MICRO LAMBDA WIRELESS, INC.

LUXYN™ SYNTHESIZERS
Model MLVS-0520

FEATURES

- 50 MHz to 21 GHz Frequency Coverage
- 0.001 Hz Frequency Resolution
- 50 µsec Switching Speed
- Superior Phase Noise
- Compact Size

APPLICATIONS

Test Equipment
Local Oscillators
Frequency Converters

DESCRIPTION

LUXYN™ synthesizers are ideal main local oscillators in Receiving Systems, Frequency Converters and Test & Measurement Equipment. MLVS-0520 is VCO-based and provides 0.001 Hz frequency resolution over the 50 MHz to 21 GHz frequency range. Output power level of +15 dBm is provided throughout the full frequency range. Full band switching speed is 50 µsec maximum. The MLVS-0520 is 4" x 3.6" x 0.94" high.

PERFORMANCE SPECIFICATIONS

RF Specifications	
Frequency Range(1)	50 MHz to 21 GHz
Resolution	0.001 Hz
Output Power	+15 dBm min.
Switching Speed(2) (Full band) (List Mode)	50 µsec max. (settling within ± 1 ppm)
Harmonics(3)	-12 dBc typ.
Sub-Harmonics	-50 dBc typ.
Spurs	-60 dBc typ.

Phase Noise	50 MHz(1)		500 MHz		5 GHz		10 GHz		20 GHz		21 GHz(1)	
	Typ.	*Max*	Typ.	*Max*	Typ.	*Max*	Typ.	*Max*	Typ.	*Max*	Typ.	*Max*
100 Hz	-132	*-129*	-116	*-113*	-104	*-101*	-100	*-97*	-91	*-88*	-90	*-87*
1 kHz	-144	*-141*	-132	*-129*	-125	*-122*	-120	*-117*	-114	*-111*	-113	*-110*
10 kHz	-153	*-150*	-140	*-137*	-132	*-129*	-126	*-123*	-120	*-117*	-119	*-116*
100 kHz	-156	*-153*	-147	*-144*	-132	*-129*	-126	*-123*	-120	*-117*	-119	*-116*
1 MHz	-156	*-153*	-147	*-144*	-130	*-127*	-124	*-121*	-118	*-115*	-117	*-114*
10 MHz	-156	*-153*	-151	*-148*	-143	*-140*	-138	*-135*	-130	*-127*	-134	*-131*
50 MHz	-156	*-153*	-152	*-149*	-149	*-146*	-148	*-145*	-153	*-150*	-152	*-149*
100 MHz	-156	*-153*	-152	*-149*	-149	*-146*	-149	*-146*	-156	*-153*	-155	*-152*

(1): Optional frequencies available. Please see Options.

