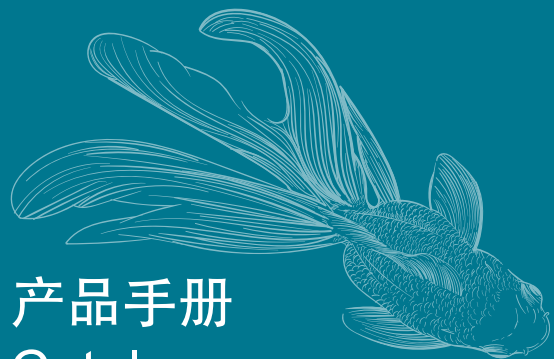




新疆星耀矢量科技有限公司
Xinjiang Xingyao Vector Technology Co., Ltd.

矢量网络分析仪 Vector Network Analyzers



产品手册
Catalog



2026

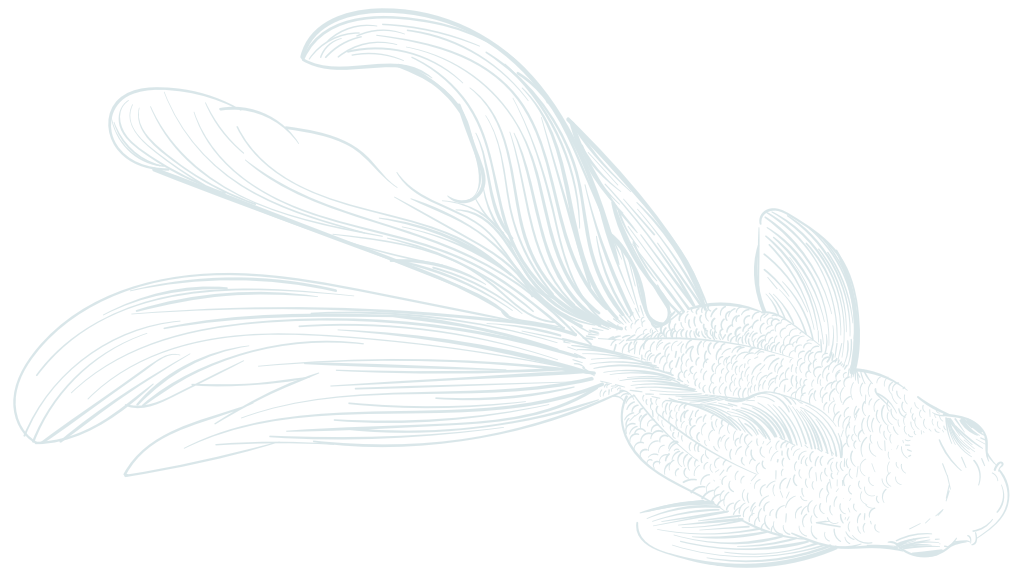


Table of Contents

CRXVT Vector Network Analyzer	
Selection Guide	4
CRXVT Vector Network Analyzers:	
Software and Hardware Capabilities	6
Software Options	8
Calibration	9
1-Port Series	
Vector Network Analyzers	
X606	10
X615	12
Compact Series	
Vector Network Analyzers	
TR1300x	14
X1754	16
X1201, X1203, X1204, X1206, X1209	18
X1218	20
X1244, X1444	22
Multiport Series	
Vector Network Analyzers	
X709	24

Benchtop Series	
Vector Network Analyzers	
X2209, X3209, X4209,	
X2409, X3409, X4409	26
X2220, X3220, X4220,	
X2420, X3420, X4420	28
X5222, X5422	30
X5244, X5444	32
Frequency	
Extension Module	
XT1854	34
Frequency	
Extension Modules	
XVECTOR 50-75/75-110/110-170	36
Port Extenders	
X708-18A, X716-18A	38
Automatic Calibration Module	
XC7204, XC5206, XC5209, XC5220,	
XC5409, XC5420, XC5232, XC5244	40
Standalone	
Auto-calibration Module	
XCB5206	42

Vector Network Analyzer

Selection Guide

		Frequency Range	Impedance/Number of Ports	Measured Parameters	Dynamic Range ² (typ.)	Output Power	Measurement Time per Point	Two Signal Sources	Frequency Range			
1-Port Series	X606	1 MHz to 6 GHz	50 Ohm/1	S11, cable loss S11, S21 , S12 , S22 ¹	119 dB	-40 ... 0 dBm	100 μs		1 MHz	X606	6 GHz	
	X615	85 MHz to 15 GHz	50 Ohm/1	S11, cable loss S11, S21 , S12 , S22 ¹	125 dB (85 MHz...4.8 GHz) 105 dB (4.8 GHz...15 GHz)	0 dBm; -25 dBm	170 μs		85 MHz	X615	15 GHz	
Compact Series	TR1300x	0.3 MHz to 1.3 GHz	50 Ohm/2	S11, S21	130 dB	-55 ... +3 dBm	150 μs		300 kHz	TR1300x	1.3 GHz	
	X1754	100 kHz to 4 GHz	75 Ohm/2	S11, S21, S12, S22	133 dB	-50 ... +10 dBm	24 μs		100 kHz	X1754	4.0 GHz	
	X1201 X1203 X1204 X1206 X1209	9 kHz to 1.5 GHz 9 kHz to 3 GHz 9 kHz to 4.5 GHz 9 kHz to 6.5 GHz 9 kHz to 9 GHz	50 Ohm/2	S11, S21, S12, S22	137 dB 137 dB 135 dB 135 dB 135 dB	-55 ... +5 dBm	24 μs		9 kHz	X1201 X1203 X1204 X1206 X1209	1.5 GHz 3 GHz 4.5 GHz 6.5 GHz 9 GHz	
	X1218	100 kHz to 18 GHz	50 Ohm/2	S11, S21, S12, S22	135 dB (< 8 GHz); 128 dB (> 8 GHz)	-45 ... +10 dBm	24 μs		100 kHz	X1218	18 GHz	
	X1244 X1444	10 MHz to 44 GHz	50 Ohm/2 50 Ohm/4	S11, S21, S12, S22 S11, S21 ... S44	135 dB	-50 ... 0 dBm	22 μs		10 MHz	X1244 X1444	44 GHz	
Multiport Series	X709	300 kHz to 9 GHz	50 Ohm/6 50 Ohm/8 50 Ohm/10 50 Ohm/12 50 Ohm/14 50 Ohm/16	S11, S21 ... S66 S11, S21 ... S88 S11, S21 ... S1010 S11, S21 ... S1212 S11, S21 ... S1414 S11, S21 ... S1616	140 dB ⁷	-45 ... +10 dBm ⁷	24 μs		300 kHz	X709	9 GHz	
Benchtop Series	X2209 X3209 X4209 X2409 X3409 X4409	100 kHz to 9 GHz	50 Ohm/2 50 Ohm/2 direct receiver access 50 Ohm/2 expandable up to 54 GHz ⁴ 50 Ohm/4 50 Ohm/4 direct receiver access 50 Ohm/4 expandable up to 54 GHz ⁴	S11, S21, S12, S22 S11, S21, S12, S22 S11, S21, S12, S22 S11, S21 ... S44 S11, S21 ... S44 S11, S21 ... S44	152 dB	-60 ... +15 dBm	10 μs	Yes Yes Yes	100 kHz	X2209 X3209 X4209 X2409 X3409 X4409	9 GHz	
	X2220 X3220 X4220 X2420 X3420 X4420	100 kHz to 20 GHz	50 Ohm/2 50 Ohm/2 direct receiver access 50 Ohm/2 expandable up to 178 GHz ⁴ 50 Ohm/4 50 Ohm/4 direct receiver access 50 Ohm/4 expandable up to 178 GHz ⁴	S11, S21, S12, S22 S11, S21, S12, S22 S11, S21, S12, S22 S11, S21 ... S44 S11, S21 ... S44 S11, S21 ... S44	135 dB	-60 ... +10 dBm	12 μs	Yes Yes Yes	100 kHz	X2220 X3220 X4220 X2420 X3420 X4420	20 GHz	
	X5222 X5422	100 kHz to 22.5 GHz	50 Ohm/2 ⁶ 50 Ohm/4 ⁶	S11, S21, S12, S22 S11, S21 ... S44	144 dB	-60 ... +15 dBm	9 μs	Yes	100 kHz	X5222 X5422	22.5 GHz	
	X5244 X5444	10 MHz to 44 GHz	50 Ohm/2 ⁶ 50 Ohm/4 ⁶	S11, S21, S12, S22 S11, S21 ... S44	140 dB	-60 ... +10 dBm	10 μs	Yes	10 MHz	X5244 X5444	44 GHz	
Frequency Range Extension Module	XT1854 ³	18 GHz to 54 GHz	50 Ohm/1...4	S11, S21, S12, S22 S11, S21 ... S44	140 dB	-20 ... +3 dBm	12 μs		18 GHz	XT1854	54 GHz	
	XVECTOR 50-75 GHz ⁵	50 to 75 GHz	WR-15/1	S11, S21, S12, S22 S11, S21 ... S44	120 dB	+14 ⁸ dBm -23 ... +12 ⁹ dBm	12 μs		50 GHz	XVECTOR 50-75 GHz	75 GHz	
	XVECTOR 75-110 GHz ⁵	75 to 110 GHz	WR-10/1	S11, S21, S12, S22 S11, S21 ... S44	+10 ⁸ dBm -27 ... +8 ⁹ dBm	75 GHz		XVECTOR 75-110 GHz	110 GHz			
	XVECTOR 110-170 GHz ⁵	110 to 170 GHz	WR-6/1	S11, S21, S12, S22 S11, S21 ... S44	110 dB	-2 ⁸ dBm -39 ... -4 ⁹ dBm		110 GHz	XVECTOR 110-170 GHz	170 GHz		

¹ With two 1-Port Vector Network Analyzers.

