Logo for DVD/HD DVD-Video Player
will be put here after it will be decided.

# HD DVD-Video
# Product Requirement & Guideline

## Version 1.2

## June 2008

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- September 2005
  The Version 1.0 was issued.

- December 2005
  The Version 1.0 was updated to Version 1.01 for the following reasons:
  - To accommodate for the issuance of "DVD Specifications for High Definition VIDEO RECORDING Version 1.0" (Sections **1.3.3, 3.2.2** and **3.3.2** were revised.)
  - To clarify the requirements for PC software HD DVD-Video Player (Section **3.3.2** was revised.)

- February 2006
  The Version 1.01 was updated to Version 1.02 for the following reasons:
  - To add requirements of content to HD DVD-Video Disc. (Sections **2.2.2, 2.3.2** were added.)
  - To clarify and add the requirements for HD DVD-Video Player (Sections **3.2.2, 3.3.2** were revised.)

- September 2006
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  - To add the requirements for HD DVD-Video Player. (Sections **3.2.2, 3.3.2** were revised.)

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  - To clarify Scope (Section **1.1**)
  - To add Product Category (Sections **1.2.1, 1.2.2, 2.1, 2.4, 2.5, 2.6, 2.7, 3.1** were revised.)
  - To add specification list (Sections **1.3.1, 1.3.2, 3.2.1, 3.3.1** were revised.)
  - To modify Content Protection part (Section **1.4**)
  - To add DVD writable disc, HD DVD-Video disc and HD DVD writable disc (Section **1.5**)
  - To add an Abbreviation (Section **1.6**)
  - To modify the AACS compliance requirements (Sections **2.2.1, 2.3.1**)
  - To add the requirements for HD DVD-Video Player (Sections **3.2.2, 3.3.2** were revised.)
  - To add a recommendation to Content Format Description (Section **4.2** was revised.)

- June 2008
  The Version 1.1 was updated to Version 1.2 for the following reason:
  - To add DVD/HD Video Player as a new Product Category. (Sections **1.2.3, 4, 5.4** were added. Sections **1.1, 1.2.2** were revised.)

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# 1. General

## 1.1 Scope

This document defines the minimum requirements for HD DVD-Video products* for manufactures from a consumer's point of view and the minimum requirements for a typical HD DVD-Video product*.

HD DVD-Video product shall comply with the requirements described in the "HD DVD-Video Product Requirement & Guideline".

*: The products which refer to the HD DVD-Video specifications as defined in **1.2 HD DVD-Video Product Category**, except for products which have HD DVD-Video Format Recording capability. As for the minimum requirements for the HD DVD-Video Format Recording products, refer to "HD DVD-Video Format Recording Product Requirement & Guideline".

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## 1.2 HD DVD-Video Product Category

HD DVD-Video Product Requirement & Guideline defined in this document applies to the following product categories and specifications.

### 1.2.1 HD DVD-Video Disc

1) HD DVD-Video Disc using HD DVD-ROM*
2) HD DVD-Video Disc using 3x-speed DVD-ROM
3) HD DVD-Video Disc using DVD-R for General
4) HD DVD-Video Disc using DVD-R for DL
5) HD DVD-Video Disc using HD DVD-R
6) HD DVD-Video Disc using HD DVD-R for DL

***: HD DVD-ROM/DVD-ROM Twin format disc is included.***

### 1.2.2 HD DVD-Video Player

1) Standalone HD DVD-Video Player for consumer use
2) PC software HD DVD-Video Player with HD DVD Drive

Note: In this product category, Players have the capability of playback of both HD DVD-ROM disc and 3x DVD-ROM disc containing HD DVD-Video content, and also they may have the capability of playback of some HD/DVD writable discs containing HD DVD-Video content.

### 1.2.3 DVD/HD Video Player

1) Standalone DVD/HD Video Player for consumer use
2) PC software DVD/HD Video Player with DVD Drive

Note: In this product category, Players have the capability of playback of 3x DVD-ROM and some DVD writable discs containing HD DVD-Video content, but they do not have the capability of playback HD DVD-ROM nor HD DVD writable discs.

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## 1.3 Normative References

HD DVD-Video product shall comply with all of relevant specifications listed here.

Notes: In the event of minor updates to the applicable specifications which is defined as a change of second digit or third digit of version number, such as from 1.1 to 1.2, all HD DVD-Video products shall comply with the updated specifications after a reasonable time period, even if this HD DVD-Video Product Requirement & Guideline is not updated. The latest version of each of the applicable specifications will be informed on the DVD FLLC web site, www.dvdfllc.co.jp.

In the event of major updates to the applicable specifications, which is defined as a change of first digit of version number such as from 1.0 to 2.0, or the creation of a new format, HD DVD-Video products are not required to comply with these updates or the new format until the HD DVD-Video Product Requirement & Guideline document is updated. Major specification revisions or new format specifications will be informed on the DVD FLLC web site, www.dvdfllc.co.jp.

