

UMD™ Image Generator

Version 1.2.7

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1 Software Overview

Overview

The UMD™ Image Generator (umdgen) is a tool that is used for creating UMD™ image files.

Currently, no tools are provided to allow users to create UMD™ discs on their own.

However, a UMD™ image that has been written to a DVD-R as a logical file can be used by the Testing Tool (DTP-L1500/DTP-L1500A).

To create a UMD™ image file using umdgen, first specify the required data files, then enter additional information to be added to the disc.

UMD™ Image Files

A UMD™ image file that is output by the UMD™ Image Generator actually consists of a group of 4-5 files. These files are needed to manufacture the UMD™. The files include USER_L0.IMG (Layer0) and USER_L1.IMG (Layer 1), which comprise the disc image and are in a format that is an extension to ISO 9660 Level 2.

Operating Environment

The UMD™ Image Generator runs in the following environment.

Operating system	Windows 98 (Internet Explorer 5.0 or later is required) Windows NT 4.0 SP5 or later Windows 2000 Windows XP
CPU	Pentium II 450MHz or faster
RAM	Min. 128MB
Minimum free memory	16MB (*) More memory is required if a large number of source files are written.

2 UMD™ Image Generator Window

UMD™ Image Generator Window Structure

The UMD™ Image Generator window has the following structure.

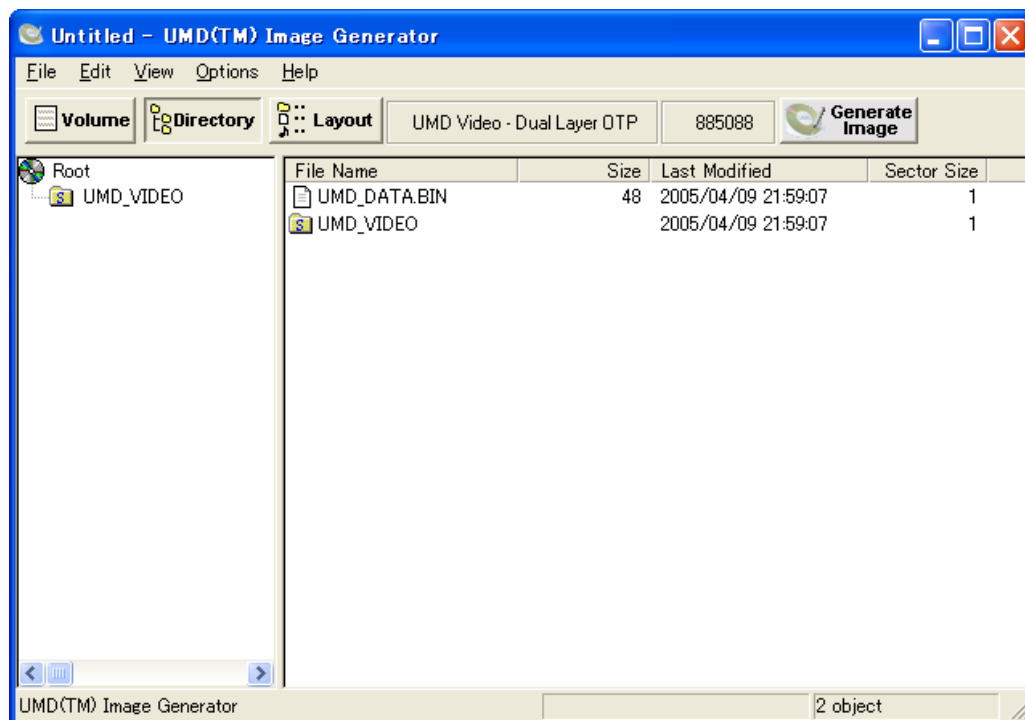
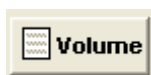


Figure 1 UMD™ Image Generator Window - Directory Mode

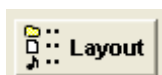
The following buttons are arranged from left to right under the menu bar at the top of the window.



