

MOVING FORWARD WITH CONFIDENCE

YOUR TRUSTED PNT PARTNER

AUTOMOTIVE TEST SOLUTIONS

Achieving precision and robustness with Spirent's automotive PNT solutions

Precise positioning, navigation and timing (PNT) is accelerating the automotive industry. To guarantee performance, you need to verify every development at every stage. Our PNT test systems enable you to assure accuracy, continuity and reliability in the most challenging environments.



Precision multi-frequency, multi-GNSS simulation: the highest fidelity signals from the most powerful and flexible systems available.



Unrivalled realism: from high bit depth record & playback through to advanced 3D environment modelling, Spirent delivers the realism needed for your system.



Hardware-in-the-loop (HIL): integrate GNSS into your existing HIL setup using our open and rich API, simulation control interface, and ultra-low latency signal generation.



Greater robustness: Spirent's flexible vulnerabilities testing solutions enable you to protect your customers from environmental and malicious threats.

Simulation Solutions

Simulation enables development teams to bring millions of miles into the lab, accelerating testing, reducing costs, and adding critical repeatability. Spirent's solutions incorporate the greatest environmental realism, the highest fidelity GNSS signal generation, and the most flexible configurations available.

Multi-frequency, multi-GNSS simulation with the GSS7000 Series

The GSS7000 is the ultimate tool for developers of GNSS-enabled automotive systems, delivering the flexibility required for comprehensive testing and the true performance needed for reliable results. Capable of generating every current and planned civilian GNSS signal, the GSS7000 combines state-of-the-art architecture with Spirent's patented Direct Digital Synthesis (DDS) to truthfully represent the operating environment.

- High level of control via Spirent's industry leading Positioning Application control software
- Intuitive ease of use
- 2 RF output option—with multiple vehicles specified at one RF output
- MEMS simulation—including 3D inertial MEMS output plus odometry and heading rate gyros
- RTK message simulation with RTCM v3.2
- Integration with Vector CANoe
- Embedded in-band interference generation
- Powerful remote controllable capability
- Route-matched trajectory utilising Google Maps® and OpenStreetMap
- Compatible with Spirent V2X Emulator
- Single Channel Utility for simple operation of production line testing



Integrating Realism

Hardware-in-the-loop testing with SimHIL

SimHIL is an open and rich application programming interface (API) that brings high fidelity GNSS simulation into existing HIL configurations. Designed to enable users of the leading HIL platforms to bring the dynamic motion of the antenna into the test, SimHIL saves users time in integration and cost in configuration.

- Supports the leading HIL platforms and vehicle models—including dSPACE, IPG, AV Simulation, Mechanical Simulation, and National Instruments
- Control the simulated scenario through a simple GUI on the HIL platform
- Consolidated partnerships for comprehensive support
- Ideal for sensor fusion/hybrid positioning development

