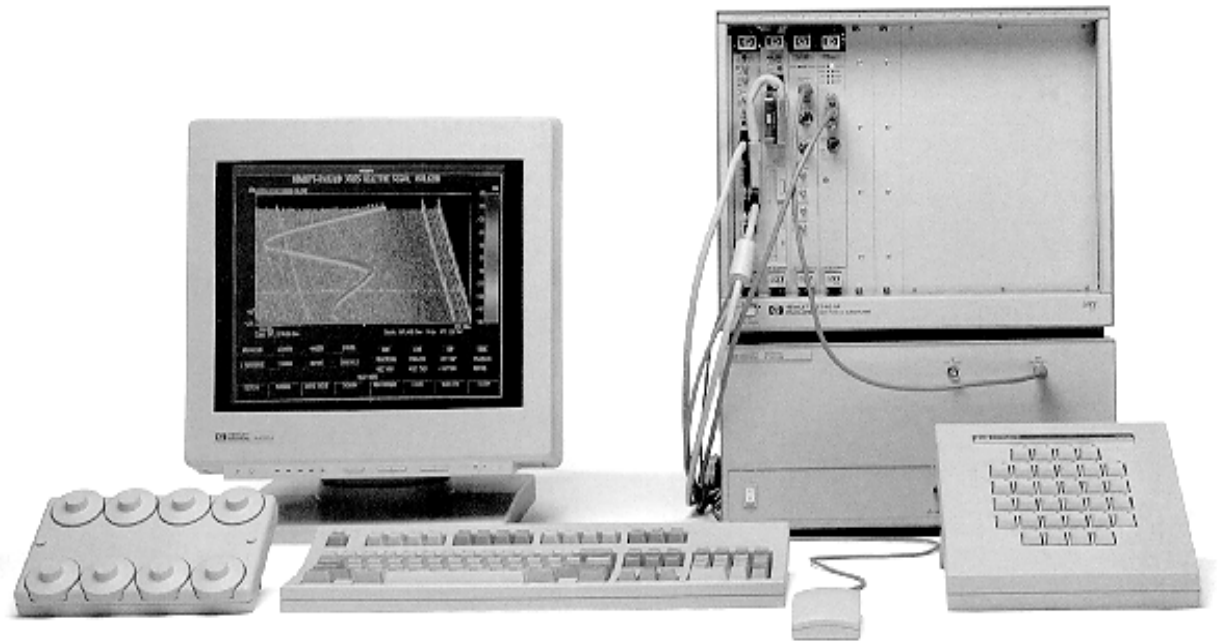


HP 3587S Signal Analysis System

The fastest,
highest resolution,
highest dynamic range,
signal analyzer HP has made, so far



HP 3587S Signal Analysis System

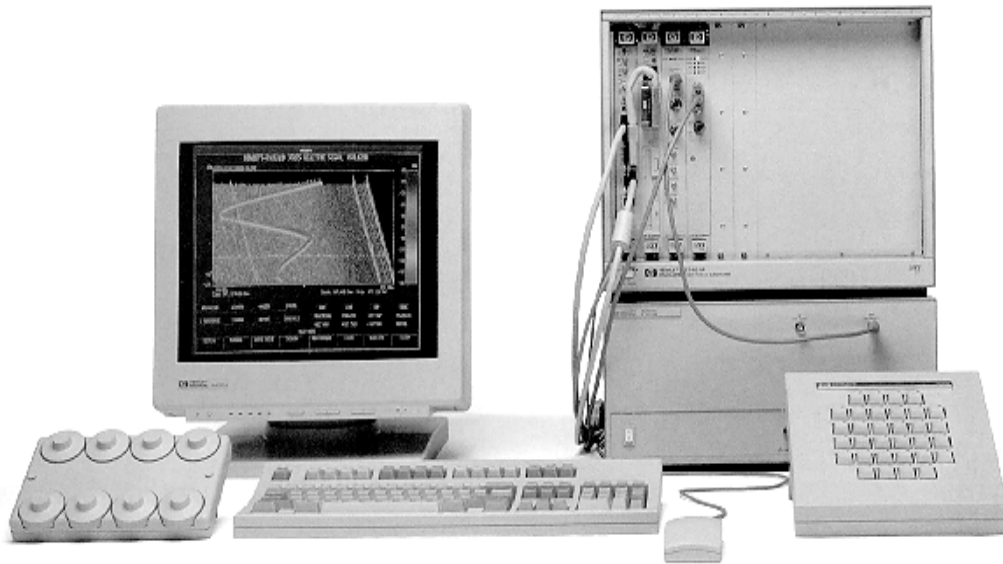
Digitizing: *Wide band, high dynamic range for best analysis*

Capture Tools: *Catch wideband signals, speed analysis*

DSP Tools: *A choice of tools for successful analysis*

Display Tools: *A wide selection leverages DSP results*

Integrate/Customize: *LAN, programmable*



A real-time signal analysis workstation

HP3587S Performance

Dynamic Range:

- ▶ 110 dBfs, 4 / 8MHz BW

Signal Capture:

- ▶ 4 MHz BW, 16 GBytes (13 minutes), opt ATR

DSP Tools

- ▶ FFT (1 MHz RTBW)
- ▶ Digital filters and zoom (real time)
- ▶ Averaging, overlap processing
- ▶ Resample (opt ATR)

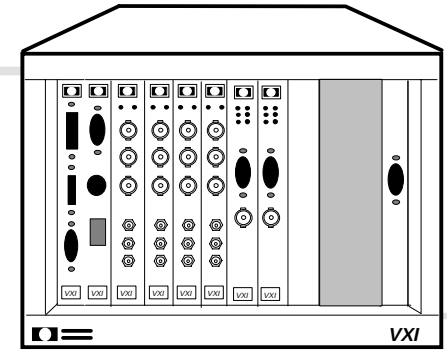
Display Tools

- ▶ Selection of speed, domain, type, control,

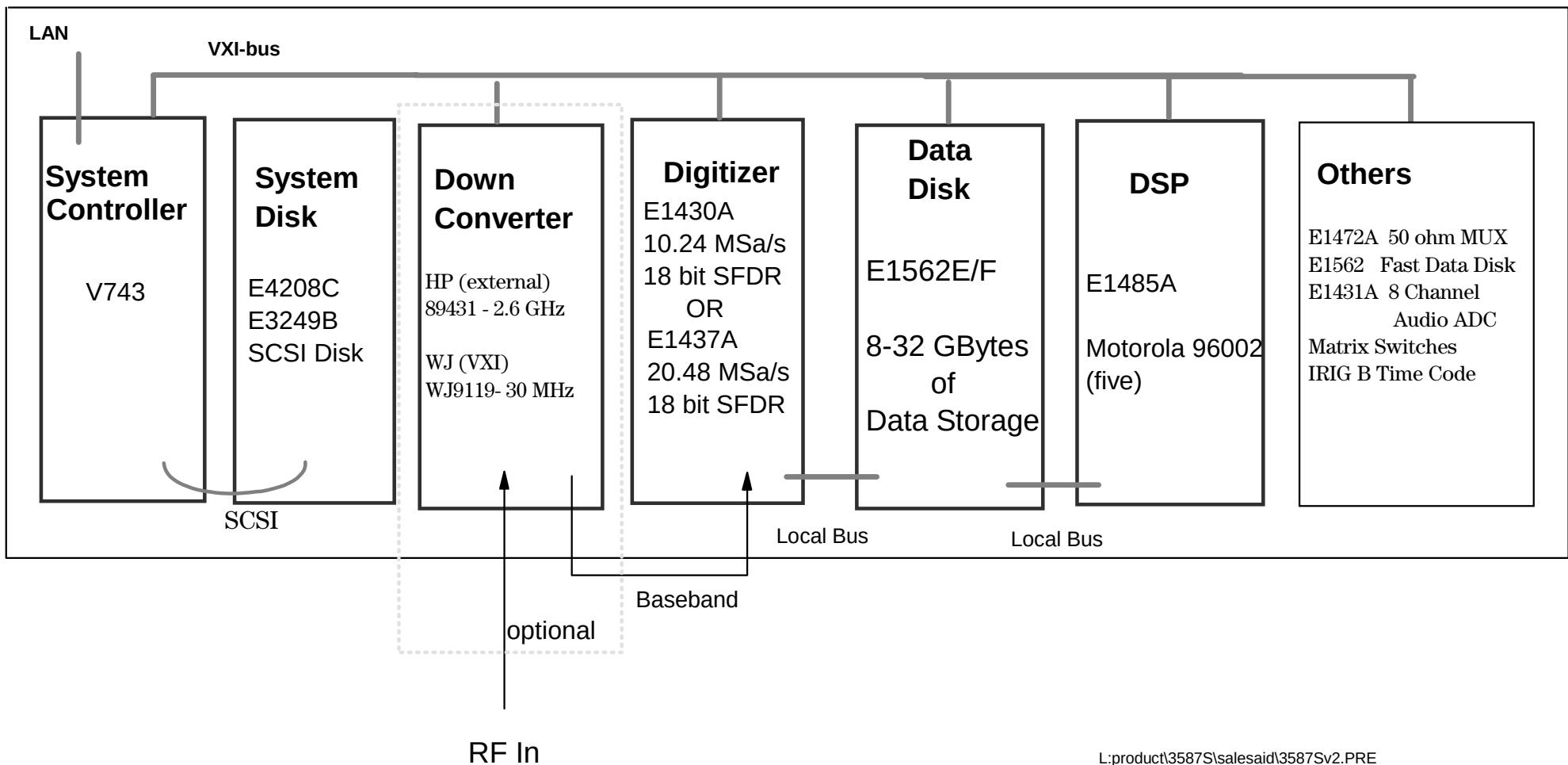
Integrate/Customize

- ▶ LAN
- ▶ opt AGG

HP3587S System VXI/COTS

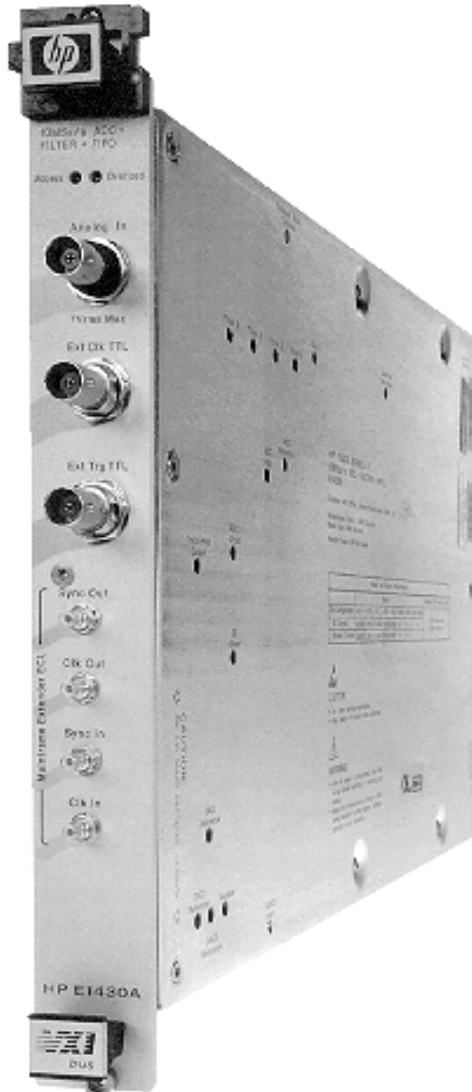


VME Extensions for Instrumentation (VXI)



