UHF Sled Reader

R7 User Manual



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Introduction

1.1 Introduction

The R7 is a professional UHF back clip designed for smartphones/PDAs, compatible with various manufacturers' Android and iOS smartphones or smart devices, easily transforming your phone into a professional data acquisition device. It boasts excellent UHF read/write capabilities, based on the Impinj E-series chip and supporting Impinj Gen2X. Tag reading and writing are accurate, fast, and wide-ranging, with a reading distance exceeding 30 meters in open outdoor environments. It is comfortable to hold, easy to install and remove, and suitable for a wide range of applications, such as power line inspection, asset management, clothing inventory, warehouse management, vehicle management, and financial management.

1.2 Battery Precautions

- Do not leave batteries idle for extended periods, whether in product equipment or in storage. If a battery has been used for 6 months, check its charging status or dispose of it properly.
- The battery lifespan is generally two to three years, with 300 to 500 charge cycles. A complete charge cycle refers to a full charge, a full discharge, and then a full charge.
- Rechargeable batteries have a limited lifespan and gradually lose their ability to hold charge. This loss (aging) is irreversible. As the battery loses capacity, its lifespan (runtime) decreases.
- When the battery is not in use or idle, it continues to discharge slowly (automatically). The battery's charge status should be checked frequently, and the charging instructions can be found in the user manual.
- Observe and record the runtime of an unused, fully charged battery. Compare the runtime of the new battery to that of a battery with a longer runtime. Battery runtime will vary depending on product configuration and application.
- Check the battery charging status regularly.

- When battery runtime drops to about 80% of its original runtime, battery charging time increases significantly.
- Note: Replacing batteries with the wrong type may cause an explosion hazard. Always dispose of used batteries according to the instructions.

Equipment appearance and function overview

2.1 Appearance



R 7

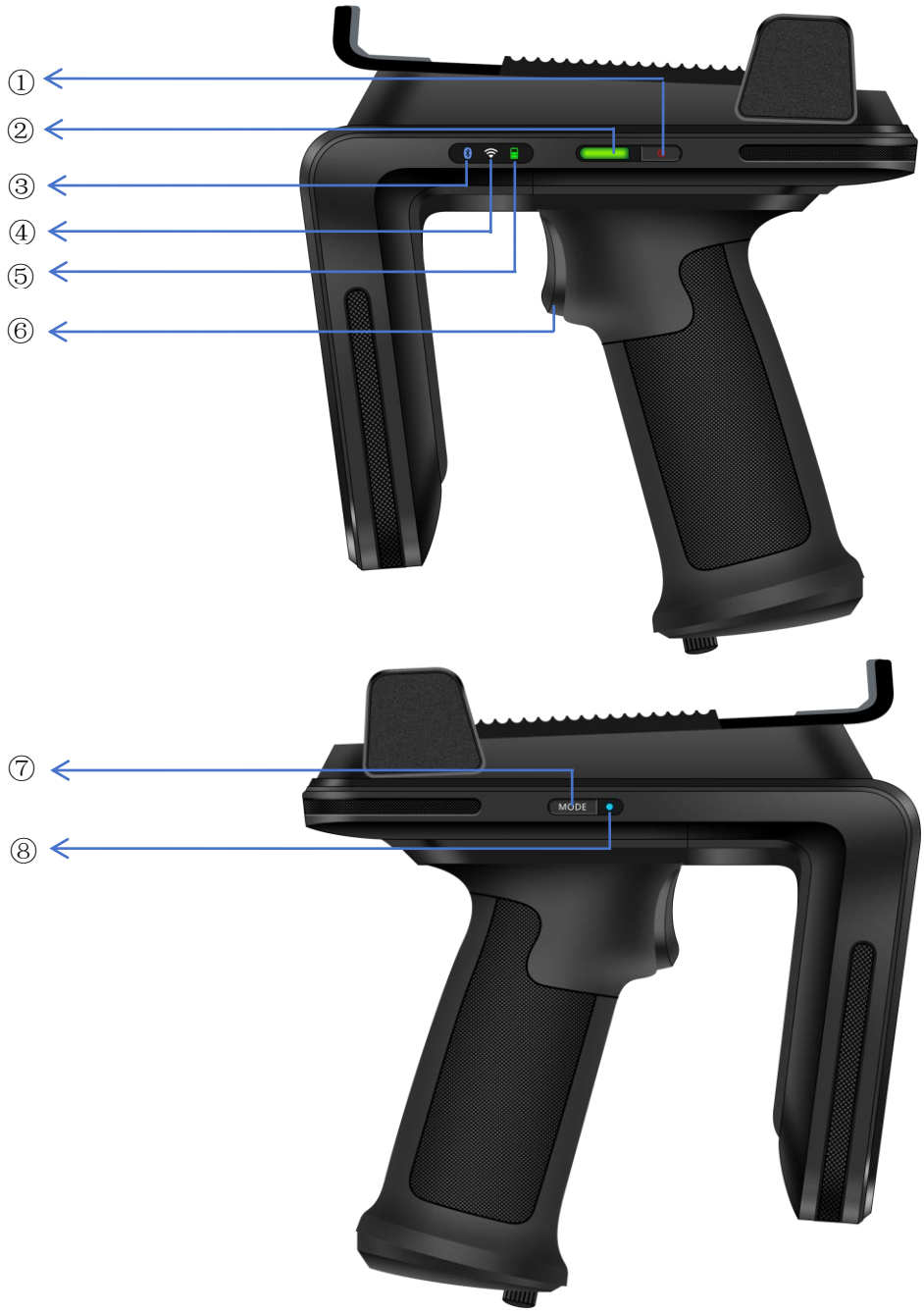


R 7 (Magnetic version)

2.2 Battery Charging

Charge the battery using the original adapter via USB interface.

2.3 Button and Function Area Display



Button and indicator light description

project	describe
①Buttons	Power button
② Work lamp	The green light flashes when the inventory tags are checked.
③Bluetooth light	Blue light illuminates when connected to Bluetooth
④ WiFi light	A blue light illuminates when connected to WiFi.
⑤ Power lamp	The power light turns green when the device is turned on . The blue light flashes while charging and stays on when fully charged . Charging detection battery abnormality red light flashing
⑥ Handle buttons	Scan key
⑦ Mode switch button	RFID and barcode mode switching button
⑧ Mode indicator light	The mode indicator light does not illuminate in command mode ; In HID mode, switching to RFID mode will display a green light; switching to barcode mode will display a blue light.

