



# MPEG-2 MAIN PROFILE SOFTWARE ENCODER

## OVERVIEW

The AL-MPEG2E-SW Video Encoder is MPEG-2 part 2 Main Profile implementation for Mobile Platforms. The software IP is optimized with innovative and efficient algorithms that Atria Logic has developed for low-power and high efficiency mobile applications. The implementation is highly efficient in terms of speed and memory footprint. The IP creates high quality streams at low bit-rates.

Designed for easy reuse and optimization, the software IP runs on several platforms and operating systems. The design has been proven on Tiler TilePro64, ARM7, ARM9, ARM9E and ARM11. The design has been tested in both Windows and Linux environments.

The design can encode both Simple profile and Main profile at Low and Main levels. The design can handle very low bitrates in both variable and constant modes. The design can encode up to 1080pHD resolution videos, it also supports B frame prediction which can predict with one reference picture in each way. The rate control algorithm is proprietary which changes the Qp values in a single pass. The mode decision for best prediction is done using rate-distortion algorithm for good PSNR values.

## APPLICATIONS

- Mobile phone, Handheld video
- Camera, Security systems
- Video game consoles, Mobile TV
- Blu-ray DVD players
- Satellite TV/IPTV/Cable Set-top-box
- Video conferencing
- HD enabled MID, netbook

## Features

- ✓ Compliant with MPEG-2 part 2 standard.
- ✓ Supports both Main and Simple profile at Low and Main levels.
- ✓ Proprietary motion estimation algorithm that has been optimized for speed.
- ✓ Supports all frame rates and bitrates (both constant and variable) compliant with the standard.
- ✓ Input format is progressive YUV and the output is MPEG-2 compliant bitstream.
- ✓ Supports I, P and B picture types.
- ✓ Supports full pel and half pel for inter prediction and DC prediction in Intra prediction.
- ✓ Proprietary rate control algorithm and R-D optimized mode decisions for best quality at a given bitrate.
- ✓ Proven on Tiler TilePro64, ARM7, ARM9, ARM9E and ARM11 platforms using chip specific intrinsics.
- ✓ Proven on Microsoft Windows and Linux flavors of OS.

## PERFORMANCE

The benchmarking results are shown in table below for 300kbps on ARM9 Simulator:

Frame Size	Sequence Name	No. of Frames	MCycles/sec <sup>#</sup> on ARM9 <sup>*</sup>	Coding tools enabled in benchmarking streams
QCIF	Akiyo	300	34	Intra, Inter  Reference Frame: 1 MV Resolution: Hpel  Entropy coding: VLC  Bit-rate: 300kbps  Frame-rate: 30fps  Encoder Mode: Moderate Quality
	Foreman	300	63	
	News	300	42	
	Table	300	50	

## DELIVERABLES

- C source code or object file optimized and compiled for a specific platform.
- Makefile with user configurability extension file to change the configuration of the encoder.
- Comprehensive user documentation, including detailed specifications and a system integration guide.

## ORDERING INFORMATION

Please contact the following office for evaluation and licensing questions.



**ASICSoft, Inc.**  
**Atria Logic - Marketing Partner**  
111 W. Saint John Street, Suite 230  
San Jose, CA 95113  
408-998-2800 x11  
[info@asicsoft.com](mailto:info@asicsoft.com)  
[www.asicsoft.com](http://www.asicsoft.com)  
[www.atrialogic.com](http://www.atrialogic.com)

