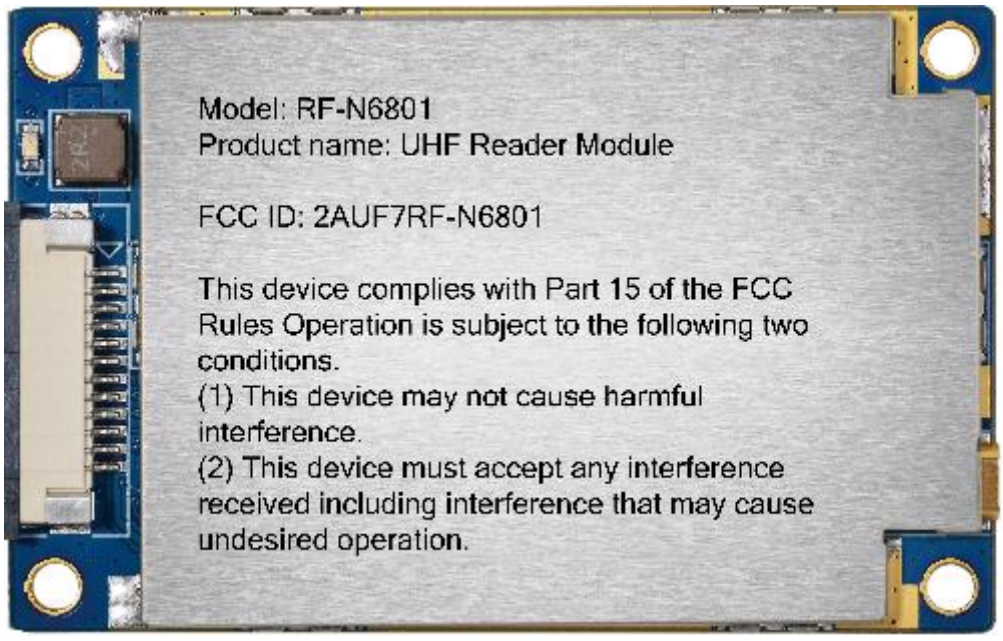
国芯物联
NATION RFID

RF-N6801 Operation Manual



Contents

1 Demo Instruction

The Demo mainly carries out the functions of system control, parameter set and get, tag reading and writing, and data display, etc.

Before using the demo, please check whether the reader hardware connection is all done, and pay attention to the following aspects:

1. The network parameters are configured correctly (connect WIFI if necessary);
2. The antenna ports that need to be used are connected to antennas;
3. The reader is power-on(the buzzer is ringing).

2 Demo Applicating Environment

- Software Environment

Windows Server 2003、Windows XP Service Pack 2、Windows 7、Windows10 operating systems.

- Hardware Environment

P4/1.7GHz PC with better configuration,512M or larger storage, 40G hard disk.

3 Demo Version

- V0.17.0.0

4 Demo Operation

4.1 Connect Reader

All functions can only be operated after a successful connection.

4.1.1 RS232 Communication Connection

Double click “GReaderDemo.exe” to start the Demo. Grey icons on the main interface means the reader is not connected. Select communication mode “RS232 connection”, “connection parameters”, “COM”(the COM number of the PC chose) in Device Connection. Choose 115200(default) as Baud rate, then click “Confirm”, as figure 4.1.1.1 shows.

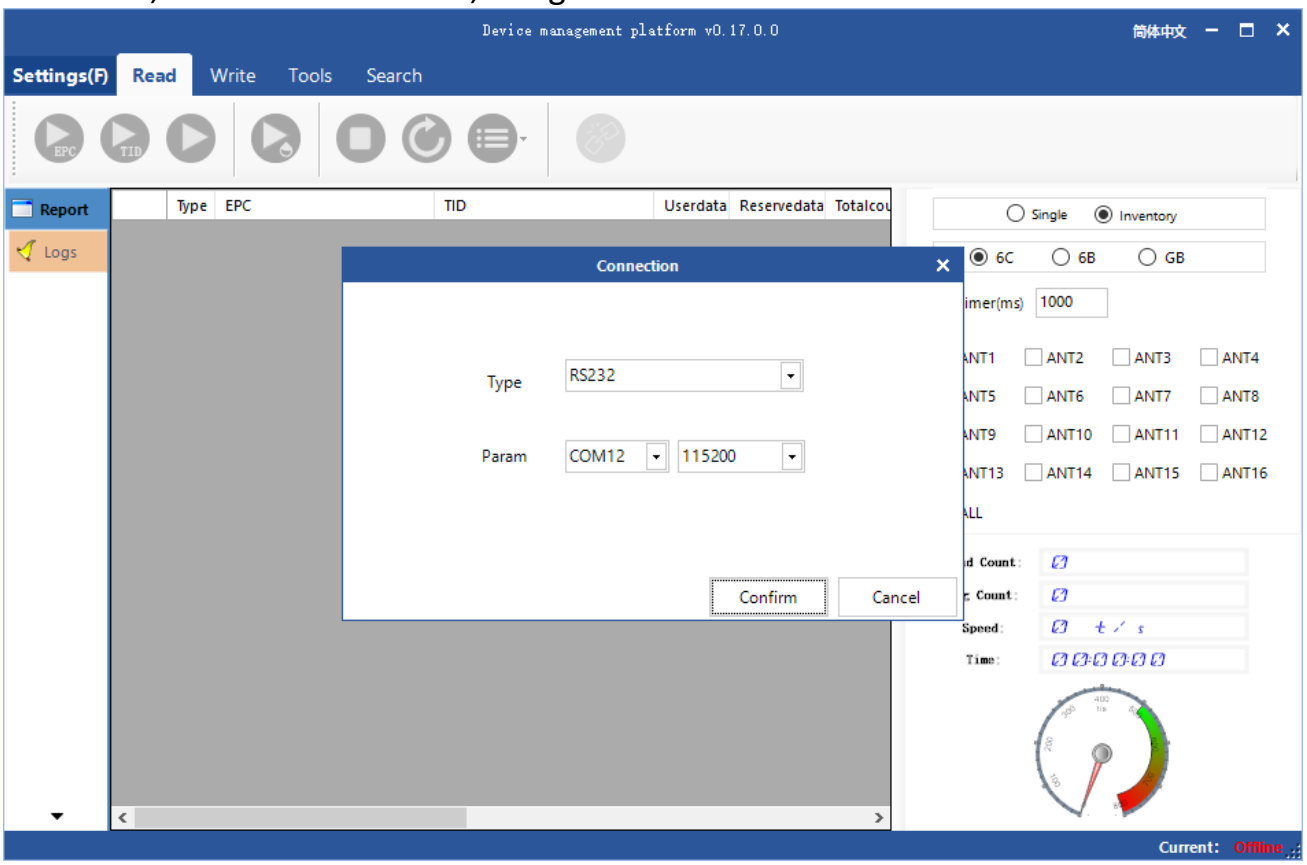


Figure 4.1.1.1 RS232 Connection

If the connection is successful, the icons in the tool bar will be colored as figure 4.1.1.2 shows. It means COM is connected.

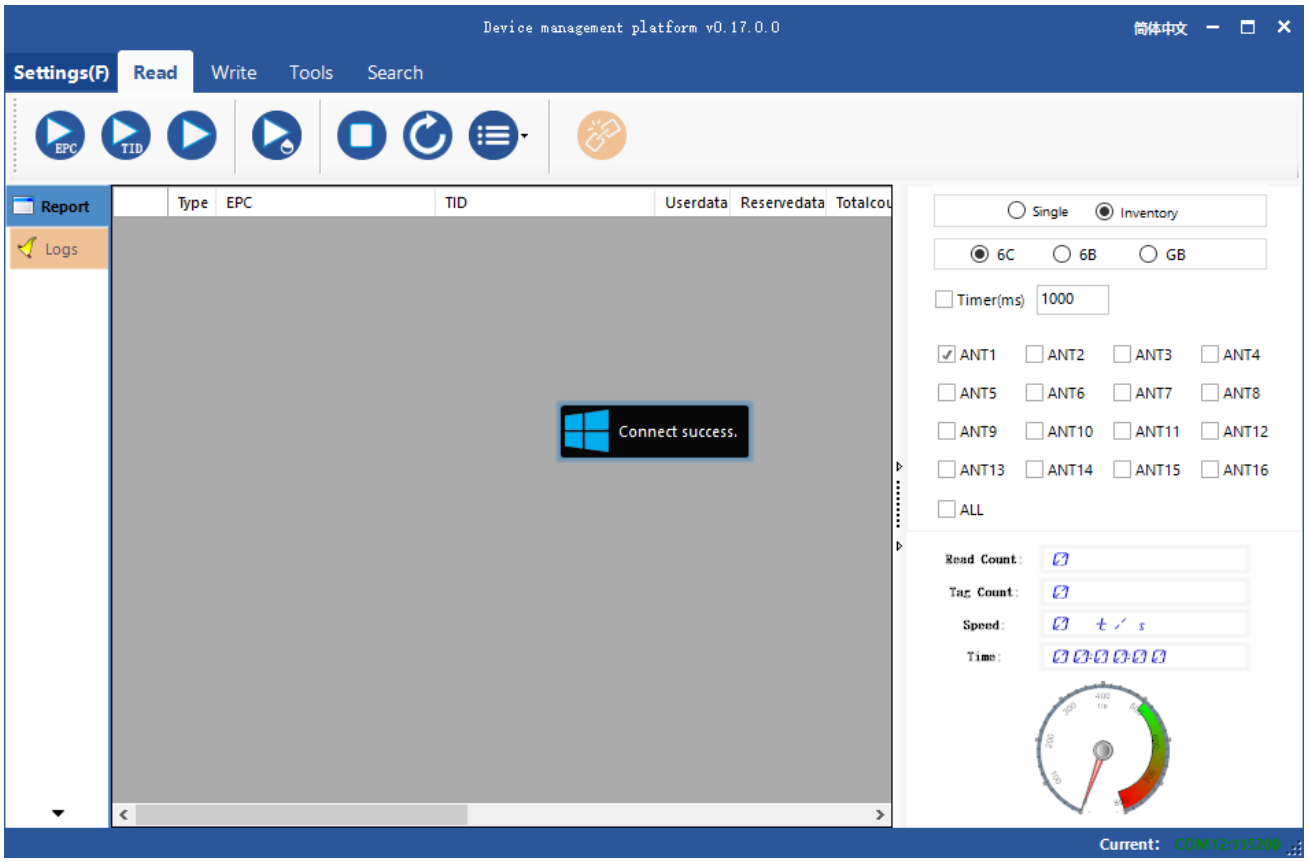


Figure 4.1.1.2 RS232 Connection success

4.1.2 RS485 Communication Connection

Select communication mode “RS485 connection” in Device Connection, fill in the parameters, and then click “Confirm” to connect the device, as Figure 4.1.2.1 shows. If the connection is successful, the icons will be colored as Figure 4.1.2.2 shows.

