

CRXVT

Vector Network Analyzers



Frequency Extension Modules

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.

They support operating with continuous signals and modulated carriers.

Key Features:

- Frequency extension modules for Benchtop Series VNA
- Filters and Antenna systems measurement, and on-wafer testing
- Up to 2/4 modules can be connected to the Analyzer (depending on ports number)
- Controlled and powered by the Analyzer
- Supporting all the measurement capabilities of the Analyzer
- Calibrating with mechanical kit
- Optional embedded electronic attenuators



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Available models

Model ¹	Frequency Range	Impedance / Number of Ports	Measured Parameters	Dynamic Range ² (typ.)	Output Power	Measurement Time per Point
XVECTOR 50-75 GHz	50 to 75 GHz	WR-15/1	S11, S21, S12, S22	120 dB	+14 ³ dBm -23 ... +12 ⁴ dBm	12 µs
			S11, S21 ... S44			
XVECTOR 75-110 GHz	75 to 110 GHz	WR-10/1	S11, S21, S12, S22	120 dB	+10 ³ dBm -27 ... +8 ⁴ dBm	12 µs
			S11, S21 ... S44			
XVECTOR 110-170 GHz	110 to 170 GHz	WR-6/1	S11, S21, S12, S22	110 dB	-2 ³ dBm -39 ... -4 ⁴ dBm	12 µs
			S11, S21 ... S44			

Software and Hardware Capabilities ¹

CALIBRATION OPTIONS	
Waveguide calibration	Yes
Calibration with a Power Meter	Yes
MEASUREMENT OPTIONS / SOFTWARE	
Fixture Simulation (Embedding and De-embedding)	Yes
Calculator	Yes
Time Domain Analysis and Gating (TD-X option)	Yes (bandpass mode)
Balanced Device Measurements	Yes, Cx4xx models
Source to Receivers frequency offset mode (MXR-X option)	Yes
Scalar Mixer Calibration and measurement MXR-X option	Yes
Vector Mixer Calibration and measurement (MXR-X option)	Yes
Frequency Offset Adjustment (MXR-X option)	Yes
FIFO Buffer	Yes
Automatic Fixture Removal (AFR-X) ⁵	Yes
SYSTEM REQUIREMENTS	
Operating System	Windows 10 and above, Linux
Processor	1.5 GHz
RAM	4 GB

¹ The modules are used with the X4220 and X4420 vector network analyzers. No standalone operation.

² With a 10 Hz IF filter bandwidth.

³ XVECTOR models without the embedded step-attenuator option.

⁴ XVECTOR models with the embedded step-attenuator option. Attenuation range: 0 to 35 dB.

⁵ The AFR-X option supports 16-port devices.

