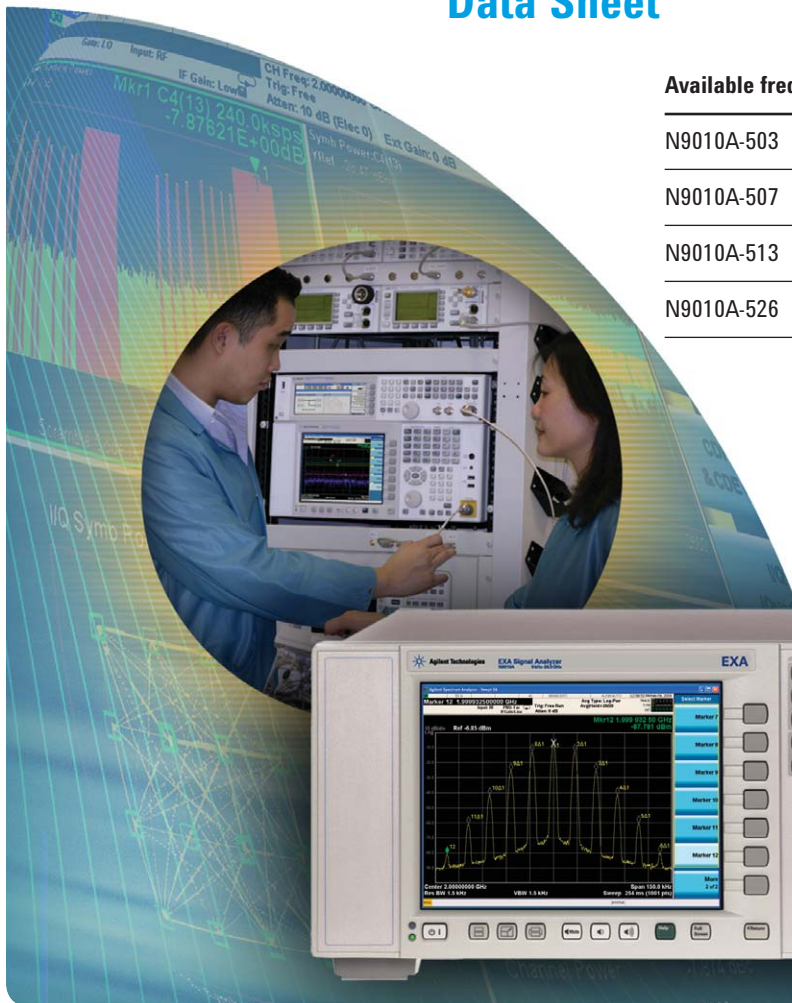


Agilent EXA Signal Analyzer N9010A

Data Sheet



Available frequency range

| | |
|------------|-------------------|
| N9010A-503 | 9 kHz to 3.6 GHz |
| N9010A-507 | 9 kHz to 7.0 GHz |
| N9010A-513 | 9 kHz to 13.6 GHz |
| N9010A-526 | 9 kHz to 26.5 GHz |



LXI class C certified



Agilent Technologies

Table of Contents

| | |
|--|-----------|
| Definitions and Conditions | 3 |
| Frequency and Time Specifications | 4 |
| 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 |
| Amplitude Accuracy and Range Specifications | 7 |
| 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 |
| Dynamic Range Specifications | 10 |
| 1 dB gain compression (two tone) | 10 |
| Displayed average noise level (DANL) | 10 |
| Spurious responses | 10 |
| Second harmonic distortion (SHI) | 11 |
| Third-order intermodulation distortion (TOI) | 11 |
| Phase noise | 12 |

| | |
|---|-----------|
| Power Suite Measurement Specifications | 13 |
| 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 |
| General Specifications | 15 |
| 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 |
| Inputs and Outputs | 17 |
| Front panel | 17 |
| Rear panel | 17 |
| EXA Signal Analyzer Ordering Information | 19 |
| Hardware | 19 |
| Applications | 19 |
| Accessories | 20 |
| Warranty and service | 20 |
| Calibration | 20 |
| Related Literature | 21 |

Eliminate the compromise between speed and price

The Agilent EXA is the industry's fastest economy-class signal analyzer. Its speed and accuracy, coupled with its unprecedented performance and application coverage, provides development and manufacturing engineers with the capabilities to cost-effectively troubleshoot new designs, increase manufacturing throughput, or analyze complex and time-varying signals.

