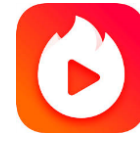


JVET-L0334

AHG 16: TRANSFORM-FREE CODING FOR $2 \times N$ OR $N \times 2$ CHROMA BLOCKS

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Problem

- In the current VVC, tiny blocks with size $2 \times N$ or $N \times 2$ are allowed to code chroma components. Therefore, $2 \times N$ or $N \times 2$ transform/inverse-transform is required, which is not desirable in the hardware implementation.

Solution

- ❑ No transform is required for tiny blocks with sizes $2 \times N$ or $N \times 2$
 - ❑ *Solution #1: `cbf_flag` of a tiny block is not signaled and inferred to be 0*
 - ❑ *Solution #2: `transform_skip_flag` of a tiny block is not signaled and inferred to be 1*

Simulations results on VTM-2.0.1

■ Solution #1

	AI					RA				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.08%	0.75%	0.27%	99%	100%	0.20%	0.86%	1.17%	97%	99%
Class A2	0.11%	1.33%	1.48%	97%	98%	0.10%	2.48%	2.78%	97%	99%
Class B	0.02%	1.45%	1.86%	99%	99%	0.03%	3.18%	3.47%	98%	99%
Class C	0.08%	2.98%	3.68%	98%	101%	0.15%	5.92%	6.07%	98%	99%
Class E	0.00%	0.83%	0.81%	99%	96%					
Overall	0.06%	1.55%	1.76%	98%	99%	0.11%	3.31%	3.57%	98%	99%

■ Solution #2

	AI					RA				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.09%	0.51%	0.33%	100%	104%	0.14%	0.55%	0.93%	99%	102%
Class A2	0.16%	1.41%	1.29%	100%	102%	0.12%	2.56%	2.42%	99%	100%
Class B	0.07%	1.41%	1.84%	100%	102%	0.09%	3.15%	3.24%	99%	101%
Class C	0.18%	2.45%	3.13%	100%	95%	0.20%	4.70%	5.09%	100%	100%
Class E	0.04%	0.88%	0.60%	100%	101%					
Overall	0.11%	1.40%	1.58%	100%	101%	0.13%	2.92%	3.10%	100%	101%

Conclusion

- Propose:
 - *2xN or Nx2 transforms are disabled*
- Benefits:
 - *Minor coding performance change: 0.06% (AI) 0.11% (RA)*
 - *Remove 2xN or Nx2 transforms*
 - *Remove 2x2 CG*
- Recommend:
 - *Adopt in VTM*