# ADENEO

## WINDOWS CE FOR AT91SAM9263

## APPLICATION NOTE: VERSIONS FOLLOWUP

**Ref.: AT91SAM9263EK CE5.0 VERSIONS FOLLOWUP V1.0.0 A**

# HISTORY

| BSP Version | Revision | Date | Update History |
|---|---|---|---|
| V0.1.0 | A | 01/02/2007 | Creation |
| V0.9.0 | A | 28/06/2007 | PreRelease |
| V1.0.0 | A | 17/07/2007 | Official Release |
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# 1. Document presentation

## 1.1 Abbreviations used

| | |
|---|---|
| BSP | Board Support Package |
| OAL | OEM Adaptation Layer |
| PB | Platform Builder |
| VS2005 | Visual Studio 2005 |
| WinCE | Windows CE |
| AT91SAM9263EK | Atmel development kit for AT91SAM9263 product |

%_TARGETRELEASEDIR%: this environment variable is set by platform builder to contain the BSP directory when building a Windows CE image. We use the same abbreviation in this document to refer to the BSP directory for AT91SAM9263EK board.

## 1.2 Document Purpose

This document provides history for the various versions of the AT91SAM9263 Windows CE BSP.

First it lists all the known issues in the current version of the BSP.

Next, it presents the fixups and improvements that were applied in each version of the BSP.

# 2. Known issues of current version

The current version of the BSP is **V 1.0.0.**

This version has the following known issues:

- **KITL on Ethernet and the Ethernet driver cannot be used simultaneously, because they are using the same Ethernet MAC controller (EMACB).**
- **USB keyboard** only works when KITL is activated.
- **ActiveSync doesn't launch automatically** every time the board boots. This is due to loading order in the OS. To fix this, you can setup the **BSP_NOTIFY_IN_DEVICE environment variable**.
- **Ethernet cable must not be detached at startup** because reattaching later doesn't work.

# 3. Features included in the current version

The current version of the BSP is **V 1.0.0.**

This version includes the following features:

- Windows CE Bootloader (FirstBoot / Eboot) including:
  - Hardware initialization of Clocks, SDRAM and NAND flash
  - Debug messages through DBGU port
  - Boot support on Serial Data flash
  - Boot on WinCE local image located in NAND flash

- Update of local image in NAND flash, through ethernet
- Update of Bootloader in Serial Data flash, using SAM-BA software from ATMEL, via USB
- Remote boot of CE image through Ethernet

- Windows CE kernel including
  - Tick and scheduling management using system timer (low resolution clock) and TC controller (high resolution clock)
  - Interrupt management for both AIC and PIOs interruptions
  - RTC management for AT91 RTT peripheral
  - Power management (idle and suspend mode handled, setting CPU in idle mode)
  - Kernel debugging through DBGU and Ethernet/KITL
  - Standard OEMIocontrol codes from Windows CE
  - Registry saved in NAND flash (Hive registry)
  - Clock frequencies management

- Display driver
  - AT91 LCDC peripheral handling
  - Multiple display support (VGA, SVGA)
  - Ddraw support in emulation
  - Available in 8bpp, 16bpp and 24bpp
  - Portrait and landscape modes

- USB Host driver
  - AT91 UHP peripheral handling
  - Standard OHCI driver with support for bulk, interrupt, control and isochronous
  - Support for all USB peripherals supported natively by Windows CE:

    *(Only mouse works on first chip version)*
    - Mouse
    - Keyboard
    - USB Flash Key
    - USB Printer (**not tested**)
    - USB hubs

- USB Device driver
  - AT91 UDP peripheral handling

- Ethernet driver
  - EmacB  Ethernet chip with external PHY

- Serial driver
  - AT91 USART peripheral handling
  - Data transfer using PDC

- I2C driver
    - AT91 TWI peripheral handling
    - Sample driver (not used in the BSP) for I2C devices direct access from applications
- EEPROM I2C
    - Based on the I2C Driver
- SPI driver
    - AT91 SPI peripheral handling
    - Sample driver (not used in the BSP) for SPI devices direct access from applications
- ATAPIEBI driver
    - IDE ATAPI hard disk driver on EBI bus
- SDCard driver
    - AT91 MCI peripheral handling
    - Support for SD memory card (no SDIO support)
    - Data transfer using interruptions and PDC
- NAND Flash driver
    - AT91 EBI peripheral handling
- PWM Controller
    - Output on a connector
- Touchscreen driver
    - Based on the SPI driver
- Audio driver
    - Based on the SPI driver

# 4. <u>Versions history</u>

## 4.1 V 0.1.0

### 4.1.1 Issues fixed

- None

### 4.1.2 Improvements

- Creation of the BSP

## 4.2 V 0.9.0

### 4.2.1 Issues fixed

- USB Cable attachment is detected if the board boot with the cable attached.
- The two SDCard slots now support autodetection.

- Display does not shift anymore.
- The watchdog timer is not deactivated by bootloader.
- EMACB NDIS driver now support cable attached and detached.

### 4.2.2 Improvements

- HMatrix can be configured using simple structures in order to fit specific needs.
- New driver used to wake up the board when it is in suspend mode with keypad buttons.

## 4.3 V 1.0.0

### 4.3.1 Issues fixed

- Removed MasterClock clipping. User can now set any value.

### 4.3.2 Improvements

- New PLL management with customizable tolerance for output frequency value.
- Added KITL on serial feature.
- NandFlash driver reorganized, using common and processor specific parts.
- Added generic Bootloader.