Test Equipmet Depot
99 Washington Street
Melrose, MA 02176-6024
TEL: 800.517.8431
FAX: 781.665.0780

- New sweep gating option
- 80-100 dB dynamic range
- ±0.25 dB typical level accuracy
- 50, 75, 1 M Ω inputs
- 3 Hz resolution bandwidth
- Automatic limit testing

DESIGNED FOR HP-IB SYSTEMS

HP 3585B

Uncompromising Baseband Signal Analysis

The HP 3585B spectrum analyzer delivers high performance where it counts – at baseband frequencies. With unmatched accuracy, resolution, and dynamic range, the HP 3585B is the best solution for signal analysis at the critical frequencies comprising voice, picture, 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 80-100 dB of spurious-free dynamic range, a sharp 3 Hz resolution bandwidth, and a 20 Hz–40.1 MHz frequency range to easily cover most information bandwidths. Fully synthesized tuning (including sweeps) and typical amplitude accuracy to ±0.25 dB are unique in this frequency range and ensure complete measurement confidence.

Measurement performance is critically important at baseband frequencies because signal degradation occurring here is typically not recoverable elsewhere in the system. As a result, test requirements for baseband signals and circuits often demand a level of performance that only a high-performance, low-frequency signal analyzer such as the HP 3585B can provide.

Carefully Chosen Features for Better Measurements

Measurements are faster and easier with the optimized featured 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 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. For offset measurements, a reference point is selected and all measurements are displayed relative to this value. Offset measurements are especially useful when comparing various spectral component levels to a carrier in modulation analysis or when determining signal-to-noise ratio.

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 printer.

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 on 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.

Compatibility

Hewlett-Packard protects your investment in measurement solutions. The HP 3585B can directly replace the HP 3585A in virtually every application. The HP 3585B meets all HP 3585A specifications and uses an expanded version of the HP 3585A programming codes. Physical dimensions are identical, and input and output are in the same location, serving the same functions.

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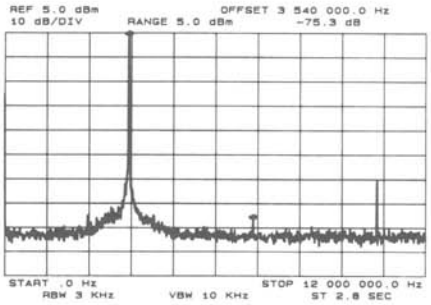
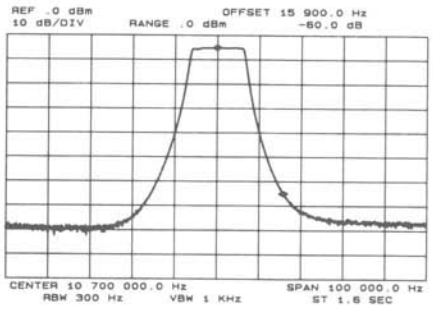
Distortion Measurements

The dynamic range, resolution, and level accuracy of the HP 3585B make harmonic and intermodulation distortion measurements a straightforward task. The peak search function quickly locates the fundamental and each distortion product, and the automatic limit test function can be used for immediate pass/fail results. Resolve and measure closely-spaced intermodulation products with resolution bandwidths as narrow as 3 Hz. The fully synthesized local oscillator provides the frequency accuracy and stability necessary to make dependable measurements on closely-spaced signals, and to measure distortion products directly with the narrowest bandwidths.



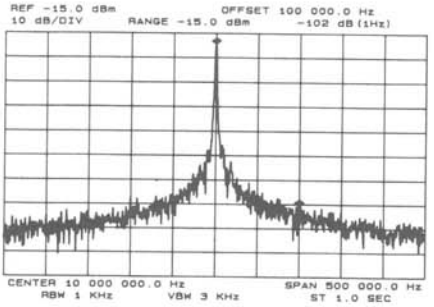
Network Analysis

Gain, loss, and frequency response measurements are dependable and automatic with the built-in synthesized tracking generator. Superb amplitude accuracy, resolution, and flatness contribute to high-quality measurements. The HP 3585B has multiple input impedances to match the network under test and a broad selection of receiver bandwidths to provide the best balance of measurement speed and dynamic range. Use the limit test function to save analysis time and effort with its immediate, automatic, pass/fail results. For narrowband devices such as crystal filters, the synthesized local oscillator yields stable, repeatable measurements. For devices such as mixers that perform frequency conversion, swept measurements can be synchronized with separate sources for complete characterization in one pass.



