DATA SHEET

N9020B MXA X-Series Signal Analyzer, Multi-touch

10 Hz to 3.6, 8.4, 13.6, 26.5, 32, 44, or 50 GHz

KEYSIGHT TECHNOLOGIES

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Quickly adapt to evolving test requirements

Every device demands decisions that require tradeoffs in your goals—customer specs, throughput, yield. With a highly flexible signal analyzer, you can manage and minimize those tradeoffs. Keysight Technologies Inc.'s mid-performance MXA is the optimum choice for wireless as you take new-generation devices to market. It has the flexibility to quickly adapt to evolving test requirements, today and tomorrow.

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

Definitions and Conditions

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

95th percentile values indicate the breadth of the population (approx. 2 σ) 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
- Signal frequencies < 10 MHz, with 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. 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

Get More Information

This MXA signal analyzer data sheet is a summary of the specifications and conditions for N9020B MXA signal analyzers. A full set of specifications are available in the MXA Signal Analyzer Specification Guide at www.keysight.com/find/mxa_specifications.

For ordering information, refer to the N9020B MXA Signal Analyzer Configuration Guide (literature number 5992-1256EN).

Frequency and Time Specifications

Frequency range		**DC coupled**	**AC coupled**
Option 503		10 Hz to 3.6 GHz	10 MHz to 3.6 GHz
Option 508		10 Hz to 8.4 GHz	10 MHz to 8.4 GHz
Option 513		10 Hz to 13.6 GHz	10 MHz to 13.6 GHz
Option 526		10 Hz to 26.5 GHz	10 MHz to 26.5 GHz
Option 532		10 Hz to 32 GHz	NA
Option 544		10 Hz to 44 GHz	NA
Option 550		10 Hz to 50 GHz	NA
Band	**LO multiple (N)**		
0	1	10 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	
5	4	26.4 to 34.5 GHz	
6	8	34.4 to 50 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 x N) p-p in 20 ms, nominal ≤ (10 Hz x N) p-p in 20 ms, nominal See band table above for N (LO multiple)	
Frequency readout accuracy (start, stop, center, marker)			
± (marker frequency x frequency reference accuracy + 0.25 % x span + 5 % x RBW + 2 Hz + 0.5 x horizontal resolution [1])			
Marker frequency counter			
Accuracy		± (marker frequency x frequency reference accuracy + 0.100 Hz)	
Delta counter accuracy		± (delta frequency x frequency reference accuracy + 0.141 Hz)	
Counter resolution		0.001 Hz	
Frequency span (FFT and swept mode)			
Range		0 Hz (zero span), 10 Hz to maximum frequency of instrument	
Resolution		2 Hz	
Accuracy – Swept – FFT		 ± (0.25 % x span + horizontal resolution) ± (0.10 % x span + horizontal resolution)	

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

Frequency and Time Specifications (continued)

Sweep time and triggering		
Range	Span = 0 Hz Span ≥ 10 Hz	1 µs to 6000 s 1 ms to 4000 s
Accuracy	Span ≥ 10 Hz, swept Span ≥ 10 Hz, FFT Span = 0 Hz	± 0.01 %, nominal ± 40 %, nominal ± 0.01 %, nominal
Trigger	Free run, line, video, external 1, external 2, RF burst, periodic timer	
Trigger delay	Span = 0 Hz or FFT Span ≥ 10 Hz, swept Resolution	–150 to +500 ms 0 to 500 ms 0.1 µs
Time gating		
– Gate methods – Gate length range (except method = FFT) – Gate delay range – Gate delay jitter	Gated LO; gated video; gated FFT 100.0 ns to 5.0 s 0 to 100.0 s 33.3 ns p-p, nominal	
Sweep (trace) point range		
All spans	1 to 100,001	
Resolution bandwidth (RBW)		
Range (–3.01 dB bandwidth) – Standard – With one or more of Option B40, DP2, or MPB – With Option B85 or B1A, and Option RBE – With Option B1X and Option RBE	 1 Hz to 3 MHz (10 % steps), 4, 5, 6, and 8 MHz 1 Hz to 3 MHz (10 % steps), 4, 5, 6, 8, and 10 MHz 10, 15, 20, 25, 30, 40, 50, 60, and 70 MHz, in Spectrum Analyzer mode and zero span 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 100, and 133 MHz, in Spectrum Analyzer mode and zero span	
Bandwidth accuracy (power)	1 Hz to 750 kHz 820 kHz to 1.2 MHz (< 3.6 GHz CF) 1.3 to 2 MHz (< 3.6 GHz CF) 2.2 to 3 MHz (< 3.6 GHz CF) 4 to 10 MHz (< 3.6 GHz CF)	± 1.0 % (± 0.044 dB) ± 2.0 % (± 0.088 dB) ± 0.07 dB, nominal ± 0.15 dB, nominal ± 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 461 compliant)	10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz	(Option EMC required)
Analysis bandwidth [1]		
Maximum bandwidth	Option B1X Option B1A Option B85 Option B40 Option B25 (standard)	160 MHz 125 MHz 85 MHz 40 MHz 25 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	

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.

