POINTS OF CONTACT

OSTA
Ray Freeman
OSTA Facilitator

311 East Carrillo Street
Santa Barbara, CA 93101
Tel: +1 805 963 3853
Fax: +1 805 962 1541
Email: ray@osta.org
www.osta.org

Technical Content
Felix Nemirovsky
Chairman, MultiRead Subcommittee

Oak Technology, Inc.
139 Kifer Court
Sunnyvale, CA 94086
Tel: +1 415 643 0944
Fax: +1 520 299 4319
Email: felixn@oaktech.com

ABSTRACT
This specification defines the read-compatibility requirements for a MultiPlay compliant device. The applicable clauses of the specification containing the word “shall” are the requirements to be MultiPlay compliant. Annexes may be part of this document but are not required for compliance.

LICENSING
Application of this specification does not require a license. However, CD disc and CD equipment products are known to require a license from Philips Consumer Electronics B.V. DVD disc and DVD equipment products are known to require a license from the DVD Forum.

IMPORTANT NOTICES
This document is a specification adopted by Optical Storage Technology Association (OSTA). This specification may be revised by OSTA. It is intended solely as a guide for companies interested in developing products that can be compatible with other products developed using this document. OSTA makes no representation or warranty regarding this document, and any company using this document shall do so at its sole risk, including specifically the risks that a product developed will not be compatible with any other product or that any particular performance will not be achieved. OSTA shall not be liable for any exemplary, incidental, proximate or consequential damages or expenses arising from the use of this document.

This document is an authorized publication of OSTA. It is the exclusive property of OSTA but may be referred to and utilized by the general public for any legitimate purpose, particularly in the design and development of CD and DVD readable and/or playable devices, systems and subsystems. This document may be copied, in whole or in part, provided that no revisions, alterations, or changes of any kind are made to the materials contained herein. Only OSTA has the right and authority to revise or change the materials contained in this document and any revisions by any party other than OSTA are totally unauthorized and specifically prohibited.

Compliance with the specification set forth in this document may require use of one or more features covered by proprietary rights (such as features which are the subject of a patent, patent application, copyright, mask work right or trade secret right). By publication of this document, no position is taken by OSTA with respect to the validity or infringement of any patent or other proprietary right, whether owned by a Member or Associate of OSTA or otherwise. OSTA hereby expressly disclaims any liability for infringement of intellectual property rights of others by virtue of the use of this document. OSTA has not and does not investigate any notices or allegations of infringement prompted by publication of any OSTA document nor does OSTA undertake a duty to advise users or potential users of OSTA documents of such notices or allegations. OSTA hereby expressly advises all users or potential users of this document to investigate and analyze any potential infringement situation, seek the advice of intellectual property counsel, and obtain a license under any applicable intellectual property right or take the necessary steps to avoid infringement of any intellectual property right. OSTA expressly disclaims any intent to promote infringement of any intellectual property right by virtue of the evolution, adoption, or publication of this OSTA document.
## Contents

1 General 1  
  1.1 Purpose .................................................. 1  
  1.2 Related Documents ........................................ 1  
  1.3 Computer Terminology ................................... 2  
  1.4 Terms ...................................................... 2  
  1.5 Scope ...................................................... 3  

2 MultiPlay + Red Book Audio 5  
  2.1 Test Disc Specification .................................... 5  
  2.2 Test Plan .................................................. 5  
  2.3 Pass or Fail Criteria ....................................... 6  

3 MultiPlay + CD–Text 7  
  3.1 Test Disc Specification .................................... 7  
  3.2 Test Plan .................................................. 7  
  3.3 Pass or Fail Criteria ....................................... 8  

4 MultiPlay + Slideshow 9  
  4.1 Test Disc Specification .................................... 9  
  4.2 Test Plan .................................................. 9  
  4.3 Pass or Fail Criteria ....................................... 10  

5 MultiPlay + VideoCD 11  
  5.1 Test Disc Specification .................................... 11  
  5.2 Test Plan .................................................. 11  
  5.3 Pass or Fail Criteria ....................................... 11  

