COPPER MOUNTAIN® TECHNOLOGIES
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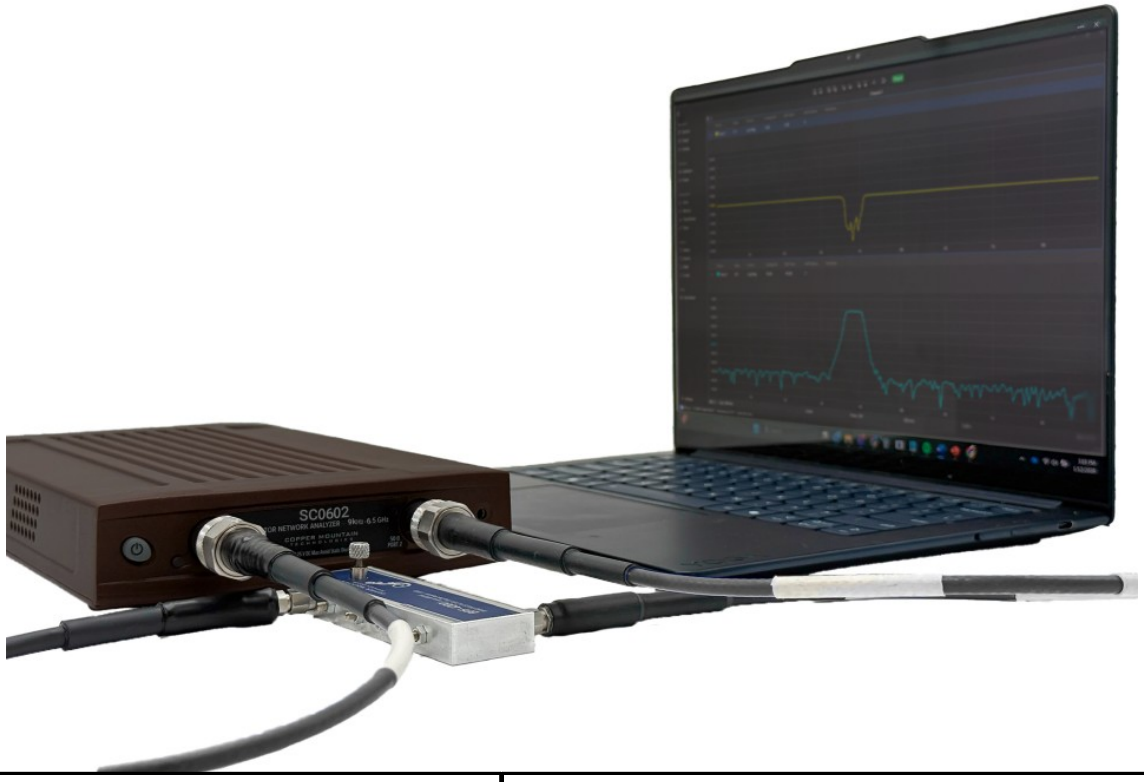
Select Series up to 9GHz Vector Network Analyzer Specifications



SC0402	9 kHz to 4.5 GHz
SC0602	9 kHz to 6.5 GHz
SC0902	9 kHz to 9 GHz

Revision 26.00 22.05.2026

U.S.: +1.317.222.5400
Latin America: +1.954.495.3459
Singapore: +65.63.23.6546
EMEA: +44 75 03 69 21 13

General Overview

SC0402

Frequency range	9 kHz to 4.5 GHz
Measured parameters	S11, S21, S12, S22
Sweep types	linear frequency, log frequency, segment, power sweep
Dynamic range	>130 dB typ. (10 Hz IF BW)
Measurement speed	25 µs typ.
Output power adjustment range	-50 dBm to +5 dBm
Measurement points per sweep	up to 500,001
Software	S2VNA

SC0602

Frequency range	9 kHz to 6.5 GHz
Measured parameters	S11, S21, S12, S22
Sweep types	linear frequency, log frequency, segment, power sweep
Dynamic range	>130 dB typ. (10 Hz IF BW)
Measurement speed	25 µs typ.
Output power adjustment range	-50 dBm to +5 dBm
Measurement points per sweep	up to 500,001
Software	S2VNA

SC0902

Frequency range	9 kHz to 9 GHz
Measured parameters	S11, S21, S12, S22
Sweep types	linear frequency, log frequency, segment, power sweep
Dynamic range	>130 dB typ. (10 Hz IF BW)
Measurement speed	25 µs typ.
Output power adjustment range	-50 dBm to +5 dBm
Measurement points per sweep	up to 500,001
Software	S2VNA

Hardware Specifications

Select Series
SC0402/SC0602/SC0902

[1] All specifications subject to change without notice.

Measurement Range

Impedance	50 Ohm
Test port connector	type N, female
Number of test ports	2
Frequency range	
SC0402	9 kHz to 4.5 GHz
SC0602	9 kHz to 6.5 GHz
SC0902	9 kHz to 9 GHz
Full frequency accuracy	$\pm 5 \cdot 10^{-6}$
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 300 kHz
Dynamic range[2]	
9 kHz to 100 kHz	95 dB
100 kHz to 10 MHz	115 dB
10 MHz to 4.5 GHz	130 dB (135 dB typ.)
4.5 GHz to 6.5 GHz	125 dB (130 dB typ.)
6.5 GHz to 9.0 GHz	123 dB (130 dB typ.)

[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.

Measurement Accuracy[3]

Accuracy of transmission measurements[4]	Magnitude/Phase
9 kHz to 100 kHz	
0 dB to +10 dB	±0.35 dB / ±3.5°
-15 dB to 0 dB	±0.25 dB / ±2.5°
-35 dB to -15 dB	±0.35 dB / ±3.5°
-55 dB to -35 dB	±1.2 dB / ±8.0°
100 kHz to 10 MHz	
0 dB to +10 dB	±0.35 dB / ±3.5°
-35 dB to 0 dB	±0.25 dB / ±2.5°
-55 dB to -35 dB	±0.35 dB / ±3.5°
-75 dB to -55 dB	±1.2 dB / ±8.0°
10 MHz to 4.5 GHz	
0 dB to +10 dB	±0.25 dB / ±2.5°
-50 dB to 0 dB	±0.15 dB / ±1.5°
-70 dB to -50 dB	±0.25 dB / ±2.5°
-90 dB to -70 dB	±1.1 dB / ±7.5°
4.5 GHz to 9 GHz	
0 dB to +10 dB	±0.25 dB / ±2.5°
-45 dB to 0 dB	±0.15 dB / ±1.5°
-65 dB to -45 dB	±0.25 dB / ±2.5°
-85 dB to -65 dB	±1.1 dB / ±7.5°
Accuracy of reflection measurements[5]	Magnitude/Phase
-15 dB to 0 dB	±0.5 dB / ±4°
-25 dB to -15 dB	±1.5 dB / ±10°
-35 dB to -25 dB	±5.5 dB / ±30°
Trace noise magnitude (IF bandwidth 3 kHz)	
9 kHz to 100 kHz	0.005 dB rms
100 kHz to 10 MHz	0.005 dB rms
10 MHz to 4.5 GHz	0.002 dB rms
4.5 GHz to 9 GHz	0.004 dB rms
Temperature dependence	0.02 dB/°C

[3] Reflection and transmission measurement accuracy applies over the temperature range of (73 ± 9) °F or (23 ± 5) °C after 30 minutes of warming up, with less than 1°C deviation from the full two-port calibration temperature,at output power of -5 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.

