AT91SAM9G45-EVK
Android User Manual

Revision History

Rev	Date	Description
1.0	2011-05-27	Initial version

Catalogue

Chapter 1: How to install & compile Linux source

1.1 First build the working directory

mkdir /home/Linux
cd /home/Linux

Copy 05-Linux_Source and 07-Anriod_Source to the package of /home/Linux.
Please do not modify the package name.

1.2 Install the cross compiler tools

tar xvjf 05-Linux_Source/Official_Code/CrossTool/arm-2007q1-10-arm-none-linux-gnueabi.tar.bz2 –C /usr/local

1.3 Install and compile AT91Bootstrap

Install
unzip 05-Linux_Source/Official_Code/AT91Bootstrap/Bootstrap-v1.14.zip

Compile
cd Bootstrap-v1.14/board/at91sam9g45ekes/nandflash/
make clean
make CROSS_COMPILE=/usr/local/arm-2007q1/bin/arm-none-linux-gnueabi-
ls

Now you can see the file “nandflash_at91sam9g45ekes.bin”, we have successfully installed & compiled AT91Bootstrap.

1.4 Install and compile U-boot

Install
tar xvjf 05-Linux_Source/Official_Code/u-boot/u-boot-1.3.4.tar.bz2 -C ./
cd u-boot-1.3.4/

Compile

make distclean
make clean
make at91sam9g45ekes_nandflash_config
make CROSS_COMPILE=/usr/local/arm-2007q1/bin/arm-none-linux-gnueabi-
ls

Now you can see the file “u-boot.bin”, we have successfully installed & compiled U-boot.

1.5 Install and compile Linux source code

Install

tar xvjf 05-Linux_Source/Official_Code/linux_kernel_2.6.30/linux-2.6.30.tar.bz2 -C ./
cd linux-2.6.30/
patch -p1 < ../05-Linux_Source/Official_Code/linux_kernel_2.6.30/2.6.30-at91.patch.gz
tar xvzf ../05-Linux_Source/Official_Code/linux_kernel_2.6.30/2.6.30-at91-exp.4.tar.gz -C ./
for p in 2.6.30-at91-exp.4/*; do patch -p1 < $p; done
patch -p1 < ../07-Anriod_Source/patch/Kernel_patch/andriod_all_patches.diff

Configure the file (according to the LCD size)

LCD type	Configure file
LCD_4.3	AT91SAM9G45-EVK_4.3LCD_Android
LCD_7.0	AT91SAM9G45-EVK_7.0_LCD_Android
LCD_10.2	AT91SAM9G45-EVK_10.2_LCD_Android

cp arch/arm/configs/AT91SAM9G45-EVK_4.3LCD_Android .config

Compile

# make ARCH=arm menuconfig
# make uImage ARCH=arm
CROSS_COMPILE=/usr/local/arm-2007q1/bin/arm-none-linux-gnueabi-

Chapter 2: How to install Android compiler environment

2.1 First install the environment

See: http://source.android.com/source/initializing.html
Notice: Select JDK version 1.6

2.2 Download the Android source code

See: http://source.android.com/source/downloading.html
Note: we have offered the andriod-2.3.1_r1 version patches，so use the command as follows:
$ repo init -u git://android.git.kernel.org/platform/manifest.git -b Android-2.3.1_r1

2.3 Installing the patch codes

Build a working directory package in the section 2.2,we assume that the package name is Android-2.3.1_r1

- Copy 07-Android/patch/Android_Patch/atmel.tar.bz2 to /Android-2.3.1_r1/device, and execute the command as follows:
  # cd Android-2.3.1_r1/device
  # tar xvjf atmel.tar.bz2
- Copy 07-Android/patch/Generate_jffs2_image/Generate_jffs2_image.tar.bz2 to /Android-2.3.1_r1

Chapter 3: How to compile Android system

3.1 Configure and compile Android

cd Android-2.3.1_r1(Notice：we are using the same package name as used in section 2.2)
make clean
source build/envsetup.sh
partner_setup sam9g45
choosecombo Device release sam9g45 eng
make

3.2 Making jffs2 file

#cd Android-2.3.1_r1
tar xvjf Generate_jffs2_image.tar.bz2
cd Generate_jffs2_image
./jffs2.sh -b sam9g45 –l 4.3 //This assign the LCD size

Chapter 4: Download Linux images to ATMEL SAM9G45 ARM9 Board

4.1 Install download tools

Please refer to the 03-tools\SAM-BA\sam-ba install

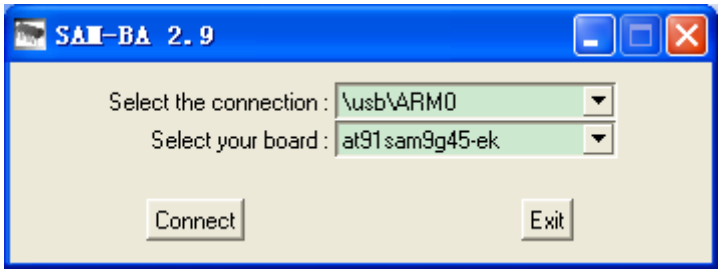
4.2 Connect ATMEL SAM9G45 ARM9 Board with SAM-BA

4.2.1 Install AT91SAM9G45-EVK's USB driver

Please refer to 03-tools\SAM-BA\the board driver install

4.2.2 Connect the ATMEL AT91SAM9G45-EVK ARM9 Board

First, you should open the JP2 jumper wire; then double click the SAM-BA v2.9 icon in the PC's desktop; then it will display the dialog:



Click 'Connect' to connect the ATMEL AT91SAM9G45-EVK ARM9 Board with Scand close the JP2 jumper wire.

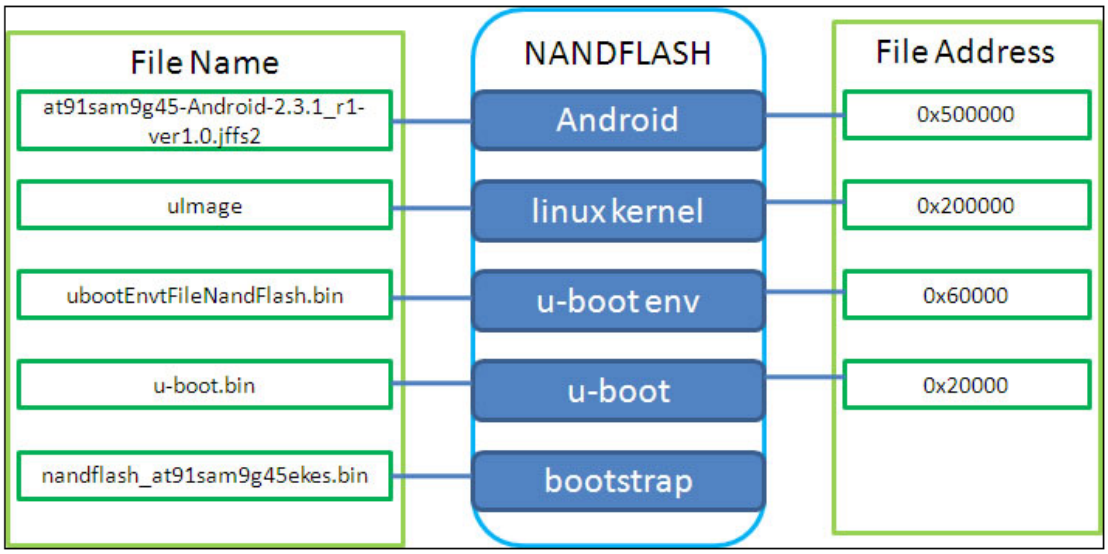
4.3 Download Linux images

4.3.1 Auto download

After following step 2.1 and step 2.2, open the 02-Images\Linux_images\ AT91SAM9G45-EVK _Linux_4.3_LCD, click on download.bat file. By this SAM-BA will start downloading the Linux images to the board automatically (please be patient it may take longer then 3min.). After image download, connect the development board with the PC (Hyper Terminal) using serial port, then reset the board, you will see the Linux startup information in the HyperTerminal.

