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| *Title:* | **Cross-check report of SKT/SKKU Deblocking Filter (JCTVC-E417)** | | |
| *Status:* | Input Document to the JCT-VC | | |
| *Purpose:* | Cross-verification | | |
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| *Source:* | KAIST (Korea Advanced Institute of Science and Technology) and ETRI | | |

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# Abstract

This is a cross verification of contribution JCTVC-E417 (SKT/SKKU Deblocking Filter) for combination 3 test. The source code was provided by SKT and SKKU and was based on HM-2.0. We compiled, inspected, and ran the code with Intra Only, Low delay, and Random access for high efficiency and low complexity configurations. RD results were identical to those provided by SKT and SKKU.

# Test conditions

Our computing platform used for cross-verification tests is a clustering system with 16 computing nodes, each of which contains:

* CPU: dual-socket quad-core Intel Xeon 2.5 GHz
* memory: 32 GB RAM
* storage (local): one 146 GB 2.5" 10k RPM SAS disk

The encoder and decoder executables were generated with g++ 4.1.2.

# Simulation results

The de-blocking filter by SKT/SKKU (comb3) was evaluated in JCTVC-D600. The coding gains for SKT/SKKU deblocking filter (comb3) are summarized as following:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Intra | | | Intra LoCo | | |
| Y BD-rate | U BD-rate | V BD-rate | Y BD-rate | U BD-rate | V BD-rate |
| Class A | -1.6 | -1.2 | -1.4 | -1.5 | -2.3 | -2.2 |
| Class B | -1.1 | -1.8 | -2.1 | -1.0 | -2.9 | -2.9 |
| Class C | -0.9 | -2.5 | -2.5 | -0.9 | -3.4 | -3.8 |
| Class D | -0.8 | -2.3 | -2.6 | -0.8 | -3.7 | -3.9 |
| Class E | -1.3 | -0.2 | -0.4 | -1.0 | -2.1 | -2.8 |
| All | -1.1 | -1.7 | -1.9 | -1.1 | -2.9 | -3.1 |
| Enc Time[%] | 100% | | | 100% | | |
| Dec Time[%] | 101% | | | 104% | | |
|  |  |  |  |  |  |  |
|  | Random access | | | Random access LoCo | | |
| Y BD-rate | U BD-rate | V BD-rate | Y BD-rate | U BD-rate | V BD-rate |
| Class A | -1.4 | -1.8 | -1.8 | -1.2 | -2.2 | -2.0 |
| Class B | -1.2 | -2.5 | -2.5 | -1.1 | -2.6 | -2.2 |
| Class C | -1.0 | -3.3 | -3.1 | -0.9 | -3.3 | -3.5 |
| Class D | -0.7 | -2.9 | -3.2 | -0.6 | -2.9 | -3.0 |
| Class E |  |  |  |  |  |  |
| All | -1.1 | -2.6 | -2.7 | -1.0 | -2.7 | -2.6 |
| Enc Time[%] | 104% | | | 100% | | |
| Dec Time[%] | 102% | | | 103% | | |
|  |  |  |  |  |  |  |
|  | Low delay | | | Low delay LoCo | | |
|  | Y BD-rate | U BD-rate | V BD-rate | Y BD-rate | U BD-rate | V BD-rate |
| Class A |  |  |  |  |  |  |
| Class B | -1.5 | -2.5 | -2.7 | -1.2 | -2.4 | -1.3 |
| Class C | -1.1 | -2.4 | -2.5 | -0.9 | -2.3 | -2.7 |
| Class D | -1.0 | -2.2 | -2.2 | -0.7 | -2.0 | -1.7 |
| Class E | -3.3 | -3.5 | -3.9 | -2.6 | -6.4 | -5.4 |
| All | -1.6 | -2.6 | -2.8 | -1.3 | -3.0 | -2.5 |
| Enc Time[%] | 99% | | | 105% | | |
| Dec Time[%] | 99% | | | 103% | | |

The measurement of the time is not accurate because the simulation is done in a cluster environment.

# Conclusion

The code and results are verified and are conformant to the results stated by SKT and SKKU.