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Title: **Draft AVC amendment text to specify Constrained Baseline profile, Stereo High profile, and frame packing SEI message**

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In subclause 0.4 "Publication and versions of this specification", replace the paragraph

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 10 (the current Specification) refers to the integrated version 9 text after its amendment to specify multiview video coding in one profile (Multiview High profile).

with

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 10 refers to the integrated version 9 text after its amendment to specify a profile for multiview video coding and to define additional SEI messages.

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 11 refers to the integrated version 10 text after its amendment to define a new profile (the Constrained Baseline profile) intended primarily to enable implementation of decoders supporting only the common subset of capabilities supported in various previously-specified profiles.

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 12 (the current Specification) refers to the integrated version 11 text after its amendment to define a new profile (the Stereo High profile) for two-view video coding with support of interlaced coding tools and to specify an additional SEI message specified as the frame packing arrangement SEI message. The changes for versions 11 and 12 were processed as a single amendment in the ISO/IEC approval process.

In subclause 0.7 "How to read this specification", replace the sentence

Annex A specifies eleven profiles (Baseline, Main, Extended, High, High 10, High 4:2:2, High 4:4:4 Predictive, High 10 Intra, High 4:2:2 Intra, High 4:4:4 Intra, and CAVLC 4:4:4 Intra), each being tailored to certain application domains, and defines the so-called levels of the profiles.

with

Annex A specifies twelve profiles (Baseline, Constrained Baseline, Main, Extended, High, High 10, High 4:2:2, High 4:4:4 Predictive, High 10 Intra, High 4:2:2 Intra, High 4:4:4 Intra, and CAVLC 4:4:4 Intra), each being tailored to certain application domains, and defines the so-called levels of the profiles.

In subclause 0.7 "How to read this specification", replace the sentence

Annex H specifies multiview video coding (MVC). The reader is referred to Annex H for the entire decoding process for MVC, which is specified there with references being made to clauses 2-9 and Annexes A-E. Subclause H.10 specifies one profile for MVC (Multiview High).

with

Annex H specifies multiview video coding (MVC). The reader is referred to Annex H for the entire decoding process for MVC, which is specified there with references being made to clauses 2-9 and Annexes A-E. Subclause H.10 specifies two profiles for MVC (Multiview High and Stereo High).

In subclause 7.3.2.1.1, Sequence parameter set data syntax, replace the following rows of the syntax table

constraint_set4_flag	0	u(1)
reserved_zero_3bits /* equal to 0 */	0	u(3)
level_idc	0	u(8)
seq_parameter_set_id	0	ue(v)

if(profile_idc = = 100 || profile_idc = = 110 ||
profile_idc = = 122 || profile_idc = = 244 || profile_idc = = 44 ||
profile_idc = = 83 || profile_idc = = 86 || profile_idc = = 118) {		

with

constraint_set4_flag	0	u(1)
constraint_set5_flag	0	u(1)
reserved_zero_2bits /* equal to 0 */	0	u(2)
level_idc	0	u(8)
seq_parameter_set_id	0	ue(v)

if(profile_idc = = 100 || profile_idc = = 110 ||
profile_idc = = 122 || profile_idc = = 244 || profile_idc = = 44 ||
profile_idc = = 83 || profile_idc = = 86 || profile_idc = = 118 ||
profile_idc = = 128) {		

In subclause 7.3.2.1.3, Subset sequence parameter set RBSP syntax, replace the following row of the syntax table

} else if(profile_idc = = 118) {		

with

} else if(profile_idc = = 118 || profile_idc = = 128) {		

In subclause 7.4.2.1.1, Sequence parameter set data semantics, replace the sentence

reserved_zero_3bits shall be equal to 0. Other values of reserved_zero_3bits may be specified in the future by ITU-T | ISO/IEC. Decoders shall ignore the value of reserved_zero_3bits.

with

constraint_set5_flag has semantics as specified in Annex H. Decoders conforming to the profiles specified in Annex A and Annex G may ignore the value of constraint_set5_flag.

reserved_zero_2bits shall be equal to 0. Other values of reserved_zero_2bits may be specified in the future by ITU-T | ISO/IEC. Decoders shall ignore the value of reserved_zero_2bits.

In subclause 8.7 "Deblocking filter process", replace the sentence

A conditional filtering process is specified in this subclause that is an integral part of the decoding process which shall be applied by decoders conforming to the Baseline, Extended, Main, High, High 10, High 4:2:2, and High 4:4:4 Predictive profiles.

with

A conditional filtering process is specified in this subclause that is an integral part of the decoding process which shall be applied by decoders conforming to the Baseline, Main, Constrained Baseline, Extended, High, High 10, High 4:2:2, and High 4:4:4 Predictive profiles.

In subclause 9.2.2.1 "Parsing process for level_prefix", replace the sentence

The value of level_prefix is constrained to not exceed 15 in bitstreams conforming to the Baseline, Main, and Extended profiles, as specified in subclauses A.2.1, A.2.2, and A.2.3, respectively.

with

The value of level_prefix is constrained to not exceed 15 in bitstreams conforming to the Baseline, Constrained Baseline, Main, and Extended profiles, as specified in subclauses A.2.1, A.2.1.1, A.2.2, and A.2.3, respectively.

Remove the following text from subclause A.2.1 "Baseline profile"

A bitstream can be referred to as a Constrained Baseline bitstream when profile_idc is equal to 66 and constraint_set1_flag is equal to 1.

A decoder is referred to as a Constrained Baseline decoder when it has the capability of decoding bitstreams in which profile_idc is equal to 66 or constraint_set0_flag is equal to 1 and in which constraint_set1_flag is equal to 1.

NOTE – All decoders conforming to the Baseline, Scalable Baseline, Main, Extended, High, Scalable High, High 10, High 4:2:2, and High 4:4:4 Predictive profiles are Constrained Baseline decoders.

Add a new subclause A.2.1.1 "Constrained Baseline profile" as follows

A.2.1.1 Constrained Baseline profile

Bitstreams conforming to the Constrained Baseline profile shall obey all constraints specified in subclause A.2.1 for the Baseline profile and all constraints specified in subclause A.2.2 for the Main profile.

Conformance of a bitstream to the Constrained Baseline profile is specified by profile_idc being equal to 66 with constraint_set1_flag being equal to 1.

NOTE – This specification of the Constrained Baseline profile is technically identical to specification of the use of the Baseline profile with constraint_set1_flag equal to 1. Thus, any existing specifications (in other documents that reference this Recommendation | International Standard) that have referred to the use of the Baseline profile with constraint_set1_flag equal to 1 should thus be interpreted as continuing in force as being technically identical to referring to the use of the Constrained Baseline profile (without any need for revision of these existing specifications to instead refer explicitly to the use of the Constrained Baseline profile).

Decoders conforming to the Constrained Baseline profile at a specific level shall be capable of decoding all bitstreams in which all of the following are true:

- profile_idc is equal to 66 or constraint_set0_flag is equal to 1
- constraint_set1_flag is equal to 1
- level_idc and constraint_set3_flag represent a level less than or equal to the specified level.

Replace the title of subclause A.3.1 "Level limits common to the Baseline, Main, and Extended profiles" by replacing the following

A.3.1 Level limits common to the Baseline, Main, and Extended profiles

with

A.3.1 Level limits common to the Baseline, Constrained Baseline, Main, and Extended profiles

In subclause A.3.1 "Level limits common to the Baseline, Constrained Baseline, Main, and Extended profiles", replace the following sentence

Bitstreams conforming to the Baseline, Main, or Extended profiles at a specified level shall obey the following constraints:

with

Bitstreams conforming to the Baseline, Constrained Baseline, Main, or Extended profiles at a specified level shall obey the following constraints:

In subclause A.3.3 "Profile-specific level limits" replace the following NOTE

> NOTE 1 – direct_8x8_inference_flag is not relevant to the Baseline profile as it does not allow B slice types (specified in subclause A.2.1), and direct_8x8_inference_flag is equal to 1 for all levels of the Extended profile (specified in subclause A.2.3).

with

> NOTE 1 – direct_8x8_inference_flag is not relevant to the Baseline or Constrained Baseline profiles as these profiles do not allow B slice types (specified in subclause A.2.1), and direct_8x8_inference_flag is equal to 1 for all levels of the Extended profile (specified in subclause A.2.3).

In subclause A.3.3 "Profile-specific level limits" replace the following NOTE

> NOTE 2 – frame_mbs_only_flag is equal to 1 for all levels of the Baseline profile (specified in subclause A.2.1).

with

> NOTE 2 – frame_mbs_only_flag is equal to 1 for all levels of the Baseline and Constrained Baseline profiles (specified in subclauses A.2.1 and A.2.1.1, respectively).

