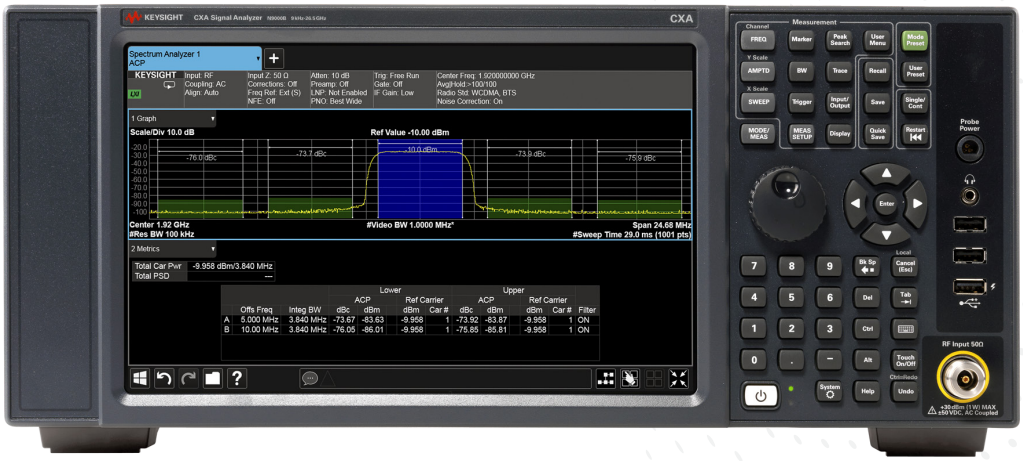
DATA SHEET

CXA X-Series Signal Analyzer, Multi-touch N9000B

9 kHz to 3.0, 7.5, 13.6, or 26.5 GHz



KEYSIGHT TECHNOLOGIES

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Leading low-cost tool

The CXA is today's leading low-cost tool for essential signal characterization. Its capabilities provide a solid foundation for cost-effective testing in general-purpose and educational applications.

This data sheet is a summary of the specifications and conditions for CXA signal analyzers. For the complete specifications guide, visit
www.keysight.com/find/cxa_specifications

Definitions and Conditions

Specifications describe the performance of parameters covered by the product warranty and apply to temperature ranges 0 to 55 °C, unless otherwise noted.

95th percentile values indicate the breadth of the population (approx. 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 are not covered by the product warranty.

The analyzer will meet its specifications when:

- It is within its calibration cycle
- Under auto couple control, except when Auto Sweep Time Rules = Accy
- 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. If Auto Align is set to Light, performance is not warranted, and nominal performance will degrade to become a factor of 1.4 wider for any specification subject to alignment, such as amplitude tolerances.

For ordering information, refer to the CXA Signal Analyzer Configuration Guide (5992-1275EN).

For more information

This CXA signal analyzer data sheet is a summary of the complete specifications and conditions for N9000B CXA signal analyzers, which are available in the CXA Signal Analyzer Specification Guide. The CXA Signal Analyzer Specification Guide can be obtained on the web at:

www.keysight.com/find/cxa_specifications

Frequency and Time Specifications

Frequency range	**DC coupled**		**AC coupled**
Option 503	NA		9 kHz to 3.0 GHz
Option 507	NA		9 kHz to 7.5 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)**	**AC coupled**
RF (Option 503, 507)	0	1	9 kHz to 3.0 GHz
	1	1	2.95 to 3.80 GHz
	2	1	3.70 to 4.55 GHz
	3	1	4.45 to 5.30 GHz
	4	1	5.20 to 6.05 GHz
	5	1	5.95 to 6.80 GHz
	6	1	6.70 to 7.50 GHz
	Band	**LO multiple (N)**	**AC coupled**
MW (Option 513, 526)	0	1	9 kHz to 3.08 GHz
	1	2	2.95 to 7.58 GHz
	2	2	7.45 to 9.55 GHz
	3	2	9.45 to 12.60 GHz
	4	2	12.50 to 13.05 GHz
	4	4	12.95 to 13.80 GHz
	5	4	13.40 to 15.55 GHz
	6	4	15.45 to 19.35 GHz
	7	4	19.25 to 21.05 GHz
	8	4	20.95 to 22.85 GHz
	9	4	22.75 to 24.25 GHz
	10	4	24.15 to 26.55 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 Full temperature range	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	 ≤ 0.25 Hz p-p in 20 ms nominal ≤ 10 Hz p-p in 20 ms nominal		
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])			
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		

