

USB Vector Signal Generator

BG100



Overview

BG100 Vector Signal Generator is a high performance vector signal generator. It can generate arbitrary wave signal, continuous wave signal, common vector signal, analog and digital signal, standard wireless vector signal, standard radio signal and customized signal. BG100 is applicable for educational practices, wireless monitoring, mobile communication, aerospace and national defense industry in terms of research, manufacturing, testing and measurement, and electronic countermeasure. BG100 can satisfy most of the signal simulation practices and provide user continues customization services.

- Pulse modulation and sweep mode
- Fixable integration interface, customized data can be input into module to generate customized signal
- Simple control via USB port. API is provided for secondary development

Frequency range

10MHz to 6GHz (can upgrade to 1MHz to 6GHz)

Power coverage

-110 to +14dBm

Variety of common signal generating

**GSM | EDGE | CDMA | TD-SCDMA
WCDMA | TDD-LTE | FDD-LTE
NB-IoT | LoRa | 5GNR**

(Users can modify channels under different configuration)

Full range of common digital modulation

**BPSK | QPSK | OQPSK | 8PSK
16QAM | 32QAM | 64QAM
MSK | FSK**

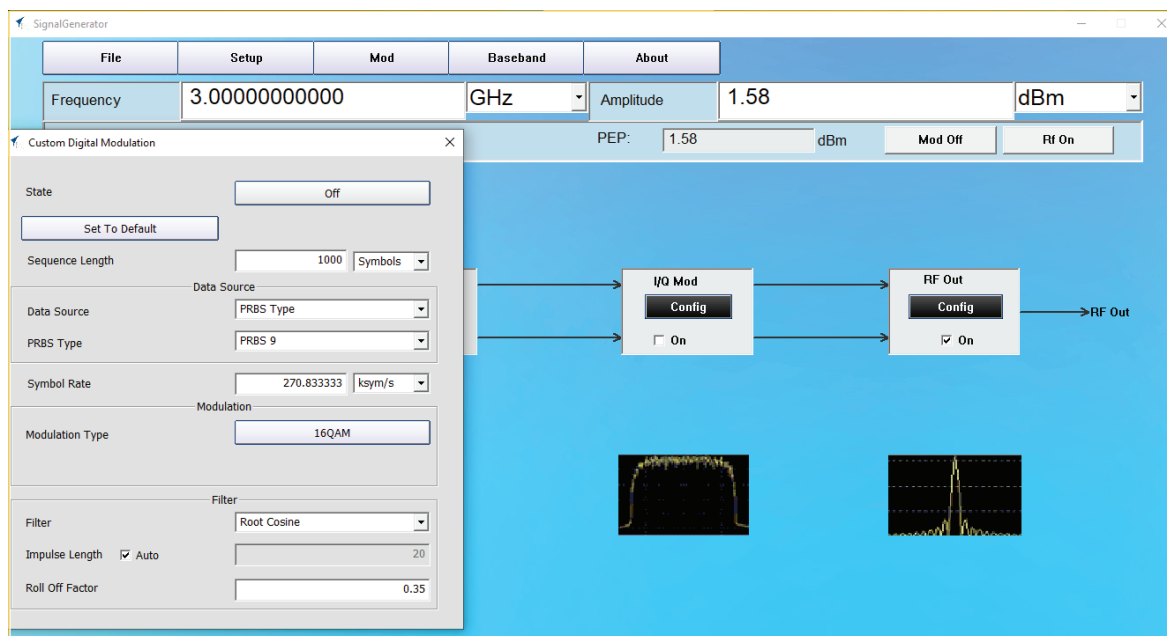
Functions

Analog Modulation

Analog modulation is a change to a characteristic of a periodic or non-periodic signal in order to convey information. BG100 can generate a variety of analog signals such as AM\FM\PM.

