



DVD-RAM Drive (2.6 Gbytes)

TEST SPECIFICATION

Version 1.01

June 2005

Amendment for DVD-RAM Drive (2.6 Gbytes) TS Version 1.0i (June 2005)

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

- **Minor amendment (March 26, 2009)**

Page	Location	Amendment
Page 7	Annex A	<ul style="list-style-type: none">• Class-A Lab information of "Hitachi, Ltd.", "Industrial Technology Research Institute" and "Matsushita Electric Industrial Co., Ltd. (company name)" was updated.
Page 10	Annex D	<ul style="list-style-type: none">• A note regarding Class-A Lab information was added.• The company name "Matsushita Electric Industrial Co., Ltd." was changed to "Panasonic Corporation".

- **Minor amendment (January 2010)**

Page	Location	Amendment
Page 7	Annex A	<ul style="list-style-type: none">• Class-A Lab information of "Hitachi, Ltd. (company name)" and "Panasonic Corporation" were updated.
Page 10	Annex D	<ul style="list-style-type: none">• Class-A Lab information of "Panasonic Corporation" was updated.

- **Amendment 1 (January 2012)**

Page	Location	Amendment
Page 7	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 7	Annex A	<ul style="list-style-type: none">• "Industrial Technology Research Institute" was deleted from the Class-A Lab list.

Conditions for Publication

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Revision History

- April 14, 1999
DVD-RAM Drive Test Specification Version 0.9 was drafted.
- May 20, 1999
Version 1.0 was revised with agreement at Verification Task Force meeting.
- June 2005
Version 1.01 updated Class-A Lab List, and was edited as electronic files.

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Forms for DVD Format verification

Form 1D

Preliminary Information for DVD Format Verification F1

Form 2D

Test Information of DVD Format Verification F2

Form 3D

Test result of Write characteristics F3

Form 4D

Test result of overwrite characteristics F4

Form 5D

Test result of read characteristics F5

Form 6D

Confirmation of DVD Format Verification F6

1. General

1.1 Scope

The scope of this Test Specification is for the purpose of testing DVD-RAM Drive (2.6 Gbytes) for compliance with **DVD Specifications for Rewritable Disc Part 1** and **Part 2**. The test procedure described herein could be used by Class-A Verification Labs, Class-B Verification Labs and Quality Assurance Departments of DVD-RAM Drive manufacturers.

The scope of this Test Specification is limited to product compliance to DVD Specifications and not to evaluate performance of DVD-RAM Drive.

1.2 Normative References

DVD Specifications for Rewritable Disc

Part 1: Physical Specifications Version 1.0

Part 2: File System Specification Version 1.1

1.3 Scope of Products Covered

- A. DVD-RAM Drive
- B. DVD-RAM Disc read functions of integrated systems

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 Specification compliance of the product for logo consideration must be validated by the test specifications as defined in this document.

The scope of this Test Specification is limited to product compliance to DVD Specifications and not to evaluate performance of DVD-RAM Drive.

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**:

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

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 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**:

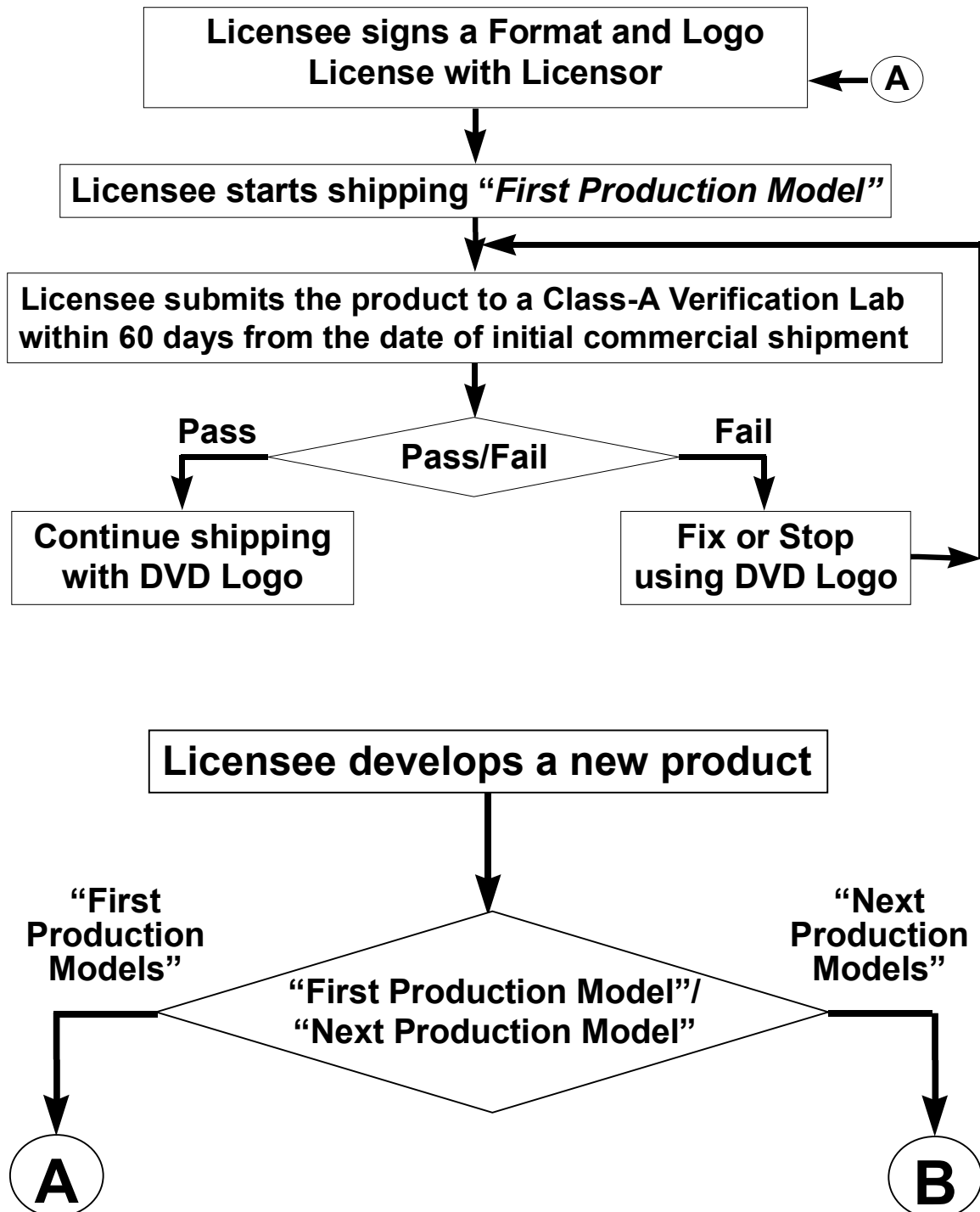
1. DVD Specifications Version n.x changing to n.x+1
2. DVD format related significant changes at Licensees discretion to Pickup head, LSI and firmware.

