Android

Application Start Guide

TCC892x-Android-ICS-V1.00E-APP Start Guide

March. 02, 2012.

Telechips

Preliminary

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Revision History

Date	Version	Description
2012-01-30	0.00	Initial Release
2012-03-02	1.00	SDK-V4001 Release

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1 Introduction

This document describes how to start applications. If you follow description, you can execute applications.

2 Music player

When the device normally boot up, you can see below screen from LCD.

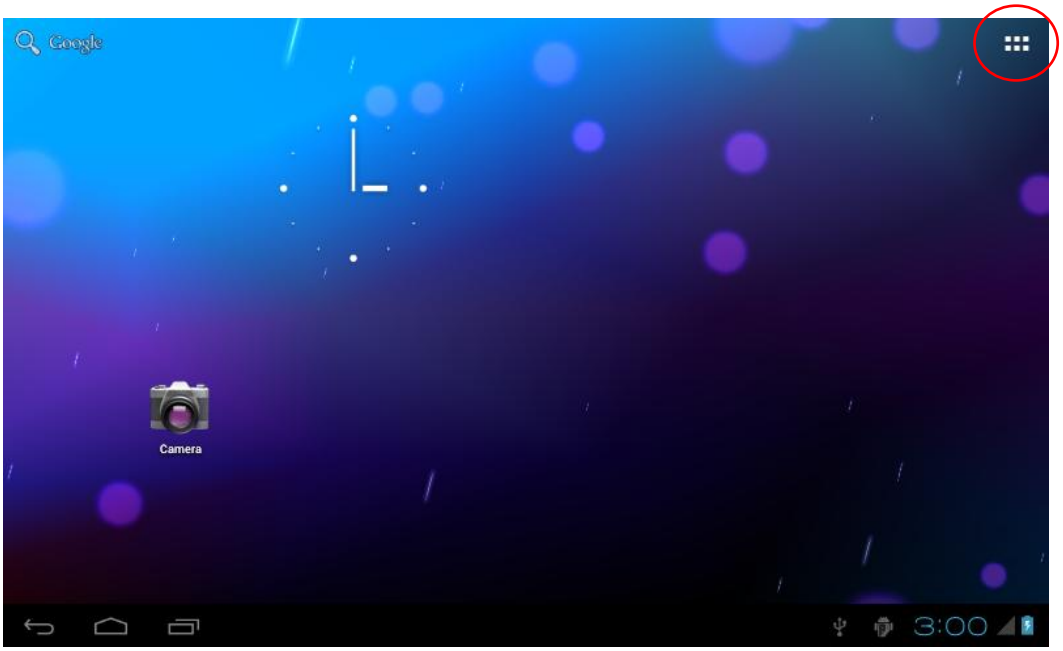


Figure 1. Screen after android is boot up

When you touch red circle area, then you can see below screen.

Figure 2. Applications which you can select

If you touch “Music” icon, you can see below screen.

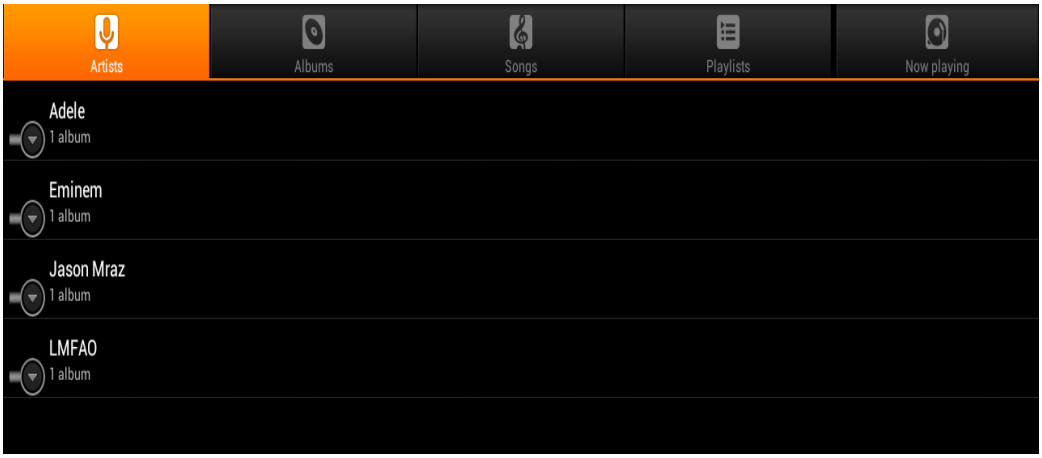


Figure 3. Music player

Select one of “Artists”, “Albums”, “Songs” or “Playlists”, then you can see list of songs. Select one of them. Then you can see below screen with playing music.

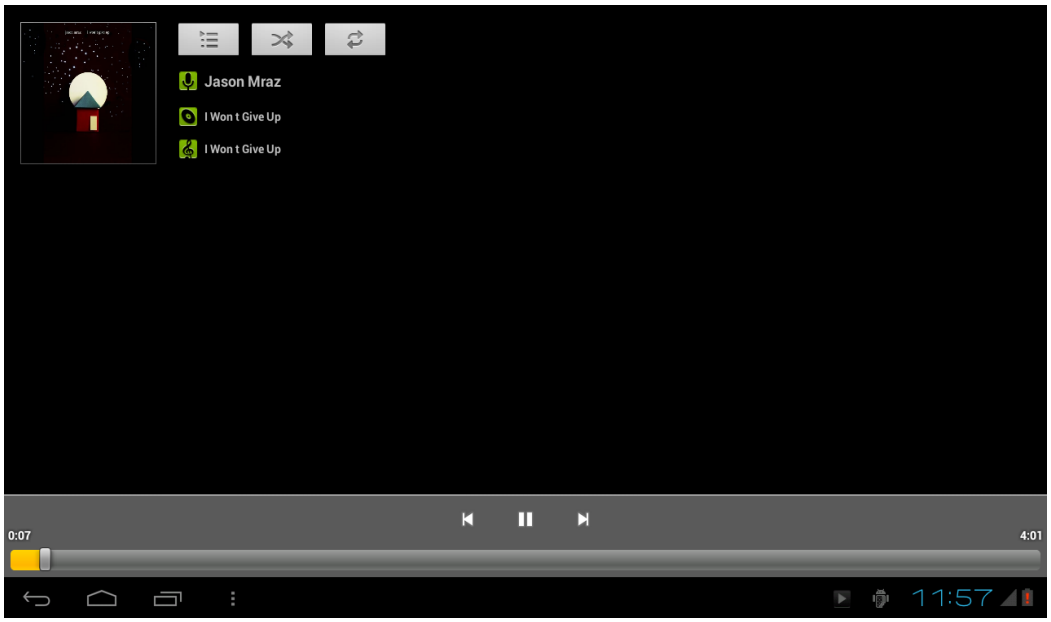


Figure 4. Play music

3 Video player

If you select “Gallery” from figure 2 screen, you can see below screen and this is video player.

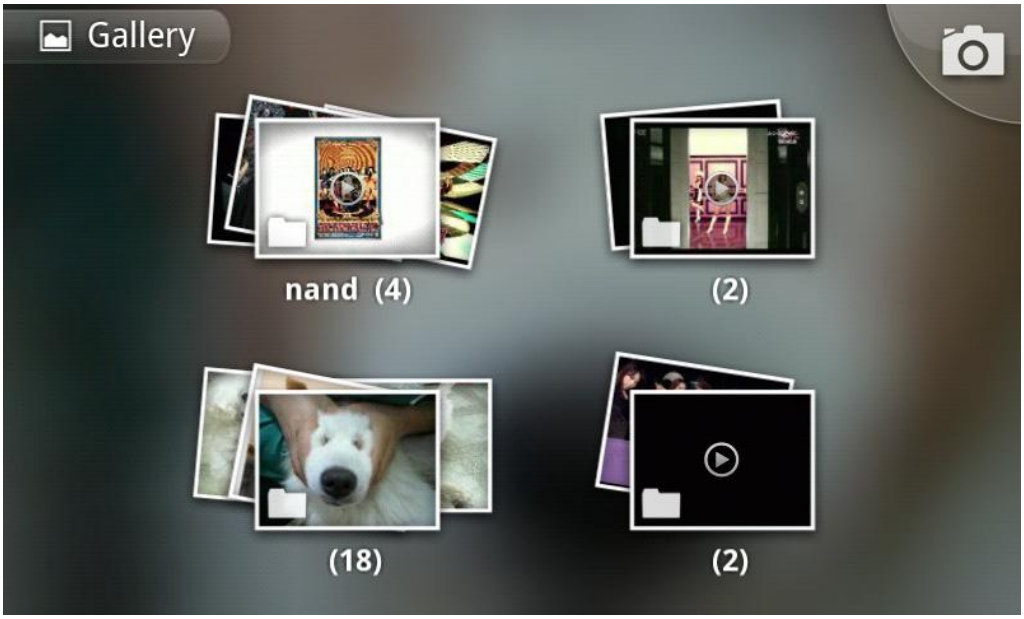


Figure 5. Video player

When you select one of “All pictures”, “All videos”, “Video”, “Still Image”, or “sdcard”, you can see thumbnail of videos.

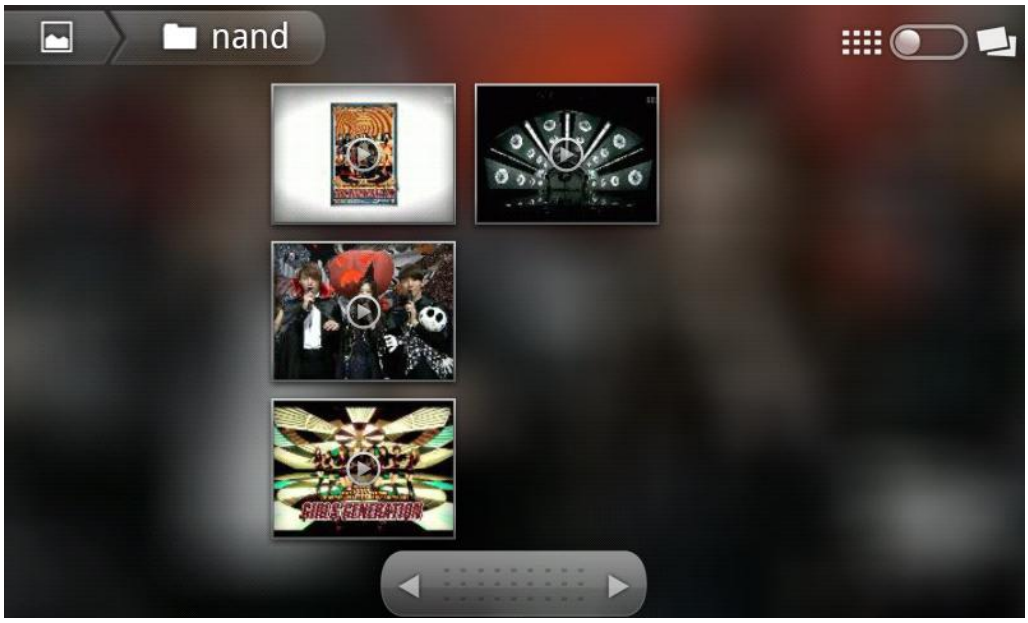


Figure 6. Thumbnail for video player

If you select one of videos, you can see video.

3.1 Support video out synchronized to H/W interrupt

It makes video out can be displayed more smoothly, but it use 16Mbytes memory more.
To use this function, You have to set as below.

1) Bootloader

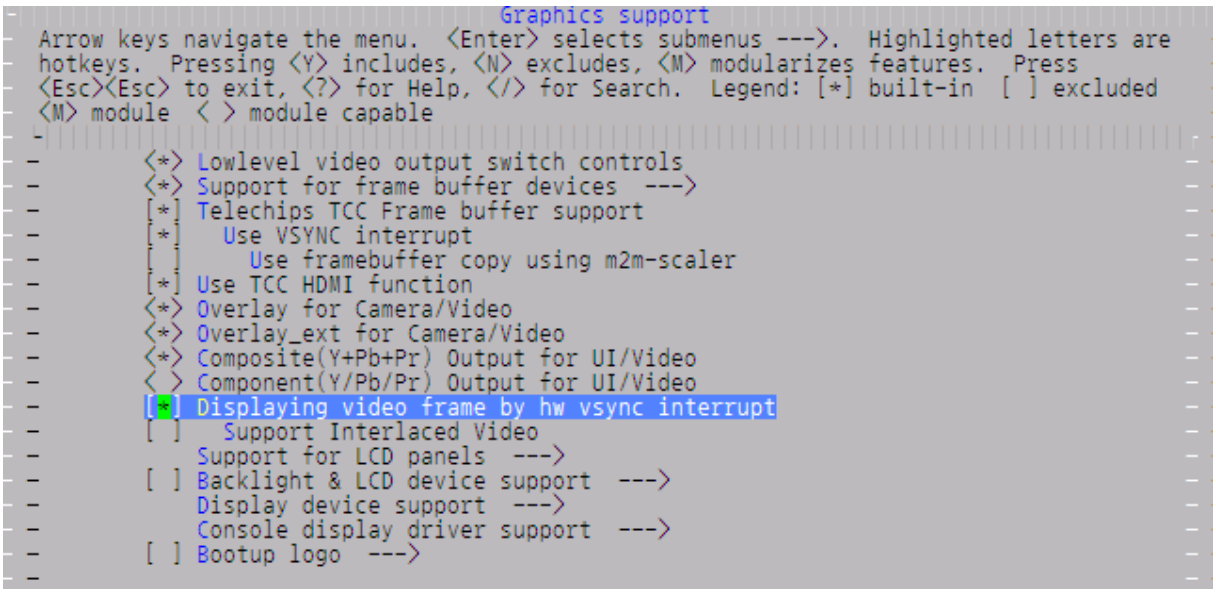
Change "TCC_VIDEO_DISPLAY_BY_VSYNC_INT" option from "false" to "true" in lk/target/tcc8800_evm/rules.mk file as below.
(*bootable/bootloader/lk/target/tcc8920_evm/rules.mk*)

```
#-----------------------------------------------------------------------
# Support video displaying by hw vsyn interrupt
#-----------------------------------------------------------------------
TCC_VIDEO_DISPLAY_BY_VSYNC_INT := true
```

2) Kernel

You must change kernel configuration.
Execute "make menuconfig" command from kernel folder and select configurations as below.

Select "Device Drivers → Graphics support → Displaying video frame by hw vsync interrupt"



3) System

Change "*device/telechips/tcc8920/BoardConfigBase.mk*".

```
BOARD_VIDEO_DISPLAY_BY_VSYNC_INT_FLAG := true
```

Change "*device/telechips/tcc8920/device_base.mk*".

```
setprop tcc.video.vsync.support    1
```

4 TDMB player

* To test TDMB player, you must have TCC3150 sub board.