Effective System Data

Directivity	42 dB
Source match	38 dB
Load match	42 dB
Reflection tracking	±0.10 dB
Transmission tracking	
9 kHz to 10 MHz	±0.25 dB
10 MHz to 9 GHz	±0.14 dB

Uncorrected System Performance

9 kHz to 100 kHz	
Directivity	8 dB
Source match	10 dB
Load match	10 dB
100 kHz to 6.5 GHz	
Directivity	15 dB
Source match	15 dB
Load match	15 dB
6.5 GHz to 9 GHz	
Directivity	12 dB
Source match	12 dB
Load match	12 dB

Test Port Output

Power range	
9 kHz to 6.5 GHz	-50 dBm to +5 dBm
6.5 GHz to 9 GHz	-50 dBm to +3 dBm
Power accuracy	±1.5 dB
Power resolution	0.05 dB
Harmonic distortion[6]	-15 dBc
Non-harmonic spurious[6]	-20 dBc

[6] Specification applies in the frequency range above 10 MHz, at output power of 0 dBm.

Test Port Input

Noise floor[7]	
9 kHz to 100 kHz	-100 dBm/Hz
100 kHz to 10 MHz	-120 dBm/Hz
10 MHz to 4.5 GHz	-135 dBm/Hz
4.5 GHz to 9 GHz	-130 dBm/Hz
Damage level	+23 dBm
Damage DC voltage	25 V

[7] The receiver noise floor within the 9 kHz to 100 kHz frequency range may be limited by crosstalk (-90 dBm).

Measurement Speed

Time per point	25 µs typ.
Port switchover time	1 ms

Frequency Reference Input

Port	10 MHz Ref In/Out
External reference frequency	10 MHz
Input level	-1 dBm to 5 dBm
Input impedance	50 Ohm
Connector type	BNC, female

Frequency Reference Output

Port	10 MHz Ref In/Out
Internal reference frequency	10 MHz
Output reference signal level at 50 Ohm impedance	-1 dBm to 5 dBm
Connector type	BNC, female

Trigger Input

Port	Ext Trig In
Input level	
Low threshold voltage	0.8 V
High threshold voltage	2.0 V
Input level range	0 V to +3.3 V
Pulse width	≥2 µs
Polarity	positive or negative
Input impedance	≥5 kOhm
Connector type	BNC, female

Trigger Output

Port	Ext Trig Out
Maximum output current	12 mA
Output level	
Low level voltage	0.0 V
High level voltage	3.3 V
Polarity	positive or negative
Connector type	BNC, female

System & Power

Operating system	Windows 10 and above
CPU	4 core 2.0 GHz (x64)
RAM	4 GB
Interface	USB 2.0
Connector type	Type C
Input power (VNA)	9 V DC to 15 V DC
Input power consumption (VNA)	26 W
Power supply (main outlet)	110-240 V, 50/60 Hz
Power consumption (main outlet)	30 W

Calibration

Recommended factory adjustment interval	3 Years

Dimensions

Length	297 mm
Width	160 mm
Height	44 mm
Weight	2.3 kg (70.5 oz)

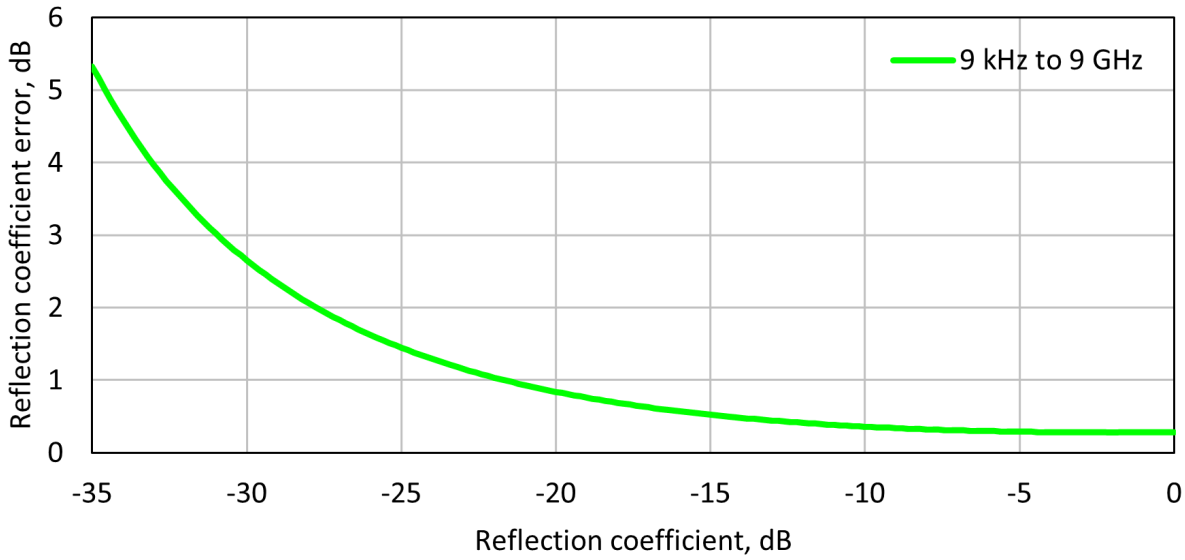
Environmental Specifications

Operating condition	
Temperature	+5 °C to +40 °C (41 °F to 104 °F)
Humidity	90 % at 25 °C (77 °F)
Storage	
Temperature	0 °C to +40 °C (32 °F to 104 °F)
Humidity	80 % at 35 °C (95 °F)
Non-operating temperature	-50 °C to +70 °C (-58 °F to 158 °F)
Atmospheric pressure	70.0 kPa to 106.7 kPa

