

YNA-3096 Vector Network Analyzer Module

10 MHz to 9 GHz dual-slot PXIe VNA module

At a Glance

The YNA-3096 is a six-port, dual-slot vector network analyzer module covering 10 MHz to 9 GHz with 10 Hz frequency resolution, ± 3 ppm frequency accuracy, and 15 μ s lock time.

It provides six physical RF test ports, while its application software supports 64 test channels and 32 traces per channel, up to 10001 points per trace, FIFO test-queue acceleration, segmented frequency sweep, manual and external single triggering, and mechanical or electronic calibration workflows.



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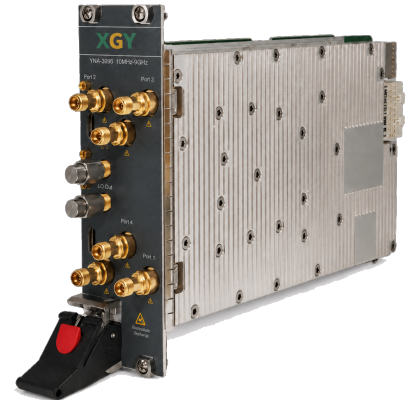
Definitions and Conditions

Specifications describe the guaranteed performance of a calibrated instrument under the stated operating conditions. Specifications include measurement uncertainty.

Measured values indicate performance that more than 95% of instruments are expected to meet within an ambient temperature range of 20°C to 30°C. In addition to the instrument statistical observation data, these values include the uncertainty effect of external calibration references. Unless otherwise stated, all data in this document are measured data.

Typical values indicate 90% confidence for 80% of instruments within a temperature range of 20°C to 30°C, but typical performance does not include the effect of measurement uncertainty.

Nominal values indicate expected performance or performance characteristics determined by design. They do not directly reflect actual measured values or error ranges, are not guaranteed data, and are measured at room temperature, nominally 25°C.



Application Software

Test Capability	
Test Parameters	S-parameters
Software Test Channels	64
Measurement Traces per Software Channel	32 per channel
Test Points	Supports 10001 points per trace
Test Queue	Supports FIFO test-queue acceleration
Display Formats	Log magnitude, linear magnitude, phase, VSWR, Smith chart, and polar plot
Sweep Characteristics	
Linear Frequency Sweep	Supported, minimum resolution 10 Hz
Segmented Frequency Sweep	Supported, more than 256 segments per channel
Trigger Modes	
Continuous Trigger	Supported
Single Trigger	Supported, including manual trigger and external trigger
Trace Functions	
Data Averaging	Supported, maximum 1000 averages
IF Bandwidth	1000 kHz / 300 kHz / 100 kHz / 30 kHz / 10 kHz / 3 kHz / 1 kHz / 300 Hz / 100 Hz / 30 Hz / 10 Hz
Marker Functions	
Markers	9 per trace
Calibration Functions	
Mechanical Calibration	Supported; requires characteristic parameters for a third-party mechanical calibration kit
Electronic Calibration	Supported with matching products; third-party electronic calibration kits are not supported
Calibration Algorithms	Single-port OSL; two-port TR, ER, SOLT, TRL, and UT
Impedance Conversion	Supported
Port Extension	Supported
Fixture Embedding	Supported
De-embedding	Supported
System Settings	
State Save	Supported
State Recall	Supported
Data Storage	Supported, sNp format
Preset Restore	Supported

System Technical Specifications

Frequency Range	
Product Model	YNA-3096
Frequency Range	10 MHz to 9 GHz
Resolution	10 Hz
Frequency Accuracy	±3 ppm
Frequency Switching Speed	Lock time: 15 us
Dynamic Range	
30 MHz to 0.5 GHz	132 dB
0.5 GHz to 6 GHz	132 dB
6 GHz to 9 GHz	132 dB

Dynamic range refers to performance normalized to 10 Hz IF bandwidth and does not include module crosstalk effects.

Corrected Performance

Directivity	
10 MHz to 0.5 GHz	40 dB
0.5 GHz to 6 GHz	38 dB
6 GHz to 9 GHz	36 dB
Source Match	
10 MHz to 0.5 GHz	39 dB
0.5 GHz to 6 GHz	34 dB
6 GHz to 9 GHz	33 dB
Load Match	
10 MHz to 0.5 GHz	40 dB
0.5 GHz to 6 GHz	38 dB
6 GHz to 9 GHz	36 dB
Transmission Tracking	
10 MHz to 0.5 GHz	±0.04 dB
0.5 GHz to 6 GHz	±0.06 dB
6 GHz to 9 GHz	±0.09 dB
Reflection Tracking	
10 MHz to 0.5 GHz	±0.04 dB
0.5 GHz to 6 GHz	±0.07 dB
6 GHz to 9 GHz	±0.09 dB

