

# UHF Sled Reader

---

## R6 User Manual



# Content

|                                             |    |
|---------------------------------------------|----|
| Content .....                               | 1  |
| Statement.....                              | 3  |
| Chapter 1 Product intro .....               | 4  |
| 1.1 Intro .....                             | 4  |
| 1.2 Precaution before using battery.....    | 5  |
| 1.3 Charger .....                           | 6  |
| 1.4 Notes.....                              | 7  |
| Chapter 2 Installation instructions.....    | 8  |
| 2.1 Appearance .....                        | 8  |
| 2.3 Battery charge .....                    | 9  |
| 2.4 Buttons and function area display ..... | 10 |
| Chapter 3 Demo Test.....                    | 11 |
| 3.1 Install demo-uhf-bt (1.0.8).....        | 11 |
| 3.2 Pairing Device .....                    | 12 |
| 3.3 UHF Scan Function .....                 | 14 |
| 3.4 UHF Configuration.....                  | 15 |
| 3.5 UHF Encryption .....                    | 16 |
| 3.6 UHF Tag Reading and Writing.....        | 17 |
| 3.7 UHF Tag Lock and Kill.....              | 18 |
| 3.8 Firmware Upgrade.....                   | 20 |
| 3.9 Barcode Scan Test.....                  | 21 |
| Chapter 4 Device characteristic.....        | 22 |

## FCC caution

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 0mm separation distance between the user's body and the back of the handset. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.

## 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.

## RF Exposure Information(SAR)

The SAR limit of USA (FCC) is 1.6 W/kg averaged over one gram of tissue.

Device types R6 (FCC ID:2AC6AR6) 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 are 0.784W/kg(0mm) and 0.816W/kg(10mm).

# Statement

©2013 by ShenZhen Chainway Information Technology Co., Ltd. All rights reserved.

No part of this publication may be reproduced or used in any form, or by any electrical or mechanical means, without permission written from Chainway. This includes electronic or mechanical means, such as photocopying, recording, or information storage and retrieval systems. The material in this manual is subject to change without notice.

The software is provided strictly on an “as is” basis. All software, including firmware, furnished to the user is on a licensed basis. Chainway grants to the user a non-transferable and non-exclusive license to use each software or firmware program delivered hereunder (licensed program). Except as noted below, such license may not be assigned, sublicensed, or otherwise transferred by the user without prior written consent of Chainway. No right to copy a licensed program in whole or in part is granted, except as permitted under copyright law. The user shall not modify, merge, or incorporate any form or portion of a licensed program with other program material, create a derivative work from a licensed program, or use a licensed program in a network without written permission from Chainway.

Chainway reserves the right to make changes to any software or product to improve reliability, function, or design.

Chainway does not assume any product liability arising out of, or in connection with, the application or use of any product, circuit, or application described herein.

No license is granted, either expressly or by implication, estoppel, or otherwise under any Chainway intellectual property rights. An implied license only exists for equipment, circuits, and subsystems contained in Chainway products.

# **Chapter 1 Product intro**

## **1.1 Intro**

This is a new UHF back clip product, featuring the Cortex-M3 STM32 processor with excellent working performance. The device can be used with any Android and IOS device as a host. The device combines powerful UHF (Read and write) functions with 2D scanning for greater sensitivity. It equipped with a host is widely used in clothing inventory, warehouse management, vehicle management, financial management and other fields.

## 1.2 Precaution before using battery

- Do not leave battery unused for long time, no matter it is in device or inventory. If battery has been used for 6 months already, it should be checked for charging function or it should be disposed correctly.
- The lifespan of Li-ion battery is around 2 to 3 years, it can be circularly charged for 300 to 500 times. (One full battery charge period means completely charged and completely discharged.)
- When Li-ion battery is not in use, it will continue to discharge slowly. Therefore, battery charging status should be checked frequently and take reference of the related battery charging information on the manuals.
- Observe and record the information of a new unused and non-fully charged battery. On the basis of operating time of new battery and compare with a battery that has been used for long time. According to product configuration and application program, the operating time of battery would be different.
- Check battery charging status at regular intervals.
- When battery operating time drops below about 80%, charging time will be increased remarkably.
- If a battery is stored or otherwise unused for an extended period, be sure to follow the storage instructions in this document. If you do not follow the instructions, and the battery has no charge remaining when you check it, consider it to be damaged. Do not attempt to recharge it or to use it. Replace it with a new battery.
- Store the battery at temperatures between 5 °C and 20 °C (41 °F and 68 °F).

