V2X & GNSS Simulation

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ADAS iiT offers test solutions for virtual test drive, combining sensor test, Sensor Fusion, HIL, V2X communication, GNSS simulation and integrated data management systems.
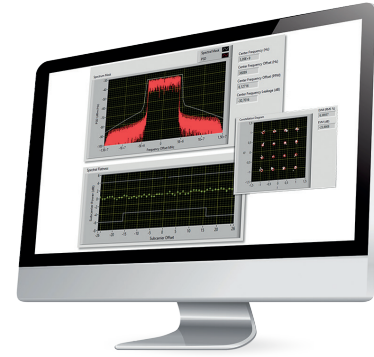
One Stop Test Solution for Autonomous Vehicles

adas iiT
INNOVATION IN TEST

Sensor Fusion Test

EXPERTISE

- Design Verification through Production Test
- Complete Sensor and Connected Car Test Solutions
- Software Simulation
- Sensor Fusion Hardware-in-the-Loop Test
- Services, Support and Training

Vehicles can combine data from multiple sensors and communication information (V2X) to perform environment recognition and make decisions accordingly.

ADAS iiT offers an innovative approach to test this Sensor Fusion technology. The approach combines ADAS sensors as well as the communication environment with a Hardware in the Loop System. Objects and surrounding traffic are simulated in real-time in a virtual environment simulating real world driving scenarios in the lab. Sensor Fusion testing enables manufacturers to proceed with confidence in developing and producing safe autonomous vehicles.

System Example

V2X VALIDATION SYSTEM

- Fully integrated, efficient to use
- Customizable and configurable
- High level test definition
- V2X Day 1 test data base
- V2X HIL for 802.11p/DSRC & cV2C/LTE-V
- Scenario, CAN and GNSS simulation
- Geo-localized data management

The turnkey system design is built on the expertise in RF, V2X and automated test. Baseline are the V2X products of S.E.A. , experienced partners and the NI platform. Customer specific adaptation is part of the system concept.
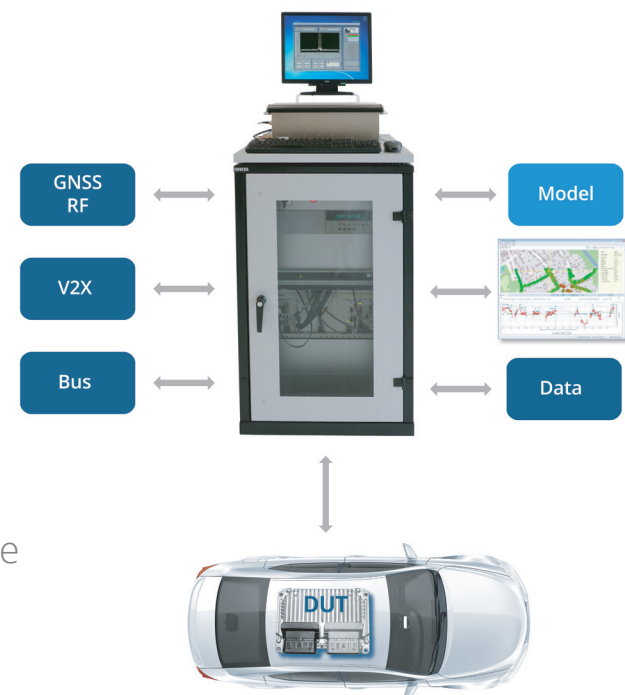
V2X Test Applications

VALIDATION AND VERIFICATION TEST

The turn-key test systems hide the technical complexity for V2X validation from the user, enabling him to concentrate on the test targets and to quickly gain test results. This ensures a fast ROI.

The systems are designed in a modular, open architecture providing the flexibility to interface external tools or integrate into workflows.

Pre-defined test catalogs or user defined high-level scenarios define the test. During the test execution the system simulates, generates and acquires all physical signals and information with the necessary quality. Cost optimized systems align to the different application needs: from simple low-cost Open Loop to HIL configurations. Support for 802.11p/DSRC and cV2X/LTE-V based communication according to US, EU and Chinese V2X standards is available. Testing of V2X on application, component or system level requires consistent modelling and simulation of traffic scenarios by synchronized physical signals like V2X messages for traffic, GNSS-RF signals for DUT position, bus messages (e.g. CAN) for the vehicle state.

Powerful acquisition and data evaluation functions support a fully automated test process.

PRODUCTION TEST

Compact V2X end-of line production test systems integrate all tools for flexible, precise, time and cost effective test of V2X and GNSS function of TCUs or head units. Functional communication test & measurement can be performed in parallel by the optimized S.E.A. 802.11p or LTE-V implementation in the software defined radio from National Instruments. The open architecture integrates with state-of-the-art test automation software, e.g. NI TestStand®..

RESEARCH AND DEVELOPMENT

The software defined radio (SDR) based implementation of channel emulation, extended measurement and communication functions provide the optimum flexibility for measurements and manipulations required by V2X developers and chip designers.

S.E.A. has implemented the 802.11p and LTE-V standards into the SDRs, extended with special additional functions for monitoring and manipulation down to RF-level. Additional measurement functions for RF-compliance and a 8 tap channel emulation completes the V2X toolset available for LabVIEW and C++.

The integration with NI LabVIEW® enables the application of the comprehensive NI platform.