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| **Joint Video Experts Team (JVET)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  16th Meeting: Geneva, CH, 1–11 Oct. 2019 | Document: JVET-P\_Notes\_d0 |

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| *Title:* | **Meeting Report of the 16th Meeting of the Joint Video Experts Team (JVET), Geneva, CH, 1–11 Oct. 2019** | | |
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| *Purpose:* | Report | | |
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| *Source:* | Chairs of JVET | | |

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# Summary

The Joint Video Experts Team (JVET) of ITU-T WP3/16 and ISO/IEC JTC 1/ SC 29/ WG 11 held its sixteenth meeting during 1–11 October 2019 at the ITU premises in Geneva, CH. The JVET meeting was held under the chairmanship of Dr Gary Sullivan (Microsoft/USA) and Dr Jens-Rainer Ohm (RWTH Aachen/Germany). For rapid access to particular topics in this report, a subject categorization is found (with hyperlinks) in section 2.13 of this document. It is further noted that the unabbreviated name of JVET was formerly known as “Joint Video *Exploration* Team”, but the parent bodies modified it when entering the phase of formal development of a new standard. The name Versatile Video Coding (VVC) was chosen in April 2018 as the informal nickname for the new standard.

The JVET meeting began at approximately 1400 hours on Tuesday 1 October 2019. Meeting sessions were held on all days (including weekend days) until the meeting was closed at approximately XXXX hours on Friday 11 October 2019. On the first two days of the meeting, only aspects related to high level syntax were on the agenda. Approximately XXX people attended the JVET meeting, and approximately XXX input documents, 8 CE summary reports, and 18 AHG reports were discussed. The meeting took place in a collocated fashion with a meeting of SG16 – one of the two parent bodies of the JVET. The subject matter of the JVET meeting activities consisted of developing video coding technology with a compression capability that significantly exceeds that of the current HEVC standard, or otherwise gives better support regarding the requirements of future application domains of video coding. As a primary goal, the JVET meeting reviewed the work that was performed in the interim period since the fourteenth JVET meeting in producing a fifth draft of the VVC standard and the fifth version of the associated VVC test model (VTM). Further important goals were reviewing the results of 8 Core Experiments (CE), reviewing other technical input on novel aspects of video coding technology, producing the next versions of the VVC draft text and VTM, and plan next steps for further investigation of candidate technology towards the formal standard development.

The JVET produced XX output documents from the meeting (update):

* JVET-O2001 Versatile Video Coding specification text (Draft 6), also issued as ISO/IEC CD 23090-3 Versatile Video Coding
* JVET-O2002 Algorithm description for Versatile Video Coding and Test Model 6 (VTM 6)
* JVET-O2007 Supplemental enhancement information messages for coded video bitstreams
* JVET-O2011, JVET common test conditions and software reference configurations for HDR/WCG video
* JVET-O2021 through JVET-O2028, Description of Core Experiments 1 through 8

For the organization and planning of its future work, the JVET established XX “ad hoc groups” (AHGs) to progress the work on particular subject areas. At this meeting, X Core Experiments (CE) were defined. The next four JVET meetings were planned for 8–17 January 2020 under WG 11 auspices in Brussels, BE, during 15–24 April 2020 under WG 11 auspices in Alpbach, AT, during 23 June – 01 July 2020 under ITU-T SG16 auspices in Geneva, CH, and during 7–16 October 2020 under WG 11 auspices in Rennes, FR.

The document distribution site <http://phenix.it-sudparis.eu/jvet/> was used for distribution of all documents.

The reflector to be used for discussions by the JVET and all its AHGs is the JVET reflector:  
[jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de) hosted at RWTH Aachen University. For subscription to this list, see  
<https://lists.rwth-aachen.de/postorius/lists/jvet.lists.rwth-aachen.de/>.

# Administrative topics

## Organization

The ITU-T/ISO/IEC Joint Video Experts Team (JVET) is a group of video coding experts from the ITU-T Study Group 16 Visual Coding Experts Group (VCEG) and the ISO/IEC JTC 1/SC 29/WG 11 Moving Picture Experts Group (MPEG). The parent bodies of the JVET are ITU-T WP3/16 and ISO/IEC JTC 1/SC 29/WG 11.

The Joint Video Experts Team (JVET) of ITU-T WP3/16 and ISO/IEC JTC 1/ SC 29/ WG 11 held its sixteenth meeting during 1–11 October 2019 at the ITU premises in Geneva, CH. The JVET meeting was held under the chairmanship of Dr Gary Sullivan (Microsoft/USA) and Dr Jens-Rainer Ohm (RWTH Aachen/Germany).

It is further noted that the unabbreviated name of JVET was formerly known as “Joint Video *Exploration* Team”, but the parent bodies modified it when entering the phase of formal development of a new standard. The name Versatile Video Coding (VVC) was chosen in April 2018 as the informal nickname for the new standard.

## Meeting logistics

Information regarding logistics arrangements for the meeting had been provided via the email reflector [jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de) and at <http://wftp3.itu.int/av-arch/jvet-site/2019_10_P_Geneva/>.

## Primary goals

As a primary goal, the JVET meeting reviewed the work that was performed in the interim period since the fifteenth JVET meeting in producing a sixth draft of the VVC standard and the sixth version of the associated VVC test model (VTM). Further important goals were reviewing the results of 8 Core Experiments (CE), reviewing other technical input on novel aspects of video coding technology, producing the next versions of draft text and VTM, and planning next steps for further investigation of candidate technology towards the formal standard development.

## Documents and document handling considerations

### General

The documents of the JVET meeting are listed in Annex A of this report. The documents can be found at <http://phenix.it-sudparis.eu/jvet/>.

Registration timestamps, initial upload timestamps, and final upload timestamps are listed in Annex A of this report.

The document registration and upload times and dates listed in Annex A and in headings for documents in this report are in Paris/Geneva time. Dates mentioned for purposes of describing events at the meeting (other than as contribution registration and upload times) follow the local time at the meeting facility.

Highlighting of recorded decisions in this report is practised as follows:

* Decisions made by the group that might affect the normative content of a future standard are identified in this report by prefixing the description of the decision with the string “Decision:”.
* Decisions that affect the VTM software but have no normative effect are marked by the string “Decision (SW):”.
* Decisions that fix a “bug” in the VTM description (an error, oversight, or messiness) or in the software are marked by the string “Decision (BF):”.

This meeting report is based primarily on notes taken by the JVET chairs. The preliminary notes were also circulated publicly by ftp and http during the meeting on a daily basis. It should be understood by the reader that 1) some notes may appear in abbreviated form, 2) summaries of the content of contributions are often based on abstracts provided by contributing proponents without an intent to imply endorsement of the views expressed therein, and 3) the depth of discussion of the content of the various contributions in this report is not uniform. Generally, the report is written to include as much information about the contributions and discussions as is feasible (in the interest of aiding study), although this approach may not result in the most polished output report.

### Late and incomplete document considerations

The formal deadline for registering and uploading non-administrative contributions had been announced as Tuesday, 24 September 2019. Any documents uploaded after 1159 hours Paris/Geneva time on Wednesday 25 September were considered “officially late”, giving a grace period of 12 hours to accommodate those living in different time zones of the world. The deadline does not apply to AHG reports, and other such reports which can only be produced after the availability of other input documents.

As agreed by the fifteenth meeting as permanent rule, contributions related to CE proposals (including draft text) were to be uploaded 1 week ahead of the above mentioned deadline, such that more thourough study was possible, and in particular the CE summary reports could be provided in time by the regular deadline. Consequently, CE proposal documents which were uploaded after 1159 hours Paris/Geneva time on Wednesday 18 September were considered “officially late”.

It was suggested to have CE description documents include a description of how the results are planned to be reported – e.g., the form of the tables to be used for the results data. Complexity analysis characterizations were suggested to be a particular issue where this applies.

All contribution documents with registration numbers higher than JVET-P0618 were registered after the “officially late” deadline (and therefore were also uploaded late). Likewise, CE proposal documents with registration numbers higher than JVET-P0081 were registered late. However, some documents in the “late” range might include break-out activity reports that were generated during the meeting, and are therefore better considered as report documents rather than as late contributions. Also, all cross-check reports were uploaded late.

In many cases, contributions were also revised after the initial version was uploaded. The contribution document archive website retains publicly accessible prior versions in such cases. The timing of late document availability for contributions is generally noted in the section discussing each contribution in this report.

One suggestion to assist with the issue of late submissions was to require the submitters of late contributions and late revisions to describe the characteristics of the late or revised (or missing) material at the beginning of discussion of the contribution. This was agreed to be a helpful approach to be followed at the meeting.

The following technical design proposal contributions were registered and/or uploaded late:qq

* JVET-P0XXX (a proposal on …), uploaded XX-XX.
* …

It may be observed that some of the above-listed contributions were submissions made in response to issues that arose in discussions during the meeting or from the study of other contributions, and thus could not have been submitted by the ordinary deadline. For example, some of them were proposing combinations or simplifications of other proposals.

The following other document not proposing normative technical content, but with some need for consideration, were registered and/or uploaded late:

* JVET-P0XXX (a document on …), uploaded XX-XX.
* …

All cross-verification reports at this meeting (except for JVET-P0594) were registered late and all were uploaded late. In the interest of brevity, these are not specifically identified here. Initial upload times for each document are recorded in Annex A of this report.

The following (X) contribution registrations were later cancelled, withdrawn, never provided, were cross-checks of a withdrawn contribution, or were registered in error: JVET-P0XXX (withdrawn), JVET-P0XXX (missing by the end of meeting), … .

The following crosschecks had not been uploaded yet by the end of the meeting, but were provided later (check if they become available – otherwise withdraw them):

…

“Placeholder” contribution documents that were basically empty of content, or lacking any results showing benefit for the proposed technology, and obviously uploaded with an intent to provide a more complete submission as a revision, had been agreed to be considered unacceptable and to be rejected in the document management system until a more complete version was available (which would then typically be counted as a late contribution). At the current meeting, this situation applied to the initial uploads of documents JVET-P0487, JVET-P0596, JVET-P0620, and … .

Contributions that had significant problems with uploaded versions included the following:

* JVET-P0XXX (…)
* …

As a general policy, missing documents were not to be presented, and late documents (and substantial revisions) could only be presented when there was a consensus to consider them and there was sufficient time available for their review. Again, an exception is applied for AHG reports, CE summaries, and other such reports which can only be produced after the availability of other input documents. There were no objections raised by the group regarding presentation of late contributions, although there was some expression of annoyance and remarks on the difficulty of dealing with late contributions and late revisions.

It was remarked that documents that are substantially revised after the initial upload can also be a problem, as this becomes confusing, interferes with study, and puts an extra burden on synchronization of the discussion. This can especially be a problem in cases where the initial upload is clearly incomplete, and in cases where it is difficult to figure out what parts were changed in a revision. For document contributions, revision marking is very helpful to indicate what has been changed. Also, the “comments” field on the web site can be used to indicate what is different in a revision although participants tend to seldom notice what is recorded there.

A few contributions may have had some problems relating to IPR declarations in the initial uploaded versions (missing declarations, declarations saying they were from the wrong companies, etc.). These issues were corrected by later uploaded versions in a reasonably timely fashion in all cases (to the extent of the awareness of the responsible coordinators).

Some other errors were noticed in other initial document uploads (wrong document numbers or meeting dates or meeting locations in headers, etc.) which were generally sorted out in a reasonably timely fashion. The document web site contains an archive of each upload.

### Outputs of the preceding meeting

All output documents of the previous meeting, particularly the meeting report JVET-O2000, the Versatile Video Coding specification text (Draft 6) JVET-O2001, the Algorithm description for Versatile Video Coding and Test Model 6 (VTM 6) JVET-O2002, the Methodology and reporting template for coding tool testing JVET-O2005, the Supplemental enhancement information messages for coded video bitstreams JVET-O2007, the JVET common test conditions and software reference configurations for HDR/WCG video JVET-N2011, and the Description of Core Experiments 1 through 8 (JVET-O2021 through JVET-O2028), had been completed and were approved. The software implementation of VTM (versions 6.0 and 6.1) was also approved.

The group was initially asked to review the meeting report of the previous meeting for finalization. The meeting report was later approved without modification.

The available output documents of the previous meeting and the software had been made available in a reasonably timely fashion.

## Attendance

The list of participants in the JVET meeting can be found in Annex B of this report.

The meeting was open to those qualified to participate either in ITU-T WP3/16 or ISO/IEC JTC 1/‌SC 29/‌WG 11 (including experts who had been personally invited as permitted by ITU-T or ISO/IEC policies).

Participants had been reminded of the need to be properly qualified to attend. Those seeking further information regarding qualifications to attend future meetings may contact the responsible coordinators.

## Agenda

The agenda for the meeting was as follows:

* Opening remarks and review of meeting logistics and communication practices
* IPR policy reminder and declarations
* Contribution document allocation
* Review of results of the previous meeting
* Reports of *ad hoc* group (AHG) activities
* Reports of core experiments planned at the previous meeting
* Consideration of contributions and communications on project guidance
* Consideration of additional video coding technology contributions
* Consideration of information contributions
* Coordination activities
* Approval of output documents and associated editing periods
* Future planning: Determination of next steps, discussion of working methods, communication practices, establishment of coordinated experiments, establishment of AHGs, meeting planning, other planning issues
* Other business as appropriate for consideration

On the first two days of the meeting (October 1 and 2), only aspects related to high level syntax (including AHG8, AHG12, AHG14, and AHG17 reports) were on the agenda. In the morning of October 3, the meeting was continued with general status review and administrative matters, and then proceeded with reports of ad *hoc* group activities, reports of core experiments, and other matters.

## IPR policy reminder

Participants were reminded of the IPR policy established by the parent organizations of the JVET and were referred to the parent body websites for further information. The IPR policy was summarized for the participants.

The ITU-T/ITU-R/ISO/IEC common patent policy shall apply. Participants were particularly reminded that contributions proposing normative technical content shall contain a non-binding informal notice of whether the submitter may have patent rights that would be necessary for implementation of the resulting standard. The notice shall indicate the category of anticipated licensing terms according to the ITU-T/ITU-R/ISO/IEC patent statement and licensing declaration form.

This obligation is supplemental to, and does not replace, any existing obligations of parties to submit formal IPR declarations to ITU-T/ITU-R/ISO/IEC.

Participants were also reminded of the need to formally report patent rights to the top-level parent bodies (using the common reporting form found on the database listed below) and to make verbal and/or document IPR reports within the JVET necessary in the event that they are aware of unreported patents that are essential to implementation of a standard or of a draft standard under development.

Some relevant links for organizational and IPR policy information are provided below:

* <http://www.itu.int/ITU-T/ipr/index.html> (common patent policy for ITU-T, ITU-R, ISO, and IEC, and guidelines and forms for formal reporting to the parent bodies)
* <http://ftp3.itu.int/av-arch/jvet-site> (JVET contribution templates)
* <http://www.itu.int/ITU-T/dbase/patent/index.html> (ITU-T IPR database)
* <http://www.itscj.ipsj.or.jp/sc29/29w7proc.htm> (JTC 1/‌SC 29 Procedures)

It is noted that the ITU TSB director’s AHG on IPR had issued a clarification of the IPR reporting process for ITU-T standards, as follows, per SG 16 TD 327 (GEN/16):

“TSB has reported to the TSB Director’s IPR Ad Hoc Group that they are receiving Patent Statement and Licensing Declaration forms regarding technology submitted in Contributions that may not yet be incorporated in a draft new or revised Recommendation. The IPR Ad Hoc Group observes that, while disclosure of patent information is strongly encouraged as early as possible, the premature submission of Patent Statement and Licensing Declaration forms is not an appropriate tool for such purpose.

In cases where a contributor wishes to disclose patents related to technology in Contributions, this can be done in the Contributions themselves, or informed verbally or otherwise in written form to the technical group (e.g. a Rapporteur’s group), disclosure which should then be duly noted in the meeting report for future reference and record keeping.

It should be noted that the TSB may not be able to meaningfully classify Patent Statement and Licensing Declaration forms for technology in Contributions, since sometimes there are no means to identify the exact work item to which the disclosure applies, or there is no way to ascertain whether the proposal in a Contribution would be adopted into a draft Recommendation.

Therefore, patent holders should submit the Patent Statement and Licensing Declaration form at the time the patent holder believes that the patent is essential to the implementation of a draft or approved Recommendation.”

The responsible coordinators invited participants to make any necessary verbal reports of previously-unreported IPR in technology that might be considered as prospective candidate for inclusion in future standards, and opened the floor for such reports: No such verbal reports were made.

## Software copyright disclaimer header reminder

It was noted that the VTM software implementation package uses the same software copyright license header as the HEVC reference software, where the latter had been agreed at the 5th meeting of the JCT-VC and approved by both parent bodies at their collocated meetings at that time. This license header language is based on the BSD license with a preceding sentence declaring that other contributor or third party rights, including patent rights, are not granted by the license, as recorded in [N 10791](http://phenix.it-sudparis.eu/mpeg/doc_end_user/current_document.php?id=27881&id_meeting=16) of the 89th meeting of ISO/IEC JTC 1/‌SC 29/‌WG 11. Both ITU and ISO/IEC will be identified in the <OWNER> and <ORGANIZATION> tags in the header. This software is used in the process of designing the VTM software, and for evaluating proposals for technology to be potentially included in the design. This software or parts thereof might be published by ITU-T and ISO/IEC as an example implementation of a future video coding standard and for use as the basis of products to promote adoption of such technology.

Different copyright statements shall not be committed to the committee software repository (in the absence of subsequent review and approval of any such actions). As noted previously, it must be further understood that any initially-adopted such copyright header statement language could further change in response to new information and guidance on the subject in the future.

These considerations apply to the 360Lib video conversion software and HDRTools as well.

## Communication practices

The documents for the meeting can be found at <http://phenix.it-sudparis.eu/jvet/>.

It was reminded to send a notice to the chairs in cases of changes to document titles, authors etc.

JVET email lists are managed through the site <https://lists.rwth-aachen.de/postorius/lists/jvet.lists.rwth-aachen.de/>, and to send email to the reflector, the email address is [jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de). Only members of the reflector can send email to the list. However, membership of the reflector is not limited to qualified JVET participants.

It was emphasized that reflector subscriptions and email sent to the reflector must use real names when subscribing and sending messages and subscribers must respond to inquiries regarding the nature of their interest in the work. The current number of subscribers was 1179.

For distribution of test sequences, a password-protected ftp site had been set up at RWTH Aachen University, with a mirror site at FhG-HHI. Accredited members of JVET may contact the responsible JVET coordinators to obtain the password information (but the site is not open for use by others).

## Terminology

Some terminology used in this report is explained below:

(check for completeness with JVET-N0013, and draft text)

