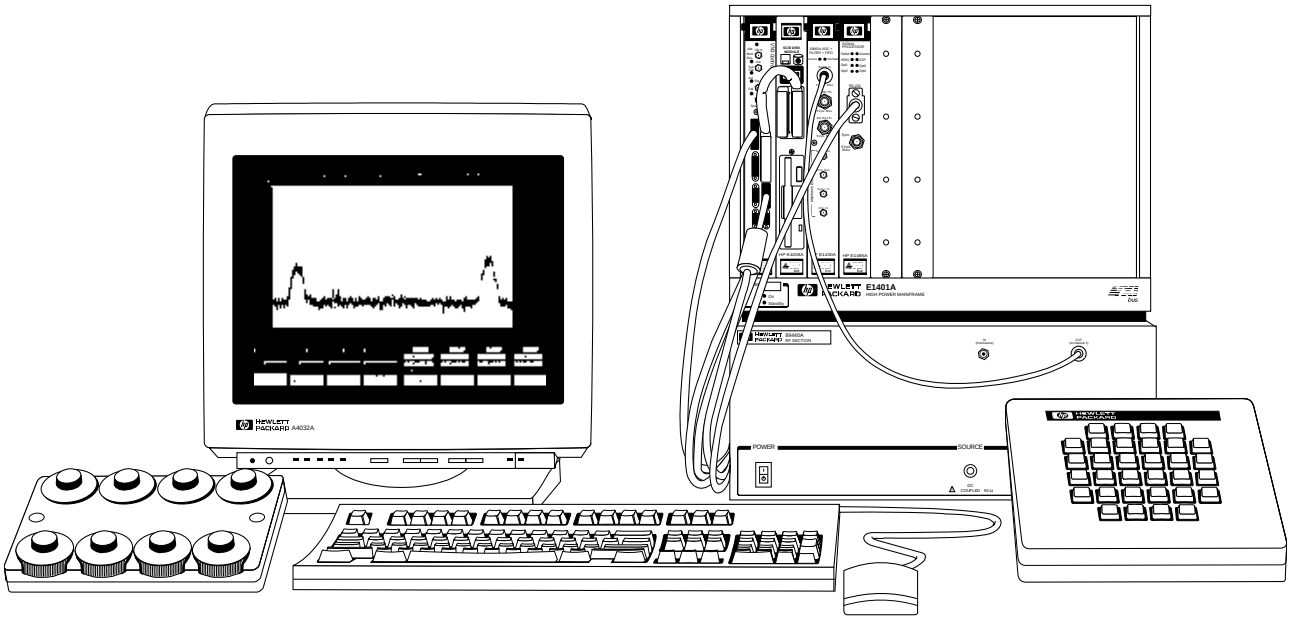
HP 3587S
dc to 4 MHz

Technical Specifications

Signal Analysis System



Specifications describe warranted performance over the temperature range of 0° to 50°C (except where noted), after a 30-minute warm-up from ambient conditions, for the system configuration listed. Supplemental characteristics identified as “typical” or “characteristic,” provide useful information by giving non-warranted performance parameters. Typical performance is applicable from 20° to 30°C.

For more detailed specifications refer to the technical data sheets of the individual system components.

Configuration

The performance of a system depends on its hardware and software components. This technical data is based on the following configuration. Any changes in this configuration may effect system performance.

Table 1 Configuration data

Controller	HP E1498A with 64 Mbytes RAM
ADC	HP E1430A with opt AYD, 10.24 MHz time base
DSP	HP E1485A with four option 1FL, 96002 DSP
Down Converter	None
System Disk	HP E4208A (500 MByte)
Mainframe	HP E1401A (13 slot, C size)
Monitor	HP A4032A (17 inch, color)
Operating Software	35687B Signal analysis software

Definitions

Baseband = dc to 4 MHz

dBc = dB relative to input signal level

dBfs = dB relative to full scale amplitude range setting. Full scale on the ADC module is approximately 1 dB below overload.

FS or fs = Full Scale; the same as amplitude range or input range

SNR = Signal to noise ratio

Standard Features

(HP 35687B Signal Analysis software)

Resolution

Windows

Bins

Averaging

RMS

Peak

Nth

Overlap

Measurement Control

Modes

Run

Pause/Continue

Arm

Status Indicators

Overload

Triggered

External reference

Gap

Measurement Results

Types

Frequency

Time

Phase †

Amplitude

Markers

Mode

Off

Single

Relative (same trace, separate trace)

Functions

Marker to Peak

Marker to Next Peak Right/Left

Band Power

Noise

Display

Format

Single

Dual

Triple

Overlay

State

Active Trace

A, B, C, AB, BC, AC, ABC

Standard Display Types

Spectrum

Time

Phase

Advanced Display Types

Spectrogram

Rollogram

Spectral Map/Color Map/ Time Map: azimuth, elevation, threshold, height, scroll direction, hidden line, wireframe

Histogram

PDF

CDF

Strip Chart

Display Title

Trace Coordinates

Y axis: log magnitude, linear magnitude, dB magnitude, dBm magnitude, real, imaginary, phase

X axis: linear frequency, linear time, volts

Trace Label

Units

Peak/RMS

Volts/Volts^2

Volts/Eng Units

Scaling

Y axis: auto scale, Y range, Y reference

X axis: X reference, X magnify, X default

Engineering Units

Threshold

Display Memory

Manipulation: scroll up, scroll down, home, end

Color Configuration

Trace line

Trace grid

Trace background

Display background

User Interface

Input Devices

Keyboard

Mouse

9-knob panel

32-button panel

General

On-line Help

Memory and data storage

Save/Recall

Record/Playback

Optional Features

Option AGG Programming

† Phase display is relative to the beginning of the data block. Data is not corrected for trigger jitter, digital filter phase error, or local oscillator phase error.

