

# JCTVC-M0255: 8-bit decoding of 10-bit sequences

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# Use cases

- Some constrained devices employing software decoders are able to decode 8-bit bitstreams but have issues when moving to 10-bit.
- User experience in such situations can be frustrating.  
(Sometimes it is more desirable to see a degraded picture than none at all)

# Can an 8-bit decoder be re-purposed for 10-bit decoding?

Yes, by either:

- 1 Naïvely treating the bitstream as an 8-bit bitstream<sup>1</sup>.
- 2 Identifying which processing paths can afford to be increased in bit depth and using appropriate rounding methods to convert.

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Performance: average 6.5dB loss on 10s low-delay-B cfg
- 2 Identifying which processing paths can afford to be increased in bit depth and using appropriate rounding methods to convert.  
Performance: average 2.5dB loss on 10s low-delay-B cfg

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# Suggested technique (detail)

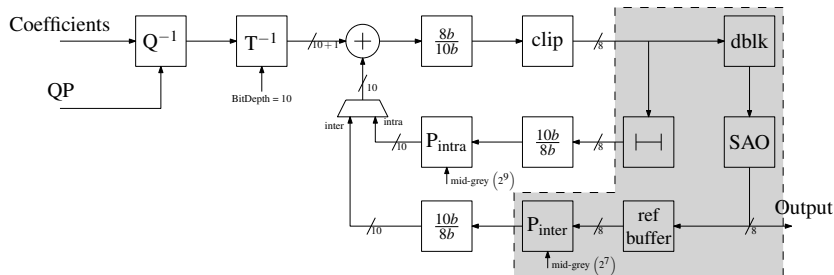
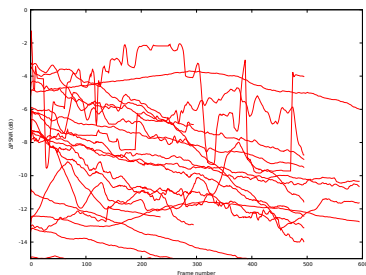


Figure – Illustrative signal coding path of hybrid 8-bit-10-bit decoder

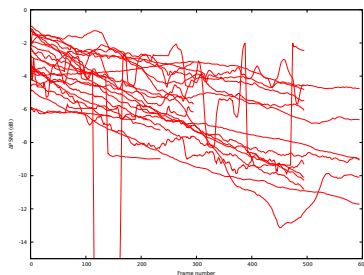
# Results

Figure – Plot of frame-number versus  $\Delta\text{PSNR}$  for all sequences at particular QPs using Method-1 (a) and Method-2 (b).

(a) QP 22



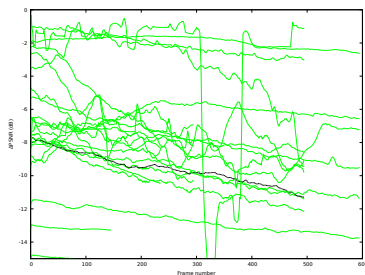
(b) QP 22



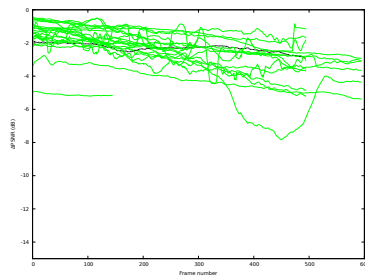
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Figure – Plot of frame-number versus  $\Delta\text{PSNR}$  for all sequences at particular QPs using Method-1 (a) and Method-2 (b).

(a) QP 27



(b) QP 27

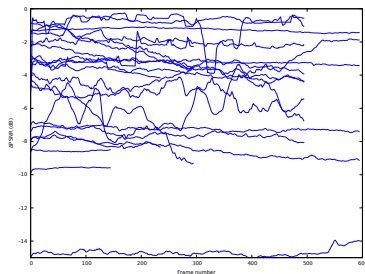




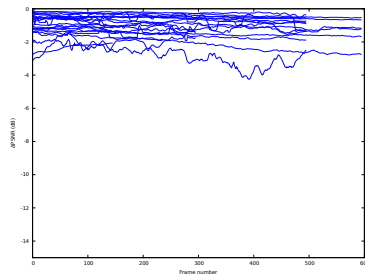
# Results

Figure – Plot of frame-number versus  $\Delta\text{PSNR}$  for all sequences at particular QPs using Method-1 (a) and Method-2 (b).

(a) QP 32



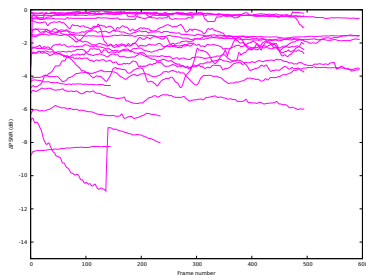
(b) QP 32



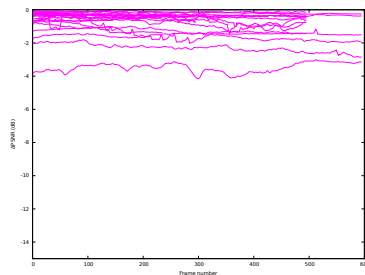
# Results

Figure – Plot of frame-number versus  $\Delta$ PSNR for all sequences at particular QPs using Method-1 (a) and Method-2 (b).

(a) QP 37



(b) QP 37





We need some mechanism for the specification to bless such a technique. The specification defines what conformance is, this could be addressed by the specification.

- M0255 provides text that describes a **recommended** process.
- Important to require conformance to a profile (like Main)