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ISO/IEC JTC1/SC29/WG04 MPEG VIDEO CODING**

**ISO/IEC JTC1/SC29/WG7/M71555
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Title [GSC][JEE6.2] Proposal for new test views for the Choreo (dark) sequence
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1 Introduction

During the anchor generation cycle related to JEE6.2 activity [1] it was observed that Choreo sequence (dark version) is difficult to calculate even if some QP tuning was done. The quality of rendered test views specified in Table 5 in CTC document [2], especially for outer views is much lower than the middle views:

View		RGB-PSNR	YUV-PSNR	YUV-SSIM	YUV-IVSSIM
v7	RP0	23,80	30,83	0,91	0,96
	RP1(21)	23,98	31,01	0,92	0,95
	RP2(25)	23,91	30,84	0,92	0,95
	RP3(28)	23,79	30,66	0,92	0,95
	RP4(34)	23,88	30,64	0,91	0,95
v9	RP0	28,03	35,15	0,93	0,98
	RP1	27,99	35,11	0,93	0,97
	RP2	27,96	34,99	0,93	0,97
	RP3	27,88	34,82	0,93	0,97
	RP4	27,92	34,59	0,93	0,97
v10	RP0	27,95	35,16	0,94	0,98
	RP1	28,02	35,26	0,95	0,98
	RP2	27,81	35,02	0,94	0,98
	RP3	27,73	34,83	0,94	0,98
	RP4	27,58	34,48	0,94	0,97
v12	RP0	24,46	32,59	0,92	0,96
	RP1	24,96	33,00	0,92	0,96
	RP2	24,91	32,88	0,92	0,96
	RP3	24,91	32,76	0,92	0,96
	RP4	24,82	32,46	0,92	0,96

Fig 1. Quality of synthesized test views. Views v7 and v12 have significant quality degradation comparing to v9 and v10.

Therefore, a variant with a different set of test views was considered. The views were changed to **v5**, **v9**, **v10**, **v14**. Several TMIV experiments with accordance to CTC[2] were conducted.

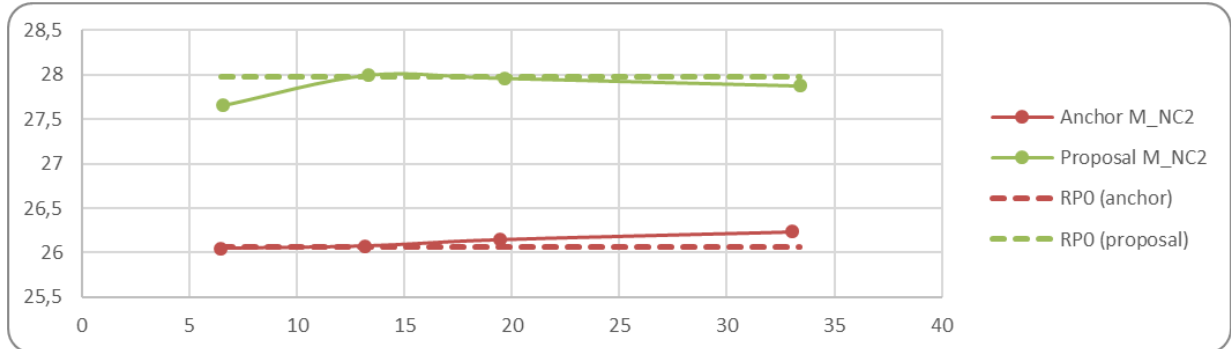
2 Experiments:

- CTC views: v7, v9, v10, v12; old QPs: [0,21,25,28,34],
- CTC views: v7, v9, v10, v12; new QPs: [0,21,31,41,51],
- New views: v5, v9, v10, v14; old QPs: [0,21,25,28,34],
- New views: v5, v9, v10, v14; new QPs: [0,21,31,41,51].

