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

**AMENDMENT 2: Support of IPMP on  
MPEG-2 systems**

**iTeh STANDARD PREVIEW**

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

*AMENDEMENT 2: Support de IPMP sur les systèmes MPEG-2*

*ISO/IEC 13818-1:2000/Amd 2:2004*

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## Foreword

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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.

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INTERNATIONAL STANDARD  
ITU-T RECOMMENDATION

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

**Amendment 2**

**Support of IPMP on MPEG-2 systems**

**1) Subclause 1.2.3**

*Insert the following additional reference:*

- ISO/IEC 13818-11:2003, *Information technology – Generic coding of moving pictures and associated audio information – Part 11: IPMP on MPEG-2 systems.*

**2) Subclause 2.4.1**

*Replace the following paragraph (with the changes underlined):*

The PSI tables are carried in the Transport Stream. There are six PSI tables:

- Program Association Table; [ISO/IEC 13818-1:2000/Amd 2:2004](http://standards.iteh.ai/catalog/standards/sist/422892d7-afec-4666-98ad-e61454f96ec8/iso-iec-13818-1-2000-amd-2-2004)
- Program Map Table; <http://standards.iteh.ai/catalog/standards/sist/422892d7-afec-4666-98ad-e61454f96ec8/iso-iec-13818-1-2000-amd-2-2004>
- Conditional Access Table;
- Network Information Table;
- Transport Stream Description Table;
- IPMP Control Information Table.

These tables contain the necessary and sufficient information to demultiplex and present programs. The Program Map Table, in Table 2-28, specifies, among other information, which PIDs, and therefore which elementary streams are associated to form each program. This table also indicates the PID of the Transport Stream packets which carry the PCR for each program. The Conditional Access Table shall be present if scrambling is employed. The Network Information Table is optional and its contents are not specified by this Recommendation | International Standard. The IPMP Control Information Table shall be present if IPMP as described in ISO/IEC13818-11 is used by any of the components in the ITU-T Rec. H.222.0 | ISO/IEC 13818-1 stream.

**3) Subclause 2.4.2.3**

*Replace the first paragraph with the following text:*

Complete Transport Stream packets containing system information, for the program selected for decoding, enter the system transport buffer, TBSys, at the Transport Stream rate. These include Transport Stream packets whose PID values are 0, 1, 2 or 3, and all Transport Stream packets identified via the Program Association Table (see Table 2-25) as having the program\_map\_PID value for the selected program. Network Information Table (NIT) data as specified by the NIT PID is not transferred to TBSys.

NOTE – Size of IPMP Control Information table could be large, and the repetition rate of this table should be adjusted to meet the buffer requirement.

4) Subclause 2.4.3.7

a) Replace Table 2-17 (PES packet) as follows (with the changes highlighted):

Table 2-17 – PES packet

Syntax	No. of bits	Mnemonic
PES_packet() {		
<b>packet_start_code_prefix</b>	24	<b>bslbf</b>
<b>stream_id</b>	8	<b>uimsbf</b>
<b>PES_packet_length</b>	16	<b>uimsbf</b>
if (stream_id != program_stream_map && stream_id != padding_stream && stream_id != private_stream_2 && stream_id != ECM && stream_id != EMM && stream_id != program_stream_directory && stream_id != DSMCC_stream && stream_id != ITU-T Rec. H.222.1 type E stream) {		
'10'	2	<b>bslbf</b>
<b>PES_scrambling_control</b>	2	<b>bslbf</b>
<b>PES_priority</b>	1	<b>bslbf</b>
<b>data_alignment_indicator</b>	1	<b>bslbf</b>
<b>Copyright</b>	1	<b>bslbf</b>
<b>original_or_copy</b>	1	<b>bslbf</b>
<b>PTS_DTS_flags</b>	2	<b>bslbf</b>
<b>ESCR_flag</b>	1	<b>bslbf</b>
<b>ES_rate_flag</b>	1	<b>bslbf</b>
<b>DSM_trick_mode_flag</b>	1	<b>bslbf</b>
<b>Additional_copy_info_flag</b>	1	<b>bslbf</b>
<b>PES_CRC_flag</b>	1	<b>bslbf</b>
<b>PES_extension_flag</b>	1	<b>bslbf</b>
<b>PES_header_data_length</b>	8	<b>uimsbf</b>
if (PTS_DTS_flags == '10') {		
'0010'	4	<b>bslbf</b>
<b>PTS [32..30]</b>	3	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>PTS [29..15]</b>	15	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>PTS [14..0]</b>	15	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
}		
if (PTS_DTS_flags == '11') {		
'0011'	4	<b>bslbf</b>
<b>PTS [32..30]</b>	3	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>PTS [29..15]</b>	15	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>PTS [14..0]</b>	15	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
'0001'	4	<b>bslbf</b>
<b>DTS [32..30]</b>	3	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>DTS [29..15]</b>	15	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>DTS [14..0]</b>	15	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
}		
if (ESCR_flag == '1') {		
<b>reserved</b>	2	<b>bslbf</b>
<b>ESCR_base[32..30]</b>	3	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>ESCR_base[29..15]</b>	15	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>ESCR_base[14..0]</b>	15	<b>bslbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
<b>ESCR_extension</b>	9	<b>uimsbf</b>
<b>marker_bit</b>	1	<b>bslbf</b>
}		
if (ES_rate_flag == '1') {		
<b>marker_bit</b>	1	<b>bslbf</b>
}		

Syntax	No. of bits	Mnemonic
<b>ES_rate</b>	<b>22</b>	<b>uimsbf</b>
<b>marker_bit</b>	<b>1</b>	<b>bslbf</b>
} if (DSM_trick_mode_flag == '1') { <b>trick_mode_control</b>	<b>3</b>	<b>uimsbf</b>
if (trick_mode_control == fast_forward) {		
<b>field_id</b>	<b>2</b>	<b>bslbf</b>
<b>intra_slice_refresh</b>	<b>1</b>	<b>bslbf</b>
<b>frequency_truncation</b>	<b>2</b>	<b>bslbf</b>
}		
else if (trick_mode_control == slow_motion) {		
<b>rep_cntrl</b>	<b>5</b>	<b>uimsbf</b>
}		
else if (trick_mode_control == freeze_frame) {		
<b>field_id</b>	<b>2</b>	<b>uimsbf</b>
<b>reserved</b>	<b>3</b>	<b>bslbf</b>
}		
else if (trick_mode_control == fast_reverse) {		
<b>field_id</b>	<b>2</b>	<b>bslbf</b>
<b>intra_slice_refresh</b>	<b>1</b>	<b>bslbf</b>
<b>frequency_truncation</b>	<b>2</b>	<b>bslbf</b>
else if (trick_mode_control == slow_reverse) {		
<b>rep_cntrl</b>	<b>5</b>	<b>uimsbf</b>
}		
Else		
<b>reserved</b>	<b>5</b>	<b>bslbf</b>
}		
if (additional_copy_info_flag == '1') {		
<b>marker_bit</b>	<b>1</b>	<b>bslbf</b>
<b>additional_copy_info</b>	<b>7</b>	<b>bslbf</b>
}		
if (PES_CRC_flag == '1') {		
<b>previous_PES_packet_CRC</b>	<b>16</b>	<b>bslbf</b>
}		
if (PES_extension_flag == '1') {		
<b>PES_private_data_flag</b>	<b>1</b>	<b>bslbf</b>
<b>Pack_header_field_flag</b>	<b>1</b>	<b>bslbf</b>
<b>program_packet_sequence_counter_flag</b>	<b>1</b>	<b>bslbf</b>
<b>P-STD_buffer_flag</b>	<b>1</b>	<b>bslbf</b>
<b>reserved</b>	<b>3</b>	<b>bslbf</b>
<b>PES_extension_flag 2</b>	<b>1</b>	<b>bslbf</b>
if (PES_private_data_flag == '1') {		
<b>PES_private_data</b>	<b>128</b>	<b>bslbf</b>
}		
if (pack_header_field_flag == '1') {		
<b>pack_field_length</b>	<b>8</b>	<b>uimsbf</b>
pack_header()		
}		
if (program_packet_sequence_counter_flag == '1') {		
<b>marker_bit</b>	<b>1</b>	<b>bslbf</b>
<b>program_packet_sequence_counter</b>	<b>7</b>	<b>uimsbf</b>
<b>marker_bit</b>	<b>1</b>	<b>bslbf</b>
<b>MPEG1_MPEG2_identifier</b>	<b>1</b>	<b>bslbf</b>
<b>original_stuff_length</b>	<b>6</b>	<b>uimsbf</b>
}		
if (P-STD_buffer_flag == '1') {		
<b>'01'</b>	<b>2</b>	<b>bslbf</b>
<b>P-STD_buffer_scale</b>	<b>1</b>	<b>bslbf</b>
<b>P-STD_buffer_size</b>	<b>13</b>	<b>uimsbf</b>
}		
if (PES_extension_flag 2 == '1') {		
<b>marker_bit</b>	<b>1</b>	<b>bslbf</b>
<b>PES_extension_field_length</b>	<b>7</b>	<b>uimsbf</b>
<b>stream_id_extension_flag</b>	<b>1</b>	<b>bslbf</b>
If (stream_id_extension_flag == '0') {		
<b>stream_id_extension</b>	<b>7</b>	<b>uimsbf</b>
for (i = 1; i <		
PES_extension_field_length; i++) {		
<b>reserved</b>	<b>8</b>	<b>bslbf</b>
}		
}		
}		
}		
}		

Syntax	No. of bits	Mnemonic
<pre>                     }                     for (i &lt; 0; i &lt; N1; i++) {                         stuffing_byte                     }                     for (i &lt; 0; i &lt; N2; i++) {                         PES_packet_data_byte                     }                 }                 else if ( stream_id == program_stream_map                    stream_id == private_stream_2                    stream_id == ECM                    stream_id == EMM                    stream_id == program_stream_directory                    stream_id == DSMCC_stream                    stream_id == ITU-T Rec. H.222.1 type E stream ) {                     for (i = 0; i &lt; PES_packet_length; i++) {                         PES_packet_data_byte                     }                 }                 else if ( stream_id == padding_stream ) {                     for (i &lt; 0; i &lt; PES_packet_length; i++) {                         padding_byte                     }                 }             }         }     } </pre>	8	bslbf
	8	bslbf
	8	bslbf
	8	bslbf

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b) Replace Table 2-18 (Stream\_id assignments) as follows (with the changes underlined>):

**Table 2-18 – Stream\_id assignments**

stream_id	Note	stream coding
1011 1100	(1)	program_stream_map
1011 1101	(2)	private_stream_1
1011 1110		padding_stream
1011 1111	(3)	private_stream_2
110x xxxx		ISO/IEC 13818-3 or ISO/IEC 11172-3 or ISO/IEC 13818-7 or ISO/IEC 14496-3 audio stream number x xxxx
1110 xxxx		ITU-T Rec. H.262   ISO/IEC 13818-2 or ISO/IEC 11172-2 or ISO/IEC 14496-2 video stream number xxxx
1111 0000	(3)	ECM_stream
1111 0001	(3)	EMM_stream
1111 0010	(5)	ITU-T Rec. H.222.0   ISO/IEC 13818-1 Annex A or ISO/IEC 13818-6_DSM-CC_stream
1111 0011	(2)	ISO/IEC_13522_stream
1111 0100	(6)	ITU-T Rec. H.222.1 type A
1111 0101	(6)	ITU-T Rec. H.222.1 type B
1111 0110	(6)	ITU-T Rec. H.222.1 type C
1111 0111	(6)	ITU-T Rec. H.222.1 type D
1111 1000	(6)	ITU-T Rec. H.222.1 type E
1111 1001	(7)	ancillary_stream
1111 1010		ISO/IEC 14496-1_SL-packetized stream
1111 1011		ISO/IEC 14496-1_FlexMux_stream
1111 1100		metadata stream
<u>1111 1101</u>	<u>(8)</u>	<u>extended_stream_id</u>
1111 1110		reserved data stream
1111 1111	(4)	program_stream_directory

The notation x means that the value '0' or '1' are both permitted and results in the same stream type. The stream number is given by the values taken by the x's.

NOTE 1 – PES packets of type program\_stream\_directory have unique syntax specified in 2.5.4.1.

NOTE 2 – PES packets of type private\_stream\_1 and ISO/IEC\_13522\_stream follow the same PES packet syntax as those for ITU-T Rec. H.262 | ISO/IEC 13818-2 video and ISO/IEC 13818-3 audio streams.

NOTE 3 – PES packets of type private\_stream\_2, ECM\_stream and EMM\_stream are similar to private\_stream\_1 except no syntax is specified after PES\_packet\_length field.

NOTE 4 – PES packets of type program\_stream\_directory have a unique syntax specified in 2.5.5.

NOTE 5 – PES packets of type DSM-CC\_stream have a unique syntax specified in ISO/IEC 13818-6, which is a compatible extension of ITU-T Rec. H.222.0 | ISO/IEC 13818-1 Annex A.

NOTE 6 – This stream\_id is associated with stream\_type 0x09 in Table 2-29.

NOTE 7 – This stream\_id is only used in PES packets, which carry data from a Program Stream or an ISO/IEC 11172-1 System Stream, in a Transport Stream (refer to 2.4.3.7).

NOTE 8 – The use of stream\_id 0xFD (extended\_stream\_id) identifies that this PES packet employs an extended syntax to permit additional stream types to be identified.

c) Insert the following text and table after the existing semantics for PES\_extension\_field\_length:

**stream\_id\_extension\_flag** – A 1-bit flag, which when set to '0' indicates that a stream\_id\_extension field is present in the PES packet header. The value of '1' for this flag is reserved.

**stream\_id\_extension** – In Program Streams, the stream\_id\_extension specifies the type and number of the elementary stream as defined by the stream\_id\_extension in Table Amd.2-1. In Transport Streams, the stream\_id\_extension may be set to any valid value which correctly describes the elementary stream type as defined in Table Amd.2-1. In Transport Streams, the elementary stream type is specified in the Program Specific Information as specified in 2.4.4. Note that this field is used as an extension of the stream\_id defined above. This field shall not be used unless the value of stream\_id is 1111 1101.