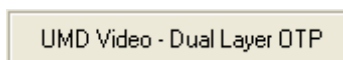
Volume button



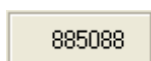
Directory button



Layout button



Type of UMD™ image currently being created



Remaining number of sectors



Generate Image button

The UMD™ Image Generator has three modes: Volume, Directory, and Layout. You can switch modes by clicking on the respective buttons.

Directory Mode

Fig. 1 shows Directory mode, where the directory and file configuration that is written to the UMD™ image can be edited.

In Directory mode, the left hand side of the window contains the tree view, showing the overall directory configuration. The right hand side is the directory view, showing the files and subdirectories in the currently selected directory.

In this document, data files written to UMD™ images are referred to as source files.

Directory mode can be used to add source files and directories to UMD™ images in the following three ways:

- By selecting the desired file or directory in Explorer, and dragging and dropping the file onto the UMD™ Image Generator window.
- By pressing “Shift + Insert” while the UMD™ Image Generator is selected, or choosing “Put Files” from the “Edit” menu, and selecting the desired file or files in the open dialog window.
- By pressing “Insert” while the UMD™ Image Generator is selected, or choosing “Put Directory” from the “Edit” menu and selecting the desired directory.

To create a new directory, press “Ctrl-D” or choose “Create Directory” from the “Edit” menu.

Volume Mode

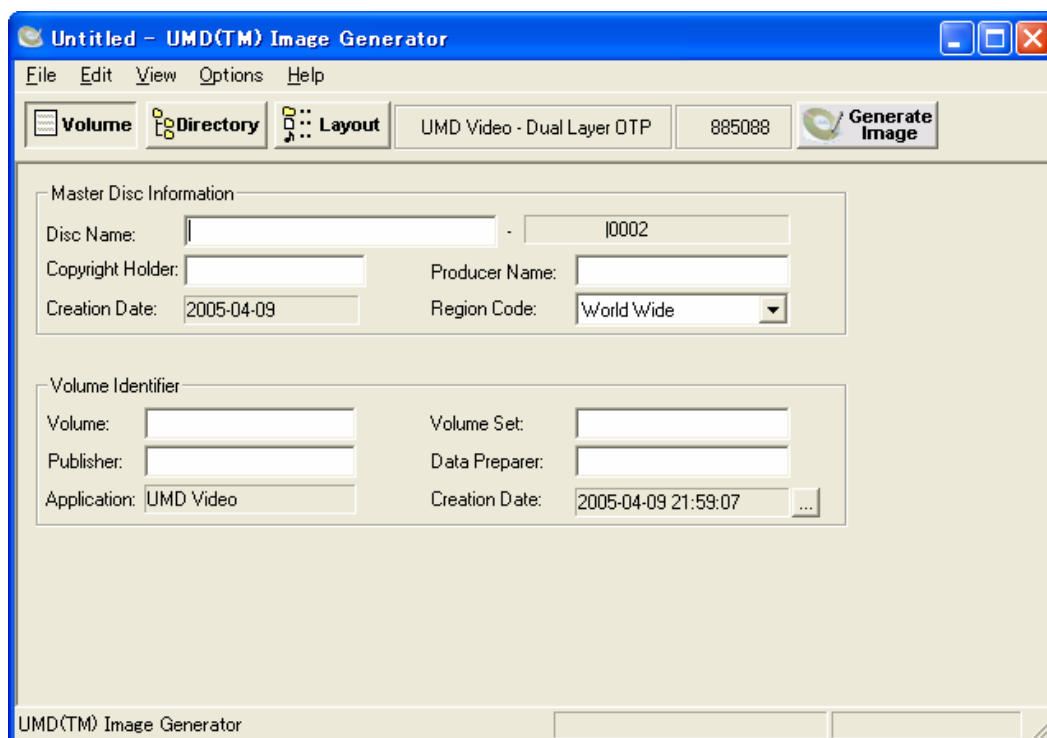


Figure 2 Volume Mode

In Volume mode, information about the UMD™ image being created such as the Disc Name, which indicates the disc product number, as well as the Copyright Holder and Producer Name can be edited.

