

APPLICATION NOTE

Linux 系统下 ATBM WIFI 文件系统使用指南



ATBM603X

1x1 802.11b/g/n
Wi-Fi 芯片

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作者	版本	说明
Yuzhihuang	V1.0	init
Yuzhihuang	V1.1	增加 wifi6 相关子命令

1 文件系统说明

和 wifi 驱动进行数据的交互以及状态查询。
通过 echo 进行配置，在通过 cat 获取结果。

2 文件系统所在目录

加载 atbm_wifi.ko

通过 lsmod 查看驱动在内核生成的模块名称（以 usb 接口为例）：

名称默认为：atbm603x_wifi_usb

2.1 状态查询系统

（1）所在目录

/sys/module/atbm603x_wifi_usb/parameters/

这个目录下有一些参数：

```
ampdu      efuse      start_choff  wifi_txpw
atbm_printk_mask fw_ver      stbc
chip_name   hif_sta     wifi_freq
driver_ver  sgi         wifi_run_sta
/sys/module/atbm603x_wifi_usb/parameters/
```

（2）参数说明

ampdu:

effuse:

start_choff:

wifi_txpw:

atbm_printk_mask:

fw_ver:

```
cat fw_ver
```

stbc:

wifi_freq:

hif_sta:

chip_name:

sgi:

wifi_run_sta:

driver_ver: 获取驱动版本

```
cat driver_ver
```

(3) WIFI6 新增功能

2.1.3.1 设置 HT 模式 short gi 功能

```
echo 1 > /sys/module/atbm6062_wifi_ax/parameters/ht_sgi
```

参数含义:

0 long-gi ,

1 sgi,

2.1.3.2 tx_longpreamble 参数

```
echo 1 > /sys/module/atbm6062_wifi_ax/parameters/tx_longpreamble
```

参数含义:

1 表示使用 long preamble

0 表示使用 short preamble

2.1.3.3 设置 HT 模式 ldpc 功能

只在 wifi4 速率时起作用

```
echo 1 > /sys/module/atbm6062_wifi_ax/parameters/ht_ldpc
```

参数含义:

0 bcc ,

1 ldpc,

2 auto

2.1.3.4 设置 wifi6 时是否支持 LDPC

```
echo 1> /sys/module/atbm6062_wifi_ax/parameters/he_ldpc
```

he_ldpc 参数:

1 表示 LDPC

0 表示 BCC

2.1.3.5 设置 wifi6 tx 时使用的 LTF 与 GI

```
echo 1 > /sys/module/atbm6062_wifi_ax/parameters/he_ltf_gi
```

he_ltf_gi 参数:

1 表示 4X 3.2

2 表示 4X 0.8

3 表示 2X 1.6

4 表示 2X 0.8

2.1.3.6 设置 wifi6 tx 时使用的 dcm

```
echo 1 > /sys/module/atbm6062_wifi_ax/parameters/he_dcm
```

he_dcm 参数:

1 表示 on

0 表示 off

2.1.3.7 设置 wifi6 支持 HT40M

```
echo 1 > /sys/module/atbm6062_wifi_ax/parameters/he_not_40M
```

he_not_40M 参数: 该参数只在 AP 支持 40M 时起作用

1 表示不使用 40M

0 表示使用 40M

2.1.3.8 不知道是啥

```
echo 1 > /sys/module/atbm6062_wifi_ax/parameters/he_ER_106tone
```

he_ER_106tone 参数: 该参数只在 AP 支持 20M 时起作用

1 表示使用 he_ER_106tone

0 表示不使用 he_ER_106tone

2.2 交互系统

(1) 驱动配置

```

Driver Extern Function Select
Arrow keys navigate the menu. <Enter> selects submenus --->. Highlighted letters
are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press
<Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in [ ]
excluded <M> module < > module capable

[*] Enable wifi interface bridge function
[*] Enable Tx no confirm function to enhance performance
[ ] Enable early suspend function for some platform power save
[*] Enable rx monitor function to receive all package
[ ] Enable rx monitor header prism
[ ] Enable skb debug function to debug skb alloc and free
[ ] Enable memory debug function to debug memory alloc and free
[*] Enable 2.4g useing 5g channel function ,only support special frequence
[ ] Enable only support HT20
[ ] Enable usb aggr tx fuction to enhance tx performance
[ ] Enable usb use dam buff for xmit
[ ] Enable usb cmd send directly function
[ ] Enable usb data send directly function
[ ] Enable usb wakeup reload fw function
[ ] Enable hw do tcp/ip checksum function
[*] Enable P2P
[*] enable sw enc function
[*] enable dev_ctrl api
[*] enable modules fs
[ ] enable smartconfig function
[*] Enable loader driver fast function
[*] Enable iwpriv some prive func
[*] Enable WPA3 support,but make sure the kernel support sae before enabled

<Select> < Exit > < Help > < Save > < Load >

