

## FEATURES

- 50 MHz to 21 GHz Frequency Coverage
- 0.001 Hz Frequency Resolution
- 50  $\mu$ sec Switching Speed
- Superior Phase Noise
- Compact Size

## 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  $\mu$ sec maximum. The **MLVS-0520** is 4" x 3.6" x 0.94" high.

## APPLICATIONS

Test Equipment  
Local Oscillators  
Frequency Converters



## PERFORMANCE SPECIFICATIONS

### RF Specifications

Frequency Range<sup>(1)</sup> 50 MHz to 21 GHz

Resolution 0.001 Hz

Output Power +15 dBm min.

Switching Speed<sup>(2)</sup>  
(Full band) (List Mode) 50  $\mu$ sec max. (settling within  $\pm$  1 ppm)

Harmonics<sup>(3)</sup> -12 dBc typ.

Sub-Harmonics -50 dBc typ.

Spurs -60 dBc typ.

Phase Noise	50 MHz <sup>(1)</sup>		500 MHz		5 GHz		10 GHz		20 GHz		21 GHz <sup>(1)</sup>	
	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max
100 Hz	-126	-123	-114	-111	-100	-97	-92	-89	-89	-86	-89	-86
1 kHz	-143	-140	-128	-125	-121	-118	-113	-110	-111	-108	-107	-104
10 kHz	-151	-148	-140	-137	-130	-127	-124	-121	-118	-115	-116	-113
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 $\pm$ 1 dB
Stability	$\pm$ 1 ppm
Aging	$\pm$ 0.5 ppm / year
Tuning Range	$\pm$ 2 ppm
Output Impedance	50 $\Omega$
Warm Up Time	2 minutes

**External Reference**

Input Frequency	10 MHz
Stability for lock	$\pm$ 5 ppm
Input Level	0 dBm $\pm$ 6 dB
Input Impedance	50 $\Omega$

**Environmental**

Operating Case Temperature <sup>(4)</sup>	0° to +60° 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 <sub>rms</sub>

