HP 8757D/E
Scalar Network Analyzers

Technical Specifications

10 MHz to 110 GHz

Accurate measurement of transmission and reflection characteristics is a key requirement in your selection of a scalar network analyzer. To help you achieve these goals, Hewlett-Packard offers you a choice of microwave scalar measurement solutions which provide an excellent balance of cost, system versatility, and measurement precision.

Overview of features and differences

HP 8757E

- High resolution monochrome display
- Two display channels
- Three detector inputs
- Internal plotter/printer buffer
- +16 to –60 dBm dynamic range
- AC/DC detection modes
- 101 to 401 measurement points/trace
- Noise figure measurement display capability
- Cursor max and min search functions
- Compatible with the HP 85025 and 85026 series detectors and the HP 85027 series directional bridges

HP 8757D

Includes all of the HP 8757E features, plus the following:

- High resolution color display
- Four display channels
- An optional fourth detector input (Option 001)
- An optional internal power calibrator (Option 002)
- Accurate power measurements with the HP 85037 series precision detectors
- External disk save/recall
- 101 to 1601 measurement points/trace
- Limit line testing (channels 1 and 2)
- Adaptive normalization
- Cursor search functions (max, min, n dB, BW)

Specifications describe the instrument's warranted performance over the temperature range 0 to 55°C (except where noted). **Supplemental characteristics** are intended to provide information useful in applying the instrument, by giving typical but non-warranted performance parameters. These are denoted as "typical," "nominal," or "approximate."

HP 8757D/E scalar network analyzers

The HP 8757D has four independent display channels that process the signals from the HP 85037 series precision detectors (HP 8757D only), the HP 85025 and 85026 detectors, and the HP 85027 series directional bridges for logarithmic display, in single channel or ratio mode. Three (optionally four) detector inputs are provided. The HP 8757E has two independent display channels and three detector inputs.

Display

Horizontal resolution
The number of points (horizontal resolution) that can be selected depends on the number of traces displayed.

Network Analyzer	Traces	Selectable Number of Points
HP 8757E	1, 2	101, 201, 401
HP 8757D	1	101, 201, 401, 801, 1601
	2	101, 201, 401, 801
	3, 4	101, 201, 401

Display modes
All analyzer display channels can display any one of the detector inputs or any ratio combination of detector inputs.

Log magnitude
dBm: single channel power measurement.
dB: relative power measurement (ratio or relative to trace memory).

SWR
Relative measurements (normalized or ratio measurements) can be displayed in SWR. Channels 1 and 2 only: 401 points or fewer.

AUX voltage
The rear panel BNC input ADC IN can be measured and displayed in volts (–10 to +10 volts). Typical maximum error is 60 mV.

Color settings (HP 8757D only)
Up to 8 operator-selectable colors are available for CRT attributes, such as the grid, measurement traces, and labels.

Sweep time
The minimum sweep time depends on the number of traces displayed and the number of points selected.

Number of points	1 trace	Minimum sweep time (ms) (log magnitude format) 2 traces	3 traces	4 traces
101	40	50	60	70
201	50	75	90	100
401	100	100	150	200
801	200	250	NA	NA
1601	400	NA	NA	NA

Averaging
2, 4, 8, 16, 32, 64, 128, or 256 successive traces can be averaged.

Smoothing
Provides a linear moving average of adjacent data points. The smoothing aperture defines the trace width (number of data points) to be averaged, and ranges from 0.1% to 20% of the trace width.

Normalization
Traces are stored and normalized with the highest resolution, independent of display scale/division or offset. With adaptive normalization on the HP 8757D, calibration data is interpolated when the frequency span is decreased.

Limit lines (HP 8757D only)
Limit lines facilitate quick pass/fail decisions. Limits can be any combination of flat or sloped lines or single points up to 12 segments. They are only available for channels 1 and 2, for traces with 401 points or fewer, and can be stored in save/recall registers 1 through 4.

Internal save/recall registers

Up to 9 complete front panel states may be saved or recalled. If the source (HP 8360 or 8370 series) is connected to the HP 8757 system interface, the front panel states of both the network analyzer and source are saved. Registers 1 through 4 store the instrument state and the memory traces for channels 1 and 2. The memory traces for channels 3 and 4 are not stored. Registers 5 through 9 only store the instrument state.

Display mode	Scale resolution	Display range	Vertical resolution
dBm	0.1 to 20 dB/div (1/2/5 sequence)	–80 to +80 dBm	0.003 dB[1]
dB	0.1 to 20 dB/div (1/2/5 sequence)	–90 to +90 dB	0.006 dB[1]
Normalized ratio measurements	0.1 to 20 dB/div (1/2/5 sequence)	–180 to +180 dB	0.01 dB
SWR	0.02 to 10 units/div (1/2/4 sequence)	1.0 to 37.0	0.01 at 1 0.1 at 10 0.27 at 30
AUX Voltage	0.025 to 5 V/div (1/2.5/5 sequence)	–10 to +10V	0.001V

1. 0.01 dB for display cursor

Modulation requirements

Applies to the HP 85037 series precision detectors, HP 85025/26 series detectors, and HP 85027 series directional bridges in AC mode.

