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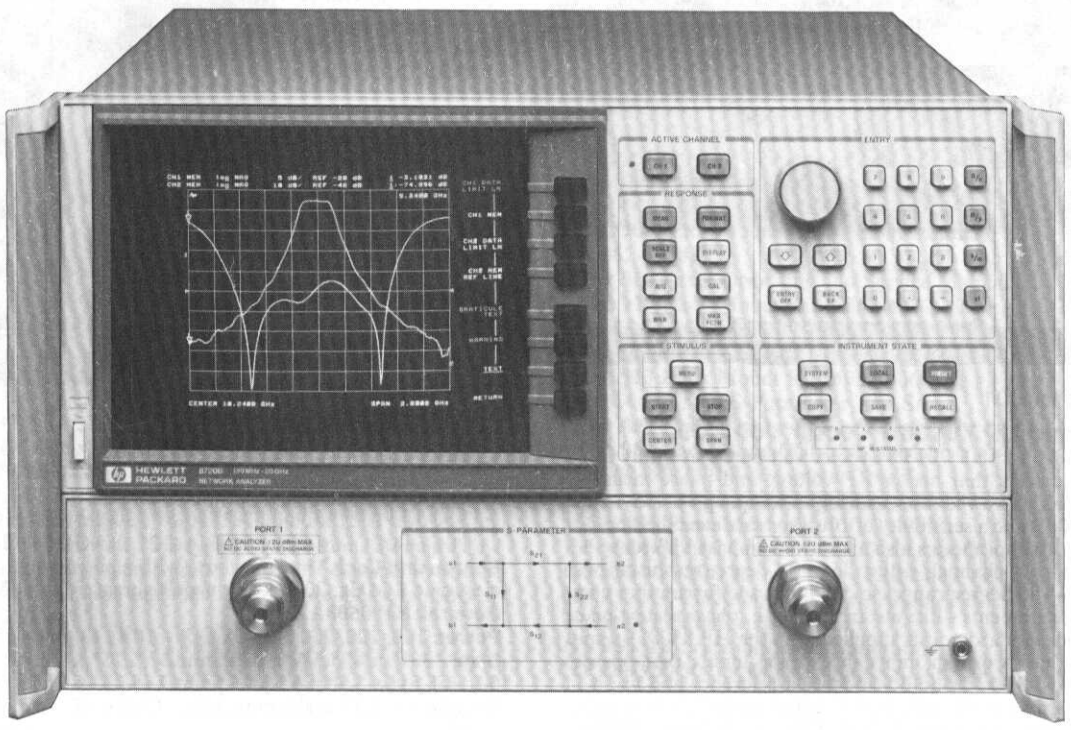
Find the *Keysight / Agilent 8720A* at our website: ***Click HERE***

NETWORK ANALYZERS

Microwave Network Analyzers, 130 MHz to 13.5 or 20 GHz

HP 8719A, 8720B, 85162A

- 130 MHz to 13.5 or 20 GHz frequency range
- Fast-sweeping synthesized source built in
- Integrated switching s-parameter test set
- Direct save/recall to an external disk drive
- Up to 95 dB dynamic range
- Built-in accuracy enhancement



DESIGNED FOR HP-IB SYSTEMS

HP 8720B

HP 8719A, 8720B Microwave Network Analyzers

The HP 8719A or 8720B microwave network analyzers characterize microwave components and networks to 13.5 or 20 GHz. These vector network analyzers include a fast-sweeping synthesized source, switching s-parameter test set, and large, full color display in a single integrated package. These compact instruments are economical and easy to use. They are ideal choices for manufacturing, incoming inspection, and final test.

Affordable Analyzers with Excellent Performance

The integral source is fully synthesized, even while sweeping, and it provides stability and accuracy within 10 ppm (typical). Yet, the source sweeps extremely fast: measurement update times are typically about 1 ms per point. Frequency resolution is 100 kHz standard; option 001 provides 1 Hz resolution for narrow-band or long devices.

