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Information technology — High efficiency coding and media delivery in heterogeneous environments —

Part 8: Conformance specification for HEVC

AMENDMENT 1: Conformance testing for HEVC screen content coding (SCC) extensions and non-intra high throughput profiles

Technologies de l'information — Codage à haute efficacité et livraison des medias dans des environnements hétérogènes —

Partie 8: Spécification de conformité du codage video à haute efficacité

AMENDEMENT 1: .

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Information technology — High efficiency coding and media delivery in heterogeneous environments —

Part 8: Conformance specification for HEVC

AMENDMENT 1: Conformance testing for HEVC screen content coding (SCC) extensions and non-intra high throughput profiles

NOTE The conformance bitstreams added by this Amendment are available at: https://standards.iso.org/iso-iec/23008/-8/ed-2/en/amd/-1.

4.5.7

Replace paragraph 9 with the following:

A decoder that conforms to the High Throughput 4:4:4 16 Intra, High Throughput 4:4:4, High Throughput 4:4:4 10 and High Throughput 4:4:4 14 profiles (as specified in Rec. ITU-T H.265 | ISO/IEC 23008-2:2017, A.3.6), which are collectively referred to as the high throughput profiles, at specific level shall be capable of decoding the specified bitstreams in Table 4.

4.5.7

At the end of 4.5.7, add the following paragraph:

A decoder that conforms to the Screen-Extended Main, Screen-Extended Main 10, Screen-Extended Main 4:4:4, Screen-Extended Main 4:4:4 10, Screen-Extended High Throughput 4:4:4, Screen-Extended High Throughput 4:4:4 10 or Screen-Extended High Throughput 4:4:4 14 profiles (as specified in Rec. ITU-T H.265 | ISO/IEC 23008-2:2017, A.3.7), which are collectively referred to as the screen content coding extensions profiles, shall be capable of decoding the specified bitstreams in Table 7. A decoder that conforms to some screen content coding extensions profiles is also required to be capable of decoding bitstreams that conform to particular other profiles. Thus, in addition to the specified bitstreams in Table 7, a decoder that conforms to a screen content coding extension profile shall also be capable of decoding the bitstreams specified in Table 1 or Table 4 that conform to the decoding requirements specified for the screen content coding extensions profile in Rec. ITU-T H.265 | ISO/IEC 23008-2:2017, A.3.7.

4.6.16.43

At the end of 4.6.16.43, add the following additional subclauses:

4.6.16.44 Test bitstreams #WPP_AND_TILE_10Bit422Test_HIGH_TP_444_10BIT_RExt

Specification: All slices are coded as I or P slices. The value of bit_depth_luma_minus8 is set equal to 2. The value of bit_depth_chroma_minus8 is set equal to 2. The value of chroma_format_idc is set equal to 2. There are 3 pictures in the bitstream. The cabac_bypass_alignment_enabled_flag and extended_precision_processing_flag are set equal to 0.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise the combination of simultaneously using wavefronts and tiles in the specified profile (the High Throughput 4:4:4 10 profile) when cabac_bypass_alignment_enabled_flag and extended_precision_processing_flag are set equal to 0.

4.6.16.45 Test bitstreams # WPP_AND_TILE_AND_CABAC_BYPASS_ALIGN_0_HIGH_TP_444_14BIT_RExt

Specification: All slices are coded as I or P slices. The value of bit_depth_luma_minus8 is set equal to 0. The value of bit_depth_chroma_minus8 is set equal to 0. The value of chroma_format_idc is set equal to 1. There are 3 pictures in the bitstream. The cabac_bypass_alignment_enabled_flag and extended_precision_processing_flag are set equal to 0. The video_full_range_flag is set equal to 1 in VUI.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise the combination of simultaneously using wavefronts and tiles in the specified profile (the High Throughput 4:4:4 14 profile) when cabac_bypass_alignment_enabled_flag and extended_precision_processing_flag are set equal to 0.

