H.264 SOFTWARE IP SUITE FOR DSP

H.264

"High quality with the use of a single chip"

APPLICATIONS

▶ **Video Security**

Go beyond MPEG-4 SP/ASP and update to the state of the art of video compression

▶ **Video Telephony, Video Conferencing**

The Next-Generation codec that will replace H.263

▶ **Consumer Electronics**

Use our advanced codec to raise the number of hours stored on your PVR, or use smaller hard drive.

▶ **Streaming** & **Multimedia**

With reduce bitrate, push more channels over your network

KEY FEATURES

A complete toolset:
Video / Audio / Streaming

MPEG-4 AVC / H.264
Baseline and Main Profile

Runs on a single DSP

Up to D1 resolution

The best-unrivalled quality and performance

BENEFITS

Use **Less Network Bandwidth**

Save Storage Space

Inter-Operate with new systems

One-stop shop solution

Get The Best Video Coding Efficiency On A Single DSP

MPEG-4 AVC / H.264 is known as being the best video compression standard available today. We have stressed the DSP architecture to its limits to provide the best coding efficiency.

ATEME's 10+ years of expertise in video encoder design allows us to offer a wide range of encoding solutions for MPEG-4 AVC / H.264.

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VIDEO CODEC

Features	Encode	Decode
Resolution	CIF, Half D1, D1 – PAL & NTSC	
ISO/IEC 14496-10 / ITU H.264 compliance	X	X
Baseline Profile	X	X
Main Profile	X [1]	X
Pictures support	I / P / B (1)	I / P / B
Entropy coding	CABAC, CAVLC	CABAC, CAVLC
Deblocking	X	X
Multislice	X [1]	X
Interlaced slices management	Field	Progressive, Field, MBAFF, PAFF
Others	1, ½, ¼ pixel motion estimation CBR/VBR/CQ (constant quality) rate control mode	All types of macroblocks P/B (from size 16*16 to 4*4) Spatial and temporal prediction Robustness against missing or corrupted data Control of the decoding quality

(1) optional

Encoding library supports

- Fast to Best quality modes, optimise quality vs. performance

- Full control of parameters and tools

COMPLEMENTARY TOOLSET

		Encoding side	Decoding side
Pre- / Post -processing	De-interlacing	X	X
	Inverse Telecine	X	
	Resizing	X	X
	Cropping	X	
	Denoiser	X	

- Pre-processing enhances encoding efficiency.

- Post-processing improves the image quality after decompression

Audio	AAC, MPEG audio, ADPCM	X	X

Streaming & File management	RTSP / RTP	Server	Client
	MPEG-2 TS	Multiplexer	Demultiplexer
	MP4 file management	Multiplexer	Demultiplexer

Encoder

- Benchmarking test have been performed on a Texas Instruments' TMS320DM642 @ 720 MHz on NTSC video sequences

- Memory configuration: 192 kbytes ISRAM + 64 Kbytes of cache L2. DSP/BIOS is mapped in external memory

Resolution	CIF NTSC	Half D1 NTSC	Full D1 NTSC
Rate Control Mode	CBR	CBR	CBR
Tools	Deblocking	Deblocking	
Bitrate	384 kb/s	768 kb/s	1500 kb/s
Speed - CPU load	110 fps - 30%	56 fps - 50%	34 fps - 97%

Decoder

- Benchmarking test have been performed on a Texas Instruments' TMS320DM642 @ 600 MHz

- Original sequences have been encoded at full frame rate (PAL @ 25 fps, NTSC @ 30 fps)

- Memory configuration: 196 kBytes ISRAM (heap and data/code sections) + 64 kBytes of cache

(1)	Video format	Bitrate	Entropy mode	Scanning mode	CPU load
1	Full D1 PAL	3 Mbps	CAVLC	Frame	76 %
5	Full D1 PAL	3 Mbps	CABAC	Frame	88 %
6	Full D1 PAL	1.5 Mbps	CABAC	Frame	81 %
9	Full D1 NTSC	4.0 Mbps	CAVLC	Frame	81 %
10	Full D1 NTSC	2.0 Mbps	CABAC	PAFF	91 %
11	Full D1 NTSC	1.5 Mbps	CABAC	MBAFF	95 %
12	Full D1 NTSC	1.7 Mbps	CABAC	MBAFF	93 %

(1) The results presented here are extracted from our release notes, numbers refer to corresponding sequence ID

DSP TARGETS

- Supports Texas Instruments C6400 family
  > C6414/6415/6416: high end solution, full D1 at best quality
  > DM642: most applications, up to D1 at standard quality
  > DM641: low-end application, up to CIF

DAVINCI ™
TEXAS INSTRUMENTS

ATEME fully embraces the **DaVinci ™** technology.
Please contact **ATEME** for more details.

RELATED PRODUCTS

ATEME **Reference Designs** provide ideal environments for the development and prototyping of embedded applicatio

They shorten the development cycle by providing an all-in-one toolset in a single product reference:

- One or more application source code illustrating all the features of a real product.
- Dedicated hardware.
- Set of complementary libraries for communication, media transport, remote control ...
- Set of codec libraries (including H.264).

H.264 Reference Designs for DM642 embedded platforms:

- ViPix: Compact H.264 IP player .
- VSIP2 Compact H.264 IP video encoder
- ViSio: Multi-channel H.264 IP video encoder/recorder

Generic HW platforms for your developments:

- DMEK642: TMS320DM642 evaluation board.
- IEKC64: TMS320C64x evaluation board

To complete your end-to-end system design, ATEME solutions also cover:

· MPEG-4 AVC / H.264 Decoder for PC
· RTSL and RTSC streaming server/client library
· MPEG-4 SP/ASP and AVC PC Player ActiveX SDK

For more details or product demonstrations please contact your ATEME representative or products@ateme.com

DELIVERABLES

Software IP suite:

- H.264 video encoder & decoder libraries
- Video pre-processing library
- Audio codecs (AAC, MP3) libraries
- Streaming libraries (RTP/RTSP, MPEG-2 TS)

Each library can be delivered individually or in a bundle

Each library delivery includes:

- Library object code.
- User's manual and release notes
- Sample code

DEMOS

The following demos are available:

> MPEG-4 AVC / H.264 streaming demo
on ATEME's DMEK642 board

> MPEG-4 AVC / H.264 streaming demo
on TI & Spectrum Digital DM642 EVM board

For more details and to check how you could see these demos, please contact your ATEME representative or **products@ateme.com**

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