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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**  18th Meeting: Sapporo, JP, 30 June – 9 July 2014 | Document: JCTVC-R0173 |

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| --- | --- | --- | --- |
| *Title:* | **SCE1: Crosscheck report of SCE1 test 1.1** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
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| *Source:* | InterDigital Communications, Inc. | | |

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# Abstract

This documents reports the crosscheck results for SCE1 test 1.1 on improved weighted prediction for color gamut scalability (JCTVC-R0239). The source code provided by the proponents was verified to be consistent with the description in JCTVC-Q1101. The rate-distortion performance was evaluated for SCE1 test conditions JCTVC-Q1101 and matches the one provided in JCTVC-R0239.

# Introduction

JCTVC-R0239 [2] describes a technique where an improved weighted prediction method is used for color gamut scalability coding. Two ILR reference pictures are added to enable accurate weighted prediction parameters by signaling each set of WP for each ILR picture for this test. More details of this technique can be found in JCTVC-R0239.

# Simulation results

The performance of the SCE1 test 1.1 is evaluated according to SCE1 test conditions [1] and is summarized below. The detailed results can be found in the attached excel datasheets.

Table 1. Average BD rate reduction compared with SHM-6.0 WP

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **AI HEVC 1x 10-bit base** | | | **AI HEVC 2x 8-bit base** | | |
|  | Y | U | V | Y | U | V |
|  |  |  |  |  |  |  |
| Class A+ | -2.3% | -2.5% | -2.8% | -2.0% | -1.9% | -2.6% |
| **Overall (Test vs Ref)** | -2.3% | -2.5% | -2.8% | -2.0% | -1.9% | -2.6% |
| **Overall (Test vs single layer)** | 29.3% | 28.4% | 8.7% | 18.7% | 22.3% | 16.3% |
| **Overall (Ref vs single layer)** | 32.3% | 31.8% | 11.7% | 21.2% | 24.7% | 19.4% |
| **EL only (Test vs Ref)** | -8.3% | -8.5% | -8.8% | -3.6% | -3.4% | -4.2% |
| **Overall (Test EL+BL vs single EL+BL)** | -31.4% | -31.8% | -42.5% | -22.3% | -19.9% | -24.3% |
| **Overall (Ref EL+BL vs single EL+BL)** | -29.7% | -30.1% | -40.7% | -20.7% | -18.4% | -22.1% |
| Enc Time[%] | 141.0% | | | 161.3% | | |
| Dec Time[%] | 99.4% | | | 95.7% | | |
| Enc Mem[%] | #DIV/0! | | | #DIV/0! | | |
| BL Match | Matched | | | Matched | | |
|  |  |  |  |  |  |  |
|  | **RA HEVC 1x 10-bit base** | | | **RA HEVC 2x 8-bit base** | | |
|  | Y | U | V | Y | U | V |
|  |  |  |  |  |  |  |
| Class A+ | -2.2% | -2.2% | -3.2% | -1.2% | -1.3% | -2.1% |
| **Overall (Test vs Ref)** | -2.2% | -2.2% | -3.2% | -1.2% | -1.3% | -2.1% |
| **Overall (Test vs single layer)** | 41.7% | 45.5% | 22.2% | 27.7% | 31.5% | 24.9% |
| **Overall (Ref vs single layer)** | 45.0% | 48.8% | 26.1% | 29.3% | 33.2% | 27.6% |
| **EL only (Test vs Ref)** | -5.9% | -5.9% | -6.9% | -2.3% | -2.2% | -3.1% |
| **Overall (Test EL+BL vs single EL+BL)** | -23.7% | -21.6% | -33.6% | -15.3% | -11.6% | -16.1% |
| **Overall (Ref EL+BL vs single EL+BL)** | -21.8% | -19.7% | -31.3% | -14.1% | -10.4% | -14.0% |
| Enc Time[%] | 100.2% | | | 100.7% | | |
| Dec Time[%] | 100.1% | | | 100.3% | | |
| Enc Mem[%] | #DIV/0! | | | #DIV/0! | | |
| BL Match | Matched | | | Matched | | |

# References

1. A. Duenas, P. Andrivon, E. Alshina, Y. Ye, K. Ugur, X. Li, “HEVC Scalable Extensions Core Experiment SCE1: Colour Gamut and Bit Depth Scalability”, JCTVC-Q1101, Apr. 2014.
2. D. Bugdayci, A. Aminlou, K. Ugur, M. M. Hannuksela, “SCE1: Test 5.1 results on improved weighted prediction for color gamut scalability”, JCTVC-R0239, Jul. 2014.