

Non-CE11: Considering boundary strength on CPR coded block (JVET-M0336)

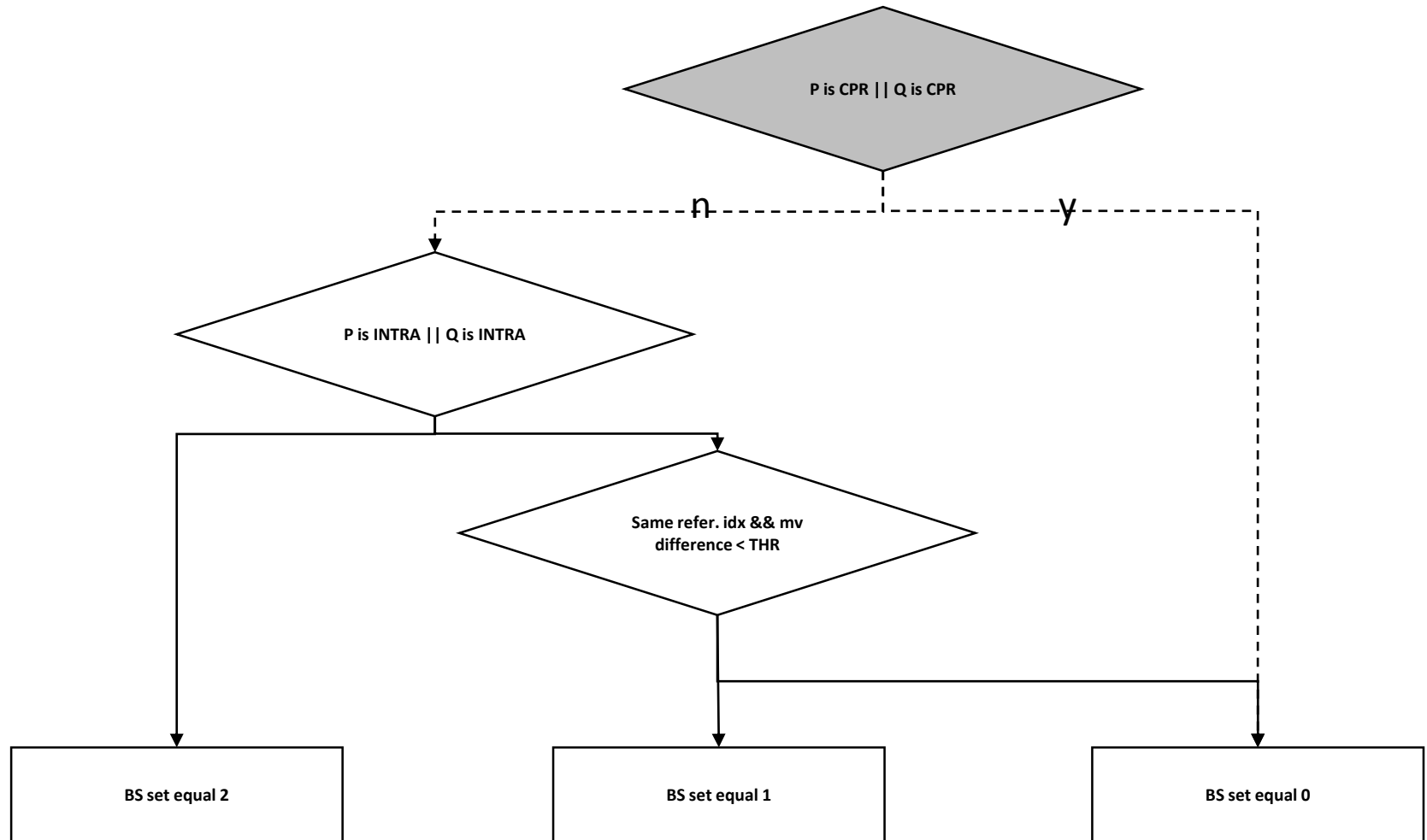
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Summary

- Suggest boundary strength decision for CPR coded block boundary
 - Method 1.
 - Boundary strength is set as 0 when at least one of block is coded as CPR across the block boundary.
 - Method 2.
 - Boundary strength is set as 0 when both block are coded as CPR and is set as 1 when only one block is coded as CPR across the block boundary
- Provide visual quality improvement on computer generated video sequence where CPR mode occurs frequently.

