

# TCC-Android- IceCreamSandwich-V1.5E- Wi-Fi Guide

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Jun 20, 2012

***TeleChips***

***Preliminary***

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### Revision History

Date	Version	Description
2012-01-26	1.00	Initial Release
2012-03-13	1.10	Update default Wi-Fi / known issue
2012-05-17	1.20	Update Realtek driver
2012-05-29	1.20	Update Portable Wi-Fi Hotspot for Realtek Wi-Fi
2012-06-20	1.50	Update supported Wi-Fi list & minor update

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## 1 Introduction

This document describes how to use Wi-Fi on TCCxx Android 4.x(IcsCreamSandwidth).

## 2 Supported Wi-Fi

Telechips Android4.x(IcsCreamSandwidth) supported only below modules.

Don't support the other Wi-Fi modules by Telechips. Please contact to company of Wi-Fi module.

- Qualcomm Atheros AR6003 / AR6103 / AR6302(SDIO interface)  
(AR6302 is only use in China market. If you use AR6302, you must change calibration data to fit their board because AR6302 is not module. Please contact to Qualcomm Atheros for more detail.)  
**Qualcomm Atheros Wi-Fi not yet support Wi-Fi Direct.**
- Realtek RT8188CUS(USB) / RT8189ES(SDIO)
- Broadcom BCM4330(**support TCC892x only**)

### 3 Setting Wi-Fi

The default Wi-Fi module is AR6103 on TCC892x/TCC880x EVM. And default Wi-Fi of m805\_892x is RT8188CUS

If you change another Wi-Fi, please modify below 3 files.

- device/telechips/tcc8920 or [to your board]/BoardConfig.mk
- device/telechips/tcc8920 or [to your board]/device\_base.mk
- device/telechips/tcc8920 or [to your board]/init.tcc8920.wifi.rc
- device/telechips/tcc8920 or [to your board]  
/overlay/frameworks/base/core/res/res/values/config.xml

First, modify BoardConfig.mk file.

If you want Qualcomm Atheros Wi-Fi module, please set BOARD\_USES\_ATH\_WIFI to 'true'. And set BOARD\_WIFI\_MODULE to want module. If you want to AR6103, set BOARD\_WIFI\_MODULE to 'ar6103'(ar6103, ar6003 and ar6302 is the same driver. It is classified by module itself.

If you want Realtek Wi-Fi module, please set BOARD\_USES\_ATH\_WIFI & BOARD\_USES\_BROADCOM\_WIFI to 'false' and BOARD\_USES\_REALTEK\_WIFI to 'true'

If you want Broadcom Wi-Fi module, please set BOARD\_USES\_ATH\_WIFI & BOARD\_USES\_REALTEK\_WIFI to 'false' and BOARD\_USES\_BROADCOM\_WIFI to 'true'

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

Second, modify device\_base.mk

If you want to use Realtek RT8188CUS, remove comment to rt81xxcu.mk and the other must comment

```
....  
# Atheros Wi-Fi module  
#$(call inherit-product, device/telechips/tcc892x-common/wifi/ar6002.mk)  
#$(call inherit-product, device/telechips/tcc892x-common/wifi/ar6003.mk)
```



```
# Realtek Wi-Fi module
$(call inherit-product, device/telechips/tcc892x-common/wifi/rt81xxcu.mk)
#$(call inherit-product, device/telechips/tcc892x-common/wifi/rt8189es.mk)

# Broadcom Wi-Fi module
#$(call inherit-product-if-exists, hardware/broadcom/wlan/bcmdhd/firmware/bcm4330/device-bcm.mk)
#$(call inherit-product, device/telechips/tcc892x-common/wifi/broadcom.mk)
```

