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| *Title:* | **Cross-check of SCE4.2.6 SHARP LAB’s proposal on Bilateral Filter** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
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| *Source:* | Huawei Technologies Co., Ltd. | | |

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# Abstract

This document reports the crosschecking procedures and results for the bilateral filter proposed in JCTVC-M0213. The RD data and complexity assessment data we obtained match the results provided by the proponent.

# Introduction

**SHARP LAB** provided the source codes of their proposed bilateral filter described in JCTVC-M0213, based on SHM1.0. The verification is carried out by setting the following macros in TypeDef.h.

The configurations are tested about the proposed algorithm. the setting is as follows:

#define SCE\_4\_2\_6 1 ///< sharp Bilateral filter for INTRA\_BL block

#define SHVC\_COMPLEXITY\_ASSESSMENT\_SCE4\_2\_6 1

#if SCE\_4\_2\_6

#define SCE\_4\_2\_6\_DEC\_SPEEDUP 1 ///< 0: decoder bilat filter whole picture, 1: on the fly

#define BLT\_2DFILTER\_HALF\_WIDTH 2 ///< half of filter width.

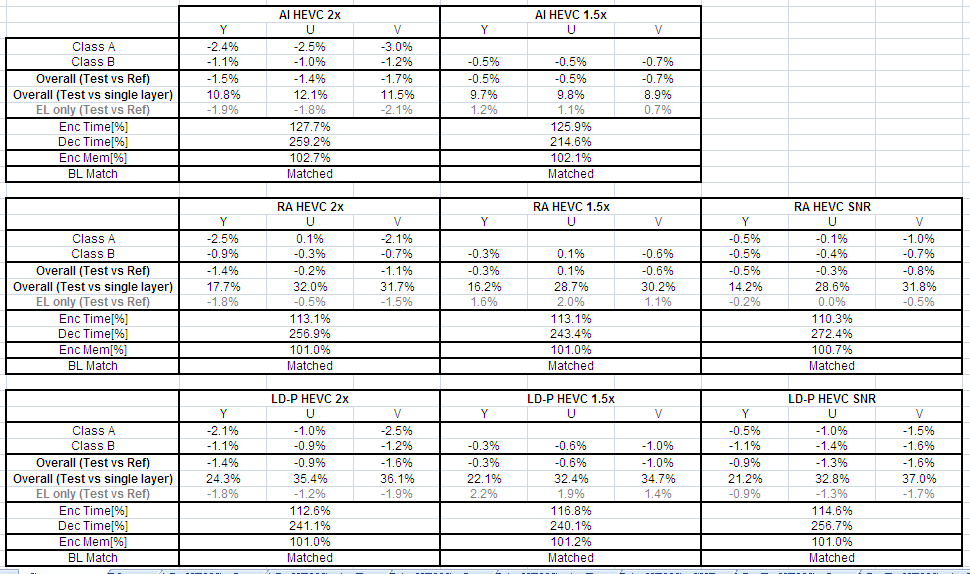
## Test condition

VS2010 x64 compiler is used to generate the executable file from the provided source code. Simulations were done on computer cluster running Windows Server 2003 x64 OS.

## Test results

Tables 1 show the summary of results of proposed algorithm based on SHM1.0. It was confirmed that BD-Rate values are exactly same as those provided by the proponent. Detailed RD data can be found in the attached excel sheet.

**Table 1: Summary results of test of** JCTVC-M0213 **against SHM1.0**



## Complexity Assessment

Tables 2 show the complexity assessment results of proposed upsampling filter. It was confirmed that bandwidth values are exactly same as those provided by the proponent. Detailed data can be found in the attached excel sheet.

**Table 2. Complexity summary of proposed adaptive upsampling method**



# Conclusion

The executables generated from the provided source code can be used for the encoding and decoding test. The decoded sequences match the reconstructed sequences. The RD data and memory bandwidth usage provided by the proponent are exactly the same as the results we obtained. Detailed RD data can be found in the attached excel sheet.

# References

1. C. Tomasi and R. Manduchi, “Bilateral filtering for gray and color images,” IEEE International Conference on Computer Vision, pp.839-846, 1998.
2. J. Zhao, K. Misrak, A. Segall, “SCE4.2.6: Adaptive up-sampling of base layer picture using bilateral filters,” JCTVC-M0213, Geneva, CH, Jan. 2013