Amplitude Accuracy and Range Specifications (continued)

Amplitude range	
Measurement range	
Preamp Off	Displayed average noise level (DANL) to +30 dBm
Preamp On	Displayed average noise level (DANL) to +30 dBm
Input attenuator range	0 to 70 dB in 2 dB steps
Electronic attenuator (Option EA3)	
Frequency range	10 Hz to 3.6 GHz
Attenuation range – Electronic attenuator range – Full attenuation range (mechanical + electronic)	 0 to 24 dB, 1 dB steps 0 to 94 dB, 1 dB steps
Maximum safe input level	
Average total power (with and without preamp)	+30 dBm (1 W)
Peak pulse power	< 10 µs pulse width, < 1 % duty cycle +50 dBm (100 W) and input attenuation ≥ 30 dB
DC volts – DC coupled – AC coupled	 ± 0.2 Vdc ± 100 Vdc
Display range	
Log scale	0.1 to 1 dB/division in 0.1 dB steps 1 to 20 dB/division in 1 dB steps (10 display divisions)
Linear scale	10 divisions
Scale units	dBm, dBmV, dBµV, dBmA, dBµA, V, W, A

Amplitude Accuracy and Range Specifications (continued)

Frequency response		Specification	95th percentile (≈ 2σ)
(10 dB input attenuation, 20 to 30 °C, preselector centering applied, σ = nominal standard deviation)			
RF/MW	20 Hz to 10 MHz	± 0.6 dB	± 0.28 dB
(Option 503, 508, 513, 526 [1])	10 MHz [2] to 3.6 GHz	± 0.45 dB	± 0.17 dB
	3.5 to 8.4 GHz	± 1.5 dB	± 0.48 dB
	8.3 to 13.6 GHz	± 2.0 dB	± 0.47 dB
	13.5 to 22.0 GHz	± 2.0 dB	± 0.52 dB
	22.0 to 26.5 GHz	± 2.5 dB	± 0.71 dB
Millimeter-Wave	20 Hz to 10 MHz	± 0.6 dB	± 0.28 dB
(Option 532, 544, 550)	10 to 50 MHz	± 0.45 dB	± 0.21 dB
	50 MHz to 3.6 GHz	± 0.45 dB	± 0.2 dB
	3.5 to 5.2 GHz	± 1.7 dB	± 0.67 dB
	5.2 to 8.4 GHz	± 1.5 dB	± 0.47 dB
	8.3 to 13.6 GHz	± 2.0 dB	± 0.47 dB
	13.5 to 17.1 GHz	± 2.0 dB	± 0.52 dB
	17.0 to 22.0 GHz	± 2.0 dB	± 0.66 dB
	22.0 to 26.5 GHz	± 2.5 dB	± 0.79 dB
	26.4 to 34.5 GHz	± 2.5 dB	± 1.07 dB
	34.4 to 50 GHz	± 3.2 dB	± 1.4 dB
Preamp on (0 dB attenuation) (Option P03, P08, P13, P26, P32, P44, P50)			
RF/MW	100 kHz to 3.6 GHz	± 0.75 dB	± 0.28 dB
(Option 503, 508, 513, 526 [1])	3.5 to 8.4 GHz	± 2.0 dB	± 0.67 dB
	8.3 to 13.6 GHz	± 2.3 dB	± 0.73 dB
	13.5 to 17.1 GHz	± 2.5 dB	± 0.97 dB
	17.0 to 22.0 GHz	± 2.8 dB	± 1.36 dB
	22.0 to 26.5 GHz	± 3.5 dB	± 1.48 dB
Millimeter-Wave	100 kHz to 3.6 GHz	± 0.75 dB	± 0.28 dB
(Option 532, 544, 550)	3.5 to 5.2 GHz	± 2.0 dB	± 0.67 dB
	5.2 to 8.4 GHz	± 2.0 dB	± 0.51 dB
	8.3 to 13.6 GHz	± 2.3 dB	± 0.73 dB
	13.5 to 17.1 GHz	± 2.5 dB	± 0.97 dB
	17.0 to 22.0 GHz	± 2.8 dB	± 1.36 dB
	22.0 to 26.5 GHz	± 3.5 dB	± 1.48 dB
	26.4 to 34.5 GHz	± 3.0 dB	± 1.48 dB
	34.4 to 50 GHz	± 4.1 dB	± 1.69 dB
Input attenuation switching uncertainty		**Specifications**	**Additional information**
Attenuation > 2 dB, preamp off	50 MHz (reference frequency)	± 0.20 dB	± 0.08 dB, typical
Relative to 10 dB (reference setting)	20 Hz to 3.6 GHz		± 0.3 dB, nominal
	3.5 to 8.4 GHz		± 0.5 dB, nominal
	8.3 to 13.6 GHz		± 0.7 dB, nominal
	13.5 to 26.5 GHz		± 0.7 dB, nominal
	26.4 to 50 GHz		± 1.0 dB, nominal

1. Signal frequencies above 18 GHz are prone to response errors due to modes in the Type-N connector used. With the use of Type-N to APC 3.5 mm adapter part number 1250-1744, there are nominally six such modes. The effect of these modes with this connector are included within these specifications.
2. DC coupling required to meet specifications below 50 MHz. With AC coupling, specifications apply at frequencies of 50 MHz and higher. Statistical observations at 10 MHz with AC coupling show that most instruments meet the DC-coupled specifications, however, a small percentage of instruments are expected to have errors exceeding 0.5 dB at 10 MHz at the temperature extreme. The effect at 20 to 50 MHz is negligible but not warranted.

Amplitude Accuracy and Range Specifications (continued)

