MPEG4 Simple Profile Encoder (v1.2.1.0)

FEATURES

- **eXpress DSP Algorithm Interface Standard (XDAIS) compliant.**
- **eXpress Digital Media (XDM) interface compliant.**
- **MPEG4 Simple Profile compliant.**
- **Validated on DM644x DV-EVM.**
- **I/P picture type supported.**
- **Motion Estimation up to half-pixel supported.**
- **User controllable quantization parameter range supported.**
- **Arbitrary resolution (maximum depending on available memory), including standard image sizes such as SQCIF, QCIF, CIF, QVGA, and VGA supported.**
- **ATEME advanced rate control algorithm.**
- **User configurable Group of Picture (GOP) range supported.**
- **Control of the balance between encoder speed and quality by using the user definable settings.**
- **Mpeg quantization method not supported.**
- **Reverse VLC not supported.**
- **Short Header (H.263 compatibility) not supported.**
- **Resynchronization markers (Video Packets) not supported.**
- **Data partitioning not supported.**
- **Optional de-interlacing filter.**
- **YUV4:2:2 interleaved and YUV4:2:0 planar color sub-sampling input.**
- **MPEG-4 Video Elementary Stream output.**

DESCRIPTION

MPEG4 is the ISO/IEC recommended standard for video compression. It is validated on the DM6446 EVM with Code Composer Studio version 3.2 and code generation tools version 6.0.8.

Performance Summary

This section describes performance of the ATEME MPEG4 encoder.

Table 1. Cycles Information – Profiled on DM6446 DV-EVM

PERFORMANCE STATISTICS (MEGA CYCLES PER SECONDS)		
TEST DESCRIPTION	**AVERAGE(1)**	**PEAK(2)**
5ee_telecine_uyvy.yuv, 640x480@30.0fps CBR@ 1.5Mbits/s, quality setting: Best	367,96	499,09
5ee_telecine_uyvy.yuv, 640x480@30.0fps VBR (mean bitrate=1.5Mbits/s), quality setting: Best	367,19	526,14
tahiti_interlaced.yuv, 640x480@25fps VBR (mean bitrate=1.48Mbits/s), quality setting: Best	315,39	441,92
Spidey_progressive.yuv, 720x576@25fps VBR (mean bitrate=1.48Mbits/s), quality setting: Best	413,40	568,60

(1) Based on average number of cycles per frame
(2) Based on worst case cycles on moving average of 4 frames

Table 2. External Data Memory Split-Up

RESOLUTION	DATA MEMORY – EXTERNAL(1)	
	PERSISTENT	**SCRATCH**
CIF, 352x288	813	0,1
VGA, 640x480	2166	0,1
NTSC, 720x480	2416	0,1

(1) All memory requirements are expressed in kilobytes (1 kilobyte = 1024 bytes) and there could be a variation of approximately 1-2% in values

Table 3. Internal Data Memory Split-Up

RESOLUTION	DATA MEMORY – INTERNAL(1)	
	PERSISTENT	**SCRATCH**
CIF, 352x288	2,4	50
VGA, 640x480	2,4	50
NTSC, 720x480	2,4	50

(1) All memory requirements are expressed in kilobytes (1 kilobyte = 1024 bytes) and there could be a variation of approximately 1-2% in values

Notes

- If you are using an evaluation version of this codec there will be an ATEME logo visible in the output.
- The overall performance of the evaluation version may slightly differ from the production version. Performance listed in this release notes refers to the production version

References

- MPEG-4 standard: ISO.IEC 14496-2:1999
- MPEG-4 standard: ISO.IEC 14496-2:2001
- MPEG-4 standard: ISO.IEC 14496-2:2001/Amd1:2002
- MPEG-4 final Committee Draft of ISO.IEC 14496-2:2003: ISO/IEC JTC 1/SC 29/WG 11 N5546
- XEM4V_ATEME_DM644x_UserGuide

Glossary

Term	Description
Scratch	Memory space that can be reused across different instances of the algorithm
Persistent	Persistent-memory that contains persistent information - allocated for each instance of the algorithm

Acronyms

Acronym	Description
CIF	Common intermediate format
EVM	Evaluation module
GOP	Group of pictures
LPF	Loop filter
MV	Motion vector
QCIF	Quarter common intermediate format
VGA	Video graphics array
XDAIS	eXpressDSP Algorithm Interface Standard
XDM	eXpressDSP Digital Media

Kane Computing Ltd
7 Theatre Court, London Road,
Northwich, Cheshire, CW9 5HB, UK.
Tel: +44(0)1606 351006
Fax: +44(0)1606 351007/8
Email: sales@kanecomputing.com
Web: www.kanecomputing.co.uk