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

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	± 1 % nominal
Trigger	Free run, line, video, external 1, 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) nominal
	820 kHz to 1.2 MHz (< 3 GHz CF)	± 2.0 % (± 0.088 dB) nominal
	1.3 to 2.0 MHz (< 3 GHz CF)	± 0.07 dB nominal
	2.2 to 3 MHz (< 3 GHz CF)	± 0.15 dB nominal
	4 to 8 MHz (< 3 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	
EMI bandwidth (CISPR compliant)	200 Hz, 9 kHz, 120 kHz, 1 MHz	(Option EMC required)
EMI bandwidth (MIL STD 461E compliant)	10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz	(Option EMC required)
Analysis bandwidth [1]		
Maximum bandwidth	Option B25	25 MHz
	Standard	10 MHz
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	11 ms (90/s) nominal	
Remote measurement and LAN transfer rate	6 ms (167/s) nominal	
Marker peak search	5 ms nominal	
Center frequency tune and transfer	22 ms nominal	
Measurement/mode switching	75 ms nominal	

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.
2. Sweep points = 101.

Amplitude Accuracy and Range Specifications

Amplitude range			
Measurement range			
RF (Option 503, 507)	Preamp off	100 kHz to 1 MHz	Displayed average noise level (DANL) to +20 dBm
		1 MHz to 7.5 GHz	Displayed average noise level (DANL) to +23 dBm
	Preamp on	100 kHz to 7.5 GHz	Displayed average noise level (DANL) to +15 dBm
MW (Option 513/526)	Preamp off	100 kHz to 26.5 GHz	Displayed average noise level (DANL) to +23 dBm
	Preamp on	100 kHz to 26.5 GHz	Displayed average noise level (DANL) to +23 dBm
Input attenuator range			
RF (Option 503, 507)	Standard	0 to 50 dB in 10 dB steps	
	Option FSA	0 to 50 dB in 2 dB steps	
MW (Option 513, 526)	Standard	0 to 70 dB in 10 dB steps	
	Option FSA	0 to 70 dB in 2 dB steps	
Maximum safe input level			
Average total power			
RF (Option 503, 507)	+30 dBm (1 W)	Input attenuation ≥ 20 dB, preamp off	
	10 dBm (10 mW)	Input attenuation ≥ 20 dB, preamp on	
MW (Option 513, 526)	+30 dBm (1 W)	Input attenuation ≥ 10 dB, preamp off	
	+30 dBm (1 W)	Input attenuation ≥ 20 dB, preamp on	
Peak pulse power			
	+50 dBm (100 W)	< 10 µs pulse width, < 1 % duty cycle, input attenuation ≥ 30 dB	
DC volts			
RF (Option 503, 507)	AC coupled	± 50 Vdc	
MW (Option 513, 526)	AC coupled	± 50 Vdc	
	DC coupled	± 0.2 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		
Frequency response		**Specification**	**95th percentile (≈ 2σ)**
(10 dB input attenuation, 20 to 30 °C, σ = nominal standard deviation)			
RF (Option 503, 507)	9 kHz to 10 MHz	± 0.60 dB	± 0.45 dB
	10 MHz to 3 GHz	± 0.75 dB	± 0.55 dB
	3 to 5.25 GHz	± 1.45 dB	± 1.00 dB
	5.25 to 7.5 GHz	± 1.65 dB	± 1.20 dB
MW (Option 513, 526)	9 kHz to 10 MHz	± 0.8 dB	± 0.5 dB
	10 MHz to 3 GHz	± 0.65 dB	± 0.4 dB
	3 to 7.5 GHz	± 1.5 dB	± 0.5 dB
	7.5 to 13.6 GHz	± 2.0 dB	± 0.8 dB
	13.6 to 19 GHz	± 2.0 dB	± 1.0 dB
	19 to 26.5 GHz	± 2.5 dB	± 1.3 dB
Preamp on			
RF (Option 503, 507) (P03, P07)	100 kHz to 3 GHz		± 0.70 dB
	3 to 5.25 GHz		± 0.85 dB
	5.25 to 7.5 GHz		± 1.35 dB
MW (Option 513, 526) (P03, P07, P13, P26)	100 kHz to 3 GHz		± 0.7 dB
	3 to 13.6 GHz		± 1.0 dB
	13.6 to 19 GHz		± 1.1 dB
	19 to 26.5 GHz		± 2.5 dB

