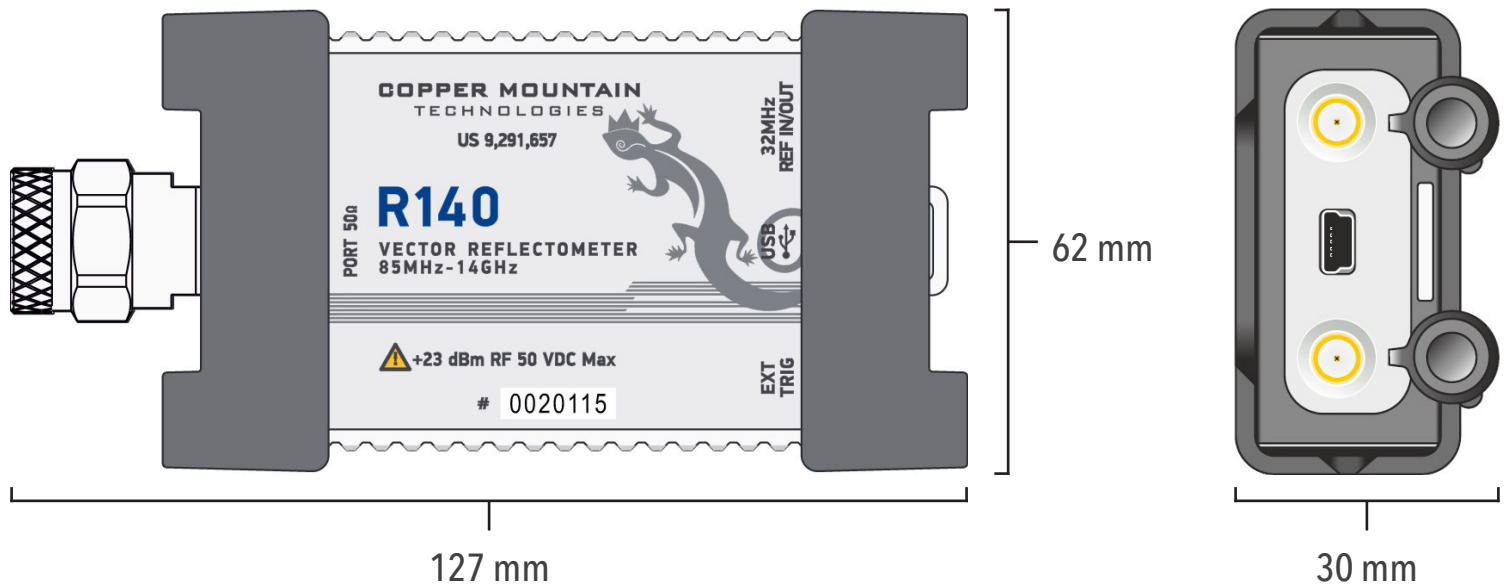


# R140 Specifications<sup>1</sup>



## Primary Specifications

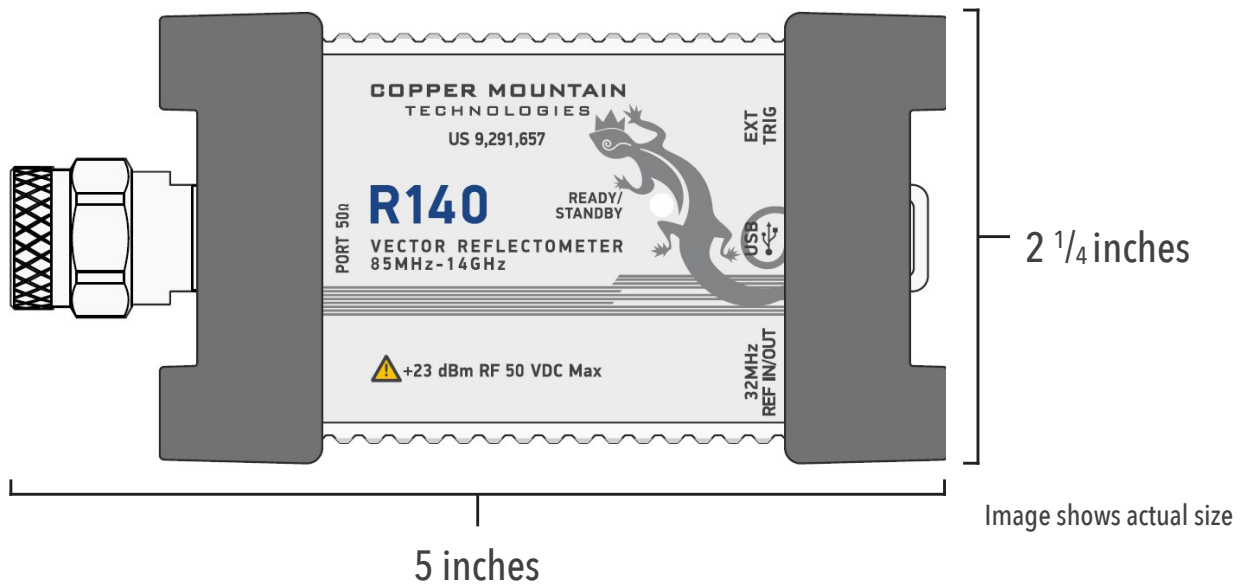
Impedance	50 Ohm
Test port connector	type N, male
Number of test ports	1
Frequency range	85 MHz to 14 GHz
Full frequency accuracy	$\pm 2.5 \cdot 10^{-6}$
Frequency resolution	25 Hz
Number of measurement points	2 to 100,001
Measurement bandwidths (with 1/3 steps)	10 Hz to 30 kHz
Cable loss measurement range	
85 MHz to 4.8 GHz	35 dB
4.8 GHz to 14 GHz	30 dB
Dynamic range <sup>2</sup>	
85 MHz to 4.8 GHz	107 dB typ.
4.8 GHz to 14 GHz	70 dB typ.

