Amendment 1:2015 to
SMPTE ST 425-3:2014

SMPTE STANDARD

Image Format and Ancillary Data Mapping for the Dual Link 3 Gb/s Serial Interface — Amendment 1

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Foreword

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Amendment 1 to SMPTE ST 425-3:2014 was prepared by Technology Committee 32NF.

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Introduction

The purpose of this amendment is to add detail about the placement of audio data and control packets in the 1080-line Level A mapping, to describe the mapping of 4:2:0 source images, to add support for UHDTV colorimetry, and to provide additional information about the size of the ancillary data space available.

Change instructions are shown in *italics*. Inserted text is shown thus. Deleted text is shown ~~thus~~.

1 Amendment of Section 6 1080-line Level A Mapping

At the end of Section 6.2 "Ancillary Data" add the paragraph:

Annex C provides information about the size of the ancillary data space available

In Section 6.2.1 "Audio Data", following paragraph 1 "....defined in SMPTE ST 425-1" and before paragraph 2 "The audio data shall be mapped..." add:

Audio control packets and extended audio control packets are mapped into odd-numbered data streams.

Audio data packets and extended audio data packets are mapped into even-numbered data streams.

2 Amendment of Section 7 1080-line Level B Dual-Link Mapping

At the end of Section 7.2 "Ancillary Data" add the paragraph:

Annex C provides information about the size of the ancillary data space available

3 Amendment of Section 8 2160-line Mapping

In Section 8.1 "Mapping of 2160-line Source Image", following paragraph 1 "...consecutive horizontal samples." and before paragraph 2 "Each sub image shall then be mapped..." add:

The sample structure of a 4:2:0 source image shall be regarded as a 4:2:2 image with the C'_B and C'_R sample values set to 200h on odd-numbered lines.

The sample structure of the resulting Sub Images divided from a 4:2:0 source image are thus the same as that from 4:2:2 except that:

> The C'_B and C'_R samples from the source image are all mapped to Sub Images 1 and 2, as they are present on the even lines only of the source image.
>
> The C'_B and C'_R samples in Sub Images 3 and 4 shall be set to the value 200h.

At the end of Section 8.1.1 "Multiplex Structure" add the paragraph:

Note: For 4:2:0 image formats, the C'_B and C'_R values for Sub Image 3 and Sub Image 4 are set to the value 200h.

At the end of Section 8.1.1.1 "3G-SDI Link Multiplex Structure (Informative)" add the paragraph:

Note: For 4:2:0 image formats, the C'_B and C'_R values for Link 2 are set to the value 200h.

At the end of Section 8.2 "Ancillary Data" add the paragraph:

Annex C provides information about the size of the ancillary data space available.

In Section 8.2.1.1.1 "Carriage of up to 64 Channels of Audio at up to 48 kHz Sampling" amend the first sentence as follows:

For audio at up to 48-kHz sampling embedded into 4096x2160 image formats at frame rates of ~~6~~30/1.001 or ~~6~~30, the audio data and control packets for the first 8 channels~~,~~ shall be mapped into data stream one.

In Section 8.2.1.1.2 "Carriage of up to 32 Channels of Audio at 96 kHz Sampling" amend the first sentence as follows:

For audio at 96-kHz sampling embedded into 4096x2160 image formats at frame rates of ~~6~~30/1.001 or ~~6~~30, the audio data and control packets for the first 4 channels~~,~~ shall be mapped into data stream one.

In Section 8.2.3.1, Table 15 "Payload Identifier Definitions for 2160-line Video Payload Mapping on a Dual-link 3Gb/s (nominal) Serial Interface", replace the contents of Byte 3 bit 7 and bit 4

~~reserved (0)~~

with:

Colorimetry
(see Section 8.2.3.4)

In Section 8.2.3.4 "Byte 3 – Sampling Structure, Aspect Ratio and Horizontal Size" delete

~~Bit 7 shall be set to 0h (reserved)~~

and replace with:

Bits b7 and b4 shall identify the colorimetry for the image formats identified in Table 3 such that:

b7,b4 = 0h shall identify Rec 709 colorimetry[*1]

b7,b4 = 1h shall identify that the colorimetry is defined in the Color VANC packet as referenced in SMPTE ST 2048-2

b7,b4 = 2h shall identify UHDTV colorimetry[*2]

b7,b4 = 3h shall identify unknown colorimetry

Notes:

*1 Rec 709 indicates ITU-R BT.709 colorimetry and is equivalent to ST 2036-1 Conventional System Colorimetry.

*2 UHDTV indicates ST 2036-1 UHDTV colorimetry and is equivalent to ITU-R BT.2020 colorimetry

In Section 8.2.3.4 "Byte 3 – Sampling Structure, Aspect Ratio and Horizontal Size" delete

~~Bit 4 shall be set to 0h (reserved)~~

4 Amendment of Annex A Bibliography (Informative)

Add:
SMPTE RP 291-2:2013, Ancillary Data Space Use — 4:2:2 SDTV and HDTV Component Systems and 4:2:2 2048 ×1080 Production Image Formats

5 Amendment of Annex C Document Road Map (Informative)

Amend the title line of this Annex as follows:

Annex ~~C~~D Document Road Map (Informative)

Following "Annex B Square Division of 2160-image formats (informative)" and before "Annex D Document Road map (Informative)" add:

Annex C Ancillary Data Capacity of the Dual Link Interface (Informative)

The ancillary data space available in serial digital interface transports is approximately equivalent to horizontal interval space and vertical interval space for the video format being transported. In the case of images transported on the interface specified in this standard, it is dependent on the horizontal interval space and vertical interval space for each of the Data Streams being carried on the interface, multiplied by the number of Data Streams.

SMPTE RP 291-2 provides information on the size of the ancillary data space in a SMPTE ST 425-1 Level A interface and a Level B Dual Link interface.

For 1080-line source image formats specified in this standard, the available HANC and VANC data space on the dual link interface is 2 times the HANC and VANC data space available (as shown in the tables of SMPTE RP 291-2) on a SMPTE ST 425-1 3G SDI link interface carrying the corresponding Sub Image format.

For 2160-line source image formats specified in this standard, the available HANC and VANC data space on the dual link interface is 4 times the HANC and VANC data space available (as shown in the tables of SMPTE RP 291-2) on a SMPTE ST 292-1 interface carrying the corresponding Sub Image format.

SMPTE RP 291-2 also provides a method of calculating the available ancillary data space on any interface. These calculations provide the reader with the underlying formulas used to calculate the numbers in the tables, as well as providing a mechanism to calculate the space for interfaces not covered explicitly by SMPTE RP 291-2.