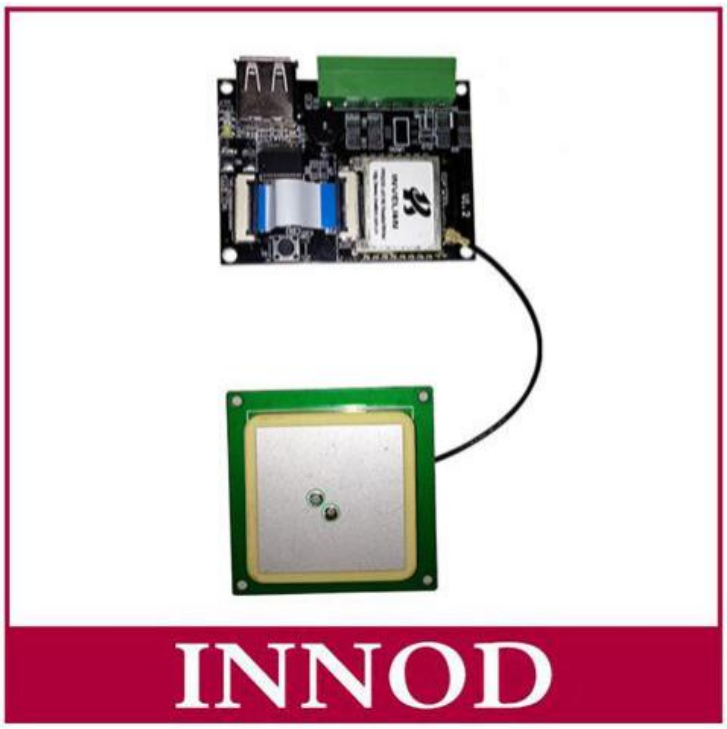
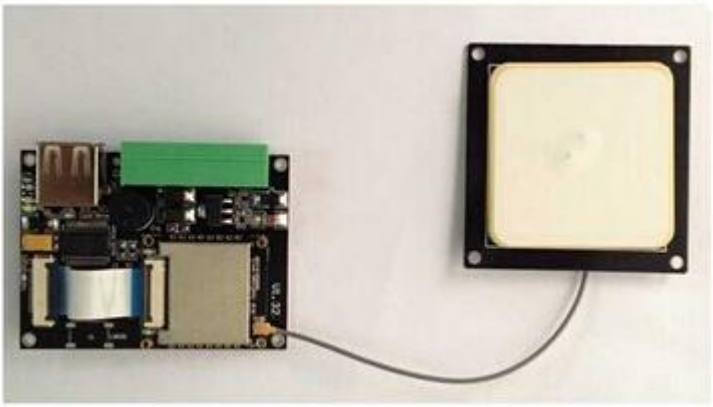


small uhf rfid reader module user manual

The document scope	
Reader firmware version	V 1.9
Presentation software version	V 3.62

Catalogue

一、Acquaintance your RFID reader

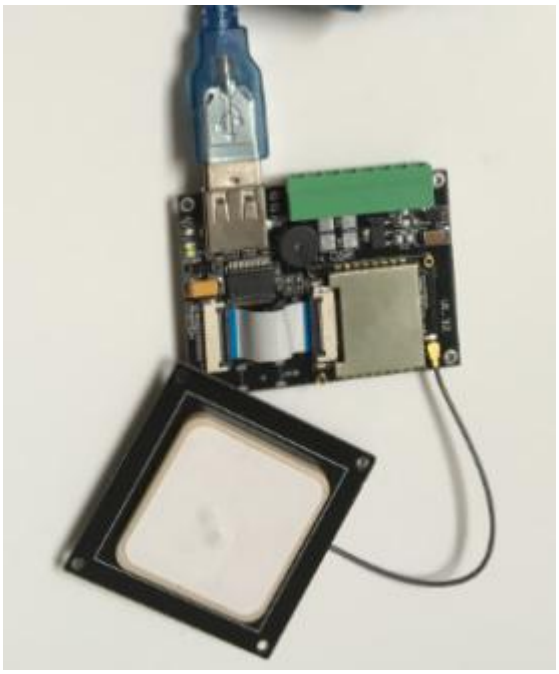


二、Operate the reader

2.1 First test by USB Interface

2.1.1 The first step: connect USB

Firstly,install the"232_USB_DRIVER" and "dotNetFx45_Full_x86_x64" (if you have it ,don’t need install it).And then connect the desktop reader to PC by USB cable ,as shown:



At this time, you will be heard a "drops" ringing, power indicator light is lit at the same time. Those shows that electricity process is normal, reader self-checking passed.

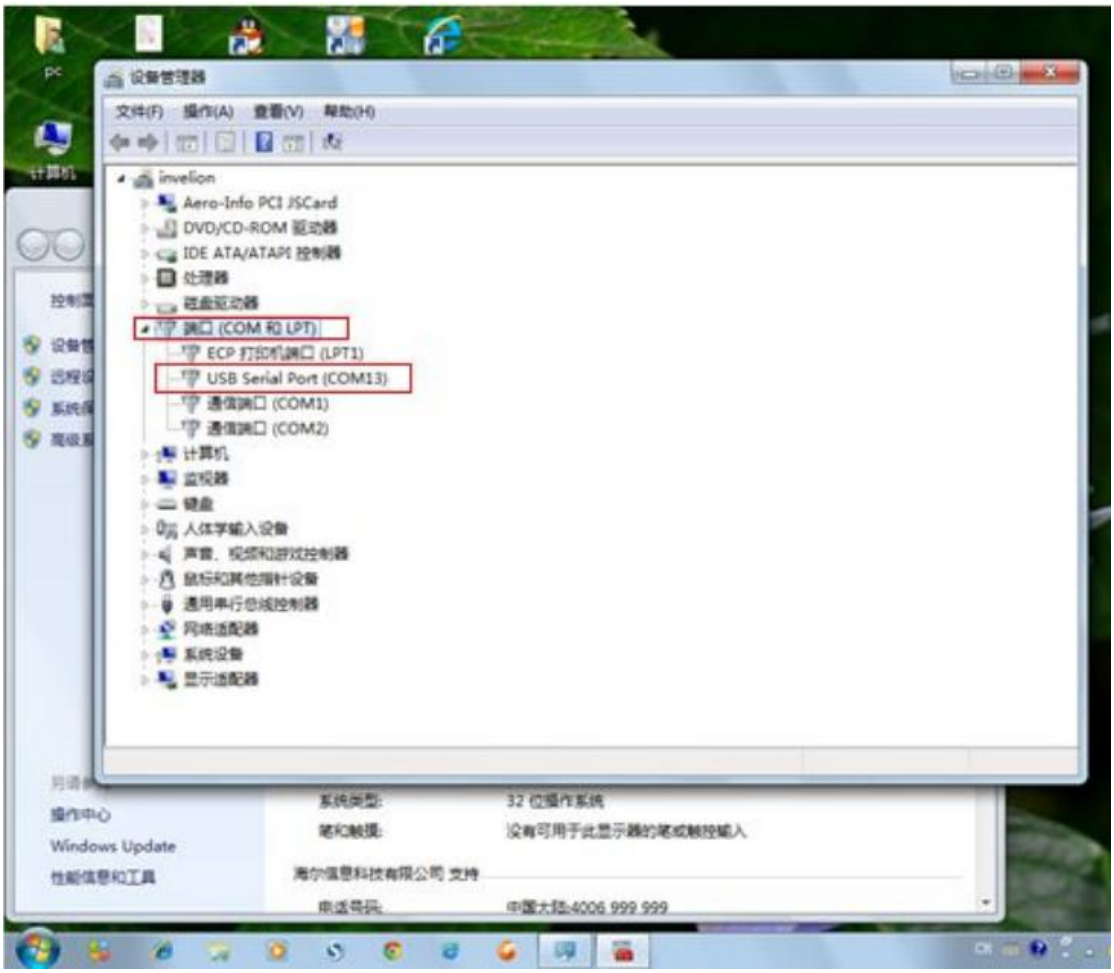
Note: reader connected to the PC will automatically install the driver for the first time. If the driver installation failure, can ask our technical staff for driving manual installation.

