Keysight Technologies
Accelerate PXI VSA Measurements with X-Series Measurement Applications for Modular Instruments

Accelerate PXI VSA manufacturing testing and achieve measurement consistency from design to manufacturing with the same X-Series measurement applications available for use with X-Series analyzers.

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Overview

Expand the capabilities of your PXIe vector signal analyzers (PXI VSAs) with Keysight Technologies, Inc. library of X-Series measurement applications – the same applications used to increase the capability and functionality of its X-Series signal analyzers. Eleven of the most popular applications are now available for use with Keysight's M9391A PXIe VSA and the new M9393A PXIe performance VSA. When you combine the raw hardware speeds of the PXI VSAs and the X-Series measurement applications for modular instruments, you can test more products in less time while ensuring measurement continuity from design to manufacturing.

X-Series measurement applications for modular instruments transform PXI VSAs into standards based RF transmitter testers. They provide fast RF conformance measurements to help you test your components and devices in high-volume manufacturing.

Use these applications with your new PXI VSA and achieve measurement consistency and integrity across your design and test flow.
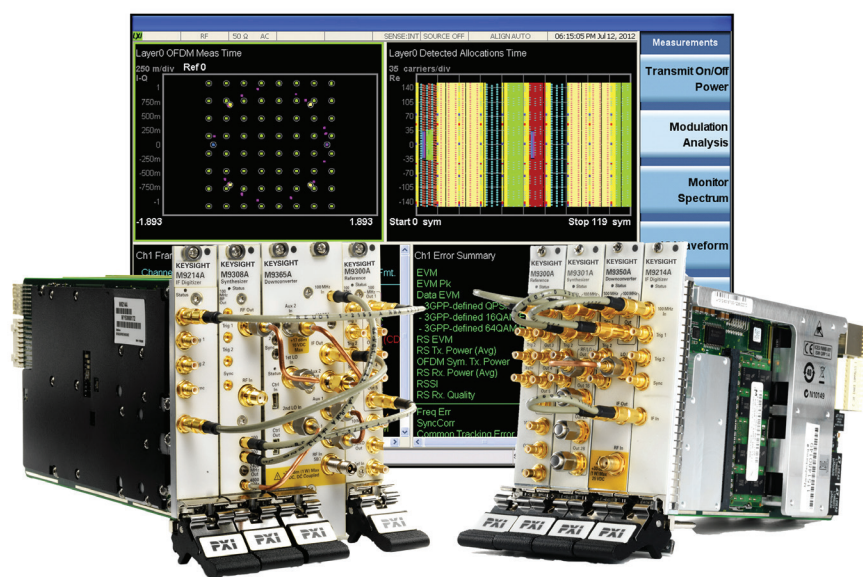

Figure 1. PXI Vector Signal Analyzers and X-Series measurement application for LTE FDD.

Figure 2. There are now eleven X-Series measurement applications for the M9391A PXIe VSA and M9393A PXIe performance VSA.

Benefits of X-Series Measurement Applications for Modular Instruments

Innovative speed optimized drivers and a unique resource manager provide direct access to hardware drivers for fastest power and spectrum based measurements, while simultaneously using the X-Series applications for fast modulation quality measurements.

The X-Series measurement applications for modular instruments are the same as those available for Keysight's X-Series signal analyzers. Consistent and intuitive user interfaces reduce the need for re-training or familiarization and also simplify measurement setup. Programming consistency including SCPI compatibility across platforms to enable software re-use from bench top to modular and speed test system development. This consistency reduces risk in the transition from development phase to manufacturing.
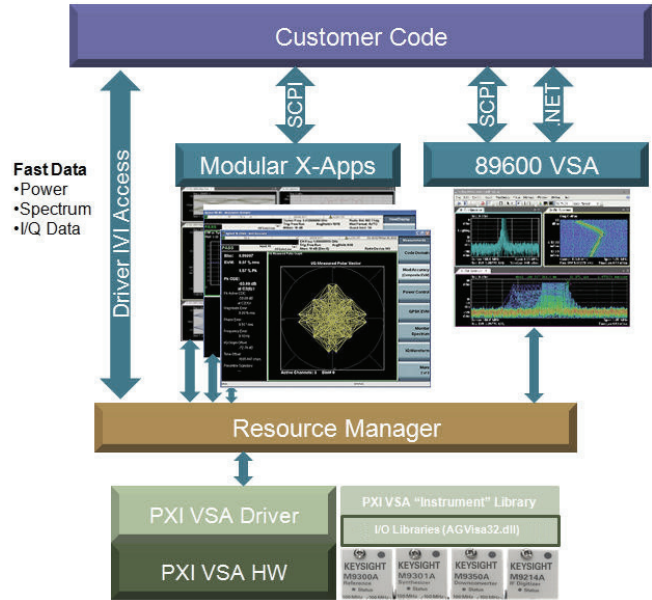