Square-wave amplitude modulation.
Frequency 27,778 Hz ±20 Hz.
≥30 dB on/off ratio.
45% to 55% symmetry.

HP 8757D/E network analyzer (cont'd)

Rear panel connectors

Sweep voltage requirements (Sweep in)
Horizontal sweep voltage, normally provided by the sweeper, from 0 to 10 volts.

Marker and blanking requirements (Pos z blank)
Blanking and marker signals are provided by the sweeper through the “Pos z blank” input on the rear panel of the HP 8757.

Voltage levels
Blanked: +5V typical
Unblanked: 0V typical
Marker: –4V typical
Active marker: –8V typical

Modulator drive
The modulator drive output of the HP 8757 scalar analyzer provides the circuitry to drive the HP 8360/8370 series synthesized sweepers and the HP 11665B modulator. Modulation drive may be turned on and off via the front panel or HP-IB. In the “off” state, the modulator drive signal turns the HP 11665B fully on for minimum insertion loss.
Frequency: 27,778 Hz ±12 Hz
Symmetry: 50% ±1%

Stop sweep
Used with the HP 8360 and 8370 series when controlled by the HP 8757 system interface to stop the sweep at band crossings and at the end of sweep.

ADC in
An input connector for auxiliary voltage input in the –10 to +10 volt range. This voltage can be displayed (in volts) on any channel.

Control 1 and control 2
These connectors provide digital output signals (TTL open-collector) as a user convenience for driving other peripheral equipment in an HP-IB controlled system.

Video outputs (HP 8757D only)
Used to drive an external color monitor that has the following characteristics:

- Red, green, and blue (RGB) BNC inputs, sync on green
- 75 ohm input impedance
- 25.5 kHz horizontal scan rate
- 60 Hz vertical refresh rate
- 1 V p-p (typically 0.7 V = white; 0 V = black; –0.3 V = sync)

HP-IB

Interface
HP-IB operates according to IEEE 488-1978 and IEC-625 interface standards.

Interface function codes
SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT0, C0, E1.

Transfer formats
Data can be transferred either as ASCII strings or as 16-bit integers. Readings may be taken at a single point, or an entire trace may be transferred at once.

Transfer speed

ASCII format, 401 point trace:	500 ms typical.
ASCII format, single point:	10 ms typical.
Binary format, 401 point trace:	30 ms typical.
Binary format, single point:	7 ms typical.

Programmable functions
All front panel functions except power on/off are programmable. The HP 8757D/E is compatible with all appropriate HP 8757A/C scalar analyzer programming codes.

User-accessible display graphics
HP-GL subset that allows user to display test setup diagrams and operator instructions on the analyzer CRT.

Interrupts
HP-IB service interrupts (SRQs) are generated for the following conditions:

- Front-panel key pressed
- Operation complete
- Illegal command
- Instrument self-test error
- Limit test failed

System interface

The HP 8757 system interface is a dedicated HP-IB port used exclusively by the HP 8757 to control and extract information from a swept source, a digital plotter, a printer, and a disk drive (HP 8757D only).

Compatible swept sources

The following swept sources are specifically made to complement the HP 8757 system. With them, the HP 8757 is able to display start, stop and marker frequencies, save and recall front panel states of both the sweeper and the scalar analyzer, preset both instruments simultaneously, and alternately sweep two different frequency or power ranges and display both simultaneously:

- HP 8360 series synthesized sweeper
- HP 8370 series synthesized sweeper

Printers

For a list of compatible printers, consult our printer-compatibility guide Web page. Its URL location is http://www.hp.com/go/pcg

Internal plotter/printer buffer

The HP-IB buffer speeds measurements by returning the control to the analyzer while outputting data to a plotter or printer. Output two channels (401 points each) of information to the buffer in typically less than 5 seconds.

Disk interface (HP 8757D only)

The HP 8757D provides the capability to store and retrieve the analyzer's instrument state, measurement data, and user accessible display graphics to and from an external HP-IB disk drive that is compatible with command subset CS/80. Data files are stored in Hewlett-Packard's standard LIF format and can be read by a wide variety of computers, including the HP 9000 series 200 or 300. Files can be stored in binary or ASCII format.

Recommended disk drive

HP 9122C dual 3.5 in disk drive (only available with Option 802)

General information

Temperature range

Operating: 0 to 55°C
Storage: –40 to 75°C

Power requirements

48 to 66 Hz, 100/120/220/240V ±10%, typically 155 VA.

