# UHF Demo For Android

# MODEL: MUBR01

# instructions

# Version

# 1.0

# Version

| date | Alter | principal | version |
|---|---|---|---|
| 2016.9.30 | original version | | 1.0 |

# Directory


**1 sketch** ..... 4

**1 bluetooth reader demo** ..... 4

**2 serial or network reader demo** ..... 4

**2 install apk** ..... 4

**3 Apply** ..... 5

**3.1 Connection** ..... 5

**3.1.1 connect to bluetooth reader** ..... 5

**3.1.2 connect to general reader** ..... 8

**3.2. Inventory** ..... 11

**3.3 Single tag opration** ..... 15

**3.3.1 read tag memory opration** ..... 17

**3.3.2 write tag memory opration** ..... 18

**3.3.3 lock opration** ..... 19

**3.4 Primary Setup** ..... 21

**3.4.1 Inventory time and interval** ..... 21

**3.4.3 region and frequency** ..... 24

**3.4.4 Gen2 option** ..... 25

**3.4.5 addition data** ..... 25

**3.4.6 quickly mode** ..... 27

**3.4.7 bluetooth active mode config** ..... 28

**3.5 System menu** ..... 30

**4 development on android system** ..... 31

**1 import the package into project：** ..... 31

**2 power opration** ..... 31

**3 connect to UHF reader** ..... 31

**4 set power** ..... 32

**5 read multiple tags** ..... 32

**5 write epc and alter epc len** ..... 33

**6 write any bank** ..... 33

**7 read any bank** ..... 33

# 1 sketch

Latest, android system is applied by users with strong capacity, more functions and beatiful form. Usually been used in cellphone,hander set and pad as mobile set. Along RFID technology develop,the market happened more and more product been compact rfid and mobile set. There are two demos in android for our Company product by different communication way. Introduce them respectively.

## 1 bluetooth reader demo

Software name：Module_Android_BlueDemo

function：be used show how the bluetooth reader work(rfid oprations)

request：a android system set on 4.3 or above，only blue2.0 communication is supported under 4.3. a bluetooth reader(optional blue2.0 or blue4.0 BLE）

## 2 serial or network reader demo

Software name：Module_Android_Demo

function：control UHF module to execute rfid opration on android system set

request：a android PDA with UHF module,or a android PDA and UHF reader in LAN.

# 2 install apk

Copy apk to the andorid set,according to UHF reader install Module_Android_BlueDemo.apk or Module_Android_Demo.apk。

Note:give all the system right that request，apk would access to serial port,network or bluetooth on different communication way.so that give apk the rights been related to.install bluetooth demo according to andorid system version.(BLE supported on or above android 4.3)

# 3 Apply

The bluetooth reader and general uhf reader have the same work or not. The bluetooth reader has two work mode.（Active and Passive），Passive mode is like as general reader but different communication way.

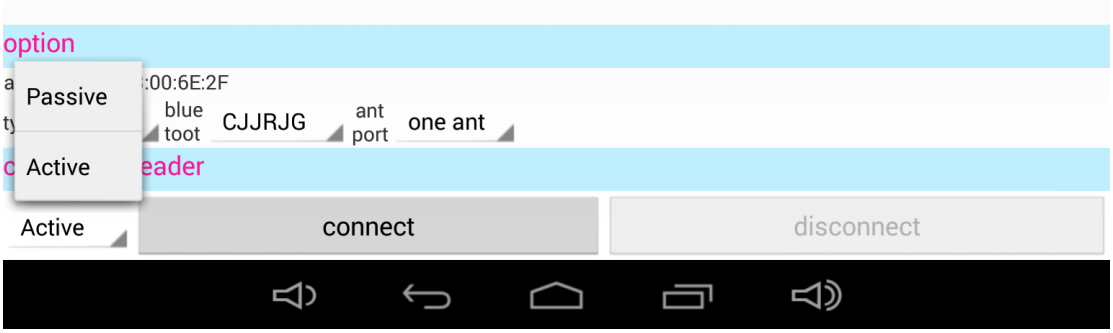
## 3.1 Connection

### 3.1.1 connect to bluetooth reader

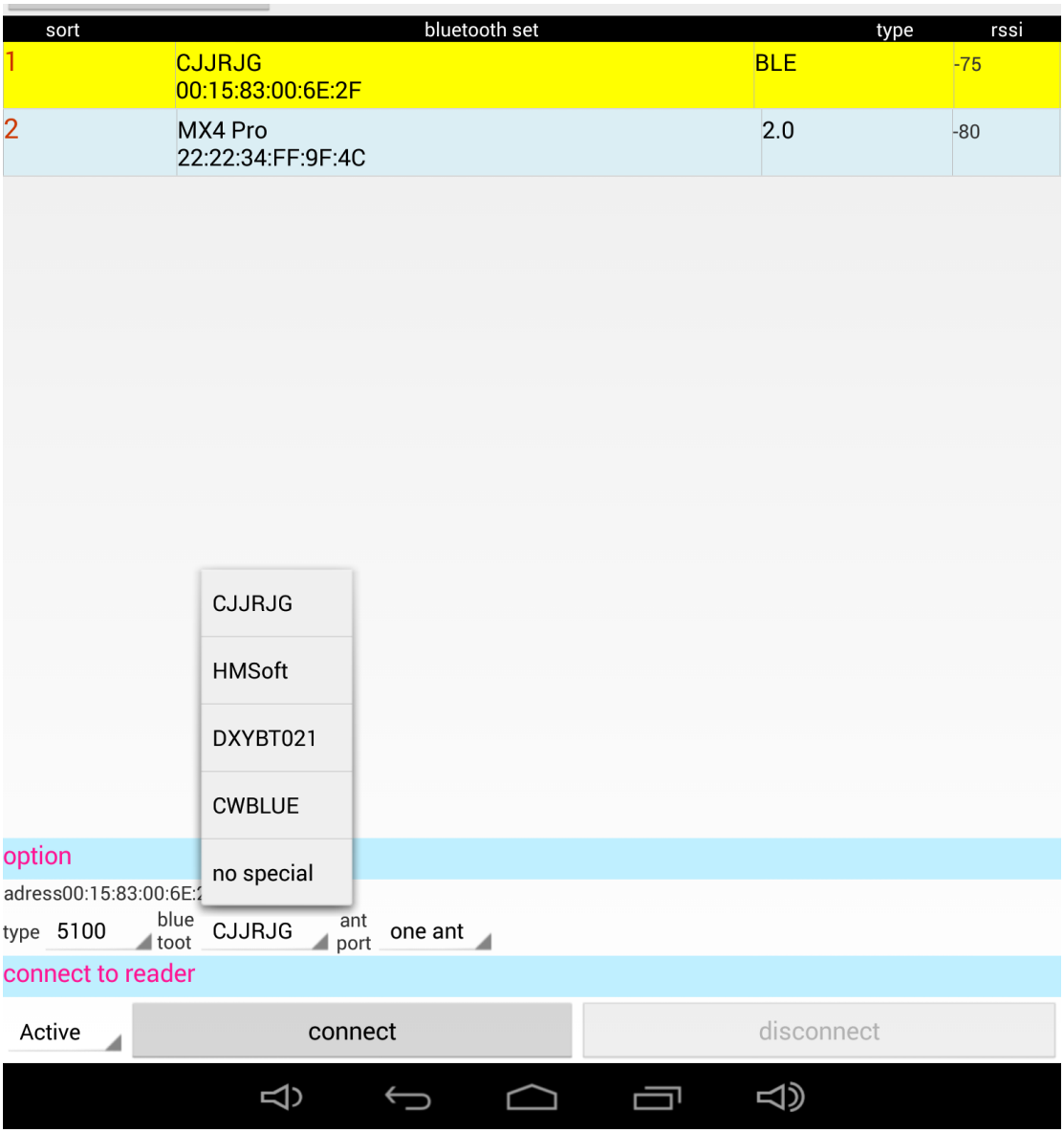
Open the apk,then this enable the bluetooth set, window as follow.

There are two work modes.passive mode and active mode.once connected in passive,is the same as usual uhf reader work,uhf reader works by the read,write and lock command that send by user. Active work mode is that press on the button on the reader to read tags after you connected it. Then the andorid set only need to receive data from bluetooth reader.

