

# **ARM926EJ S3C2450 Mango24R2 image transfer to SD MMC and SD boot**

<http://www.mangoboard.com/>

<http://cafe.naver.com/embeddedcrazyboys>

**Crazy Embedded Laboratory**

# Document History

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# 1. 준비물

Micro MMC card , SD/MMC Aapter (2GB 이하 만 가능)

## 1.1. U-boot image transfer to SD/MMC (Host PC Ubuntu 12.04)

Micro SD card (2GB 이하) 준비

```
$ sudo wget  
http://crztech.iptime.org:8080/Release/mango24R2\_S3C2450/sdwriter\_recovery/mango24R2\_sdwriter\_image\_120704\_Rel.tgz  
$ sudo tar xvf mango24R2_sdwriter_image_120704_Rel.tgz
```

Card를 PC에 삽입



```
# cd sdwriter
```

```
# df
```

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
/dev/sda5	117017192	6157080	105000784	6%	/
udev	886476	4	886472	1%	/dev
tmpfs	358104	916	357188	1%	/run
none	5120	0	5120	0%	/run/lock

```
none                895256      76      895180   1% /run/shm
192.168.0.113:/home/icanjji/work/ 1746752512 174884864 1484445696 11% /media/113
/dev/sdb1           1845952      0      1845952  0% /media/9016-4EF8
```

"df" 명령으로 device 확인

```
# sudo ./sdwriter sdb 24 bin all
```

실행 결과

```
# ./sdwriter sdb 24 all
Mango SD Writer V1.0
START_GNOME=1576958

Unmount all : success

Partition Create : success

Write Mango24R2 Signaturesuccess
Write Mango24R2 BL1 : success
Write Mango24R2 Uboot : success
Write Mango24 Kernel : success

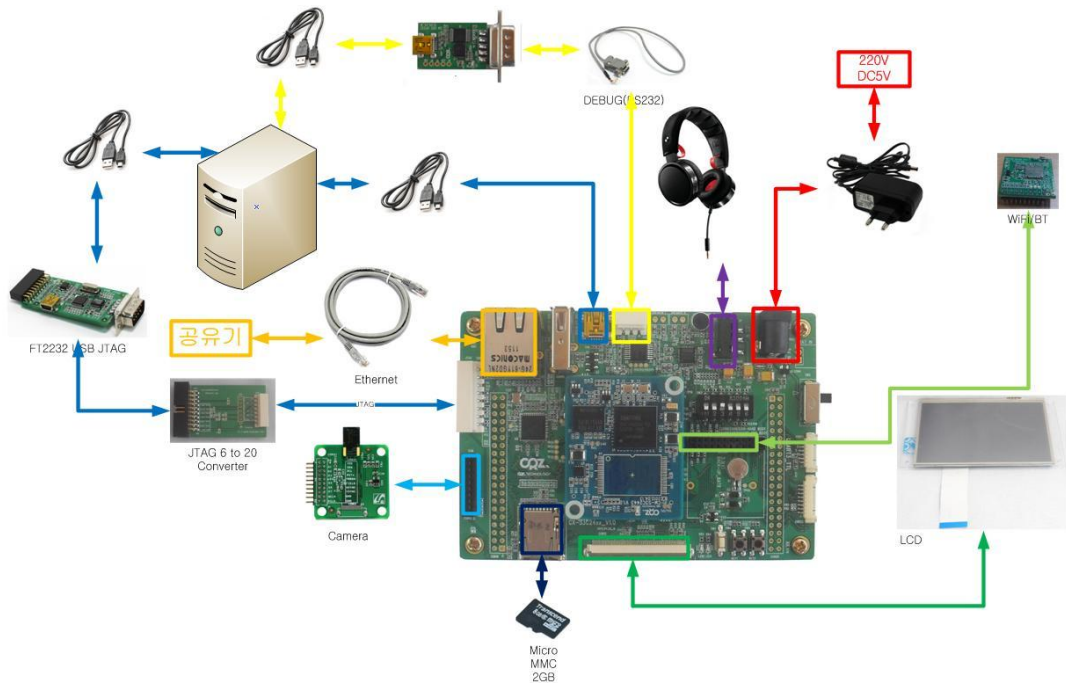
Gnome Filesystem Create : success

Unmount all : success

Success
```

