E6953A DSRC COC Test Solution

Single, integrated PXI frame including IEEE802.11p, IEEE1690.3, IEEE1609.4. IEEE1609.2 and J2945/1

The Dedicated Short Range Communications(DSRC) is "a two-way short-to-medium-range wireless communications capability that permits very high data transmission critical in communications-based active safety applications." according to the U.S. Department of Transportation's Intelligent Transportation Systems Joint Program Office. In Report and Order FCC-03-324, the Federal Communications Commission (FCC) allocated 75 MHz of spectrum in the 5.9 GHz band for use by Intelligent Transportations Systems (ITS) vehicle safety and mobility applications."

In general, using DSRC technologies to ensure safe, interoperable connectivity to help prevent vehicular crashes of all types and to enhance mobility and environmental benefits across all transportation system modes.

DSRC Test Challenges

Testing a wired bus such as CAN or LIN is relatively straightforward. However, with DSRC devices must pass demanding certification processes similar to those used for cellular and Wi-Fi communications. This demands that you step back and reassess your test methodology to ensure keeping pace with evolving certification requirements which address multiple layers of the protocol stack, testing should cover all layers to the relevant standards including IEEE1609.3/4/2 & SAE J2945/1.

The OmniAir Certification Operating Council (CoC) develop certification services and provides conformance & verification test per industry-defined standards.

KEYSIGHT TECHNOLOGIES

Keysight E6953A DSRC Certification Operating Council Test Solution

The Keysight E6953A DSRC COC test solution is compact single PXIe solutions and the foundation is Keysight's leadership in wireless technology and measurement science:
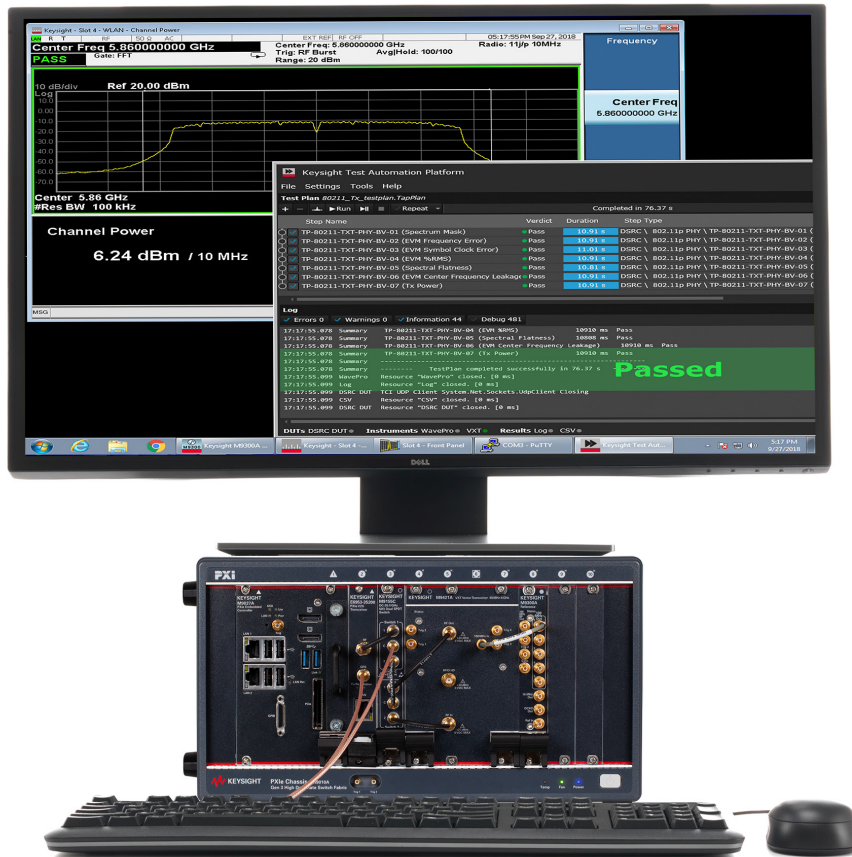
- The Keysight M9421A PXIe vector transceiver (VXT) is purpose-built to enable rapid solution creation and faster throughput in manufacturing test of wireless components, power amplifiers, and RF front-end modules. It covers 60 MHz to 3.8 or 6 GHz with modulation and analysis bandwidths up to 160 MHz. With FPGA-accelerated measurements and deep software, the ready-to-run VXT lets you start closer to your finish line.