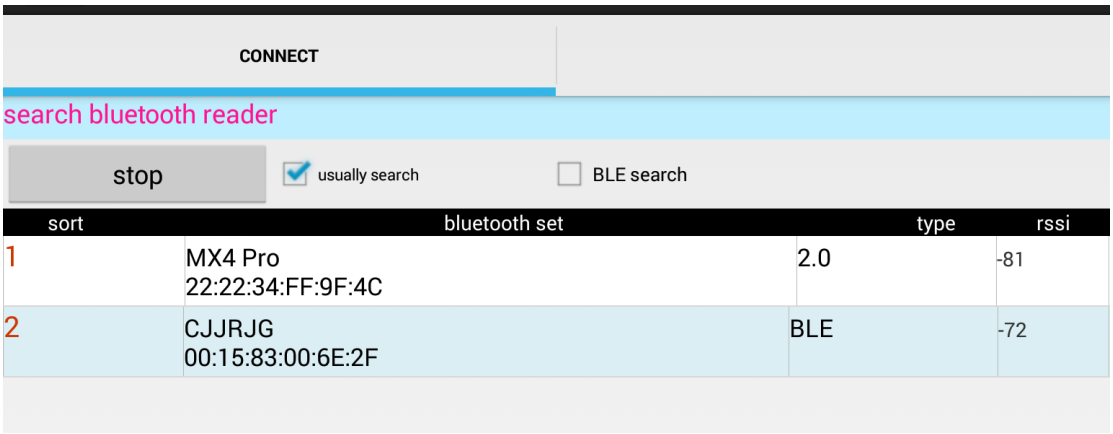
Select work mode show,



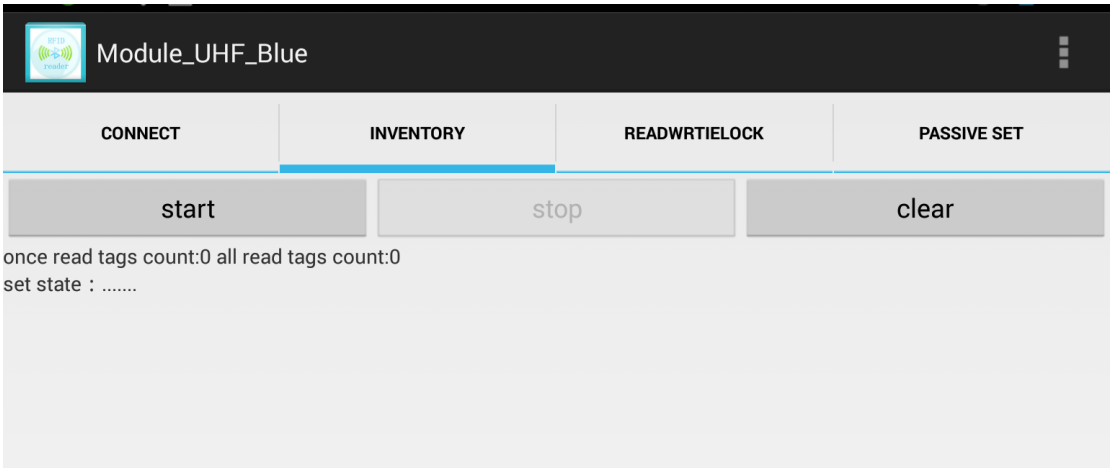

Bluetooth module choose：only for blue 4.0 BLE.default,that is CJJRJG module. Choose it you using in infact, if the bluetooth module is not in that select no special to set UUID.




Select one of them,click connect button.



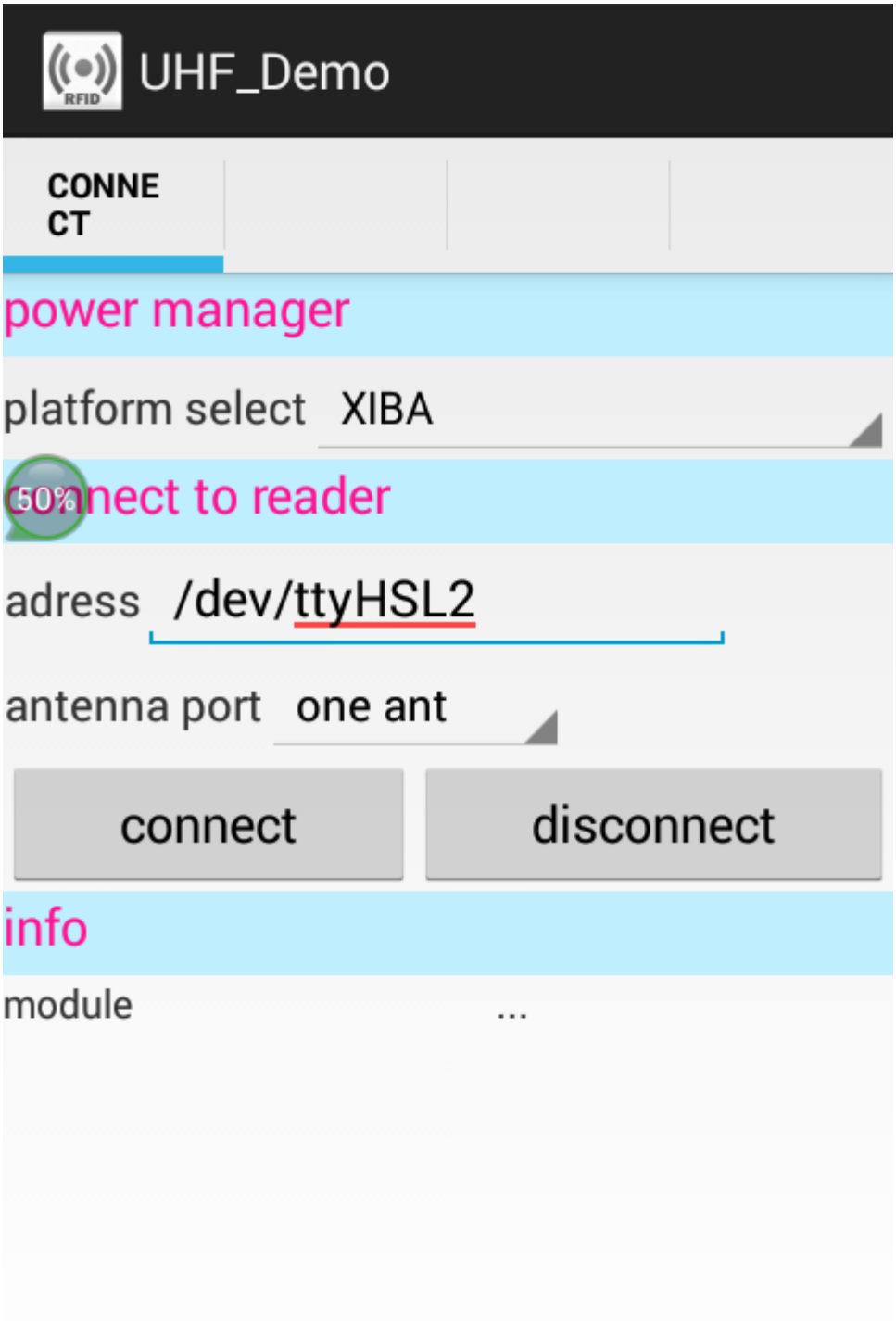

For bluetooth reader passive work way,it could be cost serveral seconds.it would jump to Inventory page as follow:




There is no ReadWriteLock page if select the activie mode. As follow：

### 3.1.2 connect to general reader

When connect to general reader(serial or network),then show as.



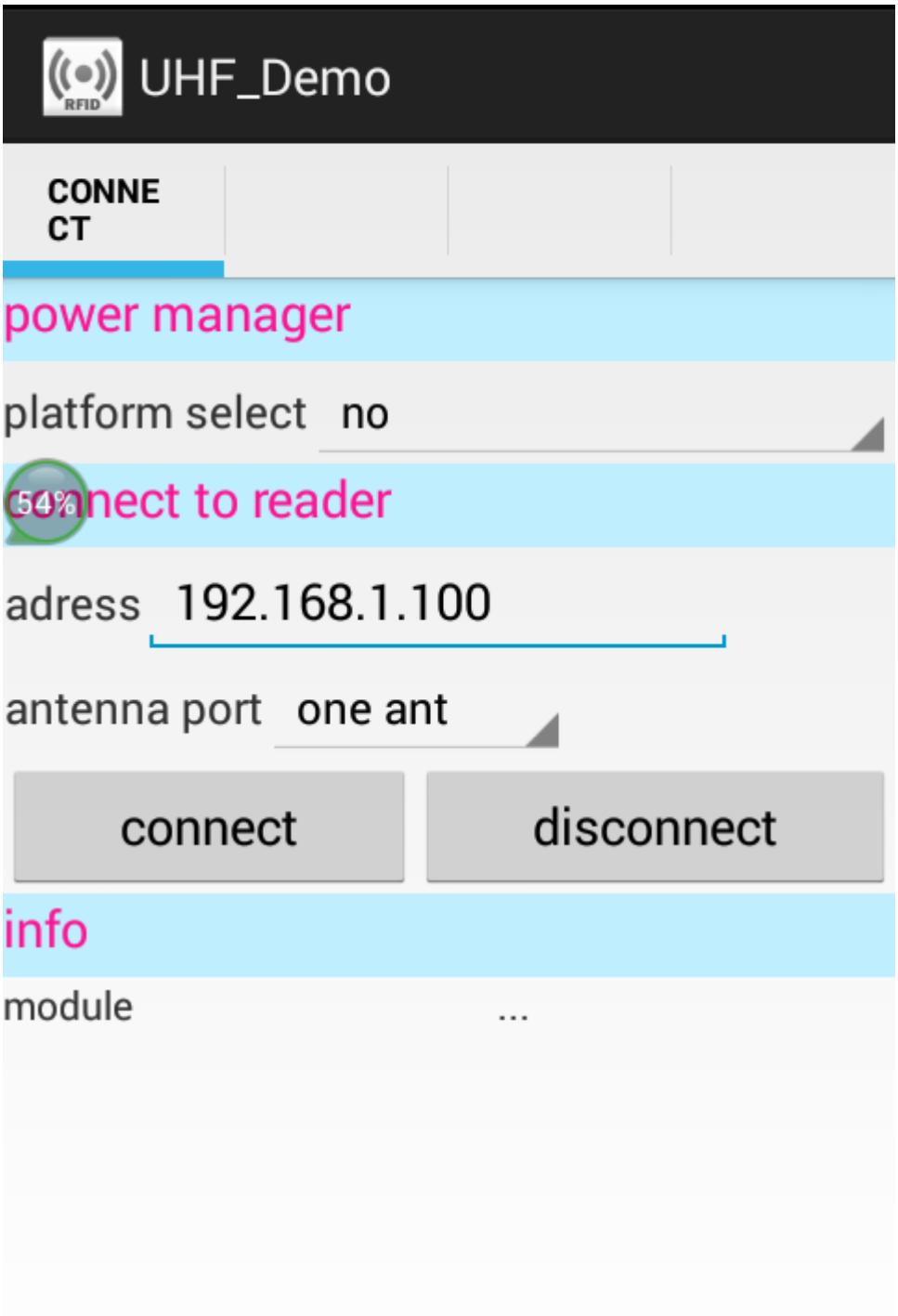

Power manager：if the PDA install UHF module and support power control.then manage the power according to PDA type. Must select right PDA type to power UHF moudle. If PDA type is not in the list , select none. all network rfid readers select this.

