHz	-22 dBc	2	PASS
12900 MHz	-22 dBc	2	PASS
13000 MHz	-23 dBc	2	PASS
13100 MHz	-23 dBc	2	PASS
13200 MHz	-23 dBc	2	PASS
13300 MHz	-23 dBc	2	PASS
13400 MHz	-26 dBc	2	PASS

Number of Failures: 0

Finish Time: 10:50:42 AM

Harmonic Readings complete

Pass

\*\*\*\*\* Random Spur Test from 8000 MHz to 20000 MHz \*\*\*\*\*

Serial Number: 1989  
Model Number: MLSP-8020BD  
Time: 12:01:02 PM  
Date: 2/1/2018  
Minimum Frequency: 8000 MHz  
Maximum Frequency: 20000 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: +32.4C Deg. C  
NOVO State: UnLocked

Random Frequency	Status
Frequency Tested = 19407.645 MHz	Pass
Frequency Tested = 17835.318 MHz	Pass
Frequency Tested = 11021.919 MHz	Pass
Frequency Tested = 12336.072 MHz	Pass
Frequency Tested = 12823.118 MHz	Pass
Frequency Tested = 15514.426 MHz	Pass
Frequency Tested = 12298.879 MHz	Pass
Frequency Tested = 14479.503 MHz	Pass
Frequency Tested = 12318.612 MHz	Pass
Frequency Tested = 9056.333 MHz	Pass
Frequency Tested = 19380.813 MHz	Pass
Frequency Tested = 16541.858 MHz	Pass
Frequency Tested = 8924.140 MHz	Pass
Frequency Tested = 14399.867 MHz	Pass
Frequency Tested = 12570.888 MHz	Pass
Frequency Tested = 19904.964 MHz	Pass
Frequency Tested = 15943.424 MHz	Pass
Frequency Tested = 9254.109 MHz	Pass
Frequency Tested = 10085.954 MHz	Pass
Frequency Tested = 11348.971 MHz	Pass
Frequency Tested = 12543.733 MHz	Pass
Frequency Tested = 10120.433 MHz	Pass
Frequency Tested = 13613.103 MHz	Pass
Frequency Tested = 10305.186 MHz	Pass
Frequency Tested = 13552.537 MHz	Pass

Total Spur Errors: 0

Finish Time: 12:33:18 PM  
Pass

\*\*\*\*\* Switching Speed Test from 8000.0 to 20000.0 MHz in 100 1000 MHz & Full Band Steps \*\*\*\*\*

Model Number: MLSP-8020BD  
 Serial Number: 1989  
 Time: 11:51:39 AM  
 Date: 2/1/2018  
 Minimum Frequency: 8000.000 MHz  
 Maximum Frequency: 20000.000 MHz  
 Current Unit Temperature: +33.6C Deg. C  
 Switching Speed Spec:  
 For a 100 MHz Step: 1.0 mS (Frequencies <500 MHz = 2.0 mS)  
 For a 1000 MHz Step: 3.0 mS  
 For a Full Band Step: 6.0 mS  
 For 25 Random Jumps - Max Time Range: 1.0 to 6.0 mS

Frequency Step	Meas. Speed	Status
100 MHz Step Up =	0.9 mS	Pass
100 MHz Step Down =	0.7 mS	Pass
1000 MHz Step Up =	2.0 mS	Pass
1000 MHz Step Down =	1.9 mS	Pass
Full band Step Up =	5.3 mS	Pass
Full band Step Down =	4.3 mS	Pass

