

**SHARP**

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On clarification of applicable conditions of DMVR and BDOF

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- One of applicable conditions of DMVR and BDOF is that luma coefficients and offsets for weighted prediction are not exist for both L0 and L1 reference indexes.
- However, when any luma coefficient is not existed and some chroma coefficients are existed, the applicable conditions of DMVR and BDOF are not clear.
- Add a condition that chroma coefficients and offsets for weighted prediction are not exist for both L0 and L1 reference indexes.

- When any luma coefficient is not existed and some Chroma coefficients are existed, the applicable conditions of DMVR and BDOF are not clear.
- Draft7
  - weightedPredFlag is set equal to `( pps_weighted_bipred_flag && !dmvrFlag )`
    - **!dmvrFlag means that chroma weighted prediction is prohibited when only DMVR is on. Therefore this condition seems to be incomplete.**
    - It should be set equal to **`( pps_weighted_bipred_flag && !(dmvrFlag && cldx == 0 ) )`**
- VTM-7.0
  - DMVR and BDOF support chroma weighted prediction.
  - CIIP encoder does not consider chroma weighted prediction for DMVR which has been reported as **ticket #778**.

- The changes are to add only one line to the applicable condition of both DMVR and BDOF.

## ***8.5 Decoding process for coding units coded in inter prediction mode***

### **8.5.1 General decoding process for coding units coded in inter prediction mode**

When all of the following conditions are true, dmvrFlag is set equal to 1:

Both luma\_weight\_l0\_flag[ refIdxL0 ] and luma\_weight\_l1\_flag[ refIdxL1 ] are equal to 0.

Both chroma\_weight\_l0\_flag[ refIdxL0 ] and chroma\_weight\_l1\_flag[ refIdxL1 ] are equal to 0.

### **8.5.6 Decoding process for inter blocks**

#### **8.5.6.1 General**

If all of the following conditions are true, bdofFlag is set equal to TRUE.

luma\_weight\_l0\_flag[ refIdxL0 ] and luma\_weight\_l1\_flag[ refIdxL1 ] are both equal to 0.

chroma\_weight\_l0\_flag[ refIdxL0 ] and chroma\_weight\_l1\_flag[ refIdxL1 ] are both equal to 0.

- CTC sequences
  - No difference
- Fade sequences
  - When WeightedPred Method is equal to 4, there are sometimes cases of no luma coefficient and some chroma coefficients.

		Over VTM-7.0_WPM4+WPB+WPP				
		Y	U	V	EncT	DecT
<b>Proposed (RA)</b>	Black fade sequences	0.00%	0.01%	0.01%	100%	100%
	White fade sequences	0.00%	-0.01%	0.00%	100%	100%

# Performance of WP (compared to VTM-7.0 CTC)

- Black fade sequences

- RA

WeightedPredMethod	Y	U	V	EncT	DecT
0	-6.88%	-9.94%	-9.46%	130%	88%
2	-6.56%	-9.34%	-8.93%	131%	88%
4	-6.79%	-9.54%	-8.89%	130%	88%

- LB

WeightedPredMethod	Y	U	V	EncT	DecT
0	-29.86%	-39.12%	-37.91%	92%	87%
2	-30.52%	-40.29%	-39.03%	98%	86%
4	-29.93%	-38.52%	-37.35%	93%	87%

- White fade sequences

- RA

WeightedPredMethod	Y	U	V	EncT	DecT
0	-8.65%	-11.73%	-11.78%	127%	87%
2	-8.49%	-10.52%	-10.88%	129%	86%
4	-8.52%	-10.80%	-10.89%	128%	87%

- LB

WeightedPredMethod	Y	U	V	EncT	DecT
0	-31.19%	-39.52%	-38.45%	86%	85%
2	-31.59%	-40.63%	-39.52%	90%	85%
4	-31.21%	-38.95%	-37.96%	87%	85%

- Applicable conditions of DMVR and BD OF have been clarified.
- The working draft and reference software should be fixed.
- If not, the bugs of text and software should be fixed.

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