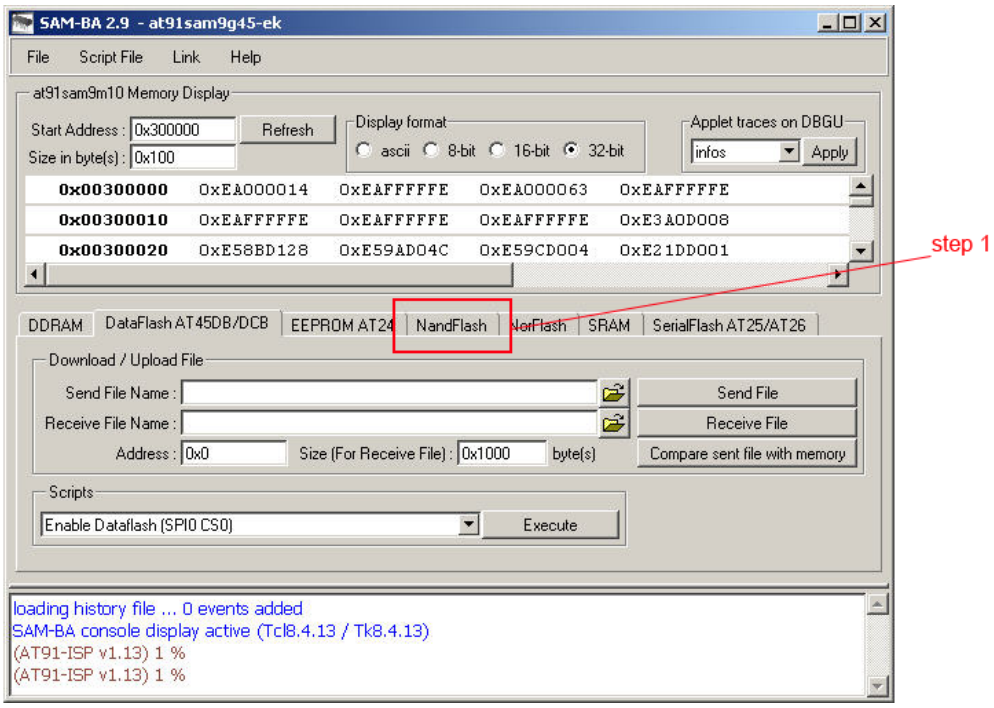
4.3.2 Manual download

- Under below shows the NandFlash demo Memory map

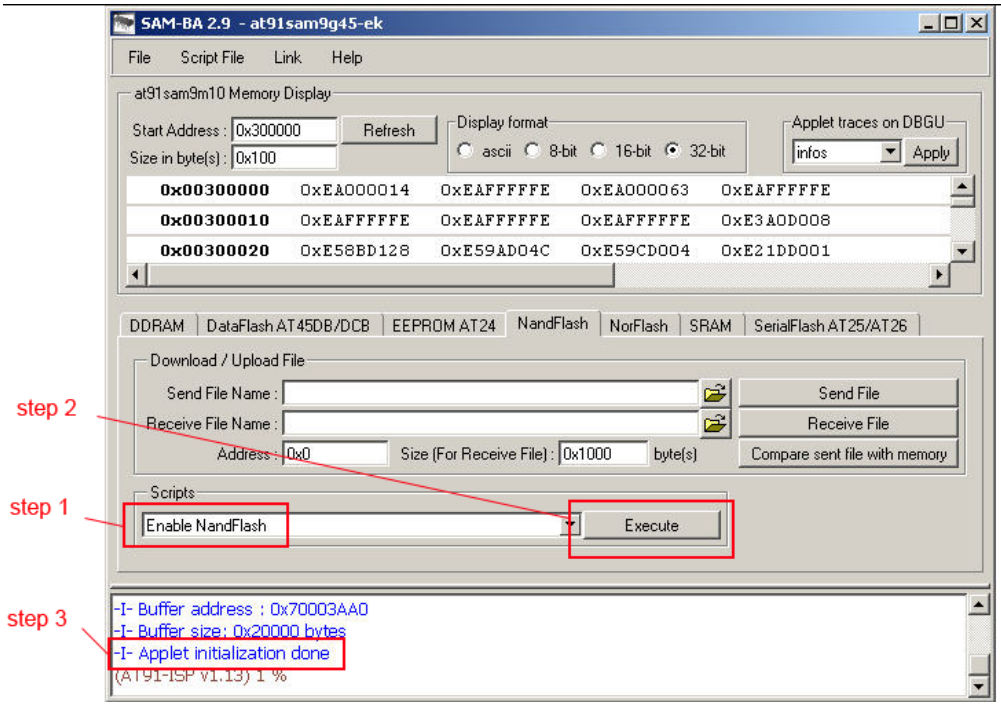


➢ Use SAM-BA to download Linux image

✓ After following step2.1 and step2.2, you can get SAM-BA compile console as show below，and choose “NandFlash”.



✓ From this console select NandFlash then execute the “enable NandFlash” script as shown below.



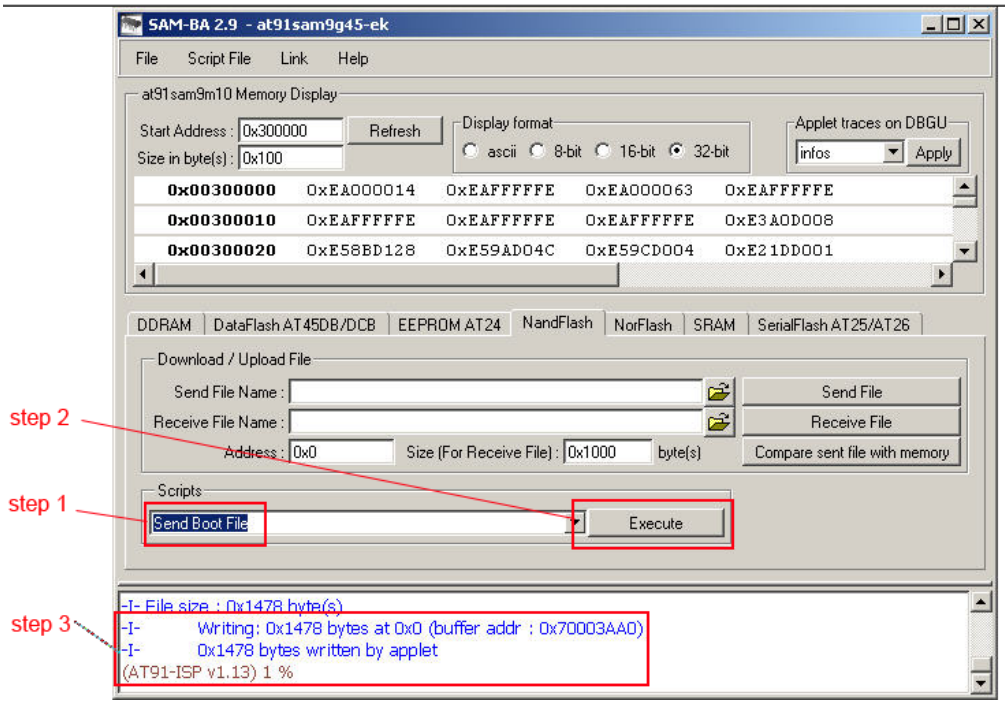
Note:

Step 1: Enable Nandflash;

Step 2: Execute;

Step 3: Successfully Enable NandFlash.

