JCTVC-M0065
On collocated picture and low-delay checking for SHVC ref_idx framework

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Summary

- **Under Ref_idx framework, both inter-layer reference picture(ILRP) and temporal reference picture(TRP) are used for non-base layer coding**
- **Motion info. in these reference pictures used for TMVP derivation**

- **1st proposed method, to reduce storage of the motion info.**
  - Propose to add constraint on collocated picture, such that the collocated picture shall be ILRP rather than TRP (as done in SHM1.1)
  - A flag in SPS extension can be used to indicate the constraint
  - No need to store the motion info in all of these TRPs
- **2nd proposed method, on Low-delay checking**
  - Low-delay checking is required for TMVP derivation. In SHM1.1 , a low-delay flag is determined at slice-level according to POC values of current picture and its reference pictures
  - Propose to set the low-delay flag additionally depending on whether the collocated picture is an ILRP
  - Overall BD-rate saving: -0.4%, -0.4%, -0.5% for RA 2X, 1.5X and SNR, respectively

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Experimental results

1. For the 1st method: no performance influence since SHM1.1 has already used ILRP as collocated picture

2. Performance of 2nd method against SHM1.1 under ref_idx framework

	RA HEVC 2x			RA HEVC 1.5x			RA HEVC SNR		
	Y	U	V	Y	U	V	Y	U	V
Class A	-0.4%	-0.6%	-0.5%				-0.5%	-0.8%	-0.8%
Class B	-0.4%	-0.8%	-0.8%	-0.4%	-0.7%	-0.7%	-0.5%	-0.9%	-1.0%
Overall (Test vs Ref)	**-0.4%**	**-0.7%**	**-0.7%**	**-0.4%**	**-0.7%**	**-0.7%**	**-0.5%**	**-0.9%**	**-1.0%**
Overall (Test vs single layer)	19.6%	32.2%	33.2%	16.9%	27.2%	29.7%	15.3%	28.8%	33.4%
EL only (Test vs Ref)	-0.7%	-0.9%	-0.9%	-0.6%	-0.8%	-0.9%	-0.8%	-1.2%	-1.3%
Enc Time[%]	99.5%			99.7%			99.5%		
Dec Time[%]	100.8%			100.7%			100.3%		
BL Match	Matched			Matched			Matched		

Thank Qualcomm for crosschecking report in JCTVC-M0240

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Conclusion

- **Two proposed methods**
  - **constraint on collocated picture**
    - A flag in SPS extension can be used to indicate the constraint
    - reduced storage requirement
  - **modification to low-delay checking**
    - Slice-level change to SHM reference software
    - Improved BD-rate performance in RA scalability cases

  - **Recommend inclusion of the two methods for SHVC ref_idx framework**

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THANK YOU!

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