SAMSUNG ELECTRONICS

Release Note for SMDK6410 (Windows Embedded CE 6.0)

S3C6410

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S3C6410 RISC Microprocessor
Release Note

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Revision History

Revision No	Description of Change	Refer to	Author(s)	Date
0.1	Beta BSP Release	-	WinCE Team	2008-10-16
0.2	Beta RC1 BSP Release	-	WinCE Team	2009-01-02
0.3	Beta RC2 BSP Release	-	WinCE Team	2009-01-19
0.4	Beta RC3 BSP release	-	Jungchul Park	2009-03-31
0.5	Beta RC4 BSP release	-	WinCE Team	2009-04-16
0.6	Beta RC5 BSP release	-	D/D Team	2009-06-12
0.7	Beta RC6 BSP release	-	D/D Team	2009-07-28

Contents

1 SMDK6410_CE60_PM_REL_0.08_090728_Beta RC6 BSP Release

Updated on July 28, 2009

What's New?

Fixes made in this update

- UART serial driver is updated
  - I. TX DMA is implemented
    1. To use TX DMA, enable USE_DMA definition in sources file and add "TXDMAEnable" value in registry file.
  - II. Bug fix when sleep, wakeup : restore sequence of Special Function Register is changed fit for device specification.
- MFC Driver is updated
  - I. MFC Driver can encode and decode together.
  - II. Update options in API, SsbSipMPEG4EncodeSetConfig()
- VFL library is changed.
  - I. The previous version have bug during the initial bad block is checked when the 8bit ECC device is used.
  - II. READ_ERR_FLAG change bug by CRITICAL_READ_CNT is fixed.
  - III. Related files : VFL_MLC.lib
- FTL library is changed.
  - I. FTL_Delete function is changed. The previous version has some problem when format the device. There were many erase operation during format device. This bug was fixed.
  - II. Related files :FTL_MLC.lib
- Mass product solution is updated to support 8bit ECC device (K9GAG08U0D)
  - I. Related files : DumpImage.c, PMSMDMaker.exe, msvcr80d.dll
- NAND_GetPlatformInfo function is added to FIL code.
  - I. This function has to be added to S3C6410_FIL.c file. This function check the NAND device is SAMSUNG MLC NAND or Not. If this function is not implemented on FIL code, the VFL library will not work anymore.
  - II. Related files : S3C6410_FIL.c, S3C6410_FIL.h, FIL.c
- The CRITICAL_READ_CNT value can be set to 0.
  - I. If you do not want to use Read Reclaim function by read count, set this CRITICAL_READ_CNT value 0. If your device has periodic scan function by OnDISK or other application, please set this CRITICAL_READ_CNT value to 0.
  - II. Related files : S3C6410_FIL.c
- FTL_ReadReclaim function call is removed in DSK_Open.
  - I. If you implement FTL_Scan and FTL_ReadReclaim function in some application level, this function is not need anymore. So this FTL_ReadReclaim function is removed in DSK_Open

by default setting.

II. Related files : ONDisk_core.lib

Known Issues

None

2 SMDK6410_CE60_PM_REL_0.07_090612_Beta RC5 BSP Release

Updated on June 12, 2009

What's New?

- 8bit ECC MLC NAND Support. We test this algorithm with K9GAG08U0D device.
- The 4K page device, for example K9GAG08U0M, spare area layout is changed like as below.

  0 ~ 3 : B.I + C.M + Reserve 2Byte (It is same with previous version)

  4 ~ 23 : SCTX Data (Meta data for page information)

  24 ~ 31 : MECC 0

  32 ~ 39 : MECC 1

  40 ~ 47 : MECC 2

  48 ~ 55 : MECC 3

  56 ~ 64 : MECC 4

  64 ~ 71 : MECC 5

  72 ~ 80 : MECC 6

  80 ~ 87 : MECC 7

  88 ~ 103 : 8bit SECC for Spare area from 4 to 23 (SCTX Data)

  104 ~ 119 : 8bit SECC for Spare area from 24 to 87 (MECC0~MECC7)
- NAND_Read_Retry function is supported.

  .1. This function try to read again after change the NAND timing value to maximum delay, when the uncorrectable ECC error is happened.

  .2. To use this function, please set the stLowFuncTbl.Read value to NAND_Read_Retry in FIL.c file.
- ECC algorithm verify function is implemented.

