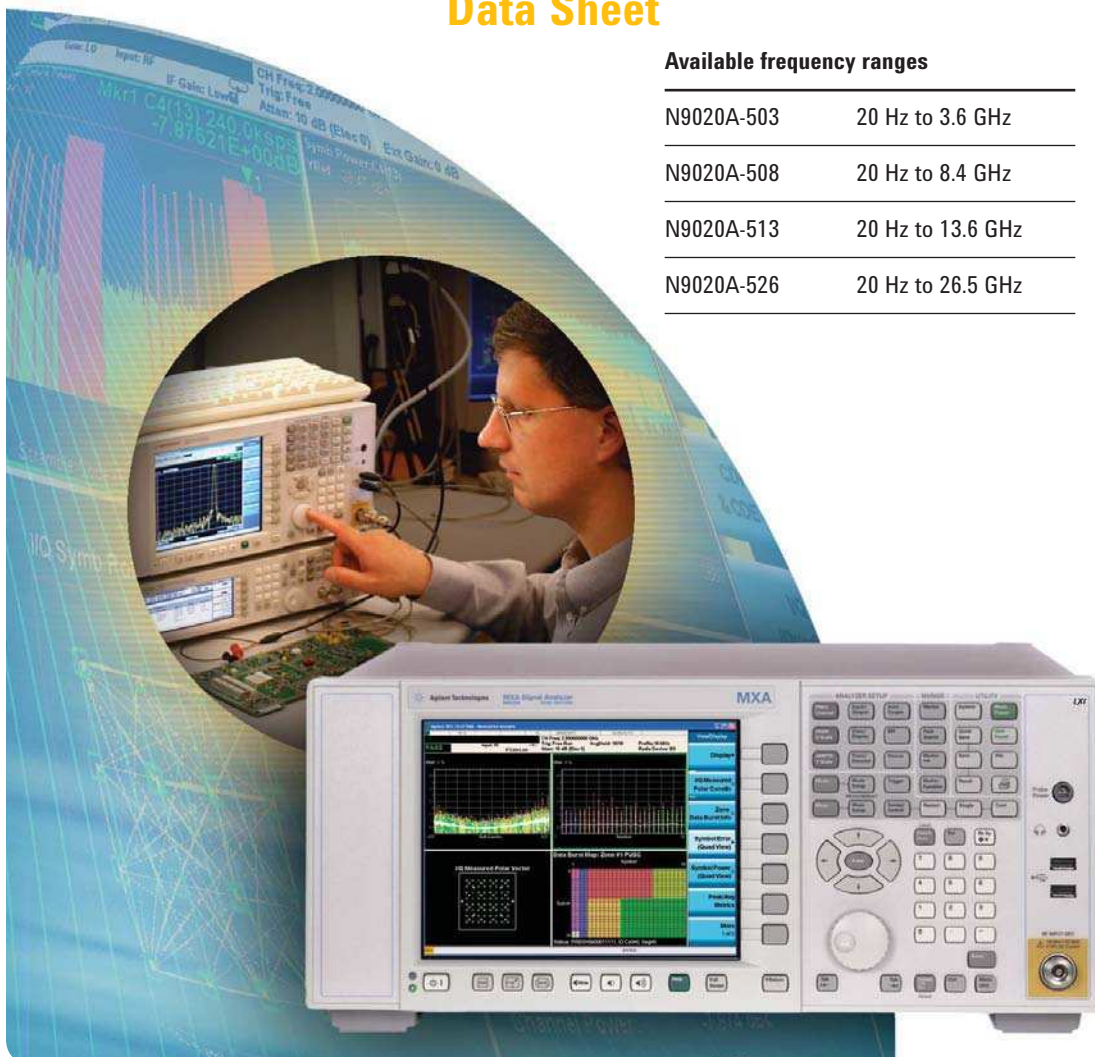


# Agilent MXA Signal Analyzer N9020A

## 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

## Table of Contents

<b>Definitions and Conditions</b>	<b>3</b>
<b>Frequency and Time Specifications</b>	<b>4</b>
Frequency range	4
Band	4
Frequency reference	4
Frequency readout accuracy	4
Marker frequency counter	4
Frequency span	5
Sweep time and triggering	5
Time gating	5
Sweep (trace) point range	5
Resolution bandwidth (RBW)	5
Analysis bandwidth	6
Video bandwidth (VBW)	6
Measurement speed	6
<b>Amplitude Accuracy and Range Specifications</b>	<b>7</b>
Amplitude range	7
Electronic attenuator	7
Maximum safe input level	7
Display range	7
Frequency response	8
Input attenuation switching uncertainty	8
Total absolute amplitude accuracy	8
Input voltage standing wave ratio (VSWR)	8
Resolution bandwidth switching uncertainty	9
Reference level	9
Display scale switching uncertainty	9
Display scale fidelity	9
Trace detectors	9
Preamplifier	9
<b>Dynamic Range Specifications</b>	<b>10</b>
1 dB gain compression (two tone)	10
Displayed average noise level (DANL)	10
Spurious responses	10
Second harmonic distortion (SHD)	11
Third-order intermodulation distortion (TOI)	11
Phase noise	12

