

SMPTE REGISTERED DISCLOSURE DOCUMENT



D-Cinema Packaging — SMPTE DCP Bv2.1 Application Profile

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Version 1.0.0 – May 18, 2020

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Introduction

SMPTE DCP Bv2.1 Application Profile is a defined feature set of and constraints on Digital Cinema (D-Cinema) Packages and DCP elements within current standards, applicable to theatrical distribution, which have been integrated, globally agreed upon, tested, and rolled out by various industry experts, vendors, manufacturers, content owners, and industry bodies such as Inter-Society Digital Cinema Forum (ISDCF) and European Digital Cinema Forum (EDCF). This profile is simply referred to in the industry as “Bv2.1”.

Background

D-Cinema Composition manufacturing and packaging has long been plagued by global interchange interoperability since its inception. SMPTE ratified a suite of standards within the 428, 429 and 430 families to constrain the implementation of the format. However, throughout this ratification process, ambiguities have been introduced at the manufacturing level as the format has gradually evolved and been adopted due to subjective interpretation of the standards by both manufacturing and servicing vendors alike.

These ambiguities have often been the root cause of financial loss to multiple content owners over the course of various releases throughout the years. Efforts have been made to remediate such ambiguities through ad hoc industry group recommended practices. Unfortunately, such practices, although based on real world faults, are not enforceable. Without their adoption, such ambiguities are still present and will continue to be so until such further constraints are included in the primary documents and are enforced.

By creating an RDD D-Cinema Application, it allows the sponsors and other DCP creators who work with the format daily and on a global scale, to agree and disseminate the constraints based upon their real-world experience. The aim; allow adoption to any market player and eventually achieving approximately 99%+ interoperability of the most commonly distributed formats within the D-Cinema distribution supply chain.

1 Scope

This document specifies requirements and constraints for an Application of D-Cinema Package (DCP) mastering and packaging for playback globally on the highest percentage of systems, and applies to standard general release packages used in current distribution. The document does not preclude the use of current or future formats and/or constraints for special releases. The document follows the Image and Audio Characteristics, Track File and Composition constraints specified in SMPTE ST 429-2 D-Cinema Packaging — DCP Operational Constraints whenever possible. Where applicable, other further constraints to ST 429-2 and references to other documents are included to further define current mastering and packaging practices.

2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or contains the conformance language keywords: "shall", "should", or "may". Informative text is text that is potentially helpful to the user, but not indispensable, and can be removed, changed, or added editorially without affecting interoperability. Informative text does not contain any conformance keywords.

All text in this document is, by default, normative, except: the Introduction, any section explicitly labeled as "Informative" or individual paragraphs that start with "Note:"

The keywords "shall" and "shall not" indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

The keywords, "should" and "should not" indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.

The keywords "may" and "need not" indicate courses of action permissible within the limits of the document.

The keyword "reserved" indicates a provision that is not defined at this time, shall not be used, and may be defined in the future. The keyword "forbidden" indicates "reserved" and in addition indicates that the provision will never be defined in the future.

3 Normative References

The following documents contain provisions, which, through reference in this text, constitute provisions of this Application. At the time of publication, the editions indicated were valid. This document is subject to revision and parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent edition of the documents indicated below.

SMPTE, ST 428-7:2014 "D-Cinema Distribution Master — Subtitle"

SMPTE, ST 428-12:2013 "D-Cinema Distribution Master — Common Audio Channels and Soundfield Groups"

SMPTE, ST 429-2:2019 "D-Cinema Packaging — DCP Operational Constraints"

SMPTE, ST 429-18:2019 "D-Cinema Packaging — Immersive Audio Track File"

SMPTE, ST 429-19:2019 "D-Cinema Packaging — DCP Operational Constraints for Immersive Audio"

SMPTE, ST “429-8:2007 “D-Cinema Packaging — Packing List”

SMPTE, ST 429-7:2006 “D-Cinema Packaging — Composition Playlist”

SMPTE, ST 429-16:2014 “D-Cinema Packaging — Additional Composition Metadata and Guidelines”

SMPTE, ST 2001-1:2015 “XML Representation of SMPTE Registered Data (Reg-XML) – Mapping Rules”

SMPTE, ST 429-4:2020 “D-Cinema Packaging — MXF JPEG 2000 Application”

SMPTE, ST 429-6:2006 Amd 1:2018 “D-Cinema Packaging — MXF Track File Essence Encryption”

SMPTE, ST 377:2004¹ “Material Exchange Format MXF – File Format Specification”

ISO/IEC Joint Technical Committee JTC 1 (ISO/IEC), 15444-1:2016, “Information Technology — JPEG 2000 Image Coding System: Core Coding System”

Digital Cinema Initiatives (DCI), “Digital Cinema System Specification, Version 1.3”, (all Addenda and Errata, as of May 18, 2020)

Internet Assigned Numbers Authority (IANA), “Language Subtag Registry, File-Date: 2019-09-16”, Available: “<http://www.iana.org/assignments/language-subtag-registry>”

Internet Engineering Task Force (IETF), RFC 5646, “Tags for Identifying Languages”, 2009-09

Internet Engineering Task Force (IETF), RFC 4122, “A Universally Unique Identifier (UUID) URN Namespace”, 2005-07

Inter-Society Digital Cinema Forum (ISDCF), “Digital Cinema Naming Convention v.9.6.1”, Available: “<http://isdcf.com/dcnc>”

¹ The reference to SMPTE ST 377:2004 is intentional. SMPTE ST 377-1:2011 or future versions are not appropriate for use with this document.