REALTEK

REALTEK Wi-Fi Linux Driver
BT-Coexistence Issue Debug Guide

Revision history

Revision	Date	Changes	Author
v1.0	2013/08/20	1. First Release	Amy
v2.0	2015/11/05	1. Add Debug SOP 2. Refine document layout	Lucas

Contents

1. Introduction

This document describes how to debug Wi-Fi and BT coexistence issue on Realtek Wi-Fi and BT combo IC (single chip). If using two chips solution please reference document "*How_to_set_bt-coex_antenna_isolation_parameters_on_combo_card.pdf*".

2. Driver Configuration

The compiler flag "**CONFIG_BT_COEXIST**" for the BT coexistence must be turned on.
Check the Makefile in diver to make sure that "**CONFIG_BT_COEXIST = y**"

3. Antenna setting

Driver supports two kinds of BT Coexistence mechanisms, 1-antenna mechanism and 2-antenna mechanism. Driver decides which mechanism is used according to antenna number and the antenna number is saved in the efuse.
When turn on the bt coexistence debug message on kernel log, the messages will show the mechanism running is 1 or 2 antenna.
For 1-antenna, it shows "**[BTCoex], 1 Ant mechanism**".
For 2-antenna, it shows "**[BTCoex], 2 Ant mechanism**".
If the antenna setting of the Wi-Fi device does not match the debug messages, please check the efuse setting.

4. Print debug messages on

kernel log

User can turn on/off the bt coexistence debug message by following below commands.

REALTEK

Turn on debug messages:

#> **echo 1 > /proc/net/rtl8723as/wlan0/btcoex_dbg**

Turn off debug messages:

#> **echo 0 > /proc/net/rtl8723as/wlan0/btcoex_dbg**

ps. "rtl8723as" and "wlan0" are just examples, please use right "IC name" and "wlan interface name" to replace them.

5. Show BT-Coexistence summary information

Driver provides one proc entry to show runtime BT-Coexistence information for debug.

The command is:

\#> **cat /proc/net/rtl8723as/wlan0/btcoex**

ex.

```
C:\Users\lucasyu>adb shell cat /proc/net/rtl8723bs/wlan0/btcoex

============[BT Coexist info]============
Ant PG number/ Ant mechanism:        = 2/ 2
BT stack/ hci ext ver                = No / 0
CoexVer/ FwVer/ PatchVer             = 20131113_3f/ 0x170002/ 0x0(0)
Dot11 channel / HsChnl(HsMode)       = 1 / 0(0)
H2C Wifi inform bt chnl Info         = 00 00 00
Wifi rssi/ HS rssi/ AP#              = 0/ 0/ 115
Wifi bLink/ bRoam/ bScan             = 0/ 0/ 0
Wifi status                          = 2.4G / HT20/ idle
BT [status/ rssi/ retryCnt]          = [non-connected idle/ 0/ 0]
SCO/HID/PAN/A2DP                     = 0 / 0 / 0 / 0
BT Info A2DP rate                    = EDR rate
BT Info[wifi fw]                     = 00 00 00 00 00 00 00(3)
PS state, IPS/LPS                    = IPS ON/LPS OFF
Power mode cmd                       = 00 00 00 00 00 00      █
============[Sw mechanism]============
SM1[ShRf/ LpRA/ LimDig]              = 0/ 0/ 0
SM2[AgcT/ AdcB/ SwDacSwing(lvl)]     = 0/ 0/ 0(0x18)
============[Fw mechanism]============
PS TDMA                              = 00 00 00 48 00 case-1 (auto:0)
DecBtPwr/ IgnWlanAct                 = 0/ 1
============[Hw setting]============
RF-A, 0x1e initVal                   = 0x0
0x778/0x880[29:25]                   = 0xea/ 0x15
0x948/ 0x67[5] / 0x765               = 0xeaeaeaea/ 0x0/ 0xea
0x92c[1:0]/ 0x930[7:0]/0x944[1:0]    = 0x2/ 0xea/ 0x2
0x38[11]/0x40/0x4c[24:23]/0x64[0]    = 0x1/ 0x2c/ 0x0/ 0x0
0x550(bcn ctrl)/0x522                = 0xeaeaeaea/ 0xea
0xc50(dig)/0x49c(null-drop)          = 0xea/ 0xea
OFDM-CCA/OFDM-FA/CCK-FA              = 0xeaea/ 0x5817c/ 0xeaea
0x6c0/0x6c4/0x6c8/0x6cc(coexTable)   = 0xeaeaeaea/ 0xeaeaeaea/ 0xeaeaeaea/ 0xea
0x770(high-pri rx/tx)                = 60138/ 60138
0x774(low-pri rx/tx)                 = 60138/ 60138
```

6. Debug SOP

6.1. Collect Wi-Fi and BT driver version

6.2. Check Antenna number

Get efuse content and check inside antenna number setting match expected or not, otherwise just provide efuse content to Realtek.

6.3. Test on Wi-Fi only and BT only

If BT and Wi-Fi can't work well at the same time, check if BT only and Wi-Fi only normal or not.

6.4. Collect issue scenario information

The information should include:
6.4.1. BT profile
     ACL/SCO/A2DP/FTP/HID or etc.
6.4.2. Wi-Fi operation mode
     STA/SoftAP/P2P(GC or GO)/TDLS or tec.
6.4.3. Test devices model
     Paired BT devices and Wi-Fi devices/AP.
6.4.4. Expected result
     Target throughput or pass criteria.

6.5. Capture debug log

Release package includes some scripts to help to capture BT coexistence debug log, you can find them in directory "btcoex/script/":
a. *btcoex_win.bat*
   This script could be run on Windows OS and capture log of android platform connected.
   Modify following settings in this batch file before using:

REALTEK

"**AndroidADB**" is path of adb.exe

"**dbgfile**" is btcoex debug proc entry path.

b. *btcoex_lnx.sh*

This script could be run on Linux and capture localhost btcoex log.

The usage:

 # ./btcoex_lnx.sh [CHIP] [WLan Interface] [Log File]

ex:

./btcoex_lnx.sh 8723bs wlan0 btcoex.log

The steps of capturing BT coexistence debug log are as follow:

6.5.1. Enable script

6.5.2. Reproduce issue

6.5.3. Disable script

6.5.4. Save log and send it to Realtek for analysis.

7. Reference

1. How_to_set_bt-coex_antenna_isolation_parameters_on_combo_card.pdf