**Additional**

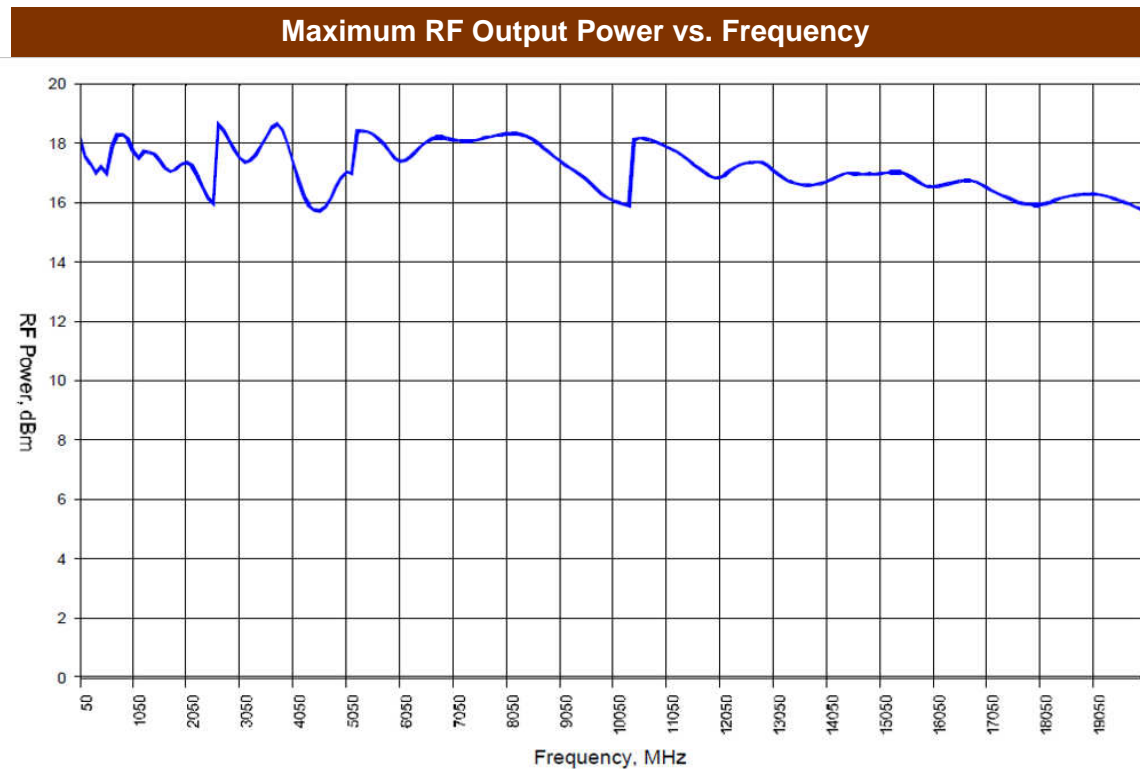
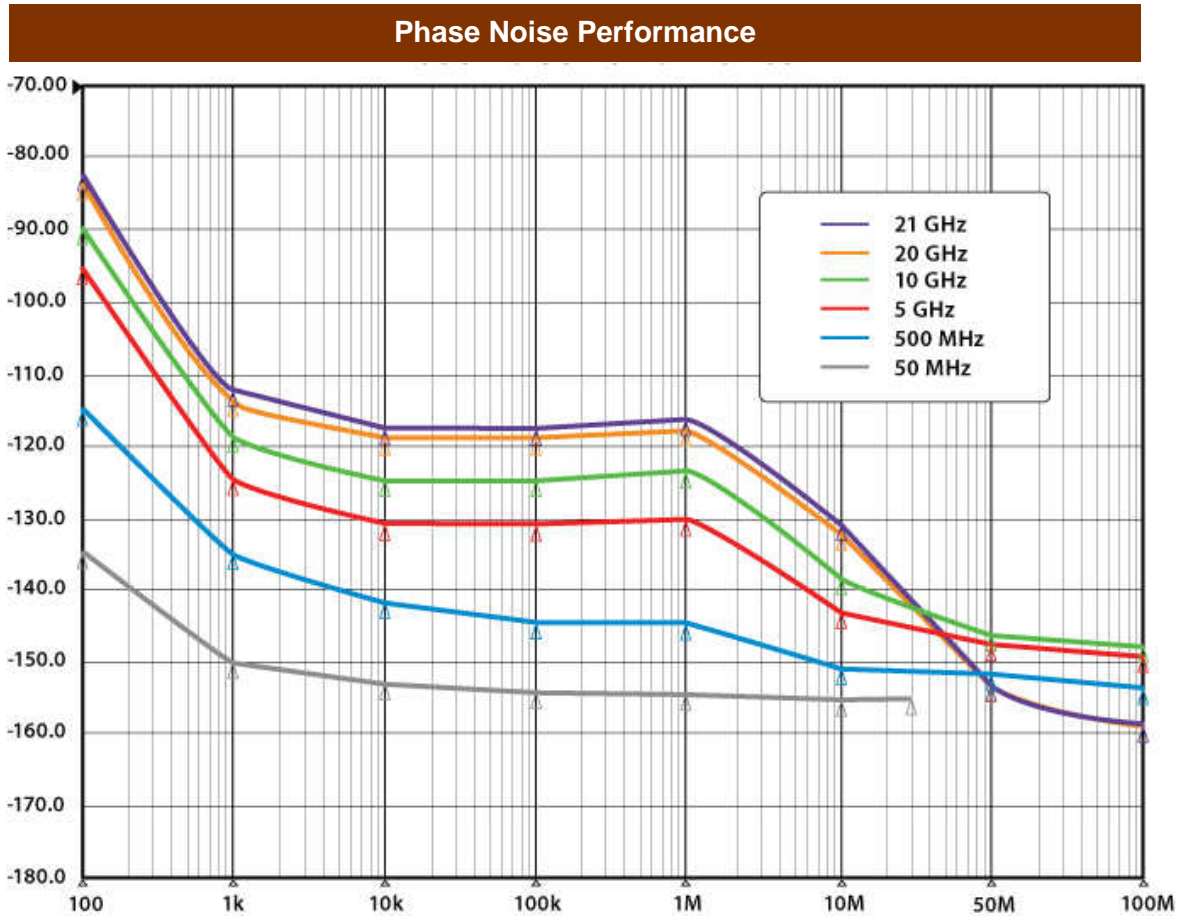
Supply Voltage	+10 to +16 V DC
Power Consumption	15 W nom. / $\approx$ 1.2 amp @ 12 V
Control Interface	SPI & USB
Size	4" x 3.6" x 0.94"
Weight	21 ounces

