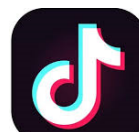


JVET-00625

NON-CE5: UNIFIED PADDING METHOD FOR SAMPLES AT VARIANT BOUNDARIES IN ALF

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Summary

■ Problem

- *ALF virtual boundary may be enabled or disabled for different inner CTUs.*

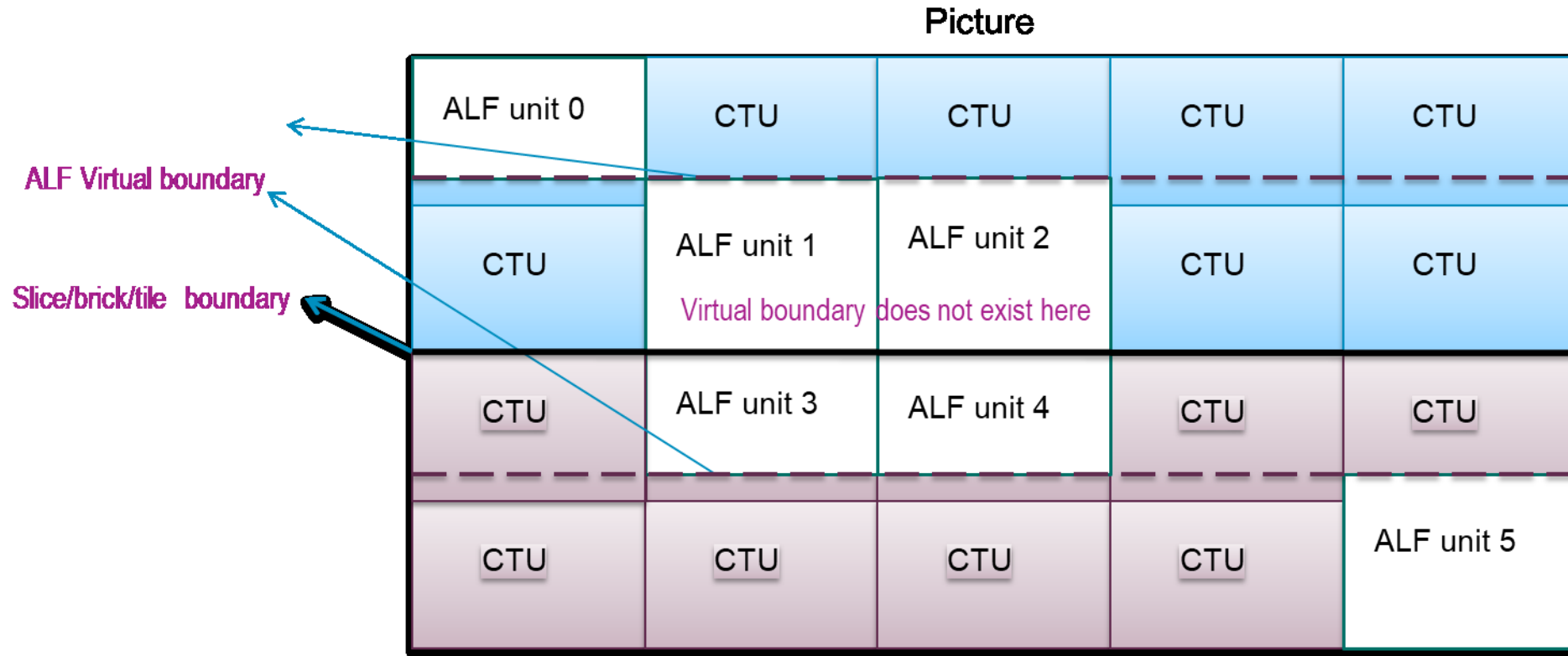
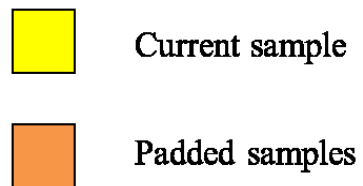
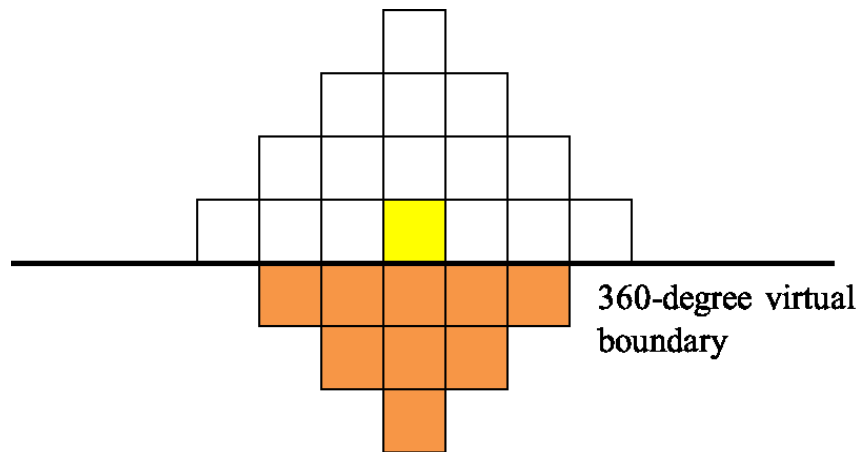


