

Lucid-X Series Models

The all-new Lucid-X extends the frequency range of Tabor's industry leading Lucid series of analog signal generator all the way up to 40GHz microwave, in the smallest footprint module available on the market. It provides excellent signal quality and integrity and fast switching speeds. Built on Tabor's modular technology platform, the Lucid-X family is available in PXIe, rackmount, benchtop, desktop and portable formfactors. The Lucid-X Series is designed to meet today's most demanding specifications, needed from the R&D benches to the production lines.



20 & 40 GHz Microwave
signal generator



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

Phase noise of -134 dBc/
Hz @1 GHz and 10 kHz offset



Frequency Resolution
of 0.001 Hz



SPI and USB C
integrated interfaces



Extra small, compact
module platform



Multi instrument synchronization
capability

Flexible modular platform
for OEM and custom
requirements and
applications, to satisfy
specific customer demands

AM, FM, PM, Sweep,
Pulse & Pattern
Modulation



Signal Integrity and Purity

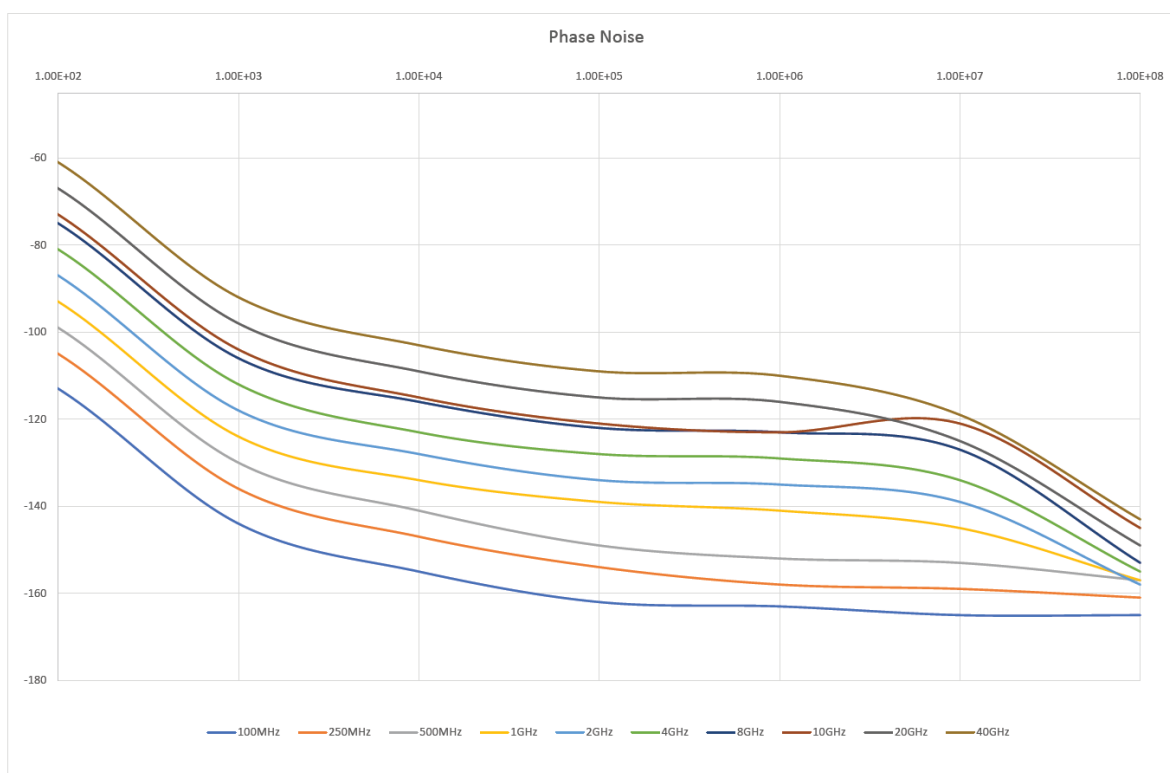
One of the most important requirements in today's testing and measurement applications is a high signal quality. With a typical SSB phase noise of -134 dBc/Hz at 1 GHz, and -115 dBc/Hz at 10 GHz, at 10 kHz carrier offset, Tabor's Lucid-X Series platform delivers excellent quality signals with the best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

Multiple Ways to Control the Unit and Write Your Code

Tabor's Lucid Series has a dedicated software to control the instrument functions, modes, and features via a graphical user interface (GUI). It also includes a complete set of drivers, allowing you to write your application in various environments, including LabVIEW, Python, CVI, C++, VB, and MATLAB. You may use low-level SCPI commands to program the instrument, regardless of whether your application is written for Windows, Linux, or Macintosh operating systems.

