

Standards and Recommended Practices

Proposed SMPTE Standards

Seven Proposed SMPTE Standards are published for your information. The first page of each appears here:

SMPTE 306M, Proposed Revisions to SMPTE 306M-1998 - 6.35-mm Type D-7 Component Format - Video Compression at 25 Mb/s and 50Mb/s - 525/60 and 625/50 (\$80.00 US)

SMPTE 307M, Proposed Revisions to SMPTE Standard for Television SMPTE 307M-1998 Digital Recording - 6.35-mm Type D-7 and Type D-12 Component Format - Tape Cassette (\$44.00 US)

SMPTE 321M, Revisions to SMPTE 321M-1999 - Data Stream Format for the Exchange of DV-Based Audio, Data and Compressed Video over a Serial Data Transport Interface (\$32.00 US)

SMPTE 367M, Type D-11 Picture Compression and Data Stream Format (\$56.00 US)

SMPTE 368M, 12.65-mm Type D-11 Format (\$66.00 US)

SMPTE 369M, Type D-11 Data Stream and AES3 Data mapping over SDTI (\$28.00 US)

SMPTE 372M, Dual Link 292M Interface for 1920 x 1080 Picture Raster (\$32.00 US)

Proposed SMPTE Recommended Practices

Four Proposed SMPTE Recommended Practices are published for your information. The first page of each appears here:

RP 212, Ancillary Data Mapping over MPEG-2 Video Elementary Stream Editing Information (\$20.00 US)

RP 214, Packing KLV Encoded Metadata and Data Essence into SMPTE 291M Ancillary Data Packets (\$22.00 US)

RP 219, High-Definition, Standard-Definition Compatible Color Bar Signal (\$32.00 US)

RP 220, PAL/SECAM IP and Trigger Binding to VBI (\$20.00 US)

Proposed SMPTE Engineering Guidelines

One Proposed SMPTE Engineering Guideline is published for your information. The first page appears here:

EG 39, Overview of Declarative Data Essence (\$38.00 US)

Approved SMPTE Standards

The Society recently approved five SMPTE Standards:

SMPTE 306M-2002, Proposed Revisions to SMPTE 306M-1998 - 6.35-mm Type D-7 Component Format - Video Compression at 25 Mb/s and 50Mb/s - 525/60 and 625/50 (\$80.00 US)

SMPTE 307M-2002, Proposed Revisions to SMPTE Standard for Television SMPTE 307M-1998 Digital Recording - 6.35-mm Type D-7 and Type D-12 Component Format - Tape Cassette (\$44.00 US)

SMPTE 367M-2002, Type D-11 Picture Compression and Data Stream Format (\$56.00 US)

SMPTE 368M-2002, 12.65-mm Type D-11 Format (\$66.00 US)

SMPTE 369M-2002, Type D-11 Data Stream and AES3 Data mapping over SDTI (\$28.00 US)

All documents are available from Society Headquarters at the prices shown above.

—Carlos V. Girod, Jr., P.E.,
Director of Engineering

SMPTE Standards Subscription Service

The Society provides a Standards Subscription Service to assist firms, libraries, and individuals in establishing and maintaining a complete and current file of approved American National Standards, SMPTE Recommended Practices, and SMPTE Engineering Guidelines in the motion picture, television, and video magnetic recording fields. Through this service, the Society makes automatic distribution to standards subscribers of all new and revised standards, recommended practices, and guidelines that are approved during the calendar year in these fields. Documents are also available either in printed form or on CD-ROM.

For further information, write to:

Standards Subscription Service
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White Plains, NY 10607

SMPTE STANDARD

for Television —
6.35-mm Type D-7 Component Format —
Video Compression at 25 Mb/s and
50 Mb/s — 525/60 and 625/50



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Abbreviations and Acronyms

AAUX	Audio auxiliary data
AP1	Audio application ID
AP2	Video application ID
AP3	Subcode application ID
APT	Track application ID
Arb	Arbitrary
AS	AAUX source pack
ASC	AAUX source control pack
B/W	Black and white flag
CGMS	Copy generation management system
DBN	DIF block number
DCT	Discrete cosine transform
DIF	Digital interface
DSF	DIF sequence flag
ECC	Error correction code

SMPTE STANDARD

for Television Digital Recording —
6.35-mm Type D-7 and
Type D-12 Component Format —
Tape Cassette



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1 Scope

This standard specifies the dimensions for three types of 6.35-mm type D-7 and type D-12 tape cassettes (M, L, and EL) for use with digital recorders.

