

---

---

**Information technology — General  
video coding —**

**Part 1:  
Essential video coding**

*Technologies de l'information — Codage vidéo général —*

*Partie 1: Codage vidéo essentiel*  
**iTeh STANDARD PREVIEW  
(standards.iteh.ai)**

ISO/IEC 23094-1:2020

<https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020>



**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO/IEC 23094-1:2020](https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020)  
[https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-  
e33cc2dd820d/iso-iec-23094-1-2020](https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020)



**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier; Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

<b>Contents</b>	<b>Page</b>
<b>Foreword</b> .....	<b>vi</b>
<b>Introduction</b> .....	<b>vii</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Abbreviated terms</b> .....	<b>11</b>
<b>5 Conventions</b> .....	<b>12</b>
5.1 General.....	12
5.2 Arithmetic operators .....	13
5.3 Logical operators.....	13
5.4 Relational operators .....	13
5.5 Bit-wise operators .....	13
5.6 Assignment operators .....	14
5.7 Range notation .....	14
5.8 Mathematical functions .....	14
5.9 Order of operation precedence .....	16
5.10 Variables, syntax elements and tables .....	16
5.11 Text description of logical operations .....	18
5.12 Processes .....	19
<b>6 Bitstream and picture formats, partitionings, scanning processes and neighbouring relationships</b> .....	<b>19</b>
6.1 Bitstream formats .....	19
6.2 Source, decoded and output picture formats .....	20
6.3 Partitioning of pictures, slices, tiles, and CTUs .....	22
6.3.1 Partitioning of pictures into slices and tiles.....	22
6.3.2 Spatial or component-wise partitionings.....	23
6.4 Availability processes.....	24
6.4.1 Derivation process for neighbouring block availability.....	24
6.4.2 Derivation process for left and right neighbouring blocks availabilities....	24
6.4.3 Derivation process for neighbouring block motion vector candidate availability.....	25
6.4.4 Derivation process for ALF neighbouring block availability.....	25
6.5 Scanning processes.....	26
6.5.1 CTB raster and tile scanning process.....	26
6.5.2 Zig-zag scan order 1D array initialization process.....	28
6.5.3 Inverse scan order 1D array initialization process .....	29
<b>7 Syntax and semantics</b> .....	<b>29</b>
7.1 Method of specifying syntax in tabular form.....	29
7.2 Specification of syntax functions and descriptors.....	31
7.3 Syntax in tabular form.....	32
7.3.1 NAL unit syntax.....	32
7.3.2 Raw byte sequence payloads, trailing bits and byte alignment syntax .....	33
7.3.3 Supplemental enhancement information message syntax .....	38
7.3.4 Slice header syntax .....	39
7.3.5 Adaptive loop filter data syntax .....	41
7.3.6 DRA data syntax.....	42

7.3.7	Reference picture list structure syntax.....	43
7.3.8	Slice data syntax .....	43
7.4	Semantics.....	56
7.4.1	General.....	56
7.4.2	NAL unit semantics.....	56
7.4.3	Raw byte sequence payloads, trailing bits and byte alignment semantics	60
7.4.4	Supplemental enhancement information message semantics .....	73
7.4.5	Slice header semantics .....	74
7.4.6	Adaptive loop filter data semantics .....	79
7.4.7	DRA data semantics.....	84
7.4.8	Reference picture list structure semantics.....	86
7.4.9	Slice data semantics .....	88
<b>8</b>	<b>Decoding process .....</b>	<b>105</b>
8.1	General decoding process.....	105
8.2	NAL unit decoding process .....	105
8.3	Slice decoding process .....	105
8.3.1	Decoding process for picture order count.....	105
8.3.2	Decoding process for reference picture lists construction.....	107
8.3.3	Decoding process for reference picture marking .....	111
8.3.4	Decoding process for collocated picture .....	112
8.4	Decoding process for coding units coded in intra prediction mode .....	112
8.4.1	General.....	112
8.4.2	Derivation process for luma intra prediction mode .....	114
8.4.3	Derivation process for chroma intra prediction mode.....	124
8.4.4	Decoding process of intra prediction.....	126
8.4.5	Decoding process for the residual signal.....	141
8.5	Decoding process for coding units coded in inter prediction mode .....	143
8.5.1	General.....	143
8.5.2	Derivation process for motion vector components and reference indices.....	148
8.5.3	Derivation process for affine motion vector components and reference indices .....	188
8.5.4	Decoding process for inter prediction samples.....	217
8.5.5	Decoder-side motion vector refinement process .....	234
8.5.6	Decoding process for the residual signal of coding units coded in inter prediction mode.....	240
8.6	Decoding process for coding units coded in ibc prediction mode .....	246
8.6.1	General.....	246
8.6.2	Derivation process for motion vector components .....	247
8.6.3	Decoding process for ibc blocks.....	250
8.7	Scaling, transformation and array construction process .....	251
8.7.1	Derivation process for quantization parameters.....	251
8.7.2	Scaling and transformation process.....	251
8.7.3	Scaling process for transform coefficients.....	252
8.7.4	Transformation process for scaled transform coefficients.....	253
8.7.5	Picture construction process.....	263
8.7.6	Post-reconstruction filter process.....	264
8.8	In-loop filter process .....	267
8.8.1	General.....	267
8.8.2	Deblocking filter process .....	268
8.8.3	Advanced deblocking filter process.....	280
8.8.4	Adaptive Loop Filter .....	293
8.9	DRA process .....	303

8.9.1	General.....	303
8.9.2	Derivation of samples of output decoded picture by DRA process .....	303
8.9.3	Inverse mapping process for a luma sample .....	304
8.9.4	Inverse mapping process for a chroma sample.....	305
8.9.5	Identification of the range index of piecewise function .....	305
8.9.6	DRA chroma scale value derivaton process .....	306
8.9.7	Derivation of output chroma DRA parameters.....	306
8.9.8	Derivation of adjusted chroma DRA scales.....	307
<b>9</b>	<b>Parsing process .....</b>	<b>309</b>
9.1	General.....	309
9.2	Parsing process for 0-th order Exp-Golomb codes .....	310
9.2.1	General.....	310
9.2.2	Mapping process for signed Exp-Golomb codes.....	311
9.3	CABAC parsing process for slice data .....	312
9.3.1	General.....	312
9.3.2	Initialization process .....	312
9.3.3	Binarization process .....	326
9.3.4	Decoding process flow .....	333
<b>Annex A (normative) Profiles, levels and toolsets.....</b>		<b>349</b>
<b>Annex B (normative) Raw bitstream file storage format.....</b>		<b>361</b>
<b>Annex C (normative) Hypothetical reference decoder .....</b>		<b>362</b>
<b>Annex D (normative) Supplemental enhancement information.....</b>		<b>374</b>
<b>Annex E (normative) Video usability information.....</b>		<b>389</b>
<b>Bibliography .....</b>		<b>414</b>

[ISO/IEC 23094-1:2020](https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020)

<https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020>

## 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)) or the IEC list of patent declarations received (see <http://patents.iec.ch>).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

**iTeh STANDARD PREVIEW**

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

<https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020>

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

A list of all parts in the ISO/IEC 23094 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

The International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of a patent.

ISO and IEC take no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured ISO and IEC that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO and IEC. Information may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents).

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

## iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/IEC 23094-1:2020

<https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO/IEC 23094-1:2020](https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020)

<https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020>



# Information technology — General video coding —

## Part 1: Essential video coding

### 1 Scope

This document specifies a video coding technology known as essential video coding (EVC), which contains syntax format, semantics and an associated decoding process. The decoding process is designed to guarantee that all EVC decoders conform to a specified combination of capabilities known as the profile, level and toolset. Any decoding process that produces identical cropped decoded output pictures to those produced by the described process is considered to be in conformance with the requirements of this document.

This document is designed to cover a wide range of application, including but not limited to digital storage media, television broadcasting and real-time communications.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11664-1, *Colorimetry — Part 1: CIE standard colorimetric observers*

### 3 Terms and definitions

For the purposes of this document, the following definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1

##### **access unit**

set of *NAL units* (3.53) that are associated with each other according to a specified classification rule, are consecutive in *decoding order* (3.28), and contain exactly one *coded picture* (3.16)

#### 3.2

##### **adaptive loop filter**

##### **ALF**

filtering process that is applied as part of the *decoding process* (3.29) and is controlled by *parameters* (3.58) conveyed in an *APS* (3.4)

### 3.3

#### **ALF APS**

APS (3.4) that controls the ALF (3.2) process

### 3.4

#### **adaptation parameter set**

##### **APS**

*syntax structure* (3.87) containing *syntax elements* (3.86) that apply to zero or more *slices* (3.81) or *pictures* (3.60) as determined by zero or more *syntax elements* (3.86) found in *slice headers* (3.82)

### 3.5

#### **bi-predictive slice**

##### **B slice**

*slice* (3.81) that is decoded using *intra prediction* (3.43) or using *inter prediction* (3.40) with at most two *motion vectors* (3.52) and *reference indices* (3.74) to predict the sample values of each *block* (3.11)

### 3.6

#### **bin**

one bit of a *bin string* (3.7)

### 3.7

#### **bin string**

intermediate binary representation of values of *syntax elements* (3.86) from the *binarization* (3.8) of the *syntax element* (3.86)

### 3.8

#### **binarization**

set of *bin strings* (3.7) for all possible values of a *syntax element* (3.86)

### 3.9

#### **binarization process**

unique mapping process of all possible values of a *syntax elements* (3.86) from the *binarization* (3.8) of the *syntax element* (3.86)

### 3.10

#### **bitstream**

sequence of bits, in the form of a *NAL unit stream* (3.54) or a *raw bitstream* (3.71), that forms the representation of *coded pictures* (3.16) and associated data forming one or more *coded video sequences* (3.19)

### 3.11

#### **block**

MxN (M-column by N-row) array of samples, or an MxN array of *transform coefficients* (3.93)

### 3.12

#### **buffering period**

set of *access units* (3.1) starting with an *access unit* (3.1) that contains a buffering period supplemental enhancement information (SEI) message and containing all subsequent *access units* (3.1) in *decoding order* (3.28) up to but not including the next *access unit* (3.1) (when present) that contains a buffering period SEI message

### 3.13

#### **byte**

sequence of 8 bits, within which, when written or read as a sequence of bit values, the left-most and right-most bits represent the most and least significant bits, respectively

**3.14****byte-aligned**

position in a *bitstream* (3.10) where the position is an integer multiple of 8 bits from the position of the first bit in the *bitstream* (3.10)

Note 1 to entry: A bit or *byte* (3.13) or *syntax element* (3.86) is said to be byte-aligned when the position at which it appears in a *bitstream* (3.10) is byte-aligned.

**3.15****chroma**

sample array or single sample representing one of the two colour difference signals related to the primary colours, represented by the symbols Cb and Cr

Note 1 to entry: The term chroma is used rather than the term chrominance in order to avoid the implication of the use of linear light transfer characteristics that are often associated with the term chrominance.

**3.16****coded picture**

*coded representation* (3.18) of a *picture* (3.60) containing all *CTUs* (3.22) of the *picture* (3.60)

**3.17****coded picture buffer****CPB**

first-in first-out buffer containing *access units* (3.1) in *decoding order* (3.28)

Note 1 to entry: Specified in the *hypothetical reference decoder* (3.36) in Annex C.

**3.18****coded representation**

data element as represented in its coded form

[ISO/IEC 23094-1:2020](https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-c53cc2d0620d/iso-iec-23094-1-2020)

<https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-c53cc2d0620d/iso-iec-23094-1-2020>

**3.19****coded video sequence****CVS**

sequence of *access units* (3.1) that consists, in *decoding order* (3.28), of an *IDR access unit* (3.38), followed by zero or more *access units* (3.1) that are not *IDR access units* (3.38), including all subsequent *access units* (3.1) up to but not including any subsequent *access unit* (3.1) that is an *IDR access unit* (3.38)

**3.20****coding block****CB**

MxN *block* (3.11) of samples for some values of M and N such that the division of a *CTB* (3.21) into coding blocks is a *partitioning* (3.59)

**3.21****coding tree block****CTB**

NxN *block* (3.11) of samples for some value of N such that the division of a *component* (3.24) into coding tree blocks is a *partitioning* (3.59)

**3.22****coding tree unit****CTU**

*CTB* (3.21) of *luma* (3.51) samples, two corresponding *CTBs* (3.21) of *chroma* (3.15) samples of a *picture* (3.60) that has three sample arrays, or a *CTB* of samples of a monochrome *picture* (3.60) or a *picture*

(3.60) that is coded using three separate colour planes and *syntax structures* (3.87) used to code the samples

### 3.23

#### **coding unit**

**CU**  
*coding block* (3.20) of *luma* (3.51) samples, two corresponding *coding blocks* (3.20) of *chroma* (3.15) samples of a *picture* (3.60) that has three sample arrays, or a *coding block* (3.20) of samples of a monochrome *picture* (3.60) or a *picture* (3.60) that is coded using three separate colour planes and *syntax structures* (3.87) used to code the samples

### 3.24

#### **component**

array or single sample from one of the three arrays (*luma* (3.51) and two *chroma* (3.15)) that compose a *picture* (3.60) in 4:2:0, 4:2:2, or 4:4:4 colour format or the array or a single sample of the array that compose a *picture* (3.60) in monochrome format

### 3.25

#### **decoded picture**

derived by decoding a *coded picture* (3.16)

### 3.26

#### **decoded picture buffer**

**DPB**  
buffer holding *decoded pictures* (3.25) for reference, output reordering, or output delay

Note 1 to entry: Specified for the *hypothetical reference decoder* (3.36) in Annex C.

[ISO/IEC 23094-1:2020](https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020)

### 3.27

#### **decoder**

embodiment of a *decoding process* (3.29)

<https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020>

### 3.28

#### **decoding order**

order in which *syntax elements* (3.86) are processed by the *decoding process* (3.29)

### 3.29

#### **decoding process**

process specified that reads a *bitstream* (3.10) and derives *decoded pictures* (3.25) from it

### 3.30

#### **dynamic range adjustment**

**DRA**  
mapping process that is applied to *decoded picture* (3.25) prior to cropping and output as part of the *decoding process* (3.29) and is controlled by parameters conveyed in an *APS* (3.4)

### 3.31

#### **DRA APS**

*APS* (3.4) that controls the *DRA* (3.30) process

**3.32****decoder under test****DUT**

*decoder* (3.27) that is tested for conformance to this document

Note 1 to entry: A *decoder* (3.27) is tested by operating the *hypothetical stream scheduler* (3.37) to deliver a conforming *bitstream* (3.10) to the *decoder* (3.27) and to the *hypothetical reference decoder* (3.36) and comparing the values and timing of the output of the two *decoders* (3.27).

**3.33****encoder**

embodiment of an *encoding process* (3.34)

**3.34****encoding process**

process that produces a *bitstream* (3.10) conforming to this document

**3.35****flag**

variable or single-bit *syntax element* (3.86) that can take one of the two possible values: 0 and 1

**3.36****hypothetical reference decoder****HRD**

hypothetical *decoder* (3.27) model that specifies constraints on the variability of conforming *NAL unit streams* (3.54) or conforming *raw bitstreams* (3.10) produced by an encoding process

**3.37****hypothetical stream scheduler****HSS**

hypothetical delivery mechanism for the timing and data flow of the input of a *bitstream* (3.10) into the *hypothetical reference decoder* (3.36)

Note 1 to entry: The HSS is used for checking the conformance of a *bitstream* (3.10) or a *decoder* (3.36).

**3.38****IDR access unit**

access unit in which the *coded picture* is an *IDR picture*

**3.39****IDR picture**

*coded picture* (3.16) for which each *VCL NAL unit* (3.96) has `NalUnitType` equal to `IDR_NUT`

**3.40****inter prediction**

*prediction* (3.63) derived in a manner that is dependent on data elements (e.g., sample values or motion vectors) of one or more *reference pictures* (3.75)

Note 1 to entry: A *prediction* (3.63) from a *reference picture* (3.75) that is the current *picture* (3.60) itself is also inter prediction.

**3.41**

**intra block copy**

**IBC**

*prediction* (3.63) derived in a manner that is dependent on data elements (e.g., sample values or block vectors) of the same decoded *slice* (3.81) without referring to a *reference picture* (3.75)

**3.42**

**intra coding**

coding of a *coding block* (3.20), *slice* (3.81), or *picture* (3.60) that uses *intra prediction* (3.43)

**3.43**

**intra prediction**

*prediction* (3.63) derived from only data elements (e.g., sample values) of the same decoded *slice* (3.81) without referring to a *reference picture* (3.75)

**3.44**

**intra slice**

**I slice**

*slice* (3.81) that is decoded using *intra prediction* (3.43) only

**3.45**

**level**

defined set of constraints on the values that may be taken by the *syntax elements* (3.86) and variables of this document, or the value of a *transform coefficient* (3.93) prior to scaling

Note 1 to entry: The same set of levels is defined for all *profiles* (3.67), with most aspects of the definition of each level being in common across different *profiles* (3.67). Individual implementations can, within the specified constraints, support a different level for each supported *profile* (3.67)<sup>20</sup>

<https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-e33cc2dd820d/iso-iec-23094-1-2020>

**3.46**

**list 0 motion vector**

*motion vector* (3.52) associated with a *reference index* (3.74) pointing into a *reference picture list 0* (3.77)

**3.47**

**list 0 prediction**

*inter prediction* (3.40) of the content of a *slice* (3.81) using a *reference index* (3.74) pointing into a *reference picture list 0* (3.77)

**3.48**

**list 1 motion vector**

*motion vector* (3.52) associated with a *reference index* (3.74) pointing into a *reference picture list 1* (3.78)

**3.49**

**list 1 prediction**

*inter prediction* (3.40) of the content of a *slice* (3.81) using a *reference index* (3.74) pointing into a *reference picture list 1* (3.78)

**3.50**

**long-term reference picture**

**LTRP**

*picture* (3.60) that is marked as "used for long-term reference"

**3.51****luma**

sample array or single sample is representing the monochrome signal related to the primary colours, represented by the symbol or subscript Y or L

Note 1 to entry: The term luma is used rather than the term luminance in order to avoid the implication of the use of linear light transfer characteristics that are often associated with the term luminance. The symbol L is sometimes used instead of the symbol Y to avoid confusion with the symbol y as used for vertical location.

**3.52****motion vector**

two-dimensional vector used for *inter prediction* (3.40) that provides an offset from the coordinates in the *decoded picture* (3.25) to the coordinates in a *reference picture* (3.75)

**3.53****NAL unit**

*syntax structure* (3.87) containing an indication of the type of data to follow and *bytes* (3.13) containing that data in the form of an *RBSP* (3.72) interspersed as necessary

**3.54****NAL unit stream**

sequence of *NAL units* (3.53)

**3.55****non-IDR picture**

*coded picture* (3.16) that is not an *IDR picture* (3.39)

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

**3.56**

**non-VCL NAL unit** <https://standards.iteh.ai/catalog/standards/sist/f0759686-abc2-49bc-a982-ec-23094-1-2020>  
*NAL unit* (3.53) that is not a *VCL NAL unit* (3.96)

**3.57****output order**

order in which the *decoded pictures* (3.25) are output from the *decoded picture buffer* (3.26) [for the *decoded pictures* (3.25) that are to be output from the *decoded picture buffer* (3.26)]

**3.58****parameter**

*syntax element* (3.86) of an *SPS* (3.79), *PPS* (3.61) or *APS* (3.4)

**3.59****partitioning**

division of a set into subsets such that each element of the set is in exactly one of the subsets

**3.60****picture**

array of *luma* (3.51) samples in monochrome format or an array of *luma* (3.51) samples and two corresponding arrays of *chroma* (3.15) samples in 4:2:0, 4:2:2, and 4:4:4 colour format

Note 1 to entry: A picture can be either a frame or a field. However, in one *CVS* (3.19), either all pictures are frames or all pictures are fields.