



INTERNATIONAL TELECOMMUNICATION UNION

# ITU-T

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

# J.94

## **Amendment 2**

(03/2001)

SERIES J: CABLE NETWORKS AND TRANSMISSION  
OF TELEVISION, SOUND PROGRAMME AND OTHER  
MULTIMEDIA SIGNALS

Ancillary digital services for television transmission

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Service information for digital broadcasting in cable  
television systems

**Amendment 2: Revised Annex C – Service  
information for digital multi-programme  
System C**

ITU-T Recommendation J.94 – Amendment 2

(Formerly CCITT Recommendation)

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# **ITU-T Recommendation J.94**

## **Service information for digital broadcasting in cable television systems**

### **AMENDMENT 2**

#### **Revised Annex C – Service information for digital multi-programme System C**

#### **Summary**

This annex describes the service information for digital broadcasting by cable television of Annex C/J.83. The specifications basically constitute a subset of the ones in Annex A.

However, there are some specifications which are different from those of Annex A and also there are some specifications which are yet to be established.

#### **Source**

Amendment 2 to ITU-T Recommendation J.94 was prepared by ITU-T Study Group 9 (2001-2004) and approved under the WTSA Resolution 1 procedure on 9 March 2001.

## FOREWORD

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

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

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

## NOTE

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

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

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## ITU-T Recommendation J.94

### Service information for digital broadcasting in cable television systems

#### AMENDMENT 2

### Revised Annex C – Service information for digital multi-programme System C

*Replace old Annex C by the following:*

#### ANNEX C

### Service information for digital multi-programme System C

#### C.1 SI tables

The specifications for SI tables are fully aligned with those in Annex A both in table names and in their function. See Table C.1.

**Table C.1/J.94 – SI tables and their function**

Table	Function
Program Association Table (PAT)	For each service in the multiplex, the PAT indicates the location (the PID values of the Transport Stream packets) of the corresponding Program Map Table (PMT). It also gives the location of the Network Information Table (NIT).
Conditional Access Table (CAT)	The CAT provides information on the Conditional Access (CA) systems used in the multiplex; the information is private (not defined within ITU-T H.222.0   ISO/IEC 13818-1) and dependent on the CA system, but includes the location of the EMM stream, when applicable.
Program Map Table (PMT)	The PMT identifies and indicates the locations of the streams that make up each service, and the location of the Program Clock Reference fields for a service.
Network Information Table (NIT)	The location of the NIT is defined in ITU-T H.222.0   ISO/IEC 13818-1, but the data format is outside the scope of ITU-T H.222.0   ISO/IEC 13818-1. It is intended to provide information about the physical network. The syntax and semantics of the NIT are defined in this Recommendation.
Bouquet Association Table (BAT)	The BAT provides information regarding bouquets. As well as giving the name of the bouquet, it provides a list of services for each bouquet.
Service Description Table (SDT)	The SDT contains data describing the services in the system, e.g. names of services, the service provider, etc.

**Table C.1/J.94 – SI tables and their function (*concluded*)**

<b>Table</b>	<b>Function</b>
Event Information Table (EIT)	The EIT contains data concerning events or programs such as event name, start time, duration, etc.; the use of different descriptors allows the transmission of different kinds of event information, e.g. for different service types.
Running Status Table (RST)	The RST gives the status of an event (running/not running). The RST updates this information and allows timely automatic switching to events.
Time and Date Table (TDT)	The TDT gives information relating to present time and date. This information is given in a separate table due to the frequent updating of the time information.
Stuffing Table (ST)	The ST is used to invalidate existing sections, for example at delivery system boundaries.

The PID allocation for SI and the allocation of table\_id values are as shown in Tables C.2 and C.3, which are the same as those in Tables A.1 and A.2.