* **ACT**: Adaptive colour transform.
* **AFF**: Affine.
* **AI**: All-intra.
* **AIF**: Adaptive interpolation filtering.
* **ALF**: Adaptive loop filter.
* **AMP**: Asymmetric motion partitioning – a motion prediction partitioning for which the sub-regions of a region are not equal in size (in HEVC, being N/2x2N and 3N/2x2N or 2NxN/2 and 2Nx3N/2 with 2N equal to 16 or 32 for the luma component).
* **AMVP**: Adaptive motion vector prediction.
* **AMT or MTS**: Adaptive multi-core transform, or multiple transform selection.
* **AMVR**: (Locally) adaptive motion vector resolution.
* **APS**: Adaptation parameter set.
* **ARC**: Adaptive resolution conversion (synonymous with DRC, and a form of RPR).
* **ARSS**: Adaptive reference sample smoothing.
* **ATMVP** or “subblock-based temporal merging candidates”: Alternative temporal motion vector prediction.
* **AU**: Access unit.
* **AUD**: Access unit delimiter.
* **AVC**: Advanced video coding – the video coding standard formally published as ITU-T Recommendation H.264 and ISO/IEC 14496-10.
* **BA**: Block adaptive.
* **BC**: See CPR or IBC.
* **BCW**: Biprediction with CU based weighting
* **BD**: Bjøntegaard-delta – a method for measuring percentage bit rate savings at equal PSNR or decibels of PSNR benefit at equal bit rate (e.g., as described in document VCEG-M33 of April 2001).
* **BDOF**: Bi-directional optical flow (formerly known as **BIO**).
* **BDPCM**: Block-wise DPCM.
* **BL**: Base layer.
* **BMS**: Benchmark set (no longer used), a former preliminary compilation of coding tools on top of VTM, which provide somewhat better compression performance, but are not deemed mature for standardzation.
* **BoG**: Break-out group.
* **BR**: Bit rate.
* **BV**: Block vector (used for intra BC prediction).
* **CABAC**: Context-adaptive binary arithmetic coding.
* **CBF**: Coded block flag(s).
* **CC**: May refer to context-coded, common (test) conditions, or cross-component.
* **CCLM**: Cross-component linear model.
* **CCP**: Cross-component prediction.
* **CE**: Core Experiment – a coordinated experiment conducted toward assessment of coding technology.
* **CG**: Coefficient group.
* **CGS**: Colour gamut scalability (historically, coarse-grained scalability).
* **CIIP**: Combined inter/intra prediction.
* **CL-RAS**: Cross-layer random-access skip.
* **CPMV**: Control-point motion vector.
* **CPMVP**: Control-point motion vector prediction (used in affine motion model).
* **CPR**: Current-picture referencing, also known as IBC – a technique by which sample values are predicted from other samples in the same picture by means of a displacement vector called a block vector, in a manner conceptually similar to motion-compensated prediction.
* **CST**: Chroma separate tree.
* **CTC**: Common test conditions.
* **CVS**: Coded video sequence.
* **DCT**: Discrete cosine transform (sometimes used loosely to refer to other transforms with conceptually similar characteristics).
* **DCTIF**: DCT-derived interpolation filter.
* **DF**: Deblocking filter.
* **DMVR**: Decoder-side motion vector refinement.
* **DRC**: Dynamic resolution conversion (synonymous with ARC, and a form of RPR).
* **DT**: Decoding time.
* **ECS**: Entropy coding synchronization (typically synonymous with WPP).
* **EMT**: Explicit multiple-core transform.
* **EOTF**: Electro-optical transfer function – a function that converts a representation value to a quantity of output light (e.g., light emitted by a display.
* **EPB**: Emulation prevention byte (as in the emulation\_prevention\_byte syntax element).
* **ECV**: Extended Colour Volume (up to WCG).
* **EL**: Enhancement layer.
* **ET**: Encoding time.
* **FRUC**: Frame rate up conversion (pattern matched motion vector derivation).
* **GRA**: Gradual random access
* **HDR**: High dynamic range.
* **HEVC**: High Efficiency Video Coding – the video coding standard developed and extended by the JCT-VC, formalized by ITU-T as Rec. ITU-T H.265 and by ISO/IEC as ISO/IEC 23008-2.
* **HLS**: High-level syntax.
* **HM**: HEVC Test Model – a video coding design containing selected coding tools that constitutes our draft standard design – now also used especially in reference to the (non-normative) encoder algorithms (see WD and TM).
* **HMVP**: History based motion vector prediction.
* **HRD**: Hypothetical reference decoder.
* **HyGT**: Hyper-cube Givens transform (a type of NSST).
* **IBC** (also **Intra BC**): Intra block copy, also known as CPR – a technique by which sample values are predicted from other samples in the same picture by means of a displacement vector called a block vector, in a manner conceptually similar to motion-compensated prediction.
* **IBDI**: Internal bit-depth increase – a technique by which lower bit-depth (8 bits per sample) source video is encoded using higher bit-depth signal processing, ordinarily including higher bit-depth reference picture storage (ordinarily 12 bits per sample).
* **IBF**: Intra boundary filtering.
* **ILP**: Inter-layer prediction (in scalable coding).
* **IPCM**: Intra pulse-code modulation (similar in spirit to IPCM in AVC and HEVC).
* **ISP**: Intra subblock partitioning
* **JCCR**: Joint coding of chroma residuals
* **JEM**: Joint exploration model – the software codebase for future video coding exploration.
* **JM**: Joint model – the primary software codebase that has been developed for the AVC standard.
* **JSVM**: Joint scalable video model – another software codebase that has been developed for the AVC standard, which includes support for scalable video coding extensions.
* **KLT**: Karhunen-Loève transform.
* **LB** or **LDB**: Low-delay B – the variant of the LD conditions that uses B pictures.
* **LD**: Low delay – one of two sets of coding conditions designed to enable interactive real-time communication, with less emphasis on ease of random access (contrast with RA). Typically refers to LB, although also applies to LP.
* **LFNST**: Low-frequency non-separable transform
* **LIC**: Local illumination compensation.
* **LM**: Linear model.
* **LMCS**: Luma mapping with chroma scaling (formerly sometimes called “in-loop reshaping”)
* **LP** or **LDP**: Low-delay P – the variant of the LD conditions that uses P frames.
* **LUT**: Look-up table.
* **LTRP**: Long-term reference pictures.
* **MC**: Motion compensation.
* **MCP**: Motion compensated prediction.
* **MDNSST**: Mode dependent non-separable secondary transform.
* **MIP**: Matrix-based intra prediction
* **MMLM**: Multi-model (cross component) linear mode.
* **MMVD**: Merge with MVD.
* **MPEG**: Moving picture experts group (WG 11, the parent body working group in ISO/IEC JTC 1/‌SC 29, one of the two parent bodies of the JVET).
* **MPM**: Most probable mode (in intra prediction).
* **MRL**: Multiple reference line intra prediction.
* **MV**: Motion vector.
* **MVD**: Motion vector difference.
* **NAL**: Network abstraction layer (as in AVC and HEVC).
* **NSQT**: Non-square quadtree.
* **NSST**: Non-separable secondary transform.
* **NUH**: NAL unit header.
* **NUT**: NAL unit type (as in AVC and HEVC).
* **OBMC**: Overlapped block motion compensation (e.g., as in H.263 Annex F).
* **OETF**: Opto-electronic transfer function – a function that converts to input light (e.g., light input to a camera) to a representation value.
* **OOTF**: Optical-to-optical transfer function – a function that converts input light (e.g. l,ight input to a camera) to output light (e.g., light emitted by a display).
* **PDPC**: Position dependent (intra) prediction combination.
* **PMMVD**: Pattern-matched motion vector derivation.
* **POC**: Picture order count.
* **PoR**: Plan of record.
* **PROF**: Prediction refinement with optical flow
* **PPS**: Picture parameter set (as in AVC and HEVC).
* **QM**: Quantization matrix (as in AVC and HEVC).
* **QP**: Quantization parameter (as in AVC and HEVC, sometimes confused with quantization step size).
* **QT**: Quadtree.
* **BT**: Binary tree.
* **TT**: Ternary tree.
* **RA**: Random access – a set of coding conditions designed to enable relatively-frequent random access points in the coded video data, with less emphasis on minimization of delay (contrast with LD).
* **RADL**: Random-access decodable leading.
* **RASL**: Random-access skipped leading.
* **R-D**: Rate-distortion.
* **RDO**: Rate-distortion optimization.
* **RDOQ**: Rate-distortion optimized quantization.
* **RDPCM**: Residual DPCM
* **ROT**: Rotation operation for low-frequency transform coefficients.
* **RPLM**: Reference picture list modification.
* **RPR**: Reference picture resampling (e.g., as in H.263 Annex P), a special case of which is also known as ARC or DRC.
* **RPS**: Reference picture set.
* **RQT**: Residual quadtree.
* **RRU**: Reduced-resolution update (e.g. as in H.263 Annex Q).
* **RVM**: Rate variation measure.
* **SAO**: Sample-adaptive offset.
* **SBT**: Subblock transform.
* **SbTMVP**: Subblock based temporal motion vector prediction.
* **SD**: Slice data; alternatively, standard-definition.
* **SDT**: Signal-dependent transform.
* **SEI**: Supplemental enhancement information (as in AVC and HEVC).
* **SH**: Slice header.
* **SHM**: Scalable HM.
* **SHVC**: Scalable high efficiency video coding.
* **SIMD**: Single instruction, multiple data.
* **SMVD**: Symmetric MVD.
* **SPS**: Sequence parameter set (as in AVC and HEVC).
* **STMVP**: Spatial-temporal motion vector prediction.
* **TBA/TBD/TBP**: To be announced/determined/presented.
* **TGM**: Text and graphics with motion – a category of content that primarily contains rendered text and graphics with motion, mixed with a relatively small amount of camera-captured content.
* **TPM**: Triangular partitioning mode
* **UCBDS**: Unrestricted center-biased diamond search.
* **UWP**: Unequal weight prediction.
* **VCEG**: Visual coding experts group (ITU-T Q.6/16, the relevant rapporteur group in ITU-T WP3/16, which is one of the two parent bodies of the JVET).
* **VPS**: Video parameter set – a parameter set that describes the overall characteristics of a coded video sequence – conceptually sitting above the SPS in the syntax hierarchy.
* **VTM**: VVC Test Model.
* **VVC**: Versatile Video Coding, the standardization project developed by JVET.
* **WAIP**: Wide-angle intra prediction
* **WCG**: Wide colour gamut.
* **WG**: Working group, a group of technical experts (usually used to refer to WG 11, a.k.a. MPEG).
* **WPP**: Wavefront parallel processing (usually synonymous with ECS).
* Block and unit names in HEVC:
  + **CTB**: Coding tree block (luma or chroma) – unless the format is monochrome, there are three CTBs per CTU.
  + **CTU**: Coding tree unit (containing both luma and chroma, synonymous with LCU), with a size of 16x16, 32x32, or 64x64 for the luma component.
  + **CB**: Coding block (luma or chroma), a luma or chroma block in a CU.
  + **CU**: Coding unit (containing both luma and chroma), the level at which the prediction mode, such as intra versus inter, is determined in HEVC, with a size of 2Nx2N for 2N equal to 8, 16, 32, or 64 for luma.
  + **PB**: Prediction block (luma or chroma), a luma or chroma block of a PU, the level at which the prediction information is conveyed or the level at which the prediction process is performed in HEVC.
  + **PU**: Prediction unit (containing both luma and chroma), the level of the prediction control syntax within a CU, with eight shape possibilities in HEVC:
    - **2Nx2N**: Having the full width and height of the CU.
    - **2NxN (or Nx2N)**: Having two areas that each have the full width and half the height of the CU (or having two areas that each have half the width and the full height of the CU).
    - **NxN**: Having four areas that each have half the width and half the height of the CU, with N equal to 4, 8, 16, or 32 for intra-predicted luma and N equal to 8, 16, or 32 for inter-predicted luma – a case only used when 2N×2N is the minimum CU size.
    - **N/2x2N** paired with **3N/2x2N** or **2NxN/2** paired with **2Nx3N/2**: Having two areas that are different in size – cases referred to as AMP, with 2N equal to 16 or 32 for the luma component.
  + **TB**: Transform block (luma or chroma), a luma or chroma block of a TU, with a size of 4x4, 8x8, 16x16, or 32x32.
  + **TU**: Transform unit (containing both luma and chroma), the level of the residual transform (or transform skip or palette coding) segmentation within a CU (which, when using inter prediction in HEVC, may sometimes span across multiple PU regions).
* Block and unit names in VVC:
  + **CTB**: Coding tree block (luma or chroma) – there are three CTBs per CTU in a P or B slice or in an I slice that uses a single tree, and one CTB per luma CTU and two CTBs per chroma CTU in an I slice that uses separate trees.
  + **CTU**: Coding tree unit (synonymous with LCU, containing both luma and chroma in a P or B slice or in an I slice that uses a single tree, containing only luma or only chroma in an I slice that uses separate trees), with a size of 16x16, 32x32, 64x64, or 128x128 for the luma component.
  + **CB**: Coding block, a luma or chroma block in a CU.
  + **CU**: Coding unit (containing both luma and chroma in P/B slice, containing only luma or chroma in I slice), a leaf node of a QTBT. It’s the level at which the prediction process and residual transform are performed in JEM. A CU can be square or rectangle shape.
  + **PB**: Prediction block, a luma or chroma block of a PU.
  + **PU**: Prediction unit, has the same size as a CU in the VVC context.
  + **TB**: Transform block, a luma or chroma block of a TU.
  + **TU**: Transform unit, has the same size as a CU in the VVC context.

## Opening remarks (to be updated)

Remarks during the opening session of the meeting 0900 Wednesday 3 July (initially chaired by GJS and later joined by JRO) were as follows.

* The meeting logistics, agenda, working practices, policies, and document allocation were reviewed.
  + The meeting host is the Swedish Institute for Standards
  + Sponsors: Ericsson, SiS, Dolby, Divideon
  + 1030-1130, 1530-1630
  + 1830 Wed Kajskjul 8, Packhusplatsen 11 (14 min by foot)
  + There is a goal of potential CD ballot at this meeting in the ISO/IEC approval process.
  + In addition to problems of late submission of documents, it was remarked that text is missing for a number of documents. Having text available is crucial (and not just arriving at the end of the meeting).
  + There were no objections voiced in the opening plenary to the consideration of late contributions.
* The results of the previous meeting were reviewed.
* On placeholders – there were a number of cases where there was some description of a concept but no test results (see section 2.4.2).
* The primary goals of the meeting were to review the results of CEs, identify promising technology directions, and adopt proposed technology into the VVC draft text and VTM.
* Due to the high number of input contributions, parallelization and breakout work were planned to be used at the meeting.
* Planning of viewing & equipment setup
* Principles of standards development were discussed.
* Standardization timelines [CD July, DIS October (possibly January), Consent & FDIS July; or CD October, DIS Jan, Consent & FDIS July]

## Scheduling of discussions

Scheduling: Generally meeting time was scheduled during 0900–2100+ hours, with coffee and lunch breaks as convenient. Ongoing scheduling refinements were announced on the group email reflector as needed. Some particular scheduling notes are shown below, although not necessarily 100% accurate or complete:

* Tue. 1 Oct., 1st day
  + 1400–XXXX High level syntax (chaired by GJS)
  + …

## Contribution topic overview

The approximate subject categories and quantity of contributions per category for the meeting were summarized as follows (note that the noted document counts do not include crosschecks, and may not be completely accurate):

* AHG reports (18) (section 3) (Plenary)
* Project development (X) (section 4) (Plenary)
  + Text and software development (1)
  + Test conditions (1)
  + Performance assessment (3)
  + Coding studies on specific use cases (0)
  + Test Material (0)
  + Conformance (5)
  + Implementation (2)
* Core Experiments (xx) (section 5) with subtopics
  + CE1: Reference picture resampling filters (4) (section 5.1) (Track B)
  + CE2: Gradual decoding refresh (3) (section 5.2) (Track B)
  + CE3: Intra prediction and mode coding (4) (section 5.3) (Track A)
  + CE4: Inter prediction (8) (section 5.4) (Track B)
  + CE5: Loop filtering (8) (section 5.5) (Track A)
  + CE6: Transforms and transform signalling (6) (section 5.6) (Track A)
  + CE7: Quantization and coefficient coding (9) (section 5.7) (Track A)
  + CE8: Screen content coding tools (6) (section 5.8) (Track A)
* Non-CE technology proposals (xx) (section 6) with subtopics
  + CE1 related – Reference picture resampling filters (9) (section 6.1) (Track B)
  + CE2 related – Gradual decoding refresh (0) (section 6.2) (Track B)
  + CE3 related – Intra prediction and mode coding (48) (section 6.3) (Track A)
  + CE4 related – Inter prediction (100) (section 6.4) (Track B)
  + CE5 related – Loop filtering (70) (section 6.5) (Track A)
  + CE6 related – Transforms and transform signalling (38) (section 6.6) (Track A)
  + CE7 related – Quantization and coefficient coding (26) (section 6.7) (Track A)
  + CE8 related – Screen content coding tools (35) (section 6.8) (Track A)
  + Quantization control (20) (section 6.9) (Track A)
  + Entropy coding 4) (section 6.10) (Track A)
  + Partitioning (14) (section 6.11) (Track B)
  + Chroma sampling and chroma formats (1) (section 6.12) (Track B)
  + Lossless and near lossless coding (24) (section 6.13) (Track A)
  + Miscellaneous coding tools (6) (section 6.14) (Track B)
  + Neural networks (1) (section 6.15) (Track A)
  + 360 degree video (2) (section 6.16) (Track B)
  + High level tool control (5) (section 6.17) (Track B)
  + AHG17: General high-level syntax (47) (section 6.18) (Track B)
  + AHG12: High-level parallelism and coded picture regions (46) (section 6.19) (Track B)
  + AHG8: Layered coding and resolution adaptation (36) (section 6.20) (Track B)
* Complexity analysis and reduction (2) (section 7) (Track X)
* Encoder optimization (1) (section 8) (Track X)
* Metrics and evaluation criteria (1) (section 9) (Track X)
* Withdrawn (13) (section 10) (Track none)
* Joint meetings, plenary discussions, BoG reports, Summary of actions (section 11)
* Project planning (section 12)
* Establishment of AHGs (section 13)
* Output documents (section 14)
* Future meeting plans and concluding remarks (section 15)

The document counts above do not include cross-checks and CE summary reports.

Track A (294) was generally chaired by JRO, and Track B (281) by GJS.

# AHG reports (18)

These reports were discussed Thursday 3 Oct. 0900–XXXX (chaired by GJS and JRO), except otherwise noted.

JVET-P0001 JVET AHG report: Project Management (AHG1) [J.-R. Ohm, G. J. Sullivan]

JVET-P0002 JVET AHG report: Draft text and test model algorithm description editing (AHG2) [B. Bross, J. Chen, J. Boyce, JVET-P0003 JVET AHG report: S. Kim, S. Liu, Y.-K. Wang, Y. Ye]

JVET-P0003 JVET AHG report: Test model software development (AHG3) [F. Bossen, X. Li, K. Sühring]

JVET-P0004 JVET AHG report: Test material and visual assessment (AHG4) [T. Suzuki, M. Wien, V. Baroncini, R. Chernyak, A. Norkin, J. Ye]

JVET-P0005 JVET AHG report: Memory bandwidth consumption of coding tools (AHG5) [R. Hashimoto, T. Ikai, X. Li, D. Luo, H. Yang, M. Zhou]

JVET-P0006 JVET AHG report: 360° video coding tools, software and test conditions (AHG6) J. Boyce, Y. He, K. Choi, J.-L. Lin, Y. Ye]

JVET-P0007 JVET AHG report: Coding of HDR/WCG material (AHG7) [A. Segall, E. François, W. Husak, S. Iwamura, D. Rusanovskyy]

JVET-P0008 JVET AHG report: Layered coding and resolution adaptivity (AHG8) [S. Wenger, A. Segall, M. M. Hannuksela, Hendry, S. McCarthy, Y.-C. Sun, P. Topiwala, M. Zhou]

JVET-P0009 JVET AHG report: Neural networks in video coding (AHG9) [S. Liu, Y. M. Li, B. Choi, K. Kawamura, Y. Li, L. Wang, P. Wu, H. Yang]

JVET-P0010 JVET AHG report: Encoding algorithm optimization (AHG10) [A. Duenas, A. Tourapis, S. Ikonin, A. Norkin, R. Sjöberg, J. Le Tanou, J.-M. Thiesse]

JVET-P0011 JVET AHG report: Screen content coding (AHG11) [S. Liu, J. Boyce, A. Filippov, Y.-C. Sun, J. Xu, H. Yang]

JVET-P0012 JVET AHG report: High-level parallelism and coded picture regions (AHG12) [S. Deshpande, M. M. Hannuksela, R. Sjöberg, R. Skupin, W. Wan, Y.-K. Wang S. Wenger]

JVET-P0013 JVET AHG report: Tool reporting procedure (AHG13) [W.-J. Chien, J. Boyce, W. Chen, Y.-W. Chen, R. Chernyak, K. Choi, R. Hashimoto, Y.-W. Huang, H. Jang, R.-L. Liao, S. Liu]

JVET-P0014 JVET AHG report: Operation modes for low latency support (AHG14) [J.-M. Thiesse, S. Deshpande, A. Duenas, Hendry, K. Kazui, R. Sjöberg, A. Tourapis]

JVET-P0015 JVET AHG report: Quantization control (AHG15) [R. Chernyak, E. François, C. Helmrich, S. McCarthy, A. Segall]

JVET-P0016 JVET AHG report: Implementation studies (AHG16) [M. Zhou, J. An, E. Chai, K. Choi, S. Sethuraman, T. Hsieh, X. Xiu]

JVET-P0017 JVET AHG report: High-level syntax (AHG17) R. Sjöberg, J. Boyce, S. Deshpande, M. M. Hannuksela, R. Skupin, A. Tourapis, Y.-K. Wang, W. Wan, S. Wenger]

JVET-P0018 JVET AHG report: Lossless and near-lossless coding tools (AHG18) [T. Nguyen, T.-C. Ma, M. Ikeda, S. Iwamura, H. Jang, X. Zhao]

# Project development (X)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX (chaired by XXX)

## Text and software development (1)

[JVET-P0113](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7902) AHG2: Editorial input on VVC draft text [Y.-K. Wang (Futurewei), B. Bross (HHI), J. Chen (Futurewei), G. J. Sullivan (Microsoft)] [late]

## Test conditions (1)

[JVET-P0345](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8134) Low-Delay B encoder configuration proposal [F. Le Léannec, R. Jullian, E. François (InterDigital)]

## Performance assessment (3)

[JVET-P0328](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8117) AHG10: Performance of the GOP-based temporal filter in VTM-6.1 [J. Enhorn, R. Sjöberg, J. Ström, P. Wennersten (Ericsson)]

[JVET-P0616](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8410) AHG13: Compression performance analysis for 8K HLG sequences [S. Nemoto, S. Iwamura, A. Ichigaya (NHK), K. Kazui (Fujitsu)] [late] [miss]

[JVET-P0622](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8417) AHG13: Low Delay results for Affine, ALF and DBF (Class A included) [M. Sychev (Huawei)] [late]

## Coding studies on specific use cases (0)

## Test material (0)

## Conformance (5)

[JVET-P0099](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7888) Level limits for number of luma samples, tiles, and subpictures [M. M. Hannuksela (Nokia)]

[JVET-P0133](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7922) AHG17: DPB size analysis of VTM6.0 using RA configuration in current CTC [X. Ma, H. Yang (Huawei)]

[JVET-P0295](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8084) Level restrictions on maximum tile width for line buffer reduction [M. Ikeda, Y. Yagasaki, T. Suzuki (Sony)]

[JVET-P0388](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8177) On VVC Conformance [J. Boyce, I. Moccagatta (Intel), L. Litwic (Ericsson), A. Stein (Technicolor), S. McCarthy, W. Husak, B. Lee (Dolby)]

[JVET-P0389](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8178) Proposal of preliminary list of VVC conformance bit streams [I. Moccagatta, J. Boyce (Intel)]

## Implementation (2)

[JVET-P0207](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7996) Mobile based heterogeneous multi-core for a VVC Decoder [W. Liu, Y. B. Cho (??)]

[JVET-P0307](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8096) Early Implementation of VVC software player and Demonstration on Mobile devices [J. R. Arumugam, S. Kotecha, S. Ramamurthy, A. Chelawat, Jayasanker J., A. K. Bedgujar, N. M. Thomas, S. Agrawal, Vijayakumar GR, K. Patankar (Ittiam)]

# Core Experiments

## CE1: Reference picture resampling filters (4)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0021](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8424) CE1: Summary report on reference picture resampling filters [J. Luo, V. Seregin, W. Wan]

[JVET-P0083](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7872) CE1-3: Reference picture resampling filters [J. Luo, M. Sarwer, Y. Ye, (Alibaba)] [late]

[JVET-P0088](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7877) CE1-1: RPR downsampling filter [J. Samuelsson, S. Deshpande, A. Segall (Sharp Labs of America)] [late]

[JVET-P0563](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8353) Crosscheck of JVET-P0088: CE1-1: RPR downsampling filter [W. Wan, M. Zhou, P. Chen (Broadcom)] [late]

[JVET-P0628](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8423) CE1-2: RPR Resampling Filters [P. Topiwala, M Krishnan, W. Dai (FastVDO)] [late]

## CE2: Gradual decoding refresh (3)

Contributions in this category were discussed XXday X July XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0022](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8403) CE2: Summary Report on Gradual Decoding Refresh [K. Kazui, J.-M. Thiesse, Hendry, L. Wang, K. Kawamura]

[JVET-P0112](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7901) CE2-3: Wavefront-Based GRA [L. Wang, S. Hong, K. Panusopone (Nokia)] [late]

[JVET-P0193](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7982) CE2: Gradual Random Access (GRA) using encoder and normative restrictions (Tests 2.1.a, 2.1.b and 2.1.c) [D. Gommelet, J.-M. Thiesse, D. Nicholson (VITEC)] [late]

## CE3: Intra prediction and mode coding (4)

Contributions in this category were discussed XXday X July XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0023](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8369) CE3: Summary Report on Intra Prediction and Mode Coding [G. Van der Auwera, L. Li, A. Filippov]

[JVET-P0054](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7843) CE3-3: Up-sampling with a fixed order in MIP [H. Liu, L. Zhang, K. Zhang, Z. Deng, J. Xu, Y. Wang (Bytedance)]

[JVET-P0056](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7845) CE3-2: On rounding shift of MIP [K. Kondo (Sony), J.-Y. Huo (Xidian Univ.)]

[JVET-P0064](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7853) CE3-1: MIP downsampling process – align positions of reduced boundary samples with positions of reduced prediction samples [Z. Zhang, K. Andersson, D. Saffar, R. Sjöberg, J. Ström, R Yu (Ericsson)]

## CE4: Inter prediction (8)

Contributions in this category were discussed XXday X July XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0024](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8416) CE4: Summary report on inter prediction [C.-C. Chen, H. Yang, X. Xiu]

[JVET-P0057](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7846) CE4: Harmonization of BDOF and PROF (Test 4-2.1 and 4-2.2) [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai), H. Huang, W.-J. Chien, V. Seregin, M. Karczewicz (Qualcomm), C.-Y. Lai, T.-D. Chuang, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek), Y. He, W. Chen (InterDigital)

[JVET-P0068](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7857) CE4: CE4-1.1, CE4-1.2 and CE4-1.14: Geometric Merge Mode (GEO) [H. Gao, S. Esenlik, E. Alshina, A. M. Kotra, B. Wang (Huawei), M. Bläser, J. Sauer (RWTH Aachen Univ.)]

[JVET-P0069](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7858) CE4: CE4-1.7, CE4-1.8: GEO and TPM Blending Off for SCC [H. Gao, S. Esenlik, E. Alshina, A. M. Kotra, B. Wang (Huawei), M. Bläser, J. Sauer (RWTH Aachen Univ.)]

