Freescale Semiconductor
Release Notes

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Rev. WCE600_MX23_SDK_1005, 5/2010

Windows Embedded CE 6.0 i.MX23 EVK BSP

Release Notes

This document contains important information about the package contents, supported features, and known issues/limitations for this release.

Contents

1 Release Contents

1.1 Documentation Package

The documentation provided with this release is packaged in the following ZIP file:

```
WCE600_MX23_SDK_1005_DOCKIT.zip
```

The following documents are included within this documentation package:

- *Windows Embedded CE 6.0 i.MX23 EVK BSP Release Notes*
- *Windows Embedded CE 6.0 BSP for i.MX23 EVK User's Guide*
- *Windows Embedded CE 6.0 BSP for i.MX23 EVK Reference Manual*
- *Windows Embedded CE 6.0 Fundamentals*

1.2 BSP Package

The BSP source code and support files provided with this release are packaged in the following Microsoft installer file:

```
WCE600_10.05.02_SDK.msi
```

Refer to installation instructions in the Windows Embedded CE 6.0 BSP for i.MX23 EVK User's Guide.

2 System Requirements

2.1 Windows Embedded CE 6.0

The following must be installed in order to create a Windows Embedded CE 6.0 development environment for i.MX23 EVK WinCE 6.0 BSP:

- Visual Studio 2005
- Visual Studio 2005 SP1
- Visual Studio 2005 SP1 Update for Vista (if applicable)
- Windows Embedded CE 6.0 Platform Builder
- Windows Embedded CE 6.0 SP1 (required if PB 6.0 Tools have been installed)
- Windows Embedded CE 6.0 R2
- Windows Embedded CE 6.0 R3
- Windows Embedded CE 6.0 Cumulative Product Update Rollup Package (through 12/31/2009)
- Windows Embedded CE 6.0 Monthly Update January 2010
- Windows Embedded CE 6.0 Monthly Update February 2010

2.2 i.MX23 EVK Kit

Hardware Modules	Revision
i.MX23 EVK Board	REV C
i.MX 4.3" WQVGA LCD Daughter Card	VER B

3 What's New

The section describes the new changes in this release, including new features and defect fixes.

3.1 New Features

The following table describes the new features, supports and enhancements since the last release.

Identifier	Description
ENGR121501	TV-Out: Support TV-Out on EVK
ENGR121503	USB: Update USB driver for EVK Rev.C
ENGR122480	USB: Modify PHDC stack to pass USBCV test
ENGR122517	USB: Support USB CDC class
ENGR122897	USB: Restructure PHDC code structure
ENGR123390	WiFi: Support Atheros SDIO WiFi

3.2 Defect Fixes

The following table describes the defect and issue fixes available in the release.

Identifier	Description
ENGR121788	SD: System hangs up after card removal during data transfer.
ENGR123027	USB: Unplug USB device will resume board after suspend.
ENGR123303	USB: When copying big file (>100M) into mounted NAND flash UI freezes.
ENGR123346	USB: U-disk can Not be recognized if boot up with USB cable only.
ENGR123348	USB: System hangs or U-disk can Not be recognized if plug/unplug the u-disk several times.
ENGR123387	Keypad: Long press "power" (more than 2s) to reboot instead of power off target board in fake battery mode.
ENGR123388	Keypad: keypad can not be locked.
ENGR123481	USB: Board can not be suspended when USB keyboard is connected.
ENGR123486	CSPI: CSPI function dose not work well.
ENGR123513	WiFi: Data abort happens when insert Atheros SDIO card after suspend then resume.
ENGR123525	PXP: System crash during playback MPEG4/H264 with repeated seeking, close, open operations.
ENGR123564	WDOG: It fails to enable watchdog with the conditional compilation option.
ENGR123617	Power: Power consumption will be higher after suspend resume if USB driver is built in.

4 BSP Supported Features

The following table describes the features that are supported in this BSP.