The EXA seamlessly integrates a broad range of standards-based measurements with Agilent's industry-leading 89600 vector signal analysis (VSA) software—all in a single instrument. In addition to the use of an open Windows® XP Professional operating system, the EXA provides an advanced signal analysis user interface. All measurement features and functions are intuitively grouped and accessible from the front panel or via a USB keyboard and mouse.

Optional measurement application software provides preconfigured test routines for 802.16e Mobile WiMAX™, W-CDMA, HSDPA/HSUPA, GSM/EDGE/EDGE Evolution, and more. See page 19 or visit: www.agilent.com/find/xseries_apps for more information. Running the Agilent 89600 VSA software application in the EXA enables advanced signal demodulation analysis and troubleshooting of more than 50 demodulation formats including: 2G, 3G, 3.5G, WiMAX, WLAN, and Private Mobile Radio.

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

Frequency and Time Specifications

| Frequency range | DC Coupled | AC Coupled |
|-----------------|-------------------|--------------------|
| Option 503 | 9 kHz to 3.6 GHz | 10 MHz to 3.6 GHz |
| Option 507 | 9 kHz to 7.0 GHz | 10 MHz to 7.0 GHz |
| Option 513 | 9 kHz to 13.6 GHz | 10 MHz to 13.6 GHz |
| Option 526 | 9 kHz to 26.5 GHz | 10 MHz to 26.5 GHz |

| Band | LO Multiple (N) | Required options | |
|------|-----------------|------------------|------------------|
| 0 | 1 | 9 kHz to 3.6 GHz | |
| 1 | 1 | 3.5 to 7.0 GHz | Option 507 |
| 1 | 1 | 3.5 to 8.4 GHz | Options 513, 526 |
| 2 | 2 | 6.9 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 (marker frequency x frequency reference accuracy + 0.25% x span + 5% x RBW + 2 Hz + 0.5 x horizontal resolution¹)

1. 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 μ 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 μ s to 500 ms 0.1 μ 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 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 | $\pm 1.0\%$ (± 0.044 dB) |
| RBW range | 820 kHz to 1.2 MHz (< 3.6 GHz CF) | $\pm 2.0\%$ (± 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) | 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 bandwidth¹

| | |
|-------------------|-------------------|
| 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 speed²

| | Option PC2 | Standard |
|---|----------------------|----------------------|
| Local measurement and display update rate | 4 ms (250/s) nominal | 11 ms (90/s) nominal |
| Remote measurement and LAN transfer rate | 5 ms (200/s) nominal | 6 ms (167/s) nominal |
| Marker peak search | 1.5 ms nominal | 5 ms nominal |
| Center frequency tune and transfer (RF) | 20 ms nominal | 22 ms nominal |
| Center frequency tune and transfer (μ W) | 47 ms nominal | 49 ms nominal |
| Measurement/mode switching | 39 ms nominal | 75 ms nominal |

2. Sweep points = 101

Amplitude Accuracy and Range Specifications

Amplitude range

| | |
|---|---|
| Measurement range | Displayed average noise level (DANL) to +23 dBm |
| Input attenuator range (9 kHz to 26.5 GHz) | |
| Standard | 0 to 60 dB in 10 dB steps |
| Option FSA | 0 to 60 dB in 2 dB steps |

Electronic attenuator (Option EA3)

| | |
|---|------------------------|
| Frequency range | 9 kHz to 3.6 GHz |
| Attenuation range | |
| Electronic attenuator range | 0 to 24 dB, 1 dB steps |
| Full attenuation range (mechanical + electronic) | 0 to 84 dB, 1 dB steps |

Maximum safe input level

| | |
|--|---|
| Average total power (with and without preamp) | +30 dBm (1 W) |
| Peak pulse power | < 10 μ s pulse width, < 1% duty cycle +50 dBm (100 W) and input attenuation \geq 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, dB μ V, dBmA, dB μ A, 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 | 95 th Percentile ($\approx 2\sigma$) |
|--|--------------------|---|
| 9 kHz to 10 MHz | ± 0.8 dB | ± 0.4 dB |
| 10 MHz to 3.6 GHz | ± 0.6 dB | ± 0.3 dB |
| 3.5 to 7.0 GHz | ± 2.0 dB | |
| 6.9 to 13.6 GHz | ± 2.5 dB | |
| 13.5 to 22.0 GHz | ± 3.0 dB | |
| 22.0 to 26.5 GHz | ± 3.2 dB | |
| Preamp on (Option P03) (0 dB attenuation) | 100 kHz to 3.6 GHz | ± 0.28 dB |