HP3587S Digitizing

E1430A / E1437A

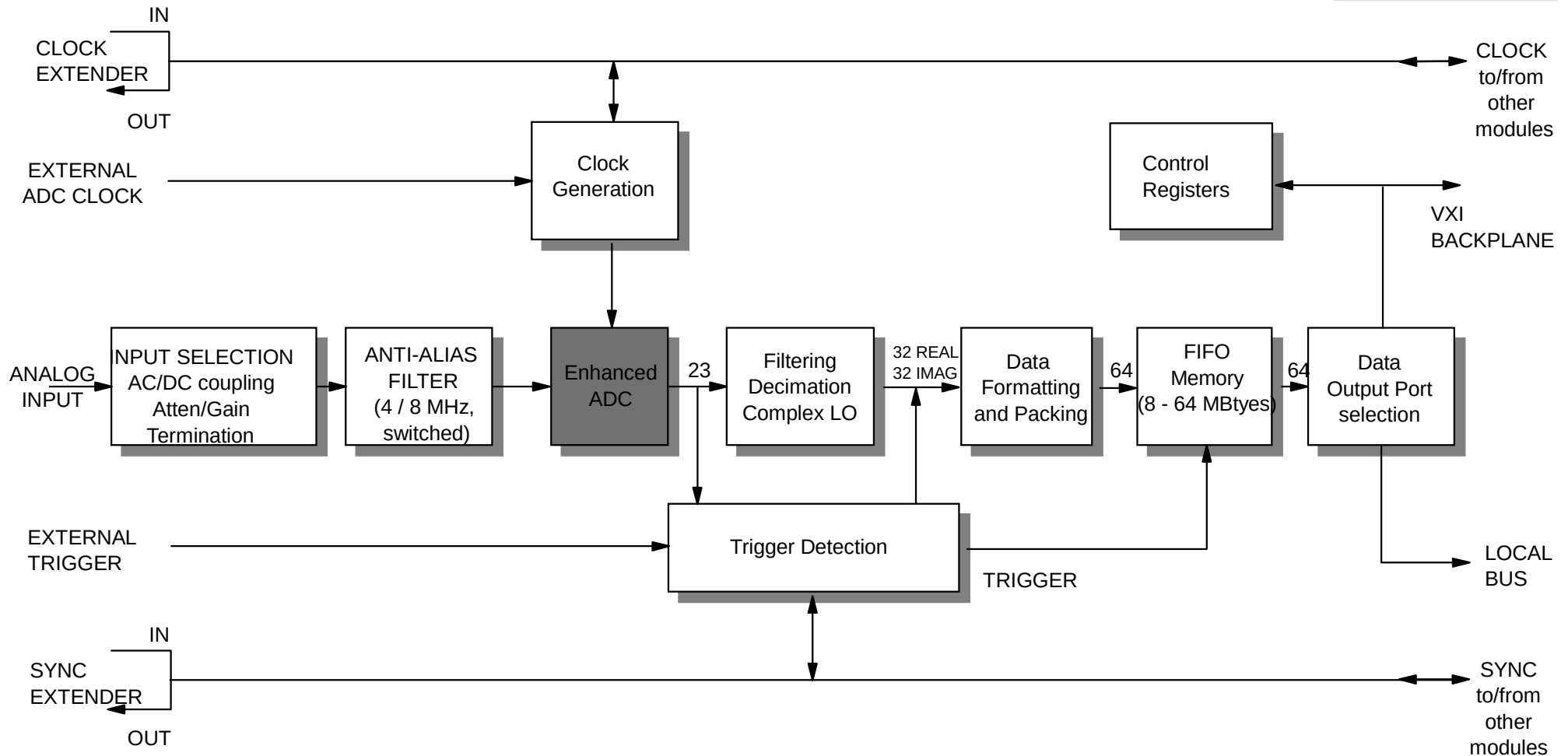


- **Dynamic Range:** up to 110 dBFS (18 bits)
- **Input Bandwidth:** 4 / 8 MHz, alias protected

E1430A ADC with filtering and FIFO memory

- **Sample Rate:** 10-20 MSa/sec
- **Raw resolution:** 23 bits
- **Input ranges:** +26 to -32 dBm
- **Digital filters:** <1 Hz to 2 MHz, octave steps
- **Complex LO:** 10 uHz tuning resolution
- **FIFO memory:** 8 to 64 MBytes
- **Data Transfer Rate:** 25 / 60 MBytes/s (LBus)

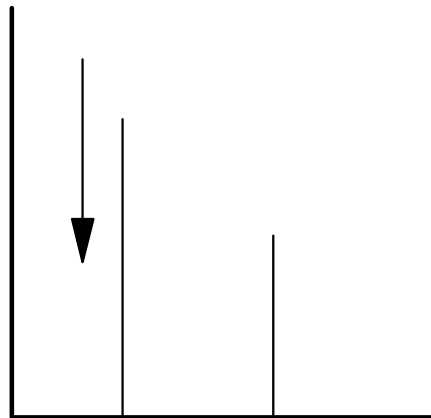
E1430A / E1437A Block Diagram



HP 3587S Digitizing

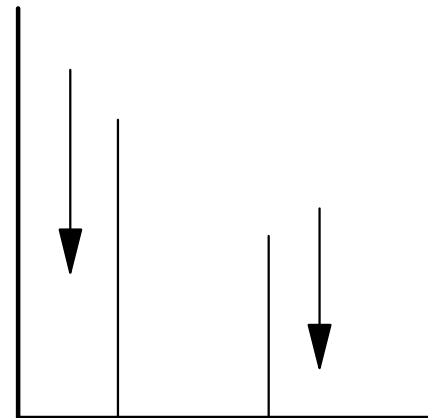
- **Dynamic Range = Noise + Spurs + Distortion**

Traditional Digitizer



Hard Distortion

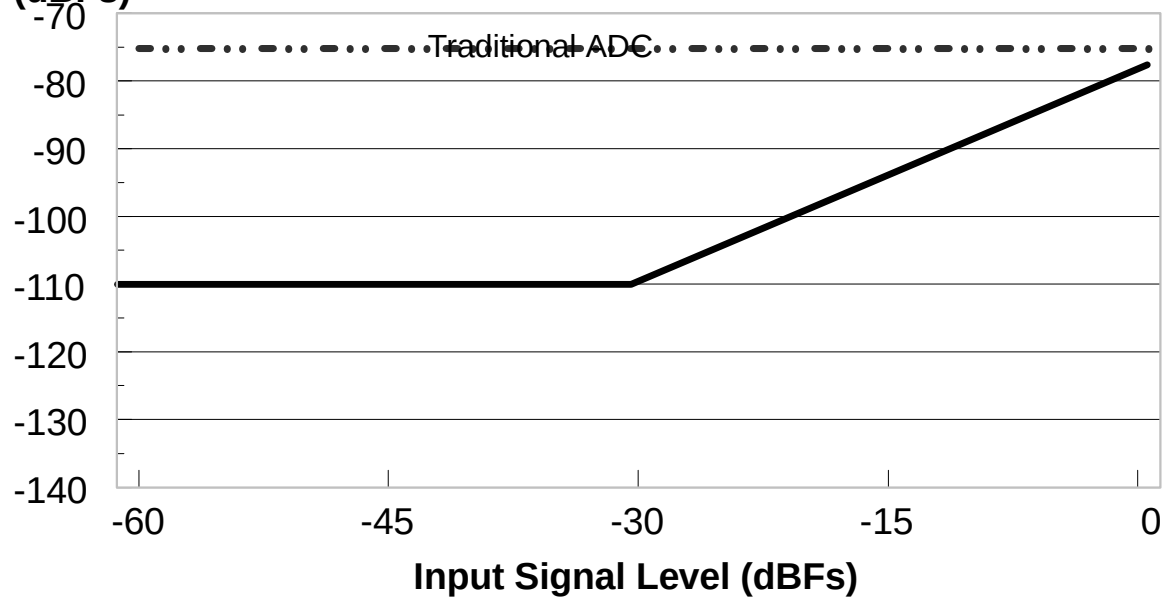
E1430A / E1437A



Soft Distortion

HP 3587S Digitizing E1430A / E1437A

Level of Worst Distortion Product
(dBFs)



Spurs & Alias Products

-110 dBFs

Distortion Products

-110 dBFs or -80 / -75 dBc

Noise Floor

-136 / 140 dBFs/Hz

Up to 110 dBFs instantaneous Spur Free Dynamic Range

HP 3587S DSP Tools

FFT

Real-time Bandwidth: 1 MHz

- *See all activity on every channel (12.5 KHz)*

Resolution: 50 - 12,800 lines / span

- *80 KHz to < 1 mHz resolution*

Windows:

- 6 types

Averaging:

- RMS, Peak, Nth



HP 3587S DSP Tools

Additional Tools

Digital filtering with decimation (ADC)

- *IIR, real-time*
- *0.24 to 2 MHz (octave)*

Zoom (ADC)

