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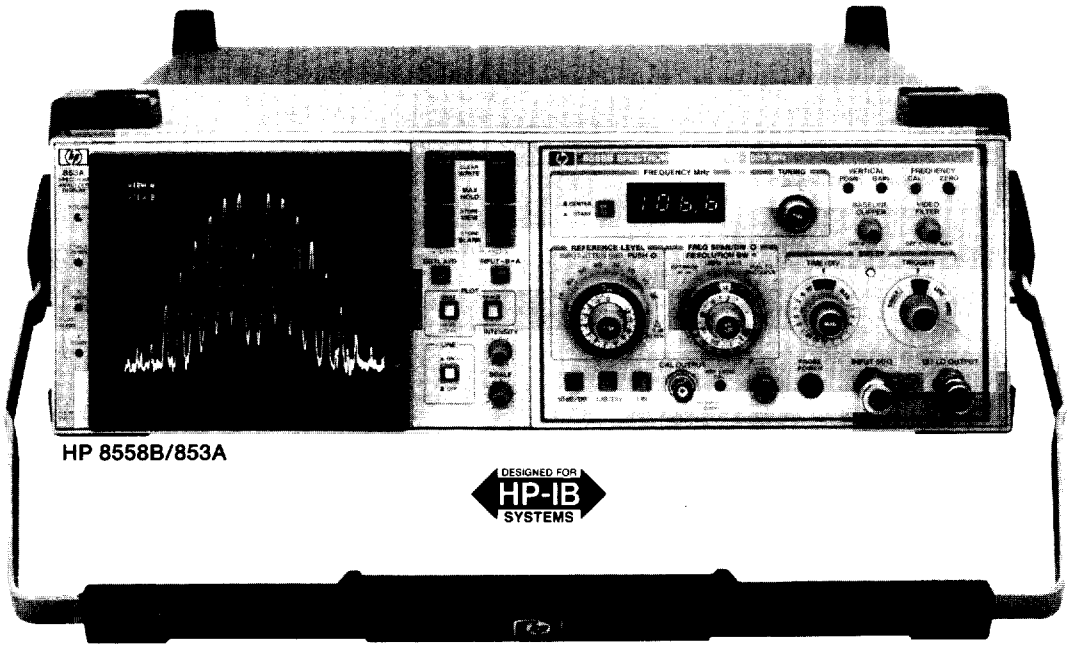
Find the *Keysight / Agilent 8558B* at our website: ***Click HERE***

# SIGNAL ANALYZERS

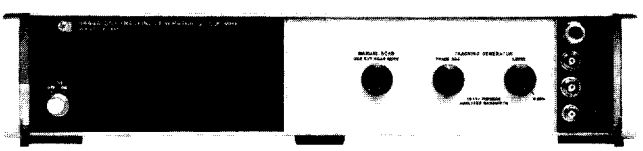
## Spectrum Analyzer, 0.1 to 1500 MHz

### Models 8558B/853A & 8444A Option 059

- Rugged portability
- Simple three knob operation
- Direct plotter control
- Display annotation and storage accessories
- Digital display with trace arithmetic
- Resolution bandwidths from 1 kHz to 3 MHz
- 0.5 to 1500 MHz tracking generator available
- Optional 75 Ω input with dBm or dBmV calibration




HP 8558B/853A



HP 8444A Opt. 059

## HP 8558B Spectrum Analyzer Plug-In

### Performance Plus Economy

The HP 8558B is a 100 kHz to 1500 MHz spectrum analyzer plug-in for use with the HP 853A or 182T display. The high performance and convenient operation of this economical unit is ideally suited for a variety of applications in production, R&D or field service measurements.

### Simple, 3-knob Operation

Preset the HP 8558B to the color coded, "basic-operation" settings, and use the coupled controls to make most measurements in three easy steps. Tune to the signal; the LED readout displays its frequency. Zoom-in on the signal by reducing the span width; the resolution bandwidth, video filter, and sweeptime automatically change to an optimum value for a calibrated display. Then, change the reference level to bring the peak of the signal to the top of the screen for the most accurate amplitude measurement.

