




## LUCID SERIES


THINK RF THINK LUCID

### PORTABLE MODELS


The All-new Lucid-X Portable platform extends the frequency range of Tabor's industry leading Lucid series of analog signal generator all the way up to mm-Wave and is by far the most advanced portable, handheld signal generator on the market. It offers a modern design capable of operating either as a benchtop or a portable signal generator. The series feature 20 and 40GHz single channel versions, all sharing the very same industry leading highlighted features. Featuring superior signal integrity and purity, all the necessary modulated signals for analog communication systems, built in USB, optional LAN interfaces and removable micro-SD card, the Lucid-X Series is designed to meet today's most demanding applications, whether in the lab or out in the field.



20 & 40GHz Microwave signal generator



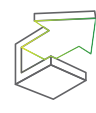
Field ready, with 10" touch screen suited for day and night use and 2 hour battery operation




Phase noise of  $-134\text{dBc}/\text{Hz}$  @1GHz and 10kHz offset



Remotely programmable via MATLAB, Python, LabVIEW and other software programming environments.



Removable uSD card for instrument security



AM, FM, PM, Sweep & Modulation





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## Signal Integrity and Purity

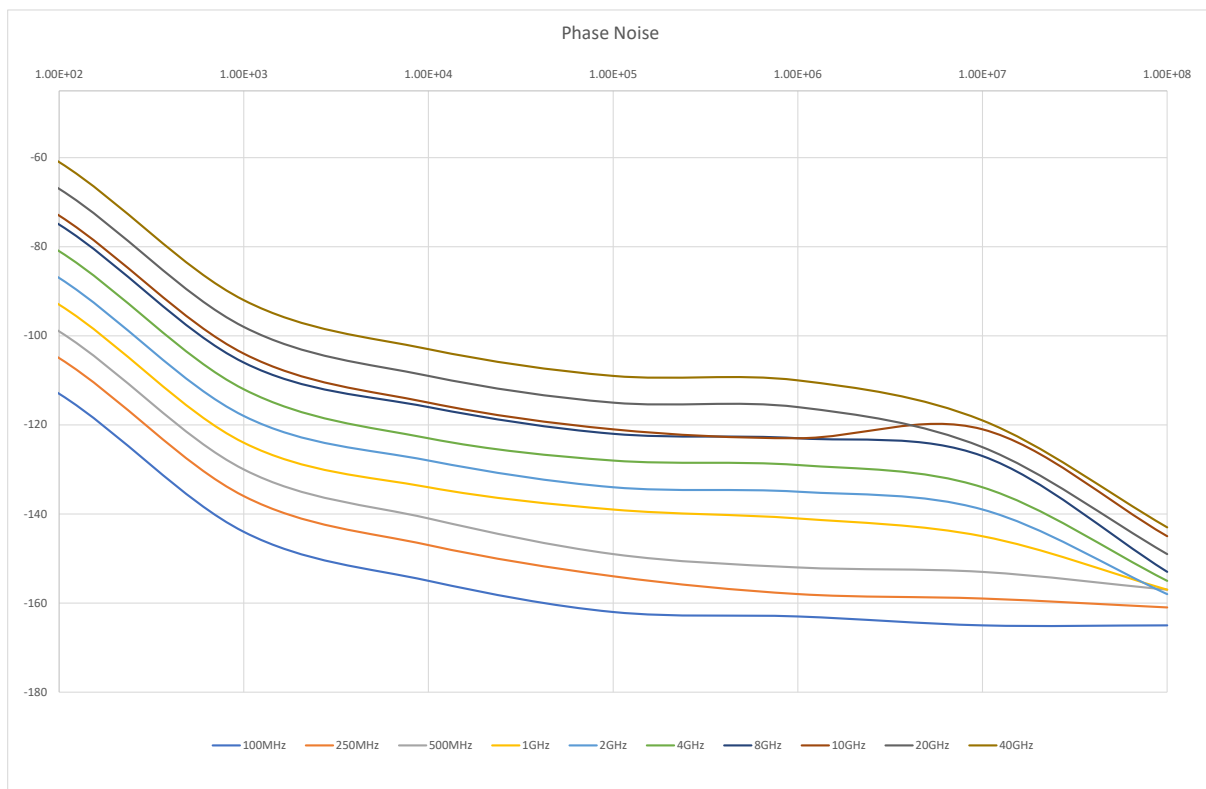
One of the most important requirements in today's testing and measurement applications is a high signal quality. With a typical SSB phase noise of  $-134\text{dBc}/\text{Hz}$  at  $1\text{GHz}$ , and  $-115\text{dBc}/\text{Hz}$  at  $10\text{GHz}$ , at  $10\text{kHz}$  carrier offset, Tabor's Lucid X Series platform delivers great quality signals with the best price to performance value.

