CRITICAL LINK MITYARM-335X BSP ADAPTATION

WINDOWS EMBEDDED COMPACT 2013

RELEASE NOTES

TABLE OF CONTENTS

COMPANION DOCUMENTS

- CRITICALLINK_MITYARM335X_BSP_UG_V1.0.0.pdf

REFERENCES

These documents were used as a reference in creation of this documentation.

- Project Scope of Work (SOW)
- AM335x Starter Kit WEC2013 BSP V2.00 Release Notes

CHAPTER 1: RELEASE CONTENTS

These are release notes for the BSP adaptation for the Critical Link MityARM-335x Development Kit hardware.

This document, its companion documents, and the BSP source/binaries are located in the zip archive: **CRITICALLINK_AM335X_MITYARM_WEC2013_V1_1_0.zip**

1.1: RELEASE BINARIES

The following binaries are packaged in the release:

- Binary Test Images:
  - \Images \MLO
  - \Images \EBOOTSD.nb0
  - \Images \NK.bin

1.2: RELEASE SOURCE

- Source Code
  - \Sources\OSDesigns\AM335X_MITYARM_WEC2013
  - \Sources\PLATFORM\AM335X_MITYARM
  - \Sources\PLATFORM\COMMON\SRC\SOC\COMMON_TI_V1

CHAPTER 2: CHANGELOG

Version	Component	Description
1.1.0	Ethernet Miniport	Support for the Vitesse VSC8601 PHY was added to the CPSW3G Miniport driver.
1.1.0	Touch	Support for the 4 wire touch screen was added.
1.1.0	LCD	Support for the RGB16 TFT panel (NL10276BC13) was added.
1.1.0	Bootloader	A splash screen bitmap was added to the bootloader.

CHAPTER 3: SYSTEM REQUIREMENTS

3.1: WINDOWS EMBEDDED COMPACT 2013

To create a Windows Embedded Compact 2013 development environment for this BSP requires the following software:

- Visual Studio 2012 Professional Edition
- Windows Embedded Compact 2013 RTM Drop

3.2: HARDWARE USED

- Critical Link MityARM-335x Development Board
- Critical Link LCD Expansion Board
- HDMI to DVI display cable
- DVI-D monitor
- Mouse
- Keyboard

CHAPTER 4: BSP SUPPORTED FEATURES

- XLDR Loader
    - The Xloader is a small first stage bootloader (MLO file). It is used to initialize memory and enough of the peripheral devices to access and load the second stage loader (Eboot) into the main memory.
    - Boot from SD card supported. Nandflash XLDR is not supported.
- EBOOT Loader
    - The Eboot loader (EBOOTSD.nb0 file) performs low-level hardware initialization. Ethernet download and SD card download of Windows Embedded Compact 2013 runtime image are supported. At this time, no support of download via USB RNDIS is provided.
- Ethernet KITL
    - KITL is used to download and debug an image on the MityARM-335x. This BSP provides full support for KITL on the GIGETH1 port only.
- Ethernet NDIS/Miniport driver
    - The Miniport driver allows a single network adapter to be initialized using the AM335x CPSW3G MAC controller.
- Display driver
    - The display driver provides support for the TI PanelBus panel display via the HDMI connection.
    - The display driver provides support for the TFT RGB16 display (NL10276BC13-01) connected on the LCD interface.
- Touch driver

- o The touch driver provides support for 4 wire touchscreens on the TSCADC controller of the AM335x SoC.
- GPIO driver
  - o The GPIO driver allows manipulating any GPIO pin from user space, including setting pin directions and reading/writing.
- USB Host driver
  - o Full support for USB host controller 1.
- USB Client driver
  - o Full support for USB function driver on USB controller 0. The default function driver is set to the Mass Storage Class.
- SD Host Controller driver
  - o The SD Host Controller driver provides support for both microSD and microSDHC and standard SD cards on the MityARM-335x SD card port.
- UART driver
  - o The UART driver provides support for writing and reading on the serial line using UART3 and UART4 controllers. The debug serial line can optionally be disabled and used as an instance of the stream driver on the UART0 controller.
- SPI driver
  - o The SPI driver allows control of the SPI bus, on which any SPI-complaint device can be connected.
- I2C driver
  - o The I2C driver provides support for controlling the I2C bus, reading and writing on-board devices (such as the TI PanelBus), or on any I2C-compliant device connected to the I2C bus.
- CAN driver
  - o The CAN driver provides support for controlling both of the AM335X SoC's DCAN controllers.

