

KEYSIGHT TECHNOLOGIES (AGILENT HP)

83711A

The Keysight (Agilent HP) 83711A is a synthesized CW generator operating in the 1.0 to 20.0 GHz frequency range. Highly regarded for its spectral purity, output power, and reliability, it serves as an industry-standard signal source for microwave testing, local oscillator substitution, and component characterization.

SPECIFICATIONS

General

Interfaces	GPIB (HP-IB)
Display	Backlit Liquid Crystal Display (LCD)
Warm-Up Time	30 minutes
Frequency Reference Option 1E5 Aging Rate	$< 5 \times 10^{-10}$ per day (after 30 days warm-up)
Frequency Reference Option 1E5 Temperature Stability	$< \pm 2 \times 10^{-8}$ (0 to 55 °C)

Physical

Power Supply	90 to 132 Vac (48 to 440 Hz) or 198 to 264 Vac (48 to 66 Hz), < 200 VA
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	426 mm × 133 mm × 498 mm mm

Frequency

Frequency Range	1.0 to 20.0 GHz
Frequency Resolution	1 kHz (1 Hz with Option 1E8)
Frequency Switching Speed	< 50 ms (to within 100 Hz of final frequency)
Phase Offset Range	0 to 360°
Phase Offset Resolution	1°

Frequency Reference

Frequency Reference Temperature Stability	$< \pm 1 \times 10^{-6}$ (0 to 55 °C)
Frequency Reference Calibration Interval	1 year

Output Power & Leveling

Maximum Output Power (1 to 18 GHz)	+13 dBm
Maximum Output Power (18 to 20 GHz)	+10 dBm
Minimum Output Power (Standard)	-4 dBm
Minimum Output Power (with Option 1E1)	-110 dBm
Power Resolution	0.01 dB
Level Flatness	±0.7 dB
Output Impedance	50 Ω
Output SWR (1 to 8 GHz)	< 1.5:1
Output SWR (8 to 20 GHz)	< 2.0:1
Attenuator Range (with Option 1E1)	110 dB
Attenuator Step Size (with Option 1E1)	10 dB
Maximum Reverse Power Protection	0.5 W (27 dBm) RF, 0 Vdc

Spectral Purity

Harmonics	<-50 dBc (at output levels < +10 dBm)
Non-harmonic Spurious	<-60 dBc
SSB Phase Noise (10 kHz offset, 10 GHz carrier)	<-90 dBc/Hz
Residual FM (50 Hz to 15 kHz BW, 10 GHz carrier)	< 10 Hz
Phase Noise @ 10 GHz Carrier, 100 Hz Offset	-65 dBc/Hz (typical)
Phase Noise @ 10 GHz Carrier, 1 kHz Offset	-78 dBc/Hz (typical)
Phase Noise @ 10 GHz Carrier, 100 kHz Offset	-100 dBc/Hz (typical)
Phase Noise @ 10 GHz Carrier, 1 MHz Offset	-120 dBc/Hz (typical)
Residual AM	< 0.01% (50 Hz to 15 kHz bandwidth)

Sweep Capabilities

Sweep Mode	Step Sweep
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Front & Rear Panel Connectors

External Reference Input Frequency	10 MHz
Internal Reference Output Frequency	10 MHz
Internal Reference Output Level	0 dBm nominal

System Control & Connectivity

Remote Interface Port	GPIO (HP-IB)
Command Set Language	SCPI
GPIO Address Range	0 to 30

Power & Physical Requirements

AC Line Voltage Range	90 to 132 Vac or 198 to 264 Vac
AC Line Frequency Range	48 to 440 Hz (90-132 Vac) / 48 to 66 Hz (198-264 Vac)
Storage Temperature Range	-40 to +75 °C
Height	133 mm (3 EIA rack units)
Width	426 mm
Depth	498 mm
Rackmount Flange Option Availability	Option 1CP available

Compliance & Certifications

Electromagnetic Compatibility (EMC)	CISPR 11 / EN 55011 Group 1 Class A
Safety Standards Compliance	CSA certified, IEC 348 compliant

Rear Panel Ports & Connections

Sweep Output Voltage	0 to 10 V ramp
Z-Axis Blanking Output	TTL level, BNC connector
1 V/GHz Output	1 V/GHz or 0.5 V/GHz (selectable), BNC connector
Stop Sweep Input	TTL level, BNC connector

Environmental

Operating Altitude	Up to 4,570 m (15,000 ft)
Non-Operating Altitude	Up to 15,240 m (50,000 ft)

Inputs & Outputs

Rear Panel AUX I/O Connector	25-pin D-sub (female)
External Reference Input Connector	BNC female
Internal Reference Output Connector	BNC female
Sweep Output Connector	BNC female
Stop Sweep Input Connector	BNC female
Z-Axis Blanking Output Connector	BNC female
1 V/GHz Output Connector	BNC female
External ALC Input Connector	BNC female
GPIO Interface Connector	24-pin IEEE-488 (GPIO) female

Performance

Modulation Capabilities	CW only (no modulation support)
ALC Leveling Modes	Internal ALC, External Diode Detector, External Power Meter, Unleveled
External ALC Loop Bandwidth	Nominally 100 kHz (diode mode), 0.5 Hz (power meter mode)

Maintenance

Self-Test Diagnostics	Power-on self-test and GPIB-initiated diagnostics (*TST?)
Recommended Calibration Cycle	1 year

TECHNOLOGY

Synthesized Signal Generator

APPLICATIONS

Microwave Testing, Local Oscillator Substitution, Component Characterization

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.