² With a 10 Hz IF filter bandwidth.

³ The modules are used with the X4209, X4409, X4220, and X4420 vector network analyzers. No standalone operation.

⁴ To extend the range up, use third-party frequency range extension modules.

⁵ The modules are used with the X4220 and X4420 vector network analyzers. No standalone operation.

⁶ Direct receiver access and frequency extension up to 178 GHz are optional

⁷ Specifications apply in the frequency range from 5 MHz to 6 GHz

⁸ XVECTOR models without the embedded step-attenuator option.

⁹ XVECTOR models with the embedded step-attenuator option. Attenuation range: 0 to 35 dB.

Software and Hardware Capabilities

					
1-Port Series		Compact Series			
1-Port Vector Network Analyzer		Vector Network Analyzer			
X606, X615	TR1300x	X1754	X1201, X1203, X1204, X1206, X1209	X1218	X1244 X1444

HARDWARE CAPABILITIES

Second Auxiliary Source	No	No	No	No	No	No
Built-in Pulse Generators and Modulators	No	No	No ¹	Yes (PLS-X option)	Yes (PLS-X option)	Yes (PLS-X option)
Direct Access to Measuring Receivers	No	No	No	No	No	No
Frequency Extenders Support	No	No	No	No	No	No
DC Voltage Measurement	No	No	No	No	No	No

CALIBRATION OPTIONS

Support for Automatic Calibration Modules	Yes	Yes	Yes	Yes	Yes	Yes
Waveguide calibration	Yes ⁴	Yes	Yes	Yes	Yes	Yes
Calibration with a Power Meter	No	Yes	Yes	Yes	Yes	Yes

MEASUREMENT OPTIONS / SOFTWARE

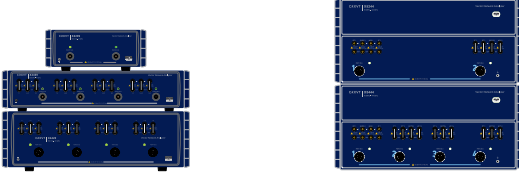
Fixture Simulation (Embedding and De-embedding)	Yes	No	Yes	Yes	Yes	Yes
Calculator	No	No	Yes	Yes	Yes	Yes
Time Domain Analysis and Gating	Yes	Yes	Yes	Yes	Yes	Yes
Balanced Device Measurements	No	No	No	No	No	Yes, model X1444
Source to Receivers frequency offset mode	No	Yes	Yes	Yes	Yes	Yes
Scalar Mixer Calibration and measurement	No	Yes (SC21)	Yes	Yes	Yes	Yes
Vector Mixer Calibration and measurement	No	No	Yes	Yes	Yes	Yes
Frequency Offset Adjustment	No	Yes	Yes	Yes	Yes	Yes
Pulse Measurements (PLS-X)	No	No	No ¹	Yes (PLS-X option)	Yes (PLS-X option)	Yes (PLS-X option)
FIFO Buffer	No	No	Yes	Yes	Yes	Yes, model X1244
Automatic Fixture Removal (AFR-X) Software ⁵	No	No	Yes (AFR-X option)	Yes (AFR-X option)	Yes (AFR-X option)	Yes (AFR-X option)
Noise Figure (NF-X)	No	No	No	No	No	No

SYSTEM REQUIREMENTS

Operating System	Windows 10 and above, Linux	Windows 10 and above, Linux			
Processor	1 GHz	1.5 GHz			
RAM	2 GB	2 GB	4 GB	4 GB	4 GB
Data Exchange Standard	USB 2.0 High Speed	USB 2.0 High Speed			

¹ Please contact XVT to select an external pulse modulator and integrate it into your measurement system.
² There are jumpers on the X4xxx/ X5xxx analyzers to connect frequency extenders. We also offer special XT1854R and XT1854TR modules for antenna measurements. Please contact XVT for configuration details.

of the CRXVT Vector Network Analyzer

				
Multiport Series	Benchtop Series		Frequency Range Extension Module	
Multiport Vector Network Analyzer	Vector Network Analyzer		Benchtop Frequency Range Extension Module	
X709	X2209, X3209, X4209, X2409, X3409, X4409 X2220, X3220, X4220, X2420, X3420, X4420	X5222, X5422 X5244, X5444	X4x09/X4x20 with XT1854	X4220, X4420 with the XVECTOR frequency extension module

HARDWARE CAPABILITIES

No	Yes, Cx4xx models	Yes, CM4xx models	-	-
No ¹	No ¹	Yes (PLS-X option)	No ¹	No ¹
No	Yes, C2xxx models	Yes	No ²	No
No	Yes, C4xxx ³ models	Yes	-	-
No	Yes (AUX option)	No	-	-

CALIBRATION OPTIONS

Yes	Yes	Yes	Yes	No
Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes

MEASUREMENT OPTIONS / SOFTWARE

Yes	Yes	Yes	Yes	Yes
No	Yes	Yes	Yes	Yes
Yes (TD-X option)	Yes (TD-X option)	Yes (TD-X option)	Yes (bandpass mode)	Yes (bandpass mode)
Yes	Yes, Cx4xx models	Yes, CM4xx models	Yes, Cx4xx models	Yes, Cx4xx models
Yes (MXR-X option)	Yes (MXR-X option)	Yes (MXR-X option)	Yes	Yes
Yes (MXR-X option)	Yes (MXR-X option)	Yes (MXR-X option)	Yes	Yes
Yes (MXR-X option)	Yes (MXR-X option)	Yes (MXR-X option)	Yes	Yes
Yes (MXR-X option)	Yes (MXR-X option)	Yes (MXR-X option)	Yes	Yes
No ¹	No ¹	Yes (PLS-X option)	No ¹	No ¹
Yes	Yes	Yes	Yes	Yes
Yes (AFR-X option)	Yes (AFR-X option)	Yes (AFR-X option)	Yes (AFR-X option)	Yes (AFR-X option)
No	Yes	Yes	No	No

SYSTEM REQUIREMENTS

Windows 10 and above, Linux	Windows 10 and above, Linux		Windows 10 and above, Linux	Windows 10 and above, Linux
3.3 GHz	1.5 GHz	1.5 GHz	1.5 GHz	1.5 GHz
8 GB	4 GB	4 GB	4 GB	4 GB
USB 2.0 High Speed	USB 2.0 High Speed	USB 2.0 High Speed	USB 2.0 High Speed	USB 2.0 High Speed

³ Specify the characteristics of the frequency extenders to be used. Control of modules through the interface of VNA software is not supported.
⁴ To perform a full 1-port calibration, a waveguide calibration kit type SSL Offset Short 1/8, Offset Short 3/8, Load is required. Please contact CRXVT for the calibration kit configuration.
⁵ The AFR software supports 16-port devices.

Software Options



CRXVT network analyzers do not include a display, computer, or keys.

To do this, the user connects the instrument to the USB and runs the software on the PC.

Such an arrangement has several advantages:

- Higher reliability of the instrument.
- Easy software maintenance and updates.
- No need to update, maintain, and secure the instrument's operating system.
- Confidentiality: The user cannot tamper with anything.

The software takes raw measurement data from the analyzer and converts it into S-parameters and other values using proprietary algorithms. The software provides easy integration of the analyzer with other software applications.

There is a fully functional demo mode to explore the features and capabilities of our network analyzers without actually connecting the instrument to your PC.

The recommended PC specifications are:

- 1.5+ GHz CPU.
- 2+ GB RAM.
- USB 2.0 interface.
- Windows 10 or above or Linux (Ubuntu 14.04, Mint 17, Debian 8.9, and so on.).

The software provides a wide range of measurement functions. Please refer to the sections below.

Calibration

Analyzer calibration (not to be confused with factory calibration) is similar to zeroing in some instruments. It calculates and corrects systematic measurement errors due to imperfections in the measuring setup: amplitude and phase flatness, limited directivity, mismatch between the source and receiver ports, and insufficient port isolation. Calibration of the measurement setup, including the VNA, cables, adapters, and other accessories, significantly increases the accuracy of measurements.

Our software supports the most advanced calibration algorithms in coaxial and waveguide lines:

- Normalization of reflection and transmission.
- Full 1-Port Calibration (SOL).
- One Path 2-Port Calibration.
- Full 2-Port Calibration (SOLT), and Unknown Thru calibration (SOLR).
- TRL, including Multiline TRL.
- SSS(T).
- Adapter Removal/Insertion.

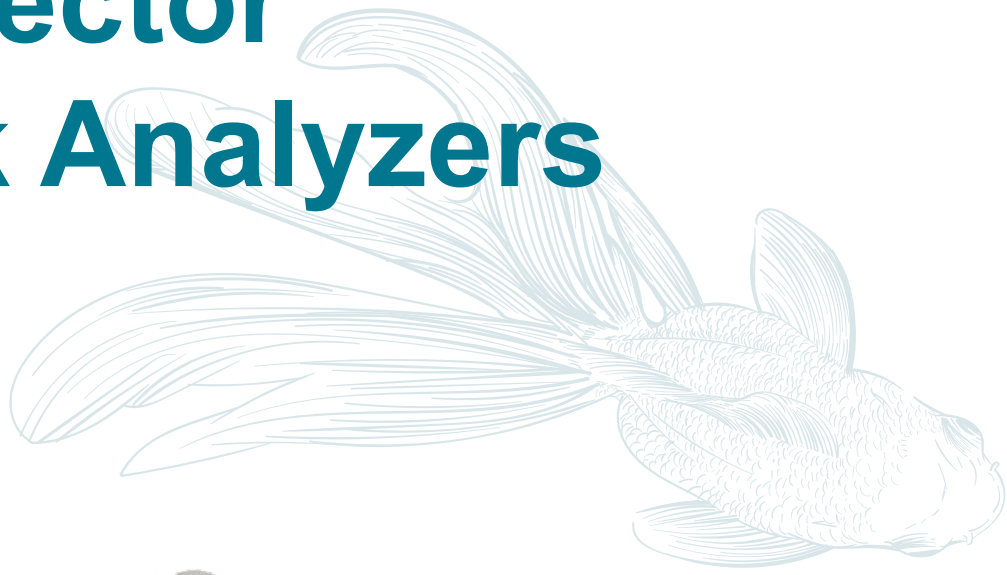
For details on the differences, features, and applications of these algorithms, please refer to the literature and operating manuals.

