Android

Quick Start Guide

TCC88xx-Android-IceCreamSandwich-V0.00E-Quick Start Guide

May 16, 2012

Telechips

Preliminary

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Revision History

Date	Version	Description
2012-05-16	1.00	Initial Release

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1 Introduction

This document provides guideline for users to start Android platform v4.0.4(IceCreamSandwich) for TCC88xx quickly.

2 Features

Telechips Android v4.0.4 (IceCreamSandwich) platform supports following features

- **Upgraded to kernel 3.0.8**
- **Applications on NAND storage*.**
- **1GHz CPU frequency**
- **Max. resolution of video playback is Full-HD**
  (In case of DDR3, Max. bit rate of Video playback is up to 15Mbps)

Note1> Telechips Android platform supports 2 types of flash memory

- Internal Flash Memory
  This memory has two separate areas – System area and NAND storage.
  System area is used to store Android system image and NAND storage is used to store various data including multimedia data.

- SD Card – Removable area to store various data
  Telechips Android platform makes an application to be installed on the NAND storage.

Note2> Following functions will be supported in the near future.

- Application backup API (it needs GMS)
- Potable Hotspot(It needs 3G modem)

3 Download the SDK

Download SDK from ‘ics branch of Telechips Android Git server

```
$ mkdir mydroid
$ cd mydroid

$ repo init -u ssh://android.telechips.com/androidce/android/platform/manifest.git
-b ics

$ repo sync
```

You must to use “-b ics" option.

4 Compile Linux kernel

Kernel must be compiled firstly. After compile kernel, you must compile boot.img and system.img. If you change Kernel, boot.img and system.img must be compiled again.

4.1 Set Linux kernel default setting

Lunch menu must be selected before setting linux kernel configuration, because lunch menu affect the kernel configuration of architecture in ics release.

4.1.1 For TCC88xx

Enter Linux kernel folder and execute below command to set TCC88xx default setting. *.config* file is created at kernel folder.

```
$ cd ~/mydroid/android/kernel
$ make tcc880x_defconfig
```

In this case, default operating clock is 1GHz/400MHz. And operating clock will not be varied during operation.

4.1.2 For M801, M805 and M805S

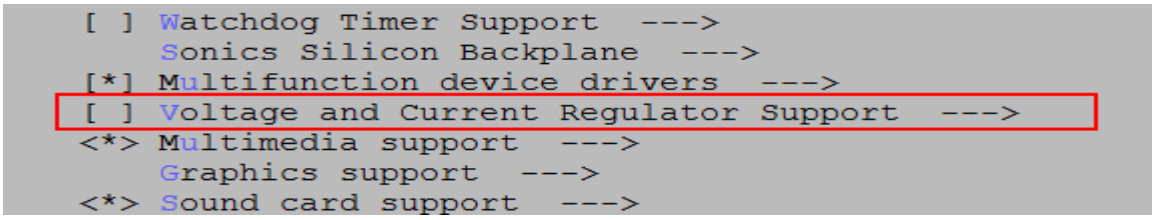
Default operating clock is currently 1GHz/400MHz.
For reference,
M805 is a revision 0.3 board of M801.

```
$ cd ~/mydroid/android/kernel
$ make m805_880x_defconfig
```

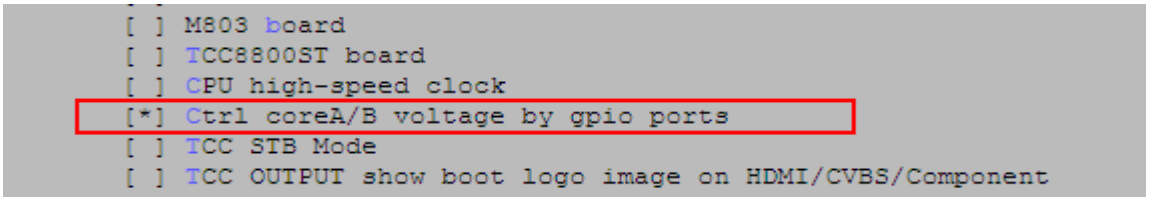
1) **How to use M801 Rev 0.1 Board (without AXP192 PMU Device)**
(*Board Name : TCC93_8803_M801_D3_16X2_V0.1*)

If you use M801 Rev 0.1 board, you have to change configuration in kernel menuconfig as below.

Select "*Device Driver.*
Disable "*Voltage and Current Regulator Support".*

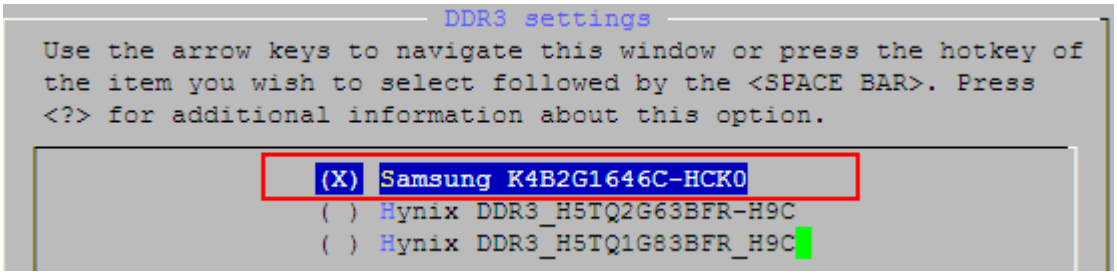


And then, select "*System Type → Ctrl coreA/B voltage by gpio ports*".

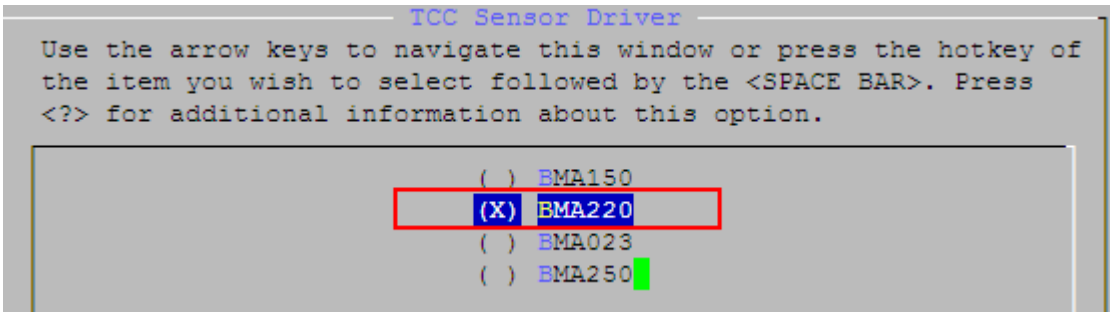


2) How to use M801 Rev 0.2 Board (with AXP192 PMU Device)
(*Board Name : TCC93_8803_M801_D3_16X2_V0.2*)

a. Select "*System Type → DDR3 settings*"
Select "*Samsung K4B2G1646C-HCK0*" as follows.



