Digital terrestrial television broadcasting – Basic information of service information

Televisão digital terrestre – Multiplexação e serviços de informação (SI) – Parte 2: Sintaxes e definições da informação básica de SI

Televisión digital terrestre — Multiplexación y servicios de información (SI) – Parte 2: Estructura de datos y definiciones de la información básica de SI

Digital terrestrial television – Multiplexing and service information (SI) – Part 2: Data structure and definitions of basic information of SI

デジタル放送に使用する番組配列情報 – 第 2 部：番組配列情報における基本情報のデータ構造と定義

Service information for digital broadcasting system – Part 2: Data structure and definition of basic information of service information

Foreword

This document is the result of the joint efforts of the ABNT, ARIB and SBTVD Forum under the standardization and technical cooperation activities of the Brazil-Japan Digital Television Joint Working Group.

The Brazilian Association for Standardization (ABNT) is the organism responsible for technical standardization in Brazil, providing essential support for Brazilian technical development. It is private, non-profit organization, recognized as the only National Standardization Body. It provides Brazilian society with systematic knowledge, through normative documents, enabling the production, commercialization and use of goods and services, in a competitive and sustainable way, in the internal and external markets, contributing to scientific and technological development, environmental protection and consumer's protection.

The Association of Radio Industries and Businesses (ARIB) was designated as "the Center for Promotion of Efficient Use of the Radio Spectrum" and "the Designated Frequency Change Support Agency" by the Minister of Internal Affairs and Communications (MIC) of Japan under the provisions of the Radio Law. Under this designation, ARIB conducts studies and R&D, establishes standards, provides consultation services for radio spectrum coordination, cooperates with other overseas organizations and provides frequency change support services for the smooth introduction of digital terrestrial television broadcasting. These activities are carried out in cooperation with and/or participation by telecommunication operators, broadcasters, radio equipment manufacturers and related organizations as well as under the support by MIC.

The Brazilian Digital Terrestrial Television Forum (SBTVD Forum) is a non-profit entity, created with the objective of aiding and stimulating the development and implementation of best practices aiming at the success of systems reality for digital broadcasting of images and sounds in Brazil. Since the creation of the SBTVD Forum in February, 2007, its members have endeavored to establish standards of technical quality which permit deployment of digital television in Brazil. The Technical Module has contributed to the preparation of standards, with active participation by universities, research centers, related industry organizations and broadcasters.

This document does not describe the industrial property rights mandatory to these standards.

This document has no standardization value. Its purpose is to serve as a reference for characterizing the specificities of Brazilian and Japanese digital terrestrial television standards within the scope of the Brazil-Japan Digital Television Joint Working Group.

This document is drafted in accordance with the rules established in the ISO/IEC Directives, Part 2.

In the Brazilian and Japanese harmonized documents, commonalities are described in Clause 5 where Table 1 includes all references to ABNT and ARIB related documents. Differences are described in Clause 6. In each subclause, a reference to the corresponding Brazilian and Japanese related session is included in separate boxes in *italic text*.

No reference is made to the domestic policies of the countries.

1   Scope

This document addresses the structure of service information for digital terrestrial television broadcasting in Brazil and Japan.

2   Normative references

The following referenced documents are indispensable for the application 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.

ABNT NBR 15602-2:2007, *Digital terrestrial television – Video coding, audio coding and multiplexing – Part 2: Audio coding*

ABNT NBR 15603-1:2007, *Digital terrestrial television – Multiplexing and service information (SI) – Part 1: SI for digital broadcasting systems*

ABNT NBR 15603-2:2007, *Digital terrestrial television – Multiplexing and service information (SI) – Part 2: Data structure and definition of basic information of SI*

ABNT NBR 15603-3:2007, *Digital terrestrial television — Multiplexing and service information (SI) — Part 3: Syntaxes and definitions of extension information of SI*

ARIB STD-B10:v4.6:2007, *Service information for digital broadcasting systems*

ARIB STD-B25:v4.2:2007, *Conditional Access system specifications for digital broadcasting*

Brazilian Justice Ministry: 2007, *Ordinance number 1220 of July 11th , 2007*

ISO/IEC 13818-1:2007:2007, *Information technology - Generic coding of moving pictures and associated audio information: Systems*

3   Terms and definitions

For the purposes of this document, the terms and definitions given in ABNT NBR 15603-2:2007 and ARIB STD-B10:v4.6:2007, part 2, apply.

4   Abbreviated terms

For the purposes of this document, the abbreviated terms given in ABNT NBR 15603-2:2007 and ARIB STD-B10:v4.6:2007, part 2, apply.

5   Commonalities of the transmission system

The common parts of ABNT NBR 15603-2:2007 and part 2 of ARIB STD-B10:v4.6:2007 and how they correspond are described in Table 1.

Table 1 — Correspondence between ABNT NBR 15603-2:2007 and ARIB STD-B10:v4.6:2007 standards

Description	ABNT NBR 15603-2:2007 reference clause	ARIB STD-B10:v4.6:2007 reference clause
Structure for construction of the basic information	5	4
Basic service information description	6	4
SI tables mechanisms - General	7.1.1	5.1
Explanation	7.1.2	5.1.1
Section mapping of a transport stream (TS) packet	7.1.3	5.1.2
PID and table_ID allocation	7.1.4	5.1.3
Table repetition rates and random access	7.1.5	5.1.4
Data scrambling	7.1.6	5.1.5
Program association table (PAT) - General information	7.2.1.1	5.2
Program association section	7.2.1.2	5.2.1
Conditional access table (CAT) - General information	7.2.2.1	5.2.2
Conditional access section	7.2.2.2	5.2.2
Program map table - General information	7.2.3.1	5.2.3
Program map section	7.2.3.2	5.2.3
Network information table - General information	7.2.4.1	5.2.4
Bouquet association section	7.2.5.1	5.2.5
Service description section	7.2.6.1	5.2.6
Event information section	7.2.7.1	5.2.7
Running status table (RST)	7.2.10	5.2.10
Stuffing table (ST)	7.2.11	5.2.11
Partial content announcement table (PCAT)	7.2.12	5.2.12
Broadcaster information table - General information	7.2.13.1	5.2.13
Network board information sections	7.2.14.1	5.2.14
Linked description table (LDT)	7.2.15	5.2.15
Descriptor coding - General information	8.3.1	6.2
Bouquet name descriptor	8.3.2	6.2.1
Conditional access system identifier descriptor	8.3.3	6.2.2
Content descriptor	8.3.5	6.2.4
Country availability descriptor	8.3.6	6.2.5
Extended event descriptor	8.3.7	6.2.7
Linkage descriptor	8.3.8	6.2.8
Mosaic descriptor	8.3.9	6.2.9
Near video on demand (NVOD) reference descriptor	8.3.10	6.2.10
Network name descriptor	8.3.12	6.2.11
Service descriptor	8.3.13	6.2.13
Service list descriptor	8.3.14	6.2.17
Short event descriptor	8.3.15	6.2.15
Stream identifier descriptor	8.3.16	6.2.16

Stuffing descriptor	8.3.17	6.2.17
Time shifted event descriptor	8.3.18	6.2.18
Time shifted service descriptor	8.3.19	6.2.18

Table 1 (continuation)

Description	ABNT NBR 15603-2:2007 reference clause	ARIB STD-B10:v4.6:2007 reference clause
Data component descriptor	8.3.20	6.2.19
System management descriptor	8.3.21	6.2.20
Hierarchical transmission descriptor	8.3.22	6.2.21
Emergency information descriptor	8.3.24	6.2.24
Target region descriptor	8.3.27	6.2.27
Data content descriptor	8.3.28	6.2.28
Hyperlink descriptor	8.3.29	6.2.29
Video decode control descriptor	8.3.30	6.2.30
Partial reception descriptor	8.3.32	6.2.32
Series descriptor	8.3.33	6.2.33
Event group descriptor	8.3.34	6.2.34
SI parameter descriptor	8.3.35	6.2.35
Broadcaster name descriptor	8.3.36	6.2.36
Component group descriptor	8.3.37	6.2.37
SI prime_TS descriptor	8.3.38	6.2.38
Board information descriptor	8.3.39	6.2.39
LDT linkage descriptor	8.3.40	6.2.40
Connected transmission descriptor	8.3.41	6.2.41
TS information descriptor	8.3.42	6.2.42
Extended broadcaster descriptor	8.3.43	6.2.43
Logo transmission descriptor	8.3.44	6.2.44
Content availability descriptor	8.3.45	6.2.45
Carousel compatible composite descriptor	8.3.46	6.2.46
AVC video descriptor	8.3.47	6.2.47
AVC timing and HRD descriptor	8.3.48	6.2.48

6   Differences in the transmission system

6.1 Field semantics

Details about the PAT structure have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.1.3.

7.2.1.3 Field semantics

The field semantics of the program association table (PAT) shall be as follows:

— *table_id: an 8-bit field , according to Table 6; section_syntax_indicator: a 1-bit field which is always set to "1";*

— *section_length: a 12-bit field, the first two bits of which shall be '00'. The remaining 10 bits inform the number of bytes in the section, beginning immediately following the section_length field and including the CRC. The value in this field shall not exceed to 1021 (0x3FD);*

— *transport_stream_id: a 16-bit field whose function shall be the TS identification flag of any other multiplexer present in the network. This value shall be set by the user;*

— *version_number: a 5-bit field corresponding to the version number of the entire program association table. The*

version number shall be increased by 1 until 32, every time a PAT definition changes. When the current_next_indicator field is set to '1', then the version_number is that of the next applicable valid PAT. When the field current_next_indicator is set to '0', then the version_number field shall be that of the next applicable valid;

— current_next_indicator: a 1-bit indicator, when set to '1' shall indicate that the program association table sent is currently valid and applicable. When this bit is set to '0', it indicates that the table sent is not applicable and the system shall wait for the next valid table;

— section_number: an 8-bit field informs the number of the section. The section_number field of the first PAT section shall be 0x00. Each additional section in the PAT is incremented by 1;

— last_section_number: an 8-bit field specifying the number of the last section, that is, the section with the highest section_number of a PAT;

— program_number: a 16-bit field specifying the program to which the program_map_PID is applicable. When it has a value of 0x000, then the next reference PID shall be the network PID. In all other cases, this field value may be set by the user. This field value shall not be repeated within the same PAT;

— network_PID: a 13-bit field used only in conjunction when the program_number is 0x0000, specifying the TS packets PID containing the network information table (NIT). The network_PID value is set by the user, but shall only have values as specified in Table 8;

— program_map_PID: a 13-bit field specifying the TS packets PID which contain the applicable program_map_section for the specified program by program_number. No program_number shall have more than one program_map_PID allocation. The program_map_PID value is set by the user, but shall have values as specified in Table 7;

— CRC_32: a 32-bits field contains the CRC value which provides a zero output of the registers in the decoder, according to Annex B, after processing the entire program association section.

Table 1 — PID Table

Value	Description
0x0000	Program association table
0x0001	Conditional access table
0x0002 - 0x000F	Reserved
0x0010 - 0x1FFE	This can be used as network_PID, program_map_PID, elementary_PID or for other purposes
0x1FFF	Null packets
NOTE	TS packets with PID values 0x0000, 0x0010 - 0x1FFFE can be used to carry PCR.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, the description of PAT field semantics is provided by reference to subclause 2.4.4 of ISO/IEC 13818-1:2007:2007.

6.2 Field semantics

Details about CAT table syntax have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.2.3:

7.2.2.3 Field semantics

Definition of field semantics in the conditional access section:

— table_id:an 8-bit field to be set to 0x01 in accordance with Table 6;

— section_syntax_indicator: a 1-bit field to be set to "1";

— section_length: a 12-bit field, the first two bits of which shall be '00'. The remaining 10 bits inform the number of bytes of the section, beginning immediately following the section_length field and including the CRC. The value in this field shall not exceed 1021 (0x3FD);

— version_number: a 5-bit field corresponding to the version number of the entire program association table. The version number is incremented by 1 until 32 every time a PAT definition changes. When the

current_next_indicator field is set to '1', then the version_number shall be that of the next applicable valid PAT;

— *current_next_indicator: a 1-bit indicator, when set to '1', this indicates that the program association table sent is currently valid and applicable. When this bit is set to '0', it indicates that the table sent is not applicable and the system shall wait for the next valid table;*

— *section_number: an 8-bit field informing the number of the section. The section_number field of the first CAT section shall be 0x00. Each additional section in the CAT is incremented by 1;*

— *last_section_number: an 8-bit field specifying the number of the last section, that is, the section with the highest section_number of a CAT;*

— *CRC_32: a 32-bit field containing the CRC value which provides a zero output of the registers in the decoder, according to Annex B, after processing the entire program association section.*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, the description of PAT field semantics is provided by reference to subclause 2.4.4 of ISO/IEC 13818-1:2007.

6.3 Possible descriptors in CAT

Details about possible descriptors in CAT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.2.4:

7.2.2.4 Possible descriptors in CAT

The descriptors which may appear in CAT are:

— *conditional access descriptor;*

— *conditional rebroadcasting descriptor;*

— *CA service descriptor.*

In the Japanese digital terrestrial television system, the descriptors available for specific tables are summarized in ARIB STD-B10:v4.6:2007, Subclause 6.1, Table 6-1.

Conditional rebroadcasting descriptor and CA service descriptor are not defined in ARIB STD-B10:v4.6:2007.