Digital Modulation

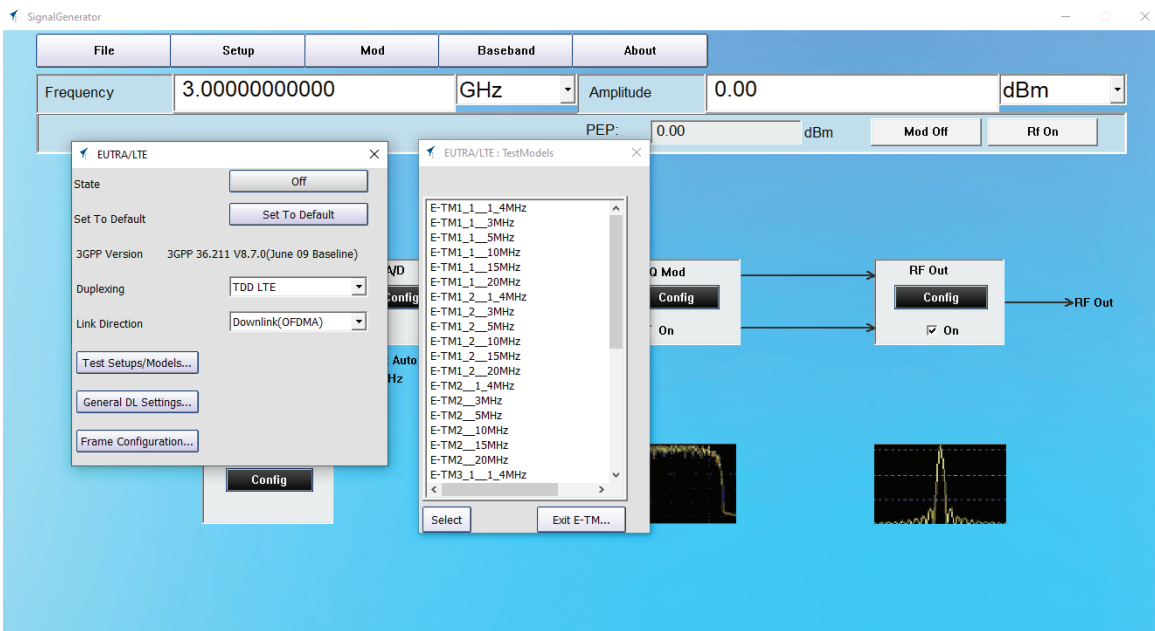
Digital modulation is an important signal modulation method for modern telecommunications. It has better anti-interference ability, safe-to-use and able to churn out a variety of digital modulated signals.



Functions

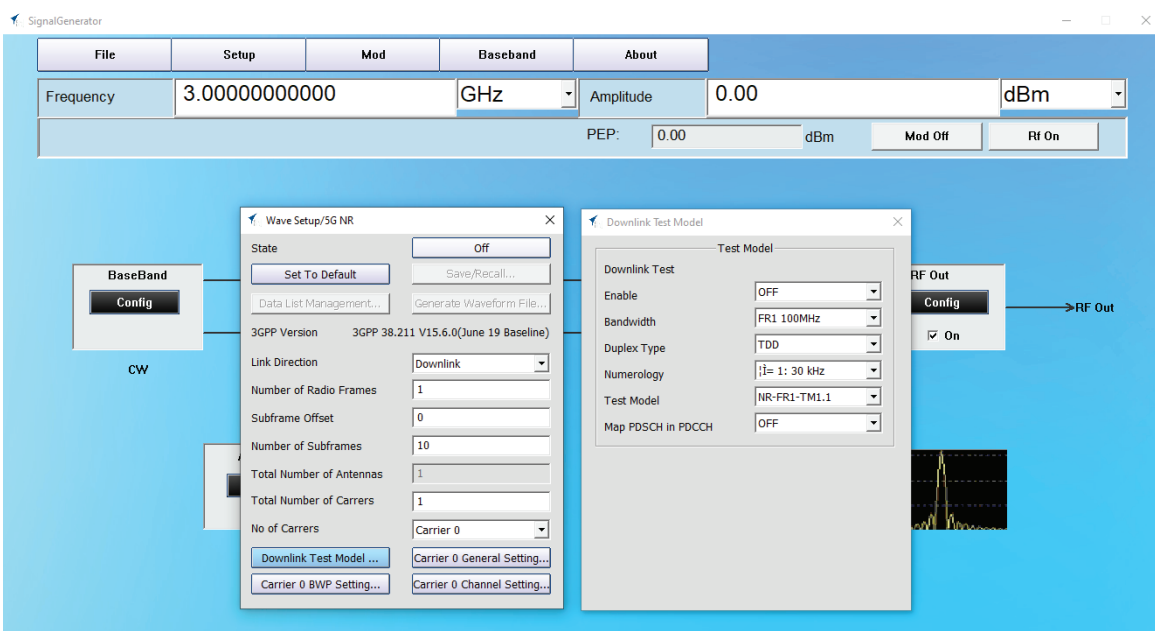
Wireless Communication Standard Modulation