Modulation Schemes

Signal bursts and chirps have become a common need in most aerospace or defense application. With Tabor's All-New 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.



Specifications

Frequency	
Range	
LSX8081X ⁽¹⁾	50 kHz to 8 GHz
LSX209xy ⁽¹⁾	50 kHz to 20 GHz
LSX409xy ⁽¹⁾	50 kHz to 40 GHz
Resolution	0.001 Hz
Phase offset	0.01 deg
Switching speed	
Standard	500 μ s
FS Option	100 μ s

Frequency Reference	
Temperature Stability	± 10 ppb max (0-50°C)
Aging	± 0.3 ppm 1st year ± 3 ppm 20 years
Warm up Time	15 min
Frequency Accuracy	± 0.5 ppm

Amplitude		
Max Output Power	Base	EPR Opt.
Settable	+12 dBm	up to +20 dBm
Calibrated	+10 dBm	up to +17 dBm
Min Output Power	Base	LP Opt.
Settable	-30 dBm	-75 dBm
Calibrated	-20 dBm	-70 dBm
Resolution	0.01 dB	
Power Mute	-80 dBm	
Output Return Loss	-10 dBm	
Accuracy (dB)	-70 dBm to +10 dBm	
Up to 100 MHz	± 0.3 (typ.) dBm	
100 MHz to 3 GHz	± 0.4 (typ.) dBm	
3 GHz to 9 GHz	± 0.7 (typ.) dBm	
Above 9 GHz	± 1 (typ.) dBm	

Phase Noise (dBc/Hz)	
Measured @ 10 kHz Offset	
100 MHz	-153 (typ.)
250 MHz	-147 (typ.)
500 MHz	-141 (typ.)
1 GHz	-134 (typ.)
2 GHz	-128 (typ.)
4 GHz	-122 (typ.)
8 GHz	-116 (typ.)
10 GHz	-114 (typ.)
20 GHz	-108 (typ.)
40 GHz	-102 (typ.)

Harmonics (typ.)		
Range	0 dBm	+10 dBm
Up to 8 GHz	-50 dBc	-40 dBc
8 GHz to 20 GHz	-40 dBc	-30 dBc
20 GHz to 40 GHz	-35 dBc	-28 dBc

Sub-Harmonics (typ.)	
Up to 20 GHz	-70 dBc
20 GHz to 40 GHz	-35 dBc

Non-Harmonics (dBc)	
Up to 20 GHz	-90 dBc (typ.) -60 dBc max. ⁽²⁾
20 GHz to 40 GHz	-60 dBc max.

Modulation	
Frequency Modulation	
Maximum Deviation	10 MHz
Resolution	0.1% or 1 Hz (the greater)
Modulation Rate	1 MHz
Resolution	1 Hz
Amplitude Modulation	
AM Depth	
Type	Linear
Maximum Settable	100%
Resolution	0.1% of depth
Modulation Rate	DC to 100 kHz
Phase Modulation	
Peak Deviation	360 deg
Modulation Rate	DC to 100 kHz
Sweep	
Range	Same as frequency range
Modes	Frequency step, Amplitude step, List
Dwell Time	10 μ s to 562,499 s
Resolution	1 μ s
Number of Points	2 to 4,096
Step Change	Linear
Trigger	Free run, External, Bus, Timer
Pattern Modulation (PAT Option)	
Number of Steps	1 to 2048
Step Repetition	1 to 65535
On/Off Time	32 ns to 20 days

Pulse Modulation (PLS Option)	
On/Off Ratio	80 dB
Rise/Fall Time	15 ns, 10%-90% (typ.)
Resolution	8 ns
Minimum Width	32 ns
Repetition Frequency	DC to 10 MHz

Inputs/Outputs	
RF Out	
Impedance	50 Ω
Connector Type	
LSX8081X	2.92 mm
LSX209xy	2.92 mm
LSX409xy	2.4 mm
VSWR	1:2.1
Reverse Power	0.5 W, 16 VDC
Reference Out ⁽³⁾	
Impedance	50 Ω
Connector Type	SMA
Frequency	10 MHz or 100 MHz
Shape	Sine
Power	3 to 7 dBm
Modulation Input	
Connector Type	SMP
Input Impedance	50 Ω
Max. Input Voltage	± 1 V
Input Damage Level	± 3.5 V
Pulse / Trigger Input	
Connector Type	SMP
Input Impedance	50 Ω
Input Voltage	TTL, CMOS compatible
Threshold	1.5 V
Damage Level	-0.42 V or 5.42 V
Reference Input	
Connector Type	SMA
Input Impedance	50 Ω
Waveform	Sine or Square
Frequency	10/100 MHz
Power	-3 dBm to +10 dBm
Absolute Max. Level	+15 dBm
Clock Input / Output ⁽³⁾	
Number of Ports	2, (1 Input & 1 Output)
Connector Type	SMA
Input Impedance	50 Ω
Waveform	Sine
Frequency	2.7 GHz - 3.3 GHz
Power	+10 dBm
Absolute Max. Level	+12 dBm

