TCC89XX BLUETOOTH(BROADCOM) USER GUIDE

TCCxxxx-Android_4.4.2(Kitkat-mr1.1)-V1.00E-Bluetooth User Guide_BROADCOM

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Telechips

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Revision History

Date	Version	Description
2014-02-12	1.00	This document is a guide to the Bluetooth with BROADCOM. Initial release.

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1 Introduction

This document describes how to start Android portable project with Bluetooth(BROADCOM BCM433x) for TCC892x and TCC893x.

2 Bluetooth control driver

2.1 Bluetooth power On/Off

In kernel, you can turn on or off the Bluetooth module with Bluetooth power control driver.

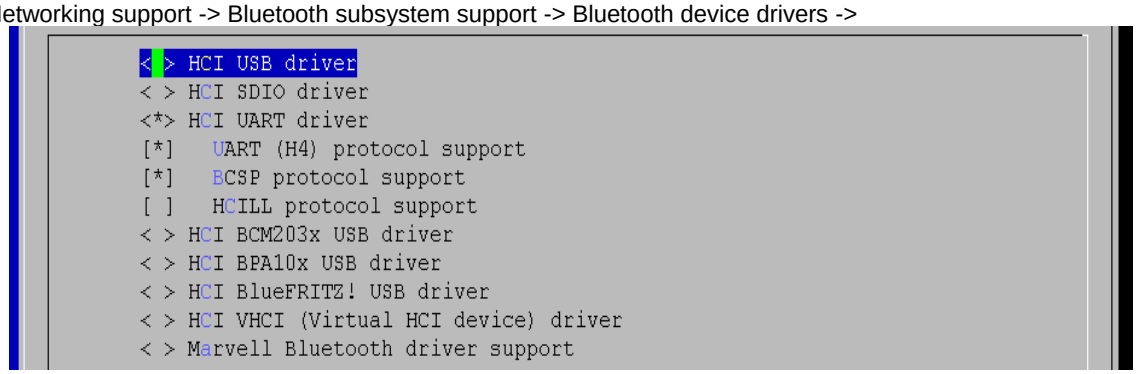
That's source file is "**arch/arm/mach-tcc892x/board-tcc8920-bluetooth.c**" or "**arch/arm/mach-tcc893x/board-tcc8930-bluetooth.c**".

And this driver uses rfkill of linux.

You can change power and reset port of Bluetooth module according to your system to modify the driver file.

2.2 Check list

In menuconfig, you can check below list
- Networking support -> Bluetooth subsystem support -> Bluetooth device drivers ->



HCI UART driver -> UART (H4) protocol support ← this must be checked.

3 Build Android to use Bluetooth

If you want to use your specific Bluetooth module, below list may be checked.

3.1 BoardConfig.mk

This file is in "device/telechips/tcc8920/" or "device/telechips/tcc893x/" folder.
You should check bcm option in it.

```
# Bluetooth defines
#
BOARD_HAVE_BLUETOOTH := true
#CUSTOM_BLUETOOTH_VENDOR := csr
CUSTOM_BLUETOOTH_VENDOR := bcm
BOARD_HAVE_BLUETOOTH_BCM := true
```

- Kitkat does not support csr vendor.

If you open it, you can find this.
You should check that "CUSTOM_BLUETOOTH_VENDER := bcm" and "BOARD_HAVE_BLUETOOTH_BCM := true" are opened (this is not default option).

3.2 Kitkat

Android Kitkat does not use Blue-Z stack on linux anymore and default android kitkat uses Broadcom stack(H4).
If you use another vendor's Bluetooth module, you will need the driver according to the Bluetooth vendor.

3.3 Bt_vendor.conf

Kitkat has bt_vendor.conf file to use Bluetooth according to host device.

Example: hardware/broadcom/libbt/conf/telechips/tcc893x/bt_vendor.conf

```
# UART device port where Bluetooth controller is attached
UartPort = /dev/ttyTCC1

# Firmware patch file location
FwPatchFilePath = /vendor/firmware
```

If you want to change uart port for Bluetooth, you should revise this file.
/dev/ttyTCC1 -> uart 1 channel.

3.4 HCD file

This file is in "device/telechips/tcc892x-common/bluetooth" or "device/telechips/tcc893x-common/bluetooth" folder.
You should check that it is in that folder.

For bcm4330 module , you should use "bcm4330.hcd" file.

3.5 Bluetooth pin settings

A BCM433x module has three pins for the Bluetooth initialization.

BT_DEV_WAKE: The host(TCC89XX) enables this pin to wake the module up so the BT_DEV_WAKE pin must be set as output mode from the view of the host.

BT_HOST_WAKE: A BCM433x module enables this pin to wake the host up so the BT_HOST_WAKE pin must be set as input mode from the view of the host.

Example: kernel/arch/arm/mach-tcc893x/board-tcc8930-bluetooth.c

```
static int tcc_bluetooth_probe(struct platform_device *pdev)
{
        if( machine_is_tcc8800()|| machine_is_tcc893x())
         {
                gpio_request(TCC_GPEXT3(2), "bt_wake");
                gpio_request(TCC_GPG(19), "bt_reset");
                gpio_direction_output(TCC_GPEXT3(2),1);      /* BT_WAKE Output mode, Enable*/
                gpio_direction_input(TCC_GPEXT3(3));         /* BT_HWAKE Input mode*/
                mdelay(500);
        }

                                                    ⋮


}
```

※ Remove "tcc_bt_rfkill_set_power(NULL, true);" in the "tcc_bluetooth_probe" function.

BT_REG_ON: The host uses this pin to enable/disable the module. To enable(disable) the module, the BT_REG_ON must be set as high from low(as low from high) while the BT_DEV_WAKE is high.

Example: kernel/arch/arm/mach-tcc893x/board-tcc8930-bluetooth.c

```
static int tcc_bt_rfkill_set_power(void *data, bool blocked)
{
        if (!blocked && (bt_enable_flag == 0))
        {
                bt_enable_flag = 1;
                if (machine_is_tcc8800() || machine_is_tcc893x())
                {
                        gpio_direction_output(TCC_GPG(19),1);        // Enable BT_REG_ON
                        mdelay(100);
                }

                                                ⋮


        }
        else if(blocked && (bt_enable_flag == 1))
        {
                bt_enable_flag = 0;
                if (machine_is_tcc8800() || machine_is_tcc893x())
                        gpio_set_value(TCC_GPG(19),0);               // Disable BT_REG_ON

                                                ⋮


        }
       bt_enabled = !blocked;
       return 0;
}
```

3.6 Bluetooth Low Energy

Android 4.3 (API Level 18) introduces built-in platform support for Bluetooth Low Energy in the central role and provides APIs that apps can use to discover devices, query for services, and read/write characteristics. In contrast to Classic Bluetooth, Bluetooth Low Energy (BLE) is designed to provide significantly lower power consumption. This allows Android apps to communicate with BLE devices that have low power requirements, such as proximity sensors, heart rate monitors, fitness devices, and so on.

If you want to declare that your platform is available to BLE-capable devices, include the following in "**device/telechips/tcc8920/device.mk**" or "**device/telechips/tcc893x/device.mk**":

```
PRODUCT_COPY_FILES += \
        frameworks/native/data/etc/android.hardware.bluetooth_le.xml:
        system/etc/permissions/android.hardware.bluetooth_le.xml
```