### Absolute Amplitude Calibration

Signal levels can be read directly from the CRT in dBm (dBmV for Option 002) without the use of external standards or calculations. The signal level represented by the top CRT graticule line is always indicated by the reference level control, and vertical scale factors of 10 dB/div, 1 dB/div, or linear can be selected.

### Optional 75 Ohm Input

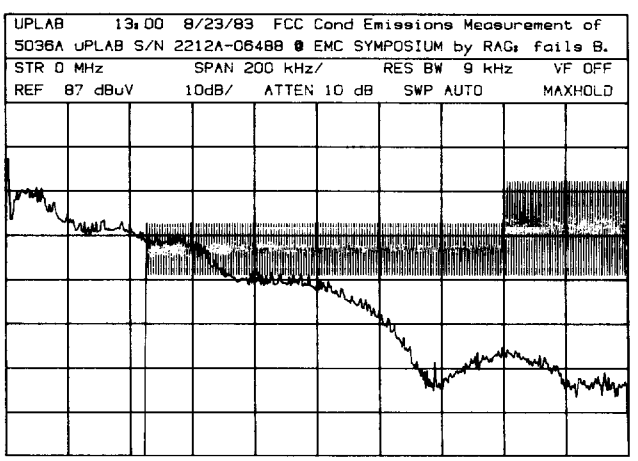
Two options are available which allow measurements in 75 ohm systems. Option 001 has 75 Ω impedance but retains the dBm power calibration. Option 002 is also 75 Ω, but the amplitude is calibrated in dBmV for measurements on systems such as CATV.

### EMI Option H98

A hardware modification to the HP 8558B extends the low-frequency coverage to 10 kHz, calibrates the display in dBμV, and provides resolution filters with 6-dB bandwidths of 9 kHz and 120 kHz. With these enhancements, the HP 8558B is useful for FCC and VDE emission testing.

### EMI Measurement System Option E98

A portable, semi-automatic EMI measurement system is provided by combining HP 8558B Option H98 (above) with HP 853A computer accessories and software (see the "Software" section below). The system consists of HP 8558B Option H98, HP 853A Display, HP 75D Portable Computer, HP 82700A Memory Module, HP 82169A Interface, HP 82161A Cassette Drive, HP 82176A Cassettes, HP 82715A Card Holders, and Solid State Camera Software with user's manual (HP part number 75-00853). The following is a plot of test results with limit lines for an actual EMI test using Option E98:




### HP 8444A Option 059 Tracking Generator (0.5–1500 MHz)

Make swept frequency response measurements from 0.5 to 1500 MHz with greater than 90 dB of dynamic range. The output is absolutely calibrated at 0 dBm and continuously variable to −10 dBm. Frequency of an unknown signal, as well as any point on a frequency response curve, can be measured by using the external counter output and a frequency counter such as the HP 5300B/5305B.

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## HP 853A Spectrum Analyzer Display

### Digital Display

The HP 853A is a digital display mainframe for use with the HP 8558B Spectrum Analyzer plug-in. Signals are displayed on either of two independently stored digital traces. Display processing capabilities include maximum hold, digital averaging, and trace normalization for extended measurement capability. A built-in microprocessor manages the display operation and provides built-in test routines for display calibration and test (accessible via the front panel).

### HP-IB Capability Includes Direct Plotter Control

A hardcopy record of the displayed traces and graticules can be made on an HP-IB digital plotter by simply using the HP 853A's front-panel pushbuttons; a controller is not required. Although analyzer controls are not programmable, some HP-IB applications include using a controller for recording trace data or for placing operator prompts on the HP 853A CRT. The digital display and processing functions can be remotely programmed, and analyzer sweeps can be initiated via HP-IB.