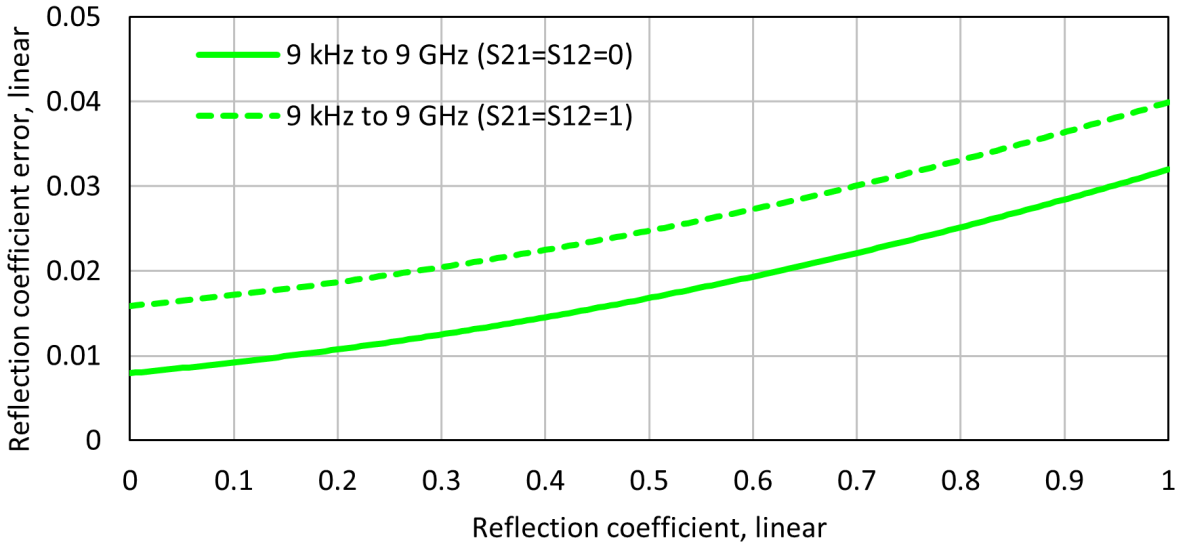
Reflection Accuracy Plots

Reflection Magnitude Errors

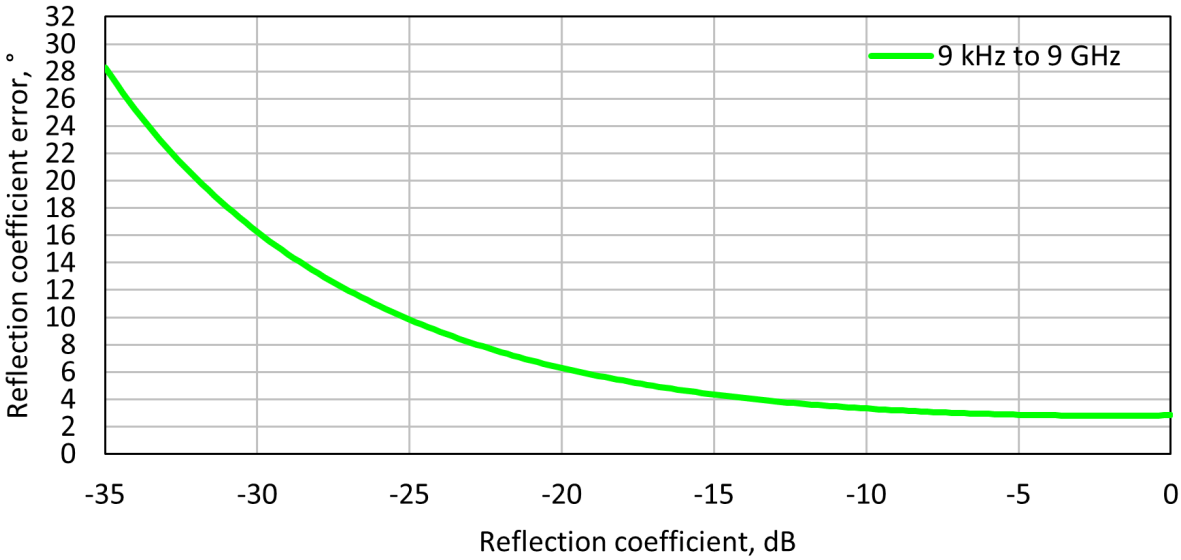




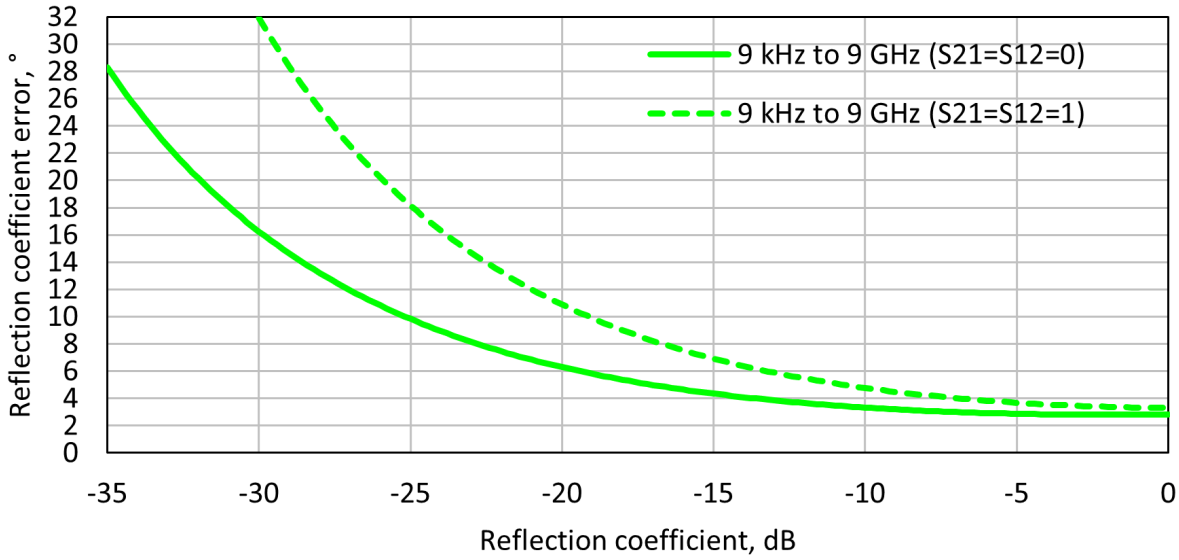
Specifications are based on an isolating DUT (S21 = S12 = 0)



Reflection Phase Errors

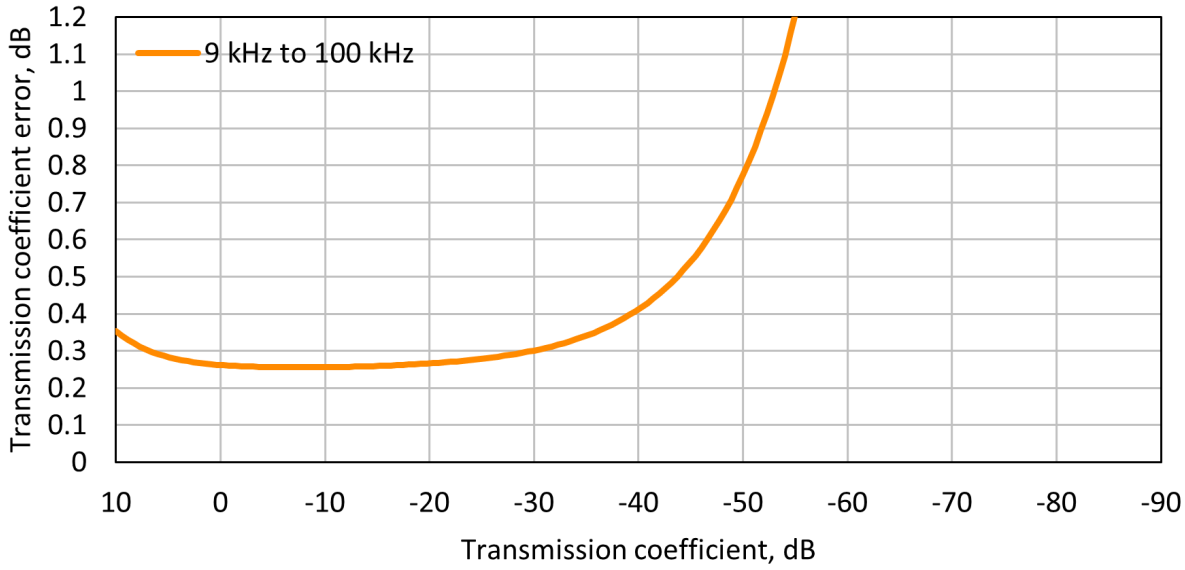


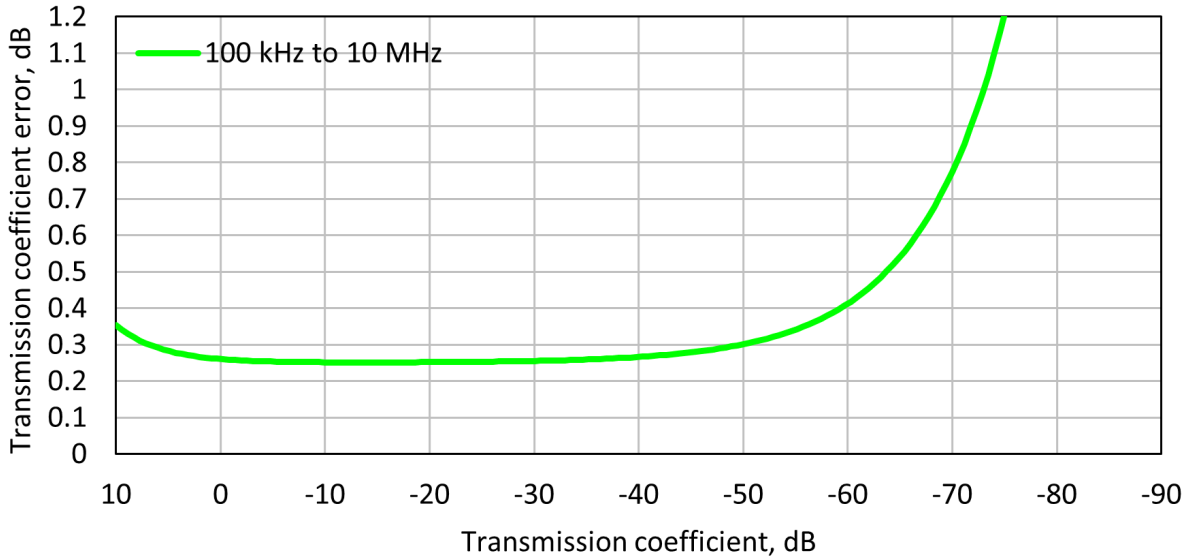
Specifications are based on an isolating DUT (S21 = S12 = 0)

