

SMPTE STANDARD



D-Cinema Packaging – DCP Operational Constraints

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Foreword

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

This SMPTE ST 429-2 amendment was prepared by Technology Committee 21DC.

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.

Scope

The scope of this amendment is to integrate the additional frame rate standard [SMPTE ST 429-13:2009] D-Cinema Packaging — DCP Operational Constraints for Additional Frame Rates into the standard [ST429-2 D-Cinema Packaging — DCP Operational Constraints].

1. Updates to section 3 “Normative References”.

1a. - Update the reference to “[SMPTE ST 428-1:2006] D-Cinema Distribution Master — Image Characteristics” to the most recent version of this same standard: “[SMPTE ST 428-1:20XX] D-Cinema Distribution Master — Image Characteristics”.

1b. – Update the reference to “[SMPTE ST 429-4:2006] D-Cinema Packaging — MXF JPEG 2000 Application” to the most recent version of this same standard: “[SMPTE ST 429-4:20XX] D-Cinema Packaging — MXF JPEG 2000 Application”.

1c. - The following reference:

“[ISO/IEC 15444-1:2004] Information Technology — JPEG 2000 Image Coding System: Core Coding System”

shall be changed into:

“[ISO/IEC 15444-1:2016] Information Technology — JPEG 2000 Image Coding System: Core Coding System”

1d. - The reference to “[ISO/IEC 15444-1:2004/Amd 1:2006] Profiles for Digital Cinema Applications” shall be removed entirely.

2. Update section 8.1 - “Edit Rate”

The line

“The composition shall have an Edit Rate of 24/1 or 48/1. (See also Annex B.)”

shall be changed into

“The composition shall have an Edit Rate of 24/1, 25/1, 30/1, 48/1, 50/1 or 60/1.”

3. Update table 1 in section 8.2 – “Picture Essence Encoding”

Replace Table 1 with the following table:

Table 1 – Pixel Array Dimensions

Format	Horizontal Pixels	Vertical Pixels	Frame Rate
<i>2K Scope (2.39:1)</i>	2048	858	24/1, 25/1, 30/1, 48/1, 50/1 or 60/1
<i>2K Flat (1.85:1)</i>	1998	1080	24/1, 25/1, 30/1, 48/1, 50/1 or 60/1
<i>2K Full (1.90:1)</i>	2048	1080	24/1, 25/1, 30/1, 48/1, 50/1 or 60/1
<i>4K Scope (2.39:1)</i>	4096	1716	24/1, 25/1 or 30/1,
<i>4K Flat (1.85:1)</i>	3996	2160	24/1, 25/1 or 30/1,
<i>4K Full (1.90:1)</i>	4096	2160	24/1, 25/1 or 30/1,

4 - Update section 8.5 - “Sound and Picture Sample Rates”

4a - Change the line

“The sample rate of sound essence in a Composition shall be one of the combinations *a-d* listed in Table 2.”
into

“The sample rate of sound essence in a Composition shall be one of the combinations *a-l* listed in Table 2.”

4b - Replace Table 2 with the following table:

Table 2 – Sample Rate Constraints

	Sound Sample Rate	Composition Edit Rate	Samples per Edit Unit
<i>a</i>	48 kHz	24/1	2000
<i>b</i>	48 kHz	25/1	1920
<i>c</i>	48 kHz	30/1	1600
<i>d</i>	48 kHz	48/1	1000
<i>e</i>	48 kHz	50/1	960
<i>f</i>	48 kHz	60/1	800
<i>g</i>	96 kHz	24/1	4000
<i>h</i>	96 kHz	25/1	3840
<i>i</i>	96 kHz	30/1	3200
<i>j</i>	96 kHz	48/1	2000
<i>k</i>	96 kHz	50/1	1920
<i>l</i>	96 kHz	60/1	1600

5 - Update version of JPEG reference in section 10.2.2 - “Compression”

Change the line

“Picture essence shall be compressed using JPEG 2000 [ISO/IEC 15444-1] as constrained by [ISO/IEC 15444-1:2004/Amd 1:2006].”

Into

“Picture essence shall be compressed using JPEG 2000 [ISO/IEC 15444-1].”

6 - Remove Annex B - “Additional Frame Rates (Informative)”

Remove Annex B in its entirety. Both the header and the contents shall be removed.

7 - Change the heading of the section “Annex C Bibliography (Informative)”.

The header of section “Annex C Bibliography (Informative)” shall be changed from

“Annex C Bibliography (Informative)”

into

“Bibliography (Informative)”

8 - Remove two references from the section “Bibliography (Informative)”.

8a. – Remove the reference to “[SMPTE ST 428-11:2013] Additional Frame Rates for D-Cinema”.

8b. – Remove the reference to “[SMPTE ST 429-13:2009] D-Cinema Packaging — DCP Operational Constraints for Additional Frame Rates”.