

i.MX51 EVK Windows Embedded CE 6.0

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_MX51_ER_1104_DOCKIT.zip

The following documents are included in this documentation package:

- i.MX51 EVK Windows Embedded CE 6.0 Release Notes
- i.MX51 EVK Windows Embedded CE 6.0 User's Guide
- i.MX51 EVK Windows Embedded CE 6.0 Reference Guide
- 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_11.04.02_ER.msi

Refer to installation instructions in the *i.MX51 EVK Windows Embedded CE 6.0 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.MX51 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 \(through 12/31/2010\)](#)
- [Windows Embedded CE 6.0 Monthly Update January 2011](#)
- [Windows Embedded CE 6.0 Monthly Update February 2011](#)

2.2 RealView Tools

- RealView ICE Kit
The kit includes RVI unit, power supply, Ethernet cable, LVDS probe and cable.
- RealView ICE firmware. Download and install the following files from ARM web site:
 - ARM-RVI-3.1.0-754-base.rvi
 - ARM-RVI-3.1.3-776-patch.rvi
 - ARM-RVI-3.2.0-850-base.rvi
 - ARM-RVI-3.2.6-875-Engineer-patch.rvi
- RealView Developer Suite v3.1 or later

2.3 ATK Tool

- ATK Tool v1.70 or later is required.

2.4 Manufacture Tool

- Manufacture Tool Mfgtools-Rel-WCE600_11.04.00 is required.
- Refer to Manufacture Tool document to know how to use it.

2.5 i.MX51 EVK Kit Components

This kit contains the following items.

Hardware Modules	Revision
i.MX51 EVK board	V 2.5 / 3.0
i.MX51 EVK Accessory card	Rev X

3 What's New

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

3.1 New Features

See [ResolvedEnhancements.html](#) for the list of new features, supports and enhancements since the last release.

A summary of the main new features is as follows:

- Manufacture Tool for i.MX51 EVK
- GPU / VPU driver update
- Add fuse check for GPU and VPU

3.2 Defect Fixes

See [ResolvedDefects.html](#) for the list of the defects fixed in this release.

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)		
X-Loader (SD/MMC)	Y	Initial program loaded when booting from SD/MMC card. File system on same card is also supported
X-Loader (SPI Flash)	Y	Initial program loaded when booting from SPI Flash
Bootloader (Ethernet)	Y	Support image download over Ethernet (FEC). The ethernet bootloader can run from SPI Flash as well as SD/MMC cards connected to SD Slot 1
Bootloader (USB)	Y	
Boot Partition on eSD v2.1 & eMMC v4.3	Y	Flashing to and booting from the boot partition of eSD v2.1 and eMMC v4.3 (from Samsung) is supported
Secure Boot	N	
EPIT1	Y	PQOAL system timer support
Kernel Profiler	Y	Supported using GPT
KITL (Ethernet)	Y	Kernel Independent Transport Layer (KITL) supported via Ethernet (FEC) between Platform Builder and the target.
KITL (USB)	Y	
L2 Cache	Y	Default policy is write-back
PQOAL	Y	Conform to Production Quality OAL (PQOAL) coding standards
Serial Debug Port	Y	Debug message support provided via internal UART1
SRTC	Y	PQOAL time-of-day support with MX51 SRTC
TZIC	Y	PQOAL interrupt controller support
WDOG	Y	PQOAL watchdog supports system reset
Drivers		
Audio (SGTL5000)	Y	Playback and recording using SGTL5000 codec
Backlight	N	
Battery	Y	Support the fake battery driver
Blue Tooth	Y	Support Blue Tooth USB dongle
Camera	Y	Support OV3640 sensor. Additional Information: • This release supports viewfinder. • This release supports still image capture. • This release supports Rotate / Resize / Flip / Mirror

