PXI RF Vector Signal Analyzer’s Performance Surpasses Traditional Rack-and-Stack Instrumentation

National Instruments today introduced the NI PXIe-5665, a 3.6 GHz RF vector signal analyzer (VSA) that delivers best-in-class RF performance in a cost-effective PXI form factor. The new VSA features industry-leading phase noise, average noise level, amplitude accuracy and dynamic range. The VSA’s PXI platform also facilitates peer-to-peer streaming; includes a flexible multiple input, multiple output (MIMO) architecture for phase-coherent measurements; and offers measurement speeds that are at least five times faster than traditional rack-and-stack instruments - all of which make it ideal for demanding automated RF test applications.

The VSA combines the new NI PXIe-5603 downconverter with the new NI PXIe-5653 local oscillator synthesizer and the NI PXIe-5622, a 150 MS/s intermediate frequency (IF) digitizer. This combination creates an ideal solution for spectrum and wideband vector signal measurements over a frequency range from 20 Hz to 3.6 GHz with analysis bandwidths up to 50 MHz. The VSA features an exceptionally low phase noise of -129 dBc/Hz at a 10 kHz offset at 800 MHz, an average noise level of -165 dBm/Hz, a third-order intercept point of +24 dBm and absolute amplitude accuracy of ±0.10 dB. These specifications make the NI PXIe-5665 the highest performing instrument in its class.

For modulated signal analysis, the VSA’s unique onboard self-calibration tool makes it possible to achieve an IF amplitude response of ±0.15 dB and IF phase linearity of ±0.1 degree. This accuracy facilitates exceptional error vector magnitude performance of less than 0.21 percent for a 256-QAM signal. The VSA’s flexible, modular architecture expands to provide phase-coherent acquisition for MIMO test, as well as a 20 GHz/s scan rate and peer-to-peer streaming for efficient spectrum monitoring. Additionally, engineers can operate the NI PXIe-5665 using its RF list mode function to deterministically step through a user-defined set of RF configurations using internal timing or an external trigger to significantly reduce test time.

Because the NI PXIe-5665 joins a product line of more than 1,500 software-defined

PXI modular instruments, engineers can mix and match the VSA with a variety of modules and control an entire automated test system with NI LabVIEW graphical system design software. This makes PXI systems ideal for a multitude of automated test applications.

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