BG100 supports modulation of signals based on mainstream wireless communication standards. It not only includes 2G/3G/4G mobile communication standards, but also supports IoT signal standards such as LoRa and NB-IoT. The release of WiFi and Bluetooth signal modulation functions is also planned.



5G NR Modulation

Support fast configuration to generate 5G NR modulation signal.



Functions

Pulse Modulation

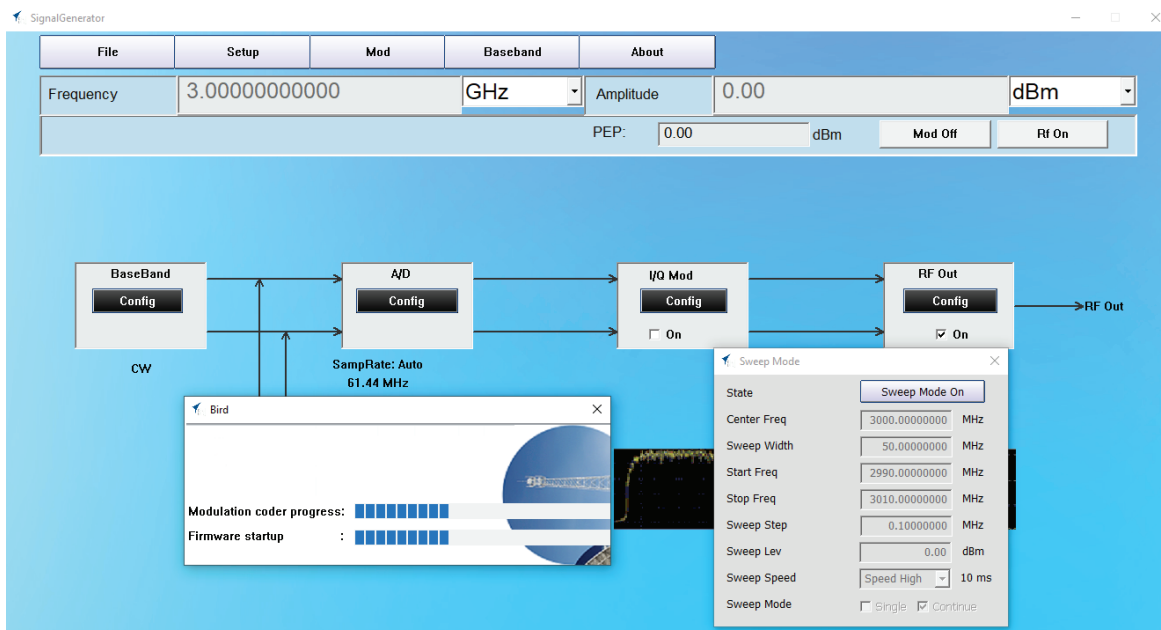
Digital modulation is an important signal modulation method for modern telecommunications. It has better anti-interference ability and safety. BG100 can output a variety of digital modulated signals.

ARB Function

ARB function allows users to transmit customized baseband data. Supports IQ data in .txt and .mat formats. Users need to set the data length and signal sampling rate according to the IQ data file.

