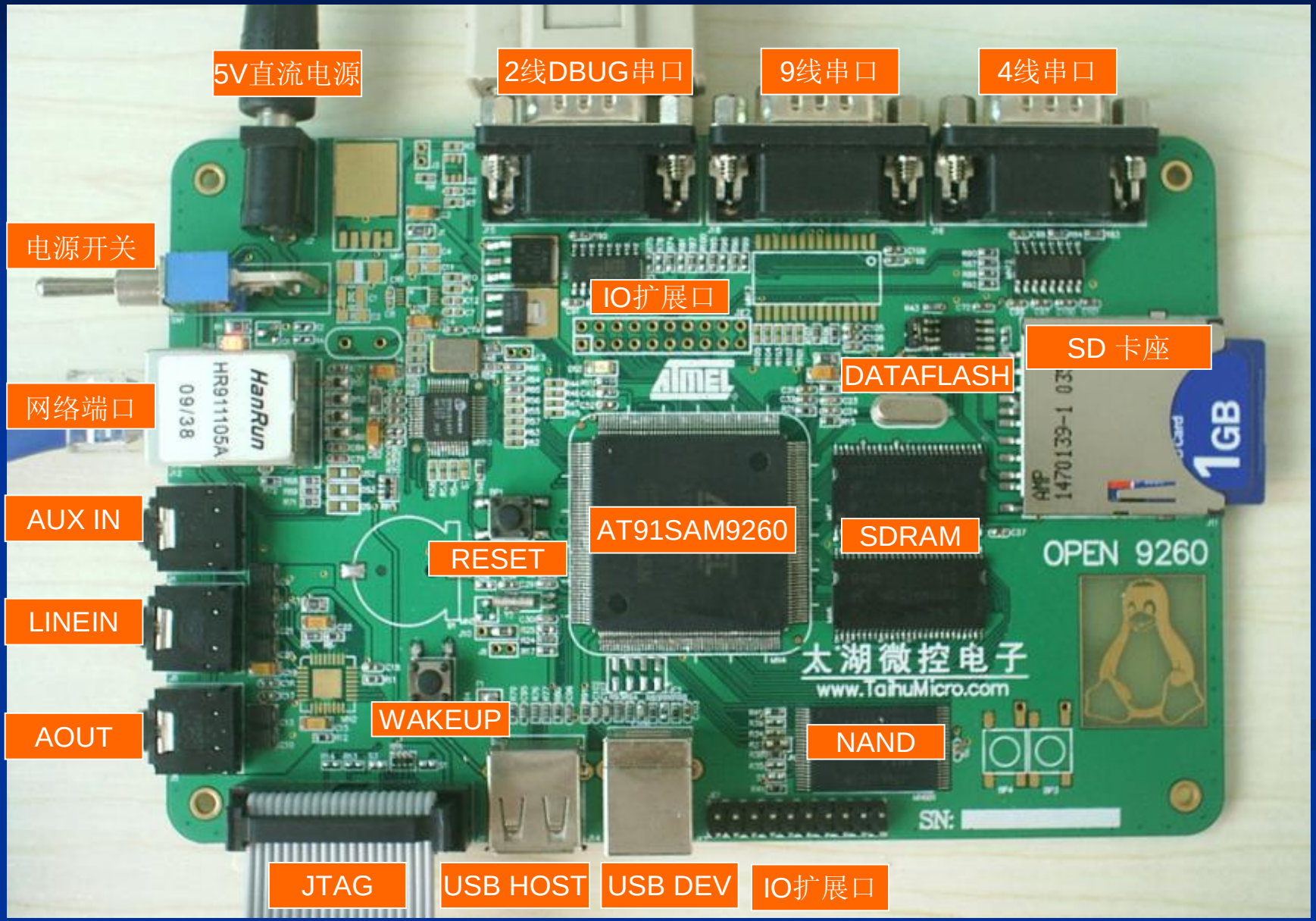
AT91SAM9260使用说明

http://group.ednchina.com/2549/

http://shop35912616.taobao.com/

AT91SAM9260硬件资源



硬件资源详细清单

主芯片

一片AT91SAM9260(QFP208绿色封状)，内核ARM926EJ-S，180MHz 200MIPS，8K数据Cache，8K指令Cache。

存储器

SDRAM：2片镁光SDRAM(MT48LC16M16A2)，共64M BYTES。
NANDFLASH：一片三星 nandflash K9F1G08U0B 128M BYTE。
DATAFLASH：一片atmel dataflashAT45DB321-SU 4M BYTE。

