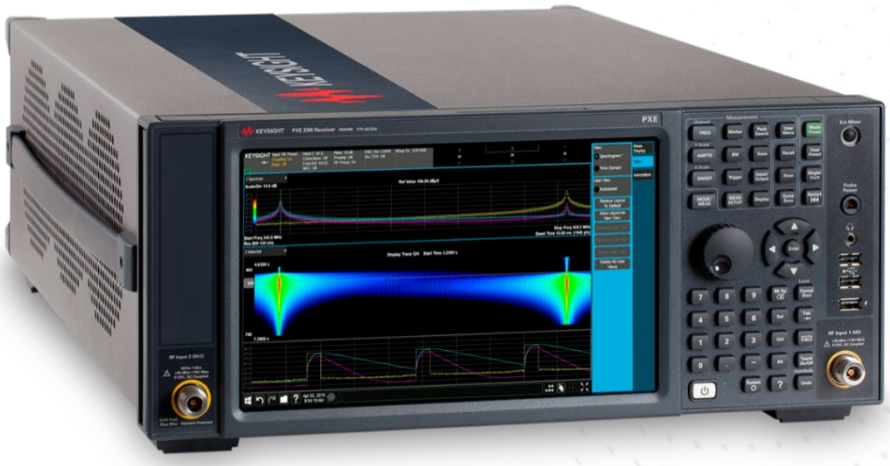
DATA SHEET

N9048B PXE EMI Receiver

1 Hz to 44 GHz



KEYSIGHT TECHNOLOGIES

Table of Contents

Definition and Terms

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.

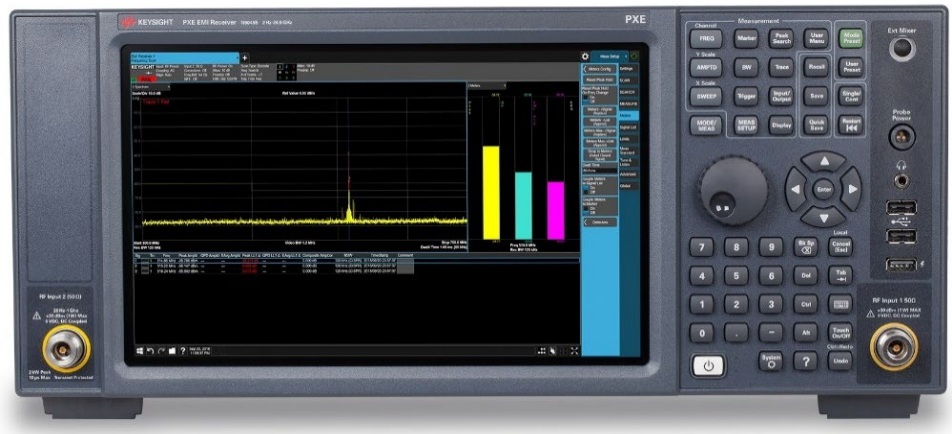
Typical values describe additional product performance information that is not covered by the product warranty. It is performance beyond specifications that 80 percent of the units exhibit with a 95 percent confidence level over the temperature range 20 to 30 °C. Typical performance does not include 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 receiver 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 receiver has been stored at an ambient temperature within the allowed operating range for at least two hours before being turned on
- The receiver 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 receiver may fail to meet specifications without informing the user

This data sheet is a summary of the specifications and conditions for the PXE EMI receiver. For the complete specifications guide, visit: www.keysight.com/find/PXE



Keep the test queue flowing

In EMC testing, success depends on tools that can help you do more in less time—today and tomorrow. That’s why Keysight Technologies, Inc. created the PXE: it’s a standards-compliant EMI receiver and diagnostic signal analyzer built on an upgradeable platform. In the lab and on the bench, it provides the accuracy, repeatability, and reliability you need to test with confidence. Equip your team with the PXE and keep the test queue flowing.

Frequency and Time Specifications

Frequency range		DC coupled	AC coupled
Input 1			
Option 503		1 Hz to 3.6 GHz	10 MHz to 3.6 GHz
Option 508		1 Hz to 8.4 GHz	10 MHz to 8.4 GHz
Option 526		1 Hz to 26.5 GHz	10 MHz to 26.5 GHz
Option 544		1 Hz to 44 GHz	NA
Input 2			
Option 503, 508 or 526		1 Hz to 1 GHz	10 MHz to 1 GHz
Option 544		1 Hz to 1 GHz	NA
Band	**LO Multiple (N)**		
0	1	1 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	17.0 to 26.5 GHz	
5	4	26.4 to 34.5 GHz	
6	8	34.4 to 44 GHz	
Frequency reference	**Standard**	**With option PFR**	
Accuracy	± [(time since last adjustment x aging rate) + temperature stability + calibration accuracy]		
Aging rate	$\pm 1 \times 10^{-6}$ / year	$\pm 1 \times 10^{-7}$ / year	
Temperature stability			
20 to 30 °C	$\pm 2 \times 10^{-6}$	$\pm 1.5 \times 10^{-8}$	
Full temperature range	$\pm 2 \times 10^{-6}$	$\pm 5 \times 10^{-8}$	
Achievable initial calibration accuracy	$\pm 1.4 \times 10^{-6}$	$\pm 4 \times 10^{-8}$	
Residual FM	≤ $(0.25 \text{ Hz} \times N)_{p\text{-}p}$ in 20 ms (nominal). N is the LO multiplication factor		
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 span (FFT and swept mode)		
Range	0 Hz (zero span), 10 Hz to maximum frequency of instrument	
Resolution	2 Hz	
Accuracy		
Stepped/Swept	± (0.25 % x span + horizontal resolution)	
FFT	± (0.1% x span + horizontal resolution)	
Sweep time and triggering		
Range	Span = 0 Hz	1 µs to 6000 s
	Span ≥ 10 Hz	1 ms to 4000 s
Accuracy	Span ≥ 10 Hz, swept	± 0.01 % nominal
	Span ≥ 10 Hz, FFT	± 40 % nominal
	Span = 0 Hz	± 0.01 % nominal
Trigger	Free run, Line, Video, External 1, External 2, RF Burst, Periodic timer	
Trigger delay	Span = 0 or FFT	−150 to +500 ms
	Span ≥ 10 Hz, swept	0 to 500 ms
	Resolution	0.1 µs
Gated Sweep		
Gate methods	Gated LO; gated video; gated FFT	
Gate length range	1 µs to 5.0 s (Except method = FFT)	
Gate delay range	0 to 100.0 s	
Gate delay jitter	33.3 ns p-p, nominal	
Sweep/Step (trace) point range		
Analyzer mode	1 to 100,001	
Receiver mode	1 to 4,000,001	
Resolution bandwidth (RBW)		
EMI bandwidths (CISPR compliant)	200 Hz, 9 kHz, 120 kHz, 1 MHz	
EMI bandwidths (Mil-STD-461 compliant)	10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz	
Other bandwidths (–6 dB)	1 Hz (requires Option WF1 or WF2)	
	30 Hz, 300 Hz, 3 kHz, 30 kHz, 300 kHz, 3 MHz, 10 MHz	
Range (−3 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)
820 kHz to 1.2 MHz (< 3.6 GHz CF)		± 2.0 % (± 0.088 dB)
1.3 to 2 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 dB)	1 Hz to 1.3 MHz	± 2% nominal
Selectivity (−60 dB/−3 dB)		4.1: 1 nominal
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)	
Analysis bandwidth [1]		
Maximum bandwidth	Option B40	40 MHz
	Option B25	25 MHz
	Standard	10 MHz
Real time scan bandwidth		
Option N9048WT1B	170 MHz	
Option N9048WT2B	350 MHz	
RF preselector filters		
Frequency range	**Filter type**	**6 dB Bandwidth (nominal)**
1 Hz to 150 kHz	Fixed lowpass, 150 kHz	289 kHz (−3 dB corner frequency)
150 kHz to 30 MHz	Fixed bandpass	36 MHz
30 to 52 MHz	Fixed bandpass	28 MHz
52 to 75 MHz	Fixed bandpass	39 MHz
75 to 120 MHz	Fixed bandpass	63 MHz
120 to 165 MHz	Fixed bandpass	71 MHz
165 to 210 MHz	Fixed bandpass	69 MHz
210 to 255 MHz	Fixed bandpass	71 MHz
255 to 300 MHz	Fixed bandpass	68 MHz
300 to 475 MHz	Fixed bandpass	284 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.

475 to 650 MHz	Fixed bandpass	305 MHz
650 to 825 MHz	Fixed bandpass	302 MHz
825 to 1000 MHz	Fixed bandpass	314 MHz
1 to 1.7 GHz	Fixed highpass, 1 GHz	912 MHz (−3 dB corner frequency)
1.7 to 2.9 GHz	Fixed highpass, 1.7 GHz	1.56 GHz (−3 dB corner frequency)
2.9 to 3.6 GHz	Fixed highpass, 2.9 GHz	2.29 GHz (−3 dB corner frequency)
Notch filters		
Reject band	2.4 to 2.5 GHz	
Reject attenuation	20 dB nominal	

Amplitude Accuracy and Range Specifications

Amplitude range		
Measurement range	Displayed average noise level (DANL) to +30 dBm	
Input attenuator range	0 to 70 dB in 2 dB steps	
Maximum safe input level		
	RF input 1	**RF input 2**
Average total power	+30 dBm (1 W)	+30 dBm (1 W)
Peak pulse power	+50 dBm (100 W)	+50 dBm (100 W)
Surge power		+2 kW (10 µs pulse width)
DC volts		
DC coupled	± 0.2 Vdc	± 0.2 Vdc
AC coupled	± 100 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, dBuV/m, dBuA/m, dBpT, dBG, dBpW	