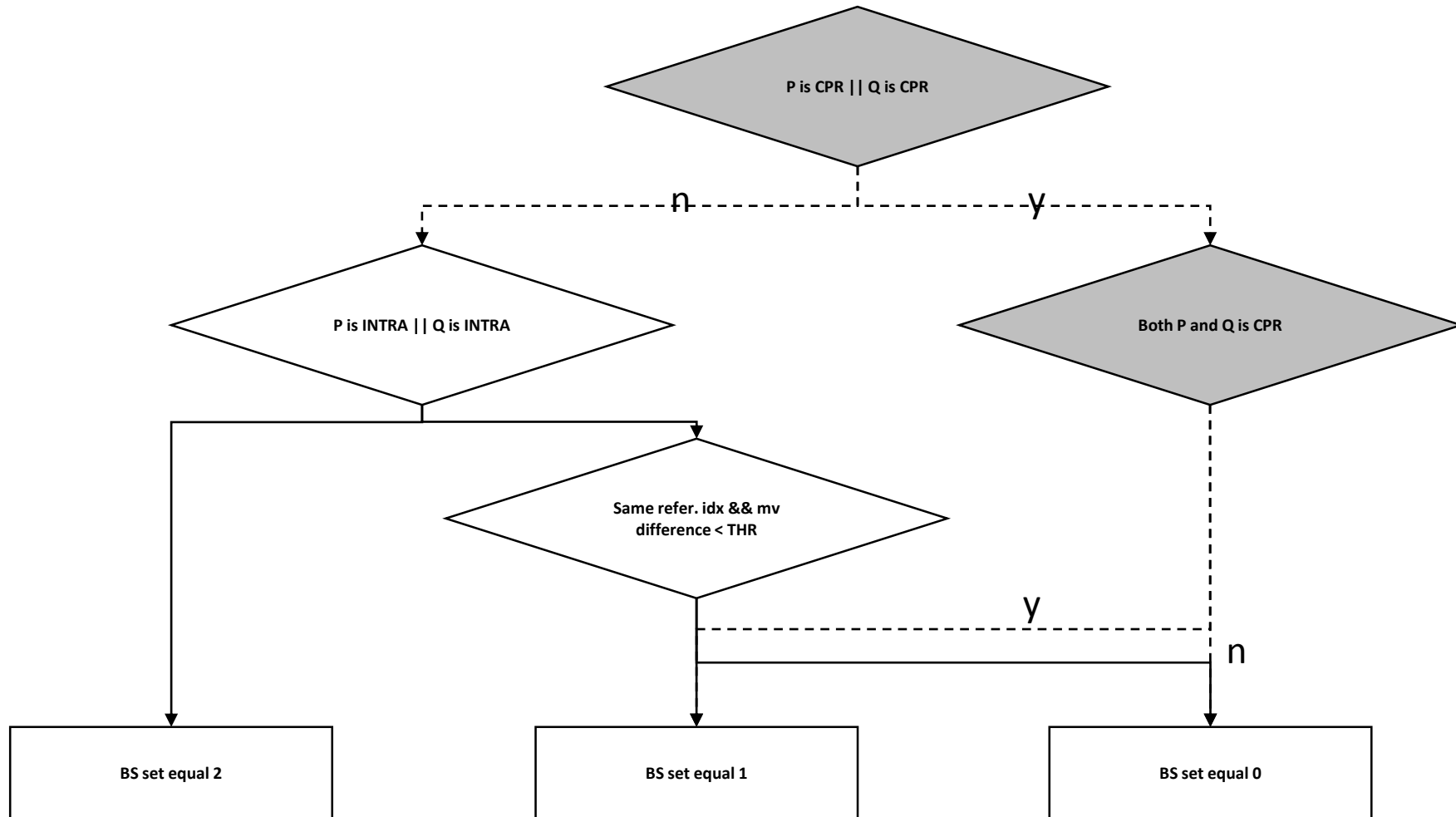
Proposed method

- Method 1
 - Boundary strength is set as 0 when at least one of block is coded as CPR across the block boundary.



Proposed method

- Method 2
 - Boundary strength is set as 0 when both block are coded as CPR and is set as 1 when only one block is coded as CPR across the block boundary



Subjective quality(Method 1)

