

KEYSIGHT TECHNOLOGIES (AGILENT HP)

83651b

The Agilent/Keysight 83651B is a high-performance synthesized signal source specifically designed and optimized for use with the Agilent 8510 series network analyzers. It provides precise broadband frequency coverage from 45 MHz to 50 GHz with an exceptional 1 Hz resolution. To maximize value and efficiency in dedicated systems, this model omits front panel modulation controls, keyboards, and displays, relying instead on rear-panel connections and direct system control.

SPECIFICATIONS

General

Interfaces	HP-IB (GPIB), 8510 System Interface
Display	None (dedicated system source, no front panel display)

Physical

Power Supply	90 to 132 Vac (48 to 440 Hz) or 198 to 264 Vac (48 to 66 Hz), 400 VA maximum
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	425 mm × 133 mm × 497 mm mm
Weight	27 kg kg

Frequency Specifications

Frequency Range	45 MHz to 50 GHz
Frequency Resolution	1 Hz
Aging Rate (Standard Timebase)	$< 1 \times 10^{-9}$ /day (after 72 hours)
Temperature Stability	$< 1 \times 10^{-10}$ /°C
Phase Offset Range	0 to 360 degrees
Phase Offset Resolution	1 degree

RF Output Power

Max Leveled Power (0.045 to 2 GHz)	+10 dBm
Max Leveled Power (2 to 20 GHz)	+10 dBm
Max Leveled Power (20 to 26.5 GHz)	+5 dBm
Max Leveled Power (26.5 to 40 GHz)	+2.5 dBm
Max Leveled Power (40 to 50 GHz)	-3 dBm
Minimum Leveled Power (Standard)	-20 dBm
Power Level Resolution	0.02 dB
Output Impedance	50 ohms (nominal)

Spectral Purity

Harmonics (0.045 to 2.0 GHz)	< -30 dBc
Harmonics (2.0 to 26.5 GHz)	< -50 dBc
Harmonics (26.5 to 40 GHz)	< -40 dBc
Harmonics (40 to 50 GHz)	< -40 dBc
Sub-harmonics (20 to 26.5 GHz)	< -50 dBc
Sub-harmonics (26.5 to 50 GHz)	< -40 dBc
Non-harmonic Spurious (0.045 to 2.0 GHz)	< -50 dBc
Non-harmonic Spurious (2.0 to 20 GHz)	< -60 dBc
Non-harmonic Spurious (20 to 26.5 GHz)	< -54 dBc
SSB Phase Noise @ 10 kHz Offset (10 GHz)	< -80 dBc/Hz
SSB Phase Noise @ 10 kHz Offset (40 to 50 GHz)	< -68 dBc/Hz

Inputs and Outputs (Front/Rear Panel)

RF Output Connector	2.4 mm (male), rear panel
External Reference Input Frequency	10 MHz
Internal Reference Output Frequency	10 MHz

Sweep Capabilities

Sweep Types	Step sweep, List sweep
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System and Control

Remote Control Languages	HP-IB Command Set (optimized for 8510)
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Power and Mechanical

Rack Height	3 U
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Environmental and Compliance

Storage Temperature Range	-40 to +75 °C
Operating Altitude Limit	Up to 4,570 meters (15,000 feet)

Available Options and Accessories

Option 001	Option 002 = Step Attenuator (extends minimum leveled power to -110 dBm)
Option 1D5	High-Stability Timebase

Power

Line Voltage	90 to 132 VAC / 198 to 264 VAC (automatic selection)
Line Frequency	48 to 66 Hz
Maximum Power Consumption	400 VA

Frequency

Frequency Switching Time	< 15 ms
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Options

Option 002 Description	Adds a 90 dB step attenuator in 10 dB steps
Option 004 Description	Moves RF output connector to the rear panel

Environmental

Operating Humidity	Up to 95% RH @ 40 °C
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Phase Noise

SSB Phase Noise @ 100 Hz Offset (10 GHz)	-70 dBc/Hz
SSB Phase Noise @ 1 kHz Offset (10 GHz)	-78 dBc/Hz
SSB Phase Noise @ 100 kHz Offset (10 GHz)	-113 dBc/Hz
SSB Phase Noise @ 1 MHz Offset (10 GHz)	-130 dBc/Hz
SSB Phase Noise @ 100 kHz Offset (40 to 50 GHz)	-99 dBc/Hz
SSB Phase Noise @ 1 MHz Offset (40 to 50 GHz)	-122 dBc/Hz

RF Output

Leveled Power Flatness (0.045 to 20 GHz)	±0.7 dB
Leveled Power Flatness (20 to 26.5 GHz)	±0.9 dB
Leveled Power Flatness (26.5 to 40 GHz)	±1.1 dB
Leveled Power Flatness (40 to 50 GHz)	±1.4 dB
Minimum Leveled Power with Option 002	-110 dBm
Step Attenuator Range (Option 002)	90 dB in 10 dB steps
Max Leveled Power with Option 002 (0.045 to 2 GHz)	+8 dBm
Max Leveled Power with Option 002 (2 to 20 GHz)	+8 dBm
Max Leveled Power with Option 002 (20 to 26.5 GHz)	+3 dBm
Max Leveled Power with Option 002 (26.5 to 40 GHz)	+0 dBm
Max Leveled Power with Option 002 (40 to 50 GHz)	-3 dBm

Inputs & Outputs

Rear Panel GPIB Ports	HP-IB port and dedicated HP 8510 System Interface port
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TECHNOLOGY

Synthesized Signal Generation

APPLICATIONS

Dedicated RF/Microwave Source for Network Analysis

