LUCID SERIES
THINK RF THINK **LUCID**

## BENCHTOP MODELS

The all-new Lucid-X Series benchtop platform offers up to 4 phase coherent channels in a standalone compact unit. The series feature 20 and 40GHz models in single, dual or four channel versions, all sharing the very same industry leading highlighted features. Featuring extremely fast switching speed, superior signal integrity and purity, removable memory card for maximum security, all the necessary modulated signals for analog communication systems, built in LAN and USB interfaces, the Lucid Series is designed to meet today's most demanding specifications, needed from the R&D benches to the production lines.

20 & 40GHz Microwave signal generator

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

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

Frequency Resolution of 0.001Hz

USB and LAN interfaces

Small form factor and space efficient benchtop platform

Removable SD card for instrument security

Single, Dual and four phase coherent channels in a single box

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

Easy to use benchtop platform with 5" touch screen and user friendly GUI

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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 -134dBc/Hz at 1GHz, and -115dBc/Hz at 10GHz, at 10kHz carrier offset, Tabor's Lucid X Series platform delivers great quality signals with the best price to performance value.

## Modulation Schemes

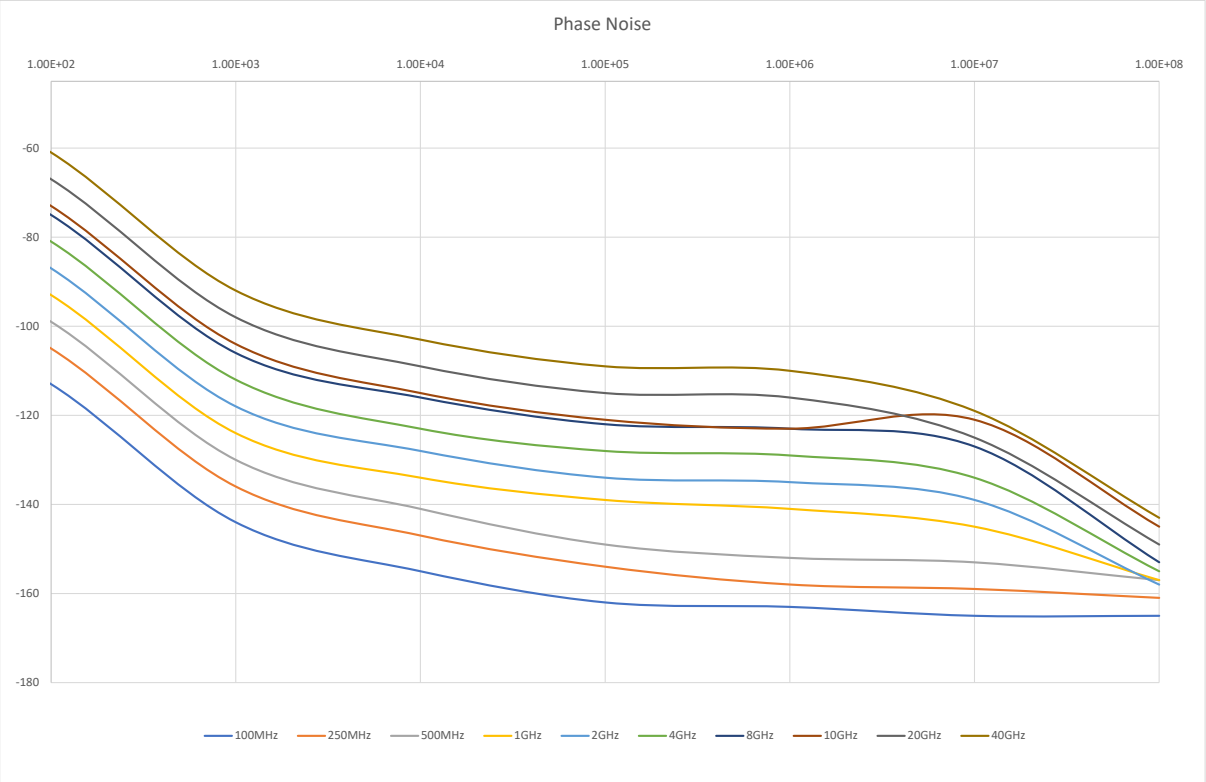
Signal bursts and chirps have become common need in most aerospace or defense application. With Tabor's Lucid Series, any signal modulation is possible, no matter if "narrow" or "standard" signals are required. On top of its outstanding pulse modulation performance, the Lucid Series is also equipped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