The VNA supports calibration kits from any manufacturer, defined by a polynomial model or databased ones. To increase the convenience and speed of measurements, we recommend using our Automatic Calibration Modules (ACM). Besides calibration, ACMs are also convenient for validating a calibration. Activate the «Confidence Check» function in the menu. The embedded attenuator is connected to the ACM ports, and its characteristics, measured during module calibration, are stored in the internal memory. The factory S-parameters of the attenuator are displayed on a trace along with the measured values so that the user can compare the measurements with the reference values.

Power calibration is also available. The calibration ensures that correct signal source power is radiated off the measurement plane (output of measurement setup). Power meters of the world's leading manufacturers are supported. The calibration is useful when measuring the scalar characteristics of frequency converters, absolute value of power, and amplifier compression points.



1-Port Vector Network Analyzers



1-Port Series X606

1-Port Series Vector Network Analyzers are designed to measure the magnitude and phase of the reflection coefficient and cable losses.

X606 is a 1-Port Vector Network Analyzer for measurements in the frequency range from 1 MHz up to 6 GHz. This lightweight and compact 1-Port Vector Network Analyzer can be used in both manufacturing and laboratory settings as part of automated measurement setups. The 1-Port Vector Network Analyzer can be directly connected to the DUT without any RF cable. This improves measurement accuracy, reduces operating costs and allows to save time on calibration, which can be performed less frequently and under more convenient conditions. The device is controlled by an external computer. The USB 2.0 interface provides power supply and data communication with the computer.

The 1X-VNA software has an adapted interface for working with a touch screen and allows the use of 1-Port Vector Network Analyzer with laptop, tablets, industrial and personal computers running Windows and Linux OS. The 1NX-VNA software can control up to sixteen 1-Port Vector Network Analyzers simultaneously connected to one USB controller to measure the amplitude and phase of reflection coefficients and the scalar transmission coefficient between any pair of 1-Port Vector Network Analyzers. With a high number of measurement ports, you can address a wide range of issues related to measuring multiport devices such as diplexers, splitters, combiners, and antenna arrays.

Frequency range: 1 MHz to 6 GHz
Impedance: 50 Ohm
Number of ports: 1, N type, male
Measured parameters:
With one 1-Port Vector Network Analyzer:
S11, cable loss
With two 1-Port Vector Network Analyzers:
S11, |S21|, |S12|, S22
With up to 16 1-Port Vector Network Analyzers:
Sii, |Sji|, |Sij|, Sjj, where i, j = 1 to 16
Dynamic range: 119 dB typ.
Output power range : -40 to 0 dBm, typ.
Measurement time per point: 100 μ s
Number of measurement points:
1X-VNA software: 2 to 100,001
1NX-VNA software: 2 to 16,001
Number of channels:
1X-VNA software:
up to 4 logical independent measuring channels
1NX-VNA software:
up to 16 logical independent measuring channels
Frequency resolution: 20 Hz
Full-scale frequency accuracy: $\pm 2.5 \times 10^{-6}$
Measurement bandwidths:
100 Hz to 100 kHz (1/3 steps)
Time Domain measurements (DTF)
Gating
Connector type: mini USB B
Power consumption: 3.5 W
Operating Temperature:
-10 °C to +50 °C (14 °F to 122 °F)
Dimensions:
Length x Width x Height: 161 × 65 × 28 mm
Weight: 0.35 kg (12.4 oz)
Software:
1 1-Port Vector Network Analyzer: 1X-VNA
Up to 16 1-Port Vector Network Analyzers: 1NX-VNA
The warranty period: 1 year. A warranty extension to 3 or 5 years is available with the EXW3/5 option

1-Port Vector Network Analyzers



1-Port Series X615

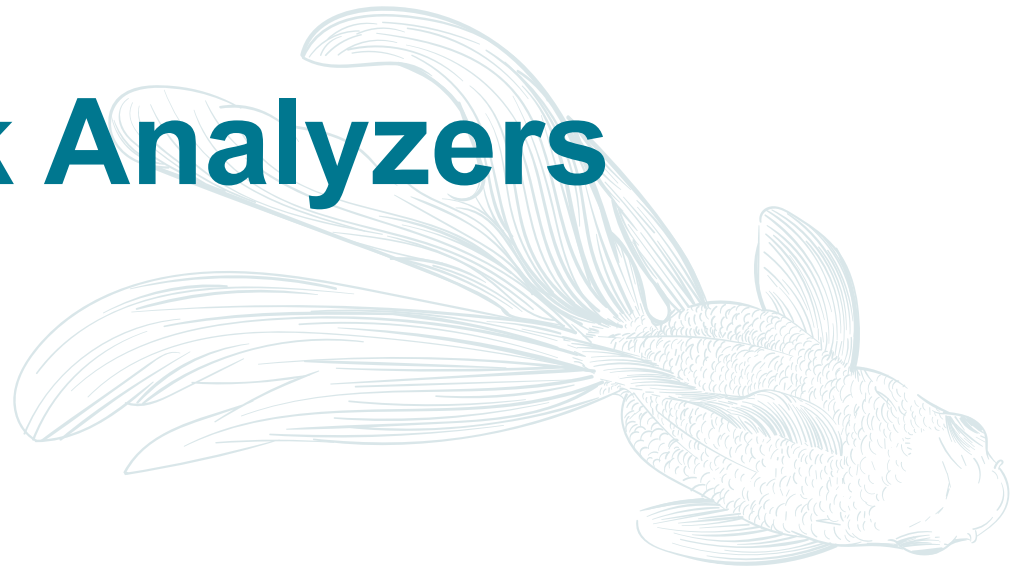
1-Port Series Vector Network Analyzers are designed to measure the magnitude and phase of the reflection coefficient and cable losses.

X615 is a 1-Port Vector Network Analyzer for measurements in the 85 MHz to 15 GHz operating frequency range. This lightweight and compact 1-Port Vector Network Analyzer can be used in both manufacturing and laboratory settings as part of automated measurement setups. The 1-Port Vector Network Analyzer can be directly connected to the device being measured without using a VNA test cable. This improves measurement accuracy, reduces operating costs, and accelerates the calibration, which can be performed less frequently and under more convenient conditions. The device is controlled by an external computer. Power supply and communication with the computer are carried out via the USB 2.0 interface.

The 1X-VNA software has a convenient, touch-screen-friendly GUI. With it, 1-Port Vector Network Analyzer can be operated from laptops, tablets, and industrial and personal computers running Windows and Linux OS. The 1NX-VNA software can control up to sixteen 1-Port Vector Network Analyzers simultaneously connected to one USB controller to measure the amplitude and phase of reflection coefficients and the scalar transmission coefficient between any pair of 1-Port Vector Network Analyzers. With a high number of measurement ports, you can address a wide range of issues related to measuring multipoint devices such as diplexers, combiners, and antenna arrays.

Frequency range: 85 MHz to 15 GHz
Impedance: 50 Ohm
Number of ports: 1,
X615-01: N type, female
X615-02: N type, male
X615-11: 3.5 mm, female
X615-12: 3.5 mm, male
Measured parameters:
With one 1-Port Vector Network Analyzer:
S11, cable loss
With two 1-Port Vector Network Analyzers:
S11, |S21|, |S12|, S22
When using up to 16 1-Port Vector Network Analyzers:
Sii, |Sji|, |Sij|, Sjj, where i, j = 1 to 16
Dynamic range:
125 dB (85 MHz to 4.8 GHz) /
105 dB (4.8 GHz to 15 GHz) typ.
Output power: -25; 0 dBm
Measurement time per point: 170 μs
Number of measurement points:
1X-VNA software: 2 to 100,001
1NX-VNA software: 2 to 16,001
Number of channels:
1X-VNA software:
up to 4 logical independent measuring channels
1NX-VNA software:
up to 16 logical independent measuring channels
Frequency resolution: 25 Hz
Full-scale frequency accuracy: $\pm 2.5 \times 10^{-6}$
Measurement bandwidths: 10 Hz to 300 kHz
(1/3 steps)
Time Domain measurements (DTF)
Gating
Connector type: mini USB B
Power consumption: 3.5 W, USB-powered
Operating Temperature: -10 °C to +50 °C
(14 °F to 122 °F)
Dimensions:
Length x Width x Height: 158 × 66 × 28 mm
Weight: 0.4 kg (14.1 oz)
Software:
1 1-Port Vector Network Analyzer: 1X-VNA
Up to 16 1-Port Vector Network Analyzers: 1NX-VNA
The warranty period: 1 year. A warranty extension to
3 or 5 years is available with the EXW3/5 option

Vector Network Analyzers



Compact Series TR1300x

This is an entry-level Vector Network Analyzer that provides one-way measurements in a frequency range up to 1.3 GHz. Applications: testing, tuning and development of various radio devices used in manufacturing and laboratories, and as part of automated measuring systems.