✓ Now follow the below steps to download nandflash_at91sam9g45ekes.bin



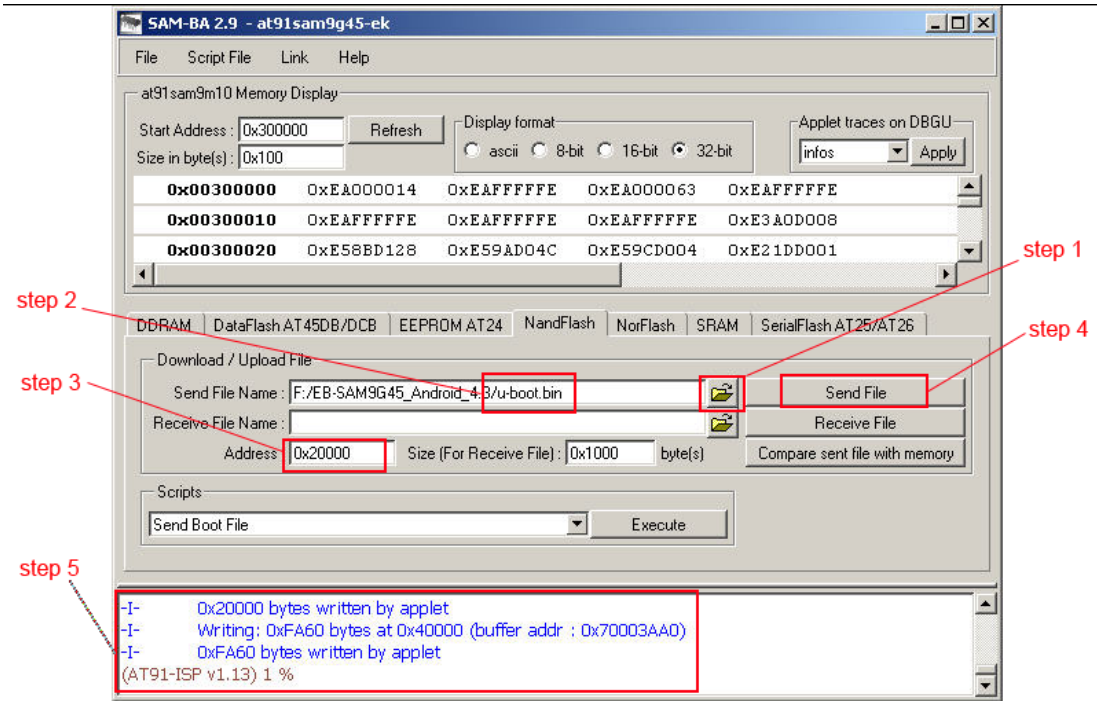
Note:

Step 1: choose “Send Boot File”;

Step 2: Execute, and you can pick up the file “nandflash_at91sam9g45ekes.bin”;

Step 3:Download nandflash_at91sam9g45ekes.bin successfully.

✓ Follow the below steps to download u-boot.bin



Note:

Step 1: Open files;

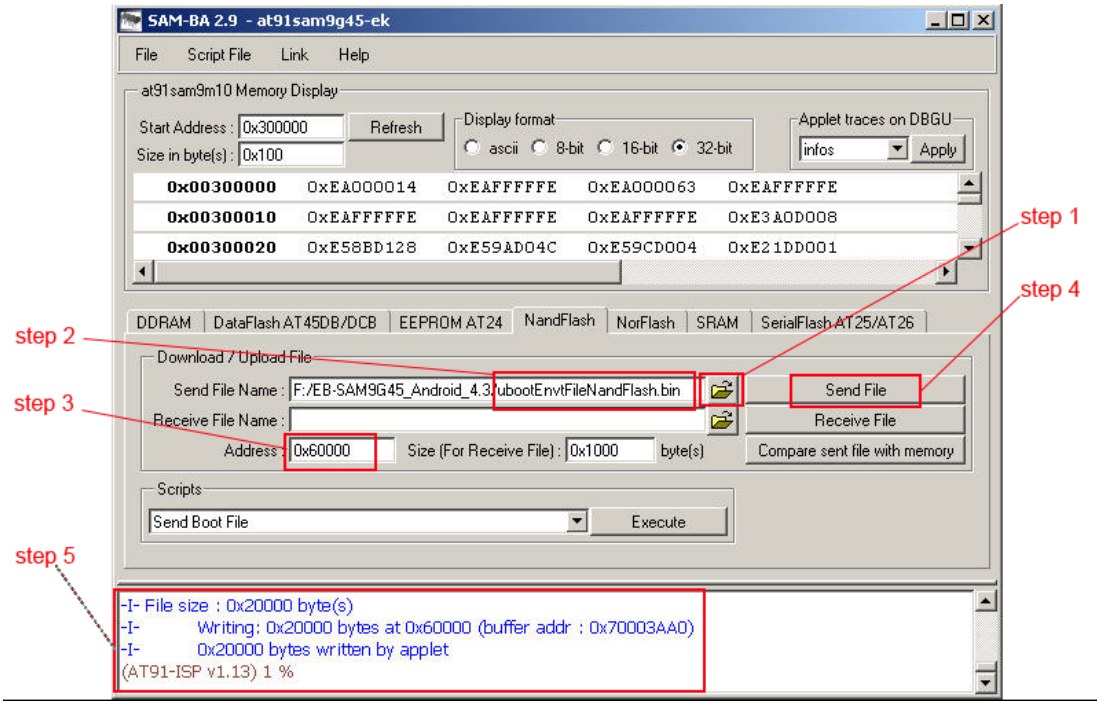
Step 2: Pick up the file “u-boot.bin”;

Step 3: Add address 0x20000;

Step 4: Send File;

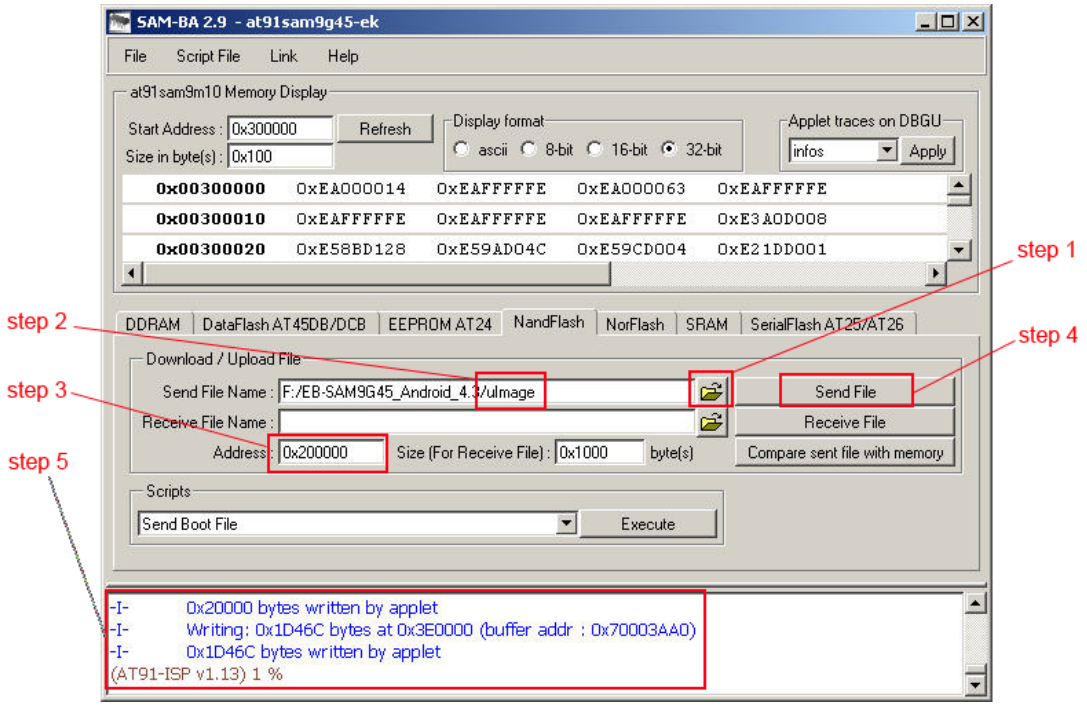
Step 5: Successfully download the file u-boot.bin

✓ Follow the below steps to download ubootEnvtFileNandFlash.bin Address: 0x60000.



