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| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  11th Meeting: Shanghai, CN, 10–19 Oct. 2012 | Document: JCTVC-K0115 |

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| *Title:* | **Cross-check of JCTVC-K0138 - non-CE1:Deblocking of Large Block Artifacts** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Cross Check | | |
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# Abstract

This contribution reports the cross-check results of JCTVC-K0138: Non-CE1: Deblocking of Large Block Artifacts. Two simulations were run: One with all parts of the proposal enabled, one with the intra boundary smoothing restrictions disabled.

# Introduction

JCTVC-K0138 proposes to address the large block artifacts with modifications to the intra DC smoothing and deblocking filter. This contribution is a cross-check of the results on the CTC sequences. The software has been examined and found to match the proposal.

Cross-check simulations were run with two configurations:

* All parts enabled
* Intra smoothing restriction disabled (Intra boundary smoothing behaves like HM-8.0)

# Simulations results

Note that encode/decode times are not reliable because of unpredictable load on the compute clusters.

## Results of the CTC sequences

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **All Intra Main** | | | **All Intra HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0.6% | 0.1% | 0.2% | 0.7% | 0.2% | 0.2% |
| Class B | 0.2% | 0.1% | 0.1% | 0.3% | 0.1% | 0.1% |
| Class C | 0.1% | 0.1% | 0.0% | 0.1% | 0.1% | 0.0% |
| Class D | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.1% |
| Class E | 0.1% | 0.0% | 0.0% | 0.2% | 0.1% | 0.0% |
| Class F | 0.1% | 0.0% | 0.0% | 0.1% | -0.1% | 0.1% |
| **Overall** | 0.2% | 0.1% | 0.1% | 0.3% | 0.1% | 0.1% |
|  | 0.2% | 0.1% | 0.1% | 0.2% | 0.1% | 0.1% |
| Enc Time[%] | 95% | | | 93% | | |
| Dec Time[%] | 142% | | | 142% | | |
|  |  |  |  |  |  |  |
|  | **Random Access Main** | | | **Random Access HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0.3% | -0.3% | 0.1% | 0.2% | 0.0% | -0.2% |
| Class B | 0.1% | 0.0% | 0.2% | 0.1% | 0.1% | 0.2% |
| Class C | 0.1% | 0.0% | 0.2% | 0.1% | 0.1% | 0.0% |
| Class D | 0.1% | 0.0% | 0.1% | 0.0% | 0.0% | -0.3% |
| Class E |  |  |  |  |  |  |
| Class F | 0.1% | -0.1% | -0.1% | 0.1% | 0.1% | 0.1% |
| **Overall** | 0.1% | -0.1% | 0.1% | 0.1% | 0.1% | 0.0% |
|  | 0.1% | -0.1% | 0.1% | 0.1% | 0.0% | -0.1% |
| Enc Time[%] | 100% | | | 99% | | |
| Dec Time[%] | 176% | | | 180% | | |
|  |  |  |  |  |  |  |
|  | **Low delay B Main** | | | **Low delay B HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | 0.1% | 0.2% | 0.2% | 0.1% | 0.1% | 0.3% |
| Class C | 0.1% | 0.0% | 0.0% | 0.1% | -0.1% | 0.0% |
| Class D | 0.0% | 0.3% | -0.1% | 0.0% | -0.2% | -0.4% |
| Class E | 0.2% | 0.2% | 1.0% | 0.0% | -0.3% | 0.2% |
| Class F | 0.2% | 0.2% | -0.1% | 0.1% | 0.5% | -0.4% |
| **Overall** | 0.1% | 0.2% | 0.1% | 0.1% | 0.0% | -0.1% |
|  | 0.1% | 0.2% | 0.2% | 0.1% | 0.0% | 0.0% |
| Enc Time[%] | 99% | | | 95% | | |
| Dec Time[%] | 199% | | | 189% | | |
|  |  |  |  |  |  |  |
|  | **Low delay P Main** | | | **Low delay P HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | -0.1% | 0.1% | 0.1% | 0.0% | 0.2% | -0.4% |
| Class C | 0.1% | 0.0% | 0.3% | 0.0% | -0.2% | -0.2% |
| Class D | 0.0% | 0.2% | 0.0% | 0.1% | -0.5% | -0.1% |
| Class E | 0.1% | 0.5% | -0.8% | 0.0% | -0.5% | 0.0% |
| Class F | 0.1% | 0.4% | 1.1% | 0.2% | 0.3% | -0.2% |
| **Overall** | 0.0% | 0.2% | 0.2% | 0.0% | -0.1% | -0.2% |
|  | 0.0% | 0.2% | 0.2% | 0.0% | -0.2% | -0.1% |
| Enc Time[%] | 97% | | | 98% | | |
| Dec Time[%] | 194% | | | 182% | | |

## Results of the CTC sequences with intra boundary smoothing restriction disabled

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **All Intra Main** | | | **All Intra HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0.5% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% |
| Class B | 0.3% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% |
| Class C | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% |
| Class D | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% |
| Class E | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% |
| Class F | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% |
| **Overall** | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% |
|  | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% |
| Enc Time[%] | 99% | | | 94% | | |
| Dec Time[%] | 135% | | | 134% | | |
|  |  |  |  |  |  |  |
|  | **Random Access Main** | | | **Random Access HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0.3% | 0.0% | -0.1% | 0.2% | -0.2% | 0.0% |
| Class B | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% |
| Class C | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | -0.1% |
| Class D | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | -0.1% |
| Class E |  |  |  |  |  |  |
| Class F | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% |
| **Overall** | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% |
|  | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | -0.1% |
| Enc Time[%] | 103% | | | 98% | | |
| Dec Time[%] | 166% | | | 171% | | |
|  |  |  |  |  |  |  |
|  | **Low delay B Main** | | | **Low delay B HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | 0.1% | 0.2% | -0.1% | 0.1% | 0.1% | 0.2% |
| Class C | 0.1% | 0.0% | 0.1% | 0.1% | 0.1% | 0.0% |
| Class D | 0.0% | 0.2% | 0.0% | 0.0% | -0.1% | -0.3% |
| Class E | 0.2% | 0.2% | 0.6% | 0.1% | -0.2% | 0.3% |
| Class F | 0.2% | 0.2% | 0.4% | 0.1% | -0.3% | -0.8% |
| **Overall** | 0.1% | 0.1% | 0.2% | 0.1% | -0.1% | -0.1% |
|  | 0.1% | 0.1% | 0.2% | 0.1% | -0.1% | -0.1% |
| Enc Time[%] | 98% | | | 98% | | |
| Dec Time[%] | 171% | | | 166% | | |
|  |  |  |  |  |  |  |
|  | **Low delay P Main** | | | **Low delay P HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | 0.0% | 0.0% | -0.1% | 0.0% | 0.1% | -0.5% |
| Class C | 0.1% | 0.1% | 0.2% | 0.1% | 0.0% | -0.1% |
| Class D | 0.1% | 0.4% | -0.4% | 0.1% | 0.1% | 0.1% |
| Class E | 0.1% | 0.6% | 0.1% | 0.1% | -0.4% | -0.1% |
| Class F | 0.2% | 0.1% | 0.3% | 0.1% | 0.3% | -0.4% |
| **Overall** | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | -0.2% |
|  | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | -0.1% |
| Enc Time[%] | 106% | | | 103% | | |
| Dec Time[%] | 166% | | | 176% | | |

# Conclusion

The results presented JCTVC- K0138 are verified.

# Patent rights declaration(s)

**Intel Corporation does not have any current or pending patent rights relating to the technology described in this contribution.**