```

(2) 文件系统目录

会增加一个 atbmfs 目录。

这里因为在编译的时候驱动名称修改为：

```

--- Atbm Wireless Lan
[ ] support wireless wext
select which atbm Wi-Fi product will be used:ATBM601x,ATBM603x
ATBM603x chip
[*] ATBM6012B chip
select which bus will be used (usb bus) --->
Select which firmware will be used:.bin or firmware.h (Include)
Driver Extern Function Select --->
Driver debug features --->
[ ] WAPI support
[*] Use short GI support
(wlan%d) Setting wifi interface 1 name
[*] ENABLE scnd interface
(p2p%d) Setting wifi interface 2 name
(pm_stayawake) Setting wifi pm stay awake modules name
(atbm_wlan) Setting wifi module driver name
(atbm_dev_wifi) Setting wifi platform device name
(0x007a) Setting wifi usb vid
(0x8888) Setting wifi usb pid
(ATBM_313E_HT40) set module name

```

所以其中文件系统参数路径变为:

```

[/ext/demo]##
[/ext/demo]##
[/ext/demo]## cat /sys/module/ATBM_313E_HT40/atbmfs/atbm_
atbm_cmd atbm_get_cfg_power atbm_sys
atbm_efuse atbm_printk_mask atbm_sys_backup
atbm_first_efuse atbm_remainEfuseSpace
[/ext/demo]## cat /sys/module/ATBM_313E_HT40/atbmfs/atbm_get_cfg_power
delta_gain1:0
delta_gain2:0
delta_gain3:0
b_gain1:0

```

(3) 参数说明

2.2.3.1 atbm_cmd

功能比较多, 通过 echo/cat 方式进行操作, 具体见文档《Altobeam_FileSystem_使用说明_0.2.pdf》

```

[/sys/module/atbm603x_wifi_usb/atbmfs]## echo help > atbm_cmd
[atbm_log]:atbm_module_attr_help
[/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_cmd
atbm cmd help-->:
[help]:show all cmd help info
[example]:show example
[disable_echo]:disable echo:disable_echo
[enable_echo]:enable echo parmas:enable_echo num_echo=[1]
[scan]:sta scan: scan channel=[1][2][3] ssid=[ap1][ap2] private=[ie]or<ie> mac=[mac1][mac2]
[start_monitor]:start_monitor: start_monitor channel=[x]
[stop_monitor]:stop_monitor:stop_monitor
[ap_info]:get ap info:ap_info req=[rssi][channel[toprate][txrxbytes][ssid]
[sta_info]:get ap info:sta_info req=[rssi][channel[toprate][txrxbytes][ssid] mac=[mac1][mac2]
[wsm_cmd]:wsm cmd:wsm_cmd adaptive=[on or off] txpwr_dcxo=[M][H][L][dcxo] txpwr=[power]
[send_probe]:monitor/sta interface send probe request send_probe num=[number of probe request] private=[ie]
[sta_listen]:sta_listen: sta_listen ifname=[wlan0 or p2p0 or other] channel=[x]
[set_beacon]:set beacon: ap mode set special beacon,set beacon ifname=[wlan0 of p2p0] special=[some special ie]
[special_scan]:special_scan:channel=[1][2][3] ssid=[ap1] private=[ie] positive=[true or false]
[set_freq]:set_freq: set special freq,set_freq channel=[xx],freq=[2300~2600]
[clear_freq]:clear_freq: clear special freq,clear_freq channel=[xx]
[channel_select]:auto channel select:channel_select start=[x] end=[y] version=[0 or 1]
[chip_version]:chip_version:get version of current running chip
[ap_config]:set ap configs:ap_config ifname=[xxx] channel=[x] ssid=[ap] bssid=[xx:xx:xx:xx:xx:xx]
[set_mode]:set if mode:set_mode ifname=[xxxx] mode=[managed/monitor] channel=[x]
[halt]:halt:halt ifname=[xxxx]
help[ok]
[/sys/module/atbm603x_wifi_usb/atbmfs]##

