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Non-EE2: Enhancements on IntraTMP

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Introduction

- In ECM11.0, two rounds of BV search (sparse search and refinement search) are applied in IntraTMP. For both search processes, SAD cost is used.
- In ECM11.0, sub-pel precision is enabled for IntraTMP
 - Three sub-pel positions ($1/2$ -pel, $1/4$ -pel and $3/4$ -pel) are supported. For each sub-pel position, eight directions are supported.
 - The best sub-pel BV is selected by explicit signalling, which takes up to 6-bit signaling overhead.



Proposal

Two aspects are proposed for improving IntraTMP:

- 1) Use SATD for the integer-pel BV refinement.
- 2) Use a reordering method for reducing the sub-pel BV signaling.
 - A candidate list is constructed, which includes a selected integer-pel BV and 16 sub-pel BVs around the integer-pel BV.
 - TM based reordering is applied on the list.
 - A 1-bit flag is introduced to select one of the first two candidates in the list.



Simulation Results

	All Intra Main 10				
	Over ECM-11.0				
	Y	U	V	EncT	DecT
Class A1	-0.03%	-0.07%	-0.04%	101.9%	100.9%
Class A2	-0.12%	-0.11%	-0.06%	#VALUE!	#VALUE!
Class B	-0.05%	-0.05%	-0.07%	102.3%	101.6%
Class C	-0.07%	0.01%	-0.02%	102.4%	102.7%
Class E	-0.12%	0.04%	0.01%	101.4%	102.3%
Overall	-0.08%	-0.04%	-0.04%	#VALUE!	#VALUE!
Class D	-0.06%	-0.16%	0.05%	102.0%	102.4%
Class F	0.02%	0.03%	0.07%	102.0%	101.7%
Class TGM	-0.09%	-0.08%	-0.05%	101.8%	100.8%



Conclusion

- It proposes to improve the coding efficiency of the intraTMP from two aspects:
 - 1) Use SATD for the integer-pel BV refinement.
 - 2) Use a reordering method for reducing the BV signaling.
- Promising gains on natural content can be observed with negligible encoding/decoding impacts
- Recommended to study the proposed method into EE

