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| *Title:* | **CE1: Summary Report on Segmental Prediction** | | |
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# Abstract

This document is the summary report of Core Experiment 1 (CE1) on Segmental Prediction. Tools under test will be evaluated according to their impact on compression efficiency and implementation complexity.

# Participants

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1. **List of contribution**

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| **CE contribution** | | | |
| MediaTek | [JCT3V-J0032](http://phenix.it-sudparis.eu/jct2/doc_end_user/current_document.php?id=2321) | 3D-CE1: Segmental prediction in 3D-HEVC | Proposal |
| Sharp | [JCT3V-J0031](http://phenix.it-sudparis.eu/jct2/doc_end_user/current_document.php?id=2320) | CE1: Cross-check on Test 2 and Test 4 | Crosscheck |
| HHI | [JCT3V-J0074](http://phenix.it-sudparis.eu/jct2/doc_end_user/current_document.php?id=2363) | CE1: Cross check of segmental prediction, test3 (JCT3V-J0032) | Crosscheck |
| Hisilicon | [JCT3V-J0098](http://phenix.it-sudparis.eu/jct2/doc_end_user/current_document.php?id=2389) | CE1: Crosscheck on CE1 test 6 (JCT3V-J0032) | Crosscheck |
| NTT | [JCT3V-J0102](http://phenix.it-sudparis.eu/jct2/doc_end_user/current_document.php?id=2393) | 3D-CE1: Crosscheck on Segmental prediction in 3D-HEVC (JCT3V-J0032) | Crosscheck |

# Summary of proposals & results

## Segmental prediction

In this contribution, a segmental prediction method for Inter-SDC is proposed in depth coding. Besides the current Inter-SDC mode, three segmental Inter-SDC modes with 1, 2 and 3 segments are added. A single depth value is assigned to all reconstructed samples in a segment.

For a CU which is coded with Inter-SDC mode, a flag is signaled to indicate whether to apply the normal Inter-SDC or the segInter-SDC. When the segInter-SDC is enabled, two steps are applied to obtain the reconstructed block from the prediction block.

1. In the first step, samples in the current block are classified into one, two or three segments.
2. In the second step, a single value is derived for each segment in the reconstructed block.



Fig. 1 An example of segInter-SDC with 2 segments for an 8x8 block.

The following aspects should be further studied in this context:

- Usage in combination with Intra SDC (where it would target similar depth map characteristics as DMM)

- Restriction of number of segments to two (instead of three)

Table 1. Configuration for tests

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 segment | 2 segments | 3 segments | For Inter-SDC | For Intra-SDC |
| Test 1 | Yes | Yes | Yes | Yes | No |
| Test 2 | No | Yes | Yes | Yes | No |
| Test 3 | Yes | Yes | No | Yes | No |
| Test 4 | No | Yes | No | Yes | No |
| Test 5 | No | Yes | Yes | Yes | Yes |
| Test 6 | No | Yes | No | Yes | Yes |

#### Coding results

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Video 1* | *Video 2* | *Video/video BR* | *Video/total BR* | *Synthesized/total BR* | *Enc time* | *Dec time* |
| Test 1 | 0.0% | 0.0% | 0.0% | 0.1% | -0.4% | 114.1% | 101.5% |
| Test 2 | 0.0% | -0.1% | 0.0% | 0.1% | -0.5% | 107.3% | 101.7% |
| Test 3 | 0.0% | 0.0% | 0.0% | 0.1% | -0.3% | 109.8% | 101.2% |
| Test 4 | 0.0% | 0.0% | 0.0% | 0.1% | -0.3% | 105.5% | 100.7% |
| Test 5 | 0.0% | 0.0% | 0.0% | 0.1% | -0.6% | 108.4% | 99.2% |
| Test 6 | 0.0% | 0.0% | 0.0% | 0.0% | -0.4% | 106.3% | 101.1% |