Amendment 1:2014 to SMPTE ST 425-1:2011

SMPTE STANDARD

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

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Approved
May 13, 2014

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, Engineering Guidelines and Registered Disclosure Documents, 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.

Amendment 1 to SMPTE ST 425-1:2011 was prepared by Technology Committee 32NF.

1 Scope

The purpose of this amendment is to add an additional provision which defines Time Code mapping into the Level A section. Numbers of the Mapping Structure are also added into the Table 13 of the Level B-DL section.

This amendment also modifies the provisions which define the data and ancillary data mappings of the Level B-DL to clarify the accordance with SMPTE ST 372.

This amendment also adds the note into the Level B-DL section to clarify the maximum number of audio channels that varies in accordance with the video format and the video frame rate.

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

2 Amendment of Section 3 Normative References

Add the following Normative Reference:

SMPTE ST 12-2:2014, Transmission of Time Code in the Ancillary Data Space

3 Amendment of Section 4.1 20-Bit Virtual Interface

Add a new Section 4.1.7.:

4.1.7 Time Code Data

When present the time code shall be mapped into the horizontal ancillary data space of data stream one, and shall be in conformance with SMPTE ST 12-2.

The vertical placement of the packet shall be in accordance with the recommendations given in SMPTE ST 12-2.

4 Amendment of section 5 Level B — Mapping of SMPTE ST 372 Dual-Link

Replace the third paragraph with the following sentences:

~~All applicable ancillary data shall be mapped into each Link A and Link B of the Dual-Link interface prior to final mapping into the Virtual Interface of this standard. The correct construction of this data is defined in SMPTE ST 372, in the applicable source image format document, and/or in any other applicable mapping document.~~ When present, the ancillary data shall be mapped into the HANC or the VANC space of data streams one and two. Ancillary data mapping rules are defined in SMPTE ST 372. The ancillary data packet shall be in conformance with SMPTE ST 291-1.

Add the following texts as the fourth and fifth paragraphs of the Section 5:

Up to 32 audio channels sampled at 32 kHz, 44.1 kHz, or 48 kHz may be mapped into the horizontal ancillary data space of data stream one and data stream two of the virtual interface. At 96-kHz sampling, 16 audio channels may be mapped.

Note: The maximum number of audio channels that can be mapped into the available horizontal ancillary data space varies in accordance with the video format and the video frame rate. Table 4 illustrates the number of audio channels that can be supported in each case.

5 Amendment of Section 5.1 SMPTE ST 372 Dual Link Mapping

Replace the first paragraph with the following sentences:

~~Two parallel 10-bit interfaces of the same line and frame structure, having bit synchronization and constructed in conformance with SMPTE ST 372,~~ R', G', B',/ Y', C'$_B$, C'$_R$,/ *X', Y', Z'* and A components shall be mapped into a 20-bit Virtual Interface consisting of two data streams — data stream one and data stream two. The data mapping rules are defined in SMPTE ST 372.

6 Amendment of Table 13

Add the number of each Mapping Structure into the leftmost column of the Table 13:

Table 13 – Source Image Formats carried by the SMPTE ST 372 Dual Link interface

~~Mapping Structure in~~ SMPTE ST 372 Mapping Structure	Reference SMPTE Standard	Image Format	Signal Format Sampling Structure/Pixel Depth	Frame/Field Rates	Transport
I §5.1	ST 274	1920 × 1080	4:2:2 (Y'C'$_B$C'$_R$)/10-bit	60, 60/1.001 and 50 Frames Progressive	Interlaced
	ST 2048-2	2048 × 1080[*6]	4:2:2 (Y'C'$_B$C'$_R$)/10-bit	60, 60/1.001, 50, 48 and 48/1.001 Progressive	Interlaced
II §5.2, §5.4	ST 274	1920 × 1080	4:4:4 (R'G'B'), 4:4:4:4 (R'G'B' +A)/10-bit[*4] 4:4:4 (Y'C'$_B$C'$_R$), 4:4:4:4 (Y'C'$_B$C'$_R$+A)/10-bit[*4]	60, 60/1.001 and 50 Fields Interlaced	Interlaced
				30, 30/1.001, 25, 24 and 24/1.001 Frames Progressive	Progressive
				30, 30/1.001, 25, 24 and 24/1.001 PsF	PsF[*1]
	ST 2048-2	2048 × 1080[*6]	4:4:4 (R'G'B') [*7], 4:4:4:4 (R'G'B' +A) /10-bit[*4] 4:4:4 (Y'C'$_B$C'$_R$), 4:4:4:4 (Y'C'$_B$C'$_R$+A) /10-bit[*4]	30, 30/1.001, 25, 24 and 24/1.001 Progressive	Progressive
				30, 30/1.001, 25, 24 and 24/1.001 PsF	PsF[*1]
III §5.3, §5.4	ST 274	1920 × 1080	4:4:4 (R'G'B')/12-bit 4:4:4 (Y'C'$_B$C'$_R$)/12-bit	60, 60/1.001 and 50 Fields Interlaced	Interlaced
				30, 30/1.001, 25, 24 and 24/1.001 Frames Progressive	Progressive
	ST 2048-2	2048 × 1080[*6]	4:4:4 (R'G'B') [*7]/12-bit 4:4:4 (Y'C'$_B$C'$_R$)/12-bit	30, 30/1.001, 25, 24 and 24/1.001 Progressive	Progressive
				30, 30/1.001, 25, 24 and 24/1.001 PsF	PsF[*1]
	ST 428-9	2048 x 1080[*5]	4:4:4 (*X'Y'Z'*)/12-bit	24 Frames Progressive	Progressive
				24 Frames PsF	PsF[*2]
	ST 428-19	2048 × 1080[*5]	4:4:4 (*X'Y'Z'*)/12-bit	25 and 30Frames Progressive	Progressive
				25 and 30Frames PsF	PsF[*3]
IV §5.5	ST 274	1920 × 1080	4:2:2 (Y'C'$_B$C'$_R$)/12-bit	60, 60/1.001 and 50 Fields Interlaced	Interlaced
				30, 30/1.001, 25, 24 and 24/1.001 Frames Progressive	Progressive
				30, 30/1.001, 25, 24 and 24/1.001 Frames PsF	PsF[*1]

	ST 2048-2	2048 × 1080[*6]	4:2:2 ($Y'C'_BC'_R$)/12-bit,	30, 30/1.001, 25, 24 and 24/1.001 Progressive	Progressive
			4:2:2:4 ($Y'C'_BC'_R$)/12-bit + A[*4]	30, 30/1.001, 25, 24 and 24/1.001 PsF	PsF[*1]