Last, modify `init.tcc8920.wifi.rc`

If you want to use realtek wifi, modify like below.

```
on boot
    #setprop tcc.wifi.vendor atheros
    setprop tcc.wifi.vendor realtek
    #setprop tcc.wifi.vendor broadcom

# for Atheros Wi-Fi -----
#service wpa_supplicant /system/bin/wpa_supplicant -Dwext -iwlan0 -c/data/misc/wifi/wpa_supplicant.conf
#    disabled
#    oneshot

#service abtflt1 /system/bin/abtflt1 -a -d -v -z -s
#    disabled
#    oneshot

#service wlan_tool /system/bin/wlan_tool
#    user root
#    group root
#    disabled
#    oneshot
# -----

# for Realtek wifi -----
service wpa_supplicant /system/bin/wpa_supplicant -Dnl80211 -iwlan0 -c/data/misc/wifi/wpa_supplicant.conf
    socket wpa_wlan0 dgram 660 wifi wifi
    group wifi inet
    disabled
    oneshot
service hostapd /system/bin/hostapd -ddddd /data/hostapd/hostapd.conf
    class late_start
    user root
```

```
group root
oneshot
disabled
```

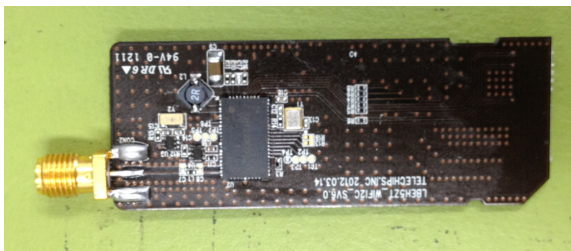
```
# -----
....
```

If you want to use Broadcom BCM4330, you must modify kernel configuration like below.

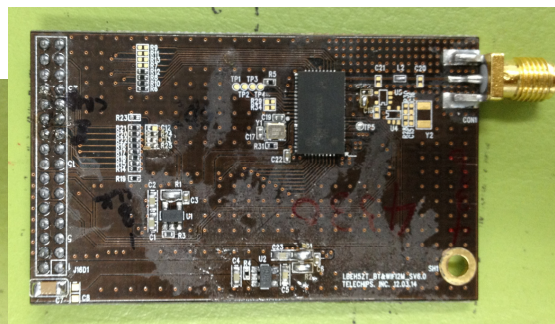
Device Drivers -> MMC/SD/SDIO card support -> Support Broadcom BCM4330 Wi-Fi module  
-> Support Broadcom BCM4330 sub board

```
< > MMC host test driver
*** MMC/SD/SDIO Host Controller Drivers ***
< > Secure Digital Host Controller Interface support
[*] Telechips SD/MMC Host Controller Driver
[ ] Support an eMMC
[*] Enable TCC SDHC0
[*] Enable TCC SDHC1
[*] Enable TCC SDHC2
[ ] Enable TCC SDHC3
[ ] Enable TCC SDHC Speed Up
SDHC Data Transmission Methods (SDMA) --->
[*] Support Broadcom BCM4330 Wi-Fi module
[*] Support Broadcom BCM4330 sub board
[ ] Enabling a SEMAPHORE for Sharing one host controller
< > Synopsys DesignWare Memory Card Interface
< > VUB300 USB to SDIO/SD/MMC Host Controller support
```

If you have BCM4330 of SD type(1), you just enable “Support Broadcom BCM4330 Wi-Fi module”  
But if you have BCM4330 of header type(2), you must enable “Support Broadcom BCM4330 Wi-Fi module” and “Support Broadcom BCM4330 sub board”



(1)



(2)

And if you want to use tethering on Realtek/Broadcom Wi-Fi, please see 7. Potable Wi-Fi Hotspot.

And if you want to use tethering on Realtek/Broadcom Wi-Fi, please see 8. Wi-Fi Direct

## 4 Build

If you change to Wi-Fi setting, please clean-build SDK. Or re-build after below command executed in your SDK

```
# rm -rf $OUT/system/wifi
# rm $OUT/root/init.tcc8920.wifi.rc
# touch `find external/wpa_supplicant_8`
# touch `find hardware/libhardware_legacy/wifi`
# touch `find device/telechips/tcc8920`
```

## 5 Using Wi-Fi

To use WIFI, you must enable WIFI. To enable WIFI, please select “Settings” from below figure screen.