网络接口

DM9161 NET PHY + HR911105A组成的10M/100M以太网接口。

USB接口

一个USB DEVICE，一个USB HOST

SD接口

一个SD CARD SLOT

调试接口

一个JTAG 20 PIN调试接口

音频接口

音频DAC AT73C213(未焊接)1个耳机接口，一个MIC输入，一个LINE 输入。

电源接口

5V直流电源输入，3.3V,1.8V系统电源。

串口

一个2线DBGU接口，一个9线串口(未焊接)，一个4线串口。

开发板资源

硬件原理图

开发板各个子部件测试软件

UCOS移植源代码

Linux移植代码包，UBOOT移植代码包等

Linux移植文档

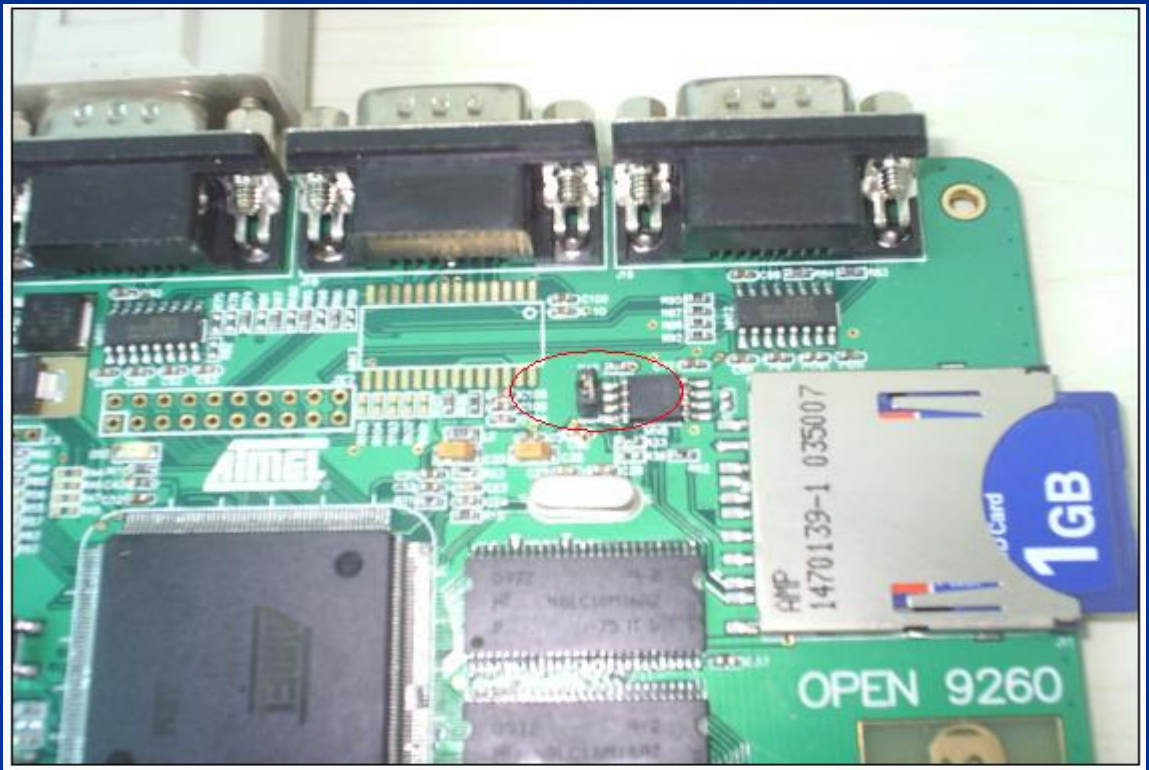
制作根文件系统的BUSYBOX移植文档

制作JFFS2文件系统文档

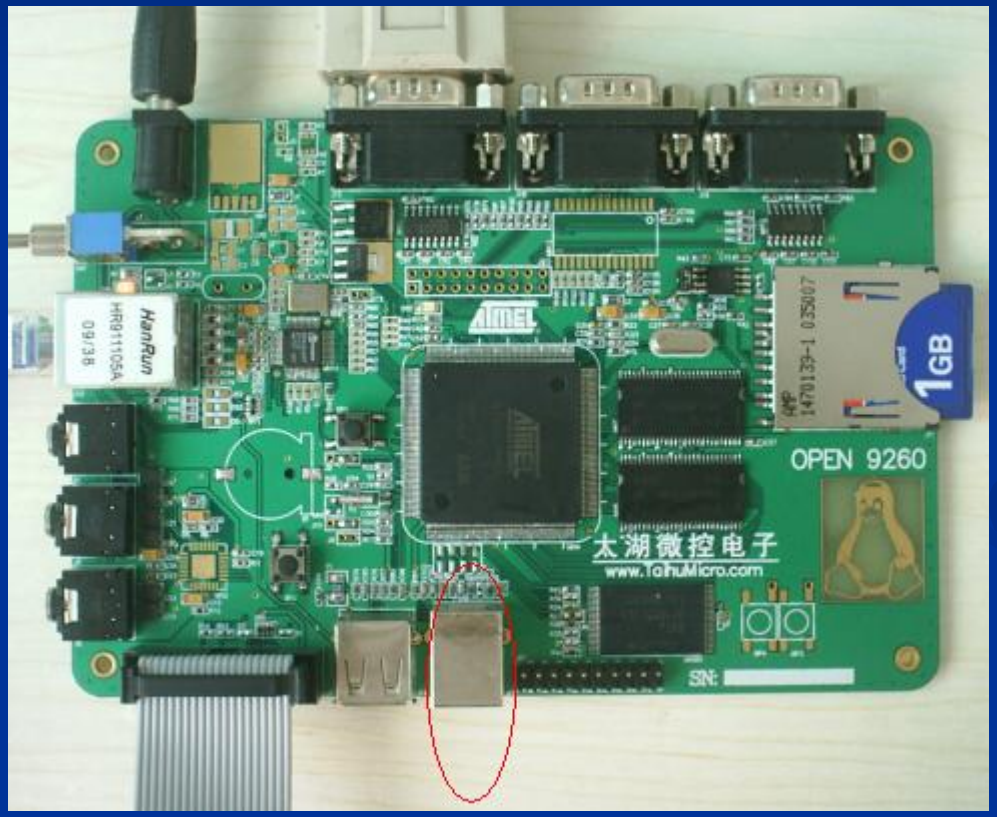
网络收音机移植文档

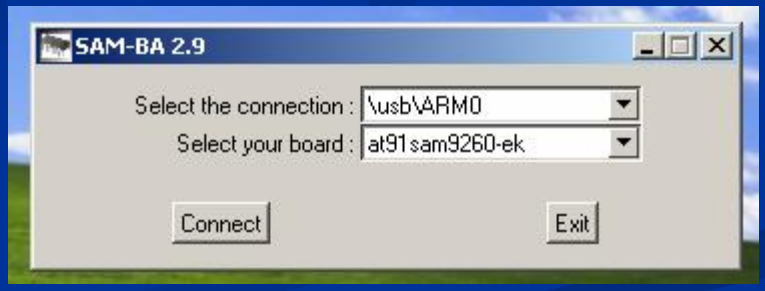
使用SAM-BA下载Linux映像文件

1. 首先检查开发板上DATAFLASH左边跳线帽是否拔去，如果没有拔去则需要拔去，这样可以避免运行DATAFLASH内程序而直接运行SAM-BA程序。

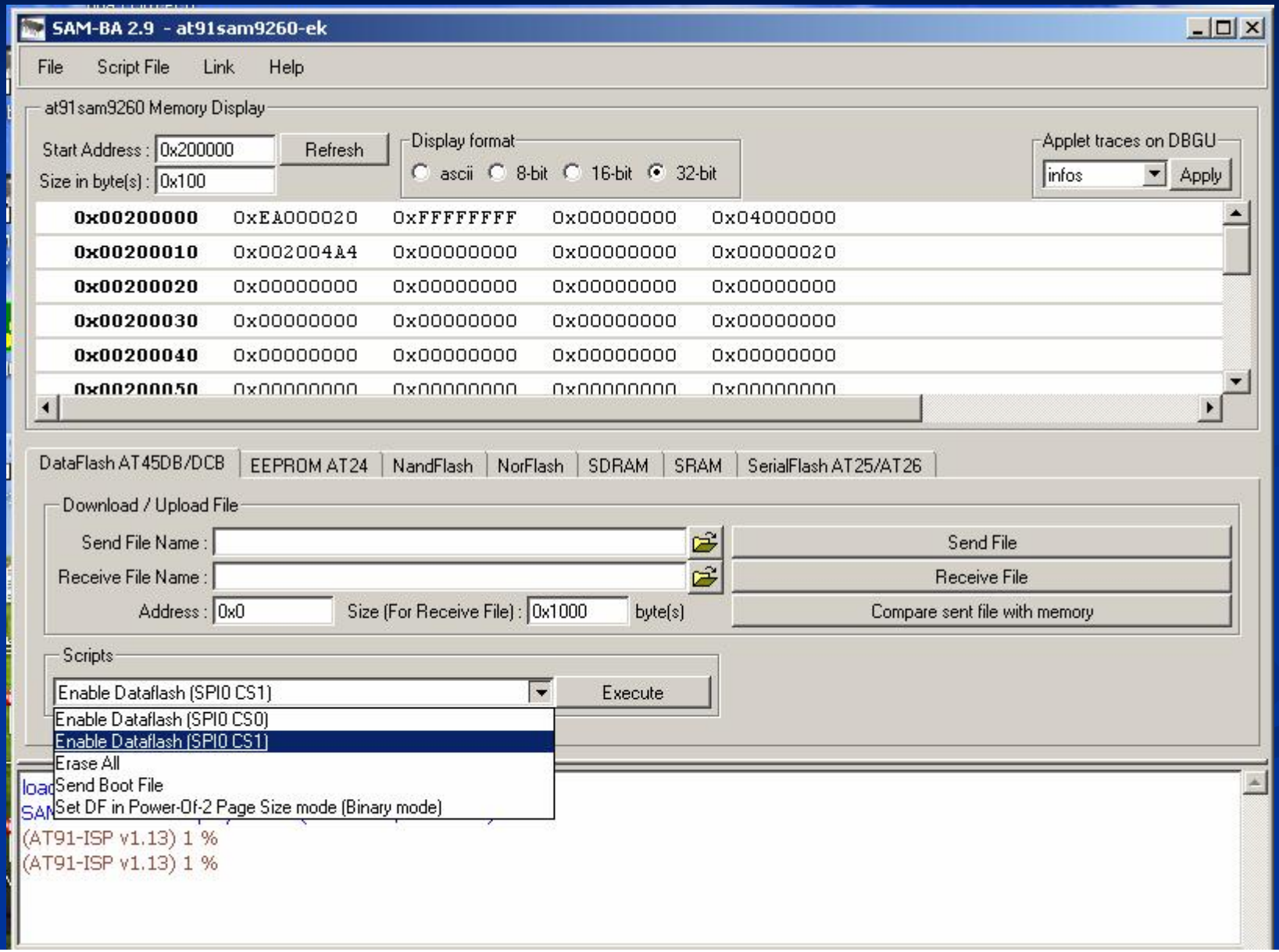


2. 打开5V直流电源，接上 USB连接线(第一次连接电脑会提示安装驱动)，电脑上会显示连接到USB设备，点击SAM-BA运行该软件。
选择AT91SAM9260-EK,点击Connect按键。





