

Advanced Spectrum Analysis Tools for Microwave Bench Test

MS271xB Family

Economy Microwave Spectrum Analyzers, 9 kHz to 7.1, 13, and 20 GHz

System Description

The Anritsu MS271xB Economy Microwave Spectrum Analyzer Family (MS2717B, MS2718B, and MS2719B) delivers affordable spectrum analysis with exceptional performance, advanced capabilities, and modern W-CDMA and WiMAX signal analysis.

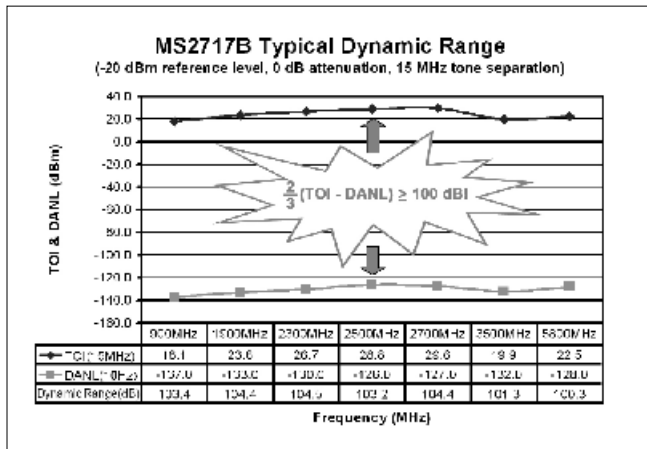


The MS2717B with Tracking Generator, MS2718B, MS2719B Economy Microwave Spectrum Analyzers, and PSN50 High Accuracy Power Sensor

Introduction

Engineers in R&D and manufacturing need advanced tools for spectrum analysis of wireless components in the critical physical layer of modern communication systems. For best value and overall satisfaction, these general purpose tools must deliver performance, capabilities, and the ability to lower the cost of testing. Anritsu's new MS271xB Economy Microwave Spectrum Analyzers offer superior performance and advanced capabilities. Take a closer look and we think you will agree that the MS271xB family redefines the economy class by delivering superior spectrum analyzer performance at a surprisingly affordable price.

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 phase noise performance: typical -110 dBc/Hz SSB phase noise at 10 kHz offsets up to 7.1 GHz (MS2717B) which easily measures most wireless local oscillators and synthesizers. 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 improving productivity in manufacturing, R&D, and general purpose testing.



MS271xB family offers superior dynamic range for linear measurements of next generation wireless components.

Typical Performance of the MS271xB family

- 9 kHz to 7.1, 13 and 20 GHz
- Standard Built-in Preamp
- Dynamic Range of 100 dB
- Third Order Intercept of +12 dBm
- DANL (No Preamp) of -126 dBm (RBW = 10 Hz)
- DANL (With Preamp) of -150 dBm (RBW = 10 Hz)
- Phase Noise (800 MHz) of -114 dBc/Hz at 10 kHz Offset
- Amplitude Accuracy of ± 1.0 dB to 20 GHz
- Sweep Speed of 200 ms in 10 MHz Span (RBW = 30 kHz, VBW = 10 kHz)
- Demodulation Bandwidth of 10 MHz
- Residual ACLR of -60 dB
- Residual EVM of 1.75%
- True RMS Detection
- 65 dB Attenuation Range, 5 dB Steps
- 20 Watt (+43 dBm) Input Protection

Standard Measurements

- **ACPR:** Measures power levels in the channels immediately above and below the center channel.
- **Occupied Bandwidth:** Measures 99% to 1% power channel of a spectrum.
- **Channel Power:** Measures the total power in a specified bandwidth.
- **C/I:** Measures carrier to interference ratio.

Optional Capabilities

- **Tracking Generator option (MS2717B only)**
- **High Accuracy Power Meter Option**
- **Rack Mount Chassis:**
Conveniently place MS271XB in 19 inch racks.
- **W-CDMA/HSDPA Measurements:**
Analyze the signal strength and mask.
- **W-CDMA/HSDPA Demodulation:**
Evaluate transmitter modulation performance using Code Domain Power (CDP).
- **WiMAX Measurements and Demodulation (MS2717B only):** Support fixed WiMAX testing and verification.

Master Software Tools

- **Anritsu Master Software Tools:**
Powerful data management and pass/fail setup tool (Windows® 2000/XP compatible).