Mango 보드에 SD Card 삽입

아래 전체 연결도 참조하여 전원과 3 Pin Serial 케이블 연결



### SD Boot Mode: 3번 ON

전원 인가 후 u-boot 터미널 창에서

```

MANGO2450 # setenv bootcmd "movi read kernel c0008000;bootm c0008000"
MANGO2450 # saveenv
Saving Environment to moviNAND...
done
MANGO2450 # setenv bootargs 'noinitrd console=ttySAC1,115200 rw root=/dev/mmcblk0p2
rootfstype=ext3 rootwait'
MANGO2450 # saveenv
Saving Environment to moviNAND...
done

```

디버깅 터미널 창에서 로그 확인

```
U-Boot 1.3.4 (Jun 27 2012 - 15:18:18) for MANGO2450
```

```
CPU: S3C2416@400MHz
```

```
Fclk = 800MHz, Hclk = 133MHz, Pclk = 66MHz
Board: MANGO2450 Mobile DDR
DRAM: 64 MB
Flash: 1 MB
NAND: 256 MB
SD/MMC: 1804 MB
After SD/MMC boot
*** Warning - bad CRC or moviNAND, using default environment

In: serial
Out: serial
Err: serial
ETH test 1
ETH test 2
Hit any key to stop autoboot: 0
MANGO2450 # print
bootcmd=sleep 1;nand scrub ;sleep 1;nand erase;sleep 1;movi read 3800000# 40000 c0000000 ;sleep
1;nand write c0000000 0 40000;sleep 1;movi read kernel c0000000;sleep 1;nand write c0000000
40000 200000;sleep 1;movi read 3600000# 3800000 c0000000;sleep 1;nand write.yaffs c0000000
400000 35db4c0
bootdelay=3
baudrate=115200
ethaddr=00:40:5c:26:0a:5b
ipaddr=192.168.30.20
serverip=192.168.30.39
gatewayip=192.168.30.1
netmask=255.255.255.0
stdin=serial
stdout=serial
stderr=serial

Environment size: 478/16380 bytes
MANGO2450 # setenv bootcmd "movi read kernel c0008000;bootm c0008000"
MANGO2450 # saveenv
Saving Environment to moviNAND...
done
MANGO2450 # setenv bootargs 'noinitrd console=ttySAC1,115200 rw root=/dev/mmcbk0p2
rootfstype=ext3 rootwait'
```

```
MANGO2450 # saveenv
Saving Environment to moviNAND..
done
MANGO2450 # print
bootdelay=3
baudrate=115200
ethaddr=00:40:5c:26:0a:5b
ipaddr=192.168.30.20
serverip=192.168.30.39
gatewayip=192.168.30.1
netmask=255.255.255.0
stdin=serial
stdout=serial
stderr=serial
bootcmd=movi read kernel c0008000;bootm c0008000
bootargs='noinitrd console=ttySAC1,115200 rw root=/dev/mmcblk0p2 rootfstype=ext3 rootwait'

Environment size: 328/16380 bytes
MANGO2450 # boot
Reading kernel from sector 3683278 (8192 sectors).. completed
Boot with zImage

Starting kernel ...

Uncompressing Linux... done, booting the kernel.
[ 0.000000] Initializing cgroup subsys cpu
[ 0.000000] Linux version 2.6.38.8 (shbae@shbae-crztech-tower-system) (gcc version 4.4.1
(Sourcery G++ Lite 2010q1-202) ) #4 PREEMPT Thu Jun 14 13:56:22 KST 2012
[ 0.000000] CPU: ARM926EJ-S [41069265] revision 5 (ARMv5TEJ), cr=00053177
[ 0.000000] CPU: VIVT data cache, VIVT instruction cache
[ 0.000000] Machine: MANGO2450
[ 0.000000] Memory policy: ECC disabled, Data cache writeback