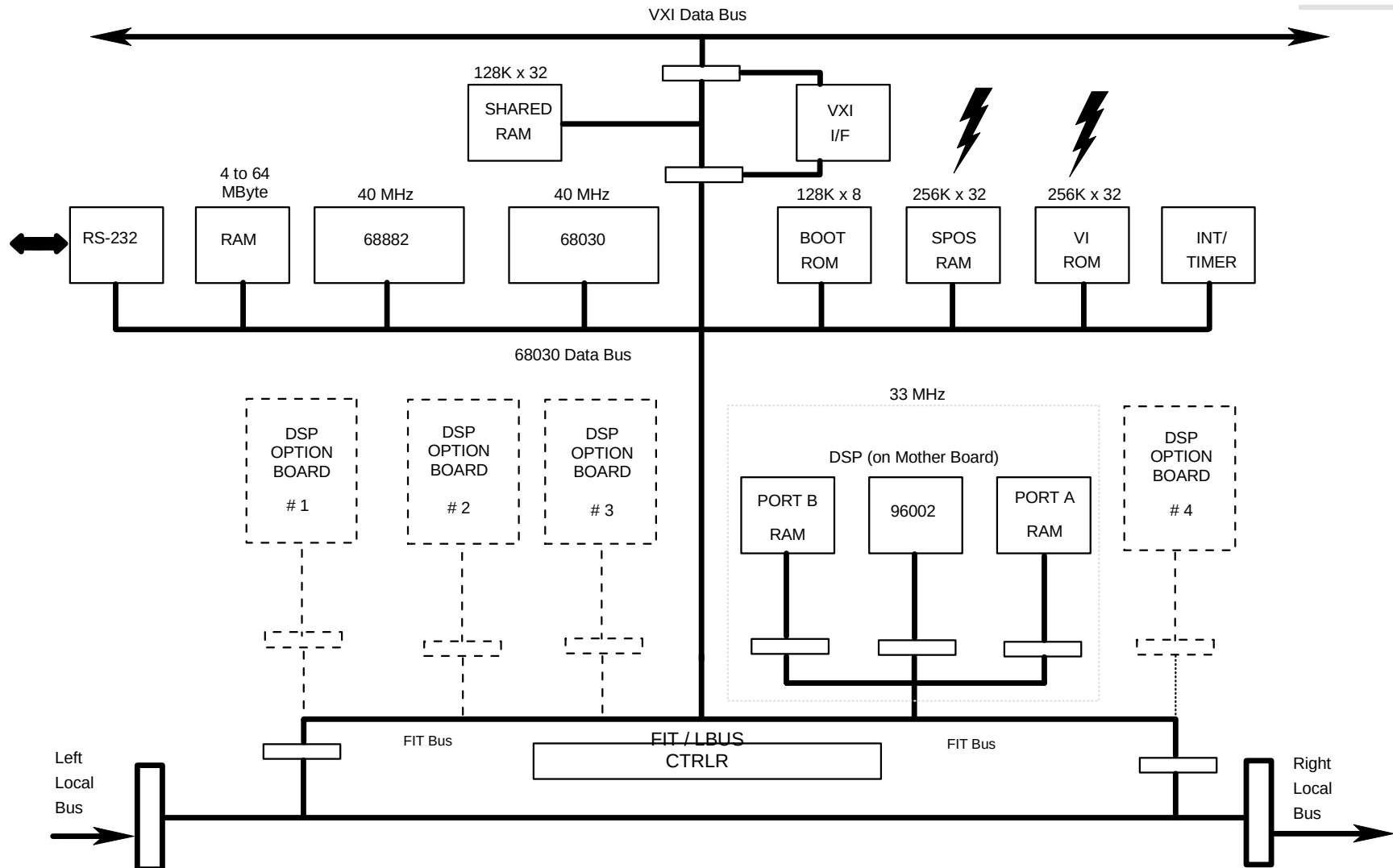
- *Real-time*
- *I and Q values*

Overlap processing

- *0 - 99% (span dependent)*

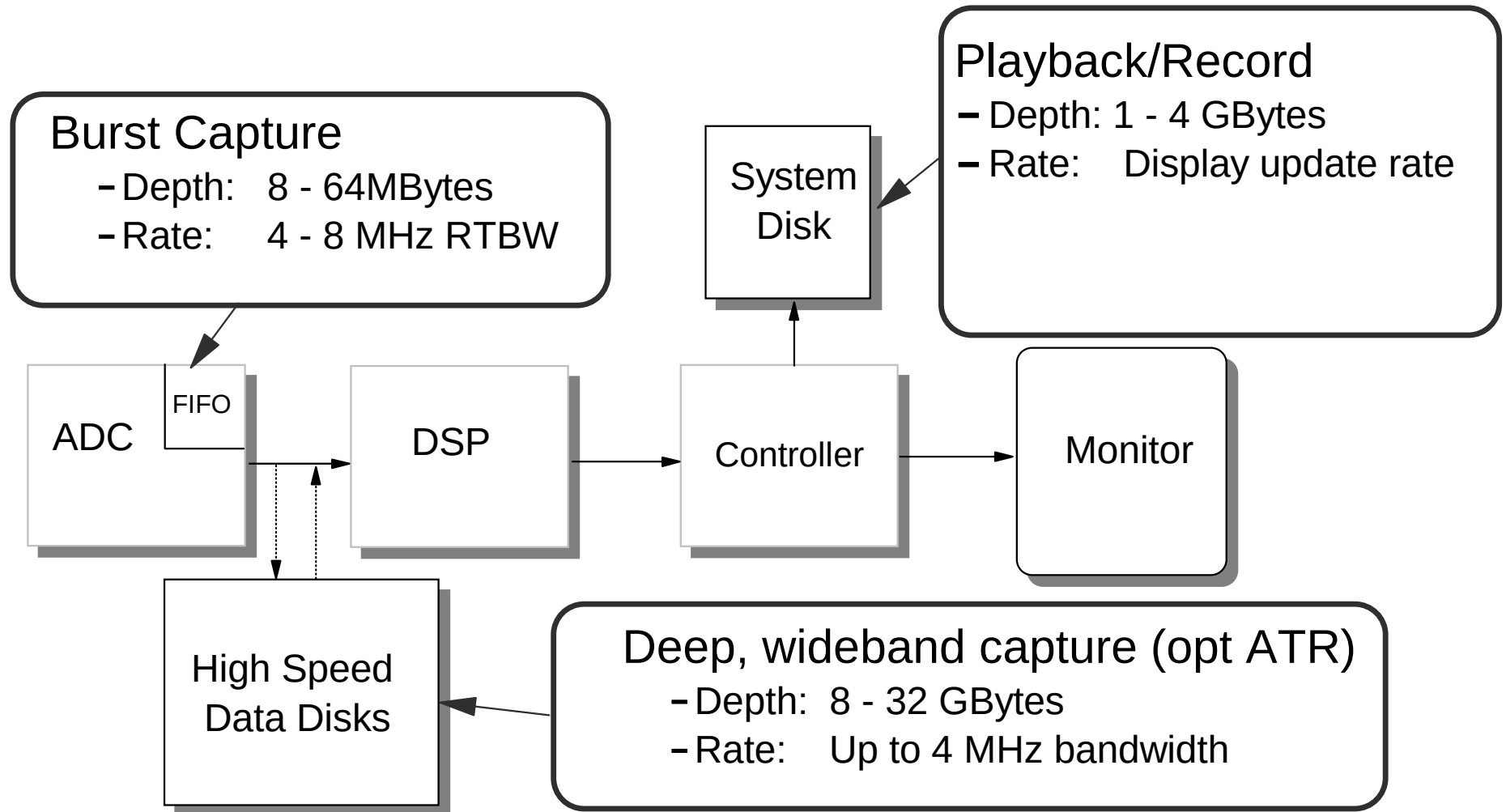
Resample (opt ATR)

E1485A Block Diagram



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HP 3587S Signal Capture Tools



Deep, Wideband Signal Capture (opt ATR)

Key Features

- ▶ Wideband recording
 - Up to 4 MHz*
 - Monitor and tag*
 - Circular buffer*
- ▶ Deep
 - Up to 32 GBytes (26 min)*
- ▶ Random access
 - Jump to tag*
- ▶ DSP Tools
 - Digital filter and zoom*
 - Resample*
- ▶ File Management
 - Includes copy SOI*
- ▶ Flexible configuration

HP 3587S Display Tools

- **Fast updates**

800 lines/sec (rollogram)

Variable trace width (200, 400, 800 pixels)

- **Multi-Domain:**

Frequency	Time	Amplitude
Spectrum	Trace	Histogram
Map	Map	Map
Spectrogram	Strip Chart	PDF
Rollogram		CDF

- **Markers:**

(Trace, Spectrum, Map, Spectrogram, Rollogram)
single marker, relative marker, marker to peaks,
noise, power