Frequency response			
Maximum error relative to reference condition (50 MHz), Mechanical attenuator only, Non-FFT operation only, 20 to 30 °C			
		Specification	95th percentile
RF/MW (Option 503/508/526)			
RF Preselector Off, Preamp Off (10 dB attenuation)	1 Hz to 9 kHz	± 0.45 dB	± 0.16 dB
	9 kHz to 10 MHz	± 0.45 dB	± 0.25 dB
	10 MHz to 1.0 GHz	± 0.40 dB	± 0.25 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.25 dB
	3.5 to 13.6 GHz	± 1.00 dB	± 0.50 dB
	13.5 to 16 GHz	± 1.10 dB	± 0.90 dB
	16 to 17.1 GHz	± 1.40 dB	± 1.03 dB
	17.0 to 22.0 GHz	± 1.20 dB	± 0.55 dB
	22.0 to 26.5 GHz	± 1.40 dB	± 0.60 dB
RF Preselector On, Preamp off (10 dB attenuation)	1 Hz to 9 kHz	± 0.50 dB	± 0.20 dB
	9 kHz to 10 MHz	± 0.60 dB	± 0.25 dB
	10 MHz to 1.0 GHz	± 0.50 dB	± 0.23 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.25 dB
	3.5 to 13.6 GHz	± 1.00 dB	± 0.50 dB
	13.5 to 16 GHz	± 1.10 dB	± 0.90 dB
	16 to 17.1 GHz	± 1.40 dB	± 1.03 dB
	17.0 to 22.0 GHz	± 1.20 dB	± 0.55 dB
	22.0 to 26.5 GHz	± 1.40 dB	± 0.60 dB
RF Preselector Off, Preamp On, LNA Off (0 dB attenuation)	100 kHz to 10 MHz	± 0.70 dB	± 0.36 dB
	10 MHz to 1.0 GHz	± 0.60 dB	± 0.25 dB
	1.0 to 3.6 GHz	± 0.70 dB	± 0.30 dB
	3.5 to 13.6 GHz	± 1.50 dB	± 0.75 dB
	13.5 to 16 GHz	± 1.50 dB	± 1.02 dB
	16 to 17.1 GHz	± 1.50 dB	± 1.21 dB
	17.0 to 22.0 GHz	± 1.80 dB	± 0.95 dB
	22.0 to 26.5 GHz	± 2.00 dB	± 0.95 dB
RF Preselector On, Preamp On, LNA Off (0 dB attenuation)	1 to 9 kHz	± 0.50 dB	± 0.20 dB
	9 kHz to 10 MHz	± 0.80 dB	± 0.31 dB
	10 to 30 MHz	± 0.80 dB	± 0.32 dB
	30 MHz to 1.0 GHz	± 0.50 dB	± 0.23 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.23 dB
	3.5 to 13.6 GHz	± 1.50 dB	± 0.75 dB
	13.5 to 16 GHz	± 1.50 dB	± 1.02 dB
	16 to 17.1 GHz	± 1.50 dB	± 1.21 dB
	17.0 to 22.0 GHz	± 1.80 dB	± 0.95 dB
	22.0 to 26.5 GHz	± 2.00 dB	± 0.95 dB

Frequency response			
RF Preselector Off, Preamp Off or On, LNA On (0 dB attenuation)	30 MHz to 1.0 GHz	± 0.50 dB	± 0.25 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.30 dB
RF Preselector On, Preamp Off or On, LNA On (0 dB attenuation)	10 to 30 MHz		± 0.35 dB
	30 MHz to 1.0 GHz	± 0.50 dB	± 0.22 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.27 dB
RF Preselector On or Off, Preamp Off, LNA On (0 dB attenuation)	3.5 to 8.4 GHz	± 1.60 dB	± 0.75 dB
	8.3 to 13.6 GHz	± 1.60 dB	± 0.85 dB
	13.5 to 16 GHz	± 1.60 dB	± 1.26 dB
	16 to 17.1 GHz	± 1.80 dB	± 1.61 dB
	17.0 to 26.5 GHz	± 1.90 dB	± 0.95 dB
RF Preselector On or Off, Preamp On, LNA On (0 dB attenuation)	3.5 to 13.6 GHz	± 1.60 dB	± 0.75 dB
	13.5 to 16 GHz	± 1.60 dB	± 1.02 dB
	16 to 17.1 GHz	± 1.60 dB	± 1.28 dB
	17.0 to 22.0 GHz	± 1.80 dB	± 0.95 dB
	22.0 to 26.5 GHz	± 2.00 dB	± 0.95 dB
Millimeter-Wave (Option 544)			
RF Preselector Off, Preamp Off (10 dB attenuation)	1 Hz to 9 kHz	± 0.45 dB	± 0.16 dB
	9 kHz to 10 MHz	± 0.45 dB	± 0.25 dB
	10 MHz to 1.0 GHz	± 0.40 dB	± 0.25 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.25 dB
	3.5 to 5.2 GHz	± 1.50 dB	± 0.60 dB
	5.2 to 17.1 GHz	± 1.00 dB	± 0.45 dB
	17.0 to 26.5 GHz	± 1.20 dB	± 0.55 dB
	26.4 to 34.5 GHz	± 1.80 dB	± 0.70 dB
	34.4 to 40.0 GHz	± 2.30 dB	± 1.10 dB
	40.0 to 44.0 GHz	± 2.60 dB	± 1.30 dB
RF Preselector On, Preamp Off (10 dB attenuation)	1 Hz to 9 kHz	± 0.50 dB	± 0.20 dB
	9 kHz to 10 MHz	± 0.60 dB	± 0.25 dB
	10 MHz to 1.0 GHz	± 0.50 dB	± 0.23 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.25 dB
	3.5 to 5.2 GHz	± 1.50 dB	± 0.60 dB
	5.2 to 17.1 GHz	± 1.00 dB	± 0.45 dB
	17.0 to 26.5 GHz	± 1.20 dB	± 0.55 dB
	26.4 to 34.5 GHz	± 1.80 dB	± 0.70 dB
	34.4 to 40.0 GHz	± 2.30 dB	± 1.10 dB
	40.0 to 44.0 GHz	± 2.60 dB	± 1.30 dB

RF Preselector Off, Preamp On, LNA Off (0 dB attenuation)	100 kHz to 10 MHz	± 0.70 dB	± 0.36 dB
	10 MHz to 1.0 GHz	± 0.60 dB	± 0.25 dB
	1.0 to 3.6 GHz	± 0.70 dB	± 0.30 dB
	3.5 to 5.2 GHz	± 1.70 dB	± 0.65 dB
	5.2 to 17.1 GHz	± 1.20 dB	± 0.50 dB
	17.0 to 26.5 GHz	± 1.40 dB	± 0.50 dB
	26.4 to 34.5 GHz	± 2.00 dB	± 0.70 dB
	34.4 to 40.0 GHz	± 2.50 dB	± 1.10 dB
	40.0 to 44.0 GHz	± 2.80 dB	± 1.30 dB
RF Preselector On, Preamp On, LNA Off (0 dB attenuation)	1 to 9 kHz	± 0.50 dB	± 0.20 dB
	9 kHz to 10 MHz	± 0.80 dB	± 0.31 dB
	10 to 30 MHz	± 0.80 dB	± 0.32 dB
	30 MHz to 1.0 GHz	± 0.50 dB	± 0.23 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.23 dB
	3.5 to 5.2 GHz	± 1.70 dB	± 0.65 dB
	5.2 to 17.1 GHz	± 1.20 dB	± 0.50 dB
	17.0 to 26.5 GHz	± 1.40 dB	± 0.50 dB
	26.4 to 34.5 GHz	± 2.00 dB	± 0.70 dB
	34.4 to 40.0 GHz	± 2.50 dB	± 1.10 dB
	40.0 to 44.0 GHz	± 2.80 dB	± 1.30 dB
RF Preselector Off, Preamp Off or On, LNA On (0 dB attenuation)	30 MHz to 1.0 GHz	± 0.50 dB	± 0.25 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.30 dB
RF Preselector On, Preamp Off or On, LNA On (0 dB attenuation)	10 to 30 MHz		± 0.35 dB
	30 MHz to 1.0 GHz	± 0.50 dB	± 0.22 dB
	1.0 to 3.6 GHz	± 0.60 dB	± 0.27 dB
RF Preselector On or Off, Preamp Off, LNA On (0 dB attenuation)	3.5 to 5.2 GHz	± 1.70 dB	± 0.65 dB
	5.2 to 17.1 GHz	± 1.30 dB	± 0.50 dB
	17.0 to 26.5 GHz	± 1.50 dB	± 0.55 dB
	26.4 to 34.5 GHz	± 2.00 dB	± 0.70 dB
	34.4 to 40.0 GHz	± 2.50 dB	± 1.10 dB
	40.0 to 44.0 GHz	± 2.90 dB	± 1.30 dB
RF Preselector On or Off, Preamp On, LNA On (0 dB attenuation)	3.5 to 5.2 GHz	± 1.70 dB	± 0.65 dB
	5.2 to 17.1 GHz	± 1.30 dB	± 0.50 dB
	17.0 to 26.5 GHz	± 1.50 dB	± 0.55 dB
	26.4 to 34.5 GHz	± 2.00 dB	± 0.70 dB
	34.4 to 40.0 GHz	± 2.60 dB	± 1.20 dB
	40.0 to 44.0 GHz	± 3.00 dB	± 1.30 dB

Input attenuation switching uncertainty			
		Specification	95th percentile
Attenuation > 2 dB, preamp off	50 MHz (reference frequency)	± 0.20 dB	± 0.08 dB typical
Relative to 10 dB			
Absolute amplitude accuracy			
10 dB attenuation, 20 to 30°C, 1 Hz ≤ RBW ≤ 1 MHz, input signal −10 to −50 dBm, RF Preselector Off, Preamp Off and On, all settings auto-coupled except Auto Swp Time = Accy, any reference level, any scale, σ = nominal standard deviation)			
		Specification	95th percentile
RF input 1	At 50 MHz	± 0.30 dB	± 0.17 dB
	At all frequencies	± (0.30 dB + frequency response)	
RF input 2	At 50 MHz	± 0.35 dB	± 0.21 dB
	At all frequencies	± (0.35 dB + frequency response)	
Input voltage standing wave ratio (VSWR) [1]			
		Input atten = 0 dB	Input atten ≥ 10 dB
RF Preselector Off, Preamp Off			
DC coupled	1 to 18 GHz	3.0:1	2.0:1, 1.8:1 typical
	18 to 26.5 GHz	3.0:1	2.0:1, 1.8:1 typical
	26.5 to 40.0 GHz	3.0:1	2.5:1, 1.8:1 typical
	40.0 to 44.0 GHz		2.0:1 typical
AC coupled	1 to 18 GHz	3.0:1	2.0:1, 1.8:1 typical
	18 to 26.5 GHz	3.0:1	2.4:1, 2.0:1 typical
RF Preselector On, Preamp Off			
DC coupled	9 kHz to 1 GHz	2.0:1	1.2:1, 1.1:1 typical
	1 to 3.6 GHz	3.0:1	2.0:1, 1.5:1 typical
	3.6 to 26.5 GHz	3.0:1	2.0:1, 1.8:1 typical
	26.5 to 40.0 GHz	3.0:1	2.5:1, 1.8:1 typical
	40.0 to 44.0 GHz		2.0:1 typical
AC coupled	55 MHz to 1 GHz	2.0:1	1.2:1
	1 to 18 GHz	3.0:1	2.0:1, 1.8:1 typical
	18 to 26.5 GHz	3.0:1	2.4:1, 2.0:1 typical

