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| Wioty Labs  Sigfox USB radio  WLSF-USB-R2  (SIGFOX RC2 900 MHz Radio)  Datasheet |
| Version 01.00 |

**Revision History**

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| --- | --- | --- | --- |
| **Version #** | **Remark** | **Date** | **Done By** |
| 01.00 | Initial Release | OCT 23, 2020 | D. Baughman |
|  |  |  |  |

# Description

* WLSF-USB contains a Sigfox Radio module accessed via a USB/UART interface and is suitable for any computer equipment or embedded computing system with an open USB 2.0 port.
* WLSF-USB supports +22.5 dBm Tx power supporting long-range connectivity up to 20 kilometers, direct line of sight.
* WLSF-USB supports a serial protocol based on AT Commands for rapid product development.

# Additional Features

* Industry’s leading Sigfox module with external whip antenna
* AT command set for easy integration into existing embedded systems.
* Sigfox Ready certified
* Transmit Power: +22.5 dBm (Class 0u)
* Maximum range: >12 miles Line of Sight
* RF Receive Sensitivity (Downlink): -136 dBm
* Operating temperature: -25 ⁰C to +85 ⁰C
* Modular Certification: FCC (USA) and IC (Canada)
* RoHS compliant

# Applications

* + - * Long range sensor communications
* Utility monitoring
  + - * Data logging (Agriculture)
      * Home and Building Security
      * Sensor and industrial equipment status monitoring

# Ordering Information

|  |  |
| --- | --- |
| **Product Code** | **Description** |
| **WLSF-USB-R2** | **USB dongle (antenna sold separately)** |

Table 1 Ordering Information

# Recommended Antenna Specification

|  |  |
| --- | --- |
|  | Description |
|  | 900 MHz Dipole Antenna with Reverse Polarity SMA Male Connector  Part No: |

Table 2 Antenna Description

# Get started and develop your Sigfox enabled product

The USB Sigfox radio is designed with the intent that Sigfox connectivity can be added to any commercial product by simply attaching this USB enabled radio to an open USB port.

The certified Sigfox radio can be accessed via a USB-UART serial communications adapter embedded in the design. Any standard “comm port” application (off the shelf app or custom embedded code) can be used to connect applications to the radio via a serial stream.

Details:

1. The device is pre-configured to communicate at 9600 baud, 8 bit data no parity and 1 stop bit
2. For laptop and desktop computers there are many “Terminal” managers available to download and install for free. Examples are: Putty, and Tera Term.
3. Control the radio is supported via an embedded AT command menu. Users can refer to the Wioty Labs documentation found at the Github repository on how to use the AT commands in an application.

# Installation process for use with computer equipment

* The WLUSBSF can connect to standard laptop computer equipment using a standard USB driver available from Silicon Labs from their support site.

<https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers>

* Choose the driver for the appropriate OS and follow the instructions on the download sit. Once the driver is installed, the device should be recognized by the terminal program.

# Electrical characteristics

## Recommended Operating Condition

|  |  |
| --- | --- |
| **Items** | **Specification** |
| USB 2.0 Supply Voltage (Vusb) | 5V |
| Ambient Temperature range | -25⁰C to 85⁰C |
|  |  |

Table 3 recommended operating condition

# RF Characteristics

## RF specification summary

|  |  |
| --- | --- |
| **Items** | **Specification** |
| Frequency | 902-924 MHz |
| Uplink Data rate and Modulation | 600 bps DBPSK |
| Downlink Data rate and Modulation | 600 bps GFSK |
| Output power | 176 mW = 22 dBm |
|  |  |

Table 4 RF Specification Mechanical Dimension

Additional radio specifications are available from the Wisol module data sheet at the Wioty Labs Github repository.

Figure# Mechanical Dimension

Note: All Dimensions are in mm without antenna

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Item** | **Dimension** | **Tolerance** |
| 1. | Length | 7.00 mm | +/- 0.20 |
| 2. | Width | 2.50 mm | +/- 0.20 |
| 3. | Height | 1.5 mm | +/- 0.20 |

Table 5 Mechanical Dimension

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# Certifications

This device complies with FCC and IC requirements because it contains a module so certified

## 9.1 Module FCC and IC Compliance Statement

FCC ID: **2ABA2SFM10R2**

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1) This device may not cause harmful interference and

2) This device must accept any interference received,

Including interference that may cause undesired operation.

# Contact Support

Email: support@wiotylabs.com