6 RevisionHistory 13  
  6.1 1.04 → 1.10 (July 11, 2001) ................................. 13  
  6.2 1.00 → 1.04 (June 15, 2001) ......................... 13  
  6.3 1.00 (December 4, 2000) ................................. 13  

Index 15
1 General

1.1 Purpose

The purpose of this document is to specify the read and/or play compatibility requirements for a MultiPlay compliant consumer electronic device. It is intended as a specification for CD and DVD device manufacturers, personal computer manufacturers and operating system software developers. MultiPlay defines the requirements that shall be met for a device to read and/or play all the following types of media: CD–R and CD–RW.

This specification describes the complete device requirements of the MultiPlay Specification and Test Plan. It covers the physical requirements for a MultiPlay compliant device.

The MultiPlay Test Plan for MultiPlay compliant devices applies only to the actions or features in the MultiPlay Specification that are indicated by the word “shall.” This test plan document expresses what shall be tested, and all of its sections are mandatory. These tests shall be performed with test discs specially designed according to this test plan.

1.2 Related Documents

Other industry standards and specifications were reviewed and consulted in the development of this specification. They are directly related to CD-DA, VideoCD, CD-Text, CD-R, and CD-RW. These documents include:

IEC 60908 Ed.2.0 b.1999 Audio Recording - Compact disc digital audio system

ISO 9660:1988 Information Processing - Volume and File Structure of CD-ROM for Information Interchange on read-only 120mm optical data discs (CD–ROM)

ISO/IEC 10149:1995 Information Technology – Data Interchange on read-only 120mm optical data discs (CD–ROM)

Orange Book Part–II Recordable Compact Disc System Part II, Philips and Sony Corp., Version 2.0 or higher

Orange Book Part–III ReWritable Compact Disc System Part III, Philips and Sony Corp., Version 1.0 or higher

Sony/Philips Color Books VideoCD Standard

Sony/Philips Color Books CD-Text Standard
1.3 Computer Terminology

*Digital Versatile Disc (DVD)* - Generic class of devices based on 120mm discs, using 8 to 16 Modulation, having a track pitch of 0.74 or 0.80 um, with a multiple gigabyte capacity.

*Dolby Digital* - A coding system for audio. It is the most common means of encoding audio for DVD-Video.

*DVD-Video* – A format for storing video on a disc. It is based on MPEG video, Dolby Digital and MPEG audio.

*Moving Picture Expert Group (MPEG)* – A committee that developed the MPEG family of audio and video compression systems.

*MPEG audio* – Audio compressed according to the MPEG perceptual encoding system.

*MPEG-2* – Audio with data to provide discrete multi-channel audio.

*MPEG video* – Video compressed according to the MPEG perceptual encoding system.

*MPEG-2* – Video used for higher-quality video.

1.4 Terms

*May* – Indicates an action or feature that is optional.

*Optional* – Describes a feature that may or may not be implemented. If implemented, the feature will be implemented as described.

*Shall* – Indicates an action or feature that is mandatory and shall be implemented in a device that is claimed to be in compliance with this specification.

*Should* – Indicates an action or feature that is optional but its implementation is strongly recommended. or higher Applies to version of standards, specification or documents that include a version number. It implicitly applies to any version number. New versions that conflict with older versions are exceptions that would require an update of this MultiPlay Specification.

*Device* – For the purposes of this document the word “device” is used interchangeably with “drive” and “player.”

*Drive* – Product that is internally or externally connected to a computer system.

*Player* – Standalone or connected product that allows the playback of audio and/or video.

*Selection* – A segment of playable content (audio, video, still picture).

*Title* – Refers to text information about the playable selection.

*Version* – Indicates a change to the document.
1.5 Scope

This document specifies the read and/or play compatibility requirements of a MultiPlay compliant consumer electronic device and states the Test Plan for its verification. MultiPlay defines the requirements that shall be met for a device to read and/or play all the following types of media: CD–R and CD–RW.