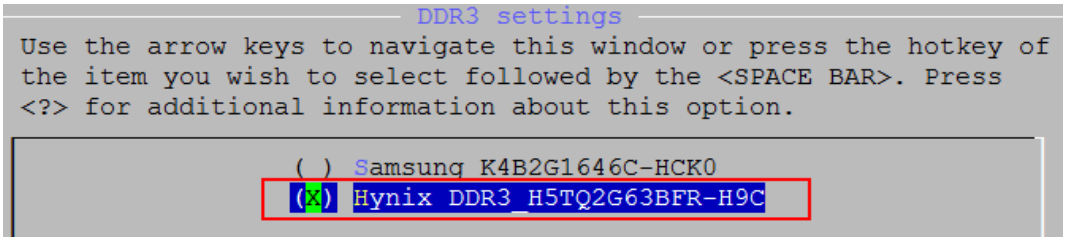
b. Select "*Device Drivers→Character devices→TCC Sensor Driver*"
In the "*TCC Sensor Driver*" option, Select "*BMA220*" as follows.



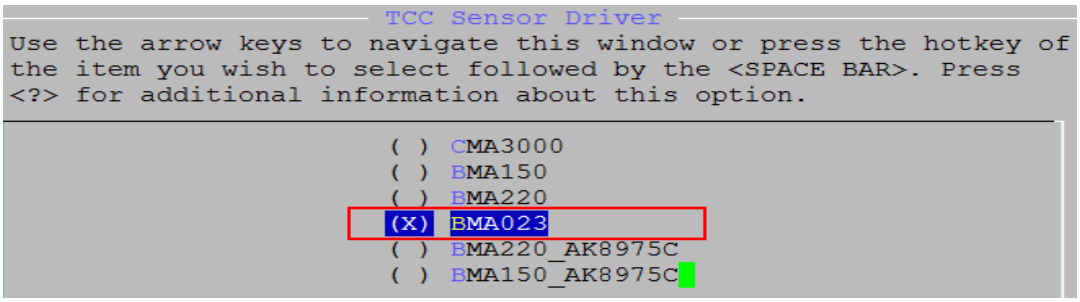
3) How to use M801 Rev 0.3(= M805 Rev 0.3) Board (with AXP192 PMU Device) And M805 Rev 0.4A Board
(*Board Name : TCC8803_M805_D3_16X2_V0.3 and TCC8803_M805_D3_16X2_V0.4A*)

If you use M805 Rev 0.3 and M805 Rev 0.4A board, you have to change configuration in kernel menuconfig as below.

a. Select "*System Type → DDR3 settings*"
Select "*Hynix DDR3_H5TQ2G63BFR-H9C*".



b. Select "*Device Drivers→Character devices→TCC Sensor Driver*"
In the "*TCC Sensor Driver*" option, Select "*BMA023*" as follows.



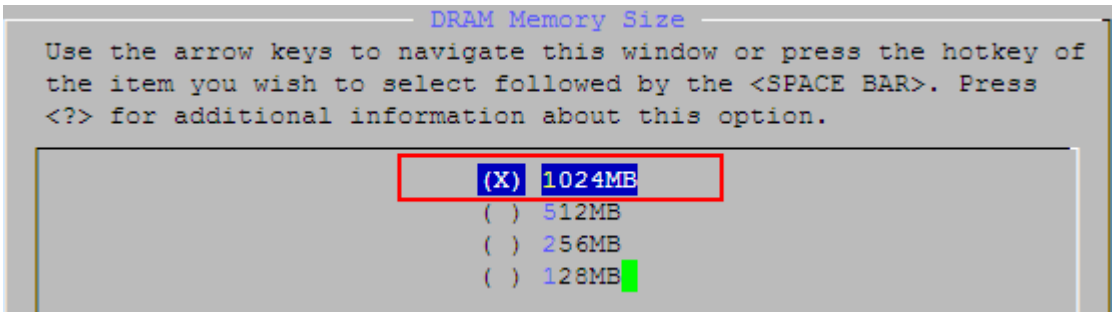
4) How to use M805S Board

If you use M805S board, you have to change configuration in kernel menuconfig as below.
For reference,
M805S Board is composed of 2 type board.
One is board that has DRAM of 1024MBytes and the other is board that has DRAM of 512Mbytes.

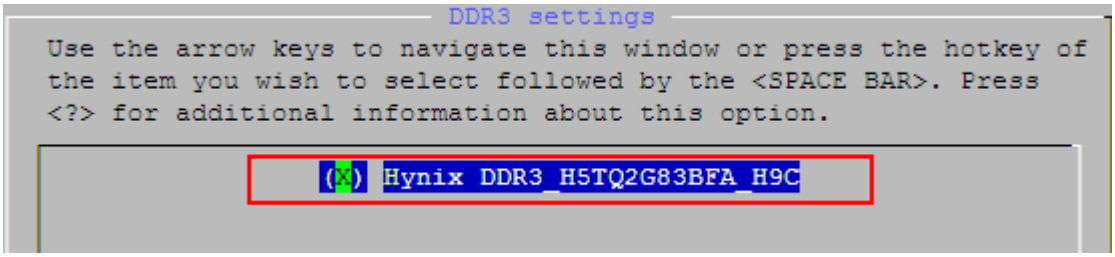
(1) Memory Setting

a. In case of M805S_DRAM_1024MB (Memory type : H5TQ2G83BFR-H9C)

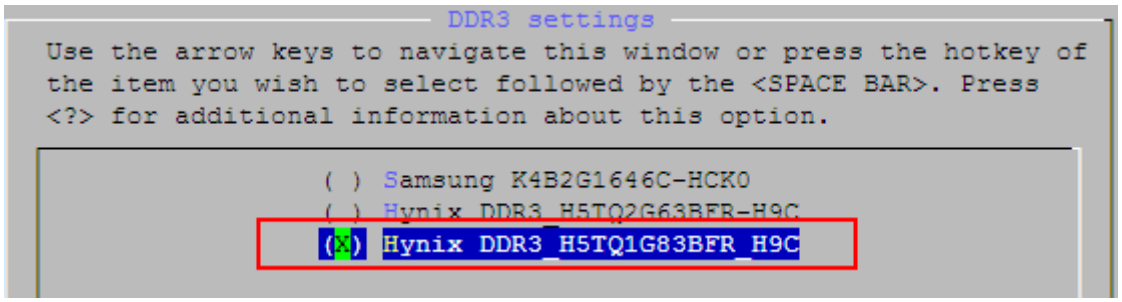
Select "*System Type → DRAM Memory Size*" and then select "*1024MB*"



Select "*System Type→DDR3 settings*"
and then select "*Hynix DDR3_H5TQ2G83BFA_H9C*" as follows.

