How to read external TX_power_related_table

2014/11/12

Introduction

Realtek WiFi driver has TX_power_by_rate_table and TX_power_limit_table which use to adjust output power and limit maximum output power in each channel with different transmit rate. Maximum transmit power depends on Government regulations which are FCC, ETSI and MKK. Realtek dongle has a factory default TX power_limit_table burned in efuse in production.

Customize TX power table provides a possibility for WiFi module maker to modify TX_power_by_rate_table (PHY_REG_PG.txt) and TX_power_limit_table (TXPWR_LMT.txt) after production for some reason.

Note!

- External TX power table will be generated by agent who sells wifi chip to customer.
- Store TX_power_by_rate_table and TX_power_limit_table in a read only partition is a good idea to avoid damage.
- TX_power_by_rate_table and TX_power_limit_table cannot be removed by upgrade image and reset default.

Configure steps

1. Load parameter from file – by modify Makefile.
   A. Modify the CONFIG_LOAD_PHY_PARA_FROM_FILE to y .
      Ex: CONFIG_LOAD_PHY_PARA_FROM_FILE = y
2. Copy file to specified folder:
   A. Make new folder according to your chip name under the path which have read permissions.
      Ex: /lib/firmware/rtl8812a
   B. Move PHY_REG_PG.txt and TXPWR_LMT.txt to above folder.
3. 3 ways to decide if driver refer to external TX power table

A. By change configuration

Step-1. Modify Makefile

Ex: CONFIG_CALIBRATE_TX_POWER_BY_REGULATORY = **y**

Driver will refer to PHY_REG_PG.txt and TXPWR_LMT.txt

Ex: CONFIG_CALIBRATE_TX_POWER_TO_MAX = **y**

Driver will refer to PHY_REG_PG.txt

Step-2.Modify file path in Makefile

Un-mark

#EXTRA_CFLAGS += -DREALTEK_CONFIG_PATH=\"/lib/firmware/\"

Ex: EXTRA_CFLAGS += -DREALTEK_CONFIG_PATH=\"/lib/firmware/\"

and mark

EXTRA_CFLAGS += -DREALTEK_CONFIG_PATH=\"\"

Ex: #EXTRA_CFLAGS += -DREALTEK_CONFIG_PATH=\"\"

Or

B. By change configuration

Step-1. Modify Makefile

Ex: CONFIG_CALIBRATE_TX_POWER_BY_REGULATORY = **y**

Driver will refer to PHY_REG_PG.txt and TXPWR_LMT.txt

Ex: CONFIG_CALIBRATE_TX_POWER_TO_MAX = **y**

Driver will refer to PHY_REG_PG.txt

Step-2.Modify file path in os_intfs.c

Ex: char *rtw_phy_file_path = "/lib/firmware/";

Or

C. By change load-time module parameter

$>insmod 8812au.ko rtw_tx_pwr_lmt_enable=1 rtw_tx_pwr_by_rate=1 rtw_phy_file_path=”/lib/firmware/” rtw_decrypt_phy_file=0

4. Parameter Notes:

A. rtw_tx_pwr_lmt_enable:

i. rtw_tx_pwr_lmt_enable = 0; // 0: Disable

ii. rtw_tx_pwr_lmt_enable = 1; // 1: Enable

iii. rtw_tx_pwr_lmt_enable = 2; // 2: Depends on efuse

B. rtw_tx_pwr_by_rate:

i. rtw_tx_pwr_lmt_enable = 0; // 0: Disable

ii. rtw_tx_pwr_lmt_enable = 1; // 1: Enable

iii. rtw_tx_pwr_lmt_enable = 2; // 2: Depends on efuse

C. rtw_phy_file_path:
   i. rtw_phy_file_path=”/lib/firmware/”, path /lib/firmware/ is the location of tx power related file.
D. rtw_decrypt_phy_file:
   i. rtw_decrypt_phy_file = 0; //File is not encrypted
   ii. rtw_decrypt_phy_file = 1; //File is encrypted

5. Folder name for each supported chip.
   A. rtl8188e
   B. rtl8812a
   C. rtl8821a
   D. rtl8723b
   E. rtl8192e

How could you check power tables have been loaded?

1. Input command to open kernel log
   #tail -f /var/log/kern.log
2. After insert module, the log will show as below.

” RTL871X: retriveFromFile openFile path:/lib/firmware/rtl8812a/TXPWR_LMT.txt fp = ffff8800a62ebc00 “

Realtek default regulation of power limit table (FCC/ETSI/MKK) corresponding eFuse (0xB8h) channel plan divide into 3 group, if your product must support other regulation, please contact Realtek.

1. ETSI for Europe.
2. MKK for Japan and Korea.
3. FCC for excluding Europe and Japan/Korea.