Feature	Supported?	Comments
Tools		
-W4 Compiler Setting	Y	All BSP code compiles cleanly with –W4 compiler warning level. –W4 is default warning level.
Prefast	Y	Prefast for drivers, version 8. Freescale defined filter.
OEM Adaptation Layer (OAL)		
Bootloader (Ethernet)	Y	Using external SPI Ethernet controller ENC28J60.
Bootloader (SD)	Y	Bootloader resident in SD Card.
Bootloader (USB)	Y	Using on-chip OTG device.
Interrupt Controller	Y	PQOAL interrupt controller support.
Kernel Profiler	Y	Supported using TIMER1.
KITL (Ethernet)	Y	Kernel Independent Transport Layer (KITL) supported via Ethernet.
KITL (USB)	Y	Using on-chip OTG device.
PQOAL (Production Quality OAL)	Y	Conforms to Production Quality OAL coding Standards.
RTC	Y	PQOAL time-of-day support.
Serial Debug Port	Y	Using on-chip UART1 on debug board.
Timer	Y	PQOAL system timer support.
Unique Serial Number	Y	Stored in NAND Flash.
WDOG	Y	PQOAL watchdog supports system reset.
Drivers		
Audio	Y	Supports both playback and recording through on-chip audio codec.
Backlight	Y	Uses PWM channel 2.
Battery	Y	Supports battery charging, temperature monitoring.
Clock Control	Y	Supported as component of CSPDDK(DDK_CLK).
Display	Y	Samsung 4.3” panel LMS430HF02.
DMA	Y	Supported as component of CSPDDK(DDK_SDMA)
DVFC	Y	Supports three setpoints: High, Medium, Low.
GPIO	Y	Supported as component of CSPDDK(DDK_GPIO).
I2C	Y	Supports bus driver for I2C bus.
IOMUX	Y	Supported as component of CSPDDK (DDK_IOMUX).
LRADC	Y	Used by Battery, Keypad, Touch drivers.

Feature	Supported?	Comments
MMC/SD/SDIO	Y	Supports memory and SDIO cards through SSP interface.
NAND	Y	Supports NAND Flash through GPMI interface.
Serial	Y	Supports both AUART and DUART.
SPI	Y	Supports SPI bus driver through SSP interface.
TV-Out	Y	Supports TV-Out on Rev.C board.
USB	Y	Supports USB OTG Host / Device drivers. Supports devices class, Serial, RNDIS, MSC, PHDC and CDC. Supports USB Camera dongle. Verified with the following modules. - Microsoft LifeCam NX-6000 - Microsoft LifeCam NX-3000 - Logitech QuickCam Pro 5000 Supports USB Bluetooth dongle. Verified with module BU-2073-J.
WiFi	Y	Supports Atheros SDIO WiFi cards.
Applications – End User		
Etcha	Y	Free drawing on touch screen.
Core OS Services		
Splash Screen	Y	Displays Freescale logo in EBOOT.
Power Manager	Y	Supports suspend/resume.
Redundant Boot	Y	Support Redundant Boot on NAND.
Graphics and Multimedia Technologies		
DirectDraw	Y	Hardware support for overlays, color keying, alpha blending, color space conversion, scaling, cropping.
Windows Media Player	Y	WMV playback with software codec.
Shell and User Interface		
Keypad	Y	Supported through LRADC interface.
Touch Screen	Y	Supported through LRADC interface.

5 Known Problems

This section will cover known problems with this release.

5.1 Known Defects

The following table describes the known BSP defects for this release and available workarounds.

Identifier	Description	Workaround

Identifier	Description	Workaround
ENGR123618	OAL: CETK OAL Cache Test Fails.	The test only fails on Rev.C board. The same run-time image never runs into this issue on Rev.B board.

5.2 BSP Limitations/Issues

The following table describes the known issues/limitations of the BSP and available workarounds:

Limitation/Issue	Workaround
If NAND Flash was programmed by other OS or program, WinCE BSP may have problem read/write NAND as normal.	Perform a low-level NAND format in EBOOT.
System can not suspend when USB 5V is there.	Suspend system when S14 is OFF or USB cable is disconnected.
Ethernet download only gets 200~300 KB/s which is slow for NK image download.	Use USB Serial or USB RNDIS instead of Ethernet for NK download.

