

# LMS-402D Lab Brick® Signal Generator

1 GHz – 4 GHz Frequency | 50 dB Power Control Range | 100 Hz Step Size

## Features/Benefits

- Fast Switching
- Includes GUI, Windows and Linux SDK, LabVIEW driver
- Programmable phase continuous frequency sweep
- Operate multiple devices directly from a PC or self powered hub
- Optional Internal/external pulse modulation
- Easily portable USB powered device
- Sized to fit into a single rack unit for ATE applications



## Applications

- Portable LO Source
- Low Cost Test Equipment for RADAR Receiver Systems
- Engineering/Production Test Labs
- Automated Test Equipment (ATE)

The Lab Brick LMS series of Signal Generators bring affordability, functionality, reliability and simplicity to the microwave test bench. The LMS products range from 0.5 MHz to 20 GHz with 100 Hz step size, 0.5 dB power control steps and linear frequency sweep capability. Lab Bricks use a native USB HID interface to avoid the difficulties inherent in using older serial or IEEE-488 interfaces implemented over USB. As a result, Lab Brick users can get to work faster without having to install kernel level drivers, and Lab Brick devices can be easily used on any system that supports USB HID devices, including low cost embedded computers using Linux or similar operating systems.

The LMS-402D is an affordable Signal Generator with low harmonic energy. The LMS-402D provides calibrated power control from 1 to 4 GHz with a 100 Hz frequency setting resolution. The signal generator is easily programmable for fixed frequency operation, unidirectional or bidirectional frequency sweep and pulse modulation directly from the included Graphical User Interface (GUI). Alternatively, for users wishing to develop their own interface, Vaunix supplies LabVIEW drivers, Windows API DLL files, Linux drivers, Python examples and much more.

## LMS-402D Specifications

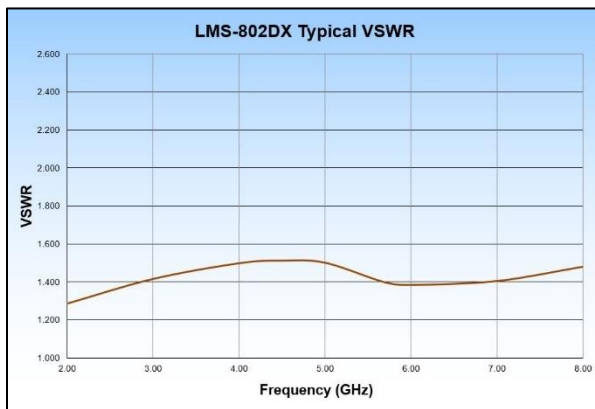
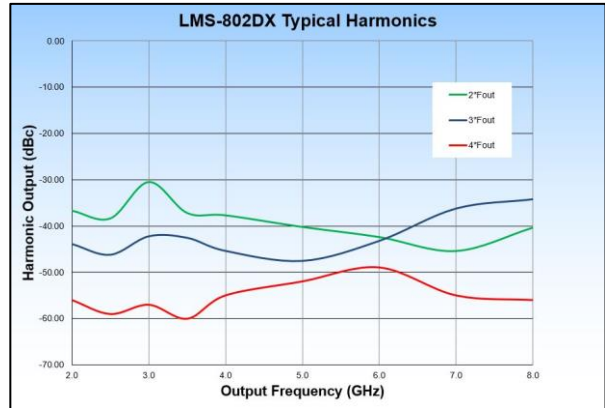
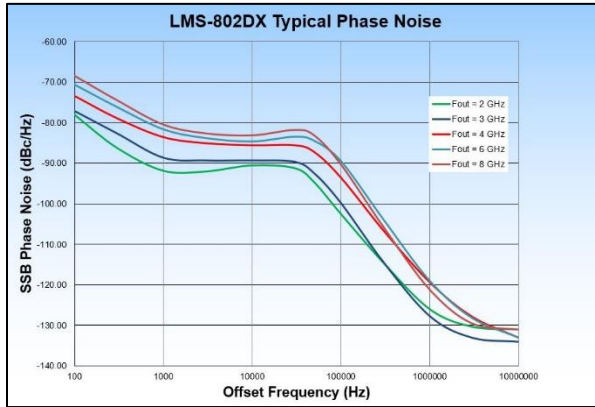
<i>Parameter</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>
<b>Frequency</b>	Range (GHz)	1		4
	Step Size (Hz)	100		
	Accuracy (ppm)			+/-2
	Switching ( $\mu$ s)		100	
<b>Phase Noise (dBc/Hz) 10, 100, 1000, 10000 kHz</b>	@1 GHz		-90/-98/-126/-140	
	@2 GHz		-86/-94/-120/-140	
	@4 GHz		-84/-90/-118/-140	
<b>Output Power</b>	Standard (dBm)	9.25	10	10.75
	Optional (dBm)	12.25	13	13.75
	Resolution (dB)		0.5	
	Range (dB)		50	
	Accuracy (dB)		+/-1.0	+/-2.0
<b>Spurious</b>	Inband (dBc)		-80	-70
	Harmonics (dBc)		-20	
<b>VSWR</b>			1.5:1	
<b>Reference (Int/Ext)</b>	Frequency (MHz)		10	
	Input Level (Vpp)	0.5	1	3
<b>Phase Continuous Linear Frequency Sweep</b>	Band 1 (GHz)	1		2
	Band 2 (GHz)	2		4
	Sweep Time (sec)	0.001		1000
	Trigger in/out (Vpp)	3		5
<b>Pulse Modulation (Int/Ext)</b>	Pulse Depth (dB)	60	70	
	Pulse Width (ns)	100		
	Pulse Repetition Interval (ns)	200		
	Resolution (ns)	100		
	Trigger in/out (Vpp)	3		5