## Multi-channel, phase coherent, benchtop generator

Many test systems and experimental setups require multiple RF channels, either separate or synchronized. The Lucid series benchtop platform offers up to 4, separate or phase coherent, RF outputs in a single 19" 2U box, saving up to 4 times the space compared to available benchtop solutions on the market. You can save both valuable bench/rack space and investment capital without compromising performance.

## Easy to use

The benchtop platform offers a 5" 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 Ethernet and USB interface enabling remote programming from PC.



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# Specifications

## FREQUENCY

| | |
|---|---|
| **Range:** | |
| LSX2091/2/4B: | 100 kHz to 20 GHz |
| LSX4091/2/4B: | 100 kHz to 40 GHz |
| **Resolution:** | 0.001 Hz |
| **Phase offset:** | 0.01 deg |
| **Switching speed:** | |
| Standard: | 500 µs |
| FS Option: | 100 µs |

## FREQUENCY REFERENCE

| | |
|---|---|
| **Temp. Stability:** | ±25 ppb max. |
| **Aging:** | ± 3 ppm for 20 years |
| **Warm up time:** | 30 min |

## AMPLITUDE

| | | |
|---|---|---|
| **Max output power:** | | |
| Settable: | +15 dBm | |
| Calibrated: | +10 dBm | |
| **Min output power:** | Base | LP Opt. |
| Settable: | -70 dBm | -80 dBm |
| Calibrated: | -50 dBm | -70 dBm |
| **Resolution:** | 0.01 dB | |
| **Power Mute:** | -70 dBm | |
| **Output Return Loss:** | -10 dBm | |
| **Accuracy (dB):** | -50dBm to +15dBm | |
| Up to 100MHz: | ±0.3 (typ.) | |
| 100MHz to 3GHz: | ±0.4 (typ.) | |
| 3GHz to 9GHz: | ±0.7 (typ.) | |
| Above 9GHz: | ±1 (typ.) | |

## PHASE NOISE (dBc/Hz)

| Measured @ 10kHz offset | |
|---|---|
| **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.)

| | | |
|---|---|---|
| **Range:** | 0dBm | +10dBm |
| Up to 8GHz: | -50dBc | -42dBc |
| 8GHz to 20GHz: | -40dBc | -32dBc |
| 20GHz to 40GHz: | -35dBc | -28dBc |

## SUB-HARMONICS (typ.)

| | |
|---|---|
| **Up to 20GHz:** | -75 dBc |
| **20 to 40GHz:** | -35 dBc |

## NON-HARMONICS (dBc)

| | |
|---|---|
| **Up to 40GHz:** | -90dBc (typ.)<br>-60dBc max.[1] |

## MODULATION

| | |
|---|---|
| **FREQUENCY MODULATION** | |
| **Maximum Deviation:** | 10MHz |
| Resolution: | 0.1% or 1 Hz (the greater) |
| **Modulation Rate:** | 1MHz |
| Resolution: | 1Hz |
| **AMPLITUDE MODULATION** | |
| **AM Depth:** | |
| Type: | Linear |
| Maximum settable: | 100% |
| Resolution: | 0.1% of depth |
| **Modulation rate:** | DC to 100kHz |
| **PHASE MODULATION** | |
| **Peak Deviation:** | 360 deg |
| **Modulation Rate:** | DC to 100 kHz |
| **SWEEP** | |
| **Range:** | Same as freq. range |
| **Modes:** | Frequency step, Amplitude step, List |
| **Dwell time:** | 10 µs to 1000 s |
| **Resolution:** | 1 µs |
| **Number of points:** | |
| List: | 2 to 4,096 |
| Step: | 2 to 65,535 |
| **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:** | 20ns to 20 days |