[JVET-P0070](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7859) CE4-1.10: CIIP with triangular partitions + GEO [S. Blasi, A. Seixas Dias, G. Kulupana (BBC), H. Gao, S. Esenlik, E. Alshina, A. M. Kotra, B. Wang (Huawei)]

[JVET-P0071](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7860) CE4-1.9: CIIP with triangular partitions [S. Blasi, A. Seixas Dias, G. Kulupana (BBC)]

[JVET-P0074](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7863) CE4: Geometric merge mode (GEO) with partial transform (tests CE4-1.5 and CE4-1.6) [A. Filippov, V. Rufitskiy (Huawei)]

[JVET-P0075](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7864) CE4: CIIP with triangular partitions and partial transform (tests CE4-1.12 and CE4-1.13) [A. Filippov, V. Rufitskiy (Huawei), S. Blasi, A. Seixas Dias, G. Kulupana (BBC)]

## CE5: Loop filtering (8)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0025](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8425) CE5: Summary Report on Loop filtering [C.-Y. Chen, A. Norkin]

[JVET-P0045](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7834) CE5-3.3: Signalling EO signs in SAO [C.-Y. Lai, C.-Y. Chen, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0639](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8436) CE5: Crosscheck of JVET-P0045 (CE5-3.3: Signalling EO signs in SAO) [E. Alshina, A.M. Kotra (Huawei)] [late]

[JVET-P0061](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7850) CE5-1.2: Consistent chroma deblocking [J. Xu, J. Wang, W. Zhu, L. Zhang, K. Zhang, H. Liu, Z. Deng (Bytedance)]

[JVET-P0062](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7851) CE5-1.1.1: DMVR deblocking, CE5-1.1.2: DMVR restricted deblocking and CE5-1.1.3: DMVR off [K. Andersson, J. Enhorn (Ericsson)]

[JVET-P0073](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7862) CE5-3.1: Combination of bilateral filter and SAO [J. Ström, P. Wennersten, J. Enhorn, D. Liu, K. Andersson, L. Litwic, D. Saffar, C. Hollmann, R. Yu, R. Sjöberg (Ericsson)]

[JVET-P0078](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7867) CE5-3: Combination of Hadamard filter and SAO (CE5-3.2, CE5-3.4) [S. Ikonin, V. Stepin, A. Karabutov, S. Nikolaeva (Huawei)]

[JVET-P0080](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7869) CE5-2.1, CE5-2.2: Cross Component Adaptive Loop Filter [K. Misra, F. Bossen, A. Segall (Sharp Labs of America)]

[JVET-P0081](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7870) CE5-1.3: Unified design for longer tap deblocking line buffer reduction [A. M. Kotra, S. Esenlik, B. Wang, H. Gao, E. Alshina (Huawei)]

## CE6: Transforms and transform signalling (6)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0026](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8376) CE6: Summary Report on Transforms and Transform Signalling [X. Zhao, H. E. Egilmez, M. Salehifar]

[JVET-P0041](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7830) CE6-1: LFNST with one mode [M.-S. Chiang, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek), J. Lainema (Nokia)]

JVET-P0044 CE6-2.1: LFNST with 3 transform sets [Y. Zhao, H. Yang (Huawei)]

[JVET-P0051](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7840) CE6-2.2a/c: LFNST with unified kernels [X. Zhao, X. Li, S. Liu (Tencent)]

[JVET-P0052](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7841) CE6-2.2d: Combination of CE6-2.2a and CE6-2.3 [X. Zhao, X. Li, S. Liu (Tencent), T. Zhou, T. Hashimoto, T. Ikai (Sharp)]

[JVET-P0065](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7854) CE6-2.3a: Simplification with new LFNST transform basis [T. Zhou, T. Hashimoto, T. Ikai (Sharp)] [late]

[JVET-P0594](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8386) Crosscheck of CE6-2.2a and CE6-2.2d: An Orthogonality Analysis [H. E. Egilmez]

[JVET-P0647](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8445) Crosscheck of CE6 Proposals, Under non-CTC Configuration [M. Koo (LGE)]

## CE7: Quantization and coefficient coding (9)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0027](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8396) CE7: Summary report on quantization and coefficient coding [H. Schwarz, M. Coban, C. Auyeung]

[JVET-P0046](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7835) CE7-1.1 and CE7-2.1: Improving transform skip residual coding [S.-T. Hsiang, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)

[JVET-P0047](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7836) CE7-3.1: Context reduction for sig\_coeff\_flag [S.-T. Hsiang, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0049](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7838) CE7-4.1: Coding of chroma cbf flags [S. Esenlik, B. Wang, A. M. Kotra, H. Gao, E. Alshina (Huawei)]

[JVET-P0066](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7855) CE7-3.2: Context reduction by reduced usage of local neighbourhood [Y. Chen, F. Le Léannec, T. Poirier, F. Galpin (InterDigital)]

[JVET-P0067](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7856) CE7-3.3: Context reduction for sig\_coeff\_flag, par\_level\_flag, abs\_level\_gtx\_flag [Y. Chen, F. Le Léannec, T. Poirier, F. Galpin (Intedigital), S.-T. Hsiang, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0072](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7861) CE7-1.3: Simplification of transform-skip residual coding [M. G. Sarwer, R. -L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0076](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7865) CE7-2.2: QP dependent binarization in TS residual coding [M. Karczewicz, H. Wang, Y.-H. Chao, M. Coban (Qualcomm)]

[JVET-P0079](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7868) CE7: Modifications to transform-skip residual coding (CE7-1.2) [M. Karczewicz, H. Wang, Y.-H. Chao, M. Coban (Qualcomm)]

## CE8: Screen content coding tools (6)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0028](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8287) CE8: Summary Report on 4:4:4 Screen Content Coding Tools [X. Xu, Y.-C. Chao, Y.-C. Sun, J. Xu]

[JVET-P0055](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7844) CE8-1.2: Compound Palette Mode [W. Zhu, J. Xu, L. Zhang, K. Zhang, H. Liu, Y. Wang (Bytedance)]

[JVET-P0058](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7847) CE8-2.1: Transform Skip for Chroma with limiting maximum number of context-coded bin in TS residual coding [T. Tsukuba, M. Ikeda, Y. Yagasaki, T. Suzuki (Sony)]

[JVET-P0059](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7848) CE8-4.1: BDPCM and Transform skip for Chroma [G. Clare (bcom), F. Henry (Orange), T. Tsukuba, M. Ikeda, Y. Yagasaki, T. Suzuki (Sony)]

[JVET-P0060](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7849) CE8-1.1: Palette mode with neighboring pixel copy [Y.-C. Sun, T.-S. Chang, J. Lou (Alibaba)]

[JVET-P0077](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7866) CE8-1.3: Line-based CG Palette Mode [Y.-H. Chao, C.-H. Hung, W.-J. Chien, T. Hsieh, M. Karczewicz (Qualcomm)]

# Non-CE Technology proposals

## CE1 related – Reference picture resampling filters (9)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0119](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7908) AHG8: On reference picture resampling (RPR) [J. Chen (Futurewei) ]

[JVET-P0274](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8063) Non-CE1: Enabling TMVP in RPR [T.-S. Chang, Y.-C. Sun, L. Zhu, J. Lou (Alibaba)]

[JVET-P0723](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8524) Crosscheck of JVET-P0274 (Non-CE1: Enabling TMVP in RPR) [Y.-W. Chen (Kwai Inc.)]

[JVET-P0353](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8142) CE1-related: Reference picture resampling filters [J. Luo, Y. Ye, M. Sarwer (Alibaba)]

[JVET-P0381](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8170) Non-CE1: A fix on reference sample offset for RPR [K. Zhang, L. Zhang, H. Liu, Z. Deng, J. Xu, Y. Wang (Bytedance)]

[JVET-P0382](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8171) Non-CE1: Simplified motion compensation in RPR [K. Zhang, L. Zhang, H. Liu, Z. Deng, J. Xu, N. Zhang (Bytedance)]

[JVET-P0661](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8459) Crosscheck of JVET-P0382 (Non-CE1: Simplified motion compensation in RPR) [J. Chen (Alibaba)]

[JVET-P0390](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8179) CE1-related: Anti-aliasing motion compensation interpolation downsampling filters for reference picture resampling [A. Alshin, J. Boyce, P. Frolov, V. Aristarkhov (Intel)] [late]

[JVET-P0409](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8198) CE1-related: Enable PROF for RPR [J. Chen, R.-L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0655](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8453) Crosscheck of JVET-P0409 (CE1-related: Enable PROF for RPR) [K. Zhang (Bytedance)]

[JVET-P0592](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8384) AHG8/Non-CE1: Phase shifts for resampling [V. Seregin, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0593](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8385) AHG8/CE1-related: Signalling filter coefficients for resampling [V. Seregin, M. Coban, M. Karczewicz (Qualcomm)]

## CE2 related – Gradual decoding refresh (0)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

## CE3 related – Intra prediction and mode coding (48)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0111](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7900) CE3-related: Chroma intra prediction mode mapping for 4:2:2 format [B. Wang, S. Esenlik, A. M. Kotra, H. Gao, E. Alshina (Huawei)]

[JVET-P0136](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7925) Non-CE3: MIP simplification [J.-Y. Huo, H.-X. Wang, Y. Sun, Y.-Z. Ma, F.-Z. Yang (Xidian Univ.), S. Wan (NPU), Y.-F. Yu, Y. Liu (OPPO)]

[JVET-P0150](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7939) CE3-related: Simplification of reference luma intra prediction mode derivation [Z.-Y. Lin, T.-D. Chuang, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0177](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7966) Non-CE3: On Constraint of CCLM and CST [C.-W. Kuo, J. Li, C.S. Lim (Panasonic)]

[JVET-P0649](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8447) Crosscheck of JVET-P0177 (Non-CE3: On Constraint of CCLM and CST) [T.-S. Chang (Alibaba)]

[JVET-P0194](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7983) CE3-related: Simplified MIP with reduced memory footprint [T. Biatek, A.K. Ramasubramonian, G. Van Der Auwera, M. Karczewicz (Qualcomm)]

[JVET-P0198](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7987) Non-CE3: Enable MIP prediction for 64×N or N×64 blocks at maximum transform size 32 [Z. Zhang, K. Andersson, D. Saffar, R. Sjöberg, J. Ström, R. Yu (Ericsson)]

[JVET-P0199](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7988) Non-CE3: Align MIP matrix multiplication process [Z. Zhang, K. Andersson, D. Saffar, R. Sjöberg, J. Ström, R. Yu (Ericsson)]

[JVET-P0208](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7997) Non CE3: Intra mode coding of non-MPM modes [S. Blasi, A. Seixas Dias, G. Kulupana (BBC)]

[JVET-P0265](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8054) CE3-related: CCLM with unified filter shape [D.-Y. Kim (Chips&Media), S.-C. Lim, J. Lee, J. Kang, H. Lee (ETRI)]

[JVET-P0277](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8066) Non-CE3: LFNST restriction based on MIP [A. Kumar, S. Shrestha, B. Lee (Chosun Univ.), Y. Lee, J. Park (Humax)]

[JVET-P0289](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8078) Non-CE3: MIP simplification [Y. Yasugi, T. Ikai (Sharp)]

[JVET-P0294](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8083) Non-CE3: Simplification of MPM derivation [D. Gwon, H. Han, H. Choi (HNU), H. Lee, J. Kang (ETRI)]

[JVET-P0302](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8091) Non-CE3: PDPC without clipping [A. Filippov, V. Rufitskiy (Huawei)]

[JVET-P0303](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8092) Non-CE3: Removal of leaving out operation for 4×16 and 16×4 MIP blocks [X. Li, R.-L. Liao, Y. Chen, J. Chen, J. Luo, Y. Ye (Alibaba)]

[JVET-P0318](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8107) Non-CE3: Context reduction for intra\_luma\_not\_planar\_flag [D. Park, Y.-U. Yoon, J. Do, J.-G. Kim (KAU), J. Lee, J. Kang (ETRI)]

[JVET-P0329](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8118) CE3-related: Simplification of Planar intra prediction [B. Wang, S. Esenlik, A. M. Kotra, H. Gao, E. Alshina (Huawei)]

[JVET-P0352](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8141) Non-CE6 / Non-CE3: MIP UP TO 64x64 CU’s [K. Naser, T. Poirier, F. Le Léannec, F. Galpin (InterDigital)]

[JVET-P0355](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8144) Non CE3: Simplified coding of chroma intra modes [S. Blasi, A. Seixas Dias, G. Kulupana (BBC)]

[JVET-P0633](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8430) Crosscheck of JVET-P0355 (Non CE3: Simplified coding of chroma intra modes) [?? (??)]

[JVET-P0358](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8147) Non-CE3: Improved intra mode coding simplified [G. Rath, F. Galpin, F. Urban (InterDigital)]

[JVET-P0369](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8158) Non-CE3: MPM flag signaling with MRL [G. Rath, F. Galpin, F. Le Léannec (InterDigital)]

[JVET-P0685](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8484) Crosscheck of JVET-P0369 (Non-CE3: MPM flag signaling with MRL) [J. Yao (Fujitsu)]

[JVET-P0374](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8163) Non-CE3: One directional Intra planar mode [H. Yang, Y. He (InterDigital)]

[JVET-P0716](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8517) Crosscheck of JVET-P0374: Non-CE3: One directional Intra planar mode [Y.-H. Chao (Qualcomm)]

[JVET-P0398](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8187) Non-CE3: MIP Cleanup [J. Pfaff, B. Stallenberger, M. Schäfer, P. Merkle, T. Hinz, P. Helle, H. Schwarz, D. Marpe, T. Wiegand]

[JVET-P0401](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8190) CE3-related: MIP downsampling process with re-trained MIP matrix [Z. Zhang, K. Andersson, D. Saffar, R. Sjöberg, J. Ström, R. Yu (Ericsson)]

[JVET-P0406](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8195) Non-CE3: Generalization of SCIPU for different YUV formats [L. Pham Van, G. Van der Auwera, V. Seregin, H. Huang, A. K. Ramasubramonian, M. Karczewicz (Qualcomm)]

[JVET-P0701](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8500) Crosscheck of JVET-P0406 (Non-CE3: Generalization of SCIPU for different YUV formats) [Z. Deng (Bytedance)]

[JVET-P0418](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8207) Non-CE3: Cleanup of MRLP Line Storage [T. Hellman, M. Zhou, B. Heng (Broadcom)]

[JVET-P0484](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8273) Non-CE3: Signalling unification of prediction mode and SCIPU mode [L. Pham Van, G. Van der Auwera, A. K. Ramasubramonian, H. Huang, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0500](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8290) Non-CE3: Multiple reference sample set for CCLM [P.-H. Lin, C.-Y. Teng (Foxconn)]

[JVET-P0718](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8519) Crosscheck of JVET-P0500 (Non-CE3: Multiple reference sample set for CCLM) [H.-J. Jhu (Kwai Inc.)]

[JVET-P0503](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8293) Non-CE3: Simplification of harmonization for LFNST and MIP [S. Shrestha, A. Kumar, B. Lee (Chosun Univ.), Y. Lee, J. Park (Humax)]

[JVET-P0507](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8297) Non-CE3: ISP simplifications [L. Zhao, X. Li, X. Zhao, S. Liu (Tencent)]

[JVET-P0725](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8526) Crosscheck of JVET-P0507 (Non-CE3: ISP simplifications) [Y.-W. Chen (Kwai Inc.)]

[JVET-P0509](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8299) CE3-related: Simplification for MIP matrix multiplication [L. Zhao, X. Zhao, X. Li, S. Liu (Tencent)]

[JVET-P0726](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8527) Crosscheck of JVET-P0509 (CE3-related: Simplification for MIP matrix multiplication) [Y.-W. Chen (Kwai Inc.)]

[JVET-P0510](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8300) Non-CE3/AHG8: On picture size restriction [L. Zhao, X. Zhao, X. Li, S. Liu (Tencent)]

[JVET-P0511](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8301) Non-CE3: ISP extension to avoid small Chroma intra blocks [L. Zhao, X. Li, X. Zhao, S. Liu (Tencent)]

[JVET-P0520](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8310) Non-CE3: Spec fix for the smallest chroma intra prediction unit (SCIPU) [Y.-W. Chen, X. Xiu, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0531](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8321) Non-CE3: Removal of 2×N chroma intra blocks [Z. Deng, L. Zhang, K. Zhang, H. Liu, Y. Wang (Bytedance)]

[JVET-P0535](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8325) Non-CE3: Removal of block size restriction in MIP [J. Choi, J. Heo, J. Lim, S. Kim (LGE)]

[JVET-P0536](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8326) Non-CE3: MRL with non-MPM intra modes [J. Choi, J. Heo, J. Lim, S. Kim (LGE)]

[JVET-P0537](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8327) Non-CE3: Cleanups on local dual tree for non-4:2:0 chroma formats [Z. Deng, J. Xu, L. Zhang, K. Zhang, H. Liu, Y. Wang (Bytedance)]

[JVET-P0548](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8338) Non-CE3: Removal of MRL restriction [J. Heo, H. Jang, J. Choi, J. Lim, S. Kim (LGE)]

[JVET-P0549](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8339) Non-CE3: Interpolation filter selection for chroma intra prediction [J. Heo, J. Choi, H. Jang, J. Lim, S. Kim (LGE)]

[JVET-P0550](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8340) Non-CE3: Cleanup of intra reference sample filter selection [J. Heo, J. Choi, J. Nam, H. Jang, J. Lim, S. Kim (LGE)]

[JVET-P0560](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8350) Non-CE3: Simplification on MIP and MPM context model [H.-J. Jhu, T.-C. Ma, X. Xiu, Y.-W. Chen, X. Wang (Kwai Inc.)]

[JVET-P0694](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8493) Cross-check of JVET-P0560: Non-CE3: Simplification on MIP and MPM context model [H. Sun, J. Li (Panasonic)]

[JVET-P0596](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8388) Non-CE3: Removal of chroma 2xN blocks in CIIP mode [L. Pham Van, G. Van der Auwera, A. K. Ramasubramonian, T Hsieh, V. Seregin, M. Karczewicz (Qualcomm)] [late]

Initial version rejected as “placeholder”

[JVET-P0599](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8391) Non-CE3: Cleanup of interpolation filtering for intra prediction [A. Filippov, V. Rufitskiy (Huawei)]

[JVET-P0615](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8409) Non-CE3: Intra chroma mode coding cleanup [B. Ray, G. Van der Auwera, M. Karczewicz (Qualcomm)]

[JVET-P0625](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8420) Non-CE3: simplified MIP with power-of-two offsets [T. Biatek, A.K. Ramasubramonian, G. Van Der Auwera, M. Karczewicz (Qualcomm)] [late]

[JVET-P0626](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8421) Non-CE3: Cleanup of reference sample padding for intra prediction [A. Filippov, V. Rufitskiy (Huawei)] [late]

[JVET-P0638](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8435) CE3-related: Adaptive coding subset for intra mode [M. Bhat, D. Gommelet, J.-M. Thiesse, D. Nicholson (VITEC)] [late] [miss]

[JVET-P0641](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8438) Non-CE3: Combination of JVET-P0596 and JVET-P0531 on removal of 2xN chroma intra blocks [L. Pham Van, G. Van der Auwera, T. Hsieh, A. K. Ramasubramonian, V. Seregin, M. Karczewicz (Qualcomm), Z. Deng, L. Zhang, K. Zhang, H. Liu, Y. Wang (Bytedance)] [late]

## CE4 related – Inter prediction (100)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0089](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7878) Non-CE4: DMVR control by reference picture type [H. Huang, W.-J. Chien, M. Karczewicz (Qualcomm)]

[JVET-P0090](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7879) Non-CE4: 32 bits coding for abs\_mvd\_minus2 [H. Huang, M. Coban, H. Wang, V. Seregin, W.-J. Chien, M. Karczewicz (Qualcomm)]

[JVET-P0673](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8472) Crosscheck of JVET-P0090 (Non-CE4: 32 bits coding for abs\_mvd\_minus2) [C.-Y. Lai (MediaTek)]

[JVET-P0091](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7880) CE4-related: Simplification of PROF and BDOF [H. Huang, W.-J. Chien, M. Karczewicz (Qualcomm)]

[JVET-P0094](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7883) AHG16: Fix on overflow issue in PROF [H. Chen, [H. Yang (Huawei)](mailto:haitao.yang@huawei.com)]

[JVET-P0107](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7896) CE4-Related: Geometric Merge Mode (GEO) Simplifications [H. Gao, S. Esenlik, E. Alshina, A. M. Kotra, B. Wang (Huawei), M. Bläser, J. Sauer (RWTH Aachen Uni.)]

[JVET-P0677](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8476) Crosscheck of JVET-P0107 (CE4-related: Geometric merge mode simplifications) [Y.-L. Hsiao (MediaTek)]

[JVET-P0137](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7926) Non-CE4: On coding of merge triangle index [J.-Y. Huo, H.-X. Wang, Y.-Z. Ma, F.-Z. Yang (Xidian Univ.), S. Wan (NPU), Y.-F. Yu, Y. Liu (OPPO)]

[JVET-P0151](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7940) CE4-related: Simplification of half-pel switchable interpolation filter [Y.-L. Hsiao, C.-C. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0152](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7941) CE4-related: On maximum number of subblock-based merging candidates [O. Chubach, C.-C. Chen, C.-W. Hsu, C.-Y. Chen, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0153](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7942) CE4-related: Overlapped block optical flow [Y.-L. Hsiao, Y.-C. Lin, C.-C. Chen, C.-W. Hsu, C.-Y. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0154](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7943) CE4-related: PROF prediction sample range reduction [T.-D. Chuang, Z.-Y. Lin, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0155](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7944) CE4-related: An encoder switch for forcing temporal MV to zero in SbTMVP [Y.-L. Hsiao, C.-C. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0172](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7961) AHG16/Non-CE4: Prediction sample value clipping for PROF [J. Li, C. S. Lim (Panasonic)]

[JVET-P0174](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7963) Non-CE4: Modifications of TPM and GEO [J. Li, C. S. Lim (Panasonic)]

[JVET-P0175](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7964) AHG16/Non-CE4: A clean-up to merge list generation by removing shared merge list [J. Li, C. S. Lim (Panasonic)]

[JVET-P0191](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7980) Enabling BDOF and DMVR according to reference picture types [N. Zhang, H. Liu, L. Zhang, K. Zhang, Y. Wang (Bytedance)]

[JVET-P0200](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7989) Non-CE4: Modifications on BDOF intermediate parameter derivation [D. Liu, R.Yu (Ericsson)]

[JVET-P0678](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8477) Crosscheck of JVET-P0200 (Non-CE4: Modifications on BDOF intermediate parameter derivation-Test 1) [F. Chen (Hikvision)]

[JVET-P0201](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7990) Non-CE4: Simplification on BDOF offset calculation [D. Liu, R. Yu (Ericsson)]

[JVET-P0209](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7998) Non-CE4: On the affine AMVR [H. Huang, W.-J. Chien, M. Karczewicz (Qualcomm)]

[JVET-P0698](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8497) Cross-check of JVET-P0209: Non-CE4: On the affine AMVR [H. Sun, J. Li (Panasonic)]

[JVET-P0214](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8003) CE4-related: Simplification of the CIIP chroma Intra Prediction Mode [J. Park, B. Jeon (SKKU)]

[JVET-P0234](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8023) AHG-2/Non-CE4: On clarification of weightedPredFlag [T. Chujoh, T. Ikai (Sharp)]

[JVET-P0236](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8025) Non-CE4: On a simplification for triangle merge mode [T. Chujoh, E. Sasaki, T. Ikai (Sharp)]

[JVET-P0690](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8489) Crosscheck of JVET-P0236 (Non-CE4: On a simplification for triangle merge mode) [P. Bordes (InterDigital)]

[JVET-P0237](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8026) Non-CE4: On conditions for PROF [T. Chujoh, E. Sasaki, T. Ikai (Sharp)]

[JVET-P0238](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8027) Non-CE4: On definition of motion vector range for PROF and BDOF [T. Chujoh, E. Sasaki, T. Ikai (Sharp)]

[JVET-P0248](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8037) CE4-related: Modification of GEO mode [L. Xu, X. Cao, Y. Sun, F. Chen, L. Wang (Hikvision)]

[JVET-P0249](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8038) CE4-related: On simplification for CIIP with triangular partitions [Y. Sun, F. Chen, L. Wang (Hikvision)]

[JVET-P0250](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8039) CE4-related: On simplification for GEO weight derivation [Y. Sun, F. Chen, L. Wang (Hikvision)]

[JVET-P0253](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8042) Non-CE4: Simplify the division process of DMVR [K. Abe, Y. Kato, T. Toma (Panasonic)]

[JVET-P0260](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8049) CE4-related: On inheritance of half-pel interpolation filter in merge mode [S. H. Wang (PKU)]

[JVET-P0695](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8494) Cross-check of JVET-P0260: CE4-related: On inheritance of half-pel interpolation filter in merge mode [H. Sun, J. Li (Panasonic)]

[JVET-P0261](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8050) Non-CE4: On Affine Motion Vector Restriction [X. W. Meng (PKU)]

[JVET-P0263](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8052) Non-CE4: On PROF conditions [X. W. Meng (PKU)]

[JVET-P0679](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8478) Crosscheck of JVET-P0263 (Non-CE4: On PROF conditions) [F. Chen (Hikvision)]

[JVET-P0264](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8053) CE4-related: Simplification of GEO using angles with power-of-two tangents [K. Reuzé, C.-C Chen, H. Huang, W.-J Chien, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0722](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8523) Crosscheck of JVET-P0264 (CE4-related: Simplification of GEO using angles with power-of-two tangents) [H.-J. Jhu (Kwai Inc.)]