If you select “Mobile TV” from figure 2 screen, you can see below screen and this is TDMB player.

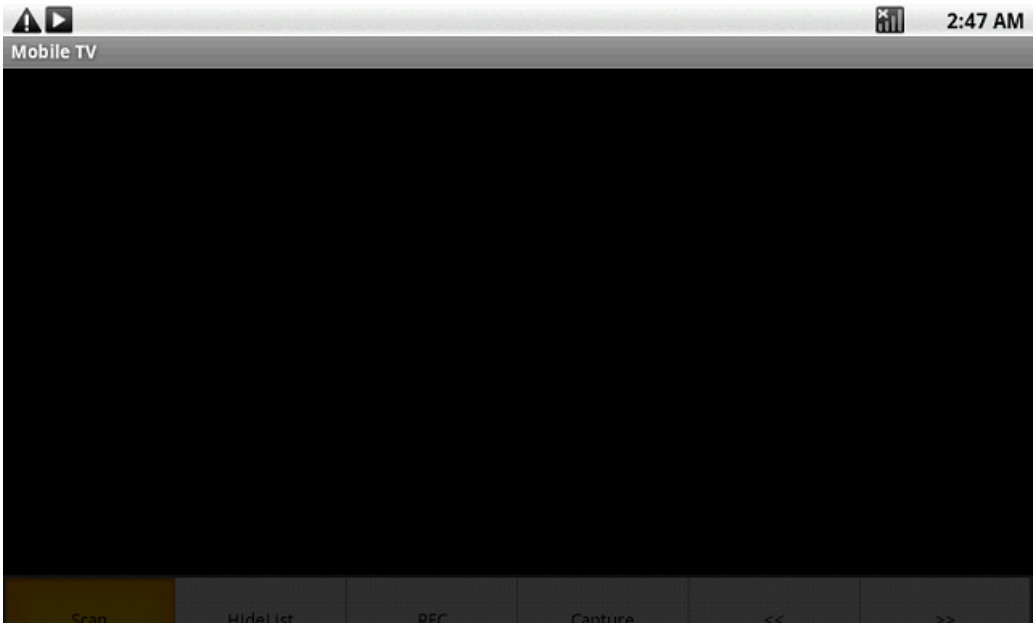


Figure 7. TDMB player

When you press “MENU” key, you can see menus. Select button which you want to do.

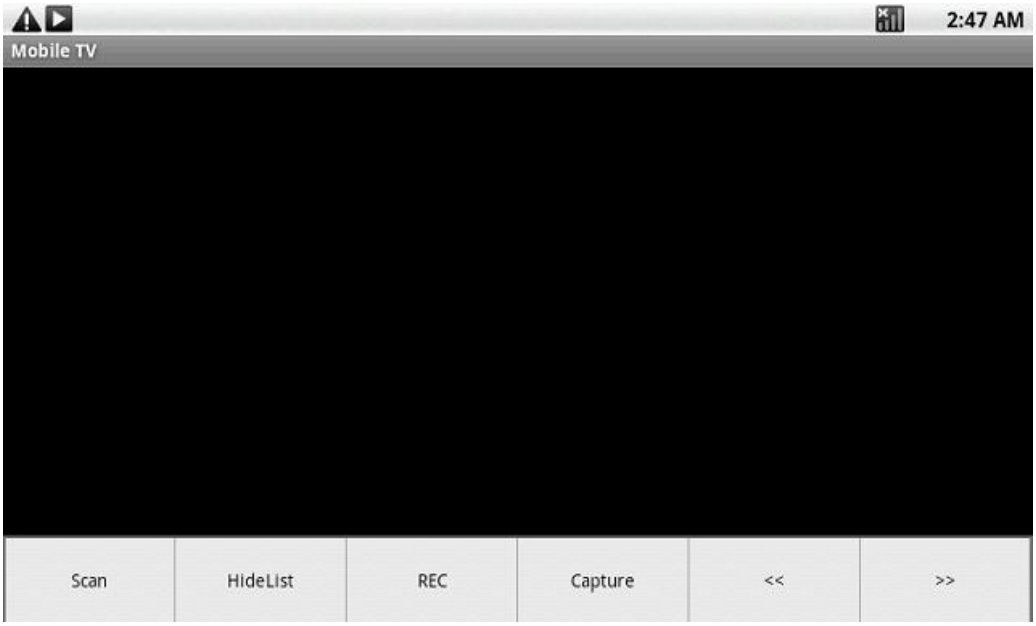
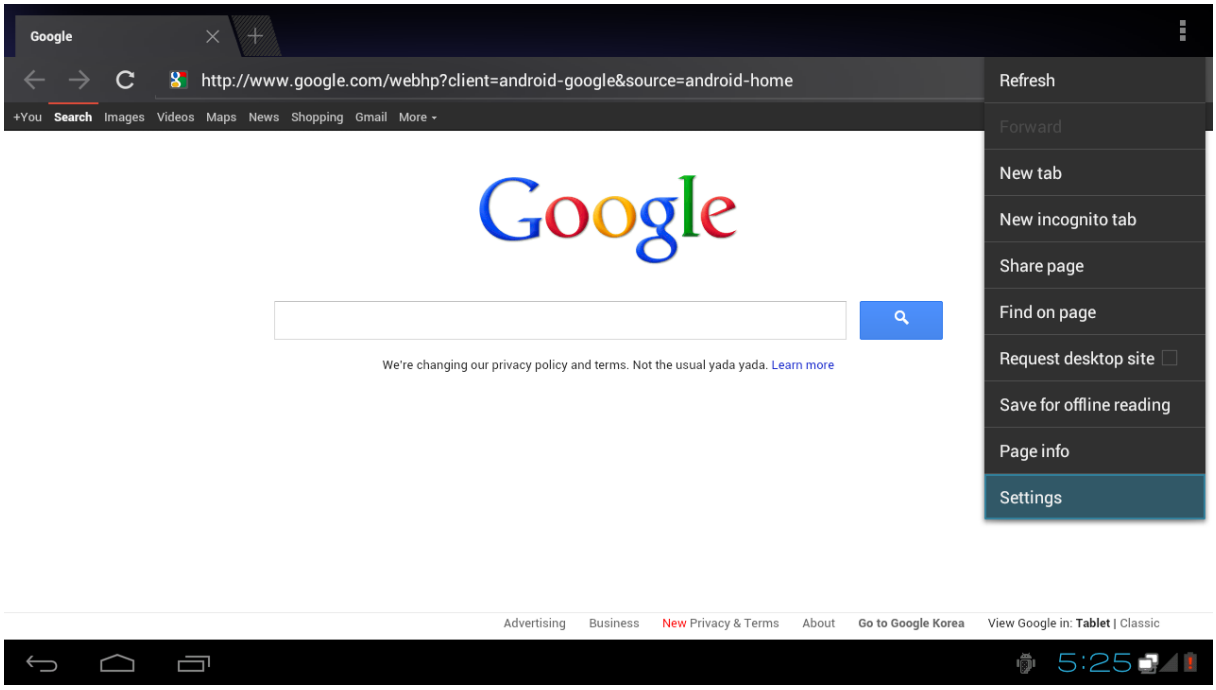


Figure 8. Menus for TDMB player

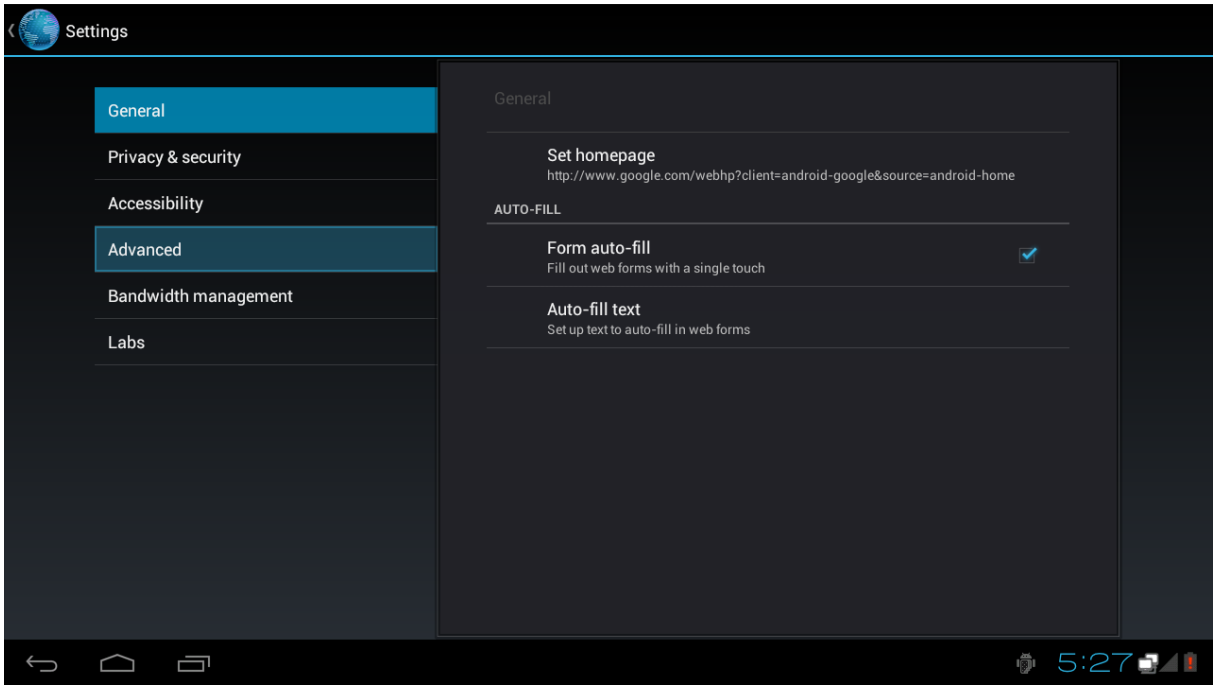
5 How to support HTML5 video playback

You might want to play a video clip on a web site without any installation of the browser plug-in (i.e. flash player). By changing the default user agent of Android web browser as below, http live streaming playback could be supported :

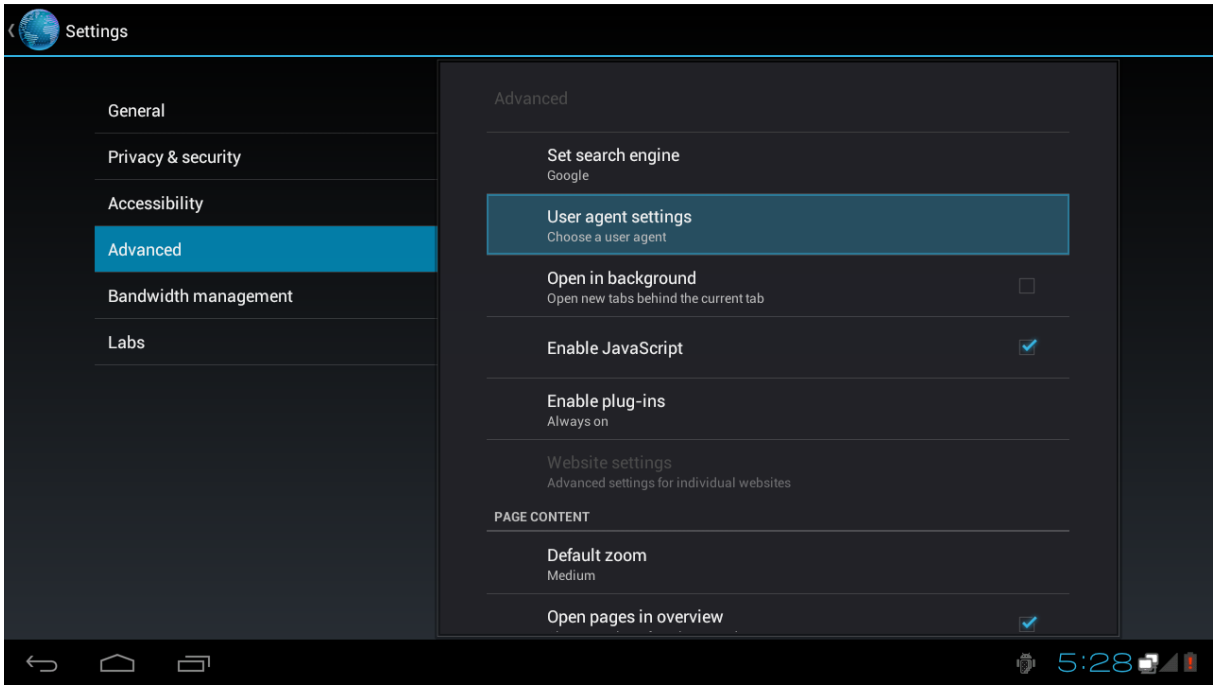
Step 1> Run 'Browser', click the right-top icon and select 'Settings' .



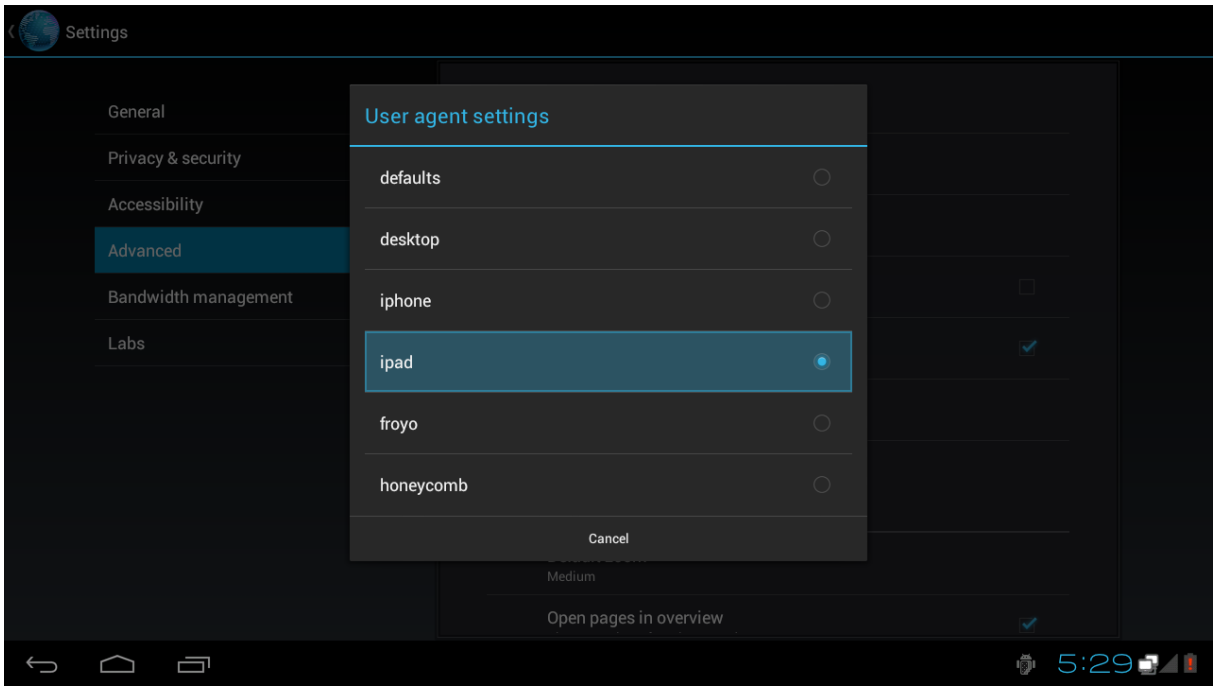
Step 2> Select 'Advanced'.



