

BT830 Configuration File for BooTpatch

Application Note

v1.1

Laird's BT830 is a UART HCI Bluetooth module. Because there is no EEPROM on board, you must load a configuration file at the module initialization stage. For different platforms, the configuration file context is slightly different but they basically create the same configuration to the module. You can also modify the file to enable WLAN/BT coexistence, host wake-up, and Deep Sleep mode.

CONFIGURATION FILES SYNTAX

For Big Windows, a BTCLI file is required. For Linux and WinCE, a PSR file is required. Below is an example of both.

```
# UART baud rate in bits per second ( Default is 115200 )
psset 0x01ea 0x0001 0xc200
sleep 300
```

Figure 1: BTCLI file to configure the module baud rate

```
&2200 = f100 cf15 01b4 f100 cf25 00e2 9dd1
&01ea = 0001 c200
&0001 = 00D0 1111 0023 0017
&01fe = 6590
```

Figure 2: PSR file to configure the module baud rate

WI-FI/BT COEXISTENCE

The corresponding address for co-existence is 0x2480; the supported schemes are Unity-3 and Unity-3e. Values for the different schemes are listed in Table 1. For detailed explanation on these schemes, refer to the CSR document.

Table 1: Value of 0x2480 for different Coexistence scheme

Coexistence Scheme	Value of 0x2480
Disable	0x0000
Unity 3	0x0003
Unity 3e	0x0007

```
#####
# ***For Bluetooth coexistence setting ( Default is disable )***
# Configure co-existence
# Do not leave WLAN_DENY leave floating / high, if below values are used
# PSKEY_COEX_SCHEME(0x2480) set to 3 for Unity 3, 0 to disable
# psset 0x2480 0x0000
# PSKEY_COEX_PIO_UNITY_3_BT_ACTIVE(0x2483) set to PIO[1]
# psset 0x2483 0x0001 0x0001
# PSKEY_COEX_PIO_UNITY_3_BT_STATUS(0x2484) set to PIO[9]
# psset 0x2484 0x0009 0x0001
# PSKEY_COEX_PIO_UNITY_3_WLAN_DENY(0x2485) set to PIO[4]
# psset 0x2485 0x0004 0x0001
#####
```

Figure 3: WIF/BT coexistence setting in BTCLI file

HOST WAKE-UP

Because of different system capabilities and transport protocol (such as H4), it may be necessary to have the HCI Bluetooth module wake up the host with a PIO. You can configure the BT830 to use the PIO3 for this purpose. If the system supports UART activity wakeup and the transport protocol is BCSP (given BCSP has a mechanism for recovering lost or corrupt data), the BT830 will resend data packets until it is acknowledged by the host. This feature is optional depending on your platform. The default configuration for Host Wake-Up is disabled.

Two pskeys are used to configure the host wake-up. The address of PSKEY_UART_HOST_WAKE is 0x01C7 and it contains four parameters. The address of PSKEY_UART_HOST_WAKE_SIGNAL is 0x01CA. You must use PIO3 for the host wake up function.

Table 2: PSKEY_UART_HOST_WAKE parameters

Parameter	Value	Description
Enable	0x0001	Enable mechanism
	0x0004	Disable mechanism (default)
Sleep_Delay	1 to 65535	Seconds/milliseconds after UART activity (the host is assumed to have gone into deep sleep state)
Break_Length	1 to 1000	Duration (in milliseconds) of the wake signal/pulse
Pause_Length	0 to 1000	Duration (in milliseconds) between the end of the wake signal and sending data to the host

```
#=====
# ***For PIO WAKEUP setting ( Enabled with PIO3 on negative pulse )*
# 0 - repeated byte sequence (only for H4DS)
# 1 - positive pulse on PIO
# 2 - negative pulse on PIO
# 3 - UART BREAK condition
psset 0x01c7 0x0001 0x01f4 0x000a 0x0000
psset 0x01ca 0x0032
#=====
```

PIO 3 negative pulse

Figure 4: PSKEY_UART_HOST_WAKE_SIGNAL is configured to PIO3 with negative pulse

DEEP SLEEP MODE

There are three PSKEYS related to deep sleep mode. The BT830 provides an input pin for a deep sleep mode external clock. The address of PSKEY_DEEP_SLEEP_EXTERNAL_CLOCK_SOURCE_PIO is 0x2579 and its value must be zero (0) as the module is designed to use PIO0 for this input.

The address of PSKEY_DEEP_SLEEP_USE_EXTERNAL_CLOCK is 0x03C3. If it is enabled (0x0001), the BT830 continues to use the external clock for deep sleep mode. The third pskey is PSKEY_DEEP_SLEEP_STATE and its address is 0x229. The provided configuration files (BT830_Linux.psr and BT830_BigWindows.psr) have the Deep Sleep mode disabled by default. To enable Deep Sleep mode, use the following settings:

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```
# ***For external 32.768KHZ setting***  
# Enable external slow clock ( The PIO0 for the slow clock and default is disabled )  
psset 0x03c3 0x0001  
psset 0x2579 0x0000  
psset 0x0229 0x0003  
#=====
```

Figure 5: PSkeys to enabled Deep sleep mode with Slow clock is accurate

REVISION HISTORY

Revision	Date	Description	Approved By
1.0	11 Aug 2014	Initial Release	Jonathan Kaye
1.1	27 May 2015	Updated Figure 3	Raymond Au