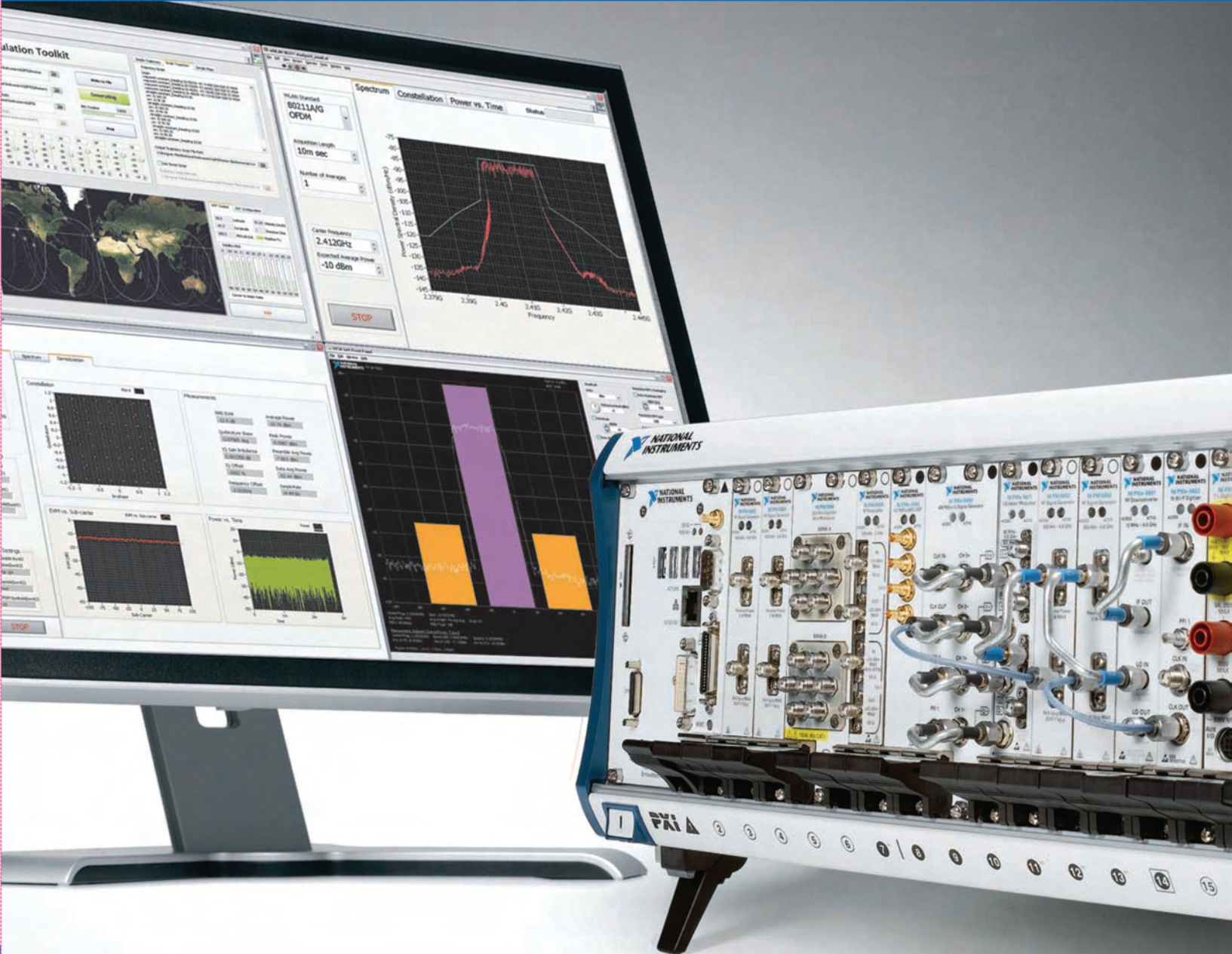


RF and Wireless Test

Flexible

Fast

Cost-Effective

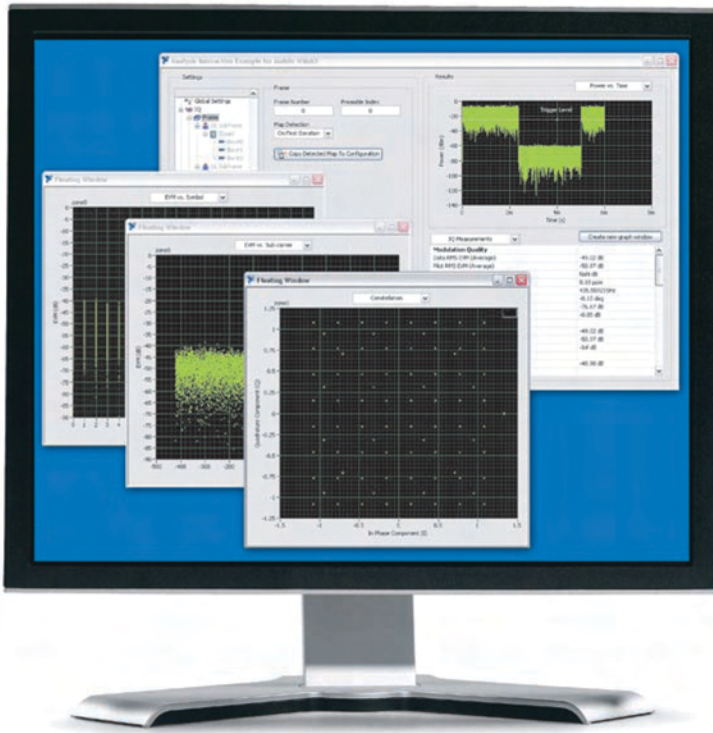


Software-Defined RF Instruments

Maximize test coverage for today's wireless standards and tomorrow's technologies with software-defined RF instrumentation from National Instruments. This approach provides the flexibility to define your instrument's test capabilities in software such as NI LabVIEW, so you can future-proof your system to support tomorrow's measurements.

LabVIEW Graphical Programming

LabVIEW simplifies the task of programming software-defined RF instrumentation. You can choose your channel coding, define a modulation or demodulation scheme, add impairments, and perform many common RF measurements or apply custom analysis and visualization techniques.



NI LabVIEW Modulation Toolkit

Use the vector signal analyzer toolkit for custom modulation/demodulation measurements and communications system design.

NI Spectral Measurements Toolkit

Perform customized spectrum measurements such as occupied bandwidth, ACP, peak searches, and others.

NI Measurement Suite for WLAN

Perform measurements such as power, EVM, and spectral mask for IEEE 802.11a/b/g/n.

NI Measurement Suites for WiMAX

Take advantage of these full RF characterization suites with interactive soft front panels for Fixed and Mobile (OFDM and OFDMA) WiMAX devices.

NI GPS Simulation Toolkit