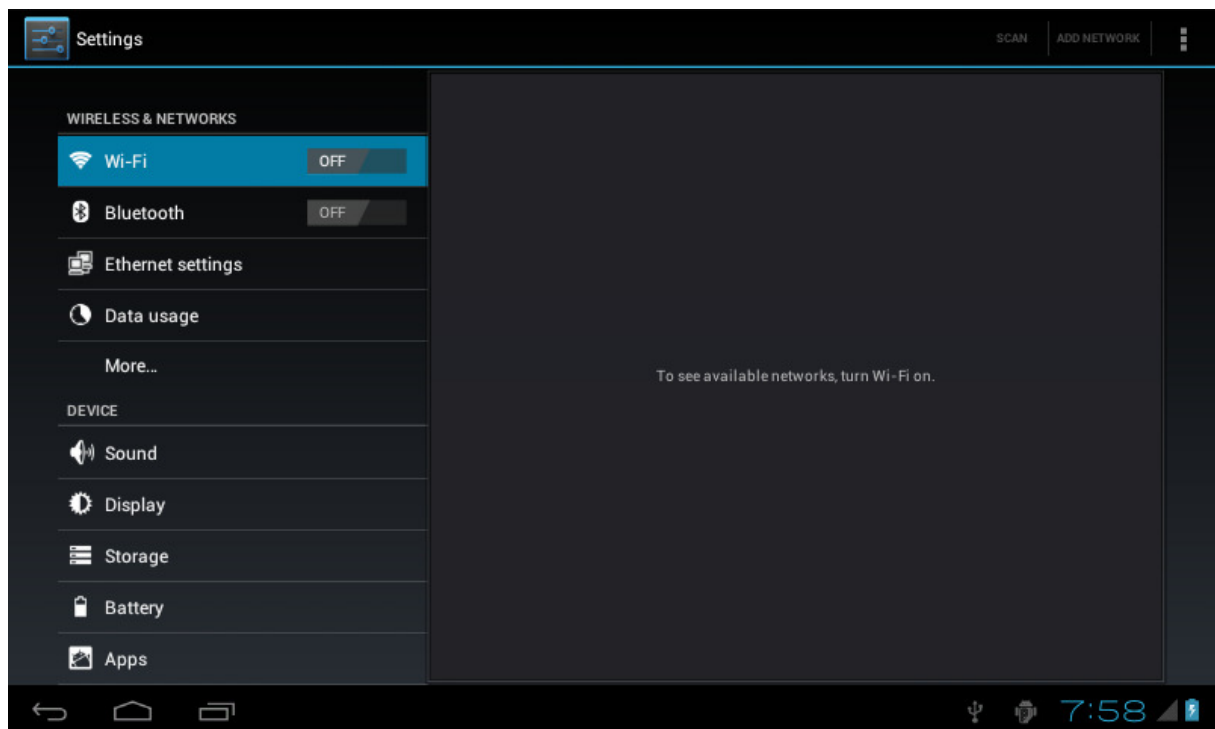




Figure 1 Setting menu for WIFI

## 6 Soft MAC address for Atheros Wi-Fi

Telechips Android 4.x SDK support soft mac address for Atheros Wi-Fi. *Don't support for Realtek Wi-Fi.* 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.

***\*If you are schedule to mass production, MAC address value must unique by IEEE***

The screenshot shows the 'FWDN V7 Options' dialog box. It has a 'Target' field with 'etc.' and a 'Base Address' field with '0x82000000' and a 'Custom' checkbox. The 'Serial Number' section has a checked 'Overwrite Serial Number' checkbox and a 'Custom Field' section with 'Custom Number' (0xF1), 'Product Number' (0x00), and 'Serial Count' (0x0073). The 'BlueTooth Device Address' section has an unchecked 'Insert BTD Address' checkbox, a 'No Auto Increment of LAP' checkbox, and fields for 'NAP' (0x0000), 'UAP' (0x00), and 'LAP' (0x000000). The 'MAC Address' section has a checked 'Insert MAC Address' checkbox, 'OUI' (0x001234), 'Host Id' (0x567213), and an 'Increment' dropdown set to 3. Below these fields is a formula: '"F1" + Product Number(2) + MAC Address(12) + Time(12) + Serial Count(4)' and a 'Generated Serial Number' field showing 'F100 0012 3456 7213 1201 2618 0622 0073'. At the bottom are buttons for '확인' (OK), '취소' (Cancel), and '적용(A)' (Apply).

