emtrion
embedded systems

Linux mainline support for DIMM-AM335x

Rev	Date/Signature	Changes
01	06.05.2014/bi	Initial release

1 Disclaimer

This package shall support you in using the mainline Linux kernel together with our DIMM-AM335x device. **This technical reference is intended for experienced Linux developers**. So building and installing a kernel should not be a problem for you.

2 Contents

Filename	Description
DIMM-AM335x-Mainline-Support-vxxxen.pdf	This document
am335x-dimm.dts	The device tree source code for DIMM-AM335x
am335x_mainline_defconfig	Kernel build configuration
uboot_script	Updated U-Boot script which contains startup scripts using the mainline kernel + device tree blob

3 Building the kernel

The supplied device tree and defconfig were tested against Kernel release **3.14.y**. For the list of supported interfaces please have a look at the device tree source. If you have setup a cross toolchain and downloaded the kernel from kernel.org, you can build kernel and devicetree as follows:

```
hico@emlinux:~/linux-stable-mainline$ make ARCH=arm
am335x_mainline_defconfig
hico@emlinux:~/linux-stable-mainline$ make ARCH=arm
CROSS_COMPILE=arm-poky-linux-gnueabi- LOADADDR=0x80008000 uImage
modules
hico@emlinux:~/linux-stable-mainline$ make ARCH=arm
CROSS_COMPILE=arm-poky-linux-gnueabi- am335x-dimm.dtb
```

4 Modify the RootFS

After you build everything successfully you can install the files in the Root File System. If you use our emLinux/Yocto RootFS all files should be copied to **/boot**. Of course, the kernel modules should be installed via “make modules_install”.

Also replace **/boot/uboot_script** with the new **uboot_script** from this package.

5 Modify U-Boot environment

We add following 2 scripts to the U-Boot environment to be able to boot the mainline kernel.

```
U-Boot# setenv net_boot_ml 'run configure-ip && if test -n
"${tftproot}"; then tftp ${tftproot}/boot/uboot_script; else run
test-nfsroot && nfs ${nfsroot}/boot/uboot_script; fi && env import
-t ${loadaddr} ${filesize} && if test -n
"${uboot_script_net_boot_ml}"; then run uboot_script_net_boot_ml;
else echo Bootscript does not define uboot_script_net_boot_ml,
aborting. ; fi'

U-Boot# setenv flash_boot_ml 'setenv result 0; while test "0" -eq
${result}; do mmc dev 0 && mmc rescan && if fatinfo mmc 0:1 ; then
fatload mmc 0:1 ${loadaddr} /boot/uboot_script ; else ext2load mmc
0:1 ${loadaddr} /boot/uboot_script; fi && setenv result 1; done;
env import -t ${loadaddr} ${filesize} && if test -n
"${uboot_script_flash_boot_ml}" ; then run
uboot_script_flash_boot_ml ; else echo Bootscript does not define
uboot_script_flash_boot_ml, aborting. ; fi'
```

6 Yocto support

The Yocto layers available on our FTP server have been extended with a separate machine configuration “dimm-am335x-mainline” which enables you to build a RootFS which directly contains the mentioned kernel and device tree.