



MBS-SAM9G15/9G35 /9X35 Android User Manual V1.0

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Revision History

Rev	Date	Description	Ву
1.0	2012-4-30	Initial version	Heyong,Huangyin

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Description

This document is divided into four parts: the first part describes how to start the Linux image quickly; the second part allows you to experience the Linux and describes the Linux system functional modules; the third part describes how to make Linux system package, including build the environment, cross-compilation tools and source code compilation, and then download the Linux system to the board; the fourth part is the list of the Linux software resources.

This document is prepared for the developers with experience of the Linux-like operating system (ubuntu, redhat, etc.) and embedded systems development.

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Chapter 1 Quick Start

1.1 Preparation

(1) Install SAM-BA(vision 2.11 or more, location: 04-tools)

Note: If SAM-BA 2.10 or less is installed, we should uninstall it before installation.(uninstall both SAM-BA software and board USB driver)

(2) Power on, connect the board(J10) and PC using micro USB cable.

(3) Switch off the SW-(1, 2) on the core board, and then reboot the board (Sequential cannot be reversed).

Driver will be prompted to install at the first time, the installation file is located:



(4) When the driver is installed, it should be like this in the device manager:



1.2 Download the Android image automatically

Open the Android package Android_4.3, as below:

```
    at91sam9x5. bat
    at91sam9x5. tcl
    at91sam9x5ek=nandflashboot=3.1. bin
    logfile.log
    system_ubifs=SAM9X5=ANDROID=2.3.5_r1. img
    uImage
    userdata_ubifs=SAM9X5=ANDROID=2.3.5_r1. img
```

Edit the file "at91sam9x5.bat" as below. Change the COMx to your AT91 USB to Serial Converter COM. Here we change it to COM8.



sam-ba.exe \USBserial\<mark>COM8</mark> at91sam9G15at91sam9g15ekes_test_demo.tcl > logfile

Switch on the SW-1, double click the download.bat (MS-DOS batch file, automatic download tool)

The Android image will be downloaded to the board automatically. It will take 2 or 3 minutes.



Chapter 2 Android Function Test

On MBS-SAM9X5 board: K3 maps to BACK; K4 maps to HOME; K5 maps to MENU; K6 maps to POWER

2.1 Input Text

In Android, if the current focus is on an input box, a soft keyboard will be shown. Then you can click the keyboard to input text.





2.2 Change settings

		• •			
Google					0
					6
					•
					8
					ATT
					-
	-				-
Ð		Q		Ó	00
Mess Add	Wallpaper (Con a	Search	Edit	Settings	MADWSettings
1 : . :					ill 📋 00
Settings					
🔋 Wireless	& networks				
WirelessCall setti	& networks ngs				
 Wireless Call setti 	& networks ngs				
 Wireless Call setti Sound 	& networks ngs				
 Wireless Call setti Sound Display 	& networks				
 Wireless Call setti Sound Display 	& networks				
 Wireless Call setti Sound Display Location 	& networks ngs & security				
 Wireless Call setti Sound Display Location Applicati 	& networks ngs & security ons				

In Home Page Screen, press MENU button. A menu pops up: Select the "Settings"

2.3 Ethernet configuration

In Settings, you can configure the network interface to use DHCP or Static IP





2.4 Play Music

In Home Page Screen, select Music icon. Then Music Screen will pop up











2.5 View Photos

In Home Page Screen, select Gallery icon. Then Gallery Screen will pop up if your inserted SD card has pictures.







2.6 Play Videos

Please take the following steps as a reference to play the video clips in your SD card. Note: It only supports 3gp and .mp4 files currently.











Chapter 3 System Compilation

3.1 Android System Principles

3.1.1 Mirror Package

at91sam9x5ek-nandflashboot-3.1.bin	Guidance program compiled by AT91Bootstrap				
u-boot.bin	Compiled by uboot source code from uboot start programs				
ulmage	Linux kernel file				
system_ubifs-SAM9X5-ANDROID-2.3.5_r 1.img	Android filesystem				
at91sam9x5ek_demo_linux_nandflash.tcl	Download record				
at91sam9x5ek_demo_linux_nandflash.ba t	Auto download tools				

3.1.2 Principles of System Operation

After power on, system starts from nandflash, due to the nature of hardware design:

- 1. First, at91sam9x5ek-nandflashboot-3.1.bin will be copied to SRAM; when it runs, it initializes the hardware, and copies uboot.bin to DDRAM;
- 2. Uboot.bin runs in DDRAM, and the copies ulmage to DDRAM;
- 3. Linux starts, and ulmage runs in DDRAM;
- 4. Android filesystem starts, the Android system runs.

