



Windows Embedded CE 6.0 iMX31ADS BSP Release Notes

Version: WCE600-14

06-4823-RN-TX30

October 18, 2007

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

1. Release Contents

1.1. Documentation Package

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

`WCE600-14-DOCKIT.zip`

The following documents are included within this documentation package:

- ❑ *Windows Embedded CE 6.0 iMX31ADS BSP Release Notes*
- ❑ *Windows Embedded CE 6.0 BSP for MCIMX31 (i.MX31) ADS User's Guide*

1.2. BSP Package

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

`WCE600-14-BSP.msi`

Refer to installation instructions in the *Windows Embedded CE 6.0 for iMX31ADS User's Guide*.

2. System Requirements

2.1. Windows Embedded CE 6.0

- Microsoft Windows Embedded CE 6.0
Refer to Windows Embedded CE 6.0 release notes for additional requirements.
- Windows Embedded CE 6.0 Updates
Review the following site for a complete list of updates:
<http://msdn2.microsoft.com/en-us/embedded/aa731256.aspx>

The following updates for Windows Embedded CE 6.0 should be installed for use with this release.

Yearly Updated Full Update Package through December 2006

<http://www.microsoft.com/downloads/details.aspx?familyid=5733c26c-168b-474d-8a27-59b30b769402&displaylang=en>

January

<http://www.microsoft.com/downloads/details.aspx?familyid=71b39842-ca77-42f5-a076-f1fd8bbe79d4&displaylang=en>

February

<http://www.microsoft.com/downloads/details.aspx?familyid=431b0a72-060b-4df0-b5bc-5179303ae8d1&displaylang=en>

March

<http://www.microsoft.com/downloads/details.aspx?familyid=021f5cfd-95fe-4bcf-aed2-15c0296370da&displaylang=en>

April

<http://www.microsoft.com/downloads/details.aspx?familyid=32f71c04-85fc-4024-8a39-83b6bdbcf35&displaylang=en>

Windows Embedded CE 6.0 Platform Builder Service Pack 1

<http://www.microsoft.com/downloads/details.aspx?familyid=BF0DC0E3-8575-4860-A8E3-290ADF242678&displaylang=en>

June

<http://www.microsoft.com/downloads/details.aspx?familyid=69744a54-ec71-49d2-a211-c2bdec2f5f5b&displaylang=en>

2.2. RealView Tools

- RealView ICE Kit
The kit includes RVI unit, power supply, Ethernet cable, LVDS probe and cable.
- RealView ICE firmware build #182 or greater
- RealView Debugger version 1.7 or greater
This is a component of RealView Developer Suite v2.1.

2.3. iMX31ADS Kit

ADS Kit Component	Revision
ADS base board	REV 3.0 or later
CPU board	REV 3.0 or later
Supported CPU Mask Revisions	M91E (TO2)
MC13783 board	REV G or later
Sharp QVGA Display	
ADS Keypad	
ADS Power Supply	
Ethernet Cable	
Serial cable	

