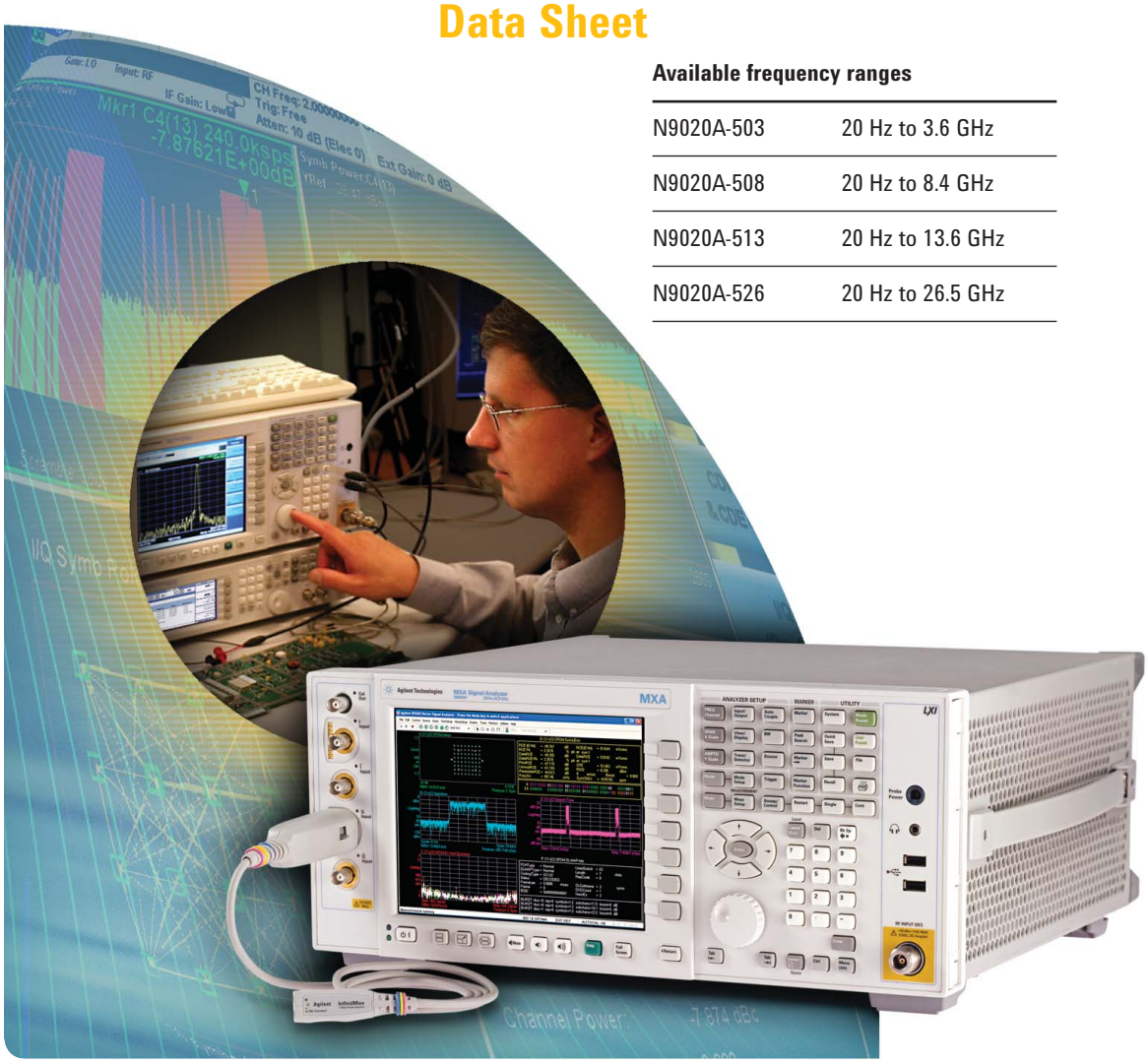
Agilent MXA Signal Analyzer N9020A

Data Sheet



Available frequency ranges

N9020A-503	20 Hz to 3.6 GHz
N9020A-508	20 Hz to 8.4 GHz
N9020A-513	20 Hz to 13.6 GHz
N9020A-526	20 Hz to 26.5 GHz

LXI class C certified

Agilent Technologies

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The MXA signal analyzer takes signal and spectrum analysis to the next generation, offering the highest performance in a midrange signal analyzer with the industry's fastest signal and spectrum analysis, eliminating the compromise between speed and performance. With a broad set of applications and demodulation capabilities, an intuitive user interface, outstanding connectivity and powerful one-button measurements, the MXA is ideal for both R&D and manufacturing engineers working on cellular, emerging wireless communications, general purpose, aerospace and defense applications.

Definitions and Conditions

Specifications describe the performance of parameters covered by the product warranty and apply over 5 to 50 °C unless otherwise noted. 95th percentile values indicate the breadth of the population (≈2σ) of performance tolerances expected to be met in 95 percent of the cases with a 95 percent confidence, for any ambient temperature in the range of 20 to 30 °C. In addition to the statistical observations of a sample of instruments, these values include the effects of the uncertainties of external calibration references. These values are not warranted. These values are updated occasionally if a significant change in the statistically observed behavior of production instruments is observed. Typical describes additional product performance information that is not covered by the product warranty. It is performance beyond specifications that 80 percent of the units exhibit with a 95 percent confidence level over the temperature range 20 to 30 °C. Typical performance does not include measurement uncertainty. Nominal values indicate expected performance, or describe product performance that is useful in the application of the product, but is not covered by the product warranty.

