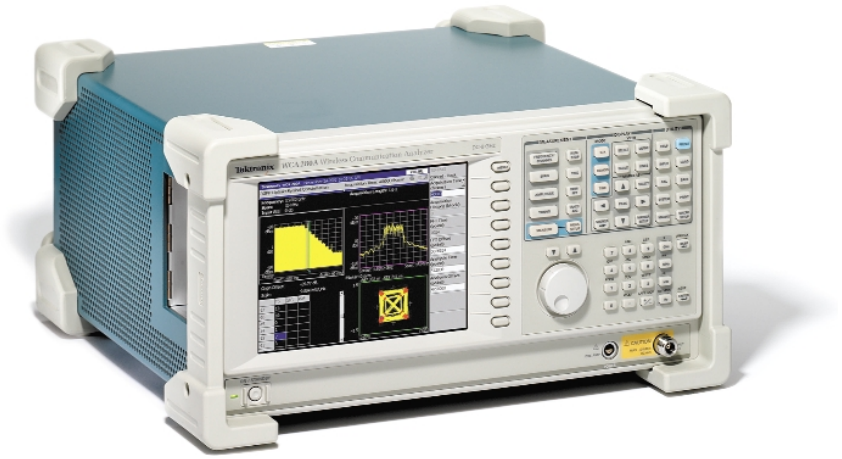
Wireless Communication Analyzers

WCA230A • WCA280A



Improve Your View

The WCA230A (3 GHz) and WCA280A (8 GHz) Wireless Communication Analyzers are extremely versatile, practical and easy to use. Developed for designers and manufacturers of wireless components and devices, these analyzers combine solid frequency-domain analysis with high-performance and flexible modulation analysis, making them ideal for characterization, troubleshooting, and verification of wireless devices. Coupled with its exceptional measurement speed and outstanding accuracy, the WCA200A Series is an equally practical tool for manufacturing applications.

Characterization – The Versatile WCA200A Series Lets You See More Of What Is There

The WCA230A and WCA280A provide design engineers with all the measurement capabilities needed to fully characterize devices in an accurate, efficient manner – ensuring a complete picture of the device's capability.

- 2G, 2.5G, 3G Demodulation Software – The WCA200A Series offers demodulation software that provides one-button measurement routines that quickly and accurately perform measurements that conform to the relevant industry standards.
- W-CDMA Compressed Mode – The WCA200A Series, with its unique ability to analyze W-CDMA compressed mode, allows engineers to quickly and easily monitor their device during the complex handover process between W-CDMA and GSM.
- Differential I/Q Inputs – By providing differential I/Q inputs, the WCA200A Series is the only product in this class that addresses the increasingly common need of 3G UE designers to directly measure their differential I/Q signals.
- 3D Graphical Display – The WCA200A Series is the only one-box solution that offers engineers extremely useful graphical representations, such as spectrogram and codogram, that give a complete picture of what is happening with the signal under test.

Features & Benefits

Multi-domain Analysis Enables Fast, Complete Signal Analysis in Frequency, Time, Code and Modulation Domains – Without the Need for Multiple Measurements

Extended Memory Enables 10 Seconds of W-CDMA Signal to be Captured, Ensuring All the Necessary Information is Available to Make a Complete Analysis of the Signal

Frequency Mask Trigger Captures Single or Multiple RF Signals, Even in the Presence of Other RF Signals that Traditional Spectrum and Vector Analyzers Would Miss

Fast and Accurate 2G, 2.5G, and 3G Measurements at the Touch of a Button

Codogram Provides a Simple, Graphical Means of Analyzing Code Power vs. Time

W-CDMA Compressed Mode Enables Analysis of Handovers Between W-CDMA and GSM

Differential I/Q Inputs Enable Straightforward Analysis of Differential Baseband Signals

Fast Measurement Speed and Exceptional Accuracy Improve Production Throughput Without Affecting Yield

Versatile General Demodulation Capabilities Ranging from BPSK to 256QAM, as Well as Selectable Filters Allow Analysis of Non-standard Signals

