



JVET-L0209: PCM Mode with Dual Tree Partition

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Summary

- In current draft of VVC [1], PCM mode is not supported.
- In fact, VTM-2.0.1 will mismatch if dual tree partition and PCM mode are both enabled.
- This document proposes to include PCM mode in VVC spec.
- Syntax table and PCM source code modification supporting dual tree partition is provided with the proposal.

The reason we need PCM mode

- PCM mode can guarantee the worst case of bit amount of a coding unit.
 - Some content
- Some cloud applications need lossless coding for ROI in video
 - Telemedicine: Alibaba cloud has demonstrated the commercial live 8K video live stream for telemedicine.



PCM Syntax

coding_unit(x0, y0, cbWidth, cbHeight, treeType) {	Descriptor	pcm_sample(x0, y0, cbWidth, cbHeight, treeType) {	Descriptor
if(slice_type != I) {		if(treeType == SINGLE_TREE treeType == DUAL_TREE_LUMA)	
pred_mode_flag	ae(v)	for(i = 0; i < cbWidth* cbHeight; i++)	
}		pcm_sample_luma[i]	u(v)
if(CuPredMode[x0][y0] == MODE_INTRA) {		if(treeType == SINGLE_TREE treeType == DUAL_TREE_CHROMA)	
if(pcm_enabled_flag &&		for(i = 0; i < 2 * ((cbWidth* cbHeight) / (SubWidthC * SubHeightC)); i++)	
cbWidth >= MinIpcmCbSizeY &&		pcm_sample_chroma[i]	u(v)
cbWidth <= MaxIpcmCbSizeY &&		}	
cbHeight >= MinIpcmCbSizeY &&			
cbHeight <= MaxIpcmCbSizeY)			
pcm_flag[x0][y0]	ae(v)		
if(pcm_flag[x0][y0]) {			
while(!byte_aligned())			
pcm_alignment_zero_bit	f(1)		
pcm_sample(x0, y0, cbWidth, cbHeight, treeType)			
} else {			
...			
}			
} else {			
...			
}			
if(CuPredMode[x0][y0] != MODE_INTRA)			
cu_cbf	ae(v)		
if(cu_cbf) {			
transform_tree(x0, y0, cbWidth, cbHeight, treeType)			
}			

Conclusion

- This document proposes to include PCM mode in VVC spec.
- Syntax table and PCM source code modification supporting dual tree partition is provided with the proposal.
- We suggest to include PCM mode into the VVC spec and VTM.

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