With tuned receivers and variable-bandwidth IF filters, the HP 8719A and 8720B microwave network analyzers provide over 85 dB of dynamic range. Option 003 boosts the forward dynamic range to 95 dB; solutions to 100 dB are available. The built-in test set measures all four s-parameters (both forward and reverse) with a single connection.

A step attenuator controls incident power level from -10 to -65 dBm in 5 dB steps, and two internal tees provide bias to active devices through the test ports.

Two independent channels can display reflection and transmission characteristics at the same time. The receiver detects both magnitude and phase, and presents results in a variety of useful formats, including group delay, deviation from linear phase, complex impedance, or SWR, on rectangular, polar, or Smith charts.

Built-in vector accuracy enhancement supports calibration kits in 3.5 mm, 7 mm, and type-N connectors; a user kit supports waveguide. Choose from a simple response normalization to full 2-port error correction. And the frequency subset feature lets you zoom in on a response without recalibrating.

Time domain capability (option 010) computes and displays the DUT's response versus time or distance (instead of frequency). Use time domain to locate and quantify individual discontinuities in a network. Or apply the gating feature to remove the effects of unwanted reflections (separated in time), then view the DUT's true response versus frequency.

Time-Saving Productivity Features

Limit test capability makes pass/fail decisions quantitative and decisive. Define up to 22 test limits per channel, based on the specifications of your components. Tuning is faster, and testing is more consistent.

To document results without a computer, the copy feature sends the entire display to a compatible plotter or printer.

Annotate specific trace features with markers — up to four per channel, all displayed at once. Advanced marker functions track a maximum or minimum point (while tuning), or compute the delta between two markers. For bandpass filters, markers automatically determine center frequency, bandwidth, and Q.

With save/recall capability, an experienced user can define and save test configurations for each DUT. Other users can recall identical conditions later, and align/test each DUT consistently. Use five internal memory registers, or save/recall directly to an external CS80 disk drive.

Software

Automate the HP 8719A or 8720B microwave network analyzers with HP-IB for added capability. The HP 85162A Measurement Automation Software guides you through measurements and simplifies test configuration. You can measure transistors quickly and completely with the HP 85014C Active Device Measurements Application Pac. The software includes models to de-embed the HP 85041A transistor fixture, and also controls the bias supply. Or, you can use the HP 85165A Resonator Measurement Software to characterize SAW devices and crystal.

HP 8719A/8720B System Perf

All specifications apply to the HP 8719A

Dynamic Range[1]

	0.13 to
Transmission (S_{21} or S_{12})(standard)	70 d
Forward Transmission (S_{21})(Option 003)	99 d
Reverse Transmission (S_{12})(Option 003)	30 d

Measurement Port Characteristic

The following specifications show the r (including switch repeatability) after acc full 2-port measurement calibration (inc bandwidth of 10 Hz, and the specified ca temperature is 23±3°C.

Calibration Kit: HP 85052B (3.5 mm, m sliding loads)

	Freq	
	0.13 to 0.5 GHz	0.5 to 2 GHz
Directivity	40 dB	40 dB
Source Match	30 dB	30 dB
Load Match	35 dB	35 dB
Reflection Tracking	±0.10 dB	±0.10 d
Transmission Tracking	±0.10 dB[6]	±0.10 d

Calibration Kit: HP 85052D (3.5 mm, n precision fixed load)

	Freq	
	0.13 to 0.5 GHz	0.5 to 2 GHz
Directivity	40 dB	40 dB
Source Match	30 dB	30 dB
Load Match	35 dB	35 dB
Reflection Tracking	±0.10 dB	±0.10 dI
Transmission Tracking	±0.10 dB[6]	±0.10 dI