## **1.3 Charger**

The charger type is GME10D-050200FGu, output voltage/current is 5V DC/2A. The plug considered as disconnect device of adapter.

## 1.4 Notes

**Note:**

Using the incorrect type battery has danger of explosion.  
Please dispose the used battery according to instructions.

**Note:**

Due to the used enclosure material, the product shall only be connected to a USB Interface of version 2.0 or higher. The connection to so called power USB is prohibited.

**Note:**

The adapter shall be installed near the equipment and shall be easily accessible.

**Note:**

The suitable temperature for the product and accessories is 0-10°C to 50°C.

**Note:**

CAUTION RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

# Chapter 2 Installation instructions

## 2.1 Appearance

R6 right and front appearances are showing as follows:



### Indicating Lamps instruction

| Lamps            |           | Description                                               |
|------------------|-----------|-----------------------------------------------------------|
| Indicating Lamps | Power     | Constant light up (battery available)/Flash (Low battery) |
|                  | Bluetooth | Constant light up (Bluetooth connected)                   |
|                  | Work      | Flash when read UHF tags                                  |

## **2.2 Battery charge**

By using USB contact, the original adaptor should be used for charging the device. Make sure not to use other adaptors to charge the device.

## 2.3 Buttons and function area display

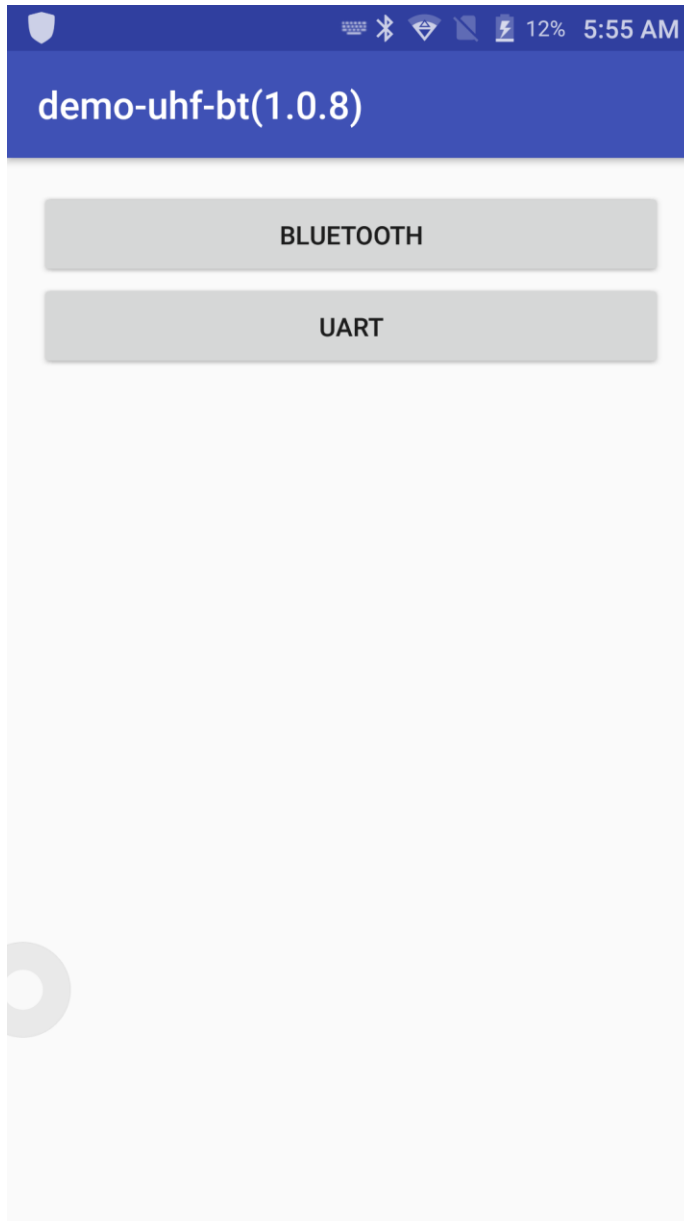
R6 Sled reader has 1 power button and 3 indicating lamps.



