spectracom

GSG-51

GNSS Signal Generator

FUTURE PROOF
EASY TO USE · POWERFUL · AFFORDABLE

Upgradable to all constellations and signals

- **Very accurate one-channel GNSS signal generator**
- **Ideal for GNSS receiver production test**
- **Wide RF output power range enables both conducted and over-the-air (OTA) testing**
- **Fully programmable with easy to use I/O protocol**
- **Communicates via USB, GPIB or Ethernet**
- **Affordable**

The GSG-51 is a GNSS signal generator that emulates a single GNSS signal. The main application is a simple but very fast manufacturing test, to assure that the assembly is correct, that the antenna is properly connected, and that the receiver can receive and identify a satellite signal.

GSG-51 provides a fast and cost-effective solution for production test of GNSS-receivers in e.g. mobile phones with integrated GNSS-receivers. Thanks to the wide RF level range from –65 to –160 dBm, the sensitivity of all types of GNSS receivers can be verified with a minimum of delay. The 60 dB of extra power from normal test scenarios allows from splitting the signal many times.

Easy to Use

GSG-51 users can configure settings without the need for an external PC and pre-compilation phase. Via the front panel, the user can swiftly modify parameters such as satellite ID, time and power output. The front panel can be locked out to prevent accidental power down or configuration changes. Once initiated the unit can simulate for 31 days continuously (or indefinitely if the unit is connected to the internet).

Flexibility

As the base model of the popular 5 Series GNSS Simulator family, this affordable unit can be upgraded at any time after purchase to increase the channel count, add receiver trajectory control, and add advanced features such as SBAS (WAAS, EGNOS, MSAS, or GAGAN), white noise generation, or multipath simulation. Some restrictions apply. Your investment is protected as you can purchase now, and upgrade later, as needed, when your requirements change.

Input and Output Specifications

RF Signal GPS/GLONASS L1

Connector: Type N female

DC Blocking: internal, up to 7 VDC; 470 Ω nominal load

Frequency: L1/E1/B1/SAR:1539 – 1627 MHz

Number of output channels: 1

Channel configuration: 1 GPS, GLONASS, Galileo, or BeiDou satellite

Data format: 50 bits/s, GPS and GLONASS frame structure

PRN codes: 1 to 210

Spurious transmission: <-40 dBc

Harmonics: <-40 dBc

Output signal level: -65 to -160 dBm; 0.1 dB resolution down to -150 dBm; 0.3 dB down to -160 dBm.

Power accuracy: ±1.0 dB

Pseudorange accuracy: 1mm

Inter-channel bias: Zero

Inter-channel range: >54 dB

External Frequency Reference Input

Connector: BNC female

Frequency: 10 MHz nominal

Input signal level: 0.1 to 5Vrms

Input impedance: >1kΩ

Frequency Reference Output

Connector: BNC female

Frequency: 10 MHz sine

Output signal level: 1Vrms in to 50 Ω load

External Trigger Input

Connector: BNC female

Frequency: TTL level, 1.4V nominal

1PPS Output

Connector: BNC female

Output signal level:

approx. 0V to +2.0V in 50 Ω load

Accuracy: Calibrated to ±10 nSec of RF timing mark output

Built-in Timebase

Internal Timebase – High Stability OCXO

Ageing per 24 h: $<5x10^{-10}$

Ageing per year: $<5x10^{-8}$

Temp. variation 0...50°C: $<5x10^{-9}$

Short term stability (Adev @1s): $<5x10^{-12}$

Auxiliary Functions

Interface

GPIB (IEEE-488.2), USB 1.X or 2.X (USBTMC-488), Ethernet (100/10 Mbps)

General Specifications

Certifications

Safety: Designed and tested for Measurement Category I, Pollution Degree 2, in accordance with EN/IEC 61010-1:2001 and CAN/ CSA-C22.2 No. 61010-1-04 (incl. approval)

EMC: EN 61326-1:2006, increased test levels per EN 61000-6-3:2001 and EN 61000-6-2:2005

Dimensions

WxHxD: 210 x 90 x 395 mm (8.25" x 3.6" x 15.6")

Weight: approx. 2.7 kg (approx. 5.8 lb)

Optional Antenna

Frequency: 1000MHz to 2600MHz

Impedance: 50 Ω

VSWR: <2:1 (typ)

Connector: SMA male

Dimensions: 15 mm diameter x 36 mm length

Environmental

Class: MIL-PRF-28800F, Class 3

Temperature: 0°C to +50°C (operating); -40°C to +70°C non-condensing @ <12,000 m (storage)

Humidity:

5-95 % @ 10 to 30°C

5-75 % @ 30 to 40°C

5-45 % @ 40 to 50°C

Power

Line Voltage: 90-265 Vrms, 45-440 Hz

Power Consumption: <25 W

Ordering information

Basic Models

GSG-51: GNSS 1-channel simulator; with high stability OCXO timebase

Included with instrument

- User manual on CD
- RF cable, 1.5 m
- SMA to Type N adapter
- USB cable
- Certificate of calibration
- 3-year warranty[1]

Optional Accessories

Option 01/71: Passive GNSS Antenna

Option 22/90: Rack-mount kit

Option 27H: Heavy-duty hard transport case

OM-54: User Manual (printed)

Optional Upgrades

Option GLO: Adds GLONASS Constellation

Option GAL: Adds Galileo Constellation

Option BDS: Adds BeiDou Constellation

Option 4: Upgrade GSG-51 to Advanced 4 Channel GNSS Simulator

Optional Services[1]

Option 95/05: Extended warranty to 5 years

Calibration/GSG: GSG Calibration Service

GSG-ASP: GSG Annual Service Plan

GSG-INST: User Training and Installation

[1]The warranty period and available services may vary dependent on country.

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