LSG Series Signal Generator

Datasheet

Saluki Technology Inc.

The document applies to the signal generator of the following models:

- LSG022 signal generator (100 kHz - 22 GHz).

Document No.

LSG022-02-01

Version

Rev02 2022.02

Saluki Technology

Document Authorization

The information contained in this document is subject to change without notice. The power to interpret the contents of and terms used in this document rests with Saluki.

Product Quality Assurance

The warranty period of the product is three years from the date of delivery. The instrument manufacturer will repair or replace damaged parts according to the actual situation within the warranty period.

Product Quality Certificate

The product meets the indicator requirements of the document at the time of delivery. Calibration and measurement are completed by the measuring organization with qualifications specified by the state, and relevant data are provided for reference.

Quality/Settings Management

Research, development, manufacturing and testing of the product comply with the requirements of the quality and environmental management system.

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Definitions

Specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

Typical (typ) describes additional product performance information that is not covered by the product warranty. It is performance beyond specifications that 80 percent of the units exhibit with a 90 percent confidence level at room temperature (approximately 25 °C). Typical performance does not include measurement uncertainty.

Nominal (nom) values indicate the expected mean or average performance, or an attribute whose performance is by design. This data is not warranted and is measured at room temperature (approximately 25 °C).

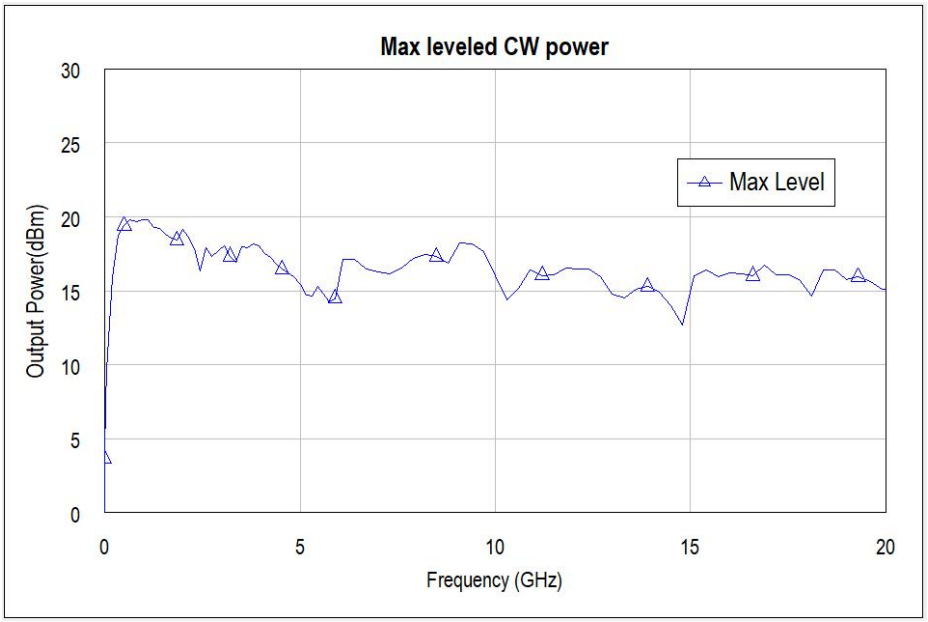
Measured (meas) describes an attribute measured during the design phase for purposes of communicating expected performance. This data is not warranted and is measured at room temperature (approximately 25 °C).

Frequency

Frequency range	
Frequency range	100 kHz to 22 GHz
Resolution	0.1 Hz
Phase offset	Adjustment in normal 1° increasement
Frequency switching speed	
CW mode	10 ms
Frequency reference	
Accuracy	**± (time since last adjustment x aging rate)**
	± temperature effects
	± line voltage effects
	± calibration accuracy
Internal time base reference oscillator aging rate	≤±1 ppm/year ≤±0.02 ppm/day
Initial achievable calibration accuracy	≤±1 ppm
Adjustment resolution	≤0.6 ppb
Temperature effects	≤±0.1 ppm
Line voltage effects	≤±0.2 ppm
Reference output	
Frequency	10 MHz
Amplitude	≥4 dBm, nominal into 50 Ω load
External reference input	
Input frequency	10 MHz
Stability	Follow the stability of external reference input signal
Lock range	±5 ppm
Impedance	50 Ω
Waveform	Sine
Sweep modes (frequency and amplitude)	
Operating modes	Step sweep List sweep
Sweep range	Within instrument frequency range
Dwell time	1 ms to 100 s
Number of points	2 to 127
Step change	Linear or logarithmic
Triggering	Free run, external, Timer, bus (USB)