*In item f of subclause A.3.3 "Profile-specific level limits" replace the phrase "*Baseline or Extended*" with "*Baseline, Constrained Baseline, or Extended*".*

*In item f of subclause A.3.3 "Profile-specific level limits" replace the phrase "*specified in Table A-3 for the Baseline profile*" with "*specified in Table A-3 for the Baseline and Constrained Baseline profiles*".*

Replace the title of subclause A.3.3.1 "Baseline profile level limits" by replacing the following

A.3.3.1 Baseline profile level limits

with

A.3.3.1 Baseline and Constrained Baseline profile level limits

In subclause A.3.3.1 "Baseline and Constrained Baseline profile level limits", replace the following sentence

Table A-3 specifies limits for each level that are specific to bitstreams conforming to the Baseline profile.

with

Table A-3 specifies limits for each level that are specific to bitstreams conforming to the Baseline or Constrained Baseline profiles.

*In subclause A.3.3.1 "Baseline and Constrained Baseline profile level limits", replace the title of Table A-3 by replacing "*Baseline profile level limits*" with "*Baseline and Constrained Baseline profile level limits*".*

In subitem i of item a of subclause G.10.1.1 "Scalable Baseline profile", replace the following sentence

All constraints of the Baseline profile specified in subclause A.2.1 shall be obeyed.

with

All constraints of the Baseline and Constrained Baseline profiles specified in subclauses A.2.1 and A.2.1.1 shall be obeyed.

In the syntax table of subclause D.1 "SEI payload syntax", after the following rows of the table

else if(payloadType = = 44)		
base_view_temporal_hrd(payloadSize) /* specified in Annex H */	5	

insert the following additional rows

else if(payloadType = = 45)		
frame_packing_arrangement(payloadSize)	5	

Add a NOTE at the beginning of subclause D.2.22 "Stereo video information SEI message semantics" as follows:

NOTE – The stereo video information SEI message is included in this Specification primarily for historical reasons. It is now suggested to use the frame packing arrangement SEI message rather than the stereo video information SEI message to signal stereo video information.

Add a new subclause D.1.24.1 "Frame packing arrangement SEI message syntax" as follows

D.1.24.1 Frame packing arrangement SEI message syntax

frame_packing_arrangement(payloadSize) {	C	Descriptor
frame_packing_arrangement_id	5	ue(v)
frame_packing_arrangement_cancel_flag	5	u(1)
if(!frame_packing_arrangement_cancel_flag) {		
frame_packing_arrangement_type	5	u(7)
quincunx_sampling_flag	5	u(1)
content_interpretation_type	5	u(6)
spatial_flipping_flag	5	u(1)
frame0_flipped_flag	5	u(1)
field_views_flag	5	u(1)
current_frame_is_frame0_flag	5	u(1)
frame0_self_contained_flag	5	u(1)
frame1_self_contained_flag	5	u(1)
If(!quincunx_sampling_flag && frame_packing_arrangement_type !=5) {		
frame0_grid_position_x	5	u(4)
frame0_grid_position_y	5	u(4)
frame1_grid_position_x	5	u(4)
frame1_grid_position_y	5	u(4)
}		
frame_packing_arrangement_reserved_byte	5	u(8)
frame_packing_arrangement_repetition_period	5	ue(v)
}		
frame_packing_arrangement_extension_flag	5	u(1)
}		

Add a new subclause D.2.24.1 "Frame packing arrangement SEI message semantics" as follows:

D.2.24.1 Frame packing arrangement SEI message semantics

This SEI message informs the decoder that the output decoded picture contains samples of a frame consisting of multiple distinct spatially packed constituent frames using an indicated frame packing arrangement scheme. This information can be used by the decoder to appropriately rearrange the samples and process the samples of the constituent frames appropriately for display or other purposes (which are outside the scope of this Specification).

This SEI message may be associated with pictures that are either frames or fields. The frame packing arrangement of the samples is specified in terms of the sampling structure of a frame in order to define a frame packing arrangement structure that is invariant with respect to whether a picture is a single field of such a packed frame or is a complete packed frame.

frame_packing_arrangement_id contains an identifying number that may be used to identify the usage of the frame packing arrangement SEI message. The value of frame_packing_arrangement_id shall be in the range of 0 to $2^{32} - 2$, inclusive.

Values of frame_packing_arrangement_id from 0 to 255 and from 512 to $2^{31} - 1$ may be used as determined by the application. Values of frame_packing_arrangement_id from 256 to 511 and from 2^{31} to $2^{32} - 2$ are reserved for future use by ITU-T | ISO/IEC. Decoders shall ignore (remove from the bitstream and discard) all frame packing arrangement SEI messages containing a value of frame_packing_arrangement_id in the range of 256 to 511 or in the range of 2^{31} to $2^{32} - 2$, and bitstreams shall not contain such values.

frame_packing_arrangement_cancel_flag equal to 1 indicates that the frame packing arrangement SEI message cancels the persistence of any previous frame packing arrangement SEI message in output order. frame_packing_arrangement_cancel_flag equal to 0 indicates that frame packing arrangement information follows.

frame_packing_arrangement_type indicates the type of packing arrangement of the frames as specified in Table D-8.

Table D-8 – Definition of frame_packing_arrangement_type

Value	Interpretation
0	Each component plane of the decoded frames contains a "checkerboard" based interleaving of corresponding planes of two constituent frames as illustrated in Figure D-1.
1	Each component plane of the decoded frames contains a column based interleaving of corresponding planes of two constituent frames as illustrated in Figure D-2.
2	Each component plane of the decoded frames contains a row based interleaving of corresponding planes of two constituent frames as illustrated in Figure D-3.
3	Each component plane of the decoded frames contains a side-by-side packing arrangement of corresponding planes of two constituent frames as illustrated in Figure D-4 and Figure D-6.
4	Each component plane of the decoded frames contains top-bottom packing arrangement of corresponding planes of two constituent frames as illustrated in Figure D-5.
5	The component planes of the decoded frames in output order form a temporal interleaving of alternating first and second constituent frames as illustrated in Figure D-7.

NOTE 1 – Figure D-1 to Figure D-6 provide typical examples of rearrangement and upconversion processing for various packing arrangement schemes. Actual characteristics of the constituent frames are signaled in detail by the subsequent syntax elements of the frame packing arrangement SEI message. In Figure D-1 to Figure D-6, an upconversion processing is performed on each constituent frame to produce frames having the same resolution as that of the decoded frame. An example of the upsampling method to be applied to a quincunx sampled frame as shown in Figure D-1 or Figure D-6 is to fill in missing positions with an average of the available spatially neighbouring samples (the average of the values of the available samples above, below, to the left and to the right of each sample to be generated). The actual upconversion process to be performed, if any, is outside the scope of this Specification.

NOTE 2 – Sample aspect ratio (SAR) should be signalled appropriately in VUI parameters to describe the intended horizontal distance between the columns and the intended vertical distance between the rows of the luma sample array in the decoded frame. For the typical examples in Figure D-1 to Figure D-3 with SAR of 1:1 for the upconverted color plane, signalling SAR of 1:1 is appropriate. For the typical examples in Figure D-4 and Figure D-6 with SAR of 1:1 for the upconverted color plane, signalling SAR of 2:1 is appropriate. For the typical example in Figure D-5 with SAR of 1:1 for the upconverted color plane, signalling SAR of 1:2 is appropriate.

NOTE 3 – When the output time of the samples of constituent frame 0 differs from the output time of the samples of constituent frame 1 (i.e., when field_views_flag is equal to 1 or frame_packing_arrangement_type is equal to 5) and the display system in use presents two views simultaneously, the display time for constituent frame 0 should be delayed to coincide with the display time for constituent frame 1. (The display process is not specified in this Recommendation | International Standard.)

NOTE 4 – When field_views_flag is equal to 1 or frame_packing_arrangement_type is equal to 5, the value 0 for fixed_frame_rate_flag is not expected to be prevalent in industry use of this SEI message.

NOTE 5 – frame_packing_arrangement_type equal to 5 describes a temporal interleaving process of different views.

All other values of frame_packing_arrangement_type are reserved for future use by ITU-T | ISO/IEC. It is a requirement of bitstream conformance to this Specification that the bitstreams shall not contain such other values of frame_packing_arrangement_type.

quincunx_sampling_flag equal to 1 indicates that each color component plane of each constituent frame is quincunx sampled as illustrated in Figure D-1 or Figure D-6, and quincunx_sampling_flag equal to 0 indicates that the color component planes of each constituent frame are not quincunx sampled.