General

- Easy-to-Learn Operation
- 8.4 inch Color TFT Display (SVGA)
- Eight Built-in Languages (plus Two Custom)
- 256 MB Storage for 4,000 Traces and 4,000 Setups
- Six Markers, Nine Marker Modes
- Built-in AM/FM/SSB Demodulator
- Output Displays in JPEG Formats
- Connectivity: Ethernet, USB 2.0, Compact Flash
- USB 2.0 Host connector for PSN50 High Accuracy Power Meter and USB Flash Drives
- Remote Programming: Ethernet Only
- Compact Size and Weight: 5.6 kg (12 lbs)
- Operational -10°C to 55°C , Humidity $< 85\%$
- 1 Year Standard Warranty

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

Preamplifier:

MS2717B: 100 kHz to 7.1 GHz
 MS2718B and MS2719B: 100 kHz to 4.0 GHz

Frequency Span:

10 Hz to full frequency range, plus 0 Hz (zero span)

Tuning Resolution: 1 Hz

Dynamic Range

Using the popular dynamic range definition of 2/3 (TOI – DANL), the following specifications show the excellent dynamic range that is available when using the indicated tone spacing for TOI and RBW of 1 Hz.

Minimum Dynamic Range using 2/3 (TOI-DANL),
 –20 dBm tones, 100 kHz spacing, RBW = 1 Hz,
 0 dB attenuation, Preamp = OFF

MS2717B: 600 MHz 95 dB, 3.5 GHz 96 dB
 MS2718B and MS2719B: 2.4 GHz 101 dB

Typical Dynamic Range using 2/3 (TOI-DANL)

Frequency	Typical Dynamic Range (–20 dBm tones, 100 kHz spacing, RBW = 1 Hz, 0 dB attenuation, Preamp = OFF)		
	MS2717B	MS2718B	MS2719B
10 MHz to 1.0 GHz	98	98	98
>1.0 GHz to 2.2 GHz	97	100	100
>2.2 GHz to 2.8 GHz	96	101	101
>2.8 GHz to 3.0 GHz	99	101	101
>3.0 GHz to 4.0 GHz	101	101	101
>4.0 GHz to 7.1 GHz	95	100	100
>7.1 GHz to 10 GHz	N/A	100	100
>10 GHz to 13 GHz	N/A	100	100
>13 GHz to 20 GHz	N/A	N/A	100

Displayed Average Noise Level (DANL)

Using 1 Hz RBW the following tables show maximum DANL performance (not including discrete spurious). Reference level is –20 dBm for preamplifier off and –50 dBm for preamplifier on; RMS detection is used and input attenuation is set to 0 dB.

Maximum Displayed Average Noise Level (DANL)

Frequency	Maximum DANL (RBW = 1 Hz)					
	MS2717B		MS2718B		MS2719B	
	Preamp OFF	Preamp ON	Preamp OFF	Preamp ON	Preamp OFF	Preamp ON
10 MHz to 1.0 GHz	–137 dBm	–161 dBm	–139 dBm	–159 dBm	–139 dBm	–159 dBm
>1.0 GHz to 2.2 GHz	–133 dBm	–159 dBm	–139 dBm	–156 dBm	–139 dBm	–156 dBm
>2.2 GHz to 2.8 GHz	–126 dBm	–153 dBm	–139 dBm	–156 dBm	–139 dBm	–156 dBm
>2.8 GHz to 3.0 GHz	–136 dBm	–159 dBm	–139 dBm	–156 dBm	–139 dBm	–156 dBm
>3.0 GHz to 4.0 GHz	–136 dBm	–159 dBm	–139 dBm	–154 dBm	–139 dBm	–154 dBm
>4.0 GHz to 7.1 GHz	–127 dBm	–154 dBm	–136 dBm	N/A	–136	N/A
>7.1 GHz to 10 GHz	N/A	N/A	–136 dBm	N/A	–136	N/A
>10 GHz to 13 GHz	N/A	N/A	–130 dBm	N/A	–130	N/A
>13 GHz to 20 GHz	N/A	N/A	N/A	N/A	–136	N/A

Noise Figure

The following table shows the calculated noise figure from DANL measurements for 0 dB attenuation at 23°C with preamplifier on.

Equivalent Noise Figure, 23° C

Frequency	Equivalent Noise Figure, 23°C, Preamp = On		
	MS2717B	MS2718B	MS2719B
10 MHz to 1.0 GHz	11 dB	15 dB	15 dB
>1.0 GHz to 2.2 GHz	14 dB	18 dB	18 dB
>2.2 GHz to 2.8 GHz	18 dB	18 dB	18 dB
>2.8 GHz to 3.0 GHz	14 dB	18 dB	18 dB
>3.0 GHz to 4.0 GHz	14 dB	20 dB	20 dB
>4.0 GHz to 7.1 GHz	16 dB	38 dB ¹	38 dB ¹
>7.1 GHz to 10 GHz	N/A	38 dB ¹	38 dB ¹
>10 GHz to 13 GHz	N/A	44 dB ¹	44 dB ¹
>13 GHz to 20 GHz	N/A	N/A	38 dB ¹

¹Preamplifier is limited to 4 GHz; equivalent noise figure values for Preamp = Off –174 dBm/Hz (i.e., 1 Hz bandwidth at 23°C), 10 log (BW2/BW1)

Third Order Intercept (TOI)

Using two -20 dBm tones separated by 100 kHz, the following tables show the minimum and TOI performance. Reference level is set to -20 dBm, input attenuation is set to 0 dB, and the preamplifier is off.

