Agilent FieldFox Handheld Analyzers

4/6.5/9/14/18/26.5 GHz

Data Sheet

N9913A

N9914A

N9915A

N9916A

N9917A

N9918A

N9925A

N9926A

N9927A

N9928A

N9935A

N9936A

N9937A

N9938A

This data sheet provides the specified and typical performance of the FieldFox family of portable analyzers. This data sheet should be used in conjunction with the technical overviews and configuration guide, for a complete description of the analyzers.

Carry precision with you.

Anticipate ___Accelerate ___Achieve

Agilent Technologies

Table of contents

Cable and antenna analyzer and vector network analyzer

The performance listed in this section applies to the cable and antenna analyzer (referred to as CAT) and vector network analyzer (VNA) capabilities available in the following models (may require options – see configuration guide):

FieldFox microwave combination analyzers: **N9913A, N9914A, N9915A, N9916A, N9917A, N9918A**
FieldFox microwave vector network analyzers: **N9925A, N9926A, N9927A, N9928A**

Specification (spec)

Specifications include guardbands to account for the expected statistical performance distribution, measurement uncertainties, and changes in performance due to environmental conditions. Warranted performance. FieldFox must be within its calibration cycle. No warm-up required for the specifications listed on pages 3 through 7.

Typical

Expected performance of an average unit; does not include guardbands. It is not covered by the product warranty. FieldFox must be within its calibration cycle.

Nominal

A general, descriptive term or design parameter. It is not tested, and not covered by the product warranty. FieldFox must be within its calibration cycle.

Models	Frequency range
N9913A	30 kHz to 4 GHz
N9914A	30 kHz to 6.5 GHz
N9915A, N9925A	30 kHz to 9 GHz
N9916A, N9926A	30 kHz to 14 GHz
N9917A, N9927A	30 kHz to 18 GHz
N9918A, N9928A	30 kHz to 26.5 GHz

Frequency reference	-10 to 55 ºC
Accuracy	± 0.7 ppm (spec) + aging ± 0.4 ppm (typical) + aging
Accuracy, when locked to GPS	± 0.010 ppm (spec)
Accuracy, when GPS antenna is disconnected	± 0.2 ppm (nominal)[1]
Aging rate	± 1 ppm/yr for 20 years (spec), will not exceed ± 3.5 ppm

Frequency resolution	**Spec**
Frequency ≤ 5 GHz	1 Hz
Frequency ≤ 10 GHz	1.34 Hz
Frequency ≤ 20 GHz	2.68 Hz
Frequency ≤ 26.5 GHz	5.36 Hz

Data points or resolution	101, 201, 401, 601, 801, 1001, 1601, 4001, 10,001 Arbitrary number of points settable through SCPI
IF bandwidth[2]	10 Hz, 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz
System impedance	50 ohm (nominal), 75 ohm with appropriate adapter and calibration kit

[1] The maximum drift expected in the frequency reference applicable when the ambient temperature changes ± 5 ºC from the temperature when the GPS signal was last connected.
[2] VNA mode only. Recommend using averaging in CAT mode.

Test port output power	Port 1 or port 2, high power, 23 ± 5 °C	
Frequency	**Typical**	**Nominal**
30 kHz to 300 kHz	-11 dBm	
> 300 kHz to 2 MHz	-3 dBm	-2 dBm
> 2 MHz to 625 MHz	-2 dBm	-1 dBm
> 625 MHz to 3 GHz	+1 dBm	+3 dBm
≥ 3 to 6.5 GHz	-1 dBm	+1 dBm
≥ 6.5 to 9 GHz	-2 dBm	0 dBm
≥ 9 to 14 GHz	-4 dBm	-2.5 dBm
≥ 14 to 18 GHz	-6 dBm	-4.5 dBm
≥ 18 to 23 GHz	-10 dBm	-8.5 dBm
≥ 23 to 26.5 GHz	-12 dBm	-11 dBm

Power level accuracy	± 1.5 dB at -15 dBm, typical
Power range	CAT: High, low and manual. Low power is -45 dBm, nominal. Default power is high. VNA: High, low and manual. Low power is -45 dBm, nominal. Default power is manual power of -15 dBm.
Power step size	Power settable in 1 dB steps across power range. Flat power, in 1 dB steps, is available across the whole frequency span, nominal.

System dynamic range[1]	Port 1 or port 2, high power, 100 Hz IF bandwidth, 100 point average, -10 to 55 °C	
Frequency	**Spec**	**Typical**
> 300 kHz to 9 GHz[2]	95 dB	100 dB
≥ 9 to 14 GHz	91 dB	97 dB
≥ 14 to 18 GHz	90 dB	94 dB
≥ 18 to 20 GHz	87 dB	90 dB
≥ 20 to 25 GHz	74 dB	79 dB
> 25 to 26.5 GHz	65 dB	70 dB

Trace noise[3]	Port 1 or port 2, high power, 300 Hz IF bandwidth, spec, -10 to 55 °C	
Frequency	**Magnitude**	**Phase**
≤ 300 kHz	± 0.003 dB (rms)	± 0.020 degrees
> 300 kHz to 10 GHz	± 0.002 dB (rms)	± 0.014 degrees
> 10 to 20 GHz	± 0.004 dB (rms)	± 0.027 degrees
> 20 to 26.5 GHz	± 0.010 dB (rms)	± 0.066 degrees

Temperature stability	Nominal
Magnitude	± 0.018 dB/°C ≤ 15 GHz, ± 0.08 dB/°C > 15 GHz

Receiver compression	Port 1 or port 2, typical, 23 ± 5 °C
500 MHz to 1 GHz	+10 dBm, 0.15 dB compression
> 1 GHz to 26.5 GHz	+10 dBm, 0.10 dB compression

Port 1 or port 2 maximum input level	
Average CW power	+27 dBm, 0.5 watts
DC	± 50 VDC

Immunity to interfering signals	+16 dBm (nominal)

[1] For CAT mode "Insertion loss (2-port)", decrease listed dynamic range specifications by 20 dB, as CAT mode IFBW is fixed at 10 kHz. Can obtain full dynamic range by using S21 measurement in VNA mode with 100 Hz IFBW.

[2] <300 kHz: 63 dB nominal; 2 MHz to 9 MHz: 85 dB spec, 90 dB typical

[3] For CAT mode, increase trace noise by a factor of 5.7, as CAT mode IFBW is fixed at 10 kHz. Can use averaging in CAT mode to reduce trace noise, or use VNA mode with 300 Hz IFBW.

Measurement speed	
Includes hardware sweep time, re-trace and display update.	
CAT	
Return loss, 30 kHz to 26.5 GHz, 1-port cal, 1001 points	850 µs/pt
Distance-to-fault, 100 meter cable, 1-port cal, 1001 points	850 µs/pt
VNA	
S11 and S21, 30 kHz to 26.5 GHz, enhanced response cal, 100 kHz IF bandwidth, 1001 points	850 µs/pt

Measurements	
CAT	Distance-to-fault (dB), return loss, VSWR, distance-to-fault (VSWR), cable loss (1-port), insertion loss (2-port)[1] , distance-to-fault (linear or Rho)
VNA T/R	S11, S21[2]
VNA S-parameters	S11, S21, S22, S12[3]
Number of traces	Four traces available, Tr1, Tr2, Tr3, Tr4
Display formats	Single-trace Dual-trace overlay (both traces on one graticule) Dual-trace split (each trace on separate graticule) Three-trace overlay (all three traces on one graticule) Three-trace split (each trace on separate graticule) Quad-trace split (each trace on separate graticule)
Trace formats	Log magnitude, linear magnitude, VSWR, phase, Smith chart, polar, group delay, unwrapped phase, real impedance, imaginary impedance
Frequency settings	Start, stop, center, span
Frequency sweep type	Linear
Sweep trigger	Continuous, single
Trigger type	Internal or external trigger input Edge trigger Sweep begins when external TTL signal occurs at the trigger input port
Polarity	Positive edge, negative edge
CAT mode distance-to-fault settings	Start distance, stop distance. Units: meters or feet
Sweep time	Set sweep time in seconds
Averaging	Sweep and point averaging 2 to 1000
Smoothing	0.25 to 25% of trace width Computes the moving average of adjacent data points. Smoothing aperture defines the trace width (number of points) to be averaged.
Group delay	
Aperture (selectable)	Frequency span / (number of points -1)
Maximum aperture	25% of frequency span
Minimum delay	Limited to measuring no more than 180 degrees of phase change within the minimum aperture.

[1] All measurements standard on N991xA analyzers except insertion loss (2-port). Insertion loss (2-port) requires Option 210. All measurements available on N992xA analyzers with Option 305.

[2] Standard on N992xA VNAs. Option 210 required on N991xA analyzers.

[3] Option 211 required to obtain all four S-parameters.

Measurements *continued*	
Port extension	For both port 1 and port 2, delay settings. Port extensions apply to all measurements.
Title	Add custom titles to the display
Display data	Display data, memory, data and memory, or data math One memory trace per data trace. Total of 4 memory traces
Trace math	Vector division or subtraction of current linear measurement values and memory data
Scale	Autoscale, scale, reference level, reference position Autoscale: Automatically selects scale resolution and reference value to center the trace. Autoscale all: Scales all visible traces.
Display range	Start, stop, center, span
Return loss, log magnitude	-1000 to 1000 dB
Log magnitude resolution	0.01 dB
Phase	-180 to +180 degrees (unwrapped phase can show larger values)
Phase resolution	0.01 degrees
Phase offset	-360 to +360 degrees
VSWR	1.01 to 1000
VSWR resolution	0.01
Data markers	Each trace has six independent markers that can be displayed simultaneously. Delta markers are available for each marker.
Marker formats	Default marker format is the trace format. In Smith chart or polar format, [Real + Imag] or [Mag and Phase] formats are also available.
Marker functions	Peak, Next Peak, Peak Left, Peak Right, Mkr→ Center, Mkr→Delay, Min Search, Peak Excursion, Peak Threshold, Target, Bandwidth (BW, Q, Loss), Tracking CAT mode only: Tracking 3 peaks (CAT mode), Marker→ Start distance, Marker→ Stop distance
Marker table	On/Off
Marker types	Normal, delta, data trace and memory trace markers
Marker coupling	On/Off (coupling between traces)

