SPECTRO-X

Related Products

IQC5000B RECORD AND PLAYBACK SYSTEM

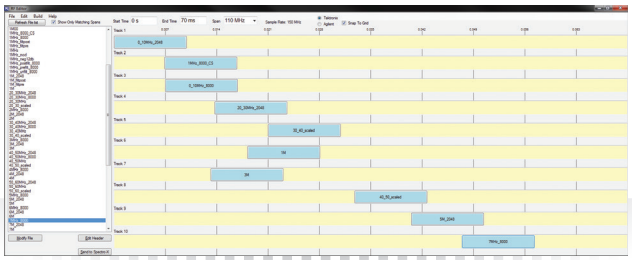
The IQC5000B series is the smallest, lightest, best-performing system available for the capture and replay of RF and microwave signals. Up to 255 MHz of record and playback bandwidth per channel, the IQC5000B can meet recording needs from HF to millimeter wavelengths in mission-critical applications.

IQC91000A RECORD AND PLAYBACK SYSTEM

With its 12 bit fidelity, the IQC91000A can continuously record 90 minutes of 1000 MHz wide waveforms to ensure designers capture transient and unexpected events.

RF EDITOR SIGNAL EDITING SOFTWARE

RF Editor is a drag-and drop graphical editing tool that easily modifies I&Q signals of any length and creates entirely new ones. Users can modify and build signal waveforms in the time and frequency domains, make frequency domain signal modifications and move any signal or slice of spectrum anywhere among 10 time-domain tracks in the recording. Snippets of recorded data can be dragged and dropped onto any track and delayed, filtered, and shifted in frequency before playback.



ADDITIONAL SPECTRO-X RESOURCES

- Demonstration videos
- 30-day software trial

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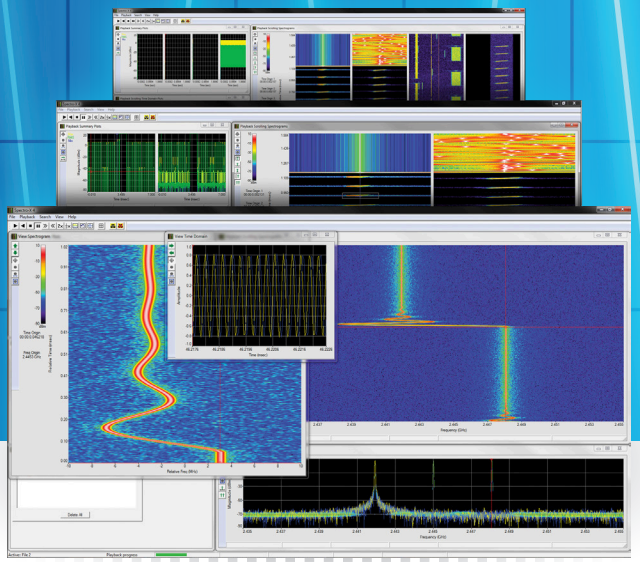
Phone: +1 571.612.5480 | Fax: +1 440.248.5426 / 866.546.4306 [Toll Free]

The RF Experts

RF SIGNAL ANALYSIS
Software Toolkit

SPECTRO-X



Visualize Complex RF Signals

Spectro-X is the essential signal extraction tool that enables users to sift through multi-terabytes of RF data recordings to quickly identify signals of interest based on user input. The fast, spectral search enables visualization and analysis, with high resolution, for system or test engineers developing Active Electronically Scanned Array (AESA) and conventional radar, ELINT, SIGINT, ECM, ESM, multi-channel communications, telemetry and MIMO systems.

When combined with either the IQC5000B or IQC91000A signal recorders, Spectro-X turns hours of attended spectrum monitoring into fast post-acquisition search, mark and measurement tasks, all without any programming.

Find and zoom into specific sections of captured files using Spectro-X's three discrete search engines: Carrier, Arbitrary Waveform and Pulse. Selected portions of large recordings can be IQ exported to industry standard formats usable by vector signal analysis software for demodulation and detailed analysis.

PRODUCT FEATURES

- Simultaneously find and analyze up to four signal files (channels).
- Spectrogram and Time Domain plots to detect transient events.
- Display signal parameters in both time and frequency.
- Playback files with a signal generator, using MATLAB or other popular VSA software.
- Zoom into specific portions of a file to quickly identify signals of interest.
- Unlimited markers per plot. Link markers across plots within channels.
- Pulse descriptor words characterizes pulse trains.
- Carrier searches identify all stationary carriers over a specified time range.
- User-adjustable channel playback offsets provide subsample precision.
- Marker math allows time and frequency differences to be measured within or between channels.
- No limit on file duration.