MS271xB Third Order Intercept for popular wireless frequencies

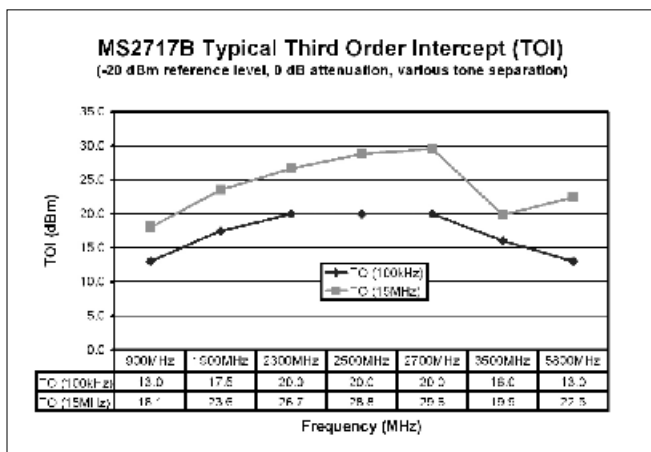
Minimum Third Order Intercept (TOI), -20 dBm tones, 100 kHz spacing, RBW = 1 Hz, 0 dB attenuation, Preamp = OFF

MS2717B: 600 MHz +7 dBm, 3.5 GHz +9 dBm

MS2718B and MS2719B: 2.4 GHz 12 dBm

Typical Third Order Intercept (TOI)

Frequency	Typical TOI (-20 dBm tones, 100 kHz spacing, 0 dB attenuation)		
	MS2717B	MS2718B	MS2719B
50 MHz to 300 MHz	>8	>6	>6
>300 MHz to 500 MHz	>10	>6	>6
>500 MHz to 2.0 GHz	>10	>8	>8
>2.0 GHz to 2.2 GHz	>10	>10	>10
>2.2 GHz to 2.8 GHz	>15	>10	>10
>2.8 GHz to 3.0 GHz	>10	>10	>10
>3.0 GHz to 4.0 GHz	>13	>10	>10
>4.0 GHz to 7.1 GHz	>13	>12	>12
>7.1 GHz to 10 GHz	N/A	>12	>12
>10 GHz to 1.3 GHz	N/A	>12	>12
>13 GHz to 20 GHz	N/A	N/A	>12



MS2717B family typical Third Order Intercept for popular wireless frequencies.

Typical TOI

The following table shows the excellent TOI that is typically available for popular wireless frequencies and tone spacings.

Frequency	Typical TOI (Offset = 100 kHz)	Typical TOI (Offset = 15 MHz)
900 MHz	13 dBm	18 dBm
1900 MHz	17 dBm	24 dBm
2300 MHz	20 dBm	27 dBm
2500 MHz	20 dBm	29 dBm
2700 MHz	20 dBm	30 dBm
3500 MHz	16 dBm	20 dBm
5800 MHz	13 dBm	23 dBm

Second Harmonic Distortion

(0 dB input attenuation, -30 dBm input):

Frequency Range	Second Harmonic
50 MHz to 750 MHz	-50 dBc
>750 MHz to 1.05 GHz	-40 dBc
>1.05 to 1.4 GHz	-50 dBc
>1.4 to 2 GHz	-70 dBc
>2 GHz	-80 dBc

Amplitude

Maximum Continuous Input: (≥10 dB attenuation), +30 dBm Input Damage Level*:

Attenuation Setting	Input Damage Level*
≥10 dB >+43 dBm	± 50 Vdc
<10 dB >+23 dBm	± 50 Vdc

*Input protection relay opens at >30 dBm with ≥10 dB input attenuation and at approximately 10 to 23 dBm with <10 dB attenuation. ESD Damage Level: >10 kV with ≥10 dB attenuation.