Layout Mode

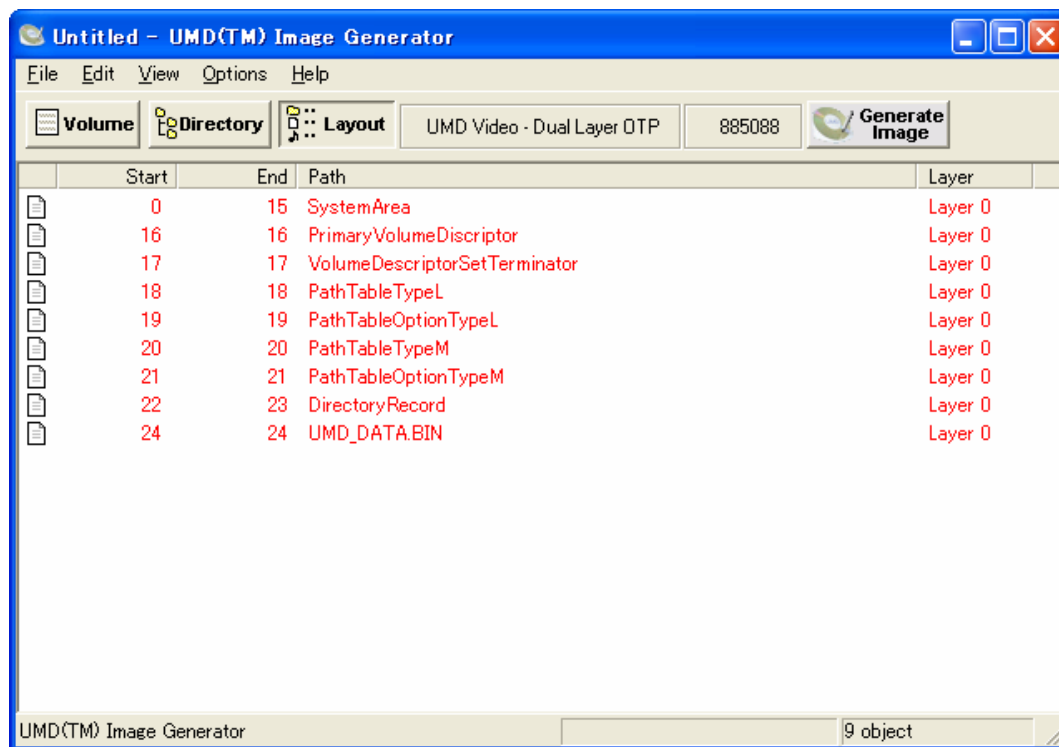


Figure 3 Layout Mode

In Layout mode, the layout of the sectors that contain the files that have been added to the UMD™ image, can be checked and updated.

Although Layout mode allows files to be added to a UMD™ image while it is being created, these files are not recognized as files by the normal filesystem.

The following information is displayed in this mode:

“Start”: the first sector

“End”: the last sector

“Path”: the path of the file

“Layer”: the layer where the file is located

Files that appear in black are those that have been placed in the filesystem of the UMD™ image.

Files that appear in red are reserved by the system, and cannot be relocated by the user.

Entries that appear in blue represent files added in Layout mode, and are not seen by the

filesystem.

Files may be added in Layout mode in the following two ways:

- By selecting the desired file or directory in Explorer, and dragging and dropping it onto the window.
- By pressing “Insert” while the UMD™ Image Generator is selected, or choosing “Put Files” from the “Edit” menu, and selecting the desired files from the open dialog window.

