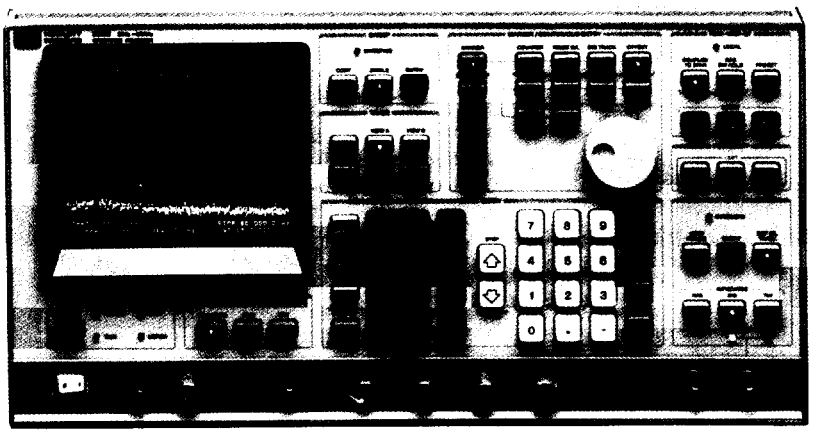
SIGNAL ANALYZERS

Spectrum Analyzer 20 Hz to 40 MHz

HP 3585B

- Sweep gating option
- 80 to 100 dB dynamic range
- ±0.25 dB typical level accuracy
- 50, 75, 1 MΩ inputs
- 3 Hz resolution bandwidth
- Automatic limit testing



DESIGNED FOR HP-IB SYSTEMS

Uncompromising Baseband Signal Analysis

The HP 3585B spectrum analyzer delivers high performance where it counts — at baseband frequencies. With very high accuracy, resolution, and dynamic range, the HP 3585B is the best solution for signal analysis at the critical frequencies comprising voice, video, or digital information.

In today's high-speed, high-density information processing systems, maintaining the integrity of data signals requires more measurement performance than ever before. The HP 3585B provides 80 to 100 dB of spurious-free dynamic range, a sharp 3 Hz resolution bandwidth, and a 20 Hz to 40.1 MHz frequency range to easily cover most information bandwidths. Fully synthesized tuning (including sweeps) and typical amplitude accuracy to ±0.25 dB ensure complete measurement confidence.

Carefully Chosen Features for Better Measurements

Measurements are faster and easier with the optimized feature set. The automatic limit test function checks all 1000 measurement points against user-defined upper and lower limits in a fraction of a second. Pass/fail results are shown in the display and are available over HP-IB for improved productivity in automated applications.

The automatic peak search and signal track functions speed signal identification and analysis and make examination of drifting signals more convenient. In addition to locating the strongest signal in a display, the peak search function can also find successively smaller signals, or search to the right or left for peaks above a user-defined threshold.

Fast, Flexible Frequency Sweeps

Well-designed resolution bandwidth filters and a phase-continuous, synthesized local oscillator team up with exceptional dynamic range to give the HP 3585B very fast measurement speeds. A 40 MHz sweep using the 30 kHz resolution bandwidth takes only 200 milliseconds, fast enough for high-resolution spectrum surveillance. A 1 MHz sweep using a 1 kHz bandwidth takes only 2 seconds, yet yields an average noise floor of −85 dBc.

Powerful Marker Functions

The tunable marker readout of frequency and amplitude can be expressed as an absolute or relative (offset) value. With a single keystroke, the marker value can be entered as the center frequency, reference level, frequency span, or center frequency step size. This improves accuracy and efficiency in manual testing and reduces setup errors.

The built-in frequency counter provides additional accuracy when measuring the frequency of a signal in the display. Results are provided in 0.3 seconds to 0.1 Hz resolution. Because the counter function is combined with the selectivity of the analyzer, it is possible to accurately measure small signals in the vicinity of much larger ones.

For noise measurements, the noise level marker function displays averaged rms noise density at the marker position, normalized to a standard 1 Hz bandwidth and corrected for the analyzer's characteristics. This function can be combined with the relative measurement mode for fast, easy signal-to-noise ratio measurements.

