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| *Title:* | **On base layer video output in SHVC** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
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# Abstract

The conformance cropping window output base layer picture is used in SHVC test model for enhancement layer codec prediction to accommodate the separate legacy AVC base layer decoder which can only output a cropped video picture. This contribution proposes to restrict using cropped base layer output picture for AVC base layer only. It is reported that directly using coded base layer, rather than cropped base layer, for enhancement layer coding can reduce codec complexity and memory access for general applications with HEVC base layer.

# Introduction

At the 12th JCTVC Geneva meeting, JCTVC-L0178 was adopted to use cropped base layer output video for enhancement layer texture prediction in scalable test model (SHM). The scheme is applied to both refidx and intraBL frameworks.

The motivation of using cropped base layer output is to accommodate the legacy black box AVC decoder used in SHVC which can only output cropped video picture resolution. Unlike integrated base layer codec, it is assumed a separate legacy AVC base layer decoder offers no APIs for the enhancement layer codec to access base layer syntax and decoded pictures. In that case, mandating to use cropped base layer output would avoid discrepancy between the encoder and decoder.

However, such mandate would increase the codec operational complexity and memory access. For example, for the SNR scalability with 960x540 sequences, the 960x540 base layer is coded as 960x544, and is cropped to 960x540 when ready for output. During inter layer prediction, if cropped output base layer is used, the cropped 960x540 base layer needs to be padded back to 960x544. This creates additional padding operations, which could be avoided if coded base layer pictures are used instead. The extra memory allocation and access could become significant when considering higher resolution (4K or 8K) video applications. Due to the potential increase in memory access when cropped base layer picture is used, it would make sense to restrict using cropped base layer output only for particular use cases, like AVC base layer, to reduce the coding complexity and memory access.

# Base layer video output resolution support in SHVC

Given the fact that the current SHVC test model supports using compressed motion field to improve the coding efficiency, it is reasonable to assume that HEVC base layer decoder can also allow access to base layer coded pictures. Therefore, for HEVC base layer, we propose to use coded base layer picture, rather than cropped base layer picture, to simplify the decoding operation and reduce memory access.

# Patent rights declaration(s)

**InterDigital Communications Inc does not have any current or pending patent rights relating to the technology described in this contribution.**