



GLONASS Test Capability

UMTS Location Test System

Technical Note 128

Spirent

541 Industrial Way West
Eatontown, NJ 07724 USA

Email: sales@spirent.com

Web: <http://www.spirent.com>

AMERICAS 1-800-SPIRENT • +1-818-676-2683 • 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

Page Part Number: 71-006325, Version A0

Copyright

© 2010 Spirent. All Rights Reserved.

All of the company names and/or brand names and/or product names referred to in this document, in particular, the name “Spirent” and its logo device, are either registered trademarks or trademarks of Spirent plc and its subsidiaries, pending registration in accordance with relevant national laws. All other registered trademarks or trademarks are the property of their respective owners.

The information contained in this document is subject to change without notice and does not represent a commitment on the part of Spirent. The information in this document is believed to be accurate and reliable; however, Spirent assumes no responsibility or liability for any errors or inaccuracies that may appear in the document.

Table of Contents

1.	Overview	1
2.	GLONASS Configuration	2
2.1.	Hardware.....	2
2.2.	Software.....	2
3.	GNSS Test Pack Basic Settings	3
3.1.	Overview	3
4.	Important Configuration Elements	4
4.1.	GNSS Test Suite Parameter Groups.....	4
4.2.	SSE Settings.....	5
4.3.	GPS Scenario Settings	6
5.	Test Case Configuration.....	8
5.1.	Linking to the Network	8
5.2.	GNSS Environment Setup	9
5.3.	Test Parameter Setup.....	9
5.4.	GNSS Scenario Editing	10
5.5.	Performing Positioning Sessions	11
5.6.	SMLC Setup	11
5.7.	Test Parameter Setup.....	13
5.8.	Location Statistics and Pass/Fail Criteria	14
6.	Conclusion	16
7.	Appendix.....	17
7.1.	Parameter Groups	17
7.2.	General Parameters	17
7.3.	Pass/Fail Criteria	18
7.4.	LBS Parameters	18
7.5.	GSM/WCDMA Parameters	20
7.6.	GNSS Scenario Parameters	21
7.7.	Unsolicited GPS Assistance Data Parameters	21

7.8. Unsolicited GANSS Assistance Data Parameters.....	22
7.9. Unsolicited GLONASS Assistance Data Parameters.....	22
7.10. SUPL General Parameters.....	23
7.11. SUPL 2.0 Parameters.....	23
7.12. SMS Configuration Parameters.....	23
7.13. Control Plane Parameters.....	23
7.14. ADS Parameters.....	24
7.15. GNSS Channel 1 Parameters	24

1. Overview



A-GLONASS test capability has been a part of Spirent's UMTS location test system (ULTS) since release 5.0. GLONASS support has been added by means of hardware upgrades (GSS8000 and GSS6700) and software upgrades to the Spirent SMLC Emulator (SSE), SimGEN and TestDrive test executive software.

Key features include support of AGNSS constellations, GANSS assistance data elements, configurable test suites, support for control plane (RRLP/RRC Rel 8) and user plane (SUPL 2.0), and support for chipset testing (8100-ADS configuration). These features are realized by the AGNSS Performance test pack which is similar in functionality to the Spirent GPS performance test pack.

2. GLONASS Configuration

A-GLONASS/GNSS functionality in TestDrive requires the hardware and software elements outlined in the sections below.

2.1. Hardware

GLONASS capabilities are supported by the GSS8000 or the GSS6700 GNSS simulators. Along with support for GLONASS, these simulators are capable of supporting all GPS functionality offered by the GSS 6560.

2.2. Software

- **Simulation Software:** SimGEN version 2.83 is the minimum version that enables GLONASS support. SimGEN 2.83 is bundled with TestDrive ULTS 5.0; all future releases of TestDrive will support an appropriate version of SimGEN that enables GLONASS functionality.
- **TestDrive ULTS:** ULTS bundle version 5.0 is required for enabling of GLONASS functionality. Software elements are installed from the Master Installer by enabling the entry **GNSS Performance**. The following components are installed:
- **GNSS Performance Test Pack:** These tests are similar to the Spirent GPS performance test pack. The test pack installs with 6 pre-defined test suites, which consist of three hybrid scenarios and three GLONASS-only scenarios.
- **Spirent SSE Updates:** The Spirent SSE has been upgraded to support RRLP and RRC rel 8, as well as GLONASS and GANSS assistance data elements. Assistance data delivery for MS-Assisted and MS-Based modes is fully supported. Position calculation for MS-Assisted mode is not currently supported, but is planned for a future release. Currently, **pseudo range** data returned by the phone can be captured and used for pass/fail analysis. For more information, please refer to section x-xx, **Location Statistics and Pass/Fail Criteria**.
- **SMLC Configuration Utility:** This allows you to configure SMLC. The Configuration Utility generates SSE configuration files. Four different SSE configuration files are pre-installed, in the **GNSS Performance Tests** folder under the `|TestDrive|SSE Configurations` folder.
- **GPS Scenarios:** SimGEN 2.83 and higher allows configuration of GPS-only, GLONASS-only, or **hybrid GPS-GLONASS** constellations. Two GNSS scenarios are pre installed – a pure GLONASS scenario and a hybrid scenario.

3. GNSS Test Pack Basic Settings

3.1. Overview

The GNSS Test Pack consists of six pre-installed test suites. The six suites are divided by GNSS scenario type, location technology and location protocol. The particular combination of these elements is represented by the suite name, as shown in the table below.

Test Name	GNSS Scenario Type	Location Technology	Location Protocol
GLONASS Only Control Plane RRC	GLONASS-Only	Control Plane	RRC
GLONASS Only Control Plane RRLP	GLONASS-Only	Control Plane	RRLP
GLONASS Only User Plane RRLP	GLONASS-Only	User Plane	SUPL 2.0 over RRLP
GPS and GLONASS Control Plane RRC	GPS+GLONASS hybrid	Control Plane	RRC
GPS and GLONASS Control Plane RRLP	GPS+GLONASS hybrid	Control Plane	RRLP
GPS and GLONASS User Plane RRLP	GPS+GLONASS hybrid	User Plane	SUPL 2.0 over RRLP

All test cases use the default settings displayed in table x-xx.

LBS Method	MS-Based
LBS Initiation	Network-Initiated Location Request
Bearer for Control Plane tests	Mobile-Terminated Voice Call
Number of position fixes	5
Pass/Fail criteria	Location Accuracy

The default suites allow a quick and easy way to get a test started by simply varying the **Operating Band, LBS method** and **number of sessions**. However, the full potential of the test pack is utilized only by taking advantage of its configurability. The GNSS test pack is designed to be a performance solution and offers many opportunities for customization.