[JVET-P0278](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8067) Non-CE4: HMVP buffer update for TPM block [N. Park, J. Nam, H. Jang, J. Lim, S. Kim (LGE)]

[JVET-P0660](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8458) Crosscheck of JVET-P0278 (Non-CE4: HMVP buffer update for TPM block) [N. Zhang (Bytedance)]

[JVET-P0279](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8068) Non-CE4: Interaction between PROF and other tools [N. Park, J. Nam, H. Jang, J. Lim, S. Kim (LGE)]

[JVET-P0280](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8069) Non-CE4: Fix the behavior between BCW and WP [N. Park, J. Nam, H. Jang, J. Lim, S. Kim (LGE)]

[JVET-P0281](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8070) Non-CE4: Corrections on parameter calculation for PROF and BDOF [N. Park, J. Nam, H. Jang, J. Lim, S. Kim (LGE)]

[JVET-P0282](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8071) Non-CE4: Block size alignment between PROF and BDOF [N. Park, J. Nam, H. Jang, J. Lim, S. Kim (LGE)]

[JVET-P0285](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8074) Non-CE4: Intra prediction mode of CIIP selection using left adjacent coded block [D. Jiang, J. Lin, F. Zeng, C. Fang (Dahua)]

[JVET-P0286](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8075) Non-CE4: Intra prediction mode of CIIP selection using left and above adjacent coded block [D. Jiang, J. Lin, F. Zeng, C. Fang (Dahua)]

[JVET-P0287](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8076) Non-CE4: Modified MVD derivation method for bidirectional MMVD using the magnitude of MV [D. Jiang, J. Lin, F. Zeng, C. Fang (Dahua)]

[JVET-P0288](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8077) Non-CE4: Modified MVD derivation method for bidirectional MMVD using the magnitude of MV and POC distance [D. Jiang, J. Lin, F. Zeng, C. Fang (Dahua)]

[JVET-P0304](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8093) CE4-related: Simplification of blending weights and motion field storage in geometric merge mode [R.-L. Liao, J. Chen, Y. Ye, J. Luo (Alibaba)]

[JVET-P0305](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8094) CE4-related: Unification of triangle partition mode and geometric merge mode [R.-L. Liao, J. Chen, Y. Ye, J. Luo (Alibaba)]

[JVET-P0309](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8098) Non-CE4: Improved signaling method for merge modes [F. Chen, L. Wang (Hikvision)]

[JVET-P0310](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8099) Non-CE4: On simplification of PROF and BDOF [F. Chen, L. Wang (Hikvision)

[JVET-P0311](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8100) Non-CE4: On enabling condition of BDOF and DMVR [F. Chen, L. Wang (Hikvision)]

[JVET-P0312](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8101) Non-CE4: On condition of SMVD [F. Chen, L. Wang (Hikvision)]

[JVET-P0314](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8103) Non-CE4: Harmonization of PROF, BDOF and DMVR syntax [X.W. Meng (PKU), X. Zheng (DJI), S.S. Wang, S.W. Ma (PKU)]

[JVET-P0317](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8106) Non-CE4: BCW clean-up for weight signaling [D. Park, Y.-U. Yoon, [J. Do](mailto:jhdo@kau.kr), J.-G. Kim (KAU), J. Lee, J. Kang (ETRI)]

[JVET-P0675](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8474) Crosscheck of JVET-P0317 (Non-CE4: BCW cleanup for weight signalling) [Y.-L. Hsiao (MediaTek)]

[JVET-P0322](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8111) Non-CE4: CIIP size restriction [G. Ko, D. Kim, J. Jung, J. Son, J. Kwak (WILUS)]

[JVET-P0325](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8114) Non-CE4: Construction of spatial merge candidates [Z. Wang, Y. Yan, J. Luo (Alibaba)]

[JVET-P0340](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8129) Non-CE4: Unification of merge interpolation filter (triangle and pairwise-average) [P. Bordes, A. Robert, F. Le Léannec, F. Galpin (InterDigital)]

[JVET-P0658](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8456) Crosscheck of JVET-P0340 (Non-CE4: Unification of merge interpolation filter (triangle and pairwise-average)) [Y. Wang (Bytedance)]

[JVET-P0341](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8130) Non-CE4: Coding of interpolation filter index in non-merge inter mode [P. Bordes, F. Galpin, F. Le Léannec, E. François (InterDigital)]

[JVET-P0384](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8173) Non-CE4: Flexible MMVD candidates [F. Galpin, F. Le Léannec, A. Robert (InterDigital)] [late]

[JVET-P0385](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8174) Non-CE4: MV rounding in sbTMVP [K. Zhang, L. Zhang, H. Liu, Z. Deng, N. Zhang, Y. Wang (Bytedance)]

[JVET-P0387](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8176) Non-CE4: Flexible CIIP mode [F. Galpin, F. Le Léannec, A. Robert, K. Naser (InterDigital)] [late]

[JVET-P0408](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8197) CE4-related: On PROF on/off control [J. Chen, R.-L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0413](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8202) CE4-related: Clipping for PROF [W. Chen, Y. He (InterDigital)]

[JVET-P0697](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8496) Cross-check of JVET-P0413: CE4-related: Clipping for PROF [H. Sun, J. Li (Panasonic)]

[JVET-P0414](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8203) Non-CE4: Simplification of SIF [W. Chen, Y. He (InterDigital)]

[JVET-P0415](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8204) Non-CE4: Unification of DMVR and BDOF enabling conditions [W. Chen, Y. He (InterDigital)]

[JVET-P0416](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8205) Non-CE4: Using integer MV in CIIP [W. Chen, Y. He (InterDigital)]

[JVET-P0434](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8223) Non-CE4: Enabling conditions of PROF [Z. Deng, L. Zhang, K. Zhang, H. Liu, N. Zhang, K. Fan (Bytedance)]

[JVET-P0439](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8228) Non-CE4: Motion pruning with alternative half-pel interpolation filter flag [G. Li, X. Li, X. Xu, S. Liu (Tencent)]

[JVET-P0440](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8229) Non-CE4: On inheritance of alternative half-pel interpolation filter flag in MMVD [G. Li, X. Li, X. Xu, S. Liu (Tencent)]

[JVET-P0646](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8444) Cross-check of JVET-P0440 (Non-CE4: On inheritance of alternative half-pel interpolation filter flag in MMVD) [K. Zhang (Bytedance)]

[JVET-P0442](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8231) Non-CE4: Unified AMVR signalling [G. Li, X. Li, X. Xu, S. Liu (Tencent)]

[JVET-P0443](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8232) Non-CE4: On DMVR early termination [G. Li, X. Li, X. Xu, S. Liu (Tencent)]

[JVET-P0444](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8233) Non-CE4: On DMVR without padding [G. Li, X. Li, X. Xu, S. Liu (Tencent)]

[JVET-P0445](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8234) Non-CE4: Encoder optimization for subblock-based merge candidate search [G. Li, X. Li, X. Xu, S. Liu (Tencent)]

[JVET-P0714](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8515) Cross-check of JVET-P0445: Non-CE4: Encoder optimization for subblock-based merge candidate search [J. Zhao (LGE)]

[JVET-P0449](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8238) CE4-related: Thin Partition Mode [K. Panusopone, S. Hong, L. Wang (Nokia)]

[JVET-P0461](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8250) Non-CE4: Usage of half-pel switchable interpolation filter for pairwise candidate [N. Zhang, H. Liu, L. Zhang, K. Zhang, Y. Wang (Bytedance)]

[JVET-P0490](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8279) Non-CE4: Cleanup of half-pel switchable interpolation filter [H. Liu, N. Zhang, L. Zhang, K. Zhang, Z. Deng, J. Xu (Bytedance)]

[JVET-P0491](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8280) CE4-related: On MVD derivation in PROF [H. Liu, L. Zhang, K. Zhang, Y. Wang, J. Xu, Y. Wang (Bytedance)]

[JVET-P0496](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8285) Non-CE4: Switchable interpolation filter in TPM [Y. Wang, L. Zhang, H. Liu, K. Zhang, N. Zhang, Y. Wang (Bytedance)]

[JVET-P0689](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8488) Crosscheck of JVET-P0496 (Non-CE4: Switchable interpolation filter for TPM) [P. Bordes (InterDigital)]

[JVET-P0498](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8288) Non-CE4: On weight derivation process in CIIP [N. Zhang, H. Liu, L. Zhang, [K. Zhang](mailto:zhangkai.video@bytedance.com), Y. Wang (Bytedance)

[JVET-P0499](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8289) Non-CE4: Removal of MVD scaling process in MMVD [N. Zhang, H. Liu, L. Zhang, K. Zhang, Y. Wang (Bytedance)]

[JVET-P0645](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8442) Cross-check of JVET-P0499: Non-CE4: Removal of MVD scaling process in MMVD [J. Zhao (LGE)]

[JVET-P0512](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8302) Non-CE4: SIMD support for motion compensated prediction at high internal bit-depth [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0513](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8303) Non-CE4: Extending switchable interpolation filter to affine mode [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0518](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8308) AHG16/Non-CE4: Addressing 16-bit multiplication overflow issue of the PROF [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0519](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8309) Non-CE4: On SAD threshold for BDOF early termination [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0530](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8320) Non-CE4: Alignment of luma and chroma weight calculation for TPM blending [Z. Deng, L. Zhang, K. Zhang, H. Liu, Y. Wang (Bytedance)]

[JVET-P0532](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8322) CE4-related: Modified hpelIfIdx derivation for half-pel interpolation filter [Y. Kidani, K. Kawamura, K. Unno, S. Naito (KDDI)]

[JVET-P0533](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8323) CE4-related: Motion vector rounding in enabled hpelIfIdx [Y. Kidani, K. Kawamura, K. Unno, S. Naito (KDDI)]

[JVET-P0541](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8331) Non-CE4: Context modeling for inter prediction mode [J. Nam, H. Jang, N. Park, J. Lim, S. Kim (LGE)]

[JVET-P0542](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8332) Non-CE4: Cleanup on alternative half-pel interpolation filter [J. Nam, H. Jang, N. Park, J. Lim, S. Kim (LGE)]

[JVET-P0544](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8334) Non-CE4: A slice header flag disabling PROF [K. Unno, K. Kawamura, S. Naito (KDDI)]

[JVET-P0546](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8336) Non-CE4: An applying condition of BDOF [K. Unno, K. Kawamura, S. Naito (KDDI)]

[JVET-P0572](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8362) AHG17/Non-CE4: Restrict integer-pel fetch for BDOF and RPOF for subpicture [H. Jang, J. Nam, N. Park, S. Paluri, S. Kim, J. Lim (LGE)]

[JVET-P0583](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8374) CE4-related: On the SBT in CE4-1.1 [H. Huang, T. Hsieh, V. Seregin, K. Reuze, C.-C. Chen, H.E. Egilmez, W.-J. Chien, M. Karczewicz (Qualcomm)]

[JVET-P0595](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8387) Non-CE4: Neighboring locations for CIIP [G. Ko, D. Kim, J. Jung, J. Son, J. Kwak (WILUS)]

[JVET-P0598](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8390) CE4-related: Harmonized CU-level Condition Check in BDOF and DMVR [C.-C. Chen, H. Huang, K. Reuzé, W.-J. Chien, M. Karczewicz (Qualcomm)]

[JVET-P0600](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8392) CE4-related: Support large rotation and flipping in affine and PROF [A. Aminlou (Nokia)]

[JVET-P0664](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8462) Cross-check of JVET-P0600: CE4-related: Support large rotation and flipping in affine and PROF [Y. He (InterDigital)]

[JVET-P0601](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8393) CE4-related: Support slice level disabling for PROF [K. Kondo, M. Ikeda (Sony)] [late]

[JVET-P0604](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8397) Non-CE4: Motion field storage optimization for the line buffer [T. Solovyev, S. Ikonin, A. Karabutov, R. Chernyak (Huawei)]

[JVET-P0605](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8398) Non-CE4: On triangular merge list size signalling [T. Solovyev, S. Ikonin, A. Karabutov, R. Chernyak (Huawei)]

[JVET-P0617](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8411) Non-CE4: On TPM merge mode in the presence of weighted prediction [A. Filippov, V. Rufitskiy (Huawei)] [late] [miss]

[JVET-P0620](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8414) Non-CE4: Flexible SBT mode [F. Galpin, F. Le Léannec, A. Robert, K. Naser, E. François (InterDigital)] [late]

Initial version rejected as “placeholder”

[JVET-P0621](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8415) Non-CE4: On motion information comparison [A. Robert, F. Le Léannec, F. Galpin, T. Poirier (InterDigital)] [late]

[JVET-P0629](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8426) CE4-related: CIIP Simplification [J. Y. Lee (Sejong Univ.), W. Lim, G. Bang (ETRI)] [late]

[JVET-P0653](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8451) Non-CE4: On BDOF and PROF parameter derivation [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai)] [late]

[JVET-P0654](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8452) Non-CE4: Unified BDOF and DMVR early termination threshold [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai)] [late] [miss]

[JVET-P0663](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8461) CE4-1.14 related: Block size limitation of enabling TPM and GEO [Z. Deng, L. Zhang, H. Liu, K. Zhang, Y. Wang (Bytedance)] [late] [miss]

## CE5 related – Loop filtering (70)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0043](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7832) AHG16/Non-CE5: A cleanup for de-blocking in the affine and TPM mode [[B. Heng](mailto:brian.heng@broadcom.com), M. Zhou (Broadcom)]

[JVET-P0656](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8454) Crosscheck of JVET-P0043 (AHG16/Non-CE5: A cleanup for de-blocking in the affine and TPM mode) [J. Xu (Bytedance)]

[JVET-P0053](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7842) AHG16/Non-CE5: A cleanup for the ALF sample padding [M. Zhou (Broadcom)]

[JVET-P0086](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7875) AHG16/Non-CE5: Deblocking boundary strength fix for Affine and TPM [A. M. Kotra, S. Esenlik, H. Gao, B. Wang, E. Alshina (Huawei)]

[JVET-P0087](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7876) Non-CE5: Deblocking boundary strength modification for triangle and affine mode [K. Misra, F. Bossen, A. Segall (Sharp Labs of America)]

[JVET-P0105](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7894) Non-CE5: Modified Chroma QP derivation for deblocking filter [A. M. Kotra, S. Esenlik, B. Wang, H. Gao, E. Alshina (Huawei)]

[JVET-P0106](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7895) AHG16/CE5-Related: Simplifications for Cross Component Adaptive Loop Filter [A. M. Kotra, S. Esenlik, B. Wang, H. Gao, E. Alshina (Huawei)]

[JVET-P0109](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7898) AHG18/Non-CE5: Boundary strength fix for coding units using BCW [A. M. Kotra, S. Esenlik, B. Wang, H. Gao, E. Alshina (Huawei)]

[JVET-P0121](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7910) On adaptive loop filter [J. Chen, Hendry (Futurewei)]

[JVET-P0156](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7945) CE5-related: ALF padding process when raster scan slices are used [C.-Y. Lai, C.-Y. Chen, T.-D. Chuang, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek), A. M. Kotra, S. Esenlik, H. Gao, B. Wang, E. Alshina (Huawei)]

[JVET-P0157](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7946) CE5-related: Align ALF padding processes at picture and subpicture boundaries [C.-Y. Lai, O. Chubach, L. Chen, C.-Y. Chen, T.-D. Chuang, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0158](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7947) CE5-related: Align ALF virtual boundary processes in the bottom CTU rows of one picture and one subpicture [C.-Y. Lai, O. Chubach, L. Chen, C.-Y. Chen, T.-D. Chuang, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0159](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7948) CE5-related: DMVR deblocking by inheriting neighbouring boundary strength values [C.-M. Tsai, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0160](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7949) CE5-related: Unification of deblocking processes for transform block and prediction block boundaries [C.-M. Tsai, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0161](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7950) CE5-related: Deblocking considering prediction weights in BCW and TPM [C.-M. Tsai, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0162](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7951) CE5-related: Simplified ALF syntax with removal of alf\_ctb\_use\_first\_aps\_flag [Y.-L. Hsiao, C.-C. Chen, O. Chubach, C.-W. Hsu, C.-Y. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0163](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7952) CE5-related: SAO encoder-only improvements [C.-Y. Lai, C.-Y. Chen, T.-D. Chuang, O. Chubach, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0164](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7953) CE5-related: Simplified ALF syntax regarding to alf\_luma\_coeff\_signalled\_flag and alf\_luma\_coeff\_flag [C.-Y. Lai, C.-Y. Chen, T.-D. Chuang, O. Chubach, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0165](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7954) CE5-related: Simplified CCALF [O. Chubach, C.-Y. Lai, C.-Y. Chen, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0173](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7962) AHG16/Non-CE5: Cross component ALF simplification [J. Li, C. S. Lim (Panasonic)]

[JVET-P0178](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7967) CE5-related: Unification of CCALF and ALF [C.-W. Kuo, J. Li, C.S. Lim (Panasonic)]

[JVET-P0717](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8518) Crosscheck of JVET-P0178 (CE5-related: Unification of CCALF and ALF) [H.-J. Jhu (Kwai Inc.)]

[JVET-P0179](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7968) Non-CE5 [H.-B. Teo, H.-W. Sun, C.-S. Lim (Panasonic)]

[JVET-P0180](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7969) Non-CE5: Cleanup of ALF syntax elements [H. Liu, L. Zhang, K. Zhang, N. Zhang, Y. Wang, Y. Wang (Bytedance)]

[JVET-P0672](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8471) Crosscheck of JVET-P0180 (Non-CE5: Cleanup of ALF syntax elements) [C.-Y. Lai (MediaTek)]

[JVET-P0192](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7981) CE5-related: Reducing the number of luma filters in ALF [O. Chubach, C.-Y. Chen, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0195](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7984) Non-CE5: Unified strong deblocking filter for luma and chroma [Y. Ahn, D. Sim (Digital Insights)]

[JVET-P0247](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8036) Non-CE5: Intra deblocking coefficients for weak filters [L.-H. Xu, J.-Q. Zhu, K. Kazui (Fujitsu)]

[JVET-P0251](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8040) CE5-related: Simplified CCALF [K. Abe, T. Toma, V. Drugeon (Panasonic)]

[JVET-P0255](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8044) CE5-related: Bilateral filter with SAO band offset [K. Abe, T. Toma (Panasonic)]

[JVET-P0262](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8051) AHG16/Non-CE5: Deblocking boundary design cleanup for affine and TPM mode [X. W. Meng (PKU)]

[JVET-P0269](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8058) AHG18 / non-CE5: Deblocking for TPM and BCW

[JVET-P0290](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8079) CE5-related: Clipping of intermediate value in CC-ALF [Y. Yasugi, T. Ikai (Sharp)]

[JVET-P0668](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8466) Crosscheck of JVET-P0290 (CE5-related: Clipping of intermediate value in CC-ALF) [A. Nalci (Qualcomm)]

[JVET-P0299](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8088) CE5-related: Interaction between Bilateral Filter and Cross-Component Adaptive Loop Filter [C. Hollmann, J. Ström (Ericsson)]

[JVET-P0710](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8511) Cross check report of JVET-P0299 [K. Misra (Sharp Labs of America)]

[JVET-P0306](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8095) Non CE5: DMVR internal edge deblocking without using refined MVs [J. R. Arumugam, S. Kotecha, S. Ramamurthy (Ittiam)]

[JVET-P0330](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8119) Non-CE5: CC-ALF filtering simplification [J. Taquet, P. Onno, C. Gisquet, G. Laroche (Canon)]

[JVET-P0331](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8120) Non-CE5: CC-ALF design simplification [J. Taquet, P. Onno, C. Gisquet, G. Laroche (Canon)]

[JVET-P0332](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8121) AHG17/Non-CE5: On parsability of alternative ALF Chroma filter signaling [J. Taquet, P. Onno, C. Gisquet, G. Laroche (Canon)]

[JVET-P0333](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8122) On SAO performance [P. Onno, G. Laroche (Canon)]

[JVET-P0372](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8161) CE5-related: Joint chroma cross-component adaptive loop filtering [H. Yang, Y. He, H. Li (InterDigital)]

[JVET-P0704](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8505) Crosscheck of JVET-P0372 on joint chroma cross-component adaptive loop filtering [X. Li (Tencent)]

[JVET-P0386](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8175) Non-CE8/Non-CE5: Deblocking for IBC blocks [H. Gao, S. Esenlik, E. Alshina, A. M. Kotra, B. Wang (Huawei)]

[JVET-P0411](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8200) Non-CE5: Fixes for long luma deblocking filter decision [K. Andersson, J. Enhorn (Ericsson)]

[JVET-P0412](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8201) CE5-related: On further modification of Hadamard filter from CE5-3.2 [S. Ikonin, V. Stepin, A. Karabutov, S. Nikolaeva (Huawei)]

[JVET-P0423](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8212) Non-CE5: Modified boundary strength derivation [W. Zhu, L. Zhang, J. Xu (Bytedance)]

[JVET-P0635](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8432) Crosscheck of JVET-P0423 (Non-CE5: Modified boundary strength derivation) [T.-H. Li, C.-Y. Teng (Foxconn)]

[JVET-P0441](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8230) Non-CE5: On deblocking on affine internal prediction sub-block edges [G. Li, X. Li, X. Xu, S. Liu (Tencent)]

[JVET-P0452](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8241) Non-CE5/AHG17: Low-delay ALF syntax [K. Sühring, R. Skupin, Y. Sanchez, T. Schierl (HHI)]

[JVET-P0468](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8257) CE5-Related: Reducing multiplier count in CC-ALF [K. Misra, F. Bossen, A. Segall (Sharp Labs of America)]

[JVET-P0470](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8259) Non-CE5: Simplification of Cross Component Adaptive Loop Filter [[X. Li](mailto:xlxiangli@tencent.com), X. Zhao, L. Zhao, Y. Du, S. Liu (Tencent)]

[JVET-P0492](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8281) Non-CE5: Fixes of ALF sample padding [H. Liu, L. Zhang, K. Zhang, Y. Wang, J. Xu, Y. Wang (Bytedance)]

[JVET-P0504](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8294) CE5-related: Harmonization of Hadamard filter, SAO and ALF [V. Stepin, S. Ikonin, A. Karabutov (Huawei)]

[JVET-P0505](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8295) Non-CE5: On non-linear ALF clipping values [Y. Du, X. Zhao, X. Li, S. Liu (Tencent)]

[JVET-P0708](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8509) Crosscheck of JVET-P0505 (Non-CE5: On non-linear ALF clipping values) [H. Yang (InterDigital)]

[JVET-P0534](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8324) AhG16/Non-CE5: On deblocking at ALF virtual boundaries [Z. Deng, L. Zhang, K. Zhang, H. Liu, H.-C. Chuang (Bytedance)]

[JVET-P0727](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8528) Crosscheck of JVET-P0534 (AhG16/Non-CE5: On deblocking at ALF virtual boundaries) [Y.-W. Chen (Kwai Inc.)]