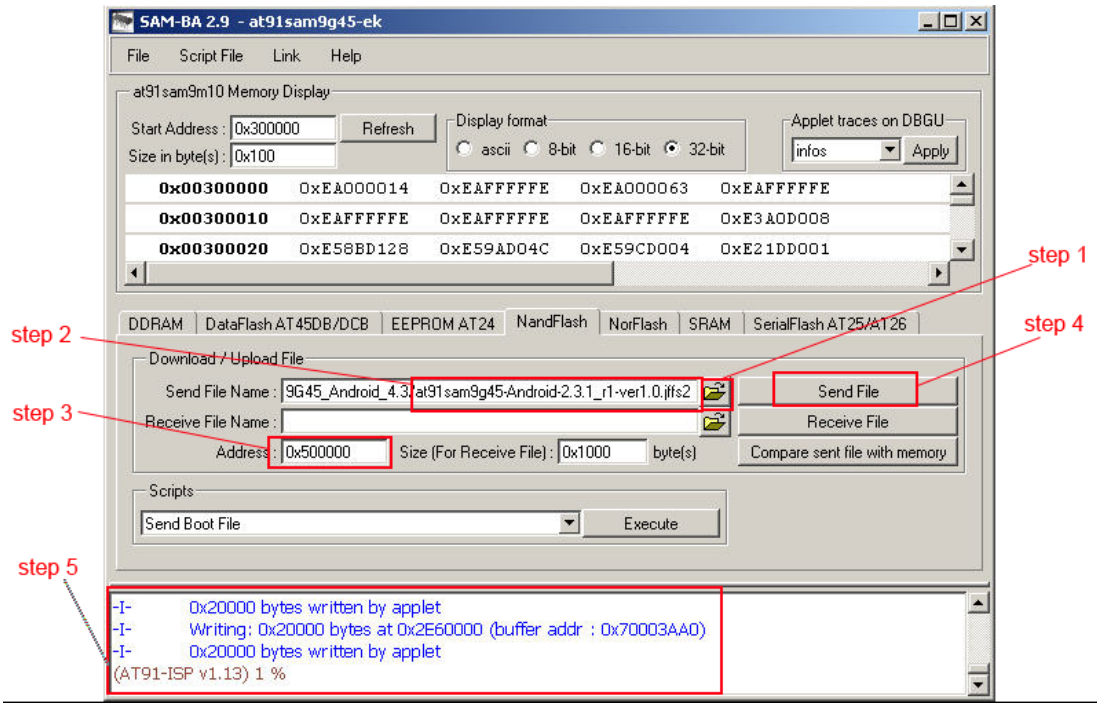
✓ Follow the below steps to download uImage

Address: 0x200000.



✓ Follow the below steps to download at91sam9g45-Android-2.3.1_r1-ver1.0.jffs2

Address: 0x500000.



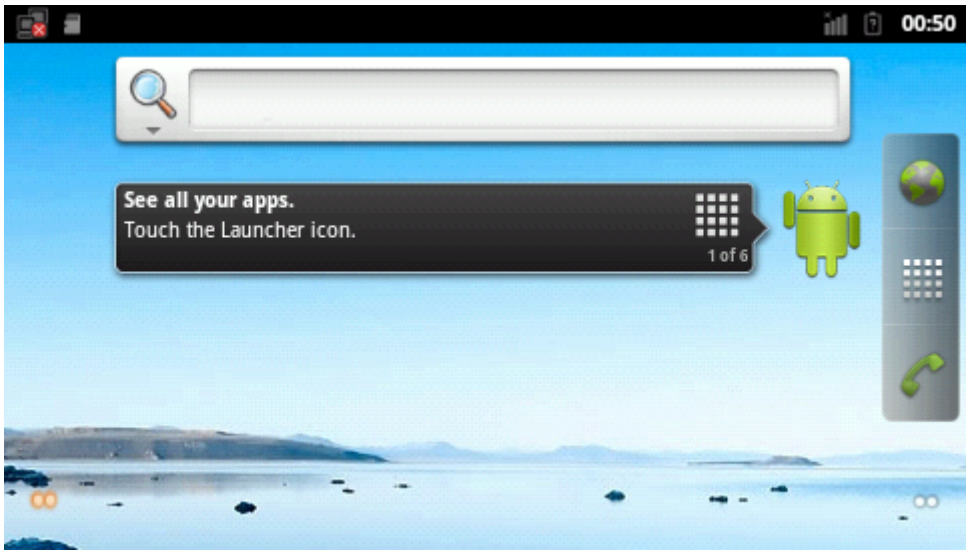
Chapter 5: How to use the Android System

5.1 How to mount & use SD card

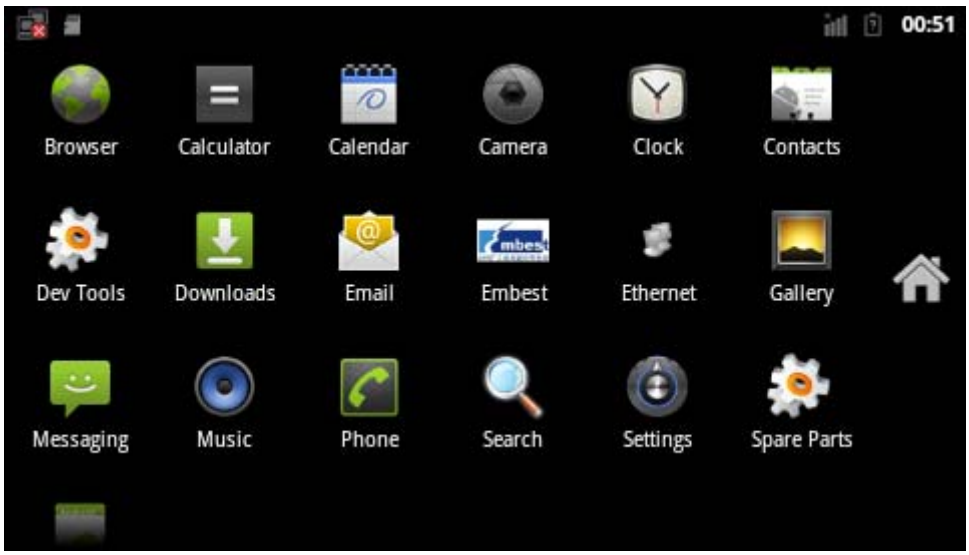
- First, insert the SD card into the SD slot.

- Once SD card inserted & detected you will see SD card message on top left side of your screen.