Sweep Mode

The BG100 has a frequency sweep function. In this function, engineers can configure parameters such as start and stop frequency, frequency stepping, sweep power, and scan speed.



Performance Advantage

Dynamic Range

The dynamic range of the signal source is the power difference between the maximum and minimum signals that can be output. The dynamic range of the BG100 is as large as -100dBm to +10dBm.

Phase Noise

Phase noise is an important indicator of the performance of a signal source. It refers to the ratio of the signal power in the 1 Hz bandwidth at the signal center frequency offset of 10 kHz to the total power of the signal. The phase noise of the BG100 is very good, at -105dBc/Hz.

10MHz Reference Signal

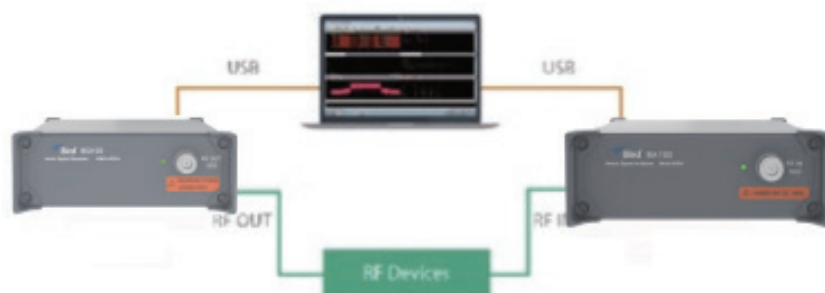
BG100 has a physical 10MHz reference signal port (SMA). Engineer can choose to use the built-in 10MHz clock signal and send it out, or receive and synchronize clock signals from other devices.

Application



Laboratory RF Test

BG100 covers 10MHz to 6GHz wireless radio frequency communication range with full range 10KHz phase noise better than -110dBc, which realize the replacement of local oscillator in wide frequency band. BG100 also supports testing of inter modulation distortion on amplifier, mixer and receiver. By using with spectrum analyzer, BG100 is able to complete broadband and frequency response performance testing for antenna, amplifier, attenuator etc.

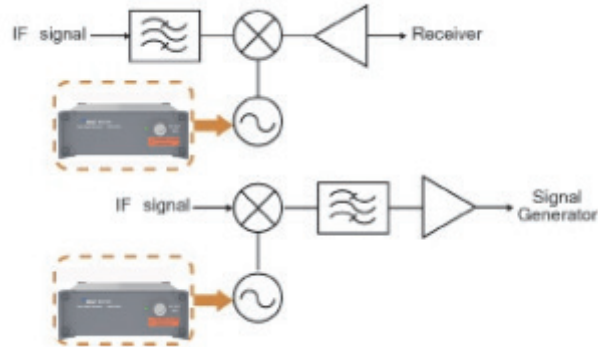


Application



Manufacturing Testing

The BG100 is able to simulate GSM, WCDMA, TDD-LTE, FDD-LTE, NB-IoT and LoRa standard base station signals to cooperate with production and calibration of UE. With the help of a vector signal analyzer (BA100), it provides said base station with consistent and functional tests.



Educational Practices

By combining with a vector signal analyzer, the BG100 is able to provide RF microwave device testing demonstrations to reduce the complexity of professional teaching courses. It has the ability to produce all standard uplink, downlink and digital modulation signals in any chip rate to satisfy educational needs.



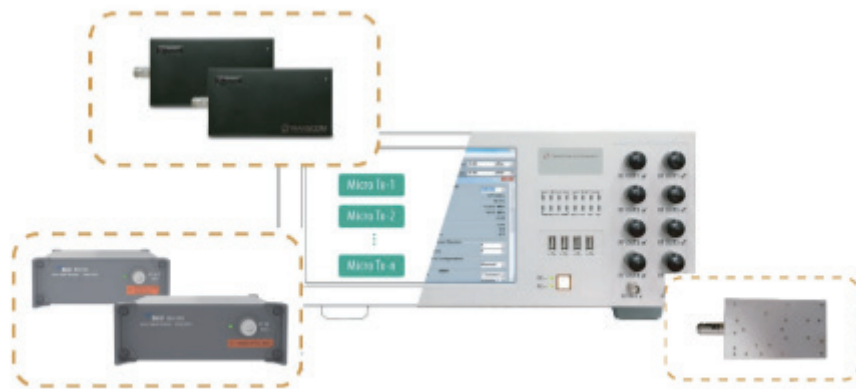
Innovative Features

Compact Size & Fast Deployment

Easy to use and set up, users will be able to carry this equipment around the field and set up easily.