[JVET-P0539](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8329) Non-CE5: A chroma deblocking clean-up [J. Xu, L. Zhang, W. Zhu, K. Zhang, H. Liu (Bytedance)]

[JVET-P0543](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8333) CE5-related: Cleanup on cross-component adaptive loop filter [J. Nam, J. Choi, J. Lim, S. Kim (LGE)]

[JVET-P0547](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8337) Non-CE5: Deblocking filter at PROF sub-block boundary [K. Unno, K. Kawamura, S. Naito (KDDI)]

[JVET-P0551](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8341) AHG16/Non-CE5: On ALF boundary padding [N. Hu, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0552](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8342) AHG12/Non-CE5: Extending slice boundary processing for adaptive loop filter for raster scanned slices [N. Hu, V. Seregin, M. Coban, A. K. Ramasubramonian, M. Karczewicz (Qualcomm)]

[JVET-P0553](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8343) Non-CE5: Using truncated binary codes for ALF filter indices [N. Hu, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0554](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8344) Non-CE5: Clean up of coefficient coding of adaptive loop filter [N. Hu, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0555](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8345) CE5-related: Dynamic range reduction for coefficients of cross component adaptive loop filter [N. Hu, J. Dong, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0556](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8346) CE5-related: Temporal buffer removal for cross component adaptive loop filter [N. Hu, J. Dong, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0557](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8347) CE5-related: Multiplication removal for cross component adaptive loop filter [N. Hu, J. Dong, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0703](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8504) Crosscheck of JVET-P0557 on Multiplication removal for cross component adaptive loop filter [X. Li (Tencent)]

[JVET-P0558](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8348) CE5-related: Reduced filter shape for cross component adaptive loop filter [N. Hu, J. Dong, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0674](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8473) Crosscheck of JVET-P0558 (CE5-related: Reduced filter shape for cross component adaptive loop filter) [C.-Y. Lai (MediaTek)]

[JVET-P0570](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8360) AHG10/Non-CE5: Performance of encoder-side deblocking optimization in VTM-6.0 [N. Hu, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0571](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8361) CE5/CE8: Deblocking Filter for BDPCM coded block [H. Jang, J. Nam, S. Kim, J. Lim (LGE)]

[JVET-P0586](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8378) [AHG18][Non-CE5] Proposed cleanup of deblocking filter process [S. Iwamura, S. Nemoto, A. Ichigaya (NHK), K. Andersson, R. Yu, J. Enhorn (Ericsson)]

[JVET-P0700](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8499) Crosscheck of JVET-P0586 Aspect #1 ([AHG18][Non-CE5] Proposed cleanup of deblocking filter process) [Z. Deng (Bytedance)]

[JVET-P0602](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8394) [AHG18][non-CE5] Boundary strength derivation for CUs with TPM [S. Iwamura, S. Nemoto, A. Ichigaya (NHK)]

[JVET-P0611](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8405) Non-CE5/AHG-11: Boundary strength harmonization for BDPCM, TS, Palette and IBC [B. Ray, G. Van der Auwera, M. Karczewicz (Qualcomm)]

[JVET-P0613](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8407) Non-CE5: On the average calculation for luma adaptive deblocking filter [B. Ray, D. Rusanovskyy, G. Van der Auwera, M. Karczewicz (Qualcomm)]

[JVET-P0614](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8408) Non-CE5: On the gridsize for virtual boundaries [B. Ray, G. Van der Auwera, M. Karczewicz (Qualcomm)]

[JVET-P0665](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8463) Non-CE5: Spec fix for ALF filter and transpose index calculation [N. Hu, V. Seregin, M. Karczewicz (Qualcomm)] [late]

[JVET-P0666](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8464) Non-CE5: Combination of JVET-P0470 and JVET-P0557 on simplification of CC-ALF [X. Li., X. Zhao, L. Zhao, X. Du, S. Liu (Tencent), N. Hu, J. Dong, V. Seregin, M. Karczewicz (Qualcomm)] [late]

[JVET-P0709](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8510) Crosscheck of JVET-P0666 (Non-CE5: Combination of JVET-P0470 and JVET-P0557 on simplification of CC-ALF) [H. Yang (InterDigital)]

[JVET-P0688](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8487) Non-CE5: Intra deblocking coefficients for weak filters [L. Xu, J. Zhu, K. Kazui (Fujitsu)] [late]

## CE6 related – Transforms and transform signalling (38)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0166](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7955) CE6-related: Transform selection with intra prediction mode for implicit MTS [M.-S. Chiang, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0196](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7985) CE6-related: Latency reduction for LFNST signalling [J. Lainema (Nokia)]

[JVET-P0197](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7986) CE6-related: LFNST transform mapping [J. Lainema (Nokia)]

[JVET-P0215](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8004) CE6 related: Harmonization of CE6-1.1 and two-mode LFNST [X. Zhao, X. Li, S. Liu (Tencent)]

[JVET-P0216](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8005) Non-CE6: Simplified SBT mode coding [J. Park, B. Jeon (SKKU)]

[JVET-P0259](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8048) Non-CE6: On LFNST reduced kernels [J. Gan, C. Rosewarne (Canon)]

[JVET-P0266](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8055) Non-CE6: LFNST signalling [C. Rosewarne, J. Gan (Canon)]

[JVET-P0271](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8060) Non-CE6: Context modelling for LFNST index coding [T. Tsukuba, M. Ikeda, Y. Yagasaki, T. Suzuki (Sony)]

[JVET-P0273](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8062) Non-CE6: On MTSIntraMaxCand [C. Hollmann, D. Saffar, J. Ström (Ericsson)]

[JVET-P0276](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8065) Non-CE6: On Supporting 64x64 Chroma Transform Unit with Composite VPDU [W. Cai, J. Zhu, J. Yao, K. Kazui (??)]

[JVET-P0301](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8090) Non-CE6: Decoding process of implicit TU partitioning [G. Ko, D. Kim, J. Jung, J. Son, J. Kwak (WILUS)]

[JVET-P0313](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8102) Non-CE6: Simplification of LFNST LUT [S. Shrestha, A. Kumar, B. Lee (Chosun Univ.), Y. Lee, J. Park (Humax)]

[JVET-P0342](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8131) CE6-related: LFNST applied to ISP mode [F. Le Léannec, K. Naser, F. Galpin (InterDigital)]

[JVET-P0346](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8135) Non-CE6: SPS Clean-up of SBT [K. Naser, T. Poirier, F. Le Léannec, F. Galpin (InterDigital)]

[JVET-P0349](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8138) CE6 Related: MIP Adaptation On Top of CE6-1.1d [K. Naser, F. Galpin, T. Poirier, Y. Chen (InterDigital)]

[JVET-P0350](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8139) CE6 Related: Modified LFNST Index Coding For Fast Encoder Implementation [K. Naser, F. Galpin, T. Poirier, Y. Chen (InterDigital)]

[JVET-P0354](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8143) Non-CE6: LFNST Up to 64x64 CU’s [K. Naser, T. Poirier, F. Le Léannec, F. Galpin (InterDigital)]

[JVET-P0376](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8165) Non-CE6: Refined LFNST restriction with MIP [H. Yang, Y. He (InterDigital)]

[JVET-P0682](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8481) Crosscheck of JVET-P0376: Refined LFNST restriction with MIP [X. Zhao (Tencent)]

[JVET-P0379](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8168) Non-CE6: Unified zero-out range for 4x4 LFNST [K. Fan, L. Zhang, K. Zhang, Y. Wang (Bytedance)]

[JVET-P0696](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8495) Cross-check of JVET-P0379: Non-CE6: A unified zero-out range for 4x4 LFNST [H. Sun, J. Li (Panasonic)]

[JVET-P0391](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8180) Non-CE6: A clean-up of SPS maximum SBT size signaling [M. G. Sarwer, R. L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0392](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8181) Non-CE6: Combination of ISP and LFNST [S. De-Luxán-Hernández, V. George, G. Venugopal, J. Brandenburg, B. Bross, H. Schwarz, D. Marpe, T. Wiegand (HHI), M. Koo, M. Salehifar, J. Lim, S. Kim (LGE)]

[JVET-P0405](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8194) Non-CE6: Cleanups of maximum transform size related syntax elements [Z. Deng, L. Zhang, K. Zhang, H. Liu, Y. Wang (Bytedance)]

[JVET-P0493](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8282) CE6-related: Further simplification with new LFNST transform basis [?? (??)] [late]

[JVET-P0495](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8284) Non-CE6: On implicit MTS [Y. Wang, H. Liu, L. Zhang, K. Zhang, Z. Deng, Y. Wang (Bytedance)]

[JVET-P0691](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8490) Crosscheck of JVET-P0495: Non-CE6: On implicit MTS [C. Hollmann (Ericsson)]

[JVET-P0501](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8291) Non-CE6: Cleanup on MTS related HLS [X. Zhao, X. Li, S. Liu (Tencent)]

[JVET-P0527](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8317) Non-CE6: On context model for coding last NZ position [T.-C. Ma, Y.-W. Chen, X. Xiu, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0538](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8328) Non-CE6: Transform skip with fixed transform shift [J. Xu, L. Zhang, W. Zhu, K. Zhang, H. Liu, Z. Deng (Bytedance)]

[JVET-P0540](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8330) Non-CE6: Disabling MTS for 64xN and Nx64 CUs [J. Jung, D. Kim, G. Ko, J. Son, J. Kwak (WILUS)]

[JVET-P0680](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8479) Crosscheck of JVET-P0540: Disabling MTS for 64xN and Nx64 CUs [X. Zhao (Tencent)]

[JVET-P0545](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8335) CE6-2.3-related: further reduced 8x8 LFNST matrices [K. Fan, L. Zhang, K. Zhang, Y. Wang (Bytedance)]

[JVET-P0566](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8356) CE6-related: On LFNST Support Patterns [H. E. Egilmez, A. Said, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0567](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8357) CE6-related: Optimized LFNST matrices for CE6-2.1 [H. E. Egilmez, A. Said, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0568](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8358) CE6-related: An LFNST Index Signaling with Bin Prediction [H. E. Egilmez, V. Seregin, A. Nalci, A. Said, M. Karczewicz (Qualcomm)]

[JVET-P0569](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8359) AHG17/Non-CE6: High-level syntax for MTS and Implicit Transform Derivations [H. E. Egilmez, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0634](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8431) Non-CE6: Removal of LFNST for 4x4, 4xN and Nx4 blocks [H. E. Egilmez, T. Hsieh, V. Seregin, M. Karczewicz (Qualcomm)] [late]

[JVET-P0637](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8434) CE6-related: On measuring reconstruction error of LFNST matrices [X. Zhao (Tencent)] [late]

[JVET-P0640](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8437) Non-CE6: High Level Syntax Flag for SBT Transform Selection [K. Naser, F. Le Léannec, M. Kerdranvat, T. Poirier (InterDigital)] [late]

[JVET-P0699](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8498) Non-CE6 / Non-CE3: On ISP and Maximum Transform Size [K. Naser, T. Poirier, T. Urban, G. Rath (InterDigital)] [late]

[JVET-P0702](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8502) Non-CE6 / Non-CE3: Combined Test of JVET-P0352 and JVET-P0354 [K. Naser, T. Poirier, F. Le Léannec, F. Galpin (InterDigital)] [late]

## CE7 related – Quantization and coefficient coding (26)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0042](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7831) Non-CE7: A cleanup for inter\_pred\_idc coding [B. Heng, M. Zhou (Broadcom)]

[JVET-P0713](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8514) Crosscheck of JVET-P0042 (Non-CE7: A cleanup for inter\_pred\_idc coding) [K. Panusopone (Nokia)]

[JVET-P0050](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7839) AHG16/Non-CE7: A study of bin to bit ratio for VTM6.0 [M. Zhou (Broadcom)]

[JVET-P0167](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7956) CE7-related: Improved coding of user defined quantization matrices [O. Chubach, C.-Y. Lai, C.-Y. Chen, T.-D. Chuang, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0168](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7957) CE7-related: Removing 2x2 chroma quantization matrices [O. Chubach, C.-Y. Lai, C.-Y. Chen, T.-D. Chuang, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek), H. Jang, J. Nam, S. Paluri, S. Kim, J. Lim (LGE)]

[JVET-P0169](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7958) CE7-related: Further context reduction for sig\_coeff\_flag [S.-T. Hsiang, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0170](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7959) CE7-related: Simplification of coding transform coefficient levels [S.-T. Hsiang, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0270](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8059) Non-CE7: Modified signalling method of cu\_cbf and tu\_cbf\_luma [D. -J. Won, J. -M. Ha, J. -H. Moon (Sejong university)]

[JVET-P0272](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8061) On Scaling of Transform Skip [T. Tsukuba, M. Ikeda, Y. Yagasaki, T. Suzuki (Sony)]

[JVET-P0298](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8087) CE7-related: Unification of CCB check method and bypass coding between two residual coding modes [Y. Kato, K. Abe, T. Toma (Panasonic)]

[JVET-P0705](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8506) Crosscheck of JVET-P0298 (CE7-related: Unification of CCB check method and bypass coding between two residual coding modes) [H. Yang (InterDigital)]

[JVET-P0319](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8108) CE7-related: Re-position GT3 flag into the first coding pass in TS residual coding [Y. Chen, F. Le Léannec, T. Poirier, F. Galpin (InterDigital)]

[JVET-P0631](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8428) Crosscheck of JVET-P0319: Re-position GT3 flag into the first coding pass in TS residual coding [Y.-H. Chao (Qualcomm)]

[JVET-P0360](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8149) On chroma CBFs and transform units [A. K. Ramasubramonian, G. Van der Auwera, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0370](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8159) Non-CE7: Signaling of coded\_sub\_block\_flag [M. G. Sarwer, R. L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0373](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8162) CE7-related: Decouple level mapping from transform skip residual coding [M. G. Sarwer, R. L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0397](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8186) CE7-related: Simplified two-pass transform-skip residual coding [M. G. Sarwer, R. L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0692](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8491) Crosscheck of JVET-P0397 (CE7-related: Simplified two-pass transform-skip residual coding) [S.-T. Hsiang (MediaTek)]

[JVET-P0402](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8191) CE7-related: Unification of CCB count method between transform residual and transform skip residual coding [Y. Chen, F. Le Léannec, T. Poirier, K. Naser(InterDigital)]

[JVET-P0632](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8429) Crosscheck of JVET-P0402: Unification of CCB count method between transform residual and transform skip residual coding [Y.-H. Chao (Qualcomm)]

[JVET-P0422](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8211) Non-CE7: Unified neighbouring block selection in context and MV/mode derivation [W. Zhu, L. Zhang, J. Xu (Bytedance)]

[JVET-P0648](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8446) Crosscheck of JVET-P0422 (Non-CE7: Unified neighbouring block selection in context and MV/mode derivation) [H. Dou, L. Xu (Intel)]

[JVET-P0435](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8224) CE7-related: Modifications to transform skip significant flag coding [C. Auyeung, X. Li, X. Zhao, S. Liu (Tencent)]

[JVET-P0437](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8226) CE7-related: Modifications to transform skip coefficient sign flag coding [C. Auyeung, X. Li, X. Zhao, S. Liu (Tencent)]

[JVET-P0447](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8236) CE7-related: Rice parameter range extension in residual coding with transform skip [C. Auyeung, X. Li, X. Zhao, S. Liu (Tencent)]

[JVET-P0451](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8240) CE7-related: Combination of JVET-P0435, JVET-P0437, and JVET-P0447 for residual coding at 1.75 bins/coefficient [C. Auyeung, X. Li, X. Zhao, S. Liu (Tencent)]

[JVET-P0465](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8254) Non-CE7: Rice parameter derivation for coefficient level coding [J. Choi, J. Heo, S. Yoo, J. Choi, J. Lim, S. Kim (LGE)]

[JVET-P0488](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8277) Non-CE7: On updating a variable for context model selection [S. Yoo, J. Choi, J. Lim, S. Kim (LGE)]

[JVET-P0508](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8298) CE7-related: unification for joint chroma residue coding modes [L. Zhao, X. Li, X. Zhao, S. Liu (Tencent)]

[JVET-P0585](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8377) CE7-related: Alignment of number of context coded bins per coefficients for TS residual coding and transform coefficient coding [M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0587](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8379) CE7-related: Simplifying the derivation process of ctxInc for residual coding [S.-T. Hsiang, T.-D. Chuang, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0619](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8413) Non-CE7: State-dependent Binarization for Transform Coefficient Levels [H. Schwarz, A. Henkel, D. Marpe, T. Wiegand] [late]

## CE8 related – Screen content coding tools (35)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0210](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7999) Non-CE8: Transform skip for chroma block in the single tree [J. Park, B. Jeon (SKKU)]

[JVET-P0681](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8480) Crosscheck of JVET-P0210: Transform skip for chroma block in the single tree [X. Zhao (Tencent)]

[JVET-P0230](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8019) CE8-1.2-related: Compound palette mode with signalled merge index [W. Zhu, J. Xu, L. Zhang (Bytedance)]

[JVET-P0283](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8072) Non-CE8: Modified DM mode selection under IBC mode using left block [D. Jiang, J. Lin, F. Zeng, C. Fang (Dahua)] [late]

Initial version rejected: requested authors not referring to CTC as other test set is used.

[JVET-P0284](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8073) Non-CE8: Modified DM mode selection under IBC mode using left and above block [D. Jiang, J. Lin, F. Zeng, C. Fang (Dahua)] [late]

Initial version rejected: requested authors not referring to CTC as other test set is used.

[JVET-P0375](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8164) Non-CE8: Palette mode CU size restriction [H. Yang, Y. He (InterDigital)]

[JVET-P0399](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8188) Non-CE8: On escape sample coding [W. Zhu, J. Xu, L. Zhang (Bytedance)]

[JVET-P0706](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8507) Crosscheck of JVET-P0399 (Non-CE8: On escape sample coding) [H. Yang (InterDigital)]

[JVET-P0400](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8189) AhG16/Non-CE8: Removal of shared merge list [Y. Wang, L. Zhang, H. Liu, K. Zhang, J. Xu, Y. Wang (Bytedance)]

[JVET-P0662](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8460) Crosscheck of JVET-P0400 (AhG16/Non-CE8: Removal of shared merge list) [J. Chen (Alibaba)]

[JVET-P0421](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8210) Non-CE8: Palette mode with 8-bit entries [W. Zhu, J. Xu, L. Zhang, H.-C. Chuang (Bytedance)]

[JVET-P0644](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8441) Cross-check of JVET-P0421: Non-CE8: Palette mode with 8-bit entries [J. Zhao (LGE)]

[JVET-P0424](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8213) Non-CE8: Resetting predictor palette at CTU row [W. Zhu, L. Zhang, J. Xu (Bytedance)]

[JVET-P0425](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8214) CE8-related: On index adjustment in palette mode [W. Zhu, J. Xu, L. Zhang (Bytedance)]

[JVET-P0454](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8243) Non-CE8: Constraints on IBC reference block locations [X. Xu, X. Li, S. Liu (Tencent)]

[JVET-P0455](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8244) Non-CE8: IBC slice level on/off [X. Xu, X. Li, S. Liu (Tencent)]

[JVET-P0456](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8245) Non-CE8: IBC chroma mode with dual-tree [X. Xu, X. Li, S. Liu (Tencent)]

[JVET-P0457](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8246) Non-CE8: On IBC merge list size signaling [X. Xu, X. Li, S. Liu (Tencent)]

[JVET-P0676](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8475) Crosscheck of JVET-P0457 (Non-CE8: On IBC merge list size signalling) [Y.-L. Hsiao (MediaTek)]

[JVET-P0460](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8249) Non-CE8: Minimum QP for Palette Escape Coding [J. Zhao, S. Paluri, S. Kim (LGE)]

[JVET-P0472](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8261) Non-CE8: Palette Coding Encoder Improvement [J. Zhao, S. Yoo, S. Kim (LGE)]

[JVET-P0719](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8520) Crosscheck of JVET-P0472 (Non-CE8: Palette Coding Encoder Improvement) [H.-J. Jhu (Kwai Inc.)]

[JVET-P0473](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8262) Non-CE8: Implicit block partitioning in palette mode [Y.-H. Chao, T. Hsieh, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0724](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8525) Crosscheck of JVET-P0473 (Non-CE8: Implicit block partitioning in palette mode) [Y.-W. Chen (Kwai Inc.)]

[JVET-P0474](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8263) Non-CE8: Minimum QP for escape mode in palette [Y.-H. Chao, H. Wang, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0475](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8264) Non-CE8: Simplification of palette predictor update for small CUs [Y.-H. Chao, T. Hsieh, V. Seregin, M. Karczewicz (Qualcomm)]

[JVET-P0707](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8508) Crosscheck of JVET-P0475 (Non-CE8: Simplification of palette predictor update for small CUs) [H. Yang (InterDigital)]

[JVET-P0476](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8265) Non-CE8: Palette mode and prediction mode signaling [Y.-H. Chao, C.-H. Hung, W.-J Chien, M. Karczewicz (Qualcomm)]

[JVET-P0479](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8268) CE8-related: Restriction on context coded bins in palette [C.-H. Hung, Y.-H. Chao, M. Karczewicz (Qualcomm)]

[JVET-P0483](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8272) Non-CE8: Quantization in palette escape mode [M. Karczewicz, H. Wang, Y.-H. Chao, M. Coban (Qualcomm)]

[JVET-P0720](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8521) Crosscheck of JVET-P0483 (Non-CE8: Quantization in palette escape mode) [H.-J. Jhu (Kwai Inc.)]