Dimensions: 178 H x 425 W x 482 mm D
(7.0 x 16.75 x 19.0 in)

Weight: Net 22 kg (48 lb), Shipping: 28 kg (61.5 lb)

Power calibrator (HP 8757D Option 002 only)

The HP 8757D's internal power calibrator provides a 50 MHz reference standard for characterizing the absolute power accuracy and dynamic power accuracy of the HP 85037 series precision detectors.

Frequency: 50 MHz ±0.2 MHz

Output power: (25 ±5°C)

Range: +20 to –50 dBm

Accuracy at 0 dBm: ±0.05 dB

Linearity: (over any 10 dB range)

±0.08 dB (+20 to +10 dBm)
±0.04 dB (+10 to –30 dBm)
±0.06 dB (–30 to –50 dBm)

SWR: ≤1.05

Modes of operation

DC Mode (unmodulated)
AC Mode (modulated at 27,778 Hz ±12 Hz)

Connector: type-N (f)

Accessory included

A type-N (m) to 3.5-mm (f) adapter is provided to allow calibration of the HP 85037B (3.5 mm) precision detector.

Ordering information

HP 8757D scalar network analyzer

Option 001: adds fourth detector input
Option 002: adds internal power calibrator
Option 802: adds an HP 9122C dual 3.5 inch disk drive and HP 10833A HP-IB cable.

HP 8757D/E options

Option 1BN: MIL-STD 45662A certificate of calibration
Option 1BP: MIL-STD 45662A certificate of calibration with data

System accuracy

Transmission measurement accuracy

Transmission loss or gain measurements are made relative to a 0 dB reference point established at calibration.

Transmission measurement uncertainty
= dynamic power accuracy + mismatch uncertainty

Dynamic power accuracy is the measurement uncertainty due to the change in power level between calibration and the measurement. Mismatch uncertainty is the uncertainty due to reflections in the measurement setup. The frequency response errors of the source, detectors, bridge, and power splitter are removed via calibration.

Transmission measurement uncertainty examples
Assumptions:
- Measurement frequency = 10 GHz
- DUT input/output SWR = 1.5
- Ratio measurement

Change in power after calibration
<30 dB (+0 to –30 dBm range)

Uncertainty component	HP 85037B precision detector	HP 85025E detector
Dynamic accuracy (±dB)	0.11	0.40
Mismatch (±dB)	0.45	0.33
Total (±dB)	0.56	0.73

Change in power after calibration
60 dB (+6 to –55 dBm range)

Uncertainty component	HP 85037B precision detector	HP 85025E detector
Dynamic accuracy (±dB)	0.96	2.00
Mismatch (±dB)	0.45	0.33
Total (±dB)	1.41	2.33

Absolute power measurement accuracy

This specification is useful for determining the accuracy of power measurements in dBm when using the HP 85037 series precision detectors or the HP 85025 series detectors in DC mode.

Absolute power uncertainty =
absolute power accuracy at 50 MHz
+ frequency response + mismatch uncertainty

Absolute power measurement uncertainty examples
Assumptions:
- Measurement frequency = 10 GHz
- DUT input/output SWR = 1.5

Power = +10 dBm

Uncertainty component	HP 85037B precision detector	HP 85025E detector
Absolute power accuracy at 50 MHz (±dB)	0.11	0.50
Frequency response (±dB)	0.18	0.50
Mismatch (±dB)	0.18	0.10
Total (±dB)	0.47	1.10

Power = 0 dBm

Uncertainty component	HP 85037B precision detector	HP 85025E detector
Absolute power accuracy at 50 MHz (±dB)	0.11	0.40
Frequency response (±dB)	0.18	0.50
Mismatch (±dB)	0.18	0.10
Total (±dB)	0.47	1.00

Power = –50 dBm

Uncertainty component	HP 85037B precision detector	HP 85025E detector
Absolute power accuracy at 50 MHz (±dB)	0.85	1.30
Frequency response (±dB)	0.18	0.50
Mismatch (±dB)	0.18	0.10
Total (±dB)	1.21	1.90

Precision detector vs. power sensor absolute power measurement accuracy

Accuracy terms differ depending on the test equipment used to make absolute power measurements. The following table simplifies and compares the accuracy terms of an HP 8757 system (using an HP 85037 series precision detector) and a power meter (using a power sensor). A measurement accuracy example is also provided.