Figure 2 WI-FI MAC address setting from FWDN.exe

## 7 Portable Wi-Fi hotspot

You can use portable Wi-Fi hotspot if you have upstresm(e.g. Ethernet, mobile network)

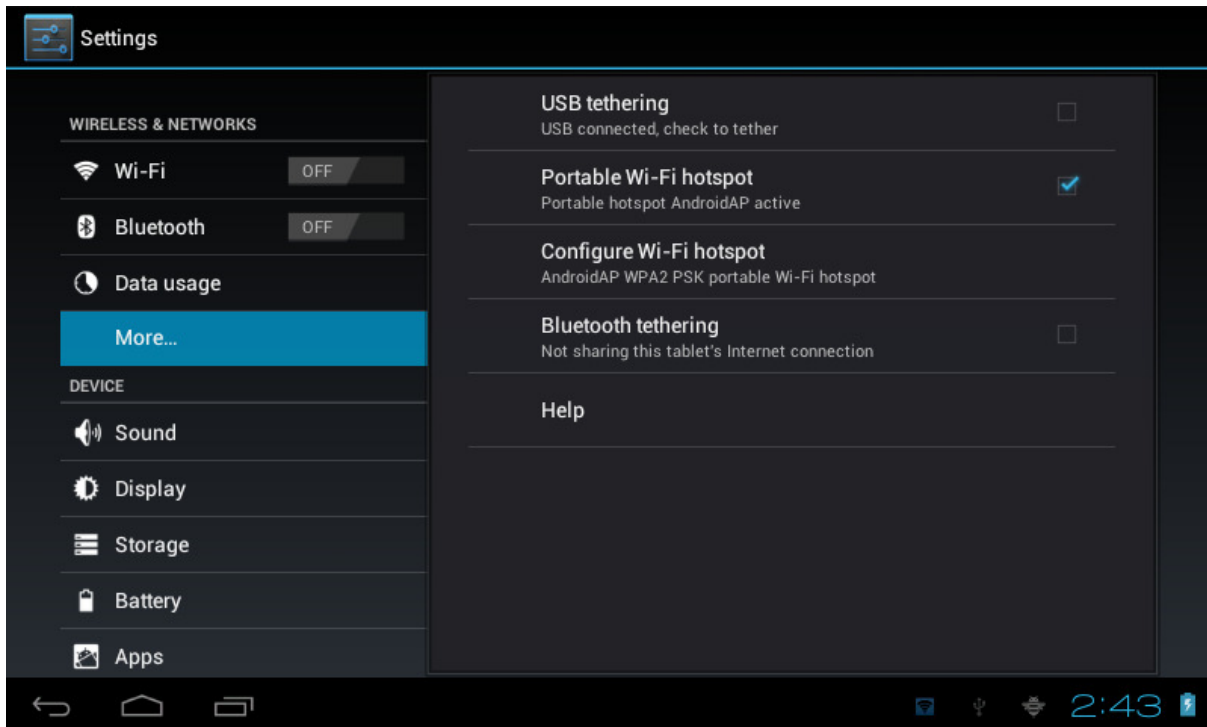


Figure 3 Portable Wi-Fi hotspot

Default password of portable Wi-Fi hotspot is **123456789**. We fix password like below.

```
diff --git a/wifi/java/android/net/wifi/WifiApConfigStore.java
b/wifi/java/android/net/wifi/WifiApConfigStore.java
index 0531ca3..bbd9e3c 100644
--- a/wifi/java/android/net/wifi/WifiApConfigStore.java
+++ b/wifi/java/android/net/wifi/WifiApConfigStore.java
@@ -206,7 +206,7 @@ class WifiApConfigStore extends StateMachine {
    config.allowedKeyManagement.set(KeyMgmt.WPA2_PSK);
    String randomUUID = UUID.randomUUID().toString();
    //first 12 chars from xxxxxxxx-xxxx-4xxx-yxxx-xxxxxxxxxxxx
-    config.preSharedKey = randomUUID.substring(0, 8) + randomUUID.substring(9,13);
+    config.preSharedKey = "1234567890";//randomUUID.substring(0, 8) +
randomUUID.substring(9,13);
    sendMessage(WifiStateMachine.CMD_SET_AP_CONFIG, config);
}
```