- **Multi-trace displays**

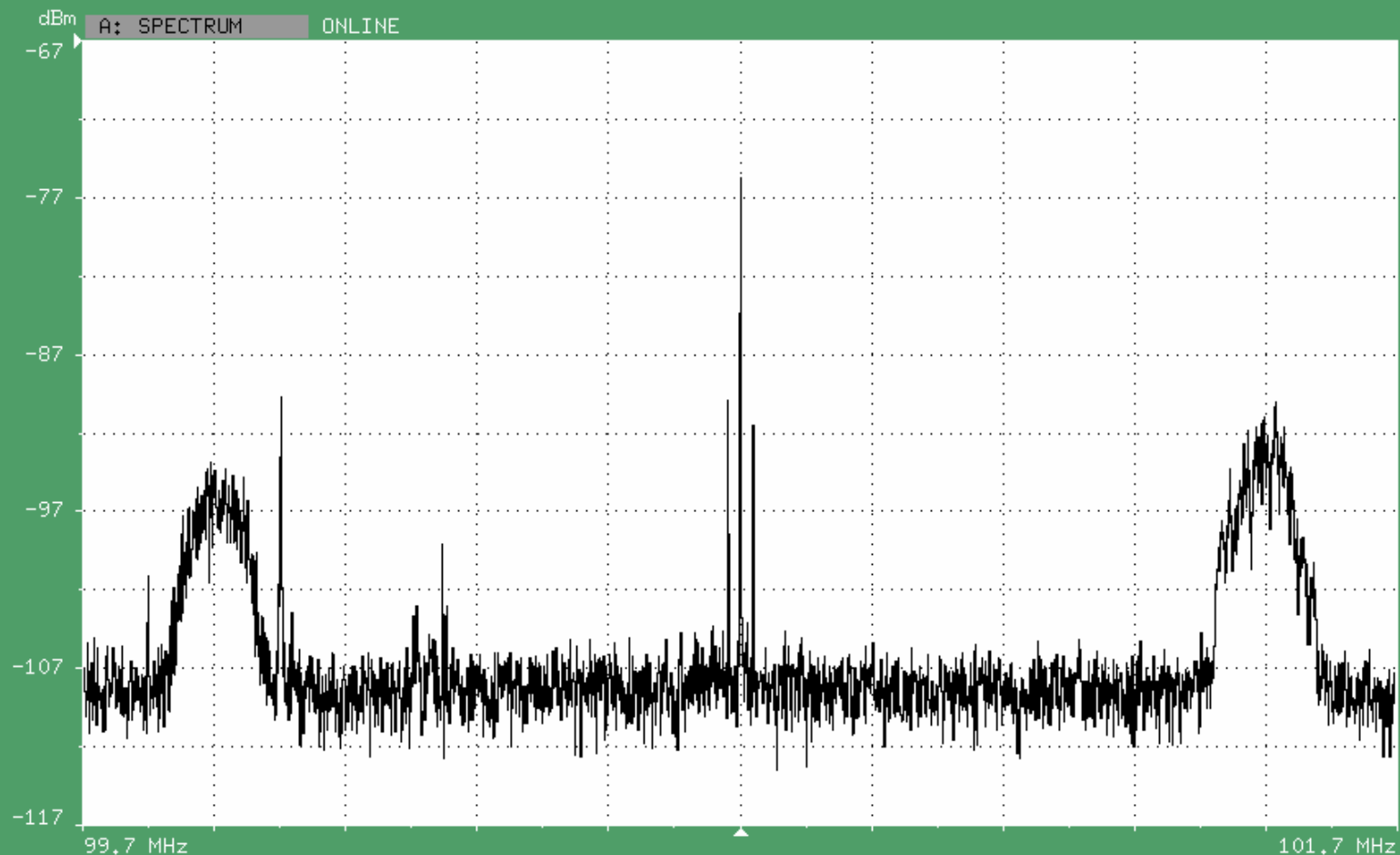
- **Image Enhancement**

- **Digital Persistence**

- **Map Rotation**

- **Customize (Opt AGG):**
 - Roll-your-own markers/displays

HEWLETT-PACKARD 3587S REALTIME SIGNAL ANALYZER

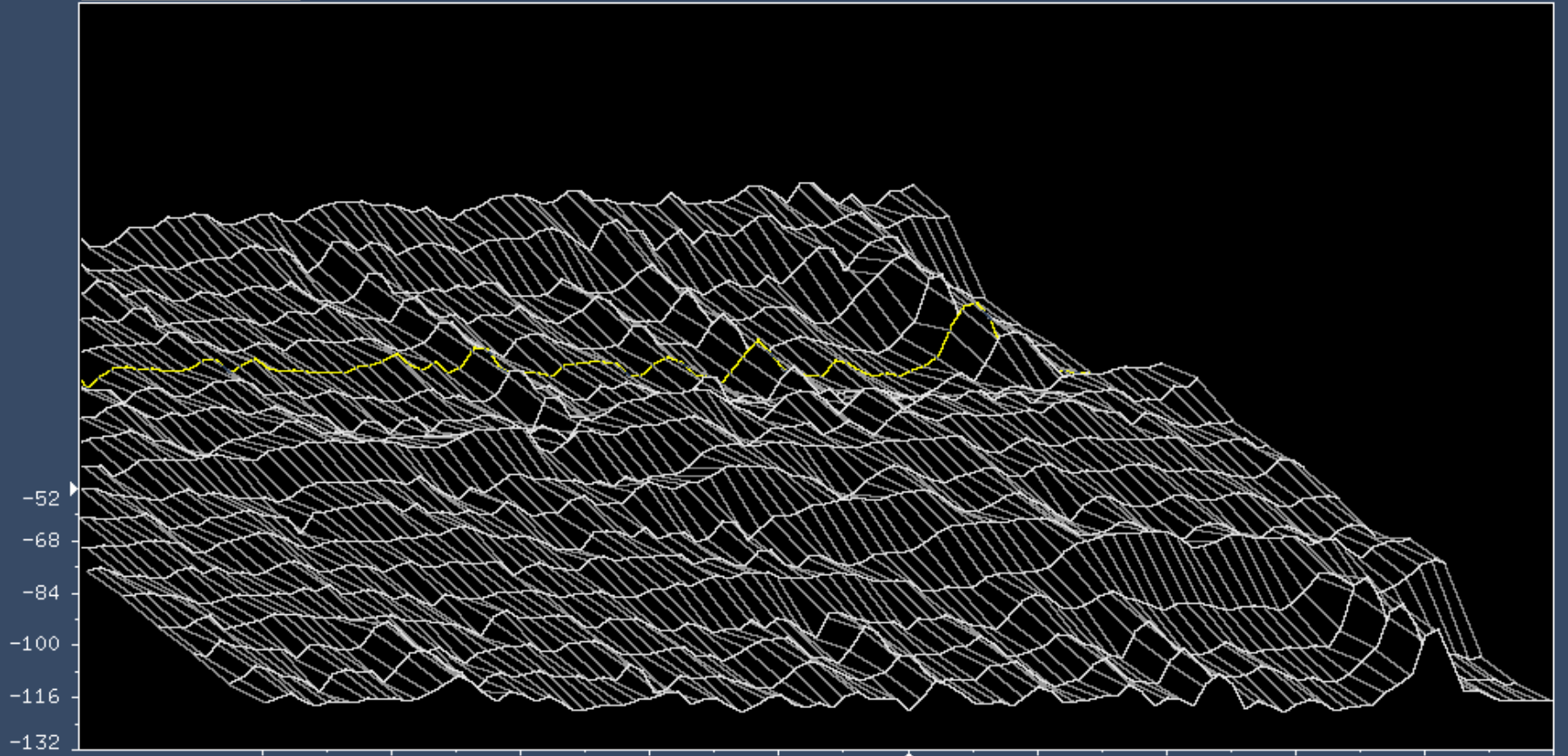


ELEVATION	AZIMUTH	MARKER	SCROLL	RUN	CONT	ARM	HOME
Y REFERENCE	Y RANGE	HEIGHT	THRESHOLD	☐ MEASURING	☐ OVERLOAD	☐ EXT REF	☐ PLAYBACK
				☐ WAIT ARM	☐ WAIT TRIG	☐ CAPTURE	☐ RECORD
HARDCOPY MENU							
PRINT SCREEN	PRINT MENU SYSTEM	PRINT HELP TEXT	PRINT STATE	PRINT PRGM MANUAL	PRINT FEEDBACK FORM	PRINTER SETUP	RETURN