**Table C.2/J.94 – PID allocation for SI**

<b>Table</b>	<b>PID value</b>
PAT	0x0000
CAT	0x0001
NIT, ST	0x0010
SDT, BAT, ST	0x0011
EIT, ST	0x0012
RST, ST	0x0013
TDT	0x0014
NULL	0x1FFF

**Table C.3/J.94 – Allocation of table\_id values**

<b>Value</b>	<b>Table and description</b>
0x00	PAT
0x01	CAT
0x02	PMT
0x40	NIT, network_information_section-actual_network
0x41	NIT, network_information_section-other_network
0x42	SDT, service_description_section-actual_transport_stream
0x46	SDT, service_description_section-other_transport_stream
0x4A	BAT
0x4E	EIT, event_information_section-actual_transport_stream, present/following
0x4F	EIT, event_information_section-other_transport_stream, present/following

**Table C.3/J.94 – Allocation of table\_id values (concluded)**

Value	Table and description
0x50 to 0x5F	EIT, event_information_section-actual_transport_stream, before 8th day EIT, event_information_section-actual_transport_stream, on or after 8th day
0x60 to 0x6F	EIT, event_information_section-other_transport_stream, before 8th day EIT, event_information_section-other_transport_stream, on or after 8th day
0x70	TDT, time_date_section
0x71	RST, running_status_section
0x72	ST, stuffing_section
0x82 to 0x85	Reserved for conditional access system
0x90 to 0xBF	Selectable as operator setting table_id

## C.2 Descriptor

### C.2.1 Location and tag value

The location and tag value of each descriptor are as shown in Table C.4. The description, data structure, and syntax of each descriptor are the same as those in Table A.12. However, the coding of the data field of each descriptor is not specified.

**Table C.4/J.94 – Possible locations of descriptors**

Descriptor	Tag value	NIT	BAT	SDT	EIT	PMT	CAT
CA_descriptor	0x09					*	*
network_name_descriptor	0x40	*					
stuffing_descriptor	0x42	*	*	*	*		
cable_delivery_system_descriptor	0x44	*					
bouquet_name_descriptor	0x47		*	*			
service_descriptor	0x48			*			
linkage_descriptor	0x4A	*	*	*	*		
NVOD_reference_descriptor	0x4B			*			
time_shifted_service_descriptor	0x4C			*			
short_event_descriptor	0x4D				*		
extended_event_descriptor	0x4E				*		
time_shifted_event_descriptor	0x4F				*		
component_descriptor	0x50				*		
mosaic_descriptor	0x51			*		*	
stream_identifier_descriptor	0x52					*	
content_descriptor	0x54				*		
parental_rating_descriptor	0x55				*		
User-defined	0x80 to 0xBF						
Forbidden	0xFF						

**Table C.4/J.94 – Possible locations of descriptors (concluded)**

Descriptor	Tag value	NIT	BAT	SDT	EIT	PMT	CAT
area_specified_service_descriptor	0x96		*	*			
data_coding_method_descriptor	0xFD					*	
* Possible location							

Descriptors which are used in Japan but not specified in Annex A are detailed in the following clauses.

### C.2.2 CA descriptor

The CA descriptor which is described in CAT and PMT identifies the type of conditional access and also identifies the PID in TS packet that carries the information related to conditional access. Conditional access is only available when this descriptor is used. See Table C.5.

**Table C.5/J.94 – CA descriptor**

Syntax	Bits	Identifier	Note
CA_descriptor(){ descriptor_tag descriptor_length CA_system_id reserved CA_PID for (i = 0; i < N; i++) { private_data } }	8 8 16 3 13 8xN	uimsbf uimsbf uimsbf bslbf uimsbf bslbf	"111"

### C.2.3 Area specified service descriptor

This descriptor is used to render the services to the specified part within a given service area by transmitting either the area list of the service reception area or the one beyond the service reception area (see Table C.6). Area specified service is only available when this descriptor is used.

**Table C.6/J.94 – Area specified service descriptor**

Syntax	Bits	Identifier	Note
area_specified_service_descriptor(){ descriptor_tag descriptor_length descriptor_flag reserved for (i = 0; i < N; i++) { area_code } }	8 8 1 7 24	uimsbf uimsbf bslbf bslbf bslbf	(1: available, 0: not available)  alphanumeric 3 characters



### C.2.4 Data coding method descriptor

The data coding method descriptor which is described in PMT identifies the data coding method for data broadcasting services. See Table C.7.

