



DVD Multi Drive (Read-Only)

TEST SPECIFICATION

Version 1.01
June 2005

Amendment for DVD Multi Drive (Read-Only) TS Version 1.0₁ (June 2005)

The following pages were amended without changing the version number of the TS.

- **Minor amendment (April 16, 2009)**

Page	Location	Amendment
Page 16	Annex A	<ul style="list-style-type: none">• Class-A Lab information of "Hitachi, Ltd.", "Industrial Technology Research Institute", "Matsushita Electric Industrial Co., Ltd. (company name)" and "SAMSUNG ELECTRONICS CO., LTD" and was updated.
Pages 19 to 20	Annex D	<ul style="list-style-type: none">• A note regarding Class-A Lab information was added.• An editorial error was corrected. (DMA Test Disc Type B was added.)• Class-A Lab information of "Matsushita Electric Industrial Co., Ltd. (company name)" and "PIONEER CORPORATION" was updated.

- **Minor amendment (January 2010)**

Page	Location	Amendment
Page 16	Annex A	<ul style="list-style-type: none">• Class-A Lab information of "Hitachi, Ltd. (company name)", "Panasonic Corporation" and "SAMSUNG ELECTRONICS CO., LTD" were updated.
Pages 19 to 20	Annex D	<ul style="list-style-type: none">• Class-A Lab information of "Panasonic Corporation", "PIONEER CORPORATION" and "Hitachi, Ltd. (company name)" were updated.

- **Amendment 1 (January 2012)**

Page	Location	Amendment
Page 16	Annex A	<ul style="list-style-type: none">• "Toshiba Corporation" was deleted from the Class-A Lab list.

- **Amendment 2 (June 2012)**

Page	Location	Amendment
Page 16	Annex A	<ul style="list-style-type: none">• "Industrial Technology Research Institute" was deleted from the Class-A Lab list.• Class-A Lab information of "SAMSUNG ELECTRONICS CO., LTD" was updated.

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Revision History

- December 1999
Version 0.2 was distributed to VTF ad-hoc members for discussion.
- May 2000
Version 0.3 was drafted and distributed to VTF ad-hoc members for review.
- March 2001
Version 0.9 was drafted and distributed to VTF ad-hoc members.
- April 2001
Version 1.0 (Draft) was approved at VTF and VPC.
- July 2001
DVD Multi Drive (Read-Only) Test Specification Version 1.0 was revised on the basis of the DVD Multi Specifications Version 1.0
- September 13, 2001
Steering Committee approved DVD Multi Drive (Read-Only) Test Specification Version 1.0.
- June 2005
Version 1.0₁ updated Normative References (with related portions) and Class-A Lab List, and was edited as electronic files.

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Forms for DVD Format verification

Form 1AA

Preliminary Information for DVD Format Verification F1

Form 2AA

Test Information of DVD Format Verification F2

Form 3AA

Confirmation of DVD Format Verification F3

1. General

1.1 Scope

The scope of this Test Specification is the testing DVD Multi Drive (Read-Only) for compliance with the minimum requirements of DVD Multi Specifications: PRODUCT REQUIREMENTS Version 1.1.

Class-A Verification Labs, Class-B Verification Labs and Quality Assurance Departments of DVD Multi Drive (Read-Only) manufacturers could use the test procedure described herein.

The scope of this Test Specification is limited to product compliance to DVD Multi product requirements and not to evaluate performance or their product quality.

Note: This product is regarded as an associated product conforming to the plural DVD Specifications (i.e. DVD-ROM, DVD-R for General, DVD-RW and DVD-RAM Book). Therefore this Test Specification involves four kinds of test group which may link to the verification fee.

1.2 Scope of Products Covered

DVD Multi Drive (Read-Only) as defined in Section 1.3.

1.3 Requirements for DVD Multi Drive (Read-Only)

DVD Multi Drive (Read-Only) is for the PC attached drive. The following chart defines the minimum requirement.

Contents	Requirement
Physical Read Compatibility	DVD-ROM
	DVD-R for General
	DVD-RW
	DVD-RAM (4.7 Gbytes)
Contents Playback Capability	Determined by software application.
Copyright Protection Compatibility	
Since copyright protection system is not DVD Forum specification, it is not subject to DVD Format verification but compliance to the specification of copyright protection system is recommended.	
DVD-Video	CSS
DVD-RAM, DVD-RW, DVD-R for General	CPRM
DVD-Audio	CPPM
Total copyright protection system compliance rule	CPSA

1.4 Normative References

- 1) DVD Multi Specifications PRODUCT REQUIREMENTS Version 1.1
- 2) DVD Specifications for Read Only Disc
 - Part 1: Physical Specifications Version 1.0
 - Part 2: File System Specifications Version 1.0
- 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
- 4) DVD Specifications for Re-recordable Disc (DVD-RW)
 - Part 1: Physical Specifications Version 1.2
 - Part 2: File System Specifications Version 1.0
- 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-ROM Drive Test Specification Version 1.0₃
- 7) DVD-R Drive for General & for DL Test Specification Version 2.5
- 8) DVD-RW Drive Test Specification Version 1.6₁
- 9) DVD-RAM Drive (4.7/1.46 Gbytes) Test Specification Version 2.3₁

Notes:

- In the event of future updates of these specifications from 2) to 5) with the change of second digit of version number, such as from 1.0 to 1.1, DVD Multi product should comply with the updated specifications after reasonable time period, even if the DVD Multi specifications are not updated.
The latest version of each specification will be informed in DVD FLLC web site, www.dvdfllc.co.jp.
- In the event of future updates of these Test Specifications from 6) to 9) with the change of second digit (or third digit) of version number, such as from 1.0 to 1.1, DVD Multi product should comply with the updated Test Specifications, even if this DVD Multi Test Specification is not updated.

