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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-C0026 |

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| --- | --- | --- | --- |
| *Title:* | **CE6 Summary Report: Depth intra coding** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Report | | |
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| *Source:* | CE coordinator | | |

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# Abstract

This document summarizes the proposals and cross check results of CE6, including tools under test according to JCT2-B1106 as well as related input contributions.

# Introduction

In this document a summary of proposals and cross check results for CE6 is reported. The goal of this Core Experiment (CE) is to investigate tools for depth intra coding, covering AVC-based proposals under sub-experiment CE6.A and HEVC-based proposals under sub-experiment CE6.H. For the 3rd JCT-3V meeting all tools under test and related contributions are in sub-experiment CE6.H. The proposed tools are evaluated in terms of coding efficiency and computational complexity. The objective of tools under test in CE6.H was simplification of both the implementation and processing complexity of existing depth intra coding methods, such as DMM, region boundary chain, and SDC.

Participants in CE6 are as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Participant** | **Person** | **Email address** | **P** | **C** |
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(P=proponent, C=cross checker)

# List of input documents

## CE6.H proposals

|  |  |  |  |
| --- | --- | --- | --- |
| **Participants** | **Doc No.** | **Title** | **Type** |
| Aachen Univ. | [JCT3V-C0143](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=584) | 3D-CE6: Simplification of Simplified Depth Coding | Proposal |
| Ghent Univ. | [JCT3V-C0159](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=601) | 3D-CE6.h: Cross check of Simplification of Simplified Depth Coding (JCT3V-C0143) | Cross check |
| Qualcomm | [JCT3V-C0052](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=490) | 3D-CE6.h: Results on distortion calculation simplification for Depth Modeling Mode (DMM) 3 | Proposal |
| HHI | [JCT3V-C0147](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=588) | CE6.H cross check on distortion calculation simplification for DMM 3 of Qualcomm (JCT3V-C0052) | Cross check |
| LGE PKU | [JCT3V-C0044](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=481) | CE6.h: Results on Simplification of Depth Modeling Mode 3 | Proposal |
| GIST | [JCT3V-C0109](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=548) | 3D-CE6.h: Cross check of simplification of depth modeling mode 3 (JCT3V-C0044) | Cross check |
| Intel | [JCT3V-C0191](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=640) | 3D-CE6.h: Crosscheck on S3 of LG Proposal JCT3V-C0044 | Cross check |
| GIST | [JCT3V-C0108](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=547) | 3D-CE6.h: Results on simplified DMM mode 3 | Proposal |
| LGE | [JCT3V-C0088](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=527) | CE6.h Crosscheck of GIST's proposal on simplification of DMM3 (JCT3V-C0108) | Cross check |