MULTIPLE SEARCH ENGINES

- Carrier Search – CW and stationary modulated carriers
- Waveform Search – search against a library of user-defined reference waveforms, I&Q time domain matching
- Pulse Search – search and quantify pulsed waveforms by Rise/fall times, Pulse Width, Pulse Repetition Interval, Peak & Average Power, and Carrier Frequency

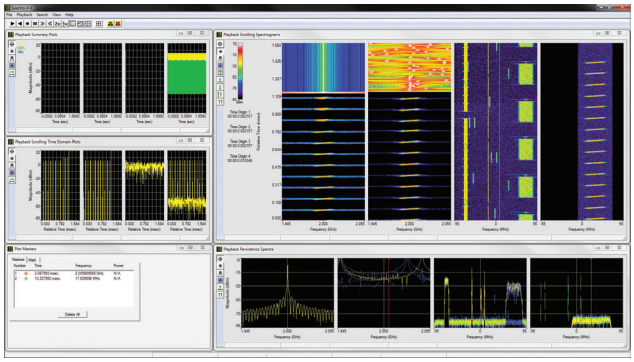
RF SIGNAL ANALYSIS TOOLKIT

SPECTRO-X

Function Highlights

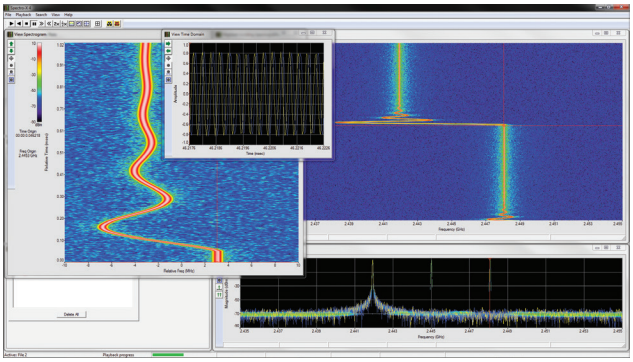
Four Channels of Insight

Simultaneously view and analyze up to four signal files (channels). The user can choose frequency, time, and magnitude plots for each channel.



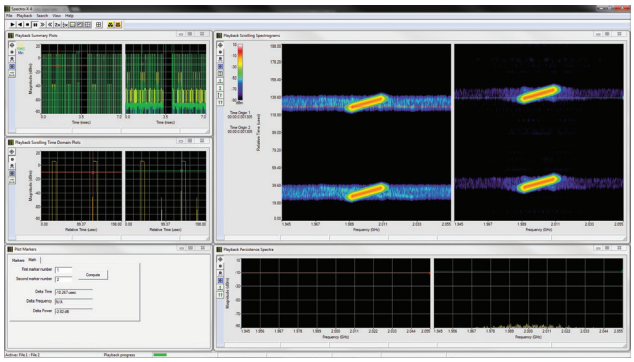
Spectrogram View

View Spectrogram and View Time-Domain Plots provide high-resolution, with finely detailed snapshots of transient events.

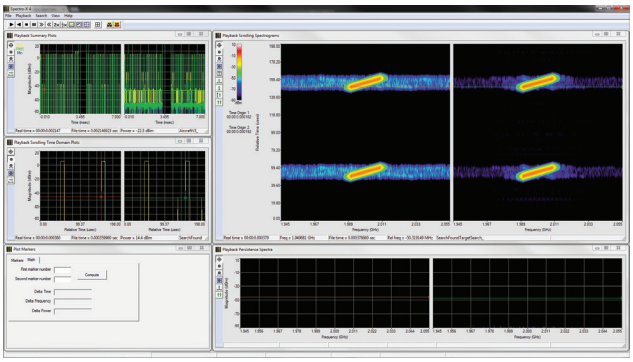


Spectrogram time windows positioned in time and frequency by marker placement.

User-Adjustable Playback

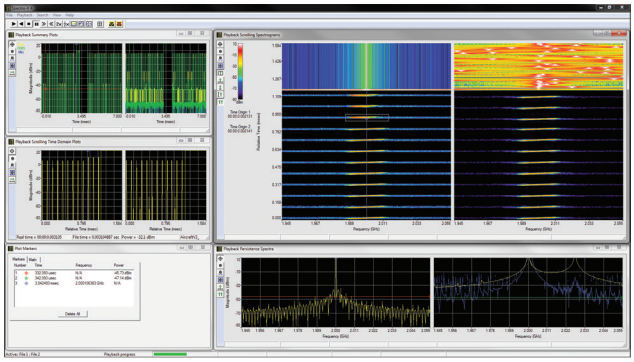


Before playback offset (measured channel 1 to channel 2 time offset of 10 µs).