## Measurement Accuracy

Accuracy of reflection measurements <sup>4</sup>	Magnitude / Phase
85 MHz to 4.8 GHz	
-15 dB to 0 dB	$\pm 0.4$ dB / $\pm 4^\circ$
-25 dB to -15 dB	$\pm 1.2$ dB / $\pm 8^\circ$
-35 dB to -25 dB	$\pm 4.0$ dB / $\pm 22^\circ$
4.8 GHz to 14 GHz	
-15 dB to 0 dB	$\pm 0.5$ dB / $\pm 5^\circ$
-25 dB to -15 dB	$\pm 1.5$ dB / $\pm 10^\circ$
-35 dB to -25 dB	$\pm 5.5$ dB / $\pm 30^\circ$
Accuracy of transmission magnitude measurements <sup>5</sup>	Magnitude
85 MHz to 4.8 GHz	
-50 dB to 0 dB	$\pm 1$ dB
4.8 GHz to 14 GHz	
-40 dB to 0 dB	$\pm 1$ dB
Trace noise magnitude <sup>6</sup>	
85 MHz to 4.8 GHz	0.005 dB rms
4.8 GHz to 14 GHz	0.050 dB rms
Temperature dependence	
85 MHz to 4.8 GHz	0.015 dB/°C
4.8 GHz to 14 GHz	0.035 dB/°C

## Effective System Data<sup>2</sup>

85 MHz to 4.8 GHz	
Directivity	45 dB
Source match	37 dB
Reflection tracking	$\pm 0.10$ dB
4.8 GHz to 14 GHz	
Directivity	42 dB
Source match	35 dB
Reflection tracking	$\pm 0.20$ dB



### Test Port

<b>Output power</b>	
85 MHz to 4.8 GHz	
High level	0 dBm
Low level	-35 dBm
4.8 GHz to 14 GHz	-10 dBm
<b>Interference immunity</b>	+17 dBm
<b>Damage level</b>	+23 dBm
<b>Damage DC voltage</b>	50 V

### Measurement Speed

<b>Time per point</b>	200 $\mu$ s typ.
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### Frequency Reference Input

<b>Port</b>	Ref In / Out
<b>External reference frequency</b>	32 MHz
<b>Input level</b>	0 dBm to 4 dBm
<b>Input impedance</b>	50 Ohm
<b>Connector type</b>	SMA, female

### Frequency Reference Output

<b>Port</b>	Ref In / Out
<b>Internal reference frequency</b>	32 MHz
<b>Output reference signal level at 50 Ohm impedance</b>	-1 dBm to 5 dBm
<b>Connector type</b>	SMA, female

### Trigger Input

<b>Port</b>	Ext Trig
<b>External trigger source</b>	3.3 V CMOS, TTL compatible
<b>Pulse width</b>	$\geq 1 \mu$ s
<b>Polarity</b>	positive or negative
<b>Input impedance</b>	$\geq 10$ kOhm
<b>Connector type</b>	SMA, female

### System & Power

<b>Operating system</b>	Windows 7 and above
<b>CPU frequency</b>	1.0 GHz
<b>RAM</b>	2 GB
<b>Interface</b>	USB 2.0
<b>Connector type</b>	Mini USB B
<b>Power consumption</b>	3 W

### Calibration

<b>Recommended factory adjustment interval</b>	3 Years
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### Environmental Specifications

<b>Operating temperature</b>	+5 °C to +40 °C (41 °F to 104 °F)
<b>Storage temperature</b>	-50 °C to +70 °C (-58 °F to 158 °F)
<b>Humidity</b>	90 % at 25 °C (77 °F)
<b>Atmospheric pressure</b>	70.0 kPa to 106.7 kPa

[1] All specifications subject to change without notice. [2] Measurement of |S21| and |S12| using two reflectometers, both being connected to the same USB hub, applies over the temperature range of (23  $\pm$  5) °C after 30 minutes of warming-up, with less than 1 °C deviation from the calibration temperature at high output power and IF bandwidth 100 Hz. [3] Reflection and transmission measurement accuracy applies over the temperature range of (73  $\pm$  9) °F or (23  $\pm$  5) °C after 30 minutes of warming-up, with less than 1 °C deviation from calibration temperature, at high output power and IF BW 100 Hz. Frequency points have to be identical for measurement and calibration (no interpolation allowed). [4] Reflection specifications are based on an isolating DUT. [5] Transmission specifications are based on a matched DUT. Measurement of |S21| and |S12| using two devices, both being connected to the same USB hub. [6] IF bandwidth 1 kHz. © Copper Mountain Technologies - www.coppermountaintech.com - Rev. 2019Q1