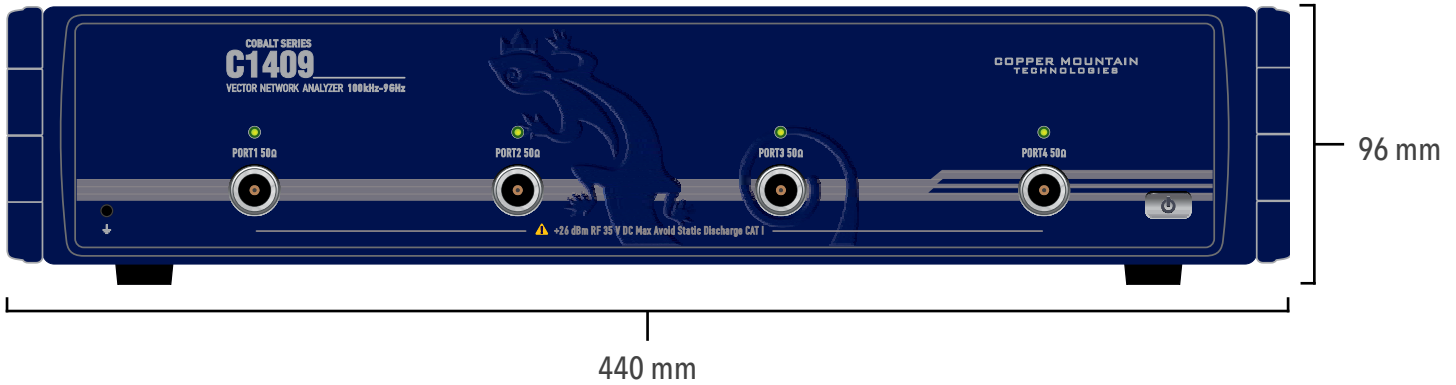


# C1409 Specifications<sup>1</sup>



## Primary Specifications

Impedance	50 Ohm
Test port connector	N-type Female
Number of test ports	4
Frequency range	100 kHz to 9.0 GHz
Full CW Frequency	$\pm 2 \times 10^6$
Frequency setting resolution	1 Hz
Number of measurement points	2 to 500,001
Measurement bandwidths with 1/1.5/2/3/5/7 steps	1 Hz to 2 MHz
Dynamic range	
100 kHz to 1 MHz; 1 Hz IF BW	115 dB
1 MHz to 8 GHz; 1 Hz IF BW	158 dB/162 dB, typ.
8 GHz to 9 GHz; 1 Hz IF BW	148 dB/152 dB, typ.
Time per point (Typ.)	10 $\mu$ sec
Port switchover time (Typ.)	0.2 msec

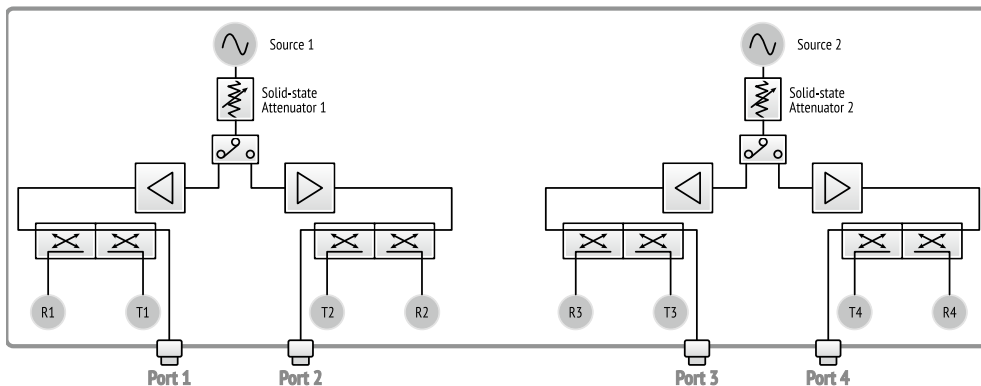
## Effective System Data

Effective directivity	46 dB
Effective source match	40 dB
Effective load match	46 dB