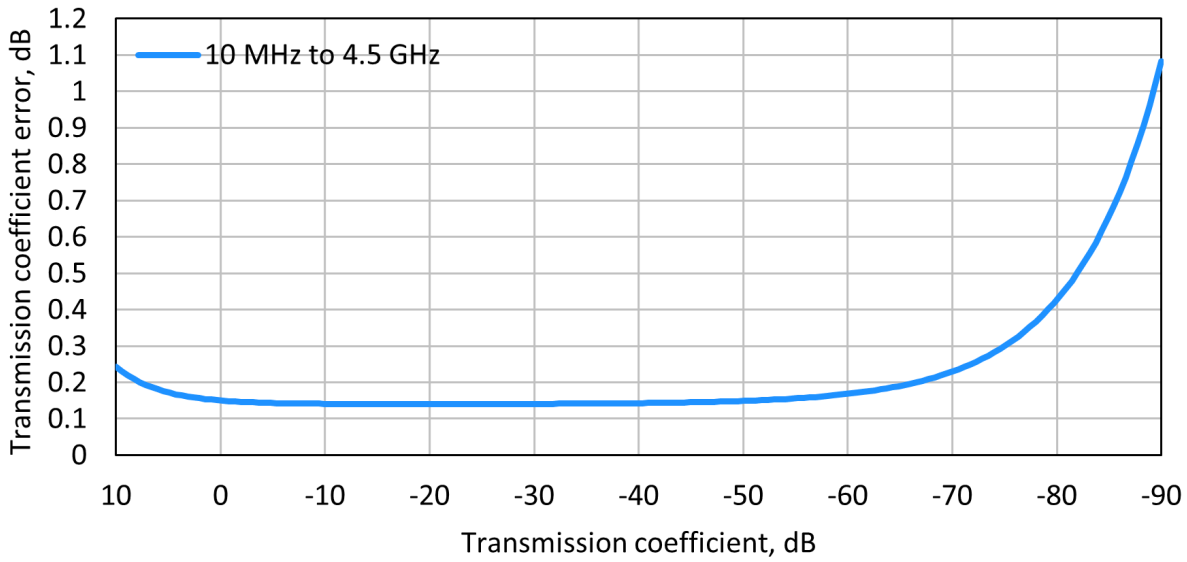

Reflection coefficient error, °
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-35
-30
-25
-20
-15
-10
-5
0
Reflection coefficient, dB
9 kHz to 9 GHz (S21=S12=0)
9 kHz to 9 GHz (S21=S12=1)