Figure 3. Resource manager, included with all X-Series applications for modular instruments enables simultaneous access to the instruments driver, X-Series measurements and 89600 VSA software for optimized performance.

X-Series measurement applications for modular instruments available for use with the M9391A PXIe VSA and M9393A Performance PXIe VSA

Application	Model number
Analog Demodulation	M9063A
VXA Vector Signal	M9064A
GSM / EDGE / EVO	M9071A
cdma2000®/ cdmanOne	M9072A
WCDMA / HSPA+	M9073A
1xEV-DO	M9076A
WLAN 802.11a/b/g/n/ac	M9077A
TD-SCDMA / HSPA	M9079A
LTE/LTE-A FDD	M9080B
Bluetooth®	M9081A
LTE/LTE-A TDD	M9082B

30-day trials

30-day free trials allow you to try each application's features and functionality on your own PXI VSA.

Cellular Communications

M9080B LTE/LTE-A FDD

- Supports 3GPP Release 11 LTE and LTE-Advanced standards
- Downlink and uplink analysis in a single option
- Transmitter characteristic measurements including
  - NEW: Cumulative ACLR (CACLR) and cumulative SEM for intra-band non-contiguous carrier aggregation
  - Base station (eNB): EVM, freq error, DL RS power, RSTP, OSTP, SEM, ACLR
  - User equipment: EVM, freq error, I/Q offset, in-band emissions, SEM, on/off time mask, ACLR
  - Multiple, color-coded result views: EVM vs. subcarrier, symbol, slow, resource block
- Transport layer channel decoding

M9082B LTE/LTE-A TDD

- Supports 3GPP Release 11 LTE and LTE-Advanced standards
- Downlink and uplink analysis in a single option
- All DL/UL and special subframe length configurations
- Transmitter characteristic measurements including
  - NEW: Cumulative ACLR (CACLR) and cumulative SEM for intra-band non-contiguous carrier aggregation
  - Base station (eNB): EVM, freq error, DL RS power, RSTP, OSTP, transmit on/off power, SEM, ACLR
  - User equipment: EVM, freq error, I/Q offset, in-band emissions, SEM, on/off time mask, ACLR
  - Multiple, color-coded result views: EVM vs. subcarrier, symbol, slow, resource block
- Transport layer channel decoding

