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| *Title:* | **Cross-check of J0031 on unification of band and edge offsets with respect to sign for SAO** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Information | | |
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| *Source:* | Canon Research Centre France | | |

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# Abstract

This document is a crosscheck report of the contribution JCTVC-J0031 about the unification of Band Offset and Edge Offset regarding the signs.

This document confirms the results (0.0% for Luma and 0.0% for Chroma) provided by Ericsson under HM7.0 test conditions however there are some impacts for class F especially on Chroma (up to 3.9% loss for Slide Show, LBHE).

# Introduction

In current HM7.0 design, there are currently two main differences between the syntax for band offset and edge offset. In addition to the syntax elements for offsets, band offsets also requires syntax elements for band position and 4 syntax elements for sign

In the JCTVC-J0031 contribution, it is proposed to remove the sign syntax elements for band offset and derive band offsets with sign implicitly as for edge offsets. The first two offsets are positive and the other two offsets are negative as for edge offsets.

# Results

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  | **All Intra Main** | | | **All Intra HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0,0% | 0,0% | -0,1% | 0,0% | 0,0% | -0,1% |
| Class B | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% |
| Class C | 0,0% | 0,2% | 0,3% | 0,0% | 0,0% | 0,2% |
| Class D | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% |
| Class E | 0,0% | 0,0% | -0,1% | 0,0% | 0,0% | -0,1% |
| **Overall** | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% |
|  | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% |
| Class F | 0,0% | 0,1% | 0,3% | 0,0% | 0,0% | 0,1% |
| Enc Time[%] | 101% | | | 100% | | |
| Dec Time[%] | 105\*% | | | 101\*% | | |
|  |  |  |  |  |  |  |
|  | **Random Access Main** | | | **Random Access HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0,0% | -0,1% | 0,0% | 0,0% | 0,0% | -0,2% |
| Class B | 0,0% | 0,1% | 0,1% | 0,0% | 0,0% | -0,1% |
| Class C | 0,0% | 0,3% | 0,4% | 0,0% | 0,1% | 0,1% |
| Class D | 0,0% | 0,1% | 0,0% | 0,0% | 0,1% | 0,0% |
| Class E |  |  |  |  |  |  |
| **Overall** | 0,0% | 0,1% | 0,1% | 0,0% | 0,0% | -0,1% |
|  | 0,0% | 0,1% | 0,1% | 0,0% | 0,0% | -0,1% |
| Class F | 0,1% | 0,2% | 0,4% | 0,0% | 0,0% | 0,1% |
| Enc Time[%] | 100% | | | 101% | | |
| Dec Time[%] | 108\*% | | | 104\*% | | |
|  |  |  |  |  |  |  |
|  | **Low delay B Main** | | | **Low delay B HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | 0,1% | 0,1% | 0,0% | 0,0% | 0,0% | 0,0% |
| Class C | 0,1% | 0,4% | 0,6% | 0,0% | -0,1% | 0,1% |
| Class D | 0,0% | 0,1% | 0,1% | 0,0% | 0,1% | 0,0% |
| Class E | 0,1% | -0,1% | -0,3% | 0,1% | -0,4% | 0,1% |
| **Overall** | 0,1% | 0,1% | 0,1% | 0,0% | -0,1% | 0,0% |
|  | 0,1% | 0,1% | 0,1% | 0,0% | -0,1% | 0,1% |
| Class F | 0,3% | 0,0% | 0,7% | 0,2% | -0,1% | 1,0% |
| Enc Time[%] | 100% | | | 101% | | |
| Dec Time[%] | 114\*% | | | 101\*% | | |
|  |  |  |  |  |  |  |
|  | **Low delay P Main** | | | **Low delay P HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | 0,0% | 0,1% | -0,3% | 0,0% | 0,1% | -0,2% |
| Class C | 0,0% | 0,1% | 0,4% | 0,0% | -0,1% | 0,1% |
| Class D | 0,0% | 0,1% | 0,7% | 0,0% | -0,2% | -0,6% |
| Class E | 0,1% | -0,2% | 0,2% | 0,1% | 0,3% | 0,6% |
| **Overall** | 0,0% | 0,0% | 0,2% | 0,0% | 0,0% | -0,1% |
|  | 0,0% | 0,1% | 0,2% | 0,0% | 0,1% | 0,0% |
| Class F | 0,2% | 0,3% | 0,2% | 0,1% | 0,2% | -0,1% |
| Enc Time[%] | 100% | | | 101% | | |
| Dec Time[%] | 106\*% | | | 104\*% | | |
|  |  |  |  |  |  |  |

\*: Please note that decoding times are unreliable, but no change is expected here in terms of decoding run time.

# Conclusion

The BD-rate results provided by Ericsson are confirmed with respectively 0.0% loss for the three components under the common test conditions of HM7.0.

Regarding class F, BDR rate for Luma vary from 0.0% to 0.3% loss. Some losses are important for Chroma component and can reach up to 3.9% in LBHE.

We did not perform any visual tests on the results but we recommend performing visual sessions in order to visually evaluate the impact of the proposed sign modification for Band Offset.