Performance	
Real-Time Bandwidth (801 lines, 0% overlap, spectrogram display, rms averaging, 16-bit word width, 1024 × 768 pixel display)	1.0 MHz
Signal Capture Buffer (typical)	2048 spectra, gap free (4 MHz span, 801 lines, 16 bit word width)
Display Update Rate (typical)	
Spectrogram	60/s
Waterfall	30/s
Color Waterfall	30/s
Frequency Trace	30/s
Time Trace	30/s
Map Rotate †	2 Repaint/s

† 100 Spectra, 1024 x 768 pixel display.

Baseband Specifications

Frequency

Range	dc to 4 MHz
Spans	0.24 Hz to 4.0 MHz, octave steps, includes frequency translation (zoom) capability for spans < 4 MHz
Tuning resolution	10 Hz, span < 4 MHz
Frequency resolution	51 to 12,801 lines
Bin width	18.6 Hz to 78.4 kHz
Window factors	Uniform, Hann, Flattop, Gausstop, Blackman, Gaussian

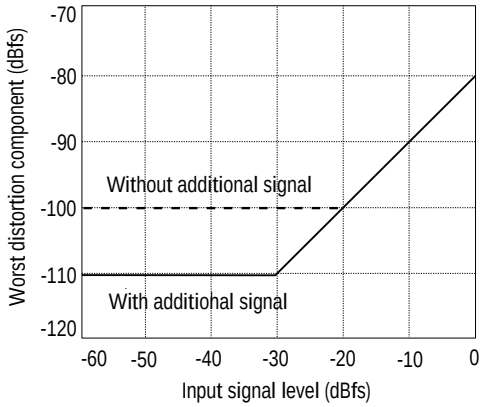
Amplitude

Input impedance	50 Ω
ADC resolution (raw)	23 bits
Input ranges	+ 28 dBm to – 32 dBm, 6 dB steps
Measurement range	+ 28 dBm to – 142 dBm
Sensitivity	– 159 dBm/Hz (– 32 dBm range)
Noise figure	15 dB
Damage level	> + 31 dBm
Coupling	ac/dc
Autorange	Off/up/single
Autozero	Single by command
ADC sample rate	10.24 MSa/s
ADC clock accuracy	10.24 MHz ± 100 Hz, < 10 ps jitter
Anti-alias filter	4 MHz, low pass
Digital filters	0.24 Hz to 2.0 MHz, octave steps, includes frequency translation (zoom) capability

Dynamic Range

Spurious free dynamic range	< 110 dBfs
Spurious signals (includes alias products)	< – 110 dBfs, using internal clock
Harmonic distortion	< – 110 dBfs or – 80 dBc, whichever is greater

Harmonic distortion versus input level



Input Noise: (For 1 kHz **<** fo **<** 4 MHz)

Range	**Noise Density**
+ 28 dBm to – 16 dBm	< – 136 dBfs/Hz
– 22 dBm to – 32 dBm	< – 127 dBfs/Hz

General Specifications

Signal Capture	
Mode	On/Off
Buffer Size	4 MSamples (4 Msamples = 2048 spectra, 801 line, 4 MHz span, 16 bit word width)
Buffer Length (seconds)	4 Msamples / (span × 2.5)
Averaging	
Mode	Off, rms, Peak, Nth
Number of Averages	1 to 32,767
Overlap Percentage (Overlap processing does not require averaging)	0 to 99% (span < 125 kHz), 0 to 50% (125 kHz > span (< 500 kHz), 0% (span > 500 kHz)
Memory	
Save/Recall	
State	32 registers
Trace	32 registers
Data	32 registers
Record/Playback Mode	Off/Playback/Record
Triggering	
Modes	Freerun, Level, Magnitude, External
Level	± 100% of input
Slope	Positive, Negative
Delay	– 4,194,303 to + 33,554,432 samples
Arm	Auto/Manual
External Clock Input †	
Frequency Range	100 kHz to 10.24 MHz
Input Levels	TTL
Accuracy	Source accuracy + 10 ps rms jitter
Printer Output	
Modes	Print Screen/Print Trace
Printers	HP Paintjet, HP Laserjet

† Performance specifications valid for internal sample clock only. Spurs and noise of greater than –110 dBc on external clock signal will degrade the performance of the ADC.

Physical Specifications
(Based on configuration in Table 1.
VXI module power consumption, weight,
and size are included with VXI chassis)

Environmental	VXI Chassis (HP E1401A)	Monitor (HP A4032A)	Disk Drive (HP E4208A)
Operating			
Temperature	0° to 55°C	0° to 40°C	5° to 45°C
Humidity (non-condensing)	75% (40°C)	10% to 80% (40°C)	10 to 80% (40°C)
Storage			
Temperature	– 40° to 75°C	– 40° to 60°C	– 20° to 60°C
Humidity (non-condensing)	75% (40°C)	5% to 95% (65°C, 24 hrs)	5% to 95%
Altitude	4600 m (15,000 ft)	15333 m (50,000 ft)	n/a
Weight	22 kg (47 lbs.)	22 kg (47 lbs.)	n/a
Power			
(110/120 VAC, 50-60 Hz)	12 A	2.7 A	n/a
(220/240 VAC, 50-60 Hz)	6 A	1.5 A	
Size			
(mm H × mm W × mm D)	323 × 426 × 602	414 × 406 × 450	1 slot
(inch H × inch W × inch D)	12.7 × 16.8 × 23.7	16.7 × 16 × 17.7	C size VXI

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