Digital Cinema Initiatives, LLC (DCI)
CTP Addendum on Testing

Approved 26 July 26, 2011, and15 June 15,2022, and 13 October 2022
Digital Cinema Initiatives, LLC, Member Representative Committee

Contents

1. Introduction

DCI's primary purpose is to establish and document voluntary specifications for an open architecture for digital cinema that ensures a uniform and high level of technical performance, reliability and quality control.

The DCI Digital Cinema System Specification (DCSS) provides an open architecture for digital cinema that ensures a uniform and high level of technical performance, reliability and quality control. The Compliance Test Plan (CTP) was created by DCI to provide a uniform testing procedure for demonstrating compliance with the DCSS. Manufacturers may demonstrate compliance by developing equipment in accordance with the DCSS and its referenced SMPTE, ISO and FIPS standards, and then submitting the equipment for testing to a third-party entity licensed by DCI to administer the CTP.

Additional policies and procedures for testing are described herein, which shall apply to all certificated devices as defined in the opening of Part III of the CTP[1].

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[1] Image Media Block (IMB), Outboard Media Block (OMB), Image Media Block with OMB functions (IMBO), Link Decryptor Block (LDB), Projector, Screen Management System/Server (SMS) and Link Decryptor/Encryptor (LD/LE).

2. Definitions

2.1. Non-Programmable Related Components (NPRC)

Any non-programmable devices that do not affect compliance of the current DCSS, *e.g.*, non-programmable integrated circuits, resistors, capacitors, transistors, inductors, lamps, fans, displays, power supplies, switches, connectors, fuses, passive components, mechanical components, *etc*.

3. Combining Devices into Families

An entity may aggregate some of its products that only have different NPRCs into a family group by attesting to the similarity of that family group in a letter, signed by a person who has authority to bind the entity under test to the terms of said letter. The letter shall be sent to the contracted licensed test entity and to DCI at dci.info@dcimovies.com.

The letter, which will be attached to the detailed report of the tested device, will clearly and comprehensively provide detailed information and justification as described below:

- Clear justification for combining various products into a family group.
- Itemized model number and description of the product tested and each of the products proposed to be in the same family group.
- Clear itemized differences between each product model in a proposed family group.
- Attest that all SPB-1 electrical, mechanical, and data-protocol interfaces and behavior are identical among all models of the proposed family group.
- Attest that all implementations of SPB-2 normative device requirements are identical among all models of the proposed family group.

Further, the form provided on the last page of this CTP Addendum on Testing shall be attached to the letter to identify the general family group information. This form will be published with the summary report of the tested device on the DCI Compliant Family Groups web site page.

4. Interoperability

For projectors with an integrated Image Media Block (IMB), at least one projector must successfully pass testing with a particular IMB. Testing of that IMB model and version with other projectors in the family group is not required.

For media block-server combinations with link encryption, such servers must only pass testing with one projector that is already listed on the DCI website as Compliant Equipment. Testing of that server model and version with other projectors is not required.

5. Equipment Component Failures during Testing

5.1. Failures within the Test Subject

If any NPRCs fail within a Test Subject during CTP testing, the components may be replaced with *equivalent* units (having identical technical specifications) and testing resumed from a test point

before any anomalous behavior was first observed. In order to assure compliance, the DCI licensed entity will determine the appropriate resumption point and continue testing all procedures thereafter in numerical order.

If any programmable components (*e.g.*, FPGAs) fail within a Test Subject during CTP testing and it can be shown rigorously by the manufacturer that a completely identical component with identical programming is available (same component, version and programming), the programmable component may be replaced with the identical component and testing resumed from a test point before any anomalous behavior was first observed. In order to assure compliance, the DCI licensed entity will determine the appropriate resumption point and continue testing all procedures thereafter in numerical order.

It is recognized that when an SPB-1 or SPB-2 is replaced, the private key will necessarily change. However, the certificate formulation (*e.g.*, digest method, subject name component values (O, OU), subject name CN roles, RSA, key length, extensions, *etc*.) will need to be identical to that of the certificate in the original SPB so as to result in the same system behavior.

5.2. Failures of Devices Connected to the Test Subject

Any device that fails during CTP testing that is connected to the Test Subject may be repaired and then verified as to its correct behavior. If correct behavior is verified, testing may resume from a test point before any anomalous behavior was first observed.

