

SHENZHEN CHAINWAY INFORMATION TECHNOLOGY CO.,LTD

# Wearable BT UHF Reader

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## MR20 User Manual



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# Statement

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# Chapter 1 Product intro

## 1.1 Intro

Chainway MR20 is our refined and new generation wearable Bluetooth UHF readers. Being a compact and portable device, it can be operated together with gloves, wristbands, or lanyards and make your work much more flexible and convenient. With a built-in UHF module, Chainway MR20 possesses a powerful data-collection and transmission function via a simple Bluetooth connection with Android/iOS devices. Removable battery and fast charging capability enable it to achieve work continuity for a long duration. Besides, this tiny device has the protection features like dustproof, waterproof, shockproof, and drop resistance. All these functions make the MR20 a most adaptable device in a wide spectrum of circumstances such as logistics & express delivery, retail store management, warehouse management, power patrol inspection, asset management, e-commerce picking, and tickets checking, etc. helping users free their hands and significantly improve work efficiency.

## 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 PWR-R2/R5/R6/MR20-5V2A-CN, output voltage/current is 5V DC/1.5A. 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

MR20 appearances are showing as follows:



### Indicating Lamps instruction

Lamps		Description
Indicating Lamps	Power	Red lamp lights up constantly (charging status) Green lamp lights up constantly (battery fully charged) Blue lamp lights up constantly (battery level higher than 20%) Blue lamp flashing (battery level lower than 20%)
	Bluetooth	Constant light up (Bluetooth connected)
	Work	Flash when read UHF tags



## **2.3 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.

## 2.4 Buttons and function area display

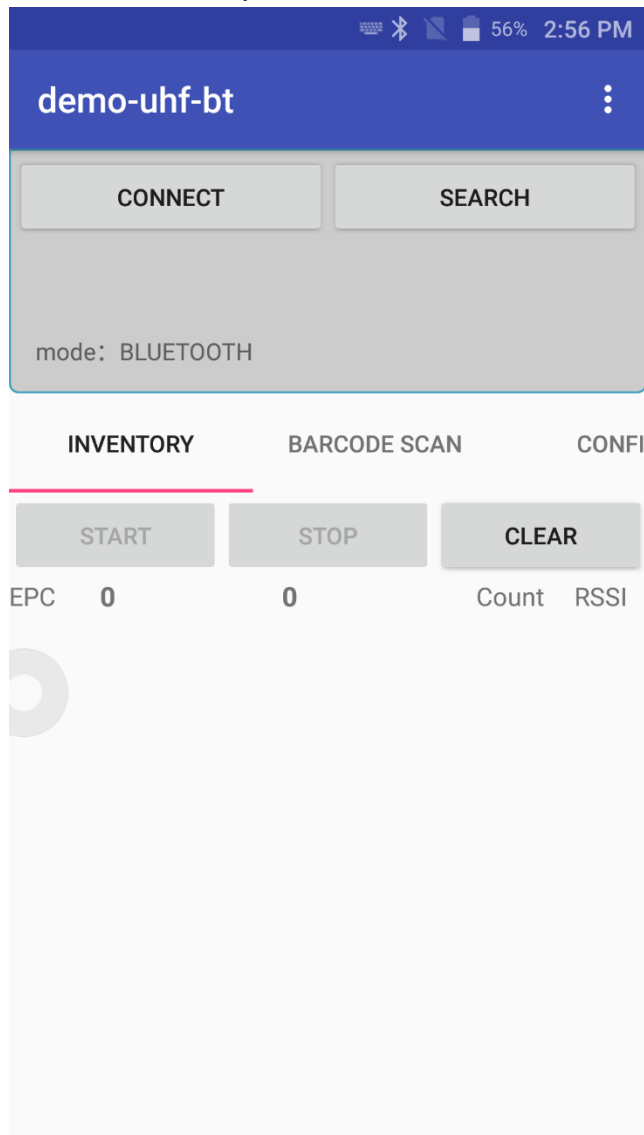
MR20 reader has 1 power button and 1 Type-C port, 1 SCAN button.



