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Spirent Solutions for the Automotive Industry

spirent™

Testing Advanced Information & Communications Technologies

Spirent is your partner of choice for testing in-vehicle networks, V2X connectivity, navigation systems, and autonomous vehicle positioning. The world's leading automotive brands and sub-system developers rely on Spirent solutions to verify their systems deliver outstanding user experience and performance. Our expertise enables the deployment of life enriching communication networks, devices, services and applications.

Spirent is working closely with the automotive industry to successfully implement new features and services that form the intelligent transportation systems and connected vehicles of the 21st Century.

Commitment to Innovation in Automotive

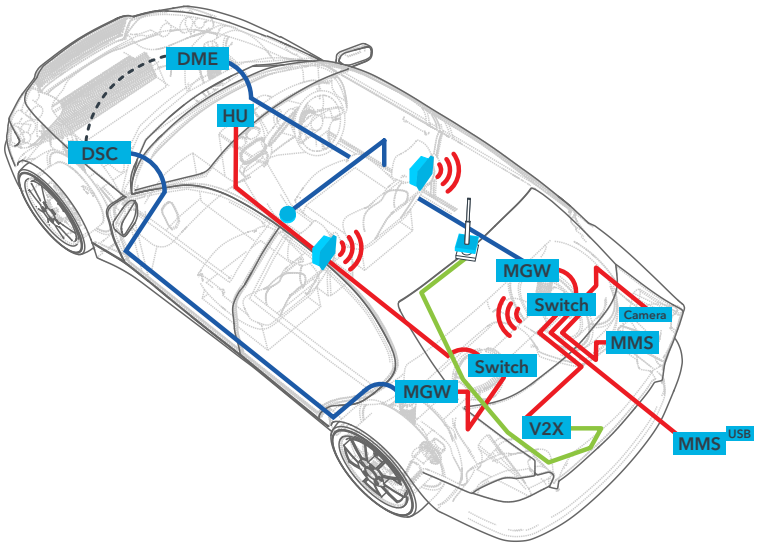
As transportation becomes more connected, and new features become more critical, systems designers, OEMs and suppliers need to verify their operation at all stages of development.

Spirent is working with government agencies and laboratories, standards bodies and commercial organizations to help create innovative new systems and features.

Spirent's lab test solutions are perfectly suited for evaluating performance of the latest technologies. As new communication services and applications are launched, Spirent provides tools for service management and field test to improve troubleshooting and quality.

Unmatched Range of Test Solutions

We offer a wide range of solutions to help verify that automotive networking, communication and positioning systems perform as intended.



Spirent Areas of Expertise Include

- TSN & Automotive Ethernet Testing
  - Support for Base-T1 (automotive ethernet) from 10M to 10G
  - TSN/AVB functional & performance testing
  - Avnu Alliance TSN/AVB conformance
  - OPEN Alliance conformance
  - AUTOSAR conformance
- V2X Testing
  - V2X signaling conformance testing
  - V2X functional & performance testing
  - Multi-PHY support (DSRC, C-V2X)
  - Multi-protocol stack support (EU ETSI, US WAVE/OmniAir, China ITS)
- Positioning & Navigation System Testing
  - Robustness against threats (jamming, spoofing, multipath, out-of-band interference)
  - Positioning precision testing
  - Record & playback of real-world operating environments
  - HIL integration testing
  - Testing against real and GEO-realistic signal propagation environments through 3D modeling

Standard & Base-T1 2-wire Automotive Ethernet

Automotive Ethernet (AE) benefits manufacturers by enabling high-speed, reliable data transfer for real-time applications like ADAS and autonomous driving. It simplifies integration, reduces wiring complexity, and allows remote diagnostics, lowering maintenance costs. Safety is enhanced through high-priority traffic segregation. Ethernet is future-proof, scalable, enables zonal-architecture and paves the way to software-defined vehicles (SDV). With decades of experience in the Ethernet testing market, Spirent offers comprehensive solutions for every Base-T1 Ethernet variant, ranging from 10Base-T1S to multigig 2.5/5/10G Base-T1.