## Power Suite Measurement

<b>Specifications</b>	<b>13</b>
Channel power	13
Occupied bandwidth	13
Adjacent channel power	13
Power statistics CCDF	13
Burst power	14
Spurious emission	14
Spectrum emission mask (SEM)	14
<b>General Specifications</b>	<b>15</b>
Temperature range	15
EMC	15
Safety	15
Audio noise	15
Environmental stress	15
Power requirements	16
Data storage	16
Weight	16
Dimensions	16
Warranty	16
Calibration cycle	16
<b>Inputs and Outputs</b>	<b>17</b>
Front panel	17
Rear panel	17
<b>MXA Signal Analyzer Ordering Information</b>	<b>19</b>
Hardware	19
Applications	19
Accessories	20
Warranty and service	20
Calibration	20
<b>Related Literature</b>	<b>21</b>
<b>Support, Services, and Assistance</b>	<b>22</b>

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 ( $\approx 2\sigma$ ) 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](http://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	$\pm$ [(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) 1 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	$\leq (0.25 \text{ Hz} \times N)$ p-p in 20 ms nominal $\leq (10 \text{ Hz} \times N)$ p-p in 20 ms nominal See band table above for N (LO Multiple)	

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

$$\pm (\text{marker frequency} \times \text{frequency reference accuracy} + 0.25\% \times \text{span} + 5\% \times \text{RBW} + 2 \text{ Hz} + 0.5 \times \text{horizontal resolution}^1)$$

<sup>1</sup> Horizontal resolution is span/(sweep points - 1)

### Marker frequency counter

Accuracy	$\pm$ (marker frequency x frequency reference accuracy + 0.100 Hz)
Delta counter accuracy	$\pm$ (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	$\pm(0.25\% \times \text{span} + \text{horizontal resolution})$
FFT	$\pm(0.10\% \times \text{span} + \text{horizontal resolution})$

### Sweep time and triggering

Range	Span = 0 Hz Span $\geq$ 10 Hz	1 $\mu$ s to 6000 s 1 ms to 4000 s
Accuracy	Span $\geq$ 10 Hz, swept Span $\geq$ 10 Hz, FFT Span = 0 Hz	$\pm 0.01\%$ nominal $\pm 40\%$ nominal $\pm 0.01\%$ nominal
Trigger	Free run, line, video, external 1, external 2, RF burst, periodic timer	
Trigger delay	Span = 0 Hz or FFT Span $\geq$ 10 Hz, swept Resolution	-150 to +500 ms 1 $\mu$ s to 500 ms 0.1 $\mu$ s

### 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 20001
-----------	------------

### 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	$\pm 1.0\%$ ( $\pm 0.044$ dB)
RBW range	820 kHz to 1.2 MHz (< 3.6 GHz CF)	$\pm 2.0\%$ ( $\pm 0.088$ dB)
	1.3 to 2.0 MHz (<3.6 GHz CF)	$\pm 0.07$ dB nominal
	2.2 to 3 MHz (<3.6 GHz CF)	$\pm 0.15$ dB nominal
	4 to 8 MHz (<3.6 GHz CF)	$\pm 0.25$ dB nominal
Bandwidth accuracy (-3.01 dB)	1 Hz to 1.3 MHz	$\pm 2\%$ nominal
RBW range		
Selectivity (-60 dB/-3 dB)	4.1:1 nominal	

## Frequency and Time Specifications (continued)

### Analysis bandwidth<sup>2</sup>

---

Maximum bandwidth	
Option B25	25 MHz
Standard	10 MHz

---

<sup>2</sup> 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

---

Local measurement and display update rate	Sweep points = 1001	11 ms ( 90/s) nominal
Remote measurement and LAN transfer rate	Sweep points = 1001	4 ms ( 250/s) nominal
Marker peak search	5 ms nominal	
Center frequency tune and transfer (RF)	51 ms nominal	
Center frequency tune and transfer ( $\mu$ W)	86 ms nominal	
Measurement/mode switching	75 ms nominal	