A MultiPlay device shall play back Red Book Audio recorded on CD–R and CD–RW media.

A MultiPlay device that supports CD–Text capability shall be capable of playing and displaying CD–Text information recorded on CD–R and CD–RW media.

A MultiPlay device that supports VideoCD capability shall be capable of playing VideoCD information recorded on CD–R and CD–RW media.

Examples of MultiPlay Compliance:

<table>
<thead>
<tr>
<th></th>
<th>MultiPlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD–R Disc</td>
<td>YES</td>
</tr>
<tr>
<td>CD–RW Disc</td>
<td>YES</td>
</tr>
</tbody>
</table>

YES – A MultiPlay compliant device shall be able to read this media type.
2 MultiPlay + Red Book Audio

This test shall be performed twice, once using a CD–R test disc and once using a CD–RW test disc. The MultiPlay + Red Book Audio test shall be considered successful only if all six test steps pass for each disc.

2.1 Test Disc Specification

With the use of Red Book Audio–formatted content that is recorded on CD–R and CD–RW discs, five tracks shall be tested. Each track shall contain a spoken phrase in English with a minimum duration of 4 seconds and a maximum duration of 30 seconds. The phrase is noted in quotation marks below.

<table>
<thead>
<tr>
<th>Track Number</th>
<th>Track Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>“Now playing first track, now playing first track, ...”</td>
</tr>
<tr>
<td>02</td>
<td>“Now playing second track, now playing second track, ...”</td>
</tr>
<tr>
<td>03</td>
<td>“Now playing third track, now playing third track, ...”</td>
</tr>
<tr>
<td>04</td>
<td>“Now playing fourth track, now playing fourth track, ...”</td>
</tr>
<tr>
<td>05</td>
<td>“Now playing fifth track, now playing fifth track, ...”</td>
</tr>
</tbody>
</table>

2.2 Test Plan

<table>
<thead>
<tr>
<th>Action</th>
<th>Expected Result</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Check the test disc type.</td>
<td>CD–R _____ CD–RW _____</td>
<td>P F □ □</td>
</tr>
<tr>
<td>2 Load the MultiPlay + Audio/CD–Text Test Disc into the consumer electronic player. If the device starts to play, press the Stop button.¹</td>
<td>The device shall accept the disc and become ready to play the first track</td>
<td>P F □ □</td>
</tr>
<tr>
<td>3 Press the Play button to start the first track playing.</td>
<td>The device shall play the first track. The track will contain “Now playing first track, now playing first track...” etc.</td>
<td>P F □ □</td>
</tr>
<tr>
<td>4 Press the Skip track button to move to the next track.</td>
<td>The device shall play the second track. The track will contain “Now playing second track, Now playing second track...” etc.</td>
<td>P F □ □</td>
</tr>
<tr>
<td>5 Press the Skip track button three times to move to the fifth track.</td>
<td>The device shall play the fifth and last track. The track will contain “Now playing fifth track, Now playing fifth track...” etc.</td>
<td>P F □ □</td>
</tr>
</tbody>
</table>
6 Press the Skip track button again. The device **shall** continue to play the fifth track. □ □

1. Some devices will automatically recognize the disc and start playing. To initiate this test plan, the disc shall be played from a stop position.

**Note:** *Audio quality will not be judged by this test. The recording of each track **shall** be understandable, however.*

### 2.3 Pass or Fail Criteria

This test plan **shall** be performed two times, once with a CD-R written test disc and once with a CD-RW written test disc. The MultiPlay test **shall** be considered successful only if all six test steps pass for both CD-R and CD-RW test discs.
3 MultiPlay + CD–Text

This test shall be performed twice, once using a CD–R test disc and once using a CD–RW test disc. The MultiPlay + CD–Text test shall be considered successful only if all six test steps pass for each disc.

