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| *Title:* | **non-[RCE1, RCE2] Combination of RCE1 subtests B5 and B6 with RCE2 subtest A1** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
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# Abstract

This document reports the experimental results of combination of subtests B5 and B6 of HEVC Range Extensions core experiment 1 (JCTVC-O1121) with Golomb Rice parameter initialization method from subtest A1 of HEVC Range Extensions core experiment 2 (JCTVC-O1122).

# Introduction

Results for subtests B5 and B6 of HEVC Range Extensions core experiment 1 are reported in JCTVC-P0074. Subtests B5 and B6 skip coding of *coded\_sub\_block\_flag*, *significance\_coeff\_flag* and/or *coeff\_abs\_level\_greater*X flags in transform coefficient coding under certain conditions. For bypass bins, alignment to 256 is also performed if the same condition is satisfied.

The decision to skip and align is based on whether the Golomb Rice parameter at the end of the previous 4×4 subblock is greater than a threshold (4). Subtest A1 (JCTVC-Pxxxx ) of HEVC Range Extensions core experiment 2 derives an initial value for the Golomb Rice parameter for each 4×4 subblock. In this document, we propose the use of the derived initial Golomb Rice parameter for the current 4×4 subblock instead of the Golomb Rice parameter at the end of the previous 4×4 subblock as the criterion for the skip and align decision.

## Combination of RCE1 subtest B5 and RCE2 subtest A1

For each 4×4 subblock, an initial Golomb Rice parameter is derived using the method in subtest A1 of RCE2. If the initial Golomb Rice parameter is greater than or equal to a threshold (4), the coding of *coeff\_abs\_level\_greater1* and *coeff\_abs\_level\_greater2* flags is skipped for the current 4×4 subblock. The *coeff\_abs\_level\_remaining* syntax element is adjusted to account for the fact that *coeff\_abs\_level\_greater1* and *coeff\_abs\_level\_greater2* flags are not coded. Furthermore, for the current 4×4 subblock, ivlCurrRange is aligned to 256 before the coding pass for *coeff\_sign\_flag*.

## Combination of RCE1 subtest B6 and RCE2 subtest A1

For each 4×4 subblock, an initial Golomb Rice parameter is derived using the method in subtest A1 of RCE2. If the initial Golomb Rice parameter is greater than or equal to a threshold (4), the coding of *coded\_sub\_block\_flag*, *significance\_coeff\_flag*, *coeff\_abs\_level\_greater1* and *coeff\_abs\_level\_greater2* flags is skipped for the current 4×4 subblock. The *coeff\_abs\_level\_remaining* syntax element is adjusted to account for the fact that *significance\_coeff\_flag and coeff\_abs\_level\_greaterX* flags are not coded. Furthermore, for the current 4×4 subblock, ivlCurrRange is aligned to 256 before the coding pass for *coeff\_sign\_flag*.

# Simulation results

The proposal is implemented on top of HM12.1\_Rext5.1. Simulations are performed under AHG18, test conditions. The performance is compared to the anchor in terms of BD-rate savings.



Table 1: BD-rate results for subtest B5 for AHG18 test conditions



Table 2: BD-rate results for subtest B6 for AHG18 test conditions

# Conclusions

Combinations of RCE1 subtests B5 and B6 with RCE2 subtest A1 are tested. The initial Golomb parameter for each 4×4 subblock is derived using RCE2 subtest A1. This initial Golomb Rice parameter is used as a criterion to decide whether to skip coding of *coded\_sub\_block\_flag*, *significance\_coeff\_flag* and/or *coeff\_abs\_level\_greater*X flags. It is also used to decide whether alignment of ivlCurrRange to 256 is performed for the current 4×4 subblock before coding any bypass bins.

# Patent rights declaration(s)

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