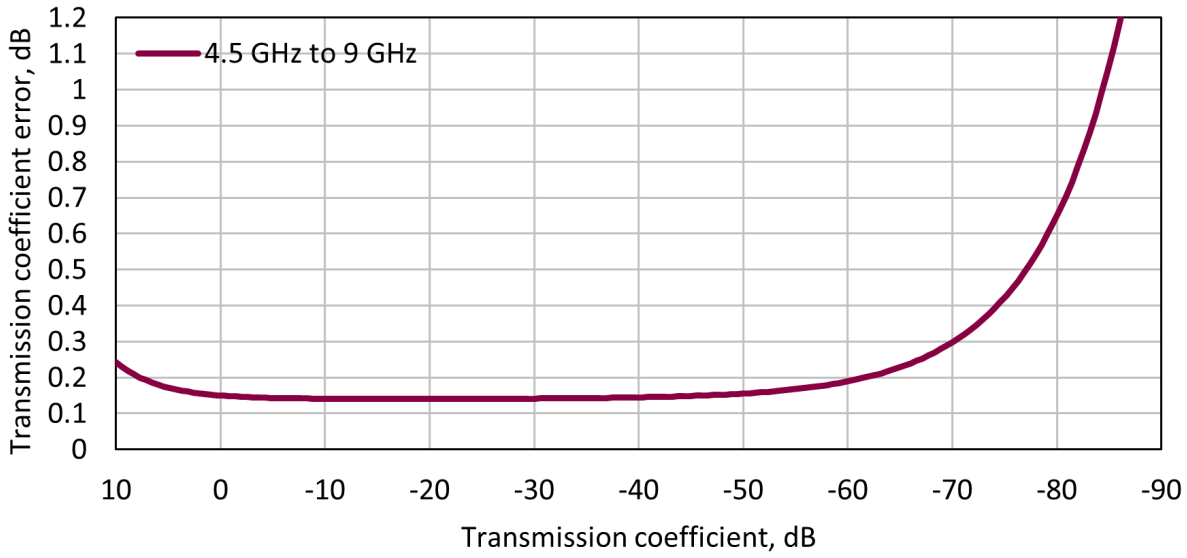
Transmission Accuracy Plots

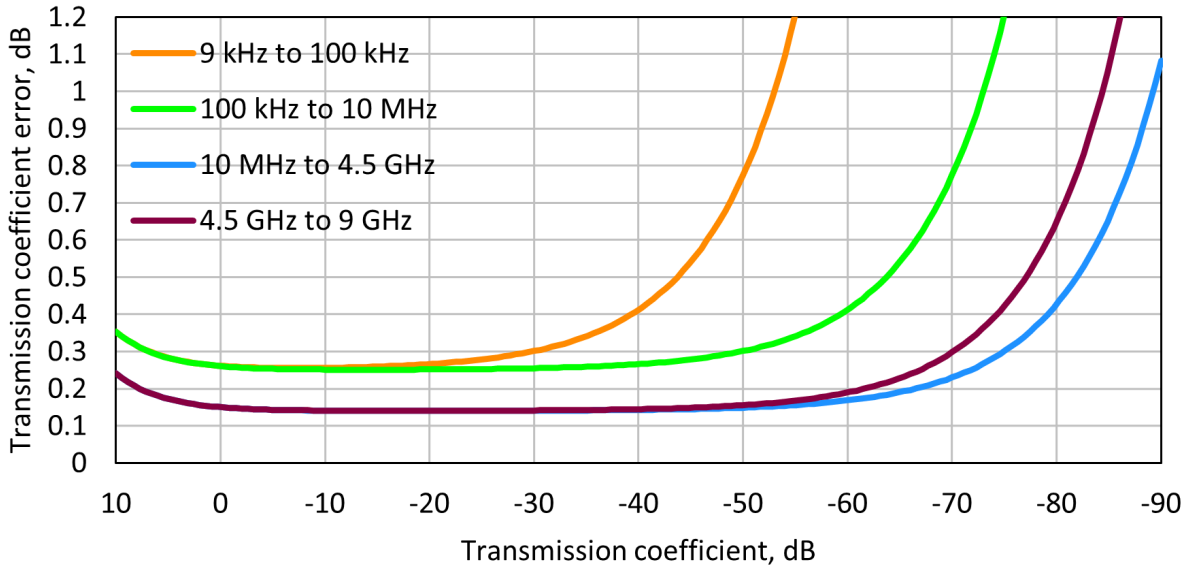
Transmission Magnitude Errors





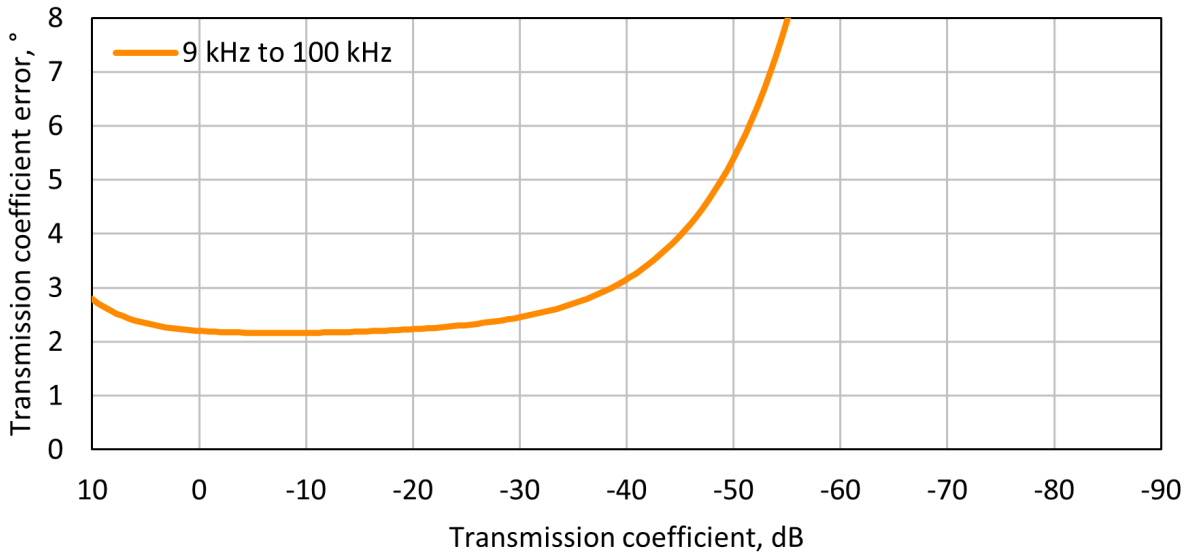

10 MHz to 4.5 GHz
Transmission coefficient error, dB
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Transmission coefficient, dB

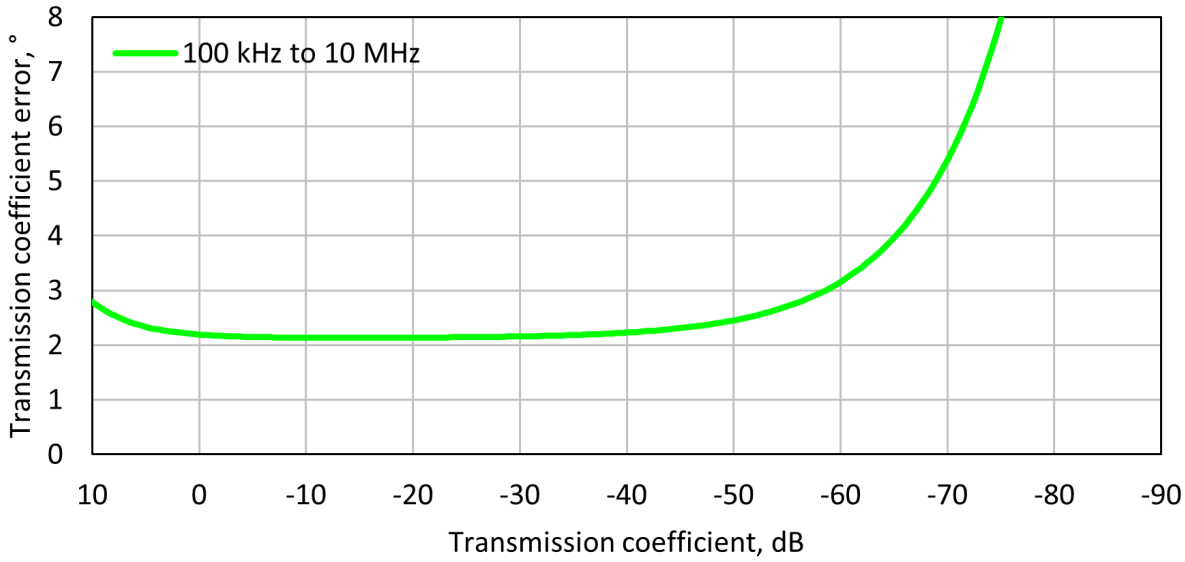

4.5 GHz to 9 GHz
Transmission coefficient error, dB
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Transmission coefficient, dB