Scalar terms	Equivalent power meter/sensor terms
Absolute power accuracy at 50 MHz	Power reference uncertainty Instrument linearity Zero set Noise
Frequency response	Sensor calibration factor uncertainty
Mismatch	Mismatch

Scalar analyzer vs power meter Absolute power measurement uncertainty examples

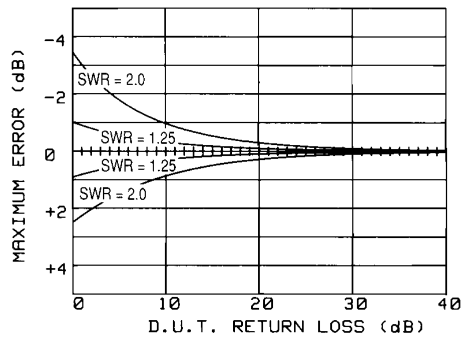
Assumptions:
- Measurement frequency = 10 GHz
- DUT input/output SWR = 1.5
- Power measurement range = +10 to –20 dBm

Uncertainty component (see above table for equivalent power meter terms)	HP 8757D opt 002/ 85037B	HP EPM-441A 8485A
Absolute power accuracy at 50 MHz (±dB)	0.11	0.09
Frequency response (±dB)	0.18	0.09
Mismatch (±dB)	0.18	0.12
Total (±dB)	0.47	0.30

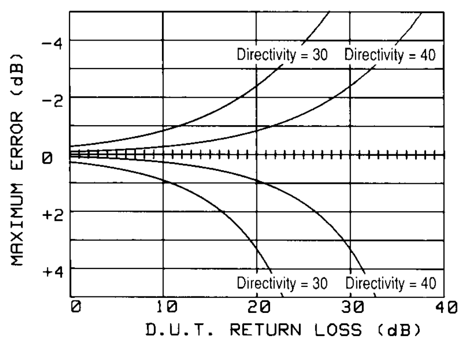
Reflection measurement accuracy

Uncertainties due to calibration error and the frequency response of the source, detectors, and bridges are removed via open/short averaging. The remaining uncertainties are primarily the sum of directivity uncertainty, effective source match uncertainty, and dynamic power accuracy. As shown in the graphs below, directivity is the dominant error term when measuring small reflected signals (high return loss) and source match is dominant when measuring large reflected signals (low return loss).

Effective source match versus reflection uncertainty



Directivity versus reflection uncertainty



Example calculation

The following example shows how to find the uncertainty (excluding dynamic accuracy), in measuring a 14-dB return loss (SWR = 1.5) with an HP 85027A directional bridge at 10 GHz (directivity = 40 dB, test port match = 1.25 SWR).

Uncertainty Component	Uncertainty
Source match error Directivity error	approximately ±0.2 dB approximately ±0.4 dB
Total uncertainty	approximately ±0.6 dB

System accessories

Detectors

HP 85037 series precision detectors (AC/DC)

The HP 85037 series precision detectors are designed specifically for operation with the HP 8757D scalar network analyzer and are not compatible with the HP 8757A/E, 8756, or 8755 scalar network analyzers. These detectors may be used in either AC or DC detection modes. For improved power measurement accuracy versus frequency, each HP 85037 series precision detector includes detector specific frequency response data, stored in an internal EEPROM, which is automatically read by the HP 8757D. When used in conjunction with the HP 8757D's internal power calibrator (Option 002), these detectors provide the maximum absolute power measurement accuracy.

HP 85025 and 85026 series detectors (AC/DC)

The HP 85025 and 85026 series detectors are designed specifically for operation with the HP 8757 scalar network analyzer and are not compatible with either the HP 8756 or the 8755. The HP 85025/26 detectors may be used in either AC or DC detection modes.

General information—coaxial detectors

Impedance: 50 ohms nominal
Maximum input power: +20 dBm (100 mW)
Maximum input voltage: 10 VDC
Dimensions: Cable length is 1.22 m (48 in.)
Weight: Net 0.24 kg (0.5 lb), Shipping 1.0 kg (2.2 lb)

Detector adapters

The HP 85025C detector adapters match the scalar analyzer display to most standard crystal, silicon, and gallium arsenide detectors. This enables the user to operate up to 110 GHz with the HP 8757. The HP 85025C detector adapter is designed for use with the HP 8757 only, and can operate in either AC or DC detection modes.
Maximum measurable input: ±3V peak
Maximum allowable input: ±10V peak
Connector: SMA (m)

Precision Detector Summary, HP 85037 Series[1]
For use with the HP 8757D in either AC or DC detection modes

Model	Frequency Range	Connector Type	Dynamic Range	Frequency	Return Loss	Frequency Response[3]
HP 85037A	10 MHz–18 GHz	Type-N (m) 7 mm[2]	AC mode +20 to –55 dBm DC mode +20 to –50 dBm	0.01–0.04 GHz 0.04–18 GHz	10 dB 20 dB	±0.35 dB ±0.18 dB
HP 85037B	10 MHz–26.5 GHz	3.5 mm (m)	AC mode +20 to –55 dBm DC mode +20 to –50 dBm	0.01–0.04 GHz 0.04–18 GHz 18–26.5 GHz	10 dB 20 dB 18 dB	±0.35 dB ±0.18 dB ±0.22 dB