Measurement Hard Copy

Copying a complete display to a printer or plotter is as easy as pressing a button. The HP 3585B directly controls HP-GL compatible HP-IB plotters and graphics printers such as the HP ThinkJet.

Tracking Generator

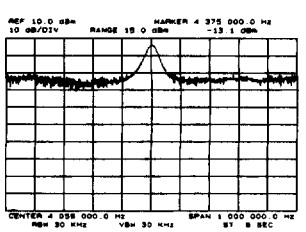
The standard 50 Ω tracking generator covers the full 40 MHz frequency range of the HP 3585B to provide easy scalar (amplitude-only) network analysis. The signal is fully synthesized in CW measurements and sweeps, and level is adjustable from 0 dBm to −11 dBm from the front panel.

Flexible Inputs with Autoranging

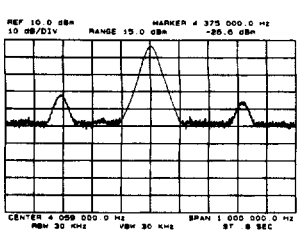
50, 75, and 1 MΩ input impedances are all standard and are electronically selectable to match your system. For sensitive circuits, the 50 Ω and 1 MΩ inputs and provided probe power, offer maximum compatibility with a variety of passive and active probes. With input autoranging, the HP 3585B automatically chooses the optimum input range for maximum dynamic range and lowest distortion. This eliminates the need to manually adjust attenuation and IF gain.

Burst Signal Analysis

Spectrum analysis on burst signals using traditional swept measurement techniques include not only the signal of interest but also the signal from the burst repetition period. This raises the effective noise floor of the measurement which masks the signal of interest, making accurate signal-to-noise and carrier-to-noise measurements impossible. The new sweep gating option 001 reveals the signals you have missed.



Before sweep gating



After sweep gating

Specifications

Specifications describe the warranted performance of the HP 3585B over the temperature range 0° C to 55° C, except where noted. Supplemental characteristics describe typical but non-warranted performance; they are described as "typical" or "approximate" and apply over the temperature range 25 ±5° C.

Frequency

Measurement range: Specifications apply 20 Hz to 40.1 MHz
Start/stop, center, manual frequency range: 0 Hz to 40.1 MHz
Accuracy: (Same as frequency ref. accuracy)
Frequency span: 0 Hz to 40.1 MHz
Frequency reference accuracy: $\pm 1 \times 10^{-7}$/mo. of frequency
Marker frequency:
Readout accuracy: ±0.2% of frequency span ± resolution bandwidth.
Resolution: 0.1 Hz
Resolution bandwidth:
Bandwidth: 3 Hz to 30 kHz (3 dB bandwidth) in 1, 3, 10 sequence.
Selectivity: (60 dB / 3 dB) < 11:1
Video bandwidth: 1 Hz to 30 kHz in 1, 3, 10 sequence

Amplitude

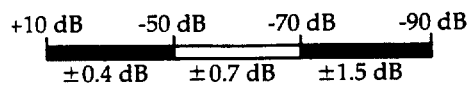
Display scale: 10 vertical division graticule with reference level (0dB) at top graticule line
Calibration: 1, 2, 5, 10 dB/division
Measurement range:
50/75 Ω input: −137 dBm to +30 dBm or equivalent level in dBV or volts
1 MΩ input: 31 nVrms to 7.08 Vrms
Input range settings: Autoranging, −25 dBm to +30 dBm in 5dB steps

Amplitude accuracy

Accuracy note: Measurement accuracy is determined by the sum of reference level accuracy, amplitude linearity (if the signal is not at the reference level) and frequency response across the measurement span (if the signal is not at the center or manual frequency). In measurements where the signal is at the reference level and/or at the center or manual frequency, the amplitude linearity and/or frequency response uncertainties will not apply.