4. Important Configuration Elements

Customizing the test pack consists of two main steps – first, to understand the available customization options and second, to apply these options to a selected use case.

Customization options are divided into three major groups:

1. Test Suite Parameter Groups
2. SMLC Settings
3. GPS Scenario Settings

4.1. GNSS Test Suite Parameter Groups

A given test case has numerous parameter groups that in turn contain test parameters. Test parameters are used to control and modify the execution settings for a given test case. The *ULTS User Manual* has a thorough explanation of test parameter groups and test parameters, and this document assumes basic familiarity with their usage.

The table below describes the purpose of each parameter group used in the GNSS test pack. For an explanation of what each parameter represents, refer to the Appendix on page 17.

Parameter Group Name	Purpose	Key Parameters
General Parameters	General test settings	UE Lat/Long. Number of Sessions. Delay Between Sessions.
Pass/Fail Criteria Parameters	Pass/Fail settings	Analysis Type. Horizontal Error Sigma 1/Sigma 2. Response Time. Doppler Error.
LBS Parameters	LBS positioning session settings	SSE configuration File. LBS Session Type. LBS Method. Response Time.
GSM/WCDMA Parameters	Air Interface settings	Air Interface Technology. Operating Band. Downlink Power. BTS Lat/Long.
GNSS Scenario Parameters	GNSS scenario settings	GNSS Scenario file. Power Level Offset
Unsolicited GPS Assistance Data Parameters	GPS Assistance Data delivery settings	Navigation Model. Reference Time. Reference Location. Acquisition Assistance
Unsolicited GANSS Common Assistance Data Parameters	GANSS common assistance data delivery settings	Reference Time. Reference Location.
Unsolicited GLONASS Assistance Data Parameters	GLONASS assistance data delivery settings	Time Model. Corrections. Real-Time Integrity

Parameter Group Name	Purpose	Key Parameters
SUPL General Parameters	SUPL 1.0 settings	Not Used
SUPL 2.0 Parameters	SUPL 2.0 settings	Reporting Mode. Number of Periodic Fixes.
SMS Configuration Parameters	SUPL INIT SMS settings	Service Center Timestamp Type. Protocol ID
Control Plane Parameters	Settings for Notification and Privacy on Control Plane	Notification Enabled. Notification Type. Privacy Verification Timer.
ADS Parameters	ADS (A400) mode settings	Send ADS Cold Start Message. Enable ADS Fine Time Synchronization
GNSS Channel x Parameters	Set individual channel power and type for MS-Assisted Test Cases	GNSS SV ID. Power Level. GNSS Type.

4.2. SSE Settings

SSE settings are configured by means of SMLC configuration files (extension .SSE). Each test case has an SSE file associated with it. SSE files are specified for a given test case by means of the SSE File parameter in the LBS parameters group.

SSE files can be edited using the SMLC Configuration Utility. For a comprehensive usage guide, including configurability of GPS, GNSS and GANSS assistance data elements, refer to Section 3.4 of the *ULTS User Manual*. The key areas of configurability discussed in the next section of this document are shown in Figure 4-1.

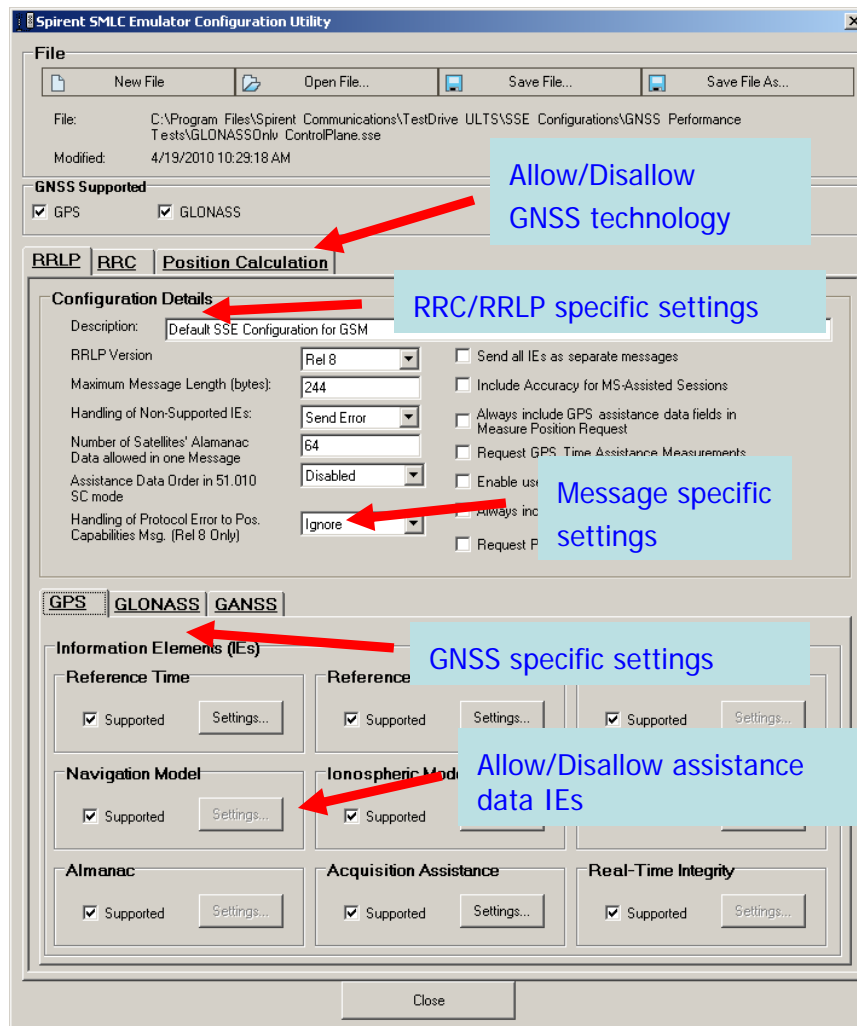


Figure 4-1: SMLC Emulator Configuration Utility

4.3. GPS Scenario Settings

The GNSS environment for a given test case is defined in SimGEN scenario (.SCN) files. Scenario files are configured using SimGEN or Positioning Application software. The GNSS test pack comes installed with two GPS scenarios; one with a GLONASS-only constellation, and the other with a GPS-GLONASS hybrid scenario.