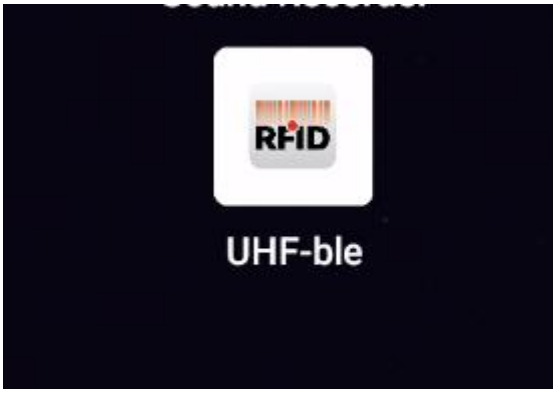
Android DEMO Installation Test

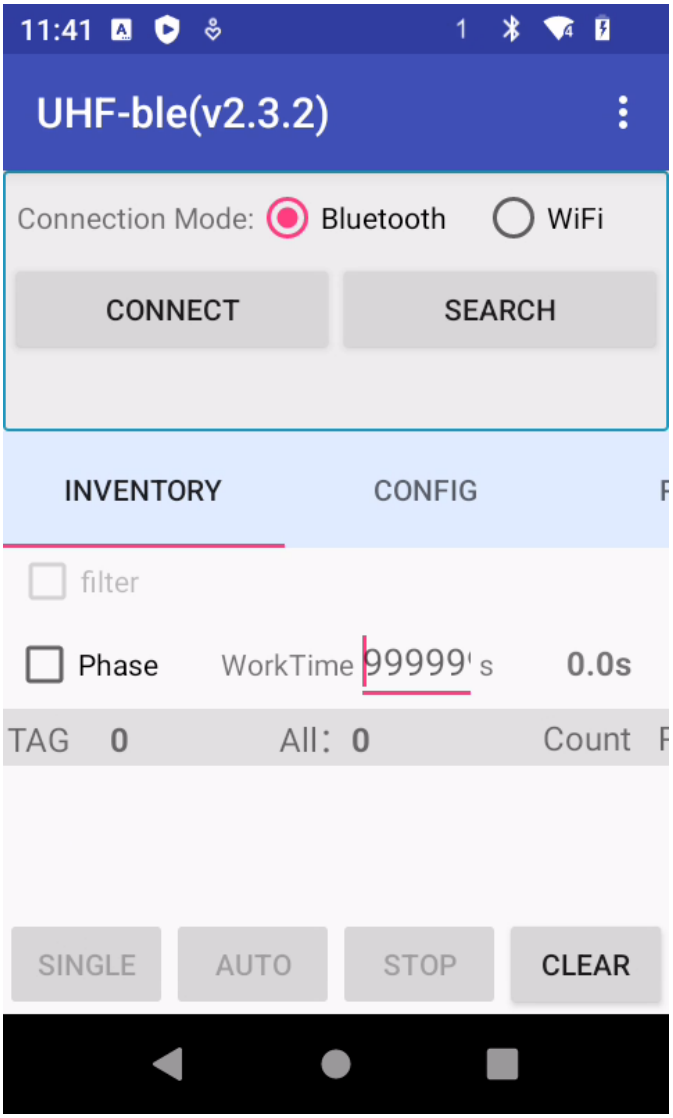
3.1 Install demo-uhf-ble

1. Copy the demo to your personal smartphone's internal storage or SD card;

2. Click to install;

3. Click the demo icon to enter the app.





3.2 Device Bluetooth Connection

Bluetooth sleds have three connection methods

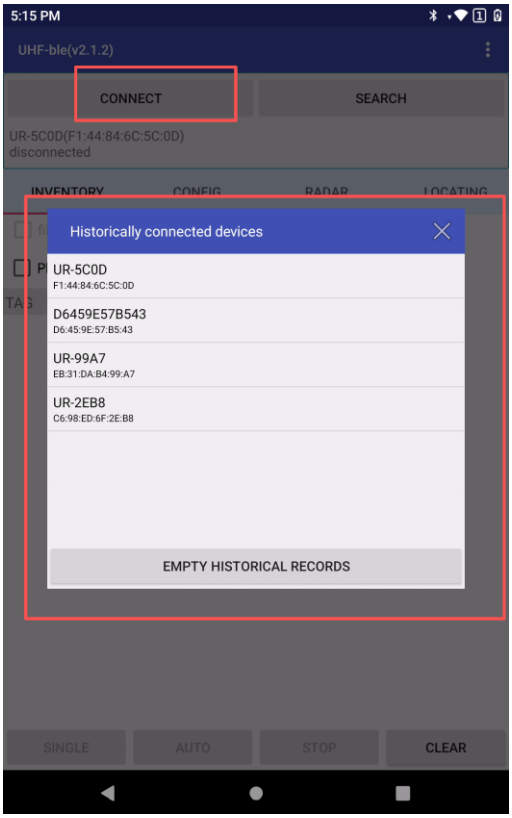
Method 1: Turn on your smartphone's Bluetooth and power on the device; click search, and the list will display the names and MAC addresses of nearby devices with Bluetooth turned on; find the corresponding device's Bluetooth MAC address or device name and connect.

Note: There is a label with the serial number and MAC address on the

back of the device, which can be used to find the MAC address of the Bluetooth device.

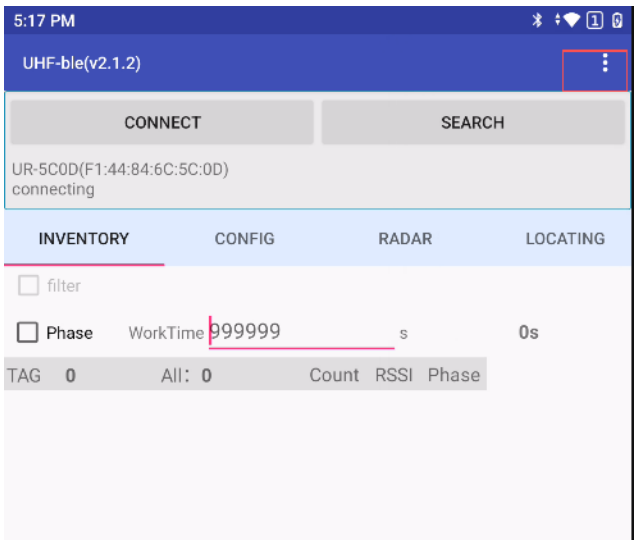


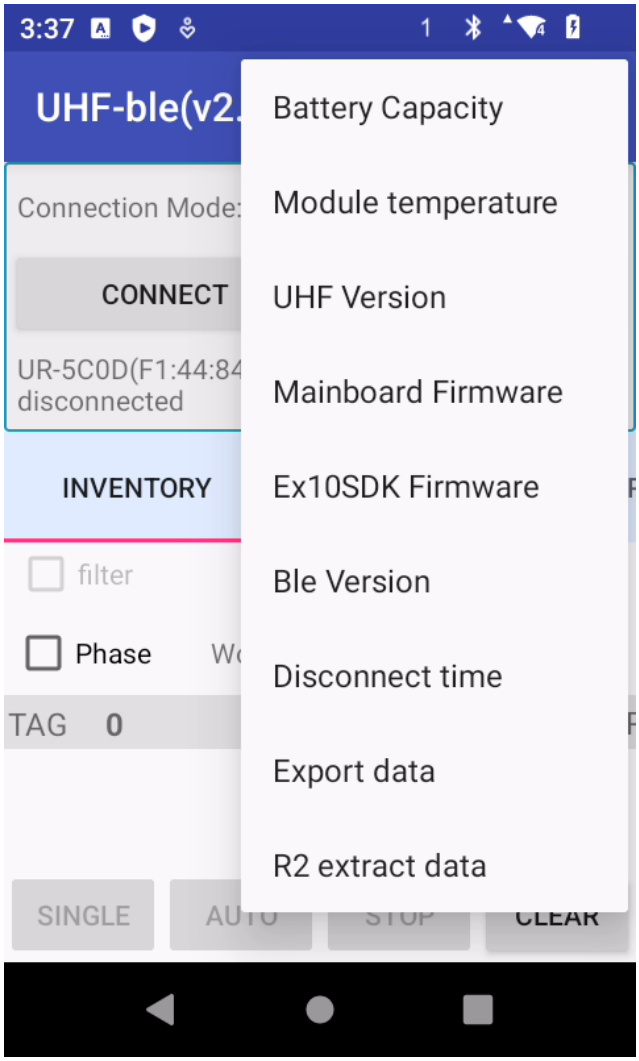
Method 2: If the device has already been connected, you can click the 'Connect' to view the historical connected devices and select the device you want to connect to.



Method 3 : Power on the device , use a phone with NFC enabled, open the UHF-BLE demo, and place it close to the NFC tag at the bottom of the R7 . When the NFC tag is recognized, it will vibrate and connect successfully.

After a successful connection, you can view the current UHF version, device battery level, Bluetooth version, etc. in the upper right corner of the page; you can also set the connection disconnection time and export the acquired data.



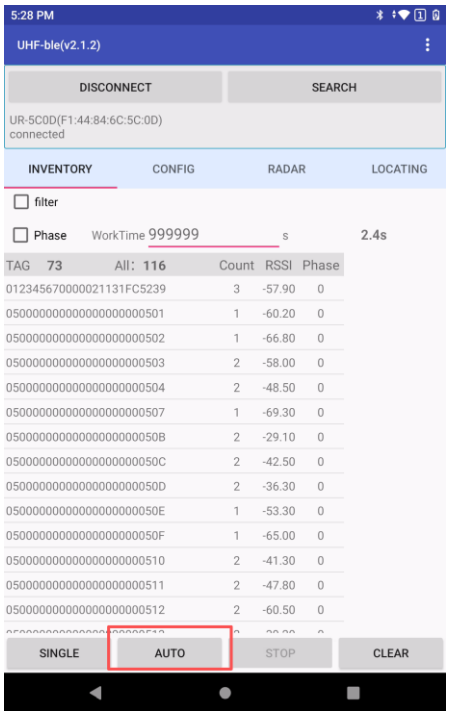


3.3 Scanning Test

3.3.1 UHF Inventory

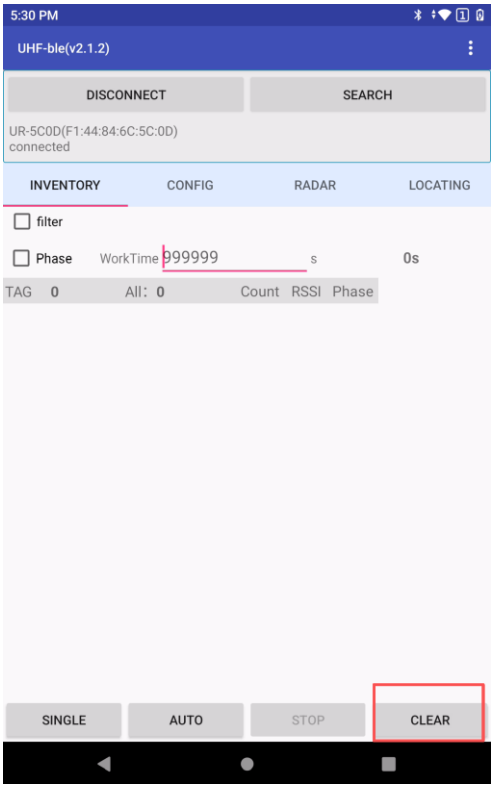
Place the UHF tag within the reading range of the R7:

（1）After successful connection via the UHF-ble demo, click the ‘Auto’ button on the app to start to read the UHF tags, and click the stop button to stop UHF reading.



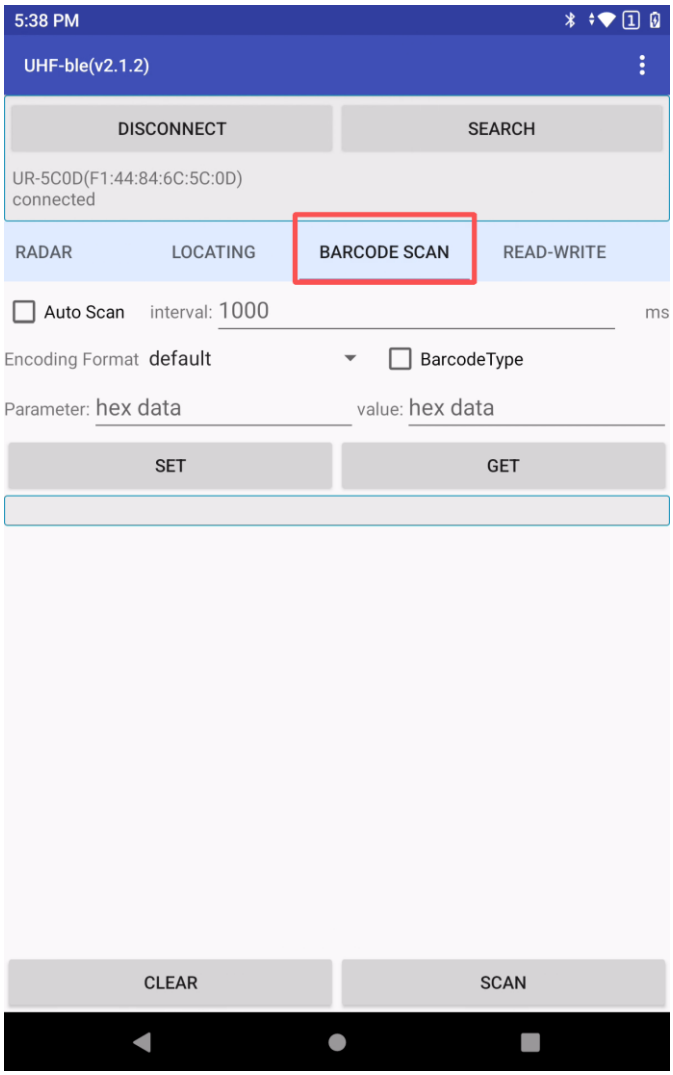
（2）The reader can be started or stopped by pressing the button on the sled's handle;

(3) After pausing UHF reading, you can click the clear button to clear the data;



3.3.2 Two-dimensional scanning (optional)

Switch the page to ‘Barcode SCAN’ mode to use the barcode scanning function to obtain 1D/2D barcode data.



