



Agilent N9342C Handheld Spectrum Analyzer (HSA)

Data Sheet



Field testing just got easier



Agilent Technologies

Agilent N9342C Handheld Spectrum Analyzer (HSA) Definitions and Requirements

Definitions and Requirements

This book contains Spectrum Analyzer specifications and supplemental information. The distinction among specifications, typical performance, and nominal values are described as follows.

Definitions

- Specifications describe the performance of parameters covered by the product warranty (temperature = -10 to 50°C, unless otherwise noted).
- 95th percentile values indicate the breadth of the population ($>2\sigma$) 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. See the General section of this chapter.
- Under auto couple control, except that Swp Time Rule is set as 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, to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization members.



Field testing just got easier with the N9342C handheld spectrum analyzer (HSA)

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. Set your work preferences with the personalized interface. Perform measurements faster. Take comfort in the N9342C's unique ergonomic features. Your job and field testing just got easier with the Agilent N9342C HSA.

N9342C

Handheld Spectrum Analyzer (HSA)

Specifications

Supplemental information

Frequency

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 0 °C to 30 °C
in addition +2 ppm / 10 °C 30 °C to 50 °C

Frequency readout accuracy with marker (Start, stop, center, marker)

Marker resolution : (frequency span) / (sweep points – 1)
Uncertainty : \pm (frequency indication \times frequency reference uncertainty
 $+1\% \times$ span $+ 20\% \times$ resolution bandwidth $+ \text{marker}$
resolution+1 Hz)

Frequency reference uncertainty = (aging rate \times period of time since adjustment + temperature stability)

Marker frequency counter

Resolution: 1 Hz
Accuracy: \pm (marker frequency \times 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 : $\pm(0.22\% \times \text{span} + \text{span} / (\text{sweep points} - 1))$ *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 : $\pm 5\%$, RBW = 10 Hz to 1 MHz *Nominal*
 $\pm 10\%$, RBW = 3 MHz
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 : $\pm 10\%$, VBW = 1 Hz to 1 MHz *Nominal*

Amplitude

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
DC voltage :	\pm 50 VDC maximum	

Displayed average noise level

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	

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

Level display range

Log scale :	10 dB to 100 dB, 10 divisions displayed, 1,2,5,10 dB/division	
Linear scale :	0 to 100%, ten 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 to 30°C, peak detector, preamp off, input signal -50 dBm to 0 dBm, 95% percentile. Swp Time Rule is set to as Accuracy.
	\pm 0.6 dB, <i>Typical</i>	Adds additional \pm 0.3 dB when Swp Time Rule is set as Speed.

Reference level

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	Because reference level affects only the display not the measurement, it cause no additional error in measurement results from trace data markers

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 : (third order intercept)	+ 7 dBm, 50 MHz to 300 MHz + 10 dBm, 300 MHz to 7 GHz	Two -20 dBm tones at the input, spaced by 100 kHz, input attenuation 0 dB, preamp off, reference level level \geq -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

Sweep

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

RF input

Connector and impedance :	Type - N female, 50 Ω	<i>Nominal</i>
----------------------------------	------------------------------	----------------

10 MHz reference / External trigger input

Reference input frequency :	10 MHz	
Reference input amplitude :	0 to + 10 dBm	
Trigger voltage :	5 V TTL level	<i>Nominal</i>
Connector :	BNC female, 50 Ω	<i>Nominal</i>

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

General

Display

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

Languages

On-Screen GUI : English

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	<i>Typical</i>
Battery :		
Operating time (fully charged battery)	4 hours 3 hours	Tracking generator off, preamplifier off 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 × 207 × 69 mm (12.5 x 8.15 x 2.7 in)	Approximately (W x H x D)

Options

Spectrum Monitor (Option SIM)

3 display modes : Spectrogram
Spectrum trace
Combination of spectrogram and spectrum trace in one screen

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

 **Agilent Email Updates**

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

Agilent Channel Partners

www.agilent.com/find/channelpartners
Get the best of both worlds: Agilent's measurement expertise and product breadth, combined with channel partner convenience.



Agilent Advantage Services is committed to your success throughout your equipment's lifetime. We share measurement and service expertise to help you create the products that change our world. To keep you competitive, we continually invest in tools and processes that speed up calibration and repair, reduce your cost of ownership, and move us ahead of your development curve.

www.agilent.com/find/advantageservices



www.agilent.com/quality

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

Americas

Canada	(877) 894 4414
Brazil	(11) 4197 3500
Latin America	305 269 7500
Mexico	01800 5064 800
United States	(800) 829 4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Thailand	1 800 226 008

Europe & Middle East

Austria	43 (0) 1 360 277 1571
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700*
	*0.125 €/minute
Germany	49 (0) 7031 464 6333
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
Switzerland	0800 80 53 53
United Kingdom	44 (0) 118 9276201

Other European Countries:

www.agilent.com/find/contactus

Revised: July 8, 2010

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

© Agilent Technologies, Inc. 2010
Printed in USA, August 10, 2010
5990-5587EN