  .1. To disable this function, set the PROVE_ECC_ALGORITHM value to 0 in S3C6410_FIL.c file.

  .2. This function verify the ECC algorithm again after modify bit error.
- New MLC device K9LBG08U0D which use 8bit ECC is updated.

  .1. Related files : S3C6410_FIL.c
- NAND_GetPlatformInfo function is added in S3C6410_FIL.c file. This function have to return valid address of NFCON. This function is used to check NAND flash ID. Only Samsung MLC NAND is available in our solution.

  .1. Related files : S3C6410_FIL.c
- Whimory : FTL_Delete function is supported. This function can increase write performance.

  .1. Related files : FTL_MLC.lib, HALWrapper.c, HALWrapper.h, ONDisk.c, PseudoFTL.c
- OS Area and File System Area scan code is implemented on FIL code. This function is useful to prevent read disturbance problem. To use this function, the FTL_SCAN_RATIO and OS_SCAN_RATIO value have to be determined by FIL code. To disable scan function, just set this values to 0.

  .1. FTL_Scan(SCAN_OS); FTL_Scan(SCAN_FS); FTL_Scan(SCAN_OS|SCAN_FS);

.2. Related files :WMRTypes.h, FTL_MLC.lib

Fixes made in this update

- FTL_ReadReclaim function is changed. User can change reclaim count value in WMRConfig.h file. The defined value name is DEF_WMR_MAX_RECLAM.

  I. Related files : WMRConfig.h, WMRTypes.h, FTL_MLC.lib, WMRGlobal.c

- NF_WAIT_ECC_DEC_DONE function is changed. Because some specific pattern can not be finished by 4bit ECC decoding algorithm. But the probability of this problem is very low and this pattern has over 5bit error. To resolve this problem, the NF_WAIT_ECC_DEC_DONE function have time out operation. And it needs reset CPU.

  I. Related files : S3C6410_FIL.c

- MFC Driver is updated

  I. A bug that can't run HybridDivX in MFC driver is fixed.

- CMM Driver is updated

  I. CMM Driver is updated to succeed in stress test.

- UART serial driver is updated

  I. UART1 is dedicated to use Hardware AFC(Auto flow control)

Known Issues

None

3 SMDK6410_CE60_PM_REL_0.06_090416_Beta RC4 BSP Release

Updated on April 16, 2009

What's New?

Fixes made in this update

- A fix of the high performance timer
  I. The high performance timer was updated for "High Perf Timer Backwards Check" test of CETK.
- A fix of the RTC
  I. A leap year rollover bug has been fixed.
- The kernel profiler(Monte Carlo) is supported now.
  I. A bug on the code to start a timer for the kernel profiler was fixed.

Known Issues

None

4 SMDK6410_CE60_PM_REL_0.05_090331_Beta RC3 BSP Release

Updated at Mar 31, 2009

What's New?

- **OS area (WMR_SPECIAL_AREA_SIZE) was changed to 100MB.**
- **Bitblt with Alphablending from 32bpp to 32bpp surfaces was enabled. DirectDraw Bitblt with Alphablending is also supported.**
- **Touch Calibration application is added due to different LCD module between SMDK6410 board. This application will be launched automatically each boot time. So if you want to skip this calibration application launching. Comment out the line related with TouchCalibration.exe in platform.dat, platform.bib**
- **USB management part inf Main.c of Eboot was updated.**
- **I2C driver updated**
- **MFC Ring buf mode was deleted**
- **MFC Encoder test code was added**
- **USB OTG device driver was updated to support USB test mode for USB HS Electrical compliance test.**

Fixes made in this update

- **The multiple XIP is supported now. (by default)**
- **Display driver was updated**
  - **I. Data abort issue was fixed when using StretchBlt H/W acceleration.**
- **Workaround was applied for Alphablend doing Source Constant and Per-Pixel with HW. Now, the HW alpha-blending result has similar RGB value to MS SW alpha-blending result, but still the alpha-bit is source's one.**
- **The PowerButton driver has been reverted to the version 0.69.**
  - **On the version 0.70, SMDK didn't go into the suspend mode.**
- **On Screen Rotation, HW BitBlt with SRCCOPY will run**
- **Improved Drivers security. The following is list of drivers applied with TMD feedback.**
  - CF_ATAPI
  - Display partial
  - Video Driver
  - Power Button
  - Power Controler
  - MFC
  - HSMMC
  - IIC
  - SPI
  - Backlight

