1-Port USB VNA - R54
Extended Specifications

COPPER MOUNTAIN™
TECHNOLOGIES

- **Patent US 9,291,657** - No test cable needed
- **Frequency range:** 85 MHz - 5.4 GHz
- **Measurement time per point:** 200 µs min typ.
- **Automation programming** in LabView, Python, MATLAB, .NET, etc.
- Up to **100,001 measurement points**
- **Time domain and gating** included standard

EXTEND YOUR REACH™

Specifications[1]

Measurement Range

Impedance	50 Ohm
Test port connector	type N, male
Number of test ports	1
Frequency range	85 MHz to 5.4 GHz
Full frequency accuracy	$\pm 5 \cdot 10^{-6}$
Frequency resolution	10 Hz
Number of measurement points	2 to 100,001
Measurement bandwidths (with 1/3 steps)	10 Hz to 30 kHz
Cable loss measurement range	35 dB
Dynamic range[2]	97 dB typ.

Measurement Accuracy[3]

Accuracy of reflection measurements[4]	Magnitude / Phase
-15 dB to 0 dB	± 0.4 dB / $\pm 4°$
-25 dB to -15 dB	± 1.2 dB / $\pm 8°$
-35 dB to -25 dB	± 4.0 dB / $\pm 22°$
Accuracy of transmission magnitude measurements	Magnitude
-40 dB to 0 dB	± 1 dB
Trace noise magnitude[6]	0.015 dB rms
Temperature dependence	0.020 dB/°C

Effective System Data

85 MHz to 4.8 GHz	
Directivity	45 dB
Source match	37 dB
Reflection tracking	± 0.10 dB

Factory-Calibrated System Data

85 MHz to 4 GHz	
Directivity	36 dB
4 GHz to 4.8 GHz	
Directivity	32 dB

Uncorrected System Performance

85 MHz to 4.8 GHz	
Directivity	18 dB
Source match	18 dB

Specifications[1]

Test Port

Output power	
High level	-10 dBm typ.
Low level	-30 dBm typ.
Interference immunity	+17 dBm
Damage level	+23 dBm
Damage DC voltage	50 V

Measurement Speed

Time per point	200 µs typ.

System & Power

Operating system	Windows 7 and above
CPU frequency	1.0 GHz
RAM	2 GB
Interface	USB 2.0
Connector type	Mini USB B
Power consumpion	2 W

Calibration

Recommended factory adjustment interval	3 Years

Dimensions

Weight	0.25 kg (8.8 oz)
Length	120 mm
Width	43 mm
Height	23 mm

Environmental Specifications

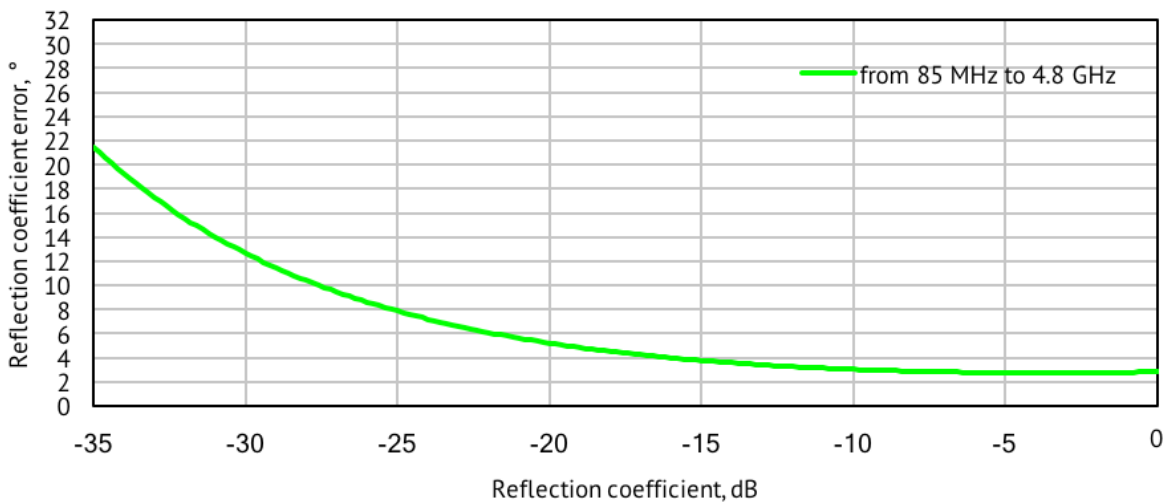| Operating temperature	-10 °C to +50 °C (14 °F to 122 °F)
Storage temperature	-50 °C to +70 °C (-58 °F to 158 °F)
Humidity	90 % at 25 °C (77 °F)
Atmospheric pressure	70.0 kPa to 106.7 kPa

