

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.

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1 Release Contents

1.1 Documentation Package

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

WCE600_MX23_SDK_0912_DOCKIT.zip

The following documents are included in 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 Windows Installer file:

WCE600_09.12.00_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](#)

NOTE

Windows Embedded CE 6.0 R3 installs all updates released up through August 31st, 2009. Do not install updates currently available for Windows Embedded CE 6.0 R2. Once Windows Embedded CE 6.0 R3 release is installed, please install [Windows Embedded CE 6.0 R3 Update Rollup](#).

2.2 i.MX23 EVK Kit Components

This kit contains the following items.

Hardware Modules	Revision
i.MX23 EVK Board	REV B
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
ENGR116689	Power: Audio playback power consumption optimization
ENGR117345	BOOT: Support SD/MMC image flashing in EBOOT
ENGR117398	BOOT: Support SPI NOR boot
ENGR117403	USB: Improve USB device performance
ENGR117541	Power: Change Power Button implementation to use "POWER" other than "RECOVERY" key
ENGR117985	GDI: Use DCP to improve GDI performance
ENGR117986	SD: Separate SDMMC type definitions from eSDHC register header file
ENGR117990	System: Clean up unnecessary header inclusions in common folder
ENGR118064	System: Add WinCE 6.0 R3 support
ENGR118072	Power: Enable HBUS auto-slow feature
ENGR118340	CSPDDK: Update DDK_CLK frequency configuration function for SAIF
ENGR118815	USB Device: Support USB PHDC (Personal Health Care Class) device function

3.2 Defect Fixes

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

Identifier	Description
ENGR117659	Display: Direct Draw CETK case #1350, #1360 failed on WQVGA display panel
ENGR117721	USB: Need to remove call CeOpenCallerBuffer() from function UfnPdd_IssueTransfer()
ENGR117748	Audio: Can't select Line-in as the default record device by Mixer
ENGR117888	Redundant Boot: While it's about to reboot after updating, pressing "OK" button will cause data abort
ENGR117919	Power: RevB board consumes much more power than RevA board in system suspend
ENGR118453	BOOT: It fails to download eboot.msb to RAM via BL menu

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	Y	Conform to Production Quality OAL (PQOAL) 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.

Feature	Supported?	Comments
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.
MMC/SD/SDIO	Y	Supports memory and SDIO cards through SSP interface.
NAND	Y	Supports NAND Flash through GPMI interface.
MMC/SD/SDIO	Y	Support the following memory cards: SD, SDHC, MMC and MMCPlus
Serial	Y	Supports both AUART and DUART.
SPI	Y	Supports SPI bus driver through SSP interface.
USB	Y	Supports USB OTG Host / Device drivers.
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.
Manufacturing Tool	N	
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 chapter describes the known defects and workarounds, and the limitations or issues with the BPS release.

5.1 Known Defects

The following table describes the known defects for this release and available workarounds. The defects are categorized as follows:

- BSP – Defects related to the i.MX23 EVK BSP
- EVK – Defects related to the i.MX23 EVK hardware
- PB/CETK – Defects related to Windows Embedded CE 6.0 Platform Builder or the Microsoft Windows CE Test Kit (CETK)

Identifier	Category	Description	Workaround
ENGR115889	BSP	SD: It failed to recognize some SD memory cards, while DVFC module was removed from workspace.	No workaround is available.
ENGR117801	BSP	USB Host: Suspend/resume or plug/unplug U-Disk for several times, put S14 off, the system will hang.	No workaround is available.
ENGR117847	BSP	System: It fails to pass suspend/resume stress test.	No workaround is available.
ENGR117849	BSP	System: It fails to pass cold boot stress test.	No workaround is available.
ENGR117856	BSP	SDIO: It could not connect to any AP successfully.	No workaround is available.
ENGR117858	BSP	SDIO: SDIO is not mounted after suspend and resume.	No workaround is available.
ENGR119123	BSP	USB KITL: USB RNDIS KITL fails to work with USB full function image.	No workaround is available.
ENGR119469	BSP	System: It fails to pass CE stress test.	No workaround is available.
ENGR119554	BSP	USB: Can not remount USB MSC device if switching off/on S14 during data transfer.	No workaround is available.
ENGR119597	BSP	DVFC: Audio is not smooth with video playback in system idle state.	No workaround is available.

5.2 BSP Limitations/Issues

The following table describes the known issues/limitations and available workarounds for the BSP.

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 does not support booting from USB 5V power supply when LI-ION BATTERY is unavailable.)	Define variable BSP_USB_DIRECT_BOOT and rebuild the BSP.
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 and workarounds for the Platform Builder tool.

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 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 <i>Microsoft Windows CE 6.0 Release Notes</i> for information on how to configure the CETK disconnect timeout using a registry setting.
Connection to Platform Builder Remote Tools may fail.	<p>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.</p> <p>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.</p>
The KITL thread priority may need to be raised if connection to development platform is dropped excessively.	<p>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</p> <p><code>\WINCE600\PLATFORM\iMX233-EVK\SRC\KITL\kitl.c</code>,</p> <p>change the existing KITL_THREAD_HIGH_PRIORITY macro definition from the default value of 131 to 97.</p>

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. (ENGR117233)	Supply VDDIO_SD power from 3.3V external supply with the following two steps: 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.

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