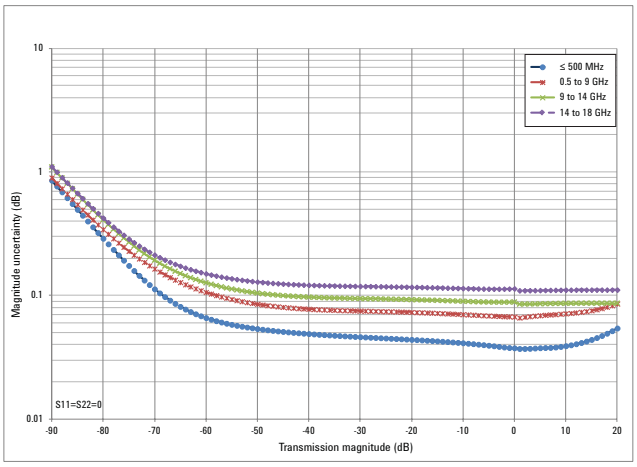
Calibration types	
CalReady, 1-port	Each FieldFox has a highly accurate calibration at the test port, at room temperature, traceable to national standards labs.
QuickCal, 1-port	Uses internal and a subset of external standards. QuickCal is most accurate for DUTs with 7/16 and Type-N connectors and measurement uncertainties are provided for frequencies ≤ 18 GHz. Reduced accuracy for DUTs with 3.5 mm (m), SMA (m), or other male coaxial connectors; performance is unspecified. QuickCal is not recommended for DUTs with 3.5 mm (f), SMA (f), or other similar female connectors. QuickCal is not applicable to waveguide.
SOL, 1-port	Traditional short, open and load 1-port calibration for reflection measurements.
Frequency response	Simultaneous magnitude and phase correction of frequency response errors for either reflection or transmission measurements.
Enhanced response (also known as one-path, two-port)	Corrects for frequency response and source match for transmission measurements, and reflection frequency response, directivity and source match for reflection measurements. Partial correction for load match for low-loss reciprocal devices.
CalReady, 2-port	Full 12-term error correction at test port, at room temperature. Highly accurate calibration, traceable to national standards labs.
QuickCal, 2-port	Full 12-term error correction using internal and a subset of external standards. QuickCal is most accurate for DUTs with 7/16 and Type-N connectors and measurement uncertainties are provided for frequencies ≤ 18 GHz. Reduced accuracy for DUTs with 3.5 mm (m), SMA (m), or other male coaxial connectors; performance is unspecified. QuickCal is not recommended for DUTs with 3.5 mm (f), SMA (f), or other similar female connectors. QuickCal is not applicable to waveguide.
SOLT or offset short, 2-port	Traditional short, open, load and thru (or using offset short standards) for calibration. Full 12-term error correction.
QSOLT calibration, 2-port	Full 12-term error correction. Requires fewer connections, compared to traditional SOLT (4 compared to 7). Applicable to insertable devices.
Unknown thru calibration, 2-port	Full 12-term error correction. Applicable to both insertable and non-insertable devices. Easily characterize non-insertable devices such as Type-N to 3.5 mm, or female-female devices with unknown thru calibration.
Guided calibration wizard	FieldFox's calibration wizard recommends a calibration type and calibration kit based on selected parameters and connector types. Alternatively, users can select their own calibration type and calibration kit.
Interpolated error correction	With any type of accuracy enhancement applied, interpolated mode recalculates the error coefficients when the test frequencies are changed. The number of points can be increased or decreased and the start/stop frequencies can be changed, but the resulting frequency span must be a subset of the original calibration frequency span.
Connectors	Type-N 50 ohm, Type-N 75 ohm, 7/16, TNC, 3.5 mm, 2.4 mm, waveguide bands: X-band WR-90, P-band WR-62, K-band WR-42 Custom coaxial or waveguide calibration kits can be added to any FieldFox analyzer.

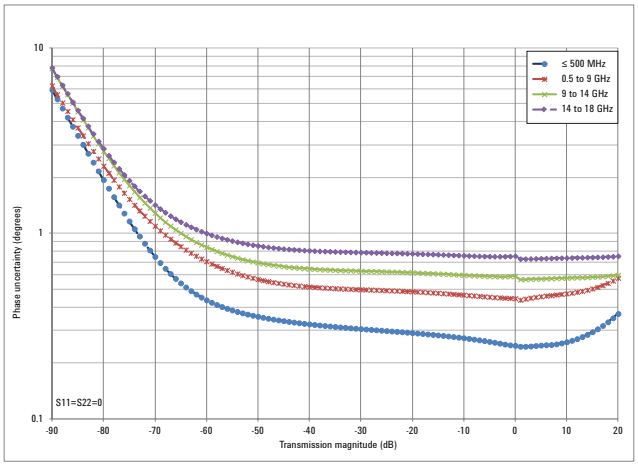
Distance-to-fault	Available in CAT mode, standard on N991xA analyzers, Option 305 on N992xA analyzers.
Range	Range = velocity factor x speed of light x (number of points -1) / frequency span x 2 Number of points auto coupled according to start and stop distance entered.
Range resolution	Resolution = range / (number of points -1) Number of points settable by user
Transform modes	Bandpass, low-pass
Window types	Maximum, medium, and minimum
Alias-free range indicator for bandpass mode	On/Off
Dispersion compensation	Yes

Corrected measurement uncertainty

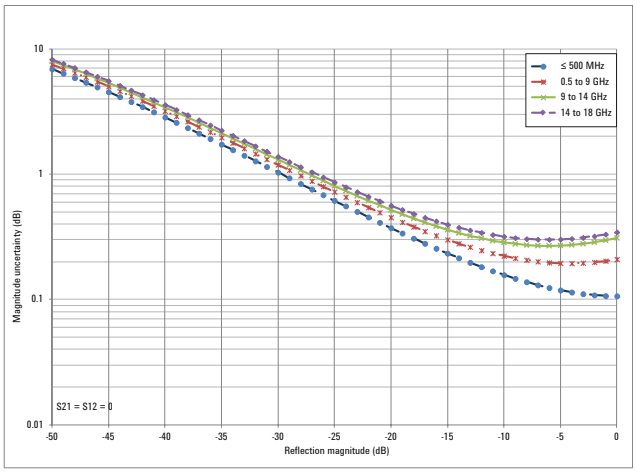
Power level of -15 dBm, 10 Hz IF bandwidth, no averaging, and 30-minute warm-up time. Includes uncertainties due to drift, noise, compression, and dynamic accuracy. Coverage factor of x1 applied to uncertainties, for ease of comparison with other industry handheld analyzers.

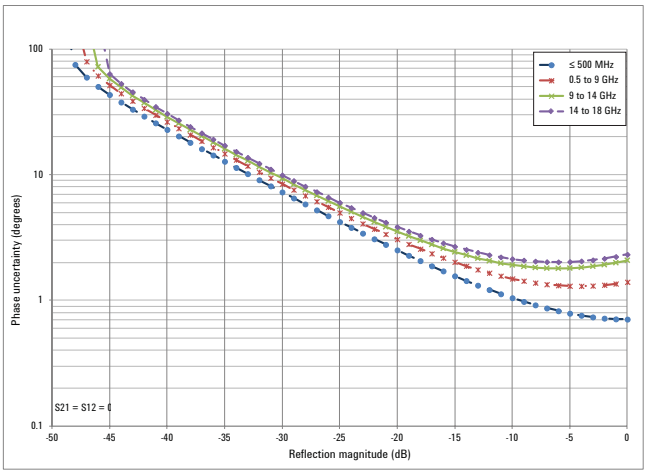
CalReady, Type-N test ports; applies to N9913/4/5/6/7A and N9925/6/7A[1]





Transmission uncertainty (S21, S12)





Reflection uncertainty (S11, S22)

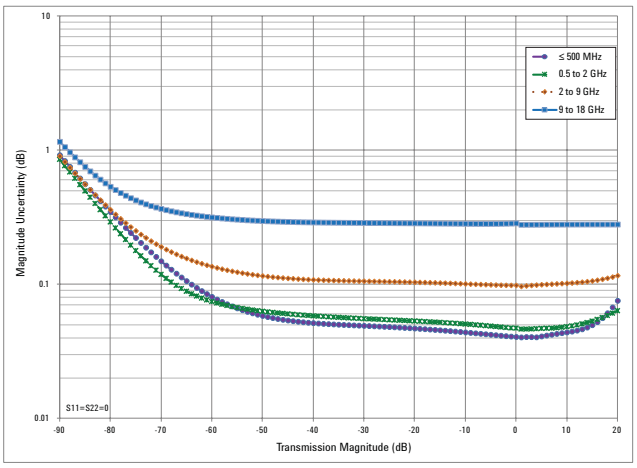
[1] *Uncertainties shown based on a factory calibration using data-based calibration kits.*

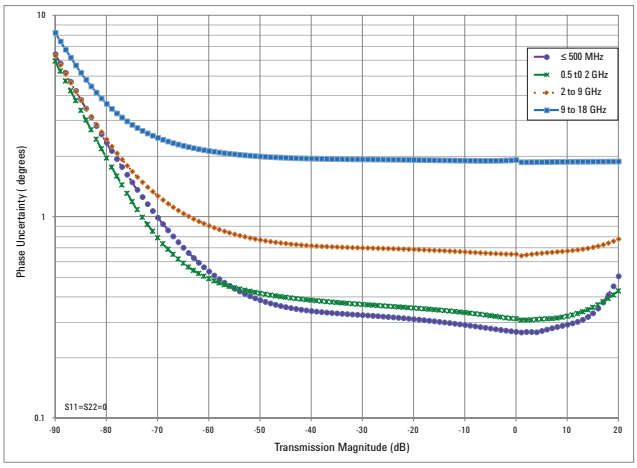
Corrected measurement uncertainty

Power level of -15 dBm, 10 Hz IF bandwidth, no averaging, and 30-minute warm-up time. Includes uncertainties due to drift, noise, compression, and dynamic accuracy. Coverage factor of x1 applied to uncertainties, for ease of comparison with other industry handheld analyzers.

