

Economy Microwave Spectrum Analyzers

MS2717B

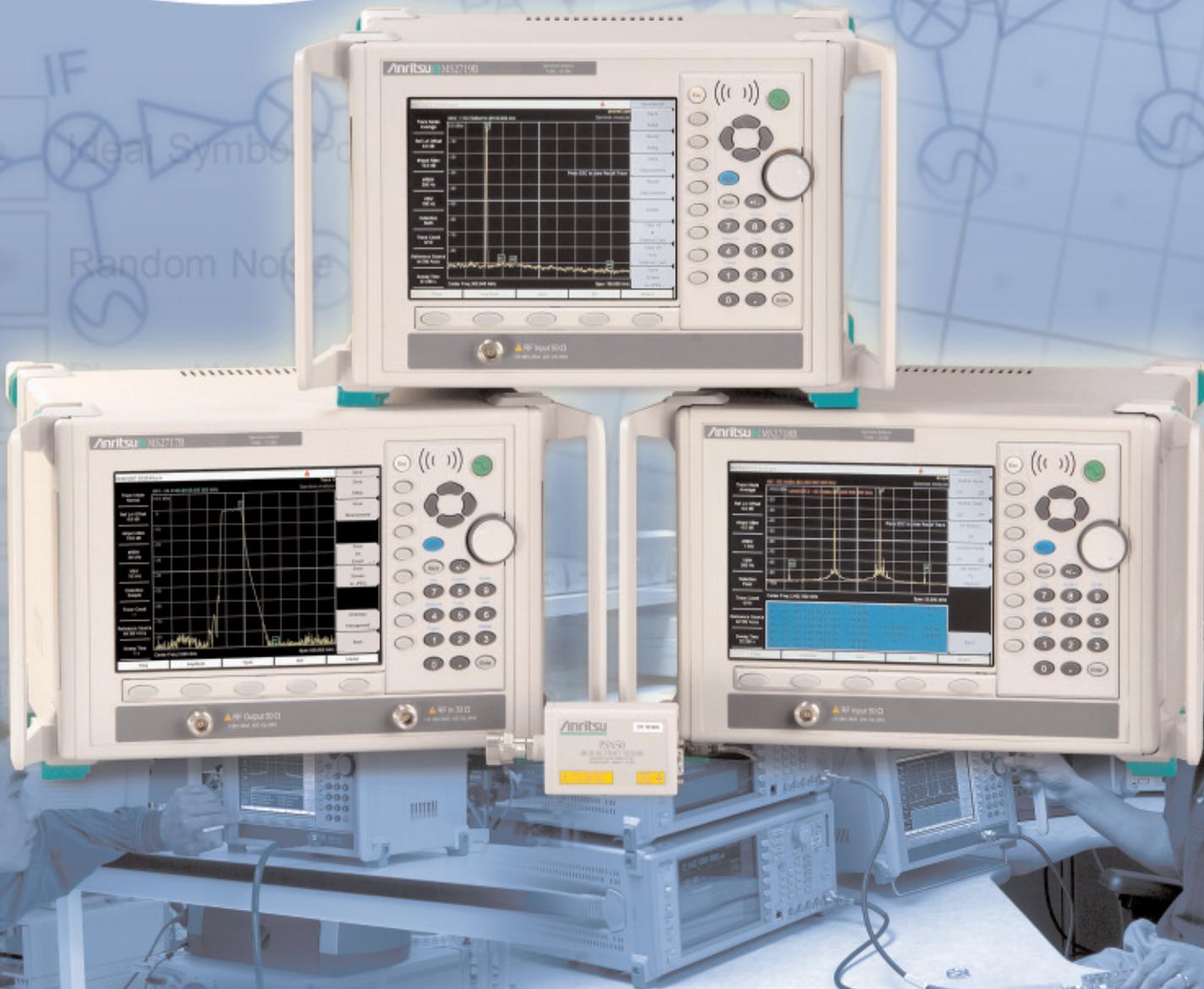
9 kHz to 7.1 GHz

MS2718B

9 kHz to 13 GHz

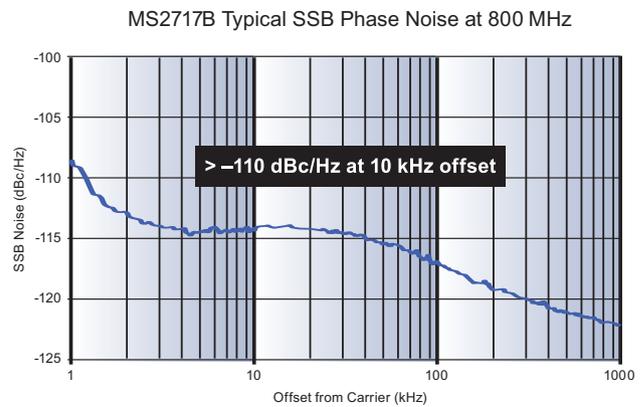
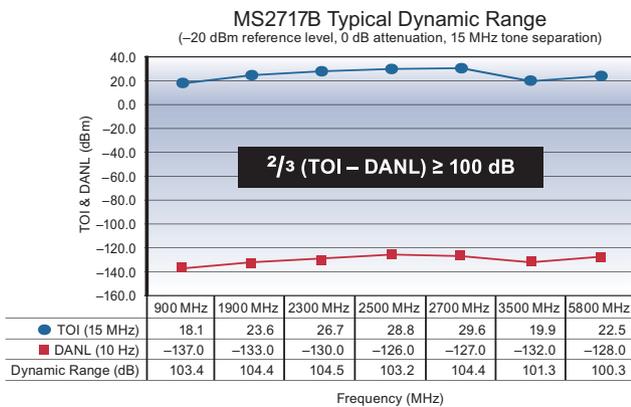
MS2719B

