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| *Title:* | SCE1: Crosscheck report of SCE1.2 on Combined bit-depth and color gamut conversion with 3D LUT for SHVC color gamut scalability (JCTVC-P0186) | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
| *Author(s) or Contact(s):* | Xiang Li | Tel: Email: | +1 858 658 3923  [lxiang@qti.qualcomm.com](mailto:lxiang@qti.qualcomm.com) |
| *Source:* | Qualcomm Incorporated | | |

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# Abstract

This contribution reports the crosschecking results for JCTVC-P0186 on combined bit-depth and color gamut conversion with 3D LUT for SHVC color gamut scalability. The simulation results reportedly matched those provided by the proponents. However, it is observed that a new step (additional filtering) on top of the original proposal JCTVC-O0161 was included. It is reported that the new step provided 0.4%-0.7% luma BD-rate reduction.

# Introduction

JCTVC-P0186 presents SCE1 test 1.2 results on lookup table based color gamut scalability. The same as the original proposal JCTVC-O0161, the tetrahedral interpolation is applied inside each octant with four vertices. Different from JCTVC-O0161 where y, u, and v are reconstructed base layer samples, y, u, v here in JCTVC-P0186 are filtered samples of base layer reconstruction. The additional filtering process is indicated by the macros CGS\_LUMA\_ENH and CGS\_CHROMA\_ENH in the software.

# Experimental results

We received the source code from the proponents, implemented in SHM-4.0 SCE1 anchor, and did a code study to verify whether the proposed method was implemented as described. We ran simulations for the cases of AI-2x, RA-2x with SCE4 test sequences [1].

The results matched what were provided by the proponents and are summarized as follows

## Use case 1



## Use case 2



## Use case 2 without additional filtering (in line with JCTVC-O0161)

To check the performance of the original proposal JCTVC-O0161, the macros CGS\_LUMA\_ENH and CGS\_CHROMA\_ENH are set to 0 in this test. The results are summarized as follows.



Compared to the results of use case 2 (section 2.2), the additional filtering is able to provide 0.4%-0.7% luma BD-rate reduction.

# Conclusion

In this contribution, we have presented the results of our cross-check of JCTVC-P0186. The implemented algorithm is in line with the proponent’s description, and the simulation results also match those provided by the proponents. However, an additional filtering step is introduced in JCTVC-P0186 on top of the original proposal JCTVC-O0161. Simulations show that the additional filtering is able to provide 0.4%-0.7% luma BD-rate reduction.

# References

1. P. Bordes, Y. Ye, E. Alshina, X. Li, S.-H. Kim, A. Duenas, K. Ugur, K. Sato, “Description of HEVC Scalable Extensions Core Experiment SCE1: Color Gamut and Bit-Depth Scalability”, JCTVC-O1101, Oct. 2013, CH