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| *Title:* | **3D-CE5 related:** **Improvement on SDC** | | |
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| *Purpose:* | Proposal | | |
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# Abstract

The simplified depth coding (SDC) is utilized as an alternative intra coding mode in 3D-HEVC. In current SDC, the prediction samples of the current depth block are generated by planar mode or DMM mode 1 (i.e., explicit wedgelets). In this contribution, it is proposed to add two more options for generating the prediction samples in SDC. In addition to planar mode and DMM mode 1, horizontal mode and vertical mode are also allowed in SDC. The experimental results reportedly show 0.1% BD-rate saving under the comment test conditions and the all-intra test conditions. Since horizontal mode and vertical mode are much less complex than planar mode and DMM mode 1, the average decoding time is reduced by 3-4%.

# Introduction

In 3D-HEVC, the simplified depth coding (SDC) is applied as an alternative intra coding mode [1]. For SDC, the prediction samples of the current depth block are generated by a conventional intra prediction mode or a DMM intra prediction mode. The possible intra modes used in SDC are listed as follows.

1. Planar mode (1 partition)
2. DMM mode 1 – explicit wedgelets (2 partitions)

In the current design of SDC, the input is a predicting depth value, which is the mean of the prediction samples of the current depth block generated by intra prediction of planar mode or DMM mode 1. A depth lookup table (DLT) is used to map the predicting depth value to an index value.

Instead of transmitting quantized transform coefficients to represent the residual signal, the residual of each partition in the current depth block is coded by transmitting a constant residual of the index value to the decoder.

# Proposed scheme

In current SDC, the prediction samples of the current depth block are generated by planar mode or DMM mode 1 (i.e., explicit wedgelets). In order to improve coding efficiency, two more options are added. The possible intra modes used in the proposed SDC scheme are listed as follows.

1. Planar mode (1 partition)
2. DMM mode 1 – explicit wedgelets (2 partitions)
3. Horizontal mode (1 partition)
4. Vertical mode (1 partition)

# Experimental results

The proposed schemes are integrated into HTM-8.0 [2], and the tests are conducted under the common test conditions [3] and all-intra test conditions [4]. The experimental results under the comment test conditions and all-intra test conditions are shown in Table 1 and Table 2, respectively. Compared to the anchor, HTM-8.0, adding horizontal and vertical intra prediction modes for SDC brings an average of 0.1% BD-rate saving for the synthesized view while the decoding time is also reduced by 3-4%.

**Table 1.** **The experimental results under the common test conditions**



**Table 2. The experimental results under the all-intra test conditions**



# Conclusion

In this contribution, it is proposed to add horizontal mode and vertical mode for SDC. The experimental results reportedly show 0.1% BD-rate saving under the comment tests conditions and the all-intra test conditions with 3-4% reduction in decoding time.

# Patent rights declaration(s)

**MediaTek Inc****. may have current or pending patent rights relating to the technology described in this contribution and, conditioned on reciprocity, is prepared to grant licenses under reasonable and non-discriminatory terms as necessary for implementation of the resulting ITU-T Recommendation | ISO/IEC International Standard (per box 2 of the ITU-T/ITU-R/ISO/IEC patent statement and licensing declaration form).**

# References

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