

# PROPOSED SMPTE STANDARD

SMPTE 321M

## for Television — Data Stream Format for the Exchange of DV-Based Audio, Data and Compressed Video Over a Serial Data Transport Interface

Page 1 of 15 pages

### 1 Scope

1.1 This standard defines the format of the data stream for the synchronous exchange of DV-based audio, data, and compressed video (whose data structure is defined in SMPTE 314M) over the interface defined in SMPTE 305M (SDTI). It covers the transmission of audio, subcode data, and compressed video packets associated with DV-based 25 and 50 Mb/s data structures for 525/60 and 625/50 systems, including faster-than-real-time transmission.

1.2 The standard does not include the data stream of DV-compliant data structure as defined in SMPTE 322M.

1.3 Space within SMPTE 305M not used by a data stream conforming to this standard may be used for the transmission of data other than those representing DV-based audio, data, and compressed video.

NOTE — The 4:2:0 variant of DB-based video that is defined within IEC 61834 may not be transmitted via data exchange using this standard.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility

of applying the most recent edition of the standards indicated below.

SMPTE 305M-1998, Television — Serial Data Transport Interface

SMPTE 314M-1999, Television — Data Structure for DV-Based Audio, Data and Compressed Video — 25 and 50 Mb/s

### 3 Identification within the serial data transport interface (SDTI) format

#### 3.1 SDTI header packet data

The header packet data words of the serial data transport interface (SDTI) associated with this data stream format shall conform to SMPTE 305M. When the SDTI interface is transporting a data stream conforming to this standard, the block type word within the SDTI header packet shall have the value 173<sub>h</sub> for transported data contained in fixed-size blocks when ECC (error correction code) is used and the value 233<sub>h</sub> when ECC is not used.

#### 3.2 Payload

The payload is composed of consecutive fixed-size blocks (see figure 1). The SDTI data type word shall identify the data type of this payload with the value 221<sub>h</sub>.

### 4 Stream block format

The stream block format is shown in figure 1. The length of each stream block is 170 words, including a

SMPTE 321M

secondary header, two DIF (digital interface) block IDs, two DIF block data (of stream data), and an ECC block. The secondary header contains reserved data words, signal type words, and a transmission type word. The complete word structure of the stream block for a compressed video data stream is defined below:

- Reserved data: 3 words
- Signal type: 2 words
- Transmission type: 1 word
- DIF block ID: 3 words
- DIF block data: 77 words
- DIF block ID: 3 words
- DIF block data: 77 words
- ECC: 4 words

#### 4.1 Reserved data words

The reserved data words shall consist of 3 words and be positioned at the start of the stream block. The default value for the reserved data is 200<sub>h</sub>.

#### 4.2 Signal type words

The signal type word (ST) mapping is shown in figure 2. The signal type words shall consist of two words. The first word includes the specific type of video frame ID (STVF ID). The second word includes the field/frame frequency flag (FF), the DIF structure format, the frame sequence number flag (FSNF), the transmission rate flag (TRF), and reserved bits.

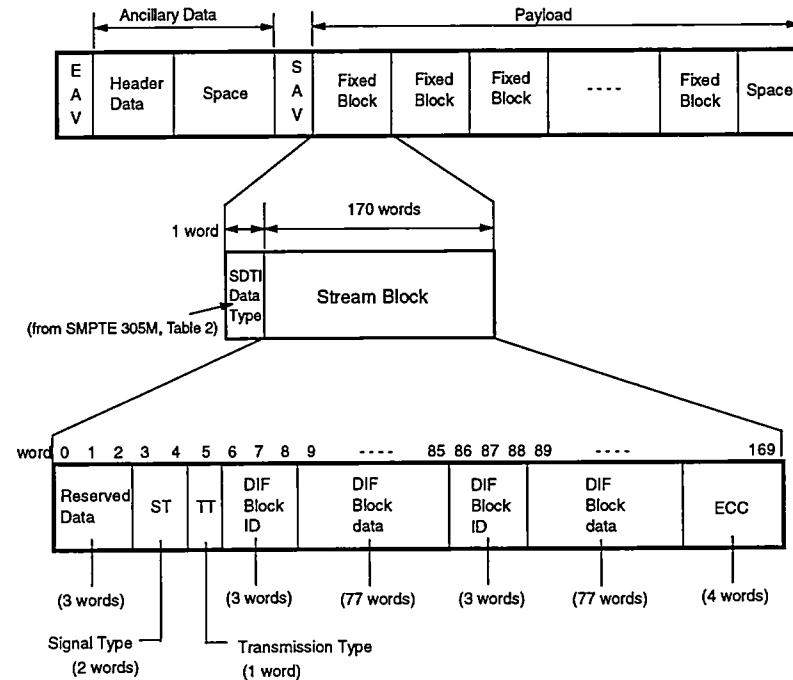


Figure 1 – Stream block format

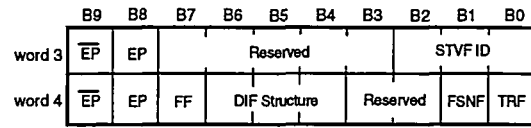


Figure 2 – Signal type (ST) word mapping

(Word 3 for the 525/60 system)

Bits B7 through B3 are reserved bits and shall be set to 00000<sub>b</sub> as default values.

Bits B2 through B0 indicate the specific type of video frame ID with the following values:

B2	B1	B0	
0	0	0:	480i / 29.97
0	0	1:	480p / 29.97
0	1	0:	480p / 23.98 (film with no field sequence ID)
0	1	1:	480p / 23.98 / 3:2 – A frame
1	0	0:	480p / 23.98 / 3:2 – B frame
1	0	1:	480p / 23.98 / 3:2 – C frame
1	1	0:	480p / 23.98 / 3:2 – D frame
1	1	1:	480p / 23.98 / 3:2 – E frame

(Word 3 for the 625/50 system)

All values of bits B7 through B0 are set to 00<sub>h</sub> as default values.

Bit B8 of word 3 is equal to the even parity of B7 through B0. Bit B9 of word 3 is equal to the complement of B8.

(Word 4)

Bit B7 indicates the field/frame frequency with the following values:

B7	
0:	60 Hz (59.94 Hz)
1:	50 Hz

Bits B6 through B4 indicate the DIF structure with the following values:

B6	B5	B4	
0	0	0:	Reserved
0	0	1:	Reserved
0	1	0:	Reserved

0	1	1:	25-Mb/s structure
1	0	0:	Reserved
1	0	1:	50-Mb/s structure
1	1	0:	Reserved
1	1	1:	Reserved

Bits B3, B2 are reserved bits and shall be set to 01<sub>b</sub> as default values.

Bit B1 is the frame sequence number flag (FSNF) and indicates the validity of the frame sequence number (see 4.3) with the following values:

B1	
0:	Valid
1:	Invalid

Bit B0 is the transmission rate flag (TRF) and indicates the validity of the transmission rate (see 4.3) with the following values:

B0	
0:	Valid
1:	Invalid

Bit B8 is equal to the even parity of B7 through B0. Bit B9 is equal to the complement of B8.

4.3 Transmission type word

The transmission type word (TT) mapping is shown in figure 3. The transmission type word shall consist of one word including the frame sequence number and the transmission rate.