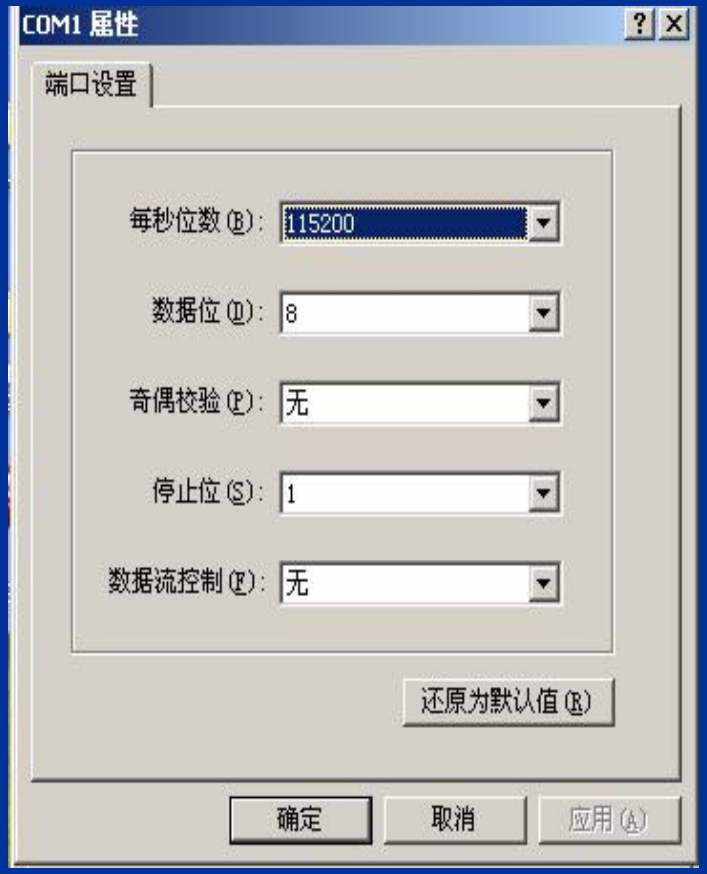
会弹出如下对话框，在对话框中上方有显示存储器中数值的窗口，下方是选择不同的存储器，针对不同存储器有不同的操作命令，选择好操作命令后，点击EXECUTE按钮就能执行相应的操作。

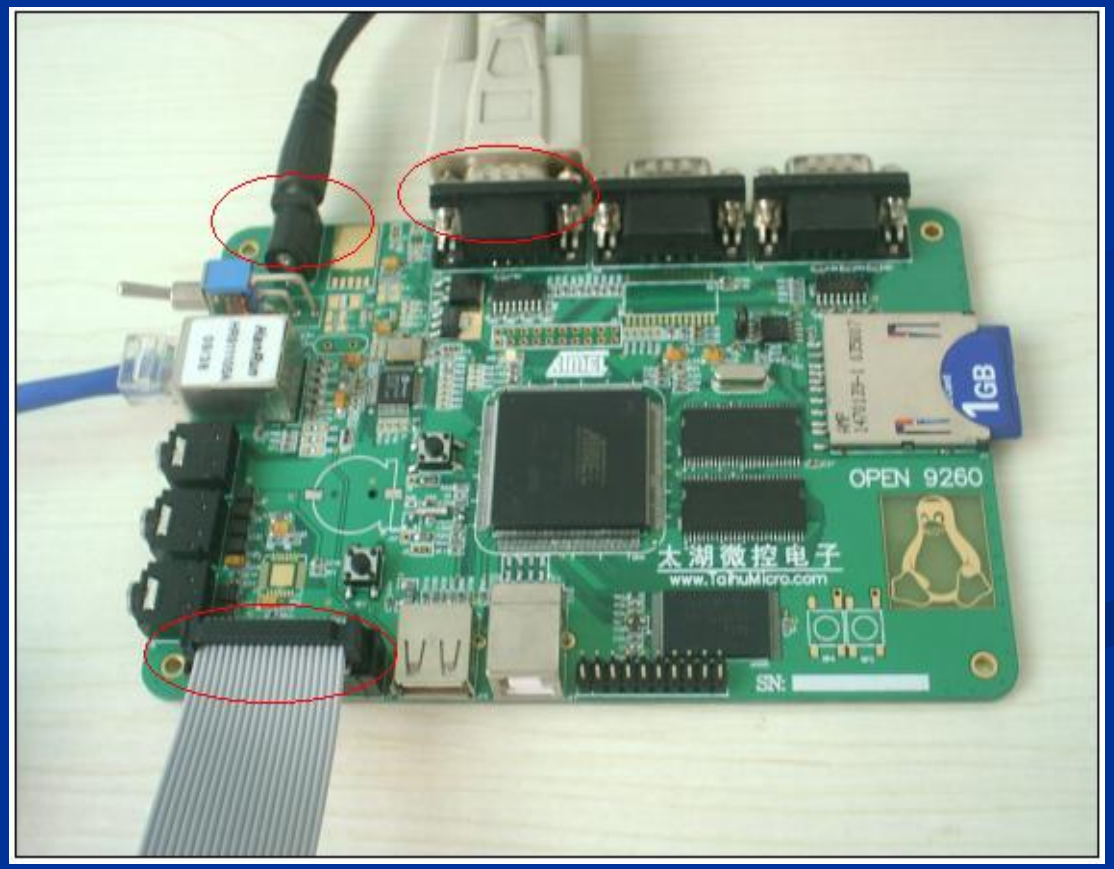


调试测试程序

连接5V直流电源,使用J-LINK连接JTAG接口,使用交叉串口 线连接电脑串口和开发板DBGU两线串口(J15).