### 1.3.1 Physical specifications

1) DVD Specifications for High Density Read-Only Disc (HD DVD-ROM)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.2*1
   **1: **HD DVD-ROM/DVD-ROM Twin format disc is defined in Annex P (Normative).***
2) DVD Specifications for Read-Only Disc
   Part 1: PHYSICAL SPECIFICATIONS Version 1.0
   Optional specifications: 3x-speed DVD-ROM Revision 1.1 (3x DVD-ROM)
3) DVD Specifications for High Density Rewritable Disc (HD DVD-RAM)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.1
4) DVD Specifications for High Density Recordable Disc (HD DVD-R)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.1
5) DVD Specifications for High Density Recordable Disc for Dual Layer (HD DVD-R for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
6) DVD Specifications for High Density Re-recordable Disc (HD DVD-RW)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.1
7) DVD Specifications for High Density Re-recordable Disc for Dual Layer (HD DVD-RW for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
8) DVD Specifications for Rewritable Disc (DVD-RAM)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.2
9) DVD Specifications for Recordable Disc for General (DVD-R for General)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
10) DVD Specifications for Recordable Disc for Dual Layer (DVD-R for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 3.0

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11) DVD Specifications for Re-recordable Disc (DVD-RW)
Part 1: PHYSICAL SPECIFICATIONS Version 1.2

12) DVD Specifications for Re-recordable Disc for Dual Layer (DVD-RW for DL)
Part 1: PHYSICAL SPECIFICATIONS Version 2.0

### 1.3.2 File System specifications

1) DVD Specifications for High Density Read-Only Disc (HD DVD-ROM)
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

2) DVD Specifications for Read-Only Disc
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0
Optional specifications: FILE SYSTEM for HD DVD-Video on 3x-speed DVD-ROM Revision 1.0

3) DVD Specifications for High Density Rewritable Disc (HD DVD-RAM)
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

4) DVD Specifications for High Density Recordable Disc (HD DVD-R)
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.1

5) DVD Specifications for High Density Recordable Disc for Dual Layer (HD DVD-R for DL)
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

6) DVD Specifications for High Density Re-recordable Disc (HD DVD-RW)
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

7) DVD Specifications for High Density Re-recordable Disc for Dual Layer (HD DVD-RW for DL)
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

8) DVD Specifications for Rewritable Disc (DVD-RAM)
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

9) DVD Specifications for Recordable Disc for General (DVD-R for General)
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.1
Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

10) DVD Specifications for Recordable Disc for Dual Layer (DVD-R for DL)
Part 2: FILE SYSTEM SPECIFICATIONS Version 3.0
Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

11) DVD Specifications for Re-recordable Disc (DVD-RW)
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

12) DVD Specifications for Re-recordable Disc for Dual Layer (DVD-RW for DL)
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

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### 1.3.3 Application specifications

1) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1
2) HD DVD-Video Guideline for Player and Content*2
3) DVD Specifications for High Definition VIDEO RECORDING (HD DVD-VR) Version 1.0

**2: This guideline defines the restrictions for content programming and player performance which comply with HD DVD-Video specifications.*

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## 1.4 Content Protection

The basic policy of the DVD Forum is to respect copyrights and to enable content protection systems. According to the basic policy stated above, AACS has been/will be adopted for HD DVD content and media as an appropriate content protection system. Therefore it is recommended that the manufacturers confirm the latest AACS License.

Note: AACS License information is available from the AACS LA, LLC, www.aacsla.com.
Available AACS License and specifications and their updates will be informed by the DVD Forum or check web site of the DVD Forum or AACS LA, LLC.

Since the content protection system is not a DVD Forum specification, it is not subject to the DVD Forum verification but compliance to the specification is recommended by the DVD Forum.

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## 1.5 Terminology

**DVD writable disc:**
This is a general term of discs, except for HD DVD writable discs, which are able to record the data onto the disc and are defined in the DVD Forum. At the time of publication, this document is applicable to the following specifications.

- DVD-RAM
- DVD-R for General
- DVD-R for DL
- DVD-RW
- DVD-RW for DL

**HD DVD-Video Disc:**
This is HD DVD Disc specified in DVD Specifications for High Definition VIDEO.

**HD DVD writable disc:**
This is a general term of high density discs which are able to record the data onto the disc and are defined in the DVD Forum. At the time of publication, this document is applicable to the following specifications.

- HD DVD-RAM
- HD DVD-R
- HD DVD-R for DL
- HD DVD-RW
- HD DVD-RW for DL

**Interoperable Content:**
Content specified by "DVD Specifications for High Definition VIDEO" and "DVD Specifications for High Definition VIDEO RECORDING".

**Twin format disc:**
A DVD disc specified by "DVD Specifications for High Density Read-Only Disc".

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## 1.6 Abbreviations

| | |
|---|---|
| AACS | Advanced Access Content System |
| VAT | Virtual Allocation Table |

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# 2. HD DVD-Video Disc

## 2.1 General Descriptions

This specification covers six categories as follows:

1) HD DVD-Video Disc using HD DVD-ROM*
2) HD DVD-Video Disc using 3x-speed DVD-ROM
3) HD DVD-Video Disc using DVD-R for General
4) HD DVD-Video Disc using DVD-R for DL
5) HD DVD-Video Disc using HD DVD-R
6) HD DVD-Video Disc using HD DVD-R for DL

***: HD DVD-ROM/DVD-ROM Twin format disc is included.***

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## 2.2 Requirements of HD DVD-Video Disc using HD DVD-ROM

### 2.2.1 Technical requirements

The technical requirements for HD DVD-Video Disc using HD DVD-ROM are listed as below.

1) DVD Specifications for High Density Read-Only Disc (HD DVD-ROM)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.2
   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

2) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

It is recommended to comply with AACS License, if the content needs to be protected.

### 2.2.2 Requirements of content

Content of HD DVD-Video Disc shall not be designed to send illegitimate data to the Internet, and to harm software or hardware of HD DVD-Video Player.

Note: This section may be revised in the near future.