(2): Optional switching speeds available. Please see Options

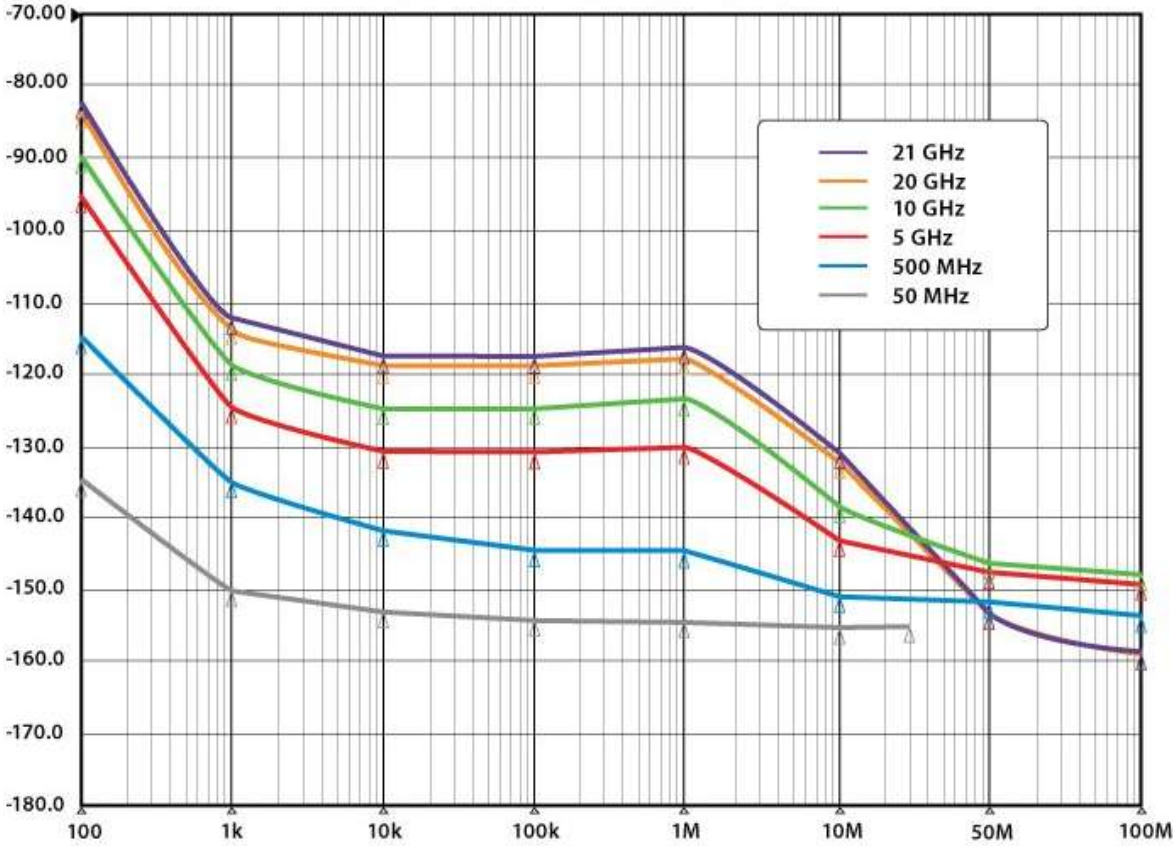
(3): -10dBc typ. below 250 MHz

Reference	
Internal Reference	
Output Frequency	10 MHz
Output Power	+5 dBm ± 1 dB
Stability	± 1 ppm
Aging	± 0.5 ppm / year
Tuning Range	± 2 ppm
Output Impedance	50 Ω
Warm Up Time	2 minutes
External Reference	
Input Frequency	10 MHz
Stability for lock	± 2 ppm
Input Level	0 dBm ± 6 dB
Input Impedance	50 Ω
Environmental	
Operating Case Temperature(4)	0º to +60º C
Operating Relative Humidity	10% to 90%, non-condensing
Operating Shock	30g, half-sine pulse, 11 msec duration
Operating Vibration	5 Hz to 500 Hz, $0.31g_{rms}$
Additional	
Supply Voltage	+10 to +16 V DC
Power Consumption	15 W nom. / ≈ 1.2 amp @ 12 V
Control Interface	SPI & USB
Size	4” x 3.6” x 0.94”
Weight	21 ounces
Options	
Frequency Range	Option A: 500 MHz to 20 GHz
	Option B: 500 MHz to **21** GHz
	Option C: **50** MHz to 20 GHz
	Option D: **50** MHz to **21** GHz
Switching Speed	Option R: 150 - 200 µsec
	Option S: 50 µsec max.

