

How can Spirent help?

The only way to improve performance and reliability across the range of functions and uses is to implement an intensive and scientific testing regime. Spirent has been developing GNSS test solutions for over 30 years, and offers a range of solutions to address the differing problems faced by our customers.

Complex Testing – Multipath and Additional Sensors

Spirent simulators are designed to work in conjunction with additional software and hardware products, enabling you to perform comprehensive testing. Address two of the key concerns of current GNSS integrators and developers

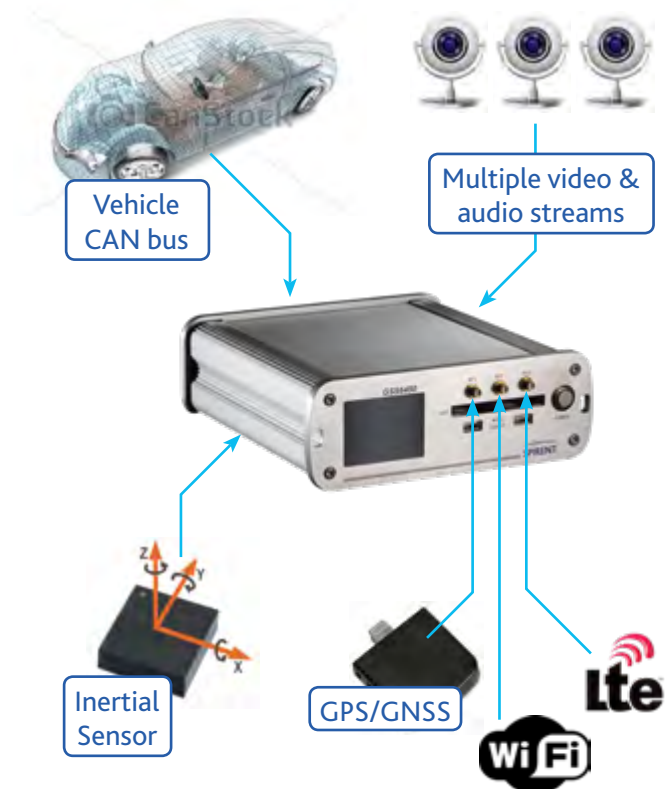
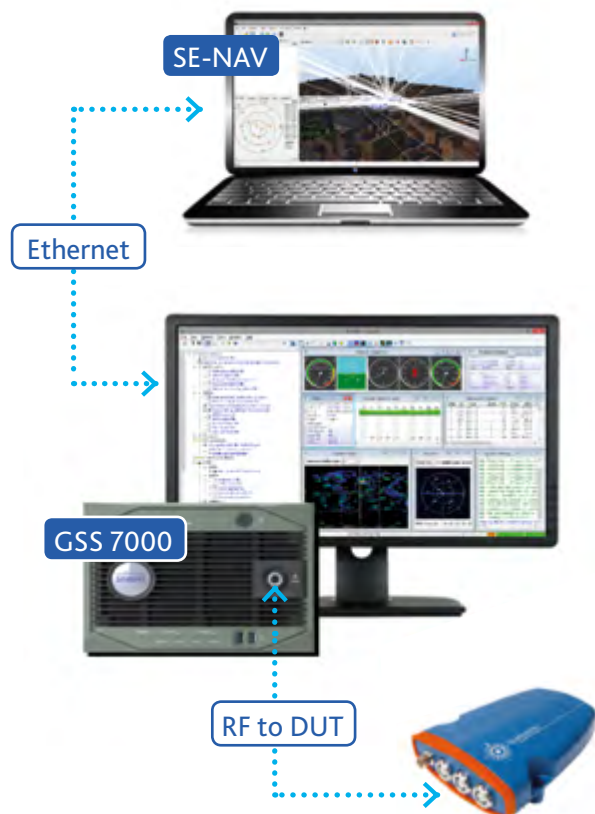
– multipath in challenging RF environments, by integrating the GSS7000 RF constellation simulator with Sim3D, and debugging real-world GNSS issues in the lab, by utilising the GSS6450 RF record & playback device.