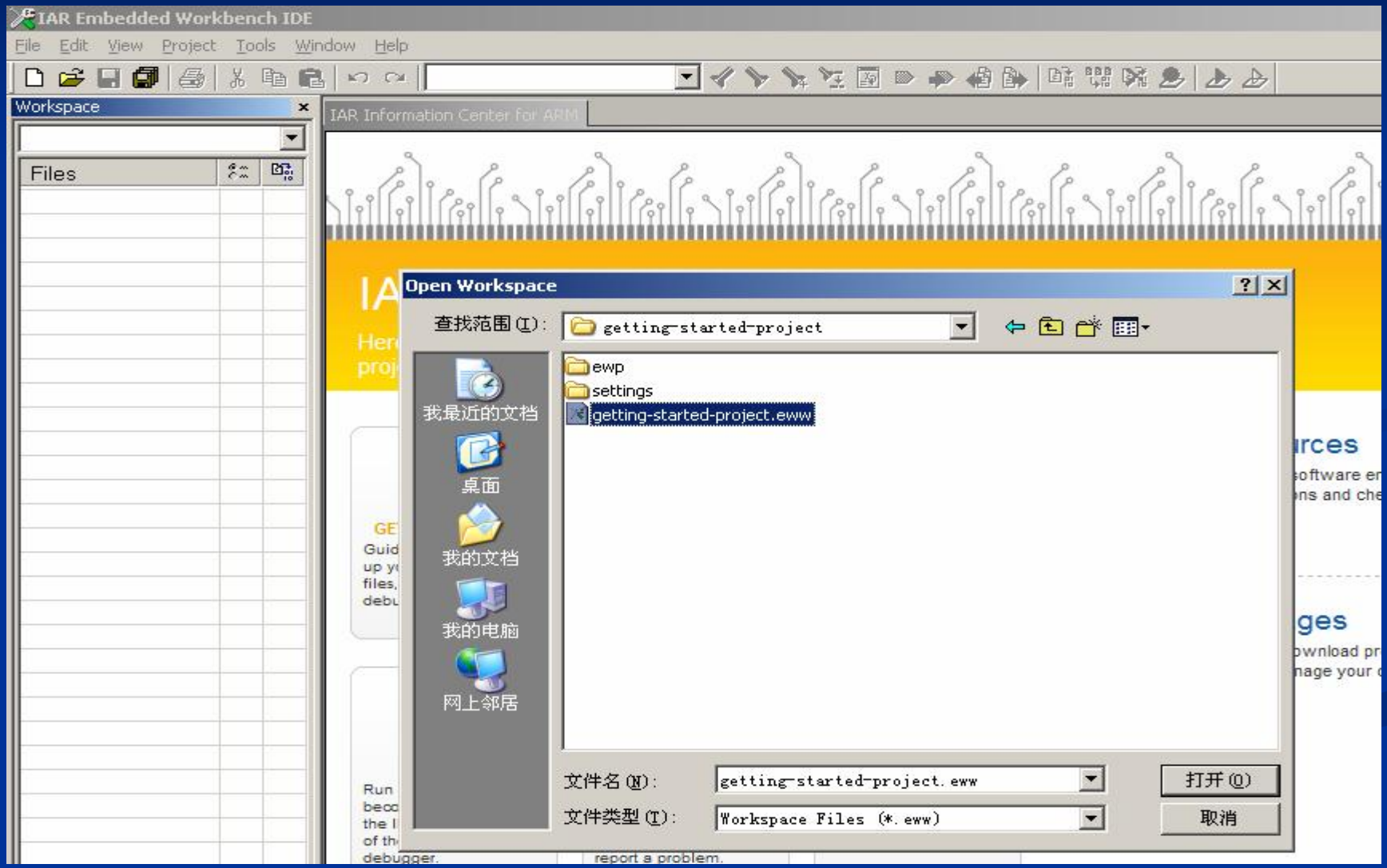
电脑上设置好超级终端参数.打开超级终端用于观察串口输出内容



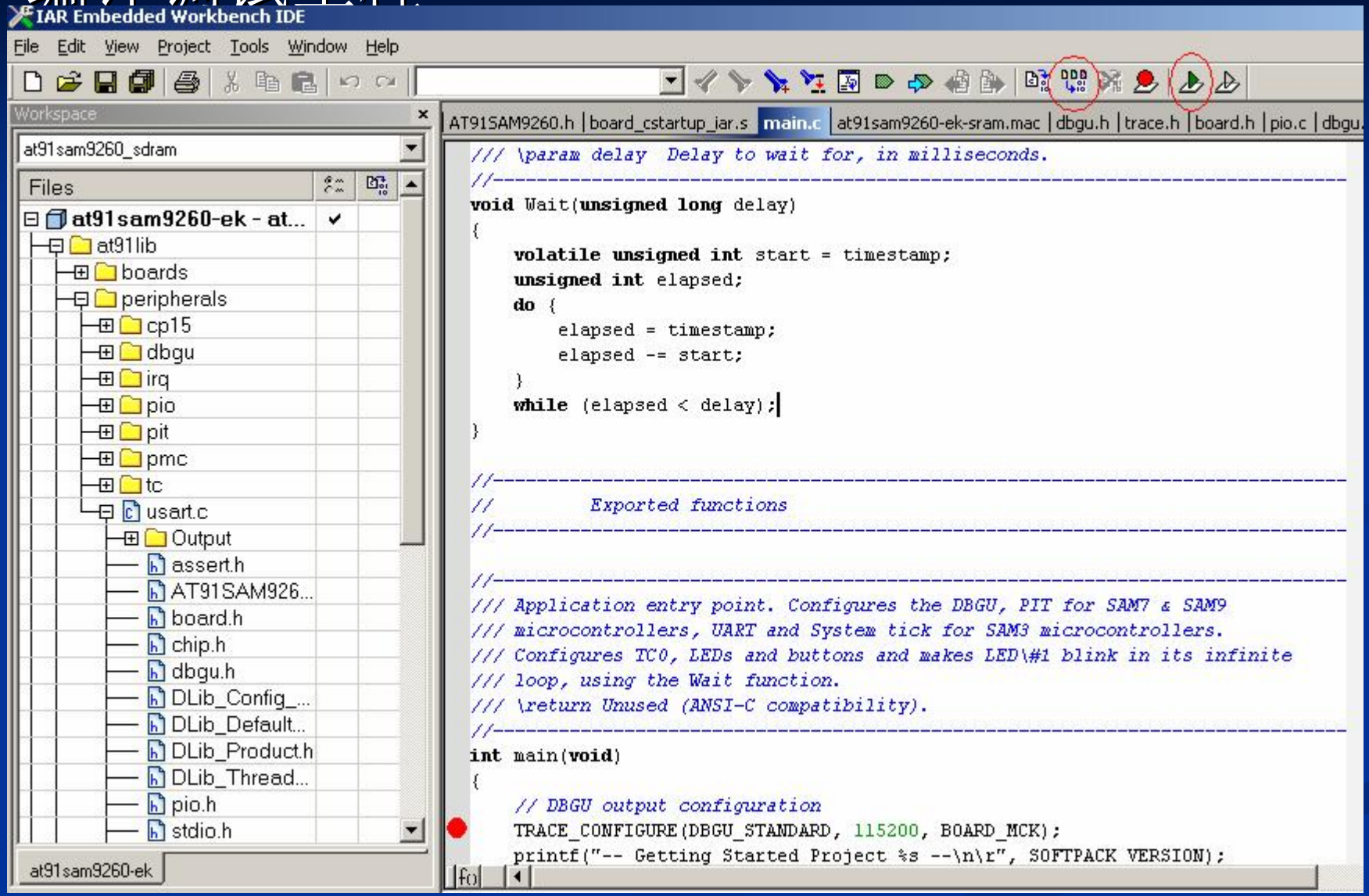


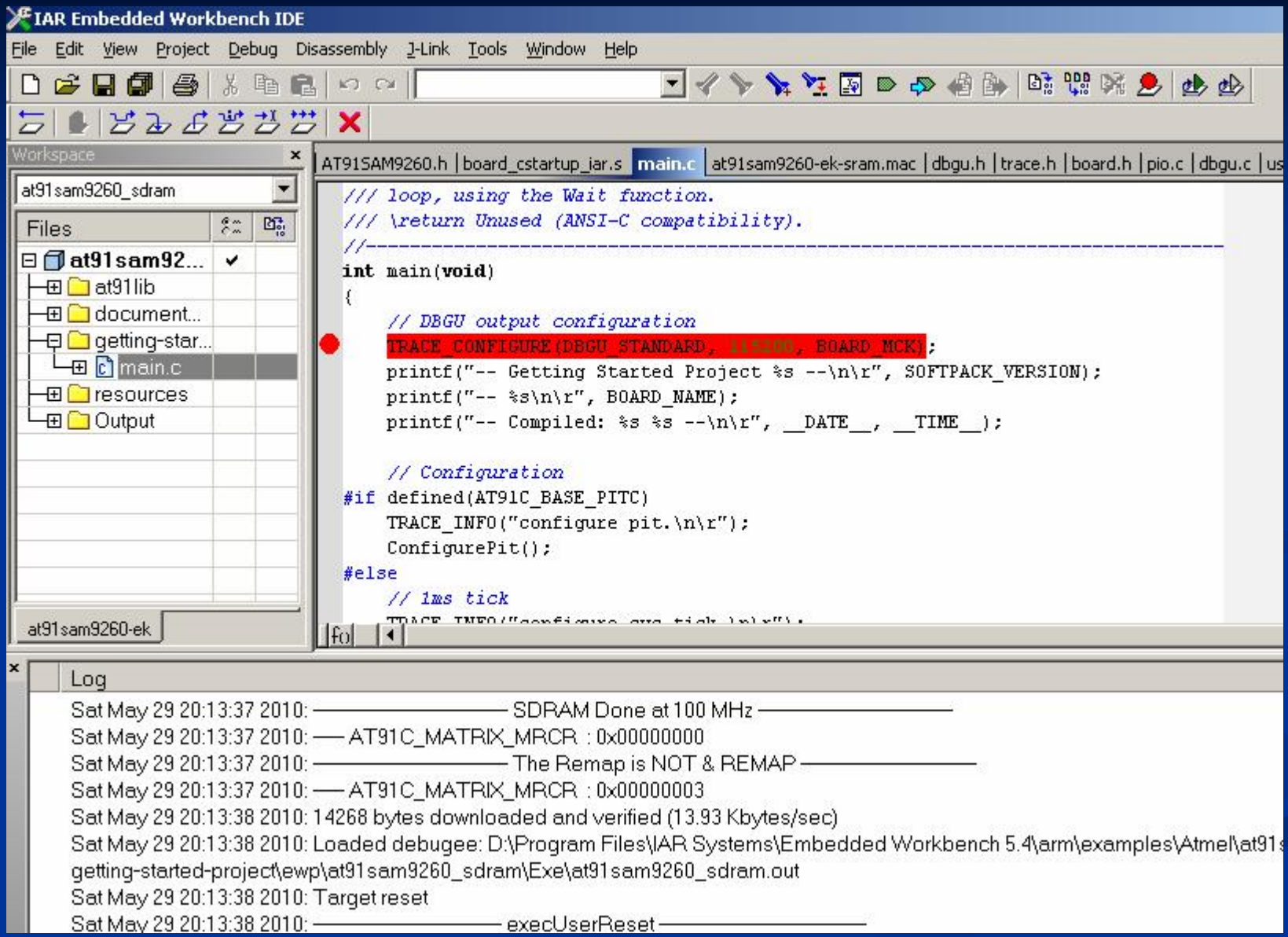
安装IAR FOR ARM 开发环境

打开安装目录下9260的范例工程getting-started-project.eww



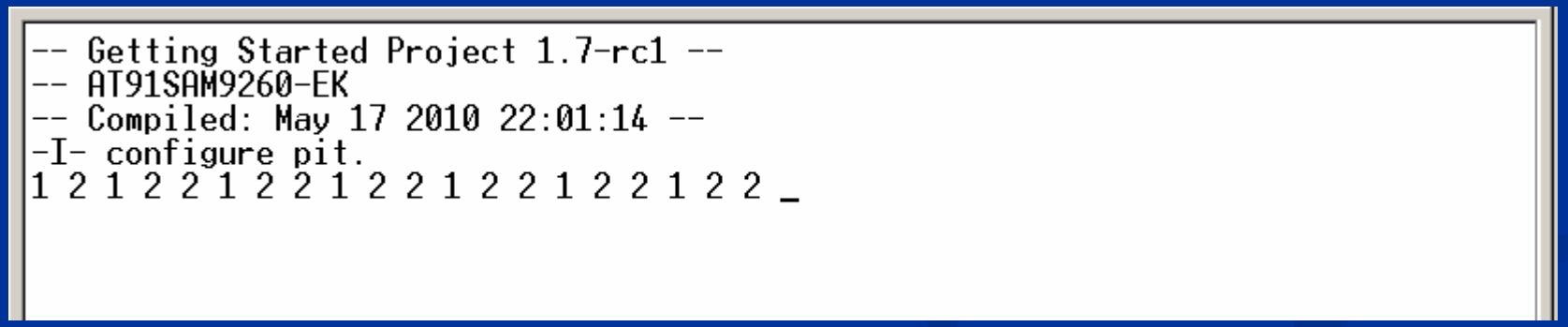
编译调试工程


IAR Embedded Workbench IDE
File Edit View Project Tools Window Help
Workspace
at91sam9260_sdram
Files
at91sam9260-ek - at...
at91lib
boards
peripherals
cp15
dbgu
irq
pio
pit
pmc
tc
usart.c
Output
assert.h
AT91SAM926...
board.h
chip.h
dbgu.h
DLib_Config_...
DLib_Default...
DLib_Product.h
DLib_Thread...
pio.h
stdio.h
at91sam9260-ek
AT91SAM9260.h
board_cstartup_iar.s
main.c
at91sam9260-ek-sram.mac
dbgu.h
trace.h
board.h
pio.c
/// \param delay Delay to wait for, in milliseconds.
void Wait(unsigned long delay)
{
volatile unsigned int start = timestamp;
unsigned int elapsed;
do {
elapsed = timestamp;
elapsed -= start;
}
while (elapsed < delay);
}
// Exported functions
/// Application entry point. Configures the DBGU, PIT for SAM7 & SAM9
/// microcontrollers, UART and System tick for SAM3 microcontrollers.
/// Configures TC0, LEDs and buttons and makes LED\#1 blink in its infinite
/// loop, using the Wait function.
/// \return Unused (ANSI-C compatibility).
int main(void)
{
// DBGU output configuration
TRACE_CONFIGURE(DBGU_STANDARD, 115200, BOARD_MCK);
printf("-- Getting Started Project %s --\n\r", SOFTPACK VERSION);

