

Title: **CE11-1.1: Further information on conditionally signaled very strong deblocking**

Status: Input document to JVET

Purpose: Proposal

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Abstract

This document provides additional Bjøntegaard delta-rate (BD-R) results for the latest version of the conditionally signaled very strong deblocking method first proposed in JVET-L0523 and currently evaluated as test 1.1 in CE11. Unlike in previous versions, the use of the conditional very strong deblocking is only allowed in Intra slices. The proposal, when activated, reportedly results in negligible BD-R differences of

- ALF on (CTC): 0.04% AI, 0.01% RA, –0.02% LB, –0.04% LP, 101% enc., 99–100% dec. time,
- ALF off (CE11): 0.04% AI, 0.01% RA, –0.0% LB, –0.0% LP, 100% enc., 100–101% dec. time

in the luminance channel. When configured for minimum BD-R loss ($x=0.0$ dB as in L0523), the ALF-on results are as follows: 0.02% AI, 0.0% RA/LB/LP, 100% enc. time and very slight chroma gains in LP.

1 Additional Objective BD-R Results

As a follow-up on JVET-L0523 [1], and as required by CE11 [2], objective BD-R results on top of VTM 4.0 are provided in the ...SDR__VTM-4.0...xlsm files included in the Zip file containing this document. A summary of the results is given in above. As noted, only negligible BD-R differences are observed.

Moreover, additional results on top of VTM 4.0.1, a bug-fix and encoder-optimization update of VTM 4.0, are provided in the ...SDR__VTM-4.0.1...xlsm Excel files. Since these BD-R results are nearly identical to those measured on top of VTM 4.0, a summary is omitted in this document for the sake of brevity.

2 Change in Algorithmic Complexity

The line-buffer requirement and strong-deblocking parameter calculation complexity for the proposed Intra only conditional very strong deblocking have not changed since the last variant provided to the Marrakesh meeting, and the exact numbers remain identical to those tabulated in the last CE11 summary report [3].

The computational complexity (operation count) of the actual very strong deblocking process increases by one addition per filtered sample, i. e., worst-case by one addition per sample of each TU component being processed. This minor change is motivated by a significant increase in subjective quality on some input.

3 References

- [1] C. Helmrich, B. Bross, “Very strong deblocking filtering with conditional activation signaling,” JVET-L0523, Macau, Oct. 2018.
- [2] A. Norkin, A. M. Kotra, “Description of Core Experiment 11 (CE11): Deblocking,” JVET-M1031, Marrakesh, Feb. 2019.
- [3] A. Norkin, A. M. Kotra, “CE11: Summary Report on Deblocking,” JVET-M0031, Marrakesh, 2019.

4 Patent Rights Declaration(s)

Fraunhofer HHI may have current or pending patent rights relating to the technology described in this contribution and, conditioned on reciprocity, is prepared to grant licenses under reasonable and non-discriminatory terms as necessary for implementation of the resulting ITU-T Recommendation | ISO/IEC International Standard (per box 2 of the ITU-T/ITU-R/ISO/IEC patent statement and licensing declaration form).