address：UHF module serial port or ip,（select one of type list would auto show the

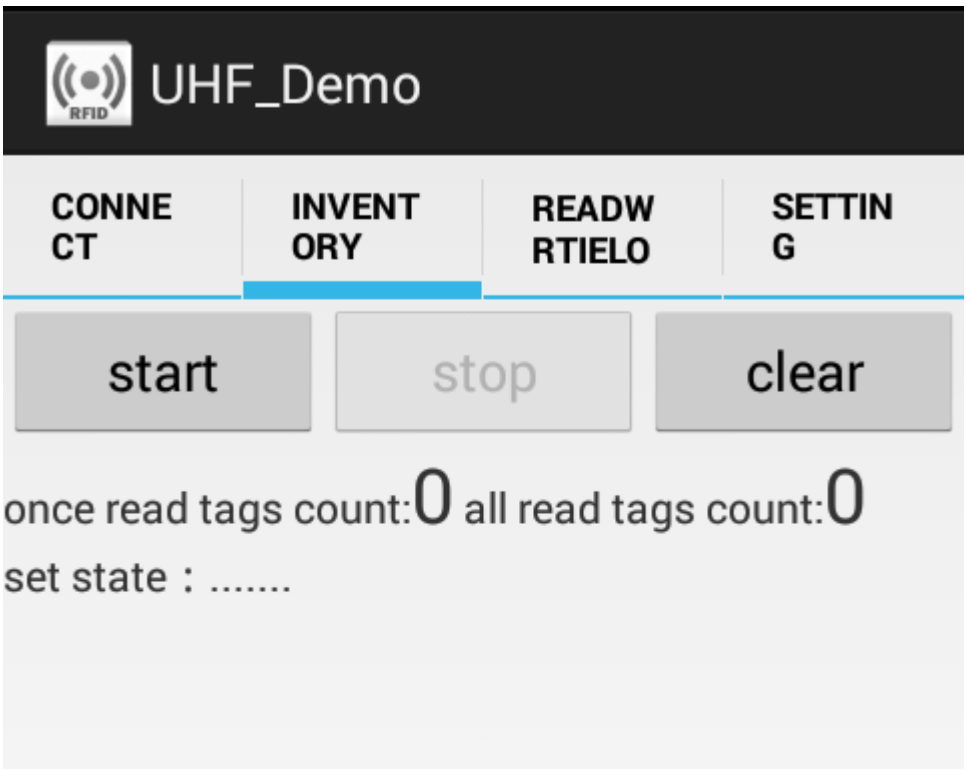
address）

antenna port：that is number of antenna ports to connect antennas. The UHF module in PDA is almost one antenna port.

If connect to network reader,it is no power manager. Only input its ip address,as follow:

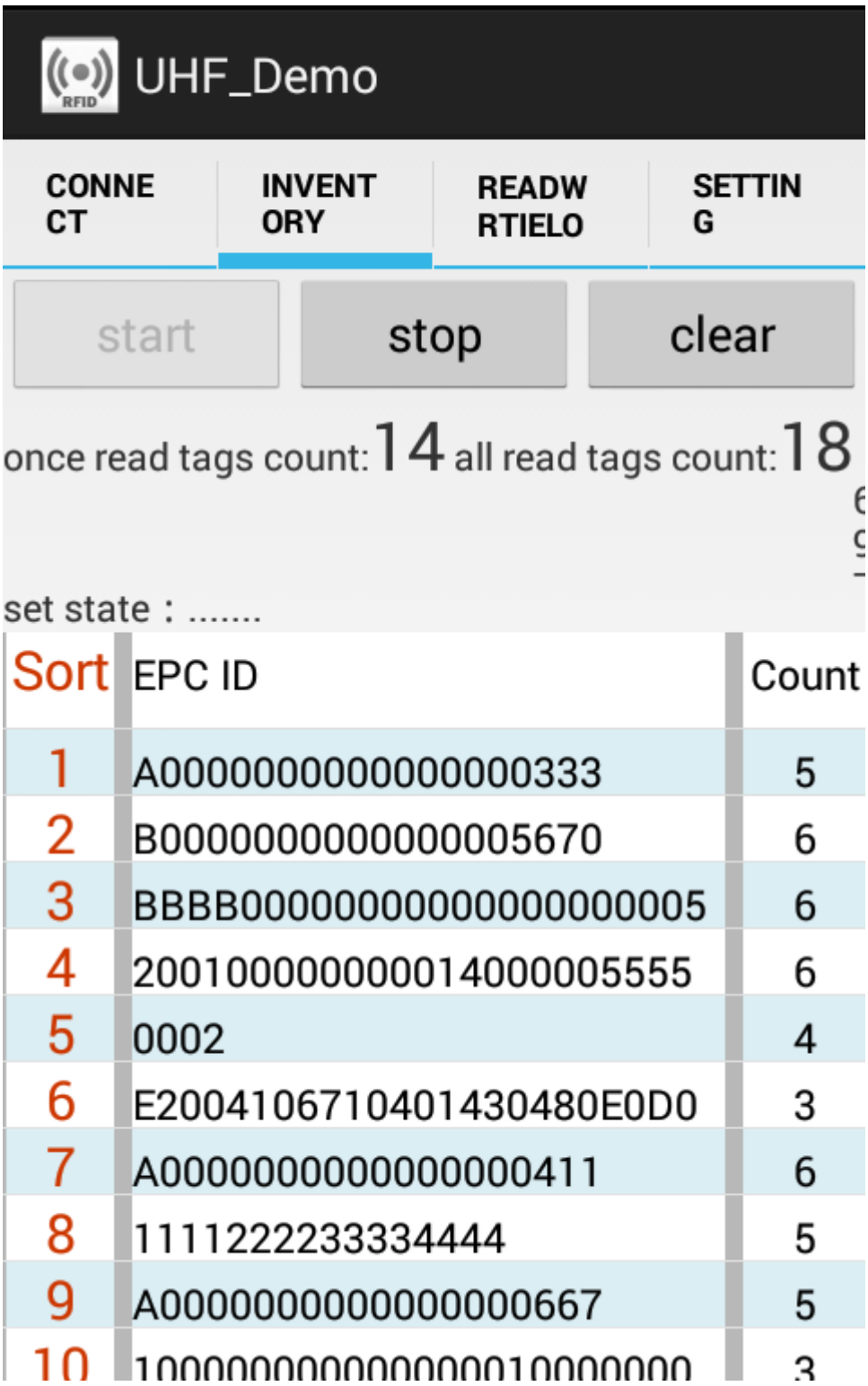


Click to connect,if success it would show as:

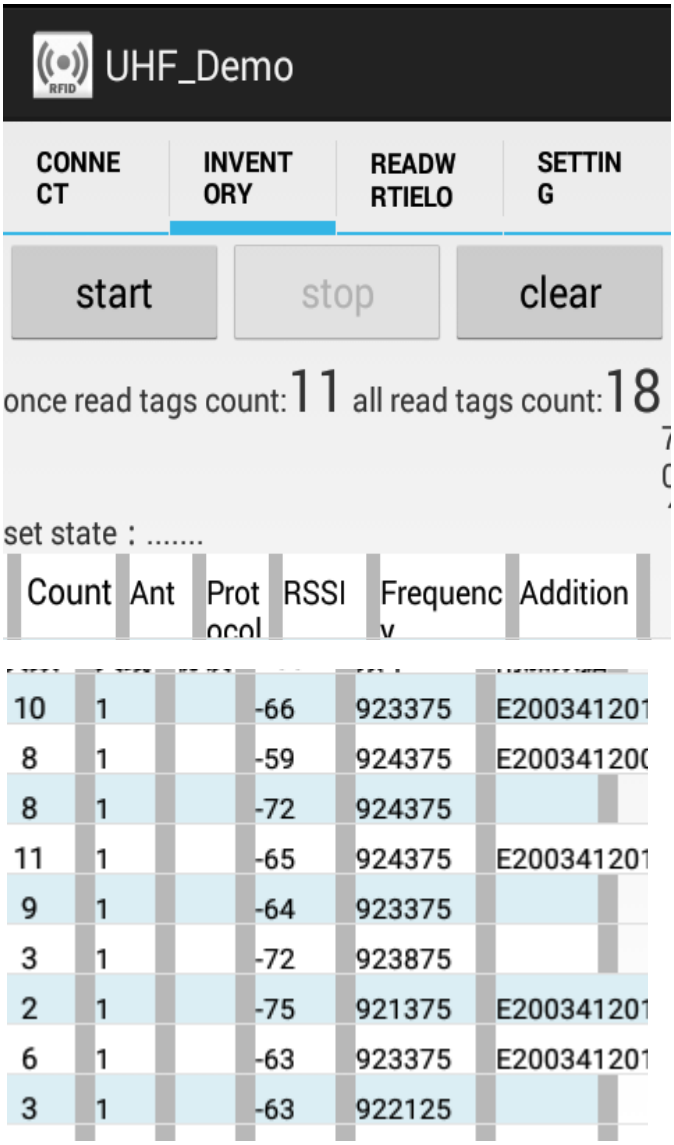



## 3.2. Inventory

In Inventory page，click the inventory button. It would list epc id of tag when is read and read count of each tag is adding. Slide the screen would get more info about tag.




besides，the read tags contain antenna id,RSSI,frequency and addition data and so on. Addition data must had been set,as bank,start block and byte count(1 block equal to 2 bytes)




Factors impact effect about inventory are power,gen2 session value,region and frequency. The read timeout and interval affects the speed of inventroy.