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## 2.3 Requirements of HD DVD-Video Disc using 3x-speed DVD-ROM

### 2.3.1 Technical requirements

The technical requirements for HD DVD-Video Disc using 3x-speed DVD-ROM are listed as below.

1) DVD Specifications for Read-Only Disc
   Part 1: PHYSICAL SPECIFICATIONS Version 1.0
   Optional specifications: 3x-speed DVD-ROM Revision 1.1 (3x DVD-ROM)
   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0
   Optional specifications: FILE SYSTEM for HD DVD-Video on 3x-speed DVD-ROM Revision 1.0

2) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

*Note: Combination of HD DVD-Video with DVD-Video on the same disc layer shall not be allowed.*

It is recommended to comply with AACS License, if the content needs to be protected.

### 2.3.2 Requirements of content

Content of HD DVD-Video Disc shall not be designed to send illegitimate data to the Internet, and to harm software or hardware of HD DVD-Video Player.

Note: This section may be revised in the near future.

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## 2.4 Requirements of HD DVD-Video Disc using DVD-R for General

### 2.4.1 Technical requirements

The technical requirements for HD DVD-Video Disc using DVD-R for General are listed as below.

1) DVD Specifications for Recordable Disc for General (DVD-R for General)
Part 1: PHYSICAL SPECIFICATIONS Version 2.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.1
Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

VAT or Read-only partition of UDF Revision 2.5 shall be used. Read-only partition is recommended.

2) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

*Note: Combination of HD DVD-Video with DVD-Video on the same disc layer shall not be allowed.*

If the content needs to be protected, it is recommended to comply with AACS License, after AACS content protection specification for HD DVD-Video on DVD writable disc is defined in the License.

### 2.4.2 Requirements of content

Content of HD DVD-Video Disc shall not be designed to send illegitimate data to the Internet, and to harm software or hardware of HD DVD-Video Player.

Note: This section may be revised in the near future.

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## 2.5 Requirements of HD DVD-Video Disc using DVD-R for DL

### 2.5.1 Technical requirements

The technical requirements for HD DVD-Video Disc using DVD-R for DL are listed as below.

1) DVD Specifications for Recordable Disc for Dual Layer (DVD-R for DL)
Part 1: PHYSICAL SPECIFICATIONS Version 3.0
Part 2: FILE SYSTEM SPECIFICATIONS Version 3.0
Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

VAT or Read-only partition of UDF Revision 2.5 shall be used. Read-only partition is recommended.

2) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

*Note: Combination of HD DVD-Video with DVD-Video on the same disc layer shall not be allowed.*

If the content needs to be protected, it is recommended to comply with AACS License, after AACS content protection specification for HD DVD-Video on DVD writable disc is defined in the License.

### 2.5.2 Requirements of content

Content of HD DVD-Video Disc shall not be designed to send illegitimate data to the Internet, and to harm software or hardware of HD DVD-Video Player.

Note: This section may be revised in the near future.

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## 2.6 Requirements of HD DVD-Video Disc using HD DVD-R

### 2.6.1 Technical requirements

The technical requirements for HD DVD-Video Disc using HD DVD-R are listed as below.

1) DVD Specifications for High Density Recordable Disc (HD DVD-R)
Part 1: PHYSICAL SPECIFICATIONS Version 1.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.1

VAT or Read-only partition of UDF Revision 2.5 shall be used. Read-only partition is recommended.

2) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

If the content needs to be protected, it is recommended to comply with AACS License, after AACS content protection specification for HD DVD-Video on HD DVD writable disc is defined in the License.

### 2.6.2 Requirements of content

Content of HD DVD-Video Disc shall not be designed to send illegitimate data to the Internet, and to harm software or hardware of HD DVD-Video Player.

Note: This section may be revised in the near future.

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## 2.7 Requirements of HD DVD-Video Disc using HD DVD-R for DL

### 2.7.1 Technical requirements

The technical requirements for HD DVD-Video Disc using HD DVD-R for DL are listed as below.

1) DVD Specifications for High Density Recordable Disc for Dual Layer (HD DVD-R for DL)
Part 1: PHYSICAL SPECIFICATIONS Version 2.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

VAT or Read-only partition of UDF Revision 2.5 shall be used. Read-only partition is recommended.

2) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

If the content needs to be protected, it is recommended to comply with AACS License, after AACS content protection specification for HD DVD-Video on HD DVD writable disc is defined in the License.

### 2.7.2 Requirements of content

Content of HD DVD-Video Disc shall not be designed to send illegitimate data to the Internet, and to harm software or hardware of HD DVD-Video Player.

Note: This section may be revised in the near future.

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# 3. HD DVD-Video Player

## 3.1 General Descriptions

This specification covers two categories as follows:

1) Standalone HD DVD-Video Player for consumer use
2) PC software HD DVD-Video Player with HD DVD Drive

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## 3.2 Requirements of Standalone HD DVD-Video Player for consumer use

The technical requirements for Standalone HD DVD-Video Player for consumer use are listed as below.