Note: Please scan the barcode correctly, otherwise the scan will fail.

1D Barcode



Right



Wrong

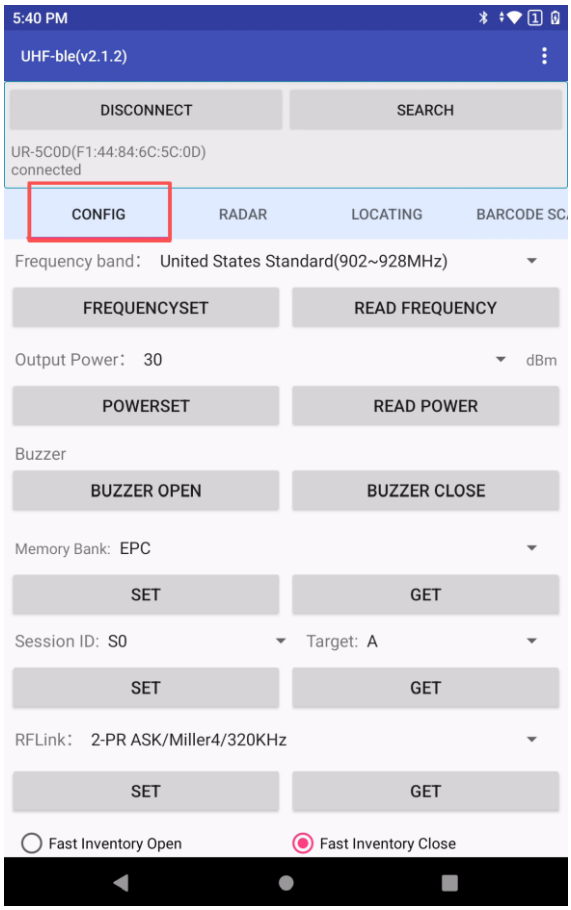


Note: The scanning engine emits laser radiation; please do not look directly at the scanning light.

3.4 Functional Description

3.4.1 CONFIG

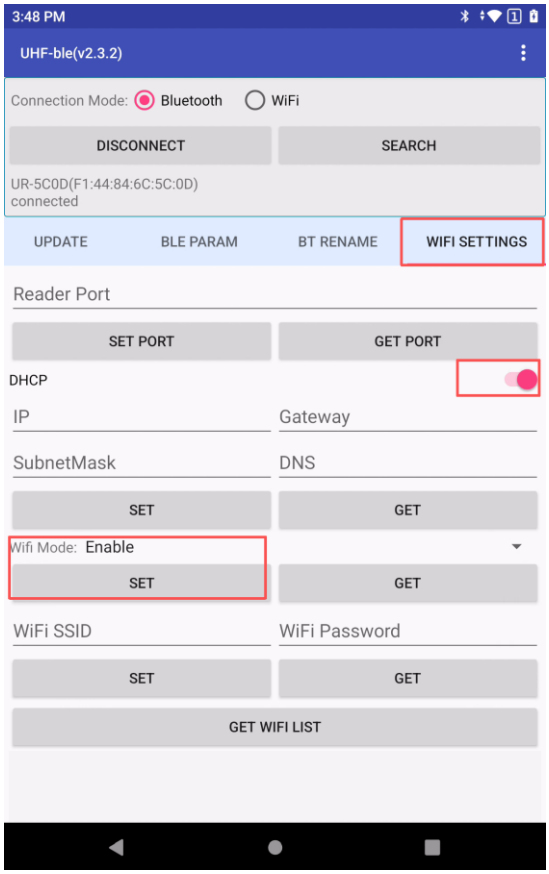
After a successful Bluetooth connection, clicking on the ‘CONFIG’ interface will allow you to access the current default settings of the UHF module and configure UHF functions such as frequency band, output power, and buzzer.



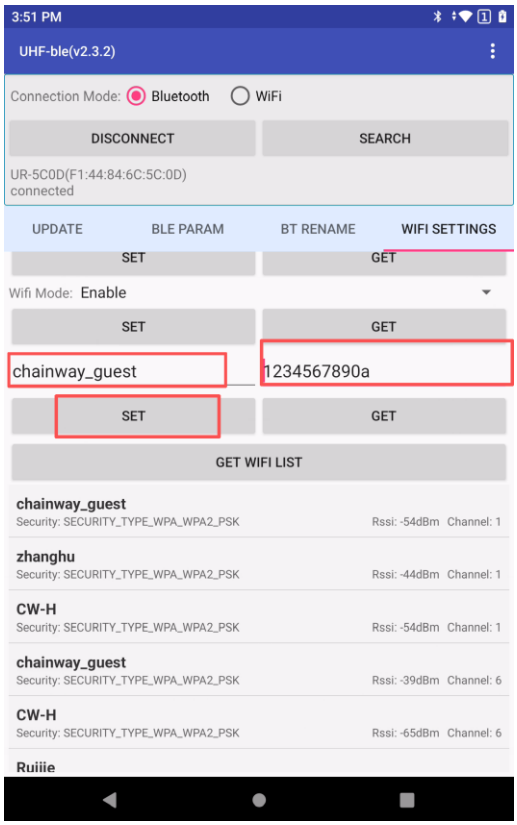
3.4.2 WIFI Settings

Note: Android devices need to be connected to Wi-Fi and have the UHF-ble demo and UHF-NetWork demo installed.

1. Connect the R7 to UHF-ble Demo, switch to the "WIFI SETTINGSs" page and enable WiFi mode and DHCP.

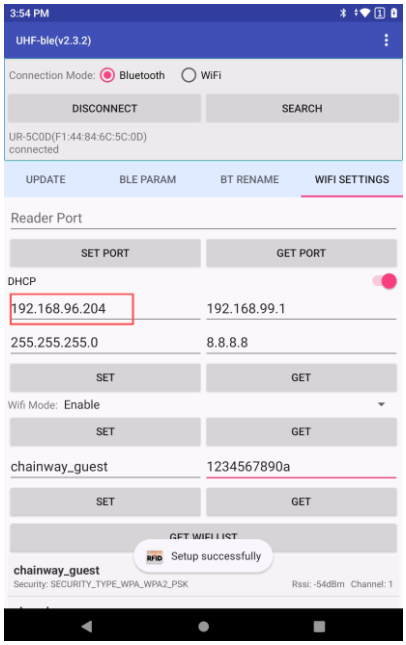


2. Find the Wi-Fi network your Android phone is connected to, enter the Wi-Fi SSID and Wi-Fi password, and click Settings.(You can also click on the ‘Get WiFi LIST’ to search the Wi-Fi SSID, and then enter the password).



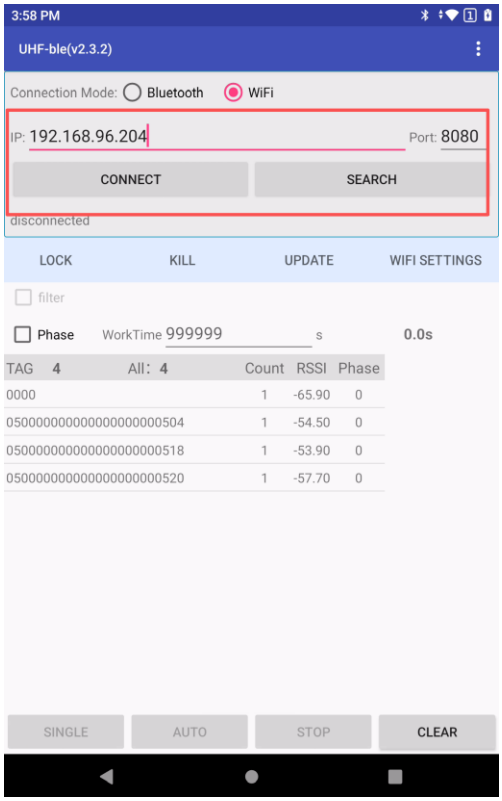
2. Restart R7, then re-connect via Bluetooth using the UHF-ble demo;

4.Click "Get IP," and you will obtain the IP address of your R7, such as 192.168.96.204;

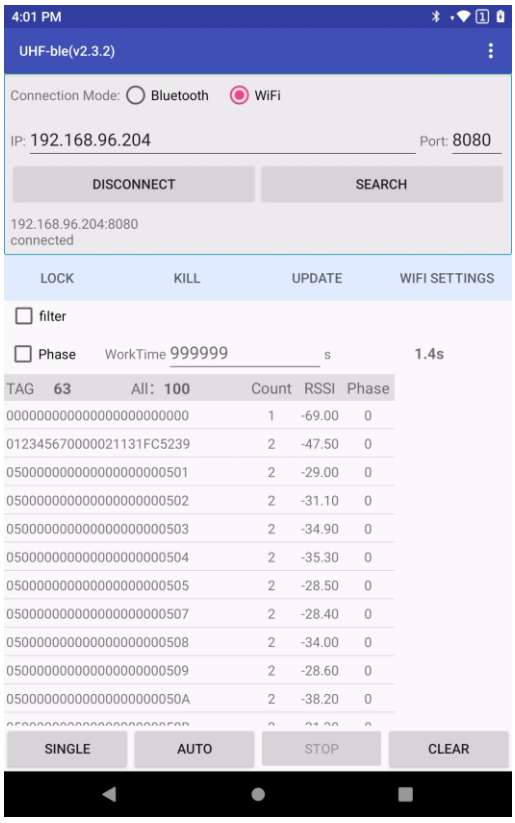


5. Changing the Wi-Fi mode, then enter the IP address of the R7,and

click on the ‘Connect’.