6.4 Possible descriptors in the PMT

Details about possible descriptors in the PAT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.3.3:

7.2.3.3 Possible descriptors in the PMT

The descriptors which may appear in the PMT are:

— *conditional access descriptor;*

— *copyright descriptor;*

— *country availability descriptor;*

— *linkage descriptor;*

— *component descriptor;*

— *mosaic descriptor;*

— *stream identifier descriptor;*

— *parental rating descriptor;*

— *hierarchical transmission descriptor;*

— *digital copy descriptor;*

— *emergency information descriptor;*

In the Japanese digital terrestrial television system, the descriptors available for specific table are summarized in ARIB STD-B10:v4.6:2007, Subclause 6.1, Table 6-1.

Conditional rebroadcasting descriptor and AAC audio descriptor are not defined in ARIB STD-B10:v4.6:2007.

6.5 NIT descriptors

Details about possible descriptors in NIT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.4.3:

7.2.4.3 NIT descriptors

The descriptors which may appear in the NIT are:

— *network name descriptor;*

— *system management descriptor;*

— *service list descriptor;*

— *stuffing descriptor;*

— *linkage descriptor;*

— *terrestrial delivery system descriptor;*

— *emergency information descriptor;*

— *partial reception descriptor;*

— *TS information descriptor.*

In the Japanese digital terrestrial television system, network_id and original_network_id may not have the same value.

Descriptors available for specific tables are summarized in ARIB STD-B10:v4.6:2007, Subclause 6.1, Table 6-1. According to this table, NIT defined in ARIB STD-B10:v4.6:2007 is allowed to have a satellite delivery system descriptor, a connected transmission descriptor, and a service group descriptor in addition to the NIT descriptors available in ABNT NBR 15603-2:2007.

6.6 BAT descriptor

Details about possible descriptors in BIT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.5.2:

7.2.5.2 BAT descriptor

The descriptors which may appear in BAT are:

— *service list descriptor;*
— *stuffing descriptor;*
— *bouquet name descriptor;*
— *country availability descriptor;*
— *linkage descriptor;*
— *CA identifier descriptor.*

In the Japanese digital terrestrial television system, the descriptors available for specific tables are summarized in ARIB STD-B10:v4.6:2007, Subclause 6.1, Table 6-1.

6.7 Possible SDT descriptors

Details about possible descriptors in SDT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.6.2:

7.2.6.2 Possible SDT descriptors

The descriptors which may appear in the SDT are:

— *service descriptor;*
— *stuffing descriptor;*
— *bouquet name descriptor;*
— *country availability descriptor;*
— *linkage descriptor;*
— *NVOD reference service descriptor;*
— *time shifted service descriptor;*
— *mosaic descriptor;*
— *CA identifier descriptor;*
— *digital copy control descriptor;*
— *logo transmission descriptor;*
— *content availability descriptor.*

In the Japanese digital terrestrial television system, the descriptors available for specific tables are summarized in ARIB STD-B10:v4.6:2007, Subclause 6.1, Table 6-1.

The semantics of the 'free_CA_mode' field, which are not defined in ABNT NBR 15603-2:2007, are defined in the Japanese digital terrestrial television system. Descriptors available for specific tables are summarized in ARIB STD-B10:v4.6:2007 as follows: free_CA_mode: This 1-bit field, when set to "0" indicates that all the component streams of the event are not scrambled. When set to "1" it indicates that access to one or more streams is controlled by a CA system.

6.8 EIT

In order to comply with Brazilian official time followed by a UTC-3 definition, the field *start_time* in ABNT NBR 15603-2:2007, Subclause 7.2.7.1 was modified from the original text of ARIB STD-B10:v4.6:2007, Subclause 5.2.7.

In the Brazilian digital terrestrial television system, ABNT NBR 15603-2:2007, Subclause 7.2.7.1:

7.2.7.1 Event information section

EIT (see Table 15) shall provide information in chronological order related to events contained in each service.

Four EIT classificationshave been identified, distinguishable by using different table_id (see Table 6) as below:

a) actual TS, present/following event information = table_id = "0x4E";

b) other TS, present/following event information = table_id = "0x4F";

c) actual TS, event schedule information = table_id = "0x50" for "0x5F";

d) other TS, event schedule information = table_id = "0x60" to "0x6F".

The present/following table shall only contain information pertaining to the present event, while the following event may be transmitted in the actual TS or other TS, except in the case of a "near video on demand" service (NVOD), where it may have more than two event descriptions. Event schedule tables for either the actual TS or other TS contain a list of events, including events taking place at some time beyond the next event. Event tables are optional. Event information shall be chronologically ordered.

EIT shall be segmented into event_information_sections using the syntax of Table 15. Any sections forming part of an EIT shall be transmitted in TS packets with a PID value of 0x0012.

Table 15 - Event information section

Syntax	Number of bits	Identifier
event_information_section(){		
table_id	8	uimsbf
section_syntax_indicator	1	bslbf
reserved_future_use	1	bslbf
Reserved	2	bslbf
section_length	12	uimsbf
service_id	16	uimsbf
Reserved	2	bslbf
version_number	5	uimsbf
current_next_indicator	1	bslbf
section_number	8	uimsbf
last_section_number	8	uimsbf
transport_stream_id	16	uimsbf
original_network_id	16	uimsbf
segment_last_section_number	8	uimsbf
last_table_id	8	uimsbf
for(i=0;i<N;i++){		
event_id	16	uimsbf
start_time	40	bslbf
Duration	24	uimsbf
running_status	3	uimsbf
free_CA_mode	1	bslbf
descriptors_loop_length	12	uimsbf
for(j=0;j<N;j++){		
Descriptor()		
}		
}		
CRC_32	32	rpchof
}		

Semantics of information for the event information section shall be according to EN 300 468:2007, Subclause 6.2.4; except for the fields below:

— *table_id: see Table 6;*

— *start_time: a 40-bit field containing the start time of the event in the UTC -3 and the date in "modified julian date" (MJD) (see Annex A). This field shall be coded as 16 bits, giving the 16 LSBs of MJD preceded by 24 bits coded as 6 digits in 4-bit Binary Coded Decimal (BCD). If the start time is undefined (for example, for reference to a NVOD event), all bits of the field shall be set to "1";*

EXAMPLE   93/10/13 12:45:00 → 0xC079124500, where C079 is the MJD and 124500 is the UTC-3

— *duration: a 24bit field containing the event duration in hours, minutes and seconds. When duration is not defined (such as emergency news), all bits in this field shall be set to "1";*

— *format: 6 digits, 4 bits BCD = 24 bits;*

EXAMPLE   01:45:30 is coded as "0 x 014530".

— *running_status: a 3-bit field indicating the status of an event. Its definitions can be seen in Table 14.*

The specification of table EIT types (H, M or L) are in Annex I.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 5.2.7:

5.2.7 Event Information Table (EIT)

The EIT (see table 5-7) provides information in chronological order regarding the events contained within each service. Four classifications of EIT have been identified, distinguishable by the use of different table_ids (see table 5-2):

 1) actual Transport Stream, present/following event information = table_id = "0x4E";
 2) other Transport Stream, present/following event information = table_id = "0x4F";
 3) actual Transport Stream, event schedule information = table_id = "0x50" to "0x5F";
 4) other Transport Stream, event schedule information = table_id = "0x60" to "0x6F".

The present/following table shall contain only information pertaining to the present event and the chronologically following event carried by a given service on either the actual Transport Stream or another Transport Stream, except in the case of a Near Video On Demand (NVOD) reference service, where it may have more than two event descriptions. The event schedule tables for either the actual Transport Stream or other Transport Streams contain a list of events, in the form of a schedule, including events taking place at some time beyond the next event. The EIT schedule tables are optional. The event information shall be chronologically ordered.

The EIT shall be segmented into event_information_sections using the syntax of table 5-7. Any sections forming part of an EIT shall be transmitted in Transport Stream packets with a PID value of 0x0012.

Table 5-7 - Event information section

Syntax	Number of bits	Identifier
event_information_section(){		
table_id	8	uimsbf
section_syntax_indicator	1	bslbf
reserved_future_use	1	bslbf
Reserved	2	bslbf
section_length	12	uimsbf
service_id	16	uimsbf
Reserved	2	bslbf
version_number	5	uimsbf
current_next_indicator	1	bslbf
section_number	8	uimsbf

		last_section_number	8	uimsbf	
		transport_stream_id	16	uimsbf	
		original_network_id	16	uimsbf	
		segment_last_section_number	8	uimsbf	
		last_table_id	8	uimsbf	
		for(i=0;i<N;i++){			
		event_id	16	uimsbf	
		start_time	40	bslbf	
		Duration	24	uimsbf	
		running_status	3	uimsbf	
		free_CA_mode	1	bslbf	
		descriptors_loop_length	12	uimsbf	
		for(j=0;j<N;j++){			
		Descriptor()			
		}			
		}			
		CRC_32	32	rpchof	
	}				

Semantics for the event information section:

table_id: See table 5-2.

section_syntax_indicator: The section_syntax_indicator is a 1-bit field which shall be set to "1".

section_length: This is a 12-bit field. It specifies the number of bytes of the section, starting immediately following the section_length field and including the CRC. The section_length shall not exceed 4093 so that the entire section has a maximum length of 4096 bytes.

service_id: This is a 16-bit field which serves as a label for identifying this service from any other service within a Transport Stream. The service_id is the same as the program_number in the corresponding program_map_section.

version_number: This 5-bit field is the version number of the sub_table. The version_number shall be incremented by 1 when a change in the information carried within the sub_table occurs. When it reaches value 31, it wraps around to 0. When the current_next_indicator is set to "1", then the version_number shall be that of the currently applicable sub_table defined by the table_id and service_id. When the current_next_indicator is set to "0", then the version_number shall be that of the next applicable sub_table.

current_next_indicator: This 1-bit indicator, when set to "1", indicates that the sub_table is the currently applicable sub_table. When the bit is set to "0", it indicates that the sub_table sent is not yet applicable and shall be the next valid sub_table.

section_number: This 8-bit field gives the number of the section. The section_number of the first section in the sub_table shall be "0x00". The section_number shall be incremented by 1 with each additional section with the same table_id, transport_stream_id, and original_network_id. In this case, the sub_table may be structured as a number of segments. Within each segment, the section_number shall increment by 1 with each additional section, but a gap in numbering is permitted between the last_section of a segment and the first section of the adjacent segment.

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 sub_table of which this section is part.

transport_stream_id: This is a 16-bit field which serves as a label for identification of the Transport Stream, about which the EIT informs, from any other multiplex within the delivery system.

original_network_id: This 16-bit field gives the label identifying the network_id of the originating delivery system.

segment_last_section_number: This 8-bit field specifies the number of the last section of this segment of the sub_table. For sub_tables which are not segmented, this field shall be set to the same value as the last_section_number field.

last_table_id: This 8-bit field identifies the last table_id used. If only one table is used this is set to the table_id of this table. The chronological order of information is maintained across successive table_id values.

event_id: This 16-bit field contains the identification number of the described event (uniquely allocated within a service definition).

start_time: This 40-bit field contains the start time of the event in Japan Standard Time (JST) and Modified Julian Date (MJD) (see Annex C). This field is coded as 16 bits, giving the 16 LSBs of MJD followed by 24 bits coded as 6 digits in 4-bit Binary Coded Decimal (BCD). If the start time is undefined (e.g., for an event in a NVOD reference service), all bits of the field are set to "1".

Example 1:93/10/13 12:45:00 is coded as "0xC079124500".

duration: A 24-bit field containing the duration of the event in hours, minutes, seconds. When duration is not defined, (such as emergency news, the end time of which is not known), all bits in this field are set to "1".

format: 6 digits, 4-bit BCD = 24 bit.

Example 2: 01:45:30 is coded as "0x014530".

running_status: This is a 3-bit field indicating the status of the event as defined in table 5-6.

free_CA_mode: This 1-bit field, when set to "0", indicates that all the component streams of the event are not scrambled. When set to "1", it indicates that access to one or more streams is controlled by a CA system.

descriptors_loop_length: This 12-bit field gives the total length in bytes of the following descriptors.

CRC_32: This is a 32-bit field containing the CRC value that gives a zero output of the registers in the decoder defined in Annex B after processing the entire private section.

6.9 Possible EIT descriptors

Details about possible descriptors in EIT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.7.2:

7.2.7.2 Possible EIT descriptors

The descriptors which may appear in EIT are:

— *stuffing descriptor;*

— *linkage descriptor;*

— *short event descriptor;*

— *extended event descriptor;*

— *time shifted event descriptor;*

— *component descriptor;*

— *CA identifier descriptor;*

— *content descriptor;*

— *parental rating descriptor;*

— *digital copy control descriptor;*

— *audio component descriptor;*

— *hyperlink descriptor;*

— *data content descriptor;*

— *CA agreement information descriptor;*

- *series descriptor;*
- *event group descriptor;*
- *component group descriptor;*
- *LDT linkage descriptor;*
- *content availability descriptor;*
- *carousel compatible composite descriptor.*

In the Japanese digital terrestrial television system, the descriptors available for specific tables are summarized in ARIB STD-B10:v4.6:2007, Subclause 6.1, Table 6-1.