The analyzer will meet its specifications when:

- The analyzer is within its calibration cycle.
- Under auto couple control, except that Auto Sweep Time Rules = Accy.
- For signal frequencies < 20 MHz, DC coupling applied.
- The analyzer has been stored at an ambient temperature within the allowed operating range for at least two hours before being turned on, if it had previously been stored at a temperature range inside the allowed storage range but outside the allowed operating range.
- The analyzer has been turned on at least 30 minutes with Auto Align set to normal, or if Auto Align is set to off or partial, alignments must have been run recently enough to prevent an Alert message. If the Alert condition is changed from Time and Temperature to one of the disabled duration choices, the analyzer may fail to meet specifications without informing the user.

This MXA signal analyzer data sheet is a summary of the complete specifications and conditions, which are available in the *MXA Signal Analyzer Specification Guide*. The *MXA Signal Analyzer Specification Guide* can be obtained on the web at: **www.agilent.com/find/mxa_manuals**.

Frequency and Time Specifications

Frequency range	DC Coupled	AC Coupled
Option 503	20 Hz to 3.6 GHz	10 MHz to 3.6 GHz
Option 508	20 Hz to 8.4 GHz	10 MHz to 8.4 GHz
Option 513	20 Hz to 13.6 GHz	10 MHz to 13.6 GHz
Option 526	20 Hz to 26.5 GHz	10 MHz to 26.5 GHz

Band	**LO Multiple (N)**	
0	1	20 Hz to 3.6 GHz
1	1	3.5 to 8.4 GHz
2	2	8.3 to 13.6 GHz
3	2	13.5 to 17.1 GHz
4	4	17 to 26.5 GHz

Frequency reference		
Accuracy	± [(time since last adjustment x aging rate) + temperature stability + calibration accuracy]	
Aging rate	Option PFR $\pm 1 \times 10^{-7}$ / year $\pm 1.5 \times 10^{-7}$ / 2 years	Standard $\pm 1 \times 10^{-6}$ / year
Temperature stability 20 to 30 °C 5 to 50 °C	Option PFR $\pm 1.5 \times 10^{-8}$ $\pm 5 \times 10^{-8}$	Standard $\pm 2 \times 10^{-6}$ $\pm 2 \times 10^{-6}$
Achievable initial calibration accuracy	Option PFR $\pm 4 \times 10^{-8}$	Standard $\pm 1.4 \times 10^{-6}$
Example frequency reference accuracy (with Option PFR) one year after last adjustment	$= \pm(1 \times 1 \times 10^{-7} + 5 \times 10^{-8} + 4 \times 10^{-8})$ $= \pm 1.9 \times 10^{-7}$	
Residual FM Option PFR Standard	 ≤ (0.25 Hz x N) p-p in 20 ms nominal ≤ (10 Hz x N) p-p in 20 ms nominal See band table above for N (LO Multiple)	

Frequency readout accuracy *(start, stop, center, marker)*

± (marker frequency x frequency reference accuracy + 0.25% x span + 5% x RBW + 2 Hz + 0.5 x horizontal resolution[1])

1 Horizontal resolution is span/(sweep points – 1)

Marker frequency counter	
Accuracy	± (marker frequency x frequency reference accuracy + 0.100 Hz)
Delta counter accuracy	± (delta frequency x frequency reference accuracy + 0.141 Hz)
Counter resolution	0.001 Hz

Frequency and Time Specifications (continued)

Frequency span *(FFT and swept mode)*

Range	0 Hz (zero span), 10 Hz to maximum frequency of instrument	
Resolution	2 Hz	
Accuracy		
Swept	±(0.25% x span + horizontal resolution)	
FFT	±(0.10% x span + horizontal resolution)	

Sweep time and triggering

Range	Span = 0 Hz	1 µs to 6000 s
	Span ≥ 10 Hz	1 ms to 4000 s
Accuracy	Span ≥ 10 Hz, swept	±0.01% nominal
	Span ≥ 10 Hz, FFT	±40% nominal
	Span = 0 Hz	±0.01% nominal
Trigger	Free run, line, video, external 1, external 2, RF burst, periodic timer	
Trigger delay	Span = 0 Hz or FFT	–150 to +500 ms
	Span ≥ 10 Hz, swept	1 µs to 500 ms
	Resolution	0.1 µs

Time gating

Gate methods:	Gated LO; Gated video; Gated FFT
Gate length range (except method = FFT):	100.0 ns to 5.0 s
Gate delay range:	0 to 100.0 s
Gate delay jitter:	33.3 ns p-p nominal

Sweep (trace) point range

All spans	1 to 40001

Resolution bandwidth (RBW)

Range (–3.01 dB bandwidth)	1 Hz to 3 MHz (10% steps), 4, 5, 6, 8 MHz	
Bandwidth accuracy (power)	1 Hz to 750 kHz	±1.0% (±0.044 dB)
RBW range	820 kHz to 1.2 MHz (< 3.6 GHz CF)	±2.0% (±0.088 dB)
	1.3 to 2.0 MHz (< 3.6 GHz CF)	±0.07 dB nominal
	2.2 to 3 MHz (< 3.6 GHz CF)	±0.15 dB nominal
	4 to 8 MHz (< 3.6 GHz CF)	±0.25 dB nominal
Bandwidth accuracy (–3.01 dB) RBW range	1 Hz to 1.3 MHz	±2% nominal
Selectivity (–60 dB/–3 dB)	4.1:1 nominal	

Frequency and Time Specifications (continued)

Analysis bandwidth[1]

Maximum bandwidth	
Option B25	25 MHz
Standard	10 MHz

1 Analysis bandwidth is the instantaneous bandwidth available around a center frequency over which the input signal can be digitized for further analysis or processing in the time, frequency, or modulation domain.

