

IGSAAC003A MPEG-4 HE-AAC Decoder on ARM9E

Features

- ◆ Compliant to decoder part of ISO/IEC 13818-7 MPEG-2 AAC-LC, ISO/IEC 14496-3 Subpart 4 MPEG-4 AAC-LC and ISO/IEC 14496-3:AMD1 Bandwidth
Extension specifications:
 - Sampling frequency: 8 / 11.025 / 12 / 16 / 22.05 / 24 / 32 / 44.1 / 48 / 64 / 88.2 / 96 kHz
 - Bit rates: 8kbps – 320kbps
 - Supports MPEG-2 ADIF, MPEG-2 ADTS, MPEG-4 RAW* and MPEG-4 SBR v1 Format
 - Supports Low Power SBR decoding, High Quality SBR decoding, and Down Sampling decoding
 - Supports mono and stereo channel
 - Supports tools: MS / IS / TNS / PNS
- ◆ Optimized for ARMv5E processor family
- ◆ Requires low CPU load:
 - 25.4MIPS / 34.9MHz (Peak) @ Stereo / 44.1kHz / Low Power Mode
 - 30.1MIPS / 43.3MHz (Peak) @ Stereo / 44.1kHz / High Quality Mode
- ◆ Requires small memory space:
 - HE-AAC: Low Power Mode:
 - ◆ ROM: 77.2kB
 - ◆ RAM: 54.4kB
 - HE-AAC: High Quality Mode:
 - ◆ ROM: 76.9kB
 - ◆ RAM: 72.1kB
- ◆ Provides Compact software API:
 - Supports a simple C callable with flexible memory allocation scheme
 - Supports reentrant capability

Overview

High Efficiency Advanced Audio Coding or HE-AAC is an extension AAC version by combining AAC-LC with Spectral Band Replication (SBR) bandwidth extension tool. These combination algorithms replicate the low spectrum band to high spectrum with a small of data and achieve the remarkable quality improvement especially at the low bit rates AAC bitstream.

IGSAAC003A MPEG-4 HE-AAC Decoder or GUC HE-AAC Decoder is a software library on ARMv5E processor family to implement MPEG-4 HE-AAC Decoder. This software library owns very good capabilities as low CPU power, small memory space, high sound quality, and compact software API to facilitate application development.

Applications

- ◆ Digital Audio Broadcasting
- ◆ Portable Personal Audio Player
- ◆ Portable Personal Audio-Video Player
- ◆ Internet Streaming

* IGSAAC003A MPEG-4 HE-AAC Decoder needs an additional MPEG-4 Parser to decode the track with MPEG-4 file format.

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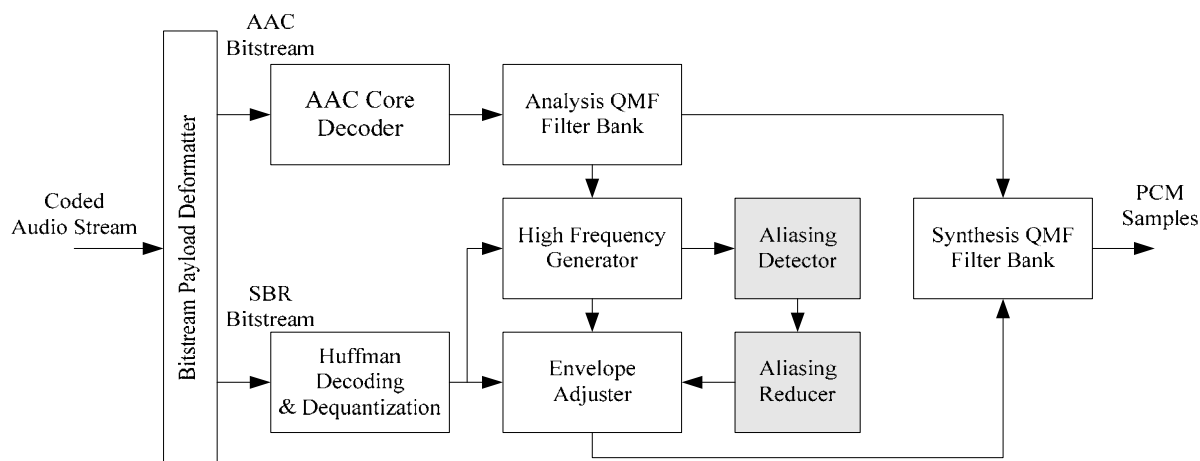
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Block Diagram



GUC HE-AAC Decoder block diagram

Description

The block diagram shows interconnection of AAC core decoder and SBR decoder. The bitstream payload deformatter divides the bitstream payload into two parts, the AAC core bitstream part and SBR bitstream part. The SBR bitstream part is fed to the Huffman and Dequantization modules to decode the control data. The AAC bitstream part is fed to the AAC core decoder and yields a time domain audio signal block of 1024 samples. Then, the audio block is fed to the analysis QMF bank and output the low spectrum band samples. The High Frequency Generator calculates the high spectrum band with the low spectrum band and control data information. The Envelope Adjuster is then shaping the envelope of high spectrum data with the SBR envelope data, extracted from the SBR bitstream. If the Low Power SBR is used, then the additional modules will be triggered to reduce aliasing introduced by the real-valued process in Low Power mode. Finally, the synthesis QMF bank operates on the output from the analysis QMF bank and the output from the envelope adjuster to produce the 16-bits PCM samples.

Deliverables

- ◆ The RVDS (v2.2) library package of HE-AAC Decoder on ARM9E
- ◆ The Linux GNU-ARM tool chain (v4.1.1) library package of HE-AAC Decoder on ARM9E
- ◆ The evaluation program (Win32 console on WinXP/2000) of HE-AAC Decoder on ARM9E
- ◆ Document Set including One Page Summary and Technical Manual

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