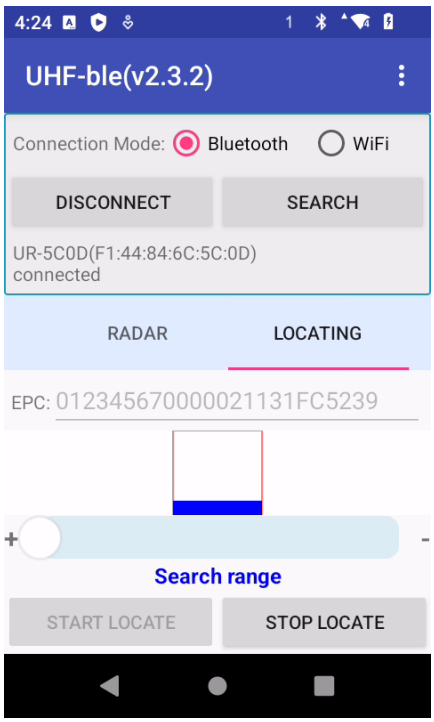


Once the WiFi connection is successful, you will see the WiFi light illuminate, and then you can perform inventory checks, as shown in the image below. If you cannot connect through the WiFi settings page after setting up the WiFi informations, please restart the device and then re-connet it .



3.4.3 Locating

A simple location can be set for a specific tag; the higher the blue bar, the closer it is to the Bluetooth sled device.

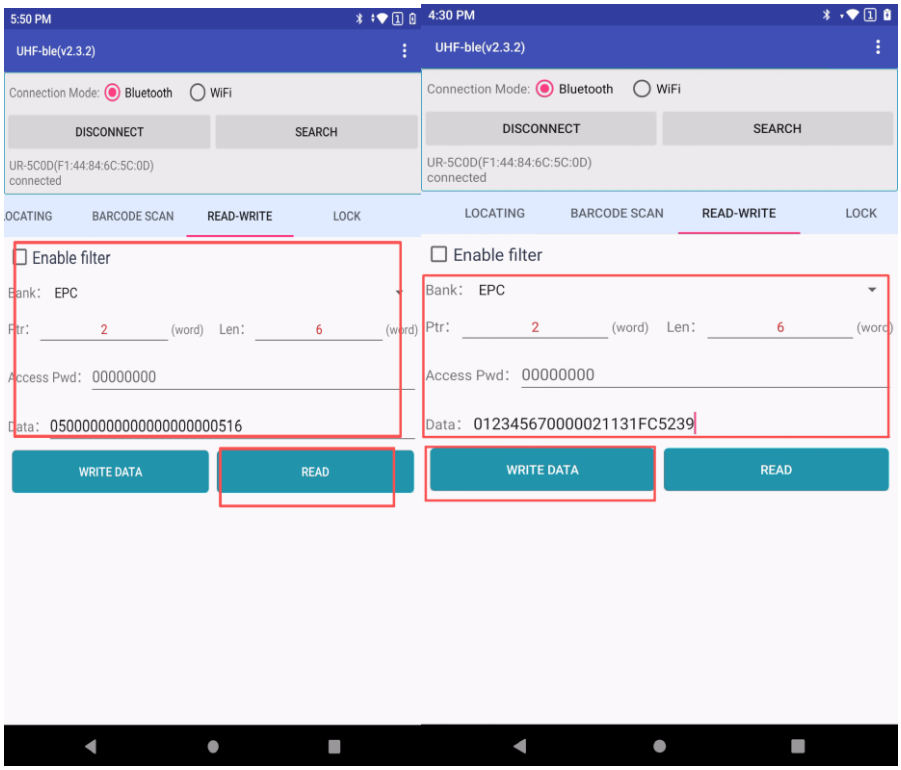


3.4.4 Reading and Writing

It can perform single-read/write operations on tags, including the following areas: RESERVED, EPC, TID, and USER.

TID is special because it can only be read, not written.

Enable Filtering: After checking this option and entering the data, you can perform read/write operations on the specified tags.



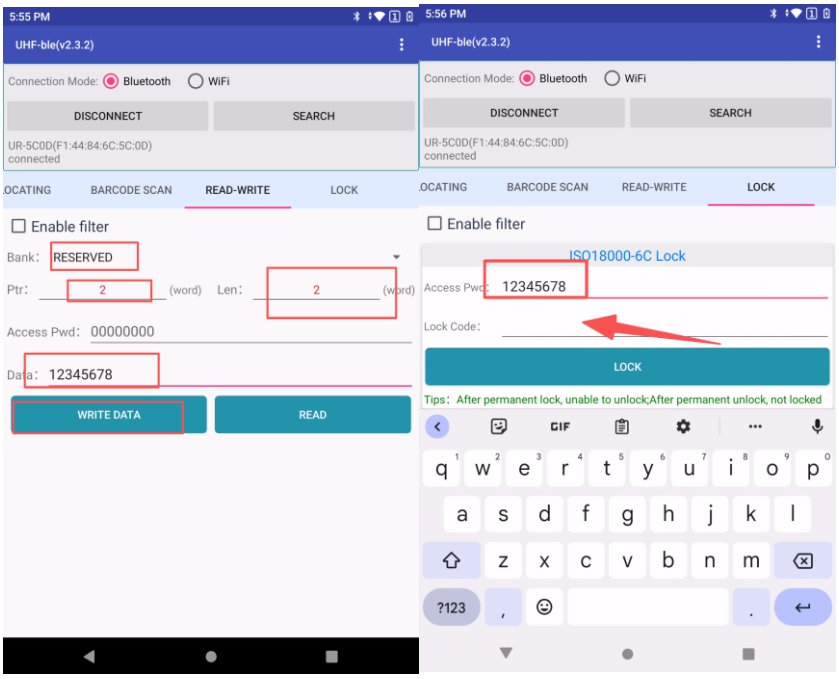
3.4.5 Locks and Destruction

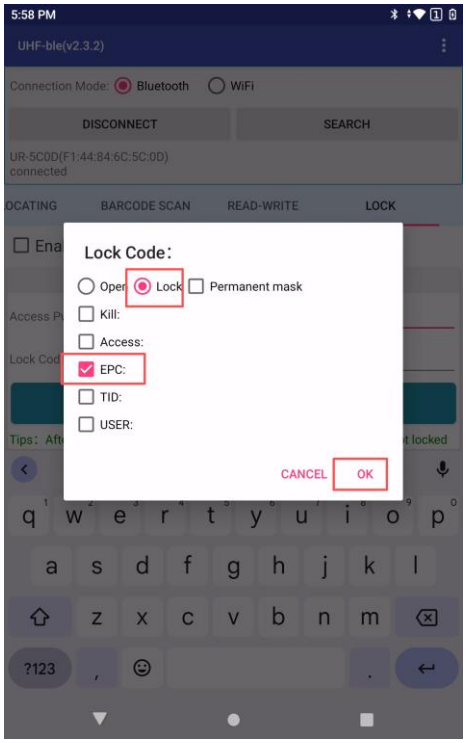
Lock function: You can use a password to lock one or more items. Once locked, the item cannot be changed or retrieved. Lockable items include: Kill, Access, EPC, TID, and USER.

The access password is the 3rd and 4th words of the RESERVED section of this label. The default initial password is 00000000. If you need to lock the device, you need to rewrite the password (you cannot use the default password to lock it).

Enter the correct access password, click the lock code, and select the lock and EPC area; after locking, you need to enter the correct access password to modify the EPC.

The following example is a lock tag EPC:

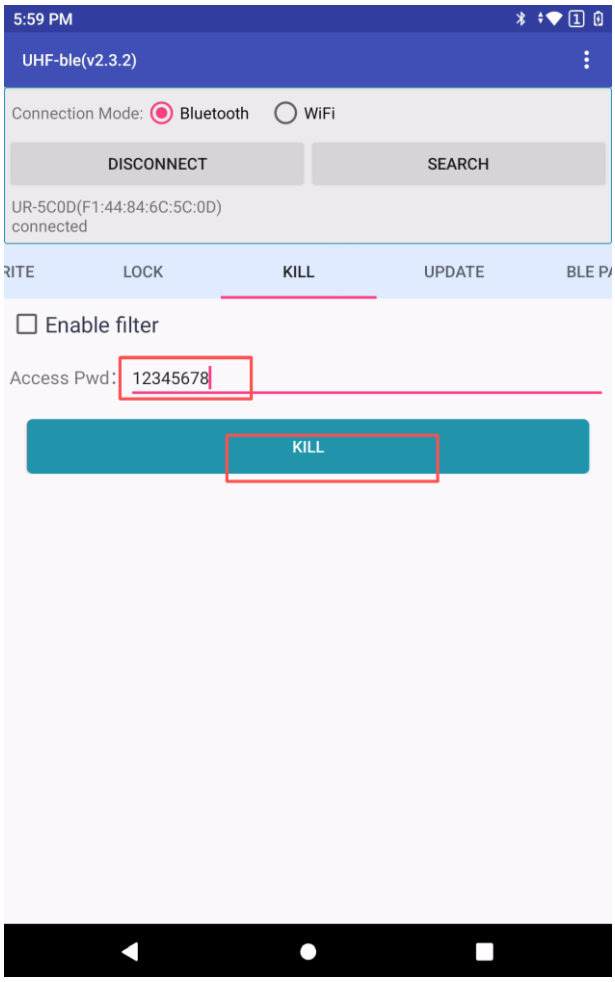



5:58 PM
UHF-ble(v2.3.2)
Connection Mode: Bluetooth WiFi
DISCONNECT
SEARCH
UR-5C0D(F1:44:84:6C:5C:0D)
connected
BARCODE SCAN
READ-WRITE
LOCK
Lock Code:
Lock
Permanent mask
Kill:
Access:
EPC:
TID:
USER:
CANCEL
OK

Destroy function: Destroys/kill the tag; this operation is irreversible. After destruction, the tag is completely unusable and cannot be read, written, or operated on.