Preference Window

In addition to the above three modes, the UMD™ Image Generator has a Preference window for setting detailed preferences for a project.

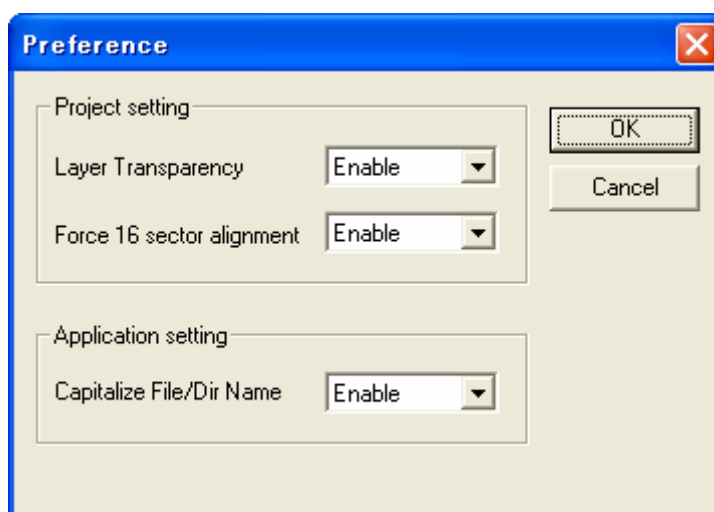


Figure 4 Preference Window

To open the Preference window, select “Preference” from the Options menu.

In this window, you can configure the “Layer Transparency” and “Force 16 sector alignment” settings. The “Capitalize File/Dir Name” setting allows file/folder names to be automatically converted to uppercase.

Refer to Chapter 5, “Description of Operations,” for more information about these settings.

3 Usage Overview

This chapter describes the typical procedure for using the UMD™ Image Generator, up through outputting a UMD™ image.

Preparing Source Files

Begin by preparing the source files which will be written to the UMD™ image.

Launching the UMD™ Image Generator and Creating a New Project

When the UMD™ Image Generator first starts up, it displays the following window.

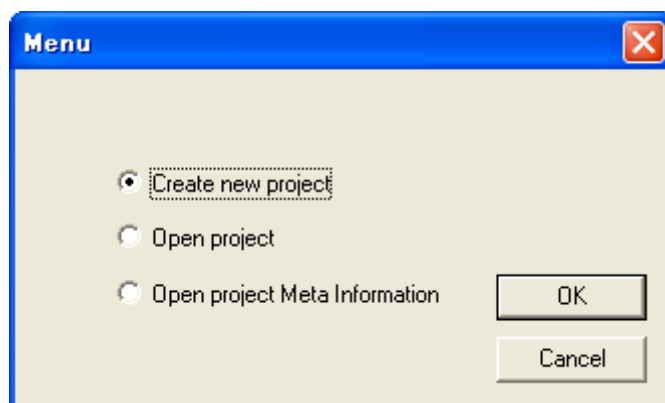


Figure 5 UMD™ Image Generator at Startup

The UMD™ Image Generator manages the creation of a UMD™ image as a single project. The UMD™ Image Generator's Menu window displayed at startup enables you to either create a new project or open an existing project. Select "Create New Project" to create a new project.

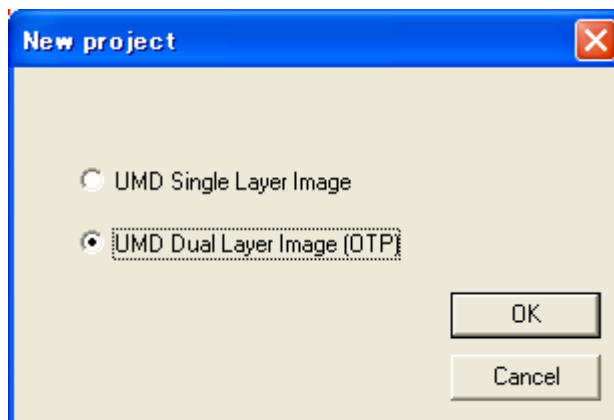


Figure 6 Selection of Layer Configuration

When the New Project dialog window appears, select the type of project you wish to create, and click OK.

