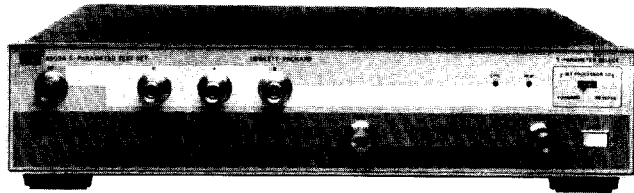




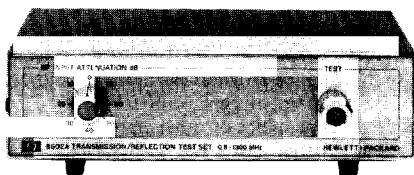
# NETWORK ANALYZERS

## RF Network Analyzer, 500 kHz to 1.3 GHz (cont.)

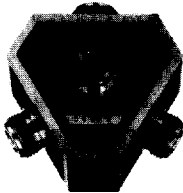
Models 8503A/B, 8502A/B, 11850A/B, 11851A-11858A, 11857B, 1121A



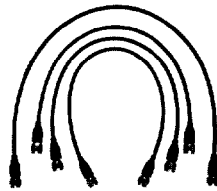
HP 8503A



HP 8502A



HP 11850A



HP 11851A

### HP 8502A 50 Ω Transmission/Reflection Test Set HP 8502B 75 Ω Transmission/Reflection Test Set

**Frequency range:** 500 kHz to 1.3 GHz.

**Impedance:** HP 8502A, 50 Ω; HP 8502B, 75 Ω.

**Directivity:**  $\geq 40$  dB.

#### Frequency Response

**Transmission:**  $\leq \pm 0.8$  dB and  $\leq \pm 8^\circ$ .

**Reflection ( $S_{11}$ ,  $S_{22}$ ):**  $\leq \pm 1.5$  dB and  $\leq 15^\circ$  from 0.5–1300 MHz;  $\leq \pm 10^\circ$  from 2–1300 MHz.

#### Port Match

**Test port:**  $\geq 26$  dB return loss from 2–1300 MHz ( $\geq 24$  dB for HP 8502B);  $\geq 20$  dB return loss from 0.5–2 MHz ( $\geq 18$  dB for HP 8502B).

**Test port open/short ratio:**  $\pm 0.75$  dB and  $\pm 6^\circ$  from 2–1000 MHz ( $\pm 0.9$  dB and  $\pm 7.5^\circ$  for HP 8502B);  $\pm 0.9$  dB and  $\pm 7.5^\circ$  from 1000–1300 MHz;  $\pm 1.25$  dB and  $\pm 10^\circ$  from 0.5–2 MHz.

**Reference and reflection ports:**  $\geq 25$  dB return loss from 2–1000 MHz;  $\geq 23$  dB return loss from 0.5–1300 MHz.

**Input port:**  $\geq 23$  dB return loss.

#### Nominal Insertion Loss

**Input to test port:** 13 dB (HP 8502A), 19 dB (HP 8502B).

**Input to reference port:** 19 dB (HP 8502A), 19 dB (HP 8502B).

**Input to reflection port:** 19 dB (HP 8502A), 31 dB (HP 8502B).

**Maximum operating level:** +20 dBm.

**Damage level:** 1 watt CW.

**RF attenuator range:** 0 to 70 dB in 10-dB steps.

**Connectors test port:** 50 Ω Type N Female for HP 8502A and 75 Ω Type N Female for HP 8502B; all other RF ports 50 Ω Type N Female; Bias input, BNC Female.

**DC bias input:**  $\pm 30$  V dc and  $\pm 200$  mA.

**Includes:** HP 8502B includes 50 Ω/75 Ω minimum loss pad.

**Recommended accessory:** HP 11851A RF Cable Kit for either HP 8502A or 8502B.

**Size:** 61.5 H x 101 W x 204 mm D (2.44" x 7.5" x 8.0").

**Weight:** net, 1.7 kg (3.25 lb); shipping, 3.1 kg (7 lb).

### HP 8503A 50 Ω S-Parameter Test Set

### HP 8503B 75 Ω S-Parameter Test Set

**Frequency range:** 500 kHz to 1.3 GHz.

**Impedance:** HP 8503A, 50 Ω; HP 8503B, 75 Ω.

**Directivity:**  $\geq 40$  dB.

#### Frequency Response

**Transmission ( $S_{12}$ ,  $S_{21}$ ):**  $\pm 1$  dB,  $\pm 12^\circ$  from 0.5–1300 MHz.

**Reflection ( $S_{11}$ ,  $S_{22}$ ):**  $\pm 2$  dB,  $\pm 20^\circ$  from 0.5–1300 MHz;  $\pm 15^\circ$  from 2–1300 MHz.

#### Port Match

**Test ports 1 and 2:**  $\geq 26$  dB return loss from 2–1300 MHz ( $\geq 24$  dB for HP 8503B),  $\geq 20$  dB return loss from 0.5–2 MHz ( $\geq 18$  dB for HP 8503B).