Video bandwidth (VBW)

Range	1 Hz to 3 MHz (10% steps), 4, 5, 6, 8 MHz and wide open (labeled 50 MHz)
Accuracy	±6% nominal

Measurement speed[2]

Local measurement and display update rate	4 ms (250/s) nominal
Remote measurement and LAN transfer rate	5 ms (200/s) nominal
Marker peak search	1.5 ms nominal
Center frequency tune and transfer (RF)	20 ms nominal
Center frequency tune and transfer (μW)	47 ms nominal
Measurement/mode switching	39 ms nominal

2 Sweep points = 101

Amplitude Accuracy and Range Specifications

Amplitude range	
Measurement range	Displayed average noise level (DANL) to maximum safe input level
Input attenuator range (20 Hz to 26.5 GHz)	0 to 70 dB in 2 dB steps

Electronic attenuator (Option EA3)	
Frequency range	20 Hz to 3.6 GHz
Attenuation range	
Electronic attenuator range	0 to 24 dB, 1 dB steps
Full attenuation range (mechanical + electronic)	0 to 94 dB, 1 dB steps

Maximum safe input level	
Average total power (with and without preamp)	+30 dBm (1 W)
Peak pulse power	< 10 µs pulse width, < 1% duty cycle +50 dBm (100 W) and input attenuation ≥ 30 dB
DC volts	
DC coupled	±0.2 Vdc
AC coupled	±70 Vdc

Display range	
Log scale	0.1 to 1 dB/division in 0.1 dB steps 1 to 20 dB/division in 1 dB steps (10 display divisions)
Linear scale	10 divisions
Scale units	dBm, dBmV, dBµV, dBmA, dBµA, V, W, A

Amplitude Accuracy and Range Specifications (continued)

Frequency response ***(10 dB input attenuation, 20 to 30 °C, preselector centering applied, σ = nominal standard deviation)***

		Specification	95th Percentile (≈ 2σ)
	20 Hz to 10 MHz	±0.6 dB	±0.28 dB
	10 MHz to 3.6 GHz	±0.45 dB	±0.17 dB
	3.5 to 8.4 GHz	±1.5 dB	±0.48 dB
	8.3 to 13.6 GHz	±2.0 dB	±0.47 dB
	13.5 to 22.0 GHz	±2.0 dB	±0.52 dB
	22.0 to 26.5 GHz	±2.5 dB	±0.71 dB
Preamp on (Option P03, P08, P13, P26)	100 kHz to 3.6 GHz	±0.75 dB	±0.28 dB
attenuation 0 dB	3.5 to 8.4 GHz	±2.0 dB	±0.53 dB
	8.3 to 13.6 GHz	±2.3 dB	±0.60 dB
	13.5 to 17.1 GHz	±2.5 dB	±0.81 dB
	17.0 to 22.0 GHz	±2.5 dB	±0.81 dB
	22.0 to 26.5 GHz	±3.5 dB	±1.25 dB

Input attenuation switching uncertainty

	50 MHz (reference frequency)	±0.20 dB	±0.08 dB typical
	attenuation > 2 dB, preamp off		
	20 Hz to 3.6 GHz		±0.3 dB nominal
	3.5 to 8.4 GHz		±0.5 dB nominal
	8.3 to 13.6 GHz		±0.7 dB nominal
	13.5 to 26.5 GHz		±0.7 dB nominal

Total absolute amplitude accuracy ***(10 dB attenuation, 20 to 30 °C, 1 Hz ≤ RBW ≤ 1 MHz, input signal –10 to –50 dBm, all settings auto-coupled except Auto Swp Time = Accy, any reference level, any scale, σ = nominal standard deviation)***

	At 50 MHz	±0.33 dB
	At all frequencies	±(0.33 dB + frequency response)
	20 Hz to 3.6 GHz	±0.23 dB (95th Percentile ≈ 2σ)
Preamp on (Option P03, P08, P13, P26)	At all frequencies	± (0.39 dB + frequency response)

Input voltage standing wave ratio (VSWR) ***(≥ 10 dB input attenuation)***

	10 MHz to 3.6 GHz	< 1.2:1 nominal
	3.6 to 8.4 GHz	< 1.5:1 nominal
	8.4 to 13.6 GHz	< 1.6:1 nominal
	13.6 to 26.5 GHz	< 1.9:1 nominal
Preamp on (Option P03. P08, P13, P26)	10 MHz to 3.6 GHz	< 1.7:1 nominal
(0 dB attenuation)	3.6 to 8.4 GHz	< 1.8:1 nominal
	8.4 to 13.6 GHz	< 2.0:1 nominal
	13.6 to 26.5 GHz	< 2.0:1 nominal

Amplitude Accuracy and Range Specifications (continued)

