 ISO/IEC JTC 1/SC 29/WG 04 N0432

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**INTERNATIONAL ORGANIZATION FOR STANDARDIZATION**

**ORGANISATION INTERNATIONALE DE NORMALISATION**

**ISO/IEC JTC 1/SC 29/WG 04 MPEG VIDEO CODING**

**ISO/IEC JTC 1/SC 29/WG 04 N0432**

**October 2023, Hannover**

|  |  |
| --- | --- |
| **Title** | **Text of ISO/IEC 23094-4:2022 CD Amd.1 Green metadata supplemental enhancement information** |
| **Source** | **WG 04, MPEG Video Coding** |
| **Status** | **Approved** |
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**Information technology — General video coding — Part 4: Conformance and reference software for essential video coding — Amendment 1: Green metadata supplemental enhancement information**

*6.1, 6.5.2, 6.6.1 and 7.2*

Replace hyperlink <https://standards.iso.org/iso-iec/23094/-4/ed-1/en/> with

<http://mpegx.int-evry.fr/software/MPEG/Video/EVC>   
[Ed. (RC) The URL will be updated to standards.iso.org]

*6.6.2.43*

Add “only” before “ADMVP” in the last sentence.

*6.6.2.74 and 6.6.2.75*

Replace “CM\_init” with “CM\_INIT”

*6.6.2.95*

Remove “only” before “ADDB” in the last sentence.

*6.6.2.96*

Remove “only” before “ALF” in the last sentence.

*6.6.2.97*

Remove “only” before “ALF” in the first sentence.

*6.6.2.99 and 6.6.2.101*

Remove “only” before “HTDF” in the first sentence.

*6.6.2.114*

Remove “only” before “RPL” in the first sentence.

*6.6.2.116*

Remove “only” before “POCS” in the first sentence.

*6.6.2.125*

Add subclause 6.6.2.125 as the following:

**6.6.2.125 Test bitstream BP\_SET\_C**

Specification: Streams with sets of coding tools in Baseline profile.

Functional stage: Test the decoding process of Baseline profile, low delay configuration.

Purpose: Check that the decoder can properly decode bitstreams in which the full set of coding tools is enabled in Baseline profile, low delay configuration.

*6.6.2.126*

Add subclause 6.6.2.126 as the following:

**6.6.2.126 Test bitstream BP\_SET\_D**

Specification: Streams with sets of coding tools in Baseline profile.

Functional stage: Test the decoding process of Baseline profile, low delay configuration with P slice.

Purpose: Check that the decoder can properly decode bitstreams in which the full set of coding tools is enabled in Baseline profile, low delay configuration with P slice.

*6.6.2.127*

Add subclause 6.6.2.127 as the following:

**6.6.2.127 Test bitstream ADMVP\_I**

Specification: Streams with ADMVP is enabled and its dependent tools disabled in Main profile.

Functional stage: Test the decoding process of the inter prediction in Main profile.

Purpose: Check that the decoder can properly decode bitstreams in which ADMVP is enabled and its dependent tools are disabled in Main profile.

*6.6.2.128*

Add subclause 6.6.2.128 as the following:

**6.6.2.128 Test bitstream ADMVP\_J**

Specification: Streams with only ADMVP tool enabled in Main profile.

Functional stage: Test the decoding process of the inter prediction in Main profile, low delay configuration with P slice.

Purpose: Check that the decoder can properly decode bitstreams in which only ADMVP tool is enabled in Main profile, low delay configuration with P slice.

*6.6.2.129*

Add subclause 6.6.2.129 as the following:

**6.6.2.129 Test bitstream ADMVP\_K**

Specification: Streams with only ADMVP and its dependent tools enabled in Main profile.

Functional stage: Test the decoding process of the inter prediction in Main profile, low delay configuration with P slice.

Purpose: Check that the decoder can properly decode bitstreams in which only ADMVP and its dependent tools are enabled in Main profile, low delay configuration with P slice.

