

# Spirent 8100 Mobile Device Test System

## LTE Location Technology Solution

Emergency (E911), navigation and location-aware applications are becoming ever more prevalent on wireless devices. Ensure that your devices meet the needs of next-generation location applications running on LTE networks with Spirent's Location Technology Solutions.

### Applications

Device and chipset manufacturers:

- Type approval and certification testing (GCF/PTCRB)
  - A-GNSS, OTDOA & eCID minimum performance
  - A-GNSS, OTDOA & eCID protocol conformance
  - OMA SUPL test specifications
- Design verification and validation
- R&D performance and functional testing
- Operator-acceptance testing and validation

### Network Operators:

- Acceptance testing
- Device characterization and comparison

### Test Houses:

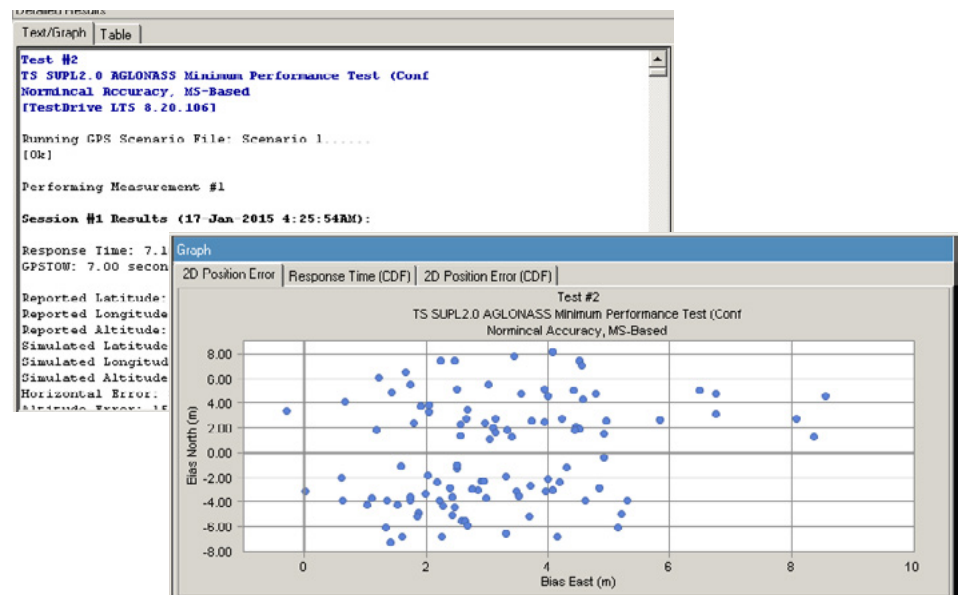
- Type approval and certification testing (GCF/PTCRB)
  - A-GNSS, OTDOA & eCID minimum performance
  - A-GNSS, OTDOA & eCID protocol conformance
- Operator-acceptance testing and validation

Over a decade ago, Spirent pioneered automated testing of location-equipped wireless devices. As the world's leading vendor of GNSS (Global Navigation Satellite System) simulators and leading supplier of automated wireless device testing systems, Spirent has become the industry's first choice for location technology testing on wireless devices.

With the 8100 Location Technology Solution, users benefit from the unique advantage of being able to test multiple GNSS/A-GNSS location technologies and air interfaces in one system, which scales to address evolving CDMA, WCDMA, GSM, LTE, Wi-Fi, Bluetooth (BLE), and sensor multi-mode device testing needs. Spirent's solutions also include the industry's first system to test devices in parallel, cutting overall test time and increasing team productivity.

Spirent's 8100 Location Technology Solution (LTS) provides comprehensive performance and conformance testing for A-GNSS, Observed Time Difference of Arrival (OTDOA) and Enhanced Cell Id (eCID). Spirent LTS supports critical LTE features such as end-to-end VoLTE E911 with LPP positioning session, LTE-to-3G circuit-switched fallback (CSFB), LTE-to-Wi-Fi handover and offload, emergency IMS procedures, and is the first to support A-BeiDou, the Chinese satellite constellation.