2. DVD Logo

DVD Format/Logo Licensing Corporation owns the rights to license the DVD Logo. To be able to use the DVD Logo, DVD manufacturer must have:

- a. License to use the Logo and
- b. DVD Specifications compliance of the product for logo consideration must be validated by the test specifications as defined in this document.

Licensing terms for the DVD Logo are available from the DVD Format/Logo Licensing Corporation. This chapter describes the mechanism to be used for product compliance testing.

2.1 Definition of Terms Used

First Production Model - The **First Production Model** must be tested and approved by any of the appropriate Class-A Verification Labs (see definition of Class-A Labs below) for compliance with DVD Specifications. Class-A labs will use the test specifications described in this document for compliance verification.

The following parameters must be used to determine a **First Production Model**:

- DVD Specifications Version n.x changing to n+1.x
- Initial or the latest production model at the start of Logo Program for each licensee

Next Production Model - A **Next Production Model** does not require compliance verification from a Class-A Verification Lab, but must be tested by licensee in its QA department for compliance with DVD Specifications. Licensee's QA department must have the test tools required to perform the tests specified in this document and must, at minimum, use the test procedure referred to in this document (licensee is free to have its own QA procedure, equipment and tools as long as it is a superset of the specification described in this document). A Licensee without its own QA department can get the product tested by a certified Third Party Class-B Verification Lab (see definition of Class-B Labs below).

The following parameters must be used to determine a **Next Production Model**:

- DVD Specifications Version n.x changing to n.x+1
- Significant changes at Licensees discretion to Pickup head, LSI and/or firmware related to DVD format

Class-A Verification Labs - Class-A Verification Labs are experts in DVD technology and provide independent expert assessment of Licensee's product compliance with DVD Specifications. Class-A labs also provide additional services such as interpretation of DVD Specifications, Test Tool development, Class-B Lab and Licensee auditing, etc.

Class-B Verification Labs - DVD Multi Drive (Read-Only) Class-B Verification Labs provide DVD Multi Drive (Read-Only) testing strictly according to the **DVD Multi Drive (Read-Only) Test Specification** (They can not interpret the specifications).

2.2 Test requirement

- Exemption of test group(s)

A DVD Multi product can be viewed as a combination of multiple DVD elements.

In case a licensee had submitted and passed the mandatory verification test on individual product(s) at Class-A Lab, the test group for the corresponding product element of DVD Multi product can be exempted from mandatory verification test at Class-A Lab.

Licensee shall fill out Verification record(s) of the corresponding products in Table-1 of **Form 1AA** and submit copy of the "Confirmation of DVD Format Verification" record(s), if such exemption is applicable.

- License status of copyright protection system

Since copyright protection system is not DVD Forum specification, it is not subject to DVD Format verification. However, compliance to the specification of copyright protection system is recommended. Licensee shall fill out the license status of copyright protection system in Table-2 of **Form 1AA**.

2.3 Checklist for DVD Multi product verification

To identify the exemption of test group(s) described in Section 2.2, it is recommended to use following tables for each DVD Multi product.

Each table shows product elements of the DVD Multi product and the combined product(s), if any, which covers the elements in the left columns.

Select an applicable table for your DVD Multi product and check the boxes of the DVD products if you have the confirmation record of DVD Format Verification.

Test group which corresponds with the product element that is checked or covered by the checked combined product, is exempted from official/mandatory verification test at Class-A Lab.

In case all the product elements are checked or covered by the checked combined product, the licensee may be waived from submitting the DVD Multi product to Class-A Lab by submitting the "Preliminary Information for DVD Format Verification" together with copy of the Confirmation of DVD Format Verifications. Otherwise, the DVD Multi product must be submitted to Class-A Lab as **First Production Model**.

Table 2.3-1: Checklist for DVD Multi Drive (Read-Only) verification

Multi product elements		Combined product(s) that covers elements in the left column	
<input type="checkbox"/>	DVD-ROM Drive	<input type="checkbox"/>	DVD Multi Drive (Writable)
<input type="checkbox"/>	DVD-R for General Drive (Read Element)		
<input type="checkbox"/>	DVD-RW Drive (Read Element)		
<input type="checkbox"/>	DVD-RAM (4.7 Gbytes) Drive (Read Element)		

Table 2.3-2: Checklist for DVD Multi Drive (Writable) verification

Multi product elements	
<input type="checkbox"/>	DVD-ROM Drive
<input type="checkbox"/>	DVD-R for General Drive
<input type="checkbox"/>	DVD-RW Drive
<input type="checkbox"/>	DVD-RAM (4.7 Gbytes) Drive

Table 2.3-3: Checklist for DVD Multi Video Player verification

Multi product elements		Combined product(s) that covers elements in the left column	
<input type="checkbox"/>	DVD-R Video Format Recorder (Playback Element)*	<input type="checkbox"/>	DVD Multi Video Recorder or DVD Multi Video/Audio Player or DVD-Multi Video/Audio Recorder
<input type="checkbox"/>	DVD-R Video Recorder (Playback Element)		
<input type="checkbox"/>	DVD-RW Video Recorder (Playback Element)		
<input type="checkbox"/>	DVD-RAM Video Recorder (Playback Element)		