```

2.2.3.2 atbm_efuse

查询当前正在使用的 efuse 数据


```
[/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_efuse
dcxo[40]
gain1[30]
gain2[27]
gain3[30]
mac[f4:b1:9c:31:70:62]
[/sys/module/atbm603x_wifi_usb/atbmfs]##
```

2.2.3.3 atbm_first_efuse

获取芯片出厂的 efuse 数据。

```
[/sys/module/atbm603x_wifi_usb/atbmfs]##
[/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_first_efuse
dcxo[59]
gain1[27]
gain2[27]
gain3[29]
mac[f4:b1:9c:31:70:62]
[/sys/module/atbm603x_wifi_usb/atbmfs]##
```

2.2.3.4 atbm_get_cfg_power

获取通过《Linux 通过配置文件调节发射功率_v1.2.3.pdf》配置文件的配置

```
[/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_get_cfg_power
delta_gain1:0
delta_gain2:0
delta_gain3:0
b_gain1:0
b_gain2:0
b_gain3:0
gn_gain1:0
gn_gain2:0
gn_gain3:0

b_1M_2M:0
b_5_5M_11M:0
g_6M_n_6_5M:0
g_9M:0
g_12M_n_13M:0
g_18M_n_19_5M:0
g_24M_n_26M:0
g_36M_n_39M:0
g_48M_n_52M:0
g_54M_n_58_5M:0
n_65M:0
b_1M_2M_40M:0
b_5_5M_11M_40M:0
g_6M_n_6_5M_40M:0
g_9M_40M:0
g_12M_n_13M_40M:0
g_18M_n_19_5M_40M:0
g_24M_n_26M_40M:0
g_36M_n_39M_40M:0
g_48M_n_52M_40M:0
g_54M_n_58_5M_40M:0
n_65M_40M:0
[/sys/module/atbm603x_wifi_usb/atbmfs]## █
```

2.2.3.5 atbm_printk_mask

获取/设置 当前驱动的打印等级。

```
[/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_printk_mask
Debug Level Help--->
[LOG_ERR]:output err level log
[LOG_WARN]:output warn level log
[LOG_INIT]:output init level log
[LOG_EXIT]:output exit level log
[LOG_BUS]:output bus level log
[LOG_SCAN]:output scan level log
[LOG_P2P]:output p2p level log
[LOG_MGMT]:output mgmt level log
[LOG_LMAC]:output lmac level log
[LOG_AGG]:output agg level log
[LOG_AP]:output ap level log
[LOG_STA]:output sta level log
[LOG_SMT]:output smart config level log
[LOG_WEXT]:output wext level log
[LOG_TX]:output tx level log
[LOG_RX]:output rx level log
[LOG_PM]:output pm level log
[LOG_PLATFORM]:output platform level log
[LOG_BH]:output bh level log
[LOG_CFG80211]:output cfg80211 level log
[LOG_DEBUG]:output cfg80211 level log
Current Log Level--->
[LOG_ERR]
[LOG_WARN]
[LOG_INIT]
[LOG_EXIT]
[LOG_SCAN]
[LOG_LMAC]
[LOG_WEXT]
[LOG_PM]
[/sys/module/atbm603x_wifi_usb/atbmfs]##
```

Current Log Level---> 之下为当前驱动打开的打印

之上为驱动支持配置开关的打印

关相关打印方法:

echo LOG_ERR=OFF > atbm_printk_mask

```
[/sys/module/atbm603x_wifi_usb/atbmfs]## echo LOG_ERR=OFF > atbm_printk_mask
[atbm_log]:[atbm_module_printk_mask_store]:LOG_ERR=OFF

[atbm_log]:[LOG_ERR=ON]--->[LOG_ERR=OFF]
[atbm_log]:atbm_module_printk_mask_store end 1
sh: write error: Invalid argument
[/sys/module/atbm603x_wifi_usb/atbmfs]##
[/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_printk_mask
Debug Level Help--->
[LOG_ERR]:output err level log
[LOG_WARN]:output warn level log
[LOG_INIT]:output init level log
[LOG_EXIT]:output exit level log
[LOG_BUS]:output bus level log
[LOG_SCAN]:output scan level log
[LOG_P2P]:output p2p level log
[LOG_MGMT]:output mgmt level log
[LOG_LMAC]:output lmac level log
[LOG_AGG]:output agg level log
[LOG_AP]:output ap level log
[LOG_STA]:output sta level log
[LOG_SMT]:output smart config level log
[LOG_WEXT]:output wext level log
[LOG_TX]:output tx level log
[LOG_RX]:output rx level log
[LOG_PM]:output pm level log
[LOG_PLATFORM]:output platform level log
[LOG_BH]:output bh level log
[LOG_CFG80211]:output cfg80211 level log
[LOG_DEBUG]:output cfg80211 level log
Current Log Level--->
[LOG_WARN]
[LOG_INIT]
[LOG_EXIT]
[LOG_SCAN]
[LOG_LMAC]
[LOG_WEXT]
[LOG_PM]
[/sys/module/atbm603x_wifi_usb/atbmfs]##
```