**Test port 1 and 2 open/short ratio:**  $\leq \pm 0.75$  dB and  $\pm 6^\circ$  from 2–1000 MHz ( $\pm 0.9$  dB and  $\pm 7.5^\circ$  for HP 8503B);  $\leq \pm 0.9$  dB and  $7.5^\circ$  from 1000–1300 MHz;  $\pm 1.25$  dB and  $\pm 10^\circ$  from 0.5–2 MHz.

**Reference and return ports:**  $\geq 23$  dB return loss from 2–1000 MHz;  $\geq 20$  dB return loss from 0.5–2 MHz and 1000–1300 MHz.

**RF input port:** 20 dB return loss from 0.5–1300 MHz.

**Maximum operating level:** +20 dBm.

**Damage level:** 1 watt CW.

**Connectors:** test ports, 50 Ω APC-7 for HP 8503A and 75 Ω Type-N Female for HP 8503B; all other RF connectors, 50 Ω Type-N Female; Bias inputs BNC Female.

**DC bias input:** 30 V dc,  $\pm 200$  mA.

**Includes:** four 19 cm (7.5") cables for connection to HP 8505A.

**Recommended accessory:** HP 11857A 50 Ω Test Port Extension Cables or HP 11857B/C 75 Ω Test Port Extension Cables.

**Programming:** programming via HP-IB; 0.5 m HP-IB cable included.

**Power:** 100, 120, 220, or 240 V +5%–10%, 50 or 60 Hz; approx. 10 watts (15 watts for HP 8503B).

**Size:** 90 H x 426 W x 553 mm D (3.5" x 16.75" x 21.0").

**Weight:** net, 9.1 kg (20 lb); shipping, 11.3 kg (25 lb).

#### Accessories

##### HP 11850A 50 Ω Power Splitter

##### HP 11850B 75 Ω Power Splitter

**Frequency range:** dc to 1.3 GHz.

**Impedance:** HP 11850A, 50 Ω; HP 11850B, 75 Ω.

**Tracking between any two output ports:**  $\leq 0.1$  dB and  $\leq 1.5^\circ$ .

**Equivalent source match (ratio or leveling):**  $\geq 32$  dB return loss ( $\leq 1.05$  SWR).

**Input port match:**  $\geq 20$  dB return loss.

**Nominal insertion loss:** 9.54 dB for HP 11850A; 7.78 dB for HP 11850B.

**Frequency response absolute:** input to output  $\leq 0.2$  dB.

**Maximum operating level:** +20 dBm.

**Burn-out level:**  $\geq 1$  watt CW.

**Connectors:** HP 11850A, 50 Ω Type N female; HP 11850B, three outputs 75 Ω Type N female; RF input, 50 Ω Type N female.

**Recommended accessory:** HP 11851A RF Cable Kit.

**Includes:** HP 11850B includes three 50 Ω/75 Ω Minimum Loss Pads

**Size:** 46 H x 67 W x 67 mm D (1.88" x 2.63" x 2.63").

**Weight:** net, 1.8 kg (4 lb); shipping, 3.1 kg (7 lb).



#### HP 11851A RF Cable Kit

**General:** three 610 mm (24 in.) 50  $\Omega$  cables phase matched to 4° at 1.3 GHz and one cable 860 mm (34 in.). Connectors are Type N Male. Recommended for use with HP 8502A/B Transmission/Reflection Test Set and HP 11850A/B Power Splitter.  
**Weight:** net, 0.91 kg (2 lb); shipping, 1.36 kg (3 lb).

#### HP 11852A 50 $\Omega$ /75 $\Omega$ Minimum Loss Pad

**General:** the HP 11852A is a low SWR minimum loss pad required for transmission measurements on 75  $\Omega$  devices with HP 8505A receiver (50  $\Omega$ ).

**Frequency range:** dc to 1.3 GHz.

**Insertion loss:** 5.7 dB.

**Return loss:** 75  $\Omega$  side, 50  $\Omega$  side terminated: typically  $\geq 34$  dB ( $\leq 1.04$  SWR). 50  $\Omega$  side, 75  $\Omega$  side terminated: typically  $\geq 30$  dB ( $\leq 1.06$  SWR).

**Typical flatness:**  $\leq 0.1$  dB from dc to 1.3 GHz.

**Maximum input power:** 250 mW (+24 dBm).

**Connectors:** 50  $\Omega$  Type N female and 75  $\Omega$  Type N male.

**Size:** 14 D x 70 mm L (0.56" x 2.75").

**Weight:** net, 0.11 kg (4 oz); shipping, 0.26 kg (9 oz).

#### HP 11853A 50 $\Omega$ Type N Accessory Kit

**General:** the HP 11853A furnishes the RF components required for measurement of devices with 50  $\Omega$  Type N Connectors using the HP 11850A, 8502A, or 8503A (8503A also requires the HP 85032A). Kit contains a Type N Female short, a Type N Male short, two Type N Male barrels, two Type N Female barrels and storage case.

