



AV/C Tuner Broadcast System Specification - Digital Video Broadcast (DVB)

Version 1.0
April 15, 1998

Sponsored by:
Audio/Video Working Group of the 1394 Trade Association

Approved for Release by:
This document has been approved for release by the 1394 Trade Association Board of Directors

Abstract: This specification defines the detailed specifications for Digital Video Broadcast (DVB) data structures which are used by an AV/C tuner subunit which supports DVB. The AV/C tuner defines a model and command set for analog and digital tuners operating over IEEE 1394-1995. The command set makes use of the Function Control Protocol (FCP) defined by IEC 61883, Digital Interface for Consumer Electric Audio/Video Equipment standard, for the transport of audio/video command requests and responses. The audio/video devices are implemented as a common unit architecture within 1394-1995.

Keywords: Audio, Video, 1394, Digital, Interface, Tuner, DVB

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1. Normative References

The following documents may be useful to the reader interested in learning about the full AV/C protocol and related technologies. All standards are subject to revision; the reader is encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

This document is designed to be used in conjunction with the General AV/C and AV/C Tuner Subunit documents referenced below.

1.1 Contact Information

The documents referenced herein may be obtained from the following organizations:

1.1.1 1394 Trade Association (1394 TA)

The 1394 Trade Association can be contacted via the references provided on the cover page of this and all AV/C specification documents.

1.1.2 Association of Radio Industries and Business (ARIB)

Nittochi Bld. 14F 1-4-1 Kasumigaseki Chiyoda-ku Tokyo
100-0013 Japan

Phone: +81-3-5510-8590

Fax: +81-3-3592-1103

1.1.3 Advanced Television Systems Committee (ATSC)

Documents from the ATSC can be located on the following WWW site:

<http://www.atsc.org>

1.1.4 European Telecommunications Standards Institute (ETSI)

ETSI Secretariat

Postal Address: F-06921 Sophia Antipolis Cedex - FRANCE

Office Address: 650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE

Phone: +33-4-92-94-42-00

Fax: +33-4-93-65-47-16

Internet: secretariat@etsi.fr

<http://www.etsi.fr>

1.1.5 International Electrotechnical Commission (IEC) (contact in the United States)

U.S. National Committee of the IEC ANSI

11, West 42nd Street, 13th floor

New York, NY 10036

Phone: +1-212-642-4900
+1-212-642-4980 (sales)
Fax: +1-212-398-0023
Internet: <http://www.ansi.org>

Documents can be ordered from:

<http://www.iec.ch/cs1ord-e.htm>
<http://www.iec.ch/cs1oi-e.htm>

1.1.6 The Institute of Electrical and Electronics Engineers, Inc. (IEEE)

The IEEE can be contacted via their WWW home page: <http://www.ieee.org>

1.1.7 International Telecommunication Union (ITU)

The ITU can be contacted via their WWW home page:<http://www.itu.int>

1.2 1394 Trade Association Specifications

AV/C Master Index: Guide to AV/C Specification Documents - this document is available on the 1394 Trade Association web site noted above, and is kept up to date with the latest released versions of AV/C specifications. The reader is encouraged to always consult this document for information on the latest versions of specifications mentioned here, as well as specifications which may be developed in the future.

AV/C Digital Interface Command Set General Specification Version 3.0

AV/C Digital Interface Command Set General Specification Version 2.0.1

AV/C Tuner Model Specification Version 1.0

AV/C Tuner Model Working Specification Version 1.0W

1.3 Related Technical Specifications

IEEE Std 1394-1995, *Standard for a High Performance Serial Bus*

ISO/IEC 13213:1994, *Control and Status Register (CSR) Architecture for Microcomputer Buses*

EN300 468 V1.3.1 (1997-09), *Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB Systems*

Association of Radio Industries and Business ARIB STANDARD - ARIB STD-B5 version 1.0, *DATA MULTIPLEX BROADCASTING SYSTEM FOR THE CONVENTIONAL TELEVISION USING THE VERTICAL BLANKING INTERVAL*

ISO/IEC 13818-1:1996(E), *Information Technology - Generic Coding of Moving Pictures and Associated Audio Information: Systems*

2. Introduction

This document defines the Digital Video Broadcast (DVB) system specification for AV/C Tuner subunits. This document is used in conjunction with the AV/C Tuner Model and Command Set specification noted in the references.

2.1 Rules for Reserved Fields

This section clarifies the rules which have always been in effect regarding how reserved fields shall be treated in command parameters and data structures for AV/C.