Bits B7 through B4 indicate the frame sequence number with the following values:

0 <sub>h</sub> :	1
1 <sub>h</sub> :	2
	1
F <sub>h</sub> :	16

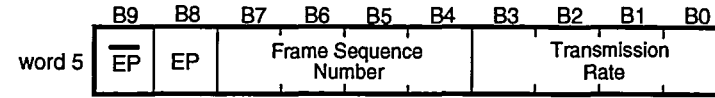


Figure 3 – Transmission type (TT) word mapping

The frame sequence number identifies compressed video frames multiplexed within an SDI video frame.

Bits B3 through B0 indicate the transmission rate with the following values:

0 <sub>h</sub> :	1 x (Normal transmission rate) (see note)
1 <sub>h</sub> :	2 x
2 <sub>h</sub> :	3 x
3 <sub>h</sub> :	4 x
4 <sub>h</sub> :	5 x
5 <sub>h</sub> :	6 x
6 <sub>h</sub> :	7 x
7 <sub>h</sub> :	8 x
8 <sub>h</sub> - E <sub>h</sub> :	Reserved
F <sub>h</sub> :	16 x

NOTE – The multiple of the normal transmission rate is represented by x. The normal transmission rate corresponding to normal reproduction of the television picture is 1 x.

Bit B8 is equal to the even parity of B7 through B0; Bit B9 is equal to the complement of B8.

4.4 DIF block ID words

The DIF block ID (ID0-2) shall consist of three words contained in bits A23 through A0 as shown in figure 4. The lower 8-bit portion of these three words is specified in SMPTE 314M.

EP1 is equal to the even parity of bits A7 through A0; EP2 is equal to the even parity of bits A15 through A8; EP3 is equal to the even parity of bits A23 through A16; and EP1 is equal to the complement of EP1; EP2 is equal to the complement of EP2; EP3 is equal to the complement of EP3.

4.5 DIF block data words

The DIF block data shall consist of 77 words. The lower 8 bits of each DIF block word represent the DIF block data, as specified in SMPTE 314M; the higher 2 bits are parity data.

Bits B7 through B0 are DIF block data; Bit B8 is equal to the even parity of B7 through B0; Bit B9 is equal to the complement of B8.

4.6 Error correction code (ECC) words

The bits B7 through B0 of the words within a stream block (including reserved data words, the ST word, the TT word, and all words of the DIF block ID and DIF block data) are optionally protected by an error correction code (ECC). The ECC shall consist of four words and be inserted at the end of the stream block.

The error correction code is a (170, 166) Reed-Solomon code in GF(256), whose field generator polynomial is shown as:

$$P(x) = X^8 + X^4 + X^3 + X^2 + 1$$

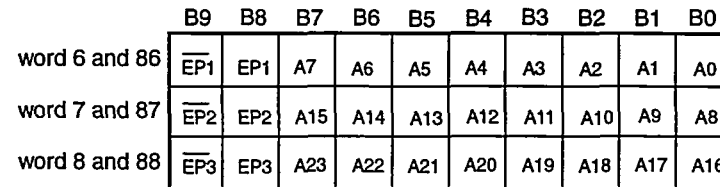


Figure 4 – Mapping of DIF block ID

where  $X^i$  are place-keeping variables in GF(2), the binary field. The generator polynomial of the code in GF(256) is:

$$G(x) = (x+\alpha)(x+\alpha^2)(x+\alpha^3)(x+\alpha^4)$$

where  $\alpha$  is given by  $2_h$  in GF(256).

When the value of the block type in the SDTI header (see 3.1) is 173h, the Reed-Solomon code shall be contained in C31 through C0 as shown in figure 5. When the value of the block type is 233h, the ECC shall have the fixed value 200h.

EP1 is equal to the even parity of bits C7 through C0; EP2 is equal to the even parity of bits C15 through C8; EP3 is equal to the even parity of bits C23 through C16; EP4 is equal to the even parity of bits C21 through C24; and EP1 is equal to the complement of EP1; EP2 is equal to the complement of EP2; EP3 is equal to the complement of EP3; EP4 is equal to the complement of EP4.

### 5 Transmission order

The transmission order within one compressed video frame for 25 and 50 Mb/s DV-based compression structures consisting of DIF blocks is shown in figures 6, 7, and 8.

In the 50-Mb/s structure, each video frame is carried in two channels, which are transmitted in sequence one after another. In the 25-Mb/s structure, only a single channel is used.

Each channel consists of 10 DIF sequences in the 525/60 system or 12 DIF sequences in the 625/50

	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
word 166	EP1	EP1	C7	C6	C5	C4	C3	C2	C1	C0
word 167	EP2	EP2	C15	C14	C13	C12	C11	C10	C9	C8
word 168	EP3	EP3	C23	C22	C21	C20	C19	C18	C17	C16
word 169	EP4	EP4	C31	C30	C29	C28	C27	C26	C25	C24

Figure 5 – Mapping of ECC

system. DIF sequences within a compressed frame are transmitted in a DIF sequence order from 0 to n-1. Each DIF sequence is composed of 150 DIF blocks. DIF blocks within a DIF sequence are transmitted sequentially from DIF block 0 to 149.

### 6 Mapping structure

The mapping structure defines where SDTI stream blocks are mapped into SDI video frames.

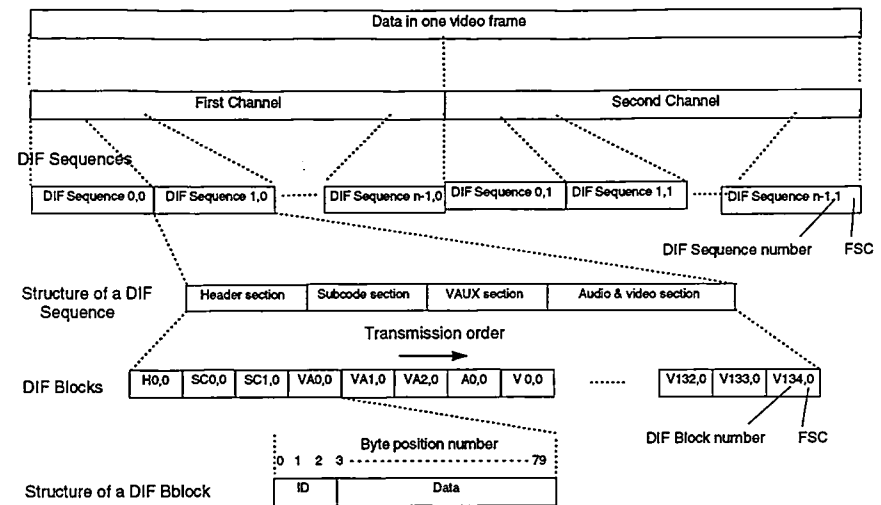
An SDTI data block of the fixed-block variety (as used by this standard) is based on one stream block; the stream block in turn includes two DIF blocks and associated words, as shown in figure 1.

– In the 525/60 system, the compressed video data stream within an SDI video frame is composed of 750 SDTI data blocks (1500 DIF blocks) for the 25-Mb/s compression structure or 1500 SDTI data blocks (3000 DIF blocks) for the 50-Mb/s structure.

– In the 625/50 system, the compressed video data stream within an SDI video frame is composed of 900 SDTI data blocks (1800 DIF blocks) for the 25-Mb/s compression structure or 1800 SDTI data blocks (3600 DIF blocks) for the 50-Mb/s structure.