The EIT defined in ARIB STD-B10:v4.6:2007 is permitted, having a parental rating descriptor which is not listed for the EIT defined in ABNT NBR 15603-2.

Three descriptors listed for the EIT defined in ABNT NBR 15603-2:2007, event shifting descriptor, indicative classification descriptor, and CA agreement information descriptor, are not defined in ARIB STD-B10:v4.6:2007.

6.10 Time and date table (TDT)

For ABNT NBR 15603-2:2007 standard, all references to JST have been replaced by UTC-3.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.8:

7.2.8 Time and date table (TDT)

The TDT (see Table 16) shall carry only the time and date information.

TDT shall consist of a single section using the syntax of Table 16. This TDT section shall be transmitted in data stream packets with a PID value of 0x0014, and the table_id shall have a value of 0x70.

Table 16 - Time and date section

Syntax	Number of bits	Identifier
time_date_section(){		
table_id	8	Uimsbf
section_syntax_indicator	1	Bslbf
reserved_future_use	1	Bslbf
reserved	2	Bslbf
section_length	12	Uimsbf
UTC_time	40	Bslbf
}		

Semantics for the time and date section shall be:

- *table_id: see Table 6;*

- *section_length: This is a 12-bit field, which shall be set to "0x005". It specifies the number of bytes of the section, beginning immediately following the section-length and up to the end of the section;*

- *UTC_time: (Current time and date): This 40-bit field contains the current time and date in Brazil (UTC-3) and MJD (see Annex A). This field is coded as 16-bit, giving the 16 LSBs of MJB followed by 24 bits coded as 6 digits in a 4-bit BCD.*

EXAMPLE   93/10/13 12:45:00 is coded as "0xC079124500".

NOTE   As the field of MJD has 16 bits, the current date may be indicated until April 22nd, 2038.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 5.2.8, the field for UTC_time defined in ABNT NBR 15603-2:2007 is defined as follows;

JST_time: (Current time and date): This 40-bit field contains the current time and date in Japan Standard Time (JST) and MJD (see Annex C). This field is coded as 16 bits giving the 16 LSBs of MJD followed by 24 bits coded as 6 digits in 4-bit BCD.

6.11 Time offset table (TOT)

For ABNT NBR 15603-2:2007 standard, all references to JST have been replaced by UTC-3.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.9.1:

As the field of MJD has 16 bits, the current date may be indicated until April 22nd, 2038.

6.11.1 Time offset table (TOT)

6.11.1.1 Date and time offset sections

The TOT (see Table 17) shall carry the time and date information and local time offset. The TOT shall consist of a single section using the syntax of Table 17. This TOT section shall be transmitted in TS packets with a PID value of 0x0014, and the table_id shall take the value 0x73

Table 17 – Date and time offset sections

Syntax	Number of bits	Identifier
time_offset_section(){		
table_id	8	uimsbf
section_syntax_indicator	1	bslbf
reserved_future_use	1	bslbf
reserved	2	bslbf
section_length	12	uimsbf
UTC_time	40	bslbf
reserved	4	bslbf
descriptors_loop_length	12	uimsbf
for(i=0;i<N;i++){		
descriptor()		
}		
CRC_32	32	rpchof
}		

Semantics for the date and time offset section shall be:

— table_id: see Table 6;

— UTC_time: (current time and date): a 40-bit field containing the current time and date in Brazil (UTC-3) and MJD (see Annex A). This field is coded as 16 bits, giving the 16 LSB of MJB followed by 24 bits coded as 6 digits for time in BCD. This section shall be in accordance with EN 300 468:2007, Subclause 6.2.6.

EXAMPLE   93/10/13 12:45:00 is coded as "0xC079124500"

NOTE   As the field of MJD has 16 bits, the current date may be indicated until April 22nd, 2038.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 5.2.9, the field for UTC_time defined in ABNT NBR 15603-2:2007 is defined as follows;

JST_time: (Current time and date): This 40-bit field contains the current time and date in Japan Standard Time (JST) and MJD (see Annex C). This field is coded as 16 bits giving the 16 LSBs of MJD followed by 24 bits coded as 6 digits in 4-bit BCD.

6.12 Possible TOT descriptors

Details about possible descriptors in TOT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.9.2:

7.2.9.2 Possible TOT descriptors

The descriptor of TOT used in TOT to submit information of change in the time is local_time_offset_descriptor.

In the Japanese digital terrestrial television system, *descriptors available for specific tables are summarized in* ARIB STD-B10:v4.6:2007, Subclause 6.1, Table 6-1.

In the Japanese digital terrestrial television system, *descriptors available for specific tables are summarized in ARIB STD-B10:2007, Subclause 6.1, Table 6-1.*

6.13 Partial content announcement table

Additional field semantics of the PCAT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.12:

7.2.12 Partial content announcement table (PCAT)

PCAT (see Table 20) shall be used to inform the access terminal start time of a data transmission by broadcaster, to partially update the accumulated content in the access terminal, that is, it performs a content update scheduling.

Table 20 - Partial content announcement table

Syntax	Number of bits	Identifier
partial_content_announcement_section(){		
table_id	8	uimsbf
section_syntax_indicator	1	bslbf
reserved_future_use	1	bslbf
reserved	2	bslbf
section_length	12	uimsbf
service_id	16	uimsbf
reserved	2	bslbf
version_number	5	uimsbf
current_next_indicator	1	bslbf
section_number	8	uimsbf
last_section_number	8	uimsbf
transport_stream_id	16	uimsbf
original_network_id	16	uimsbf
content_id	32	uimsbf
num_of_content_version	8	uimsbf
for(i=0;i<num_of_content_version; i++){		
content_version	16	uimsbf
content_minor_version	16	uimsbf
version_indicator	2	bslbf
reserved_future_use	2	bslbf
content_descriptor_length	12	uimsbf
reserved_future_use	4	bslbf
schedule_description_length	12	uimsbf
for(j=0;j<N;j++){		
start_time	40	bslbf
duration	24	uimsbf
}		
for(j=0;j<N2;j++){		
descriptors()		
}		
}		

| CRC_32 | 32 | rpchof | |
| } | | | |

Semantics for the partial content announcement section are:

— table_id: see Table 6;

— section_syntax_indicator: a 1- bit field which shall be set to "1";

— section_length: a 12-bit fields specifying the number of bytes of the section, beginning immediately following the section_length field and including the CRC. The section_length shall not exceed 4093 so that the entire section has a maximum length of 4096 bytes;

— service_id: a 16-bit field indicating the event service_id which announces partial original data broadcasting program and partial data. The service_id shall be the same as the program_number in the corresponding program_map section;

— version_number: a 5-bit field which shall be the version number of the next subtable. The version_number shall be incremented by 1 when a change in the information carried within the sub-table occurs. When the value reaches 31, it shall wrap around to 0;

— current_next_indicator: a 1-bit indicator which, when set to "1", shall indicate that the sub-table shall be the currently applicable sub-table;

— section_number: an 8-bit field indicating the number of the section;

— last_section_number: an 8–bit-s field specifying the number of last section of the sub-table of which this section is part;

— transport_stream_id: a 16-bit field which shall serve as a label for identifying the TS, from any other multiplexer within the delivery system;

— original_network_id: a 16-bit field which stores the label identifying the originating delivery system;

— content_id: a 32-bit field which shall serve as a label identifying which partial content the partial data belongs to. The content_id shall be attributed to the original transmitted data of the partial contents, so that it shall serve as a label for identifying the contents in the service uniformly;

— num_of_content_version: an 8-bit field indicating the number of the content version announced in the table;

— content_version: a 16-bit field indicating the total contents version of the partial contents announced in the table;

— content_minor_version: a 16-bit field indicating partial contents version announced in the table;

— version_indicator: a 2bit field indicating the meaning related to content version and contents minor version:

00: whole version shall be the target (designation of contents version shall be invalid);

01: target shall be the version after the designated version;

02: target shall be the version before the designated version;

03: target shall be only the designated version;

— content_descriptor_length: a 12-bit field indicating the total length in bytes of the following schedule loop and descriptor loop;

— schedule_description_length: a 12-bit field indicating the total length in bytes of the following schedule loop;

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 5.2.12:

5.2.12 Partial content announcement table (PCAT)

The partial content announcement table (see table 5-12) is the information about the transmission schedule of partial content data in accumulative-type data broadcasting.

Table 5-12 - Partial content announcement table

Syntax	Number of bits	Identifier
partial_content_announcement_section(){		
table_id	8	uimsbf
section_syntax_indicator	1	bslbf
reserved_future_use	1	bslbf
reserved	2	bslbf
section_length	12	uimsbf
service_id	16	uimsbf
reserved	2	bslbf
version_number	5	uimsbf
current_next_indicator	1	bslbf
section_number	8	uimsbf
last_section_number	8	uimsbf
transport_stream_id	16	uimsbf
original_network_id	16	uimsbf
content_id	32	uimsbf
num_of_content_version	8	uimsbf
for(i=0;i<num_of_content_version; i++){		
content_version	16	uimsbf
content_minor_version	16	uimsbf
version_indicator	2	bslbf
reserved_future_use	2	bslbf
content_descriptor_length	12	uimsbf
reserved_future_use	4	bslbf
schedule_description_length	12	uimsbf
for(j=0;j<N;j++){		
start_time	40	bslbf
duration	24	uimsbf
}		
for(j=0;j<N2;j++){		
descriptors()		
}		
}		
CRC_32	32	rpchof
}		

The semantics for the partial content announcement section:

table_id: See table 5-2

section_syntax_indicator: The section_syntax_indicator is a 1-bit field which shall be set to "1".

section_length: This is a 12-bit field. It specifies the number of bytes in the section, beginning immediately following the section_length field and including the CRC. The section_length shall not exceed 4093 so that the entire section

has a maximum length of 4096 bytes.

service_id: This is a 16-bit field indicating the service_id that announces partial original data broadcasting program and partial data. The service_id is the same as the program_number in the corresponding program_map_section.

version_number: This 5-bit field is the version number of the sub_table. The version_number shall be incremented by 1 when a change in the information carried within the sub_table occurs. When it reaches value 31, it wraps around to 0.

current_next_indicator: This 1-bit indicator, when set to "1" indicates that the sub_table is the currently applicable sub_table.

section_number: This 8-bit field gives the number of the section.

last_section_number: This 8-bit field specifies the number of the last section of the sub_table of which this section is part.

transport_stream_id: This is a 16-bit field which serves as a label for identifying the TS from any other multiplex within the delivery system.

original_network_id: This 16-bit field gives the label identifying the network_id of the originating delivery system.

content_id: This is a 32-bit field which serves as a label for identifying in which partial contents the partial data belongs. The content_id is given to the original data broadcasting contents of the partial contents so that it serves as a label for identifying the contents in the service in a uniform manner.

num_of_content_version: This 8-bit field indicates the number of contents version announced in the table.

content_version: This 16-bit field indicates the total contents version of the partial contents announced in the table.

content_minor_version: This 16-bit field indicates partial contents version announced in the table.

version_indicator: This 2-bit field indicates the meaning related to contents version and contents minor version.

> *00: Whole version is target (designation of contents version is invalid.)*
> *01: Target is the version after the designated version*
> *02: Target is the version before the designated version*
> *03: Target is the designated version only*

content_descriptor_length: This 12-bit field gives the total length in bytes of the following schedule loop and descriptor loop.

schedule_description_length (Schedule description length): This 12-bit field gives the total length in bytes of the following schedule loop.

start_time (Start time): This 40-bit field indicates the start time of partial contents announcement by JST and MJD.

duration: A 24-bit field indicates the duration of the partial contents announcement in hours, minutes, and seconds.
descriptor0: Stores data contents descriptor in case of partial contents.

6.14 Possible BIT descriptors

Details about possible descriptors in BIT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.13.2:

7.2.13.2 Possible BIT descriptors

The descriptors that may appear in BIT are:

— service list descriptor (the only one which is mandatory);

— SI parameters descriptor;

In the Japanese digital terrestrial television system, *descriptors available to specific tables are summarized in* ARIB STD-B10:v4.6:2007, S*ubclause 6.1, Table 6-1.*

BIT defined in STD-B10:v4.6:2007 *is allowed to have hyperlink descriptor in addition to the descriptors available to BIT defined in ABNT NBR 15603-2.*

6.15 Possible NBIT descriptors

Details about possible descriptors in BIT table have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 7.2.14.2:

7.2.14.2 Possible NBIT descriptors

The NBIT descriptors shall be:

— *stuffing descriptor;*

— *board information descriptor.*

In the Japanese digital terrestrial television system, *descriptors available to specific table are summarized in* STD-B10:v4.6:2007, S*ubclause 6.1, Table 6-1.*

6.16 Descriptor location and identification

All possible descriptors have been included in ABNT NBR 15603-1:2007, Subclause 8, Table 26.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.1:

8.1 Descriptor location and identification

The Table 26 lists the descriptors defined within this Standard, giving the intended placement within the SI tables. This does not imply that their use in other tables is restricted.