The following types of projects can be created:

- UMD™ Single Layer
Creates a new project to be used for a single layer UMD™ image.
- UMD™ Dual Layer Image (OTP)
Creates a new project for a dual layer UMD™ image (OTP).

The UMD™ Image Generator's default project type is UMD™ Dual Layer Image (OTP).

Entering Master Disc Information

The window for editing the directory configuration of the UMD™ image is automatically displayed when a new project is created or an existing project is opened.

Click the "Volume" button at the top of the UMD™ Image Generator window to switch to Volume mode.

In Volume mode, enter the required master disc information for the UMD™ image.

Untitled - UMD(TM) Image Generator

File Edit View Options Help

Volume Directory Layout UMD Video - Dual Layer OTP 885088 Generate Image

Master Disc Information

Disc Name: UMDV-00001 - J0002

Copyright Holder: SCEI Producer Name: IZUMI KAWANISHI

Creation Date: 2005-04-09 Region Code: World Wide

Volume Identifier

Volume: Volume Set:

Publisher: Data Preparer:

Application: UMD Video Creation Date: 2005-04-09 22:31:58

UMD(TM) Image Generator

Figure 7 Volume Mode: Master Disc Information Input Example

The following table gives detailed information about the information entered here.

Input Field	Input Data and Notes
Disc Name	Product number of the title. Maximum of 26 alphanumeric characters. The following symbols can be used: (vertical line), - (hyphen), and space. Do not use any other symbols as this may cause problems during disc manufacturing.
Copyright Holder	Name of the copyright holder. Max. of 32 uppercase letters, symbols, and digits.
Producer Name	Name of the producer. Max. of 32 uppercase letters, symbols, and digits.
Region Code	Selectable as "Region 1," "Region 2," "Region 1 + 2," or "World Wide." An arbitrary region can also be set by using "Manual."
Volume	Volume Identifier stipulated by ISO 9660. This entry can be omitted.
Volume Set	Volume Set Identifier stipulated by ISO 9660. This entry can be omitted.
Publisher	Publisher Identifier stipulated by ISO 9660. This entry can be omitted.
Data Preparer	Data Preparer Identifier stipulated by ISO 9660. This entry can be omitted.

Adding Source Files to the Project

Click the "Directory" button at the top of the UMD™ Image Generator window to switch to Directory mode. Directory mode is used for specifying the files that will be included in the UMD™ image.

Perform the following operations using Windows Explorer. In Explorer, select the files that you want to include in the UMD™ image and drag and drop them onto the Directory mode windows of the UMD™ Image Generator. They will be added to the project that is being created. In addition, if you press "Shift + Insert" while the UMD™ Image Generator is selected, you can select files that you wish to include in the UMD™ image in the dialog window that appears.

Note

Note that file names are case sensitive, so upper case characters are considered to be different from lower case characters.

Outputting the UMD™ Image

To output the UMD™ image, either click the "Generate Image" button at the top of the UMD™ Image Generator, or select "Generate Image" from the "File" menu. This will open the Directory Selection window. Select the desired output directory, and click "OK" to begin writing out the UMD™ image. The UMD™ image will be created in the specified directory.

Should you choose to output to a directory that already contains either a complete or partial image file, a dialog window will appear warning you that the existing file will be deleted. If you want to proceed anyway, click "Yes," and the new UMD™ image will be output, erasing the previous one.

Saving and Loading Projects

Choose "Save" from the "File" menu to save the currently open project.

To load a saved project, either select "Load Project" from the "File" menu, or select "Open Project" in the startup dialog window and choose the desired project.

