

JVET-M0269
Non-CE6 : Extension of transform skip block size to 8x8

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Summary

- Proposal
 - Extend transform skip size up to 8x8
- Simulation results (vs.VTM-3.0)

	All Intra Main10			Random access Main10			Low delay B Main10		
	Over VTM-3.0			Over VTM-3.0			Over VTM-3.0		
	Y	U	V	Y	U	V	Y	U	V
Class A1	-0.03%	-0.03%	0.10%	0.04%	0.23%	0.21%			
Class A2	0.03%	0.03%	0.00%	0.03%	-0.08%	-0.03%			
Class B	0.00%	-0.02%	0.00%	-0.04%	0.16%	-0.05%	-0.04%	-0.29%	-0.22%
Class C	-0.12%	-0.14%	-0.26%	-0.18%	-0.09%	0.16%	-0.21%	0.10%	0.34%
Class E	0.01%	-0.02%	0.05%				0.06%	1.38%	0.09%
Overall	-0.03%	-0.04%	-0.03%	-0.05%	0.06%	0.06%	-0.07%	0.26%	0.04%
Class D	-0.11%	-0.17%	-0.17%	-0.34%	-0.43%	-0.10%	-0.38%	0.11%	0.26%
Class F	-1.88%	-1.55%	-1.54%	-1.83%	-1.31%	-1.48%	-1.69%	-1.09%	-1.73%
TGM	-6.81%	-5.24%	-5.37%	-6.77%	-5.67%	-5.78%	-6.78%	-5.98%	-6.11%
Enc Time [%]		107%			103%			103%	
Dec Time [%]		100%			100%			100%	

- Crosschecked by Sony (JVET-0709)

Proposed method

- Proposed method
 - To extended transform skip size up to 8x8
 - Allows 4x4, 4x8, 8x4, 8x8 transform skip blocks in luma component
 - Allows 2x2, 2x4, 4x2, 4x4, 4x8, 8x4, 8x8, 2x8, 8x2 transform skip blocks in chroma component
 - Higher coding gain in computer-generated contents
 - Class F
 - Y : -1.88%, U : -1.55%, V : -1.54% in AI
 - Y : -1.83%, U : -1.31%, V : -1.48% in RA
 - Y : -1.69%, U : -1.09%, V : -1.73% in LB
 - TGM
 - Y : -6.81%, U : -5.24%, V : -5.37% in AI
 - Y : -6.77%, U : -5.67%, V : -5.78% in RA
 - Y : -6.78%, U : -5.98%, V : -6.11% in LB

Test results

	All Intra Main10				
	Over VTM-3.0				
	Y	U	V	EncT	DecT
Class A1	-0.03%	-0.03%	0.10%	105%	100%
Class A2	0.03%	0.03%	0.00%	107%	100%
Class B	0.00%	-0.02%	0.00%	106%	100%
Class C	-0.12%	-0.14%	-0.26%	109%	100%
Class E	0.01%	-0.02%	0.05%	106%	100%
Overall	-0.03%	-0.04%	-0.03%	107%	100%
Class D	-0.11%	-0.17%	-0.17%	110%	99%
Class F	-1.88%	-1.55%	-1.54%	114%	98%
Class SCC	-6.81%	-5.24%	-5.37%	127%	93%

	Random access Main10				
	Over VTM-3.0				
	Y	U	V	EncT	DecT
Class A1	0.04%	0.23%	0.21%	102%	100%
Class A2	0.03%	-0.08%	-0.03%	103%	100%
Class B	-0.04%	0.16%	-0.05%	103%	100%
Class C	-0.18%	-0.09%	0.16%	104%	100%
Class E					
Overall	-0.05%	0.06%	0.06%	103%	100%
Class D	-0.34%	-0.43%	-0.10%	105%	100%
Class F	-1.83%	-1.31%	-1.48%	106%	100%
Class SCC	-6.77%	-5.67%	-5.78%	109%	97%

	Low delay B Main10				
	Over VTM-3.0				
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B	-0.04%	-0.29%	-0.22%	102%	100%
Class C	-0.21%	0.10%	0.34%	105%	100%
Class E	0.06%	1.38%	0.09%	101%	101%
Overall	-0.07%	0.26%	0.04%	103%	100%
Class D	-0.38%	0.11%	0.26%	106%	102%
Class F	-1.69%	-1.09%	-1.73%	104%	100%
Class SCC	-6.78%	-5.98%	-6.11%	108%	97%

Conclusion

- It is reported that the transform skip is allowed up to 8x8.
- With reasonable increase of encoding complexity, the coding efficiency is remarkable on the computer-generated materials.
- It is recommended to include the proposed transform skip extension up to 8x8 for next version of VTM/VVC.

Thank you