2.1.2 The second step: use test demo of sdk software operate reader

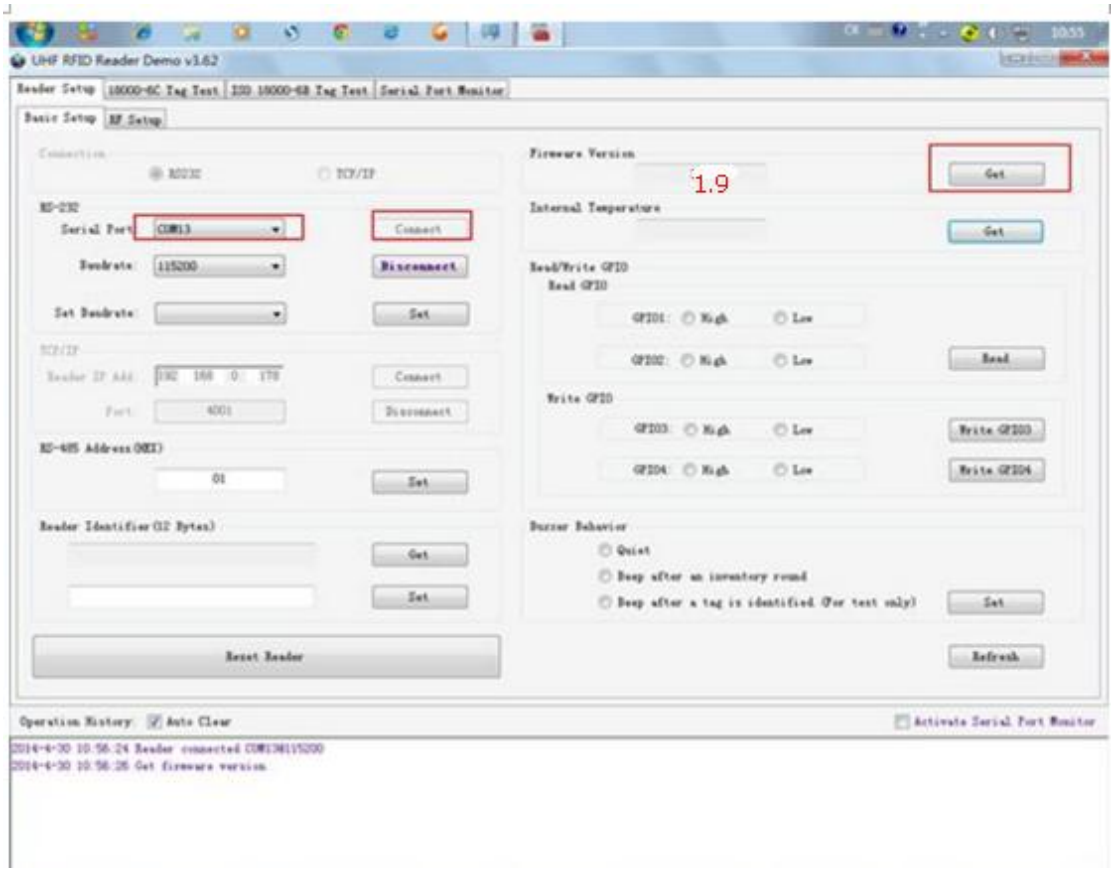
Firstly, uncompress the “demo_V3.62_eng”.rar, and then install the “UHFDemo”.exe.

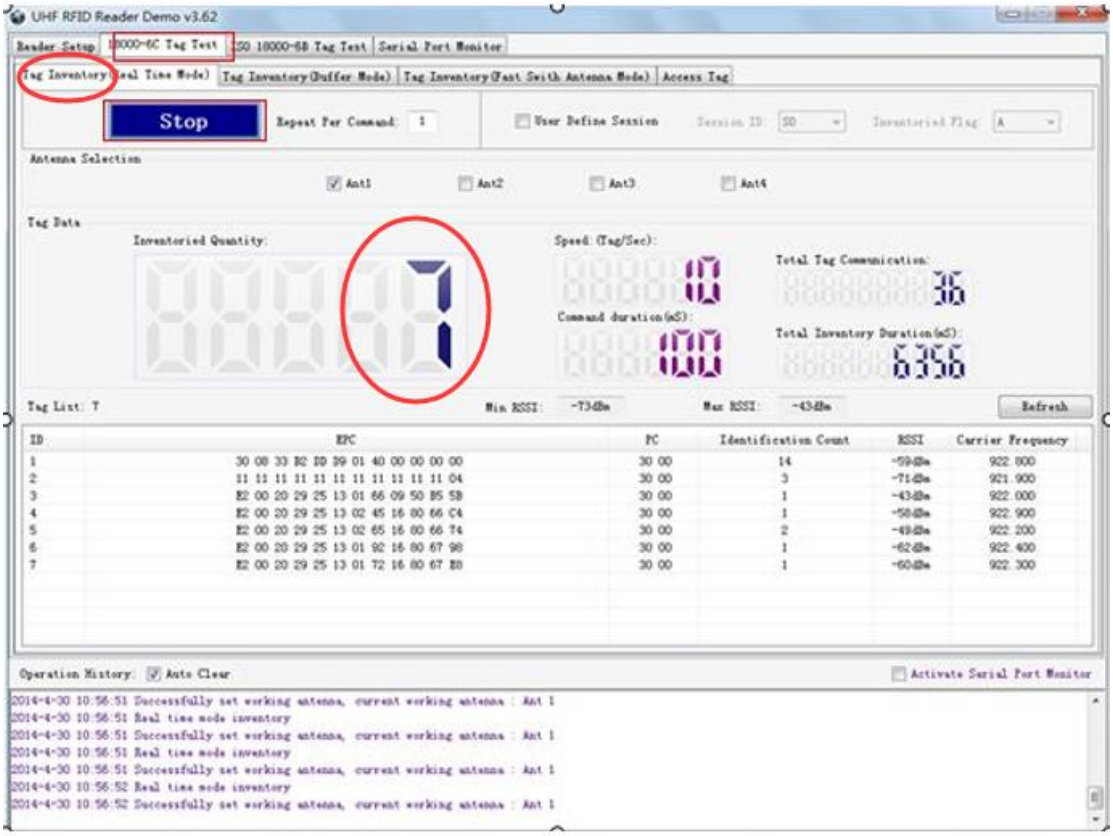
When you use USB connector(reader back switch 1and 2 on ,3 and 4 off) ,need select the corresponding serial number（Check serial number：My Computer-Management-Device Manager- COM port-USB Serial Port），And then, click "connect reader button "If the serial interface is not

occupied, it will displays the following information in the bottom of the operating record column:



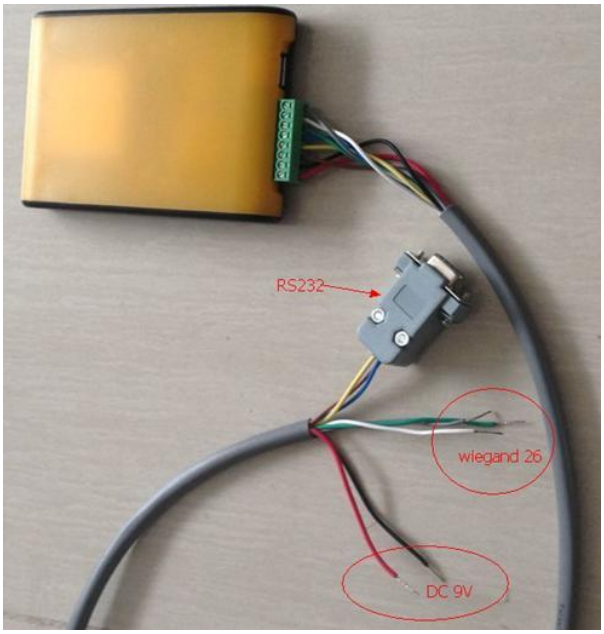
And the baud rate is 115200 bps(default&recommended) 38400bps(optional).When get the firmware version “1.9”,and then access “iso18000-6c tag test”interface ,the tag inventory will show the quantities of inventoried tag.

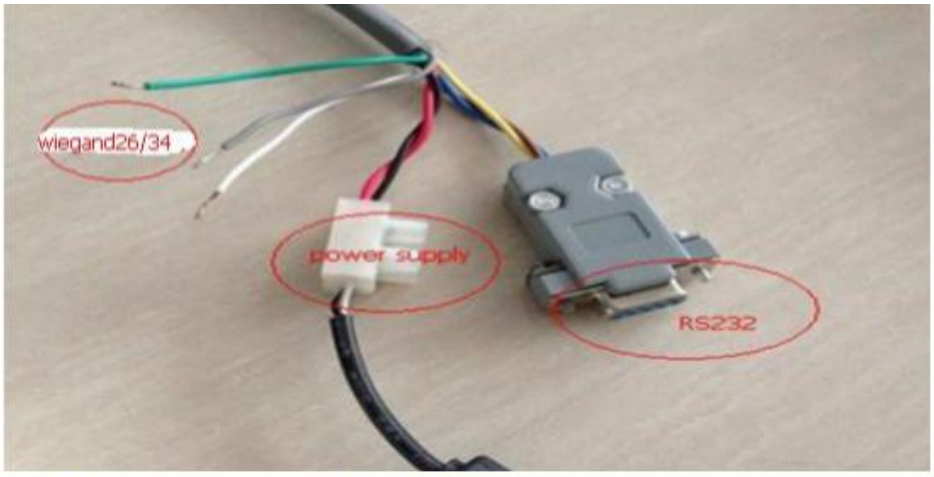

UHF RFID Reader Demo v3.62
Reader Setup
Basic Setup
RF Setup
Connection
RS232
TCP/IP
RS-232
Serial Port:
COM13
Connect
Baudrate:
115200
Disconnect
Set Baudrate:
Set
TCP/IP
Connect
Disconnect
RS-485 Address(HEX)
01
Set
Reader Identifier(12 Bytes)
Get
Set
Reset Reader
Firmware Version
1.9
Get
Internal Temperature
Get
Read/Write GPIO
Read GPIO
GPIO1: High Low
GPIO2: High Low
Read
Write GPIO
GPIO3: High Low
Write GPIO3
GPIO4: High Low
Write GPIO4
Buzzer Behavior
Quiet
Beep after an inventory round
Beep after a tag is identified (For test only)
Set
Refresh
Operation History:
Auto Clear
Activate Serial Port Monitor
2014-4-30 10:56:24 Reader connected COM13@115200
2014-4-30 10:56:25 Get firmware version