# Chapter 3 Demo Test

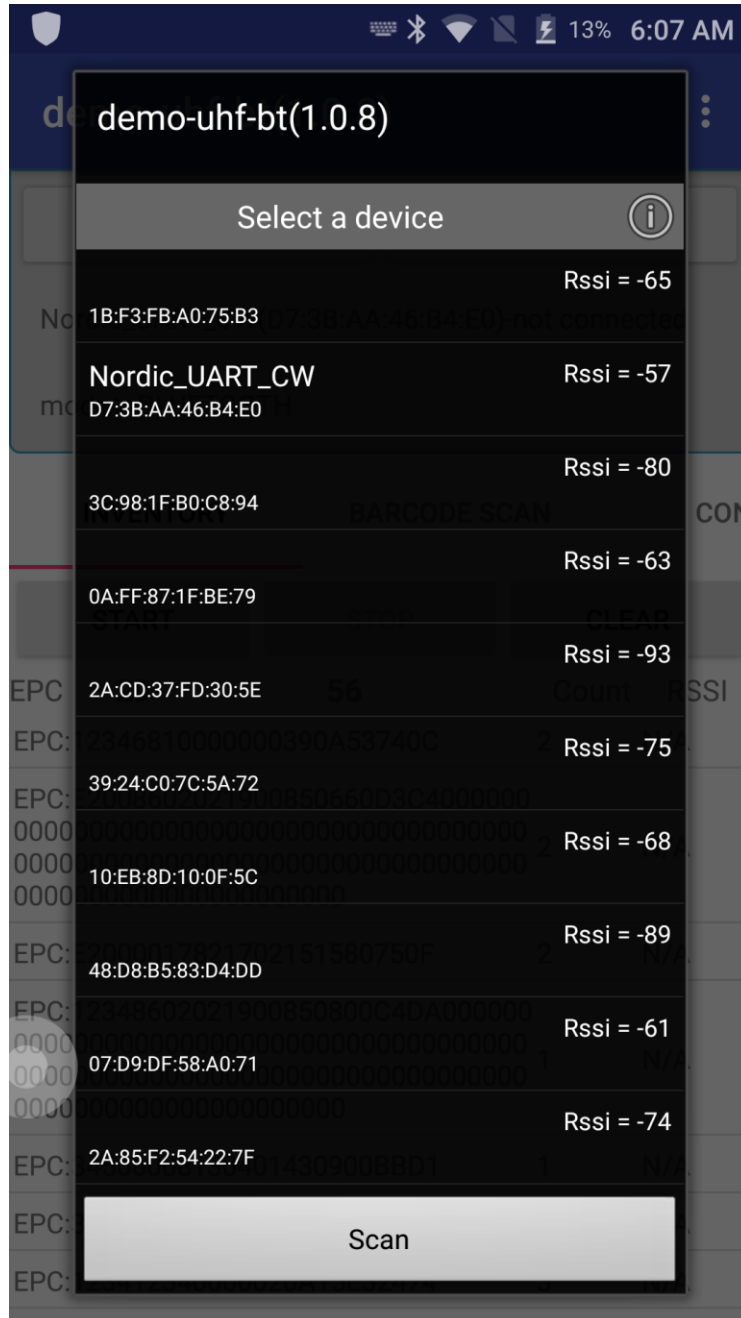
## 3.1 Install demo-uhf-bt (1.0.8)

1. Copy demo-uhf-bt (1.0.8) into internal storage of smart phone or C7x device.
2. Click to install.
3. Click icon to open demo.