Total absolute amplitude accuracy		**Specifications**	
(10 dB attenuation, 20 to 30 °C, 1 Hz ≤ RBW ≤ 1 MHz, input signal –10 to –50 dBm, all settings auto-coupled except Auto Swp Time = Accy, any reference level, any scale, σ = nominal standard deviation)			
	At 50 MHz	± 0.33 dB	
	At all frequencies	± (0.33 dB + frequency response)	
	20 Hz to 3.6 GHz	± 0.23 dB (95th Percentile ≈ 2σ)	
Preamp on (Option P03, P08, P13, P26, P32, P44 and P50)	At all frequencies	± (0.39 dB + frequency response)	
Input voltage standing wave ratio (VSWR) (≥ 10 dB input attenuation)		**95th Percentile**	
		Freq Opt 503, 508, 513, 526	**Freq Opt 532, 544, 550**
	10 MHz to 3.6 GHz	1.142	1.147
	3.5 to 8.4 GHz	1.33	1.221
	8.3 to 13.6 GHz	1.48	1.276
	13.5 to 17.1 GHz	1.46	1.285
	17.0 to 26.5 GHz	1.55	1.430
	26.4 to 34.5 GHz	NA	1.424
	34.4 to 50 GHz	NA	1.533
Preamp on (0 dB attenuation)	10 MHz to 3.6 GHz	1.80	1.450
	3.5 to 8.4 GHz	1.68	1.522
	8.3 to 13.6 GHz	1.69	1.430
	13.5 to 17.1 GHz	1.66	1.432
	17.0 to 26.5 GHz	1.66	1.562
	26.4 to 34.5 GHz	NA	1.375
	34.4 to 50 GHz	NA	1.483
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, 10 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	
	Option P32	100 kHz to 32 GHz	
	Option P44	100 kHz to 44 GHz	
	Option P50	100 kHz to 50 GHz	
Gain	100 kHz to 3.6 GHz	+20 dB, nominal	
	3.6 to 26.5 GHz	+35 dB, nominal	
	26.5 to 50 GHz	+40 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 50 GHz	DANL + 176.24 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	1 dBm	+5 dBm, typical
	3.6 to 26.5 GHz	0 dBm	+4 dBm, typical
	26.5 to 50 GHz	0 dBm	0 dBm, nominal
Preamp on	10 MHz to 3.6 GHz		–14 dBm, nominal
(Option P03, P08, P13, P26, P32, P44, P50)	3.6 to 26.5 GHz		
	– Tone spacing 100 kHz to 20 MHz		–26 dBm, nominal
	– Tone spacing > 70 MHz		
	Freq Option ≤ 526		–16 dBm, nominal
	Freq Option > 526		–20 dBm, nominal
	26.5 to 50 GHz		–30 dBm, nominal

Displayed average noise level (DANL)

(Input terminated, sample or average detector, averaging type = Log, 0 dB input attenuation, IF Gain = High, 1 Hz RBW, 20 to 30 °C)

		Specification	**Typical**
RF/MW	10 Hz		–95 dBm, nominal
(Option 503, 508, 513, 526)	20 Hz		–105 dBm, nominal
	100 Hz		–110 dBm, nominal
	1 kHz		–120 dBm, nominal
	9 kHz to 1 MHz		–130 dBm
	1 to 10 MHz	–150 dBm	–153 dBm
	10 MHz to 2.1 GHz	–151 dBm	–154 dBm
	2.1 to 3.6 GHz	–149 dBm	–152 dBm
	3.6 to 8.4 GHz	–149 dBm	–153 dBm
	8.3 to 13.6 GHz	–148 dBm	–151 dBm
	13.5 to 17.1 GHz	–144 dBm	–147 dBm
	17.0 to 20.0 GHz	–143 dBm	–146 dBm
	20.0 to 26.5 GHz	–136 dBm	–142 dBm
Preamp on, RF/MW	100 kHz to 1 MHz		–149 dBm, nominal
(Option 503, 508, 513, 526)	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
	8.3 to 13.6 GHz	–162 dBm	–165 dBm
	13.5 to 17.1 GHz	–159 dBm	–163 dBm
	17.0 to 20.0 GHz	–157 dBm	–161 dBm
	20.0 to 26.5 GHz	–152 dBm	–157 dBm
Millimeter-Wave	10 Hz		–95 dBm, nominal
(Option 532, 544, 550)[1]	20 Hz		–105 dBm, nominal
	100 Hz		–110 dBm, nominal
	1 kHz		–120 dBm, nominal
	9 kHz to 1 MHz		–135 dBm
	1 MHz to 1.2 GHz	–154 dBm	–155 dBm
	1.2 to 2.1 GHz	–152 dBm	–154 dBm
	2.1 to 3.6 GHz	–150 dBm	–152 dBm
	3.5 to 4.2 GHz	–144 dBm	–147 dBm
	4.2 to 6.6 GHz	–146 dBm	–149 dBm
	6.6 to 8.4 GHz	–148 dBm	–150 dBm
	8.3 to 13.6 GHz	–148 dBm	–150 dBm
	13.5 to 20 GHz	–145 dBm	–148 dBm
	20 to 26.5 GHz	–142 dBm	–145 dBm
	26.4 to 34 GHz	–140 dBm	–144 dBm
	33.9 to 40 GHz	–136 dBm	–140 dBm
	40 to 44 GHz	–135 dBm	–140 dBm
	44 to 46 GHz	–135 dBm	–140 dBm
	46 to 50 GHz	–133 dBm	–137 dBm

1. Without Option B40, B85, B1A, B1X, DP2, or MPB. When any of these options are installed, performance may change. Please refer to the MXA specifications guide for more details.

Dynamic Range Specifications (continued)

Preamp on, Millimeter-Wave (Option 532, 544, 550)	100 kHz to 1 MHz	–149 dBm	–151 dBm
	1 to 10 MHz	–163 dBm	–165 dBm
	10 MHz to 1.2 GHz	–164 dBm	–166 dBm
	1.2 to 2.1 GHz	–163 dBm	–165 dBm
	2.1 to 3.6 GHz	–162 dBm	–164 dBm
	3.5 to 7 GHz	–161 dBm	–162 dBm
	7 to 20 GHz	–161 dBm	–162 dBm
	20 to 26.5 GHz	–159 dBm	–161 dBm
	26.4 to 32 GHz	–158 dBm	–160 dBm
	32 to 34 GHz	–156 dBm	–159 dBm
	33.9 to 40 GHz	–154 dBm	–157 dBm
	40 to 44 GHz	–150 dBm	–155 dBm
	44 to 46 GHz	–150 dBm	–155 dBm
	46 to 50 GHz	–150 dBm	–153 dBm

DANL with Noise Floor Extension (Option NF2) improvement

DANL improvement exceeds 9 dB with 95% confidence in the average of all bands, paths (normal, preamp, low noise path and microwave preselector bypass), frequency options and signal path option (MPB).