UHF RFID Reader Demo v3.62
Reader Setup
Tag Inventory(Real Time Mode)
Tag Inventory(Buffer Mode)
Tag Inventory(Fast Swith Antenna Mode)
Access Tag
Stop
Repeat Per Command: 1
User Define Session
Session ID: S0
Inventoried Flag: A
Antenna Selection
Ant1
Ant2
Ant3
Ant4
Tag Data
Inventoried Quantity:
7
Speed (Tag/Sec):
0
Total Tag Communication:
36
Command duration(mS):
100
Total Inventory Duration(mS):
6356
Tag List: 7
Min RSSI: -73dBm
Max RSSI: -43dBm
Refresh
ID | EPC | PC | Identification Count | RSSI | Carrier Frequency
1 | 30 08 33 B2 DD 39 01 40 00 00 00 00 | 30 00 | 14 | -59dBm | 922.800
2 | 11 11 11 11 11 11 11 11 11 11 11 04 | 30 00 | 3 | -71dBm | 921.900
3 | E2 00 20 29 25 13 01 66 09 50 B5 5B | 30 00 | 1 | -43dBm | 922.000
4 | E2 00 20 29 25 13 02 45 16 80 66 C4 | 30 00 | 1 | -58dBm | 922.900
5 | E2 00 20 29 25 13 02 65 16 80 66 74 | 30 00 | 2 | -49dBm | 922.200
6 | E2 00 20 29 25 13 01 92 16 80 67 98 | 30 00 | 1 | -62dBm | 922.400
7 | E2 00 20 29 25 13 01 72 16 80 67 B8 | 30 00 | 1 | -60dBm | 922.300
Operation History:
Auto Clear
Activate Serial Port Monitor
2014-4-30 10:56:51 Successfully set working antenna, current working antenna : Ant 1
2014-4-30 10:56:51 Real time mode inventory
2014-4-30 10:56:51 Successfully set working antenna, current working antenna : Ant 1
2014-4-30 10:56:51 Real time mode inventory
2014-4-30 10:56:51 Successfully set working antenna, current working antenna : Ant 1
2014-4-30 10:56:52 Real time mode inventory
2014-4-30 10:56:52 Successfully set working antenna, current working antenna : Ant 1

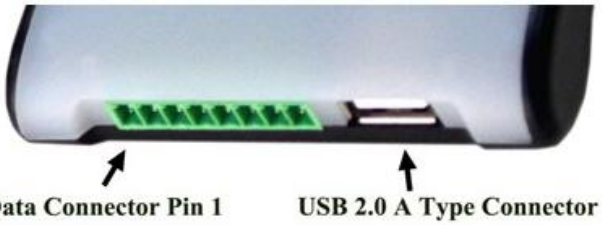
2.2 How to test by rs232 Interface

when you test the desktop reader by rs232 interface,Firstly,use rs232/wigenad cable to connect the reader ,and then need put (reader back switch 1and 2 off ,3 and 4 on).Finally ,use the UHF demo to test the reader.Generally,the serial port is COM1 (default),if COM1 can't work ,you can change other COM ports to test .

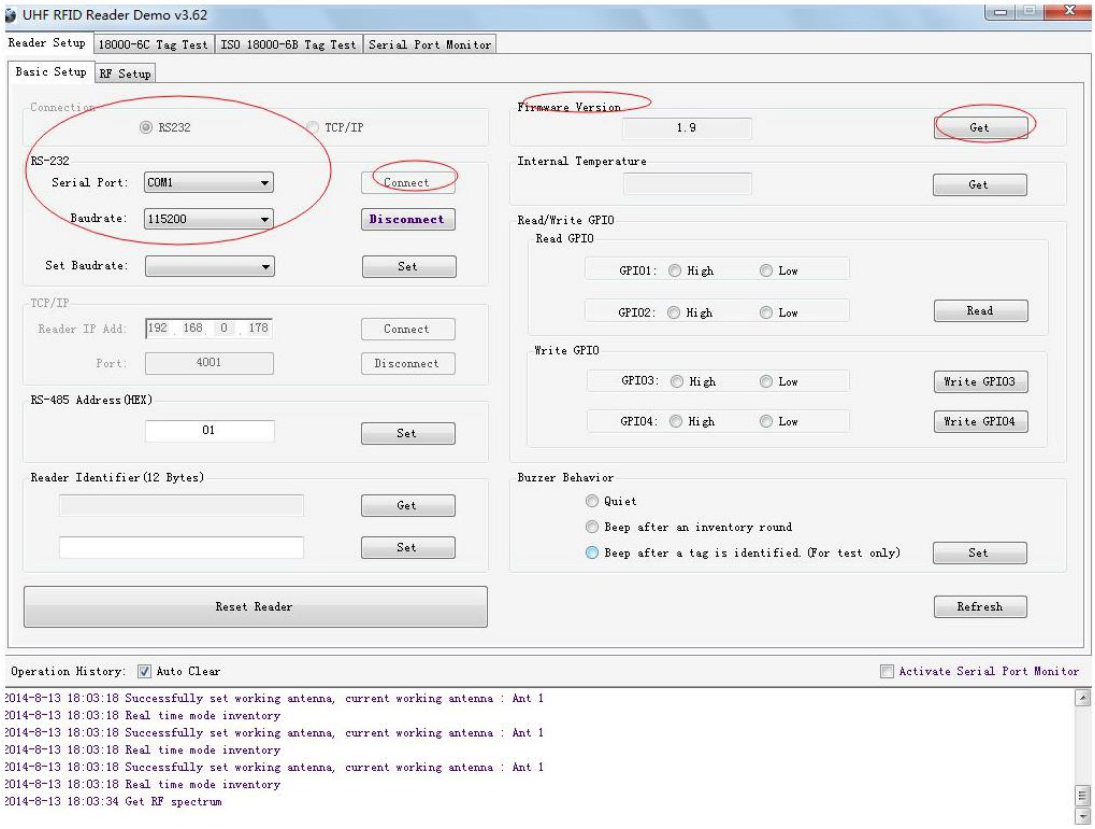




PIN	Definition	Remark
1	+ 9V	External + 9V power supply.
2	GND	Connect to external power supply's ground.
3	RS-232 TXD	RS-232 data output.
4	RS-232 RXD	RS-232 data input.
5	GND	Connect to RS-232's ground.
6	GPIO3	GPIO3 or Wiegand Data 0.
7	GPIO4	GPIO4 or Wiegand Data 1.
8	GND	Connect to Wiegand data ground.



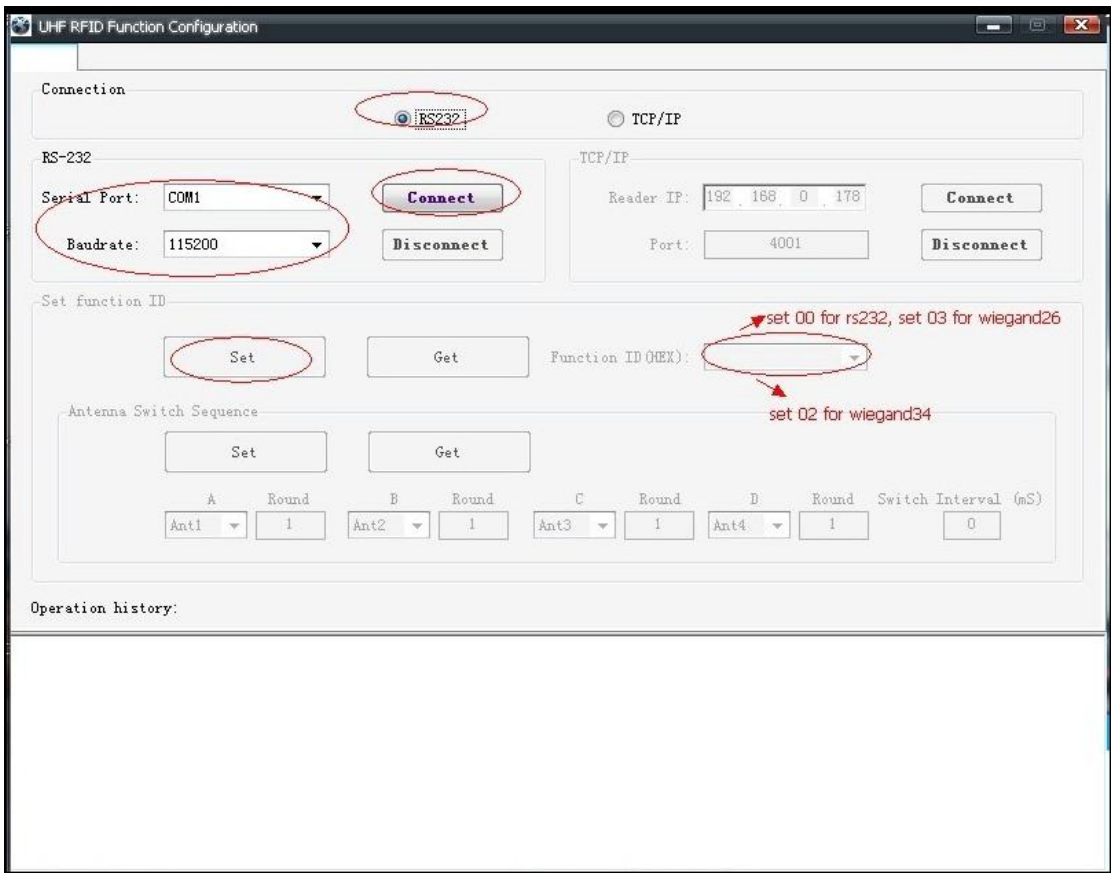
PIN	Definition	Explain
1	+9V	External 9 V power supply.（Note: do not connect the external power supply and USB at the same time.）
2	GND	With + 9 v external power supply common grounding.
3	RS-232 TXD	RS-232 data output.
4	RS-232 RXD	RS-232 data input.。
5	GND	With RS-232 connector common grounding.
6	GPIO3	GPIO3 or WiegandData 0。
7	GPIO4	GPIO4 or WiegandData 1。
8	GND	with Wiegand Data common grounding.