### 3.2.1 Specifications

Standalone HD DVD-Video Player for consumer use shall comply with the following specifications:

1) DVD Specifications for High Density Read-Only Disc (HD DVD-ROM)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.2
   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

2) DVD Specifications for Read-Only Disc
   Part 1: PHYSICAL SPECIFICATIONS Version 1.0
   Optional specifications: 3x-speed DVD-ROM Revision 1.1 (3x DVD-ROM)

   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0
   Optional specifications: FILE SYSTEM for HD DVD-Video on 3x-speed DVD-ROM Revision 1.0

3) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

Standalone HD DVD-Video Player for consumer use should comply with the following specification before July 1st, 2009, and shall comply with the following specifications on and after July 1st, 2009:

4) DVD Specifications for High Density Recordable Disc (HD DVD-R)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.1
   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.1

5) DVD Specifications for High Density Recordable Disc for Dual Layer (HD DVD-R for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

6) DVD Specifications for Recordable Disc for General (DVD-R for General)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.1
   Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

7) DVD Specifications for Recordable Disc for Dual Layer (DVD-R for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 3.0
   Part 2: FILE SYSTEM SPECIFICATIONS Version 3.0
   Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

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Standalone HD DVD-Video Player for consumer use may comply with the following specifications:

8) DVD Specifications for High Density Rewritable Disc (HD DVD-RAM)
Part 1: PHYSICAL SPECIFICATIONS Version 1.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

9) DVD Specifications for High Density Re-recordable Disc (HD DVD-RW)
Part 1: PHYSICAL SPECIFICATIONS Version 1.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

10) DVD Specifications for High Density Re-recordable Disc for Dual Layer (HD DVD-RW of DL)
Part 1: PHYSICAL SPECIFICATIONS Version 2.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

11) DVD Specifications for Rewritable Disc (DVD-RAM)
Part 1: PHYSICAL SPECIFICATIONS Version 2.2
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

12) DVD Specifications for Re-recordable Disc (DVD-RW)
Part 1: PHYSICAL SPECIFICATIONS Version 1.2
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

13) DVD Specifications for Re-recordable Disc for Dual Layer (DVD-RW for DL)
Part 1: PHYSICAL SPECIFICATIONS Version 2.0
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

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### 3.2.2 Required functions

Standalone HD DVD-Video Player for consumer use shall comply with the following functions:

1) Playback disc

The player shall play HD DVD-ROM disc and 3x DVD-ROM disc containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

The player is strongly recommended to play DVD-R for General, DVD-R for DL, HD DVD-R, and HD DVD-R for DL discs containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO before July 1st, 2009.

The player shall play DVD-R for General, DVD-R for DL, HD DVD-R, and HD DVD-R for DL discs containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO on and after July 1st, 2009.

The player may play HD DVD-RAM, HD DVD-RW, HD DVD-RW for DL, DVD-RAM, DVD-RW, and DVD-RW for DL discs containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

If the player supports HD DVD-R for DL, HD DVD-R shall also be supported.

If the player supports DVD-R for DL, DVD-R for General shall also be supported.

If the player supports HD DVD-RW for DL, HD DVD-RW shall also be supported.

If the player supports DVD-RW for DL, DVD-RW shall also be supported.

*Refer to* ***2. HD DVD-Video Disc***.

Standalone HD DVD-Video Player for consumer use shall use the File Systems which correspond to each supported disc in the following table.

| | Disc type | File System | |
|---|---|---|---|
| | | UDF Revision | Volume Structure |
| 1 | HD DVD-ROM | 2.5 | Read-only partition |
| 2 | 3x DVD-ROM | 2.5 | Read-only partition |
| 3 | DVD-RAM | 2.0 | Overwritable partition |
| 4 | DVD-R for General | 2.5 | Read-only partition |
| 5 | ↑ | 2.5 | VAT |
| 6 | DVD-R for DL | 2.5 | Read-only partition |
| 7 | ↑ | 2.5 | VAT |
| 8 | DVD-RW | 2.0 | Sparable partition |
| 9 | DVD-RW for DL | 2.0 | Sparable partition |
| 10 | HD DVD-RAM | 2.5 | Overwritable partition |
| 11 | HD DVD-R | 2.5 | Read-only partition |
| 12 | ↑ | 2.5 | VAT |
| 13 | HD DVD-R for DL | 2.5 | Read-only partition |
| 14 | ↑ | 2.5 | VAT |
| 15 | HD DVD-RW | 2.5 | Read-only partition |
| 16 | ↑ | 2.5 | Sparable partition |
| 17 | HD DVD-RW for DL | 2.5 | Read-only partition |
| 18 | ↑ | 2.5 | Sparable partition |

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2) HD DVD-Video/DVD-Video Twin format disc

If HD DVD-Video Player has a capability to play DVD layer, the player shall play Twin format disc in a manner of following operation (a) or (b).

(a) The player shall playback HD DVD layer at first as default setting.
The user can override the default setting and access the DVD layer by user operation.

(b) A dialog box or same effect menu prompting user to choose HD DVD layer or DVD layer playback shall appear. Time-out auto playback of default layer is optional.

3) Interoperable Contents

HD DVD-Video Player is strongly recommended to play Interoperable Contents on any HD DVD/DVD writable disc which is supported by the player for playback of HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

Note: Item 3) may be made mandatory at the appropriate timing.

4) Video output

At least one video output is required except for player with built-in display.

5) Audio output

At least one 2ch stereo audio output is required.

6) Content protection

Until now, AACS is the only approved content protection method for HD DVD-Video Disc. Therefore it is recommended for HD DVD-Video Player to comply with AACS License. And also, it is recommended to comply with AACS content protection specification for HD DVD-Video on HD DVD/DVD writable disc after the specification is defined in the License.
If HD DVD-Video Player complies with AACS License, it shall treat a content of HD DVD-Video Disc protected by AACS as Trusted Content. (Refer to **3.4 Restricted Mode for Advanced Content** of DVD Specifications for High Definition VIDEO.)