- **Fixed data abort from 2D Software Optimization Library**
- **Stabilized USB connection on Download and Transport**
  - **Tested with all download method, and KITL connection.**
- **Improved Drivers security. The following is list of drivers applied with TMD feedback.**
  - Audio AC97 and IIS
  - Camera
  - Backlight
  - Display partial
  - CMM
  - JPEG
- **Removed all Hard TAB in the source code**
- **Removed printf function in the source code.**
- **EBOOT USB Initialization Code is moved for USB-Serial and USB-RNDIS connection with Platform builder**
- **STEPLDR.bin is added into SRC\BOOTLOADER\STEPLDR\BIN, This can be used for PlatformBuilder Download. To minimize code size of steploader, all UART function references are commented out.**
- **Display Driver's Directory Layout is changed to removing chip prefix**
- **2D Control code is updated for supporting Per-Pixel Alphablend with Source Constant Alpha Blend(Pre-multiplied SCA) through GDI AlphaBlend functoin, but it's result still has some differences from SW result.**
- **OpenGLES Library**
  - **OpenGLES Library follows the Khronos naming rule.**
  - **FIMG Driver source code for supporting OpenGLES is added.**
- **MFC driver**
  - **When dynamic parameter change for encoder, MFC clk is enabled.**
- **Bug fixes to 2D SW optimized library**
- **WriteRawImageToBootMedia function in EBOOT will not check badblock for Block 0 that's used for Steploader.**
- **Serial driver is modified. The interrupt value to notify MDD is fixed.**
- **OpenGLES Library naming is changed to libGLESv1_CM.dll and libGLESv2.dll**
- **OpenGLES1.1/2.0 and EGL is more optimized.**
- **Changed the SoC library names to be consistent with the SoC naming convention.**
- **USBHost registry keys modified**
- **RTC initialize code added in bootloader and OAL**
- **Fixed the SoC dirs file**
- **Fixed the incorrect reporting of alpha blending capabilities**
- **HalGetDriverInfo() function is modified**
- **OTG device driver has bug in previous version BSP. It is fixed.**

  (If you repeat Sleep/Wakeup quickly connecting USB cable, system will be hanged.)
- **In SMDK6410 board latest 4.8"LCD, since touch panel is changed, touch calibration default value is changed in platform.reg file. (If you use old version 4.8"LCD on SMDK6410 board, calibration value should be changed. Refer to the porting guide)**

- USB connection for download image was updated for fluent connection.
- I2C clock divide value modified.
- In case of VC1, the function for width/height information was updated.
- Bug fixes to DVFS(Dynamic Voltage and Frequency Scaling).
  - DVFS system supports 532, 666 and 800 MHz ARM clock with Sync mode.
  - Porting guide on DVFS was added on chapter 3.2 of the porting guide.
  - Clock setting process on booting time was added on chapter 3.6 of the porting guide

Known Issues

- USB Connection can be unstable for specific Evaluation Board.
- 2D HW has conformance issue
  - CETK GDI test 218 StretchBlt can fail even when disabling 2D Optimization codes.
  - CETK GDI test 231 Alphablend can fail when enabling 2D HW.
  - CETK DDraw Test 202 can fail when enabling 2D HW.
- For backward compatibility, the IOCTLs of MFC, JPEG drivers about In/Out mixed parameter structure is not modified.
- Currently, Alphablend doing Source Constant and Per-Pixel with HW does not work correctly. This is occurred by HW limitation that does not blend AlphaBit of destination surface. HW just forward Source AlphaBit to Destination.

5 SMDK6410_CE60_PM_REL_0.04_090119_Beta RC2 BSP Release

Updated at Jan 19, 2009

What's New?

Fixes made in this update

- **Bug fixes to DVFS(Dynamic Voltage and Frequency Scaling).**
  - **DVFS system supports 532, 666 and 800 MHz ARM clock with Sync mode.**
  - **Porting guide on DVFS was added on chapter 3.2 of the porting guide.**
  - **Clock setting process on booting time was added on chapter 3.6 of the porting guide**

Known Issues

- **2D HW has conformance issue**
  - **CETK GDI test 218 StretchBlt can fail even when disabling 2D Optimization codes.**
  - **CETK GDI test 231 Alphablend can fail when enabling 2D HW.**
  - **CETK DDraw Test 202 can fail when enabling 2D HW.**

6 SMDK6410_CE60_PM_REL_0.03_090102_Beta RC1 BSP Release

Updated at Jan 1, 2009

What's New?