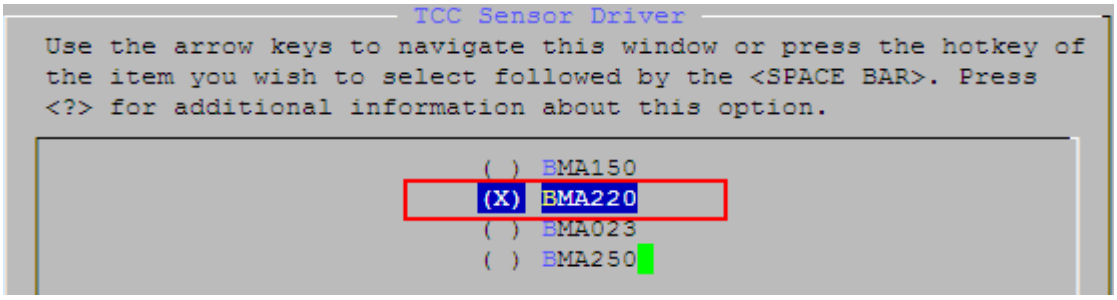


b. In case of M805S_DRAM_512MB (Memory type : H5TQ1G83BFR-H9C)

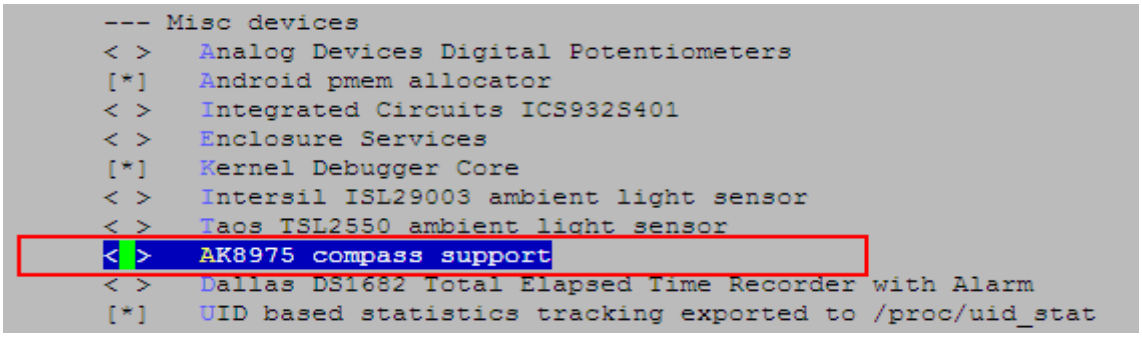


(2) G-Sensor Setting

Select "*Device Drivers→Character devices→TCC Sensor Driver*"
In the "*TCC Sensor Driver"* option, Select "*BMA220*" as follows.

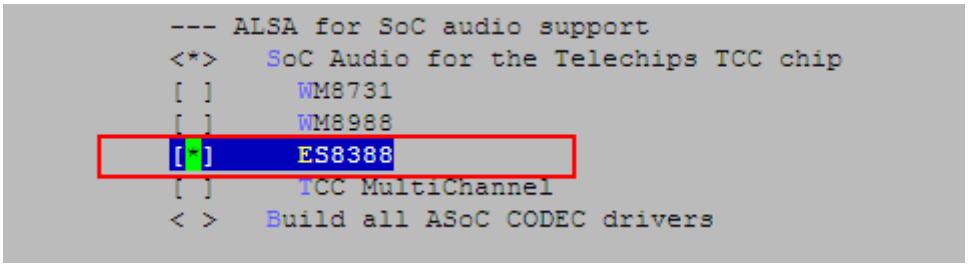


(3) Remove Compass (AK8975)
M805S is not included Compass(AK8975).
Select "*Device Drivers→Misc devices*" and then exclude "*AK8975 compass support*" as follows.



(4) Audio Codec Setting

Select "*Device Drivers→Character devices→Sound card support→ Advanced Linux Sound Architecture→ALSA for SoC audio support*"
Select "*ES8388*" as follows.



4.2 Set Linux kernel's configurations

The above config file locates in *kernel/arch/arm/configs/*

For TCC88xx EVM, kernel configuration will be set by tcc880x_defconfig. And in addition, you must set correct module with menuconfig.
And for M801, kernel configuration will be set by m801_defconfig.

4.3 Compile Linux kernel

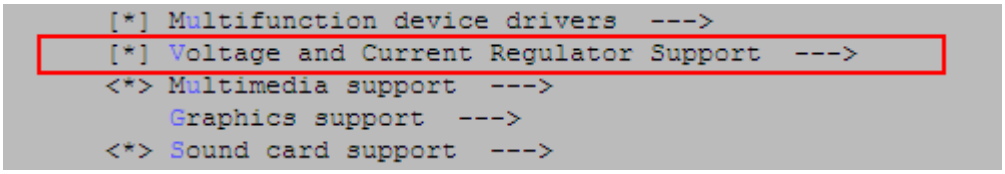
To compile Linux kernel, just execute "*make*".

```
$ cd ~/mydroid/android/kernel
$ make
```

4.4 How to set compile option about power control of Core A/B

1) In case of using PMIC (ex, AXP192, …)

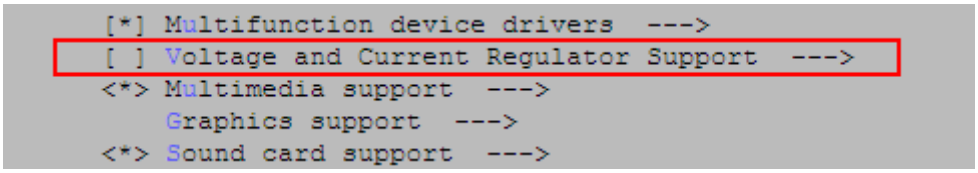
If you use PMIC power, you have to use option as below.



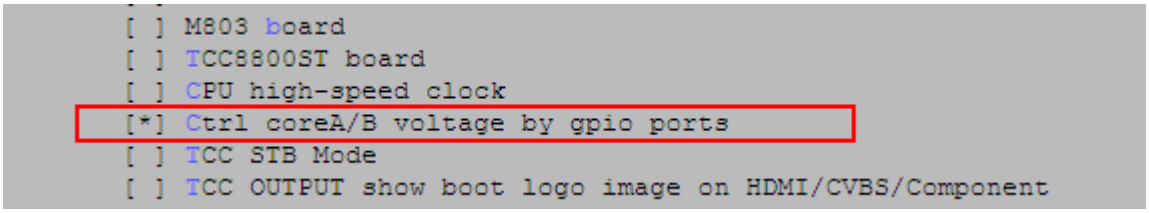
2) In case of using Discrete power by GPIO

If you use Discrete power, you have to change configuration in kernel menuconfig as below.

Select "*Device Driver.*
Disable "*Voltage and Current Regulator Support".*



And, select "*System Type → Ctrl coreA/B voltage by gpio ports*".



