
**Information technology — Coding of
audio-visual objects —**

**Part 4:
Conformance testing**

**AMENDMENT 31: Conformance testing for
SVC profiles**

Technologies de l'information — Codage des objets audiovisuels —

Partie 4: Essai de conformité

AMENDEMENT 31: Essai de conformité pour profils SVC



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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 31 to ISO/IEC 14496-4:2004 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This Amendment establishes conformance test requirements for conformance to ITU-T Rec. H.264 | ISO/IEC 14496-10.

In this Amendment, additional text to ITU-T Rec. H.264 | ISO/IEC 14496-10 is specified for testing the conformance of ITU-T Rec. H.264 | ISO/IEC 14496-10 video decoders including in particular the SVC Profiles, which consist of the Scalable Baseline, Scalable High, and Scalable High Intra profiles.

The following subclauses specify the normative tests for verifying conformance of ITU-T Rec. H.264 | ISO/IEC 14496-10 video bitstreams and decoders. These normative tests make use of test data (bitstream test suites) provided as an electronic annex to this document, and of the reference software decoder specified in ISO/IEC 14496-5 with source code available in electronic format.

The numbering in this Amendment is relative to the text of ISO/IEC 14496-4. When a numbered item (i.e., a clause, subclause, figure, table, or equation) or associated content is being replaced or modified, the same number is used for the modified numbered item. When a numbered item is inserted between prior numbered items, the number of the corresponding numbered item immediately preceding it is used and the letter 'a' is appended to this number. When, after this one such inserted numbered item, another numbered item is inserted, the letter "a" is replaced by the letter "b" to indicate their relative order, and so on, following ordinary English alphabetical order. If text integrating this Amendment with ISO/IEC 14496-4 is produced, the inserted numbered items with appended letters are to be assigned to corresponding numbers in their numerical order without any such letters, and any subsequent numbered items are to be assigned later numbers to avoid conflicts. The purpose of the numbering convention in this Amendment text is to avoid the renumbering of existing numbered items in ISO/IEC 14496-4 while drafting this Amendment. Therefore, if the addition of a numbered item does not require renumbering of numbered items in ISO/IEC 14496-4, the final number is assigned to the numbered item herein.

Information technology — Coding of audio-visual objects —

Part 4: Conformance testing

AMENDMENT 31: Conformance testing for SVC profiles

Replace 10.3.1 with the following:

10.3.1 bitstream: An ITU-T Rec. H.264 | ISO/IEC 14496-10 video bitstream. A bitstream may contain IDR, I, P, B, SI, SP, EI, EP and EB slices.

Add the following text after 10.3.3:

10.3.4 TemporalIdMax: Maximum value of temporal_id in the NAL unit header extension for SVC of the coded slice NAL units or prefix NAL units of an ITU-T Rec. H.264 | ISO/IEC 14496-10 video bitstream.

Replace 10.6.5.7 with the following:

10.6.5.7 Decoder conformance test of a particular profile-and-level

In order for a decoder of a particular profile-and-level to claim output order conformance to ITU-T Rec. H.264 | ISO/IEC 14496-10 as described by this Recommendation | International Standard, the decoder shall successfully pass the static test defined in subclause 10.6.5.5 with all the bitstreams of the normative test suite specified for testing decoders of this particular profile-and-level.

In order for a decoder of a particular profile and level to claim output timing conformance to ITU-T Rec. H.264 | ISO/IEC 14496-10 as described by this Recommendation | International Standard, the decoder shall successfully pass both the static test defined in subclause 10.6.5.5 and the dynamic test defined in subclause 10.6.5.6 with all the bitstreams of the normative test suite specified for testing decoders of this particular profile-and-level. Tables 1 and 2 define the normative test suites for each profile-and-level combination. The test suite for a particular profile-and-level combination is the list of bitstreams that are marked with an “X” in the column corresponding to that profile-and-level combination.

“X” indicates that the bitstream is designed to test both the dynamic and static conformance of the decoder.

The bitstream column specifies the bitstream used for each test.

A decoder that conforms to the Scalable Baseline profile at a specific level shall be capable of decoding the Scalable Baseline profile bitstreams specified in Table AMD31-1.

A decoder that conforms to the Scalable High profile at a specific level shall be capable of decoding the Scalable High profile bitstreams specified in Table AMD31-1.

A decoder that conforms to the Scalable High Intra profile at a specific level shall be capable of decoding the Scalable High Intra profile bitstreams specified in Table AMD31-1.

Add the following sentence before 10.6.6.1:

In Table AMD31-1, the value “59.94” shall be interpreted as an approximation of an exact value of $60000 \div 1001$.

Add the following text after 10.6.6.29.7:

10.6.6.30 Test bitstreams – SVC Profiles: Scalable Baseline Profile 4:2:0 8 bit

10.6.6.30.1 Test bitstream #SVCBC-1

Specification: All slices are coded as I, P, EI, EP or EB slices. Each layer representation contains only one slice. `disable_deblocking_filter_idc` is equal to 1, specifying disabling of the deblocking filter process. `entropy_coding_mode_flag` is equal to 0 for layer representations with `dependency_id` equal to 0, specifying the CAVLC parsing process, and `entropy_coding_mode_flag` is equal to 1 for layer representations with `dependency_id` equal to 1, specifying the CABAC parsing process. `pic_order_cnt_type` is equal to 0. `gaps_in_frame_num_value_allowed_flag` is equal to 1. Reference picture list reordering and memory management control operations are used. `transform_8x8_mode_flag` is equal to 1 for layer representations with `dependency_id` equal to 1, specifying that 8x8 transform decoding process may be in use. `DependencyIdMax` is equal to 1, `TemporalIdMax` is equal to 4 and `DQIdMax` is equal to 16. `extended_spatial_scalability` is equal to 0. `SpatialResolutionChangeFlag` is equal to 0. `no_inter_layer_pred_flag` is equal to 0. `use_ref_base_pic_flag` is equal to 0, specifying that reference base pictures are not used as reference pictures for the inter prediction process. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_header_restriction_flag` is equal to 0 and `store_ref_base_pic_flag` is equal to 0, specifying that the reference base picture are not stored. `slice_skip_flag` is equal to 0. `adaptive_base_mode_flag` is equal to 1, specifying that inter-layer motion and inter-layer intra prediction are enabled. `adaptive_motion_prediction_flag` is equal to 1, specifying that inter-layer motion prediction is enabled. `adaptive_residual_prediction_flag` is equal to 1, specifying that inter-layer residual prediction is enabled. `inter_layer_deblocking_filter_control_present_flag` is equal to 0. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Gaps in `frame_num`, reference picture list reordering, memory management control operations and decoding of EI, EP and EB coded slices of a quality enhancement layer, 8x8 transform size with inter-layer motion, intra and residual prediction and CABAC parsing.

Purpose: Check that the decoder can properly handle gaps in `frame_num`, reference picture list reordering, memory management control operations and EI, EP and EB coded slices of a quality enhancement layer, 8x8 transform size with inter-layer motion, intra and residual prediction and CABAC parsing.

10.6.6.30.2 Test bitstream #SVCBM-1

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation contains only one slice. `disable_deblocking_filter_idc` is equal to 1, specifying disabling of the deblocking filter process. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 2. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 0, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_skip_flag` is equal to 0, `adaptive_base_mode_flag` is equal to 0 (with `default_base_mode_flag` equal to 1), `adaptive_motion_prediction_flag` is equal to 0 (with `default_motion_prediction_flag` equal to 1), and `adaptive_residual_prediction_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Decoding of EI and EP coded slices of a quality enhancement layer.

Purpose: Check that the decoder can properly handle EI and EP coded slices of a quality enhancement layer.

10.6.6.30.3 Test bitstream #SVCBM-2

Specification: All slices are coded as I, P, EI or EP slices. Each layer representation contains only one slice. `disable_deblocking_filter_idc` is equal to 1, specifying disabling of the deblocking filter process. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 0. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 0 and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0. `SpatialResolutionChangeFlag` is equal to 0. `no_inter_layer_pred_flag` is equal to 0. `adaptive_tcoeff_level_prediction_flag` is equal to 0, specifying that an alternative inter-layer prediction process is applied for the whole sequence. `slice_header_restriction_flag` is equal to 1. `slice_skip_flag` is equal to 0. `default_base_mode_flag` is equal to 1, specifying inter-layer motion and intra prediction. `default_residual_prediction_flag` is equal to 0. `inter_layer_deblocking_filter_control_present_flag` is equal to 0. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Decoding of EI and EP coded slices of a quality enhancement layer, using an alternative inter-layer prediction process for translation to an AVC bitstream.

Purpose: Check that the decoder can properly handle EI and EP coded slices of a quality enhancement layer, using an alternative inter-layer prediction process for translation to an AVC bitstream.

10.6.6.30.4 Test bitstream #SVCBM-3

Specification: All slices are coded as I, P or EP slices. Each layer representation contains only one slice. `disable_deblocking_filter_idc` is equal to 1, specifying disabling of the deblocking filter process. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 0. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 0 and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0. `SpatialResolutionChangeFlag` is equal to 0. `no_inter_layer_pred_flag` is equal to 0. `tcoeff_level_prediction_flag` is equal to 1, specifying that an alternative inter-layer prediction process is applied on a macroblock basis. `slice_header_restriction_flag` is equal to 1. `slice_skip_flag` is equal to 0. `default_base_mode_flag` is equal to 1, specifying inter-layer motion and intra prediction. `default_residual_prediction_flag` is equal to 0. `inter_layer_deblocking_filter_control_present_flag` is equal to 0. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Decoding of EI and EP coded slices of a quality enhancement layer, enabling an alternative inter-layer prediction process by macroblock for translation to an AVC bitstream.

Purpose: Check that the decoder can properly handle EI and EP coded slices of a quality enhancement layer, enabling an alternative inter-layer prediction process by macroblock for translation to an AVC bitstream.

10.6.6.30.5 Test bitstream #SVCBM-4

Specification: All slices are coded as I, P, EI or EP slices. Each layer representation contains only one slice. `disable_deblocking_filter_idc` is equal to 1, specifying disabling of the deblocking filter process. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 0. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 0 and `DQIdMax` is equal to 2. `extended_spatial_scalability` is equal to 0. `SpatialResolutionChangeFlag` is equal to 0. `no_inter_layer_pred_flag` is equal to 0. `tcoeff_level_prediction_flag` is equal to 1 for the layer representation with `quality_id` equal to 1, specifying that an alternative inter-layer prediction process is applied on a macroblock basis. For the layer representation with `quality_id` equal to 2 `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_header_restriction_flag` is equal to 1. `slice_skip_flag` is equal to 0. `default_base_mode_flag` is equal to 1, specifying inter-layer motion and intra prediction. `default_residual_prediction_flag` is equal to 0. `inter_layer_deblocking_filter_control_present_flag` is equal to 0. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Decoding of EI and EP coded slices of a quality enhancement layer and of a quality enhancement layer enabling an alternative inter-layer prediction process by macroblock for translation to an AVC bitstream.

Purpose: Check that the decoder can properly handle EI and EP coded slices of a quality enhancement layer and of a quality enhancement layer enabling an alternative inter-layer prediction process by macroblock for translation to an AVC bitstream.

10.6.6.30.6 Test bitstream #SVCBM-5

Specification: All slices are coded as I, P, EI, or EP slices. Each layer representation contains only one slice. `disable_deblocking_filter_idc` is equal to 1, specifying disabling of the deblocking filter process. `entropy_coding_mode_flag` is equal to 0 for layer representations with `quality_id` equal to 0, specifying the CAVLC parsing process. `entropy_coding_mode_flag` is equal to 1 for layer representations with `quality_id` greater than 0, specifying the CABAC parsing process. `pic_order_cnt_type` is equal to 0. `gaps_in_frame_num_value_allowed_flag` is equal to 1. Reference picture list reordering and memory management control operations are used. `transform_8x8_mode_flag` is equal to 1 for layer representation with `quality_id` greater than 0, specifying that 8x8 transform decoding process may be in use. `mb_qp_delta` is equal to 0. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 4 and `DQIdMax` is equal to 3. `extended_spatial_scalability` is equal to 0. `SpatialResolutionChangeFlag` is equal to 0. `no_inter_layer_pred_flag` is equal to 0. `use_ref_base_pic_flag` is equal to 1 for access units with `temporal_id` equal to 0, specifying that reference base pictures may be used as reference pictures for the inter prediction process. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_header_restriction_flag` is equal to 0 and `store_ref_base_pic_flag` is equal to 1 for access units with `temporal_id` equal to 0, specifying that reference base pictures are stored for these access units. `slice_skip_flag` is equal to 0. `default_base_mode_flag` is equal to 1 for layer representations with `quality_id` greater than 1, specifying inter-layer motion and intra prediction. `default_residual_prediction_flag` is equal to 1 for layer representations with `quality_id` greater than 1. `inter_layer_deblocking_filter_control_present_flag` is equal to 0. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Gaps in `frame_num`, Reference picture list reordering, memory management control operations and decoding of EI and EP slices of quality enhancement layers, using key pictures and transform coefficient fragmentation, 8x8 transform size with inter-layer motion and intra prediction.

Purpose: Check that the decoder can properly handle gaps in `frame_num`, reference picture list reordering, memory management control operations and EI and EP coded slices of quality enhancement layers, using key pictures and transform coefficient fragmentation, 8x8 transform size with inter-layer motion and intra prediction.

10.6.6.30.7 Test bitstream #SVCBCT-1

Specification: All slices are coded as I, P, EI, EP or EB slices. Each layer representation contains only one slice. `disable_deblocking_filter_idc` is equal to 0. `entropy_coding_mode_flag` is equal to 0 for layer representation with `dependency_id` equal to 0, specifying the CAVLC parsing process, and `entropy_coding_mode_flag` is equal to 1 for layer representation with `dependency_id` equal to 1, specifying the CABAC parsing process. `pic_order_cnt_type` is equal to 0. `gaps_in_frame_num_value_allowed_flag` is equal to 1. Reference picture list reordering and memory management control operations are used. `transform_8x8_mode_flag` is equal to 1 for layer representation with `dependency_id` equal to 1, specifying that 8x8 transform decoding process may be in use. `DependencyIdMax` is equal to 1, `TemporalIdMax` is equal to 4 and `DQIdMax` is equal to 16. `extended_spatial_scalability` is equal to 0. `SpatialResolutionChangeFlag` is equal to 0. `no_inter_layer_pred_flag` is equal to 0. `use_ref_base_pic_flag` is equal to 1, specifying that reference base pictures are not used as reference pictures for the inter prediction process. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_header_restriction_flag` is equal to 0 and `store_ref_base_pic_flag` is equal to 0, specifying that reference base picture are not stored. `slice_skip_flag` is equal to 0. `adaptive_base_mode_flag` is equal to 1, specifying that inter-layer motion and inter-layer intra prediction is enabled. `adaptive_motion_prediction_flag` is equal to 1, specifying that inter-layer motion prediction is enabled. `adaptive_residual_prediction_flag` is equal to 1, specifying that inter-layer residual prediction is enabled. `inter_layer_deblocking_filter_control_present_flag` is equal to 0. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Gaps in frame_num, reference picture list reordering, memory management control operations and decoding of EI, EP and EB coded slices of a quality and temporal enhancement layer, 8x8 transform size with inter-layer motion, intra and residual prediction and CABAC parsing.

Purpose: Check that the decoder can properly handle gaps in frame_num, reference picture list reordering, memory management control operations and EI, EP and EB coded slices of a quality and temporal enhancement layer, 8x8 transform size with inter-layer motion, intra and residual prediction and CABAC parsing.

10.6.6.30.8 Test bitstream #SVCBMT-1

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation contains only one slice. disable_deblocking_filter_idc is equal to 1, specifying disabling of the deblocking filter process. entropy_coding_mode_flag is equal to 0, specifying the CAVLC parsing process. pic_order_cnt_type is equal to 2. Reference picture list reordering is used. DependencyIdMax is equal to 0, TemporalIdMax is equal to 3, and DQIdMax is equal to 1. extended_spatial_scalability is equal to 0, SpatialResolutionChangeFlag is equal to 0, chroma_phase_x_plus1_flag is equal to 1, and chroma_phase_y_plus1 is equal to 1. no_inter_layer_pred_flag is equal to 0, slice_header_restriction_flag is equal to 0, scan_idx_start is equal to 0, and scan_idx_end is equal to 15. seq_tcoeff_level_prediction_flag is equal to 0. slice_skip_flag is equal to 0, adaptive_base_mode_flag is equal to 0 (with default_base_mode_flag equal to 1), adaptive_motion_prediction_flag is equal to 0 (with default_motion_prediction_flag equal to 1), and adaptive_residual_prediction_flag is equal to 1. disable_inter_layer_deblocking_filter_idc is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering and decoding of EI and EP coded slices of a quality enhancement layer.

Purpose: Check that the decoder can properly handle reference picture list reordering and EI and EP coded slices of a quality enhancement layer.

10.6.6.30.9 Test bitstream #SVCBMT-2

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation contains only one slice. disable_deblocking_filter_idc is equal to 1, specifying disabling of the deblocking filter process. entropy_coding_mode_flag is equal to 0, specifying the CAVLC parsing process. pic_order_cnt_type is equal to 2. Reference picture list reordering and memory management control operations are used. DependencyIdMax is equal to 0, TemporalIdMax is equal to 3, and DQIdMax is equal to 1. extended_spatial_scalability is equal to 0, SpatialResolutionChangeFlag is equal to 0, chroma_phase_x_plus1_flag is equal to 1, and chroma_phase_y_plus1 is equal to 1. no_inter_layer_pred_flag is equal to 0, slice_header_restriction_flag is equal to 0, scan_idx_start is equal to 0, and scan_idx_end is equal to 15. seq_tcoeff_level_prediction_flag is equal to 0. slice_skip_flag is equal to 0, adaptive_base_mode_flag is equal to 0 (with default_base_mode_flag equal to 1), adaptive_motion_prediction_flag is equal to 0 (with default_motion_prediction_flag equal to 1), and adaptive_residual_prediction_flag is equal to 1. disable_inter_layer_deblocking_filter_idc is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer.

10.6.6.30.10 Test bitstream #SVCBMT-3

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation can contain more than one slice. `disable_deblocking_filter_idc` is equal to 1, specifying disabling of the deblocking filter process. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 2. Reference picture list reordering and memory management control operations are used. `slice_qp_delta` is equal to a non-zero value to change the quantizer scale at each slice and `mb_qp_delta` is equal to a non-zero value to change the quantizer scale at some macroblocks. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 3, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_skip_flag` is equal to 0, `adaptive_base_mode_flag` is equal to 0 (with `default_base_mode_flag` equal to 1), `adaptive_motion_prediction_flag` is equal to 0 (with `default_motion_prediction_flag` equal to 1), and `adaptive_residual_prediction_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`.

10.6.6.30.11 Test bitstream #SVCBMT-4

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation can contain more than one slice. `disable_deblocking_filter_idc` is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, `slice_alpha_c0_offset_div2` and `slice_beta_offset_div2` are not equal to 0. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 2. Reference picture list reordering and memory management control operations are used. `slice_qp_delta` is equal to a non-zero value to change the quantizer scale at each slice and `mb_qp_delta` is equal to a non-zero value to change the quantizer scale at some macroblocks. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 3, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_skip_flag` is equal to 0, `adaptive_base_mode_flag` is equal to 0 (with `default_base_mode_flag` equal to 1), `adaptive_motion_prediction_flag` is equal to 0 (with `default_motion_prediction_flag` equal to 1), and `adaptive_residual_prediction_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter.

10.6.6.30.12 Test bitstream #SVCBMT-5

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation can contain more than one slice and slice groups greater than 1. `disable_deblocking_filter_idc` is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, `slice_alpha_c0_offset_div2` and `slice_beta_offset_div2` are not equal to 0. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 0. Reference picture list reordering is used. `slice_qp_delta` is equal to a non-zero value to change the quantizer scale at each slice and `mb_qp_delta` is equal to a non-zero value to change the quantizer scale at some macroblocks. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 3, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_skip_flag` is equal to 0, `adaptive_base_mode_flag` is equal to 0 (with `default_base_mode_flag` equal to 1), `adaptive_motion_prediction_flag` is equal to 0 (with `default_motion_prediction_flag` equal to 1), and `adaptive_residual_prediction_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter and slice groups.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter and slice groups.

10.6.6.30.13 Test bitstream #SVCBMT-6

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation can contain more than one slice. `disable_deblocking_filter_idc` is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, `slice_alpha_c0_offset_div2` and `slice_beta_offset_div2` are not equal to 0. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 0. Reference picture list reordering is used. `slice_qp_delta` is equal to a non-zero value to change the quantizer scale at each slice and `mb_qp_delta` is equal to a non-zero value to change the quantizer scale at some macroblocks. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 3, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 1 (with `adaptive_tcoeff_level_prediction_flag` equal to 0). `slice_skip_flag` is equal to 0, `adaptive_base_mode_flag` is equal to 0 (with `default_base_mode_flag` equal to 1), `adaptive_motion_prediction_flag` is equal to 0 (with `default_motion_prediction_flag` equal to 1), and `adaptive_residual_prediction_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, using an alternative inter-layer prediction process for translation to an AVC bitstream, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, using an alternative inter-layer prediction process for translation to an AVC bitstream, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter.

10.6.6.30.14 Test bitstream #SVCBMT-7

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation can contain more than one slice. `disable_deblocking_filter_idc` is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, `slice_alpha_c0_offset_div2` and `slice_beta_offset_div2` are not equal to 0. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 0. Reference picture list reordering is used. `slice_qp_delta` is equal to a non-zero value to change the quantizer scale at each slice and `mb_qp_delta` is equal to a non-zero value to change the quantizer scale at some macroblocks. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 3, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 1 (with `adaptive_tcoeff_level_prediction_flag` equal to 1). `slice_skip_flag` is equal to 0, `adaptive_base_mode_flag` is equal to 0 (with `default_base_mode_flag` equal to 1), `adaptive_motion_prediction_flag` is equal to 0 (with `default_motion_prediction_flag` equal to 1), and `adaptive_residual_prediction_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, enabling an alternative inter-layer prediction process by macroblock for translation to an AVC bitstream, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, enabling an alternative inter-layer prediction process by macroblock for translation to an AVC bitstream, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter.

10.6.6.30.15 Test bitstream #SVCBMT-8

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation can contain more than one slice. `disable_deblocking_filter_idc` is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, `slice_alpha_c0_offset_div2` and `slice_beta_offset_div2` are not equal to 0. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `chroma_qp_index_offset` is not equal to 0. `pic_order_cnt_type` is equal to 2. Reference picture list reordering and memory management control operations are used. `slice_qp_delta` is equal to a non-zero value to change the quantizer scale at each slice and `mb_qp_delta` is equal to a non-zero value to change the quantizer scale at some macroblocks. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 3, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_skip_flag` is equal to 0, `adaptive_base_mode_flag` is equal to 0 (with `default_base_mode_flag` equal to 1), `adaptive_motion_prediction_flag` is equal to 0 (with `default_motion_prediction_flag` equal to 1), and `adaptive_residual_prediction_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter, and non-zero `chroma_qp_index_offset`.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter, and non-zero `chroma_qp_index_offset`.

10.6.6.30.16 Test bitstream #SVCBMT-9

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation can contain more than one slice. `disable_deblocking_filter_idc` is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, `slice_alpha_c0_offset_div2` and `slice_beta_offset_div2` are not equal to 0. `entropy_coding_mode_flag` is equal to 1, specifying the CABAC parsing process. `pic_order_cnt_type` is equal to 2. Reference picture list reordering and memory management control operations are used. `slice_qp_delta` is equal to a non-zero value to change the quantizer scale at each slice and `mb_qp_delta` is equal to a non-zero value to change the quantizer scale at some macroblocks. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 3, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_skip_flag` is equal to 0, `adaptive_base_mode_flag` is equal to 0 (with `default_base_mode_flag` equal to 1), `adaptive_motion_prediction_flag` is equal to 0 (with `default_motion_prediction_flag` equal to 1), and `adaptive_residual_prediction_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter with CABAC parsing.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter with CABAC parsing.

10.6.6.30.17 Test bitstream #SVCBMT-10

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation can contain more than one slice. `disable_deblocking_filter_idc` is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, `slice_alpha_c0_offset_div2` and `slice_beta_offset_div2` are not equal to 0. `entropy_coding_mode_flag` is equal to 0, specifying the CAVLC parsing process. `pic_order_cnt_type` is equal to 2. Reference picture list reordering and memory management control operations are used. `slice_qp_delta` is equal to a non-zero value to change the quantizer scale at each slice and `mb_qp_delta` is equal to a non-zero value to change the quantizer scale at some macroblocks. `DependencyIdMax` is equal to 0, `TemporalIdMax` is equal to 3, and `DQIdMax` is equal to 1. `extended_spatial_scalability` is equal to 0, `SpatialResolutionChangeFlag` is equal to 0, `chroma_phase_x_plus1_flag` is equal to 1, and `chroma_phase_y_plus1` is equal to 1. `no_inter_layer_pred_flag` is equal to 0, `slice_header_restriction_flag` is equal to 0, `scan_idx_start` is equal to 0, and `scan_idx_end` is equal to 15. `seq_tcoeff_level_prediction_flag` is equal to 0. `slice_skip_flag` is equal to 1. `disable_inter_layer_deblocking_filter_idc` is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP skipped slices of a quality enhancement layer, with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP skipped slices of a quality enhancement layer with non-zero values of `slice_qp_delta` and `mb_qp_delta`, using deblocking filter.

10.6.6.30.18 Test bitstream #SVCBMT-11

Specification: All slices are coded as I, P, EI or EP slices. The first frame and some other frames are coded as IDR access unit and each dependency representation can contain more than one slice. `disable_deblocking_filter_idc` is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, `slice_alpha_c0_offset_div2` and `slice_beta_offset_div2` are not equal to 0.

entropy_coding_mode_flag is equal to 0, specifying the CAVLC parsing process. pic_order_cnt_type is equal to 2. Reference picture list reordering and memory management control operations are used. slice_qp_delta is equal to a non-zero value to change the quantizer scale at each slice and mb_qp_delta is equal to a non-zero value to change the quantizer scale at some macroblocks. DependencyIdMax is equal to 0, TemporalIdMax is equal to 3, and DQIdMax is equal to 1. extended_spatial_scalability is equal to 0, SpatialResolutionChangeFlag is equal to 0, chroma_phase_x_plus1_flag is equal to 1, and chroma_phase_y_plus1 is equal to 1. no_inter_layer_pred_flag is equal to 0, slice_header_restriction_flag is equal to 0, scan_idx_start is equal to 0, and scan_idx_end is equal to 15. seq_tcoeff_level_prediction_flag is equal to 0. slice_skip_flag is equal to 0, adaptive_base_mode_flag is equal to 0 (with default_base_mode_flag equal to 1), adaptive_motion_prediction_flag is equal to 0 (with default_motion_prediction_flag equal to 1), and adaptive_residual_prediction_flag is equal to 1. disable_inter_layer_deblocking_filter_idc is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, with non-zero values of slice_qp_delta and mb_qp_delta, using deblocking filter and more than one IDR.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, with non-zero values of slice_qp_delta and mb_qp_delta, using deblocking filter and more than one IDR.

10.6.6.30.19 Test bitstream #SVCBMT-12

Specification: All slices are coded as I, P, EI or EP slices. The first frame and some other frames are coded as IDR access unit and each dependency representation can contain more than one slice. disable_deblocking_filter_idc is equal to 2, specifying enabling of deblocking filter process (without slice boundary deblocking). Additionally, slice_alpha_c0_offset_div2 and slice_beta_offset_div2 are not equal to 0. entropy_coding_mode_flag is equal to 0, specifying the CAVLC parsing process. pic_order_cnt_type is equal to 2. Reference picture list reordering and memory management control operations are used. slice_qp_delta is equal to a non-zero value to change the quantizer scale at each slice and mb_qp_delta is equal to a non-zero value to change the quantizer scale at some macroblocks. DependencyIdMax is equal to 0, TemporalIdMax is equal to 3, and DQIdMax is equal to 1. extended_spatial_scalability is equal to 0, SpatialResolutionChangeFlag is equal to 0, chroma_phase_x_plus1_flag is equal to 1, and chroma_phase_y_plus1 is equal to 1. no_inter_layer_pred_flag is equal to 0, slice_header_restriction_flag is equal to 0, scan_idx_start is equal to 0, and scan_idx_end is equal to 15. use_ref_base_pic_flag is equal to 1 and store_ref_base_pic_flag is equal to 1. seq_tcoeff_level_prediction_flag is equal to 0. slice_skip_flag is equal to 0, adaptive_base_mode_flag is equal to 0 (with default_base_mode_flag equal to 1), adaptive_motion_prediction_flag is equal to 0 (with default_motion_prediction_flag equal to 1), and adaptive_residual_prediction_flag is equal to 1. disable_inter_layer_deblocking_filter_idc is equal to 1. All NAL units are encapsulated into the byte stream format specified in Annex B in ITU-T Rec. H.264 | ISO/IEC 14496-10.

Functional stage: Reference picture list reordering, memory management control operations, and decoding of EI and EP coded slices of a quality enhancement layer, with non-zero values of slice_qp_delta and mb_qp_delta, using deblocking filter, more than one IDR and key pictures.

Purpose: Check that the decoder can properly handle reference picture list reordering, memory management control operations, and EI and EP coded slices of a quality enhancement layer, with non-zero values of slice_qp_delta and mb_qp_delta, using deblocking filter, more than one IDR and key pictures.

10.6.6.30.20 Test bitstream #SVCBMT-13

Specification: All slices are coded as I, P, EI or EP slices. Only the first frame is coded as an IDR access unit and each dependency representation contains only one slice. disable_deblocking_filter_idc is equal to 1, specifying disabling of the deblocking filter process. entropy_coding_mode_flag is equal to 0, specifying the CAVLC parsing process. pic_order_cnt_type is equal to 0. Reference picture list reordering is used. DependencyIdMax is equal to 0, TemporalIdMax is equal to 3, and DQIdMax is equal to 2. extended_spatial_scalability is equal to 0, SpatialResolutionChangeFlag is equal to 0,