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TECHNICAL CORRIGENDUM 1

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

TECHNICAL CORRIGENDUM 1

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

RECTIFICATIF TECHNIQUE 1

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INTERNATIONAL STANDARD
RECOMMENDATION ITU-T

Information technology – Generic coding of moving pictures and associated audio information: Systems

Technical Corrigendum 1

Correction of zero_byte syntax element and stream_id_extension mechanism

1) Subclause 2.14.1

Delete the following bullet point and Note:

- Each byte stream NAL Unit that carries the access unit delimiter shall contain exactly one zero_byte syntax element.

  NOTE 3 – The syntax and semantics of byte stream NAL units are defined in Annex B of ITU-T Rec. H.264 | ISO/IEC 14496-10.

2) Subclause 2.4.3.6

Change Table 2-21 as indicated below, so as to ensure byte alignement in case the stream_id_extension_flag is '1':

--- Unchanged initial part of Table 2-21 ---		
---		
if (PES_extension_flag_2 == '1') {		
marker_bit	**1**	**bslbf**
PES_extension_field_length	**7**	**uimsbf**
stream_id_extension_flag	**1**	**bslbf**
if (stream_id_extension_flag == '0') {		
stream_id_extension	**7**	**uimsbf**
}		
else {		
reserved	**7**	**bslbf**
}		
for (i = 1; i < PES_extension_field_length; i++) {		
reserved	**8**	**bslbf**
}		
}		

--- Unchanged trailing part of Table 2-21 ---		

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3) Subclause 2.5.3.5

Replace Table 2-40 with the following:

Table 2-40 – Program Stream system header

Syntax	No. of bits	Mnemonic
system_header () {		
system_header_start_code	**32**	**bslbf**
header_length	**16**	**uimsbf**
marker_bit	**1**	**bslbf**
rate_bound	**22**	**uimsbf**
marker_bit	**1**	**bslbf**
audio_bound	**6**	**uimsbf**
fixed_flag	**1**	**bslbf**
CSPS_flag	**1**	**bslbf**
system_audio_lock_flag	**1**	**bslbf**
system_video_lock_flag	**1**	**bslbf**
marker_bit	**1**	**bslbf**
video_bound	**5**	**uimsbf**
packet_rate_restriction_flag	**1**	**bslbf**
reserved_bits	**7**	**bslbf**
while (nextbits () == '1') {		
stream_id	**8**	**uimsbf**
if (stream_id == '1011 0111') {		
'11'	**2**	**bslbf**
'000 0000'	**7**	**bslbf**
stream_id_extension	**7**	**uimsbf**
'1011 0110'	**8**	**bslbf**
'11'	**2**	**bslbf**
P-STD_buffer_bound_scale	**1**	**bslbf**
P-STD_buffer_size_bound	**13**	**uimsbf**
}		
else {		
'11'	**2**	**bslbf**
P-STD_buffer_bound_scale	**1**	**bslbf**
P-STD_buffer_size_bound	**13**	**uimsbf**
}		
}		
}		

4) Subclause 2.5.3.6

Change the following paragraphs:

stream_id – The stream_id is an 8-bit field that indicates the coding and elementary stream number of the stream to which the following P-STD_buffer_bound_scale and P-STD_buffer_size_bound fields refer.

If stream_id equals '1011 1000' the P-STD_buffer_bound_scale and P-STD_buffer_size_bound fields following the stream_id refer to all audio streams in the Program Stream.

If stream_id equals '1011 1001' the P-STD_buffer_bound_scale and P-STD_buffer_size_bound fields following the stream_id refer to all video streams in the Program Stream.

If stream_id equals '1111 1101', the P-STD_buffer_bound_scale and P-STD_buffer_size_bound fields following the stream_id refer to all elementary streams with an extended_stream_id in the Program Stream, independent of the coded value of the stream_id_extension in the PES header of those streams.

If stream_id equals '1011 0111', the following stream_id_extension field shall be interpreted as referring to the stream coding and elementary stream number according to Table 2-27.

If the stream_id takes on any other value it shall be a byte value greater than or equal to '1011 1100' and shall be interpreted as referring to the stream coding and elementary stream number according to Table 2-22.

Each elementary stream present in the Program Stream shall have its P-STD_buffer_bound_scale and P-STD_buffer_size_bound specified exactly once by this mechanism in each system header.

