DATA SHEET

LPG Series Signal Generators

LPG2040 Analog

- ✓ Frequency range 300 kHz to 20GHz /32GHz /40GHz optional
- ✓ Modular and desktop versions are available

中科四点零
RF-Cube

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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	300kHz to 20GHz / 32GHz / 40GHz optional
Resolution	1 Hz
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	10 ms to 100 s
Number of points	2 to 400
Step change	Linear or logarithmic
Triggering	Free run, external, Timer~~, bus (USB)~~

Amplitude

Output parameters	
Settable range	+15 至-90dBm dBm(Typical values, see "Output Power" table for details)
Resolution	0.5 dB
Connector	NMD2.4mm-JYKG 50Ω(Nominal value)

Output power

Frequency	**Max output power**	**Min output power**
300kHz to 500kHz	5dBm	-95dBm
500kHz to 1MHz	10dBm	-90dBm
1MHz to 100MHz	12dBm	-90dBm
100MHz to 300MHz	15dBm	-90dBm
300MHz to 6GHz	18dBm	-90dBm
6GHz to 13GHz	15dBm	-90dBm
13GHz to 32GHz	13dBm	-90dBm
32GHz to 35GHz	13dBm	-90dBm
35GHz to 40GHz	12dBm	-80dBm

* Specification guaranteed temperature range 25℃±10℃.

Absolute level accuracy in CW mode

Range	10dBm～ -40dBm	≤-40dBm～ -75dBm	≤-75dBm
300kHz to 3GHz	±0.7dB	±1.3dB	/
3GHz to 16GHz	±0.8dB	±1.3dB	/
16GHz to 32GHz	±1.5dB	±2dB	/
32GHz to 40GHz	±1.5dB	±2dB	/

* Specification guaranteed temperature range 25℃±10℃.

SWR (measured CW mode)

Frequency	
300KHz 至 6GHz	<1.9:1
6GHz 至 9GHz	<1.7:1
9GHz 至 15GHz	<2.0:1
15GHz 至 32GHz	<2.5:1
32GHz 至 40GHz	<2.5:1

Maximum reverse power	
≤10MHz	0dBm
10 MHz to 40 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)	
300kHz to 300MHz	-114
1GHz	-122
3GHz	-115
6GHz	-108
10GHz	-104
20GHz	-98
26GHz	-95
40GHz	-92

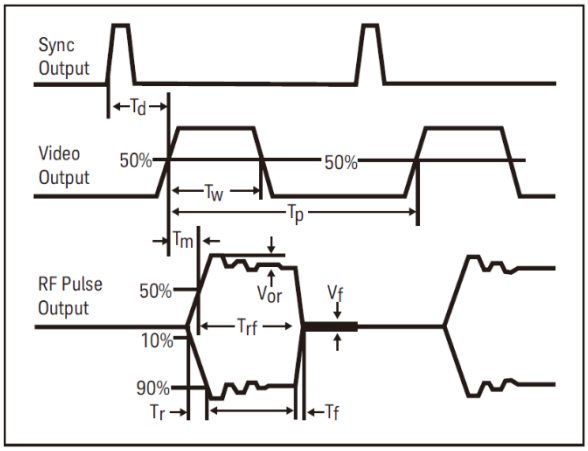
Harmonics (CW mode)	
Range（Fundamental Tone）	**Harmonics (Fundamental Tone Power 0dBm)**
300kHz to 300MHz	≤-30dBc
300MHz to 4GHz	≤-40dBc
4GHz to 20GHz	≤-45dBc
20GHz to 21GHz	≤-45dBc
21GHz to 22GHz	≤-35dBc
Non-harmonics (CW mode)	
Range	**> 10 kHz offset**
Full range	≤-60 dBc (> 90% frequency points)
Subharmonics (CW mode)	
300kHz to 20GHz	≤-80dBc
20GHz to 25GHz	≤-80dBc
25GHz to 32GHz	≤-65dBc
32GHz to 40GHz	≤-65dBc

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 V_{peak} = 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 3.0	
Control languages	Factory defined SCPI	
Power requirements		
Modular Version: 12VDC/30W Desktop Version: 220VAC/60W		
Operating temperature range		
0 to 45℃		
Storage temperature range		

-20 to 70℃
Operating and storage altitude
Up to 15,000 feet
Humidity
Relative humidity type test: 25-65%, +25°C (non-condensing)
Weight
Modular Version：1.5kg　Desktop Version：3.5kg
Size
Modular Version：64mm(high)x172mm(width)x196mm(Length)　(Shock Resistant Case not included) Desktop Version：95mm(high)x220mm(width)x300mm(Length)
Recommended calibration cycle
24 months
ISO compliant
This instrument is manufactured in an ISO-9001 registered facility in concurrence with RF-Cube 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.
Reference output	Output the 10 MHz reference signal used by internal time base. level nominally +4 dBm; nominal output impedance 50 Ω; input damage level is +16 dBm.
Pulse Input	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	

Power connector	R7B 4 Pin Socket,12VDC
USB Type-C	USB3.0 Type-C Socket
Power Button	On/Off button with LED
LAN interface (desktop version)	RJ45 Socket 10/100M Self adapt