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| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11**  9th Meeting: Geneva, CH, 27 April – 7 May 2012 | Document: JCTVC-I0489  WG11 Number: m24991 |

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| *Title:* | **Cross-check report for JCTVC-I0125 on reference list combination** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
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# Abstract

Cross-checking results of JCTVC-I0125 on reference list combination are shown. A source code package was distributed by proponents and it was run on an independent platform. All local decoded images by encoder matched decoded images by decoder perfectly. All bitrate and PSNR were identical with proponent's results perfectly. Detailed experimental results show attached Excel files. JCTVC-I0125 that proposes removal of reference list combination has been cross-verified independently.

# Proposal and software check

This contribution proposes a removal of reference list combination and uses conventional bidirectional prediction. Since an additional prediction mode is needed, Pred\_L1 mode and its context mode are re-introduced. They try to test two different versions of context model. One is reuse of context model for cuDepth and the other is addition of new context model. Both modifications are very minor.

# Experimental results

The simulation was conducted for all sequences of WQVGA, WVGA, 720p, 1080p and cropped 4kx2k based on the recommended simulation common conditions, JCTVC-H1100. Table 1 indicates the average results of coding efficiency compared to each anchor. Used platform is that the OS is Windows 7 64-bit; the CPU is Core™i7-2600, 3.4GHz and the compiler is Visual C++ 2008. All local decoded images by encoder match decoded images by decoder perfectly. All bitrate and PSNR are identical with proponent's results perfectly.

Table Results of reuse of context model

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Random Access Main** | | | **Random Access HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0.0% | 0.0% | 0.1% | 0.0% | 0.1% | 0.0% |
| Class B | -0.1% | -0.1% | 0.0% | -0.1% | 0.0% | -0.1% |
| Class C | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% |
| Class D | -0.1% | -0.1% | 0.1% | -0.1% | -0.2% | -0.3% |
| Class E |  |  |  |  |  |  |
| **Overall** | -0.1% | -0.1% | 0.0% | -0.1% | -0.1% | -0.1% |
|  | -0.1% | -0.1% | 0.0% | -0.1% | -0.1% | -0.1% |
| Class F | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | 0.0% |
| Enc Time[%] | 100% | | | 100% | | |
| Dec Time[%] | 99% | | | 99% | | |
|  |  |  |  |  |  |  |
|  | **Low delay B Main** | | | **Low delay B HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | 0.0% | -0.2% | -0.2% | 0.0% | -0.2% | 0.0% |
| Class C | 0.0% | 0.1% | 0.2% | 0.0% | 0.2% | 0.2% |
| Class D | 0.1% | -0.2% | 0.2% | 0.0% | -0.1% | -0.8% |
| Class E | -0.1% | -0.4% | 0.1% | 0.0% | -0.7% | 0.0% |
| **Overall** | 0.0% | -0.1% | 0.1% | 0.0% | -0.2% | -0.2% |
|  | 0.0% | -0.1% | 0.1% | 0.0% | -0.1% | -0.3% |
| Class F | 0.0% | 0.2% | 0.3% | 0.0% | -0.4% | 0.4% |
| Enc Time[%] | 100% | | | 100% | | |
| Dec Time[%] | 98% | | | 100% | | |

Table Results of addition of context model

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Random Access Main** | | | **Random Access HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0.1% | 0.0% | 0.1% | 0.0% | 0.1% | 0.0% |
| Class B | -0.1% | -0.1% | 0.0% | -0.1% | -0.1% | -0.1% |
| Class C | -0.1% | 0.0% | -0.1% | -0.1% | -0.1% | -0.1% |
| Class D | -0.1% | -0.1% | -0.1% | 0.0% | 0.0% | -0.2% |
| Class E |  |  |  |  |  |  |
| **Overall** | -0.1% | -0.1% | 0.0% | -0.1% | 0.0% | -0.1% |
|  | -0.1% | -0.1% | 0.0% | -0.1% | 0.0% | -0.1% |
| Class F | -0.1% | 0.0% | -0.1% | 0.0% | -0.1% | 0.0% |
| Enc Time[%] | 99% | | | 100% | | |
| Dec Time[%] | 100% | | | 100% | | |
|  |  |  |  |  |  |  |
|  | **Low delay B Main** | | | **Low delay B HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A |  |  |  |  |  |  |
| Class B | 0.0% | -0.2% | 0.0% | 0.0% | -0.1% | -0.1% |
| Class C | 0.0% | 0.2% | 0.1% | 0.0% | 0.1% | 0.2% |
| Class D | 0.0% | -0.1% | 0.4% | -0.1% | -0.3% | -0.4% |
| Class E | 0.0% | 0.1% | -0.2% | -0.2% | -0.2% | 0.0% |
| **Overall** | 0.0% | 0.0% | 0.1% | 0.0% | -0.1% | -0.1% |
|  | 0.0% | 0.0% | 0.1% | 0.0% | -0.1% | -0.1% |
| Class F | -0.1% | -0.3% | 0.1% | 0.0% | 0.3% | 0.3% |
| Enc Time[%] | 99% | | | 99% | | |
| Dec Time[%] | 100% | | | 100% | | |

# Conclusions

JCTVC-I0125 on reference list combination that is proposed by Samsung has been cross-verified independently. As experimental results, it seems that there is no advantage of reference list combination on current specification.

# References

[1] F. Bossen, “Common test conditions and software reference configurations,” Joint Collaborative Team on Video Coding, JCTVC-H1100, San Jose, Feb. 2012.

# Patent rights declaration(s)

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