*6.7*

Replace Table 1 with the following:

Table 1 — Bitstreams for Baseline and Main profiles

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Categories** | **Sub category** | **Description** | **Bitstream** | **Baseline** | **Main** | **Base Still Picture** | **Main Still Picture** | **Level** | **Frame rate  (Frame/sec)** |
| Tool set | Baseline profile tool set | Tool set of Baseline profile | BP\_SET\_A | X |  |  |  | 5.1 | 60 |
| Baseline Still Picture profile tool set | Tool set of Baseline Still Picture profile | BP\_SET\_B |  |  | X |  | NA | NA |
| Baseline profile tools set | Tool set of Baseline profile , low delay | BP\_SET\_C | X |  |  |  | 5.1 | 60 |
| Baseline profile tools set | Tool set of Baseline profile , low delay with P slice | BP\_SET\_D | X |  |  |  | 5.1 | 60 |
| Main profile minimum tool set | Minimum tool set of Main profile | MP\_MIN\_A |  | X |  |  | 5.1 | 60 |
| Main Still Picture profile minimum tool set | Minimum tool set of Main Still Picture profile | MP\_MIN\_B |  |  |  | X | NA | NA |
| Main profile tool set | All tools in Main profile enabled | MP\_SET\_A |  | X |  |  | 5.1 | 60 |
| Main Still Picture profile tool set | All tools in Main Still  Picture profile enabled | MP\_SET\_B |  |  |  | X | NA | NA |
| Block  structure | CTU,CU | CTU = 64 (cb\_max: 6, cb\_min: 2, cu14\_max: 6, tris\_max: 6, tris\_min: 4) | CTU\_A |  | X |  |  | 5.1 | 60 |
|  | CTU = 32 (cb\_max: 5, cb\_min: 2, cu14\_max: 5, tris\_max: 5, tris\_min: 4, suco\_max: 5) | CTU\_B |  | X |  |  | 5.1 | 60 |
|  | CTU = 128, minCU = 8 (cb\_max: 7, cb\_min: 3, cu14\_max: 6, tris\_max: 6, tris\_min: 5) | CTU\_C |  | X |  |  | 5.1 | 60 |
|  | CTU = 32, minCU = 32 (cb\_max: 5, cb\_min: 5, cu14\_max: 5, tris\_max: 5, tris\_min: 7) | CTU\_D |  | X |  |  | 5.1 | 60 |
|  | CTU = 64 (cb\_max: 6, cb\_min: 2, cu14\_max: 6, tris\_max: 6, tris\_min: 4) | CTU\_E |  |  |  | X | NA | NA |
|  | CTU = 32 (cb\_max: 5, cb\_min: 2, cu14\_max: 5, tris\_max: 5, tris\_min: 4, suco\_max: 5) | CTU\_F |  |  |  | X | NA | NA |
|  | CTU = 128, minCU = 8 (cb\_max: 7, cb\_min: 3, cu14\_max: 6, tris\_max: 6, tris\_min: 5) | CTU\_G |  |  |  | X | NA | NA |
|  | CTU = 32, minCU = 32 (cb\_max: 5, cb\_min: 5, cu14\_max: 5, tris\_max: 5, tris\_min: 7) | CTU\_H |  |  |  | X | NA | NA |
|  | BTT (Binary and ternary split) | BTT structure Off test | BTT\_A |  | X |  |  | 5.1 | 60 |
|  | BTT structure On test based on MP\_MIN (cb\_max: 7, cb\_min: 2, cu14\_max: 6, tris\_max: 6, tris\_min: 4) | BTT\_B |  | X |  |  | 5.1 | 60 |
|  | Binary split on, ternary off (cb\_max: 7, cb\_min: 2, cu14\_max: 6, tris\_max: 2, tris\_min: 4) | BTT\_C |  | X |  |  | 5.1 | 60 |