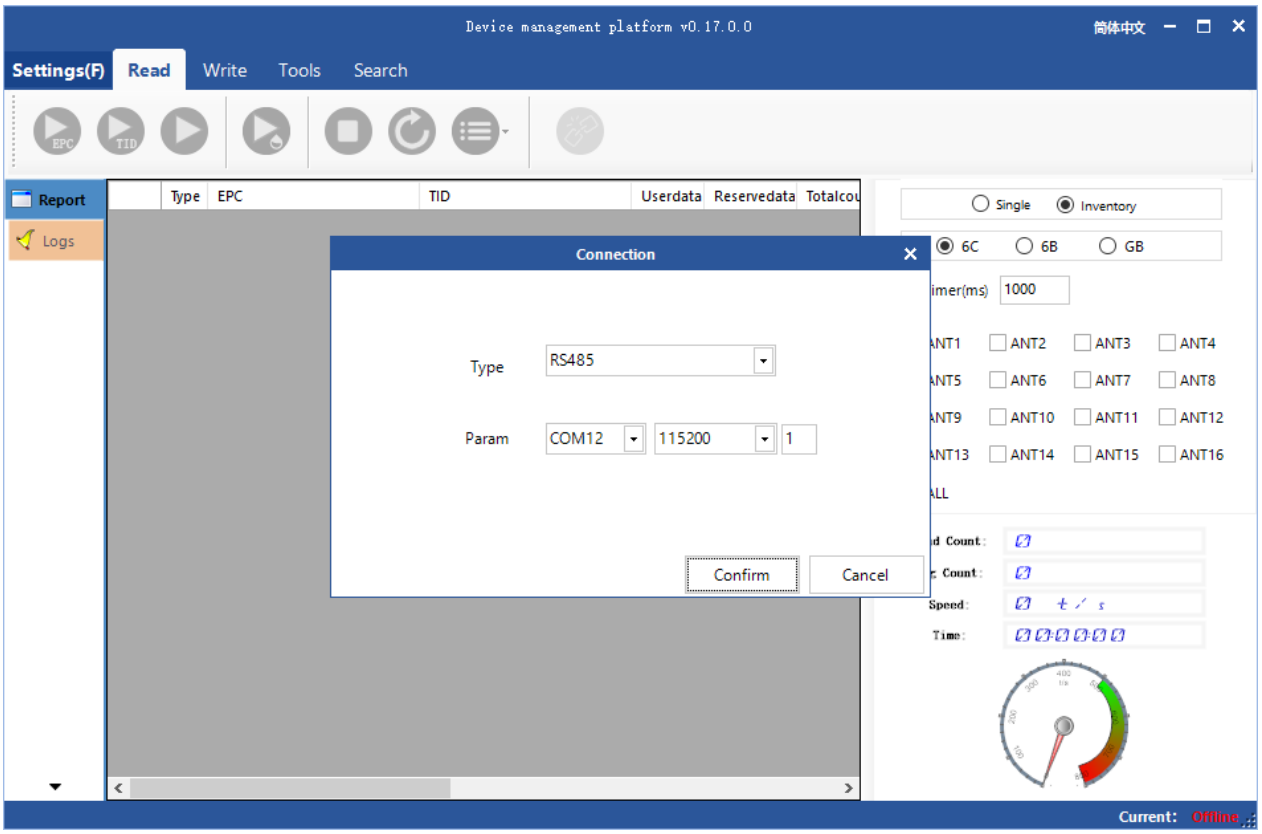


Figure 4.1.2.1 RS485 Connection

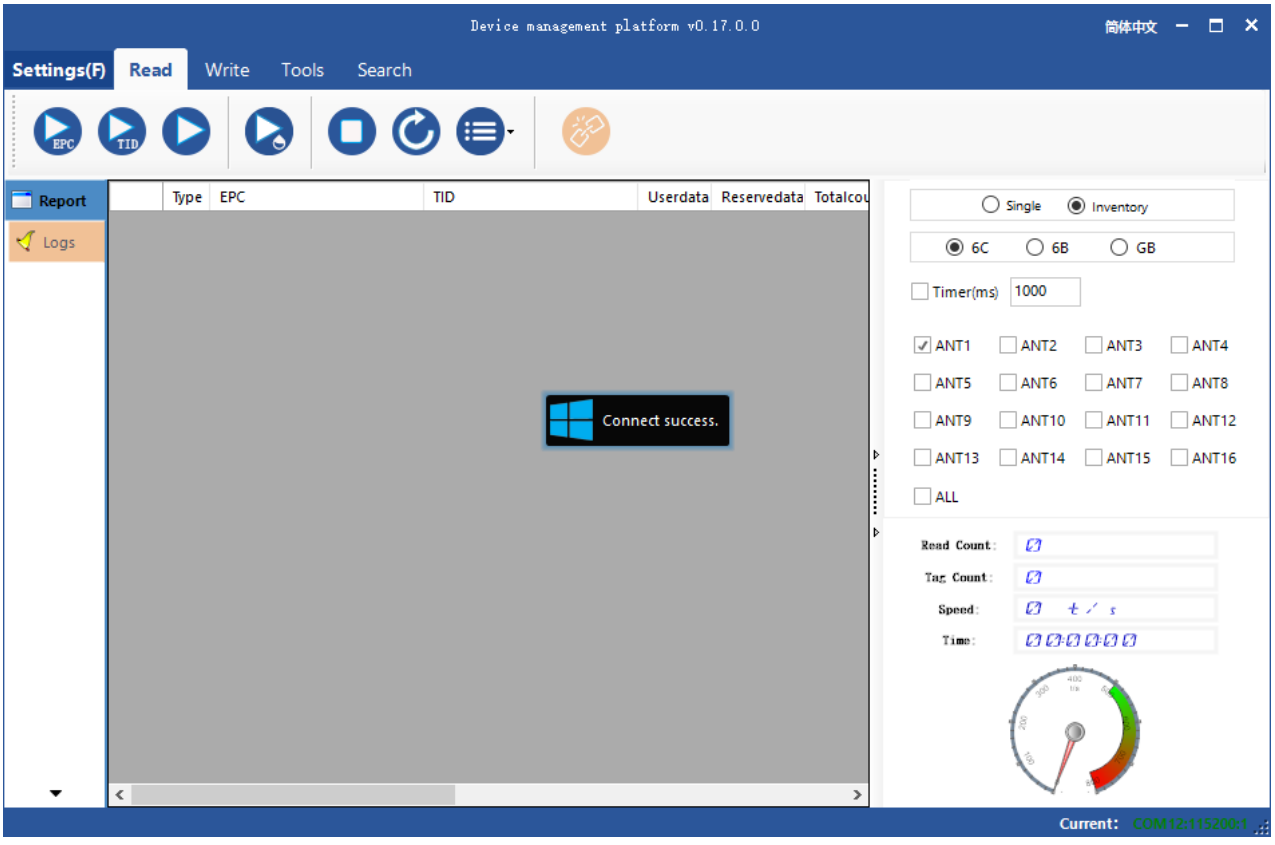


Figure 4.1.2.2 RS485 Connection success

4.1.3 TCP Client Communication Connection

Select communication mode" TCP client" in the " connect reader", "connection parameter", and fill in" "192.168.1.168:8160 " (192.168.1.168 is the default IP of the reader, 8160 is the port number). Click "Confirm", as Figure 4.1.3.1 shows. If the connection is successful, the icons will be colored like Figure 4.1.3.2.