4.6.16.46 Test bitstreams #WPP_AND_TILE_AND_CABAC_BYPASS_ALIGN_1_HIGH_TP_444_14BIT_RExt

Specification: All slices are coded as I or P slices. The value of bit_depth_luma_minus8 is set equal to 0. The value of bit_depth_chroma_minus8 is set equal to 0. The value of chroma_format_idc is set equal to 1. There are 3 pictures in the bitstream. The cabac_bypass_alignment_enabled_flag is set equal to 1. The extended_precision_processing_flag is set equal to 0. The video_full_range_flag is set equal to 1 in VUI.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise the combination of simultaneously using wavefronts and tiles in the specified profile (the High Throughput 4:4:4 14 profile) when cabac_bypass_alignment_enabled_flag is set equal to 1 and the extended_precision_processing_flag is set equal to 0.

4.6.16.47 Test bitstreams #WPP_AND_TILE_AND_CABAC_EXT_PREC_1_HIGH_TP_444_14BIT_RExt

Specification: All slices are coded as I or P slices. The value of bit_depth_luma_minus8 is set equal to 0. The value of bit_depth_chroma_minus8 is set equal to 0. The value of chroma_format_idc is set equal to 1. There are 3 pictures in the bitstream. The cabac_bypass_alignment_enabled_flag is set equal to 0. The extended_precision_processing_flag is set equal to 1. The video_full_range_flag is set equal to 1 in VUI.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise the combination of simultaneously using wavefronts and tiles in the specified profile (the High Throughput 4:4:4 14 profile) when cabac_bypass_alignment_enabled_flag is set equal to 0 and the extended_precision_processing_flag is set equal to 1.

4.6.16.48 Test bitstreams #WPP_AND_TILE_HIGH_TP_444_8BIT_RExt

Specification: All slices are coded as I or P slices. The value of bit_depth_luma_minus8 is set equal to 0. The value of bit_depth_chroma_minus8 is set equal to 0. The value of chroma_format_idc is set equal to 1. There are 3 pictures in the bitstream. The cabac_bypass_alignment_enabled_flag and the extended_precision_processing_flag are set equal to 0. The video_full_range_flag is set equal to 1 in VUI.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise the combination of simultaneously using wavefronts and tiles in the specified profile (the High Throughput 4:4:4 profile) when the cabac_bypass_alignment_enabled_flag and the extended_precision_processing_flag are set equal to 0.

4.6.16.49 Test bitstreams # WPP_HIGH_TP_444_8BIT_RExt

Specification: All slices are coded as I or P slices. The value of bit_depth_luma_minus8 is set equal to 0. The value of bit_depth_chroma_minus8 is set equal to 0. The value of chroma_format_idc is set equal to 1. There are 3 pictures in the bitstream. The cabac_bypass_alignment_enabled_flag and the extended_precision_processing_flag is set equal to 0. The video_full_range_flag is set equal to 1 in VUI.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise use wavefronts in the specified profile (the High Throughput 4:4:4 profile) when the cabac_bypass_alignment_enabled_flag and the extended_precision_processing_flag are set equal to 0.

4.6.17

At the end of 4.6.17, add the following subclause and subordinate subclauses:

4.6.18 Test bitstreams – screen content coding extensions

4.6.18.1 Test bitstreams #PPI_A

Specification: All slices are coded as P or B slices. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set to 3. There are a total of 33 pictures.

In the bitstream, the palette predictor initializers in both SPS and PPS are enabled. The bitstream consists of one SPS and three PPS's:

— The first part of the bitstream contains the first SPS with sps_palette_predictor_initializer_present_flag equal to 1 and the first PPS with pps_palette_predictor_initializer_present_flag equal to 0. Therefore, the pictures in the first part of the bitstream use the palette predictor initializer signalled in the SPS.

— The second part of the bitstream contains the second PPS with pps_palette_predictor_initializer_present_flag set equal to 1. Therefore, the pictures in the second part of the bitsream use the palette predictor initializers as signalled in the second PPS.

— The third part of the bitstream contains the third PPS with pps_palette_predictor_initializer_present_flag equal to 1 and pps_num_palette_predictor_initializer equal to 0. Therefore, the pictures in the third part of the bitstream use an empty palette predictor initializer.

Coding structure: Hierarchical B-pictures with GOP size of 16.