Reflection Accuracy Plots

Reflection Magnitude Errors
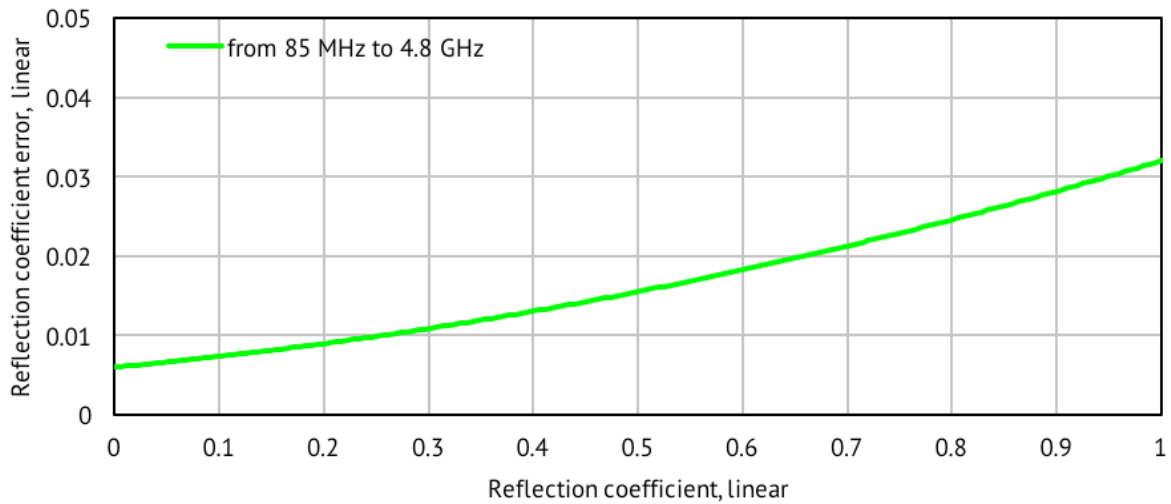
Specifications are based on isolating DUT $(S_{21} = S_{12} = 0)$
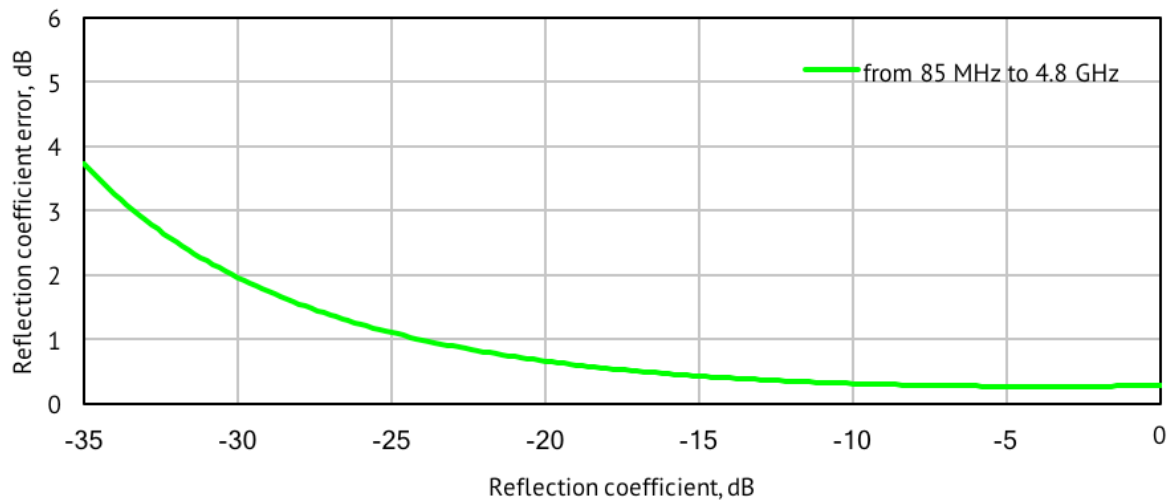
Specifications are based on isolating DUT $(S_{21} = S_{12} = 0)$

Technology is supposed to move. It's supposed to change and update and progress. It's not meant to sit stagnant year after year simply because that's how things have always been done.

The engineers at Copper Mountain Technologies are creative problem solvers. They know the people using VNAs don't just need one giant machine in a lab. They know that VNAs are needed in the field, requiring portability and flexibility. Data needs to be quickly transferred, and a test setup needs to be easily automated and recalled for various applications. The engineers at Copper Mountain Technologies are rethinking the way VNAs are developed and used.

Copper Mountain Technologies' VNAs are designed to work with the Windows PC you already use via USB interface. After installing the test software, you have a top-quality VNA at a fraction of the cost of a traditional analyzer. The result is a faster, more effective test process that fits into the modern workspace. This is the creativity that makes Copper Mountain Technologies stand out above the crowd.

We're creative. We're problem solvers.

	R54	R60	R140	R180
Frequency Range	85 MHz to 5.4 GHz	1 MHz to 6 GHz	85 MHz to 14 GHz	1 MHz to 18 GHz
External frequency reference	No	10 MHz	32 MHz	10 MHz
External trigger	No	Input/Output	Input	Input/Output
Power connector	USB mini-B	Reinforced (rugged) USB mini-B	USB mini-B	Reinforced (rugged) USB-C or +5V external
Adjustable output power	Hi/Low/Off	0.25 dB steps	Hi/Low/Off	0.05 dB steps
S21, S12 measurements	Scalar, with specialized software (available upon request)		Scalar, with specialized software (available upon request)	

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