## CE6.H related proposals

|  |  |  |  |
| --- | --- | --- | --- |
| **Participants** | **Doc No.** | **Title** | **Type** |
| HHI | [JCT3V-C0034](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=467) | CE6.H related: Results on modified deltaDC processing for DMM | Proposal |
| Qualcomm | [JCT3V-C0179](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=628) | 3D-CE6.h related: Cross check on results on modified deltaDC processing for DMM (JCT3V-C0034) | Cross check |
| LGE | [JCT3V-C0042](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=479) | CE6.h related: Modified Index Assignment of Depth Intra Modes in Simplified Depth Coding | Proposal |
| Aachen Univ. | [JCT3V-C0120](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=559) | 3D-CE6: Cross check of Modified Index Assignment of Depth Intra Modes in Simplified Depth Coding (JCT3V-C0042) | Cross check |
| LGE | [JCT3V-C0067](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=506) | 3D-CE6.h related: Improved Simplified Depth Coding | Proposal |
| Samsung | [JCT3V-C0102](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=541) | 3D-CE6 cross check on Related Improved Simplified Depth Coding of LGE (JCT3V-C0067) | Cross check |
| LGE | [JCT3V-C0068](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=507) | 3D-CE6.h related: Software Improvement of Simplified Depth Coding | Proposal |
| Samsung | [JCT3V-C0216](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=665) | 3D-CE6.h cross check on software improvement of simplified depth coding of LGE (JCT3V-C0068) | Cross check |
| Samsung | [JCT3V-C0093](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=532) | 3D-CE6.h Related: Improved depth lookup table (DLT) | Proposal |
| LGE | [JCT3V-C0113](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=552) | 3D-CE6.h: Cross-check of Related Improved depth lookup table (DLT) (JCT3V-C0093) | Cross check |
| Samsung | [JCT3V-C0096](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=535) | 3D-CE6.h related results on Improved Simple Depth Coding | Proposal |
| Aachen Univ. | [JCT3V-C0119](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=558) | 3D-CE6: Cross check on Improved Simple Depth Coding (JCT3V-C0096) | Cross check |
| MediaTek | [JCT3V-C0142](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=583) | 3D-CE6.h related: An efficient coding method for DLT in 3DVC | Proposal |
| Samsung | [JCT3V-C0103](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=542) | 3D-CE6.h cross check on an efficient coding method for DLT in 3DVC of MediaTek (JCT3V-C0142) | Cross check |
| Hisilicon | [JCT3V-C0154](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=596) | CE6.H related: Reference samples sub-sampling for SDC and DMM | Proposal |
| Intel | [JCT3V-C0189](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=638) | 3D-CE6.h related: Crosscheck on Huawei Proposal JCT3V-C0154 | Cross check |
| Hisilicon | [JCT3V-C0155](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=597) | CE6.H related: Simplification of SDC singalling | Proposal |
| LGE | [JCT3V-C0089](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=528) | CE6.h related: crosscheck of Hisilicon's proposal on SDC (JCT3V-C0155) | Cross check |
| HHI | [JCT3V-C0160](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=604) | 3D-CE6.h related: Results on modified depth coding in random access units | Proposal |
| Orange | [JCT3V-C0167](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=612) | 3D-CE6.h related: Crosscheck of JCT3V-C0160 on modified depth coding in random access unit | Cross check |
| SCU Hisilicon | [JCT3V-C0190](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=639) | 3D-CE6.h related: Fast DMM Selection for Depth Intra Coding | Proposal |
| Qualcomm | [JCT3V-C0209](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=658) | 3D-CE6.h related: Cross check on fast DMM selection for depth intra coding (JCT3V-C0190) | Cross check |
| KDDI | [JCT3V-C0230](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=684) | 3D-CE6.h related: Calculation Sample Reduction for Depth Modeling Mode 1 and 3 | Proposal |

# Summary of proposals

Six of the contributions study improvements related to DMM:

* Three proposals mainly target simplifications of DMM 3: JCT3V-C0052 replaces inter-component prediction by intra prediction; JCT3V-C0044 omits the decoder search by signaling the Wedgelet partition; JCT3V-C0108 restricts the search to a very limited set.
* One proposal (JCT3V-C0034) mainly targets BD rate reduction for all DMMs by using un-quantized DC offsets like in SDC.
* One proposal (JCT3V-C0190) mainly targets a reduction of encoder complexity by fast mode selection for DMMs.
* One proposal (JCT3V-C0230) mainly targets simplification of the Wedgelet search in DMM 1 and 3 by reducing the number of calculation samples.

Seven of the contributions study improvements related to SDC:

* Three proposals (JCT3V-C0143, JCT3V-C0068, JCT3V-C0155) target a reduction of encoder complexity by reusing the prediction signals.
* Three proposals (JCT3V-C0143, JCT3V-C0042, JCT3V-C0155) study modifications of SDC signaling: JCT3V-C0143 and JCT3V-C0042 target a BD rate reduction by changing the mode index order; JCT3V-C0155 targets a syntax and design simplification by moving the SDC flag signaling behind the intra mode and removing contexts for SDC modes.
* Two proposals (JCT3V-C0143, JCT3V-C0067) target a reduction of CABAC contexts for SDC: JCT3V-C0143 removes segment-specific contexts; JCT3V-C0067 proposes residual index coding with less contexts.
* Two proposals (JCT3V-C0067, JCT3V-C0096) study modifications of SDC prediction modes: JCT3V-C0067 targets BD rate reduction by replacing DMM2 with region boundary chain coding mode for SDC; JCT3V-C0096 targets a complexity reduction by removing DMM2 from SDC.
* One proposal (JCT3V-C0154) targets a complexity reduction for SDC as well as DMM by sub-sampling of reference samples.

Two of the contributions study improvements related to DLT:

* Both proposals (JCT3V-C0093, JCT3V-C0142) study modifications of DLT signaling: JCT3V-C0093 targets a syntax and design simplification by signaling the DLT in intra slices instead of SPS; JCT3V-C0142 targets BD rate reduction by using range constrained bit map signaling for DLT values.

One of the contributions studies improvements related to random access units:

* The proposal (JCT3V-C0160) targets BD rate reduction for random access unit slices in dependent views by always testing intra modes and by disabling quadtree limitation and predictive coding.