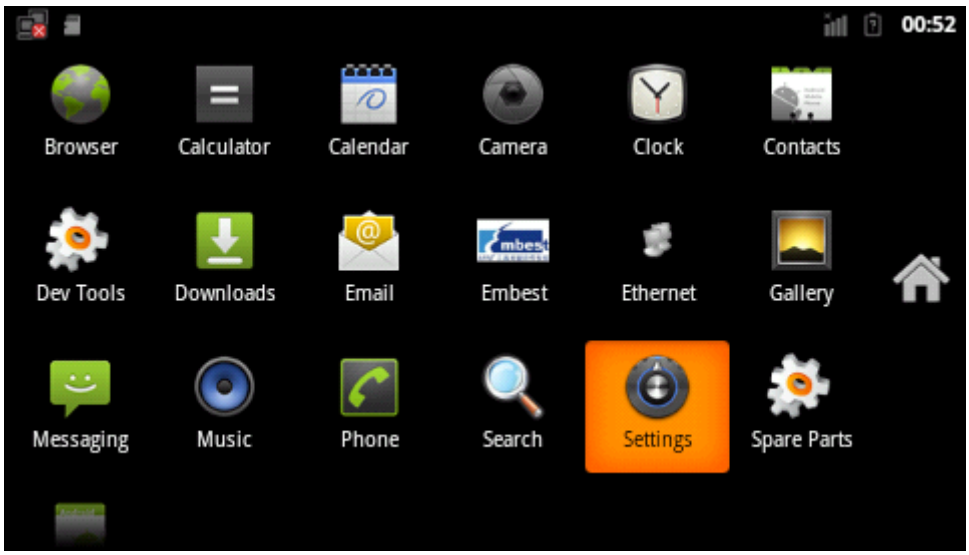
- To unlock the screen press the user1 key OR use the F1 key of usb keyboard (if connected).



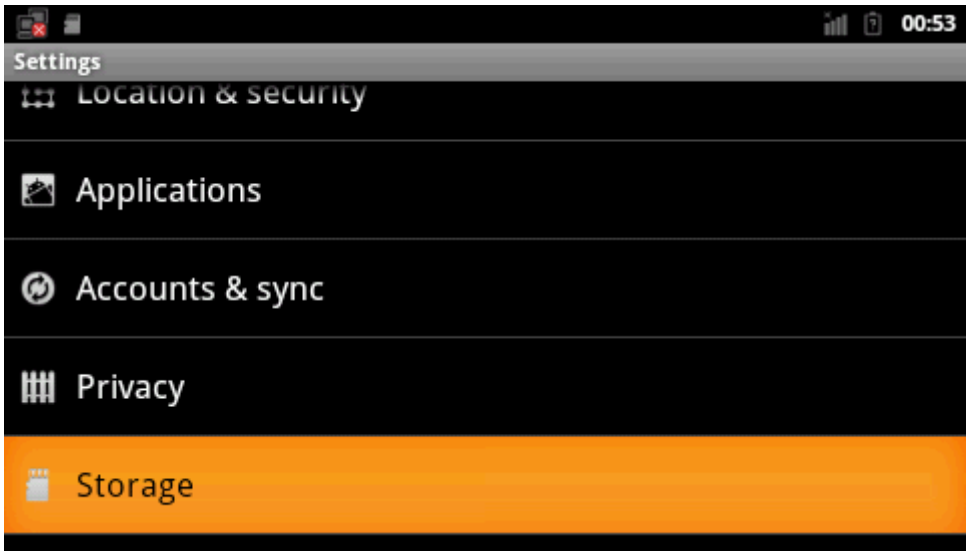
➢ Press applications  sign on the screen.



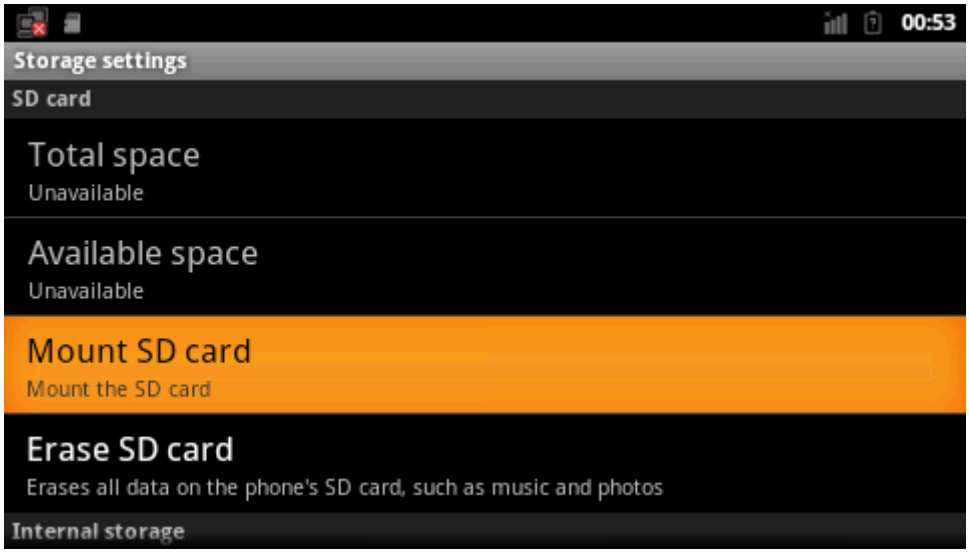
➢ Select “Settings” icon on the screen.



- Now select “Storage” option from the list.



- Under storage option select “mount SD card”.



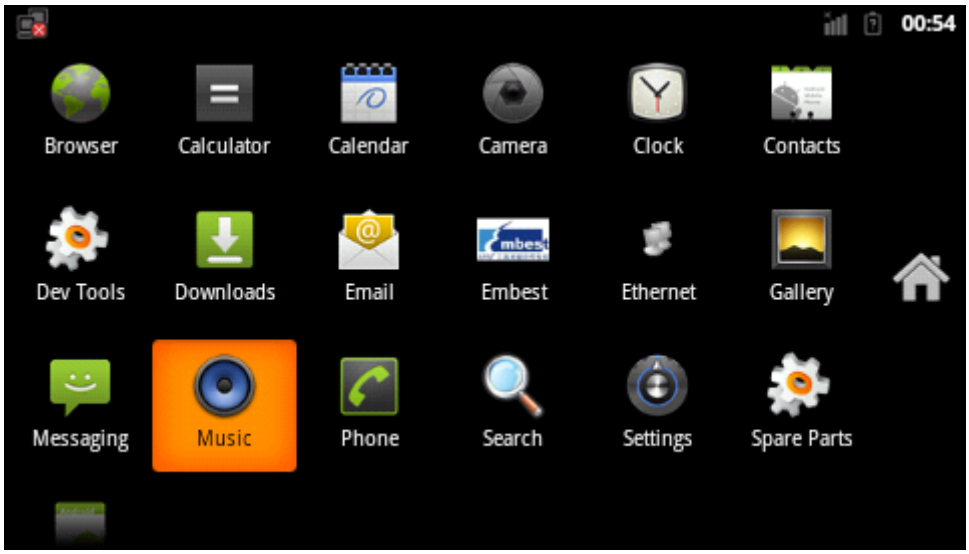
- Now you have mounted SD card successfully, you can use the SD card

