



Prediction and Partition Mode Binarization for Low Delay P

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Outline

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- Proposed unification for Low Delay P and Low Delay B
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Introduction

- Prediction and partition mode binarization for Low Delay P in current WD (JCTVC-F803_d4, Table 9-47)

Slice type	Value of pred_type	PredMode	PartMode	Bin string		
				cLog2CUSize > Log2MinCUSize	cLog2CUSize == Log2MinCUSize	
					cLog2CUSize == 3 && !inter_4x4_enabled_flag	cLog2CUSize > 3 && inter_4x4_enabled_flag
I	0	MODE_INTRA	PART_2Nx2N	-	1	1
	1	MODE_INTRA	PART_NxN	-	0	0
P	0	MODE_INTER	PART_2Nx2N	0 1	0 1	0 1
	1	MODE_INTER	PART_2NxN	0 011	0 01	0 01
	2	MODE_INTER	PART_Nx2N	0 001	0 00	0 001
	4	MODE_INTER	PART_2NxN	0 0100	-	-
	5	MODE_INTER	PART_2NxN	0 0101	-	-
	6	MODE_INTER	PART_nLx2N	0 0000	-	-
	7	MODE_INTER	PART_nRx2N	0 0001	-	-
	3	MODE_INTER	PART_NxN	-	-	0 000
	4	MODE_INTRA	PART_2Nx2N	1	11	11
	5	MODE_INTRA	PART_NxN	-	10	10
B	0	MODE_INTER	PART_2Nx2N	1	1	1
	1	MODE_INTER	PART_2NxN	011	01	01
	2	MODE_INTER	PART_Nx2N	001	001	001
	4	MODE_INTER	PART_2NxN	0100	-	-
	5	MODE_INTER	PART_2NxN	0101	-	-
	6	MODE_INTER	PART_nLx2N	0000	-	-
	7	MODE_INTER	PART_nRx2N	0001	-	-
	3	MODE_INTER	PART_NxN	-	-	0001
	4	MODE_INTRA	PART_2Nx2N	000	000 0	0000 0
	5	MODE_INTRA	PART_NxN	-	000 1	0000 1

Results for Bug Fix

	Low delay P HE		
	Y	U	V
Class A			
Class B	0.0%	0.0%	0.1%
Class C	0.0%	0.0%	-0.1%
Class D	0.0%	-0.3%	0.0%
Class E	0.0%	0.1%	0.4%
Overall	0.0%	-0.1%	0.1%
	0.0%	-0.1%	0.1%
Enc Time[%]	100%		
Dec Time[%]	100%		

Unification for Low Delay P and B

Slice type	Value of pred_type	PredMode	PartMode	Bin string		
				cLog2CUSize > Log2MinCUSize	cLog2CUSize == Log2MinCUSize	
					cLog2CUSize == 3 && !inter_4x4_enabled_flag	cLog2CUSize > 3 inter_4x4_enabled_flag
I	0	MODE_INTRA	PART_2Nx2N	-	1	1
	1	MODE_INTRA	PART_NxN	-	0	0
P/B	0	MODE_INTER	PART_2Nx2N	1	1	1
	1	MODE_INTER	PART_2NxN	011	01	01
	2	MODE_INTER	PART_Nx2N	001	001	001
	4	MODE_INTER	PART_2NxN	0100	-	-
	5	MODE_INTER	PART_2NxND	0101	-	-
	6	MODE_INTER	PART_nLx2N	0000	-	-
	7	MODE_INTER	PART_nRx2N	0001	-	-
	3	MODE_INTER	PART_NxN	-	-	0001
	4	MODE_INTRA	PART_2Nx2N	000	000 0	0000 0
	5	MODE_INTRA	PART_NxN	-	000 1	0000 1

Results for Unification

	Low delay P HE		
	Y	U	V
Class A			
Class B	0.0%	0.2%	0.3%
Class C	0.0%	0.1%	-0.1%
Class D	0.0%	-0.1%	-0.1%
Class E	0.0%	0.0%	0.1%
Overall	0.0%	0.0%	0.0%
	0.0%	0.0%	-0.1%
Enc Time[%]	100%		
Dec Time[%]	100%		

Conclusion

- Bug (WD-HM mismatch) fix is reported.
 - Negligible impact on BD-rate and encoding/decoding runtime.
- Prediction and partition binarization unification for Low Delay P and B is proposed.
 - Negligible impact on BD-rate and encoding/decoding runtime.
 - Simplify WD, encoding and decoding procedures.
- Recommend to include the proposed unification or bug fix in the next version WD and/or HM.

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