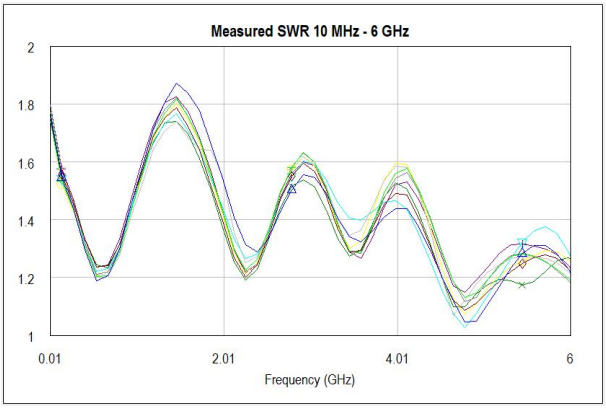
Amplitude

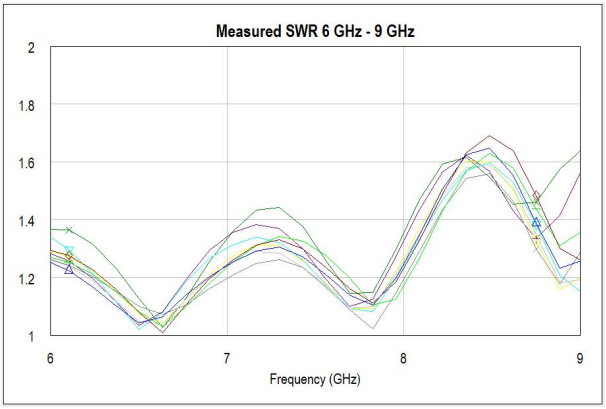
Output parameters	
Settable range	+20 to -80 dBm
Resolution	0.5 dB
Step attenuator	0 to 90 dB in 0.5 dB step electronic type
Connector	SMA 50 Ω
Max output power	
Frequency	**Output power**
100 kHz to 1 MHz	3.0 dBm
1 MHz to 10 MHz	6.0 dBm
10 MHz to 300 MHz	15 dBm
300 MHz to 6 GHz	19 dBm
6 GHz to 10 GHz	18 dBm
10 GHz to 20GHz	16 dBm

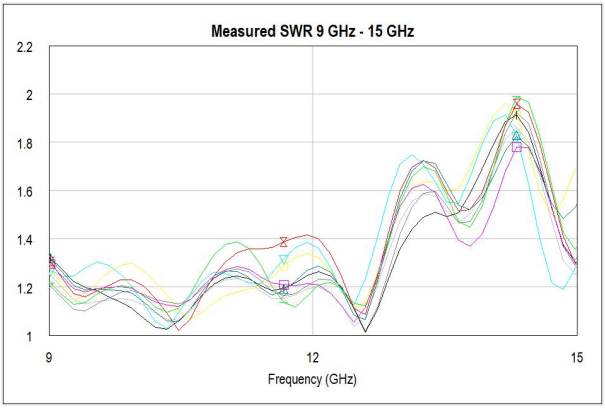


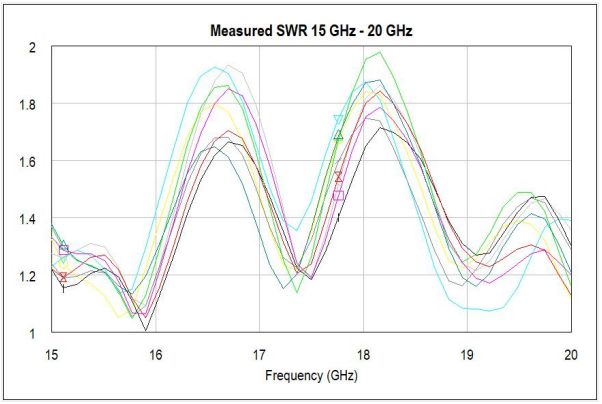
Absolute level accuracy in CW mode		
Range	**Max power to -20 dBm**	**< -20 to -65 dBm**
100 kHz to 3 GHz	±0.7 dB	±0.9 dB
3 GHz to 6 GHz	±1.0 dB	±1.3 dB
6 GHz to 20 GHz	±0.8 dB	±1.0 dB

