

# MPEG-2 4:2:2 P@High Level Video Decoder

## PRODUCT DESCRIPTION

MPEG-2 4:2:2 P@ High Level video decoder is a high performance and high quality solution catering to high end broadcast and professional video applications. It is compliant with ISO/IEC 13818-2 (H.262) standards and is capable of decoding upto 4:2:2P@High Level (422P@HL).

The decoder design is fully autonomous; does not require any external processor to aid the decode operation. The IO interface comprises of an input FIFO and an output frame buffer. The decoder requires a single external DDR2/DDR3 SDRAM to store reference pictures.

The decoder solution is available in both FPGA netlist and source code licensing models. CoreEL can also customize the core according to end application requirements.

Typical Application include:

- Video contribution & distribution decoders
- Multi-format digital receivers (IRDs)
- Video/play-out servers
- Test & Measurement equipment
- News gathering (SNG/ENG)
- 3D Video
- Medical
- Aerospace & Defence

## KEY FEATURES

Device	MPEG-2 Profile	Bitrate	SD [720 x 576] Frame-rate	HD [1080p] Frame-rate
Lintex-7 / Virtex-6	422@HL	100 Mbps	240 fps	60 fps
Virtex-5	422@HL	80 Mbps	240 fps	60 fps
Spartan-6	422@HL	40 Mbps	150 fps	30 fps

- 4:2:2P @ High Level decoder
- Support both 4:2:0 and 4:2:2 chroma formats
- Supports resolution upto 1920x1080 progressive
- Supports progressive and interlaced formats
- Frame-rate up to 60 fps for progressive HD decode
- Field tested and proven in various customer applications
- MPEG-2 Video Decoder has been validated in hardware using
  - ISO/IEC 13818-2 conformance test streams
- Simultaneous multi-channel decode
- Single chip FPGA solution
- Optimized both for memory and performance and hence low resource utilization
- High bitrate supported up to 100 Mbps

## SPECIFICATIONS

### Detailed description

- Decodes I, P and B slices
- Supports YUV420 and YUV422 formats
- Decodes multiple video streams simultaneously
- Supports VLC (run-length) decoding
- Supports Progressive & Interlaced coding
- Performs Inverse Scaling and DCT for 8x8 blocks
- Supports quantization scaling matrices
- Supports Frame and Field DCTType
- IEEE 1180 compliant inverse DCT
- Inter prediction support for P and B frames
- Inter prediction supports Frame, Field, 16x8 and Dual Prime prediction
- Half-Pel Inter prediction
- Maintains list of reference pictures
- Robust Error Concealment & resilient design
- Optional support for TS input

### PART NUMBER(S)

The following variants of this IP core are available:

Part Numbers	Variants
C1020	MPEG-2 4:2:2 P@High Level video decoder
C1021	MPEG-2 Main Profile @High Level (MP@HL)
C1022	MPEG-2 Main Profile @Main Level (MP@ML)
C1023	MPEG-2 Main Profile @Low Level (MP@LL)
C1024	MPEG-2 Simple Profile @Low Level (SP@LL)