HEWLETT-PACKARD 3587S REALTIME SIGNAL ANALYZER

dBm

A: SPECTRAL MAP ONLINE

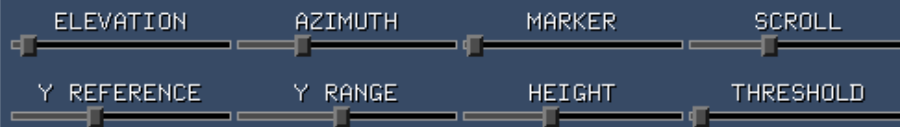


Time: 15.10000002 Sec

GAP

Start: 14.8200 Sec Stop: 15.8200 Sec

100.686875 MHz



☐ MEASURING	☐ OVERLOAD	☐ EXT REF	☐ PLAYBACK
☐ WAIT ARM	☐ WAIT TRIG	☐ CAPTURE	☐ RECORD

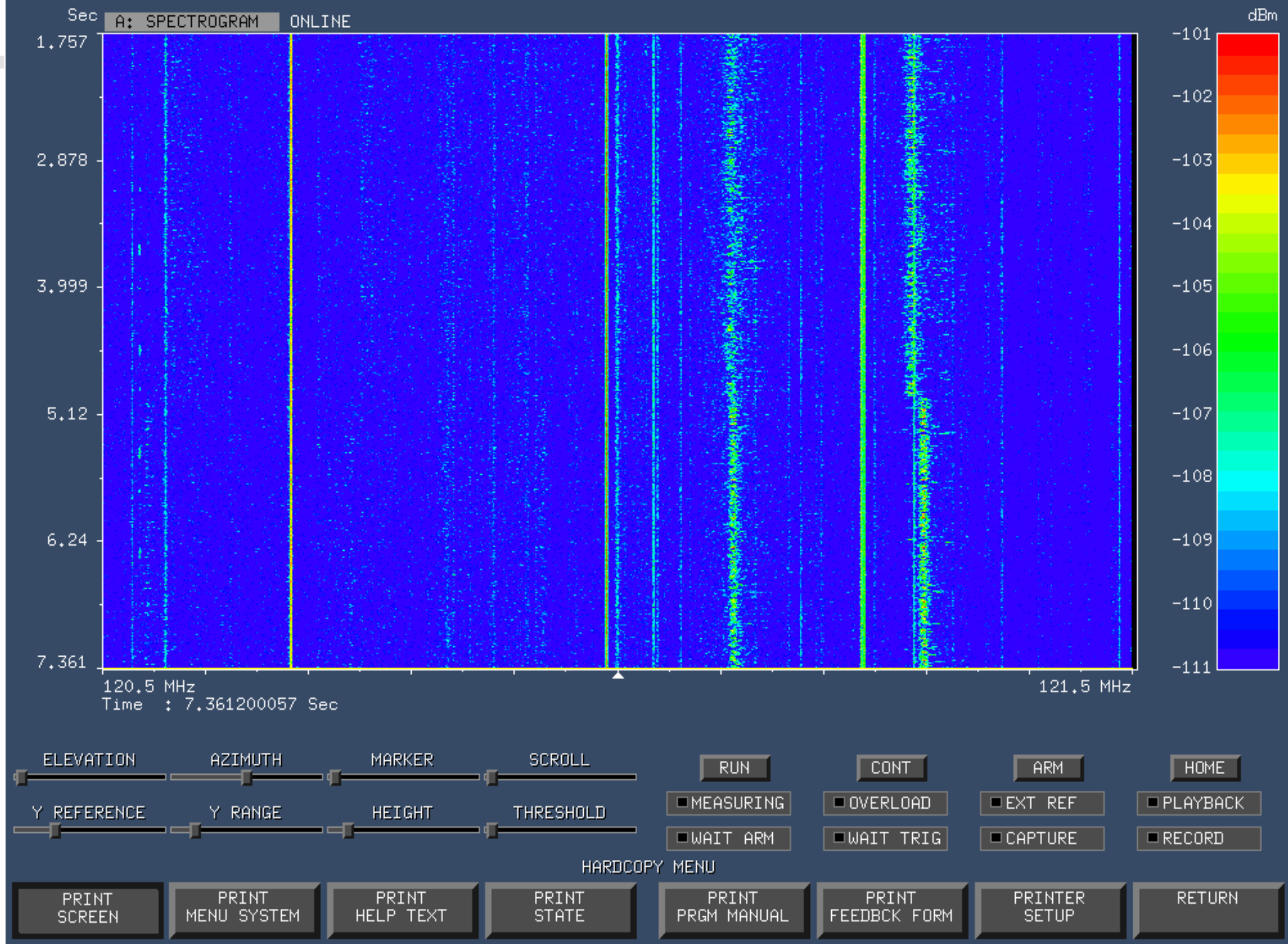
HARDCOPY MENU

PRINT SCREEN	PRINT MENU SYSTEM	PRINT HELP TEXT	PRINT STATE	PRINT PRGM MANUAL	PRINT FEEDBACK FORM	PRINTER SETUP	RETURN
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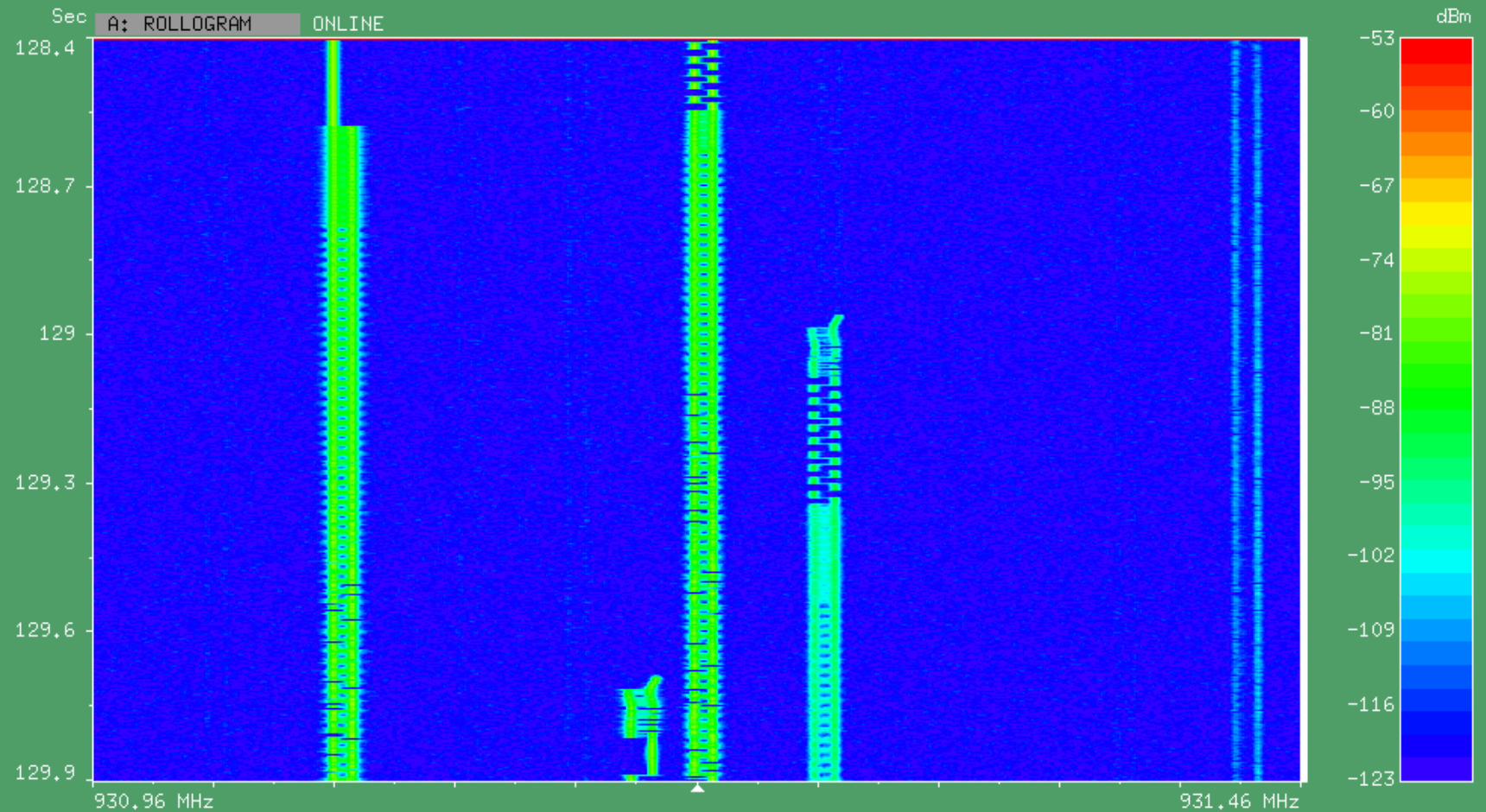