Writing to a DVD-R Disc

Although the UMD™ Image Generator does not have a built-in function for writing the UMD™ image directly to a DVD-R disc, this can be done by first setting up the necessary DVD writing software, then writing the UMD™ image that was created by the UMD™ Image Generator to a DVD-R disc. The following points should be noted.

- The disc must be created as a "data DVD."
- All the files (four or five) that were created as the UMD™ image must be written to the root directory of the DVD.

After the DVD-R has been successfully written, insert it into the DVD drive of the Testing Tool (DTP-L1500/DTP-L1500A) to use it.

4 Miscellaneous Functions

Changing the File Layout

Use Layout mode to change the layout of files in the UMD™ image.

To move a given file, select the desired file in the Layout Edit window and drag and drop it to the desired location. You can also perform the same operation by right-clicking on the desired file and choosing “Move (select)” from the pop-up menu. Then, right-click on the destination, and choose “Move (insert)” from the pop-up menu.

Generating a GUID

To recognize different discs, the UMD™ Image Generator generates a 16-byte GUID whenever it creates a new project or loads an existing project. The GUID is then embedded in the UMD_DATA.BIN file that is located in the root directory.

For information about reserved system files and directories, see "Reserved System Directories/Files" in "Description of Operations."

To manually generate a new GUID, choose “Generate new GUID” from the “Edit” menu in Volume mode.

Specifying Sector Numbers Directly

You can manually arrange files by explicitly specifying their sector numbers, provided that you do so exclusive of the Automatic 16-Sector Alignment feature of the program. Refer to the section on this feature in the “Description of Operations” chapter of this document for information on how to deactivate Automatic 16-Sector Alignment.

To change sectors for a particular file, click the Layout button to enter Layout mode. Then, right-click the desired file, and choose “Location” from the pop-up menu. When the “Location” window opens, enter the desired sector number in the “Location” field, and click OK.

Exporting File Lists

The program can export a list containing file layout information to an external file. To perform this operation, choose “Export File List” from the “File” menu.

You can load a file list at the same time that project information is loaded by setting the FILE LIST field in the project meta information file to the desired file list.

The file list format is defined in Chapter 8, "Appendix: UMD™ File List Format."

Importing File Lists

The program can import a file layout list from an external file. To perform this operation, choose “Import File List” from the “File” menu. The imported file list overwrites information in the currently open project.

If “Automatic Sector Alignment” is enabled when a file list is imported, the program will ignore sector numbers stored in the imported file list.

The file list format is defined in Chapter 8, "Appendix: UMD™ File List Format."

Exporting Project Meta Information Files

The UMD™ Image Generator can export projects in progress as user-editable external files. These files are called project meta information files.

To export a project meta information file, choose “Export Meta Info” from the “File” menu. Exporting a project meta information file also automatically generates a UMD™ file list, which is set in the FILE LIST field in the project meta information file being exported.

The project meta information file format is defined in "Appendix: UMD™ Meta Information Format

Importing Project Meta Information Files

The UMD™ Image Generator can import a project meta information file, making it unnecessary to enter the information directly when a UMD™ image is output.

To import a project meta information file, either choose “Import Meta Info” from the “File” menu, or select “Open Project Meta Information File” from the startup menu, click “OK”, and select the desired file. Importing a project meta information file from the menu will erase the corresponding information in the currently open project.

The project meta information file format is defined in "Appendix: UMD™ Meta Information Format

5 Description of Operations

Automatic 16-Sector Alignment Feature

The starting sector numbers of all files are multiples of 16 in order to improve the efficiency and speed with which files can be read from the UMD™.

By default, the UMD™ Image Generator automatically arranges all files on the disc so that this condition is met. This feature is known as “Automatic 16-Sector Alignment”.

To turn this feature on or off, choose “Preference” from the “Options” menu, and set the “Force 16 Sector Alignment” item as desired.

The setting of the “Automatic 16-Sector Alignment” feature is saved when a project is saved. When the project is later reloaded, that setting is restored.

