

**Joint Video Experts Team (JVET)
of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC
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Title: EE1-2.1: Super Resolution with existing VVC functionality

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Abstract

This contribution reports the performance of RPR tool in VVC if tested for providing super-resolution functionality (test 2.1 in EE1). Experiments are limited to scaling factor 2.0 only. In average under AhG11 test conditions gains (in Y-PSNR) of 1.2 % in random access and 0.6% in all intra configuration can be achieved. Gain is higher in MS-SSIM metric (2.9% in random access and 1.9% in all intra configuration).

Results

In this experiment RPR was enabled in VTM as described in [1]. Experiments were performed using scaling factor =2.0 (both horizontally and vertically). All frames are coded in quarter resolution, then up-sampled with VVC RPR filters. This corresponds to pure pre- and post-processing.

Coding of all frames in quarter resolution is helpful for high resolution content (4K, classes A1 and A2), however when the same QPs are used it is likely that rate-distortion curves are crossing, rates do not match target rates. This would lead to unreliable BD-rate measurements.

In order to estimate performance of RPR as coding tool, it was enabled only if it gives compression benefits compared to full-size coding, otherwise regular VVC full-size coding is used. Additionally, the QP was adjusted for the down sampled video coding in order to avoid crossing rate-distortion curves. The reported results are similar to the ones in JVET-X0117 (identical software), the difference is a slightly relaxed constraint for matching of the anchor bitrates: Here, the QPs were selected such that the difference to the target bitrate was lower than 10%. In JVET-X0117 only RPR points where considered that had better quality at less or equal rate than the anchor.

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EE1-2.1: Super Resolution with existing VVC functionality

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ABSTRACT

MEETING NOTES

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MEETING NOTES

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Title: Meeting Report of the 41st Meeting of the Joint Video Experts Team

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Purpose: Report

1 Summary

MEETING NOTES

[JVET-Y0061](#) EE1-2.1: Super Resolution with existing VVC functionality [E. Alshina, J. Sauer (Huawei)]

CITATION

E. Alshina, J. Sauer, "EE1-2.1: Super Resolution with existing VVC functionality", JVET-Y0061, 25th Meeting: by teleconference, January 2022.

REFERENCES

1. [Elena Alshina, Johannes Sauer, "EE1-2.1: Super Resolution with existing VVC functionality.", JVET-X0117, 25th Meeting: by teleconference, October 2021.](#)
2. [E. Alshina, R.-L. Liao, S. Liu, A. Segall, "Common Test Conditions and evaluation procedures for neural network-based video coding technology", JVET-X2016, 25th Meeting: by teleconference, October 2021.](#)
3. [E. Alshina, S. Liu, W. Chen, F. Galpin, Y. Li, Z. Ma, H. Wang, "Exploration Experiments on Neural Network-based Video Coding \(EE1\)", JVET-X2023, 25th Meeting: by teleconference, October 2021.](#)