Blu-ray Analysis

REVOLUTIONARY OPTICAL
TECHNOLOGY MADE SIMPLE

SPECIFICATION – ECLIPSESUITE BD ANALYSIS ENGINE

Protecting Your Process

All EclipseSuite BD programs use the same rules-based analysis engine. More than 150 new rules ensure every title meets the various BD specifications – at every point in the manufacturing process. The EclipseSuite Analysis Engine adheres to the following specifications:

- BD Read-Only – Part 1: Basic Format Specifications Ver.1.3 Nov.2005
- BD Read-Only – Part 2: File System Specifications Ver.1.2 Dec.2005
- BD Read-Only – Part 3: Audio Visual Basic Specifications Ver.2.01 Jan.2007
- Advanced Access Content System (AACS) – Blu-ray Disc Pre-recorded Book Ver. 0.912 July 27, 2006
- Blu-ray ROM Cutting Master Format (BDCMF) Ver. 0.90 20 Oct. 2006

Customizable Test Levels

The EclipseSuite Analysis Engine allows customization of each testing rule. EclipseSuite rule sets can be created and saved for use in different areas of the process, or to be shared with customers – ensuring compatibility. Each rule can be set to one of seven severity levels.

- Ignore – results are not displayed and will not influence final results
- Info –results are display with an info icon and will not influence final results
- Flag – results are displayed with a flag icon and will not influence final results
- Warning – results are displayed with a warning icon and will change final results to 'Pass With Warning'
- Error – results are displayed with an error icon, final results change to 'Failed', and test will continue
- Abort - results are displayed with an error icon, final results change to 'Failed', and test will stop immediately

AACS Support – Encryption and Decryption

The AACS encryption process starts at authoring and is completed in the replication plant mastering process. The EclipseSuite analysis engine uses specific test rules to ensure that the image is authored correctly for encryption. Once encrypted, any further analysis and verification securely decrypts the data automatically, validating the encryption and image contents.

Program	Encryption	Decryption
ImageAnalysis	No	Yes
ImageCopy	Yes	Yes[1]
ImageVerify	No	Yes

1 - Used for Verify-After-Copy

EclipseSuite AACS Encryption and Decryption

ImageSignature Tracking and Verification

The EclipseSuite BD Analysis Engine automatically calculates an ImageSignature and checksums during every analysis. Checksums ensure that all files associated with the title are accurately transferred from one process step to the next. Separate and different from checksums which protect every bit of every file, ImageSignature is highly-reliable mathematical representation of the user data and certain key information. Therefore, it can be used for identifying and verifying the image throughout the process – the Analysis Engine can calculate the same signature from a title as it moves from authoring as a CMF file, through encryption, and Final QC as a replica.

Specification for EclipseSuite Analyses Engine

Blu-ray Basic Format (Part 1)	CMF	Replica
Information Zone		
PIC Data	✓	✓
Emergency Brake	✓	--
PAC 2 Data	✓	--
PAC Data (primary cluster)	✓	✓
Push-Pull Polarity Flag	✓	✓

Blu-ray File System (Part 2)	CMF	Replica
UDF 2.5 - Basic Requirements		
General		
Timestamp	✓	✓
Entity Identifier	✓	✓
Volume Recognition Sequence	✓	✓
Volume Structure		
Descriptor Tag	✓	✓
Primary Volume Descriptor	✓	✓
Anchor Volume Descriptor Pointer	✓	✓
Logical Volume Descriptor	✓	✓
Unallocated Space Descriptor	✓	✓
Logical Volume Integrity Descriptor	✓	✓
Implementation Use Volume Descriptor	✓	✓
Virtual Partition Map	✓	✓
File Structure		
Descriptor Tag	✓	✓
File Set Descriptor	✓	✓
Partition Header Descriptor	✓	✓
File Identifier Descriptor	✓	✓
ICB Tag	✓	✓
File Entry	✓	✓
Unallocated Space Descriptor	✓	✓
Space Bitmap Descriptor	✓	✓
Partition Integrity Entry	✓	✓
Allocation Descriptors	✓	✓
Allocation Extent Descriptor	✓	✓
Pathname	✓	✓

Blu-ray Audio Visual System (Part 3)	CMF	Replica
Navigation (*No AV Stream Validation*)		
Top Menu	✓	✓
Orphan Clips	✓	✓
First Playback	✓	✓
m2ts Title Key Mapping	✓	✓

AACS for Blu-ray	CMF	Replica
Content Revocation		
Content Certificate		
Header	✓	✓
Digest Values	✓	✓
Hash Values	✓	✓
Root Certificate	✓	✓
Allocation Size	✓	✓
Content Revocation List	✓[1]	--
Content Hash Table		
Data Structure	✓	✓
Hash Calculations	✓	✓
Content Encryption And Decryption		
Media Key Block	✓	✓
Volume Identifier	✓	✓
CP_Sector	✓	--
PMKB for Host Revocation List	--	--
CPS Unit Key File and CPS Usage File		
Application Format Structure	✓	✓
CPS Unit	✓	✓
CPS Unit Key File (Unit_Key_RO.inf)	✓	✓
CPS Unit Usage File (CPSUnitXXX.cci)	--	--
Encrypted Packs	✓	✓
Encryption Scheme	✓	✓
Copy Permission Indicator	✓	✓
Embedded CCI in AV Content	--	--
Managed Copy – Pre-Recorded Content		
Managed Copy Manifest File	✓	✓
ISAN	✓	✓
Data Allocation Restrictions	✓	✓

BDCMF	CMF	Replica
General	✓	N/A
BDCMF.CMF	✓	N/A
PIC.DAT	✓	N/A
PAC.DAT	✓	N/A
UD.DAT	✓	N/A
AACS1.DAT	✓	N/A

Checks XML File Structure, Required Elements, & Cross-Checks to Image

Miscellaneous	CMF	Replica
ImageSignature	✓	✓
ImageIntegrity Checksum	✓	N/A

[1] Checked by Eclipse CMU

✓ = Validated N/A = Not Applicable