Functional stage: Test palette predictor initializer in SPS and/or PPS

Purpose: Test that the decoder correctly parses and decodes pictures when a palette predictor is initialized using different types of palette predictors such as from SPS or PPS or the palette predictor is initialized 0.

4.6.18.2 Test bitstreams #PPI_B

Specification: All slices are coded as P or B slices. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set to 1. There are a total of 33 pictures.

In the bitstream, the palette predictor initializers in both SPS and PPS are enabled. The bitstream consists of one SPS and three PPS's:

— The first part of the bitstream contains the first SPS with sps_palette_predictor_initializer_present_flag equal to 1 and the first PPS with pps_palette_predictor_initializer_present_flag equal to 0. Therefore, the pictures in the first part of the bitstream use the palette predictor initializer signalled in the SPS.

— The second part of the bitstream contains the second PPS with pps_palette_predictor_initializer_present_flag set equal to 1. Therefore, the pictures in the second part of the bitsream use the palette predictor initializers as signalled in the second PPS.

— The third part of the bitstream contains the third PPS with pps_palette_predictor_initializer_present_flag equal to 1 and pps_num_palette_predictor_initializer equal to 0. Therefore, the pictures in the third part of the bitstream use an empty palette predictor initializer.

Coding structure: Hierarchical B-pictures with GOP size of 16.

Functional stage: Test palette predictor initializer in SPS and/or PPS

Purpose: Test that the decoder correctly parses and decodes pictures when a palette predictor is initialized using different types of palette predictors such as from SPS or PPS or the palette predictor is initialized 0.

4.6.18.3 Test bitstreams #Zero_and_One_Palette_Size_A

Specification: The bitstream consists of a single picture that is coded as a single slice. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set to 3. Several CUs within the picture are coded using the palette mode with palette size of 0 and 1.

Coding structure: The single picture is coded as a P-picture with the current picture as the only reference picture.

Functional stage: Test the decoding and reconstruction of a palette block for palette sizes of 0 and 1.

Purpose: Test that the decoder correctly parses and decodes a palette block when the palette size is 0 or 1.

4.6.18.4 Test bitstreams #Slice_ACT_QP_Offsets_A

Specification: There are two pictures with each picture containing a single slice. The first slice is coded as a P slice with the current picture as the only reference picture. The second slice is coded as a B slice. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 3.

There are two PPSs. The first picture uses the first PPS and the second picture uses the second PPS. For each PPS, pps_act_y_qp_offset_plus5, pps_act_cb_qp_offset_plus5, and pps_act_cr_qp_offset_plus3 are set to 2, –1, and 1, respectively. For the first PPS, pps_slice_act_qp_offsets_present_flag is set equal to 0. For the second PPS, pps_slice_act_qp_offsets_present_flag is set equal to 1 and slice_act_y_qp_offset, slice_act_cb_qp_offset, and slice_act_cr_qp_offset are set to –2, –1, and 1, respectively.

Coding structure: The first slice is a P slice with the current picture as the only reference picture. The second slice is a B slice.

Functional stage: Test the ACT QP offsets at the PPS and slice level.

Purpose: Check that ACT QP offsets can be specified in the PPS and modified at the slice level.

4.6.18.5 Test bitstreams #Bipred_8x8_A

Specification: All slices are coded as P or B slices. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 1. There are 3 pictures. In the 3rd picture, there 5 8×8 non-merge blocks for which the signalled motion vector is bi-directional. It is converted to unidirectional during the decoding process.

Coding structure: Low delay B configuration with hierarchical B pictures.

Functional stage: Test the decoding process for 8×8 blocks when a bi-directional motion vector is converted to a uni-directional motion vector.

Purpose: Check the decoder correctly converts a bi-directional motion vector for an 8×8 block to a uni-directional motion vector when bi-directional prediction is restricted.

4.6.18.6 Test bitstreams #IBF_Disabled_A

Specification: All slices are coded as P or B slices. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 3. There are 33 pictures. The intra_boundary_filtering_disabled_flag is set to 0.

Coding structure: Hierarchical B-pictures with GOP size of 16.

Functional stage: Test the reconstruction process of intra boundary filtering based on the intra_boundary_filtering_disabled_flag.