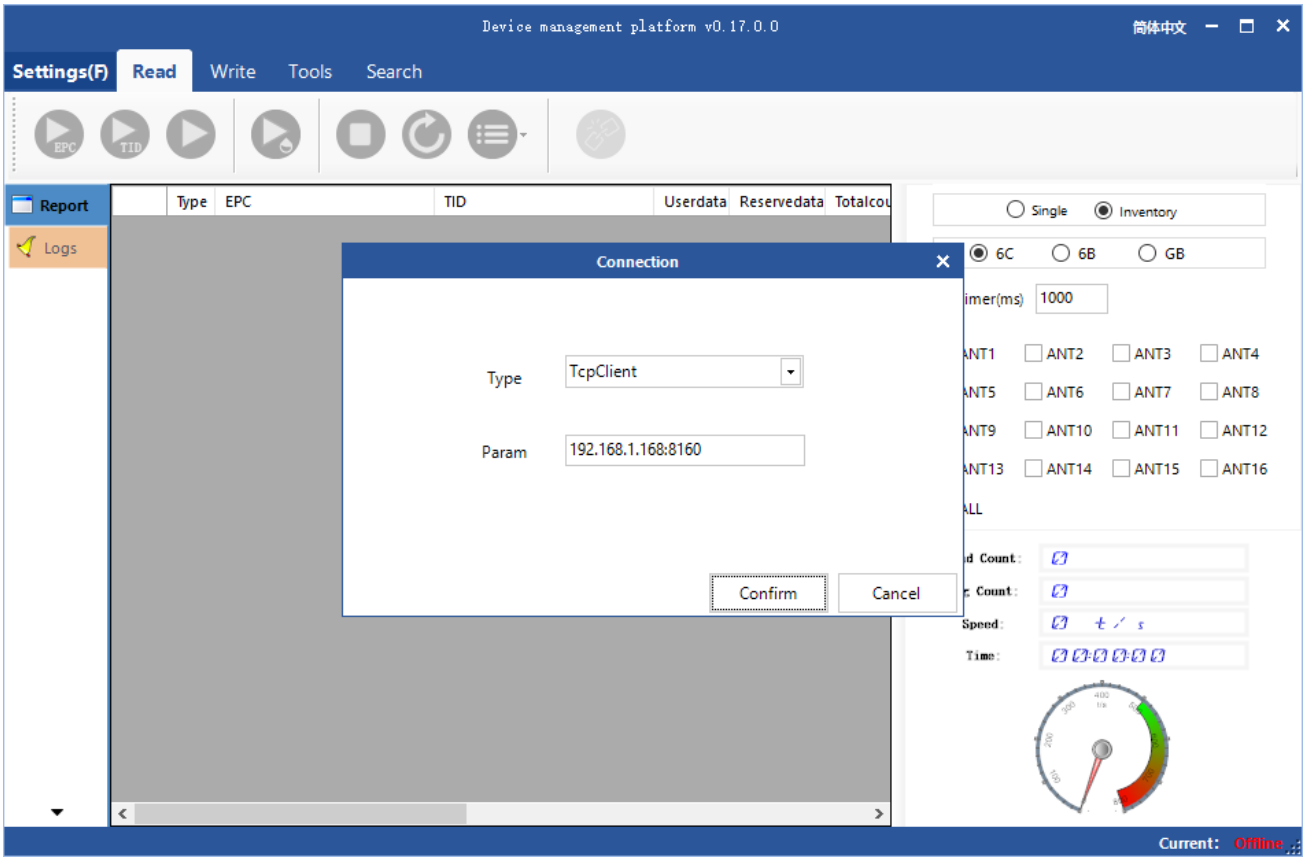


Figure 4.1.3.1 TCP Connection

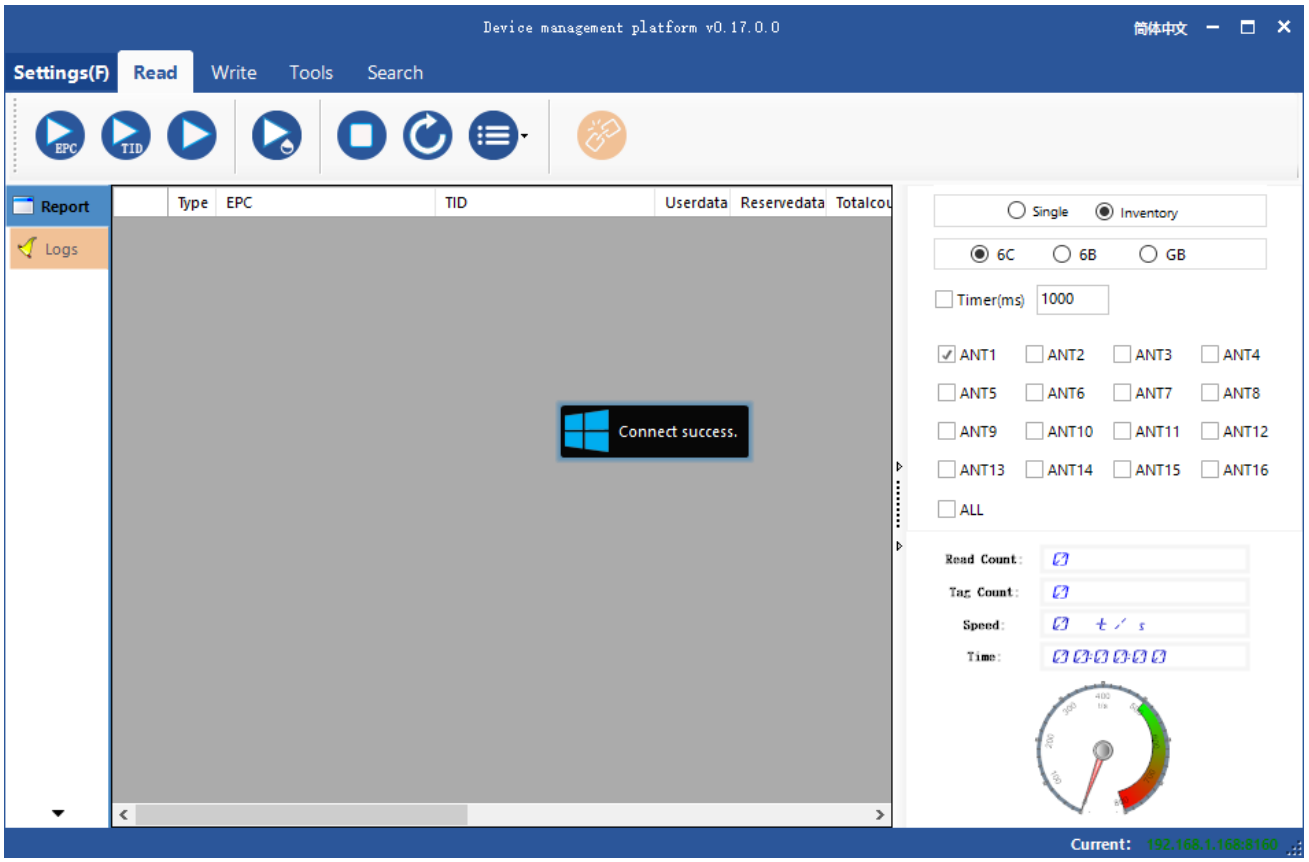


Figure 4.1.3.2 TCP Connection success

4.2 Data Displaying Area

Click  ,the data displaying area will be like Figure 4.2.1.

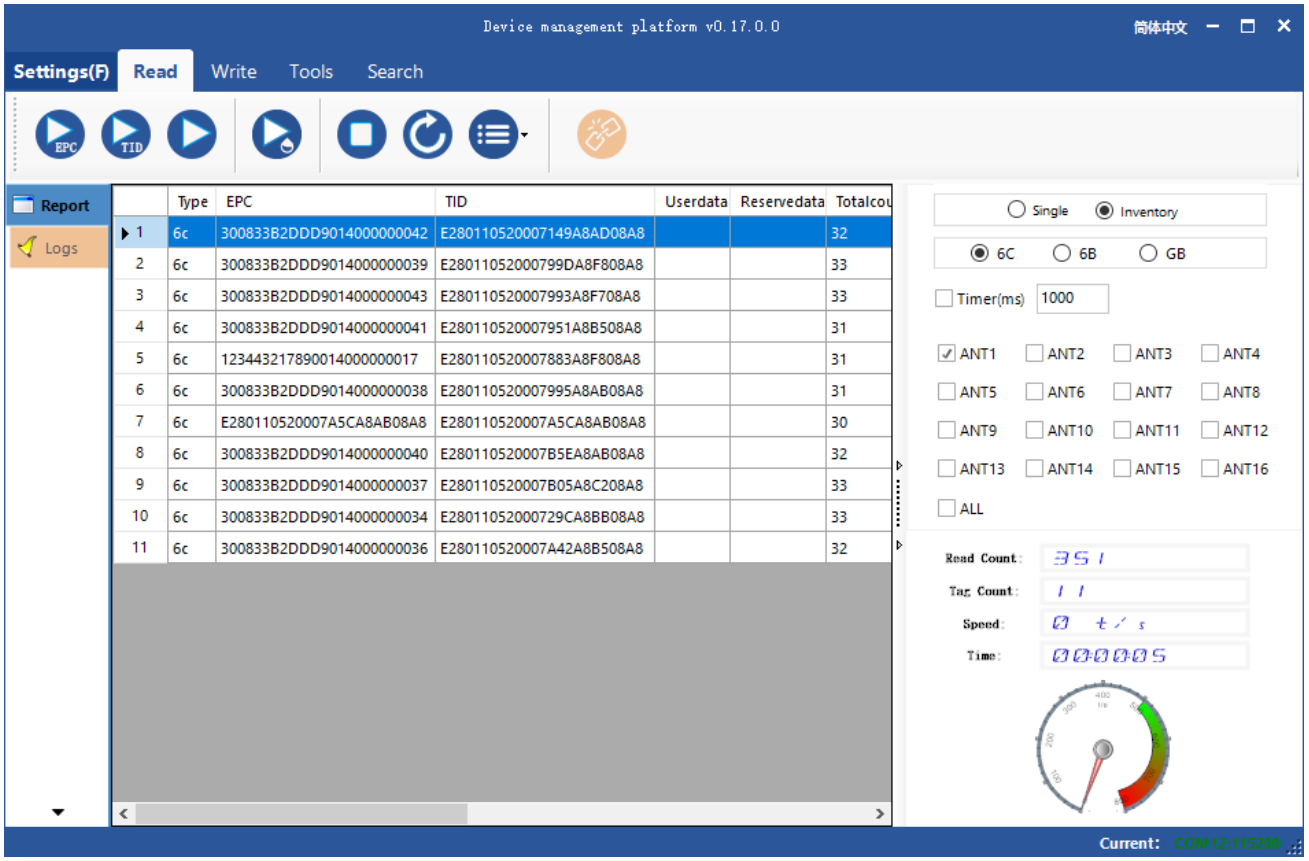


Figure 4.2.1 data displaying area parameter meaning

Type: type of tag:6C, 6B and GB ;

EPC: EPC data of the tag which is readable and writable ;

TID: TID data of the tag, which is a unique identification and readable only ;

Userdata: data of the user area, readable and writable ;

Reservedata: data of the reserved data, to store the tag password, etc. ;

Totalcount: total number of the times the tag read ;

ANT1: number of the times antenna 1 read ;

ANT2: number of the times antenna 2 read ;

ANT3: number of the times antenna 3 read ;

ANT4:number of the times antenna 4 read ;

ANT5: number of the times antenna 5 read ;

ANT6: number of the times antenna 6 read ;

ANT7: number of the times antenna 7 read ;

ANT8: number of the times antenna 8 read ;

RSSI: signal strength ;

Frequency: the frequency of the tag being read ;

Phase: phase value of the tag being read ;

ReadTime: reading time .

4.2.1 Read EPC

Click 

, and the EPC being read will be displayed on the data displaying area. It can read the EPC data area of the ISO18000-6C tag and national standard tag.

EPC is displayed in hexadecimal strings, and the length is in words (1 word=2 bytes=4 hexadecimal character) .

To read the EPC data of custom length, please refer to Custom Reading for details.

4.2.2 Read TID

Click 

, and the EPC and TID data being read will be displayed on the data displaying area. It can read the EPC and TID data area of ISO18000-6B, ISO18000-6C, and national standard tag.

TID is displayed in hexadecimal strings, and the length is in words (1 word=2 bytes=4 hexadecimal character) . The length of TID is defaulted to be 6 words.

To read the TID data of custom length, please refer to Custom Reading for details.

4.2.3 Custom Read

4.2.3.1 ISO18000-6C Tag

Select ”6C” as tag type , click  ,and a dialog box will pop up, like Figure 4.2.3.1. Detail parameter instruction will be as follows:

Match parameter, which can be read by matching the known tag data, means that only this tag can be read.

Read TID: select read tag TID data. The reading mode is defaulted to be "self-adaptable" and the reading length is in words, as shown in Figure 4.2.3.1.

Read user data: choose to read the data of the tag user area. The starting address and reading length are in words, as shown in Figure 4.2.3.2.

Read reserved area: select the data of the tag reserve area. The starting address and reading length are in words, as shown in Figure 4.2.3.3.

Access password, the access password for tag checking, as shown in Figure 4.2.3.4.

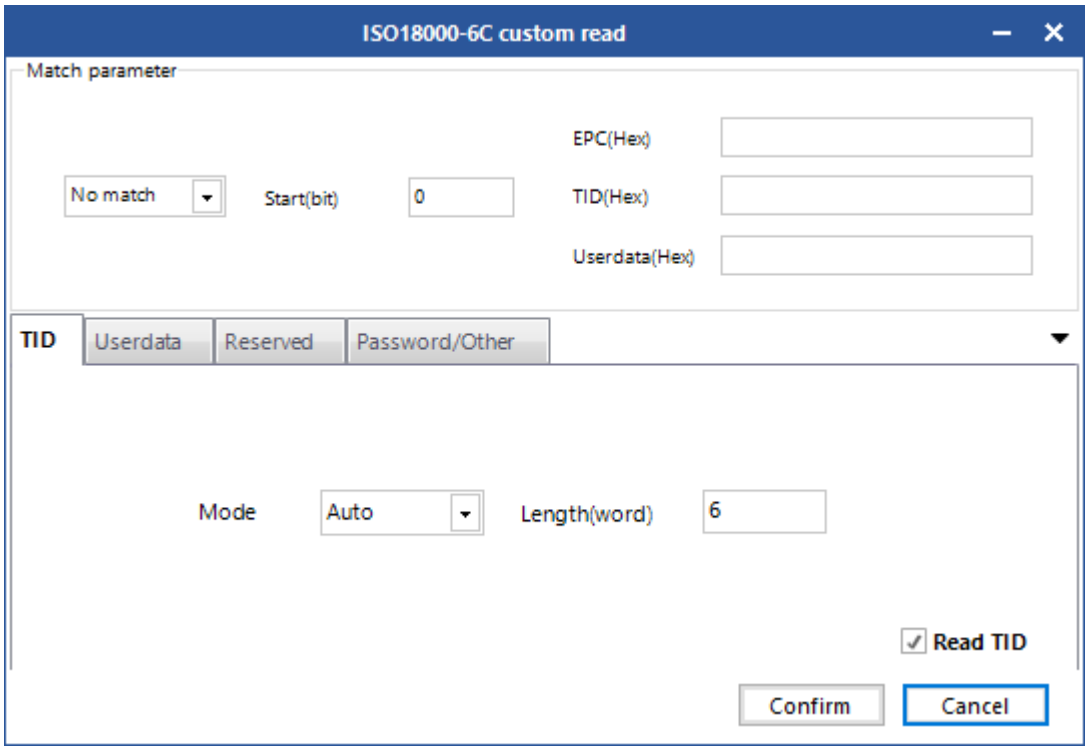


Figure 4.2.3.1 Custom Reading for EPC Tag (TID)