SimGEN allows you to configure numerous GNSS settings. For purposes of the test pack, three main features are considered:

1. Setting up a power profile.
2. Adding multi-path.
3. Including an antenna pattern.

These features are discussed in the next section.

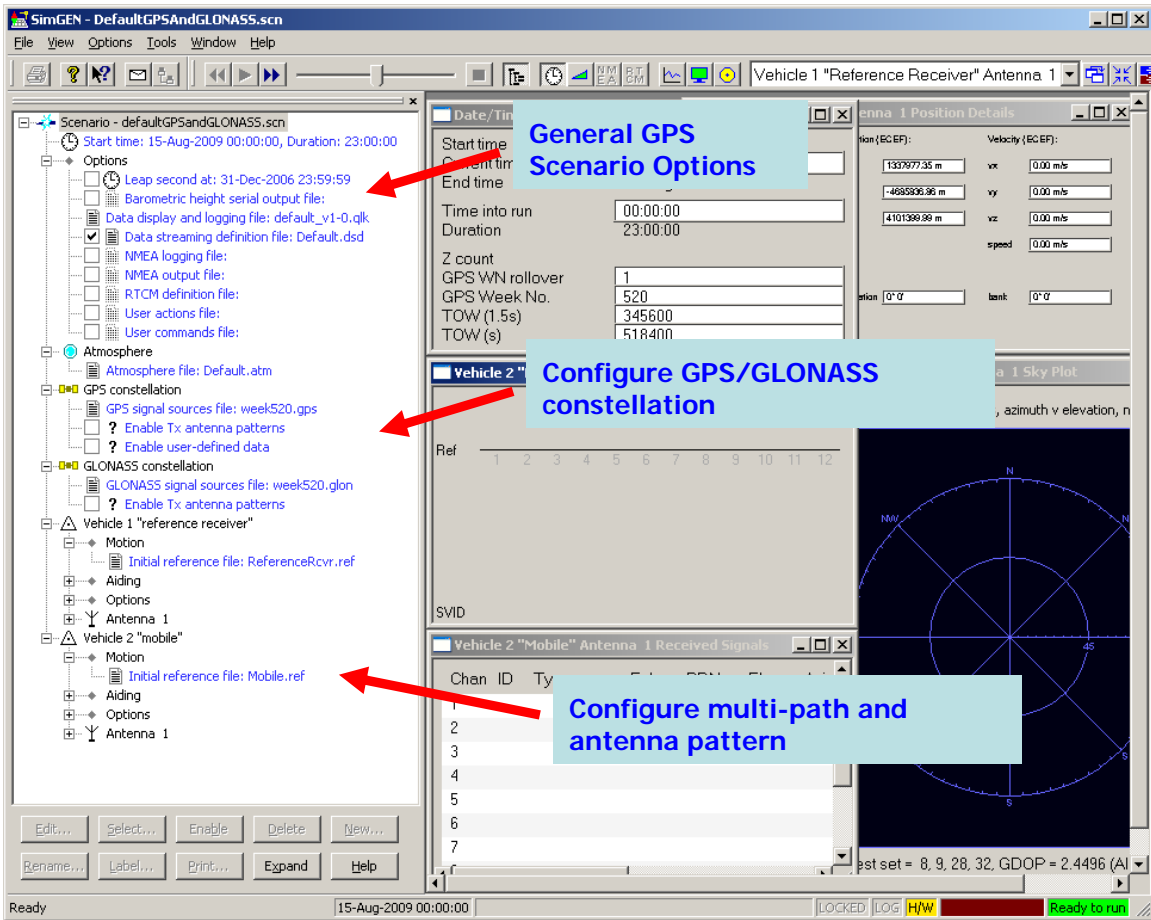


Figure 4-2: SimGEN GPS Scenario Editor

5. Test Case Configuration

All test cases follow a basic execution procedure consisting of the following:

- Setting up a link to the network, by means of a voice call or a data call.
- Setting up the GNSS environment.
- Performing a predetermined number of positioning sessions.
- Performing a statistical analysis of the measurements and comparing them to predetermined pass/fail criteria.

Each step of this execution procedure can be customized using the options mentioned above.

5.1. Linking to the Network

Decide whether you want to execute the network link and subsequent A-GNSS positioning over control plane or user plane. Control plane positioning involves setup of a voice call (Mobile Originated or Mobile Terminated) and several RRC (WCDMA) or RRLP (GSM) location sessions. User plane positioning involves setup of a data call and positioning over SUPL 2.0.

The test pack comes installed with test suites for control plane (RRC and RRLP) and user plane (SUPL 2.0). Select the suite based on your test preference.

The following are key configuration options that affect network link setup:

- **Decide on physical link parameters:** From the GSM/WCDMA parameters group, configure Band, Air Interface technology and other base station parameters. For an explanation of what each parameter does, refer to the *ULTS User Manual*.
- **Configure details of the link:** From LBS parameters, decide on whether the desired call is Mobile Originated, or Mobile Terminated. Select if the *LBS session* is initiated by the network or the SET, and the type of *LBS method* used for positioning (MS-Based/MS-Assisted).

Note that the default suites installed with the test pack already have some of the settings modified. For example, the GLONASS Only Control Plane RRC has the Transport parameter and the Positioning Protocol parameter, under LBS parameters, set to Control Plane and RRC respectively. These parameters may be changed, but we recommend that you do any customizations to one of the selected default templates.

5.2. GNSS Environment Setup

The GNSS environment refers to satellite signal levels, UE and BS location (including altitude), GNSS constellation type, and optionally any effects on the signal levels such as multi-path, antenna pattern emulation, etc.

GNSS environment settings can be configured from the test parameter level as well as direct edits to the scenario file itself.

5.3. Test Parameter Setup

The options available from the test parameters depends on the positioning method selected. Because the Spirent SMLC emulator does not currently support position calculation for GLONASS-only or hybrid scenarios, using a UE in MS Assisted mode yields pseudo range values as the final result. This affects the type of results presented by TestDrive; instead of horizontal error, TestDrive aggregates statistics on key components of reported measurements such as Code Phase Error, Doppler Error, and Carrier to Noise Ratio. For an understanding of how Pass/Fail criteria are used in MS-Assisted testing, refer to the *Location Statistics and Pass/Fail Criteria* section on page 14 of this document.

In MS-Assisted mode, it is possible to configure the power levels of each individual channel using the GNSS Channel xx parameters group.

The parameters allow you to select the following:

- The SV ID to which the power level is applied.
- The actual power level on the channel.
- The type of GNSS satellite (GPS or GLONASS).