The default initial password is 00000000. If you need to kill the password, you need to rewrite the password (you cannot kill the password with the default password).

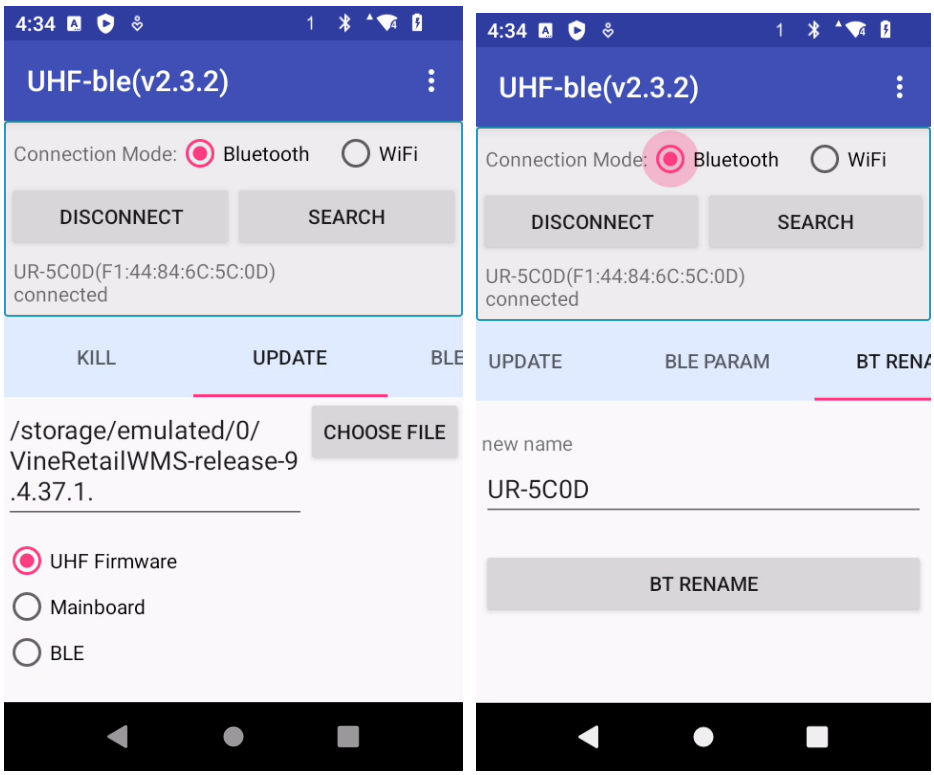
The following is an example of destroying a tag:



3.4.6 Upgrading and Changing Bluetooth Name

Upgrade: This function can upgrade UHF firmware, motherboard, etc., and requires the corresponding firmware file.

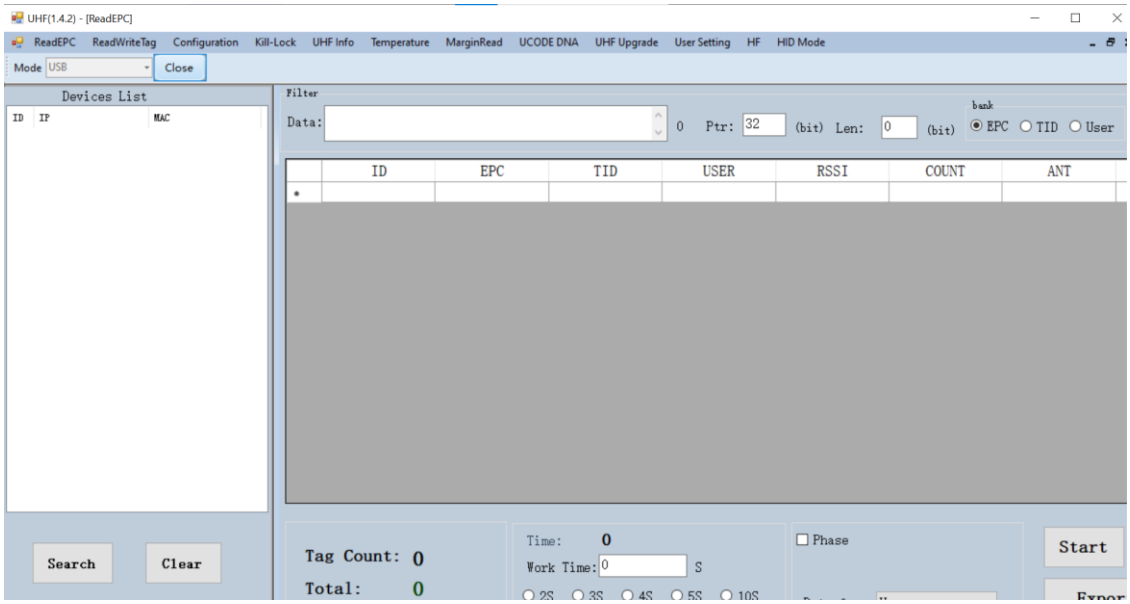
Change Bluetooth name: You can change the Bluetooth name of the Bluetooth sled device.



Windows DEMO Installation Test

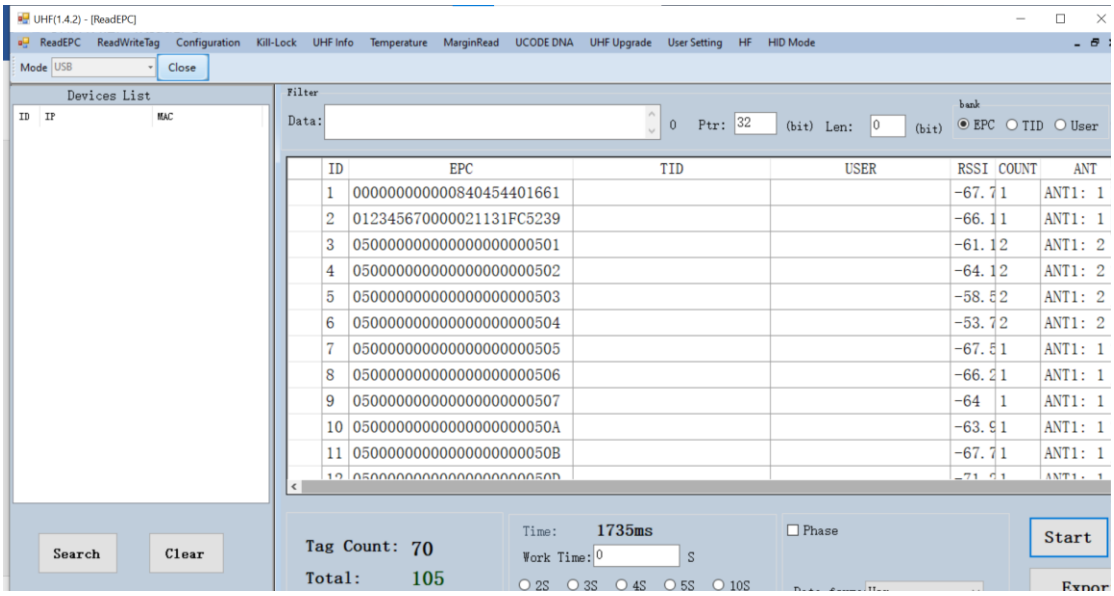
4.1 Connecting the R6

Open the UHFAPP demo program on your computer, select USB mode, connect the R7 with a USB cable, and wait for the computer to finish installing the driver before clicking open.



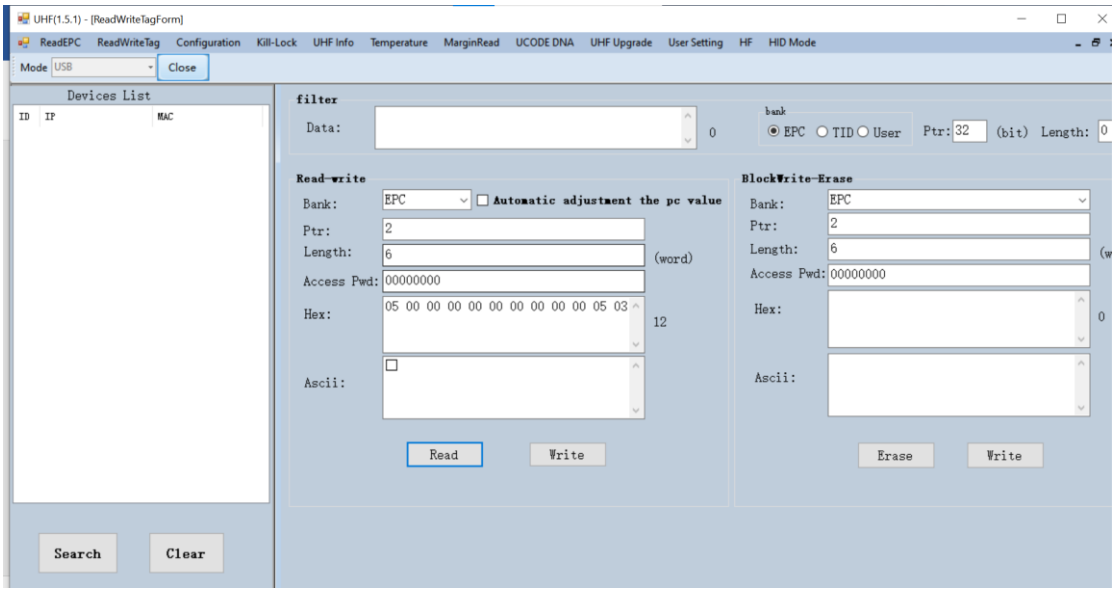
4.2 Inventory of EPC Projects

Click the Start button to begin inventory counting. The blank area will display the counted data, including EPC or TID, RSSI value, count, and antenna number. Click the Stop button again to stop inventory counting .