Unless otherwise specified (see note below), command parameters and data structure fields marked as “reserved” or “reserved for future specification” shall be set to zero by controllers on input to a target, and by targets on output to controllers.

For input operands of commands, targets shall NOT ignore fields that were reserved when the target was implemented. Rather, the target shall examine the reserved fields; if any of them are specified, then the target shall reject the command with a NOT IMPLEMENTED response.

On output data structures or parameters of commands, controllers shall ignore fields that were reserved when the controller was implemented. These rules exist to allow future extension of the specification while retaining compatibility with existing products.

NOTE: In some instances, reserved command operands or data structure fields may be specified as non-zero values. These cases will be clearly indicated in the specification. Controllers and targets shall deal with them in the same manner as defined above.

3. General Broadcast System Specifications

This section contains a review of the general structures used by all tuner subunits to represent broadcast objects - multiplex, service, component.

3.1 Text Field Encoding

The format of all text fields in the various read-only broadcast system descriptors which are maintained by the tuner subunit shall be defined according to the particular broadcast system being represented. The exception is for regional variations which are based on a given broadcast system. For example, the Japanese digital broadcast system is based on the European DVB system, but the Japanese system specifies two-byte character codes which are not in the European DVB specification. The appropriate references are provided.

The character codes provided in ARIB STD-B5 (see normative references) shall be used in AV/C tuner implementations which support the Japanese broadcast system.

3.2 Multiplex Descriptors

For convenience when reading all of the system-specific structures below, the basic format of the tuner subunit multiplex descriptor is presented here. The multiplex descriptors for each broadcast system will share this same format:

address offset	msb		lsb
00 ₁₆	system_id		
01 ₁₆	input	antenna_number	
system_specific_multiplex_attributes_valid_flags			
02 ₁₆	system_specific_multiplex_attributes_valid_flags		
:			
system_specific_multiplex_selection_attributes			
:	currently _availabl e	selected	reserved
:	broadcast_system_specific_multiplex_selection_attributes		
:			
:			
:	reserved_field_length (if specified by <i>reserved_field</i> bit of multiplex attributes valid flags)		
:	reserved_field (if specified by <i>reserved_field</i> bit of multiplex attributes valid flags)		
:	system_specific_multiplex_information_attributes		
:	system_specific_multiplex_information_attributes		
:			
:	reserved_field_length (if specified by <i>reserved_field</i> bit of multiplex attributes valid flags)		
:	reserved_field (if specified by <i>reserved_field</i> bit of multiplex attributes valid flags)		
:			

The *system_id* field identifies the type of system (e.g. DVB, analog video) described by this tuner object. The values are defined in the table of *system_id* values presented in the AV/C Tuner Model and Command Set specification.

The *system_id* for a DVB tuner shall be 20₁₆.

All *reserved* fields shall be treated as specified in Rules for Reserved Fields on page 6.

The *input* field indicates which input, either the antenna or demux destination plug, the subunit should use to get the requested service(s). The following table illustrates the values defined for this field:

Value for input	Meaning
0	Take input from the antenna destination plug.
1	Take input from the demux destination plug.

The *antenna_number* field is the index of an antenna specifier for the subunit, as described in the subunit identifier descriptor data structure. This is a zero-based value. If the demux destination plug is selected, then the *antenna_number* field has no meaning in the object descriptor and the selection specifier (when used for making a selection).

The *system_specific_multiplex_attributes_valid_flags* are defined per system, and indicate the validity of the entries in both of the following fields (selection and information attributes). They are detailed in the sections that follow.

While the *system_specific_multiplex_attributes_valid_flags* are defined per *system_id*, all system definitions share one common flag as shown here:

flags	meaning
1xxx xxxx (MSB)	The most significant bit of the multiplex attributes valid flags indicates whether the reserved fields are present or not. When this flag is 1, then the fields exist in both the selection and information attributes fields. If the flag is 0, then they do not exist.
xxxx xxxx (LSB)	All other flags are defined per <i>system_id</i> .

The *selected* flag indicates whether this multiplex is currently selected or not. The value 1 means it is selected. When a selection is being performed, the *selected* flag will be ignored.

The *currently_available* flag indicates whether this multiplex is actually available at this time. In some situations it is possible that the multiplex (or a certain part of it, such as a service) may not be available even though it is selected. If this bit is set to 1, then it is available. When a selection is being performed, the *currently_available* flag will be ignored.

