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| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  12th Meeting: Geneva, CH, 14–23 Jan. 2013 | Document: JCTVC-L0364 |

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| *Title:* | **Cross-check of JCT-VC L0167 An encoder bug fix for the reference index framework in SHVC reference software** | | |
| *Status:* | Input document to JCT-VC | | |
| *Purpose:* | Cross Check | | |
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# Abstract

This contribution reports the cross-check results of JCT-VC L0167, an encoder bug fix for the reference index framework in SHVC reference software, from Huawei. The cross check results match the results proposed by Huawei.

# Introduction

In JCTVC-L0167[1], an encoder bug fix for the reference index framework in SHVC reference software.

The proposal describes a bug found in the procedure for searching the best motion information in the SMuc 0.1.1 reference software when applied for ref\_idx framework. the bug not only makes the uni-directional prediction from list1 unuseable, but also ends up non-optimal bi-directional prediction. The simulation results show decent performance gain when incoperating such bug fix.

# Simulation results

The proposed scheme is verified. The anchor in Table 1 and Table 2 is the results of IntraBL framework with DCT bug fix. Please note encode/decode times are not reliable because of the inhomogeneous computer clusters. Full simulation results are provided in the attached Excel sheets. The results match the simulation results provided by Huawei.

1. Cross-check Results (refidx w/o L0167 bugfix vs. (intraBL+DCT bugfix))

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|  | **RA HEVC 2x** | | | **RA HEVC 1.5x** | | | **RA HEVC SNR** | | |
|  | Y | U | V | Y | U | V | Y | U | V |
| Class A | 1.5% | 3.8% | 4.1% |  |  |  | 1.6% | 4.7% | 5.5% |
| Class B | 1.8% | 4.7% | 5.3% | 1.5% | 2.9% | 3.4% | 2.4% | 5.9% | 7.4% |
| **Overall (EL+BL)** | 1.7% | 4.5% | 5.0% | 1.5% | 2.9% | 3.4% | 2.1% | 5.6% | 6.8% |
| **Overall (EL)** | 3.0% | 8.0% | 8.7% | 3.4% | 7.0% | 7.6% | 4.2% | 10.1% | 12.0% |
| Enc Time[%] | 81.8% | | | 77.1% | | | 80.5% | | |
| Dec Time[%] | 78.2% | | | 71.3% | | | 74.7% | | |
| BL Match | Matched | | | Matched | | | Matched | | |
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1. Cross-check Results (refidx w/ L0167 bugfix vs. (intraBL+DCT bugfix))

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|  | **RA HEVC 2x** | | | **RA HEVC 1.5x** | | | **RA HEVC SNR** | | |
|  | Y | U | V | Y | U | V | Y | U | V |
| Class A | 0.1% | 1.4% | 1.6% |  |  |  | 0.1% | 1.7% | 2.2% |
| Class B | 0.1% | 2.1% | 2.3% | -0.3% | 0.3% | 0.6% | -0.1% | 1.9% | 2.9% |
| **Overall (EL+BL)** | 0.1% | 1.9% | 2.1% | -0.3% | 0.3% | 0.6% | 0.0% | 1.8% | 2.7% |
| **Overall (EL)** | 0.1% | 3.2% | 3.5% | -1.3% | 0.6% | 0.4% | -0.1% | 3.1% | 4.3% |
| Enc Time[%] | 88.7% | | | 85.0% | | | 87.5% | | |
| Dec Time[%] | 82.3% | | | 77.0% | | | 81.6% | | |
| BL Match | Matched | | | Matched | | | Matched | | |
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# Patent rights declaration(s)

**InterDigital Communications, LLC may have IPR relating to the technology described in this contribution and, conditioned on reciprocity, is prepared to grant licenses under reasonable and non-discriminatory terms as necessary for implementation of the resulting ITU-T Recommendation | ISO/IEC International Standard (per box 2 of the ITU-T/ITU-R/ISO/IEC patent statement and licensing declaration form).**

# References

1. J. Zhang, B. Li, H. Li (USTC), H. Yang (Huawei), An encoder bug fix for the reference index framework in SHVC reference software. Document no JCTVC-L0167. Jan. 2013.