Amplitude Accuracy and Range Specifications (continued)

Input attenuation switching uncertainty		**Specifications**	**Additional information**
Attenuation > 2 dB, preamp off	50 MHz (reference frequency)	± 0.32 dB	± 0.15 dB typical
Relative to 10 dB (reference setting)	100 kHz to 3.0 GHz		± 0.30 dB nominal
	3.0 to 7.5 GHz		± 0.50 dB nominal
	7.5 to 26.5 GHz		± 0.70 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	± 0.40 dB	
	At all frequencies	± (0.40 dB + frequency response)	
	100 kHz to 10 MHz	± 0.60 dB (95th Percentile ≈ 2σ)	
	10 MHz to 2.0 GHz	± 0.50 dB (95th Percentile ≈ 2σ)	
	2.0 to 3.0 GHz	± 0.60 dB (95th Percentile ≈ 2σ)	
Preamp on (Option P03/P07/P13/P26)		± (0.39 dB + frequency response) nominal	
Input voltage standing wave ratio (VSWR) (≥ 10 dB attenuation)			
		Option 503, 507	Option 513, 526
	10 MHz to 3 GHz	< 1.5 nominal	< 1.3 nominal
	3 to 7.5 GHz	< 2.0 nominal	< 1.4 nominal
	7.5 to 26.5 GHz	N/A	< 1.9 nominal
Resolution bandwidth switching uncertainty (referenced to 30 kHz RBW)			
1 Hz to 3 MHz RBW	± 0.15 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			
–80 dBm ≤ input mixer level < –15 dBm	± 0.15 dB total		
–15 dBm ≤ input mixer level < –10 dBm	± 0.30 dB	± 0.15 dB typical	
Trace detectors			
Normal, peak, sample, negative peak, log power average, RMS average, and voltage average			
Preamplifier (Option P03/P07/P13/P26)			
Frequency range	Option P03	100 kHz to 3.0 GHz	
	Option P07	100 kHz to 7.5 GHz	
	Option P13	100 kHz to 13.6 GHz	
	Option P26	100 kHz to 26.5 GHz	
Gain	100 kHz to 26.5 GHz	+20 dB nominal	
Noise figure	100 kHz to 26.5 GHz	DANL + 176.24 dB nominal	