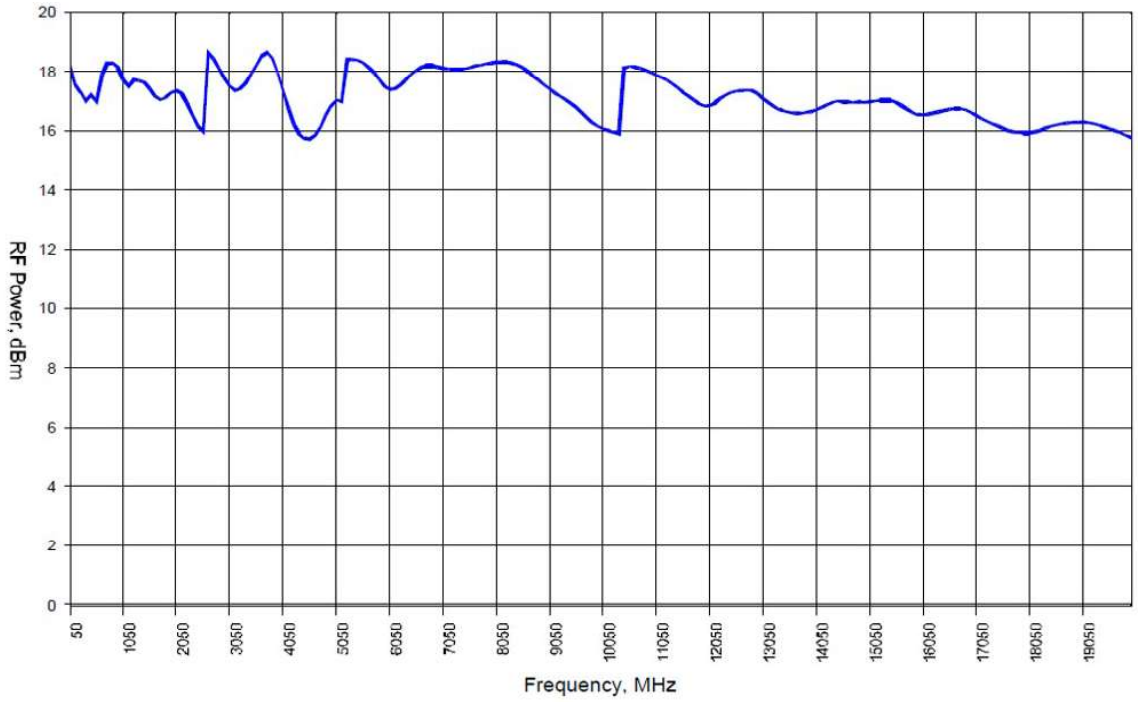
Part Number Example: MLVS-0520AS represents 500MHz to 20GHz frequency synthesizer with 50 µsec max. switching speed

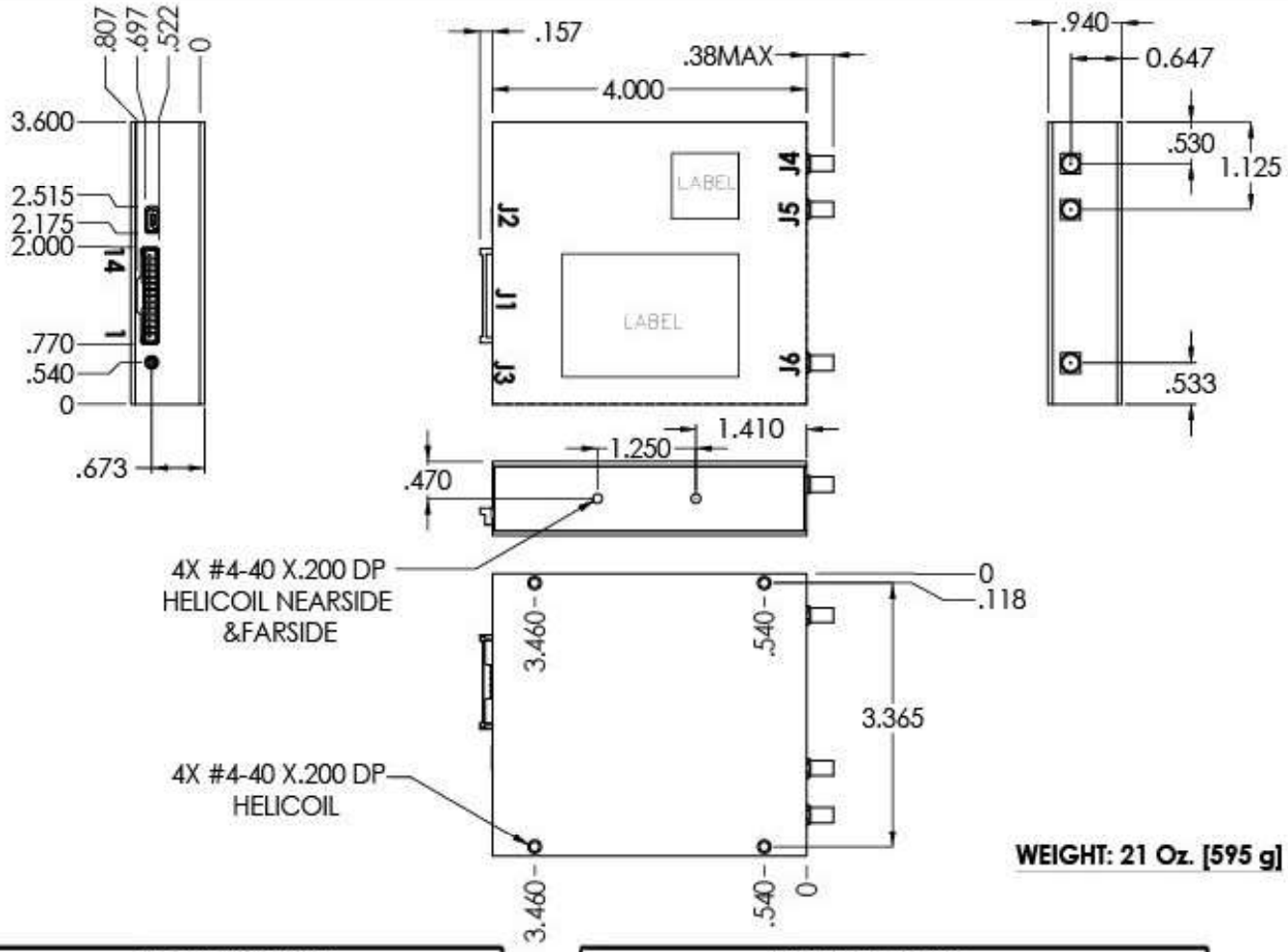
(4): Extended temperature ranges available

