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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**  3rd Meeting: Geneva, CH, 17–23 Jan. 2013 | Document: JCT3V-C0147 |

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| *Title:* | **CE6.H cross check on distortion calculation simplification for DMM 3 of Qualcomm (JCT3V-C0052)** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Information | | |
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# Abstract

Cross check results for JCT3V-C0052 on distortion calculation simplification for DMM 3 by Qualcomm are reported. Performance evaluation results for random access and all-intra configuration reported by the proponent were verified.

# Introduction

InJCT3V-C0052,Qualcomm proposes distortion calculation simplification for DMM 3. As cross-checker, we received their source code and simulation results for random access and all-intra configuration according to JCT2-B1106. The source code was compiled and the corresponding simulations were conducted within our lab on a clustered system with Linux OS and GCC 4.5.5 compiler.

# Results

Encoding and decoding YUV files (md5sum) matched. More details of the cross check results are summarized in Tables 1 and 2.

Table 1. Result for 3-view scenario under CTC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **video only** | **synthesized only** | **coded & synthesized** | **enc time** | **dec time** | **ren time** |
| Balloons | 0.0% | 0.1% | 0.1% | 99.8% | 92.2% | 99.5% |
| Kendo | 0.0% | -0.1% | 0.0% | 99.4% | 95.9% | 99.6% |
| Newspapercc | 0.0% | 0.0% | 0.0% | 99.9% | 100.2% | 99.8% |
| GhostTownFly | 0.0% | -0.1% | 0.0% | 99.6% | 93.1% | 96.9% |
| PoznanHall2 | 0.0% | 0.0% | 0.0% | 99.5% | 91.0% | 97.3% |
| PoznanStreet | 0.0% | 0.0% | 0.0% | 99.5% | 92.3% | 99.0% |
| UndoDancer | 0.0% | 0.4% | 0.3% | 99.9% | 99.1% | 98.8% |
| 1024x768 | 0.0% | 0.0% | 0.0% | 99.7% | 96.0% | 99.6% |
| 1920x1088 | 0.0% | 0.1% | 0.1% | 99.6% | 93.8% | 98.0% |
| **average** | **0.0%** | **0.1%** | **0.0%** | **99.6%** | **94.8%** | **98.7%** |

Table 2. Result for 3-view scenario under all-intra configuration

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **video only** | **synthesized only** | **coded & synthesized** | **enc time** | **dec time** | **ren time** |
| Balloons | 0.0% | 0.0% | 0.0% | 95.8% | 91.6% | 99.0% |
| Kendo | 0.0% | 0.0% | 0.0% | 96.0% | 98.8% | 100.1% |
| Newspapercc | 0.0% | 0.0% | 0.0% | 97.5% | 93.2% | 98.6% |
| GhostTownFly | 0.0% | 0.1% | 0.1% | 97.0% | 95.3% | 94.6% |
| PoznanHall2 | 0.0% | 0.0% | 0.0% | 96.4% | 98.0% | 97.4% |
| PoznanStreet | 0.0% | 0.0% | 0.0% | 97.1% | 91.8% | 96.2% |
| UndoDancer | 0.0% | 0.0% | 0.0% | 96.6% | 94.0% | 95.1% |
| 1024x768 | 0.0% | 0.0% | 0.0% | 96.4% | 94.5% | 99.3% |
| 1920x1088 | 0.0% | 0.0% | 0.0% | 96.8% | 94.7% | 95.8% |
| **average** | **0.0%** | **0.0%** | **0.0%** | **96.6%** | **94.6%** | **97.3%** |

# Conclusion

Qualcomm provided the source code of their proposal for HTM-5.0.1 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.

The cross check results were matched to those provided by the proponent. The complexity results differ slightly, which might by caused by different simulation environments.