CHAPTER 5: KNOWN ISSUES

The following are known issues sorted by category. The following categories are divided into:

- BSP – Defects related to the BSP for WEC2013
- HW – Defects or limitations related to the MityARM-335x board
- PB – Defects related to Windows Embedded Compact 2013 Platform Builder
- LIM – Known limitation of the current BSP

Category	Component	Description	Workaround/Notes
LIM	Audio Codec	The audio codec is not supported.	The existing audio codec driver is not compatible with the audio codec used on the MityARM-335x. Therefore, the BSP does not support audio.
LIM	NANDFlash	The NANDFlash is not	The NANDFlash driver is not

Category	Component	Description	Workaround/Notes
		supported.	compatible with the NANDFlash chip used on the MityARM-335x hardware. Therefore the BSP does not support NANDFlash access in the bootloader or OS.

CHAPTER 6: TESTING

The following components and features of the BSP have been verified:

Element	Test
Serial Debug	Verify that the serial debug port on the MityARM335x works properly at a baud rate of 115200. **Pass**
Bootloader (Boot from SD)	Verify that the board can properly boot from the SD card slot and load and boot the OS image from SD card. **Pass**
Bootloader (Ethernet download)	Verify that the bootloader can establish an Ethernet connection and can download an OS image to the device from Platform Builder. **Pass**
Ethernet KITL debug	Verify that the OS image can establish a KITL debug connection across Ethernet and hit breakpoints. **Pass**
Ethernet – Miniport Adapter	Verify that the CPSW3G2 miniport adapter is initialized, that it receives an address from the DHCP server, and that it is possible to ping devices on the network. **Pass**
Watchdog	Verify that the watchdog will reset the system if the kernel freezes (this option is disabled by default). **Pass**
Display – HDMI	Verify that the HDMI connection on the MityARM335x works by connecting it to a DVI/HDMI monitor and booting the OS. **Pass**
Display – LCD	Verify that the LCD panel is initialized in the bootloader and displays the boot splash logo. Verify that the OS display driver properly initialized the LCD panel and displays the shell. **Pass**
I2C	There is no device that uses the I2C proxy driver to verify functionality of this driver. The I2C controller hardware is verified to work because the TI PanelBus uses I2C and display output works. No hardware pads to probe to verify bus communication.
SPI	The SPI bus is not connected to any devices that can be tested to verify the functionality of the SPI bus. However, the SPI0 bus communication can be validated by using the J401 header on pins 29, 30, 31, 32. **Verified SPI clock and MOSI lines with oscilloscope**
UART	Verify that serial communication read/write is possible on UART0(COM1) when enabled. The testSerial.exe can be used. **Pass** Verify that serial output works on UART3 (COM4) and UART4(COM5) by probing the J506 and J505 headers. **Pass**
Touch	Verify that the touch calibration can properly select coordinates and

Element	Test
	that it is possible to interact with the shell. **Pass**
USB Host	Verify that you can plug a keyboard, mouse, and USB drive into the host port on USB1 controller. **Pass**
USB Client	Verify that you can plug in a USB mini cable and access the device's storage on your host computer. **Pass**
SDHC	Verify that you can read and write to the mounted SD storage on the device. **Pass**
Audio Codec	No test. BSP does not support audio.
NANDFlash	No test. BSP does not support NANDFlash access in the OS or the bootloader.
Memory	There is no built in memory test in the BSP, but the memory available can be discovered by running meminfo.exe. **Verified**
CAN	The CAN driver tux test was used to validate the functionality of this driver. This test can be ran using the CTK harness with the following command: Tux –o –d TUX_CAN.dll The test binaries and dependencies have been included in the release in the *test* folder. **All test cases passed.**

CHAPTER 7: CONTACT

Office	Phone	Address	Email
U.S.A	+1 (425) 749-4335 Fax: +1 (425) 818-1911	3150 Richards Road, Suite 210 Bellevue, WA 98005	sales.amer@adeneo-embedded.us
France	+33 (0)4 26 49 23 28 Fax: +33(0)4 72 18 08 41	2 chemin du Ruisseau 69130 Ecully France	sales.emea@adeneo-embedded.com
Germany	+49 (6031) 693 707 – 0 Fax: +49 (6031) 693 707 29	Pfingstweide 51 61169 Friedberg Deutschland	sales.dach@adeneo-embedded.com