Table 26 - Location and requirements of SI descriptors

Descriptor	Transmission level	CAT	PMT	NIT	BAT	SDT	EIT	TOT	BIT	NBIT	LDT	SIT	SDTT	LIT	ERT	ITT
Conditional access descriptor [a]	*Mandatory for conditional access*	X	X													
Copyright descriptor [a]	*c*		X				x									
AVC video descriptor	*Optional*		X													
AVC timing and HRD descriptor	*Optional*		X													
Network name descriptor [b]	*Mandatory*			X												
Service list descriptor [a]	*Mandatory in NIIT (actual Network)*			X	X				X							

	Optional in NIT (other network) *Mandatory in BAT* *Optional in BIT*												
Stuffing descriptor	*Optional*			X	X	X	X			X	X		
Bouquet name descriptor	*Mandatory in BAT*				X	X							
Service descriptor [b]	*Mandatory in SDT (actual stream)* *Optional in SDT (other stream)*						X						
Country availability descriptor	*Optional*		X			X	X						
Linkage descriptor	*Optional*		X	X	X	X	X						
NVOD reference descriptor	*Mandatory for NVOD*						X						
Time shifted service descriptor [b]	*Mandatory in time shift event*						X						
Short event descriptor	*Optional*						X						
Extended event descriptor	*Optional*						X						
Time shifted event descriptor	*Optional*						X						
Component descriptor	*Optional*		X				X						
Mosaic descriptor	*Optional*		X			X							
Stream identifier descriptor	*Optional*		X										
CA identifier descriptor	*Optional*				X	X	X						
Content descriptor	*Optional*						X						
Parental rating descriptor	*Optional*		X				X						
Local_time_offset_descriptor	*Mandatory for local_time_offset execution*							X					
Hierarchical transmission descriptor	*Mandatory for hierarchical transmission*		X										
Digital copy control descriptor	*Optional*		X			X	X						
Audio component descriptor	*Optional*						X						

Descriptor	Requirement															
Hyperlink descriptor	Optional						X									
Target area descriptor	Optional		X													
Data contents descriptor	Optional						X									
Video decode control descriptor	Optional		X													
TS information descriptor	Optional			X												
Extended broadcaster descriptor	Optional								X							
Logo transmission descriptor	Optional					X										
Basic local event	Optional													X		
Reference descriptor	Optional						X							X		
Node relation descriptor	Optional														X	
Short node information descriptor	Optional						X								X	
STC (system time clock) reference descriptor	Optional															X
Series descriptor	Optional						X									
Event group descriptor	Optional						X									
SI parameter descriptor	Optional								X							
Broadcast name descriptor	Optional								X							
Component group descriptor	Optional						X									
SI prime TS descriptor	Optional								X							
Board information descriptor	Optional									X						
LTD link descriptor	Optional						X									
Connected transmission descriptor	Mandatory for linkage transmission			X												
Content availability descriptor	Optional		X			X	X									
Service group descriptor	Optional			X												

Descriptor	Requirement														
Carousel compatible composite descriptor [a]	Optional		X				X								
Conditional playback descriptor [a]	Mandatory in case of conditional playback	X	X												
Terrestrial delivery system descriptor [a]	Mandatory			X											
Partial reception descriptor [a]	Mandatory for one-seg reception			X											
Emergency information description [a]	Mandatory for alarm emergency transmission		X	X											
Data component descriptor [a]	Mandatory for data transmission		X												
System management descriptor [a]	Mandatory in NIT		X	X											
Carousel ID descriptor [e]	Mandatory for GINGA application		X												
Association tag descriptor [e]	Mandatory for GINGA application		X												
Deferred association tag descriptor [e]	Mandatory for GINGA application		X												
AAC descriptor [f]	Mandatory		X												
Partial transport stream descriptor [g]	Optional										X				
Partial transport stream time descriptor [g]	Optional										X				
Network identifier descriptor [g]	Optional										X				
Download content descriptor [g]	Optional											X			

[a] In accordance with ARIB STD-B10.

[b] Can be substituted by the descriptor defined by service provider, if it has at least the same function.

[c] Locations and requirements of descriptors are to be observed in a future Brazilian digital television system standard.

[d] This is not applicable when using the function with conditional access descriptor.

[e] In accordance with ABNT NBR 15606-3

[f] In accordance with EN 300 468:2007, Annex H.

[g] In accordance with ARIB STD-B21.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.1:

6.1 Descriptor identification and location

Table 6-1 lists the descriptors defined within the present document, giving the intended placement within the SI tables. This does not imply that their use in other tables is restricted.

Table 6-1 - Location and requirements of SI descriptors

Descriptor	Transmission level	CAT	PMT	NIT	BAT	SDT	EIT	TYT	BIT	NBIT	LDT
conditional_access_descriptor *1	Mandatory for conditional access	Y	Y								
copyright_descriptor *1	*3		Y								
network_name_descriptor *2	Mandatory			Y							
service_list_descriptor *1	Mandatory in NIT (actual network) Optional in NIT (other network) Mandatory in BAT, Optional in BIT			Y	Y				Y		
stuffing_descriptor	Optional			Y	Y	Y	Y			Y	Y
satellite_delivery_system_descriptor *1	Mandatory in digital satellite broadcasting			Y							
bouquet_name_descriptor	Mandatory in BAT				Y	Y					
service_descriptor *2	Mandatory in SDT (actual stream) Optional in SDT (other stream)					Y					
country_availability_descriptor	Optional		Y		Y	Y					
linkage_descriptor	Optional		Y	Y	Y	Y	Y				
NVOD_reference_service_descriptor	Mandatory for NVOD					Y					
time_shifted_service_descriptor *2	Mandatory for time shift service					Y					
short_event_descriptor *2	Mandatory in EIT						Y				Y
extended_event_descriptor	Optional						Y				Y
time_shifted_event_descriptor *2	Mandatory in time shift event						Y				
component_descriptor	Optional		Y				Y				
mosaic_descriptor	Optional		Y			Y					
stream_identifier_descriptor	Optional		Y								
CA_identifier_descriptor	Optional				Y	Y	Y				
content_descriptor	Optional						Y				
parental_rating_descriptor	Optional		Y				Y				
hierarchical_transmission_descriptor	Mandatory for hierarchical transmission		Y								
digital_copy_control_descriptor	Optional		Y			Y	Y				
emergency_information_descriptor *1	Mandatory for emergency alarm broadcasting		Y	Y							
data_component_descriptor *1	Mandatory for data broadcasting		Y								
system_control_descriptor *1	Mandatory either in PMT or NIT		Y	Y							
local_time_offset	Mandatory for local							Y			

descriptor	time execution								
audio_component _descriptor_	Optional						Y		
hyper_link_descriptor	Optional						Y	Y	
target_area_descriptor	Optional	Y							
data_contents_descriptor	Optional						Y		
video_decode_control _descriptor_	Optional	Y							
terrestrial_delivery _system_descriptor_ [*1]	Mandatory for digital terrestrial broadcasting		Y						
partial_reception _descriptor_ [*1]	Mandatory for partial reception service		Y						
series_descriptor	Optional						Y		
event_group_descriptor	Optional						Y		
SI_transmission _parameter_descriptor	Optional							Y	
broadcaster_name _descriptor_	Optional							Y	
component_group _descriptor_	Optional						Y		
SI_prime_TS_descriptor	Optional							Y	
board_information _descriptor_	Optional								Y
LDT_link_descriptor	Optional						Y		
linkage_descriptor	Mandatory for linkage transmission.		Y						
TS information descriptor	Optional		Y						
Extension broadcaster descriptor	Optional							Y	
Logo transmission descriptor	Optional				Y				
Content availability descriptor	Optional	Y			Y	Y			
Carousel compatible composite descriptor [*1]	Optional	Y				Y			
Conditional playback descriptor [*1,*5]	Mandatory in case of conditional playback [*4]	Y	Y						
AVC video descriptor	Optional	Y							
AVC timing HRD descriptor	Optional	Y							
Service group descriptor	Optional		Y						

[*1]: In accordance with the Notification
[*2]: Can be substituted by the descriptor defined by service provider, if it has at least the same function.
[*3]: Locations and requirements of descriptors are to be observed in the future international standard.
[*4]: This is not applicable when using the function with conditional access descriptor.
[*5]: Specified in ARIB STD-B25

6.17 Component descriptor

In ABNT NBR 15603-2:2007, Subclause 8.3.4, the Table 28 was modified in order to meet Brazilian MPEG-4 audio and video specifications.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.4, Table 28

8.3.4 Component descriptor

The component descriptor shall identify the type of component stream and can be used to provide a text description of the elementary stream. Structure details are on EN 300 468:2007, Subclause 6.2.8.

The semantics for the component descriptor are:

⸺ stream_content: a 4-bit field specifying the stream type (video, audio or data). This field coding shall be specified in Table 28;

⸺ component_type: an 8-bit field specifying the type of video, audio or data component. This field coding shall be specified in Table 28;

⸺ component_tag: an 8-bit field with the same value as component_tag field in the stream identification descriptor (see 8.3.15) for the component stream (if present in PSI program map section);

⸺ ISO_639_language_code: a 24-bit field identifying the language of the component (in case of audio or data) and a text description which may be contained in the descriptor. An ISO_639_language_code contains a 3 character code as specified by ISO 639-2. Each character shall be coded in 8 bits according to ISO/IEC 8859-15 and inserted in order into the 24-bit field;

EXAMPLE   Portuguese, the Brazilian official language, has a 3-character code "por", which is coded as: " 0111 0000 0110 1111 0111 0010"

⸺ text_char: This is an 8-bit field. A word describes the text in the component stream. Text information is coded using the character sets and methods described in the service provider's operating standard.

Table 28 – Stream_content and component_type

Stream_content	Component_type	Description
0x00	0x00 – 0xFF	Reserved for future use
0x01	0x00	Reserved for future use
0x01	0x01	MPEG 2 Video 480i(525i), 4:3 aspect ratio with pan vectors
0x01	0x02	MPEG 2 Video 480i(525i), 16:9 aspect ratio without pan vectors
0x01	0x03	MPEG 2 Video 480i(525i), 16:9 aspect ratio
0x01	0x04	MPEG 2 Video 480i(525i), > 16:9 aspect ratio
0x01	0x05 – 0xA0	Reserved for future use
0x01	0xA1	MPEG 2 Video 480p(525p), 4:3 aspect ratio
0x01	0xA2	MPEG 2 Video 480p(525p), 16:9 aspect ratio with pan vectors
0x01	0xA3	MPEG 2 Video 480p(525p), 16:9 aspect ratio without pan vectors
0x01	0xA4	MPEG 2 Video 480p(525p), > 16:9 aspect ratio
0x01	0xA5 – 0xB0	Reserved for future use
0x01	0xB1	MPEG 2 Video 1080i(1125i), 4:3 aspect ratio
0x01	0xB2	MPEG 2 Video 1080i(1125i), 16:9 aspect ratio, with pan vectors
0x01	0xB3	MPEG 2 Video 1080i(1125i), 16:9 aspect ratio, without pan vectors
0x01	0xB4	MPEG 2 Video 1080i(1125i), > 16:9 aspect ratio
0x01	0xB5 – 0xC0	Reserved for future use
0x01	0xC1	MPEG 2 Video 720p(750p), 4:3 aspect ratio
0x01	0xC2	MPEG 2 Video 720p(750p), 16:9 aspect ratio, with pan vectors
0x01	0xC3	MPEG 2 Video 720p(750p), 16:9 aspect ratio, without pan vectors
0x01	0xC4	MPEG 2 Video 720p(750p), > 16:9 aspect ratio
0x01	0xC5- 0xD0	Reserved for future use
0x01	0xD1	MPEG 2 Video 240p, 4:3 aspect ratio
0x01	0xD2	MPEG 2 Video 240p, 4:3 aspect ratio, with pan vectors
0x01	0xD3	MPEG 2 Video 240p, 4:3 aspect ratio, without pan vector
0x01	0xD4	MPEG 2 Video 240p, 4:3 aspect ratio > 16:9