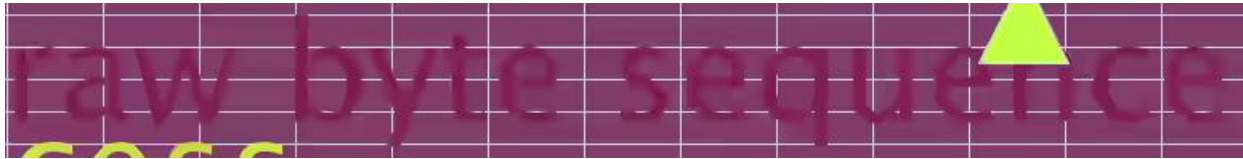


Figure 1. Anchor FlyingGraphics QP37 1st frame



Figure 2. Proposed FlyingGraphics QP37 1st frame

Experimental results

- Method 1

	All Intra Main10									
	Over VTM-3.0-CPR-off					Over VTM-3.0-CPR-on				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.08%	-0.10%	0.06%	126%	100%	0.00%	0.00%	0.00%	99%	100%
Class A2	-0.47%	-0.50%	-0.54%	128%	100%	0.00%	0.01%	0.01%	100%	100%
Class B	-0.29%	-0.39%	-0.36%	135%	100%	0.00%	0.00%	0.00%	100%	100%
Class C	-0.08%	-0.24%	-0.25%	139%	101%	0.01%	0.00%	0.00%	100%	100%
Class E	-0.61%	-0.81%	-0.60%	139%	100%	0.03%	0.00%	0.00%	100%	100%
Overall	-0.27%	-0.40%	-0.33%	134%	100%	0.01%	0.00%	0.00%	100%	100%
Class D	-0.10%	-0.23%	0.22%	136%	101%	0.00%	0.00%	0.01%	100%	100%
Class F (optional)	-12.05%	-12.04%	-12.09%	154%	98%	0.05%	0.00%	0.00%	100%	99%
Class SCC 1080p	-36.89%	-36.11%	-36.36%	109%	80%	0.03%	0.00%	0.00%	100%	99%

	Random Access Main 10									
	Over VTM-3.0-CPR-off					Over VTM-3.0-CPR-on				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.13%	-0.01%	0.24%	99%	100%	-0.01%	0.03%	0.01%	100%	100%
Class A2	0.01%	0.12%	0.22%	97%	100%	0.01%	0.05%	-0.02%	100%	100%
Class B	0.02%	0.00%	-0.24%	99%	100%	0.00%	0.00%	-0.04%	100%	100%
Class C	0.19%	-0.08%	0.16%	102%	100%	0.00%	-0.02%	0.08%	100%	100%
Class E										
Overall	0.08%	0.00%	0.05%	99%	100%	0.00%	0.01%	0.01%	100%	100%
Class D	0.21%	-0.33%	0.12%	102%	99%	0.06%	-0.05%	-0.04%	100%	100%
Class F (optional)	-9.87%	-10.00%	-10.00%	107%	99%	0.02%	-0.09%	-0.05%	100%	99%
Class SCC 1080p	-22.02%	-21.69%	-22.27%	103%	95%	0.00%	-0.14%	-0.19%	100%	99%

Experimental results

- Method 2

	All Intra Main10									
	Over VTM-3.0-CPR-off					Over VTM-3.0-CPR-on				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.08%	-0.10%	0.06%	126%	100%	0.00%	0.00%	0.00%	99%	100%
Class A2	-0.47%	-0.50%	-0.54%	128%	100%	0.00%	0.00%	0.00%	100%	100%
Class B	-0.29%	-0.39%	-0.35%	135%	100%	0.00%	0.00%	0.00%	100%	100%
Class C	-0.09%	-0.25%	-0.25%	139%	100%	0.00%	0.00%	0.00%	100%	100%
Class E	-0.63%	-0.81%	-0.59%	139%	101%	0.01%	0.00%	0.00%	99%	100%
Overall	-0.27%	-0.40%	-0.33%	134%	100%	0.00%	0.00%	0.00%	100%	100%
Class D	-0.10%	-0.23%	0.21%	136%	100%	0.00%	0.00%	0.00%	100%	100%
Class F (optional)	-12.08%	-12.04%	-12.10%	154%	97%	0.01%	0.00%	0.00%	100%	99%
Class SCC 1080p	-36.91%	-36.11%	-36.36%	109%	80%	0.01%	0.00%	0.00%	100%	99%

	Random Access Main 10									
	Over VTM-3.0-CPR-off					Over VTM-3.0-CPR-on				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.14%	-0.03%	0.23%	99%	100%	0.00%	0.01%	0.00%	100%	100%
Class A2	0.01%	0.03%	0.22%	97%	100%	0.01%	-0.04%	-0.02%	100%	100%
Class B	0.02%	-0.05%	-0.24%	98%	99%	0.00%	-0.05%	-0.03%	100%	100%
Class C	0.17%	-0.02%	0.19%	102%	99%	-0.02%	0.04%	0.10%	100%	100%
Class E										
Overall	0.08%	-0.02%	0.06%	99%	99%	0.00%	-0.01%	0.01%	100%	100%
Class D	0.20%	-0.16%	0.22%	102%	99%	0.05%	0.12%	0.06%	100%	100%
Class F (optional)	-9.90%	-9.90%	-9.98%	107%	99%	-0.01%	0.02%	-0.03%	100%	99%
Class SCC 1080p	-22.08%	-21.77%	-22.32%	103%	96%	-0.06%	-0.22%	-0.25%	100%	99%