Agilent N6422C
WiMAX™ Wireless Test Manager

Technical Overview

Get your WiMAX devices to market quickly with reduced test development costs

Agilent's test manager software provides ready-to-use tests, test plans, test sequencing, and menu-selectable hardware support for quick and easy automation of device verification and pre-conformance test processes. An integrated test development wizard simplifies making software modifications and adding user-defined tests and specific module calibration. The test manager runs on a Windows® PC and supports Agilent test system hardware.

The N6422C WiMAX wireless test manager is the development and run-time version, which includes the source code to allow you to customize the product to your own needs. This test manager requires customer-supplied Microsoft® Visual Studio® .NET software. The N6423C is a run-time only version.

Simplify Your Automated Test Development and Support

- Ready-to-use tests, test plans, and test sequencing
- Results can be logged, compared, and post processed
- Tailor test steps and test parameters by using wizards to reduce time on coding
- Adaptable for WiMAX module calibration and control
- Customize test development with the power of Microsoft Visual Studio.NET

Agilent Technologies

Automate tests quickly with the wireless test manager for WiMAX. This wireless test manager software saves time and resources when automating device testing. Designed for use with Agilent's E6651A Mobile WiMAX™ test set, the test manager makes test development, test execution, and support easier than ever. Applicable to RF design verification and pre-conformance test, the test manager includes a test executive, WiMAX-specific tests, easy-to-use interfaces, Visual Basic® .NET programming and Windows PC compatibility.

With this exciting new product, Agilent helps you get your designs to market faster and more efficiently, and continues to provide comprehensive tools for all stages of your product lifecycle. So, as you move WiMAX forward, Agilent clears the way.

Simplify and expedite test efforts

Designed specifically for engineers engaged in WiMAX design verification, the test manager eliminates the frustrating complexity associated with automating and optimizing device testing. Why struggle with computer control and data management issues, when the wireless test manager lets you focus on test and supplements your WiMAX testing expertise with Agilent experience and measurement knowledge?
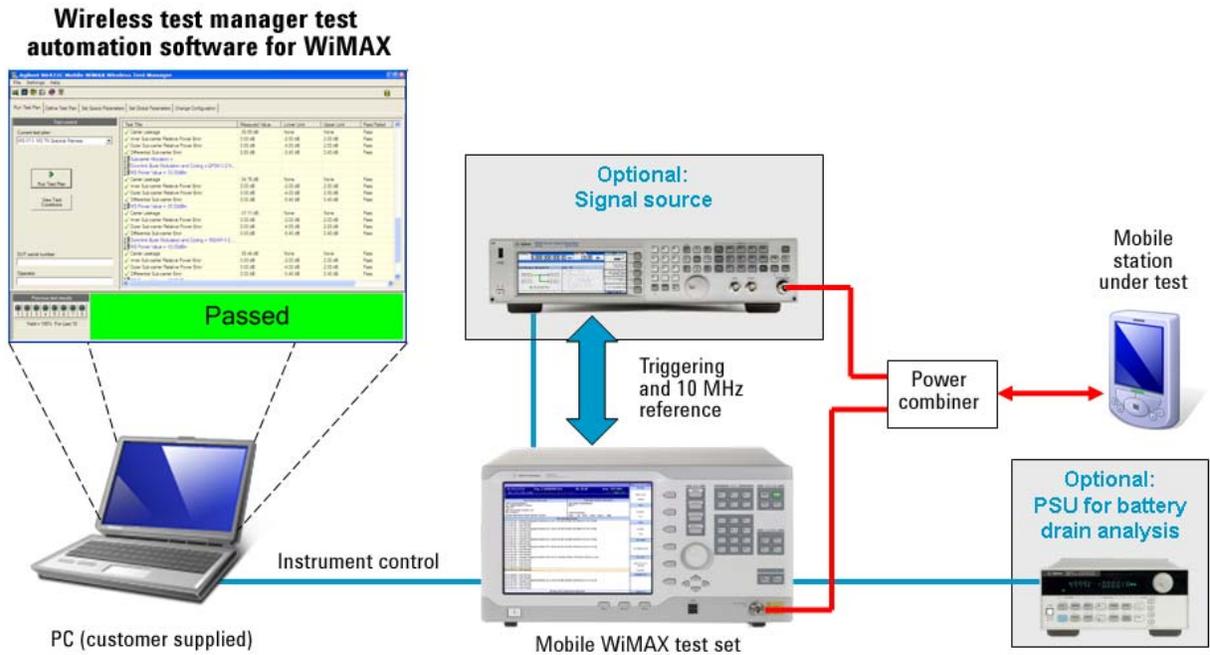
The test manager makes it simple to configure system hardware. It provides for point-and-click set-up of the E6651A test set, selected signal sources, and power supplies.

