MOVING FORWARD WITH CONFIDENCE

YOUR TRUSTED PNT PARTNER

SimHIL Integrated hardware-in-the-loop testing

Precise positioning, navigation and timing (PNT) is accelerating vehicle capabilities. To guarantee performance you need to verify every development at every stage. Our PNT test systems enable you to assure accuracy, integrity, continuity and reliability in the most challenging environments, so you can move forward with confidence.

Bringing hardware into the loop with SimHIL

The path to vehicle autonomy is setting developers significant challenges. Increasing numbers of use cases and corner cases, difficult or impossible to reproduce in a real environment, dictate that costly drive testing is no longer practicable, and the need to provide a realistic simulated environment in the lab is critical.

SimHIL is a software solution that provides dedicated APIs to integrate Spirent's GSS7000 and GSS9000 GNSS simulators with dynamic hardware-in-the-loop (HIL) environments. Providing ultra-low latency, combined with an extensive level of control, greater realism, and Spirent's assured ease of use and set-up, SimHIL brings the responsive motion of the antenna into the test in real-time. This function is essential for automotive manufacturers and Tier 1 suppliers developing ADAS, V2X, sensor fusion engines for autonomy and infotainment systems.

External motion

SimHIL enables the direct input of motion and trajectory data into the GNSS simulator from the HIL platform in real-time.

Sensor fusion

Vehicles are incorporating an increasing number of sensors, and these must be tested both independently and simultaneously. SimHIL brings global navigation satellite systems (GNSS) into this real-time co-simulation environment.

Testing V2X

In partnership with Tata Elxsi, Spirent has developed a V2X test bed that can be used for validation and performance benchmarking of V2X applications running on V2X ECUs. Spirent's GNSS simulators play a key role in providing a precise source of timing, as well as the position transmitted in messages such as Basic Safety Messages (BSM).

Testing infotainment systems

To test user experience, infotainment system developers are bringing the driver into the loop. SimHIL facilitates dynamic real-time feedback to the driver through visual, audio and navigation information – highlighting system and driver responses to different scenarios.

Vehicle-in-the-loop (VIL)

For complex and expensive VIL platforms to be effective, the virtual environment needs to be as close to reality as possible. SimHIL brings Spirent's world-leading GNSS simulation capability into this equation.

Combined with Spirent's multi-output simulation platforms, SimHIL has also enabled over-the-air (OTA) angle of arrival (AoA) testing with VIL in an anechoic chamber. This means developers can now include the antenna in their procedure, testing the final product in its production form.
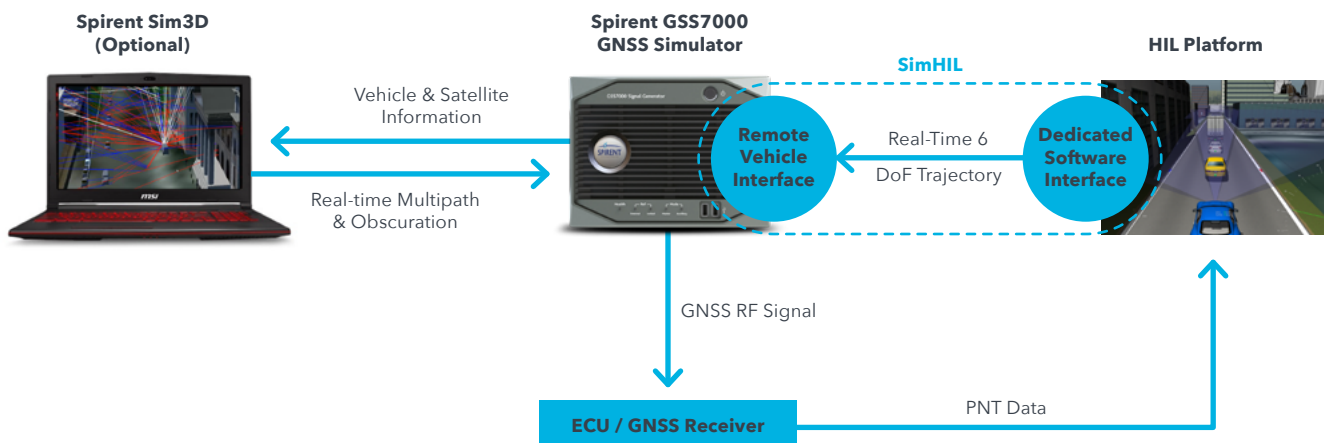
SUPPORTED INTERFACES

Spirent has worked closely with industry leaders to provide a HIL solution for our GNSS simulators – fully controlled from the third-party environment.

PRODUCT	HARDWARE SUPPORTED	SOFTWARE SUPPORTED	VEHICLE MODELS SUPPORTED
SimHIL for dSPACE	dSPACE SCALEXIO dSPACE SCALEXIO LabBox	dSPACE ConfigurationDesk dSPACE ControlDesk dSPACE ModelDesk dSPACE MotionDesk	dSPACE ASM FMU IPG CarMaker Matlab Simulink Mechanical Simulation CarSim
SimHIL for IPG	IPG XPack 4 NI PXI NI PXIe	IPG CarMaker IPG TruckMaker	IPG CarMaker IPG TruckMaker Matlab Simulink
SimHIL for AV Simulation		SCANeR Studio	CALLAS

If you are looking for a different third-party integration, let us know. Thanks to our TCP/UDP based API, we offer the flexibility our customers need for their HIL set-ups.

Integration support

Spirent offers support for each of the interfaces provided with SimHIL. Our consolidated partnerships with third-party providers ensures that our customers receive all the support they need to set-up and run simulations to test their GNSS receivers and ECUs.

Spirent offers a range of services to SimHIL customers, from the setup and commissioning of the existing dedicated software interface (DSI), to the development of a custom DSI specific to customer HIL environments. Spirent's expert team of engineers are perfectly positioned to deliver the knowledge and the speed required in innovative and fast-paced businesses.

Ease of use

Thanks to its open and rich API, users can configure and control the GNSS scenario and signal generation from a control panel within the integrated software tool. Controlling the whole simulation environment from a single point greatly simplifies the configuration process and removes the possibility of human error.

Spirent simulation for HIL testing

Spirent's best-in-class GNSS simulators are the ideal tools for HIL testing of challenging applications. With high simulation iteration rates (SIRs), ultra-low latency, fully customisable signals and frequencies, and the capability to add layers of realism through Sim3D, Spirent's GSS7000 and GSS9000 enable our customers to perform the most accurate and reliable tests.

GSS9000	GSS7000
1 KHz SIR	100 Hz SIR
<4 ms overall latency – From motion command input to RF output	<40 ms overall latency – From motion command input to RF output
All GNSS and SBAS signals supported	All GNSS and SBAS signals supported

Greater realism in simulation

SimHiL is compatible with all GNSS-specific options and features available with Spirent's GNSS simulators. This includes ionospheric and tropospheric modelling, antenna patterns, date and time settings - and obscuration effects and multipath via Sim3D.

OUR PARTNERS

ABOUT SPIRENT POSITIONING TECHNOLOGY

Positioning, navigation and timing (PNT) technology is driving the worlds most advanced applications. Whether you are looking for robustness in the face of interference, or improved performance in challenging environments, Spirent's flexible test solutions enable you to assure the accuracy, integrity, continuity and reliability your customers demand.

spirent.com/pnt

dSPACE   IPG AUTOMOTIVE   AVSIMULATION   NATIONAL INSTRUMENTS   CarSim Mechanical Simulation

Contact Us

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