UHF(1.4.2) - [ReadEPC]
ReadEPC
ReadWriteTag
Configuration
Kill-Lock
UHF Info
Temperature
MarginRead
UCODE DNA
UHF Upgrade
User Setting
HF
HID Mode
Mode
USB
Close
Devices List
ID
IP
MAC
Search
Clear
Filter
Data:
0
Ptr:
32
(bit)
Len:
0
(bit)
bank
EPC
TID
User
ID
EPC
TID
USER
RSSI
COUNT
ANT
1 000000000000840454401661 -67.7 1 ANT1: 1
2 012345670000021131FC5239 -66.1 1 ANT1: 1
3 050000000000000000000501 -61.1 2 ANT1: 2
4 050000000000000000000502 -64.1 2 ANT1: 2
5 050000000000000000000503 -58.5 2 ANT1: 2
6 050000000000000000000504 -53.7 2 ANT1: 2
7 050000000000000000000505 -67.5 1 ANT1: 1
8 050000000000000000000506 -66.2 1 ANT1: 1
9 050000000000000000000507 -64 1 ANT1: 1
10 05000000000000000000050A -63.9 1 ANT1: 1
11 05000000000000000000050B -67.7 1 ANT1: 1
Tag Count: 70
Total: 105
Time: 1735ms
Work Time:
0
S
2S
3S
4S
5S
10S
Phase
Start

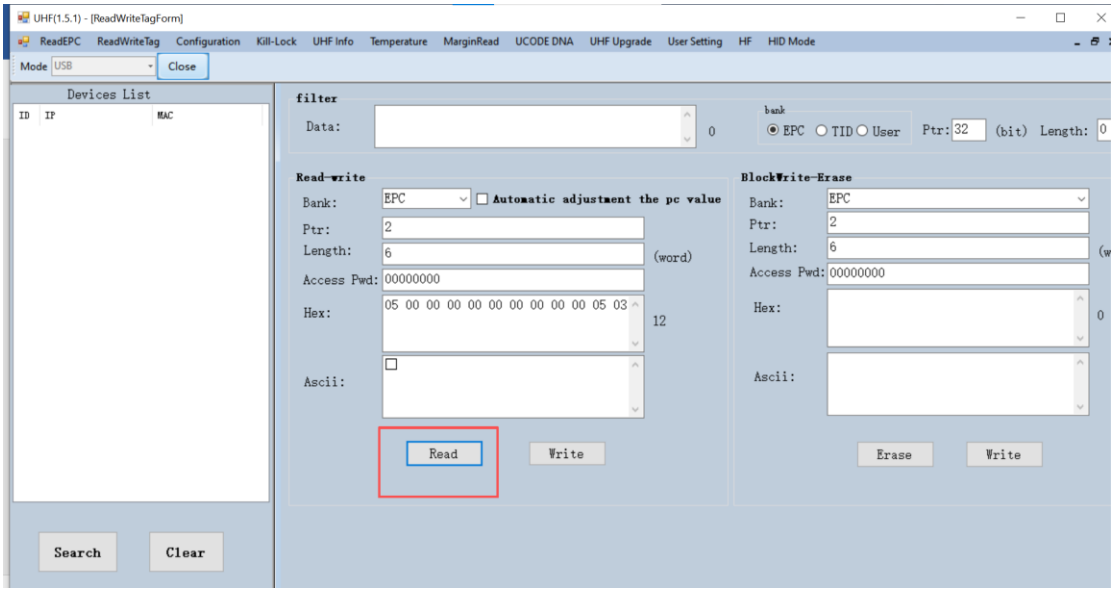
4.3 Reading and Writing Tags

Select the ReadWriteTag tab in the top navigation bar.



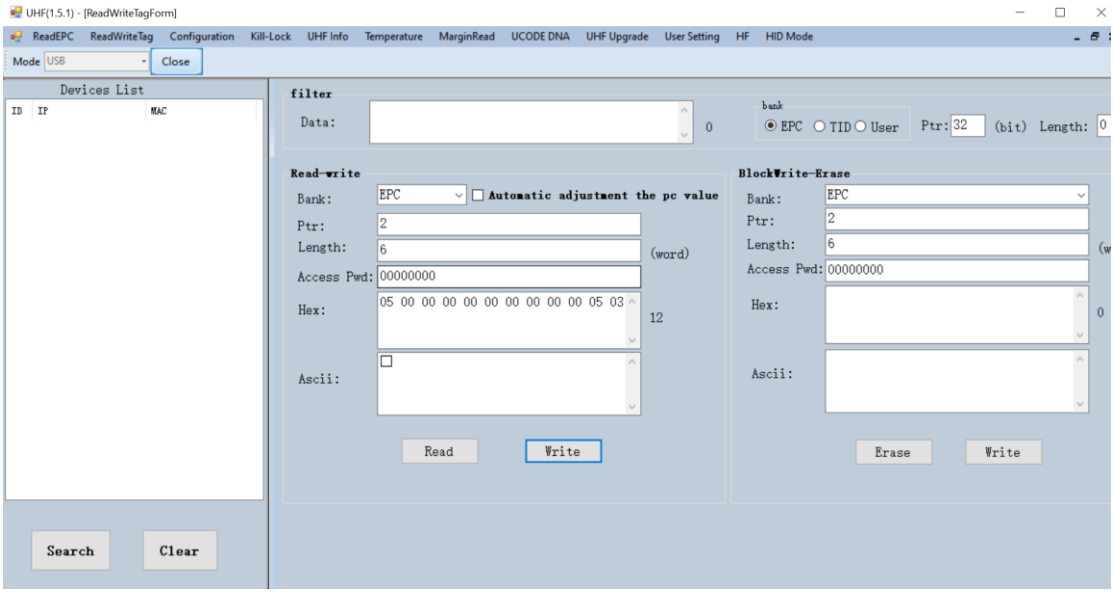
4.3.1 Reading Labels

You can choose to read data from the storage area (RESERVED, EPC, TID, USER), and you can set the starting address and read length. The default access password is "00000000" (eight zeros). Click the Read button to read .



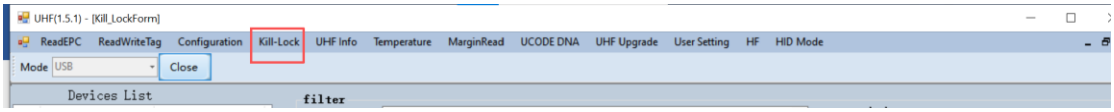
4.3.2 Writing Tags

You can choose to write data to the storage area (RESERVED, EPC, USER), and you can set the starting address and write length. Enter the access password and the data content to be written (hexadecimal), and click the Write button to write .



4.4 Locking and Destroying Tags

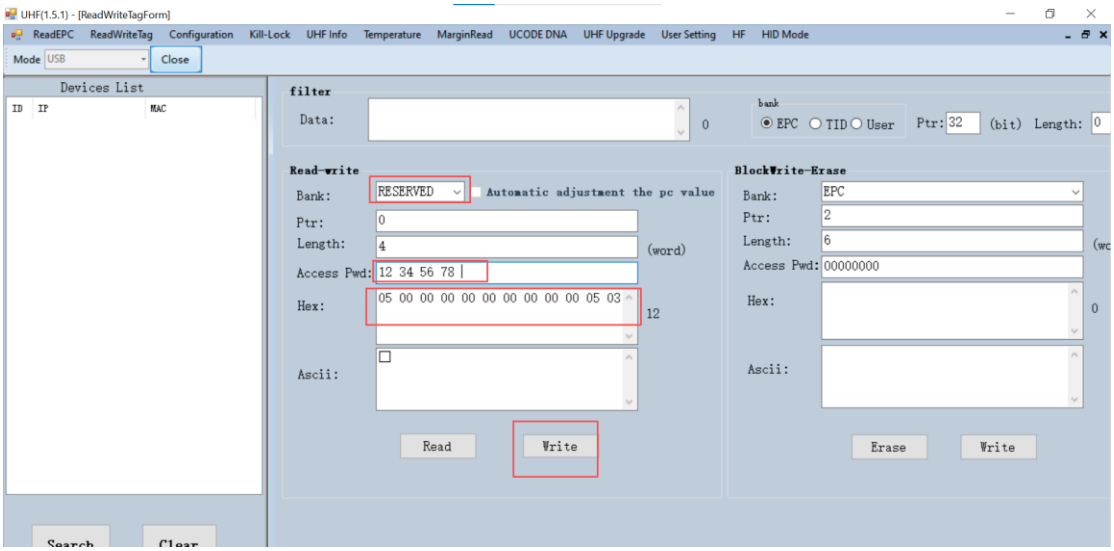
Select the top navigation bar kill-lock tab