Step 3> Select 'User agent settings' .



Step 4> Select 'iPad' .



6 HDMI

To use HDMI, you must enable HDMI. To enable HDMI, please select "`Settings` → `Display`", and then select "`Output settings`" and then you can see "`Output type`" menu. And select "`Output mode`" menu, you can see output mode select popup window, and then choice HDMI.

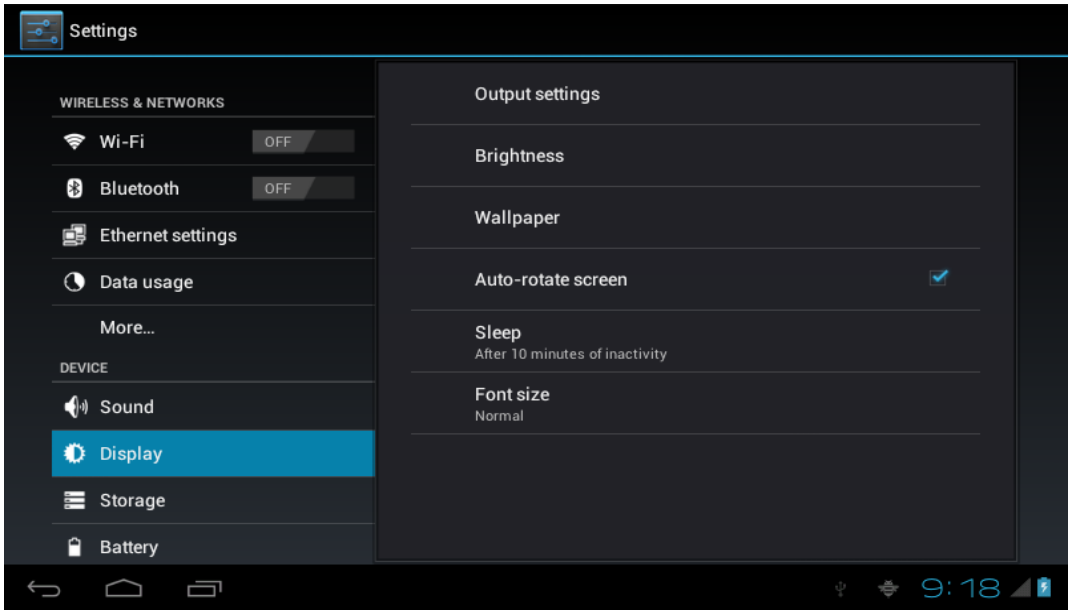


Figure 9. Turn off status of HDMI output

When you choice "HDMI", HDMI sub menu is activated.

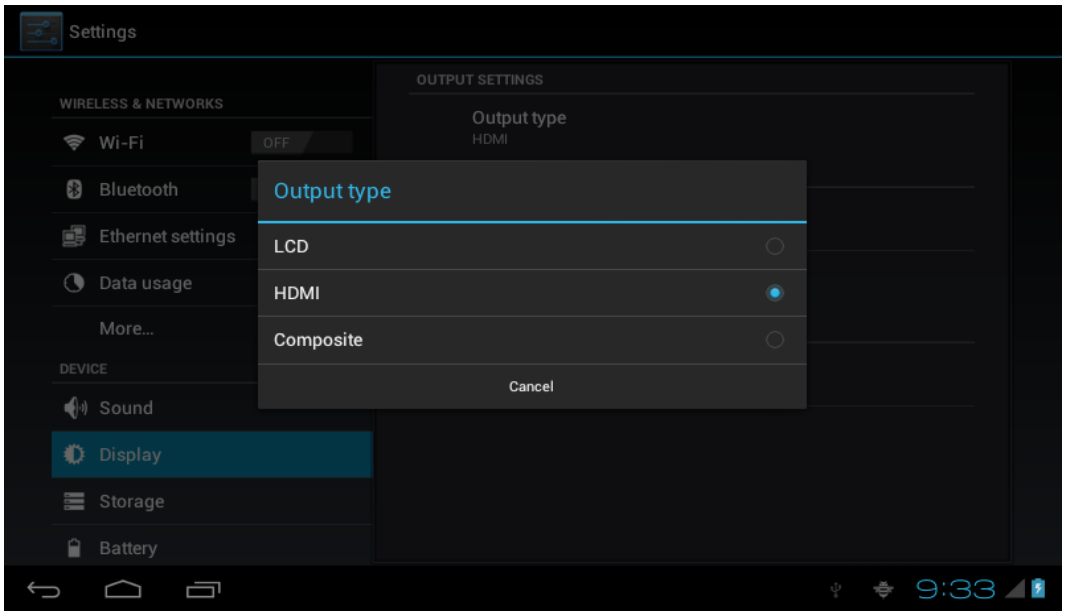


Figure 10. Turn on status of HDMI output

HDMI is operated with hot-plug. In other word, when you plug-in HDMI, you can see UI and VIDEO screen from HDMI device.

If you want to change HDMI resolution, select Resolution menu in “HDMI settings” menu. So you can see HDMI resolution setting popup window. And select the resolution.
HDMI resolution menu is 1080p , 720p
If you want to add other HDMI resolution, change the source code.
Sorce file: device/telechips/tcc8920/device_base.mk
PRODUCT_PROPERTY_OVERRIDES += ro.system.hdmi_portable = **false**

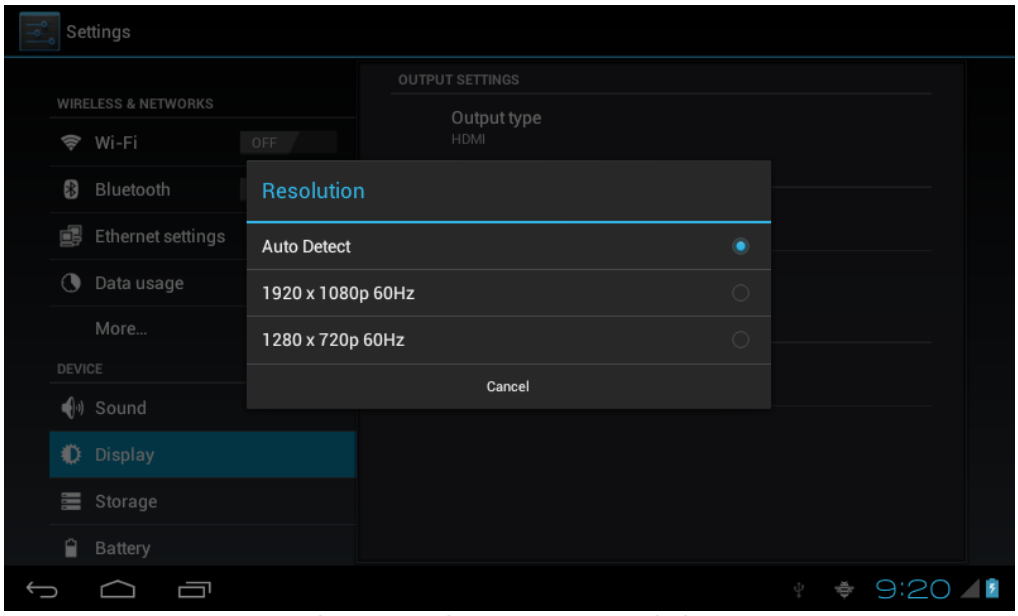


Figure 11. Change HDMI resolution

If you want to use DVI monitor, push the HDMI/DVI menu and choose DVI.

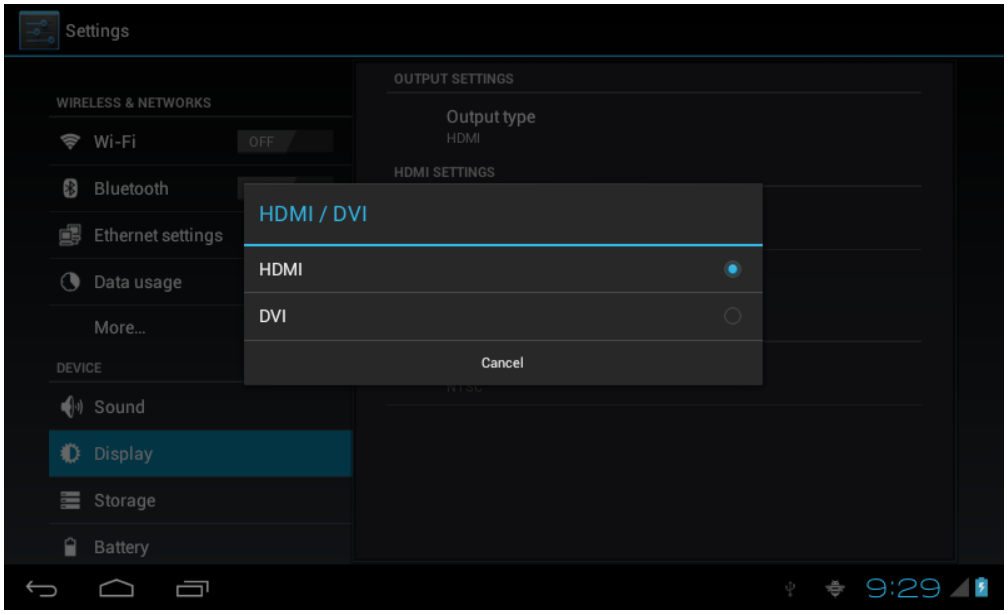


Figure 12. HDMI/DVI auto select mode

6.1 HDMI CEC

If you want to test HDMI CEC, you must use **TCC892X AX** version.
Also change the source code.
Sorce file: device/telechips/telechips/tcc8920/BoardConfigBase.mk
BOARD_HDMI_CEC := -DTCC_HDMI_CEC

Supported HDMI CEC functions are like below.

1) Device search and select
If you want to use HDMI CEC, you must search device and select.
The device is registered as a Player. (Local address is 4.)

2) Play / Pause / Fast Forward / Rewind / Stop button
You can use play-back control by using these buttons.

3) Up / Down / Right / Left / Select / Exit button
If you select Player MENU, you can control telechips android menu by using these buttons.

4) F1 (Blue) / F2 (Red) / F3 (Green) / F4 (Yellow) button
These buttons are not connected with Android framework, data is only handled under kernel level.
If you want to use these, user can add the function.

5) 0~9, - button
You can input the number 0~9 and -.

7 Bluetooth

* To test Bluetooth, you must have Bluetooth sub board.

Before use Bluetooth, you must set define of Bluetooth power control driver
- in kernel, make menuconfig
-> You should check "Device drivers->Charater device->TCC Bluetooth dev Control power"

To use Bluetooth, you must enable Bluetooth. To enable Bluetooth, please select "`Settings`" from figure 2 screen. And select "`Bluetooth`" menu.

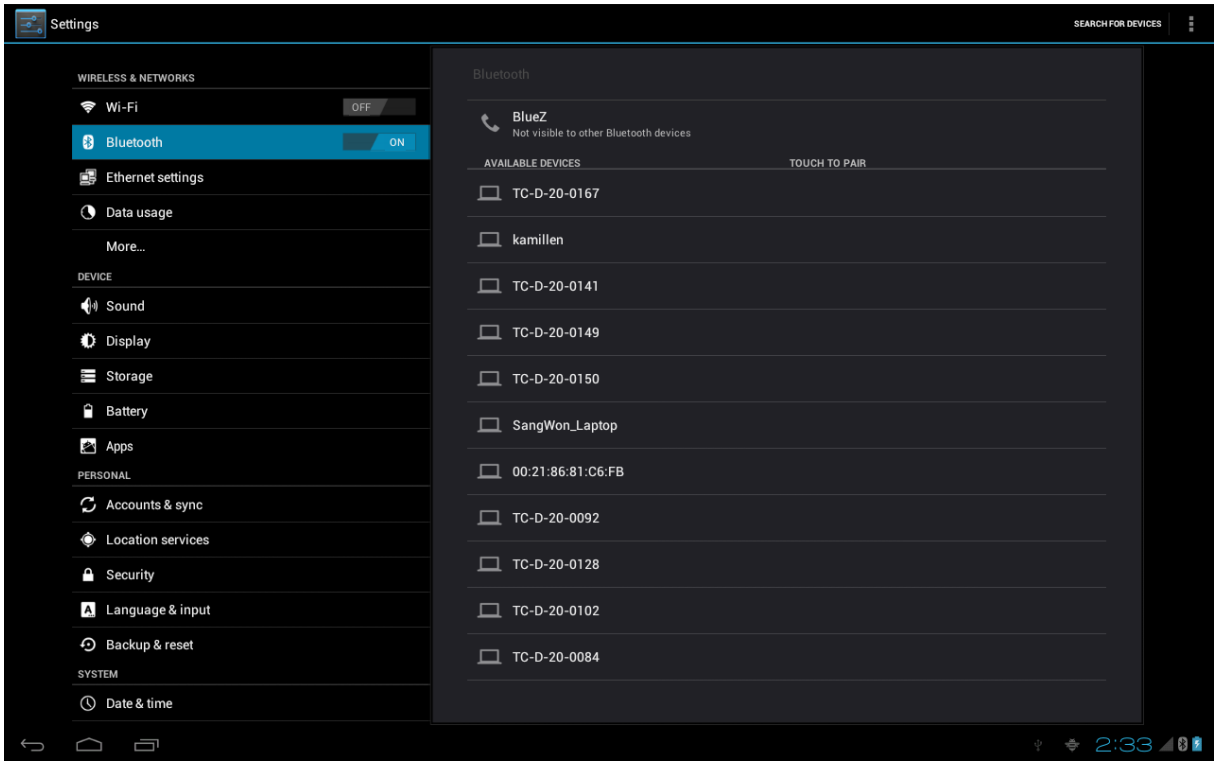


Figure 11. Setting menu for Bluetooth

After enable Bluetooth, select "`Bluetooth settings`". Then searching device operation will be executed. After this operation, you can see device list which shows devices which can be connected. Select device which you want to connect. After connecting, all sound can be heard with Bluetooth headset.

