- **Validated on SIMCOP and M3 based platform of DM812x IPNC**
- **JPEG encoder shall comply with T.81/ISO DIS 10918-1 standard for encoding images in baseline sequential mode**
- **Comply with specification JPEG File Interchange Format Version 1.02**
- **Encoding of images in YUV4:2:0 NV12 format shall be supported**
- **Encoding of images in YUV4:2:2 interleaved format shall be supported**
- **JPEG encoder shall encode images with size up to 16 Mpixels**
- **Support EXIF and JFIF Headers**
- **JPEG Encoder shall support generation and insertion of thumbnail (compressed JPEG format) in JFIF extension compliant header in the generated jpeg bitstream when JFIF marker is requested**
- **The encoder shall support custom quantization tables**
- **The encoder shall support custom Huffman tables**

description

JPEG is the popular image compression standard from the Joint Photographic Experts Group. This JPEG Encoder is validated on the SIMCOP based M3 Platform of DM812x.

summary of performance

Table 1. Configuration Table

CONFIGURATION	ID
Baseline	JPEG_ENC_001

Table 2. Cycles Information – Profiled on DM812x IPNC with Code Generation Tools Version 4.9.2

CONFIGURATION ID	PERFORMANCE STATISTICS (IN MEGA CYCLES PER SEC)[1]		
	TEST DESCRIPTION[2]	AVERAGE[3]	PEAK[4]
JPEG_ENC_001	Well Lit scene encoded at 1920x1080@30, quality factor 85 with JFIF Header.	172	216

[1] Measured with M3@480MHz, SIMCOP@480MHz, DDR@400MHz, L3@400MHz. A deviation of 1-2% can be there in the reported numbers.
[2] restartInerval is automatically set to 8 MCU
[3] Based on average cycles for 1 second @ 30 fps.
[4] Based on worst case cycles

notes

- I/O buffers:

references

- ISO/IEC JTC 1/SC 29 (2009-05-07). "ISO/IEC JTC 1/SC 29/WG 1 – Coding of Still Pictures
- JPEG Encoder on SIMCOP and M3 based platform User's Guide (literature number: SPRUXYZ)

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

DMA	Direct Memory Access
SIMCOP	Still Image Co-Processor
DCT	Discrete Cosine Transform H/w Block
VLCDJ	Variable Length Coding and Decoding for JPEG H/w Block
RM	Resource Manager
MSP	Multimedia Service Provider
APP Marker	Application Marker Eg: EXIF, JFIF
EXIF	Exchangeable Image file format
JFIF	JPEG File Interchange Format

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		**Applications**	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DLP® Products	www.dlp.com	Broadband	www.ti.com/broadband
DSP	dsp.ti.com	Digital Control	www.ti.com/digitalcontrol
Clocks and Timers	www.ti.com/clocks	Medical	www.ti.com/medical
Interface	interface.ti.com	Military	www.ti.com/military
Logic	logic.ti.com	Optical Networking	www.ti.com/opticalnetwork
Power Mgmt	power.ti.com	Security	www.ti.com/security
Microcontrollers	microcontroller.ti.com	Telephony	www.ti.com/telephony
RFID	www.ti-rfid.com	Video & Imaging	www.ti.com/video
RF/IF and ZigBee® Solutions	www.ti.com/lprf	Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265