The RF Expert

USB Vector Signal Generator

BG Series

Carry Precision With You

3 YEAR Warranty

The USD Vector Signal Generator fetures in high testing performance,light in weight and portable design, make it possible for on-hand measurement. Its supported signal type can meet most test requirements in modern RF testing scenarios, also, we are open for customize in its functions at customer demands.

PRODUCT FEATURES

- Freq：10MHz to 6GHz, 10MHz to 18GHz.
- Superior to some desktop generator, and open API for users
- Analog/AM/FM/PM
- TWO-tone/DSB/LSB/USB
- Mobile standard generation:
- GSM/EDGE/WCDMA/TDD-LTE/FDD-LTE/NB-IoT/ LoRa/5GNR
- Digital mod：BPSK/QPSK/OQPSK/8PSK/16QAM/32QAM/ 64QAM/
- 128QAM/256QAM/MSK/FSK
  IQ modulation bandwidth：20MHz/100MHz
- Pulse / LFM modulation
- Multiple GNSS interference type
- Portable in dimensions(290×175×65mm),weight（1.8 kg）

Functions

- Analog Mod
- Digital Mod
- Mobile signal
- AWGN
- Pulse Mod
- Sweep
- ARB

Advantages

- Portable
- Good signal quality
- Digital mod type
- Mobile standard signal generation
- Long battery life
- High output dynamic range

Bird®

USB VECTOR SIGNAL GENERATOR

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Product Overview

The BG100 Vector Signal Generator is a versatile device capable of generating various signals, including arbitrary waves, continuous waves, common vectors, analog and digital signals, standard wireless vectors, standard radio signals, and customized signals. It is suitable for educational, wireless monitoring, mobile communication, aerospace, and defense applications, providing extensive signal simulation capabilities and continuous customization services to meet diverse needs.

- 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

9kHz to 6 / 18 / 31 / 44 GHz

Output Power Range

-130 to +15dBm

Modulation Bandwidth

20MHz (upgradable to 100MHz)

Support Communication Standard Signal Type

GSM | WCDMA | TDD-LTE | FDD-LTE | NB-IoT | LoRa | 5GNR

Digital Modulation Type

BPSK | QPSK | OQPSK | 8PSK | MSK | FSK | ASK | 16QAM | 32QAM | 64QAM | 128QAM | 256QAM

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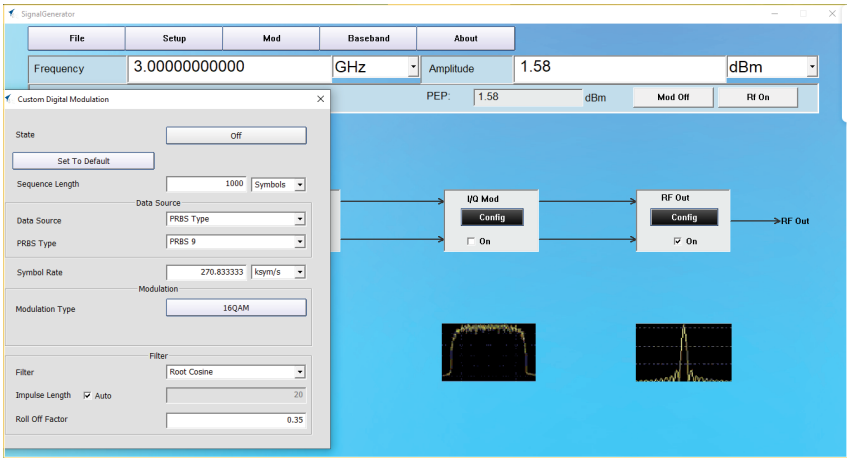
Functions

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.