If you want to use your specific Bluetooth module, below files/folders may be checked.

1) Files in `device/telechips/tcc892x-common/bluetooth` folder.

This folder includes HCD and PSR file.
PSR file must be changed for your own purpose and please contact with Bluetooth module provider.

2) `device/telechips/tcc892x-common/Android.mk` file.

```
  Below codes are include files in device/telechips/tcc892x-
common/bluetooth folder.

PRODUCT_COPY_FILES += \
             $(LOCAL_PATH)/bluetooth/key_921600.psr:system/key_921600.psr
PRODUCT_COPY_FILES += \
             $(LOCAL_PATH)/bluetooth/key_3000000.psr:system/key_3000000.psr
PRODUCT_COPY_FILES += \
             $(LOCAL_PATH)/bluetooth/BCM4325D0.hcd:system/BCM4325D0.hcd
PRODUCT_COPY_FILES += \
          $(LOCAL_PATH)/bluetooth/BCM4325D1_004.002.004.0076.0100.hcd:...
PRODUCT_COPY_FILES += \
             $(LOCAL_PATH)/bluetooth/sample.bdaddr:system/sample.bdaddr
```

3) `device/telechips/tcc8920/init.tcc892x.rc` file.

```
#service bccmd /system/bin/bccmd -t bcsp -d /dev/tcc-uart1 psload
/system/key_921600.psr
service bccmd /system/bin/bccmd -t bcsp -d /dev/tcc-uart1 psload
/system/key_3000000.psr
       disabled
       oneshot

…

service hciattach /system/bin/hciattach -n -s 3000000 /dev/tcc-uart1 bcsp
3000000
```

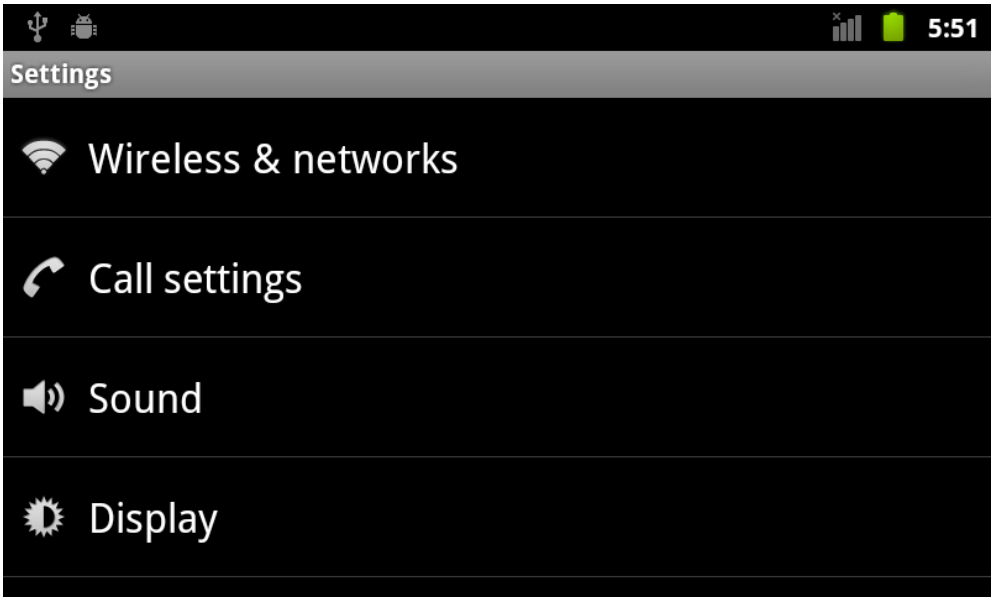
8 WIFI

To test WIFI, you must have WIFI module.

Telechips Android SDK support only Atheros WiFi(AR6102/AR6003/AR6302)

AR6302 is only use in China. If you use AR6302, you must change calibration data because AR6302 is not module. Please contact to Atheros.

To use WIFI, you must enable WIFI. To enable WIFI, please select "`Settings`" from below figure screen. And select "`Wi-Fi`" menu.



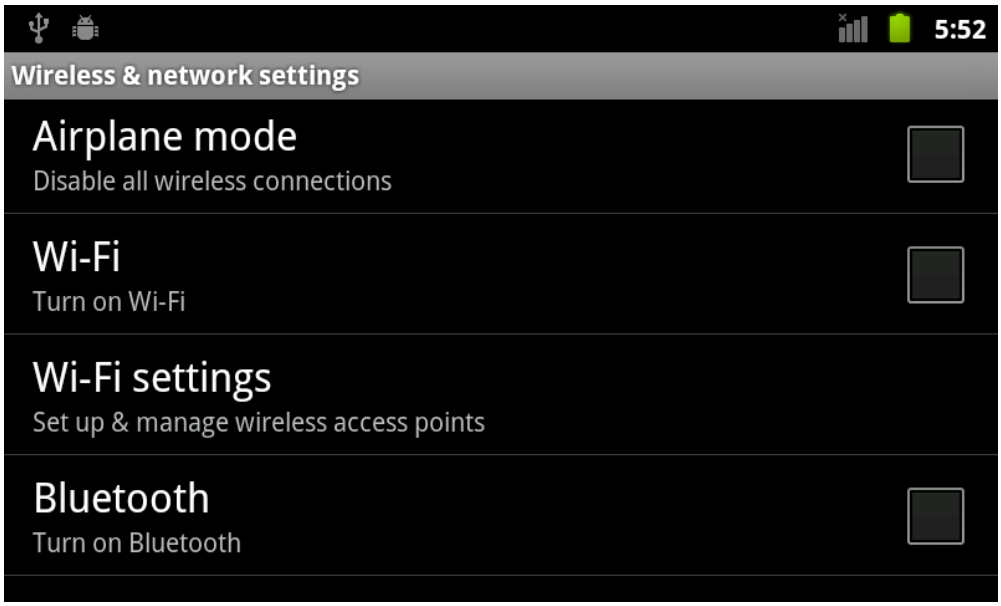


Figure 12. Setting menu for WIFI

After enable WIFI, select "`Wi-Fi settings`". Then searching device operation will be executed. After this operation, you can see AP list which shows AP which can be connected. Select AP which you want to connect. After connecting, you can use WIFI.

You can select WIFI device. Please check `BoardConfig.mk` which can be found from `device/telechips/tcc8800, m801 or m803` folder.

```
# wifi defines
BOARD_USES_ATH_WIFI := true
BOARD_WIFI_MODULE := ar6002 # you can chose ar6002, ar6102, ar6003, ar6103, ar6302
```

Default Atheros WiFi module is AR6002(AR6102). If you want to use AR6003, just modify BOARD_WIFI_MODULE := ar6003 .

You must set proper WIFI MAC address. Otherwise, connection with AP can be failed frequently. SDK set MAC address for Atheros WIFI module by software with FWDN.exe. Please refer below figure and `load_driver()` from *`hardware/libhardware_legacy/wifi/wifi_atheros.c`*.

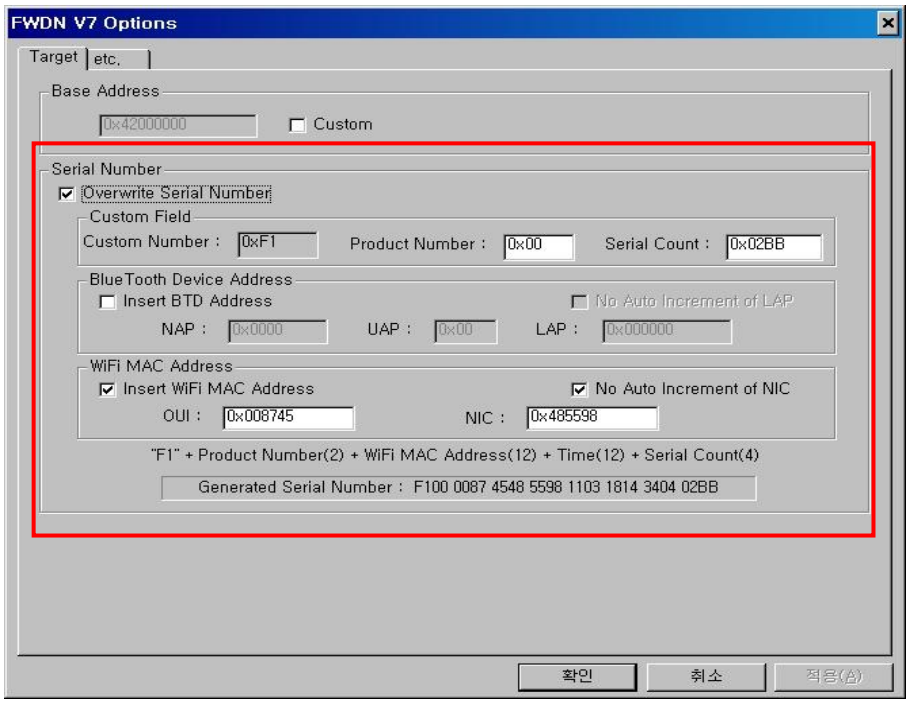


Figure 13. WIFI MAC address setting from FWDN.exe

You can run TCMD(test command) by athtestcmd utility for Rx/Tx test

```
athtestcmd  : system\wlan\atheros\athtestcmd
athtestcmd document system\wlan\atheros\athtestcmd.pdf
```

9 Ethernet

[kernel Configuration]

To use Ethernet and if **below setting is not set as default**, you must change kernel configuration.

Please execute "`make menuconfig`" command from kernel folder and select configurations.

1. Select "`Networking support ---> Networking options ---> TCP/IP networking`". Then you can see more configurations
2. Select "`IP: multicasting`" and "`IP: kernel level autoconfiguration`". Then also, you can see more configurations.
3. Select "`IP: DHCP support , IP: BOOTP support and IP: RARP support`".

You have to set Ethernet driver. **Check which Phy chip is used for Ethernet device**.

4. Select "`Device Drivers ---> Network device support`"

You have to check below two settings.

If **Realtek 8211 is used**,

5. Select "`Ethernet (1000Mbit) ---> Telechips 10/100/1000 Ethernet Driver ---> Rx has priority over Tx (NEW) ---> Phy Interface (RGMII)`"
6. And select "`PHY Device support and infrastructure (NEW) ---> Drivers for RTL8211 PHY Telechips support`" to make Ethernet device driver.

,else if **Realtek 8201 is used**,

5. Select "`Device Drivers ---> Network device support ---> Ethernet (1000Mbit) ---> Telechips 10/100/1000 Ethernet Driver ---> Rx has priority over Tx (NEW) ---> Phy Interface (MII)`"
6. And select "`PHY Device support and infrastructure (NEW) ---> Drivers for RTL8201 PHY Telechips support`" to make Ethernet device driver.

After booting, you can see "`eth0`" with below command.

```
# busybox ifconfig –a
```

[Android Menu]

You can use Ethernet Menu to set IP,DNS,Gateway.. etc.
Please select "Settings" and enter "Wireless & network settings", you can see "Ethernet Settings".

[MAC address Setting]

There are two methods to set Mac address of Ethernet device, One is setting through FWDN, another is reading Chip ID.
In case of setting through FWDN, if you need to set softMAC of Ethernet device, you can use WIFI MAC address as Ethernet MAC address by sharing it. Refer to WIFI MAC address setting.
In case of reading Chip ID, if you contract something about Mac address with Telechips, you can set Mac address by reading Chip ID which includes Mac address bits.
Select "`Ethernet (1000Mbit) ---> Telechips 10/100/1000 Ethernet Driver ---> Mac address is set by reading TCC Chip ID`"

10 NTP(Network Time Protocol) – Date & Time

This is related to "Settings" -> "Date & Time".
If there is no connection of Mobile Network (3G or GSM), The 'Automatic date & time' setting menu is not working. NTP makes the 'Automatic date & time' menu be useful although no connection of Mobile Network.

NTP is protocol to set Date & Time automatically with connecting to NTP server.

To connect NTP server, there must be internet connection through Ethernet or WIFI.

[Android Menu]

You can use NTP through "Settings" -> "Date & Time"

To enable NTP, you must make 'Automatic date & time' set to 'enable'.

And you have to select time zone which is your local time in the list of the 'Select time zone' menu.

If you want to set default local time zone, use property like below.
'tcc.default.timezone' property is used and defined in device\telechips\tccXXXX\device_base.mk,
ex) tcc.default.timezone = Asia/Seoul or tcc.default.timezone = Asia/Shanghai

Also, you can change 'NTP Server'. (if you need)

Default settings related to NTP are like below.

-. 'Automatic date & time' is 'enable' as default..
-. 'NTP Server' is set to 'pool.ntp.org' as default.

If above menus are set right and network connection works, you will see date and time changed.

11 Camera/TV Decoder

- To test Camera, you have to only need Menuconfig configuration settings.
- In TCC892x, both single camera and dual camera support.

To use Camera, you must change kernel configuration.
Please execute "`make menuconfig`" command from kernel folder and select configurations.
Select "`Device Driver --> Multimedia devices --> Video capture`". You can see below Camera modules.

```
<*>   Telechips TCCXXX Camera support (EXPERIMENTAL)
< >     Enable Camera with max-clock
<*>     CAMERA sensor support
< >       Enable Telechips Dual-Camera
<*>       Enable Telechips Single-Camera
<*>         MT9D112 2MP-sensor support
< >         OV3640 3MP-sensor support
< >         S5K4BAFB 2MP-sensor support
< >         MV9317 3MP-sensor support
< >         MT9P111 5MP-sensor support
```

Figure 14. Single camera modules which can be used in EVM

```
<*>   Telechips TCCXXX Camera support (EXPERIMENTAL)
< >     Enable Camera with max-clock
<*>     CAMERA sensor support
<*>       Enable Telechips Dual-Camera
<*>         Select Telechips Back-Camera
<*>           MT9P111 5MP-sensor support
<*>         Select Telechips Front-Camera
<*>           MT9M113 1.3MP-sensor support
< >       Enable Telechips Single-Camera
```

Figure 15. Dual camera modules which can be used in EVM

```
--- Video capture adapters
[ ]   Enable advanced debug functionality
[ ]   Enable old-style fixed minor ranges for video devices
[*]   Autoselect pertinent encoders/decoders and other helper chips
< >   CPiA2 Video For Linux
< >   SR030PC30 VGA camera sensor support
< >   NOON010PC30 CIF camera sensor support
< >   SoC camera support
<*>   Telechips TCCXXX Camera support (EXPERIMENTAL)
< >     Enable Camera with max-clock
<*>     CAMERA sensor support
< >       Enable Telechips Dual-Camera
< >       Enable Telechips Single-Camera
< >     ISP support
<*>   Telechips TCCXXX Analog TV support (EXPERIMENTAL)
<*>     ATV sensor support
< >       RDA5888 ATV-sensor support (NEW)
<*>       TVP5150 ATV-sensor support
[*]   V4L USB devices  --->
```

Figure 16. TV Decoder(TVP5150) modules which can be used in EVM

Select Camera module which you are used.
In single camera case "`MT9D112 2MP-sensor support`" is selected.
In dual camera case "`MT9P111 5MP-sensor support & MT9M113 1.3MP-sensor support`" is selected.