Amplitude Accuracy

Amplitude accuracy at 50 MHz: ± 0.7 dB (20°C to 30°C)

MS2717B (30 minute warmup)

Overall Amplitude Accuracy: (-10°C to 55°C)

Power levels:

≥-50 dBm, ≤35 dB input attenuation

9 kHz to ≤10 MHz	±1.5 dB
>10 MHz to 4 GHz	±1.25 dB
>4 to 7.1 GHz	±1.75 dB

40 to 55 dB input attenuation

9 kHz to ≤10 MHz	±1.5 dB
>10 MHz to 4 GHz	±1.75 dB
>4 to 6.5 GHz	±1.75 dB
>6.5 to 7.1 GHz	±2 dB

60 to 65 dB input attenuation

9 kHz to ≤10 MHz	±1.5 dB
>10 MHz to 6.5 GHz	±1.75 dB
>6.5 to 7.1 GHz	±3 dB

Preamplifier on, 0 or 10 dB input attenuation

9 kHz to 4 GHz	±1.5 dB
>4 to 7.1 GHz	±1.75 dB

MS2718B and MS2719B (30 minute warmup)

Overall Amplitude Accuracy: (20°C to 30°C) ±1.3 dB

Frequency Flatness: >4 GHz add ±1.5 dB

Amplitude Settings

Attenuator Range: 0 to 65 dB
Attenuator Resolution: 5 dB steps
Measurement Range: DANL to +30 dBm
Display Range: 1 to 15 dB/div in 1 dB steps
 Ten divisions displayed

Amplitude Units

Modes	Units
Log Scale	dBm, dBV, dBmV, dBμV
Linear Scale	nV, μV, mV, V, kV, nW, μW, mW, W, kW

Resolution and Video Bandwidth (RBW, VBW)

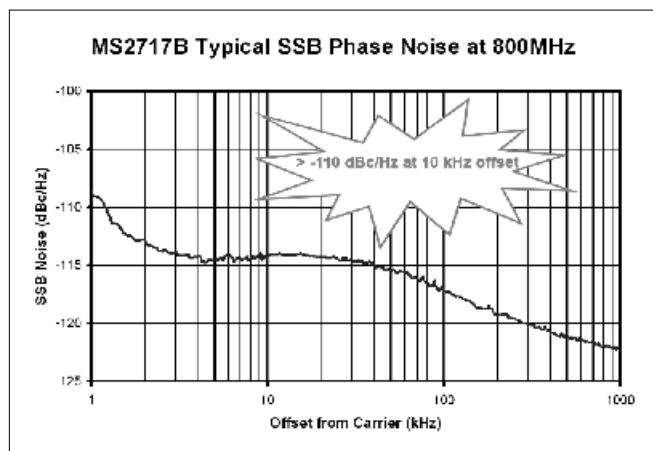
Resolution Bandwidth:

(-3 dB) 1 Hz to 3 MHz in 1-3 sequence ±10%,
 200 Hz, 9 kHz, 120 kHz when quasi-peak detector selected

Demodulation Bandwidth: 10 MHz

Video Bandwidth: (-3 dB) 1 Hz to 3 MHz in 1-3 sequence

SSB Phase Noise:



MS2717B family typical Phase Noise at 800 MHz.

Frequency Range Model(s)	9 kHz to 7.1 GHz MS2717B	9 kHz to 13 GHz MS2718B/19B	>13 GHz to 20 GHz MS2719B
Offset From Carrier	SSB Phase Noise (typical)	SSB Phase Noise (typical)	SSB Phase Noise (typical)
10, 20 and 30 kHz	-100 (110) dBc/Hz	-95 (102) dBc/Hz	-91 (99) dBc/Hz
100 kHz	-102 (112) dBc/Hz	-97 (104) dBc/Hz	-93 (101) dBc/Hz
1 MHz	-100 (110) dBc/Hz	-105 (112) dBc/Hz	-102 (109) dBc/Hz
10 MHz	-100 (110) dBc/Hz	-120 (126) dBc/Hz	-116 (123) dBc/Hz

Time Base Stability

Frequency Reference:

Condition Specification

25°C ± 25°C, Aging < ±1 ppm/10 yrs

25°C ± 25°C, < ±0.3 x 10⁻⁶/yr or 0.3 ppm/yr + aging

Span Accuracy: Same as frequency reference accuracy

Sweep Times

Sweep Time:

Zero span: 10 us to 600s

Spans >0 Hz: Minimum 200 ms, automatically optimized. Can be manually increased

Sweep Time Accuracy: ±2% in zero span

Sweep Trigger: Free run, Single, Video, External

Sweep Span:

Full span, zero span, and span up/span down

Typical Sweep Time (sample detection)