9 kHz to 20 GHz



Advanced Spectrum Analysis for Manufacturing, R & D and General Purpose Testing

Manufacturing and design engineers face extraordinary pressure to ship lower cost RF and microwave components. Anritsu's new MS271xB Economy Microwave Spectrum Analyzers offer superior performance and advanced capabilities. Covering the 9 kHz to 7.1, 13 and 20 GHz ranges, the MS271xB family easily handles most RF and microwave spectrum analyzer needs. The hallmark of the MS271xB family is the exceptional phase noise performance. The superior dynamic range of 100 dB means fast and precise testing of wireless components that require exceptional linearity. The wide 10 MHz demodulation bandwidth supports optional W-CDMA/HSDPA, W-CDMA, and WiMAX measurements. Best of all, the MS271xB family is ergonomically designed so controls are easy-to-learn and easy-to-use for improved productivity in manufacturing, R&D and general purpose testing.

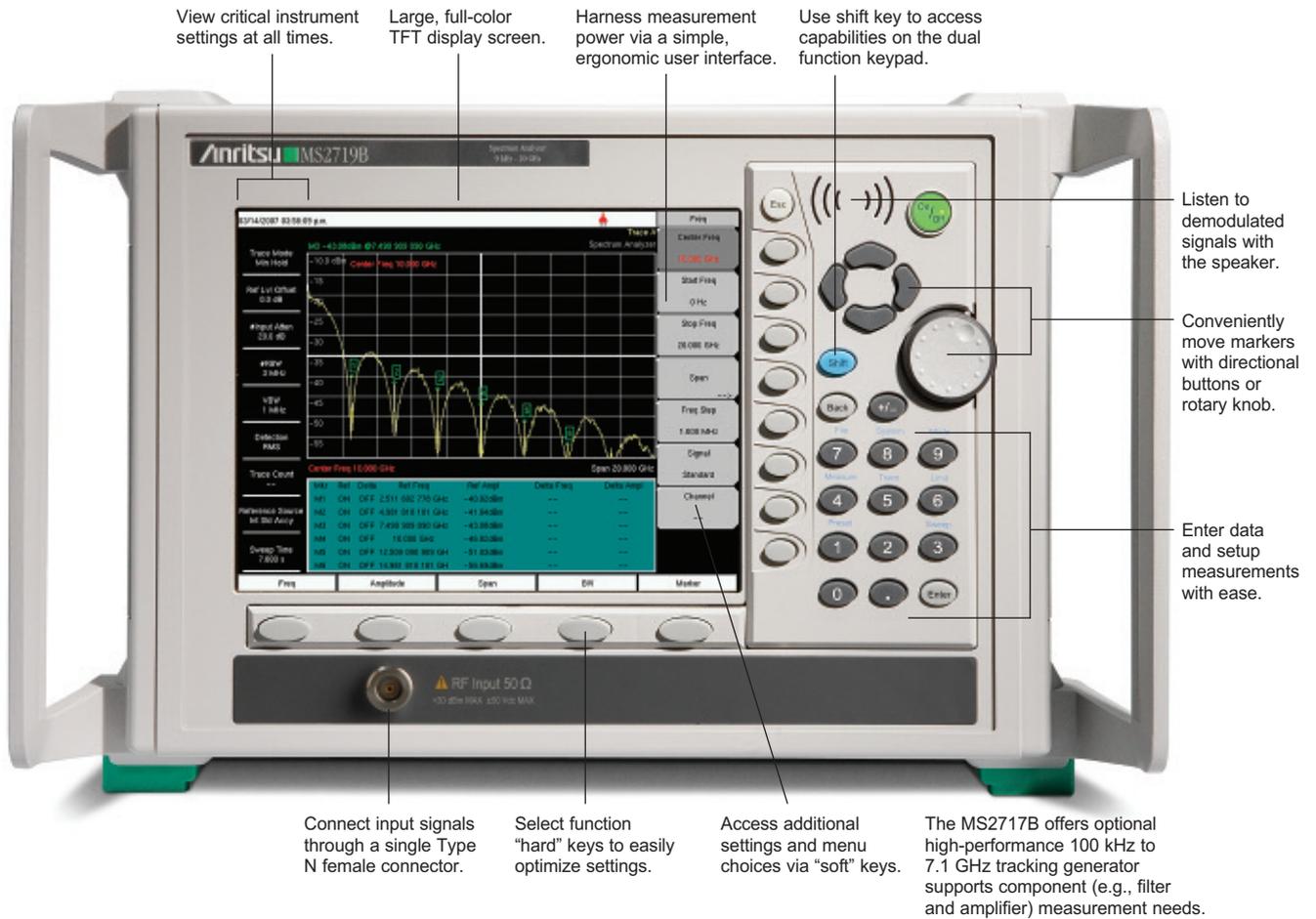


With as much as 100 dB dynamic range, the MS271xB Economy Microwave Spectrum Analyzer Family has the performance to optimize measurements for both accuracy and speed. With typical phase noise of -110 dBc/Hz for offsets between 10 kHz and 100 kHz, the superb spectral purity simplifies oscillator testing and delivers superior EVM measurement capabilities.