# Chapter 3 Demo Test

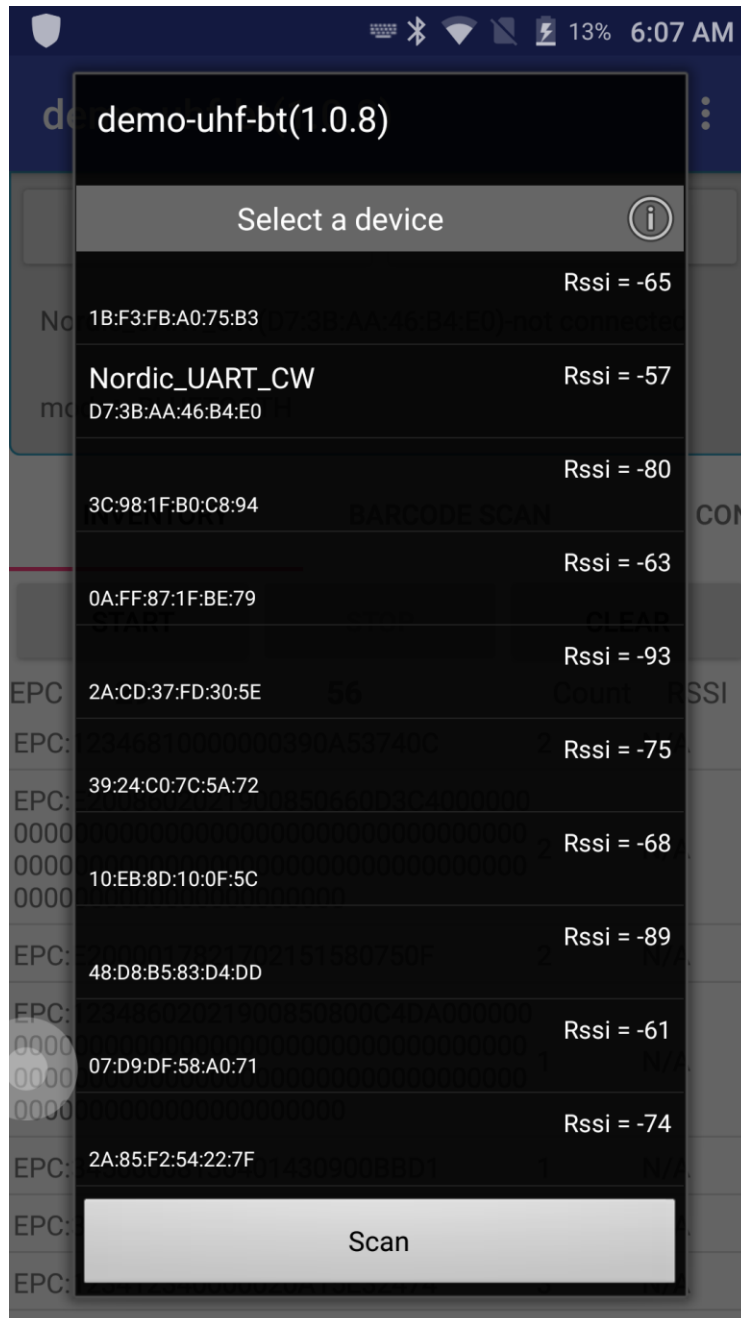
## 3.1 Install demo-uhf-bt (1.0.8)

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.



