

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

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

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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.

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 dcinfo@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.¹ 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 dcinfo@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 manufacturers shall notify DCI at dcinfo@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

¹ FIPS testing laboratories are independent laboratories certified by NIST.

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.

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.

7. Acronym List

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|------|---|
| 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 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 | |