



CREATING THE LIVING NETWORK™

JVET-P0414

Non-CE4: Simplification of SIF

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October 2019



Introduction

- Adopted in last meeting, when half-luma-sample MVD precision is signaled for a CU, a 6-tap half-pel switchable interpolation filter (SIF) instead of the default 8-tap interpolation filter is used.
- This 6-tap SIF is known to introduce certain level of smoothing effect. For bigger sized CUs, SIF may not be selected.

Proposal

- Proposal
 - Simplify SIF by adding a CU size restriction.
 - Specifically, half-pel MVD precision is disabled if a CU size satisfies certain conditions.
- Tests
 - Test 1: if either the width or height of a CU is larger than 32, half-pel MVD precision is disabled.
 - Test 2: if the area of a CU is larger than 1024, half-pel MVD precision is disabled.

Simulations

Test 1: Check CU width and height

	Random Access Main 10				
	Over VTM-6.0				
	Y	U	V	EncT	DecT
Class A1	0.04%	0.14%	0.07%	97%	100%
Class A2	0.06%	0.13%	0.13%	98%	100%
Class B	0.03%	0.14%	0.03%	98%	99%
Class C	-0.01%	0.01%	-0.05%	99%	98%
Class E	-	-	-	-	-
Overall	0.03%	0.10%	0.03%	98%	99%
Class D	-0.01%	0.03%	0.05%	99%	100%
Class F	-0.02%	-0.03%	-0.02%	99%	99%

	Low delay B Main10				
	Over VTM-6.0				
	Y	U	V	EncT	DecT
Class A1	-	-	-	-	-
Class A2	-	-	-	-	-
Class B	0.00%	-0.12%	-0.06%	99%	102%
Class C	0.02%	-0.07%	0.15%	99%	100%
Class E	0.03%	0.27%	-0.26%	99%	101%
Overall	0.02%	-0.01%	-0.04%	99%	101%
Class D	-0.01%	0.12%	0.03%	99%	97%
Class F	0.08%	0.19%	0.35%	100%	99%

Test 2: Check CU area size

	Random Access Main 10				
	Over CE-6.0				
	Y	U	V	EncT	DecT
Class A1	0.03%	0.17%	0.04%	98%	100%
Class A2	0.04%	0.11%	0.07%	99%	100%
Class B	0.01%	0.11%	0.05%	99%	99%
Class C	-0.01%	0.01%	-0.07%	100%	101%
Class E	-	-	-	-	-
Overall	0.01%	0.10%	0.02%	99%	100%
Class D	0.00%	0.00%	0.00%	100%	102%
Class F	0.01%	-0.02%	-0.03%	100%	100%

	Low delay B Main10				
	Over CE-6.0				
	Y	U	V	EncT	DecT
Class A1	-	-	-	-	-
Class A2	-	-	-	-	-
Class B	0.01%	0.00%	-0.08%	99%	102%
Class C	0.01%	0.08%	0.02%	99%	98%
Class E	0.02%	0.30%	0.01%	99%	99%
Overall	0.01%	0.10%	-0.03%	99%	100%
Class D	0.06%	0.08%	0.04%	100%	98%
Class F	0.12%	0.30%	1.02%	100%	98%

Summary

- Propose to add CU size restriction to SIF
 - Avoid unnecessary encoder checking, over-smoothing and encoder signaling.
- Two tests
 - Test 1: Check CU width and height
 - RA: (0.03%, 0.10%, 0.03%), LDB: (0.02%, -0.01%, -0.04%)
 - Test 2: Check CU area size
 - RA: (0.01%, 0.10%, 0.02%), LDB: (0.01%, 0.10%, -0.03%)
- This simplification leads to negligible loss.

Thank Huawei for cross-checking !
(JVET-P0871)