
SMPTE STABLE DOCUMENT



The attached SMPTE Engineering Document has been declared “Stable” by the controlling Technology Committee.

The SMPTE Operations Manual for Standards states:

A document should be stabilized if it is believed to be substantially correct, does not contain harmful or misleading recommendations, may still be relevant to equipment or practices in use, is stable, but does not represent current technology, and need not be subject to future reviews.

A Stable document shall still be made available and offered for sale by the Society, but it shall be prefaced by a cover page explaining its current status.

At any time, a Technology Committee may revise, amend, or otherwise initiate a new Project on a Stable document.

A Stable document is “In Force”, and not deprecated or withdrawn.

*** * * * ***

Note:

SMPTE “Stable” documents were previously described as “Archived” and the attached document may be marked as “Archived”. The status of a SMPTE document described as “Archived” is exactly as described above for a “Stable” document.

Stable documents may not adhere to the latest style and format of SMPTE documents, or to current usage of normative language. Suitable care should be taken in interpretation.

SMPTE STANDARD

for Television — MPEG-2 Video Recoding Data Set



Page 1 of 9 pages

Table of contents

- 1 Scope
- 2 Normative references
- 3 General
- 4 Definitions
- 5 Picture rate information
- 6 Macroblock rate information
- 7 Transport of the MPEG-2 recoding data set
- 8 Compressed stream format for bandwidth reduced systems
- Annex A Transport mechanisms
- Annex B Bibliography

1 Scope

This standard specifies the content of the picture related recoding data set for the representation of ISO/IEC 13818-2 MPEG coding information for the purpose of optimally cascading decoders and recoders at any bit rate or GOP structure. The coding information is as derived from an ISO/IEC 13818 compliant MPEG bit stream during the picture decoding process, as described in ISO/IEC 13818-2.

The scope and operation of this standard are the definition of the content of a sufficient recoding data set which may be derived in decoders that comply with ISO/IEC 13818-2, including all non-scalable profiles defined in ISO/IEC 13818-2.

To allow the resynchronization of the video and its associated audio or data after processing, a mechanism using some additional information derived from ISO/IEC 13818-1 is also included in this standard.

This sufficient data set may be transported by various means defined in other SMPTE standards.

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.

ITU-T H.222.0 with amend 1-2, ISO/IEC 13818-1:1996, Information Technology — Generic Coding of Moving Pictures and Associated Audio Information — Part 1: Systems

ITU-T H.262 with amend 1/corr 1 and amend 2/corr 2, ISO/IEC 13818-2:1996, Information Technology — Generic Coding of Moving Pictures and Associated Audio Information — Part 2: Video

3 General

The principal application of this standard is to preserve the quality of the video signal when cascading MPEG-2 decoders and coders (including transcoding) by feeding forward previous coding decisions.

The MPEG-2 recoding data set is described as sufficient when it contains the data required that, in combination with an MPEG-2 decoded or partially decoded picture, allows bit accurate recreation of the previously picture coded bit stream.

The various methods whereby the data set is transported alongside the MPEG-2 decoded or partially decoded picture information are the subject of other standards.

This standard describes the content of the MPEG-2 recoding data set as extracted or derived from an MPEG-2 bit stream.

The information required in the sufficient MPEG-2 recoding data set can be broken down into three parts. These three parts consist of the picture rate information (described in clause 5), the macroblock rate information (described in clause 6), and some additional information (described in clause 7).

4 Definitions

4.1 bit stream: An ordered series of bits conforming to ISO/IEC 13818-2.

4.2 bottom field: One of two fields that comprise a frame. Each line of a bottom field is spatially located immediately below the corresponding line of the top field.

4.3 cascading: The process where video that has once been coded (compressed) is subsequently decoded and coded once more. This cascaded step could carry on for any number of generations.

4.4 coding: The process by which an uncompressed video sequence is compressed to a bit stream that conforms to ISO/IEC 13818-2.

4.5 column: A vertical column of macroblocks spanning the full height of the decoded picture (columns are numbered from left to right starting at 0).

4.6 decoder: A compressed bit stream decoder that complies with ISO/IEC 13818-2.

4.7 DTS: Decoding time stamp (see ISO/IEC 13818-1).

4.8 macroblock: Defined in ISO/IEC 13818-2 as a block of 16×16 luminance pixels.

4.9 macroblock rate information: This corresponds to the coding information from the ISO/IEC 13818-2 bit stream that relates to the individual macroblocks as defined in this standard.

4.10 MPEG profile / level: As defined in ISO/IEC 13818-2.

4.11 picture: As defined in ISO/IEC 13818-2.

4.12 picture rate information: In this standard, this corresponds to the coding information from the ISO/IEC 13818-2 bit stream that relates to the whole picture plus some additional information derived from sequence and GOP headers.

4.13 PTS: Presentation time stamp (see ISO/IEC 13818-1).

4.14 recoding data set: The set of information derived from an ISO/IEC 13818-1/2 compliant stream which, when accompanied by decoded or partially decoded video information, assists in the recreation of the original bit stream as defined in this standard.

4.15 stripe: A horizontal row of macroblocks spanning the full width of the decoded picture (stripes are numbered from top to bottom starting at 0).

4.16 sufficient: [As applied usually to the recoding data set] allows bit accurate recreation of the previously picture coded bit stream when used in combination with the decoded or partially decoded picture.

4.17 top field: One of two fields that comprise a frame. Each line of a top field is spatially located immediately above the corresponding line of the bottom field.

4.18 transcoding: A conversion within the MPEG-2 stream domain, such as bit-rate changing or changing the group of pictures (GOP) structure.

5 Picture rate information

This clause defines the minimum picture rate information required by the MPEG-2 recoding data set. Table 1 lists the elements taken from the bit stream which shall be included.

For the bit order and number format of this information, refer to the corresponding transport mechanism.