Use Agilent or custom test plans

Run a pre-defined Agilent test plan, customize an existing plan, or create your own custom test plan. The test manager makes it easy to modify test parameters, adjust test limits, change the order of test steps, or build your own test plan – without programming.

Create custom test steps, support additional hardware

With the N6422C development version, you can customize your test routines to add new measurements, device control, and calibration routines. A test wizard guides you through adding custom steps, and a device control template file is provided for easy insertion of device-specific control commands. The wizard automatically adds most of the programming code required for a new step. To complete the step, add the Visual Basic programming code for calculation, device control, and instrument control. Once added, custom steps become part of the test menu and can be used without additional programming.

Wireless test manager test automation software for WiMAX

Passed

PC (customer supplied)

Instrument control

Optional: Signal source

Triggering and 10 MHz reference

Mobile WiMAX test set

Power combiner

Mobile station under test

Optional: PSU for battery drain analysis

Optional hardware and software expand test coverage

Control your WiMAX devices

Device control can easily be added to both the N6422C and N6423C to support WiMAX devices. The flexibility of the N6422C development version allows you to customize your device control and build control commands specific to your WiMAX device. Developers can use Visual Studio to create custom software, or call existing DLLs from the test manager. Example files are available for users of certain chipsets, making it easy to automatically control devices during test.

Overcome battery powered device testing challenges

When coupled with Agilent's mobile communications DC sources and device characterization software, it is possible to add battery drain analysis capabilities. More than just measuring battery run time, battery drain analysis allows you to characterize current out of the battery and make tradeoffs in design that impact the current drain and battery life. By providing CCDF measurements and long-term battery drain data logging, the 14565B device characterization software with test automation and 66319/21 mobile communication DC sources provide a complete solution for analyzing current drain so that you can optimize your device designs to achieve maximum battery run time.

- Test designs simulating different battery conditions with programmable output resistance
- Fast and easy battery drain test setup
- Digitize current waveforms
- Accurately log battery current drain measurements from 10 seconds to 1,000 hours at 64,000 measurements per second

Common software savings
Flexibility to meet your test needs

The test manager allows you to use LAN and GPIB interfaces, as appropriate, to control instruments. The software utilities allow you to run the wireless test manager for WiMAX as a remote application, manage path loss, convert the user interface to local language, and limit user capability. Run conditions can be set to stop, continue, or retry on failure.

Wireless test manager allows you to:
- Integrate with other test executives
- Generate custom XML measurement reports
- Produce graphs from measurement data
- Export results for off-line analysis

The wireless test manager for WiMAX is easy to learn and simple to use. You will not have to learn complex applications and multiple programming languages to support test. Since Agilent's interfaces and development tools are the same across all of its wireless test manager products, leveraging your knowledge of the software with other technologies has never been easier.

Multiple technologies

Also available for the key wireless technologies, other wireless test manager products support W-CDMA, cdma2000®, 1xEV-DO, IS-95, GSM, GPRS, EGPRS, AMPS, WLAN, and *Bluetooth*® testing.

Order information
- N6422C WiMAX wireless test manager, development license and software
- N6423C WiMAX wireless test manager, run-time license and software

The N6422C can be used as part of a pre-conformance test system and supports the performance of the following Wave 1 RF measurements, as referenced in the WiMAX Forum® Mobile RCT test specification v1.0.0. Note that while users may choose to add their own fader control, this is not provided as part of the wireless test manager for WiMAX.

