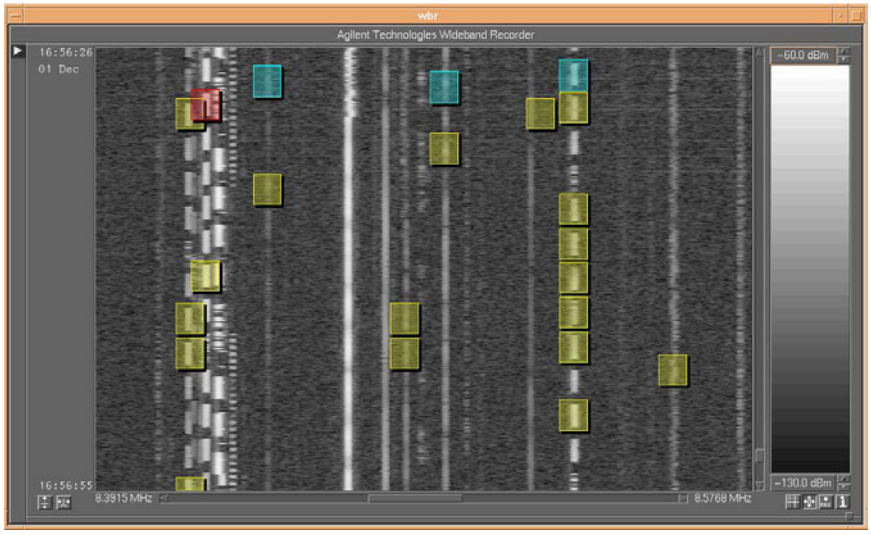
Agilent Technologies

Wideband Recorder

Preliminary Technical Information

Spectrogram with pending recordings marked



The wideband spectrogram display can scroll though hours of activity. The colored boxes are selected narrowband signals, with the box size showing the selected center frequency, bandwidth, and duration of the signal. Narrowband signals can automatically be selected by an E3238, or an operator can use a mouse to drag a box around a signal of interest. In this display, the signal in the red box is being written to the system disk, the yellow boxes are waiting to be recorded, and the blue ones have already been recorded.

Summary

Sometimes you know something has happened, but you don't have enough information to analyze it immediately. You want to capture everything and figure it out later.

The Agilent Technologies Wideband Recorder uses high-speed hard drives to record gap-free time data in a circular buffer for over 3 hours at bandwidths up to 5 MHz. The last 3 hours is always available.

A graphical user interface lets you view a spectrogram of the entire capture and select just the narrowband signals you want. The wideband signals are then filtered, re-zoomed, and recorded to the host computer hard drive, all without interrupting the recording of new wideband data. Alternatively, signals can be handed off from an E3238 system. An E3238 can pass the frequency and bandwidth of the target signal to the Wideband Recorder using an alarm task.

Key features:

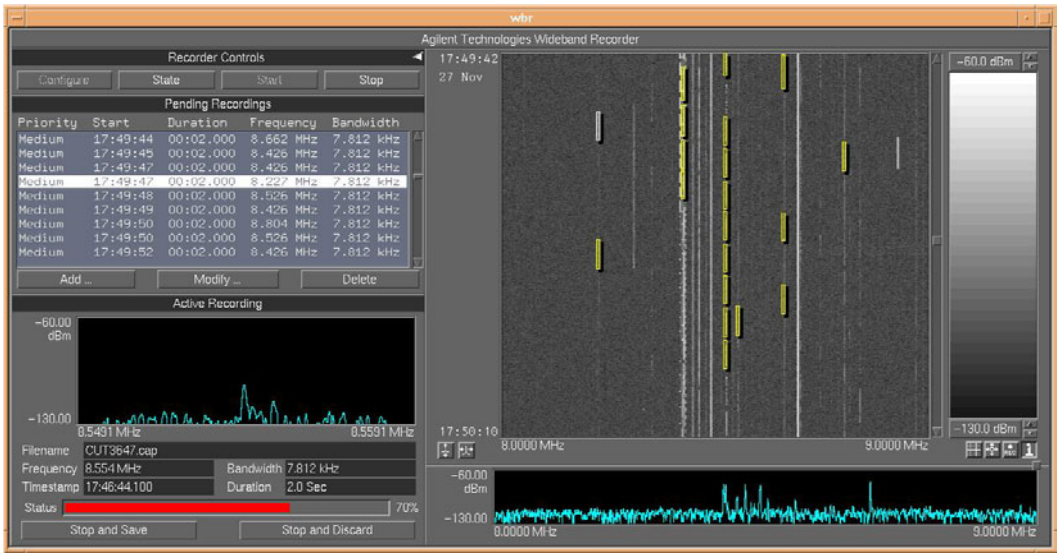
- Sustainable wideband recording rates from 312.5 kBytes/sec to 10 MBytes/sec*
- Sustainable wideband bandwidths from 156 kHz to 5 MHz*
- Narrowband bandwidths from 10 Hz to 5 MHz*
- Max record length is 292 GB
- Select signals with mouse or E3238

(*For the E1438A ADC)

Required:

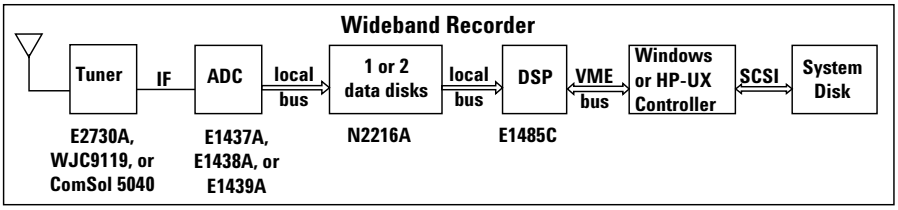
- VXI Mainframe
- WinNT/2000 or HP-UX controller
- Firewire interface, if ext. computer
- E1437A, E1438A/B, E1439A/B ADC
- E2730A, WJC9119M/S, CS5040VXI tuner (not required if used in conjunction with an E3238)
- One or two N2216A 146 GB disks
- E1485C DSP card
- Optional BC350VXI IRIG & GPS

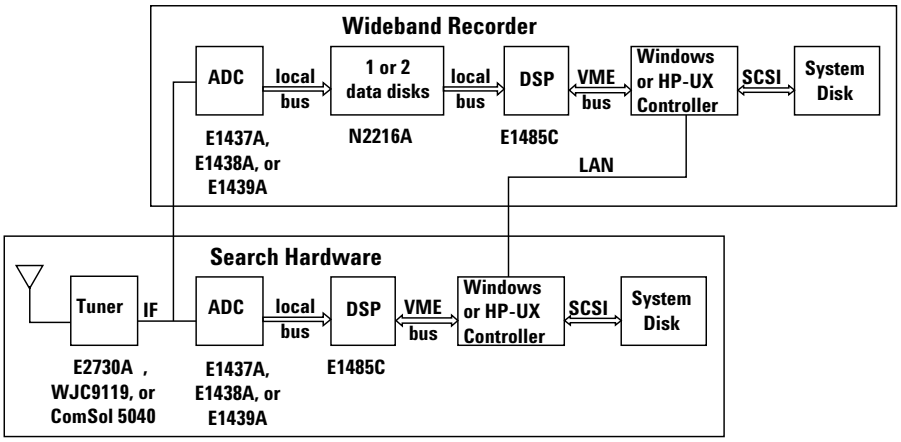
Wideband Recorder User Interface



Re-zoomed, filtered narrowband data recorded to system disk

Wideband data recorded to N2216A VXI disk





Stand-alone wideband recorder

The system can be HF, VHF/UHF, or µWave, depending on which tuner and ADC is chosen. Signals are selected by using the mouse to drag a box around the desired signal in the wideband spectrogram. Wideband signals are stored on the data disks. The selected narrowband signals are filtered and re-zoomed, and then recorded to the system disk.