The *broadcast_system_specific_multiplex_selection_attributes* field will contain the various attributes that specify a multiplex in the given *system_id*. These attributes are used for selection purposes. If the input is via the demux destination plug of the tuner subunit, then this field shall be empty.

The *system_specific_multiplex_information_attributes* field will contain the various attributes that provide useful information about a multiplex in the given *system_id*. These attributes are NOT used for selection purposes.

The *reserved_field_length* and *reserved_field* fields only exist in the structure if defined by the valid flag described above.

3.3 Service Descriptors

The service descriptors for each broadcast system will also share a common format, but this format is slightly different from that of the multiplex descriptor:

address offset	msb						lsb
00 ₁₆	system_id						
system_specific_service_attributes_valid_flags							
01 ₁₆	system_specific_service_attributes_valid_flags						
:							
system_specific_service_selection_attributes							
:	currently available	reserved					
:							
:	broadcast_system_specific_service_selection_attributes						
:							
:	reserved_field_length (if specified by <i>reserved_field</i> bit of service attributes valid flags)						
:	reserved_field (if specified by <i>reserved_field</i> bit of service attributes valid flags)						
:							
system_specific_service_information_attributes							
:	system_specific_service_information_attributes						
:							
:	reserved_field_length (if specified by <i>reserved_field</i> bit of service attributes valid flags)						
:	reserved_field (if specified by <i>reserved_field</i> bit of service attributes valid flags)						
:							

The fields for this common structure are all the same as defined for the multiplex descriptor above, but service descriptors do not have (or need) the input and antenna field. The reason for this is that the selection process for a given type of object (multiplex, service or component) requires the specification of the appropriate objects higher in the hierarchy.

All *reserved* fields shall be treated as specified in Rules for Reserved Fields on page 6.

The *system_specific_service_attributes_valid_flags* are defined per *system_id*, but all systems share one common definition:

flags	meaning
1xxx xxxx	The most significant bit of the multiplex attributes valid flags indicates whether the reserved fields are present or not. When this flag is 1, then the fields exist in both the selection and information attributes fields. If the flag is 0, then they do not exist.

The *reserved_field_length* and *reserved_field* fields only exist in the structure if defined by the valid flag described above.

3.4 Component Descriptors

The component descriptors for each broadcast system will also share a common format, which is similar to that of the service descriptor:

address offset	msb						lsb
00 ₁₆	system_id						
system_specific_component_attributes_valid_flags							
01 ₁₆	system_specific_component_attributes_valid_flags						
:							
system_specific_component_selection_attributes							
:	currently _availabl e	reserved					
:							
:	broadcast_system_specific_component_selection_attributes						
reserved_field_length (if specified by reserved_field_bit of component attributes valid flags)							
reserved_field (if specified by reserved_field bit of component attributes valid flags)							
:							
system_specific_component_information_attributes							
:							
:	system_specific_component_information_attributes						
:							
:	reserved_field_length (if specified by reserved_field bit of component attributes valid flags)						
:							
:	reserved_field (if specified by reserved_field bit of component attributes valid flags)						
:							

The fields for this common structure are all the same as defined for the service descriptor above.

All reserved fields shall be treated as specified in Rules for Reserved Fields on page 6.

The *system_specific_component_attributes_valid_flags* are defined per *system_id*, but all systems share one common definition:

flags	meaning
1xxx xxxx	The most significant bit of the multiplex attributes valid flags indicates whether the reserved fields are present or not. When this flag is 1, then the fields exist in both the selection and information attributes fields. If the flag is 0, then they do not exist.

The *reserved_field_length* and *reserved_field* fields only exist in the structure if defined by the valid flag described above.

4. Digital Video Broadcast (DVB) System Specification

This section contains information about the Digital Video Broadcast (DVB) system. This includes the details of system-dependent information fields for all of the descriptors used in the tuner model, object descriptors and lists, etc.

Some of the data structures defined in this section are used by the tuner subunit to indicate the information types which are currently available in the air, or the status of the tuner subunit and its plugs. Some of these structures may also be used by controllers when performing selection operations, such as DIRECT SELECT INFORMATION TYPE or DIRECT SELECT DATA.

The descriptions of the data structures will indicate how the controller should treat the information when it is provided by the tuner subunit for status reporting, or when it is provided by the controller as operands in commands being sent to the tuner subunit.