General reader and bluetooth reader in passive mode are the same on inventory page, there are only epc id and read count avaible default in active mode of bluetooth reader. For show other items of tag, choose some you want return items of tag on active setting page.

The active inventory page as follow,press on button on bluetooth reader,then the bluetooth reader would up load data to andorid set when read in time.

Module_UHF_Blue

CONNECT | INVENTORY | ACTIVE SET

start | stop | clear

once read tags count:1 all read tags count:7

set state：.....

| Sort | EPC ID | Count | Ant | Protocol | RSSI | Frequency | Addition |
|---|---|---|---|---|---|---|---|
| 1 | E20083191904011116007016 | 5 | 1 | | 0 | 0 | DE9F3000E200831919040111 |
| 2 | 000000000000000000000642 | 1 | 1 | | 0 | 0 | CF8D30000000000000000000 |
| 3 | 1111222233334444 | 6 | 1 | | 0 | 0 | C2412000111122223333444 |
| 4 | E20083191904011116007012 | 1 | 1 | | 0 | 0 | 9E1B3000E200831919040111 |
| 5 | E2806810000000390A54D57B | 1 | 1 | | 0 | 0 | A2173000E280681000000039 |
| 6 | E2806810000000390A54D505 | 1 | 1 | | 0 | 0 | 3D4E3000E280681000000039 |
| 7 | E20083242419021113708B05 | 1 | 1 | | 0 | 0 | FEA33000E200832424190211 |

## 3.3 Single tag opration

This opration page is of general reader or bluetooth reader in passive,but is no in bluetooth reader in active.

Genral opration is read,write ,lock.

Gen2 tag is divided into 4 banks：

reserver bank　save password。0,1 block save kill password， 2,3 block save access password

EPC bank　epc id，epc code（Electronic Product Code,Unified item code of internel of things in global），generally 96 bits ,6 block in all，or 64 bits。Support 496 bits extends，first two blocks are，check block and pc block（pc show epc length）。Note that，write and read start to second block,6 block in all.

TID bank　written by suppiler and can't be write again,read only.　General is 64 bits，96 bits，is the identification of tag.

USER bank　is for user save their data，read and write supported, start 0 block

GEN2 tag bank opration, read tag data is hexadecimal chars，is hexadecimal chars and length must be 4 or 4 multiple too.

reserver bank and user bank could be read and write.　0~1 block is kill password,2~3 block is access password.

EPC　bank start to second block,could be read and write.　0 block is pc, 1 block is crc.　2~6 block is epc id

reserver 0~3 block　4 blocks in all

epc 2~8 block　6 blocks in all

user　0~31 block　32 blocks in all

tid 4 blocks or 6 blocks

filter function：

should be specified a tag when to read,write or lock. If not ,please ensure only one tag

in the antenna cover.

Filter data：general is epc id

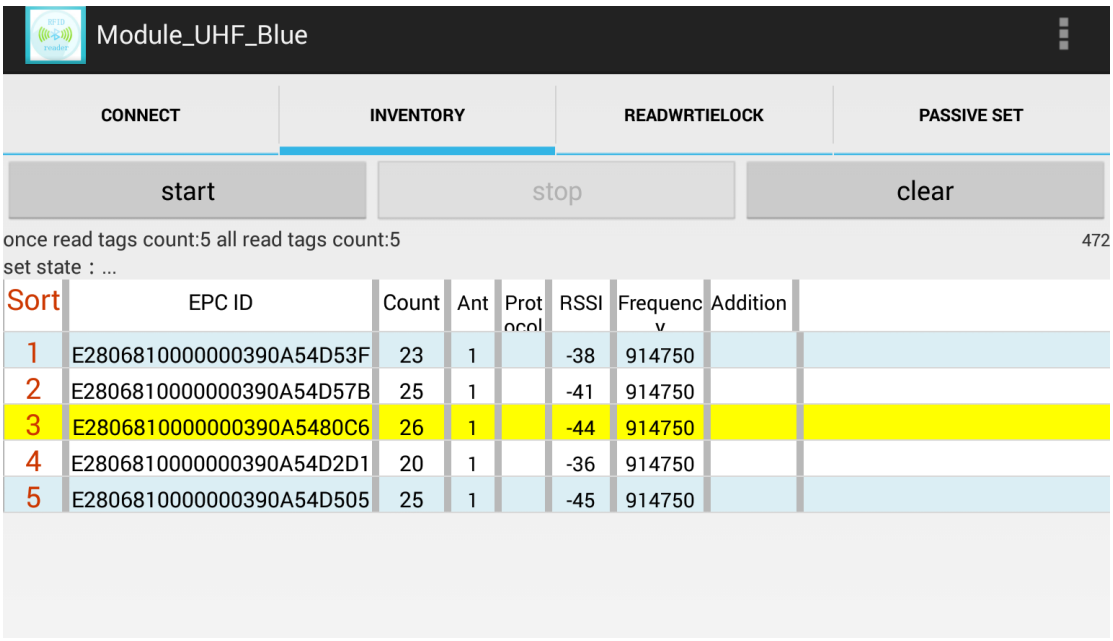
Start address：unit in bit，epc bank is start to 2 block，as 32 bits

match：is that match is find tags which match the filter data,not match is find tags which not match the filter data.

enable：last，if want to filter tag,must enable it.and disable it when need't filter tag.it would affect inventory tags.

example：read tid bank according to epcid.

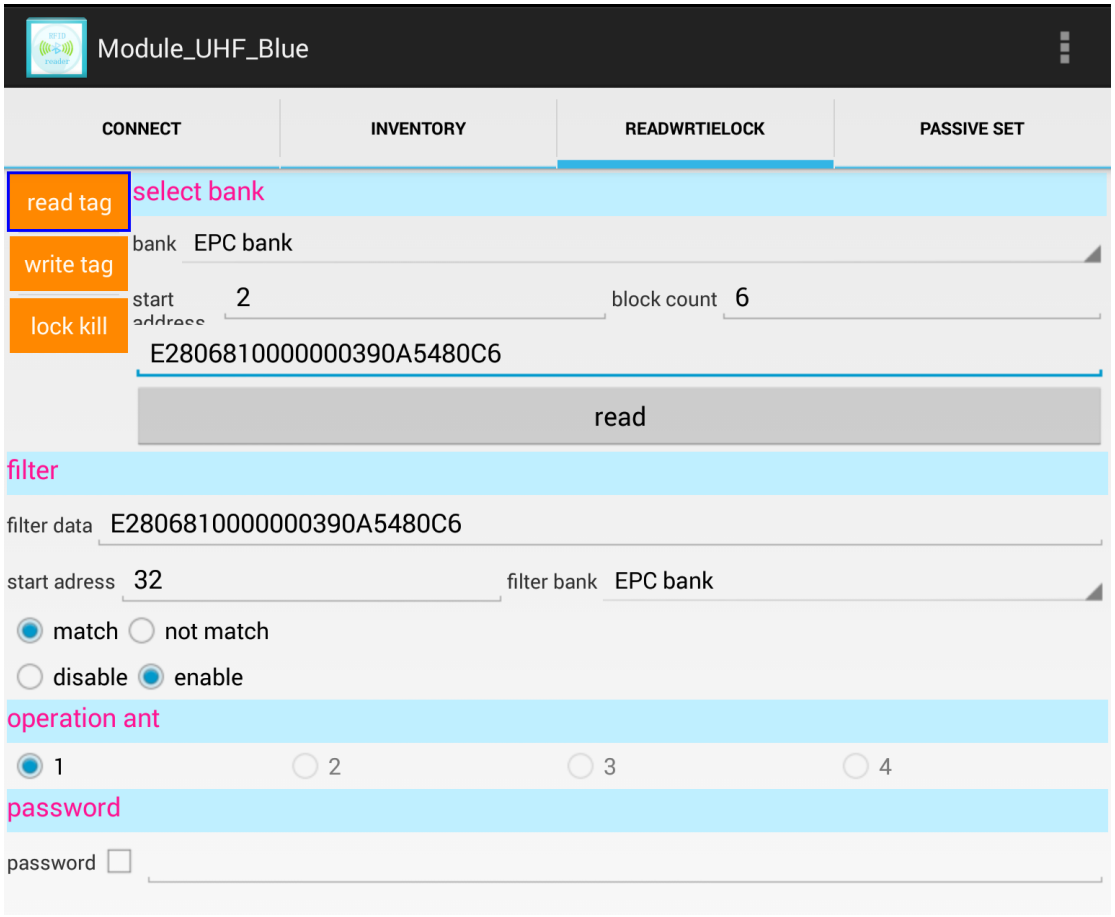
1 select one of tags after inventory：




2 then select the read write lock page,read tid bank according to tag had selected：