DANL with Noise Floor Extension (Option NF2) on RF/MW (Option 503, 508, 513, 526)	**95th percentile**	
Frequency	**Preamp Off**	**Preamp On**
Band 0, f > 20 MHz	–162 dBm	–172 dBm
Band 1	–160 dBm	–170 dBm
Band 2	–160 dBm	–170 dBm
Band 3	–156 dBm	–170 dBm
Band 4	–148 dBm	–164 dBm
Millimeter-Wave (Option 532, 544, 550)[1]		
Band 0, f > 20 MHz	–163 dBm	–174 dBm
Band 1	–160 dBm	–172 dBm
Band 2	–161 dBm	–173 dBm
Band 3	–161 dBm	–174 dBm
Band 4	–158 dBm	–171 dBm
Band 5	–157 dBm	–169 dBm
Band 6	–152 dBm	–165 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 (–108 dBc, typical)
	3.5 to 13.6 GHz	–78 dBc (–87 dBc, typical)
	13.5 to 17.1 GHz	–74 dBc (–85 dBc, typical)
	17.0 to 22 GHz	–70 dBc (–81 dBc, typical)
	22 to 26.5 GHz	–68 dBc (–77 dBc, typical)
	26.5 to 34.5 GHz	–70 dBc (–94 dBc, typical)
	34.4 to 44 GHz	–60 dBc (–79 dBc, typical)
	44 to 50 GHz	–75 dBc, nominal
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 + 20xlogN [2]	

1. Without Option B40, B85, B1A, B1X, DP2, or MPB. When any of these options are installed, performance may change. Please refer to the MXA specifications guide for more details.
2. N is the LO multiplication factor.

Dynamic Range Specifications (continued)

Second harmonic distortion (SHI)				
	Source frequency	**Mixer level**	**Distortion**	**SHI**
RF/MW (Option 503, 508, 513, 526)	10 MHz to 1.0 GHz	–15 dBm	–60 dBc	+45 dBm
	1.0 to 1.8 GHz	–15 dBm	–56 dBc	+41 dBm
	1.75 to 6.5 GHz	–15 dBm	–80 dBc	+65 dBm
	6.5 to 11 GHz	–15 dBm	–70 dBc	+55 dBm
	11 to 13.25 GHz	–15 dBm	–65 dBc	+50 dBm
Millimeter-Wave (Option 532, 544, 550)	10 MHz to 1.0 GHz	–15 dBm	–60 dBc	+45 dBm
	1.0 to 1.8 GHz	–15 dBm	–56 dBc	+41 dBm
	1.75 to 3 GHz	–15 dBm	–72 dBc	+57 dBm
	3 to 6.5 GHz	–15 dBm	–80 dBc	+65 dBm
	6.5 to 11 GHz	–15 dBm	–70 dBc	+55 dBm
	11 to 13.25 GHz	–15 dBm	–65 dBc	+50 dBm
	13.2 to 25 GHz	–15 dBm	–65 dBc, nominal	+50 dBm, nominal
		Preamp level	Distortion	SHI
Preamp on (Option P03, P08, P13, P26, P32, P44, P50)	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
	13.25 to 25 GHz	–50 dBm	–50 dBc, nominal	0 dBm, nominal
Third-order intermodulation distortion (TOI)				
(Two –18 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**	**TOI (typical)**
RF/MW (Option 503, 508, 513, 526)	10 to 100 MHz	–84 dBc	+12 dBm	+17 dBm
	100 to 400 MHz	–90 dBc	+15 dBm	+20 dBm
	400 MHz to 1.7 GHz	–92 dBc	+16 dBm	+20 dBm
	1.7 to 3.6 GHz	–92 dBc	+16 dBm	+19 dBm
	3.6 to 26.5 GHz	–90 dBc	+15 dBm	+18 dBm
Millimeter-Wave (Option 532, 544, 550)	10 to 100 MHz	–88 dBc	+14 dBm	+17 dBm
	100 MHz to 3.95 GHz	–92 dBc	+16 dBm	+19 dBm
	3.95 to 8.4 GHz	–90 dBc	+15 dBm	+18 dBm
	8.3 to 13.6 GHz	–90 dBc	+15 dBm	+21 dBm
	13.5 to 17.1 GHz	–84 dBc	+12 dBm	+16 dBm
	17 to 26.5 GHz	–82 dBc	+11 dBm	+17 dBm
	26.4 to 34.5 GHz	–82 dBc	+11 dBm	+18 dBm
	34.4 to 50 GHz	–80 dBc	+10 dBm	+18 dBm, nominal
Preamp on, RF/MW (Tones at preamp input)				
two –45 dBm	10 MHz to 500 MHz	–98 dBc, nominal		+4 dBm, nominal
two –45 dBm	500 MHz to 3.6 GHz	–100 dBc, nominal		+5 dBm, nominal
two –50 dBm	3.6 to 26.5 GHz	–70 dBc, nominal		-15 dBm, nominal
Preamp on, Millimeter-Wave (Tones at preamp input)				
two –45 dBm	10 MHz to 3.6 GHz	–90 dBc, nominal		0 dBm, nominal
two –50 dBm	3.6 to 26.5 GHz	– 64 dBc, nominal		–18 dBm, nominal

Phase noise [1]	Offset	Specification	Typical
Noise sidebands	10 Hz		–80 dBc/Hz, nominal
(20 to 30 °C, CF = 1 GHz)	100 Hz	–91 dBc/Hz	–100 dBc/Hz
	1 kHz		–112 dBc/Hz, nominal
	10 kHz	–113 dBc/Hz	–114 dBc/Hz
	100 kHz	–116 dBc/Hz	–117 dBc/Hz
	1 MHz	–135 dBc/Hz	–136 dBc/Hz
	10 MHz		–148 dBc/Hz, nominal