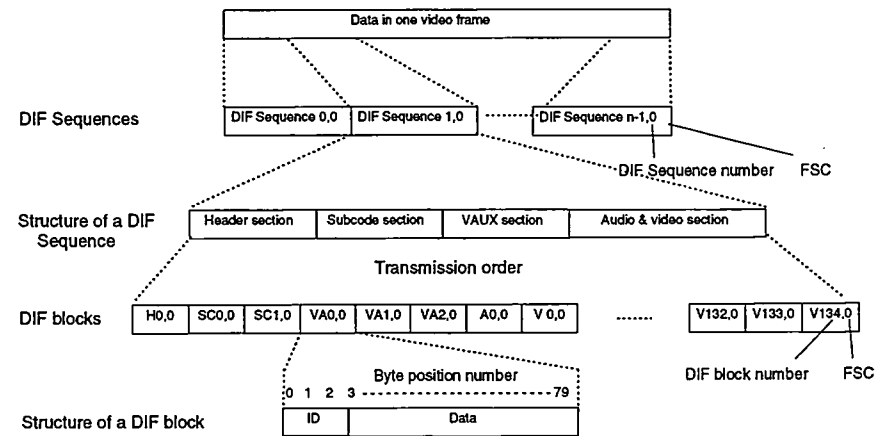
#### 6.1 Channel unit

The channel unit structure is shown in figures 9 and 10. A channel unit is a series of SDI raster lines into which SDTI data blocks are mapped. In the case of 25-Mb/s structure transmission, a channel unit is composed of the SDTI data blocks of one compressed video frame (see 6.2 for the 50-Mb/s structure).



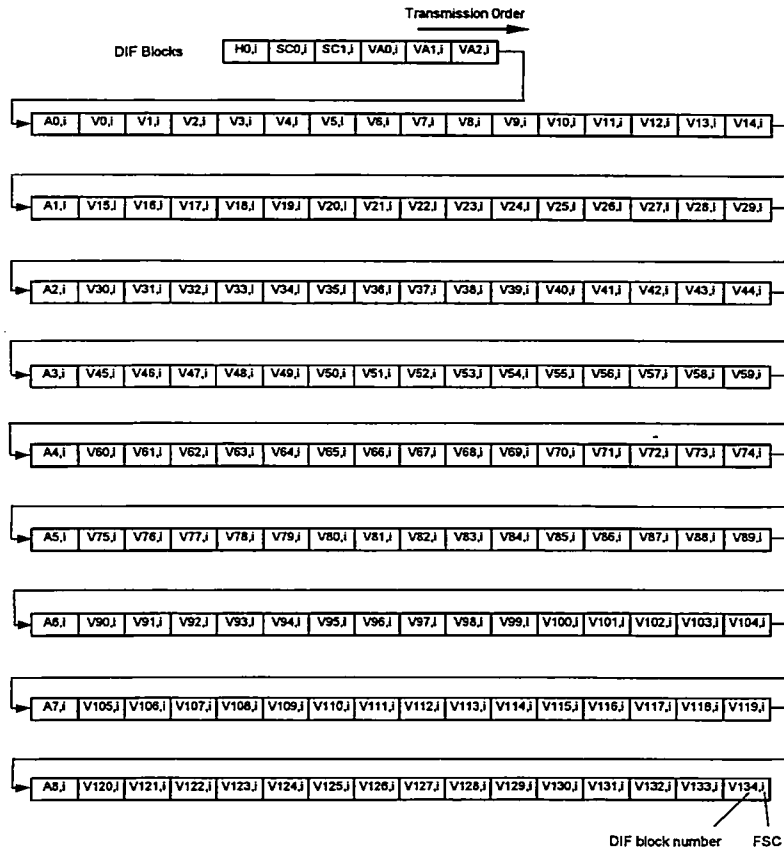
NOTE – n = 10 for 525/60 system; n = 12 for 625/50 system; FSC: First/second channel

Figure 6 – Transmission order in one video frame for the 50-Mb/s structure



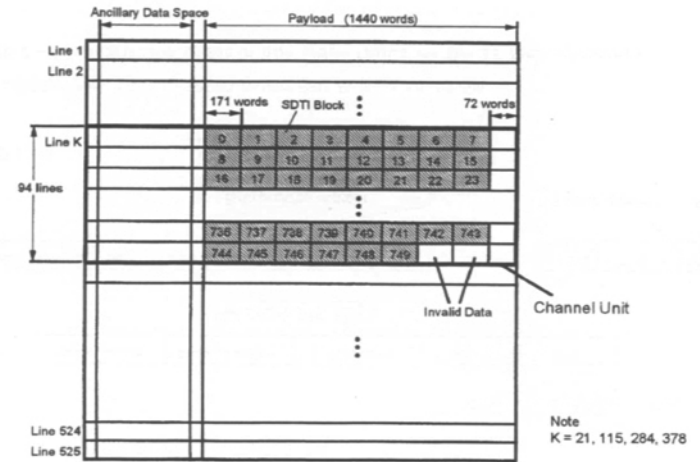
NOTE – n = 10 for 525/60 system; n = 12 for 625/50 system; FSC: First/second channel

Figure 7 – Transmission order in one video frame for the 25-Mb/s structure

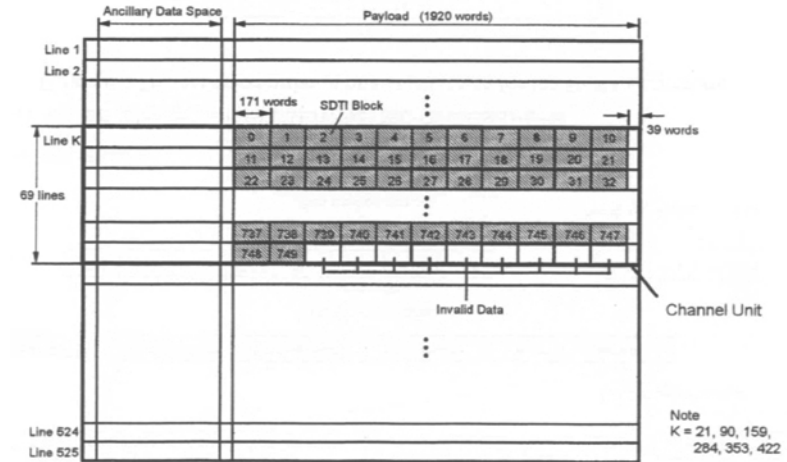


NOTE  
 i: FSC    i = 0 for 25-Mb/s structure;  
           i = 0, 1 for 50-Mb/s structure.  
 H0,i: DIF block in header section.  
 SC0,i to SC1,i: DIF blocks in subcode section.  
 VA0,i to VA2,i: DIF blocks in VAUX section.  
 A0,i to A8,i: DIF blocks in audio section.  
 V0,i to V134,i: DIF blocks in video section.

