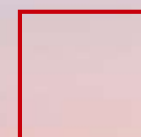


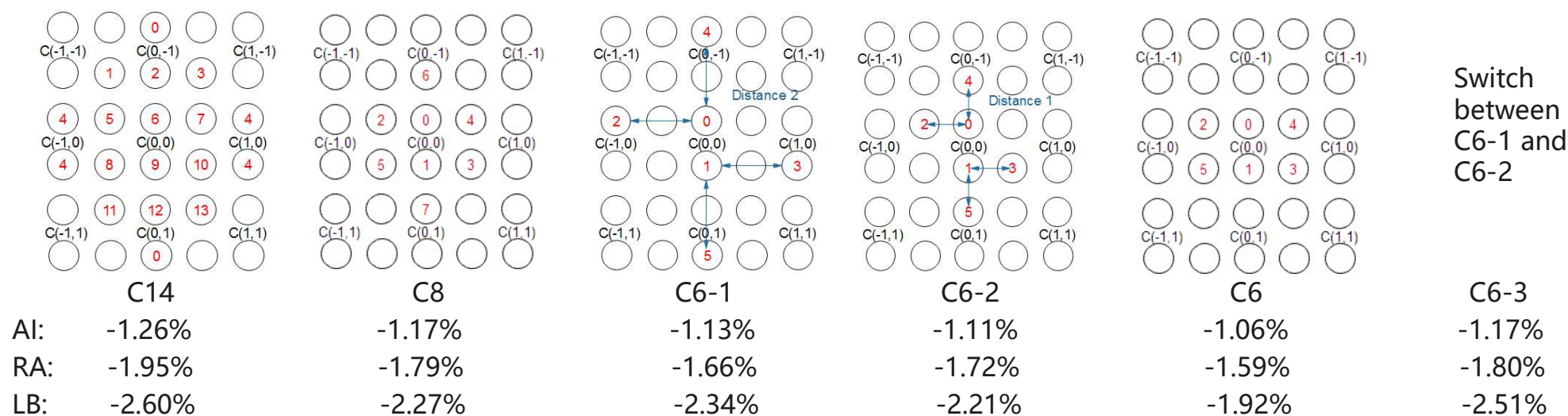
# CE5-related: Simplified CCALF with 6 filter coefficients

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# Proposed method

- Simplify the CC-ALF filter shape with 6-tap filter:
  - Test 1: C6-1
  - Test 2: C6-2 filter, which is a sub-set of 8-tap filter in JVET-P0173/JVET-P1008, 0.3% chroma loss compared with the 8-tap filter
  - Switching between C6-1 and C6-2 by APS flag (independently for Cb & Cr), same performance as the 8-tap filter in AI/RA and better performance in LB



# More detailed results

		Y	U	V	YUV(8:1:1)/10
<b>C14(CE5-2.1)</b>	<b>AI</b>	0.13%	-7.58%	-6.01%	-1.26%
<b>Six Tap in P0173</b>		0.10%	-6.60%	-4.83%	-1.06%
<b>Eight Tap in P0173</b>		0.11%	-7.13%	-5.42%	-1.17%
<b>C6-1</b>		0.11%	-6.80%	-5.34%	-1.13%
<b>C6-2</b>		0.10%	-6.75%	-5.17%	-1.11%
<b>C6-3</b>		0.11%	-7.02%	-5.58%	-1.17%
<b>C14(CE5-2.1)</b>	<b>RA</b>	0.16%	-10.69%	-10.07%	-1.95%
<b>Six Tap in P0173</b>		0.16%	-9.00%	-8.22%	-1.59%
<b>Eight Tap in P0173</b>		0.16%	-9.75%	-9.40%	-1.79%
<b>C6-1</b>		0.17%	-9.29%	-8.70%	-1.66%
<b>C6-2</b>		0.16%	-9.46%	-8.99%	-1.72%
<b>C6-3</b>		0.18%	-9.96%	-9.48%	-1.80%
<b>C14(CE5-2.1)</b>	<b>LB</b>	0.17%	-15.62%	-11.75%	-2.60%
<b>Six Tap in P0173</b>		0.13%	-11.98%	-8.24%	-1.92%
<b>Eight Tap in P0173</b>		0.16%	-13.90%	-10.05%	-2.27%
<b>C6-1</b>		0.17%	-14.40%	-10.34%	-2.34%
<b>C6-2</b>		0.15%	-13.50%	-9.80%	-2.21%
<b>C6-3</b>		0.18%	-15.19%	-11.34%	-2.51%

# Conclusion

We suggest considering two 6-tap filter candidates

- C6-2: a further simplification of C8 (8 multiplication -> 6), 0.00% in luma and around 0.35% in chroma in AI / RA / LB (vs. C8)
- C6-3: very close performance in AI and RA, and around 1.2% chroma gain in LB (vs. C8)

	Y	U	V	YUV(8:1:1)/10	Avg U & V vs. C8
AI					
<b>C8</b>	0.11%	-7.13%	-5.42%	-1.17%	
<b>C6-2</b>	0.10%	-6.75%	-5.17%	-1.11%	0.32%
<b>C6-3</b>	0.11%	-7.02%	-5.58%	-1.17%	-0.03%
RA					
<b>C8</b>	0.16%	-9.75%	-9.40%	-1.79%	
<b>C6-2</b>	0.16%	-9.46%	-8.99%	-1.72%	0.35%
<b>C6-3</b>	0.18%	-9.96%	-9.48%	-1.80%	-0.14%
LB					
<b>C8</b>	0.16%	-13.90%	-10.05%	-2.27%	
<b>C6-2</b>	0.15%	-13.50%	-9.80%	-2.21%	0.33%
<b>C6-3</b>	0.18%	-15.19%	-11.34%	-2.51%	-1.29%

# Thank you.

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