

REVISION TO DCI *DIGITAL CINEMA SYSTEM SPECIFICATION* **COMPLIANCE TEST PLAN, VERSION 1.2**

CTP Revision items continue to be evaluated and will be posted after agreement by the DCI membership that the specific CTP Revision needs to modify the DCI *Digital Cinema System Specification, Compliance Test Plan, Version 1.2*.

Suggested CTP Revision issues may be emailed to dcinfo@dcimovies.com. Please include "CTP Revision" in the subject line.

DCI DCSS CTP v1.2 REVISION

1 OCTOBER 2018

Revision Date	Revision Stage Type	CTP v1.2 Page No.	Sections Affected	Problem Description	Revision Description
August 23, 2018	1	268	6.5.2	<p>DCSS Section 8.3.3 <i>Environment, Image Parameters and Projected Image Tolerances</i> states that the SMPTE published recommended practice [SMPTE RP 431-2: D-Cinema Quality - Reference Projector and Environment] shall be utilized and shall be normative in its entirety for this specification.</p> <p>However, the instructions in CTP V1.2 Section 6.5.2 <i>Decoder Requirements</i>, procedure #3, Part C do not reference the current tolerances defined in RP 431-2.</p>	Replace CTP V1.2 Section 6.5.2 <i>Decoder Requirements</i> , procedure #3 in its entirety with the revised procedure #3 below.

Current CTP 1.2 Text – Section 6.5.2 – Procedure Test 3:

3. To test for X'Y'Z' color reproduction: Using a *DCI Projector*, properly calibrated for Luminance and Color Calibration and a *Spectroradiometer*, perform the following steps:

- a. For each of the 12 Color Accuracy color patch code values referenced in [SMPTE-431-2], Table A.4, display the given X'Y'Z' code values. This may be achieved by displaying a suitable test file or by delivering the appropriate signal to an external interface (e.g. Dual-Link HD-SDI). Measure the and record the displayed Luminance and Color Coordinates for each of the Color Accuracy patches.
- b. Play back the composition *Color Accuracy Series* and measure and record the displayed Luminance and Color Coordinates for each of the Color Accuracy patches.
- c. For each of the corresponding reference and decoded values recorded in steps i and ii, calculate the delta E*ab values and record them.

If any of the values recorded in step iii is >4.0 this is cause to fail this test.

Revised CTP 1.2 Text – Section 6.5.2 – Procedure Test 3:

3. To test for X'Y'Z' color reproduction: Using a DCI Projector, properly calibrated for Luminance and Color Calibration and a *Spectroradiometer*, perform the following steps:
 - a. For each of the 12 Color Accuracy color patch code values referenced in [SMPTE-431-2], Table A.4, display the given X'Y'Z' code values. This may be achieved by displaying a suitable test file or by delivering the appropriate signal to an external interface (e.g. Dual-Link HD-SDI). Measure and record the displayed Luminance and Color Coordinates for each of the Color Accuracy patches.
 - b. Play back the composition Color Accuracy Series and measure and record the displayed Luminance and Color Coordinates for each of the Color Accuracy patches.
 - c. For each of the corresponding reference and decoded values recorded in steps i and ii, calculate the x and y delta values and record them.

If any of the values recorded in step iii exceed the tolerances defined in [SMPTE-431-2], Table A, Section 7.9 this is cause to fail this test.

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Revision Date	Revision Stage Type	CTP v1.2 Page No.	Sections Affected	Problem Description	Revision Description
August 23, 2018	2	360	10.4.43	Additional clarification to assure all image and audio (main sound and OBAE) Forensic Marking is applied prior to content essence leaving the MB.	Replace CTP test as shown below.

Current CTP 1.2 Test 10.4.43:

10.4.43. FM Insertion Requirements

Verify that FM insertion is a real-time (i.e., show playback time), in-line process performed in the associated MB, and has a reasonable computational process.

Reference Document ID	Reference Document Section(s)
[DCI-DCSS-1-2]	DCSS 9.4.6.1.1

Revised CTP 1.2 Test 10.4.43:

10.4.43. FM Insertion Requirements

- Verify that audio and image FM insertion is a real-time (i.e., show playback time), in-line process performed in the associated MB, and has a reasonable computational process.
- Verify that audio (main sound and OBAE, as applicable) and image FM is applied at the earliest point after decryption and prior to the essence being present on any data bus outside the MB.

Reference Document ID	Reference Document Section(s)
[DCI-DCSS-1-2-3]	DCSS 9.4.6.1.1, 9.4.6.2 #9

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DCI DCSS CTP v1.2 REVISION

1 OCTOBER 2018

Revision Date	Revision Stage Type	CTP v1.2 Page No.	Sections Affected	Problem Description	Revision Description
August 23, 2018	2	363	10.4.60	Revised test to respond to new DCSS mandate for content keys to be protected if stored outside of secure silicon.	Replace CTP test as shown below.

Current CTP 1.2 Test 10.4.60:

10.4.60. Image Keys Outside Secure Silicon

In case keys decrypted from the KDM have to be stored externally (off-secure-chip memory is used for key caching within a Media Decryptor), verify that 2048 bit RSA, 128 bit AES or 112 bit TDES are used for encryption.

Reference Document ID	Reference Document Section(s)
[DCI-DCSS-1-2]	DCSS 9.5.2.2

Revised CTP 1.2 Test 10.4.60:

10.4.60. Content Keys Outside Secure Silicon

Verify that once decrypted from the KDM (and except when being used during playback) content keys are either cached within the secure silicon IC, or protected by AES key wrapping per NIST SP800-38F when cached externally to secure silicon within the Media Block.

Reference Document ID	Reference Document Section(s)
[DCI-DCSS-1-2-3]	DCSS 9.5.2.2, 9.7.4

DCI Digital Cinema Initiatives, LLC

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Revision Date	Revision Stage Type	CTP v1.2 Page No.	Sections Affected	Problem Description	Revision Description
August 23, 2018	2	368	10.4.84	Confirms the OMB conforms to the DCSS OBAE Addendum dated 1 October 2018.	Add new test as indicated below.

10.4.84. October 1, 2018, OBAE Addendum

- Verify that Media Block OBAE essence format processing is as represented by SMPTE ST 2098-2 Immersive Audio Bitstream Specification, per the requirements of the OBAE Addendum section 3.1 "Essence Format."
- Verify that Media Block OBAE essence processing is per SMPTE ST 429-18 D-Cinema Packaging – Immersive Audio Track File and consistent with all provisions of SMPTE ST 429-19 D-Cinema Packaging – DCP Operational Constraints for Immersive Audio, per the requirements of the OBAE Addendum section 3.2 "Packaging."
- Verify that Media Block OBAE essence decryption processing decrypts OBAE essence within the MB using only the MDEK KeyType delivered by a KDM per SMPTE ST 430-1 D-Cinema Operations – Key Delivery Message, per the requirements of the OBAE Addendum section 3.3 "Security." (See CTP section 6.1.4.)
- Verify that OBAE essence forensic marking adheres to the same requirements as non-OBAE audio (all audio channels are marked prior to essence leaving the MB and all FM marks are recoverable). Verify that that all OBAE forensic marking is enabled/disabled (all marked/none marked) pursuant to the presence/absence respectively of the MDEK flag defined in SMPTE ST 430-1 D-Cinema Operations – Key Delivery Message, per the requirements of the OBAE Addendum, section 3.4 "Forensic Marking." (See CTP sections 6.4.2, 6.4.3 and 10.4.43.)

Reference Document ID	Reference Document Section(s)
[DCI-DCSS-1-2-3]	(See OBAE Addendum)