---

# 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	+30 dBm (1 W)
Preamp (Option P03, P08, P13, P26)	+25 dBm
Peak pulse power	<10 $\mu$ s pulse width, <1% duty cycle +50 dBm (100 W) and input attenuation $\geq$ 30 dB
DC volts	
DC coupled	$\pm$ 0.2 Vdc
AC coupled	$\pm$ 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, dB $\mu$ V, dBmA, dB $\mu$ A, V, W, A

## Amplitude Accuracy and Range Specifications (continued)

### Frequency response (10 dB input attenuation, 20 to 30 °C, preselector centering applied, $\sigma$ = nominal standard deviation)

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

### Input attenuation switching uncertainty

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

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

	At 50 MHz	$\pm 0.33$ dB	
	At all frequencies	$\pm(0.33$ dB + frequency response)	
	20 Hz to 3.6 GHz	$\pm 0.23$ dB (95 <sup>th</sup> Percentile $\approx 2\sigma$ )	
Preamp on (Option P03, P08, P13, P26)	At all frequencies	$\pm (0.39$ dB + frequency response)	

### Input voltage standing wave ratio (VSWR) ( $\geq 10$ 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) (0 dB attenuation)	10 MHz to 3.6 GHz	< 1.7:1 nominal
	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		-125 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
Preamp on (Option P03, P08, P13, P26)	20.0 to 26.5 GHz	-136 dBm	-142 dBm
	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 degC, see Specifications Guide for IF prefilter bandwidths)

	Distortion	TOI	Typical
10 to 100 MHz	-84 dBc	+12 dBm	+17 dBm
100 to 400 MHz	-88 dBc	+14 dBm	+18 dBm
400 MHz to 1.7 GHz	-90 dBc	+15 dBm	+19 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	

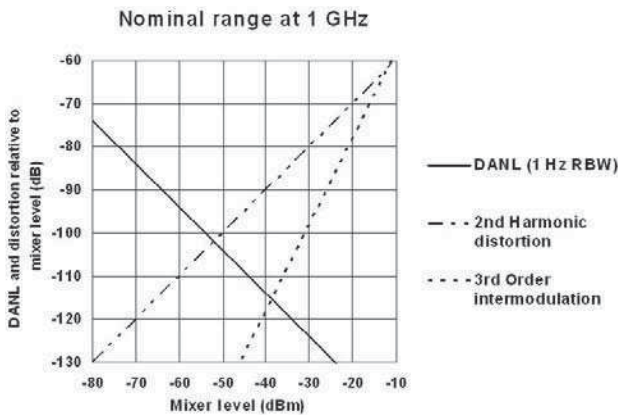


Figure 1. Nominal dynamic range – Band 0, for second and third order distortion, 20 Hz to 3.6 GHz

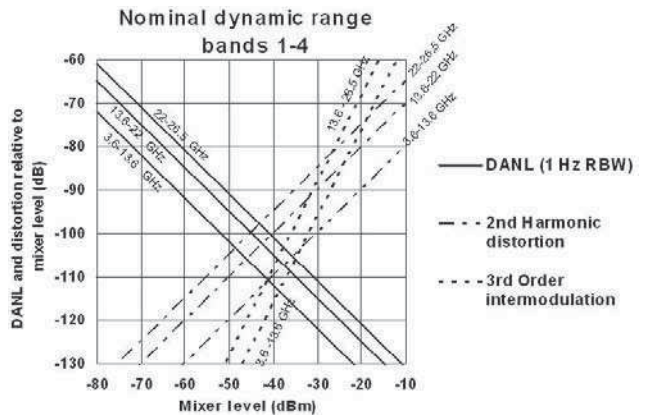


Figure 2. Nominal dynamic range – Bands 1 to 4, second and third order distortion, 3.6 GHz to 26.5 GHz

## Dynamic Range Specifications (continued)

### Phase noise<sup>3</sup>

Noise sidebands (20 to 30 °C, CF = 1 GHz)	Offset	Specification	Typical
	100 Hz	-84 dBc/Hz	-88 dBc/Hz
	1 kHz		-100 dBc/Hz nominal
	10 kHz	-103 dBc/Hz	-106 dBc/Hz
	100 kHz	-115 dBc/Hz	-117 dBc/Hz
	1 MHz	-133 dBc/Hz	-137 dBc/Hz
	10 MHz		-148 dBc/Hz nominal