NOTE — The cassette is used for more than a single recording format. The cassette provides no information to indicate the format of the recording contained on the tape within the cassette.

2 Measurements

2.1 Tests and measurements on cassette parameters shall be carried out under the following atmospheric conditions:

- Temperature: 20°C ± 1°C
- Relative humidity: (50 ± 2)%
- Barometric pressure: 86 kPa to 106 kPa
- Stabilization time: 24 hours

3 Video tape cassette

3.1 General specifications

3.1.1 The dimensions of the three cassettes used for recording shall be in accordance with figures 1 to 29.

3.1.2 General tolerances for dimensions, except those for which tolerances are otherwise specified, shall be as indicated in table 1.

3.1.3 The three types of cassette shall be identified as:

- Medium: M
- Large: L
- Extended large: EL

The size of the EL cassette is the same as the L cassette except for the reel size.

NOTE — Annex A shows the adapter size for the small cassette which is specified in IEC 61834-1.

3.1.4 Tape length and tape thickness for the three types of cassette shall be as given in table 2.

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



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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 and SMPTE 370M) over the interface defined in SMPTE 305M. It covers the transmission of audio, subcode data, and compressed video packets associated with DV-based 25- and 50-Mb/s data structures including faster-than-real-time transmission, and 100-Mb/s data structures for 525/60 SDTI and 625/50 SDTI systems.

1.2 This standard does not include the data stream of a DV-compressed 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.

1.4 In this standard, the 60-Hz system refers to the field frequency 59.94-Hz system and the 50-Hz system refers to the field frequency 50.0-Hz system.

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 274M-1998, Television — 1920 x 1080 Scanning and Analog and Parallel Digital Interfaces for Multiple Picture Rates

SMPTE 296M-2001, Television — 1280 x 720 Progressive Image Sample Structure — Analog and Digital Representation and Analog Interface

SMPTE 305.2M-2000, Television — Serial Data Transport Interface (SDTI)

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

SMPTE 370M, Television — Data Structure for DV-Based Audio, Data and Compressed Video at 100 Mb/s — 1080/60i, 1080/50i, 720/60p

for Television —
**Type D-11 Picture Compression
and Data Stream Format**



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1 Scope

This standard specifies the compression of a high-definition source format to a dual-channel packetized data stream format which is suitable for recording on disc and tape storage devices including type D-11 tape recorder. The specification includes a number of basic packetizing operations including the shuffling of the source data prior to compression both to aid compression performance and to allow error concealment processing in the decoder. The standard also includes the processes required to decode the compressed type D-11 packetized data format into a high-definition output signal.

This standard supports high-definition source formats using 1920*1080 pixels and the sampling structures specified in SMPTE 274M and SMPTE RP 211 at the following picture rates:

24+1.001/PsF, 24/PsF, 25/PsF, 30+1.001/PsF, 50i and 60+1.001/i
(where PsF indicates progressive segmented frame and I indicates interlaced).

The data packet format specified by this standard is used as the source data stream for the associated document which maps this type D-11 packetized data stream format together with AES3 data over SDTI.

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,

SMPTE STANDARD

for Digital Television Tape Recording — 12.65-mm Type D-11 Format



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1 Scope

This standard specifies the format for the recording of type D-11 compressed pictures, four channels of AES3 data, and associated data which form helical records on 12.65-mm (0.5 in) tape in cassettes. This standard also defines the helical track record parameters, the content and format of the longitudinal records, and the cassette physical specifications.

Type D-11 picture compression is defined by SMPTE 367M.

The recording format supports frame frequencies of 30/1,001 Hz, 25 Hz, 24 Hz, and 24/1,001 Hz.

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.

AES3-1992, Serial Transmission Format for Two-Channel Linearly Represented Digital Audio Data

SMPTE STANDARD

for Television — Type D-11 Data Stream and AES3 Data Mapping over SDTI



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1 Scope

This standard specifies the mapping of type D-11 compressed picture data stream into the SDTI payload area (SMPTE 305.2M) together with the mapping of four channels of AES3 data and time code data into H-ANC packets. Type D-11 compressed picture data stream mapping is defined for source coded picture rates of 24/1,001/P, 24/P, 25/P, 50-I, 30/1,001/P, and 60/1,001. For the transmission of compressed picture data coded at source picture rates of 25/P and 50/I, the SDTI interface operates at a frame rate of 25 Hz. For the transmission of compressed picture data coded at source picture rates of 30/1,001P and 60/1,001I, the SDTI interface operates at a frame rate of 30/1,001 Hz.