Span	RBW	VBW	Typical Sweep Time
20 GHz (MS2719B)	3 MHz	1 MHz	900 ms
13 GHz (MS2718B)	3 MHz	1 MHz	900 ms
6 GHz	3 MHz	1 MHz	400 ms
200 MHz	300 kHz	100 kHz	200 ms
10 MHz	30 kHz	10 kHz	200 ms
2.2 kHz	10 Hz	3 Hz	149 ms
100 Hz	1 Hz	3 Hz	5 sec

Input-Related Spurious:¹

(-30 dBm input, 0 dB input attenuation, Span <1.7 GHz)
-70 dBc typical -60 dBc max²

MS2717B Residual Spurious:

(Preamplifier on, RF input terminated, 0 dB input attenuation)

-100 dBm max

(Preamplifier off, RF input terminated, 0 dB input attenuation)

-90 dBm max*, 100 kHz to <3200 MHz

-84 dBm max*, 3200 to 7100 MHz

*Exceptions:

Frequency	Max Spur Level (Typical)
250, 300, and 350 MHz	-85 dBm
~4010 MHz	-80 dBm (-90 dBm)
~5084 MHz	-70 dBm (-83 dBm)
~5894 MHz	-75 dBm (-87 dBm)
~7028 MHz	-80 dBm (-92 dBm)

MS2718/MS2719B Residual Spurious:

(Preamplifier on, RF input terminated, 0 dB input attenuation)

-100 dBm max

(Preamplifier off, RF input terminated, 0 dB input attenuation)

-90 dBm max

-85 dBm max, >13 GHz

¹Discrete spurious signals are not included in the measurement of DANL as they are covered by the residual spurious specification.

²MS2718B, MS2719B except input frequency 3275 MHz, -50 dBc max.

Options Specifications

Demodulation Hardware (Option 9)

Needed to run any of the demodulation options

PSN50 High Accuracy Power Meter Functionality (Option 19)

PSN50 Sensor:

Measurement Range: -30 dBm to +20 dBm

Frequency Range: 50 MHz to 6 GHz

Input Connector: Type N, male, 50Ω

Max Input Without Damage: +33 dBm, ±25 VDC

Input Return Loss:

50 MHz to 2 GHz: ≥26 dB

2 GHz to 6 GHz: ≥20 dB

PSN50 Accuracy:

Total RSS Measurement Uncertainty (0°C to 50°C):

±0.16 dB¹

Noise: 20 nW max

Zero Set: 20 nW

Zero Drift: 10 nW max²

Sensor Linearity: ±0.13 dB max

Instrumentation Accuracy: 0.00 dB

Sensor Cal Factor Uncertainty: ±0.06 dB

Temperature Compensation: ±0.06 dB max

Continuous Digital Modulation Uncertainty:

±0.06 dB (+17 to +20 dBm)

PSN50 System:

Measurement Resolution: 0.01 dB

Offset Range: ±60 dB

¹Excludes mismatch errors

²After 30 min warm-up

Tracking Generator, Option 20 (MS2717B only)

Frequency Range: 100 kHz to 7.1 GHz

Frequency Resolution: 1 Hz

Frequency Accuracy (25°C ±25°C):

Same as spectrum analyzer

Output Power: 0 dBm to -40 dBm

Step Size: 0.1 dB nominal

Level Accuracy (15°C to 35°C):

±1.5 dB max, 450 kHz to 7.1 GHz,
excluding SWR effects

Zero Span Behavior: CW Output

Output Connector: Type N female, 50Ω

Damage Levels: +23 dBm, ±50V DC

Phase Noise: -100 dBm/Hz max at 10 kHz offset.

(1 GHz, 0 dBm CW output)

W-CDMA/HSDPA Analysis (Options 44, 45, 65)

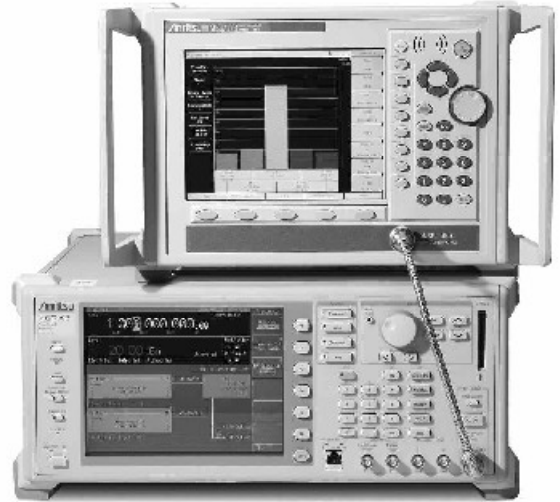
The following table shows the capability of Options 44 and 45 to analyze W-CDMA/HSDPA modulation quality. Option 45 requires the demodulation hardware, Option 9.

