NEW PART!

www.Linwave.alaris.tech

Ultra-Low Noise Xtal Multiplied Unit

Available for any frequency between 200MHz - 12 GHz

TYPICAL APPLICATIONS

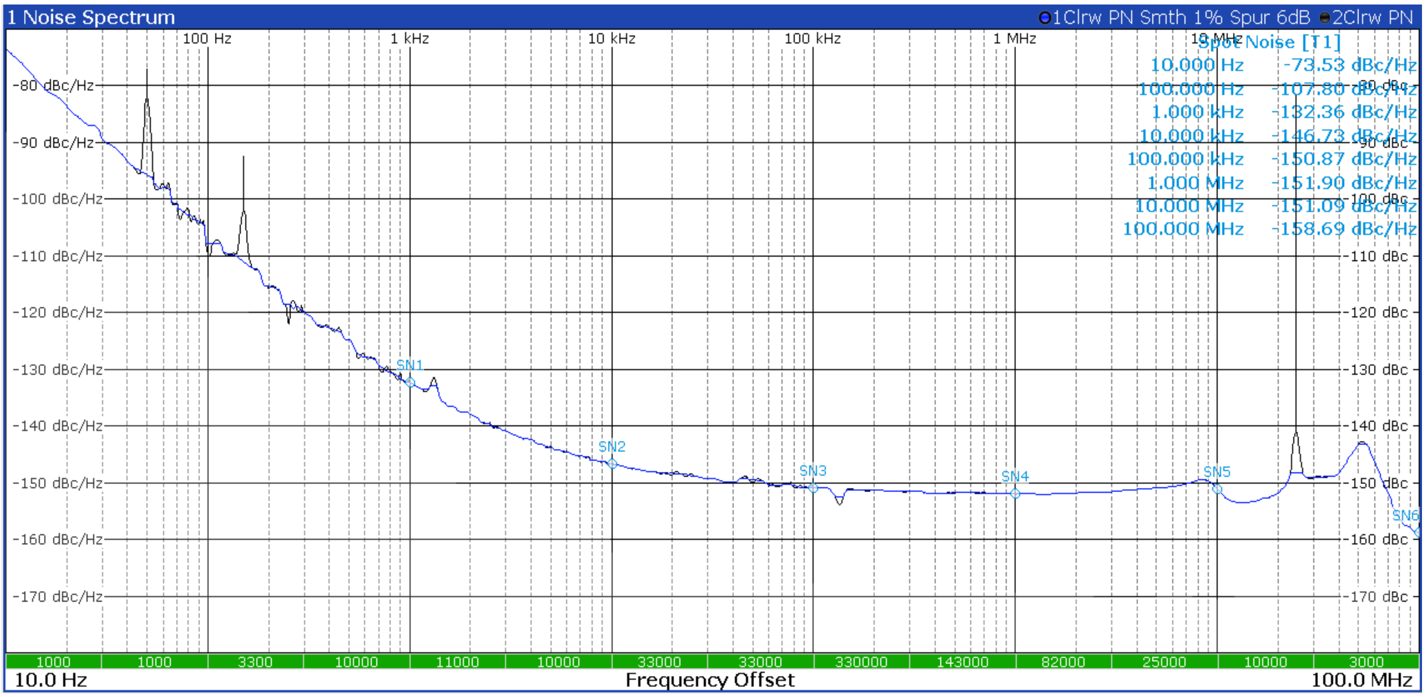
- **Radar Systems**
- **System Master Clock**
- **Quantum Computing System Clock**
- **Test and Measurement**

GENERAL DESCRIPTION

Linwave's XMU range of fixed frequency Ultra Low Noise Multiplied Crystal Oscillator Modules are designed for very high-performance applications requiring phenomenally low phase noise performance. The devices can be used in a multitude of differing applications with the added advantage of improved vibration performance due to its multi-crystal dual-axis design and ultra-low noise multiplication techniques. This device is particularly ideal for RADAR and Quantum applications, offering industry leading phase noise performance. The modules output frequency is customised for each application with solutions available at any fixed frequency in the range 200MHz to 12 GHz . Optional additional features such as ability to lock to an external reference frequency and multiple low-noise outputs can be made available upon request.