Figure 8 – Transmission order in a DIF sequence

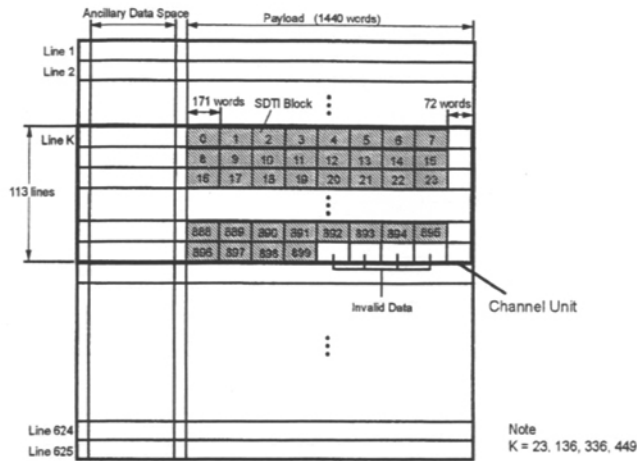


a) for 270 Mb/s System

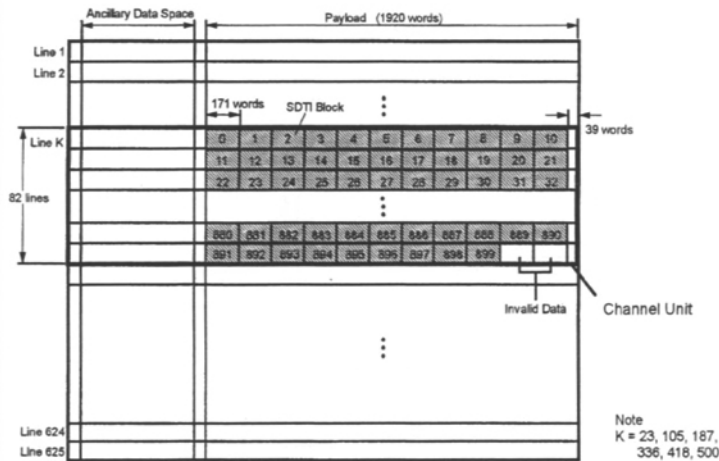


b) for 360 Mb/s System

Figure 9 – Channel-unit mapping for 25-Mb/s structure (525/60 system)



a) for 270 Mb/s System



b) for 360 Mb/s System

Figure 10 – Channel-unit mapping for 25-Mb/s structure (626/50 system)

**SMPTE 321M**

A channel unit is thus composed of 750 SDTI data blocks for the 525/60 system or 900 SDTI data blocks for the 625/50 system.

In the 525/60 system, a channel unit occupies 94 lines in the 270-Mb/s interface or 69 lines in the 360-Mb/s interface; in the 625/50 system, a channel unit occupies 113 lines in the 270-Mb/s interface or 82 lines in the 360-Mb/s interface.

The remaining payload space within a channel unit should be filled with blocks with their value set to the invalid type number 100h, as defined in SMPTE 305M.

**6.2 Mapping rules**

The mapping rules are as follows:

- Channel units consist of contiguous lines with no gaps and shall not use lines 10, 11, 273, or 274 in the 525/60 system, or lines 6, 7, 319, or 320 in the 625/50 system.
- A channel unit shall be completely contained within an SDI video field.
- Multiple channel units shall not be mapped into the same line and shall not be interleaved with each other.
- For faster-than-real-time transmission, the mapping order of channel units shall be in time sequence.

In the case of synchronized multichannel unit transmission, the mapping of channel units shall be in fixed

positions as shown in figures 11 and 12. One SDI video frame shall contain 4 channel units with the 270-Mb/s interface or 6-channel units with the 360-Mb/s interface. The start lines in which channel units can be mapped are shown in table 1.

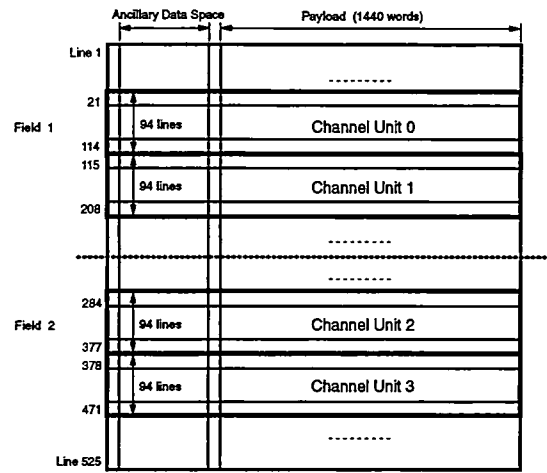
**Table 1 – Start lines of channel units**

525/60 system	270-Mb/s interface	21,115, 284, 378
	360-Mb/s interface	21, 90, 159, 284, 353, 422
625/50 system	270-Mb/s interface	23,136, 336, 449
	360-Mb/s interface	23, 105, 187, 336, 418, 500

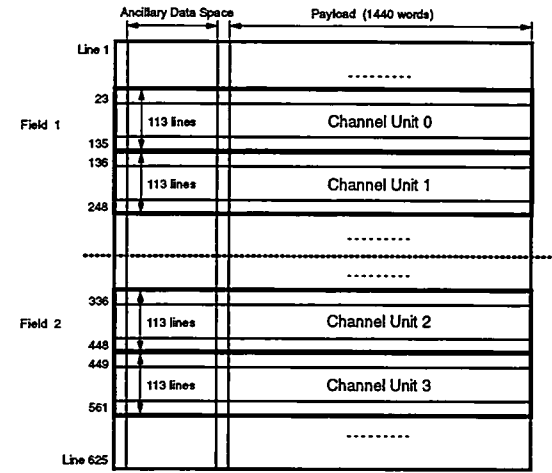
In the case of 50-Mb/s structure transmission, one compressed video frame shall use two adjacent channel units as shown in figures 13 and 14. The first part of one compressed video frame shall use the first channel unit and the second part of the frame shall use the second channel unit.

- In the 525/60 system, 1500 SDTI data blocks are mapped into 188 lines for the 270-Mb/s interface or into 138 lines for the 360-Mb/s interface.
- In the 625/50 system, 1800 SDTI data blocks are mapped into 226 lines for the 270-Mb/s interface or into 164 lines for the 360-Mb/s interface.

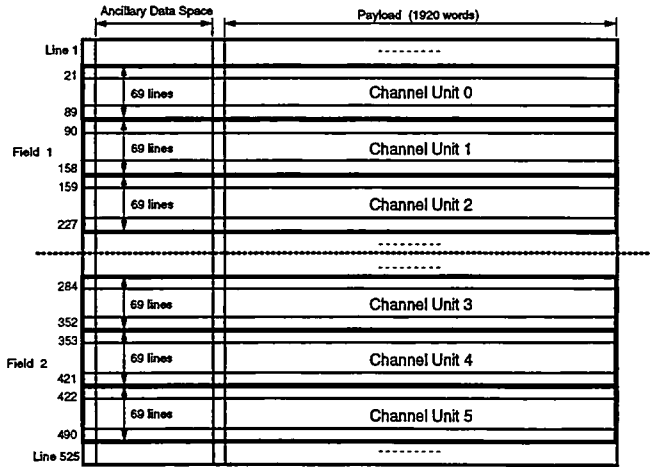
In the case of faster-than-real-time transmission, SDTI data blocks are mapped into adjacent multiple channel units.



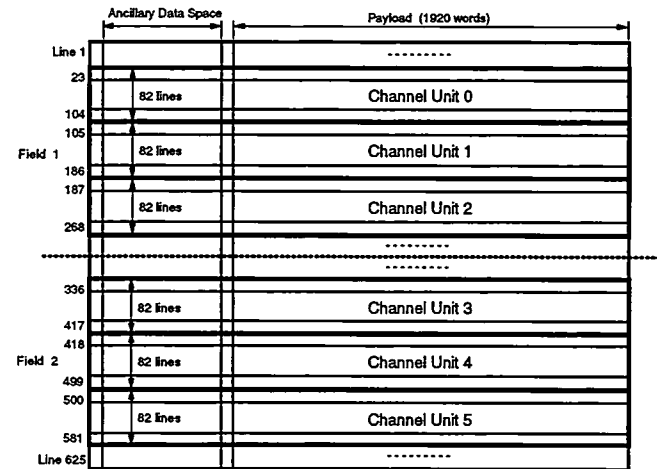
a) for 270 Mb/s System



a) for 270 Mb/s System



b) for 360 Mb/s System



b) for 360 Mb/s System

Figure 11 – Channel-unit mapping in a synchronized multichannel unit transmission (525/60 system)

