KEYSIGHT TECHNOLOGIES (AGILENT HP)

83731B

The Keysight (formerly Agilent / HP) 83731B is a high-performance synthesized signal generator operating from 1 GHz to 20 GHz. Designed to deliver excellent spectral purity and robust performance without exceeding budget constraints, it utilizes fundamental oscillators and switched low-pass filters to eliminate sub-harmonics and reduce spurious emissions to below -60 dBc. It provides ample output power, typically exceeding +14 dBm across its range and reaching +20 dBm below 1 GHz. With versatile built-in modulation capabilities including Frequency (FM), Phase (PM), Pulse, and Scan modulation, it is well-suited for simulating communications data, scanning antennas, and testing radar and electronic warfare (EW) receivers.

SPECIFICATIONS

Frequency

Minimum Frequency	1 GHz Hz
Maximum Frequency	20 GHz Hz
Frequency Resolution	1 kHz (1 Hz with Option 1E8)
Internal Timebase Aging Rate (Standard)	< 1.5 x 10^-8 / day
Internal Timebase Aging Rate (Option 1E5)	< 5 x 10^-10 / day

Output

Output Power Range	+10 dBm to -4 dBm (standard); +8 dBm to -110 dBm (with Option 1E1)

Modulation

Pulse Modulation	Included (for testing radar and EW receivers)
Frequency Modulation (FM)	Included (for simulating communications data)
Phase Modulation (PM)	Included (for satellite and radar applications)

General

Reference Oscillator	10 MHz
Interfaces	HP-IB (IEEE-488)

Physical

Dimensions (W×H×D)	426 × 133 × 498 mm
Weight	16 kg

Spectral Purity

Harmonics	<-55 dBc
Non-harmonics / Spurious	<-60 dBc
Sub-harmonics	Eliminated

Amplitude

Amplitude Resolution	0.01 dB

Pulse Modulation

Pulse On/Off Ratio	> 80 dB

Environmental

Operating Temperature Range	0 to +55 °C

Hardware Options

Option 1E1	110 dB Step Attenuator
Option 1E5	High-Stability Timebase
Option 1E8	1 Hz Frequency Resolution

Inputs & Outputs

RF Output Connector	3.5 mm (male)

Performance

Output Impedance	50 Ω nominal

Power

Power Consumption	400 VA maximum

TECHNOLOGY

Synthesized Signal Generator

APPLICATIONS

Radar Testing, Electronic Warfare (EW) Receivers, Satellite Applications, Communications Data Simulation, Scanning Antenna Simulation