M9073A W-CDMA/HSPA+

- W-CDMA, HSPA and HSPA+ per 3GPP release 99 to 8
- Downlink and uplink analysis in a single option
- Transmitter measurements including
  - Downlink: EVM, freq error, CPICH power, 64 QAM RCDE, SEM, ACLR
  - Uplink: EVM, freq error, PkCDE, RCDE, slot power, SEM, ACLR
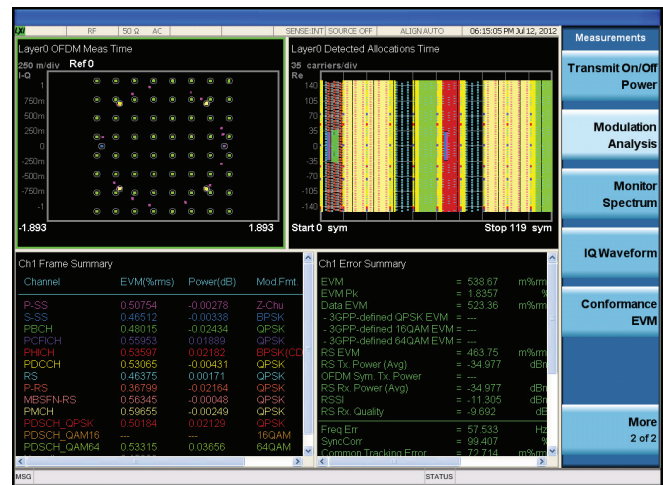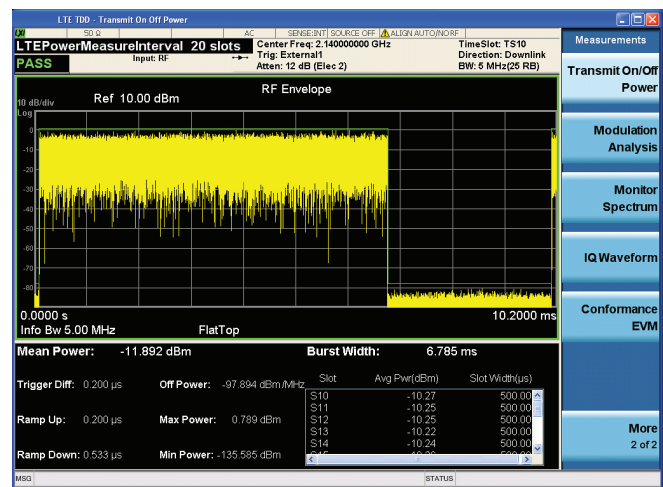- Automatic detection of all channels and signals

Figure 4. LTE FDD

Figure 5. LTE TDD

Figure 6. W-CDMA/HSPA+

M9071A GSM/EDGE/EVO

– GSM, EDGE and EDGE Evolution per 3GPP GERAN standard
– Analysis of both base and mobile stations in a single option
– Transmitter measurements including
  – Base station: EVM, phase and frequency error, output RF spectrum (ORFS), power vs. time (PvT)
  – Mobile station: EVM, phase and frequency error, ORFS, PvT, TX band spur
– Multicarrier BTS (MCBTS) and adaptive QPSK (AQPSK) modulated VAMOS measurements per release 9 of 3GPP TS 45 standard

M9079A TD-SCDMA/HSPA

– TD-SCDMA, TD-HSDPA/HSUPA/8PSK per 3GPP release 99 to 8
– Downlink and uplink analysis in a single option
– Transmitter measurements including
  – Downlink: EVM, freq error, power vs. time, transmit power, code domain power, SEM, ACLR
  – Uplink: EVM, freq stability, transmit on/off power, PkCDE, SEM, ACLR
  – Multiple result views: constellation, diagram, code domain, numeric display, spectrum, time domain

M9076A 1xEV-DO

– 1xEV-DO per rel 0, rev A and rev B of 3GPP2 standard
– Analysis of both forward link and reverse link analysis in a single option
– Transmitter measurements with pass/fail per 3GPP2 standard including
  – Modulation accuracy: composite EVM and Rho, CDP, CDE, I/Q chip error
  – Code doman power: displayed in Hadamard code or bitreverse order
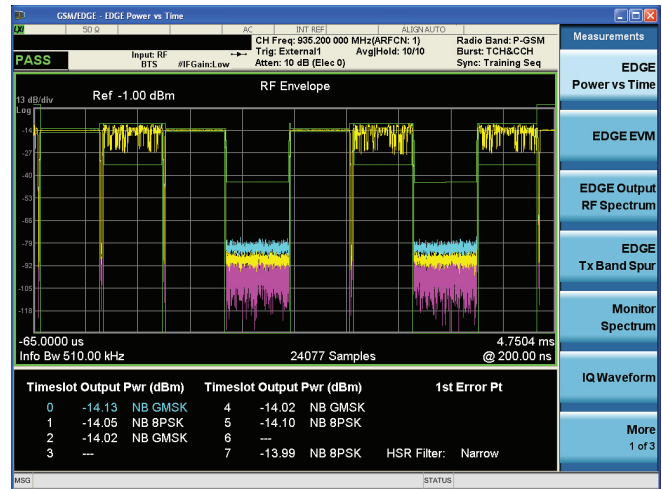 – Power and spectrum measurements: channel power, ACP, SEM and spurious emissions
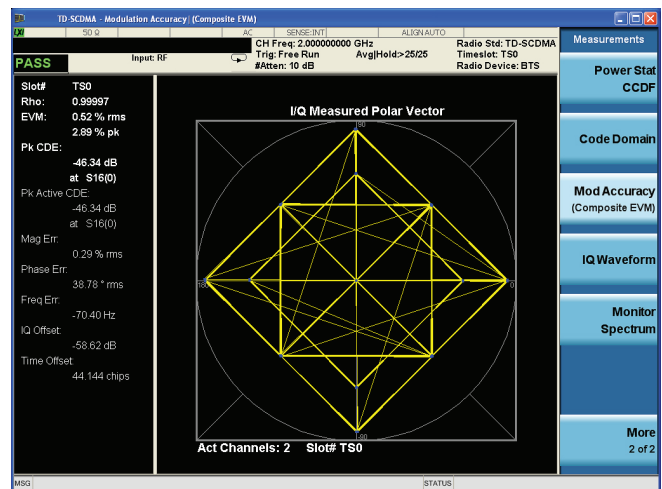