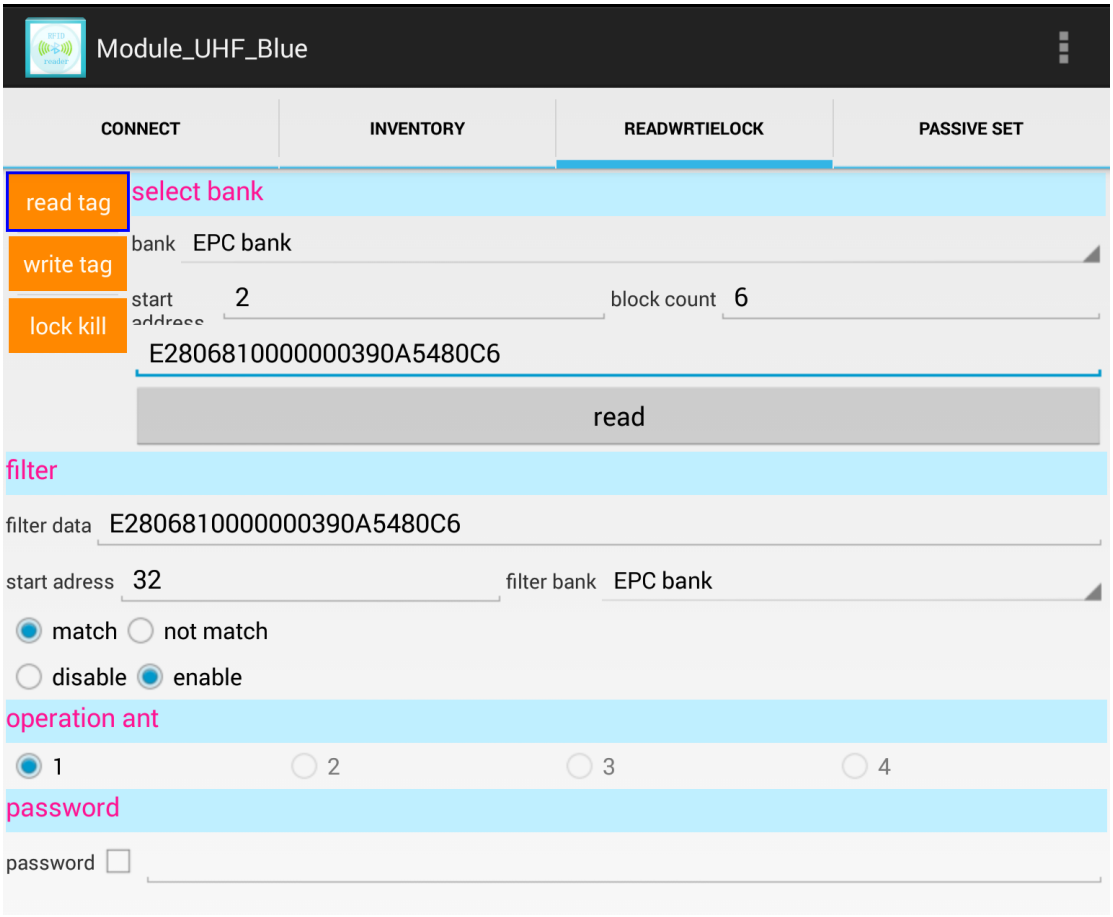
read memeny opration

Such as： read epc bank， start second block, 6 block together， the picture show




### 3.3.1 read tag memory opration

Such as：read epc bank，start second block, 6 block together，the picture show.




### 3.3.2 write tag memory opration

There are two ways to write data for tag. One is write tag memory in block of all bank(except tid bank),it only alter data in block. Other is write epc,only for epc bank.that is start to 2 block and affecting inventory.

Such as：write access password into reserver bank，start second block with 00000001

### 3.3.3 lock opration

Lock is that make to write epc or user bank must be with password. For reserver bank which had locked can't been read or written except with access password.

Must write password in block in reserver bank before lock.（see last section about write tag）。

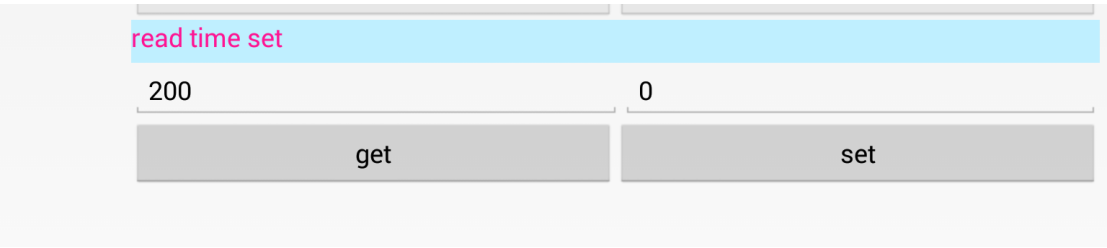
Lock bank then could't been write data into epc again without access password,as follow.

Only tick the password checkbox that could write successful again.

## 3.4 Primary Setup

UHF module configs are more,and must know about RFID. There are some primary setting to introduce about general setting. That is introduce bluetooth reader in active other sections.

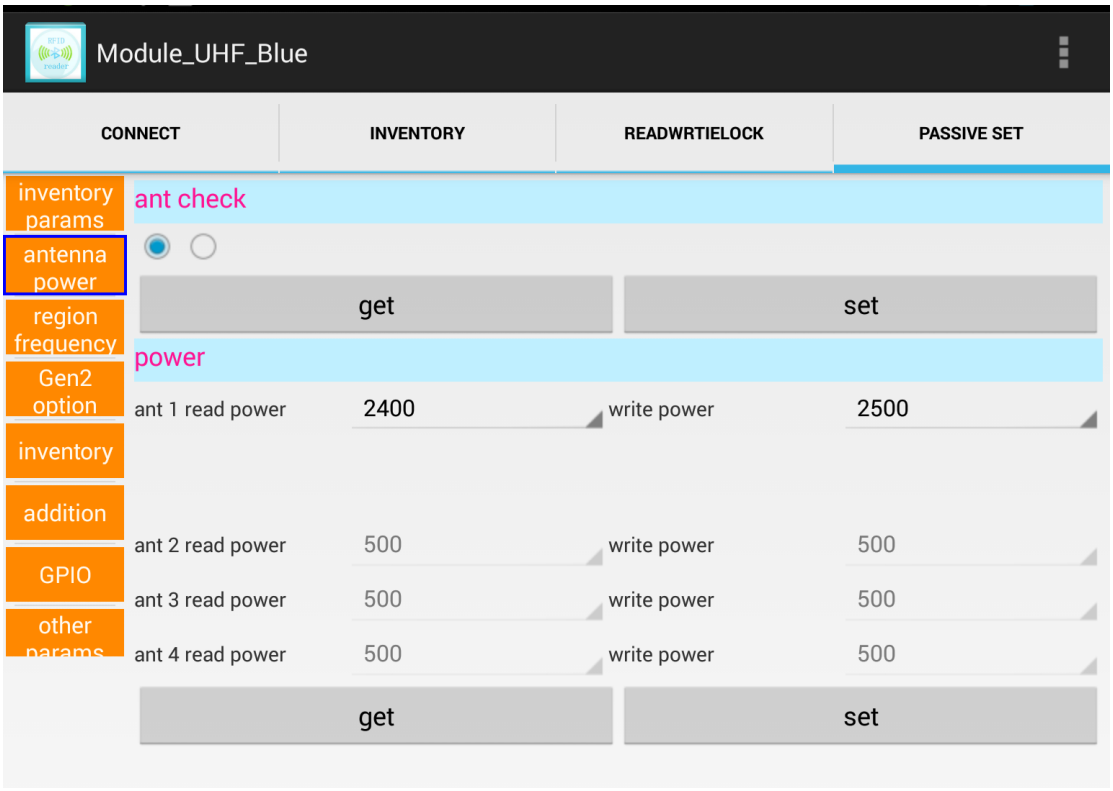
### 3.4.1 Inventory time and interval




Inventory time：200 show 200 milliseconds，that return result after 200 milliseconds

interval：0 special the time bewteen twice read，is set by program not uhf module.

