**3GPP TSG-SA4 Meeting #130S4-242050**

**Orlando, 18th - 22nd November 2024**

**Source: Apple Inc.**

**Title: [VOPS] Way forward for MV-HEVC support**

**Agenda item: 9.5**

**Document for: Agreement**

# 1 Introduction

As MV-HEVC can be used to enable a variety of immersive experiences, it is often that the subtle differences in these types of experiences are lost. This paper provides an overview of the characteristics of such experiences.

# 2 Overview

MV-HEVC can be used to realize a variety of immersive experiences. For example, [1] outlines how it is used to support the following set of applications (the list is not exhaustive):

1. Spatial Video. Spatial Video is a type of User Generated Content (UGC) captured by iPhone and Vision Pro devices. MV-HEVC is currently used for coding Spatial Video in these platforms. This content can be shared via iCloud File sharing/Messaging etc. and uses rectilinear projection.
2. 3D Movies. This includes professionally (e.g. Hollywood) created stereoscopic content (e.g. *Avatar: The Way of Water* or *Avengers: Endgame*). This content is differentiated from Spatial Video as being very high quality professionally produced 3D content intended to be streamed via streaming services e.g. Netflix, Disney+, Such content has been distributed for quite some time and is based on mature coding formats.
3. Apple Immersive Video. This is a new media format that supports 180-degree 8k stereo video to enable an improved immersive experience for a viewer. This content is currently being streamed via Apple TV+.

For further details, please refer to [1], [2] and references therein.

VOPS currently mainly focuses on streaming applications. It has been agreed via [3] that the messaging work will not be pursued by VOPS due to limitations of support via the file format. Hence VOPS work will likely not fully address messaging type of experiences such as Spatial Video. On the other hand, applications such as Apple Immersive Video, may be too new and may require more detail and, possibly, refinements prior to them being included into the VOPS work. However, the support of 3D movies seems a mature enough application so as to be included into the VOPS work. Diverging focus on diverse and less mature applications, as listed above, will not be conducive to conclude the work in its Rel-19 timeframe.

# 3 Proposal

It is proposed that the VOPS work, for the Rel-19 timeframe, primarily focuses on the delivery (streaming) of stereoscopic 3D movie type material with rectilinear projection.

# References

1. “Build compelling spatial photo and video experiences”, transcribed video <https://developer.apple.com/videos/play/wwdc2024/10166/>
2. https://developer.apple.com/documentation/ImageIO/Creating-spatial-photos-and-videos-with-spatial-metadata
3. [S4-241704](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_129-e/Docs/S4-241704.zip), [VOPS] On adding MV-HEVC capabilities for messaging