Don't let the small footprint fool you. These instruments are packed with performance and features designed to improve productivity, increase production yields, and lower cost-of-test. They offer optional W-CDMA/HSDPA RF measurements and W-CDMA demodulation analysis for affordable pass/fail testing of the popular adjacent channel leakage ratio (ACLR), occupied bandwidth (OBW), error-vector magnitude (EVM), and spectral emission mask tests. Optional WiMAX RF measurements and demodulation analysis help manufacturers qualify and test fixed WiMAX base stations. Best of all, this superior performance is available at a surprisingly affordable price. Whether you're involved with testing in manufacturing, R&D, or service, you'll find they deliver advanced spectrum analysis with outstanding value.

Feature	Benefit
Three models offering 9 kHz to 7.1, 13, and 20 GHz frequency ranges	Embrace most of the wireless communications and defense RF and Microwave testing needs.
Wide, 100 dB dynamic range	Enables faster testing of wireless components that require exceptional linearity
Excellent spectral purity, with typical phase noise of -110 dBc/Hz at 10 kHz offset (MS2717B)	Increased repeatability and throughput of local oscillator testing
Wide, 10 MHz demodulation bandwidth supports W-CDMA/HSDPA and WiMAX measurements	WiMAX RF measurements and demodulator support testing of fixed WiMAX equipment
Ergonomically designed controls	Easy-to-learn and easy-to-use to optimize operator productivity
Surprisingly affordable price	Outstanding value for lowering cost-of-test and reducing capital equipment expenditures

Introducing the MS271xB Economy Microwave Spectrum Analyzer Family



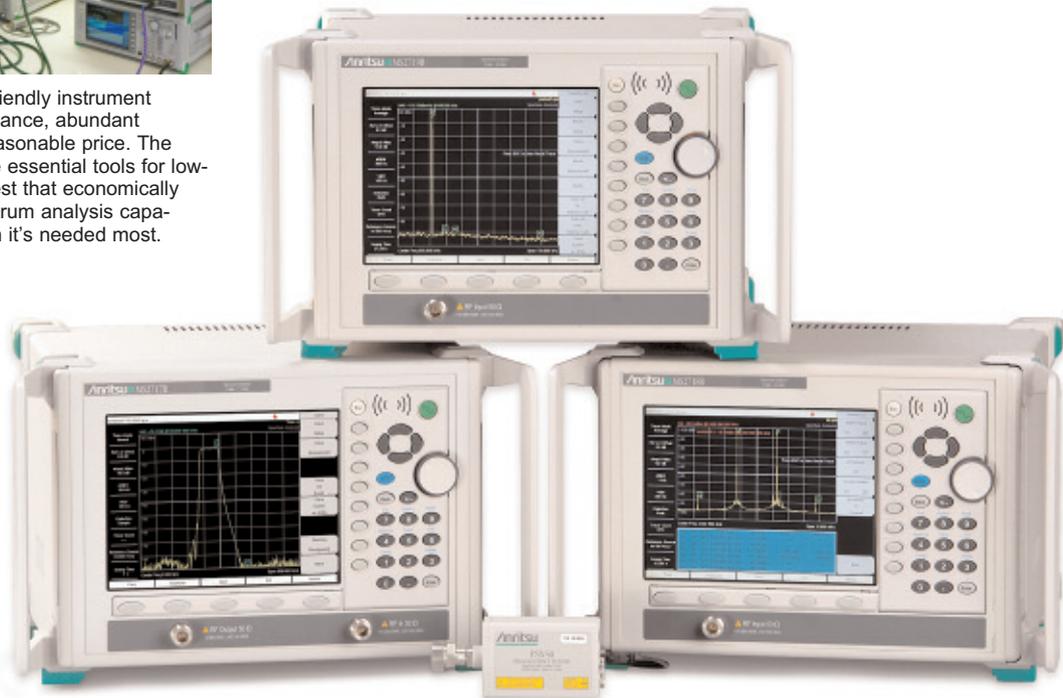
Feature	Benefit
Light weight and small footprint	Operators can safely optimize working environments for maximum space
Large 8.4 inch full-color TFT display screen	At-a-glance results and instrument settings improve operator productivity
Type N female RF connector	Easy-to-connect with proven reliability in severe manufacturing environments
Soft keys, directional buttons and rotary knob	Tactile feedback enables precise control of instrument settings and measurement results
USB 2.0 (full-speed) connections and USB host connection	Supports Anritsu's PSN50 High Accuracy Power Sensors and USB Flash Drives
LAN and USB 2.0 (full-speed) connections	Latest connections to networks and PCs for remote programming and transfer of data
Rear-panel BNC connectors for hookup of external trigger and timebase synchronization	Easily integrates into existing manufacturing environments
256 MB storage	Store and easily access more than 4,000 traces and 4,000 measurement setups

Manufacturing Environments Demand Economical Spectrum Analysis Solutions



This manufacturing-friendly instrument features high performance, abundant capabilities, and a reasonable price. The MS271xB models are essential tools for low-cost manufacturing test that economically deliver superior spectrum analysis capabilities at a time when it's needed most.