Layer Transparency Feature

The UMD™ Image Generator allows users to set for each project, whether files in a dual-layer UMD™ image are to be arranged so they extend from one layer to the other. This feature is known as “Layer Transparency”. It is “On” by default whenever a new dual-layer project is created.

To turn this feature on or off, choose “Preference” from the “Options” menu, and set the “Layer Transparency” preference as desired in the Preference window.

File/Folder Name Automatic Uppercase Conversion Feature

The UMD™ Image Generator has a function for automatically converting file/folder names to uppercase. This function is also performed when files or folders are renamed.

To switch this feature on and off, select "Preference" from the “Options” menu and then change the "Capitalize File/Dir Name" item in the Preference window.

Automatic Padding

The UMD™ specification requires that the final number of total sectors on the disc be a multiple of 16. For this reason, the UMD™ Image Generator automatically pads out the UMD™ image whenever it is changed, to maintain a proper total sector count. This padding is

always added at the end of the sequence of sectors.

Reserved System Directories/Files

The UMD™ Image Generator automatically generates the reserved system directories required by each application and the reserved files for distinguishing different titles, and places them in the logical format.

These are handled internally by the UMD™ Image Generator as system directories and files and cannot be deleted or renamed by the user.

6 Precautions

Restrictions

- You cannot set sectors manually if you are using forced 16-sector alignment.
- Items cannot be dragged and dropped from the left to right panes in the Directory mode window.
- Files must be placed on the second layer of a dual-layer UMD™ image. An error will occur if a dual-layer project is output that has no files located in the second layer.
- When the file layout is changed by directly specifying sector numbers, a file can be placed such that it extends across layers regardless of whether the “Layer Transparency” feature is enabled or disabled.

Precautions when Creating UMD™ Images

A UMD™ image must satisfy the following requirements.

- The product number must be correctly entered in the Disc Name field in Volume mode.
- The Region Code field in Volume mode must be correctly set.
- The Creation Date field in Volume mode must be correctly set.

7 Appendix: UMD™ Meta Information Format

A UMD™ meta information file (umi file) is a text file that contains information required to create a UMD™ image project. The UMD™ Image Generator can output such files.

A UMD™ meta information file consists of three sections [SYS], [MDI], and [VOL], which are described below. The information contained in each section is given in the format FIELD_NAME=VALUE.

If a line begins with a "#", it is considered to be a comment and is ignored.

[SYS] Section

The [SYS] section contains the following information, which includes information about the project itself.

Field Name	Required	Function
VERSION	Yes	Version (fixed value)
APPLICATION	Yes	Application name
LAYER_STRUCT	Yes	Layer structure
FORCE16SECTOR	No	Use Automatic 16-Sector Alignment
LAYER_TRP	No	Use Layer Transparency
FILE_LIST	No	Name of file list
BOOT	No	Indicates if this is a boot disc
UPDATE	No	Indicates if update data is included

VERSION

This field contains the current UMD™ File List version number, "1.0".

APPLICATION

The following types can be specified.

- PSP GAME
- UMD VIDEO
- UMD AUDIO

FORCE16SECTOR

This field controls the Automatic 16-Sector Alignment function.

0 to disable, 1 to enable.

LAYER_TRP

This field controls the Layer Transparency function.

0 to disable, 1 to enable.

Layer Transparency is ignored on single-layer discs.

BOOT

This field indicates whether the disc image is bootable.

0 means bootable, 1 means not bootable.

Only valid for UMD™ images used for games.

UPDATE

This field indicates whether the disc image contains PSP™ system update data.

0 means the disc image contains update data, 1 means it does not.

Only valid for UMD™ images that are not used for games.

[MDI] Section

The [MDI] section contains the following information, which includes information related to UMD™ Master Disc Information.