[ 0.000000] CPU S3C2416/S3C2450 (id 0x32450003)
[ 0.000000] S3C24XX Clocks, Copyright 2004 Simtec Electronics
[ 0.000000] CPU: MPLL on 800.000 MHz, cpu 400.000 MHz, mem 133.333 MHz, pclk 66.666 MHz
[ 0.000000] CPU: EPLL on 96.000 MHz, usb-bus 48.000 MHz
[ 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 16256
[ 0.000000] Kernel command line: 'noinitrd console=ttySAC1,115200 rw root=/dev/mmcblk0p2
```



```

rootfstype=ext3 rootwait'
[ 0.000000] PID hash table entries: 256 (order: -2, 1024 bytes)
[ 0.000000] Dentry cache hash table entries: 8192 (order: 3, 32768 bytes)
[ 0.000000] Inode-cache hash table entries: 4096 (order: 2, 16384 bytes)
[ 0.000000] Memory: 64MB = 64MB total
[ 0.000000] Memory: 58216k/58216k available, 7320k reserved, 0K highmem
[ 0.000000] Virtual kernel memory layout:
[ 0.000000]   vector   : 0xffff0000 - 0xffff1000   ( 4 kB)
[ 0.000000]   fixmap   : 0xffff0000 - 0xfffe0000   ( 896 kB)
[ 0.000000]   DMA      : 0xffc00000 - 0xffe00000   ( 2 MB)
[ 0.000000]   vmalloc  : 0xc4800000 - 0xf6000000   ( 792 MB)
[ 0.000000]   lowmem   : 0xc0000000 - 0xc4000000   ( 64 MB)
[ 0.000000]   modules  : 0xbf000000 - 0xc0000000   ( 16 MB)
[ 0.000000]     .init   : 0xc0008000 - 0xc0008d00   ( 532 kB)
[ 0.000000]     .text   : 0xc0008d00 - 0xc0612000   (5652 kB)
[ 0.000000]     .data   : 0xc0612000 - 0xc0650480   ( 250 kB)
[ 0.000000] SLUB: Genslabs=13, HWalign=32, Order=0-3, MinObjects=0, CPUs=1, Nodes=1
[ 0.000000] NR_IRQS:107
[ 0.000000] irq: clearing subpending status 0000001e
[ 0.000000] irq: clearing subpending status 00000012
[ 0.000000] Console: colour dummy device 80x30
[ 0.000000] console [ttySAC1] enabled
[ 0.015000] Calibrating delay loop... 199.47 BogoMIPS (lpj=498688)
[ 0.115000] pid_max: default: 32768 minimum: 301
[ 0.115000] Mount-cache hash table entries: 512
[ 0.120000] Initializing cgroup subsys debug
[ 0.125000] Initializing cgroup subsys cpuacct
[ 0.125000] Initializing cgroup subsys freezer
[ 0.130000] CPU: Testing write buffer coherency: ok
[ 0.140000] devtmpfs: initialized
[ 0.140000] gpiochip_add: registered GPIOs 0 to 23 on device: GPIOA
[ 0.145000] gpiochip_add: registered GPIOs 32 to 47 on device: GPIOB
[ 0.150000] gpiochip_add: registered GPIOs 64 to 79 on device: GPIOC
[ 0.155000] gpiochip_add: registered GPIOs 96 to 111 on device: GPIOD
[ 0.160000] gpiochip_add: registered GPIOs 128 to 143 on device: GPIOE
[ 0.165000] gpiochip_add: registered GPIOs 160 to 167 on device: GPIOF
[ 0.170000] gpiochip_add: registered GPIOs 192 to 207 on device: GPIOG
[ 0.175000] gpiochip_add: registered GPIOs 224 to 234 on device: GPIOH