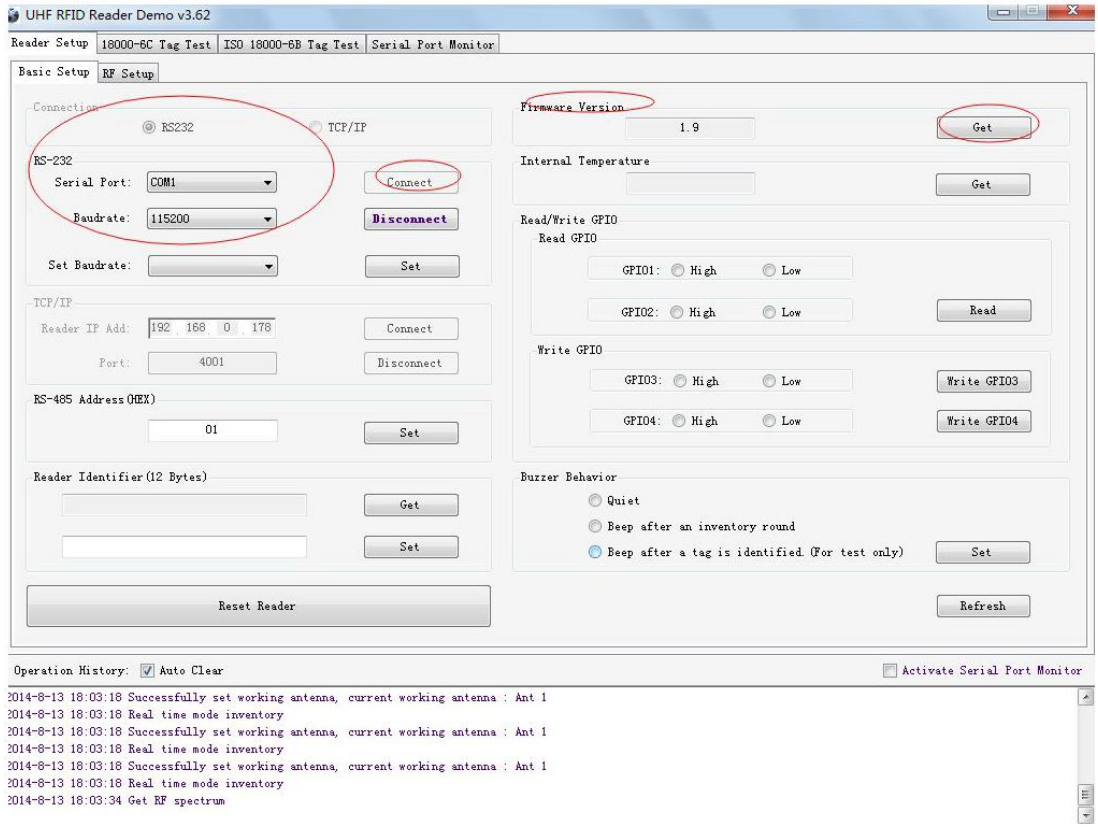


2.3 How to test by wiegand Interface

when you test the desktop reader by wiegand interface,Firstly,use rs232/wigenad cable to connect the reader,and need put (reader back switch 1and 2 off ,3 and 4 on) ,and then “Configuration customization function tools ”,to Configuration （all COM is COM1 ）:

Set “Function ID ”03 for using wiegand26 ,or Set “Function ID ”02 for using wiegand34 , set as the below picture. Finally, use the UHF demo to test the reader.


UHF RFID Function Configuration
Connection
RS232
TCP/IP
RS-232
Serial Port:
COM1
Baudrate:
115200
Connect
Disconnect
TCP/IP
Reader IP:
192 . 168 . 0 . 178
Port:
4001
Connect
Disconnect
Set function ID
Set
Get
Function ID(HEX):
set 00 for rs232, set 03 for wiegand26
set 02 for wiegand34
Antenna Switch Sequence
Set
Get
A
Round
B
Round
C
Round
D
Round
Switch Interval (mS)
Ant1
1
Ant2
1
Ant3
1
Ant4
1
0
Operation history:

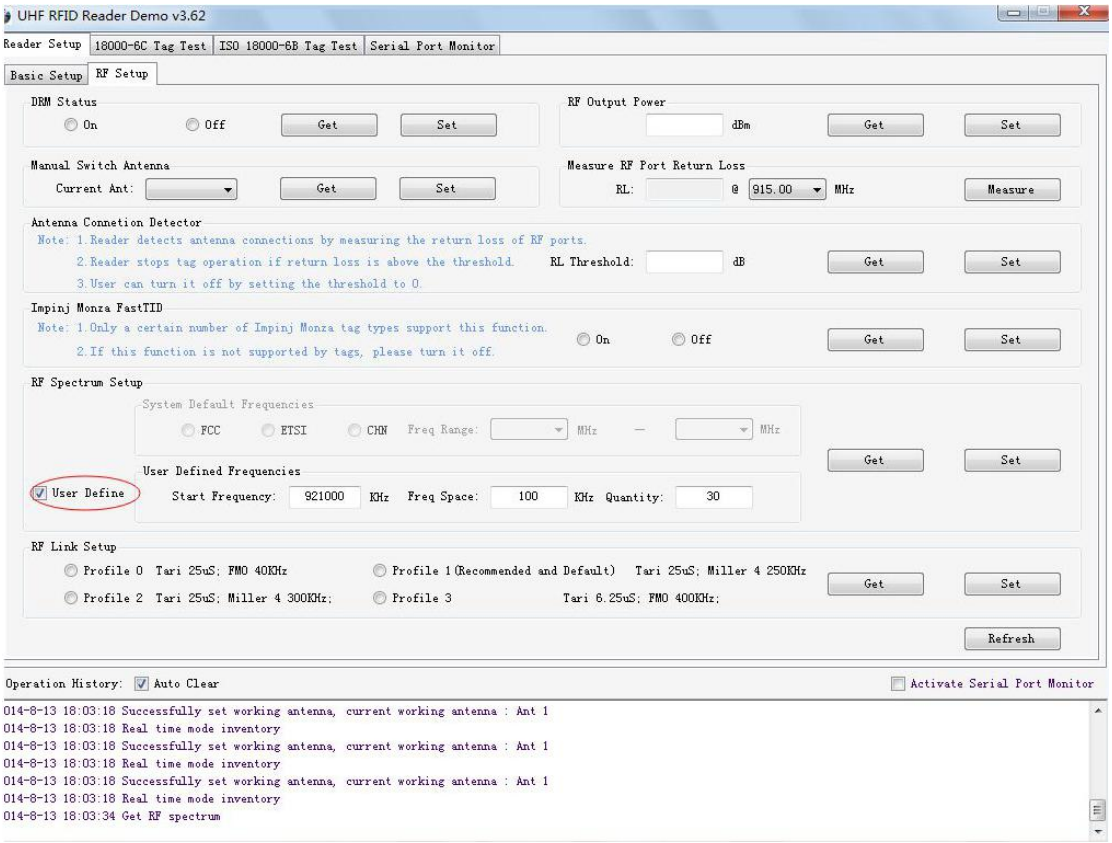

UHF RFID Reader Demo v3.62
Reader Setup
18000-6C Tag Test
ISO 18000-6B Tag Test
Serial Port Monitor
Basic Setup
RF Setup
RS232
TCP/IP
RS-232
Serial Port:
COM1
Baudrate:
115200
Connect
Disconnect
Set Baudrate:
Set
TCP/IP
Reader IP Add:
192 . 168 . 0 . 178
Port:
4001
Connect
Disconnect
RS-485 Address(HEX)
01
Set
Reader Identifier(12 Bytes)
Get
Set
Reset Reader
Firmware Version
1.9
Get
Internal Temperature
Get
Read/Write GPIO
Read GPIO
GPIO1: High Low
GPIO2: High Low
Read
Write GPIO
GPIO3: High Low
Write GPIO3
GPIO4: High Low
Write GPIO4
Buzzer Behavior
Quiet
Beep after an inventory round
Beep after a tag is identified. (For test only)
Set
Refresh
Operation History:
Auto Clear
Activate Serial Port Monitor
2014-8-13 18:03:18 Successfully set working antenna, current working antenna : Ant 1
2014-8-13 18:03:18 Real time mode inventory
2014-8-13 18:03:18 Successfully set working antenna, current working antenna : Ant 1
2014-8-13 18:03:18 Real time mode inventory
2014-8-13 18:03:18 Successfully set working antenna, current working antenna : Ant 1
2014-8-13 18:03:18 Real time mode inventory
2014-8-13 18:03:34 Get RF spectrum

三、Set RFID parameter

After the reader connected successful， we can set the RFID parameter for best performance:

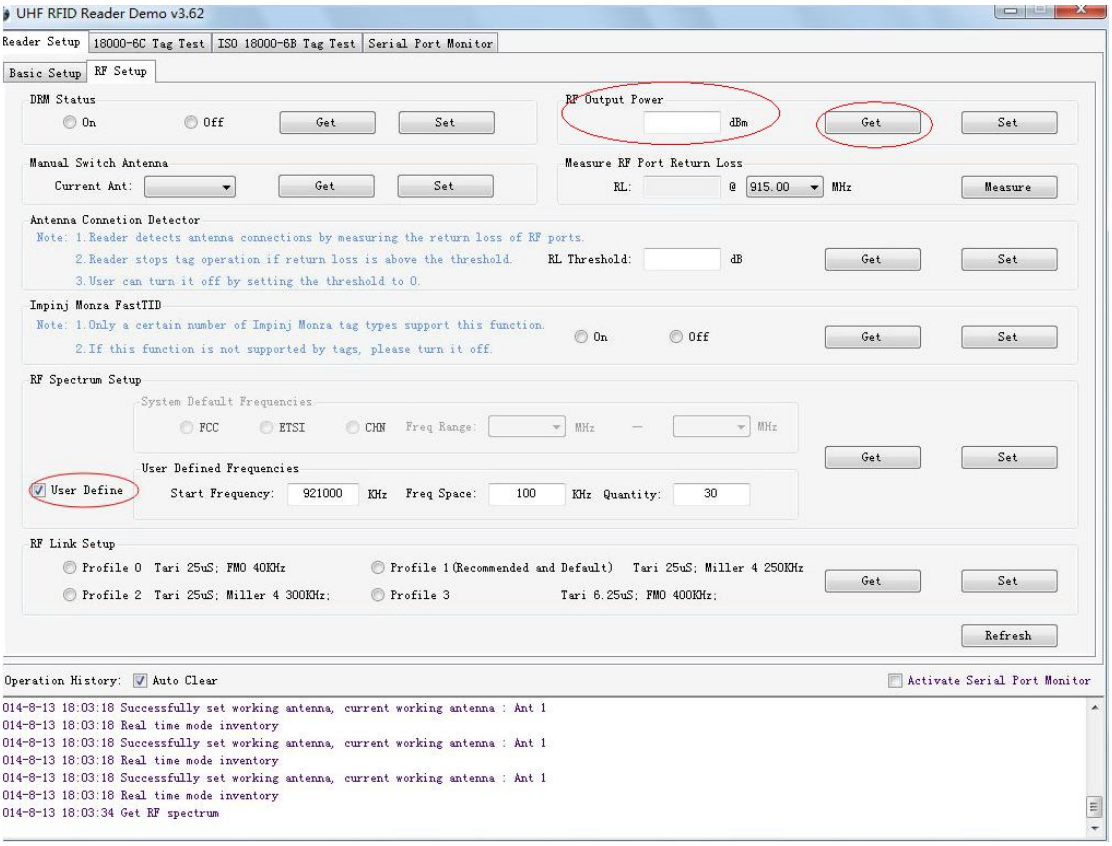
3.1 set frequency range

Europe frequency 865-868mhz,American frequency 902-928 MHZ



3.2 set RFID output power

RFID output power refers to RFID signal strength of the antenna ports output .The unit is dBm。



The range of output power is 10dBm、18dBm – 26dBm.The default value is 26 dBm , after the completion of this value set, it will automatically stored inside the machine, it is not lost when the power is cut off.

四、inventory ISO-18000-6C tag

Properly connected reader, then can read tag operation after the RF parameter setting well.

Inventory tag that is the EPC number of identify tags. it is the core function of the UHF RFID reader, its performance directly determines the advantages and disadvantages of reader.

4.1 cache mode and real-time mode

There are two modes to choose from when Inventory tags The most common is real-time mode, namely, immediately upload after read the tag number of EPC,the user can get the EPC number of tag in the first time.

Another caching pattern, namely, firstly, put into reader the cache after read the tag number of EPC ;finally ,to upload multiple EPC data together when needed.

These two models have different characteristics，real-time mode advantage with good performance of Identification Multi-tag ， quick response ， the user can get the tag data in the first time, no delay. And RSSI (tag signal strength indicate), frequency parameters (read tag carrier frequency) also real-time change .Will produce large amounts of data.

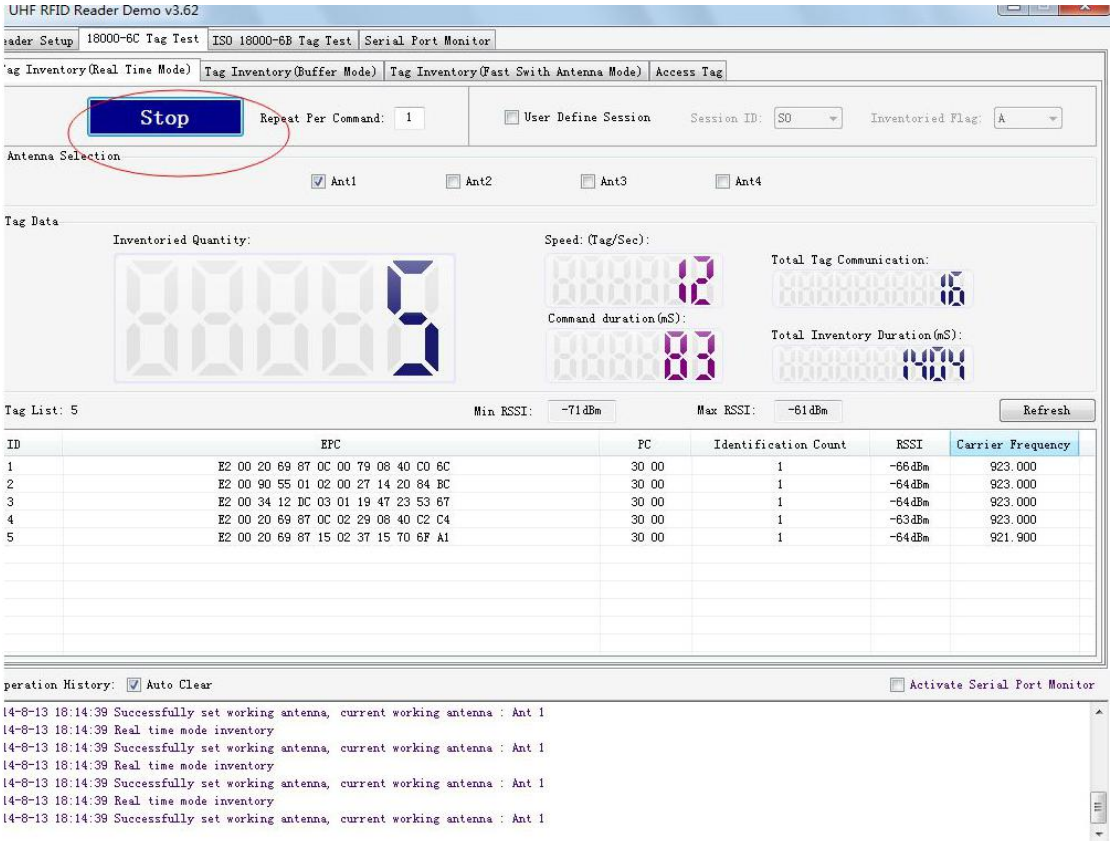
Caching pattern the advantage is that small amount of communication data ,because summary upload data is filtered no duplicate data. But identifying a large number of tags, each time need to filter duplicate data for the tag information by one by one,

so the efficiency of recognition a large number of tags will be slightly lower than the real time mode. In addition, Extracted tag data from the cache , it can't read and write tags operation when , it should pay attention to this user.

User can choose the appropriate method of inventory tag according to the practical application environment .

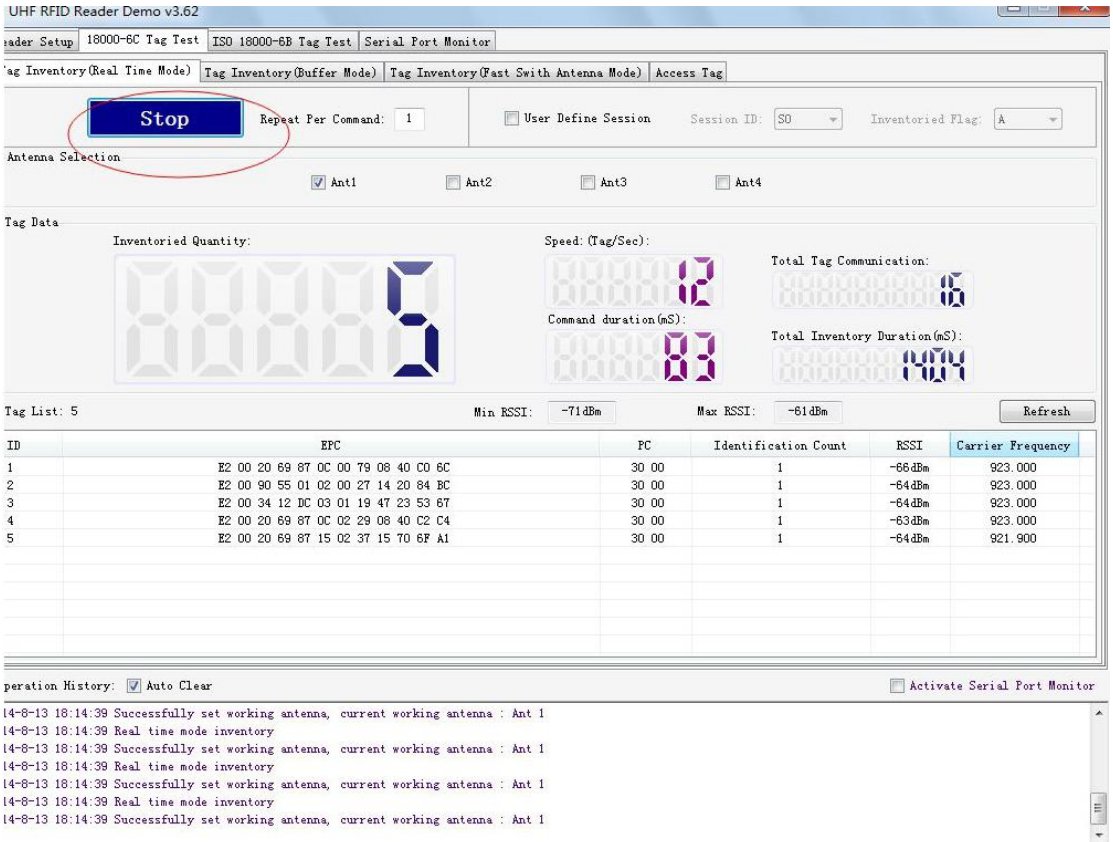
In random spin-off the presentation software, choosing the way of inventory

tags through the following interface:



Let's start inventory tags by real-time mode.