Figure 12 – Channel-Unit mapping in a synchronized multichannel unit transmission (625/50 system)



## Annex A (informative) Bibliography

ANSI/SMPTE 125M-1995, Television — Component Video Signal 4:2:2 — Bit-Parallel Digital Interface

ANSI/SMPTE 244M-1995, Television — System M/NTSC Composite Video Signals — Bit-Parallel Digital Interface

ANSI/SMPTE 259M-1997, Television — 10-Bit 4:2:2 Component and 4/3 NTSC Composite Digital Signals — Serial Digital Interface

ANSI/SMPTE 267M-1995, Television — Bit-Parallel Digital Interface — Component Video Signal 4:2:2 16x9 Aspect Ratio

ANSI/SMPTE 294M-1997, Television — 720 x 483 Active Line at 59.94-Hz Progressive Scan Production — Bit-Serial Interfaces

SMPTE 291M-1998, Television — Ancillary Data Packet and Space Formatting

SMPTE 306M-1998, Television Digital Recording — Video Compression at 25-Mb/s 6.35-mm Type D-7 Component Format — 525/60 and 625/50

SMPTE 316M-1999, Television Digital Recording — 12.65-mm Type D-9 Component Format — Video Compression — 525/60 and 625/50

SMPTE 322M, Television — Format for Transmission of DV Compressed Video, Audio and Data Over a Serial Data Transport Interface

IEC 61834-1 (1998-08), Recording — Helical-Scan Digital Video Cassette Recording System Using 6,35 mm Magentic Tape for Consumer Use (525-60, 625-50, 1125-60 and 1250-50 Systems) — Part 1: General Specifications

IEC 61834-2 (1998-08), Recording — Helical-Scan Digital Video Cassette Recording System Using 6,35 mm Magentic Tape for Consumer Use (525-60, 625-50, 1125-60 and 1250-50 Systems) — Part 2: SD Format for 525-60 and 625-50 Systems

# PROPOSED SMPTE STANDARD

SMPTE 322M

## for Television — Format for Transmission of DV Compressed Video, Audio and Data Over a Serial Data Transport Interface

Page 1 of 13 pages

### Table of contents

- 1 Scope
- 2 Normative references
- 3 SDTI header data
- 4 Data structure
- 5 Transmission format

### 1 Scope

This standard specifies the data structure and the transmission format of DV compressed video, audio, and data over a serial data transport interface (SDTI [SMPTE 305M]). The standard is a combination of video, audio, subcode, and control data optimized for the connection between DV-compliant VCRs and disk systems. It ensures high-speed data stream transfer up to five times faster than real time. The video, audio, and subcode data comply with IEC 61834-2 for both 525/60 and 625/50 systems. The bit stream consists of 77-byte DIF data blocks, which are common to other DV based signals. The DIF blocks are mapped onto SDTI using a frame-bounded algorithm preserving ease of manipulating the video and audio data.

The layers of signal processing and related standards are shown in figure 1.

NOTE — For descriptions of the SDTI, refer to SMPTE 305M, and for descriptions of video, audio, and subcode data, refer to IEC 61834-2. The standard corresponds to data type [241h] registered as DVCAM- 1 in SMPTE 305M.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to

revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

SMPTE 305M-1998, Television — Serial Data Transport Interface

IEC 61834-2 (1998-08), Recording — Helical-Scan Digital Video Cassette Recording System Using 6,35 mm Magnetic Tape for Consumer Use (525-60, 625-50, 1125-60 and 1250-50 Systems) — Part 2: SD Format for 525-60 and 625-50 Systems

### 3 SDTI header data

The SDTI header data as specified in SMPTE 305M shall contain the parameters shown in table 1, and shall be repeated on every line. The SDTI header data structure is as shown in figure 2.

### 4 Data structure

The following clause describes the basic data structure and the system parameters of the bit stream. The data structure of the SDTI payload is shown in figure 3. The data block consists of a control data block and five vertical data slots, in which one compressed video stream shall be contained. The empty space and reserved area shall be set to all zeros (200h) as default value.

#### 4.1 Data block

The control data block and the DIF data shall be contained in B0 (LSB) through B7 (8 bits). B8 shall be a reserved data bit for future expansion, which is normally set to zero. B9 shall be the complement of B8.

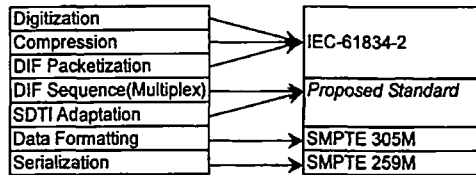


Figure 1 - Layers of signal processing and related standards

Table 1 - Header data packet

Parameters	Length	Value
ADF	3 words	[000h][3FFh][3FFh]
DID	1 word	[140h]
SDID	1 word	[101h]
DC	1 word	[22Eh]
Line number	2 words	—
Line number CRC	2 words	—
Code	4 bits	[1h]
AAI	4 bits	—
Destination address	16 words	—
Source address	16 words	—
Block type	1 word	[1C1h]
CRC flag	1 word	[101h]
Data extension flag	1 word	[200h]
Reserved data	4 words	[200h][200h][200h][200h]
Header CRC	2 words	—
CS	1 word	—

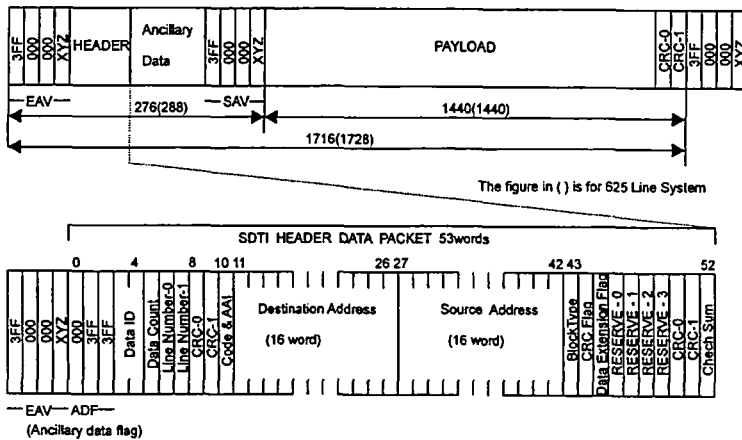


Figure 2 - SDTI header data structure

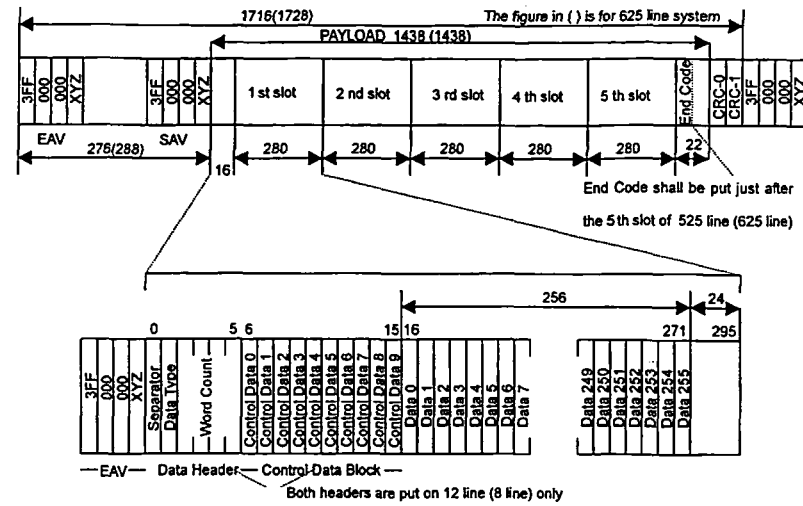


Figure 3 - Data structure

4.2 Data block header

The data block header, as specified in SMPTE 305M, shall contain the parameters shown in table 2. The data block header shall exist on line 12 for the 525/60 system or line 8 for the 625/50 system (refer to figures 4 and 7).