3 For nominal values, refer to Figure 3.

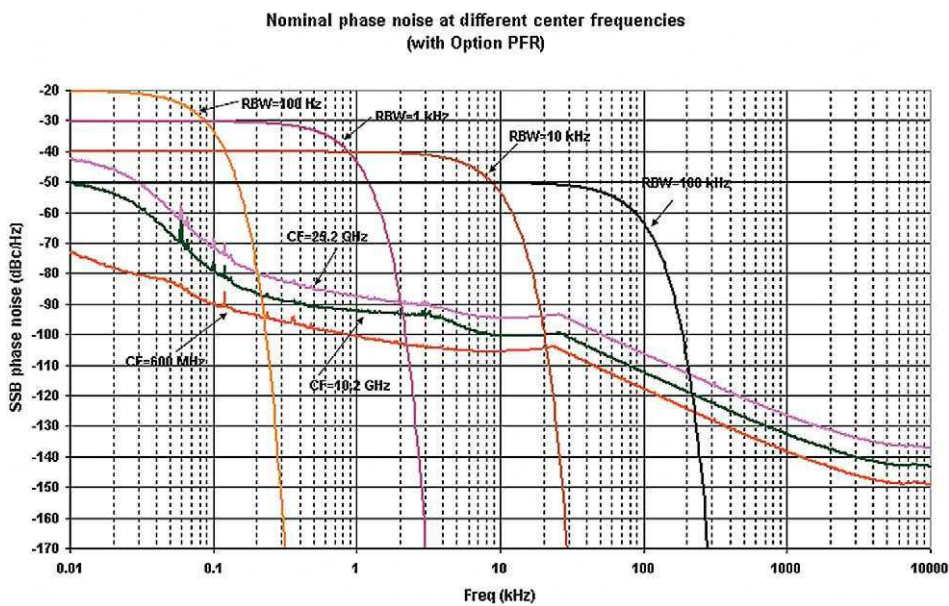


Figure 3. Nominal phase noise at different center frequencies (with Option PFR)

# 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 ( $\sigma = 0.2$  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	95.3 dB (100.3 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 89/336/EEC, amended by 93/68/EEC

- IEC/EN 61326
  - CISPR Pub 11 Group 1, class A
  - AS/NZS CISPR 11:2002
  - ICES/NMB-001
- 

## Safety

Complies with European Low Voltage Directive 73/23/EEC, amended by 93/68/EEC

- IEC/EN 61010-1
  - Canada: CSA C22.2 No. 61010-1
  - USA: UL 61010-1
- 

## 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)	100/120 V, 50/60 Hz 220/240 V, 50/60 Hz
---------------------------------	--

---

### Power consumption

On	< 260 watts
Standby	< 20 watts

---

### Data storage

---

Internal	40 GB nominal
----------	---------------

---

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 one year. Calibration services are available through Agilent service centers.

---



## Inputs and Outputs

### Front panel

---

RF input	
Connector	Type-N female, 50 $\Omega$ nominal
Probe power	
Voltage/current	+15 Vdc, $\pm 7\%$ at 150 mA max nominal -12.6 Vdc, $\pm 10\%$ 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 $\Omega$ nominal
Output amplitude	$\geq 0$ dBm nominal
Frequency	10 MHz $\pm$ (10 MHz x frequency reference accuracy)
Ext Ref In	
Connector	BNC female, 50 $\Omega$ 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	$>10$ k $\Omega$ nominal
Trigger level range	-5 to +5 V
Trigger 1 and trigger 2 outputs	
Connector	BNC female
Impedance	50 $\Omega$ nominal
Level	5 V TTL nominal

---

## 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) (reserved for future use)	
Connector	BNC female
SNS series noise source (reserved for future use)	
Digital bus (reserved for future use)	
Connector	MDR-80
Analog out (reserved for future use)	
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
GPIO interface	
Connector	IEEE-488 bus connector
GPIO codes	SH1, AH1, T6, SR1, RL1, PP0, DC1, C1, C2, C3, C28, DT1, L4, C0
LAN TCP/IP interface	
Standard	100BaseT
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-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

### Applications

N9063A	Analog demodulation measurement application (Orderable December 2007)
N9068A	Phase noise measurement application
N9071A	GSM/EDGE measurement application
N9073A-1FP	W-CDMA measurement application
N9073A-2FP	HSDPA/HSUPA measurement application (requires N9073A-1FP)
N9075A	802.16 OFDMA measurement application
N9069A	Noise figure measurement application (Orderable December 2007)
N9072A	cdma2000 measurement application (Orderable December 2007)
N9079A-1FP	TD-SCDMA measurement application (Orderable December 2007)
N9079A-2FP	HSDPA/8PSK measurement application (requires N9079A-1FP) (Orderable December 2007)
89601A	Vector signal analysis software

