MICRO LAMBDA WIRELESS, INC.

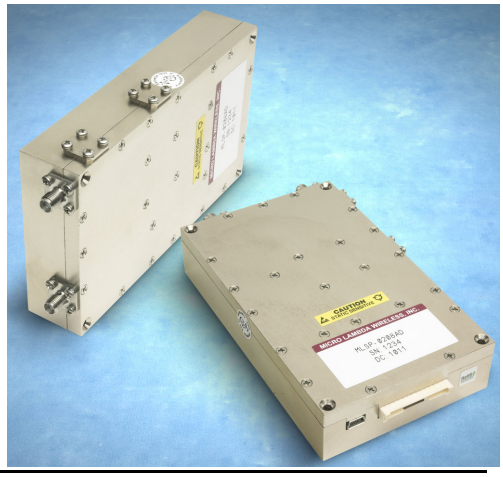
MLSP SERIES
WIDEBAND, LOW NOISE SYNTHESIZERS
2 - 20 GHz

FEATURES

- Superior Phase Noise
- 1 kHz Step Size
- External Reference 1-200 MHz (Optional)
- PXI, Compact PCI Size Compatible
- 5 Line Serial & USB Control

APPLICATIONS

Test Equipment
Local Oscillators
Frequency Converters



DESCRIPTION

The **MLSP-Series** of YIG-Based wideband synthesizers are ideal as the main local oscillators in receiving systems, frequency converters and test and measurement equipment. They provide 1 kHz frequency resolution over the 2 to 20 GHz frequency range. Power levels of +13 dBm are provided through out the series and full band tuning speed is 7 mSec. The units are 5" x 3" x 1" high and fit a 2 slot PXI chassis.

PERFORMANCE SPECIFICATIONS

(Operating Case Temperature: 0º to +60º C Baseplate) (Note 1)

Model No.	MLSP-2018	MLSP-2020
RF Specifications		
Output Frequency (Note 2)	2 - 18 GHz	2 - 20 GHz
Output Power Min.	+10 dBm	+10 dBm
Po Variation over Freq/Temp	6 dB	6 dB
Step Size, Min.	1 kHz	1 kHz
Switching Speed, 100 MHz Step, Typ.	1 mS	1 mS
1000 MHz Step, Typ.	3 mS	3 mS
Full Band Step, Typ.	7 mS	7 mS
Warm-up Time ("Lock") @ 0C (Minutes) (with Internal Crystal Reference)	3.0	3.0
Output Impedance	50 Ohms	50 Ohms
Load VSWR	2.0:1	2.0:1
Harmonics	-12 dBc	-12 dBc
Non-Harmonic Spurious		
100 Hz f off ≤500 kHz	-60 dBc	-60 dBc

Phase Noise Performance (dBc/Hz)

(with Internal Crystal Reference)

Frequency Range	2 - 8 GHz	8 - 16 GHz	16 - 20 GHz
@ 100 Hz Offset	-76	-72	-72
@ 1 kHz Offset	-92	-87	-79
@ 10 kHz Offset	-93	-85	-72
@ 100 kHz Offset	-114	-107	-95
@ 1MHz Offset	-142	-135	-125

MLSP PERFORMANCE SPECIFICATIONS (Continued)

Model No.	MLSP-2018	MLSP-2020
Reference Oscillator Options		
Option A		
External Reference (Note 3)	1 - 200 MHz	1 - 200 MHz
External Ref. Input Power	0 +/- 3 dBm	0 +/- 3 dBm
Frequency Stability	Cust Supplied	Cust Supplied
Option B		
External Reference with Internal Crystal (Note 4)	1 - 100 MHz	1 - 100 MHz
External Ref. Input Power	0 +/- 3 dBm	0 +/- 3 dBm
Frequency Stability	Cust Supplied	Cust Supplied
Option C		
Internal Reference	100 MHz	100 MHz
Frequency Stability	+/- 1 PPM	+/- 1 PPM
Supply Voltage & Current (Note 5)		
+15 Vdc (± 0.5) Vdc)	1975 mA	2075 mA
+5 Vdc (± 0.25) Vdc)	350 mA	350 mA
Power dissipation	31 watts	33 watts
Supply Voltage Ripple (Pk-Pk from 60 Hz to 3 MHz)	<50 mV	<50 mV
Control Format	5-Line Serial USB	5-Line Serial USB
Phase Lock Alarm (P13) (TTL)	1=Locked	1=Locked
Weight	15 oz / 426 g	15 oz / 426 g

MLSP Options:

Option A: External Reference / No Internal Reference
Option B: Internal Reference / External Reference
Option C: Internal Reference / No External Reference, Drawing 181-003 & 181-004
Option D: RF Connectors Front, Drawing 181-001
Option E: RF Connectors Side, Drawing 181-002

Part Number Example: MLSP-2020BD 2 GHz to 20 GHz with Internal Reference and External Reference with RF connectors on front.

Notes:
1) Special operating temperature range available.
2) Special frequency ranges available.
3) 50-100 MHz OCXO recommended for best phase noise performance. External reference directly effects phase noise performance.
4) Output phase noise performance is not dependent on external reference phase noise.
5) All values stated for units with external reference. For internal reference add 125mA on the +15 Vdc line.