- This BSP is based on SMDK6410 Windows Embedded CE60 R2 FMD RC6 BSP.
- Bitblt with Alphablending from 32bpp to 32bpp surfaces is enabled. DirectDraw Bitblt with Alphablending also supported.
- Touch Calibration application is added due to different LCD module between SMDK6410 board. This application will be launched automatically each boot time. So if you want to skip this calibration application launching. Comment out the line related with TouchCalibration.exe in platform.dat, platform.bib
- I2C driver updated
- MFC Ring buf mode is deleted
- MFC Encoder test code is added
- USB OTG device driver is updated to support USB test mode for USB HS Electrical compliance test.
- CF/ATAPI Driver is cleaned up.
- Keyboard Driver is cleaned up.
- Serial Driver is cleaned up.
- USB OTG Device Driver is cleaned up.
- New KITL driver is added to support USB_RNDIS, USB_Serial, Ethernet
  - So, Bootloader's menu changes largely, 'U' Menu command to download using DNW is integrated to 'D' command, the original download command. '6' command to determine after downloading image is changed to 'T'
- USB will connect after 'D' command.
- OAL code was cleaned up.
- 2D Software Acceleration Library is updated for RGB565 to RGB555 BitBlt
- HSMMC driver code was cleaned up.
  - Some comments and dummy code were cleaned up.
  - Some functions like SDMMCMicroTest for MMC were updated.
- SPI Driver is cleaned up. A commented & dead code is removed. A validation of arguments is added. A function is added to free memory allocated.
- USB Host Driver is cleaned up. RETAILMSG is modified with DEBUGMSG. Hard-coding is fixed. A validation of arguments is added.
- USB OTG Device Driver is cleaned up. A short function header comment is added. Hard-coding is fixed. A validation of arguments is added. SD card detection mechanism solution is removed. UfnPdd_IsEndpointHalted() is modified.

Fixes made in this update

- Bug fixes to 2D SW optimized library
- WriteRawImageToBootMedia function in EBOOT will not check badblock for Block 0 that's used for Steploader.
- Serial driver is modified. The interrupt value to notify MDD is fixed.
- OpenGLES Library naming is changed to libGLESv1_CM.dll and libGLESv2.dll
- OpenGLES1.1/2.0 and EGL is more optimized.
- Changed the SoC library names to be consistent with the SoC naming convention.
- USBHost registry keys modified
- RTC initialize code added in bootloader and OAL
- Fixed the SoC dirs file
- Fixed the incorrect reporting of alpha blending capabilities
- HalGetDriverInfo() function is modified
- OTG device driver has bug in previous version BSP. It is fixed.

  (If you repeat Sleep/Wakeup quickly connecting USB cable, system will be hanged.)
- In SMDK6410 board latest 4.8"LCD, since touch panel is changed, touch calibration default value is changed in platform.reg file. (If you use old version 4.8"LCD on SMDK6410 board, calibration value should be changed. Refer to the porting guide)
- USB connection for download image was updated for fluent connection.
- I2C clock divide value modified.
- In case of VC1, the function for width/height information was updated.

Known Issues

- 2D HW has conformance issue
  - CETK GDI test 218 StretchBlt can fail even when disabling 2D Optimization codes.
  - CETK GDI test 231 Alphablend can fail when enabling 2D HW.
  - CETK DDraw Test 202 can fail when enabling 2D HW.

7 SMDK6410_CE60_PM_REL_0.02_081016_Beta BSP Release

Updated at Oct 16, 2008

What's New?

- **Windows Embedded CE 6.0 R2 PocketMory Beta Release for SMDK6410.**
- **This BSP is based on SMDK6410 Windows Embedded CE60 R2 FMD RC4 BSP.**
- **This BSP was tested on Windows Embedded CE 6.0 R2 and SMDK6410 board Rev1.0.**
- **All of the devices listed on porting guide are available.**

Fixes made in this update

None

Known Issues

None