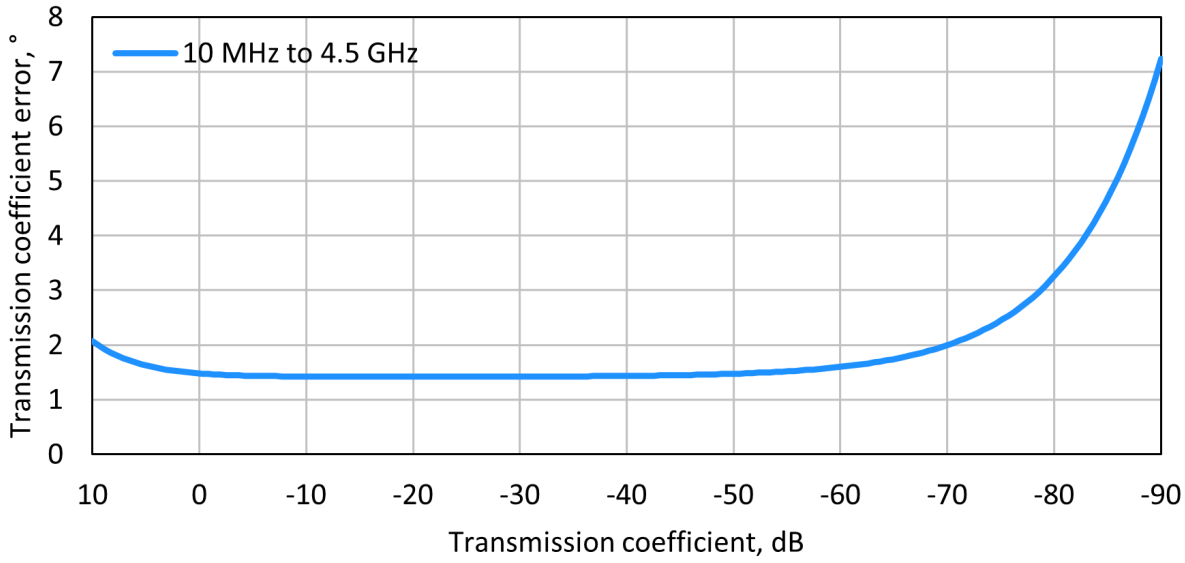


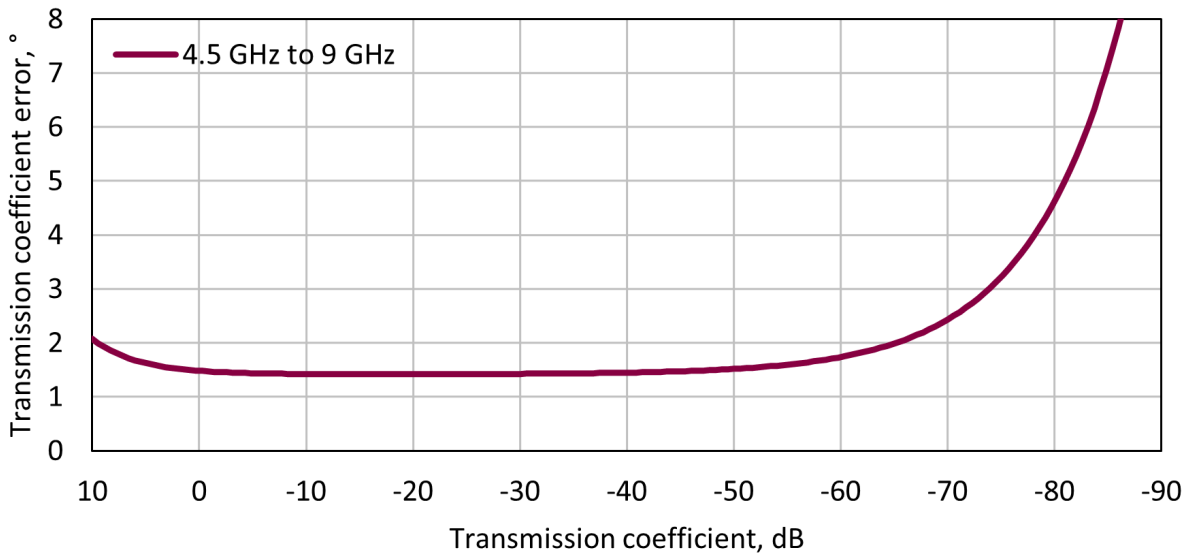
Specifications are based on a matched DUT, and IF bandwidth of 10 Hz

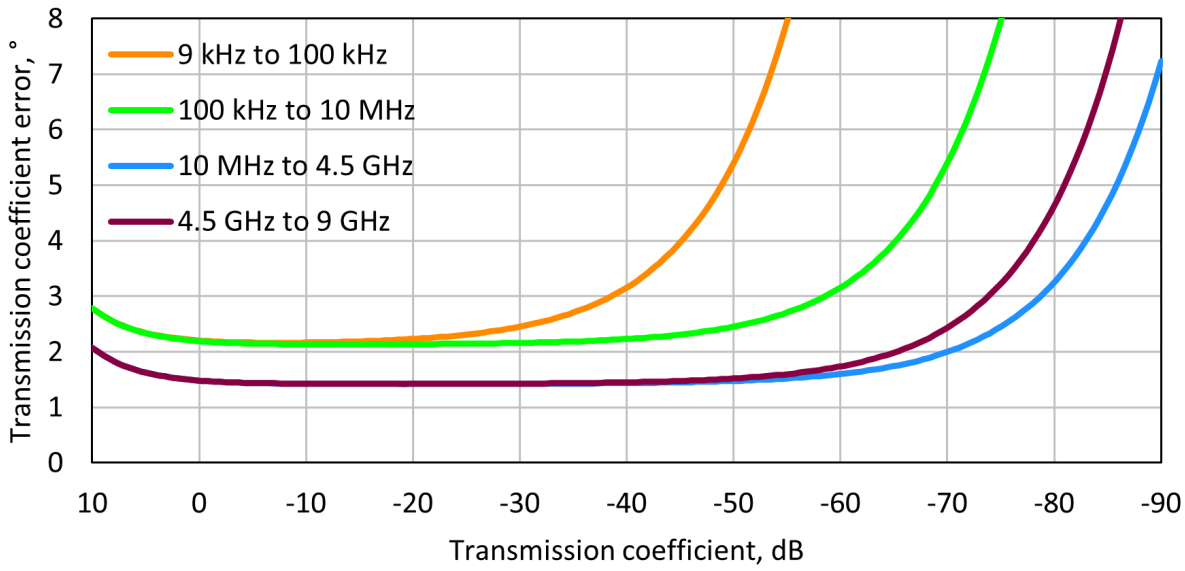
Transmission Phase Errors





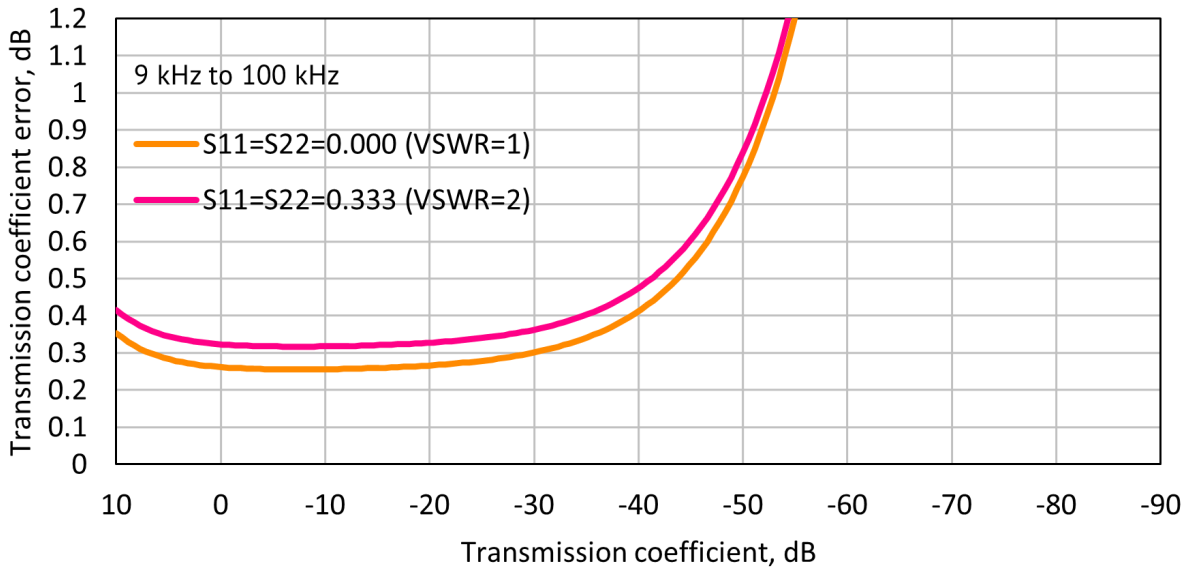

10 MHz to 4.5 GHz
Transmission coefficient error, °
8
7
6
5
4
3
2
1
0
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Transmission coefficient, dB

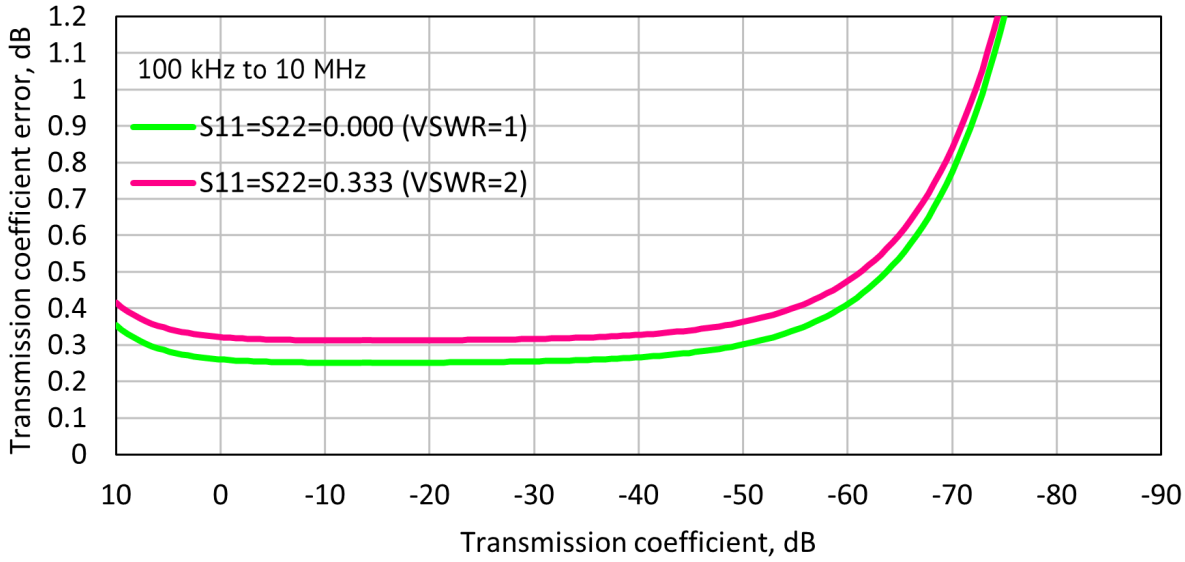

4.5 GHz to 9 GHz
Transmission coefficient error, °
8
7
6
5
4
3
2
1
0
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Transmission coefficient, dB