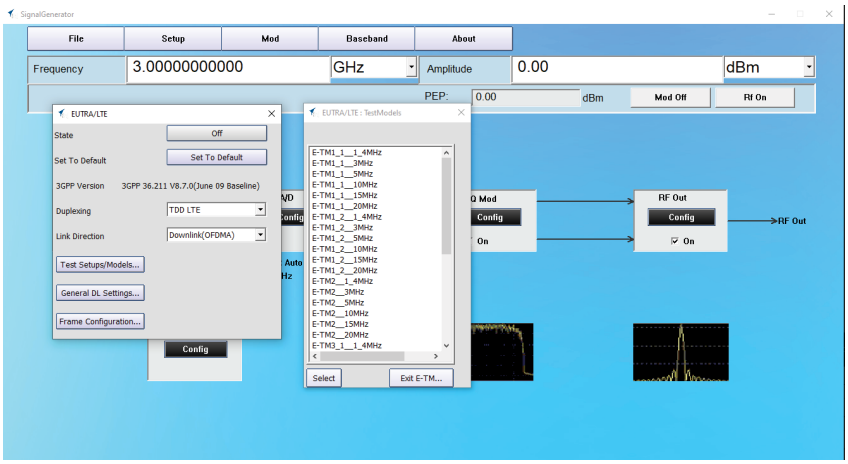
DIGITAL MODULATION

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.



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.



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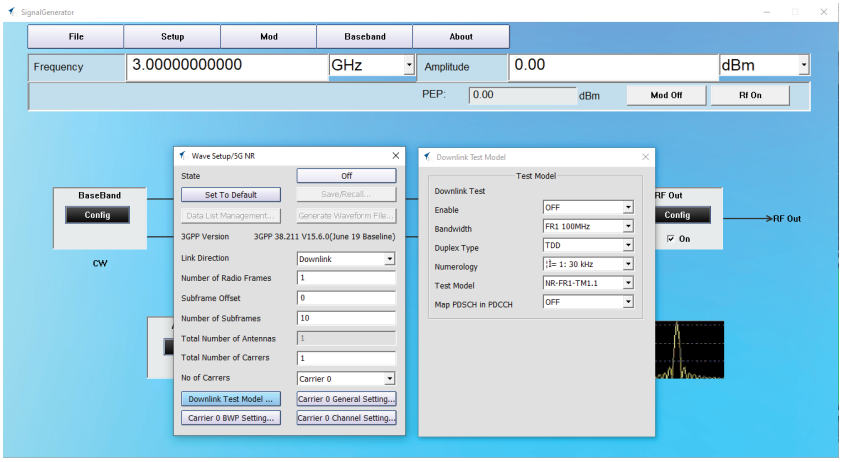
Functions

5GNR MODULATION

Support fast configuration to generate 5GNR modulation signal.



PULSE MODULATION

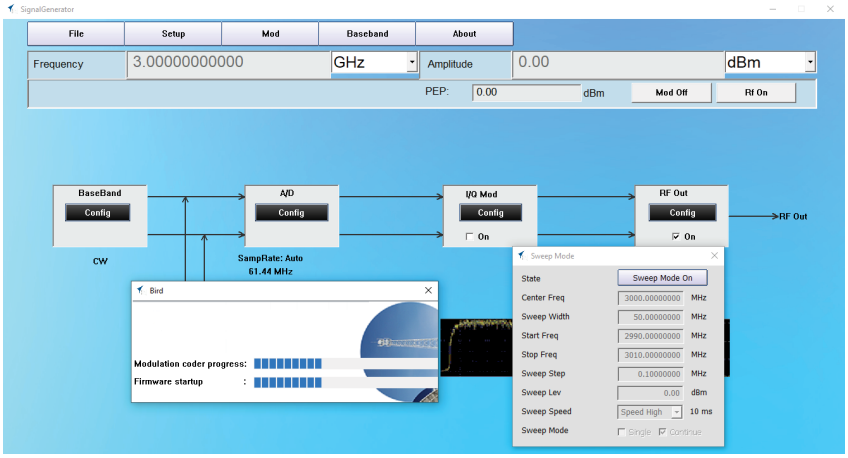
Digital modulation is an important signal modulation method for modern telecommunications. It has better anti-interference ability and safety. BG100 can output a variety of digital modulated signals.