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<i>Parameter</i>	<i>Test Conditions/Notes</i>	
<b>Power Requirements</b>	From the USB connection	+5 VDC 650 mA typical
<b>Environmental</b>	Operating Temperature	0 °C to +50 °C
	Relative Humidity (non-condensing)	<95%
<b>Physical Connections</b>	Power and Control	USB Type B – female
	RF Connector	SMA – female
	10 MHz Reference	BNC - female
	Pulse Modulation	BNC - female
	Frequency Sweep Trigger	BNC - female
<b>Optional Features</b>	Opt 003 Pulse Modulation Opt 004 Frequency Sweep Trigger	
<b>Mechanical</b>	Size	4.9 x 3.14 x 1.59 inches 124 x 80 x 40 millimeters
	Weight	1.0 pounds 0.45 kilograms

# LMS-402D Performance Plots

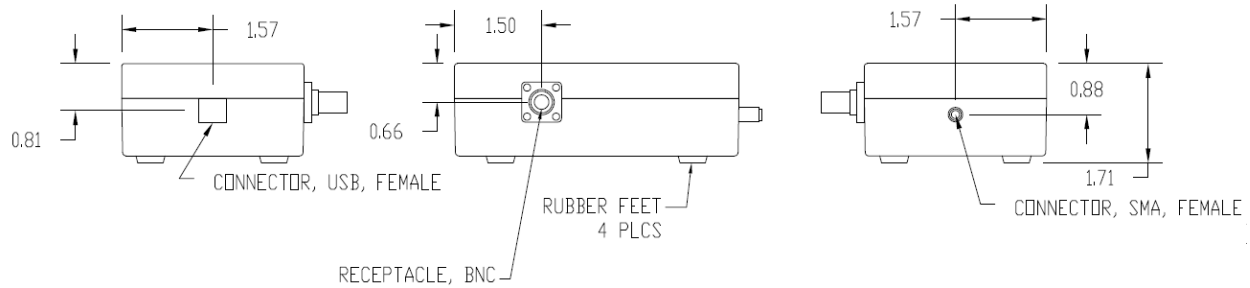
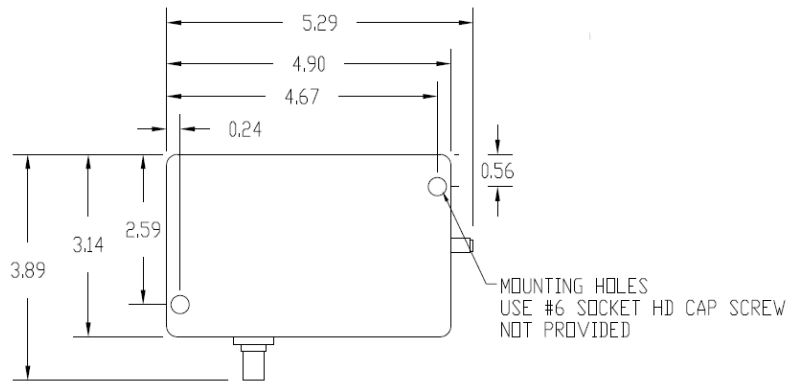