开相关打印方法:

```
echo LOG_ERR=ON > atbm_printk_mask
```

```
[/sys/module/atbm603x_wifi_usb/atbmfs]## echo LOG_ERR=ON > atbm_printk_mask
[atbm_log]:[atbm_module_printk_mask_store]:LOG_ERR=ON

[atbm_log]:[LOG_ERR=OFF]--->[LOG_ERR=ON]
[atbm_log]:atbm_module_printk_mask_store end 1
sh: write error: Invalid argument
[/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_printk_mask
Debug Level Help--->
[LOG_ERR]:output err level log
[LOG_WARN]:output warn level log
[LOG_INIT]:output init level log
[LOG_EXIT]:output exit level log
[LOG_BUS]:output bus level log
[LOG_SCAN]:output scan level log
[LOG_P2P]:output p2p level log
[LOG_MGMT]:output mgmt level log
[LOG_LMAC]:output lmac level log
[LOG_AGG]:output agg level log
[LOG_AP]:output ap level log
[LOG_STA]:output sta level log
[LOG_SMT]:output smart config level log
[LOG_WEXT]:output wext level log
[LOG_TX]:output tx level log
[LOG_RX]:output rx level log
[LOG_PM]:output pm level log
[LOG_PLATFORM]:output platform level log
[LOG_BH]:output bh level log
[LOG_CFG80211]:output cfg80211 level log
[LOG_DEBUG]:output cfg80211 level log
Current Log Level--->
[LOG_ERR]
[LOG_WARN]
[LOG_INIT]
[LOG_EXIT]
[LOG_SCAN]
[LOG_LMAC]
[LOG_WEXT]
[LOG_PM]
[/sys/module/atbm603x_wifi_usb/atbmfs]##
```

注意:

通过该方法配置各个类型的打印互相独立

2.2.3.6 atbm_remainEfuseSpace

查询 efuse 剩余空间

```
[/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_remainEfuseSpace
remain Efuse[298 bit]
[/sys/module/atbm603x_wifi_usb/atbmfs]##
```

2.2.3.7 atbm_sys

查询当前 WIFI 驱动信息 & firmware 的配置信息

```

[~/sys/module/atbm603x_wifi_usb/atbmfs]## cat atbm_sys
DriverVer [22681]
FirmwareVer [15614]
Firmware Cap:
PRIVATE_IE [1]
NVR_IPC [1]
NO_CONFIRM [1]
SDIO_PATCH [0]
NO_BACKOFF [0]
CFO [0]
AGC [1]
TXCAL [1]
CTS_BUG [0]
MONITOR [0]
CUSTOM [1]
SMARTCONFIG [0]
ETF [1]
LMAC_RATECTL [1]
LMAC_TPC [1]
LMAC_TEMPC [1]
USE_IPC [1]
OUTER_PA [0]
HW_CHECKSUM [0]
MULTI_RX [1]
USB_RECOVERY_BUG [1]
POWER_CONSUMPTION [1]
RSSI_DECIDE_TXPOWER [0]
RTS_LONG_DUR [1]
TX_CFO_PPM_CORRECTION [1]
NOISE_SET_DCXO [0]
Driver Cap:
HIF_TYPE [USB]
HW_CHW [20M]
BAND_SUPPORT [only 2G]
CHIP_NAME [6032is]
[/sys/module/atbm603x_wifi_usb/atbmfs]##

```

2.2.3.8 atbm_sys_backup

保存上一次完整执行 `echo ap_info > atbm_cmd ;cat atbm_cmd` 的信息

对 `echo ap_info > atbm_cmd` 的结果做了一次备份, 该功能为 `sta` 模式下获取连接上 `ap` 的信息。



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