The transmission of compressed picture data coded at the source picture rates of 24/1,001/P and 24/P require the SDTI interface to operate at frame rates of 24/1,001 Hz and 24 Hz with the parameters defined in normative annex A and annex B of 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.

AES3-1992, Digital Audio Engineering — Serial Transmission Format for Two-Channel Linearly Represented Digital Audio Data

PROPOSED SMPTE STANDARD

SMPTE 372M

for Television — Dual Link 292M Interface for 1920 x 1080 Picture Raster

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1 Scope

This standard defines a means of interconnecting digital video equipment with a dual link HD SDI (link A and link B), based upon the SMPTE 292M data structure. The source formats for this dual link interconnection are the picture raster formats, and digital interface representations as defined in SMPTE 274M. The total data rate of the dual link connection is 2.970 Gb/s or 2.970/1.001 Gb/s. This dual link also supports carriage of the embedded audio, the ancillary data and the ID of the stream.

NOTE — This may not be the only mapping onto the dual link 292M. It is likely that other image formats will be mapped onto the dual link 292M.

2 Normative references

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

- ANSI/SMPTE 299M-1987, Television — 24-Bit Digital Audio Format for HDTV Bit-Serial Interface
- SMPTE 274M-1998, Television — 1920 x 1080 Scanning and Analog and Parallel Digital Interfaces for Multiple Picture Rates
- SMPTE 291M-1998, Television — Ancillary Data Packet and Space Formatting
- SMPTE 292M-1998, Television — Bit-Serial Digital Interface for High-Definition Television Systems
- SMPTE 294M-2001, Television — 720 x 483 Active Line at 59.94-Hz Progressive Scan Production — Bit-Serial Digital Interfaces

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PROPOSED SMPTE RECOMMENDED PRACTICE

RP 212

Ancillary Data Mapping over MPEG-2 Video Elementary Stream Editing Information

Page 1 of 3 pages

SMPTE 291M defines the basic structure of ancillary data packets in the form of 10-bit words. SMPTE 291M defines ancillary data packets for use in both the horizontal blanking interval (H-ANC) and the vertical blanking interval (V-ANC). This practice only provides a mapping for V-ANC data packets.

V-ANC packets can carry many kinds of data including those defined in SMPTE 334M, SMPTE RP 214, and other specifications which define V-ANC packet payloads.

The MPEG-2 video elementary stream (video-ES) can be supplemented with additional information for professional studio applications according to SMPTE 328M. This supplementary information is carried within the sequence header and the user data area of the MPEG-2 video-ES to facilitate seamless edits under circumstances defined in SMPTE 328M. This practice specifies that V-ANC packets be placed into the space assigned as ancillary data in the MPEG-ES syntax as defined by SMPTE 328M. The ancillary data are based on an 8-bit interface.

The 10-bit word structure of SMPTE 291M is not appropriate for an 8-bit interface. While annex A of SMPTE 291M provides guidance for 8-bit operation, the result is unnecessarily restrictive and a simpler solution is defined in this practice. It should be noted that while the internal operation in the MPEG-2 video-ES stream is 8-bits, the input and output interfaces of SDI operate with the full 10-bit resolution.

4 Data structure

The V-ANC data packet shall be mapped onto the ancillary data payload of the ES editing information as follows.

- The data_ID of the MPEG-ES syntax, as defined in SMPTE 328M, shall be set to the value 07_h in conformance with that standard.

1 Scope

This practice defines the mapping of vertical ancillary (V-ANC) data packets within MPEG-2 video elementary streams conforming to the framework provided by SMPTE 328M.

The purpose of this practice is to provide a method of mapping V-ANC data packets through the 8-bit interface provided by SMPTE 328M and to provide guidance for data coding to prevent the false creation of MPEG-2 video elementary stream start marker bit sequences.

Although this practice refers to bit-serial interfaces, the description can be equally applied to the equivalent parallel interfaces.

2 Normative references

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

- SMPTE 291M-1998, Television — Ancillary Data Packet and Space Formatting
- SMPTE 328M-2000, Television — MPEG-2 Video Elementary Stream Editing Information

3 General

This practice defines the mapping of vertical ancillary (V-ANC) data packets within the framework provided by SMPTE 328M.

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