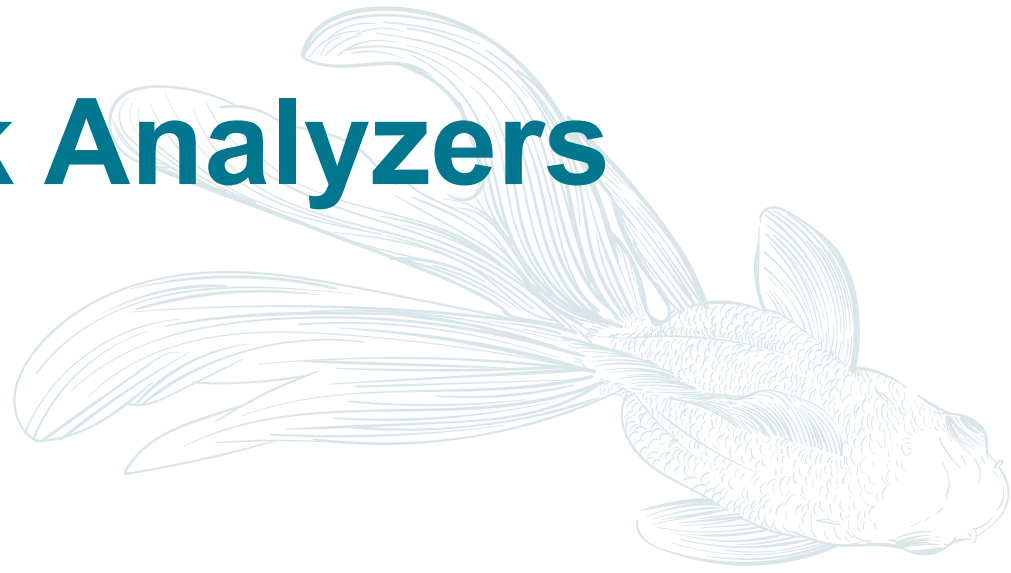
The TR1300x is best suited for applications where the full matrix of S-parameter measurements are not required, but one-way transmission/reflection (T/R) characteristics are sufficient, saving costs on measurement equipment. To measure the nonlinear properties of DUTs and expand the measurement range, the device uses output power regulation with a depth of at least 58 dB.

The analyzers are controlled by an external PC running dedicated software, which processes information and provides GUI. A USB 2.0 interface is used to communicate with the PC. A PC is not included.

Frequency range: 0.3 MHz to 1.3 GHz
Impedance: 50 Ohm
(75 Ohm using adapter)
Number of ports: 2, N type, female
Measured parameters: S11, S21
Dynamic range: 130 dB, typ.
Output power range: -55 to +3 dBm
Measurement time per point: 150 μ s
Number of measurement points: 2 to 16,001
Number of channels:
up to 16 logical independent channels
Frequency resolution: 1 Hz
Full-scale frequency accuracy: $\pm 5 \times 10^{-6}$
Measurement bandwidths:
10 Hz to 30 kHz (1 / 3 step)
Connector type: USB B
Dimensions: Length x Width x Height
285 x 142 x 40 mm
Weight: 1.5 kg (52.9 oz)

Software: TRX-VNA
The warranty period: 1 year
A warranty extension to 3 or 5 years is available
with the EXW3/5 option

Vector Network Analyzers



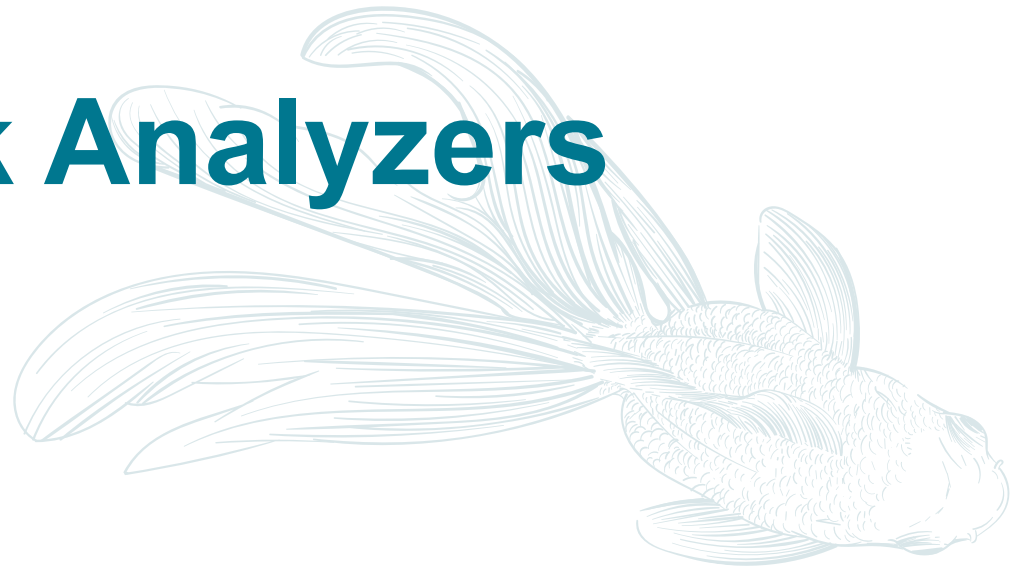
Compact Series X1754

The X1754 analyzer measures complex transmission and reflection coefficients (S-parameters) of DUTs. The X1754 is used for testing, configuring, and developing devices in both manufacturing and laboratory settings as part of automated measurement setups. The X1754 analyzer is a 2-port instrument. The X1754 comes with N (75 Ohm) port connectors.

The analyzers are controlled by an external PC running dedicated software, which processes information and provides GUI. A USB 2.0 interface is used to communicate with the PC. A PC is not included.

Frequency range: 100 kHz to 4 GHz
Impedance: 75 Ohm
Number of ports: 2, N type, female
Measured parameters: S11, S21, S12, S22
Dynamic range: 133 dB typ.
Output power range: -50 to +10 dBm
Measurement time per point: 24 μ s
Number of measurement points: 2 to 500,001
Number of channels:
up to 16 logical independent channels
Frequency resolution: 1 Hz
Full-scale frequency accuracy: $\pm 5 \times 10^{-6}$
Measurement bandwidths:
1 Hz to 300 kHz (1 / 1.5 / 2 / 3 / 5 / 7 step)
Connector type: USB C
Dimensions:
Length x Width x Height: 267 × 160 × 44 mm
Weight: 1.7 kg (60 oz)
Software: 2X-VNA
The warranty period: 1 year
A warranty extension to 3 or 5 years is available with the EXW3/5 option
Additional software options (purchased separately):
AFR-X – Automatic Fixture Removal

Vector Network Analyzers



Compact Series X1201, X1203, X1204, X1206, X1209

The Compact Series of Vector Network Analyzers (X1201, X1203, X1204, X1206, X1209) provides measurements of complex transmission and reflection coefficients (S-parameters) of DUTs. The Compact Series is used for testing, configuring, and developing devices in both manufacturing and laboratory settings as part of automated measurement setups. The Compact Series analyzers differ from each other in their frequency range and dynamic measurement range.

The Compact Series analyzers are 2-port instruments that support pulse mode measurements (PLS-X option). The device features an embedded pulse modulator capable of generating pulse signals with a minimum duration of 200 ns, along with a synchronizer and logic generators that enable various pulse measurement modes: «Point-in-pulse», «Pulse Profile», and «Asynchronous Pulse». The minimum time resolution in the Pulse Profile mode is 2 μ s.

The analyzer is controlled by an external PC running dedicated software, which processes information and provides GUI. A USB C interface is used to communicate with the PC. A PC is not included.

Frequency range
X1201: 9 kHz to 1.5 GHz
X1203: 9 kHz to 3 GHz
X1204: 9 kHz to 4.5 GHz
X1206: 9 kHz to 6.5 GHz
X1209: 9 kHz to 9 GHz
Impedance: 50 Ohm
Number of ports: 2, N type, female
Measured parameters: S11, S21, S12, S22
Dynamic range:
X1201: 137 dB typ.
X1203: 137 dB typ.
X1204: 135 dB typ.
X1206: 135 dB typ.
X1209: 135 dB typ.
Output power range: -55 to +5 dBm
Measurement time per point: 24 μ s
Number of measurement points: 2 to 500,001
Number of channels: up to 16 logical independent channels
Frequency resolution: 1 Hz
Full-scale frequency accuracy: $\pm 5 \times 10^{-6}$
Measurement bandwidths:
1 Hz to 300 kHz (1 / 1.5 / 2 / 3 / 5 / 7 step)
Connector type: USB C
Dimensions:
Length x Width x Height: 267 × 160 × 44 mm
Weight: 2 kg (71 oz)
Software: 2X-VNA
Additional software options:
PLS-X - Pulse mode measurements
AFR-X - Automatic Fixture Removal
The warranty period: 1 year
A warranty extension to 3 or 5 years is available with the EXW3/5 option

Vector Network Analyzers



Compact Series X1218

The X1218 analyzer measures complex transmission and reflection coefficients (S-parameters) of DUTs. The X1218 model is the newest addition to our compact series. It is used for testing, tuning, and developing devices in both manufacturing and laboratory settings as part of automated measurement setups.

The X1218 Vector Network Analyzer supports pulse mode measurements (PLS-X software option). The device features an embedded pulse modulator capable of generating pulse signals with a minimum duration of 200 ns, along with a synchronizer and logic generators that enable various pulse measurement modes: «Point-in-pulse», «Pulse Profile», and «Asynchronous Pulse». The minimum time resolution in the Pulse Profile mode is 2 μ s.

The analyzer is controlled by an external PC running dedicated software, which processes information and provides GUI. A USB 2.0 interface is used to communicate with the PC. A PC is not included.