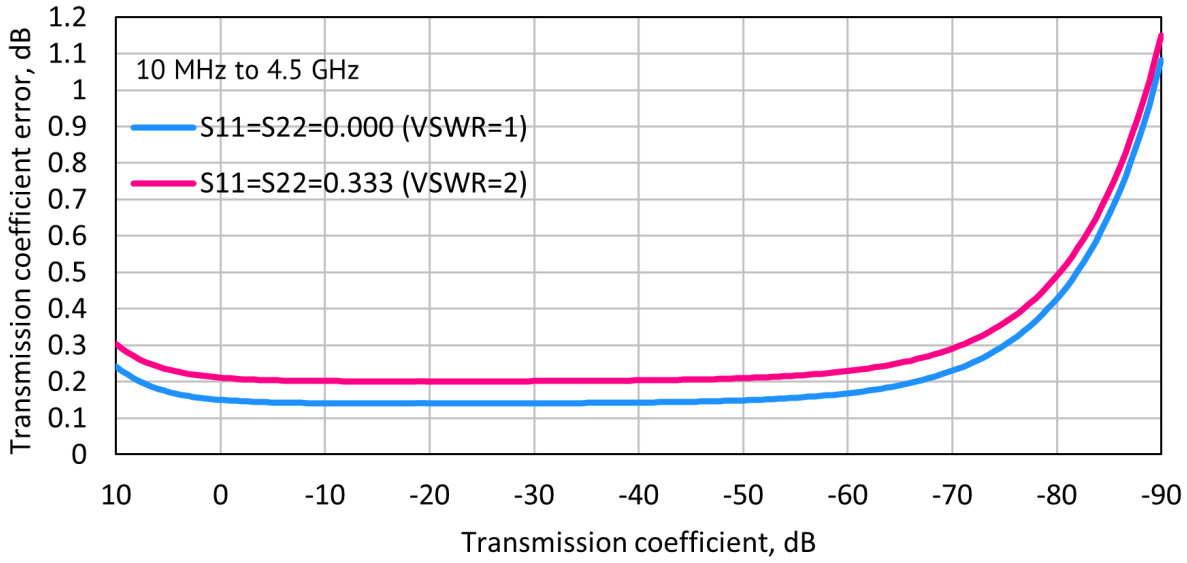


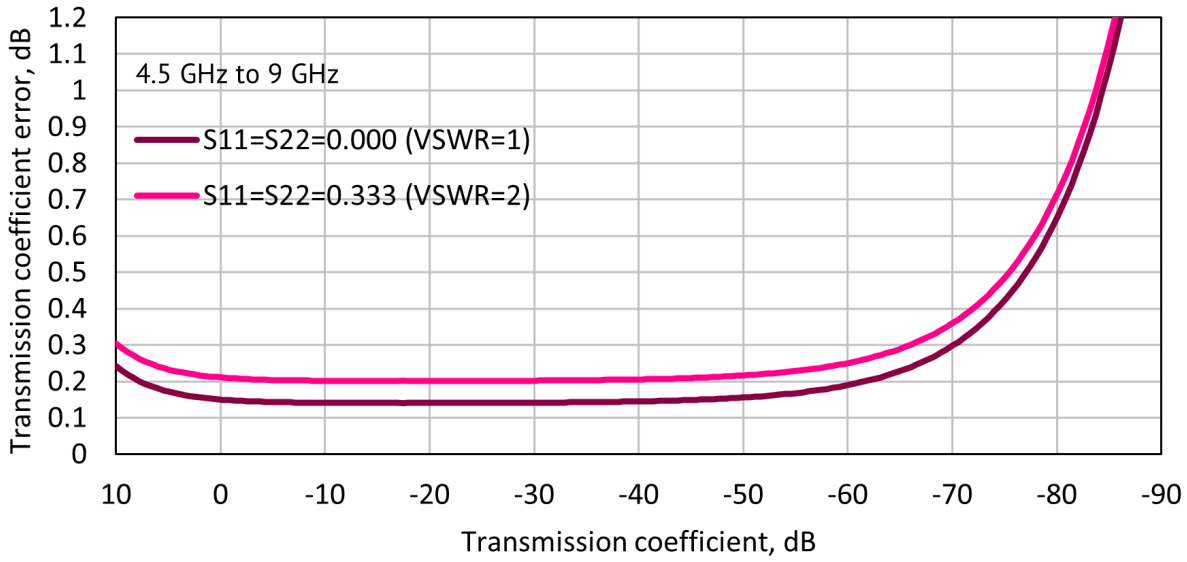
Specifications are based on a matched DUT, and IF bandwidth of 10 Hz