5 Compile and build Android framework

5.1 Setup compile environment

Before compile operation, TARGET_PRODUCT must be set for the proper board configuration. Execute below commands. There is space between *dot(.)* and '*build/envsetup.sh*' to execute shell scripter. When you execute "*lunch*" command, you can see lists.

```
$ cd ~/mydroid/android

$ . build/envsetup.sh
including device/moto/stingray/vendorsetup.sh
including device/moto/wingray/vendorsetup.sh
including device/samsung/crespo4g/vendorsetup.sh
including device/samsung/crespo/vendorsetup.sh
including device/samsung/maguro/vendorsetup.sh
including device/samsung/torospr/vendorsetup.sh
including device/samsung/toro/vendorsetup.sh
including device/samsung/tuna/vendorsetup.sh
including device/telechips/m805_880x/vendorsetup.sh
including device/telechips/m805_892x/vendorsetup.sh
including device/telechips/tcc8800/vendorsetup.sh
including device/telechips/tcc8920st/vendorsetup.sh
including device/telechips/tcc8920/vendorsetup.sh
including device/ti/panda/vendorsetup.sh
lincluding sdk/bash_completion/adb.bash$
lunch

You're building on Linux

Lunch menu... pick a combo:
     1. full-eng
     2. full_x86-eng
     3. vbox_x86-eng
     4. full_stingray-userdebug
     5. full_wingray-userdebug
     6. full_crespo4g-userdebug
     7. full_crespo-userdebug
     8. full_maguro-userdebug
     9. full_torospr-userdebug
     10. full toro-userdebug
     11. full_tuna-userdebug
     12. full_m805_880x-eng
     13. full_m805_892x-eng
     14. full_m805_892x_emmc-eng
     15. full_tcc8800-eng
     16. full_tcc8800emmc-eng
     17. full_tcc8920st_evm-eng
     18. full_tcc8920st_emmc-eng
     19. full_tcc8920-eng
     20. full_tcc8920v8-eng
     21. full_tcc8920emmc-eng
     22. full_panda-eng
     24. full_tcc9300_evm-userdebug
     25. full_tcc9300_evm-eng
```

If you want to use TCC88xx, please select '*full_tcc8800-eng*' with input an appropriate number as above.

※ How to use user mode
If you want to use user mode, you should use "**choosecombo**" command.

※ **This selection should be done before compiling kernel because it affects the kernel configuration of architecture.**

5.2 Compile bootloader

You must **compile bootloader, kernel and frameworks respectively** and compile bootloader and kernel firstly.
"*bootable/bootloader/lk*".

5.2.1 TCC88xx

To compile for TCC88xx, "*make tcc8800_evm*" must be executed.

```
$ cd ~/mydroid/android/bootable/bootloader/lk
$ make tcc8800_evm
```

Then "*lk.rom*" is created at "*bootable/bootloader/lk/build-tcc8800_evm/lk.rom*"

In addition,
you have to select H/W Revision of EVB Board that you are using.

Change "*bootable/bootloader/lk/target/tcc8800_evm/rules.mk*" for H/W Revision

```
# Define board revision
#HW_REV=0x0500
#HW_REV=0x0600
#HW_REV=0x0601
#HW_REV=0x0602
HW_REV=0x0610
#HW_REV=0x0612
#HW_REV=0x0613
#HW_REV=0x0614
#HW_REV=0x0615
#HW_REV=0x0620
#HW_REV=0x0621
#HW_REV=0x0622
#HW_REV=0x0623
#HW_REV=0x0624
```

For more information, refer to the table below.

HW Revision	Demo Board
HW_REV=0x0601	TCC8803F_D3_16X2_SV6.0
HW_REV=0x0602	TCC93&8803_D2_16X4_2CS_SV6.0
HW_REV=0x0610	TCC8801F_D2_08X4_SV6.1
HW_REV=0x0612	TCC93&8803_D2_16X4_2CS_SV6.1
HW_REV=0x0613	TCC8801F_D3_16X2_SV6.0
HW_REV=0x0614	TCC8803F_D2_16X4_2CS_SV6.0 TCC8803F_D2_16X4_2CS_SV6.1
HW_REV=0x0620	TCC8801F_D2_08X4_2CS_SV6.2
HW_REV=0x0621	TCC8801F_D2_08X4_SV6.3
HW_REV=0x0622	TCC8803F_D3_16X2_SV6.1
HW_REV=0x0623	TCC8801F_D3_08X4_SV6.0
HW_REV=0x0624	TCC8803F_LPD2_32X1_SV6.0

And then, You have to check memory type, memory size and memory part number in kernel menuconfig.
If you need to change memory type, please refer to "6. 512MB DDR2/DDR3 memory usage" part.

5.2.2 M801

To compile for M801, "*make m805_880x_evm*" must be executed.

```
$ cd ~/mydroid/android/bootable/bootloader/lk
$ make m805_880x_evm
```

"*lk.rom*" is created at "*bootable/bootloader/lk/build-m805_880x_evm/*" folder.

In addition,
you have to select H/W Revision of M801/M805 Board that you are using.

Change "*bootable/bootloader/lk/target/m805_880x_evm/rules.mk*" for H/W Revision

```
# Define board revision
# 0x0001 = TCC8803_M801_D3 16x2 V0.1 SAMSUNG DDR3, SAMSUNG NAND
# 0x0002 = TCC8803_M801_D3 16x2 V0.2 WITH PMU(AXP192) SAMSUNG DDR3, SAMSUNG NAND
# 0x0003 = TCC8803_M805_D3 16x2 V0.3 WITH PMU(AXP192) HYNIX DDR3, HYNIX NAND
# 0x0004 = TCC8803_M805_D3 16x2 V0.4A WITH PMU(AXP192) HYNIX DDR3, HYNIX NAND
# 0x0005 = TCC8803_M805S_D3 08x4 V0.4A WITH PMU(AXP192) HYNIX DDR3(1G), HYNIX NAND
# 0x0006 = TCC8803_M805S_D3 08x4 V0.4A WITH PMU(AXP192) HYNIX DDR3(512M), HYNIX NAND
#HW_REV=0x0001
#HW_REV=0x0002
#HW_REV=0x0003
#HW_REV=0x0004
#HW_REV=0x0005
HW_REV=0x0006
```

1) How to use M801 Rev 0.1 Board (without AXP192 PMU Device)
(*Board Name : TCC93_8803_M801_D3_16X2_V0.1*)

→ Select "*HW_REV=0x0001*"

2) How to use M801 Rev 0.2 Board (with AXP192 PMU Device)
(*Board Name : TCC93_8803_M801_D3_16X2_V0.2*)

→ Select "*HW_REV=0x0002*"

3) How to use M801 Rev 0.3(= M805 Rev 0.3) Board (with AXP192 PMU Device) And M805 Rev 0.4A Board
(*Board Name : TCC8803_M805_D3_16X2_V0.3 and TCC8803_M805_D3_16X2_V0.4A*)

→ Select "*HW_REV=0x0004*"

4) How to use M805S Board

If you use DDR3 of 1025MB size, you have to select "*HW_REV=0x0005*" and
If you use DDR3 of 512MB size, you have to select "*HW_REV=0x0006*".

