SNA5000A Series Vector Network Analyzer

DS09050_E03B

SIGLENT TECHNOLOGIES CO.,LTD

SNA5000A

1 General Description

The SIGLENT SNA5000A series of Vector Network Analyzers have a frequency range of 9 kHz to 8.5 GHz and 100 kHz to 26.5 GHz, which support 2/4-port scattering parameter, differential-parameter, and time-domain parameter measurements. The SNA5000A series of VNAs are effective instrumentation for determining the Q-factor, bandwidth, and insertion loss of a filter, They feature impedance conversion, movement of measurement plane, limit testing, ripple test, fixture simulation, and adapter removal/insertion adjustments. The VNAs have five sweep types: Linear-Frequency mode, Log-Frequency mode, Power-Sweep mode, CW-Time mode, and Segment-Sweep mode. The SNA5000A series VNAs also support scattering-parameter correction of SOLT, SOLR, TRL, Response, and Enhanced Response for increased flexibility in R&D and manufacturing applications.

2 Features

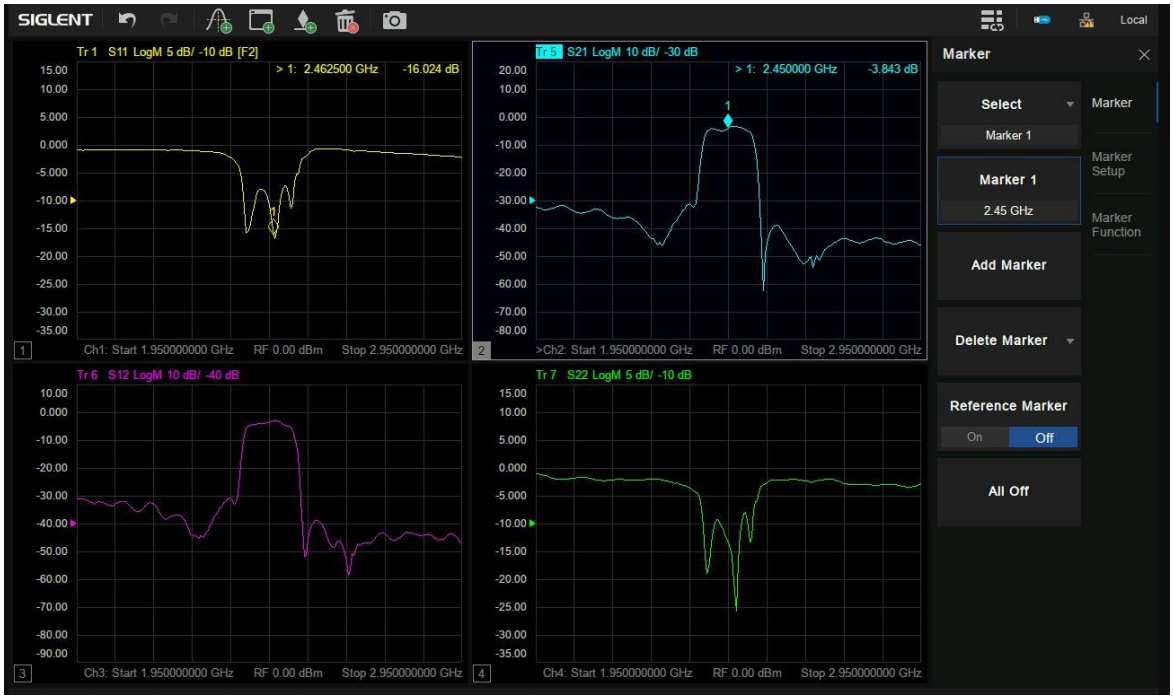
- Frequency range: 9 kHz - 8.5 GHz and 100 kHz - 26.5 GHz
- Frequency resolution: 1 Hz
- Level resolution: 0.05 dB
- Range of IFBW: 10 Hz~3 MHz
- Setting range of output level: -55 dBm ~ +10 dBm
- Dynamic range: 125 dB
- Types of calibration: Response calibration, Enhanced Response calibration, Full-one port calibration, Full-two port calibration, Full-three port calibration, Full-four port calibration, TRL calibration
- Types of measurement: Scattering-parameter measurement, differential-parameter measurement, receiver measurement, time-domain parameter analysis, limit test, ripple test, impedance conversion, fixture simulation, adapter removal/insertion, spectrum analysis frequency offset, scalar mixer measurement, pulse measurement
- Internal Bias-Tee connections
- Interface: LAN, USB Device, USB Host (USB-GPIB)
- Remote control: SCPI/ Labview/ IVI based on USB-TMC / VXI-11 / Socket /Telnet / WebServer
- 12.1-inch touch screen
- Video output: HDMI

3 Models and key specifications

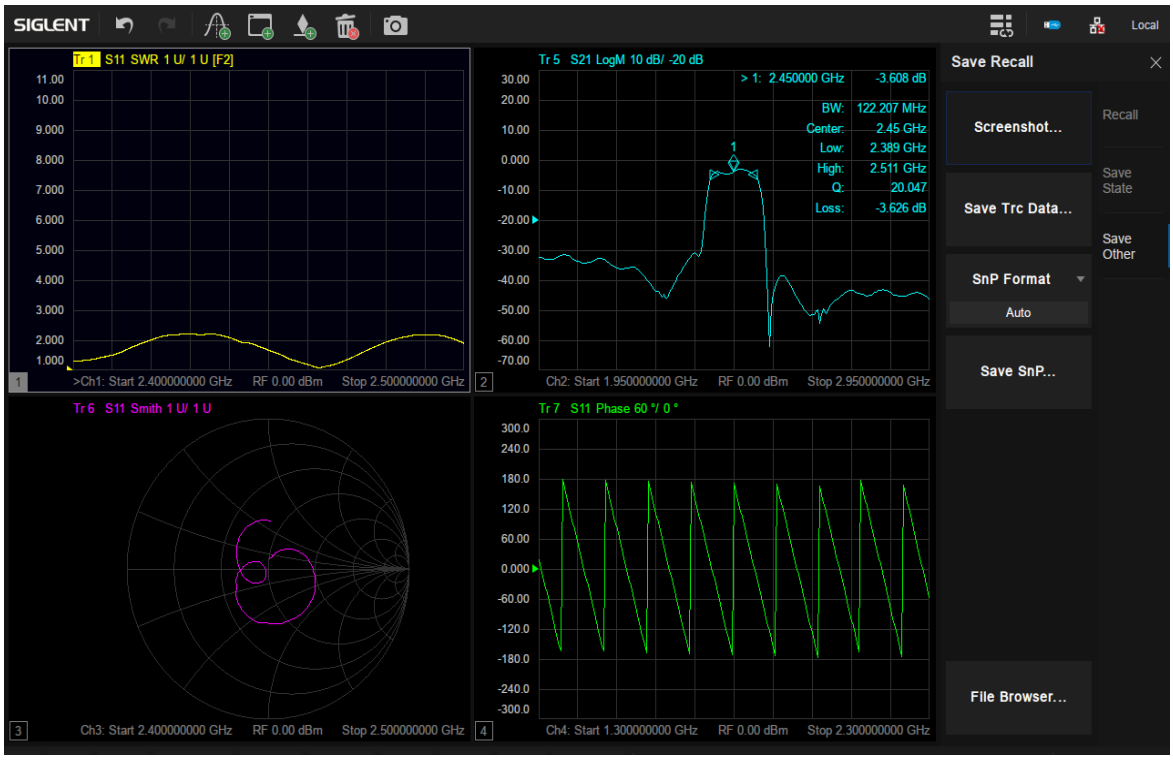
Model	SNA5002A/ SNA5004A	SNA5012A/ SNA5014A	SNA5022A	SNA5032A
Frequency range	9kHz-4.5GHz	9kHz-8.5GHz	100kHz-13.5GHz	100kHz-26.5GHz
Ports	2/4	2/4	2	2
Frequency resolution	1 Hz			
Level resolution	0.05 dB			
Range of IFBW	10 Hz~3 MHz			
Setting range of output level	-55 dBm ~ +10 dBm			
Dynamic range	125 dB			
Types of calibration	Response calibration, Enhanced Response calibration, Full-one port calibration, Full-two port calibration, Full-three port calibration, Full-four port calibration, TRL calibration			
Types of measurement	Scattering-parameter measurement, differential-parameter measurement, receiver measurement, time-domain parameter analysis, limit test, ripple test, impedance conversion, fixture simulation, adapter removal/insertion, enhanced time-domain parameter analysis (TDR), spectrum analysis, frequency offset, scalar mixer measurement, pulse measurement			
Bias-Tees	Support			
Interface	LAN, USB Device, USB Host(USB-GPIB)			
Remote control	SCPI/ Labview/ IVI based on USB-TMC/ VXI-11/ Socket/ Telnet/ WebServer			
Display	12.1-inch touch screen			
Video output	HDMI			