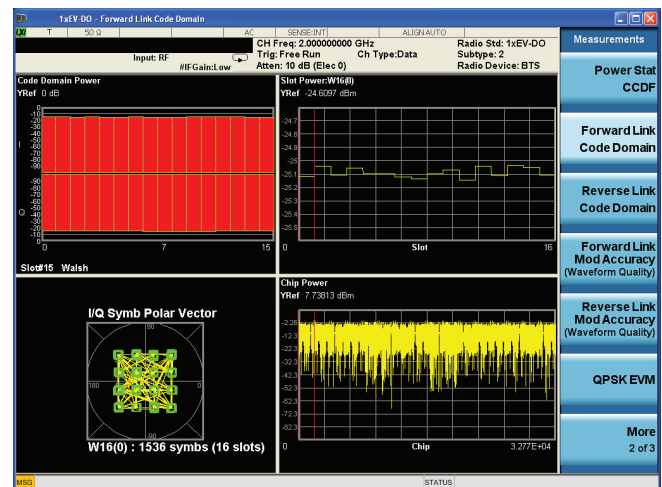Figure 7. GSM/EDGE/EVO

Figure 8. TD-SCDMA/HSPA

Figure 9. 1xEV-DO

M9072A cdma2000/cdmaOne

– cdma2000 and cdmaOne per 3GPP release A
– Analysis of both forward link and reverse link analysis in a single option
– Transmitter measurements with pass/fail per 3GPP2 standard including
  – Modulation accuracy: composite EVM, Rho, frequency error, I/Q offset
  – Code doman power: displayed in Hadamard code or bitreverse order
  – Power and spectrum measurements: channel power, ACP, SEM and spurious emissions
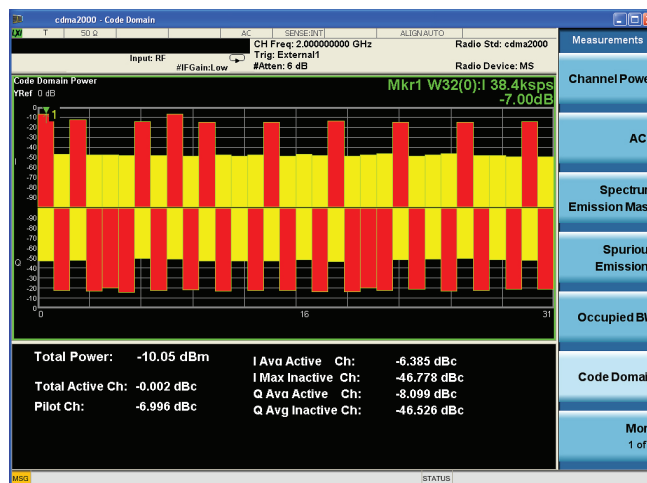

