

# **Modification of context assignment for significance flag coding for large TUs**

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# Background

- JCTVC-I0296 was adopted at the last meeting
  - ❖ position-based context derivation for significance flag coding for  $16 \times 16$  and  $32 \times 32$  TUs
- BD-rate loss of 0.1%
- Number of contexts reduced by 3
- Explore whether the loss can be recovered by increasing the number of contexts by 3
  - ❖ A modification of context assignment for significance flag coding for large TUs

# HM method

- Significance map coding for  $16 \times 16$  and  $32 \times 32$  blocks
- Context assignment for coding significance flags based on
  - ❖ the position of the coefficient within the  $4 \times 4$  subblock
  - ❖ whether the  $4 \times 4$  subblock is a DC subblock
  - ❖ the coefficient group flags for the right ( $CGF_R$ ) and bottom ( $CGF_B$ )  $4 \times 4$  subblocks

$CGF_B=0, CGF_R=0$			
1	1	1	0
1	1	0	0
1	0	0	0
0	0	0	0

$CGF_B=0, CGF_R=1$			
1	1	1	1
1	1	1	1
0	0	0	0
0	0	0	0

$CGF_B=1, CGF_R=0$			
1	1	0	0
1	1	0	0
1	1	0	0
1	1	0	0

$CGF_B=1, CGF_R=1$			
2	2	2	2
2	2	2	2
2	2	2	1
2	2	1	1

# Proposed method

- Simplified context assignment when either  $CGF_R$  or  $CGF_B$  is non-zero
- One more comparison when  $CGF_R=0$  and  $CGF_B=0$ .
- Three additional contexts (2 luma and 1 chroma)

CGF <sub>B</sub> =0, CGF <sub>R</sub> =0			
1	1	1	2
1	1	2	3
1	2	3	3
2	3	3	3

CGF <sub>B</sub> =0, CGF <sub>R</sub> =1			
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3

CGF <sub>B</sub> =1, CGF <sub>R</sub> =0			
0	1	2	3
0	1	2	3
0	1	2	3
0	1	2	3

CGF <sub>B</sub> =1, CGF <sub>R</sub> =1			
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

# Results

## ➤ Common test conditions

	BD-rate (Y)	BD-rate (Cb)	BD-rate (Cr)
AI main	-0.10%	-0.06%	-0.07
AI HE-10	-0.09%	-0.05%	-0.05
RA main	-0.06%	-0.04%	-0.17
RA HE-10	-0.05%	+0.00%	-0.09
LB main	-0.01%	+0.26%	+0.10
LB HE-10	+0.04%	+0.09%	+0.11
Average	-0.045%	+0.033%	-0.028%

# Conclusions

- A modification of context assignment for significance flag coding for large TUs is proposed
  - ❖ Small improvement in luma BD-rate (-0.045%)
  - ❖ Three additional contexts (2 luma, 1 chroma)
  - ❖ Simplified context assignment when either  $CGF_R$  or  $CGF_B$  is non-zero.
  - ❖ One more comparison when  $CGF_R=0$  and  $CGF_B=0$