Table 2.3-4: Checklist for DVD Multi Video Recorder verification

Multi product elements		Combined product(s) that covers elements in the left column	
<input type="checkbox"/>	DVD-R Video Format Recorder*	<input type="checkbox"/>	DVD-Multi Video/Audio Recorder
<input type="checkbox"/>	DVD-R Video Recorder		
<input type="checkbox"/>	DVD-RW Video Recorder		
<input type="checkbox"/>	DVD-RAM Video Recorder		

Table 2.3-5: Checklist for DVD Multi Audio Player verification

Multi product elements		Combined product(s) that covers elements in the left column	
<input type="checkbox"/>	DVD-Audio Player	<input type="checkbox"/>	DVD Multi Audio Recorder or DVD Multi Video/Audio Player or DVD-Multi Video/Audio Recorder
<input type="checkbox"/>	DVD-R Audio Recorder (Playback Element)**		
<input type="checkbox"/>	DVD-RW Audio Recorder (Playback Element)**		
<input type="checkbox"/>	DVD-RAM Audio Recorder (Playback Element)**		

Table 2.3-6: Checklist for DVD Multi Audio Recorder verification

Multi product elements		Combined product(s) that covers elements in the left column	
<input type="checkbox"/>	DVD-Audio Player	<input type="checkbox"/>	DVD-Multi Video/Audio Recorder
<input type="checkbox"/>	DVD-R Audio Recorder**		
<input type="checkbox"/>	DVD-RW Audio Recorder**		
<input type="checkbox"/>	DVD-RAM Audio Recorder**		

Table 2.3-7: Checklist for DVD Multi Video/Audio Player verification

Multi product elements		Combined product(s) that covers elements in the left column			
<input type="checkbox"/>	DVD-R Video Format Recorder (Playback Element)*	<input type="checkbox"/>	DVD Multi Video Player or DVD Multi Video Recorder	<input type="checkbox"/>	DVD Multi Video/Audio Recorder
<input type="checkbox"/>	DVD-R Video Recorder (Playback Element)				
<input type="checkbox"/>	DVD-RW Video Recorder (Playback Element)				
<input type="checkbox"/>	DVD-RAM Video Recorder (Playback Element)				
<input type="checkbox"/>	DVD-Audio Player	<input type="checkbox"/>	DVD Multi Audio Player or DVD Multi Audio Recorder		
<input type="checkbox"/>	DVD-R Audio Recorder (Playback Element)**				
<input type="checkbox"/>	DVD-RW Audio Recorder (Playback Element)**				
<input type="checkbox"/>	DVD-RAM Audio Recorder (Playback Element)**				

Table 2.3-8: Checklist for DVD Multi Video/Audio Recorder verification

Multi product elements		Combined product(s) that covers elements in the left column	
<input type="checkbox"/>	DVD-R Video Format Recorder*	<input type="checkbox"/>	DVD Multi Video Recorder
<input type="checkbox"/>	DVD-R Video Recorder		
<input type="checkbox"/>	DVD-RW Video Recorder		
<input type="checkbox"/>	DVD-RAM Video Recorder		
<input type="checkbox"/>	DVD-Audio Player	<input type="checkbox"/>	DVD Multi Audio Recorder
<input type="checkbox"/>	DVD-R Audio Recorder**		
<input type="checkbox"/>	DVD-RW Audio Recorder**		
<input type="checkbox"/>	DVD-RAM Audio Recorder**		

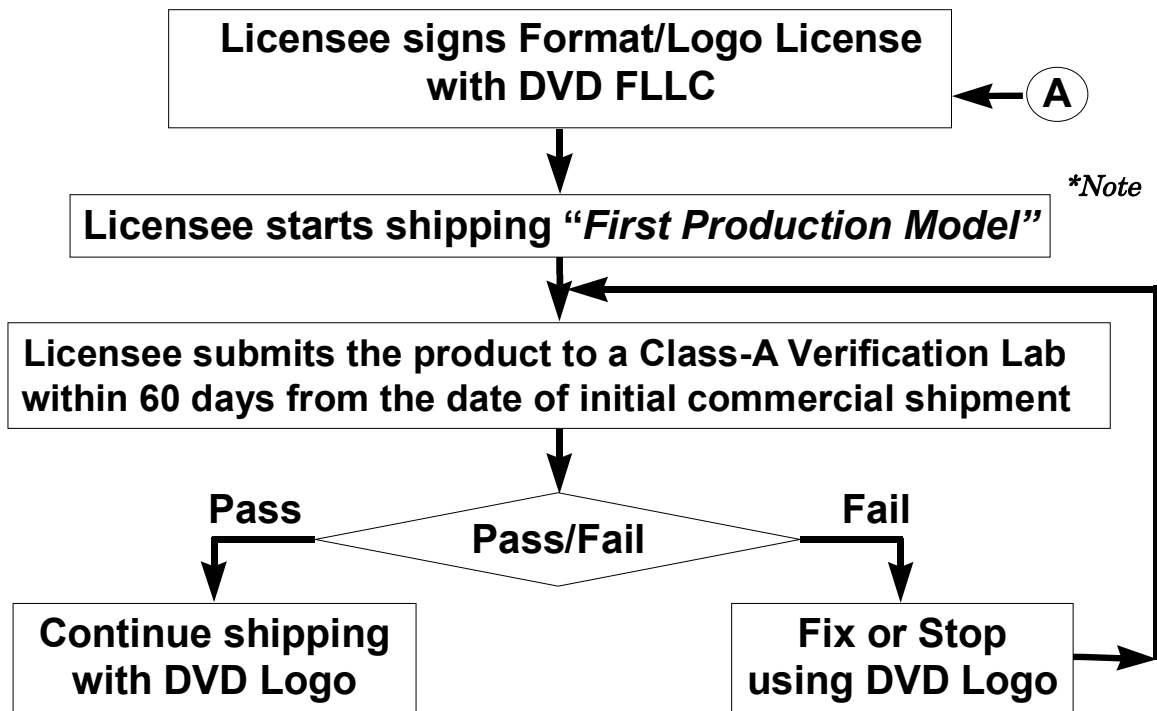
Note:

*: Test Specification for DVD-R Video Format Recorder covers the Test Specification for DVD-Video Player.

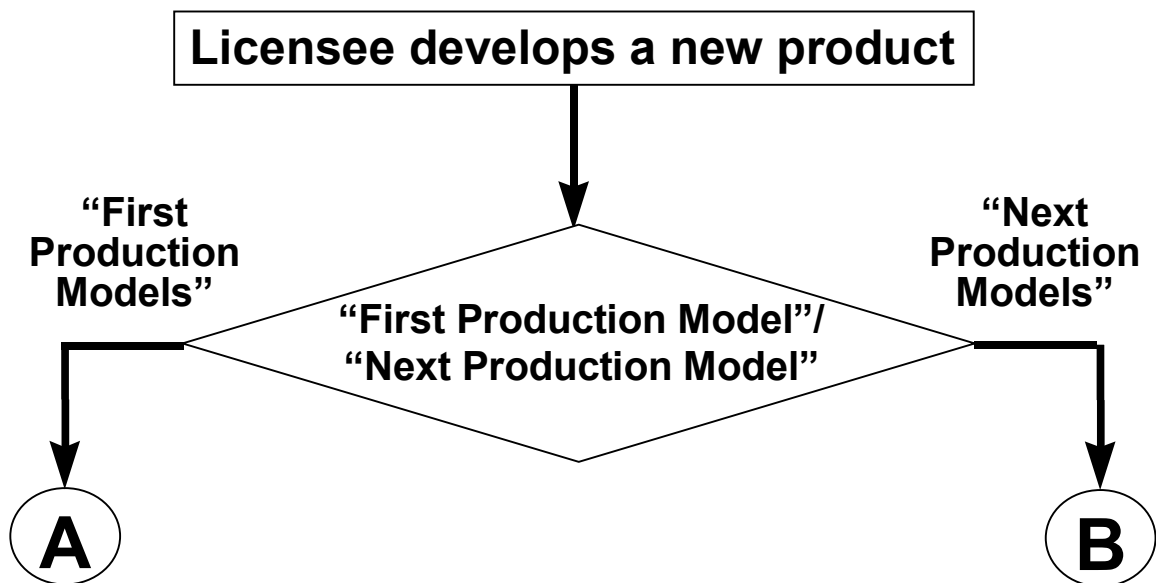
** : Test Specifications for DVD-R, DVD-RW, DVD-RAM Audio Recorder are not available yet (As of June 2005).