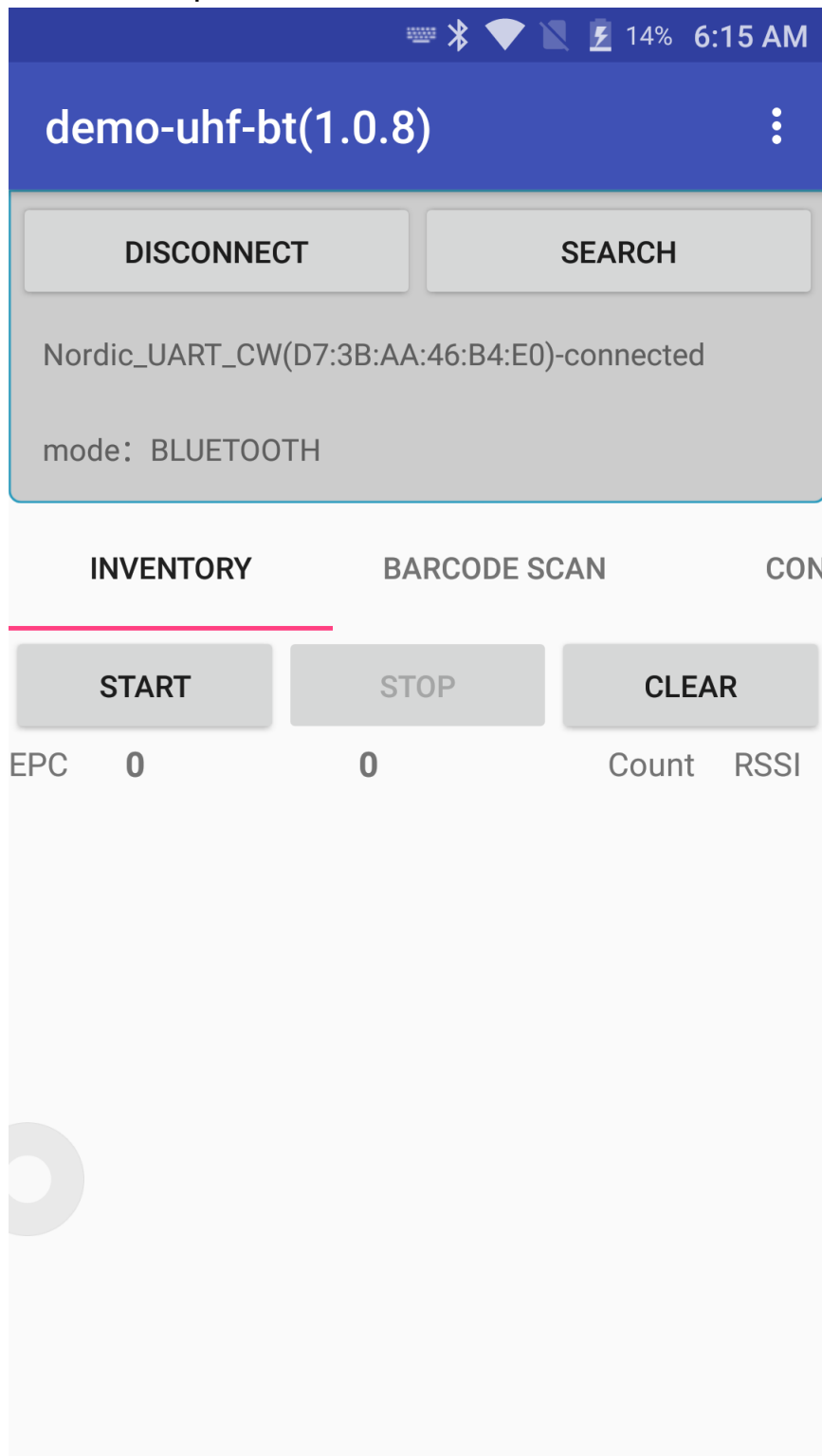
## 3.2 Pairing Device

1. Switch on Bluetooth function of smartphone or C7x device.
2. Power on MR20.
3. Click BLUETOOTH in the demo.
4. Click SEARCH to search for MAC of MR20.



5. Click the correct MAC 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 0000000000000000000000000000000000 0000000000000000000000000000000000 0000000000000000000000000000000000			1	N/A
EPC:300ED89F3350007FE25EADC2			2	N/A
EPC:E2008602021900850660D3C4000000 0000000000000000000000000000000000 0000000000000000000000000000000000 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 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 two side-by-side panels of the 'demo-uhf-bt(1.0.9)' application. Both panels are in the 'READ' mode, indicated by the red underline under the 'READ' tab. The top section of each panel contains 'CONNECT' and 'SEARCH' buttons, and a status bar shows 'mode: BLUETOOTH'. Below this is a 'filter' section with an 'Enable' checkbox, 'Ptr: 32 (bit)', and '长度: 0 (bit)'. The 'Data:' field is empty. Three buttons are present: 'EPC' (highlighted with a blue border), 'TID', and 'USER'. The 'Bank' is set to 'RESERVED'. The 'Ptr' is 0 (word) and 'Len' is 4 (word). The 'Access Pwd' is 00000000. The 'Data:' field is empty. The 'WRITE' mode is also visible but not selected.



