



LISTEN_{INC}

SoundMap™ 1.0 Technical Specifications

Time View

Input File Data format

- SoundCheck Waveform
- Wave file (*.wav)
- TIM: MLSSA binary file format for time data
- Text files (documented format)

Display of time waveform + zoom

Analysis Parameters

- Choice of the transform: STFT, CSD, WV, Wavelet (see algorithms)
- Frequency resolution: Hz (STFT, CSD, WV) or 1/3...1/24 octave (Wavelet).
- Frequency resolution (in Hz)
- Time increment (in s)
- WV Smoothing size (in s)
- Automatic / manual setup

Information

- Sampling frequency (Hz)
- Transform Overlap (%)
- Window/Wavelet duration (s).
- BT product (%)
- Analysis duration (s)
- Analysis completeness ("Gap Free"):
- Number of spectra, lines/spectra, time-frequency pixels
- Bar-graphs for windows size, smoothing size and analysis duration

Multispectrum View

Time-frequency intensity map with color coded levels and 2 side displays.

Intensity Map (time-frequency-level)

- Color coded levels
- Unit = calibrated power spectral density in dB(ref. 1 U²/Hz)
- Choice of color scales: Rainbow, Fire, Sunset, Grey Scale...
- Choice of Dynamic Range
- 2D Max search.
- 2 cross-cursors (one absolute, one delta)

Right Side Display= Frequency Display

- Global Energy Spectrum (U².s/Hz)
- Instantaneous spectrum (U²/Hz)= frequency slice at time location of cursor 1.
- Partial spectrum (U².s/Hz) between the 2 vertical cursors on the map

- Group Delay curve(s)
- 2 horizontal cursors coupled with the ones on the map.

Bottom Display= Time Display

- Time wave, analyzed segment (U)
- Time slice (U²/Hz). The time slice is done at frequency location of cursor 1.
- Energy time curve (U²)
- Partial Energy time curve (U²) between the 2 horizontal cursors on the map
- Instantaneous Frequency (Hz)
- 2 vertical cursors coupled with the cursors of the map

Analysis Parameters and Informations + Bar-graphs as in the analysis front panel
Physical Unit U.

Energy Display: Total or Partial (defined by cursors)

Save/recall map file

Save jpg/bmp images

3D view (Color Waterfall)

Log/Lin freq axis

Color scale or Surface

Full choice of view angle

3D Cursor

Save jpg/bmp images

Algorithms

Transforms

- STFT: Short-Term Fourier Transform with Gaussian window.
- WV: Smoothed Pseudo Wigner-Ville Transform with 2 independent Gaussian windows. Implemented in analytical form.
- CSD: Cumulative Spectral Decay with Cosine-Tapered (Tukey) Window. Low frequency limit inverse of window duration.
- Wavelet: Gaussian Analytical wavelet (Morlet). Fractional octave bandwidth and center frequencies.



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SoundMap™ 1.0 Technical Specifications (cont.)

Multispectrum

Global Energy Spectrum†: power sum of all spectrum of the multispectrum.

Sub-Total Spectrum†: sum of all spectrum of the multispectrum, between the 2 verticals cursors.

Energy Calculus†: sum of all time-frequency values of the whole multispectrum for the total energy, or in the box delimited by the 2 cross-cursors, for the partial energy.

Energy-Time Curve: sum of all time slices of the multispectrum.

Partial Energy Time Curve: sum of all time slices of the multispectrum, between the 2 horizontal cursors.

Group Delay Curve†: centroid of each time slice over frequency.

Instantaneous Frequency Curve: centroid of each frequency slice over time.

The functions denoted by † are only available when Analysis is complete (Gap Free).

Options Management

Same hardware key as SoundCheck.

2 versions: All algorithms or CSD algorithm only

In demo mode (data viewer), you can only load map files but you can re-analyze the time data that goes along with them.