Dynamic Range Specifications

	1 dB gain compression (two-tone)		**Total power at input mixer**	
RF (Option 503, 507)	Preamp off	50 MHz to 7.5 GHz	+2 dBm nominal	
	Preamp on	50 MHz to 7.5 GHz	–19 dBm nominal	
MW (Option 513/526)	Preamp off	50 MHz to 7.5 GHz	+7 dBm noiminal	
		7.5 to 13.6 GHz	+3 dBm noiminal	
		13.6 to 26.5 GHz	+0 dBm noiminal	
	Preamp on	50 MHz to 26.5 GHz	–19 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)				
		Parentheses indicate typical performance		
		Preamplifier OFF	Preamplifier ON	
RF (Option 503/507)	9 kHz to 1 MHz	(–120) dBm	(–139) dBm, 100 kHz to 1 MHz	
	1 to 10 MHz	–130 (–137) dBm	–149 (–157) dBm	
	10 MHz to 1.5 GHz	–148 (–150) dBm	–161 (–163) dBm	
	1.5 to 2.2 GHz	–144 (–147) dBm	–160 (–163)dBm	
	2.2 to 2.5 GHz	–144 (–147) dBm	–158 (–161) dBm	
	2.5 to 2.7GHz	–142 (–145) dBm	–158 (–161) dBm	
	2.7 to 3.0 GHz	–139 (–143) dBm	–158 (–161) dBm	
	3 to 4.5 GHz	–137 (–140) dBm	–155 (–159) dBm	
	4.5 to 6 GHz	–133 (–136) dBm	–152 (–156) dBm	
	6 to 7.5 GHz	–128 (–131) dBm	–148 (–152) dBm	
MW (Option 513/526)	1 to 10 MHz	–143 (–148) dBm	–153 (–158) dBm	
	10 MHz to 1.5 GHz	–147 (–150) dBm	–160 (–163) dBm	
	1.5 to 6 GHz	–143 (–147) dBm	–158 (–161) dBm	
	6 to 7.5 GHz	–141 (–145) dBm	–155 (–160) dBm	
	7.5 to 13.6 GHz	–139 (–142) dBm	–155 (–160) dBm	
	13.6 to 20 GHz	–134 (–140) dBm	–153 (–157) dBm	
	20 to 24 GHz	–132 (–138) dBm	–151 (–155) dBm	
	24 to 26.5 GHz	–124 (–129) dBm	–142 (–147) dBm	
Spurious responses				
RF (Option 503, 507)	Residual responses	200 kHz to 7.5 GHz (swept)	–90 dBm	
	(Input terminated and 0 dB attenuation, 20 to 30 °C)	Zero span or FFT or other frequencies	–100 dBm nominal	
	Input related spurious	10 MHz to 7.5 GHz	–60 dBc typical	
MW (Option 513, 526)		Tuned frequency (f)	Mixer level	Response
	Image responses	10 MHz to 26.5 GHz	–10 dBm	–60 dBc typical
	LO-related spurious	10 MHz to 3 GHz	–10 dBm	–64 dBc typical
	Other spurious responses			
	First RF order (f ≥ 10 MHz from carrier)		–10 dBm	–65 dBc
	High RF order (f ≥ 10 MHz from carrier)		–30 dBm	–65 dBc
Second harmonic distortion (SHI)				
	Source frequency	**SHI (nominal)**		
RF/MW (Option 503, 507, 513, 526)	10 MHz to 3.75 GHz	+42 dBm		
MW (Option 513, 526)	3.75 to 13.25 GHz	+54 dBm		

Dynamic Range Specifications (continued)

Third-order intermodulation distortion (TOI)			
Parentheses indicate typical performance			
RF (Option 503, 507)	Preamp off (Two –20 dBm tones at input mixer spaced by 100 kHz, 0 dB attenuation, 20 to 30 °C)	10 to 400 MHz	+10 (+14) dBm
		400 MHz to 3 GHz	+13 (+17) dBm
		3 to 7.5 GHz	+13 (+15) dBm
MW (Option 513/526)	Preamp off (Two –20 dBm tones at input mixer spaced by 100 kHz, 0 dB attenuation, 20 to 30 °C)	10 to 500 MHz	+11 dBm, (+15) dBm
		500 MHz to 2 GHz	+12 dBm, (+15) dBm
		2 to 3 GHz	+11 dBm, (+15) dBm
		3 to 7.5 GHz	+12 dBm, (+17) dBm
		7.5 to 13.6 GHz	+11 dBm, (+15) dBm
		13.6 to 26.5 GHz	+10 dBm, (+14) dBm
Option P03/P07/P13/ P26	Preamp on (Two –45 dBm tones at the preamp input, spaced by 100 kHz, 0 dB attenuation, 20 to 30 °C)	10 MHz to 26.5 GHz	–8 dBm nominal

Phase noise	Offset	Specification	Typical
Noise sidebands (20 to 30 °C, CF = 1 GHz)			
	1 kHz	–98 dBc/Hz	–103 dBc/Hz
	10 kHz	–106 dBc/Hz	–110 dBc/Hz
	100 kHz	–108 dBc/Hz	–110 dBc/Hz
	1 MHz	–130 dBc/Hz	–130 dBc/Hz
	10 MHz		–145 dBc/Hz nominal

