

Improved Signaling and Binarization of Chroma Intra Prediction Mode

JCTVC-D278



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- Traditional Chroma Intra Prediction Mode Encoding
- **Proposed solution** –improved signaling and binarization method for Chroma Intra Prediction Mode
- **Simulation Results**

Traditional Chroma Intra Prediction Mode Coding

mode num	Code word	TMuC
0	0	Vertical
1	10	Horizontal
2	110	DC
3	1110	Down-right
4	1111	Luma angle mode

Problem

1. Vertical mode not always most probable
2. Redundancy for the codeword, due to redundant candidate set



Proposed Chroma Intra Prediction Mode Coding

1. Vertical mode not always the highest probable → Luma angle mode
2. Redundancy for the codeword, due to redundant candidate set → different candidate set

*Table1: Luma angle **different** from vertical/ horizontal/ DC/ down-right*

mode num	Code word	
0	0	LumaAngle Mode
1	10	Vertical
2	110	Horizontal
3	1110	DC
4	1111	Down-right

*Table2: Luma angle **same** as one of vertical/ horizontal/ DC/ down-right*

mode num	Code word	
0	0	LumaAngle Mode
1	10	Vertical
2	110	Horizontal
3	111	DC

Note: LumaAngleMode=Down-right as an example

Test Condition and Results

- The anchor is HM0.9 with encoding conditions specified in the common test conditions in JCTVC-C500.
- The results are verified at the decoder and cross checked byASTRI in JCTVC-D426 . The complexity increase is negligible.

	Intra_loco		
	Y BD-rate	U BD-rate	V BD-rate
Class A	-0.6	-0.3	0.0
Class B	-0.6	-0.5	-0.3
Class C	-0.7	-0.5	-0.4
Class D	-0.5	-0.3	-0.2
Class E	-0.5	0.0	-0.1
ALL	-0.6	-0.3	-0.3

	Intra_HE		
	Y BD-rate	U BD-rate	V BD-rate
Class A	-0.9	0.1	0.3
Class B	-0.7	0.1	0.2
Class C	-0.7	0.2	0.3
Class D	-0.6	0.2	0.3
Class E	-1.1	-0.5	-0.2
ALL	-0.8	0.0	0.2



- **This technique achieves 0.6% BDBR in Intra Low Complexity (LoCo) condition and 0.8% BDBR in Intra High Efficiency (HE) condition.**
- **Recommend the standard committee to include this technique into HM software.**
- **Recommend the standard committee to include this technique into future core experiment.**