# LMS-402D Mechanical Outline

## Standard Unit

NOTE:

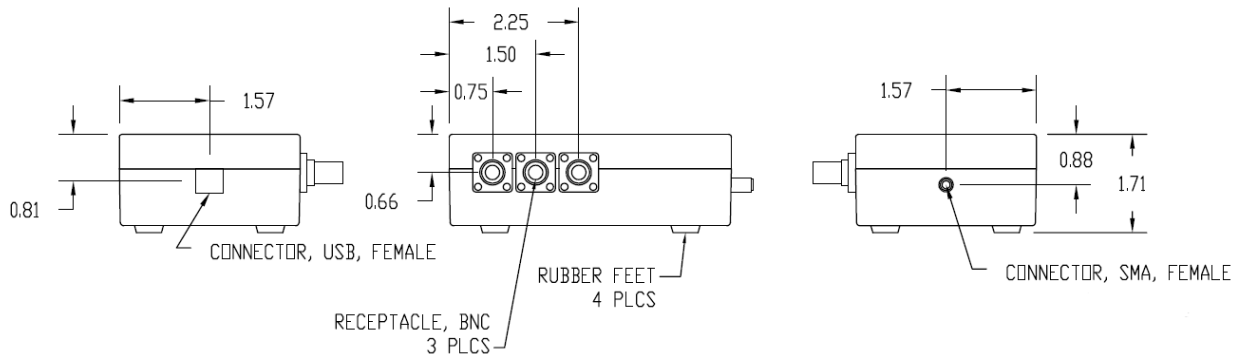
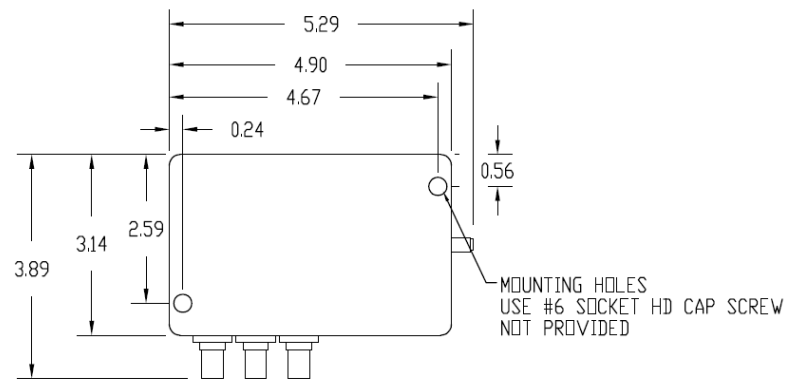
1. DIMENSIONS ARE NOMINAL



## With Pulse and Sweep Trigger Options

NOTE:

1. DIMENSIONS ARE NOMINAL



# LMS-402D Software Interface