3.1 Test Disc Specification

The format of this disc shall be Red Book Audio with CD-Text encoded in the lead-in written on CD–R and CD–RW media. The content of the disc shall be exactly the same as the content of the MultiPlay + Red Book Audio test disc with the following additions:

<table>
<thead>
<tr>
<th>Album Name:</th>
<th>MultiPlay + CD-Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author Name:</td>
<td>OSTA MultiRead Subcommittee</td>
</tr>
<tr>
<td>First Track Title:</td>
<td>First Track</td>
</tr>
<tr>
<td>Author:</td>
<td>OSTA One</td>
</tr>
<tr>
<td>Second Track Title:</td>
<td>Second Track</td>
</tr>
<tr>
<td>Author:</td>
<td>OSTA Two</td>
</tr>
<tr>
<td>Third Track Title:</td>
<td>Third Track</td>
</tr>
<tr>
<td>Author:</td>
<td>OSTA Three</td>
</tr>
<tr>
<td>Fourth Track Title:</td>
<td>Fourth Track</td>
</tr>
<tr>
<td>Author:</td>
<td>OSTA Four</td>
</tr>
<tr>
<td>Fifth Track Title:</td>
<td>Fifth Track</td>
</tr>
<tr>
<td>Author:</td>
<td>OSTA Five</td>
</tr>
</tbody>
</table>

3.2 Test Plan

<table>
<thead>
<tr>
<th>Action</th>
<th>Expected Result</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Check the test disc type.</td>
<td>CD–R ____ CD–RW ____</td>
</tr>
<tr>
<td>2</td>
<td>Load the MultiPlay + Audio/CD–Text Test Disc into the consumer electronic player. If the device starts to play, press the Stop button. ¹</td>
<td>The device shall accept the disc and become ready to play the first track. The Album name of the disc shall read “Multiplay + CD-Text” and the Author name shall read “OSTA MultiRead Subcommittee”.</td>
</tr>
<tr>
<td>3</td>
<td>Press the Play button to start the first track playing.</td>
<td>The device shall play the first track. The track will contain “Now playing first track, now playing first track...” etc. The device shall display “First Track” for the title of the track, and “OSTA One” for the author of the track.</td>
</tr>
</tbody>
</table>
4. Press the Skip track button to move to the next track. The device **shall** play the second track. The track will contain “Now playing second track, Now playing second track...” etc. The device **shall** display “Second Track” for the title of the track, and “OSTA Two” for the author of the track.

5. Press the Skip track button three times to move to the fifth track. The device **shall** play the fifth and last track. The track will contain “Now playing fifth track, Now playing fifth track...” etc. The device **shall** display “Fifth Track” for the title of the track, and “OSTA Five” for the author of the track.

6. Press the Skip track button again. The device **shall** continue to play the fifth track. The device **shall** display “Fifth Track” for the title of the track, and “OSTA Five” for the author of the track.

1. Some devices will automatically recognize the disc and start playing. To initiate this test plan, the disc shall be played from a stop position.

### 3.3 Pass or Fail Criteria

This test **shall** be performed two times, once with a CD-R written test disc and once with a CD-RW written test disc. The MultiPlay + CD-Text test **shall** be considered successful only if all six test steps pass for both CD-R and CD-RW test discs. All Album Title, Track Title and Track Author text **shall** be displayed correctly.
4 MultiPlay + Slideshow

This test shall be performed twice, once using a CD–R test disc and once using a CD–RW test disc. The MultiPlay + Slideshow test shall be considered successful only if all eight test steps pass for each disc.

4.1 Test Disc Specification

The format of this disc shall be VideoCD 2.0 written on CD–R and CD–RW media. The contents of this disc consists of 32 still image pictures from a JPG or BMP source file and one video sequence consisting of all of the still images in sequence with a delay of 8 seconds between each image. The first 8 seconds of each image in the slideshow video sequence are marked with the image number and filename. There will be two menu pages of thumbnails which display 16 images on each menu page. Each menu allows for the selection of an individual still image or the entire slideshow in sequence.

