

SUPERIOR LIGHTWEIGHT

SLICE-BASED VIDEO CODEC

AVAILABLE
NO EXTERNAL
DDR!
NOW!

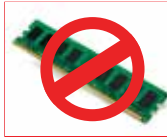
VC-2 HQ

The high quality profile and low delay syntax of VC-2 is used to achieve low compression ratio, typically up to 4 times visually lossless. The algorithm is lightweight and works without external memory allowing cost-effective implementation. The VC-2 High Quality codec has ultra-low latency due to its slice-based processing.

VC-2 HQ - MAXIMUM FLEXIBILITY



Low Complexity
for ASIC & FPGA



No External DDR



Extreme Low Latency
0.0593 milliseconds!



100% Image Quality
Lossless Compression



8K Ready and Beyond

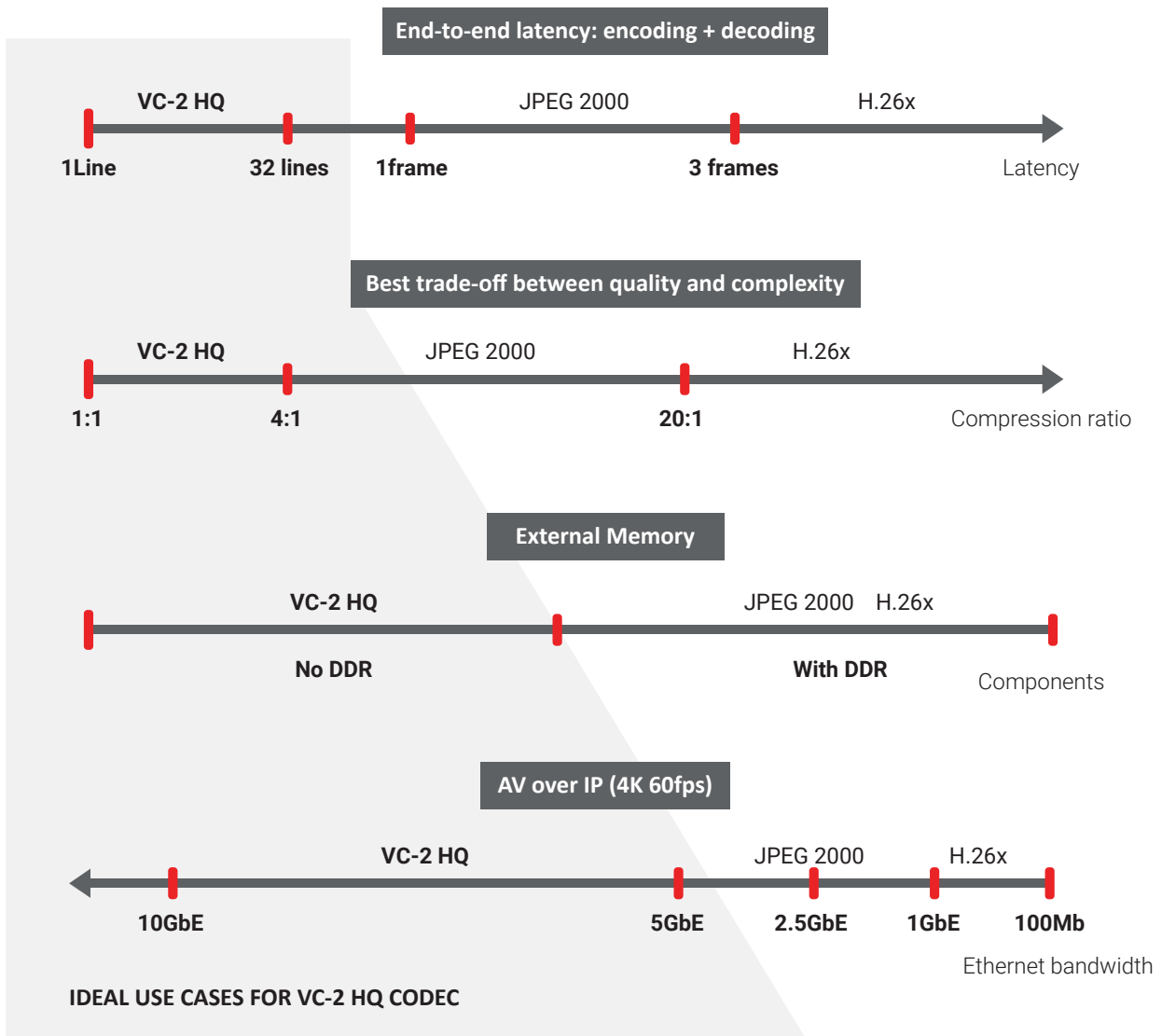


SMPTE ST 2042 & ST 2110
Patent Free

Did you know?