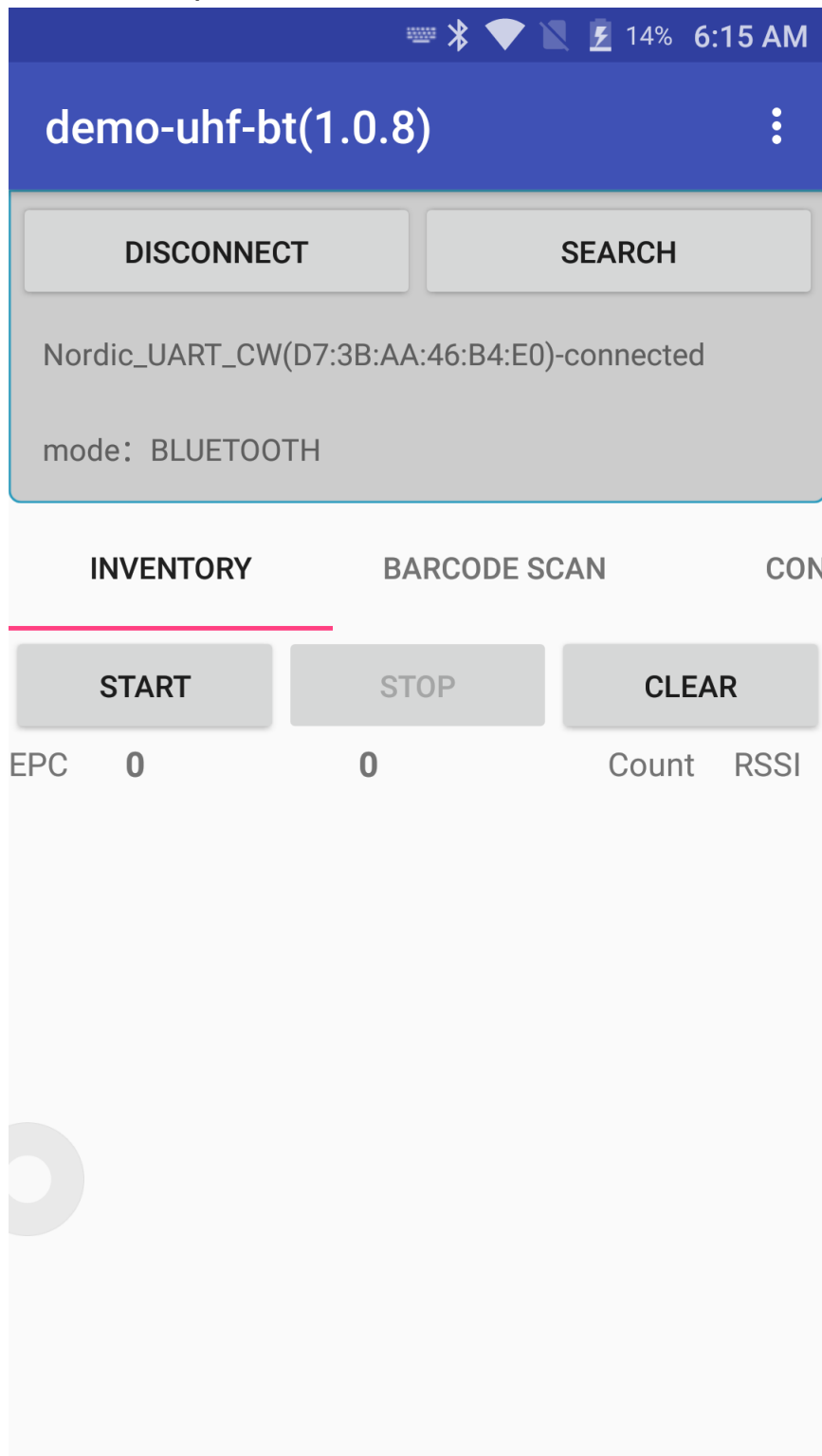
## 3.2 Pairing Device

1. Switch on Bluetooth function of smartphone or C7x device.
2. Power on R6.
3. Click BLUETOOTH in the demo.
4. Click SEARCH to search for Nordic\_UART\_CW.



5. Click Nordic\_UART\_CW to connect.

6. After connecting successfully, user could click 3 dots on top right to check UHF version, battery percentage and UHF module temperature.



### 3.3 UHF Scan Function

1. Click START in demo or pull the trigger on R6, the UHF tags could be read.
2. Click STOP in demo to stop reading of UHF tags.
3. Click CLEAR to clean all EPC information.

demo-uhf-bt(1.0.8)

DISCONNECT

SEARCH

Nordic\_UART\_CW(D7:3B:AA:46:B4:E0)-connected

mode: BLUETOOTH

INVENTORY

BARCODE SCAN

CON

START

STOP

CLEAR

| EPC                                                                                                                                                  | 36 | 64 | Count | RSSI |
|------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|-------|------|
| EPC:300ED89F3350007FE25EAE85                                                                                                                         |    |    | 2     | N/A  |
| EPC:12348602021900850800C4DA000000<br>0000000000000000000000000000000000<br>0000000000000000000000000000000000<br>0000000000000000000000000000000000 |    |    | 1     | N/A  |
| EPC:300ED89F3350007FE25EADC2                                                                                                                         |    |    | 2     | N/A  |
| EPC:E2008602021900850660D3C4000000<br>0000000000000000000000000000000000<br>0000000000000000000000000000000000<br>0000000000000000000000000000000000 |    |    | 2     | N/A  |
| EPC:E20040007806007915707535                                                                                                                         |    |    | 2     | N/A  |
| EPC:34566008130401430900BBD1                                                                                                                         |    |    | 1     | N/A  |
| EPC:E2004000780600801570752E                                                                                                                         |    |    | 2     | N/A  |

