SMPTE STANDARD

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Ancillary Data Packet and Space Formatting

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Foreword

SMPTE (the Society of Motion Picture and Television Engineers) is an internationally-recognized standards developing organization. Headquartered and incorporated in the United States of America, SMPTE has members in over 80 countries on six continents. SMPTE's Engineering Documents, including Standards, Recommended Practices, and Engineering Guidelines, are prepared by SMPTE's Technology Committees. Participation in these Committees is open to all with a bona fide interest in their work. SMPTE cooperates closely with other standards-developing organizations, including ISO, IEC and ITU.

SMPTE Engineering Documents are drafted in accordance with the rules given in Section XIII of its Engineering Operations Manual.

SMPTE ST 291-1 was prepared by Technology Committee 32NF.

Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Standard. Attention is drawn, however, to the possibility that some of the elements of this document may be the subject of patent rights. SMPTE shall not be held responsible for identifying any or all such patent rights.

Introduction

This section is entirely informative and does not form an integral part of this Engineering Document.

Ancillary data packets and space formatting described by this Standard reside in the Ancillary data space defined by an interconnecting interface document. Ancillary data space in a serial interface is a space not used by the main data stream and can be used as a transport for data associated with the main data stream. The type of payload data carried in the ancillary data space is defined in separate application documents.

SAV (Start of Active Video) and EAV (End of Active Video) markers that mark active digital video/data spaces exist on all serial digital interfaces (SDI, HD-SDI and SDTI), regardless of the number of TV lines used by the television system.

During the horizontal interval of every television line, the ancillary data space that is located between EAV and SAV markers is called horizontal ancillary data space (HANC).

During the vertical interval of each field or frame, the ancillary data space located between SAV and EAV markers is called vertical ancillary data space (VANC).

Ancillary data packets are divided into Type 1 and 2, where Type 1 uses a single ID word and Type 2 uses two ID words. Using such a method allows for a wider range of identification values within the limited ID word space. In addition, a total of 189 data identification values are reserved for 8-bit applications, whereas up to approximately 29,000 values are provided for 10-bit applications.

The basic formats of ancillary data packets are similar for both Type 1 and Type 2, but they differ in the use of a data block number. The definitions of the individual parts that make up the ancillary data packet, such as ancillary data flags (ADF), data identification (DID), secondary data identification (SDID), data block number (DBN), data count (DC), data validity checksum (CS), together with restrictions on user data words (UDW), are specified in this standard.

All of the assigned Ancillary ID codes are documented in the SMPTE online register (maintained by SMPTE-RA, LLC) titled "Assigned Ancillary Identification Codes," which serves as a register for the ancillary ID space

and is an element of this document.. The reason for such a register is to assure timely updated information on assigned ancillary codes for implementers. Documents utilizing ancillary data, as defined by this standard, normatively include their assigned ID values, so the SMPTE online register need not be a normative reference.

Legacy Equipment (Informative)

The serial digital interfaces (SMPTE ST 259, SMPTE ST 305, and SMPTE ST 292) and component parallel digital interfaces (SMPTE ST 125, SMPTE ST 274 and SMPTE ST 296) are capable of passing 10-bit words (Data 9 – Data 0). Some legacy equipment, however, is capable only of processing 8-bit data words (carried on interfaces as Data 9 – Data 2). Passage of 10-bit words through such equipment therefore will result in truncation of the two least significant bits (Data 1 and Data 0) of ancillary data words.

1 Scope

This standard specifies the basic formatting structure of the ancillary data space in digital video data streams in the form of 10 bit words. Application of this standard includes, but is not limited to, 525-line and 625-line standard definition digital television interfaces (component and composite), high definition digital television interfaces (750 and 1125 lines), and D-Cinema interfaces that provide 8-bit or 10-bit ancillary data spaces.

Space available for ancillary data packets is defined in documents specifying connecting interfaces.

Ancillary data packet payload definitions for a specific application are specified by a SMPTE Standard, Recommended Practice, or Registered Disclosure Document, or by a document generated by another organization, a company, or an individual (an Entity). When a payload format is registered with SMPTE, an application document describing the payload format is required, and the registered ancillary data packet is identified by a registered data identification word.

2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or that contains the conformance language keywords: "shall", "should", or "may". Informative text is text that is potentially helpful to the user, but not indispensable, and that can be removed, changed, or added editorially without affecting interoperability. Informative text does not contain any conformance keywords.

All text in this document is, by default, normative, except: the Introduction, any section explicitly labeled as "Informative," or individual paragraphs that start with "Note:"

The keywords "shall" and "shall not" indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

The keywords, "should" and "should not" indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.

The keywords "may" and "need not" indicate courses of action permissible within the limits of the document.

The keyword “reserved” indicates a provision that is not defined at this time, shall not be used, and may be defined in the future. The keyword “forbidden” indicates “reserved” and in addition indicates that the provision will never be defined in the future.

Unless otherwise specified, the order of precedence of the types of normative information in this document shall be as follows: Normative prose shall be the authoritative definition; Tables shall be next, followed by formal languages, then figures, and then any other language forms.

Note that, throughout this standard, a lower case “h” following a numerical value indicates hexadecimal notation.

3 Normative References

No Normative references are specified for implementation of this standard.