Input attenuation switching uncertainty

| | | |
|--|---------------|-----------------------|
| 50 MHz (reference frequency) attenuation > 2 dB, preamp off | ± 0.20 dB | ± 0.08 dB typical |
| 9 kHz to 3.6 GHz | | ± 0.3 dB nominal |
| 3.5 to 7.0 GHz | | ± 0.5 dB nominal |
| 6.9 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, $1 \text{ Hz} \leq \text{RBW} \leq 1 \text{ MHz}$, 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 | ± 0.40 dB |
| At all frequencies | $\pm(0.40 \text{ dB} + \text{frequency response})$ |
| 9 kHz to 3.6 GHz | ± 0.27 dB (95th Percentile $\approx 2\sigma$) |
| Preamp on (Option P03) | 100 kHz to 3.6 GHz $\pm(0.39 \text{ dB} + \text{frequency response})$ |

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

| | |
|--|-----------------------------------|
| 10 MHz to 3.6 GHz | < 1.2:1 nominal |
| 3.6 to 7.0 GHz | < 1.5:1 nominal |
| 7.0 to 13.6 GHz | < 1.6:1 nominal |
| 13.6 to 26.5 GHz | < 1.9:1 nominal |
| Preamp on (Option P03) (0 dB attenuation) | 10 MHz to 3.6 GHz < 1.7:1 nominal |

Amplitude Accuracy and Range Specifications (continued)

Resolution bandwidth switching uncertainty (referenced to 30 kHz RBW)

| | |
|----------------------|----------|
| 1 Hz to 1.5 MHz RBW | ±0.08 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 +23 dBm in 0.01 dB steps |
| Linear scale | Same as Log (707 pV to 3.16 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 | ±0.15 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 |
| Gain | 100 kHz to 3.6 GHz | +20 dB nominal |
| Noise figure | 100 kHz to 3.6 GHz | 11 dB nominal |

Dynamic Range Specifications

1 dB gain compression (two-tone)

| | | Total power at input mixer |
|------------------------|--------------------|----------------------------|
| | 20 MHz to 26.5 GHz | +9 dBm nominal |
| Preamp on (Option P03) | 10 MHz to 3.6 GHz | -10 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 | 1 to 10 MHz | -147 dBm | -149 dBm |
| | 10 MHz to 2.1 GHz | -148 dBm | -150 dBm |
| | 2.1 to 3.6 GHz | -147 dBm | -148 dBm |
| | 3.6 to 7.0 GHz | -147 dBm | -149 dBm |
| | 7.0 to 13.6 GHz | -143 dBm | -147 dBm |
| | 13.6 to 17.1 GHz | -137 dBm | -142 dBm |
| | 17.1 to 20.0 GHz | -137 dBm | -142 dBm |
| Preamp on (Option P03) | 20.0 to 26.5 GHz | -134 dBm | -140 dBm |
| | 10 MHz to 2.1 GHz | -161 dBm | -163 dBm |
| | 2.1 to 3.6 GHz | -160 dBm | -162 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 (-103 dBc typical) |
| | 3.6 to 13.6 GHz | -75 dBc (-87 dBc typical) |
| | 13.6 to 17.1 GHz | -71 dBc (-85 dBc typical) |
| | 17.1 to 22 GHz | -68 dBc (-82 dBc typical) |
| | 22 to 26.5 GHz | -66 dBc (-78 dBc typical) |
| LO related spurious (f > 600 MHz from carrier) | 10 MHz to 3.6 GHz | -90 dBc typical |
| Other spurious | | |
| First RF order | | |
| f ≥ 10 MHz from carrier | -68 dBc | |
| Higher RF order | | |
| f ≥ 10 MHz from carrier | -80 dBc | |

Dynamic Range Specifications (continued)

Second harmonic distortion (SHI)

| | Mixer level | SHI |
|-------------------|-------------|---------|
| 10 MHz to 1.8 GHz | -15 dBm | +45 dBm |
| 1.8 to 7.0 GHz | -15 dBm | +65 dBm |
| 7.0 to 11.0 GHz | -15 dBm | +55 dBm |
| 11.0 to 13.25 GHz | -15 dBm | +50 dBm |