Frequency Step (MHz)	Step Size (MHz)	Meas. Speed	Status
Random Jump From 8000.0 To 10469.0	2469.0	2.6 mS	Pass
Random Jump From 10469.0 To 11467.0	998.0	2.1 mS	Pass
Random Jump From 11467.0 To 15011.0	3544.0	3.2 mS	Pass
Random Jump From 15011.0 To 14547.0	-464.0	1.6 mS	Pass
Random Jump From 14547.0 To 14943.0	396.0	1.6 mS	Pass
Random Jump From 14943.0 To 9225.0	-5718.0	3.3 mS	Pass
Random Jump From 9225.0 To 12452.0	3227.0	2.8 mS	Pass
Random Jump From 12452.0 To 16072.0	3620.0	3.2 mS	Pass
Random Jump From 16072.0 To 19174.0	3102.0	3.3 mS	Pass
Random Jump From 19174.0 To 14864.0	-4310.0	3.1 mS	Pass
Random Jump From 14864.0 To 9193.0	-5671.0	3.3 mS	Pass
Random Jump From 9193.0 To 8344.0	-849.0	1.9 mS	Pass
Random Jump From 8344.0 To 14189.0	5845.0	3.5 mS	Pass
Random Jump From 14189.0 To 9971.0	-4218.0	3.1 mS	Pass
Random Jump From 9971.0 To 15389.0	5418.0	3.6 mS	Pass
Random Jump From 15389.0 To 17498.0	2109.0	2.7 mS	Pass
Random Jump From 17498.0 To 9737.0	-7761.0	3.5 mS	Pass
Random Jump From 9737.0 To 10295.0	558.0	1.8 mS	Pass
Random Jump From 10295.0 To 9208.0	-1087.0	2.0 mS	Pass
Random Jump From 9208.0 To 15314.0	6106.0	3.4 mS	Pass
Random Jump From 15314.0 To 19075.0	3761.0	3.1 mS	Pass
Random Jump From 19075.0 To 18853.0	-222.0	1.2 mS	Pass
Random Jump From 18853.0 To 11875.0	-6978.0	3.4 mS	Pass
Random Jump From 11875.0 To 12281.0	406.0	1.6 mS	Pass
Random Jump From 12281.0 To 9915.0	-2366.0	2.5 mS	Pass

Number of Failures: 0

Finish Time: 12:00:43 PM

Switching Speed Readings complete

Pass

\*\*\*\*\* Phase Noise Test from 8000 MHz to 20000 MHz in 1200 MHz Steps \*\*\*\*\*

Model Number: MLSP-8020BD  
Serial Number: 1989  
Time: 11:28:01 AM  
Date: 2/1/2018  
Minimum Frequency: 8000 MHz  
Maximum Frequency: 20000 MHz  
Number of Frequencies Tested: 11  
Current Loop Gain (LG) Setting: 8  
Current Unit Temperature: +33.7C Deg. C

Phase Noise Spec @ Offset:

@ 100 Hz = -70.0 dBc/Hz  
@ 1.0 kHz = -87.0 dBc/Hz  
@ 10.0 kHz = -88.0 dBc/Hz  
@ 100 kHz = -115.0 dBc/Hz  
@ 1.0 MHz = -138.0 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
8000.004	-81.0	-98.1	-100.1	-121.5	-146.1	-164.1	Pass	10.80 dBm
9200.005	-81.9	-97.2	-98.2	-121.1	-146.4	-165.6	Pass	9.96 dBm
10400.006	-81.1	-95.8	-97.1	-121.4	-145.1	-162.1	Pass	7.24 dBm
11600.006	-79.7	-94.7	-95.8	-121.0	-144.5	-162.6	Pass	7.84 dBm
12800.007	-78.9	-94.2	-95.8	-121.8	-144.3	-162.2	Pass	7.49 dBm
14000.008	-79.8	-93.0	-95.0	-122.1	-144.6	-161.1	Pass	6.35 dBm
15200.008	-75.5	-92.6	-94.8	-122.2	-144.9	-161.3	Pass	6.18 dBm
16400.009	-77.6	-91.0	-93.1	-121.3	-143.6	-160.8	Pass	5.01 dBm
17600.009	-75.8	-90.6	-93.2	-121.4	-143.7	-158.7	Pass	4.07 dBm
18800.010	-73.6	-90.7	-92.7	-121.1	-143.2	-158.5	Pass	3.87 dBm
20000.011	-75.4	-89.4	-92.8	-121.1	-142.1	-155.8	Pass	1.89 dBm

Number of Failures: 0

Finish Time: 11:32:40 AM

Phase Noise Readings Complete

Pass

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

Serial Number: 1604  
Model Number: MLSP-4016BD  
Time: 3:22:13 PM  
Date: 1/26/2017  
Minimum Frequency: 4000.000 MHz  
Maximum Frequency: 16000.000 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.): 19.0 dBm  
Minimum Operating Temperature: 0 Degrees C.  
Maximum Operating Temperature: 60 Degrees C.  
MLSP Firmware Version: 3.0 Mar 28 2013  
MLWI Sales Order #: 18-0106  
MLWI Outline Drawing #: 181-001 A

Final Test Data Check Point Status:

Config data file backup = Pass  
Coarse Cal file = Pass  
Fine 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. MLSP support CD Rom (1 per lot)
- 4. J1 mating connector (1 per unit)
- 5. J1 connector pins (14 per unit)
- 6. MLSP 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

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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: \_\_\_\_\_