W-CDMA/HSDPA Option Comparison Table

W-CDMA/HSDPA Measurements	W-CDMA/HSDPA RF Measurements Option 44	W-CDMA Demodulator Option 45, and W-CDMA/HSDPA Demodulator Option 65 (Option 65 includes Option 45 capability)
Band Spectrum	✓	
Channel Spectrum	✓	
Carrier Frequency	✓	✓
Frequency Error	✓	✓
Channel Power	✓	✓
Occupied Bandwidth	✓	
Peak to Average Power	✓	
Noise Floor	✓	
ACLR	✓	
Spectral Emission Mask	✓	
P-CPICH Abs Power		✓
EVM		✓
Symbol EVM		✓
Carrier Feed Through		✓
Peak CD Error		✓
CPICH		✓
P-CCPCH Power		✓
S-CCPCH Power		✓
PICH		✓
P-SCH Power		✓
S-SCH Power		✓
Pass/Fail Mode	✓	✓

Option 44 Example

The superior performance of the MS271XB family ensures precise measurements of Adjacent Channel Leakage Ratio (ACLR) when coupled with a vector signal generator.



MS271xB family has optional Adjacent Channel Leakage Ratio (ACLR) measurements when connected to Anritsu's MG3700A Vector Signal Generator.

W-CDMA/HSDPA RF Measurements (Option 44)

The following measurement performance is available for analyzing the modulation quality of selected transmitters.

Measurement	824-894 MHz, 1710-2170 MHz	2300-2700 MHz
RF Channel Power 15°C to 30°C	±1.25 dB max, ±0.7 dB typical	
Occupied Bandwidth	±100 kHz	
Residual ACLR ¹ (5 MHz Offset)	-54 dB typ	
ACLR Accuracy: 5 MHz Offset ACLR ≥ -45 dB	±0.8 dB	±1.0 dB
Residual ACLR (10 MHz Offset)	-59 dB typ	-57 dB typ
ACLR Accuracy: 10 MHz Offset ACLR ≥ -50 dB	±0.8 dB	±1.0 dB
Frequency Error	±10 Hz + Time Base Error, 99% confidence level	

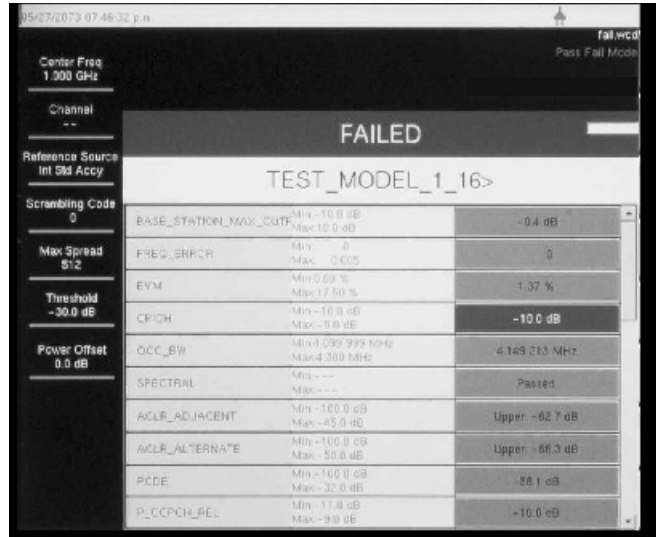
W-CDMA Demodulation (Option 45)

The following measurement performance is available for analyzing the modulation quality of selected transmitters (requires Option 9).

Measurement	824-894 MHz, 1710-2170 MHz	2300-2700 MHz
EVM Accuracy 3GPP Test Model EVM ≤25%	±2.5%	±2.5%
EVM Accuracy 3GPP Test Model 5 EVM ≤20%	±2.5%	±2.5%
Residual EVM1	2.5% typical	
Code Domain Power: Test Model 1, 16, 32, 64, DCPH Channel Power >-25 dB	±0.5 dB	
Code Domain Power: Test Model 2, 3, 16, 32, DCPH Channel Power >-25 dB	±0.5 dB	
CPICH (dBm)	±0.8 dB typ	
Scrambling Code	3 seconds	

Option 45 Example

Use any of the five 3GPP models covering all eleven test scenarios (TS 25.141) for easy pass/fail testing.



MS271xB family has optional PASS/FAIL summary screens to easily verify compliance to 3GPP test models.

Fixed WiMAX RF Measurements

(Option 46, MS2717B only)

Channel Power Accuracy:

±1 dB typical for +20 dBm to -50 dBm (±1.5 dB max)

Fixed WiMAX Demodulator

(Option 47, MS2717B only, Requires Option 9)

Residual EVM (rms):

3% for +20 dBm to -50 dBm (3.5% max.)

