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| *Title:* | **HDR CE2: Report of CE2.b-2, CE2.c and CE2.d experiments (for reshaping setting 2)** | | |
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# Abstract

This document reports a combination of CE2 subtests: CE2.b-2 on SDR backward compatibility, CE2.c on chromaQPOffset, and CE2.d on DeltaQP adjustment for luma. The experiment was conducted to study bitstream SDR backward compatibility as well as joint optimization of the reshaper and encoder. Subjective evaluation was conducted on a SIM2. It is asserted that compared to anchor v3.2, the proposed joint optimization of reshaper and encoder provides similar perceptual quality while supporting SDR backward compatibility.

# Introduction

In this document, a combination of SDR backward compatibility and encoder optimization is investigated [1]. The optimization in the reshaper includes two parts: an automatic luma reshaping parameter update algorithm and luma-dependent chroma reshaping. The encoder optimization includes DeltaQP adjustment based on [2] with consideration of reshaper information.

# CE subtests description

## SDR backward compatibility of the reshaper

In the reshaper, the luma reshaping parameters are automatically derived and updated based on the dynamic change of frame characteristics. Upon the availability of reshaped luma values, the chroma pixels are also reshaped based on the collocated luma pixels for SDR backward compatibility.

## Joint optimization of reshaper and encoder

The DeltaQP adjustment is based on the similar algorithm in CE1. However, since code level distribution after the reshaper is different from that of the anchor data, the same DeltaQP mapping table used in CE1 doesn’t fit well for the data after reshaping. Consequently, taking the DeltaQP mapping table used in CE1 as a target mapping table, a new mapping table is generated by taking the reshaper parameters into consideration.

# Simulation results

Table 1. Simulation result of CE2.b-2 with encoding optimization vs Anchor 3.2



The simulation result is shown in Table 1. Subjective viewing on a SIM2 indicates that the proposed approach achieves similar perceptual quality while supporting SDR backward compatibility.

# Conclusion

In this document, the combination of SDR backward compatible reshaping and encoder optimization is investigated. Subjective viewing shows that the proposed approach achieves similar perceptual quality while supporting backward compatibility.

# References

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