Resolution bandwidth switching uncertainty *(referenced to 30 kHz RBW)*

1 Hz to 1.5 MHz RBW	±0.05 dB
1.6 MHz to 3 MHz RBW	±0.10 dB
4, 5, 6, 8 MHz RBW	±1.0 dB

Reference level

Range	
Log scale	–170 to +30 dBm in 0.01 dB steps
Linear scale	Same as Log (707 pV to 7.07 V)
Accuracy	0 dB

Display scale switching uncertainty

Switching between linear and log	0 dB
Log scale/div switching	0 dB

Display scale fidelity

Between –10 dBm and –80 dBm input mixer level	±0.10 dB total

Trace detectors

Normal, peak, sample, negative peak, log power average, RMS average, and voltage average

Preamplifier

Frequency range	Option P03	100 kHz to 3.6 GHz
	Option P08	100 kHz to 8.4 GHz
	Option P13	100 kHz to 13.6 GHz
	Option P26	100 kHz to 26.5 GHz
Gain	100 kHz to 3.6 GHz	+20 dB nominal
	3.6 to 26.5 GHz	+35 dB nominal
Noise figure	100 kHz to 3.6 GHz	11 dB nominal
	3.6 to 8.4 GHz	9 dB nominal
	8.4 to 13.6 GHz	10 dB nominal
	13.6 to 26.5 GHz	15 dB nominal

Dynamic Range Specifications

1 dB gain compression (two-tone)

		Total power at input mixer	
	20 to 500 MHz	0 dBm	+3 dBm typical
	500 MHz to 3.6 GHz	+3 dBm	+7 dBm typical
	3.6 to 26.5 GHz	0 dBm	+4 dBm typical
Preamp on (Option P03, P08, P13, P26)	10 MHz to 3.6 GHz		–10 dBm nominal
	3.6 to 26.5 GHz		
	Tone spacing 100 kHz to 20 MHz		–26 dBm nominal
	Tone spacing > 70 MHz		–16 dBm nominal

Displayed average noise level (DANL)
(Input terminated, sample or average detector, averaging type = Log, 0 dB input attenuation, IF Gain = High, 20 to 30 °C)

		Specification	Typical
Preamp off	9 kHz to 1 MHz		–130 dBm
	1 to 10 MHz	–150 dBm	–153 dBm
	10 MHz to 2.1 GHz	–151 dBm	–154 dBm
	2.1 to 3.6 GHz	–149 dBm	–152 dBm
	3.6 to 8.4 GHz	–149 dBm	–153 dBm
	8.4 to 13.6 GHz	–148 dBm	–151 dBm
	13.6 to 17.1 GHz	–144 dBm	–147 dBm
	17.1 to 20.0 GHz	–143 dBm	–146 dBm
	20.0 to 26.5 GHz	–136 dBm	–142 dBm
Preamp on (Option P03, P08, P13, P26)	100 kHz to 1 MHz		–149 dBm
	1 to 10 MHz	–161 dBm	–163 dBm
	10 MHz to 2.1 GHz	–163 dBm	–166 dBm
	2.1 to 3.6 GHz	–162 dBm	–164 dBm
	3.6 to 8.4 GHz	–162 dBm	–166 dBm
	8.4 to 13.6 GHz	–162 dBm	–165 dBm
	13.6 to 17.1 GHz	–159 dBm	–163 dBm
	17.1 to 20.0 GHz	–157 dBm	–161 dBm
	20.0 to 26.5 GHz	–152 dBm	–157 dBm

Spurious responses

Residual responses (Input terminated and 0 dB attenuation)	200 kHz to 8.4 GHz (swept)	–100 dBm
	Zero span or FFT or other frequencies	–100 dBm nominal
Image responses	10 MHz to 3.6 GHz	–80 dBc (–107 dBc typical)
	3.6 to 13.6 GHz	–78 dBc (–88 dBc typical)
	13.6 to 17.1 GHz	–74 dBc (–85 dBc typical)
	17.1 to 22 GHz	–70 dBc (–82 dBc typical)
	22 to 26.5 GHz	–68 dBc (–78 dBc typical)
LO related spurious (f > 600 MHz from carrier)	10 MHz to 3.6 GHz	–90 dBc typical
Other spurious		
f ≥ 10 MHz from carrier	–80 dBc	

Dynamic Range Specifications (continued)

Second harmonic distortion (SHI)

		Mixer level	Distortion	SHI
	10 MHz to 1.8 GHz	–15 dBm	–60 dBc	+45 dBm
	1.8 to 7.0 GHz	–15 dBm	–80 dBc	+65 dBm
	7.0 to 11.0 GHz	–15 dBm	–70 dBc	+55 dBm
	11.0 to 13.25 GHz	–15 dBm	–65 dBc	+50 dBm
Preamp on (Option P03, P08, P13, P26)		Preamp level	Distortion	SHI
	10 MHz to 1.8 GHz	–45 dBm	–78 dBc nominal	+33 dBm nominal
	1.8 to 13.25 GHz	–50 dBm	–60 dBc nominal	+10 dBm nominal

Third-order intermodulation distortion (TOI) *(two -30 dBm tones at input mixer with tone separation > 5 times IF prefilter bandwidth, 20 to 30 °C, see Specifications Guide for IF prefilter bandwidths)*