5.3 Compile frameworks

Just execute "*make*" command, you can build Android frameworks. It takes time.

```
$ cd ~/mydroid/android
$ make
```

If you select proper *TARGET_PRODUCT* with "*Setup compile environment*" chapter, you can check it with below log. This log can be seen when you select "*full_tcc8800_evm-eng*".

```
============================================
PLATFORM_VERSION_CODENAME=REL
PLATFORM_VERSION=4.0.4
TARGET_PRODUCT=full_tcc8800
TARGET_BUILD_VARIANT=eng
TARGET_BUILD_TYPE=release
TARGET_BUILD_APPS=
TARGET_ARCH=arm
TARGET_ARCH_VARIANT=armv7-a-neon
HOST_ARCH=x86
HOST_OS=linux
HOST_BUILD_TYPE=release
BUILD_ID=IMM76D
============================================
```

5.3.1 For M801

If you use M801 Rev0.1 and M801 Rev 0.2 Board, You have to change NAND page size, spare size and WiFi module.
In this board, NAND type was changed to Hynix 512Mbyte and WiFi module is AR6302.

Change "*device/telechips/m805_880x/BoardConfig.mk*" file as follows.

```
#BOARD_NAND_PAGE_SIZE := 16384
#BOARD_NAND_SPARE_SIZE := 512
#BOARD_KERNEL_PAGESIZE := 16384
#BOARD_FLASH_BLOCK_SIZE := 16384
#BOARD_SYSTEMIMAGE_PARTITION_SIZE := 314572800
#m805s
BOARD_NAND_PAGE_SIZE := 8192
BOARD_NAND_SPARE_SIZE := 256
BOARD_KERNEL_PAGESIZE := 8192
BOARD_FLASH_BLOCK_SIZE := 8192
BOARD_SYSTEMIMAGE_PARTITION_SIZE := 314572800
endif

# Wi-Fi defines
BOARD_USES_ATH_WIFI := true
BOARD_WIFI_MODULE := ar6003 # ar63003 is the same ar6103 and ar6302

BOARD_USES_REALTEK_WIFI = false
```

Change Audio Codec
In the M801,M805, Audio codec is WM8988.
Modify "*device/telechips/m805_880x/BoardConfig.mk*" file as follows.

```
# Audio Codec Chip
TARGET_BOARD_AUDIO_CODEC := wm8988
#m805s
#TARGET_BOARD_AUDIO_CODEC := es8388
```

5.3.2 For M805

If you use M805 Rev0.3 and M805 Rev 0.4A Board, You have to change NAND page size, spare size and WiFi module.
In this board, NAND type was changed to Hynix 512Mbyte and WiFi module is AR6302.

Change "*device/telechips/m805_880x/BoardConfig.mk*" file as follows.

```
BOARD_NAND_PAGE_SIZE := 16384
BOARD_NAND_SPARE_SIZE := 512
BOARD_KERNEL_PAGESIZE := 16384
BOARD_FLASH_BLOCK_SIZE := 16384
BOARD_SYSTEMIMAGE_PARTITION_SIZE := 314572800
#m805s
#BOARD_NAND_PAGE_SIZE := 8192
#BOARD_NAND_SPARE_SIZE := 256
#BOARD_KERNEL_PAGESIZE := 8192
#BOARD_FLASH_BLOCK_SIZE := 8192
#BOARD_SYSTEMIMAGE_PARTITION_SIZE := 314572800
endif

# Wi-Fi defines
BOARD_USES_ATH_WIFI := true
BOARD_WIFI_MODULE := ar6003 # ar63003 is the same ar6103 and ar6302

BOARD USES REALTEK WIFI = false
```

Change Audio Codec
In the M801,M805, Audio codec is WM8988.
Modify "*device/telechips/m805_880x/BoardConfig.mk*" file as follows.

```
# Audio Codec Chip
TARGET_BOARD_AUDIO_CODEC := wm8988
#m805s
#TARGET_BOARD_AUDIO_CODEC := es8388
```

5.3.3 For M805S

If you use M805S Rev0.1 Board, You have to change NAND page/spare size, WiFi module, Compass option and Audio codec.

1) Change NAND Page/Spare size
Modify "*device/telechips/m805_880x/BoardConfig.mk*" file as follows.

```
#BOARD_NAND_PAGE_SIZE := 16384
#BOARD_NAND_SPARE_SIZE := 512
#BOARD_KERNEL_PAGESIZE := 16384
#BOARD_FLASH_BLOCK_SIZE := 16384
#BOARD_SYSTEMIMAGE_PARTITION_SIZE := 314572800
#m805s
BOARD_NAND_PAGE_SIZE := 8192
BOARD_NAND_SPARE_SIZE := 256
BOARD_KERNEL_PAGESIZE := 8192
BOARD_FLASH_BLOCK_SIZE := 8192
BOARD_SYSTEMIMAGE_PARTITION_SIZE := 314572800
endif
```

2) Change WiFi Module
In case of M805S, WiFi module is Realtek(RTL8188) module.
Modify "*device/telechips/m805_880x/BoardConfig.mk*" file as follows.

```
# Wi-Fi defines
BOARD_USES_ATH_WIFI := false
BOARD_WIFI_MODULE := ar6003 # ar63003 is the same ar6103 and
ar6302

BOARD_USES_REALTEK_WIFI = true
ifeq ($(BOARD_USES_REALTEK_WIFI), true)
    WPA_SUPPLICANT_VERSION := VER_0_8_X
    BOARD_WPA_SUPPLICANT_DRIVER := NL80211
    BOARD_WPA_SUPPLICANT_PRIVATE_LIB := lib_driver_cmd_rtl
    BOARD_HOSTAPD_DRIVER       := NL80211
    BOARD_HOSTAPD_PRIVATE_LIB   := lib_driver_cmd_rtl

    WIFI_DRIVER_MODULE_NAME   := wlan
    WIFI_DRIVER_MODULE_PATH   := "/system/wifi/wlan.ko"

    WIFI_DRIVER_MODULE_ARG    := ""
    WIFI_FIRMWARE_LOADER     := ""
    WIFI_DRIVER_FW_PATH_STA   := ""
    WIFI_DRIVER_FW_PATH_AP    := ""
    WIFI_DRIVER_FW_PATH_P2P   := ""
    WIFI_DRIVER_FW_PATH_PARAM := ""
endif
```

3) Change Compass Options
Please refer TCCxxxx-Android-IceCreamSandwich-V1.0E-Sensor Guide.pdf

4) Change Audio Codec
In the M805S, Audio codec is Everest-Semi(ES8388).
Modify "*device/telechips/m801/BoardConfig.mk*" file as follows.

```
# Audio Codec Chip
#TARGET_BOARD_AUDIO_CODEC := wm8988
#m805s
TARGET_BOARD_AUDIO_CODEC := es8388
```

6 512MB DDR2/DDR3 memory usage

Default 512MB DDR3 is used in SDK. If you want to use DDR2 or DDR3, you have to change several points and compile it again. And you must also consider memory type.

For your information, M801 use 512MB-DDR3 memory.