Click the inventory tags (real-time mode) selection page, let software interface to switch to the real time mode. Next, click the reading tag EPC number buttons, then we can see that the EPC data of the tag wil be upload immediately ,Updated in real time.if not Click stop the inventory， reader will inventory tag all the time， as shown in the figure below:



the meaning of data display as the following:

total number	the total number of inventory different tag from

of had inventory tags	click start inventory button up to now.
Command recognition speed	recognition tags speed，The unit is tags/second.
cumulative return data	one tag EPC record that is a data, real-time statistics a total how much of the data return , which contains repeated read data of the same tag.
command execution time	The consumption time of each inventory command。The unit is ms.
Cumulative run time	the total consumption time of inventory different tag from click start inventory button up to now.The unit is ms.

tag EPC number list (don't repeat) list box meaning as follows:

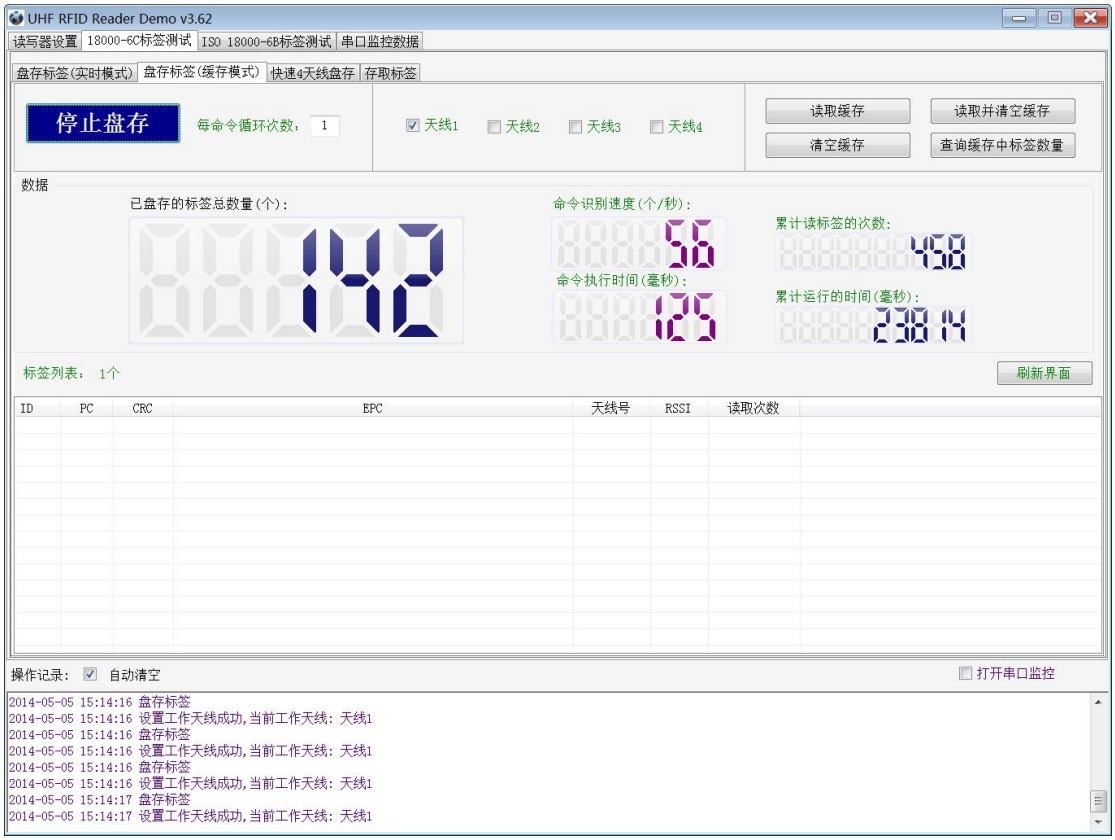
serial number	serial number of data
ＥＰＣ	EPC number of tags
ＰＣ	Protocol control word of tags
Identified times	The number of tag identified.
RSSI	Signal strength of when The last time label is identified
Carrier	the carrier frequency of when The last time label is

frequency	identified

Next ,inventory tags by caching pattern .

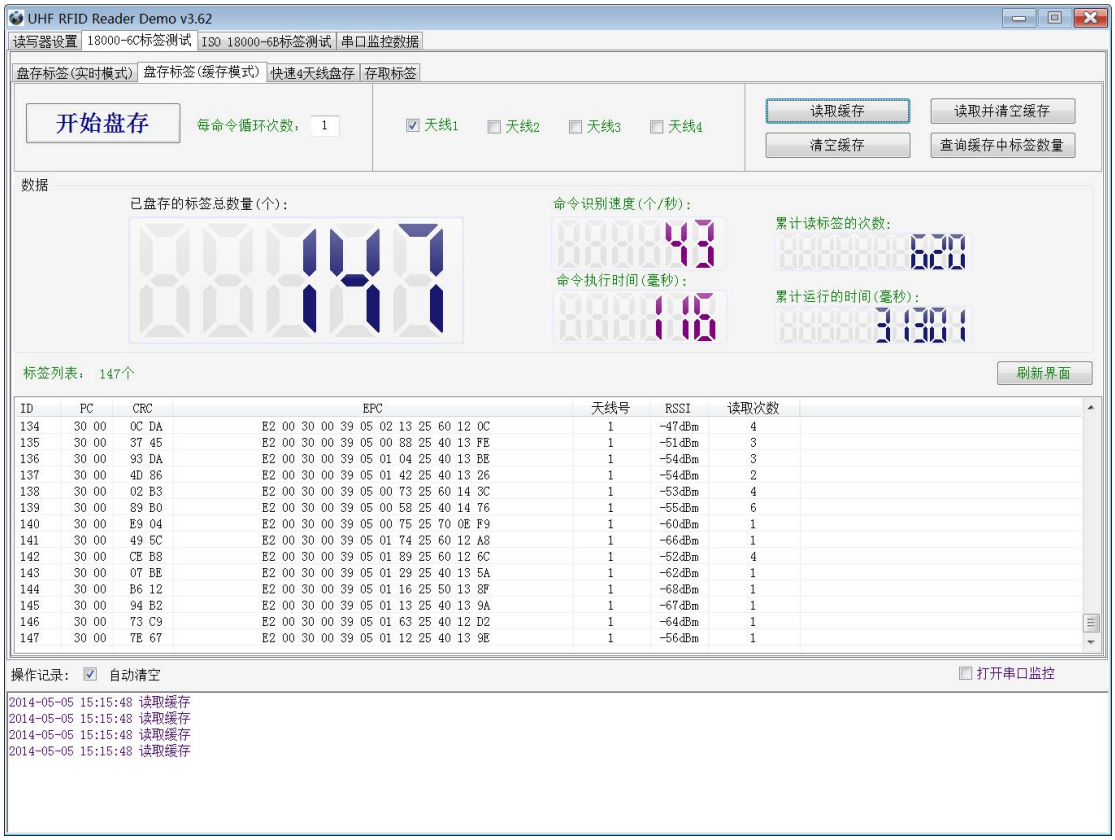
Click the inventory tags (caching pattern) selection page, let software interface to switch to the caching pattern .

The same as real-time mode,Click the start inventory button.Software interface shows the following information:



We found that data display had read the tag, but no tag data display on the tag list.

If you want to get the tag data, now need to click the stop inventory button .Then click read cache button, at this time,tag data of All stored in the reader cache will be uploaded, as shown in the figure below:



The function of cache operation ‘s other three buttons is very simple and clear, described as follows:

Read and clear the cache: the data of cache is clear immediately after the data read from the cache . Again reading the cache is empty at this time.

query Tag number of cache: sometimes just know how many tags data in the cache, without to upload all of the content, click the button ,the tag number will showed in the records column of operating

Clear the cache: empty caches, and refresh the software interface.

Through above operation ， Users can clearly understand the differences for these two method of the inventory tag.

