

Ittiam WMA Decoder

WMA Decoder

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 Decoder is an implementation of the WMA9 Decoder (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

- Decoding of WMA9 Standard bitstream.
- Supports all bitrates from 5 kbps to 384 kbps.
- Supports all sample rates from 8 kHz to 48 kHz.
- Decoder is conformant to WMA Version 9.0 specification provided as part of the Windows Media Porting Kit (WMPK).
- Supports a simple C callable with flexible memory allocation scheme.
- Multi-channel reentrant software.
- The implementation has been tested on a variety bitstreams and audio files for robustness and quality.
- Optimized for low footprint and processing power.

Decoder Validation

The WMA decoder implementation has been tested for conformance against the WMA Test specification (as defined in "IC Test Spec v9.0 Revision 1.doc"). The decoder has also been tested for robustness against bitstream errors and quality based on listening tests.

Resource requirements on c64x plus Processor

| Function | MCPS | Pgm | Tables | Static | Scratch |
|---------------|------|----------|--------|----------|---------|
| | Peak | ROM (kB) | | RAM (kB) | |
| Decode | 5.53 | 56.75 | 50.51 | 51.1 | 0 |

Note

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

MCPS/MIPS indicate the CPU usage for processing Stereo/128 Kbps/44 KHz.

MIPS/MCPS measurement on 0 wait-state memory access



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Details of c64x plus Resources required

CPU Loading

| CPU Description | Simulator | | Hardware | |
|------------------------------|-------------|--------------|-------------|--------------|
| | Ave MCPS | Peak MCPS | Ave MCPS | Peak MCPS |
| High Rate, 320 kbps, 48khz | 6.32 | 9.9 | 11.37 | 15.96 |
| Low Rate, 22 kbps, 22khz | 3.14 | 6.36 | 7.23 | 10.1 |
| Mid Rate, 32 kbps, 44.1khz | 4.54 | 5.55 | 7.1 | 10.21 |
| High Rate, 128 kbps, 44.1khz | 3.61 | 5.53 | 7.81 | 10.36 |

Memory Usage

| Program | Tables | Static | Scratch | Input | Output |
|---------|--------|--------|---------|-------|--------|
| 56.75 | 50.51 | 51.1 | 0 | 0.2 | 8 |

Note:

- I/O Buffers
 - Input Buffer Size : 0.2 kB
 - Output Buffer Size : 8 kB
- Performance generated on *CCS 3.2.39.5 with C64x+ Cycle Accurate Simulator with 0 wait state memory access*
- Hardware Configuration performance generated on a DM6446 processor with all data and program memory sections placed in the external memory, with cache configuration of 32 kB L1 P Cache, 16 kB L1 D Cache & 64 kB L2 Cache, and cache thrashed after decoding each frame.
- MCPS numbers on the hardware will vary with the I-Cache and D-Cache size and with the memory configuration/placement
- Program memory doesn't include the code size of the test bench and standard library functions
- Data memory should be aligned to desired byte-boundary to meet the performance/functionality requirement
- Memory numbers mentioned are in kB, kB refers to Kilo bytes.
- Files used for the profile are Test3_WMA_v9_1pCBR_320kbps_48Khz_2, test3_WMA_v7_22kbps_22kHz_2 and test1_WMA_v8_32kbps_44kHz_2, test1_WMA_40_v2_128kbps_44kHz_2.

Notice

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