

Ittiam WMA Encoder

WMA Encoder

Microsoft® Windows Media™ Audio (WMA) codec is a popular audio coding standard, which is a part of the Microsoft® Windows Media ® series of technologies. WMA is designed to handle all types of audio content, from speech-only audio recorded with a sampling rate of 8 kilohertz (kHz), to 48 kHz high-quality stereo music. It is tolerant to packet loss, making it suitable for streaming content and player applications.

Ittiam’s WMA Encoder is an implementation of the WMA V8 Encoder (Windows Media Porting Kit (WMPK) and is provided subject to the terms and conditions of the Microsoft Corporation Implementation License Agreement to other Licensees of the same.

Features

- Encoding of WMA V8 Standard bitstream.
- Supports all bitrates from 5 kbps to 192 kbps which are supported for WMA V8 Config.
- Supports encoding of all sample rates from 8 kHz to 48 kHz.
- Implementation is fully compliant to the Windows Media Technology implementation test specification.
- Supports a simple C callable interface/TI XDM API with flexible memory allocation scheme.
- The implementation has been tested on a variety bitstreams and audio files for robustness and quality.
- Optimized for low footprint and processing power.

Encoder Validation

The WMA encoder implementation has been tested for conformance against the WMA Test specification. The implementation has been certified by Microsoft at QL4 quality level. The encoder has also been tested for robustness and quality based on listening tests.

Resource requirements on ARM9E Processor

Function	MCPS	Pgm	Tables	Static	Scratch
	Peak	ROM (kb)		RAM (kb)	
Encode	74.36	139.2	103.3	64	98

Note The Data Memory mentioned in the above Table does not include Input/ Output buffers.

MCPS/MIPS indicate the CPU usage for processing Stereo/160 Kbps/44.1 KHz encoding

MIPS for MCPS measurement on 0 wait-state memory access

Details of ARM9E Resources required
CPU Loading

CPU	Simulator		Hardware	
Description	Peak Average MCPS	Packet Peak MCPS	Peak Average MCPS	Packet Peak MCPS
High rate-160 kbps,44.1 KHz	69.46	74.36	120.38	131.51
Mid rate -32 kbps,44.1 kHz	97.23	101.95	161.23	172.69
Low rate - 16 kbps 16 kHz	95.45	99.96	151.71	159.60

Memory Usage

File	Program	Tables	Static	Scratch	Stack	Input	Output
High rate-160 kbps,44.1 KHz	109	40.8	62.8	98.0	<1	32	7.3
Mid rate -32 kbps,44.1 kHz	121	42.3	59.0	98.0	<1	32	1.5
Low rate - 16 kbps 16 kHz	128	39.7	43.7	44.0	<1	8	0.6

Memory Breakup

File	Tables							Static		Scratch
High rate	24.9	10.9	41.8	1	13.42	4.1	7.2	0.14	62.8	98.0
Mid rate	24.9	10.9	41.8	1	13.42	4.1	7.2	0.14	59.0	98.0
Low rate	24.9	10.9	41.8	1	13.42	4.1	7.2	0.14	43.7	44.0

Note:

- Memory numbers are in KB (Kilobytes)
- I/O Buffer size for single input/output buffers
- Performance numbers on Simulator generated with ARM RVDS Tools version 2.1 *with 0-wait state memory access and without Cache*
- Hardware performance generated on a ARM9E processor with 16Kb of I Cache and 8 Kb of D Cache, using the RVDS 2.1 library.
- MCPS numbers on the hardware will vary with the I-Cache and D-Cache size and with the memory configuration/place
- The peak table size is 52.2 Kbytes for 32 kHz at 40 kbps
- If the encoder is enabled to encode with any combination of bit-rates and sampling frequencies, the program memory used is 139.2 and table size required is 103.3.

Notice

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