Test Port Output

Port Maximum Output Power	
10 MHz to 0.5 GHz	+10 dBm
0.5 GHz to 6 GHz	+10 dBm
6 GHz to 9 GHz	+10 dBm
Nominal Power	
10 MHz to 9 GHz	0 dBm
Power Range	
10 MHz to 0.5 GHz	+10 dBm to -30 dBm
0.5 GHz to 6 GHz	+10 dBm to -30 dBm
6 GHz to 9 GHz	+10 dBm to -30 dBm
Power Level Accuracy	
10 MHz to 0.5 GHz	±1.0 dB
0.5 GHz to 5.5 GHz	±1.0 dB
5.5 GHz to 9 GHz	±1.2 dB
Source Harmonics	
10 MHz to 0.5 GHz	-20 dBc
0.5 GHz to 6.5 GHz	-25 dBc
6.5 GHz to 9 GHz	-26 dBc

Test Port Input

Input Limits and Accuracy	
Test Port Input Damage Level	10 MHz to 9 GHz: >+27 dBm, >±35 VDC, >1000 V ESD
Receiver Level Accuracy	10 MHz to 9 GHz: ±1.5 dB
Noise Floor	
10 MHz to 0.5 GHz	-122 dBm
0.5 GHz to 6 GHz	-122 dBm
6 GHz to 9 GHz	-122 dBm
Magnitude Trace Noise	
10 MHz to 0.5 GHz	0.005 dB rms
0.5 GHz to 6 GHz	0.005 dB rms
6 GHz to 9 GHz	0.005 dB rms
Phase Trace Noise	
10 MHz to 0.5 GHz	0.04 degrees rms
0.5 GHz to 6 GHz	0.04 degrees rms
6 GHz to 9 GHz	0.04 degrees rms

Noise floor refers to performance normalized to 10 Hz IF bandwidth and does not include module crosstalk effects.

Measurement Speed

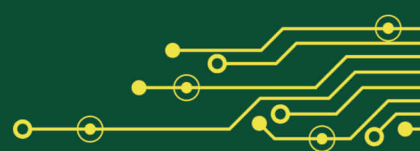
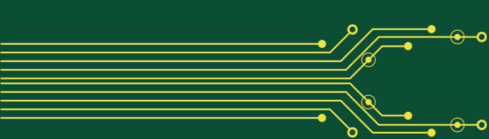
Condition	201 Points	401 Points	801 Points
Typical Cycle Time			
Full frequency span, 100 kHz IF bandwidth, including data transfer	Applies to all point counts		
Uncorrected	16 ms	31 ms	57 ms
6-Port Calibration	27 ms	53 ms	99 ms

General Technical Specifications

Remote Programming	
Interface	PXIe, fits PXI hybrid slots
Control Language	Factory-defined SCPI
Electrical and Environmental	
Power Requirement	12 VDC, 60 W maximum
Operating Temperature Range	0 to 50°C
Storage Temperature Range	-20 to 70°C
Operating and Storage Altitude	Up to 15,000 ft
Humidity	Relative-humidity type test: 95%, +40°C, non-condensing
Physical and Maintenance	
Memory	Depends on PC
Weight, Including Enclosure	≤1.4 kg
Dimensions	Dual-slot PXI: 128.4 mm high x 40.0 mm wide x 212.6 mm long
Recommended Calibration Interval	24 months
ISO Compliance	
ISO Standard Compliance	The instrument is manufactured in an ISO-9001 certified factory and complies with applicable internal quality standards.

Connector Characteristics

Front-Panel Connectors	
Test Ports (Port 1/2/3/4/5/6)	Input/output RF signals through SMA female connectors; impedance: 50 Ω nominal; input damage level: +27 dBm
Reference Input	Connector: MMPX; accepts a 10 MHz reference signal for frequency-locking the internal timebase; nominal input level 0 dBm to 10 dBm; impedance 50 Ω; sine wave
10 MHz Output	Connector: MMPX; outputs a 10 MHz reference signal for internal timebase use; nominal level +12 dBm; nominal output impedance 50 Ω; input damage level +18 dBm
LO Input/Output	Connector: SMA female; impedance: 50 Ω nominal; output nominal level -2 dBm; input damage level +20 dBm
Trigger Input	Connector: MMPX; trigger type: edge; impedance: 1 kΩ nominal; level range: 3.3 V CMOS, TTL compatible and 5 V tolerant
Trigger Output	Connector: MMPX; level range: 3.3 V CMOS, TTL compatible and 5 V tolerant
Trigger Output Ready	Connector: MMPX; impedance: 50 Ω nominal; level range: 3.3 V CMOS, TTL compatible and 5 V tolerant



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Specifications subject to change without notice. Per AS/NZS standards.