5.2 Using USB keyboard

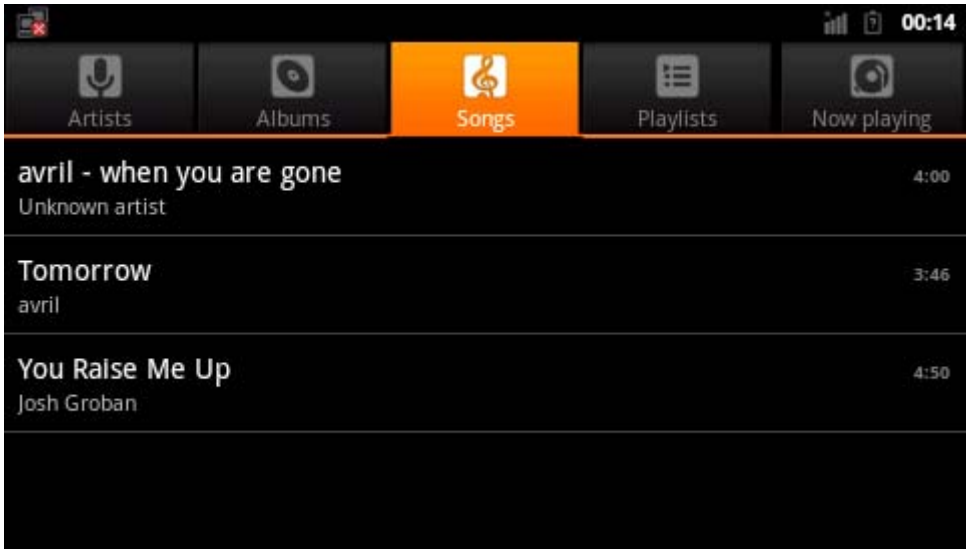
To use the USB keyboard simply insert to USB port of the keyboard to Host USB port of the board, after this you can use USB keyboard.

5.3 Testing Audio output

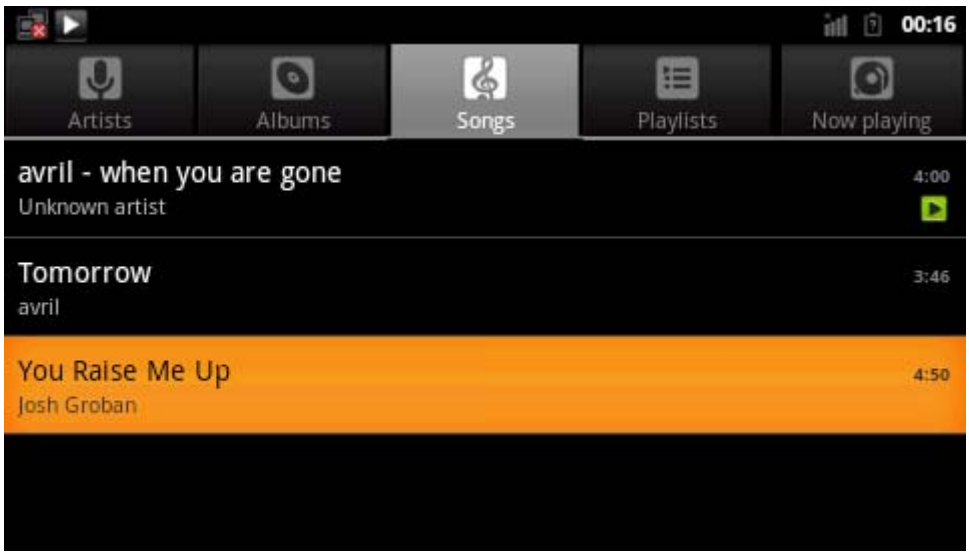
- First from the applications screen select “Music” icon.



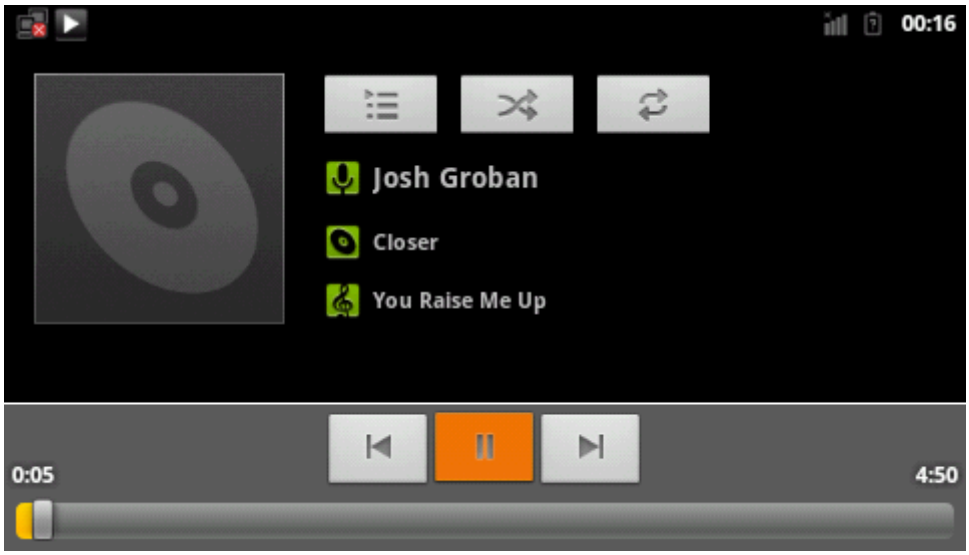
- Now you will see multiple tap son top, now select “Songs” tab where you will see a list of songs stored in the memory.



- Now you can select any song from the list to play.



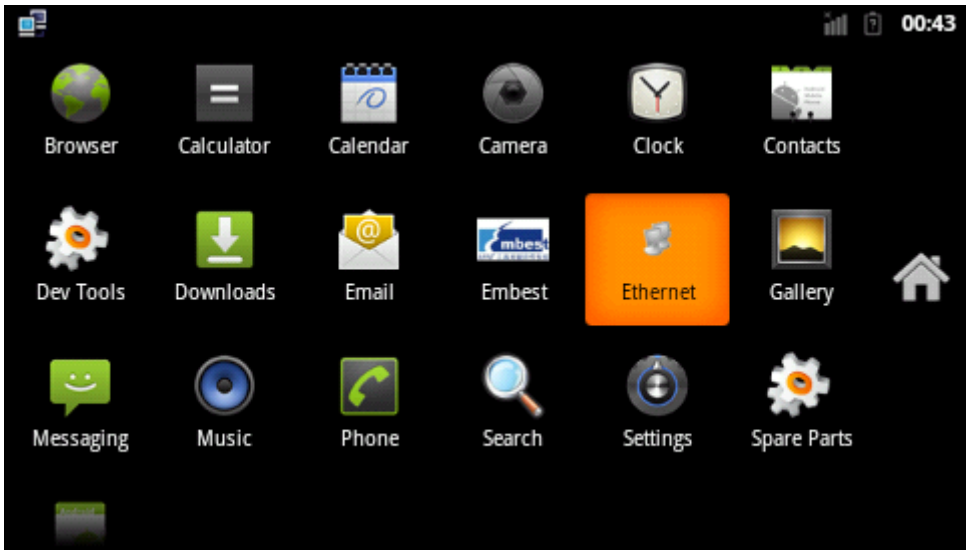
- Once the song started playing you will see player interface as below.