NOTE: It is forbidden for the DVB tuner to start inserting SI tables along with a currently active service on the source plug. This would be an illegal MPEG-2 Transport Stream. When the source plug is carrying one or more services, then subsequent requests for DVB SI PIDs and table_id's on that source plug shall be rejected.

NOTE: Text fields in the DVB structures specified in this document will have regional definitions for text encoding. The normative references provided here include the text encoding specification for the appropriate region.

4.1 DVB system_id

The *system_id* field for a DVB tuner subunit shall be set to 20₁₆.

4.2 DVB Profile ID Assignments

Currently, there are no profiles defined for the DVB tuner subunit.

4.3 DVB Multiplex Descriptor and Mandatory Attributes

The multiplex descriptor for DVB has the following system specific fields in a multiplex object structure. The mandatory attributes are in **BOLD**:

address offset	msb						lsb	
system specific multiplex attributes valid flags								
02 ₁₆	reserved fields	pol	orb_pos	RF_freq_raster	symbol_rate	FEC_outer	FEC_inner	modulation
03 ₁₆	network_id	reserved						
system specific multiplex selection attributes								
04 ₁₆	currently_available	selected	reserved					
05 ₁₆	polarization*		west_east*	reserved				
06 ₁₆	orbital_position_upper*							
07 ₁₆								
08 ₁₆	raster_frequency	RF_frequency (MS bits)						
09 ₁₆	RF_frequency (LSB)							
0A ₁₆								
0B ₁₆								
0C ₁₆	symbol_rate				reserved			
0D ₁₆								
0E ₁₆	FEC_outer							
0F ₁₆	FEC_inner							
10 ₁₆	modulation					reserved		
11 ₁₆	network_id							
12 ₁₆								
system specific multiplex information attributes								
<< no information attributes are defined >>								

NOTE: The mandatory attributes marked with () have the following rules:

- a) For satellite antennas, the *polarization* attribute is mandatory
- b) For movable antennas, the *west_east* and *orbital_position* attributes are mandatory

The *valid_flags* have the same meaning as described for the general multiplex layout described above.

For a detailed explanation of the *polarization* field, refer to the DVB Service Information specification ETS 300 468, section 6.2.6, Delivery System Descriptors.

A detailed explanation of the *west_east* field can be also be found in DVB SI 6.2.6. This data is not valid when the *orb_pos* valid flag is set to value 0.

For details of the *orbital_position*, refer to DVB SI 6.2.6.

The *frequency* field is a 24 bit value composed of the *raster_frequency* and *RF_frequency* fields.

The *symbol_rate* field is encoded as a 20 bit integer value, representing the number of kilosymbols per second (where kilo means 1000).

The *raster_frequency* field indicates the step size for the *RF_frequency* field:

=00	250 Hz
=01	1 kHz
=10	4 kHz
=11	16 kHz

The *RF_frequency* field is an unsigned integer. The real frequency, in Hz, is given by the *RF_frequency* field multiplied by the *raster_frequency* field.

The *network_id* field contains the identifier of the network that is currently providing the multiplex.

4.4 DVB Service Descriptor and Mandatory Attributes

The DVB service descriptor is defined as follows. The mandatory attributes are in **BOLD**:

address offset	msb						lsb
system specific service attributes valid flags							
01 ₁₆	reserved fields	CA_output	org_network	transport_id	service_id	bouquet_id	reserved
system specific service selection attributes							
02 ₁₆	currently_available	reserved					
03 ₁₆	CA_output	reserved					
04 ₁₆	org_network_id						
05 ₁₆							
06 ₁₆	transport_stream_id						
07 ₁₆							
08 ₁₆							
09 ₁₆	service_id						
0A ₁₆							
0B ₁₆	bouquet_id						
system specific service information attributes							
0C ₁₆	service_name_length						
0D ₁₆	service_name						
:							
:	bouquet_name_length						
:							
:	bouquet_name						
:							
:							

The *system_specific_service_attributes_valid_flags* fields have the same meaning as described above for the general service descriptor layout described above.

The *ca_output* field indicates whether this service is currently being output to the source plug as a scrambled (= 1) or descrambled signal. **THIS FIELD IS VALID ONLY FOR SELECTION PURPOSES.** This field is only a placeholder in the descriptor structure, and shall be ignored when reading the descriptor.

The *org_network_id* field indicates the ID of the original network that broadcast this service. In the case of a service being distributed to customers via cable, it's possible that the service originated from another network such as a satellite. When services are combined in this way, it's possible that their *service_id* values (described below) will be the same. In these situations, services can be uniquely identified by using the *org_network_id* field.

