

S5243 Specifications¹



Primary Specifications

Impedance	50 Ohm
Test port connector	NMD 2.4 mm, male
Number of test ports	2
Frequency range	10 MHz to 43.5 GHz
Full frequency accuracy	$\pm 2 \cdot 10^{-6}$
Frequency 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 ²	
10 MHz to 8 GHz	135 dB (140 dB typ.)
8 GHz to 43.5 GHz	125 dB (130 dB typ.)

Measurement Accuracy

Accuracy of transmission measurements ⁴	Magnitude / Phase
10 MHz to 8 GHz	
0 dB to +10 dB	± 0.2 dB / $\pm 2^\circ$
-55 dB to 0 dB	± 0.1 dB / $\pm 1^\circ$
-75 dB to -55 dB	± 0.2 dB / $\pm 2^\circ$
-95 dB to -75 dB	± 1.0 dB / $\pm 6^\circ$
8 GHz to 43.5 GHz	
0 dB to +10 dB	± 0.2 dB / $\pm 2^\circ$
-45 dB to 0 dB	± 0.1 dB / $\pm 1^\circ$
-65 dB to -45 dB	± 0.2 dB / $\pm 2^\circ$
-85 dB to -65 dB	± 1.0 dB / $\pm 6^\circ$
Accuracy of reflection measurements ⁵	Magnitude / Phase
10 MHz to 26.5 GHz	
-15 dB to 0 dB	± 0.5 dB / $\pm 5^\circ$
-25 dB to -15 dB	± 1.5 dB / $\pm 10^\circ$
-35 dB to -25 dB	± 5.5 dB / $\pm 30^\circ$
26.5 GHz to 43.5 GHz	
-15 dB to 0 dB	± 0.6 dB / $\pm 6^\circ$
-25 dB to -15 dB	± 2 dB / $\pm 12^\circ$
-35 dB to -25 dB	± 7.5 dB / $\pm 35^\circ$
Trace noise magnitude (IF bandwidth 3 kHz)	
10 MHz to 43.5 GHz	0.004 dB rms
Temperature dependence	
10 MHz to 6 GHz	0.02 dB/°C
6 GHz to 43.5 GHz	0.04 dB/°C

[1] All specifications subject to change without notice. [2] The dynamic range is defined as the difference between the specified maximum power level and the specified noise floor. The specification applies at 10 Hz IF bandwidth. [3] Reflection and transmission measurement accuracy applies over the temperature range of (73 ± 9) °F or (23 ± 5) °C after 40 minutes of warming-up, with less than 1 °C deviation from the full two-port calibration temperature, at output power of -10 dBm. Frequency points have to be identical for measurement and calibration (no interpolation allowed). [4] Transmission specifications are based on a matched DUT, and IF bandwidth of 10 Hz. [5] Reflection specifications are based on an isolating DUT. [6] Specification applies over entire frequency range at output power of 0 dBm. © Copper Mountain Technologies - www.coppermountaintech.com - Rev. 2020Q3

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Effective System Data

10 MHz to 26.5 GHz	
Directivity	42 dB
Source match	34 dB
Load match	42 dB
Reflection tracking	±0.15 dB
Transmission tracking	±0.08 dB

Uncorrected System Performance

10 MHz to 43.5 GHz	
Directivity	10 dB
Source match	10 dB
Load match	10 dB

Test Port Output

Power range	-50 dBm to 0 dBm
Power accuracy	±1.5 dB
Power resolution	0.05 dB
Harmonic distortion ⁶	-10 dBc
Non-harmonic spurious ⁶	-10 dBc

Test Port Input

Noise floor	
10 MHz to 8 GHz	145 dBm/Hz (150 dBm/Hz typ.)
8 GHz to 43.5 GHz	135 dBm/Hz (140 dBm/Hz typ.)
Damage level	+23 dBm
Damage DC voltage	15 V

Measurement Speed

Time per point	15 µs typ.
Port switchover time	0.2 ms

Frequency Reference Input

Port	10 MHz Ref In
External reference frequency	10 MHz
Input level	-2 dBm to 4 dBm
Input impedance	50 Ohm
Connector type	BNC, female

Frequency Reference Output

Port	10 MHz Ref Out
Internal reference frequency	10 MHz
Output reference signal level at 50 Ohm impedance	0 dBm to 2 dBm
Connector type	BNC, female

Trigger Input

Port	Ext Trig In
Input level	
Low threshold voltage	0.8 V
High threshold voltage	2.7 V
Input level range	0 V to + 5 V
Pulse width	≥2 µs
Polarity	positive or negative
Input impedance	≥10 kOhm
Connector type	BNC, female

Trigger Output

Port	Ext Trig Out
Maximum output current	20 mA
Output level	
Low level voltage	0.4 V
High level voltage	3.0 V
Polarity	positive or negative
Connector type	BNC, female

System & Power

Operating system	Windows 7 and above
CPU frequency	1.0 GHz
RAM	512 MB
Interface	USB 2.0
Connector type	USB B
Power supply	110-240 V, 50/60 Hz
Power consumption	45 W

Factory Adjustment

Recommended factory adjustment interval	3 years
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Environmental Specifications

Operating temperature	+5 °C to +40 °C (41 °F to 104 °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