And if you want to use tethering on Realtek and Broadcom Wi-Fi, you must modify  
device/telechips/tcc8920/overlay/frameworks/base/core/res/res/values/config.xml file like below

```
.....  
    <string-array translatable="false" name="config_tether_wifi_regexs">  
-        <item>"wlan0"</item>  
+        <item>"wlan\\d"</item>  
    </string-array>  
.....
```

## 8 Wi-Fi Direct

Wi-Fi Direct is only supported on Realtek and Broadcom Wi-Fi. If you want to use Wi-Fi Direct, please remove comment below line to device/telechips/tcc8920 or [your device]/device\_base.mk like below

```
.....  
frameworks/base/data/etc/android.hardware.wifi.direct.xml:system/etc/permissions/android.hardware.wifi.direct.xml  
.....
```

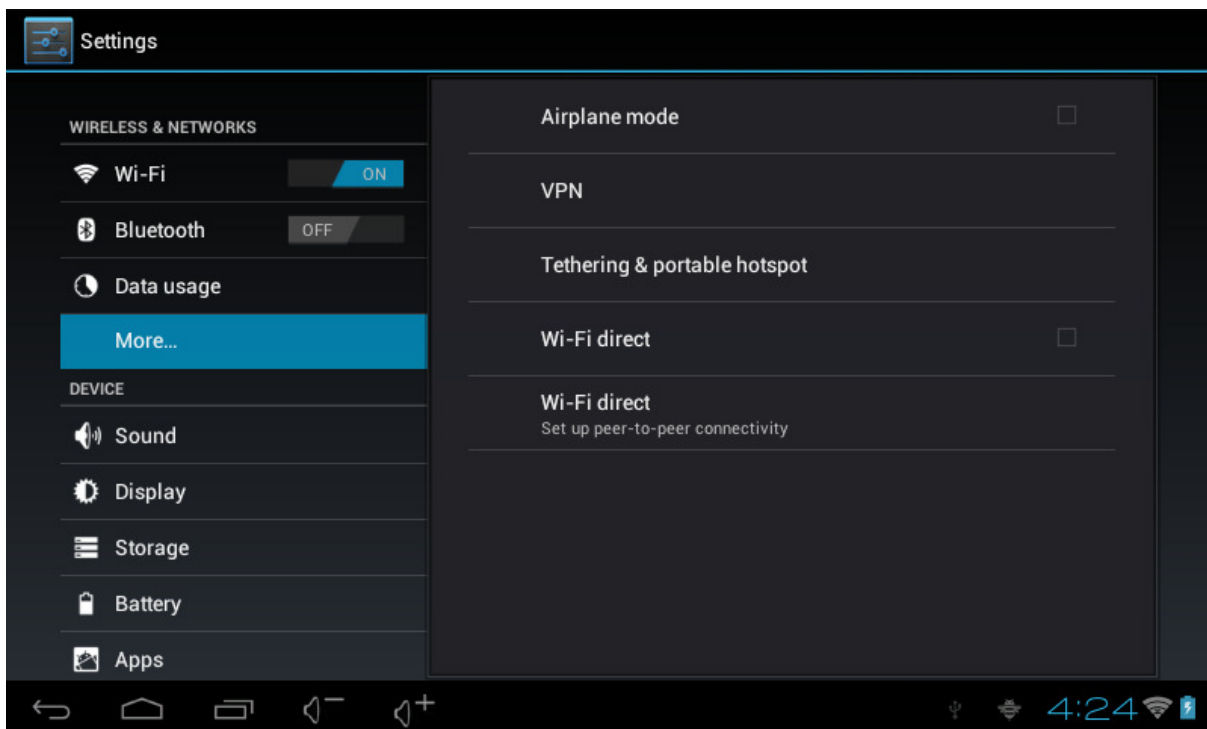


Figure 4 Wi-Fi Direct



## 9 Known Issues

- Atheros Wi-Fi is don't support Wi-Fi Direct yet.
- AR6003 / AR6103 / AR6302 something problem for multicast operation. If you want to fix it, please contact to Qualcomm Atheros.