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 |
|--------------------|------------|---------|---------|
| 100 to 400 MHz | -80 dBc | +10 dBm | +14 dBm |
| 400 MHz to 1.7 GHz | -82 dBc | +11 dBm | +15 dBm |
| 1.7 to 3.6 GHz | -86 dBc | +13 dBm | +17 dBm |
| 3.6 to 5.1 GHz | -82 dBc | +11 dBm | +17 dBm |
| 5.1 to 7.0 GHz | -86 dBc | +13 dBm | +17 dBm |
| 7.0 to 13.6 GHz | -82 dBc | +11 dBm | +15 dBm |
| 13.6 to 26.5 GHz | -78 dBc | + 9 dBm | +14 dBm |

Preamp on (Option P03) 30 MHz to 3.6 GHz 0 dBm nominal (two -45 dBm tones at preamp input)

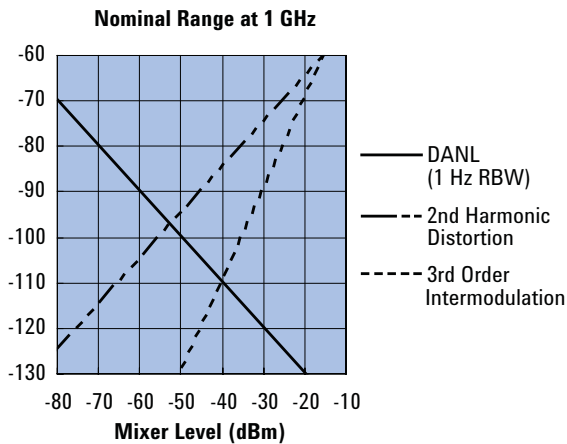


Figure 1. Nominal dynamic range – Band 0, for second and third order distortion, 9 kHz to 3.6 GHz

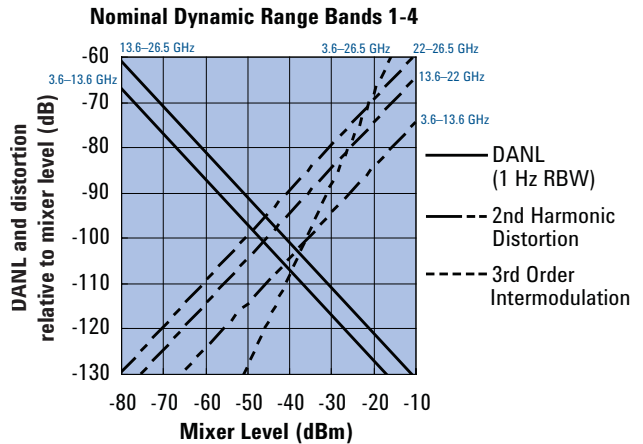


Figure 2. Nominal dynamic range – Bands 1 to 4, second and third order distortion, 3.6 GHz to 26.5 GHz

Dynamic Range Specifications (continued)

Phase noise¹

| Noise sidebands (20 to 30 °C, CF = 1 GHz) | Offset | Specification | Typical |
|--|---------|---------------|---------------------|
| | 100 Hz | -84 dBc/Hz | -88 dBc/Hz |
| | 1 kHz | -- | -98 dBc/Hz nominal |
| | 10 kHz | -99 dBc/Hz | -103 dBc/Hz |
| | 100 kHz | -112 dBc/Hz | -114 dBc/Hz |
| | 1 MHz | -132 dBc/Hz | -135 dBc/Hz |
| | 10 MHz | -- | -143 dBc/Hz nominal |

