Unification of the Availability Checking method for Intra prediction (JCTVC-F477)

Chanyul Kim, Heechul Yang,Youngo Park
(Samsung)

Introduction

- There are two different available checking methods in the current HM
  - CIP on and CIP off cases.
  - Different coding gain and bit-stream are shown depending on CIP status.

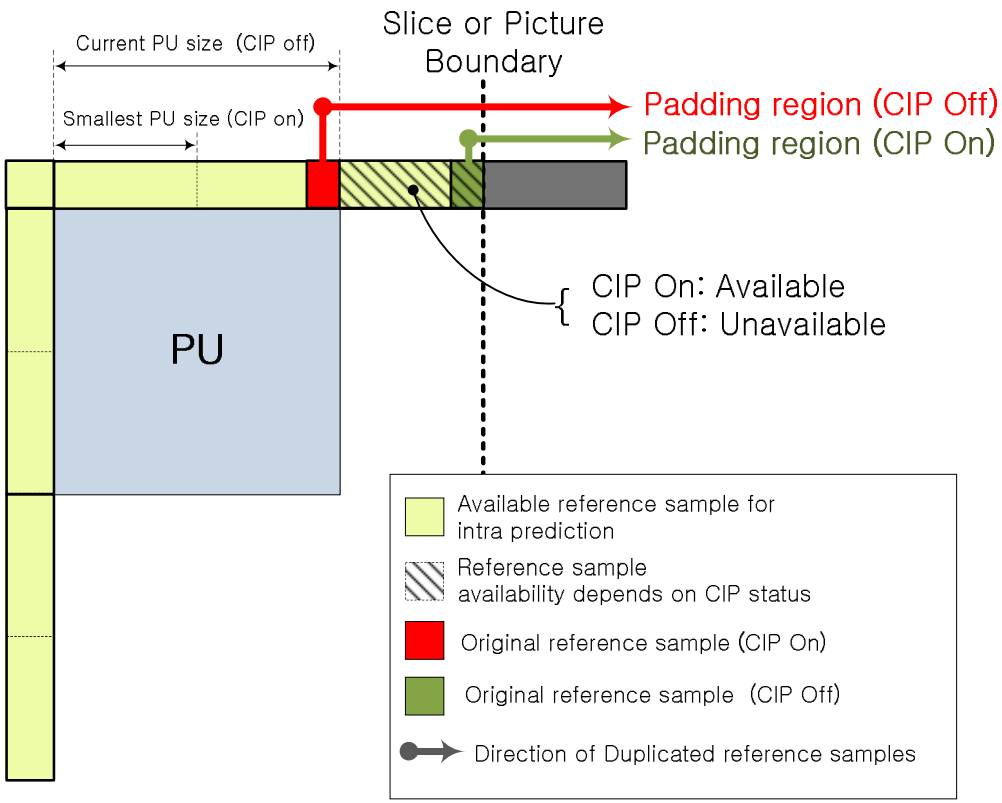
- Propose unified checking method

- Cross checked by NEC (JCTVC-F653)
  - The proposal is to be a sort of bug fix about reference sample padding process (ticket #190)
  - They recommended that JCTVC adopts the proposed software bug to next version of HM.

Availability check method

- Two availability checking methods for picture or slice boundary
  - CIP on: Unit is checked by the smallest PU size.
  - CIP off: Unit is checked by the current PU size.

Smallest PU size



Experimental results

- Results of proposed scheme compared to HM3.0 anchor

	All Intra HE			All Intra LC		
	Y	U	V	Y	U	V
Class A	0.00	0.00	0.00	0.00	0.00	0.00
Class B	0.00	0.00	-0.01	0.00	-0.01	0.00
Class C	0.00	0.00	0.00	0.00	0.00	0.00
Class D	0.00	-0.01	0.00	0.00	0.00	0.00
Class E	0.00	0.00	0.00	0.00	0.00	0.00
Overall	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Enc Time[%]	101%			103%		
Dec Time[%]	101%			104%		

- Results of proposed scheme compared to HM3.0_dev_mediatek anchor
  - FGS conditions

	All Intra HE			All Intra LC		
	Y	U	V	Y	U	V
Class A	-0.02	-0.10	-0.06	-0.03	-0.07	-0.01
Class B	-0.02	-0.03	-0.05	-0.02	-0.02	-0.02
Class C	-0.01	-0.01	-0.03	-0.01	0.00	0.00
Class D	-0.01	-0.02	-0.01	0.00	-0.01	-0.01
Class E	-0.01	-0.03	-0.02	-0.01	-0.02	-0.03
Overall	**-0.01**	**-0.04**	**-0.04**	**-0.01**	**-0.02**	**-0.01**
Enc Time[%]	101%			102%		
Dec Time[%]	102%			104%		

Conclusions

- Unification of available checking method
  - Availability checking and padding methods are consistent regardless of CIP status.
  - Not to mark available pixels to unavailable them.

- Coding efficiency impact:
  - -0.0/-0.0/-0.0% on average
  - More benefit in case of FGS or slice structure.

- The availability checking is recommended for next HM adoption by cross-check