[JVET-P0486](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8275) CE8-related: Alignment of maximum transform-skip size with maximum transform block size [M. G. Sarwer, R. L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0487](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8276) Non-CE8: Binarization of palette escape value [S. Yoo, J. Zhao, J. Nam, J. Choi, S. Kim, J. Lim (LGE)] [late]

Initial version rejected as “placeholder”.

[JVET-P0515](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8305) Non-CE8: Quantization unification for palette escape and transform skip [H.-J. Jhu, X. Xiu, Y.-W. Chen, T.-C. Ma, X. Wang (Kwai Inc.)]

[JVET-P0715](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8516) Crosscheck of JVET-P0515: Non-CE8: Quantization unification for palette escape and transform skip [Y.-H. Chao (Qualcomm)]

[JVET-P0516](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8306) Non-CE8: On palette mode signaling binarization [Y.-W. Chen, X. Xiu, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0630](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8427) Crosscheck of JVET-P0516: On palette mode signalling binarization [Y.-H. Chao (Qualcomm)]

[JVET-P0522](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8312) Non-CE8: On palette mode syntax [Y.-W. Chen, X. Xiu, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0650](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8448) Crosscheck of JVET-P0522 (Non-CE8: On palette mode syntax) [T.-S. Chang (Alibaba)]

[JVET-P0523](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8313) Non-CE8: Context coded bin constraint for palette mode signaling [Y.-W. Chen, X. Xiu, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0651](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8449) Crosscheck of JVET-P0523 (Non-CE8: Context coded bin constraint for palette mode signaling) [T.-S. Chang (Alibaba)]

[JVET-P0526](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8316) Non-CE8: Palette encoder improvements [H.-J. Jhu, Y.-W. Chen, X. Xiu, T.-C. Ma, X. Wang (Kwai Inc.)]

[JVET-P0529](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8319) Non-CE8: QP dependent binarization for palette escape [H.-J. Jhu, Y.-W. Chen, X. Xiu, T.-C. Ma, X. Wang (Kwai Inc.)]

[JVET-P0652](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8450) Crosscheck of JVET-P0529 (Non-CE8: QP dependent binarization for palette escape) [T.-S. Chang (Alibaba)]

[JVET-P0562](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8352) Non-CE8: Transform skip residual coding simplification [Y.-W. Chen, X. Xiu, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0642](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8439) Crosscheck of JVET-P0562 (Non-CE8: Transform skip residual coding simplification) [L. Zhao (Tencent)]

[JVET-P0565](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8355) CE8-related: Cross-component residual prediction for 4:4:4 format [K. Kawamura, S. Naito (KDDI)]

[JVET-P0573](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8363) AHG17/Non-CE8: Support parallel decoding based on initialization for palette predictor at CTU row [H. Jang, N. Park, J. Nam, S. Kim, J. Lim (LGE)]

[JVET-P0643](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8440) Crosscheck of JVET-P0573: AHG17/NonCE8: Support parallel decoding based on initialization for palette predictor at CTU row [W. Zhu (Bytedance)]

[JVET-P0577](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8367) AHG17/Non-CE8: APS support for palette predictor entry initialization [H. Jang, S. Paluri, S. Yoo, J. Nam, S. Kim, J. Lim (LGE)]

[JVET-P0670](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8468) Non-CE8: On num\_palette\_indices\_minus1 [W. Zhu, L. Zhang, J. Xu (Bytedance)] [late] [miss]

## Quantization control (20)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0093](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7882) Fix on value ranges of cu\_qp\_delta\_subdiv and cu\_chroma\_qp\_offset\_subdiv [E. Sasaki, T. Chujoh, T. Ikai (Sharp)]

[JVET-P0110](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7899) AHG15: Quantization matrices with single identifier and enhanced prediction [P. de Lagrange, F. Leléannec, E. François, K. Naser (InterDigital)]

[JVET-P0256](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8045) AHG15: 16x16 base scaling matrix for 64x64 TU [T. Toma, K. Abe (Panasonic)]

[JVET-P0257](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8046) AHG15: VTM decoder speed-up for handling scaling matrices [T. Toma, K. Abe (Panasonic)]

[JVET-P0267](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8056) Quantization group subdivision level signalling [C. Rosewarne, J. Gan (Canon)]

[JVET-P0292](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8081) AHG15: Scaling process for LFNST case [T. Hashimoto, E. Sasaki, T. Ikai (Sharp)]

[JVET-P0657](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8455) Crosscheck of JVET-P0292 (AHG15: Scaling process for LFNST case) [Y. Wang (Bytedance)]

[JVET-P0293](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8082) AHG15: Signalling scaling matrix for LFNST case [T. Hashimoto, E. Sasaki, T. Ikai (Sharp)]

[JVET-P0321](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8110) AHG15: Signaling of chroma QP mapping table [Z. Wang, Y. Ye, J. Luo (Alibaba)]

[JVET-P0324](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8113) AHG15: Quantization matrix selection based on block area [P. de Lagrange, P. Bordes, K. Naser, E. François (InterDigital)]

[JVET-P0335](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8124) AHG15: Chroma QP mapping table for HDR [T. Lu, F. Pu, P. Yin, M. Sean, W. Husak, T. Chen (Dolby)]

[JVET-P0623](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8418) Crosscheck report of JVET-P0335 on Chroma QP mapping table for HDR [E. François (InterDigital)]

[JVET-P0339](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8128) AHG15: Signalling of CU level chroma QP offset [Z. Wang, Y. Ye, J. Luo (Alibaba)

[JVET-P0361](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8150) On chroma quantization groups [A. K. Ramasubramonian, G. Van der Auwera, W.-J. Chien, H. Huang, Y. Han, B. Ray, M. Karczewicz (Qualcomm)]

[JVET-P0365](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8154) AHG15: Scaling matrices for LFNST-coded blocks [A. K. Ramasubramonian, G. Van der Auwera, V. Seregin, H. E. Egilmez, M. Karczewicz (Qualcomm)]

[JVET-P0371](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8160) AHG7/AHG15: signalling of corrective values for chroma residual scaling [E. François, F. Galpin, K. Naser, P. de Lagrange (InterDigital)]

[JVET-P0711](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8512) Crosscheck of JVET-P0371 (AHG7/AHG15: signalling of corrective values for chroma residual scaling) [T. Lu (Dolby)]

[JVET-P0407](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8196) AHG15: cu\_qp\_delta\_subdiv and cu\_chroma\_qp\_offset\_subdiv syntax dependency removal [J. Chen, R.-L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0410](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8199) AHG15: chroma QP mapping table syntax variant with less bits [P. de Lagrange, P. Bordes, K. Naser, E. François (InterDigital)]

[JVET-P0426](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8215) AHG17/AHG15: On quantization control parameters signalling [R. Chernyak (Huawei)]

[JVET-P0667](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8465) AHG17/AHG15: Comments on aspect 1 of JVET-P0426 [B. Ray, A. K. Ramasubramonian, G. Van der Auwera, M. Karczewicz (Qualcomm)] [late]

[JVET-P0436](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8225) AHG15: On CU Adaptive Chroma QP Offset Signalling [J. Zhao, S. Paluri, S. Kim (LGE)]

[JVET-P0608](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8401) [AHG15] On scaling list for JCCR [S. Iwamura, S. Nemoto, A. Ichigaya (NHK)]

[JVET-P0469](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8258) AHG15: efficient coding of qp\_out\_val [F. Bossen, A. Segall (Sharp)]

## Entropy coding (4)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0300](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8089) High throughput CABAC mode for VVC [H. Kirchhoffer, D. Marpe, B. Bross, T. Nguyen, C. Rudat, H. Schwarz, T. Wiegand (HHI)]

[JVET-P0395](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8184) CABAC zero word thresholds [A. Browne, S. Keating, K. Sharman (Sony)]

[JVET-P0396](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8185) Switching between CABAC context coded bins and bypass coded bins [A. Browne, S. Keating, K. Sharman (Sony)]

[JVET-P0603](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8395) CABAC zero word signalling [M. Coban, A. Ramasubramonian, V. Seregin, M. Karczewicz (Qualcomm)]

## Partitioning (14)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0063](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7852) AHG16: Fix on local dual tree [Y. Zhao, H. Yang (Huawei), Z.-Y. Lin, T.-D. Chuang, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0188](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7977) On MinCU constraint [T. Suzuki (Sony)]

[JVET-P0343](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8132) Flexible maximum MTT hierarchy depth [F. Le Léannec, F. Galpin, T. Poirier (InterDigital)]

[JVET-P0344](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8133) Overriding qtbtt\_dual\_tree\_flag [F. Le Léannec, K. Naser, F. Galpin, T. Poirier (InterDigital)]

[JVET-P0347](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8136) Comments on maximum MTT Depth and MinCbSize [T. Poirier, F. Le Léannec, F. Urban, F. Galpin (InterDigital)]

[JVET-P0348](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8137) On BT/TT flag signalling [T. Poirier, F. Le Léannec, F. Urban, F. Galpin (InterDigital)]

[JVET-P0419](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8208) AHG16/AHG17: Simplification of CU Splitting Controls [T. Hellman, W. Wan, M. Zhou, B. Heng (Broadcom)]

[JVET-P0429](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8218) AHG17: On log2\_min\_luma\_coding\_block\_size\_minus2 [Y.-J. Chang, V. Seregin, M. Coban, A. Ramasubramonian, M. Karczewicz (Qualcomm)]

[JVET-P0506](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8296) On max QT/BT/TT size signaling [Y. Du, X. Li, X. Zhao, B. Choi, S. Wenger, S. Liu (Tencent)]

[JVET-P0575](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8365) Non-CE: to support SCIPU with local dual tree for various color format [H. Jang, J. Nam, S. Kim, J. Lim (LGE)]

[JVET-P0578](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8368) Interaction between dual tree and minimum CU size [T.-D. Chuang, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0580](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8371) On signaling CTU size in SPS [Y. Du, B. Choi, X. Li, X. Zhao, S. Wenger, S. Liu (Tencent)]

[JVET-P0582](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8373) AhG16: On dynamic internal bit depth [Y. Du, X. Zhao, X. Li, L. Zhao, S. Liu (Tencent)]

[JVET-P0624](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8419) AHG16: Bugfix for local dual tree [L. Zhao, X. Li, X. Zhao, S. Liu (Tencent)] [late]

## Chroma sampling and chroma formats (1)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0517](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8307) Support of adaptive color transform for 444 video coding in VVC [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0683](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8482) Crosscheck of JVET-P0517: Support of adaptive color transform for 444 video coding in VVC [X. Zhao (Tencent)]

## Lossless and near lossless coding (24)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0082](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7871) AHG18: BDPCM for Lossless [A. Nalci, H. Wang, H. E. Egilmez, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0147](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7936) AHG18: BDPCM in lossless coding [Z.-Y. Lin, T.-D. Chuang, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0148](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7937) AHG18: Disabling dependent quantization in lossless coding [Z.-Y. Lin, T.-D. Chuang, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek), T.-C. Ma, Y.-W. Chen, X. Xiu, H.-j. Jhu, X. Wang (Kwai)]

[JVET-P0659](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8457) Crosscheck of JVET-P0148 (AHG18: Disabling dependent quantization in lossless coding) [N. Zhang (Bytedance)]

[JVET-P0149](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7938) AHG18: Disabling LMCS for lossless coding [Z.-Y. Lin, T.-D. Chuang, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0176](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7965) AHG18: Lossless coding support related to cross-component ALF [J. Li, C. S. Lim (Panasonic)]

[JVET-P0258](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8047) AHG18: Disabling Dependent Quantization for Lossless [A. Nalci, H. Wang, H. E. Egilmez, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0327](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8116) AHG18: Configurable Maximum Transform Size for Mixed Lossy and Lossless Coding [A. Nalci, H.E. Egilmez, H. Wang, Y.-H. Chao, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0463](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8252) AHG18: Residual coding method for lossless mode [M. G. Sarwer, R. L. Liao, J. Luo, Y. Ye (Alibaba)]

[JVET-P0466](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8255) AHG18: Residual coding for lossless video coding [J. Choi, H. Jang, J. Heo, S. Yoo, J. Lim, S. Kim (LGE)]

[JVET-P0467](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8256) AHG18: Rice parameter extension [J. Choi, H. Jang, J. Heo, S. Yoo, J. Lim, S. Kim (LGE)]

[JVET-P0477](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8266) AHG18: On Last Position Signaling for Lossless [A. Nalci, H. E. Egilmez, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0485](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8274) AHG18: Performance of CE7-1.2d and CE7-2.2 on lossless coding [Y.-H. Chao, A. Nalci, H. Wang, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0502](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8292) AHG18: Interaction between lossless coding and max transform size [X. Zhao, X. Li, S. Liu (Tencent)]

[JVET-P0514](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8304) AHG18: Enable lossless coding for VVC [T.-C. Ma, Y.-W. Chen, X. Xiu, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0521](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8311) AHG18: Disabling DMVR and BDOF for lossless coding [T.-C. Ma, Y.-W. Chen, X. Xiu, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0525](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8315) AHG18: Residual coding selection signaling for lossless VVC [T.-C. Ma, Y.-W. Chen, X. Xiu, H.-J. Jhu, X. Wang (Kwai Inc.), Z.-Y. Lin, T.-D. Chuang, C.-Y. Chen, C.-W. Hsu, Y.-W. Huang, S. Lei (MediaTek)]

[JVET-P0528](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8318) AHG18: On residual scanning order for lossless coding [T.-C. Ma, Y.-W. Chen, X. Xiu, H.-J. Jhu, X. Wang (Kwai Inc.)]

[JVET-P0671](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8470) Crosscheck of JVET-P0528 (AHG18: On residual scanning order for lossless coding) [Z.-Y. Lin (MediaTek)]

[JVET-P0559](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8349) AHG18: Rice parameter derivation for coefficient level coding in lossless [M. Karczewicz, H. Wang, Y.-H. Chao, M. Coban (Qualcomm)]

[JVET-P0574](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8364) AHG18: BDPCM residual coding for lossless coding [H. Jang, J. Choi, J. Nam, S. Kim, J. Lim (LGE)]

[JVET-P0576](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8366) AHG18: on low level coding for lossless [H. Jang, J. Choi, J. Nam, S. Kim, J. Lim (LGE)]

[JVET-P0584](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8375) AHG18: BDPCM for luma and chroma in lossless coding [T. Tsukuba, M. Ikeda, Y. Yagasaki, T. Suzuki (Sony)]

[JVET-P0606](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8399) AHG18: Enabling lossless coding with minimal impact on VVC design [[B. Bross](mailto:benjamin.bross@hhi.fraunhofer.de), T. Nguyen, H. Schwarz, D. Marpe, T. Wiegand (HHI), M. Karczewicz, Y.-H. Chao, H. Wang, M. Coban (Qualcomm)]

[JVET-P0684](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8483) Crosscheck of JVET-P0606: Enabling lossless coding with minimal impact on VVC design [L. Zhao, X. Zhao (Tencent)]

[JVET-P0607](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8400) AHG18: Two Stage Residual Coding for Lossless [B. Bross, T. Nguyen, H. Schwarz, D. Marpe, T. Wiegand (HHI)] [late]

[JVET-P0721](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8522) Crosscheck of JVET-P0607: AHG18: Two Stage Residual Coding for Lossless [Y.-H. Chao (Qualcomm)]

[JVET-P0612](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8406) AHG18: Non-Lossless Coding Tools in VVC [?? (??)] [late] [miss]

## Miscellaneous coding tools (6)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0254](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8043) Issue of simplified luma mapping of LMCS [K. Abe, T. Toma (Panasonic)]

[JVET-P0383](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8172) Non-CE: JCCR and LMCS interaction [K. Fan, L. Zhang, K. Zhang, Y. Wang (Bytedance)]

[JVET-P0712](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8513) Crosscheck of JVET-P0383 (Non-CE3: JCCR and LMCS interaction) [T. Lu (Dolby)]

[JVET-P0394](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8183) AHG13: Luma Clipping instead of LMCS [S. Keating, K. Sharman, A. Browne (Sony)]

[JVET-P0417](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8206) AHG13: Removal of ISP [T. Hellman, B. Heng, W. Wan (Broadcom)]

[JVET-P0497](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8286) AHG17: On LMCS Signalling [Y.-C. Yang, C.-Y. Teng, P.-H. Lin (Foxconn)]

[JVET-P0561](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8351) AHG16: Context restriction on CTU boundary for line buffer reduction [H.-J. Jhu, Y.-W. Chen, X. Xiu, T.-C. Ma, X. Wang (Kwai Inc.)]

[JVET-P0636](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8433) Crosscheck of JVET-P0561 (AHG16: Context restriction on CTU boundary for line buffer reduction) [T.-H. Li, C.-Y. Teng (Foxconn)]

## Neural networks (1)

[JVET-P0489](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8278) AHG9: Multiple Convolution Neural Networks for Sequence-Independent Processing [H. Yin, R. Yang, X. Fang, Z. Gao, R. Yang (Intel)] [late]

## 360 degree video (2)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0315](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8104) Modified 360Lib for more flexible cube face arrangements [J. Sauer, M. Bläser (RWTH Aachen)

[JVET-P0669](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8467) AHG6: Wrap-around motion vector prediction at the picture boundary [M. Lee, J. Lee, J. Park, D. Sim, S.-J. Oh (KWU), W. Lim, G. Bang (ETRI)] [late] [miss]

## High level tool control (5)

[JVET-P0275](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8064) AHG17: On slice-level syntax for TPM and GEO [A. Filippov, V. Rufitskiy (Huawei)]

[JVET-P0291](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8080) AHG17: MMVD and CIIP parameters in PPS or slice header [Y. Yasugi, E. Sasaki, T. Ikai (Sharp)] [late]

[JVET-P0320](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8109) AHG17: On slice-level syntax for BDOF and DMVR [A. Filippov, V. Rufitskiy (Huawei)]

[JVET-P0430](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8219) AHG17: High level syntax cleanup on the syntax elements of transform skip [Y.-J. Chang, V. Seregin, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0524](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8314) On high-level control flags of BDOF and PROF [X. Xiu, Y.-W. Chen, T.-C. Ma, H.-J. Jhu, X. Wang (Kwai Inc.)]

## AHG17: General high-level syntax (47)

### NAL unit header (2)

[JVET-P0362](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8151) AHG17: NAL unit header extension to extend the number of layers [R. Sjöberg, M. Pettersson, M. Damghanian (Ericsson)]

[JVET-P0363](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8152) AHG17: On NAL unit type table [M. Pettersson, R. Sjöberg, M. Damghanian (Ericsson)]

### PTL definition and signalling (2)

[JVET-P0217](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8006) On Profile, Tier, Level Syntax Structure [J. Samuelsson, S. Deshpande, A. Segall (Sharp)]

[JVET-P0478](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8267) AHG17: On (sub)profiles signalling in the DPS [R. Skupin, Y. Sanchez, K. Sühring, T. Schierl (HHI)] [late]

### Cross-RAP referencing (2)

[JVET-P0114](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7903) AHG17: On external decoding refresh (EDR) [Y.-K. Wang, Hendry, J. Chen (Futurewei), H. Yu, L. Yu (ZJU)]

[JVET-P0211](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8000) AHG17: On cross-RAP referencing [M. M. Hannuksela (Nokia)]

### Reference picture list signalling and constraints (8)

[JVET-P0123](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7912) AHG17: RPL constraints for RASL and RADL pictures [Hendry, Y.-K. Wang (Futurewei)]

[JVET-P0134](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7923) AHG17: On long-term reference picture signalling [X. Ma, H. Yang (Huawei)]

[JVET-P0135](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7924) AHG8/AHG17: On inter-layer reference picture signalling [X. Ma, H. Yang (Huawei)]

[JVET-P0182](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7971) AHG8/AHG17: On Reference Picture List and Inter-Layer Prediction [S. Deshpande (Sharp)]

[JVET-P0221](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8010) AHG8: On signaling interlayer reference picture list [B. Choi, S. Wenger, S. Liu (Tencent)]

[JVET-P0235](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8024) AHG17: A bugfix of SPS flags and reference picture list structure [T. Chujoh, E. Sasaki, T. Ikai (Sharp)]

[JVET-P0356](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8145) AHG17: Bitstream constraints on RPL and GDR [R. Sjöberg, M. Pettersson, M. Damghanian (Ericsson)]

[JVET-P0589](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8381) AHG8: On inter-layer reference picture index range [V. Seregin, M. Coban, M. Karczewicz (Qualcomm)]

### AUD, picture header, slice header parameters signalling (10)

[JVET-P0687](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8486) AHG17: A summary of HLS proposals on access unit delimiter, picture header, and slice header parameters signalling [Hendry (Futurewei)] [late]

[JVET-P0095](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7884) AHG12/AHG17: On signalling of picture-specific syntax elements in access unit delimiter [M. M. Hannuksela (Nokia)]

[JVET-P0120](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7909) AHG17: On access unit delimiter [Hendry, Y.-K. Wang (Futurewei)]

[JVET-P0218](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8007) AHG8/AHG17: On Access Unit Delimiter and Picture Detection [J. Samuelsson, S. Deshpande, A. Segall (Sharp)]

[JVET-P0222](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8011) AHG17: On signaling parameters in AUD [B. Choi, S. Wenger, S. Liu (Tencent)]

[JVET-P0239](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8028) AHG17: HLS Cleanup [W. Wan, T. Hellman, B. Heng (Broadcom)]

[JVET-P0334](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8123) AHG17: On constant slice header parameter set in PPS [B. Wang, S. Esenlik, A. M. Kotra, H. Gao, E. Alshina (Huawei)]

[JVET-P0367](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8156) AHG17: On AUD signaling [M. Pettersson, R. Sjöberg, M. Damghanian (Ericsson)]

[JVET-P0368](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8157) AHG17: On selectively signal slice header parameters in PPS [M. Pettersson, R. Sjöberg, M. Damghanian (Ericsson)]

[JVET-P0427](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8216) AHG17: Bugfixes on constant slice header parameters [Y.-J. Chang, V. Seregin, M. Coban, A. Ramasubramonian, M. Karczewicz (Qualcomm)]

[JVET-P0428](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8217) AHG17: Improvement on signaling of constant slice header parameters [Y.-J. Chang, [V. Seregin](mailto:vseregin@qti.qualcomm.com), M. Coban, M. Karczewicz (Qualcomm)]

### Miscellaneous HLS topics (11)

[JVET-P0122](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7911) AHG17: On adaptation parameter set [Hendry, J. Chen, Y.-K. Wang (Futurewei)]

[JVET-P0359](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8148) AHG17: An STSA\_NUT restriction on PPS and APS availability [R. Sjöberg, M. Pettersson, M. Damghanian (Ericsson)]

[JVET-P0184](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7973) AHG8/AHG17: On Decoding Process for Unavailable Reference Pictures and Reference Picture List Construction [S. Deshpande (Sharp)]

[JVET-P0243](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8032) AHG17: HLS simplification W. Wan, T. Hellman, B. Heng (Broadcom)]

[JVET-P0244](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8033) AHG17: Miscellaneous HLS corrections [W. Wan, T. Hellman (Broadcom)]

[JVET-P0316](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8105) Coding of 360° video in non-compact cube layout using uncoded areas [J. Sauer, M. Bläser (RWTH Aachen)]

