- **eXpressDSP Digital Media (XDM1.0 IAUDDEC1) Interface compliant**
- **MPEG4 AAC Low Complexity (LC) object type implementations supported**
- **MPEG2 AAC Low Complexity (LC) object type implementations supported**
- **MPEG4 AAC High Efficiency (HEv1) object type implementations supported**
- **MPEG4 AAC Parametric Stereo (HEv2) object type implementations supported.**
- **Decoding of upto 2 channels (mono, stereo and dual mono)**
- **Audio Data Interchange Format (ADIF) and Audio Data Transport Stream (ADTS) input formats, encoded with ISO/IEC 13818-7 or 14496-3 compliant encoders supported**
- **RAW input format not supported**
- **High quality AAC HE decode as per ISO/IEC 14496-3:AMENDMENT 8 supported**
- **AAC HEv2(Parametric Stereo) decode as per ISO/IEC 14496-3:AMENDMENT 11 supported**
- **Sampling frequency range of 8 kHz – 96 kHz as per ISO/IEC 14496-3 standard supported**
- **Maximum bit-rate based on the sampling frequency as per standard supported**
- **Validated on DM8148 EVM with Code Composer Studio version 4.2.0.10018 and Code Generation tools version 7.2.3.**

description

Advance Audio Coding (AAC) is an audio data compression format. This coding technique uses a perceptual filter bank, a sophisticated masking model, noise-shaping techniques, and channel coupling. It is validated on DM8148 EVM with Code Composer Studio version 4.2.0.1008 and Code Generation tools version 7.2.3.

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summary of performance

Table 1.   Configuration Table

CONFIGURATION	ID
MPEG4 AAC HEv2, bSbrEnable flag ON , ELF	MPEG4_AAC_001
MPEG4 AAC HEv2, bSbrEnable flag OFF, ELF	MPEG4_AAC_002
MPEG4 AAC HEv2, bSbrEnable flag ON , COFF	MPEG4_AAC_003
MPEG4 AAC HEv2, bSbrEnable flag OFF,COFF	MPEG4_AAC_004

Table 2.   Cycles Information – Profiled on DM8148 EVM with Code Generation Tools Version 7.2.3

CONFIGURATION ID	PERFORMANCE STATISTICS (IN MEGA CYCLES PER SEC)[1, 2, 3]		
	TEST DESCRIPTION	AVERAGE	PEAK
MPEG4_AAC_001	LC - mj_48khz_128000.aac	3.32	4.25
	HEHQ - MJ_STEREO1_44khz_64.aac	22.27	249
	PS - ps_mj_44khz_32000.aac	39.04	44.44
MPEG4_AAC_002	LC - mj_48khz_128000.aac	3.3	4.25

[1] All the performance numbers are measured with COFF library, performance numbers may change +/-2% for ELF library
2 Measured with program memory, all data/code sections in external memory, and cache setting of L1P-32k, L1D-32k and L2-64kb
3 [3] L1 and L2 Cache Invalidation done for every frame
4 Measured with frame size= 1024 samples for LC Profile
5 Measured with frame size= 2048 samples for HEHQ/PS Profile

Table 3.   Memory Statistics - Generated with Code Generation Tools Version 7.2.3

CONFIGURATION	MEMORY STATISTICS[4]				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
MPEG4_AAC_001 and MPEG4_AAC_003	95	0	161.9	5	261.9
MPEG4_AAC_002 and MPEG4_AAC_004	95	0	54.5	5	154.5

[6] All memory requirements are expressed in kilobytes (1K-bytes = 1024 bytes).
7 Program memory numbers were measured with COFF library, program memory for ELF library may change by +/-2%. Data memory requirements remain same for both COFF and ELF libraries.

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Table 4.   Data Memory Split-up

CONFIGURATION	DATA MEMORY – EXTERNAL[6]		
	SHARED		INSTANCE[5]
	CONSTANTS	SCRATCH	
MPEG4_AAC_001 and MPEG4_AAC_003	44	62.6	55.3
MPEG4_AAC_002 and MPEG4_AAC_004	44	4.5	6

8 All memory requirements are expressed in kilobytes.
9 Does not include I/O buffers

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notes

- I/O Buffers
- Input Buffer Size = 1536 bytes
- Output buffer size = 16384 bytes
- Total data memory for N non pre-emptive instances =
  Constants + Runtime Tables + Scratch + N*(Instance + I/O buffers + Stack)
- Total data memory for N pre-emptive instances =
  Constants + Runtime Tables + N*(Instance + I/O buffers + Stack + Scratch)

references

- ISO/IEC 13818-7:2003 Information technology – Generic Coding of moving pictures and associated audio information -- Part 7: Advanced Audio Coding (MPEG2 AAC standards document)
- ISO/IEC 14496-3:1999(E) Information technology -- Coding of audio-visual objects -- Part 3: Audio (MPEG4 AAC standards document)
- ISO/IEC 14496-3:2001 / AMENDMENT 1 Bandwidth extension (MPEG4 AAC-HE standards document)
- User Guide for MPEG4AAC Decoder on C674x (literature number SPRUGY3)

glossary

Constants	Elements that go into .const memory section
Scratch	Memory space that can be reused across different instances of the algorithm
Shared	Sum of Constants and Scratch
Instance	Persistent-memory that contains persistent information - allocated for each instance of the algorithm

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acronyms

AAC	Advanced Audio Coding
AAC-HE	High Efficiency Advanced Audio Coding
ADIF	Audio Data Interchange Format
ADTS	Audio Data Transport Stream
EVM	Evaluation Module
IEC	International Electro-technical Commission
ISO	International Organization for Standardization
LC	Low Complexity
PS	Parametric Stereo
MPEG4	Moving Pictures Experts Group-4
XDAIS	eXpressDSP Algorithm Interface Standard
XDM	eXpressDSP Digital Media

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