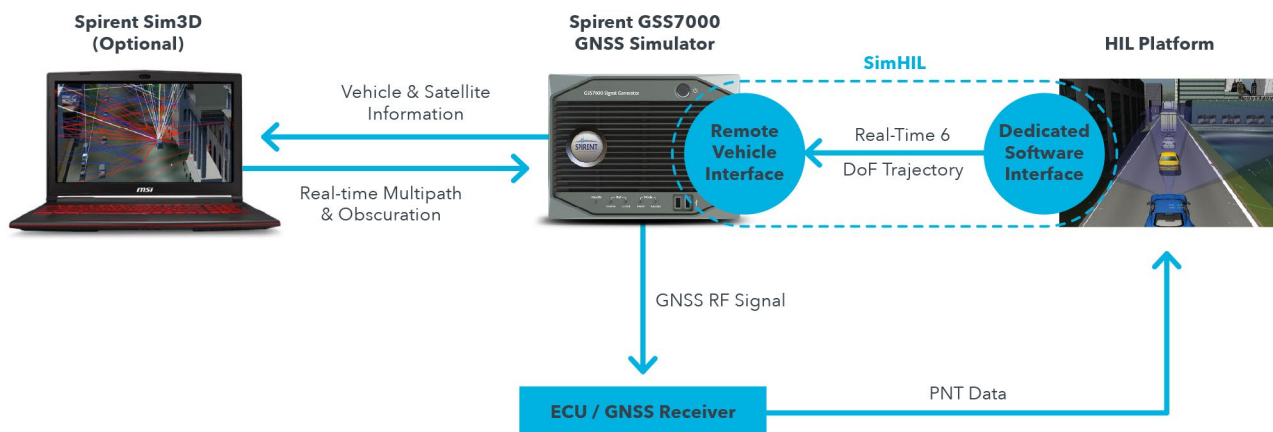
dSPACE

IPG
AUTOMOTIVE

AVSIMULATION

NATIONAL INSTRUMENTS

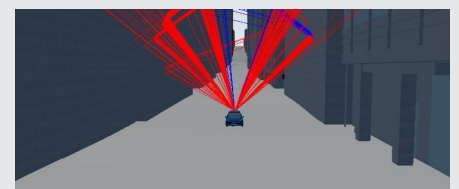
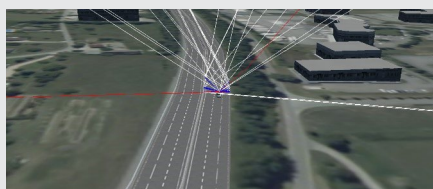
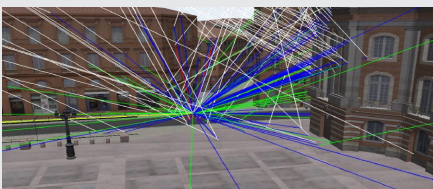
CarSim
Mechanical Simulation



Enhanced realism with Sim3D

Multipath and obscuration are critical issues for developers of autonomous and high-precision automotive systems. Sim3D enables developers to use accurate 3D models of real or geotypical signal propagation environments to test their mitigation algorithms, creating the most realistic test environment, reducing reliance on field testing.

- Full control over all aspects of the signal environment
- Supports all civilian GNSS signals
- Simple integration into HIL environments
- Import models or use predefined environments and objects