System Integration & Secondary Development

Compact form factor, superior specifications, comprehensive telecommunication, general demodulation support and an open API Interface provides user with exactly what they need for a system integration. It also comes in three different product models, a full-sized USB module, a small-size USB module, and a PCB module.



Control Element



Specifications

Testing Range	Description
Frequency range	10MHz to 6GHz (can upgrade to 1MHz - 6GHz)
Frequency step	0.1Hz
Frequency-temperature Stability	±1ppm @0°C -50°C
Initial Frequency Accuracy	±0.5ppm
Power range	-110 to +14dBm
Power step	0.1dB
Power accuracy	±0.75dB @ Lev ≥-80dBm ±1.5dB @ Lev <-80dBm
Harmonic	≤-30dBc (+10dBm)
Nonharmonic	≤-50dBc
Phase noise	≤-105dBc/Hz @ 10kHz (3GHz to 6GHz) ≤-109dBc/Hz @ 10kHz (≤3GHz)
Modulation bandwidth	20MHz (can upgrade to 100MHz)
Modulation Type	I/Q, Pulse
Pulse modulation parameter	Pulse width: 10ns to 40s, Repetition cycle: 10us to 40s
General digital modulation type	BPSK QPSK OQPSK 8PSK MSK FSK 16QAM 32QAM 64QAM 128QAM 256QAM
Analog modulation standard	AM FM PM DSB USB LSB
Mobile communication standard	GSM EDGE CDMA TD-SCDMA WCDMA CDMA2000 TDD-LTE FDD-LTE NB-IoT LoRa 5GNR
Support channel (LTE)	PSS SSS CSRS PBCH PCFICH PHICH PDCCH PDSCH PUSCH PUCCH PRACH SRS
EVM	≤1%rms (20MHz) ≤3.5%rms (100MHz)
Reference output	10MHz, frequency error ±20Hz, power >0dBm
Waveform Quality	ρ>0.9999
Provide API	Support secondary development (Open API)

General	Description
OS for Software	Windows 10, Windows 7
Power Supply Current	2A MAX
Connect interface	RF output: N-type, 50 Ω PC connect: USB type-C Power connect: DC12V
Temperature	Operating: 0° C to 50° C Storage: -20° C to 70° C
Dimension	180×50×290mm
Weight	1.8kg
Warranty	3 years

Ordering List

Model	Description
BG100	USB Vector Signal Generator

Accessories Model	Description
MTX-AS001	Power adapter
MTX-AS002	USB cable

Calibration module	Description
MTX-S001	GSM Modulation License
MTX-S002	WCDMA Modulation License
MTX-S003	TDD-LTE Modulation License
MTX-S004	FDD-LTE Modulation License
MTX-S005	NB-IoT Modulation License
MTX-S006	LoRa Modulation License
MTX-S008	Custom Digital Modulation License
MTX-S009	ARB License
MTX-S010	Pulse Modulation License
MTX-S011	Analog Modulation License
MTX-S012	Sweep Mode License
MTX-S013	LSB\USB\Two Tone License
MTX-S014	5GNR License
MTX-S015	10MHz Ref IN/OUT Option
MTX-S016	Linear Frequency Modulation License
MTX-S017	GNSS Interference License
MTX-S018	AWGN
MTX-S019	100MHz Bandwidth (hardware upgrade)
MTX-S020	Frequency expansion 300kHz - 6GHz (hardware upgrade)



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