Reducing Power Consumption on Melody 5.0 RC9 and later

Application Note

SIERRA WIRELESS®

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Rev 1

Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

Safety and Hazards

Do not operate the Sierra Wireless modem in areas where blasting is in progress, where explosive atmospheres may be present, near medical equipment, near life support equipment, or any equipment which may be susceptible to any form of radio interference. In such areas, the Sierra Wireless modem **MUST BE POWERED OFF**. The Sierra Wireless modem can transmit signals that could interfere with this equipment.

Do not operate the Sierra Wireless modem in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Sierra Wireless modem **MUST BE POWERED OFF**. When operating, the Sierra Wireless modem can transmit signals that could interfere with various onboard systems.

Note: Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Sierra Wireless modems may be used at this time.

The driver or operator of any vehicle should not operate the Sierra Wireless modem while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

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Revision History

Revision number	Release date	Changes
1	March 23, 2017	Initial revision in SWI template.

Contents

1: Introduction

There are several Melody configurations that can be used to reduce power consumption:

- ENABLE_LEDS
- DEEP_SLEEP
- ENABLE_SPP_SNIFF

The use of these configurations is discussed in detail below.

2: Configuration

Configuring ENABLE_LEDS

By default Melody is configured with LED indications on. Melody uses LEDs to indicate different states as described in the LED Indication sections of the Melody Manual.

However, using the LEDs significantly increases BC127 power usage. If you do not require LED indications, setting *ENABLE_LEDS=OFF* will immediately decrease power usage with no affect on Melody connection or power management settings.

Configuring DEEP_SLEEP

Melody can configure the BC127 module to go into Deep Sleep, thereby reducing power consumption when the RF and processor are idle. This feature will reduce power consumption by 75% when Melody is Idle or Idle-Connected. Power usage will be reduced in other states, however, due to the active RF communication this will be less noticeable.

By default Melody is configured with *DEEP_SLEEP=OFF*. This is because while in Deep Sleep the processor needs a short wake-up time when triggered by an external event (such as UART input) before becoming operational. An extra *\r* character is best sent before any command issued while Melody has Deep Sleep enabled, as the first character over UART will be lost.

Configuring ENABLE_SPP_SNIFF

While in an active connected mode with only a Data connection (SPP or iAP), Melody power consumption can be further reduced by changing connection parameters. Please note that this will result in increased latency, and may result in compatibility issues with some device (some devices will not handle the transitions between sniff and active correctly which may lead to adverse behaviour).

By default *ENABLE_SPP_SNIFF* is set to *OFF 0 0 0 0 0*

This meant that SPP and iAP connections are always in the active state, latency is minimised at the cost of RF uptime and power usage.

Setting *ENABLE_SPP_SNIFF=ON 0 0 0 0 0* will put Melody in Passive mode. This means that Melody will accept the connection parameters supplied by the remote side.

Changing any of the parameters from 0, when Sniff is ON will result in Melody going into Sniff with Passive mode and will attempt to negotiate the sniff mode parameters supplied. For details on the connection parameters, please refer to the Melody Manual.

Enabling Sniff Mode will reduce power consumption; however, we are unable to provide example configurations as those are highly dependent on individual applications.

Please note that if any other profiles (A2DP, HFP, MAP, PBAP, or AVRCP) are connected, the connection setting for those will take precedence and the SPP sniff parameters will not be applied. This is done to ensure connection quality and user experience are not affected for the listed additional profiles.