[JVET-P0366](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8155) AHG17: Signalling absence of NAL unit types in DPS [M. Pettersson, R. Sjöberg, M. Damghanian (Ericsson)]

[JVET-P0420](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8209) AHG8/AHG17: Reduction of overlapping between POC LSB and Temporal ID [M. Sychev (Huawei)]

[JVET-P0438](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8227) AHG17: On Constraints for ALF APS [J. Chen, Hendry (Futurewei)]

[JVET-P0588](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8380) AHG17: APS for low latency ALF [V. Seregin, M. Coban, A. K. Ramasubramonian, N. Hu, M. Karczewicz (Qualcomm)]

[JVET-P0610](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8404) AHG8/AHG17: Sub-layer picture rates [M. Sychev (Huawei)]

[JVET-P0108](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7897) AHG17: On parsing dependency between slice data and APS [S. Esenlik, A. M. Kotra, B. Wang, H. Gao, E. Alshina (Huawei)]

### HRD (6)

[JVET-P0181](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7970) AHG17: On HRD Information Signalling [S. Deshpande (Sharp)]

[JVET-P0183](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7972) AHG17: On Picture Timing Information Signalling [S. Deshpande (Sharp)]

[JVET-P0189](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7978) AHG8/AHG17: On buffering period, picture timing, and decoding unit information SEI messages [Y.-K. Wang (Futurewei)]

[JVET-P0202](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7991) AHG17: Harmonized HRD parameters signalling for decoding units [V. Drugeon (Panasonic)]

[JVET-P0203](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7992) AHG17: Parsing HRD related SEI messages independently from the SPS [V. Drugeon (Panasonic)]

[JVET-P0446](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8235) AHG17: On HRD for VVC: Splicing, Open GOP and DRAP support [Y. Sanchez, R. Skupin, K. Sühring, T. Schierl (HHI)]

### VUI and SEI (6)

[JVET-P0337](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8126) AHG17: On porting SEI messages specified in HEVC and AVC [M. Sean, T. Lu, F. Pu, P. Yin, W. Husak, T. Chen (Dolby)]

[JVET-P0338](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8127) AHG17: Shutter interval information SEI message [M. Sean, T. Lu, F. Pu, P. Yin, W. Husak, T. Chen (Dolby)]

[JVET-P0404](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8193) SEI message for MPEG-I Part 7 metadata [M. M. Hannuksela (Nokia)]

[JVET-P0459](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8248) AHG17: Mergeability identifier for subpictures [R. Skupin, K. Sühring, S. Sanchez, T. Schierl (HHI)]

[JVET-P0462](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8251) AHG6: 360-degree video related SEI messages [R. Skupin, Y. Sanchez, K. Sühring, T. Schierl (HHI)]

[JVET-P0597](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8389) AHG6/AHG17: Generalized cubemap projection syntax for 360-degree videos [Y.-H. Lee, J.-L. Lin, Y.-J. Chen, C.-C. Ju (MediaTek), J. Boyce, M. Dmitrichenko (Intel)]

## AHG12: high-level parallelism and coded picture regions (46)

### Subpicture (35)

#### General aspects (3)

[JVET-P0139](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7928) AHG17/AHG12: General questions on subpicture designs for discussion [L. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0242](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8031) AHG12/AHG16/AHG17: Subpicture Support [W. Wan, T. Hellman, M. Zhou, B. Heng, P. Chen (Broadcom)]

[JVET-P0245](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8034) AHG12/AHG17: Subpicture Properties [W. Wan, T. Hellman, B. Heng (Broadcom)]

#### Subpicture layout and ID signalling (18)

[JVET-P0126](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7915) AHG12: Signalling of subpicture IDs and layout [M. M. Hannuksela (Nokia), Y.-K. Wang, Hendry (Futurewei)

[JVET-P0129](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7918) AHG12: On subpicture grid syntax [Y. He, A. Hamza (InterDigital)]

[JVET-P0130](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7919) AHG12: On subpicture ID [Y. He, A. Hamza (InterDigital)]

[JVET-P0140](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7929) AHG17/AHG12: Some comments on the VVC text [L. Chen, C.-W. Hsu, C.-Y. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

Aspects 1 and 2 of JVET-P0140 belong to this category.

[JVET-P0141](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7930) AHG17/AHG12: On signalling the subpicture IDs [L. Chen, C.-W. Hsu, C.-Y. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0142](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7931) AHG17/AHG12: Comments on the subpicture grid in the SPS [L. Chen, C.-W. Hsu, C.-Y. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0143](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7932) AHG17/AHG12: On signalling of subpicture structure in the SPS [L. Chen, C.-W. Hsu, C.-Y. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0144](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7933) AHG17/AHG12: On associating slices with a subpicture [L. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0171](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7960) AHG12: Modification for subpicture [J. Li, K. Abe, V. Drugeon (Panasonic)]

[JVET-P0224](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8013) AHG12: On sub-picture layout and ID [B. Choi, S. Wenger, S. Liu (Tencent)] [late]

[JVET-P0377](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8166) AHG12: Cleanups on syntax design of sub-pictures [K. Zhang, L. Zhang, H. Liu, Z. Deng, J. Xu, N. Zhang (Bytedance)]

[JVET-P0431](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8220) AHG12: On subpicture ID [Y.-J. Chang, V. Seregin, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0432](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8221) AHG12: On signaling and grid size of subpictures [Y.-J. Chang, V. Seregin, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0464](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8253) AHG12: Comments on Subpicture Semantic Derivations [S. Paluri, J. Zhao, S. Kim (LGE)]

[JVET-P0471](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8260) AHG12 Explicit Signalling of Uniform and Non-Uniform Subpicture Grid in the SPS [S. Paluri, J. Zhao, S. Kim (LGE)

[JVET-P0480](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8269) AHG17: On simplification of subpicture design [R. Skupin, Y. Sanchez, K. Sühring, T. Schierl (HHI)] [late]

[JVET-P0579](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8370) AHG12: On Subpicture Information Signalling [S. Deshpande, J. Samuelsson (Sharp)]

[JVET-P0609](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8402) AHG12: On slice address signalling [R. Sjöberg, M. Damghanian, M. Pettersson (Ericsson)] [late]

#### Subpicture-level random access and merging (6)

[JVET-P0095](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7884) AHG12/AHG17: On signalling of picture-specific syntax elements in access unit delimiter [M. M. Hannuksela (Nokia)]

One aspect of JVET-P0095 belongs to here.

[JVET-P0124](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7913) AHG17: On mixed NAL unit types within a picture [Y.-K. Wang, Hendry (Futurewei)]

[JVET-P0146](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7935) AHG17/AHG12: On AUD as a picture header [L. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0458](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8247) AHG17: NAL unit type mapping [R. Skupin, K. Sühring, Y. Sanchez, T. Schierl (HHI)]

[JVET-P0351](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8140) [AHG12] On Subpictures merging [N. Ouedraogo, F. Denoual, F. Mazé (Canon)]

[JVET-P0378](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8167) AHG12: Removal of dependency between sub-pictures [K. Zhang, L. Zhang, H. Liu, Z. Deng, J. Xu, Y. Wang (Bytedance)]

#### Subpicture wraparound, padding, and cropping (4)

[JVET-P0127](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7916) AHG12: On subpicture wraparound motion compensation signalling [Y. He, Y. He, A. Hamza (InterDigital)]

[JVET-P0220](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8009) AHG12: On padding processing with sub-pictures [B. Choi, S. Wenger, S. Liu (Tencent)] [late]

[JVET-P0494](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8283) AHG12: Sub-picture signaling [B. Choi, S. Wenger, S. Liu (Tencent)] [late]

[JVET-P0581](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8372) AHG12: On Subpicture Cropping [S. Deshpande, J. Samuelsson, A. Segall (Sharp)]

#### Subpicture conformance definition and signalling (2)

[JVET-P0131](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7920) AHG12: On output sub\_picture sets [Y. He, A. Hamza (InterDigital) ]

[JVET-P0448](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8237) AHG17: Sub-picture level info for extraction and merging [R. Skupin, Y. Sanchez, K. Sühring, T. Schierl (HHI)]

#### Subpicture boundary filtering (2)

[JVET-P0693](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8492) AHG12: Summary of HLS proposals on subpictures [M. M. Hannuksela (Nokia)] [late]

[JVET-P0145](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7934) AHG17/AHG12: On the flags for processing with subpictures [L. Chen, C.-W. Hsu, C.-Y. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

[JVET-P0246](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8035) AHG17/Non-CE5: on loop filter processing for subpicture treated as a picture

### Slices, tiles, and brick (12)

[JVET-P0686](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8485) AHG12: A summary of HLS proposals on slices, tiles, and bricks [Y.-K. Wang (Futurewei)] [late]

[JVET-P0096](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7885) AHG12: On signalling of tile and brick partitioning [M. M. Hannuksela (Nokia)]

[JVET-P0140](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7929) AHG17/AHG12: Some comments on the VVC text [L. Chen, C.-W. Hsu, C.-Y. Chen, Y.-W. Huang, S.-M. Lei (MediaTek)]

Aspects 3 and 4 of JVET-P0140 belong to this category.

[JVET-P0186](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7975) AHG12: On Tiles, Bricks, Slices [S. Deshpande (Sharp)]

[JVET-P0231](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8020) AHG12: On brick information signalling [B.-K. Lee (XRis), D. Jun (Kyungnam University)]

[JVET-P0232](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8021) AHG12: On rectangular slice addressing information [B.-K. Lee (XRis), D. Jun (Kyungnam University)]

[JVET-P0233](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8022) AHG12: Signaling of tile and brick information [B.-K. Lee (XRis), D. Jun (Kyungnam University)]

[JVET-P0240](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8029) AHG17: Slices [T. Hellman, W. Wan, M. Zhou, B. Heng, P. Chen (Broadcom)]

[JVET-P0252](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8041) AHG12: Loop filter control flag for tile boundary [K. Abe, T. Toma, V. Drugeon (Panasonic)]

[JVET-P0308](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8097) AHG12: On signalling of tile partitioning [J. Do, D. Park, Y.-U. Yoon, J.-G. Kim (KAU)]

[JVET-P0357](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8146) AHG12: Signal the CTU size in both SPS and PPS [R. Sjöberg, M. Pettersson, M. Damghanian (Ericsson)]

[JVET-P0364](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8153) AHG12: Multiple tile partitions in PPS [M. Pettersson, R. Sjöberg, M. Damghanian (Ericsson)]

[JVET-P0433](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8222) AHG12: On brick signalling [Y.-J. Chang, M. Coban, M. Karczewicz (Qualcomm)]

## AHG8: layered coding and resolution adaptivity (36)

### Scalability (27)

#### Output layer sets (3)

JVET-P0115 AHG8: Scalability - general and operation points [Y.-K. Wang (Futurewei)]

[JVET-P0204](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7993) AHG8: User defined output layers mode [V. Drugeon (Panasonic)]

[JVET-P0225](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8014) AHG8: On output layer set and PTL signalling [B. Choi, S. Wenger, S. Liu (Tencent)]

#### Random access and POC (3)

[JVET-P0100](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7889) AHG8: Unaligned IRAP pictures across layers and layer-wise start-up [M. M. Hannuksela (Nokia)]

[JVET-P0101](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7890) AHG8: POC derivation for a multi-layer bitstream [M. M. Hannuksela (Nokia)]

JVET-P0116 AHG8: Scalability - random access [Y.-K. Wang (Futurewei)]

#### PTL, bitstream extraction, and conformance (6)

[JVET-P0117](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7906) AHG8: Scalability - PTL and decoder capability [Y.-K. Wang (Futurewei)]

[JVET-P0098](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7887) AHG8/AHG17: Handling of VPS and EOB NAL units in the sub-bitstream extraction process [M. M. Hannuksela (Nokia)]

[JVET-P0380](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8169) AHG8/AHG17: On the role of nuh\_layer\_id in the layer design [E. Thomas (TNO), M. Hannuksela (Nokia), L. Chen (MediaTek), Yong.He@InterDigital.com, S. Wenger, B. Choi (Tencent)]

[JVET-P0118](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7907) AHG8: Scalability - HRD [Y.-K. Wang (Futurewei)]

[JVET-P0125](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7914) AHG17: Miscellaneous HLS topics [Y.-K. Wang (Futurewei)]

[JVET-P0190](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7979) AHG8/AHG17: Scalable nesting SEI message [Y.-K. Wang (Futurewei)]

#### Region-wise scalability (1)

[JVET-P0336](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8125) AHG8: Support of ROI (Region-Of-Interest) scalability [T. Lu, F. Pu, P. Yin, M. Sean, W. Husak, T. Chen (Dolby)]

#### VPS and single-layer bitstreams/decoders (2)

[JVET-P0097](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7886) AHG8/AHG17: Removing dependencies on VPS from the decoding process of a non-scalable bitstream [M. M. Hannuksela (Nokia)]

[JVET-P0205](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7994) AHG17: Presence of Video Parameter Set in bitstreams [V. Drugeon (Panasonic)]

#### External independent layers (2)

[JVET-P0213](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8002) AHG8: External independent layers [M. M. Hannuksela (Nokia)]

[JVET-P0326](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8115) AHG17: External reference picture [P. Bordes, D. Doyen, F. Galpin, M. Kerdranvat (InterDigital)]

#### Multi-layer based single-layer decoding and subpicture support (3)

[JVET-P0212](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8001) AHG8/AHG12: Decoding multiple independent layers with single-layer decoding process [M. M. Hannuksela (Nokia)]

[JVET-P0226](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8015) AHG8/AHG12: On output layer set with sub-pictures [B. Choi, S. Wenger, S. Liu (Tencent)] [late]

[JVET-P0481](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8270) AHG17: On output layers and output layer sets [Y. Sanchez, R. Skupin, K. Sühring, T. Schierl (HHI)] [late]

#### Miscellaneous scalability HLS topics (7)

[JVET-P0128](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7917) AHG8: Scalability - GDR [Y. He, A. Hamza (InterDigital)]

[JVET-P0132](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7921) AHG8: On inter-layer motion vector prediction [Y. He, Y. He, A. Hamza (InterDigital)]

[JVET-P0187](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7976) AHG8/AHG17: Comments on HLS of VVC [S. Deshpande (Sharp)]

[JVET-P0185](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7974) AHG8/AHG17: On Video Parameter Set and Highest Temporal Sub-layer [S. Deshpande (Sharp)]

[JVET-P0223](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8012) AHG8: Signaling representation format [B. Choi, S. Wenger, S. Liu (Tencent)] [late]

[JVET-P0228](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8017) AHG17: General comments on HLS of VVC [B. Choi, S. Wenger, S. Liu (Tencent)]

[JVET-P0453](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8242) AHG8: On diagonal referencing for layered VVC [Y. Sanchez, R. Skupin, K. Sühring, T. Schierl (HHI)]

### Reference picture resampling (RPR) (8)

[JVET-P0206](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7995) AHG17: Clean-up on disabling temporal motion vector prediction in case of reference picture resampling [T. Nishi, V. Drugeon (Panasonic)]

[JVET-P0219](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8008) AHG8/AHG17: On signaling reference picture resampling [B. Choi, S. Wenger, S. Liu (Tencent)]

[JVET-P0241](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8030) AHG17/CE1-related: RPR [T. Hellman, W. Wan, P. Chen (Broadcom)]

[JVET-P0403](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8192) AHG8/AHG12: Subpicture-specific reference picture resampling [M. M. Hannuksela, A. Aminlou, K. Kammachi-Sreedhar (Nokia)]

[JVET-P0450](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8239) AHG17: On Sample Aspect Ratio for RPR [R. Skupin, Y. Sanchez, K. Sühring, T. Schierl (HHI)]

[JVET-P0482](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8271) AHG8: On reference picture resampling [Y. Sanchez, R. Skupin, K. Sühring, T. Schierl (HHI)] [late]

[JVET-P0590](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8382) AHG8: Scaling window for scaling ratio derivation [V. Seregin, A. K. Ramasubramonian, M. Coban, M. Karczewicz (Qualcomm)]

[JVET-P0591](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8383) AHG8: Resampled output picture [V. Seregin, A. K. Ramasubramonian, M. Coban, M. Karczewicz (Qualcomm)]

# Complexity analysis and reduction (2)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0084](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7873) Decoding Energy Assessment of VTM-6.0 [M. Kränzler, C. Herglotz, A. Kaup]

[JVET-P0085](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7874) Bit Stream Analyzer for Coding Tool Statistics [C. Herglotz, M. Kränzler, A. Kaup]

# Encoder optimization (1)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0092](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7881) AHG13: Encoder speed up for SMVD [H. Chen, H. Yang (Huawei)]

# Metrics and evaluation criteria (1)

Contributions in this category were discussed XXday X Oct. XXXX–XXXX in Track X (chaired by XXX).

[JVET-P0393](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=8182) On BD rate computation for tools affecting quantization [S. Keating, K. Sharman, A. Browne (Sony)]

# Withdrawn (13)

JVET-P0048 Withdrawn

JVET-P0102 Withdrawn

JVET-P0103 Withdrawn

JVET-P0104 Withdrawn

JVET-P0138 Withdrawn

JVET-P0227 Withdrawn

JVET-P0229 Withdrawn

JVET-P0268 Withdrawn

JVET-P0296 Withdrawn

JVET-P0323 Withdrawn

JVET-P0564 Withdrawn

JVET-P0618 Withdrawn

JVET-P0627 Withdrawn

# Plenary meetings, joint meetings, BoG reports, and summary of actions taken

## High-level syntax / systems relation meeting Saturday 5 Oct. 0900-XXXX

This session, held on XXXX at XXXX, was co-chaired by GJS and Youngkown Lim.

## Plenary meeting XXday X Oct. XXXX-XXXX

Reports of the tracks were presented as follows:

The general status of track A was presented and discussed, which particularly included the following aspects (not every small decision is noted):

…

The general status of track B was then presented and discussed, which particularly included the following aspects. Decisions recommended from track B were agreed and approved, unless otherwise noted:

…

## Closing Plenary meeting Friday 11 Oct.

… .

## Joint meeting XXday XX March XXXX-

JVET with … .

## BoGs (X)

## List of actions taken affecting the draft text of VVC, the VTM, and 360Lib

The following is a summary, in the form of a brief list, of the actions taken at the meeting that affect the text of the VVC draft text, VTM or 360Lib description. Both technical and editorial issues are included. This list is provided only as a summary – details of specific actions are noted elsewhere in this report and the list provided here may not be complete and correct. The listing of a document number only indicates that the document is related, not that it was adopted in whole or in part. The description given in the “Tool” column is a best effort for the sake of understanding but may not precisely reflect the functionality of the tool. It is also noted that in cases where several contributions proposed the same method, usually only one of the is listed as adoption below; refer to the meeting notes about the adoption to see which other contributions are related.

…

# Project planning

## Core experiment planning

…

## Drafting of specification text, encoder algorithm descriptions, and software

The following agreement has been established: the editorial team has the discretion to not integrate recorded adoptions for which the available text is grossly inadequate (and cannot be fixed with a reasonable degree of effort), if such a situation hypothetically arises. In such an event, the text would record the intent expressed by the committee without including a full integration of the available inadequate text.

## Plans for improved efficiency and contribution consideration

The group considered it important to have the full design of proposals documented to enable proper study.

Adoptions need to be based on properly drafted working draft text (on normative elements) and HM encoder algorithm descriptions – relative to the existing drafts. Proposal contributions should also provide a software implementation (or at least such software should be made available for study and testing by other participants at the meeting, and software must be made available to cross-checkers in EEs).

Suggestions for future meetings included the following generally-supported principles:

* No review of normative contributions without draft specification text
* VTM algorithm description text is strongly encouraged for non-normative contributions
* Early upload deadline to enable substantial study prior to the meeting
* Using a clock timer to ensure efficient proposal presentations (5 min) and discussions

The document upload deadline for the next meeting was planned to be XXday XX Jan 2020.

As general guidance, it was suggested to avoid usage of company names in document titles, software modules etc., and not to describe a technology by using a company name.

## General issues for experiments

It was emphasized during the opening plenary on January 9 that those rules which had been set up or refined during the 12th meeting should be observed. In particular, for some CEs, results were available late, and some changes in the experimental setup (particularly in CE4) were not discussed on the JVET reflector.

Group coordinated experiments have been planned as follows:

* “Core experiments” (CEs) are the coordinated experiments on coding tools which are deemed to be interesting but require more investigation and could potentially become part of the draft standard by the next meeting.
* A CE is a test of a specific fully described technology in a specific agreed way. It is not a forum for thinking of new ideas (like an AHG). The CE coordinators are responsible for making sure tha the CE description is complete and correct and has adequate detail. Reflector discussions about CE description clarity and other aspects of CE plans are encouraged.
* A description of each experiment is to be approved at the meeting at which the experiment plan is established. This should include the issues that were raised by other experts when the tool was presented, e.g., interference with other tools, contribution of different elements that are part of a package, etc. The experiment description document should provide the names of individual people, not just company names.
* Software for tools investigated in a CE will be provided in one or more separate branches of the software repository. Each CE will have a “fork” of the software, and within the CE there may be multiple branches established by the CE coordinator. The software coordinator will help coordinate the creation of these forks and branches and their naming. All JVET members will have read access to the CE software branches (using shared read-only credentials; the method for members to obtain the credentials is TBA on the reflector).
* During the experiment, revisions of the experiment plans can be made, but not substantial changes to the proposed technology.
* The CE description must match the CE testing that is done. The CE description needs to be revised if there has been some change of plans.
* The CE summary report must describe any changes that were made in the process of finalizing the CE.
* By the next meeting it is expected that at least one independent cross-checker will report a detailed analysis of each proposed feature that has been tested and confirm that the implementation is correct. Commentary on the potential benefits and disadvantages of the proposed technology in cross-checking reports is highly encouraged. Having multiple cross-checking reports is also highly encouraged (especially if the cross-checking involves more than confirmation of correct test results). The reports of cross-checking activities may (and generally should) be integrated into the CE report rather than submitted as separate documents.

It is possible to define sub-experiments within particular CEs, for example designated as CEX.a, CEX.b, etc., where X is the basic CE number.

As a general rule, it was agreed that each CE should be run under the same testing conditions using one software codebase, which should be based on the group test model software codebase. An experiment is not to be established as a CE unless there is access given to the participants in (any part of) the CE to the software used to perform the experiments.

The general agreed common conditions for single-layer coding efficiency experiments are described in the output document JVET-N1010.

Experiment descriptions should be written in a way such that it is understood as a JVET output document (written from an objective “third party perspective”, not a proponent perspective – e.g. not referring to methods as “improved”, “optimized”, etc.). The experiment descriptions should generally not express opinions or suggest conclusions – rather, they should just describe what technology will be tested, how it will be tested, who will participate, etc. Responsibilities for contributions to CE work should identify individuals in addition to company names.

CE descriptions contain a basic description of the technology under test, but should not contain excessively verbose descriptions of a technology (at least not unless the technology is not adequately documented elsewhere). Instead, the CE descriptions should refer to the relevant proposal contributions for any necessary further detail. However, the complete detail of what technology will be tested must be available – either in the CE description itself or in documents that are referenced in the CE description that are also available in the JVET document archive.

Any technology must have at least one cross-check partner to establish a CE – a single proponent is not enough. It is highly desirable have more than just one proponent and one cross-checker.

[Add info on software access.]

