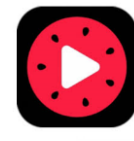


JVET-Y0172

NON-EE2: LONG TAP INTERPOLATION FILTERING ON CHROMA COMPONENTS

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Introduction

- In ECM3.1
 - *Chroma MC uses 4-tap interpolation filter*
 - *Luma MC uses 12-tap interpolation filter*
- Long tap interpolation filtering can obtain coding gains on luma component
 - *How about chroma?*

Proposed

- Replace the 4-tap interpolation filter on chroma MC with a 12-tap interpolation filter

Fractional position	Coefficients (12 taps)
1/32	{ 0, 0, 0, 0, 0, 256, 0, 0, 0, 0, 0, 0, }
2/32	{ 0, 1, -2, 3, -7, 255, 8, -3, 2, -1, 0, 0, }
3/32	{ -1, 2, -3, 6, -14, 254, 16, -7, 4, -2, 1, 0, }
4/32	{ -1, 2, -5, 9, -20, 253, 25, -10, 5, -3, 1, 0, }
5/32	{ -1, 3, -7, 12, -26, 249, 35, -15, 8, -4, 2, 0, }
6/32	{ -1, 3, -7, 14, -31, 245, 44, -18, 9, -4, 2, 0, }
7/32	{ -2, 5, -9, 17, -36, 241, 54, -22, 12, -6, 3, -1, }
8/32	{ -1, 4, -9, 18, -40, 235, 64, -25, 13, -6, 3, 0, }
6/32	{ -2, 5, -11, 21, -43, 230, 75, -29, 15, -8, 4, -1, }
7/32	{ -2, 5, -11, 21, -46, 225, 86, -32, 16, -8, 3, -1, }
8/32	{ -2, 6, -13, 24, -48, 216, 97, -36, 19, -10, 4, -1, }
9/32	{ -2, 6, -12, 24, -49, 208, 107, -38, 19, -10, 4, -1, }
10/32	{ -2, 7, -14, 25, -51, 200, 119, -42, 22, -12, 5, -1, }
11/32	{ -2, 6, -13, 24, -51, 191, 129, -43, 22, -11, 5, -1, }
12/32	{ -2, 7, -14, 26, -51, 181, 140, -46, 24, -13, 6, -2, }
13/32	{ -1, 6, -12, 24, -50, 170, 151, -47, 23, -12, 5, -1, }
14/32	{ -2, 6, -13, 25, -50, 162, 162, -50, 25, -13, 6, -2, }
15/32	{ -1, 5, -12, 23, -47, 151, 170, -50, 24, -12, 6, -1, }
16/32	{ -2, 6, -13, 24, -46, 140, 181, -51, 26, -14, 7, -2, }
17/32	{ -1, 5, -11, 22, -43, 129, 191, -51, 24, -13, 6, -2, }
18/32	{ -1, 5, -12, 22, -42, 119, 200, -51, 25, -14, 7, -2, }
19/32	{ -1, 4, -10, 19, -38, 107, 208, -49, 24, -12, 6, -2, }
20/32	{ -1, 4, -10, 19, -36, 97, 216, -48, 24, -13, 6, -2, }
21/32	{ -1, 3, -8, 16, -32, 86, 225, -46, 21, -11, 5, -2, }
22/32	{ -1, 4, -8, 15, -29, 75, 230, -43, 21, -11, 5, -2, }
23/32	{ 0, 3, -6, 13, -25, 64, 235, -40, 18, -9, 4, -1, }
24/32	{ -1, 3, -6, 12, -22, 54, 241, -36, 17, -9, 5, -2, }
25/32	{ 0, 2, -4, 9, -18, 44, 245, -31, 14, -7, 3, -1, }
26/32	{ 0, 2, -4, 8, -15, 35, 249, -26, 12, -7, 3, -1, }
27/32	{ 0, 1, -3, 5, -10, 25, 253, -20, 9, -5, 2, -1, }
28/32	{ 0, 1, -2, 4, -7, 16, 254, -14, 6, -3, 2, -1, }
31/32	{ 0, 0, -1, 2, -3, 8, 255, -7, 3, -2, 1, 0, }

Simulations results on ECM-3.1

	RA					LB				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-0.01%	-0.09%	-0.24%	107%	112%					
Class A2	-0.01%	-1.00%	-1.30%	106%	114%					
Class B	-0.08%	-1.52%	-1.72%	107%	113%	-0.13%	-2.37%	-2.05%	104%	104%
Class C	-0.05%	-3.25%	-3.08%	106%	113%	-0.16%	-3.47%	-3.06%	106%	108%
Class E						0.01%	0.19%	0.36%	106%	107%
Overall	-0.04%	-1.59%	-1.70%	106%	113%	-0.11%	-2.10%	-1.78%	105%	106%
Class D	-0.04%	-4.48%	-5.09%	107%	116%	-0.06%	-3.52%	-6.23%	107%	112%
Class F	-0.02%	-1.17%	-1.46%	106%	110%	-0.19%	-1.36%	-1.38%	104%	105%

Conclusion

- Long tap MC filtering for chroma is proposed
- Promising gain on chroma
- Suggested to be tested in EE2