Purpose: Check that the decoder decodes properly when intra_boundary_filtering_disabled_flag is equal to 0.

4.6.18.7 Test bitstreams #IBF_Disabled_B

Specification: All slices are coded as P or B slices. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 1. There are 33 pictures. The intra_boundary_filtering_disabled_flag is set to 1.

Coding structure: Hierarchical B-pictures with GOP size of 16.

Functional stage: Test the reconstruction process of intra boundary filtering based on intra_boundary_filtering_disabled_flag.

Purpose: Check that the decoder properly decodes when intra_boundary_filtering_disabled_flag is equal to 1.

4.6.18.8 Test bitstreams #DPB_Loop_Filters_A

Specification: All slices are coded as P or B slices. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 3. There are 10 pictures. For one picture in the middle, both SAO and deblocking filters are off and the pps_curr_pic_ref_enabled_flag is equal to 1. For this picture, the number of reference pictures is increased by 1.

Coding structure: Low delay B configuration with hierarchical B pictures.

Functional stage: Test the maximum number of reference pictures based on whether loop filters are on or off and the value of pps_curr_pic_ref_enabled_flag.

Purpose: Check that the decoder allows one more reference picture to be used when all the loop filters are off and pps_curr_pic_ref_enabled_flag is equal to 1.

4.6.18.9 Test bitstreams #Delta_QP_Chroma_QP_Offsets_A

Specification: Each slice is coded as a P slice with current picture as the only reference picture. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 3. There are two pictures with each picture containing a single slice.

Additionally, cu_qp_delta_enabled_flag is set to 1 and diff_cu_qp_delta_depth is also set to 1. Similarly, chroma_qp_offset_list_enabled_flag is set to 1 and diff_cu_chroma_qp_offset_depth is set to 1.

There are 7 instances when delta QP is signalled in a palette-coded block. There are 19 instances when chroma QP offsets are signalled in a palette-coded block.

Coding structure: P slices with only the current picture as reference.

Functional stage: Test delta QP and chroma QP offset signalling for a coding unit coded in palette mode with escape samples.

Purpose: Check that for a quantization or chroma offset group, delta QP and chroma QP offsets may be signalled either for a palette block with escape sample(s) or a non-palette block with non-zero residual, based on the order of occurrence of the blocks within the quantization or chroma offset group.

4.6.18.10 Test bitstreams #MVRESIDC_A

Specification: There are 9 pictures with each picture containing a single slice. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 3.

Additionally, motion_vector_resolution_control_idc is set equal to 0. This implies that luma motion vectors have a quarter pel precision.

Coding structure: Low delay B configuration with hierarchical B pictures. The first picture is a P-picture with only the current picture as reference.

Functional stage: Test motion vector decoding process based on the value of motion_vector_resolution_control_idc.

Purpose: Check that the decoder can properly decode motion vectors and slices when motion_vector_resolution_control_idc is set equal to 0.

4.6.18.11 Test bitstreams #MVRESIDC_B

Specification: There are 9 pictures with each picture containing a single slice. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 3.

Additionally, motion_vector_resolution_control_idc is set equal to 1. This implies that luma motion vectors have an integer pel precision.

Coding structure: Low delay configuration with hierarchical B pictures. The first picture is a P-picture with only the current picture as reference.

Functional stage: Test motion vector decoding process based on the value of motion_vector_resolution_control_idc.

Purpose: Check that the decoder can properly decode motion vectors and slices when motion_vector_resolution_control_idc is set equal to 1.

4.6.18.12 Test bitstreams #MVRESIDC_C

Specification: There are 9 pictures with each picture containing a single slice. bit_depth_luma_minus8 is set equal to 0 and bit_depth_chroma_minus8 is set equal to 0. chroma_format_idc is set equal to 3.

Additionally, motion_vector_resolution_control_idc is set equal to 2. For pictures with even numbered POCs, the use_integer_mv_flag is set equal to 1. For the remaining pictures, the use_integer_mv_flag is set equal to 0.

Coding structure: Low delay configuration with hierarchical B pictures. The first picture is a P-picture with only the current picture as reference.

Functional stage: Test motion vector decoding process based on the value of motion_vector_resolution_control_idc.