0x01	0xD5- 0xE0	Reserved for future use
0x01	0xE1	MPEG 2 Video 1080p(1125p), 4:3 aspect ratio
0x01	0xE2	MPEG 2 Video 1080p(1125p), 16:9 aspect ratio, with pan vectors
0x01	0xE3	MPEG 2 Video 1080p(1125p), 16:9 aspect ratio, without pan vectors
0x01	0xE4	MPEG 2 Video 1080p(1125p), > 16:9 aspect ratio
0x01	0xE5 – 0xFF	Reserved for future use
0x02	0x00	Reserved for future use
0x02	0x01	AAC MPEG2 audio, 1/0 mode (single mono)
0x02	0x02	AAC MPEG2 audio, 1/0 + 1/0 mode (dual mono)
0x02	0x03	AAC MPEG2 audio, 2/0 mode (stereo)
0x02	0x04	AAC MPEG2 audio, 2/1 mode
0x02	0x05	AAC MPEG2 audio, 3/0 mode
0x02	0x06	AAC MPEG2 audio, 2/2 mode
0x02	0x07	AAC MPEG2 audio, 3/1 mode
0x02	0x08	AAC MPEG2 audio, 3/2 mode
0x02	0x09	AAC MPEG2 audio, 3/2 + LFE mode
0x02	0x0A - 0x3F	Reserved for future use
0x02	0x40	AAC MPEG2 audio audio description for the visually impaired
0x02	0x41	AAC MPEG2 audio for the hard of hearing
0x02	0x42 - 0xAF	Reserved for future use
0x02	0xB0 - 0xFE	User-defined
0x02	0xFF	Reserved for future use
0x03 – 0x4F	0x00 – 0xFF	Reserved for future use
0x05	0x00	Defined by user Reserved for future use
0x05	0x01	H264/AVC video 480i(525i), 4:3 aspect ratio
0x05	0x02	H264/AVC video 480i(525i), 16:9 aspect ratio, with pan vectors
0x05	0x03	H264/AVC video 480i(525i), 16:9 aspect ratio, without pan vectors
0x05	0x04	H264/AVC video 480i(525i), > 16:9 aspect ratio
0x05	0x05 – 0xA0	Reserved for future use
0x05	0xA1	H264/AVC video 480p(525p), 4:3 aspect ratio
0x05	0xA2	H264/AVC video 480p(525p), 16:9 aspect ratio, with pan vectors
0x05	0xA3	H264/AVC video 480p(525p), 16:9 aspect ratio, without pan vectors
0x05	0xA4	H264/AVC video 480p(525p), > 16:9 aspect ratio
0x05	0xA5 - 0xB0	Reserved for future use
0x05	0xB1	H264/AVC video 1080i(1125i), 4:3 aspect ratio
0x05	0xB2	H264/AVC video 1080i(1125i), 16:9 aspect ratio, with pan vectors
0x05	0xB3	H264/AVC video 1080i(1125i), 16:9 aspect ratio, without pan vectors
0x05	0xB4	H264/AVC video 1080i(1125i), 16:9 aspect ratio
0x05	0xB5 – 0xC0	Reserved for future use
0x05	0xC1	H264/AVC video 720p(750p), 4:3 aspect ratio
0x05	0xC2	H264/AVC video 720p(750p), 16:9 aspect ratio, with pan vectors
0x05	0xC3	H264/AVC video 720p(750p), 16:9 aspect ratio, without pan vectors
0x05	0xC4	H264/AVC video 720p(750p), > 16:9 aspect ratio
0x05	0xC5 - 0xD0	Reserved for future use
0x05	0xD1	H264/AVC video 240p, 4:3 aspect ratio
0x05	0xD2	H264/AVC video 240p, 16:9 aspect ratio, with pan vectors

0x05	0xD3	H264/AVC video 240p, 16:9 aspect ratio, without pan vectors
0x05	0xD4	H264/AVC video 240p, 4:3 aspect ratio > 16:9 aspect ratio
0x05	0xD5 - 0xE0	Reserved for future use
0x05	0xE1	H264/AVC video 1080p(1125p), 4:3 aspect ratio
0x05	0xE2	H264/AVC video 1080p(1125p), 16:9 aspect ratio, with pan vectors
0x05	0xE3	H264/AVC video 1080p(1125p), 16:9 aspect ratio, without pan vectors
0x05	0xE4	H264/AVC video 1080p(1125p), > 16:9 aspect ratio
0x05	0xD5 – 0xE0	Reserved for future use
0x06	0x00	Reserved for future use
0x06	0x01	HE-AAC MPEG4 audio, 1/0 mode (single mono)
0x06	0x02	HE-AAC MPEG4 audio, 1/0 + 1/0 mode (dual mono)
0x06	0x03	HE-AAC MPEG4 audio, 2/0 mode (stereo)
0x06	0x04	HE-AAC MPEG4 audio, 2/1 mode
0x06	0x05	HE-AAC MPEG4 audio, 3/0 mode
0x06	0x06	HE-AAC MPEG4 audio, 2/2 mode
0x06	0x07	HE-AAC MPEG4 audio, 3/1 mode
0x06	0x08	HE-AAC MPEG4 audio, 3/2 mode
0x06	0x09	HE-AAC MPEG4 audio, 3/2 + LFE mode
0x06	0x0A – 0x3F	Reserved for future use
0x06	0x40	HE-AAC MPEG4 pure audio description for the visually impaired
0x06	0x41	HE-AAC MPEG4 audio for the hard of hearing
0x06	0x42	HE-AAC MPEG4 mixed audio description for the visually impaired
0x06	0x43	HE-AAC v2 MPEG4 audio, mode 1/0 (mono)
0x06	0x44	HE-AAC v2 MPEG4 audio, mode 2/0 (stereo)
0x06	0x45	HE-AAC v2 MPEG4 pure audio description for the visually impaired
0x06	0x46	HE-AAC MPEG4 v2 audio for the hard of hearing
0x06	0x47	HE-AAC v2 MPEG4 mixed audio description for the visually impaired
0x06	0x48 – 0x50	Reserved for future use
0x06	0x51	AAC MPEG4 audio, 1/0 mode (single mono)
0x06	0x52	AAC MPEG4 audio, 1/0 + 1/0 mode (dual mono)
0x06	0x53	AAC MPEG4 audio, 2/0 mode (stereo)
0x06	0x54	AAC MPEG4 audio, 2/1 mode
0x06	0x55	AAC MPEG4 audio, 3/0 mode
0x06	0x56	AAC MPEG4 audio, 2/2 mode
0x06	0x57	AAC MPEG4 audio, 3/1 mode
0x06	0x58	AAC MPEG4 audio, 3/2 mode
0x06	0x59	AAC MPEG4 audio, 3/2 + LFE mode
0x06	0x60 – 0x9E	Reserved for future use
0x06	0x9F	AAC MPEG4 pure audio description for the visually impaired
0x06	0xA0	AAC MPEG4 audio for the hard of hearing
0x06	0xA1	AAC M PEG4 mixed audio description for the visually impaired
0x06	0xA2-0xA9	Reserved for future use
0x06	0xAA-0xFE	User defined
0x06	0xFF	Reserved for future use
0x07 – 0x0F	0x00 – 0xFF	Reserved for future use

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.3, Table 6-5:

6.2.3 Component descriptor

The component descriptor identifies the type of component stream and may be used to provide a text description of the elementary stream (see table 6-4).

Table 6-4 - Component descriptor

Syntax	Number of bits	Identifier
component_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
reserved_future_use	4	bslbf
stream_content	4	uimsbf
component_type	8	uimsbf
component_tag	8	uimsbf
ISO_639_language_code	24	bslbf
for(i=0;i<N;i++){		
text_char	8	uimsbf
}		
}		

Semantics for the component descriptor:

stream_content: This 4-bit field specifies the type (video, audio, or data) of stream. The coding of this field is specified in table 6-5.

component_type: This 8-bit field specifies the type of the video, audio or data component. The coding of this field is specified in table 6-5.

component_tag: This 8-bit field has the same value as the component_tag field in the stream identifier descriptor (see sub-clause 6.2.16) (if present in the PSI program map section) for the component stream.

ISO_639_language_code: This 24-bit field identifies the language of the component (in the case of audio or data) and of the text description which may be contained in this descriptor. The ISO 639_language_code contains a 3-character code as specified by ISO 639-2[22]. Each character is coded into 8 bits according to ISO/IEC 8859-1[24] and inserted in order into the 24-bit field.

 EXAMPLE: Japan has a 3-character code "jpn", which is coded as:
 "0110 1010 0111 0000 0110 1110"

text_char: This is an 8-bit field. A string of "text_char" fields specifies a text description of the component stream. Text information is coded using the character sets and methods described in Annex A.

Table 6-5 stream_content and component_type

Stream_content	Component_type	Description
0x00	0x00 – 0xFF	Reserved for future use
0x01	0x00	Reserved for future use
0x01	0x01	Video 480i(525i), 4:3 aspect ratio
0x01	0x02	Video 480i(525i), 16:9 aspect ratio, with pan vectors
0x01	0x03	Video 480i(525i), 16:9 aspect ratio, without pan vectors
0x01	0x04	Video 480i(525i), >16:9 aspect ratio
0x01	0x05 – 0xA0	Reserved for future use
0x01	0xA1	Video 480p(525p), 4:3 aspect ratio
0x01	0xA2	Video 480p(525p), 16:9 aspect ratio, with pan vectors
0x01	0xA3	Video 480p(525p), 16:9 aspect ratio, without pan vectors

0x01	0xA4	Video 480p(525p), >16:9 aspect ratio
0x01	0xA5 – 0xB0	Reserved for future use
0x01	0xB1	Video 1080i(1125i), 4:3 aspect ratio
0x01	0xB2	Video 1080i(1125i), 16:9 aspect ratio, with pan vectors
0x01	0xB3	Video 1080i(1125i), 16:9 aspect ratio, without pan vectors
0x01	0xB4	Video 1080i(1125i), >16:9 aspect ratio
0x01	0xB5 – 0xC0	Reserved for future use
0x01	0xC1	Video 720p(750p), 4:3 aspect ratio
0x01	0xC2	Video 720p(750p), 16:9 aspect ratio, with pan vectors
0x01	0xC3	Video 720p(750p), 16:9 aspect ratio, without pan vectors
0x01	0xC4	Video 720p(750p), >16:9 aspect ratio
0x01	0xC5 – 0xD0	Reserved for future use
0x01	0xD1	Video 240p, 4:3 aspect ratio
0x01	0xD2	Video 240p, 4:3 aspect ratio, with pan vectors
0x01	0xD3	Video 240p, 4:3 aspect ratio, without pan vector
0x01	0xD4	Video 240p, 4:3 aspect ratio > 16:9
0x01	0xD5 – 0xFF	Reserved for future use
0x02	0x00	Reserved for future use
0x02	0x01	Audio, 1/0 mode (single mono)
0x02	0x02	Audio, 1/0+1/0 mode (dual mono)
0x02	0x03	Audio, 2/0 mode (stereo)
0x02	0x04	Audio, 2/1 mode
0x02	0x05	Audio, 3/0 mode
0x02	0x06	Audio, 2/2 mode
0x02	0x07	Audio, 3/1 mode
0x02	0x08	Audio, 3/2 mode
0x02	0x09	Audio, 3/2+LFE mode
0x02	0x0A – 0x3F	Reserved for future use
0x02	0x40	Audio description for the visually impaired
0x02	0x41	Audio for the hard of hearing
0x02	0x42 – 0xAF	Reserved for future use
0x02	0xB0 – 0xFE	User-defined
0x02	0xFF	Reserved for future use
0x03 – 0x0B	0x00 – 0xFF	Reserved for future use
0x0C – 0x0F	0x00 – 0xFF	User-defined

6.18 Parental rating descriptor

The method used in STD-B10:v4.6:2007 to define the rating has been modified in order to comply with Brazilian law: "Brazilian Justice Ministry ordinance number *1220*, of, dated July 11th, 2007".

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.11:

8.3.11 Parental rating descriptor

The parental rating descriptor shall provide a rating based on the local parental rating regulation. In case of Brazil, the reference is the ordinance number "1220",of the Brazilian Justice Ministry, of July, 11th , 2007 (see Table 31). In case this descriptor is transmitted in multiple tables, the information priority order shall be the following: PMT -> EIT.

Table 31 - Parental rating descriptor

Syntax	Number of bits	Identifier
parental_rating_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
for(i=0;i<N;i++){		
country_code	24	bslbf
rating	8	
}		
}		

The semantics for parental rating descriptor are:

⎯ country_code: 24-bit field identifying the country using a 3-character code as specified in ISO 3166-1. Each character will be coded in 8 bits according to ISO 8859-15 and inserted in order into the 24-bit field.

EXAMPLE   Brazil has a 3-character code "BRA", which is coded as: "0100 0010 0101 0010 0100 000".

— rating: 8-bit field indicating the age and the content description. The bits are coded as shown in Figure 2.
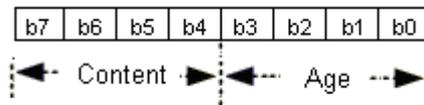
Figure 2 – Bits distribution for field rating

The 4 LSB (Low significant bits) shall indicate the age as shown in Table 32.

Table 32 – Age description

Binary code	Age
0000	Reserved
0001	L
0010	10
0011	12
0100	14
0101	16
0110	18
0111 - 1111	Reserved

The 4 MSB (major significant bit) shall indicate the content as shown in Table 33.

Table 33 – Content objective description

Binary code	Age
0000	Reserved
0001	L
0010	10
0011	12
0100	14
0101	16
0110	18
0111 - 1111	Reserved

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.12:

6.2.12 Parental rating descriptor

This descriptor (see table 6-22) gives a rating based on age and allows for extensions based on other rating criteria.

Table 6-22 - Parental rating descriptor

Syntax	Number of bits	Identifier
parental_rating_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
for(i=0;i<N;i++){		
Country_code	24	bslbf
rating	8	
}		
}		

Semantics for the parental rating descriptor:

country_code: This 24-bit field identifies a country using the 3-character code as specified in ISO 3166 [23]. Each character is coded into 8-bits according to ISO 8859-1 [24] and inserted in order into the 24-bit field.

EXAMPLE: Japan has 3-character code "JPN" which is coded as: "0100 1010 0101 0000 0100 1110"

rating: This 8-bit field is coded according to table 6-23, giving the recommended minimum age in years of the end user.

Table 6-23 Parental rating descriptor, rating

Rating	Description
0x00	undefined
0x01 – 0x0F	minimum age = rating + 3 years
0x10 – 0xFF	defined by the broadcaster

6.19 Service descriptor

Details about service type coding in service descriptor have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2 Subclause 8.3.13, Table 36:

8.3.13 Service descriptor

The service descriptor shall provide the name of service provider and the services in text form together with service_type (see Table 35).