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stream_id_extension – The stream_id_extension is a 7-bit field. In case the stream_id field is coded with the value '1011 0111', then the stream_id_extension indicates the coding and elementary stream number of the stream with an extended_stream_id to which the P-STD_buffer_bound_scale and P-STD_buffer_size_bound fields following the stream_id_extension field refer.

5) Subclause 2.5.4.1

Replace Table 2-41 with the following:

Table 2-41 – Program Stream map

Syntax	No. of bits	Mnemonic
program_stream_map() {		
packet_start_code_prefix	**24**	**bslbf**
map_stream_id	**8**	**uimsbf**
program_stream_map_length	**16**	**uimsbf**
current_next_indicator	**1**	**bslbf**
single_extension_stream_flag	**1**	**bslbf**
reserved	**1**	**bslbf**
program_stream_map_version	**5**	**uimsbf**
reserved	**7**	**bslbf**
marker_bit	**1**	**bslbf**
program_stream_info_length	**16**	**uimsbf**
for (i = 0; i < N; i++) {		
descriptor()		
}		
elementary_stream_map_length	**16**	**uimsbf**
for (i = 0; i < N1; i++) {		
stream_type	**8**	**uimsbf**
elementary_stream_id	**8**	**uimsbf**
elementary_stream_info_length	**16**	**uimsbf**
if (elementary_stream_id == 0xFD &&		
single_extension_stream_flag == 0) {		
pseudo_descriptor_tag	**8**	**uimsbf**
pseudo_descriptor_length	**8**	**uimsbf**
marker_bit	**1**	**bslbf**
elementary_stream_id_extension	**7**	**uimsbf**
for (i = 3; i < N2; i++) {		
descriptor()		
}		
}		
else {		
for (i = 0; i < N2; i++) {		
descriptor()		
}		
}		
}		
CRC_32	**32**	**rpchof**
}		

6) Subclause 2.5.4.2

a) Add the following paragraph between current_next_indicator and program_stream_map_version:

single_extension_stream_flag – This is a 1-bit field indicating, when set to '1', that the program stream contains at most one elementary stream with stream_id equal to 0xFD.

b) Replace the following paragraphs:

elementary_stream_id – The elementary_stream_id is an 8-bit field indicating the value of the stream_id field in the PES packet headers of PES packets in which this elementary stream is stored.

elementary_stream_info_length – The elementary_stream_info_length is a 16-bit field indicating the length in bytes of the descriptors immediately following this field.

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with:

elementary_stream_id – The elementary_stream_id is an 8-bit field indicating the value of the stream_id field in the PES packet headers of PES packets in which this elementary stream is stored. When elementary_stream_id is equal to 0xFD, the following applies:

- If single_extension_stream_flag is equal to 1, this indicates that the program stream contains only one elementary stream with stream_id equal to 0xFD. Note that the type of this elementary stream is signalled by the encoded value of the stream_id_extension field in the PES headers of PES packets carrying this elementary stream.
- Otherwise (single_extension_stream_flag is equal to 0), the elementary_stream_id_extension field is present to identify the elementay stream.

elementary_stream_info_length – The elementary_stream_info_length is a 16-bit field indicating the length in bytes of the descriptors and, when present, the pseudo_descriptor_tag, the pseudo_descriptor_length, and the elementary_stream_id_extension (and associated marker_bit) data immediately following this field.

pseudo_descriptor_tag – This is an 8-bit unsigned integer that shall be coded with the value 0x01; note that the use of value 0x01 for descriptor tags is forbidden in Table 2-45.

pseudo_descriptor_length – The pseudo_descriptor_length is an 8-bit unsigned integer that shall be coded with the value 1.

elementary_stream_id_extension – This 7-bit field, when present, indicates the encoded value of the elementary_stream_id_extension field in the PES packet headers of PES packets in which this elementary stream is stored.