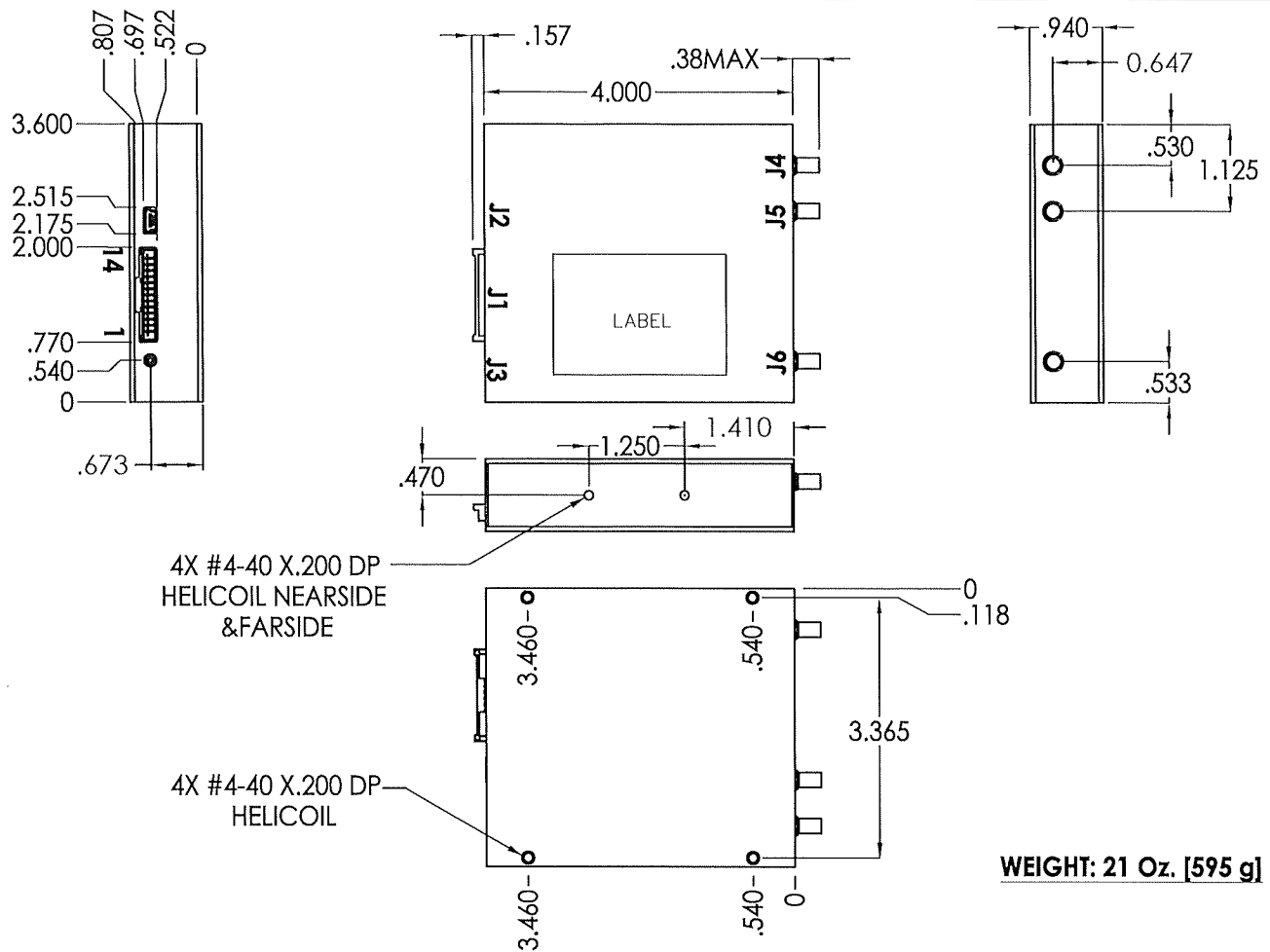
**Options**

Frequency Range	Option A: 500 MHz to 20 GHz
	Option B: 500 MHz to <b>21</b> GHz
	Option C: <b>50</b> MHz to 20 GHz
	Option D: <b>50</b> MHz to <b>21</b> GHz
Switching Speed	Option R: 150 - 200 $\mu$ sec
	Option S: 50 $\mu$ sec max.

**Part Number Example: MLVS-0520AS represents 500MHz to 20GHz frequency synthesizer with 50  $\mu$ sec max. switching speed**

(4): Extended temperature ranges available





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	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:**

- J1 MALE: MOLEX# 0353630960
- J1 MATES WITH: MOLEX# 0355070900
- CRIMP PIN: MOLEX#0502128100
- J1 OR J3 POWER SUPPLY INPUTS ARE REQUIRED FOR USB AND SPI OPERATION.
- RECOMMENDED POWER SUPPLY WIRE SIZE = A.W.G. 22-24
- J3 CENTER PIN 1.3MM DIA; OUTER 3.7MM DIA.
- SMA ENGAGE/DISENGAGE TORQUE: 2 INCH-POUNDS MAX.
- SMA MATING TORQUE (ROTATIONAL): 8 INCH POUNDS MAX.
- SMA CONTACT RETENTION: 6 LBS. MIN. AXIAL FORCE ON MATING END. 4 IN-OZ MIN. RADIAL TORQUE.
- (\*) ACTIVE LOW

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	12/5/19
ENGR. DS	12/5/19
MFG.	
Q.A.	

**MICRO LAMBDA WIRELESS, INC.**

**MLVS SYNTHESIZER**

SIZE <b>A</b>	CAGE NO. <b>ORN63</b>	DWG. NO. <b>99-0101-001</b>	REV <b>E</b>
SCALE: 1:2		SHEET 1 OF 1	