4 Design Features

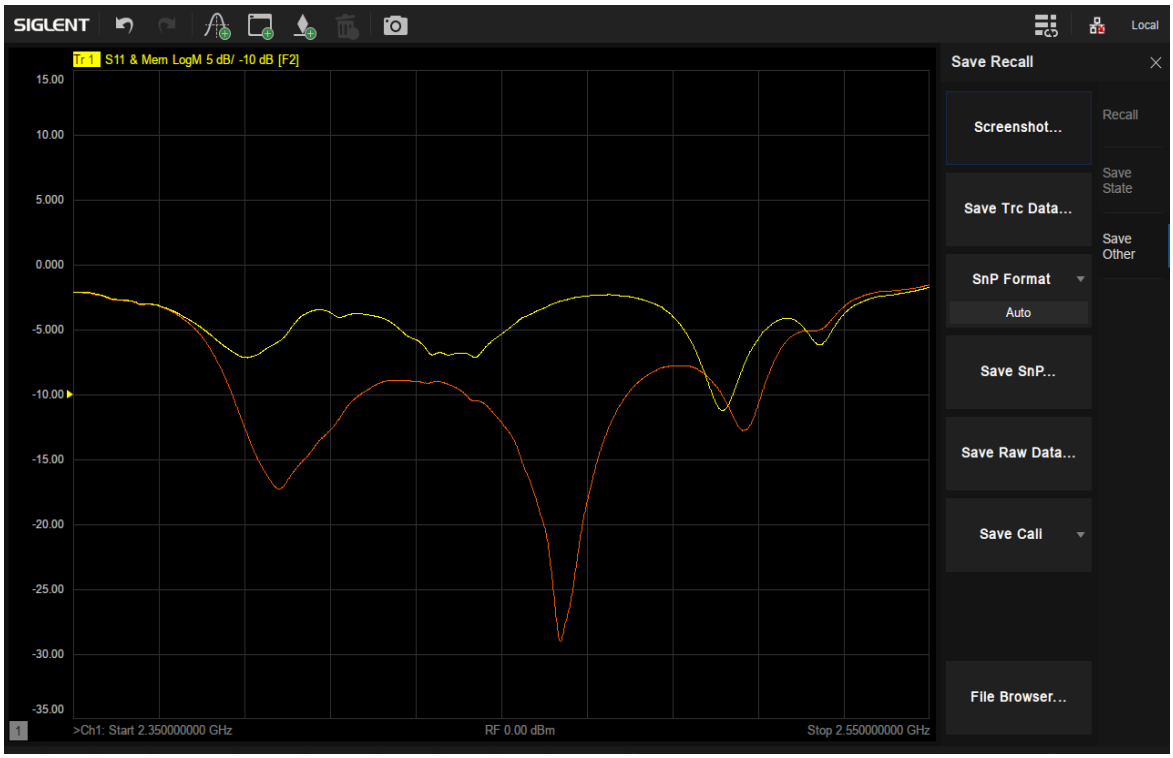
Multi-window display:



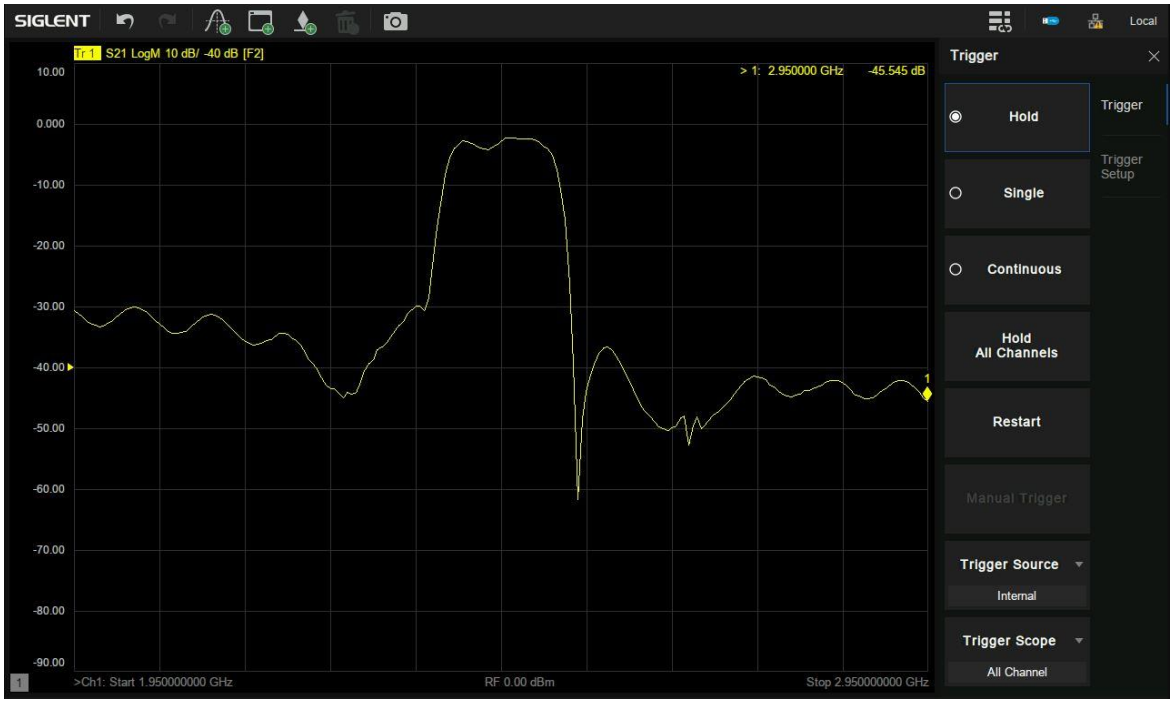
Multi-format display:



Display and compare memory and current data:

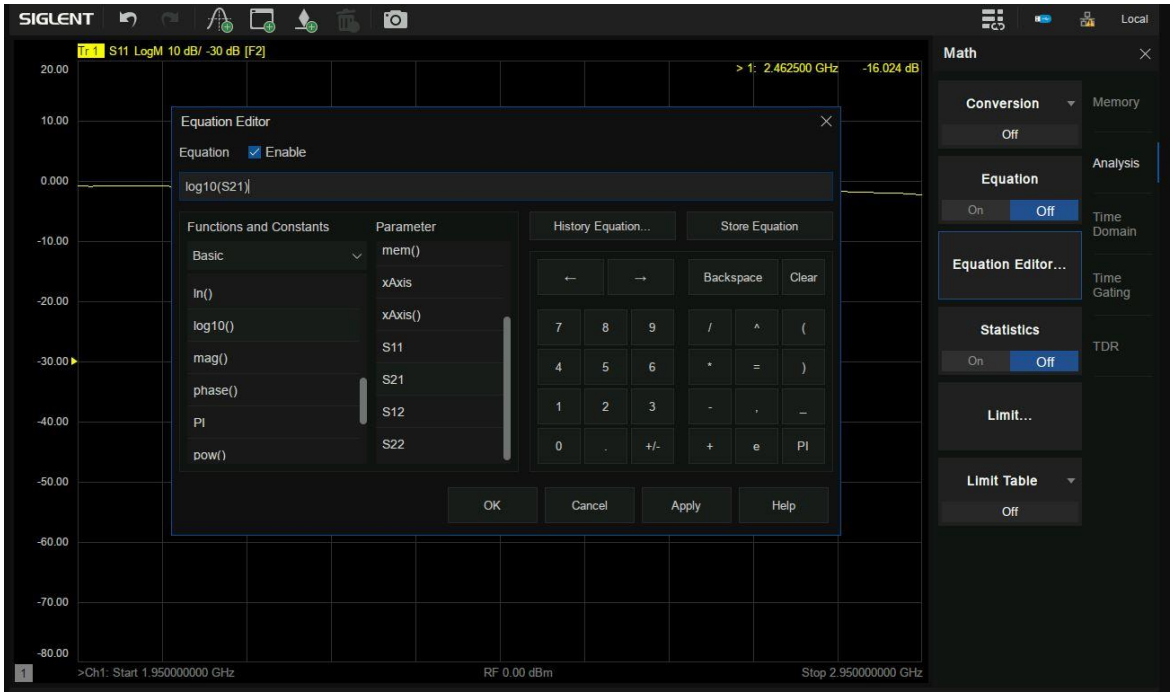


Display data hold:

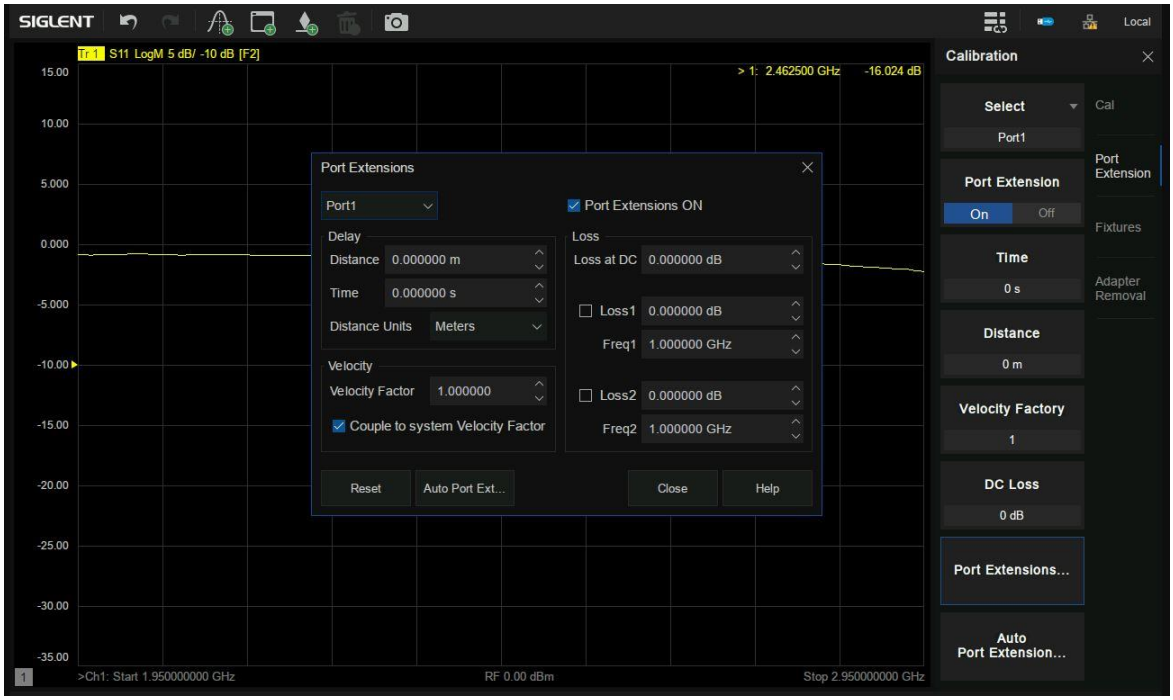


Impedance conversion:

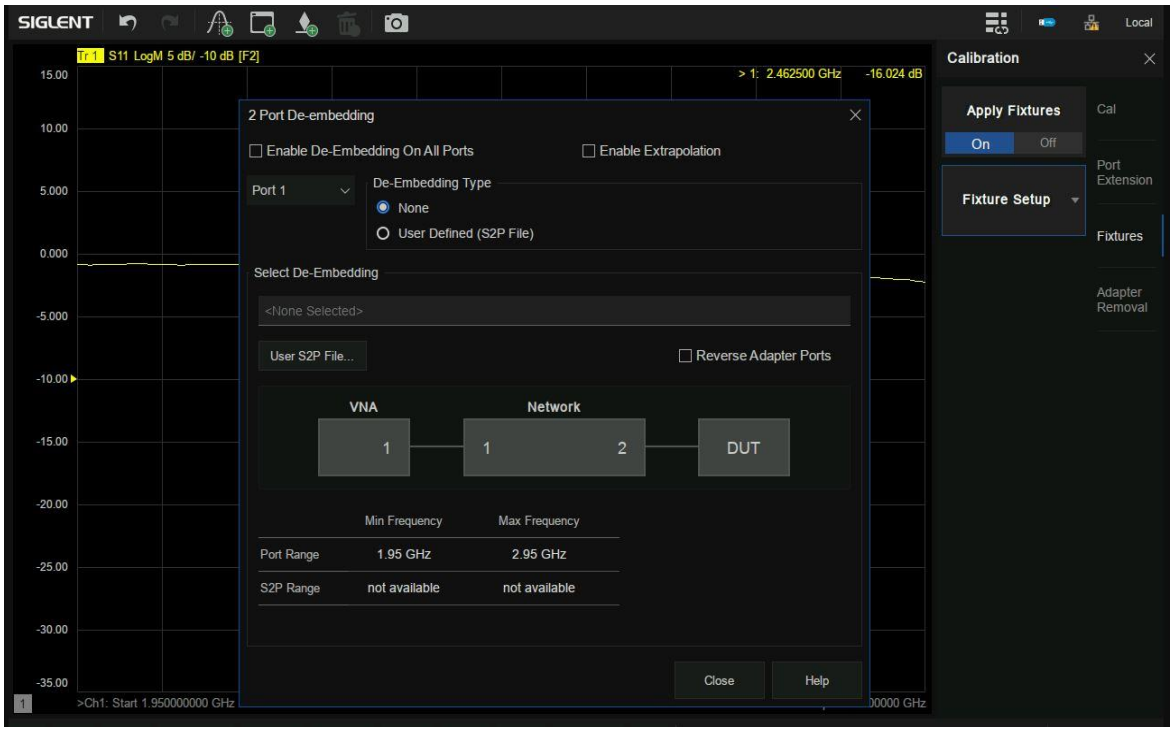
Equation Editor:



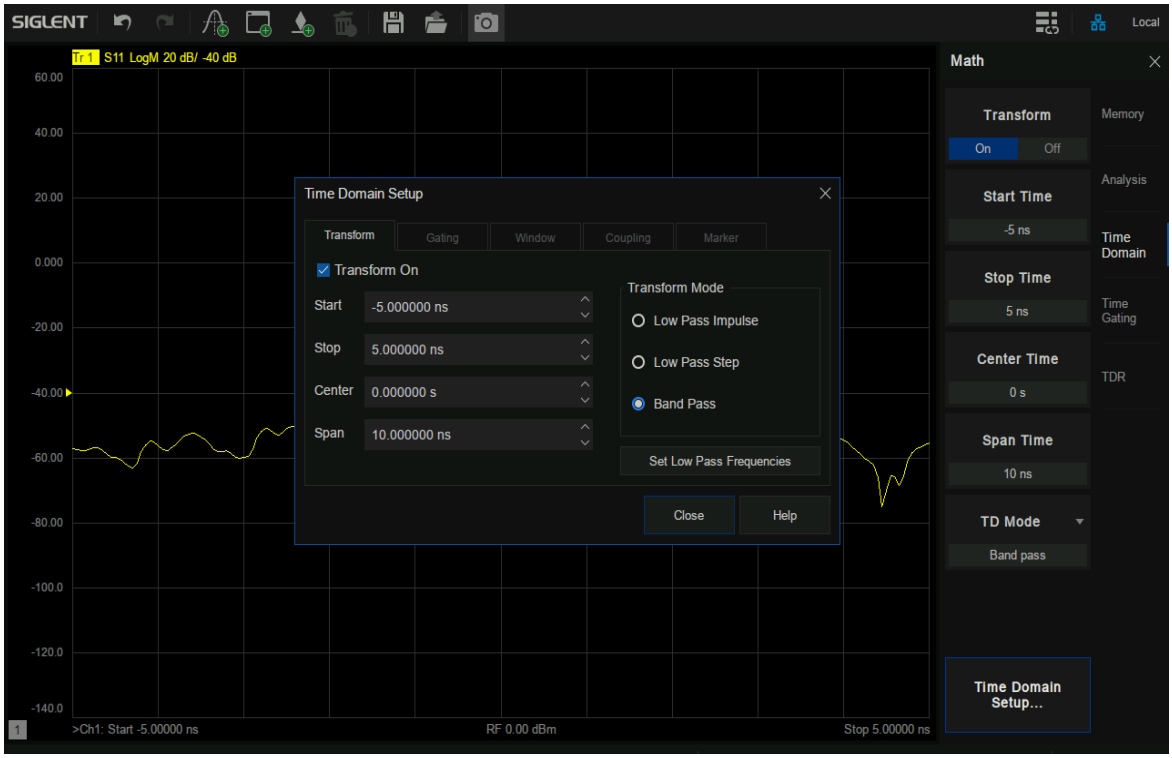
Port Extensions:



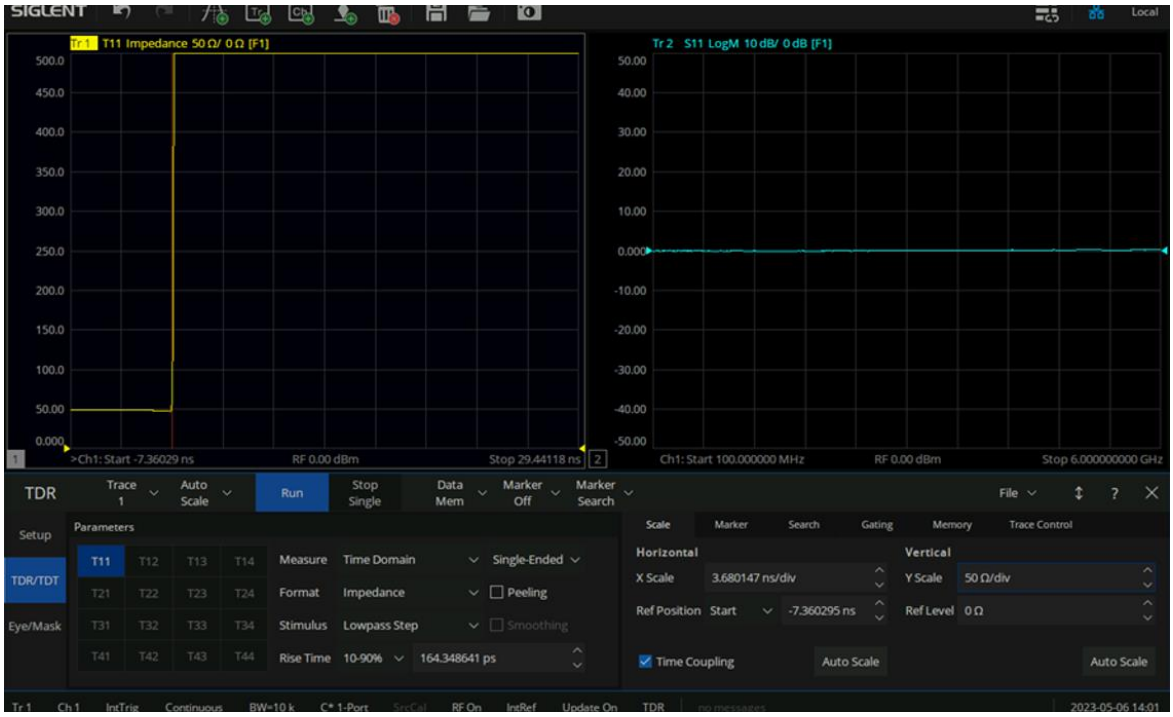
Embedding and De-Embedding:



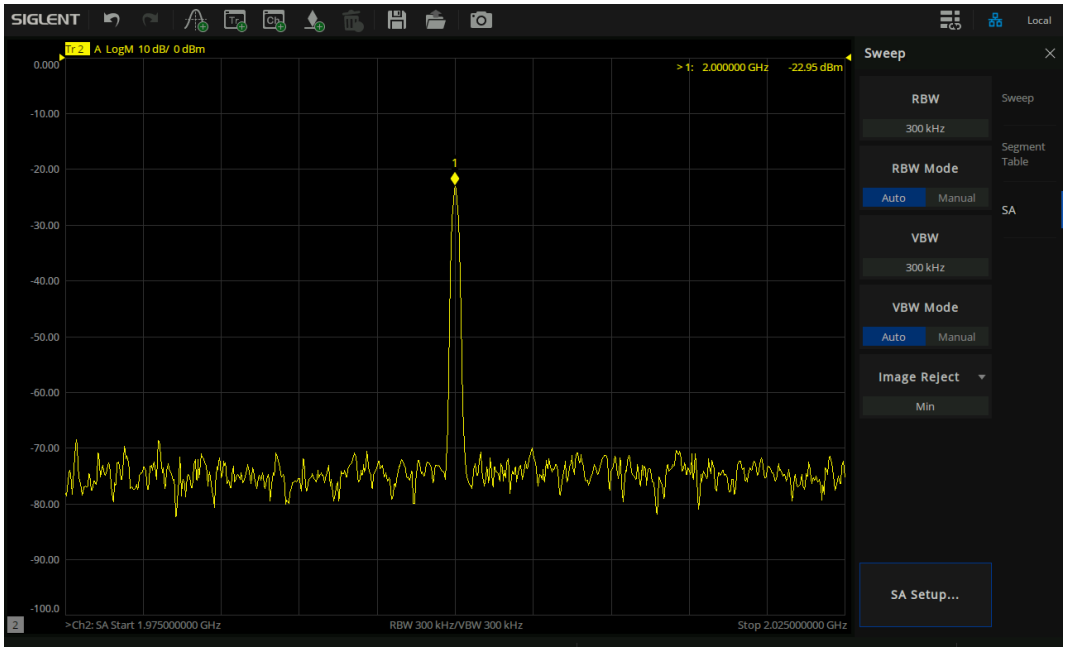
Time-Domain analysis



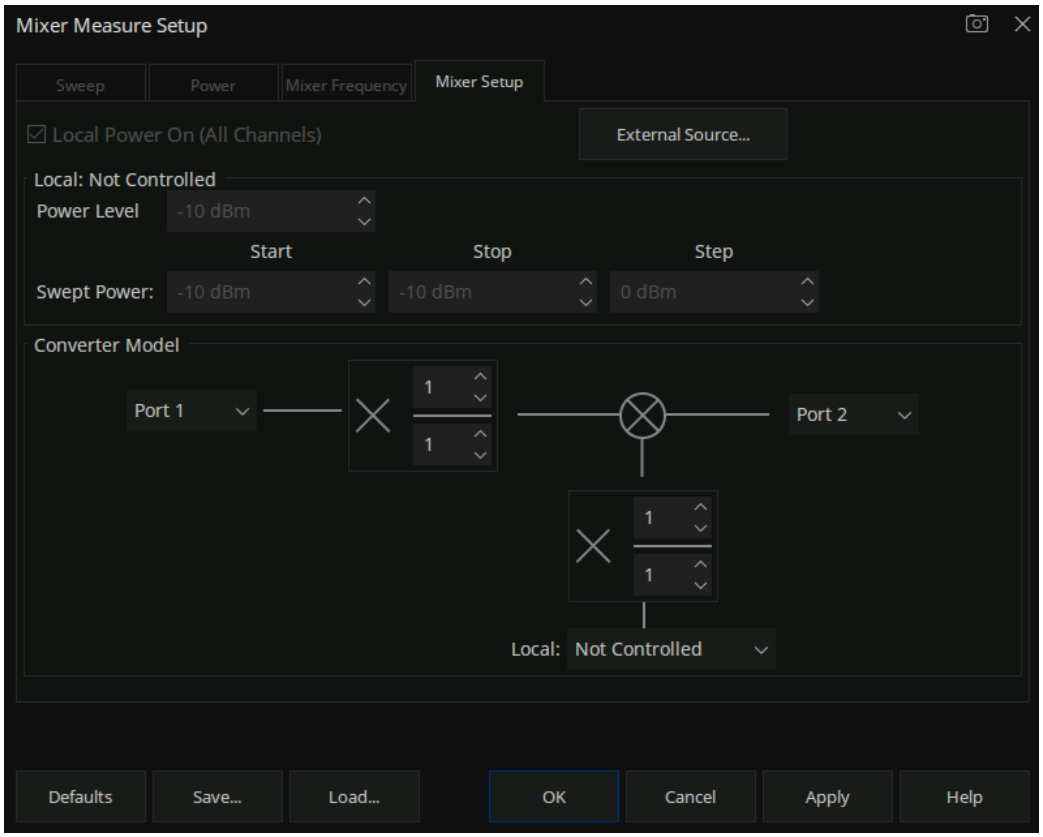
Enhanced Time-Domain analysis(TDR)



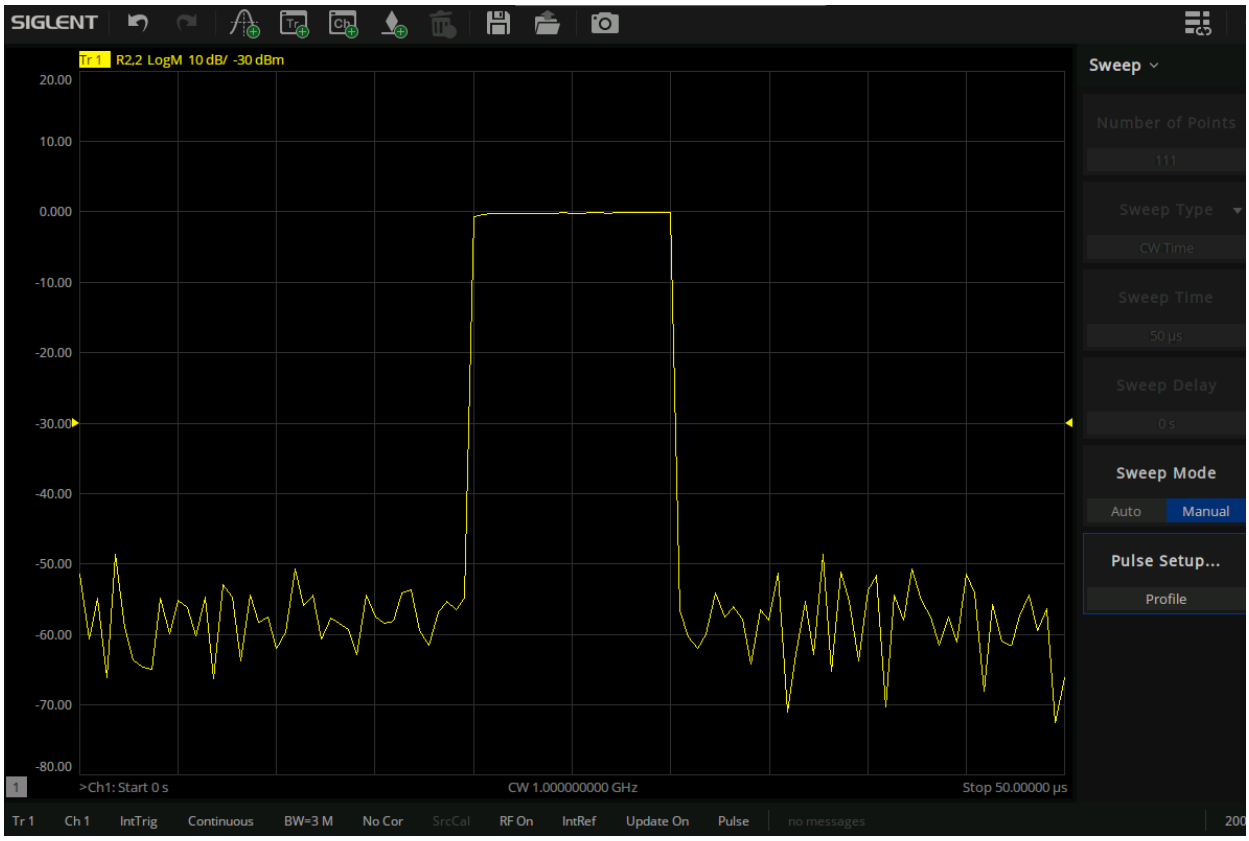
Spectrum analysis



Scalar mixer measurement



Pulse Modulation



5 Definitions

Specifications are valid under the following conditions: The instrument is within the calibration period, has been stored between 0 and 40℃ for at least 2 hours before use, and has been powered on and warmed up for at least 90 minutes. The specifications include the measurement uncertainty unless otherwise noted.

Specifications: All products are guaranteed to meet published specifications at room temperature (approximately 25℃), unless otherwise noted.

Typical: Performance deemed typical implies that 80 percent of the measurement results will meet the typical published performance with a 95th percentile confidence level at room temperature (approximately 25℃). Typical performance is not warranted and does not include measurement uncertainty.

Nominal: This value indicates the expected mean or average performance, or an attribute whose performance is by design, such as the 50 Ohm connector.