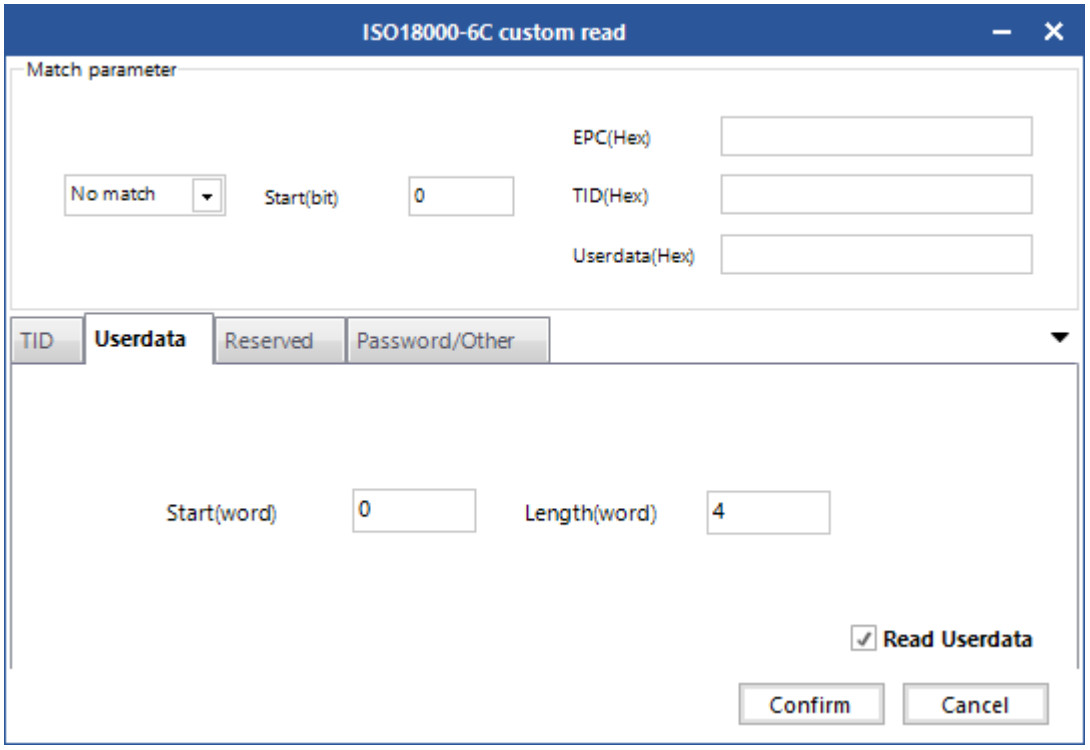


Figure 4.2.3.2 Custom Reading for EPC Tag (Userdata)

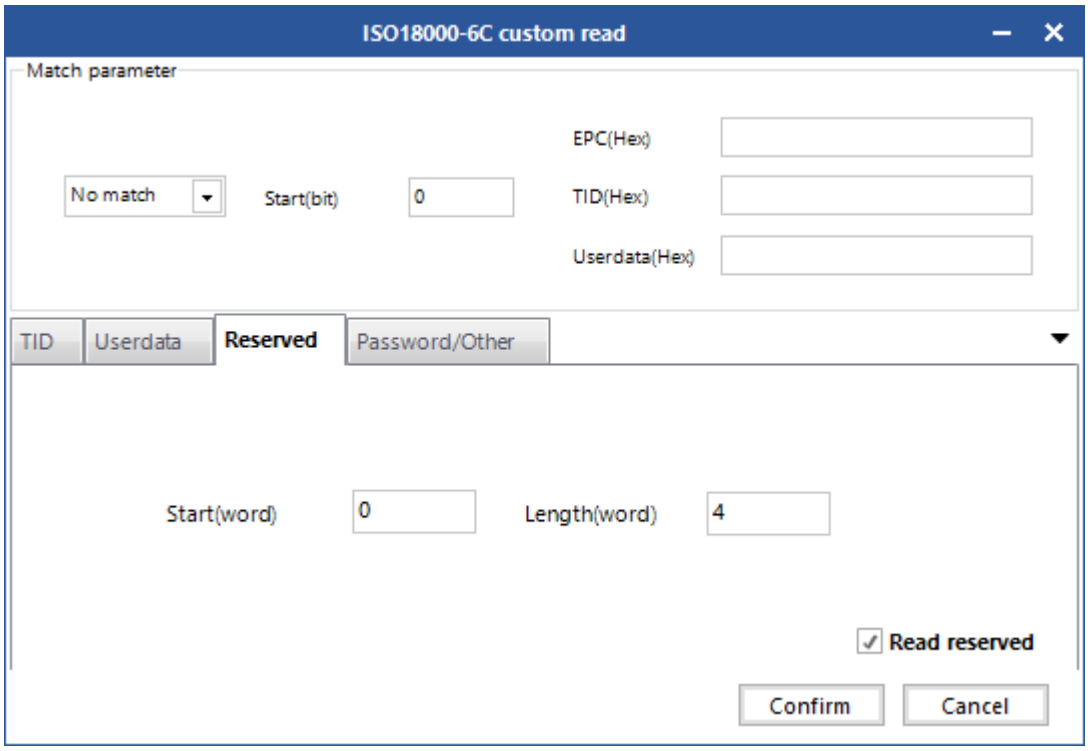


Figure 4.2.3.3 Custom Reading for EPC Tag (reserved area)

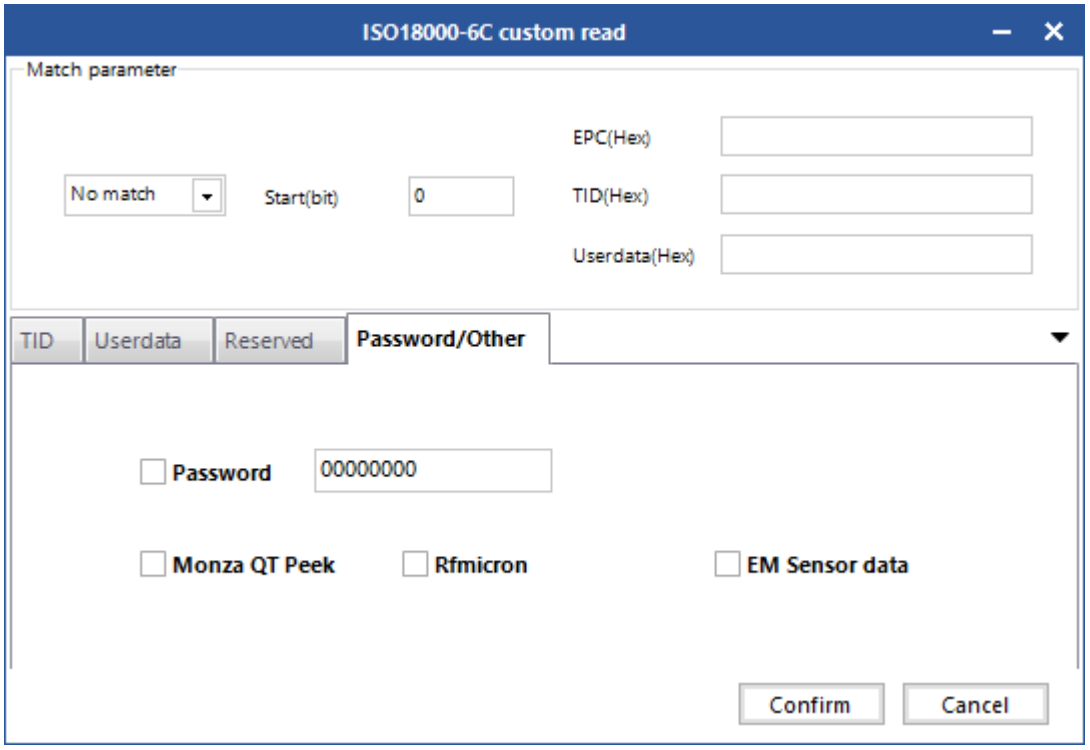


Figure 4.2.3.4 Custom Reading for EPC Tag (Access Password/Other)

4.2.3.2 ISO18000-6B Tag

Select ”6B” as tag type, click , and the dialog box will pop up. As shown in Figure 4.2.3.5. TID data or user data can be selected to read, and TID matching reading can be performed. Users unfamiliar with tag protocol

please ignore this function. The starting address and reading length are in words.

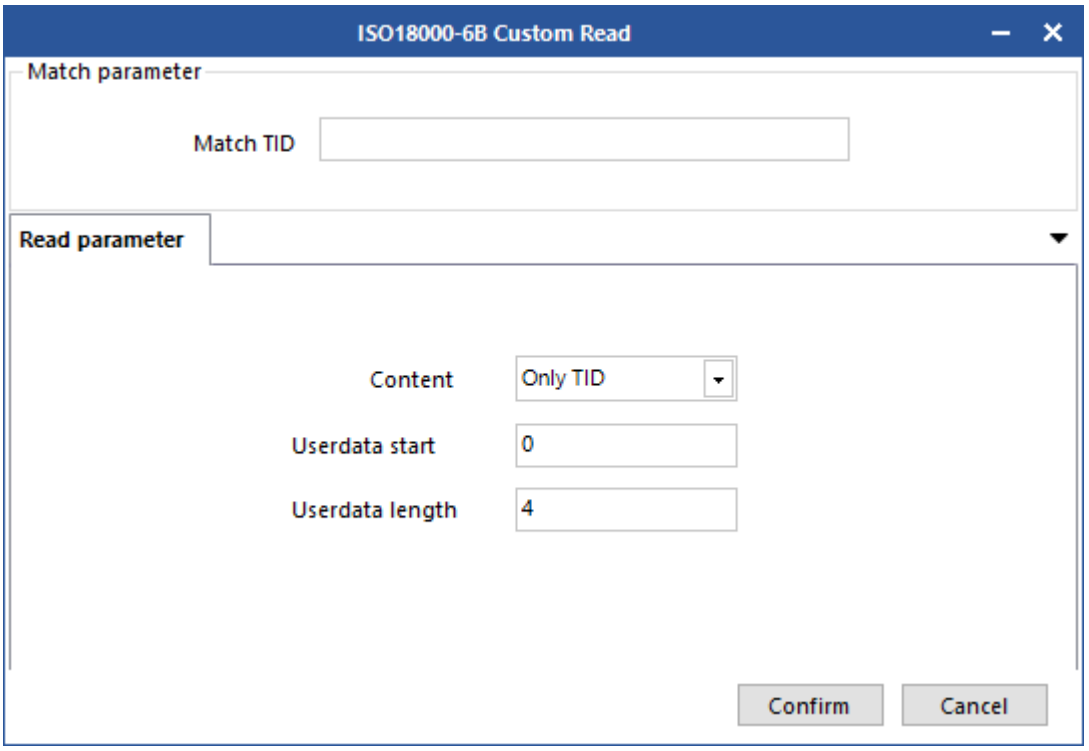


Figure 4.2.3.5 Custom Reading for 6B tag

4.2.3.3 GB/T 29768—2013 Tag

Select"GB" as tag tye, click ,and the dialog box will pop up as shown in Figure 4.2.3.6. TID data or user data can be selected to read, and TID matching reading can be performed.

