VSG2G1 USB Vector Signal Generator

VSG2G1 is a very cost effective USB vector signal generator. Its capabilities are comparable to the basic functions of a regular full size RF vector signal generator. VSG2G1 is miniature and portable equipment, but it has more features and functions than full size analog RF signal generators, with frequency range up to 2.2GHz, frequency sweep, and frequency hopping using I&Q modulation with arbitrary signal generator. It can generate most of all RF signal modulation so that many test functions can be customized to meet the needs of proprietary and other nonstandard wireless protocols. You can configure this device to meet a wide variety of test tasks.

VSG2G1 is very suitable for the field test, because it is very small and convenient to carry. It can also work at ATE system as module, being able to simulate a lot of RF system for test purpose.

Key features:

- · Frequency range up to 2.2GHz
- · Output level up to 10dBm
- · Frequency in CW, sweeping and hopping mode
- · Built-in pulse generator and generate pulse modulation
- · Built-in arbitrary function generator and generate I&Q modulation
- · AM, PM, FM analog modulation and more analog modulation
- · FSK, ASK, PSK, MSK, GMSK, SFSK and more digital modulation
- · QPSK, 8PSK, QAM and more Phase modulation
- · CDMA, TMDA, GSM and more system physical layer data frame
- · Any kind modulation generated with built-in I&Q engine
- · LF output with arbitary function generator
- · Pulse output with pulse generator

· Extra Low cost, extra low weight, best performance price rate

· Expandable architecture

· External I&Q input, up to 500MHz bandwidth

· Reference clock input and output

· USB power without extra battery pack

· Device dimension is 100x25x25mm, Weight is 90g.

Specification for Frequency:

· **Frequency range:** Band 0: 1MHz ~30MHz
Band 1: 30MHz ~2200MHz

· **Frequency resolution:** 1 KHz with PLL setting

· **Frequency offset:** +/-2Hz to +/-1KHz with I&Q Modulation setting
* frequency offset only can setup at single frequency mode any without modulation

· **Frequency stability:** +/-2.5PPM over temperature -20~+60 degree

· **Frequency aging per year:** +/-1PPM

· **Frequency reference output:** 12MHz

· **Frequency reference input:** 10MHz

Specification for amplitude:

· **Output level range:** Band 0: -21dBm~10dBm
Band 1: -21dBm~10dBm

· **Output level resolution:** 1dB

· **Output level error:** <3dB

· **Phase noise:** -90dBc/Hz offset 10 KHz at 1GHz
-105dBc/Hz offset 100 KHz at 1GHz
-120dBc/Hz offset 1MHz at 1GHz

Specification for Pulse modulation:

- **Pulse modulation repeat time:** 400uS to 20s

- **Pulse modulation duration time:** 10us to 5S

- **Multiple pulse number:** 2~250

- **Multiple pulse delay:** 100us~5s (last pulse cannot be overlay with first pulse)

- **On/off ratio:** >90dB

Specification for Frequency sweeping with/ without pulse modulation:

- **Span range:** 1 KHz to full span
- **Scan points range:** 2 to 50000
- **Frequency step range:** 1 KHz to 1GHz
- **Pulse period in sweeping mode:** Sweeping repeat time is from 400uS to 20s
- **Pulse width in sweeping mode:** Pulse duration time is from 10us to 10s

* If it is in "sweeping w/o Pulse mode", this parameter no function

Specification for Frequency hopping with/ without pulse modulation:

- **Frequency hopping range:** 30MHz to 2.2GHz
- **Frequency hopping number:** 2~4000
- **Pulse period (setting at Pulse Mod):** Hopping repeat time is from 400uS to 20s

  or 2500 hop/s to 0.05 hop/s
- **Pulse width in hopping mode:** Pulse duration time is from 10us to 10s

* If it is in "hopping w/o pulse mode", this parameter no function

Specification for I&Q unit for analog modulation:

- **FM modulation in Demo:** Modulation frequency range: 1.54Hz to 3.33KHz

  Modulation index 20

- **FM modulation by defined the file, load different file:**

  Modulation frequency range: 1.54Hz to 33.3KHz

  Modulation index 0.5 to 20

- **AM modulation in Demo:** Modulation frequency range: 30.77Hz to 66.7KHz

  Modulation index 90%

- **AM modulation by defined the file, load different file:**

  Modulation frequency range: 1.54Hz to 66.7KHz

  Modulation index 10% to 90%

- **PM modulation in Demo:** Modulation frequency range: 30.77Hz to 66.7 KHz

  Modulation index 180 degrees

- **PM modulation by defined the file, load different file:**

  Modulation frequency range: 30.77Hz to 66.7KHz

  Modulation index 36 degree to 288 degree

Define the I&Q RAW data file, any kind of analog modulation can be achieved. Such as RF narrow band noise generator

Specification for I&Q unit for Digital modulation:

- **MSK modulation in Demo:** Data rate rage: 110b/s to 240Kb/s

  Data depth: 400 bit

- **GMSK modulation in Demo:** Data rate rage: 110b/s to 240Kb/s

  Data depth: 400 bit

  BT=0.3

- **FSK modulation in Demo:** Data rate rage: 27.7b/s to 60Kb/s

  Data depth: 25 bit

* Define the I&Q data file, study different I&Q pattern, internal I&Q engine will generate most kinds of digital modulation; Such as SFSK.

Specification for I&Q unit for phase modulation:

- **QPSK modulation in Demo:** Data rate rage: 2.2kb/s to 4.8Mb/s
  Symbol rate rage: 1.1KHz to 2.4MHz
  Data depth: 4000 bit

- **8PSK modulation in Demo:** Data rate rage: 3.3kb/s to 7.2Mb/s
  Symbol rate rage: 1.1KHz to 2.4MHz
  Data depth: 4000 bit

- **16QAM modulation in Demo:** Data rate rage: 4.4kb/s to 9.6Mb/s
  Symbol rate rage: 1.1KHz to 2.4MHz
  Data depth: 4000 bit

Define the I&Q data file, study different I&Q pattern, internal I&Q engine will generate most kinds of phase modulation; Such as 32QAM.

Specification for I&Q external modulation:

- **Baseband signal bandwidth:** 500MHz

- **I&Q signal level:** 1Vpp

- **I&Q port impedance:** 200 ohm

* any kind of modulation will be depend on the input of I&Q signal

Specification for LF output:

- **SIN Waveform in Demo:** Waveform pattern length: 72 points
  Frequency range: 15.4Hz to 33.3 KHz
  Signal level: 1VPP

- **Triangle Waveform in Demo:** Waveform pattern length: 36 points
  Frequency range: 30.8Hz to 66.6 KHz
  Signal level: 1VPP

- **Spiral Waveform in Demo:** Waveform pattern length: 720 point
  Frequency range: 1.54Hz to 3.33 KHz
  Signal level 1VPP

· **Total I&Q raw data length:** 4Kb

· **I&Q points range:** 30 to 65000

Define the I&Q data file, study different pattern, internal I&Q engine will generate most kinds of signal waveform.

· **Output port:** from 4 MMCX connectors (IP, IN, QP, QN) at side of body.

Specification for Pulse signal output:

· **Pulse signal level:** High level 3.3V, low level 0V

· **Pulse repeat time:** 400uS to 20s

· **Pulse duration time:** 10us to 5S

· **Multiple pulse number:** 2~250

· **Multiple pulse delay:** 100us~5s (last pulse cannot be overlay with first pulse)

· **Output port:** From MMCX connector (Pulse) at rear pane