|  | Binary split on, ternary off, only1:1/1:2/2:1 ratio CUs allowed (cb\_max: 7, cb\_min: 2, cu14\_max: 2, tris\_max: 2, tris\_min: 4) | BTT\_D |  | X |  |  | 5.1 | 60 |
|  | Binary split on, ternary on, only1:1/1:2/2:1 ratio CUs allowed (cb\_max: 7, cb\_min: 2, cu14\_max: 2, tris\_max: 6, tris\_min: 4) | BTT\_E |  | X |  |  | 5.1 | 60 |
|  | BTT structure Off test | BTT\_F |  |  |  | X | NA | NA |
|  | BTT structure On test based on MP\_MIN (cb\_max: 7, cb\_min: 2, cu14\_max: 6, tris\_max: 6, tris\_min: 4) | BTT\_G |  |  |  | X | NA | NA |
|  | Binary split on, ternary off (cb\_max: 7, cb\_min: 2, cu14\_max: 6, tris\_max: 2, tris\_min: 4) | BTT\_H |  |  |  | X | NA | NA |
|  | Binary split on, ternary off, only1:1/1:2/2:1 ratio CUs allowed (cb\_max: 7, cb\_min: 2, cu14\_max: 2, tris\_max: 2, tris\_min: 4) | BTT\_I |  |  |  | X | NA | NA |
|  | Binary split on, ternary on, only1:1/1:2/2:1 ratio CUs allowed (cb\_max: 7, cb\_min: 2, cu14\_max: 2, tris\_max: 6, tris\_min: 4) | BTT\_J |  |  |  | X | NA | NA |
|  | BOUNDARY  (Boundary  partition) | width=128\*N+8, height=128\*M+112 | BOUNDARY\_A |  | X |  |  | 5.1 | 60 |
|  | width=128\*N+24, height=128\*M+96 | BOUNDARY\_B |  | X |  |  | 5.1 | 60 |
|  | width=128\*N+40, height=128\*M+80 | BOUNDARY\_C |  | X |  |  | 5.1 | 60 |
|  | width=128\*N+56, height=128\*M+64 | BOUNDARY\_D |  | X |  |  | 5.1 | 60 |
|  | width=128\*N+8, height=128\*M+112 | BOUNDARY\_E |  |  |  | X | NA | NA |
|  | width=128\*N+24, height=128\*M+96 | BOUNDARY\_F |  |  |  | X | NA | NA |
|  | width=128\*N+40, height=128\*M+80 | BOUNDARY\_G |  |  |  | X | NA | NA |
|  | width=128\*N+56, height=128\*M+64 | BOUNDARY\_H |  |  |  | X | NA | NA |
|  | SUCO (Split unit  coding ordering) | SUCO Off test | SUCO\_A |  | X |  |  | 5.1 | 60 |
|  | SUCO On test based on MP\_MIN (default setting == (suco\_max: 6, suco\_min: 4)) | SUCO\_B |  | X |  |  | 5.1 | 60 |
|  | suco\_max: 5, suco\_min: 4 | SUCO\_C |  |  |  |  | 5.1 | 60 |
|  | suco\_max: 6, suco\_min: 5 | SUCO\_D |  |  |  |  | 5.1 | 60 |
|  | SUCO Off test | SUCO\_E |  |  |  | X | NA | NA |
|  | SUCO On test based on MP\_MIN (default setting == (suco\_max: 6, suco\_min: 4)) | SUCO\_F |  |  |  | X | NA | NA |
|  | suco\_max: 5, suco\_min: 4 | SUCO\_G |  |  |  | X | NA | NA |
|  | suco\_max: 6, suco\_min: 5 | SUCO\_H |  |  |  | X | NA | NA |
| Inter | ADMVP (Advanced motion vector  prediction) | ADMVP Off test  (dependent tools = off) | ADMVP\_A |  | X |  |  | 5.1 | 60 |
|  | ADMVP On test based on MP\_MIN and ADMVP On (dependent tools = off) | ADMVP\_B |  | X |  |  | 5.1 | 60 |
