

KEYSIGHT TECHNOLOGIES (AGILENT HP)

5347A

The Keysight (Agilent/HP) 5347A is a high-performance 20 GHz Microwave Counter and Power Meter integrated into a single rugged, portable instrument. It provides precise frequency measurements from 10 Hz to 20 GHz alongside accurate power measurements using standard HP 8480 series power sensors.

SPECIFICATIONS

General

Interfaces	HP-IB (IEEE-488.2)
Display	Backlit custom Liquid Crystal Display (LCD) with 12-digit frequency and 4-digit power readout

Physical

Power Supply	90 to 132 V ac or 198 to 264 V ac (auto-selecting), 47 to 66 Hz
Operating Temperature	0 to 50 °C °C
Dimensions (W×H×D)	325 mm × 133 mm × 432 mm mm
Weight	9.1 kg (without options); 11.4 kg (with Option 002 battery) kg

Frequency Counter - Channel 1

Channel 1 Frequency Range	10 Hz to 520 MHz
Channel 1 Sensitivity	25 mV rms
Channel 1 Input Impedance	1 MΩ (shunted by < 70 pF) or 50 Ω nominal (selectable)
Channel 1 Coupling	AC
Channel 1 Maximum Input Level	5 V rms (50 Ω), 250 V peak (1 MΩ)

Frequency Counter - Channel 2 (Microwave)

Channel 2 Frequency Range	500 MHz to 20 GHz
Channel 2 Sensitivity (500 MHz to 12.4 GHz)	-32 dBm
Channel 2 Sensitivity (12.4 GHz to 18 GHz)	-27 dBm
Channel 2 Sensitivity (18 GHz to 20 GHz)	-22 dBm
Channel 2 Input Impedance	50 Ω nominal
Channel 2 Maximum Input Level	+7 dBm
Channel 2 Damage Level	+25 dBm (peak)
Channel 2 Connector Type	Precision Type N (female)
Acquisition Time	< 125 ms (typical)

Power Meter

Power Meter Frequency Range	10 MHz to 20 GHz (sensor dependent)
Power Meter Power Range	-70 dBm to +44 dBm (sensor dependent)
Compatible Power Sensors	HP 8481A, HP 8481D, HP 8485A
Power Instrumentation Accuracy	± 0.02 dB or $\pm 0.5\%$
Power Display Resolution	0.01 dB (logarithmic mode) or 0.1% of full scale (linear mode)
Calibration Factor Range	70% to 120% in 0.1% steps
Power Sensor Calibration Output	1.00 mW (0.00 dBm) at 50 MHz
Calibration Output Connector	Type N (female), front panel

Internal Timebase

Standard Timebase Type	TCXO
Standard Timebase Nominal Frequency	10 MHz
Standard Timebase Temperature Stability	$< 1 \times 10^{-6}$ (0 to 50 °C)
Standard Timebase Aging Rate	$< 1 \times 10^{-7}$ per month
Option 001 High Stability Timebase Aging Rate	$< 5 \times 10^{-10}$ per day (after 24-hour warm-up)
Option 001 High Stability Timebase Temperature Stability	$< 7 \times 10^{-9}$ (0 to 50 °C)
External Reference Input Frequency	1, 2, 5, or 10 MHz
External Reference Input Level	0.2 V to 2.0 V rms
External Reference Input Impedance	1 k Ω nominal
Internal Reference Output Frequency	10 MHz
Internal Reference Output Level	> 1.5 V p-p into 50 Ω

Power Requirements

Option 002 Internal Battery Type	Sealed Lead-Acid
Option 002 Battery Operating Time	> 2 hours typical
Option 002 DC Input Range	11 to 24 V dc
Power Consumption	< 40 VA typical (excluding battery charging)

Environmental

Storage Temperature Range	-40 to 75 °C
Operating Humidity Range	Up to 95% RH at 40 °C
Safety Standards Compliance	IEC 348, EN 61010-1
Maximum Operating Altitude	4,600 m (15,000 ft)
Maximum Storage Altitude	15,000 m (50,000 ft)

Counter Channel 2 Specifications

Channel 2 FM Tolerance	20 MHz p-p (modulation frequency 100 Hz to 10 MHz)
Channel 2 AM Tolerance	Up to 90% depth for modulation frequencies up to 100 kHz
Channel 2 Amplitude Discrimination	10 dB (typical) within 500 MHz; 20 dB (typical) up to 20 GHz

Counter Channel 1 Specifications

Channel 1 Maximum Resolution	1 Hz
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Power Meter Specifications

Power Meter Calibrator Output SWR	< 1.08
Power Meter Calibrator Output Frequency	50 MHz
Power Meter Offset Range	-99.99 dB to +99.99 dB

Timebase Specifications

Standard Timebase Short Term Stability	< 1×10^{-9} (1 s average)
Option 001 High Stability Timebase Short Term Stability	< 1×10^{-10} (1 s average)
Option 001 High Stability Timebase Warm-up Time	< 15 minutes (to within 1×10^{-7} of final value)

Option 002 Battery Specifications

Option 002 Battery Charge Time	8 hours (with instrument turned off)
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GPIOB / Interface Specifications

GPIOB Interface Functions	SH1, AH1, T5, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0, E1
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Channel 1 Input

Channel 1 Connector Type	BNC female
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Channel 2 Performance

Channel 2 Frequency Resolution	1 Hz to 1 MHz (user selectable)
Channel 2 Acquisition Modes	Automatic, Manual

Channel 2 Input

Channel 2 VSWR	1.5:1 (500 MHz to 12.4 GHz), 2.0:1 (12.4 GHz to 20 GHz)
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Power Meter Calibrator

Power Meter Calibrator Output Accuracy	$\pm 1.2\%$
Power Meter Calibrator Output Impedance	50 Ω nominal

Power Meter Performance

Power Meter Calibration Factor Resolution	0.1%
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Interfaces

Programming Language	HP-IB
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TECHNOLOGY

RF & Microwave Frequency Counter & Power Meter

APPLICATIONS

Microwave and RF telecommunications testing, power sensor calibration, and portable frequency and power measurement

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