KEYSIGHT TECHNOLOGIES (AGILENT HP)

8780A

The Keysight Agilent 8780A is a synthesized vector signal generator designed for IF testing from 10 MHz to 3 GHz. Offering wideband modulation capabilities up to 100 times wider than traditional synthesizers, it delivers a 700 MHz modulation bandwidth via vector/IQ inputs. The 8780A supports diverse modulation schemes—including QPSK, 16QAM, wideband FM, and fast-rise pulse modulation—making it highly suited for receiver, radar EW, and satellite telemetry testing.

SPECIFICATIONS

Frequency

Minimum Frequency	10 MHz Hz
Maximum Frequency	3 GHz Hz
Frequency Resolution	1 Hz

Output

Maximum Output Power	+10 dBm dBm
Output Power Range	+10 dBm to -110 dBm
Phase Noise	<-118 dBc/Hz (typical @ 20 kHz offset, 1 GHz carrier)

Modulation

Modulation	BPSK, QPSK, 8PSK, 16QAM, 64QAM, digital, AM, FM, pulse, vector I/Q, optional phase modulation

General

Reference Oscillator	10 MHz (aging rate < 1 x 10^-9/day)
Interfaces	HP-IB (GPIB)

Physical

Power Supply	90 to 132 VAC / 198 to 264 VAC, 48 to 440 Hz, 500 VA max
Dimensions (W×H×D)	425 mm x 177 mm x 624 mm mm
Weight	32 kg kg

Frequency Specifications

Frequency Range	10 MHz to 3 GHz
Coherent Carrier Output	Unmodulated coherent carrier output provided for demodulation

Amplitude Specifications

Minimum Output Power	-110 dBm

Analog Modulation

Modulation Bandwidth	700 MHz (using I/Q or vector)
Direct-Sequence Spread Spectrum Chip Width	Down to 7 ns
Wideband FM Peak-to-Peak Deviation	Over 200 MHz
Optional Analog Phase Modulation	Available for satellite telemetry

Vector Modulation and Baseband

Digital Modulation Formats	BPSK, QPSK, 8PSK, 16QAM, 64QAM

System Connectivity and Interfaces

GPIB Interface	Standard HP-IB

Spectral Purity

Harmonics	<-30 dBc
Spurious (Non-harmonics)	<-55 dBc

Inputs & Outputs

I/Q Input Impedance	50 ohms nominal

Environmental

Operating Temperature Range	0 °C to +55 °C

Power

Maximum Power Consumption	500 VA

RF Output Characteristics

Output VSWR	< 1.5:1 (10 MHz to 1.5 GHz), < 2.0:1 (1.5 GHz to 3.0 GHz)
Output Level Accuracy	±1.5 dB (output levels > -100 dBm)

Vector Modulation Performance

I/Q Quadrature Phase Error	< ±3° (10 MHz to 1.5 GHz)
I/Q Amplitude Imbalance	< ±0.5 dB (10 MHz to 1.5 GHz)
Carrier Leakage	< -30 dBc

Pulse Modulation

Pulse On/Off Ratio	> 80 dB
Minimum Pulse Width	50 ns

Frequency Performance

Frequency Switching Time	< 150 ms (to within 100 Hz of final frequency)
Reference Oscillator Aging Rate	< 5 × 10^-10 per day (after warmup)

TECHNOLOGY

Synthesized IF Vector Signal Generator

APPLICATIONS

Receiver, component, radar EW, and communication testing