1. When the notch filter is selected, the specs between 2.3 – 2.6 GHz is not applicable.

RF Preselector Off, Preamp On or Off, LNA On or Off			
DC coupled	1 to 18 GHz	3.0:1	2.0:1, 1.8:1 typical
	18 to 26.5 GHz	3.0:1	2.0:1, 1.8:1 typical
	26.5 to 40.0 GHz	3.0:1	2.5:1, 1.8:1 typical
	40.0 to 44.0 GHz		2.0:1 typical
AC coupled	1 to 18 GHz	3.0:1	2.0:1, 1.8:1 typical
	18 to 26.5 GHz	3.0:1	2.4:1, 2.0:1 typical
RF Preselector On, Preamp On or Off, LNA On or Off			
DC coupled	50 MHz to 1 GHz	2.0:1	1.2:1, 1.1:1 typical
	1 to 3.6 GHz	3.0:1	2.0:1, 1.5:1 typical
	3.6 to 26.5 GHz	3.0:1	2.0:1, 1.8:1 typical
	26.5 to 40.0 GHz	3.0:1	2.5:1, 1.8:1 typical
	40.0 to 44.0 GHz		2.0:1 typical
AC coupled	55 MHz to 1 GHz	2.0:1	1.2:1
	1 to 18 GHz	3.0:1	2.0:1, 1.8:1 typical
	18 to 26.5 GHz	3.0:1	2.4:1, 2.0:1 typical
RBW switching uncertainty (reference to 30 kHz RBW)			
1 Hz to 1.5 MHz RBW	± 0.05 dB		
1.6 to 3 MHz RBW	± 0.10 dB		
4, 5, 6, 8 MHz RBW	± 1.0 dB		
Reference level			
Range			
Log scale	−170 to +30 dBm in 0.01 dB steps		
Linear scale	Same as log (707 pV to 7.07 V)		
Accuracy	0 dB		
Display scale switching uncertainty			
Switching between linear and log	0 dB		
Log scale/div switching	0 dB		
Display scale fidelity			
Between −10 dBm and −80 dBm input mixer level	± 0.10 dB		

Total measurement uncertainty			
Signal level 0 to 90 dB below reference point, RF attenuation 0 to 40 dB, RBW ≤ 1 MHz, 20 to 30 ºC			
		Spectrum analyzer mode (95th percentile)	EMI receiver mode
RF/MW (Option 503/508/526)			
RF Preselector Off, Preamp Off	9 kHz to 10 MHz	± 0.35 dB	± 0.40 dB
	10 MHz to 3.6 GHz	± 0.25 dB	± 0.30 dB
	3.6 to 18.0 GHz	± 0.50 dB	± 0.65 dB
	18.0 to 26.5 GHz	± 0.80 dB	± 0.95 dB
RF Preselector On, Preamp Off	9 kHz to 10 MHz	± 0.31 dB	± 0.44 dB
	10 MHz to 3.6 GHz	± 0.20 dB	± 0.31 dB
	3.6 to 18.0 GHz	± 0.50 dB	± 0.65 dB
	18.0 to 26.5 GHz	± 0.80 dB	± 0.95 dB
RF Preselector Off, Preamp On, LNA Off	100 kHz to 10 MHz	± 0.40 dB	± 0.45 dB
	10 MHz to 3.6 GHz	± 0.30 dB	± 0.35 dB
	3.6 to 18.0 GHz	± 0.65 dB	± 0.70 dB
	18.0 to 26.5 GHz	± 0.90 dB	± 1.10 dB
RF Preselector On, Preamp On, LNA Off	9 kHz to 10 MHz	± 0.36 dB	± 0.41 dB
	10 MHz to 3.6 GHz	± 0.20 dB	± 0.34 dB
	3.6 to 18.0 GHz	± 0.65 dB	± 0.70 dB
	18.0 to 26.5 GHz	± 0.90 dB	± 1.10 dB
RF Preselector Off, Preamp On or Off, LNA On	2 to 10 MHz	± 0.45 dB	± 0.50 dB
	10 MHz to 3.6 GHz	± 0.30 dB	± 0.30 dB
RF Preselector On, Preamp On or Off, LNA On	10 MHz to 3.6 GHz	± 0.27 dB	± 0.33 dB
RF Preselector Off or On, Preamp Off, LNA On	3.6 to 18.0 GHz	± 0.65 dB	± 0.65 dB
	18.0 to 26.5 GHz	± 0.90 dB	± 1.15 dB
RF Preselector Off or On, Preamp On, LNA On	3.6 to 18.0 GHz	± 0.65 dB	± 0.70 dB
	18.0 to 26.5 GHz	± 0.90 dB	± 1.20 dB

Millimeter-Wave (Option 544)			
RF Preselector Off, Preamp Off	9 kHz to 10 MHz	± 0.35 dB	± 0.40 dB
	10 MHz to 1 GHz	± 0.25 dB	± 0.30 dB
	1 to 3.6 GHz	± 0.35 dB	± 0.40 dB
	3.6 to 18.0 GHz	± 0.50 dB	± 0.65 dB
	18.0 to 26.5 GHz	± 0.80 dB	± 0.95 dB
	26.5 to 44.0 GHz	± 1.20 dB	± 1.50 dB
RF Preselector On, Preamp Off	9 kHz to 10 MHz	± 0.31 dB	± 0.44 dB
	10 MHz to 3.6 GHz	± 0.20 dB	± 0.31 dB
	3.6 to 18.0 GHz	± 0.50 dB	± 0.65 dB
	18.0 to 26.5 GHz	± 0.80 dB	± 0.95 dB
	26.5 to 44.0 GHz	± 1.20 dB	± 1.50 dB
RF Preselector Off, Preamp On, LNA Off	100 kHz to 10 MHz	± 0.40 dB	± 0.45 dB
	10 MHz to 1.0 GHz	± 0.30 dB	± 0.35 dB
	1.0 to 3.6 GHz	± 0.35 dB	± 0.40 dB
	3.6 to 18.0 GHz	± 0.65 dB	± 0.70 dB
	18.0 to 26.5 GHz	± 0.90 dB	± 1.10 dB
	26.5 to 44.0 GHz	± 1.25 dB	± 1.55 dB
RF Preselector On, Preamp On, LNA Off	9 kHz to 10 MHz	± 0.36 dB	± 0.41 dB
	10 MHz to 3.6 GHz	± 0.25 dB	± 0.34 dB
	3.6 to 18.0 GHz	± 0.65 dB	± 0.70 dB
	18.0 to 26.5 GHz	± 0.90 dB	± 1.10 dB
	26.5 to 44.0 GHz	± 1.25 dB	± 1.55 dB
RF Preselector Off, Preamp On or Off, LNA On	2 to 10 MHz	± 0.45 dB	± 0.50 dB
	10 MHz to 1 GHz	± 0.30 dB	± 0.30 dB
	1 to 3.6 GHz	± 0.35 dB	± 0.35 dB
RF Preselector On, Preamp On or Off, LNA On	10 MHz to 3.6 GHz	± 0.27 dB	± 0.33 dB
RF Preselector Off or On, Preamp Off, LNA On	3.6 to 18.0 GHz	± 0.65 dB	± 0.70 dB
	18.0 to 26.5 GHz	± 0.90 dB	± 1.15 dB
	26.5 to 44.0 GHz	± 1.25 dB	± 1.55 dB
RF Preselector Off or On, Preamp On, LNA On	3.6 to 18.0 GHz	± 0.65 dB	± 0.70 dB
	18.0 to 26.5 GHz	± 0.90 dB	± 1.20 dB
	26.5 to 44.0 GHz	± 1.25 dB	± 1.55 dB
Trace detectors			
Normal, peak, sample, negative peak, log power average, RMS average, and voltage average			
CISPR detectors: quasi-peak, EMI-avg, RMS-avg			

Preamplifier Gain		
RF Preselector Off, Preamp On, LNA Off	100 kHz to 3.6 GHz	+20 dB (nominal)
	3.6 to 44 GHz	+28 dB (nominal)
RF Preselector On, Preamp On, LNA Off	1 to 150 kHz	+20 dB (nominal)
	150 kHz to 3.6 GHz	+15 dB (nominal)
RF Preselector On or Off, Preamp Off, LNA On	150 kHz to 26.5 GHz	+20 dB (nominal)
	26.5 to 44 GHz	+16 dB (nominal)
RF Preselector On or Off, Preamp On, LNA On	150 kHz to 3.6 GHz	+20 dB (nominal)
	3.6 to 26.5 GHz	+35 dB (nominal)
	26.5 to 44 GHz	+36 dB (nominal)

Amplitude probability distribution	
	Specifications
Dynamic range	> 70 dB
Amplitude accuracy	< ± 2.7 dB
Maximum measurable time period	2 minutes
Minimum measurable probability	10^{-7}
Amplitude level assignment	1000 levels
Sampling rate (within a 1 MHz RBW)	≥ 10 MSa/s
Amplitude resolution	0.1881 dB