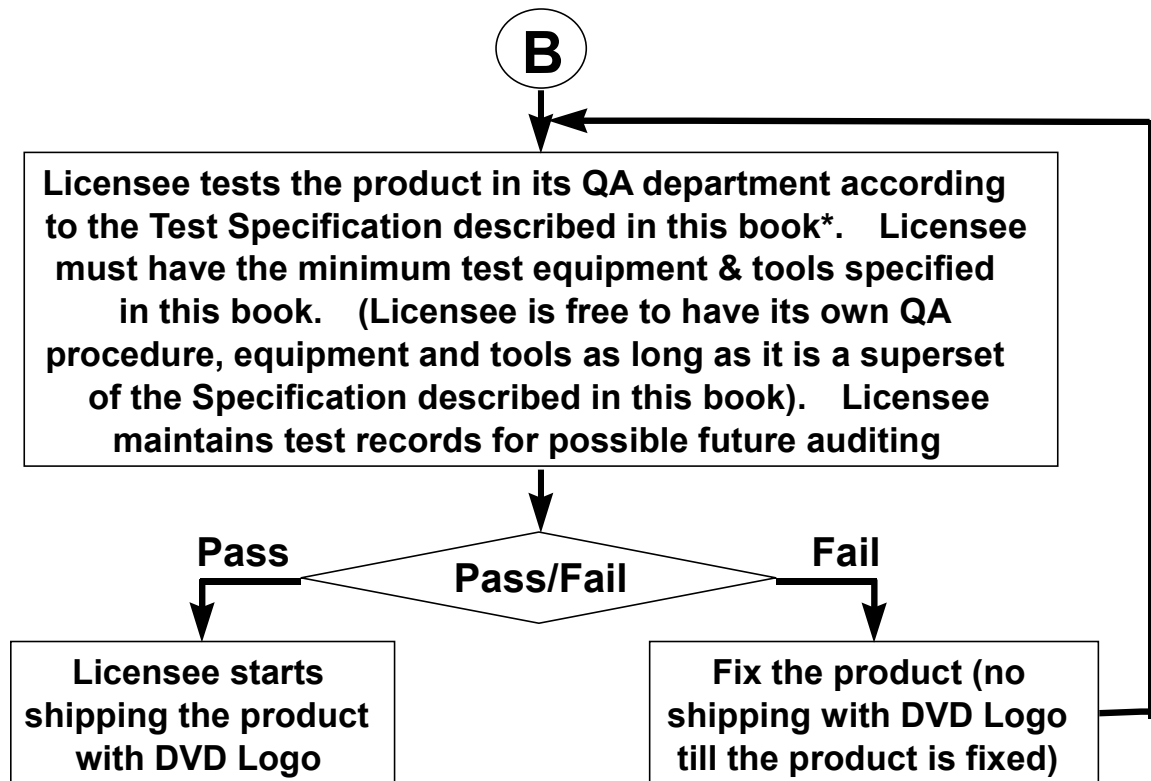
Class-A Verification Labs - Class-A Verification Labs are experts in DVD technology and provide independent expert assessment of Licensee's product compliance with DVD Specifications. Class-A labs also provide additional services such as interpretation of DVD Specifications, development of Test Tools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

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

2.2 DVD Logo Mechanism

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





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

3. Test Tools and Test Specification

This chapter covers the test specifications and tool requirements for the physical and logical compliance testing.

