JPEG XS Encoder/Decoder

Powered by original computing algorithm "DMNA" based on mathematical methods

1 Abstract

TMC's JPEG XS encoder / decoder IP is Visually LossLess compression / decompression hardware RTL core that complies with ISO/IEC-21122-1 (JPEG XS).

The logic gate count and internal memory capacity are optimized to reduce cost and power consumption.

2 Features

- Next-generation mezzanine compression for large screens and ultra-low latency -

- JPEG XS (ISO/IEC21122-1) specifications
  - ・Compliant with the "JPEG XS" standard standardized in 2019
- Visually LossLess compression & decompression
  - ・Visually lossless due to the effect of mezzanine compression
- Ultra Low latency
  - ・Delay from input to output of the order of a few lines
  - ・Less than 1ms delay using high-speed transmission lines
- Various image formats supported
  - ・RGB, YCbCr 4:4:4/4:2:2/4:0:0, 8/10/12 bit
- Configurable compression ratio
  - ・1/2 to 1/20 compression ration in Byte unit
 - ・Constant Bit Rate method controlled per frame

3 Specification

JPEG XS
DMNA

- Compression format
  - ・JPEG XS (ISO/IEC21122-1)
    - Supported profiles: Light 422.10 , Light444.12 , Main422.10 , Main444.12 , High444.12
- Compression and decompression throughput
  - ・4pixels/clock (ex:4K-422-60P@150MHz)
- Image size (width x height)
  - ・32 x 4 pixels to 8192 x 4320 pixels (changeable on request)
- Image formats and bit depth
  - ・format : RGB, YCbCr 4:4:4/4:2:2/4:0:0 , bit depth : 8/10/12 bit
- Image data, compressed data interface
  - ・image data : AXI4-Stream , 144 bit/clock
  - ・compressed data : AXI4-Stream , 128 bit/clock

JPEG XS is expected to be applied to:
 - Remote controlling and self driving vehicles
   using camera images such as:
     drones, robots, automobiles,
     infrastructure inspection machines, etc.
 - Remote diagnosis for medical use
 - High-resolution VR/AR equipment
 - Game contents
 - High-quality content streaming
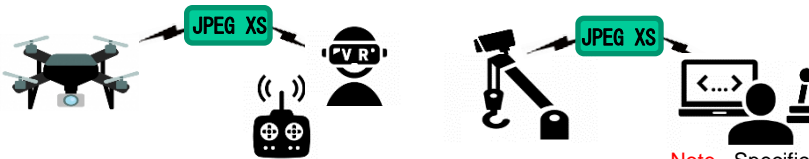
Note Specifications are subject to change without notice

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