2012-01-03

Withdrawal of SMPTE 2016-5-2009

KLV Coding for Active Format Description, Bar Data and Pan-Scan Information

> *A document should be Withdrawn only if there is a significant possibility of its use causing harm. A Withdrawn document shall still be made available and offered for sale by the Society, but it shall be prefaced by a cover page explaining its current status including a statement that some or all of the content is no longer endorsed by the Society.*

ST 2016-5 defines a method for KLV Coding Active Format Description (AFD), Bar Data, and Pan-Scan Information. Two metadata elements are defined for this purpose: one for AFD & Bar Data, and another for Pan-Scan.

While ST 2016-5 defines a perfectly valid KLV encoding of both elements, the use of this within MXF has never been defined. Instead, a pre-existing and different metadata element is used to encode AFD, as a static value for the file. Furthermore, for dynamic carriage of AFD in MXF, ST 436 is typically used to embed the AFD data as VANC (using ST 2016-3) in the MXF essence container.

ST 377-1 Amendment 1 further clarifies the use of AFD as a static value and ST 377-1 Amendment 2 clarifies the carriage of dynamic AFD values in the MXF essence container.

In summary, while ST 2016-5 defines a valid KLV encoding of AFD, Bar Data and Pan-Scan Information, alternative solutions have already been applied within MXF. To avoid potential confusion and harm to the industry, ST 2016-5 has been withdrawn.

The metadata elements defined for ST 2016-5 within RP210 (Metadata Elements Dictionary) are listed below and shall be deprecated.

06.0E.2B.34.01.01.01.0C.04.01.01.01.09.00.00.00	AFD and Bar Data
06.0E.2B.34.01.01.01.0C.04.01.01.01.0A.00.00.00	Pan Scan Information

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SMPTE 2016-5-2009

SMPTE STANDARD

KLV Coding for Active Format Description, Bar Data and Pan-Scan Information

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Approved
June 15, 2009

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 Part XIII of its Administrative Practices.

SMPTE Standard 2016-5 was prepared by Technology Committee 22TV.

Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Standard. However, attention is drawn 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

Image formatting information describes certain spatial characteristics of a high definition or standard definition video image. It is generated and carried through all or some of the video production, distribution, and emission chain. The image formatting metadata types are Active Format Description (AFD), Bar Data, and Pan-Scan information.

AFD and Bar Data are intended to be broadcast with the video signal that they describe. AFD information is intended to guide DTV receivers and/or intermediate professional video equipment regarding the display of video of one aspect ratio on a display of another aspect ratio. Bar Data information is used to signal the precise unused areas of an image raster when the active video does not completely fill that raster, in particular widescreen cinema material carried letterboxed in a frame with bars top and bottom.

Pan-Scan information is a set of data that is intended to guide professional video equipment in extracting an image to be presented in an aspect ratio that is different from that in which the material was produced or distributed. Independent parameters are provided for pan (horizontal offset), tilt (vertical offset), vertical size, horizontal size, and output aspect ratio. Pan-Scan information is not intended for use beyond the production and distribution environments.

The following suite of SMPTE standards defines the origination and carriage of AFD, Bar Data, and Pan-Scan information:

SMPTE 2016-1	Format for Active Format Description and Bar Data
SMPTE 2016-2	Format for Pan-Scan Information
SMPTE 2016-3	Vertical Ancillary Data Mapping of Active Format Description and Bar Data
SMPTE 2016-4	Vertical Ancillary Data Mapping of Pan-Scan Information
SMPTE 2016-5	KLV Coding for Active Format Description, Bar Data, and Pan-Scan Information

Other SMPTE standards may be used for alternative transport methods for this data. The relationship between these and related standards is shown in the Road Map in Annex A.

1 Scope

This Standard defines a method of coding that allows Active Format Description, Bar Data and Pan-Scan information to be Key-Length-Value (KLV) coded.

Associated standards, SMPTE 2016-1 defines the format for Active Format Description and Bar Data, and SMPTE 2016-2 defines the format for Pan-Scan information, and these standards identify the video image and interface standards with which they may be associated (see Annex A).

2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or contains the conformance language keywords: "shall", "should", or "may". Informative text is text that is potentially helpful to the user, but not indispensable, and 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.

A conformant implementation according to this document is one that includes all mandatory provisions ("shall") and, if implemented, all recommended provisions ("should") as described. A conformant implementation need not implement optional provisions ("may") and need not implement them as described.

3 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 2016-1-2007, Television — Format for Active Format Description and Bar Data

SMPTE 2016-2-2007, Format for Pan-Scan Information

SMPTE 2016-3-2007, Television — Vertical Ancillary Data Mapping of Active Format Description and Bar Data

SMPTE 2016-4-2007, Vertical Ancillary Data Mapping of Pan-Scan Information

SMPTE 335M-2001, Television — Metadata Dictionary Structure

SMPTE 336M-2001, Data Encoding Protocol Using Key-Length-Value

SMPTE RP210, Metadata Dictionary Registry of Metadata Element Descriptions

4 Format of KLV Data Packets

Each data packet shall comply with the format defined in SMPTE 336M. It shall consist of a KLV triplet comprising the identifying key (K), the data count or length (L), and the payload information value (V).

4.1 Key

The values of the key UL parameter values are listed in the SMPTE RP210 Metadata Dictionary, this being the register defined by SMPTE 335M, and shall be as shown in Table 1.

Table 1 – Key Values for AFD and Bar Data and Pan-Scan Information

Byte No.	Description	Key Value [hex]		Meaning
		AFD & Bar Data	Pan-Scan	
1	Object Identifier Tag	06		UL identifier
2	Label size	0E		Overall label is 16 octets
3	Designator	2B		ISO, ORG
4	Designator	34		SMPTE
5	Register Category Designator	01		Dictionary
6	Register Designator	01		Metadata dictionary
7	Structure Designator	01		Per SMPTE 336M
8	Version Number	0C		Register Version at the point of registration of this Key
9	Item Designator	04		Parametric
10	Organization	01		Video/Image Essence Characteristics
11	Application	01		Fundamental Image Characteristics
12	Structure Version	01		Aspect Ratios
13	Item Type Identifier	09	0A	
14	System Scheme Identifier	00		
15	Metadata or Control Element Identifier	00		
16	Reserved for use by metadata Element	00		

4.2 Length

The length fields are fixed entries and shall be as shown in Table 2.

Table 2 – Length Entries for AFD and Bar Data and Pan-Scan Information

Length for	Length [hex]	Description
AFD and Bar Data	08	Fixed length 8 bytes
Pan-Scan	0C	Fixed length 12 bytes

4.3 Payload Information Value for Active Format Description and Bar Data

As defined in SMPTE 2016-1, the Active Format Description (AFD) and Bar Data is a concatenated series of codes, flags, and values that signal the active image area being used for program content within the video frame. The content and structure of the payload information value shall be coded as a string of eight 8-bit bytes as described in SMPTE 2016-3 § 4.1 and specified by bits b7 through b0 of SMPTE 2016-3 Table 1.

4.4 Payload Information Value for Pan-Scan Information

As defined in SMPTE 2016-2, the Pan-Scan information is a concatenated series of codes, flags, and values that describe a variable image viewport (a selected area of a source image that will be used to create an output image) and the output image aspect ratio. The content and structure of the payload information value shall be coded as a string of twelve 8-bit bytes as described in SMPTE 2016-4 § 4.1 and specified by bits b7 through b0 of SMPTE 2016-4 Table 1.

Annex A (Informative)
Road Map to Related Standards for AFD, Bar Data and Pan-Scan