One Instrument, Practical and Useful Every Day, to Cover all Your Spectrum and Vector Analysis Needs

Applications

2.5 and 3G Wireless Design and Manufacturing
- Characterization
- Troubleshooting
- Verification

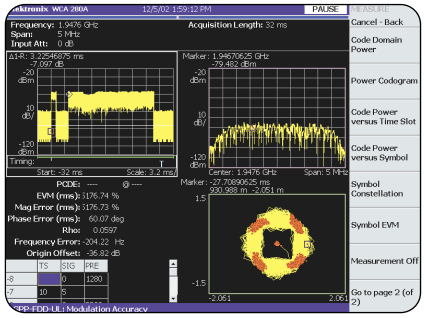
Bluetooth Design

Tektronix
Enabling Innovation

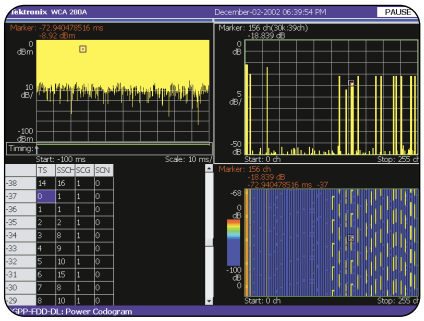
Troubleshooting – Now It Is Simple To See What Couldn't Be Seen

Troubleshooting a design can be a challenging, time-consuming task for any engineer. The WCA200A Series is designed to let you focus on the task at hand, troubleshooting your design, and not spend your time learning specialized test equipment or using external software for post processing. The WCA200A Series was designed to provide advanced modulation analysis and troubleshooting capability in an easy-to-use, one-box solution, which allows you to use these advanced troubleshooting tools without having to become an expert on the test equipment.

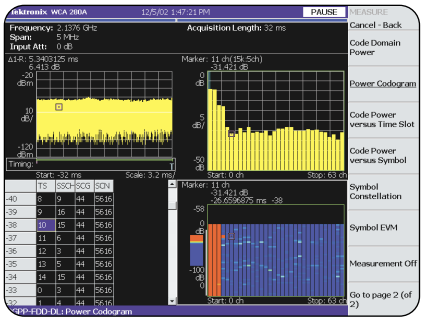
- Concurrent Multi-domain Analysis – The WCA200A Series lets you perform simultaneous measurements in the frequency, time, code, and modulation domains, which enables simple, fast and complete analysis of all complex RF signal without the need for multiple and non-concurrent measurements. By removing the need for multiple measurements you can be sure that your results correlate between the domains, thus ensuring accurate comparisons.
- Frequency Mask Trigger – The ability to trigger off any signal, either known or unknown, in the frequency domain ensures that signals which traditional spectrum analyzers and vector signal analyzers would miss can be captured and analyzed in all domains – providing you with a complete view of even the most random signals.
- Long Acquisition Memory – Extended memory enables 10 seconds of W-CDMA signal to be captured, ensuring all the necessary information is available to make a complete analysis of the signal.



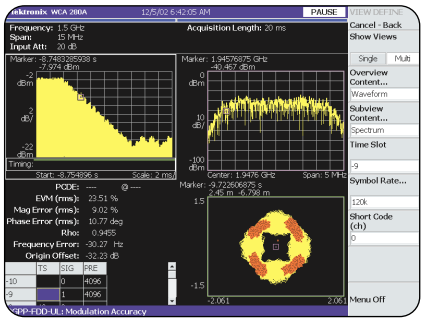
▶ *Extended memory allows capture of PRACH preamble and entire message.*



▶ *Codogram allows analysis of W-CDMA compressed mode.*



▶ *Code domain power analysis of AICH.*



▶ *Multi-domain analysis of handset power control behavior.*

- Simultaneous Analysis of UE and BTS Interaction – When two WCA200A Series instruments are synchronized, the unique frequency mask trigger coupled with the long memory capture enables the complete call up set interactions between UE and BTS be recorded so interoperability issues can be identified.
- Ease of Use – The user interface of the WCA200A Series was designed to ensure that its advanced troubleshooting capabilities are easy to use. As a result, you will spend less time pondering operation and more time troubleshooting the device under test.