British Broadcasting Corporation (BBC) developed and open sourced a Wavelet-based video codec named Dirac. A low-complexity profile of the Dirac codec named Dirac Pro, which does not use motion compensation, was standardized by SMPTE as the VC-2 codec. Silex Insight's VC-2 HQ IP implements the VC-2 codec and associated support for handling the compressed bitstream.

EXTENSIVE USE CASES



FEATURES IN VC-2 HQ

SLICE-BASED PROCESSING

The slice-based processing allows a high level of parallelization. In combination with small slices, a sub-frame level pipelining can be put in place and lead to an **end-to-end latency of 2 stripe height lines**. With 8 lines of latency in 4K60, VC-2 HQ has a **latency of only 0.0593 milliseconds**.



Video input at the encoder



Video output at the decoder

COMPRESSED FRAME BUFFER

The slice-based processing allows to update any slice directly in the compressed picture! This is ideal for **picture in picture (see example below), logo insertion or video content update** without the decoding and re-encoding of the full resolution picture, saving power. VC-2 HQ is a hyper-flexible codec.



REGION OF INTEREST (ACTIVITY ZONE) PROCESSING

With ROI coding, only the useful slices determined by the user are encoded. This allows saving power and bandwidth.



WHEN LOW COMPLEXITY VIDEO CODEC MATTERS

VC-2 HQ for ASIC and FPGA

Features:

- Very light codec - fits even the most cost-efficient FPGA's
- VC-2 HQ is defined in the standard SMPTE ST 2042-1:2017
- No need for external DDR
- Resolution scalability: decode a lower resolution version
- Slice-based processing for high flexibility/parallelization
- Region Of Interest/Activity Zone coding
- Reverse order decoding (from bottom to top)
- AV over IP SMPTE ST 2110 compliant with RTP payload format standardized in RFC 8450
- Zero latency: encoding-decoding latency of only 8 lines

Supports the following video parameters and encoding modes

- Unrestricted resolution including SD, HD, 2K, 4K, 8K
- 4:4:4, 4:2:2 and 4:2:0 color subsampling
- Interlaced and progressive formats
- 2-pixel interleaved video interface for UHD
- From 8 up to 16 bits per pixel component (HDR Ready)
- Haar0 and Haar1 Discrete Wavelet Transform (DWT) with 1, 2 or 3 levels
- Asymmetric LeGall Discrete Wavelet Transform (DWT)
- Constant bit-rate encoding (CBR) with adjustable compression ratio
- Lossless and constant quality/variable bit-rate encoding (VBR)
- Capped VBR encoding with maximum slice size

Intellectual Property & Licensing

VC-2 and its parent, the Dirac codec, are not covered by any granted patents and hence can be used royalty-free. BBC has provided assurances that they will ensure no patents encumber use of the codec and have let relevant patent applications expire allowing for free and fair use of the codec.




For additional information, please contact your local sales representative or visit our website www.silexinsight.com

VIPER



Viper – Custom OEM board for 4K HDMI AV over IP

Silex Insight has designed and developed fully integrated boards that is perfect suited for VC-2 HQ codec and ultra-low latency audio/video over IP. The transmit and receive boards are production-ready and reduce the development cost of the system. Viper features high resolutions up to 4K/UHD over 1Gb, 2.5Gb, or 10Gb Ethernet cable. The HDMI video is transported over Ethernet after compression with the VC-2 HQ (or JPEG 2000 or another codec) video compression.

-  Global sales offices
-  Worldwide customer base
-  Founded in 1991



-  Silex Insight = Silicon experts with know-how
-  Expertise on PCB design, FPGA and ASIC
-  Design Services to fully develop to your needs