**Weight:** net, 0.91 kg (2 lb); shipping, 1.36 kg (3 lb).

#### HP 11854A 50 $\Omega$ BNC Accessory Kit

**General:** the HP 11854A furnishes the RF components required for measurement of devices with 50  $\Omega$  BNC Connectors using the HP 11850A, 8502A, or 8503A (8503A also requires the HP 85032A). Kit contains two Type N Male to BNC Female adapters, two Type N Male to BNC Male adapters, two Type N Female to BNC Female adapters, two Type N Female to BNC Male adapters, a BNC Male short and storage case.

**Weight:** net, 1.13 kg (2½ lb).

#### HP 11855A 75 $\Omega$ Type N Accessory Kit

**General:** the HP 11855A provides the RF connecting hardware generally required for measurement of devices with 75  $\Omega$  Type N connectors using the HP 8502B, 8503B or 11850B. Kit contains two 75  $\Omega$  Type N Male barrels, two Type N Female barrels, a 75  $\Omega$  Type N Female short, a 75  $\Omega$  Type N Male short, a 75  $\Omega$  Type N Male termination, and storage case.

**Weight:** net, 0.91 kg (2 lb); shipping, 1.36 kg (3 lb).

#### HP 11856A 75 $\Omega$ BNC Accessory Kit

**General:** the HP 11856A provides the RF connecting hardware generally required for measurement of devices with 75  $\Omega$  BNC connectors using the HP 8502B, 11850B, or 8503B. Kit contains two Type N Male to BNC Female adapters, two Type N Male to BNC Male adapters, two Type N Female to BNC Female adapters, two Type N Female to BNC Male adapters, a BNC Male short, a 75  $\Omega$  BNC Male termination, and storage case.

**Weight:** net, 0.91 kg (2 lb); shipping, 1.36 kg (3 lb).

#### HP 11857A 50 $\Omega$ APC-7 Test Port Extension Cables

**General:** two precision 61 cm (24 in.) cables, phase matched to 2° at 1.3 GHz for use with HP 8503A S-parameter test set. Connectors are 50  $\Omega$  APC-7.

**Weight:** net, 0.91 kg (2 lb); shipping, 2.3 kg (5 lb).

#### HP 11857B 75 $\Omega$ Type N Test Port Extension Cables

**General:** two precision 61 cm (24 in.) cables, phase matched to 2° at 1.3 GHz for use with HP 8503B S-parameter test set. One cable has 75  $\Omega$  Type N Male connectors on both ends; the other has one Type N Male and one Type N Female connector.

**Weight:** net, 0.91 kg (2 lb); shipping, 2.3 kg (5 lb).

#### HP 11858A Transistor Fixture Adapter

**General:** the HP 11858A adapts the HP 11600B and 11602B transistor fixtures (vertical test port configuration) to the HP 8503A S-parameter test set. Connectors are APC-7.

**Weight:** net, 0.91 kg (2 lb); shipping, 1.36 kg (3 lb).

#### Ordering Information

	Price
HP 8505A* RF Network Analyzer	\$40,370
Opt 005: Phase Lock	\$1,505
Opt 908: Rack Mounting Kit (for use without front handles)	\$50
Opt 910: Extra Manual	\$150
Opt 913: Rack Mounting Kit	\$62
HP 8503A* 50 $\Omega$ S-Parameter Test Set	\$7,170
Opt 908: Rack Mounting Kit (for use without front handles)	\$30
Opt 910: Extra Manuals	\$12
Opt 913: Rack Mounting Kit	\$30
HP 8503B* 75 $\Omega$ S-Parameter Test Set	\$7,270
Opt 908: Rack Mounting Kit (for use without front handles)	\$30
Opt 910: Extra Manual	\$12
Opt 913: Rack Mounting Kit	\$30
HP 8501A* Storage Normalizer	\$7,770
Opt 908: Rack Mounting Kit (for use without front handles)	\$30
Opt 910: Extra Manual	\$25
Opt 913: Rack Mounting Kit	\$30
HP 8502A 50 $\Omega$ Transmission/Reflection Test Set	\$3,010
Opt 910: Extra Manual	\$6
HP 8502B 75 $\Omega$ Transmission/Reflection Test Set	\$3,410
Opt 910: Extra Manual	\$6
HP 11850A 50 $\Omega$ Power Splitter	\$805
HP 11850B 75 $\Omega$ Power Splitter	\$1,405
HP 11851A RF Cable Kit	\$955
HP 11852A 50 $\Omega$ to 75 $\Omega$ Minimum Loss Pad	\$205
HP 11853A 50 $\Omega$ Type N Accessory Kit	\$230
HP 11854A 50 $\Omega$ BNC Accessory Kit	\$195
HP 11855A 75 $\Omega$ Type N Accessory Kit	\$230
HP 11856A 75 $\Omega$ BNC Accessory Kit	\$330
HP 11857A 50 $\Omega$ APC-7 Test Port Extension Cables	\$1,005
HP 11857B 75 $\Omega$ Type N Test Port Extension Cables	\$1,455
HP 11858A Transistor Fixture Adapter	\$980
HP 11864A Labeling Interface Kit	\$945

\*Front Handles are standard