INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.222.0

Amendment 3

(02/98)

SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Transmission multiplexing and synchronization

---

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

Amendment 3

ITU-T Recommendation H.222.0 – Amendment 3

(Previously CCITT Recommendation)

ITU-T H-SERIES RECOMMENDATIONS

AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Characteristics of transmission channels used for other than telephone purposes	H.10–H.19
Use of telephone-type circuits for voice-frequency telegraphy	H.20–H.29
Telephone circuits or cables used for various types of telegraph transmission or simultaneous transmission	H.30–H.39
Telephone-type circuits used for facsimile telegraphy	H.40–H.49
Characteristics of data signals	H.50–H.99
CHARACTERISTICS OF VISUAL TELEPHONE SYSTEMS	H.100–H.199
INFRASTRUCTURE OF AUDIOVISUAL SERVICES	
General	H.200–H.219
Transmission multiplexing and synchronization	**H.220–H.229**
Systems aspects	H.230–H.239
Communication procedures	H.240–H.259
Coding of moving video	H.260–H.279
Related systems aspects	H.280–H.299
Systems and terminal equipment for audiovisual services	H.300–H.399
Supplementary services for multimedia	H.450–H.499

For further details, please refer to ITU-T List of Recommendations.

INTERNATIONAL STANDARD 13818-1

ITU-T RECOMMENDATION H.222.0

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

AMENDMENT 3

Summary

This Amendment defines the fields for DSM-CC (ISO/IEC 13818-6) and the method to indicate the use of private data in Transport Streams.

Source

The ITU-T Recommendation H.222.0, Amendment 3 was approved on the 6th of February 1998. The identical text is also published as ISO/IEC International Standard 13818-1.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

INTELLECTUAL PROPERTY RIGHTS

The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, the ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

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

AMENDMENT 3

1) Clause 2

Replace Table 2-3 with:

Table 2-3 – PID table

Value	Description
0x0000	Program Association Table
0x0001	Conditional Access Table
0x0002	Transport Stream Description Table
0x0003-0x000F	Reserved
0x00010 … 0x1FFE	May be assigned as network_PID, Program_map_PID, elementary_PID, or for other purposes
0x1FFF	Null packet
NOTE – The transport packets with PID values 0x0000, 0x0001, and 0x0010-0x1FFE are allowed to carry a PCR.	

2) Subclause 2.4.4

a Replace text of paragraph 2 with:

In Transport Streams, Program Specific Information is classified into five table structures as shown in Table 2-23. While these structures may be thought of as simple tables, they shall be segmented into sections and inserted in Transport Stream packets, some with predetermined PIDs and others with user selectable PIDs.

b) Replace Table 2-23 with:

Table 2-23 – Program specific information

Structure Name	Stream Type	PID number	Description
Program Association Table	ITU-T Rec. H.222.0 | ISO/IEC 13818-1	0x00	Associates Program Number and Program Map Table PID
Program Map Table	ITU-T Rec. H.222.0 | ISO/IEC 13818-1	Assignment indicated in the PAT	Specifies PID values for components of one or more programs
Network Information Table	Private	Assignment indicated in the PAT	Physical network parameters such as FDM frequencies, Transponder Numbers, etc.
Conditional Access Table	ITU-T Rec. H.222.0 | ISO/IEC 13818-1	0x01	Associates one or more (private) EMM streams each with a unique PID value
Transport Stream Description Table	ITU-T Rec. H.222.0 | ISO/IEC 13818-1	0x02	Associates one or more descriptors from Table 2-39 to an entire Transport Stream

c) Add the following text between paragraphs 13 and 14:

The Transport Stream Description Table is optional. When present, the Transport Stream Description is carried within Transport Stream packets that have a PID value 0x0002 as specified in Table 2-23 and shall apply to the entire Transport Stream. Sections of the Transport Stream Description shall use a table_id value of 0x03 as specified in Table 2-26 and its contents are restricted to descriptors specified in Table 2-39. The TS_description_section becomes valid when the last byte of the section required to complete the table exits B_{sys}.