Dynamic Range Specifications

1 dB gain compression (two-tone)		
At 1 kHz RBW with 100 kHz tone spacing, Input 1, 20 to 30 °C RF Input 1 to 44 GHz (RF Input 2 to 1 GHz, performance = RF Input 1 performance + 9 dB)		
RF Preselector Off or On, Preamp Off, LNA Off	9 kHz to 40 MHz	+2 dBm nominal
	40 MHz to 3.6 GHz	+2 dBm nominal
	3.5 to 16 GHz	+5 dBm nominal
	16 to 26.5 GHz	+1 dBm nominal
	26.4 to 34.5 GHz	+4 dBm nominal
	34.4 to 44 GHz	0 dBm nominal
RF Preselector Off, Preamp On, LNA Off	10 MHz to 3.6 GHz	−16 dBm nominal
	3.5 to 26.5 GHz	
	Tone spacing 100 kHz to 20 MHz	−27 dBm nominal
	Tone spacing > 70 MHz	−16 dBm nominal
	26.4 to 44 GHz	−30 dBm nominal
RF Preselector On, Preamp On, LNA Off	9 to 150 kHz	−17 dBm nominal
	150 kHz to 10 MHz	−11 dBm nominal
	10 to 50 MHz	−13 dBm nominal
	50 MHz to 3.6 GHz	−10 dBm nominal
	3.5 to 26.5 GHz	
	Tone spacing 100 kHz to 20 MHz	−23 dBm nominal
	Tone spacing > 70 MHz	−16 dBm nominal
	26.4 to 44 GHz	−30 dBm nominal
RF Preselector Off or On, Preamp Off, LNA On	30 MHz to 3.6 GHz	−20 dBm nominal
	3.5 to 26.5 GHz	
	Tone spacing 100 kHz to 20 MHz	−13 dBm nominal
	Tone spacing > 70 MHz	−7 dBm nominal
	26.4 to 44 GHz	−18 dBm nominal
RF Preselector Off or On, Preamp On, LNA On	30 MHz to 3.6 GHz	−16 dBm nominal
	3.5 to 26.5 GHz	
	Tone spacing 100 kHz to 20 MHz	−34 dBm nominal
	Tone spacing > 70 MHz	−26 dBm nominal
	26.4 to 44 GHz	−35 dBm nominal

Spurious response		
RF Input 1; RF Preselector Off or On		
Residual responses [1]	200 kHz to 8.4 GHz (swept)	−100 dBm
	Zero span or FFT or other frequencies	−100 dBm nominal
Images response		
RF/MW (Option 503/508/526)	10 MHz to 3.6 GHz	−80 dBc, −108 dBc typical
f ± 645 MHz	3.5 to 13.6 GHz	−81 dBc, −85 dBc typical
Mixer level −10 dBm	13.5 to 17.1 GHz	−81 dBc, −86 dBc typical
	17.0 to 22 GHz	−76 dBc, −81 dBc typical
	22 to 26.5 GHz	−69 dBc, −76 dBc typical
Millimeter-Wave (Option 544)	10 MHz to 3.6 GHz	−80 dBc, −108 dBc typical
f ± 645 MHz	3.5 to 13.6 GHz	−80 dBc, −102 dBc typical
Mixer level −10 dBm	13.5 to 17.1 GHz	−80 dBc, −102 dBc typical
	17.0 to 22 GHz	−80 dBc, −100 dBc typical
	22 to 26.5 GHz	−70 dBc, −97 dBc typical
Mixer level −30 dBm	26.5 to 34.5 GHz	−70 dBc, −94 dBc typical
	34.4 to 44 GHz	−59 dBc, −79 dBc typical
LO related spurious (f > 600 MHz from carrier)	10 MHz to 3.6 GHz	−90 dBc + 20LogN [2] typical
Other spurious (f ≥ 10 MHz from carrier)	Carrier frequency ≤ 26.5 GHz	−80 dBc + 20LogN [2] typical
	Carrier frequency > 26.5 GHz	−90 dBc nominal
Second harmonic distortion (SHI)		
RF Input 1; RF Input 2 to 1 GHz; RF Input 2 performance = RF Input 1 performance +9 dB; see Specifications Guide for verification conditions		
RF/MW (Option 503/508/526)		
RF Preselector Off, Preamp Off	10 to 500 MHz	+54 dBm, +61 dBm typical
	500 MHz to 1.8 GHz	+45 dBm, +54 dBm typical
	1.8 to 4 GHz	+60 dBm, +67 dBm typical
	4 to 11 GHz	+65 dBm, +74 dBm typical
	11 to 13.25 GHz	+65 dBm, +73 dBm typical
RF Preselector Off, Preamp Off	10 to 30 MHz	+45 dBm, +50 dBm typical
	30 to 500 MHz	+54 dBm, +58 dBm typical
	500 MHz to 1 GHz	+70 dBm, +78 dBm typical
	1 to 1.6 GHz	+62 dBm, +70 dBm typical
	1.6 to 1.8 GHz	+70 dBm, +82 dBm typical
	1.8 to 4 GHz	+60 dBm, +67 dBm typical
	4 to 11 GHz	+65 dBm, +74 dBm typical
	11 to 13.25 GHz	+65 dBm, +73 dBm typical

1. Input terminated, 0 dB input attenuation.
2. N is the LO multiplication factor.

Millimeter-Wave (Option 544)		
RF Preselector Off, Preamp Off	10 to 500 MHz	+53 dBm, +61 dBm typical
	500 MHz to 1.8 GHz	+44 dBm, +54 dBm typical
	1.8 to 4 GHz	+58 dBm, +67 dBm typical
	4 to 11 GHz	+62 dBm, +69 dBm typical
	11 to 13.25 GHz	+65 dBm, +73 dBm typical
	13.2 to 17.25 GHz	+63 dBm, +71 dBm typical
	17.2 GHz to 22 GHz	+54 dBm, +67 dBm typical
RF Preselector On, Preamp Off	10 to 30 MHz	+45 dBm, +50 dBm typical
	30 to 500 MHz	+54 dBm, +58 dBm typical
	500 MHz to 1 GHz	+70 dBm, +78 dBm typical
	1 to 1.6 GHz	+62 dBm, +70 dBm typical
	1.6 to 1.8 GHz	+70 dBm, +82 dBm typical
	1.8 to 4 GHz	+58 dBm, +67 dBm typical
	4 to 11 GHz	+62 dBm, +69 dBm typical
	11 to 13.25 GHz	+65 dBm, +73 dBm typical
	13.2 to 17.25 GHz	+63 dBm, +71 dBm typical
	17.2 GHz to 22 GHz	+54 dBm, +67 dBm typical
RF/MW/Millimeter-Wave (Option 503/508/526/544)		
RF Preselector Off, Preamp On, LNA Off	10 MHz to 1.8 GHz	+33 dBm nominal
	1.8 to 2.5 GHz	+20 dBm nominal
	2.5 to 4.0 GHz	+0 dBm nominal
	4 to 4.5 GHz	+5 dBm nominal
	4.5 to 13.25 GHz	+10 dBm nominal
	13.2 to 22 GHz	+5 dBm nominal
RF Preselector On, Preamp On, LNA Off	10 to 30 MHz	+43 dBm nominal
	30 to 500 MHz	+56 dBm nominal
	500 MHz to 1 GHz	+61 dBm nominal
	1 to 1.6 GHz	+57 dBm nominal
	1.6 to 1.8 GHz	+57 dBm nominal
	1.8 to 2.5 GHz	+20 dBm nominal
	2.5 to 4.0 GHz	+0 dBm nominal
	4.0 to 4.5 GHz	+5 dBm nominal
	4.5 to 13.25 GHz	+10 dBm nominal
	13.2 to 22 GHz	+5 dBm nominal
RF Preselector Off, Preamp Off or On, LNA On	30 MHz to 1.8 GHz	+15 dBm nominal
RF Preselector On, Preamp Off or On, LNA On	30 MHz to 1 GHz	+17 dBm nominal
	1 to 1.8 GHz	+15 dBm nominal

RF Preselector Off or On, Preamp Off, LNA On	1.8 to 13.25 GHz	+15 dBm nominal
	13.2 to 22 GHz	+12 dBm nominal
RF Preselector Off or On, Preamp On, LNA On	1.8 to 4.0 GHz	−7 dBm nominal
	4.0 to 13.25 GHz	−5 dBm nominal
	13.2 to 22 GHz	−7 dBm nominal
Third-order intermodulation distortion (TOI)		
RF Input 1; RF Input 2 to 1 GHz; RF Input 2 performance = RF Input 1 performance + 9 dB; Tone separation > 5 times IF prefilter bandwidth, 20 to 30 °C, see Specifications Guide for verification conditions		
RF/MW (Option 503/508/526)		
RF Preselector Off, Preamp Off	10 to 100 MHz	+12 dBm, +17 dBm typical
	100 to 400 MHz	+15 dBm, +18 dBm typical
	400 MHz to 3.6 GHz	+17 dBm, +20 dBm typical
	3.5 to 8.4 GHz	+13 dBm, +16 dBm typical
	8.3 to 13.6 GHz	+16 dBm, +20 dBm typical
	13.5 to 26.5 GHz	+12 dBm, +16 dBm typical
RF Preselector On, Preamp Off	10 to 30 MHz	+16.5 dBm, +18 dBm typical
	30 to 100 MHz	+13.5 dBm, +15.5 dBm typical
	100 to 1GHz	+15 dBm, +17 dBm typical
	1 to 1.5 GHz	+16 dBm, +17.5 dBm typical
	1.5 to 3.6 GHz	+17 dBm, +19.5 dBm typical
	3.5 to 8.4 GHz	+15 dBm, +20 dBm typical
	8.3 to 13.6 GHz	+16 dBm, +20 dBm typical
	13.5 to 26.5 GHz	+12 dBm, +16 dBm typical
RF Preselector Off, Preamp On, LNA Off	10 to 500 MHz	+1 dBm nominal
	500 MHz to 3.6 GHz	+3 dBm nominal
	3.5 to 26.5 GHz	−10 dBm nominal
RF Preselector On, Preamp On, LNA Off	10 to 30 MHz	+1 dBm, +3 dBm typical
	30 MHz to 1 GHz	−3 dBm, −1 dBm typical
	1 to 2 GHz	−1 dBm, +1 dBm typical
	2 to 3.6 GHz	−1 dBm, +2 dBm typical
	3.5 to 26.5 GHz	−10 dBm nominal
RF Preselector Off, Preamp Off or On, LNA On	30 to 500 MHz	0 dBm nominal
	500 MHz to 3.6 GHz	+1 dBm nominal
RF Preselector On, Preamp Off or On, LNA On	30 MHz to 1 GHz	−8 dBm, −6 dBm typical
	1 to 2 GHz	−6 dBm, −4 dBm typical
	2 to 3.6 GHz	−4 dBm, −2 dBm typical