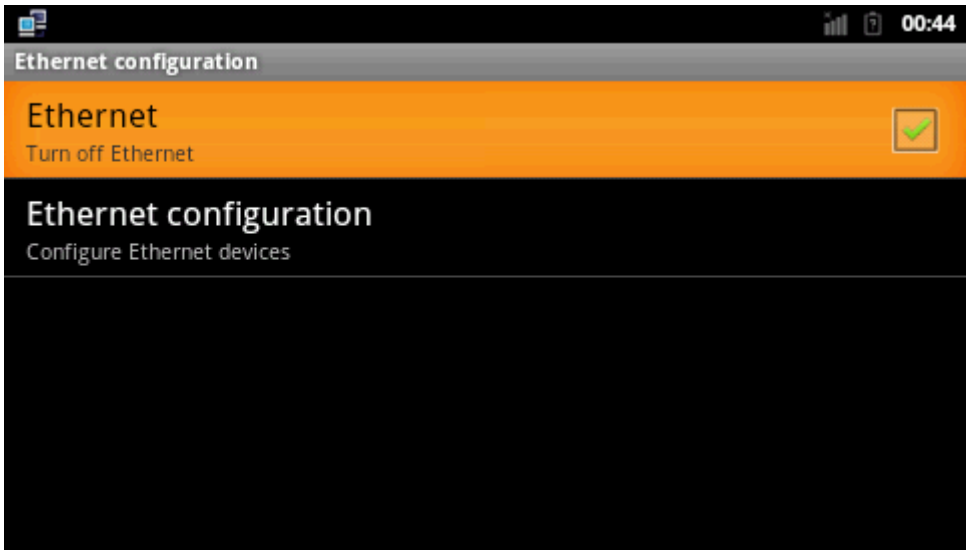
5.4 Testing Ethernet connection

Note：Before testing Ethernet connection, please make sure you have connected the board with the router using network cable.

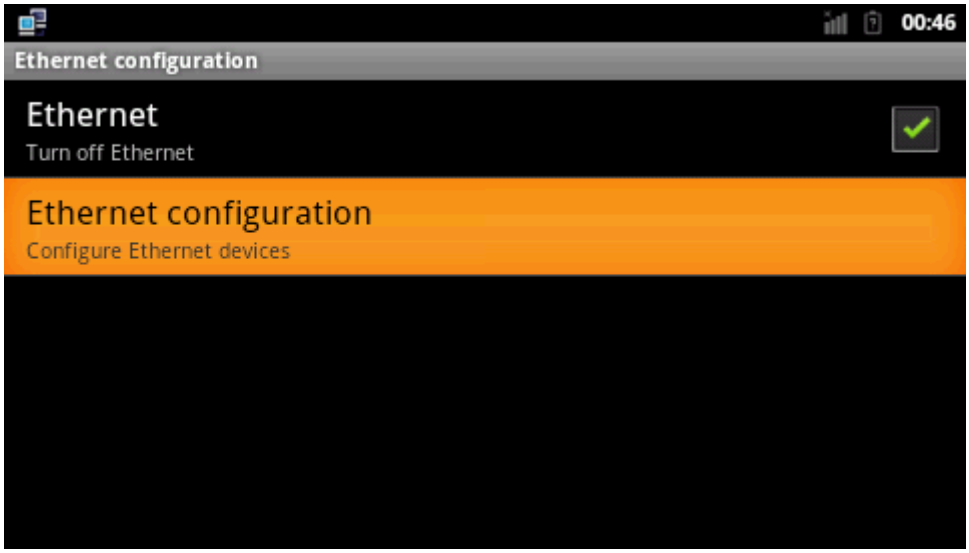
- Now select the “Ethernet” icon from application screen.



- This will open Ethernet window where you will see option to “Turn ON”, “Turn OFF” and configure Ethernet.

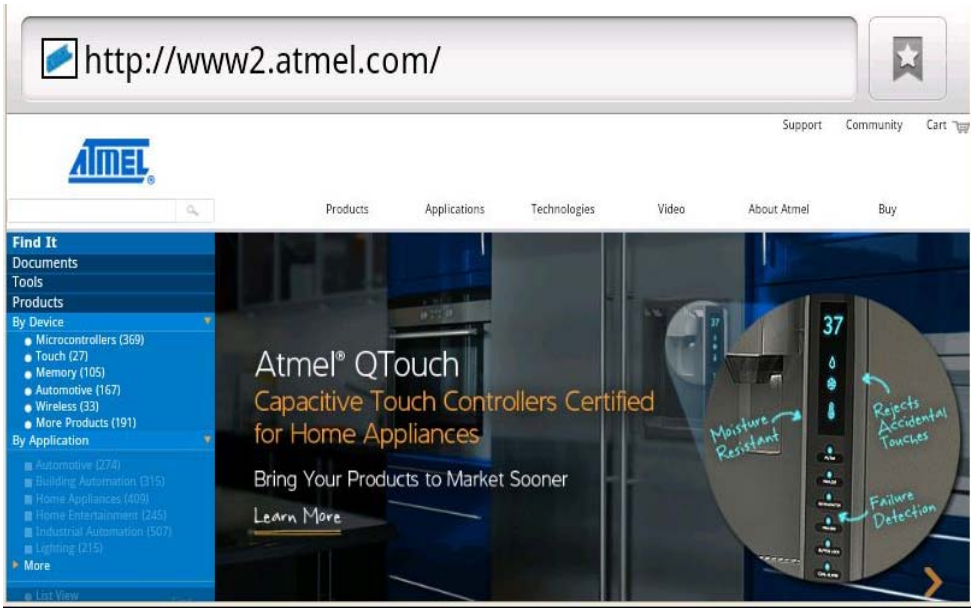


- Now select the “Ethernet Configuration” from the menu.



Under Ethernet configuration you need to provide IP address, Mask, DNS server and default gate.

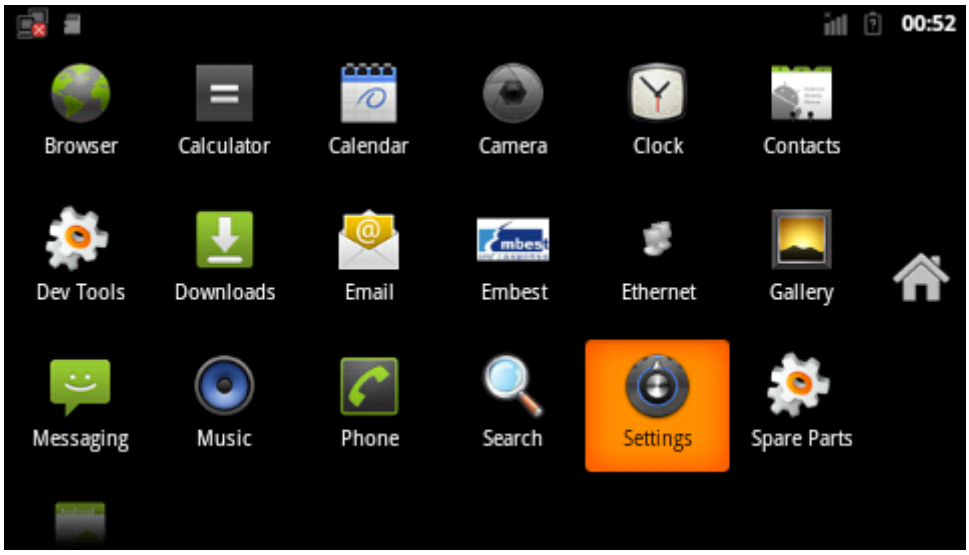
- After configuring Ethernet successfully， open the browser to test and enter: www2.atmel.com



5.5 Testing Wi-Fi connection

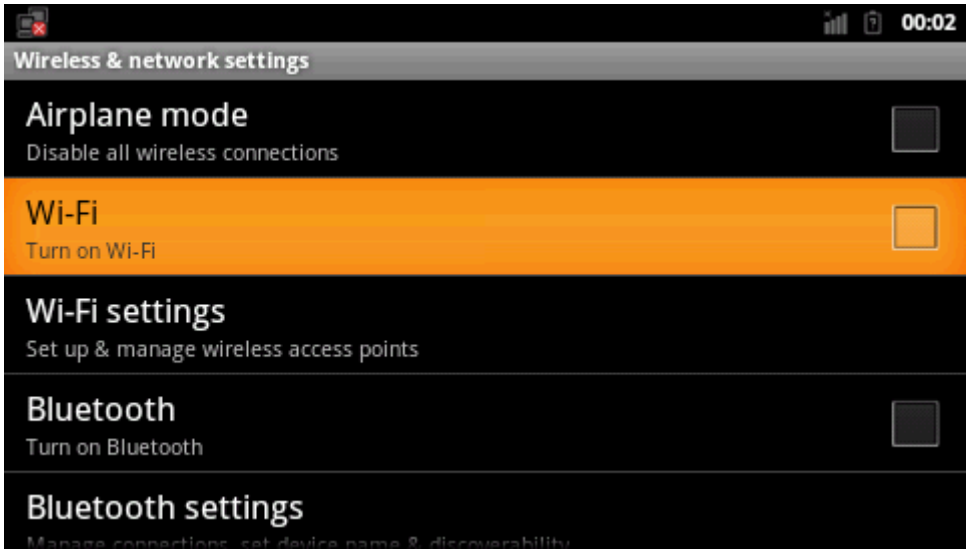
Note：Before testing Wi-Fi connection please make sure you have connected the Wi-Fi adapter（only support rt2070 and rt3070) to the USB Host interface of the board.