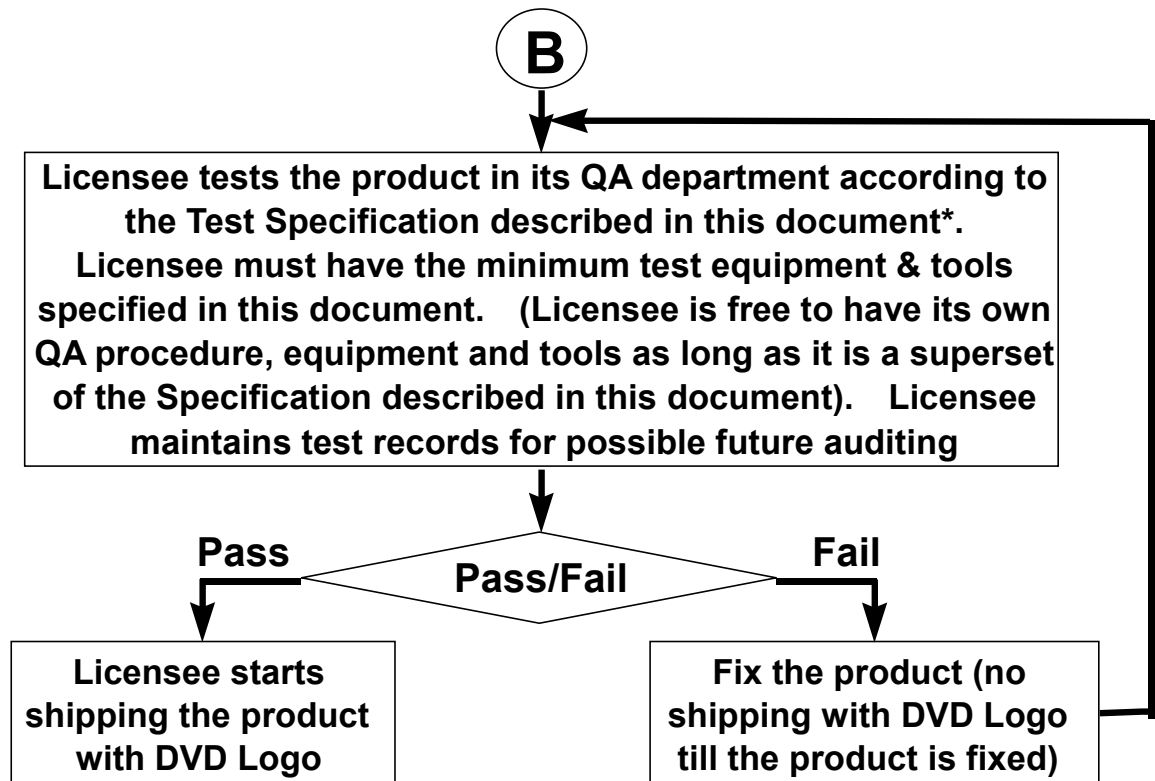
2.4 DVD Logo Mechanism

The DVD Logo mechanism is described in the following flow chart:



**Note: New another rule is applied to the First Production Model of DVD-Video Products (DVD-Video Disc and DVD-Video Player) commercially shipped on or after October 1, 2001.*





*: Licensee without own QA department can get the product tested by a **DVD Multi Drive Class-B Verification Lab**.

Also licensee without QA department is recommended to consult with Class-A Lab. Certain Class-A Lab may have the function of a Class-B Lab.

3. Test Tools and Test Specifications

This chapter covers the test specifications and tool requirements for the physical and logical compliance testing. The Test Specifications consist of four test groups for each product element of DVD Multi Drive (Read-Only). The Forms specified in each test group to describe test results shall use the latest Forms from DVD FLLC web (<http://www.dvdfllc.co.jp>).

3.1 Test Tools

The following tools are required to perform the tests specified and shall be available before executing the test procedures. As for acquisition, refer to **Annex D**.

- 1) Test discs for DVD-ROM Drive Element:
 - Navigation Files Test Disc Vol. 2: DVD-NF100 (Dual Layer, Parallel Track Pass)
 - Navigation Files Test Disc Vol. 2: DVD-NF150 (Dual Layer, Opposite Track Pass)
- 2) Test disc for DVD-R for General Drive Read Element:
 - DVD-R for General Standard Signal Test Disc Type 1: GRSTD-001
- 3) Test disc for DVD-RW Drive Read Element:
 - DVD-RW Standard Signal Test Disc: RWSTD-011 or RWSTD-101
- 4) Test discs for DVD-RAM (4.7 Gbytes) Drive Read Element
 - "FFh" Signal and BCA Test Disc: RAM-PT200-B
 - DMA Test Disc Type A: RAM-PT200-1, 2, 3, 4, 5, 6, 7, and 8
 - DMA Test Disc Type B: RAM-HM200-B1, and B2

3.2 Test Specifications

The following sections describe the test procedures for each product element of DVD-Multi Drive (Read-Only).

3.2.1 DVD-ROM Drive Element

For test of this element, refer to the Normative Reference 6) defined in 1.4, replacing the term of DVD-ROM Drive with DVD Multi Drive (Read-Only).

3.2.1.1 Dual Layered Disc readability

1. Layer 0 of PTP

- Put the DVD-NF100 test disc into the untested DVD-ROM Drive.
- Copy the file named "VIDEO_TS.IFO" onto the hard disk drive.
- Compare the original file to the copied file. If the file comparison passed, that means the DVD-ROM drive can read the data of the Layer 0 of Parallel Track Path (PTP) test disc properly and check mark OK in item 1 of **Form 3B**.

2. Layer 1 of PTP

- Copy the file named "VTS_29_0.BUP" onto the hard disk drive.
- Compare the original file to the copied file. If the file comparison passed that means the DVD-ROM drive can read the data of the Layer 1 of Parallel Track Path (PTP) test disc properly and check mark OK in item 2 of **Form 3B**.

3. Layer 0 of OTP

- Remove the DVD-NF100 test disc from the DVD-ROM Drive, and put the DVD-NF150 test disc in.
- Copy the file named "VIDEO_TS.IFO" onto the hard disk drive.
- Compare the original file to the copied file. If the file comparison passed that means the DVD-ROM drive can read the data of the Layer 0 of Opposite Track Path (OTP) test disc properly and check mark OK in item 3 of **Form 3B**.

4. Layer 1 of OTP

- Copy the file named "VTS_29_0.BUP" onto the hard disk drive.
- Compare the original file to the copied file. If the file comparison passed that means the DVD-ROM drive can read the data of the Layer 1 of Opposite Track Path (OTP) test disc properly and check mark OK in item 4 of **Form 3B**.

Note: If the applicant chooses to use their own test disc, please follow the same model above to validate proper file access from Layer 0 and 1 on both parallel and opposite tracks of the disc.

3.2.2 DVD-R for General Drive Read Element

For test of this element, refer to Reading characteristics test of the Normative Reference 7) defined in 1.4, replacing the term of DVD-R Drive for General with DVD Multi Drive (Read-Only).