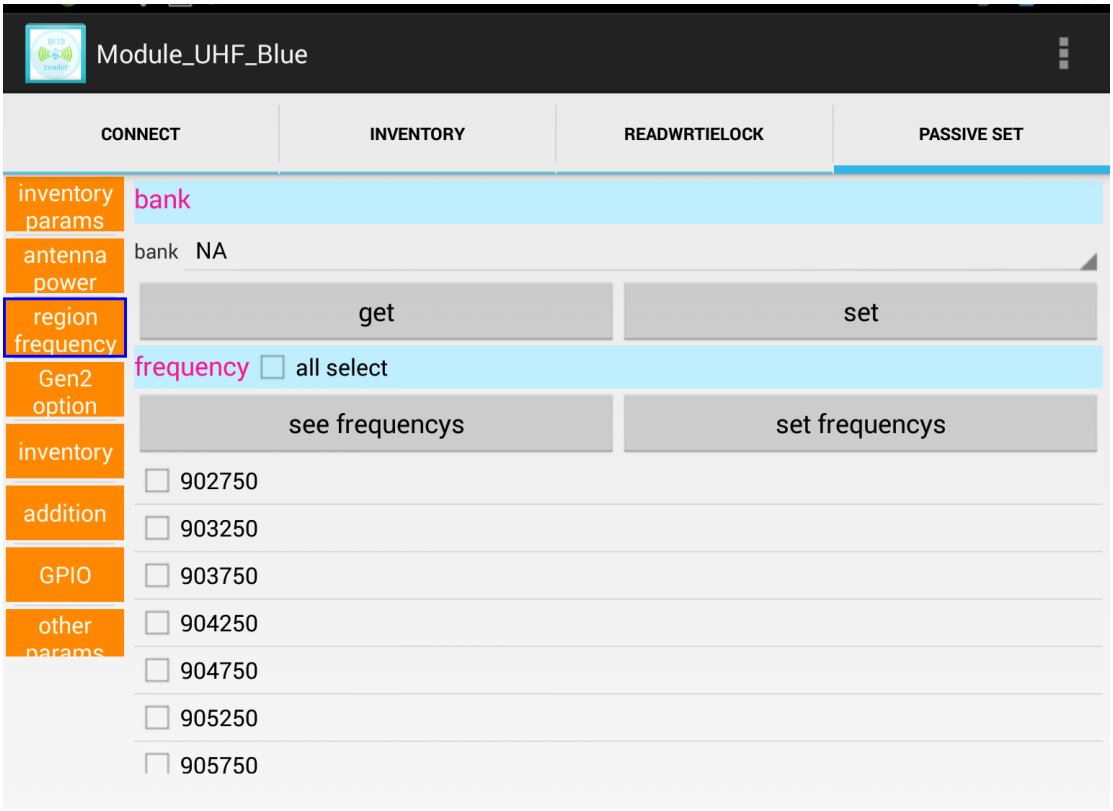
### 3.4.2 antenna power




Different power range according to UHF module. It would return failed when is out of range.Besides, some UHF module request the read power as same as write.

### 3.4.3 region and frequency

Set region first,then set frequencys of the region.



### 3.4.4 Gen2 option

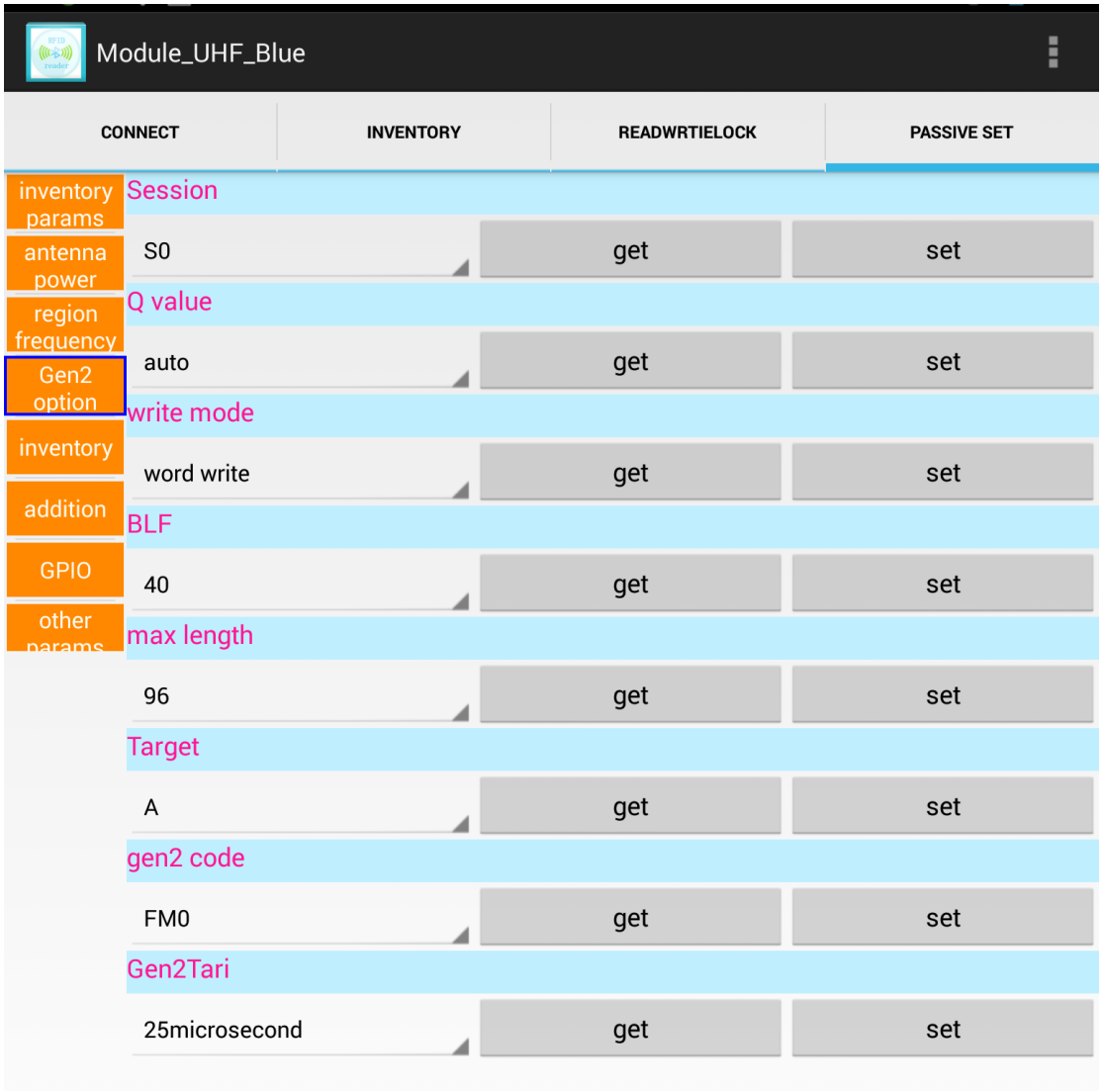
Gen2 option config,these configs affects read Gen2 protocol tags. Usually,it not set except the user know about gen2 protocol.

Session option

S0 read tags quickly,but fit for less tags,usually less than fifty.

S1 fit for more tags

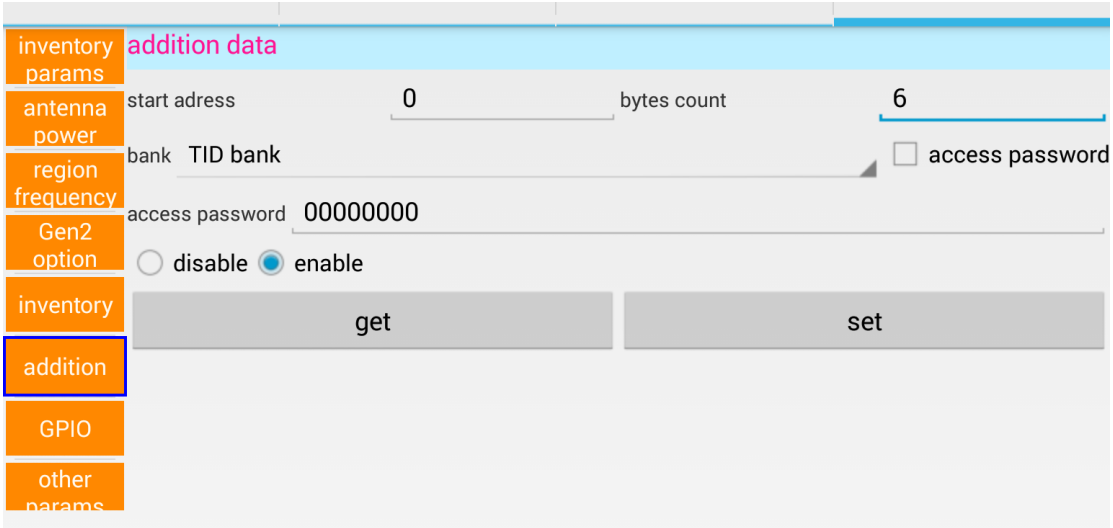
S2，S3　read tags of special signed，see the Gen2 protocol for more