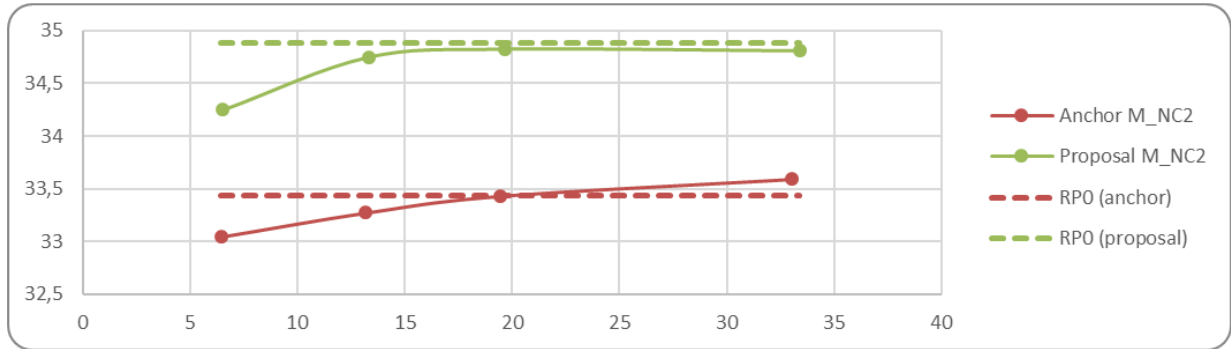
3 Results

3.1 CTC views (old QPs) vs. new views (old QPs):

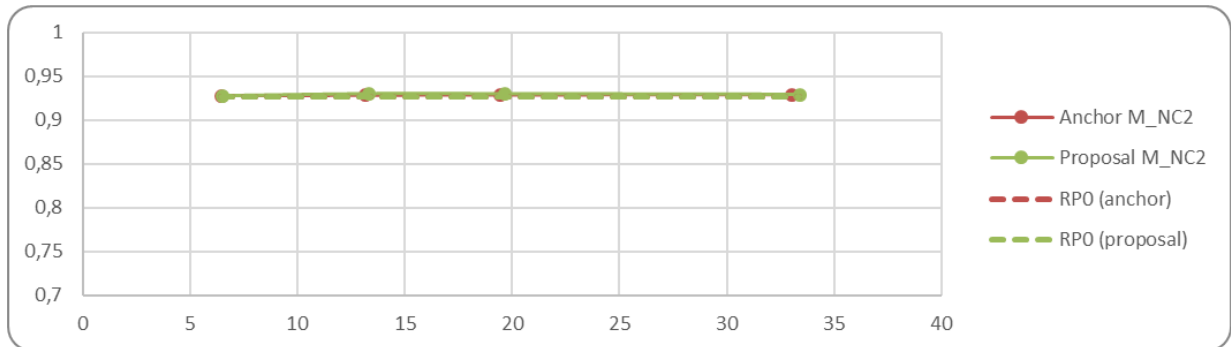
RGB-PSNR:



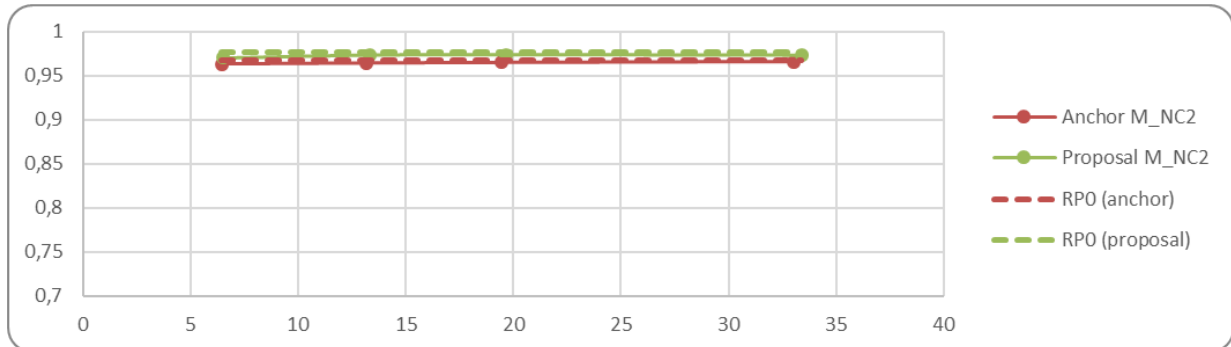
YUV-PSNR:



YUV-SSIM:

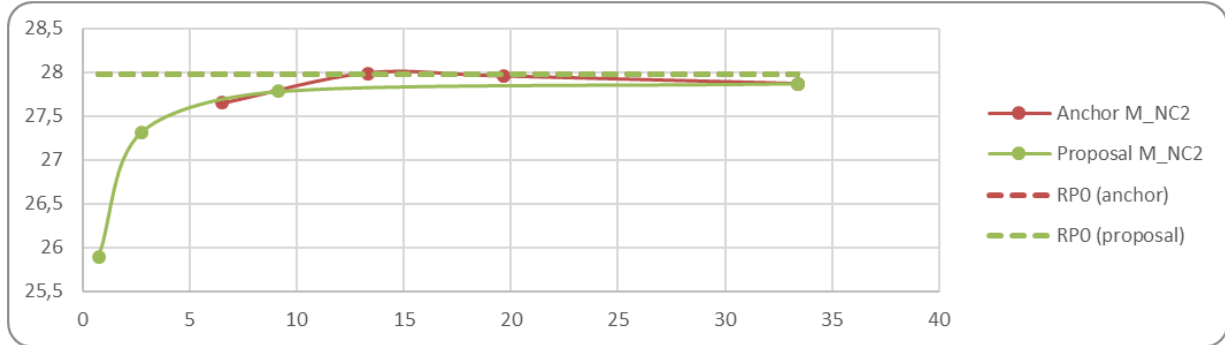


YUV-IVSSIM:

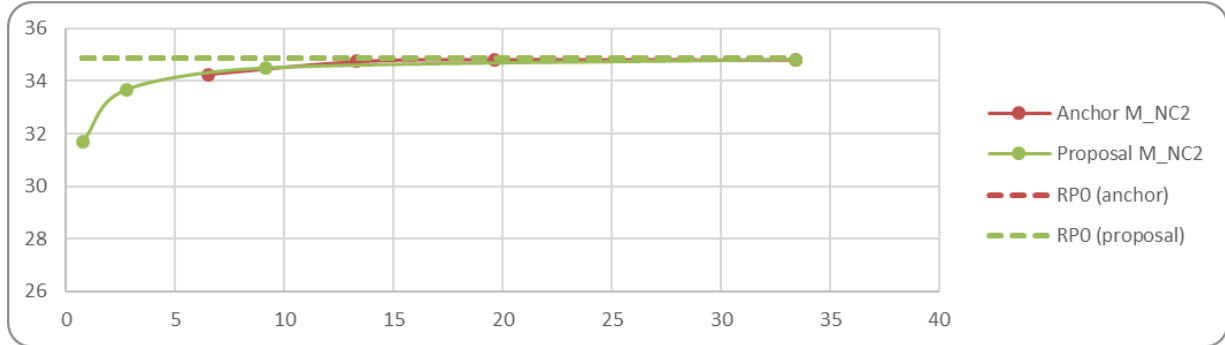


3.2 New views: old QPs vs. new QPs

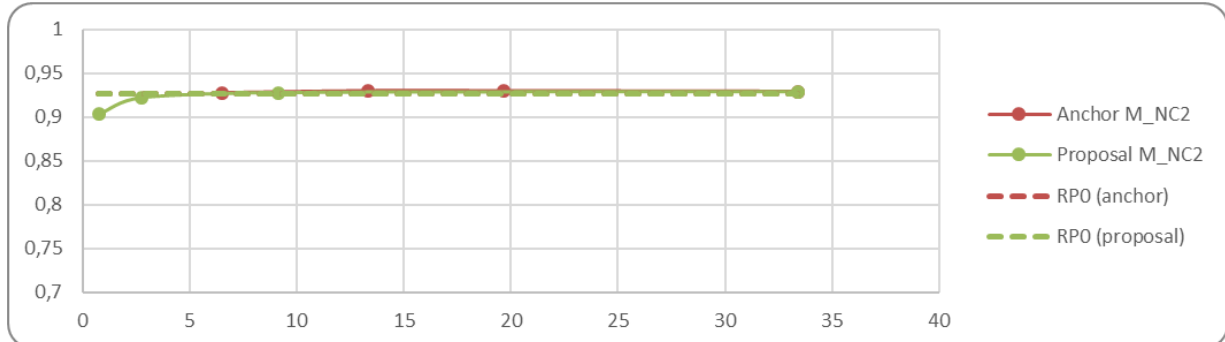
RGB-PSNR:



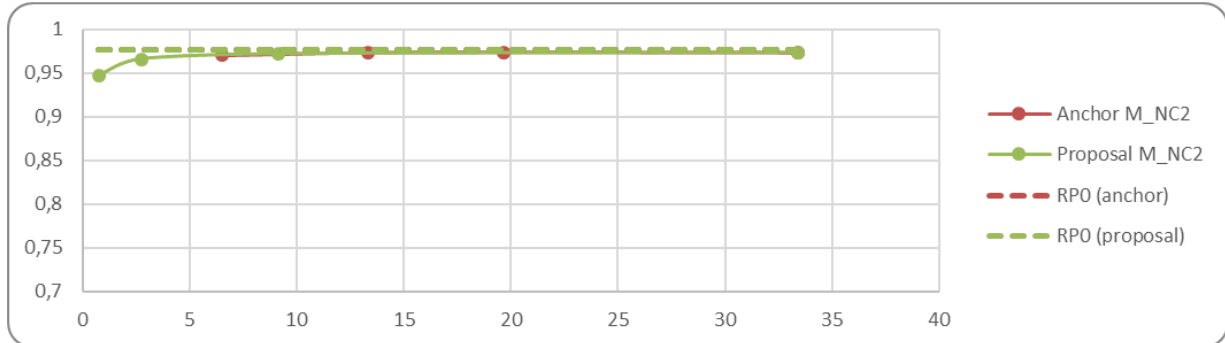
YUV-PSNR:



YUV-SSIM:

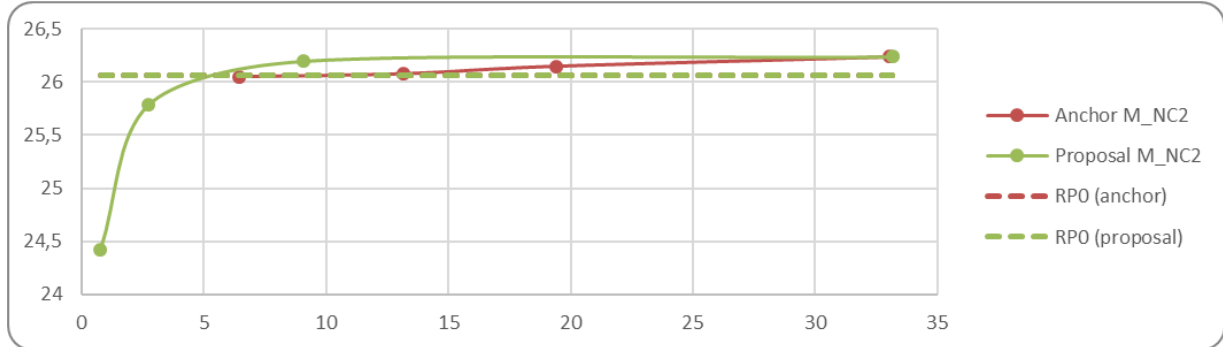


YUV-IVSSIM:

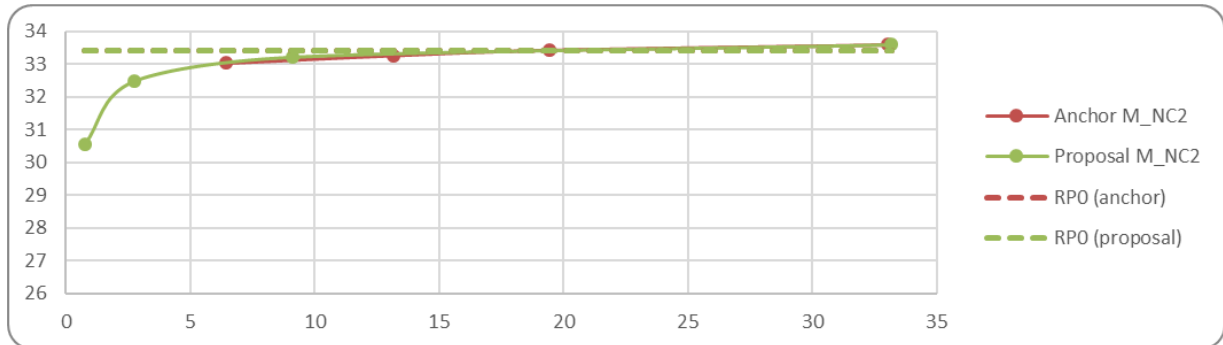


3.3 CTC views: old QPs vs new QPs:

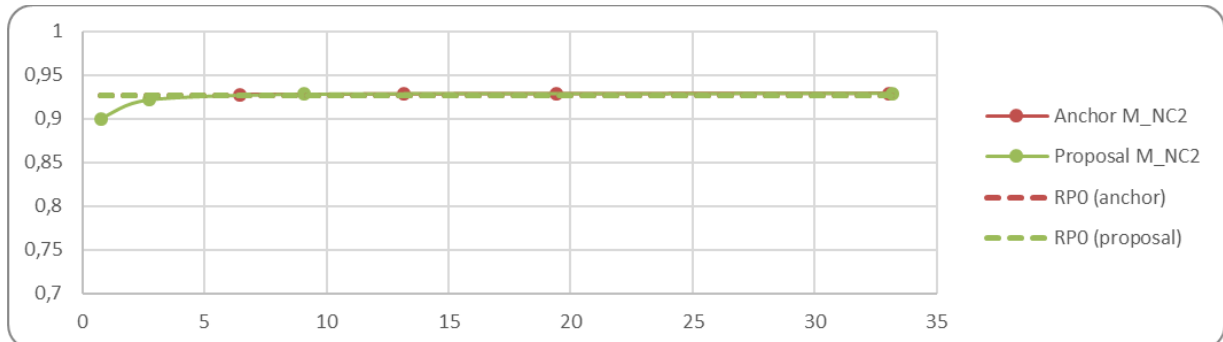
RGB-PSNR:



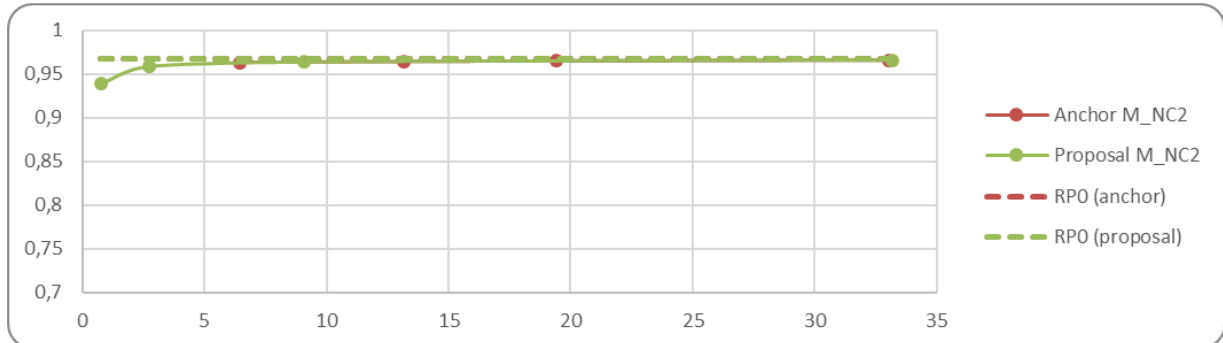
YUV-PSNR:



YUV-SSIM:

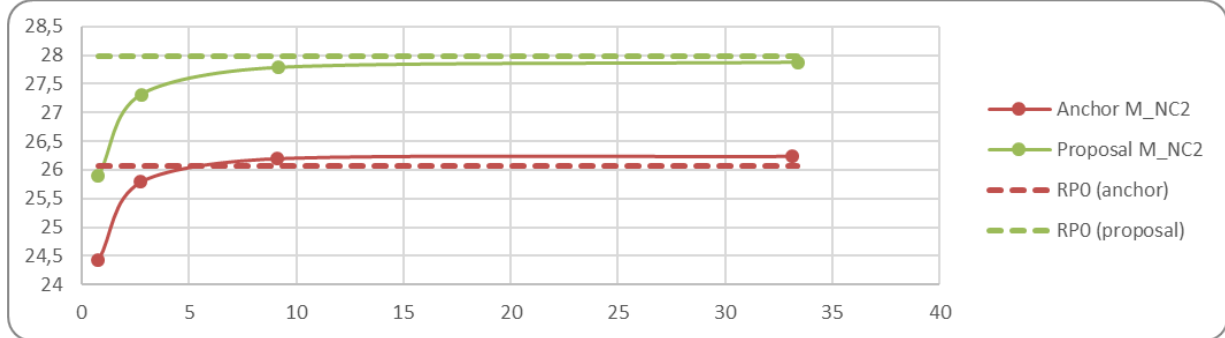


YUV-IVSSIM:

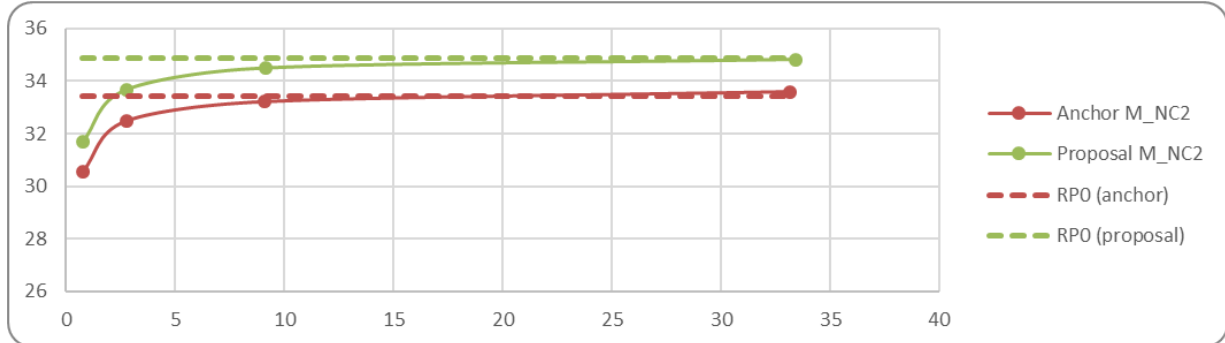


3.4 CTC views(new QPs) vs. new views (new QPs)

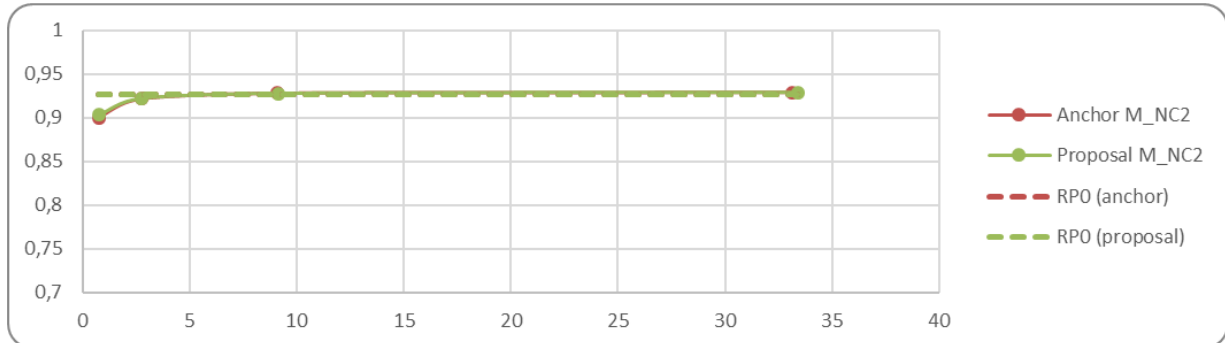
RGB-PSNR:



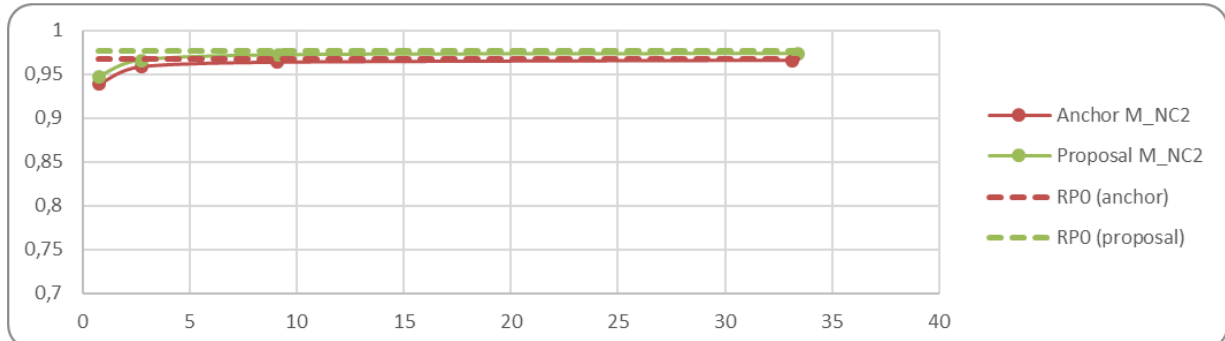
YUV-PSNR:



YUV-SSIM:



YUV-IVSSIM:



View		RGB-PSNR	YUV-PSNR	View		RGB-PSNR	YUV-PSNR			RGB-PSNR	YUV-PSNR
v7	RP0	23,80	30,83	v5	RP0	29,05	34,93			5,25	4,10
	RP1	23,98	31,01		RP1	29,02	34,90			5,04	3,89
	RP2	23,89	30,59		RP2	28,91	34,66			5,02	4,07
	RP3	23,86	30,38		RP3	28,53	34,04			4,66	3,66
	RP4	23,07	29,07		RP4	26,52	31,85			3,44	2,78
v9	RP0	28,03	35,15	v9	RP0	28,20	35,35			0,16	0,21
	RP1	27,99	35,11		RP1	28,27	35,40			0,28	0,29
	RP2	27,94	34,72		RP2	28,10	34,92			0,16	0,20
	RP3	27,60	33,95		RP3	27,74	34,10			0,14	0,14
	RP4	26,34	32,00		RP4	26,45	32,13			0,11	0,13
v10	RP0	27,95	35,16	v10	RP0	28,15	35,31			0,20	0,15
	RP1	28,02	35,26		RP1	28,15	35,35			0,13	0,09
	RP2	27,97	34,84		RP2	27,93	34,87			-0,05	0,02
	RP3	26,99	33,58		RP3	27,19	33,79			0,20	0,21
	RP4	24,97	31,07		RP4	25,76	31,71			0,79	0,64
v12	RP0	24,46	32,59	v14	RP0	26,52	33,97			2,05	1,38
	RP1	24,96	33,00		RP1	26,04	33,59			1,08	0,59
	RP2	24,99	32,71		RP2	26,19	33,49			1,20	0,78
	RP3	24,72	32,00		RP3	25,80	32,71			1,09	0,71
	RP4	23,32	30,06		RP4	24,83	31,00			1,51	0,94

- Subjective results

CTC views: QP2, v9, f0



New views: QP2, v9, f0



CTC views: QP4, v10, f0



New views: QP4, v10, f0



4 Recommendations

- In the CTC [2], update the test views in Table 5 for the Choreo (dark) sequence to: v5, v9, v10, v14.

5 References

- [1] Description of JEE 6.2 on anchor generation, ISO/IEC JTC 1/SC 29/WG 04 N00585, Kemer, November, 2024
- [2] Common test conditions on Gaussian splat coding, ISO/IEC JTC 1/SC 29/WG 04 N00582, Kemer, November, 2024