SWR (measured CW mode)	
Frequency	
100 kHz to 6 GHz	< 1.9:1
6 GHz to 9 GHz	< 1.7:1
9 GHz to 15 GHz	< 2:1
15 GHz to 20 GHz	< 2:1





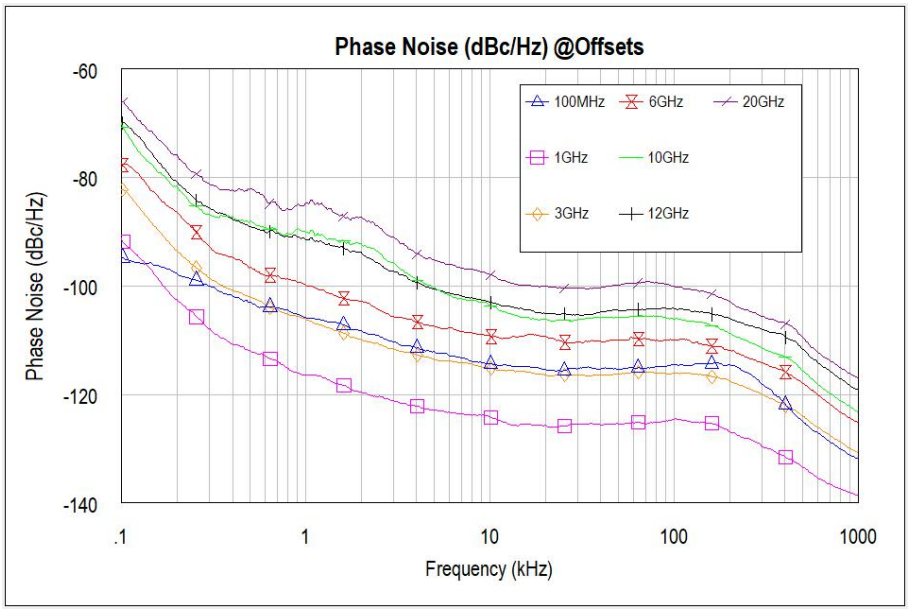




Maximum reverse power	
≥ 10 MHz	0 dBm
10 MHz to 20 GHz	25 dBm
Max DC voltage	10 VDC
Amplitude switching speed	
CW mode	
List/step sweep mode	10 ms

Spectral Purity

Standard absolute SSB phase noise (dBc/Hz, CW, at 10 kHz offset)	
100 kHz to 300 MHz	-114
1 GHz	-123
3 GHz	-114
6 GHz	-109
10 GHz	-104
20 GHz	-98

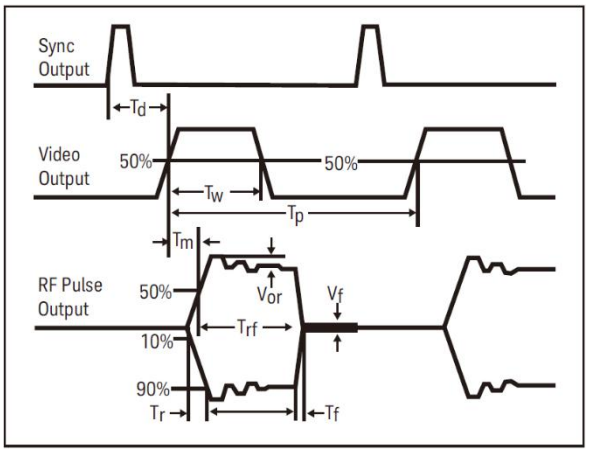


Harmonics (CW mode)	
Range	**Output Power(0dBm)**
100 kHz to 300 MHz	≤ -30 dBc
300 MHz to 6 GHz	≤ -35 dBc
6 GHz to 15 GHz	≤ -45 dBc
15 GHz to 20 GHz	≤ -55 dBc
Nonharmonics (CW mode)	
Range	**> 10 kHz offset**
Full range	≤-60 dBc (> 90% frequency points)
Subharmonics (CW mode)	
100 kHz to 15 GHz	≤-70 dBc
15 GHz to 20 GHz	≤-60 dBc