Next, you have to select the save position in the between NAND and SD.

Please note that the available camcording Size is
NAND(until CIF(352x288)), SD(until HD(1280x720)).

If you want to use NAND, the save position, Use default setting. But, if you want to use SD, the save position, below must be changed from frameworks/base/core/java/android/os/Enviroment.java

```
public static File getExternalStorageDirectory() {
        //return EXTERNAL_STORAGE_DIRECTORY;
        return EXTERNAL_EXT_STORAGE_DIRECTORY;
    }
```

Finally, you have to adjust encoding size by camera sensor resolution.

The source position about Camera encoding size is
device/Telechips/tcc892x-common/media_profiles.xml
In now, Encoding default sizes are High(1280x720) and Low(176x144).

```
        <CamcorderProfiles  cameraId="0">  // for Back camera of Dual
camera and Single camera

        <EncoderProfile quality="high" fileFormat="3gp" duration="60">
            <Video codec="h264"
                   bitRate="8000000"
                   width="1280"
                   height="720"
```

```
                frameRate="20" />

            <Audio codec="amrnb"
                bitRate="48000"
                sampleRate="8000"
                channels="1" />
        </EncoderProfile>

        <EncoderProfile quality="low" fileFormat="3gp" duration="60">
            <Video codec="h264"
                bitRate="192000"
                width="176"
                height="144"
                frameRate="20" />

            <Audio codec="amrnb"
                bitRate="48000"
                sampleRate="8000"
                channels="1" />

        </EncoderProfile>

        <ImageEncoding quality="90" />
        <ImageEncoding quality="80" />
        <ImageEncoding quality="70" />
        <ImageDecoding memCap="20000000" />

        <Camera previewFrameRate="0" />

    </CamcorderProfiles>

    <CamcorderProfiles cameraId="1"> // for Front camera of Dual camera

        <EncoderProfile quality="high" fileFormat="3gp" duration="60">
            <Video codec="h264"
                bitRate="8000000"
                width="1280"
                height="720"
                frameRate="20" />

            <Audio codec="amrnb"
                bitRate="48000"
                sampleRate="8000"
                channels="1" />
        </EncoderProfile>

        <EncoderProfile quality="low" fileFormat="3gp" duration="60">
            <Video codec="h264"
                bitRate="192000"
                width="176"
                height="144"
                frameRate="20" />

            <Audio codec="amrnb"
                bitRate="48000"
                sampleRate="8000"
                channels="1" />

        </EncoderProfile>
```

```
        <ImageEncoding quality="90" />
        <ImageEncoding quality="80" />
        <ImageEncoding quality="70" />
        <ImageDecoding memCap="20000000" />

        <Camera previewFrameRate="0" />

    </CamcorderProfiles>
```

If Camera module is more than 2M resolution sensor, Use default size.
But, if Camera module is less than 2M resolution sensor, it has to modify default size, especially High Encoding size.

For example, M805S Camera sensor is XGA(800x600) resolution sensor.
Because of sensor performance, in M805S Camera module, is has to fix High Encoding size from 1280x720 to 800x600.

If you want to use USB camera or UVC Camera, kernel configuration must be changed.

```
Device Drivers --->
        USB support  --->
                Telechips DWC OTG support
                Telechips DWC OTG mode (OTG Dual-role mode)
        Multimedia devices --->
                <*> Video capture adapters
                        <*> V4L USB devices
                                <*> USB Video Class (UVC)
                                        [*] UVC input events device support
                                < > GSPCA based webcams
```

In EVM, if you want to use USB Camera, it must be connected to mini-5pin connector with host-gender.

12 UMS

Select "`Device Drivers --> USB support --> USB Gadget Support --> USB Gadget Drivers`". In this menu, you can select "`Android Gadget`" to use ADB and UMS, or "`File-backed Storage Gadget`" to use only UMS.

To use NAND UMS, you must partition NAND driver. Please refer "Quick Start Guide" document.

After boot up, please connect USB cable. After USB connection, you can see icon which indicates that USB is connected.

Figure 16. Icon which indicates that USB is connected

To select USB connect menu, scroll status bar. Then you can see below USB connect menu.

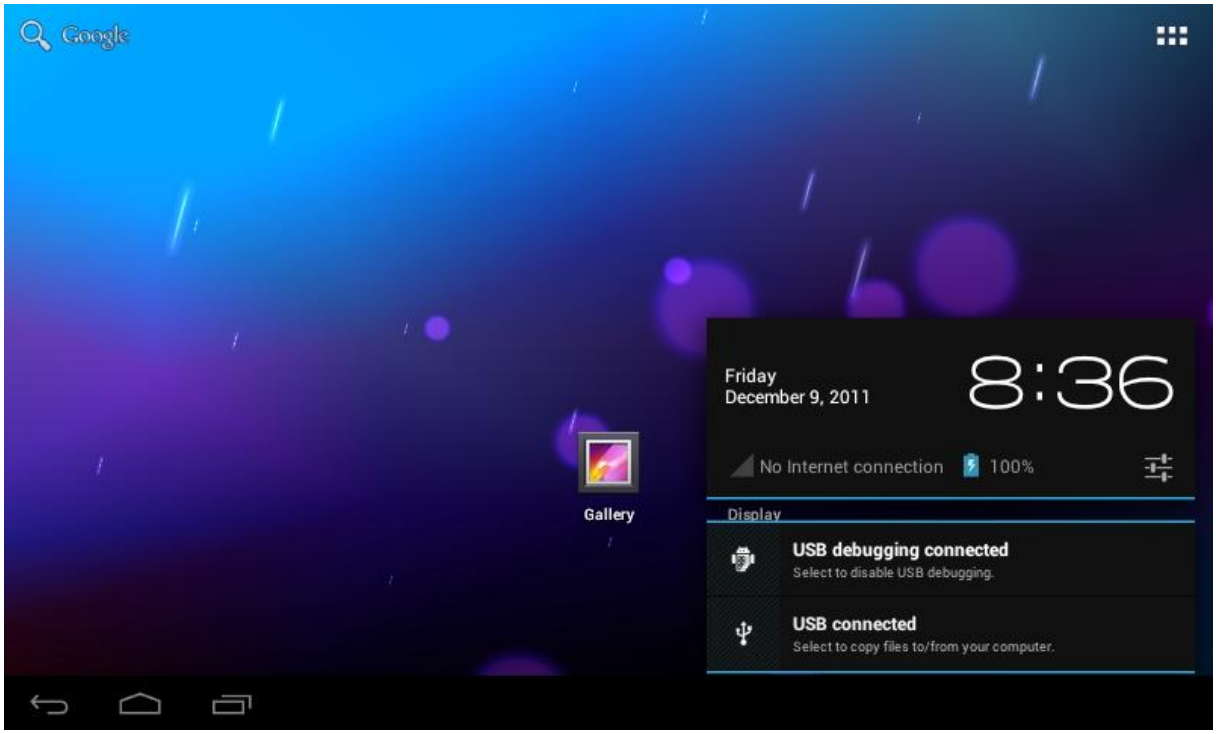
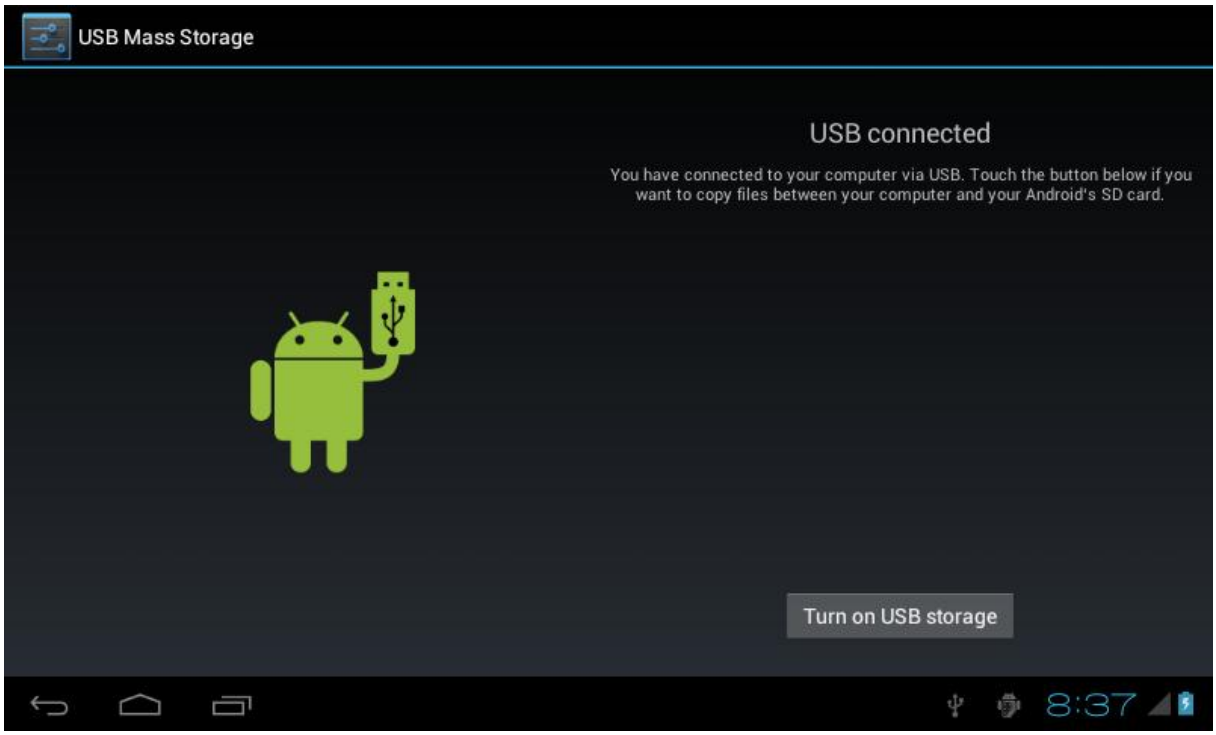


Figure 17. USB connect menu

Recently, these were changed. You can see "`USB connected`", and "`USB debugging connected`". If you wan to connect NAND or SD card, you must select "`USB connected`". Then "`USB connected`" menu will be popped up. Select "`Turn on USB storage`". Then you can see NAND or SD card with UMS.



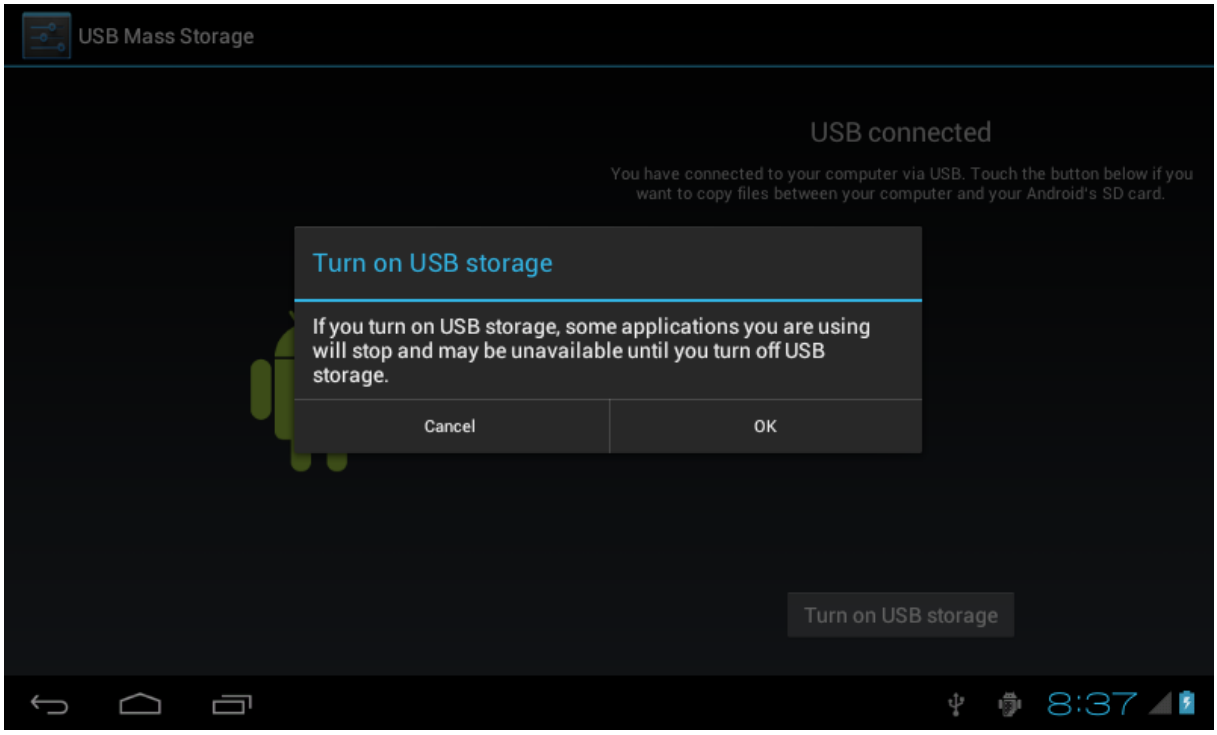
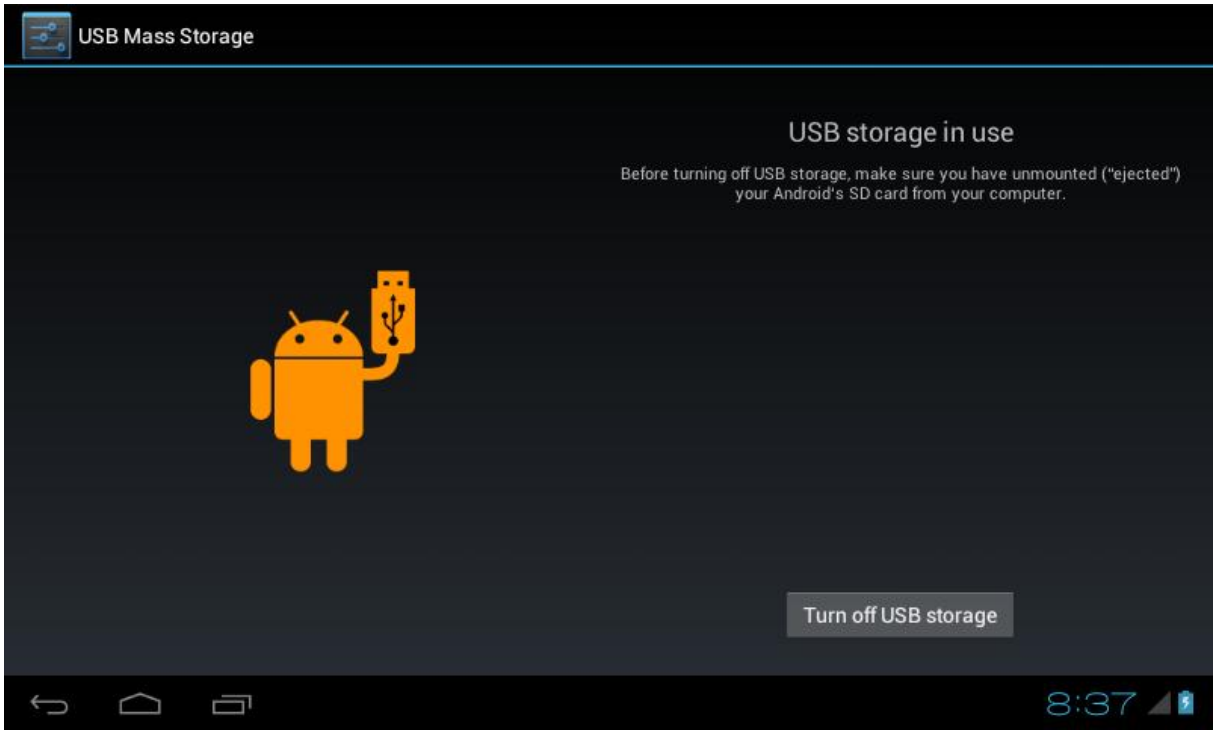