When frame_packing_arrangement_type is equal to 0, it is a requirement of bitstream conformance to this Specification that quincunx_sampling_flag shall be equal to 1. When frame_packing_arrangement_type is equal to 5, it is a requirement of bitstream conformance to this Specification that quincunx_sampling_flag shall be equal to 0.

NOTE 6 – For any chroma format (4:2:0, 4:2:2, or 4:4:4), the luma plane and each chroma plane is quincunx sampled as illustrated in Figure D-1 when quincunx_sampling_flag is equal to 1.

content_interpretation_type indicates the intended interpretation of the constituent frames as specified in Table D-9. Values of content_interpretation_type that do not appear in Table D-9 are reserved for future specification by ITU-T | ISO/IEC.

For each specified frame packing arrangement scheme, there are two constituent frames that are referred to as frame 0 and frame 1.

Table D-9 – Definition of content_interpretation_type

Value	Interpretation
0	Unspecified relationship between the frame packed constituent frames
1	Indicates that the two constituent frames form the left and right views of a stereo view scene, with frame 0 being associated with the left view and frame 1 being associated with the right view
2	Indicates that the two constituent frames form the right and left views of a stereo view scene, with frame 0 being associated with the right view and frame 1 being associated with the left view

NOTE 7 – The value 2 for content_interpretation_type is not expected to be prevalent in industry use of this SEI message. However, the value was specified herein for purposes of completeness.

spatial_flipping_flag equal to 1, when frame_packing_arrangement_type is equal to 3 or 4, indicates that one of the two constituent frames is spatially flipped relative to its intended orientation for display or other such purposes.

When frame_packing_arrangement_type is equal to 3 or 4 and spatial_flipping_flag is equal to 1, the type of spatial flipping that is indicated is as follows:

– If frame_packing_arrangement_type is equal to 3, the indicated spatial flipping is horizontal flipping.

– Otherwise (frame_packing_arrangement_type is equal to 4), the indicated spatial flipping is vertical flipping.

When frame_packing_arrangement_type is not equal to 3 or 4, it is a requirement of bitstream conformance to this Specification that spatial_flipping_flag shall be equal to 0. When frame_packing_arrangement_type is not equal to 3 or 4, the value 1 for frame_packing_arrangement_type is reserved for future use by ITU-T | ISO/IEC. When frame_packing_arrangement_type is not equal to 3 or 4, decoders shall ignore the value 1 for spatial_flipping_flag.

frame0_flipped_flag, when spatial_flipping_flag is equal to 1, indicates which one of the two constituent frames is flipped.

When spatial_flipping_flag is equal to 1, frame0_flipped_flag equal to 0 indicates that frame 0 is not spatially flipped and frame 1 is spatially flipped, and frame0_flipped_flag equal to 1 indicates that frame 0 is spatially flipped and frame 1 is not spatially flipped.

When spatial_flipping_flag is equal to 0, it is a requirement of bitstream conformance to this Specification that frame0_flipped_flag shall be equal to 0. When spatial_flipping_flag is equal to 0, the value 1 for spatial_flipping_flag is reserved for future use by ITU-T | ISO/IEC. When spatial_flipping_flag is equal to 0, decoders shall ignore the value of frame0_flipped_flag.

When quincunx_sampling_flag is equal to 0, spatial location reference information is provided to specify the location of the upper left luma sample of each constituent frame relative to a spatial reference point.

NOTE 8 – The location of chroma samples relative to luma samples can be indicated by the chroma_sample_loc_type_top_field and chroma_sample_loc_type_bottom_field syntax elements in the VUI parameters.

field_views_flag equal to 1 indicates that all pictures in the current coded video sequence are coded as complementary field pairs. All fields of a particular parity are considered a first constituent frame and all fields of the opposite parity are considered a second constituent frame. When frame_packing_arrangement_type is not equal to 2, it is a requirement of bitstream conformance to this Specification that field_views_flag shall be equal to 0. When frame_packing_arrangement_type is not equal to 2, the value 1 for field_views_flag is reserved for future use by ITU-T | ISO/IEC. When frame_packing_arrangement_type is not equal to 2, decoders shall ignore the value of field_views_flag.

current_frame_is_frame0_flag equal to 1, when frame_packing_arrangement is equal to 5, indicates that the current decoded frame is constituent frame 0 and the next decoded frame in output order is constituent frame 1, and the display time of the constituent frame 0 should be delayed to coincide with the display time of constituent frame 1. current_frame_is_frame0_flag equal to 0, when frame_packing_arrangement is equal to 5, indicates that the current

decoded frame is constituent frame 1 and the previous decoded frame in output order is constituent frame 0, and the display time of the constituent frame 1 should not be delayed for purposes of stereo-view pairing.

When frame_packing_arrangement_type is not equal to 5, the constituent frame associated with the upper-left sample of the decoded frame is considered to be consitutuent frame 0 and the other constituent frame is considered to be constituent frame 1. When frame_packing_arrangement_type is not equal to 5, it is a requirement of bitstream conformance to this Specification that current_frame_is_frame0_flag shall be equal to 0. When frame_packing_arrangement_type is not equal to 5, the value 1 for current_frame_is_frame0_flag is reserved for future use by ITU-T | ISO/IEC. When frame_packing_arrangement_type is not equal to 5, decoders shall ignore the value of current_frame_is_frame0_flag.

frame0_self_contained_flag equal to 1 indicates that no inter prediction operations within the decoding process for the samples of constituent frame 0 of the coded video sequence refer to samples of any constituent frame 1. frame0_self_contained_flag equal to 0 indicates that some inter prediction operations within the decoding process for the samples of constituent frame 0 of the coded video sequence may or may not refer to samples of some constituent frame 1. When frame_packing_arrangement_type is equal to 0 or 1, it is a requirement of bitstream conformance to this Specification that frame0_self_contained_flag shall be equal to 0. When frame_packing_arrangement_type is equal to 0 or 1, the value 1 for frame0_self_contained_flag is reserved for future use by ITU-T | ISO/IEC. When frame_packing_arrangement_type is equal to 0 or 1, decoders shall ignore the value of frame0_self_contained_flag. Within a coded video sequence, the value of frame0_self_contained_flag in all frame packing arrangement SEI messages shall be the same.

frame1_self_contained_flag equal to 1 indicates that no inter prediction operations within the decoding process for the samples of constituent frame 1 of the coded video sequence refer to samples of any constituent frame 0. frame1_self_contained_flag equal to 0 indicates that some inter prediction operations within the decoding process for the samples of constituent frame 1 of the coded video sequence may or may not refer to samples of some constituent frame 0. When frame_packing_arrangement_type is equal to 0 or 1, it is a requirement of bitstream conformance to this Specification that frame1_self_contained_flag shall be equal to 0. When frame_packing_arrangement_type is equal to 0 or 1, the value 1 for frame1_self_contained_flag is reserved for future use by ITU-T | ISO/IEC. When frame_packing_arrangement_type is equal to 0 or 1, decoders shall ignore the value of frame1_self_contained_flag. Within a coded video sequence, the value of frame1_self_contained_flag in all frame packing arrangement SEI messages shall be the same.

NOTE 9 – When frame0_self_contained_flag is equal to 1 or frame1_self_contained_flag is equal to 1, and frame_packing_arrangement_type is equal to 2, it is expected that the decoded frame should not be an MBAFF frame.

frame0_grid_position_x (when present) specifies the horizontal location of the upper left sample of constituent frame 0 to the right of the the spatial reference point in units of one sixteenth of the luma sample grid spacing between the samples of the columns of constituent frame 0 that are present in the decoded frame (prior to any upsampling for display or other purposes).

frame0_grid_position_y (when present) specifies the vertical location of the upper left sample of constituent frame 0 below the spatial reference point in units of one sixteenth of the luma sample grid spacing between the samples of the rows of constituent frame 0 that are present in the decoded frame (prior to any upsampling for display or other purposes).

frame1_grid_position_x (when present) specifies the horizontal location of the upper left sample of constituent frame 1 to the right of the the spatial reference point in units of one sixteenth of the luma sample grid spacing between the samples of the available columns of constituent frame 1 that are present in the decoded frame (prior to any upsampling for display or other purposes).

frame1_grid_position_y (when present) specifies the vertical location of the upper left sample of constituent frame 1 below the spatial reference point in units of one sixteenth of the luma sample grid spacing between the samples of the rows of constituent frame 1 that are present in the decoded frame (prior to any upsampling for display or other purposes).