Full 2-port calibration, 85518A or 85519A Type-N (m) 4-in-1 calibration kit, spec

Corrected performance	≤ 0.5 GHz	0.5 to 2 GHz	2 to 9 GHz	9 to 18 GHz
Directivity	44 dB	42 dB	35 dB	32 dB
Source match	37 dB	36 dB	33 dB	30 dB
Load match	38 dB	37 dB	31 dB	27 dB
Reflection tracking	± 0.05 dB	± 0.06 dB	± 0.07 dB	± 0.1 dB
Transmission tracking	± 0.07 dB	± 0.1 dB	± 0.18 dB	± 0.5 dB





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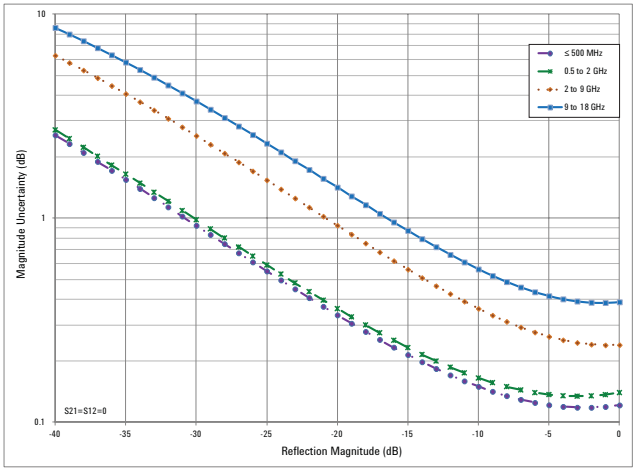
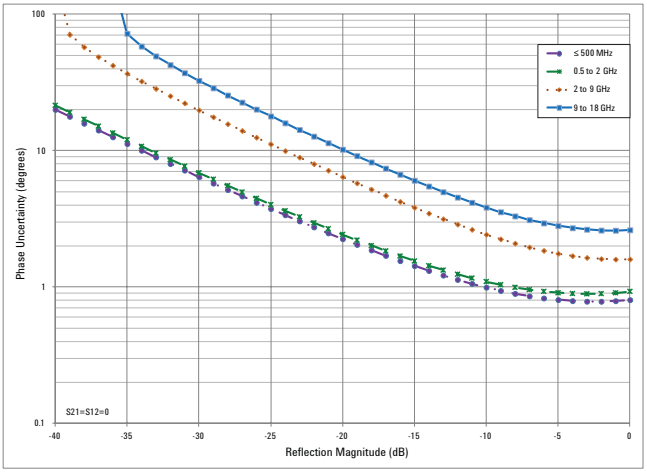




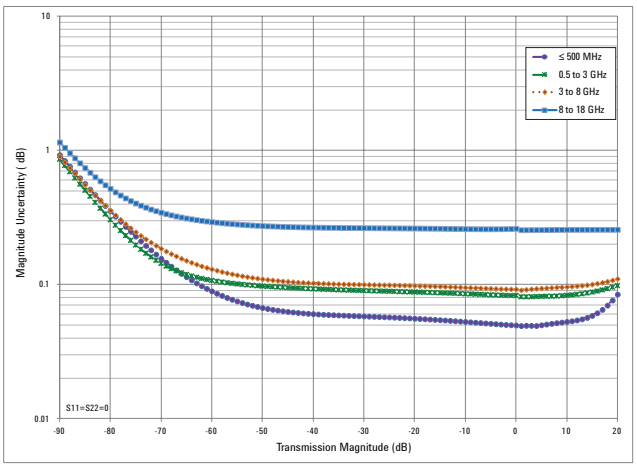
Reflection uncertainty (S11, S22)

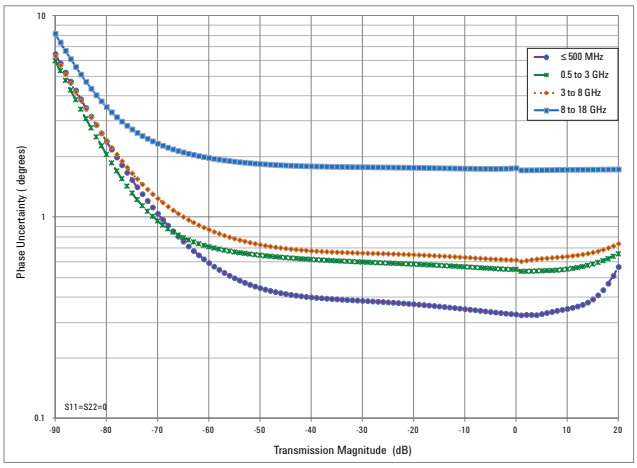
Corrected measurement uncertainty

Power level of -15 dBm, 10 Hz IF bandwidth, no averaging, and 30-minute warm-up time. Includes uncertainties due to drift, noise, compression, and dynamic accuracy. Coverage factor of x1 applied to uncertainties, for ease of comparison with other industry handheld analyzers.

Full 2-port calibration, 85054D Type-N (m) calibration kit, spec

Corrected performance	≤ 0.5 GHz	0.5 to 2 GHz	2 to 8 GHz	8 to 18 GHz
Directivity	40 dB	40 dB	36 dB	34 dB
Source match	38 dB	33 dB	33 dB	27 dB
Load match	37 dB	35 dB	32 dB	27 dB
Reflection tracking	± 0.006 dB	± 0.006 dB	± 0.009 dB	± 0.027 dB
Transmission tracking	± 0.08 dB	± 0.1 dB	± 0.15 dB	± 0.43 dB





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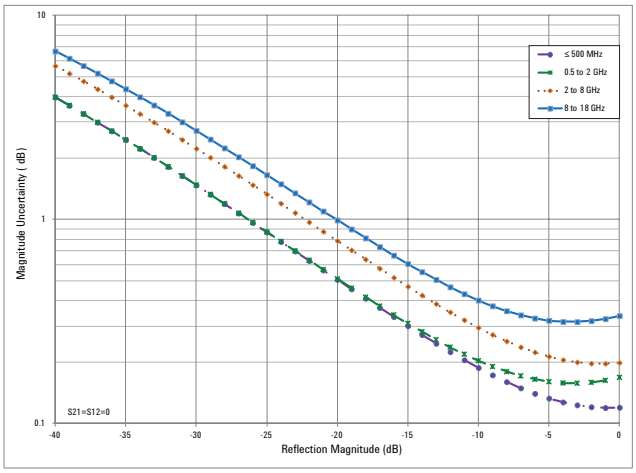
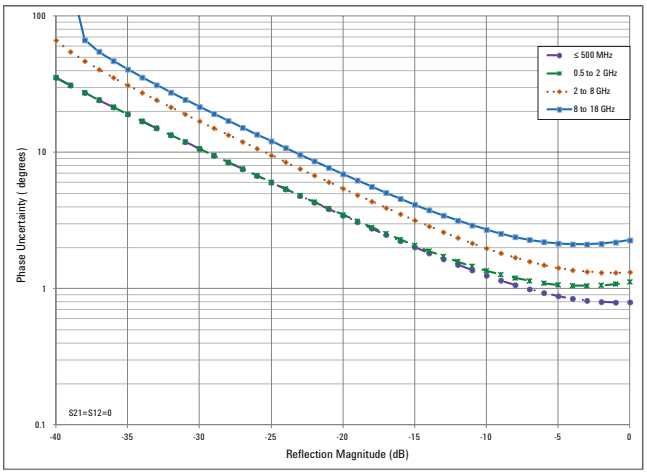


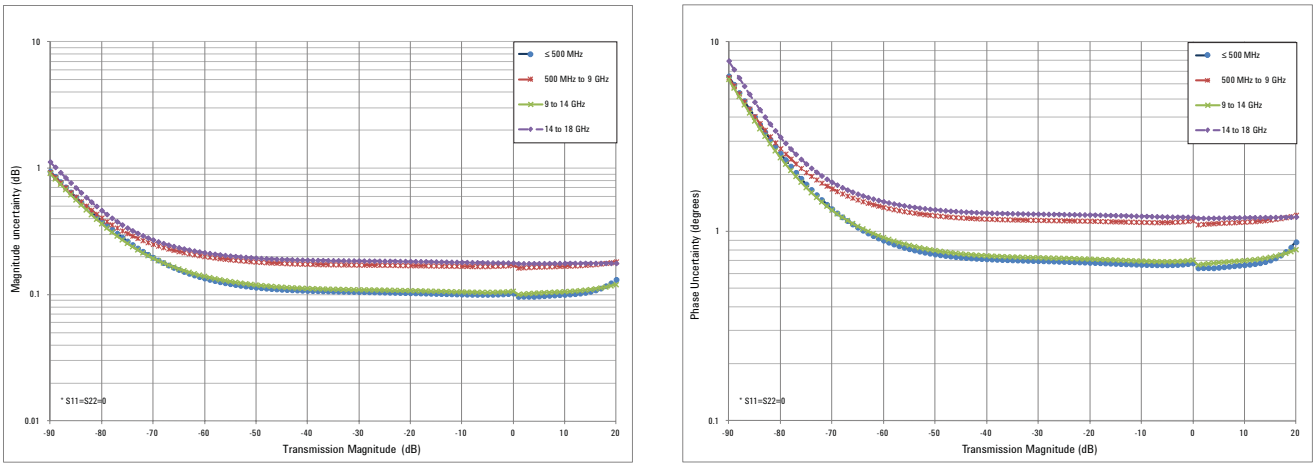


Reflection uncertainty (S11, S22)

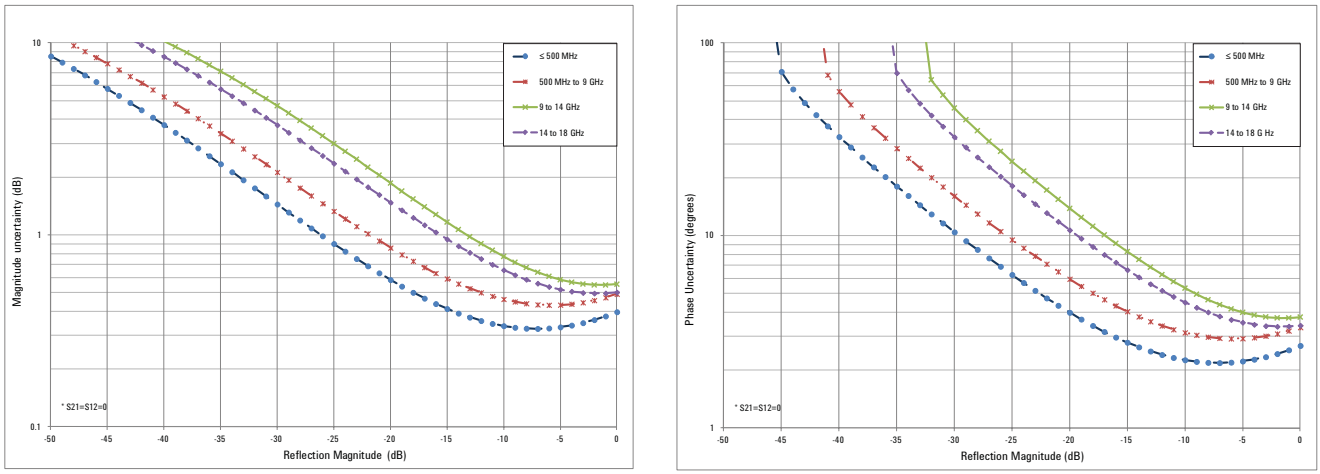
Corrected measurement uncertainty

Power level of -15 dBm, 10 Hz IF bandwidth, no averaging, and 30-minute warm-up time. Includes uncertainties due to drift, noise, compression, and dynamic accuracy. Coverage factor of x1 applied to uncertainties, for ease of comparison with other industry handheld analyzers.