6 Specifications

6.1 Dynamic range

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Frequency range	IFBW	Specification(dB)	SPD (dB)
9 kHz-18 kHz	10Hz	85	102
18 kHz-30 kHz		90	105
30 kHz-100 kHz		95	107
100 kHz-300 kHz		105	117
300 kHz-500 kHz		120	130
500 kHz-1 MHz		125	136
1 MHz-5 GHz		125	140
5 GHz-6.8 GHz		123	133
6.8 GHz-7.7 GHz		120	130
7.7 GHz-8 GHz		119	129
8 GHz -8.5 GHz		117	127

SNA5022A/SNA5032A

Frequency range	IFBW	Specification(dB)	SPD (dB)
100 kHz-10 MHz	10Hz	115	125
10 MHz-3 GHz		125	135
3 GHz-9 GHz		125	135
9 GHz-13.5 GHz		118	125
13.5 GHz-20 GHz		115	125
20 GHz-26.5 GHz		110	120

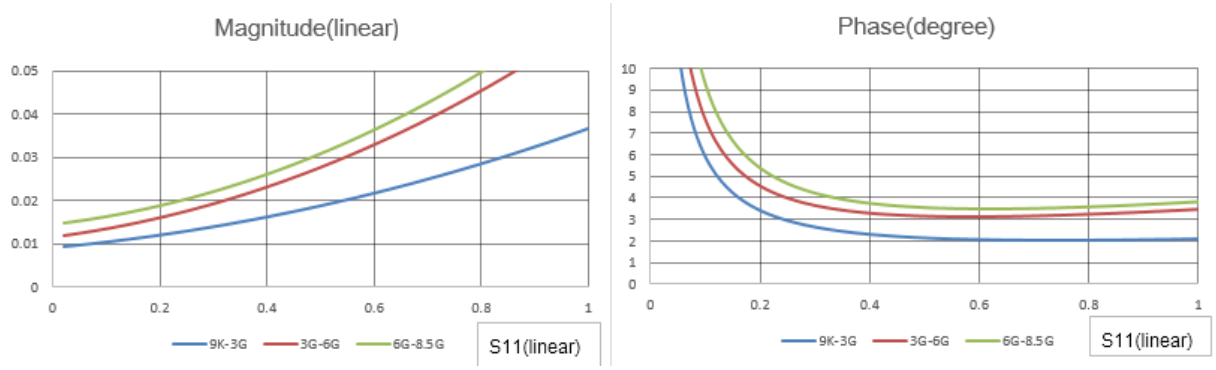
6.2 Corrected system performance with calibration kit

User correction: On, system correction: On; Corrected system performance with Keysight 85052D 3.5mm calibration kit, isolation calibration performed.IFBW is 10 Hz, no averaging applied to data, and environmental temperature is 25℃ (± 5℃), with < 1℃ deviation from calibration temperature.

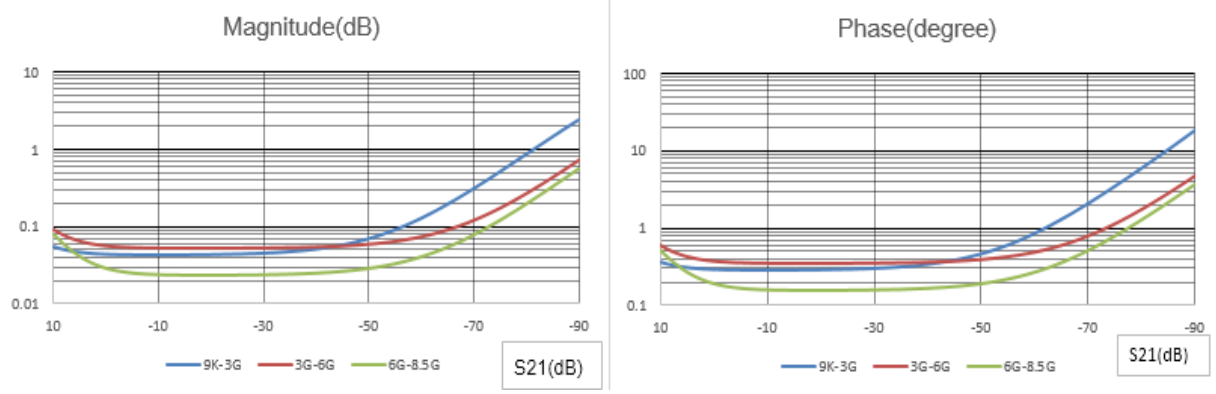
SNA5002A/SNA5012A/SNA5004A/SNA5014A

Specification (dB)	9 kHz-3 GHz	3 GHz-6 GHz	6 GHz-8.5 GHz
Directivity	41	39	37
Source match	36	30	29
Load match	41	37	35
Reflect tracking	±0.004	±0.003	±0.004
Transmission tracking	±0.06	±0.09	±0.11

Reflection uncertainty (Specification, Power: -10 dBm, IFBW:10 Hz):



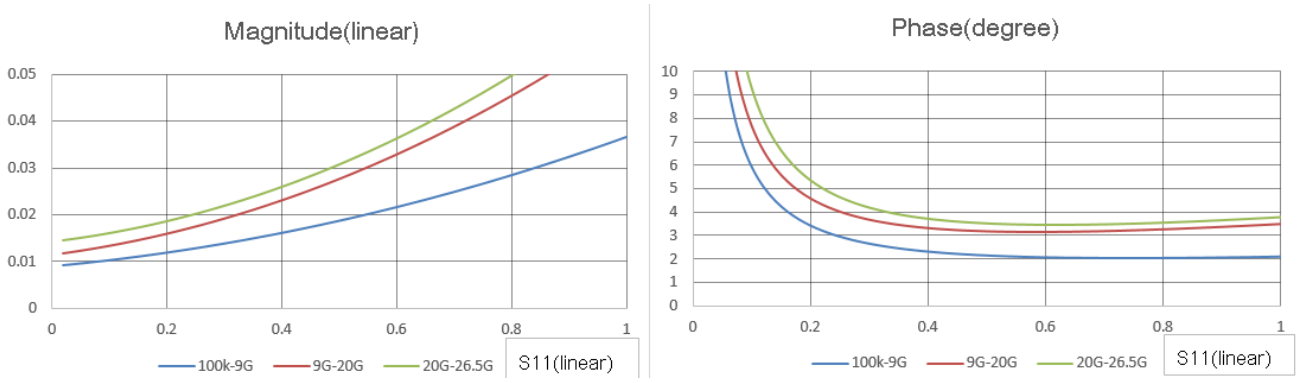
Transmission uncertainty (Specification, Power: -10 dBm, IFBW:10 Hz):



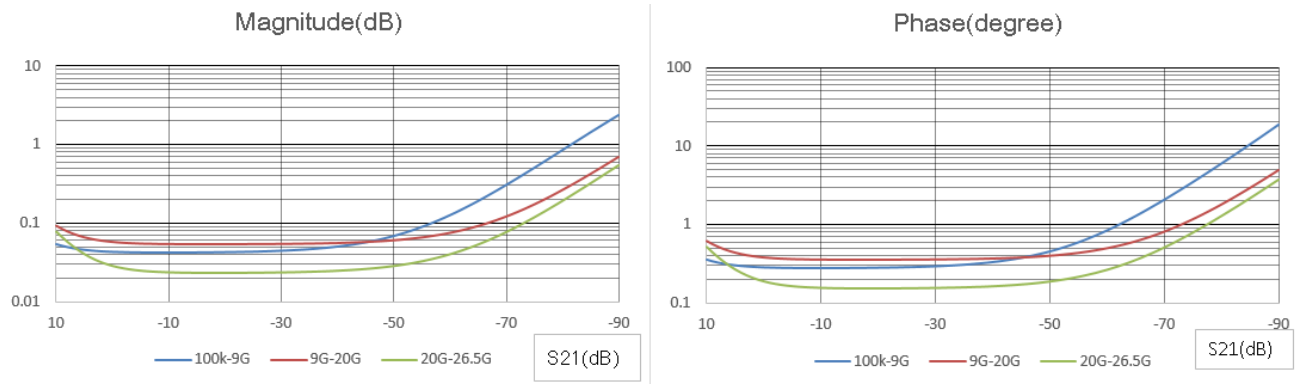
SNA5022A/SNA5032A

Specification (dB)	100 kHz-9 GHz	9 GHz-20 GHz	20 GHz-26.5 GHz
Directivity	40	36	35
Source match	35	29	27
Load match	39	36	33
Reflect tracking	±0.004	±0.003	±0.01
Transmission tracking	±0.06	±0.09	±0.5

Reflection uncertainty (Specification, Power: -10 dBm, IFBW:10 Hz):



Transmission uncertainty (Specification, Power: -10 dBm, IFBW:10 Hz):



6.3 Uncorrected system performance

User correction: Off, system correction: On; IFBW is 10 Hz, no averaging applied to data.

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Specification (dB)	9 kHz-30 MHz	30 MHz-3 GHz	3 GHz-6 GHz	6 GHz-8.5 GHz
Directivity	22	22	20	16
Source match	22	22	20	16

Load match	6	12	11	10
Reflect tracking	±1.0	±1.0	±1.0	±1.0
Transmission tracking	±1.0	±1.0	±1.0	±1.0

SNA5022A/SNA5032A

Specification (dB)	100 KHz-1 GHz	1 GHz-9 GHz	9 GHz-20 GHz	20 GHz-26.5 GHz
Directivity	20	20	16	13
Source match	20	20	16	13
Load match	8	11	7	7
Reflect tracking	±1.4	±1.4	±1.0	±1.0
Transmission tracking	±1.4	±1.4	±1.0	±1.0

6.4 Test port output (Source)

6.4.1 Test port output frequency

Description	Specification
Frequency range	
SNA5002A，SNA5004A	9 kHz to 4.5 GHz
SNA5012A，SNA5014A	9 kHz to 8.5 GHz
SNA5022A	100 kHz to 13.5 GHz
SNA5032A	100 kHz to 26.5 GHz
Frequency resolution	1 Hz
CW accuracy	
Standard	± 1.0 ppm (23 ± 3℃)
Option: SNA5000-HPR	± 0.1 ppm (23 ± 3℃)
Source stability	
Standard	± 1.0 ppm (0 to 40℃) ± 0.5 ppm/year，± 3.0 ppm/20 year
Option: SNA5000-HPR	± 1 ppb (0 to 40℃) ± 50 ppb/year