### Two Configurations

The display is offered in two styles. The HP 853A (pictured) is a ruggedized, portable mainframe complete with tilt-bail handle and drip-proof, protective front cover. The HP 853A is ideally suited for rugged, field environments and any areas where system mobility is required. The HP 853A Option 001 offers the digital display in a full module bench or rack mount configuration.

### Software

The Solid State Camera Software provides a low cost, portable alternative to CRT photos. One program, "Camera," allows permanent storage of spectrum analyzer display traces along with display annotations. Another program, "Limitgen," allows test limit lines to be drawn on the HP 853A display. For more details, see page 684 in the HP 8559A Spectrum Analyzer section.

## HP 8558B Specifications

### Frequency Specifications

**Frequency range:** 0.1 to 1500 MHz.

**Frequency Spans**

**Per division:** 5 kHz to 100 MHz/div in a 1, 2, 5 sequence.

**Zero span:** analyzer functions as a manually tuned receiver.

**Frequency Accuracy**

**Tuning accuracy:** (+10°C to +40°C)

**0-195 MHz:** ±(1 MHz + 20% frequency span per division).

**195-1500 MHz:** ±(5 MHz + 20% frequency span per division).

**Frequency span accuracy:** ±5% of displayed frequency separation.

**Spectral Resolution**

**Resolution bandwidths:** eight selectable resolution (3-dB) bandwidths from 1 kHz to 3 MHz in a 1, 3 sequence. Bandwidth and frequency span are independently variable or may be coupled for optimum display when control markers are aligned (▶◀).

**Resolution bandwidth accuracy:** 3-dB points are ±20% (+10° to +40°C).

**Selectivity:** (60-dB/3-dB bandwidth ratio) <15:1.

**Spectral Stability**

**Residual FM:** <1 kHz p-p in 0.1 second.

**Noise sidebands:** ≥65 dB down, ≥50 kHz from center of CW signal with 1 kHz resolution bandwidth and full video filtering.

### Amplitude Specifications

**Amplitude range:** −117 to +30 dBm.

**Maximum Input (safe) Levels**

**Total power:** +30 dBm (1W, 7.1 Vrms).

**Voltage:** ±50 V dc or 50 V RMS (<100 Hz).

**Peak pulse power:** +50 dBm (100W, <10 μs pulse width, 0.01% duty cycle) with ≥20 dB input attenuation.

**Gain compression:** typically <1 dB for −10 dBm signal, 0 dB input attenuation.

**Average noise level:** <−107 dBm with 10 kHz resolution bandwidth, 0 dB input attenuation, and video filter at MAX.

**Calibrated Display Range**

**Log:** 70 dB with 10 dB/div scale; 8 dB with 1 dB/div scale.

**Linear:** 8 divisions with linear (LIN) amplitude scale.

**Amplitude Accuracy**

**Calibrator:** −30 dBm ±1 dB (into 50 Ω), 280 MHz ± 300 kHz.

**Reference level:** 10 dB steps and a 12 dB vernier for calibrated adjustment from −112 dBm to +60 dBm.[1]

**Step accuracy (with 0 dB input attenuation):** −10 to −80 dBm: ±0.5 dB; −10 to −100 dBm: ±1.0 dB.

**Vernier accuracy:** ±0.5 dB.

**Frequency response:** ≤ ±1.0 dB with 10 dB input attenuation (includes input attenuator, mixer flatness, and internal limiter).

**Input attenuator:** 0 to 70 dB, selectable in 10 dB steps.

**Step accuracy:** <±0.5 dB per 10 dB step.

**Maximum cumulative error:** <±1.0 dB.

**Bandwidth Switching (amplitude variation)**

**3 MHz to 300 kHz:** <±0.5 dB.

**3 MHz to 1 kHz:** <±1.0 dB.

**Display Fidelity**

**Log incremental accuracy:** ±0.1 dB/dB from Reference Level.

**Log maximum cumulative error:** ≤ ±1.5 dB over 70 dB range.

**Linear accuracy:** ±3% of Reference Level.

**Spurious Responses**

**Second harmonic distortion:** >70 dB below a −40 dBm input signal with 0 dB input attenuation; >60 dB below for signals 100 kHz to 5 MHz.