|  | ADMVP On test based on MP\_MIN and ADMVP On (dependent tools = off) | ADMVP\_C |  | X |  |  | 5.1 | 60 |
|  | ADMVP On test based on MP\_MIN and ADMVP On (dependent tools = off), Low delay | ADMVP\_D |  | X |  |  | 5.1 | 60 |
|  | ADMVP Off test (dependent tools=off) | ADMVP\_E |  | X |  |  | 5.1 | 60 |
|  | ADMVP Off test (dependent tools=off), Low delay | ADMVP\_F |  | X |  |  | 5.1 | 60 |
|  | ADMVP On test based on MP\_MIN and ADMVP On (dependent tools = off, temporal\_mvp\_assigned\_flag = 0) | ADMVP\_G |  | X |  |  | 5.1 | 60 |
| ADMVP On test based on MP\_MIN and ADMVP On (dependent tools=on) | ADMVP\_H |  | X |  |  | 5.1 | 60 |
| ADMVP On test based on MP\_SET and ADMVP On (dependent tools=off) | ADMVP\_E |  | X |  |  | 5.1 | 60 |
| ADMVP On test based on MP\_MIN and ADMVP On (dependent tools = off), Low delay with P slice | ADMVP\_C |  | X |  |  | 5.1 | 60 |
| ADMVP On test based on MP\_MIN and ADMVP On (dependent tools = on), Low delay with P slice | ADMVP\_C |  | X |  |  | 5.1 | 60 |
| AFF (Affine model based motion  compensation) | AFF Off test | AFF\_A |  | X |  |  | 3.1 | 50 |
| Only regular affine prediction (EIF affine is never used) | AFF\_B |  | X |  |  | 3.0 | 60 |
| Only EIF affine is used for affine motion compensation | AFF\_C |  | X |  |  | 2.0 | 50 |
|  | Both EIF affine and regular affine are used for motion compensation | AFF\_D |  | X |  |  | 3.0 | 60 |
|  | AFF On test based on MP\_MIN and ADMVP On | AFF\_E |  | X |  |  | 3.1 | 50 |
|  | AMVR (Adaptive motion vector  resolution) | AMVR Off test | AMVR\_A |  | X |  |  | 5.1 | 60 |
|  | AMVR On test based on MP\_MIN and ADMVP On | AMVR\_B |  | X |  |  | 5.1 | 60 |
|  | DMVR (Decoder side motion vector refinement) | DMVR Off test | DMVR\_A |  | X |  |  | 3.1 | 50 |
|  | DMVR On test based on MP\_MIN and ADMVP On | DMVR\_B |  | X |  |  | 3.1 | 50 |
|  | MMVD (Merge with motion vector difference) | MMVD Off test | MMVD\_A |  | X |  |  | 5.1 | 60 |
|  | MMVD On test based on MP\_MIN and ADMVP On (mmvd\_group\_enable\_flag==1) | MMVD\_B |  | X |  |  | 5.1 | 60 |
|  | MMVD On test based on MP\_MIN and ADMVP On (mmvd\_group\_enable\_flag==0) | MMVD\_C |  | X |  |  | 5.1 | 60 |
|  | HMVP (History based motion  vector prediction) | HMVP On test based on MP\_MIN and ADMVP On | HMVP\_A |  | X |  |  | 5.1 | 60 |
|  | HMVP On test based on MP\_MIN and ADMVP On, Low delay | HMVP\_B |  | X |  |  | 5.1 | 50 |
|  | HMVP Off test | HMVP\_C |  | X |  |  | 5.1 | 60 |
|  | HMVP Off test, Low delay | HMVP\_D |  | X |  |  | 5.1 | 50 |
| Intra | EIPD (Extended intra prediction modes) | EIPD Off test | EIPD\_A |  | X |  |  | 5.1 | 60 |
