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| **Joint Collaborative Team on 3D Video Coding Extensions**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  8th Meeting: Valencia, ES, 29 March – 4 April 2014 | Document: JCT3V-H0071 |

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| *Title:* | **Cross Check of Simplification of DBBP in 3D-HEVC (JCT3V-H0068)** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Cross Check | | |
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| *Source:* | RWTH Aachen University | | |

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# Abstract

This document describes RWTH Aachen University's crosscheck of Samsung’s proposal on *Simplification of DBBP in 3D-HEVC* (JCT3V-H0068).

Samsung’s proposed modifications were implemented into the 3DV-HTM reference software HTM 10.0r1 and evaluated according to the common test conditions. The results of the crosscheck are provided in terms of rate and distortion. BD-Rates comparing the proposed method and the anchor encodings are also attached to this document.

# Crosscheck Results

The cross check of Samsung’s simulation results was performed for three different test configurations. All three simulations sets perfectly match with the results provided by Samsung.

## Test 1: Segmentation threshold for segmention mask

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | video 0 | video 1 | video 2 | video PSNR / video bitrate | video PSNR / total bitrate | synth PSNR / total bitrate | enc time | dec time |
| Balloons | 0,0% | 0,1% | 0,0% | 0,0% | 0,0% | 0,0% | 96,7% | 99,9% |
| Kendo | 0,0% | 0,0% | -0,1% | 0,0% | 0,0% | 0,0% | 96,3% | 100,9% |
| Newspaper\_CC | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | 95,7% | 97,5% |
| GT\_Fly | 0,0% | 0,1% | -0,2% | 0,0% | 0,0% | 0,0% | 114,2% | 109,1% |
| Poznan\_Hall2 | 0,0% | 0,1% | -0,2% | 0,0% | 0,0% | -0,1% | 98,3% | 98,4% |
| Poznan\_Street | 0,0% | -0,1% | 0,0% | 0,0% | 0,0% | 0,0% | 97,1% | 98,6% |
| Undo\_Dancer | 0,0% | -0,1% | 0,0% | 0,0% | 0,0% | 0,0% | 98,6% | 101,5% |
| Shark | 0,0% | 0,1% | 0,0% | 0,0% | 0,0% | 0,0% | 97,4% | 100,8% |
| 1024x768 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 96,2% | 99,5% |
| 1920x1088 | 0,0% | 0,1% | -0,1% | 0,0% | 0,0% | 0,0% | 101,2% | 101,7% |
| **average** | **0,0%** | **0,0%** | **-0,1%** | **0,0%** | **0,0%** | **0,0%** | **99,3%** | **100,9%** |

## Test 2: Derivation process for partitioning mode

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | video 0 | video 1 | video 2 | video PSNR / video bitrate | video PSNR / total bitrate | synth PSNR / total bitrate | enc time | dec time |
| Balloons | 0,0% | -0,1% | 0,0% | 0,0% | 0,0% | 0,0% | 98,2% | 99,1% |
| Kendo | 0,0% | -0,1% | -0,1% | 0,0% | 0,0% | 0,0% | 97,5% | 97,3% |
| Newspaper\_CC | 0,0% | 0,0% | -0,2% | 0,0% | 0,0% | -0,1% | 97,8% | 97,9% |
| GT\_Fly | 0,0% | -0,1% | -0,2% | 0,0% | 0,0% | 0,0% | 107,3% | 109,7% |
| Poznan\_Hall2 | 0,0% | -0,4% | -0,3% | -0,1% | -0,1% | -0,2% | 104,0% | 106,3% |
| Poznan\_Street | 0,0% | -0,1% | 0,0% | 0,0% | 0,0% | 0,0% | 105,3% | 104,8% |
| Undo\_Dancer | 0,0% | -0,2% | -0,1% | 0,0% | 0,0% | 0,0% | 100,4% | 103,4% |
| Shark | 0,0% | -0,1% | -0,1% | 0,0% | 0,0% | 0,0% | 99,8% | 94,8% |
| 1024x768 | 0,0% | -0,1% | -0,1% | 0,0% | 0,0% | 0,0% | 97,8% | 98,1% |
| 1920x1088 | 0,0% | -0,2% | -0,2% | 0,0% | 0,0% | -0,1% | 103,4% | 103,8% |
| **average** | **0,0%** | **-0,1%** | **-0,1%** | **0,0%** | **0,0%** | **0,0%** | **101,3%** | **101,7%** |

## Test 3: Combination of Test 1 and Test 2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | video 0 | video 1 | video 2 | video PSNR / video bitrate | video PSNR / total bitrate | synth PSNR / total bitrate | enc time | dec time |
| Balloons | 0,0% | 0,1% | 0,0% | 0,0% | 0,0% | 0,0% | 96,6% | 97,8% |
| Kendo | 0,0% | -0,2% | -0,1% | 0,0% | 0,0% | 0,0% | 99,5% | 92,3% |
| Newspaper\_CC | 0,0% | 0,0% | -0,2% | 0,0% | 0,0% | 0,0% | 98,8% | 96,2% |
| GT\_Fly | 0,0% | 0,0% | -0,3% | 0,0% | 0,0% | 0,0% | 99,2% | 93,3% |
| Poznan\_Hall2 | 0,0% | -0,1% | -0,1% | 0,0% | 0,0% | -0,1% | 98,7% | 100,5% |
| Poznan\_Street | 0,0% | -0,1% | 0,0% | 0,0% | 0,0% | 0,0% | 102,4% | 108,2% |
| Undo\_Dancer | 0,0% | -0,2% | -0,1% | 0,0% | 0,0% | 0,0% | 96,2% | 98,0% |
| Shark | 0,0% | 0,0% | -0,2% | 0,0% | 0,0% | 0,0% | 98,7% | 99,4% |
| 1024x768 | 0,0% | -0,1% | -0,1% | 0,0% | 0,0% | 0,0% | 98,3% | 95,5% |
| 1920x1088 | 0,0% | -0,1% | -0,1% | 0,0% | 0,0% | 0,0% | 99,0% | 99,9% |
| **average** | **0,0%** | **-0,1%** | **-0,1%** | **0,0%** | **0,0%** | **0,0%** | **98,8%** | **98,2%** |

# Investigation of Implementation

Samsung provided the source code of their modified 3DV-HTM 10.0r1 software together with a short explanation on how to enable and compile the proposed algorithm. All the modifications to the reference software were encapsulated in preprocessor statements for conditional compilation. Overall the implementation of the proposed algorithm is done in a clean and maintainable way and does not interfere with other coding tools.