Feature	Supported?	Comments
		• This release supports Video Capture
Clock Control (CCM)	Y	Supported as component of CSPDDK (DDK_CLK)
CSPI	N	No CSPI connection available on the board
DVFS	Y	
eCSPI	Y	Master mode only. eCSPI1 is a bus driver for PMIC
FEC	Y	
GPIO	Y	Supported as component of CSPDDK (DDK_GPIO)
GPU	Y	IP wrapper for Z160 2D / Z430 3D hardware acceleration with software release version: Dec, 2010.
GPT	Y	
I2C	Y	Support Master mode. I2C2 is a bus driver for DVI display and Audio codec
IOMUX	Y	Supported as component of CSPDDK (DDK_IOMUX)
IPU Display - Synchronous	Y	Support DVI display / RGB display / WVGA / LVDS panel. Displays UI
IPU Display - Asynchronous	N	
MC13892 Power Management IC (PMIC)	Y	Support PMIC features, including regulators, ADC, and touch controller
MMC/SD/SDIO	Y	Support the following memory cards: SD, SDHC, MMC and MMCPlus
NLED	Y	
One-Wire	Y	
Post-Processor	Y	
SIM	N	
SPDIF	Y	
SDMA	Y	Supported as component of CSPDDK (DDK_SDMA)
Serial	Y	
TV OUT	Y	
USB	Y	Support HS OTG Host / Device / XVC and USB HS HOST1
Video De-Interlacer (VDI)	Y	Supported in IPU driver
Video Processing Unit (VPU)	Y	VPU decoder and encoder with firmware version 1.4.28
WiFi	Y	Support Atheros AR6102 SDIO WiFi card with demo quality
Applications – End User		
WordPad	Y	
Etcha	Y	Free drawing on touch screen
Core OS Services		

Feature	Supported?	Comments
Power Manager	Y	
Graphics and Multimedia Technologies		
Windows Media Player	Y	WMV playback with Microsoft CODEC
DirectDraw	Y	IPU hardware support for page flipping
Shell and User Interface		
Soft Input Panel	Y	
Touch Screen (Stylus)	Y	Support MC13892 touch controller
Keypad	Y	Support keypad on MX51 EVK accessory card

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.MX51 EVK BSP
- EVK – Defects related to the i.MX51 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
ENGR78411	CETK	OAL CETK Test OAL_Data_Cache_Size_Calculatio n_Test fail	The increased L1 and L2 cache sizes cause this test to fail with the default command-line parameters. To pass this test, you must do the following: (1) Build NK with the STARTUP_CFG_INHIBIT_L1_CACHE flag removed from startup.s to enable L1 caching (2) Add the following command-line option to the CETK test: -c "stride_min 16"
ENGR82060	CETK	Display: CETK Graphic Device Interface Test Failed	Need to add one of these parameters: -c "/NoRotate" or -c "/NoResize" to disable dynamic screen rotation / dynamic resolution resize. Please refer to: ms-help://MS.VSCC.v80/MS.VSIPCC.v80/MS.WindowsCE.v60.en/CE_OS_ShellUI/html/6c512a0c-188e-4055-912c-64b9c10d25e1.htm.
ENGR89283	CETK	Audio: Case 8001 failed in CETK Audio International and Invalid Parameter test	It's MSFT's CETK bug. The following is line 154,155 in file baddeviceid.cpp of wavetest CETK: MMResult = waveOutGetDevCaps(

Identifier	Category	Description	Workaround
			<pre>uLoopIndex, &woc, sizeof(woc)); dwReturn = GetReturnCode(dwReturn, ProcessWaveformFunctionResults(MMResult, uLoopIndex, uNumWaveInNumDevs, TEXT("waveOutGetDevCaps\t")));</pre> <p>The parameter of uNumWaveInNumDevs is fault, it should be uNumWaveOutNumDevs.</p> <p>Since in MX51, the uNumWaveOutNumDevs is 2 while uNumWaveInNumDevs is 1.</p> <p>After correct this, the CETK case can pass.</p>
ENGR104143	PB	Display: CETK Graphics Device Interface Test #218 StretchBlit failed	This issue is introduced by either MSFT Sept 2008 QFE or the Cumulative Product Rollup Package for 2008. Please refer to http://support.microsoft.com/kb/973650 for the details.
ENGR112001	BSP	GPU: D3DM Comparison CETK 2805 subcase Failed	It's because of hardware limitation and no software workaround is available. When using the "end in diamond" rule for line ends, the GPU hardware ends the line using rules that are consistent with the desktop rendering engine. The diamond end rules for D3DM are very slightly different and as a result there is a precision variance in the results check for D3DM diamond line ends.
ENGR113066	BSP	GPU: OpenVG 1.1 conformance test still has failures	It's because of hardware limitation and no software workaround is available.
ENGR115192	BSP	D3DM CETK comparison test has many skipped subcases	No workaround is available.
ENGR116020	BSP	GPU: GDI CETK test failed when enable GPU accelerate	It's because of hardware limitation and no software workaround is available.
ENGR116119	BSP	GPU: D3DM demo applications performance not good	No workaround is available.
ENGR117601	CETK	Camera CETK IOTest subcase #1001,#1002 may fail	<p>It's MSFT's CETK bug. The Test_IO_Capture() test thread doesn't synchronize with process thread.</p> <p>To pass the test, please change the CETK source code in file "ccamerastreamtestimpl.cpp":</p> <pre>BOOL CStreamTest::GetNumberOfFramesProcess ed()</pre>

