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| *Title:* | **Cross-check of JCTVC-X0041: Usage of CRI for HDR video compression with dynamic range adaptation** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
| *Author(s) or Contact(s):* | Dmytro Rusanovskyy | Tel: Email: | [dmytror@qti.qualcomm.com](mailto:dmytror@qti.qualcomm.com) |
| *Source:* | Qualcomm | | |

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# Abstract

This document reports a crosscheck results for proposal JCTVC-X0041 on usage of color remapping information (CRI) SEI message for improvement of compression efficiency of HEVC Main10 for HDR/WCG video signals. The contribution JCTVC-X0041 reports three different CRI configurations with 33, 17 and 9 pivot points targeting different accuracy of the Dynamical Range Adjustment modeling (reshaper) of the modified HDR Exploratory Test Model (ETM) presented in JCTVC-W0084.

Objective simulation results produced by Qualcomm confirmed the objective results reported in the proposal X0041. A minor mismatch was observed for 2 sequences, however it was identified that a source of this mismatch is not related to the CRI implementation. This mismatch was also observed in the original ETM code base utilized for the CRI implementation.

# Introduction

The contribution X0041 presented results of experiments consisting in using CRI for Dynamic Range Adaptation (DRA) (a.k.a. reshaping) for HDR/WCG video compression efficiency. CRI was specified to perform content conversion from one colour volume to another one. CRI was also mentioned in 22nd and 23rd JCT-VC meetings as a relevant SEI message to perform DRA for improving coding efficiency of HDR10 signal, as achieved by the modified HDR Exploratory Test Model (ETM) presented in JCTVC-W0084. Experiments presented in the X0041 contribution are based on the modified ETM of JCTVC-W0084, in which the DRA metadata are embedded in a CRI SEI message instead of PPS. Proposal X0041 reports that objective results similar or slightly better of those reported in W0084 are produced with signaling and post-processing implemented with a piece-wise linear model of CR. Authors of X0041 propose to add a description of CRI SEI usage for DRA to the Annex A of document “Conversion and Coding Practices for HDR/WCG Video”, as an option to improve HDR coding efficiency.

# Simulation results

Table 1, 2 and 3 shows the comparative results of the simulations conducted by Qualcomm comparing against the results reported by the proponents of the X0041.

Subjective viewing was conducted by the cross-checkers on SIM2 display. During informal visual assessment of results X0041, it was concluded that no visual difference against the reference scheme (W0084) can be perceived.

Table . Simulation results for ETM with CRI 9 points produced in Qualcomm compared against the results reported in X0041



Table . Simulation results for ETM with CRI 17 points produced in Qualcomm compared against the results reported in X0041



Table . Simulation results for ETM with CRI 33 points produced in Qualcomm compared against the results reported in X0041