Verification – Practical for Everyday Use, the WCA230A/280A Lets You View Test Results Sooner

When verifying your product, two critical questions must be asked about your test equipment. How quickly can I get the results? How accurate are the results? The WCA200A Series answers these questions with a powerful combination of speed and accuracy. Even when your test challenges change day to day, the WCA200A Series enables you to solve your measurement challenges, quickly and accurately.

▶ Fast Power Measurements – Whether you are making power calibration measurements on a cell phone production line or testing the ACLR performance of a PA to the W-CDMA standard, the WCA200A Series offers not only exceptional measurements, but outstanding accuracy, as well, thereby improving production throughput without affecting yield.

▶ Reduced Test Setup and Cost – The WCA200A Series removes the need for test systems to include several different analyzers. This one-box solution that can meet all your demodulation requirements, without sacrificing the traditional RF performance that you need to satisfy your RF test challenges.

▶ Flexible Connectivity – The WCA200A Series provides users with many different ways to access their measurement results. Ethernet, USB (2 ports), GPIB and Serial ports are supplied as standard, along with a floppy disk drive.

▶ Characteristics

Electrical Specifications

Frequency Range – DC to 20 MHz (Baseband), 15 MHz to 3 GHz or 8 GHz.

Frequency Marker Readout Accuracy – ±(RE x MF + 0.001 x Span + 2) Hz.
RE: Reference Frequency ErrorMF: Marker Frequency [Hz].

Frequency Readout Accuracy at Specified Frequency –
±1 kHz (Marker).
±210 Hz (CFM) (RF/RF1, Frequency = 2 GHz, Span = 1 MHz).

Residual FM – 2 Hz_{p-p}.

Spectrum Purity

Frequency = 1500 MHz, Carrier offset = 10 kHz – –100 dBc/Hz.

Amplitude

Reference Level Setting Range –
–50 dBm to +30 dBm (1 dB step, RF/RF1/RF2/RF3).
–30 dBm to +20 dBm (2 dB step, Baseband).
–10 dBm to +20 dBm (10 dB step, I/Q).

Frequency Response at 20 ºC to 30 ºC (RF ATT 10 dB) –
±0.5 dB (Baseband).
±1.2 dB (RF/RF1).

Absolute Amplitude Accuracy at Calibration Point (RF) – ±0.5 dB (at 50 MHz, –20 dBm Signal, 0 dB ATT, 20 ºC to 30 ºC).

Level Linearity in Display Range –
±0.2 dB (0 to –40 dBfs)

Channel Power Measurement Accuracy For W-CDMA signal at 20 ºC to 30 ºC –
±0.6 dB at conditions below*1.
Signal Frequency: 1900 to 2200 MHz.
Signal Power: +10 dBm to –30 dBm.
After Auto Level is performed at 10 MHz span.

*1 Option 22 or 23 required.

Dynamic Range

1 dB Compression Input – +2 dBm (RF ATT = 0 dB, 2 GHz).

3rd Order Inter-modulation Distortion – –73 dBc (Ref Level: +5 dBm, RF Att: 20 dB, Total Signal Power: –7 dBm, CF: 2 GHz).

Displayed Average Noise Level – –150 dBm/Hz (at 2 GHz), –147 dBm/Hz (at 3 GHz), –141 dBm/Hz (at 7 GHz).

ACLR (W-CDMA Down Link, Test Model 1, 16 ch) (Opt. 22) – 60 dB (5 MHz Offset), 63 dB (10 MHz Offset).

ACLR (W-CDMA Down Link, Test Model 1, 16 ch) (Opt. 22) – 66 dB (5 MHz Offset), 70 dB (10 MHz Offset) Typical.

Acquisition

Acquisition Memory Size – 64 MB (Std), 256 MB (Opt. 02).

Vector Span –
15 MHz (RF), 20 MHz (Baseband), 20 MHz (I/Q, Opt. 03).
At 64 MB (Std), the product can capture 2.5 sec W-CDMA signal at 5 MHz span.
At 256 MB, it extends to 4 times standard. (10 sec for W-CDMA).