Identifier	Category	Description	Workaround
			<pre> { int nPictureCount = 0; MSGQUEUEINFO MsgInf; // keep state changes synchronous. WaitForSingleObject(m_hMutex, INFINITE); GetMsgQueueInfo(m_hStreamMsgQueue,& MsgInf); nPictureCount = m_nPictureNumber + MsgInf.dwCurrentMessages; ReleaseMutex(m_hMutex); return nPictureCount; } </pre>
ENGR 142360	BSP	Touch: Transcriber doesn't support	No workaround is available.
ENGR142448	BSP	SDIO_Wifi: The application may not resume after suspend & resume with 50% probability	This should be caused by 3rd party wifi driver. No workaround is available.
ENGR142523	BSP	Suspend/resume stress: Error occurred after suspend/resume more than 7900 times	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
<p>MMC: When using a high capacity eMMC v4.3 as boot device, after OS has loaded, it fails to initialize the eMMC device, and a subsequent warm reset will not result in a successful boot.</p>	<p>Workaround: Perform a cold reset.</p> <p>Windows CE 6.0 R2/R3 SDBus Driver does not support high capacity MMC cards, even though high capacity SD cards are supported. This results in a failure to properly initialize the eMMC v4.3 device, and subsequent warm reset does not bring the device out of its bad state. A cold reset is required.</p>
<p>GPU: Conditional CDEFINES in SOURCES files do not automatically trigger the build system to rebuild the corresponding source code when adding or removing the GPU driver.</p>	<p>Users need to manually rebuild the OAL when adding or removing the GPU driver.</p>
<p>Audio: The default Audio Out device may be routed to SPDIF device</p>	<p>Use Windows\AudioRouting.exe to select the default Audio Out device you want.</p>

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 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> <pre data-bbox="743 1062 1386 1087">\WINCE600\PLATFORM\iMX51-EVK\SRC\KITL\kitl.c,</pre> <p>change the existing KITL_THREAD_HIGH_PRIORITY macro definition from the default value of 131 to 97.</p>

5.4 i.MX51 EVK Hardware Limitations/Issues

Make sure you've applied all necessary hardware rework on the EVK board.

The following table describes the known issues/limitations of the i.MX51 EVK hardware and available workarounds.

Limitation/Issue	Workaround
ENGR00107947 -- USB_OTG: System get slow when USB OTG port is connected to 2 level HUBs without power supply	Use self-powered USB HUBs instead. Suspect USB OTG port can not provide enough power for hubs.
i.MX51 EVK v2.5 board can NOT work with backlight driver if the WVGA panel is not connected.	Make sure the backlight driver will never be added into the workspace.
Sometimes the touch controller may not catch the touch point accurately	Try more times.
ENGR85880 -- TVOUT: NTSC/PAL mode, the display shown on TV doesn't match well the TV screen size.	This issue is TV overscan. When using the TVE driver to drive display data to a TV, some WinCE icons on the home screen may appear partly outside of the TV screen due to TV overscan. TV overscan is dependent on the TV, so the adjustment to the screen position must be made using TV controls.
ENGR122072 -- Some USB storage CETK will run on Disk3 and get fail result but the real U-disk in Disk2 if connected the U-disk before boot up.	There is a USB to SATA bridge attached to USB host, so there is always a SATA device in system no matter there is a real SATA Disk attached to system. In case no real SATA Disk attached to system, during cool boot, U-Disk is enumerated before this SATA, and then when CETK is running, it will assign SATA disk to perform the Test, and hence this issue occurs. The workarounds for this issue: 1. After system boot up, attach the U-disk, and then run CETK 2. Plug in a SATA Disk before system boot up and run CETK on this SATA Disk
ENGR142641 : USB_SATA: could not create/mount partition with Sandisk SDSA4BH-032G SSD SATA .	There is a USB to SATA bridge attached to USB host. Due to this bridge could not support such SSD SATA device, we have no other workaround.

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www.freescale.com/support

Europe, Middle East, and Africa:

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Technical Information Center
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+44 1296 380 456 (English)
+46 8 52200080 (English)
+49 89 92103 559 (German)
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www.freescale.com/support

Japan:

Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064, Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:

Freescale Semiconductor China Ltd.
Exchange Building 23F
No. 118 Jianguo Road
Chaoyang District
Beijing 100022
China
+86 010 5879 8000
support.asia@freescale.com

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