7) 44.1 kHz audio family

HD DVD-Video Player is strongly recommended to play 44.1 kHz audio family before Oct 1st, 2008.
HD DVD-Video Player shall play 44.1 kHz audio family on and after Oct. 1st, 2008.

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## 3.3 Requirements of PC software HD DVD-Video Player with HD DVD Drive

The technical requirements for PC software HD DVD-Video Player with HD DVD Drive are listed as below.

### 3.3.1 Specifications

PC software HD DVD-Video Player with HD DVD Drive shall comply with the following specifications:

1) DVD Specifications for High Density Read-Only Disc (HD DVD-ROM)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.2
   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

2) DVD Specifications for Read-Only Disc
   Part 1: PHYSICAL SPECIFICATIONS Version 1.0
   Optional specifications: 3x-speed DVD-ROM Revision 1.1 (3x DVD-ROM)

   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0
   Optional specifications: FILE SYSTEM for HD DVD-Video on 3x-speed DVD-ROM Revision 1.0

3) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

PC software HD DVD-Video Player with HD DVD Drive should comply with the following specification before July 1st, 2009, and shall comply with the following specifications on and after July 1st, 2009:

4) DVD Specifications for High Density Recordable Disc (HD DVD-R)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.1
   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.1

5) DVD Specifications for High Density Recordable Disc for Dual Layer (HD DVD-R for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

6) DVD Specifications for Recordable Disc for General (DVD-R for General)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.1
   Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

7) DVD Specifications for Recordable Disc for Dual Layer (DVD-R for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 3.0
   Part 2: FILE SYSTEM SPECIFICATIONS Version 3.0
   Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

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PC software HD DVD-Video Player with HD DVD Drive may comply with the following specifications:

8) DVD Specifications for High Density Rewritable Disc (HD DVD-RAM)
Part 1: PHYSICAL SPECIFICATIONS Version 1.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

9) DVD Specifications for High Density Re-recordable Disc (HD DVD-RW)
Part 1: PHYSICAL SPECIFICATIONS Version 1.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

10) DVD Specifications for High Density Re-recordable Disc for Dual Layer (HD DVD-RW of DL)
Part 1: PHYSICAL SPECIFICATIONS Version 2.1
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

11) DVD Specifications for Rewritable Disc (DVD-RAM)
Part 1: PHYSICAL SPECIFICATIONS Version 2.2
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

12) DVD Specifications for Re-recordable Disc (DVD-RW)
Part 1: PHYSICAL SPECIFICATIONS Version 1.2
Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

13) DVD Specifications for Re-recordable Disc for Dual Layer (DVD-RW for DL)
Part 1: PHYSICAL SPECIFICATIONS Version 2.0
Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

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### 3.3.2 Required functions

PC software HD DVD-Video Player with HD DVD Drive shall comply with the following functions:

1) Playback disc

PC HD DVD-Video playback system shall play HD DVD-ROM disc and 3x DVD-ROM disc containing HD DVD-Video content specified in HD DVD-Video book: DVD Specifications for High Definition VIDEO.

PC HD DVD-Video playback system is strongly recommended to play DVD-R for General, DVD-R for DL, HD DVD-R, and HD DVD-R for DL discs containing HD DVD-Video content specified in HD DVD-Video book: DVD Specifications for High Definition VIDEO before July 1st, 2009.

PC HD DVD-Video playback system shall play DVD-R for General, DVD-R for DL, HD DVD-R, and HD DVD-R for DL discs containing HD DVD-Video content specified in HD DVD-Video book: DVD Specifications for High Definition VIDEO on and after July 1st, 2009.

*Refer to* ***2. HD DVD-Video Disc***.

PC HD DVD-Video playback system may play HD DVD-RAM, HD DVD-RW, HD DVD-RW for DL, DVD-RAM, DVD-RW, and DVD-RW for DL discs containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

If the player supports HD DVD-R for DL, HD DVD-R shall also be supported.

If the player supports DVD-R for DL, DVD-R for General shall also be supported.

If the player supports HD DVD-RW for DL, HD DVD-RW shall also be supported.

If the player supports DVD-RW for DL, DVD-RW shall also be supported.

Accordingly HD DVD Drive for this player shall be compatible with HD DVD-ROM and 3x DVD-ROM. The drive is also strongly recommended to be compatible with DVD-R for General, DVD-R for DL, HD DVD-R, and HD DVD-R for DL before July 1st, 2009. The drive shall also be compatible with DVD-R for General, DVD-R for DL, HD DVD-R, and HD DVD-R for DL on and after July 1st, 2009.

If the drive supports HD DVD-R for DL, HD DVD-R shall be supported.

If the drive supports DVD-R for DL, DVD-R for General shall also be supported.

If the drive supports HD DVD-RW for DL, HD DVD-RW shall also be supported.

If the drive supports DVD-RW for DL, DVD-RW shall also be supported.