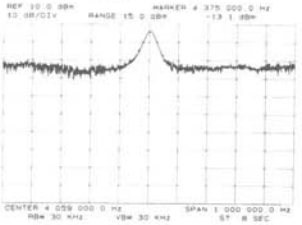
Noise Level Measurements

The HP 3585B makes fully calibrated noise level measurements automatically. Just select the frequency and press the Noise Level key. The HP 3585B calculates averaged rms noise density and displays the results normalized to a 1 Hz bandwidth. The extremely low internal noise level makes repeatable, accurate measurements possible below −137 dBm. For convenience, the marker can provide both absolute and relative (signal-to-noise) measurements directly.

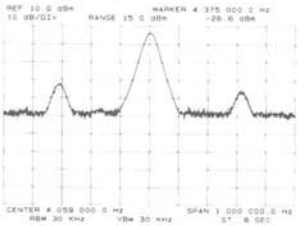


Burst Signal Analysis

Spectrum analysis results from traditional swept measurements on burst signals include not only the signal of interest, but also the c signal from the burst repetition period. The noise floor is higher in burst measurements, which masks the signal of interest. Accurate signal-to-noise and carrier-to-noise measurements are 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-40.1 MHz Start/stop, center, manual frequency range: 0 Hz-40.1 MHz
Accuracy: (same as frequency ref. accuracy)
Frequency span: 0 Hz-40.1 MHz
Frequency reference accuracy: ± 1 x 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-30 kHz (3 dB bandwidth) in 1, 3, 10 sequence.
Selectivity: 60 dB / 3 dB < 11:1
Video bandwidth: 1Hz-30 kHz in 1,3,10 sequence

Amplitude

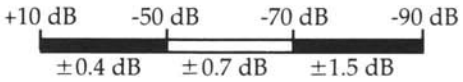
Display scale: 10 vertical division graticule with reference level (0dB) at top graticule line
Calibration: 1, 2, 5, 10 dB/division
Measurement range:
50/75Ω input: −137 dBm to +30 dBm or equivalent level in dBV or volts
1MΩ input: 31 n Vrms to 7.08 Vrms
Input range settings: autoranging, −25 dBm to +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 flatness uncertainties will not apply.

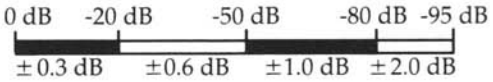
Reference level

Range: −100 dB to +10 dB (relative to input range)
Accuracy: 50/75 0 input (using 1 or 2 dB/div., measured at manual frequency or with sweep rate reduced by a factor of 4):



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

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



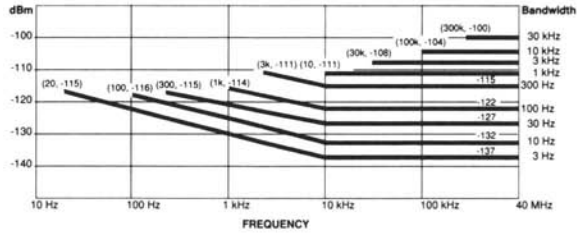
Typical linearity 0 dB to −20 dB: ±0.2 dB

Frequency response
50/75 Ω input (relative to center frequency): ±0.5 dB
Typical frequency response: ±0.3 dB
For 1MΩ input: add to above specification ±0.7 dB for 20 Hz-10 MHz, ±1.5 dB for 10 MHz-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)
50/75Ω input: <−80 dB relative to a single signal at or below the input range setting.
Typical performance: −84 dB - (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.
1MΩ 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
1MΩ 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
50/75Ω input:



1MΩ input: below 500 kHz add 12 dB to above

Sweep:
Modes: continuous, single, manual (CW, direct or knob entry)
Trigger: free run, external, line
Time: 0.2s to 200s/Hz of frequency span, excluding calibration cycles (autocalibration may be disabled)

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
50/75Ω: >26 dB return loss, BNC connectors
1MΩ: ±3% shunted by <30 pF, BNC connector
Maximum input level
50/75Ω: 13V peak ac plus dc, relay protected for overloads to 42V peak.
1MΩ: 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

Signal output
Frequency reference: 10.00 MHz ±1x10 $^{-7}$/mo., +10 dBm into 50Ω
IF: 350 kHz, −11 dBV to −15 dBV at the reference level
Video: 10V at the reference level
Probe power: +15 Vdc, −13 Vdc; 150 mA max., suitable for HP active probes
HP-IB interface functions: SH1 AH1 T5 L4 SR1 RL1 PP0 DC1 DT1 C0 E1

General
Environmental
Temperature, operating: 0° C to 55° C
Humidity: <95% RH
Warm up time: 20 min. at ambient room temperature
Power
115V (11% -25%), 48-440 Hz
230V (11% -18%), 48-66 Hz
180 W, 3A max.
Weight: 36.7kg (81lb)
Size: 229H x 426W x 635mmD cm (9″ x 16.75″ x 25″)

Ordering Information

HP 3585B spectrum analyzer
Opt W30 Extended Repair Service. See page 725.
Opt 001 Sweep Gating
Opt 002 Field Installable Sweep Gating Kit

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