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Non-CE11: Modified Method for Two-Level Coding of Significance Maps

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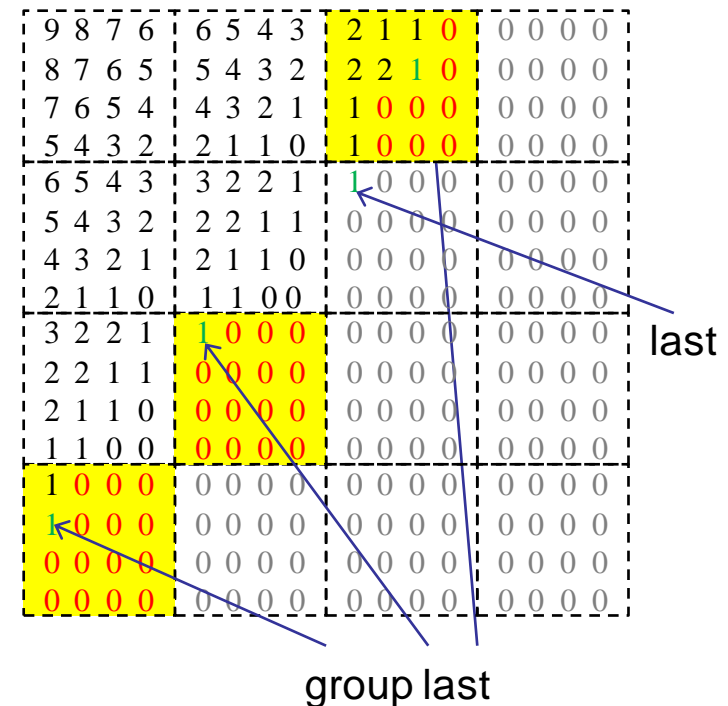
Overall Summary

- Propose to code the position of the last significant coefficient within a sub-block for coding the significance maps in large transform blocks

- Benefits
  – Reduced number of coded bins
  – Improved efficiency

- No BD-rate loss for HE configurations and Y BD-rate decreases 0.0 – 0.3 % for LC configurations

Proposed Method

- Code new syntax elements **group_last_significant_coeff_x** and **group_last_significant_coeff_y** to represent the position of the last significant coefficient in scanning order within a sub-block

- New syntax elements are only coded for the sub-block with the group significance flag explicitly coded as '1'

- Coding significance flags is skipped for the coefficients after the last significant coefficient within the sub-block

last

group last

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CABAC

- Syntax elements **group_last_significant_coeff_x** and **group_last_significant_coeff_y** each binarized by a truncated unary code

- Each bin is assigned a single context

- Add 12 new contexts (6 for Luma, 6 for Chroma)

Results

- JCTVC-G1200 anchor

- No BD-bitrate loss for HE configurations

- Y BD-bitrate decreases 0.0 - 0.3 % for LC configurations

- Thank JVC for verification

	All Intra HE			All Intra LC		
	Y	U	V	Y	U	V
Class A (8bit)	0.0%	0.0%	0.1%	-0.1%	-0.2%	-0.2%
Class B	0.0%	0.0%	0.1%	-0.2%	-0.4%	-0.4%
Class C	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%
Class D	0.0%	0.1%	0.1%	-0.1%	-0.1%	-0.1%
Class E	0.1%	0.2%	0.2%	-0.1%	-0.1%	-0.2%
Overall	**0.0%**	**0.1%**	**0.1%**	**-0.1%**	**-0.2%**	**-0.2%**
	0.0%	0.1%	0.1%	-0.1%	-0.2%	-0.2%
Class F	0.0%	0.0%	0.1%	0.0%	0.0%	-0.1%
Enc Time[%]	103.3%			105.5%		
Dec Time[%]	103.5%			104.7%		

	Random Access HE			Random Access LC		
	Y	U	V	Y	U	V
Class A (8bit)	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.3%
Class B	0.0%	-0.1%	0.0%	-0.1%	-0.2%	-0.3%
Class C	0.0%	-0.1%	0.1%	0.0%	-0.1%	-0.1%
Class D	0.0%	-0.2%	0.0%	0.0%	0.3%	-0.2%
Class E						
Overall	**0.0%**	**-0.1%**	**0.0%**	**-0.1%**	**0.0%**	**-0.2%**
	0.0%	-0.1%	0.0%	-0.1%	0.0%	-0.2%
Class F	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Enc Time[%]	100.9%			104.5%		
Dec Time[%]	100.6%			103.6%		

	Low Delay B HE			Low Delay B LC		
	Y	U	V	Y	U	V
Class A						
Class B	0.1%	-0.1%	0.0%	-0.3%	-0.4%	-0.1%
Class C	0.0%	-0.1%	0.1%	-0.1%	0.0%	-0.2%
Class D	0.0%	-0.4%	-0.2%	-0.1%	0.9%	0.2%
Class E	0.1%	0.3%	-0.4%	-0.2%	0.0%	-0.2%
Overall	**0.0%**	**-0.1%**	**-0.1%**	**-0.2%**	**0.1%**	**0.0%**
	0.0%	-0.1%	-0.1%	-0.2%	0.1%	0.0%
Class F	-0.1%	0.0%	-0.6%	0.0%	-0.5%	-0.3%
Enc Time[%]	101.7%			101.7%		
Dec Time[%]	101.7%			100.7%		

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