# Performance evaluation

## Comparison of proposals

**Table 1. Result for 3-view scenario under CTC**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **video only** | **synthesized only** | **coded & synthesized** | **enc time** | **dec time** | **ren time** |
| [JCT3V-C0143](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=584) | 0.0% | -0.1% | -0.1% | 95.9% | 100.1% | **n/a** |
| [JCT3V-C0052](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=490) | 0.0% | 0.1% | 0.0% | 95.8% | 95.0% | 96.8% |
| [JCT3V-C0044](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=481) | 0.0% | 0.0% | 0.0% | 100.7% | 100.3% | **n/a** |
| [JCT3V-C0108](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=547) | 0.0% | 0.0% | 0.0% | 99.8% | 99.2% | 96.5% |
| [JCT3V-C0034](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=467) | 0.0% | -0.2% | -0.1% | 100.3% | 94.0% | 98.7% |
| [JCT3V-C0042](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=479) | 0.0% | 0.0% | 0.0% | 100.4% | **n/a** | **n/a** |
| [JCT3V-C0067](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=506) | 0.0% | -0.3% | -0.2% | 99.8% | 96.5% | 93.7% |
| [JCT3V-C0068](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=507) | 0.0% | 0.0% | 0.0% | 98.3% | 98.6% | 109.9% |
| [JCT3V-C0093](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=532) | 0.0% | 0.1% | 0.1% | 98.0% | 97.8% | 100.0% |
| [JCT3V-C0096](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=535) | 0.0% | -0.1% | -0.1% | 99.6% | 95.2% | 99.7% |
| [JCT3V-C0142](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=583) | 0.0% | 0.0% | 0.0% | 94.8% | 100.7% | 97.5% |
| [JCT3V-C0154](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=596) | 0.0% | -0.1% | 0.0% | 98.9% | 101.9% | 100.3% |
| [JCT3V-C0155](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=597) | 0.0% | 0.0% | 0.0% | 96.8% | 100.3% | 100.2% |
| [JCT3V-C0160](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=604) | 0.0% | -0.8% | -0.4% | 105.5% | 102.2% | 99.6% |
| [JCT3V-C0190](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=639) | 0.0% | 0.1% | 0.0% | 99.0% | 97.3% | 96.0% |
| [JCT3V-C0230](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=684) | 0.0% | 0.0% | 0.0% | 100.6% | 99.0% | 95.6% |

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **video only** | **synthesized only** | **coded & synthesized** | **enc time** | **dec time** | **ren time** |
| [JCT3V-C0143](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=584) | 0.0% | 0.2% | 0.2% | 81.9% | 100.6% | **n/a** |
| [JCT3V-C0052](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=490) | 0.0% | 0.0% | 0.0% | 97.0% | 96.7% | 99.0% |
| [JCT3V-C0044](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=481) | 0.0% | 0.0% | 0.0% | 100.3% | 98.9% | **n/a** |
| [JCT3V-C0108](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=547) | 0.0% | 0.1% | 0.0% | 95.3% | 98.3% | 95.7% |
| [JCT3V-C0034](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=467) | 0.0% | -0.7% | -0.4% | 106.3% | 99.3% | 99.8% |
| [JCT3V-C0042](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=479) | 0.0% | 0.0% | 0.0% | 99.9% | **n/a** | **n/a** |
| [JCT3V-C0067](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=506) | 0.0% | -0.2% | -0.2% | 96.5% | 99.8% | 103.2% |
| [JCT3V-C0068](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=507) | 0.0% | 0.0% | 0.0% | 84.0% | 99.9% | 99.8% |
| [JCT3V-C0093](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=532) | 0.0% | 0.2% | 0.2% | 98.5% | 99.6% | 100.0% |
| [JCT3V-C0096](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=535) | 0.0% | 0.0% | 0.0% | 98.0% | 97.2% | 99.7% |
| [JCT3V-C0142](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=583) | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** |
| [JCT3V-C0154](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=596) | 0.0% | 0.0% | 0.0% | 100.9% | 101.5% | 101.9% |
| [JCT3V-C0155](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=597) | 0.0% | 0.4% | 0.3% | 80.1% | 97.8% | 102.6% |
| [JCT3V-C0160](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=604) | --- | --- | --- | --- | --- | --- |
| [JCT3V-C0190](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=639) | 0.0% | 0.2% | 0.2% | 85.4% | 100.2% | 98.9% |
| [JCT3V-C0230](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=684) | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** |