Frequency Error:

±10 Hz + time base error, 99% confidence level

General

Markers and Limit Lines

6 Markers, 9 Modes: Normal, Delta, Marker to Peak, Marker to Center, Marker to Reference Level, Next Peak Left, Next Peak Right, All Markers Off, Noise Marker, Frequency Counter Marker (1 Hz resolution), Markers Tracking or Fixed, Marker 1 reference for all deltas.

Multiple Marker: Display up to six markers on screen. Each marker includes a delta marker, effectively allowing up to 12 markers on screen.

Marker Table: Display a table of up to six marker frequency and amplitude values plus delta marker frequency offset and amplitude.

Limit Lines: Display upper and lower fixed and segmented limit lines, where each upper and lower limit can be made up of between one and 40 segments.

Miscellaneous

Detection: Peak, Negative, Sample, RMS, Quasi-peak

Displayed Traces: Three Traces with trace overlay. Trace A is always the live data; Traces B and C can be either stored data or traces which have been mathematically manipulated. Also Trace C can show max hold or min hold.

Memory: Trace and Setup storage is limited only by the capacity of the installed Compact Flash card or USB Flash drive. For a 256 MB card, storage is greater than 13000 spectrum analyzer traces and over 10000 setups.

Languages: Built-in English, Spanish, Italian, French, German, Japanese, Korean, and Chinese. The instrument also has the capability to have customized languages and soft key definitions installed from Master Software Tools.

Display

Display: Bright color transmissive LCD, Full SVGA, 8.4 inches

Connectivity

For convenient connection to PCs and networks, the MS271xB family offers an RJ45 connector for Ethernet 10/100 Base T connections. Alternatively, a 5-pin Mini-B USB 2.0 (full speed) connection is provided for connection to a PC. USB 2.0 Host connector used with PSN50 High Accuracy Power Meter and USB Flash Drives

Interfaces

RF Input Connector: Type N female

RF Input VSWR (>10 dB attenuation):

MS2717B, MS2718B; 2.0:1 maximum, 1.5:1 typical

MS2719B; 2.0:1 maximum, 1.5:1 typical <13 GHz, 2:1 typical 13 to 20 GHz

External Reference Input Connector: BNC female

External Reference Frequencies:

1, 1.2288, 1.544, 2.4576, 4.8, 4.9152, 5, 9.8304, 10, 13 and 19.6608 MHz at -10 to +10 dBm

External Trigger Connector: BNC female, TTL Signal

External Headphone Jack

Speaker

Remote Programming

SCPI available via Ethernet

Power Requirements

90 to 250 VAC, 47-63 Hz, 35 VA maximum

Size and Weight

Size with handles: 372W x 242H x 339D mm (14.7W x 9.6H x 13.4D in)

Size with rack mount: 483W x 242H x 339D mm (19W x 9.6H x 13.4D in)

Weight: 5.6 kg (12 lbs)

Environmental

MIL-PRF-28800F class 2

Operating: -10°C to 55°C, humidity 85% or less

Storage: -51°C to 71°C

Altitude: 4600 meters, operating and non-operating

Safety

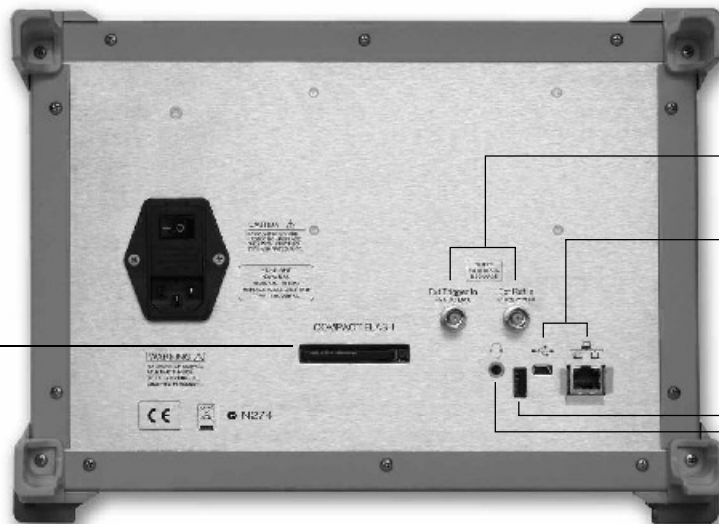
Conforms to EN 61010-1 for Class 1 portable equipment

Electromagnetic Compatibility Meets European Community requirements for CE marking.