## 3.4 UHF Configuration

1. Click CONFIG in demo to adjust working mode and output power.

The screenshot shows the 'demo-uhf-bt(1.0.8)' application interface. At the top, there's a status bar with icons for keyboard, Bluetooth, Wi-Fi, signal strength, battery (16%), and time (6:28 AM). Below the status bar is a blue header with the app name 'demo-uhf-bt(1.0.8)' and a three-dot menu icon. The main content area has two buttons: 'CONNECT' and 'SEARCH'. Below these buttons, it says 'Nordic\_UART\_CW(D7:3B:AA:46:B4:E0)-not connected' and 'mode: BLUETOOTH'. There are three tabs: 'CODE SCAN', 'CONFIG' (which is selected and underlined in red), and 'ENCRYPTION'. Under the 'CONFIG' tab, there's a 'Working Mode:' dropdown menu currently set to 'China Standard1(840~84..'. Below this are two buttons: 'FREQUENCYSET' and 'READ FREQUENCY'. There are three radio buttons: 'US' (which is selected), 'BRA', and 'Other'. Below the radio buttons is a 'Hop:' dropdown menu set to '902.75'. Below that is a 'SET FREHOP' button. At the bottom, there's an 'Output Power:' dropdown menu set to '5' dBm. Below this are two buttons: 'POWERSET' and 'READ POWER'.

demo-uhf-bt(1.0.8)

CONNECT SEARCH

Nordic\_UART\_CW(D7:3B:AA:46:B4:E0)-not connected

mode: BLUETOOTH

CODE SCAN CONFIG ENCRYPTION

Working Mode: China Standard1(840~84..

FREQUENCYSET READ FREQUENCY

☒ US ☐ BRA ☐ Other

Hop: 902.75

SET FREHOP

Output Power: 5 dBm

POWERSET READ POWER

## 3.5 UHF Encryption

1. Click ENCRYPTION to decrypt and encrypt the special zones of UHF tags such as USER, EPC, etc.

The screenshot shows the 'demo-uhf-bt(1.0.9)' application interface. At the top, there's a status bar with icons for keyboard, Bluetooth, Wi-Fi, and battery (19% at 6:51 AM). Below the title bar, there are two buttons: 'CONNECT' and 'SEARCH'. The mode is set to 'BLUETOOTH'. The interface has three tabs: 'MAN', 'CONFIG', and 'ENCRYPTION'. The 'ENCRYPTION' tab is active, showing two buttons: '设置密钥' (Set Key) and '获取密钥' (Get Key). Below these, there's a dropdown menu for 'mode' set to 'ECB'. There are input fields for '密 钥' (Key) and '初始值' (Initial Value). At the bottom, there are two buttons: '加密' (Encrypt) and '解密' (Decrypt). Below these buttons, there are two text areas: '加密、解密前的数据(hex)' (Data before encryption/decryption (hex)) containing the value '11112222333344445555666677778888', and '加密、解密后的数据(hex)' (Data after encryption/decryption (hex)).

demo-uhf-bt(1.0.9)

CONNECT SEARCH

mode: BLUETOOTH

MAN CONFIG ENCRYPTION

设置密钥 获取密钥

mode ECB ▼

密 钥

初始值

加密 解密

加密、解密前的数据(hex)

11112222333344445555666677778888

加密、解密后的数据(hex)

## 3.6 UHF Tag Reading and Writing

1. The storage of one tag has 4 zones: RESERVED, EPC, TID and USER. Normally, the default password is 00000000. And TID zone can only be read, other zones can be read and written.

The screenshot displays the 'demo-uhf-bt(1.0.9)' application interface on a mobile device. The top status bar shows 24% battery and 7:40 AM. The app title 'demo-uhf-bt(1.0.9)' is centered at the top. Below the title, there are two main panels, each with 'CONNECT' and 'SEARCH' buttons. The left panel is currently in 'mode: BLUETOOTH' and has tabs for 'ACTION', 'READ', and 'WRITE'. The 'READ' tab is selected, showing a 'filter' section with an 'Enable' checkbox, 'Ptr: 32 (bit)', '长度: 0 (bit)', and a 'Data:' field. Below this are buttons for 'EPC', 'TID', and 'USER'. The 'EPC' button is highlighted. Underneath, there's a 'Bank: RESERVED' dropdown, 'Ptr: 0 (word)' and 'Len: 4 (word)' fields, an 'Access Pwd: 00000000' field, and a 'Data:' field. The right panel is identical but has the 'WRITE' tab selected, showing a 'Write Data:' field instead of 'Data:'.