5.3 Platform Builder Limitations/Issues

The following table describes the known issues/limitations of the Platform Builder tool and available workarounds:

Limitation/Issue	Workaround
Windows Embedded CE 6.0 Platform Builder will lock the run-time image downloaded by USB Serial connection until the process CESVCH~1.EXE is manually killed.	When image downloading is finished, manually kill the process CESVCH~1.EXE by Windows Task Manager to get the image unlocked by Platform Builder.
Windows Embedded CE 6.0 Test Kit server occasionally drops KITL connection. This appears to occur more frequently with long CETK tests such as the Display Driver Test.	Refer to the *Microsoft Windows Embedded CE 6.0 Release Notes* for information on how to configure the CETK disconnect timeout using a registry setting.
Connection to Platform Builder Remote Tools may fail.	Network configuration for PC workstation may have MTU (Maximum Transmit Size) size set to less than 1500, which is not compatible with the KITL MTU size. There is also a known issue regarding the use of more than one of the Remote Tools using the current version of the Windows CE 6.0 shell. Please refer to the Windows Embedded CE 6.0 Release Notes under the heading “Known issues with the new shell” for more information.

Limitation/Issue	Workaround
The KITL thread priority may need to be raised if connection to development platform is dropped excessively.	Ethernet KITL support is not tolerant of dropped packets and retransmissions. Raising the KITL thread priority can improve the reliability of the KITL interface. In the source file `\WINCE600\PLATFORM\iMX233-EVK\SRC\KITL\kitl.c`, change the existing KITL_THREAD_HIGH_PRIORITY macro definition from the default value of 131 to 97.
The default PDA workspace created by Platform Builder Wizard fails in build sysgen phase, even with example BSP shipped with Platform Builder. (ENGR123567)	No workaround is available.
It takes long time to directly close the media player that is playing a clip. (ENGR123479)	Stopping the playing and then closing the media player will have no this problem. Using FSL Codec does not have this problem either.
MSFT WMAPro Codec has problem to play some low bit rate WMAPro audio stream. (ENGR123658)	Using FSL WMAPro Codec has no such problem.

5.4 i.MX23 EVK Hardware Limitations/Issues

The following table describes the known issues/limitations of the i.MX23 EVK hardware and available workarounds:

Limitation/Issue	Workaround
Booting from SD may fail on some SD 2.0 2GB cards due to that SD/MMC read delay time in ROM code is not sufficient. (ENGR112229)	No workaround is available.
On RevB board, MMC cards fail to be recognized by both ROM and WinCE BSP. (ENGR117497)	Two workaround options are available. 1) Replace U13 with the correct buffer chip SN74LVT244BPW. 2) Or to fix the issue with two 10K 0603 resistors. One is used to populate R264, the other goes between U39 Pin 8 (VCC) and J31 Pin 5 (SSP1_CMD).
On RevB board, USB device driver may re-enumerate with S14 switching off.	As a temporary workaround, DNP D20 to shut the possible reversed current from BL_VIN.
USB Host can not work on the default RevB board.	Populate J123 and short 2&3 to get USB Host work.
SD/MMC, Ethernet and SPI are mutually exclusive because they all use the same one i.MX23 SSP interface.	No workaround is available.
USB OTG driver can not work with together with SD/MMC, because there is pin conflict between USB ID and SD/MMC card detection.	No workaround is available.
VDDIO power rail can only support 250mA current, while the Cychip WiFi SDIO card require 400mA. Thus, the card can not work without board rework.	Supply VDDIO_SD power from 3.3V external supply with the following two steps:

Limitation/Issue	Workaround
(ENGR117233)	1) Lift Q40 pin 2 (Lower Right) from the pad and bend the pin up. 2) Attach a wire from Q40 pin 2 to R539 pin 1 (left pad). R539 is located ~ 35mm to the right of Q40. R538 is not populated.
Multiple-key input is not supported.	No workaround is available.
The keypad response becomes slow when system loading is high. This is because there is no HW interrupt support for Keypad, and SW has to consume CPU time for polling. (ENGR114891)	No workaround is available.
The population of accelerometer U48 on Rev.C may cause 10mA extra power consumption due to the pin conflict between accelerometer and UART2.	DNP U48 or remove UART2 driver from run-time image.
When USB Camera is working, display shows serial tearing on the panel, due to bus contention issue.	Slow down panel refreshing rate by decreasing the pixel clock. Change WINCE600\PLATFORM\iMX233-EVK\SRC\DRIVERS\DISPLAY\lms430.cpp line 40 “9200” to “4600”.
The label (ON & OFF) of HOLD Switch S1 is reversed.	No workaround is available.

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