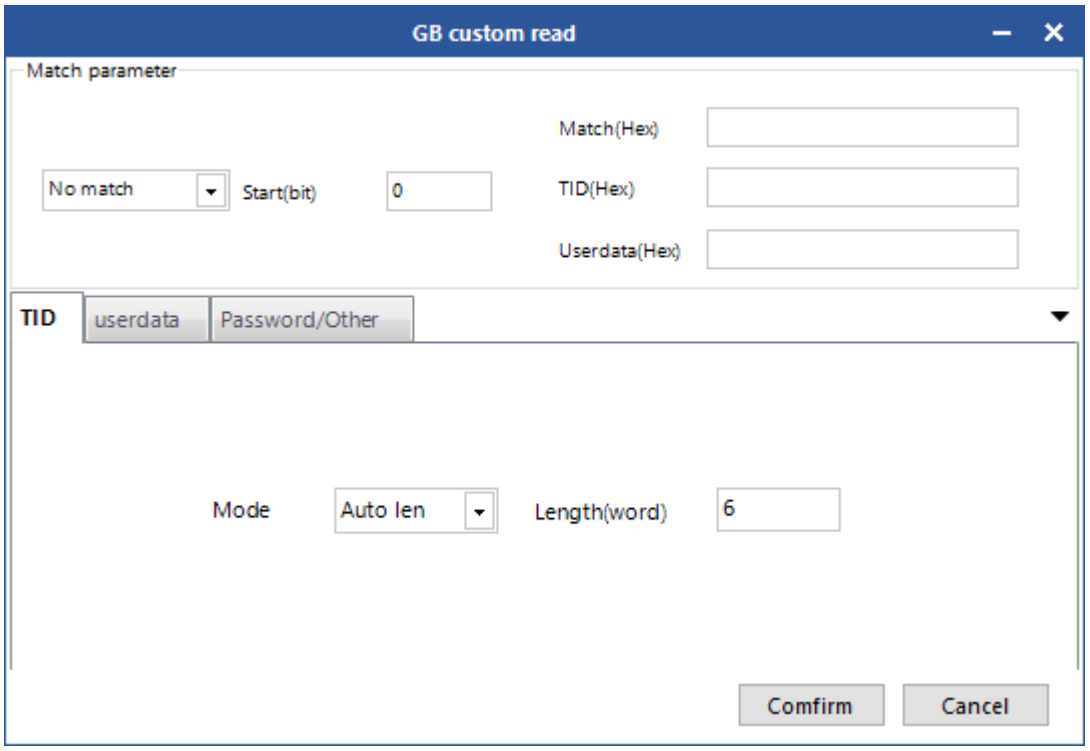


Figure 4.2.3.6 Custom Reading for GB-T 29768—2013 Tag (TID)

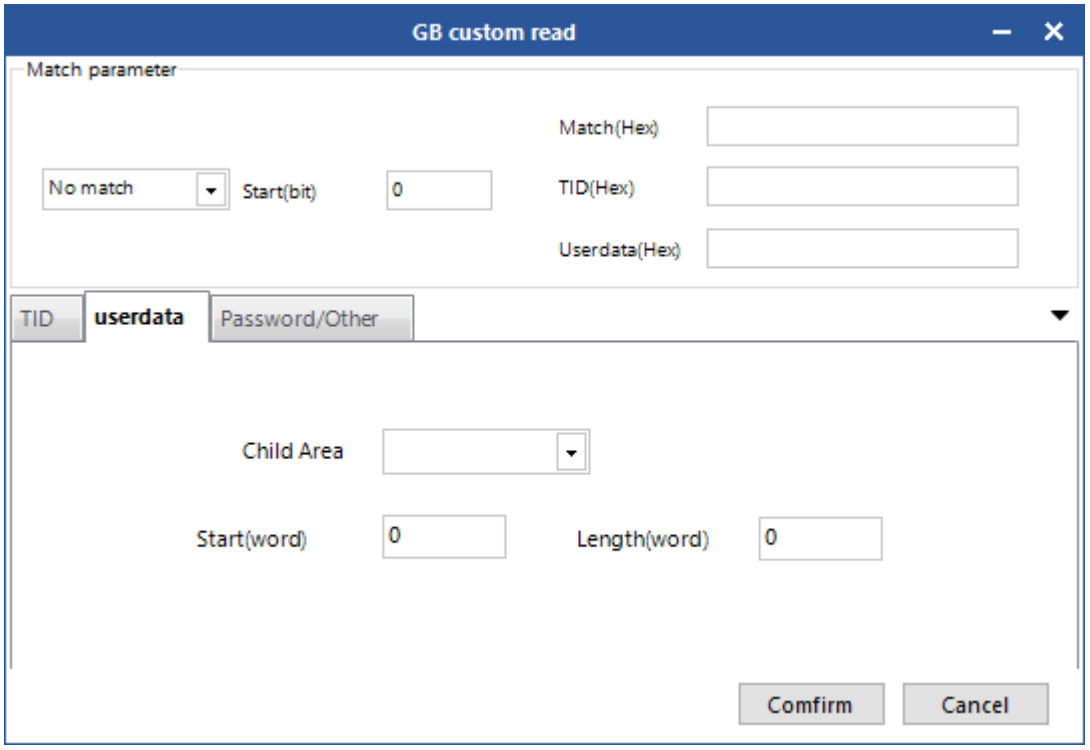


Figure 4.2.3.7 Custom Reading for GB-T 29768—2013 Tag (userdata)

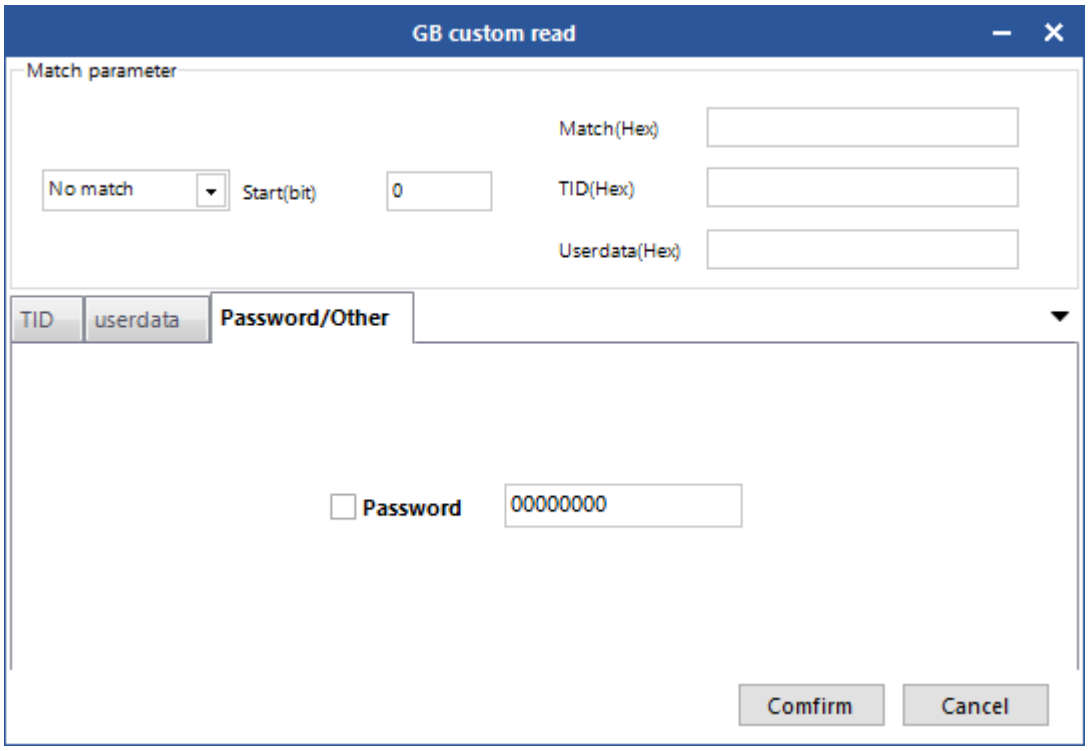


Figure 4.2.3.7 Custom Reading for GB-T 29768—2013 Tag (accesss password)

4.2.4 Stop

Click  to stop all RFID operations of the reader and put the reader into an idle state.

4.3 Write Data

4.3.1 Write EPC Data

Select Write on the main interface -> click  , and the dialog box will pop up as shown in Figure 4.3.1 .

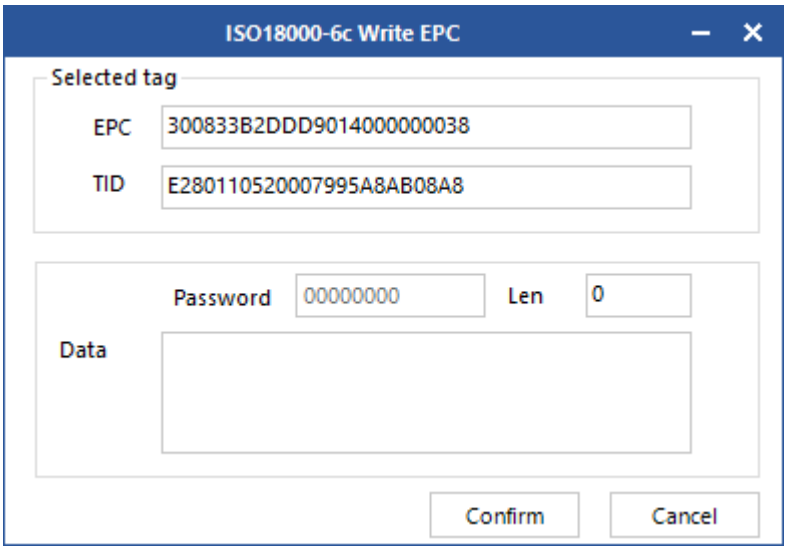


Figure 4.3.1 Write EPC Data

Select data (with TID information) of a tag, fill in EPC data (hexadecimal character string), then click “Confirm”.

4.3.2 Write User Data

Select Write on the main interface -> click 

and the dialog box will pop up, as shown in Figure 4.3.2.

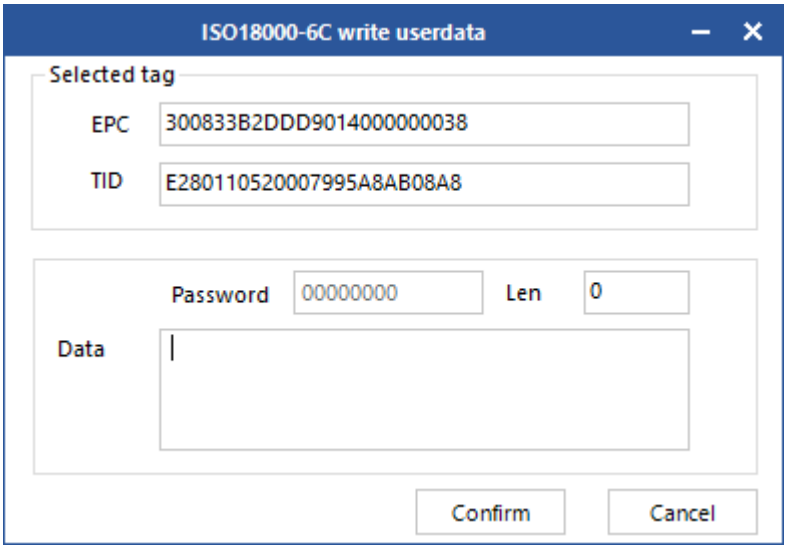


Figure 4.3.2 write user data

Select data (with TID information) of a read tag, fill in EPC data (hexadecimal character string), then click “Confirm”.

4.3.3 Custom Tag Operation

Select a tag data in the displaying data area before custom tag operation.

Otherwise, the tag with the best signal will be the default one. Take care to follow the communication protocol about the writing/ reading/ locking/ destroying for the tag.

4.3.3.1 ISO18000-6C Tag

Select 6C as tag type. Click  , and the dialog box will pop up, as shown in Figure 4.3.3.1. Writing operation can change data of the specified area of the tag. Access passwor is needed if such area is locked.

