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| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  23rd Meeting: San Diego, USA, 19–26 February 2016 | Document: JCTVC-W0085r1 |

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| *Title:* | **HDR CE2 related: Further Improvement of JCTVC-W0084** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
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# Abstract

This proposal reports a further improvement of JCTVC-W0084, which is a combination of CE2 subtests: CE2.a-2 on luma forward reshaping improvement, CE2.c on chromaQPOffset, CE2.d on DeltaQP adjustment for luma, and CE2.e-3 on automatic selection of ETM parameters. The improvement is solely on luma DeltaQP adjustment. Compared to JCTVC-W0084, subjective quality improvements on texture details can be observed.

# Introduction

In this proposal, we report further improvement of JCTVC-W0084 [1]. The improvement is on luma DeltaQP adjustment. The lumaDQP table is refined compared to [1]:

|  |  |
| --- | --- |
| W0084 | W0085 |
| fixed dQP mapping table applied on equivalently inverse reshaped average Luma value of LCU | adaptive dQP mapping table applied on equivalently inverse reshaped average Luma value of LCU |

Table 1 listed the different Luma deltaQP mapping tables used in Anchor v3.2, W0084 and W0085.

Since W0085 provides encoder-only improvement of W0084, the YUV generation process remains the same as in W0084. During crosscheck, a bug was identified for causing mismatched YUV of ShowGirl sequence on linux and windows platforms. The bug is fixed in W0085 software and should also be applied to W0084. The change has negligible impacts on the ShowGirl sequence generation and coding results.

Table 1 Comparsion of Luma dQP mapping

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Anchor v3.2 (W0054)** | | **W0084** | | **W0085** |
| dQP | change points | dQP | change points | Adaptive |
| -3 | 0 | -3 | 0 |
| -2 | 301 | -2 | 153 |
| -1 | 367 | -1 | 307 |
| 0 | 434 | 3 | 520 |
| 1 | 501 | 2 | 616 |
| 2 | 567 | 3 | 692 |
| 3 | 634 | 2 | 737 |
| 4 | 701 | 3 | 769 |
| 5 | 767 | 2 | 846 |
| 6 | 834 | 3 | 923 |

# Simulation results

The simulation results (bit rate statistics and objective metrics with md5sum check values) are provided in the attachment. Subjective viewing of the results would be made available during this meeting. A few examples of compression performance compared with Anchor v3.2 and W0084 are shown in Figure 1 and Figure 2.



Source Anchor v3.2 W0084 W0085

Figure 1 EBU\_4 Rate 3



Source Anchor v3.2 W0084 W0085

Figure 2 BalloonFestival Rate 3

# Acknowledgement

We would like to thank ETRI and Intel for helping to crosscheck this proposal.

# References

1. T. Lu, F. Pu, P. Yin, T. Chen, W. Husak, Y. He, L. Kerofsky, Y. Ye, “HDR CE2: CE2.a-2, CE2.c, CE2.d and CE2.e-3”, JCTVC-W0084, San Diego, US, Feb. 2016

# Patent rights declaration(s)

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