

JVET-Q0629

CE2-related: Palette mode excluding small blocks

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Introduction & Proposed Modification

- In current VVC, palette mode can apply for CU that are equal or smaller than 64x64 pixels
- Applying palette mode on small CUs shows insignificant coding performance change but causes extra complexity on small CUs
- Propose to disable palette mode for CU that are smaller or equal to 16 pixels

Dual Tree On	All Intra				
	Over VTM-7.0				
	Y	U	V	EncT	DecT
TGM 1080p	-0.03%	0.02%	0.00%	100%	100%
TGM 720p	0.04%	-0.01%	-0.03%	100%	100%
Animation	0.00%	0.05%	0.06%	100%	97%
Mixed content	0.01%	0.04%	0.03%	100%	99%
Camera-Captured content	0.02%	-0.03%	-0.05%	99%	101%
Overall	0.01%	0.02%	0.00%	100%	100%

	Random access				
	Over VTM-7.0				
	Y	U	V	EncT	DecT
TGM 1080p	0.02%	0.06%	0.06%	100%	100%
TGM 720p	-0.02%	0.07%	-0.04%	99%	100%
Animation	0.03%	0.02%	0.05%	99%	100%
Mixed content	0.03%	0.14%	0.14%	100%	100%
Camera-Captured content	-0.05%	-0.04%	0.10%	100%	100%
Overall	0.01%	0.06%	0.05%	100%	100%

	Low delay B				
	Over VTM-7.0				
	Y	U	V	EncT	DecT
TGM 1080p	-0.04%	-0.01%	-0.04%	100%	98%
TGM 720p	0.01%	-0.06%	0.16%	100%	100%
Animation	0.07%	-0.02%	-0.09%	100%	99%
Mixed content	-0.02%	-0.17%	0.23%	101%	100%
Camera-Captured content	0.00%	0.03%	-0.07%	99%	98%
Overall	0.00%	-0.05%	0.05%	100%	99%

Dual Tree Off	All Intra				
	Over VTM-7.0				
	Y	U	V	EncT	DecT
TGM 1080p	0.10%	0.10%	0.11%	100%	100%
TGM 720p	-0.01%	0.01%	0.04%	100%	100%
Animation	-0.03%	0.00%	-0.13%	100%	101%
Mixed content	0.02%	0.05%	-0.01%	100%	100%
Camera-Captured content	0.00%	-0.01%	0.06%	101%	100%
Overall	0.02%	0.04%	0.02%	100%	100%

	Random access				
	Over VTM-7.0				
	Y	U	V	EncT	DecT
TGM 1080p	0.03%	0.04%	0.03%	101%	100%
TGM 720p	0.03%	0.18%	0.09%	99%	100%
Animation	0.02%	0.00%	0.01%	100%	99%
Mixed content	0.13%	0.30%	0.16%	100%	100%
Camera-Captured content	-0.01%	-0.07%	0.04%	100%	99%
Overall	0.04%	0.10%	0.07%	100%	100%

	Low delay B				
	Over VTM-7.0				
	Y	U	V	EncT	DecT
TGM 1080p	0.03%	0.09%	0.12%	100%	99%
TGM 720p	-0.24%	0.03%	-0.09%	99%	99%
Animation	-0.10%	0.10%	0.13%	100%	101%
Mixed content	0.24%	0.48%	0.55%	98%	100%
Camera-Captured content	-0.03%	0.04%	0.11%	100%	102%
Overall	-0.03%	0.14%	0.15%	100%	100%

Spec Change

if(CuPredMode[chType][x0][y0] == MODE_INTRA && sps_palette_enabled_flag && cbWidth <= 64 && cbHeight <= 64 && cu_skip_flag[x0][y0] == 0 && modeType != MODE_TYPE_INTER && (cbWidth* cbHeight > (treeType != DUAL_TREE_CHROMA? 16:16* SubWidthC* SubHeightC)))	
pred_mode_plt_flag	ae(v)
}	

chroma_format_idc	separate_colour_plane_flag	Chroma format	SubWidthC	SubHeightC
0	0	Monochrome	1	1
1	0	4:2:0	2	2
2	0	4:2:2	2	1
3	0	4:4:4	1	1
3	1	4:4:4	1	1

Summary

- The proposed method reports negligible BD-rate changes compared to anchor
- It is recommended to consider adoption of the proposed method into palette mode

Thank you