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| *Title:* | **Restriction of large-sized DMM** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Proposal | | |
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**Abstract**

In current 3D-HEVC, DMM is disallowed when current CU block size is greater than maximum transform block size and SDC scheme is not applied. However, DMM could be allowed up to 32x32 block size regardless of maximum transform size when SDC is applied. In this contribution, restriction of large-sized DMM is proposed. The proposed method is that DMM is disallowed when current CU block size is greater than maximum transform block size. Experimental results incur no impact in terms of synthesized PSNR.

1. **Introduction**

Intra prediction block size in HEVC is restricted by maximum transform block size. It offers flexibility of the encoder. In current 3D-HEVC, the block size for intra SDC mode can be up to 64x64. It is required to intra prediction for 64x64 block. To restrict 64x64 intra prediction caused by intra SDC mode, a simplification method by changing a 64x64 block prediction to four 32x32 block predictions was adopted [1-2]. Therefore, when intra prediction block size is larger than the maximum transform block size, intra prediction block is split as sub-block having the maximum transform block size.

Similarly, DMM should be disallowed when current CU block size is greater than the maximum transform block size and SDC scheme is not applied. However, there is no constraint for DMM mode when SDC is applied. For example, it could be required larger DMM than the maximum transform block size because DMM is allowed up to 32x32 CU size, as shown Table 1.

**Table 1. Size of intra prediction according to CU and maximum TU size**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Current CU | Maximum TU | SDC on | | SDC off | |
| Conventional intra | DMM | Conventional intra | DMM |
| 32x32 | 16x16 | 4 blocks w/  16x16 pred. | 1 block w/  32x32 pred. | 4 blocks w/  16x16 pred.  ~ 64 blocks w/  4x4 pred. | X |

1. **Proposed method**

This contribution proposes restriction of large-sized DMM. The proposed method is that DMM is disallowed when current CU block size is greater than maximum transform block as shown Table 2.

**Table 2. Proposed method**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Current CU | Maximum TU | SDC on | | SDC off | |
| Conventional intra | DMM | Conventional intra | DMM |
| 32x32 | 16x16 | 4 blocks w/  16x16 pred. | X | 4 blocks w/  16x16 pred.  ~ 64 blocks w/  4x4 pred. | X |

In addition, there is a mismatch between specification and HTM. DMM mode in HTM is split by sub-blocks as if conventional intra prediction coded by SDC is split as sub-blocks, when current CU size is greater than maximum transform block size and SDC is applied.

1. **Experimental results**

The proposed method is implemented on HTM-12.0 reference software [3]. The maximum transform size is always greater than CU size for DMM under CTC. For this proposal, non-CTC anchor is generated with the maximum transform size is set to 16x16.

Table 1 shows results of bug-fix for mismatch between specification and HTM.

**Table 1. Bug-fix for DMM vs. HTM-12.0 non-CTC**



Table 2 shows results of the proposed method which incurs no impact in terms of synthesized PSNR.

**Table 2. Proposed method vs. HTM 12.0 non-CTC**



1. **Conclusion**

Restriction for large-sized DMM is proposed in this contribution. The proposed method is that DMM is disallowed when current CU block size is greater than maximum transform block. There is no impact of coding efficiency for the synthesized views under non-CTC conditions.

# Patent rights declaration(s)

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1. **References**

[1] W. Li, X. Zheng, and, Y. He, CE5 related: Implicit split process for intra SDC, JCT3V-G0111, San José, US, Jan., 2014

[2] Q. Yu, H. Liu, and, Y. Chen, CE5 related: Simplification of 64x64intra SDC mode in 3D-HEVC, JCT3V-G0123, San José, US, Jan., 2014

[3] HTM-12.0, https://hevc.hhi.fraunhofer.de/svn/svn\_3DVCSoftware/tags/HTM-12.0.