⁽¹⁾ x = Number of channels, y=X/R/B/D/P=PXIe/Rackmount/Benchtop/Desktop/Portable.

⁽²⁾ Boundary spurs which may appear @ -100 MHz to +100 MHz offset from CW.

⁽³⁾ Reference Out and Clock Output are not supported by Lucid-X Portable.

General

General	
Temperature	
Operating	0°C to +40°C
Storage	-40°C to +70°C
Warm up Time	15 minutes
Humidity	85% RH, non-condensing
Safety	CE Marked, IEC61010-1:2010
EMC	IEC 61326-1:2013
Calibration	2 years
Warranty	3 years

General Desktop	
Power Supply	Input: 100 – 240 V AC, 1.5 A, 47-63 Hz. Output 12.0 V DC, 8.34 A, 100.0 W
Power Consumption	
LSX2091D	30 W typ., 45 W max.
LSX4091D	35 W typ., 55 W max.
Interface	USB TYPE C, SPI
Dimensions	14.5 x 9.5 x 3 cm
Weight	
Without Package	1.0 kg
Shipping Weight	1.5 kg

General Portable	
Power Supply	Input: 100 – 240 V AC, 1.5 A, 47-63 Hz. Output 12.0 V DC, 8.34 A, 100.0 W
Power Consumption	60 W max.
LSX2091P	30 W typ., 45 W max.
LSX4091P	35 W typ., 55 W max.
Display Type	10.1", 1280x800 TFT capacitive touch screen
Battery	
Type	4-cell, replaceable
Standby	Up to 2 hours
Maximum Load	Up to 1 hour
Interface	USB TYPE C, SPI
Host	2 x USB type A
Device	1 x USB type B, 1 x micro-USB for LAN adapter
Storage	16 GB removable SD card
Dimensions (WxHxD)	280 x 225 x 65 mm
Weight	
Without Package	3.0 kg
Shipping Weight	4.5 kg

General PXIe	
Voltage	+12.0 to +12.6 VDC
Power Consumption	
LSX8081X	25 W typ., 35 W max.
LSX2091X	30 W typ., 45 W max.
LSX4091X	35 W typ., 55 W max.
Current Consumption	
+3.3 V	0.5 A max.
+12 V	5.5 A max.
Interface	PXIe Gen3 x8 Lanes
Dimensions	8HP PXIe (2 Slots)
Weight	
Without Package	1.0 kg
Shipping Weight	1.5 kg

General Rackmount	
Voltage Range	90 VAC to 264 VAC
Frequency Range	47 Hz to 63 Hz
Power Consumption	
LSX2091R	30 W typ., 45 W max.
LSX2092R	60 W typ., 90 W max.
LSX2094R	120 W typ., 180 W max.
LSX4091R	35 W typ., 55 W max.
LSX4092R	70 W typ., 110 W max.
LSX4094R	140 W typ., 220 W max.
Interface	
Host	2 x front panel USB type A 1 x rear panel USB type A
Device	1 x rear panel USB type B
LAN	1 x rear panel 1000/100/10 BASE-T
Storage	16 GB removable SD card
Dimensions (WxHxD)	450 x 43 x 500 mm
Weight	
Without Package	6 kg
Shipping Weight	7 kg

General Benchtop	
Voltage Range	90 VAC to 264 VAC
Frequency Range	47 Hz to 63 Hz
Power Consumption	
LSX2091B	30 W typ., 45 W max.
LSX2092B	60 W typ., 90 W max.
LSX2094B	120 W typ., 180 W max.
LSX4091B	35 W typ., 55 W max.
LSX4092B	70 W typ., 110 W max.
LSX4094B	140 W typ., 220 W max.
Display Type	5", TFT capacitive touch screen
Interface	
Host	2 x front panel USB type A 1 x rear panel USB type A
Device	1 x rear panel USB type B
LAN	1 x rear panel 1000/100/10 BASE-T RJ45
Storage	32 GB removable SD card
Dimensions (WxHxD)	
With Feet	315 X 102 x 425 mm
Without Feet	315 X 88 x 425 mm
Weight	
Without Package	6 kg
Shipping Weight	6.5 kg