RF Preselector Off or On, Preamp Off, LNA On	3.5 to 13.6 GHz	+5 dBm nominal
	13.5 to 26.5 GHz	+1 dBm nominal
RF Preselector Off or On, Preamp On, LNA On	3.5 to 13.6 GHz	−14 dBm nominal
	13.5 to 26.5 GHz	−20 dBm nominal
Millimeter-Wave (Option 544)		
RF Preselector On, Preamp Off	10 to 100 MHz	+12 dBm, +17 dBm typical
	100 to 400 MHz	+12 dBm, +18 dBm typical
	400 MHz to 3.6 GHz	+17 dBm, +20 dBm typical
	3.5 to 8.4 GHz	+15 dBm, +20 dBm typical
	8.3 to 13.6 GHz	+16 dBm, +20 dBm typical
	13.5 to 26.5 GHz	+9 dBm, +13 dBm typical
	26.4 GHz to 34.5 GHz	+11 dBm, +15.5 dBm typical
	34.4 GHz to 44 GHz	+6 dBm, +10 dBm typical
RF Preselector On, Preamp Off	10 to 30 MHz	+16.5 dBm, +18 dBm typical
	30 to 100 MHz	+12.5 dBm, +14.5 dBm typical
	100 MHz to 1 GHz	+14.5 dBm, +16.5 dBm typical
	1 to 1.5 GHz	+16 dBm, +17.5 dBm typical
	1.5 to 3.6 GHz	+17 dBm, +19.5 dBm typical
	3.5 to 8.4 GHz	+15 dBm, +20 dBm typical
	8.3 to 13.6 GHz	+16 dBm, +20 dBm typical
	13.5 to 26.5 GHz	+9 dBm, +13 dBm typical
	26.4 GHz to 34.5 GHz	+11 dBm, +15.5 dBm typical
	34.4 GHz to 44 GHz	+6 dBm, +10 dBm typical
RF Preselector Off, Preamp On, LNA Off	10 to 500 MHz	+1 dBm nominal
	500 MHz to 3.6 GHz	+3 dBm nominal
	3.5 to 13.6 GHz	−10 dBm nominal
	13.5 to 34.5 GHz	−17 dBm nominal
	34.4 GHz to 44 GHz	−20 dBm nominal
RF Preselector On, Preamp On, LNA Off	10 to 30 MHz	+1 dBm, +3 dBm typical
	30 MHz to 1 GHz	−5 dBm, −1 dBm typical
	1 to 2 GHz	−1 dBm, +1 dBm typical
	2 to 3.6 GHz	−1 dBm, +2 dBm typical
	3.5 to 13.6 GHz	−10 dBm nominal
	13.5 to 34.5 GHz	−15 dBm nominal
	34.4 GHz to 44 GHz	−20 dBm nominal
RF Preselector Off, Preamp Off or On, LNA On	30 to 500 MHz	+0 dBm nominal
	500 MHz to 3.6 GHz	+1 dBm nominal

RF Preselector On, Preamp Off or On, LNA On	30 MHz to 1 GHz	−8 dBm, −6 dBm typical
	1 to 2 GHz	−6 dBm, −4 dBm typical
	2 to 3.6 GHz	−4 dBm, −2 dBm typical
RF Preselector Off or On, Preamp Off, LNA On	3.5 to 13.6 GHz	+0 dBm nominal
	13.5 to 26.5 GHz	−5 dBm nominal
	26.4 GHz to 34.5 GHz	0 dBm nominal
	34.4 GHz to 44 GHz	−3 dBm nominal
RF Preselector Off or On, Preamp On, LNA On	3.5 to 13.6 GHz	−18 dBm nominal
	13.5 to 34.5 GHz	−22 dBm nominal
	26.4 GHz to 34.5 GHz	−22 dBm nominal
	34.4 GHz to 44 GHz	−27 dBm nominal

Displayed average noise level (DANL)

Input terminated, 1 Hz RBW, sample or average detector, averaging type = Log, 0 dB input attenuation, IF Gain = High, 20 to 30°C. Input 1; Input 2 = Input 1 performance + 11 dB; NFE = Noise Floor Extension

		Specification	Typical including NFE
RF/MW (Option 503/508/526)			
RF Preselector Off, Preamp Off	1 Hz		−70 dBm, nominal [1]
	2 Hz to 10 Hz		−110 dBm, nominal [1]
	20 Hz	−120 dBm	
	100 Hz	−125 dBm	
	1 kHz	−130 dBm	
	9 to 150 kHz	−142 dBm	
	150 kHz to 1 MHz	−153 dBm	
	1 to 10 MHz	−154 dBm	
	10 MHz to 1 GHz	−153 dBm	−163 dBm
	1 to 2.5 GHz	−150 dBm	−160 dBm
	2.5 to 3.6 GHz	−147 dBm	−157 dBm
	3.5 to 8.4 GHz	−153 dBm	−163 dBm
	8.3 to 13.6 GHz	−152 dBm	−162 dBm
	13.5 to 18 GHz	−150 dBm	−160 dBm
	18 to 25 GHz	−146 dBm	−155 dBm
	25 to 26.5 GHz	−143 dBm	−155 dBm

1. No NFE factor at this frequency.

RF Preselector On, Preamp Off	1 Hz		−70 dBm, nominal [1]
	2 Hz to 10 Hz		−110 dBm, nominal [1]
	20 Hz	−120 dBm	
	100 Hz	−125 dBm	
	1 kHz	−130 dBm	
	9 to 100 kHz	−141 dBm	−143 dBm
	100 to 150 kHz	−142 dBm	−163 dBm
	150 to 500 kHz	−149 dBm	−161 dBm
	500 kHz to 30 MHz	−153 dBm	−163 dBm
	30 MHz to 1 GHz	−153 dBm	−164 dBm
	1 to 1.7 GHz	−155 dBm	−165 dBm
	1.7 to 2.5 GHz	−152 dBm	−162 dBm
	2.5 to 3.6 GHz	−149 dBm	−160 dBm
	3.5 to 8.4 GHz	−153 dBm	−163 dBm
	8.3 to 13.6 GHz	−152 dBm	−162 dBm
	13.5 to 18 GHz	−150 dBm	−160 dBm
	18 to 25 GHz	−146 dBm	−155 dBm
	25 to 26.5 GHz	−143 dBm	−155 dBm
RF Preselector Off, Preamp On, LNA Off	100 kHz to 1 MHz	−157 dBm	
	1 to 10 MHz	−165 dBm	
	10 MHz to 1 GHz	−165 dBm	−174 dBm
	1 to 3.6 GHz	−160 dBm	−172 dBm
	3.5 to 13.6 GHz	−164 dBm	−174 dBm
	13.5 to 26.5 GHz	−160 dBm	−170 dBm
RF Preselector On, Preamp On, LNA Off	1 kHz	−145 dBm	−150 dBm
	9 to 100 kHz	−160 dBm	−161 dBm
	100 kHz to 1 MHz	−159 dBm	−170 dBm
	1 to 30 MHz	−162 dBm	−172 dBm
	30 MHz to 1 GHz	−163 dBm	−174 dBm
	1 to 1.7 GHz	−165 dBm	−174 dBm
	1.7 to 2.5 GHz	−163 dBm	−174 dBm
	2.5 to 3.6 GHz	−160 dBm	−171 dBm
	3.5 to 13.6 GHz	−164 dBm	−174 dBm
	13.5 to 26.5 GHz	−160 dBm	−170 dBm

1. No NFE factor at this frequency.

RF Preselector Off, Preamp Off or On, LNA On	150 kHz to 1 MHz		−92 dBm
	1 to 10 MHz		−119 dBm
	10 to 30 MHz		−148 dBm
	30 to 50 MHz	−161 dBm	−172 dBm
	50 to 150 MHz	−165 dBm	−172 dBm
	150 MHz to 2 GHz	−167 dBm	−172 dBm
	2 to 3.6 GHz	−163 dBm	−172 dBm
RF Preselector On, Preamp Off or On, LNA On	150 kHz to 1 MHz		−100 dBm
	1 to 10 MHz		−125 dBm
	10 to 30 MHz		−165 dBm
	30 to 50 MHz	−163 dBm	−174 dBm
	50 to 100 MHz	−165 dBm	−174 dBm
	100 to 150 MHz	−166 dBm	−174 dBm
	150 MHz to 2 GHz	−166 dBm	−174 dBm
	2 to 3.6 GHz	−164 dBm	−174 dBm
RF Preselector Off/On, Preamp Off, LNA On	3.5 to 8.4 GHz	−165 dBm	−172 dBm
	8.3 to 13.6 GHz	−164 dBm	−171 dBm
	13.5 to 19 GHz	−163 dBm	−170 dBm
	19 to 22GHz	−161 dBm	−170 dBm
	22 to 26.5 GHz	−157 dBm	−168 dBm
RF Preselector Off/On, Preamp On, LNA On	3.5 to 8 GHz	−167 dBm	−174 dBm
	8 to 13.6 GHz	−166 dBm	−174 dBm
	13.5 to 19 GHz	−165 dBm	−173 dBm
	19 to 22 GHz	−164 dBm	−173 dBm
	22 to 26.5 GHz	−163 dBm	−172 dBm
Millimeter-Wave (Option 544)			
RF Preselector Off, Preamp Off	1 Hz		−70 dBm, nominal [1]
	2 Hz to 10 Hz		−105 dBm, nominal [1]
	20 Hz	−115 dBm	
	100 Hz	−125 dBm	
	1 kHz	−130 dBm	
	9 to 150 kHz	−142 dBm	
	150 kHz to 1 MHz	−153 dBm	
	1 to 10 MHz	−154 dBm	
	10 MHz to 1 GHz	−153 dBm	−163 dBm
	1 to 2.5 GHz	−150 dBm	−160 dBm
	2.5 to 3.6 GHz	−147 dBm	−157 dBm
	3.5 to 8.4 GHz	−149 dBm	−161 dBm
	8.3 to 13.6 GHz	−150 dBm	−162 dBm
	13.5 to 18 GHz	−147 dBm	−158 dBm
	18 to 25 GHz	−144 dBm	−155 dBm
	25 to 26.5 GHz	−142 dBm	−154 dBm