4.2 Test Plan

<table>
<thead>
<tr>
<th>Action</th>
<th>Expected Result</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Check the test disc type.</td>
<td>CD–R ____ CD–RW ____</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td>2 Load the MultiPlay + Slideshow Test Disc into the consumer electronic player. If the device starts to play automatically, press the Return button to go back to the menu.</td>
<td>The device shall accept the disc and become ready to play. The device should display the Page 1 Thumbnail Menu correctly.</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td>3 Press the Next Picture button to go to the Page 2 menu.</td>
<td>The device shall play the second Thumbnail Menu page.</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td>4 Press the numbers 17 on the device controller.</td>
<td>The device shall play the slideshow movie. This is each picture from the thumbnails in order. Each picture should display for approximately 5 seconds and the picture number and picture name should display for approximately 2 seconds.</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td>5 Press the Return button on the device controller.</td>
<td>The device shall stop playback and return to the Thumbnail menu page 1.</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td>6 Press a specific picture number.</td>
<td>The device shall display that selection.</td>
<td>Pass/Fail</td>
</tr>
</tbody>
</table>
1. Some devices will automatically recognize the disc and start playing. To initiate this test plan, the disc shall be played from a Page 1 Thumbnail Menu position.

4.3 Pass or Fail Criteria

This test shall be performed two times, once with a CD–R and once with a CD-RW test disc. The MultiPlay + Slideshow test shall be considered successful only if all eight test steps pass for both CD–R and CD–RW test discs.
5 MultiPlay + VideoCD

This test shall be performed twice, once using a CD–R test disc and once using a CD–RW test disc. The MultiPlay + VideoCD test shall be considered successful only if all five test steps pass for each disc.

5.1 Test Disc Specification

The format of a test disc shall be VideoCD v1.1 written on CD–R or CD–RW media. The content of this disc consists of movies. These discs are fully compliant with the VideoCD v1.1 specification.

The VideoCD Movie disc will consist of 5 MPEG–1 compressed video tracks.

5.2 Test Plan

<table>
<thead>
<tr>
<th>Action</th>
<th>Expected Result</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Check the test disc type.</td>
<td>CD–R ____ CD–RW ____</td>
<td></td>
</tr>
<tr>
<td>2 Load the MultiPlay + VideoCD Test Disc into the consumer electronic player. If the device starts to play, press the Stop button.</td>
<td>The device shall accept the disc and become ready to play the first selection.</td>
<td>P F □ □</td>
</tr>
<tr>
<td>3 Press the Play button.</td>
<td>The device shall start playing the selection continuously from first to last.</td>
<td>P F □ □</td>
</tr>
<tr>
<td>4 Press the Next button to go to next selection.</td>
<td>The device shall automatically start playing the next selection from its beginning.</td>
<td>P F □ □</td>
</tr>
<tr>
<td>5 Repeat step 3 for all the remaining selections.</td>
<td></td>
<td>P F □ □</td>
</tr>
</tbody>
</table>

1. Some devices will automatically recognize the disc and start playing. To initiate this test plan, the disc shall be played from a stop position.

5.3 Pass or Fail Criteria

This test shall be performed twice, once using a CD–R test disc and once using a CD–RW test disc. The MultiPlay + VideoCD test shall be considered successful only if all five test
steps pass for both CD–R and CD–RW test discs. All selections shall be viewable on the display.
6 RevisionHistory

6.1 1.04 → 1.10 (July 11, 2001)
   • Typographical errors were fixed.
   • Index was added to the document.
   • Revision history was added to the document.

6.2 1.00 → 1.04 (June 15, 2001)
   • Test sheets were incorporated into the document.
   • The document was reformatted

6.3 1.00 (December 4, 2000)
   • First version of the document.
Index

CD, 1
CD–R, 1, 3, 5, 7, 9, 11
CD–RW, 1, 3, 5, 7, 9, 11
CD–Text, 3, 7

DVD, 1, 2

image
  BMP, 9
  JPG, 9
  still, 9

menu
  thumbnail, 9

MPEG, 2

Red Book Audio, 3, 5, 7

Slideshow, 9

track, 5

VideoCD, 3, 9, 11