Model	Power	Dynamic Accuracy[4,5]		Absolute Accuracy[4,6]	
	(50 MHz)	Corrected	Default	Corrected	Default
HP 85037A/B	20 dBm	±0.25 dB	±0.40 dB	±0.25 dB	±0.40 dB
	10 dBm	±0.11 dB	±0.40 dB	±0.11 dB	±0.40 dB
	–30 dBm	±0.11 dB	±0.40 dB	±0.11 dB	±0.40 dB
	–40 dBm	±0.40 dB	±0.80 dB	±0.40 dB	±0.80 dB
	–50 dBm	±0.85 dB	±1.30 dB	±0.85 dB	±1.30 dB
	–55 dBm	±0.85 dB	±1.30 dB	———	———

Temperature coefficient of linearity: 0.01 dB/°C temperature change after calibration

1. The HP 85037A/B specifications are only applicable when used with the HP 8757D scalar network analyzer.
2. Option 001 changes to 7 mm connector.
3. –10 dBm, 25 ±5°C
4. The corrected specifications apply after a calibration via the HP 8757D Option 002 internal power calibrator. The default specifications apply when the calibrator is not used. Power calibrator uncertainty is included in the HP 85037A/B corrected specifications.
5. Dynamic accuracy refers to measurement accuracy as power varies (in dB) from a 0 dBm reference. 25 ±5°C, 50 MHz, calibration and measurement at the same temperature.
6. DC mode, 25 ±5°C, calibration and measurement at the same temperature.

Coaxial Detector Summary, HP 85025 Series
For use with the HP 8757 in either AC or DC detection modes

Model	Frequency Range	Connector Type	Dynamic Range	Frequency	Return Loss	Frequency Response[2]	Power (50 MHz)	Dynamic Accuracy[3]	Absolute Accuracy[4]
HP 85025A[5]	10 MHz–18 GHz	Type-N (m) 7 mm[1]	AC mode +16 to –55 dBm DC mode +16 to –50 dBm	0.01–0.04 GHz 0.04–4 GHz 4–18 GHz	10 dB 20 dB 17 dB	±0.8 dB ±0.5 dB ±0.5 dB	16 dBm 6 dBm –35 dBm –50 dBm –55 dBm	±0.8 dB ±0.4 dB ±0.4 dB ±1.3 dB ±1.6 dB	±0.8 dB ±0.4 dB ±0.4 dB ±1.3 dB ———-
HP 85025B[5]	10 MHz–26.5 GHz	3.5 mm (m)	AC mode +16 to –55 dBm DC mode +16 to –50 dBm	0.01–0.04 GHz 0.04–4 GHz 4–18 GHz 18–26.5 GHz	10 dB 20 dB 17 dB 12 dB	±0.8 dB ±0.5 dB ±0.5 dB ±2.0 dB	16 dBm 6 dBm –35 dBm –50 dBm –55 dBm	±0.8 dB ±0.4 dB ±0.4 dB ±1.3 dB ±1.6 dB	±0.8 dB ±0.4 dB ±0.4 dB ±1.3 dB ———-
HP 85025D[5]	10 MHz–50 GHz	2.4 mm (m)	AC mode +16 to –55 dBm DC mode +16 to –50 dBm	0.01–0.1 GHz 0.1–20 GHz 20– 26.5 GHz 26.5–40 GHz 40–50 GHz	10 dB 20 dB 20 dB 15 dB 9 dB	±0.8 dB ±0.5 dB ±1.0 dB ±2.5 dB ±3.0 dB	16 dBm 6 dBm –35 dBm –50 dBm –55 dBm	±1.0 dB ±0.4 dB ±0.4 dB ±1.3 dB ±1.6 dB	±1.0 dB ±0.4 dB ±0.4 dB ±1.3 dB ———-
HP 85025E[5]	10 MHz–26.5 GHz	3.5 mm (m)	AC mode +16 to –55 dBm DC mode +16 to –50 dBm	0.01–0.1 GHz 0.1–18 GHz 18–25 GHz 25–26.5 GHz	10 dB 25 dB 25 dB 23 dB	±0.8 dB ±0.5 dB ±0.5 dB ±1.4 dB	16 dBm 6 dBm –35 dBm –50 dBm –55 dBm	±1.0 dB ±0.4 dB ±0.4 dB ±1.3 dB ±1.6 dB	±1.0 dB ±0.4 dB ±0.4 dB ±1.3 dB ———-

Waveguide Detectors and Detector Adapters Summary
For use with the HP 8757 only in either AC or DC detection modes

