With its A-GNSS Over-the-Air (OTA) test solutions, Spirent brings A-GNSS expertise and industry leadership to an OTA test environment. The OTA test pack option offers full automation of all A-GNSS OTA tests in the latest release v3.5 of the CTIA Test Plan for Wireless Device Over-the-Air Performance. This includes new A-GLONASS testing requirements, which are will be mandated for CTIA Authorized Test Laboratories in early 2016. Customizable parameters enable test time optimization, as well as testing beyond the requirements of industry standards.

OTA test capability is supported on Spirent’s Location Technology Solution (LTS) for UMTS and LTE devices and Position Location Test System (PLTS) for CDMA devices. A combined LTS/PLTS system is also supported, enabling testing of UMTS, CDMA, and LTE devices in a single solution.

The Spirent solutions are supported by automation software from the leading suppliers of radiated test solutions: SATIMO’s SMM (for UMTS and CDMA) and ETS-Lindgren’s EMQuest™ (for UMTS, CDMA and LTE).

As an option, Custom Chamber Integration is available through Spirent Professional Services, whereby a customer-supplied chamber and associated hardware can be integrated with the Spirent A-GNSS OTA solution.
**Benefits**

- **Comprehensive radiated GNSS antenna testing**— OTA testing measures the true radiated GNSS performance of mobile devices, unlike conducted testing where GNSS signals bypass the GNSS antenna and key RF components.
- **Automated CTIA A-GNSS OTA testing**— Full automation executes all the test procedures required by the CTIA Test Plan with minimum user intervention.
- **Flexible parameters maximize test efficiency**— Optimize test time by modifying parameters and scheduling only the tests that are needed.
- **Testing capability beyond industry standards**— Extensive customization options enable advanced performance testing.

**Key features**

- Fully supports CTIA’s A-GNSS OTA Test Plan v3.5 including new A-GLONASS requirements.
- Supports OTA performance testing beyond CTIA Test Plan requirements.
- Uses standard cellular signaling channels for direct over-the-air measurements.
- Conducts tests using standard positioning protocols as required by the specific cellular technology: LPP for LTE; RRLP for GSM; RRC for WCDMA, and; IS-801 for CDMA.
- Supports reliable operation with SUPL2.0 using RRLP and LPP protocol.
- Supported by ETS-Lindgren’s EMQuestTM automation software.
- Supported by SATIMO’s SMM automation software.
- OTA Open API option for advanced customization and test case development.
- Allows easy integration of Spirent’s PLTS and LTS for a combined CDMA, UMTS, and LTE A-GNSS OTA test solution.
- Scalable to industry-leading coverage of conducted A-GNSS conformance and performance test capability for UMTS, CDMA and LTE devices.

*GPS antenna pattern testing at different angles of arrival and signal polarizations.*
Technical specifications

Anechoic chamber requirements
- Anechoic chamber with turntable/positioning system, GNSS antenna, and cellular communication antenna
- Typical GNSS OTA path loss range: 30-60dB. Note: Max. 60dB OTA Loss supported
- Linearly polarized GNSS antenna, able to transmit two orthogonal polarizations supporting the frequency 1575.42 MHz
- Minimum of one cellular antenna (two antenna configuration also supported)
- Uplink Limiting Amplifier
- Turntable or other method of changing angle of arrival

The CTIA test plan

Spirent’s OTA test solutions automate the CTIA’s OTA Test Plan for A-GNSS, which includes the following key steps:

- Establish the **Antenna Pattern** by radiating a reference GNSS Signal to the Device Under Test (DUT) and varying the angle of arrival in two planes using the chamber’s positioning system
- Carry out a **Linearization** procedure to characterize and remove any non-linearities introduced by the DUT’s measurements
- Measure **Radiated Sensitivity** by lowering the GPS signal until the DUT is unable to meet the performance requirements of the Test Plan
- Calculate Total **Isotropic Sensitivity (TIS)**, **Upper Hemispheric Isotropic Sensitivity (UHIS)** and **Partial Isotropic GNSS Sensitivity (PIGS)**, metrics which combine the Antenna Pattern and Radiated Sensitivity
- Test **Intermediate Channel Degradation (ICD)** to establish A-GNSS performance across a range of cellular channels likely to be encountered by the DUT while roaming

Spirent features support for the latest CTIA OTA test plan v3.5, which includes A-GNSS OTA TIS measurements over LTE using the SUPL 2.0 protocol.

List of Spirent A-GNSS OTA solutions approved and placed on the CTIA Authorized Equipment List:

- Spirent UMTS+GSM A-GNSS
- Spirent CDMA A-GPS
- ETS-Lindgren’s EMQuest™ & Spirent UMTS+GSM+LTE A-GNSS
- ETS-Lindgren’s EMQuest™ & Spirent CDMA A-GPS
- Satimo SMM & Spirent UMTS+LTE A-GNSS
- Satimo SMM & Spirent CDMA A-GNSS
Spirent services

Spirent Global Services provides a variety of professional services, support services and education services—all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services website at www.spirent.com or contact your Spirent sales representative.

System requirements

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<tr>
<th>Option</th>
<th>SATIMO SMM</th>
<th>ETS-Lindgren EMQuest™</th>
<th>Spirent TestDrive-OTA Automation Software</th>
<th>OTA API for Custom Development</th>
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Ordering information

Due to the modularity and wide range of available 8100 Mobile Device Test System configurations, please contact your regional Spirent sales representative for detailed ordering information.

* Ask about supported chambers.