1. For nominal values, refer to Figure 3.

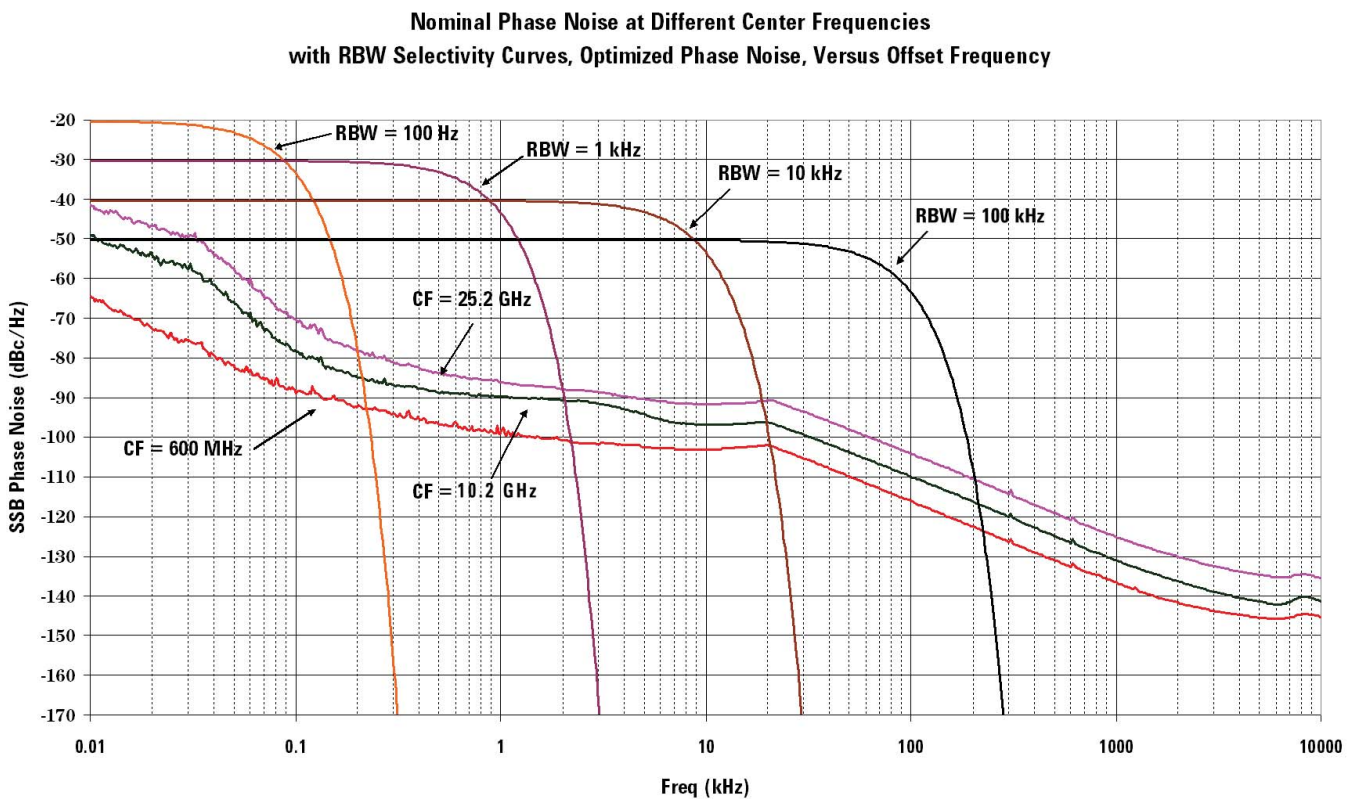


Figure 3. Nominal phase noise at different center frequencies

Power Suite Measurement Specifications

Channel power

Amplitude accuracy, W-CDMA or IS95 ± 0.94 dB (± 0.30 dB 95th percentile)
(20 to 30 °C, attenuation = 10 dB)

Occupied bandwidth

Frequency accuracy \pm [span/1000] nominal

Adjacent channel power

| Accuracy, W-CDMA (ACLR) (at specific mixer levels and ACLR ranges) | Adjacent | Alternate |
|--|---------------|---------------|
| MS | ± 0.22 dB | ± 0.34 dB |
| BTS | ± 1.07 dB | ± 1.00 dB |

| | | |
|--------------------------|--------|--------|
| Dynamic range (typical) | | |
| Without noise correction | -68 dB | -74 dB |
| With noise correction | -73 dB | -76 dB |

Offset channel pairs measured 1 to 6

ACP speed (fast method). Data measurement and transfer time 14 ms nominal ($\sigma = 0.2$ dB)

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 | 93.1 dB (98.4 dB typical) |
| Absolute sensitivity | -79.4 dBm (-85.4 dBm typical) |

Spectrum emission mask (SEM)

cdma2000® (750 kHz offset)

| | |
|-------------------------------------|--------------------------------|
| Relative dynamic range (30 kHz RBW) | 74.0 dB (81.0 dB typical) |
| Absolute sensitivity | -94.7 dBm (-100.7 dBm typical) |
| Relative accuracy | ±0.11 dB |

3GPP W-CDMA (2.515 MHz offset)

| | |
|-------------------------------------|--------------------------------|
| Relative dynamic range (30 kHz RBW) | 76.5 dB (83.9 dB typical) |
| Absolute sensitivity | -94.7 dBm (-100.7 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 | 40 GB nominal 160 GB nominal (Removable hard drive) with Option PC2 32 GB nominal (Removable solid state drive) with Option PC2 and Option SSD |
| 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 EXA 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 Ω 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 Ω nominal |
| Output amplitude | ≥ 0 dBm nominal |
| Frequency | 10 MHz \pm (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 | 10 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 Ω 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 |

