



Agilent N9342C Handheld Spectrum Analyzer (HSA)

Data Sheet



Field testing just got easier

The Agilent N9342C handheld spectrum analyzer (HSA) is more than easy-to-use — its measurement performance gives you the assurance you need to know the job's been done right.

- * Best-in-class RF specifications ensure precise measurements
- * Field ready - rugged, weather-resistant design
- * Automate complex tasks for consistent results



Agilent Technologies

Agilent N9342C Handheld Spectrum Analyzer (HSA)

Your job just got easier

- Best-in-class displayed average noise level (DANL), -164 dBm/Hz typical
- Fastest sweep: minimum sweep time < 2 ms
- Task Planner saves up to 95% test setup time and enables test automation
- Ergonomic backpack ensures comfort and provides true hands-free operation

Definitions and requirements

This data sheet contains specifications and supplemental information for Agilent N9342 handheld spectrum analyzer. The differences between specifications, typical performance, and nominal values are described as follows.

Definitions

Specifications describe the performance of parameters covered by the product warranty and apply to temperature ranges -10 to 50° C, unless otherwise noted.

95th percentile values indicate the breadth of the population (>2) of performance tolerances expected to be met in 95% of the cases with a 95% 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 specification that 80% of the units exhibit with a 95% confidence level over the temperature range 20° to 30° C. Typical performance does not include measurement uncertainty.

Nominal values indicate expected performance, or describe product performance that is useful in the application of the product, but is not covered by the product warranty.

Conditions required to meet specifications

The following conditions must be met for the analyzer to meet its specifications.

- The analyzer is within its calibration cycle.
- Under auto couple control, except when Swp Time Rule is set to Accuracy.
- Any analyzer that has been stored at a temperature range inside the allowed storage range but outside the allowed operating range must be stored at an ambient temperature within the allowed operating range for at least two hours before being turned on.
- The analyzer has been turned on at least 30 minutes.

Certification

Agilent Technologies certifies that this product met its published specifications at the time of shipment from the factory. Agilent Technologies further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (NIST), to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization (ISO) members.



N9342C Handheld Spectrum Analyzer (HSA) Specifications

Specifications		Supplemental information
Frequency		
Frequency range	100 kHz to 7 GHz (tunable to 9 kHz)	AC coupled
Internal 10 MHz frequency reference accuracy		
Aging rate	± 1 ppm/year	
Temperature stability	± 1 ppm in addition +2 ppm/10° C	0° C to 30° C 30° C to 50° C
Frequency readout accuracy with marker (start, stop, center, marker)		
Marker resolution	(frequency span)/(sweep points – 1)	
Uncertainty	± (frequency indication × frequency reference uncertainty +1% × span +20% × resolution bandwidth + marker resolution +1 Hz)	Frequency reference uncertainty = (aging rate x period of time since adjustment + temperature stability)
Marker frequency counter		
Resolution	1 Hz	
Accuracy	± (marker frequency × frequency reference uncertainty + counter resolution)	RBW/span ≥ 0.02; marker level to displayed noise level > 25 dB; frequency offset 0 Hz
Frequency span		
Range	0 Hz (zero span), 100 Hz to 7 GHz	
Resolution	1 Hz	
Accuracy	± (0.22% x span + span/(sweep points – 1))	Nominal
SSB phase noise		
Carrier offset		
30 kHz	< –86 dBc/Hz, typical –89 dBc/Hz	20° C to 30° C
100 kHz	< –97 dBc/Hz, typical –101 dBc/Hz	Center frequency 500 MHz
1 MHz	< –117 dBc/Hz, typical –119 dBc/Hz	
Resolution bandwidth (RBW)		
–3 dB bandwidth	10 Hz to 3 MHz	1-3-10 sequence
Accuracy	± 5%, RBW = 10 Hz to 1 MHz ± 10%, RBW = 3 MHz	Nominal
Resolution filter shape factor	< 5:1	60 dB/3 dB bandwidth ratio; nominal; digital, Gaussian-like
Video bandwidth (VBW)		
–3 dB bandwidth	1 Hz to 3 MHz	1-3-10 sequence
Accuracy	± 10%, VBW = 1 Hz to 1 MHz	Nominal

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Specifications *(continued)*

Amplitude specifications

Supplemental information

Measurement range		
Preamp off, 100 kHz to 2 MHz	Displayed average noise level (DANL) to +10 dBm	
Preamp off, 2 MHz to 7 GHz	Displayed average noise level (DANL) to +20 dBm	
Input attenuator range	0 to 50 dB, in 1 dB steps	
Maximum safe input level		
Average continuous power	+33 dBm, 3 minutes maximum, 2 MHz to 7 GHz	Input attenuator setting \geq 20 dB
DC voltage	\pm 50 VDC maximum	
Displayed average noise level ¹		
Preamp off		Reference level \leq -50 dBm
100 kHz to 1 MHz	-108 dBm, typical -127 dBm	
1 MHz to 10 MHz	-128 dBm, typical -146 dBm	
10 MHz to 500 MHz	-142 dBm, typical -146 dBm	
500 MHz to 2.5 GHz	-141 dBm, typical -145 dBm	
2.5 GHz to 4 GHz	-140 dBm, typical -144 dBm	
4 GHz to 6 GHz	-138 dBm, typical -142 dBm	
6 GHz to 7 GHz	-136 dBm, typical -140 dBm	
Preamp on		Reference level \leq -70 dBm
100 kHz to 1 MHz	-131 dBm, typical -150 dBm	
1 MHz to 10 MHz	-148 dBm, typical -163 dBm	
10 MHz to 500 MHz	-161 dBm, typical -164 dBm	
500 MHz to 2.5 GHz	-159 dBm, typical -162 dBm	
2.5 GHz to 4 GHz	-158 dBm, typical -161 dBm	
4 GHz to 6 GHz	-155 dBm, typical -158 dBm	
6 GHz to 7 GHz	-150 dBm, typical -154 dBm	
Level display range		
Log scale	10 dB to 100 dB, 10 divisions displayed, 1, 2, 5, 10 dB/division	
Linear scale	0 to 100%, 10 divisions displayed	
Scale units	dBm, dBmV, dB μ V, W, V, dBmV EMF, dB μ V EMF, V EMF	
Sweep (trace) points	461	
Marker level readout resolution		
Log scale	0.01 dB	
Linear scale	\leq 1% of signal level (nominal)	
Detectors	Normal, positive peak, sample, negative peak, average (video, RMS, voltage)	
Number of traces	4	
Trace functions	Clear/write, maximum hold, minimum hold, average	
Level measurement error	\pm 1.5 dB (excluding input VSWR mismatch)	20° C to 30° C, peak detector, preamp off, input signal -50 dBm to 0 dBm, 95% percentile. Swp Time Rule is set to Accuracy. Adds additional \pm 0.3 dB when Swp Time Rule is set to Speed.
	\pm 0.6 dB, typical	