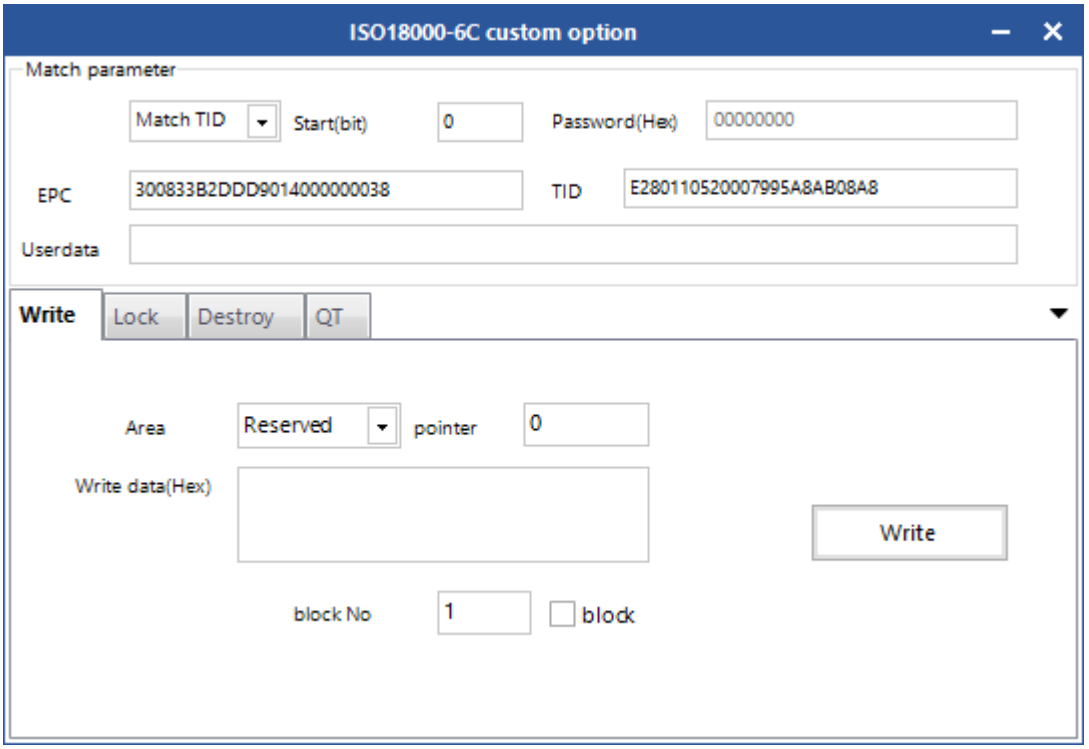


Figure 4.3.3.1 6C Tag Custom Operation(Write)

Locking operation to 6C tag. The interface is 6C as shown in Figure 4.3.3.2. Select the area for operation and corresponding operation, fill in password then the operation can be done, or it will fail (it also fails for tag without any password).

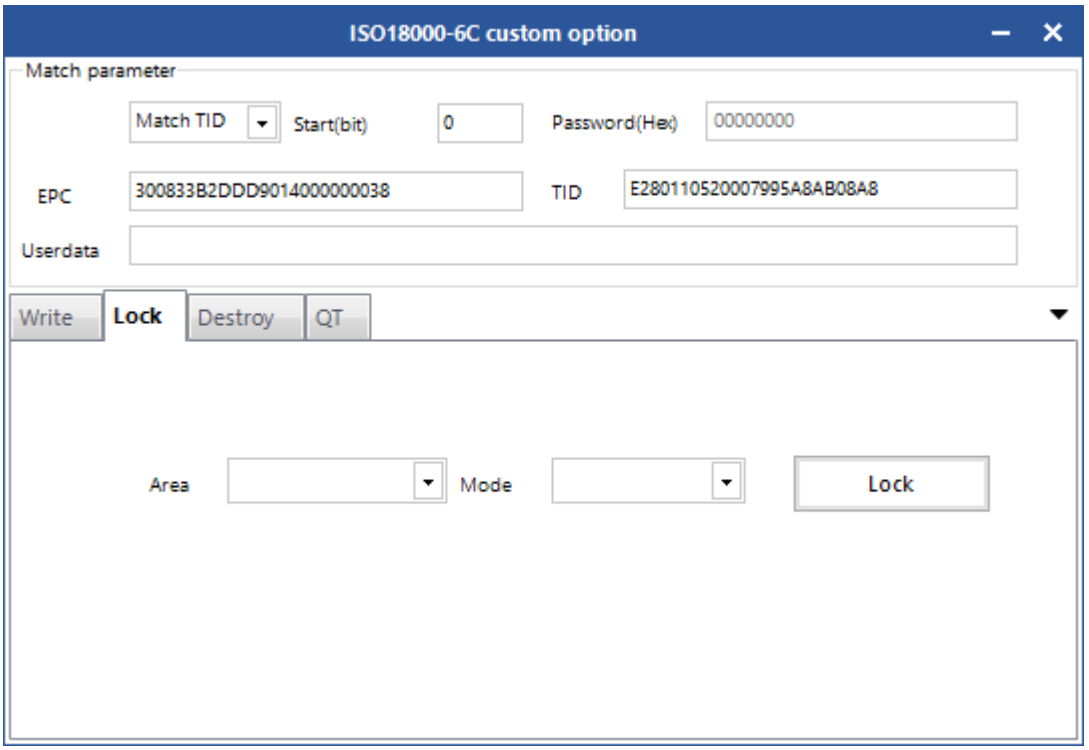


Figure 4.3.3.2 6C Tag Custom Operation(Lock)

Destroying operation to 6C tag is as shown in Figure 4.3.3.3. Click Destroy after filling in the password, then the tag will be destroyed. This operation is irrevocable and the tag destroyed will be invaid permanently.

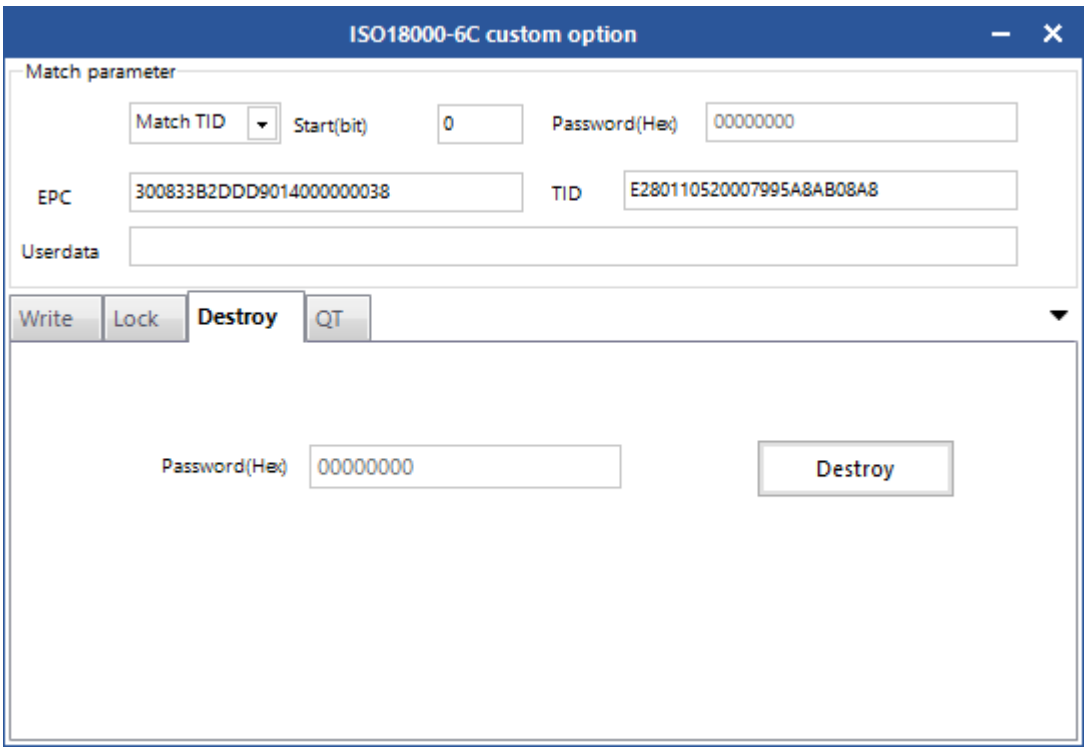


Figure 4.3.3.3 6C Tag Custom Operation(Destroy)

4.3.3.2 ISO18000-6B Tag

Select 6B as tag type. Click  , and the dialog box will pop up, as shown in Figure 4.3.3.4. Only user area is writable area for 6B tag. Click “Write” after filling in the start address and writing content.

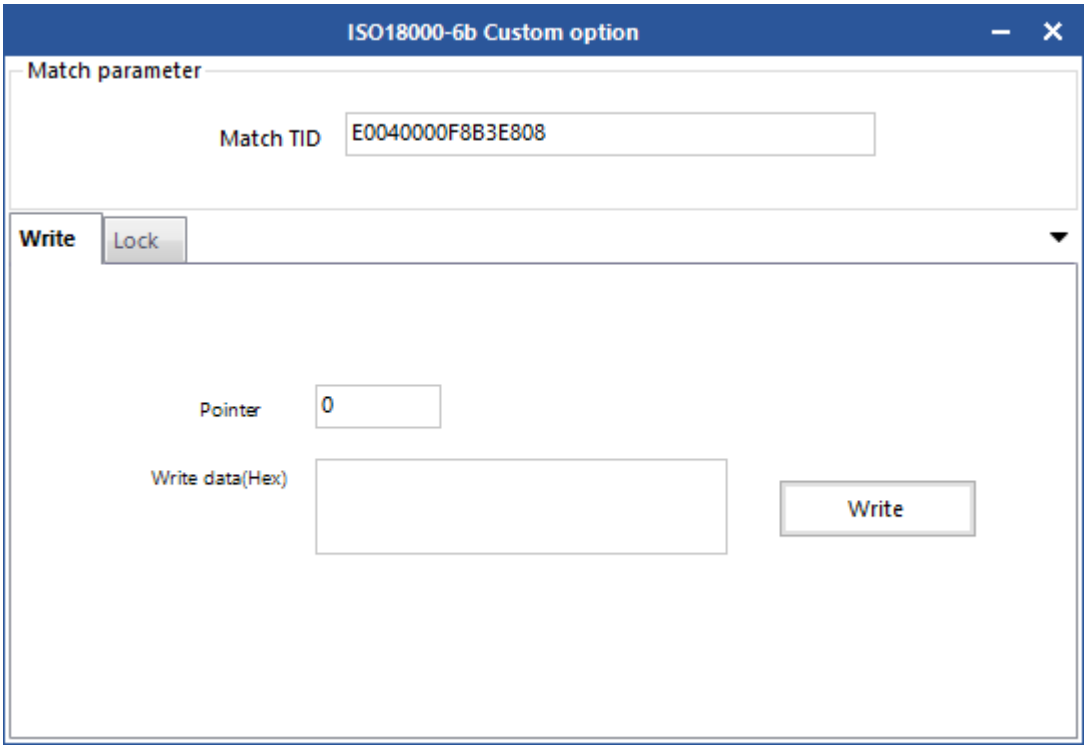


Figure 4.3.3.4 6B Tag Custom Operation(Write)

The locking operation for 6B tag includes locking and locking get. As shown in Figure 4.3.3.5, fill in operation address, and click “Lock” to lock this address. The locked address is irreversible. Click “Get” to check if the adress is locked.

Notes: The locking for 6B tag is irrevocable and irreversibel. And The lock operation defined by this command is a single operation.