3. 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 for Drivers (v8.0)	Y	Using Microsoft recommended filter, all BSP code compiles cleanly with PreFast v8.0
OEM Adaptation Layer (OAL)		
X-Loader	Y	Used to boot from SLC NAND connected to NFC controller.
Ethernet Bootloader	Y	See User's Manual for configuration options such as boot from NOR or NAND.
Serial Bootloader	N	Support for image download and flashing over serial.
PQOAL	Y	Conforms to Production Quality OAL (PQOAL) coding standards. Additional Information: - The following OAL CETK tests have one or more failures: Interrupt ioctls-Kernel Mode, Processor Info ioctl, and GTC verify Get Idle Time. - The OAL real time clock CETK test 1260 fails. The test requires the RTC to support 100 year time span. The MC13783 is limited to approximately 88 years.
KITL (Ethernet)	Y	Kernel Independent Transport Layer (KITL) supported via Ethernet connection between Platform Builder and the target.
KITL (serial)	N	Kernel Independent Transport Layer (KITL) supported via serial connection between Platform Builder and the target.
Serial Debug Port	Y	Debug message support provided via internal UART1.
Kernel Profiler	Y	Supported using GPT.
MX31 RTC	Y	PQOAL time-of-day support with MX31 RTC.
MC13783 RTC	Y	PQOAL time-of-day support with MC13783 RTC.
EPIT1	Y	PQOAL system timer support.
AVIC	Y	PQOAL interrupt controller support.
WDOG	Y	PQOAL watchdog supports system reset.
Random Number Generator	Y	Hardware acceleration for random number generation
L2 Cache	Y	Option to use Write-back, Write-through or disable.
Drivers		
IPU SDC	Y	Sharp TFT LQ035Q2DD54 240x320 support. NEC TFT NL6448BC20 640x480 support.
IPU ADC	Y	Epson LSFxxxxT00 QVGA Smart LCD support
IPU Image Sensor (Camera)	N	
MBX Direct 3D Mobile/OpenGL ES	N	
VFP	N	Freescale VFP library
MPEG4/H.263 Encoder	Y	MPEG4/H.263 DirectShow filter
Post Filtering	Y	MPEG-4 deblock and dering H.264 deblock
CSPI 1, CSPI3	Y	Bus driver for CSPI interface.
CSPI 2	Y	Interface for MC13783 PMIC.
EPIT2	Y	Used for touch panel sampling.
Serial	Y	Supports baud rates up to 1.875 Mbps Additional Information:

Feature	Supported?	Comments
		CETK stress tests 1000-1003 fail. These tests pass if the timeout values are changed to the same value used by the performance test.
IrDA (SIR)	N	
FIR	N	
GPT	Y	Provides profiling support or can be supported via the BSP GPT driver.
EMI – NANDFC	Y	Support for NAND FMD. Data transfers using SDMA is not supported.
EMI – WEIM	Y	EBOOT programming of AMD Spansion NOR flash is supported. NOR boot and XIP is supported.
One Wire	Y	
Audio	Y	Record/playback using MC13783 codec/DAC. Additional Information: Audio record is not supported.
MMC/SD/SDIO	Y	SD/MMC Memory and SDIO WiFi support. CE6 OS does not support High Capacity.
PCMCIA	Y	
USB	Y	USBOTG high-speed, USB HOST1 full-speed, USB HOST2 high-speed. Full port to Windows CE 6.0 OTG not supported
ATA	Y	Hitachi 1.8 20G ATA HDD
SIM	Y	
I2C	Y	I2C1 is a bus driver for camera and USB transceiver.
PWM	Y	
Ethernet (NDIS)	Y	CS8900 NDIS support.
DPTC/DVFS (DVFC)	Y	Voltage scaling and process/temperature compensation support using MC13783 regulators.
MC13783 Power Management IC (PMIC)	Y	Provides support for PMIC features including regulators, ADC, touch controller, backlight, battery, and charger. Additional Information: For testing PMIC, it is required to run the tux test suite in Kernel mode. In order to achieve this, copy 'ktux.dll' file from <i>Program Files\Microsoft Platform Builder\6.00\cepb\wcetk\ddtk\armv4i</i> folder onto the release directory and then run test suite using the command s tux -o -n -d pmictest.dll.
SDMA	Y	Supported as component of CSPDDK (DDK_SDMA)
GPIO	Y	Supported as component of CSPDDK (DDK_GPIO)
IOMUX	Y	Supported as component of CSPDDK (DDK_IOMUX)
Clock Control (CCM)	Y	Supported as component of CSPDDK (DDK_CLK)
Applications – End User		
WordPad	Y	
Etcha	Y	Free drawing on touch screen.
Tcal	Y	Console application to display system time information.
Camera Application	Y	Freescall provides sample camera application for WindowsCE.
Core OS Services		
Battery Driver	Y	Hardware support provided by MC13783 battery driver.
Power Manager	Y	
Notification LED Support	Y	Notifications provided by baseboard status LEDs.
Graphics and Multimedia Technologies		
Windows Media Player	Y	WMA and WMV playback
DirectDraw	Y	IPU hardware support for page flipping, overlays, color keying, color space

Feature	Supported?	Comments
		conversion, rotation, and scaling.
Shell and User Interface		
Quarter VGA Resources – Portrait Mode	Y	
Soft Input Panel	Y	
Backlight	Y	Supported via IPU PWM or MC13783 backlight control.
Touch Screen (Stylus)	Y	Supported via MC13783 touch controller
Keypad	Y	ADS Keypad Support

4. Known Problems

This section will cover known problems with this release.