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PC software HD DVD-Video Player with HD DVD Drive shall use the File Systems which correspond to each supported disc in the following table.

| | Disc type | File System | |
|---|---|---|---|
| | | UDF Revision | Volume Structure |
| 1 | HD DVD-ROM | 2.5 | Read-only partition |
| 2 | 3x DVD-ROM | 2.5 | Read-only partition |
| 3 | DVD-RAM | 2.0 | Overwritable partition |
| 4 | DVD-R for General | 2.5 | Read-only partition |
| 5 | ↑ | 2.5 | VAT |
| 6 | DVD-R for DL | 2.5 | Read-only partition |
| 7 | ↑ | 2.5 | VAT |
| 8 | DVD-RW | 2.0 | Sparable partition |
| 9 | DVD-RW for DL | 2.0 | Sparable partition |
| 10 | HD DVD-RAM | 2.5 | Overwritable partition |
| 11 | HD DVD-R | 2.5 | Read-only partition |
| 12 | ↑ | 2.5 | VAT |
| 13 | HD DVD-R for DL | 2.5 | Read-only partition |
| 14 | ↑ | 2.5 | VAT |
| 15 | HD DVD-RW | 2.5 | Read-only partition |
| 16 | ↑ | 2.5 | Sparable partition |
| 17 | HD DVD-RW for DL | 2.5 | Read-only partition |
| 18 | ↑ | 2.5 | Sparable partition |

2) HD DVD-Video/DVD-Video Twin format disc

If PC HD DVD-Video playback system has a capability to play DVD layer, the player shall play Twin format disc in a manner of following operation (a) or (b).

(a) The system shall playback HD DVD layer at first as default setting.
The user can override the default setting and access the DVD layer by user operation.

(b) A dialog box or same effect menu prompting user to choose HD DVD layer or DVD layer playback shall appear. Time-out auto playback of default layer is optional.

3) Interoperable Content

PC software HD DVD-Video Player with HD DVD Drive is strongly recommended to play Interoperable Contents on any HD DVD/DVD writable disc which is supported by the player for playback of HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

Note: Item 3) may be made mandatory at the appropriate timing.

4) Video output

At least one video output is required except for player with built-in display.

5) Audio output

At least one 2ch stereo audio output is required.

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6) Content protection

Until now, AACS is the only approved content protection method for HD DVD-Video Disc. Therefore it is recommended for PC software HD DVD-Video Player with HD DVD Drive to comply with AACS License. And also, it is recommended to comply with AACS content protection specification for HD DVD-Video on HD DVD/DVD writable disc after the specification is defined in the License.

If PC software HD DVD-Video Player with HD DVD Drive complies with AACS License, it shall treat a content of HD DVD-Video Disc protected by AACS as Trusted Content. (Refer to **3.4 Restricted Mode for Advanced Content** of DVD Specifications for High Definition VIDEO.)

7) 44.1 kHz audio family

PC software HD DVD-Video Player with HD DVD Drive is strongly recommended to play 44.1 kHz audio family before Oct 1st, 2008. PC software HD DVD-Video Player with HD DVD Drive shall play 44.1 kHz audio family on and after Oct. 1st, 2008.

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# 4. DVD/HD Video Player

## 4.1 General Descriptions

This specification covers two categories as follows:

1) Standalone DVD/HD Video Player for consumer use
2) PC software DVD/HD Video Player with DVD Drive

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## 4.2 Requirements of Standalone DVD/HD Video Player for consumer use

The technical requirements for Standalone DVD/HD Video Player for consumer use are listed as below.

### 4.2.1 Specifications

Standalone DVD/HD Video Player for consumer use shall comply with the following specifications:

1) DVD Specifications for Read-Only Disc
   Part 1: PHYSICAL SPECIFICATIONS Version 1.0
   Optional specifications: 3x-speed DVD-ROM Revision 1.1 (3x DVD-ROM)

   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0
   Optional specifications: FILE SYSTEM for HD DVD-Video on 3x-speed DVD-ROM Revision 1.0

2) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

Standalone DVD/HD Video Player for consumer use should comply with the following specification before July 1st, 2009, and shall comply with the following specifications on and after July 1st, 2009:

3) DVD Specifications for Recordable Disc for General (DVD-R for General)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.1
   Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

4) DVD Specifications for Recordable Disc for Dual Layer (DVD-R for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 3.0
   Part 2: FILE SYSTEM SPECIFICATIONS Version 3.0
   Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

Standalone DVD/HD Video Player for consumer use may comply with the following specifications:

5) DVD Specifications for Rewritable Disc (DVD-RAM)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.2
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

6) DVD Specifications for Re-recordable Disc (DVD-RW)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.2
   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

7) DVD Specifications for Re-recordable Disc for Dual Layer (DVD-RW for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.0
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

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### 4.2.2 Required functions

Standalone DVD/HD Video Player for consumer use shall comply with the following functions:

1) Playback disc

The player shall play 3x DVD-ROM disc containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

The player is strongly recommended to play DVD-R for General and DVD-R for DL discs containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO before July 1st, 2009.

The player shall play DVD-R for General and DVD-R for DL discs containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO on and after July 1st, 2009.

The player may play DVD-RAM, DVD-RW and DVD-RW for DL discs containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

If the player supports DVD-R for DL, DVD-R for General shall also be supported.

If the player supports DVD-RW for DL, DVD-RW shall also be supported.

*Refer to* ***2. HD DVD-Video Disc***.

The player shall not play HD DVD-ROM and HD DVD writable discs.

Standalone DVD/HD Video Player for consumer use shall use the File Systems which correspond to each supported disc in the following table.

| | Disc type | File System | |
|---|---|---|---|
| | | UDF Revision | Volume Structure |
| 1 | 3x DVD-ROM | 2.5 | Read-only partition |
| 2 | DVD-RAM | 2.0 | Overwritable partition |
| 3 | DVD-R for General | 2.5 | Read-only partition |
| 4 | ↑ | 2.5 | VAT |
| 5 | DVD-R for DL | 2.5 | Read-only partition |
| 6 | ↑ | 2.5 | VAT |
| 7 | DVD-RW | 2.0 | Sparable partition |
| 8 | DVD-RW for DL | 2.0 | Sparable partition |

2) Interoperable Contents

DVD/HD Video Player is strongly recommended to play Interoperable Contents on any DVD writable disc which is supported by the player for playback of HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

Note: Item 2) may be made mandatory at the appropriate timing.

