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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**  6th Meeting: Geneva, CH, 25 Oct. – 1 Nov. 2013 | Document: JCT3V-F0154 |

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| *Title:* | **3D-CE5: Cross Check of Simplified depth coding based on most probable mode (JCT3V-F0148)** | | |
| *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 *Simplified depth coding based on most probable mode* (JCT3V-F0148).

Samsung's proposed modifications to the software were implemented into the 3DV-HTM reference software HTM 8.0 and evaluated according to the common test conditions [[1](#Hei11)]. 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

## Random Access Coding Configuration

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 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% | -0,1% | 0,0% | -0,1% | 0,0% | 97,9% | 98,4% |
| Kendo | 0,0% | 0,0% | -0,2% | 0,0% | -0,1% | -0,2% | 104,8% | 101,2% |
| Newspaper\_CC | 0,0% | 0,0% | 0,1% | 0,0% | -0,1% | 0,0% | 102,0% | 99,3% |
| GT\_Fly | 0,0% | 0,0% | 0,1% | 0,0% | -0,1% | -0,3% | 99,3% | 102,0% |
| Poznan\_Hall2 | 0,0% | 0,1% | -0,3% | -0,1% | -0,2% | -0,3% | 100,7% | 102,6% |
| Poznan\_Street | 0,0% | 0,2% | 0,1% | 0,0% | -0,1% | -0,1% | 101,2% | 99,7% |
| Undo\_Dancer | 0,0% | -0,1% | -0,3% | 0,0% | -0,1% | -0,2% | 99,4% | 100,0% |
| 1024x768 | 0,0% | 0,0% | -0,1% | 0,0% | -0,1% | -0,1% | 101,6% | 99,6% |
| 1920x1088 | 0,0% | 0,0% | -0,1% | 0,0% | -0,1% | -0,2% | 100,2% | 101,1% |
| **average** | **0,0%** | **0,0%** | **-0,1%** | **0,0%** | **-0,1%** | **-0,2%** | **100,8%** | **100,5%** |
|  |  |  |  |  |  |  |  |  |
| Shark | 0,0% | 0,0% | 0,1% | 0,0% | 0,0% | -0,2% | 102,6% | 102,1% |

## All-Intra Coding Configuration

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 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% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 101,1% | 102,4% |
| Kendo | 0,0% | 0,0% | 0,0% | 0,0% | -0,2% | -0,1% | 99,5% | 100,8% |
| Newspaper\_CC | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 100,4% | 100,9% |
| GT\_Fly | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,3% | 102,0% | 98,4% |
| Poznan\_Hall2 | 0,0% | 0,0% | 0,0% | 0,0% | -0,5% | -0,5% | 100,6% | 102,0% |
| Poznan\_Street | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 99,2% | 100,5% |
| Undo\_Dancer | 0,0% | 0,0% | 0,0% | 0,0% | -0,2% | -0,1% | 102,1% | 101,3% |
| 1024x768 | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 100,3% | 101,4% |
| 1920x1088 | 0,0% | 0,0% | 0,0% | 0,0% | -0,2% | -0,2% | 101,0% | 100,6% |
| **average** | **0,0%** | **0,0%** | **0,0%** | **0,0%** | **-0,2%** | **-0,2%** | **100,7%** | **100,9%** |
|  |  |  |  |  |  |  |  |  |
| Shark | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,2% | 103,2% | 99,7% |

# Investigation of Implementation

Samsung provided the source code of their modified 3DV-HTM 8.0 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.