

**ISO/IEC JTC 1/SC 29/WG 11**

**Coding of moving pictures and audio**

**Convenorship: UNI (Italy)**

**ISO/IEC JTC 1/SC 29/WG 11 N19367**

**Document type: Approved WG 11 document**

**Title: Description of Exploration Experiment 13.44 on residual coding for lifting transform**

**Status: Draft**

**Date of document: 2020-05-10**

**Source: 3DG**

**Expected action:**

**No. of pages:**

**Email of convenor: leonardo@chiariglione.org**

**Committee URL: mpeg.chiariglione.org**

**INTERNATIONAL ORGANISATION FOR STANDARDISATION**

**ORGANISATION INTERNATIONALE DE NORMALISATION**

**ISO/IEC JTC 1/SC 29/WG 11**

**CODING OF MOVING PICTURES AND AUDIO**

**ISO/IEC JTC 1/SC 29/WG 11 N19367**

**Alpbach, AUT – April 2020**

|  |  |
| --- | --- |
| **Source:** | **3DG** |
| **Title:** | **Description of Exploration Experiment 13.44 on residual coding for lifting transform** |

# Abstract

This document provides a description of G-PCC Exploration Experiment (EE) 13.44 on residual coding for lifting transform.

# Introduction

The goal of EE 13.44 is to further investigate and improve the performance of the residual coding for lifting transform as presented in m53672.

# Information about related proposals

* 1. ***m53672: Improved residual coding for lifting-transform [1]***

In this contribution, a method is proposed to modify the coefficient coding of lifting-transform for improved coding efficiency. The method aims to leverage on the correlation between chroma channel transform coefficient values. The average BD-rate savings are -0.8%, -0.8%, -1.5% for C1 and -0.8%, -0.8%, -1.9% for C2 coding conditions, respectively, with a rudimentary encoder implementation.

# Experimental description

In this EE, the proposed residual coding scheme will be evaluated in terms of its coding efficiency and implementation aspects.

## Mandates

1. To improve the encoding scheme for better coding performance of the proposed method.

2. To study the applicability of the proposed method for chroma residual coding of other transforms in TMC13. Namely, RAHT under C1/C2 coding conditions (YCbCr color-space) and possibly Predicting transform under CW coding condition (YCoCg-R color-space).

## Information for conducting tests

### Participants

| **Name** | **Company** | **E-mail address** | **Type** |
| --- | --- | --- | --- |
| Sehoon Yea | Tencent | sehoonyea@tencent.com | Proponent |
| Wen Gao | Tencent | [wengao@tencent.com](mailto:wengao@tencent.com) | Proponent |
| David Flynn | Apple | [davidflynn@apple.com](mailto:davidflynn@apple.com) | Crosscheck |
|  |  |  |  |

### Software

TMC13v10 shall be used for these experiments. The proposed tools shall be implemented on top of TMC13v10.

### Test configurations

Parameters and configurations for TMC13v10 software will be provided by the proponent.

### Evaluation Method

The point cloud test material will be tested under the following conditions of the CTC [4]:

Lifting

* C1 Lossless Geometry - Lossy Attributes
* C2 Lossy Geometry - Lossy Attributes

(Optional) RAHT

* C1 Lossless Geometry - Lossy Attributes
* C2 Lossy Geometry - Lossy Attributes

(Optional) Predicting-Transform

* CW Lossless Geometry - Lossless Attributes

## CE.13.33 Coordinators

Sehoon Yea ([sehoonyea@tencent.com)/](mailto:sehoonyea@tencent.com)/) Wen Gao ([wengao@tencent.com](mailto:wengao@tencent.com))

# Timeline:

* **2020-05-08**: Expected date for TMC13v10 release;
* **2020-05-29**:Source code and results to cross-checkers;
* **2020-06-06:** Preliminary feedback from cross-checkers;
* **2020-07-01**: MPEG document upload deadline.

# References

1. Improved residual coding for lifting-transform, ISO/IEC JTC1/SC29 WG11 m53672, Brussels, BE, January 2020.
2. G-PCC codec description, ISO/IEC JTC1/SC29 WG11 w19091, Brussels, BE, January 2020.
3. G-PCC Test Model v10, ISO/IEC JTC1/SC29/WG11 w19323, Alpbach, AUT, April 2020.
4. Common Test Conditions for PCC, ISO/IEC JTC1/SC29 WG11 w19324, Alpbach, AUT, April 2020.