WAAS GUS-Type 1 Signal Generator

Features

Separate L1 and L5 signal generators

Parallel RF signal output

Standard 19 inch rack mount enclosure and connectors

Benefits

Increases flexibility by providing independent control of the L1 and L5 signals

Offers the ability to monitor the generated signals for improved integrity

Ensures easy integration and secure installation for added reliability

NovAtel's WAAS GUS - Type 1 Signal Generator is a high performance L1 and L5 signal generator designed for use in the ground uplink system of Satellite-Based Augmentation Systems.

Independent signal generators

The GUS Signal Generator is built with two independent L1 and L5 signal generators that precisely control the frequency and phase of L1 and L5 code and carrier. Using Binary-Phase Shift Keying (BPSK), the signal generator provides two modulated 70 MHz intermediate frequency (IF) signals. In addition, it generates upconverted replicas of the L1 and L5 signals, which can be used for signal quality monitoring. The GUS Signal Generator also features a factory configurable bandwidth on the L1 IF signal.

Easy installation

Requiring minimal integration effort, the GUS Signal Generator is available in a 19 inch 3U rack-mount enclosure. Standard connectors also ensure quick and secure installation. Modulation of the output carrier signals is easily disabled with switches on the back panel. Designed to operate with NovAtel's WAAS GUS - Type 1 Receiver, the GUS Signal Generator includes 1PPS and external frequency reference inputs. The front panel includes LEDs to provide the status of the external reference and the signal output and the results of the automatic self-testing.

Quick configuration and operation

Once connected to a data source, control computer, and 1PPS reference, the signal generator is ready to operate. The RS-232 serial ports provide a command and status interface. Configuration is completed using simple fixed-length message packets. Combined with two RS-485 ports for SBAS data symbol input, the GUS signal generator allows for independent control of the L1 and L5 data streams.

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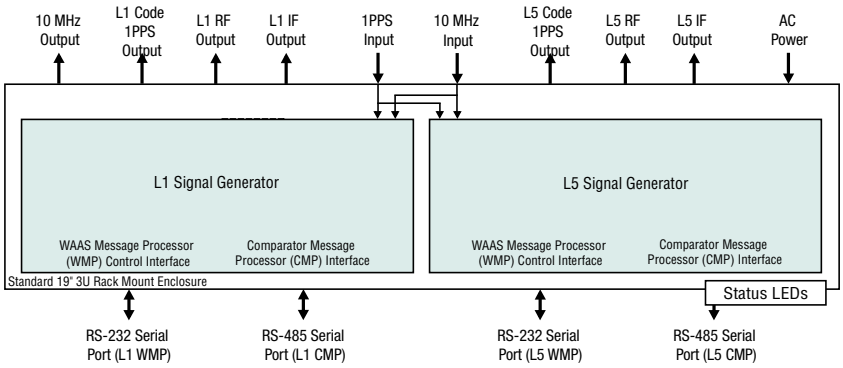
L1 Signal Output

- Coarse/Acquisition (C/A) codes with selectable PRN values from 120 to 138
- 70 MHz Binary-Phase Shift Keying (BPSK) modulated IF output signal generation using the SBAS message with the selected 1023 bit PRN code
- In-phase (I) channel only or I channel with dataless quadrature (Q) channel
- 1227.6 MHz[1] BPSK modulated RF output signal generation using the SBAS message with the selected 1023 bit PRN code

L5 Signal Output

- L5 codes with selectable PRN values from 120 to 138
- 70 MHz BPSK modulated IF output signal generation using the SBAS message with the selected 10230 bit PRN code
- In-phase (I) channel only or I channel with dataless quadrature (Q) channel
- 1176.45 MHz BPSK modulated RF output signal generation using the SBAS message with the selected 10230 bit PRN code



Physical & Electrical

Size (H x W x D)	**13.3 x 44.9 x 42.8 cm** (without mounting brackets)
Weight	**8.0 kg**

Power

Input Voltage	+100 to +240 VAC
Input Frequency	50 to 60 Hz
Power Consumption	42 W (typical)

L1 RF Output

Frequency	1227.6 MHz[1]
Bandwidth	22 MHz[2]
Signal Level	-100 dBm ± 1.5 dB
Impedance	50 Ω

L5 RF Output

Frequency	1176.45 MHz
Bandwidth	22 MHz
Signal Level	-100 dBm ± 1.5 dB
Impedance	50 Ω

External Oscillator Input

Input Frequency	10 MHz ± 5 ppm
Signal Level	0 to +6 dBm

Communication Ports

- 2 RS-232 bi-directional serial ports capable of up to 57,600 bps (WMP ports)
- 2 RS-485 serial data ports at 1,000,000 bps (CMP ports)

Input/Output Connectors

Power Input	Standard AC plug
WMP Port	2 x DB-9 female
CMP Port	2 x DB-25 female
Code 1PPS Output	2 x BNC female
IF Output	2 x BNC female
RF Output	2 x Type N female
10 MHz Input	BNC female
10 MHz Output	BNC female
1PPS Input	BNC female

Environmental

Temperature	
Operating	0°C to +50°C
Storage	-40°C to +85°C
Humidity	90% non-condensing
MTBF[3]	**44,367 hr**

1 For legacy reasons, the RF output from the L1 section is actually at the L2 frequency.
2 L1 signal bandwidth is factory configurable at 2, 4, or 22 MHz.
3 Per MIL-HDBK-217F Notice 2 at +35°C external ambient temperature.

ISO 9001:2000 FM 92323

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