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Non-EE2: Coefficient Precision Adjustment for ALF

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Summary

■ Motivation

- Higher Coefficient Precision Leads to Higher Restoration Quality
- Find a Better Balance between Reconstruction Quality and Signal Cost

■ Proposed Solution

- Coefficient Precision Adjustment for ALF

ALF Design in ECM-10.0

■ Luma-ALF

- Fixed with 8-Bit Precision
- Including Sign Bit

■ Chroma-ALF

- Fixed with 8-Bit Precision
- Including Sign Bit

Proposed Method

■ Luma-ALF

- Fixed with 9-Bit Precision
- Including Sign Bit

■ Chroma-ALF

- Fixed with 8-Bit Precision
- Including Sign Bit

Simulation Results

- Anchor is ECM-10.0
- Table Shows the Performance of the Proposed Method

	AI					RA					LB				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class-A1															
Class-A2															
Class-B	-0.03%	-0.01%	-0.01%	100.7%	99.4%	-0.07%	0.02%	-0.10%	99.4%	99.3%					
Class-C	-0.07%	-0.01%	-0.01%	101.2%	101.2%	-0.10%	-0.07%	-0.19%	99.6%	100.2%	-0.06%	-0.22%	-0.09%	100.3%	99.6%
Class-E	-0.04%	-0.02%	-0.02%	99.7%	99.4%						-0.04%	0.12%	0.41%	99.0%	100.7%
Overall															
Class-D	-0.06%	0.02%	0.02%	100.4%	99.7%	-0.13%	0.08%	-0.15%	99.4%	100.0%	-0.06%	0.38%	-0.56%	99.7%	100.3%
Class-F						-0.04%	0.04%	-0.05%	99.5%	100.2%					

Conclusion

- Coefficient Precision Adjustment for ALF is Proposed
- Achieve a Better Balance between Reconstruction Quality and Signal Cost for ALF Coefficient
- Promising Coding Gain Can be Achieved with Negligible Coding Time Increase
- Recommended to Adopt the Proposed Method into Next Version of ECM
- Thanks Kwai for Cross-Checking

Thanks!