Some agreements relating to CE activities were established as follows:

* Only qualified JVET members can participate in a CE.
* Participation in a CE is possible without a commitment of submitting an input document to the next meeting. Participation is requested by contacting the CE coordinator.
* All software, results, and documents produced in the CE should be announced and made available to JVET in a timely manner.
* A JVET CE reflector will be established and announced on the main JVET reflector. Discussion of logistics arrangements, exchange of data, minor refinement of the test plans, and preparation of documents shall be conducted on the JVET CE reflector, with subject lines prefixed by “[CEx: ]”, where “x” is the number of the CE. All substantial communications about a CE other than such details shall take place on main JVET reflector. In the case that large amounts of data are to be distributed, it is recommended to send a link to the data rather than the data itself, or upload the data as an input contribution to the next meeting.

General timeline for CEs

Reviewed Thursday 11 July 2019 1900 (Y. Ye).

T1= 3 weeks after the JVET meeting: To revise the CE description and refine questions to be answered. Questions should be discussed and agreed on JVET reflector. Any changes of planned tests after this time need to be announced and discussed on the JVET reflector. Initially assigned description numbers shall not be changed later. If a test is skipped, it is to marked as “withdrawn”.

T2 = Test model software release + 2 weeks or X XX, whichever is earlier: Integration of all tools into a separate CE branch of the VTM is completed and announced to JVET reflector.

* Initial study by cross-checkers can begin.
* Proponents may continue to modify the software in this branch until T3
* 3rd parties are encouraged to study and make contributions to the next meeting with proposed changes

T3: 3 weeks before the next JVET meeting or T2 + 1 week, whichever is later: Any changes to the CE test branches of the software must be frozen, so the cross-checkers can know exactly what they are cross-checking. A software version tag should be created at this time. The name of the cross-checkers and list of specific tests for each tool under study in the CE plan description shall be documented in an updated CE description by this time.

T4: Regular document deadline – 1 week: CE contribution documents including specification text and complete test results shall be uploaded to the JVET document repository (particularly for proposals targeting to be promoted to the draft standard at the next meeting).

The CE summary reports shall be available by the regular deadline. This shall include documentation about crosscheck of software, matching of CE description and confirmation of the appropriateness of the text change, as well as sufficient crosscheck results to create evidence about correctness (crosscheckers must send this information to the CE coordinator at least 3 days ahead of the document deadline). Furthermore, any deviations from the timelines above shall be documented. The numbers used in the summary report shall not be changed relative to the description document.

CE reports may contain additional information about tests of straightforwared combinations of the identified technologies. Such supplemental testing needs to be clearly identified in the report if it was not part of the CE plan.

New branches may be created which combine two or more tools included in the CE document or the VTM (as applicable).

It is not necessary to formally name cross-checkers in the initial version of the CE description document. To adopt a proposed feature at the next meeting, we would like see comprehensive cross-checking done, with analysis that the description matches the software, and recommendation of value of the tool given tradeoffs.

The establishment of a CE does not indicate that a proposed technology is mature for adoption or that the testing conducted in the CE is fully adequate for assessing the merits of the technology, and a favourable outcome of CE does not indicate a need for adoption of the technology.

Availability of spec text is important to have a detailed understanding of the technology and also to judge what its impact on the complexity of the spec will be. There must also be sufficient time to study it in detail. CE contributions without sufficiently mature draft spec text in the CE input document should not be considered for adoption.

Plans for the CEs to be conducted were established Thursday 11 July (Y. Ye); CE plan documents were reviewed Thursday 11 July (Y. Ye).

Lists of participants in CE documents should be pruned to include only the active participants. Read access to software will be available to all members.

## Software development and anchor generation

The planned timeline for software releases was established as follows:

* VTM6.0 will be released by 2019-08-12 including all adoptions necessary for CTC and CE basis references. VTM6.1 with non-CTC adoptions will be released later. Further versions of VTM may be released for additional bug fixing, as appropriate.
* Preparation of the VTM software will include immediate removal of macros that were added in the previous meeting cycle. The software coordinator has the discretion to retain some such macros.
* No change of of 360lib or HDRTools was noted in response to meeting.

# Establishment of ad hoc groups

The ad hoc groups established to progress work on particular subject areas until the next meeting are described in the table below. The discussion list for all of these ad hoc groups was agreed to be the main JVET reflector ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de)).

|  |  |  |
| --- | --- | --- |
| **Title and Email Reflector** | **Chairs** | **Mtg** |
| **Project Management (AHG1)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Coordinate overall JVET interim efforts. * Supervise CE and AHG studies. * Report on project status to JVET reflector. * Provide a report to next meeting on project coordination status. | J.-R. Ohm, G. J. Sullivan (co-chairs) | N |
| **Draft text and test model algorithm description editing (AHG2)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Produce and finalize JVET-O2001 VVC text specification draft 6. * Produce and finalize JVET-O2002 VVC Test Model 6 (VTM 6) Algorithm and Encoder Description. * Gather and address comments for refinement of these documents. * Coordinate with test model software development AhG to address issues relating to mismatches between software and text. | B. Bross, J. Chen (co-chairs), J. Boyce, S. Kim, S. Liu, Y.-K. Wang, Y. Ye (vice-chairs) | N |
| **Test model software development (AHG3)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Coordinate development of test model (VTM) software and associated configuration files. * Produce documentation of software usage for distribution with the software. * Discuss and make recommendations on the software development process. * Propose improvements to the guideline document for developments of the test model software. * Perform tests of VTM 6 behaviour relative to HEVC and VTM 5 using the VTM common test conditions. * Coordinate with AHG on Draft text and test model algorithm description editing (AHG2) to identify any mismatches between software and text, and make further updates and cleanups to the software as appropriate. * Coordinate with AHG6 for integration with 360lib software. | F. Bossen, X. Li, K. Sühring (co-chairs) | N |
| **Test material and visual assessment (AHG4)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Maintain the video sequence test material database for development of the VVC standard. * Identify and recommend appropriate test materials for use in the development of the VVC standard. * Identify missing types of video material, solicit contributions, collect, and make available a variety of video sequence test material. * Evaluate new test sequences, particularly including the material recently submitted by the Blender Foundation / Blender Animation Studio and Twitch. * Propose a new structure for the test sequence repository. * Prepare availability of viewing equipment and facilities arrangements for the next meeting, and prepare testing upon consultation with CE coordinators. * Coordinate with AHG11 on test material for screen content coding | T. Suzuki, M. Wien (co-chairs), V. Baroncini, R. Chernyak, A. Norkin, J. Ye (vice-chairs) | N |
| **Memory bandwidth consumption of coding tools (AHG5)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Develop improved software tools for measuring both average and worst case of memory bandwidth, and provide information for usage of these tools. * Study cache configurations for measuring decoder memory bandwidth consumption. * Identify coding tools in CEs and VTM with significant memory bandwidth impact. * Study the impact of memory bandwidth on specific application cases. | R. Hashimoto (chair), T. Ikai, X. Li, D. Luo, H. Yang, M. Zhou (vice-chairs) | N |
| **360° video coding tools, software and test conditions (AHG6)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Study the effect on compression and subjective quality of different projections formats, resolutions, and packing layouts. * Discuss refinements of common test conditions, test sequences, and evaluation criteria. * Solicit additional test sequences, and evaluate suitability of test sequences on head-mounted displays and normal 2D displays. * Study coding tools dedicated to 360° video, their impact on compression, and implications to the core codec design. * Study the effect of viewport resolution, field of view, and viewport speed/direction on visual comfort. * Study complexity of GPU rendering of projection formats * Study syntax for signalling of projection formats, cubeface layouts, spherical rotations * Prepare and deliver the 360Lib-9.1 software version and common test condition configuration files according to JVET-M1012. * Generate CTC (PHEC) anchors and PERP results for VTM according to JVET-M1012, and finalize the reporting template for the common test conditions. * Produce documentation of software usage for distribution with the software. | J. Boyce and Y. He (co-chairs), K. Choi, J.-L. Lin, Y. Ye (vice-chairs) | N |
| **Coding of HDR/WCG material (AHG7)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Study and evaluate available HDR/WCG test content. * Study objective metrics for quality assessment of HDR/WCG material, including investigation of the correlation between subjective and objective results. * Compare the performance of the VTM and HM for HDR/WCG content. * Prepare for expert viewing of HDR content at the next JVET meeting if feasible. * Investigate the implications of chroma sampling location. * Coordinate implementation of HDR anchor aspects in the test model software with AHG3. * Study additional aspects of coding HDR/WCG content. | A. Segall (chair), E. François, W. Husak, S. Iwamura, D. Rusanovskyy (vice-chairs) | N |
| **Layered coding and resolution adaptivity (AHG8)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Study adaptive-resolution coding approaches for real-time communication, adaptive streaming, and 360-degree viewport-dependent streaming, including reference picture management and related scope and signalling * Study approaches for temporal scalability to avoid temporal judder when temporal scalability sub-bitstream extraction is used for achieving lower frame rate, and consider whether this should have a normative impact. * Develop a software framework which allows testing various layered coding and resolution adaptivity modalities in the context of the VTM software * Study approaches for support of layered coding scalability including spatial, temporal, quality, and view scalability; and analyse their coding efficiency and complexity characteristics * Coordinate with CEx on resampling filters | S. Wenger and A. Segall (co-chairs), M. M. Hannuksela, Hendry, S. McCarthy, Y.-C. Sun, P. Topiwala, M. Zhou (vice-chairs) | N |
| **Neural networks in video coding (AHG9)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Investigate the benefit of using neural networks in video compression such as CNN loop filter, intra prediction, resampling in adaptive resolution coding, and encoder-side partition mode decisions. * Investigate the complexity impact of using neural networks in video compression. * Investigate the complexity measurement of neural network coding tools. * Investigate benefit of universal versus selectable networks, both in terms of compression benefit and complexity. * Investigate how CNN parameters can be established for operation of the decoding process. * Investigate the impact of training materials on the performance of neural network coding tools. * Investigate the impact of the training process on performance and complexity. | S. Liu and Y. M. Li (co-chairs), B. Choi, K. Kawamura, Y. Li, L. Wang, P. Wu, H. Yang (vice-chairs) | N |
| **Encoding algorithm optimization (AHG10)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Study the impact of using techniques such as GOP structures and perceptually optimized adaptive quantization for encoder optimization. * Study the impact of adaptive quantization on individual tools in the test model. * Study the quantization adaptation tool in the test model. * Investigate the feasibility of adding a CTC test category in which adaptive quantization is turned on. * Study quality metrics for measuring subjective quality using e.g. the CfP response MOS scores. * Investigate other methods of improving objective and/or subjective quality, including adaptive coding structures, adaptive quantization without signalling, and multi-pass encoding. * Study methods of rate control and their impact on performance, subjective and objective quality. | A. Duenas, A. Tourapis (co-chairs), S. Ikonin, A. Norkin, R. Sjöberg, J. Le Tanou, J.-M. Thiesse (vice-chairs) | N |
| **Screen content coding (AHG11)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Investigate coding tools targeted at screen content in terms of compression benefit and implementation complexity. * Identify test materials, discuss testing conditions for screen content coding, and propose associated updated common test conditions. * Study the impact of loop filters on screen content coding. | S. Liu (chair), J. Boyce, A. Filippov, Y.-C. Sun, J. Xu, H. Yang (vice-chairs) | N |
| **High-level parallelism and coded picture regions (AHG12)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Study wavefront processing including the relationship with tiles and low delay characteristics. * Study flexible loop filter control and tile size restriction, including identifying implications on coding tools and implementation. * Study flexible tile partitioning (e.g. more flexible than HEVC and tile boundaries not spanning a full picture). * Study support of independently coded picture regions, including easy rewriting of such regions into a conforming sub-bitstream. * Prepare software and configurations for the test model to facilitate parallel processing tests. * Study the coding efficiency impact of parallel processing and coded picture regions. | S. Deshpande (chair), M. M. Hannuksela, R. Sjöberg, R. Skupin, W. Wan, Y.-K. Wang S. Wenger (vice-chairs) | N |
| **Tool reporting procedure (AHG13)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Prepare output document JVET-O2005, which describes the methodology of tool-off testing and a list of tools to be tested by identified testers. * Provide configurations files, bitstreams, and results of tool-on/tool-off testing. * Use the tool usage counts and memory bandwidth usage to study the decoder complexity of features in on/off testing. * Prepare a report with results of the tests. | W.-J. Chien, J. Boyce (co-chairs), W. Chen, Y.-W. Chen, R. Chernyak, K. Choi, R. Hashimoto, Y.**-**W. Huang, H. Jang, R.-L. Liao, S. Liu (vice-chairs) | N |
| **Operation modes for low latency support (AHG14)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Define relevant test conditions for the study of low latency modes * Study and propose low-latency performance assessment criteria/metrics * Update the implementation in the VTM model for supporting GRA. * Study a parallel framework for GRA assessment | J.-M. Thiesse (chair), S. Deshpande, A. Duenas, Hendry, K. Kazui, R. Sjöberg, A. Tourapis (vice-chairs) | N |
| **Quantization control (AHG15)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Identify methods for quantization step size control for luma and chroma, including spatially and frequency-adaptive approaches * Develop methods for evaluating quantization step size control operation * Study the association between transforms and quantization matrices * Develop testing conditions for evaluating QP signalling improvements including rate control and perceptual optimization strategies as appropriate * Evaluate the performance of the current VVC QP design using the adaptive quantization control techniques currently available in the VTM | R. Chernyak (chair), E. François, C. Helmrich, S. McCarthy, A. Segall (vice-chairs) | N |
| **Implementation studies (AHG16)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Study draft and proposed coding tools to identify implementation issues relating to decoder pipelines, decoder throughput, and other aspects of implementation difficulty. * Solicit hardware analysis of complex tools. * Provide feedback on potential solutions to address identified issues. | M. Zhou (chair), J. An, E. Chai, K. Choi, S. Sethuraman, T. Hsieh, X. Xiu (vice-chairs) | N |
| **High-level syntax (AHG17)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Study NAL unit header, sequence parameter set, picture parameter set, adaptation parameter set, and tile group header syntax designs * Study reference picture buffering and list construction * Study random access signalling and random access approaches, including approaches with reference pictures provided by external means * Assist in software development and text drafting for the high-level syntax in the VVC design. * Study syntax approaches for interoperability point signalling * Study selection of constraint flags to be included in the VTM and their impact on syntax, semantics, and decoding process | R. Sjöberg, J. Boyce (co-chairs), S. Deshpande, M. M. Hannuksela, R. Skupin, A. Tourapis, Y.-K. Wang, W. Wan, S. Wenger (vice-chairs) | N |
| **Lossless and near-lossless coding tools (AHG18)**  ([jvet@lists.rwth-aachen.de](mailto:jvet@lists.rwth-aachen.de))   * Study coding tools for lossless and near-lossless coding, including transform skip, BDPCM, and other potential technologies * Consider the interaction between coding tools and other processing such as loop filtering and LMCS for lossless and near-lossless coding * Develop proposals for lossless and near-lossless coding for chroma and non-YCbCr colour space content * Consider throughput bottlenecks for lossless and near-lossless coding at high resolutions and frame rates | T. Nguyen and T.-C. Ma (co-chairs), M. Ikeda, S. Iwamura, H. Jang, X. Zhao (vice-chairs) | N |

# Output documents

The following documents were agreed to be produced or endorsed as outputs of the meeting. Names recorded below indicate the editors responsible for the document production. Where applicable, dates of planned finalization and corresponding parent-body document numbers are also noted.

It was reminded that in cases where the JVET document is also made available as MPEG output document, a separate version under the MPEG document header should be generated. This version should be sent to GJS and JRO for upload.

JVET-O2000 Meeting Report of the 15th JVET Meeting [G. J. Sullivan, J.-R. Ohm] (2019-xx-xx, near next meeting)

Initial versions of the meeting notes (d0 … d9) were made available on a daily basis during the meeting.

JVET-O2001 Versatile Video Coding (Draft 6) [B. Bross, J. Chen, S. Liu] [WG 11 CD 23090-3, N18692] (2019-07-31)

(Initial version planned to be made available by 2019-07-18.)

See the list of elements under section 11.7, as agreed by the Fri. 12 July plenary.

JVET-O2002 Algorithm description for Versatile Video Coding and Test Model 6 (VTM 6) [J. Chen, Y. Ye, S. Kim] [WG 11 N 18693] (2019-09-09)

(Initial version planned to be made available by 2019-08-15.)

See the list of elements under section 0, as agreed by the Wed. 27 March plenary.

Remains valid – not updated: [JVET-N1003](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=6638) Guidelines for VVC reference software development [K. Sühring] (2019-04-01)

Remains valid – not updated: [JVET-M1004](http://phenix.int-evry.fr/jvet/doc_end_user/current_document.php?id=5757) Algorithm descriptions of projection format conversion and video quality metrics in 360Lib (Version 9) [Y. Ye, J. Boyce] (2019-02-15)

JVET-O2005 Methodology and reporting template for coding tool testing [W.-J. Chien and J. Boyce] (2019-07-31)

Remains valid – not updated: [JVET-M1006](http://phenix.int-evry.fr/jvet/doc_end_user/current_document.php?id=5758) Methodology and reporting template for neural network coding tool testing [Y. Li, S. Liu, K. Kawamura] (2019-02-01)

This output was produced to capture aspects specific to enable study of neural network techniques.

JVET-O2007 Supplemental enhancement information messages for coded video bitstreams [J. Boyce, G. J. Sullivan, Y.-K. Wang] [WG 11 CD 23002-7, N18699] (2019-07-31)

(.)

See the list of elements under section 11.8, as agreed by the Wed. 27 March plenary.

Remains valid – not updated: JVET-N1010 JVET common test conditions and software reference configurations for SDR video [F. Bossen, J. Boyce, X. Li, V. Seregin, K. Sühring] (2019-04-12)

(Old document revised for editorial refinement of headings.)

JVET-O2011 JVET common test conditions and evaluation procedures for HDR/WCG video [A. Segall, E. François, W. Husak, S. Iwamura, D. Rusanovskyy] (2019-07-31)

Remains valid – not updated: [JVET-L1012](http://phenix.int-evry.fr/jvet/doc_end_user/current_document.php?id=4840) JVET common test conditions and evaluation procedures for 360° video [P. Hanhart, J. Boyce, K. Choi, J.-L. Lin] (2018-10-26)

[JVET-O2021](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7821) Description of Core Experiment 1 (CE 1): Reference picture resampling filters [D. Luo, V. Seregin, W. Wan]

Regarding 0.5 second switching point, it was agreed to round down the switching point frame number to be a multiple of 4 to align with the GOP structure in LDB. In terms of the number of pictures tested, it will be set equal to 5-second-worth of test material without rounding.

Because the dimensions of coded pictures (full-resolution and downsampled) must be multiple of 8, it was agreed that the CE coordinators and participants will fill out the detailed plan for what lower resolution to code for each of the different source resolutions and different resampling ratios in the CE description document.

For PSNR1 caluclation, averaging PSNR values of different picture sizes may not be desirable. One way to address this is to accumulate the MSEs of all pictures and only convert to PSNR at the end of coding. It was agreed that the CE coordinators and participants will fill out the detailed plan for PSNR1 caluclation in the CE description document.

[JVET-O2022](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7823) Description of Core Experiment 2 (CE2): Gradual decoding refresh [K. Kazui, J.-M. Thiesse, Hendry, K. Kawamura]

Reviewed in closing plenary 1245.

Will test normative change of intra boundary, normative change of MC boundary extrapolation, and wavefront GDR.

[JVET-O2023](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7816) Description of Core Experiment 3 (CE3): Intra prediction and mode coding [G. Van der Auwera, L. Li, A. Filippov]

[JVET-O2024](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7820) Description of Core Experiment 4 (CE4): Inter prediction [C.-C. Chen, H. Yang, X. Xiu]

[JVET-O2025](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7822) Description of Core Experiment 5 (CE5): Loop filtering [C.-Y. Chen, A. Norkin]

Includes ALF, SAO, bilateral, HDTF, and deblocking.

Includes considering removal of SAO (or merging filters).

CE5-1.3 will include testing the proposed methods with DMVR off.

CE5-3.3 will include testing removal of SAO.

[JVET-O2026](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7817) Description of Core Experiment 6 (CE6): Transforms and transform signalling [H. E. Egilmez, M. Salehifar, X. Zhao]

CE tests that retrain the basis functions will provide the training software, training data, and version information of the VTM software used to conduct the training.

The CE test condition will include some non-CTC sequences.

[JVET-O2027](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7818) Description of Core Experiment 7 (CE7): Quantization and coefficient coding [H. Schwarz, M. Coban, C. Auyeung]

Bug fix to ensure that bin-to-bit ratio is accurate will be included in VTM6.0.

[JVET-O2028](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=7819) Description of Core Experiment 8 (CE8): 4:4:4 Screen Content Coding Tools [X. Xu, Y.-H. Chao, Y.-C. Sun, J. Xu]

It was noted that CTC for 4:4:4 content has not been decided yet.

In the context of CE8, it was agreed that palette mode should be turned on in the anchors.

# Future meeting plans, expressions of thanks, and closing of the meeting

Future meeting plans were established according to the following guidelines:

* Meeting under ITU-T SG 16 auspices when it meets (ordinarily starting meetings on the Tuesday of the first week and closing it on the Wednesday of the second week of the SG 16 meeting – a total of 9 meeting days), and
* Otherwise meeting under ISO/IEC JTC 1/SC 29/WG 11 auspices when it meets (ordinarily starting meetings on the Wednesday prior to such meetings and closing it at lunchtime on the last day of the WG 11 meeting – a total of 9.5 meeting days).

In cases where an exceptionally high workload is expected for a meeting, an earlier starting date may be defined. For the upcoming meeting in October 2019, the SG16 parent-level meeting dates had been shifted after the JVET and MPEG meeting plans were established, which has caused an additional adjustment in the JVET dates.

Some specific future meeting plans (to be confirmed) were established as follows:

* Wed. 8 – Fri. 17 January 2020, 17th meeting under WG 11 auspices in Brussels, BE.
* Wed. 15 – Fri. 24 April 2020, 18th meeting under WG 11 auspices in Alpbach, AT.
* Tue. 23 June – Wed. 1 July 2020, 19th meeting under ITU-T auspices in Geneva, CH.
* Wed. 7 – Fri. 16 October 2020, 20th meeting under WG 11 auspices in Rennes, FR.

The agreed document deadline for the 16th JVET meeting was planned to be XXday XX January 2020. CE proposal documents are due one week ahead of that date. Plans for scheduling of agenda items within that meeting remained TBA.

ITU was thanked for the excellent hosting of the 14th meeting of the JVET.

EBU, HHI, ITU-T and Sharp Labs of America were thanked for providing equipment used for subjective viewing during the 14th JVET meeting. Philippe Hanhart, Andrew Segall and Mathias Wien were thanked for preparing and conducting the subjective test efforts related to CE1, CE5 and CE11, and Vittorio Baroncini was thanked for his advice. Roger Miles was thanked for support in providing the displays from EBU; Kenneth Andersson, Johannes Sauer and Vadim Seregin were thanked for carefully transporting these. The experts who participated in the role as test subjects were also thanked.

The 16th JVET meeting was closed at approximately XXXX hours on Friday 11 Oct. 2019.

# Annex A to JVET report: List of documents

# Annex B to JVET report: List of meeting participants

The participants of the sixteenth meeting of the JVET, according to an attendance sheet circulated during the meeting sessions (approximately XXX people in total), were as follows: