



INTERNATIONAL STANDARD ISO/IEC 13818-2:1996
TECHNICAL CORRIGENDUM 2

Published 1997-12-15

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION
INTERNATIONAL ELECTROTECHNICAL COMMISSION • МЕЖДУНАРОДНАЯ ЭЛЕКТРОТЕХНИЧЕСКАЯ КОМИССИЯ • COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

Information technology — Generic coding of moving pictures and associated audio information: Video

TECHNICAL CORRIGENDUM 2

Technologies de l'information — Codage des images animées et du son associé: Vidéo

RECTIFICATIF TECHNIQUE 2

Technical Corrigendum 2 to International Standard ISO/IEC 13818-2:1995 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ICS 35.040

Ref. No. ISO/IEC 13818-2:1996/Cor.2:1997(E)

Descriptors: data processing, moving pictures, image processing, video recording, video data, data converting, coding (data conversion).

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ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – GENERIC CODING OF MOVING PICTURES
AND ASSOCIATED AUDIO INFORMATION: VIDEO

TECHNICAL CORRIGENDUM 2

Introduction

Some corrigenda items are followed by an informative background.

1) Subclause 3.44

Replace “in SI units” by “in spatial measurement units such as centimetre”

Background

SI (Système International) units are used by engineers to measure lots of different things. In this case, we are talking only of spatial measurement units such as centimetre. Using the term SI is not necessary and, furthermore, the abbreviation SI is not defined in this Recommendation | International Standard.

2) Subclause 3.78

Add the following definition immediately after 3.78:

3.79 Inverse DCT, IDCT: Inverse discrete cosine transform, as defined in Annex A.

and renumber the subsequent items.

3) Subclause 4.6

At the end of this subclause, after the definition of “vclbf”, add the following text that clarifies the use of those abbreviations in the syntax clause:

In the clauses describing the syntax, any syntactic element that can only take positive or unsigned values (such as a flag that can be equal to 0 or 1) is described with the mnemonic 'uimbf'. If the syntactic element can have a negative value, it is described with the mnemonic 'simbf'. If the syntactic element has a constant value (e.g. marker_bit) then it is described with the mnemonic 'bslbf'. If the syntactic element represents a variable-length code, it is described with the mnemonic 'vclbf'.

4) Subclause 6.1.1.4

At the beginning of 6.1.1.4, insert the following text:

A coded picture is made of a picture header, the optional extensions immediately following it and the following picture data. A coded picture may be a coded frame or a coded field.

An I-frame picture or a pair of field pictures, where the first field picture is an I-picture and the second field picture is an I-picture or a P-picture, is called a coded I-frame.

A P-frame picture or a pair of P-field pictures is called a coded P-frame.

A B-frame picture or a pair of B-field pictures is called a coded B-frame.

A coded I-frame, a coded P-frame or a coded B-frame is called a coded frame.

Background

Currently coded I-frame, coded P-frame and coded B-frame are not defined by any text except in clause 3.

5) Subclause 6.2.1

In the fifth paragraph, change “Table 6-1 defines the slice start code values ...” to “Table 6-1 defines the start code values ...”.

6) Subclause 6.2.2.6

*Change the mnemonic for **time_code** from “bslbf” to “uimsbf”.*

7) Subclause 6.2.3.6

*Change the mnemonic for **original_or_copy** from “bslbf” to “uimsbf”.*

*Change the mnemonic for **copyright_flag** from “bslbf” to “uimsbf”.*

*Change the mnemonic for **reserved** from “uimsbf” to “bslbf”.*

Background

As of today, only one possible value is permitted for those reserved bits.

8) Subclause 6.2.4

*Change the mnemonic for **reserved_bits** from “uimsbf” to “bslbf”.*

Background

As of today, only one possible value is permitted for those reserved bits.

9) Subclause 6.2.6

Define the mnemonic for “First DCT coefficient” and “Subsequent DCT coefficients” to be “vclbf”.

10) Subclause 6.3.9

*Replace the definition of **temporal_reference** with the following:*

temporal_reference – The **temporal_reference** is a 10-bit unsigned integer associated with each coded picture.

The following simple specification applies only when **low_delay** is equal to zero.

When a coded frame is in the form of two field pictures, the **temporal_reference** associated with each picture shall be the same (it is called the **temporal_reference** of the coded frame). The **temporal_reference** of each coded frame shall increment by one modulo 1024 when examined in display order at the output of the decoding process, except when a group of pictures header occurs. Among the frames coded after a group of pictures header, the **temporal_reference** of the coded frame that is displayed first, shall be set to zero.

The following more general specification applies when `low_delay` is equal to zero or one.

If picture A is not a big picture, i.e. the VBV buffer is only examined once before the coded picture A is removed from the VBV buffer and if N is the `temporal_reference` of picture A, then the `temporal_reference` of picture B immediately following picture A in display order is equal to:

- 0 if there is a group of pictures header present between picture A and picture B (in coded order).
- $(N + 1) \% 1024$ if picture B is a frame picture or is the first field of a pair of field pictures.
- N if picture B is the second field of a pair of field pictures.

When `low_delay` is equal to one, there may be situations where the VBV buffer shall be re-examined several times before removing a coded picture (referred to as a big picture) from the VBV buffer.

If picture A is a big picture and if K is the number of times that the VBV buffer is re-examined as defined in C.7 ($K > 0$), if N is the `temporal_reference` of picture A, then the `temporal_reference` of picture B immediately following picture A in display order is equal to:

- $K \% 1024$ if there is a group of pictures header present between picture A and picture B (in coded order).
- $(N + K + 1) \% 1024$ if picture B is a frame picture or is the first field of a pair of field pictures.
- $(N + K) \% 1024$ if picture B is the second field of a pair of field pictures.

NOTE 1 – If the big picture is the first field of a frame coded with field pictures, then the `temporal_reference` of the two field pictures of that coded frame are not identical.

Background

A minor technical error was found in 6.3.9, definition of temporal reference in the presence of big pictures. The current specification is incorrect when the big picture happens to be the first field of a pair of field pictures, like in the following example:

The sequence consists of six field pictures.

Picture T1 (first field of the second coded frame) is big.

decode	T0	B0	--	--	T1	B2	T3	B3	
display	T0				T0	T1		T3	
		B0		B0		B2		B3	
									top field
									bottom field

Clearly, in this case, the temporal reference of the bottom field following T1 (T1 is the big field-picture) should be 2 (B2), but according to the current text, it would have to be 3, which is incorrect. The definition of `temporal_reference` should be changed to handle the case of the first field of a pair of field pictures being a big picture.

In Table 6-12, add a missing space between “IEC” and “11172”.

11) Subclause 6.3.10

Right before the paragraph for `top_field_first`, add the following two bullets:

- `vbv_delay`;
- `temporal_reference`.

12) Subclause 6.3.11

Identify by “u” the horizontal axis and by “v” the vertical axis, as in Figure 7-2.

Background

Axis of the default quantiser matrices are not identified. They should match the convention of 7.3.

Under `intra_quantiser_matrix`, replace “The first value shall always be 8.” by “The first value shall always be 8 (values 1 to 7 and 9 to 255 are reserved).”

Under `chroma_intra_quantiser_matrix`, replace “The first value shall always be 8.” by “The first value shall always be 8 (values 1 to 7 and 9 to 255 are reserved).”