Purpose: Check that the decoder can properly decode motion vectors and slices when motion_vector_resolution_control_idc is set equal to 2.

4.6.18.13 Test bitstreams #HT_A_SCC

Specification: All slices are coded as P or B slices. The value of bit_depth_luma_minus8 is set equal to 2. The value of bit_depth_chroma_minus8 is set equal to 2. The value of chroma_format_idc is set equal to 3. There are 3 pictures in the bitstream. The cabac_bypass_alignment_enabled_flag and extended_precision_processing_flag are set equal to 0.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise the combination of simultaneously using wavefronts and tiles in the specified profile (the Screen-Extended High Throughput 4:4:4 10 profile) when cabac_bypass_alignment_enabled_flag and extended_precision_processing_flag are set equal to 0.

4.6.18.14 Test bitstreams #HT_B_SCC

Specification: All slices are coded as P or B slices. The value of bit_depth_luma_minus8 is set equal to 0. The value of bit_depth_chroma_minus8 is set equal to 0. The value of chroma_format_idc is set equal to 3. There are 3 pictures in the bitstream.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise the combination of simultaneously using wavefronts and tiles in the specified profile (the Screen-Extended High Throughput 4:4:4 14 profile) when cabac_bypass_alignment_enabled_flag is set equal to 1 and extended_precision_processing_flag is set equal to 0.

4.6.18.15 Test bitstreams #HT_C_SCC

Specification: All slices are coded as P or B slices. The value of bit_depth_luma_minus8 is set equal to 0. The value of bit_depth_chroma_minus8 is set equal to 0. The value of chroma_format_idc is set equal to 3. There are 3 pictures in the bitstream.

Functional stage: Test parsing and reconstruction process with various combinations of tools.

Purpose: The purpose of the stream is to exercise the combination of simultaneously using wavefronts and tiles in the specified profile (the Screen-Extended High Throughput 4:4:4 14 profile) when cabac_bypass_alignment_enabled_flag is set equal to 0 and extended_precision_processing_flag is set equal to 1.

4.7.4

Replace Table 4 with the following:

Table 4 — Bitstreams for Monochrome 12, Monochrome 16, Main 12, Main 4:2:2 10, Main 4:2:2 12, Main 4:4:4, Main 4:4:4 10, Main 4:4:4 12, Main Intra, Main 10 Intra, Main 12 Intra, Main 4:2:2 10 Intra, Main 4:2:2 12 Intra, Main 4:4:4 Intra, Main 4:4:4 10 Intra, Main 4:4:4 12 Intra, Main 4:4:4 16 Intra, Main 4:4:4 Still Picture and Main 4:4:4 16 Still Picture profiles

Categories	Subcategory	Bitstream	File name	Profile	Main tier	Level	Frame rate (frames/sec)
Intra coding	Intra chroma prediction angle	ADJUST_IPRED_ANGLE_A	ADJUST_IPRED_ANGLE_A_REext_Mitsubishi_2	Main 4:2:2 10	X	6.2	24
Inter coding	Cross component prediction	CCP_8bit_REext	CCP_8bit_REext_QCOM_1	Main 4:4:4	X	4.1 and higher	30
		CCP_10bit_REext	CCP_10bit_REext_QCOM_1	Main 4:4:4 10	X	4.1 and higher	24
		CCP_12bit_REext	CCP_12bit_REext_QCOM_1	Main 4:4:4 12	X	4.1 and higher	30
Bit depth	Different bit depth for luma and chroma	Bitdepth_A_REext	Bitdepth_A_REext_Sony_1	Main 4:4:4 12	X	4.1 and higher	60
		Bitdepth_B_REext	Bitdepth_B_REext_Sony_1	Main 4:4:4 12	X	4.1 and higher	60
Quantization	Scaling list	QMATRIX_A_REext	QMATRIX_A_REext_Sony_1	Main 4:4:4	X	4.0 and higher	20
Loop filter	SAO	SAO_A_REext	SAO_A_REext_MediaTek_1	Main 4:4:4 12	X	6.2	30
Entropy coding	Persistent Rice parameter tool	PERSIST_RPARAM_A_REext	PERSIST_RPARAM_A_REext_Sony_3	Main 4:4:4 12 Intra	X	3.0 and higher	
Precision	Extended precision	HIGH_TP_8BIT_REext	EXTPREC_HIGHTHROUGHPUT_444_16_INTRA_8BIT_REext_Sony_1	High Throughput 4:4:4 16 Intra	X	3.0 and higher	
		HIGH_TP_10BIT_REext	EXTPREC_HIGHTHROUGHPUT_444_16_INTRA_10BIT_REext_Sony_1	High Throughput 4:4:4 16 Intra	X	3.0 and higher	
		HIGH_TP_12BIT_REext	EXTPREC_HIGHTHROUGHPUT_444_16_INTRA_12BIT_REext_Sony_1	High Throughput 4:4:4 16 Intra	X	3.0 and higher	