五、Access/rewrite ISO-18000-6C tag

Click on the "access tag" into the interface of access tag, as shown in the figure below:

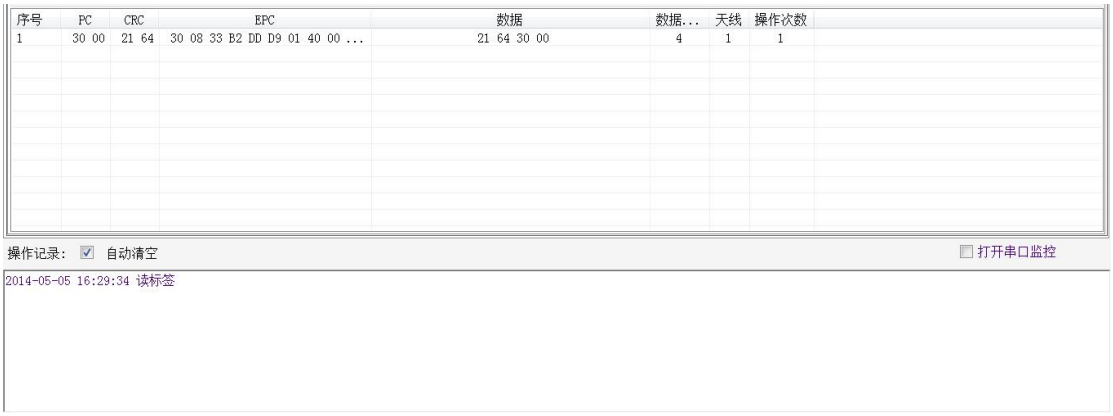
5.1 Reading tags

input parameters of reading tag in the interface of shown below:

Reading tag need to input three parameters: read tag area, starting address and data length. Notice that units of the start address and data length both are a WORD ,that is 16 bit double byte. Click the button of read tag after parameter after set finished.

It is important to note that the input parameters need meet the tag's specifications , otherwise there will be error message.

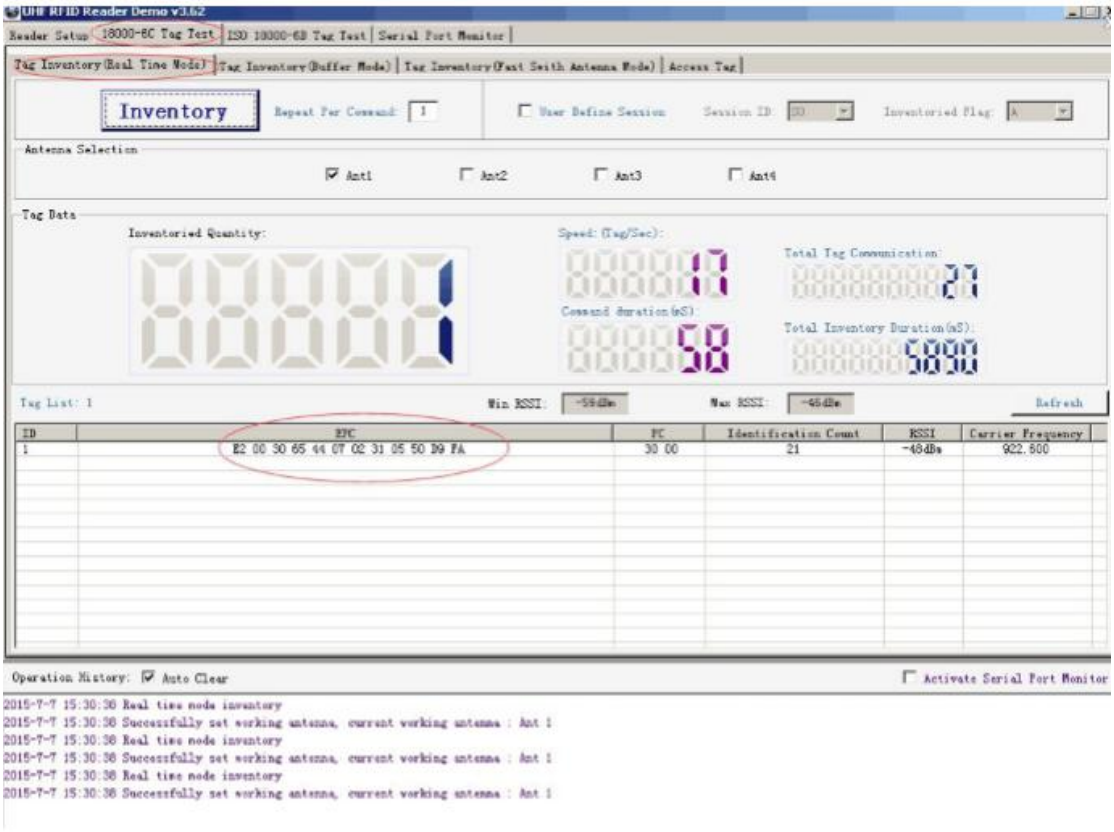
After operation finished successful , feedback will be shown below

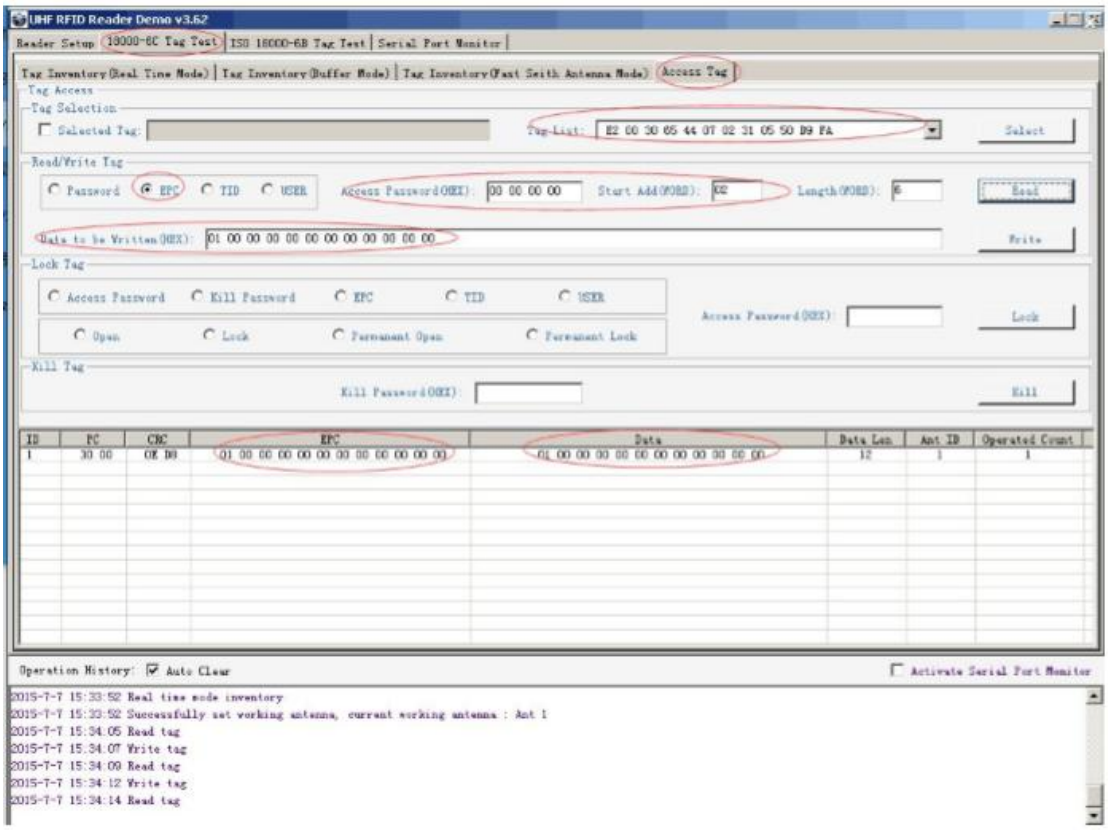


.Operation how many tags, there will be the same quantity data displayed in the list as shown .

5.2 Writing tag

The Interface of rewrite tag also in the "access tag"interface , the difference is that the rewrite also shall provide the access password and to write these data information.


UHF RFID Reader Demo v3.62
Reader Setup
18000-6C Tag Test
ISO 18000-6B Tag Test
Serial Port Monitor
Tag Inventory(Real Time Mode)
Tag Inventory(Buffer Mode)
Tag Inventory(Fast Swith Antenna Mode)
Access Tag
Inventory
Repeat Per Command:
User Define Session
Session ID:
Inventoried Flag:
Antenna Selection
Ant1
Ant2
Ant3
Ant4
Tag Data
Inventoried Quantity:
Speed: (Tag/Sec):
Total Tag Communication:
Command duration(mS):
Total Inventory Duration(mS):
Tag List: 1
Min RSSI:
Max RSSI:
Refresh
ID
EPC
PC
Identification Count
RSSI
Carrier Frequency
1
E2 00 30 65 44 07 02 31 05 50 B9 FA
30 00
21
-48dBm
922.800
Operation History:
Auto Clear
Activate Serial Port Monitor
2015-7-7 15:30:30 Real time mode inventory
2015-7-7 15:30:30 Successfully set working antenna, current working antenna : Ant 1
2015-7-7 15:30:36 Real time mode inventory
2015-7-7 15:30:36 Successfully set working antenna, current working antenna : Ant 1
2015-7-7 15:30:36 Real time mode inventory
2015-7-7 15:30:36 Successfully set working antenna, current working antenna : Ant 1


UHF RFID Reader Demo v3.62
Reader Setup
18000-6C Tag Test
ISO 18000-6B Tag Test
Serial Port Monitor
Tag Inventory(Real Time Mode)
Tag Inventory(Buffer Mode)
Tag Inventory(Fast Swith Antenna Mode)
Access Tag
Tag Access
Tag Selection
Selected Tag:
Tag List:
E2 00 30 65 44 07 02 31 05 50 B9 FA
Select
Read/Write Tag
Password
EPC
TID
USER
Access Password(HEX):
00 00 00 00
Start Add(WORD):
02
Length(WORD):
6
Read
Data to be Written(HEX):
01 00 00 00 00 00 00 00 00 00 00 00
Write
Lock Tag
Access Password
Kill Password
EPC
TID
USER
Open
Lock
Permanent Open
Permanent Lock
Access Password(HEX):
Lock
Kill Tag
Kill Password(HEX):
Kill
ID
PC
CRC
EPC
Data
Data Len
Ant ID
Operated Count
1
30 00
0E B0
01 00 00 00 00 00 00 00 00 00 00 00
01 00 00 00 00 00 00 00 00 00 00 00
12
1
1
Operation History:
Auto Clear
Activate Serial Port Monitor
2015-7-7 15:33:52 Real time mode inventory
2015-7-7 15:33:52 Successfully set working antenna, current working antenna : Ant 1
2015-7-7 15:34:05 Read tag
2015-7-7 15:34:07 Write tag
2015-7-7 15:34:09 Read tag
2015-7-7 15:34:12 Write tag
2015-7-7 15:34:14 Read tag

Successful operation how many tags, will be shows same quantity data in the area of arrow indicated , the difference with reading tags that is, there is no content in the data column of above graph. The user can read the same area of the tags again, validation data is whether properly written.