3) Subclause 2.4.4.4

Replace Table 2-26 with:

Table 2-26 – table_id assignment values

Value	Description
0x00	program_association_section
0x01	conditional_access_section(CA_section)
0x02	TS_program_map_section
0x03	TS_description_section
0x04-0x37	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 reserved
0x38-0x3F	Defined in ISO/IEC 13818-6
0x40-0xFE	User private
0xFF	Forbidden

4) New subclauses 2.4.4.12 and 2.4.4.13

Add the following text and Table 2-30-1:

2.4.4.12 Syntax of the Transport Stream section

ITU-T Rec. H.222.0 | ISO/IEC 13818-1 compliant bitstreams may carry the information defined in Table 2-30-1. ITU-T Rec. H.222.0 | ISO/IEC 13818-1 compliant decoders may decode the information defined in this table.

The Transport Stream Description Table is defined to support the carriage of descriptors as found in 2.6 for an entire Transport Stream. The descriptors shall apply to the entire Transport Stream. This table uses a table_id value of 0x03 as specified in Table 2-26 and is carried in Transport Stream packets whose PID value is 0x0002 as specified in Table 2-3.

Table 2-30-1 – The Transport Stream Description Table

Syntax	No. of bits	Mnemonic
TS_description_section() {		
table_id	**8**	**uimsbf**
section_syntax_indicator	**1**	**bslbf**
'0'	**1**	**bslbf**
reserved	**2**	**bslbf**
section_length	**12**	**uimsbf**
reserved	**18**	**bslbf**
version_number	**5**	**uimsbf**
current_next_indicator	**1**	**bslbf**
section_number	**8**	**uimsbf**
last_section_number	**8**	**uimsbf**
for (i = 0; i < N; I++) {		
descriptor()		
}		
CRC_32	**32**	**rpchof**
}		

2.4.4.13 Semantic definition of fields in the Transport Stream section

table_id – This is an 8 bit field, which shall be set to '0x03' as specified in Table 2-26.

section_length – This is a 12-bit field, the first two bits of which shall be '00'. The remaining 10 bits specify the number of bytes of the section, starting immediately following the section_length field, and including the CRC. The value in this field shall not exceed 1021 (0x3FD).

version_number – This 5-bit field is the version number of the whole Transport Stream Description Table. The version number shall be incremented by 1 modulo 32 whenever the definition of the Transport Stream Description Table changes. When the current_next_indicator is set to '1', then the version_number shall be that of the currently applicable Transport Stream Description Table. When the current_next_indicator is set to '0', then the version_number shall be that of the next applicable Transport Stream Description Table.

current_next_indicator – A 1-bit indicator, which, when set to '1', indicates that the Transport Stream Description Table sent is currently applicable. When the bit is set to '0', it indicates that the table sent is not yet applicable and shall be the next table to become valid.

section_number – This 8-bit field gives the number of this section. The section_number of the first section in the Transport Stream Description Table shall be 0x00. It shall be incremented by 1 with each additional section in the Transport Stream Description Table.

last_section_number – This 8-bit field specifies the number of the last section (that is, the section with the highest section_number) of the complete Transport Stream Description Table.

CRC_32 – This is a 32-bit field that contains the CRC value that gives a zero output of the registers in the decoder defined in Annex A after processing the entire Transport Stream Description section.

5) Subclause 2.6.1

Replace Table 2-39 with:

Table 2-39 – Program and program element descriptors

descriptor_tag	TS	PS	Identification
0	n/a	n/a	Reserved
1	n/a	n/a	Reserved
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
27-63	n/a	n/a	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 Reserved
64-255	n/a	n/a	User Private

ITU-T RECOMMENDATIONS SERIES

Series A	Organization of the work of the ITU-T
Series B	Means of expression: definitions, symbols, classification
Series C	General telecommunication statistics
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	**Audiovisual and multimedia systems**
Series I	Integrated services digital network
Series J	Transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks and open system communications
Series Y	Global information infrastructure
Series Z	Programming languages