Full 2-port QuickCal calibration with load, Type-N (m) device[1]



Transmission uncertainty (S21, S12)



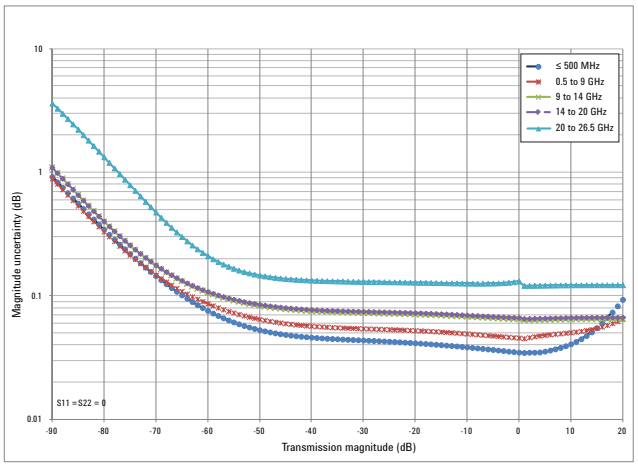
Reflection uncertainty (S11, S22)

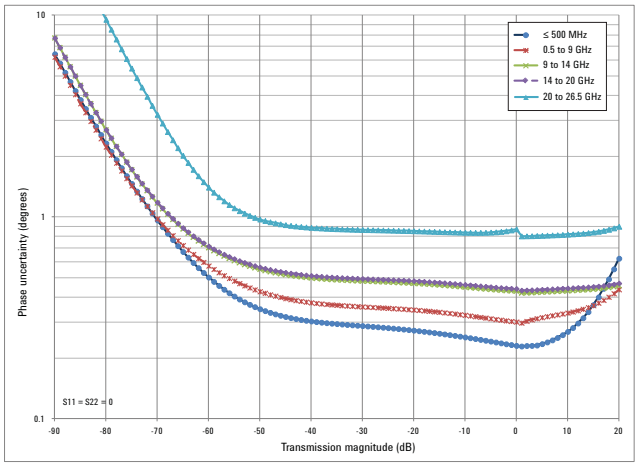
[1] *Uncertainties shown based on a factory calibration using data-based calibration kits.*

Corrected measurement uncertainty

Power level of -15 dBm, 10 Hz IF bandwidth, no averaging, and 30-minute warm-up time. Includes uncertainties due to drift, noise, compression, and dynamic accuracy. Coverage factor of x1 applied to uncertainties, for ease of comparison with other industry handheld analyzers.

CalReady, 3.5 mm test ports; applies to N9918A, N9928A[1]





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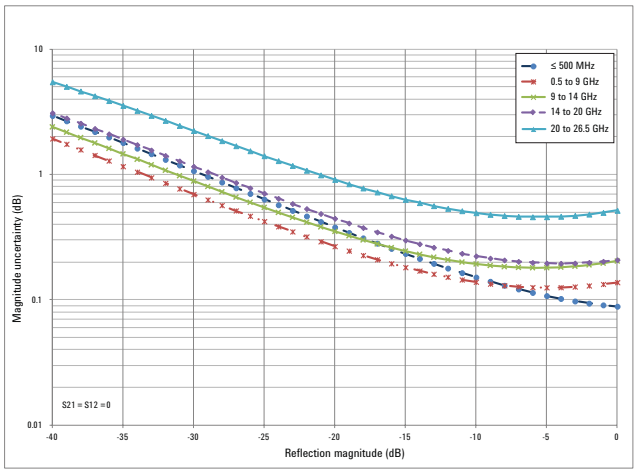
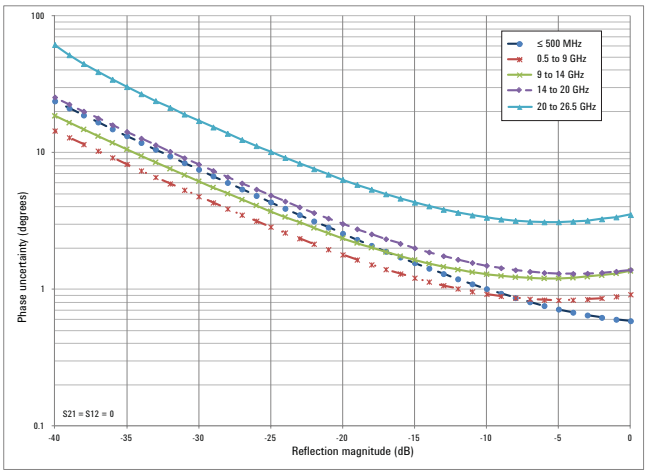




Reflection uncertainty (S11, S22)

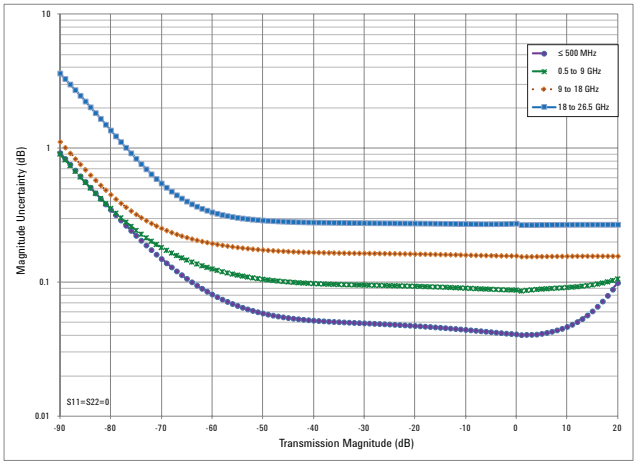
[1] *Uncertainties shown based on a factory calibration using data-based calibration kits.*

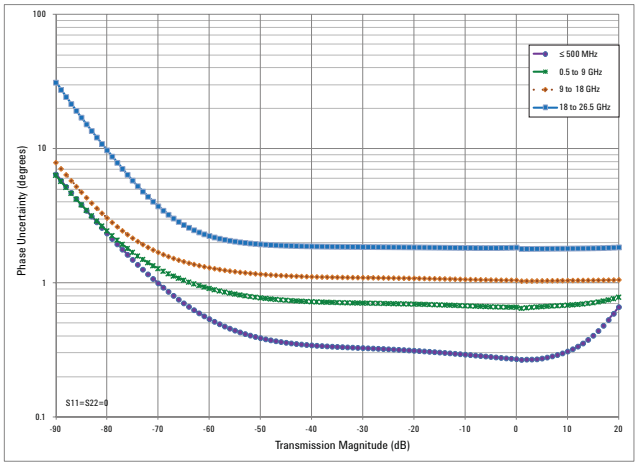
Corrected measurement uncertainty

Power level of -15 dBm, 10 Hz IF bandwidth, no averaging, and 30-minute warm-up time. Includes uncertainties due to drift, noise, compression, and dynamic accuracy. Coverage factor of x1 applied to uncertainties, for ease of comparison with other industry handheld analyzers.

Full 2-port calibration, 85520A or 85521A 3.5 mm (m) 4-in-1 OSLT calibration kit, spec

Corrected performance	≤ 0.5 GHz	0.5 to 9 GHz	9 to 18 GHz	18 to 26.5 GHz
Directivity	42 dB	36 dB	32 dB	32 dB
Source match	37 dB	30 dB	28 dB	27 dB
Load match	37 dB	30 dB	28 dB	24 dB
Reflection tracking	± 0.035 dB	± 0.13 dB	± 0.14 dB	± 0.21 dB
Transmission tracking	± 0.07 dB	± 0.29 dB	± 0.33 dB	± 0.52 dB





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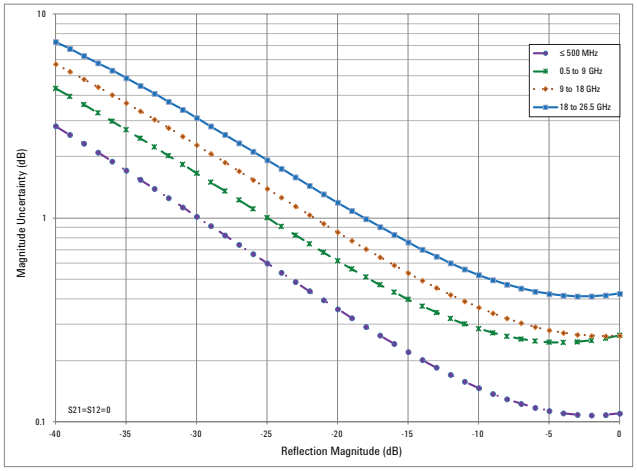
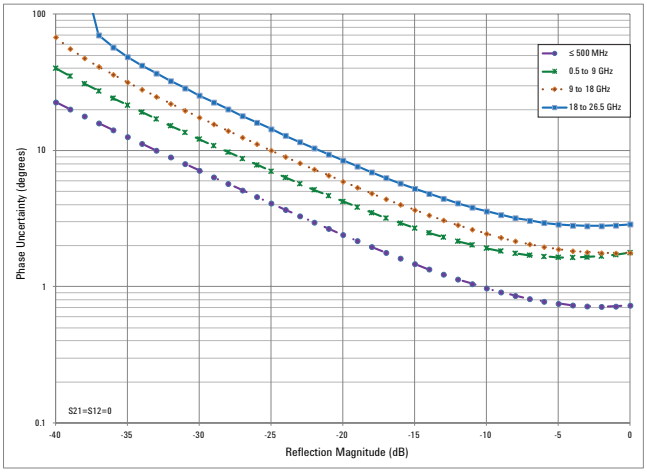