```

```
[ 0.180000] gpiochip_add: registered GPIOs 256 to 271 on device: GPIOJ
[ 0.185000] gpiochip_add: registered GPIOs 288 to 303 on device: GPIOK
[ 0.190000] gpiochip_add: registered GPIOs 320 to 334 on device: GPIOL
[ 0.195000] gpiochip_add: registered GPIOs 352 to 353 on device: GPIOM
[ 0.205000] print_constraints: dummy:
[ 0.205000] NET: Registered protocol family 16
[ 0.280000] S3C Power Management, Copyright 2004 Simtec Electronics
[ 0.285000] S3C2416: Initializing architecture
[ 0.285000] S3C2416: IRQ Support
[ 0.290000] S3C24XX DMA Driver, Copyright 2003-2006 Simtec Electronics
[ 0.295000] DMA channel 0 at c4808000, irq 88
[ 0.300000] DMA channel 1 at c4808100, irq 89
[ 0.305000] DMA channel 2 at c4808200, irq 90
[ 0.310000] DMA channel 3 at c4808300, irq 91
[ 0.315000] DMA channel 4 at c4808400, irq 92
[ 0.320000] DMA channel 5 at c4808500, irq 93
[ 0.325000] s3c-adc s3c24xx-adc: attached adc driver
[ 0.355000] bio: create slab <bio-0> at 0
[ 0.360000] SCSI subsystem initialized
[ 0.360000] usbcore: registered new interface driver usbfs
[ 0.365000] usbcore: registered new interface driver hub
[ 0.370000] usbcore: registered new device driver usb
[ 0.375000] s3c-i2c s3c2410-i2c: slave address 0x10
[ 0.380000] s3c-i2c s3c2410-i2c: bus frequency set to 65 KHz
[ 0.385000] s3c-i2c s3c2410-i2c: i2c-0: S3C I2C adapter
[ 0.390000] Advanced Linux Sound Architecture Driver Version 1.0.23.
[ 0.395000] Bluetooth: Core ver 2.15
[ 0.400000] NET: Registered protocol family 31
[ 0.405000] Bluetooth: HCI device and connection manager initialized
[ 0.410000] Bluetooth: HCI socket layer initialized
[ 0.420000] cfg80211: Calling CRDA to update world regulatory domain
[ 0.470000] NET: Registered protocol family 2
[ 0.470000] IP route cache hash table entries: 1024 (order: 0, 4096 bytes)
[ 0.480000] TCP established hash table entries: 2048 (order: 2, 16384 bytes)
[ 0.485000] TCP bind hash table entries: 2048 (order: 3, 40960 bytes)
[ 0.490000] TCP: Hash tables configured (established 2048 bind 2048)
[ 0.495000] TCP reno registered
[ 0.500000] UDP hash table entries: 128 (order: 0, 6144 bytes)
```

```
[ 0.505000] UDP-Lite hash table entries: 128 (order: 0, 6144 bytes)
[ 0.510000] NET: Registered protocol family 1
[ 0.515000] NetWinder Floating Point Emulator V0.97 (extended precision)
[ 0.555000] ROMFS MTD (C) 2007 Red Hat, Inc.
[ 0.560000] fuse init (API version 7.16)
[ 0.560000] msgmni has been set to 113
[ 0.570000] io scheduler noop registered
[ 0.570000] io scheduler deadline registered
[ 0.575000] io scheduler cfq registered (default)
[ 0.635000] Console: switching to colour frame buffer device 100x30
[ 0.670000] s3c-fb s3c-fb: window 0: fb
[ 0.675000] s3c2440-uart.0: ttySAC0 at MMIO 0x50000000 (irq = 70) is a S3C2440
[ 0.680000] s3c2440-uart.1: ttySAC1 at MMIO 0x50004000 (irq = 73) is a S3C2440
[ 0.690000] s3c2440-uart.2: ttySAC2 at MMIO 0x50008000 (irq = 76) is a S3C2440
[ 0.695000] s3c2440-uart.3: ttySAC3 at MMIO 0x5000c000 (irq = 94) is a S3C2440
[ 0.735000] brd: module loaded
[ 0.750000] loop: module loaded
[ 0.755000] S3C24XX NAND Driver, (c) 2004 Simtec Electronics
[ 0.755000] s3c24xx-nand s3c2412-nand: Tacls=3, 22ns Twrph0=8 60ns, Twrph1=3 22ns
[ 0.760000] s3c24xx-nand s3c2412-nand: NAND hardware ECC
[ 0.765000] NAND device: Manufacturer ID: 0xec, Chip ID: 0xda (Samsung NAND 256MiB 3,3V 8-bit)
[ 0.770000] Scanning device for bad blocks
[ 0.785000] Bad eraseblock 114 at 0x000000e40000
[ 0.785000] Bad eraseblock 115 at 0x000000e60000
[ 0.820000] Bad eraseblock 464 at 0x000003a00000
[ 0.870000] Bad eraseblock 984 at 0x000007b00000
[ 0.875000] Bad eraseblock 1025 at 0x000008020000
[ 0.875000] Bad eraseblock 1063 at 0x0000084e0000
[ 0.880000] Bad eraseblock 1113 at 0x000008b20000
[ 0.895000] Bad eraseblock 1231 at 0x0000099e0000
[ 0.940000] Bad eraseblock 1764 at 0x00000dc80000
[ 0.955000] Bad eraseblock 1931 at 0x00000f160000
[ 0.965000] Bad eraseblock 2013 at 0x00000fba0000
[ 0.965000] Creating 3 MTD partitions on "NAND":
[ 0.970000] 0x000000000000-0x000000040000 : "Bootloader"
[ 0.980000] 0x000000040000-0x000000400000 : "Kernel"
[ 0.985000] 0x000000400000-0x000010000000 : "rootfs"
```

```
[ 0.990000] smsc911x: Driver version 2008-10-21.