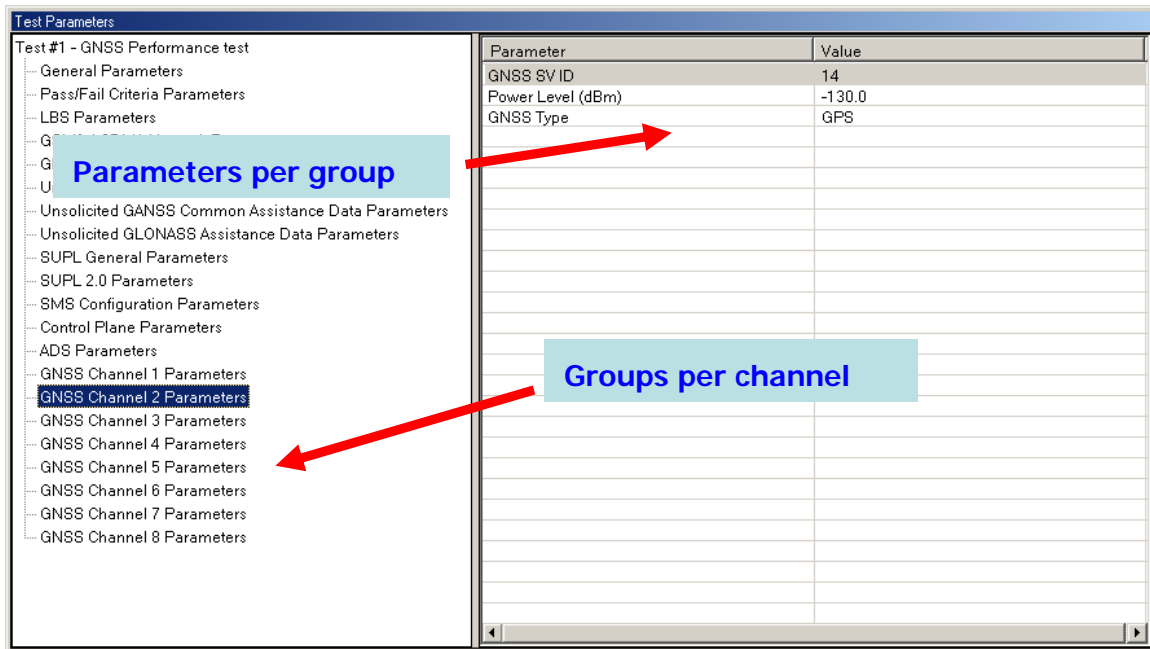


Figure 5-1: MS-Assisted Mode

In MS-Based mode, this functionality is not available. The power profile is determined from the GPS Scenario file, and a fixed offset is applied. The offset is applied using the Power Level Offset parameter in the GNSS Scenario Parameters group.

You can configure General scenario parameters, such as simulated location, altitude, simulation start time, or date from the General Parameters group. Note that changing the default UE location also requires a change to the BTS location. This is found under the GSM/WCDMA Network Parameters group.

5.4. GNSS Scenario Editing

There are two types of pre-packaged GNSS scenarios – a GLONASS-only scenario and GLONASS – GPS hybrid scenario. The GNSS scenario can be edited to modify advanced GNSS environment settings, such as:

- **Power Profile:** The default power profile in these scenarios is similar to that of the Nominal Accuracy test case from the TS 34.171 specification.
- **Adding Multi-path Effects:** The default scenario does not have any multi-path applied to the GNSS channels. SimGEN supports a variety of multi-path scenarios ranging from simple linear reflections to complex mask configurations.
- **Adding an Antenna Pattern:** SimGEN allows you to import CSV files of a complete-sphere antenna loss pattern, and includes the effects in the simulation.

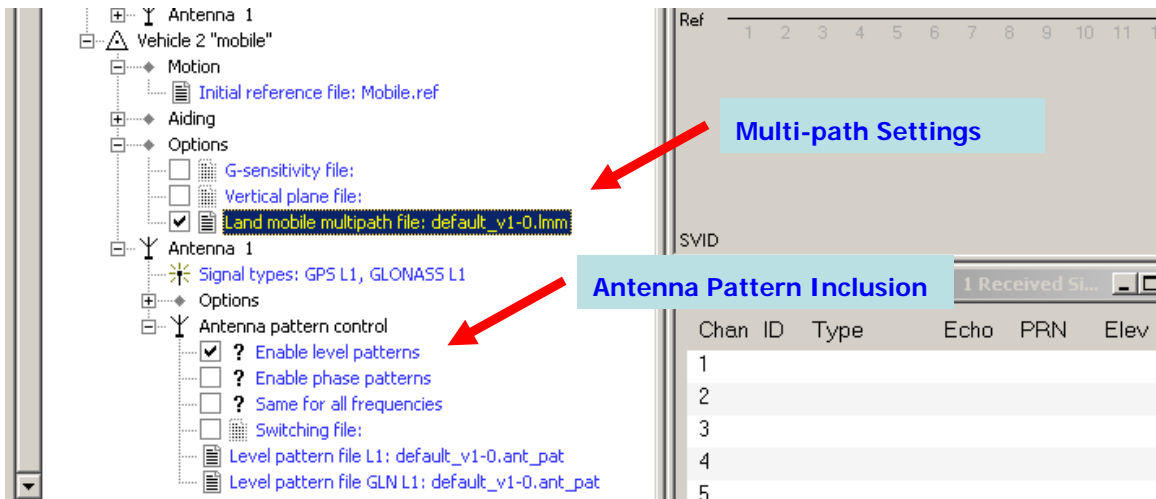


Figure 5-2: Multi-path Settings and Antenna Pattern Settings using SimGEN

A description of making these modifications is beyond the scope of this document, and is thoroughly covered in the *SimGEN User Manual*. When making changes to the GPS scenario, you should save the file as a different scenario in a new folder. This ensures that the pre-packaged scenario files are not affected. Include the new scenario in the test case using the GNSS Scenario File Parameter under the GNSS Scenario Parameters group.

5.5. Performing Positioning Sessions

The characteristics of a positioning session are defined at the test parameter level and the SMLC configuration file. The SMLC configuration primarily affects RRC/RRLP message formatting and delivery of assistance data. The test parameters are used to setup session setup specific parameters such as LBS type, and LBS method used.

5.6. SMLC Setup

SMLC setup is done by means of an SSE configuration file. Four different SSE files are installed along with the test pack. Access these files from within TestDrive as shown in Figure 5-3.