To help leverage our customers' investments, existing Spirent ULTS and PLTS systems can be easily upgraded to support LTE location technology testing.



Sample results from SUPL 2.0 A-GLONASS minimum performance testing.

## Benefits

- **A single solution for the entire product life cycle**—control both conducted mode and radiated Over-the-Air (OTA) testing using a single user interface.
- **Committed to address your location test needs**—Spirent’s 8100 Location Test Solution is your trusted partner to address location technology testing challenges.
- **Addresses the requirements of leading LTE network operators**—Spirent test cases ensure that you’ll quickly meet operator acceptance test requirements, shaving weeks off your product’s time to market.
- **Built with experience and expertise**—Spirent is the world’s leading vendor of satellite navigation simulators as well as the world’s most experienced location technology device testing provider.
- **Results you can trust**—Industry leaders trust Spirent’s 8100 Location Technology Solution to provide accurate and reliable results to meet their quality goals and commitments.

## Conformance and Operator Acceptance

LTE network operators are actively rolling out a rich array of protocols to enable location technologies on multi-mode devices. Spirent works directly with 3GPP working groups, operators and technology leaders to ensure complete test coverage of user plane and control plane implementations are ready when needed by location technology early adopters. This includes the latest LTE positioning methods such as OTDOA, positioning protocols such as LTE Positioning Protocol [LPP], legacy protocols such as Radio Resource Location Protocol [RRLP] and IS-801-1, as well as user plane protocols, including SUPL 2.0. Spirent has been a leading contributor to development of SUPL standards through long-standing membership in the Open Mobile Alliance (OMA). Spirent’s offerings also include critical LTE features such as VoLTE E911 functional tests, 34.229 E911 tests and 37.571-1 based OTDOA test cases. For a complete and up-to-date list of validated GCF and PTCRB test cases, please contact your Spirent representative.

Bearer	SUPL Payload
LTE	RRLP, LPP
WCDMA	RRLP
GSM	RRLP
CDMA 1x, HRPD, eHRPD	IS-801-1

## Key Features

- Easy-to-use graphical user interface provides simple test execution and results analysis.
- Test case configurability enables testing beyond 3GPP conformance.
- Troubleshooting capabilities analyze device failures quickly and efficiently.
- Industry-leading GNSS simulation capabilities guarantee accurate, reliable and repeatable test results.
- Industry’s first and unique test solution enables two devices to be tested in parallel, reducing overall test time and increasing team productivity.
- Solutions include hybrid A-GNSS+OTDOA testing capability with positioning performance evaluation.
- Test solutions are widely used and recommended by chipset vendors, OEMs, and operators the world over.

## GNSS Record & Playback

Testing A-GNSS performance in real world conditions is important to ensure a wireless device’s positioning performance, but live testing is expensive and difficult to consistently reproduce. Spirent’s A-GNSS record and playback capability brings the field testing environment into the lab in a controlled and repeatable methodology to identify any device’s positioning performance issues.

## Hybrid Positioning

An important test methodology is the use of hybrid positioning techniques, which incorporates technologies such as OTDOA, Wi-Fi, BLE, and sensors to improve location performance. This is especially important for indoor positioning, where the public is increasingly using wireless devices as the primary means for contacting emergency services and accurate positioning becomes critical. Indoor location-based marketing is also heavily on the rise, where accuracy can make the difference between users perceiving promotional information as a benefit or a nuisance.

## Parallel Device Testing

Unique to the industry, LTS is available in a configuration tailored for A-GNSS LTE parallel device testing. Increase productivity and reduce overall test time by parallel execution of test cases in one of three scenarios:

- Same test case executed on two devices
- Same GPS conditions with different A-GPS parameters
- Simultaneously perform R&P tests on one device and GPS parameter tests on another



8100-B series example configuration.



8100-Q750 with optional record & playback unit.