Table 2 - Data block header

Parameters	Length	Value
Separator	1 word	[309h]
Data type	1 word	[241h]
Wordcount	4 words	[B4720h] (525/60 system) [D8F50h] (625/50 system)

4.3 Control data block

Followed by the data block header, a control data block shall be inserted (immediately after the SDTI data block header). The control data block shall consist of 10 words (see figure 2), and the bits are allocated as shown in table 3. The control data block has some areas of commonality with the header section specified in IEC 61834-2, and also provides

specific data required for data transfer between storage devices.

Byte 1: Indicates the data type (secondary).

Byte 2: Indicates the transfer conditions (transfer speed, locked/unlocked, audio and video validity).

Bytes 3-10: Common information to IEC 61834-2.

4.3.1 Secondary data type

The control data block and the data slots are preceded with a secondary data type (1 word), with which the entire data block is defined. The initial code shall be set to all zero, and the receiver shall attempt to decode the data as soon as the desired secondary data type is detected.

Value	Description
0000 0000	Initial code
0000 0001	Data block as defined
0000 0010	Reserved
1111 1111	Reserved

Table 3 – Control data block structure

MSB		Secondary data type						LSB	
Byte 1									
Byte 2	0 (RESERVE)	0 (RESERVE)	VIDEO INVALID	AUDIO INVALID	LOCK	TRANSFER MODE			
Byte 3	V 50/60	V STYPE	A 50/60	A STYPE	AP3	AP2	AP1	APT	
Byte 4	FF	FS	V REC MODE	BCSYS		DISP			
Byte 5	A-1 LF	A-1 CHN		A-1 PA	A-1 AUDIO MODE				
Byte 6	A-1 REC ST	A-1 REC END	A-1 REC MODE	A-1 EF	A-1 SMP		A-1 QU		
Byte 7	A-1 DRF SPEED								
Byte 8	A-2 LF	A-2 CHN		A-2 PA	A-2 AUDIO MODE				
Byte 9	A-2 REC ST	A-2 REC END	A-2 REC MODE	A-2 EF	A-2 SMP		A-2 QU		
Byte 10	A-2 DRF SPEED								

4.3.2 Transfer mode

The transfer mode specifies the desired transfer speed of the compressed video stream. The following transfer speed can be selected:

Value	Description
000	Reserved
001	Normal speed (1X)
010	2X speed
011	3X speed
100	4X speed
101	5X speed
110	Reserved
111	Reserved

LOCK: Indicates whether the VCR is being servo locked or not during the data transfer.

Value	Description
0	VCR servo unlocked
1	VCR servo locked

AUDIO INVALID: Indicates the validity of the audio data. When the AUDIO INVALID flag is active (1), the receiver shall not attempt to decode the audio data.

Value	Description
0	Audio data valid
1	Audio data invalid

VIDEO INVALID: Indicates the validity of the video data. When the VIDEO INVALID flag is active (1), the receiver shall not attempt to decode the video data.

Value	Description
0	Video data valid
1	Video data invalid

4.3.6 Common parameters

Other parameters contained in bytes 3 to 10 are common information to the international standard (IEC 61834).

4.4 Data slot

Each data slot consists of 280 words, and shall start from the word number address shown below. The data shall be contained in the first 256 bytes, and the last 24 bytes are reserved for future extensions.

Word address	Number
Slot 1	16
Slot 2	296
Slot 3	576
Slot 4	856
Slot 5	1136

4.5 Endcode

The endcode as specified in SMPTE 305M shall be present at the word number address 1416 on line 525 for the 525/60 system, or line 625 for the 625/50 system.

Parameters	Length	Value
Encode	1 word	[30Ah]

5 Transmission Format

The following clause describes the overall transmission format and the detailed data structure of the compressed video stream.

5.1 Digital interface format (DIF)

The data structure of the video, audio, and subcode in the DIF blocks shall be as specified in IEC 61834-2. However, the 3-byte ID shall not be carried over the interface (see figures 4, 5, and 6). The DIF blocks shall be mapped onto the data slots using a frame-bounded algorithm, which is different in sequence to the one specified in IEC 61834-2.

5.2 525/60 system

The data block shall be transmitted from line 12 through line 525, provided that valid data shall not exist on lines 9 - 11 and 272 - 274 for the 525/60 system as shown in figure 7. The areas in lines 247 - 271 and 510 - 8 are reserved for future extensions.

5.2.1 Video sections

The video sections are contained in lines 12 - 223 and 275 - 486 (see figure 8):

$$(n, V0) - (n, V134); n = 0 \text{ to } 9$$

5.2.2 SC/VAUX sections

The SC/VAUX sections are contained in lines 224 - 231 and 487 - 494 (see figure 9):

$$(n, SC0), (n, SC1), (n, VA0), (n, VA1), (n, VA2); n = 0 \text{ to } 9$$

5.2.3 Audio/AAUX sections

The audio/AAUX sections are contained in lines 232 - 246 and 495 - 509 (see figure 9):

$$(n, A0) - (n, A8); n = 0 \text{ to } 9$$

5.3 625/50 system

The data block shall be transmitted from line 8 through line 625, provided that valid data shall not exist on lines 5 - 7 and 318 - 320 for the 625/50 system as shown in figure 10. The areas in lines 289 - 317 and 602 - 4 are reserved for future extensions.

5.3.1 Video sections

The video sections are contained in lines 8 - 261 and 321 - 574 (see figure 11):

$$(n, V0) - (n, V134); n = 0 \text{ to } 11$$

5.3.2 SC/VAUX sections

The SC/VAUX sections are contained in lines 262 - 271 and 575 - 584 (see figure 12):

$$(n, SC0), (n, SC1), (n, VA0), (n, VA1), (n, VA2); n = 0 \text{ to } 11$$

5.3.3 Audio/AAUX sections

The audio/AAUX sections are contained in lines 272 - 288 and 585 - 601 (see figure 12):