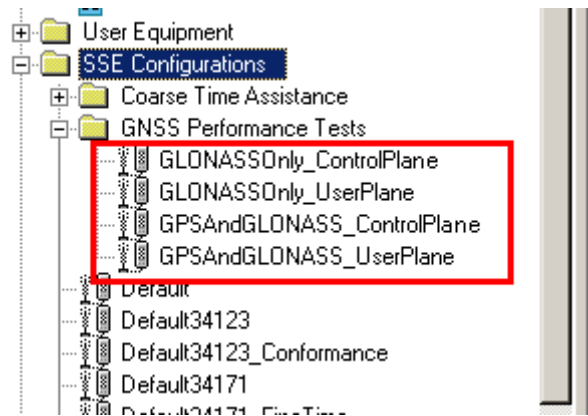


Figure 5-3: Default SSE Configuration Files in TestDrive

Generally, default SMLC configuration is adequate for most testing. The following are some key options that are useful for configuration:

- **RRC/RRLP Message Length:** Changing this field affects the number of messages sent downlink. Choosing a small size implies multiple downlink messages.
- **GNSS Supported:** Selecting GPS or GLONASS or both allows you to configure the assistance data for the corresponding GNSS technology.
- **Allowing/Disallowing Sending of Assistance Data:** Selecting the Assistance Data elements in the GPS/GLONASS/GNSS tab allows SMLC to send the data upon UE request. If these options are not selected, the SMLC does not include the data even if the UE requests it.
- **Configuring Assistance Data IEs:** Some GPS assistance data IEs, such as reference time, allow configuration at the IE field level. Select the *Settings* option to make these configurations available.

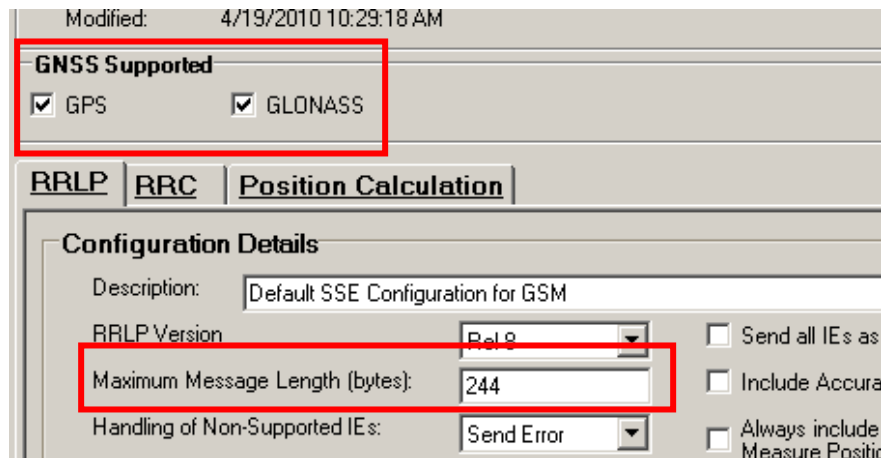


Figure 5-4: Useful SMLC Options

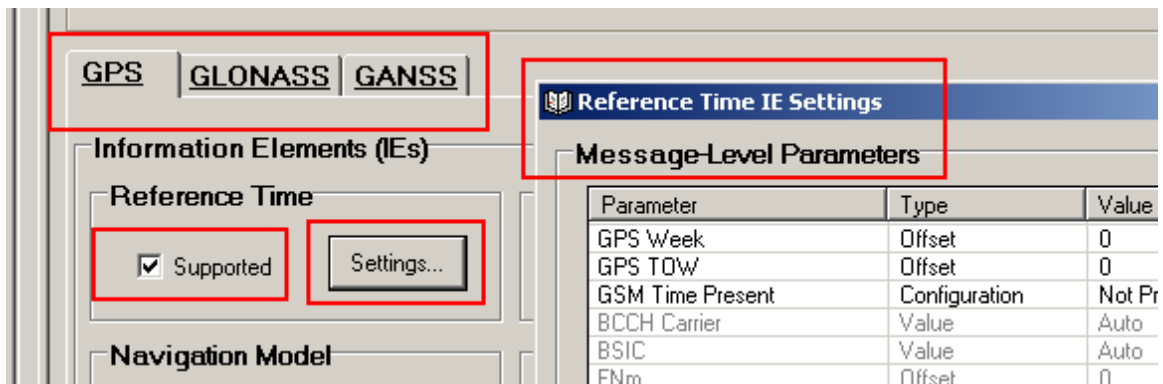


Figure 5-5: Spirent SSE Assistance Data Settings

For information on the rest of the SMLC options, please refer to the ULTS User Manual section 3.4.

5.7. Test Parameter Setup

- **Session Characteristics:** From LBS parameters, select appropriate values for LBS Session Type and LBS Method. Set a Response Time.
- **Customized SSE Configuration File:** If you have created a custom SSE file as outlined in the section SMLC Setup, use the SSE Configuration File parameter to select the file.
- **Cold Start Messages:** From LBS parameters, select if the cold start messages for GLONASS and GPS are required to be sent before the positioning session begins.
- **Unsolicited Assistance Data Configuration:** This group allows Assistance Data to be “pushed” to the UE. For example, you can set the parameter to send the elements even if the UE has not requested them.
Typically, the data is pushed in the first Measurement Control (RRC) or Measure Position Request (RRLP) message of the positioning session. This functionality is not currently available for SUPL. Three types of IEs can be “pushed”: GPS Assistance Data, GLONASS Assistance Data IEs, and GANSS Assistance Data (common elements for GPS and GLONASS).
- **Transport Type Parameters:** This refers to settings for Control Plane and User plane parameters.
 - **SUPL 2.0 Parameters:** These parameters affect the SUPL 2.0 session. For more information, refer to the *Parameters* section of the *ULTS User Manual*.
 - **Control Plane Parameters:** These parameters are used to configure notification and privacy for control plane.
 - **ADS Parameters:** These parameters are used when testing is done in A-GPS Development System mode to test chipsets without involving an Air Interface.

