WMA Version9 Decoder (v1.10) on C64x+

FEATURES

- **eXpressDSP™ Algorithm Interface Standard (XDAIS)compliant**
- **eXpressDSP Digital Media (XDM) Interface compliant**
- **All versions, namely V2, V7, V8, V9, V9 beta odd, and V9 NC supported**
- **Class 4 implementation of WMA Decoder supported**
- **Low, medium, and high bit rates supported**
- **Variable bit rate (VBR) mode supported**
- **Mono and stereo output channel supported**
- **Raw compressed audio (RCA) streams supported**
- **Outputs 16-bit PCM samples**
- **8-48 kHz output sampling rates and 5-384 kbps input bit rates supported**
- **Digital Rights Management (DRM) not supported**
- **Microsoft Acceptance Test criteria compliant**

DESCRIPTION

WMA Version9 Decoder is a WMA standard decoder that decodes Windows Media Audio files in the Raw Compressed Audio (RCA) format.It is validated on DM644x EVM with Code Composer Studio version 3.2.37.12 and Code Generation Tools version 6.0.8.

PRODUCT PREVIEW

Performance Summary

This section describes the performance of WMA9 Decoder.

Table 1. Configuration Table

CONFIGURATION	ID
RCA support library	WMA_DEC_001

Table 2. Cycles Information – Profiled on DM644x EVM With Code Generation Tools Version 6.0.8

CONFIGURATION ID	PERFORMACE STATISTICS (MEGA CYCLES PER SECOND)(1)		
	TEST DESCRIPTION	AVERAGE	PEAK
WMA_DEC_001	test1_WMA_v8_20kbps_22kHz_2.wma	11.8	33.9
	test1_WMA_v8_32kbps_44kHz_2.wma	9.2	16.7
	test2_WMA_v9_1pCBR_320kbps_48kHz_2.wma	11.6	26.5
	test2_WMA_v9_2pVBR-Bitrate_192kbps_48kHz_2_NC.wma	10.2	21.6
	test2_WMA_v9_2pVBR-Peak128kbps_Avg64kbps_48kHz_2_NC.wma	8.2	17.52
	test2_WMA_v9_1pCBR_128kbps_44kHz_2_NC.WMA	8.9	21.7

(1) Measured with program memory, stack, and I/O buffers in external memory and with cache configuration: 64K-bytes L2, 32K-bytes L1P, and 16K-bytes L1D cache with cache thrashing.

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

CONFIGURATION ID	MEMORY STASTICS(1)				TOTAL
	PROGRAM MEMORY	DATA MEMORY			
		INTERNAL(2)	EXTERNAL	STACK	
WMA_DEC_001	114.1	Not used	121.7	6	241.8

(1) All memory requirements are expressed in kilobytes (1K-byte = 1024 bytes).
(2) Internal memory is not used.

Table 4. Internal Data Memory Division

CONFIGURATION ID	DATA MEMORY - INTERNAL(1)		
	SHARED		INSTANCE
	CONSTANTS	SCRATCH	
WMA_DEC_001	Not used	Not used	Not used

(1) All memory requirements are expressed in kilobytes.

Table 5. External Data Memory Division

CONFIGURATION ID	DATA MEMORY - EXTERNAL(1)		
	SHARED		INSTANCE
	CONSTANTS	SCRATCH	
WMA_DEC_001	58.8	16	46.90

(1) All memory requirements are expressed in kilobytes.

Table 6. Co Processor(s) Memory Statistics

CONFIGURATION ID	SEQ DATA MEMORY	SEQ PROG MEMORY	IMX WORKING MEM	IMX IMG BUF	IMX CMD MEM
WMA_DEC_001	0	0	0	0	0

Notes

- I/O buffers
  - Input buffer size = 25K-bytes
  - Output buffer size = 16K-bytes
- Total data memory for N nonpre-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

- Implementation Acceptance test specification, Version 9.00, Revision G. Date: May 19, 2003, Microsoft Corporation.
- An Overview of Windows Media Audio Decoding, WMA Version 7.0, Microsoft Corporation.
- *TMS320 DSP Algorithm Standard API Reference Guide* (literature number SPRU360)

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
ASF	Advanced systems format
EVM	Evaluation module
RCA	Raw compressed audio
VBR	Variable bit rate
WMA	Windows media audio
XDAIS	eXpressDSP Algorithm Interface Standard
XDM	eXpressDSP Digital Media

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