Table 35 - Service descriptor

Syntax	Number of bits	Identifier
service_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
service_type	8	uimsbf
service_provider_name_length	8	uimsbf
for(i=0;i<N;i++){		

char		8	*uimsbf*
}			
service_name_length		8	*uimsbf*
for(i=0;i<N;i++){			
Char		8	*uimsbf*
}			
}			

The semantics for service descriptor are:

⎯ *service_type: 8-bit field specifying the service type. It shall be coded according to Table 36;*

⎯ *char: 8-bit field in which the sequence of characters shall inform the name of theservice provider or service. The details of characters shall be specified in the service provider's operating standard ;*

⎯ *service_name_length: 8-bit field specifying the number of bytes preceding it for describing the characters of the service name;*

⎯ *service_provider_name_length: 8-bit field specifying the number of bytes preceding the field service_provider_name_length for describing the characters of the name of the service provider.*

Table 36 - Service type coding

Service_type	Description
0x00	*Reserved for future use*
0x01	*Digital television service*
0x02	*Digital audio service*
0x03	*Teletext service*
0x04	*NVOD reference service*
0x05	*NVOD time-shifted service*
0x06	*Mosaic service*
0x07 – 0x09	*Reserved for future use*
0x0A	*Advanced coding for digital radio service*
0x0B	*Advanced coding for mosaic service*
0x0C	*Data broadcasting service*
0x0D	*Reserved for common interface (see EN 50221)*
0x0E	*RCS Map (see EN 301 790)*
0x0F	*RCS FLS (see EN 301 790)*
0x10	*DVB MHP service*
0x11	*Digital MPEG2 HD television service*
0x12 – 0x15	*Reserved for future use*
0x16	*Advanced coding for digital SD television service*
0x17	*Advanced coding for digital NVOD SD time-shifted television service*
0x18	*Advanced coding for digital NVOD SD reference television service*
0x19	*Advanced coding for digital NVOD HD television service*
0x1A	*Advanced coding for digital NVOD HD time-shifted television service*
0x1B	*Advanced coding for digital NVOD HD reference television service*
0x1C – 0x7F	*Reserved for future use*
0x80 – 0xA0	*Defined by the service provider*
0xA1	*Special video service*
0xA2	*Special audio service*
0xA3	*Special data service*
0xA4	*Engineering service*
0xA5	*Promotional video service*
0xA6	*Promotional audio service*
0xA7	*Promotional data service*

0xA8	Data service for anticipated storage	
0xA9	Exclusive data service for storage	
0xAA	Bookmark service list	
0xAB	Simultaneous server type service	
0xAC	Independent file service	
0xAD – 0xBF	Not defined (range defined by the standardization organization)	
0xC0	Data service	
0xC1 – 0xFF	Not defined	

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.13, Table 6-25:

6.2.13   Service descriptor

The service descriptor (see table 6-24) provides the names of the service provider and the service in text form together with the service_type.

Table 6-24 - Service descriptor

Syntax	Number of bits	Identifier
service_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
service_type	8	uimsbf
service_provider_name_length	8	uimsbf
for(i=0;i<N;i++){		
char	8	uimsbf
}		
service_name_length	8	uimsbf
for(i=0;i<N;i++){		
Char	8	uimsbf
}		
}		

Semantics for the service descriptor:

service_type: This is an 8-bit field specifying the type of service. It shall be coded according to table 6-25.

[Note]: This field is expressed as "service_type_id" in Notification No. 37 of the Ministry of Public Management, Home Affairs, Posts and Telecommunications in 2003.

Table 6-25 - Service type coding

Service_type	Description
0x00	Not defined
0x01	Digital television service
0x02	Digital audio service
0x03 – 0x7F	Not defined
0x80 – 0xA0	Service provider defined
0xA1	Special video service
0xA2	Special audio service
0xA3	Special data service
0xA4	Engineering service

	0xA5	Promotion video service
	0xA6	Promotion audio service
	0xA7	Promotion data service
	0xA8	Data service for accumulation in advance
	0xA9	Data service exclusive for accumulation
	0xAA	Book mark list service
	0xAB	Server-type simultaneous service
	0xAC	Independent file service
	0xAD – 0xBF	Not defined (to be defined by standardization organization)
	0xC0	Data service
	0xC1 – 0xFF	Not defined

service_provider_name_length: This 8-bit field specifies the number of bytes that follow the service_provider_name_length field for describing characters of the name of the service provider.

char: This is an 8-bit field. A string of char fields specify the name of the service provider or service. Text information is coded using the character sets and methods described in Annex A.

service_name_length: This 8-bit field specifies the number of bytes that follow the service_name_length field for describing characters of the name of the service.

6.20 System management descriptor

Details in ABNT NBR 15603-2, Subclause 8.3.21, Table 43, about broadcasting_identifier in the system_management_id() structure used in the system management descriptor have been modified for adaptation for terrestrial broadcasting only.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2 Subclause 8.3.21, Table 43:

8.3.21 System management descriptor

The system management descriptor (see Table 40 and Table 41) shall be used to identify broadcasting and non-broadcasting.

Table 40 - System management descriptor

Syntax	Number of bits	Identifier
system_management_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
system_management_id	16	uimsbf
for(i=0;i <N;i++){		
additional_identification_info	8	uimsbf
}		
}		

The semantics for the system management descriptor are:

— system_management_id: 16-bit field composed as shown in Table 42;

— broadcasting_flag: 2-bit field indicating the type of broadcasting/non-broadcasting in accordance with Table 42. The broadcasting shall be the transmission available for all receivers, while non-broadcasting shall have some type of conditional access;

— broadcasting_identifier: 6-bit field indicating the standard broadcasting method in accordance with Table

43. In the case of the Brazilian system, this field shall always be 000011;

— additional_broadcasting_identification: 8-bit field to be specified by service provider's operating standard of.

EXAMPLE   000001 ISDB System; other values: reserved.

— additional_identification_info: 8-bit field, as defined on Table 41, which shall be used to increase system management identification number.

Table 41 — Construction of system management identifier

Syntax	Number of bits	Identifier
system_management_id(){		
broadcasting_flag	2	Uimsbf
broadcasting_identifier	6	Uimsbf
additional_broadcasting_identification	8	Uimsbf
}		

Table 42 — Transmission type

Value	Semantics
00	Broadcasting
01, 10	Non Broadcasting
11	Undefined

Table 43 — Types of transmission system standards

Value	Semantics
'000000	Undefined
'000001	Not used
'000010	Not used
'000011	ISDB system
000100 – 000110	Not used
000111 – 111111	Undefined

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.21:

6.2.21   System management descriptor

[Note] This item is specified in Notation No. 37 of the Ministry of Public Management, Home Affairs, Posts and Telecommunications in 2003.

The system management descriptor (see table 6-33) is used to identify broadcasting and non-broadcasting.

Table 6-33 - System management descriptor

Syntax	Number of bits	Identifier
system_management_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf

Syntax		Number of bits	Identifier	
system_management_id		16	uimsbf	
for(i=0;i <N;i++){				
additional_identification_info		8	uimsbf	
}				
}				

Semantics for the system management descriptor:

system_management_id: This is a 16-bit field and composed as shown in table 6-34.

Table 6-34 - Structure of system management identifier

Syntax	Number of bits	Identifier
system_management_id(){		
broadcasting_flag	2	Uimsbf
broadcasting_identifier	6	Uimsbf
additional_broadcasting_identification	8	Uimsbf
}		

broadcasting_flag: This is a 2-bit field and indicates type of broadcasting/non-broadcasting in accordance with table 6-35.

Table 6-35 Broadcasting/non-broadcasting type

Value	Semantics
00	Broadcasting
01, 10	Non Broadcasting
11	Undefined

broadcasting_identifier: This is a 6-bit field and indicates standard broadcasting method in accordance with table 6-36.

Table 6-36 Types of standard broadcasting system

Value	Semantics
000000	Undefined
000001	Standard system specified as digital satellite broadcasting using 27 MHz bandwidth in 12.2 to 12.75 GHz frequency band
000010	Standard system specified as digital satellite broadcasting using 34.5 MHz bandwidth in 11.7 to 12.2 GHz frequency band
000011	Standard system specified as digital terrestrial television broadcasting.
000100	Standard system specified as digital satellite broadcasting using 34.5 MHz bandwidth in 12.2 to 12.75 GHz frequency band
000101	Standard system specified as digital terrestrial sound broadcasting.
000110	Standard system specified as broadcasting operated by broadcasting satellites or broadcasting stations in 2630 to 2655 MHz frequency band.
000111	Standard system specified as digital satellite broadcasting based on advanced narrow-band transmission system using 27 MHz bandwidth in 12.2 to 12.75 GHz frequency band

001000 – 111111	Undefined

additional_broadcasting_identification: This is an 8-bit field and is specified by the operation standard of service providers.

additional_identification_info: This is an 8-bit field and used to extend system management indication number.

6.21 Digital copy control descriptor

In Brazilian standard ABNT NBR 15603-2, Subclause 8.3.23, Table 46, more details have been included about the *digital copy control descriptor*.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.23:

8.3.23 Digital copy control descriptor

The digital copy control descriptor (see Table 45) shall provide information for controlling copies generated in digital recording equipment. This information shall be provided by the broadcasting service provider (holder of copyrights)

This descriptor shall also be used to identify the maximum transmission rate for each event.

In the event this is sent by several tables, the priority of information shall be as follow: PMT > EIT > SDT.
Bit definition for the digital copy control descriptor is given on Annex D.

Table 45 - Digital copy control descriptor

Syntax	Number of bits	Identifier
digital_copy_control_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
digital_recording_control_data	2	bslbf
maximum_bitrate_flag	1	bslbf
component_control_flag	1	bslbf
copy_control_type	2	bslbf
if(copy_control_type != 00){		
APS_control_data	2	bslbf
}		
Else{		
reserved_future_use	2	bslbf
}		
if(maximum_bitrate_flag == 1){		
maximum_bitrate	8	uimsbf
}		
if(component_control_flag == 1){		
component_control_length	8	uimsbf
For(j=0;j<N;j++){		
component_tag	8	uimsbf
digital_recording_control_data	2	bslbf
Maximum_bitrate_flag	1	bslbf
reserved_future_use	1	bslbf
copy_control_type	2	bslbf
if(copy_control_type != 00){		
APS_control_data	2	bslbf
}		
else{		
reserved_future_use	2	bslbf

Syntax	Number of bits	Identifier
}		
if(maximum_bitrate_flag == 1){		
maximum_bitrate	8	uimsbf
}		
}		
}		

The semantics for digital copy control descriptor are:

— digital_recording_control_data: 2–bit-s field indicating information for controlling copy generation. It shall be coded according to Table 46;

— maximum_bitrate_flag: 1-bit field, which when set to 1, means that the following maximum transmitting rate field shall be effective. When set to 0, it shall mean that the following maximum transmitting rate field does not exist;

— component_control_flag: 1-bit field indicating whether it is necessary to specify digital copy control information in each event component. When set to 1, the field following the component control length shall be effective and the digital copy information shall be specified in each event component. When set to 0, the digital copy control information shall be specified for all event components and the field following the component control length does not exist. When this descriptor is transmitted by PMT, the component_control_flag shall always be 0;

— maximum_bitrate: 8-bit field describing the transmission rate of the transport stream packet for each event or elementary stream, increasing at each 1/4 Mbps. In case of variable transmission rates, the maximum value shall be described;

— component_control_length: 8-bit field indicating the size in bytes of the next component control loop ;

— component_tag: 8-bit field identifying the elementary stream of the component whose events shall have the same value as the component tag of the stream identifier descriptor and the component descriptor.

Table 46 — Copy generation control descriptor

Digital copy control information	Description
00	Copying can be done without control
01	Defined by the service provider [a]
10	Copying may be done once [b]
11	Copying is forbidden
[a] Can be defined at the outset by the broadcasting service provider.	
[b] The signal received by broadcasting can be recorded only once.	

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.23, no priority is defined where the descriptor is allocated in several tables:

6.2.23 Digital copy control descriptor

The digital copy control descriptor (see table 6-38) indicates information for controlling generation of copies on digital recording equipment, and where digital recording is presumed, the, broadcasting service provider (holder of copyrights) uses it to inform about event recording and copyright information for digital recording equipment. This descriptor is also used to identify the maximum transmission rate for each event.

Table 6-38 - Digital copy control descriptor

Syntax	Number of bits	Identifier
digital_copy_control_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
digital_recording_control_data	2	bslbf
maximum_bitrate_flag	1	bslbf

	No. of bits	Mnemonic
component_control_flag	1	bslbf
copy_control_type	2	bslbf
if(copy_control_type != 00){		
APS_control_data	2	bslbf
}		
Else{		
reserved_future_use	2	bslbf
}		
if(maximum_bitrate_flag == 1){		
maximum_bitrate	8	uimsbf
}		
if(component_control_flag == 1){		
component_control_length	8	uimsbf
For(j=0;j<N;j++){		
component_tag	8	uimsbf
digital_recording_control_data	2	bslbf
Maximum_bitrate_flag	1	bslbf
reserved_future_use	1	bslbf
copy_control_type	2	bslbf
if(copy_control_type != 00){		
APS_control_data	2	bslbf
}		
else{		
reserved_future_use	2	bslbf
}		
if(maximum_bitrate_flag == 1){		
maximum_bitrate	8	uimsbf
}		
}		
}		

Semantics for the digital copy control descriptor:

digital_recording_control_data: This 2-bit field indicates information to control copy generation and coded in accordance with table 6-39.

