

Ittiam AAC Decoder

AAC Decoder

MPEG-2/4 AAC-LC (Advanced Audio Coding - Low Complexity version) is a popular audio coding technique recommended by MPEG committee. The codec handles audio signals sampled in the range of 8 kHz to 96 kHz. It operates on a frame of 1024 samples. The bit-rate can vary in the range from 8 to 576 kbps / channel (depending on the sampling rate). Low Complexity version of AAC provides good compromise between the codec complexity and the audio quality.

Features

Features supported:

- MPEG2 and MPEG4 AAC LC (Low complexity).
- Supports all sampling frequencies & bit rates for AAC only bit-streams.
- Channels: Mono/Stereo/Dual-Mono
- Tools: TNS (Temporal Noise Shaping), PNS (Perceptual Noise Shaping), Intensity Stereo & Mid/Side Stereo
- Bit-streams: ADIF, ADTS, GA Header
- Compliance: ISO/IEC 13818 - 4, 14496 – 4 (MPEG AAC and PNS Conformance)
- Supports TI XDMI API
- Robust against erroneous bit-streams
- Optimized for low footprint & processing power
- 16 bit WAV Output format support

Features not supported:

- More than 2 channels of audio.
- SBR & PS Decoding
- Channel Coupling
- DRC

Decoder Validation

The MPEG-4 AAC LC decoder implementation has been validated using the latest conformance tool given by MPEG-4.

Resource requirements on C64x Processor

Decoder mode	MCPS	Pgm	Tables	Static	Scratch
	Peak	ROM (kB)		RAM (kB)	
AAC	5.9	57.1	19.2	3.5	8.0

Note: Input/ Output buffers details are given in the next page.

MCPS measurement done on 0 wait-state memory access

Details of C64x Resources required

CPU Loading

Description	Simulator		Hardware Configuration	
	MCPS	MCPS	MCPS	MCPS
	Ave	Peak	Ave	Peak
AAC	4.6	5.9	10.2	11.3

Memory Usage (kB)

Program	Tables	Static	Scratch	Stack	Input	Output
57.1	19.2	3.5	8.0	0.8	1.5	4.0

Note:

- Performance generated on *CCS 2.20.18 with C64xx Cycle Accurate Simulator with 0 wait state memory access*
- Hardware Configuration performance generated on a DM642 processor with all data and program memory sections placed in the external memory, with cache configuration of 16 kB L1 P Cache, 16 kB D Cache & 64 kB L2 Cache, and cache thrashed after decoding each frame.
- MCPS numbers on the hardware will vary with the I-Cache and D-Cache size and with the memory configuration/placement
- MCPS/MIPS indicate the CPU usage for processing 2 channel music streams (AAC, al05_48.adts 48 kHz, 128 kbps, without TNS).
- Program memory doesn't include the code size of the test bench and standard library functions
- Data memory should be aligned to desired byte-boundary to meet the performance/functionality requirement

Notice

Ittiam Systems reserves the right to make changes to its products or discontinue any of its products or offerings without notice. Ittiam warrants the performance of its products to the specifications applicable at the time of sale in accordance with Ittiam's standard warranty.



Kane Computing Ltd
 7 Theatre Court, London Road,
 Northwich, Cheshire, CW9 5HB, UK.
 Tel: +44(0)1606 351006
 Fax: +44(0)1606 351007/8
 Email: sales@kanecomputing.com
 Web: www.kanecomputing.co.uk