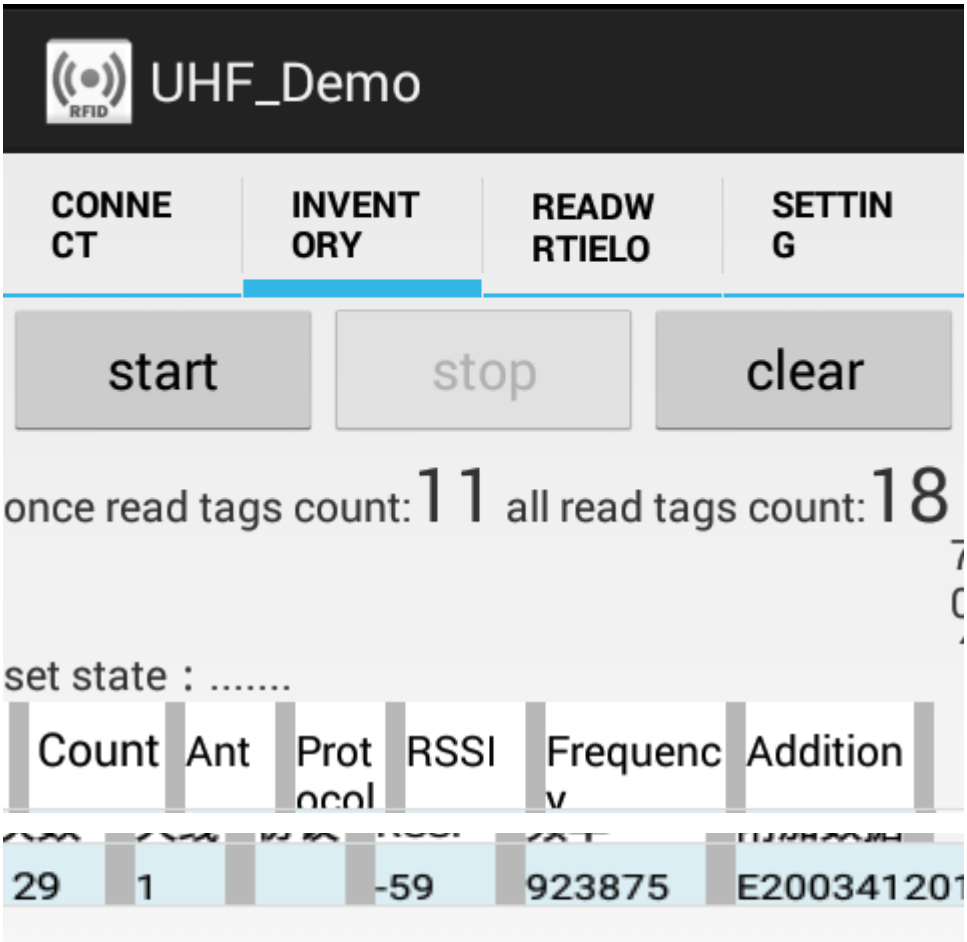

### 3.4.5 addition data

Some UHF module of function that is read tag's bank when being inventory Epc id. example，set for addition data:read tid bank, start address:0 byte count:6 ,then choose

enable radio,click set button.

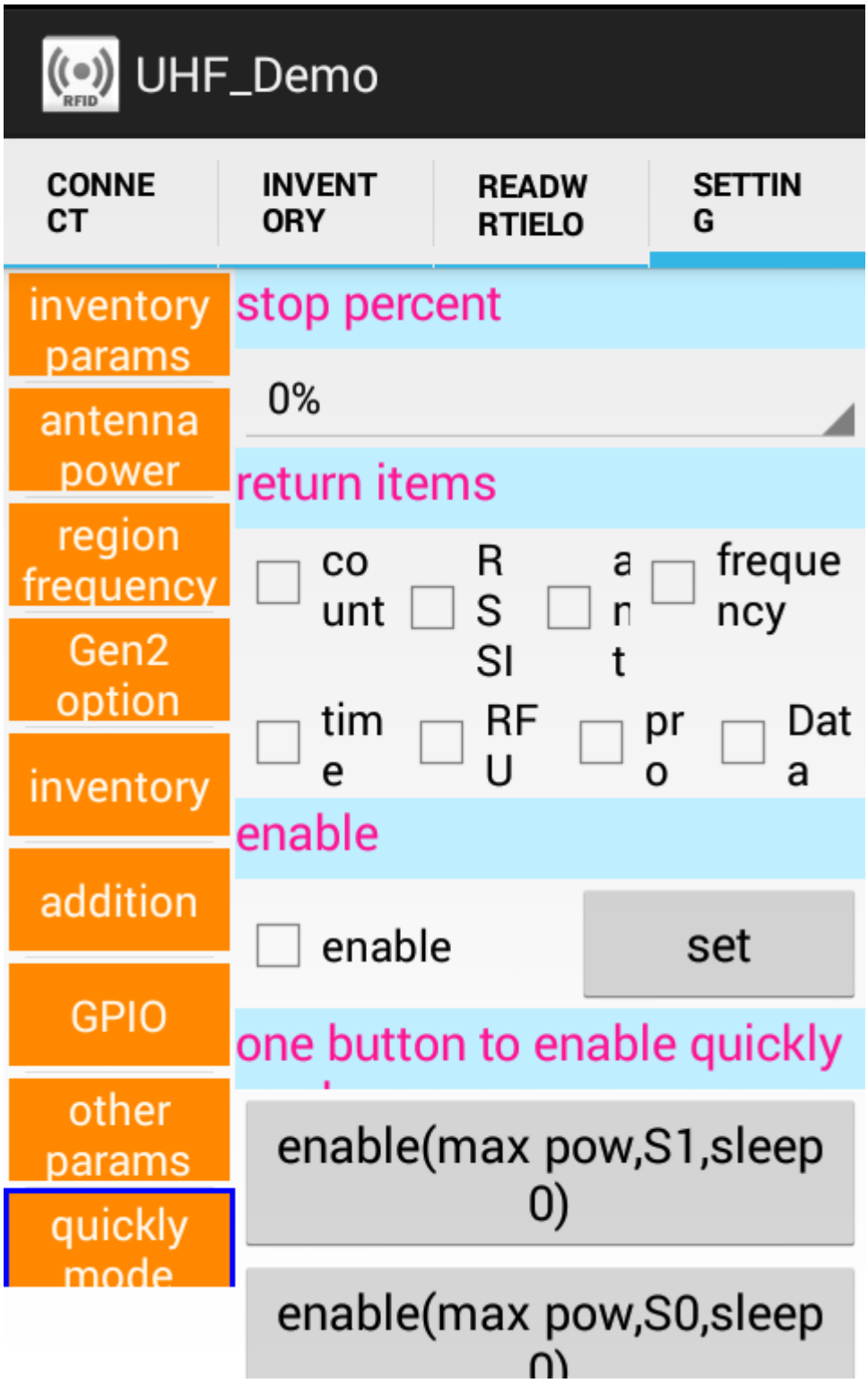



2 could get the addition data after config



### 3.4.6 quickly mode

1200 moudle support quickly mode，to promote the speed of inventory tags,but module temperature will rise soon. Keep heat dissipation.




Sleep percent：sleep percent in work period time range:0%~50%。Default 0%

Return items of tag：return the items by custom . Return epcid default, return addition Data item that is set.

Enable quickly mode，check the checkbox and click the set button

Could click button,A key configuration is to set too.enable(max power,session1,interval 0), is used to read more tags,or “enablie(max power，session0，interval 0)button is user to read less tags.