3.1 Test Tools

The following tools are required to run the test specification. These tools are mandatory and must be available before start executing the test procedures.

DVD-RAM Standard Disc, RAM-PT100

DVD-RAM Reference Signal Disc 1, RAM-PT100A

DVD-RAM Reference Signal Disc 2, RAM-PT100B

DVD-RAM Disc Evaluation System or equivalent system

3.2 Test Specification of DVD-RAM Drive

The following section describe the test procedures required for the DVD-RAM Drive, the tests are identical for both, the First Production Models and the Next Production Models.

3.2.1 Write characteristics

- "FFh" signal shall be written in the user area of each zone (0 to 23) of RAM-PT100 by the DVD-RAM Drive. And measure the characteristic of the recording layer by using DVD-RAM Disc Evaluation System or equivalent system in accordance with **Form 3D**.
- "FFh" signal shall be written in the user area of each zone (0 to 23) of RAM-PT100 by the DVD-RAM Drive. And "FFh" signal shall be read properly by using DVD-RAM Drive. If the "FFh" signal can be read properly, please mark OK in the **Form 3D**.

3.2.2 Overwrite characteristics

- "FFh" signal shall be written in the user area (Zone 0, 1, 12, 13, 22 and 23) of RAM-PT100 by using DVD-RAM Drive and random data shall be overwritten by using DVD-RAM Disc Evaluation System under the following conditions.

(Write power condition for Zone 0, 12 and 22)

Peak Power = Minus 5 % of Operational Peak Power (PPo)

Bias Power = Minus 5 % of Operational Bias Power (PBo)

(Write power condition for Zone 1, 13 and 23)

Peak Power = Minus 10 % of Operational Peak Power (PPo)

Bias Power = Minus 10 % of Operational Bias Power (PBo)

After above writings, Jitter of the user area ((Zone 0, 1, 12, 13, 22 and 23) shall be measured by using DVD-RAM Disc Evaluation System and test result shall be recorded in the **Form 4D**.

- Random data shall be written in the user area (Zone 0, 1, 12, 13, 22 and 23) of RAM-PT100 by using DVD-RAM Disc Evaluation System under the following conditions and "FFh" signal shall be overwritten by using DVD-RAM Drive.

(Write power condition for Zone 0, 12 and 22)

Peak Power = Plus 5 % of Operational Peak Power (PPo)

Bias Power = Plus 5 % of Operational Bias Power (PBo)

(Write power condition for Zone 1, 13 and 23)

Peak Power = Plus 10 % of Operational Peak Power (PPo)

Bias Power = Plus 10 % of Operational Bias Power (PBo)

After above writings, "FFh" signal shall be read by using DVD-RAM Drive. If the "FFh" signal can be read properly, please mark OK in the **Form 4D**.

3.2.3 Read Characteristics

- "FFh" signals which are written in the user area (Zone 0 to 23) of RAM-PT100A shall be read by using DVD-RAM Drive. If the "FFh" signal can be read properly, please mark OK in the **Form 5D**.
- Jitter in the user area (Zone 0, 1, 2, 3, 10, 11, 12, 13, 20, 21, 22 and 23) of Reference Signal Disc 2, RAM-PT100B shall be measured by using DVD-RAM Drive and record in accordance with **Form 5D**. "FFh" signal write conditions of RAM-PT100B are described below.

(Write power of zone 0, 10 and 20)

Peak Power = Plus 5 % of Operational Peak Power (PPo)

Bias Power = Plus 5 % of Operational Bias Power (PBo)

(Write power of zone 1, 11 and 21)

Peak Power = Plus 10 % of Operational Peak Power (PPo)

Bias Power = Plus 10 % of Operational Bias Power (PBo)

(Write power of zone 2, 12 and 22)

Peak Power = Minus 5 % of Operational Peak Power (PPo)

Bias Power = Minus 5 % of Operational Bias Power (PBo)

(Write power of zone 3, 13 and 23)

Peak Power = Minus 10 % of Operational Peak Power (PPo)

Bias Power = Minus 10 % of Operational Bias Power (PBo)

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.

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Annex B

Glossary of Terms used

DVD-RAM : DVD Rewritable Disc

DVD-ROM : DVD Read-Only Disc

DVD-R : DVD Recordable Disc

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 1D** 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 2D, 3D, 4D and 5D** to provide test results.

Mutual Non Disclosure Agreement

Applicant, in order to maintain the confidentiality of the applicant product and Verification Lab information, must sign a mutual non disclosure agreement.

Application

Applicant must submit 3 product samples along with **Form 2D, 3D, 4D and 5D** and the NDA.

Test Result

Upon completion of testing, Verification Lab will complete **Form 6D** 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.*

DVD-RAM Standard Disc: RAM-PT100, Reference Signal Disc 1: RAM-PT100A and Reference Signal Disc 2: RAM-PT100B shall be delivered by:

Panasonic Corporation<*>

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