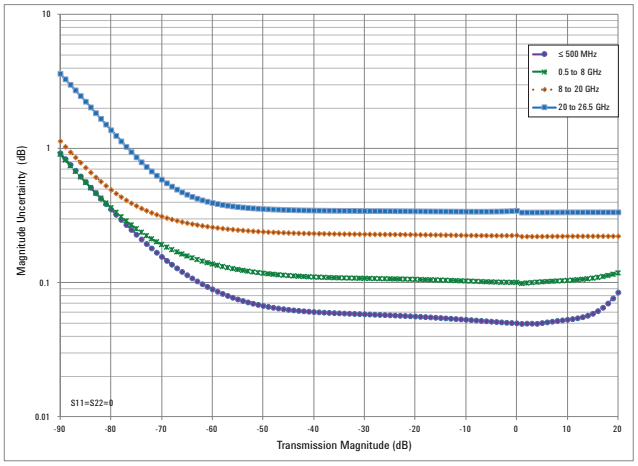
Reflection uncertainty (S11, S22)

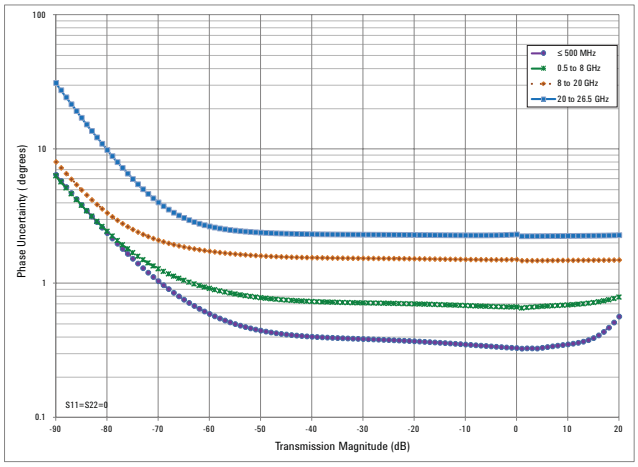
Corrected measurement uncertainty

Power level of -15 dBm, 10 Hz IF bandwidth, no averaging, and 30-minute warm-up time. Includes uncertainties due to drift, noise, compression, and dynamic accuracy. Coverage factor of x1 applied to uncertainties, for ease of comparison with other industry handheld analyzers.

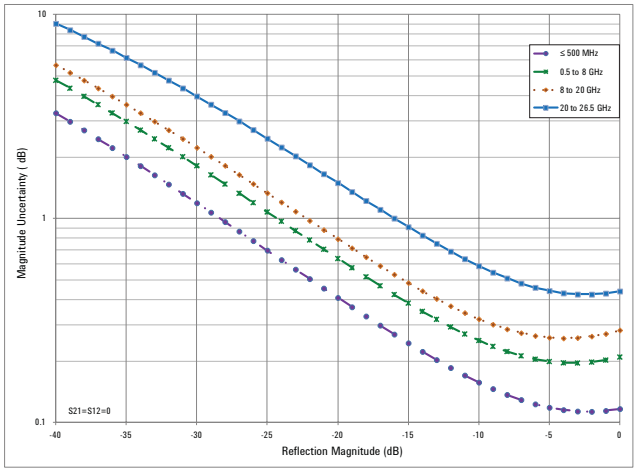
Full 2-port calibration, 85052D 3.5 mm calibration kit, spec

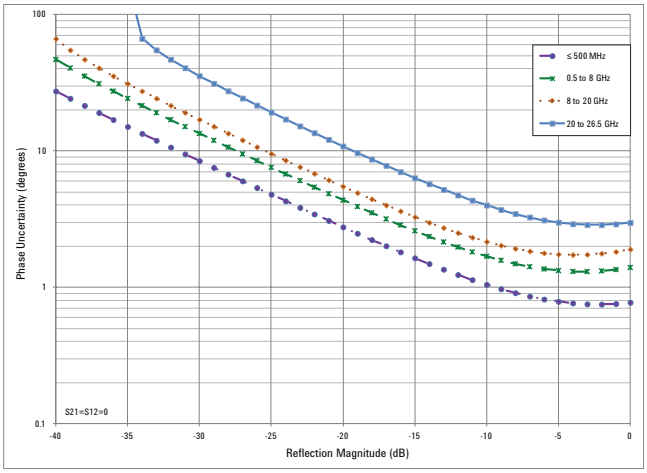
Corrected performance	≤ 0.5 GHz	0.5 to 8 GHz	8 to 20 GHz	20 to 26.5 GHz
Directivity	42 dB	38 dB	36 dB	30 dB
Source match	37 dB	31 dB	28 dB	25 dB
Load match	38 dB	33 dB	29 dB	24 dB
Reflection tracking	± 0.005 dB	± 0.006 dB	± 0.009 dB	± 0.012 dB
Transmission tracking	± 0.07 dB	± 0.135 dB	± 0.32 dB	± 0.50 dB





Transmission uncertainty (S21, S12)





Reflection uncertainty (S11, S22)

Time domain, Option 010

The performance listed in this section applies to the time domain capabilities available in the following models:

FieldFox microwave combination analyzers: **N9913A, N9914A, N9915A, N9916A, N9917A, N9918A**
FieldFox microwave vector network analyzers: **N9925A, N9926A, N9927A, N9928A**

In time-domain mode, FieldFox computes the inverse Fourier transform of the frequency-domain data to display reflection or transmission coefficients versus time.

Setup parameters

- Time: start, stop, center, span
- Gating: start, stop, center, span, and on/off
- Number of points, velocity factor, line loss, window shape, independent control for all four traces

Time stimulus modes	
Low-pass step	Low-pass step is similar to a traditional time domain reflectometer (TDR) stimulus waveform. It is used to measure low-pass devices. The frequency-domain data should extend from DC (extrapolated value) to a higher value.
Low-pass impulse	Low-pass impulse response is used to measure low-pass devices.
Bandpass impulse	The bandpass impulse simulates a pulsed RF signal and is used to measure the time domain response of band-limited devices.
Windows The windowing function can be used to filter the frequency domain data and thereby reduce overshoot and ringing in the time domain response.	
Windows	Minimum, medium and maximum, manual entry of Kaiser Beta and impulse width.
Gating The gating function can be used to selectively remove reflection or transmission time domain responses. In converting back to the frequency domain the effects of the responses outside the gate are removed. The results can be viewed with gating on and off, using two traces.	
Gate types	Notch, bandpass
Gate shapes	Maximum, wide, normal, minimum

Vector voltmeter (VVM), Option 308

The performance listed in this section applies to the VVM mode capabilities available in the following models:

FieldFox microwave combination analyzers: **N9913A, N9914A, N9915A, N9916A, N9917A, N9918A**
FieldFox microwave vector network analyzers: **N9925A, N9926A, N9927A, N9928A**

With vector voltmeter mode, you can characterize the difference between two measurements easily. The zeroing function allows you to create a reference signal, and characterize the difference between two device measurements. The results are shown on a large display in digital format.

Models	Frequency range
N9913A	30 kHz to 4 GHz
N9914A	30 kHz to 6.5 GHz
N9915A, N9925A	30 kHz to 9 GHz
N9916A, N9926A	30 kHz to 14 GHz
N9917A, N9927A	30 kHz to 18 GHz
N9918A, N9928A	30 kHz to 26.5 GHz

Setup parameters

- 1-port cable trimming - reflection or S11 measurement, magnitude and phase
- 2-port transmission - transmission or S21 measurement, magnitude and phase
- A/B and B/A - ratio of two receivers or channels, magnitude and phase – Need an external signal generator for the A/B or B/A measurement (must order Option 211).
- Frequency (one CW frequency point)
- IF bandwidth - 10 Hz to 100 kHz
- Output power - Low or high

Spectrum analyzer

The specifications in this section apply to the spectrum analyzer capabilities available in the following models:

FieldFox microwave combination analyzers: **N9913A, N9914A, N9915A, N9916A, N9917A, N9918A**
FieldFox microwave spectrum analyzers: **N9935A, N9936A, N9937A, N9938A**

Definitions

Specification (spec)

Specifications include guardbands to account for the expected statistical performance distribution, measurement uncertainties, and changes in performance due to environmental conditions. Warranted performance. FieldFox must be within its calibration cycle. No warm-up required.

Typical

Expected performance of an average unit; does not include guardbands. It is not covered by the product warranty. FieldFox must be within its calibration cycle.

Nominal

A general, descriptive term or design parameter. It is not tested, and not covered by the product warranty. FieldFox must be within its calibration cycle.

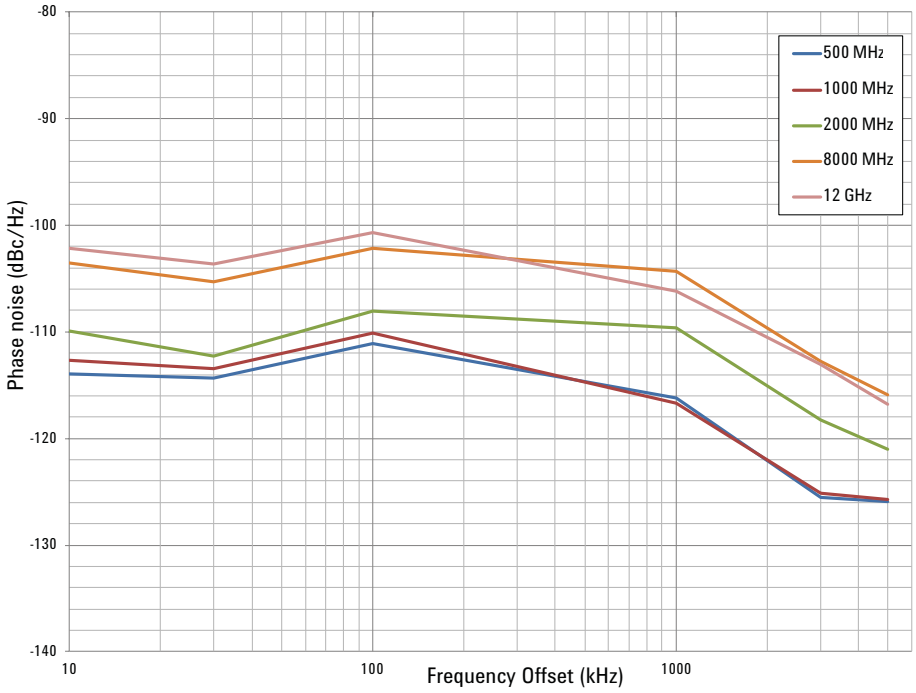
Models	**Frequency range**	
N9913A	100 kHz to 4 GHz	Usable to 5 kHz
N9914A	100 kHz to 6.5 GHz	Usable to 5 kHz
N9915A, N9935A	100 kHz to 9 GHz	Usable to 5 kHz
N9916A, N9936A	100 kHz to 14 GHz	Usable to 5 kHz
N9917A, N9937A	100 kHz to 18 GHz	Usable to 5 kHz
N9918A, N9938A	100 kHz to 26.5 GHz	Usable to 5 kHz
The spectrum analyzer is tunable to 0 Hz or DC. The preamplifier covers the full band. Nominal gain of 20 dB.		