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 |
| Analog 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 |
| GPIO interface | |
| Connector | IEEE-488 bus connector |
| GPIO codes | SH1, AH1, T6, SR1, RL1, PP0, DC1, C1, C2, C3, C28, DT1, L4, C0 |
| GPIO mode | Controller or Device |
| LAN TCP/IP interface | |
| Standard | 100Base-T, 1000Base-T with Option PC2 |
| Connector | RJ45 Ethertwist |

EXA Signal Analyzer Ordering Information

For further information, refer to *EXA Signal Analyzer Configuration Guide (5989-6531EN)*

Hardware

| | |
|------------|--|
| N9010A | EXA signal analyzer |
| N9010A-503 | Frequency range, 9 kHz to 3.6 GHz |
| N9010A-507 | Frequency range, 9 kHz to 7.0 GHz |
| N9010A-513 | Frequency range, 9 kHz to 13.6 GHz |
| N9010A-526 | Frequency range, 9 kHz to 26.5 GHz |
| N9010A-B25 | Analysis bandwidth, 25 MHz |
| N9010A-FSA | Fine step attenuator |
| N9010A-PFR | Precision frequency reference |
| N9010A-EA3 | Electronic attenuator, 3.6 GHz |
| N9010A-P03 | Preamplifier, 3.6 GHz |
| N9010A-PC2 | Dual core processor with removable hard drive |
| N9010A-HDD | Additional removable hard drive (requires Option PC2) |
| N9010A-SSD | Removable solid state drive substitution (requires Option PC2) |

Optional features

| | |
|------------|----------------------------------|
| N9010A-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) |
| N9080A-1FP or -1TP | LTE measurement application |
| N9074A-XFP or -XTP | Single acquisition combined Fixed WiMAX measurement application (requires Option B25) |
| N9077A-XFP or -XTP | Single acquisition combined WLAN measurement application (requires Option B25) |
| N6149A-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 |

EXA Signal Analyzer Ordering Information (continued)

For further information, refer to *EXA Signal Analyzer Configuration Guide (5989-6531EN)*

Applications (continued)

| | |
|------------------------------|--|
| 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 |

Accessories

| | |
|-------------|-------------------------------|
| N9010A-KYB | Keyboard ¹ |
| N9010A-KB2 | US 65 key USB keyboard |
| N9010A-BAG | Accessory pouch |
| N9010A-EFM | USB flash drive, 1 GB |
| N9010A-DVR | USB DVD-ROM/CD-R/RW drive |
| N9010A-MLP | Minimum loss pad, 50 to 75 Ω |
| N9010A-PRC | Portable configuration |
| N9010AK-CVR | Front panel cover, additional |
| N9010A-1CP | Rack mount and handle kit |
| N9010A-1CM | Rack mount kit |
| N9010A-1CN | Front handle kit |
| N9010A-1CR | Rack slide kit |
| N9010A-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 |
|--------------|---|

Calibration²

| | |
|-------------|--|
| N9010A-UK6 | Commercial calibration certification with test data |
| N9010A-1A7 | ISO 17025 compliant calibration |
| N9010A-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 N9010A-BAG accessory pouch. Order N9010A-KB2 for accessory pouch that fits keyboard.

2. Options not available in all countries

Literature Resources

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



Agilent Email Updates

www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.



Agilent Direct

www.agilent.com/find/agilentdirect
Quickly choose and use your test equipment solutions with confidence.



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
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.

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

WiMAX, Mobile WiMAX, or WiMAX Forum are trademarks of the WiMAX Forum.

MATLAB is a registered trademark of The MathWorks, Inc.

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. For information regarding self maintenance of this product, please contact your Agilent office.

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

www.agilent.com

www.agilent.com/find/EXA

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

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 | 01 36027 71571 |
| Belgium | 32 (0) 2 404 93 40 |
| Denmark | 45 70 13 15 15 |
| Finland | 358 (0) 10 855 2100 |
| France | 0825 010 700* |

*0.125 €/minute

| | |
|----------------|--------------------|
| Germany | 07031 464 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 | 0800 80 53 53 |
| United Kingdom | 44 (0) 118 9276201 |

Other European Countries:

www.agilent.com/find/contactus

Revised: October 1, 2008

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

© Agilent Technologies, Inc. 2007-2009
Printed in USA, March 19, 2009
5989-6529EN



Agilent Technologies