3) Video output

At least one video output is required except for player with built-in display.

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4) Audio output

At least one 2ch stereo audio output is required.

5) Content protection

Until now, AACS is the only approved content protection method for HD DVD-Video Disc. Therefore it is recommended for DVD/HD Video Player to comply with AACS License. And also, it is recommended to comply with AACS content protection specification for HD DVD-Video on DVD writable disc after the specification is defined in the License.

If DVD/HD Video Player complies with AACS License, it shall treat a content of HD DVD-Video Disc protected by AACS as Trusted Content. (Refer to **3.4 Restricted Mode for Advanced Content** of DVD Specifications for High Definition VIDEO.)

6) 44.1 kHz audio family

DVD/HD Video Player is strongly recommended to play 44.1 kHz audio family before Oct 1st, 2008. DVD/HD Video Player shall play 44.1 kHz audio family on and after Oct. 1st, 2008.

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## 4.3 Requirements of PC software DVD/HD Video Player with DVD Drive

The technical requirements for PC software DVD/HD Video Player with DVD Drive are listed as below.

### 4.3.1 Specifications

PC software DVD/HD Video Player with DVD Drive shall comply with the following specifications:

1) DVD Specifications for Read-Only Disc
   Part 1: PHYSICAL SPECIFICATIONS Version 1.0
   Optional specifications: 3x-speed DVD-ROM Revision 1.1 (3x DVD-ROM)

   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0
   Optional specifications: FILE SYSTEM for HD DVD-Video on 3x-speed DVD-ROM Revision 1.0

2) DVD Specifications for High Definition VIDEO (HD DVD-Video) Version 1.1

PC software DVD/HD Video Player with DVD Drive should comply with the following specification before July 1st, 2009, and shall comply with the following specifications on and after July 1st, 2009:

3) DVD Specifications for Recordable Disc for General (DVD-R for General)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.1
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.1
   Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

4) DVD Specifications for Recordable Disc for Dual Layer (DVD-R for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 3.0
   Part 2: FILE SYSTEM SPECIFICATIONS Version 3.0
   Optional Specifications: UDF Revision 2.50 based FILE SYSTEM Revision 1.0

PC software DVD/HD Video Player with DVD Drive may comply with the following specifications:

5) DVD Specifications for Rewritable Disc (DVD-RAM)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.2
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

6) DVD Specifications for Re-recordable Disc (DVD-RW)
   Part 1: PHYSICAL SPECIFICATIONS Version 1.2
   Part 2: FILE SYSTEM SPECIFICATIONS Version 1.0

7) DVD Specifications for Re-recordable Disc for Dual Layer (DVD-RW for DL)
   Part 1: PHYSICAL SPECIFICATIONS Version 2.0
   Part 2: FILE SYSTEM SPECIFICATIONS Version 2.0

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### 4.3.2 Required functions

PC software DVD/HD Video Player with DVD Drive shall comply with the following functions:

1) Playback disc

PC DVD/HD Video playback system shall play 3x DVD-ROM disc containing HD DVD-Video content specified in HD DVD-Video book: DVD Specifications for High Definition VIDEO.
PC DVD/HD Video playback system is strongly recommended to play DVD-R for General and DVD-R for DL discs containing HD DVD-Video content specified in HD DVD-Video book: DVD Specifications for High Definition VIDEO before July 1st, 2009.
PC DVD/HD Video playback system shall play DVD-R for General and DVD-R for DL discs containing HD DVD-Video content specified in HD DVD-Video book: DVD Specifications for High Definition VIDEO on and after July 1st, 2009.
*Refer to* ***2. HD DVD-Video Disc***.
PC DVD/HD Video playback system may play DVD-RAM, DVD-RW and DVD-RW for DL discs containing HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.
If the player supports DVD-R for DL, DVD-R for General shall also be supported.
If the player supports DVD-RW for DL, DVD-RW shall also be supported.
The player shall not play HD DVD-ROM and HD DVD writable discs.

Accordingly DVD Drive for this player shall be compatible with 3x DVD-ROM. The drive is also strongly recommended to be compatible with DVD-R for General and DVD-R for DL before July 1st, 2009. The drive shall also be compatible with DVD-R for General and DVD-R for DL on and after July 1st, 2009.
If the drive supports DVD-R for DL, DVD-R for General shall also be supported.
If the drive supports DVD-RW for DL, DVD-RW shall also be supported.

PC software DVD/HD Video Player with DVD Drive shall use the File Systems which correspond to each supported disc in the following table.

| | Disc type | File System | |
|---|---|---|---|
| | | UDF Revision | Volume Structure |
| 1 | 3x DVD-ROM | 2.5 | Read-only partition |
| 2 | DVD-RAM | 2.0 | Overwritable partition |
| 3 | DVD-R for General | 2.5 | Read-only partition |
| 4 | ↑ | 2.5 | VAT |
| 5 | DVD-R for DL | 2.5 | Read-only partition |
| 6 | ↑ | 2.5 | VAT |
| 7 | DVD-RW | 2.0 | Sparable partition |
| 8 | DVD-RW for DL | 2.0 | Sparable partition |

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2) Interoperable Content

PC software DVD/HD Video Player with DVD Drive is strongly recommended to play Interoperable Contents on any DVD writable disc which is supported by the player for playback of HD DVD-Video content specified in DVD Specifications for High Definition VIDEO.