Phase Noise Performance



Maximum RF Output Power vs. Frequency





WEIGHT: 21 Oz. [595 g]

CONNECTIONS			
CONN.	TYPE	PIN #	FUNCTION
J1	35363-1460	1	+10V TO +16VDC
J1	35363-1460	2	+10V TO +16VDC
J1	35363-1460	3	GROUND
J1	35363-1460	4	GROUND
J1	35363-1460	5	N/C
J1	35363-1460	6	REF LOCK
J1	35363-1460	7	TRIG
J1	35363-1460	8	$\overline{\text{RESET}}$ (*)
J1	35363-1460	9	CLOCK
J1	35363-1460	10	DATA IN
J1	35363-1460	11	SELECT (*)
J1	35363-1460	12	BUSY
J1	35363-1460	13	RF LOCK
J1	35363-1460	14	DATA OUT

CONNECTIONS			
CONN.	TYPE	PIN #	FUNCTION
J2	USB MINI-B	1	+V
J2	USB MINI-B	2	D-
J2	USB MINI-B	3	D+
J2	USB MINI-B	4	GND
J2	USB MINI-B	5	GND
J3	DC PWR JACK	1	+12V INPUT
J4	SMA-FEMALE	1	REF OUTPUT
J5	SMA-FEMALE	1	REF. INPUT
J6	SMA-FEMALE	1	RF OUTPUT

NOTES:

1. J1 MALE: MOLEX# 0353631460
2. J1 MATES WITH: MOLEX# 0355071400
3. CRIMP PIN: MOLEX#0502128100
4. J1 OR J3 POWER SUPPLY INPUTS ARE REQUIRED FOR USB AND SPI OPERATION.
5. RECOMMENDED POWER SUPPLY WIRE SIZE = A.W.G. 22-24
6. J3 CENTER PIN 1.3MM DIA; OUTER 3.7MM DIA.
7. SMA ENGAGE/DISENGAGE TORQUE: 2 INCH-POUNDS MAX.
8. SMA MATING TORQUE (ROTATIONAL): 8 INCH POUNDS MAX.
9. SMA CONTACT RETENTION: 6 LBS. MIN. AXIAL FORCE ON MATING END. 4 IN-OZ MIN. RADIAL TORQUE.
10. (*) ACTIVE LOW
11. **DO NOT** USE THERMAL COMPOUND/PASTE TO MOUNT THE PRODUCT!

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:

FRACTIONS	DECIMALS	ANGLES
±	.xx ±.02	
±	.xxx ±.010	

MATERIAL **6061 AL. & SS**

FINISH NICKEL PLATE

DO NOT SCALE DRAWING

UNCONTROLLED DRAWING:
SUBJECT TO CHANGE WITHOUT NOTICE

APPROVAL		DATE
DRAWN	NVN	12/5/24
ENGR.	TD	12/5/24
MFG.		
Q.A.		

MICRO LAMBDA WIRELESS, INC.

MLVS SYNTHESIZER

SIZE	CAGE NO.	DWG. NO.	REV
A	0RN63	99-0101-001	H

SCALE: 1:2 SHEET 1 OF 1