Generate highly customizable GPS scenarios with up to 12 GPS satellites for up to 24 hours.

“We successfully standardized on the National Instruments test platform with NI TestStand, NI LabVIEW, and PXI to reduce our production test costs by 74 percent and save millions of dollars this year and for years to come.”

– Kenneth Parfitt, Engineering Manager, RF Communications, Harris Corporation

NI RF Modular Instrumentation

National Instruments offers high-performance RF instrumentation up to 6.6 GHz. NI software-defined RF analyzers and generators are optimized for automated measurements, delivering unprecedented flexibility and speed.

RF Signal Analyzers

- Perform custom spectral measurements
- Demodulate MSK, PSK, QAM, and more
- Analyze GSM/EDGE/WCDMA, WLAN, WiMAX, and more
- Achieve fast tuning times (<400 μ s) with RF list mode supported on the NI PXIe-5663E



	NI PXI-5660	NI PXI-5661	NI PXIe-5663/5663E
Frequency range	9 kHz to 2.7 GHz	9 kHz to 2.7 GHz	85 MHz to 6.6 GHz
3 dB instantaneous bandwidth	20 MHz	20 MHz	50 MHz
Streaming bandwidth	1.25 MHz	20 MHz	50 MHz
Phase noise at 1 GHz (10 kHz)	-95 dBc/Hz	-95 dBc/Hz	-110 dBc/Hz
RMS EVM (64-QAM) ¹	1.9%	1.7%	0.5%
Typical noise floor at 1 GHz	-144 dBm/Hz	-144 dBm/Hz	-158 dBm/Hz
Typical RMS EVM (WLAN) ²	—	-38 dB	-44 dB
Typical RMS EVM (WiMAX) ²	—	—	-48 dB

¹Typical at 825 MHz and -10 dBm. Measurement performed over 2,000 symbols with a root raised cosine filter with alpha = 0.22, symbol rate = 3.84 MS/s.