Table 6-39 - Digital copy control information

Digital copy control information	Description
00	Copying can be done without control conditions
01	Defined by service provider [1]
10	Copying can be done for only one generation [2]
11	Copying is forbidden

[1]: Independently defined by the broadcasting service provider.
[2]: Received broadcasting signals can be recorded (first-generation copy) but recorded signals cannot be reproduced afterwards.

maximum_bitrate_flag: When this 1-bit flag is "1", it means that the following maximum transmitting rate field is effective. When it is "0", following maximum transmitting rate field does not exist.

component_control_flag: This 1-bit flag indicates whether to specify digital copy control information in each component

consisting event. When this flag is "1," the field following the component control length is effective and digital copy control information is specified in each component consisting event. When it is "0", digital copy control information is specified for the whole event and the field following the component control length does not exist. When this descriptor is transmitted by PMT, component control flag should always be "0".

user_defined: This is a 4-bit field, which can be defined by the broadcasting service provider at the outset.

maximum_bitrate: This 8-bit field describes the transmission rate of the TS packet of each event or elementary stream by rolling up in each 1/4Mbps. In case of variable transmission rates, the maximum value is described.

component_control_length: This 8-bit field indicates the byte length of the following component control loop.

component_tag: This is an 8-bit field. Component tag is a label for identifying the elementary component stream whose composing events have the same value as the component tag in the stream identifier descriptor and the component descriptor.

6.22 Local time offset descriptor

For ABNT NBR 15603-2:2007 standard all references to JST were replaced to UTC-3.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.25:

8.3.25 Local time offset descriptor
The local time offset descriptor (see EN 300 468:2007, subsection 6.2.19) shall be used to adjust the UTC-3 time and the local time.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.25:

6.2.25 Local time offset descriptor

The local time offset descriptor (see table 6-41) is used to allocate a fixed offset value to present time (UTC + 9 hours) and indicating the local time.

Table 6-41 Local time offset descriptor

Syntax	No. of bits	Identifier
local_time_offset_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
for(i=0;i<N;i++){		
country_code	24	bslbf
country_region_id	6	bslbf
reserved	1	bslbf
local_time_offset_polarity	1	bslbf
local_time_offset	16	bslbf
time_of_change	40	bslbf
next_time_offset	16	bslbf
}		
}		

Semantics for the local time offset descriptor:
country_code: This 24-bit field identifies a country using the 3-character code as specified in ISO 3166. Each character is coded into 8-bits according to ISO 8859-1 and inserted in order into the 24-bit field.

EXAMPLE: Japan has 3-character code "JPN" which is coded as:

"0100 1010 0101 0000 0100 1110"

country_region_id: This 6-bit field identifies a zone in the country. Use "000000" if regions are not distinguished.

local_time_offset_polarity: This 1-bit information indicates the polarity of the value of following local_time_offset and next_time_offset. If this bit is set to "0", the local time is in advance of JST_time. If this bit is set to "1", the local time is behind JST_time.

local_time_offset: This 16-bit field contains the current offset time from JST (UTC+9 hours) in the range between -12 hours and +12 hours in the area which is indicated by the combination of country_code and country_region_id in advance. These 16 bits are coded as 4 digits in 4-bit BCD in the order tens of hours, hours, tens of minutes, and minutes.

time_of_change: This is a 40-bit field which specifies the date and time in MJD and JST (see Annex C), when the time change takes place. This 40-bit field is coded as 16 bits giving the 16 LSBs of MJD followed by 24 bits coded as 6 digits in the 4-bit BCD.

next_time_offset: This 16-bit field contains the next offset time after the change from JST in the range between -12hours and +12hours in the area which is indicated by the combination of country_code and country_region_id in advance. These 16-bits are coded as 4-digits in 4-bit BCD in the order tens of hours , hours, tens of minutes and minutes.

6.23 Audio component descriptor

Several component types have been included in ABNT NBR 15603-2:2007, Subclause 8.3.26, Table 49.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.26, Table 49.

8.3.26 Audio component descriptor

Audio component descriptor shall be used to indicate each parameter of audio elementary packet and to symbolically express the elementary stream (see Table 48).

Table 48 - Audio component descriptor

Syntax	Number of bits	Identifier
audio_component_descriptor(){		
descriptor_tag	8	Uimsbf
descriptor_length	8	Uimsbf
reserved_future_use	4	Bslbf
stream_content	4	Uimsbf
component_type	8	Uimsbf
component_tag	8	Uimsbf
stream_type	8	Uimsbf
simulcast_group_tag	8	Bslbf
ES_multi_lingual_flag	1	Bslbf
main_component_flag	1	Bslbf
quality_indicator	2	Bslbf
sampling_rate	3	Uimsbf
reserved_future_use	1	Bslbf
ISO_639_language_code	24	Bslbf
if(ES_multi_lingual_flag == 1){		
ISO_639_language_code_2	24	Bslbf
}		

for(i=0;i<N;i++){			
text_char		8	Uimsbf
}			
}			

The semantics for the audio component descriptor are:

— stream_content: a 4-bit field indicating the stream type. For audio stream, the value shall be set to "0x06" (see Table 28);

— component_type: an 8-bit field specifying the type of audio component and the coding, according to Table 49;

— component_tag: an 8-bit field which shall be a labeled to identify the component stream and shall have the same value as component_tag field in the stream identifier descriptor, whether it is present in the PSI program map section for component stream (see 8.3.16);

— stream_type: an 8-bit field indicating the audio stream type (see ABNT NBR 15603-1:2007, Table 6);

— simulcast_group_tag: an 8-bit field providing the same number for the operating simulcast component (transmit the same content by different coding methods). For a component not operating simulcast, it shall be set to "0xFF";

— ES_multi_lingual_flag: a 1-bit flag which shall be set to "1" when 2 languages (ES multilingual mode) are used in ES at 1/0 + 1/0 mode. In case of another mode, this field shall be reserved;

— main_component_flag: a 1-bit flag shall be set to "1" when audio component is the main audio. Where operating in 1/0 + 1/0, the flag shall be set to "1" when the first audio component is the main audio;

— quality_indicator: a 2-bit field indicating the audio quality mode and its coding according to Table 50;

— sampling_rate: a 3bit field showing the sampling frequency and whose coding is done according to Table 51;

— ISO_639_language_code: a 24-bit field identifying the audio component language. If the ES is working in the multilingual mode, this field shall indicate the first audio component language. This field has a 3-character code as specified by ISO 639-2. Each character shall be coded in 8 bits, according to ISO 8859-1, and inserted in order into the 24-bit field;

EXAMPLE   Portuguese, official language of Brazil has 3-character code "por", which is coded as: "0111 0000 0110 1111 0111 0010"

— ISO_639_language_code_2: a 24-bit field identifying the second language of the audio component language when the ES is working in multilingual mode;

— text_char: an 8-bit field, where a word shall describe the text in the component stream. Text information shall be coded using fixed characters, according to the methods described in the operating standards of the service providers.

Table 49 — Audio component descriptor

component_type	Descriptor
0x00	Reserved for future
0x01	HE-AAC MPEG4 audio, 1/0 mode (single mono)
0x02	HE-AAC MPEG4 audio, 1/0 + 1/0 mode (dual mono)
0x03	HE-AAC MPEG4 audio, 2/0 mode (stereo)
0x04	HE-AAC MPEG4 audio, 2/1 mode
0x05	HE-AAC MPEG4 audio, 3/0 mode
0x06	HE-AAC MPEG4 audio, 2/2 mode

0x07	HE-AAC MPEG4 audio, 3/1 mode
0x08	HE-AAC MPEG4 audio, 3/2 mode
0x09	HE-AAC MPEG4 audio, 3/2 + LFE mode
0x0A – 0x3F	Reserved for future use
0x40	HE- AAC MPEG4 pure audio description for the visually impaired
0x41	HE-AAC MPEG4 audio for the hard of hearing
0x42	HE- AAC MPEG4 mixed audio description for the visually impaired
0x43	HE-AAC v2 MPEG4 audio, 1/0 mode (single mono)
0x44	HE-AAC v2 MPEG4 audio, mode 2/0 (stereo)
0x45	HE- AAC v2 MPEG4 pure audio description for the visually impaired
0x46	HE-AAC MPEG4 v2 audio for the hard of hearing
0x47	HE- AAC v2 MPEG4 mixed audio description for the visually impaired
0x48 – 0x50	Reserved for future use
0x51	AAC MPEG4 audio, 1/0 mode (single mono)
0x52	AAC MPEG4 audio, 1/0 + 1/0 mode (dual mono)
0x53	AAC MPEG4 audio, 2/0 mode (stereo)
0x54	AAC MPEG4 audio, 2/1 mode
0x55	AAC MPEG4 audio, 3/0 mode
0x56	AAC MPEG4 audio, 2/2 mode
0x57	AAC MPEG4 audio, 3/1 mode
0x58	AAC MPEG4 audio, 3/2 mode
0x59	AAC MPEG4 audio, 3/2 + LFE mode
0x60 – 0x9E	Reserved for future use
0x9F	AAC MPEG4 pure audio description for the visually impaired
0xA0	AAC MPEG4 audio for the hard of hearing
0xA1	AAC M PEG4 mixed audio description for the visually impaired
0xA2-0xA9	Reserved for future use
0xAF-0xFE	User defined
0xFF	Reserved for future use

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.26, Table 6-43:

6.2.26 Audio component descriptor

The audio component descriptor is used to indicate each parameter of the audio elementary stream and to express the elementary stream in character form. (see table 6-42.)

Table 6-42 - Audio component descriptor

Syntax	Number of bits	Identifier
audio_component_descriptor(){		
descriptor_tag	8	Uimsbf
descriptor_length	8	Uimsbf
reserved_future_use	4	Bslbf
stream_content	4	Uimsbf
component_type	8	Uimsbf
component_tag	8	Uimsbf
stream_type	8	Uimsbf
simulcast_group_tag	8	Bslbf

	ES_multi_lingual_flag	1	*Bslbf*
	main_component_flag	1	*Bslbf*
	quality_indicator	2	*Bslbf*
	sampling_rate	3	*Uimsbf*
	reserved_future_use	1	*Bslbf*
	ISO_639_language_code	24	*Bslbf*
	if(ES_multi_lingual_flag == 1){		
	ISO_639_language_code_2	24	*Bslbf*
	}		
	for(i=0;i<N;i++){		
	text_char	8	*Uimsbf*
	}		
}			

Semantics for the audio component descriptor:

stream_content: This 4-bit field indicates a stream type. For audio stream, it is set to "0x02". (See table 6-5).

component_type: This 8-bit field specifies audio component type and is coded in accordance with table 6-43.

Table 6-43 - Audio component descriptor

Component type	Description
0x00	*Reserved for future use*
0x01	*1/0 mode (single monaural channel)*
0x02	*1/0 + 1/0 mode (dual monaural channel)*
0x03	*2/0 mode (stereo)*
0x04	*2/1 mode*
0x05	*3/0 mode*
0x06	*2/2 mode*
0x07	*3/1 mode*
0x08	*3/2 mode*
0x09	*3/2 + LFE mode*
0x0A – 0x3F	*Reserved for future use*
0x40	*Commentary for visually disabled persons*
0x41	*Voice for audibly disabled persons*
0x42 – 0xAF	*Reserved for future use*
0xB0 – 0xFE	*Defined by the broadcaster*
0xFF	*Reserved for future use*

component_tag: This 8-bit field is a label to identify the component stream and has the same value as the component_tag field in the stream identifier descriptor (see Subclause 6.2.16) (if present in the PSI program map section) for the component stream.

stream_type: This 8-bit field indicates audio stream type (MPEG2 BC Audio, AAC Audio) (see Annex E).

simulcast_group_tag: This 8-bit field allocates the same number to the component operating simulcast (transmitting the same contents by different coding method). For a component which does not operate simulcast, it is set to "0xFF".

ES_multi_lingual_flag: This 1-bit flag is set to "1" when 2-language multilingual (ES multilingual mode) is used in ES at

1/0 + 1/0 mode. In the case of anothother mode, this bit is reserved.

main_component_flag: This 1-bit flag is set to "1" when the audio component is the main audio. In case of 1/0 + 1/0 mode, it is set to "1" when the 1st audio component is the main audio.

quality_indicator: This 2-bit field indicates tone quality mode and coded in accordance with table 6-44.

Table 6-44 - Quality indicator

Quality indicator	Description
00	Reserved for future use
01	Mode 1 [a]
10	Mode 2 [a]
11	Mode 3 [a]
[a] For further information, see ABNT NBR 15602-2.	

*: For detail, refer to ARIB STD-B32 Part 2 Appendix 2.

sampling_rate: This 3-bit field indicates sampling frequency and is coded in accordance with table 6-45.

Table 6-45 - Sampling frequency

Sampling frequency	Description
000	Reserved for future use
001	16kHz
010	22.05kHz
011	24kHz
100	Reserved
101	32kHz
110	44.1kHz
111	48kHz

ISO_639_language_code: This 24-bit field identifies the language of the audio component. In the case of ES multilingual mode, it indicates the first audio component language. This field contains a 3-character code as specified by ISO 639-2 (21). Each character is coded into 8 bits according to ISO 8859-1(23) and inserted in order into the 24-bit field.