|  | EIPD On test based on MP\_MIN | EIPD\_B |  | X |  |  | 5.1 | 60 |
|  | Constrained intra prediction (on based on MP\_SET) | EIPD\_C |  | X |  |  | 5.1 | 60 |
|  | Constrained intra prediction (on based on MP\_MIN) | EIPD\_D |  | X |  |  | 5.1 | 60 |
|  | EIPD Off test | EIPD\_E |  |  |  | X | NA | NA |
|  | EIPD On test based on MP\_MIN | EIPD\_F |  |  |  | X | NA | NA |
|  | IBC (Intra block copy) | IBC Off test | IBC\_A |  | X |  |  | 5.1 | 30 |
|  | IBC On test based on MP\_MIN and EIPD On | IBC\_B |  | X |  |  | 5.1 | 30 |
|  | Exercise range of IBC sizes | IBC\_C |  | X |  |  | 5.1 | 30 |
| Entropy | CM (Context  initialization) | CM Off test | CM\_INIT\_A |  | X |  |  | 5.1 | 60 |
| CM On test based on MP\_MIN | CM\_INIT\_B |  | X |  |  | 5.1 | 60 |
| ADCC (Advanced residual coding) | ADCC On test based on MP\_MIN and CM On | ADCC\_A |  | X |  |  | 5.1 | 60 |
| ADCC Off test | ADCC\_B |  | X |  |  | 5.1 | 60 |
| ADCC On with MP\_SET | ADCC\_C |  | X |  |  | 5.1 | 50 |
| Transform & Quantization | IQT (Improved quantization and transform) | IQT Off test | IQT\_A |  | X |  |  | 3.1 | 50 |
|  | IQT On test based on MP\_MIN | IQT\_B |  | X |  |  | 3.1 | 50 |
|  | Exercise range of Chroma QP offset (positive values) | IQT\_C |  | X |  |  | 3.1 | 50 |
|  | Exercise range of Chroma QP offset (negative values) | IQT\_D |  | X |  |  | 3.1 | 50 |
|  | IQT Off test | IQT\_E |  |  |  | X | NA | NA |
|  | IQT On test based on MP\_MIN | IQT\_F |  |  |  | X | NA | NA |
|  | Exercise range of Chroma QP offset (positive values) | IQT\_G |  |  |  | X | NA | NA |
|  | Exercise range of Chroma QP offset (negative values) | IQT\_H |  |  |  | X | NA | NA |
|  | Exercise on Chroma QP mapping table, MP\_SET | IQT\_I |  | X |  |  | 5.1 | 25 |
|  | ATS (Adaptive transform  selection) | ATS Off test | ATS\_A |  | X |  |  | 3.1 | 50 |
|  | ATS On test based on MP\_MIN and IQT On | ATS\_B |  | X |  |  | 3.1 | 50 |
|  | DQP (Delta QP  signalling) | DQP on using BP\_SET | DQP\_A | X |  |  |  | 5.1 | 60 |
|  | DQP on using MP\_MIN | DQP\_B |  | X |  |  | 5.1 | 60 |
|  | DQP on using MP\_SET | DQP\_C |  | X |  |  | 5.1 | 60 |
|  | Exercise range of DQP sizes and DQP values (log2\_cu\_qp\_delta\_area: 10) | DQP\_D |  | X |  |  | 5.1 | 60 |
| Loop-filter | ADDB (Advanced deblocking filter) | ADDB On test on MP\_MIN | ADDB\_A |  | X |  |  | 5.1 | 20 |
|  | ADDB On test based on MP\_SET | ADDB\_B |  | X |  |  | 5.1 | 50 |
|  | ALF (Adaptive loop filter) | ALF On test based on MP\_SET | ALF\_A |  | X |  |  | 5.1 | 60 |
|  | ALF Off test | ALF\_B |  | X |  |  | 5.1 | 50 |
|  | ALF On test based on MP\_MIN | ALF\_C |  | X |  |  | 5.1 | 60 |