## Conducted and Over-the-Air (OTA) Radiated Testing

The 8100 LTE Location Technology Solution is not limited to conducted-mode testing. For OTA testing, Spirent offers seamless integration with leading anechoic test chambers. Spirent always keeps its testing capabilities at the forefront of location technology, ensuring that its customers can focus on their testing, no matter how the industry's OTA test requirements evolve in the future. Spirent is ready right now with the test cases you need for operator acceptance across several major global carriers. The Spirent LTS is completely compliant with the LTE OTA test requirements in CTIA v3.5.2.

Spirent currently offers test coverage for the following test specifications:

Technical Specifications	GCF	PTCRB	Operator-Specific
3GPP TS 37.571-1 Section 6 (formerly TS 34.171) RRC A-GNSS minimum performance over WCDMA	Yes	Yes	Yes
3GPP TS51.010 Section 70 RRLP A-GNSS protocol conformance and minimum performance	Yes	Yes	Yes
3GPP TS37.571-1 Section 7 LPP A-GNSS minimum performance	Yes	Yes	Yes
3GPP TS37.571-2 Section 7 LPP protocol conformance	Yes	Yes	Yes
3GPP TS37.571-1 Section 8 LPP eCID minimum performance	Yes	Yes	Yes
3GPP TS37.571-1 Section 9 LPP OTDOA minimum performance	Yes	Yes	Yes
3GPP TS37.571-1 Section 10 LPP OTDOA minimum performance with carrier aggregation	Yes	Yes	Yes
3GPP TS37.571-2 Section 6 (formerly TS34.123) RRC protocol conformance	Yes	Yes	Yes
A-GNSS record and playback	N/A	N/A	Yes
Hybrid A-GNSS+OTDOA	N/A	N/A	Yes
OTDOA positioning performance	N/A	N/A	Yes
VoLTE E911 calling procedures	N/A	N/A	Yes
E911 calling over Wi-Fi	N/A	N/A	Yes
OMA SUPL 1.0 & 2.0	Yes	Yes	Yes
OMA LPP Extension (LPPe)	N/A	N/A	Yes
CTIA A-GNSS OTA Test Plan	N/A	Yes	Yes
OTDOA record and playback	N/A	N/A	Yes
Indoor positioning record and playback	N/A	N/A	Yes
Standalone GNSS performance and OTA test	N/A	N/A	Yes

As the plans of key technology providers and network operators evolve, Spirent evolves its test solutions to meet the latest requirements.

## About Spirent Communications

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](http://www.spirent.com)

## Ordering Information

As a part of Spirent's scalable 8100 platform, the LTE Location Technology Solution can be an upgrade to existing Spirent test solutions or implemented as a dedicated location testing station. Existing 8100 customers can re-use much of their existing hardware, helping to conserve precious testing budgets. Please see your Spirent representative for more details on the depth and breadth of testing available with the 8100 system.

Platform	Description
8100-B500	Advanced LBS platform for LTE networks
8100-B502	Advanced LBS platform for OTDOA positioning including at least three LTE cells
8100-B750	Entry level LBS platform for LTE, WCDMA, CDMA, and GSM radio technologies
8100-Q750	Entry level LTE LBS platform, which allows optional parallel device testing

*Operator-specific part #s are available upon request.*

Reference our datasheet *Spirent 8100 A-GNSS Over-The-Air Test Solutions* for more information on over-the-air testing.

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## Contact Us

For more information, call your Spirent sales representative or visit us on the Web at [www.spirent.com/ContactSpirent](http://www.spirent.com/ContactSpirent).

[www.spirent.com](http://www.spirent.com)

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Americas 1-800-SPIRENT  
+1-800-774-7368 | [sales@spirent.com](mailto:sales@spirent.com)

US Government & Defense  
[info@spirentfederal.com](mailto:info@spirentfederal.com) | [spirentfederal.com](http://spirentfederal.com)

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

Asia and the Pacific  
+86-10-8518-2539 | [salesasia@spirent.com](mailto:salesasia@spirent.com)