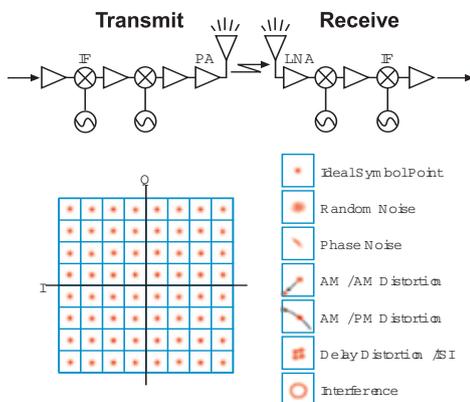
Manufacturing engineers in search of test solutions judge economy in terms of cost-of-test and cost-of-ownership. Other low-cost instruments sacrifice performance to slash cost-of-test of wireless RF components. No sacrifices are necessary with the MS271xB Economy Microwave Spectrum Analyzer Family. The outstanding performance truly belies its “economy” label. Production lines everywhere can upgrade their capabilities and lower their costs.



Here's a quick look at some of the manufacturing benefits:

Feature	Benefit
Rugged design, proven technology and room to upgrade	Lower cost-of-ownership with excellent reliability, ensuring minimal downtime on production lines
An input damage level of +43 dBm	Supports both infrastructure and mobile-device signal levels for nearly indestructible capabilities in manufacturing
Built-in 7.1 GHz Tracking Generator Option for the MS2717B.	Supports transmission measurements of components to over 100 dB dynamic range
Third-order intercept (TOI) to +12 dBm DANL (with preamp): -160 dBm, normalized to 1 Hz Low phase noise of -110 dBc/Hz at 10 kHz offsets Typical amplitude accuracy of ± 1 dB to 20 GHz	Lower cost-of-test with outstanding spectrum analysis performance that increases repeatability and offers increased margins for “money” specifications
Resolution bandwidths (RBWs) of 1 Hz to 3 MHz. When quasi-peak detector is selected, 200 Hz, 9 kHz, 120 kHz CISPR bandwidths are available	Lower cost-of-test by using superior dynamic range to increase resolution bandwidth and overall throughput
Eight built-in languages	Improves operator productivity anywhere by choosing popular local languages for the user interface
Modern connectivity, including LAN, USB 2.0 (full-speed), USB Host, and Compact Flash	Simplify storage, remote control, data transfer, and firmware upgrades

Engineering Environments Require Advanced Capabilities and Flexibility



Higher data-rate transmit and receive designs utilize amplifiers, mixers, oscillators, and power amplifiers that can distort signals if not designed and manufactured to high standards.

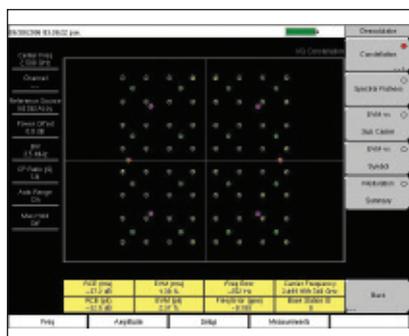
With all of its measurement performance and capability, the MS271xB Economy Microwave Spectrum Analyzer Family is hardly limited to the production floor. General purpose test users throughout the world are facing increased bandwidths and data rates for systems with higher-order modulation formats using in-phase (I) and quadrature (Q) techniques. But even though competitive markets are demanding RF and microwave components for less, they must still provide high performance for these systems. And instrument makers are challenged to test and verify component performance faster and at lower costs. Fortunately, with its superior performance, engineers can precisely characterize their designs in terms of both spectral responses and transmitter quality using a single instrument. The same instrument used to validate design performance can simply and easily verify manufacturing performance. The advanced capabilities and affordable performance of the MS271xB Economy Microwave Spectrum Analyzers ensure a smooth transition from design to production, improving not only time-to-market but time-to-volume profitability.



Benefits for the R & D environment:

Feature	Benefit
Excellent dynamic range and phase noise performance	Precisely characterize linearity of active devices and performance of local oscillators
Superior spectrum and optional modulation analysis capabilities	Affordable instrumentation for general purpose or production recommendations in verifying linearity specifications
A total of 65 dB attenuation in 5 dB steps	Optimize dynamic range for best accuracy and overall throughput
Smart W-CDMA/HSDPA and WiMAX RF and demodulation measurements	One button measurements for accurate W-CDMA and WiMAX RF and demodulator measurements
Total marker flexibility: 6 markers, 9 marker modes, and marker table display	Sophisticated marker functions offer flexible options to quickly extract measurement results
Save output displays in JPG file formats	Record displays in popular small file types for later presentation and distribution
USB 2.0 Host connector	Supports PSN50 High Accuracy Power Sensors and USB Flash Drives

Perform Modern Modulation Analysis with the MS271xB Economy Microwave Spectrum Analyzers