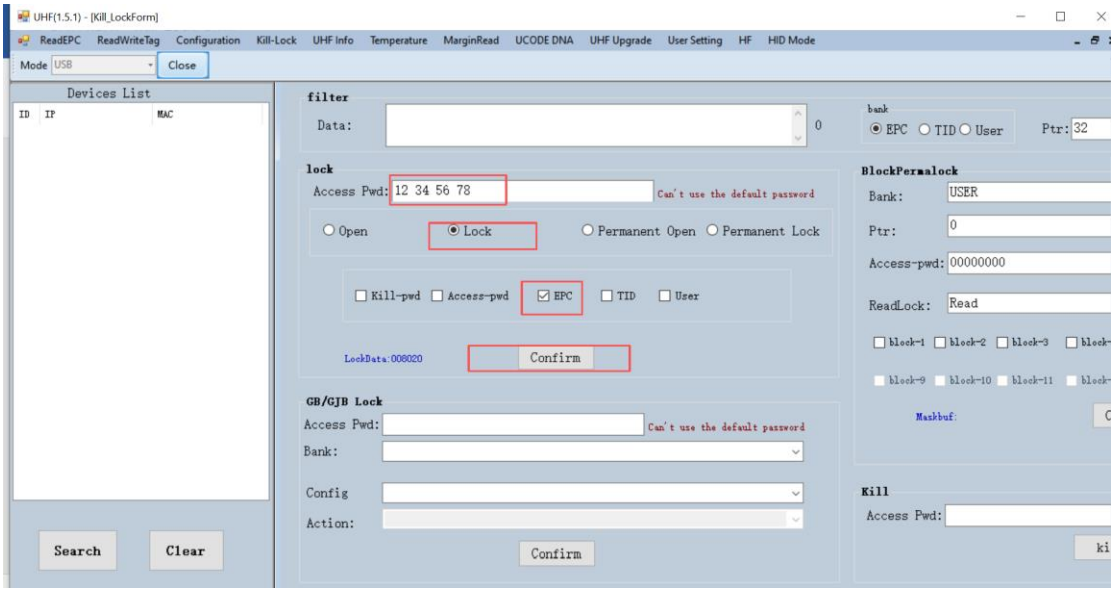
4.4.1 Locking Tags

Enter the access password (the default password cannot be used) , then select the lock option , which has four options: open, lock, permanently open, and permanently locked. Finally, select the area and click the OK button to lock the tag .

Set a access password:

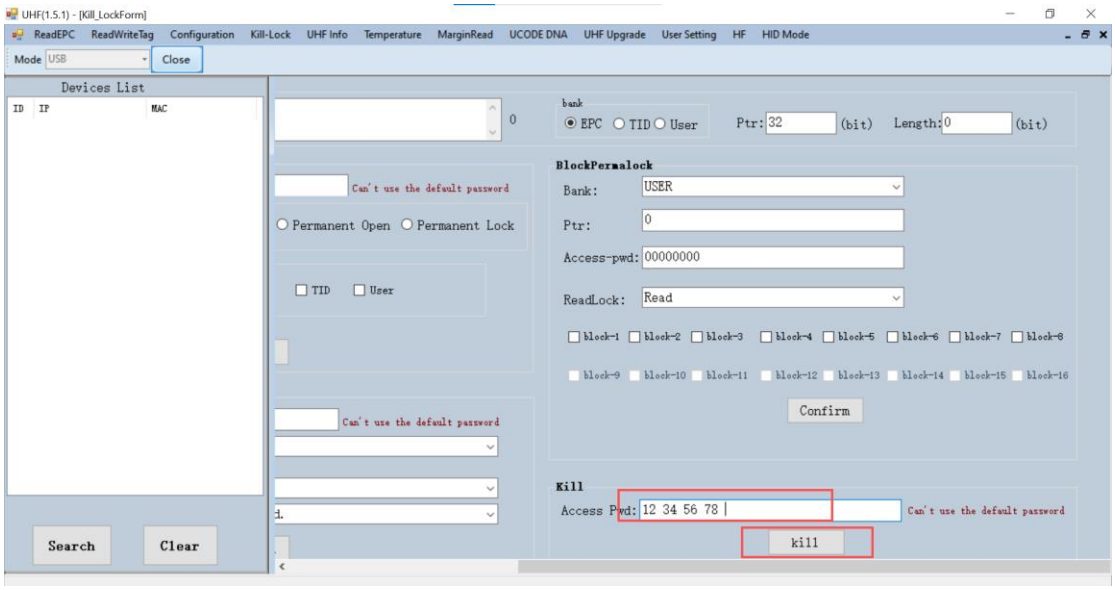


Lock Tags:



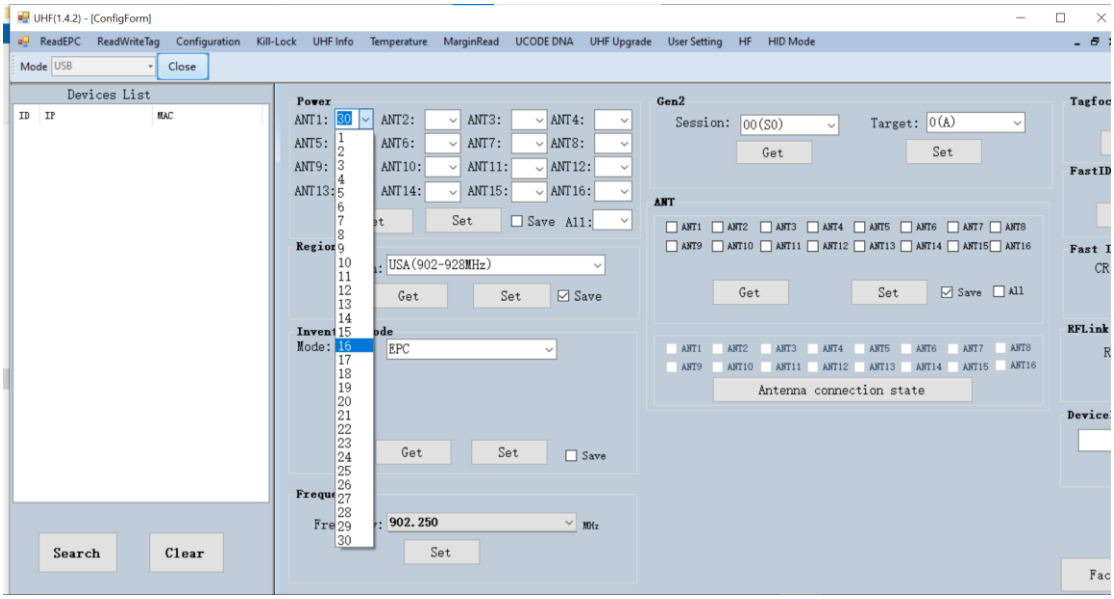
4.4.2 Kill Tags

Enter the access password (the default password cannot be used), and click the Kill button to destroy the tag.



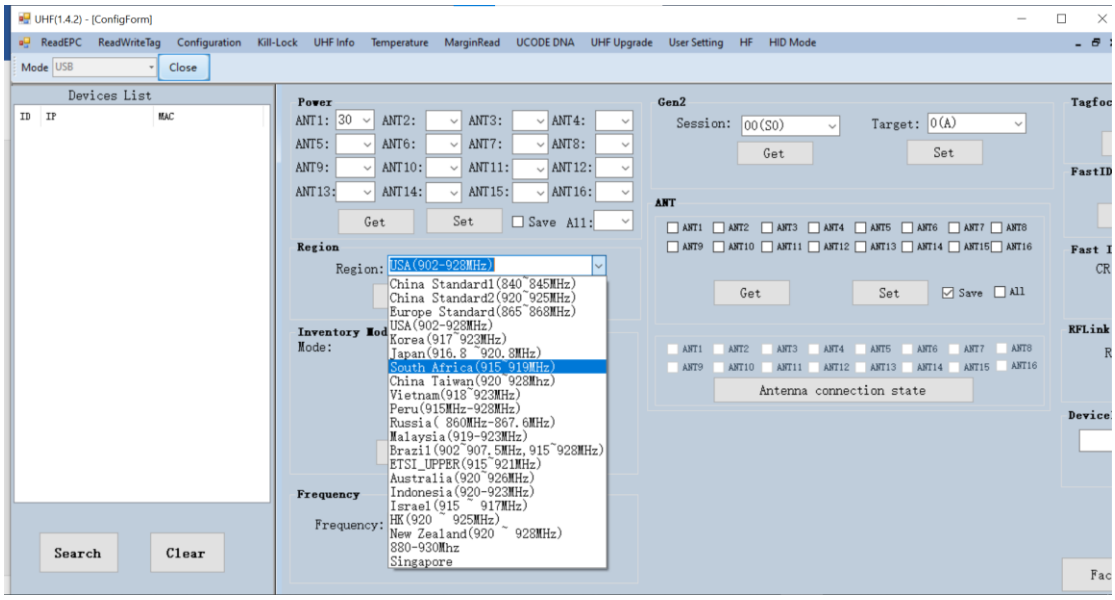
4.5 power

Click "Configuration" in the navigation bar to select power settings. Check "Save" and click the "Set" button to confirm the settings; the "Get" button retrieves the power settings for the current module. Selecting "Save" will save the settings to the module and apply them automatically next time.