## Cross check results

**Table 3. Proposals and cross checks for 3-view scenario under CTC**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **video only** | **synthesized only** | **coded & synthesized** | **enc time** | **dec time** | **ren time** |
| [JCT3V-C0143](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=584) | **0.0%** | **-0.1%** | **-0.1%** | 95.9% | 100.1% | n/a |
| [JCT3V-C0159](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=601) | **0.0%** | **-0.1%** | **-0.1%** | 97.2% | 98.5% | 99.4% |
| [JCT3V-C0052](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=490) | **0.0%** | **0.1%** | **0.0%** | 95.8% | 95.0% | 96.8% |
| [JCT3V-C0147](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=588) | **0.0%** | **0.1%** | **0.0%** | 99.6% | 94.8% | 98.7% |
| [JCT3V-C0044](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=481) | **0.0%** | **0.0%** | **0.0%** | 100.7% | 100.3% | n/a |
| [JCT3V-C0109](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=548) | **0.0%** | **0.0%** | **0.0%** | 99.4% | 99.3% | 92.8% |
| [JCT3V-C0044](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=481) | **0.0%** | **0.1%** | **0.0%** | n/a | 101.5% | n/a |
| [JCT3V-C0191](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=640) | **0.0%** | **0.1%** | **0.0%** | 100.4% | 101.2% | 103.1% |
| [JCT3V-C0108](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=547) | **0.0%** | **0.0%** | **0.0%** | 99.8% | 99.2% | 96.5% |
| [JCT3V-C0088](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=527) | **0.0%** | **0.0%** | **0.0%** | 100.2% | 99.6% | n/a |
| [JCT3V-C0034](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=467) | **0.0%** | **-0.2%** | **-0.1%** | 100.3% | 94.0% | 98.7% |
| [JCT3V-C0179](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=628) | **0.0%** | **-0.2%** | **-0.1%** | 102.2% | 98.9% | 103.0% |
| [JCT3V-C0042](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=479) | **0.0%** | **0.0%** | **0.0%** | 100.4% | n/a | n/a |
| [JCT3V-C0120](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=559) | **0.0%** | **0.0%** | **0.0%** | 100.3% | 100.1% | n/a |
| [JCT3V-C0067](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=506) | **0.0%** | **-0.3%** | **-0.2%** | 99.8% | 96.5% | 93.7% |
| [JCT3V-C0102](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=541) | **0.0%** | **-0.3%** | **-0.2%** | 99.3% | 99.4% | 100.0% |
| [JCT3V-C0068](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=507) | **0.0%** | **0.0%** | **0.0%** | 98.3% | 98.6% | 109.9% |
| [JCT3V-C0216](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=665) | **0.0%** | **0.0%** | **0.0%** | 97.9% | 100.6% | 100.0% |
| [JCT3V-C0093](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=532) | **0.0%** | **0.1%** | **0.1%** | 98.0% | 97.8% | 100.0% |
| [JCT3V-C0113](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=552) | **0.0%** | **0.1%** | **0.1%** | 99.9% | 99.7% | 99.5% |
| [JCT3V-C0096](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=535) | **0.0%** | **-0.1%** | **-0.1%** | 99.6% | 95.2% | 99.7% |
| [JCT3V-C0119](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=558) | **0.0%** | **-0.1%** | **-0.1%** | 100.2% | 100.5% | n/a |
| [JCT3V-C0142](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=583) | **0.0%** | **0.0%** | **0.0%** | 94.8% | 100.7% | 97.5% |
| [JCT3V-C0103](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=542) | **0.0%** | **0.0%** | **0.0%** | 99.9% | 100.0% | n/a |
| [JCT3V-C0154](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=596) | **0.0%** | **-0.1%** | **0.0%** | 98.9% | 101.9% | 100.3% |
| [JCT3V-C0189](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=638) | **0.0%** | **-0.1%** | **0.0%** | 99.9% | 101.5% | 100.9% |
| [JCT3V-C0155](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=597) | **0.0%** | **0.0%** | **0.0%** | 96.8% | 100.3% | 100.2% |
| [JCT3V-C0089](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=528) | **0.0%** | **0.0%** | **0.0%** | 97.9% | 100.0% | n/a |
| [JCT3V-C0160](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=604) | **0.0%** | **-0.8%** | **-0.4%** | 105.5% | 102.2% | 99.6% |
| [JCT3V-C0167](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=612) | **0.0%** | **-0.8%** | **-0.4%** | 105.6% | 101.8% | 98.4% |
| [JCT3V-C0190](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=639) | 0.0% | 0.1% | 0.0% | 99.0% | 97.3% | 96.0% |
| [JCT3V-C0209](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=658) | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** |

