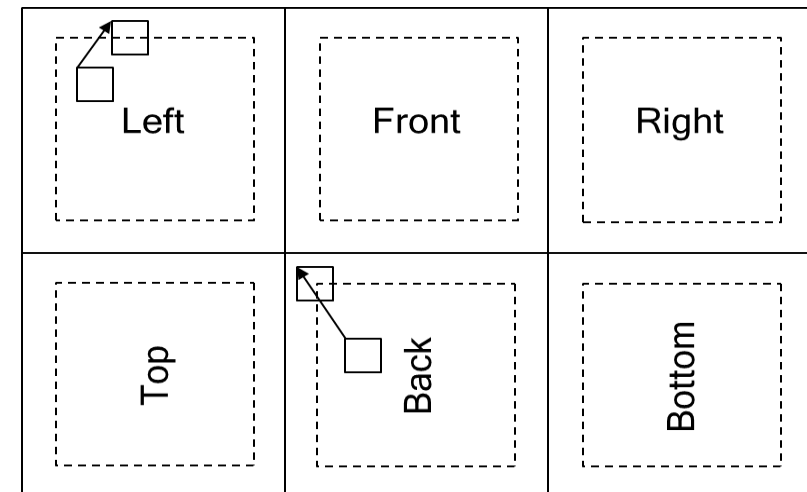
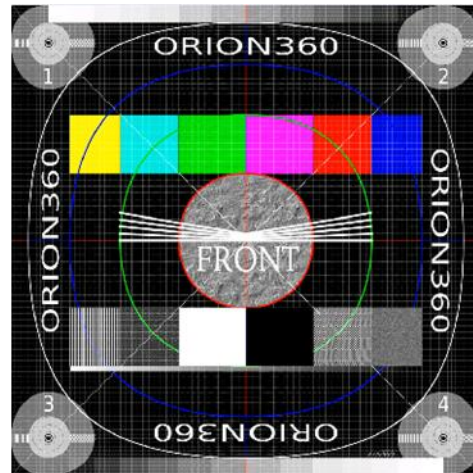
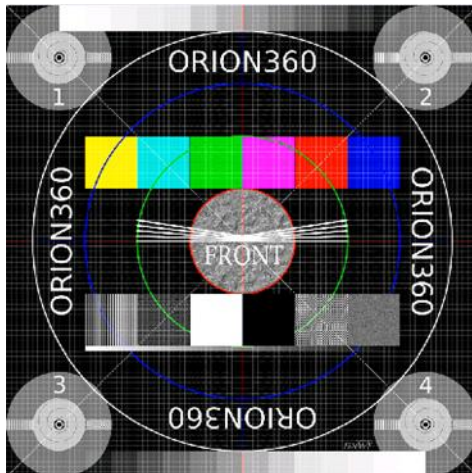


JVET-J0021 – Description of 360° video coding technology
proposal by Qualcomm and Technicolor – low and high
complexity versions

360 Video

- Adjusted Cubemap Projection (ACP) used.
- The padding is added to the reconstructed cube faces and is symmetric around each cube face with width 64 samples.
 - The padded samples are obtained based on the ACP geometry and nearest-neighbor rounding.
 - The reconstructed ACP pictures are padded one time prior to in-loop filtering.
 - The padded reconstructed ACP pictures are sequentially processed by the deblocking filter, SAO and ALF before storage as reference pictures.
- Motion compensated padding and OBMC for blocks on the boundary between top and bottom row of cube faces are disabled.
- Intra prediction uses samples from neighboring faces.



360 Results – Constraint Set 1

- The ACP projection used in the proposal is configured to 1280x1280 for all sequences.
- High complexity configuration (QTBT+TT+ABT).

Anchor: HM

	E2E WS-PSNR		
	Y	U	V
Average-HD	-38.1%	-57.4%	-60.0%
Enc Time	1060%		
Dec Time	686%		

Anchor: JEM

	E2E WS-PSNR		
	Y	U	V
Average	-19.4%	-26.4%	-28.7%
Enc Time	133%		
Dec Time	90%		

- Low complexity configuration (QTBT).

Anchor: HM

	E2E WS-PSNR		
	Y	U	V
Average	-35.3%	-55.0%	-57.3%
Enc Time	302%		
Dec Time	705%		

Anchor: JEM

	E2E WS-PSNR		
	Y	U	V
Average	-15.7%	-21.9%	-23.4%
Enc Time	38%		
Dec Time	93%		

- Increase in encoding/decoding times comparing to SDR is mainly due to use of 360Lib 5.0 functions for performing geometric padding around cube faces.

Coding Tool Results

Low complexity configuration

Anchor: Coding Tool OFF

	E2E WS-PSNR		
	Y	U	V
Balboa	-4.8%	-8.1%	-8.2%
Chairlift	-4.4%	-6.7%	-5.5%
KiteFlite	-0.3%	-1.2%	-1.3%
Harbor	-0.9%	-2.5%	-2.5%
Trolley	-0.4%	-2.5%	-1.6%
Average	-2.2%	-4.2%	-3.8%