- **Compliant with the eXpressDSP™ Algorithm Interface Standard (XDAIS)**
- **Compliant with the eXpressDSP Digital Media (XDM) interface**
- **Validated on the DM6437 EVM**
- **Simple, main, and advanced profile features of the SMPTE FCD1r6 at level 1 (AP@L1) standard up to D1 resolution supported**
- **RCV V1, RCV V2, and elementary input streams supported**
- **YUV 420 and YUV 422 interleaved output formats supported**
- **Considers Advanced Systems Format (ASF) parser as an application layer**
- **Main profile is bit exact with the reference decoder provided by Microsoft®**
- **Advanced profile (VC-1) is bit exact with the SMPTE test cases**

PRODUCT PREVIEW

description

VC-1 is the Society of Motion Picture and Television Engineers (SMPTE) standardized video decoder. This decoder supports Simple, Main, and Advance profile up to PAL D1 (720x576) resolution. It has been built and tested on DM6437 EVM hardware with XDS510 USB (Code Composer Studio version 3.3.24.1 with patch 3.2.30.0).

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PRODUCT PREVIEW

summary of performance

Table 1. Configuration Table

CONFIGURATION	ID
VC-1 Main profile and SMPTE VC-1 features - assumes 64k SRAM on (L1) chip.	CFG001
VC-1 Advanced profile and SMPTE VC-1 features at L0 Level - assumes 64k SRAM on (L1) chip.	CFG002
VC-1 Advanced profile and SMPTE VC-1 features at L1 Level - assumes 64k SRAM on (L1) chip.	CFG003

Table 2. Cycles Information – Profiled on DM6437 EVM with Code Generation Tools Version 6.0.8

CONFIGURATION ID	PERFORMANCE STATISTICS (IN MEGA CYCLES PER SEC)[1]		
	TEST DESCRIPTION	AVERAGE[2]	PEAK[3]
CFG001	Zero_Deint_895kbps_100.rcv YUV420/ VGA @ 895 kbps	139.73	231.12
CFG002	SA00059.vc1 YUV420/CIF @ 800 kbps	59.55	98.89
CFG003	SA10176.vc1 YUV420/PAL-D1 @ 2500 kbps	309.90	399.24

[1] Measured with program memory, stack, and I/O buffers in external memory
[2] Based on average number of cycles per frame @ 30 fps
[3] Based on worst case cycles averaged over 3 consecutive frames @ 30 fps
For D1 (720x576) resolution, based on average number of cycles per frame @ 25 fps
For D1 (720x576) resolution, based on worst case cycles averaged over 3 consecutive frames @ 25 fps

Table 3. Memory Statistics - Generated with Code Generation Tools Version 6.0.8

CONFIGURATION ID	MEMORY STATISTICS[4]				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
CFG001	258.813	63	3981.035	08	4310.848
CFG002	258.813	63	1949.910	08	2279.723
CFG003	258.813	63	4992.410	08	5322.223

[4] All memory requirements are expressed in kilobytes (1K-byte = 1024 bytes).

Table 4. Internal Data Memory Split-up

CONFIGURATION ID	DATA MEMORY – INTERNAL[5]		
	SHARED		INSTANCE[6]
	CONSTANTS	SCRATCH	
CFG001	0	63	0
CFG002	0	63	0
CFG003	0	63	0

[5] Internal memory refers to L1DRAM. All memory requirements are expressed in kilobytes and there could be a variation of around 1-2% in numbers.
[6] I/O buffers not included. Some of the instance memory buffers could be scratch.

Table 5. External Data Memory Split-up

CONFIGURATION ID	DATA MEMORY – EXTERNAL[7]		
	SHARED		INSTANCE
	CONSTANTS	SCRATCH	
CFG001	215.66	561.375	3204.000
CFG002	215.66	296.500	1437.750
CFG003	215.66	693.375	4083.375

[7] All memory requirements are expressed in kilobytes

Table 6. Co Processor(s) Memory Statistics

CONFIGURATION ID	SEQ DATA MEMORY	SEQ PROG MEMORY	IMX WORKING MEM	IMX IMG BUF	IMX CMD MEM
CFG001	0	0	0	0	0
CFG002	0	0	0	0	0
CFG003	0	0	0	0	0

Note: The decoder does not use co-processors and hence all the values are zero.

PRODUCT PREVIEW

notes

- Memory Configuration
  - L1P : 32K-bytes program cache
  - L1D : 64K-bytes data memory and 16K-bytes data cache
  - L2 : 64K-bytes cache
- Evaluation version performance may be off by up to 30 MHz
- Heap requirement: 5 MB, no optimizations done

references

- eXpressDSP Kit
- User Guide for Windows Media VC-1 Video Decoder (literature number SPRUF05)

glossary

Constants	Elements that go into .const memory section
Scratch	Memory space that can be reused across different instances of the algorithm
Shared	Sum of Constants and Scratch
Instance	Persistent-memory that contains persistent information - allocated for each instance of the algorithm

acronyms

AP	Advanced Profile
ASF	Advanced Systems Format
EVM	Evaluation Module
fps	Frames per second
MP	Main Profile
MPML	Main-Profile-at-Main Level
SMPTE	Society of Motion Picture and Television Engineers
SRAM	Static Random Access Memory
VC-1	SMPTE approved standard corresponding to WMV 9 having AP support also
XDAIS	eXpressDSP Algorithm Interface Standard
XDM	eXpressDSP Digital Media

PRODUCT PREVIEW

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