3.2.2.1 Reading characteristics

A 12 cm DVD-R for General Standard Signal Test Disc (GRSTD-001) shall be read by the drive. If the entire signal can be read properly, mark OK in **Form 6T**.

3.2.3 DVD-RW Drive Read Element

For test of this element refer to Reading characteristics test of the Normative Reference 8) defined in 1.4, replacing the term of DVD-RW Drive with DVD Multi Drive (Read-Only).

3.2.3.1 Reading characteristics

A 12 cm DVD-RW Standard Signal Test Disc (RWSTD-011 or RWSTD-101) shall be read by the DVD-RW Drive. If the entire signal can be read properly, mark OK in **Form 6L**.

3.2.4 DVD-RAM (4.7 Gbytes) Drive Read Element

For test of this element, refer to Read characteristics, BCA readability test, DMA readability test and DMA read procedure test of the Normative Reference 9) defined in 1.4, replacing the term of DVD-RAM Drive with DVD Multi Drive (Read-Only).

3.2.4.1 Read characteristics

"FFh" signal in the user area from Zone 0 to 34 of RAM-PT200-B* shall be read by the target DVD-RAM Drive. If the "FFh" signal can be read properly, mark OK in **Form 7O**.

*Note: "FFh" signal in the user area from Zone 0 to 34 of RAM-PT200-B is overwritten with –10 % of Operational Peak power after random signal is written with +5 % of Operational Peak power at Zone 0, 1, 16, 17, 33 and 34.

3.2.4.2 BCA readability test

To test the readability of BCA data, "FFh" Signal and BCA Test Disc: RAM-PT200-B shall be loaded on the target DVD-RAM Drive. If the BCA data, 00 02 01 08 F9 3A 8D 9A 9D CF 7E 7D can be identified properly, mark OK in **Form 8O**.

3.2.4.3 DMA readability test

To test the readability of Defect Management Area, DMA Test Discs Type A described below shall be loaded on the target DVD-RAM Drive. Then, check the readability in accordance with **Form 9O**.

1) DMA Test Disc Type A-1: RAM-PT200-1

- Contents: Valid DDS/PDL and SDL do not exist. All DDS/PDLs and SDLs are invalid.

DMA No.	DDS	PDL	SDL
DMA 1	Null data	Null data	Null data
DMA 2	Null data	Null data	Null data
DMA 3	Null data	Null data	Null data
DMA 4	Null data	Null data	Null data

- Test: This Test disc shall be unreadable when it is loaded on the target DVD-RAM Drive.
If it is unreadable by the target DVD-RAM Drive, mark OK in **Form 90 (Type A-1)**.

2) DMA Test Disc Type A-2: RAM-PT200-2

- Contents: One pair of good DDS/PDL and SDL exists. These lists are written in the same DMA. Other DDS/PDLs and SDLs are invalid.

DMA No.	DDS	PDL	SDL
DMA 1	Null data	Null data	Null data
DMA 2	Null data	Null data	Null data
DMA 3	Null data	Null data	Null data
DMA 4	In-progress=0, DDS/PDL update counter=06h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=06h Other fields are default values

- Test: This Test disc shall be readable when it is loaded on the target DVD-RAM Drive.
If it is readable by the target DVD-RAM Drive, mark OK in **Form 90 (Type A-2)**.

3) DMA Test Disc Type A-3: RAM-PT200-3

- Contents: One pair of good DDS/PDL and SDL exists. These lists are written in the different DMA. Other DDS/PDLs and SDLs are invalid.

DMA No.	DDS	PDL	SDL
DMA 1	Null data	Null data	SDL update counter=0Ah DDS/PDL update-counter=06h Other fields are default values
DMA 2	Null data	Null data	Null data
DMA 3	Null data	Null data	Null data
DMA 4	In-progress=0 DDS/PDL update-counter=06h Other fields are default values	All fields are default values	Null data

- Test: This Test disc shall be readable when it is loaded on the target DVD-RAM Drive.
If it is readable by the target DVD-RAM Drive, mark OK in **Form 90 (Type A-3)**.

4) DMA Test Disc Type A-4: RAM-PT200-4

- Contents: DDS/PDL update counter values of each DDS/PDL are different each other.

DDS/PDL update counter values of each SDL are different each other. The largest DDS/PDL update counter value in each SDL is larger than the largest DDS/PDL update counter value in each DDS/PDL. All the SDL update counter values of each SDL are identical.

DMA No.	DDS	PDL	SDL
DMA 1	In-progress=0 DDS/PDL update-counter=03h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=07h Other fields are default values
DMA 2	In-progress=0 DDS/PDL update-counter=04h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=06h Other fields are default values
DMA 3	In-progress=0 DDS/PDL update-counter=05h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=05h Other fields are default values
DMA 4	In-progress=0 DDS/PDL update-counter=06h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=04h Other fields are default values

- Test: This Test disc shall be unreadable when it is loaded on the target DVD-RAM Drive.
If it is unreadable by the target DVD-RAM Drive, mark OK in **Form 90 (Type A-4)**.

5) DMA Test Disc Type A-5: RAM-PT200-5

- Contents: DDS/PDL update counter values of each DDS/PDL are different each other. DDS/PDL update counter values of each SDL are different each other. The largest DDS/PDL update counter value in each SDL is smaller than the largest DDS/PDL update counter value in each DDS/PDL. All the SDL update counter values of each SDL are identical.

