

**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 N18681**

**Document type: Approved WG 11 document**

**Title: Description of Exploration Experiment 13.3 for G-PCC on Lossless Lifting Scheme**

**Status: Draft**

**Date of document: 2019-07-24**

**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 N18681**

**Gothenburg, SE – July 2019**

|  |  |
| --- | --- |
| **Source:** | **3DG** |
| **Title:** | **Description of Exploration Experiment 13.3 for G-PCC on Lossless Lifting Scheme** |

**Description of Exploration Experiment 13.3 for G-PCC on Lossless Lifting Scheme**

# Abstract

This document provides a description of G-PCC Exploration Experiment (EE) 13.3 on Lossless Lifting Scheme.

# Introduction

The goal of EE 13.3 is to investigate lossless coding performance of the lifting scheme as proposed in m49603 [1].

# Information about proposed tools

## m49603: Lossless Scalable Lifting for Attribute Coding [1]

In this contribution, a lossless lifting scheme is introduced based upon the current fixed-point implementation of TMC3-v6. On top of this, a bitplane-based embedded coding of lifting coefficients is proposed. It provides a quality-scalable bitstream from lossy to lossless. Preliminary results show within around 10% bpp increase compared to the DPCM anchor under the CW condition. It is in fact close to the performance with the two-stage RAHT lossless scheme proposed in m47795 and m49382 which currently do not provide a quality-scalable reconstruction.

# Experimental description

In this EE, the proposed lossless lifting scheme will be evaluated in terms of lossless coding gain benefits and its implementation aspects.

## Mandates

* Report the lossless compression performance under CW condition.
* Report related aspects such as complexity and any potential impact on lossy coding (C1)

## Participants

| **Name** | **Company** | **E-mail address** | **Type** |
| --- | --- | --- | --- |
| Sehoon Yea | Tencent | sehoonyea@tencent.com | Proponent |
| Khaled Mammou | Apple | [kmammou@apple.com](mailto:kmammou@apple.com) | Crosscheck |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### Software

TMC13v7 shall be used for these experiments. The proposed tools shall be implemented on top of TMC13v7.

### Test configurations

Parameters and configurations for TMC13v7 software will be provided by the proponent.

### Evaluation Method

The point cloud test material will be tested under the following conditions of the CTC [3]:

* CW Lossless Geometry – Lossless Attributes
* (optional) C1 Lossless Geometry – Lossy Attributes

## EE.13.3 Coordinators

Sehoon Yea (sehoonyea@tencent.com)

# Timeline:

* **2019-08-12**: Expected date for TMC13v7 release;
* **2019-09-10 [TMC13v7 + 4 weeks]**: Deliver source code and results for cross check;
* **2019-09-24**: **[TMC13v7 + 6 weeks]** Report of preliminary cross check results;
* **2019-10-02**: MPEG document upload deadline.

# References

1. Lossless Scalable Lifting for Attribute Coding, ISO/IEC JTC1/SC29 WG11 m49603, Gothenburg, SE, July 2019

[2] PCC Test Model Category 13 v7, ISO/IEC JTC1/SC29/WG11 w18664, Gothenburg, SE, July 2019.

[3] Common Test Conditions for PCC, ISO/IEC JTC1/SC29 WG11 w18665, Gothenburg, SE, July 2019.