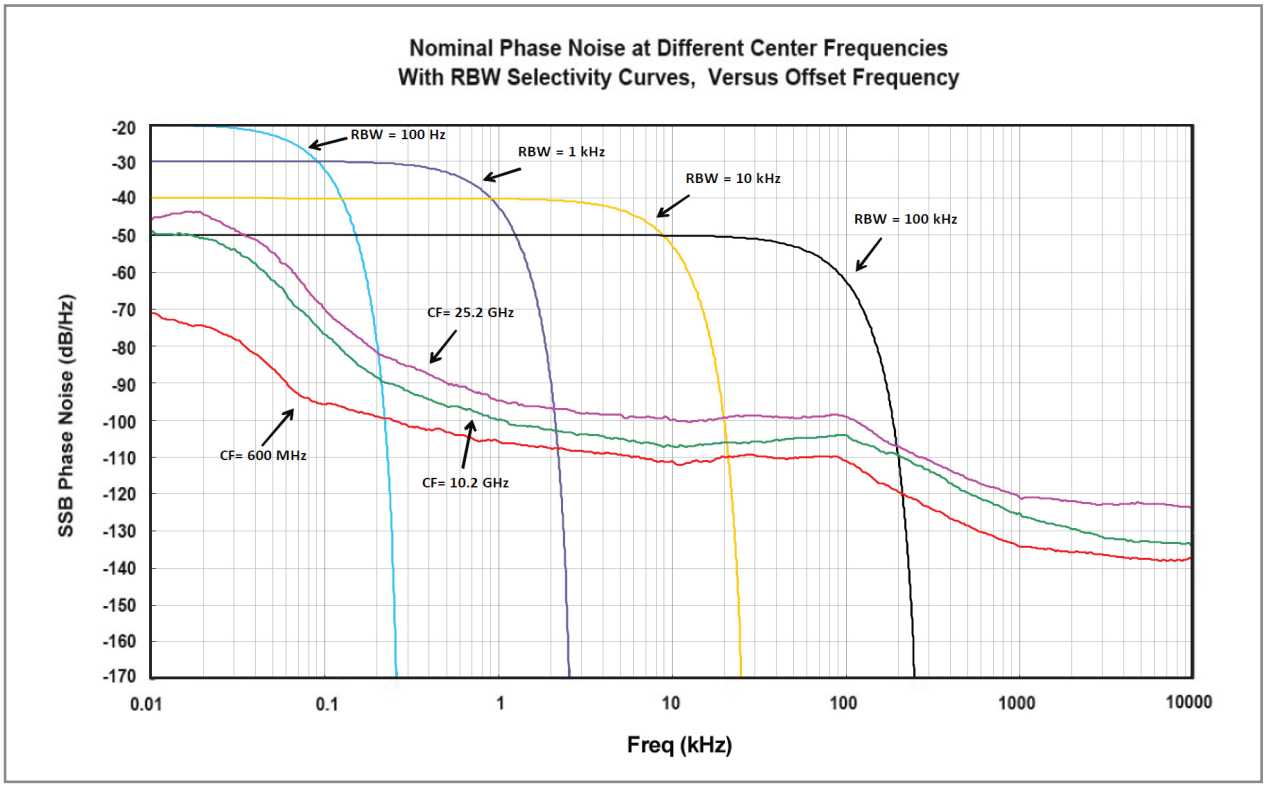

Figure 1. Nominal phase noise at different center frequencies for CXA

PowerSuite Measurement Specifications

Channel power			
Amplitude accuracy, W-CDMA or IS95 (20 to 30 °C, attenuation = 10 dB)	± 1.33 dB (± 0.61 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		± 0.76 dB	± 0.73 dB
BTS		± 1.72 dB	± 1.96 dB
Dynamic range (typical)			
RF (Option 503, 507)	Without noise correction	–63 dB	–67 dB
	With noise correction	–73 dB	–78 dB
MW (Option 513, 526)	Without noise correction	–66 dB	–69 dB
	With noise correction	–73 dB	–78 dB
Offset channel pairs measured	1 to 6		
Power statistics CCDF			
Histogram resolution	0.01 dB		
Harmonic distortion			
Maximum harmonic number	10th		
Results	Fundamental power (dBm), relative harmonics power (dBc), total harmonic distortion in %		
Intermod (TOI)			
	Measure the third-order products and intercepts from two tones		
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 2.7 GHz) table-driven spurious signals; search across regions			
Dynamic range (RBW=1 MHz)	70.7 dB	(75.9 dB typical)	
Absolute sensitivity (RBW=1 MHz)	–76.5 dBm	(–82.5 dBm typical)	
Spectrum emission mask (SEM)			
cdma2000® (750 kHz offset)			
Relative dynamic range (30 kHz RBW)	67.4 dB	(72.7 dB typical)	
Absolute sensitivity	–93.7 dBm	(–99.7 dBm typical)	
Relative accuracy	± 0.11 dB		
3GPP W-CDMA (2.515 MHz offset)			
Relative dynamic range (30 kHz RBW)	73.4 dB	(80.2 dB typical)	
Absolute sensitivity	–91.7 dBm	(–97.7 dBm typical)	
Relative accuracy	± 0.11 dB		