4.1. 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 iMX31ADS BSP.*
- ❑ *ADS – Defects related to the iMX31ADS hardware.*
- ❑ *PB/CETK – Defects related to Windows CE Platform Builder or CETK.*

Identifier	Category	Description	Workaround
ENGR26934	BSP	The audio driver fails the following CETK tests: 3008: Capture Multiple Streams 6000: Playback Mixing 6001: Capture Mixing	No workaround is available.
ENGR50864	BSP	The Serial Driver fails the following CETK tests (non-DMA mode): 30-33,41-48,51-58	No workaround is available.
ENGR54009	BSP	DDGPE Display Driver functions must be overwritten to support rotation	No workaround is available.
ENGR48545	PB	After rotating the screen (pressing S2 on the MC13783 board), DirectDraw Overlays will not be used when attempting to play back a video file using Windows Media Player. The player will revert to GDI, and the video will consequently play back with frequent frame drops and jittering.	No workaround is available.
ENGR36495	PB	The Battery Driver fails the following CETK test: 1004 - BatteryGetLifeTimeInfo	No workaround is available. Suspect the Microsoft Public Code does not check the validity of the parameters correctly.

Identifier	Category	Description	Workaround
ENGR50595	BSP	Data transfers between the USB OTG port and a PC may not complete.	The workaround is to use a different USB port on the PC. Typically, better signal quality is available on USB connectors located on the back panel of the PC.
ENGR16448	BSP	USB Host 1 with serial transceiver will not support a Full Speed host port connected to High Speed hub with Low Speed device attached.	No workaround is available. The hardware serial interface engine inserts an incorrect EOP after the PRE-PID for the LS communication, tearing down the hub's connection to the downstream port.
ENGR26152	BSP	Some card reader firmware is not supported by the Mass Storage class driver.	No workaround is available. Card readers which choose not to STALL the endpoint in cases of data residue, may fail to be properly handled by the Bulk-Only-Transport. (This is an optional implementation in the USB 2.0 specification).
ENGR5790	BSP	Some Full Speed card readers have issues when formatting large (>256 MB) Compact Flash cards via the Mass Storage class driver.	No workaround is available.
ENGR54281	BSP	Keypad keys do not resume the system from the suspend state.	The workaround is to use the S1 button on the MC13783 PMIC daughter card.
ENGR8801	CETK	Executing the CETK test for touch panel will cause a system hang.	No workaround is available. Microsoft has confirmed some of the GWES display manager APIs can not be accessed properly when the CETK test harness runs in kernel mode. Current recommendation is to test by performing calibration and verifying normal operation.
ENGR54430	CETK	May experience problems running the custom PMIC CETK test.	The workaround is to copy ktux.dll to the release directory and execute the test using the following command. s tux -o -n -d pmictest.dll
ENGR46691	BSP	Serial driver fails the CETK Serial Communications stress test (1000 – 1003).	The workaround is to change the timeout values in the stress test to match the timeout values of the performance test.
ENGR43607	BSP	Test cases for CETK OAL Interrupt-loctls-Kernal_Mode fails The CETK test cases that are failing (4000, 4100, 4200, 5000, 5100, and 5200) are all associated with testing the support for multiple IRQs that all map to a single SYSINTR.	No workaround is available. The BSP currently does not implement support for more than one IRQ per SYSINTR.
ENGR45860	ADS	The OAL real time clock CETK test 1260 fails.	No workaround is available. The test requires the RTC to support 100 year time span. The MC13783 is limited to approximately 88 years.