## MXA Signal Analyzer Ordering Information (continued)

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

### Accessories

N9020A-CPU	Instrument security, additional CPU/HDD
N9020A-MSE	Mouse
N9020A-KYB	Keyboard
N9020A-EFM	USB flash drive, 1 GB
N9020A-DVR	USB DVD-ROM/CD-R/RW drive
N9020A-MLP	Minimum loss pad, 50 to 75 $\Omega$
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

N9020A-1A7	ISO 17025 compliant calibration
N9020A-A6J	ANSI Z540 compliant calibration
R-50C-011-3	Inclusive calibration plan, 3 year coverage <sup>4</sup>
R-50C-013-3	Inclusive calibration plan and cal data, 3 year coverage <sup>4</sup>

<sup>4</sup> Options not available in all countries

## Literature Resources

<b>Publication title</b>	<b>Publication number</b>
<b>Agilent MXA Signal Analyzer</b>	
<i>Agilent MXA Signal Analyzer, Brochure</i>	5989-5047EN
<i>Agilent MXA Signal Analyzer, Data Sheet</i>	5989-4942EN
<i>Agilent MXA Signal Analyzer, Configuration Guide</i>	5989-4943EN
<b>Agilent EXA Signal Analyzer</b>	
<i>Agilent EXA Signal Analyzer, Brochure</i>	5989-6527EN
<i>Agilent EXA Signal Analyzer, Data Sheet</i>	5989-6529EN
<i>Agilent EXA Signal Analyzer, Configuration Guide</i>	5989-6531EN
<b>Agilent X-Series Signal Analyzers</b>	
<i>Agilent X-Series Signal Analyzer (MXA/EXA), Demonstration Guide</i>	5989-6126EN
<i>Agilent X-Series Signal Analyzers (MXA/EXA) W-CDMA, HSDPA/HSUPA, Technical Overview</i>	5989-5352EN
<i>Agilent X-Series Signal Analyzers (MXA/EXA) 802.16 OFDMA, Technical Overview</i>	5989-5353EN
<i>Agilent X-Series Signal Analyzers (MXA/EXA) Phase Noise, Technical Overview</i>	5989-5354EN
<i>Agilent X-Series Signal Analyzers (MXA/EXA) GSM/EDGE, Technical Overview</i>	5989-6532EN
<i>Using Agilent X-Series Signal Analyzers (MXA/EXA) for Measuring and Troubleshooting Digitally Modulated Signals, Application Note</i>	5989-4944EN
<i>Using Agilent X-Series Signal Analyzers (MXA/EXA) Preselector Tuning for Amplitude Accuracy in Microwave Spectrum Analysis, Application Note</i>	5989-4946EN
<i>Maximizing Measurement Speed with Agilent X-Series Signal Analyzers (MXA/EXA), Application Note</i>	5989-4947EN



### Agilent Email Updates

[www.agilent.com/find/emailupdates](http://www.agilent.com/find/emailupdates)

Get the latest information on the products and applications you select.



### Agilent Direct

[www.agilent.com/find/agilentdirect](http://www.agilent.com/find/agilentdirect)

Quickly choose and use your test equipment solutions with confidence.



[www.agilent.com/find/open](http://www.agilent.com/find/open)

Agilent Open simplifies the process of connecting and programming test systems to help engineers design, validate and manufacture electronic products. Agilent offers open connectivity for a broad range of system-ready instruments, open industry software, PC-standard I/O and global support, which are combined to more easily integrate test system development.



[www.lxistandard.org](http://www.lxistandard.org)

**LXI is the LAN-based successor to GPIB, providing faster, more efficient connectivity. Agilent is a founding member of the LXI consortium.**

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

Pentium® is a U.S. registered trademark of Intel Corporation.

cdma2000 is a registered certification mark of the Telecommunications Industry Association. Used under license.

## 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 project management.

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

[www.agilent.com/find/removealldoubt](http://www.agilent.com/find/removealldoubt)

[www.agilent.com](http://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](http://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	0820 87 44 11
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700*
Germany	01805 24 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 (French)	41 (21) 8113811(Opt 2)
Switzerland (German)	0800 80 53 53 (Opt 1)
United Kingdom	44 (0) 118 9276201

Other European Countries:  
[www.agilent.com/find/contactus](http://www.agilent.com/find/contactus)

Revised: October 24, 2007

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

© Agilent Technologies, Inc. 2006, 2007  
Printed in USA, October 29, 2007  
5989-4942EN



Agilent Technologies