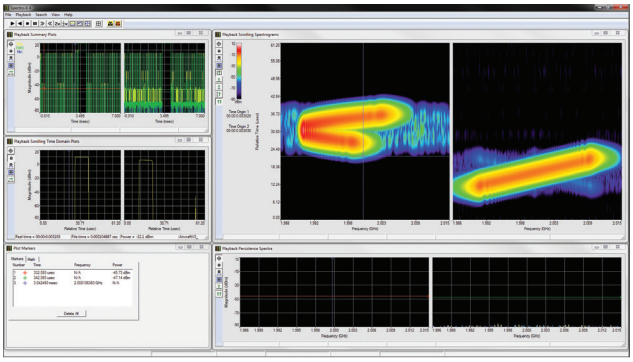


After channel 2 playback offset of 10 .

Signal of Interest Zoom



Before Zoom



After Zoom

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RF SIGNAL ANALYSIS TOOLKIT

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Specifications

CARRIER SEARCH

Types	CW and stationary modulated carriers.
Options	**Power:** ≥dBm, dB above noise floor. RBW: auto select, user-selectable. **Search windows:** Start time, stop time relative to start time.
Results	Number of matches, carrier frequency, bandwidth, start time, duration, power, save results. Prune results: from saved results file, next search. Prune IF (matching carrier): frequency, bandwidth, start time, duration, or power (≥ or ≤ user-specified value), inside or outside user specified range.

WAVEFORM SEARCH

Types	Search against a library of user-defined reference waveforms, I & Q Time domain matching.
Options	Correlation level, high selectivity filter, reference waveform (one or many), frequency shifting modes (auto or manual), time parameters. Reference waveform at f1, capture file at f2, shift (f2-f1). Included Waveforms EDGE, IEEE-802.11a/g, LTE, normal, extended prefix, 1.4, 3, 5, 10, 20 MHz.
Results	Number of matches, carrier frequency, start time, confidence, Waveform File.

PULSE SEARCH

Types	Search and quantify pulsed waveforms in capture file.
Options	Detection threshold power level, start and stop time for search, compute pulse frequencies, smoothing number of points.
Results	Peak power, average power, start time in file, width, PRI, rise time, fall time (10% to 90% referenced to detection threshold power level, phase, frequency. Sort results by any results parameters. Prune results: from saved results file, next search. Prune (matching pulse): peak power, average power, start time, width, PRI, and frequency (≥ or ≤ user-specified value), inside or outside user specified range).

ZOOM FUNCTIONS

Analysis Windows	Left mouse click and drag to define zoom box, expand X and Y axes to limits of box, zoom/unzoom and plot type.
Playback Input	Zoom box defines start and stop times of next file playback.

PLOT TYPES

Playback Time Overview	Magnitude versus time, for entire file.
Scrolling Time Domain	Magnitude versus time, for current playback view.
Current Time Domain	Magnitude versus time, phase versus time, unwrapped phase versus time, imaginary versus time, real and imaginary versus time.
Scrolling or Static Spectrogram	Time versus frequency with color-coded power, time in vertical access waterfall display with most recent time on top, power displayed as color gradient, user-selectable range of power display.
Persistence Spectrum	Visual accumulation of magnitude versus frequency over time, user-selectable persistence decay rate (infinite, slow, medium, fast).

FILE PLAYBACK

Direction and Speed	Playback time overview, play, reverse, stop, jump, double speed, half speed. Minimum time increment (441 x sample rate).
Time and Scaling	Program auto-select or user selectable playback start and stop times, time increment, jump time, spectrogram Y axis plot size, persistence spectrum Y axis plot size. Frequency domain plots (upper and lower frequency limits, absolute or relative center and span, number of points between limits). Resolution bandwidth and resolution time width, magnitude (maximum and minimum values).

DATA ACCESS

Input	.xdat, .xiq, .bin, .tiq, .siqd, .wav and columnar ASCII (.txt or .csv)
Save and Copy	Search results, program setup, intermediate spectrogram, persistent spectrums. Copy and plot any main window as JPG file.
Export	.xdat, .xiq, .bin, .tiq, .wav, .txt and .mat with selectable time parameters, filtering, frequency shifting, and/or decimation.
Hardware Requirements	Windows 7 PC (64-bit), 120 MB available on OS drive (>100 GB recommended for storage of playback files), 2GB RAM minimum.

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