1. For nominal values at other center frequencies, refer to Figure 1 and Figure 2.

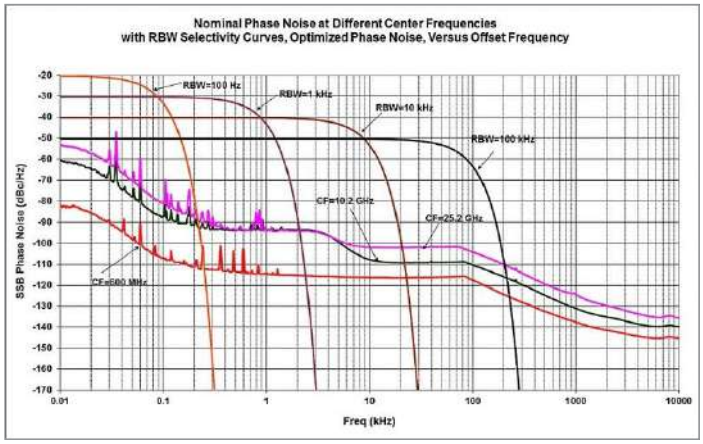

Figure 1. Nominal phase noise at different center frequencies, RF/MW(Option 503, 508, 513, 526)

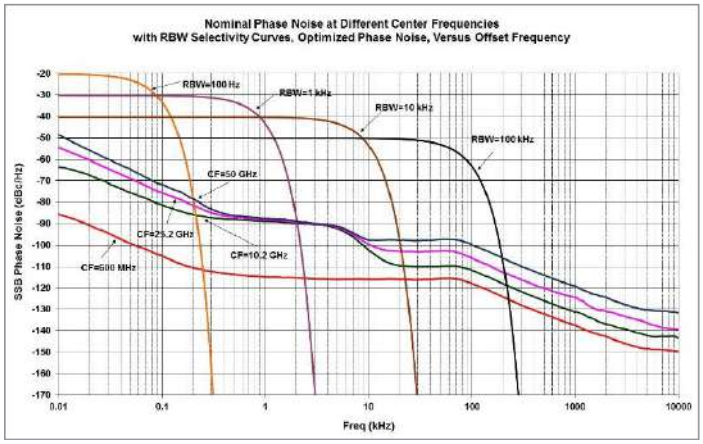

Figure 2. Nominal phase noise at different center frequencies, Millimeter-Wave (Option 532, 544, 550)

PowerSuite Measurement Specifications

Channel power		
Amplitude accuracy, W-CDMA or IS95 (20 to 30 °C, attenuation = 10 dB)	± 0.82 dB (± 0.23 dB 95th percentile)	
Occupied bandwidth		
Frequency accuracy	± [span/1000] nominal	
Adjacent channel power	**Adjacent**	**Alternate**
Accuracy, W-CDMA (ACLR) (at specific mixer levels and ACLR ranges)		
– MS	± 0.14 dB	± 0.18 dB
– BTS	± 0.49 dB	± 0.42 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 measurement and transfer time (fast method)	10 ms, nominal (σ = 0.2 dB)	
Multiple number of carriers measured	Up to 12	
Power statistics CCDF		
Histogram resolution	0.01 dB	
Harmonic distortion		
Maximum harmonic number	10th	
Result	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 3.6 GHz) table-driven spurious signals; search across regions		
– Dynamic range	81.3 dB	(82.2 dB, typical)
– Absolute sensitivity	–84.5 dBm	(–89.5 dBm, typical)
Spectrum emission mask (SEM)		
cdma2000® (750 kHz offset)		
– Relative dynamic range (30 kHz RBW)	78.6 dB	(84.8 dB, typical)
– Absolute sensitivity	–99.7 dBm	(–104.7 dBm, typical)
– Relative accuracy	± 0.12 dB	
3GPP W-CDMA (2.515 MHz offset)		
– Relative dynamic range (30 kHz RBW)	81.9 dB	(88.1 dB, typical)
– Absolute sensitivity	–99.7 dBm	(–104.7 dBm, typical)
– Relative accuracy	± 0.15 dB	

General Specifications

Temperature range		
Operating	0 to 55 °C	
Storage	–40 to 70 °C	
EMC		
Complies with the essential requirements of the European EMC Directive and the UK Electromagnetic Compatibility Regulations 2016 as well as current editions of the following standards (dates and editions are cited in the Declaration of Conformity): – IEC/EN 61326-1 or IEC/EN 61326-2-1 – CISPR 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 the essential requirements of the European Low Voltage Directive a well as current editions of the following standards (dates and editions are cited in the Declaration of Conformity) – IEC/EN 61010-1 – Canada: CSA C22.2 No. 61010-1 – U.S.A.: UL 61010-1		
Acoustic statement (European Machinery Directive 2002/42/EC, 1.7.4.2u)		
– Acoustic noise emission – LpA < 70 dB – Operator position – Normal position – Per ISO 7779		
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	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 – Standby	 465 W maximum 20 W	
Display		
Resolution	1280 x 768	
Size	269 mm (10.6 in.) diagonal (nominal) capacitive multi-touch screen	
Data storage		
Internal	≥ 160 GB nominal (removable solid state drive)	
External	Supports USB 2.0 or 3.0 compatible memory devices	
Weight (without options)		
Net – RF/MW (Option 503, 508, 513, 526) – Millimeter-Wave (Option 532, 544, 550)	 18 kg (40 lbs), nominal 20 kg (44 lbs), nominal	
Shipping – RF/MW (Option 503, 508, 513, 526) – Millimeter-Wave (Option 532, 544, 550)	 30 kg (66 lbs), nominal 32 kg (71 lbs), nominal	
Dimensions		
Height	177 mm (7.0 in)	
Width	426 mm (16.8 in)	
Length	368 mm (14.5 in)	
Calibration cycle		
The recommended calibration cycle is two years; calibration services are available through Keysight service centers		