Field Name	Required	Max. Characters	Function
DISC NAME	Yes	N/A	Title ID (product number)
PRODUCER	Yes	32	Producer's name
COPYRIGHT	Yes	32	Copyright holder's name
REGION_CODE	Yes	N/A	Region code

DISC NAME

The Title ID must be in the format "XXXX-YYYYY", where "XXXX" are capital letters, and "YYYYY" are numbers.

PRODUCER

The producer's name and copyright holder's name may each have a maximum of 32 characters.

REGION_CODE

The region code of the UMD™ is set here, from among the following choices.

- 1 (US and Canada)

- 2 (Japan, Europe, Middle East, South Africa)
- 3 (South Korea, Taiwan, Hong Kong, Singapore, Southeast Asia)
- 4 (Central America, South America, Oceania)
- 5 (South Asia, Africa, Russia)
- 6 (China (excluding Hong Kong))
- WW (world wide)

[VOL] Section

This section contains information about the UMD™ volume which is recorded in the filesystem of the UMD™ image.

Field Name	Required	Max. Characters	Function
VOLUME	No	32	VOLUME ID
PUBLISHER	No	32	PUBLISHER NAME
VOLUME SET	No	32	VOLUME SET ID
DATA PREPARER	No	32	Data preparer

Sample umi File

```
[SYS]
VERSION="1.0"
APPLICATION="PSP GAME"
LAYER_STRUCT="SINGLE"
FORCE16SECTOR=1
LAYER_TRP=0
FILE_LIST="Test_file_list.ufl"
BOOT=1
UPDATE=1
[/SYS]
```

```
[MDI]
DISCNAME="TEST-00001"
PRODUCER="SCE TAROU"
COPYRIGHT="SCE"
REGION_CODE="WW"
[/MDI]
```

[VOL]
VOLUME="TEST"
PUBLISHER="TEST"
VOLUME SET="TEST"
DATA PREPARER="TEST"
[/VOL]

8 Appendix: UMD™ File List Format

The UMD™ File List (ufl) file is used to identify the source files recorded in the UMD™ image. Information about each file is stored as a single one-line entry in CSV format. The following shows the information included in each entry.

Field Name	Required	Function
PATH_ON_DISC	Yes	Path information on the disc
LOCAL_FILE_PATH	Yes	File path in environment where the UMD™ image was created
SECTOR_ADDRESS	No	Sector address
SIZE	No	File size
FLAG	No	Additional information about the file

PATH_ON_DISC

The following are example values for this field.

Null string ("")	The path is not recorded in the UMD™ filesystem
/	The filename from LOCAL_FILE_PATH is placed in the root directory on the UMD™.
/HOGE/	The filename from LOCAL_FILE_PATH is placed in the /HOGE/ directory on the UMD™.
/HOGE/HOGE.DAT	The file HOGE.DAT is placed in the /HOGE/ directory on the UMD™.

LOCAL_FILE_PATH

This is the file path beginning with the Windows-standard drive name.

SECTOR_ADDRESS

This field is used only when file sectors are manually specified. If this field is not set, the UMD™ Image Generator will automatically assign file sectors.

SIZE

This field is used only when the UMD™ Image Generator exports file lists. It is not referenced when file lists are imported.

FLAG

This field is a flag which indicates file attributes. The following types are supported:

- 1 (boot file)
- Other (normal file)

Sample UMD™ File List (ufl) File

"/ganden_02.jpg", "C:\Storage\TempPic\ganden_02.jpg", , ,
"/Potara_02.jpg", "C:\Storage\TempPic\Potara_02.jpg", , 563794,
"/Sakya.JPG", "C:\Storage\TempPic\Sakya.JPG", , ,
"/Tibetan_Dawn.jpg", "C:\Storage\TempPic\Tibetan_Dawn.jpg", , ,
"/Yosic.jpg", "C:\Storage\TempPic\Yosic.jpg", , ,
"/ganden_05.jpg", "C:\Storage\TempPic\ganden_05.jpg", , ,