1. RMS detector, trace averaging > 40, 0 dB input attenuation, input terminated 50 Ohm, 1 kHz resolution bandwidth, normalized to 1 Hz, 20° C to 30° C

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Specifications *(continued)*

Amplitude specifications *(continued)*

Supplemental information

Reference level ²		
Setting range	–100 to +30 dBm	Steps of 1 dB
Setting resolution		
Log scale	0.01 dB	
Linear scale	Same as log (2.236 μ V to 7.07 V)	
Accuracy	0	
RF Input VSWR (at tuned frequency)		
10 MHz to 3 GHz	Nominal < 1.5:1	10 dB or 20 dB attenuation
3 GHz to 7 GHz	Nominal < 2.0:1	
Spurious response		
Second harmonic distortion	< –65 dBc, 50 MHz to 3 GHz < –70 dBc, 3 GHz to 7 GHz	Mixer signal level at –30 dBm, input attenuation 0 dB, preamp off, 20° to 30° C
Third order intermodulation distortion (third order intercept)	+7 dBm, 50 MHz to 300 MHz +10 dBm, 300 MHz to 7 GHz	Two –20 dBm tones at input mixer, spaced by 100 kHz, input attenuation 0 dB, preamp off, reference level > –30 dBm, 20° to 30° C
Input related spurious	< –75 dBc	–30 dBm signal at input mixer Exception: –65 dBc (F1 - 21.4 MHz, with F1 input frequency) –65 dBc (F1 - 5.35 MHz, with F1 input frequency) –65 dBc (F1 - 4155 MHz, with F1 input frequency)
Inherent residual response	< –90 dBm, typical –98 dBm	Input terminated and 0 dB RF attenuation, preamplifier off

2. Reference level only affects the display not the measurement, so trace data markers do not cause additional errors in measurement results.

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Specifications *(continued)*

Sweep specifications

Supplemental information

Sweep time		
Range	2 ms to 1000 s 600 ns to 200 s	Span \geq 100 Hz Span = 0 Hz (zero span)
Sweep mode	Continuous, single	
Sweep time rule	Accuracy, speed	
Trigger source	Free run, video, external	
Trigger slope	Selectable positive or negative edge	
Trigger delay	\pm 12 ms to \pm 12 s (nominal)	Span = 0 Hz (zero span)

Front panel input/output

Supplemental information

RF input		
Connector and impedance	Type-N female, 50 Ω	Nominal
10 MHz reference/external trigger input		
Reference input frequency	10 MHz	
Reference input amplitude	0 to +10 dBm	
Trigger voltage	5 V TTL level	Nominal
Connector	BNC female, 50 Ω	Nominal

USB interface

Host connector	USB Type-A female Compatible with USB 2.0 full speed
Device connector	USB Type-mini AB female Compatible with USB 2.0 full speed

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Specifications *(continued)*

General specifications

Supplemental information

Display

Resolution	640 x 480 pixels
Size and type	6.5 inch (170 mm) TFT color display

Languages

On-screen GUI	English
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Power requirements and calibration

Adaptor voltage	100 to 240 V AC, 50 - 60 Hz 15 V DC, 5.3 A, 80 W max	Auto-ranging
Power consumption	15 W	Typical
Battery		
Operating time	4 hours	Tracking generator off, preamplifier off
(fully charged battery)	3 hours	Tracking generator on, preamplifier off
Charging time	3 hours	
Life time	300 to 500 charge cycles	
Warm-up time	30 minutes	
Calibration cycle	One year	

Environmental and size

Temperature range	-10 to +50° C -40 to +70° C	Operating (Battery: 0 to 50° C) Storage (Battery: -20 to 50° C)
Relative humidity	< 95%	
Weight	3.4 kg (7.5 lb)	Net (shipping) approximately, (3.7 kg/8.1 lbs with battery)
Dimensions	318 x 207 x 69 mm (12.5 x 8.15 x 2.7 in)	Approximately (W x H x D)

Option specifications

Supplemental information

Spectrum monitor (Option SIM)

Three display modes	Spectrogram Spectrum trace Combination of spectrogram and spectrum trace in one screen
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RF preamplifier (Option PA7)

Frequency range	100 kHz to 7 GHz	
Gain	25 dB	Nominal

Tracking generator (Option TG7)

Frequency range	5 MHz to 7 GHz	
Output level	0 to -20 dBm	1 dB steps
VSWR	< 2.0:1	Nominal
Connector and impedance	Type-N female, 50 Ω	



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