## Measurement Accuracy

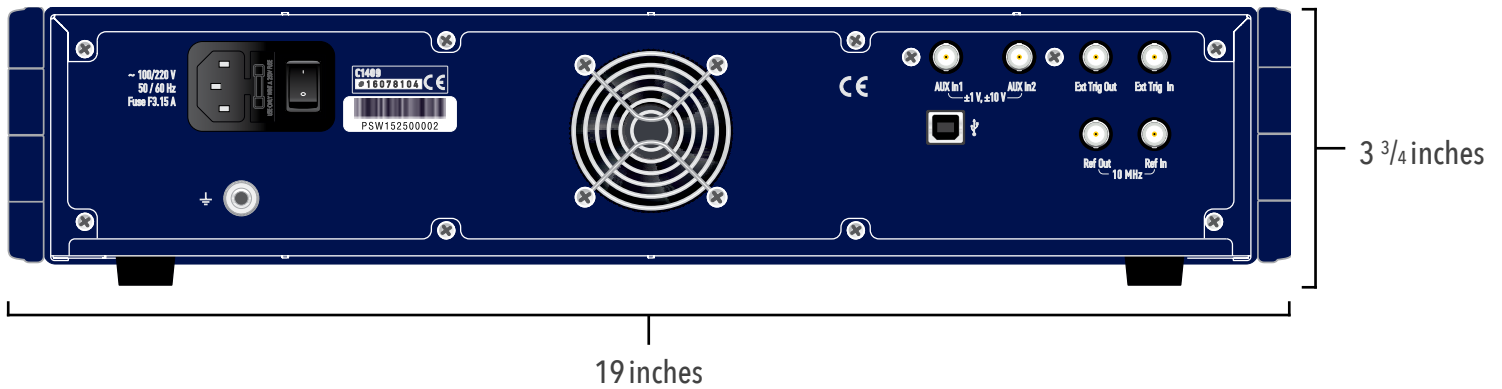
Transmission <sup>2</sup>	(Magnitude/Phase)
100 kHz to 1 MHz	
5 dB to 15 dB	0.2 dB/2°
-30 dB to 5 dB	0.1 dB/1°
-50 dB to -30 dB	0.2 dB/2°
-70 dB to -50 dB	1.0 dB/6°
1 MHz to 8 GHz	
5 dB to 15 dB	0.2 dB/2°
-70 dB to 5 dB	0.1 dB/1°
-90 dB to -70 dB	0.2 dB/2°
-110 dB to -90 dB	1.0 dB/6°
8 GHz to 9 GHz	
5 dB to 15 dB	0.2 dB/2°
-60 dB to 5 dB	0.1 dB/1°
-80 dB to -60 dB	0.2 dB/2°
-100 dB to -80 dB	1.0 dB/6°
Reflection	(Magnitude/Phase)
-15 dB to 0 dB	0.4 dB/3°
-25 dB to -15 dB	1.0 dB/6°
-35 dB to -25 dB	3.0 dB/20°
Trace noise magnitude (3 kHz IF BW)	
100 kHz to 1 MHz	0.005 dB RMS
1 MHz to 9 GHz	0.001 dB RMS
Temperature dependence	0.020 dB/°C, 0.010 dB/°C typ.

## Schematic Diagram of Cobalt C1409



[1] All specifications subject to change without notice.

[2] At 23 °C +/- 5 °C after warmup time, with +/- 1°C ambient deviation from calibration temperature, at high output power



### Test Port

<b>Directivity (without system error correction)</b>	
100 kHz to 1 MHz	12 dB
1 MHz to 9 GHz	18 dB

### Test Port Output

<b>Match (without system error correction)</b>	
100 kHz to 1 MHz	12 dB
1 MHz to 9 GHz	20 dB
<b>Power Range</b>	-60 dBm to +15 dBm
<b>Power Accuracy</b>	±1.5 dB
<b>Power Resolution</b>	0.050 dB
<b>Harmonic distortion (Power out 0 dBm)</b>	-25 dBc
<b>Non-harmonic spurious (Power out 0 dBm)</b>	-30 dBc

### Test Port Input

<b>Match (without system error correction)</b>	
100 kHz to 1 MHz	12 dB
1 MHz to 9 GHz	20 dB
<b>Damage Level</b>	+26 dBm
<b>Damage DC Voltage</b>	35 V
<b>Noise Floor</b>	
100 kHz to 1 MHz	-100 dBm/Hz
1 MHz to 8 GHz	-143 dBm/Hz
8 GHz to 9 GHz	-133 dBm/Hz

### Measurement Speed

Number of points (IF bandwidth 1 MHz)	Uncorrected	2-Port Calibration
51	1.0 ms	2.0 ms
201	2.6 ms	5.0 ms
401	4.6 ms	9.0 ms
1601	16.7 ms	33.3 ms

### External Reference Input

<b>Connector type</b>	BNC Female
<b>External reference frequency</b>	10 MHz
<b>Input level</b>	-2 dBm to 4 dBm
<b>Input impedance at &lt;&lt;Ref IN 10 MHz&gt;&gt;</b>	50 Ohm

### External Reference Output

<b>&lt;&lt;OUT 10 MHz&gt;&gt; connector type</b>	BNC Female
<b>Output reference signal level at 50 Ohm impedance</b>	0 dBm to 2 dBm

### External Trigger Input

<b>Type</b>	BNC, Female
<b>Input level low threshold voltage</b>	0.8 V
<b>Input level high threshold voltage</b>	2.7 V
<b>Input level range</b>	0 to 5 V
<b>Pulse width</b>	2 µsec
<b>Polarity</b>	Positive or Negative

### External Trigger Output

<b>Type</b>	BNC, Female
<b>Maximum output current</b>	20 mA
<b>Output level low threshold voltage</b>	0.4 V
<b>Output level high threshold voltage</b>	3.0 V
<b>Polarity</b>	Positive or Negative

### System & Power

<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>	84.0 kPa to 106.7 kPa
<b>Power Supply</b>	110-240 V, 50-60 Hz
<b>Power Consumption</b>	75.0 W
<b>Weight</b>	10 kg/353 oz

### Factory Adjustment

<b>Recommended Factory Adjustment Interval</b>	3 Years
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