6.1 TCC88xx

1) Change "*bootable/bootloader/lk/target/tcc8800_evm/rules.mk*" for TCC88xx. In general, You have only to select HW_REV.

```
//Memory type
TCC_MEM_TYPE := DRAM_DDR2
#TCC_MEM_TYPE := DRAM_DDR3

//Memory size
#TCC_MEM_SIZE := 256
TCC_MEM_SIZE := 512

//Memory part No.
ifeq ($(TCC_MEM_TYPE), DRAM_DDR2)
#DEFINES += CONFIG_DDR2_HXB18T2G160AF
#DEFINES += CONFIG_DDR2_HY5PS1G1631CFPS6
DEFINES += CONFIG_DDR2_HY5PS1G831CFPS6
endif

ifeq ($(TCC_MEM_TYPE), DRAM_DDR3)
ifeq ($(TCC_MEM_SIZE), 512)
DEFINES += CONFIG_DDR3_K4B2G1646C_HCK0
else
DEFINES += CONFIG_DDR3_K4B1G1646E_HCH9
endif
endif
```

2) Change Linux kernel configuration.

   Select DRAM Memory Type(DDR2/3), DRAM Memory Size and Memory Part Number settings.

```
[*] MMU-based Paged Memory Management Support
    ARM system type (Telechips TCC-based)  --->
    TCC Processor Family (TCC88xx)  --->
    *** DRAM Settings ***
    DRAM Memory Type (DRAM DDR2)  --->
    DRAM Memory Size (512MB)  --->
    DDR2 settings (Hynix HY5PS1G831C FP-S6)  --->
    *** TCC Board Type ***
[*] TCC8800 evaluation board
```

7 How to use 1GBytes DDR3 memory

If you want to use 1GB_DDR3 Memory, you have to change several points as follows.

7.1 Bootloader

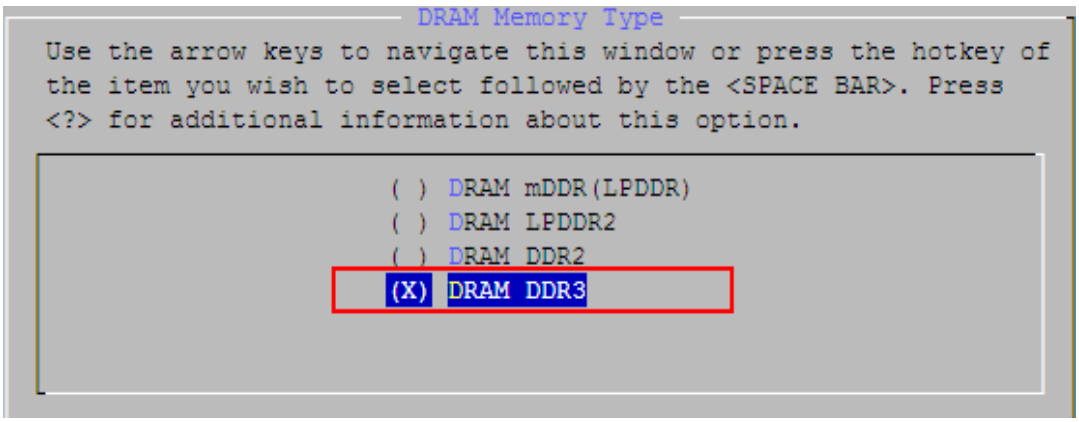
Change "*bootable/bootloader/lk/target/tcc8800_evm/rules.mk*" for H/W Revision

```
# Define board revision
#HW_REV=0x0500
#HW_REV=0x0600
#HW_REV=0x0601
#HW_REV=0x0602
#HW_REV=0x0610
#HW_REV=0x0612
#HW_REV=0x0613
#HW_REV=0x0614
#HW_REV=0x0615
#HW_REV=0x0620
#HW_REV=0x0621
#HW_REV=0x0622
HW_REV=0x0623
#HW_REV=0x0624
```

7.2 Kernel Configuration

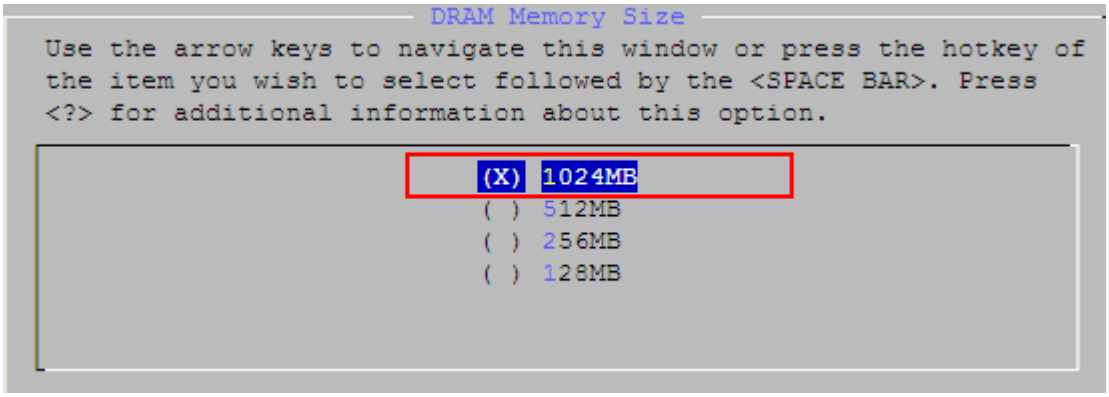
1) Change DRAM Memory Type

Select "*System Type* → *DRAM Memory Type (xxx)* → *DRAM DDR3*"



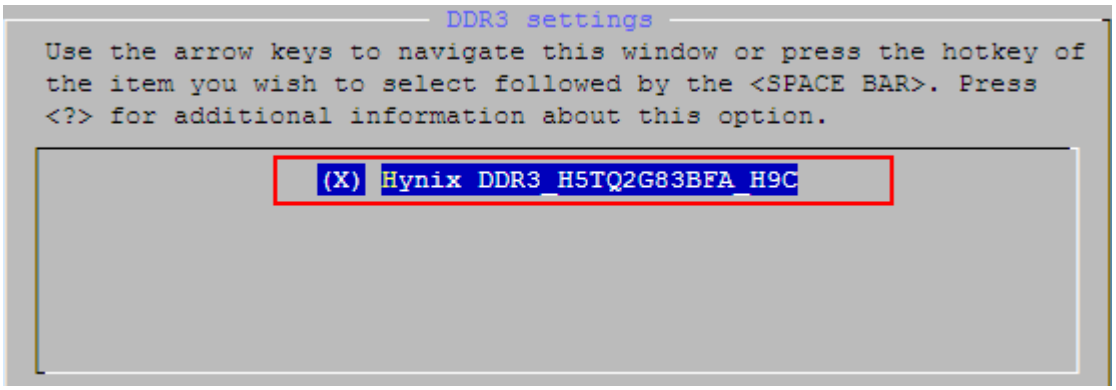
2) Change DRAM Memory Size

Select "*System Type → DRAM Memory Size (xxx) → 1024MB*"



