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| *Title:* | **Cross-check report of extending 4**×**4 sub-block diagonal scan to 8×8 TU (JCTVC-H0524)** | | |
| *Status:* | Input Document to the JCT-VC | | |
| *Purpose:* | Cross-verification | | |
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# Abstract

This is a cross verification of contribution for extension of 4x4 sub-block diagonal scan to 8x8 TU (JCTVC-H0524). The source code was provided by LGE and Qualcomm and was based on HM-5.0. We compiled, inspected, and ran the code with Intra, Low delay, and Random access for high efficiency and low complexity configurations. We report that the RD results obtained are identical to those provided by LGE and Qualcomm.

# 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 extension of 4x4 sub-block diagonal scan to 8x8 TU was evaluated on the top HM5.0 under the configuration of I-HE, I-LC, RA-HE, RA-LC, LD-HE and LD-LC [1]. The coding gains for the contribution are summarized as following:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **All Intra HE** | | | **All Intra LC** | | |
|  | Y | U | V | Y | U | V |
| Class A (8bit) | 0.0% | -0.1% | 0.0% | 0.0% | 0.0% | 0.0% |
| Class B | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Class C | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Class D | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Class E | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Overall** | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
|  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Class F | 0.0% | -0.1% | 0.0% | 0.0% | 0.0% | -0.1% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Random Access HE** | | | **Random Access LC** | | |
|  | Y | U | V | Y | U | V |
| Class A (8bit) | 0.0% | -0.1% | -0.1% | 0.0% | 0.1% | -0.1% |
| Class B | 0.0% | -0.1% | 0.0% | 0.0% | 0.1% | -0.1% |
| Class C | 0.0% | -0.1% | 0.0% | 0.0% | 0.0% | 0.0% |
| Class D | 0.0% | -0.4% | -0.1% | -0.1% | 0.5% | -0.2% |
| Class E |  |  |  |  |  |  |
| **Overall** | 0.0% | -0.2% | 0.0% | 0.0% | 0.2% | -0.1% |
|  | 0.0% | -0.2% | 0.0% | 0.0% | 0.2% | -0.1% |
| Class F | -0.1% | -0.1% | -0.1% | 0.0% | -0.1% | 0.0% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Low delay B HE** | | | **Low delay B LC** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | 0.0% | 0.2% | 0.0% | 0.0% | -0.2% | -0.2% |
| Class C | 0.0% | 0.0% | 0.1% | -0.1% | 0.2% | 0.1% |
| Class D | -0.1% | -0.2% | -0.2% | -0.1% | 0.8% | -0.2% |
| Class E | -0.1% | 0.9% | -0.7% | 0.0% | -1.3% | 0.1% |
| **Overall** | 0.0% | 0.2% | -0.2% | -0.1% | -0.1% | -0.1% |
|  | 0.0% | 0.2% | -0.2% | -0.1% | -0.1% | -0.1% |
| Class F | -0.2% | -0.1% | -0.2% | 0.0% | -0.1% | 0.1% |

# Conclusion

The code and results are verified and are conformant to the results stated by LGE and Qualcomm.

# References

1. F. Bossen, “*Common HM test conditions and software reference configurations*”, JCTVC-G1200, 7th JCT-VC Meeting, Geneva, CH, Nov. 2011.