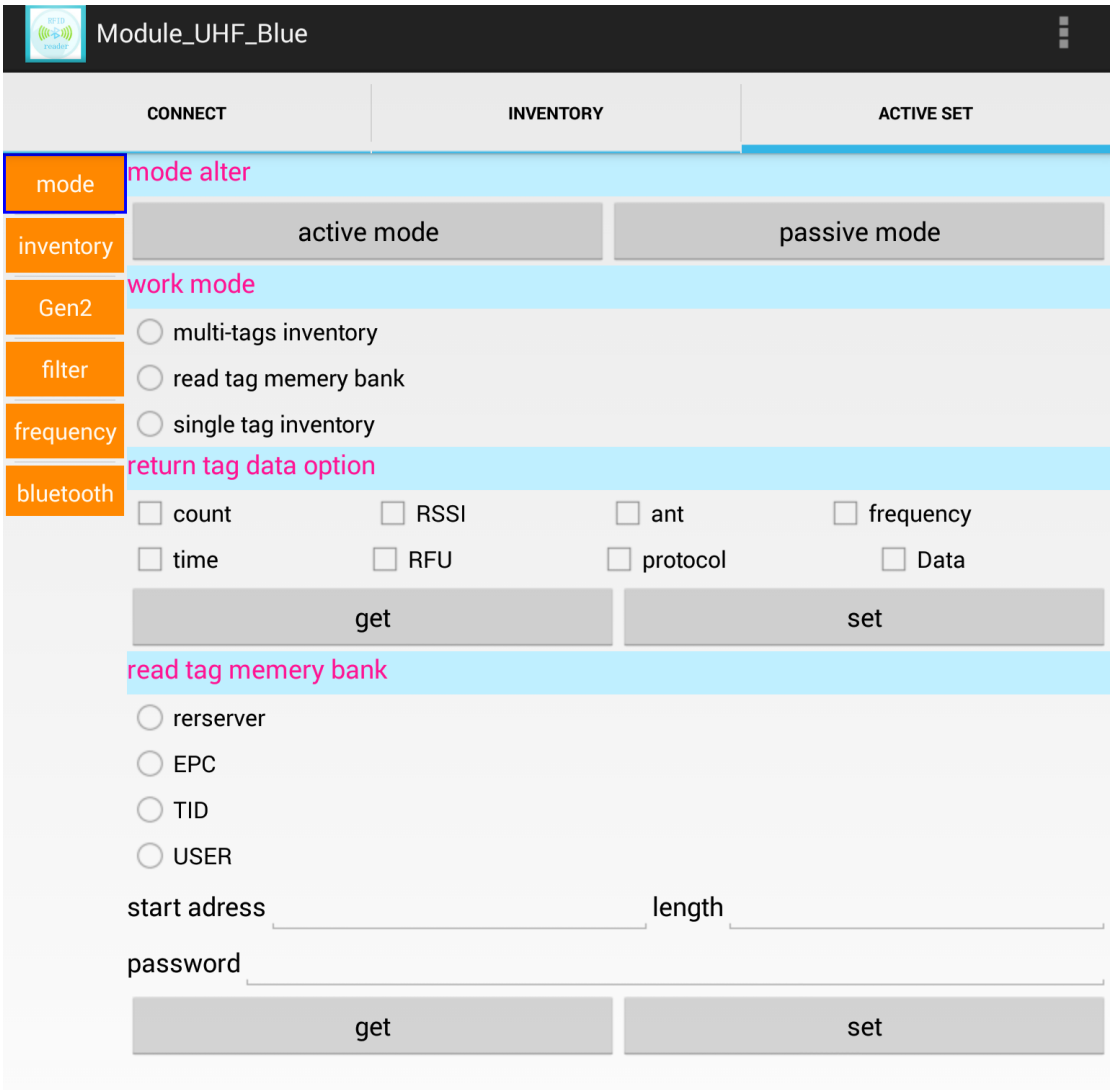
### 3.4.7 bluetooth active mode config

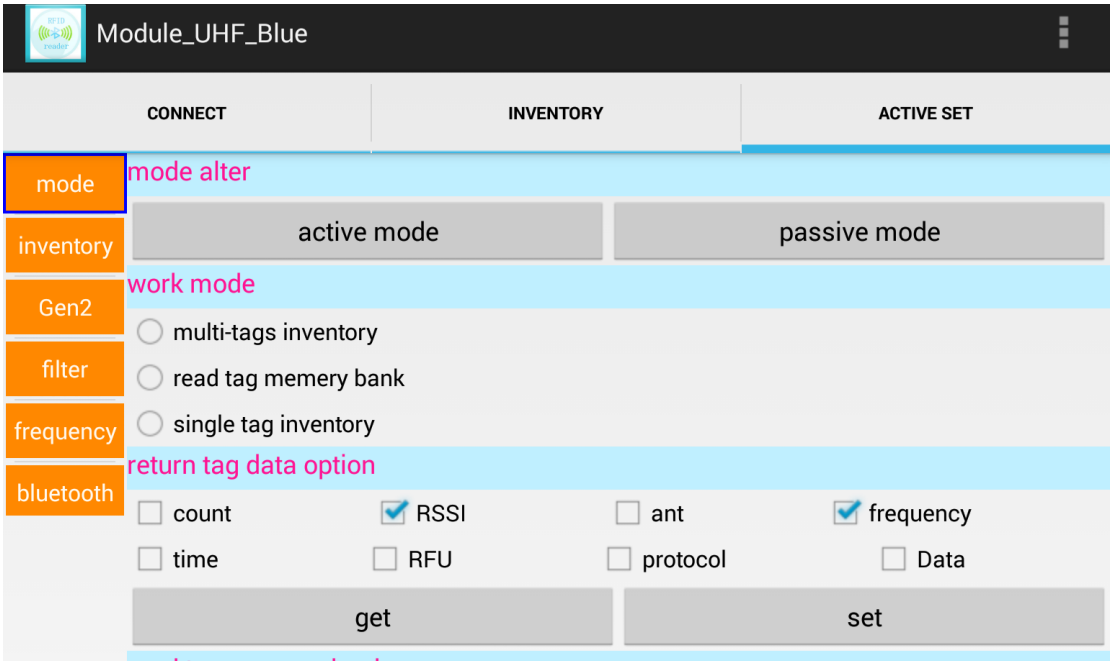
Bluetooth active mode config be set before working that is put on button on reader. Once set,avaible along.

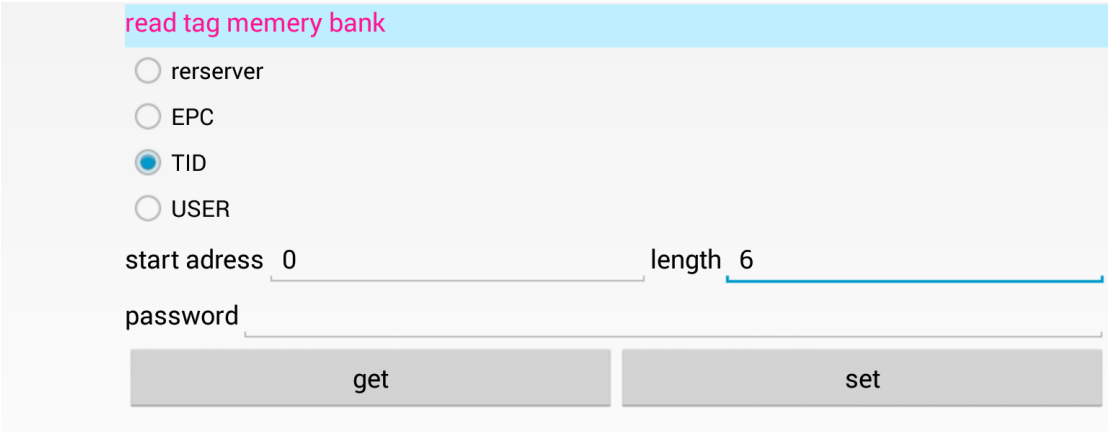
Note：once start active work that is put on the button to read tags. Bluetooth reader is always on the active work ready state and no respone any config command. If want to config it again must reboot bluetooth reader, then use apk to config it.

Frame is set 20 of frame data length and 100 of frame time in System config.

Except mode and bluetooth configs,it is the same as general configs,there is introduce to work mode setting.


Module_UHF_Blue
CONNECT
INVENTORY
ACTIVE SET
mode
inventory
Gen2
filter
frequency
bluetooth
mode alter
active mode
passive mode
work mode
multi-tags inventory
read tag memery bank
single tag inventory
return tag data option
count
RSSI
ant
frequency
time
RFU
protocol
Data
get
set
read tag memery bank
rerserver
EPC
TID
USER
start adress
length
password
get
set


Module_UHF_Blue
CONNECT
INVENTORY
ACTIVE SET
mode
inventory
Gen2
filter
frequency
bluetooth
mode alter
active mode
passive mode
work mode
multi-tags inventory
read tag memery bank
single tag inventory
return tag data option
count
RSSI
ant
frequency
time
RFU
protocol
Data
get
set

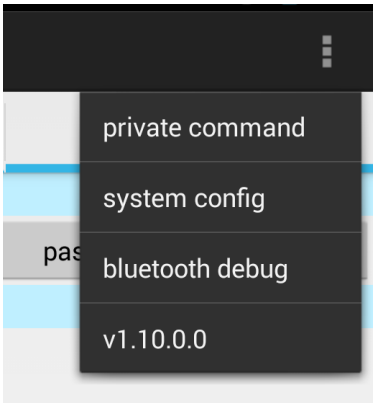



Work mode：there are multi-tags inventory, tag memory read and single tag inventory work mode to choose. If in many tags,it be select multi-tags inventory mode,if one tag and speedy,choose the single inventory. If read tag other bank choose tag emey read mode that user must specify bank ,start block and block count. Return data is specified user too,check the checkbox relative to item you want,like as RSSI ,frequency.

example：to set that，read tid bank，from 0 to 6 block. After connect to bluetooth reader,it is into active mode setting page. Select read tag bank,ignore return items if no need. Click set button at last. Example,read tid bank, select tid bank ,input 0 in start address, input 6 in length,input 0 in password. Click set button.

## 3.5 System menu

Click top right or put on menu key to jump system menu.




For system config, could save all current params.

For current software version

# 4 development on android system

## 1 import the package into project：

ModuleAPI_Android_xxxx.jar,Module_Android_DemoPower_xxxx. jar package.

libModuleAPI_Android.so lib.

Otherwise, import the power lib for different platform, like as：DeviceAPIver20150906.jar hitownsdk.jar or trinea-android-common.jar

Such as platform type：

CW：DeviceAPIver20150906.jar and libDeviceAPI.so

Other platform：libparts.so libscan_jni.so libserial_port.so libserial_port_idata.so

## 2 power opration

Pass the pad type，such as IDATA

public RfidPower Rpower=new RfidPower(PDATYPE.IDATA);

get the special path of platform，some type such as IDATA ,must get address group by system，but some are fixed.

Get the serial port address funcion is like:

GetDevPath();

Power up

Rpower.PowerUp();

Power down

Rpower.PowerDown();

## 3 connect to UHF reader

Given uhf has one ant，address as ttyMT1

public Reader Mreader;

```
Mreader=new Reader();
READER_ERR er=Mreader.InitReader_Notype("/dev/ttyMT1", 1);
If（er==READER_ERR.MT_OK_ERR）…….
```

## 4 set power

```
AntPowerConf apcf=Mreader.new AntPowerConf();
                    apcf.antcnt=1;
                    for(int i=0;i<apcf.antcnt;i++)
                    {
                        AntPower jaap=Mreader.new AntPower();
                        jaap.antid=i+1;
                        jaap.readPower =(short)3000;//(500-3000)
                        jaap.writePower=(short3000;
                        apcf.Powers[i]=jaap;
                    }

Mreader.ParamSet(Mtr_Param.MTR_PARAM_RF_ANTPOWER, apcf);
```

## 5 read multiple tags

```
int[] tagcnt=new int[1];
READER_ERR er=Mreader.TagInventory_Raw(new int[]{1}, 1,(short) 50, tagcnt);
if(er==READER_ERR.MT_OK_ERR)
{
    if(tagcnt[0]>0)
    {
  for(int i=0;i<tagcnt[0];i++)
 {
```

```
    TAGINFO tfs=Mreader.new TAGINFO();
    er=Mreader.GetNextTag(tfs);
  if(er==READER_ERR.MT_OK_ERR)
        String epcid=Reader.bytes_Hexstr(tfs.EpcId);
  }
}
```

## 5 write epc and alter epc len

Use WriteTagEpcEx function

## 6 write any bank

Use WriteTagData function

## 7 read any bank

Use GetTagData function