KEYSIGHT TECHNOLOGIES (AGILENT HP)

N5242A

The Keysight N5242A is a premier-performance Vector Network Analyzer (VNA) from the PNA-X Series, designed for highly integrated and advanced active device tests up to 26.5 GHz. It features a built-in S-parameter test set, flexible measurement architecture, and a user-friendly touchscreen interface.

SPECIFICATIONS

General

Interfaces	LAN, GPIB, USB (Host/Device), External Reference, Trigger I/O
Display	10.4 inch LCD Touch Screen
Warm-up Time	90 minutes
Recommended Calibration Interval	1 year

Physical

Power Supply	100-240 VAC, 50/60 Hz
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	426 mm × 235 mm × 483 mm mm
Weight	25 kg kg
Rack Unit Height	5U
Rack Mount Kit	Optional
Ventilation Clearance (Sides)	15 cm (6 inches)
Ventilation Clearance (Rear)	9 cm (3.5 inches)

General Specifications

Model Number	N5242A
Series	PNA-X Series
Product Description	Premier-performance Vector Network Analyzer
Number of Ports	2
Front Panel Access Loops	6 (standard)
Internal RF Transfer Switch	Solid-state in R1 reference-receiver path
Internal Storage	Hard Disk Drive

Measurement Performance

Frequency Range	10 MHz - 26.5 GHz
Dynamic Range (System Corrected)	130 dB (at 10 Hz IFBW)
IF Bandwidth Range	1 Hz - 15 MHz
Test Port Connector Type	3.5 mm (female)
Number of Measurement Points	1 to 20001
System Impedance	50 Ohm
Channels	32
Measurement Speed (Per Point)	3.6 µs (at 15 MHz IFBW)
Pulsed Measurement Speed Improvement	Up to 30x faster than external (with Option 008)
IMD/Conversion Loss Measurement Speed Improvement	Up to 35x faster than external (with optional second source)

Source Specifications

Source Power Output Range	-90 dBm to +16 dBm (typical, without options)

Receiver Specifications

Receiver Noise Floor	-110 dBm (typical, 10 Hz IFBW)

System Calibration and Correction

Calibration Methods Supported	SOLT, TRL, LRL, ECal, Response, Enhanced Response
Vector Error Correction Types	Full 2-port, 1-port, Response, Enhanced Response
Calibration Kit Support	Yes
Automatic Calibration Module Support	Yes

Sweep Capabilities

Sweep Type	Linear, Log, Power, CW, Segment
Trigger Types	Internal, External, Manual, Bus

Display and User Interface

Display Type	LCD
Display Size	10.4 inch
Touchscreen Capability	Yes
Operating System	Windows Embedded Standard

Connectivity and I/O

LAN/Ethernet Ports	1 (Gigabit Ethernet)
USB Ports (Host/Device)	Multiple USB (Host), 1 USB (Device)
GPIB Interface	Yes (IEEE-488.2)
VGA/Display Output	VGA, DisplayPort
External Reference Input	10 MHz
External Reference Output	10 MHz
Trigger Input	Yes
Trigger Output	Yes

Software and Control

Programming Interfaces	SCPI, COM
Remote Control Capabilities	Yes
Firmware Updates	Supported

Environmental Characteristics

Storage Temperature Range	-40 to +70 °C
Humidity Range	15% to 80% RH, non-condensing (up to 40 °C); 15% to 60% RH, non-condensing (40 °C to 55 °C)

Regulatory Compliance

EMC Compliance	CE, FCC
Safety Compliance	UL, CSA
Environmental Certifications	RoHS, WEEE

Physical Characteristics

Rack Mountable	Yes (2U)
Cooling	Fan

Power Requirements

Line Frequency Range	47-63 Hz
Maximum Power Consumption	600 VA

Available Options and Upgrades

Number of Synthesized Sources	1 or 2 (optional second source)
Internal Combiners/Splitters Option	Yes (Option 080 for 2-tone measurements)
Internal Attenuators Option	Yes (Option 016, Source step attenuators)
Built-in Preamplifiers Option	Yes (Option 021)
Pulse Measurement Capability Option	Yes (Option 008, Internal pulse modulators and generators)
Mixer/Converter Measurement Option	Yes (enabled by optional second internal source)
Noise Figure Measurement Option	Yes (Option 025)
X-Parameter Measurement Option	Yes
Extended Power Range Option	Yes (Option UNR, Receiver attenuator)
Rear Panel Access Loops Option	Yes
Internal Switches Option	Yes (for signal conditioning)

Frequency Characteristics

Frequency Resolution	1 Hz
Frequency Reference Aging Rate	±0.1 ppm/year
Frequency Reference Temperature Stability	±0.05 ppm (0 to 55 °C)

Source Characteristics

Source Harmonics	< -60 dBc (typical)
Source Non-Harmonic Spurious	< -50 dBc (typical)
Source Output Power Resolution	0.01 dB

Measurement Characteristics

Group Delay Aperture	User-selectable
Group Delay Resolution	Varies with aperture and frequency range

Connectivity

LAN/Ethernet Standard	10/100/1000Base-T
LXI Compliance	LXI Class C
USB Front Ports	4x USB 2.0 Type A
USB Rear Ports	2x USB 2.0 Type A, 1x USB 2.0 Type B (device)
Display Output Resolution	Up to 1920x1080
External Reference Frequency	10 MHz
Digital I/O Port	36-pin D-sub
LXI Class	C
External Monitor Output (Digital)	DVI-D, DisplayPort
Digital I/O Port Type	36-pin D-sub
Digital I/O Logic Level	TTL compatible

Software & Control

Programming Languages	SCPI, COM/DCOM, .NET, LabVIEW/VEE Drivers
Operating System Version	Windows Embedded Standard 7

Environmental

Operating Altitude	Up to 2,000 m (6,560 feet)
Non-Operating Altitude	Up to 4,600 m (15,000 feet)

Power

Power Consumption (Max VA)	1300 VA
Power Factor	>0.9

Source Performance

Source Phase Noise (1 GHz carrier, 10 kHz offset)	< -100 dBc/Hz
Source Phase Noise (10 GHz carrier, 10 kHz offset)	< -92 dBc/Hz
Source Phase Noise (20 GHz carrier, 10 kHz offset)	< -85 dBc/Hz
Source Phase Noise (26.5 GHz carrier, 10 kHz offset)	< -82 dBc/Hz
Output Power Level Accuracy	±0.6 dB (10 MHz to 26.5 GHz, Pout > -15 dBm)

Receiver Performance

Maximum Input Power (Continuous)	+27 dBm
Maximum Input DC Voltage	±30 VDC

System Performance (Corrected)

System Directivity (0.01 - 26.5 GHz)	>42 dB
System Source Match (0.01 - 26.5 GHz)	>40 dB
System Load Match (0.01 - 26.5 GHz)	>40 dB
System Port Isolation (0.01 - 26.5 GHz, 10 Hz IFBW)	>100 dB
System Transmission Tracking Magnitude (0.01 - 26.5 GHz)	±0.05 dB
System Transmission Tracking Phase (0.01 - 26.5 GHz)	±0.5 degrees

TECHNOLOGY

Vector Network Analysis

APPLICATIONS

Microwave component characterization, Active device test, Amplifier intermodulation distortion (IMD) measurement, Mixer/converter conversion loss measurement, Pulsed S-parameter measurements, Noise figure measurement