[ 1.000000] smsc911x-mdio: probed
[ 1.000000] eth0: attached PHY driver [Generic PHY] (mii_bus:phy_addr=ffffff:01, irq=-1)
[ 1.005000] net eth0: MAC Address: 00:80:00:23:45:67
[ 1.010000] ohci_hcd: USB 1.1 'Open' Host Controller (OHCI) Driver
[ 1.020000] s3c2410-ohci s3c2410-ohci: S3C24XX OHCI
[ 1.020000] s3c2410-ohci s3c2410-ohci: new USB bus registered, assigned bus number 1
[ 1.025000] s3c2410-ohci s3c2410-ohci: irq 42, io mem 0x49000000
[ 1.090000] hub 1-0:1.0: USB hub found
[ 1.090000] hub 1-0:1.0: 2 ports detected
[ 1.095000] Initializing USB Mass Storage driver..
[ 1.095000] usbcore: registered new interface driver usb-storage
[ 1.100000] USB Mass Storage support registered.
[ 1.105000] usbcore: registered new interface driver libusual
[ 1.110000] usbcore: registered new interface driver usbserial
[ 1.115000] USB Serial support registered for generic
[ 1.120000] usbcore: registered new interface driver usbserial_generic
[ 1.125000] usbserial: USB Serial Driver core
[ 1.130000] mousedev: PS/2 mouse device common for all mice
[ 1.135000] input: gpio-keys-pollled as /devices/platform/gpio-keys-pollled.0/input/input0
[ 1.140000] samsung-ts s3c2410-ts: driver attached, registering input device
[ 1.145000] input: S3C24XX TouchScreen as /devices/virtual/input/input1
[ 1.155000] S3C24XX RTC, (c) 2004,2006 Simtec Electronics
[ 1.155000] s3c-rtc s3c2410-rtc: rtc disabled, re-enabling
[ 1.160000] s3c-rtc s3c2410-rtc: rtc core: registered s3c as rtc0
[ 1.165000] i2c /dev entries driver
[ 1.170000] lirc_dev: IR Remote Control driver registered, major 253
[ 1.175000] IR NEC protocol handler initialized
[ 1.180000] IR RC5(x) protocol handler initialized
[ 1.185000] IR RC6 protocol handler initialized
[ 1.185000] IR JVC protocol handler initialized
[ 1.190000] IR Sony protocol handler initialized
[ 1.195000] IR RC5 (streamzap) protocol handler initialized
[ 1.200000] IR LIRC bridge handler initialized
[ 1.205000] Linux video capture interface: v2.00
[ 1.215000] device-mapper: uevent: version 1.0.3
[ 1.215000] device-mapper: ioctl: 4.19.1-ioctl (2011-01-07) initialised: dm-devel@redhat.com
[ 1.220000] Bluetooth: HCI UART driver ver 2.2
```

```

[ 1.225000] Bluetooth: HCI H4 protocol initialized
[ 1.230000] Bluetooth: HCI BCSP protocol initialized
[ 1.235000] Bluetooth: HCILL protocol initialized
[ 1.235000] Bluetooth: Generic Bluetooth SDIO driver ver 0.1
[ 1.240000] cpuidle: using governor ladder
[ 1.240000] sdhci: Secure Digital Host Controller Interface driver
[ 1.245000] sdhci: Copyright(c) Pierre Ossman
[ 1.250000] s3c-sdhci s3c-sdhci.0: clock source 0: hsmmc (133333333 Hz)
[ 1.255000] s3c-sdhci s3c-sdhci.0: clock source 1: hsmmc (133333333 Hz)
[ 1.260000] s3c-sdhci s3c-sdhci.0: clock source 2: hsmmc-if (96000000 Hz)
[ 1.270000] mmc0: no vmmc regulator found
[ 1.275000] mmc0: SDHCI controller on samsung-hsmmc [s3c-sdhci.0] using ADMA
[ 1.280000] s3c-sdhci s3c-sdhci.1: clock source 0: hsmmc (133333333 Hz)
[ 1.285000] s3c-sdhci s3c-sdhci.1: clock source 1: hsmmc (133333333 Hz)
[ 1.290000] s3c-sdhci s3c-sdhci.1: clock source 2: hsmmc-if (96000000 Hz)
[ 1.295000] mmc1: no vmmc regulator found
[ 1.300000] mmc1: SDHCI controller on samsung-hsmmc [s3c-sdhci.1] using ADMA
[ 1.310000] usbcore: registered new interface driver usbhid
[ 1.310000] usbhid: USB HID core driver
[ 1.320000] Mango 24 Audio Support
[ 1.320000] wm8960-codec 0-001a: No platform data supplied
[ 1.400000] mmc1: new high speed SD card at address b368
[ 1.405000] mmcblk0: mmc1:b368      1.76 GiB
[ 1.410000]  mmcblk0: p1 p2 p3
[ 2.275000] asoc: wm8960-hifi <-> samsung-i2s mapping ok
[ 2.275000] input: SMDK-I2S Headset Jack as /devices/platform/soc-audio/sound/card0/input2
[ 2.285000] ALSA device list:
[ 2.285000]   #0: SMDK-I2S
[ 2.290000] GACT probability NOT on
[ 2.290000] Mirror/redirect action on
[ 2.295000] u32 classifier
[ 2.295000]   Actions configured
[ 2.300000] Netfilter messages via NETLINK v0.30.
[ 2.305000] nf_conntrack version 0.5.0 (909 buckets, 3636 max)
[ 2.315000] ctnetlink v0.93: registering with nfnetlink.
[ 2.315000] xt_time: kernel timezone is -0000
[ 2.330000] ip_tables: (C) 2000-2006 Netfilter Core Team
[ 2.330000] arp_tables: (C) 2002 David S. Miller