The *transport_stream_id* field indicates which transport stream, of possibly many in a single network, is providing this service.

The *service_id* field uniquely identifies a service within its transport.

The *bouquet_id* field contains the ID of the bouquet, if any, that this service belongs to. If this service is not in a bouquet, then the *bouquet_id* valid flag shall be set to 0, and this *bouquet_id* field shall be ignored.

The *service_name_length* field indicates the number of bytes used for the following *service_name* field.

The *service_name* field contains the text of the service name as it is derived from the air. If the name cannot be derived from the air, then the tuner shall set the *service_name_length* field to zero and there shall be no *service_name* field.

The *bouquet_name_length* field indicates the number of bytes used for the following *bouquet_name* field.

The *bouquet_name* field contains the name of the bouquet to which this service belongs. If the name cannot be derived from the air, then the tuner shall set the *bouquet_name_length* field to zero and there shall be no *bouquet_name* field.

4.5 DVB Component Descriptor and Mandatory Attributes

The DVB component descriptor has the following format. The mandatory attributes are in **BOLD**:

address offset	msb					lsb
system specific component attributes valid flags						
01 ₁₆	reserved_fields	PID	stream_content	component_type	iso_639_language_code	reserved
system specific component selection attributes						
02 ₁₆	currently_available	reserved				
03 ₁₆	PID					
04 ₁₆						
system specific component information attributes						
05 ₁₆	reserved			stream_content		
06 ₁₆	component_type					
07 ₁₆	iso_639_language_code					
08 ₁₆						
09 ₁₆						
0A ₁₆	component_name_length					
0B ₁₆	component_name					
:						
:						

The *system_specific_component_attributes_valid_flags* for the component have the same meaning as defined for the general component descriptor described above.

The *PID* field indicates the PID value for this component. For more details on how PIDs are used, please refer to the DVB-SI specification described in the references.

The *stream_content* field specifies the type of stream (video, audio, EBU_data, etc.). The meaning of this field is defined in the DVB-SI specification.

The *component_type* field specifies the type of component. This is also defined in the DVB-SI specification.

The *iso_639_language_code* field identifies the language of the *component_name* field. The *iso_639_language_code* contains a 3 character code as specified by ISO 639 part 2. Both ISO 639.2/B and ISO 639.2/T may be used. Each character is coded into 8 bits according to ISO 8859-1 and inserted in order into the 24-bit field.

For example, the French language has the 3 character code “fre”, which is coded as:

‘0110 0110 0111 0010 0110 0101’

The *component_name_length* field specifies the number of bytes used for the following *component_name* field.

The *component_name* field contains text of the component name, if it is available from the air. If it is not available, then the length field shall be zero and there shall be no *component_name* field.

4.6 DVB DIRECT SELECT INFORMATION TYPE Search Flags

The search flags used in the DSIT control command for a DVB selection are defined as follows:

address offset	msb							lsb
00 ₁₆	orb_pos	main_fre q_up	main_fre q_down	service_i d	0	0	0	0

The *main_freq_up* and *main_freq_down* search flags allow a controller to initiate a search based on the frequency, in either the up or down direction. The *orb_pos* and *service_id* flags allow a search based on these criteria. Only one search flag may be set for any operation.

All other flags shall be treated as reserved, as specified in Rules for Reserved Fields on page 6.

4.7 DVB DIRECT SELECT DATA *dsd_selection_specification*

address offset	msb						lsb
system_specific_dsd_selection_specifier_valid_flags							
00 ₁₆	PID	table_id	filter_ma sk	filter_val ue	reserved		
system_specific_dsd_selection_specifier_attributes							
01 ₁₆	PID						
02 ₁₆							
03 ₁₆	table_id						
04 ₁₆	filter_length						
05 ₁₆	filter_mask						
	filter_value						

The *PID* and *table_id* fields are defined by the DVB specification.

The *filter_length* field specifies the length of the *filter_mask* and *filter_value* fields. Each of these two fields will be *filter_length* bytes in size.