EXAMPLE: Japan has 3-character code "jpn", which is coded as:

  "0100 1010 0101 0000 0100 1110"

ISO_639_language_code_2: This 24-bit field identifies the second audio component language in ES multilingual mode.

text_char: This is an 8-bit field. A string of "text_char" fields specifies a text description of the component stream. Text information is coded using the character sets and methods described in Annex A.

6.24 Target region descriptor

In ABNT NBR 15603-2:2007, Subclause 8.3.27, the BS region designation has been removed since this standard refers only to terrestrial broadcasting.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.27, Table 53.

8.3.27 Target region descriptor

The target region descriptor (see Table 52) shall be used to describe the region designated for an event or a part of the stream composing an event.

Table 52 - Target region descriptor

Syntax	Number of bits	Identifier
target_region_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
region_spec_type	8	uimsbf
target_region_spec()		
}		

The semantics for the target region descriptor are:

— region_spec_type:an 8-bit field designating the description method for construction and coding of next target_region_spec () according to Table 53;

— target_region_spec (): field indicating the syntax for the region specified in the method.

Table 53 — Target region descriptor

region_spec_type field value	Semantics
0x00 – 0xFF	Reserved

In the Japanese digital television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.27, Table 6-47:

6.2.27   Target region descriptor

Target region descriptor (see table 6-46) is used to describe the target region of the program or a part of the stream composing a program.

Table 6-46 - Target region descriptor

Syntax	No. of bits	Identifier
target_region_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
region_spec_type	8	uimsbf
target_region_spec() }		

Semantics for the target region descriptor:

region_spec_type: This 8-bit field designates the region description method in the following target_region_spec()

structure and is coded in accordance with table 6-47.

Table 6-47 - Region description method designation

Value of region_spec_type	Semantics
0x00	Reservation
0x01	Region designation of prefecture for BS digital
0x02 – 0xFF	Reservation

target_region_spec(): This field indicates the syntax for the target region specified by each region_spec_type (see Annex G).

6.25 Terrestrial delivery system descriptor

Additional details in the semantics of the frequency field have been included in ABNT NBR 15603-2:2007, Subclause 8.3.31.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.31:

8.3.31 Terrestrial delivery system descriptor

The terrestrial delivery system descriptor shall indicate the physical conditions of the terrestrial transmission path (see Table 67).

Table 67 - Terrestrial delivery system descriptor

Syntax	Number of bits	Identifier
terrestrial_delivery_system_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
area_code	12	bslbf
guard_interval	2	bslbf
transmission_mode	2	bslbf
for(i=0; i < N;i++){		
frequency	16	uimsbf
}		
}		

The semantics of the terrestrial delivery system descriptor are:

— *area_code: a 12-bit field indicating the service area code. The area codes shall be specified elsewhere;*

— *guard_interval: a 2-bit field indicating the guard interval in accordance with Table 68;*

— *transmission_mode: a 2-bit field indicating the mode information in accordance with Table 69;*

— *frequency: a 16-bit field indicating the center frequency. The frequency unit shall be in accordance with ABNT NBR 15601. In case of MFN, the multiple frequencies used shall be listed. The decimal value for this field shall be in accordance with the equation:*

$(473 + 6 \times (X – 14) + 1/7) \times 7 = xxx$ MHz

where "X" is the channel number.

Table 68 - Guard interval

Guard interval	Description
00	1/32
01	1/16

10	1/8
11	1/4

Table 69 - Mode information

Transmission mode	Description
00	Mode 1
01	Mode 2
10	Mode 3
11	Undefined

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.31:

6.2.31 Terrestrial delivery system descriptor

The terrestrial delivery system descriptor indicates the physical condition of the terrestrial transmission path. See table 6-61.

Table 6-61 - Terrestrial delivery system descriptor

Syntax	Number of bits	Identifier
terrestrial_delivery_system_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
area_code	12	bslbf
guard_interval	2	bslbf
transmission_mode	2	bslbf
for(i=0; i < N;i++){		
frequency	16	uimsbf
}		
}		

Semantics for the terrestrial delivery system descriptor:

area_code: This 12-bit field indicates the service area code.

guard_interval: This is a 2-bit field and indicates the guard interval in accordance with table 6-62.

Table 6-62 - Guard interval

Guard interval	Description
00	1/32
01	1/16
10	1/8
11	1/4

transmission_mode: This is a 2-bit field and indicates mode information in accordance with table 6-63.

Table 6-63 - Mode information

Transmission mode	Description
00	Mode 1
01	Mode 2
10	Mode 3

11	Undefined

frequency: This 16-bit field indicates the center frequency. Frequency unit shall be 1/7MHz, which is the same as the tuning step of the digital terrestrial broadcasting system. In case of MFN, the multiple frequencies used are listed.

6.26 Extended broadcaster descriptor

The digital terrestrial sound broadcast type has been removed from ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.43:

8.3.43 Extended broadcaster descriptor

The extended broadcaster descriptor shall specify the extended broadcaster identification information as terrestrial broadcaster identification and the relationships with other extended broadcasters and broadcasters of other networks (see Table 89).

Table 89 — Extended broadcaster descriptor

Syntax	Number of bits	Identifier
extended_broadcaster_descriptor(){		
descriptor_tag	8	uimsbf
descriptor_length	8	uimsbf
broadcaster_type	4	uimsbf
Reserved_future_use	4	bslbf
If (broadcaster_type == 0x1){		
Terrestrial_broadcaster_id	16	uimsbf
Number_of_affiliation_id_loop	4	uimsbf
Number_of_broadcaster_id_loop	4	uimsbf
for(j=0; i <N1,i++){		
affiliation_id	8	uimsbf
}		
for(j=0;j<N2;j++){		
Original_network_id	16	uimsbf
broadcaster_id	8	uimsbf
}		
for(k=0;k <N3;k++){		
private_data_byte	8	bslbf
}		
}		
else if(broadcaster_type == 0X2){		
terrestrial_sound_broadcaster_id	16	uimsbf
number_of_sound_broadcaste_affiliation_id_loop	4	uimsbf
number_of_broadcaster_id_loop	4	uimsbf
for(i=0;i<N1;i++){		
Sound_broadcaster_affiliation_id	8	uimsbf
}		
for(j=0;j<N2;j++){		
Original_network_id	16	uimsbf
Broadcaster_id	8	uimsbf
}		
for(k=0;k<N3;k++){		
private_data_byte	8	bslbf
}		
}		
else		
for(i=0;i<N;i++){		
reserved_future_use	8	bslbf
}		
}		

}			

The semantics for the extended broadcaster descriptor shall be:

— *broadcaster_type: a 4-bit field whose coding shall be according to Table 90;*

— *terrestrial_broadcaster_id: a 16-bit field indicating the terrestrial broadcaster indicated in this field;*

— *number_of_affiliation_id_loop: a 4-bit field indicating the number of loops for subsequent service identifiers;*

— *number_of_broadcaster_id_loop: a 4-bit field indicating the number of loops for subsequent broadcaster identifiers;*

— *affiliation_id: an 8-bit field used for affiliate identification of applicable terrestrial broadcaster identifier;*

— *original_network_id: a 16-bit field serving as a label to identify the original delivery system;*

— *broadcaster_id: an 8-bit field identifying the broadcaster in the original network;*

— *terrestrial_sound_broadcaster_id: a 16-bit field indicating the terrestrial sound broadcaster indicated in this field;*

— *number_of_sound_broadcaster_affiliation_id_loop: a 4-bit field indicating the number of loops for subsequent sound broadcaster affiliation identifiers;*

— *number_of_sound_broadcaster_id_loop: a 4-bit field indicating the number of loops for subsequent terrestrial sound broadcaster identifiers;*

— *sound_broadcaster_affiliation_id: an 8-bit field used to identify the sound broadcasting affiliation of the applicable terrestrial sound broadcaster identifier.*

Table 90 — Broadcaster type

Value	*Type*
0x1	*Digital terrestrial television broadcast*
0x2	*Reserved for future use*
0x3 - 0xF	*Undefined*

In the Japanese digital terrestrial broadcasting system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2.43, Table 6-84:

6.2.43   Extended broadcaster descriptor

The extended broadcaster descriptor specifies the extended broadcaster identification information such as terrestrial broadcaster identifier and defines the relationships with other extended broadcasters and broadcasters of other networks (see table 6-83).

Table 6-83 - Extended broadcaster descriptor

Syntax	*Number of bits*	*Identifier*
extended_broadcaster_descriptor(){		
descriptor_tag	*8*	*uimsbf*
descriptor_length	*8*	*uimsbf*
broadcaster_type	*4*	*uimsbf*
Reserved_future_use	*4*	*bslbf*
If (broadcaster_type == 0x1){		
Terrestrial_broadcaster_id	*16*	*uimsbf*

	Number_of_affiliation_id_loop	4	uimsbf
	Number_of_broadcaster_id_loop	4	uimsbf
	for(j=0; i <N1,i++){		
	affiliation_id	8	uimsbf
	}		
	for(j=0;j<N2;j++){		
	Original_network_id	16	uimsbf
	broadcaster_id	8	uimsbf
	}		
	for(k=0;k <N3;k++){		
	private_data_byte	8	bslbf
	}		
	}		
	else if(broadcaster_type == 0X2){		
	terrestrial_sound_broadcaster_id	16	uimsbf
	number_of_sound_broadcaste_affiliation_id_loop	4	uimsbf
	number_of_broadcaster_id_loop	4	uimsbf
	for(i=0;i<N1;i++){		
	Sound_broadcaster_affiliation_id	8	uimsbf
	}		
	for(j=0;j<N2;j++){		
	Original_network_id	16	uimsbf
	Broadcaster_id	8	uimsbf
	}		
	for(k=0;k<N3;k++){		
	private_data_byte	8	bslbf
	}		
	}		
	else		
	for(i=0;i<N;i++){		
	reserved_future_use	8	bslbf
	}		
	}		
	}		

Semantics for the extended broadcaster descriptor:

broadcaster_type(broadcaster type): This is a 4-bit field whose coding is specified in table 6-84.

Table 6-84 - Broadcaster type

value	type
0x1	Digital terrestrial television broadcast
0x2	Digital terrestrial sound broadcast
Except above	Not defined

terrestrial_broadcaster_id: This 16-bit field identifies the terrestrial broadcaster described in this field.

number_of_affiliation_id_loop: This 4-bit field indicates the number of loops for the subsequent affiliation identifier.

number_of_broadcaster_id_loop: This 4-bit field indicates the number of loops for the subsequent broadcaster identifier.

affiliation_id: This 8-bit field is used for identifying the affiliation of the applicable terrestrial broadcaster identifier.

original_network_id: This 16-bit field serves as a label for specifying the network identifier of the original distribution system.

broadcaster_id: This 8-bit field identifies the broadcaster in the original network.

terrestrial_sound_broadcaster_id: This 16-bit field identifies the terrestrial sound broadcaster described in this field.

number_of_sound_broadcaste_affiliation_id_loop: This 4-bit field indicates the number of loops for the subsequent sound broadcasting affiliation identifier.

number_of_sound_broadcaster_id_loop: This 4-bit field indicates the number of loops for the subsequent terrestrial sound broadcaster identifier.

sound_broadcast_affiliation_id: This 8-bit field is used for identifying the sound broadcasting affiliation of the applicable terrestrial sound broadcaster identifier.

6.27 Conditional playback descriptor

Same functionality as the conditional system descriptor defined in ARIB STD-B25:v4.2:2007, but included in the Brazilian SI standard ABNT NBR 15603-2:2007.

6.28 Conditional access descriptor

Same functionality as the conditional access descriptor defined in ARIB STD-B25:v4.2:2007, but included in the Brazilian SI standard ABNT NBR 15603-2:2007.

6.29 AAC audio descriptor

This descriptor has been added to ABNT NBR 15603-2:2007, in order to comply with ABNT NBR 15602-2 audio definitions.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-2:2007, Subclause 8.3.51:

8.3.51 AAC audio descriptor

8.3.51.1 General information

The identification value for the descriptor tag of the AAC audio descriptor shall be 0x7C. The descriptor length shall indicate the number of data bytes.

The AAC_descriptor shall identify HE AAC encoding of elementary streams, according to the ISO/IEC 14496-3, in order to provide configuration information for the receiver.

The descriptor shall be located in the PMT table from the PSI and shall be used only once in the program mapping section, followed by the relevant information in the ES_info_length field for all streams encoded with HE AAC audio, according to the ISO/IEC 14496-3.

The descriptor tag provides original identification of the presence of the elementary stream encoded with AAC audio. Other optional fields in the descriptor may be used to indicate the mode of the AAC audio component (AAC_type) encoded in the stream.

8.3.51.2 AAC descriptor syntax

The AAC descriptor shall be present in the PMT table from PSI, in order to identify which streams are to be encoded with AAC audio. The descriptor shall be located only once in the mapping section, followed by the relevant information in the ES_info_length field.

8.3.51.3 AAC descriptor semantics

The syntax of the AAC_descriptor provides information about the MPEG-4 AAC and MPEG-4 HE AAC elementary streams which shall be identified in the sections of the PMT table of the PSI. The descriptor shall be located only once in the program mapping section, followed by the relevant information in the ES_info_length field for any stream with MPEG-4 AAC or MPEG-4 HE AAC audio.

In the Japanese digital terrestrial television system, this descriptor is not defined.