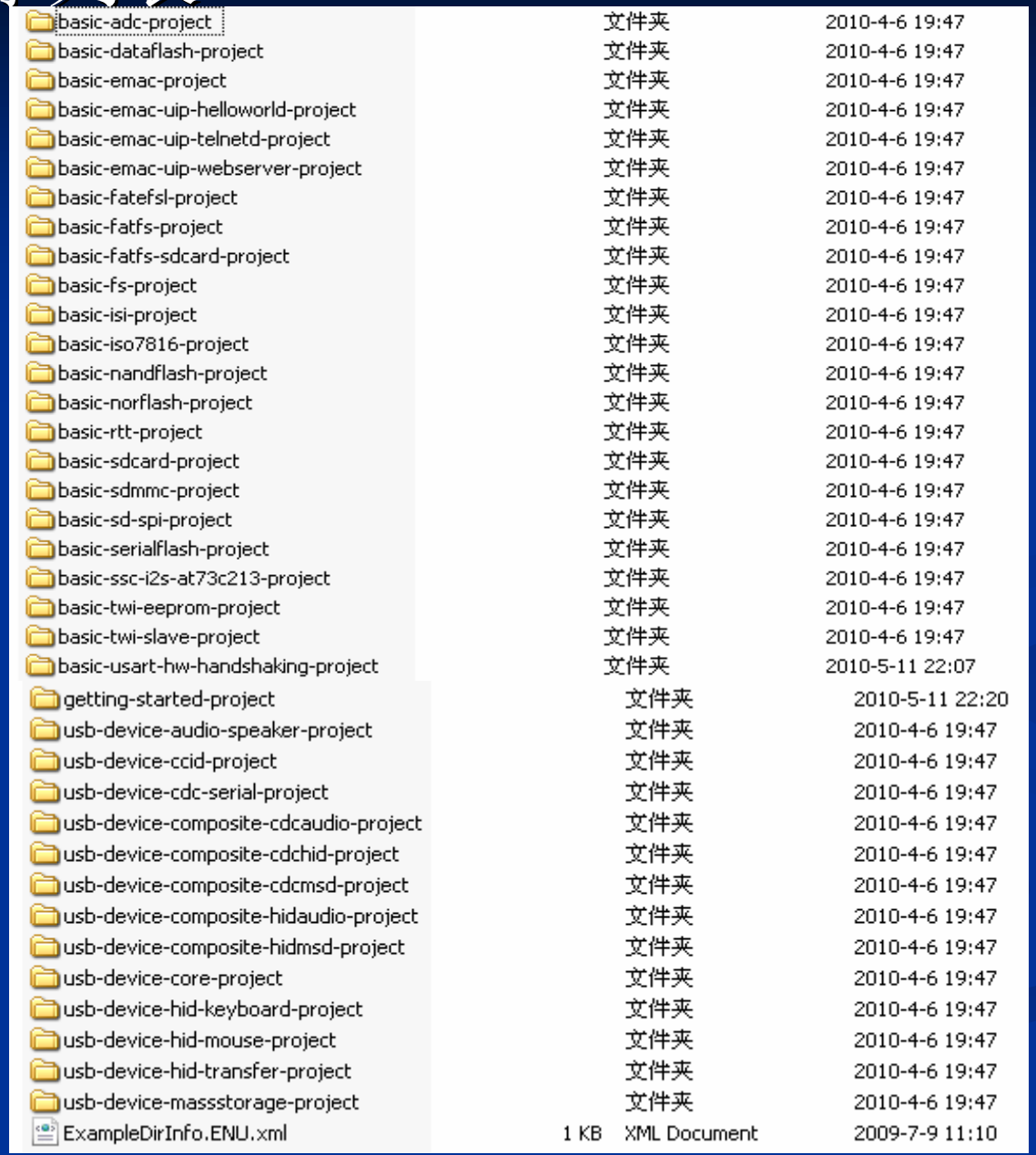

IAR Embedded Workbench IDE
File Edit View Project Debug Disassembly J-Link Tools Window Help
Workspace
at91sam9260_sdram
Files
at91sam92...
at91lib
document...
getting-star...
main.c
resources
Output
at91sam9260-ek
AT91SAM9260.h | board_cstartup_iar.s | main.c | at91sam9260-ek-sram.mac | dbgu.h | trace.h | board.h | pio.c | dbgu.c
/// loop, using the Wait function.
/// \return Unused (ANSI-C compatibility).
int main(void)
{
// DBGU output configuration
TRACE_CONFIGURE(DBGU_STANDARD, 115200, BOARD_MCK);
printf("-- Getting Started Project %s --\n\r", SOFTPACK_VERSION);
printf("-- %s\n\r", BOARD_NAME);
printf("-- Compiled: %s %s --\n\r", __DATE__, __TIME__);
// Configuration
#if defined(AT91C_BASE_PITC)
TRACE_INFO("configure pit.\n\r");
ConfigurePit();
#else
// 1ms tick
Log
Sat May 29 20:13:37 2010: ———— SDRAM Done at 100 MHz ————
Sat May 29 20:13:37 2010: —— AT91C_MATRIX_MRCR : 0x00000000
Sat May 29 20:13:37 2010: ———— The Remap is NOT & REMAP ————
Sat May 29 20:13:37 2010: —— AT91C_MATRIX_MRCR : 0x00000003
Sat May 29 20:13:38 2010: 14268 bytes downloaded and verified (13.93 Kbytes/sec)
Sat May 29 20:13:38 2010: Loaded debugee: D:\Program Files\IAR Systems\Embedded Workbench 5.4\arm\examples\Atmel\at91s
getting-started-project\ewp\at91sam9260_sdram\Exe\at91sam9260_sdram.out
Sat May 29 20:13:38 2010: Target reset
Sat May 29 20:13:38 2010: ———— execUserReset ————

超级终端中会输出DEBUG信息

开发板上DS5会 LED会闪烁



测试程序列表



basic-adc-project		文件夹	2010-4-6 19:47
basic-dataflash-project		文件夹	2010-4-6 19:47
basic-emac-project		文件夹	2010-4-6 19:47
basic-emac-uip-helloworld-project		文件夹	2010-4-6 19:47
basic-emac-uip-telnetd-project		文件夹	2010-4-6 19:47
basic-emac-uip-webserver-project		文件夹	2010-4-6 19:47
basic-fatefsl-project		文件夹	2010-4-6 19:47
basic-fatfs-project		文件夹	2010-4-6 19:47
basic-fatfs-sdcard-project		文件夹	2010-4-6 19:47
basic-fs-project		文件夹	2010-4-6 19:47
basic-isi-project		文件夹	2010-4-6 19:47
basic-iso7816-project		文件夹	2010-4-6 19:47
basic-nandflash-project		文件夹	2010-4-6 19:47
basic-norflash-project		文件夹	2010-4-6 19:47
basic-rtt-project		文件夹	2010-4-6 19:47
basic-sdcard-project		文件夹	2010-4-6 19:47
basic-sdmmc-project		文件夹	2010-4-6 19:47
basic-sd-spi-project		文件夹	2010-4-6 19:47
basic-serialflash-project		文件夹	2010-4-6 19:47
basic-ssc-i2s-at73c213-project		文件夹	2010-4-6 19:47
basic-twi-eeprom-project		文件夹	2010-4-6 19:47
basic-twi-slave-project		文件夹	2010-4-6 19:47
basic-usart-hw-handshaking-project		文件夹	2010-5-11 22:07
getting-started-project		文件夹	2010-5-11 22:20
usb-device-audio-speaker-project		文件夹	2010-4-6 19:47
usb-device-ccid-project		文件夹	2010-4-6 19:47
usb-device-cdc-serial-project		文件夹	2010-4-6 19:47
usb-device-composite-cdcaudio-project		文件夹	2010-4-6 19:47
usb-device-composite-cdchid-project		文件夹	2010-4-6 19:47
usb-device-composite-cdcmsd-project		文件夹	2010-4-6 19:47
usb-device-composite-hidaudio-project		文件夹	2010-4-6 19:47
usb-device-composite-hidmsd-project		文件夹	2010-4-6 19:47
usb-device-core-project		文件夹	2010-4-6 19:47
usb-device-hid-keyboard-project		文件夹	2010-4-6 19:47
usb-device-hid-mouse-project		文件夹	2010-4-6 19:47
usb-device-hid-transfer-project		文件夹	2010-4-6 19:47
usb-device-massstorage-project		文件夹	2010-4-6 19:47
ExampleDirInfo.ENU.xml	1 KB	XML Document	2009-7-9 11:10

如何下载LINUX映像文件

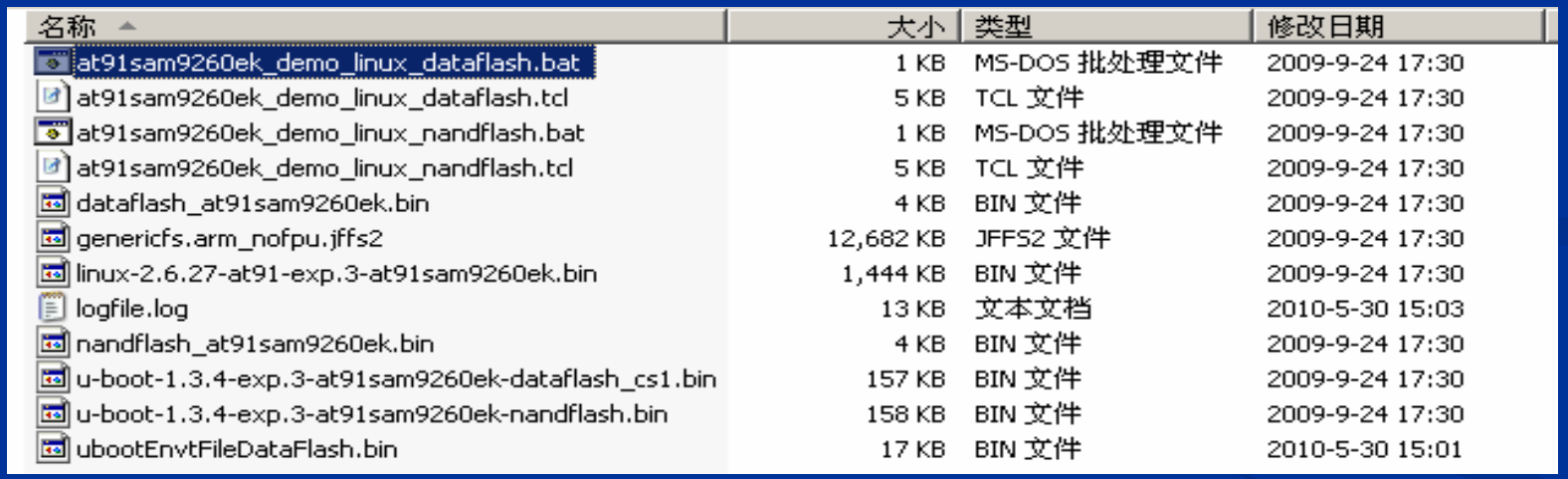
首先拔掉DATAFLASH边上的调线帽,接通电源,让9260运行在ROMBOOT的下载状态。