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HEWLETT-PACKARD 3587S REALTIME SIGNAL ANALYZER

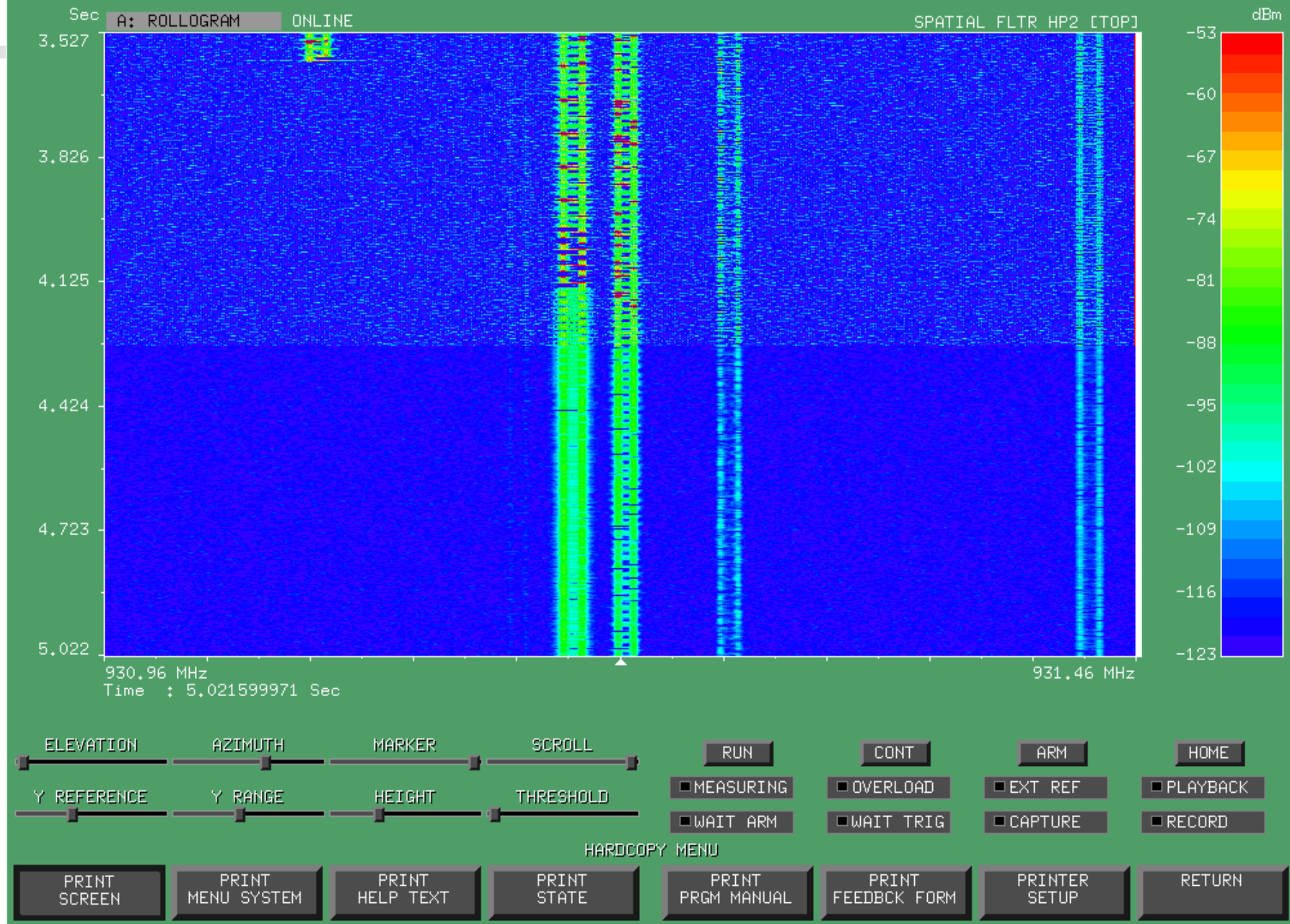


HEWLETT-PACKARD 3587S REALTIME SIGNAL ANALYZER



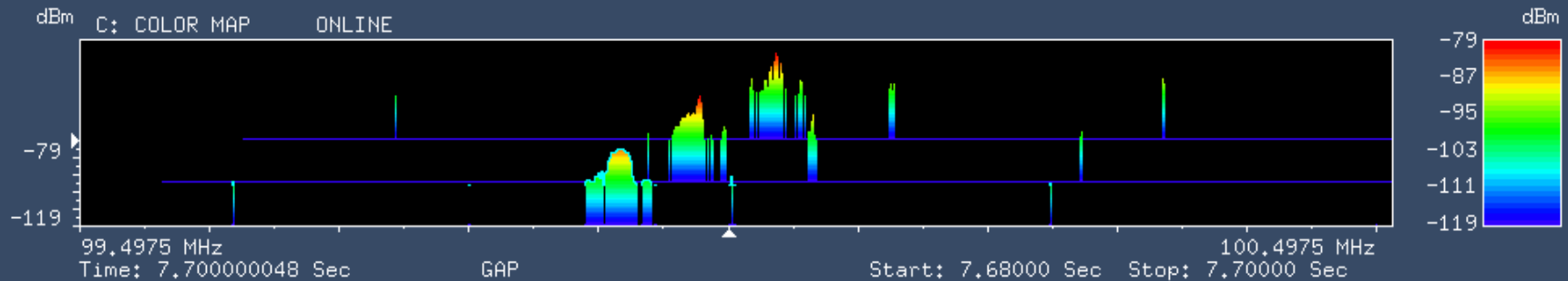
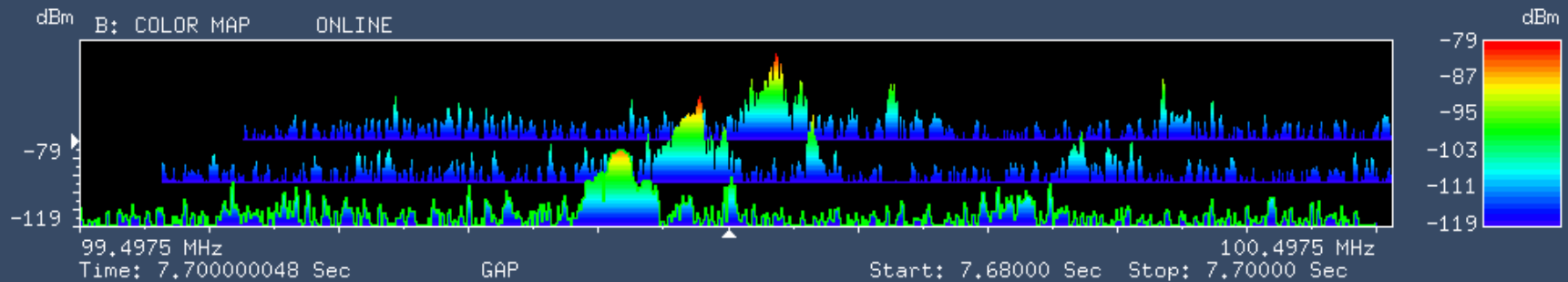
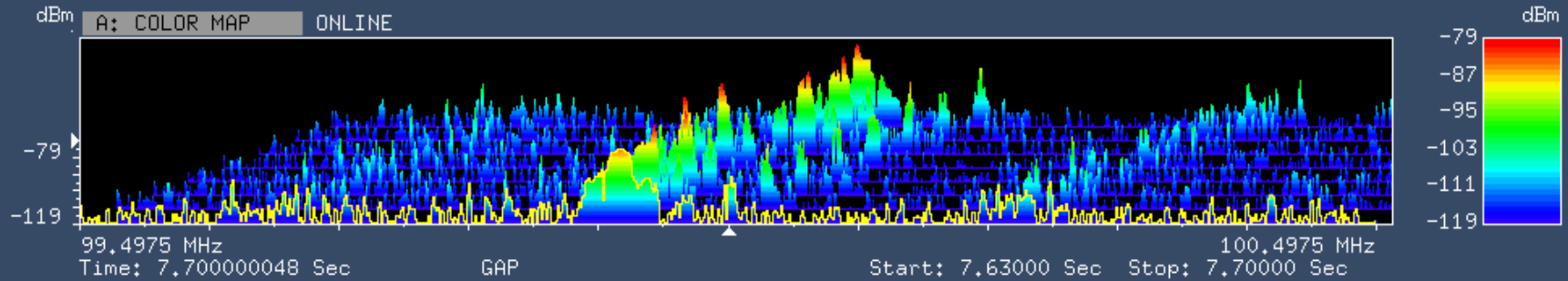
ELEVATION	AZIMUTH	MARKER	SCROLL	RUN	CONT	ARM	HOME
Y REFERENCE	Y RANGE	HEIGHT	THRESHOLD	☐ MEASURING	☐ OVERLOAD	☐ EXT REF	☐ PLAYBACK
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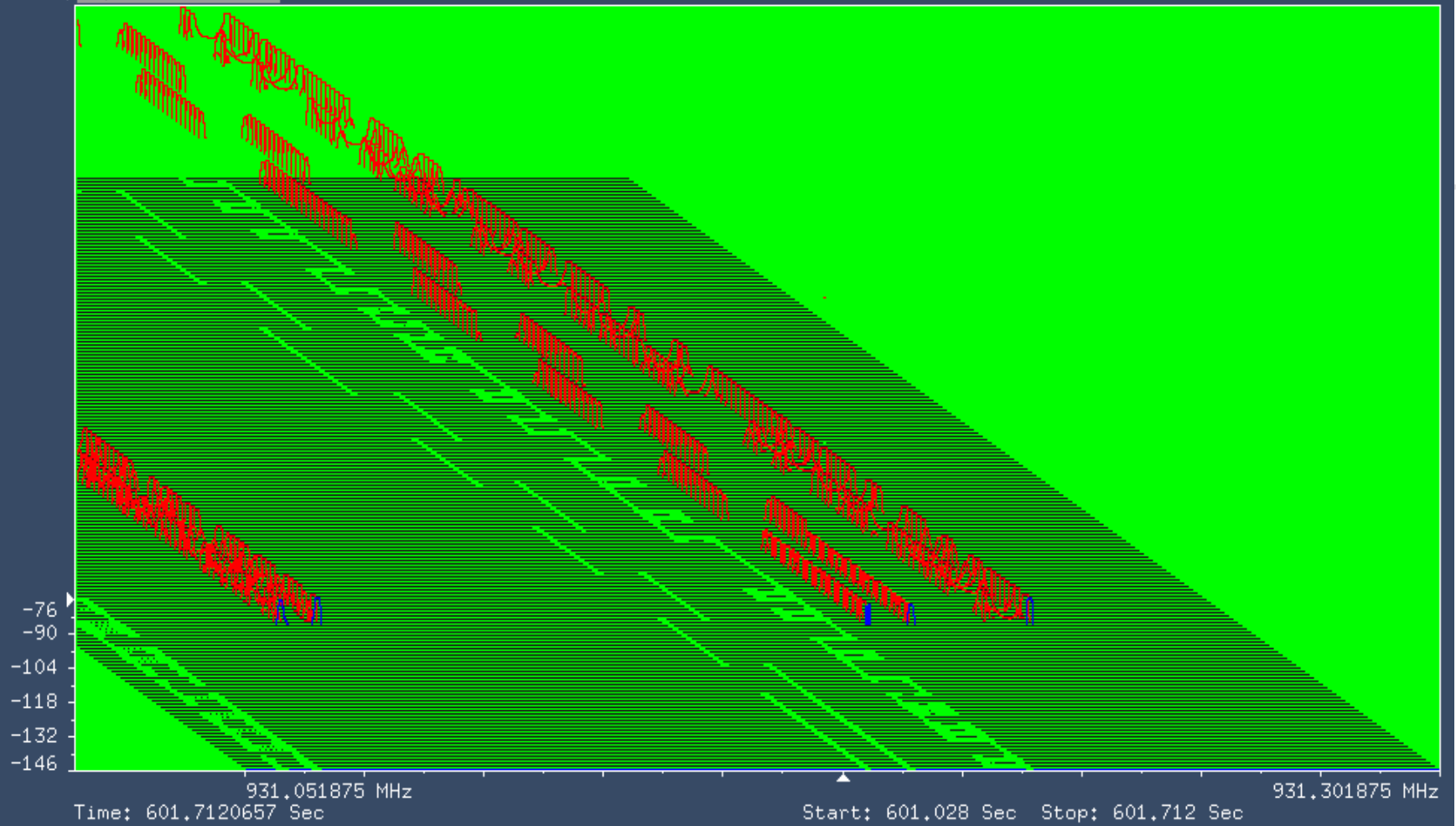
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HEWLETT-PACKARD 3587S REALTIME SIGNAL ANALYZER