		Distortion	TOI	Typical
	10 to 100 MHz	–84 dBc	+12 dBm	+17 dBm
	100 to 400 MHz	–90 dBc	+15 dBm	+20 dBm
	400 MHz to 1.7 GHz	–92 dBc	+16 dBm	+20 dBm
	1.7 to 3.6 GHz	–92 dBc	+16 dBm	+19 dBm
	3.6 to 8.4 GHz	–90 dBc	+15 dBm	+18 dBm
	8.4 to 13.6 GHz	–90 dBc	+15 dBm	+18 dBm
	13.6 to 26.5 GHz	–80 dBc	+10 dBm	+14 dBm
Preamp on (Option P03, P08, P13, P26) (two –45 dBm tones at preamp input)	10 to 500 MHz	+4 dBm nominal		
	500 MHz to 3.6 GHz	+5 dBm nominal		
	3.6 to 26.5 GHz	–15 dBm nominal		

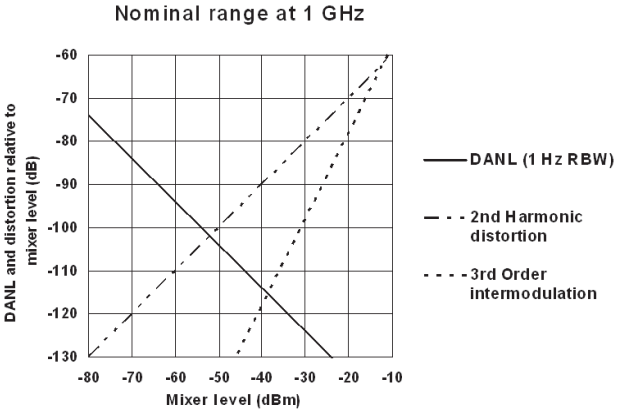

Figure 1. Nominal dynamic range – Band 0, for second and third order distortion, 20 Hz to 3.6 GHz

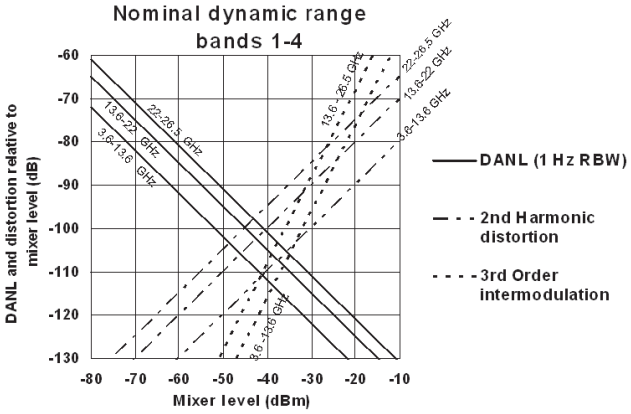

Figure 2. Nominal dynamic range – Bands 1 to 4, second and third order distortion, 3.6 GHz to 26.5 GHz

Dynamic Range Specifications (continued)

Phase noise[1]

Noise sidebands (20 to 30 °C, CF = 1 GHz)	Offset	Specification	Typical
	100 Hz	–84 dBc/Hz	–88 dBc/Hz
	1 kHz		–101 dBc/Hz nominal
	10 kHz	–103 dBc/Hz	–106 dBc/Hz
	100 kHz	–115 dBc/Hz	–117 dBc/Hz
	1 MHz	–135 dBc/Hz	–137 dBc/Hz
	10 MHz		–148 dBc/Hz nominal

1 For nominal values, refer to Figure 3.

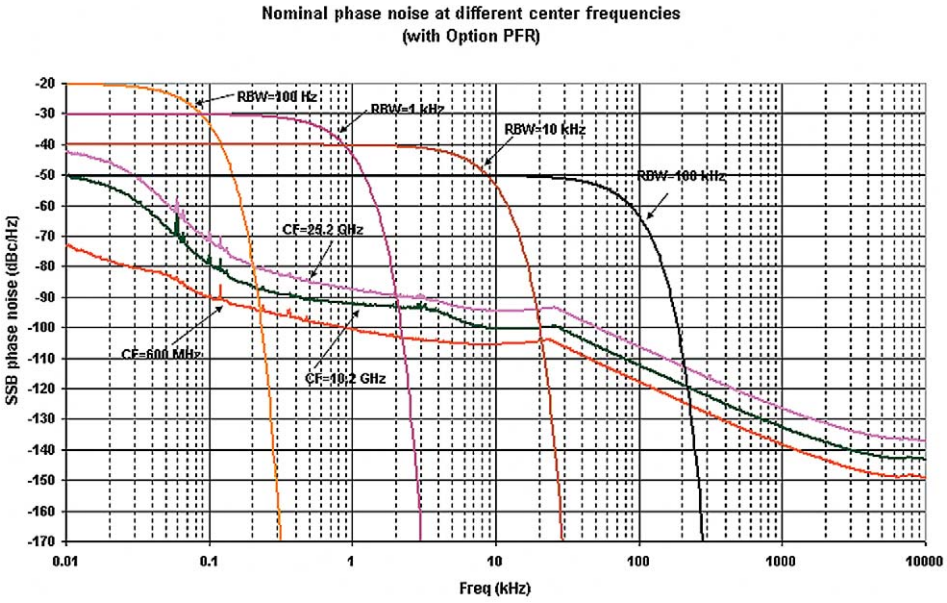

Figure 3. Nominal phase noise at different center frequencies

Power Suite Measurement Specifications

Channel power	
Amplitude accuracy, W-CDMA or IS95 (20 to 30 °C, attenuation = 10 dB)	±0.80 dB (±0.30 dB 95th percentile)

