

MEDIATEK

CE4.3.4: Removal of AMVR flag constraint

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11th JVET Meeting in Ljubljana
10–18 July 2018

Overall Summary

- In AMVP mode, signal a CU-level AMVR flag before motion information signalling
 - The AMVR flag is signaled even when the MVD are all zeros
 - Round the MVP to integer when the AMVR flag is true

		VTM			Run Time		BMS			Run Time	
		Y	U	V	Enc	Dec	Y	U	V	Enc	Dec
Proposed	RA	-1.79%	-2.41%	-2.52%	121%	100%	-1.12%	-1.57%	-1.58%	105%	98%
	LB	-0.72%	-1.39%	-1.56%	142%	99%	-0.70%	-1.16%	-1.31%	115%	99%

Proposed Method

- In JEM-7.0 AMVR, the AMVR flag is coded after all predicting information (e.g. merge flag, affine flag, MVP index, MVD). If the MVD are all zeros, the AMVR flag is inferred as false.
- In AMVP mode, signal a CU-level AMVR flag before motion information signalling
 - The AMVR flag is signaled even when the MVD are all zeros
 - Round the MVP to integer when the AMVR flag is true

Simulation Results

- Implemented on top of BMS-1.0
 - Removal of AMVR flag constraint
- No noticeable decoding time increase

Anchor: no AMVR		VTM-1.0			BMS-1.0		
		Y	U	V	Y	U	V
K0247	RA	-1.79%	-2.41%	-2.52%	-1.12%	-1.57%	-1.58%
	LB	-0.72%	-1.39%	-1.56%	-0.70%	-1.16%	-1.31%

Anchor: with AMVR		VTM-1.0			BMS-1.0		
		Y	U	V	Y	U	V
K0247	RA	-0.04%	-0.05%	-0.13%	-0.02%	-0.06%	-0.09%
	LB	-0.04%	-0.12%	-0.18%	-0.13%	-1.18%	-0.22%

Conclusions

- Propose to signal a CU-level AMVR flag before motion information signalling
 - The AMVR flag is signaled even when the MVD are all zeros
 - Round the MVP to integer when the AMVR flag is true

		VTM			Run Time		BMS			Run Time	
		Y	U	V	Enc	Dec	Y	U	V	Enc	Dec
Proposed	RA	-1.79%	-2.41%	-2.52%	121%	100%	-1.12%	-1.57%	-1.58%	105%	98%
	LB	-0.72%	-1.39%	-1.56%	142%	99%	-0.70%	-1.16%	-1.31%	115%	99%

The Mediatek logo consists of the word "MEDIATEK" in white, bold, uppercase letters, centered within an orange parallelogram with slanted sides.

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Overall Results

Table 1. Left side: anchor = VTM-1.0 (no AMVR), test = VTM-1.0 + proposed AMVR;
right side: anchor: BMS-1.0 with JEM-7.0 AMVR off, test: BMS-1.0 with JEM-7.0 AMVR off + proposed AMVR.

	Random Access Main 10									
	Over VTM-1.0					Over BMS-1.0				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-2.88%	-3.17%	-3.64%	115%	98%	-1.70%	-2.14%	-2.01%	102%	98%
Class A2	-2.17%	-2.83%	-2.74%	120%	99%	-1.21%	-1.70%	-1.66%	106%	99%
Class B	-1.51%	-2.27%	-2.12%	122%	101%	-1.00%	-1.46%	-1.36%	105%	98%
Class C	-1.03%	-1.70%	-2.02%	124%	99%	-0.75%	-1.18%	-1.49%	107%	98%
Class E										
Overall	-1.79%	-2.41%	-2.52%	121%	100%	-1.12%	-1.57%	-1.58%	105%	98%
Class D	-0.57%	-1.42%	-1.55%	128%	99%	-0.53%	-1.01%	-1.12%	107%	99%
Class F (optional)	-1.83%	-1.86%	-2.02%	125%	98%	-1.66%	-1.68%	-1.75%	106%	99%

	Low delay B Main10									
	Over VTM-1.0					Over BMS-1.0				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1										
Class A2										
Class B	-1.01%	-1.69%	-1.76%	142%	100%	-0.91%	-1.43%	-1.36%	113%	100%
Class C	-0.65%	-1.57%	-1.83%	141%	98%	-0.73%	-1.08%	-1.88%	115%	99%
Class E	-0.34%	-0.66%	-0.88%	147%	99%	-0.34%	-0.83%	-0.49%	117%	99%
Overall	-0.72%	-1.39%	-1.56%	142%	99%	-0.70%	-1.16%	-1.31%	115%	99%
Class D	-0.32%	-1.44%	-1.49%	140%	99%	-0.32%	-1.51%	-0.59%	115%	100%
Class F (optional)	-2.46%	-2.47%	-2.64%	144%	99%	-2.10%	-2.23%	-2.57%	113%	99%

Overall Results

Table 2. Left side: anchor = VTM-1.0 + JEM-7.0 AMVR, test = VTM-1.0 + proposed AMVR;
right side: anchor: BMS-1.0 (JEM-7.0 AMVR on), test: BMS-1.0 with JEM-7.0 AMVR off + proposed AMVR.

	Random Access Main 10									
	Over VTM-1.0					Over BMS-1.0				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-0.07%	-0.02%	-0.12%	103%	101%	-0.01%	-0.14%	-0.09%	102%	99%
Class A2	-0.04%	-0.10%	-0.13%	104%	99%	-0.03%	-0.11%	-0.10%	102%	101%
Class B	-0.05%	-0.10%	-0.16%	105%	100%	-0.05%	-0.03%	-0.07%	103%	100%
Class C	-0.01%	0.03%	-0.09%	106%	100%	0.02%	0.00%	-0.13%	103%	99%
Class E										
Overall	-0.04%	-0.05%	-0.13%	105%	100%	-0.02%	-0.06%	-0.09%	102%	100%
Class D	-0.02%	-0.12%	-0.10%	105%	99%	-0.01%	-0.17%	-0.11%	102%	100%
Class F (optional)	-0.12%	-0.13%	-0.13%	109%	99%	-0.18%	-0.23%	-0.27%	104%	100%

	Low delay B Main10									
	Over VTM-1.0					Over BMS-1.0				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1										
Class A2										
Class B	-0.06%	-0.15%	-0.30%	109%	100%	-0.13%	-0.38%	0.20%	105%	100%
Class C	-0.05%	-0.33%	-0.26%	108%	98%	-0.10%	-0.02%	-0.55%	105%	100%
Class E	0.03%	0.20%	0.15%	113%	100%	-0.18%	-0.05%	-0.49%	107%	100%
Overall	-0.04%	-0.12%	-0.18%	110%	100%	-0.13%	-0.18%	-0.22%	106%	100%
Class D	-0.01%	-0.25%	0.09%	107%	99%	-0.01%	-0.02%	-0.01%	104%	100%
Class F (optional)	-0.13%	0.23%	-0.38%	113%	99%	-0.11%	-0.04%	0.08%	107%	100%