1. No NFE factor at this frequency.

RF Preselector Off, Preamp Off (Continued)	26.4 to 34.5 GHz	−142 dBm	−156 dBm
	34.4 to 40 GHz	−137 dBm	−151 dBm
	40 to 42 GHz	−135 dBm	−150 dBm
	42 to 44 GHz	−133 dBm	−147 dBm
RF Preselector On, Preamp Off	1 Hz		−70 dBm, nominal [1]
	2 Hz to 10 Hz		−105 dBm, nominal [1]
	20 Hz	−115 dBm	
	100 Hz	−125 dBm	
	1 kHz	−130 dBm	
	9 to 100 kHz	−141 dBm	−143 dBm
	100 to 150 kHz	−142 dBm	−163 dBm
	150 to 500 kHz	−149 dBm	−161 dBm
	500 kHz to 30 MHz	−153 dBm	−163 dBm
	30 MHz to 1 GHz	−153 dBm	−164 dBm
	1 to 1.7 GHz	−155 dBm	−165 dBm
	1.7 to 2.5 GHz	−152 dBm	−162 dBm
	2.5 to 3.6 GHz	−149 dBm	−160 dBm
	3.5 to 8.4 GHz	−149 dBm	−161 dBm
	8.3 to 13.6 GHz	−150 dBm	−162 dBm
	13.5 to 18 GHz	−147 dBm	−158 dBm
	18 to 25 GHz	−144 dBm	−155 dBm
	25 to 26.5 GHz	−142 dBm	−154 dBm
	26.4 to 34.5 GHz	−142 dBm	−156 dBm
	34.4 to 40 GHz	−137 dBm	−151 dBm
	40 to 42 GHz	−135 dBm	−150 dBm
	42 to 44 GHz	−133 dBm	−147 dBm
RF Preselector Off, Preamp On, LNA Off	100 kHz to 1 MHz	−157 dBm	
	1 to 10 MHz	−165 dBm	
	10 MHz to 1 GHz	−165 dBm	−174 dBm
	1 to 3.6 GHz	−160 dBm	−172 dBm
	3.5 to 8.4 GHz	−162 dBm	−174 dBm
	8.3 to 13.6 GHz	−164 dBm	−174 dBm
	13.5 to 26.5 GHz	−160 dBm	−170 dBm
	26.4 to 34.5 GHz	−158 dBm	−169 dBm
	34.4 to 42 GHz	−155 dBm	−165 dBm
	42 to 43 GHz	−151 dBm	−162 dBm
	43 to 44 GHz	−149 dBm	

1. No NFE factor at this frequency.

RF Preselector On, Preamp On, LNA Off	1 kHz	−145 dBm	−150 dBm
	9 to 100 kHz	−160 dBm	−161 dBm
	100 kHz to 1 MHz	−159 dBm	−170 dBm
	1 to 30 MHz	−162 dBm	−172 dBm
	30 MHz to 1 GHz	−163 dBm	−174 dBm
	1 to 1.7 GHz	−165 dBm	−174 dBm
	1.7 to 2.5 GHz	−163 dBm	−174 dBm
	2.5 to 3.6 GHz	−160 dBm	−171 dBm
	3.5 to 8.4 GHz	−162 dBm	−174 dBm
	8.3 to 13.6 GHz	−164 dBm	−174 dBm
	13.5 to 26.5 GHz	−160 dBm	−170 dBm
	26.4 to 34.5 GHz	−158 dBm	−169 dBm
	34.4 to 42 GHz	−155 dBm	−165 dBm
	42 to 43 GHz	−151 dBm	−162 dBm
	43 to 44 GHz	−149 dBm	
RF Preselector Off, Preamp Off or On, LNA On	150 kHz to 1 MHz		−92 dBm
	1 to 10 MHz		−119 dBm
	10 to 30 MHz		−148 dBm
	30 to 50 MHz	−161 dBm	−172 dBm
	50 to 150 MHz	−165 dBm	−172 dBm
	150 MHz to 2 GHz	−167 dBm	−172 dBm
	2 to 3.6 GHz	−163 dBm	−172 dBm
RF Preselector On, Preamp Off or On, LNA On	150 kHz to 1 MHz		−100 dBm
	1 to 10 MHz		−125 dBm
	10 to 30 MHz		−165 dBm
	30 to 50 MHz	−163 dBm	−174 dBm
	50 to 100 MHz	−165 dBm	−174 dBm
	100 to 150 MHz	−166 dBm	−174 dBm
	150 MHz to 2 GHz	−166 dBm	−174 dBm
	2 to 3.6 GHz	−164 dBm	−174 dBm
RF Preselector Off/On, Preamp Off, LNA On	3.5 to 8.4 GHz	−163 dBm	−172 dBm
	8.3 to 13.6 GHz	−164 dBm	−171 dBm
	13.5 to 19 GHz	−162 dBm	−170 dBm
	19 to 22 GHz	−160 dBm	−170 dBm
	22 to 26.5 GHz	−157 dBm	−168 dBm
	26.4 to 34.5 GHz	−155 dBm	−167 dBm
	34.4 to 40 GHz	−149 dBm	−163 dBm
	40 to 42 GHz	−149 dBm	−162 dBm
	42 to 43 GHz	−146 dBm	−160 dBm
	43 to 44 GHz	−146 dBm	

RF Preselector Off/On, Preamp On, LNA On	3.5 to 8 GHz	−165 dBm	−174 dBm
	8 to 13.6 GHz	−166 dBm	−174 dBm
	13.5 to 19 GHz	−165 dBm	−173 dBm
	19 to 22 GHz	−164 dBm	−173 dBm
	22 to 26.5 GHz	−163 dBm	−172 dBm
	26.4 to 34.5 GHz	−160 dBm	−170 dBm
	34.4 to 40 GHz	−158 dBm	−169 dBm
	40 to 42 GHz	−158 dBm	−168 dBm
	42 to 43 GHz	−156 dBm	−167 dBm
	43 to 44 GHz	−149 dBm	

Indicated noise in CISPR bandwidth		
Calculated from Input 1 DANL performance, 0 dB input attenuation, EMI receiver mode, without Option WF1/WF2; EMI-AVG detector; CISPR BW		
		Typical (including NFE) [1]
RF/MW (Option 503/508/526)		
RF Preselector On, Preamp Off	1 Hz (1 Hz RBW)	32 dBµV, nominal
	10 Hz (1 Hz RBW)	2 dBµV, nominal
	20 Hz (1 Hz RBW)	−19 dBµV
	100 Hz (10 Hz RBW)	−11 dBµV
	1 kHz (100 Hz RBW)	−9 dBµV
	9 to 50 kHz (200Hz RBW)	−14 dBµV
	150 kHz to 1 MHz (9 kHz RBW)	−8 dBµV
	1 to 30 MHz (9 kHz RBW)	−12 dBµV
	30 MHz to 1 GHz (120 kHz RBW)	−3 dBµV
	1 to 2.5 GHz (1 MHz RBW)	8 dBµV
	2.5 to 3.6 GHz (1 MHz RBW)	11 dBµV
	3.6 to 8.4 GHz (1 MHz RBW)	8 dBµV
	8.4 to 13.6 GHz (1 MHz RBW)	11 dBµV
	13.6 to 17.1 GHz (1 MHz RBW)	12 dBµV
	17.1 to 25 GHz (1 MHz RBW)	14 dBµV
	25 to 26.5 GHz (1 MHz RBW)	18 dBµV

1. Typical Indicated Noise including NFE = Typical DANL + RBW correction – DANL Improvement with NFE +107.

RF Preselector On, Preamp On, LNA Off	1 kHz (100 Hz RBW)	−24 dBµV
	9 to 150 kHz (200 Hz RBW)	−31 dBµV
	150 kHz to 1 MHz (9 kHz RBW)	−17 dBµV
	1 to 30 MHz (9 kHz RBW)	−20 dBµV
	30 MHz to 1 GHz (120 kHz RBW)	−11 dBµV
	1 to 2.5 GHz (1 MHz RBW)	−2 dBµV
	2.5 to 3.6 GHz (1 MHz RBW)	0 dBµV
	3.6 to 8.4 GHz (1 MHz RBW)	−2 dBµV
	8.4 to 13.6 GHz (1 MHz RBW)	−2 dBµV
	13.6 to 17.1 GHz (1 MHz RBW)	−3 dBµV
	17.1 to 25 GHz (1 MHz RBW)	1 dBµV
	25 to 26.5 GHz (1 MHz RBW)	2 dBµV
RF Preselector On, Preamp Off, LNA On	30 MHz to 1 GHz (120 kHz RBW)	−11 dBµV
	1 to 2.5 GHz (1 MHz RBW)	−5 dBµV
	2.5 to 3.6 GHz (1 MHz RBW)	−3 dBµV
	3.6 to 8.4 GHz (1 MHz RBW)	−4 dBµV
	8.4 to 13.6 GHz (1 MHz RBW)	−3 dBµV
	13.6 to 17.1 GHz (1 MHz RBW)	−2 dBµV
	17.1 to 25 GHz (1 MHz RBW)	1 dBµV
	25 to 26.5 GHz (1 MHz RBW)	3 dBµV
RF Preselector Off/On, Preamp On, LNA On	3.6 to 8.4 GHz (1 MHz RBW)	−5 dBµV
	8.4 to 13.6 GHz (1 MHz RBW)	−4 dBµV
	13.6 to 17.1 GHz (1 MHz RBW)	−4 dBµV
	17.1 to 25 GHz (1 MHz RBW)	0 dBµV
	25 to 26.5 GHz (1 MHz RBW)	0 dBµV
Millimeter-Wave (Option 544)		
RF Preselector On, Preamp Off	1 Hz (1 Hz RBW)	32 dBµV, nominal
	10 Hz (1 Hz RBW)	2 dBµV, nominal
	20 Hz (1 Hz RBW)	−9 dBµV
	100 Hz (10 Hz RBW)	−11 dBµV
	1 kHz (100 Hz RBW)	−9 dBµV
	9 to 50 kHz (200Hz RBW)	−14 dBµV
	150 kHz to 1 MHz (9 kHz RBW)	−8 dBµV
	1 to 30 MHz (9 kHz RBW)	−12 dBµV
	30 MHz to 1 GHz (120 kHz RBW)	−3 dBµV
	1 to 2.5 GHz (1 MHz RBW)	8 dBµV
	2.5 to 3.6 GHz (1 MHz RBW)	11 dBµV
	3.6 to 13.6 GHz (1 MHz RBW)	12 dBµV
	13.6 to 17.1 GHz (1 MHz RBW)	14 dBµV
	17.1 to 25 GHz (1 MHz RBW)	18 dBµV