Model	Frequency Range	Connector Type	Dynamic Range	Return Loss	Frequency Response	Dynamic Accuracy
HP R85026A[5]	26.5–40 GHz	WR-28	+10 to –50 dBm (AC mode) +10 to –45 dBm (DC mode)	12 dB	±1.5 dB	±(0.3 dB + 0.03 dB/dB)
HP Q85026A[5]	33–50 GHz	WR-22	+10 to –50 dBm (AC mode) +10 to –45 dBm (DC mode)	12 dB	±2.0 dB	±(0.3 dB + 0.03 dB/dB)
HP U85026A[5]	40–60 GHz	WR-19	+10 to –50 dBm (AC mode) +10 to –45 dBm (DC mode)	12 dB	±2.0 dB	±(0.3 dB + 0.03 dB/dB)
HP 85025C Opt K57[7]	50–75 GHz	WR-15	+10 to –45 dBm (typical)	9.5 dB (typical)		
HP 85025C Opt K71[7]	75–110 GHz	WR-10	+10 to –45 dBm (typical)	9.5 dB (typical)		
HP 85025C[5]	[6]	SMA (m)	[6]	[6]	[6]	[6]

1. Option 001 changes to 7 mm connector.
2. –10 dBm, 25 ±5°C
3. Dynamic accuracy refers to measurement accuracy as power varies (in dB) from a 0 dBm reference. 25 ±5°C, 50 MHz.
4. DC mode, 25 ±5°C.
5. The HP 85025 and 85026 series detectors and the HP 85025C detector adapter require HP 8757A firmware revision 2.0 or higher. To upgrade previous revisions, order the HP 11614A firmware enhancement.
6. Depends on the detector.
7. Must be used with the HP 85025C detector adapter.

System accessories (cont'd)

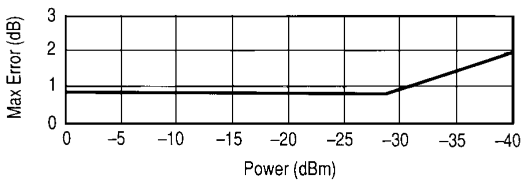
Directional bridges

HP 85027 series directional bridges (AC/DC)

The HP 85027 series directional bridges are designed to operate with either the HP 8757 in AC or DC detection modes or with the HP 8756 or 8755 in AC detection mode. These bridges offer high directivity, excellent test port match, and a measurement range of up to 50 GHz in coax.

General information—directional bridges

Dynamic power accuracy
(50 MHz, 25 ±5°C, +7 dBm input)



Typical insertion loss
6.5 dB at 10.0 MHz
8.0 dB at 18.0 GHz
10.0 dB at 26.5 GHz
11.0 dB at 40.0 GHz
13.0 dB at 50.0 GHz

Typical minimum input power for a 40 dB return loss measurement at 18 GHz: +2 dBm

Dimensions: 26 H x 124 W x 118 mm D
(1.0 x 4.9 x 4.4 in)

Weight: Net 0.5 kg (1.2 lb), Shipping 2.3 kg, (5 lb)

Accessories included with directional bridges:

HP 85027A
- 7 mm open/short
- Type-N (m)–(m) adapter

HP 85027B
- 3.5 mm (m) open/short
- 3.5 mm (m)–(m) adapter
- 3.5 mm (m)–(f) adapter

HP 85027C
- Type-N (m) short
- Type-N (m) shielded open
- Type-N (m)–(m) adapter

HP 85027D
- 2.4 mm (f) open
- 2.4 mm (f) short

HP 85027E
- 3.5 mm (f) open/short
- 3.5 mm (f)–(f) adapter
- 3.5 mm (f)–(m) adapter

Directional Bridge Summary
For use with the HP 8757 in AC or DC detection mode or with the HP 8756 or 8755 in AC detection mode only

Model	Frequency Range	Nominal Impedance	Input Connector	Test Port Connector	Frequency	Directivity	Frequency	Test Port Match
HP 85027A	10 MHz– 18 GHz	50 ohms	Type-N (f)	7 mm	0.01–18 GHz	40 dB	0.01–8.4 GHz 8.4–12.4 GHz 12.4–18 GHz	<1.15 SWR <1.25 SWR <1.43 SWR
HP 85027B	10 MHz– 26.5 GHz	50 ohms	3.5 mm (f)	3.5 mm (f)	0.01–20 GHz 20–26.5 GHz	40 dB 36 dB	0.01–8.4 GHz 8.4–20 GHz 20–26.5 GHz	<1.15 SWR <1.43 SWR <1.78 SWR
HP 85027C	10 MHz– 18 GHz	50 ohms	Type-N (f)	Type-N (f)	0.01–12.4 GHz 12.4–18 GHz	36 dB 34 dB	0.01–8.4 GHz 8.4–12.4 GHz 12.4–18 GHz	<1.15 SWR <1.25 SWR <1.43 SWR
HP 85027D	10 MHz– 50 GHz	50 ohms	2.4 mm (f)	2.4 mm (m)	0.01–26.5 GHz 26.5–40 GHz 40–50 GHz	35 dB 30 dB 25 dB	0.01–16 GHz 16–30 GHz 30–40 GHz 40–50 GHz	<1.18 SWR <1.27 SWR <1.40 SWR typically <1.85 SWR
HP 85027E	10 MHz– 26.5 GHz	50 ohms	3.5 mm (f)	3.5 mm (m)	0.01 –20 GHz 20–26.5 GHz	40 dB 36 dB	0.01 - 8.4 GHz 8.4–20 GHz 20–26.5 GHz	<1.15 SWR <1.43 SWR <1.78 SWR

Power splitters

The HP 11667 series power splitters are two-resistor splitters recommended for external source leveling or for ratio measurement applications.