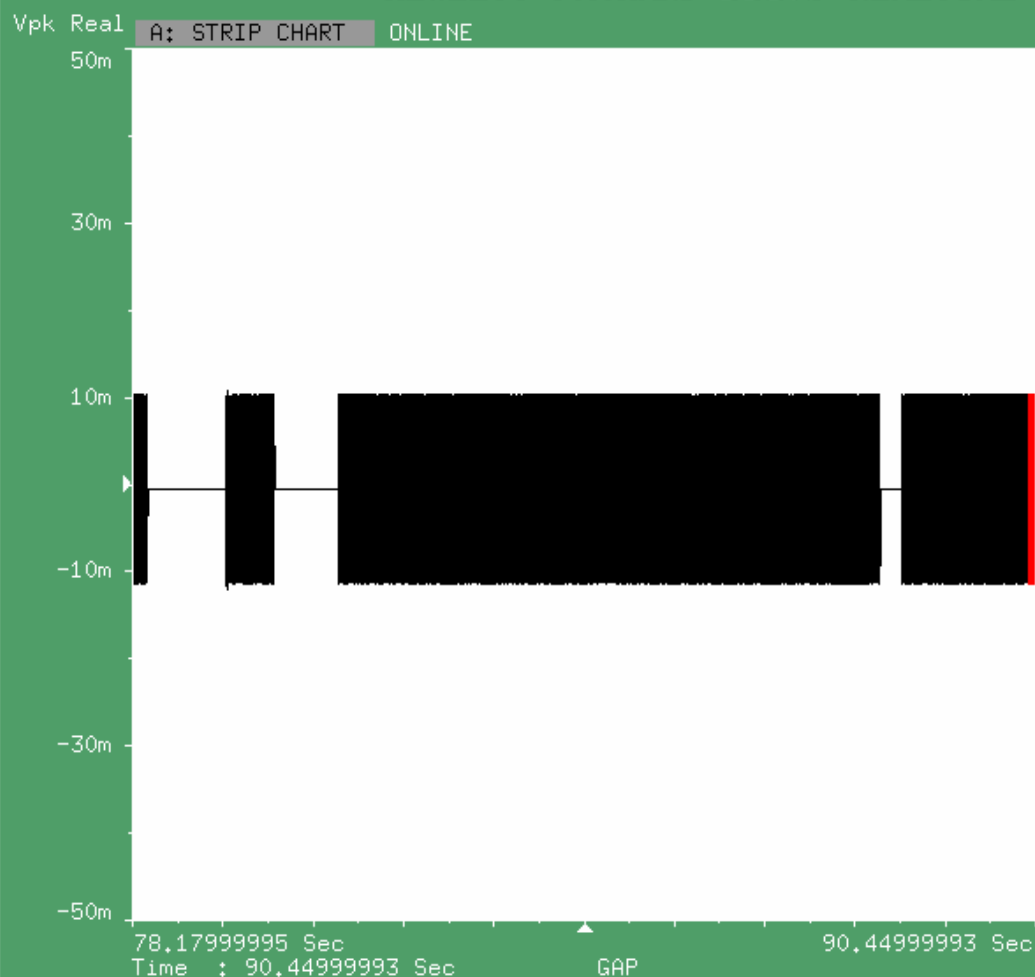


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dBm A: SPECTRAL MAP ONLINE

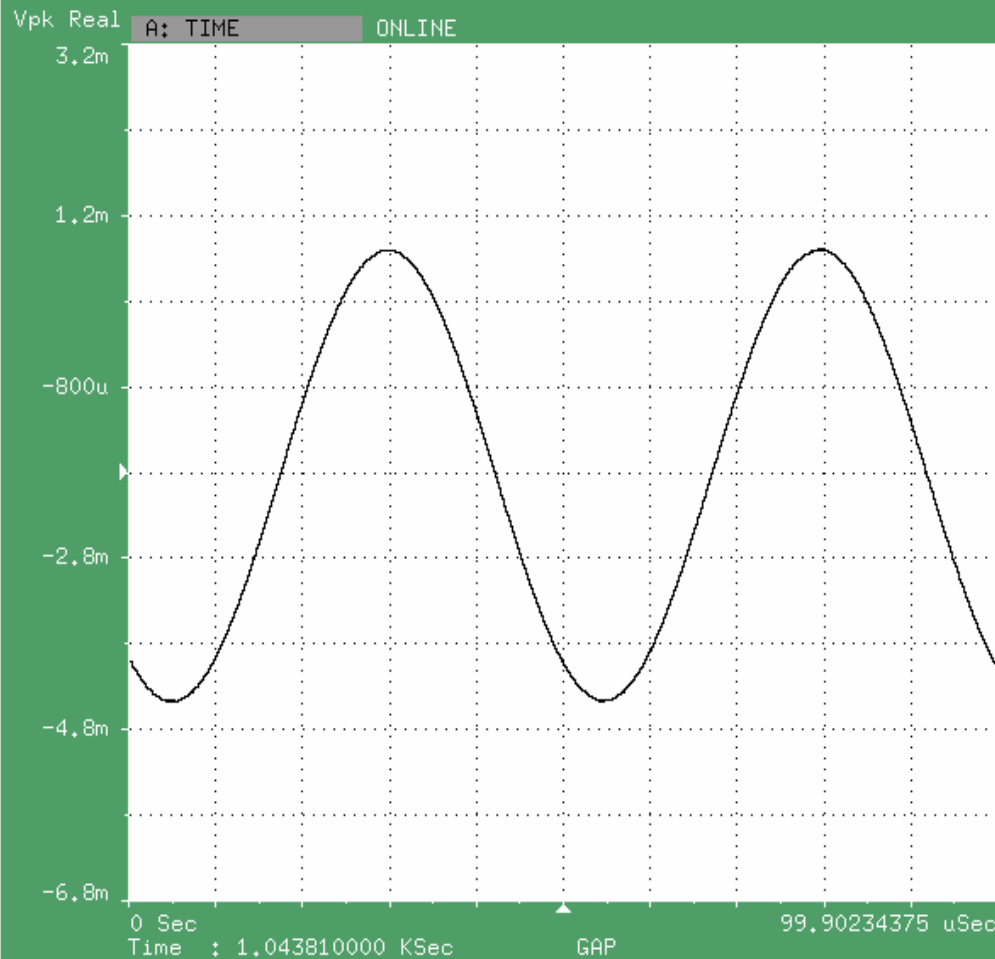


HEWLETT-PACKARD 3587S REALTIME SIGNAL ANALYZER



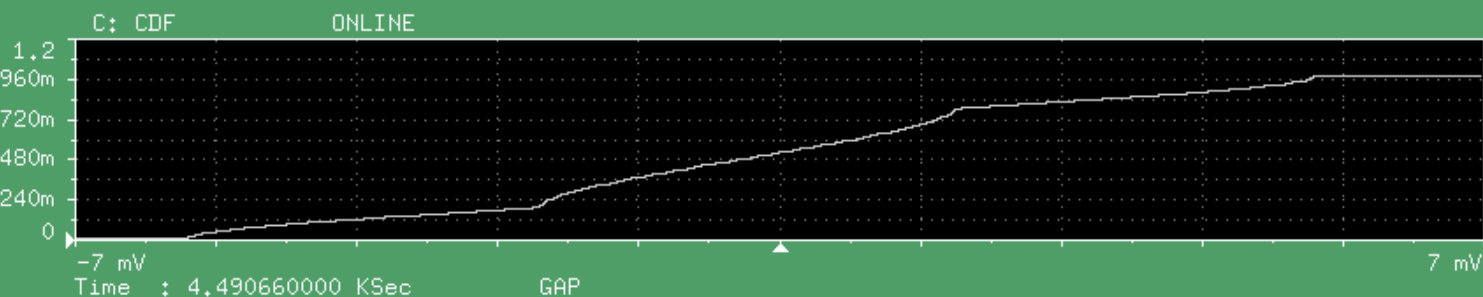
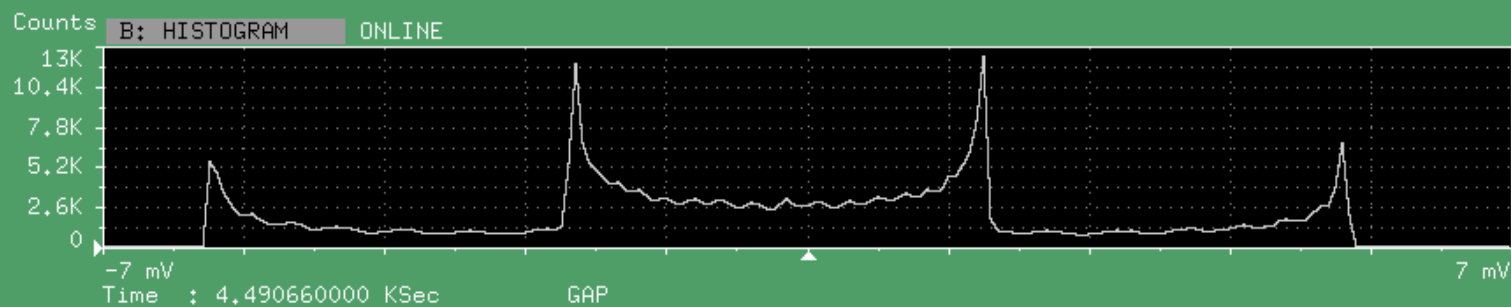
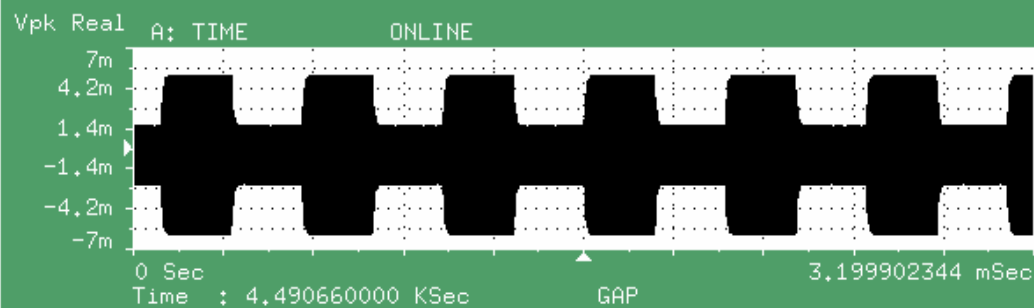
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HEWLETT-PACKARD 3587S REALTIME SIGNAL ANALYZER



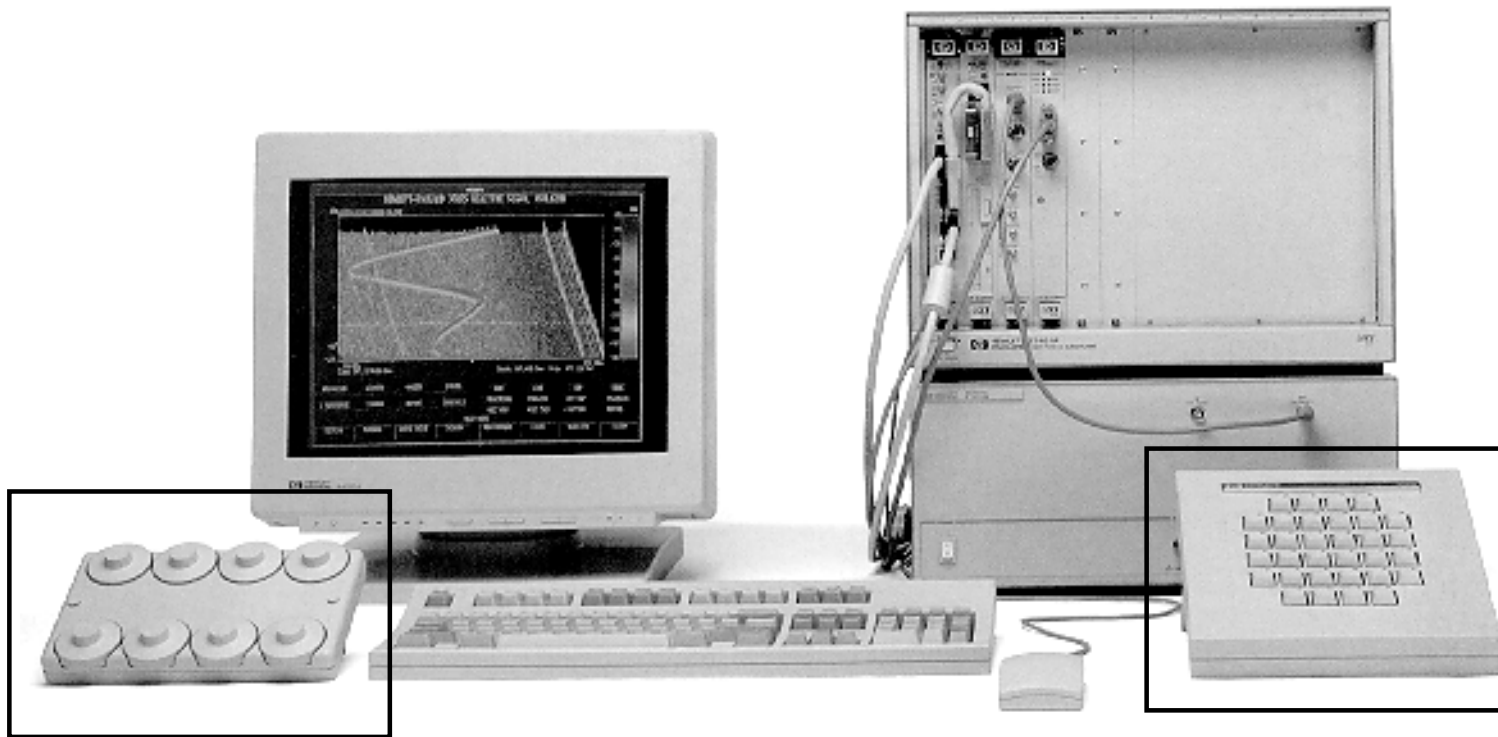
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HEWLETT-PACKARD 3587S REALTIME SIGNAL ANALYZER



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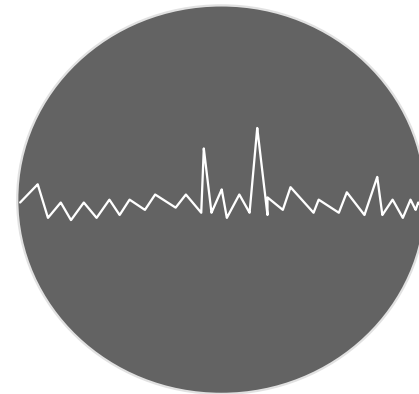
HP 3587S Analog Look & Feel



- **Knobs and Buttons**
- **Customize User Interface (opt AGG):**
 - Macros, Knob/Button assignments
- **NO UNIX knowledge required to operate**

HP 3587S Customize: Opt AGG

- **Customize Controls & Menus**
 - *Modify ASCII files only*
- **Develop Macros**
 - *Combine many operations under one button*
- **Create DISPLAY/MARKER functions**
 - *C programming*
 - *Your algorithms*
- **Command Port**
 - *Unix process access*
 - *3587S data + your application*