## Modulation Schemes

Signal bursts and chirps have become common need in most aerospace or defense application. With Tabor's Lucid Series, any signal modulation is possible, no matter if "narrow" or "standard" signals are required. On top of its outstanding pulse modulation performance, the Lucid Series is also equipped with many CW interferers, and modulated signals such as AM, FM, PM, Pulse, Pattern and Sweep.

## Easy to use

The Portable platform offers a  $10''$  touch screen with user friendly GUI to quickly and easily generate the required signal, while displaying all the critical information. For remote control, the series is equipped with a built-in USB interface enabling remote programming from PC. For those requiring LAN interface a USB to LAN converter can be provided.



## Specifications

FREQUENCY	
<b>Range:</b>	
LSX2091P:	100 kHz to 20 GHz
LSX4091P:	100 kHz to 40 GHz
<b>Resolution:</b>	0.001 Hz
<b>Phase offset:</b>	0.01 deg
<b>Switching speed:</b>	
Standard:	500 $\mu$ s
FS Option:	100 $\mu$ s

FREQUENCY REFERENCE	
<b>Temp. Stability:</b>	$\pm$ 25 ppb max.
<b>Aging:</b>	$\pm$ 3 ppm for 20 years
<b>Warm up time:</b>	30 min

AMPLITUDE		
<b>Max output power:</b>		
Settable:	+15 dBm	
Calibrated:	+10 dBm	
<b>Min output power:</b>	Base	LP Opt.
Settable:	-70 dBm	-80 dBm
Calibrated:	-50 dBm	-70 dBm
<b>Resolution:</b>	0.01 dB	
<b>Power Mute:</b>	-70 dBm	
<b>Output Return Loss:</b>	-10 dBm	
<b>Accuracy (dB):</b>	-50dBm to +15dBm	
Up to 100MHz:	$\pm$ 0.3 (typ.)	
100MHz to 3GHz:	$\pm$ 0.4 (typ.)	
3GHz to 9GHz:	$\pm$ 0.7 (typ.)	
Above 9GHz:	$\pm$ 1 (typ.)	

PHASE NOISE (dBc/Hz)	
<b>Measured @ 10kHz offset</b>	
100MHz	-155 (typ.)
250MHz	-147 (typ.)
500MHz	-141 (typ.)
1GHz	-134 (typ.)
2GHz	-128 (typ.)
4GHz	-123 (typ.)
8GHz	-116 (typ.)
10GHz	-115 (typ.)
20GHz	-109 (typ.)
40GHz	-103 (typ.)

HARMONICS (typ.)		
<b>Range:</b>	0dBm	+10dBm
Up to 8GHz:	-50dBc	-42dBc
8GHz to 20GHz:	-40dBc	-32dBc
20GHz to 40GHz:	-35dBc	-28dBc

SUB-HARMONICS (typ.)	
<b>Up to 20GHz:</b>	-75 dBc
<b>20 to 40GHz:</b>	-35 dBc

NON-HARMONICS (dBc)	
<b>Up to 40GHz:</b>	-90dBc (typ.) -60dBc max. <sup>(1)</sup>

MODULATION	
<b>FREQUENCY MODULATION</b>	
<b>Maximum Deviation:</b>	10MHz
Resolution:	0.1% or 1Hz (the greater)
<b>Modulation Rate:</b>	1MHz
Resolution:	1Hz

AMPLITUDE MODULATION	
<b>AM Depth:</b>	
Type:	Linear
Maximum settable:	100%
Resolution:	0.1% of depth
<b>Modulation rate:</b>	DC to 100kHz

PHASE MODULATION	
<b>Peak Deviation:</b>	360 deg
<b>Modulation Rate:</b>	DC to 100 kHz