Occupied bandwidth	
Frequency accuracy	± [span/1000] nominal

Adjacent channel power		
Accuracy, W-CDMA (ACLR) (at specific mixer levels and ACLR ranges)	Adjacent	Alternate
MS	±0.14 dB	±0.21 dB
BTS	±0.49 dB	±0.44 dB
Dynamic range (typical)		
Without noise correction	–73 dB	–79 dB
With noise correction	–78 dB	–82 dB
Offset channel pairs measured	1 to 6	
ACP speed (fast method). Data measurement and transfer time	14 ms nominal (σ = 0.2 dB)	
ACPR dynamic range, W-CDMA (5 MHz offset, RRC weighted, 3.84 MHz noise bandwidth)		
Two carriers	–70 dB nominal	
Four carriers	–64 dB nominal	
With noise correction	–72 dB nominal	
ACPR accuracy (two carriers, 5 MHz offset, –48 dBc ACPR)	±0.42 dB nominal	
Multiple number of carriers measured	Up to 12	

Power statistics CCDF	
Histogram resolution	0.01 dB

Power Suite Measurement Specifications (continued)

Burst power	
Methods	Power above threshold, power within burst width
Results	Single burst output power, average output power, maximum power, minimum power within burst, burst width

Spurious emission	
W-CDMA (1 to 3.6 GHz) Table driven spurious signals; search across regions.	
Dynamic range	96.7 dB (101.7 dB typical)
Absolute sensitivity	–84.4 dBm (–89.4 dBm typical)

Spectrum emission mask (SEM)	
cdma2000® (750 kHz offset)	
Relative dynamic range (30 kHz RBW)	78.9 dB (85.0 dB typical)
Absolute sensitivity	–99.7 dBm (–104.7 dBm typical)
Relative accuracy	±0.11 dB
3GPP W-CDMA (2.515 MHz offset)	
Relative dynamic range (30 kHz RBW)	81.9 dB (88.2 dB typical)
Absolute sensitivity	–99.7 dBm (–104.7 dBm typical)
Relative accuracy	±0.12 dB

General Specifications

Temperature range

Operating	5 to 50 °C
Storage	–40 to 65 °C

EMC

Complies with European EMC Directive 2004/108/EC
- IEC/EN 61326-1 or IEC/EN 61326-2-1
- CISPR Pub 11 Group 1, class A
- AS/NZS CISPR 11:2002
- ICES/NMB-001

This ISM device complies with Canadian ICES-001.
Cet appareil ISM est conforme a la norme NMB-001 du Canada

Safety

Complies with European Low Voltage Directive 73/23/EEC, amended by 93/68/EEC
- IEC/EN 61010-1 2nd Edition
- Canada: CSA C22.2 No. 61010-1
- USA: UL 61010-1 2nd Edition

Audio noise

Acoustic noise emission	Geraeuschemission
LpA < 70 dB	LpA < 70 dB
Operator position	Am Arbeitsplatz
Normal position	Normaler Betrieb
Per ISO 7779	Nach DIN 45635 t.19

Environmental stress

Samples of this product have been type tested in accordance with the Agilent Environmental Test Manual and verified to be robust against the environmental stresses of storage, transportation and end-use; those stresses include but are not limited to temperature, humidity, shock, vibration, altitude and power line conditions. Test methods are aligned with IEC 60068-2 and levels are similar to MIL-PRF-28800F Class 3.

General Specifications (continued)

Power requirements	
Voltage and frequency (nominal)	100 to 120 V, 50/60/400 Hz 220 to 240 V, 50/60 Hz
Power consumption	
On	390 W (fully loaded with options)
Standby	20 W

Display	
Resolution	1024 x 768, XGA
Size	213 mm (8.4 in.) diagonal (nominal)

Data storage	
Internal	160 GB nominal (Removable hard drive) 32 GB nominal with Option SSD (Removable solid state drive)
External	Supports USB 2.0 compatible memory devices

Weight (without options)	
Net	16 kg (35 lbs) nominal
Shipping	28 kg (62 lbs) nominal

Dimensions	
Height	177 mm (7.0 in)
Width	426 mm (16.8 in)
Length	368 mm (14.5 in)

Warranty

The MXA signal analyzer is supplied with a one-year warranty.

Calibration cycle

The recommended calibration cycle is two years. Calibration services are available through Agilent service centers.

Inputs and Outputs

Front panel	
RF input	
Connector	Type-N female, 50 Ω nominal
Analog baseband IQ inputs (Option BBA/S40) [1]	
Connectors (I, Q, I-Bar, Q-Bar, and Cal Out)	BNC female
Cal Out	
Signal	AC coupled square wave
Frequency	Selectable between 1 kHz and 250 kHz
Input impedance (4 connectors: I, Q, I-, Q-)	50 Ohm, 1 MOhm (selectable, nominal)
Probes supported [2]	
Active probe	1130A, 1131A, 1132A, 1134A
Passive probe	1161A
Input return loss	–35 dB (0 to 10 MHz, nominal)
50 Ohm impedance only selected	–30 dB (10 to 40 MHz. nominal)
Probe power	
Voltage/current	+15 Vdc, ±7% at 150 mA max nominal –12.6 Vdc, ±10% at 150 mA max nominal
USB 2.0 ports	
Master (2 ports)	
Standard	Compatible with USB 2.0
Connector	USB Type-A female
Output current	0.5 A nominal