Advanced multipath simulation

- Generate obscuration and multipath effects at RF automatically based upon a 3D synthetic environment in real time
- Together with SimGEN, Sim3D computes and provides - in real time - the deterministic propagation information (such as the obscuration, multipath received power, delay, phase etc.)
- Support for both static and dynamic scenarios

High fidelity record & playback

- Record any RF signal in 100-6000 MHz band - including GNSS, WiFi, and LTE
- Record additional signals - including CAN, IMU, NMEA, and Sensor simultaneously
- High dynamic range enabling detailed recording and playback



GSS7000

The Spirent GSS7000 is a versatile and powerful tool for all test use cases. Fully customisable according to your needs, with features including:

- Precise signal output - with a variety of motion & acceleration profiles
- Multi-antenna output – testing for attitude determination
- Simulate up to 256 satellites simultaneously – across multiple frequencies and constellations
- 2 independent RF outputs – multiply by combining units



GPS L1 C/A	GLONASS L1 C/A	GALILEO E5 a/b	BeiDou-3 B1C	QZSS L1	QZSS L6
GPS L2 C/A	GLONASS L2 C/A	BeiDou-2 B1I	BeiDou-3 B2A	QZSS L2	IRNSS L5
GPS L5 I/Q	GALILEO E1 OS	BeiDou-2 B2I	BeiDou-3 B3I	QZSS L5	SBAS

GSS6450

Record and playback enables you to bring the real world into your lab and include it in a repeatable and scientific test process. The Spirent GSS6450 is the world's smallest high bit depth RF record and playback device, offering:

- Up to 16 bits – enabling accurate capture of strong interference sources, such as jammers
- Up to 80MHz bandwidth on 3 independent RF ports
- Record GNSS, 2.4GHz and 5GHz WiFi, LTE/Cellular – as well as video streams
- Lightweight 2.2kg design



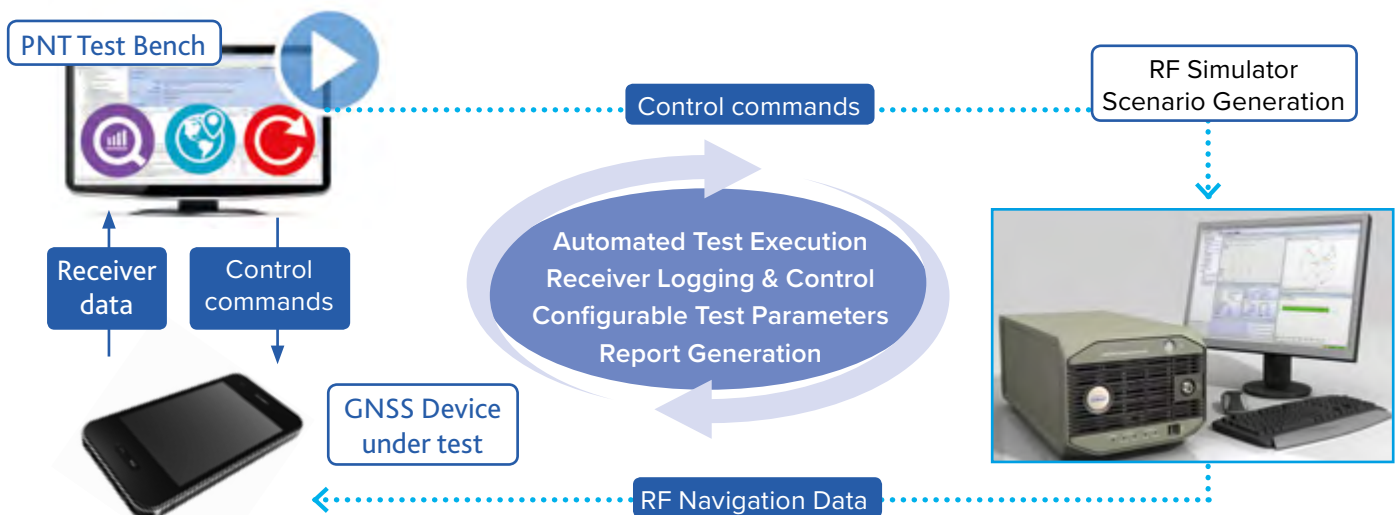
PNT TestBench

Spirent's bespoke GNSS test automation tool – PNT TestBench – takes time and hard work out of testing. The ability to run multiple iterations at a single click reduces the engineer hours required and removes any possibility of human error.

