

SMPTE STANDARD

Format for Pan-Scan Information



Page 1 of 13 pages

Table of Contents	Page
Foreword	3
Intellectual Property	3
Introduction.....	3
1 Scope	4
2 Conformance Notation	4
3 Normative References	4
4 Definitions	4
5 Pan-Scan Information	5
5.1 Overview	5
5.2 Pan-Scan Data Sets.....	6
5.3 Pan-Scan Data Flags and Aspect Ratio	6
5.4 Horizontal Viewport Offset – Pan.....	7
5.5 Vertical Viewport Offset – Tilt.....	7
5.6 Vertical Size Coefficient – Zoom Vertical.....	7
5.7 Horizontal Size Coefficient – Zoom Horizontal	7
5.8 Output Image Aspect Ratio Coding	7
6 Relationship Among AFD, Bar Data and Pan-Scan Information	8
7 Coding of Pan-Scan Information.....	8
7.1 Pan-Scan Information Coding.....	8
7.1.1 Data Set ID Byte	8
7.1.2 Pan-Scan Flags Byte	9
7.1.3 Pan-Scan Information Fields.....	9
7.2 Data Repetition Rate.....	9
Annex A Bibliography (Informative)	10
Annex B Example Pan-Scan Information (Informative)	11
B.1 Example of Pan-Scan to Extract a 4:3 Image from a 16:9 Image	11

Figures

Figure 1 – Pan-Scan Parameters 6

Figure B.1 – Extraction of a 4:3 viewport from a 1920 x 1080 16:9 source image 11

Tables

Table 1 – Pan-Scan informational payload 5

Table 2 – Pan-Scan presence flags and aspect ratio code..... 7

Table 3 – Output image aspect ratio codes..... 8

Table B.1 – Pan-Scan parameters for a 4:3 viewport from a 1920 x 1080 16:9 source image – Right pan.....13

Table B.2 – Pan-Scan parameters for a 4:3 viewport from a 1920 x 1080 16:9 source image – Left pan 13

Table B.3 – Pan-Scan parameters for a 4:3 viewport from a 1920 x 1080 16:9 source image – Centered 13

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 its Standards Operations Manual.

SMPTE ST 2016-2 was prepared by Technology Committee 24TB.

Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Engineering Document. 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 ST 2016-1 Format for Active Format Description and Bar Data
- SMPTE ST 2016-2 Format for Pan-Scan Information
- SMPTE ST 2016-3 Vertical Ancillary Data Mapping of Active Format Description and Bar Data
- SMPTE ST 2016-4 Vertical Ancillary Data Mapping of Pan-Scan Information

Other SMPTE standards can be used for alternative transport methods for this data.

1 Scope

This Standard defines Pan-Scan information for origination and conveyance through the production and distribution processes for standard definition or high definition television signals.

Associated standards define how this information is placed into ancillary data packets and is KLV coded as SMPTE metadata (see Annex C).

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.

3 Normative References

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

SMPTE RP 187:1995, Center, Aspect Ratio and Blanking of Video Images

4 Definitions

4.1

output image

The rectangular area that represents the result of an image conversion process.

4.2

source image

The rectangular area represented by the production aperture of the source signal.

4.3

viewport

A selected rectangular area of a source image that will be used to create an output image.