Ordering Information & Options

Ordering Information Desktop	
Model	Description
LSX8081D	8 GHz, 1 channel, desktop analog RF signal generator
LSX1491D	14 GHz, 1 channel, desktop analog RF signal generator
LSX2091D	20 GHz, 1 channel, desktop analog RF signal generator
LSX4091D	40 GHz, 1 channel, desktop analog RF signal generator

Ordering Information PXIe	
Model	Description
LSX8081X	8 GHz, 1 channel, PXIe analog RF signal generator
LSX1491X	14 GHz, 1 channel, PXIe analog RF signal generator
LSX2091X	20 GHz, 1 channel, PXIe analog RF signal generator
LSX4091X	40 GHz, 1 channel, PXIe analog RF signal generator

Ordering Information Rackmount	
Model	Description
LSX8081R	8 GHz, 1 channel, rackmount analog RF signal generator
LSX8082R	8 GHz, 2 channels, rackmount analog RF signal generator
LSX8084R	8 GHz, 4 channels, rackmount analog RF signal generator
LSX1491R	14 GHz, 1 channel, rackmount analog RF signal generator
LSX1492R	14 GHz, 2 channels, rackmount analog RF signal generator
LSX1494R	14 GHz, 4 channels, rackmount analog RF signal generator
LSX2091R	20 GHz, 1 channel, rackmount analog RF signal generator
LSX2092R	20 GHz, 2 channels, rackmount analog RF signal generator
LSX2094R	20 GHz, 4 channels, rackmount analog RF signal generator
LSX4091R	40 GHz, 1 channel, rackmount analog RF signal generator
LSX4092R	40 GHz, 2 channels, rackmount analog RF signal generator
LSX4094R	40 GHz, 4 channels, rackmount analog RF signal generator

Ordering Information Benchtop	
Model	Description
LSX8081B	8 GHz, 1 channel, benchtop analog RF signal generator
LSX8082B	8 GHz, 2 channels, benchtop analog RF signal generator
LSX8084B	8 GHz, 4 channels, benchtop analog RF signal generator
LSX1491B	14 GHz, 1 channel, benchtop analog RF signal generator
LSX1492B	14 GHz, 2 channels, benchtop analog RF signal generator
LSX1494B	14 GHz, 4 channels, benchtop analog RF signal generator
LSX2091B	20 GHz, 1 channel, benchtop analog RF signal generator
LSX2092B	20 GHz, 2 channels, benchtop analog RF signal generator
LSX2094B	20 GHz, 4 channels, benchtop analog RF signal generator
LSX4091B	40 GHz, 1 channel, benchtop analog RF signal generator
LSX4092B	40 GHz, 2 channels, benchtop analog RF signal generator
LSX4094B	40 GHz, 4 channels, benchtop analog RF signal generator

Ordering Information Portable	
Model	Description
LSX8081P	8 GHz, 1 channel, portable analog RF signal generator
LSX1491P	14 GHz, 1 channel, portable analog RF signal generator
LSX2091P	20 GHz, 1 channel, portable analog RF signal generator

Options	Description	Models ⁽¹⁾
MOD	Modulation package (AM, FM, PM)	X/R/B/D/P
LP	Low power option -70 dBm. Included for B/R/X.	D/P
ELP1	1 channel, extended low power range. Not available for 4 channels.	B/R
ELP2	2 channels, extended low power range. Not available for 4 channels.	B/R
EPR1	1 channel, extended power range -130dBm to +27dBm. Not available for 4 channels.	B/R
EPR2	2 channel, extended power range -130dBm to +27dBm. Not available for 4 channels.	B/R
PLS	Pulse modulation	X/R/B/D/P
PAT	Pattern modulation	X/R/B/D/P
FS	Fast switching 100 μ s	X/R/B/D
UFS	Ultra-fast switching 20 μ s	B/R
BAT	4-cell, replaceable extra battery 39 Wh	P
BAT2	4-cell, replaceable extra battery 98 Wh	P
CHA	External charger	P
LAN	USB Ethernet adapter	P
W-Rack	Rack-mount kit	B/R
WE	1 year warranty extension (standard warranty 3 years)	X/R/B/D/P
Accessories		
PXE21100	21 slot PXIe chassis	X

⁽¹⁾ X/R/B/D/P=PXIe/Rackmount/Benchtop/Desktop/Portable.

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