LabSat RT

Uses Real-Time GNSS RF Signals to play multiple satellite signals from up to two constellations with a current time stamp

If you are developing, testing or selling products incorporating GPS, GLONASS or BeiDou engines, then you'll find LabSat RT makes your job quicker, easier and more effective.

LabSat RT can play satellite signals from two constellations with a current time stamp. *Joystick functionality will be available in a later version

Why use a Real-Time GNSS Simulator?

By connecting a real-time simulator to your device it allows you to test GPS RF signals with a current time stamp simulated from anywhere in the world. You can test specific trajectories and geographical locations all from your bench, saving you hours in real world testing.

Using **LabSat RT** gives you realistic carrier to noise levels and repeatable signals all in real-time.

By using **SatGen v3** software you can define the position, route, speed, date, and time, as well as the number of satellites included in the data stream. It also gives you the ability to vary the individual carrier to noise levels for each satellite, allowing you to control the data being streamed directly into your device.
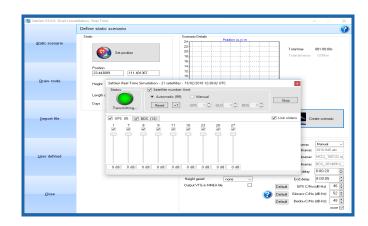
By using a powerful PC the system can generate GPS, GLONASS, BeiDou L1 signals in single constellation (1 or 2-bit) or dual constellation signals at 1-bit each.

How does it work?

SatGen v3 software generates a live signal stream to a **LabSat RT** unit. The unit then converts the RF data from digital to analogue with less than 1 second latency.

If you have an NMEA or KML file of your route, you can simply import this directly into the software. Alternatively you can create a scenario from scratch, either by creating a route in Google Maps, or by building a unique trajectory using simple user-defined commands.

SatGen v3 - Simulate GNSS signals in real-time

When playing, the PC streams the live data via USB directly to the **LabSat RT**. The unit then converts the data into a signal stream to replicate the present real-world satellite signals.

LabSat RT operates at the same time on any two of the three constellations: GPS L1 (1575.42 MHz), GLONASS L1 (1602.00 MHz), and BeiDou (1561.098 MHz).

www.labsat.co.uk

Which scenarios come with LabSat RT?

All units are shipped with a 1TB USB hard drive which contains 25 scenarios. These include static scenarios, as well as actual recorded drives, in places such as London, Detroit and China.

LabSat RT - choice of two variants

LabSat RT Replay only

Dual constellation (GPS, GLONASS, BeiDou) Replay only

LabSat RT Record and Replay

Dual constellation (GPS, GLONASS, BeiDou) Record and Replay

LabSat RT
Dual constellation real-time GNSS simulator

Which PC should I use with LabSat RT?

LabSat RT uses **SatGen v3** software to create real-time RF signals, which requires a significant amount of PC processing power. We recommend the following PC processors using the Windows 10 (64-bit) operating system:

Single constellation:

Up to 16 satellites
4-core Intel i7 3.8GHz Turbo frequency

Dual constellation:

Up to 28 satellites
8-core Intel i7 Extreme 3.5GHz Turbo frequency

LabSat RT or LabSat 2 mode?

LabSat RT operates in real-time mode or as a fully functioning record and replay GNSS simulator using the supplied **LabSat 2** PC software.

How can I generate my own tests?

With **SatGen v3** software, defining the position, time and trajectory couldn't be easier; simply select a position in Google Earth, and **SatGen** will convert this into a real-time RF signal. You can also create a dynamic route by importing an NMEA or .kml file. If you have NMEA data in the GGA format, you can use this directly to generate a **LabSat 2** scenario file or live signal stream.

	LabSat RT Mode	LabSat 2 Mode
Constellations	GPS, GLONASS, BeiDou	GPS, Galileo, GLONASS, BeiDou, SBAS
Output Signal Level	Fixed -83 dBm	Adjustable -83 dBm to -107 dBm
RF Channels	2	2
RF Channel 1 Centre Frequency	Approx. 1561.098 MHz, 1575.42 MHz, 1602.00 MHz	Approx. 1561.098 MHz, 1575.42 MHz, 1602.00 MHz
RF Channel 2 Centre Frequency	Approx. 1561.098 MHz, 1575.42 MHz, 1602.00 MHz	Approx. 1561.098 MHz, 1575.42 MHz, 1602.00 MHz
Number of Satellites Observed	User defined	All in view
Sampling Frequency	16.368 MHz	16.368 MHz
Bandwidth	8.184 MB per second	8.184 MB per second
Quantisation	1-bit / 2-bit per channel	1-bit / 2-bit per channel
Data Format	IQ	IQ
USB Transfer Rate	8.18 MB per second	8.18 MB per second
Hard Disk Drive inc.	500 GB	500 GB
Active Antenna Voltage Supply	3.3v	3.3v
Reference Oscillator	16.368 MHz Temperature Controlled +/- 2.5ppm	16.368 MHz Temperature Controlled +/- 2.5ppm
Operating Voltage	8v to 30v DC	8v to 30v DC
Size	170mm x 128mm x 38mm	170mm x 128mm x 38mm
Weight	750g	750g