Inputs and Outputs

Front panel	
RF input connector	
– Standard (Option 503, 508, 513, 526)	Type-N female, 50 Ω nominal
– Standard (Option 532, 544, 550)	2.4 mm male, 50 Ω nominal
External Mixing (Option EXM)	
– Connection port	
– Connector	SMA, female
– Impedance	50 Ω, nominal
– Functions	Triplexed for LO output, IF input, and mixer bias
– Mixer bias range	± 10 mA in 10 µA step
– IF input center frequency	
– Narrowband IF path	322.5 MHz
– 40 MHz BW IF path	250.0 MHz
– 85, 125, or 160 MHz BW IF path	300 MHz
– LO output frequency range	3.75 to 14.0 GHz
Analog baseband IQ inputs (Option BBA) [1]	
– Connectors (I, Q, I-Bar, Q-Bar, and Cal Out)	BNC female
– Cal Out	
– Signal	AC coupled square wave
– Frequency	Selectable between 1 kHz and 250 kHz
– Input impedance (4 connectors: I, Q, I-, Q-)	50 Ω, 1 MΩ (selectable, nominal)
– Probes supported [2]	
– Active probe	1130A, 1131A, 1132A, 1134A
– Passive probe	1161A
– Input return loss	–35 dB (0 to 10 MHz, nominal)
– 50 Ω impedance only selected	–30 dB (10 to 40 MHz, nominal)
Probe power	
– Voltage/current	+15 Vdc, ±7 % at 150 mA max, nominal –12.6 Vdc, ±10 % at 150 mA max, nominal
USB 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)
– Ports not marked with lightning bolt	0.5 A (nominal)
Rear panel	
10 MHz out	
– Connector	BNC female, 50 Ω, nominal
– Output amplitude	≥ 0 dBm, nominal
– Frequency	10 MHz ± (10 MHz x frequency reference accuracy)
Ext Ref In	
– Connector	BNC female, 50 Ω, nominal
– Input amplitude range	–5 to 10 dBm, nominal
– Input frequency	1 to 50 MHz, nominal
– Frequency lock range	± 2 x 10^{-6} of specified external reference input frequency
Trigger 1 and 2 inputs	
– Connector	BNC female
– Impedance	> 10 kΩ, nominal
– Trigger level range	–5 to 5 V

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

Inputs and Outputs (continued)

Rear panel	
Trigger 1 and 2 outputs	
– 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 (used with N9063A analog demod app and Option YAS)
USB ports	
– Host, super speed	2 ports
– Compatibility	USB 3.0
– Connector	USB Type A (female)
– Output current	0.9 A, nominal
– Host, stacked with LAN	1 port
– Compatibility	USB 2.0
– Connector	USB Type A (female)
– Output current	0.5 A, nominal
– Device	1 port
– Compatibility	USB 3.0
– Connector	USB type-B (female)
– Output current	0.9 A, nominal
GPIB interface	
– Connector	IEEE-488 bus connector
– GPIB codes	SH1, AH1, T6, SR1, RL1, PP0, DC1, C1, C2, C3, C28, DT1, L4, C0
– GPIB mode	Controller or device
LAN TCP/IP interface	
– Standard	1000 Base-T
– Connector	RJ45 Ethertwist
IF output	
– Connector	SMA female, shared by Option CR3 and CRP
– Impedance	50 Ω, nominal
Wideband IF output, Option CR3	
Center frequency	
– SA mode or I/Q analyzer	
– with IF BW ≤ 25 MHz	322.5 MHz
– with Option B40	250 MHz
– with Option B85, B1A, or B1X	300 MHz
Conversion gain	–1 to +4 dB (nominal) plus RF frequency response
Bandwidth	
– Low band	Up to 140 MHz (nominal)
– High band, with preselector	Depends on center frequency
– High band, with preselector bypassed [1]	Up to 410 MHz
Programmable IF output, Option CRP	
Center frequency	
– Range	10 to 75 MHz (user selectable)
– Resolution	0.5 MHz
Conversion gain	–1 to +4 dB (nominal) plus RF frequency response
Bandwidth	
– Output at 70 MHz	100 MHz (nominal)
– Low band or high band with preselector bypassed [1]	Depends on RF center frequency
– Preselected band	
– Lower output frequencies	Subject to folding
Residual output signals	≤ –88 dBm (nominal)

1. Option MPB installed and enabled.

I/Q Analyzer

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	10 Hz to 10 MHz
Option B25 (standard)	10 Hz to 25 MHz
Option B40	10 Hz to 40 MHz
Option B85	10 Hz to 85 MHz
Option B1A	10 Hz to 125 MHz
Option B1X	10 Hz to 160 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)	Preselector	Max. error	RMS (nominal)
≤ 3.6	≤ 10	NA	± 0.40 dB	0.04 dB
3.6 < f ≤ 26.5	≤ 10	On		0.25 dB
26.5 < f ≤ 50	≤ 10	On		0.35 dB
3.6 < f ≤ 50	≤ 10	Off [1]	± 0.45 dB	0.04 dB

IF phase linearity (deviation from mean phase linearity, nominal)

Center frequency (GHz)	Span (MHz)	Preselector	Peak-to-peak	RMS
≤ 3.6	≤ 10	NA	0.4 °	0.1 °
> 3.6	≤ 10	On	1.0 °	0.2 °
> 3.6	≤ 10	Off [1]	0.4 °	0.1 °

Data acquisition (10 MHz IF path)	
Time record length	
IQ analyzer	
Option DP2, B40, B85, B1A, B1X, or MPB	32,000,001 IQ sample pairs
None of the above	5,000,000 IQ sample pairs
Sample rate at ADC	
Option DP2, B40, B85, B1A, B1X, or MPB	100 MSa/s
None of the above	90 MSa/s
ADC resolution	
Option DP2, B40, B85, B1A, B1X, or MPB	16 bits
None of the above	14 bits

