

Real Time Audio Analysis for Blackberry

by
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Compatability

This program uses the 16 bin signed, 8Ks/s audio digitizing supported on Blackberries (except CDMA devices). Binaries are provided as compiled under JDE Versions 4.2.1, 4.3.0, 4.5.0 and 4.6.1 however it has only been tested on a Rogers Bold (9000) running 4.6.0.247 (Platform 4.0.0.206).

Operation

The program uses a double precision floating point complex Fast Fourier Transform with a Hanning window and adapted to compute an FFT of real data. An FFT of size N consumes 2N samples and produces a display consisting of N points.

Display

The display consists of two graphic areas: the top being an exponential average of the real time spectrum, and the bottom being the real time spectrum; and two text areas for status display.

The graphic areas accept focus through vertical navigation movement of the trackball. Horizontal movement of the trackball changes the location of a cursor, the cursors are ganged together.

The top text display area contains the number of frames averaged, and the equivalent frequency for the cursor location.

The bottom display area contains Stopped/Running, linear (LIN) or logarithmic (LOG), the FFT size, and (when running) the percent of sampled data used in FFT computation. If the live data input overruns the speed at which FFTs are computed, this value should indicate less than 100%.

Controls

All control of the program is through key presses.

s Start

Select the speakerphone mic as the input source, begin input feeding the digitized stream to the FFT.

t Test

Generate a test signal at 500Hz and feed it to the FFT.

q Quit

Stop real time input (or test signal generation). The last computed FFT and average remain displayed on the screen.

n Reduce FFT size

Reduce the FFT size by one half. If the program is in the running state it is stopped first. The minimum FFT size is 32.

N Increase FFT size

Increase the FFT size by a factor of two. If the program is in the running state it is stopped first. The maximum FFT size is 2048.

x Reduce average size

Reduce the average size by one half. The minimum average size is 1. The value is changed regardless of the program state (running or stopped), but effects will only be realized when the program is running.

X Increase average size

Increase the average size by a factor of two. The maximum average size is 32.

l Toggle LIN/LOG mode

Toggles the display computation to use linear or natural logarithmic scaling on the vertical axis.

p Peak detect

Move the cursor to the location of the maximum of the average display.

a Auto calibrate

For the selected graphic display, compute the maximum and minimum values to make maximum use of the vertical axis. Note, that when running if 10% of the trace falls outside the visible area, the display will auto calibrate.

r Reduce vertical range

Reduce the vertical scale of the selected graphic display by one half.

R Increase vertical range

Increase the vertical scale of the selected graphic display by a factor of two.

m Reduce minimum value

Reduce the value that corresponds to the bottom of the selected graphics trace by one tenth of the current range.

M Increase minimum value

Increase the value that corresponds to the bottom of the selected graphics trace by one tenth of the current range.