

## MPEG4 AAC LC Decoder (v1.18) on C64x+

### FEATURES

- eXpressDSP™ Digital Media (XDM 0.9 IAUDDEC) Interface compliant
- Validated on the DM648 EVM
- 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 as per ISO/IEC 14496-3 standard supported
- Maximum bit-rate based on sampling frequency supported as per standard
- This codec is supported on any C64x+ based

devices including DM6446, DM6467, DM6437, OMAP2430, TNETV2685, OMAP3530, DRA446, and DM648.

### DESCRIPTION

Advanced Audio Coding(AAC) is an audio data compression format. This coding technique uses a perpetual 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 DM648 EVM with code composer studio version 3.2.37.12 and code generation tools version 6.0.8.

**PRODUCT PREVIEW**



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## Performance Summary

This section describes the performance of MPEG4AAC Low Complexity Decoder.

**Table 1. Configuration Table**

CONFIGURATION	ID
MPEG4 AAC LC	MPEG4_AAC_001

**Table 2. Cycles Information - Profiled on DM648 EVM with Code Generation Tools Version 6.0.8**

CONFIGURATION ID	PERFORMANCE STATISTICS (MEGA CYCLES PER SECOND) <sup>(1)</sup>		
	TEST DESCRIPTION	AVERAGE	PEAK
MPEG4_AAC_001	LC - mj_48khz_128000.aac	15.17	18.4

(1) Measured with program memory, stack, and I/O buffers in external memory and with cache configuration 32 K-bytes L1P cache, 32 K-bytes L1D cache, and 256 K-bytes L2 cache. L1 and L2 cache invalidation is done for every frame. Measured with DDR speed of 266 MHz. Measured with frame size = 1024 samples for LC profile.

**Table 3. Memory Statistics - Generated with Code Generation Tools Version 6.0.8**

CONFIGURATION ID	MEMORY STATISTICS <sup>(1)</sup>				TOTAL
	PROGRAM MEMORY	DATA MEMORY			
		INTERNAL	EXTERNAL	STACK	
MPEG4_AAC_001	44.4	0.0	48.6	2.0	95

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

**Table 4. External Data Memory Split-Up**

CONFIGURATION ID	DATA MEMORY - EXTERNAL <sup>(1)</sup>		
	SHARED		INSTANCE <sup>(2)</sup>
	CONSTANTS	SCRATCH	
MPEG4_AAC_001	32.6	9.0	7

(1) All memory requirements are expressed in kilobytes.

(2) Does not include I/O Buffers.

## Notes

- I/O buffers
  - Input buffer size = 1648 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)
- *MPEG4 AAC LC Decoder on C64x+ User's Guide (SPRUF50A)*

## Glossary

Term	Description
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

Acronym/Abbreviation	Description
ADTS	Audio Data Transport Stream
ADIF	Audio Data Interchange Format
AAC	Advanced Audio Coding
DV-EVM	Digital Video Evaluation Module
ISO	International Organization for Standardization
IEC	International Electro-Technical Commission
MPEG4	Moving Pictures Experts Group-4
AAC-LC	Low Complexity Audio Encoding

## Revision History

This datasheet revision history highlights the technical changes made to the SPRS451 codec specific datasheet to make it SPRS451A.

**Table 5. Revision History of MPEG4 AAC LC Decoder on C64x+**

SECTION	ADDITIONS/MODIFICATIONS/DELETIONS
<a href="#">Section 1</a>	Features: <ul style="list-style-type: none"> <li>• Changed XDM version to XDM 0.9 IAUDDEC</li> <li>• Included the applicable platforms</li> </ul>

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
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