²Typical at 2.4 to 2.5 GHz and -10 dBm.

RF Signal Generators

- Take advantage of continuous wave and vector generators
- Generate waveforms for GSM/EDGE/WCDMA, GPS, WLAN, and WiMAX
- Play back RF waveforms from hard disk with streaming technology
- Achieve fast tuning times (<300 μ s) with RF list mode supported on the NI PXIe-5673E



	NI PXI-5671	NI PXIe-5672	NI PXIe-5652	NI PXIe-5673/5673E
Frequency range	250 kHz to 2.7 GHz	250 kHz to 2.7 GHz	500 kHz to 6.6 GHz	500 kHz to 6.6 GHz
Signal types	Modulated	Modulated	CW/FM/OOK	Modulated
1 dB instantaneous bandwidth	20 MHz	20 MHz	20 MHz	100 MHz
Streaming bandwidth	6.66 MHz	20 MHz	—	100 MHz
Phase noise at 1 GHz (10 kHz)	-95 dBc/Hz	-95 dBc/Hz	-112 dBc/Hz	-110 dBc/Hz
RMS EVM (QPSK) ¹	1.2%	1.2%	—	0.8%
RF List Mode support	—	—	✓	✓

¹Typical at 825 MHz and -10 dBm. Measurement performed over 2,000 symbols with a root raised cosine filter with alpha = 0.22, symbol rate = 3.84 MS/s.

Related NI Products

Supplement your software-defined RF instrumentation with switching, storage, and more. These related products integrate seamlessly with NI RF products.



RF Switching

- Switching bandwidth up to 26.5 GHz
- Multiplexer, matrix, and general-purpose relay configurations
- Minimal insertion loss, reflection, and crosstalk with maximum signal repeatability
- Deterministic scanning and onboard memory



USB RF Power Meter

- Wide frequency range from 50 MHz to 6 GHz
- High dynamic range of 63 dB (-40 to +23 dBm)
- Typical amplitude linearity of ± 0.18 dB
- Typical power consumption of 100 mA



RF Amplifier and Attenuator

- 100 kHz to 8 GHz
- Maximum output power at -25 dBm
- Noise figure as low as 5 dB
- Up to 60 dB total gain
- More than 60 dB total attenuation



RAID Storage for RF Record and Playback

- Both embedded and external RAID solutions
- RAID volume sizes up to 3 TB
- Ability to read and write speeds up to 600 MB/s
- Continuous recording for five hours with NI PXI-5661 (20 MHz bandwidth)
- Continuous recording for two hours with NI PXIe-5663E (50 MHz bandwidth)

Fast, Flexible, and Cost-Effective

Choose software-defined NI RF instrumentation to improve the performance and longevity of your RF test systems. NI RF instrumentation is ideal for design and test engineers who are automating measurements and looking to achieve faster measurements, greater flexibility, and a more cost-effective approach to test.

Fast

NI RF instrumentation takes advantage of the latest computing technologies, including multicore processors and the PCI Express data bus, to perform common RF measurements up to 10 times faster than traditional instrumentation. Because measurement speed is determined by processor performance, you can upgrade PXI instrumentation systems over time for additional improvements in measurement speed.



Flexible

The NI approach combines the power of LabVIEW programming with the modularity of PXI. As a result, you can build a single PXI system that meets your specific RF test requirements, including device test for multiple wireless communications standards. Plus, by using PXI, you can integrate additional instrumentation for DC and mixed-signal test.



Cost-Effective

Offered at an extremely competitive price, the NI RF test platform helps you minimize the cost of testing wireless devices. By investing in the platform today, you also protect yourself from future instrumentation costs because the software-defined platform can easily adapt to your changing needs.

Multiple Standards, One Platform

From ADSL to ZigBee, the NI RF test platform covers your wireless test needs today and prepares you for tomorrow's challenges. Using the NI software-defined instrumentation platform, engineers around the world have deployed automated test systems for a variety of applications including the following:

- Bluetooth
- Broadcast radio
- Broadcast video
- Custom ISM-band
- GPS
- GSM/EDGE
- LTE
- MIMO
- RFID
- WCDMA
- WiMAX
- WLAN
- ZigBee

Systems Integration

NI works with a number of companies that specialize in wireless test system design. Many of these companies maintain systems based on NI technology that can be used immediately to test several of the wireless standards listed above.



U.S. Corporate Headquarters 866 463 5417

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