6.4.2 Test port output power

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Description	Specification	Typical
Preset power	0 dBm	
Level accuracy	±1.5 dB@0 dBm[1]	
Level linearity		
9 kHz- 18 kHz	±0.5 dB(-20 dBm to -5 dBm)	
18 kHz- 30 kHz	±0.5 dB(-20 dBm to 0 dBm)	
30 kHz- 70 kHz	±0.5 dB(-20 dBm to 2 dBm)	
70 kHz- 100 kHz	±0.5 dB(-20 dBm to 5 dBm)	
100 kHz- 300 kHz	±0.5 dB(-20 dBm to 7 dBm)	
300 kHz- 5 GHz	±0.5 dB(-20 dBm to 10 dBm)	
5 GHz- 6.8 GHz	±0.5 dB(-20 dBm to 8 dBm)	
6.8 GHz- 7.7 GHz	±0.5 dB(-20 dBm to 5 dBm)	
7.7 GHz- 8 GHz	±0.5 dB(-20 dBm to 4 dBm)	
8 GHz- 8.5 GHz	±0.5 dB(-20 dBm to 0 dBm)	
Range		
9 kHz- 18 kHz	-55 dBm to -5dBm	
18 kHz- 30 kHz	-55 dBm to 0 dBm	
30 kHz- 70 kHz	-55 dBm to 2dBm	
70 kHz- 100 kHz	-55 dBm to 5dBm	
100 kHz- 300 kHz	-55 dBm to 7dBm	
300 kHz- 5 GHz	-55 dBm to 10 dBm	
5 GHz- 6.8 GHz	-55 dBm to 8 dBm	
6.8 GHz- 7.7 GHz	-55 dBm to 5 dBm	
7.7 GHz- 8 GHz	-55 dBm to 4 dBm	
8 GHz- 8.5 GHz	-55 dBm to 0 dBm	
Sweep range		
9 kHz- 18 kHz	-55 dBm to -5dBm	
18 kHz- 30 kHz	-55 dBm to 0 dBm	
70 kHz- 100 kHz	-55 dBm to 2dBm	
30 kHz- 70 kHz	-55 dBm to 5dBm	
100 kHz- 300 kHz	-55 dBm to 7dBm	

300 kHz- 5 GHz	-55 dBm to 10 dBm	
5 GHz- 6.8 GHz	-55 dBm to 8 dBm	
6.8 GHz- 7.7 GHz	-55 dBm to 5 dBm	
7.7 GHz- 8 GHz	-55 dBm to 4 dBm	
8 GHz- 8.5 GHz	-55 dBm to 0 dBm	
Max leveled power		
9 kHz- 18 kHz	-5 dBm	-1 dBm
18 kHz-30 kHz	0 dBm	2 dBm
30 kHz- 70 kHz	2 dBm	5 dBm
70 kHz-100 kHz	5 dBm	7 dBm
100 kHz-300 kHz	7 dBm	10 dBm
300 kHz- 5 GHz	10 dBm	13 dBm
5 GHz- 6.8 GHz	8 dBm	10 dBm
6.8 GHz-7.7 GHz	5 dBm	8 dBm
7.7 GHz- 8 GHz	4 dBm	6 dBm
8 GHz- 8.5 GHz	0 dBm	4 dBm
Level resolution		0.05 dB

[1] The level accuracy of 9 kHz- 18 kHz is ±1.5dB@-5dBm

SNA5022A/SNA5032A

Description	Specification	Typical
Preset power	0 dBm	
Level accuracy		
100 kHz - 10 MHz	±2.0 dB@0 dBm	
10 MHz - 20 GHz	±1.5 dB@0 dBm	
20 GHz- 26.5 GHz	±2.0 dB@0 dBm	
Level linearity		
100 kHz- 10 MHz	±0.5 dB（-20 dBm to 10 dBm）	
10 MHz- 3 GHz	±0.5 dB（-20 dBm to 10 dBm）	
3 GHz- 9 GHz	±0.5 dB（-20 dBm to 10 dBm）	
9 GHz- 13.5 GHz	±0.5 dB（-20 dBm to 5 dBm）	
13.5 GHz- 20 GHz	±0.5 dB（-20 dBm to 5 dBm）	
20 GHz- 26.5 GHz	±0.8 dB（-20 dBm to 0 dBm）	

Range		
100 kHz- 10 MHz	-55 dBm to 10 dBm	
10 MHz- 3 GHz	-55 dBm to 10 dBm	
3 GHz- 9 GHz	-55 dBm to 10 dBm	
9 GHz- 13.5 GHz	-55 dBm to 5 dBm	
13.5 GHz- 20 GHz	-55 dBm to 5 dBm	
20 GHz- 26.5 GHz	-55 dBm to 0 dBm	
Sweep range		
100 kHz- 10 MHz	-55 dBm to 10 dBm	
10 MHz- 3 GHz	-55 dBm to 10 dBm	
3 GHz- 9 GHz	-55 dBm to 10 dBm	
9 GHz- 13.5 GHz	-55 dBm to 5 dBm	
13.5 GHz- 20 GHz	-55 dBm to 5 dBm	
20 GHz- 26.5 GHz	-55 dBm to 0 dBm	
Max leveled power		
100 kHz- 10 MHz	10 dBm	11 dBm
10 MHz- 3 GHz	10 dBm	13 dBm
3 GHz- 9 GHz	10 dBm	12 dBm
9 GHz- 13.5 GHz	5 dBm	10 dBm
13.5 GHz- 20 GHz	5 dBm	10 dBm
20 GHz- 26.5 GHz	0 dBm	8 dBm
Level resolution		0.05 dB

6.4.3 Test port output signal purity

Description	Specification	Typical
2nd or 3rd harmonics (0 dBm)		
9 kHz to 100 kHz		<–15 dBc
100 kHz to 26.5 GHz		<–25 dBc
Non-harmonic spurious (0 dBm)		<-30 dBc

6.5 Test port input

6.5.1 Test port input levels

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Description	Specification	Typical
Max input level		
9 kHz-8.5 GHz	+10 dBm	
Damage input level		
9 kHz-8.5 GHz	+27 dBm (RF) or 35 V (DC)	
Crosstalk		
9 kHz- 18 kHz	-80 dB	-96 dB
18 kHz-50 kHz	-95 dB	-106 dB
50 kHz-100 kHz	-100 dB	-110 dB
100 kHz-500 kHz	-110 dB	-120 dB
500 kHz- 1 MHz	-120 dB	-130 dB
1 MHz- 5.8 GHz[2]	-125 dB	-140 dB
5.8 GHz-8.5 GHz	-120 dB	-130 dB
Noise floor		
9 kHz- 100 kHz	-100 dBm/Hz	-115 dBm/Hz
100 kHz-300 kHz	-110 dBm/Hz	-125 dBm/Hz
300 kHz-500 kHz	-120 dBm/Hz	-130 dBm/Hz
500 kHz- 1 MHz	-125 dBm/Hz	-136 dBm/Hz
1 MHz- 5 GHz[2]	-125 dBm/Hz	-140 dBm/Hz
5 GHz-8.5 GHz	-125 dBm/Hz	-135 dBm/Hz
Compression level(+10 dBm)		
Magnitude		
9 kHz- 100 kHz	0.3dB	0.09 dB
100 kHz- 8.5GHz	0.2dB	0.08dB
Phase		
9 kHz- 100 kHz	0.5 deg	0.36 deg
100 kHz- 8.5GHz	0.5 deg	0.3 deg

[2] 467.25MHz and 471.5MHz points do not meet the specs requirement.

SNA5022A/SNA5032A

Description	Specification	Typical
Max input level		
100 kHz-26.5 GHz	+10 dBm	
Damage input level		
100 kHz-26.5 GHz	+27 dBm (RF) or 35 V (DC)	
Level accuracy		
100 kHz - 10 MHz	±2.5 dB@0 dBm	
10 MHz - 20 GHz	±1.5 dB@0 dBm	
20 GHz- 26.5 GHz	±2.0 dB@0 dBm	
Crosstalk		
100 kHz- 10 MHz	-100 dB	-110 dB
10 MHz- 3GHz[3]	-125 dB	-140 dB
3 GHz- 13.5 GHz	-120 dB	-125 dB
13.5 GHz- 26.5 GHz	-108 dB	-115 dB
Noise floor		
100 kHz- 10 MHz	-115 dBm/Hz	-125 dBm/Hz
10 MHz- 3 GHz[3]	-120 dBm/Hz	-135 dBm/Hz
3 GHz- 9 GHz	-125 dBm/Hz	-135 dBm/Hz
9 GHz- 13.5 GHz	-125 dBm/Hz	-135 dBm/Hz
13.5 GHz- 20 GHz	-125 dBm/Hz	-135 dBm/Hz
20 GHz- 26.5 GHz	-120 dBm/Hz	-130 dBm/Hz
Compression level(+10 dBm)		
Magnitude		
100 kHz- 13.5 GHz	0.5 dB	0.3 dB
13.5 GHz- 26.5 GHz	1.0 dB	0.5 dB
Phase		
100 kHz- 13.5 GHz	5 deg	1 deg
13.5 GHz- 26.5 GHz	5 deg	1.5 deg

[3] 20MHz and 30MHz points do not meet the specs requirement.