Time-Sensitive Networking (TSN) Simulation Testing

Modern in-vehicle systems such as infotainment, automated driver assistance or on-board diagnostics, need to simultaneously access information over the Ethernet network while performing millions of application transactions per second.

As many of these applications are time-sensitive and safety-critical, the automotive industry must ensure that in-vehicle data services are delivered reliably and securely.

Spirent's test solutions support TSN simulation testing so automotive system designers can meet all requirements for latency, synchronization, availability, and QoS.

Vehicle-to-everything (V2X) Communication Testing

Every day, vehicles are becoming more connected—with each other, with the Internet, and with the surrounding infra-structure. V2X is one of the key technologies that autonomous vehicles will be relying on to operate safely on the road.

Drivers will expect V2X communication to work correctly, under all possible conditions independently of the RF technology (i.e. DSRC 802.11p or LTE-V/ 5G Cellular V2X) and of the protocol stack (i.e. US WAVE, EU ITS...) being used. This presents a unique combination of challenges and requires intensive and careful testing.

Spirent test solutions enable engineers to design and implement sophisticated V2X communications services by subjecting emerging V2X systems through rigorous testing. They ensure to be conform to regulations, meet customer expectations, and deliver market-leading performance.

Satellite Positioning Systems Testing

Leading Automotive navigation system providers rely on Spirent's test solutions during research and development (R&D). Particularly for vehicles with autonomy of level 2 and above, testing requires millions of miles and thousands of hours of engineer time. Spirent's range of test solutions help to streamline this process, adding orders of magnitude of scientific validity through software model testing, hardware testing, hardware-in-the-loop, and testing using real-world signals in repeatable, controllable environments.

OEMs aim to improve supplier coordination when verifying new software and hardware, and to introduce a lab based system to improve accuracy, repeatability and reliability of infotainment and telematics validation. They require user-friendly test solutions, with real-world simulation and data libraries that help to formalize standardized testing processes across their vehicle infotainment ecosystem.

Automotive and Industrial Testing Services

Spirent makes anything possible to guide you with technical expertise in testing – whether you need physical on-site support, remote assistance, testing equipment or even consider shipping your tools to us.

Benefit from 20+ years of cross-vendor technology expertise in diverse industries and from dedicated high-end test equipment. Rely on testing support in all development phases to ensure highest product quality at optimized effort and costs.

About Spirent

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks. We help bring clarity to increasingly complex technological and business challenges. Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled.

For more information visit: www.spirent.com

Technological Innovation & Collaboration

Over 3 decades of experience in developing test solutions for the wired, wireless, positioning and navigation ecosystem enables Spirent to help their customers develop and operate innovative communication networks, devices and applications.

For the advancement of new technology and test methodologies, Spirent works diligently in conjunction with standard bodies, independent test labs and industry forums.

In the automotive domain, Spirent is involved in standards initiatives and is an active member of Avnu, OPEN Alliance SIG, OmniAir Consortium, IEEE, and ETSI.

Spirent pioneered testing of many of the technologies adopted by the automotive industry, including Ethernet networks, mobile connectivity and service quality, or location-based services. Our engineers provide valuable counsel to many of the leading communication standards organizations.

To help customers truly put their solutions to the test, Spirent has partnered with several companies who share its vision in delivering the industry's highest value in test and measurement solutions. Partnerships include Hyundai, Ruetz System Solutions, Technica Engineering, Techways, and TÜV NORD GROUP.

In addition, Spirent offers state-of-the-art testing facilities for customers to validate and showcase their products while leveraging the latest test tools, technologies, and Spirent's expertise in Automotive test solutions.

Americas 1-800-SPIRENT
+1-800-774-7368 | sales@spirent.com

Europe and the Middle East
+44 (0) 1293 767979 | emeainfo@spirent.com

Asia and the Pacific
+86-10-8518-2539 | salesasia@spirent.com

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