octoScope Introduces Industry's First MIMO Wireless Channel Emulation Logic Subsystem

octoFade reduces the cost of channel emulation by enabling existing wireless test instruments with standards-based cellular and Wi-Fi channel modeling capabilities

MARLBORO, MA — December 20, 2012 — octoScope, Inc., a wireless solutions and services company, today announced a real-time logic implementation of its multiple input multiple output (MIMO) octoFade™ wireless testing solution. When applied to a wireless signal using digital signal processing, channel emulation makes the signal appear as though it has traversed a realistic indoor or outdoor space, having been reflected from walls, cars, people or other surfaces. With octoFade, channel emulation can be integrated into wireless test equipment such as vector signal generators (VSG) and base-station emulators. octoFade implements channel models defined by standards bodies such as IEEE 802.11 and 3GPP. These channel models emulate the effects of multipath and Doppler fading occurring in typical indoor and outdoor environments.

octoFade is the first computational subsystem of a MIMO wireless channel emulator being offered stand-alone for integration into test instruments or testbeds.

octoFade-3GPP is an RTL solution that implements standards-based 2G/3G/LTE channel models (802.11n/ac models to be added soon). octoFade-module is a PCIe based FPGA board running octoFade-3GPP RTL in a PC system. A powerful applications programming interface (API) lets engineers and integrators configure octoFade logic with 3GPP certification channel models. Engineers can also configure octoFade with custom channel models.

octoFade-3GPP RTL and octoFade-module hardware can be easily integrated with test equipment, such as base station emulators or VSGs, thereby enabling these instruments to also serve as channel emulators, saving end-users the cost of expensive (typically over $100k) stand-alone channel emulators. An excellent platform for channel emulation is the recently announced National Instruments Vector Signal Transceiver (VST), a VSG and a VSA (vector signal analyzer) in a single module. Incorporating state of the art RF front end and FPGA subsystems, the NI VST hardware and open LabVIEW architecture make a perfect 'home' for a multitude of test functions, including channel emulation.

"National Instruments welcomes developers such as octoScope to enable the NI Vector Signal Transceiver with wireless channel emulation functionality. The addition of octoScope's software-based IP extends the use of National Instruments RF instruments to a multitude of important test functions, particularly in an automated quality assurance testbed," said Eric Starkloff, VP of Marketing at National Instruments.

"octoFade-module is the only channel-emulation solution that provides baseband interfaces for integration into test equipment or for use in a variety of radio development environments and testbeds," said Fanny Mlinarsky, president of octoScope. "Competing channel emulation solutions burden users with expensive RF hardware, when in many cases the required hardware already exists in testbeds," she added.

octoFade-3GPP RTL and octoFade-module are a continuation of octoScope's channel emulation solution, octoFade-WiFi. octoFade-WiFi is a software-based implementation of 802.11n/ac channel models offering source code or executable library for test waveform generation.

octoScope plans to integrate channel emulation functionality with its octoBox controlled RF environment testbed to create a powerful laboratory setup capable of emulating real-world conditions, including multipath, Doppler, motion of devices, noise and interference. The octoBox testbed is currently used by engineers to test radio range, throughput, roaming and mesh functionality.

More about octoFade

Wireless connectivity is being incorporated into a widening variety of consumer devices and industrial controls, including phones, pads, PCs, access points, base stations, military and public safety handsets, vehicles, smart meters, sensors and other such devices comprising the emerging Internet of Things (IoT). Modern radios operate in hostile

environments subject to multipath, interference and dynamically changing conditions due to motion of the radios and reflectors.

To ensure adequate performance and to optimize range and throughput of wireless devices, engineers increasingly rely on channel emulation for radio testing. With the emergence of MIMO radio technology, channel emulation has become a mandatory part of radio test in R&D and quality assurance.

For customers requiring outdoor 3GPP channel emulation solutions, octoFade-3GPP RTL and octoFade-module implement real-time LTE, WCDMA and GSM channel models. For customers requiring indoor 802.11n/ac channel models, octoFade-WiFi is currently available as C source code or an executable library for Windows and Linux systems, offering channel modeling capabilities for test waveform creation.

About octoScope

octoScope offers wireless test solutions and services to companies building or deploying wireless communications devices and networks, including LTE, Wi-Fi and Bluetooth. octoScope's test solutions include a family of octoBox small anechoic chambers and octoFade channel emulation logic.

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