Frequency range: 100 kHz to 18 GHz

Number of ports: 2, N type, female

Impedance: 50 Ohm

Measured parameters: S11, S21, S12, S22

Dynamic range:
135 dB (up to 8 GHz) / 128 dB (from 8 GHz)

Output power range: -45 to +10 dBm

Measurement time per point: 24 μ s

Number of measurement points: 2 to 200,001

Number of channels:
up to 16 logical independent channels

Frequency resolution: 1 Hz

Full-scale frequency accuracy: $\pm 5 \times 10^{-6}$

Measurement bandwidths:
1 Hz to 300 kHz (1 / 1.5 / 2 / 3 / 5 / 7 step)

Connector type: USB B

Dimensions:
Length x Width x Height: 370 × 210 × 75 mm

Weight: 3.9 kg (138 oz)

Software: 2X-VNA

Additional software options:
PLS-X - Pulse mode measurements
AFR-X - Automatic Fixture Removal

The warranty period: 1 year
A warranty extension to 3 or 5 years is available
with the EXW3/5 option

Vector Network Analyzers



Compact Series X1244, X1444

The X1244 and X1444 analyzers are designed for testing, tuning, and developing devices in both manufacturing and laboratory settings as part of automated measurement setups. The X1244 and X1444 are 2- and 4-port Vector Network Analyzers operating in the 10 MHz to 44 GHz frequency range. These are the highest-frequency vector network analyzers of the Compact series. They deliver an excellent dynamic range and high measurement speed in a compact enclosure, offering a comprehensive range of software functions to tackle most real-world production measurement challenges.

The X1244 and X1444 Vector Network Analyzers support pulse mode measurements (PLS-X software option). The device includes an embedded pulse modulator capable of generating pulse signals with a minimum duration of 20 ns, along with a synchronizer and logic generators that support various pulse measurement modes: «Point in a pulse», «Pulse profile» and «Asynchronous pulse» mode. The minimum time resolution in Pulse Profile mode is 100 ns.

The analyzers are controlled by an external PC running dedicated software, which processes information and provides GUI. A USB 2.0 interface is used to communicate with the PC. A PC is not included.

For convenient, high-quality calibration of the network analyzer, it is recommended to use automatic calibration modules, including XC5244 for measuring RF paths with 2.92 mm and 2.4 mm connectors.

Frequency range: 10 MHz to 44 GHz
Impedance: 50 Ohm
Number of ports: 2/4, NMD 2.4 mm, male
Measured parameters:
X1244: S11, S21, S12, S22
X1444: S11, S21 ... S44
Dynamic range: 135 dB typ.
Output power range: -50 to 0 dBm
Measurement time per point: 22 µs
Number of measurement points: 2 to 500,001
Number of channels:
up to 16 logical independent channels
Frequency resolution: 1 Hz
Full-scale frequency accuracy: $\pm 2 \times 10^{-6}$
Measurement bandwidths:
1 Hz to 2 MHz (1 / 1.5 / 2 / 3 / 5 / 7 step)
3 / 5 / 7.5 / 10 MHz available with the PLS-X option
Connector type: USB B
Dimensions:
Length x Width x Height:
X1244: 425 × 235 × 96 mm
X1444: 440 × 395 × 96 mm
Weight:
X1244: 6 kg (211.64 oz)
X1444: 9.8 kg (345.68 oz)
Software:
X1244: 2X-VNA
X1444: 4X-VNA
Additional software options:
PLS-X - Pulse mode measurements
AFR-X - Automatic Fixture Removal
The warranty period: 1 year
A warranty extension to 3 or 5 years is available with the EXW3/5 option

Vector Network Analyzers



Multiport Series X709

The X709 Vector Network Analyzers expand the CRXVT Network Analyzer family, specializing in multiport measurements. The hardware and software design of the X709 analyzers eliminates the need for an RF switch matrix, optimizes the calibration process, enhances accuracy, and accelerates measurements.

The X709 is a general-purpose multiport solution available in 6/8/10/12/14/16 ports designed to measure a wide range of devices:

- multiport antennas
- switches
- cable assemblies
- diplexers
- multi-channel power dividers and combiners

Users can increase the number of measuring ports to 16. Please contact the XVT Service Center.

The versatile enclosure design allows you to use the analyzer on a desk or easily install it in a 19-inch rack as part of an automated measurement system.

Strong and durable connectors, accomplished with their ergonomic layout make it easy to connect the analyzer to the DUT.

The X709 Vector Network Analyzers are controlled by an external personal computer running next-generation software for Windows and Linux OS. It features a state-of-the-art GUI and a wide range of measurement capabilities. A PC is not included.

Frequency range: 300 kHz to 9 GHz

Impedance: 50 Ohm

Number of ports: 6/8/10/12/14/16 N type, female

Measured parameters:

X709-6: S11, S21 ... S66

X709-8: S11, S21 ... S88

X709-10: S11, S21 ... S1010

X709-12: S11, S21 ... S1212

X709-14: S11, S21 ... S1414

X709-16: S11, S21 ... S1616

Dynamic range: 140 dB typ. (5 MHz - 6 GHz)

Output power range: -45 to +10 dBm (5 MHz - 6 GHz)

Measurement time per point: 24 μ s

Number of measurement points: 2 to 200,001

Number of channels: up to 32 logical independent channels

Frequency resolution: 1 Hz

Full-scale frequency accuracy: $\pm 2 \times 10^{-6}$

Measurement bandwidths:

1 Hz to 2 MHz (1 / 1.5 / 2 / 3 / 5 / 7 step)

Connector type: USB B

Dimensions: Length x Width x Height:

436 × 425 × 96 mm

Weight:

X709-6: 12.8 kg (451.5 oz)

X709-8: 12.9 kg (455 oz)

X709-10: 13.8 kg (486.8 oz)

X709-12: 13.9 kg (490.3 oz)

X709-14: 14.9 kg (525.9 oz)

X709-16: 15 kg (530 oz)

Software: NX-VNA

Additional software options:

TD-X - Time Domain analysis

MXR-X - Vector and Scalar mixer/converter measurements

AFR-X - Automatic Fixture Removal

The warranty period: 1 year

A warranty extension to 3 or 5 years is available with the EXW3/5 option

Vector Network Analyzers



Benchtop Series X2209, X3209, X4209, X2409, X3409, X4409

The Benchtop series vector analyzers provide the best performance, fastest measurements, and advanced measurement capabilities. The analyzers provide high-precision parameter measurements of RF devices across a wide frequency range. The analyzers vary in the number of measurement ports, embedded RF oscillators, connectors for direct access to the test and reference receivers, and connectors for frequency range extension modules.

The X2209 and X2409 models are 2- and 4-port Vector Network Analyzers with a frequency range of 100 kHz to 9 GHz.

The X3209 and X3409 models are 2- and 4-port Vector Network Analyzers with direct access to the receivers.

The X4209 and X4409 are 2- and 4-port Vector Network Analyzers that can be connected to the XT1854 frequency range extension modules to cover the measurement frequency range from 18 to 54 GHz.

Applications: testing, tuning, research, and development of various radio devices used in radio electronics, communications, radars, measuring instruments, manufacturing and laboratories, and as part of automated measuring systems.

The analyzers are controlled by an external PC running dedicated software, which processes information and provides GUI. A USB 2.0 interface is used to communicate with the PC. A PC is not included.

Frequency range: 100 kHz to 9 GHz
Impedance: 50 Ohm
Number of ports:
Xx209: 2 ports, N type, female
Xx409: 4 ports, N type, female
Measured parameters:
Xx209: S11, S21, S12, S22
Xx409: S11, S21, ... S44
Dynamic range: 152 dB typ.
Output power range: from -60 to +15 dBm
Measurement time per point: 10 μ s
Number of measurement points: 2 to 500,001
Number of channels: up to 16 logical independent channels
Frequency resolution: 1 Hz
Full-scale frequency accuracy: $\pm 2 \times 10^{-6}$
Measurement bandwidths:
1 Hz to 2 MHz (1 / 1.5 / 2 / 3 / 5 / 7 step)
Connector type: USB B
Dimensions:
Length x Width x Height:
X2209: 425 x 235 x 96 mm
Models except X2209: 355 x 440 x 96 mm
Weight:
X2209: 5.5 kg (194 oz)
X3209, X4209: 7 kg (247 oz)
Xx409: 10 kg (352.7 oz)
Software:
Xx209: 2X-VNA
Xx409: 4X-VNA
Additional software options:
TD-X - Time Domain analysis
MXR-X - Measurement of converter scalar and vector parameters
AFR-X - Automatic Fixture Removal
NF-X - Noise Figure measurements
The warranty period: 1 year
A warranty extension to 3 or 5 years is available with the EXW3/5 option

Vector Network Analyzers



Benchtop Series X2220, X3220, X4220, X2420, X3420, X4420

The Benchtop series vector analyzers provide the best performance, fastest measurements, and advanced measurement capabilities. The analyzers provide high-precision parameter measurements of RF devices across a wide frequency range. The analyzers vary in the number of measurement ports, embedded RF oscillators, connectors for direct access to the test and reference receivers, and connectors for frequency range extension modules.

X2220, X2420 are 2- and 4-port Vector Network Analyzers with an operating frequency range from 0.1 MHz to 20 GHz.

X3220, X3420 are 2- and 4-port Vector Network Analyzers with direct access to the receivers.

X4220, X4420 are 2- and 4-port Vector Network Analyzers with the ability to connect frequency range extension modules, which allow you to expand the measurement frequency range from 20 GHz to 178 GHz.

Applications: testing, tuning, research, and development of various radio devices used in radio electronics, communications, radars, measuring instruments, manufacturing and laboratories, and as part of automated measuring systems.

The analyzers are controlled by an external PC running dedicated software, which processes information and provides GUI. A USB 2.0 interface is used to communicate with the PC. A PC is not included.

Frequency range: 100 kHz to 20 GHz

Impedance: 50 Ohm

Number of ports:

Xx220: 2 ports, NMD 3.5 mm, male

Xx420: 4 ports, NMD 3.5 mm, male

Measured parameters:

Xx220: S11, S21, S12, S22

Xx420: S11, S21, ... S44

Dynamic range: 135 dB typ.