Figure 18. USB connected and mount menu

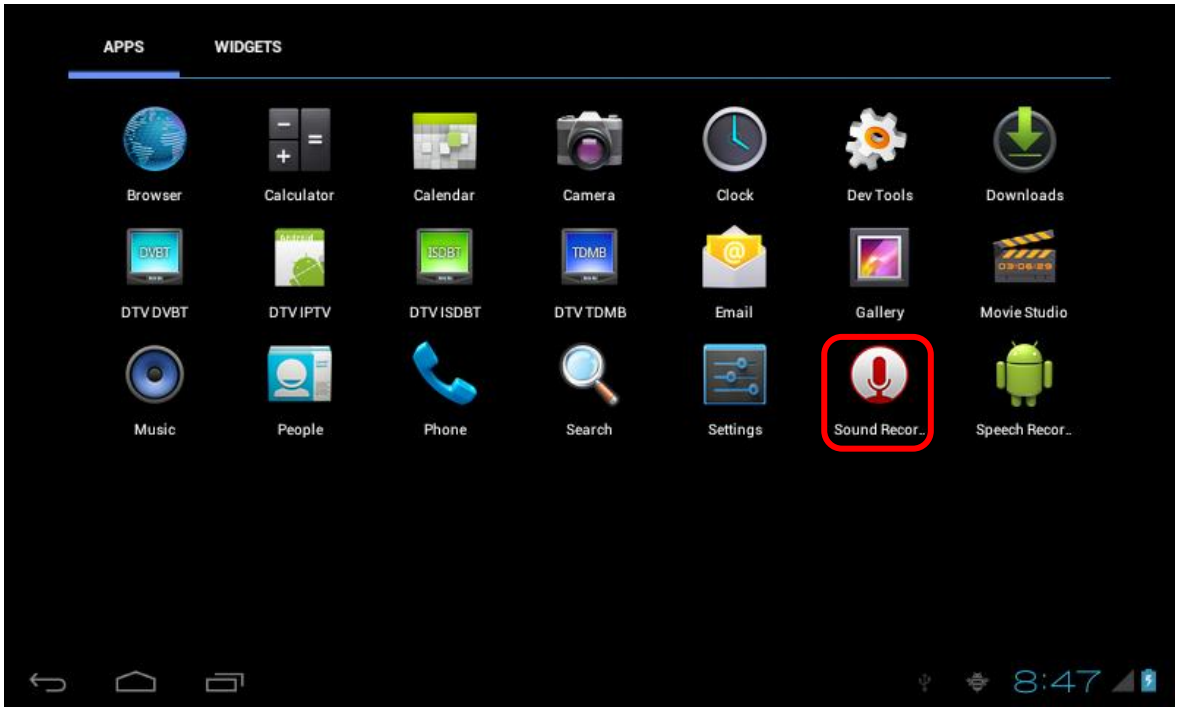
You can disconnect UMS with below.

-. Disconnect USB cable
-. Scroll title bar, then you can see "`Turn off USB storage`". Select one of then, and select "`Turn off USB storage`" pop-up menu.

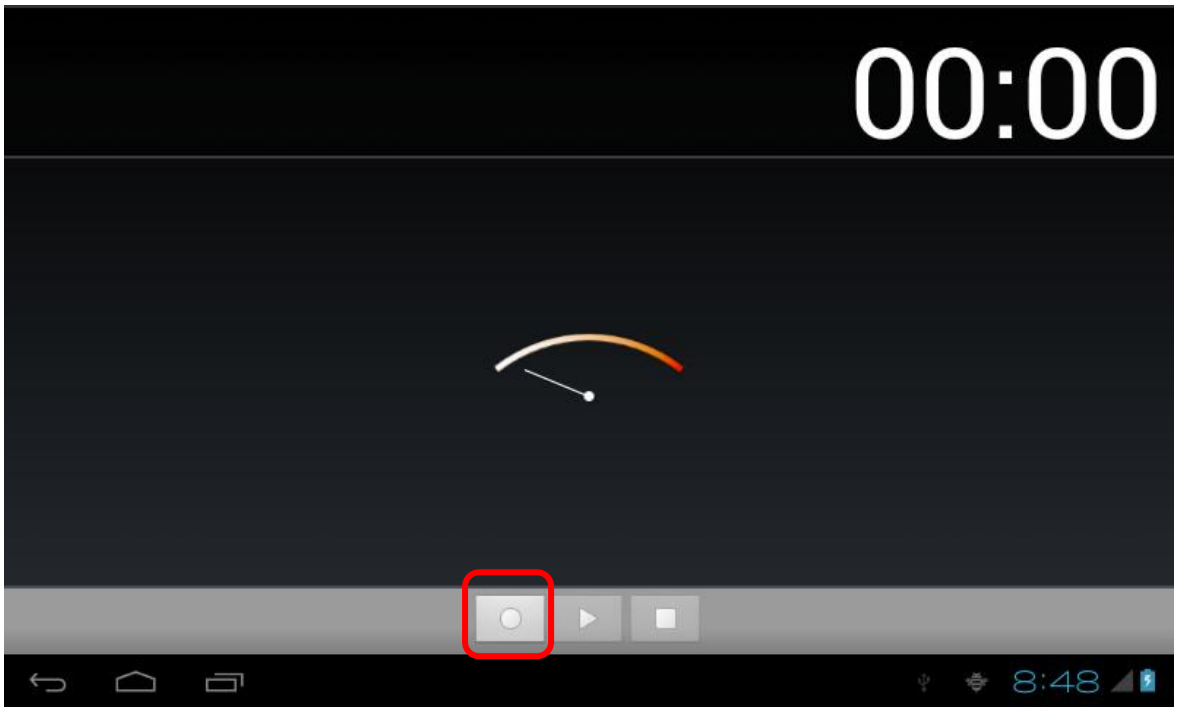


13 Recording

You can test recording with below procedures.



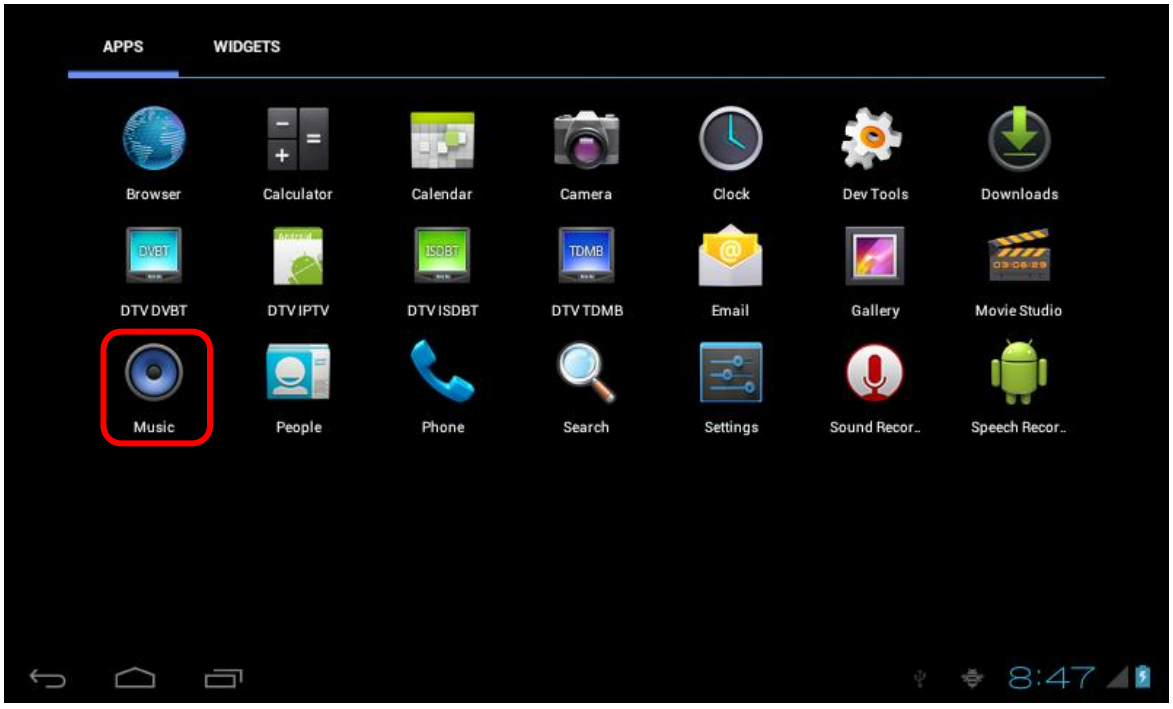
If you touch “Sound Recorder” icon, you can see below screen.



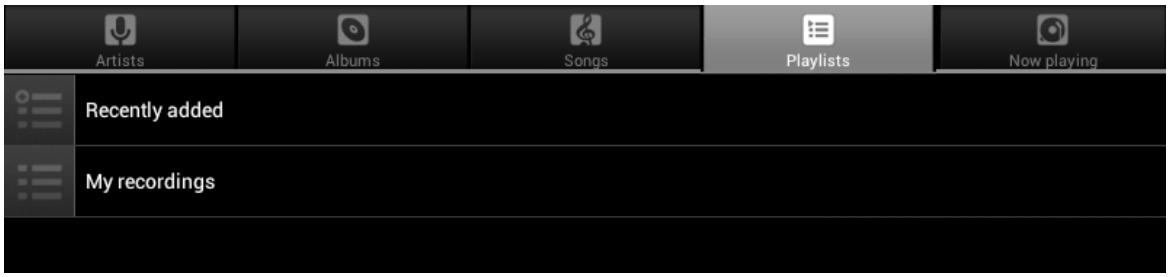
If you want to start recording, press circle button(record button). Then, recording is started. The default mode is AMR-MIC.

If you want to stop test recording, press the rectangle button(stop button).
Then, you can see two buttons. One is "Discard" button, the other is "Done" button.
Before pressing two buttons, you can check your recording. Touch the triangle button(play button).
If you touch "Discard" button, it returns to the menu screen without saving the recorded file.

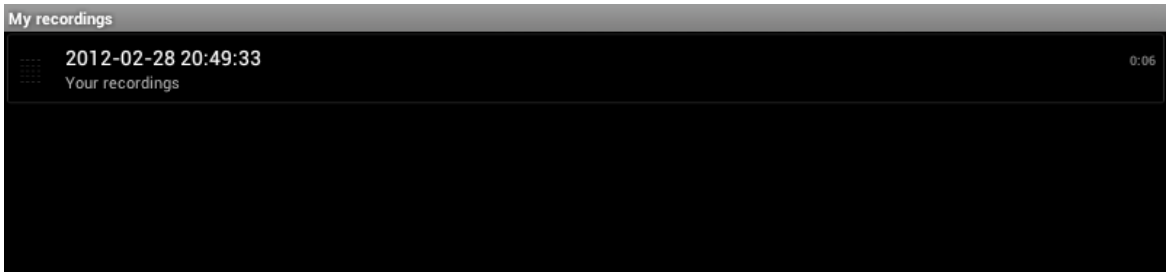
On the other hand, you touch "Done" button, the recorded file is saved. If you need to play the saved file, select "Music" application.



Then, touch “Playlists” tab.



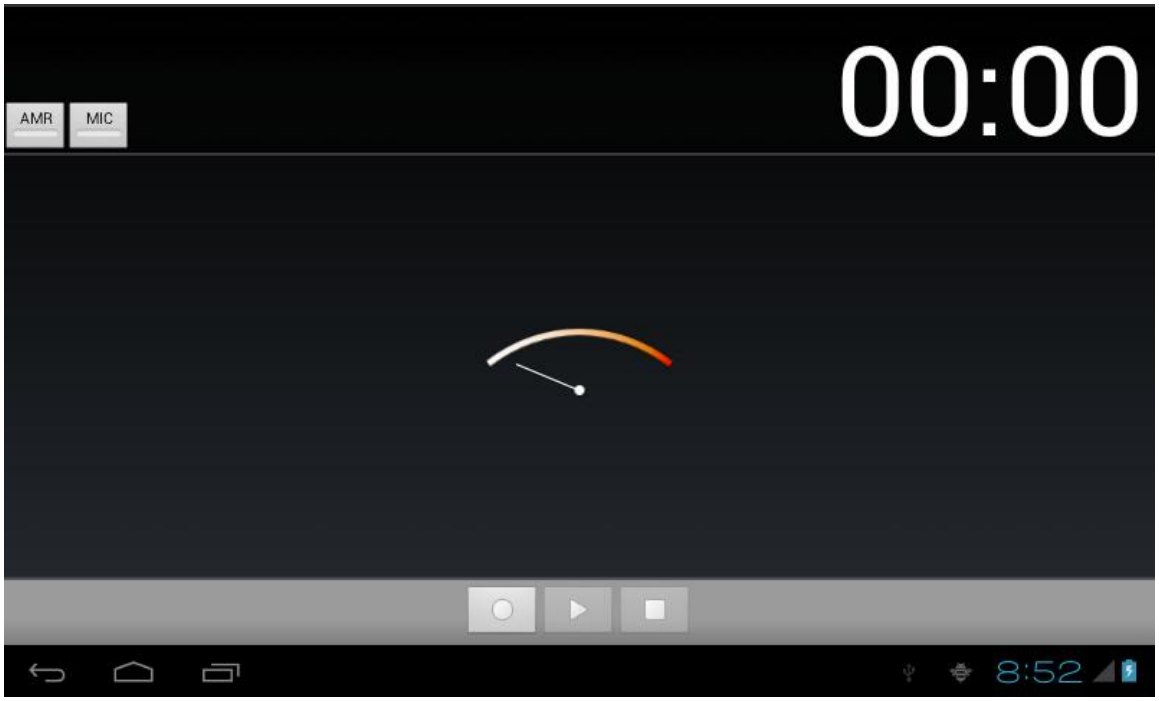
If you select “My recordings”, you can see the saved file. If there are many files on the list, you can search the file by date and time.