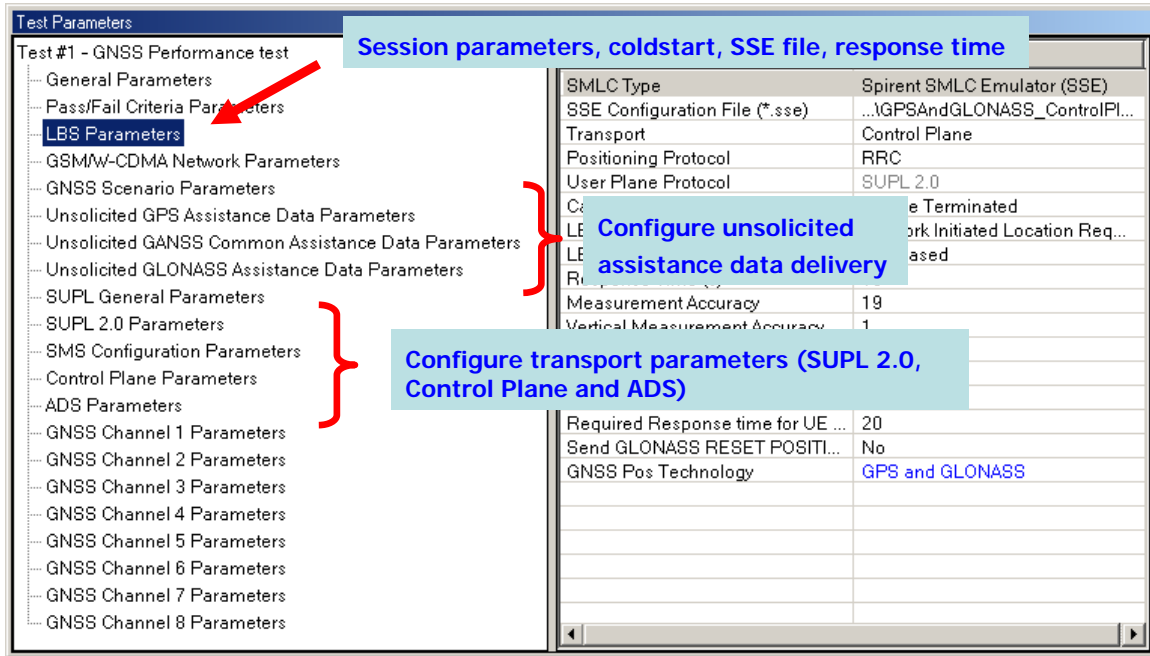


Figure 5-6: Configuring Test Parameters Relating to the Location Session

5.8. Location Statistics and Pass/Fail Criteria

The type of analysis performed depends on whether MS-Assisted or MS-Based positioning is used. The SMLC currently does not support GLONASS position calculations.

The following analysis types are available:

- MS Based, Location Measurement:** In an MS-Based case, location measurements that are reported by the UE are aggregated, and compared against pre-determined values input for the following KPIs: **Horizontal Error**, **Vertical Error** and **Response time**. The predetermined values are input using the parameters under the *Pass/Fail Criteria Parameters* group.
- MS-Assisted, Pseudo Range Analysis:** Because the SMLC cannot calculate positions, TestDrive can only check the reliability of the pseudo range data submitted by the UE. KPIs include **Code Phase Error**, **Doppler Error** and **C/No error**. Note that for TestDrive to calculate accuracy C/No error, you must enter required power values in the test case using the *GNSS Channel xx Parameters* groups. This allows TestDrive to compare the C/No values returned by the UE to the power level used for the satellite channels.

Results display inline with all other TestDrive ULTS test cases. A graph is available for plotting the measurements, and detailed results show exact measurement statistics. Pass/Fail status and measurement aggregates are shown in the *Quick Results* window.

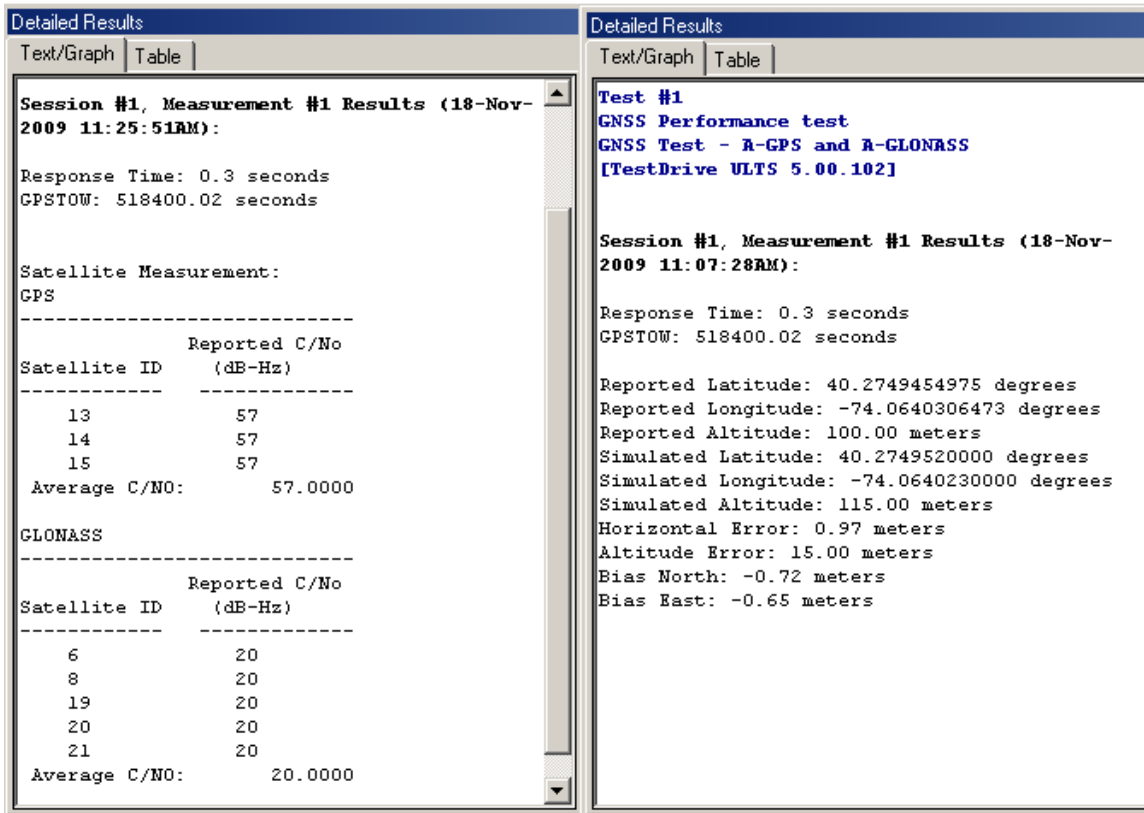


Figure 5-7: MS Assisted (left) and MS Based (right) Detailed Results Window

6. Conclusion

The Spirent GNSS test pack is a powerful, flexible performance solution to aid in testing A-GLONASS-only and A-GLONASS-AGPS hybrid scenarios. Support for MS-Based testing is complete. Full support for MS-Assisted testing is ongoing and expected to be part of a future ULTS release.