Output power range: from -60 to +10 dBm

Measurement time per point: 12 μ s

Number of measurement points: 2 to 500,001

Number of channels:

up to 16 logical independent channels

Frequency resolution: 1 Hz

Full-scale frequency accuracy: $\pm 2 \times 10^{-6}$

Measurement bandwidths:

1 Hz to 2 MHz (1 / 1.5 / 2 / 3 / 5 / 7 step)

Connector type: USB B

Dimensions:

Length x Width x Height:

Xx220: 430 × 440 × 140 mm

Xx420: 600 × 440 × 140 mm

Weight:

Xx220: 14 kg (493.8 oz)

Xx420: 22 kg (776 oz)

Software:

Xx220: 2X-VNA

Xx420: 4X-VNA

Additional software options:

TD-X - Time Domain analysis

MXR-X - Measurement of converter scalar and vector parameters

AFR-X - Automatic Fixture Removal

NF-X - Noise Figure measurements

The warranty period: 1 year

A warranty extension to 3 or 5 years is available with the EXW3/5 option

Vector Network Analyzers



Benchtop Series X5222, X5422



The Benchtop analyzers are a new stage in the evolution of the CRXVT Vector Network Analyzers. Having inherited the best technical characteristics of the Benchtop Series analyzers expand the boundaries of measurement capabilities and meet modern requirements for functionality, speed and accuracy of measurements. The Benchtop provides an excellent combination of hardware platform and high precision parameter measurements of active and passive devices at the development and production stages.

The analyzers vary in the frequency range, number of measuring ports, and internal generators:

X5222 is a 2-port analyzer with one internal signal generator.

X5422 is a 4-port analyzer with two internal signal generators.

The analyzers have connectors on the front panel for direct access to generators and measuring receivers. The configurable analyzer path allows you to assemble a measuring setup that expands the dynamic range of measurements and the range of permissible power by using additional devices: amplifiers, attenuators, directional couplers.

The analyzer configuration can be supplemented with internal electromechanical attenuators for signal sources and measuring receivers. The use of electromechanical attenuators in the signal source path provides an extension of the lower limit of the output power level setting range from -110 dB. Electromechanical attenuators in the measuring receiver path ensure linear operation of the receivers when measuring active devices with high output power.

The Benchtop analyzers are equipped with internal pulse modulators, which allow the formation of a pulsed stimulating RF signal with a minimum duration of 200 ns without the use of external modulators.

Internal pulse generators provide signal output to rear panel connectors and ensure synchronization of the measured devices with the measurement setup. The PLS-X option enables pulse profile measurements with a minimum time resolution of 100 ns.

Frequency range: 100 kHz to 22.5 GHz

Impedance: 50 Ohm

Number of ports:

X5222: 2 ports, NMD 3.5 mm male

X5422: 4 ports, NMD 3.5 mm male

Measured parameters:

X5222: S11, S21, S12, S22

X5422: S11, S21, ... S44

Dynamic range: 144 dB, typ.

Output power range: -60 dBm to +15 dBm

Measurement time per point: 10 μs

Number of measurement points: 2 to 500,001

Number of channels:

up to 16 logical independent channels

Frequency resolution: 1 Hz

Full-scale frequency accuracy: $\pm 2 \times 10^{-6}$

Measurement bandwidths:

1 Hz to 2 MHz (1 / 1.5 / 2 / 3 / 5 / 7 step)

Connector type: USB B

Dimensions: Length x Width x Height/ Weight:

X5222: 410x450x140 / 15 kg (529 oz)

X5422: 600x450x140 / 22 kg (776 oz)

Software:

X5222: 2X-VNA

X5422: 4X-VNA

Additional software options:

PLS-X - Pulse mode measurements

TD-X - Time Domain analysis

MXR-X - Vector and Scalar mixer/converter measurements

AFR-X - Automatic Fixture Removal

NF-X - Noise Figure measurements

Vector Network Analyzers



Benchtop Series X5244, X5444

The Benchtop analyzers are a new stage in the evolution of the CRXVT Vector Network Analyzers. Having inherited the best technical characteristics of the Benchtop Series analyzers expand the boundaries of measurement capabilities and meet modern requirements for functionality, speed and accuracy of measurements. The Benchtop Series provides an excellent combination of hardware platform and high precision parameter measurements of active and passive devices at the development and production stages. The analyzers vary in frequency range, number of measuring ports, and internal generators:

X5244 is a 2-port analyzer with one internal signal generator.

X5444 is a 4-port analyzer with two internal signal generators.

The analyzers have connectors on the front panel for direct access to generators and measuring receivers. The configurable analyzer path allows you to assemble a measuring setup that expands the dynamic range of measurements and the range of permissible power by using additional devices: amplifiers, attenuators, directional couplers.

The analyzer configuration can be supplemented with internal electromechanical attenuators for signal sources and measuring receivers. The use of electromechanical attenuators in the signal source path provides an extension of the lower limit of the output power level setting range from -95 dB (typ). Electromechanical attenuators in the measuring receiver path ensure linear operation of the receivers when measuring active devices with high output power.

The Benchtop analyzers are equipped with internal pulse modulators, which allow the formation of a pulsed stimulating RF signal with a minimum duration of 200 ns without the use of external modulators.

Internal pulse generators provide signal output to rear panel connectors and ensure synchronization of the measured devices with the measurement setup. The PLS-X option enables pulse profile measurements with a minimum time resolution of 100 ns.

Frequency range: 10 MHz to 44 GHz

Impedance: 50 Ohm

Number of ports:

X5244: 2 ports, NMD 2.4 mm male

X5444: 4 ports, NMD 2.4 mm male

Measured parameters:

X5244: S11, S21, S12, S22

X5444: S11, S21, ... S44

Dynamic range: 140 dB, typ.

Output power range: -50 dBm to +10 dBm

Measurement time per point: 10 μ s

Number of measurement points: 2 to 500,001

Number of channels: up to 16 logical independent channels

Frequency resolution: 1 Hz

Full-scale frequency accuracy: $\pm 2 \times 10^{-6}$

Measurement bandwidths:

1 Hz to 2 MHz (1 / 1.5 / 2 / 3 / 5 / 7 step)

Connector type: USB B

Dimensions: Length x Width x Height/ Weight:

X5244: 434x450x212 / 25 kg (882 oz)

X5444: 434x450x212 / 25 kg (882 oz)

Software

X5244: 2X-VNA

X5444: 4X-VNA

Additional software options:

PLS-X - Pulse mode measurements

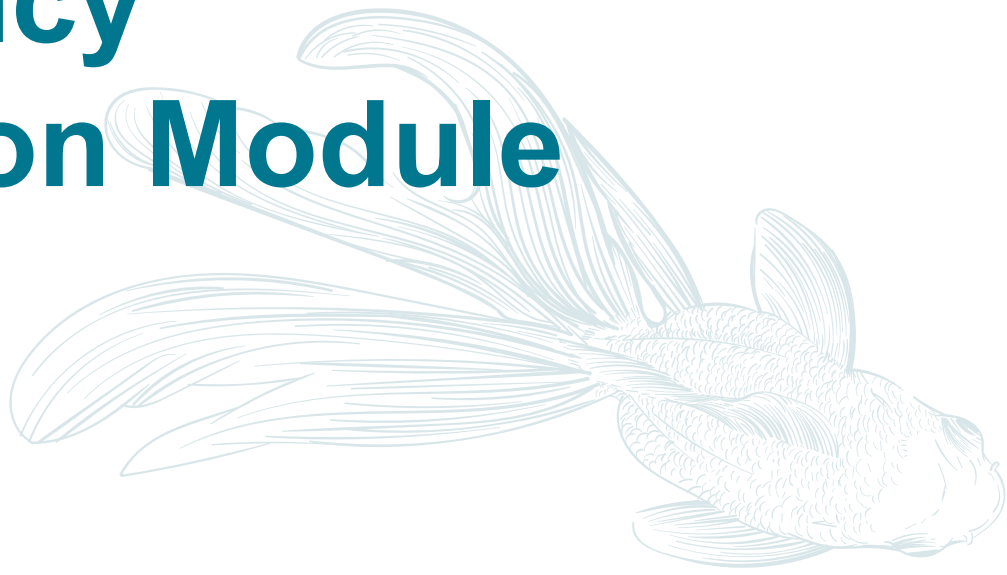
TD-X - Time Domain analysis

MXR-X - Vector and Scalar mixer/converter measurements

AFR-X - Automatic Fixture Removal

NF-X - Noise Figure measurements

Frequency Extension Module



XT1854

XT1854 is used as part of the Benchtop measuring system in conjunction with vector network analyzers of the Benchtop Series X4209, X4220, X4409, X4420 and allows you to determine the S-parameters of devices in the frequency range up to 54 GHz. The system is controlled by the analyzer software. The number of simultaneously operating modules is determined by the configuration of the vector network analyzer used. The XT1854 is an ultra-compact module consisting of measurement and local oscillator frequency multipliers, a broadband power amplifier with ALC loop, directional couplers and frequency converters. Power supply and control boards are also included. The module is powered by the network analyzer. Standalone operation is not provided. The module cannot be used without an analyzer.

The XT1854TR and XT1854R modules are available for custom order.

XT1854TR modules include only a functional block: a transmitter with a built-in directional coupler and a reference channel frequency converter. XT1854TR can be used to determine the transmission response.

The software controlling the frequency range extension modules offers a wide range of functions, including up to 16 traces in one measurement channel, a library of calibration kit definitions, a marker system for value searching based on specific criteria, limit tests, mathematical and statistical processing, filtering, fixture simulation, saving and restoring measured data and control settings, and a triggering system. Measurement results can be presented in various formats: module of transmission and reflection coefficients in linear and logarithmic scales, phase of transmission and reflection coefficients, VSWR, group delay, real and imaginary part of the measured parameter in the polar coordinate system and Smith chart, impedance.

Key measured parameters and capabilities:

S-parameters

Time domain analysis and filtering

Measuring parameters of antenna systems

Balanced measurements

Measurements of frequency offset devices

Frequency range: 18 to 54 GHz

Impedance: 50 Ohm

Test port: NMD 1.85 mm, male

Dynamic range:

18 to 36 GHz: 133 dB (140 dB typ.)

