

**INTERNATIONAL ORGANISATION FOR STANDARDISATION
ORGANISATION INTERNATIONALE DE NORMALISATION
ISO/IEC JTC1/SC29/WG11
CODING OF MOVING PICTURES AND AUDIO**

**ISO/IEC JTC1/SC29/WG11
MPEG/M17614
April 2010, Dresden, Germany**

Title **Results of 3DV/FTV Exploration Experiment EE4 for Poznan sequences**
Sub group **Video**
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1 Introduction

This document presents results of Exploration Experiment (EE4) performed on “Poznan_Street” sequence [2] and is in response to W11095 "Description of Exploration Experiments in 3D Video Coding" [1].

2 Experiments conditions

Experiments were performed basing on W11095 [1] guidelines:

Two view case:

- Original reference texture data for views 3 and 4 of “Poznan_Street” sequence were compressed using JMVM software version 5.0.6 with different QP values. GOP length was set to 16 frames, to comply with the requirement of at least 0.5 second GOP length (Poznan_Street is a 25 fps sequence)
- Depth maps for views 3 and 4, were compressed using JMVM software version 5.0.6 with different QP values (called QD). GOP length was set to 16 frames.
- Appropriate depth and texture data were selected to meet the 1.4, 2, 3.3, 6.7, 19 Mbps stream requirement
- Reconstructed texture and depth data were fed to the view synthesis software VSRS version 3.0.1, together with camera system parameters and Znear, Zfar values to recreate view 3.5.
- Synthesized view 3.5 was compared in terms of PSNR with view 3.5 synthesized using uncompressed data.

The test were performed on ‘Poznan_Street’ [2] sequence with following views selected as synthesized view S and reference views NL-NR.

Table 1. The specification of views for EE experiment.

Data set	Two cameras case	
	S	NL-NR
Poznan_Street	3.5	3 - 4

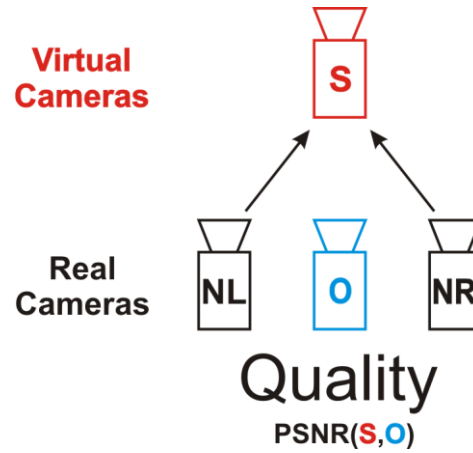


Figure 1. Two cameras case – test setup.

3 Results

3.1 Two view case:

To meet the requirements imposed on bitstream size, the following pairs of QP and QD (QP index for depth encoding) were selected:

Table 2. Selected QP-QD pairs for synthesis

Bitrate	QP-QD pairs selected
1400 kbps	40-30
2000 kbps	35-30
3.3 Mbps	30-30
6.7 Mbps	25-30
19 Mbps	20-25

With selected pairs, view 3.5 was synthesized and its quality was measured:

Table 3. Bitrates of compressed data and quality of synthesized view

QP	QD	bitrate texture [kbps]	bitrate depth [kbps]	bitrate total [kbps]	PSNR
20	20	17578.44	3468.030	21046.48	42.74
20	25	17578.44	1735.230	19313.68	42.33
20	30	17578.44	832.068	18410.51	41.90
20	35	17578.44	417.898	17996.34	41.44
20	40	17578.44	223.888	17802.33	40.82
25	20	5923.48	3468.030	9391.51	41.04
25	25	5923.48	1735.230	7658.71	40.78
25	30	5923.48	832.068	6755.55	40.49
25	35	5923.482	417.898	6341.38	40.17
25	40	5923.482	223.888	6147.37	39.71
30	20	2491.967	3468.030	5960.00	38.69
30	25	2491.967	1735.230	4227.2	38.55
30	30	2491.967	832.068	3324.04	38.38
30	35	2491.967	417.898	2909.87	38.19
30	40	2491.967	223.888	2715.86	37.91
35	20	1196.582	3468.030	4664.61	36.37
35	25	1196.582	1735.230	2931.81	36.29
35	30	1196.582	832.068	2028.65	36.20
35	35	1196.582	417.898	1614.48	36.10
35	40	1196.582	223.888	1420.47	35.94
40	20	639.325	3468.030	4107.36	33.88
40	25	639.325	1735.230	2374.56	33.84
40	30	639.325	832.068	1471.39	33.80
40	35	639.325	417.898	1057.22	33.74
40	40	639.325	223.888	863.21	33.66