NOTE 10 – The positions of luma samples for constituent frame 0 and constituent frame 1 illustrated in Figure D-2 to Figure D-5 correspond to frame0_grid_position_x equal to 0, frame0_grid_position_y equal to 0, frame1_grid_position_x equal to 0, and frame1_grid_position_y equal to 0. The use of different positions of luma samples for frame 0 and frame 1 is not expected to be prevalent in industry use of this SEI message.

NOTE 11 – The spatial location reference information frame0_grid_position_x, frame0_grid_position_y, frame1_grid_position_x, and frame1_grid_position_y is not provided when quincunx_sampling_flag is equal to 1 because the spatial alignment in this case is assumed to be such that constituent frame 0 and constituent frame 1 cover corresponding spatial areas with interleaved quincunx sampling patterns as illustrated in Figure D-1 and Figure D-6.

NOTE 12 – When frame_packing_arrangement_type is equal to 2 and field_views_flag is equal to 1, it is suggested that frame0_grid_position_y should be equal to frame1_grid_position_y.

frame_packing_arrangement_reserved_byte is reserved for future use by ITU-T | ISO/IEC. It is a requirement of bitstream conformance to this Specification that the value of frame_packing_arrangement_reserved_byte shall be equal to 0. All other values of frame_packing_arrangement_reserved_byte are reserved for future use by ITU-T | ISO/IEC. Decoders shall ignore (remove from the bitstream and discard) the value of frame_packing_arrangement_reserved_byte.

frame_packing_arrangement_repetition_period specifies the persistence of the frame packing arrangement SEI message and may specify a frame order count interval within which another frame packing arrangement SEI message with the same value of frame_packing_arrangement_id or the end of the coded video sequence shall be present in the bitstream. The value of frame_packing_arrangement_repetition_period shall be in the range of 0 to 16 384, inclusive.

frame_packing_arrangement_repetition_period equal to 0 specifies that the frame packing arrangement SEI message applies to the current decoded frame only.

frame_packing_arrangement_repetition_period equal to 1 specifies that the frame packing arrangement SEI message persists in output order until any of the following conditions are true:

– A new coded video sequence begins.

– A frame in an access unit containing a frame packing arrangement SEI message with the same value of frame_packing_arrangement_id is output having PicOrderCnt( ) greater than PicOrderCnt(CurrPic).

frame_packing_arrangement_repetition_period equal to 0 or equal to 1 indicates that another frame packing arrangement SEI message with the same value of frame_packing_arrangement_id may or may not be present.

frame_packing_arrangement_repetition_period greater than 1 specifies that the frame packing arrangement SEI message persists until any of the following conditions are true:

– A new coded video sequence begins.

– A frame in an access unit containing a frame packing arrangement SEI message with the same value of frame_packing_arrangement_id is output having PicOrderCnt( ) greater than PicOrderCnt(CurrPic) and less than or equal to PicOrderCnt(CurrPic) + frame_packing_arrangement_repetition_period.

frame_packing_arrangement_repetition_period greater than 1 indicates that another frame packing arrangement SEI message with the same value of frame_packing_arrangement_frames_id shall be present for a frame in an access unit that is output having PicOrderCnt( ) greater than PicOrderCnt(CurrPic) and less than or equal to PicOrderCnt(CurrPic) + frame_packing_arrangement_repetition_period; unless the bitstream ends or a new coded video sequence begins without output of such a frame.

frame_packing_arrangement_extension_flag equal to 0 indicates that no additional data follows within the frame packing arrangement SEI message. It is a requirement of bitstream conformance to this Specification that the value of frame_packing_arrangement_extension_flag shall be equal to 0. The value 1 for frame_packing_arrangement_extension_flag is reserved for future use by ITU-T | ISO/IEC. Decoders shall ignore the value 1 for frame_packing_arrangement_extension_flag in a frame packing arrangement SEI message and shall ignore all data that follows within a frame packing arrangement SEI message after the value 1 for frame_packing_arrangement_extension_flag.

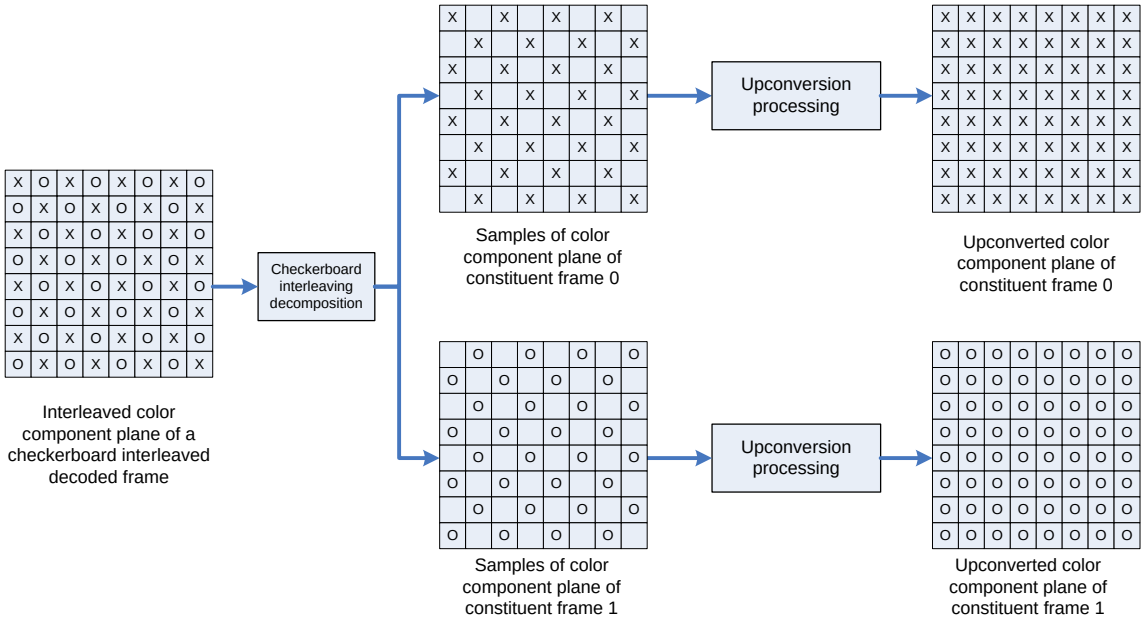

Figure D-1 – Rearrangement and upconversion of checkerboard interleaving (frame_packing_arrangement_type equal to 0)

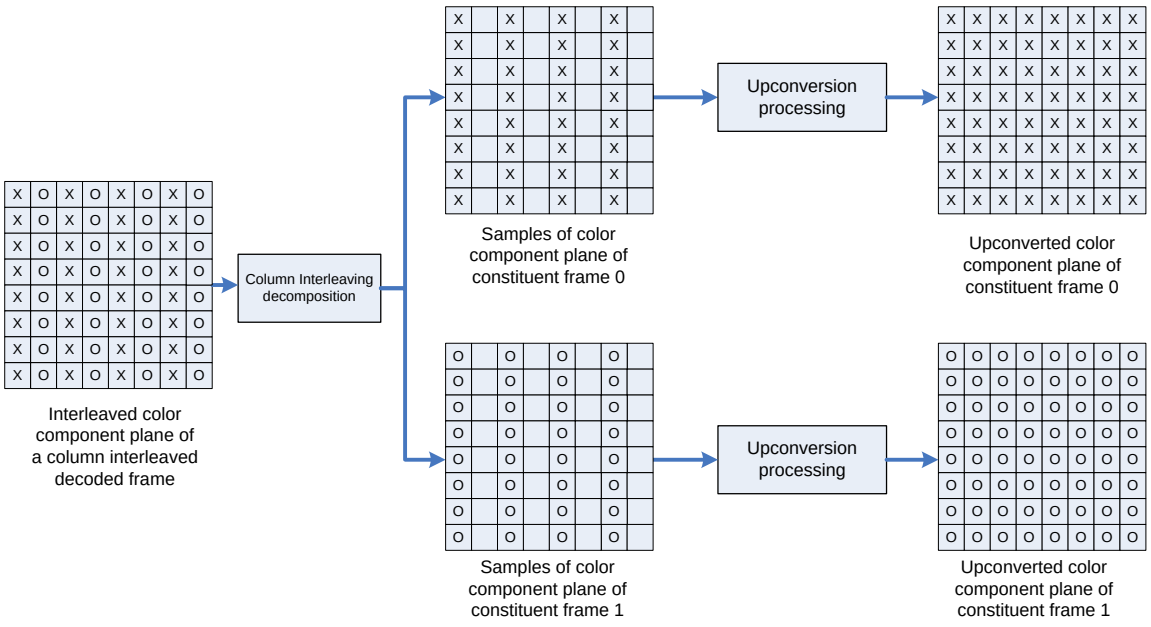

Figure D-2 – Rearrangement and upconversion of column interleaving (frame_packing_arrangement_type equal to 1 with quincunx_sampling_flag equal to 0)