36 to 50 GHz: 123 dB

50 to 54 GHz: 114 dB

Output power range:

18 to 50 GHz: -20 to +3 dBm

50 to 54 GHz: -20 to -6 dBm

Measurement time per point: 12 μ s

Standard deviation of measurement results:
0.0015 dB

Number of test ports: 1

Dimensions:

Length x Width x Height: 240 × 144 × 60 mm

Weight: 2.2 kg (77.6 oz)

Software:

Up to 2 modules: 2X-VNA

Up to 4 modules: 4X-VNA

The warranty period: 1 year

A warranty extension to 3 or 5 years is available with the EXW3/5 option

Frequency Extension Modules



XVECTOR 50-75 / 75-110 / 110-170 GHz

The frequency range extension module is used as part of the Benchtop measuring system with the Benchtop Series Vector Network Analyzers (X4220 and X4420) to determine the S-parameters in the frequency range up to 178 GHz. The system is controlled by the Analyzer software. The number of simultaneously operating modules depends on the configuration of the network analyzer used.

The frequency range extension module is a compact device that includes a frequency multiplier for the measured signal, a broadband power amplifier, an optional electronic attenuator, isolators, directional couplers, and frequency converters. Power supply and control boards are also included. The module is powered by the network analyzer. Autonomous operation of the modules is not provided; without connection to the network analyzer, the module cannot be used to carry out measurements.

Optional embedded electronic attenuators adjust

the output power in the range up to -35 dB (-40 typ.) to measure the parameters of active devices (amplifiers, low noise amplifier), including compression point in automatic mode. The frequency range extension modules are also available for rectangular waveguides from 53 to 178 GHz.

The frequency range extension modules can be used to measure:

- Filters
- Antenna systems
- On-wafer testing

They support operating with continuous signals and modulated carriers.

Key measured parameters and capabilities:

- S-parameters
- Balanced measurements
- Time domain analysis and gating
- Measurement of frequency offset devices

Software:

- Up to 2 modules: 2X-VNA
- Up to 4 modules: 4X-VNA

	XVECTOR 50-75 GHz	XVECTOR 75-110 GHz	XVECTOR 110-170 GHz
Frequency range	50 to 75 GHz	75 to 110 GHz	110 to 170 GHz
Output power	+14 dBm typ.	+10 dBm typ.	-2 dBm typ.
Output power, with attenuator option (typ.), dBm	+12	+8	-4
Dynamic range with 10 Hz IF filter bandwidth	120 dB typ.	120 dB typ.	110 dB typ.
Attenuator tuning range	0 to -35 dB	0 to -35 dB	0 to -35 dB
Test port connector	WR-15, UG-385/U	WR-10, UG-387/U-M	WR-6, UG-387/U-M
Dimensions, Length x Width x Height	347 x 140 x 93 mm	347 x 140 x 93 mm	287 x 120 x 93 mm
Weight	3.3 kg (116.4 oz)	3.3 kg (116.4 oz)	3.3 kg (116.4 oz)
Continuous operation time	16 h		
Connector type:	WR-15 IEEE 1785-2a UG-385/U compatible	WR-10 IEEE 1785-2a UG-387/UM compatible	WR-06 IEEE 1785-2a UG-387/UM compatible
Input connector type: RF, LO, and IF	SMA, female	SMA, female	SMA, female
Connection to VNA for control and power, connector type, and protocol	LEMO B-series (Lemo 2B FGG.310), SPI protocol		
Power supply	+12 V, 1 A		
Power consumption	12 W		

Port Extenders



X708-18A, X716-18A

Solid-state broadband radio frequency port extenders X708-18A and X716-18A are designed for high-speed switching of RF signals in a coaxial path with impedance of 50 Ohm in the operating frequency range from 10 MHz to 18 GHz. Unused extender output ports are automatically switched to matched internal loads.

The extenders are used together with a vector network analyzer (VNA), which allows implementing the functionality of expanding the number of VNA measurement ports, as well as independent devices with power supply and control via the USB Type-B interface and the ability to quickly switch by means of trigger ports via BNC connectors. Extenders are controlled by means of VISA library using SCPI commands. Switch Control (SWC) software is included in the delivery set for controlling extender via GUI interface.

A desktop device, compatible with the CRXVT measuring equipment, with the possibility of installation in a 19" rack, height 2U (X708-18A) or 3U (X716-18A)

Frequency range: 10 MHz to 18 GHz

Number of input ports: 2, N type, female

Number of output ports:

X708-18A: 8, N type, female

X716-18A: 16, N type, female

Insertion loss: ≤ 10 dBm

Maximum switching power: 30 dBm

Return loss of unselected port: ≥ 17 dB

Return loss of selected port: ≥ 15 dB

Signal isolation: ≥ 92 dB

Power supply: 5 ± 0.5 V

Current consumption: < 200 mA

Operation speed:

switching time no more than 200 ns

Control interface: USB B,
BNC type trigger inputs

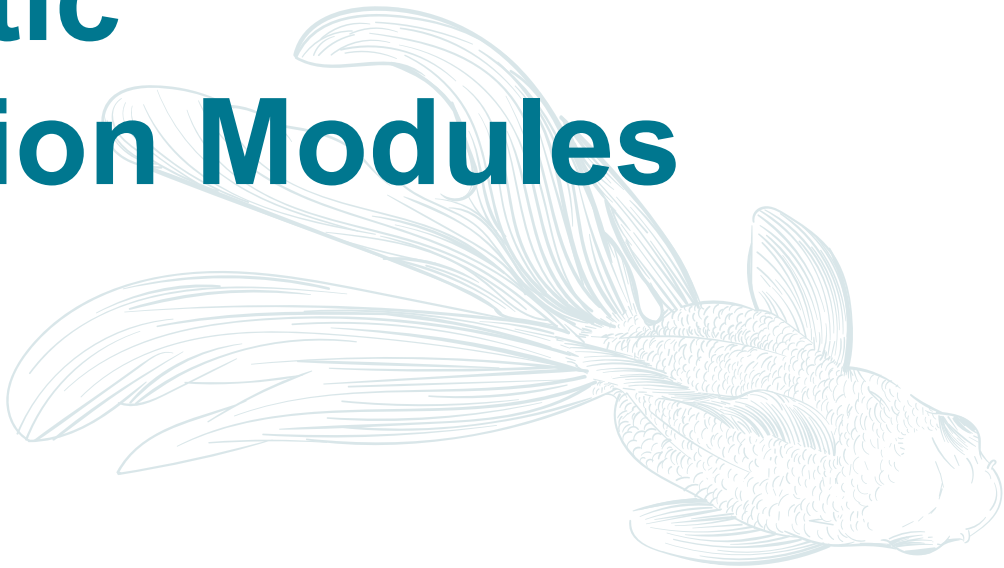
Dimensions:

Length x Width x Height/Weight

X708-18A: 440 x 430 x 97 / 5,5 kg (194 oz)

X716-18A: 440 x 430 x 142 / 8 kg (282 oz)

Automatic Calibration Modules



**XC7204, XC5206, XC5209, XC5220
XC5232, XC5244, XC5409, XC5420**

ACMs include high-frequency measuring connectors for connection to the analyzer ports, a USB connector for control, several different reflection and transmission calibration standards, and solid state RF switches. The accurately measured values of the calibration standard's S-parameters are stored in the ACM internal memory (factory characterization). The analyzer software performs auto calibration using ACMs.

During the calibration, various calibration standards and THRUs are alternately connected to the device ports. The measured S-parameters of the calibration standards and the data from the ACM memory are used to calculate the calibration coefficients of the analyzer. In addition to the factory characterization, up to three user characterization can be saved to the ACM memory. User-defined characterization allows you to take into account adapters or other matching devices on the module ports. ACM has an additional state – attenuator – which is not used during calibration. The attenuator is used to check the calibration through a special analyzer function that compares the measured S-parameters of the attenuator with the values stored in the ACM memory. To reduce calibration errors when using ACMs, temperature compensation is used over the full range of operating temperatures (18 °C to 28 °C). Thermal compensation is a software function that corrects ACM characterization data depending on the ambient temperature. The temperature dependence of the S-parameters for each ACM is factory-measured and stored in the ACM memory.

The XC7204, XC5206, XC5209, XC5220, XC5232, and XC5244 models support 1- and 2-port calibrations.

The XC5409 and XC5420 models support 1-, 2-, 3-, and 4-port calibrations.

- Impedance:
- XC5xxx: 50 Ohm
 - XC7204: 75 Ohm
- Frequency range:
- XC7204: 20 kHz to 4 GHz
 - XC5206: 20 kHz to 6 GHz
 - XC5209: 20 kHz to 9 GHz
 - XC5409: 100 kHz to 9 GHz
 - XC5220, XC5420: 100 kHz to 20 GHz
 - XC5232: 10 MHz to 32 GHz
- XC5244:
- 10 MHz to 40 GHz (2.92 mm)
 - 10 MHz to 44 GHz (2.4 mm)
- Number of ports:
- XC52xx, XC7204: 2 ports
 - XC54xx: 4 ports
- Connector type:
- XC7204: N type, (75 Ohm)
 - XC52xx: N type, 3.5 mm
 - XC54xx: N type, 3.5 mm
 - XC5232: 3.5 mm
 - XC5244: 2.92 mm, 2.4 mm
- Connector configuration:
- female-female, male-male, male-female
- Effective directivity up to 47 dB
- Simplifying the calibration procedure
- Ideal calibration method for manufacturing
- The warranty period: 1 year
- A warranty extension to 3 or 5 years is available with the EXW3/5 option

Standalone Auto-calibration Module



XCB5206

Today, cable assemblies are essential components in many complex products such as aircraft, ships, power systems, and industrial and residential buildings. Most assemblies use coax and twisted pair cables.