- Now select the “Settings” icon from the applications screen.

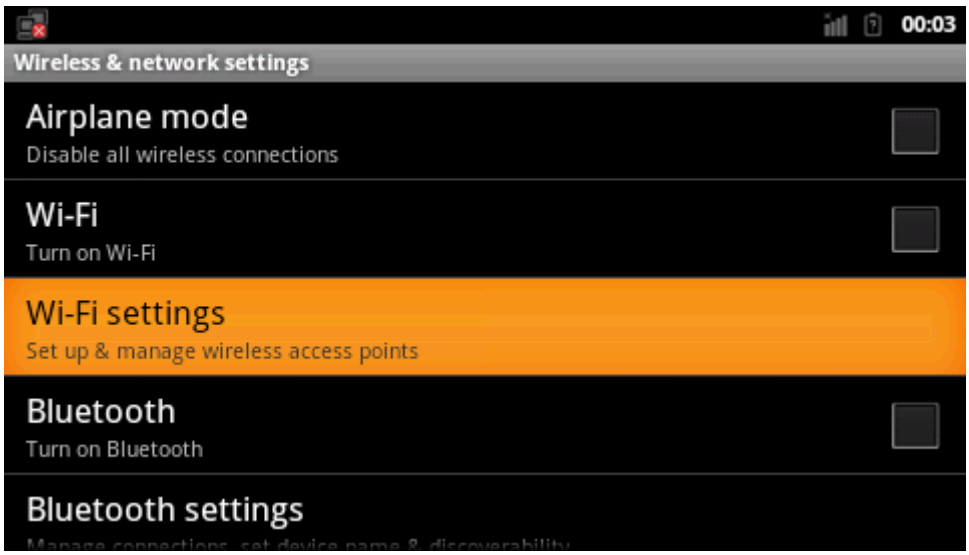


- From the list select “Wireless & Networks”.

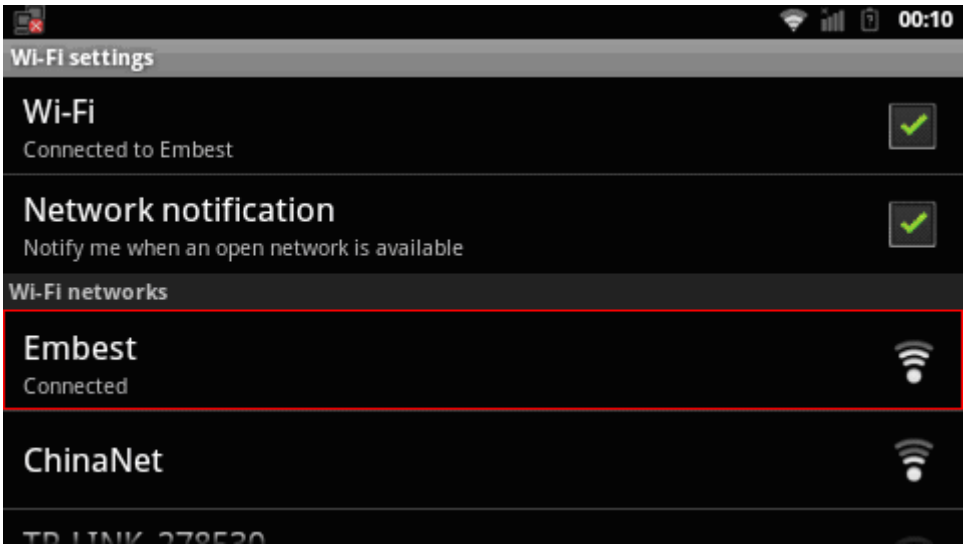
- Now turn on the Wi-Fi by selecting “Turn ON Wi-Fi”



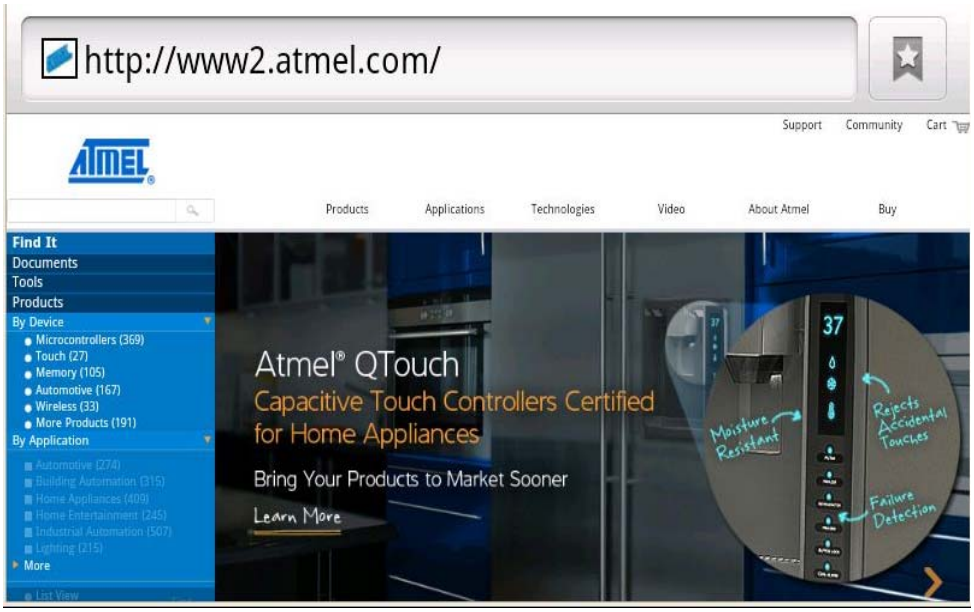
- Now we need to configure the Wi-Fi from the Wi-Fi settings.



- From settings select the appropriate wireless connection, here we have selected the Embest wireless network.



- After configuring Wi-Fi, open the browser and input:www2.atmel.com



If it opens the webpage, then Wi-Fi is working and tests successfully.

Appendix A: After-sales Service

Customer Service:

Please contact Premier Farnell local sales and customer services staffs for the help.
Website: http://www.farnell.com/

Technical Support:

Please contact Premier Farnell local technical support team for any technical issues through the telephone, live chat & mail, or post your questions on the below micro site, we will reply to you as soon as possible.

Centralized technical support mail box: knode_tech@element14.com

Community: http://www.element14.com/community/community/knode/dev_platforms_kits

Please visit the below micro site to download the latest documents and resources code:
http://www.element14.com/community/community/new_technology/at91sam9g45-evk

Notes:

This board was designed by element14's design partner- Embest, you can contact them to get the technical support as well.

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