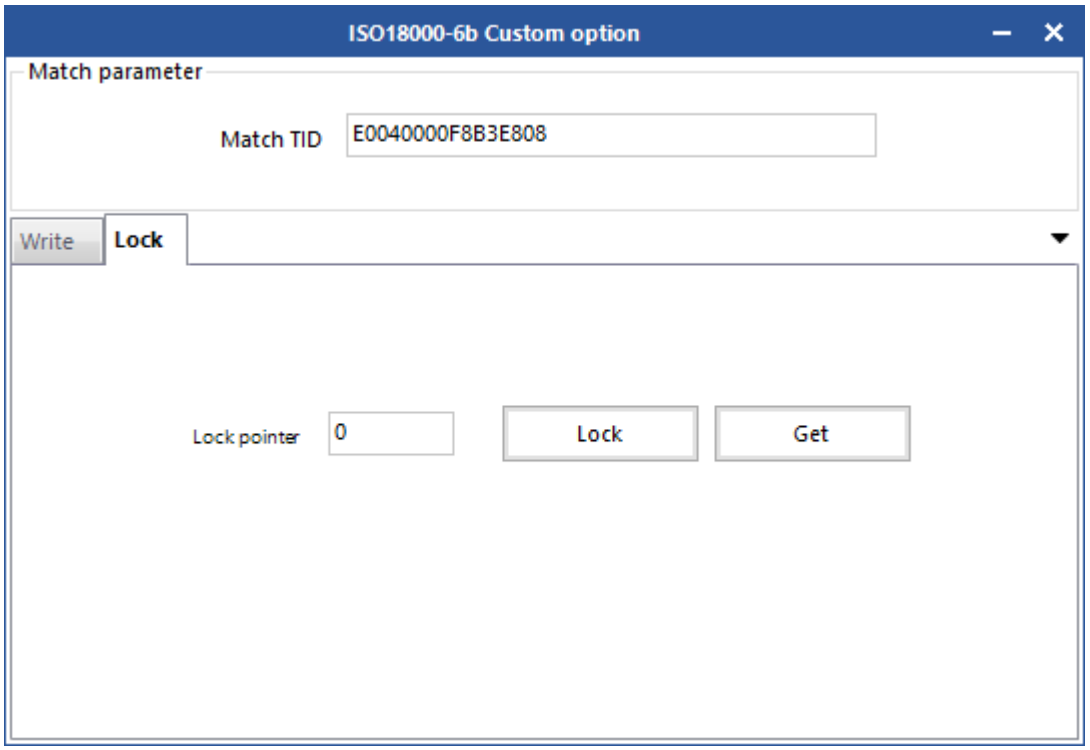


Figure 4.3.3.5 6B Tag Custom Operation(lock)

4.3.3.3 GB/T 29768—2013 Tag

Select GB as tag type. Click  , and the dialog box will pop up, as shown in Figure 4.3.3.6. Select the writing area, fill iin the address and content, click “Write”, then the opertion is done with the Write successfully Prompt. Read the data after writing to check if the data writing is correct if needed.

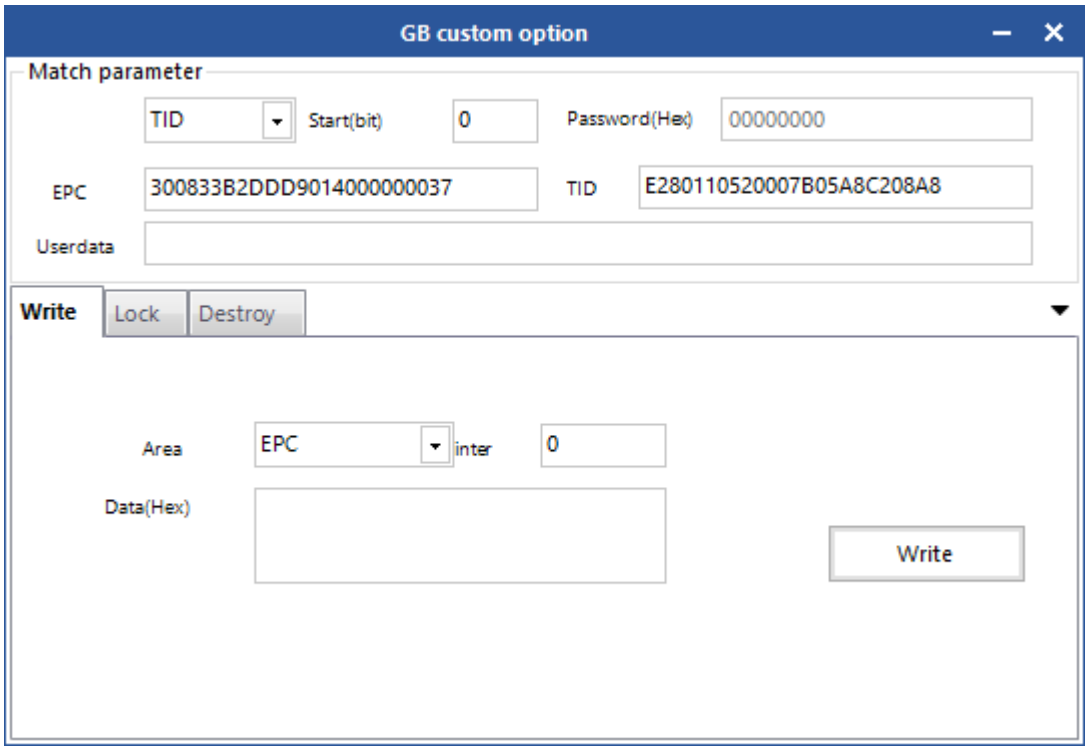


Figure 4.3.3.6 GB/T 29768—2013 Tag Custom Operation(Write)

The locking operation of national-standard tag is as shown in Figure 4.3.3.7. Select the area for operation and corresponding operation, fill in password then the operation can be done, or it will fail (it also fails for tag without any password).

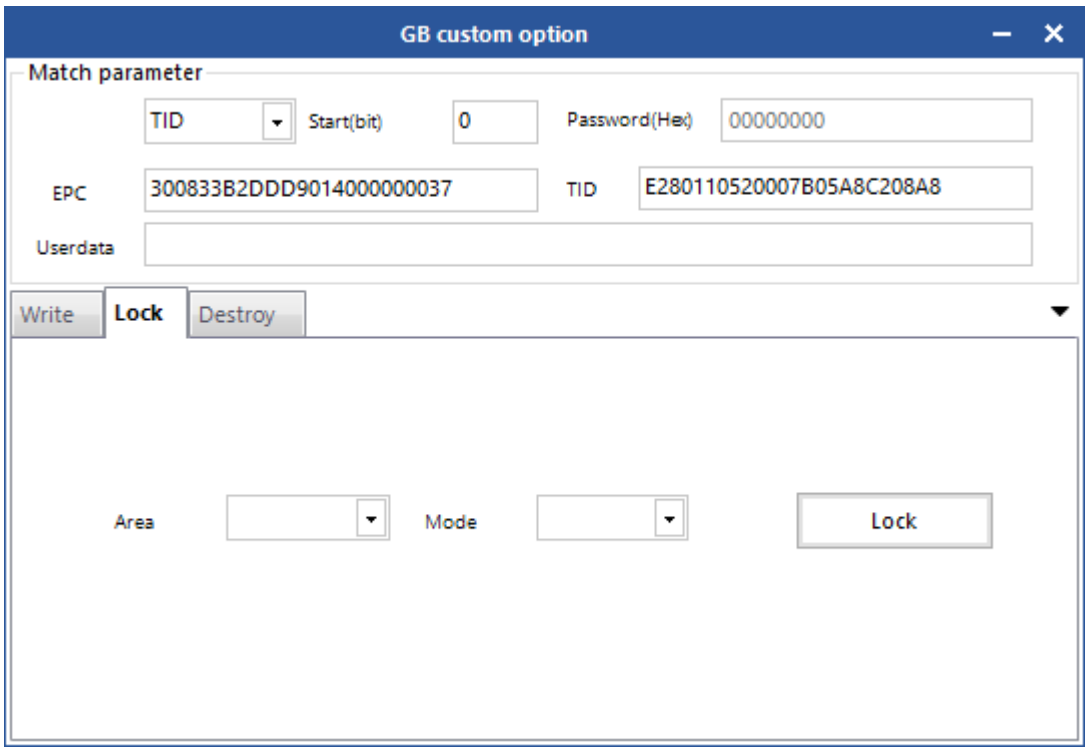


Figure 4.3.3.7 GB/T 29768—2013 Tag Custom Operation(Lock)

Destroying operation to national-standard tag is as shown in Figure 4.3.3.8. Click Destroy after filling in the password, then the tag will be

destroyed. This operation is irrevocable and the tag destroyed will be invaid permanently.

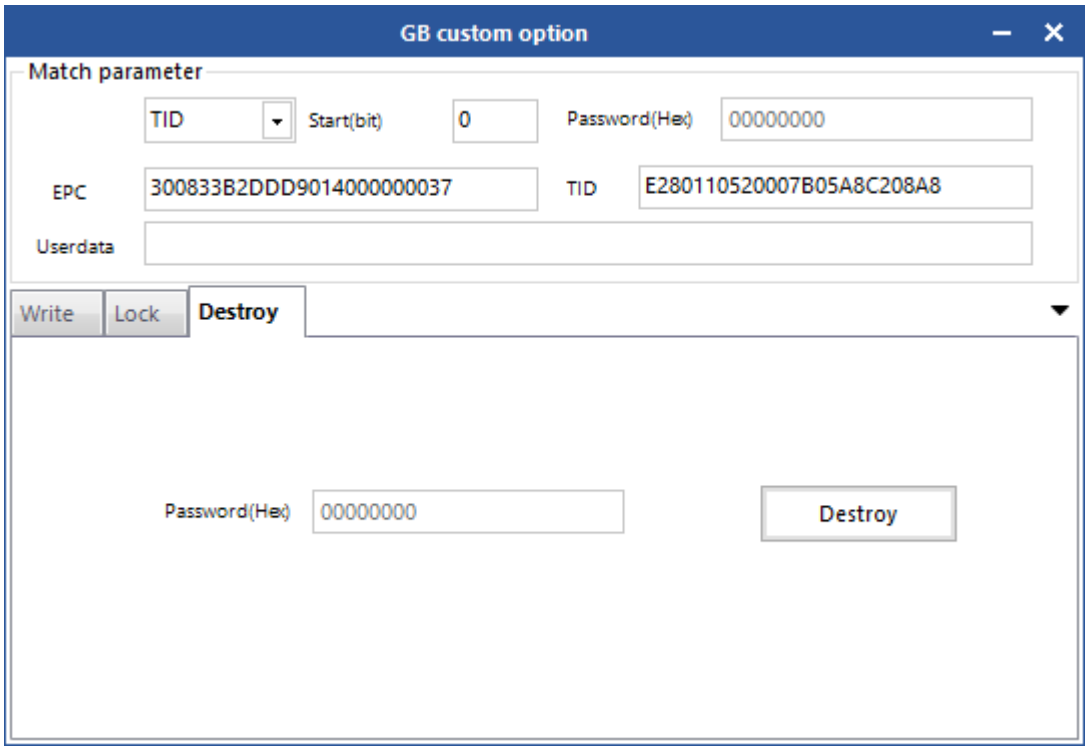


Figure 4.3.3.8 National-standard Tag Custom Operation(destroy)

4.4 Device Configuration

Select Device Control in the main interface of the Demo ->Device Configuration and then the dialog will pop up as shown in Figure 4.4 .

