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| **Joint Collaborative Team on 3D Video Coding Extension Development**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  2nd Meeting: Shanghai, CN, 13–19 Oct. 2012 | Document: JCT3V-B0132 |

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| *Title:* | **Cross Check of Region-based intra prediction for DMM mode 2 (JCT3V-B0127)** | |
| *Status:* | Input Document | |
| *Purpose:* | Cross Check | |
| *Author(s) or Contact(s):* | Fabian Jäger Institut für Nachrichtentechnik RWTH Aachen University | +49 (0) 241 80 27678 jaeger@ient.rwth-aachen.de |
| *Source:* | RWTH Aachen University | |

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# Abstract

This document describes RWTH Aachen University's crosscheck of LG Electronic’s proposal on *Region-based Intra Prediction for DMM Mode 2* in Core Experiment 6 for High Efficiency Video Coding (HEVC) based 3D Video Coding. The Core Experiment investigates the impact of intra coding tools for depth coding.

LG's proposed method was implemented into the 3DV-HTM reference software 4.0.1 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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | video 0 | video 1 | video 2 | video only | synthesized only | coded & synthesized | enc time | dec time |
| Balloons | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | 0,0% | 103,0% | 95,7% |
| Kendo | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 101,9% | 98,3% |
| Newspaper\_CC | 0,0% | 0,0% | 0,0% | 0,0% | -0,2% | -0,1% | 102,0% | 94,6% |
| GT\_Fly | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 102,3% | 94,2% |
| Poznan\_Hall2 | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 101,5% | 98,4% |
| Poznan\_Street | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 104,8% | 98,1% |
| Undo\_Dancer | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 104,2% | 98,0% |
| 1024x768 | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 102,3% | 96,2% |
| 1920x1088 | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | -0,1% | 103,2% | 97,2% |
| **average** | **0,0%** | **0,0%** | **0,0%** | **0,0%** | **-0,1%** | **-0,1%** | **102,8%** | **96,8%** |

## All Intra Coding

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | video 0 | video 1 | video 2 | video only | synthesized only | coded & synthesized | enc time | dec time |
| Balloons | 0,0% | 0,0% | 0,0% | 0,0% | -0,3% | -0,2% | 130,4% | 99,9% |
| Kendo | 0,0% | 0,0% | 0,0% | 0,0% | -0,3% | -0,2% | 128,9% | 97,4% |
| Newspaper\_CC | 0,0% | 0,0% | 0,0% | 0,0% | -0,4% | -0,3% | 132,3% | 101,0% |
| GT\_Fly | 0,0% | 0,0% | 0,0% | 0,0% | -0,3% | -0,2% | 132,7% | 100,8% |
| Poznan\_Hall2 | 0,0% | 0,0% | 0,0% | 0,0% | -0,4% | -0,2% | 129,7% | 98,3% |
| Poznan\_Street | 0,0% | 0,0% | 0,0% | 0,0% | -0,1% | 0,0% | 130,2% | 99,3% |
| Undo\_Dancer | 0,0% | 0,0% | 0,0% | 0,0% | -0,7% | -0,5% | 133,2% | 98,6% |
| 1024x768 | 0,0% | 0,0% | 0,0% | 0,0% | -0,3% | -0,2% | 130,5% | 99,4% |
| 1920x1088 | 0,0% | 0,0% | 0,0% | 0,0% | -0,4% | -0,2% | 131,5% | 99,3% |
| **average** | **0,0%** | **0,0%** | **0,0%** | **0,0%** | **-0,4%** | **-0,2%** | **131,1%** | **99,3%** |

# Investigation of Implementation

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

# References

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| [1] | Dmytro Rusanovskyy Heiko Schwarz, "Common Test Conditions for HEVC- and AVC-based 3DV," ISO/IEC JTC1/SC29/WG11 MPEG, N12560 2012. |

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