



# VSG60A Vector Signal Generator

50 MHz to 6.0 GHz

40 MHz Streaming Modulation Bandwidth



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**-55 dBm to +7 dBm  
output power**

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**Arbitrary I/Q sample  
rates from 12.5 kSPS to  
51.2 MSPS. Includes  
30.72 MSPS for LTE**

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**Stream waveforms of  
virtually any size from your  
PC or laptop**

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**Agile, low phase noise LO  
with 200  $\mu$ s frequency  
hops**

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**Amplitude, mixer balance,  
and DC offset corrected  
over frequency and  
temperature**

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**Digital oversampling,  
baseband filtering, and  
harmonic filtering across full  
operating range**

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**USB-powered, Low-cost,  
Powerful software and API included**



# VSG60A Agile Vector Signal Generator

16 July 2019

The VSG60A offers the performance and agility of a serious vector signal generator at a fraction of the cost. A low phase noise, agile local oscillator with 200  $\mu$ s switch time enables frequency hopping spread spectrum testing. A dual 14-bit DAC runs at 2x or 3x the I/Q symbol rate using digital oversampling to provide a flat, clean baseband. A digitally adjustable internal VCTCXO ensures frequency errors are kept to a minimum over temperature, or an external 10 MHz input may be used for zero ppm frequency error. A trigger output is available to synchronize your VSG60A with other test equipment.

## PREPROGRAMMED MODULATION TYPES

CW AM, FM, Pulse, Multitone, Sweep, AWGN, FSK, GFSK, OOK, ASK, MSK, GMSK, BPSK, DBPSK, QPSK, DQPSK, Pi/4DQPSK, OQPSK, 8-PSK, 16-PSK, 16-QAM, 64-QAM, 256-QAM, 802.11a/b/n/ac, arbitrary

## DIGITAL MODULATION IMPAIRMENTS

Channel, AWGN, I/Q Offset

## CUSTOM MODULATION

Use the API to continuously stream I/Q data to the VSG60A at an arbitrary sample rate up to 51.2 MSPS, or use the software to load a CSV, binary short int, or binary floating point I/Q file. Corrections are automatically applied as the data is streamed to the VSG60A.

## Abbreviated Preliminary Specifications

### FREQUENCY RANGE

50 MHz to 6 GHz

### MODULATION BW

40 MHz

### FREQUENCY SWITCH TIME

Queued frequency step time: 200  $\mu$ s (rounded up to next I/Q sample clock)

### TIMEBASE

Internal 10 MHz VCTCXO with digital adjustment  
Stability over temperature:  $\pm 0.28$  ppm  
Aging: < 1 ppm/year typical

### AMPLITUDE

Range: +7 dBm to -55 dBm  
Accuracy:  $\pm 2$  dB (0.5 dB typical) Baseband  
flatness (20 MHz),  $\pm 0.25$  dB typical Baseband  
flatness (40 MHz),  $\pm 0.5$  dB typical

### EVM

0.3% typical (1 GHz carrier, 1 MSPS QAM 16, Alpha = 0.35, raised cosine)

### SPECTRAL PURITY

#### Typical Phase Noise (1 GHz)

Offset	dBc/Hz
100 Hz	-89
1 kHz	-114
10 kHz	-125
100 kHz	-127
1 MHz	-135

**Non-harmonic spurious:** -50 dBc typical for most signals.

**Harmonics:** -35 dBc typical

### MECHANICAL / ENVIRONMENTAL

Power Requirements: USB-powered, 4.5 – 5.25V, 1200 mA typical.

Operating Temperature: 0 to 50 °C

Size and Weight: 8.63" x 3.19" x 1.19", 0.81 lb. (367 gm)