Rear panel	
10 MHz out	
Connector	BNC female, 50 Ω nominal
Output amplitude	≥ 0 dBm nominal
Frequency	10 MHz ± (10 MHz x frequency reference accuracy)
Ext Ref In	
Connector	BNC female, 50 Ω nominal
Input amplitude range	–5 to +10 dBm nominal
Input frequency	1 to 50 MHz nominal
Frequency lock range	$\pm 5 \times 10^{-6}$ of specified external reference input frequency
Trigger 1 and trigger 2 inputs	
Connector	BNC female
Impedance	> 10 kΩ nominal
Trigger level range	–5 to +5 V
Trigger 1 and trigger 2 outputs	
Connector	BNC female
Impedance	50 Ω nominal
Level	5 V TTL nominal

1. For additional specifications, please refer to the MXA Signal Analyzer Option BBA: Analog Baseband IQ Inputs Technical Overview, literature number 5989-6538EN

2. For more details, please refer to the Agilent Probe Configuration Guides, literature numbers 5968-7141EN and 5989-6162EN; probe heads are necessary to attach to your device properly and probe connectivity kits such as E2668B, E2669A. or E2675A are required

Inputs and Outputs (continued)

Rear panel (continued)	
Sync (reserved for future use)	
Connector	BNC female
Monitor output	
Connector	VGA compatible, 15-pin mini D-SUB
Format	XGA (60 Hz vertical sync rates, non-interlaced) Analog RGB
Resolution	1024 x 768
Noise source drive +28 V (pulsed)	
Connector	BNC female
SNS series noise source	
Digital bus (reserved for future use)	
Connector	MDR-80
Anolog out	
Connector	BNC female
USB 2.0 ports	
Master (4 ports)	
Standard	Compatible with USB 2.0
Connector	USB Type-A female
Output current	0.5 A nominal
Slave (1 port)	
Standard	Compatible with USB 2.0
Connector	USB Type-B female
Output current	0.5 A nominal
GPIB interface	
Connector	IEEE-488 bus connector
GPIB codes	SH1, AH1, T6, SR1, RL1, PP0, DC1, C1, C2, C3, C28, DT1, L4, C0
GPIB mode	Controller or Device
LAN TCP/IP interface	
Standard	1000Base-T
Connector	RJ45 Ethertwist

MXA Signal Analyzer Ordering Information

For further information, refer to MXA Signal Analyzer Configuration Guide (5989-4943EN)

Hardware	
N9020A	MXA signal analyzer
N9020A-503	Frequency range, 20 Hz to 3.6 GHz
N9020A-508	Frequency range, 20 Hz to 8.4 GHz
N9020A-513	Frequency range, 20 Hz to 13.6 GHz
N9020A-526	Frequency range, 20 Hz to 26.5 GHz
N9020A-B25	Analysis bandwidth, 25 MHz
N9020A-BBA	I/Q baseband inputs, analog
N9020A-S40	40 MHz baseband analysis bandwidth (requires BBA)
N9020A-PFR	Precision frequency reference
N9020A-EA3	Electronic attenuator, 3.6 GHz
N9020A-P03	Preamplifier, 3.6 GHz
N9020A-P08	Preamplifier, 8.4 GHz
N9020A-P13	Preamplifier, 13.6 GHz
N9020A-P26	Preamplifier, 26.5 GHz
N9020A-HDD	Additional removable hard drive
N9020A-SSD	Removable solid state drive substitution
N9020AK-PC2	Upgrade to dual core processor with removable hard drive (For an instrument with serial number prefix less than MY/SG/US 4910 only).

Optional features	
N9020A-EMC	Basic precompliance EMI features

Applications	
Note: The last two letters of ordering numbers indicate the license type. FP stands for Fixed Perpetual, TP for Transportable Perpetual. It is recommended you configure each application with the license type. Visit **www.agilent.com/find/xseries_transportable** for more information about transportable licensing.	
N9061A-2FP	Remote language compatibility for 856xE/EC
N9063A-2FP or -2TP	Analog demodulation measurement application
N9068A-2FP or -2TP	Phase noise measurement application
N9069A-1FP or -1TP	Noise figure measurement application (requires preamplifier)
N9051A-2FP	Pulse measurement
N9071A-2FP or -2TP	GSM/EDGE measurement application
N9071A-3FP or -3TP	EDGE Evolution measurement application (requires N9071A-2FP or -3TP)
N9071A-XFP or -XTP	Single acquisition combined GSM/EDGE measurement (requires N9071A-2FP or -2TP)
N9072A-2FP or -2TP	cdma2000® measurement application
N9073A-1FP or -1TP	W-CDMA measurement application
N9073A-2FP or -2TP	HSDPA/HSUPA measurement application (requires N9073A-1FP or -1TP)
N9073A-XFP or -XTP	Single acquisition combined W-CDMA measurement (requires N9073A-1FP or 1TP)
N9075A-2FP or -2TP	802.16 OFDMA measurement application
N9076A-1FP or -1TP	1xEV-DO measurement application
N9079A-1FP or -1TP	TD-SCDMA measurement application
N9079A-2FP or -2TP	HSPA/8PSK measurement application (requires N9079A-1FP or -1TP)

Applications (continued)