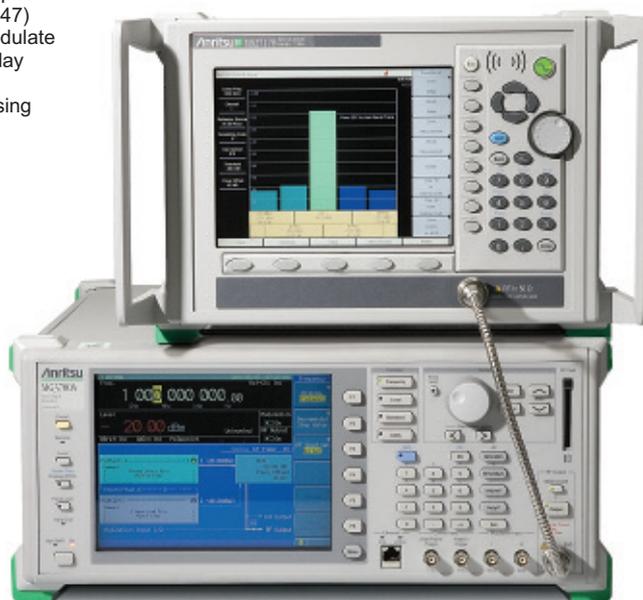


With Fixed WiMAX Measurements, (Option 46) and WiMAX Demodulator (Option 47) the MS2717B can measure and demodulate Fixed WiMAX OFDM signals and display detailed measurements for evaluating transmitter modulation performance using Constellation, Spectral Flatness, EVM vs. Sub Carrier, and EVM vs. Symbol.

The MS271xB simplify testing of Node B transmitters. As an example, the Code Domain Power measurement offers automated single-display demodulation results that are easy-to-decipher.

The MS271xB Economy Microwave Spectrum Analyzers are much more than other spectrum analyzers. In addition to making swept spectrum measurements, engineers and technicians can rely on this tool to accurately measure RF transmitter and modulation quality on critical components, such as the power amplifier, as defined in the 3GPP specification (TS 25.141).

By enabling W-CDMA/HSDPA RF Measurements (Option 44), the superior dynamic range offers the capability to quickly characterize RF transmitter performance using built-in smart measurements. These one-button transmitter test choices include automatic ACLR, Spectral Emission Mask, and RF Summary measurements.



By enabling its W-CDMA Demodulator (Option 45) capability, the excellent phase noise of the MS271xB family makes it possible to precisely determine a signal's modulation quality using built-in smart measurements. These one-button modulation-quality choices include automatic Code Domain Power (CDP), Codogram, and Modulation Summary measurements.

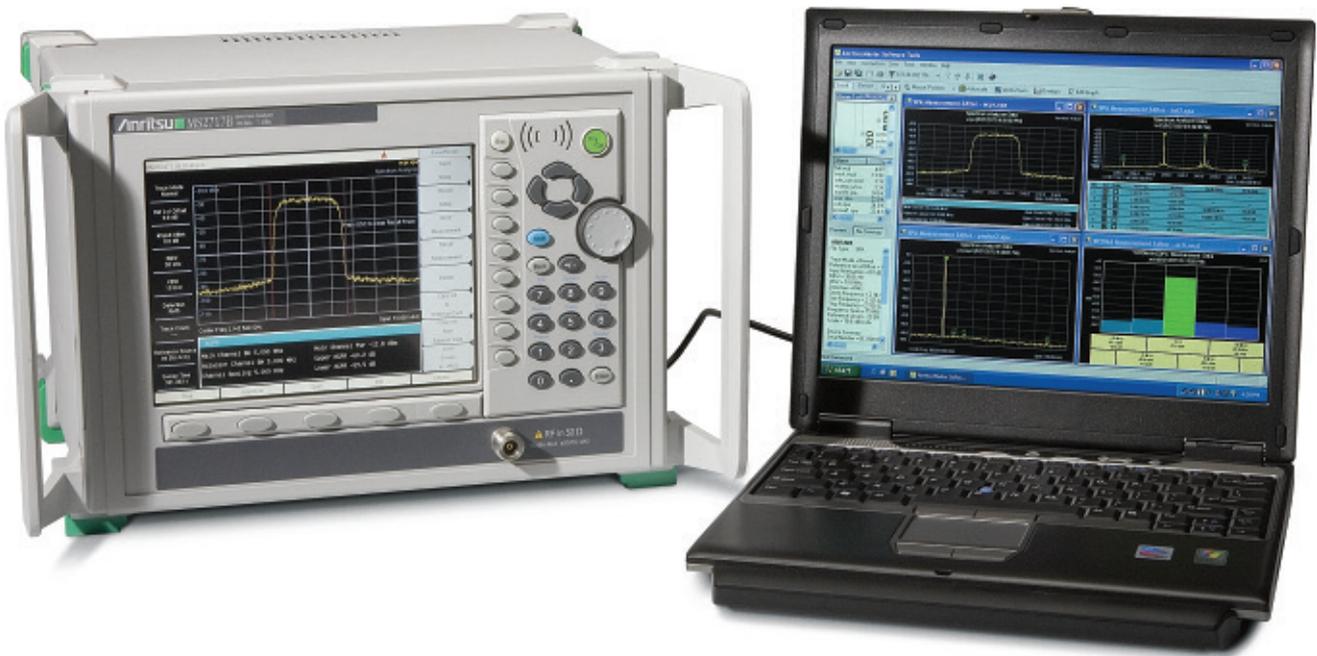
Check out these modulation analysis benefits:

Feature	Benefit
Wide, 10 MHz demodulation bandwidth Typical residual ACLR of -60 dB Typical residual EVM of 1.75% True RMS detection	Comprehensive W-CDMA/HSDPA testing to 3GPP specifications (TS 25.141) at a cost that's up to three times less than higher-priced alternatives
Easily recall five 3GPP test models for automated Pass/Fail testing	Increase operator productivity with smart, automated tests that simplify transmitter testing
Excellent timebase accuracy (± 0.3 ppm) using ovenized crystal reference	Verify performance to 3GPP frequency accuracy specifications
Smart measurements for W-CDMA/HSDPA transmitter analysis (Options 44/45)	One button measurements measure and demodulate W-CDMA signals for detailed transmitter testing
Smart measurement with W-CDMA/HSDPA Demodulator (Option 65)	Demodulate W-CDMA and HSDPA signals and measure CDP, code power variation, and code constellation
Fixed WiMAX RF Measurements and Demodulator (Options 46, 47, MS2717B only)	Characterize WiMAX channel power and residual EVM

Software-Aided Spectrum Analysis

Enlist Master Software Tools and a PC for expanded measurement functionality.

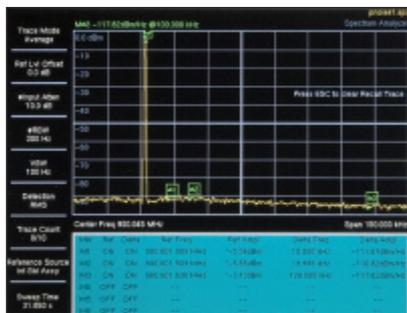
Each instrument ships with a test assistant: a copy of Anritsu's Master Software Tools™ for Windows® 2000/XP. This allows an operator to add the processing capabilities of a PC and this software to the MS271xB Economy Microwave Spectrum Analyzers to form a powerful and flexible measurement solution.



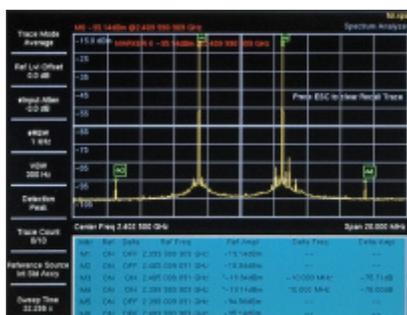
Benefits of Master Software Tools with the MS271xB Economy Microwave Spectrum Analyzers:

Feature	Benefit
Powerful data management tool for storing and sifting through measurement results	Simple-to-learn software transfers, manages, prints and archives displays and setups
Store an unlimited number of setups, traces and JPEGs (limited only by PC memory)	Develop libraries of frequently used setups and typical results
Overlay traces and further optimize displays	Easy post-processing capabilities offer versatility to further optimize results
Add, edit, and manage limit lines using Master Software Tools	Powerful Pass/Fail assistant
Connect to a PC using USB 2.0 (full-speed), Ethernet LAN or Direct Ethernet	Flexible connectivity ensures an easy connection to the Economy Microwave Spectrum Analyzer
Update with the latest firmware	Easily access and upgrade with the newest features from www.us.anritsu.com

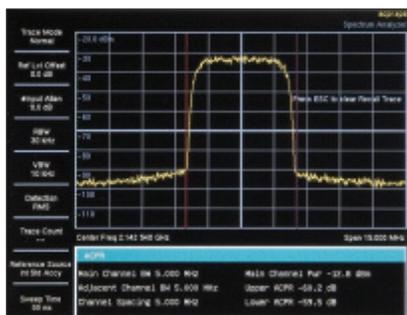
Typical Spectrum Analysis Measurements at a Glance



Phase noise measurements are the hallmark of the MS271xB.



Intermodulation distortion measurements are faster and more precise with an MS271xB.



Automated Adjacent Channel Power Ratio (ACPR) measurements are standard in the MS271xB.

Popular Spectrum Analysis Measurements

The following three examples highlight the most popular measurements using the MS271xB Economy Microwave Spectrum Analyzers.

Phase Noise

Observe the true spectral purity of your local oscillators and synthesizers. The MS271xB Economy Microwave Spectrum Analyzers, with typical phase noise of -110 dBc/Hz at 10 kHz offset, affordably verifies your most demanding phase noise specifications. Use flexible phase noise markers and convenient marker table features to further optimize, observe, and archive measurement results.

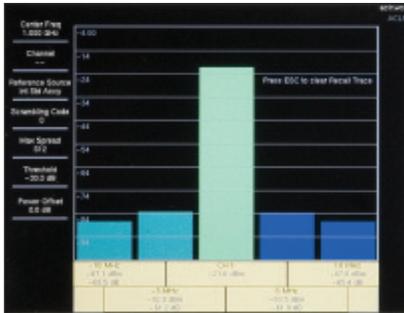
Intermodulation Distortion (IMD)

Combine the MS271xB's outstanding dynamic range (up to 100 dB) with two signal generators to accurately characterize the linearity of most amplifiers in terms of third-order intercepts (TOIs). Wide dynamic range means you can use wider resolution bandwidths to increase the sweep speed of this normally time-consuming measurement. With six markers and an easy-to-read marker table, the MS271xB reveals the true performance of your amplifier at an affordable price.