**Table C.7/J.94 – Data coding method descriptor**

Syntax	Bits	Identifier	Note
data_coding_method_descriptor(){ descriptor_tag descriptor_length data_component_id for (i = 0; i < N; i++) { additional_identification_information } }	8 8 16 8xN	uimsbf uimsbf uimsbf bslbf	

### C.2.5 Cable delivery system descriptor

This descriptor which is described in NIT identifies the physical conditions of the cable channel. See Table C.8.

**Table C.8/J.94 – Cable delivery system descriptor**

Syntax	No. of bits	Identifier
cable_delivery_system_descriptor(){ descriptor_tag descriptor_length Frequency reserved_future_use <b>frame_type</b> FEC_outer Modulation symbol_rate FEC_inner }	8 8 32 8 <b>4</b> 4 8 28 4	uimsbf uimsbf bslbf bslbf <b>bslbf</b> bslbf bslbf bslbf bslbf

#### Semantics for cable delivery system descriptor

**frequency:** The frequency is a 32-bit field giving the 4-bit BCD values specifying 8 characters of the frequency value. For the cable\_delivery\_system\_descriptor, the frequency is coded in MHz, where the decimal occurs after the fourth character (e.g. 0312.0000 MHz).

**frame\_type:** The frame\_type is a 4-bit field specifying the frame type according to Table C.9. The frame type indicates the number of slots in the TSMF, N, and the maximum number of TSs transmitted simultaneously, M if the TSMF is used. The values of N and M should be identical to those in the [draft new Recommendation D.145].

**Table C.9/J.94 – Frame type**

<b>frame_type bit 3210</b>	<b>Description</b>
0000	Reserved for future use
0001	$(N, M) = (53, 15)^a$
0010 to 1110	Reserved for future use
1111	None – indicates that the waveform does not use TSMF
<sup>a)</sup> The frame type (N, M) is (53,15) for Annex C. It might be determined for other transmission systems.	

**FEC\_outer:** The FEC\_outer is a 4-bit field specifying the outer Forward Error Correction (FEC) scheme used according to Table C.10.

**Table C.10/J.94 – Outer FEC scheme**

<b>FEC_outer bit 3210</b>	<b>Description</b>
0000	Not defined
0001	No outer FEC coding
0010	RS(204/188)
0011 to 1111	Reserved for future use

**modulation:** This is an 8-bit field. It specifies the modulation scheme used on a cable delivery system according to Table C.11.

**Table C.11/J.94 – Modulation scheme for cable**

<b>Modulation (hex)</b>	<b>Description</b>
0x00	Not defined
0x01	16-QAM
0x02	32-QAM
0x03	64-QAM
0x04	128-QAM
0x05	256-QAM
0x06 to 0xFF	Reserved for future use

**symbol\_rate:** The symbol\_rate is a 28-bit field giving the 4-bit BCD values specifying 7 characters of the symbol\_rate in Msymbol/s where the decimal point occurs after the third character (e.g. 027.4500).

**FEC\_inner:** The FEC\_inner is a 4-bit field specifying the inner FEC scheme used according to Table C.12.

**Table C.12/J.94 – Inner FEC scheme**

<b>FEC_inner bit 3210</b>	<b>Description</b>
0000	Not defined
0001	1/2 conv. code rate
0010	2/3 conv. code rate
0011	3/4 conv. code rate
0100	5/6 conv. code rate
0101	7/8 conv. code rate
1111	No conv. Coding
0110 to 1110	Reserved for future use

### **C.3 Character code tables**

The tables corresponding to Annex A are under study now.

## **SERIES OF ITU-T RECOMMENDATIONS**

Series A	Organization of the work of ITU-T
Series B	Means of expression: definitions, symbols, classification
Series C	General telecommunication statistics
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
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<b>Series J</b>	<b>Transmission of television, sound programme and other multimedia signals</b>
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Series L	Construction, installation and protection of cables and other elements of outside plant
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