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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**  20th Meeting: Geneva, CH, 10–18 Feb. 2015 | Document: JCTVC-T0167 |

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| *Title:* | **Cross-check of JCTVC-T0099: adaptive motion vector resolution for non-4:4:4 formats** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
| *Author(s) or Contact(s):* | Yuwen He, Xiaoyu Xiu, Yan Ye 9710 Scranton Rd, #250 San Diego, CA 92121, USA | Tel: Email: | +1-858-210-4819 [yuwen.he@interdigital.com](mailto:yuwen.he@interdigital.com)  xiaoyu.xiu@interdigital.com  [yan.ye@interdigital.com](mailto:yan.ye@interdigital.com) |
| *Source:* | InterDigital Communications, Inc. | | |

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# Abstract

This documents reports the crosscheck results for proposal JCTVC-T0099 on adaptive motion vector resolution for non-444 format coding. The source code provided by the proponents was verified to be consistent with the description in JCTVC-T0099. The rate-distortion performance was evaluated and matches the one provided in JCTVC-T0099.

# Introduction

JCTVC-T0099 proposed to use integer motion compensation for chroma components when the motion vector resolution is integer for non-444 coding.

# Simulation results

The performance of the modified motion compensation for chroma components described in JCTVC-T0099 is cross-checked and is summarized below. It only affected 420 coding results in CTC test conditions. The detailed results can be found in the attached excel datasheets.

Table 1. Average BD rate reduction for 420 lossy coding compared with SCM-3.0 anchor

|  |  |  |  |
| --- | --- | --- | --- |
|  | **All Intra** | | |
|  | G/Y | B/U | R/V |
| Text & graphics with motion, 720p | 0.0% | 0.0% | 0.0% |
| Mixed content, 480p | 0.0% | 0.0% | 0.0% |
| Animation, 768p | 0.0% | 0.0% | 0.0% |
| Average of all sequences | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 90% | | |
| Dec Time[%] | 85% | | |
|  |  |  |  |
|  | **Random Access** | | |
|  | G/Y | B/U | R/V |
| Text & graphics with motion, 720p | 0.0% | 0.0% | 0.0% |
| Mixed content, 480p | 0.0% | 0.0% | 0.0% |
| Animation, 768p | 0.0% | 0.0% | 0.0% |
| Average of all sequences | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 92% | | |
| Dec Time[%] | 89% | | |
|  |  |  |  |
|  | **Low delay B** | | |
|  | G/Y | B/U | R/V |
| Text & graphics with motion, 720p | 0.2% | 0.4% | -0.5% |
| Mixed content, 480p | 0.0% | 0.0% | 0.0% |
| Animation, 768p | 0.0% | 0.0% | 0.0% |
| Average of all sequences | 0.1% | 0.2% | -0.3% |
| Enc Time[%] | 92% | | |
| Dec Time[%] | 86% | | |

Table 2. Average BD rate reduction for 420 lossless coding compared with SCM-3.0 anchor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **All Intra** | | | |
|  | Bit-rate change (Total) | Bit-rate change (Average) | Bit-rate change (Min) | Bit-rate change (Max) |
|  |
| Text & graphics with motion, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| Mixed content, 480p | 0.0% | 0.0% | 0.0% | 0.0% |
| Animation, 768p | 0.0% | 0.0% | 0.0% | 0.0% |
| Average of all sequences | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 95% | | | |
| Dec Time[%] | 94% | | | |
|  |  |  |  |  |
|  | **Random Access** | | | |
|  | Bit-rate change (Total) | Bit-rate change (Average) | Bit-rate change (Min) | Bit-rate change (Max) |
|  |
| Text & graphics with motion, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| Mixed content, 480p | 0.0% | 0.0% | 0.0% | 0.0% |
| Animation, 768p | 0.0% | 0.0% | 0.0% | 0.0% |
| Average of all sequences | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 89% | | | |
| Dec Time[%] | 98% | | | |
|  |  |  |  |  |
|  | **Low Delay B** | | | |
|  | Bit-rate change (Total) | Bit-rate change (Average) | Bit-rate change (Min) | Bit-rate change (Max) |
|  |
| Text & graphics with motion, 720p | 0.0% | 0.0% | 0.0% | 0.1% |
| Mixed content, 480p | 0.0% | 0.0% | 0.0% | 0.0% |
| Animation, 768p | 0.0% | 0.0% | 0.0% | 0.0% |
| Average of all sequences | 0.0% | 0.0% | 0.0% | 0.1% |
| Enc Time[%] | 94% | | | |
| Dec Time[%] | 99% | | | |

# References

1. C. Pang, V. Seregin, M. Karczewicz, “Adaptive motion vector resolution for non-4:4:4 formats”, JCTVC-T0099, Feb. 2015.