

KEYSIGHT TECHNOLOGIES (AGILENT HP)

8508A

The Keysight (Agilent/HP) 8508A Vector Voltmeter is a fully automatic tuned receiver designed for easy and highly sensitive RF voltage and phase measurements. Featuring a narrowband measuring technique, it provides a dynamic range of over 90 dB and a high sensitivity of 10 μ V. It can measure the phase difference between two input channels with a resolution of 0.1 degrees across a full ± 180 -degree range, making it ideal for characterizing electrical length, phase distortion, and impedance.

SPECIFICATIONS

General

Interfaces	HP-IB (GPIB)
Display	Dual digital numeric displays for amplitude and phase
Compatible Input Modules	85081B High Impedance Input Module, 85082A 50 Ω Input Module
Warm-up Time	30 minutes

Physical

Power Supply	100 / 120 / 220 / 240 V AC (+5%, -10%), 48 to 440 Hz, 80 VA max
Operating Temperature	0 to 55 $^{\circ}$ C $^{\circ}$ C
Dimensions (W×H×D)	425 mm × 133 mm × 474 mm mm
Weight	11.5 kg

Frequency and Channel Configuration

Frequency Range (High Impedance Probe)	100 kHz to 1 GHz (with HP 85081B input module)
Frequency Range (50 Ω)	300 kHz to 2 GHz (with HP 85082A input module)
Number of Channels	2 (Channel A and Channel B)
Frequency Tuning Modes	Automatic (search and lock), Manual (frequency entry)

Amplitude Measurement Performance

Sensitivity	10 μ V
Voltage Measurement Range	10 μ V to 1 V rms full scale
Amplitude Resolution (dB)	0.01 dB
Amplitude Resolution (Percent)	0.1% of reading

Phase Measurement Performance

Phase Measurement Range	-180 $^{\circ}$ to +180 $^{\circ}$
Phase Resolution	0.1 $^{\circ}$

RF Input Characteristics

Input Impedance (with 85081B)	100 k Ω nominal shunted by approx. 3 pF
Input Impedance (with 85082A)	50 Ω nominal
Input Connector Type (with 85082A)	Type-N female

Outputs and Auxiliary Interfaces

IF Output Frequency	20 kHz nominal
Analog Recorder Outputs	Amplitude: 0 to 1 V, Phase: -1.8 V to +1.8 V

Environmental and Standards Compliance

Storage Temperature Range	-40 °C to +75 °C
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Accuracy

Ratio Magnitude Accuracy (100 kHz to 300 MHz)	± 0.2 dB
Ratio Magnitude Accuracy (300 MHz to 1 GHz)	± 0.4 dB
Ratio Magnitude Accuracy (1 GHz to 2 GHz, with 85082A)	± 0.4 dB
Ratio Phase Accuracy (100 kHz to 300 MHz)	$\pm 1.0^\circ$
Ratio Phase Accuracy (300 MHz to 1 GHz)	$\pm 1.5^\circ$
Ratio Phase Accuracy (1 GHz to 2 GHz, with 85082A)	$\pm 2.0^\circ$
Absolute Magnitude Accuracy (100 kHz to 100 MHz)	± 1.0 dB
Absolute Magnitude Accuracy (100 MHz to 300 MHz)	± 1.5 dB
Absolute Magnitude Accuracy (300 MHz to 1 GHz)	± 2.0 dB
Absolute Magnitude Accuracy (1 GHz to 2 GHz)	± 2.5 dB (with 85082A)

Input Characteristics

Maximum Operating Input Level	+16 dBm (2 V peak)
Maximum Non-Destructive Input Level	+24 dBm (5 V peak, ± 15 V DC)
Input SWR (with 85082A)	< 1.15 (300 kHz to 100 MHz), < 1.25 (100 MHz to 1 GHz), < 1.40 (1 GHz to 2 GHz)

Locking Characteristics

Channel A Minimum Locking Level (100 kHz to 300 kHz)	1.5 mV
Channel A Minimum Locking Level (300 kHz to 1 GHz, with 85081B)	300 μ V

Isolation & Crosstalk

Channel-to-Channel Isolation (100 kHz to 500 MHz)	>100 dB
Channel-to-Channel Isolation (500 MHz to 1 GHz)	>80 dB
Channel-to-Channel Isolation (1 GHz to 2 GHz)	>70 dB

Outputs

Analog Recorder Output Voltage	0 to ±1 V
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Interfaces & Control

HP-IB Interface Functions	SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0, E2
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Measurement Features

Phase Zero Range	±180°
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TECHNOLOGY

Tuned Receiver / Vector Voltmeter

APPLICATIONS

RF Voltage and Phase Measurements, Electrical Length, Phase Distortion, Impedance Characterization

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