System Accessories

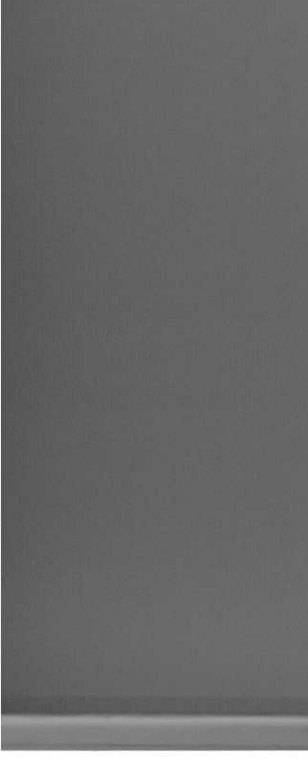
	3.5 mm	7 m
Test port cables		
Standard	HP 85131C/D	HP 8
Flexible[5]	HP 85131E/F	HP 8
Adapter sets	HP 85130D	HP 8
Calibration kits		
Standard (sliding loads)	HP 85052B	HP 8
Economy (fixed loads)	HP 85052D	HP 8
Verification kits	HP 85053B	HP 8

[1]Limited by maximum output power and system noise floo Hz, using a full 2-port measurement calibration (including a an averaging factor of 16).
[2]Crosstalk, after an isolation calibration, is below the syste
[3]HP 85130B/C Special Adapter Sets required if devices with connected directly to the HP 8719A/HP 8720B's test ports
[4]Use the cables recommended for 7 mm devices. Precision 7 in the HP 85054B/D Type N calibration kits.
[5]Standard cables are warranted for 90 days. Flexible cables
[6]With Option 003, reverse transmission tracking and maxim

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A Resonator Measurement Software to charac-
nd crystal.

HP 8719A/8720B System Performance

All specifications apply to the HP 8719A up to 13.5 GHz.

Dynamic Range[1]

	Frequency range (GHz)			
	0.13 to 0.5	0.5 to 2	2 to 8	8 to 20
Transmission (S_{21} or S_{12})(standard)	70 dB	80 dB	85 dB	85 dB
Forward Transmission (S_{21})(Option 003)	99 dB	98 dB	97 dB	95 dB
Reverse Transmission (S_{12})(Option 003)	30 dB	55 dB	65 dB	65 dB

Measurement Port Characteristics[2]

The following specifications show the residual system uncertainties (including switch repeatability) after accuracy enhancement using a full 2-port measurement calibration (including isolation) with an IF bandwidth of 10 Hz, and the specified calibration kit. Environmental temperature is 23±3°C.

Calibration Kit: HP 85052B (3.5 mm, male and female lowband and sliding loads)

	Frequency Range			
	0.13 to 0.5 GHz	0.5 to 2 GHz	2 to 8 GHz	8 to 20 GHz
Directivity	40 dB	40 dB	40 dB	40 dB
Source Match	30 dB	30 dB	30 dB	30 dB
Load Match	35 dB	35 dB	30 dB	30 dB
Reflection Tracking	±0.10 dB	±0.10 dB	±0.10 dB	±0.20 dB
Transmission Tracking	±0.10 dB[6]	±0.10 dB[6]	±0.12 dB	±0.15 dB

Calibration Kit: HP 85052D (3.5 mm, male and female broadband precision fixed load)

	Frequency Range			
	0.13 to 0.5 GHz	0.5 to 2 GHz	2 to 8 GHz	8 to 20 GHz
Directivity	40 dB	40 dB	38 dB	36 dB
Source Match	30 dB	30 dB	30 dB	29 dB
Load Match	35 dB	35 dB	30 dB	30 dB
Reflection Tracking	±0.10 dB	±0.10 dB	±0.10 dB	±0.20 dB
Transmission Tracking	±0.10 dB[6]	±0.10 dB[6]	±0.12 dB	±0.15 dB

System Accessories

	3.5 mm	7 mm[3]	Type N[3]
Test port cables Standard Flexible[5]	 HP 85131C/D HP 85131E/F	 HP 85132C/D HP 85132E/F	 HP 85132C/D[4] HP 85132E/F[4]
Adapter sets	HP 85130D	HP 85130B	HP 85130C
Calibration kits Standard (sliding loads) Economy (fixed loads)	 HP 85052B HP 85052D	 HP 85050B HP 85050D	 HP 85054B HP 85054D
Verification kits	HP 85053B	HP 85051B	HP 85055A