Frequency reference	-10 to 55 °C	
Accuracy	± 0.7 ppm (spec) + aging ± 0.4 ppm (typical) + aging	
Accuracy, when locked to GPS	± 0.010 ppm (spec)	
Aging rate	± 1 ppm/yr for 20 years (spec), will not exceed ± 3.5 ppm	
Frequency span	**Spec**	
Range	0 Hz (zero span), 10 Hz to maximum frequency range of instrument	
Resolution	1 Hz	
Accuracy	±(2 x RBW centering + horizontal resolution)	±(2 x RBW centering +2 x horizontal resolution) for detector = Normal
Frequency readout accuracy **Start, stop, center, marker**	± (readout frequency x frequency reference accuracy + RBW centering + 0.5 x horizontal resolution)	Horizontal resolution = frequency span/ (trace points – 1) RBW centering: 5% x RBW, FFT mode (nominal) 16% x RBW, step mode (nominal)
Marker frequency counter		
Accuracy	± (marker frequency x frequency reference accuracy + counter resolution)	
Resolution	1 Hz	

Sweep Acquisition, span > 0 Hz	**Spec**
Range	1 to 5000. Number of data acquisitions per measurement. Value is normalized to the minimum required to achieve amplitude accuracy with CW signals. Auto coupled. For pulsed RF signals, manually increase the sweep acquisition value to maximize the pulse spectrum envelope.
Resolution	1
Sweep time readout	Measured value representing time required to tune receiver, acquire data, and process trace.
Trace update	**Nominal**
Span = 20 MHz, RBW/VBW = 3 kHz	1.7 updates per second
Span = 100 MHz, RBW/VBW auto coupled	12 updates per second
Sweep time, zero-span	**Nominal**
Range	1 µs to 1000 s
Resolution	100 ns
Readout	Entered value representing trace horizontal scale range
Trigger (for zero-span & FFT sweeps)	
Trigger type	Free run, external, video, RF burst
Trigger slope	Positive edge, negative edge
Trigger delay	Range: -1 to 10 s Resolution: 100 ns
Auto trigger	Forces a periodic acquisition in the absence of a trigger event Range: 0 (off) to 10 s
Trigger position (zero-span)	Controls the horizontal position of the pulse edge; use sweep time to zoom into pulse edge Range: 0 to 10, integer steps; 0 is left edge of graticule, 10 is right edge of graticule
RF burst trigger	**Nominal**
Dynamic range	40 dB
Bandwidth	20 MHz
Operating frequency range	20 MHz to maximum instrument frequency
Trace points	101, 201, 401, 801, 1001 (defaults to 401) 10,001 points settable through SCPI
Resolution bandwidth (RBW)	**Spec**
Range (-3 dB bandwidth)	
Zero span	10 Hz to 5 MHz 1,3,10 sequence
Non-zero span	1 Hz to 5 MHz 1, 1.5, 2, 3, 5, 7.5, 10 sequence < 300 kHz, 300 kHz, 1 MHz, 3 MHz, 5 MHz Step keys change RBW in 1, 3, 10 sequence
Accuracy	**Nominal**
Zero span RBWs	
10 Hz to 1 MHz	± 5%
3 MHz	± 10%
5 MHz	± 15%
Non-zero span RBWs	
1 Hz to 100 kHz	± 1%
300 kHz to 1 MHz	± 5%
3 MHz	± 10%
5 MHz	± 15%
Selectivity (-60 dB/-3 dB)	4:1
Video bandwidth (VBW)	**Spec**
	1 Hz to 5 MHz in 1, 1.5, 2, 3, 5, 7, 10 sequence

Phase noise	Stability, SSB phase noise at 1 GHz			
Offset	Spec (23 ± 5 °C)	Spec (-10 to 55 °C)	Typical (23 ± 5 °C)	Typical (-10 to 55 °C)
10 kHz	-106 dBc/Hz	-106 dBc/Hz	-111 dBc/Hz	-111 dBc/Hz
30 kHz	-106 dBc/Hz	-104 dBc/Hz	-108 dBc/Hz	-110 dBc/Hz
100 kHz	-100 dBc/Hz	-99 dBc/Hz	-104 dBc/Hz	-105 dBc/Hz
1 MHz	-110 dBc/Hz	-110 dBc/Hz	-113 dBc/Hz	-113 dBc/Hz
3 MHz	-119 dBc/Hz	-118 dBc/Hz	-122 dBc/Hz	-122 dBc/Hz
5 MHz	-120 dBc/Hz	-120 dBc/Hz	-123 dBc/Hz	-123 dBc/Hz

Phase noise at different center frequencies (nominal)



Measurement range	Spec
100 kHz to 26.5 GHz	DANL to +20 dBm
Input attenuator range	0 to 30 dB, in 5 dB steps
Maximum input safe level	
Average CW power	+27 dBm, 0.5 watts
DC	± 50 VDC

Displayed average noise level (DANL)	RMS detection, log averaging, reference level of -20 dBm, normalized to 1 Hz RBW			
Preamp off	Spec (23 ± 5 °C)	Spec (-10 to 55 °C)	Typical (23 ± 5 °C)	Typical (-10 to 55 °C)
2 MHz to 4.5 GHz[1]	-137 dBm	-135 dBm	-139 dBm	-138 dBm
> 4.5 to 7 GHz	-133 dBm	-131 dBm	-136 dBm	-135 dBm
> 7 to 13 GHz	-129 dBm	-127 dBm	-132 dBm	-130 dBm
> 13 to 17 GHz	-124 dBm	-122 dBm	-126 dBm	-125 dBm
> 17 to 22 GHz	-119 dBm	-117 dBm	-122 dBm	-121 dBm
> 22 to 25 GHz	-114 dBm	-111 dBm	-117 dBm	-114 dBm
> 22 to 26.5 GHz	-110 dBm	-108 dBm	-112 dBm	-111 dBm
Preamp on	Spec (23 ± 5 °C)	Spec (-10 to 55 °C)	Typical (23 ± 5 °C)	Typical (-10 to 55 °C)
2 MHz to 4.5 GHz[1]	-153 dBm	-151 dBm	-155 dBm	-154 dBm
> 4.5 to 7 GHz	-149 dBm	-147 dBm	-151 dBm	-150 dBm
> 7 to 13 GHz	-147 dBm	-145 dBm	-149 dBm	-148 dBm
> 13 to 17 GHz	-143 dBm	-141 dBm	-145 dBm	-144 dBm
> 17 to 22 GHz	-140 dBm	-139 dBm	-143 dBm	-142 dBm
> 22 to 25 GHz	-134 dBm	-132 dBm	-137 dBm	-134 dBm
> 25 to 26.5 GHz	-128 dBm	-126 dBm	-131 dBm	-129 dBm

	Spec
Display range	Log scale 10 divisions 1 to 100 dB/division in 0.01 dB steps
Amplitude scale units	dBm, dBmV, dBµV, W, V, A, dBmA, dBµA
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
Number of averages	1 to 10,000
Reference level	-150 to + 30 dBm

50 MHz absolute amplitude accuracy	50 MHz, verified with input level of 0 to -35 dBm, peak detector, 10 dB attenuation, preamplifier off, 30 kHz RBW, all settings auto-coupled, no warm-up required, -10 to 55 °C ± 0.3 dB, spec ± 0.10 dB, typical

Total absolute amplitude accuracy	Verified with input level of -10 to -5 dBm. Peak detector, 10 dB attenuation, preamplifier off, 30 kHz RBW, all settings auto-coupled, no warm-up required. Includes frequency response uncertainties.			
	Spec (23 ± 5 °C)	Spec (-10 to 55 °C)	Typical (23 ± 5 °C)	Typical (-10 to 55 °C)
100 kHz to 18 GHz	± 0.8 dB	± 1.0 dB	± 0.35 dB	± 0.50 dB
> 18 GHz to 26.5 GHz	± 1.0 dB	± 1.2 dB	± 0.50 dB	± 0.60 dB

[1] *Increase the noise floor 4 dB for frequencies between 2.1 and 2.8 GHz.*

Resolution bandwidth switching uncertainty	Nominal
RBW < 5 MHz	0.0 dB
For signals not at center frequency	0.7 dB peak-to-peak

RF input VSWR, 10 dB attenuation	Nominal
10 MHz to 2.7 GHz	1.7 : 1
> 2.7 to 7.5 GHz	1.5 : 1
> 7.5 GHz	2.2 : 1

Second harmonic distortion	Nominal
-30 dBm signal at mixer input	
≤ 4 GHz	<-60 dBc or +30 dBm
> 4 GHz	<-80 dBc or +50 dBm

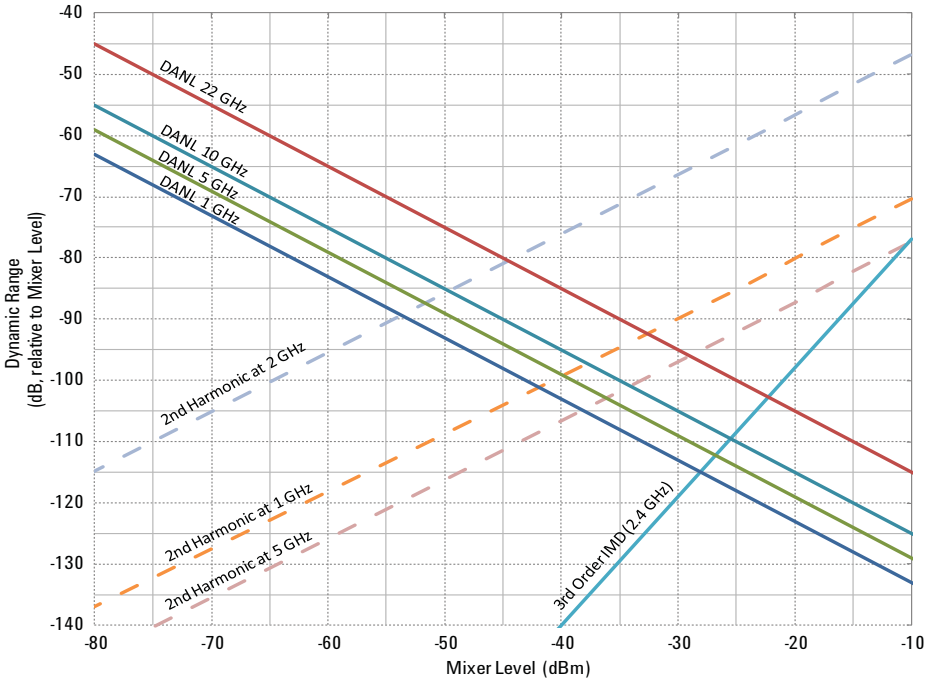
Third order intermodulation distortion (TOI)	Spec	Typical
	at 2.4 GHz, +15 dBm	< 1 GHz, +10 dBm 1 to 7.5 GHz, +15 dBm > 7.5 GHz, +21 dBm