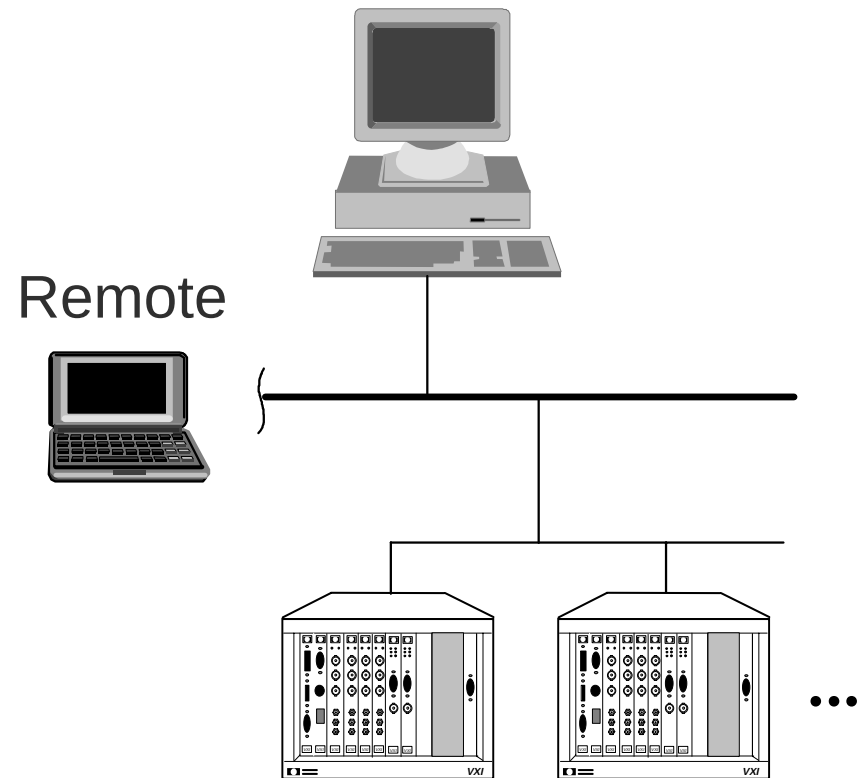


HP3587S Integrate

Open Architecture

Fully X11 compliant

- *Local LAN operation*
- *Remote LAN operation*



HP 3587S Signal Analysis System

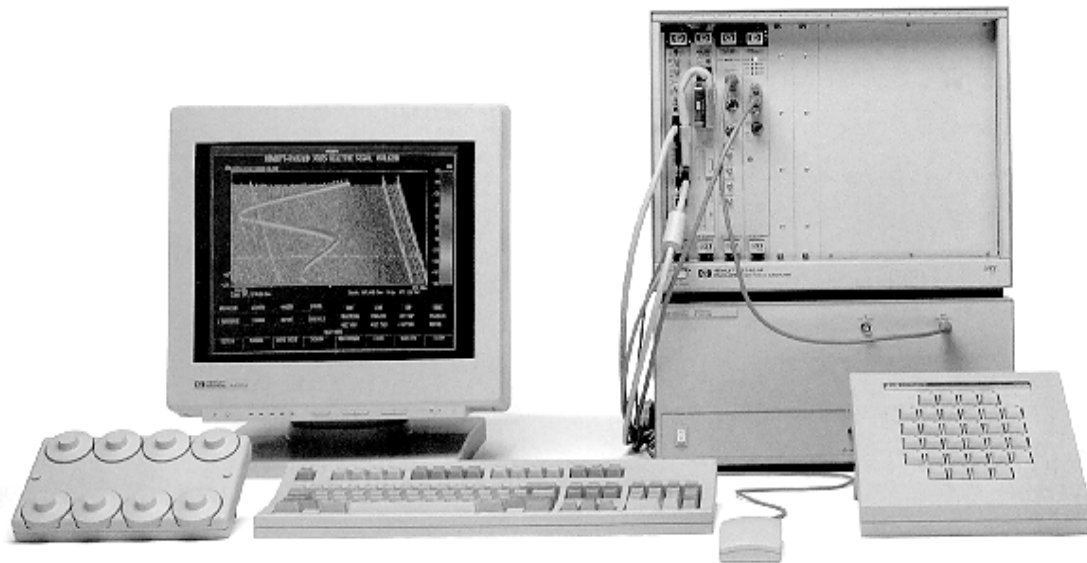
Digitizing: *Wide band, high dynamic range for best analysis*

Capture Tools: *Catch wideband signals, speed analysis*

DSP Tools: *A choice of tools for successful analysis*

Display Tools: *A wide selection leverages DSP results*

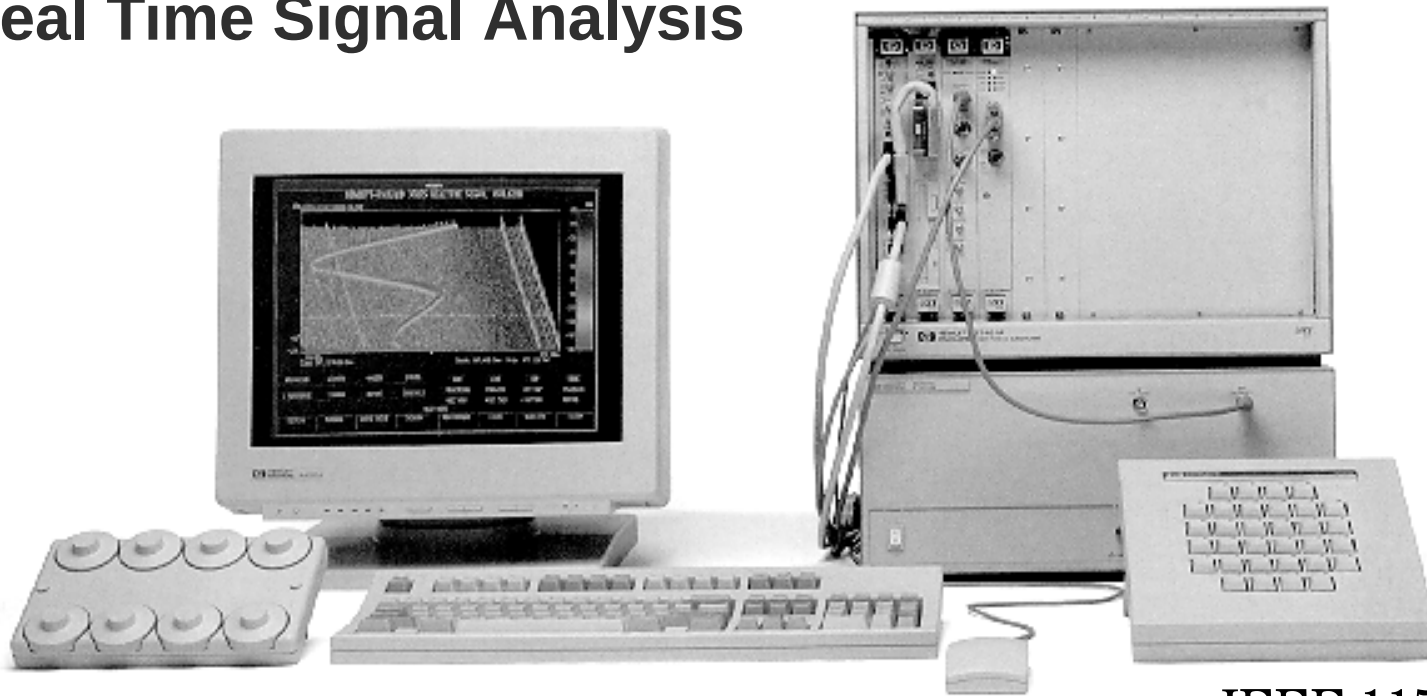
Integrate/Customize: *LAN, programmable*



A real-time signal analysis workstation

HP 3587S Signal Analysis System

Real Time Signal Analysis



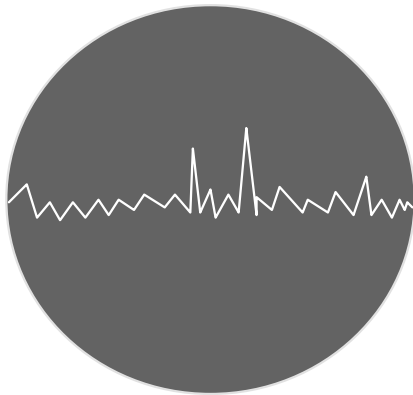
- ▶ 1 MHz Real Time Bandwidth
- ▶ Up to 110 dBFS SFDR
- ▶ Very high speed displays (*falling raster, map, spectrum, strip chart*)
- ▶ Frequency, Time, & Amplitude domain analysis

- ▶ IEEE 1155 (VXI)
- ▶ Flexible markers
- ▶ Add algorithms

HP 3587S Signal Analysis System

Performance

- Frequency Range: 4 - 8 MHz
- Real Time Bandwidth: 1 MHz
- Dynamic Range: Up to 110 dB SFDR

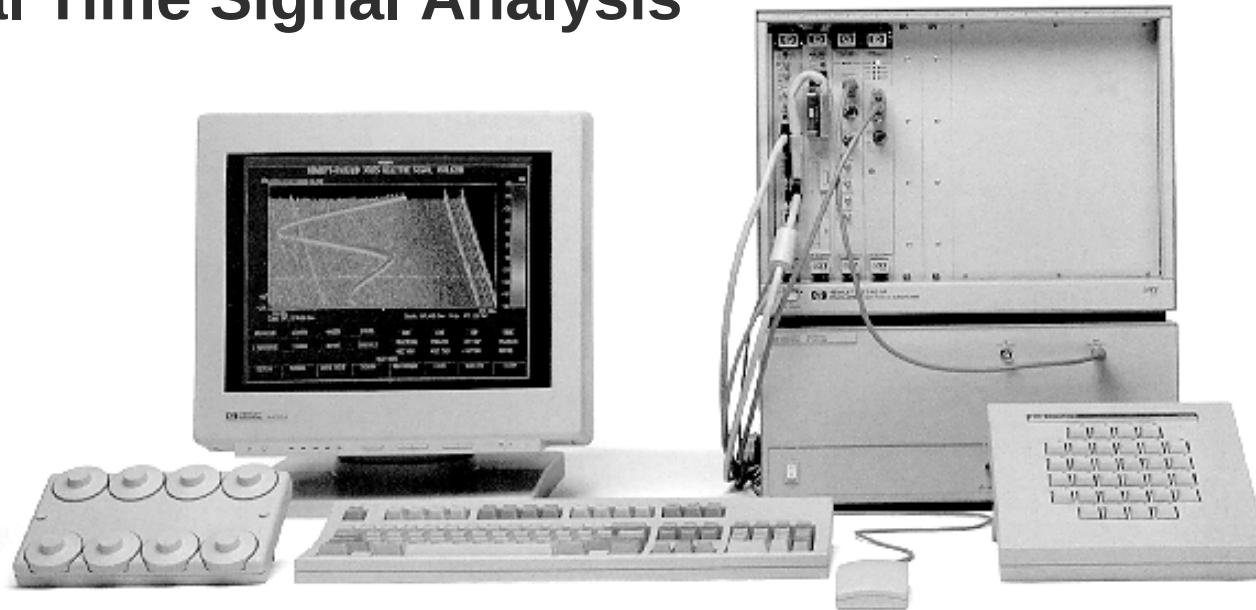


Key Features

- Dynamic Range
- Speed & Resolution
- Multi-Domain & Fast Flexible Graphics
- Signal Capture
- Analog Look & Feel
- Remote Operation & Programming

HP 3587S Signal Analysis System

Real Time Signal Analysis



- ▶ 1 MHz Real Time Bandwidth
- ▶ Up to 110 dBFS SFDR
- ▶ Very high speed displays (*falling raster, map, spectrum, strip chart*)
- ▶ Frequency, Time, & Amplitude domain analysis
- ▶ IEEE 1155 (VXI)
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