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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**  19th Meeting: Strasbourg, FR, 17–24 Oct 2014 | Document: JCTVC-S0128 |

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| *Title:* | **CE6: Crosscheck of Test B.2 –Encoder modification of palette coding for escape pixels** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
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# Abstract

This documents reports the crosscheck results for CE6 Test B.2 on encoder modification of palette coding for escape pixels (JCTVC-S0048). The source code provided by the proponents was verified to be consistent with the description in JCTVC-R1106. The rate-distortion performance was evaluated for CE6 test conditions JCTVC-R1106 and matches the one provided in JCTVC-S0048.

# Introduction

JCTVC-S0048 [2] proposed an encoder optimization technology for palette coding. The encoder will try palette coding with modified palette table by removing various numbers of colors in palette table at the end. The maximum number of colors to be removed is 3 in the test.

# Simulation results

The performance of the CE6 Test B.2 is cross-checked according to CE6 test conditions [1] and is summarized below. The detailed results can be found in the attached excel datasheets.

Table 1. Average BD rate reduction for lossless coding compared with CE6 anchors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **All Intra** | | | |
|  | Bit-rate saving (Total) | Bit-rate saving (Average) | Bit-rate saving (Min) | Bit-rate saving (Max) |
|  |
| RGB, text & graphics with motion, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, text & graphics with motion,720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion,720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 108% | | | |
| Dec Time[%] | 97% | | | |
|  |  |  |  |  |
|  | **Random Access** | | | |
|  | Bit-rate saving (Total) | Bit-rate saving (Average) | Bit-rate saving (Min) | Bit-rate saving (Max) |
|  |
| RGB, text & graphics with motion, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, text & graphics with motion,720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion,720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 100% | | | |
| Dec Time[%] | 95% | | | |
|  |  |  |  |  |
|  | **Low Delay B** | | | |
|  | Bit-rate saving (Total) | Bit-rate saving (Average) | Bit-rate saving (Min) | Bit-rate saving (Max) |
|  |
| RGB, text & graphics with motion, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, text & graphics with motion,720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion,720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 100% | | | |
| Dec Time[%] | 95% | | | |

Table 2. Average BD rate reduction for lossy coding compared with CE6 anchors

|  |  |  |  |
| --- | --- | --- | --- |
|  | **All Intra** | | |
|  | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p | -0.3% | -0.3% | -0.3% |
| RGB, text & graphics with motion,720p | -0.3% | -0.3% | -0.2% |
| RGB, mixed content, 1440p | -0.2% | -0.2% | -0.3% |
| RGB, mixed content, 1080p | -0.3% | -0.4% | -0.3% |
| RGB, Animation, 720p | 0.0% | -0.1% | -0.1% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | -0.2% | -0.5% | -0.5% |
| YUV, text & graphics with motion,720p | -0.2% | -0.3% | -0.6% |
| YUV, mixed content, 1440p | -0.1% | -0.5% | -0.5% |
| YUV, mixed content, 1080p | -0.1% | -0.3% | -0.4% |
| YUV, Animation, 720p | 0.0% | -0.3% | -0.2% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 103% | | |
| Dec Time[%] | 93% | | |
|  |  |  |  |
|  | **Random Access** | | |
|  | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p | -0.2% | -0.2% | -0.2% |
| RGB, text & graphics with motion,720p | -0.1% | -0.1% | -0.1% |
| RGB, mixed content, 1440p | -0.2% | -0.2% | -0.1% |
| RGB, mixed content, 1080p | -0.1% | -0.2% | -0.2% |
| RGB, Animation, 720p | -0.1% | 0.0% | -0.1% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | -0.1% | -0.4% | -0.4% |
| YUV, text & graphics with motion,720p | 0.0% | -0.3% | -0.3% |
| YUV, mixed content, 1440p | 0.0% | -0.2% | -0.2% |
| YUV, mixed content, 1080p | 0.1% | -0.2% | -0.4% |
| YUV, Animation, 720p | 0.0% | -0.1% | -0.1% |
| YUV, camera captured, 1080p | 0.1% | 0.1% | 0.1% |
| Enc Time[%] | 102% | | |
| Dec Time[%] | 95% | | |
|  |  |  |  |
|  | **Low delay B** | | |
|  | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p | -0.3% | -0.3% | -0.2% |
| RGB, text & graphics with motion,720p | -0.2% | -0.4% | -0.3% |
| RGB, mixed content, 1440p | 0.0% | -0.2% | -0.2% |
| RGB, mixed content, 1080p | -0.1% | -0.1% | 0.3% |
| RGB, Animation, 720p | 0.0% | 0.1% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.1% |
| YUV, text & graphics with motion, 1080p | -0.2% | -0.5% | -0.5% |
| YUV, text & graphics with motion,720p | -0.4% | -0.5% | -1.1% |
| YUV, mixed content, 1440p | 0.0% | -0.4% | -0.2% |
| YUV, mixed content, 1080p | 0.0% | -0.5% | -0.5% |
| YUV, Animation, 720p | 0.1% | -0.3% | 0.2% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.1% |
| Enc Time[%] | 101% | | |
| Dec Time[%] | 94% | | |

# References

1. Y.-W. Huang, P. Onno, R. Cohen, V. Seregin, X. Xiu, Z. Ma, “Description of Core Experiment 6 (CE6): Improvements of palette mode”, JCTVC-R1106, Jul. 2014, Sapporo, JP.
2. Y.-J. Chang, C.-H. Hung, C.-L. Lin, C.-C. Lin, J.-S. Tu, “CE6 Test B.2: Encoder modification of palette coding for escape pixels”, JCTVC-S0048, Oct. 2014.