DMA No.	DDS	PDL	SDL
DMA 1	In-progress=0 DDS/PDL update-counter=03h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=05h Other fields are default values
DMA 2	In-progress=0 DDS/PDL update-counter=04h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=04h Other fields are default values
DMA 3	In-progress=0 DDS/PDL update-counter=05h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=03h Other fields are default values
DMA 4	In-progress=0 DDS/PDL update-counter=06h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=02h Other fields are default values

- Test: This Test disc shall be unreadable when it is loaded on the target DVD-RAM Drive.
If it is unreadable by the target DVD-RAM Drive, mark OK in **Form 90 (Type A-5)**.

6) DMA Test Disc Type A-6: RAM-PT200-6

- Contents: DDS/PDL update counter values of each DDS/PDL are different each other.

DDS/PDL update counter values of each SDL are different each other. The largest DDS/PDL update counter value in each SDL is the same as the largest DDS/PDL update counter value in each DDS/PDL. SDL update counter values of each SDL are different each other.

DMA No.	DDS	PDL	SDL
DMA 1	In-progress=0 DDS/PDL update-counter=03h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update-counter=06h Other fields are default values
DMA 2	In-progress=0 DDS/PDL update-counter=04h Other fields are default values	All fields are default values	SDL update counter=0Bh DDS/PDL update-counter=05h Other fields are default values
DMA 3	In-progress=0 DDS/PDL update-counter=05h Other fields are default values	All fields are default values	SDL update counter=0Ch DDS/PDL update-counter=04h Other fields are default values
DMA 4	In-progress=0 DDS/PDL update-counter=06h Other fields are default values	All fields are default values	SDL update counter=0Dh DDS/PDL update-counter=03h Other fields are default values

- Test: Data from the sectors of Logical Sector Number (hereafter LSN) 0 to 3FFh shall be read by the target DVD-RAM Drive. If the data is the same as from the sector of existing LSN and is repeated at 32-bit intervals, mark OK in **Form 90 (Type A-6)**.

7) DMA Test Disc Type A-7: RAM-PT200-7

- Contents: DDS/PDL update counter values of each DDS/PDL are different each other. All DDS/PDL update counter values of SDLs are identical. The largest DDS/PDL update counter value in each DDS/PDL is the same as the DDS/PDL update counter value in SDL. SDL update counter values of each SDL are different each other.

DMA No.	DDS	PDL	SDL
DMA 1	In-progress=0 DDS/PDL update counter=03h Other fields are default values	All fields are default values	SDL update counter=0Dh DDS/PDL update counter=06h Other fields are default values
DMA 2	In-progress=0 DDS/PDL update counter=04h Other fields are default values	All fields are default values	SDL update counter=0Ch DDS/PDL update counter=06h Other fields are default values
DMA 3	In-progress=0 DDS/PDL update counter=05h Other fields are default values	All fields are default values	SDL update counter=0Bh DDS/PDL update counter=06h Other fields are default values
DMA 4	In-progress=0 DDS/PDL update counter=06h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update counter=06h Other fields are default values

- Test: Data from the sectors of LSN 0 to 3FFh shall be read by the target DVD-RAM Drive. If the data is the same as from the sector of existing LSN and is repeated at 32-bit intervals, mark OK in **Form 90 (Type A-7)**.

8) DMA Test Disc Type A-8: RAM-PT200-8

- Contents: All DDS/PDL update counter values of DDS/PDLs are identical. All DDS/PDL update counter values of SDLs are identical. All In-progress flags in DDS/PDLs are set to 1. All the SDL update counter values of each SDL are identical.

DMA No.	DDS	PDL	SDL
DMA 1	In-progress=1 DDS/PDL update counter=06h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update counter=06h Other fields are default values
DMA 2	In-progress=1 DDS/PDL update counter=06h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update counter=06h Other fields are default values
DMA 3	In-progress=1 DDS/PDL update counter=06h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update counter=06h Other fields are default values
DMA 4	In-progress=1 DDS/PDL update counter=06h Other fields are default values	All fields are default values	SDL update counter=0Ah DDS/PDL update counter=06h Other fields are default values

- Test: This Test disc shall be unreadable when it is loaded on the target DVD-RAM Drive.
If it is unreadable by the target DVD-RAM Drive, mark OK in **Form 90 (Type A-8)**.

Note: Each DMA default values of Type A are as follows.

DDS	PDL	SDL
DDS ID=00h User certification=1 Disc Manufacturer certification=1 Number of Groups=01h Number of zones=23h PSN of 1st sector=31000h PSN of last sector=341FFh	PDL ID=01h	SDL ID=02h Start PBA of SSA=00h Total Number of logical sectors=230520h

3.2.4.4 DMA read procedure test

Verify the slipping replacement algorithm and the linear replacement algorithm described in clause 5.6 Defect management of DVD Specifications for Rewritable Disc Part 1: Version 2.1, using DMA Test Disc Type B-1 and DMA Test Disc Type B-2 that possesses PDL and SDL in DMA.

If the target DVD-RAM Drive can read all data in user data area properly, mark "OK" in **Form 100**.

