

## **Title: Assessment of QoE and Subjective Quality of 360-degree Videos with Head Mounted Displays**

### **Abstract:**

The contribution provides the subjective test results on QoE and subjective quality evaluation of the Omnidirectional/360-degree videos. With the aim to find out the influence of the camera motion, resolutions and simulator sickness on evaluating the QoE of the omnidirectional videos. Experimental results show that the video sequence which has the highest motion provides the least QoE. The 4K resolution provides better QoE than FHD irrespective of the video sequence. Results also show that users are more prone to simulator sickness in FHD resolution as compared to 4K. Also, the video sequences which have the highest simulator sickness scores will have the lowest QoE and vice-versa. We also compare the performance of the two subjective evaluation methodologies – Modified ACR and DSIS – on HEVC Encoded 360° videos at different bit-rates for different resolutions. We also investigated the influence of simulator sickness on both these evaluation methodologies. Results show that the perceived quality at 15 Mbit/s is slightly higher than 8 Mbit/s. Therefore, it is recommended to transmit the 360-degree videos at 8 Mbit/s would reduce the bandwidth requirements up to 50% at a marginal cost in the quality. Also, the Pearson correlation coefficient (0.992) between M-ACR and DSIS is very high. Users are more prone to simulator sickness while evaluating the videos with the DSIS test method.