```

```
[ 2.335000] TCP westwood registered
[ 2.340000] Initializing XFRM netlink socket
[ 2.345000] NET: Registered protocol family 10
[ 2.370000] Mobile IPv6
[ 2.370000] IPv6 over IPv4 tunneling driver
[ 2.400000] NET: Registered protocol family 17
[ 2.400000] NET: Registered protocol family 15
[ 2.405000] Bluetooth: L2CAP ver 2.15
[ 2.405000] Bluetooth: L2CAP socket layer initialized
[ 2.410000] Bluetooth: SCO (Voice Link) ver 0.6
[ 2.415000] Bluetooth: SCO socket layer initialized
[ 2.420000] Bluetooth: RFCOMM TTY layer initialized
[ 2.425000] Bluetooth: RFCOMM socket layer initialized
[ 2.430000] Bluetooth: RFCOMM ver 1.11
[ 2.435000] Bluetooth: BNEP (Ethernet Emulation) ver 1.3
[ 2.440000] Bluetooth: BNEP filters: protocol multicast
[ 2.445000] Bluetooth: HIDP (Human Interface Emulation) ver 1.2
[ 2.450000] 802.1Q VLAN Support v1.8 Ben Greear <greearb@candelatech.com>
[ 2.455000] All bugs added by David S. Miller <davem@redhat.com>
[ 2.460000] lib80211: common routines for IEEE802.11 drivers
[ 2.475000] s3c-rtc s3c2410-rtc: setting system clock to 2000-01-08 23:07:33 UTC (947372853)
[ 2.485000] EXT3-fs: barriers not enabled
[ 2.485000] kjournald starting. Commit interval 5 seconds
[ 3.050000] EXT3-fs (mmcblk0p2): using internal journal
[ 3.050000] EXT3-fs (mmcblk0p2): recovery complete
[ 3.055000] EXT3-fs (mmcblk0p2): mounted filesystem with ordered data mode
[ 3.060000] VFS: Mounted root (ext3 filesystem) on device 179:2.
[ 3.070000] devtmpfs: mounted
[ 3.070000] Freeing init memory: 532K
Starting logging: OK
Populating using udev: [ 6.440000] <30>udev[60]: starting version 181
done
Initializing random number generator... done.
Starting system message bus: Unknown group "lp" in message bus configuration file
done
Starting network...
Starting connman ... done.
Starting dropbear sshd: generating rsa key... generating dsa key... OK
```

```
Starting qt-demo: OK
```

```
Welcome to Mangoboard
```

```
mango2450 login: root
```

```
#
```

```
#
```

```
#
```

```
#
```

```
# ls
```

```
mlan.tar
```

```
#
```