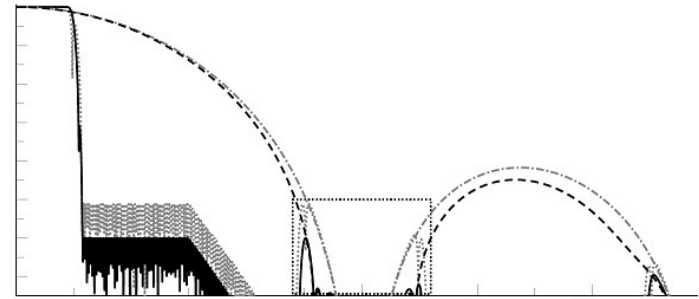


LOW-COMPLEXITY ARBITRARY SAMPLE-RATE CONVERTER



firmware-developments.com

The developer's place

Overview

This program implements a simple and flexible interpolator used for the sampling rate conversion.

The code will be ported to CortexM depending on your specific needs. The code is written in fixed-point C using $16 \times 16 = 32$ bits, and $32 \times 32 = 64$ bits arithmetics to be bit-exact compatible with the corresponding ARM or MSP430 instruction-set.

The demonstrator implements two configurations: one optimized for the lowest power consumption (about 0.5MMAC/s) and one optimized for performance using 24bits per samples and coefficients (Format Q8.24 and about 1.5MMAC/s).

The demonstration files and executable (BATCH_SRC.BAT) are located at :

http://firmware-developments.com/WEB/P6x/SSRC_M4/DEMO/



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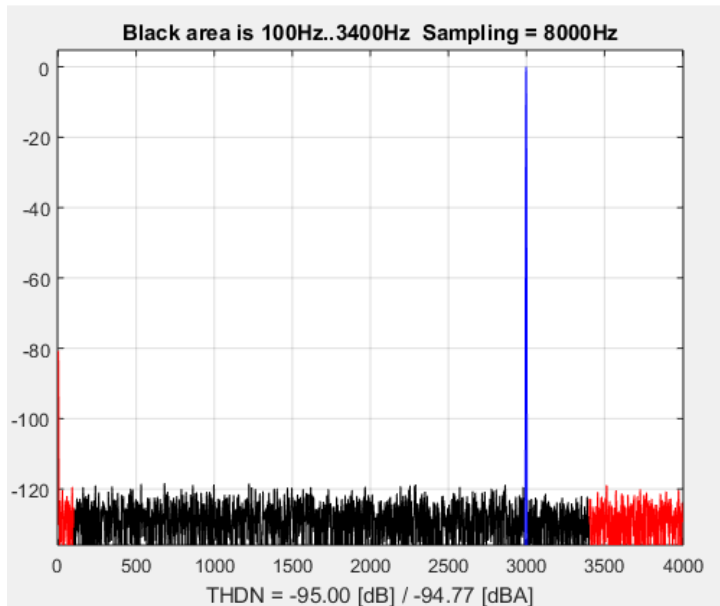
The developer's place

Performances – conversion ratio 1/6

The plot is computed with the Matlab tool “THDN”.

The program is set for a down-sampling with a ratio 1/6 (for example going from 48kHz to 8kHz). The test is made using a full-scale sine-wave at 2997Hz. The processing is made with 16bits (Q15) input samples. The THD is 95dB(A).

« THDN » description is located at : <http://firmware-developments.com/WEB/P6x/THDN/DOC/>

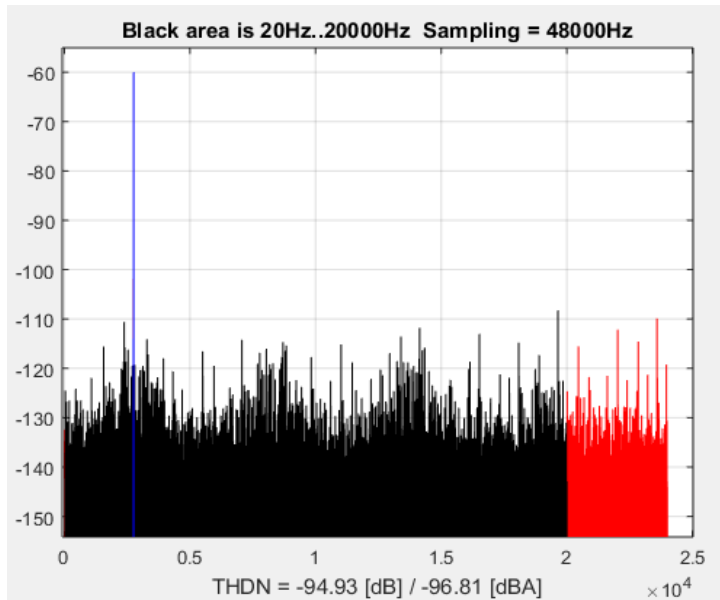


Performances – 44.1kHz to 48kHz

The plot is computed with the Matlab tool “THDN”.

