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| *Title:* | **On persistency scope signalling in some AVC SEI messages** | | |
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| *Purpose:* | Proposal | | |
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# Abstract

This contribution proposes to use the same syntax as in HEVC for signalling of persistency scope for the following six SEI messages in AVC:

1. The content colour volume SEI message,
2. The equirectangular projection SEI message,
3. The cubemap projection SEI message,
4. The sphere rotation SEI message,
5. The region-wise packing SEI message, and
6. The omnidirectional viewport SEI message.

# Introduction

JCTVC-AE1006-v1 includes the following syntax of the content colour volume SEI message followed by an editor's note:

|  |  |  |
| --- | --- | --- |
| content\_colour\_volume( payloadSize ) { | **C** | **Descriptor** |
| **ccv\_cancel\_flag** | 5 | u(1) |
| if( !ccv\_cancel\_flag ) { |  |  |
| **ccv\_repetition\_period** | 5 | ue(v) |
| **ccv\_primaries\_present\_flag** | 5 | u(1) |
| **ccv\_min\_luminance\_value\_present\_flag** | 5 | u(1) |
| **ccv\_max\_luminance\_value\_present\_flag** | 5 | u(1) |
| **ccv\_avg\_luminance\_value\_present\_flag** | 5 | u(1) |
| if( ccv\_primaries\_present\_flag ) |  |  |
| for( c = 0; c < 3; c++ ) { |  |  |
| **ccv\_primaries\_x**[ c ] | 5 | i(32) |
| **ccv\_primaries\_y**[ c ] | 5 | i(32) |
| } |  |  |
| if( ccv\_min\_luminance\_value\_present\_flag ) |  |  |
| **ccv\_min\_luminance\_value** | 5 | u(32) |
| if( ccv\_max\_luminance\_value\_present\_flag ) |  |  |
| **ccv\_max\_luminance\_value** | 5 | u(32) |
| if( ccv\_avg\_luminance\_value\_present\_flag ) |  |  |
| **ccv\_avg\_luminance\_value** | 5 | u(32) |
| } |  |  |
| } |  |  |

[Ed. (YK): Using the ue(v)-coded repetition period syntax element for specifying the persistency scope, other than using the persistence flag plus reserved bits when needed for byte alignment as in HEVC for the same SEI message, has the following drawbacks: 1) Accessing information in these SEI messages needs entropy decoding, 2) the information fields are no longer accessible at byte-aligned positions, and 3) parsing and interpretation of the same SEI message are now different between HEVC and AVC.

The same comment applies to the equirectangular projection, cubemap projection, sphere rotation, region-wise packing, and omnidirectional viewport SEI messages. For the region-wise packing, using the ue(v)-coded repetition period syntax element also makes rwp\_reserved\_zero\_4bits[ i ] and rwp\_gb\_reserved\_zero\_3bits[ i ] less meaningful.]

To overcome the drawbacks mentioned in the editor's note, it is proposed that the syntax of the content colour volume SEI message is changed as follows (i.e., make it exactly the same as in HEVC):

|  |  |  |
| --- | --- | --- |
| content\_colour\_volume( payloadSize ) { | **C** | **Descriptor** |
| **ccv\_cancel\_flag** | 5 | u(1) |
| if( !ccv\_cancel\_flag ) { |  |  |
| **ccv\_~~repetition\_period\_~~persistence\_flag** | 5 | ~~ue(v)~~u(1) |
| **ccv\_primaries\_present\_flag** | 5 | u(1) |
| **ccv\_min\_luminance\_value\_present\_flag** | 5 | u(1) |
| **ccv\_max\_luminance\_value\_present\_flag** | 5 | u(1) |
| **ccv\_avg\_luminance\_value\_present\_flag** | 5 | u(1) |
| **ccv\_reserved\_zero\_2bits** | 5 | u(2) |
| if( ccv\_primaries\_present\_flag ) |  |  |
| for( c = 0; c < 3; c++ ) { |  |  |
| **ccv\_primaries\_x**[ c ] | 5 | i(32) |
| **ccv\_primaries\_y**[ c ] | 5 | i(32) |
| } |  |  |
| if( ccv\_min\_luminance\_value\_present\_flag ) |  |  |
| **ccv\_min\_luminance\_value** | 5 | u(32) |
| if( ccv\_max\_luminance\_value\_present\_flag ) |  |  |
| **ccv\_max\_luminance\_value** | 5 | u(32) |
| if( ccv\_avg\_luminance\_value\_present\_flag ) |  |  |
| **ccv\_avg\_luminance\_value** | 5 | u(32) |
| } |  |  |
| } |  |  |

It is further proposed to apply the same design principle to the following SEI messages:

1. The equirectangular projection SEI message,
2. The cubemap projection SEI message,
3. The sphere rotation SEI message,
4. The region-wise packing SEI message, and
5. The omnidirectional viewport SEI message.

It is noted that the CRI SEI message also uses the ue(v)-coded repetition period syntax element for specifying the persistency scope. However, since that CRI SEI message is already included in a published version of the AVC standard by the ITU-T, it is suggested not to change this aspect for that SEI message.

# Patent rights declaration(s)

**Huawei Technologies Co., Ltd. and Apple Inc. do not have any current or pending patent rights relating to the technology described in this contribution (to the extent of the personal awareness of the authors).**