The GNSS test pack is a part of Spirent's continuing effort to position ULTS as a single comprehensive system capable to meeting both LBS performance and LBS conformance testing needs.

7. Appendix

7.1. Parameter Groups

Figure 7-1 below displays the various parameter groups available for the GLONASS Test Pack.

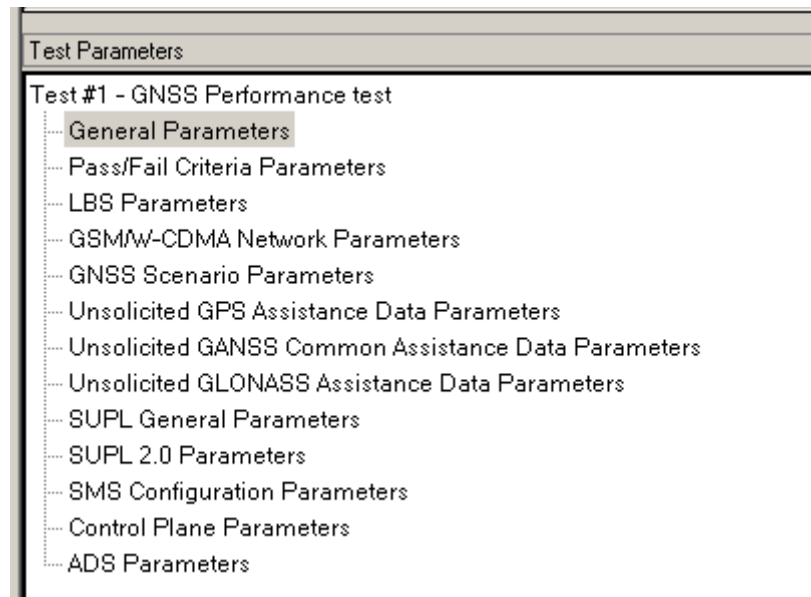


Figure 7-1: Parameter Groups for Semi-Normative Sessions

7.2. General Parameters

Parameter	Description
Title	GNSS Performance test
Description	User defined description for the test
Number of Calls/session	Number of calls in case of Control plane Number of sessions for User plane
Number of measurements per call/session	Applicable to control plane tests. Number of measurements to be performed per call
Amount of Reporting (per measurement)	Not applicable
Total number of measurements	Number of measurements * number of calls
Delay between calls/sessions (s)	Delay between calls in control plane Delay between session in user plane

Parameter	Description
Delay between measurements (s)	Delay between measurements during a call
Delay before 1 st session (s)	Delay before the 1 st session begins
Simulation Start Date	GPS-Scenario start date
Simulation Start Time	GPS-Scenario start time
UE Latitude (degrees)	Simulated latitude of the SET
UE Longitude (degrees)	Simulated longitude of the SET
UE Altitude (meters)	Simulated altitude of the SET
UE Transmit power	The UE uplink transmit power

7.3. Pass/Fail Criteria

Parameter	Description	Values
Analysis type	Select the analysis type for Pass/Fail	Location measurement Pseudo-range analysis (for MS-Assisted only) None (for MS-Assisted only)
Maximum Horizontal error – Sigma 1 (m)	Configure the maximum horizontal error – Sigma 1 in meters	0.0 to 50000.0
Maximum Horizontal error – Sigma 2 (m)	Configure the maximum horizontal error – Sigma 2 in meters	0.0 to 50000.0
Maximum Vertical error – Sigma 1 (m)	Configure the maximum horizontal error – Sigma 1 in meters	0.0 to 50000.0
Maximum Vertical error – Sigma 2 (m)	Configure the maximum horizontal error – Sigma 2 in meters	0.0 to 50000.0
Max Response Time Limit (sec)	Configure the maximum the response time limit	1.0 to 128.0

7.4. LBS Parameters

Parameter	Description	Values
SMLC Type	Configure the SMLC type	Spirent SMLC emulator
SSE configuration file (*.sse)	Select a SSE configuration file	User configurable
Transport	Configure the transport type	Control Plane User Plane

Parameter	Description	Values
Positioning Protocol	Select the positioning protocol	This parameter is dependent on the Transport type and the Air-Interface technology type under the GSM/WCDMA parameter group. The possible values are RRC or RRLP. Currently only RRLP is supported.
User plane protocol	Select the User plane protocol for the test	The values depend on the Transport type.
Call type	Configure the call type to be used for this test	Mobile Terminated Mobile Originated
LBS Session Type	Configure the LBS session type	Network Initiated Location Request Mobile Originated Location Request Mobile Terminated Location Request
LBS Method	Configure the LBS Method	MS-Assisted MS-Based
Response time (s)	Configure the response time for the positioning session	1,2,4,8,16,32,64,128 for RRLP 1 to 128 for RRC
Measurement Accuracy	Configure the horizontal accuracy	0 to 127
Vertical Measurement Accuracy	Configure the vertical accuracy	0 to 127
Network Latency (s)	Configure the network latency	0.0 to 10.0
Send RESET UE POSITIONING STORED INFO Message	Configure the sending of the reset message	Yes No
Required Response time for UE to respond (s)	Configure the required response time (for RRLP only)	0 to 127
Send GLONASS RESET UE POSITIONING STORED INFO Message	Configure the sending of the GLONASS reset message	Yes No
GNSS Pos Technology	Configure the allowed GNSS Positioning technologies	GPS and GLONASS

