- **eXpressDSP™ Algorithm Interface Standard (XDAIS) compliant**
- **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**
- **Decoding of mono and stereo streams supported**
- **RAW data input format supported**
- **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**
- **Sampling frequency range of 8 kHz – 96 kHz supported as per ISO/IEC 14496-3 standard**
- **Supports bitrates ranging from 8kbps to 1152kbps**
- **Maximum bit-rate based on the sampling frequency supported as per standard**
- **Validated on the DM8148 EVM**

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 provides the highest possible quality at smaller bit rates. It is validated on DM8148 EVM with Code Composer Studio version 4.2.0.10018 and Code Generation tools version 7.2. 2.

PRODUCT PREVIEW

Performance Summary

This section describes the performance of MPEG4 AAC Low Complexity Decoder

Table 1. Configuration Table

CONFIGURATION	ID
MPEG4 AAC LC- COFF support	MPEG4_AAC_001
MPEG4 AAC LC- ELF support	MPEG4_AAC_002

Table 2. Cycles Information – Profiled on DM8148 EVM with Code Generation Tools Version 7.2.2

CONFIGURATION ID	PERFORMANCE STATISTICS (IN MEGA CYCLES PER SEC)[1]		
	TEST DESCRIPTION	AVERAGE	PEAK
MPEG4_AAC_001	LC - mj_48khz_128000.aac	14.6	18.13
MPEG4_AAC_002	LC - mj_48khz_128000.aac	14.73	18.44

[1] All the performance numbers are measured with COFF library, performance numbers may change +/-2% for ELF library
2.Measured with program memory, stack, and I/O buffers in external memory(DDR2) and with cache configuration 32K-bytes L1P cache, 32 K-bytes L1D cache, 64K-bytes L2 cache
[3] L1 and L2 Cache Invalidation done for every frame
[4] Measured with frame size= 1024 samples for LC Profile
[5] . Average and peak MCPS measurements can vary by +/-5% depending on CPU and DDR clock.

Table 3. Memory Statistics - Generated with Code Generation Tools Version 7.2.2

CONFIGURATION	MEMORY STATISTICS[2]				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
MPEG4_AAC_001	48.69	0.00	40.2	5.0	93.89
MPEG4_AAC_002	48.09	0.00	40.2	5.0	93.29

[2] All memory requirements are expressed in kilobytes (1K-byte= 1024 bytes).
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.

Table 4. External Data Memory Split-up

CONFIGURATION	DATA MEMORY – EXTERNAL[3]		
	SHARED		INSTANCE[4]
	CONSTANTS	SCRATCH	
MPEG4_AAC_001	24	9.0	7.2
MPEG4_AAC_002	24	9.0	7.2

[3] All memory requirements are expressed in kilobytes
[4] Does not include I/O buffers

notes

- I/O Buffers
  - Input buffer size = 3840 bytes
  - Output buffer size = 8192 bytes for 16-bit audio sample size, 2 channel output (stereo)
- 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 SPRUH74)

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

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
MPEG4	Moving Pictures Experts Group-4
XDAIS	eXpressDSP Algorithm Interface Standard
XDM	eXpressDSP Digital Media

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