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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-T0204 |

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| *Title:* | **Cross-check of JCTVC-T0196: On selective RDOQ** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
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# Abstract

This documents reports the crosscheck results for proposal JCTVC-T0196 on selective RDOQ. The source code provided by the proponents was verified to be consistent with the description in JCTVC-T0196. The rate-distortion performance was evaluated and matches the one provided in JCTVC-T0196. It can reduce the encoding complexity of SCM-3.0 by 2%-5%.

# Introduction

JCTVC-T0196 proposed to apply RDOQ selectively via pre-analysis step. The normal quantization with modified offset (1/3 for luma and 1/2 for chroma) is performed in pre-analysis step. If quantized coefficients are all zeroes, then no RDOQ is by-passed.

# Simulation results

The performance of the selective RDOQ described in JCTVC-T0196 is cross-checked and is summarized below. It only affected lossy coding results in CTC test conditions. The detailed results can be found in the attached excel datasheets.

Table 1. Average BD rate reduction for 444 lossy coding compared with SCM-3.0 anchor

|  |  |  |  |
| --- | --- | --- | --- |
|  | **All Intra** | | |
|  | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p & 720p | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1440p & 1080p | 0.0% | 0.0% | 0.0% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p & 720p | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1440p & 1080p | 0.0% | 0.0% | 0.0% |
| YUV, Animation, 720p | 0.1% | -0.1% | -0.1% |
| YUV, camera captured, 1080p | 0.0% | -0.1% | -0.1% |
| Enc Time[%] | 95% | | |
| Dec Time[%] | 98% | | |
|  |  |  |  |
|  | **Random Access** | | |
|  | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p & 720p | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1440p & 1080p | 0.0% | 0.0% | 0.0% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p & 720p | 0.0% | -0.1% | -0.1% |
| YUV, mixed content, 1440p & 1080p | 0.0% | 0.0% | 0.0% |
| YUV, Animation, 720p | 0.0% | -0.2% | 0.1% |
| YUV, camera captured, 1080p | 0.0% | -0.1% | -0.1% |
| Enc Time[%] | 98% | | |
| Dec Time[%] | 100% | | |
|  |  |  |  |
|  | **Low delay B** | | |
|  | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p & 720p | -0.1% | 0.0% | 0.0% |
| RGB, mixed content, 1440p & 1080p | 0.0% | 0.1% | -0.1% |
| RGB, Animation, 720p | 0.0% | 0.0% | -0.1% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p & 720p | 0.0% | -0.1% | -0.1% |
| YUV, mixed content, 1440p & 1080p | 0.0% | 0.1% | 0.0% |
| YUV, Animation, 720p | 0.0% | 0.0% | -0.2% |
| YUV, camera captured, 1080p | -0.1% | 0.1% | 0.1% |
| Enc Time[%] | 99% | | |
| Dec Time[%] | 101% | | |

Table 2. 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% | -0.1% | 0.2% |
| Mixed content, 480p | 0.0% | -0.1% | -0.1% |
| Animation, 768p | 0.0% | 0.0% | 0.0% |
| Average of all sequences | 0.0% | -0.1% | 0.1% |
| Enc Time[%] | 97% | | |
| Dec Time[%] | 93% | | |
|  |  |  |  |
|  | **Random Access** | | |
|  | G/Y | B/U | R/V |
| Text & graphics with motion, 720p | 0.1% | -0.1% | 0.1% |
| Mixed content, 480p | 0.0% | -0.1% | 0.2% |
| Animation, 768p | 0.0% | -0.1% | 0.2% |
| Average of all sequences | 0.1% | -0.1% | 0.2% |
| Enc Time[%] | 98% | | |
| Dec Time[%] | 96% | | |
|  |  |  |  |
|  | **Low delay B** | | |
|  | G/Y | B/U | R/V |
| Text & graphics with motion, 720p | 0.1% | 0.4% | -0.1% |
| Mixed content, 480p | 0.0% | 0.3% | 0.5% |
| Animation, 768p | 0.0% | 0.4% | -0.4% |
| Average of all sequences | 0.1% | 0.4% | 0.0% |
| Enc Time[%] | 97% | | |
| Dec Time[%] | 92% | | |

# References

1. B.Li, J. Xu, “On selective RDOQ”, JCTVC-T0196, Feb. 2015, Geneva, CH.