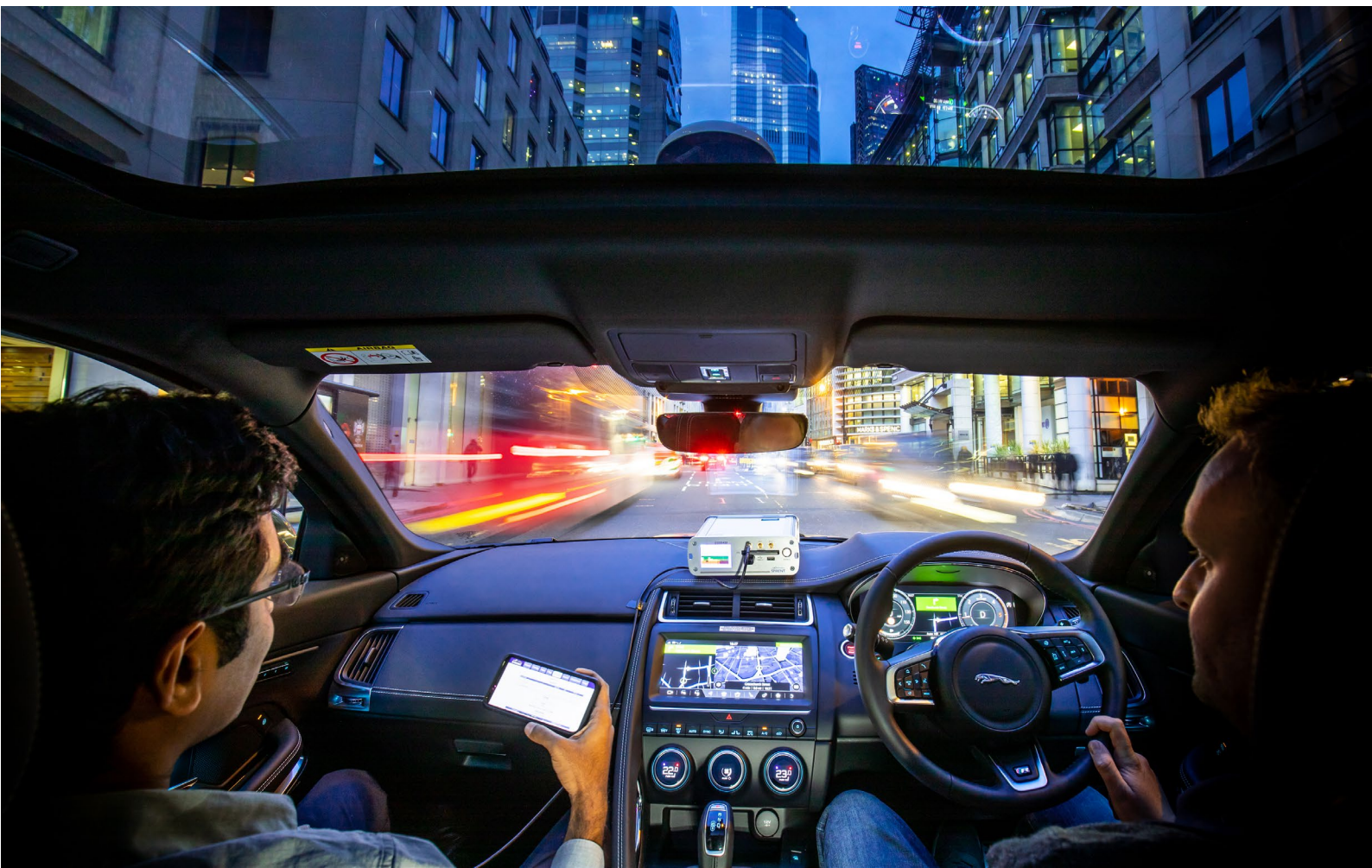


Record & Playback

Testing using real-world signals has obvious benefits. However, the lack of repeatability and control over external factors means that live-sky testing is not a viable method during development. Record & playback solutions enable users to bring the real-world signal environment back to the lab for controlled, repeatable testing of advanced driver assistance systems (ADAS) and in-vehicle systems (IVS).

Bring the real world into the lab with the GSS6450

- Three independent RF ports supporting:
 - GPS, GLONASS, Galileo, BeiDou, QZSS
 - L1, L2, L5, B3, E6
 - WiFi, LTE/Cellular
 - Other signals including FM, AM, DTV, and Trimble RTX (OTA)
- CAN / CAN-FD / Vector CANoe
- Flexible choice of bit depth, bandwidth and storage options
 - High bit depth and high dynamic capability greater realism
- Synchronous and asynchronous recording, storage, and playback of external data (e.g. cameras, IMUs, RTK)
- Capture the urban canyon in high detail—including accurate obscuration, multipath, diffraction, and interference
- Dual antenna for heading estimation





GNSS Vulnerabilities Testing

In order to improve resilience, it is very important to both understand and test against GNSS threats and vulnerabilities. Spirent provides a comprehensive range of solutions to help you build more robust systems, including:

- Interference generation
- Spoofing test scenarios and tools
- Insertion of declared and undeclared errors
- Powerful environment modelling



Professional Services

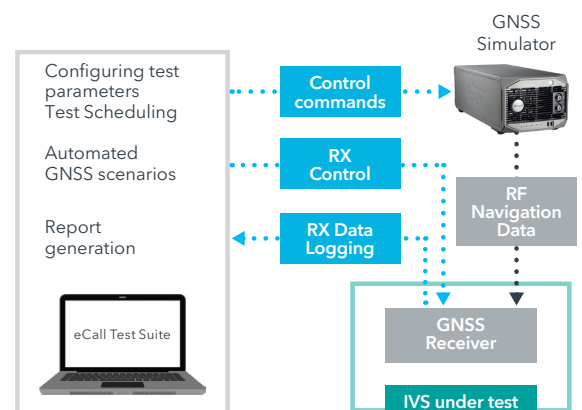
Spirent Professional Services accelerates and de-risks your automotive testing. With decades of experience in PNT testing and the flexibility to tailor services to your requirements, Spirent offers:

- **Conformance**—bespoke testing for eCall, ERA-GLONASS, RED, and ETSI TS 103 246
- **Lab as a service**—Spirent tests your equipment in our fully equipped labs
- **Test as a service**—bring Spirent experts on to your site to manage any element of your PNT testing
- **Scenario Provisioning**—access bespoke test suites to solve your PNT challenges
- **Environment Assessment**—expert analysis of your GNSS operating environment

Automated eCall Testing

Developed with direct feedback from the Joint Research Centre, Spirent's automated eCall Test Suite is a turnkey solution for ensuring your in-vehicle system (IVS) is compliant with Annex VI of the eCall regulation.

- All required test cases for Annex VI are executed sequentially
- Device under test is automatically controlled through remote commands—whilst logging the data it generates
- Results are analysed instantly, and assigned Pass/Fail based on regulation requirements





Americas



Europe



Asia

About Spirent Positioning Technology

Spirent enables innovation and development in the GNSS (global navigation satellite system) and additional PNT (positioning, navigation and timing) technologies that are increasingly influencing our lives.

Our clients promise superior performance to their customers. By providing comprehensive and tailored test solutions, Spirent assures that our clients fulfil that promise.

Why Spirent?

Over five decades Spirent has brought unrivalled power, control and precision to positioning, navigation and timing technology. Spirent is trusted by the leading developers across all segments to consult and deliver on innovative solutions, using the highest quality dedicated hardware and the most flexible and intuitive software on the market.

Spirent delivers

- Ground-breaking features proven to perform
- Flexible and customisable systems for future-proofed test capabilities
- World-leading innovation, redefining industry expectations
- First-to-market with new signals and ICDs
- Signals built from first principles – giving the reliable and precise truth data you need
- Unrivalled investment in customer-focused R&D
- A global customer support network with established experts

Contact Us

For more information, visit us on the web at www.spirent.com/ContactSpirent.

www.spirent.com

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