|  |  |
| --- | --- |
| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  14th Meeting: Vienna, AT, 25 July – 2 Aug. 2013 | Document: JCTVC-N0326 |

|  |  |  |  |
| --- | --- | --- | --- |
| *Title:* | **RCE3: Cross-check of JCTVC-N0247(Test 3.1)** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Information | | |
| *Author(s) or Contact(s):* | Xian Wang  Zhan Ma  Meng Xu  Huawei Technologies (USA) 2330 Central Expressway Santa Clara, CA 95050 USA | Email:  Tel:  Email: Tel: Email:  Tel: | [xian.w@huawei.com](mailto:xian.w@huawei.com)  +1 408 330 4440  [zhan.ma@huawei.com](mailto:zhan.ma@huawei.com)  +1 408 330 5142 [m.xu@huawei.com](mailto:m.xu@huawei.com)  +1 408 330 4994 |
| *Source:* | Huawei Technologies (USA) | | |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Abstract

This contribution reports the cross-check results performed by Huawei on JCTVC-N0247. The verification tests were carried out using the test sequences and conditions specified in JCTVC-M1123. Our test results matched, in terms of bitrates, those presented in the contribution documents.

# Description

The basic idea of JCTVC-N0247 is using palette which contains representative pixel values. If pixel values in CU can be found in the palette, then a palette index will be transmitted rather than the actual pixel value. And when pixel values of consecutive locations have the same values, then “run mode” will be signaled. Besides, if pixel values of consecutive locations have the same values as their top neighboring pixels, then “copy above mode” will be signaled.

# Results

The test conditions for Section 3.1 Palette Coding Mode in RCE3 as specified in JCTVC-M1123 were used in the verification tests. The simulations were run on a 64-bit Windows cluster. Our results matched, in terms of bitrate, those reported by the proponents. The complete cross-check results are provided in the accompanying spread-sheets. Below shows the summary of the test results.

## Lossless results

Table 1 Results of cross-check of N0247 for lossless coding

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All Intra Main** | | | **Random Access Main** | | | **Low delay B Main** | | |
|  | **compression ratio** | | Bit-rate saving | **compression ratio** | | Bit-rate saving | **compression ratio** | | Bit-rate saving |
|  | Reference | Tested | Reference | Tested | Reference | Tested |
| Class F | 5.2 | 5.3 | -1.3% | 31.7 | 32.1 | -0.6% | 49.8 | 50 | -0.2% |
| Class B | 2.2 | 2.2 | 0.0% | 2.6 | 2.6 | 0.0% | 2.6 | 2.6 | 0.0% |
| SC RGB 444 | 10.1 | 15.1 | -24.9% | 100.4 | 151.2 | -20.0% | 381.6 | 584.6 | -18.0% |
| SC YUV 444 | 11.4 | 14 | -11.6% | 128.9 | 157.7 | -10.2% | 325.6 | 426.7 | -9.4% |
| RangeExt | 2.4 | 2.4 | 0.0% | 2.5 | 2.5 | 0.0% | 2.5 | 2.5 | 0.0% |
| Enc Time[%] | 115% | | | 103% | | | 103% | | |
| Dec Time[%] | 88% | | | 98% | | | 98% | | |

## Lossy results

Table 2 Results of cross-check of N0247 for lossy coding

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All Intra HE Main-tier** | | | **All Intra HE High-tier** | | | **All Intra HE Super-High-tier** | | |
|  | Y | U | V | Y | U | V | Y | U | V |
| Class F | -0.4% | -0.3% | -0.2% | -0.8% | -0.7% | -0.5% | -1.6% | -1.3% | -1.1% |
| Class B | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SC RGB 444 | -14.4% | -14.7% | -14.8% | -18.9% | -19.0% | -19.1% | -24.6% | -25.3% | -25.4% |
| SC YUV 444 | -3.7% | -3.4% | -3.6% | -5.9% | -5.3% | -5.9% | -9.3% | -8.8% | -9.6% |
| RangeExt | 0.3% | 0.3% | 0.4% | 0.2% | 0.2% | 0.2% | 0.1% | 0.1% | 0.1% |
| Enc Time[%] | 111% | | | 109% | | | 108% | | |
| Dec Time[%] | 96% | | | 93% | | | 90% | | |
|  |  |  |  |  |  |  |  |  |  |
|  | **Random Access HE Main-tier** | | | **Random Access HE High-tier** | | |  |  |  |
|  | Y | U | V | Y | U | V |  |  |  |
| Class F | -0.4% | -0.5% | -0.1% | -0.7% | -0.8% | -0.4% |  |  |  |
| Class B | 0.2% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% |  |  |  |
| SC RGB 444 | -13.1% | -13.3% | -13.4% | -17.2% | -17.2% | -17.5% |  |  |  |
| SC YUV 444 | -3.5% | -3.2% | -3.6% | -5.5% | -5.1% | -5.8% |  |  |  |
| RangeExt | 0.2% | 0.4% | 0.4% | 0.2% | 0.2% | 0.3% |  |  |  |
| Enc Time[%] | 104% | | | 104% | | |  |  |  |
| Dec Time[%] | 98% | | | 98% | | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | **Low delay B HE Main-tier** | | | **Low delay B HE High-tier** | | |  |  |  |
|  | Y | U | V | Y | U | V |  |  |  |
| Class F | 0.1% | -0.6% | 0.3% | -0.1% | -0.7% | 0.0% |  |  |  |
| Class B | 0.2% | 0.1% | 0.0% | 0.1% | 0.1% | 0.0% |  |  |  |
| SC RGB 444 | -9.1% | -9.1% | -9.2% | -13.7% | -13.7% | -14.0% |  |  |  |
| SC YUV 444 | -2.6% | -2.5% | -2.8% | -4.4% | -4.0% | -4.7% |  |  |  |
| RangeExt | 0.3% | 0.2% | 0.4% | 0.2% | 0.1% | 0.2% |  |  |  |
| Enc Time[%] | 103% | | | 103% | | |  |  |  |
| Dec Time[%] | 101% | | | 101% | | |  |  |  |

# Conclusions

Our verification test results confirmed the reported coding efficiency gain in JCTVC-N0247.