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| **Title** | **[V-PCC] Comments on V-PCC specification** |
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# Proposal

This document points some issues with the latest V-PCC specification [1]. These are not purely editorial, hence we are bringing them to the attention of the committee.

## SurfaceThickness

In section 9.4.3 of the latest V-PCC specification, the pixel deinterleaving tool uses an undefined variable "SurfaceThickness". This could be fixed by signalling it conditional on sps\_pixel\_deinterleaving\_flag as shown below. Although we have used 8 bits to signal **surface\_thickness,** less bits may suffice.

#### 7.3.4.1 General Sequence parameter set syntax

|  |  |
| --- | --- |
| sequence\_parameter\_set( ) { | **Descriptor** |
| … |  |
| **sps\_patch\_inter\_prediction\_enabled\_flag** | u(1) |
| **sps\_pixel\_deinterleaving\_flag** | u(1) |
| **if(**sps\_pixel\_deinterleaving\_flag**)** |  |
| **surface\_thickness** | u(8) |
| **sps\_point\_local\_reconstruction\_enabled\_flag** | u(1) |
| … |  |
| } |  |

Then, all references to SurfaceThickness in section 9.4.3 would need to be replaced by surface\_thickness.

The other alternative is to use a fixed value such as 4 instead of SurfaceThickness. This would be analogous to the point local reconstruction process, which uses a fixed value of 4 to find the depth value of layer 1.

## Lossless flags

Currently the V-PCC specification contains the following editor's note related to the lossless flag(s):

[Ed. (All): We should have a sequence level or frame level lossless flag. In PCC, some points may not be projected, so a lossless indication is necessary. Even if each of the HEVC bitstreams is coded losslessly, that does not imply that PCC stream is lossless.]

There is also a variable lossless\_geometry\_444 that is undefined. Since lossless flag(s) would not affect the decoding process, perhaps another mechanism such as an SEI message may be useful.

Samsung believes that content creators may want to signal such information. In any case, it would be good for the committee to make the decision one way or another and fix the text accordingly. If it is decided to include a lossless indication, separate lossless flags for geometry and attributes are recommended.

It should be noted that lossless coding may be incompatible with certain tools such as pixel deinterleaving, point local reconstruction, and geometry/attribute smoothing. So if the committee decides to include lossless flags, either the use and signalling of these tools/flags should be conditional on the lossless flags or bitstream conformance conditions should be added so that those tools are not used when the corresponding lossless flag is 1.

# References

[1] “Continous improvement of Study Text of ISO/IEC CD 23090-5 Video-based Point Cloud Compression”, May 2019, N18479, Geneva, CH.