The program is set for an up-sampling from 44100Hz to 48000Hz. The test is made using a sine-wave at a level of -60dB and a frequency of 2753Hz. The processing is made with 16bits (Q15) input samples. The THD is 97dB(A).

« THDN » description is located at : <http://firmware-developments.com/WEB/P6x/THDN/DOC/>



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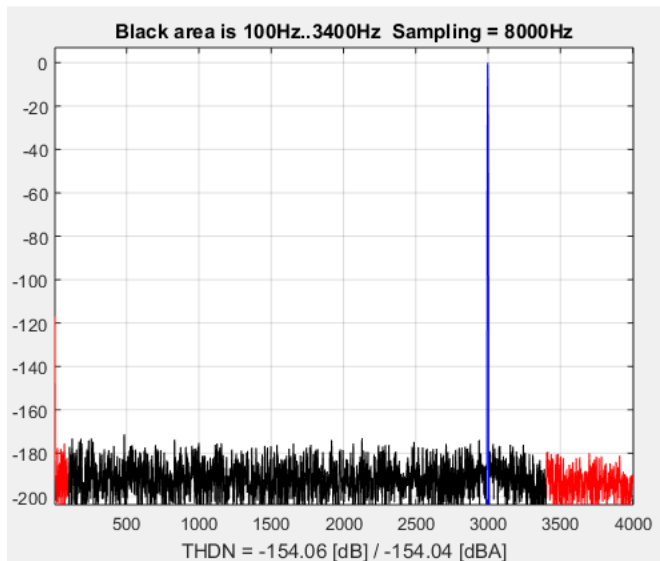
The developer's place

Performances – conversion ratio 1/6, HR mode

The plot is computed with the Matlab tool “THDN”.

The program is set for a down-sampling with a ratio 1/6 (for example going from 48kHz to 8kHz). The test is made using a full-scale sine-wave at 2997Hz. The processing is made with 24bits (Q8.23) input samples. The THD is 154dB(A).

« THDN » description is located at : <http://firmware-developments.com/WEB/P6x/THDN/DOC/>



firmware-developments.com

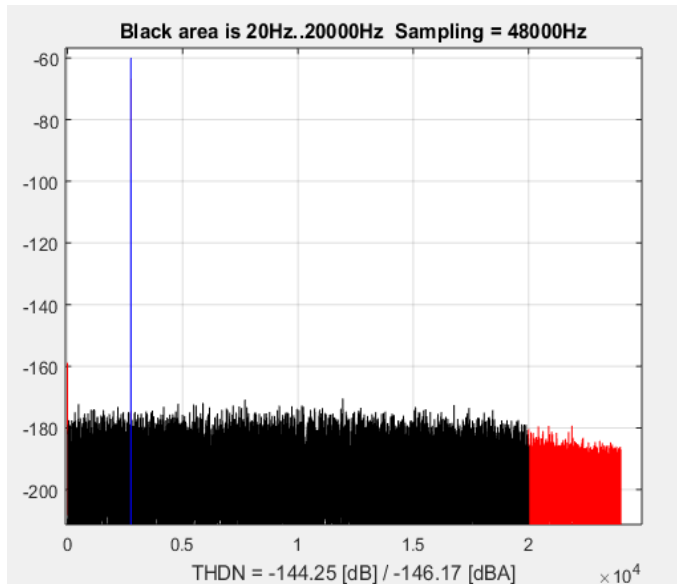
The developer's place

Performances – 44.1kHz to 48kHz – HR mode

The plot is computed with the Matlab tool “THDN”.

The program is set for an up-sampling from 44100Hz to 48000Hz. The test is made using a sine-wave at a level of -60dB and a frequency of 2753Hz. The processing is made with 24bits (Q8.23) input samples. The THD is 146dB(A).

« THDN » description is located at : <http://firmware-developments.com/WEB/P6x/THDN/DOC/>



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