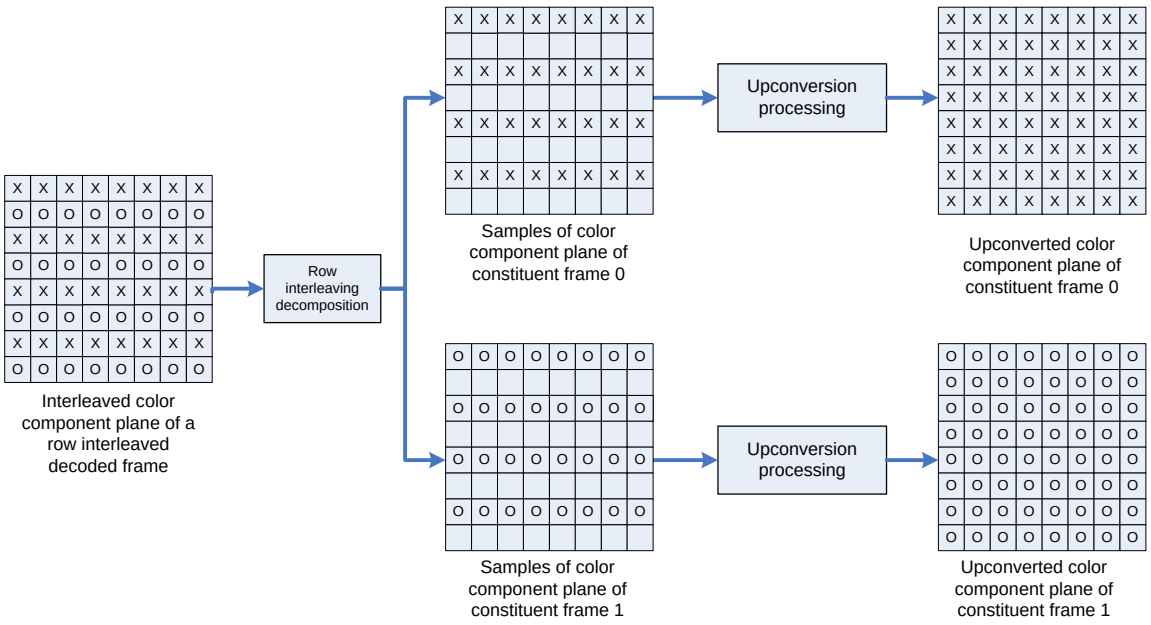

Figure D-3 – Rearrangement and upconversion of row interleaving (frame_packing_arrangement_type equal to 2 with quincunx_sampling_flag equal to 0)

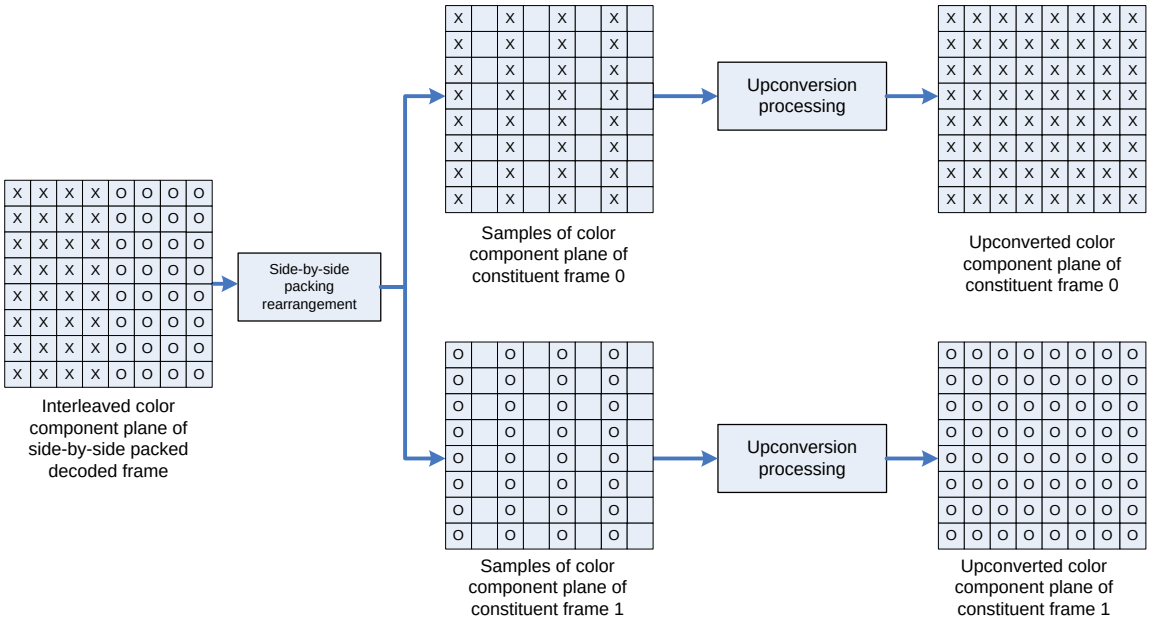

Figure D-4 – Rearrangement and upconversion of side-by-side packing arrangement (frame_packing_arrangement_type equal to 3 with quincunx_sampling_flag equal to 0)

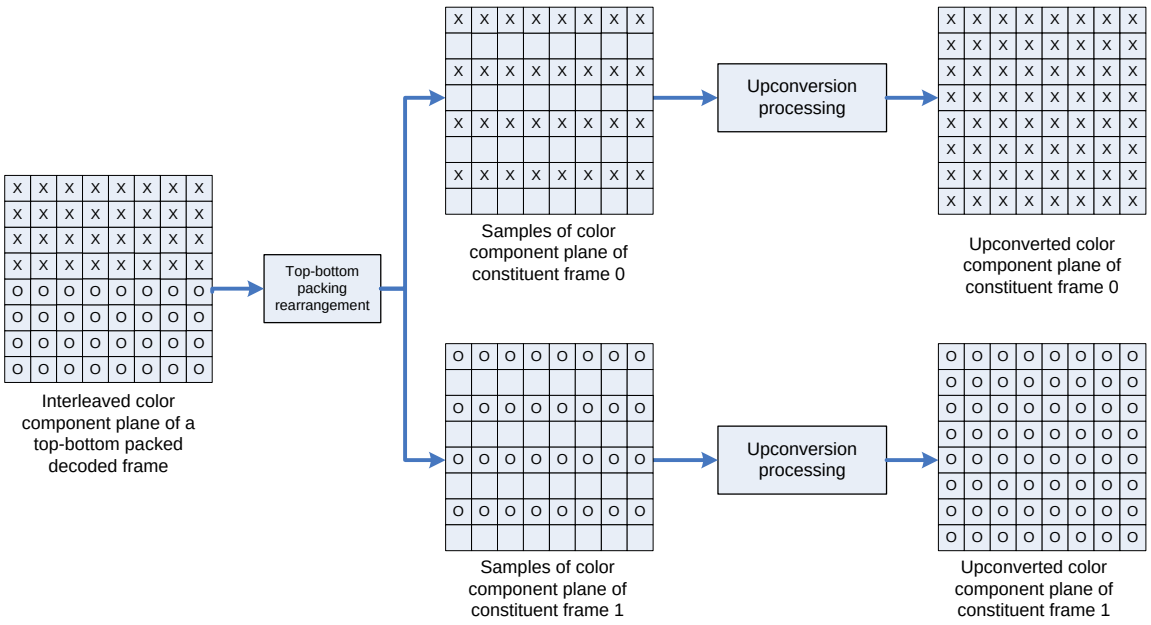

Figure D-5 – Rearrangement and upconversion of top-bottom packing arrangement (frame_packing_arrangement_type equal to 4 with quincunx_sampling_flag equal to 0)