Cable assemblies require quality control after installation; but, as a rule, they are quite long and attached in located place. The most common control methods are plotting the eye diagram or frequency response of the cable assembly. However, these methods are not precise enough and can be very expensive when measuring advanced broadband cable assemblies.

The most accurate and comprehensive method for assessing the quality of an installed cable assembly is measuring its S-parameters. Using a vector network analyzer (VNA), you can measure the S-parameters of a cable assembly over a wide frequency range and use them for analysis, including eye diagram. However, traditional S-parameter measurement requires connecting a cable assembly to two VNA ports, which is often impossible without the use of a long and expensive test cable.

The XVT presents the XCB5206 standalone automatic calibration module for measuring the S-parameters of coax and twisted pair cable assemblies. The ACM can quickly and accurately measure the cable assembly parameters without using an expensive measuring cable. For measurements, the XCB5206 and VNA are required. They are connected to cable assembly connectors.

¹ All parameters are determined at 23±5 °C with the temperature compensation enabled..

² VNA parameters, effective (after calibration).

³ Exceeding the maximum values increases the VNA measurement error.

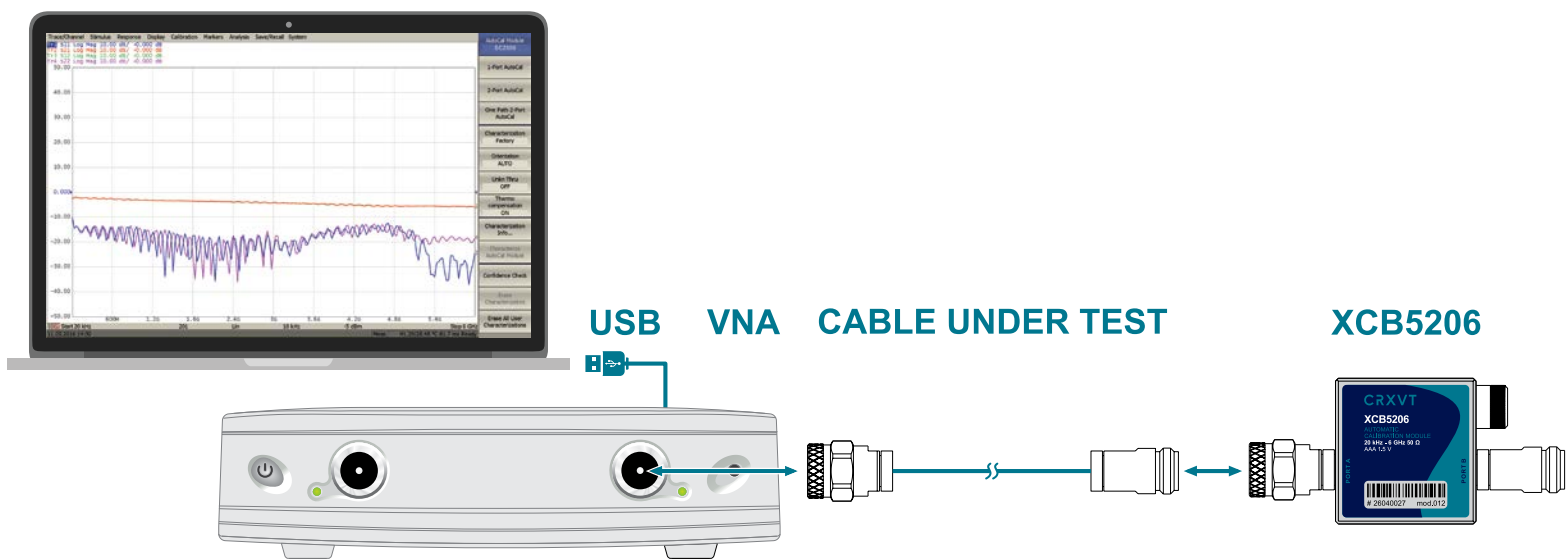
⁴ Exceeding the limit values leads to the ACM failure.

The warranty period: 1 year.

Impedance	50 Ohm
Number of ports	2
Frequency range	20 kHz to 6 GHz
Number of characterization points	1,601
Effective system data ² :	
Lower boundary to 1 MHz:	
- Directivity	≥ 36 dB
- Source match	≥ 32 dB
- Load match	≥ 36 dB
- Reflection tracking	±0.15 dB
- Transmission tracking	±0.15 dB
1 MHz to 6 GHz:	
- Directivity	≥ 46 dB
- Source match	≥ 40 dB
- Load match	≥ 46 dB
- Reflection tracking	±0.04 dB
- Transmission tracking	±0.06 dB
Maximum input power ³	0 dBm
Maximum DC input voltage ³	±10 V
Input Power Limit ⁴	±18 dBm
Damage DC input voltage ⁴	±35 V
Power consumption	< 0.2 W
Connection to computer:	
- Connector type	Mini USB
- Interface	USB 2.0
- Mini USB control protocol	USBTMC-USB488
Dimensions:	
(Length x Width x Height)	115 x 50 x 25 mm
Weight	0.6 kg (35.3 oz)
Continuous operating time	≤ 200 h
Battery type	AAA, 1.5 V

Variants		
Model	Connector Type	
	Port A	Port B
XCB5206 - 011	N, female	N, female
XCB5206 - 012	N, male	N, female
XCB5206 - 111	3,5 mm, female	3,5 mm, female
XCB5206 - 112	3,5 mm, male	3,5 mm, female

Standalone Auto-calibration Module



XCB5206

Design and Principle of Operation

Before starting S-parameter measurements of the cable assembly, perform a 1-port VNA calibration using an ACM.

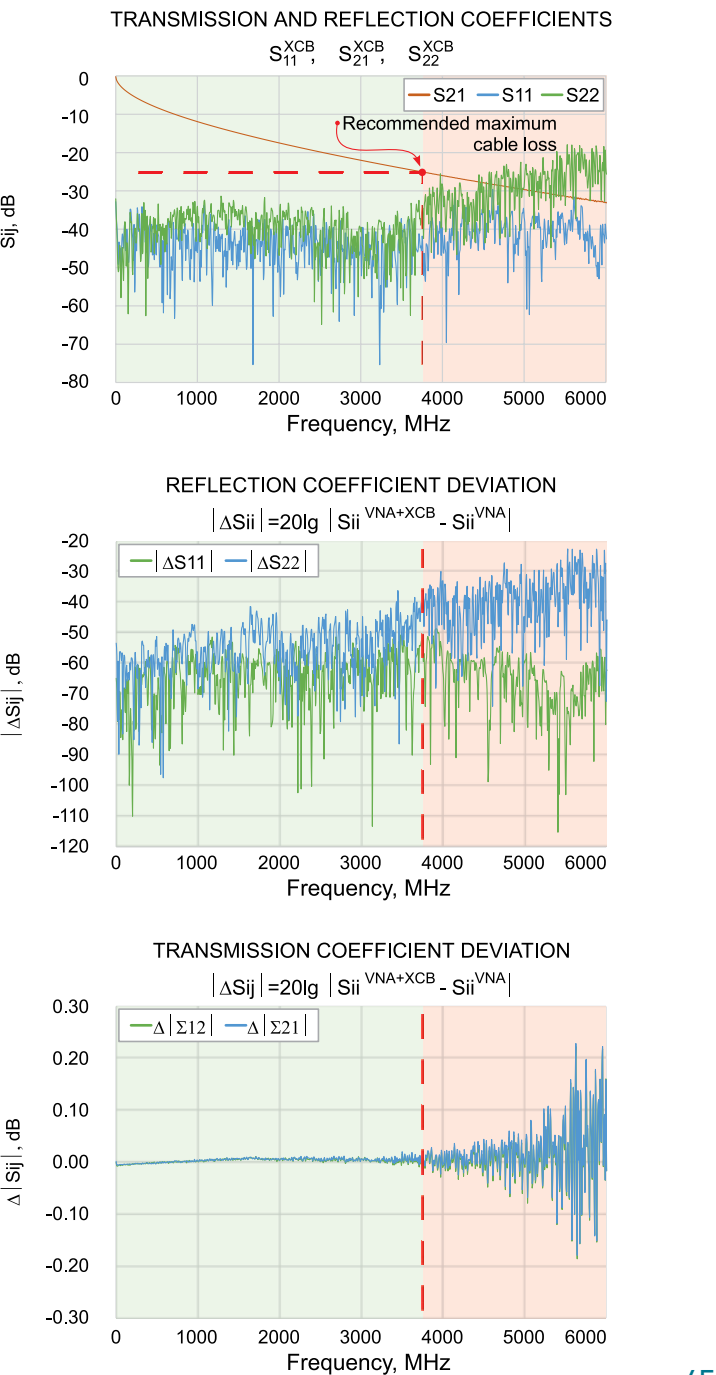
Next, connect one end of the cable to the calibrated VNA port, and the other end, to the ACM port. Switch on the ACM. It will ACM sequentially connect the reflection standards (Short, Open, and Load) to the assembly connector.

The measurement cycle is continuous. The VNA measures each of the ACM standards, and all four S-parameters of the cable assembly are calculated.

To signal the start of the next measurement cycle, the ACM generates a packet of synchronization pulses at the beginning of each cycle using two reflection standards. The VNA continuously monitors the reflection signal for synchronization pulses, and once detected, it begins measuring the standards.

Method \ Criterion	Signal Generator+ oscilloscope	Signal Generator+ power meter	2-port VNA	VNA + XCB5206
S-parameter	✗	✗	✓	✓
Eye Diagram	✓	✗	✗	✗
Frequency response	✗	✓	✓	✓
Measurement Error	Significant		Low	
Compact instrument	✗	✗	✓	✓
Cost	⌘	⌘	⌘	⌘

Example: cable assembly measurements using the XCB5206 and 2-port VNA





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