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.



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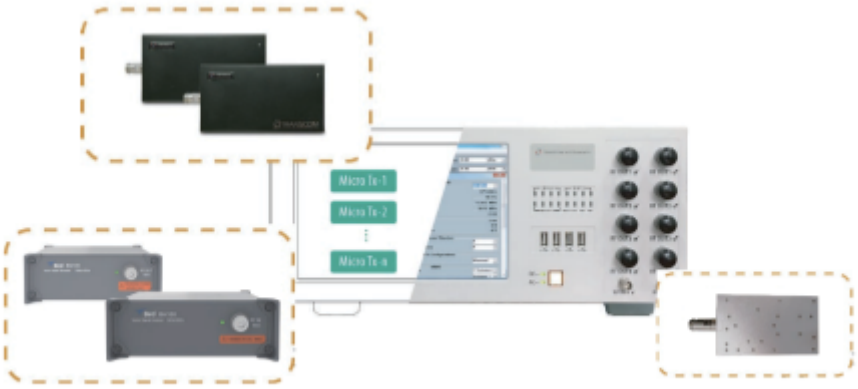
Innovative Features



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.

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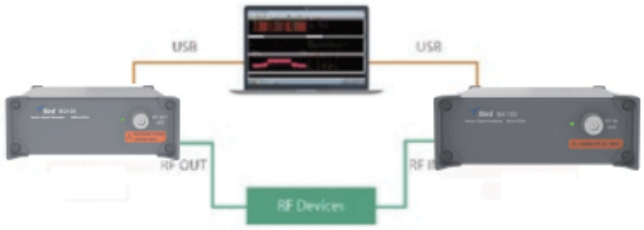
Applications

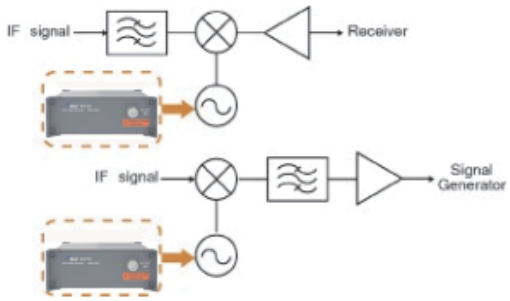
LABORATORY RF TEST

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 oscillatorin wide frequency band. BG100 also supports testing of inter modulation distortion onamplifier, mixer and receiver. By using with spectrumanalyzer, BG100 is able to complete broadband and frequency response perfor-mance testing for antenna, amplifier, attenuator etc.



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, downloink and digital modulation signals in any chip rate to satisfy educational needs.

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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.