Figure 10. cdma2000/cdmaOne

Wireless Connectivity

M9077A WLAN 802.11a/b/g/n/ac

- – IEEE 802.11a/b/g/n/ac standard
- – Standards based measurements with pass/fail tests
  - – I/Q demodulation measurements: modultion accuracy, power vs. time, spectral flatness, power stat, CCDF
  - – Swept spectrum measurements: spectrum emissions mask, spurious emissions, occupied bandwidth, channel power
- – Legacy/mixed/greenfield mode for 802.11n signals
- – Full support for 802.11ac with 20/40/80/160 MHz, 80+80 MHz and 256 QAM
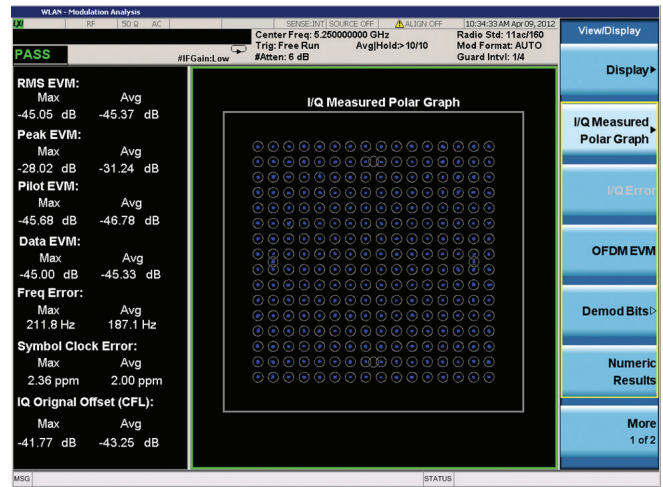- – Custom demodulation settings for analyzing 802.11j, turbo mode, 802.11p signals

Figure 11. WLAN 802.11a/b/g/n/ac

Bluetooth

- – Compliant with **Bluetooth** Core Specification Version 2.1+ EDR and Low Energy (part of Bluetooth 4.0)
- – One-button transmitter measurements, including
  - – Modulation: deviation, initial carrier frequency tolerance (ICFT), carrier frequency drift, EDR frequency stability, and EDR modulation accuracy
  - – Spectrum measurement: output spectrum bandwidth, adjacent channel power, and EDR in-band spurious emissions
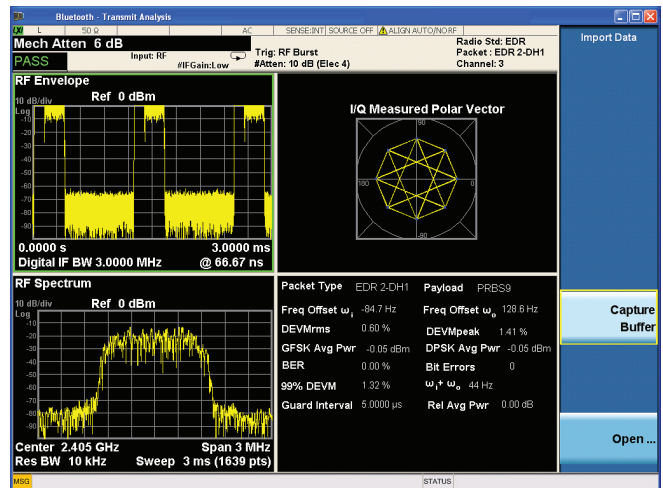 - – Multiple result views: RF envelope, demodulation waveform, RF spectrum, numeric display

Figure 11. Bluetooth

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General Purpose

Analog demodulation

– Demodulates AM, FM, or PM signals
– Demodulates FM stereo/RDS signals
– Display modulation metrics such as AM depth, FM deviation, PM deviation, THD, and SINAD audio filters
– Multiple measurement views:
  – View RF spectrum, demodulated waveform, AF spectrum, and demodulation metrics tables at the same time
  – View MPX, mono, stereo, left, right
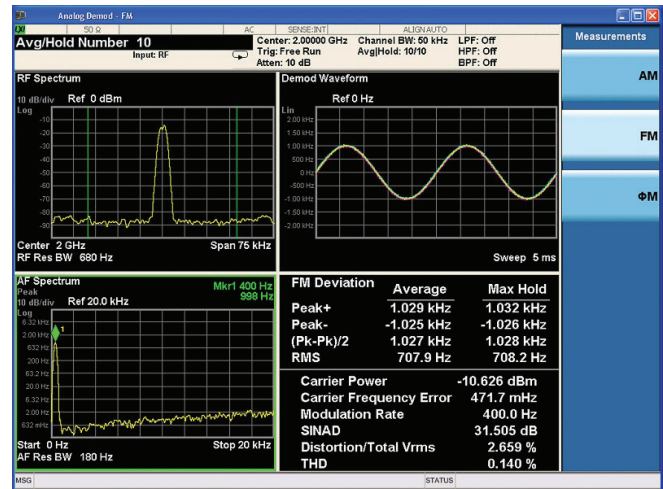 – View RDS/RBDS decoding results