6.5.2 Trace noise

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Description	Specification	Typical
Note:Setting max output power		
Transmission trace noise magnitude		
9 kHz- 50 kHz (IFBW=1 kHz)	0.005 dB rms	0.0015 dB rms
50 kHz- 1 MHz (IFBW=1 kHz)	0.003 dB rms	0.0015 dB rms
1 MHz- 8 GHz (IFBW=10 kHz)	0.003 dB rms	0.0015 dB rms
8 GHz-8.5 GHz(IFBW=10 kHz)	0.005 dB rms	0.0025 dB rms
Reflection trace noise magnitude		
9 kHz- 50 kHz (IFBW=1 kHz)	0.005 dB rms	0.0015 dB rms
50 kHz- 1 MHz (IFBW=1 kHz)	0.003 dB rms	0.0010 dB rms
1 MHz- 8 GHz (IFBW=10 kHz)	0.003 dB rms	0.0015 dB rms
8 GHz-8.5 GHz(IFBW=10 kHz)	0.005 dB rms	0.0020 dB rms
Transmission trace noise phase		
9 kHz- 50 kHz (IFBW=1 kHz)	0.04 deg rms	0.02 deg rms
50 kHz- 1 MHz (IFBW=1 kHz)	0.03 deg rms	0.015 deg rms
1 MHz- 8.5 GHz (IFBW=10 kHz)	0.05 deg rms	0.02 deg rms
Reflection trace noise phase		
9 kHz- 50 kHz (IFBW=1 kHz)	0.03 deg rms	0.015 deg rms
50 kHz- 1 MHz (IFBW=1 kHz)	0.03 deg rms	0.015 deg rms
1 MHz- 8.5 GHz (IFBW=10 kHz)	0.05 deg rms	0.020 deg rms

SNA5022A/SNA5032A

Description	Specification	Typical
Note:Setting max output power		
Transmission trace noise magnitude		
100 kHz- 10 MHz (IFBW=1 kHz)	0.009 dB rms	0.0015 dB rms
10 MHz- 13.5 GHz (IFBW=10 kHz)	0.006 dB rms	0.0015 dB rms
13.5 GHz- 26.5 GHz (IFBW=10 kHz)	0.015 dB rms	0.0025 dB rms
Reflection trace noise magnitude		
100 kHz- 10 MHz (IFBW=1 kHz)	0.003 dB rms	0.0015 dB rms
10 MHz- 13.5 GHz (IFBW=10 kHz)	0.009 dB rms	0.0015 dB rms
13.5 GHz- 26.5 GHz (IFBW=10 kHz)	0.015 dB rms	0.0025 dB rms
Transmission trace noise phase		

100 kHz- 10 MHz (IFBW=1 kHz)	0.05 deg rms	0.02 deg rms
10 MHz- 13.5 GHz (IFBW=10 kHz)	0.05 deg rms	0.015 deg rms
13.5 GHz- 20 GHz (IFBW=10 kHz)	0.06 deg rms	0.02 deg rms
20 GHz- 26.5 GHz (IFBW=10 kHz)	0.09 deg rms	0.05 deg rms
Reflection trace noise phase		
100 kHz- 10 MHz (IFBW=1 kHz)	0.03 deg rms	0.015 deg rms
10 MHz- 13.5 GHz (IFBW=10 kHz)	0.05 deg rms	0.015 deg rms
13.5 GHz- 20 GHz (IFBW=10 kHz)	0.07 deg rms	0.02 deg rms
20 GHz- 26.5 GHz (IFBW=10 kHz)	0.09 deg rms	0.05 deg rms

6.5.3 Stability

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Description	Specification	Typical
Magnitude		
9 kHz- 3 GHz		± 0.005 dB/°C
3 GHz- 8.5 GHz		± 0.014 dB/°C
Phase		
9 kHz- 3 GHz		± 0.1 deg/°C
3 GHz- 8.5 GHz		± 0.3 deg/°C

SNA5022A/SNA5032A

Description	Specification	Typical
Magnitude		
100 kHz- 13.5 GHz		± 0.01 dB/°C
13.5 GHz- 26.5 GHz		± 0.05 dB/°C
Phase		
100 kHz- 13.5 GHz		± 0.1 deg/°C
13.5 GHz- 26.5 GHz		± 0.9 deg/°C

6.5.4 Dynamic accuracy

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Description	Specification
Relative to -10 dBm input power	
Magnitude	
10 dBm	± 0.1 dB
-30 dBm	± 0.05 dB
-100 dBm	± 2 dB
Phase	
10 dBm	± 2 deg
-30 dBm	± 0.2 deg
-100 dBm	± 10.38 deg

SNA5022A/SNA5032A

Description	Specification
Relative to -10 dBm input power	
Magnitude	
10 dBm	± 0.19 dB
-30 dBm	± 0.05 dB
-100 dBm	± 2.5 dB
Phase	
10 dBm	± 4.5 deg
-30 dBm	± 0.25 deg
-100 dBm	± 16.5 deg

6.6 Pulsed-RF

6.6.1 Pulse Modulation On/Off Ratio (dB)

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Description	Typical
9 kHz- 4.5 GHz	80
4.5 GHz- 8.5 GHz	70

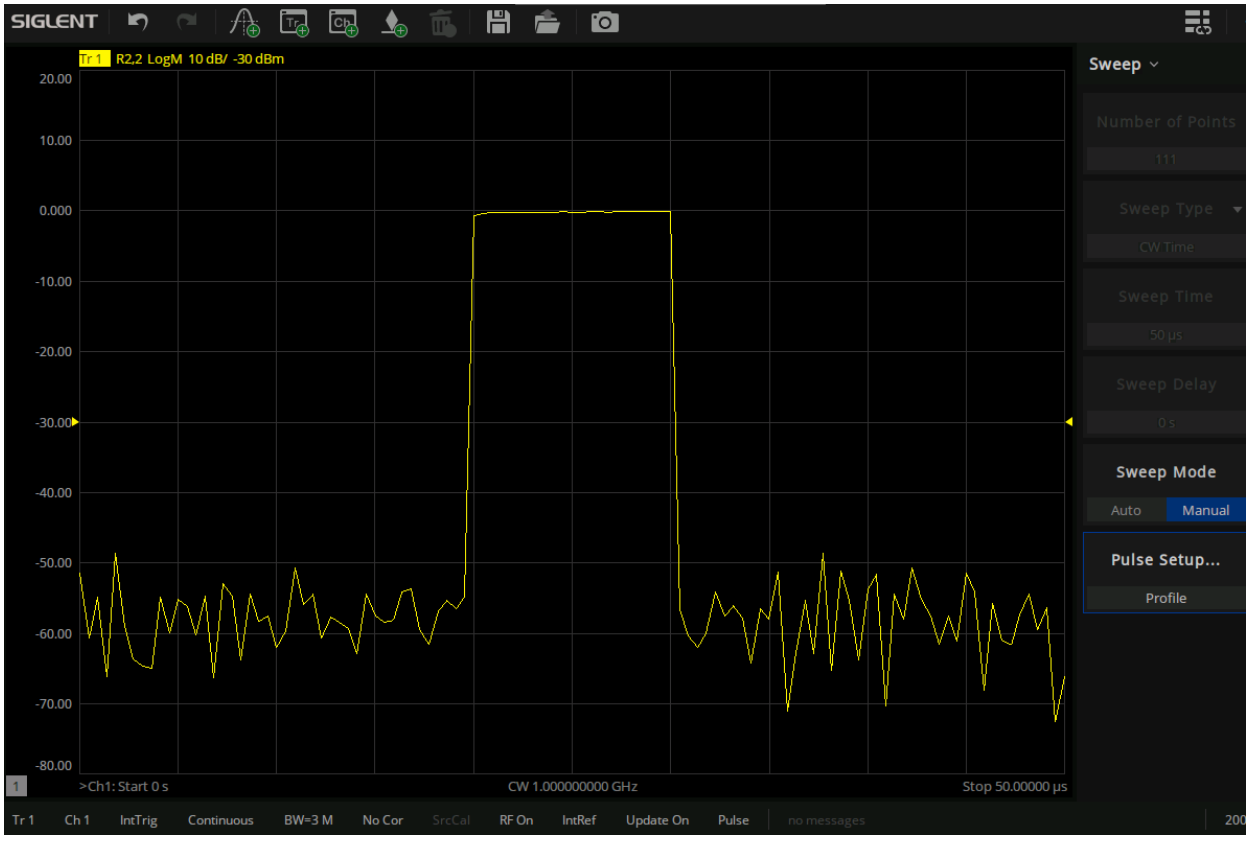
SNA5022A/SNA5032A

Description	Typical
9 kHz- 4.5 GHz	80
4.5 GHz- 26.5 GHz	70

6.6.2 Pulse Modulation

Description	Typical
Minimum pulse width	10 usec
Minimum pulse period	30 usec
Maximum pulse period	26 sec

Pulse Modulation Shape Example



7 Sweep time

SNA5002A/SNA5012A/SNA5004A/SNA5014A

Start frequency: 100 kHz, Stop frequency: 8.5 GHz; IFBW: 500 kHz.				
Points	201	401	1601	6401
Uncorrected	15 ms	17 ms	35 ms	141 ms
2-port cal	30 ms	34 ms	70 ms	282 ms
4-port cal(8.5GHz)	60 ms	68 ms	140 ms	564 ms
Start frequency: 100 kHz, Stop frequency: 8.5 GHz; IFBW: 100 kHz.				
Points	201	401	1601	6401
Uncorrected	17 ms	20 ms	46 ms	185 ms
2-port cal	34 ms	40 ms	92 ms	370 ms
4-port cal(8.5GHz)	68 ms	80 ms	184 ms	740 ms
Start frequency: 100 kHz, Stop frequency: 8.5 GHz; IFBW: 10 kHz.				
Points	201	401	1601	6401
Uncorrected	33 ms	52 ms	175 ms	698 ms
2-port cal	66 ms	104 ms	350 ms	1396 ms
4-port cal(8.5GHz)	132 ms	208 ms	700 ms	2792 ms
Start frequency: 100 kHz, Stop frequency: 8.5 GHz; IFBW: 1 kHz.				
Points	201	401	1601	6401
Uncorrected	193 ms	372 ms	1452 ms	5806 ms
2-port cal	386 ms	744 ms	2904 ms	11612 ms
4-port cal(8.5GHz)	772 ms	1488 ms	5808 ms	23224 ms