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Specifications

Model	BG100-6G0	BG100-18G0
Frequency Range	10MHz to 6 GHz	10MHz to 18 GHz
Frequency Accuracy	+/- 0.5 ppm	
Frequency Resolution	0.1 Hz	0.1Hz(f ≤ 18GHz),0.4Hz(f>18GHz)
Output Settling Time	<1.5 ms (CW)	
Power Range	9kHz ≤ f < 40kHz: -110 ~ +0dBm 40kHz < f < 100kHz: -100 ~ +10dBm 100kHz ≤ f < 2MHz: -110 ~ +10dBm 2MHz ~ 6.5GHz:-130 ~ +15dBm	9kHz ≤ f < 40kHz: -100 ~ +0dBm 40kHz ≤ f < 100kHz: -100 ~ +10dBm 100kHz ≤ f < 10MHz: -110 ~ +15dBm 10 MHz ≤ f ≤ 6GHz : -130 ~ +15dBm 6GHz < f < 10GHz: -110 ~ +15dBm 10GHz ≤ f ≤ 18GHz: -110 ~ +12dBm 18GHz ≤ f ≤ 40GHz: -110 ~ +10dBm 40GHz < f ≤ 41GHz: -110 ~ +0dBm
Power Resolution	0.1 dB	
Power Accuracy	±0.75 dB @ ≥-80 dBm ±1.5 dB @ -110 dBm to -80 dBm ±2.5 dB @ <-110 dBm	10MHz ≤ f ≤ 6GHz: ±1.5dB@ Lev ≥ -110dBm ±2.5dB@Lev < -110dBm 6GHz<f ≤ 18GHz: ±1.5dB@ Lev ≥ -110dBm 18GHz<f ≤ 41GHz: ±2.5dB@Lev ≥ -50dBm
VSWR	<2.0 (typ.)	
Max Reverse Power	10dBm	
Harmonic	CW, ≤+10 dBm 300 kHz ≤ f < 2 MHz：≤-22 dBc 2MHz ≤ f ≤ 6.5 GHz：≤-30 dBc	CW, ≤0 dBm 300kHz ≤ f < 10MHz：-25dBc 10MHz ≤ f ≤ 18 GHz：-30dBc
Nonharmonic	CW, ≤+10 dBm 300kHz ≤ f< 10MHz: ≤ -25dBc 10MHz ≤ f< 500MHz: ≤ -35 dBc 500MHz ≤ f ≤ 6GHz: ≤ -50 dBc	CW, ≤0 dBm 10MHz ≤ f ≤ 18GHz: ≤ -50dBc
Phase Noise	CW, ≤+10 dBm ≤-119 dBc/Hz (typ.) @ 1 GHz ≤-110 dBc/Hz (typ.) @ 3 GHz ≤-104 dBc/Hz (typ.) @ 6.5 GHz	CW, ≤0 dBm -124dBc/Hz(typ.)@1GHz -108dBc/Hz(typ.)@10GHz -102dBc/Hz(typ.)@18GHz
Temperature Stability	± 1 ppm @ 0 °C to 50 °C	
Error Vector Magnitude (EVM)	≤2% (typ.)	
Wave Quality ρ	> 0.9999	
Modulation Bandwidth	Default：20 MHz (Note：upgradeable to 100 MHz)	
Pulse Modulation (with MTX-S010)	Pulse Period: 1 µs to 40 s ， Pulse Width: 100 ns to 40 s ， Width Resolution: 10 ns	
Analog Modulation Types (optional)	Analog Modulation: AM | FM | PM ， Multi-Tone: MSB | USB | LSB	
Mobile Communication Standards (optional)	GSM | WCDMA | TDD-LTE | FDD-LTE | NB-IoT | LoRa | 5GNR	
Digital Modulation Types (with MTX-S008)	BPSK | QPSK | OQPSK | 8PSK | MSK | FSK | ASK | 16QAM | 32QAM | 64QAM | 128QAM | 256QAM	
LTE Channels (with MTX-S003, MTX-S004)	PSS | SSS | CSRS | PBCH | PCFICH | PHICH | PDCCH | PDSCH | PUSCH | PUCCH | PRACH | SRS	
Connections	RF Output: Type N, female, 50 Ω USB (for communication): USB type-C	RF Output: 2.4mm female, 50 Ω USB (for communication): USB type-C
OS	Window10 and above	
Operating Temperature	0 °C to 50 °C	
Storage Temperature	-20 °C to +70 °C	
Power Supply	DC12V	
Recommended Calibration Interval	1 Year	
Warranty	3 Years	
Size	11.42 in × 6.89 in × 2.56 in (290 mm × 175 mm × 65 mm)	
Weight	3.97 lbs (1.8 kg)	

