

KEYSIGHT TECHNOLOGIES (AGILENT HP)

N9913A

The Keysight (Agilent) FieldFox N9913A is a 4 GHz handheld microwave combination analyzer designed for harsh field environments. Standardizing on a ruggedized, completely sealed portrait enclosure, it functions as a cable and antenna analyzer (CAT) as well as a vector network analyzer (VNA) and spectrum analyzer. Designed to provide benchtop-level accuracy with no warm-up required, the N9913A is optimized for field testing of satellite, military, and microwave backhaul communications.

SPECIFICATIONS

General

Interfaces	LAN, USB Host (2 ports), USB Device (Mini-B), MicroSD card slot
Display	6.5-inch transfective color LCD, 640 x 480 resolution

Physical

Power Supply	External AC/DC adapter input (100 to 240 VAC, 50 to 60 Hz), 15 VDC instrument input, 14 W typical power consumption
Operating Temperature	-10 to +55 °C °C
Dimensions (W×H×D)	188 × 292 × 72 mm mm
Weight	3.0 kg

Frequency Specifications

Spectrum Analyzer Frequency Range	100 kHz to 4 GHz (usable to 5 kHz)
Frequency Span Range	0 Hz (zero span), 10 Hz to 4 GHz
Frequency Resolution	1 Hz
Cable and Antenna Analyzer (CAT) Frequency Range	30 kHz to 4 GHz
Vector Network Analyzer (VNA) Frequency Range	30 kHz to 4 GHz
Phase Noise at 10 kHz Offset	-111 dBc/Hz

Bandwidth Specifications

Resolution Bandwidth (RBW) Range	10 Hz to 5 MHz (-3 dB bandwidth)
RBW Step Sequence	1, 1.5, 2, 3, 5, 7.5, 10 sequence

Amplitude Specifications

Measurement Range (≥ 100 kHz)	DANL to +20 dBm
Displayed Average Noise Level (DANL)	-137 dBm (preamp off, RMS detection, log averaging, reference level of -20 dBm, 1 Hz RBW, 23 ± 5 °C, 2 MHz to 4.5 GHz)
Maximum Safe Input Average CW Power	+27 dBm (0.5 watts)
Maximum Safe Input DC Voltage	± 50 VDC
Input Attenuator Range	0 to 30 dB (in 5 dB steps)
Spur-Free Dynamic Range	≥ 105 dB (nominal, at 2.4 GHz, 2/3 [TOI-DANL] in 1 Hz RBW)
CAT Dynamic Range	100 dB
VNA Dynamic Range	100 dB
RF Input VSWR (10 MHz to 2.7 GHz)	1.5 : 1 (nominal, 10 dB attenuation)
RF Input VSWR (>2.7 GHz)	1.8 : 1 (nominal, 10 dB attenuation)
Amplitude Accuracy at Power-Up	± 0.5 dB

Trace and Display

Display Log Scale Range	0.01 to 100 dB/division in 0.01 dB steps (10 divisions)
Amplitude Scale Units	dBm, dBmV, dB μ V, W, V, A, dBmA, dB μ A
Trace Detectors	Normal, positive peak, negative peak, sample, average (RMS)
Trace States	Clear/write, max hold, min hold, average, view, blank
Number of Traces	4
Trace Averaging Range	1 to 10,000

Measurement Modes and Options

Cable and Antenna Analyzer Measurements	Distance-to-fault, return loss, cable loss
Vector Network Analyzer Measurements	S11, S21, S22, S12 (magnitude and phase)
Optional Hardware & Functions	Vector Voltmeter (VVM), built-in power meter, spectrum analyzer, network analyzer, independent signal generator, variable DC source, built-in GPS receiver, interference analyzer

Physical and General

Battery Operating Time	3.5 hours
Enclosure Environmental Durability	U.S. MIL-PRF-28800F Class 2 compliant (completely sealed)
Standard Warranty	3 years
Warm-up Time	No warm-up required
Instrument Design	Vertical (portrait) orientation with glove-compatible buttons
Storage Temperature Range	-51 to +71 °C
Operating Altitude Limit	Up to 4,600 m (15,000 ft)

Inputs & Outputs

RF Test Port Connector	Type-N female, 50 Ω
External Reference Input	BNC female, 50 Ω
External Reference Frequency	10 MHz
GPS Antenna Connector	SMA female, 50 Ω (Option 307)
USB Ports	2 x USB 2.0 Host (Type-A), 1 x USB 2.0 Device (Mini-B)

Vector Network Analyzer (VNA)

VNA IF Bandwidth Range	10 Hz to 100 kHz (1-3-10 sequence)
VNA/CAT Number of Points	101 to 10001 (selectable)

Power & Bias Options

Built-in DC Bias Source Voltage Range	1 to 32 V (0.1 V steps, Option 309)
Built-in DC Bias Source Max Current	650 mA (Option 309)

Triggering

Trigger Sources	Free run, External, Video, RF Burst
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Vector Voltmeter (Option 308)

Vector Voltmeter Frequency Range	30 kHz to 4 GHz (Option 308)
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Real-Time Spectrum Analyzer (Option 350)

RTSA Maximum Bandwidth	10 MHz (Option 350)
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System & Storage

Supported Storage Media	SD card, SDHC card, USB flash drive
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Frequency & Reference

Frequency Stability (vs Temperature)	± 0.5 ppm (-10 to 55 $^{\circ}\text{C}$)
Frequency Reference Aging	± 1.0 ppm/year

RF Specifications

System Impedance	50 Ω
Preamplifier Frequency Range	100 kHz to 4 GHz (Option 235)

Interfaces & Connectivity

LAN Interface	100Base-T (RJ-45 connector)
External Trigger Input Connector	BNC female
Audio Interface	3.5 mm jack (headphone/audio out)
USB Protocol Version	USB 2.0
MicroSD Slot	1 SD card slot

Environmental & Compliance

Operating Humidity	95% RH at 40 °C (non-condensing)
EMC Standards	Complies with EN 61326-1
Safety Standards	Complies with IEC/EN 61010-1

Optional Hardware & Functions

Built-in GPS Receiver Support	Option 307
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TECHNOLOGY

RF and Microwave Handheld Analyzers

APPLICATIONS

Cable and antenna test, vector network analysis, spectrum analysis, interference hunting, power measurements

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