Spirent eCall/ERA-GLONASS

Test Solution to Verify the Functionality and Conformance of eCall/ERA-GLONASS In-vehicle Systems

Solution Overview

The Spirent eCall/ERA-GLONASS IVS Test Solution is based on the following modules/components:

- Spirent eCall/ERA-GLONASS Simulator
  Platform based on Spirent TTworkbench / OECON Software
- Spirent GSS6700/GSS6300M Global Navigation Satellite System (GNSS) Simulator
- Spirent SR3420 GSM-Wireless Network Emulator

With the modular component design of the test system, the user has the ability to simulate selected parts of the real environment to enable testing of IVS, or the ability to simulate the whole environment for closed loop testing.

With the option of adding a third-party restbus simulator you can complete the system with additional vehicle simulation.

The Spirent eCall/ERA-GLONASS IVS Test Solution provides a complete test setup for verifying the functionality and conformance of the eCall/ERA-GLONASS In Vehicle System (IVS).

The combination of the eCall IVS/PSAP Simulator with a GPS/GLONASS positioning simulator and a GSM-Wireless network emulator allows the user to simulate real-world scenarios and conformance tests in a lab environment. The modular and scalable solution enables IVS development and verification cycles. Spirent’s test automation software controls all elements of the solution and makes testing easy, reliable and repeatable.

Applications

The eCall/ERA-GLONASS IVS Test Solution is an ideal fit for Automotive OEMs, suppliers and component manufacturers:

- R&D testing involving technology feasibility studies and performance modeling and optimization
- Chipset and component verification
- Protocol and functional tests
- System Integration testing

Features & Benefits

- Full PSAP simulation, GPS and/or GLONASS simulation and GSM network emulation
- Includes all CEN/ETSI compliant test scripts
- Modular architecture
- Easy-to-use user interface with Pass/Fail tests
- Reliable and repeatable testing

Realism

- Configurable PSAP simulation
- Industry-leading and highly accurate GPS and/or GLONASS simulation for GNSS performance evaluation
## System Specifications

### Spirent TTworkbench / OECONeCall Simulator Platform

### Features
- Test case support: EU eCall
  - Mandatory as per accelerated procedure
    - 38/52 supported
    - 14/52 Network Access Device (NAD) test cases by Q1/17
  - Optional test cases as per Accelerated Procedure
    - 7/7 supported
- Test case support: ERA-GLONASS
  - 17/17 supported
- Graphical and Text views of decoded MSD
- Generation of test reports (HTML, PDF, Excel, Word)
- Real-time Modem data logging
- Customizable HLAP and In-band modem parameters to simulate border cases

### Benefits
- CEN and ETSI compliant TTCN-3 test scripts
- Create your own TTCN-3 tests with the powerful TTworkbench Professional for development and adversarial testing
- Extension capabilities via open and standardized APIs for further test automation
- Freely combinable with additional test access, e.g. CAN
- GOST compliant TTCN-3 test scripts

### Standards
- CEN TS 16454: Intelligent transport systems—eSafety—eCall end to end conformance testing (2013)
- ETSI TS 103 321: ECall HLAP Conformance Tests
- CEN EN 15722: Intelligent Transport Systems—eSafety—eCall minimum set of data (MSD)
- CEN EN 16062: eCall High Level Application Requirements (HLAP)
- CEN EN 16072: PanEuropean eCall-operating requirements
- EN/ISO 24978: ITS Safety & emergency messages using any available wireless media—Data registry procedures
- ETSI TS 122 101: Universal Mobile Telecommunications System (UMTS); Service aspects and Service Principles
- ETSI TS 124 008: Digital cellular telecommunications system (Phase 2+); UMTS; Mobile radio interface Layer 3 specification; Core network protocols; Stage 3
- ETSI TS 126 267: eCall data transfer; Inband modem solution; General description
- ETSI TS 126 268: eCall data transfer; Inband modem solution; ANSI-C reference code
- ETSI TR 126 969: 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; eCall Data Transfer; Inband modem solution; Characterization Report
- GOST R 54619-2011: Protocols of data transmission from in-vehicle emergency call system to emergency response system infrastructure
- GOST R 54620-2011: General technical requirements
- GOST R 55530-2013: Functional test methods of In-Vehicle Emergency Call System and data transfer protocols

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Technical Specifications (cont’d)
Spirent TTworkbench / OECON—eCall Simulator Platform

Configurability

[Image of configurability diagram]
Spirent eCall/ERA-GLONASS
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System Specifications

GSS6700/GSS6300M Global Navigation Satellite System Emulator for GPS, GLONASS, Galileo and BeiDou

Features
- GPS/SBAS, GLONASS, BeiDou and Galileo supported
- Up to 12 independent channels of each constellation
- Class leading accuracy, fidelity and reliability
- Receiver antenna pattern modelling
- Import motion from logged NMEA
- Selection of scenario generation and simulation control software available
  - SimGen (for GSS6700)
  - SimGENTM: Comprehensive constellation, propagation and vehicle modeling with flexible data capture

Technical Specifications
- Output frequency
  - GPS L1 C/A 1575.42MHz
  - GLONASS L1 C/A (Ch0) 1602MHz
  - BeiDou2 B1 1561.098MHz
  - Galileo E1 OS CBOC 1575.42MHz
- Signal accuracy
  - Pseudorange ±0.002m
  - Pseudorange rate ±0.001m/s
  - Interchannel bias zero
- Signal quality
  - Spurious (Max) -30dBc
  - Harmonics (Max) -35dBc
  - Phase Noise (Max) 0.02 rad RMS
  - Frequency Stability ±5 x 10^-10
- Signal level
  - GPS/SBAS nominal -130dBm
  - GLONASS nominal -131dBm
  - BeiDou nominal -130dBm
  - Galileo nominal -128.5dBm
  - Level control range +15 / -20 dB
  - Level control resolution 0.1dB
  - Level control accuracy ±0.5dB

SR3420 GSM-Wireless Network Emulator

Features
- GSM/GPRS, upgradeable to WCDMA, HSDPA, HSUPA

Technical Specifications
- GSM
  - Number of cells: 2 GSM Cell; up to 2 interfering cells
  - GSM bands: 850, 900, 1800, 1900
  - Voice call supports: AMR 12.2, AMR 5.9
  - Ciphering: A5/1

Standards
- 3GPP

Contact Us
For more information, call your Spirent sales representative or visit us on the web at www.spirent.com/ContactSpirent.

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