Note: Item 2) may be made mandatory at the appropriate timing.

3) Video output

At least one video output is required except for player with built-in display.

4) Audio output

At least one 2ch stereo audio output is required.

5) Content protection

Until now, AACS is the only approved content protection method for HD DVD-Video Disc. Therefore it is recommended for PC software DVD/HD Video Player with DVD Drive to comply with AACS License. And also, it is recommended to comply with AACS content protection specification for HD DVD-Video on DVD writable disc after the specification is defined in the License.

If PC software DVD/HD Video Player with DVD Drive complies with AACS License, it shall treat a content of HD DVD-Video Disc protected by AACS as Trusted Content. (Refer to **3.4 Restricted Mode for Advanced Content** of DVD Specifications for High Definition VIDEO.)

6) 44.1 kHz audio family

PC software DVD/HD Video Player with DVD Drive is strongly recommended to play 44.1 kHz audio family before Oct 1st, 2008. PC software DVD/HD Video Player with DVD Drive shall play 44.1 kHz audio family on and after Oct. 1st, 2008.

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# 5. Additional Description for products other than related specifications (Informative)

## 5.1 Logo on HD DVD-Video Disc and disc package

Logo on the HD DVD-Video disc: Refer to DVD Logo Manual

Logo on disc package: Refer to DVD Logo Manual

Note: Refer to the latest DVD Logo Manual issued by DVD FLLC.

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## 5.2 Content Format Description

Guidelines for using the HD DVD Logo with a Content Format Description (CFD) on HD DVD-Video Disc packaging:

a) When the HD DVD logo is used on HD DVD-Video Discs, it is strongly recommended that consumer packaging include an associated Content Format Description (e.g., a table or text) that accurately describes the video resolution and line structure as well as the audio type and number of audio channels of the content contained on the packaged disc.

b) The layout of the Content Format Description is the design decision of the content provider and may vary depending on the HD DVD-Video disc package layout and available space.

c) The Content Format Description (CFD) is strongly recommended and should be included to inform consumers regarding the technical details of the disc contents.

d) It is recommended that the CFD accurately identify the technical characteristics of the disc content, for example:

Video: MPEG-2, MPEG-4 AVC, VC-1, Aspect Ratio (16:9, letter box, 4:3), 1080i, 720p etc.

Audio: DD+, DTS-HD, MLP, Linear PCM, Number of channels, Sampling frequency, quantization bits, subtitle audio languages, subtitle languages, etc.

e) In case of HD DVD-Video disc using HD DVD/DVD writable disc, it is recommended that the CFD accurately identify the type of writable disc, for example:
HD DVD-R, HD DVD-R for DL, DVD-R for General, DVD-R for DL.

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The following eight examples of a Content Format Description are provided for illustration purposes only.

(1)

(2)

(3)

(4)

(5)

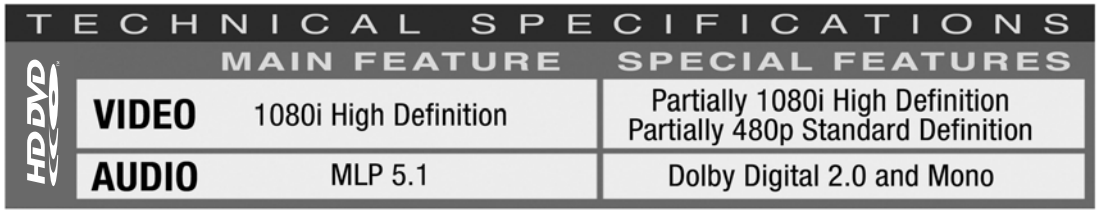
(6)

(7)

(8)

The following are examples of a Content Format Description, with video and audio descriptions for the content of a hypothetical HD DVD-Video Disc.

(a)




(b)

(c)

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## 5.3 Logo on HD DVD-Video Player

Logo on HD DVD-Video Player: Refer to DVD Logo Manual.
Note: Please refer to the latest DVD Logo Manual issued by DVD FLLC.

## 5.4 Logo on DVD/HD Video Player

Logo on DVD/HD Video Player: Refer to DVD Logo Manual.
Note: Please refer to the latest DVD Logo Manual issued by DVD FLLC.

*Note: This section is preliminary information, because Logo for DVD/HD Video Player has not been decided at the time of publication. Until the Logo is specified in the DVD Logo Manual, ask DVD FLLC for the latest information.*

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**The following Technical Coordination Group members of the DVD Forum participated in making this requirement & guideline.**

IBM Corporation
Industrial Technology Research Institute
Intel Corporation
LG Electronics Inc.
Microsoft Corporation
NEC Corporation
SANYO Electric Co., Ltd.
SAMSUNG ELECTRONICS CO., LTD.
Thomson
Toshiba Corporation
Warner Bros. Entertainment Inc.

**HD DVD-Video Product Requirement & Guideline:**

**Version 1.0 — September 2005**

**Version 1.0$_1$ — December 2005**

**Version 1.0$_2$ — February 2006**

**Version 1.0$_3$ — September 2006**

**Version 1.1 — January 2008**

**Version 1.2 — June 2008**