SWEEP	
<b>Range:</b>	Same as freq. range
<b>Modes:</b>	Frequency step, Amplitude step, List
<b>Dwell time:</b>	10 $\mu$ s to 1000 s
<b>Resolution:</b>	1 $\mu$ s
<b>Number of points:</b>	
List:	2 to 4,096
Step:	2 to 65,535
<b>Step change:</b>	Linear
<b>Trigger:</b>	Free run, External, Bus, Timer

PATTERN MODULATION (PAT OPTION)	
<b>Number of steps:</b>	1 to 2048
<b>Step Repetition:</b>	1 to 65535
<b>On/off time:</b>	20ns to 20 days

PULSE MODULATION (PLS OPTION)	
<b>On/off ratio:</b>	70dB
<b>Rise/fall time:</b>	15ns, 10%-90% (typ.)
<b>Resolution:</b>	10ns
<b>Minimum Width:</b>	30ns
<b>Repetition frequency:</b>	DC to 10MHz

INPUTS / OUTPUTS	
<b>RF OUT</b>	
<b>Impedance:</b>	50 $\Omega$
<b>Connector type:</b>	2.4mm
<b>REFERENCE OUT</b>	
<b>Impedance:</b>	50 $\Omega$
<b>Connector type:</b>	SMA
<b>Frequency:</b>	10 MHz or 100 MHz
<b>Shape:</b>	Sine
<b>Power:</b>	3 to 7 dBm

MODULATION INPUT	
<b>Connector Type:</b>	SMP
<b>Input Impedance:</b>	50 $\Omega$
<b>Max. input voltage:</b>	$\pm$ 1V
<b>Input damage level:</b>	$\pm$ 3.5V

PULSE / TRIGGER INPUT	
<b>Connector type:</b>	SMP
<b>Input Impedance:</b>	50 $\Omega$
<b>Input voltage:</b>	TTL, CMOS compatible
Threshold:	1.5V
<b>Damage level:</b>	-0.42V or 5.42V

REFERENCE INPUT	
<b>Connector type:</b>	SMA
<b>Input Impedance:</b>	50 $\Omega$
<b>Waveform:</b>	Sine or Square
<b>Frequency:</b>	10/100MHz
<b>Power:</b>	-3dBm to +10dBm
<b>Absolute Max. Level:</b>	+15dBm

CLOCK INPUT / OUTPUT	
<b>Number of Ports:</b>	2, (1 Input & 1 Output)
<b>Connector type:</b>	SMA
<b>Input Impedance:</b>	50 $\Omega$
<b>Waveform:</b>	Sine
<b>Frequency:</b>	2.7GHz – 3.3GHz
<b>Power:</b>	+10dBm
<b>Absolute Max. Level:</b>	+12dBm

<sup>(1)</sup> Boundary spurs which may appear @ -100MHz to +100MHz offset from CW.

## Specifications

GENERAL	
<b>Voltage:</b>	+12.0 to +12.6 VDC
<b>Supply Voltage:</b>	+15 V DC
<b>Power Consumption:</b>	60W max.
<b>Display Type</b>	10", TFT capacitive touch screen
<b>Battery (included):</b>	
Type:	4-cell, replaceable
Standby:	Up to 2 hours
Max. load:	Up to 1 hours
<b>Interface:</b>	
Host:	2 x USB type A
Device:	1 x USB type B 1 x micro USB for LAN adapter
<b>Storage:</b>	Removable SD card
<b>Dimensions:</b>	280 x 225 x 65 mm (W x H x D)
<b>Weight:</b>	
Without Package:	3 kg
Shipping Weight:	4.5 kg
<b>Temperature:</b>	
Operating:	0°C to +40°C
Storage:	-40°C to +70°C
<b>Warm up time:</b>	15 minutes
<b>Humidity:</b>	85% RH, non - condensing
<b>Safety:</b>	CE Marked, IEC61010-1:2010
<b>EMC:</b>	IEC 61326-1:2013
<b>Calibration</b>	2 years
<b>Warranty:</b>	3 year standard

ORDERING INFORMATION	
MODEL	DESCRIPTION
LSX2091P	20GHz Portable Microwave Signal Generator
LSX4091P	40GHz Portable Microwave Signal Generator
OPTION	
BAT	4-cell, replaceable battery (extra)
CHA	External Charger for the Lucid Portable Battery
PLS	Pulse Modulation Option
PAT	Pattern Modulation Option
LP	Low Power Option