N9080A-1FP or -1TP	LTE measurement application
N9074A-XFP or -XTP	Single acquisition combined Fixed WiMAX measrement application (requires Option B25)
N9077A-XFP or -XTP	Single acquisition combined WLAN measrement application (requires Option B25)
N9049A-2FP or -2TP	iDEN/WiDEN/MotoTalk measurement application
N6153A-2FP or -2TP	DVB-T/H measurement application
N6156A-2FP or -2TP	DTMB measurement application
89601A	89600 Vector Signal Analysis VSA software
89601X	VXA vector signal analyzer measurement application
89601XFP-205 or 89601XTP-205	VXA Basic VSA-Lite (required option at initial order of 89601X)
89601XFP-333 or 89601XTP-333	VXA X-Series connectivity (required option at initial order of 89601X, requires 205)
89601XFP-AYA or 89601XTP-AYA	VXA vector modulation analysis (requires 205/333)
89601XFP-B7R or 89601XTP-B7R	VXA WLAN modulation analysis (requires 205/333)
N6171A-M01	MATLAB® - Basic Signal Analysis Package
N6171A-M02	MATLAB - Standard Signal Analysis Package
N6171A-M03	MATLAB - Advanced Signal Analysis Package

MXA Signal Analyzer Ordering Information (continued)

For further information, refer to MXA Signal Analyzer Configuration Guide (5989-4943EN)

Accessories	
N9020A-KYB	Keyboard [1]
N9020A-KB2	US 65 key USB keyboard
N9020A-BAG	Accessory pouch
N9020A-EFM	USB flash drive, 1 GB
N9020A-DVR	USB DVD-ROM/CD-R/RW drive
N9020A-MLP	Minimum loss pad, 50 to 75 Ω
N9020A-PRC	Portable configuration
N9020AK-CVR	Front panel cover, additional
N9020A-1CP	Rack mount and handle kit
N9020A-1CM	Rack mount kit
N9020A-1CN	Front handle kit
N9020A-1CR	Rack slide kit
N9020A-HTC	Hard transit case

Warranty and service	
Standard warranty is one year.	
R-51B-001-3C	1 year return-to-Agilent warranty extended to 3 years

Calibration [2]	
N9020A-UK6	Commercial calibration certificate with test data
N9020A-1A7	ISO 17025 compliant calibration
N9020A-A6J	ANSI Z540 compliant calibration
R-50C-011-3	Inclusive calibration plan, 3 year coverage
R-50C-013-3	Inclusive calibration plan and cal data, 3 year coverage

1. Does not fit Option N9020A-BAG accessory pouch. Order N9020A-KB2 for accessory pouch that fits keyboard.
2. Options not available in all countries

Literature Resources

Literature title	Literature number
Agilent MXA Signal Analyzers	
Brochure	5989-5047EN
Data Sheet	5989-4942EN
Configuration Guide	5989-4943EN
Option BBA: Analog Baseband IQ Inputs Technical Overview	5989-6538EN
Agilent EXA Signal Analyzers	
Brochure	5989-6527EN
Data Sheet	5989-6529EN
Configuration Guide	5989-6531EN
Agilent X-Series Signal Analyzers (MXA/EXA)	
Demonstration Guide	5989-6126EN
X-Series Signal Analyzer Measurement Application Overview	5989-8019EN
EMI Precompliance Measurements Using MXA/EXA	5990-3690EN
Analog Demodulation Measurement Application Technical Overview	5989-6535EN
Noise Figure Measurement Application Technical Overview	5989-6536EN
Phase Noise Measurement Application Technical Overview	5989-5354EN
Pulse Measurement Software Technical Overview	5990-3801EN
W-CDMA, HSDPA/HSUPA Measurement Application Technical Overview	5989-5352EN
802.16 OFDMA Measurement Application Technical Overview	5989-5353EN
GSM/EDGE Measurement Application Technical Overview	5989-6532EN
EDGE Evolution Measurement Application Flyer	5989-9837EN
cdma2000, 1xEV-DO Measurement Application Technical Overview	5989-6533EN
TD-SCDMA Measurement Application Technical Overview	5989-6534EN
LTE Measurement Application Technical Overview	5989-6537EN
Single Acquisition Combined WLAN Measurement Application Technical Overview	5990-3519EN
Single Acquisition Combined Fixed WiMAX Measurement Application Technical Overview	5990-3520EN
DVB-T/H Measurement Application Technical Overview	5990-3569EN
DTMB Measurement Application Technical Overview	5990-3570EN
Remote Language Compatibility Technical Overview	5989-6539EN
Speed Enhancement and Removable Hard Drive	5989-6541EN
Using Agilent X-Series Analyzers (MXA/EXA) for Measuring and Troubleshooting Digitally Modulated Signals	5989-4944EN
Using Agilent X-Series Analyzers (MXA/EXA) Preselector Tuning for Amplitude Accuracy in Microwave Spectrum Analysis	5989-4946EN
Maximizing Measurement Speed with Agilent X-Series Signal Analyzers (MXA/EXA)	5989-4947EN
Making Precompliance Measurements with Option EMC on X-Series Analyzers (MXA/EXA)	5990-3133EN
8 Hints for Better Spectrum Analysis	5965-7009E
Agilent VXA Vector Signal Analyzer Measurement Applications	
VXA Vector Signal Analyzer Measurement Application, Technical Overview	5989-7463EN
Option AYA Vector Modulation Analysis, Technical Overview	5989-7464EN
Option B7R WLAN Modulation Analysis, Technical Overview	5989-7465EN

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Other European Countries:
www.agilent.com/find/contactus

Revised: July 17, 2008

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

Printed in USA, March 20, 2009
5989-4942EN

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