|  | HTDF (Hadamard transform domain filter) | HTDF Off test | HTDF\_A |  | X |  |  | 3.1 | 50 |
|  | HTDF On test based on MP\_MIN | HTDF\_B |  | X |  |  | 3.1 | 50 |
|  | HTDF Off test | HTDF\_C |  |  |  | X | NA | NA |
|  | HTDF On test based on MP\_MIN | HTDF\_D |  |  |  | X | NA | NA |
| Post-filter | DRA (Dynamical range adjustment) | DRA On test | DRA\_A |  | X |  |  | 5.1 | 24 |
| DRA On test based on MP\_MIN | DRA\_B |  | X |  |  | 5.1 | 24 |
| High level syntax | PIC\_SLICE\_TILE(Picture/Slices/Tile) | Pictures partitions in tiles and slices (4x4 uniform tiles and 2 rectangular slices) | PIC\_SLICE\_TILE\_A |  | X |  |  | 5.1 | 60 |
|  | Exercise tile combinations (5x3 non-uniform tiles and 1 slice) | PIC\_SLICE\_TILE\_B |  | X |  |  | 5.1 | 60 |
|  | Exercise on Arbitrary slices (4x4 uniform tiles and 2 arbitrary slices) | PIC\_SLICE\_TILE\_C |  | X |  |  | 5.1 | 60 |
|  | Exercise on picture size (4x4 uniform tiles and 2 arbitrary slices) | PIC\_SLICE\_TILE\_D |  | X |  |  | 5.1 | 60 |
|  | Pictures partitions in tiles and slices (4x4 uniform tiles and 2 rectangular slices) | PIC\_SLICE\_TILE\_E |  |  |  | X | NA | NA |
|  | Exercise tile combinations (5x3 non-uniform tiles and 1 slice) | PIC\_SLICE\_TILE\_F |  |  |  | X | NA | NA |
|  | Exercise on Arbitrary slices (4x4 uniform tiles and 2 arbitrary slices) | PIC\_SLICE\_TILE\_G |  |  |  | X | NA | NA |
|  | Exercise on picture size (4x4 uniform tiles and 2 arbitrary slices) | PIC\_SLICE\_TILE\_H |  |  |  | X | NA | NA |
|  | RPL (Reference picture lists) | RPL on test based on MP\_MIN | RPL\_A |  | X |  |  | 3.1 | 50 |
|  | RPL off with other features | RPL\_B |  | X |  |  | 3.1 | 50 |
|  | Exercise RPL combinations using related syntaxes | RPL\_C |  | X |  |  | 3.1 | 50 |
|  | POCS | POCs Off test | POCS\_A |  | X |  |  | 3.1 | 50 |
|  | POCs On test based on MP\_MIN | POCS\_B |  | X |  |  | 3.1 | 50 |
|  | APS (Adaptation parameter set) | Multiple APSs of each type(ALF) | APS\_A |  | X |  |  | 5.1 | 60 |
|  | Multiple APSs of each type (DRA) | APS\_B |  | X |  |  | 5.1 | 30 |
|  | BF (Tile / Slice  boundary filtering) | ALF is disabled across tile boundaries (3x2 tiles grid) | BF\_A |  | X |  |  | 5.1 | 60 |
|  | ALF is enabled across tile boundaries (5x3 tiles grid) | BF\_B |  | X |  |  | 5.1 | 60 |
|  | Loop filters off across tile/slice boundaries | BF\_C |  | X |  |  | 5.1 | 60 |
|  | Loop filters off across tile/slice boundaries | BF\_D |  | X |  |  | 5.1 | 60 |
|  | NAL(NAL unit type) | Exercise all types of NAL units | NAL\_A |  | X |  |  | 5.1 | 50 |
| X   Bitstream is for static and dynamic tests | | | | | | | | | |