- A common set of RF PHY layer measurements is available across Keysight tools for R&D, design verification, certification, and manufacturing test.

- Covers all CoC Test Cases in single, integrated PXI frame including IEEE 802.11p, IEEE 1609.3, IEEE 1609.4, IEEE 1609.2 and J2945/1

- The Keysight Test Automation Platform (TAP) provides powerful, flexible and extensible creation of test sequences and test plans with additional capabilities that optimize your test software development and overall performance. TAP also includes qualified certification test cases.

Signaling Switch Ref.
module module module

GPS Simulator

Benchtop
Source

VXT

5.9GHz RF
(Tx/Rx)

PATHWAVE

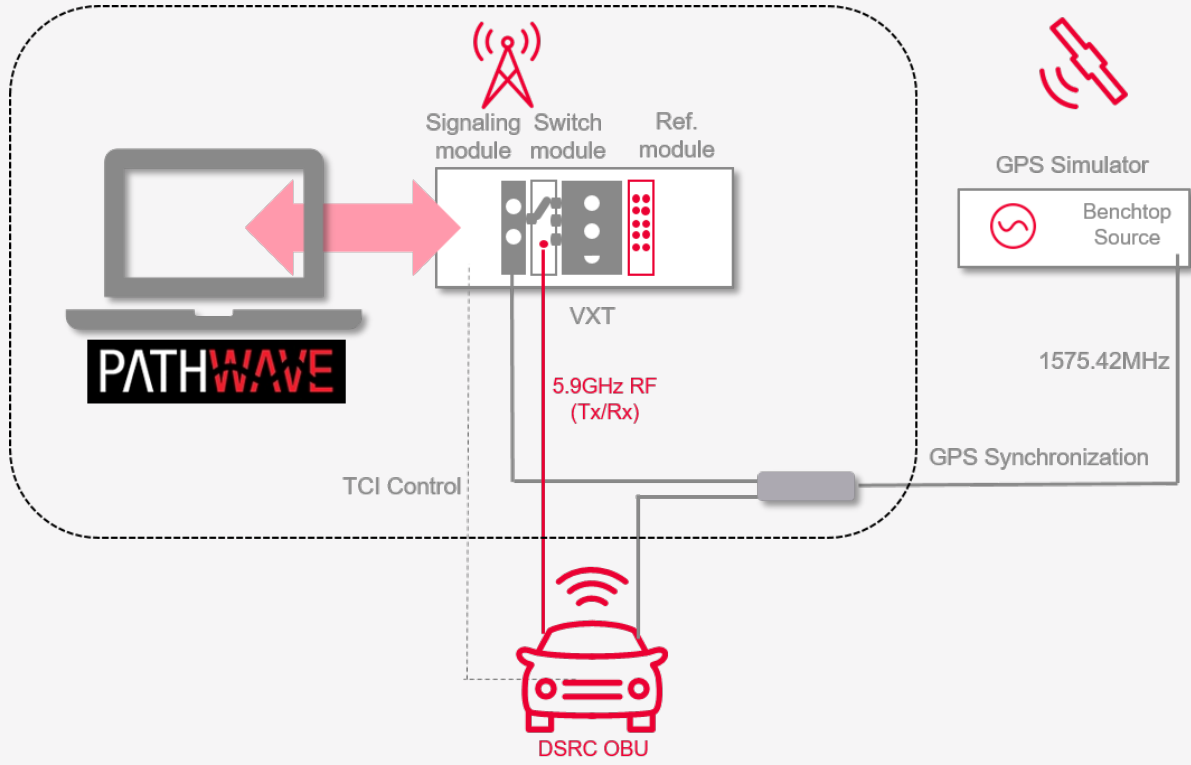1575.42MHz

TCI Control

GPS Synchronization

DSRC OBU

Figure 1: E6953A DSRC COC test solution functional diagram

Hardware Elements

With the E6953A DSRC COC solution, you can leverage your existing PXIe equipment, such as PXI controller, VXT and reference module can be reused for many other wireless application tests.

M9421A VXT

www.keysight.com/find/m9421a

The M9421A VXT is a four-slot PXIe vector signal generator and analyzer, ranging from 60 MHz to 6 GHz with modulation and analysis bandwidth up to 160 MHz. Up to four VXT's can be configured in a single 18-slot PXI chassis, with only a single M9300A frequency reference required. Alternatively, a versatile single-chassis custom solution can be created from Keysight's modular portfolio, dramatically reducing test footprint.