**Table 4. Proposals and cross checks for 3-view scenario under all-intra configuration**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **video only** | **synthesized only** | **coded & synthesized** | **enc time** | **dec time** | **ren time** |
| [JCT3V-C0143](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=584) | **0.0%** | **0.2%** | **0.2%** | 81.9% | 100.6% | n/a |
| [JCT3V-C0159](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=601) | **0.0%** | **0.2%** | **0.2%** | 83.7% | 100.4% | 101.4% |
| [JCT3V-C0052](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=490) | **0.0%** | **0.0%** | **0.0%** | 97.0% | 96.7% | 99.0% |
| [JCT3V-C0147](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=588) | **0.0%** | **0.0%** | **0.0%** | 96.6% | 94.6% | 97.3% |
| [JCT3V-C0044](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=481) | **0.0%** | **0.0%** | **0.0%** | 100.3% | 98.9% | n/a |
| [JCT3V-C0109](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=548) | **0.0%** | **0.0%** | **0.0%** | 100.0% | 98.4% | 107.3% |
| [JCT3V-C0044](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=481) | **0.0%** | **0.0%** | **0.0%** | 99.7% | 98.0% | n/a |
| [JCT3V-C0191](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=640) | **0.0%** | **0.0%** | **0.0%** | 102.2% | 100.2% | 101.8% |
| [JCT3V-C0108](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=547) | **0.0%** | **0.1%** | **0.0%** | 95.3% | 98.3% | 95.7% |
| [JCT3V-C0088](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=527) | **0.0%** | **0.1%** | **0.0%** | 96.0% | 98.2% | 107.4% |
| [JCT3V-C0034](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=467) | **0.0%** | **-0.7%** | **-0.4%** | 106.3% | 99.3% | 99.8% |
| [JCT3V-C0179](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=628) | **0.0%** | **-0.7%** | **-0.4%** | 107.6% | 98.2% | 100.3% |
| [JCT3V-C0042](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=479) | **0.0%** | **0.0%** | **0.0%** | 99.9% | n/a | n/a |
| [JCT3V-C0120](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=559) | **0.0%** | **0.0%** | **0.0%** | 100.7% | 100.3% | n/a |
| [JCT3V-C0067](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=506) | **0.0%** | **-0.2%** | **-0.2%** | 96.5% | 99.8% | 103.2% |
| [JCT3V-C0102](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=541) | **0.0%** | **-0.2%** | **-0.2%** | 95.5% | 99.0% | 100.0% |
| [JCT3V-C0068](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=507) | **0.0%** | **0.0%** | **0.0%** | 84.0% | 99.9% | 99.8% |
| [JCT3V-C0216](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=665) | **0.0%** | **0.0%** | **0.0%** | 83.0% | 99.2% | 100.0% |
| [JCT3V-C0093](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=532) | **0.0%** | **0.2%** | **0.2%** | 98.5% | 99.6% | 100.0% |
| [JCT3V-C0113](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=552) | **0.0%** | **0.2%** | **0.2%** | 100.3% | 100.4% | 100.0% |
| [JCT3V-C0096](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=535) | **0.0%** | **0.0%** | **0.0%** | 98.0% | 97.2% | 99.7% |
| [JCT3V-C0119](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=558) | **0.0%** | **0.0%** | **0.0%** | 98.2% | 100.2% | n/a |
| [JCT3V-C0142](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=583) | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** |
| [JCT3V-C0103](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=542) | 0.0% | 0.0% | 0.0% | 100.2% | 101.2% | n/a |
| [JCT3V-C0154](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=596) | **0.0%** | **0.0%** | **0.0%** | 100.9% | 101.5% | 101.9% |
| [JCT3V-C0189](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=638) | **0.0%** | **0.0%** | **0.0%** | 100.2% | 99.4% | 100.2% |
| [JCT3V-C0155](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=597) | **0.0%** | **0.4%** | **0.3%** | 80.1% | 97.8% | 102.6% |
| [JCT3V-C0089](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=528) | **0.0%** | **0.4%** | **0.3%** | 83.5% | 97.5% | 97.8% |
| [JCT3V-C0160](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=604) | --- | --- | --- | --- | --- | --- |
| [JCT3V-C0167](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=612) | --- | --- | --- | --- | --- | --- |
| [JCT3V-C0190](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=639) | 0.0% | 0.2% | 0.2% | 85.4% | 100.2% | 98.9% |
| [JCT3V-C0209](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=658) | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** | **n/a** |