

# Long Range Sub-1 GHz USB Dongle



## Key Features

- Ultra low power Sub-1 GHz
- Supports 915 MHz
- Supports 2-GFSK modulation, both fixed channel mode and FHSS mode
- Supports WB-DSSS mode over 2-GFSK modulation
- Supports 30kbps, 60kbps, 120kbps, 240kbps data rate in WB-DSSS mode over 2-GFSK modulation
- Supports 5kbps, 50kbps, 200kbps data rate in FHSS mode over 2-GFSK modulation
- Powerful Cortex-M4F MCU for your IoT products
  - Clock Speed: up to 48MHz
  - Up to 352KB of In-System-Programmable Flash
  - 80KB of Ultra-Low-Leakage SRAM
- RF performance
  - TX power: Up to +14 dBm
  - RX sensitivity: up to -121 dBm using Long-Range Mode, -110 dBm at 50 kbps (Sub-1 GHz)
- Communication range
  - 700 meters (LOS)
- USB to UART bridge
  - Full speed USB device, USB 2.0 compliant
  - Full duplex UART
  - Support 300 baud ~ 3Mbaud
- Antenna: Helical antenna, with peak gain of 4.37 dBi
- Size
  - 80.2 mm x 32.2 mm x 12.5 mm
- FCC (Contains FCC ID: 2ABRUBDRFM216), CE, RoHS compliant

## Descriptions

BDE-USB216 is an ultra-low power, long-range Sub-1 GHz USB dongle targeted at low power sensors and long range applications.

BDE-USB216 integrates a high performance RF core and also a powerful ARM cortex-M4F processor, which makes it suitable for certain products that need high performance MCU to deal with difficult applications. It features a USB to UART Bridge, which makes it easy to use in PC terminal.

The USB dongle supports 868 MHz and 915 MHz bands, with the maximum output power up to 14 dBm, along with its Long-Range Mode feature, the USB dongle is to be the best choice for IoT products which require long range communication.

## Applications

- Long-range sensor applications
- Smart grid and automatic meter reading
- Wireless healthcare applications
- Industry monitoring and control
- Home and building automation
- Energy-harvesting applications

## Block Diagram

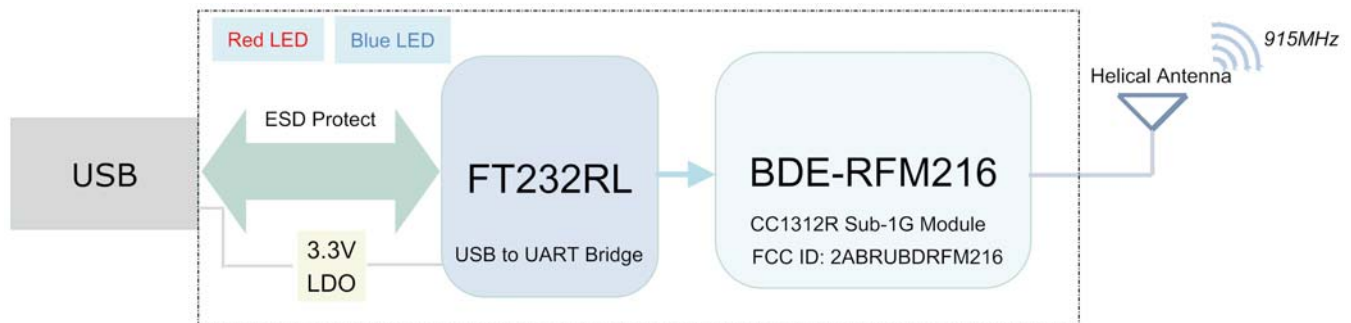


Fig. 1: The Block Diagram of BDE-USB216

## Electrical Characteristics

### ■ Absolute maximum rating

Rating	Min	Typ	Max	Unit
Storage Temperature	-40	-	125	°C
Input	-0.5	-	6	V

### ■ Recommended operating conditions

Rating	Min	Typ	Max	Unit
Operating Temperature	-40	-	85	°C
Input	4	5	5.25	V

## Dimensions

Fig. 2 shows the overall dimensions of BDE-USB216. The USB dongle measures 80.2 mm long by 32.2 mm wide by 12.5 mm high.



Fig. 2: Overall Dimensions of BDE-USB216

## FCC statements:

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.

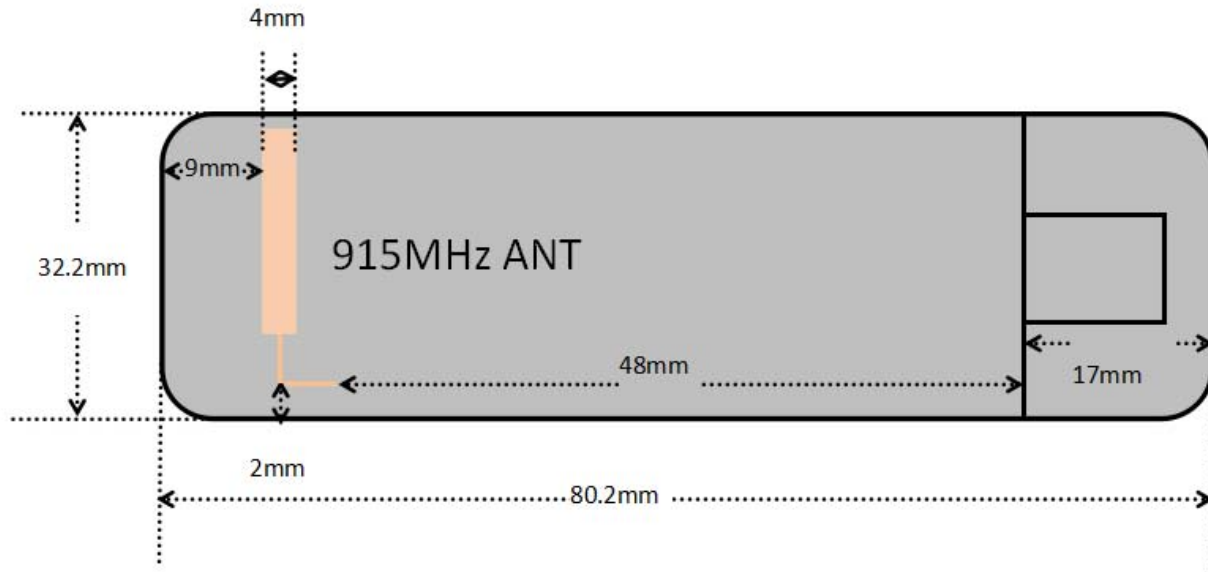
NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or changes to this equipment. Such modifications or changes could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The SAR limit of USA (FCC) is 1.6 W/kg averaged over one gram of tissue. Device types Panasonic ELUGA Ray 600 (FCC ID: 2ABRUBDRFM216) has also been tested against this SAR limit. The highest SAR value reported under this standard during product certification for use when properly worn on the body is 0.009 W/kg . This device was tested for typical body-worn operations with the back of the handset kept 0mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain a 5mm separation distance between the user's body.

## Antenna Information:



PCB Thickness	Antenna Size	Ground	RF Impedance
1mm	4*25mm	Top:2mm,Down:2mm,Left:9mm,Right:48mm	50Ω



*USB to UART Bridge, FT232RL driver download link:*

<https://www.ftdichip.com/Drivers/VCP.htm>

## Contacts

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