PNT TestBench works in conjunction with most of Spirent simulators including the GSS7000 RF constellation simulator, and can be integrated with your chosen GNSS receiver.

PNT TestBench brings our 30 years' experience into your lab. It enables you to use Spirent's purpose built test suites – enabling you to run all the tests you need at a single click. Available test suites include:

- Fundamental tests
- GNSS vulnerabilities
- RED (Radio Equipment Directive) compliance
- eCall
- GOST



Resilient PNT

Spirent provides a range of products to assist in boosting the resilience of your system, helping you to combat the effects of:

- Interference
- Jamming
- Spoofing

GSS7725

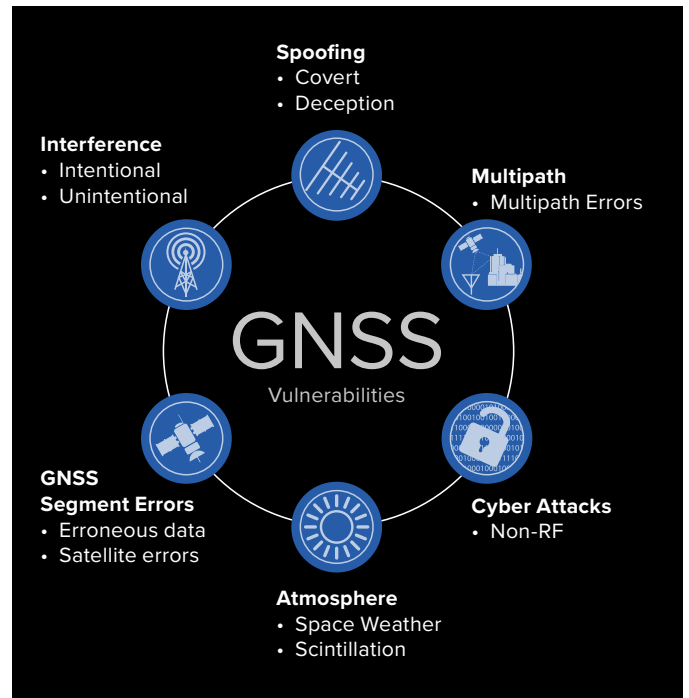
The GSS7725 is a low-cost interference generator, capable of playing a broad of I/Q files.

GSS7765

A comprehensive RF interference testing unit, supporting up to 4 fully independent interference sources.

SimSAFE

SimSAFE software allows you to modify signal properties produced by a Spirent RF constellation simulator, enabling you to test the resilience of your device against spoofing attacks.



Professional Services

Spirent's expert Professional Services team can provide a range of custom services to device developers. Whether you need to save time or money, or want to bring additional expertise into your lab, PNT Professional Services could be the right fit.

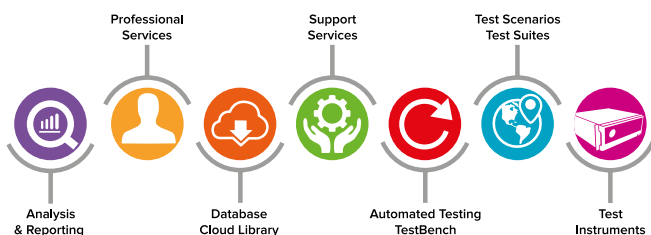
Services include:

- Test scenario creation
- Test suite creation – for use with PNT TestBench
- System integrations
- Interference detection and characterisation
- On-site and remote training services



A thorough testing regime can be the difference between the success or failure of a product. For consumer device developers, that could mean the difference between millions of happy customers and a disastrous product recall.

Whether it is interactions with other sensors, bringing the real world into your lab, or testing against the real threats your device will encounter, Spirent have all the equipment and expertise to help you develop the test systems needed to ensure performance.



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