## 3.7 UHF Tag Lock and Kill

### 1. Lock Function:

For example. User could try to lock down EPC zone.

The screenshot shows the 'demo-uhf-bt(1.0.9)' app interface. At the top, there's a status bar with icons for keyboard, Bluetooth, Wi-Fi, signal strength, battery (25%), and time (8:00 AM). Below the status bar is a blue header with the app name 'demo-uhf-bt(1.0.9)' and a menu icon. The main area has two buttons: 'CONNECT' and 'SEARCH'. Below these buttons, it says 'mode: BLUETOOTH'. A pink line highlights the 'LOCK' tab, which is selected. Below the tabs, there's a 'filter' section with an 'Enable' checkbox (unchecked). Below the checkbox, there are two input fields: 'Ptr: 32 (bit)' and '长度: 0 (bit)'. Below these, there's a 'Data:' label followed by a text input field. Below the text input field, there are three buttons: 'EPC' (highlighted with a blue border), 'TID', and 'USER'. Below the buttons, there's an 'Access Pwd:' label followed by a text input field containing '00000000'. Below the 'Access Pwd' field, there's a 'Lock Code:' label followed by a text input field containing '008020'. At the bottom, there's a large blue button labeled 'LOCK'.

demo-uhf-bt(1.0.9)

CONNECT SEARCH

mode: BLUETOOTH

E LOCK KILL

filter

☐ Enable

Ptr: 32 (bit) 长度: 0 (bit)

Data:

EPC TID USER

Access Pwd: 00000000

Lock Code: 008020

LOCK

## 2. Kill Function:

Kill function can be used to kill the tag permanently. Input the correct access password and click kill.

The screenshot shows the 'demo-uhf-bt(1.0.9)' app interface. At the top, there's a status bar with icons for signal, Bluetooth, Wi-Fi, battery (27%), and time (8:12 AM). Below the title bar, there are 'CONNECT' and 'SEARCH' buttons. The mode is set to 'BLUETOOTH'. A tab bar at the bottom has 'E', 'LOCK', and 'KILL' tabs, with 'KILL' being the active tab. The 'KILL' tab contains a 'filter' section with an 'Enable' checkbox (unchecked), 'Ptr: 32 (bit)' and '长度: 0 (bit)' fields, and a 'Data:' field. Below these are three buttons: 'EPC' (highlighted with a red border), 'TID', and 'USER'. At the bottom, there's an 'Access Pwd: 00000000' field and a large red 'KILL' button.

demo-uhf-bt(1.0.9)

CONNECT SEARCH

mode: BLUETOOTH

E LOCK KILL

filter

☐ Enable

Ptr: 32 (bit) 长度: 0 (bit)