PRODUCT FEATURES

- **Industry Leading Ultra Low Phase Noise Performance -158dBc/Hz floor at 5.6GHz**
- **Multi-Crystal Oscillator with internal oven for improved vibration performance of 7.9E-11/g**
- **Output power of +16dBm output into 50Ω**
- **Built-In Input Power Supply BITE**
- **Simple RS-422 Electronic Tuning capability, typical tuning lifetime > 525,000 Hours**
- **High Reliability and Ruggedness MTBF > 50,000 Hours**
- **±12V input with low noise regulation for increased PSRR**
- **Integrated Integer Multiplier Stages**



5.6GHz Phase Noise Plot

Rev 001

ELECTRICAL CHARACTERISTICS - Operational T_A = 21 °C, +/-12V_{DC}, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Output Return Loss	10			dB
Isolation between RF Output ports	50			dB
Current Consumption – Warm-up (10mins max)		+2.5		A
Current Consumption – Steady State		+1.5		A
Second Harmonic Emissions	-60	-70		dBc
Third Harmonic Emissions	-80			dBc
Higher Harmonic Emissions	-80			dBc
Non-Harmonic Spurious Emissions		-80	-75	dBc

CONTROL CHARACTERISTICS AND ADVANCED FEATURES

PARAMETER	VALUE
Built-In Test Functions	DC Input Voltage
Input Voltage BIT	True = ±12V Nominal (±5%) False = < ±10.8V to ±13.2V Accuracy: ±5%
Electronic Tuning Control	RS-422 via front panel 9-way Micro D (Socket)

MECHANICAL CHARACTERISTICS

PARAMETER	VALUE	UNITS
Dimensions (excluding connectors)	212(8.35) x 156(6.15) x 36(1.42)	mm(in)
Mass	2000	g
RF Connectors	SMA Female	-
DC In	Via rear 25-way Micro D connector (Socket)	-
PSU BIT RS-422 Output	Via rear 25-way Micro D connector (Socket)	
Electronic Tuning Control RS-422 Input	Via front 9-way Micro D connector (Socket)	-
Cooling Method	External Heatsink to Baseplate (Not Supplied)	-

ENVIRONMENTAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNITS
Case or Baseplate Temperature	+18		+22	°C
Humidity	10		90	%
Altitude			30,000	ft
Vibration	2 to 14Hz, ±1mm peak in any plane 14 to 100Hz, 0.8g in any plane			
Shock	1.8g peak in any plane, 25ms half sine			
Ingress Protection	IP66			

PERFORMANCE DATA

Output Frequency (MHz)	Typical Phase Noise (dBc/Hz)							Output Power (typ)	Supply Voltage	Output Connector	Acceleration Stability (/g)
	10Hz	100Hz	1KHz	10KHz	100KHz	1MHz	Floor				
200	-102.5	-137	-161	-179	-181	-181	-181	+22dBm	±12V	SMA(f)	7.9×10^{-11}
600	-93	-128	-152	-171	-172	-172	-172	+16dBm	±12V	SMA(f)	7.9×10^{-11}
900	-88	-122	-148	-163	-167	-168	-172	+16dBm	±12V	SMA(f)	7.9×10^{-11}
1800	-84	-117	-141	-154	-156	-158	-172	+16dBm	±12V	SMA(f)	7.9×10^{-11}
3600	-78	-112	-136	-150	-153	-154	-165	+16dBm	±12V	SMA(f)	7.9×10^{-11}
5600	-73	-107	-132	-146	-150	-150	-158	+16dBm	±12V	SMA(f)	7.9×10^{-11}
9000	-69	-103	-128	-142	-144	-144	-150	+12dBm	±12V	SMA(f)	7.9×10^{-11}
11000	-66	-100	-125	-139	-143	-143	-143	+10dBm	±12V	SMA(f)	7.9×10^{-11}

OUTLINE DRAWING