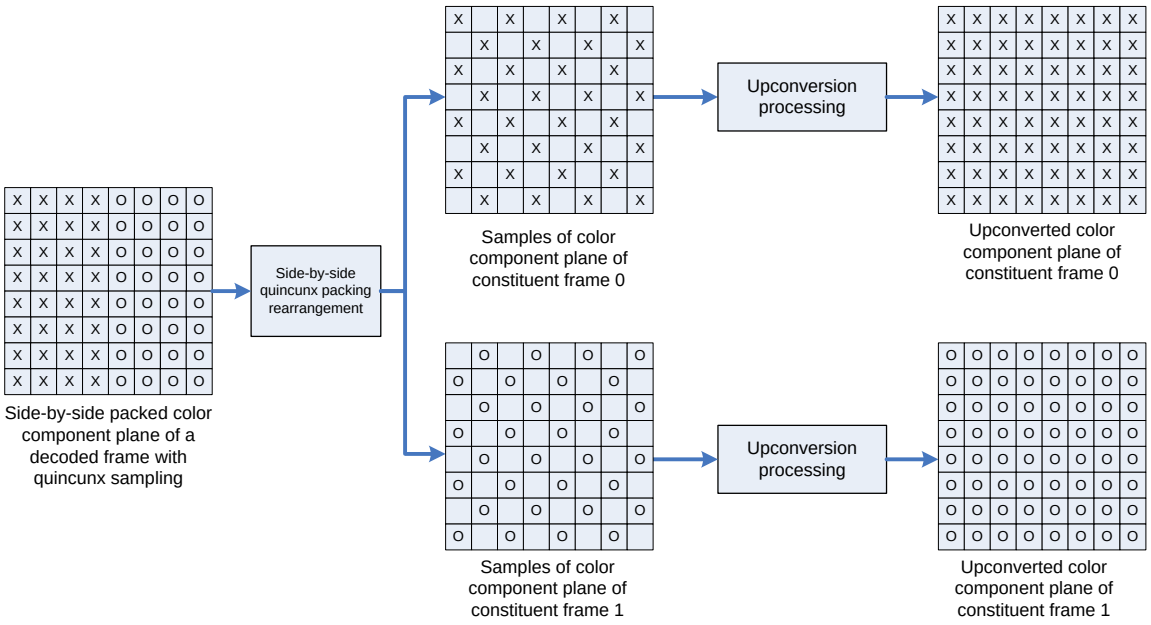

Figure D-6 – Rearrangement and upconversion of side-by-side packing arrangement with quincunx sampling (frame_packing_arrangement_type equal to 3 with quincunx_sampling_flag equal to 1)

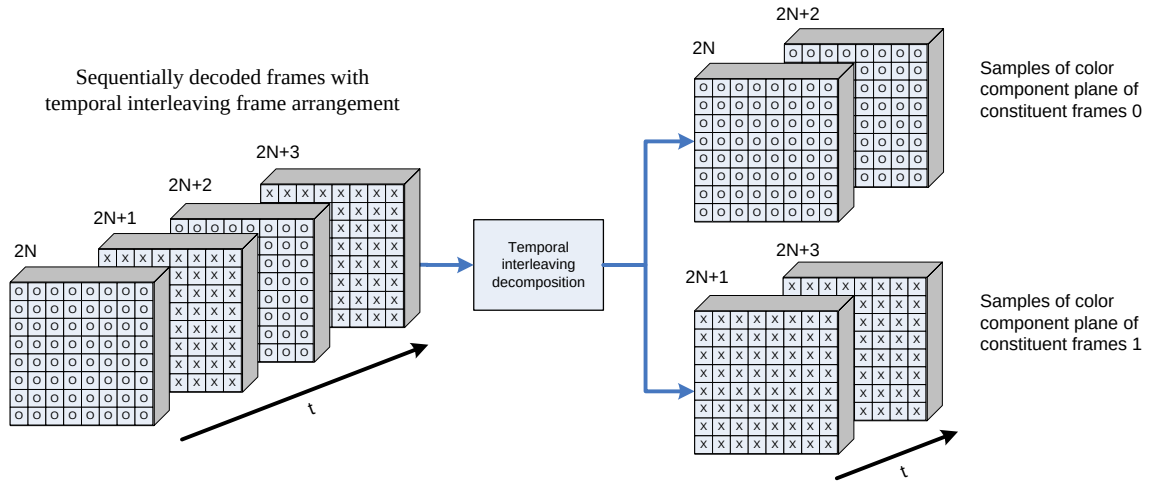

Figure D-7 – Rearrangement of a temporal interleaving frame arrangement (frame_packing_arrangement_type equal to 5)

In subclause H.3.1, replace:

H.3.1 **access unit**: A set of *NAL units* that are consecutive in *decoding order* and contain exactly one *primary coded picture* consisting of one or more *view components*. In addition to the *primary coded picture*, an access unit may also contain one or more *redundant coded pictures*, one *auxiliary coded picture*, or other *NAL units* not containing *slices* or *slice data partitions* of a *coded picture*. The decoding of an access unit always results in one *decoded picture* consisting of one or more *decoded view components*. All *slices* or *slice data partitions* in an access unit have the same value of *picture order count*.

with

H.3.1 **access unit**: A set of *NAL units* that are consecutive in *decoding order* and contain exactly one *primary coded picture* consisting of one or more *view components*. In addition to the *primary coded picture*, an access unit may also contain one or more *redundant coded pictures*, one *auxiliary coded picture*, or other *NAL units* not containing *slices* or *slice data partitions* of a *coded picture*. The decoding of an access unit always results in one *decoded picture* consisting of one or more *decoded view components*. All *slices* or *slice data partitions* in an access unit have the same values of field_pic_flag, bottom_field_flag and *picture order count.*

In subclause H.7.4.2.1.1, Sequence parameter set data semantics, replace the following text:

For all syntax elements other than constraint_set4_flag and max_num_ref_frames, the semantics specified in subclause 7.4.2.1.1 apply with the substitution of MVC sequence parameter set for sequence parameter set. All constraints specified in subclause 7.4.2.1.1 apply only to the view components for which the MVC sequence parameter set is the active MVC sequence parameter set or the active view MVC sequence parameter set as specified in subclause H.7.4.1.2.1.

For each coded video sequence, the active MVC sequence parameter set and all active view MVC sequence parameter sets (if any) shall have the same values of pic_width_in_mbs_minus1 and pic_height_in_map_units_minus1.

For the syntax elements constraint_set4_flag and max_num_ref_frames, the following applies.

constraint_set4_flag equal to 1 indicates that the coded video sequence obeys all constraints specified in subclause H.10.1. constraint_set4_flag equal to 0 indicates that the coded video sequence may or may not obey all constraints specified in subclause H.10.1.

with

For all syntax elements other than constraint_set4_flag, constraint_set5_flag and max_num_ref_frames, the semantics specified in subclause 7.4.2.1.1 apply with the substitution of MVC sequence parameter set for sequence parameter set. All constraints specified in subclause 7.4.2.1.1 apply only to the view components for which the MVC sequence parameter set is the active MVC sequence parameter set or the active view MVC sequence parameter set as specified in subclause H.7.4.1.2.1.

For each coded video sequence, the active MVC sequence parameter set and all active view MVC sequence parameter sets (if any) shall have the same values of pic_width_in_mbs_minus1, pic_height_in_map_units_minus1 and frame_mbs_only_flag.

For the syntax elements constraint_set4_flag, constraint_set5_flag and max_num_ref_frames, the following applies.

constraint_set4_flag equal to 1 indicates that the coded video sequence obeys all constraints specified in subclause H.10.1.1. constraint_set4_flag equal to 0 indicates that the coded video sequence may or may not obey all constraints specified in subclause H.10.1.1.

constraint_set5_flag is specified as follows:

- If profile_idc is equal to 118, constraint_set5_flag equal to 1 indicates that the coded video sequence obeys all constraints specified in subclause H.10.1.2 and constraint_set5_flag equal to 0 indicates that the coded video sequence may or may not obey all constraints specified in subclause H.10.1.2.
- Otherwise (profile_idc is equal to 44, 66, 77, 83, 86, 88, 100, 110, 122, 128 or 244), the value of 1 for constraint_set5_flag is reserved for future use by ITU-T | ISO/IEC. constraint_set5_flag shall be equal to 0 when profile_idc is equal to 44, 66, 77, 83, 86, 88, 100, 110, 122, 128 or 244 in bitstreams conforming to this Recommendation | International Standard. Decoders conforming to this Recommendation | International Standard shall ignore the value of constraint_set5_flag when profile_idc is equal to 44, 66, 77, 83, 86, 88, 100, 110, 122, 128 or 244.

  NOTE – For a coded video sequence conforming to both Multiview High and Stereo High profiles, the profile_idc should be equal to 118 and constraint_set5 flag should be equal to 1.

In subclause H.10, Profile and levels, replace:

The specifications in Annex A apply. An additional profile and a specific value of profile_idc is specified in the following.

The profile that is specified in subclause H.10.1 is also referred to as the profile specified in Annex H.

with

The specifications in Annex A apply. Additional profiles and specific values of profile_idc are specified in the following.

The profiles that are specified in subclause H.10.1 are also referred to as the profiles specified in Annex H.