## 3.6 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' application interface. At the top, the status bar displays the Android icon, signal strength, Bluetooth, and battery level at 56% at 3:04 PM. The app title 'demo-uhf-bt' is in a blue header with a menu icon. Below the header are 'DISCONNECT' and 'SEARCH' buttons. The main area shows 'Nordic\_BT\_CW\_20181212(C1:21:31:CD:34:AB)-connected' and 'mode: BLUETOOTH'. A tabbed interface at the bottom has 'WRITE', 'LOCK' (selected), and 'KILL' tabs. The 'LOCK' tab contains a 'filter' section with an 'Enable' checkbox, 'Ptr: 32 (bit)' and 'Len: 0 (bit)' fields, and a 'Data:' field. Below these are three buttons: 'EPC' (highlighted with a blue border), 'TID', and 'USER'. At the bottom, there are input fields for 'Access Pwd:' (with the text 'Can't use the default password') and 'Lock Code:', followed by a large blue 'LOCK' button.

demo-uhf-bt

DISCONNECT SEARCH

Nordic\_BT\_CW\_20181212(C1:21:31:CD:34:AB)-connected

mode: BLUETOOTH

WRITE LOCK KILL

filter

☐ Enable

Ptr: 32 (bit) Len: 0 (bit)

Data:

EPC TID USER

Access Pwd: Can't use the default password

Lock Code:

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' application interface. At the top, there's a status bar with a battery icon, Bluetooth icon, 56% battery, and 3:09 PM. Below the status bar, the app title 'demo-uhf-bt' is displayed. There are two buttons: 'CONNECT' and 'SEARCH'. Below these buttons, the text '(C1:21:31:CD:34:AB)-not connected' is shown, followed by 'mode: BLUETOOTH'. A tab bar at the bottom has three tabs: 'LOCK', 'KILL', and 'MODIFY BTNAME'. The 'KILL' tab is selected, indicated by a red underline. Below the tab bar, there's a 'filter' section with an 'Enable' checkbox (unchecked). Below the checkbox, there are two input fields: 'Ptr: 32 (bit)' and 'Len: 0 (bit)'. Below these fields is a 'Data:' label followed by a text input field. Below the text input field are three buttons: 'EPC' (highlighted with a blue border), 'TID', and 'USER'. Below the filter section, there's an 'Access Pwd:' label followed by a text input field containing 'Can't use the default password'. At the bottom, there's a large blue button labeled 'KILL'.

demo-uhf-bt

CONNECT SEARCH

(C1:21:31:CD:34:AB)-not connected

mode: BLUETOOTH

LOCK KILL MODIFY BTNAME

filter

☐ Enable

Ptr: 32 (bit) Len: 0 (bit)

Data:

EPC TID USER

Access Pwd: Can't use the default password

KILL

# Chapter 4 Device characteristic

## Physical characteristics

<b>Size</b>	50 × 62 × 19 mm / 1.97 × 2.44 × 0.75 in.
<b>Weight</b>	64 g / 2.26 oz. ( with glove: 90 g / 3.17 oz. )
<b>Color</b>	Yellow, Blue, Gray
<b>Appearance material</b>	Plastic
<b>Product material</b>	Plastic
<b>Battery specification</b>	1200 mAh ( removable )
<b>Indicator LED</b>	Power, Work, Bluetooth
<b>Buzzer</b>	Y
<b>Interfaces</b>	Type-C

## 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

## UHF

<b>Antenna</b>	Linear Polarized Antenna (-2.2dBi)
<b>Frequency</b>	920-925MHz/902-928MHz/865-868MHz
<b>Protocol</b>	EPC C1 GEN2 / ISO18000-6C
<b>Module power</b>	0.5W (27dBm, support +19-27dBm adjustable)
<b>R/W range</b>	80 cm

## **Declaration**

The simplified EU declaration of conformity referred to in Article 10(9) shall be provided as follows: Hereby, Shenzhen Chainway Information Technology Co.,Ltd. declares that the radio equipment type UHF Sled Reader is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following.