Wideband recorder being "tipped" by E3238

This system uses an E3238 search system and Wideband Recorder working together. The Wideband Recorder continuously captures wideband data while the E3238 system searches the spectrum for target signals. When the E3238 detects new energy that meets user-defined alarm criteria, it alerts the wideband recorder, passing it the center frequency and bandwidth of the detected signal. The Wideband Recorder then filters and re-zooms the selected portion of the spectrum, recording the resultant narrowband time waveform to the host system disk for later analysis.

Performance

Recording bandwidth: 125 kHz to 4 MHz*
Maximum disk capacity: 292 GB (two disks)
Max filter decimations: 14

Upload rate (4 MHz bandwidth)

Decimations	Upload Rate
0 (recording paused)	6%
0 (while recording)	3.35%
1 (while recording)	3.06%
2 (while recording)	2.66%
4 (while recording)	2.51%
8 (while recording)	2.45%

Wideband Recorder Capacity*

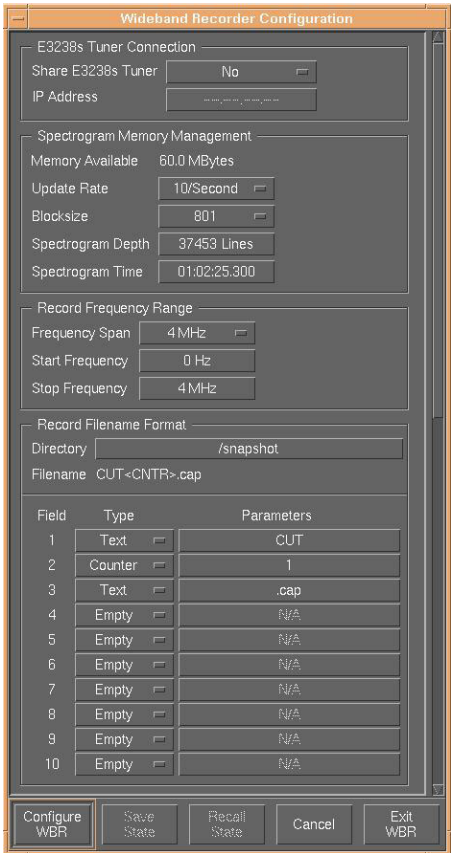
Bandwidth	One 146 GB N2216A	Two 146 GB N2216As
4 MHz	2 hr	4 hr
2 MHz	4 hr	8 hr
1 MHz	8 hr	16 hr
500 kHz	16 hr	32 hr
250 kHz	32 hr	64 hr
125 kHz	64 hr	128 hr

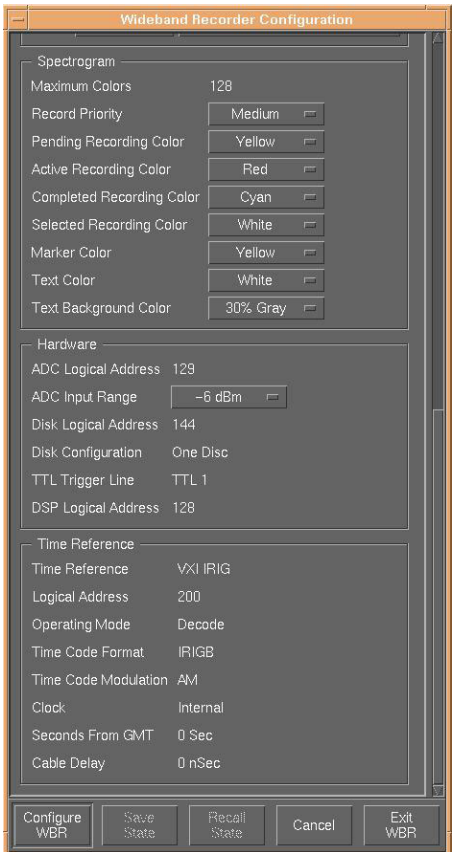
*Times and bandwidths are given for the E1437A digitizer. If an E1439A or E1438A digitizer are used, the maximum bandwidths are 4.64 MHz and 5 MHz, respectively. Therefore, for a given bandwidth, capacity times are proportionally less.