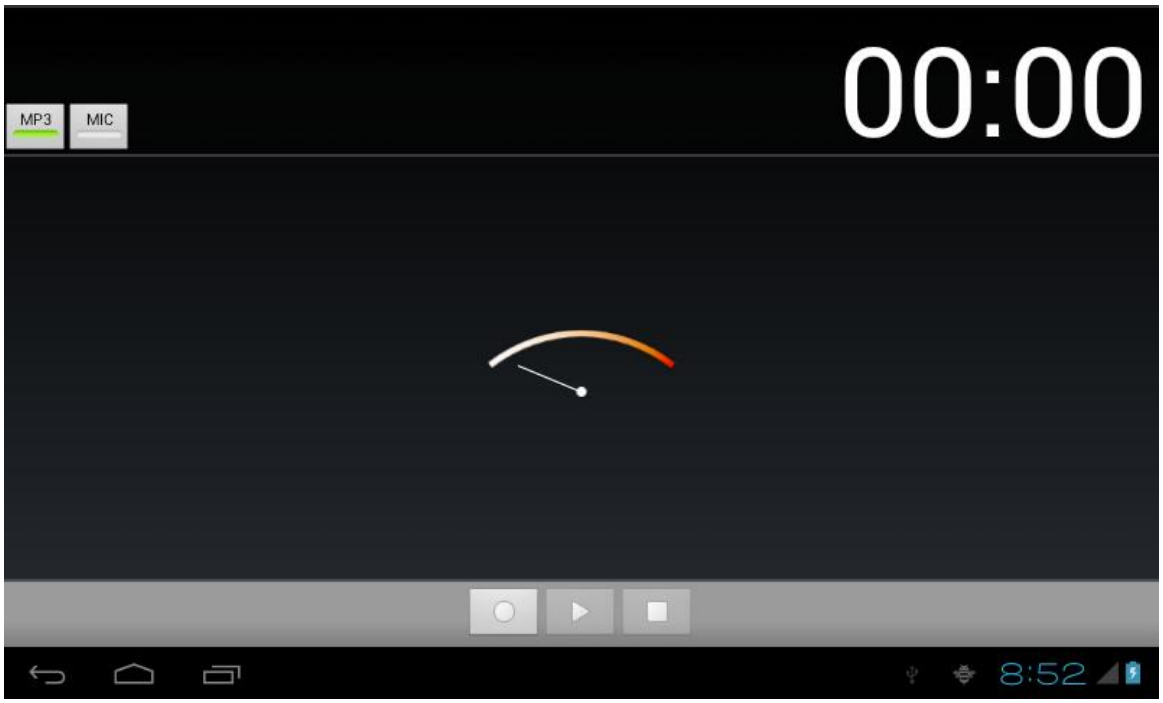
If you want to change recording mode, execute “command prompt” program.
Type this commands.

```
>adb shell
root@android:/ # setprop ro.audiobutton.enable 1
```

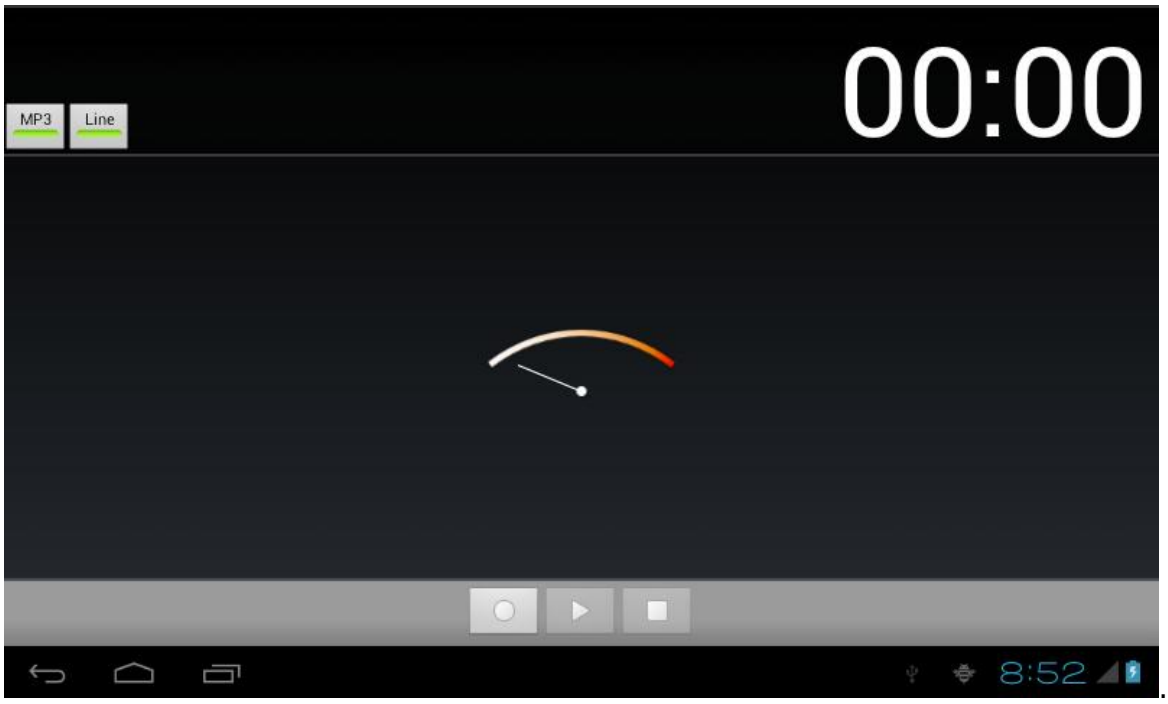
Touch “Sound Recorder” icon. You can see two buttons. One button is selecting button which is AMR or MP3, the other button is selecting input path which is MIC or Line-in.



If you touch AMR button, the button is changed from AMR to MP3.



If you touch AMR button and MIC button, you can start recording as MP3-LineIn mode.



14 SATA

To use SATA driver, you must change kernel configuration.
Please execute "`make menuconfig`" command from kernel folder and select configurations
Select "`Device Drivers --> Serial ATA and Parallel ATA drivers`".
Then select "Telechips AHCI SATA support' and choice "PHY_1" and "External 100MHz like below.
And Others should be unselected.

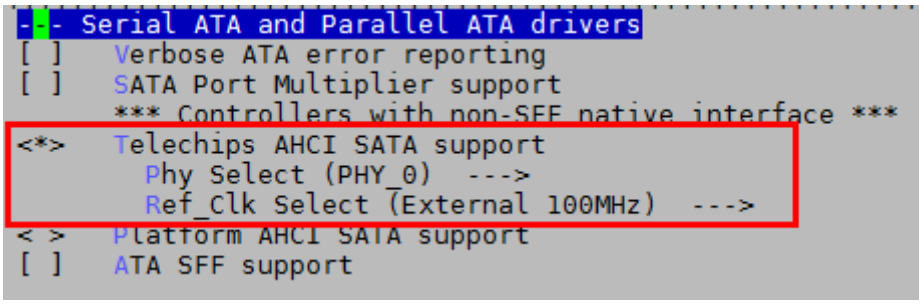


Figure 19. Select configurations for SATA operation

15 USB OTG Host

To use USB OTG Host, you must change kernel configuration.

Please execute "make menuconfig" command from kernel folder and select configurations.

Select "Device Driver --> SCSI device support --> SCSI device support". Then menus will be expanded. Then Select "SCSI disk support (NEW)", "SCSI generic support", "Probe all LUNs on each SCSI device (NEW)". Please refer below figure.

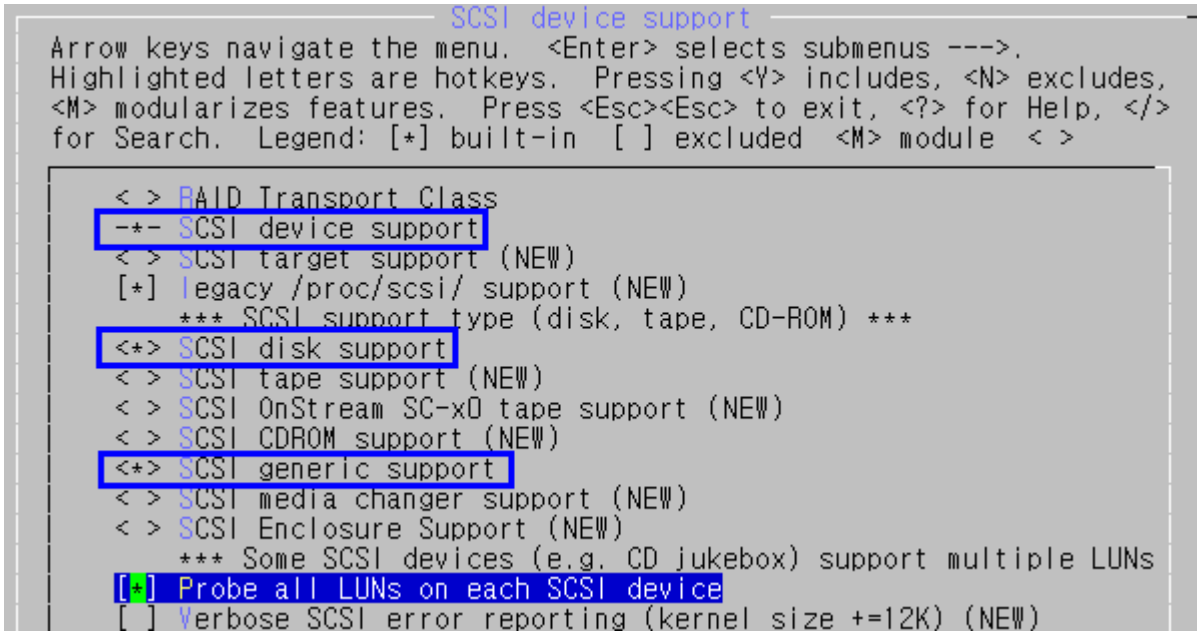


Figure 20. Select configurations for USB OTG Host operation.

Select "Device Driver --> USB support --> Telechips DWC OTG support --> Telechips DWC OTG mode (OTG Device only mode) --> OTG Dual-role mode".

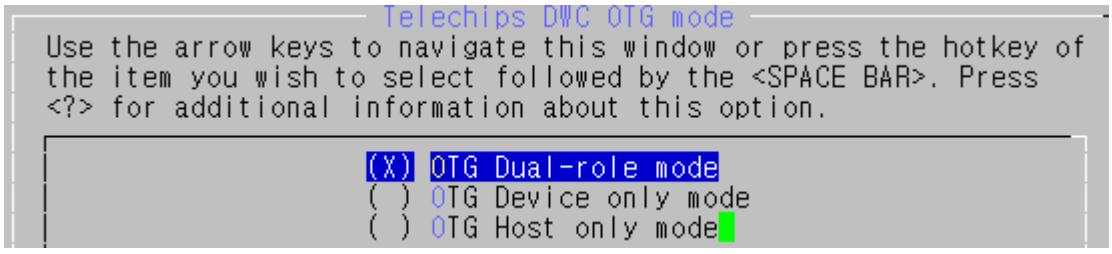


Figure 21. Select OTG Dual-roll mode for USB OTG Host operation.

Select "`Device Driver --> USB support --> USB Mass Storage support`".

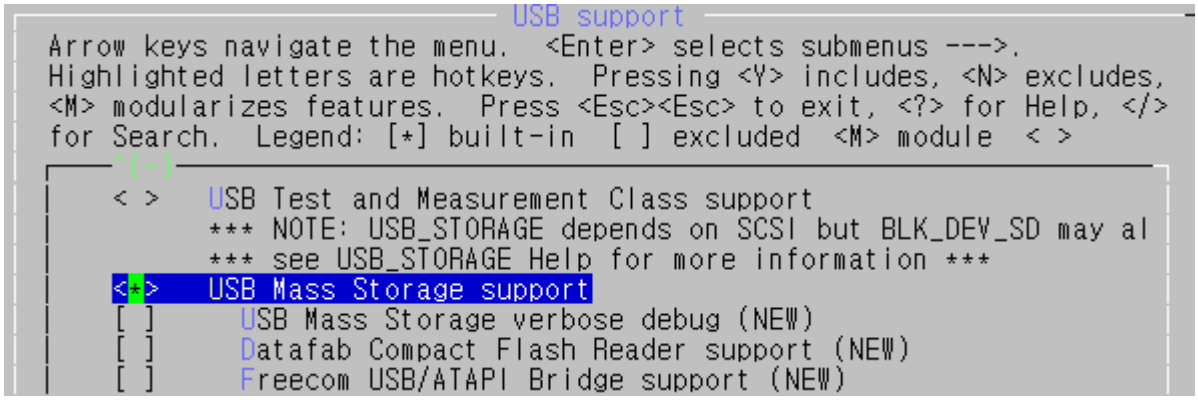


Figure 22. Select USB Mass Storage support for USB OTG Host operation.

16 USB Host 2.0

To use USB Host 2.0(EHCI&OHCI), you must change kernel configuration.

Please execute "`make menuconfig`" command from kernel folder and select configurations.

Select "Device Driver --> USB support -> EHCI HCD (USB 2.0) support" as 'M'odule
Then select 'Root Hub Transaction Translators & Support for Telechips on-chip EHCI USB controller'
And select "Device Driver --> USB support -> OHCI HCD support" as 'M'odule.