In H.10.1, Multiview High profile, make the following changes:

Replace subclause H.10.1 heading

H.10.1 Multiview High profile

with

H.10.1 Profiles

Add a new subclause heading H.10.1.1 Multiview High profile after the paragraph that starts with "All constraints".

H.10.1.1 Multiview High profile

Add a new subclause H.10.1.2 Stereo High profile after the paragraph that starts with "NOTE – When profile_idc is equal to 100, 77 or 88", with the following text:

H.10.1.2 Stereo High profile

Bitstreams conforming to the Stereo High profile shall obey the following constraints:

– The base view bitstream as specified in subclause H.8.5.4 shall obey all the constraints of the High profile specified in subclause A.2.4.

– Only I, P, and B slice types may be present.

– NAL unit streams shall not contain nal_unit_type values in the range of 2 to 4, inclusive.

– Arbitrary slice order is not allowed.

– Picture parameter sets shall have num_slice_groups_minus1 equal to 0 only.

– Picture parameter sets shall have redundant_pic_cnt_present_flag equal to 0 only.

– MVC sequence parameter sets shall have chroma_format_idc in the range of 0 to 1 inclusive.

– MVC sequence parameter sets shall have bit_depth_luma_minus8 equal to 0 only.

– MVC sequence parameter sets shall have bit_depth_chroma_minus8 equal to 0 only.

– MVC sequence parameter sets shall have qpprime_y_zero_transform_bypass_flag equal to 0 only.

– The level constraints specified for the Stereo High profile in subclause H.10.2 shall be fulfilled.

Conformance of a bitstream to the Stereo High profile is specified by profile_idc being equal to 128.

Decoders conforming to the Stereo High profile at a specific level shall be capable of decoding all bitstreams in which both of the following conditions are true:

a) All active MVC sequence parameter sets have any of the following:
   – profile_idc equal to 128,
   – profile_idc equal to 118 and constraint_set5_flag equal to 1,
   – profile_idc equal to 100 or 77,
   – profile_idc equal to 88 and constraint_set1_flag equal to 1,
   – profile_idc equal to 66 and constraint_set1_flag equal to 1.

b) All active MVC sequence parameter sets have any of the following.
   – level_idc or (level_idc and constraint_set3_flag) represent a level less than or equal to the specific level,
   – level_idc[i] or (level_idc[i] and constraint_set3_flag) represent a level less than or equal to the specific level.

In H.10.2, Levels, replace the existing text with:

The following is specified for expressing the constraints in this subclause:

– Let access unit n be the n-th access unit in decoding order with the first access unit being access unit 0.

– Let picture n be the primary coded picture or the corresponding decoded picture of access unit n.

Let the variable fR be derived as follows.

– If picture n is a frame, fR is set equal to 1 ÷ 172.

– Otherwise (picture n is a field), fR is set equal to 1 ÷ (172 * 2).

The value of mvcScaleFactor is set equal to 2.

The value of NumViews is set equal to applicable_op_num_views_minus1[i][j]] plus 1, which indicates the number of views required for decoding the target output views corresponding to the j-th operation point for level_idc[i] as signalled in the subset sequence parameter set.

H.10.2.1 Level limits common to Multiview High and Stereo High profiles

Bitstreams conforming to the Multiview High or Stereo High profiles at a specified level shall obey the following constraints:

a) The nominal removal time of access unit n (with n > 0) from the CPB as specified in subclause C.1.2, satisfies the constraint that $t_{r,n}(n) - t_r(n - 1)$ is greater than or equal to Max(NumViews * PicSizeInMbs ÷ (mvcScaleFactor * MaxMBPS), fR), where MaxMBPS is the value specified in Table A-1 that applies to picture n − 1, and PicSizeInMbs is the number of macroblocks in a single view component of picture n − 1.

b) The difference between consecutive output times of pictures from the DPB as specified in subclause C.2.2, satisfies the constraint that $\Delta t_{o,dpb}(n)$ >= Max(NumViews * PicSizeInMbs ÷ (mvcScaleFactor * MaxMBPS), fR), where MaxMBPS is the value specified in Table A-1 for picture n, and PicSizeInMbs is the number of macroblocks of a single view component of picture n, provided that picture n is a picture that is output and is not the last picture of the bitstream that is output.

c) PicWidthInMbs * FrameHeightInMbs <= MaxFS, where MaxFS is specified in Table A-1.

d) PicWidthInMbs <= Sqrt(MaxFS * 8), where MaxFS is specified in Table A-1.

e) FrameHeightInMbs <= Sqrt(MaxFS * 8), where MaxFS is specified in Table A-1.

f) max_dec_frame_buffering <= MaxDpbFrames, where MaxDpbFrames is equal to Min(mvcScaleFactor * MaxDpbMbs / (PicWidthInMbs * FrameHeightInMbs), Max(1, Ceil(log2(NumViews))) * 16) and MaxDpbMbs is specified in Table A-1.

g) Vertical motion vector component range does not exceed MaxVmvR in units of luma frame samples, where MaxVmvR is specified in Table A-1.

h) Horizontal motion vector range does not exceed the range of −2048 to 2047.75, inclusive, in units of luma samples.

i) Let setOf2Mb be the set of unsorted pairs of macroblocks that contains the unsorted pairs of macroblocks (mbA, mbB) of a coded video sequence for which any of the following conditions is true:

   – mbA and mbB are macroblocks that belong to the same slice and are consecutive in decoding order,

   – separate_colour_plane_flag is equal to 0, mbA is the last macroblock (in decoding order) of a slice, and mbB is the first macroblock (in decoding order) of the next slice in decoding order,

   – separate_colour_plane_flag is equal to 1, mbA is the last macroblock (in decoding order) of a slice with a particular value of colour_plane_id, and mbB is the first macroblock (in decoding order) of the next slice with the same value of colour_plane_id in decoding order.

   NOTE 1 – In the two above conditions, the macroblocks mbA and mbB can belong to different pictures.

   For each unsorted pair of macroblocks (mbA, mbB) of the set setOf2Mb, the total number of motion vectors (given by the sum of the number of motion vectors for macroblock mbA and the number of motion vectors for macroblock mbB) does not exceed MaxMvsPer2Mb, where MaxMvsPer2Mb is specified in Table A-1. The number of motion vectors for each macroblock is the value of the variable MvCnt after the completion of the intra or inter prediction process for the macroblock.

   NOTE 2 – When separate_colour_plane_flag is equal to 0, the constraint specifies that the total number of motion vectors for two consecutive macroblocks in decoding order must not exceed MaxMvsPer2Mb. When separate_colour_plane_flag is equal to 1, the constraint specifies that the total number of motion vectors for two consecutive macroblocks with the same value of colour_plane_id in decoding order must not exceed MaxMvsPer2Mb. For macroblocks that are consecutive in decoding order but are associated with a different value of colour_plane_id, no constraint for the total number of motion vectors is specified.

j) Number of bits of macroblock_layer( ) data for any macroblock is not greater than 128 + RawMbBits. Depending on entropy_coding_mode_flag, the bits of macroblock_layer( ) data are counted as follows.

   – If entropy_coding_mode_flag is equal to 0, the number of bits of macroblock_layer( ) data is given by the number of bits in the macroblock_layer( ) syntax structure for a macroblock.

– Otherwise (entropy_coding_mode_flag is equal to 1), the number of bits of macroblock_layer( ) data for a macroblock is given by the number of times read_bits(1) is called in subclauses 9.3.3.2.2 and 9.3.3.2.3 when parsing the macroblock_layer( ) associated with the macroblock.

k) The removal time of access unit 0 shall satisfy the constraint that the number of slices in picture 0 is less than or equal to mvcScaleFactor * (Max(PicSizeInMbs, fR * MaxMBPS) + MaxMBPS * (t_r(0) − $t_{r,n}$(0))) ÷ SliceRate, where MaxMBPS and SliceRate are the values specified in Tables A-1 and A-4, respectively, that apply to picture 0 and PicSizeInMbs is the number of macroblocks in a single view component of picture 0.

l) The removal time of access unit 0 shall satisfy the constraint that the number of slices in each view component of picture 0 is less than or equal to (Max(PicSizeInMbs, fR * MaxMBPS) + MaxMBPS * (t_r(0) − $t_{r,n}$(0))) ÷ SliceRate, where MaxMBPS and SliceRate are the values specified in Tables A-1 and A-4, respectively, that apply to picture 0 and PicSizeInMbs is the number of macroblocks in a single view component of picture 0.

m) The difference between consecutive removal time of access units n and n − 1 with n > 0 shall satisfy the constraint that the number of slices in picture n is less than or equal to mvcScaleFactor * MaxMBPS * (t_r(n) − t_r(n − 1)) ÷ SliceRate, where SliceRate is the value specified in Table A-4 that applies to picture n.