Light weight: 5.6 kg (12 lbs)

Small footprint: 372W x 242H x 339D mm
(14.7W x 9.6H x 13.4D in)

Use higher capacity compact flash cards to increase storage capacity for traces and setups.



Rear-panel female BNC connectors for an external reference source and external trigger.

Simple PC and network hookups with five-pin Mini-B USB 2.0 port and an Ethernet 10/100 Base-T local area network (LAN) RJ45 connector.

USB 2.0 Host connector for PSN50 High Accuracy Power Meter and USB Flash Drives.

Popular 2.5 mm 3-wire cellular headset connector for listening to demodulated signals.

MS271xB Rear Panel

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

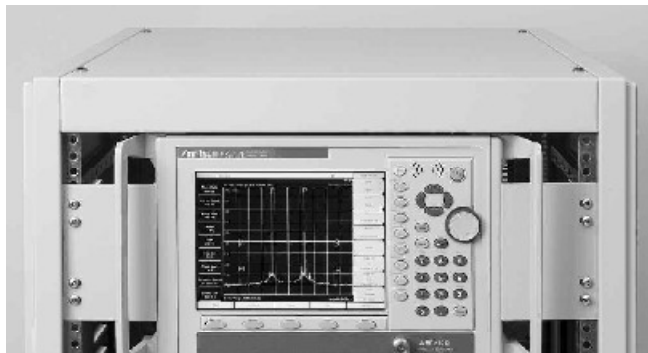
- MS271xB-001 Rack Mount (No Slides)
- MS271xB-009 Modulation Demodulation Hardware
- MS271xB-019 High Accuracy Power Meter Functionality
- MS2717B-020 Tracking Generator (MS2717B only)
- MS271xB-044 W-CDMA/HSDPA RF Measurements
- MS271xB-045 W-CDMA Demodulator(Requires Option 009)
- MS2717B-046 Fixed WiMAX RF Measurements (MS2717B only)
- MS2717B-047 Fixed WiMAX Demodulation (MS2717B only, requires Opt. 009)
- MS271xB-065 W-CDMA/HSDPA Demodulator (requires Opt. 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

Optional Rack Mount Kit



MS271xB-001 Rack Mount (No Slides)

Optional Transit Case



760-240-R MS271xB Transit Case

Optional Accessories

PSN50	High Accuracy Sensor
3-2000-1500	256 MB Compact Flash
2000-1501	256 MB USB Flash Drive
2000-1209	Cross-over Ethernet Cable
42N50A-30	30 dB, 50 watt, Bi-directional, DC to 18 GHz, N(m) to N(f) Attenuator
34NN50A	Precision Adapter, DC to 18 GHz, 50Ω, N(m) to N(m)
34NFN50C	Precision Adapter, DC to 18 GHz, 50Ω, N(f) to N(f)
15NNF50-1.5B	Test port cable, armored, 1.5 meter, N(m) to N(f) 18 GHz
15NN50-1.5C	Test port cable armored, 1.5 meter, N(m) to N(m), 6 GHz
15NN50-3.0C	Test port cable armored, 3.0 meter, N(m) to N(m), 6 GHz
15NN50-5.0C	Test port cable armored, 5.0 meter, N(m) to N(m), 6 GHz
15NNF50-1.5C	Test port cable armored, 1.5 meter, N(m) to N(f), 6 GHz
15NNF50-3.5C	Test port cable armored, 3.0 meter, N(m) to N(f), 6 GHz
15NNF50-5.0C	Test port cable armored, 5.0 meter, N(m) to N(f), 6 GHz

15ND50-1.5C	Test port cable armored, 1.5 meter, N(m) to 7/16 DIN(m), 6.0 GHz
15NDF50-1.5C	Test port cable armored, 1.5 meter, N(m) to 7/16 DIN(f), 6.0 GHz
510-90	Adapter, 7/16 DIN (f) to N(m), DC to 7.5 GHz, 50Ω
510-91	Adapter, 7/16 DIN (f)-N(f), DC to 7.5 GHz, 50Ω
510-92	Adapter, 7/16 DIN(m)-N(m), DC to 7.5 GHz, 50Ω
510-93	Adapter, 7/16 DIN(m)-N(f), DC to 7.5 GHz, 50Ω
510-96	Adapter 7/16 DIN (m) to 7/16 DIN(m), DC to 7.5 GHz, 50Ω
510-97	Adapter 7/16 DIN(f) to 7/16 DIN(f), 7.5 GHz

Literature

10580-00181	Anritsu User's Guide, Models MS271xB
10580-00182	Anritsu Programming Manual, Models MS271xB
11410-00418	MS271xB Family Brochure

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