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Specifications

Model	BG100-31G0	BG100-41G0
Frequency Range	10MHz to 31 GHz	10 MHz to 41 GHz
Frequency Accuracy	+/- 0.5 ppm	
Frequency Resolution	0.1Hz(f ≤ 18GHz) , 0.4Hz(f>18GHz)	
Output Settling Time	<1.5 ms (CW)	
Power Range	9kHz ≤ f < 40kHz: -100 ~ +0dBm 40kHz ≤ f < 100kHz: -100 ~ +10dBm 100kHz ≤ f < 10MHz: -110 ~ +15dBm 10 MHz ≤ f ≤ 6GHz : -130 ~ +15dBm 6GHz < f < 10GHz: -110 ~ +15dBm 10GHz ≤ f ≤ 18GHz: -110 ~ +12dBm 18GHz ≤ f ≤ 40GHz: -110 ~ +10dBm 40GHz < f ≤ 41GHz: -110 ~ +0dBm	
Power Resolution	0.1 dB	
Power Accuracy	10MHz ≤ f ≤ 6GHz: ±1.5dB@ Lev ≥ -110dBm ±2.5dB@Lev < -110dBm 6GHz<f ≤ 18GHz: ±1.5dB@ Lev ≥ -110dBm 18GHz<f ≤ 41GHz: ±2.5dB@Lev ≥ -50dBm	
VSWR	<2.0 (typ.)	
Max Reverse Power	10dBm	
Harmonic	CW, ≤0 dBm 9kHz ≤ f < 18GHz: ≤ -30dBc 18GHz ≤ f ≤ 41 GHz : ≤ -30dBc	
Nonharmonic	CW, ≤0 dBm 9kHz ≤ f ≤ 18GHz: ≤ -50dBc 18GHz ≤ f ≤ 41 GHz : ≤ -19dBc	
Phase Noise	CW, ≤0 dBm -126dBc/Hz(typ.)@1GHz -108dBc/Hz(typ.)@10GHz -95dBc/Hz(typ.)@28GHz	
Temperature Stability	± 1 ppm @ 0 °C to 50 °C	
	≤2% (typ.)	
Wave Quality ρ	> 0.999	
	Default：20 MHz (Note：upgradeable to 100 MHz)	
Pulse Modulation (with MTX-S010)	Pulse Period: 1 µs to 40 s ， Pulse Width: 100 ns to 40 s ， Width Resolution: 10 ns	
Analog Modulation Types (optional)	Analog Modulation: AM | FM | PM ， Multi-Tone: MSB | USB | LSB	
Mobile Communication Standards (optional)	GSM | WCDMA | TDD-LTE | FDD-LTE | NB-IoT | LoRa | 5GNR	
Digital Modulation Types (with MTX-S008)	BPSK | QPSK | OQPSK | 8PSK | MSK | FSK | ASK | 16QAM | 32QAM | 64QAM | 128QAM | 256QAM	
LTE Channels (with MTX-S003, MTX-S004)	PSS | SSS | CSRS | PBCH | PCFICH | PHICH | PDCCH | PDSCH | PUSCH | PUCCH | PRACH | SRS	
Connections	RF Output: 2.4mm female, 50 Ω USB (for communication): USB type-C	
OS	Window10 and above	
Operating Temperature	0 °C to 50 °C	
Storage Temperature	-20 °C to +70 °C	
Power Supply	DC12V	
Recommended Calibration Interval	1 Year	
Warranty	3 Years	
Size	11.42 in × 6.89 in × 2.56 in (290 mm × 175 mm × 65 mm)	
Weight	3.97 lbs (1.8 kg)	

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Ordering List

SOFTWARE ORDER LIST	
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	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	5G NR License
MTX-S015	10MHz Ref IN/OUT Option
MTX-S016	Linear Frequency Modulation License
MTX-S018	AWGN
MTX-S019	100MHz Bandwidth (hardware upgrade)
MTX- S020	Frequency expansion 300KHz - 6.5GHz

HARDWARE ORDER LIST	
MTX-H100	Low frequency extension to 100kHz
MTX-H009	Low frequency extension to 9kHz

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