WMA Version8 Encoder (v1.20) on C64x+

FEATURES

- **eXpressDSP™ Digital Media (XDM) 1.0 IAUDENC1 compliant**
- **Validated on the DM644x evaluation module (EVM)**
- **16-bit PCM samples as input supported**
- **Full implementation, that is, Class 4 type of WMA Encoder supported**
- **Bit rates from 5 kbps to 192 kbps supported**
- **Only CBR (Constant Bit Rate) mode is supported**
- **8 to 48 kHz output sampling frequencies supported**
- **Mono and stereo channels supported**
- **Advanced System Format (ASF) and Raw Compressed Audio (RCA) formats supported**
- **Microsoft Acceptance Test criteria compliant**

DESCRIPTION

WMA version8 encoder is an XDM compliant encoder, which encodes and converts the wave files into Windows Media Audio (WMA) files in the Advanced System Format (ASF) or Raw Compressed Audio (RCA) Format.

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Performance Summary

This section describes performance of the WMA version8 encoder.

Table 1. Configuration Table

CONFIGURATION	ID
ASF Support Library	WMA_ENC_001

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

CONFIGURATION ID	PERFORMACE STATISTICS (IN MEGA CYCLES PER SECOND)(1)		
	TEST DESCRIPTION	AVERAGE	PEAK(2)
WMA_ENC_001	Test2_44kHz_long.wav (32 kbps)	28.49	48.36
	Test2_44kHz_long.wav (48 kbps)	23.51	44.22
	Test2_44kHz_long.wav (80 kbps)	24.35	47.12
	Test3_44kHz_long.wav (32 kbps)	31.94	44.89

(1) Measured with program memory, stack, and I/O buffers in external memory and with default cache configuration: 32 K-bytes L1P cache, 16 K-bytes L1D cache, and 64 K-bytes L2 cache.
(2) All sections are placed in external memory and code profiled with cache invalidate enabled for input and output buffer.

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_ENC_001	117.5	0	102.9	1.5	221.9

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

Table 4. Internal Data Memory Split-Up

CONFIGURATION ID	DATA MEMORY - INTERNAL(1)		
	SHARED		INSTANCE
	CONSTANTS	SCRATCH	
WMA_ENC_001	0	0	0

(1) All memory requirements are expressed in kilobytes.

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Table 5. External Data Memory Split-Up

CONFIGURATION ID	DATA MEMORY - EXTERNAL(1)		
	SHARED		INSTANCE
	CONSTANTS	SCRATCH	
WMA_ENC_001	44.6	27.3	31

(1) All memory requirements are expressed in kilobytes.

Note: Scratch and Instance Memory sizes vary with sample-rate, bit-rate, and number of channels. The numbers mentioned here cannot occur together.

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_ENC_001	0	0	0	0	0

Note:

The encoder does not use co-processors and hence all the values are zero.

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Notes

- I/O buffers:
- - Input buffer size = 16384 bytes
- - Output buffer size = 10000 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

- TMS320 DSP Algorithm Standard API Reference Guide (literature number SPRU360)
- *WMA Version8 Encoder on C64x+ User Guide* (literature number SPRUEI2A)

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	Description
ASF	Advanced Systems Format
EVM	Evaluation Module
WMA	Windows Media Audio
XDM	eXpressDSP Digital Media

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Revision History

This datasheet revision history highlights the technical changes made to the SPRS362 codec specific datasheet to make it SPRS362A.

Table 7. Revision History of WMA version8 Encoder on C64x+

SECTION	ADDITIONS/MODIFICATIONS/DELETIONS
Section 1	Features: • Deleted eXpressDSP Algorithm Interface Standard (XDAIS) compliant • Changed XDM version to XDM 1.0 IAUDENC1 • Added Raw Compressed Audio (RAW) format supported
Section 2	Description: • Added Raw Compressed Audio (RAW) format supported
Table 2	Cycles Information: • Updated performance values for Average and Peak
Table 3	Memory Statistics: • Updated Program Memory and External Data Memory values
Table 5	External Data Memory Spilt-up: • Updated Scratch value • Included a note

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