

JVET-P0274

Non-CE1: Enabling TMVP in RPR

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Summary

- **TMVP** is enabled for **AMVP** and **SbTMVP** by performing MV scaling when current and collocated pictures have different sizes
- Scale2.0x w/ PSNR1: -0.16%/-0.07%/-0.23%
- Scale2.0x w/ PSNR2: -0.13%/-0.07%/-0.24%
- Scale1.5x w/ PSNR1: -0.08%/-0.06%/0.26%
- Scale1.5x w/ PSNR2: -0.07%/-0.08%/0.27%

TMVP Design in RPR

- In current RPR, TMVP is disabled when current and collocated pictures have different sizes
 - Temporal MVs CANNOT be used in merge mode, AMVP and SbTMVP

Proposal

- **Enable TMVP for AMVP & SbTMVP** even when current and collocated pictures have different sizes
- MV scaling
 - $$\text{mvLXCol}[0] = (\text{hori_scale_fp} * \text{mvLXCol}[0] + (1 \ll 13) - (\text{hori_scale_fp} * \text{mvLXCol}[0] \geq 0)) \gg 14$$
 - $$\text{mvLXCol}[1] = (\text{vert_scale_fp} * \text{mvLXCol}[1] + (1 \ll 13) - (\text{vert_scale_fp} * \text{mvLXCol}[1] \geq 0)) \gg 14$$

Simulation Results – Scale2.0x

■ PSNR1

■ PSNR2

	Low delay B Main10						Low delay B Main10				
	Over VTM-6.1						Over VTM-6.1				
	Y	U	V	EncT	DecT		Y	U	V	EncT	DecT
Class A1						Class A1					
Class A2						Class A2					
Class B	-0.13%	0.14%	-0.01%	100%	103%	Class B	-0.14%	0.08%	-0.02%	100%	103%
Class C	-0.20%	-0.29%	-0.15%	99%	96%	Class C	-0.11%	-0.26%	-0.09%	99%	96%
Class E	-0.14%	-0.12%	-0.68%	100%	94%	Class E	-0.12%	-0.07%	-0.80%	100%	94%
Overall	-0.16%	-0.07%	-0.23%	100%	99%	Overall	-0.13%	-0.07%	-0.24%	100%	99%
Class D	-0.08%	-0.27%	-0.02%	101%	99%	Class D	-0.06%	-0.17%	0.05%	101%	99%
Class F	-0.38%	-0.25%	-0.45%	100%	102%	Class F	-0.36%	-0.24%	-0.13%	100%	102%

Thanks Kwai for crosschecking

Simulation Results – Scale1.5x

■ PSNR1

■ PSNR2

	Low delay B Main10						Low delay B Main10				
	Over VTM-6.1						Over VTM-6.1				
	Y	U	V	EncT	DecT		Y	U	V	EncT	DecT
Class A1						Class A1					
Class A2						Class A2					
Class B	-0.12%	-0.09%	0.23%	101%	102%	Class B	-0.11%	-0.07%	0.28%	101%	102%
Class C	-0.06%	-0.29%	-0.10%	99%	98%	Class C	-0.10%	-0.36%	-0.10%	99%	98%
Class E	-0.05%	0.27%	0.79%	100%	99%	Class E	0.03%	0.26%	0.76%	100%	99%
Overall	-0.08%	-0.06%	0.26%	100%	100%	Overall	-0.07%	-0.08%	0.27%	100%	100%
Class D	-0.16%	0.36%	0.30%	101%	102%	Class D	-0.16%	0.57%	0.42%	101%	102%
Class F	0.10%	0.07%	0.16%	98%	99%	Class F	0.10%	0.23%	0.12%	98%	99%

Thanks Kwai for crosschecking