n) The difference between consecutive removal time of access units n and n − 1 with n > 0 shall satisfy the constraint that the number of slices in each view component of picture n is less than or equal to MaxMBPS * (t_r(n) − t_r(n − 1)) ÷ SliceRate, where SliceRate is the value specified in Table A-4 that applies to picture n.

o) MVC sequence parameter sets shall have direct_8x8_inference_flag equal to 1 for the levels specified in Table A-4.

p) The value of sub_mb_type[mbPartIdx] with mbPartIdx = 0..3 in B macroblocks with mb_type equal to B_8x8 shall not be equal to B_Bi_8x4, B_Bi_4x8, or B_Bi_4x4 for the levels in which MinLumaBiPredSize is shown as 8x8 in Table A-4.

q) For the VCL HRD parameters, BitRate[SchedSelIdx] <= cpbBrVclFactor * MaxBR and CpbSize[SchedSelIdx] <= cpbBrVclFactor * MaxCPB for at least one value of SchedSelIdx, where cpbBrVclFactor is equal to 1250. With vui_mvc_vcl_hrd_parameters_present_flag[i] being the syntax element, in the MVC VUI parameters extension of the active MVC sequence parameter set, that is associated with the VCL HRD parameters that are used for conformance checking (as specified in Annex C), BitRate[SchedSelIdx] and CpbSize[SchedSelIdx] are given as follows.

– If vui_mvc_vcl_hrd_parameters_present_flag equal to 1, BitRate[SchedSelIdx] and CpbSize[SchedSelIdx] are given by Equations E-37 and E-38, respectively, using the syntax elements of the hrd_parameters( ) syntax structure that immediately follows vui_mvc_vcl_hrd_parameters_present_flag.

– Otherwise (vui_mvc_vcl_hrd_parameters_present_flag equal to 0), BitRate[SchedSelIdx] and CpbSize[SchedSelIdx] are inferred as specified in subclause E.2.2 for VCL HRD parameters.

MaxBR and MaxCPB are specified in Table A-1 in units of cpbBrVclFactor bits/s and cpbBrVclFactor bits, respectively. The bitstream shall satisfy these conditions for at least one value of SchedSelIdx in the range 0 to cpb_cnt_minus1, inclusive.

r) For the NAL HRD parameters, BitRate[SchedSelIdx] <= cpbBrNalFactor * MaxBR and CpbSize[SchedSelIdx] <= cpbBrNalFactor * MaxCPB for at least one value of SchedSelIdx, where cpbBrNalFactor is equal to 1500. With vui_mvc_nal_hrd_parameters_present_flag[i] being the syntax element, in the MVC VUI parameters extension of the active MVC sequence parameter set, that is associated with the NAL HRD parameters that are used for conformance checking (as specified in Annex C), BitRate[SchedSelIdx] and CpbSize[SchedSelIdx] are given as follows.

– If vui_mvc_nal_hrd_parameters_present_flag equal to 1, BitRate[SchedSelIdx] and CpbSize[SchedSelIdx] are given by Equations E-37 and E-38, respectively, using the syntax elements of the hrd_parameters( ) syntax structure that immediately follows vui_mvc_nal_hrd_parameters_present_flag.

– Otherwise (vui_mvc_nal_hrd_parameters_present_flag equal to 0), BitRate[SchedSelIdx] and CpbSize[SchedSelIdx] are inferred as specified in subclause E.2.2 for NAL HRD parameters.

MaxBR and MaxCPB are specified in Table A-1 in units of cpbBrNalFactor bits/s and cpbBrNalFactor bits, respectively. The bitstream shall satisfy these conditions for at least one value of SchedSelIdx in the range 0 to cpb_cnt_minus1, inclusive.

s) The sum of the NumBytesInNALunit variables for access unit 0 is less than or equal to 384 * mvcScaleFactor * (Max(PicSizeInMbs, fR * MaxMBPS) + MaxMBPS * (t_r(0) − $t_{r,n}$(0))) ÷ MinCR, where MaxMBPS and MinCR are the values specified in Table A-1 that apply to picture 0 and PicSizeInMbs is the number of macroblocks in a single view component of picture 0.

t) The sum of the NumBytesInNALunit variables for each view component of access unit 0 is less than or equal to 384 * (Max(PicSizeInMbs, fR * MaxMBPS) + MaxMBPS * (t_r(0) − $t_{r,n}$(0))) ÷ MinCR, where MaxMBPS and MinCR are the values specified in Table A-1 that apply to picture 0 and PicSizeInMbs is the number of macroblocks in a single view component of picture 0.

u) The sum of the NumBytesInNALunit variables for access unit n with n > 0 is less than or equal to 384 * mvcScaleFactor * MaxMBPS * (t_r(n) − t_r(n − 1)) ÷ MinCR, where MaxMBPS and MinCR are the values specified in Table A-1 that apply to picture n.

v) The sum of the NumBytesInNALunit variables for each view component of access unit n with n > 0 is less than or equal to 384 * MaxMBPS * (t_r(n) − t_r(n − 1)) ÷ MinCR, where MaxMBPS and MinCR are the values specified in Table A-1 that apply to picture n.

w) When PicSizeInMbs is greater than 1620, the number of macroblocks in any coded slice shall not exceed MaxFS / 4, where MaxFS is specified in Table A-1.

x) max_num_ref_frames shall be less than or equal to MaxDpbFrames / mvcScaleFactor for each view component, where MaxDpbFrames is specified in item f).

Table A-1 specifies the limits for each level. Entries marked "-" in Table A-1 denote the absence of a corresponding limit.

Table A-4 specifies limits for each level that are specific to bitstreams conforming to the Multiview High and Stereo High profiles. Entries marked "-" in Table A-4 denote the absence of a corresponding limit.

For coded video sequences conforming to the Multiview High or Stereo High profile, the level_idc value is specified as follows.

– If level_idc is not equal to 0, level_idc indicates the level that applies to the coded video sequence operating with all the views being target output views.

NOTE 1 – A level_idc value that is not equal to zero may indicate a higher level than necessary to decode the coded video sequence operating with all the views being target output views. This may occur when a subset of views or temporal subsets are removed from a coded video sequence according to the sub-bitstream extraction process specified in H.8.5.3, and the level_idc value is not updated accordingly.

– Otherwise (level_idc is equal to 0), the level that applies to the coded video sequence operating with all the views being target output views is unspecified.

NOTE 2 – When profile_idc is equal to 118 or 128 and level_idc is equal to 0, there may exist a level indicated by level_idc[i] that is applicable to the coded video sequence operating with all the views being target output views. This may occur when a subset of views or temporal subsets are removed from a coded video sequence according to the sub-bitstream extraction process specified in H.8.5.3, and a particular value of level_idc[i] corresponds to the resulting coded video sequence.

A level to which the bitstream conforms shall be indicated by the syntax element level_idc or level_idc[i] as follows.

– If level_idc or level_idc[i] is equal to 9, the indicated level is level 1b.

– Otherwise (level_idc or level_idc[i] is not equal to 9), the indicated level number is equal to level_idc or level_idc[i] divided by 10.

H.10.2.2 Profile specific level limits

a) In bitstreams conforming to the Multiview High profile, MVC sequence parameter sets shall have frame_mbs_only_flag equal to 1 for all levels.

b) In bitstreams conforming to the Stereo High profile, MVC sequence parameter sets shall have frame_mbs_only_flag equal to 1 for the levels specified in Table A-4.

c) In bitstreams conforming to the Stereo High profile, MVC sequence parameter sets shall have num_views_minus1 less than 2 for all levels.

In H.13.2.3, View scalability information SEI message semantics, replace the following text

op_profile_level_idc[i **]** specifies the profile and level compliancy of the representation of the current operation point. op_profile_level_idc[i] is the exact copy of the three bytes comprised of profile_idc, constraint_set0_flag, constraint_set1_flag, constraint_set2_flag, constraint_set3_flag, constraint_set4_flag, reserved_zero_3bits and level_idc, if these syntax elements were used to specify the profile and level compliancy of the representation of the current operation point as specified in Annexes A and H.

with

op_profile_level_idc[i **]** specifies the profile and level compliancy of the representation of the current operation point. op_profile_level_idc[i] is the exact copy of the three bytes comprised of profile_idc, constraint_set0_flag, constraint_set1_flag, constraint_set2_flag, constraint_set3_flag, constraint_set4_flag, constraint_set5_flag reserved_zero_2bits and level_idc, if these syntax elements were used to specify the profile and level compliancy of the representation of the current operation point as specified in Annexes A and H.