插上USB连接线，使PC识别到USB设备。

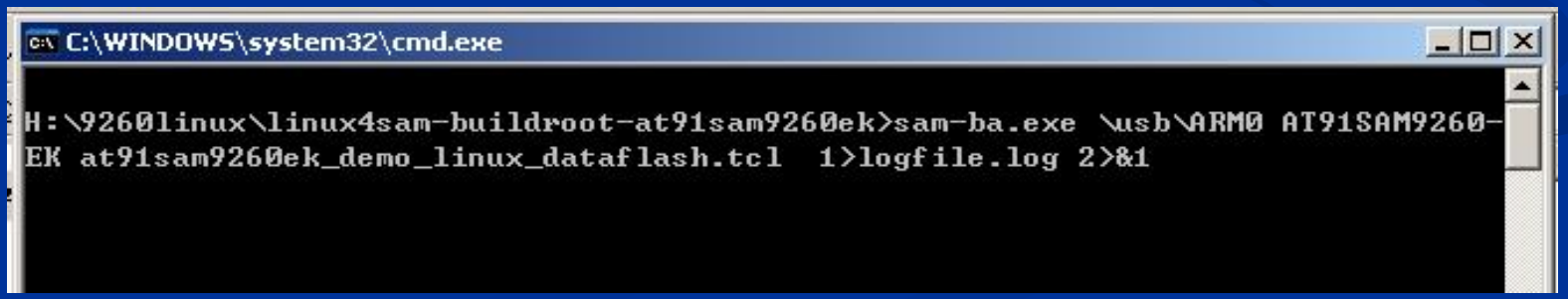
打开9260的LINUX烧录文件夹linux4sam-buildroot-at91sam9260ek

点击批处理文件at91sam9260ek_demo_linux_dataflash.bat

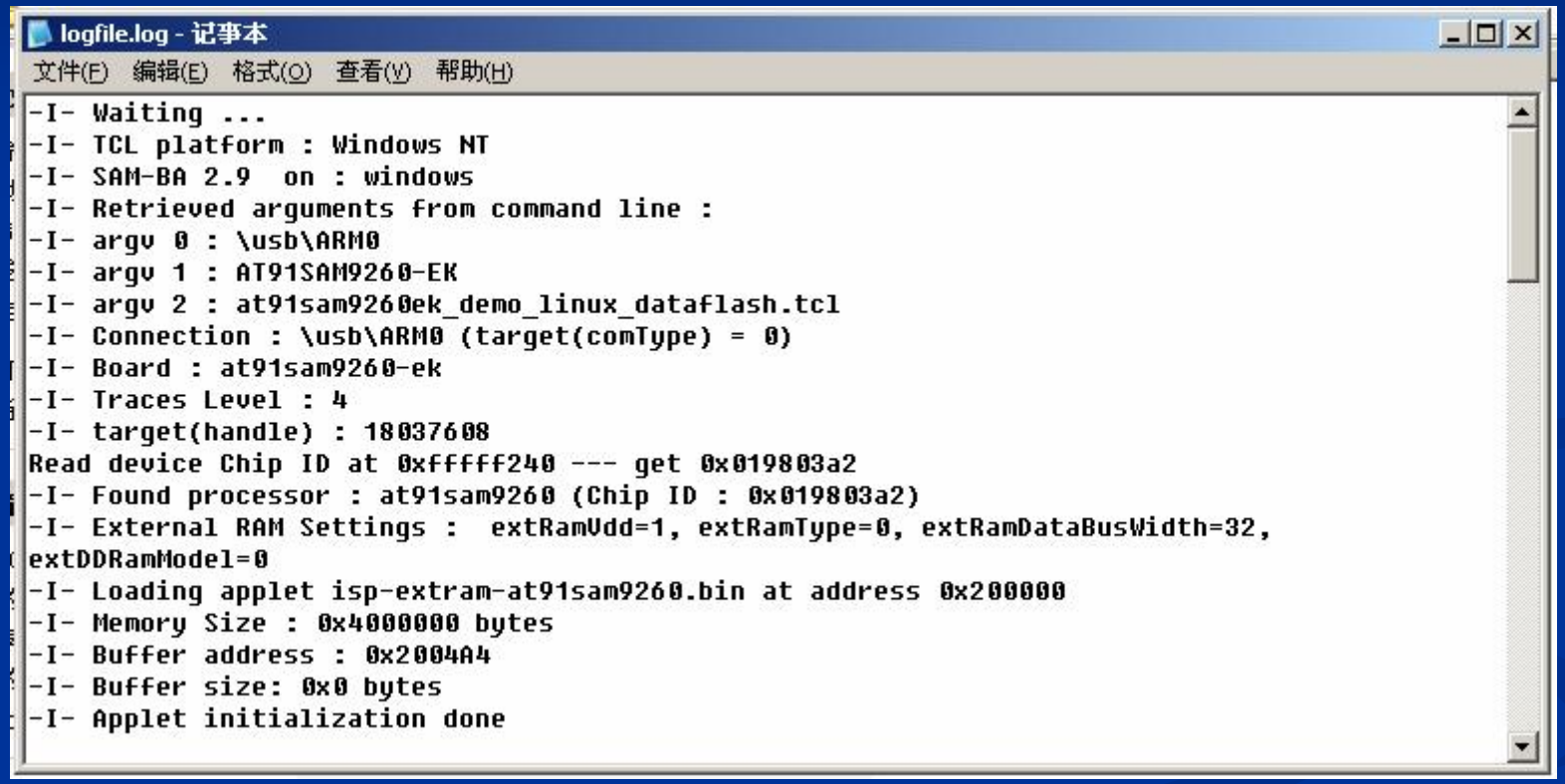
会弹出命令行提示下载正在进行。



名称	大小	类型	修改日期
at91sam9260ek_demo_linux_dataflash.bat	1 KB	MS-DOS 批处理文件	2009-9-24 17:30
at91sam9260ek_demo_linux_dataflash.tcl	5 KB	TCL 文件	2009-9-24 17:30
at91sam9260ek_demo_linux_nandflash.bat	1 KB	MS-DOS 批处理文件	2009-9-24 17:30
at91sam9260ek_demo_linux_nandflash.tcl	5 KB	TCL 文件	2009-9-24 17:30
dataflash_at91sam9260ek.bin	4 KB	BIN 文件	2009-9-24 17:30
genericfs.arm_nofpu.jffs2	12,682 KB	JFFS2 文件	2009-9-24 17:30
linux-2.6.27-at91-exp.3-at91sam9260ek.bin	1,444 KB	BIN 文件	2009-9-24 17:30
logfile.log	13 KB	文本文档	2010-5-30 15:03
nandflash_at91sam9260ek.bin	4 KB	BIN 文件	2009-9-24 17:30
u-boot-1.3.4-exp.3-at91sam9260ek-dataflash_cs1.bin	157 KB	BIN 文件	2009-9-24 17:30
u-boot-1.3.4-exp.3-at91sam9260ek-nandflash.bin	158 KB	BIN 文件	2009-9-24 17:30
ubootEnvtFileDataFlash.bin	17 KB	BIN 文件	2010-5-30 15:01