Spectrum Capacity

Block size	Update rate	Lines in spectrogram	Time
400	1 per sec	75,000	20:50 hr
400	10 per sec	75,000	2:05 hr
800	1 per sec	37,500	10:25 hr
800	10 per sec	37,500	1:02 hr
1600	1 per sec	18,750	5:12 hr
1600	10 per sec	18,750	0:31 hr

Wideband Recorder Configuration



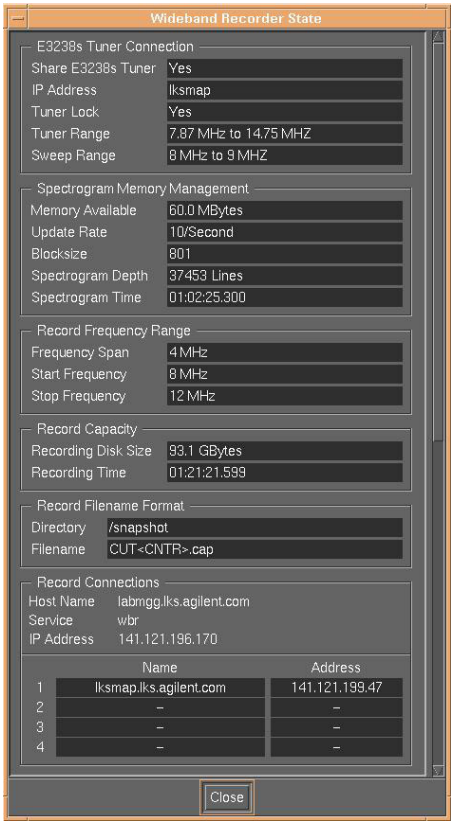


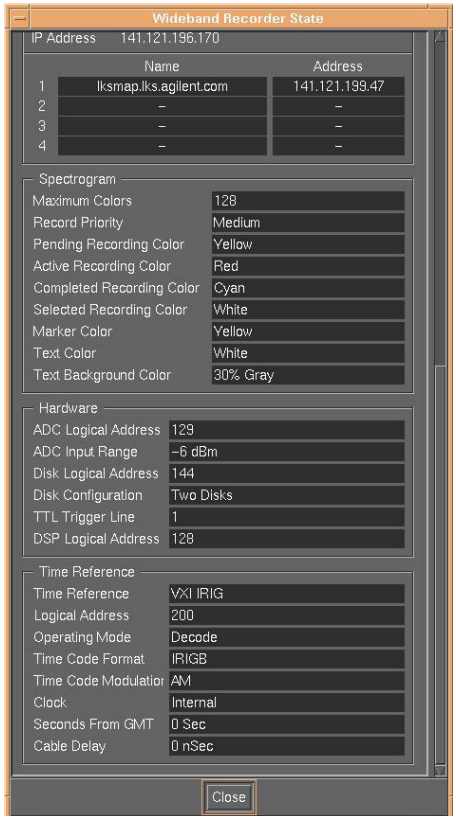
Easily to configure

If the system is used with an E3238, the IP address of the E3238 is entered, and it controls the tuner. Optional IRIG synchronization can also be enabled.