Analog Modulation

External modulation inputs	
PULSE	Pulse, 50 Ω nominal
Narrow pulse modulation	
On/off ratio	≥ 60dB
Rise/fall times (T_r, T_f)	≤ 10 ns
Minimum pulse	≥ 50 ns
Repetition frequency	DC to 10 MHz
Level accuracy (relative to CW)	≤ ±1 dB
Width compression (RF width relative to video out)	≤ 10 ns
External video delay (ext input to video)	50 ns
RF delay (video to RF output)	50 ns
Pulse overshoot	≤ 20%
Input level	1 Vpeak = RF on into 50 Ω

T_d video delay (variable)
T_w video pulse width (variable)
T_p pulse period (variable)
T_m RF delay
T_{rf} RF pulse width
T_f RF pulse fall time
T_r RF pulse rise time
V_{or} pulse overshoot
V_f Video feedthrough



Internal pulse generator		
Modes	Free-run, triggered, gated, and external pulse	
Pulse period	100 ns to 100 s	
Pulse width	50 ns to pulse period – 50 ns	
Resolution	10 ns	
Adjustable trigger delay	(- pulse period +10 ns) to (pulse width -10 ns)	
Settable delay	Free run	-3.99 to 3.99 us
	Triggered	0 to 40 s
Resolution (delay, width, period)	10 ns	

General Data

Remote programming	
Interfaces	USB Version 2.0
Control languages	Factory defined
Power requirements	
12 VDC, 15 W maximum	
Operating temperature range	
0 to 40℃	
Storage temperature range	
-20 to 70℃	
Operating and storage altitude	
Up to 15,000 feet	
Humidity	
Maximum Relative Humidity (non-condensing): 95% RH up to 40℃, decreases linearly to 45% RH at 55℃	
Memory	
Memory is same as PC computer	
Weight	
≤ 800g	
Dimensions	
37 mm H x 159 mm W x 190 mm L (with rubber gaskets)	
Recommended calibration cycle	
24 months	
ISO compliant	
This instrument is manufactured in an ISO-9001 registered facility in concurrence with Saluki Technology commitment to quality.	

Connectors

Front panel connectors	
RF output	Outputs the RF signal via a SMA type female connector; see output section for reverse power protection information.
Reference input	Accept a 10 MHz reference signal used to frequency lock the internal time base; nominal input level 0 dBm to 10 dBm, impedance 50 Ω, sine wave.
10 MHz output	Output the 10 MHz reference signal used by internal time base. level nominally +3.9 dBm; nominal output impedance 50 Ω; input damage level is +16 dBm.
Pulse	External pulse modulation input; this input is TTL or CMOS compatible; low logic level are 0 V and high logic level are 1 V; nominal input impedance is 50 Ω; damage level are ≤ -0.1 V and ≥ 5.2 V.
Trigger in/out	Trigger in accept TTL and CMOS level signals for triggering point to point in sweep mode. Trigger out outputs a TTL and CMOS compatible level signal for use with sweep mode. The signal is logic high at start of dwell, or when waiting for point trigger in manual sweep mode, and low when dwell is over or point trigger is received. This output can also be programmed to indicate when the source is settled, pulse synchronization, or pulse video. Nominal output impedance 50 Ω.
Rear panel connectors	
Type-C	The Type-C connector is used to connect PC with instrument. The connector is USB 2.0 compatible.
DC Supply	The DC supply is used to connect adaptor with instrument. The connector consumes maximum 15 W as it is 12 V.
CPCI	The CPCI is reserved for constructing testing array.

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