下载完成后，会自动打开logfile.log文件，表示下载成功。

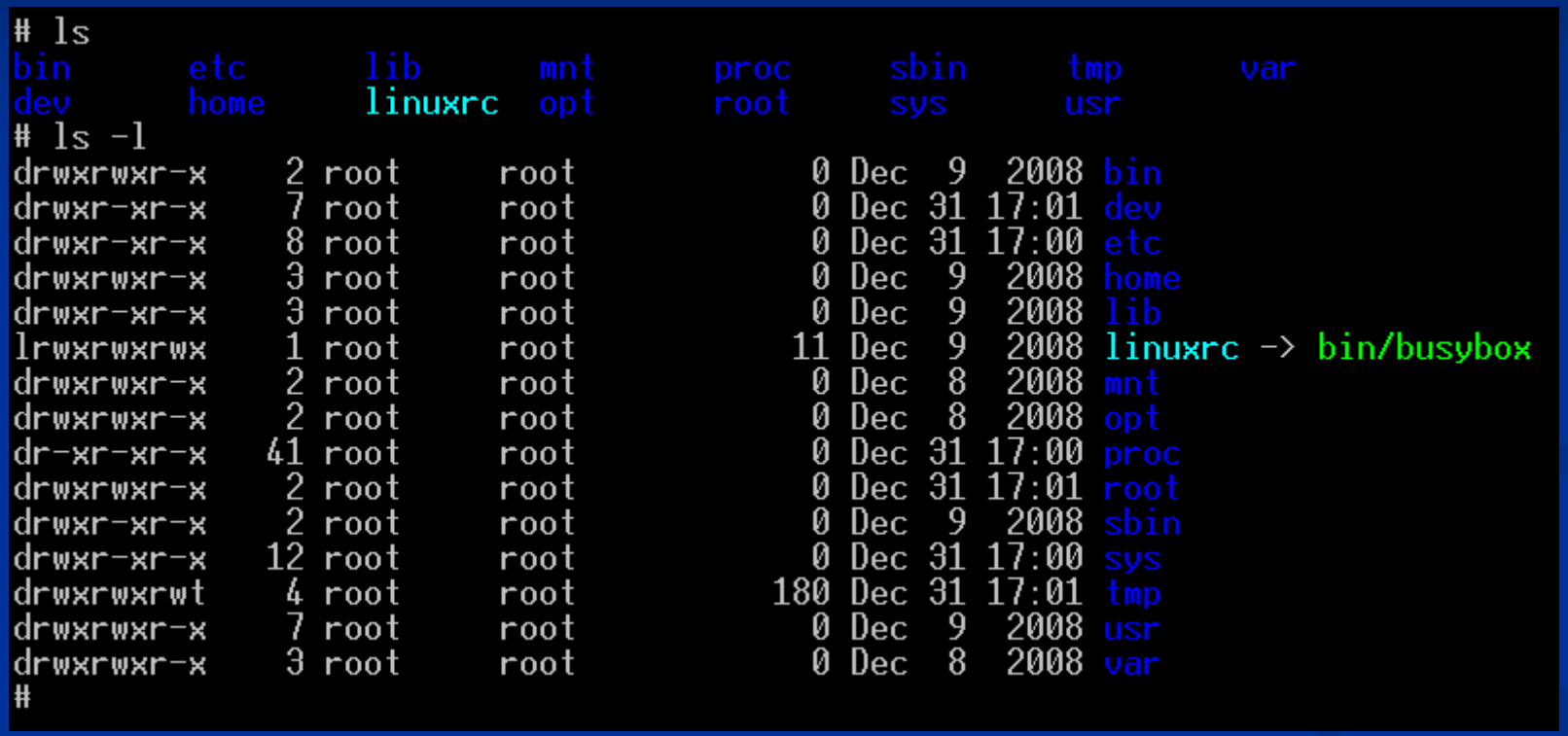


重新上电或者复位开发板，可以通过超级终端看到UBOOT，LINUX启动的信息。

```
U-Boot 1.3.4 (Sep 24 2009 - 16:53:30)

DRAM:  64 MB
NAND:  128 MiB
DataFlash:AT45DB321
Nb pages:   8192
Page Size:    528
Size= 4325376 bytes
Logical address: 0xD0000000
Area 0: D0000000 to D00041FF (RO) Bootstrap
Area 1: D0004200 to D00083FF      Environment
Area 2: D0008400 to D0041FFF (RO) U-Boot
Area 3: D0042000 to D0251FFF      Kernel
Area 4: D0252000 to D041FFFF      FS      |
In:    serial
Out:   serial
Err:   serial
Net:   macb0
macb0: Starting autonegotiation...
macb0: Autonegotiation complete
macb0: link up, 100Mbps full-duplex (lpa: 0x41e1)
Hit any key to stop autoboot:  1
```

进入SHELL，用户名：root

```
RPC: Registered udp transport module.
RPC: Registered tcp transport module.
rtc-at91sam9 at91_rtt.0: hctosys: unable to read the hardware clock
VFS: Mounted root (jffs2 filesystem).
Freeing init memory: 120K
Populating /dev using udev: cannot open /dev/null
done
Starting portmap: done
Initializing random number generator... done.
Starting network...
ip: RTNETLINK answers: File exists
Starting network time protocol daemon: ntpd.
Starting dropbear sshd: generating rsa key... generating dsa key... OK
Starting ProFTPD: warning: 'proftpd' uses 32-bit capabilities (legacy support in
 use)
 - warning: unable to determine IP address of 'AT91SAM9'
 - error: no valid servers configured
 - Fatal: error processing configuration file '/etc/proftpd.conf'
FAILED



Welcome to the Erik's uClibc development environment.
AT91SAM9 login: root_
```


ls
bin dev etc home lib linuxrc mnt opt proc root sbin sys tmp usr var
ls -l
drwxrwxr-x 2 root root 0 Dec 9 2008 bin
drwxr-xr-x 7 root root 0 Dec 31 17:01 dev
drwxr-xr-x 8 root root 0 Dec 31 17:00 etc
drwxrwxr-x 3 root root 0 Dec 9 2008 home
drwxr-xr-x 3 root root 0 Dec 9 2008 lib
lrwxrwxrwx 1 root root 11 Dec 9 2008 linuxrc -> bin/busybox
drwxrwxr-x 2 root root 0 Dec 8 2008 mnt
drwxrwxr-x 2 root root 0 Dec 8 2008 opt
dr-xr-xr-x 41 root root 0 Dec 31 17:00 proc
drwxrwxr-x 2 root root 0 Dec 31 17:01 root
drwxr-xr-x 2 root root 0 Dec 9 2008 sbin
drwxr-xr-x 12 root root 0 Dec 31 17:00 sys
drwxrwxrwt 4 root root 180 Dec 31 17:01 tmp
drwxrwxr-x 7 root root 0 Dec 9 2008 usr
drwxrwxr-x 3 root root 0 Dec 8 2008 var
#

Linux相关文档

- 9260linux移植.pdf（Linux移植详细文档）
- busybox.pdf（利用busybox制作根文件系统）
- jffs2.pdf（制作jffs2文件系统）
- Internet radio(利用9260开发板制作网络收音机)

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