Option B25 (standard) 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)	Preselector	Max. error	RMS (nominal)
≤ 3.6	10 to ≤ 25	NA	± 0.45 dB	0.051 dB
> 3.6	10 to ≤ 25	On		0.45 dB
> 3.6	10 to ≤ 25	Off [1]	± 0.45 dB	0.05 dB

IF phase linearity (deviation from mean phase linearity, nominal)

Center frequency (GHz)	Span (MHz)	Preselector	Peak-to-peak	RMS
0.02 ≤ f < 3.6	≤ 25	NA	0.6 °	0.14 °
> 3.6	≤ 25	On	4.5 °	1.2 °
> 3.6	≤ 25	Off [1]	1.9 °	0.42 °

1. Option MPB is installed and enabled.

I/Q Analyzer (continued)

Data acquisition (25 MHz IF path)				
Time record length (IQ pairs)				
IQ Analyzer				
Option DP2, B40, B85, B1A, B1X, or MPB	32,000,001 IQ sample pairs			
None of the above	5,000,000 IQ sample pairs			
89600 software	**32-bit packing**	**64-bit packing**		**Memory**
Option DP2, B40, B85, B1A, B1X, or MPB	536 MSa	268 MSa		2 GB
None of the above	5,000,000 IQ sample pairs (independent of data packing)			
Sample rate at ADC				
Option DP2, B40, B85, B1A, B1X, or MPB	100 MSa/s			
None of the above	90 MSa/s			
ADC resolution				
Option DP2, B40, B85, B1A, B1X, or MPB	16 bits			
None of the above	14 bits			

I/Q Analyzer – Option B40

40 MHz analysis bandwidth, Option B40 is automatically included in Option B85, B1A or B1X

Option B40 40 MHz analysis bandwidth				
IF frequency response (demodulation and FFT response relative to the center frequency, 20 to 30 °C)				
Center frequency (GHz)	**Span (MHz)**	**Preselector**		**RMS (nominal)**
0.03 ≤ f < 3.6	≤ 40	NA	± 0.45 dB	± 0.08 dB
3.6 ≤ f ≤ 8.4	≤ 40	Off [1]	± 0.35 dB	± 0.08 dB
8.4 < f ≤ 26.5	≤ 40	Off [1]	± 0.46 dB	± 0.08 dB
26.5 < f ≤ 34.4	≤ 40	Off [1]	±0.67 dB	± 0.1 dB
34.4 < f ≤ 50	≤ 40	Off [1]	±0.71 dB	± 0.1 dB
IF phase linearity (deviation from mean phase linearity, nominal)				
Center frequency (GHz)	**Span (MHz)**	**Preselector**	**Peak-to-peak**	**RMS**
0.02 ≤ f < 3.6	40	NA	0.4°	0.1°
≥3.6	40	Off [1]	6°	1.8°
Dynamic range (40 MHz IF path)				
SFDR (Spurious-free dynamic range)				
– Signal frequency within ± 12 MHz of center	–77 dBc, nominal			
Signal frequency anywhere within analysis BW				
– Spurious response within ± 18 MHz of center	–74 dBc, nominal			
– Response anywhere within analysis BW	–74 dBc, nominal			
Data acquisition (40 MHz IF path)				
Time record length (IQ pairs)				
– IQ Analyzer	32,000,001 samples (I/Q pairs)			
89600 VSA software	**32-bit packing**	**64-bit packing**		
Length (IQ sample pairs)	536 MSa	268 MSa	2 GB total memory, nominal	
Length (time units)			Samples/(Span x 1.25), nominal	
Sample rate				
– At ADC	200 Msa/s			
– IQ pairs	Span dependent			
ADC resolution	12 bits			