SNA5022A/SNA5032A

Start frequency: 100 kHz, Stop frequency: 26.5GHz; IFBW: 500 kHz.				
Points	201	401	1601	6401
Uncorrected	30 ms	54 ms	70 ms	229 ms
2-port cal	60 ms	108 ms	140 ms	458 ms
Start frequency: 100 kHz, Stop frequency: 26.5GHz; IFBW: 100 kHz.				
Points	201	401	1601	6401
Uncorrected	31 ms	57 ms	82 ms	275 ms
2-port cal	62 ms	114 ms	164 ms	550 ms
Start frequency: 100 kHz, Stop frequency: 26.5GHz; IFBW: 10 kHz.				
Points	201	401	1601	6401
Uncorrected	47 ms	89 ms	209 ms	784 ms
2-port cal	94 ms	178 ms	418 ms	1568 ms
Start frequency: 100 kHz, Stop frequency: 26.5GHz; IFBW: 1 kHz.				
Points	201	401	1601	6401
Uncorrected	208 ms	409 ms	1487 ms	5895 ms
2-port cal	416 ms	818 ms	2974 ms	11790 ms

8 Enhanced Time Domain Analysis with TDR (SNA5000-TDR)

Description	SNA5002/4A	SNA5012/4A	SNA5022A	SNA5032A
Bandwidth	4.5 GHz	8.5 GHz	13.5 GHz	26.5 GHz
Input Impedance	50 Ohm			
DC damage Level at test port	35 V			
Maximum test port input voltage (Hot TDR Mode)	1.5Vpp			
TDR stimulus	Step, Impulse			
TDR step amplitude	1 mV to 5 V			
TDR step rise time (min) (10% to 90%)	99.1 ps	52.5 ps	33.1 ps	16.9 ps
TDR step response resolution in free space (min) (εr = 1)	14.9 mm	7.9 mm	5 mm	2.5 mm
TDR impulse width (min)	134.1 ps	71.0 ps	44.7 ps	22.8 ps
DUT length (max)	13.8 μs		1.25 μs	
Eye diagram data rate (max)	3.6 Gb/s	6.8 Gb/s	10.8 Gb/s	21.2 Gb/s

9 General information

Description	Characteristics
Operating environment	
Temperature	0 to 40 ℃
Humidity	85%: 40 ℃, 24 hours
Altitude	0 to 3000 m
Non-operating storage environment	
Temperature	-20 ℃ to 60 ℃
Humidity	85%: 65 ℃, 24 hours
Altitude	0 to 15000 m
Size	W×H×D=378×284×126 mm
Weight	2-port: 5.5 kg; 4-port or SNA5032A/SNA5022A: 7.5 kg
EMC	
Conducted disturbance: CISPR 11/EN 55011	CLASS A group 1, 150 kHz - 30 MHz
Radiated disturbance: CISPR 11/EN 55011	CLASS A group 1, 30 MHz -1 GHz
Electrostatic discharge(ESD): IEC61000-4-2/EN61000-4-2	4.0 kV (contact), 8.0 kV (air)
Radio-frequency electromagnetic field Immunity: IEC 61000-4-3/EN 61000-4-3	10 V/m (80 MHz to 1 GHz); 3 V/m (1.4 GHz to 2 GHz); 1 V/m (2.0 GHz to 2.7 GHz)
Electrical fast transients (EFT): IEC 61000-4-4/EN 61000-4-4	2 kV (AC power ports)
Surges: IEC 61000-4-5/EN 61000-4-5	1 kV (Line to line) ; 2 kV (Line to ground)
Radio-frequency continuous conducted Immunity: IEC 61000-4-6/EN 61000-4-6	3 V, 0.15-80 MHz
Voltage dips and interruptions: IEC 61000-4-11/EN 61000-4-11	Voltage dips: 0% UT during 1 cycle; 40% UT during 10/12 cycles; 70% UT during 25/30 cycles; Voltage interruptions: 0% UT during 250 cycles
Safety	
UL 61010-1:2012/R: 2018-11; CAN/CSA-C22.2 No. 61010-1:2012/A1:2018-11. UL 61010-2-030:2018; CAN/CSA-C22.2 No. 61010-2-030:2018.	

10 Front panel information

Description	Characteristics
RF connectors	Type-N, female, 50Ω (SNA5002A/SNA5012A/SNA5004A/SNA5014A) 3.5mm NMD（male），50Ω (SNA5032A/SNA5022A)
Damage level	+27 dBm or ±35 VDC
Display Resolution	12.1 inch TFT color LCD with touch screen ; WXGA (1280 x 800)
USB interface	USB-A 2.0

11 Rear panel information

Description	Characteristics
Ext trigger input connector	
Type	BNC, female
Input level	5V TTL
Ext trigger output connector	
Type	BNC, female
Max output current	20 mA
Output level	3.3V TTL
Ext ref-signal input connector	
Type	BNC, female
Input frequency	10 MHz ±10 ppm
Input level	-3 dBm to +10 dBm
Input impedance	50Ω
Int ref-signal output connector	
Type	BNC, female
Output frequency	10 MHz ± 5 ppm
Signal type	Sinewave
Output level	0 dBm ± 3 dB into 50 Ω
Output impedance	50 Ω
Bias tee input connector	
Type	BNC, female
Max voltage	± 35 VDC
Max current (no degradation RF specification)	± 300 mA
Max current (damage level)	500 mA
Video output	HDMI
USB (USBTMC) interface	USB-B 2.0
LAN	10/100 BaseT Ethernet
Power	100~240 Vrms 50/60 Hz

	100~120 Vrms 400 Hz
Power consumption	2-port: 50 W (typical), 4-port: 70 W (typical) SNA5032A/SNA5022A: 85 W (typical)

12 Ordering Information

Items	Description	Order number
Products	2 ports, 4.5G Vector Network Analyzer	SNA5002A
	2 ports, 8.5G Vector Network Analyzer	SNA5012A
	4 ports, 4.5G Vector Network Analyzer	SNA5004A
	4 ports, 8.5G Vector Network Analyzer	SNA5014A
	2 ports, 13.5G Vector Network Analyzer	SNA5022A
	2 ports, 26.5G Vector Network Analyzer	SNA5032A
Standard Accessories	1 x Quick-start, 1 x Power-cable, 1 x USB-cable, 1 x calibration-certificate, 1 x Wireless mouse, 1 x Protective Cover	
Optional Accessories	High-performance reference source	SNA5000-HPR
	Time-Domain analysis	SNA5000-TDA
	Enhanced Time-Domain analysis	SNA5000-TDR
	Spectrum analysis	SNA5000-SA
	Scalar mixer measurement	SNA5000-SMM
	Performance Tests	SNA5000-PV
	Pulse measurement	SNA5000-PM
	N-type, Male, 50Ω Calibration Kit, 0-4.5GHz	F503ME
	N-type, Female, 50Ω Calibration Kit, 0-4.5GHz	F503FE
	3.5 mm, Male, 50Ω Calibration Kit, 0-4.5GHz	F603ME
	3.5 mm, Female, 50Ω Calibration Kit, 0-4.5GHz	F603FE
	N-type, Male, 50Ω Calibration Kit, 0-9GHz	F504MS
	N-type, Female, 50Ω Calibration Kit, 0-9GHz	F504FS
	N-type, Male and Female, 50Ω Calibration Kit,0-9GHz	F504TS
	3.5 mm, Male, 50Ω Calibration Kit, 0-9GH	F604MS
	3.5 mm, Female, 50Ω Calibration Kit, 0-9GHz	F604FS
	3.5 mm, Male and Female, 50Ω Calibration Kit, 0-9GHz	F604TS
	3.5 mm, Male and Female, 50Ω Calibration Kit, 0-26.5GHz	F606TS
	N(M)-SMA(M) RF Cable DC~18 GHz,1000 mm	N-SMA-18L
	N(M)-N(M) RF Cable DC~18 GHz,1000 mm	N-N-18L

	SMA(M)-SMA(M) RF Cable DC~18 GHz,1000 mm	SMA-SMA-18L
	SMA(M)-SMA(M) RF Cable DC~26.5 GHz,1000 mm	SMA-SMA-26L
	SMA(F)-SMA(M) RF Cable DC~26.5 GHz,1000 mm	SMAF-SMA-26L
	NMD 3.5 female-NMD 3.5 Male DC-26.5 GHz,635 mm	V26-N35MN35F-25IN
	NMD 3.5 female-APC 3.5 female DC-26.5 GHz,635 mm	V26-N35FA35F-25IN
	USB-GPIB Adapter	USB-GPIB
	RF demonstration board	SNA-TB01
	Adjustable Differential TDR probe DC-18 GHz	ADP-18
	Adjustable Differential TDR probe DC-26.5 GHz	ADP-26
	Adjustable Single-end TDR probe DC-18 GHz	ASP-18
	Adjustable Single-end TDR probe DC-26.5 GHz	ASP-26

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of electronic test & measurement instruments.

SIGLENT first began developing digital oscilloscopes independently in 2002. After more than a decade of continuous development, SIGLENT has extended its product line to include digital oscilloscopes, isolated handheld oscilloscopes, function/arbitrary waveform generators, RF/MW signal generators, spectrum analyzers, vector network analyzers, digital multimeters, DC power supplies, electronic loads and other general purpose test instrumentation. Since its first oscilloscope was launched in 2005, SIGLENT has become the fastest growing manufacturer of digital oscilloscopes. We firmly believe that today SIGLENT is the best value in electronic test & measurement.

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