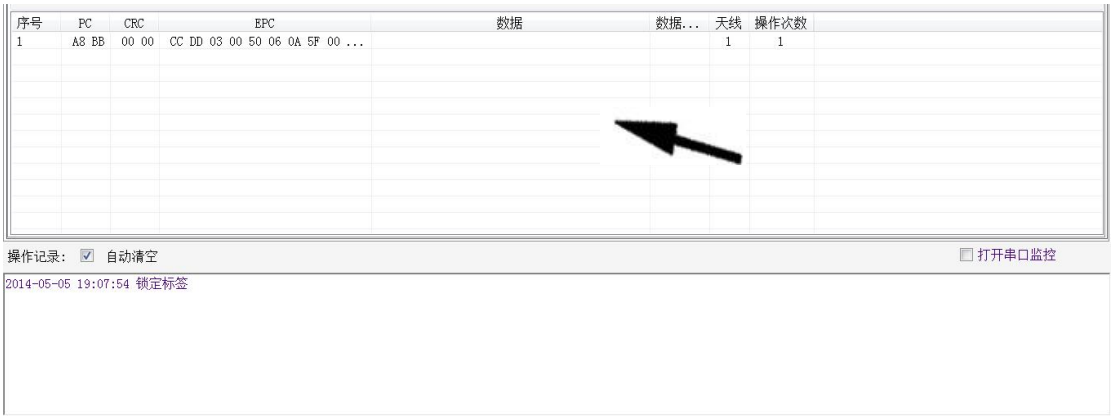
Note ,a one-time write biggest length is 32 Word（64 bytes，512bits）.

5.3 lock tag operation

The operation interface of the locking tags ， as shown in the figure below:

It must provide access password for Lock tag .

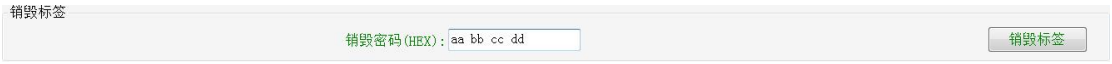
After the successful operation, it will return the following information:



the same as, how many tags operated ,it will shows how much quantity data in the area of arrow.

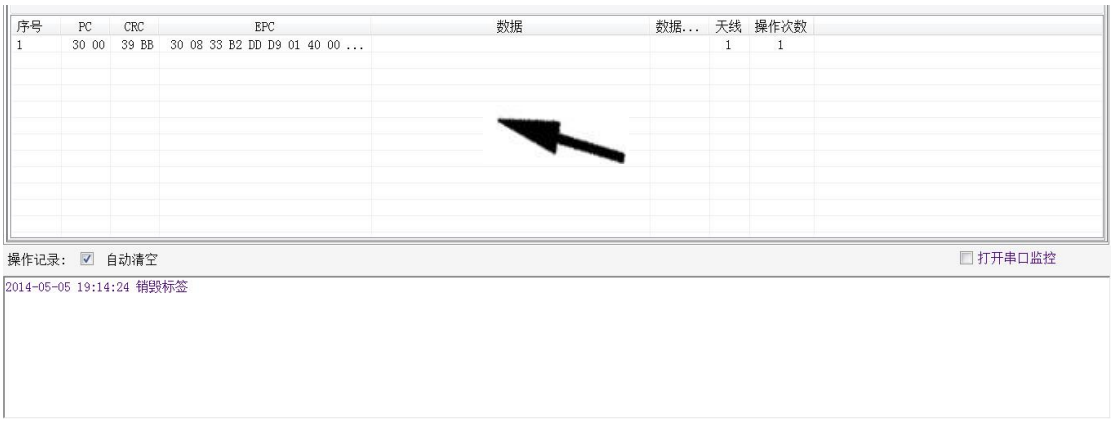
5.4 inactivated tag operation

Operating interface of inactivated tag, as shown in the figure below:



Inactivated tags must provide destruction password and destroyed the password can't be 00 00 00 00, therefore ,destroy one tag, firstly ,need modify the password region 's content by writing tag command .

After inactivated tag success, will return to the following information:



the same as operation of all access tags， inactivated how much tag, indicating it shows how many records in the area of arrow.

5.5 selected tag of the operation

In many cases, we hope that no matter how many tags in rfid area, only for a known EPC tags to access operation, this time, you need use the tag's operation of selected operation (EPC matching function) .

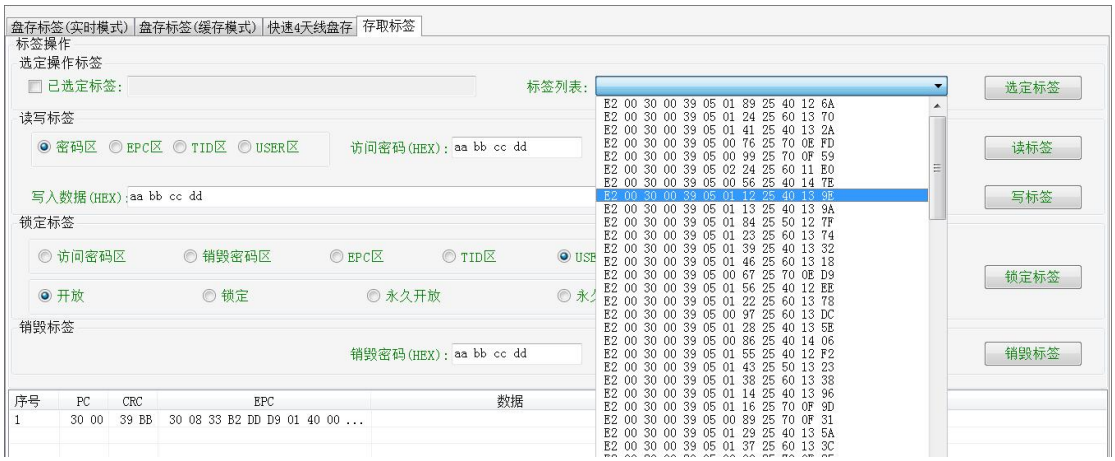
In Random spin-off presentation software, we can operate like this:

◆First to inventory tags by caching mode, to get all the EPC number.

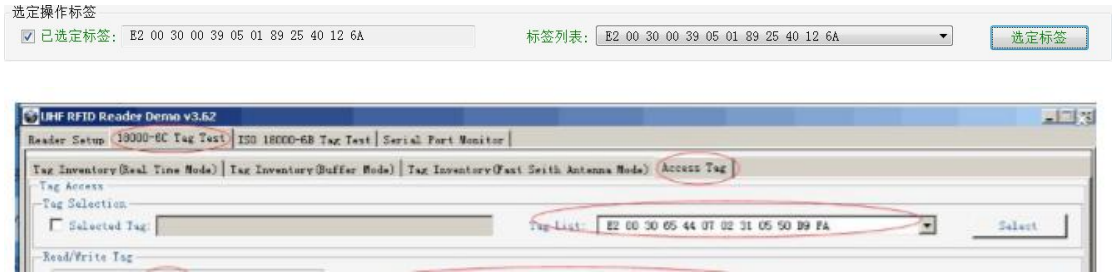
◆And then read the cache.

◆And then switch to access tag's interface again ,to choose need match the EPC number.

As shown in the figure：



After finished selection ,click selected tag. After the successful operation, as shown in the figure below:

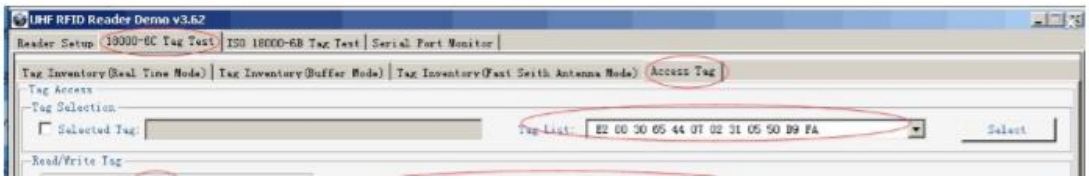


We will see "selected tag" check box which had put a tick on the left side , and select the EPC number will appears in the text box on the left side.

Next, all access tag operation just operate the tags with the EPC number .

If you want to cancel the EPC match, the method is very simple, just need uncheck “Selected tag check box”.

as shown in the figure below:


UHF RFID Reader Demo v3.62
Reader Setup
18000-6C Tag Test
ISO 18000-6B Tag Test
Serial Port Monitor
Tag Inventory(Real Time Mode)
Tag Inventory(Buffer Mode)
Tag Inventory(Fast Swith Antenna Mode)
Access Tag
Tag Access
Tag Selection
Selected Tag:
Tag List:
E2 00 30 65 44 07 02 31 05 50 09 FA
Select
Read/Write Tag