3.2 File System Compilation

With the source code and patch, we can compile the Linux image package for MBS-SAM9X5.



3.2.1 Preparation

(1) Create a working directory

#mkdir /home/Linux

#cd /home/Linux

(2) Copy the 06-Linux_Source and 07-Android_Source to /home/Embest_SAM9X5. Don't change their names.

3.2.2 Install cross compiler tools

tar xvjf 06-Linux_Source/Official_Code/CrossTool/arm-2007q1-10-arm-none-linux-gnueabi.tar.bz2 –C
/usr/local

3.2.3 Get at91bootstrap by compiling the AT91Bootstrap source file

(1) Install

tar xjvf 07-Android_Source/Official_Code/AT91Bootstrap/Bootstrap-3.1.tar.bz2

(2) Compile

cd bootstrap-3.1

make mrproper && cp board/at91sam9x5ek/at91sam9x5nf_android_defconfig .config

make CROSS_COMPILE=/usr/local/arm-2007q1/bin/arm-none-linux-gnueabi-

cd binaries

You can see the at91sam9x5ek-nandflashboot-3.1.bin. It's AT91Bootstrap.

3.2.4 Compile Linux kernel source code to get u-Image file

Install

cd 06-Linux_Source/Official_Code/linux_kernel_2.6.39/

tar xvjf linux-2.6.39.tar.bz2

cp 2.6.39-at91-exp.tar.gz linux-2.6.39

cd linux-2.6.39/

tar xvzf 2.6.39-at91-exp.tar.gz

for p in 2.6.39-at91-exp/* ; do patch -p1 < \$p ;done

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cp 07-Android_Source/Embest_Code/Kernel_Patch/* linux-2.6.39/
cd linux-2.6.39
tar xvjf root.tar.bz2
tar xvjf patch.tar.bz2
for p in patch/* ;do patch -p1 < \$p ;done
patch -p1 < embest_code_android.diff</pre>

Configuration files (select the file according to the LCD size)

LCD type	Configuration files			
LCD_4.3	embest_MBS-SAM9X5_4.3LCD_Android_defconfig			
LCD_7.0	embest_MBS-SAM9X5_7.0LCD_Android_defconfig			

cp arch/arm/configs/*Configuration files*.config

If you want to get the image file for 4.3, enter:

cp arch/arm/configs/embest_MBS-SAM9X5_4.3LCD_Android_defconfig .config

Compile it:

#make ARCH=arm menuconfig

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

Note: only after installing ulmage tool in your Ubuntu, you can use "make ulmage" command. Or install it as shown below.

apt-get install uboot-mkimage

You will get the ulmage under the directory of arch/arm/boot/



Chapter 4 Resource List

Note:

- (1) " \checkmark "--included, " \times "-- not included.
- (2) Bootloader and Kernel are offered free of charge and open-source (F&O).

Categories	Drivers		9G15	9G25	9G35	9X25	9X35	9x5
Bootloader	AT91Bootstrap			L	tested, F&O			
	Uboot		1. Nano 2.su 3. Su 4. Sup 5. Su	dFlash era pport network port the enviro port the n contrast, upport boo	tested, F&O			
	not	ETH0	×	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
	net	ETH1	×	×	×	\checkmark	×	tested, F&O
	serial	USART0	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
		USART3	×	\checkmark	×	\checkmark	×	tested, F&O
		DBGU	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
	CAN	CAN0	×	×	×	\checkmark	\checkmark	untested, provide codes
		CAN1	×	×	×	\checkmark	\checkmark	untested, provide codes
kernel	USB	USB_HOST *2	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
		USB_OTG	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
	SMD驱动		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	provide hardware interface only
	SDcard	MicroSD	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
		SDCard	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
	camera (ISI)		×	\checkmark	×	×	×	untested, provide codes
	LCD+touch		\checkmark	×	\checkmark	×	\checkmark	tested, F&O
	Zigbee		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	provide hardware interface only



	SPI	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	reuse, unregistered equipment
	TWI	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
	Qtouch	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
	DMA	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
	GPIO	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	tested, F&O
File	Angstrom	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	provide file system
system	Android	\checkmark	×	\checkmark	×	\checkmark	provide file system



Appendix: Sales and Technical Support

Sales

Tel: 0755-25621715 Fax: 0755-25616057 E-mail: <u>sales.en@embedinfo.com</u>

Technical support

Tel: 027-87290817 E-mail: <u>support.en@embedinfo.com</u> URL: <u>http://www.embedinfo.com/en/</u>