RF Preselector On, Preamp Off (Continued)	25 to 26.5 GHz (1 MHz RBW)	19 dBµV
	26.5 to 34.5 GHz (1 MHz RBW)	18 dBµV
	34.5 to 40 GHz (1 MHz RBW)	22 dBµV
	40 to 42 GHz (1 MHz RBW)	24 dBµV
	42 to 44 GHz (1 MHz RBW)	27 dBµV
RF Preselector On, Preamp On, LNA Off	1 kHz (100 Hz RBW)	−24 dBµV
	9 to 150 kHz (200 Hz RBW)	−31 dBµV
	150 kHz to 1 MHz (9 kHz RBW)	−17 dBµV
	1 to 30 MHz (9 kHz RBW)	−20 dBµV
	30 MHz to 1 GHz (120 kHz RBW)	−11 dBµV
	1 to 2.5 GHz (1 MHz RBW)	−2 dBµV
	2.5 to 3.6 GHz (1 MHz RBW)	0 dBµV
	3.6 to 8.4 GHz (1 MHz RBW)	−2 dBµV
	8.4 to 13.6 GHz (1 MHz RBW)	−2 dBµV
	13.6 to 17.1 GHz (1 MHz RBW)	−3 dBµV
	17.1 to 25 GHz (1 MHz RBW)	1 dBµV
	25 to 34.5 GHz (1 MHz RBW)	2 dBµV
	34.5 to 40 GHz (1 MHz RBW)	5 dBµV
	40 to 42 GHz (1 MHz RBW)	6 dBµV
	42 to 43 GHz (1 MHz RBW)	8 dBµV
	43 to 44 GHz (1 MHz RBW)	18 dBµV
RF Preselector On, Preamp Off, LNA On	30 MHz to 1 GHz (120 kHz RBW)	−11 dBµV
	1 to 2.5 GHz (1 MHz RBW)	−5 dBµV
	2.5 to 3.6 GHz (1 MHz RBW)	−3 dBµV
	3.6 to 17.1 GHz (1 MHz RBW)	−2 dBµV
	17.1 to 25 GHz (1 MHz RBW)	3 dBµV
	25 to 34.5 GHz (1 MHz RBW)	5 dBµV
	34.5 to 40 GHz (1 MHz RBW)	9 dBµV
	40 to 42 GHz (1 MHz RBW)	10 dBµV
	42 to 43 GHz (1 MHz RBW)	13 dBµV
	43 to 44 GHz (1 MHz RBW)	19 dBµV
RF Preselector Off/On, Preamp On, LNA On	3.6 to 8.4 GHz (1 MHz RBW)	−5 dBµV
	8.4 to 17.1 GHz (1 MHz RBW)	−4 dBµV
	17.1 to 26.5 GHz (1 MHz RBW)	0 dBµV
	26.5 to 34.5 GHz (1 MHz RBW)	2 dBµV
	34.5 to 42 GHz (1 MHz RBW)	4 dBµV
	42 to 43 GHz (1 MHz RBW)	5 dBµV
	43 to 44 GHz (1 MHz RBW)	18 dBµV

Phase noise [1]	Offset	Specification	Typical
20 to 30 °C, CF = 1 GHz	10 Hz		−80 dBc/Hz, nominal
	100 Hz	−91 dBc/Hz	−100 dBc/Hz, typical
	1 kHz	−109 dBc/Hz	−112 dBc/Hz, typical
	10 kHz	−113 dBc/Hz	−114 dBc/Hz, typical
	100 kHz	−116 dBc/Hz	−117 dBc/Hz, typical
	1 MHz	−134 dBc/Hz	−135 dBc/Hz, typical
	10 MHz		−148 dBc/Hz, nominal

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	± 0.21 dB
BTS	± 0.49 dB	± 0.44 dB
Dynamic range		
Without noise correction	−73 dB typical	−79 dB typical
With noise correction	−78 dB typical	−82 dB typical
Offset channel pairs measured	1 to 6	
ACP measurement and transfer time (fast method)	14 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	

1. For nominal phase noise plot, please refer to Page 49, N9048B Specification Guide, Publish number N9048-90010.

Burst power		
Methods	Power above threshold, power within burst width	
Result	Single burst output power, average output power, maximum power, minimum power within burst, burst width	
Spurious emission		
W-CDMA (1 to 3.6 GHz) table-driven spurious signals; search across regions		
Dynamic range	96.7 dB	101.7 dB typical
Absolute sensitivity	−85.4 dBm	
Spectrum emission mask (SEM)		
cdma2000® (750 kHz offset)		
Relative dynamic range (30 kHz RBW)	78.9 dB	85 dB typical
Absolute sensitivity	−100.7 dBm	
Relative accuracy	± 0.12 dB	
3GPP W-CDMA (2.515 MHz offset)		
Relative dynamic range (30 kHz RBW)	81.9 dB	88.2 dB typical
Absolute sensitivity	−100.7 dBm	
Relative accuracy	± 0.12 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 as well as current editions of the following standards (dates and editions are cited in the Declaration of Conformity):	
IEC/EN 61326-2-1	
CISPR 11, Group 1, Class B	
AS/NZS CISPR 11	
ICES/NMB-001	
This ISM device complies with Canadian ICES-001	
Cet appareil ISM est conforme à la norme NMB-001 du Canada	
Radio disturbance measuring apparatus	
CISPR 16-1-1	The features in this instrument comply with the performance requirements of this basic standard

Safety		
Complies with European Low Voltage Directive 2006/95/EC		
IEC/EN 61010-1		
Canada: CSA C22.2 No. 61010-01		
USA: UL 61010-1		
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 MIL-PRF-28800F Class 3.		
Power requirements		
Voltage and frequency (nominal)	100/120 V, 50/60/400 Hz	The instruments can operate with mains supply voltage fluctuations up to ± 10% of the nominal voltage
	220/240 V, 50/60 Hz	
Power consumption		
On	630 W maximum	
Standby	20 W	
Typical instrument configuration	Power (nominal)	
Base PXE instrument	300 W	
Adding Option WF1 or WF2 to base instrument	+150 W	
Display		
Resolution	1280 x 800	
Size	269 mm (10.6 in.) diagonal (nominal) capacitive multi-touch screen	
Data storage		
Internal	Removable solid state drive (≥ 160 GB standard)	
External	Supports USB 3.0/2.0 compatible memory devices	
Weight (without options)		
Net		
RF/MW (Option 503/508/526)	24 kg (52 lbs.) (nominal)	
Millimeter-Wave (Option 544)	27 kg (60 lbs.) (nominal)	
Shipping		
RF/MW (Option 503/508/526)	36 kg (79 lbs.) (nominal)	
Millimeter-Wave (Option 544)	39 kg (86 lbs.) (nominal)	

Dimensions	
Height	177 mm (7 in)
Width	426 mm (16.8 in)
Length	556 mm (21.9 in)
Calibration cycle	
The recommended calibration cycle is one year; calibration services are available through Keysight service centers	

Inputs and Outputs

Front panel	
RF input	
RF input 1 Connector	Type-N female, 50 Ω nominal (standard for Option 503, 508 and 526)
	2.4 mm male, 50 Ω nominal (standard for Option 544)
	3.5 mm male, 50 Ω (Option C35, with Option 526 only)
RF input 2 Connector	Type-N female, 50 Ω nominal (standard)
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	
≤ 25 MHz IF path	322.5 MHz
40 MHz BW IF path	250.0 MHz
LO output frequency range	
	3.75 to 14.0 GHz
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	One compatible with USB 3.0; Two 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

Headphone jack	
Connector	Miniature stereo audio jack
	3.5 mm
Rear panel	
10 MHz out	
Connector	BNC female, 50 Ω (nominal)
Output amplitude	≥ 0 dBm (nominal)
Frequency	10 MHz × (1+ 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 ideal external reference input frequency
Trigger 1 and 2 inputs	
Connector	BNC female
Impedance	> 10 kΩ (nominal)
Trigger level range	−5 to 5 V
Trigger 1 and 2 outputs	
Connector	BNC female
Impedance	> 10 kΩ (nominal)
Trigger level range	0 to 5 V (CMOS)
Monitor output 1 (Option PC6, PC6S, PC8 CPUs)	
Connector	VGA compatible, 15-pin mini D-SUB
Format	XGA (60 Hz vertical sync rates, non-interlaced) Analog RGB
Resolution	1024 x 768
Monitor output 2 (Option PC6, PC6S, PC8 CPUs)	
Connector	Mini DisplayPort
Resolution	1280 x 768
Monitor Output (Option PCA CPU)	
Connector	DisplayPort
Resolution	1280 x 768
Noise source drive +28 V (pulsed)	
Connector	BNC female
SNS Series noise source	For use with Keysight Technologies' SNS series noise sources
Analog out	
Connector	BNC female (used by Option YAS)

