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PHILIPS INTERACTIVE MEDIA

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Initializing a CD-I Player's Configurable Parameters

Supersedes AIM Technical Note #57

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The *CD-I Full Functional Specification* does not guarantee that the CD-I player will "boot" with a specific configuration. Therefore, the application must initialize the player's configurable parameters or risk unexpected behavior.

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Initializing a CD-I Player's Configurable Parameters

The *CD-I Full Functional Specification* does not guarantee that the CD-I player will "boot" with a specific configuration. Therefore, it is the responsibility of the application programmer to design the application to initialize all of the player's configurable parameters. Failure to initialize these parameters could result in unexpected behavior from players obtained from different manufacturers.

The most common example of this type of behavior is when the application does not explicitly set the audio attenuation (*sc_atten*) and, as a result, no audio is heard.

To avoid this problem, each application should ensure that the following calls are made with appropriate parameters prior to any audio video playback (in particular, before the AIM Bumper):

- dc_intl* (interlace mode)
- dc_setcmp* (compatibility mode)
- gc_blnk* (cursor blink rate)
- gc_col* (cursor color)
- gc_hide/show* (hide/show cursor)
- gc_org* (cursor origin)
- gc_ptn* (cursor pattern)
- pt_org* (pointer origin)
- sc_atten* (sound attenuation)
- ss_enable/disable* (enable/disable front panel controls)

Note that the majority of these parameters are initialized by Balboa.

In addition to the items listed above, the hardware registers that are set by the display control program (DCP) are in an undefined state when the player shell chains to an application. It is therefore essential that all such registers be set by the application's initial DCP. The following is a complete list of opcodes (followed by the macro in *ucm.h* for setting that opcode) that should be set by the application's initial DCP:

Plane A specific:

image coding method (*cp_icm*)
transparency control information (*cp_tci*)
plane order (*cp_po*)
background color (*cp_bkcol*)

Both planes:

transparent color (*cp_tcol*)
mask color (*cp_mcol*)
YUV start value (*cp_yuv*)
mosaic pixel hold factor (*cp_phld*)
image contribution factor (*cp_icf*)
display parameters (*cp_dprm*)
display start address (*cp_dadr*)

Either plane:

matte settings for all 8 matte registers (*cp_matte*)
CLUT settings for all 256 color registers (*cp_cbnk*, *cp_clut*)

Note that some of these settings may be superfluous for an application. If an application only displays DYUV images, then transparent color, mask color, and the pixel repeat factor in the display parameters are not pertinent. Similarly, if all the images displayed in the title are CLUT-based, then the settings of the YUV start values for each plane do not matter.

One common mistake when using color key transparency is to set the transparent color but to fail to initialize the mask color. On the Philips player, this register is initialized to a setting of zero for each color gun; thus, only those pixels that exactly match the transparent color will be transparent. Another player manufacturer may set the mask color to fully transparent in each color gun, resulting in every pixel being transparent (probably not what was intended).

Philips Interactive Media of America has created a suite of test programs that attempts to ensure the "green" behavior of all discs. One such program, *cdi_deinit*, can be used to check that all the parameters mentioned above are correctly initialized. To receive a copy of this program, please contact Drew Topel or Charles Golvin at PIMA.