4.2. BSP Limitations/Issues

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

Limitation/Issue	Workaround
Existing iMX31ADS BSP files in the WINCE600 tree may interfere with installation and builds of this BSP release.	Follow the steps in the <i>Windows CE BSP for iMX31ADS User's Guide</i> to remove all residual BSP files.
Uninstalling the iMX31ADS BSP using the Microsoft Windows Installer (msi) file will not remove intermediate build files/objects.	Follow the steps in the <i>Windows CE BSP for iMX31ADS User's Guide</i> to remove all residual BSP files.
Polled KITL mode may increase connection reliability.	To force polled KITL mode, define the KITL_USE_POLLING_MODE macro at the beginning of the PLATFORM\iMX31ADS\SRC\KITL\kitl.c source file.

4.3. Platform Builder Limitations/Issues

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

Limitation/Issue	Workaround
Windows 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.	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. Refer to http://logicpd.com/support/faq/faq.php?faq_id=104 for more details. 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.
The KITL thread priority may need to be raised if connection to development platform is dropped excessively.	The KITL support for the CS8900 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\iMX31ADS\SRC\KITL\kitl.c, change the existing KITL_THREAD_HIGH_PRIORITY macro definition from the default value of 131 to 97.
Kernel debugger supports the display of data in linearly addressed memory. Using the kernel debugger to display contents of peripheral registers may result in system hang.	No workaround is available.

4.4. iMX31ADS Hardware Limitations/Issues

The following table describes the known issues/limitations of the iMX31ADS hardware and available workarounds:

Limitation/Issue	Workaround
ADS board power-on reset can cause HyperTerminal or other terminal emulation applications to hang.	Close and restart the terminal emulation application after power-on reset.
ADS board power-on reset can cause MC13783 board to detect a low-voltage condition and subsequently hold the system in reset. The EBOOT or OS image will not boot and most of the LEDs on the MC13783 board will turn off.	Press one of the ON buttons on the MC13783 board (S1, S2, or S3). You should see most of the MC13783 LEDs turn back on. Then press the MX31 CPU board reset (SW1). The MX31 device should then boot normally. Avoid using power-on reset between boots. Instead, use the MX31 CPU board reset (SW1).
EBOOT programming of NOR flash may fail after ADS power-on reset.	Always press the MX31 CPU board reset (SW1) after power-on reset before attempting to program NOR flash with EBOOT.
Images may fail to boot or exhibit random crashes/failures on some MX31 ADS boards. Crashes/failures may be more frequent during periods of peak CPU or bus utilization.	You can reduce the CPU and bus speed using SW3-5 and SW3-6 user switches located on the MX31 ADS base board. Refer to <i>SW3 – User Switches</i> in the <i>MX31 BSP User's Guide</i> .
Audio output has swapped left/right channels. The tip and ring connectors on the MC13783 daughter card are incorrectly connected to the left/right audio channels.	No workaround is needed. The audio driver does not compensate for this issue. Customer platforms should connect the left/right audio channels correctly.
ADS kit cannot be configured to power the MC13783 charging circuit.	To prevent a low-battery condition, use an external power supply connected to the MC13783 charging circuit. The default workspace includes the "MC13783 Fake Battery Charger" catalog item. This catalog item forces the battery driver to report a charger is connected and avoids the low-battery condition.
The USB host ports (OTG, H1 and H2) VBUS current is limited to 100mA.	Self powered hubs must be used with USB devices that require more than 100mA.
The MX31 ADS does not support MMC/SD/SDIO cards which require more than 3V.	Avoid using cards that require greater than 3V.
MMC cards are not supported.	Modifications to the ADS board are necessary to support MMC cards.
Simultaneous use of NAND and WEIM (e.g. NOR) is not supported.	The workaround is to not access NAND and WEIM peripherals at the same time. Support for NAND flash is removed from the build with IMGFLASH build environment variable is defined. This allows the OS to boot regardless of the catalog configuration.
MX31 CPU revisions F and G do not support state retention (power off) state.	No workaround is available.
MX31 CPU boards of revision G or later do not support PCMCIA.	No workaround is available.
Early MX31 processor revisions do not support Dynamic Voltage and Frequency Scaling (DVFS) with DDR memory.	Use MX31 (TO2) processor with mask M91E. No workaround for processor masks: 2L38W, 3L38W and M45G

5. Support

Questions concerning this release should be sent to your local sales/support representative or to the following email address:

imx-wince-support@freescale.com

Please include the BSP release version, chip version, board version, image type, and any other relevant information in the e-mail.