USB ports (Option PC6, PC6S, PC8 CPUs)	
Host, Super Speed (2 ports)	
Standard	Compatible with USB 3.0
Connector	USB Type-A female
Output current	0.9 A (nominal)
Host, stacked with LAN (1 port)	
Standard	Compatible with USB 3.0
Connector	USB Type-A female
Output current	0.5 A (nominal)
Device (1 port)	
Standard	Compatible with USB 3.0
Connector	USB Type-B female
USB ports (Option PCA CPU)	
Host (4 ports)	
Standard	Compatible with USB 3.0
Connector	USB Type-A female
Output current	0.9 A (nominal)
Device	
Standard	Compatible with USB 3.0
Connector	USB Type-B female
Thunderbolt (Option PCA CPU)	
Connector	USB Type-C female, 2 ports
Output current	5V, 1.0 A max
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 (Option PC6, PC6S, PC8 CPUs)	
Standard	1G Base-T
Connector	RJ45 Ethertwist
LAN TCP/IP interface (Option PCA CPU)	
Standard	1G Base-T
Connector	RJ45 Ethertwist
Standard	10G Base-T
Connector	RJ45 Ethertwist
Aux I/O connector	
Connector	25-pin D-SUB

IQ 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		**Optional**
10 MHz		25 MHz (Option B25), 40 MHz (Option B40)
IF frequency response (standard 10 MHz IF path)		
Demodulation and FFT response relative to the center frequency		

Center frequency	Span	Preselector	Max. error	RMS (nominal)
f < 3.6 GHz	≤ 10 MHz	NA	± 0.4 dB	0.04 dB
3.6 GHz ≤ f < 26.5 GHz	≤ 10 MHz	On		0.25 dB
26.5 GHz ≤ f ≤ 44 GHz	≤ 10 MHz	On		0.35 dB
IF phase linearity (deviation from mean phase linearity, nominal)				
Center frequency	**Span**	**Preselector**	**Peak-to-Peak**	**RMS**
20 MHz ≤ f < 3.6 GHz	≤ 10 MHz	NA	± 0.5°	0.2°
3.6 GHz ≤ f < 26.5 GHz	≤ 10 MHz	On	± 1.5°	0.4°
26.5 GHz ≤ f ≤ 44 GHz	≤ 10 MHz	On	± 1.5°	0.5°
Data acquisition				
Time record length	(IQ analyzer)	32,000,001 IQ sample pairs		
Sample rate				
IF path ≤ 25 MHz		100 Msa/s		
IF path = 40 MHz		200 MSa/s		
ADC resolution				
IF path ≤ 25 MHz		16 bits		
IF path = 40 MHz		12 bits		
IF frequency response (25 MHz IF path, demodulation and FFT response relative to the center frequency)				
Center frequency	**Span**	**Preselector**	**Max. error**	**RMS (nominal)**
f < 3.6 GHz	≤ 25 MHz	NA	± 0.45 dB	0.05 dB
3.6 GHz ≤ f < 26.5 GHz	≤ 25 MHz	On		0.45 dB
26.5 GHz ≤ f ≤ 44 GHz	≤ 25 MHz	On		0.55 dB
IF phase linearity (deviation from mean phase linearity, nominal)				

Center frequency	Span	Preselector	Max. error	RMS (nominal)
Center frequency	**Span**	**Preselector**	**Peak-to-Peak**	**RMS**
20 MHz ≤ f < 3.6 GHz	≤ 25 MHz	NA	± 0.5°	0.2°
IF frequency response (40 MHz IF path, demodulation and FFT response relative to the center frequency)				
Center frequency	**Span**	**Preselector**	**Max. error**	**RMS (nominal)**
30 MHz ≤ f < 3.6 GHz	≤ 40 MHz	NA	± 0.4 dB	0.07 dB
IF phase linearity (deviation from mean phase linearity, nominal)				
Center frequency	**Span**	**Preselector**	**Peak-to-Peak**	**RMS**
20 MHz ≤ f < 3.6 GHz	≤ 40 MHz	NA	± 0.5°	0.12°

Time Domain Scan (TDS)

Frequency range		
Standard time domain scan (Accelerated TDS = Off) Option N9048TDSB	20 Hz to 44 GHz	
Accelerated time domain scan (Accelerated TDS = On) Option N9048WT1B or N9048WT2B	30 MHz to 3.2 GHz	
Trace detectors		
CISPR detectors: peak, quasi-peak, EMI average, RMS average, negative peak, voltage average		
Maximum FFT bandwidth		
Frequency range	**Accelerated TDS = Off**	**Accelerated TDS = On**
20 Hz to 30 MHz	30 MHz	
30 MHz to 3.2 GHz	59 MHz	350 MHz
3.2 to 3.6 GHz	59 MHz	
3.6 to 44 GHz	12.5 MHz	
Real time scan bandwidth		
Option N9048WT1B	170 MHz	
Option N9048WT2B	350 MHz	
FFT overlap		
> 92%		
Measurement time		
10 µs to 30 s		
Trace point range		
1 to 4,000,001		
Frequency step size		
0.25 × resolution bandwidth		
Resolution bandwidth (RBW)		
EMI bandwidths (CISPR compliant)	200 Hz, 9 kHz, 120 kHz, 1 MHz	

Frequency range		
EMI bandwidths (Mil-STD-461 compliant)	10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz	
Other bandwidths (–6 dB)	1 Hz, 30 Hz, 300 Hz, 3 kHz, 30 kHz, 300 kHz, 3 MHz, 10 MHz	
Measurement speed		
	Accelerated TDS = Off	**Accelerated TDS = On**
CISPR band B, 150 kHz to 30 MHz, RBW = 9 kHz, measurement time = 100 ms, peak detector	110 ms (nominal)	
CISPR band B, 150 kHz to 30 MHz, RBW = 9 kHz, measurement time = 1 s, quasi-peak + EMI average detector	2 s (nominal)	
CISPR band C/D, 30 MHz to 1 GHz, RBW = 120 kHz, measurement time = 10 ms, peak detector	500 ms (nominal)	100 ms (nominal)
CISPR band C/D, 30 MHz to 1 GHz, RBW = 120 kHz, measurement time = 1 s, quasi-peak + EMI average detector	46.4 s (nominal)	5.8 s (nominal)

RF preselector filters				
Frequency range	**Accelerated TDS = Off**	**Accelerated TDS = On**	**Filter type**	**6 dB bandwidth (nominal)**
1 Hz to 150 kHz	x		Fixed lowpass, 150 kHz	289 kHz (−3 dB corner frequency)
150 kHz to 30 MHz	x		Fixed bandpass	36 MHz
30 to 300 MHz		x	Fixed bandpass	320 MHz
30 to 52 MHz	x		Fixed bandpass	28 MHz
52 to 75 MHz	x		Fixed bandpass	39 MHz
75 to 120 MHz	x		Fixed bandpass	63 MHz
120 to 165 MHz	x		Fixed bandpass	71 MHz
165 to 210 MHz	x		Fixed bandpass	69 MHz
210 to 255 MHz	x		Fixed bandpass	71 MHz
255 to 300 MHz	x		Fixed bandpass	68 MHz
300 to 650 MHz		x	Fixed bandpass	515 MHz
300 to 475 MHz	x		Fixed bandpass	284 MHz
475 to 650 MHz	x		Fixed bandpass	305 MHz
650 MHz to 1 GHz		x	Fixed bandpass	550 MHz
650 to 825 MHz	x		Fixed bandpass	302 MHz
825 MHz to 1 GHz	x		Fixed bandpass	314 MHz
1 to 1.7 GHz	x	x	Fixed highpass, 1 GHz	912 MHz (−3 dB corner frequency)
1.7 to 2.9 GHz	x	x	Fixed highpass, 1.7 GHz	1.56 GHz (−3 dB corner frequency
2.9 to 3.6 GHz	x	x	Fixed highpass, 2.9 GHz	2.29 GHz (−3 dB corner frequency)

Related Literature

Publication title	Publication number
N9048B PXE EMI Receiver - Configuration Guide	5992-3403EN
N9048B PXE EMI Receiver Specifications Guide	N9048-90010

Keysight Support Services

Accelerate your learning curve, enhance your test uptime, and confidently guarantee your instrument accuracy with Keysight Support Services. Keysight Services are here to support your test needs with expert technical support, instrument repair and calibration, training, alternative acquisition program options, and more.

A KeysightCare agreement provides dedicated, proactive support through a single point of contact for an extensive group of instruments, software, and solutions to ensure optimal uptime, with fast response times and resolution. Explore the services that are right for you.

Keysight Services

Offering	Benefits
KeysightCare 	KeysightCare provides elevated support for Keysight instruments and software, with access to technical support experts who respond within a specified time and ensure committed repair and calibration turnaround times (TAT). KeysightCare offers multiple service agreement tiers, including KeysightCare Assured, Enhanced, and Application Software Support. See the KeysightCare data sheet for details.
KeysightCare Assured	KeysightCare Assured provides a commitment to respond to your engineer's technical needs quickly. When unexpected repairs are necessary, you can count on a committed repair service turnaround time to get you back up and running.
KeysightCare Enhanced	KeysightCare Enhanced includes all the benefits of KeysightCare Assured plus Keysight's accurate and reliable Calibration Services, accelerated and committed TAT, and technical response.
Keysight Support Portal & Knowledge Center	All KeysightCare tiers include access to the Keysight Support Portal, where you can manage support and service resources related to your assets, such as service requests and status, or browse the Knowledge Center.
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 Acquisition Options	
KeysightAccess	Reduce budget challenges with a lease-based subscription service that offers low monthly payments, enabling you to get the instruments, software, and technical support you want for your test needs.

Recommended services

Maximize your instrument uptime and confidently make accurate measurements by securing technical support, repair, and calibration services with committed response and turnaround times. High-performance instruments include 1 year of KeysightCare Assured or KeysightCare Warranty Plus. 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	Function
KeysightCare Enhanced*	**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-S40-01	Included – instrument fundamentals and operations starter
PS-S40-04	Recommended – instrument fundamentals and operations starter
PS-S40-02	Optional, technology & measurement science standard learning

* Limited availability might apply. Please review the service definition tool for model number availability and the datasheet for country availability. Coverage might be limited to KeysightCare Warranty Plus (R-55F-001). If KeysightCare Enhanced is available. R-55B-001-2/3/5 must be ordered with R-55B-001-1.

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