Data: \_\_\_\_\_

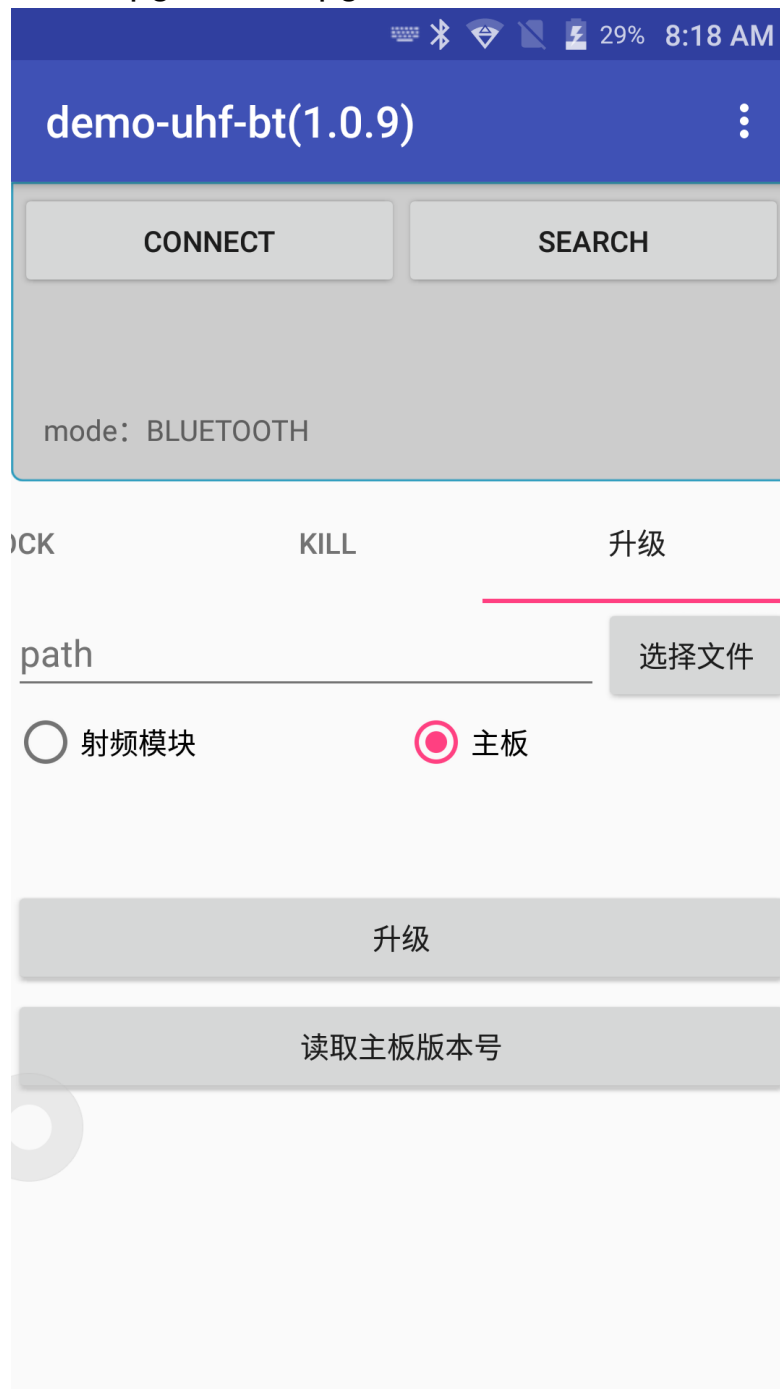
EPC TID USER

Access Pwd: 00000000

KILL

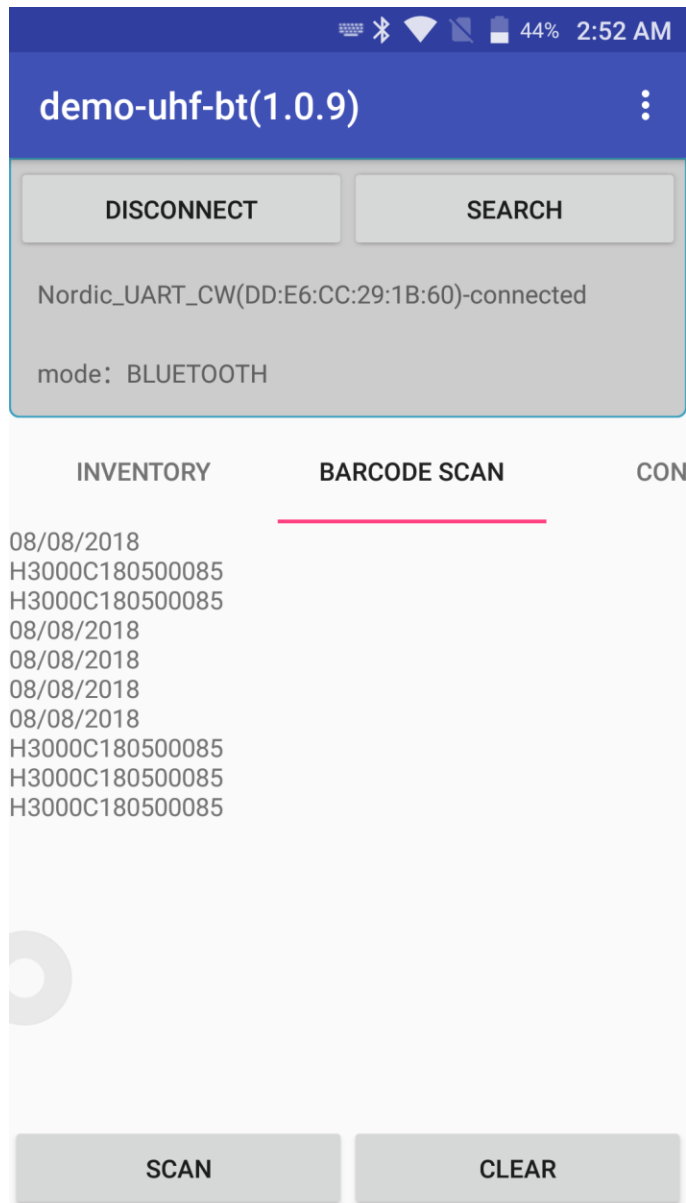
## 3.8 Firmware Upgrade

1. Copy the firmware bin. file into internal storage.
2. Click Select file to search for bin.
3. Click Upgrade to upgrade firmware.