Tracking Generator Specifications

Output frequency		
Frequency range		
Option T03[1]	9 kHz to 3 GHz	
Option T06[1]	9 kHz to 6 GHz	
Resolution	1 Hz	
Output power level		
Range	–50 to 0 dBm	
Resolution	0.1 dB	
Absolute accuracy (at 50 MHz, –10 dBm, 20 to 30 °C)	± 0.55 dB	
Output flatness (referenced to 50 MHz, –10 dBm, 20 to 30 °C)	Specification	95th percentile (≈ 2σ)
9 kHz to 100 kHz	± 1.5 dB	± 1.2 dB
100 kHz to 3.0 GHz	± 1.2 dB	± 0.8 dB
3.0 GHz to 6.0 GHz	± 1.5 dB	± 1.2 dB
Level accuracy		
9 kHz to 100 kHz		± 1.0 dB nominal
100 kHz to 3.0 GHz		± 0.5 dB nominal
3.0 GHz to 6.0 GHz		± 0.8 dB nominal
Output power sweep		
Range	–50 to 0 dBm	
Resolution	0.1 dB	
Maximum safe reverse level		
Average total power	+30 dBm (1 W)	
AC coupled	± 50 Vdc	
Phase noise		
Noise sidebands (CF = 1 GHz)	Offset	
	10 kHz	–102 dBc/Hz nominal
	100 kHz	–104 dBc/Hz nominal
	1 MHz	–117 dBc/Hz nominal
Spurious outputs (0 dBm output)		
Harmonic spurs		
100 kHz to 3 GHz	< –35 dBc	
3 GHz to 6 GHz	< –30 dBc	
Non-harmonic spurs		
9 kHz to 10 MHz		< –35 dBc nominal
10 MHz to 6 GHz	< –35 dBc	
Dynamic range		
	Maximum output power – displayed average noise level	110 dBc nominal
Output VSWR		
9 kHz to 6 GHz	< 1.5:1 nominal	

1. Not available on microwave CXA (Option 513 or 526).

General Specifications

Temperature range		
Operating	0 to 55 °C	
Storage	–40 to 70 °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 à 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 Keysight 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 MILPRF-28800F Class 3.		
Power requirements		
Voltage and frequency (nominal)	100/120 V, 50/60/400 Hz 220/240 V, 50/60 Hz	The instruments can operate with mains supply voltage fluctuations up to ± 10% of the nominal voltage
Power consumption		
On	270 W maximum	
Standby	20 W	
Display		
Resolution	1280 x 768, WXGA	
Size	269 mm (10.6 in.) diagonal (nominal)	
Data storage		
Internal	160 GB nominal (removable solid state drive)	
External	Supports USB 2.0 compatible memory devices	
Weight (without options)		
Net	15.4 kg (34.0 lbs)	
Shipping	27.4 kg (60.4 lbs)	
Dimensions		
Height	177 mm (7.0 in)	
Width	426 mm (16.8 in)	
Length	368 mm (14.5 in)	
Warranty		
The CXA signal analyzer is supplied with a 3-year warranty		
Calibration cycle		
The recommended calibration cycle is one year; calibration services are available through Keysight service centers		

Inputs and Outputs

Front panel	
RF input	
Connector	Type-N female, 50 Ω nominal
RF output (Option T03 or T06)	
Connector	Type-N female, 50 Ω nominal
Probe power	
Voltage/current	+15 Vdc, ± 7 % at 150 mA max. nominal –12.6 Vdc, ± 10 % at 150 mA max. nominal
USB ports	
Host (3 ports)	
Standard	Compatible with USB 2.0
Connector	USB Type-A female
Output current	
Port marked with lightning bolt	1.2 A (nominal)
Port not marked with lightning bolt	0.5 A
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	10 MHz ± nominal
Frequency lock range	± 5 x 10^{-6} of specified external reference input frequency
Trigger 1 input	
Connector	BNC female
Impedance	> 10 kΩ nominal
Trigger level range	–5 to 5 V
Trigger 1 output	
Connector	BNC female
Impedance	50 Ω nominal
Level	5 V TTL nominal
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	
Analog out	
Connector	BNC female