Pre-conformance test coverage		Test configuration supporting measurements	
Test case reference	Test case name	E6651A only	E6651A + signal source
MS-01.1	MS receiver maximum tolerable signal	No	Yes[1]
MS-02.1	MS receiver preamble	Partial[2]	Yes[3]
MS-03.1	MS receiver cyclic prefix	Merged with MS-01.1	
MS-04.1	MS receiver RSSI measurements	Partial	Yes
MS-05.1	MS receiver physical CINR measurements	No	Partial[4,6]
MS-07.1	MS receiver adjacent and non-adjacent channel selectivity	No	Yes
MS-08.1	MS receiver maximum input signal	Yes	-
MS-09.1	MS receiver sensitivity	Partial[5]	-
MS-10a.1	MS transmit HARQ	No	-
MS-10b.1	MS receive HARQ	No	-
MS-11.1	MS receiver PHY support for handover	No	Yes[6]
MS-12.1	MS transmitter modulation and coding, cyclic prefix, and frame duration timing	Yes	-
MS-13.1	MS transmit ranging support	Yes[6]	-
MS-14.1	MS transmitter modulation and coding	Merged with MS-12.1	
MS-15.1	MS transmit power dynamic range and relative step accuracy	Yes	-
MS-16.1	MS transmit closed and open loop power control	Yes[6]	-
MS-17.1	MS transmitter spectral flatness	Yes	-
MS-18.1	MS transmitter relative constellation error	Yes	-
MS-19.1	MS transmit synchronization	Yes[6]	-
MS-20.1	MS transmit/receiver switching gap	Yes[6]	-

PER is measured by ping method, rather than ACK/NACK method.

---

1. Uses a limited set of sub-carriers for part of the test.
2. Measurement with no interferer.
3. When testing preambles index 0 to 3 on the serving base station (BS), the interfering BS shall use preamble index 4. When testing preambles index 4 to 113 on the serving BS, the interfering BS shall use preamble index 0.
4. Reuse 1 and 3, using single interfering source, with no fading.
5. Test with AWGN only, no fading.
6. Available in beta/prototype release upon request. Please contact your Agilent representative for further details.

Hardware supported

Test instruments
- Agilent E6651A Mobile WiMAX™ test set
- E4438C ESG with Options 005, 506, and N7615A/B license
- N5182A MXG with Options 506, 651, and N7615A/B license
- Agilent 66319B/D and 66321B/D power supplies with 14565B device characterization software

Fixtures
- TescomTC5942 and TC-5952B

Adapters
- Agilent 82357A USB/GPIB interface
- National Instruments GPIB-USB-A USB to GPIB

PC cards
- Agilent Technologies GPIB
- National Instruments GPIB
- Advantech PCI 1750 digital I/O
- Control RocketPort 95870-3 and 99096-3 multi-port serial card

Peripherals
- Symbol LS-1220-1200A fixed bar code reader
- Symbol LS-3603MX-1200A, P300FZY, and LS40041-I100 handheld bar code reader
- HP printers
- Epson TM-U200D and TM-U220D strip printer

Supported Interfaces
- LAN
- USB
- GPIB
- Serial

PC requirements

- Operating system: Microsoft Windows XP Professional Service Pack 2
- Windows 2000 Professional Service Pack 4
- Microsoft Visual Studio .NET 2005 (for N6422C development only)
- Microsoft Internet Explorer Version 5.0 or later
- 600 MHz Pentium® III or higher (1 GHz Pentium III or higher for extended capability)
- 256 MB RAM minimum (512 MB is recommended for normal development and is required for extended capability operation)
- 200 MB free hard drive space
- 10x CD-ROM drive
- LAN port for instrument control
- GPIB card or converter with VISA drivers (if needed for instrument control)
- USB port for security key connection
- Serial ports for fixture, device control, and bar code reader

For more information

Further information on the N6422C, E6651A, and associated products is available at:
www.agilent.com/find/E6651A

Further information on Agilent WiMAX solutions is available at:
www.agilent.com/find/wimax

Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment throughout its lifetime. Your equipment will be serviced by Agilent-trained technicians using the latest factory calibration procedures, automated repair diagnostics and genuine parts. You will always have the utmost confidence in your measurements.

Agilent offers a wide range of additional expert test and measurement services for your equipment, including initial start-up assistance onsite education and training, as well as design, system integration and product management.

For more information on repair and calibration services, go to:

www.agilent.com/find/removealldoubt

Agilent Email Updates
www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.

Agilent Direct
www.agilent.com/find/agilentdirect
Quickly choose and use your test equipment solutions with confidence.

www.agilent.com
For more information on Agilent Technologies' products, applications, or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

Americas
Canada	(877) 894-4414
Latin America	305 269 7500
United States	(800) 829-4444

Asia Pacific
Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Thailand	1 800 226 008

Europe & Middle East
Austria	01 36027 71571
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700*
	*0.125 €/minute
Germany	07031 464 6333**
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
Switzerland	0800 80 53 53
United Kingdom	44 (0) 118 9276201

Other European countries:
www.agilent.com/find/contactus
Revised October 1, 2008

Product specifications and descriptions in this document subject to change without notice.

Agilent Technologies