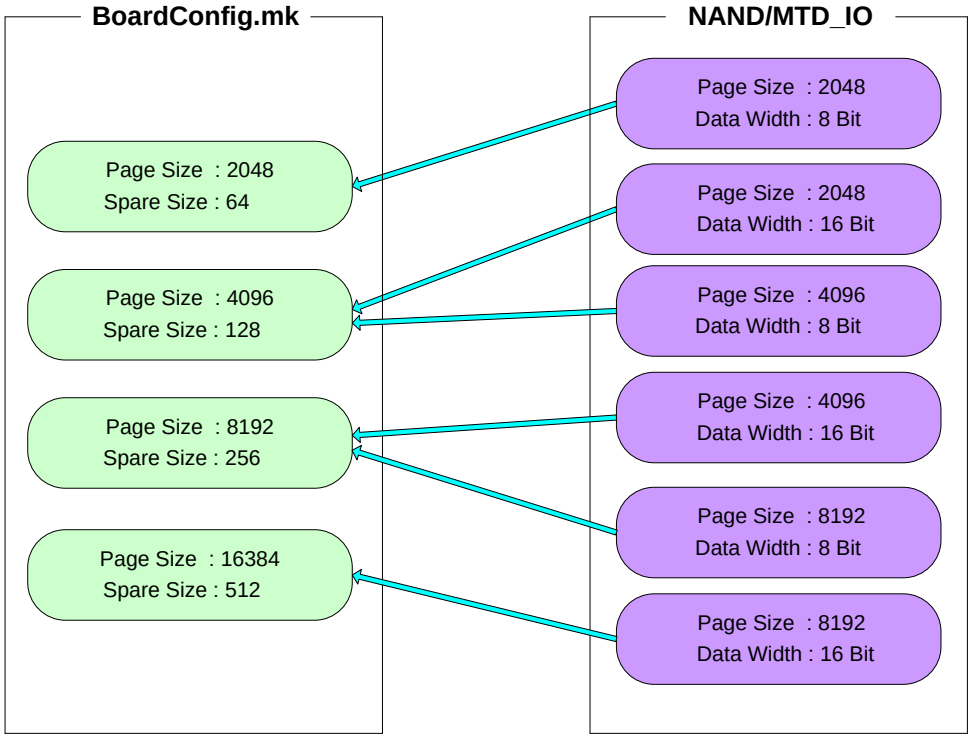
3) Change DRAM Memory Product

Select "*System Type → DDR3 settings (xxx) → Hynix DDR3_H5TQ2G83BFA _H9C*"



8 Setting NAND page & spare size

Open BoardConfig.mk file for setting nand flash type.
Nand flash type is able to check in available list or nand datasheet.




```
$ cd ~/mydroid/android
$ vi device/telechips/tcc8800/BoardConfig.mk
```

```
BOARD_NAND_PAGE_SIZE := 8192
BOARD_NAND_SPARE_SIZE := 256
BOARD_KERNEL_PAGESIZE := 8192
BOARD_FLASH_BLOCK_SIZE := 8192
```

9 How to set DPI for using Tablet UI.

Basically, In order to use Tablet UI, DP value should be over 600 DP.

1) 800x480 LCD

In this case, LCD density value should be set to 120 density.

How to calculate as follows.

*Density = (Small size of LCD * 160)/600 ≒ 120*

For reference,
The default setting of SDK is 800x480 LCD.
And the density value is 120. So there is no need to change.

2) Over 800x600 LCD

- Remove "config.xml" file.

  File location : `device\telechips\"DEVICE_NAME"\overlay\packages\apps\Launcher2\res\values\`

- Change DPI value

  In this case, LCD density value can be set as 160 normally.
  If you want to change the density value, you can change it.

  For example,
  In case of 1024x768 LCD,
  Density value is 204 (Density = (768*160)/600).
  So you can set to less value than 204.
  In this case, you can use 160 DPI.

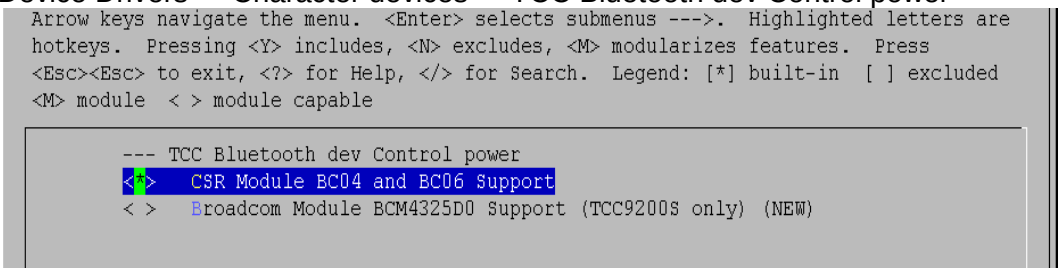
10 How to use Bluetooth

If you want to use Bluetooth, you should check following.

1) Kernel

A. Make menuconfig

Device Drivers -> Character devices -> TCC Bluetooth dev Control power->



You should choose vendor of Bluetooth.

2) Android

A. BoardConfigBase.mk

This file is in “device/telechips/tcc8800/” folder.
You should check bluetooth option in it.

```
# Bluetooth defines
#
BOARD_HAVE_BLUETOOTH := true
BOARD_HAVE_BT_MODUE := true
CUSTOM_BLUETOOTH_VENDOR := csr
```

“BOARD_HAVE_BT_MODULE := true” is not default option.
You should change from false to true to use Bluetooth and touch following.
“touch system/bluetooth/bluedroid/*”

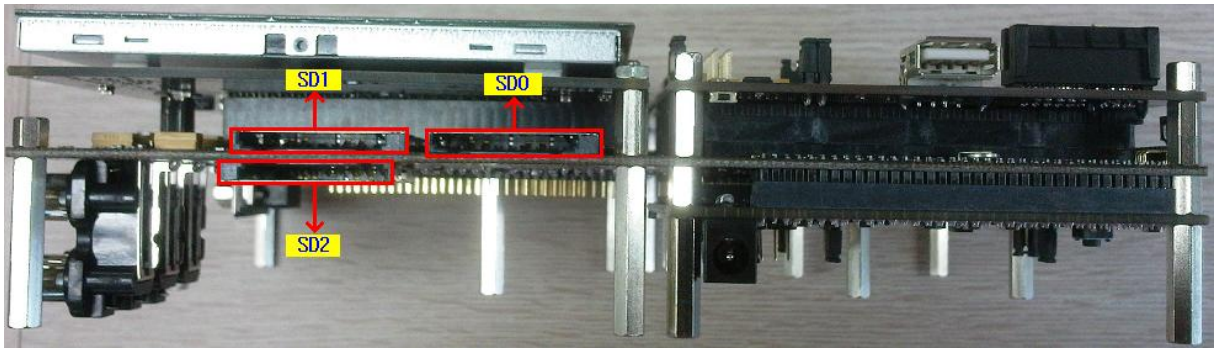
If you open it, you can find this.
You should check that “CUSTOM_BLUETOOTH_VENDER := csr” is opened.
(this is default option)

11 SD Slot Usage

11.1 Settings for High Speed SDHC Card

Default configuration is following.