Inputs and Outputs (continued)

USB ports	
Host, super speed	2 ports (stacked with each other)
Standard	Compatible with USB 3.0
Connector	USB Type-A female
Output current	0.9 A
Host	1 port (stacked with LAN)
Standard	USB 2.0
Connector	USB Type-A female
Output current	0.5 A
Device	
Standard	Compatible with USB 3.0
Connector	USB Type-B female
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
Rear panel (continued)	
LAN TCP/IP interface	
Standard	1000Base-T
Connector	RJ45 Ethertwist
Sync (reserved for future use)	
Connector	BNC female
IF output	
Connector	SMA female
Impedance	50 Ω nominal
Wideband IF output, Option CR3[1]	
Center frequency	
SA mode or I/Q analyzer	322.5 MHz
Conversion gain	–4 to +7 dB (nominal) plus RF frequency response
Bandwidth	
Low band	Up to 120 MHz (nominal)
High band	Up to 40 MHz (nominal)

1. Not available on microwave CXA (Option 513 or 526).

I/Q Analyzer

Frequency			
Frequency span			
Standard instrument	10 Hz to 10 MHz		
Option B25	10 Hz to 25 MHz		
Resolution bandwidth (spectrum measurement)			
Range			
Overall	100 mHz to 3 MHz		
Span = 1 MHz	50 Hz to 1 MHz		
Span = 10 kHz	1 Hz to 10 kHz		
Span = 100 Hz	100 mHz to 100 Hz		
Window shapes			
Flat top, Uniform, Hanning, Gaussian, Blackman, Blackman-Harris, Kaiser Bessel (K-B 70 dB, K-B 90 dB and K-B 110 dB)			
Analysis bandwidth			
Standard instrument	10 Hz to 10 MHz		
Option B25	10 Hz to 25 MHz		
IF frequency response (standard 10 MHz IF path)			
IF frequency response (demodulation and FFT response relative to the center frequency, 20 to 30 °C)			
Center frequency (GHz)	Span (MHz)	Max. error	RMS (nominal)
≤ 3.0	≤ 10	± 0.40 dB	0.03 dB
3.0 < f ≤ 26.5	≤ 10	± 0.40 dB	0.25 dB
IF phase linearity (deviation from mean phase linearity, nominal)			
Center frequency (GHz)	Span (MHz)	Peak-to-peak	RMS
≤ 3.0	≤ 10	0.5 °	0.2 °
3.0 < f ≤ 7.5	≤ 10	2.7 °	2.4 °
7.5 < f ≤ 26.5	≤ 10	1.5 °	0.4 °
Data acquisition (standard 10 MHz IF path)			
Time record length	4,000,000 IQ sample pairs		
Sample rate	30 MSa/s		
ADC resolution	14 Bits		
Option B25 25 MHz analysis bandwidth			
IF frequency response (demodulation and FFT response relative to the center frequency, 20 to 30 °C)			
Center frequency (GHz)	Span (MHz)	Max. error	RMS (nominal)
≤ 3.0	10 to ≤ 25	± 0.45 dB	0.03 dB
3.0 < f ≤ 26.5	10 to ≤ 25	± 0.45 dB	0.65 dB
IF phase linearity (deviation from mean phase linearity, nominal)			
Center frequency (GHz)	Span (MHz)	Peak-to-peak	RMS
0.02 ≤ f ≤ 3.0	10 to ≤ 25	2.7 °	0.9 °
3.0 < f ≤ 7.5	10 to ≤ 25	4.7 °	2.2 °
7.5 < f ≤ 26.5	10 to ≤ 25	3.5 °	1.0 °
Data acquisition (B25 IF path)			
Time record length			
IQ analyzer	4,000,000 IQ sample pairs		
Sample rate	90 MSa/s		
ADC resolution	14 Bits		

Related Literature

Literature	Pub number
CXA Signal Analyzer N9000B - Configuration Guide	5992-1275EN
X-Series Signal Analyzers - Brochure	5992-1316EN

For more information or literature resources please visit the web:
www.keysight.com/find/cxa

Web

Product page:
www.keysight.com/find/N9000B

X-Series measurement applications:
www.keysight.com/find/X-Series_Apps

X-Series signal analyzers:
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