1. Option MPB is installed and enabled.

I/Q Analyzer — Option B85/B1A/B1X 85/125/160 MHz analysis bandwidth

IF frequency response					
IF frequency response (20 to 30 °C)				Relative to center frequency	
Center freq. (GHz)	**Span (MHz)**	**Preselector**		**Typical**	**RMS (nominal)**
≥ 0.15, < 3.6	≤ 85	NA	± 0.6 dB	± 0.17 dB	0.05 dB
	≤ 140	NA	± 0.6 dB	± 0.25 dB	0.05 dB
	≤ 160	NA		± 0.2 dB, nominal	0.07 dB
≥ 3.6, ≤ 8.4	≤ 85	Off [1]	± 0.73 dB	± 0.2 dB	0.06 dB
	≤ 140	Off [1]	± 0.8 dB	± 0.35 dB	0.06 dB
	≤ 160	Off [1]		± 0.3 dB, nominal	0.07 dB
> 8.4, ≤ 26.5	≤ 85	Off [1]	± 1.10 dB	± 0.50 dB	0.2 dB
	≤ 140	Off [1]	± 1.40 dB	± 0.76 dB	0.2 dB
	≤ 160	Off [1]		± 0.5 dB, nominal	0.12 dB
> 26.5, ≤ 50	≤ 85	Off [1]	± 1.20 dB	± 0.45 dB	0.12 dB
> 26.5, ≤ 50	≤ 140	Off [1]	± 1.40 dB	± 0.65 dB	0.12 dB
> 26.5, ≤ 50	≤ 160	Off [1]		± 0.65 dB, nominal	0.12 dB
IF phase linearity (deviation from mean phase linearity, nominal)					
Center freq. (GHz)	**Span (MHz)**	**Preselector**		**Peak-to-peak**	**RMS**
≥ 0.03, < 3.6	≤ 85	NA		1.6°	0.54°
	≤ 140	NA		3.9°	0.85°
	≤ 160	NA		4.7°	1.23°
≥ 3.6	≤ 85	Off [1]		4.2°	0.93°
	≤ 160	Off [1]		5.3°	1.73°
EVM (EVM measurement floor)	Customized settings required, preselector bypassed (Option MPB) is installed and enabled				
Case 1: 802.11ac OFDM signal, 80 MHz bandwidth, MCS8, using 89600 VSA software equalization on, pilot phase tracking post EQ on					
Carrier frequency, 5.21 GHz; input power, 0 dBm	0.23% (–52.7 dB), nominal			(EQ on preamble, pilots, and data)	
	0.35% (–49.1 dB), nominal			(EQ on preamble only)	
Case 2: 802.11ac OFDM signal, 160 MHz bandwidth, MCS8, using 89600 VSA software equalization on, pilot phase tracking post EQ on					
Carrier frequency, 5.25 GHz; input power, 0 dBm	0.30% (–50.4 dB), nominal			(EQ on preamble, pilots, and data)	
	0.40% (–47.9 dB), nominal			(EQ on preamble only)	
Dynamic range					
SFDR (Spurious-free dynamic range)					
– Signal frequency within ± 12 MHz of center	–72 dBc, nominal				
– Signal frequency anywhere within analysis BW					
– Spurious response within ± 63 MHz of center	–71 dBc, nominal				
– Response anywhere within analysis BW	–69 dBc, nominal				
Full scale (ADC clipping)					
Default settings, signal at CF (IF gain = Low: IF gain offset = 0 dB)					
– Band 0	–8 dBm mixer level, nominal				
– Band 1 through 4	–7 dBm mixer level, nominal				
High gain setting, signal at CF (IF gain = High)					
– Band 0	–18 dBm mixer level nominal, subject to gain limitations				
– Band 1 through 4	–17 dBm mixer level nominal, subject to gain limitations				
Effect of signal frequency ≠ CF	Up to ± 3 dB, nominal				

1. Option MPB is installed and enabled.

I/Q Analyzer – Option B85/B1A/B1X (continued)

85/125/160 MHz analysis bandwidth

Data acquisition (85/125/160 MHz IF path)			
Time record length			
– IQ analyzer	32,000,001 IQ sample pairs		
– 89600 VSA software	Data packing		
	32-bit	64-bit	
– Length (IQ sample pairs)	536 MSa (2^{29} Sa)	268 MSa (2^{28} Sa)	2 GB total memory
– Length (time units)	Samples/(span x 1.25)		
Sample rate			
– At ADC	400 Msa/s		
– IQ pairs	Span dependent		
ADC resolution	14 bits		

Real-Time Spectrum Analyzer (RTSA) [1]

Option RT1 or RT2

Real-time analysis		
Real-time analysis bandwidth		
– Option RT1	Up to 160 MHz	Analysis BW option determines the max real-time bandwidth
– Option RT2	Up to 160 MHz	Analysis BW option determines the max real-time bandwidth
Minimum detectable signal duration with > 60 dB StM [2] ratio		
– Option RT1	11.42 ns	
– Option RT2	5.0 ns	
Minimum signal duration with 100% probability of Frequency Mask Triggering (FMT) at full amplitude accuracy		
– Option RT1	17.3 µs	Signal is at mask level
– Option RT2	3.57 µs	Signal is at mask level
Minimum acquisition time	100 µs	
FFT rate	292,969/s	
Supported triggers	Level, Level with time qualified (TQT), Line, External, RF burst, Frame, Frequency mask (FMT), FMT with TQT	

1. For additional RTSA specifications, please refer to Option RT1/RT2 Chapter in the MXA Signal Analyzer specifications guide (part number: N9020-90113)
2. StM = "Signal-to-Mask"

Related Literature

Publication title	**Publication number**
X-Series Signal Analyzers - Brochure	5992-1316EN
N9020B MXA X-Series Signal Analyzer – Configuration Guide	5992-1254EN

For more information or literature resources please visit the web:
Product page: **www.keysight.com/find/N9020B**
X-Series measurement applications: **www.keysight.com/find/X-Series_Apps**
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Keysight Services

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KeysightCare Assured	KeysightCare Assured goes beyond basic warranty with repair services that include committed TAT and unlimited access to technical experts.
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Education Services	Build confidence and gain new skills to make accurate measurements, with flexible Education Services developed by Keysight experts. Including Start-up Assistance.
Alternative product acquisition	
KeysightAccess	Reduce budget challenges with a subscription service enabling you to get the instruments, software, and technical support you want for your test needs.

Recommended Services

Maximize your test system up-time by securing technical support, repair, and calibration services with committed response and turnaround times. 1-year KeysightCare Assured is included in every new instrument purchase. Obtain multi-year KeysightCare upfront to eliminate the need for lengthy and tedious paperwork and yearly requests for maintenance budget. Plus, you benefit from secured service for 2, 3, or 5 years.

SERVICE KeysightCare Enhanced*	FUNCTION Includes Tech Support, Warranty and Calibration
R-55B-001-1	KeysightCare Enhanced – Upgrade 1 year
R-55B-001-2	KeysightCare Enhanced – Extend to 2 years
R-55B-001-3	KeysightCare Enhanced – Extend to 3 years (Recommended)
R-55B-001-5	KeysightCare Enhanced – Extend to 5 years (Recommended)
KeysightCare Assured	Includes Tech Support and Warranty
R-55A-001-2	KeysightCare Assured – Extend to 2 years
R-55A-001-3	KeysightCare Assured – Extend to 3 years
R-55A-001-5	KeysightCare Assured – Extend to 5 years
Start-Up Assistance	
PS-S10	Included – instrument fundamentals and operations starter
PS-S20	Optional, technology & measurement science standard learning

* Available in select countries. For details, please view the datasheet. R-55B-001-2/3/5 must be ordered with R-55B-001-1.

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