This *dsd_selection_specification* allows the selection of the different types of data, as explained in the following table:

to select this kind of data	specify this in the structure
a complete PID	use only the PID field (the <i>table_id</i> and other fields shall be ignored)
a DVB table	use only the <i>table_id</i> field (the others shall be ignored)
private tables	use both the PID and <i>table_id</i> fields (<i>filter_length</i> , <i>filter_mask</i> and <i>filter_value</i> shall be ignored)
a subset of a table (DVB or private)	in addition to the appropriate fields described above, also specify a <i>filter_mask</i> and <i>filter_value</i> (see example below)

NOTE: As specified at the beginning of this section describing the DVB system, it is forbidden for the DVB tuner to start inserting SI tables along with a currently active service on the source plug. This would be an illegal MPEG-2 Transport Stream. When the source plug is carrying one or more services, then subsequent requests for DVB SI PIDs and *table_id*'s on that source plug shall be rejected.

The *filter_mask* field acts as a bit mask (bit = 0 means do not check this bit, bit = 1 means check this bit).

The *filter_value* field is the value to be checked.

Both *filter_mask* and *filter_value* shall have the same length (number of bytes).

Example of selection using *filter_mask* and *filter_value*:

```

filter_length =      2
filter_mask =      0010 0110 0000 1111 b
filter_value =      0000 1111 0101 1010 b
matching value =      1100 0111 1010 1010 b
non-matching value = 1110 0111 1010 0000 b

```

4.8 DVB Object ID Assignment Rules

When the tuner subunit creates DVB objects (multiplex, service and component), it shall follow these rules for assigning object ID's:

	msb						lsb
object entry type	ID assignment rule						
multiplex	<< implementation dependent >>						
	(must be 6 bytes in length)						
service	original_network_id (MSB)						
	original_network_id (LSB)						
	transport_stream_id (MSB)						
	transport_stream_id (LSB)						
	service_id (MSB)						
	service_id (LSB)						
component	<< implementation dependent >>						
	(must be 6 bytes in length)						

The format of the *multiplex* and *component* object ID values for DVB will depend on the tuner subunit implementation.

The format of the *service* object ID values for all DVB tuners shall be as specified above.

4.9 DVB Subunit Identifier Descriptor - System Specific Information

Currently there is no system specific information defined for the DVB tuner subunit identifier descriptor.

4.10 DVB Subunit Identifier Descriptor - selection_attribute_range_specification definitions

The DVB tuner model specifies that the following selection attributes have range specifications. For an explanation of the range specification concepts and general formats, please refer to the AV/C Tuner Model and Command Set specification. This list is presented in the order in which the *selection_attribute_range_specification* structures are packed into the *system_specific_antenna_range_specification* structure:

		msb					lsb
	attribute	DVB selection attributes with range specifications					
A	polarization	polarization	reserved				
B	position	west_east	reserved				
			orbital_position (MSB) orbital_position (LSB)				
C	main frequency	raster_frequency	frequency (MS bits)				
			frequency				
			frequency (LSB)				
D	symbol rate	symbol_rate (MSB)					
		symbol_rate					
		symbol_rate (LS bits)			reserved		
E	FEC_outer	FEC_outer					
F	FEC_inner	FEC_inner					
G	modulation	modulation				reserved	

The *size_of_attribute* for each of the selection attributes indicated above can be derived from the number of rows used to specify the attribute. For example, the *position* attribute is 3 bytes, composed of the *west_east* bit flag, a *reserved* field, and 2 bytes for the *orbital_position* field.

4.11 DVB Tuner Status Descriptor - antenna_general_system_info Field Specification

The format of the *antenna_general_system_info* field of a tuner subunit which supports the DVB system appears as follows:

address offset	msb					lsb						
00 ₁₆	BER (MSB)											
01 ₁₆												
02 ₁₆												
03 ₁₆	BER (LSB)											
04 ₁₆	signal_strength											
05 ₁₆	raster_frequency	RF_frequency (MS bits)										
06 ₁₆												
07 ₁₆	RF_frequency (LSB)											
08 ₁₆	manufacturer_dependent_info_length											
09 ₁₆	manufacturer_dependent_info											
:												
:												

The *BER* (bit error rate) field contains an integer value representing the last computed BER as the number of errors per million. The bit error rate = BER * 10E-6.

The *signal_strength* field contains an integer indicating the current signal strength as a percentage of the maximum strength. When *signal_strength* = 0, the current signal strength is 0%. When *signal_strength* is 255, the signal strength is 100%.

4.12 DVB Tuner Status Descriptor - demux_general_system_info Field Specification

There is no *demux_general_system_info* specified for the DVB tuner subunit.

4.13 DVB Tuner Status Notification - Event Specifications

Currently there are no system specific events defined for the DVB tuner subunit.