$$(n, A0) - (n, A8); n = 0 \text{ to } 11$$

V0 to V134

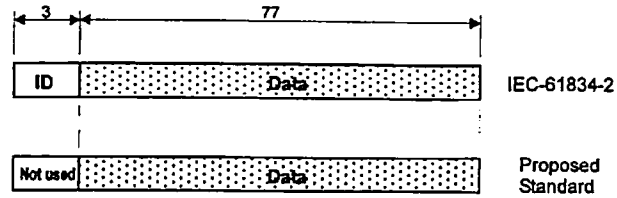


Figure 4 – Data in the video sections

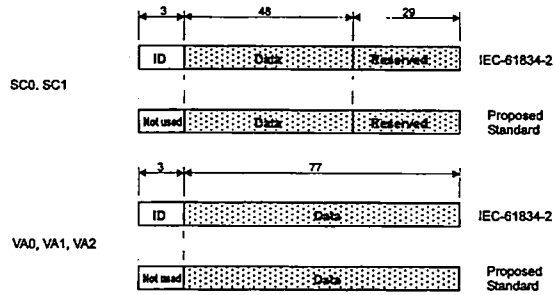


Figure 5 – Data in the SC/VAUX sections

A0 to A8

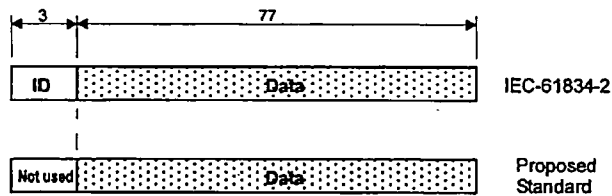


Figure 6 – Data in the audio/AAUX sections

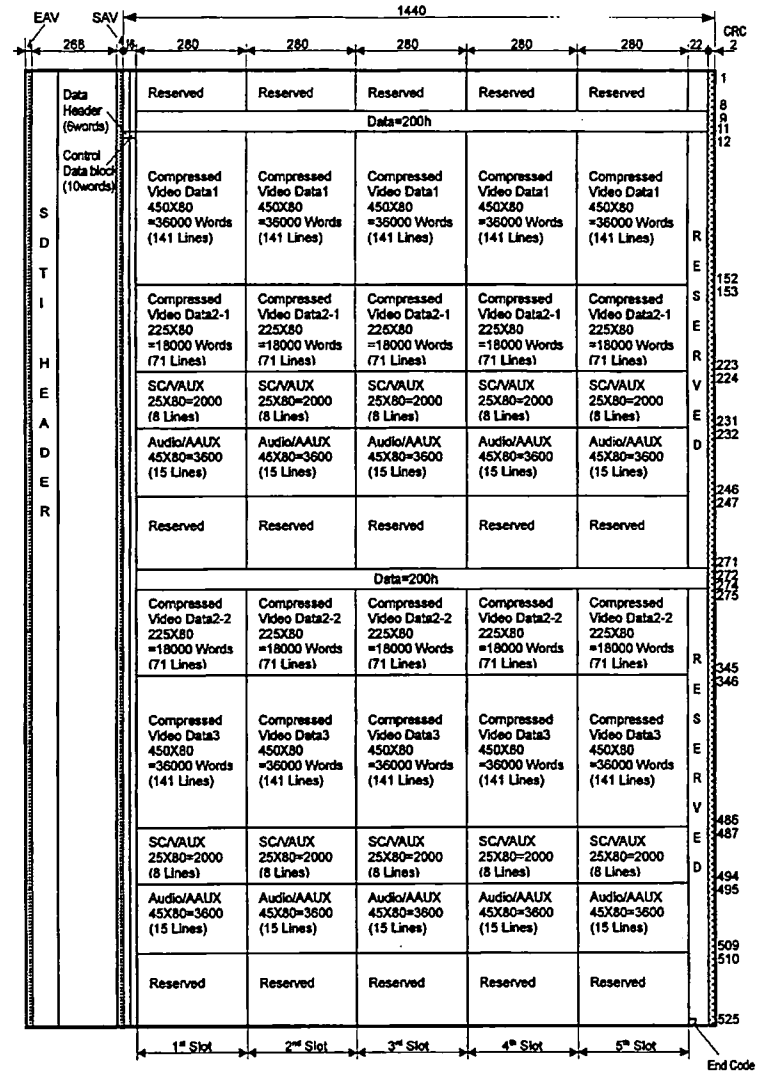


Figure 7 – Transmission format for 525/60 system

	280				
Line Number	256				24
12	(0, V0)	(0, V1)	(0, V2)	(0, V3)	R E S E R V E D
13	(0, V3)	(0, V4)	(0, V5)	(0, V6)	
14	(0, V6)	(0, V7)	(0, V8)	(0, V9)	
54	(0, V131)	(0, V132)	(0, V133)	(0, V134)	
55	(0, V134)	(1, V0)	(1, V1)	(1, V2)	
56	(1, V2)	(1, V3)	(1, V4)	(1, V5)	
96	(1, V130)	(1, V131)	(1, V132)	(1, V133)	
97	(1, V133)	(1, V134)	(2, V0)	(2, V1)	
98	(2, V2)	(2, V3)	(2, V4)	(2, V5)	
138	(2, V130)	(2, V131)	(2, V132)	(2, V133)	
139	(2, V133)	(2, V134)	(3, V0)	(3, V1)	
140	(3, V1)	(3, V2)	(3, V3)	(3, V4)	
151	(3, V3)	(3, V4)	(3, V41)	(3, V42)	
152	(3, V43)	(3, V44)	Invalid Data(96words)		
153	(3, V45)	(3, V46)	(3, V47)	(3, V48)	
180	(3, V131)	(3, V132)	(3, V133)	(3, V134)	
181	(3, V134)	(4, V0)	(4, V1)	(4, V2)	
182	(4, V2)	(4, V3)	(4, V4)	(4, V5)	
222	(4, V13)	(4, V131)	(4, V132)	(4, V133)	
223	(4, V134)	Invalid Data(176words)			

Figure 8 – Video sections for 525/60 system

	280				
Line Number	256				24
224	(0, SC0)	(0, SC1)	(0, VA0)	(0, VA1)	R E S E R V E D
225	(0, VA1)	(0, VA2)	(1, SC0)	(1, SC1)	
226	(1, SC1)	(1, VA0)	(1, VA1)	(1, VA2)	
227	(1, VA2)	(2, SC0)	(2, SC1)	(2, VA0)	
228	(2, VA0)	(2, VA1)	(2, VA2)	(3, SC0)	
229	(3, SC1)	(3, VA0)	(3, VA1)	(3, VA2)	
230	(3, VA2)	(4, SC0)	(4, SC1)	(4, VA0)	
231	(4, VA0)	(4, VA1)	(4, VA2)	Invalid Data(8words)	
232	(0, A0)	(0, A1)	(0, A2)	(0, A3)	
233	(0, A3)	(0, A4)	(0, A5)	(0, A6)	
234	(0, A6)	(0, A7)	(0, A8)	(1, A0)	
235	(1, A0)	(1, A1)	(1, A2)	(1, A3)	
236	(1, A3)	(1, A4)	(1, A5)	(1, A6)	
237	(1, A7)	(1, A8)	(2, A0)	(2, A1)	
238	(2, A1)	(2, A2)	(2, A3)	(2, A4)	
239	(2, A4)	(2, A5)	(2, A6)	(2, A7)	
240	(2, A7)	(2, A8)	(3, A0)	(3, A1)	
241	(3, A1)	(3, A2)	(3, A3)	(3, A4)	
242	(3, A5)	(3, A6)	(3, A7)	(3, A8)	
243	(3, A8)	(4, A0)	(4, A1)	(4, A2)	
244	(4, A2)	(4, A3)	(4, A4)	(4, A5)	
245	(4, A5)	(4, A6)	(4, A7)	(4, A8)	
246	(4, A8)	Invalid Data(240words)			