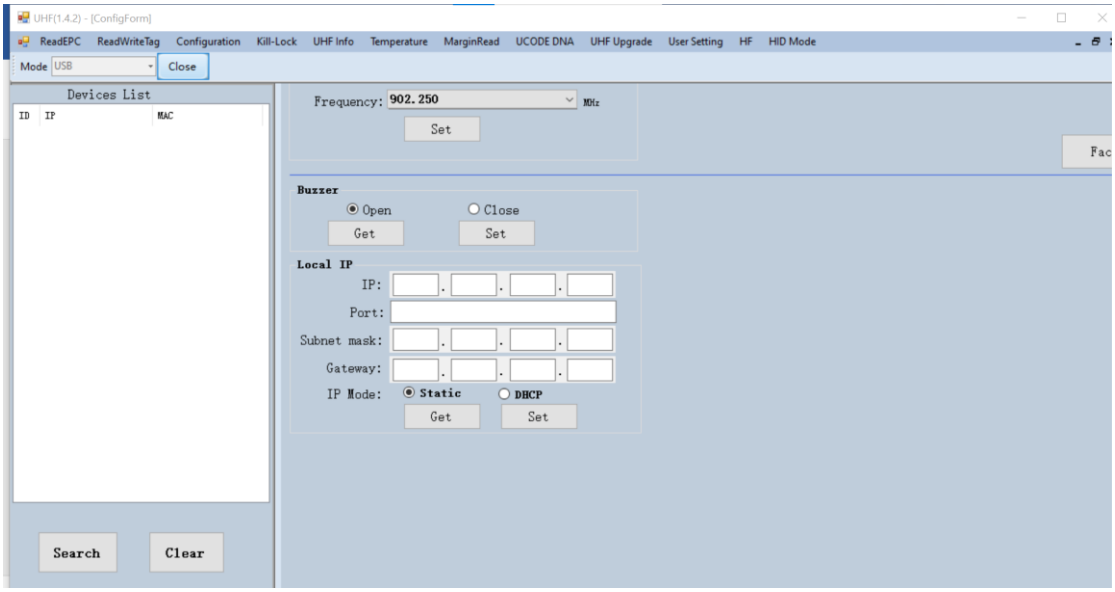
4.6 Region

You can select multiple country frequencies and click the "Set" button to confirm the settings; the "Get" button retrieves the current module's working area. Selecting "Save" will save the settings to the module and apply them automatically next time.



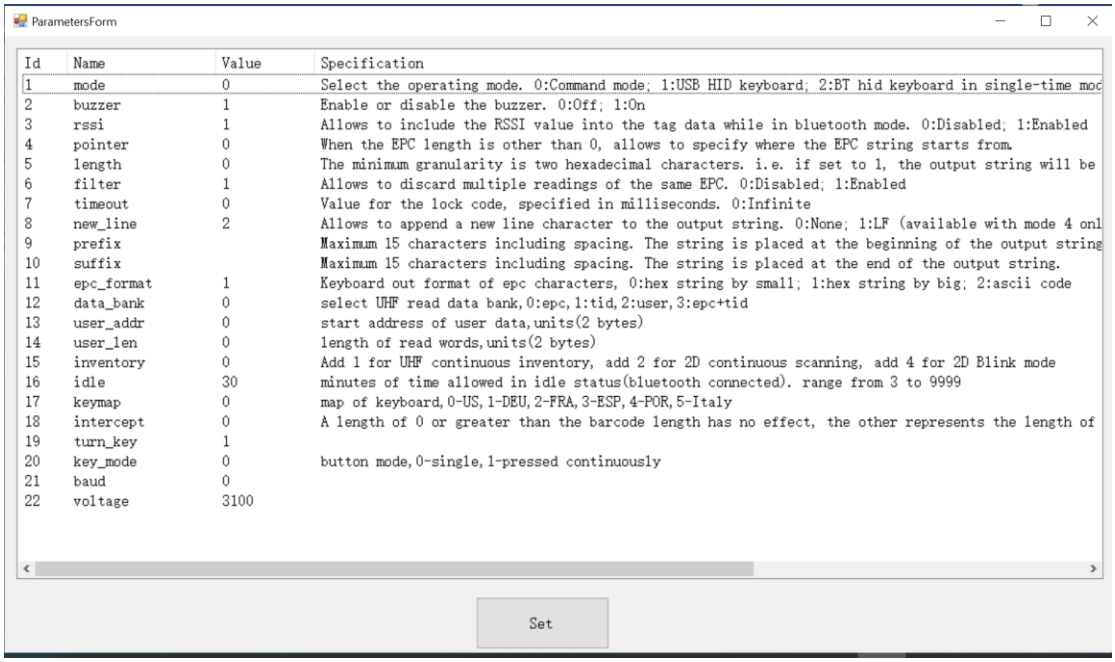
4.7 Buzzer

Choose open or ‘close’ , click the ‘Set’ button to enable or disable the buzzer; click the Get button to retrieve the current enabled or disabled setting.



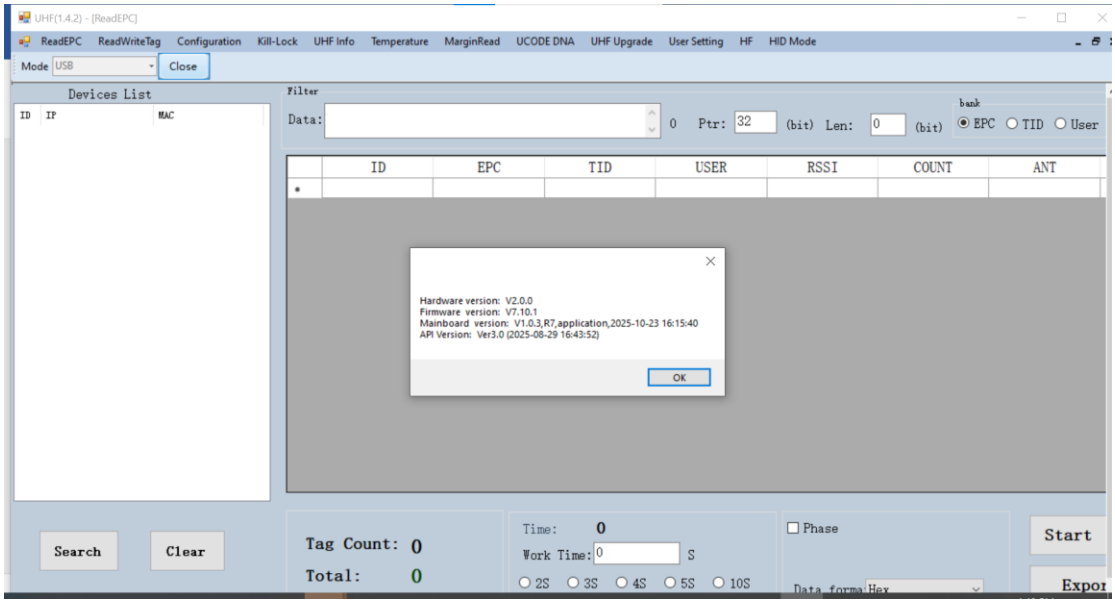
4.8 User Setting

Other special customization features can be configured in the user settings of the navigation bar; these features will not be discussed here. For assistance, please contact technical support.



4.9 UHF Info

Click on UHF Info in the top navigation bar to view UHF version information. (Note: UHF information in the image is for display purposes only; please refer to the actual parameters .)


UHF(1.4.2) - [ReadEPC]
ReadEPC
ReadWriteTag
Configuration
Kill-Lock
UHF Info
Temperature
MarginRead
UCODE DNA
UHF Upgrade
User Setting
HF
HID Mode
Mode
USB
Close
Devices List
ID
IP
MAC
Filter
Data:
0
Ptr:
32
(bit)
Len:
0
(bit)
bank
EPC
TID
User
ID
EPC
TID
USER
RSSI
COUNT
ANT
Hardware version: V2.0.0
Firmware version: V7.10.1
Mainboard version: V1.0.3,R7,application,2025-10-23 16:15:40
API Version: Ver3.0 (2025-08-29 16:43:52)
OK
Search
Clear
Tag Count: 0
Total: 0
Time: 0
Work Time:
0
S
2S
3S
4S
5S
10S
Phase
Hex
Start

Equipment Specifications

physical parameters	
size	Standard/Magnetic Version: 157.01mm x 85.22mm x 146.42mm Clip version: 157.01mm x 85.22mm x 162.41mm
weight	Standard version: 578g (including battery) Magnetic version: 590g (including battery) Clip version: 642g (including batteries)
Overall color	black
Battery	Specifications: 3.6V, 6700mAh , removable; with NTC and fuel
Communication interface	USB 2.0 Type-C
Adapt to phone size	Phone clip: Width 69-80 mm, thickness less than 22 mm Other: Related to phone cases and phone clips
buzzer	1, Support
indicator lights	Five indicators: power indicator, work indicator, BT connection indicator, WIFI indicator, and mode indicator.
Product Material	ABS, aluminum alloy
NFC pairing	support
Mobile phone mounting method	No phone holder (standard configuration) Magnetic suction (optional) Clips (optional)
Adapt to phone size	Width 68-86mm, thickness less than 11mm Other: Related to phone cases or phone clips
Usage Environment	
Operating temperature	-20 ℃ to 50 ℃
Storage temperature	-40 □ to 70 ℃
humidity	5%RH-95%RH (non- condensing)
Drop Specifications	Within the operating temperature range, all six surfaces can withstand multiple impacts from drops of 1.5 meters onto a concrete
Scrolling test	It can roll continuously for 1000 times at a distance of 0.5 meters, and still operate stably after rolling on all six contact surfaces,
sealed environment	IP 54 , meeting IEC sealing standards
Electrostatic protection	± 15 kV air discharge, ± 8 kV contact discharge
Data communication	
Bluetooth	BLE 5.0
WiFi (optional)	Dual-band 2.4G/5G, supports 802.11 a/b/g/n/ac/ax

Data collection	
Barcode scanning engine	SE4107; NLS-N1; NLS-EM3596
RFID UHF	Engine: Based on Impinj E-series chips Frequency: 920-925 MHz / 902-928 MHz / 865-868 MHz Protocol Standards: EPC C1 GEN2 / ISO18000-6C Antenna parameters: Circularly polarized antenna Maximum output power: USA: 36dBm (EIRP) EU: 35dBm (EIRP) China: 35dBm (EIRP) Power adjustment level range: 1-30, 1dB increments Impinj Gen2X： Supported

statement

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This document aims to provide users with instructions on using the R7 device. The information and guidance described in this document are based on our best knowledge and the circumstances known to the authors at the time of writing. However, please note that the content of this document may become outdated due to device upgrades, evolutions, or other changes. We will strive to ensure the accuracy of the information in this document, but we cannot guarantee its completeness, accuracy, or timeliness.

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