

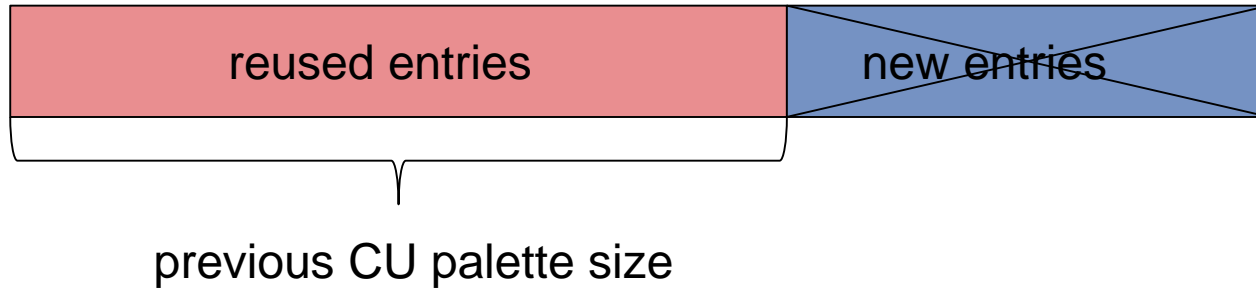
REDEFINING MOBILITY



JCTVC-T0064: Comments on palette sharing

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Palette sharing



- In SCM-3.0, additional RD is done at encoder side for palette sharing
- Palette sharing flag is coded with context coded bin

Proposal: Remove palette sharing mode

- Two tests are performed to replace palette sharing:
 1. Replace palette sharing RD by another RD in which only reused entries are allowed in the palette, and no new entries are signalled
 2. Replace palette sharing RD by another RD in which new palette entries are derived for pixels that are not within a certain threshold of the reused entries
- When signalling the number of new entries, the first bin is context coded
 - Replaces context coded palette sharing flag

Lossy results with regular bin (CTC)

Method1

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics with motion, 1080p & 720p	0.0%	0.1%	0.1%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.1%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	-0.1%	-0.1%	-0.1%	-0.2%	0.1%	-0.1%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	-0.1%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.1%	0.2%	0.1%	-0.2%	-0.2%	-0.5%	-0.1%	-0.2%	-0.5%
YUV, mixed content, 1440p & 1080p	-0.1%	-0.1%	0.0%	-0.2%	-0.2%	-0.2%	-0.3%	-0.4%	-0.2%
YUV, Animation, 720p	0.0%	0.0%	0.1%	0.0%	-0.1%	0.2%	0.1%	-0.1%	-0.1%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Enc Time[%]	110%			104%			95%		
Dec Time[%]	107%			105%			100%		

Method2

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics with motion, 1080p & 720p	-0.5%	-0.2%	-0.3%	-0.6%	-0.4%	-0.5%	-0.3%	-0.4%	-0.4%
RGB, mixed content, 1440p & 1080p	-0.3%	-0.4%	-0.4%	-0.4%	-0.6%	-0.6%	-0.5%	-0.4%	-0.5%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	-0.1%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
YUV, text & graphics with motion, 1080p & 720p	-0.1%	-0.3%	-0.4%	-0.5%	-0.9%	-1.1%	-0.2%	-0.5%	-0.8%
YUV, mixed content, 1440p & 1080p	-0.1%	-0.4%	-0.3%	-0.3%	-0.8%	-0.8%	-0.6%	-1.0%	-0.9%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	-0.1%	0.2%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Enc Time[%]	105%			107%			97%		
Dec Time[%]	104%			107%			100%		

Lossy results with bypass bin (CTC)

Method1

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics with motion, 1080p & 720p	0.1%	0.2%	0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	0.1%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%	0.1%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
YUV, text & graphics with motion, 1080p & 720p	0.1%	0.2%	0.2%	-0.2%	-0.2%	-0.6%	-0.1%	-0.1%	-0.2%
YUV, mixed content, 1440p & 1080p	-0.1%	-0.1%	0.0%	-0.1%	-0.2%	-0.1%	-0.3%	-0.4%	-0.2%
YUV, Animation, 720p	0.0%	0.1%	0.1%	0.0%	-0.1%	0.1%	0.0%	0.1%	0.3%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.1%	0.0%
Enc Time[%]	110%			107%			98%		
Dec Time[%]	105%			105%			97%		

Method2

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics with motion, 1080p & 720p	-0.5%	-0.2%	-0.2%	-0.6%	-0.4%	-0.4%	-0.3%	-0.4%	-0.3%
RGB, mixed content, 1440p & 1080p	-0.3%	-0.4%	-0.4%	-0.4%	-0.5%	-0.6%	-0.5%	-0.3%	-0.5%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	-0.2%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
YUV, text & graphics with motion, 1080p & 720p	-0.1%	-0.3%	-0.4%	-0.5%	-0.9%	-1.1%	-0.1%	-0.5%	-0.8%
YUV, mixed content, 1440p & 1080p	-0.1%	-0.4%	-0.2%	-0.3%	-0.8%	-0.8%	-0.5%	-1.3%	-0.7%
YUV, Animation, 720p	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.2%	0.1%	0.1%	0.1%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Enc Time[%]	114%			108%			99%		
Dec Time[%]	110%			107%			101%		

Lossy results with regular bin (1x4CTU)