Figure 9 – SC/VAUX and audio/AAUX sections for 525/60 system

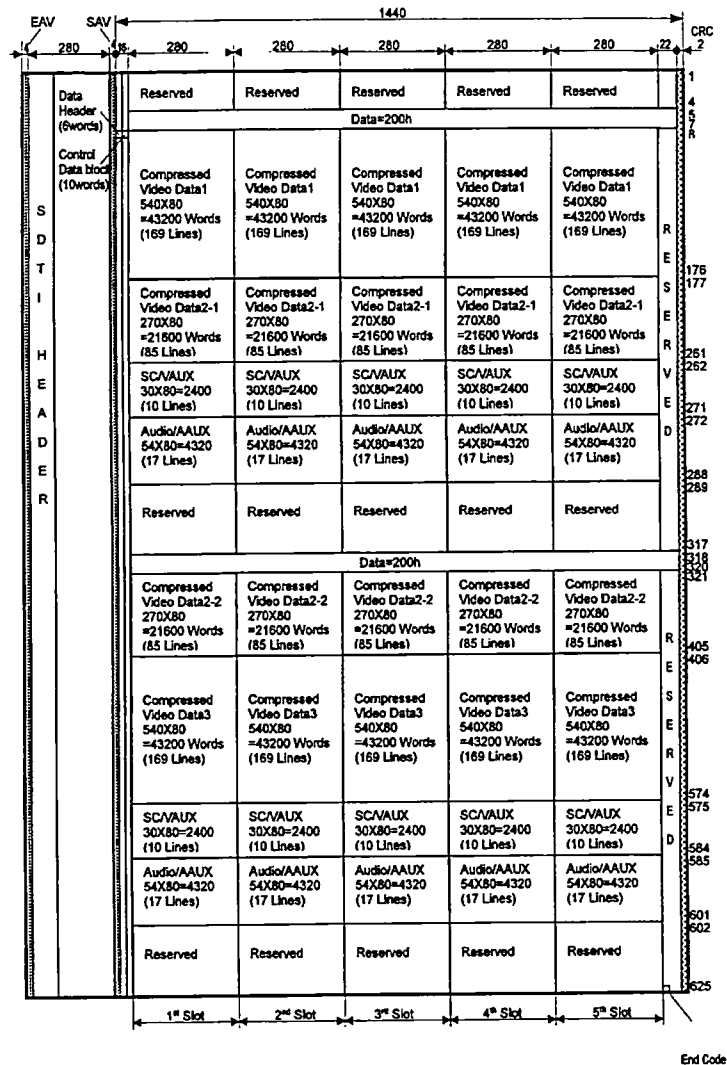


Figure 10 – Transmission format for 625/50 system

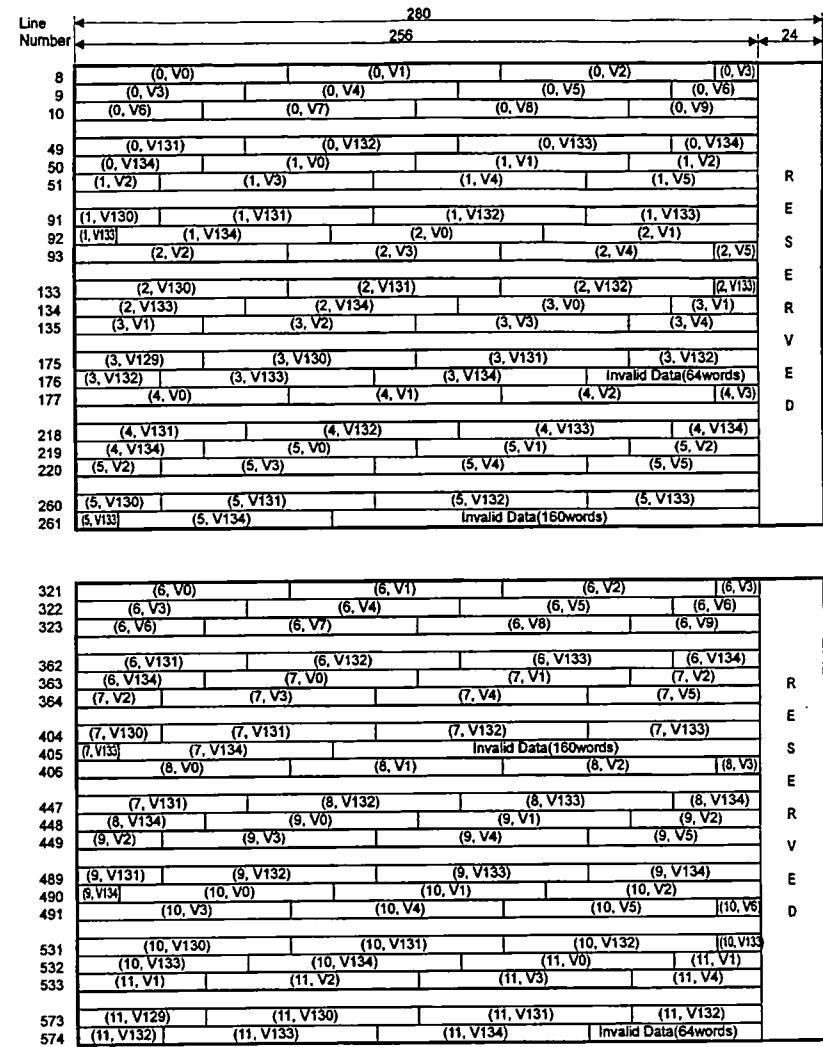


Figure 11 – Video sections for 625/50 system

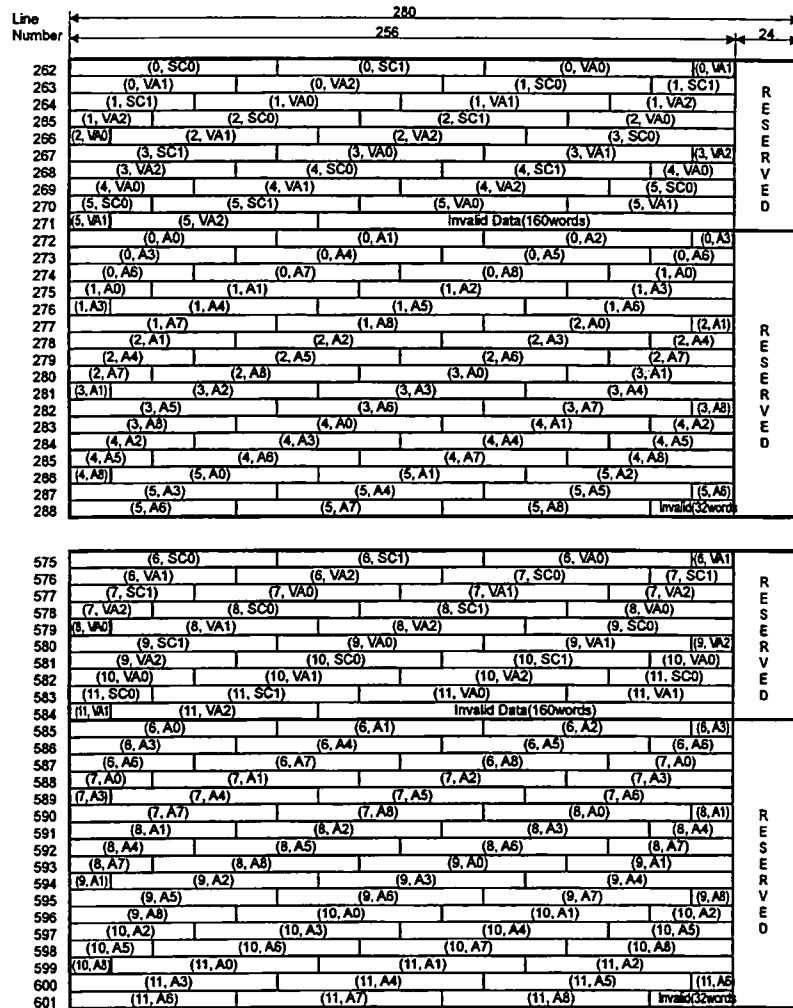


Figure 12 – SC/VAUX and audio/AAUX sections for 625/50 system

Annex A (informative)  
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