Figure 1 in JVET-00016

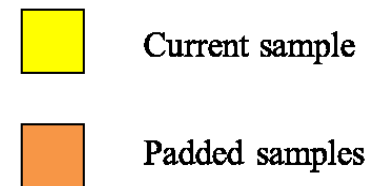
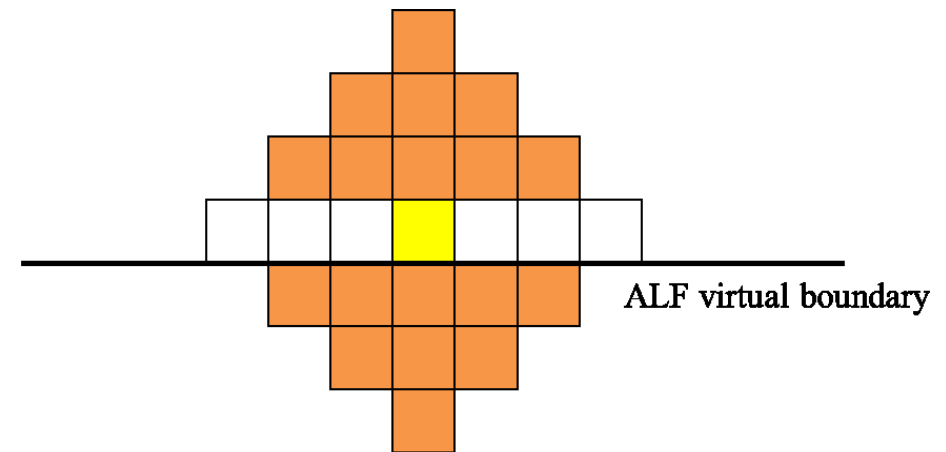
Summary

■ Problem

- *Different padding methods are used for ALF at different boundaries, such as ALF virtual boundaries, 360-degree virtual boundaries, slice/brick boundaries.*



