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Title: **Non-CE5: Modification of ALF coefficient signalling**

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Purpose: Proposal

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Source: Huawei

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Abstract

The current contribution proposes fixed 3rd order Exponential golomb codes for signalling ALF filter coefficients. VTM-5.0 uses filter merging process wherein the filter coefficient of filter N are predicted from filter N-1 and furthermore the signalled filter coefficients can further be predicted from the fixed filters which are newly introduced in VTM-5.0. The “delta (residual)” is then transmitted using Kth order exponential golomb codes. Reportedly the range of filter coefficient “delta” values can be signalled with fixed 3rd order Exponential golomb codes instead of adaptive Kth Order exponential golomb codes without any coding efficiency impact.

The objective results with “fixed 3rd order Exp. golomb” signalling scheme are as follows: Over VTM5.0 Anchor (AI, RA, LDB, LDP) with “CTC” QP: Luma BD-Rate of 0.00%, 0.01%, 0.02%, -0.01% is achieved.

The objective results with “fixed 3rd order Exp. golomb” signalling scheme are as follows: Over VTM5.0 Anchor (AI, RA, LDB, LDP) with “low” QP values (12, 27, 22, 27): Luma BD-Rate of 0.01%, 0.00%, 0.02%, 0.02% is achieved.

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CARD

<http://vexpertise.stbit.ru/documents/JVET-O0216>



https://jvet-experts.org/doc_end_user/documents/15_Gothenburg/wg11/JVET-O0216-v2.zip



https://jvet-experts.org/doc_end_user/current_document.php?id=6821



https://www.itu.int/wftp3/av-arch/jvet-site/2019_07_O_Gothenburg/JVET-O_Notes_dF.docx



MEETING NOTES

[JVET-O0216](#) Non-CE5: Modification of ALF coefficient signalling [A. M. Kotra, S. Esenlik, B. Wang, H. Gao, E. Alshina (Huawei)]

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The objective results with “fixed 3rd order Exp. golomb” signalling scheme are as follows: Over VTM5.0 Anchor (AI, RA, LDB, LDP) with “high” QP values (32, 37, 42, 47): Luma BD-Rate of -0.01%, 0.01%, -0.01%, -0.02% is achieved.

JVET-O0302, JVET-O0648 are similar

JVET-O0302 is doing fixed order 3 for chroma, and position dependent for luma

JVET-O0648 has different variants, either position dependent K, or same K for all positions with adaptation of K

It is desirable to not have position dependency for simplicity of decoding.

As detailed results of JVET-O0648 show, the benefit of making K adaptive is negligible compared to fixed K=3.

Note that this is identical with one of the methods in JVET-O0648, and the chroma coding is identical with JVET-O0302

Decision: Adopt JVET-O0216

CITATION

A. M. Kotra, S. Esenlik, B. Wang, H. Gao, E. Alshina, "Non-CE5: Modification of ALF coefficient signalling", JVET-O0216, 15th Meeting: Gothenburg, SE, July 2019.