**Third order intermodulation distortion:** >70 dB below two −30 dBm input signals (>5 MHz) separated by ≥50 kHz and with 0 dB input attenuation; >60 dB below for signals 100 kHz to 5 MHz.

**Image and multiple responses:** >70 dB below a −40 dBm input signal (>5 MHz) with 0 dB input attenuation; > 60 dB below for signals 100 kHz to 5 MHz.

**Residual responses:** <−100 dBm with 0 dB input attenuation and no signal present at input.

### Sweep Characteristics

**Sweep Time**

**Automatic:** sweeptime is automatically adjusted to maintain absolute amplitude calibration for any combination of frequency span, resolution bandwidth, and video filter bandwidth.

**Calibrated sweep times:** 0.1 ms to 10 sec/div in 1, 2, 5 sequence with ±10% typical accuracy.

**Manual sweep:** spectrum analyzer may be swept manually in either direction with front panel control.

### Signal Input Characteristics

**Input impedance:** 50 Ω nominal; precision Type-N female connector.

**Input SWR:** typically <1.5 with ≥10 dB input attenuation.

### Output Characteristics

**1st LO output:** BNC output provides +10 dBm nominal signal (into 50 Ω), 2.05 to 3.55 GHz.

**Probe power:** +15 V, −12.6V, and GND (150 mA max). Use HP 1120A, 1121A, 1123A, or 1124A high impedance probes.

## HP 853A Characteristics

For more information on the HP 853A Display, see page 681 in the HP 8557A Spectrum Analyzer section.

## General

### General Specifications

For information on HP 182T compatability, temperature range, EMI compliance, and power requirements, see page 681 in the HP 8557A Spectrum Analyzer section.

**Weight**

**HP 8558B:** net, 5.5 kg (12 lb). Shipping 10.5 kg (23 lb).

**HP 853A:** net, 15.9 kg (35 lb). Shipping 18.6 kg (41 lb).

**HP 853A Opt 001:** net, 14.5 kg (32 lb.) Shipping, 17.3 kg (38 lb).

**Size**

**HP 853A/8558B:** 158.8 H x 501.7 W x 524.5 mm D (6.25″ x 19.75″ x 20.65″).

**HP 853A Opt 001/8558B:** 133 H x 425.5 W x 473.3 mm D (5.25″ x 16.75″ x 18.65″).

| Ordering Information | Price |
|---|---|
| **HP 8558B** Spectrum Analyzer | $7,925 |
| **Opt 001:** 75 Ω input, dBm calibration | add $100 |
| **Opt 002:** 75 Ω input, dBmV calibration | add $100 |
| **Opt 910:** Extra Operating and Service Manual | add $20 |
| **Opt E98:** EMI Measurement System | add $9,545 |
| **Opt H17:** Extended coverage to 1700 MHz | add $550 |
| **Opt H36:** 6 MHz BW for CATV/LAN demodulation | add $315 |
| **Opt H98:** EMI Option | add $1190 |
| **HP 853A** Portable Spectrum Analyzer Display | $5,550 |
| **Opt 001:** Full Module Bench/Rack Configuration | less $200 |
| **Opt 910:** Extra Operation and Service Manual | add $25 |
| **Solid State Camera Software:** HP part no. 75-00853 | $50 |
| **HP 182T** Cabinet Style, Normal Persistence Display | $4,030 |

[1] Input not to exceed maximum levels.

[2] A simple modification is required for HP 8558B plug-ins with serial prefix 2145A and lower (modification kit, HP part number 00853-60058).

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