General information
Impedance: 50 ohms nominal
Maximum input power: +27 dBm
Dimensions: 46 H x 52 W x 21 mm D (1.8 x 2.0 x 0.8 in).
Weight: Net 0.14 kg (0.3 lb), Shipping 0.22 kg (0.5 lb)

Power dividers

The HP 11636 series power dividers are three-resistor splitters intended for direct power dividing applications such as transmission line fault location. The HP 11636 series can also be used as a power combiner.

General information
Impedance: 50 ohms nominal
Dimensions: 42 H x 45 W x 18 mm D (1.6 x 1.8 x 0.7 in)
Weight: Net 0.14 kg (0.3 lb), Shipping 0.45 kg (1.0 lb)

HP 11679A/B extension cables

These cables extend the distance between the scalar network analyzer and the detector or bridge to a maximum of 200 feet without degradation of performance.
HP 11679A 7.6 m (25 ft) extension cable
HP 11679B 61 m (200 ft) extension cable

HP 11665B modulator

The HP 11665B modulates test signals with the 27.8 kHz modulation drive signal from the scalar network analyzer.
Frequency range: 15 MHz to 18 GHz
Insertion loss and return loss

Frequency	Return Loss	Insertion Loss ON (+50mA)	OFF (–50mA)
15 MHz to 40 MHz	>10 dB	<7.0 dB	>35 dB
40 MHz to 4 GHz	>15 dB	<3.2 dB	>35 dB
4 GHz to 8 GHz	>12 dB	<3.8 dB	>40 dB
8 GHz to 12.4 GHz	>8 dB	<4.3 dB	>45 dB
12.4 GHz to 18 GHz	>8 dB	<5.0 dB	>45 dB

Maximum input: +24 dBm
Connectors: Input: type-N (f), Output: type-N (m)
Weight: Net: 0.17 kg (0.38 lbs), Shipping: 0.9 kg (2 lbs)

Power splitters

Model	Frequency Range	Input Connector	Output Connectors	Frequency	Insertion Loss (typical)	Equivalent Output Match	Output Tracking
HP 11667A	DC to 18 GHz	Type-N (f)[1]	Type-N (f)	DC to 4 GHz	6.6 dB	1.10 SWR	0.15 dB
				4 to 8 GHz	7.0 dB	1.20 SWR	0.20 dB
				8 to 18 GHz	7.8 dB	1.33 SWR	0.25 dB
HP 11667B	DC to 26.5 GHz	3.5 mm (f)	3.5 mm (f)	DC to 8 GHz	6.5 dB	1.22 SWR	0.25 dB
				8 to 18 GHz	7.0 dB	1.22 SWR	0.25 dB
				18 to 26.5 GHz	7.3 dB	1.22 SWR	0.40 dB
HP 11667C	DC to 50 GHz	2.4 mm (f)	2.4 mm (f)	DC to 18 GHz	6.0 dB	1.29 SWR	0.30 dB
				18 to 26.5 GHz	7.0 dB	1.20 SWR	0.35 dB
				26.5 to 40 GHz	8.0 dB	1.50 SWR	0.40 dB
				40 to 50 GHz	8.5 dB	1.65 SWR (typical)	0.40 dB

Power dividers

Model	Frequency Range	Input Connector	Output Connectors	Frequency	Output Match	Output Tracking
HP 11636A	DC to 18 GHz	Type-N (m)	Type-N (f)	DC to 4 GHz	1.25 SWR	0.20 dB
				4 to 10 GHz	1.25 SWR	0.40 dB
				10 to 18 GHz	1.35 SWR	0.50 dB
HP 11636B	DC to 26.5 GHz	3.5 mm (f)	3.5 mm (f)	DC to 10 GHz	1.22 SWR	0.25 dB
				10 to 18 GHz	1.29 SWR	0.50 dB
				18 to 26.5 GHz	1.29 SWR	0.50 dB

1. Option 001 changes the input connector to type-N (m)

System accessories (cont'd)

HP 85022A system cable kit

The HP 85022A contains the BNC and HP-IB cables needed to connect a source to the HP 8757.

Contents

HP-IB cable, 100 cm (3.3 ft.), 3 each
50 ohm BNC (m) cable, 61 cm (2 ft.), 3 each
50 ohm BNC (m) cable, 122 cm (4 ft.)