Method1

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics with motion, 1080p & 720p	0.1%	0.2%	0.2%	-0.2%	-0.1%	-0.1%	0.0%	0.1%	0.2%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	-0.1%	-0.2%	-0.1%	0.0%	-0.1%	-0.3%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.1%	0.2%	0.1%	-0.2%	-0.3%	-0.5%	0.0%	0.0%	0.2%
YUV, mixed content, 1440p & 1080p	-0.1%	-0.1%	0.1%	-0.1%	-0.3%	-0.2%	-0.4%	-0.9%	-0.3%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	-0.2%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%
Enc Time[%]	98%			101%			101%		
Dec Time[%]	88%			100%			104%		

Method2

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics with motion, 1080p & 720p	-0.4%	-0.1%	-0.2%	-0.7%	-0.5%	-0.5%	-0.4%	-0.3%	-0.2%
RGB, mixed content, 1440p & 1080p	-0.3%	-0.4%	-0.4%	-0.5%	-0.6%	-0.6%	-0.3%	-0.4%	-0.5%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.1%	-0.1%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	-0.1%	-0.2%	-0.4%	-0.4%	-0.8%	-1.1%	-0.1%	-0.4%	-0.3%
YUV, mixed content, 1440p & 1080p	-0.1%	-0.4%	-0.2%	-0.3%	-1.0%	-0.8%	-0.6%	-1.4%	-1.3%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.2%	0.1%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.2%
Enc Time[%]	104%			104%			103%		
Dec Time[%]	101%			104%			102%		

Lossy results with bypass bin (1x4CTU)

Method1

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics with motion, 1080p & 720p	0.1%	0.3%	0.2%	-0.2%	-0.1%	-0.1%	0.0%	0.1%	0.3%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	-0.1%	-0.2%	-0.1%	0.1%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.2%	0.3%	0.2%	-0.2%	-0.2%	-0.5%	0.0%	0.0%	0.1%
YUV, mixed content, 1440p & 1080p	-0.1%	0.0%	0.2%	-0.2%	-0.4%	-0.3%	-0.4%	-0.4%	-0.2%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	0.2%	0.1%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	-0.1%	0.2%	0.0%	-0.1%	0.1%
Enc Time[%]	98%			100%			101%		
Dec Time[%]	87%			101%			104%		

Method2

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics with motion, 1080p & 720p	-0.3%	-0.1%	-0.1%	-0.7%	-0.4%	-0.5%	-0.5%	-0.3%	-0.3%
RGB, mixed content, 1440p & 1080p	-0.3%	-0.4%	-0.4%	-0.5%	-0.5%	-0.6%	-0.3%	-0.7%	-0.5%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.0%	-0.1%	-0.3%	-0.4%	-0.8%	-1.1%	0.0%	-0.3%	0.0%
YUV, mixed content, 1440p & 1080p	-0.1%	-0.3%	-0.1%	-0.3%	-0.8%	-0.8%	-0.6%	-0.9%	-0.5%
YUV, Animation, 720p	0.0%	0.0%	0.0%	-0.1%	0.1%	-0.1%	0.0%	0.1%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	-0.1%	0.2%	0.0%	0.0%	0.1%
Enc Time[%]	102%			104%			101%		
Dec Time[%]	99%			103%			99%		

Lossless results with regular bin (CTC)

Method1

	All Intra				Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
RGB, text & graphics with motion, 1080p & 720p	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
YUV, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]	120%				117%				104%			
Dec Time[%]	113%				117%				100%			

Method2

	All Intra				Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
RGB, text & graphics with motion, 1080p & 720p	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%
YUV, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]	115%				116%				105%			
Dec Time[%]	112%				113%				100%			

Lossless results with bypass bin (CTC)

Method1

	All Intra				Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
RGB, text & graphics with motion, 1080p & 720p	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
YUV, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]	120%				119%				106%			
Dec Time[%]	113%				113%				100%			

Method2

	All Intra				Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
RGB, text & graphics with motion, 1080p & 720p	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	-58.2%	-50.0%	-100.0%	0.0%	-58.5%	-50.0%	-100.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.1%	0.1%	0.0%	0.2%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
YUV, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]	125%				#NUM!				#NUM!			
Dec Time[%]	117%				110%				95%			

Lossless results with regular bin (1x4CTU)

Method1

	All Intra				Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
RGB, text & graphics with motion, 1080p & 720p	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.1%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
YUV, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]	99%				105%				106%			
Dec Time[%]	83%				95%				98%			

Method2

	All Intra				Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
RGB, text & graphics with motion, 1080p & 720p	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.1%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
YUV, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]	106%				109%				102%			
Dec Time[%]	101%				107%				99%			

Lossless results with bypass bin (1x4CTU)

Method1

	All Intra				Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
RGB, text & graphics with motion, 1080p & 720p	0.1%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.1%	0.1%	0.0%	0.3%	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%	0.0%	0.2%
YUV, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]	100%				102%				104%			
Dec Time[%]	81%				90%				93%			

Method2

	All Intra				Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
RGB, text & graphics with motion, 1080p & 720p	0.1%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
RGB, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p & 720p	0.1%	0.1%	0.0%	0.3%	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%	0.0%	0.2%
YUV, mixed content, 1440p & 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, Animation, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]	109%				105%				111%			
Dec Time[%]	105%				101%				105%			



Thank you!