6. Changes to Previously DCI CTP Compliant Devices

Once compliance has been established for a particular device model through the use of the CTP, **all** product changes shall maintain compliance with the DCSS and CTP. Product changes may require retesting to ensure continued compliance. For the avoidance of doubt, no retesting is required if there are no product changes.

6.1. SPB Type 1 (SPB-1) Devices

Changes of any kind may require retesting of the SPB-1 device for FIPS 140 compliance by a Cryptographic Module Validation Program (CMVP) testing laboratory.[2] The extent of retesting of FIPS compliance shall be at the determination of the FIPS 140 CMVP testing laboratory. Device manufacturers shall notify DCI at dci.info@dcimovies.com of all SPB-1 upgrades prior to deployment, identifying all relevant component version numbers.

6.2. NPRC

Replacing NPRCs with technically equivalent components will not require retesting.

6.3. Software/Firmware and Confidence Retesting

All changes to software and firmware shall maintain compliance with the DCSS and CTP. Device

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[2] FIPS testing laboratories are independent laboratories certified by NIST.

manufacturers shall notify DCI at dci.info@dcimovies.com of all upgrades prior to deployment, identifying all relevant component version numbers.

Changes to software or firmware shall require Confidence Retesting by a licensed DCI test entity on a "three-year or four-upgrade cycle" if either

a) one, two or three upgrades are deployed within three years of the CTP compliance date, the device shall undergo a Confidence Retest prior to its third-year anniversary date; or

b) a fourth upgrade is intended to be deployed within three years of the CTP compliance date, the device shall undergo a Confidence Retest with the cumulative changes of all four upgrades installed prior to the deployment of that fourth upgrade.

Any Confidence Retest of updated software or firmware shall be conducted against the CTP in force as of the date the device is submitted for Confidence Retest, subject to the following exceptions.

To minimize barriers to upgrades, SPB devices that are already listed on the Compliant Equipment page of the DCI website may be excused from CTP tests associated with the bullets below for purposes of a Confidence Retest:

- Dual Media Block digital certificate requirements of DCSS Section 9.5.1, which were changed by erratum on April 20, 2011.[3]
- Secure silicon integrated circuit requirements of DCSS Section 9.5.2.2, which were changed by erratum on August 30, 2012.[4]
- Self-generated RSA key pair establishment per DCSS Section 9.5.1, which was changed by erratum on April 28, 2016.[5]
- Evolving NIST/FIPS requirements for SP800-90B and SP800-56Br2 compliance, per the "DCI Memorandum on NIST Standards Transitions and 'Non-FIPS Mode'" of 1 July 2020.[6]

Confidence Retests have been selected from the full CTP to assure that software/firmware changes have not impacted critical security functionality. Hardware, integrated circuit, FIPS related issues, *etc.*, are addressed by sections 6.1 and 6.2.

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[3] See: https://www.dcimovies.com/archives/spec_v1_2_No_Errata_Incorporated/errata_1-96_aug30/ERRATA_34-76_2011-04-20_TO_DCI_DCS.pdf, erratum #70
[4] See: https://www.dcimovies.com/archives/spec_v1_2_No_Errata_Incorporated/errata_1-96_aug30/DCI-Errata_90-96_v1-2_08-30-2012.html, erratum #96
[5] See: https://www.dcimovies.com/errata/v1_2_with-errata-8-12/DCI-Errata_24_APRIL-28-2016_v1-2_08-30-2012.pdf
[6] See: https://www.dcimovies.com/FIPS/DCI_Memo_on_NIST_Standards_transitions_and_Non-FIPS_mode_2020-07-01.pdf

         June 15,13 October 2022

7. Acronym List

CMVP	Cryptographic Module Validation Program
CTP	Compliance Test Plan
DCI	Digital Cinema Initiatives, LLC
DCSS	Digital Cinema System Specification
FIPS	Federal Information Processing Standards (refers to FIPS 140)
FPGA	Field-Programmable Gate Array
IMB	~~Integrated~~Image Media Block
NIST	National Institute of Science and Technology
NPRC	Non-Programmable Related Components
SPB	Secure Processing Block

To: Contracted DCI Licensed Test Entity
           Chairman, DCI Member Representatives Committee

From: **Manufacturer**	
Testament Submission Date	
Equipment Tested (Family Item 0) Make Model Version	
Family Item 1 Make Model Version	
Family Item 2 Make Model Version	
(add items as needed)	
Printed Name	
Job Title	
Signature	