Weight: Net: 0.5 kg (1.2 lbs.), Shipping: 1.2 kg (2.9 lbs)

HP 11613B calibrator

The HP 11613B is a dedicated transfer standard for Lcalibration of the HP 8757. The HP 11613B provides the standard, a 27.778 kHz source and a series of precision attenuators. The calibrator includes software (3.5 inch format) that operates on an HP 9000 series 200 or 300 computer and the HP BASIC operating system (HP BASIC 3.0 or higher). The software verifies (and adjusts if necessary) the internal calibration parameters stored in the nonvolatile memory of the HP 8757. All HP 8757 detector inputs can be calibrated in a matter of minutes. Re-calibration of the HP 11613B is recommended every two years.

Memory requirement: 0.5 Mbyte

Outputs

The 5-pin cable (1.22 m) mates with the detector inputs of the HP 8757. The lines in this cable transfer the squarewave signal to the HP 8757, provide power for the HP 11613B (from the HP 8757 supply), and program the HP 11613B's internal attenuators.

Dimensions: 40 H x 185 W x 203 mm D
(1.5 x 7.3 x 8.0 in)

Cable length: 1.22 m (48 in)

Weight: Net: 0.91 kg (2 lbs), Shipping: 2.3kg (5 lbs)

Software

Amplifier test software
HP part number 86399-10001

This amplifier test software automates basic amplifier measurements of gain, gain compression, return loss, and standing wave ratio. The software is completely menu driven for simplicity and ease of use. 3.5 inch inch format is provided.

Support products and literature

Service and support products

HP 8757D/E Option W30
Three additional years return-to-HP service (where available)
In the event of a failure, HP will repair these products for three years after delivery. (The first year is under standard warranty; the second and third are under this extended support program.) All parts, labor, post-repair adjustments, and verification are included. (Periodic maintenance and scheduled "calibrations" are not included.)

HP 8757D/E Option W32
3-year calibration
Option W32 provides three years of return-to-HP calibration service. Includes scheduled calibration at the manufacturer's calibration cycle and calibration after repair performed by Hewlett-Packard.

HP 8757D Option 1BN
MIL-STD 45662A Certificate of calibration
Certificate of calibration in full compliance with MIL-STD 45662A.

HP 8757D/E Option 1BP
MIL-STD 45662A certificate of calibration with data
Certificate of calibration in full compliance with MIL-STD 45662A supplied with calibration data. Contact your local HP sales office for additional service and support options.

Literature guide

HP 8757D/E scalar network analyzers,
Brochure, literature number 5091-2469E

HP 8757D/E scalar network analyzers,
Technical Specification, literature number 5091-2471E

Improving network analyzer measurements of frequency-translating devices,
Application Note 1287-7, literature number 5966-3318E

Network analyzer measurements: filter and amplifier examples,
Application Note 1287-4, literature number 5965-7710E

Millimeter wave measurements; V & W band scalar measurements using the scalar network analyzer,
Product Note 8757-2, literature number 5964-8380

Microwave component measurements; amplifier measurements using the scalar network analyzer,
Product Note 345-1, literature number 5954-1599

Extended dynamic range of scalar transmission measurements using the HP 8757A, HP 8756A, and HP 8755C scalar network analyzers,
Application Note 345-1, literature number 5963-8882

Measuring voltage-controlled devices with the HP 8757A scalar network analyzer,
Product Note 8757-5, literature number 5964-1537

HEWLETT PACKARD

For more information about Hewlett-Packard test and measure-ment products, applications, services, and for a current sales office listing, visit our web site, http://www.hp.com/go/tmdir. You can also contact one of the following centers and ask for a test and measurement sales representative.

United States:
Hewlett-Packard Company
Test and Measurement Call Center
P.O. Box 4026
Englewood, CO 80155-4026
1 800 452 4844

Canada:
Hewlett-Packard Canada Ltd.
5150 Spectrum Way
Mississauga, Ontario
L4W 5G1
(905) 206 4725

Europe:
Hewlett-Packard
European Marketing Centre
P.O. Box 999
1180 AZ Amstelveen
The Netherlands
(31 20) 547 9900

Japan:
Hewlett-Packard Japan Ltd.
Measurement Assistance Center
9-1, Takakura-Cho, Hachioji-Shi,
Tokyo 192, Japan
Tel: (81) 426 56 7832
Fax: (81) 426 56 7840

Latin America:
Hewlett-Packard
Latin American Region Headquarters
5200 Blue Lagoon Drive, 9th Floor
Miami, Florida 33126, U.S.A.
Tel: (305) 267-4245
(305) 267-4220
Fax: (305) 267-4288

Australia/New Zealand:
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130, Australia
1 800 629 485

Asia Pacific:
Hewlett-Packard Asia Pacific Ltd.
17-21/F Shell Tower, Times Square,
1 Matheson Street, Causeway Bay,
Hong Kong
Tel: (852) 2599 7777
Fax: (852) 2506 9285

Printed on recycled paper

Printed in U.S.A. 6/98
5091-2471E