M9037A PXIe Embedded Controller

www.keysight.com/find/m9037a

The M9037A is a four-slot PXIe embedded PC controller with Windows 7

and 10 operating systems designed for high-performance and complex, multi-chassis systems. It is also well-suited for secure environments due to its front-panel, removable solid state drive (SSD).

M9300A PXIe Frequency Reference: 10 MHz and 100 MHz

www.keysight.com/find/m9300a

The M9300A PXIe frequency reference is a PXIe compatible compact modular instrument that can be used with the Keysight M9301A synthesizer, M9310A source output and M9311A modulator to create the world's fastest vector signal generator, the M9381A. It can also be used with the M9301A and M9310A to create a CW source, the M9380A or as the 10 MHz or 100 MHz reference with other PXI solutions. Instrument control is provided through a soft front panel and programmatic interfaces tuned to your application development environment of choice.

Hardware Elements, continued

E6953-35200 DSRC Transceiver module

www.keysight.com/find/e6953a

The E6953-35200 DSRC Transceiver module support all DSRC protocol stack used for COC protocol test cases and fully functioning, configurable real-time On Board Unit(OBU) or Road-Side Unit (RSU).

Software Elements

The KS8400A Test Automation Platform provides powerful, flexible and extensible creation of test sequences and test plans with additional capabilities that optimize your test software development and overall performance. and KS8320xB DSRC COC plugin software can be installed in the M9037A embedded controller or run separately on a PC .   The plugin covers all CoC test cases including IEEE 802.11p, IEEE 1609.3,IEEE 1609.4, IEEE 1609.2 and J2945/1
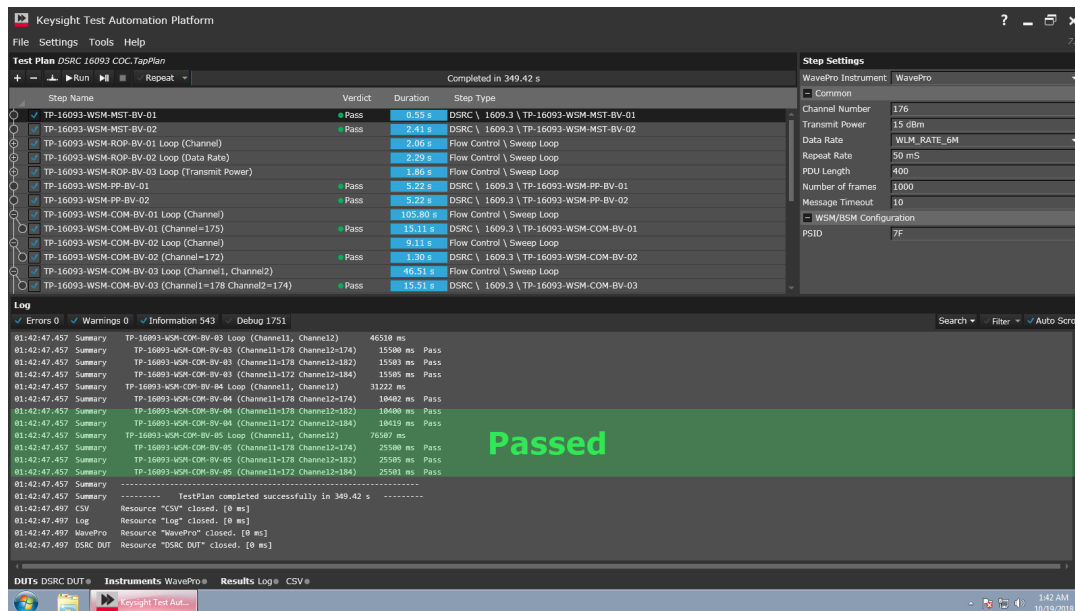
Conclusion

Greater safety on the road starts with verification and certification of your mission-critical DSRC communication systems. To suit a range of requirements and budgets, we offer PXIe solutions—compact and scalable—that support RF measurements and protocol testing.

In addition, Keysight offers a full range of professional consulting services—available worldwide—to help accelerate your time to market and ensure the success of your V2X development projects.

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

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TECHNOLOGIES

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