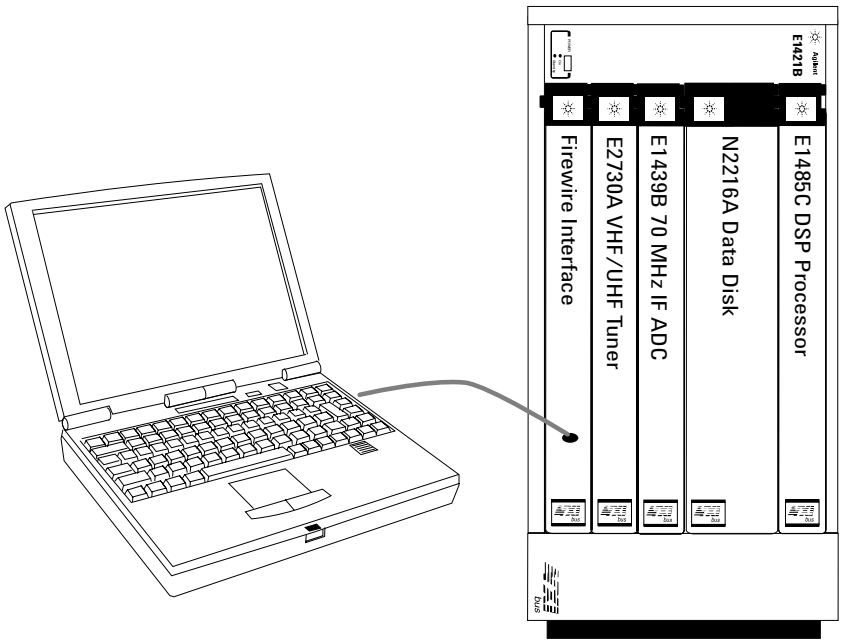
Setting the spectrogram update rate and blocksize of the wideband spectrograms determines the length of time that can be viewed in the spectrogram. To see short events, set the update rate to a short time interval. Setting the update rate to a longer interval lets you oversee many hours of activity, knowing that the most recent hours are saved on disk.

Wideband Recorder State





The Wideband Recorder state can be saved for later recall.



VHF/UHF Wideband Recorder

Portable VHF/UHF Wideband Recorder
This standalone VHF/UHF system uses a laptop with a Firewire interface for the host computer. When required it can easily be used with a separate E3238 search system in a separate mainframe.

For HF applications a two-slot HF tuner is required for a standalone system. If the Wideband Recorder is used with an E3238 search system, the Wideband Recorder will still fit in one 5-slot mainframe since its tuner is located in the E3238 search system mainframe.

Wideband Bandwidths

E1437	E1438	E1439
4 MHz	5 MHz	4.638 MHz
2 MHz	2.5 MHz	2.319 MHz
1 MHz	1.25 MHz	1.159 MHz
500 kHz	625 kHz	579 kHz
250 kHz	312 kHz	290 kHz
125 kHz	156 kHz	145 kHz

Narrowband Bandwidths

E1437	E1438	E1439
4 MHz	5 MHz	4.638 MHz
2 MHz	2.5 MHz	2.319 MHz
1 MHz	1.25 MHz	1.159 MHz
500 kHz	625 kHz	579 kHz
250 kHz	312 kHz	290 kHz
125 kHz	156 kHz	145 kHz
62.5 kHz	78.1 kHz	72.4 kHz
31.2 kHz	39.0 kHz	36.2 kHz
15.6 kHz	19.5 kHz	18.1 kHz
7.8 kHz	9.7 kHz	9.0 kHz
3.9 kHz	4.8 kHz	4.5 kHz
1.9 kHz	2.4 kHz	2.2 kHz
976 Hz	1.2 kHz	1.1 kHz
488 Hz	610 Hz	566 Hz
244 Hz	305 Hz	283 Hz
122 Hz	152 Hz	141 Hz
61 Hz	76 Hz	70 Hz
30 Hz	38 Hz	35 Hz
15 Hz	19 Hz	17 Hz
7.6 Hz	9.5 Hz	8.8 Hz

Custom solutions

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