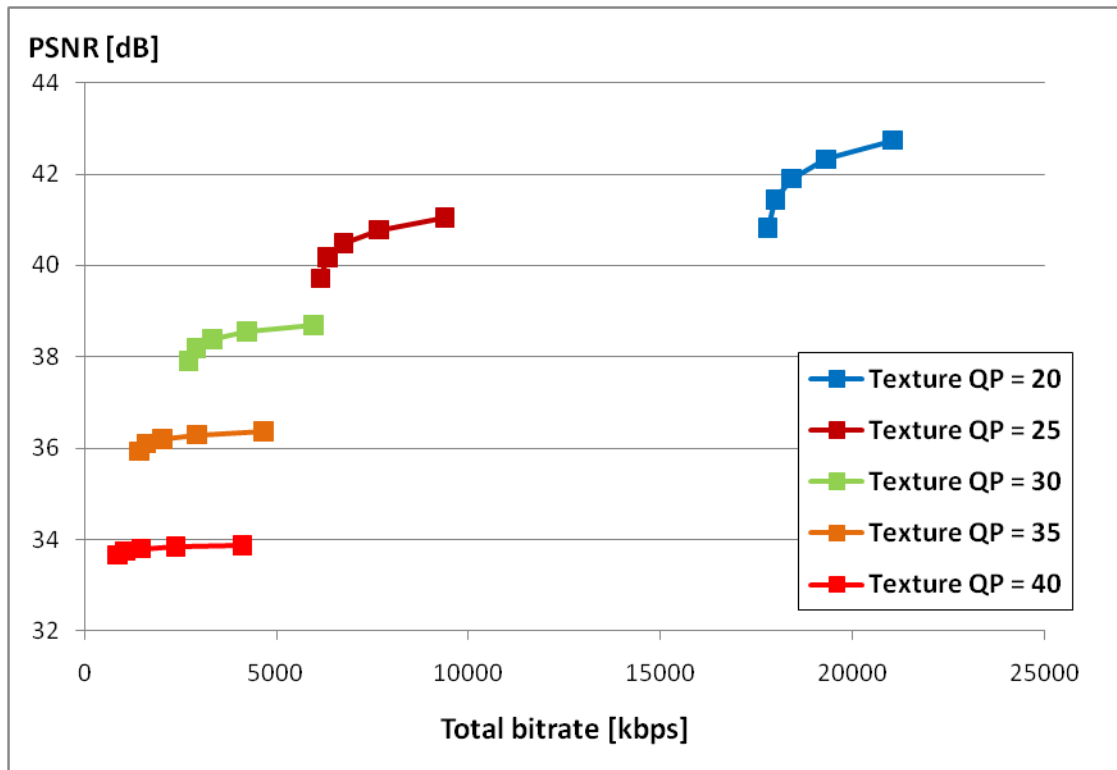


Figure 2. Comparison of total bitrates against quality of synthesized view

4 Conclusions

4.1. Two view case

- Required bitrate is higher than for other sequences, due to higher resolution and complicated depth structure.

5 References

- [1] "Description of Exploration Experiments in 3D Video Coding" MPEG 2009/W11095, Kyoto, Japan, January 2010.
- [2] M. Domański, T. Grajek, K. Klimaszewski, M. Kurc, O. Stankiewicz, J. Stankowski, K. Wegner, "Poznań Multiview Video Test Sequences and Camera Parameters", ISO/IEC JTC1/SC29/WG11 MPEG 2009/M17050, Xian, China, October 2009.