[1]Limited by maximum output power and system noise floor. Specified for an IF bandwidth of 10 Hz, using a full 2-port measurement calibration (including an isolation calibration performed with an averaging factor of 16).
[2]Crosstalk, after an isolation calibration, is below the system noise floor and can be ignored.
[3]HP 85130B/C Special Adapter Sets required if devices with 7 mm or Type N connectors are to be connected directly to the HP 8719A/HP 8720B's test ports.
[4]Use the cables recommended for 7 mm devices. Precision 7 mm to Type N adapters are included in the HP 85054B/D Type N calibration kits.
[5]Standard cables are warranted for 90 days. Flexible cables carry a standard one-year warranty.
[6]With Option 003, reverse transmission tracking and maximum Port 2 power level are reduced.

General Characteristics

Source Frequency Characteristics

Range: HP 8719A, 130 MHz to 13.5 GHz
HP 8720B, 130 MHz to 20.0 GHz
Resolution: 100 kHz (1 Hz with Option 001)
Stability: typically ±7.5 ppm @ 0° to 55°C
typically ±3 ppm/year
Accuracy: 10 ppm @ 25°±3°C

Output characteristics (at test ports, 25°±3°C)

Power range: −10 to −65 dBm in 5 dB steps[6]
Power level: −10 dBm ± 3 dB[6]
Harmonics: <−15 dBc @ −10 dBm (typical)

Test ports

Connector type: 3.5 mm (male)
Impedance: 50 ohms nominal
Switch type: Mechanical
Switch lifetime: >3 million cycles (typical)
Maximum input level: +20 dBm
DC bias: 500 mA, 40 VDC maximum

Rear Panel Connectors

External reference frequency input:
Frequency: 1, 2, 5, and 10 MHz; ≤±200 Hz at 10 MHz
Level: −10 dBm to +20 dBm, typical
Impedance: 50 ohms
External trigger: Triggers start of sweep on a negative TTL transition or contact closure to ground.
External AM auxiliary input: 0 to 10 volts (−1 dB/volt) into a 10 kohm resistor, 5 kHz max.
Auxiliary voltage input: −10 to +10 V
IO interconnect:
Type: DB-25
Output: Standard LS TTL output (active high logic) on pin 17 indicative of PASS/FAIL status during limit testing. Output voltage remains at +5 Vdc (nominal) until a FAIL condition occurs. Remains at 0 Vdc until a PASS condition occurs.

HP 85162A Measurement Automation Software

The HP 85162A Measurement Automation software is designed specifically to operate on an HP 9000 series 200 or 300 computer with BASIC 3.0 or higher. The software complements the HP 8720A microwave network analyzer, providing calibration, measurement, and data output capabilities with a minimum of operator interaction.

Ordering Information	Price
HP 8719A Network Analyzer (130 MHz to 13.5 GHz)	$44,000
Opt W30 Extended Repair Service. See page 723.	+$1,100
Opt W31 On-site Repair Service. See page 723.	+$1,980
Opt W32 Calibration Service. See page 723.	+$665
HP 8720B Network Analyzer (130 MHz to 20.0 GHz)	$55,000
Opt W30 Extended Repair Service. See page 723.	+$1,375
Opt W31 On-site Repair Service. See page 723.	+$2,500
Opt W32 Calibration Service. See page 723.	+$665
Following options available for both HP 8719A and 8720B:	
Opt 001 1 Hz frequency resolution	+$9,500
Opt 003 High forward dynamic range	$0
Opt 010 Time Domain Capability	+$9,000
Opt 802 add HP 9122C Dual Disc Drive, HP 10833A cable	+$1,495
Opt 830 add HP 85052D Cal Kit, HP 85131E cable	+$5,950
Opt 913 Rack Mount Kit (product # 5062-4071)	+$40 ☎
HP 85162A Measurement Automation Software Requires BASIC 3.0 or above and 2 Mbytes of RAM	$1,500
Must select media option (no charge):	
Opt 630 for 3.5 in. disk media	$0
Opt 655 for 5.25 in. disk media	$0

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