

SatGen Real-Time+

Real-Time GNSS RF simulation for Hardware-in-the-Loop (HIL) system testing.

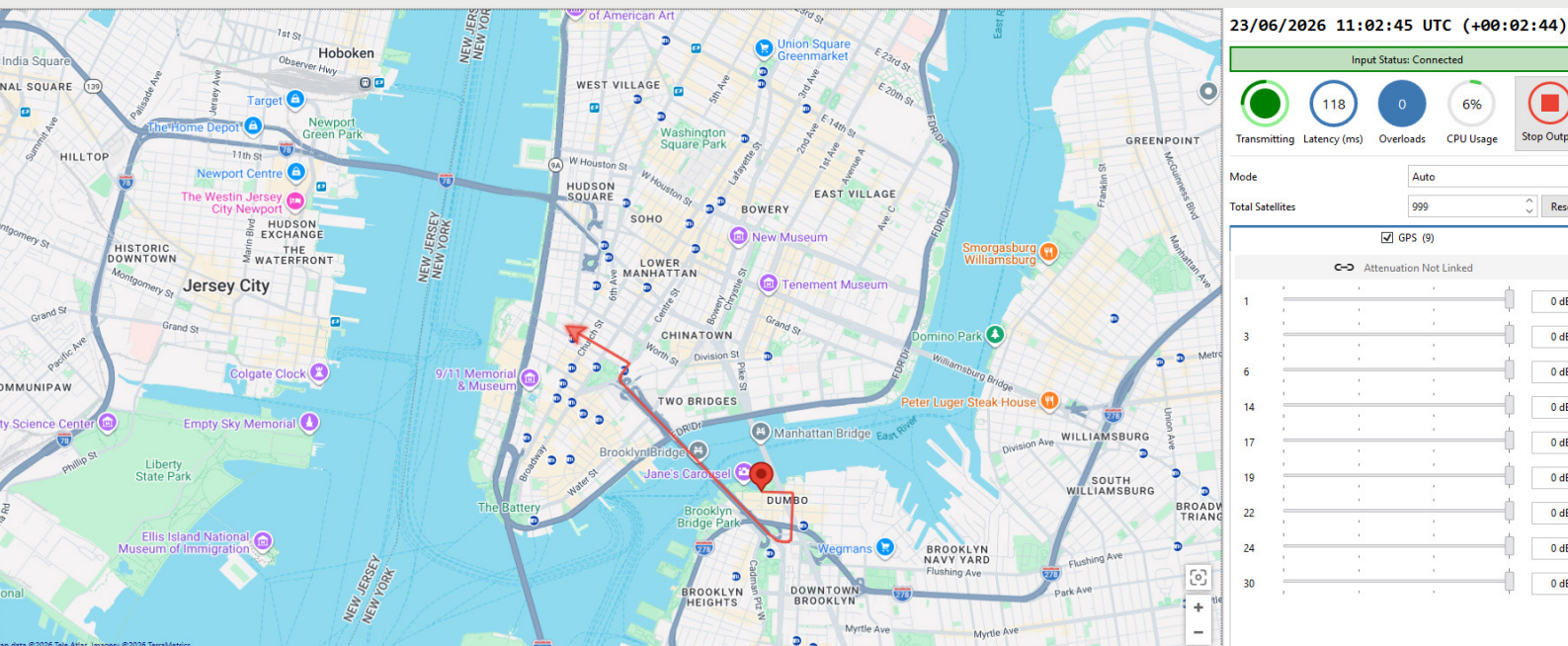
- Precise timing and position data for closed-loop tests
- Integrates with HIL systems via RS232 or Ethernet
- Multi-constellation, multi-frequency GNSS real-time simulation
- Live NMEA input from GGA/RMC sources
- Satellite and constellation control during live simulations
- Compatible with LabSat 4, LabSat 4 Core and LabSat 4 Lite
- Add-on licence for SatGen - no new hardware required

Why Use SatGen Real-Time+?

When you are developing or validating a system that depends on accurate time and position including vehicles, UAVs, or any autonomous machines, you need to test it against GNSS signals that respond to real motion, in real-time.

SatGen Real-Time+ sits inside your test environment and generates live GNSS RF signals from your NMEA data source. Whether that source is a HIL simulator, a rolling road controller, a motion platform, or a navigation algorithm under development, **SatGen Real-Time+** converts its position output into satellite signals your system can receive and respond to, under controlled, repeatable, lab conditions.

The alternative is field testing. **SatGen Real-Time+** removes that cost, logistics burden, and variability.



The screenshot displays a software interface for GNSS simulation. On the left, a map of New York City is shown with various landmarks and streets. A red arrow points to a location in Lower Manhattan. On the right, a control panel is visible with the following information:

- Time: 23/06/2026 11:02:45 UTC (+00:02:44)
- Input Status: Connected
- Transmitting: 118
- Latency (ms): 0
- Overloads: 0
- CPU Usage: 6%
- Mode: Auto
- Total Satellites: 999
- GPS (9) is checked
- Attenuation Not Linked
- A list of satellite channels (1, 3, 6, 14, 17, 19, 22, 24, 30) with sliders and dB values.

How Does It Work?

SatGen Real-Time+ receives a continuous NMEA position stream from your chosen source. It processes each update in real time and generates the corresponding GNSS RF signals across your selected constellations and frequencies, streaming them via a connected **LabSat 4** unit to your system under test.



During simulation, signal strength and satellite visibility can be adjusted live, per channel, per constellation, or per individual satellite, without interrupting the test. The live trajectory is tracked on-screen as it evolves.

Input rates from 5 to 100 Hz are supported, ranging from agricultural machinery to high-speed automotive and UAV applications.

Supported GNSS Signals

Constellation	Signals
GPS	L1 C/A, L1P, L1M*, L1C, L2C, L2P, L2M*, L5
Galileo	E1BC, E5a, E5b, E6
GLONASS	L1OF, L2OF
BeiDou	B1I, B2I, B3I, B1C, B2a, B2b, B2b-PPP
NavIC	L5-SPS, S-SPS
SBAS	L1

Technical Specifications

Compatible Hardware	LabSat 4, LabSat 4 Core, LabSat 4 Lite
Software Platform	SatGen 4 Wideband (add on license)
Input Data Format	NMEA: GGA / RMC
Input Interfaces	Ethernet, RS232
Input Rate	5-100 Hz
Recommended CPU	AMD Ryzen 9 7950X3D or Intel Core i9-14900K
Minimum CPU	Intel Core i5-12600
RAM	16 GB minimum, 32 GB recommended
Operating System	Windows 10/11 64-bit

Typical Applications

SatGen can be used for a wide range of applications:

- Automotive ADAS and autonomous vehicle development
- Truck and commercial vehicle testing
- UAV and drone navigation
- Smart agriculture and precision farming
- Robotics and motion platform testing
- GNSS-dependent system validation
- Navigation algorithm development



Set up. Connect. Simulate.

SatGen Real-Time+ is a software add-on to SatGen. Automatic **LabSat 4** network discovery and straightforward connection setup mean you spend your time testing, not configuring. If you already own SatGen, you are one licence upgrade away from live HIL simulation capability.