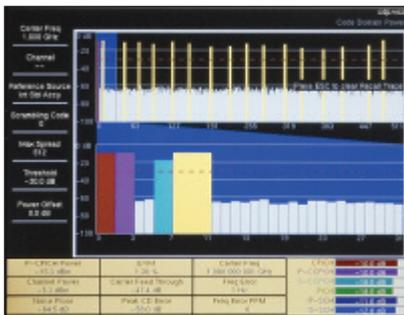
Adjacent Channel Power Ratio (ACPR)

Characterizing transmitter performance demands high-performance instruments and skilled operators for setup. The MS271xB Economy Microwave Spectrum Analyzer's combination of superior dynamic range and automated one button measurement capabilities reduces test times and increases operator productivity. Use the MS271xB to automatically measure and display ACPR results, truly revealing transmitter performance.

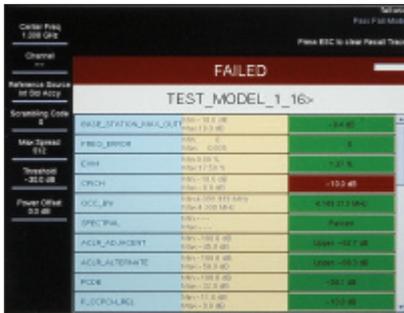
Typical Modulation Analysis Measurements at a Glance



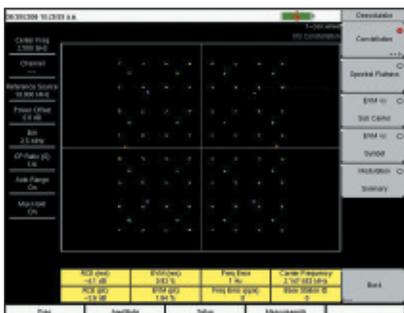
Automated W-CDMA Adjacent Channel Leakage Ratio (ACLR) measurements are optional in the MS2717B.



Minimize keystrokes with a single display containing critical W-CDMA demodulated results.



Quickly verify performance to 3GPP test models with the MS2717B.



Option 47 displays the constellation of a demodulated WiMAX signal.

Popular Modulation Analysis Measurements

When upgraded with modern W-CDMA and WiMAX capabilities, the following examples highlight the most popular modulation measurements using one of the MS271xB Economy Microwave Spectrum Analyzers (WiMAX is available on the MS2717B only).

Adjacent Channel Leakage Ratio (ACLR)

Add powerful W-CDMA ACLR measurement capability to the MS271xB family and replace other slower, more keystroke-intensive approaches. Use the MS271xB's automated W-CDMA ACLR screen to observe main channel power as well as the power levels of adjacent channels according to the 3GPP standard (TS 25.141). The MS271xB family continuously updates the screen's bars and marker readouts for easy-to-read results. Similarly, an MS271xB can also make multi-channel ACLR measurements with as many as four main channels and four adjacent channels.

Code Domain Power (CDP)

The MS271xB family's Code Domain Power (CDP) screen makes it easy to view overall W-CDMA modulation quality. An MS271xB automatically demodulates and refreshes the CDP screen with critical modulation parameters to verify performance to the 3GPP standard. An MS271xB also has flexible zoom features to conveniently observe results with higher resolution.

Pass/Fail Mode

Replace operator-intensive demodulation testing with the MS271xB family's automated Pass/Fail mode. After selecting one of five available test models, an operator can view a test summary with clear Pass/Fail indications, min/max thresholds, and actual measurement results. This clear and concise summary allows an operator to quickly determine 3GPP performance or isolate problematic performance areas for more comprehensive testing.

Fixed WiMAX Demodulator (Option 47)

With Option 47, the MS2717B can demodulate Fixed WiMAX OFDM signals and display detailed measurements for evaluating transmitter modulation performance using Constellation, Spectral Flatness, EVM vs. Sub Carrier, and EVM vs. Symbol.

MS271xB Economy Microwave Spectrum Analyzer Specification Summary
(see the MS271xB Family Technical Data Sheet for complete specifications)

Frequency	
Frequency Range	MS2717B 9 kHz to 7.1 GHz; MS2718B 9 kHz to 13.0 GHz; MS2719B 9 kHz to 20.0 GHz
Tuning Resolution	1 Hz
Frequency Span	10 Hz to full frequency range plus 0 Hz (zero span)
Resolution Bandwidth	(-3 dB width) 1 Hz to 3 MHz in 1-3 sequence $\pm 10\%$
Video Bandwidth	(-3 dB) 1 Hz to 3 MHz in 1-3 sequence
SSB Phase Noise	-100 dBc/Hz max at 10, 20 & 30 kHz offset from carrier -102 dBc/Hz max at 100 kHz offset from carrier
Demodulation Bandwidth	10 MHz
Amplitude	
Measurement Range	DANL to +30 dBm
Maximum Continuous Input	10 dB attenuation, +30 dBm, ± 50 VDC
Interfaces	Type N female RF Connector BNC female connectors for external reference and external trigger RJ45 connector for Ethernet 10/100-Base T USB 2.0 (full-speed) Compact Flash 2.5 mm 3-wire cellular headset connector USB 2.0 Host connector used with PSN50 High Accuracy Power Meter and USB Flash Drives
Power Requirements	90 to 250 VAC, 47-63 Hz, 35 VA maximum
Size	14.7 x 9.6 x 13.4 in. (372 x 242 x 339 mm)
Weight	< 12 lbs. (5.6 kg) typical

Ordering Information

Ordering Information

All models include standard 1 year warranty plus Certificate of Calibration and Conformance

