

YNA-3092 Vector Network Analyzer Module

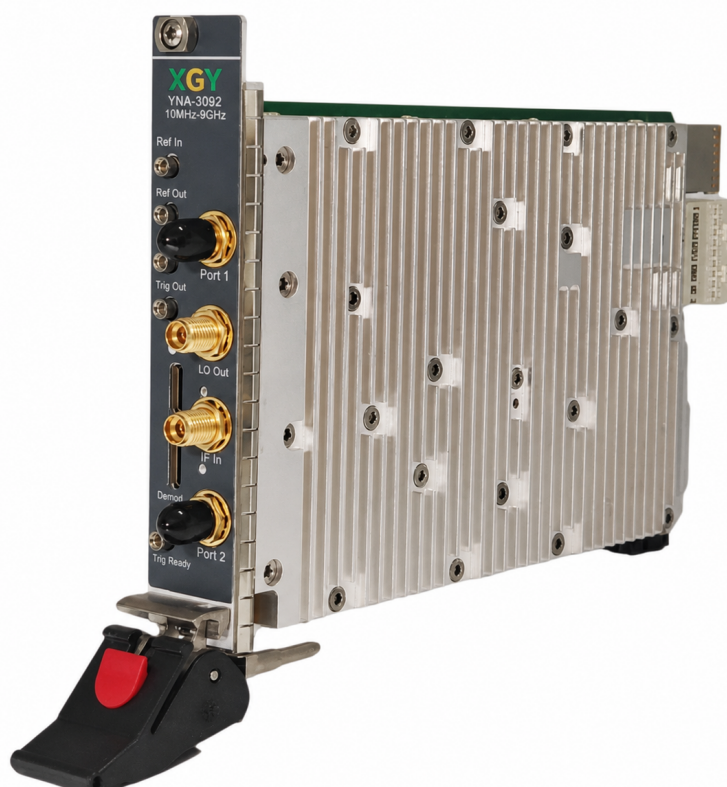
10 MHz to 9 GHz single-slot PXIe VNA module

At a Glance

The YNA-3092 is a two-port, single-slot PXIe 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 two physical RF test ports, while its application software supports up to 64 software test channels, 32 traces per software channel, up to 10001 points per trace, FIFO test-queue acceleration, linear and segmented sweeps, manual and external triggering, and standard network-analysis display formats.

The YNA-3092 supports mechanical and electronic calibration workflows, port extension, fixture embedding, and de-embedding for automated RF component and system-level test applications.





Definitions and Conditions

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

Measured values apply within an ambient temperature range of 20 °C to 30 °C, where more than 95% of instruments are expected to meet the performance targets. In addition to the instrument's statistical observation data, these values include the impact of uncertainty from external calibration references. Unless otherwise stated, data in this document is measured data.

Typical values indicate a 90% confidence level for 80% of instruments operating from 20 °C to 30 °C, but typical performance does not include measurement uncertainty.

Nominal values describe expected performance or performance characteristics defined by design. They do not directly reflect actual measured values or error limits. These data are not guaranteed values and are measured at room temperature, 25 °C.

Application Software

Test Capability	
Test Parameters	S-parameters
Software Test Channels	64
Measurement Traces per Software Channel	32
Test Points	Up to 10001 points per trace
Test Queue	FIFO test-queue acceleration supported
Display Formats	Log magnitude, linear magnitude, phase, voltage standing wave ratio, Smith chart, and polar chart
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, up to 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 Function	
Marker Count	9 per trace
Calibration Functions	
Mechanical Calibration	Supported, requires characteristic parameters for third-party mechanical calibration kits
Electronic Calibration	Supported with matching products; third-party electronic calibration kits are not supported
Calibration Algorithms	Dual-port: TR, ER, SOLT, TRL, UT; single-port: OSL
Impedance Conversion	Supported
Port Extension	Supported
Fixture Embedding	Supported
De-embedding	Supported
System Settings	
State Storage	Supported
State Recall	Supported
Data Storage	Supported, sNp format
Restore Preset	Supported

System Technical Specifications

Frequency Range	
Product Model	YNA-3092
Frequency Range	10 MHz to 9 GHz
Resolution	10 Hz
Frequency Accuracy	±3 ppm
Frequency Switching Speed	
Lock Time	15 µs
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 is normalized to 10 Hz IF bandwidth performance and does not include module crosstalk effects.

Calibrated 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

Maximum Port 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

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
Amplitude 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° rms
0.5 GHz to 6 GHz	0.04° rms
6 GHz to 9 GHz	0.04° rms

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

Measurement Speed

Typical cycle time for a full frequency sweep at 100 kHz IF bandwidth, including data transfer.

Condition	201 Points	401 Points	801 Points
Uncorrected	7 ms	13 ms	23 ms
2-Port Calibration	10 ms	19 ms	35 ms

General Technical Specifications

Remote Programming	
Interface	PXIe, compatible with PXI hybrid slots
Control Language	Factory-defined SCPI
Power Requirements	
Input Power	12 VDC, 25 W maximum
Environmental	
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% at +40 °C, non-condensing
Storage	
Memory	Depends on PC
Physical	
Weight, Including Enclosure	≤0.5 kg
Dimensions	Single-slot PXI: 128.4 mm H × 19.9 mm W × 212.6 mm L
Maintenance and Quality	
Recommended Calibration Cycle	24 months
ISO Compliance	Manufactured in an ISO-9001-certified factory and compliant with XGY internal quality standards

Connector Characteristics

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

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