After kernel compile finished, You can find 'ehci-hcd.ko' and 'ohci-hcd.ko' modules in $project_root/kernel/drivers/usb/host directory.
If you want to update those modules, You should copy it to $project_root /device/telechips/tcc88xx-common directory.

```
<M>   EHCI HCD (USB 2.0) support
[*]     Root Hub Transaction Translators
[ ]     Improved Transaction Translator scheduling (EXPERIMENTAL)
[*]     Support for Telechips on-chip EHCI USB controller
< >   OXU210HP HCD support
< >   ISP116X HCD support
< >   ISP 1760 HCD support
< >   ISP1362 HCD support
<M>   OHCI HCD support
```

Figure 23. Select configurations for USB HOST 2.0.

17 USB Host 1.1

To use USB Host 1.1(OHCI), you must change kernel configuration.

Please execute "`make menuconfig`" command from kernel folder and select configurations.
And select "Device Driver --> USB support -> OHCI HCD support" as 'M'odule.

After kernel compile finished, You can find 'ohci-hcd.ko' modules in $project_root/kernel/drivers/usb/host directory.
If you want to update this module, You should copy it to $project_root /device/telechips/tcc88xx-common directory

```
< >   OXU210HP HCD support
< >   ISP116X HCD support
< >   ISP 1760 HCD support
< >   ISP1362 HCD support
<M>   OHCI HCD support
< >   SL811HS HCD support
< >   R8A66597 HCD support
< >   Host Wire Adapter (HWA) driver (EXPERIMENTAL)
```

Figure 24. Select configurations for USB HOST 1.1

18 Remote Control

To use Remote Control, you must change kernel configuration.

Please execute “make menuconfig” command from kernel folder and select configurations

Select “`Device Drivers --> Input device support --> Miscellaneous devices --> Telechips Remote Controller`”.

19 Sensors

* To test Sensors, you must have Sensors module.

To use only g-sensor, you must change as follows.

1. Please execute "`make menuconfig`" command from kernel folder and select configurations.
   Select "`Device Driver --> Character devices --> TCC Sensor Driver --> Tcc Sensor Driver(BMA150)`". You can see below Sensor modules.

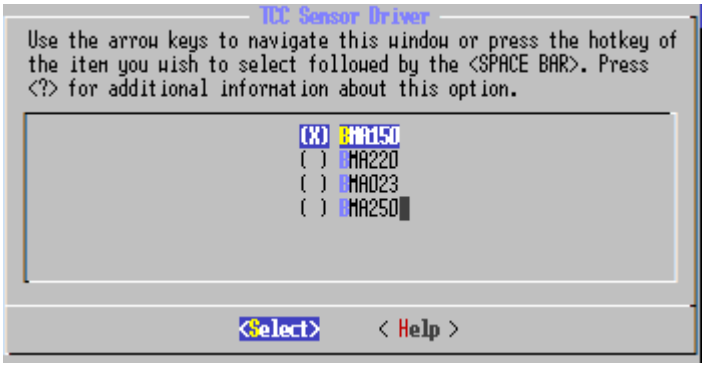


Figure 25. Select G-sensor

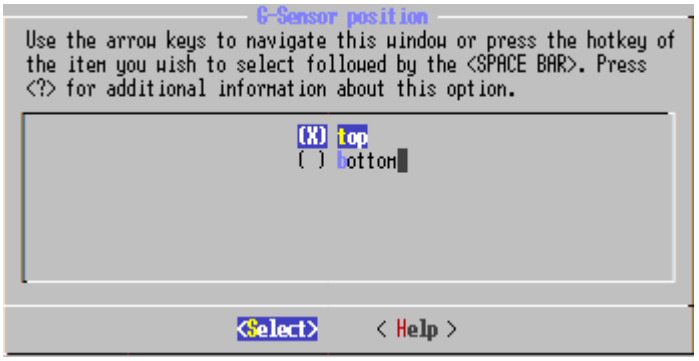


Figure 26. Select top(front) or bottom(rear)

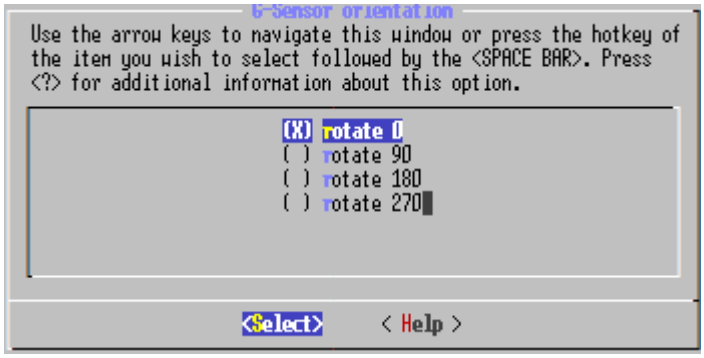
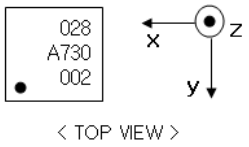


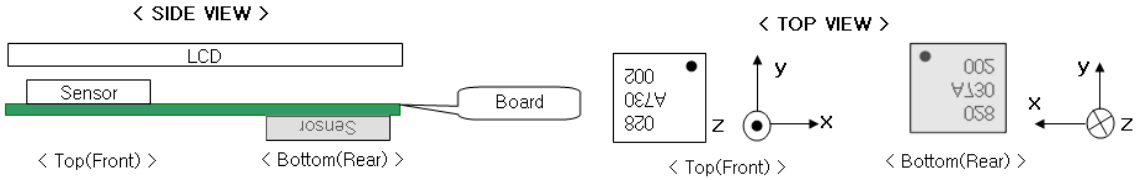
Figure 27. Select orientation

The orientation of sensor can differ with the first pin. It must check the datasheet.
Ex) Orientation of BMA150 (G-sensor)



< TOP VIEW >

In each case, the orientation marks are as below. (Ex : BMA150)



Representative eight layout are indicated below. (TOP VIEW)

Figure 28. rotate 0 -> 90 -> 180 -> 270 (top)

Figure 29. rotate 0 -> 90 -> 180 -> 270 (bottom)

To use g-sensor and compass, you must change as follows.

1. Please execute "`make menuconfig`" command from kernel folder and select configurations.
   Select "`Device Driver --> Character devices --> TCC Sensor Driver --> Tcc Sensor Driver(BMA150)`". You can see below Sensor modules.

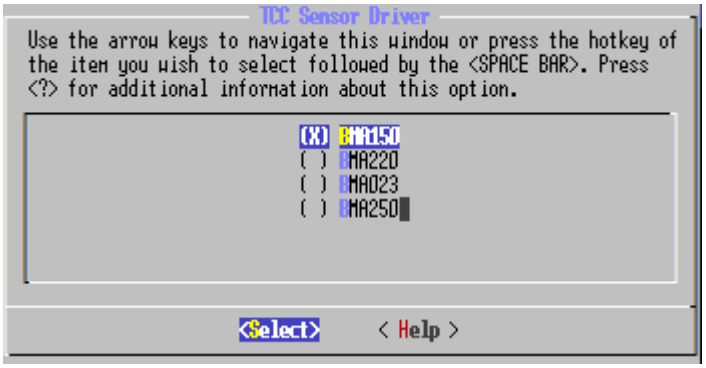
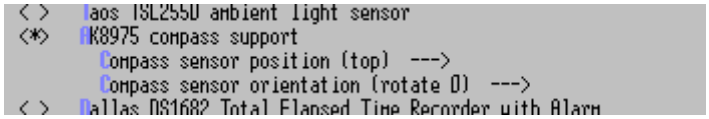


Figure 30. select g-sensor

And, **enable** "`Device Driver --> Misc devices --> AK8975 compass support`". If not support g-sensor and compass, disable.



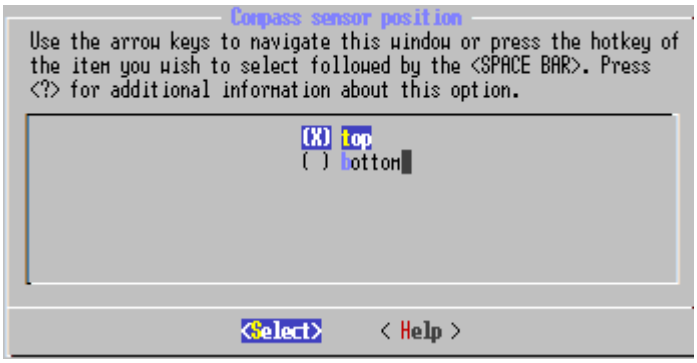


Figure 31. Select top(front) or bottom(rear)

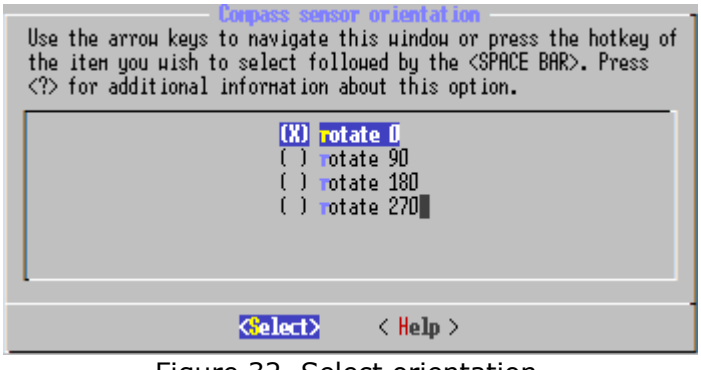
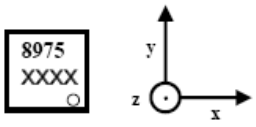


Figure 32. Select orientation

The orientation of sensor can differ with the first pin. It must check the datasheet.
Ex) Orientation of AK8975C (eCompass)



Representative eight layout are indicated below. (TOP VIEW)

Figure 33. rotate 0 -> 90 -> 180 -> 270 (top)

Figure 34. rotate 0 -> 90 -> 180 -> 270 (bottom)

20 GPS

* To test GPS, you must have GPS module.

To use hardware GPS (SIRF, JGR-SC3-S), you must change as follows.

1. Please execute "`make menuconfig`" command from kernel folder and select configurations.
   Select "`Device Driver --> GPS Driver`"
   Continously, select "`Device Driver --> [*]GPS Driver --> [*] GPS JGR SC3 S Module (NEW)`"
   If not support GPS(SIRF), disable.
   Ex) `Device Driver --> [ ]GPS Driver`

2. Open "`Android_root/device/telechips/tcc892x(or target board name) / BoardConfigBase.mk`"
   And then, check below setting.

```
# GPS define
BOARD_GPS_LIBRARIES := libgps
#BOARD_GPS_MAKER := tcc_gps
BOARD_GPS_MAKER := surf_gps
```

   This setting is default.

3. Open "`Android_root/device/telechips/tcc892x (or target board name) /init.m801.rc`"
   And then, check below setting.

```
# change permissions for gps uart, to use SURF
setprop ro.kernel.android.gps ttytCC3
     chmod 0666 /dev/ttyTCC3
     chmod 0666 /dev/gps_gpio
```

   cf) "init.tcc8920.rc", tcc8920 is target board name.

** To clear current issue in GPS SiRF,
the GPS driver of Telechips's Android 2.3 is in control of GPS_PWREN pin (GPIO).
Please check GPS sector on H/W schematics and refer Telechips H/W guide document.

21 UAC (USB Audio Class)

To use UAC, you must change kernel configuration.

Please execute "`make menuconfig`" command from kernel folder and select configurations.

Select "`Device Drivers` → `Sound card support` → `Advanced Linux Sound Architecture`"
And you must enable USB OTG Host.
Please refer to USB OTG Host chapter.

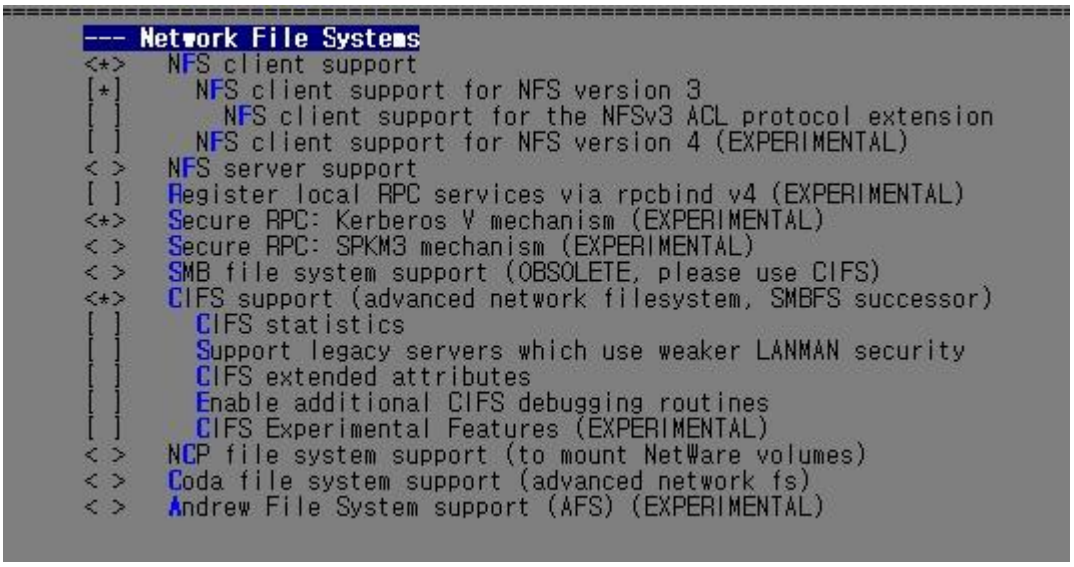
```
Device Drivers --->
      [*]Sound card support  --->
         [*] Advanced Linux Sound Architecture  --->
            [*] USB sound devices  --->
               <*> USB Audio/MIDI driver
               <*> Native Instruments USB audio devices
                [*]  enable input devices for controllers
```

22 Network File System

To use Network File System and if **below setting is not set as default**, you must change kernel configuration and some files.

Please execute "`make menuconfig`" command from kernel folder and select configurations.

Select "`File systems` → `Network File systems`" and select like below.



Check and Change *"device/telechips/tcc8800/BoardConfig.mk"*.

```
BOARD_NFS_SUPPORT := true
```

Check and Change *"device/telechips/tcc8800/init.tcc8800.rc"*.

```
setprop tcc.networkfilesystem.mount enable
```

[Android Menu]
After above changing and compiling, You can use Network File System Menu to set connection mode(nfs or cifs), server IP and directory(folder) name which you are going to connect.
Please select "Settings" and enter "Wireless & network settings", you can see "Network File System Settings