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

## INPUTS / OUTPUTS

| | |
|---|---|
| **RF OUT** | |
| **Impedance:** | 50Ω |
| **Connector type:** | 2.4mm |
| **Number of outputs:** | |
| LSX2091/4091B: | 1 |
| LSX2092/4092B: | 2 |
| LSX2094/4094B: | 4 |
| **REFERENCE OUT** | |
| **Impedance:** | 50Ω |
| **Connector type:** | BNC |
| **Frequency:** | 10 MHz or 100 MHz |
| **Shape:** | Sine |
| **Power:** | 3 to 7 dBm |
| **MODULATION INPUT** | |
| **Connector Type:** | BNC (per channel) |
| **Input Impedance:** | 50Ω |
| **Max. input voltage:** | ±1V |
| **Input damage level:** | ±3.5V |
| **PULSE / TRIGGER INPUT** | |
| **Connector type:** | BNC (per channel) |
| **Input Impedance:** | 50Ω |
| **Input voltage:** | TTL, CMOS compatible |
| Threshold: | 1.5V |
| **Damage level:** | -0.42V or 5.42V |
| **REFERENCE INPUT** | |
| **Connector type:** | BNC (per channel) |
| **Input Impedance:** | 50Ω |
| **Waveform:** | Sine or Square |
| **Frequency:** | 10/100MHz |
| **Power:** | -3dBm to +10dBm |
| **Absolute Max. Level:** | +15dBm |

[1] Boundary spurs which may apear @ -100MHz to +100MHz offset from CW.

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# Specifications

| GENERAL | |
|---|---|
| **Voltage Range:** | 90VAC to 264VAC |
| **Frequency Range:** | 47Hz to 63Hz |
| **Power Consumption:** | 100W |
| **Display Type:** | 5", TFT capacitive touch screen |
| **Interface:** | |
| Host: | 2 x front panel USB type A<br>1 x rear panel USB type A |
| Device:<br>USB:<br>LAN: | <br>1 x rear panel USB type B<br>1 x rear panel 1000/100/10 BASE-T |
| **Storage:** | Removable SD card |
| **Dimensions (W x H x D):** | |
| Without feet | 315 X 88 x 425 mm |
| With feet | 315 X 102 x 425 mm |
| **Weight:** | |
| Without Package: | 6.0 kg |
| Shipping Weight: | 6.5 kg |
| **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, EC61010-1:2010 |
| **EMC:** | IEC 61326-1:2013 |
| **Calibration:** | 2 years |
| **Warranty:** | 3 year standard |

| ORDERING INFORMATION | |
|---|---|
| **MODEL** | **DESCRIPTION** |
| **LSX2091B** | 20GHz Single Channel Microwave Signal Generator |
| **LSX2092B** | 20GHz Dual Channel Microwave Signal Generator |
| **LSX2094B** | 20GHz Four Channel Microwave Signal Generator |
| **LSX4091B** | 40GHz Single Channel Microwave Signal Generator |
| **LSX4092B** | 40GHz Dual Channel Microwave Signal Generator |
| **LSX4094B** | 40GHz Four Channel Microwave Signal Generator |
| **OPTIONS** | |
| **PLS** | Pulse Modulation |
| **PAT** | Pattern Modulation |
| **ELP** | Extended Low Power (-150dBc) |
| **EPR** | Extended Power Range (-130dBc to +20dB) |
| **FS** | Fast Switching |
| **EMU** | Emulator pack for Keysight, R&S, Anapico & Holzworth |
| **W-Rack** | Rack mount kit |

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