Table 4 *(continued)*

Categories	Subcategory	Bitstream	File name	Profile	Main tier	Level	Frame rate (frames/sec)
		HIGH_TP_16BIT_REXt	EXTPREC_HIGHTHROUGHPUT_444_16_INTRA_16BIT_REXt_Sony_1	High Throughput 4:4:4 16 Intra	X	3.0 and higher	
		HIGH_TP_8BIT_REXt	EXTPREC_MAIN_444_16_INTRA_8BIT_REXt_Sony_1	Main 4:4:4 16 Intra	X	3.0 and higher	
		HIGH_TP_10BIT_REXt	EXTPREC_MAIN_444_16_INTRA_10BIT_REXt_Sony_1	Main 4:4:4 16 Intra	X	3.0 and higher	
		HIGH_TP_12BIT_REXt	EXTPREC_MAIN_444_16_INTRA_12BIT_REXt_Sony_1	Main 4:4:4 16 Intra	X	3.0 and higher	
		HIGH_TP_16BIT_REXt	EXTPREC_MAIN_444_16_INTRA_16BIT_REXt_Sony_1	Main 4:4:4 16 Intra	X	3.0 and higher	
Others	PCM	IPCM_A_REXt	IPCM_A_REXt_NEC_2	Main 4:2:2 10	X	6.0 and higher	30
		IPCM_B_REXt	IPCM_B_REXt_NEC_1	Main 4:2:2 10	X	6.0 and higher	30
	Transform skip context	TSCTX_8bit_I_REXt	TSCTX_8bit_I_REXt_SHARP_1	Main 4:4:4	X	6.2	30
		TSCTX_8bit_REXt	TSCTX_8bit_REXt_SHARP_1	Main 4:4:4	X	6.2	30
		TSCTX_10bit_I_REXt	TSCTX_10bit_I_REXt_SHARP_1	Main 4:4:4 10	X	6.2	30
		TSCTX_10bit_REXt	TSCTX_10bit_REXt_SHARP_1	Main 4:4:4 10	X	6.2	30
		TSCTX_12bit_I_REXt	TSCTX_12bit_I_REXt_SHARP_1	Main 4:4:4 12	X	6.2	30
		TSCTX_12bit_REXt	TSCTX_12bit_REXt_SHARP_1	Main 4:4:4 12	X	6.2	30
	RDPCM	ExplicitRdpcm_A_REXt	ExplicitRdpcm_A_BBC_1	Main 4:4:4 12	X	6.2	60
		ExplicitRdpcm_B_REXt	ExplicitRdpcm_B_BBC_2	Main 4:4:4 12	X	6.2	30