SD0 slot : not used
SD1 slot : for Wi-Fi
SD2 slot : for SD Card



Some SDHC Card is able to occur that access error for SD High-Speed operation.
Access error is according to external factors (hardware pattern, passive element value, etc), also demoboard.

If you want to change the SD High-Speed mode support or not, that is following.

```
$ cd ~/mydroid/android
$ vi kernel/arch/arm/mach-tcc88xx/Board-tcc8800-mmc.c
```

```
tcc8800_mmc_platform_data[].caps in the Board-tcc8800-mmc.c file,

1) Support the SD High-Speed mode
  .caps       = MMC_CAP_SDIO_IRQ | MMC_CAP_4_BIT_DATA
      | MMC_CAP_SD_HIGHSPEED | MMC_CAP_MMC_HIGHSPEED,

2) Not support the SD High-Speed mode
  .caps       = MMC_CAP_SDIO_IRQ | MMC_CAP_4_BIT_DATA
      /*| MMC_CAP_SD_HIGHSPEED | MMC_CAP_MMC_HIGHSPEED*/,
```

11.2 How to connect SD Card to PC by the UMS

To set SDHC interface port, You have to change “vold.fstab” file and select option in kernel menuconfig as below.

```
$ cd ~/mydroid/android
$ vi device/telechips/tcc88xx-common/vold.fstab
```

11.2.1 Connect SD0 (JM2 Slot) to PC by the UMS

```
1) In the vold.fstab file,
   dev_mount sdcard /mnt/nand/sdcard auto /devices/platform/tcc-sdhc1.1/mmc_host/mmc1

2) Kernel$ make menuconfig
   Device Drivers -> MMC/SD/SDIO card support ->
    [*]   Telechips SD/MMC Host Controller Driver
    [*]   Enable TCC SDHC0
    [*]   Enable TCC SDHC1
          SDHC Data Transmission Methods (SD/MMC Interface PORT3)  --->
```

11.2.2 Connect SD1 (JM1 Slot) to PC by the UMS

```
1) In the vold.fstab file,
   dev_mount sdcard /mnt/nand/sdcard auto /devices/platform/tcc-sdhc1.1/mmc_host/mmc1

2) Kernel$ make menuconfig
       Device Drivers -> MMC/SD/SDIO card support ->
    [*]   Telechips SD/MMC Host Controller Driver
    [*]   Enable TCC SDHC0
    [*]   Enable TCC SDHC1
          SDHC Data Transmission Methods (SD/MMC Interface PORT7)  --->
```

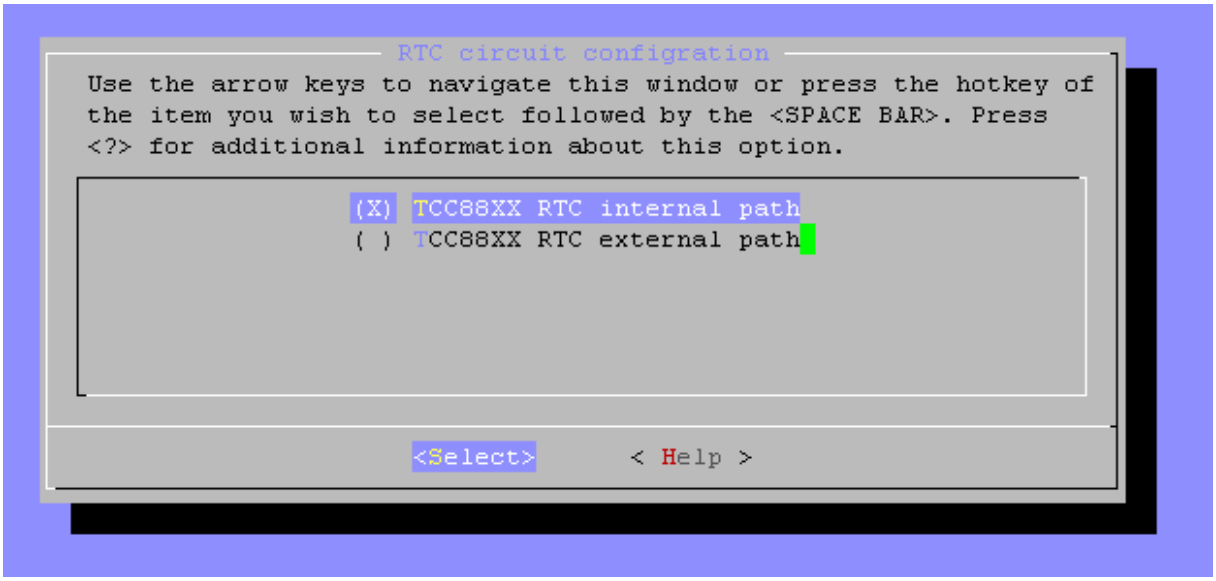
11.2.3 Connect SD2 (JM5 Slot) to PC by the UMS

```
1) In the vold.fstab file,
   dev_mount sdcard /mnt/nand/sdcard auto /devices/platform/tcc-sdhc0.0/mmc_host/mmc0
```

12 Configuration to use RTC wake-up from suspend mode

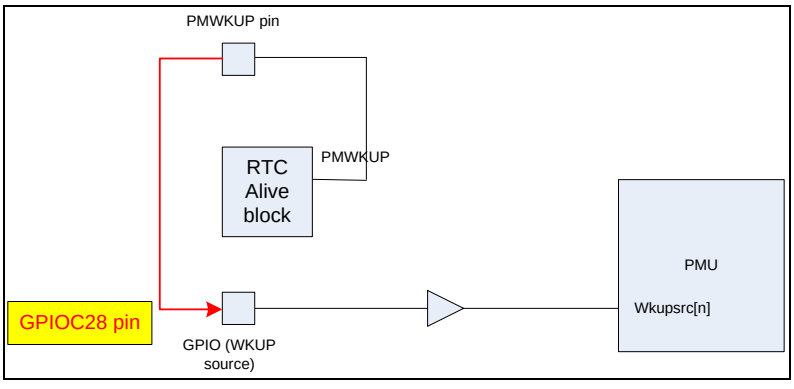
The following describes how to select the configuration according to the circuit of RTC.

You can select either shut-down or sleep mode at suspend status by kernel menuconfig. Execute "make menuconfig" command from kernel folder and select configurations as below.
System Type → RTC circuit configuration



1) TCC88XX RTC internal path
   If there is no circuit for RTC, select <TCC88XX RTC internal path>. Then sleep mode will be used at suspend status.

2) TCC88XX RTC external path (default option)
   In case of RTC_PMWKUP and GPIO_C28 is connected, select <TCC88XX RTC external path>. If you choose <TCC88XX RTC external path>, shut-down mode will be used at suspend status.



The current consumption of shut-down mode is less than sleep mode.

More information for the circuit, refer to
"TC88XX_RTC_WAKEUP_DESIGN_GUIDE_AG_5731_V01(ENG).doc".