## 3.9 Barcode Scan Test

Select BARCODE SCAN in the demo and click SCAN button on the screen to scan barcodes.



# Chapter 4 Device characteristic

## Physical characteristics

|                              |                        |
|------------------------------|------------------------|
| <b>Size</b>                  | 153.96x76x129.08mm     |
| <b>Weight</b>                | 445g                   |
| <b>Color</b>                 | Black                  |
| <b>Appearance material</b>   | Plastic                |
| <b>Product material</b>      | Plastic                |
| <b>Battery specification</b> | 2600mAh/5200mAh        |
| <b>Indicator LED</b>         | Power, Work, Bluetooth |
| <b>Buzzer</b>                | Support                |
| <b>Interfaces</b>            | Micro-USB              |

## Performance

|                |                  |
|----------------|------------------|
| <b>MCU</b>     | Cortex-M3/72 MHz |
| <b>RAM+ROM</b> | 64M+4G           |

## User environment

|                        |                             |
|------------------------|-----------------------------|
| <b>Operating temp.</b> | -20°C to 50°C               |
| <b>Storage Temp.</b>   | -40°C to 70°C               |
| <b>Humidity</b>        | 5%RH - 95%RH non condensing |

### Data collection

|                          |                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2D Imager Scanner</b> | SE2707                                                                                                                                                                                                      |
| <b>1D Symbologies</b>    | UPC/EAN, Code128, Code39, Code93, Code11, Interleaved 2 of 5, Discrete 2 of 5, Chinese 2 of 5, Codabar, MSI, RSS, etc.                                                                                      |
| <b>2D Symbologies</b>    | PDF417, MicroPDF417, Composite, RSS, TLC-39, Datamatrix, QR code, Micro QR code, Aztec, MaxiCode; Postal Codes: US PostNet, US Planet, UK Postal, Australian Postal, Japan Postal, Dutch Postal (KIX), etc. |

### UHF

|                     |                                                                 |
|---------------------|-----------------------------------------------------------------|
| <b>Antenna</b>      | Circular Polarized antenna (4dBi)                               |
| <b>Frequency</b>    | 920-925MHz/902-928MHz/865-868MHz                                |
| <b>Protocol</b>     | EPC C1 GEN2 / ISO18000-6C                                       |
| <b>Module power</b> | 1W (30dBm, support +5~+30dBm adjustable)                        |
| <b>R/W range</b>    | >28m(indoors);>12m(open outdoors)                               |
| <b>Reading rate</b> | >200tags/s<br>* Ranges and rates depend on tags and environment |

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 R6 (FCC ID: 2AC6AR6P) 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 0.784 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 and the back of the handset. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be Avoided.

BT:

The device has been evaluated to meet general RF exposure requirement, The device can be used in portable exposure condition without restriction. Federal Communication Commission (FCC) Radiation Exposure Statement Power is so low that no RF exposure calculation is needed.

**This product can be used across EU member states.**

Declaration of Conformity Hereby, Shenzhen Chainway Information TechnologyCo., Ltd declares



that the radio equipment type R6 is in compliance with directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:  
[//www.chainway.net](http://www.chainway.net)

BT:

RF exposure information: The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction. Radiation Exposure Statement Power is so low that no RF exposure calculation is needed. Specific Absorption Rate (SAR)

- Your device is tested to comply with applicable requirements and regulations of the European Union of human exposure to radio wave.
- Specific Absorption Rate (SAR) is used to measure radio waves absorbed by a body. The device complies with RF specifications when the device used at a distance of 10 mm from your body. The SAR limit is 2.0 W/kg averaged over 10 gram of tissue in the European Union.
- This product was tested and recorded the maximum SAR value was 1.015W/kg for the limbs.

#### Frequency bands and power

|           | Bands  | Operation Frequency | Max.Power      |
|-----------|--------|---------------------|----------------|
| Bluetooth | 2.4GHz | 2402-2480 MHz       | EIRP 2.35 dBm  |
| UHF       | 0.8GHz | 865.7MHz-867.5MHz   | EIRP 31.78 dBm |