Spur free dynamic range	at 2.4 GHz > 105 dB nominal 2/3 (TOI-DANL) in 1 Hz RBW

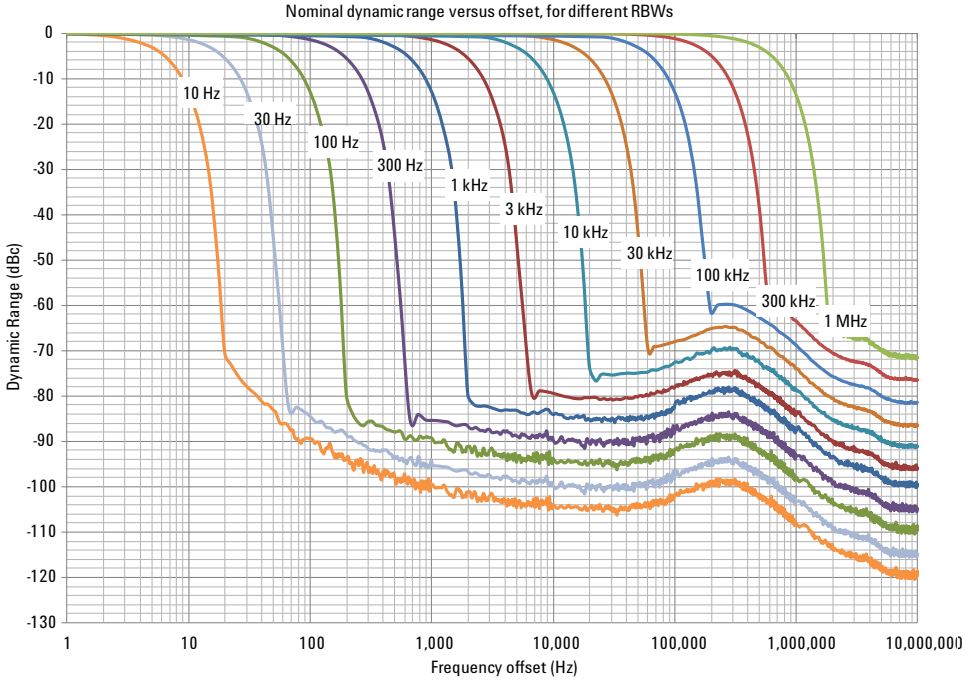
Residual responses	Nominal
Preamp off, 0 dB attenuation	
100 kHz to 13 GHz[1]	-110 dBm
>13 to 20 GHz	-90 dBm
>20 to 26.5 GHz	-80 dBm
Input related spurs	
-30 dBm signal at mixer input (excludes frequencies listed below)	-80 dBc
f = center frequency	
< 2.6 GHz, f + 2 x 33.75 MHz	-80 dBc
< 2.6 GHz, f – 2 x 866.25 MHz	-80 dBc
< 2.6 GHz, f + 2 x 3.63375 GHz	-85 dBc
≥ 2.6 to 7.5 GHz, f + 2 x 33.75 MHz	-80 dBc
≥ 2.6 to 7.5 GHz, f + 2 x 866.25 MHz	-80 dBc
≥ 2.6 to 7.5 GHz, f + 2 x 9.86625 GHz	-80 dBc
≥ 7.5 to 16.3 GHz, f + 2 x 3.63375 GHz	-65 dBc
≥ 16.3 to 26.5 GHz, f – 2 x 3.63375 GHz	-60 dBc
≥ 7.5 to 26.5 GHz, f + 2 x 33.75 MHz	-80 dBc
≥ 7.5 to 26.5 GHz, f – 2 x 866.25 MHz	-80 dBc
LO related spurs	-60 dBc
Sideband	-80 dBc

[1] *Excludes 4.5 MHz, -95 dBm at 4.5 MHz.*

Nominal distortion and noise limited (10 Hz RBW) dynamic range



Dynamic range versus offset frequency versus RBW (nominal)



Tracking generator or independent source

The specifications in this section apply to the tracking generator or independent source capabilities available in the following models:

FieldFox microwave combination analyzers: **N9913A, N9914A, N9915A, N9916A, N9917A, N9918A**. Included with Option 233. To obtain stimulus/response measurements in tracking generator mode, Option 210 must be ordered also.
FieldFox microwave spectrum analyzers: **N9935A, N9936A, N9937A, N9938A**. Included with Option 220.

Note: Traditional tracking generators track the receiver frequency. In FieldFox analyzers, the tracking generator frequency can be set to either track the receiver frequency, or act as an independent CW source.

Models	Tracking generator or independent source frequency range
N9913A	30 kHz to 4 GHz
N9914A	30 kHz to 6.5 GHz
N9915A, N9935A	30 kHz to 9 GHz
N9916A, N9936A	30 kHz to 14 GHz
N9917A, N9937A	30 kHz to 18 GHz
N9918A, N9938A	30 kHz to 26.5 GHz

Output power, maximum	23 ± 5 °C	
Frequency	**Typical**	**Nominal**
30 kHz to 300 kHz	-11 dBm	
300 kHz to 2 MHz	-3 dBm	-2 dBm
> 2 MHz to 625 MHz	-2 dBm	-1 dBm
> 625 MHz to 3 GHz	+1 dBm	+3 dBm
≥ 3 to 6.5 GHz	-1 dBm	+1 dBm
≥ 6.5 to 9 GHz	-2 dBm	0 dBm
≥ 9 to 14 GHz	-4 dBm	-2.5 dBm
≥ 14 to 18 GHz	-6 dBm	-4.5 dBm
≥ 18 to 23 GHz	-10 dBm	-8.5 dBm
≥ 23 to 26.5 GHz	-12 dBm	-11 dBm

Power level accuracy	± 1.5 dB at -15 dBm, typical Power flattened across frequency range
Power step size	Power settable in 1 dB steps across power range
Functions	Continuous wave (CW), CW coupled, tracking

RF output VSWR, 10 dB attenuation	Nominal
10 MHz to 2.7 GHz	1.7 : 1
> 2.7 to 7.5 GHz	1.5 : 1
> 7.5 GHz	2.2 : 1

Dynamic range	Typical, -10 to 55 °C	
Frequency	**Preamp off**	**Preamp on**
2 MHz to 2 GHz	97 dB	112 dB
> 2 to 7 GHz	93 dB	108 dB
> 7 to 11 GHz	88 dB	103 dB
> 11 to 18 GHz	79 dB	94 dB
> 18 to 21 GHz	71 dB	86 dB
> 21 to 23 GHz	55 dB	70 dB
> 23 to 25 GHz	50 dB	65 dB
> 25 to 26.5 GHz	45 dB	60 dB

Spectrum analyzer IF output

Center frequency	33.75 MHz
IF bandwidth	5 MHz (default), 25 MHz
Connector	SMB male
Conversion loss	0 to 27 dB nominal The loss increases approximately linearly as frequency increases, with ~27 dB loss at 26.5 GHz. Conversion loss is defined from RF input to SA output with -10 dBm input power, 0 dB attenuation, and preamp off.

AM/FM tune and listen

Audio demodulation types	AM, FM narrow, FM wide
Audio bandwidth	16 kHz
Receiver IF bandwidth	
AM	35 kHz
FM narrow	12 kHz
FM wide	150 kHz
Listen time range	0 to 100 seconds

Preamplifier, Option 235

Preamplifier	Full band; nominal gain 20 dB

Interference analyzer and spectrogram, Option 236

The capabilities listed in this section apply to the interference analyzer capabilities available with Option 236 in the following models:

FieldFox microwave combination analyzers: **N9913A, N9914A, N9915A, N9916A, N9917A, N9918A**
FieldFox microwave spectrum analyzers: **N9935A, N9936A, N9937A, N9938A**

Interference analyzer	
Spectrogram	Overlay, full screen, top, or bottom with active trace
Waterfall	
Markers	Time, delta time
Trace playback and recording	Record all spectrum analyzer measurements Store data internally or on USB or SD card Playback recorded data using FieldFox Frequency mask trigger allows recording to occur upon trigger

Spectrum analyzer time gating, Option 238

The capabilities listed in this section apply to the time gating features available with Option 238 in the following models:

FieldFox microwave combination analyzers: **N9913A, N9914A, N9915A, N9916A, N9917A, N9918A**
FieldFox microwave spectrum analyzers: **N9935A, N9936A, N9937A, N9938A**

With time gating, you can measure the spectrum of a periodic signal during a specified time interval. Pulsed-RF signals are an example of a periodic signal that can be measured with time gating. For example, you can measure the pulse during the on period, not the transition or the off period. Or you can exclude interfering signals such as a periodic transient. Time gating allows you to view spectral components that would otherwise be hidden. FieldFox's time gating method is a Gated FFT.

Gate method	Gated FFT
Span range	Any span
RBW range	1 Hz to 300 kHz (derived from gate width)
Gate delay range	-1 to 10 s
Gate width (length) range	6 µs to 1.8 s
Gate sources	External, RF burst, Video

Reflection measurements (RL, VSWR), Option 320

The capabilities listed in this section apply to the reflection measurements option available with Option 320[1] in the following models:

FieldFox microwave spectrum analyzers: **N9935A, N9936A, N9937A, N9938A[2]**

Models	Reflection measurements
N9935A	30 kHz to 9 GHz
N9936A	30 kHz to 14 GHz
N9937A	30 kHz to 18 GHz
N9938A	30 kHz to 26.5 GHz

Measurements: Return loss, VSWR
Normalization using data/memory

Radio standards

With a radio standard applied, pre-defined frequency bands, channel numbers or uplink / downlink selections can be used instead of manual frequency entry. The pre-defined FieldFox radio standards include bands such as W-CDMA, LTE, and GSM. Alternately, users can create custom standards and import them into FieldFox analyzers.

