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Title **Improved Part-15 Defect Report items for Corrigendum**
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1 Introduction

This contribution reviews the Defect Report on ISO/IEC 14496-15, more specifically section 7 "ParameterSets in LHEVC", 8 "Sample Description Width/Height in hvc2/hev2" and 9 " HEVC temporal sublayers" and proposes text to issue a corrigendum for these items. In some cases, the text is identical to the one in the Defect Report. New text is yellow highlighted.

2 Corrigendum text

2.1 Parameter Sets in hvc2 tracks

We recommend using Option 5 as indicated in the Defect Report. [editor's note: exact text to be proposed]

Note: Initial text suggested during #116 meeting was: "*the set of parameter sets used to initialize the decoder is the set in a track and the tracks it depends on. This means that there had better not be two parameter sets with the same ID but different content. Into the defect report. For lhvC one puts only the parameter sets needed that are not present in the tracks depended on.*"

Discussion:
Since MPEG116th, we have been confronted with bitstreams generated by the x265 encoder where the SPS slightly changes over time, but always with the same ID 0. These bitstreams are conformant and we need to handle these. The sentence "*This means that there had better not be two parameter sets with the same ID but different content*" is too strong here; we can store such configurations, however not with a single sample entry for out-of-band parameters. It can be stored with a single sample entry using a mixed in-band and out-of-band setup, or in-band only setup. We suggest the following text:

The set of parameter sets used to initialize the decoder is the set of parameters in a track and the tracks it depends on. These parameter sets may be stored in the sample or in the sample description associated to the sample, according to the sample entry type used. Parameter sets declared in a sample shall be handled by the decoder (or output in the reconstructed bitstream) after parameter sets present in the sample entry for that sample, if any.
In case two parameter sets with different content but using the same ID are present, it may not be possible to use a single sample entry of type hvc1,hvc2 or lhv1; file packagers should create

either different sample entries of type hvc1, hvc2 or lhv1, or use in-band parameter sets through hev1,hev2 or lhe1 sample entries.
The parameter sets present in an lhvC configuration record shall not include any of the parameter sets that are present in the tracks depended on. All parameter sets present in the sample entry of an L-HEVC track and in the sample entries of the tracks depended on shall be passed to the decoder (or output in the reconstructed bitstream) in their dependency order (base track first), and before any parameter sets present in the samples.

2.2 Parameter Sets in hev2 tracks

Mandate that parameter sets IDs of hvc2/hev2 tracks rewriting slice headers (tile subset extraction) shall be different from parameter sets IDs of the original bitstream [editor's note: exact text to be proposed].
Discussion:
If we agree on the order restriction discussed previously, this should no longer be needed.

2.3 AVC/LHVC Inband Parameter Sets

Add the following paragraph to section 9.5.3.1.1 as the 5th paragraph:

"For a L-HEVC bitstream whose base layer is an AVC bitstream, when the sample entry name of the base track is `'avc1'` or `'avc2'`, the sample entry name of the other tracks carrying the associated L-HEVC bitstream shall be `'hvc2'` or `'lhv1'`, and when the sample entry name of the base track is `'avc3'` or `'avc4'`, the sample entry name of the other HEVC tracks carrying the associated L-HEVC bitstream shall be `'hev2'` or `'lhe1'`.

2.4 Sample Description Width/Height in hvc2/hev2 with multiple layers

Change the first part of 9.5.4 as follows:
from:
"If the sample entry is of type `'hvc1'`, `'hev1'`, `'hvc2'`, or `'hev2'`, the `width` and `height` documented in the `VisualSampleEntry` shall be set according to clause 4.6 using only the base layer information; otherwise they shall be the maximum cropped frame dimensions of the decoded pictures, within the scope of the sample entry, of any layer in the track that is marked as an output layer of any output layer set. "
to:
"If the sample entry is of type `'hvc2'` or `'hev2'` and no `LHEVCConfigurationBox` is present in the sample description, the `width` and `height` documented in the `VisualSampleEntry` shall be set according to clause 4.6 using only the base layer information; in case the track reconstructs a different HEVC bitstream, the base layer is the one constructed after resolution of extractors; otherwise they shall be the maximum cropped frame dimensions of the decoded pictures, within the scope of the sample entry, of any layer in the track that is marked as an output layer of any output layer set. "

2.5 Temporal sublayers

In 9.5.3.1.1 Replace
“If the samples of a track contain an HEVC compatible base layer, then an 'hvc1', 'hev1', 'hvc2', or 'hev2' sample entry shall be used.”
With
“If the samples of a track contain an HEVC compatible base layer or a temporal subset of an HEVC base layer, then an 'hvc1', 'hev1', 'hvc2', or 'hev2' sample entry shall be used. If the samples of the track contain a temporal subset of an HEVC base layer, the value of numTemporalLayers field in the `HEVCConfigurationBox` shall match the number of temporal

sub-layers carried in the track, and the parameter sets in the `HEVCConfigurationBox` shall be identical to the ones in the `HEVCConfigurationBox` of the base track."

Discussion:
This actually contradicts the effort of non-duplication of xPS for L-HEVC. We would suggest that the parameter sets included in the temporal sublayer track sample entry only include the ones not included in the tracks depended on. The following alternative is proposed

"If the samples of a track contain an HEVC compatible base layer or a temporal subset of an HEVC base layer, then an 'hvc1', 'hev1', 'hvc2', or 'hev2' sample entry shall be used. If the samples of the track contain a temporal subset of an HEVC base layer, the value of numTemporalLayers field in the `HEVCConfigurationBox` shall match the number of temporal sub-layers carried in the track, and the parameter sets in the `HEVCConfigurationBox` shall only contain parameter sets not present in the sample entries of the tracks depended on."

2.6 oinf in temporal scalable HEVC bitstream

In 9.6.2.1, replace:
"For all tracks of an L-HEVC bitstream, there shall be only one track among this set that carries an `'oinf'` sample group."
Replace with
"For all tracks of an L-HEVC bitstream, there shall be at most one track among this set that carries an 'oinf' sample group."

3 Conclusion

We recommend MPEG to start a corrigendum on ISO/IEC 14496-15 to include the proposed text.

4 References

[1] w16169 "*FDIS of ISO/IEC 14496-15 4th Edition*", MPEG#115, Geneva, August 2016