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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, 27/04~07/05, 2012 | Document: JCTVC-I0430 |

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| *Title:* | **Cross-check of JCTVC-I0302: Intra mode coding for INTRA\_NxN** | | | |
| *Status:* | Input Document to JCT-VC | | | |
| *Purpose:* | Informational | | | |
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| *Source:* | MediaTek USA Inc. | | | |

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# Abstract

This document reports the test results of JCTVC-I0302: Intra mode coding for INTRA\_NxN from Qualcomm. The proposed techniques have been studied. The provided software has been checked, compiled and the results reported by the proponents can be confirmed.

1. Introduction of the proposed methods

In the HM6.0, intra luma prediction mode for each PU is coded as the syntax element **prev\_intra\_luma\_pred\_flag,** which is an arithmetically-coded bin, and followed by the syntax element **mpm\_idx** or **rem\_intra\_luma\_pred\_mode,** that are bypass-coded bins. For the case of INTRA\_NxN in the current design, arithmetically-coded bin and bypass-coded bins are signalled interleavely.

JCTVC-I0302 proposes all the arithmetically-coded bins of luma intra modes (prev\_intra\_luma\_pred\_flag) are signalled first and then followed by all the bypass-coded bins (mpm\_idx/rem\_intra\_luma\_pred\_mode) to improve throughput of the entropy coder for the case of INTRA\_NxN. In addition to the proposed methods, JCTVC-I0302 also points out a working draft bug about the signalling of the syntax element **intra\_chroma\_pred\_mode** for INTRA\_NxN. A bug fix is proposed.

# Experimental Results

Simulations were conducted following common test conditions defined in JCTVC-H1100 [1]. Anchor data was generated using HM6.0 software [2]. Results produced by current software implementation are reported in the following tables. In the JCTVC-I0302 software, one macro has been introduced to integrate the proposed methods:

* INTRAMODE\_BYPASSGROUP

Table 1 reports the results.

Table 1. Results with the proposed methods

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **All Intra Main** | | | **All Intra HE10** | | |
|  | Y | U | V | Y | U | V |
| Class A | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Class B | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Class C | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Class D | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Class E | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| **Overall** | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
|  | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Class F | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Enc Time[%] | 101% | | | 101% | | |
| Dec Time[%] | 99% | | | 100% | | |

# References

1. Frank Bossen, “Common test conditions and software reference configurations”, JCTVC-H1100, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T VCEG and ISO/IEC MPEG, San Jose, USA, Feb 2012.
2. HM 6.0 Software, <http://hevc.kw.bbc.co.uk/trac/browser/tags/HM-6.0>.