

Two-channel GPS simulator

Labsat 3 Dual Channel is a GPS simulator by Racelogic (UK) for testing GPS enabled systems within a laboratory environment. The simulator can record and replay two separate CAN networks, which are synchronized within 62 ns of the GPS signal.

THE GPS SIMULATOR IS CAPABLE OF RECORDING and replaying multiple raw satellite navigation RF signals including GPS, GLONASS, Galileo, BeiDou, QZSS and SBAS. The device has a battery life up to 2 hours and records and replays real world data, allowing realistic and repeatable testing to be carried out under controlled conditions. Signal artefacts including multipath, ionospheric effects and signal dropouts are reproduced and there are no limits to the number of satellites used in the test.

With its ability to record and replay additional streams of data using high-speed digital ports, CAN data, RS232 signals, or digital event triggers can be synchronized during playback.

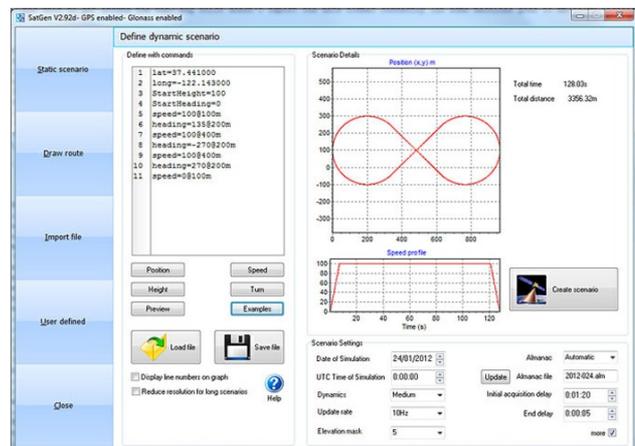
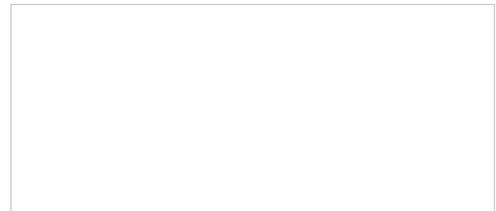
The device includes dual RF channels for multiple constellation testing, dual CAN network recording, digital event capture and inertial sensor logging. The GPS simulator allows recording of raw CAN signals in synchronization with recorded GNSS signals. Two separate CAN interfaces are built into the device, which can be used simultaneously to accurately digitize two independent CAN networks. Because the CAN data is digitized rather than interpreted, it is not necessary to configure the bit-rate. When the recorded data is replayed, the simulator will recreate the CAN traffic as it appeared on the network including any errors and data collisions. It is important to be aware that, during replay, because CAN traffic appears exactly as when recorded, the CAN interface will not arbitrate with other CAN modules.

The device receives its signal from a standard satellite antenna, but instead of processing each of the received signals to calculate a position fix, it digitizes and stores the original satellite signals at a very high bandwidth onto a removable SD card or USB disk. The RF output is then connected to the antenna input of the device under test and the recorded data is replayed back as an RF signal. The device under test will then start to track the satellites as though it was travelling along the same path taken by the simulator during the original recording.

If the user wants to create their own custom test scenario using artificial signals, Satgen software allows them to quickly draw a route using Google maps, and then automatically creates an RF file which can then be transferred to an SD card and replayed on the device. Multiple satellites and multiple constellations can be simulated, and the user can also have precise control over velocity, heading and height profiles. A suitable almanac can be automatically downloaded, or defined by the user. Satgen can also import KML files and NMEA files, and the time, date and dynamics are fully user definable.

A free library of pre-recorded and simulated files from around the world is included with all systems.

Each channel uses about 14 GiB per hour, and the largest SD card which can be used is 128 GiB. Therefore, the user can record just over 9 hours with a single channel and 4,5 hours with two channels. Storage devices that exceed 32 GiB in size need to be formatted in FAT32 using the PC utility provided. The device measures 167 mm x 128 mm x 43 mm and weighs 960 g with battery (910 g without battery).



A free version of Satgen (with a limited scenario length) is included with every model (Photo: Racelogic)