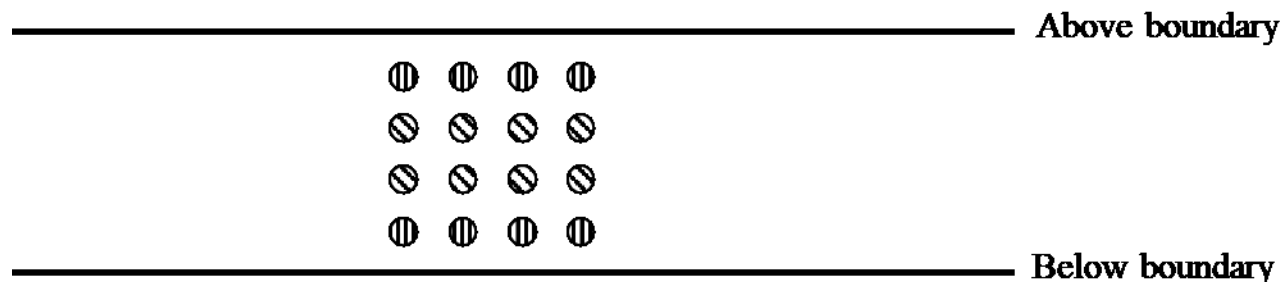
1-side padding



symmetric 2-side padding

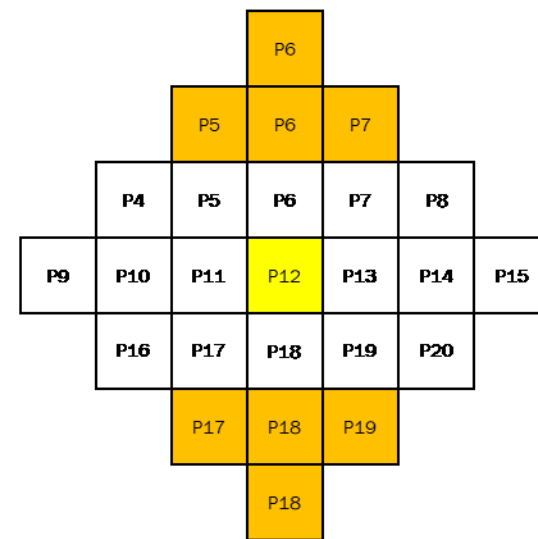
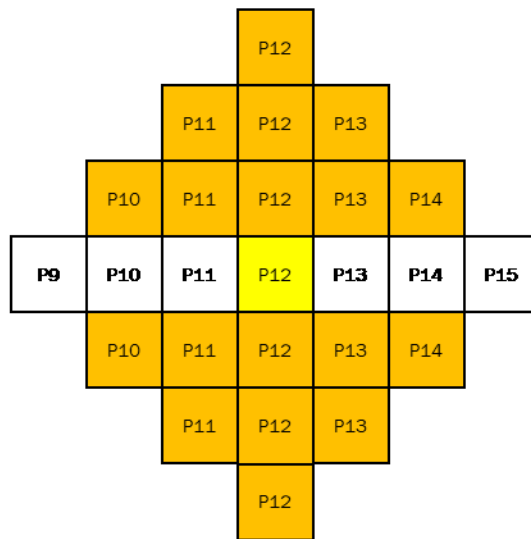
Proposed Method

- Always enable ALF virtual boundary at inner CTU boundaries.
- Use 2-side padding at all boundaries.



⊖ 6 neighboring rows needs to be padded in ALF

⊗ 4 neighboring rows needs to be padded in ALF



Current sample



Padded samples

Simulation results

- Anchor: VTM-5.0 + 2 slices
- Tested: proposed method + 2 slices

	All Intra Main10				
	Over VTM-5.0				
	Y	U	V	EncT	DecT
Class A1	0.03%	0.08%	0.07%	102%	101%
Class A2	0.02%	0.07%	0.04%	101%	101%
Class B	0.03%	0.06%	0.08%	98%	100%
Class C	0.05%	0.10%	0.14%	99%	98%
Class E	0.10%	0.07%	0.17%	100%	101%
Overall	0.05%	0.08%	0.10%	100%	100%
Class D	0.07%	0.19%	0.30%	100%	100%
Class F (optional)	0.04%	0.07%	0.06%	100%	101%

	Random Access Main 10				
	Over VTM-5.0				
	Y	U	V	EncT	DecT
Class A1	0.01%	0.06%	-0.01%	99%	100%
Class A2	0.01%	0.07%	0.13%	102%	103%
Class B	0.05%	-0.01%	-0.03%	100%	101%
Class C	0.07%	0.20%	0.00%	101%	102%
Class E					
Overall	0.04%	0.07%	0.01%	100%	101%
Class D	0.11%	0.03%	0.01%	100%	102%
Class F (optional)	0.04%	0.03%	0.06%	100%	101%

	Low delay B Main10				
	Over VTM-5.0				
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B	0.04%	0.23%	-0.06%	100%	101%
Class C	0.05%	0.06%	0.29%	101%	100%
Class E	-0.01%	-0.14%	-0.08%	102%	103%
Overall	0.03%	0.08%	0.05%	101%	101%
Class D	0.11%	-0.40%	0.08%	101%	102%
Class F (optional)	-0.04%	0.07%	0.58%	101%	103%

Conclusions

- ALF virtual boundary is always enabled except the picture boundary.
- Padding method is unified at variant boundaries.

Thanks to Interdigital for crosschecking this proposal.