[1] *Option 320 requires Option 220.*
[2] *N9938A requires Option 100, 3.5 mm connector.*

The specifications in the sections that follow apply to these FieldFox analyzers:

FieldFox microwave combination analyzers: **N9913A, N9914A, N9915A, N9916A, N9917A, N9918A**
FieldFox microwave vector network analyzers: **N9925A, N9926A, N9927A, N9928A**
FieldFox microwave spectrum analyzers: **N9935A, N9936A, N9937A, N9938A**

Built-in power meter, Option 310

Using the built-in power meter option, FieldFox is able to make very accurate channel power measurements. The channel bandwidth can be set wide to simulate average power meter measurement. This measurement function provides the flexibility to make user definable channel power measurements.

Setup parameters: Center frequency, including selection of radio standards and channel selection, span or channel width
Functions: Relative/absolute measurements, offsets, units of dBm or watts, or dB or %, minimum and maximum limits

Models	**Frequency range**	
N9913A	100 kHz to 4 GHz	Usable to 5 kHz
N9914A	100 kHz to 6.5 GHz	Usable to 5 kHz
N9915A, N9925A, N9935A	100 kHz to 9 GHz	Usable to 5 kHz
N9916A, N9926A, N9936A	100 kHz to 14 GHz	Usable to 5 kHz
N9917A, N9927A, N9937A	100 kHz to 18 GHz	Usable to 5 kHz
N9918A, N9928A, N9938A	100 kHz to 26.5 GHz	Usable to 5 kHz

Amplitude accuracy

	Spec (23 ± 5 °C)	Typical (23 ± 5 °C)	Spec (-10 to 55 °C)	Typical (-10 to 55 °C)
100 kHz to 18 GHz	± 0.8 dB	± 0.35 dB	± 1.0 dB	± 0.50 dB
> 18 GHz to 26.5 GHz	± 1.0 dB	± 0.50 dB	± 1.2 dB	± 0.60 dB

External USB power sensor support, Option 302

The external USB power sensor option supports various Agilent USB power sensors. For an up-to-date listing of the supported power sensors, visit http://www.agilent.com/find/fieldfoxsupport

Setup parameters: Frequency
Functions: Relative/absolute measurements, offsets, units of dBm or watts, or dB or %, minimum and maximum limits

Built-in GPS receiver, Option 307

GPS receiver	The internal GPS receiver can be used as a frequency reference.[1]
Modes	Off, internal, external
Sync clock	On, off
Functionality	Geo-location: latitude, longitude, altitude, time, sync time/date
Connector for antenna	SMA (f), 3.3 V

[1] *External GPS USB receivers can be used to provide geo-location data. However, they cannot be used for frequency reference locking.*

DC Bias variable-voltage source, Option 309

	Nominal
Connector	SMB (m)
Voltage	+1 to +32 V
Resolution	0.1 V
Maximum current[1]	0.65 A
DC current readout resolution	0.01 A
Maximum power[1]	7 watts
Display read out	Voltage, current

Remote control capability, Option 030

Option 030 adds remote *control* capability to FieldFox analyzers, so that FieldFox can be controlled via an iOS device. The FieldFox app, running on the iOS device, combined with Option 030 on the FieldFox analyzer provides full control of the instrument from a remote location. The app emulates the front panel of FieldFox, so users can press the FieldFox hardkeys or softkeys using their iPhone or iPad, and make measurements remotely.

For example, a tower climber can be on the tower with a FieldFox analyzer, while the technician controls and makes the measurements down below, using an iPad. The iPad and FieldFox communicate via a network connection.

iOS device requirements

- *iPad*, *iPhone*, or *iPod Touch*
- iOS of 5.1 or higher
- A WiFi or 3G/4G connection

The FieldFox app communicates with FieldFox via a network connection, so both the iOS device and FieldFox need to be on a network where both devices can reach the other. For example, a company intranet or a site installation using a wireless router. FieldFox can directly be connected to a LAN cable, or if wired LAN is not available, a user supplied wireless router can be configured to work with FieldFox. FieldFox does not include a wireless router.

FieldFox app without Option 030

The FieldFox app can be installed on an iOS device independent of the presence of Option 030 on the analyzer. Without Option 030, users can *view* the live display screen of their FieldFox remotely, but cannot *control* the instrument. With 030 purchased and installed on their FieldFox, users can both *view* and *control* their FieldFox. Control refers to the ability to press hardkeys, softkeys, make or change measurements, etc.

Option 030 does not include the iOS device itself. Users must supply their own iOS device. Option 030 is a license on the FieldFox analyzer.

Option 030 and the FieldFox app are not applicable to Android, BlackBerry, or Windows phone/tablet devices.

General information

Calibration cycle	1 year
Weight	3.0 kg or 6.6 lbs. including battery
Dimensions: H x W x D	292 x 188 x 72 mm 11.5″ x 7.4″ x 2.8″
Environmental	
MIL-PRF-28800F Class 2	Operating temperature Storage temperature Operating humidity Random vibration Functional shock Bench drop
Maximum humidity	95%
Altitude – operating	9144 m or 30,000 ft (using battery)
Altitude – Non-operating	15,240 m or 50,000 ft
Altitude – AC to DC adapter	3000 m or 9840 ft
Ingress protection	IP53 IEC/EN 60529 (IP rating for instrument by itself, with no cover)
Temperature range	
Operating, AC power, spec	-10 to 55 °C 14 to 131 °F
Operating, battery, spec	-10 to 50 °C 14 to 122 °F
Operating, battery, typical	-10 to 55 °C 14 to 131 °F
Storage, spec[2]	-51 to 71 °C -60 to 160 °F
Complies with European EMC directive 2004/108/EC	IEC/EN 61326–1 CISPR Pub 11 Group 1, class B, Group 1 limit of CISPR 11:203/EN 55011:2007 AS/NZS CISPR 11 ICES/NMB–001
Complies with European low voltage directive 2006/95/EC	IEC/EN 61010–1 2nd Edition Canada: CSA C22.2 No. 61010–1–04 USA: UL 61010–1 2nd Edition
Explosive environment	This product has been type tested to meet the requirements for operation in explosive environments in accordance with MIL-STD-810G, Method 511.5, Procedure I.″

[1] Battery life will be reduced when DC source is used. A trip function turns off the power supply when the rated current or power is exceeded.

[2] The battery packs should be stored in an environment with low humidity. Extended exposure to temperature above 45 °C could degrade battery performance and life.

General information *continued*

Power supply	
External DC input	15 to 19 VDC, 40 watts maximum when battery charging
External AC power adapter	Efficiency level IV, 115 VAC
Input	100 to 250 VAC, 50 to 60 Hz, 1.25-0.56 A
Output	15 VDC, 4 A
Power consumption	14 watts typical
Battery	
Lithium ion	10.8 V, 4.6 A-h
Operating time	3.5 hours (typical)
Charge time: A fully discharged battery takes about 1.5 hours to recharge to 80%. Four hours to 100%.	
Discharge temperature limits	-10 to 60 °C, ≤ 85% RH
Charge temperature limits	0 to 45 °C, ≤ 85% RH
Storage temperature limits	-20 to 50 °C, ≤ 85 % RH The battery packs should be stored in an environment with low humidity. Extended exposure to temperature above 45 °C could degrade battery performance and life.
Test port connectors	
Models ≤ 18 GHz	Type-N (f)
Models > 18 GHz	3.5 mm (m), unless Type-N (f) option ordered
Display	6.5″ transflective color VGA-LED backlit
Headphone jack connector	3.5 mm (⅛ inch) miniature audio jack
USB-A, 2-ports	Hi-speed USB 2.0
Mini USB, 1-port	Hi-speed USB 2.0; provided for future use
LAN	100 base-T, RJ-45 connector Used for programming, data saving, and connection to Data Link software
Programming	SCPI, using the built-in LAN interface
Languages	English, Spanish, German, Italian, French, Russian, Japanese, Chinese, and Turkish

Limit lines
The limit line capabilities listed in this section apply to the cable and antenna analyzer, network analyzer and spectrum analyzer modes in all FieldFox analyzers.
Limit lines can be a combination of horizontal lines, sloping lines, or discrete data points
Limit types: Fixed or relative
Each trace can have its own limit line
Limit lines can be built from a current trace
Limit segments > 100, limited by memory size
Max limit line number of points: 10,001
Beep: Beep off, Beep on fail, Beep on pass
Pass/fail warning: on/off
Offset and margin: An increase or decrease in the limit line
Save/recall limit lines

Data storage	
Internal	Minimum: 4 GB Minimum states and traces: 1000
External	Supports USB 2.0 compatible memory devices and SD/SDHC memory cards
Data types	Trace, trace+state, picture (png), data (csv), S2P
Secure operation	
Frequency blanking	For protection of sensitive data all frequency information can be turned off.
Erase user data	All user data can be erased on a FieldFox analyzer. For more information visit: http://www.agilent.com/find/securefieldfox
Reference out/trigger out	
Connector	SMB (m), 50 ohm
Output amplitude	≥ 0 dBm
Frequency	10 MHz (1 + frequency reference accuracy)
Trigger out	Reserved for future use
Reference in/trigger in	
Connector	SMA(f), 50 ohm
Reference input	10 MHz, -5 to +10 dBm
Trigger input	3.3 or 5 V TTL logic levels

Carry precision with you.

Every piece of gear in your field kit had to prove its worth. Measuring up and earning a spot is the driving idea behind Agilent's FieldFox analyzers. They're equipped to handle routine maintenance, in-depth troubleshooting and anything in between. Better yet, FieldFox delivers Agilent-quality measurements - wherever you need to go. Add FieldFox to your kit and carry precision with you.

Literature	Number
FieldFox Handheld Analyzers, Brochure	5990-9779EN
FieldFox Combination Analyzers, Technical Overview	5990-9780EN
FieldFox Microwave Spectrum Analyzers, Technical Overview	5990-9782EN
FieldFox Microwave Vector Network Analyzers, Technical Overview	5990-9781EN
FieldFox Handheld Analyzers, Data Sheet	5990-9783EN
FieldFox Handheld Analyzers, Configuration Guide	5990-9836EN
FieldFox RF Analyzer, Technical Overview	5989-8618EN
FieldFox RF Analyzer, Data Sheet	N9912-90006
FieldFox RF Vector Network Analyzer, Technical Overview	5990-5087EN
FieldFox RF Vector Network Analyzer, Data Sheet	5990-5363EN

Download application notes, watch videos, and learn more:
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(BP-3-1-13)

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© Agilent Technologies, Inc. 2012, 2013
Published in USA, May 21, 2013
5990-9783EN

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