Figure 19. Analog demodulation

VXA vector signal analysis

– Vector analysis: FFT-based spectrum and time domain
– Analog demodulation: AM, FM, PM
– Digital demodulation
  – > 30 modulation formats, including 2 to 16 FSK, QPSK, 16 to 1024QAM
  – > 25 standards presets, including cellular, wireless networking, digital video
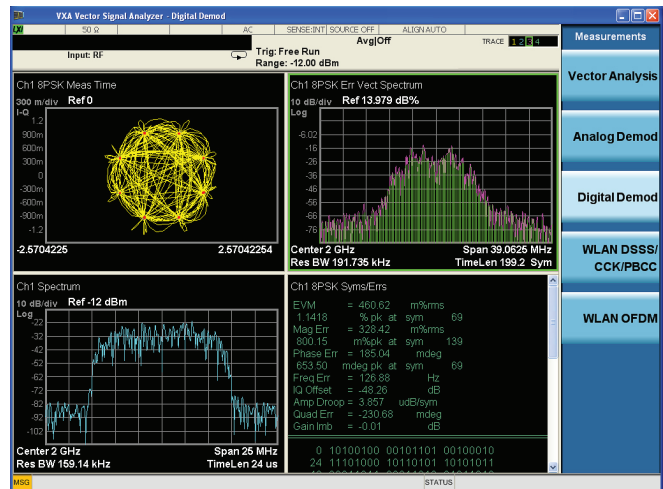 – 7 filters and a user-defined filter

Figure 21. VXA vector signal analysis

Choosing between X-Series Measurement Applications and 89600 VSA software

X-Series measurement applications provide format-specific, one-button measurements for X-Series analyzers and modular PXI VSAs. With fast measurement speed, SCPI programmability, pass/fail testing and simplicity of operation, these applications are ideally suited for design verification and manufacturing. The 89600 VSA is the industry-leading measurement software for evaluating and troubleshooting signals for R&D and design valida-tion. Supporting numerous measurement platforms and multiple measurement channels, the 89600 VSA provides flexibility and sophisticated measurements tools essential to find and fix signal problems. Recent enhancements for the modular PXI VSA platforms (89601B-SSA) provide fast spectrum measurements with benchtop analyzer SCPI programming compatibility.

www.keysight.com/find/89600B

Transportable Licenses

Keysight's X-Series measurement applications for modular instruments provide a transportable perpetual license that supports up to four measurement channels, in one PXI chassis.

Ordering Information

Model	Description
M9063A	Analog Demodulation measurement application
M9064A	VXA Vector Signal Analysis measurement application
M9071A	GSM/EDGE/EVO measurement application
M9072A	cdma2000/cdmaOne measurement application
M9073A	W-CDMA/HSPA+ measurement application
M9076A	1xEV-DO measurement application
M9077A	WLAN 802.11a/b/g/n/ac measurement application
M9079A	TD-SCDMA/HSPA measurement application
M9080B	LTE/LTE-A FDD measurement application
M9081A	*Bluetooth* measurement application
M9082B	LTE/LTE-A TDD measurement application

Each application supports up to four measurement channels in one PXI chassis.

Related Products

Model	Description
M9391A	PXIe vector signal analyzer
M9393A	PXIe performance vector signal analyzer (9 kHz to 27 GHz)
M9018A	18-slot PXIe chassis
M9036A	PXIe embedded controller
M9037A	PXIe high performance embedded controller
89601B-SSA	Spectrum analysis software

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