Reference level

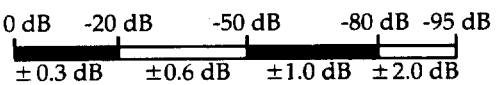
Range: −100 dB to +10 dB (relative to input range)
Accuracy: 50/75 Ω input (using 1 or 2 dB/div., measured at manual frequency or with sweep rate reduced by a factor of 4):



(For 5 or 10 dB/div. add 0.1 dB to the figures above)
Typical accuracy, +10 dB to −50 dB: ±0.25 dB.
For 1 MΩ input: Add to above specification ±0.7 dB for 20 Hz to 10 MHz; ±1.5 dB for 10 MHz to 40.1 MHz

Amplitude linearity

50/75 Ω input (relative to reference level):



Typical linearity, 0 dB to −20 dB: ±0.2 dB

Frequency response

50/75 Ω input (relative to center frequency): ±0.5 dB (±0.3 dB typ.)
For 1 MΩ input: Add to above specification ±0.7 dB for 20 Hz to 10 MHz, ±1.5 dB for 10 MHz to 40.1 MHz

Marker amplitude accuracy:

Center or manual frequency at the reference level: Use reference level accuracy from +30 dBm to −115 dBm; add amplitude linearity below −115 dBm.
Anywhere on screen: Add amplitude linearity and frequency response (same as display accuracy)

Dynamic range

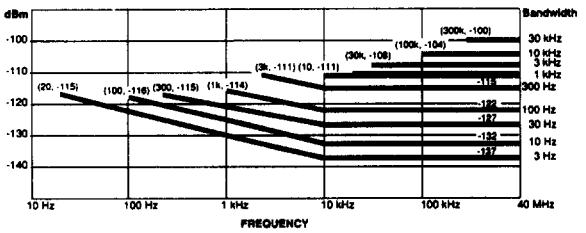
Spurious responses: (Image, out-of-band, and harmonic distortion)
50/75 Ω input: < −80 dB relative to a single signal at or below the input range setting.
Typical performance: −84 dB to (1 dB/dB below input range setting)
Example: For a −8 dBm signal on the 0 dBm input range, the spurious responses would be −92 dB.
1 MΩ input: < −80 dB, except 2nd harmonic distortion < −70 dB

Intermodulation distortion

50/75 Ω input: ≤ −80 dB relative to the larger of two signals, each ≥6 dB below input range setting except 2nd order IM from 10 MHz to 40 MHz < −70 dB
1 MΩ input: < −70 dB for 2nd order, < −80 dB for 3rd order
Residual responses (no signal at input): < −120 dBm using −25 dBm range, or 95 dB below input range setting
Residual phase noise (typical at 40 MHz, -10 dBm input):
5 kHz offset: −112 dBc/Hz
100 kHz offset: −120 dBc/Hz
Maximum dynamic range (typical): 92 dB spurious, harmonic and 3rd order IM; 115 dB signal to noise.

Average noise level

50/75 Ω input:



1 MΩ input: Below 500 kHz add 12 dB to 50/75 Ω figure

Tracking generator

Level: 0 dBm to −11 dBm, manual control from front panel
Frequency accuracy: ±1 Hz relative to analyzer tuning
Frequency response: ±0.7 dB; typically: ±0.5 dB
Impedance: 50 Ω, >14 dB return loss

Signal input

50/75 Ω: >26 dB return loss, BNC connectors
1 MΩ: ±3% shunted by <30 pF, BNC connector

Maximum input level

50/75 Ω: 13V peak ac plus dc, relay protected for overloads to 42V peak
1 MΩ: 42V peak ac plus dc (derated by factor of two for each octave above 5 MHz)

External trigger: Negative-going TTL level or contact closure initiates sweep
External frequency reference: 10 MHz or subharmonic to 1 MHz, 0 dBm minimum level

Option 001 Sweep Gating Mode

Modes: Timed (start synch to ext trigger), External gate (start and stop synchronized to ext trigger
Programmable gate delay range (typ): 10 μs-655 ms, 10μs steps
Programmable gate length range (typ): 100 μs, 200 μs-13.1 sec, 200 μs steps
Measurement accuracy dependent on signal set-up time

General

Weight: 36.7 kg (81 lb)
Size: 22.9 cm H × 42.6 cm W × 63.5 cm D (9 in × 16.75 in × 25 in)

Ordering Information	Price
HP 3585B Spectrum Analyzer	$26,000
Opt W30 Extended Repair Service. See page 671.	+$605
Opt 001 Sweep Gating	+$1,500
Opt 002 Field Installable Sweep Gating Kit	+$2,000