GNSS Simulator

Constellator

Designed to test receivers to fulfill demand of the future.

SYNTONY *GNSS*

Multi -constellation GNSS simulator

Constellator

Today, technologies based on the use of GNSS constellations and satellite augmentation systems continue to grow. In the fields of space, aeronautics and automotive, the reliable use and integration of these technologies at the heart of the design has become a fundamental issue.

Syntony developed Constellator to meet this demand: a GNSS signal simulator capable of adapting quickly to future developments thanks to its high-end RF stage and Software Defined Radio technology core. Constellator combines outstanding radio frequency simulation performance with a software core that allows you to integrate multiple parameters for maximum flexibility and accuracy.

Constellator has been designed to subject receivers to a wide range of conditions (nominal and degrated), combinations of errors that are difficult to reproduce in the real world.

Constellator is compatible with the top range other test solutions in order to offer GNSS equipment manufacturers a complete test system, including «hardware in the loop» function.

Constellator will be able to integrate functionalities adapting to specific needs while guaranteeing the availability and the integration of the most recent signals or parameters. Its adaptability and scalability ensure optimization of ownership cost.

In addition, Syntony offers maintenance and calibration contracts to help run smoothly and benefit from the latest available updates. Customers will also benefit from an expert support allowing to optimize handling and use of Constellator.

Features, extensions and advantages

Best Solution

/ High quality of simulated signals in real time

/ Hardware-in-the-loop testing up to 1000 Hz refresh rates

/ Extensible up to 400 channels delivering high quality satellite signals on up to 6 distinct frequencies

/ Utmost flexibility in simulation control

/ Generate continuous waveforms, narrowband and wideband interference as well as pulsed

/ Compatible with all constellations and augmentation systems

Fast and unmached installation time and maintenance

/ Minimized calibration operation thanks to dedicated software

Flexible and adaptable simulator

Automotive and Transportation

Constellator is the building block of your Automotive PNT solutions.

In the automotive industry, electronics has become a major differentiator, whether for conventional vehicles or autonomous cars under development. It is important to test the navigation system of the vehicle in nominal and degraded conditions.

Constellator allows to do this thanks to its simulation capabilities: atmospheric propagation errors (ionosphere, troposphere, scintillation effects), custom-made trajectory with variations in speed and directions.

Combined with other Syntony's GNSS simulation products (interference generator, Recorder & Player Echo, GBAS simulator, etc.), Constellator can be used to tackle challenging use-cases such as jamming, spoofing, multipath, and multiple antennas testing.

Aeronautics

Space

Space is a hostile environment, which demands rigor and precision in its analysis. New constellations strongly influences the development of new receivers.

Spaceborne GNSS receivers embedded on LEO/GEO satellites are used in a very specific environment. Constellator proactively addresses these challenges as it adapts to these needs and constantly evolves to provide an optimal simulation of current and future GNSS signals for space receivers.

Its representativeness includes:

- modeling satellite errors, orbital errors, embedded clock errors, satellite electronics defects, satellite malfunctions and fainting and disappearances.
- space dedicated 3D ionospheric models, sun and moon influence, atmospheric drag
- high degree of modeling of Earth gravitational model.

Linked together with the guidance loop of a satellite management unit, Constellator has an important role in a hardware-in-the-loop test campaign.

As airport is getting closer, GBAS systems take over from GNSS systems allowing aircraft to have a more precise and corrected positioning to adjust their approach and landing phases.

Constellator also has the ability to generate these signals to conduct a full simulation and study receiver behavior and response to interference.

As part of the development of GNSS receivers, Constellator has the ability to repeat a simulation infinitely and identically.

Thanks to its features and high level of representativeness including satellite errors, navigation message definition, Constellator will allow to guarantee integrity features of receivers.

The future of navigation is software

Since 2015, Syntony has become a leader in the GNSS industry. Syntony offers unique location solutions to ensure safety and efficiency to its customers.

Syntony's solutions are competitive, exclusive and performant. Syntony know-how was inherited from 20 years of R&D and collaboration with industry leaders.

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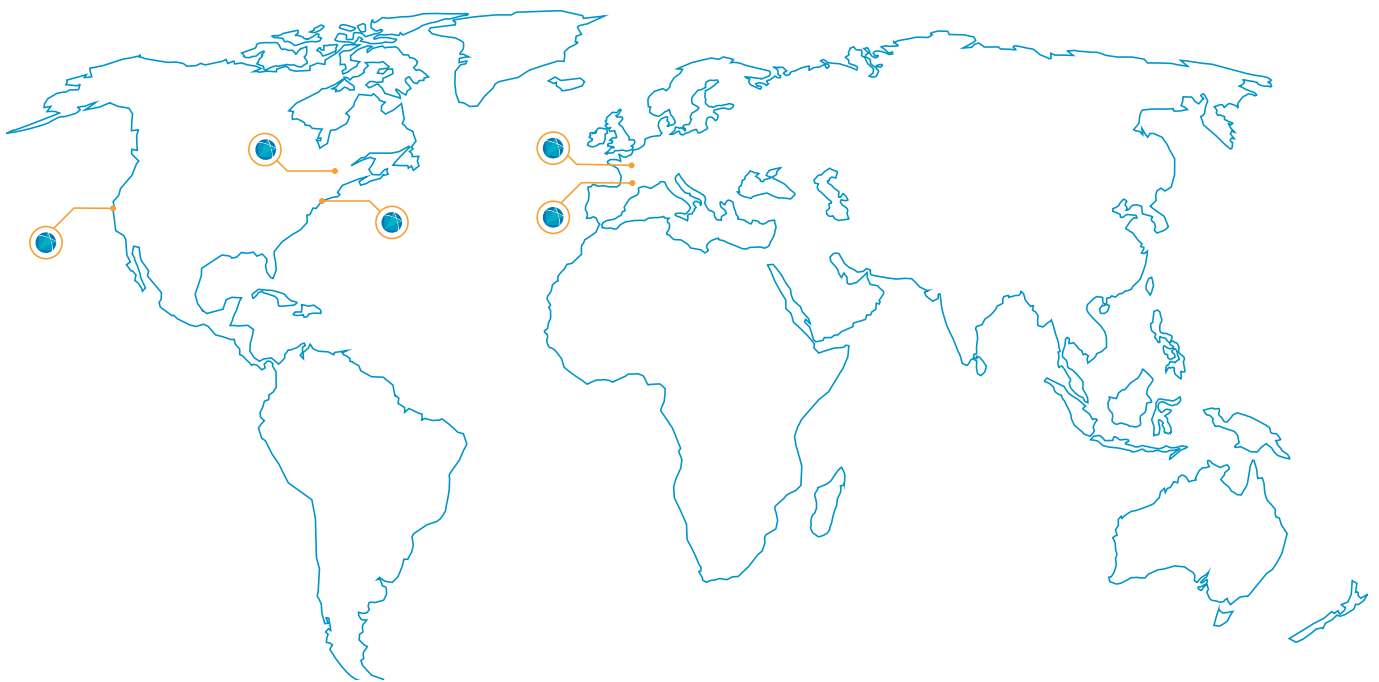
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