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Title: [G-PCC][Crosscheck] C4FE 13.40 On Dyadic RAHT

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Abstract

Authors propose the use of Dyadic RAHT in TMC13. This document reports the crosscheck of the proposal.

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1. Introduction

In the current TMC13v10 RAHT implementation, high-frequency sub-bands are not further transformed. In Dyadic RAHT, high-frequency sub-bands are further decomposed. Authors claim that this decomposition "generally improves the decorrelation of high frequency coefficients, thus improving compression." [1]

2. Crosscheck

This section reports the crosscheck of Backberry's code [2] provided for CE13.41 [3]. The source code was obtained from branch:<mpeg130/ce13.41/m53557_dyadic-raht>. After the tests, it was observed that:

1. Blackberry's implementation matches the provided results.
2. In terms of average encoding and decoding times, the differences in relation to anchor is very small (around 1% to 2% increase).
3. Average coding gains are between 1% and 2%.
4. Specific coding gains are up to around 6%.
5. There are very rare up to 2.5% coding performance losses.

Excel files with detailed crosschecked results are attached to this report.

3. Conclusion

Given the observed results, the recommendation is in favor of the adoption.

References

[1] "[GPCC] On dyadic RAHT," ISO/IEC JTC1/SC29 WG11 (MPEG) Input Document m53557, Online, April 2020.

[2] "`http://mpegx.int-evry.fr/software/MPEG/PCC/CE/mpeg-pcc-tmc13/tree/mpeg130/ce13.41/m53557_dyadic-raht`

[3] "Description of Core Experiment 13.41 for G-PCC on dyadic RAHT," ISO/IEC JTC1/SC29 WG11 (MPEG) Output Document N19362, Online, April 2020.