- DMA Test Disc Type B-1: RAM HM200-B1**

Read area: From LSN 0 to 23051Fh

Read data: LSN data consisted of 4 bytes repeatedly in each sector

Supplementary spare area: No use

- DMA Test Disc Type B-2: RAM HM200-B2**

Read area: From LSN 0 to 22C51Fh

Read data: LSN data consisted of 4 bytes repeatedly in each sector

Supplementary spare area: Use (1024 Blocks)

Annex A

List of Class-A Verification Labs

This List is correct at the time of publication. However, when the Class-A Lab information contained here differs from such information cited in our website www.dvdfllc.co.jp, the List with more current date prevails. Also, please refer to the website for the latest Verification Service of each Class-A Lab.

Hitachi Consumer Electronics Co., Ltd.

Format Verification Center

292 Yoshida-cho, Totsuka-ku, Yokohama-shi, Kanagawa, 244-0817 Japan

Fax: +81-45-866-5905

Panasonic Corporation

Format Verification Laboratory

1-15 Matsuo-cho, Kadoma, Osaka, 571-8504 Japan

Fax: +81-6-6909-5027

E-mail: fvl-info@ml.jp.panasonic.com URL: <http://panasonic.co.jp/avc/fvl/en/index.html>

SAMSUNG ELECTRONICS CO., LTD

DVD Verification Laboratory

VD Division, DM Business

416, Maetan-3Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, 443-742 Korea

Tel: +82-31-277-0875 Fax: +82-31-277-3398

E-mail: bd.tcenter@samsung.com

Annex B

Glossary of Terms used

DVD-ROM	: DVD Read Only Disc defined by the Normative Reference 2) in 1.4
DVD-R for General	: DVD Recordable Disc for General defined by the Normative Reference 3) in 1.4
DVD-RW	: DVD Re-Recordable Disc defined by the Normative Reference 4) in 1.4
DVD-RAM	: DVD Rewritable Disc defined by the Normative Reference 5) in 1.4

Annex C

Procedure for Class-A Verification Lab Product Submission

The procedure for submitting a product to a Class-A Verification Lab is as follows:

Preliminary Application

Applicant must complete **Form 1AA** to provide preliminary information.

Self Test

Applicant must test the product in accordance with this Test Specification prior to submitting to a Class-A Verification lab. Applicant must complete **Form 2AA** and **necessary Forms** to provide test results.

Note:

Necessary Forms to be filled up are **Form 3B** for DVD-ROM Drive Element, **Form 6T** for DVD-R for General Drive Read Element, **Form 6L** for DVD-RW Drive Read Element and **Form 7O to 10O** for DVD-RAM (4.7 Gbytes) Drive Read Element. Applicant shall use the latest Forms from DVD FLIC Web site (<http://www.dvdfllc.co.jp>).

If there is any test group to be exempted according to the provision of **2.2** and copy of the corresponding verification record is submitted together with **Form 1AA**, the Forms for that test group shall be exempted.

Mutual Non-Disclosure Agreement (NDA)

Applicant, in order to maintain the confidentiality of the applicant product and Verification Lab's information, must sign a Mutual Non-Disclosure Agreement.

Application

Applicant must submit 3 product samples along with said necessary Forms and the NDA.

Test Result

Upon completion of testing, Verification Lab will complete **Form 3AA** to inform the applicant and DVD Format/Logo Licensing Corporation of the test results.

Annex D

Test Tool Contact Information

The Contact Information is correct at the time of publication. However, when the Class-A Lab information (marked <>) differs from such information cited in our website www.dvdfllc.co.jp, the List with more current date prevails.*

(For DVD-ROM Drive Element)

Navigation Files Test Disc Vol. 2: DVD-NF100 and DVD-NF150 shall be delivered by:

Panasonic Corporation<*>

Format Verification Laboratory

1-15 Matsuo-cho, Kadoma, Osaka, 571-8504 Japan

Fax: +81-6-6909-5027

E-mail: fv1-info@ml.jp.panasonic.com URL: <http://panasonic.co.jp/avc/fv1/en/index.html>

(For DVD-R for General Drive Read Element)

DVD-R for General Standard Signal Test Disc (GRSTD-001) shall be delivered by:

PIONEER CORPORATION<*>

Verification Laboratory

1-1 Shin-ogura, Saiwai-ku, Kawasaki-shi, Kanagawa, 212-0031 Japan

Fax: +81-44-580-4027

(For DVD-RW Drive Read Element)

DVD-RW Standard Signal Test Disc (RWSTD-011 or RWSTD-101) shall be delivered by:

PIONEER CORPORATION<*>

Verification Laboratory

1-1 Shin-ogura, Saiwai-ku, Kawasaki-shi, Kanagawa, 212-0031 Japan

Fax: +81-44-580-4027

(Continued)

(For DVD-RAM (4.7 Gbytes) Drive Read Element)

"FFh" Signal & BCA Test Disc (RAM-PT200-B) and DMA Test Disc Type A (RAM-PT200-1 to 8) shall be delivered by:

Panasonic Corporation<*>

Format Verification Laboratory

1-15 Matsuo-cho, Kadoma, Osaka, 571-8504 Japan

Fax: +81-6-6909-5027

E-mail: fvl-info@ml.jp.panasonic.com URL: <http://panasonic.co.jp/avc/fvl/en/index.html>

DMA Test Disc Type B (RAM-HM200-B1 and B2) shall be delivered by:

Hitachi Consumer Electronics Co., Ltd.<*>

Format Verification Center

292 Yoshida-cho, Totsuka-ku, Yokohama-shi, Kanagawa, 244-0817 Japan

Fax: +81-45-866-5905