Digital Demodulation

Modulation Format – BPSK, QPSK, π/4 Shift DQPSK, 8PSK, 16QAM, 64QAM, 256QAM, GMSK, GFSK.

Maximum Symbol Rate – 12.8 Msps.

Standard Setup – PDC, PHS, NADC, TETRA, GSM, CDPD, Bluetooth.

Vector Diagram Display Format – Symbol Locus Display, Frequency Error Measurement, Origin Offset Measurement.

Constellation Diagram Display Format – Symbol Display, Frequency Error Measurement, Origin Offset Measurement.

Eye Diagram Display Format – I/Q/Trellis Display (1 to 16 Symbols).

Error Vector Diagram Display Format – EVM, Magnitude Error, Phase Error, Waveform Quality (ρ) Frequency Error Measurement, Origin Offset Measurement.

Symbol Table – Binary, Octal, Hexadecimal.

Digital Demodulation Accuracy

GSM (1 MHz Span) – EVM ≤1.8 %, Magnitude Error ≤1.2 %, Phase Error ≤1.0º.

64QAM, 5.3 Msps 1 GHz carrier (15 MHz Span) – EVM ≤2.5 %.

QPSK, 3.84 Msps 2 GHz carrier (15 MHz Span) – EVM ≤2.5 %.

Resolution Bandwidth Filter

Filter Shape – Gaussian, Rectangle, Root Nyquist.

Range – 1 Hz to 10 MHz.

Trigger

Trigger Event Source – IF (Level Comparator), External (TTL), I/Q (Opt. 02, Power Comparator).

Pre/Post Trigger Setting – Trigger Position is settable within 0 % to 100 % of Total Data Length.

Frequency Mask Trigger Level Range (Opt. 02) – 0 dBfs to –70 dBfs.

Time Mask Trigger Level Range (Opt. 02) – 0 dBfs to –40 dBfs.

Physical Characteristics

Dimensions	**mm**	**in.**
Width (without belts)	425	16.7
Height (without feet)	215	8.5
Length (without cover and feet)	425	16.7
Weight	**kg**	**lbs.**
Net	19 kg	41.9

▶ Ordering Information

WCA230A

Wireless Communication Analyzer (DC – 3 GHz).

WCA280A

Wireless Communication Analyzer (DC – 8 GHz).

Includes: User manual, Programmer manual, power cord, USB keyboard, USB mouse, BNC-N adapter.

Options

Option 1A – External Pre-amplifier (20 dB gain to 3 GHz).

Option 1R – Rackmount Kit.

Option 02 – 256 MB Data Memory with Frequency Mask Trigger.

Option 03 – Differential I/Q Input Function.

Option 22 – W-CDMA Downlink Analysis Software.

Option 23 – W-CDMA Uplink Analysis Software.

Option 24 – GSM/EDGE Analysis Software.

Power Plug Options

Option A1 – Euro Plug, 220 V, 50 Hz.

Option A2 – UK Plug, 240 V, 50 Hz.

Option A3 – Australian Plug, 240 V, 50 Hz.

Option A4 – N. American Plug, 240 V, 50 Hz.

Option A5 – Swiss Plug, 220 V, 50 Hz.

Option A6 – Japanese Plug, 100 V, 110/120 V, 60 Hz.

Option A99 – No Power Cord.

Option AC – China Plug, 240 V, 50 Hz.

Language Option

Option L5 – Japanese User/Programmers manual.

Service Options

Option C3 – Calibration Service 3 Years.

Option C5 – Calibration Service 5 Years.

Option D1 – Calibration Data Report.

Option D3 – Calibration Data Report 3 Years (with Option C3).

Option D5 – Calibration Data Report 5 Years (with Option C5).

Option R3 – Repair Service 3 Years.

Option R5 – Repair Service 5 Years.

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Our most up-to-date product information is available at:
www.tektronix.com

Tektronix Measurement products are manufactured in ISO registered facilities.

Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

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