

# LUCID SERIES

THINK RF THINK LUCID

## DESKTOP MODELS

The all-new Lucid Series offers the most advanced features and industry leading performance in the most compact form factor. The series feature 3, 6 and 12 GHz single channel versions, all sharing the very same industry leading highlighted features, in a compact, small footprint module. Featuring extremely fast switching speed, superior signal integrity and purity, all the necessary modulated signals for analog communication systems, built in SPI and micro-USB interfaces, the Lucid Series is designed to meet today's most demanding specifications, needed from the R&D benches to the production lines.

3, 6 & 12GHz RF analog signal generator

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

Exceptionally Low Phase Noise of -145dBc/Hz @100MHz and 10kHz offset

Fast Switching speed of <100us

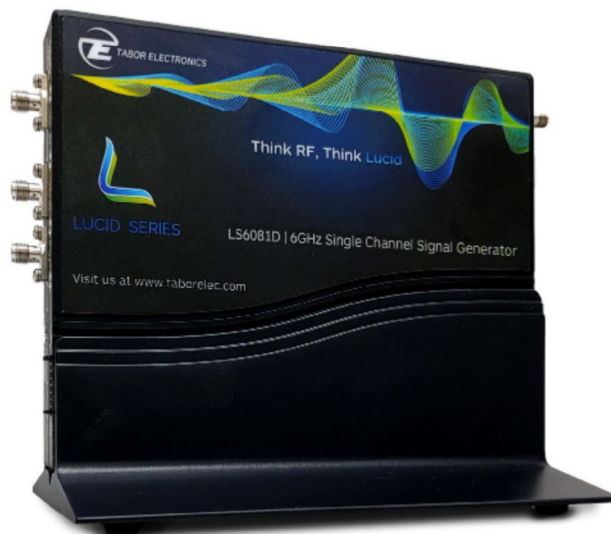
SPI and micro-USB integrated interfaces

Extra small, compact module platform

Multi instrument synchronization capability

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

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



## Specifications

FREQUENCY	
<b>Range:</b>	
LS3081D:	9 kHz to 3GHz
LS6081D:	9 kHz to 6GHz
LS1291D:	9 kHz to 12GHz
<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:	+20 dBm	
Calibrated:	+15 dBm <sup>(1)</sup>	
<b>Min output power:</b>	Base	LP Opt.
Settable:	-30 dBm	-100 dBm
Calibrated:	-20 dBm	-80 dBm
<b>Resolution:</b>	0.01 dB	
<b>Power Mute:</b>	-95 dBm	
<b>Output Return Loss:</b>	-10 dBm	
<b>Accuracy (dB):</b>	-50dBm to +15dBm	-90dBm to -50dBm
Up to 100MHz:	$\pm$ 0.3 (typ.)	$\pm$ 0.5 (typ.)
100MHz to 3GHz:	$\pm$ 0.4 (typ.)	$\pm$ 0.6 (typ.)
3GHz to 9GHz:	$\pm$ 0.7 (typ.)	$\pm$ 0.9 (typ.)
Above 9GHz:	$\pm$ 1 (typ.)	$\pm$ 1.5 (typ.)

PHASE NOISE (dBc/Hz)	
Measured @ 10kHz offset	
<b>1 GHz:</b>	-138 (typ.)
<b>2 GHz:</b>	-133 (typ.)
<b>3 GHz:</b>	-130 (typ.)
<b>6 GHz:</b>	-124 (typ.)
<b>12 GHz:</b>	-118 (typ.)

HARMONICS (dBc)	
<b>Up to 100 MHz:</b>	-30 dBc
<b>100 MHz to 12 GHz:</b>	-50 dBc <sup>(2)</sup>

SUB-HARMONICS (dBc)	
<b>6 to 12 GHz:</b>	-55 dBm

NON-HARMONICS (dBc)	
<b>Up to 12 GHz:</b>	-90dBc (typ.) <sup>(4,5)</sup> -60dBc max. <sup>(6)</sup>

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

AMPLITUDE MODULATION <sup>(6)</sup>	
<b>AM Depth:</b>	
Type:	Linear
Maximum settable:	90%
Resolution:	0.1% of depth
<b>Modulation rate:</b>	DC to 100 kHz

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

PULSE MODULATION (PLS OPTION)	
<b>On/off ratio:</b>	60 dB
<b>Rise/fall time (10%-90%):</b>	15ns (typ.)
<b>Resolution:</b>	6.4ns
<b>Minimum Width:</b>	32ns
<b>Repetition frequency:</b>	DC to 10 MHz

PATTERN MODULATION (PAT OPTION)	
<b>Number of steps:</b>	1 to 2048
<b>Step Repetition:</b>	1 to 65535
<b>On/off time:</b>	32 ns to 20 days

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

INPUTS	
<b>MODULATION INPUT</b>	
<b>Connector Type:</b>	MMCX
<b>Input Impedance:</b>	50 $\Omega$
<b>Max. input voltage:</b>	$\pm$ 1V
<b>Input damage level:</b>	$\pm$ 3.5V
<b>PULSE / TRIGGER INPUT</b>	
<b>Connector type:</b>	MMCX
<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
<b>EXTERNAL REFERENCE INPUT</b>	
<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>	-3 dBm to +10 dBm
<b>Absolute Max. Level:</b>	+15 dBm
<b>Locking Range:</b>	$\pm$ 2 ppm

OUTPUTS	
<b>RF OUT</b>	
<b>Impedance:</b>	50 $\Omega$
<b>Connector type:</b>	SMA
<b>Number of outputs:</b>	1
<b>REFERENCE OUT</b>	
<b>Impedance:</b>	50 $\Omega$
<b>Connectors type:</b>	2 x SMA
<b>Frequency:</b>	10 MHz or 100 MHz
<b>Shape:</b>	Sine
<b>Power:</b>	3 to 7 dBm

<sup>(1)</sup> Above 25kHz; <sup>(2)</sup> With LP Option; <sup>(3)</sup> 750MHz to 900MHz -35dBc (typ.); <sup>(4)</sup> -60dBm max. @ 1GHz, 1.5GHz, 2.5GHz and 3GHz; <sup>(5)</sup> -75dBm max. @ -15dBm to +15dBm and f>6GHz; <sup>(6)</sup> Boundary spurs which may appear @ -100MHz to +100MHz offset from CW. <sup>(6)</sup> Specified for >100MHz.

## Specifications

GENERAL	
<b>Voltage:</b>	+12.0 to +12.6 VDC
<b>Power Consumption:</b>	
Normal Operation:	18W nom.
Max:	24W max.
<b>Interface:</b>	MICRO-USB, SPI
<b>Dimensions:</b>	12 x 16 x 2.5 cm
<b>Weight:</b>	
Without Package:	1 kg
Shipping Weight:	1.5 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>	1 / 3 year warranty plan

ORDERING INFORMATION	
MODEL	DESCRIPTION
LS3081D	3GHz RF Analog Signal Generator Desktop Module
LS6081D	6GHz RF Analog Signal Generator Desktop Module
LS1291D	12GHz RF Analog Signal Generator Desktop Module
OPTIONS	
LP	Low Power
PLS	Pulse Modulation
PAT	Pattern Modulation
FS	Fast Switching