7.5. GSM/WCDMA Parameters

Parameter	Description	Values
Air Interface Technology	Configure the Air Interface to be used for this test. This parameter is disabled when the station configuration is set to 8100-A400	GSM/GPRS WCDMA
Domains Enabled in Network	The domains enabled during the network emulation	CS Domain CS and PS Domain
Operating band	Select the band used for network emulation	GSM850, GSM900, DCS1800, PCS1900 for GSM/GPRS WCDMA Region 1,2,3,4,5,6,8,9,11 for WCDMA
Downlink ARFCN	Specify the ARFCN to be used for the network emulation	The range for the values depends on the Operating band and Air-Interface technology selected.
Broadcast Channel (BCCH)	Configure the Broadcast channel (for GSM/GPRS only)	The range for the values depends on the Operating band and Air-Interface technology selected.
Network Colour Code (NCC)	Configure the Network Color code for the network emulated (for GSM/GPRS only)	0 - 7
Base station Colour Code (BCC)	Configure the Base Station Color code for the network emulated (for GSM/GPRS only)	0 - 7
Time Slot	Configure the time slot for the Traffic channel (for GSM/GPRS only)	0 – 7
Logical Channel	The logical channel used for the positioning session	For GSM/GPRS FACCH SDCCH For WCDMA DCH FACH
Downlink Power (dBm)	Configure the downlink power for the network emulation signal (in dBm)	-127 to -50
BTS Latitude (degrees)	Configure the latitude of the reference receiver (in degree decimal)	-90.0 to 90.0 (upto 10 decimal points)
BTS Longitude (degrees)	Configure the longitude of the reference receiver (in degree decimal)	-90.0 to 90.0 (upto 10 decimal points)

Parameter	Description	Values
BTS Altitude (meters)	Configure the altitude of the reference receiver (in degree decimal)	-1000.0 to 5000.0
BTS Max Antenna range (km)	Configure the range of the BTS antenna (in km)	0.01 to 100
BTS HEPE (m)	Configure the HEPE for the BTS (in m)	1 to 65535
GPRS Coding Scheme	Configure the coding scheme that will be used for GPRS network emulation (only for GPRS)	CS-1
GPRS MultiSlot configuration	Configure the multi slot configuration for the GPRS Network emulation (only for GPRS)	1 Down, 1 Up
Block Polling Period	Configure the polling period for the GPRS Network emulation (only for GPRS)	5

7.6. GNSS Scenario Parameters

Parameter	Description	Values
GNSS Scenario File (*.scn)	Configure the Scenario file used for the GNSS simulation	User configurable
Power level offset (dB)	Configure the power level offset applied during the GNSS simulation (in dB)	-40.0 to 40.0

7.7. Unsolicited GPS Assistance Data Parameters

This group of parameters allows you to configure the Information elements pushed to the SET.

Parameter	Description	Values
Almanac	Configure sending of Almanac data	Pushed Not Pushed
UTC Model	Configure sending of UTC Model data	Pushed Not Pushed
Ionospheric Model	Configure sending of Ionospheric model data	Pushed Not Pushed
Navigation Model	Configure sending of Navigation Model data	Pushed Not Pushed

Parameter	Description	Values
DGPS Corrections	Configure sending of DGPS Corrections data	Pushed Not Pushed
Reference Location	Configure sending of Reference Location data	Pushed Not Pushed
Reference Time	Configure sending of Reference Time data	Pushed Not Pushed
Acquisition Assistance	Configure sending of Acquisition Assistance data	Pushed Not Pushed
Real-time integrity	Configure sending of Real-time integrity data	Pushed Not Pushed

7.8. Unsolicited GANSS Assistance Data Parameters

This group of parameters allows you to configure the GANSS assistance data Information Elements sent to the MS/UE/SET.

Parameter	Description	Values
Reference Time	Configure sending of GANSS Reference time IE	Pushed Not Pushed
Reference Location	Configure sending of GANSS Reference Location IE	Pushed Not Pushed
Ionospheric Model	Configure sending of GANSS Ionospheric Model IE	Currently not supported
Additional Ionospheric Model	Configure sending of GANSS Additional Ionospheric Model IE	Currently not supported
Earth Orientation	Configure sending of GANSS Earth Orientation IE	Currently not supported

7.9. Unsolicited GLONASS Assistance Data Parameters

This group of parameters allows the user to configure the GLONASS Information elements pushed to the MS/UE/SET.

Parameter	Description	Values
Time Model	Configure sending of GLONASS Time Model IE	Pushed Not Pushed
Corrections	Configure sending of GLONASS Corrections IE	Pushed Not Pushed
Navigation Model	Configure sending of GLONASS Navigation Model IE	Pushed Not Pushed
Real-Time Integrity	Configure sending of GLONASS Real-Time Integrity IE	Pushed Not Pushed

Parameter	Description	Values
Reference Measurement Information	Configure sending of GLONASS Reference Measurement Information IE	Pushed Not Pushed
Almanac Model	Configure sending of GLONASS Almanac Model IE	Pushed Not Pushed
Auxiliary Information	Configure sending of GLONASS Auxiliary Information IE	Pushed Not Pushed
Data Bit Assistance	Configure sending of Data Bit Assistance IE	Currently not supported
UTC Model	Configure sending of UTC Model IE	Currently not supported

7.10. SUPL General Parameters

This group of parameters allows you to configure the general parameters used for SUPL 1.0.

Because of the general nature of these parameters, a table is not provided for the parameters.

7.11. SUPL 2.0 Parameters

This group of parameters allows the user to configure the general parameters used for SUPL 2.0. Refer to the Parameters section of the *ULTS User Manual* for description of these parameters.

7.12. SMS Configuration Parameters

This group of parameters is not significant for the GNSS Performance tests. Refer to the Parameters section of the *ULTS User Manual* for description of these parameters.

7.13. Control Plane Parameters

This group of parameters is not significant for the GNSS Performance tests. Refer to the Parameters section of the *ULTS User Manual* for description of these parameters.

7.14. ADS Parameters

This group of parameters allows you to configure ADS-related parameters.

Parameter	Description	Values
ADS Test case start string	Configure a custom test case start string	Custom string
ADS Initializing string	Configure a custom string to initialize the ADS system	Custom string
Post Initialization delay (msec)	Configure the post initialization delay in milliseconds	0 – 1000
Send ADS Cold Start message	Configure the ADS cold start message	Yes No
ADS Test Case completed string	Configure the ADS test case completed string	Custom string
Enable ADS Fine Time Synchronization	Enable/disable Fine time synchronization	Yes No

7.15. GNSS Channel 1 Parameters

This section refers to the parameter groups **GNSS Channel 1 Parameters** to **GNSS Channel 8 Parameters**. These groups are only used when the MS-Assisted LBS method is used. In MS-Assisted mode, a significant pass/fail criterion is C/No error. In order to determine C/No error, TestDrive needs to know the power level set for each individual channel. These groups also allow you to set a particular power level for a particular channel.

Parameter	Description	Values
GNSS SV ID	The SV ID present on the given channel	User configurable
Power Level (dBm)	Configure the power level for the SV on the given channel	-170 to -70
GNSS Type	Configure the SV on the given channel as a GLONASS type or GPS type	GPS GLONASS