Table 4 *(continued)*

Categories	Subcategory	Bitstream	File name	Profile	Main tier	Level	Frame rate (frames/sec)
	Various combination	Main_4:2:2_10_A_RExt_Sony	Main_422_10_A_RExt_Sony_2	Main 4:2:2 10	X	4.0 and higher	24
		Main_4:2:2_10_B_RExt_Sony	Main_422_10_B_RExt_Sony_2	Main 4:2:2 10	X	5.0 and higher	30
		GENERAL_8b_400_RExt	GENERAL_8b_400_RExt_Sony_1	Monochrome	X	3.0 and higher	
		GENERAL_8b_420_RExt	GENERAL_8b_420_RExt_Sony_1	Main Intra	X	3.0 and higher	
		GENERAL_8b_444_RExt	GENERAL_8b_444_RExt_Sony_2	Main 4:4:4 Intra	X	3.0 and higher	
		GENERAL_10b_420_RExt	GENERAL_10b_420_RExt_Sony_1	Main 10 Intra	X	3.0 and higher	
		GENERAL_10b_422_RExt	GENERAL_10b_422_RExt_Sony_1	Main 4:2:2 10 Intra	X	3.0 and higher	
		GENERAL_10b_444_RExt	GENERAL_10b_444_RExt_Sony_2	Main 4:4:4 10 Intra	X	3.0 and higher	
		GENERAL_12b_400_RExt	GENERAL_12b_400_RExt_Sony_1	Monochrome 12	X	3.0 and higher	
		GENERAL_12b_420_RExt	GENERAL_12b_420_RExt_Sony_1	Main 12 Intra	X	3.0 and higher	
		GENERAL_12b_422_RExt	GENERAL_12b_422_RExt_Sony_1	Main 4:2:2 12 Intra	X	3.0 and higher	
		GENERAL_12b_444_RExt	GENERAL_12b_444_RExt_Sony_2	Main 4:4:4 12 Intra	X	3.0 and higher	
		GENERAL_16b_400_RExt	GENERAL_16b_400_RExt_Sony_1	Monochrome 16	X	3.0 and higher	
		GENERAL_16b_444_RExt	GENERAL_16b_444_RExt_Sony_2	Main 4:4:4 16 Intra	X	3.0 and higher	
		GENERAL_16b_444_highThroughput_RExt	GENERAL_16b_444_highThroughput_RExt_Sony_2	High Throughput 4:4:4 16 Intra	X	3.0 and higher	
		WAVETILES_RExt	WAVETILES_RExt_Sony_2	High Throughput 4:4:4 16 Intra	X	3.0 and higher	

Table 4 *(continued)*

Categories	Subcategory	Bitstream	File name	Profile	Main tier	Level	Frame rate (frames/sec)
High throughput		WPP_AND_TILE_10Bit422Test_HIGH_TP_444_10BIT_RExt	WPP_AND_TILE_10Bit422Test_HIGH_TP_444_10BIT_RExt_Apple_2	High Throughput 4:4:4 10	X	4.0 and higher	24
		WPP_AND_TILE_AND_CABAC_BYPASS_ALIGN_0_HIGH_TP_444_14BIT_RExt	WPP_AND_TILE_AND_CABAC_BYPASS_ALIGN_0_HIGH_TP_444_14BIT_RExt_Apple_2	High Throughput 4:4:4 14	X	3.1 and higher	30
		WPP_AND_TILE_AND_CABAC_BYPASS_ALIGN_1_HIGH_TP_444_14BIT_RExt	WPP_AND_TILE_AND_CABAC_BYPASS_ALIGN_1_HIGH_TP_444_14BIT_RExt_Apple_2	High Throughput 4:4:4 14	X	3.1 and higher	30
		WPP_AND_TILE_AND_CABAC_EXT_PREC_1_HIGH_TP_444_14BIT_RExt	WPP_AND_TILE_AND_CABAC_EXT_PREC_1_HIGH_TP_444_14BIT_RExt_Apple_2	High Throughput 4:4:4 14	X	3.1 and higher	30
		WPP_AND_TILE_HIGH_TP_444_8BIT_RExt	WPP_AND_TILE_HIGH_TP_444_8BIT_RExt_Apple_2	High Throughput 4:4:4 8	X	3.1 and higher	30
		WPP_HIGH_TP_444_8BIT_RExt	WPP_HIGH_TP_444_8BIT_RExt_Apple_2	High Throughput 4:4:4 8	X	3.1 and higher	30

4.7.6

At the end of 4.7.6, add the following subclause and table:

4.7.7 Bitstreams for Screen-Extended Main, Screen-Extended Main 10, Screen-Extended Main 4:4:4, Screen-Extended Main 4:4:4 10, Screen-Extended High Throughput 4:4:4, Screen-Extended High Throughput 4:4:4 10 and Screen-Extended High Throughput 14 profiles

