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| *Title:* | **Non-CE1: Extension of palette mode to non-4:4:4 colour formats** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
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# Abstract

An extension of palette mode to non-4:4:4 colour formats is proposed. Each palette entry consists of 3 components (GBR or YCbCr). For coding purposes, the chroma samples are associated with indices which are integer multiples of the subsampling factor in each subsampled dimension. Depending, on the sample position, only the Y/G component or all three components of the palette entries are used to reconstruct the samples. For escape samples, depending on the sample position, one or three escape values are coded. It is reported that for class F sequences, the method achieves BD-rates in the range of −0.9% to −4.6% with average BD-rate of −3.2% for the Y/G component under All-Intra lossy configuration compared with SCM3.0 anchor.

# Technical description

JCTVC-T0062 proposes using two different palettes for 4:2:0 colour formats, one for luma and the other for chroma. In this proposal, a single palette is used where each palette entry consists of three components. The syntax is identical to the 4:4:4 case (except for escape samples). Once the palette indices for the whole block have been reconstructed, for the sample positions which have only luma component, only the luma component of the corresponding palette entry is used.

Escape sample coding is modified slightly compared with the 4:4:4 colour format. Depending on the position of the escape sample, only luma escape value or all three escape values are coded.

# Simulation results

The proposed method is implemented on top of SCM3.0 and tested using the common test condition defined in [1]. Table 1 reports the lossy coding performance for All-Intra configuration for class F sequences. Results for other configurations and lossless coding conditions can be found in the accompanying spreadsheets. The anchor is SCM 3.0. The simulation platform is a mostly homogenous LINUX cluster consisting of Intel(R) XEON CPUs.



# Conclusion

The proposed extension of palette mode to non-4:4:4 colour formats adds very little complexity on the decoder side while achieving, for class F sequences, BD-rates in the range of −0.9% to −4.6% with average BD-rate of −3.2% for the Y/G component under All-Intra lossy configuration compared with SCM3.0 anchor. It offers a good trade-off between complexity and performance. It is proposed that this method be adopted to HEVC Screen Content Coding Extensions draft text version 3.

# References

1. H. Yu, R. Cohen, K. Rapaka, J. Xu (editors), “Common Test Conditions for Screen Content Coding”, JCTVC-S1015, 19th Meeting: Strasbourg, Oct 2014.

# Patent rights declaration(s)

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