- MS2717B Economy Microwave Spectrum Analyzer
9 kHz to 7.1 GHz, including preamplifier
- MS2718B Economy Microwave Spectrum Analyzer
9 kHz to 13.0 GHz, including preamplifier
- MS2719B Economy Microwave Spectrum Analyzer
9 kHz to 20.0 GHz, including preamplifier



Options

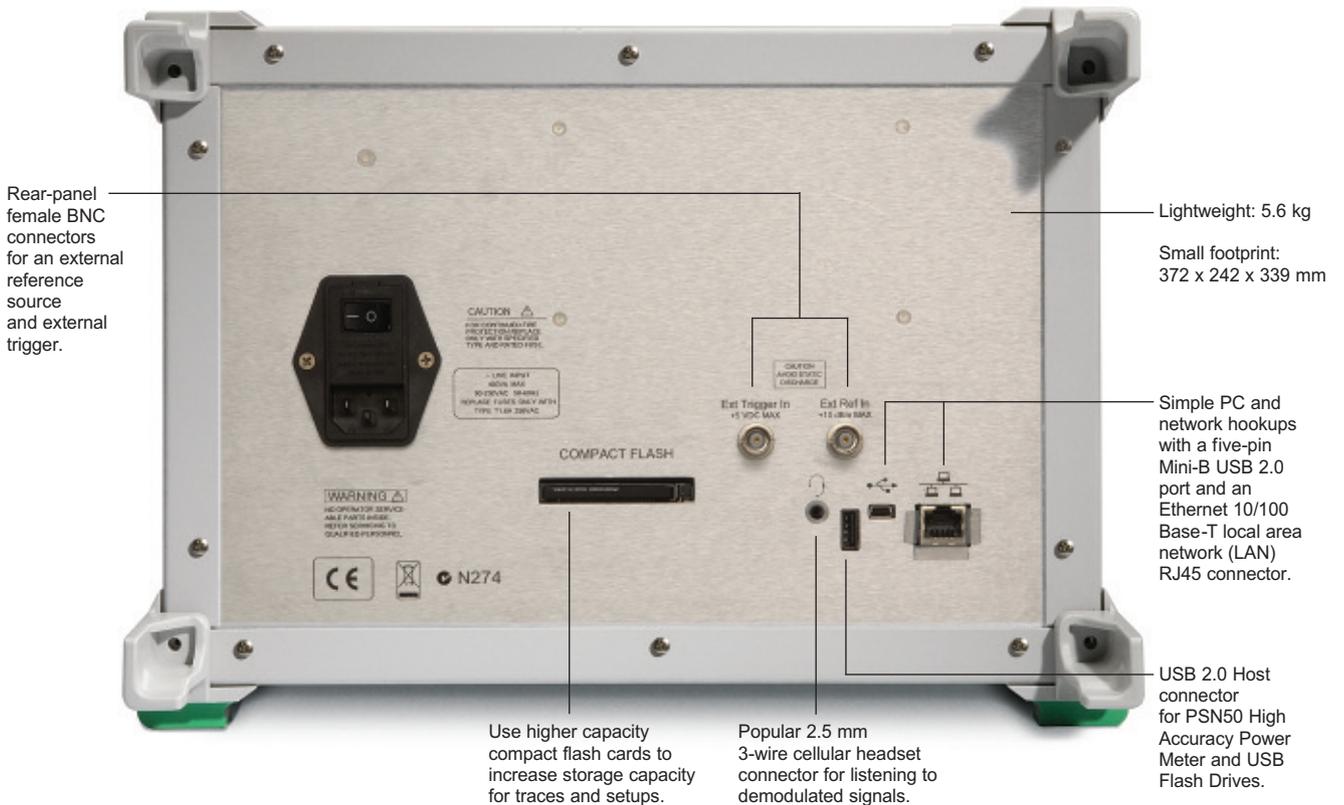
- MS271xB-001 Rack Mount (No Slides)
- MS271xB-009 Modulation Demodulation Hardware
- MS271xB-019 High Accuracy Power Meter Functionality
- MS2717B-020 Tracking Generator (MS2717B only)
- MS271xB-044 W-CDMA/HSDPA RF Measurements
- MS271xB-045 W-CDMA Demodulator (Requires Option 009)
- MS2717B-046 Fixed WiMAX RF Measurements (MS2717B only)
- MS2717B-047 Fixed WiMAX Demodulation (MS2717B only, requires Option 009)
- MS271xB-065 W-CDMA/HSDPA Demodulator (requires Option 009, includes Option 45 capability)
- MS271xB/98 Z540/ISO Guide 25 Calibration
- MS271xB/99 Premium Calibration

Standard Accessories

- 10580-00181 Anritsu User's Guide, Models MS271xB
- 2300-498 CD ROM containing Master Software Tools
- 3-2000-1498 USB A-mini B cable
- 2000-1371 RJ45 Ethernet Cable
- 3-2000-1500 256 MB Compact Flash
- 2000-1501 256 MB USB Flash Drive
- 1091-27 Type-N male to SMA Female Adapter
- 1091-172 Type-N male to BNC Female Adapter

Literature

- 10580-00181 Anritsu User's Guide, Models MS271xB
- 10580-00182 Anritsu Programming Manual, Models MS271xB
- 11410-00417 MS271xB Family Technical Data Sheet





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