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7) Subclause 2.5.5.1

Replace Table 2-42 with the following:

Table 2-42 – Program Stream directory packet

Syntax	No. of bits	Mnemonic
directory_PES_packet(){		
packet_start_code_prefix	**24**	**bslbf**
directory_stream_id	**8**	**uimsbf**
PES_packet_length	**16**	**uimsbf**
number_of_access_units	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
prev_directory_offset[44..30]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
prev_directory_offset[29..15]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
prev_directory_offset[14..0]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
next_directory_offset[44..30]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
next_directory_offset[29..15]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
next_directory_offset[14..0]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
for (i = 0; i < number_of_access_units; i++) {		
packet_stream_id	**8**	**uimsbf**
PES_header_position_offset_sign	**1**	**tcimsbf**
PES_header_position_offset[43..30]	**14**	**uimsbf**
marker_bit	**1**	**bslbf**
PES_header_position_offset[29..15]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
PES_header_position_offset[14..0]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
reference_offset	**16**	**uimsbf**
marker_bit	**1**	**bslbf**
if (packet_stream_id == 0xFD) {		
packet_stream_id_extension_msbs	**3**	**uimsbf**
}		
else {		
reserved	**3**	**bslbf**
}		
PTS[32..30]	**3**	**uimsbf**
marker_bit	**1**	**bslbf**
PTS[29..15]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
PTS[14..0]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
bytes_to_read[22..8]	**15**	**uimsbf**
marker_bit	**1**	**bslbf**
bytes_to_read[7..0]	**8**	**uimsbf**
marker_bit	**1**	**bslbf**
intra_coded_indicator	**1**	**bslbf**
coding_parameters_indicator	**2**	**bslbf**
if (packet_stream_id == 0xFD) {		
packet_stream_id_extension_lsbs	**4**	**uimsbf**
}		
else {		
reserved	**4**	**bslbf**
}		
}		
}		

8) Subclause 2.5.5.2

In subclause 2.5.5.2, insert the following paragraphs at the end of the subclause:

packet_stream_id_extension_msbs – This 3-bit field is present if packet_stream_id equals 0xFD; its coding is specified below.

packet_stream_id_extension_lsbs – This 4-bit field is present if packet_stream_id equals 0xFD; its coding is specified below.

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If packet_stream_id is equal to 0xFD, the packet_stream_id_extension indicates the encoded value of the stream_id_extension in the PES header of the PES packet(s) containing the access unit referenced by this directory entry. The value of the packet_stream_id_extension is specified by:

*packet_stream_id_extension = packet_stream_id_extension_msbs * 16 + packet_stream_id_extension_lsbs*

9) Subclause 2.6.1

Change descriptor tag 1 from "reserved" into "forbidden" by replacing Table 2-45 by:

Table 2-45 – Program and program element descriptors

descriptor_tag	TS	PS	identification
0	n/a	n/a	reserved
1	n/a	X	forbidden
2	X	X	video_stream_descriptor
3	X	X	audio_stream_descriptor
4	X	X	hierarchy_descriptor
5	X	X	registration_descriptor
6	X	X	data_stream_alignment_descriptor
7	X	X	target_background_grid_descriptor
8	X	X	video_window_descriptor
9	X	X	CA_descriptor
10	X	X	ISO_639_language_descriptor
11	X	X	system_clock_descriptor
12	X	X	multiplex_buffer_utilization_descriptor
13	X	X	copyright_descriptor
14	X		maximum_bitrate_descriptor
15	X	X	private_data_indicator_descriptor
16	X	X	smoothing_buffer_descriptor
17	X		STD_descriptor
18	X	X	IBP_descriptor
19-26	X		defined in ISO/IEC 13818-6
27	X	X	MPEG-4_video_descriptor
28	X	X	MPEG-4_audio_descriptor
29	X	X	IOD_descriptor
30	X		SL_descriptor
31	X	X	FMC_descriptor
32	X	X	external_ES_ID_descriptor
33	X	X	MuxCode_descriptor
34	X	X	FmxBufferSize_descriptor
35	X		multiplexbuffer_descriptor
36	X	X	content_labeling_descriptor
37	X	X	metadata_pointer_descriptor
38	X	X	metadata_descriptor
39	X	X	metadata_STD_descriptor
40	X	X	AVC video descriptor
41	X	X	IPMP_descriptor (defined in ISO/IEC 13818-11, MPEG-2 IPMP)
42	X	X	AVC timing and HRD descriptor
43	X	X	MPEG-2_AAC_audio_descriptor
44	X	X	FlexMux_Timing_descriptor
45	X	X	MPEG-4_text_descriptor
46	X	X	MPEG-4_text_extension_descriptor
47	X	X	auxiliary_video_stream_descriptor
48-63	n/a	n/a	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 Reserved
64-255	n/a	n/a	User Private

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