Transmission Magnitude Errors for Unmatched Devices

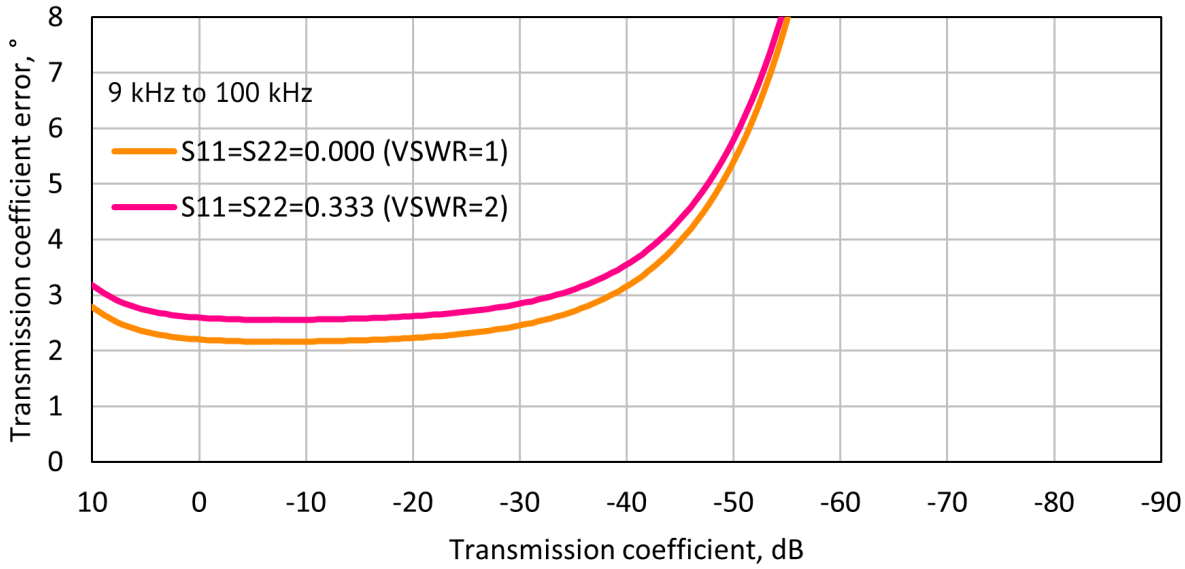


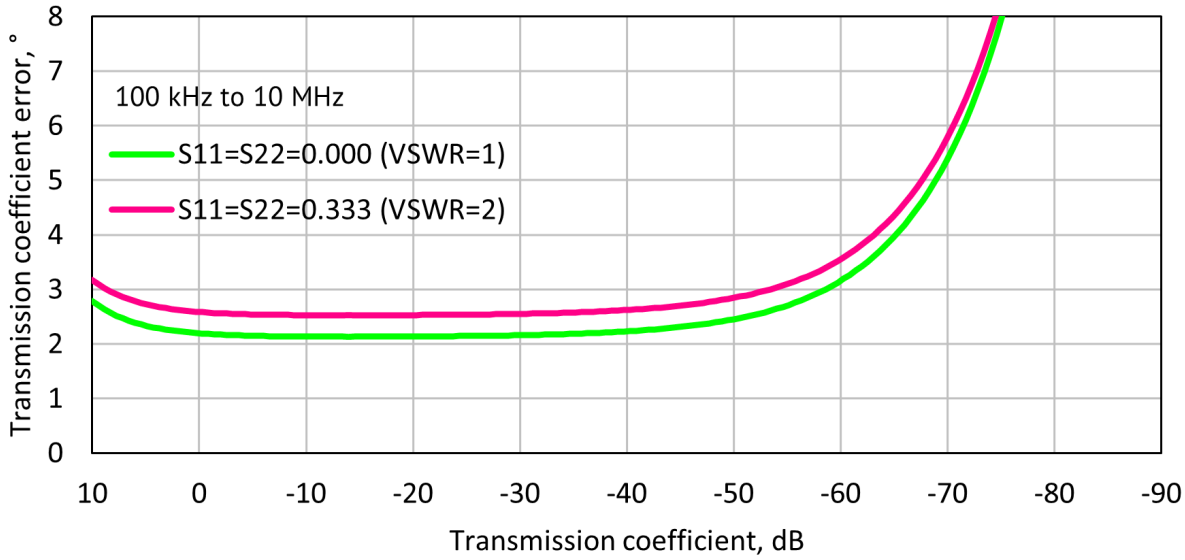


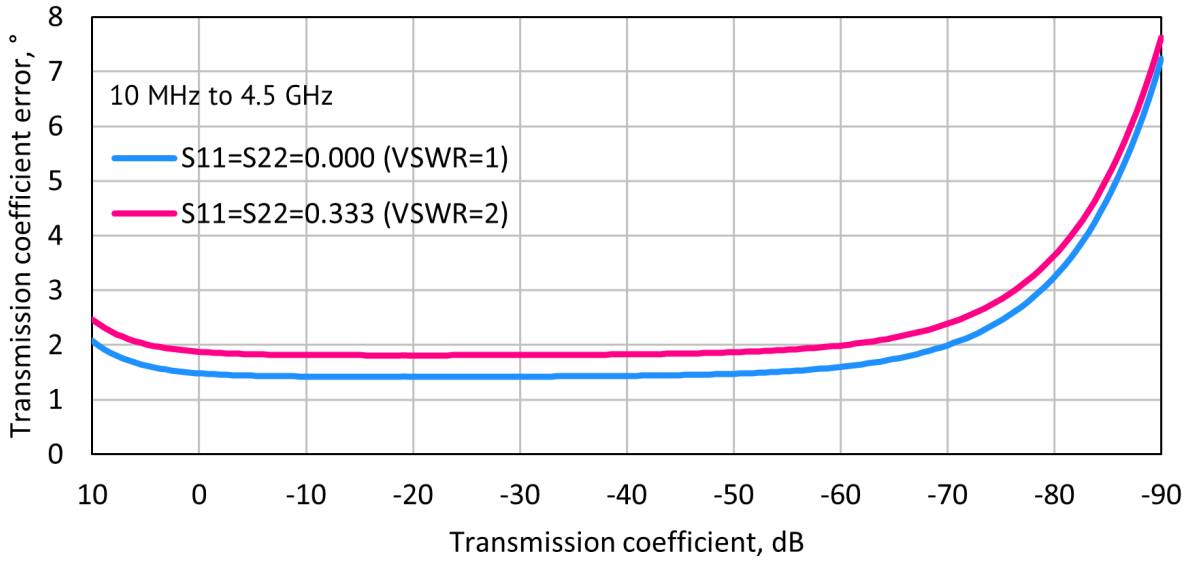

10 MHz to 4.5 GHz
S11=S22=0.000 (VSWR=1)
S11=S22=0.333 (VSWR=2)
Transmission coefficient error, dB
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Transmission coefficient, dB

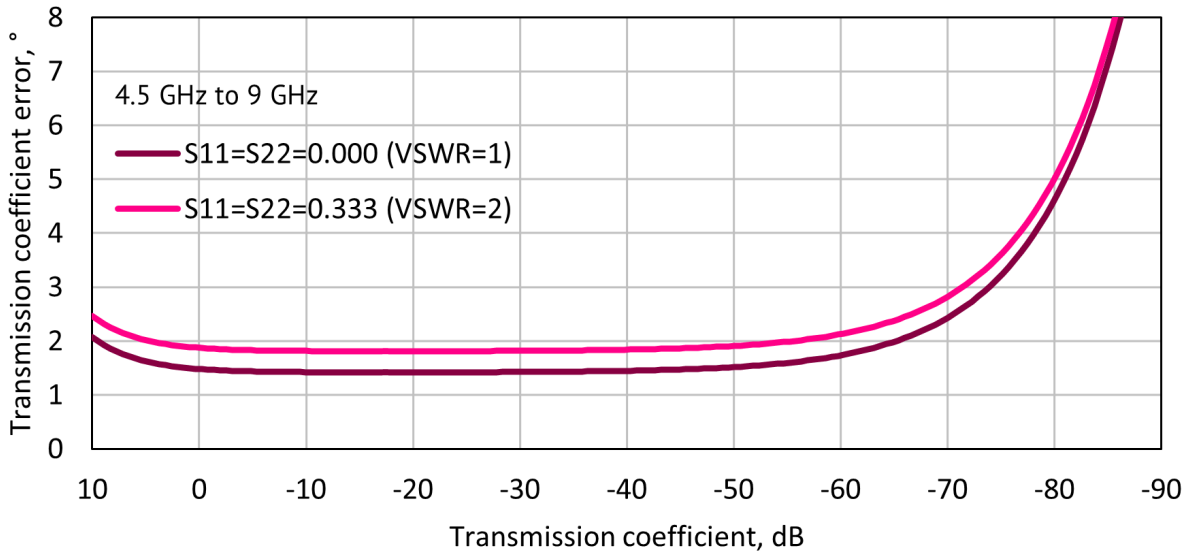

4.5 GHz to 9 GHz
S11=S22=0.000 (VSWR=1)
S11=S22=0.333 (VSWR=2)
Transmission coefficient error, dB
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Transmission coefficient, dB

Transmission Phase Errors for Unmatched Devices






Transmission coefficient error, °
8
7
6
5
4
3
2
1
0
10 MHz to 4.5 GHz
S11=S22=0.000 (VSWR=1)
S11=S22=0.333 (VSWR=2)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Transmission coefficient, dB


Transmission coefficient error, °
8
7
6
5
4
3
2
1
0
4.5 GHz to 9 GHz
S11=S22=0.000 (VSWR=1)
S11=S22=0.333 (VSWR=2)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Transmission coefficient, dB