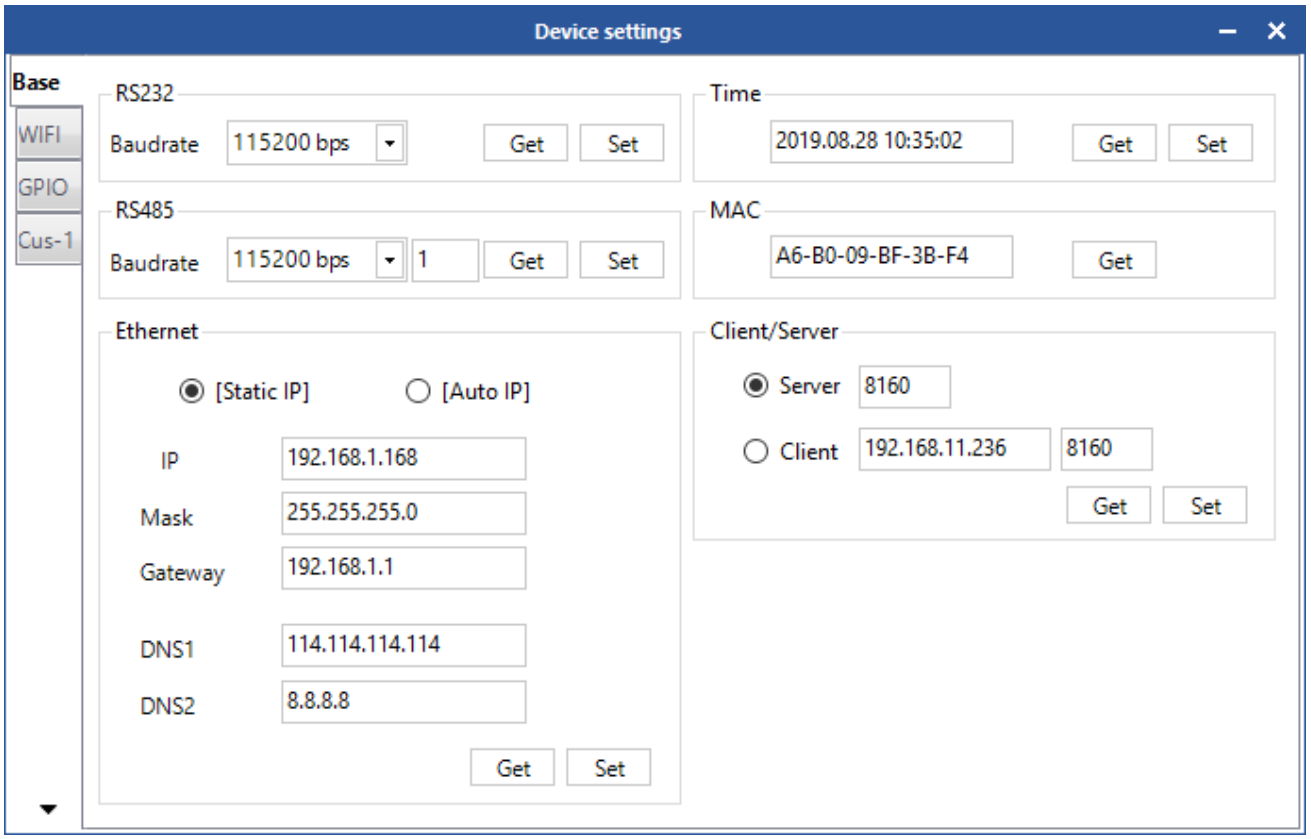


Figure 4.4 Device Configuration

4.4.1 RS232 Parameter

The COM parameter is on the top left corner as shown in Figure 4.4.1. Click “Get” to acquire the communication baud rate parameter of the COM. Then click Setting to set the communication baud rate parameter of the COM. Baud rate includes 9600 bps, 19200 bps, 115200 bps, 230400 bps and 460800bps, and the others are unsupported. The default one is 115200 bps.

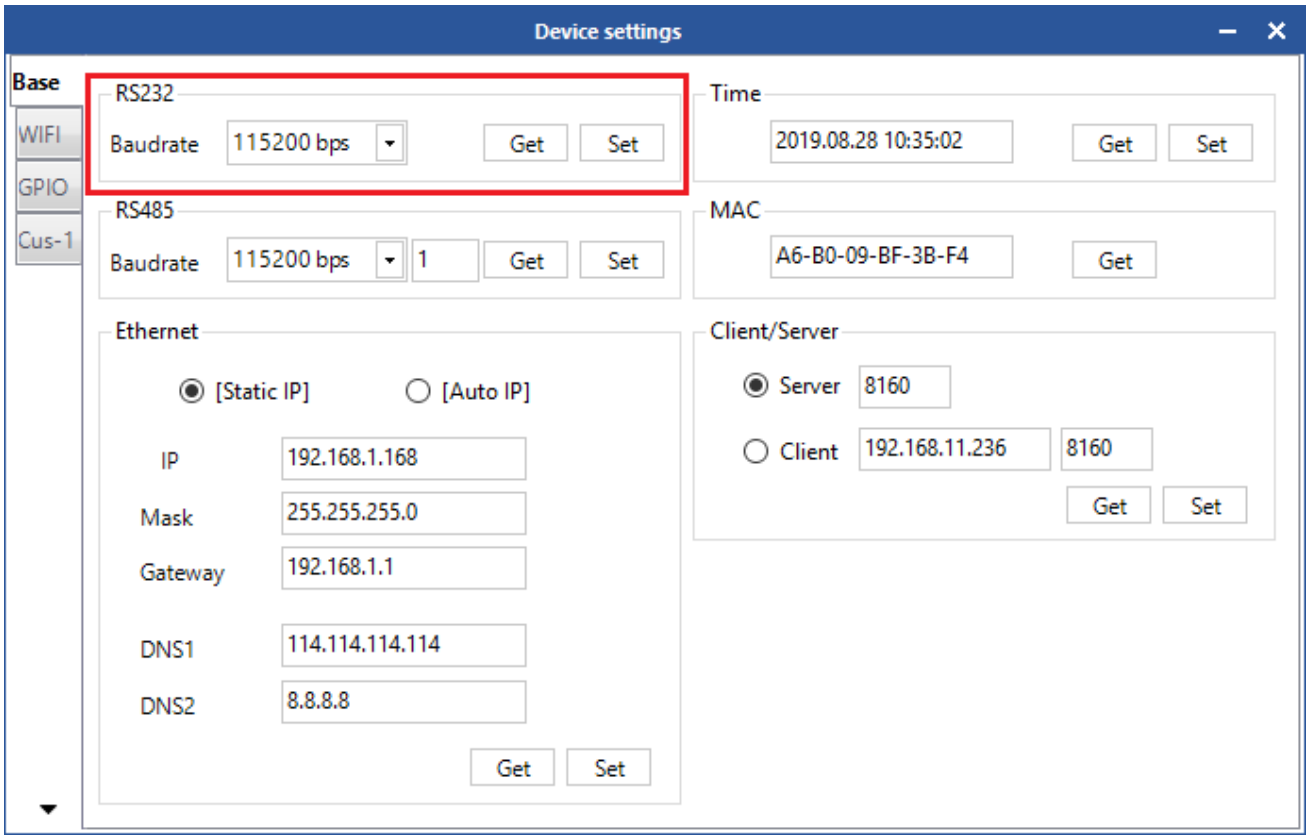


Figure 4.4.1 COM Parameter

4.4.2 RS485 Parameter

The RS485 parameter is on the top left corner as shown in Figure 4.4.2. Click “Get” to acquire the communication baud rate parameter of the RS485. Then click Setting to set the communication baud rate parameter of the COM. Baud rate includes 9600 bps, 19200 bps, 115200 bps, 230400 bps and 460800bps. The default one is 115200 bps. The RS485 BUS address(0~255) is on the text box on the right.

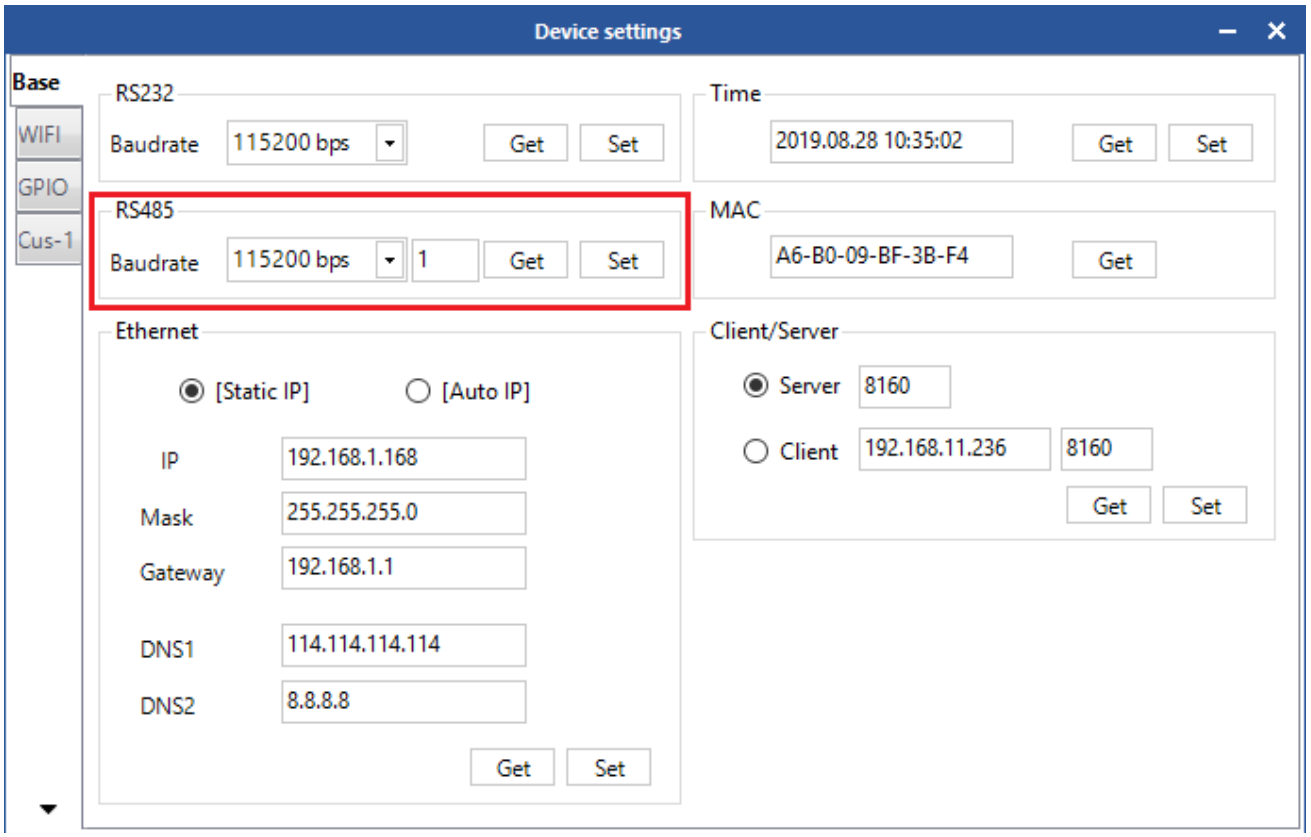


Figure 4.4.2 RS485 parameter

4.4.3 Ethernet Parameter

The Ethernet parameter is on the lower left corner as shown in Figure 4.4.3.1. Click “Get” to check the Ethernet parameter of the reader, then click Setting to set the Ethernet parameter.

Click “Get” to check the Ethernet parameter after configuration(as shown in Figure 4.4.3.2) if Acquire IP Automatically is being used as shown in Figure 4.4.3.3. Connect the reader with TCP as shown in Figure 4.4.3.4,fill in IP address, click “Set”, then the prompt will pop up as shown in Figure 4.4.3.5. Acquire IP Automatically normally works with a router.

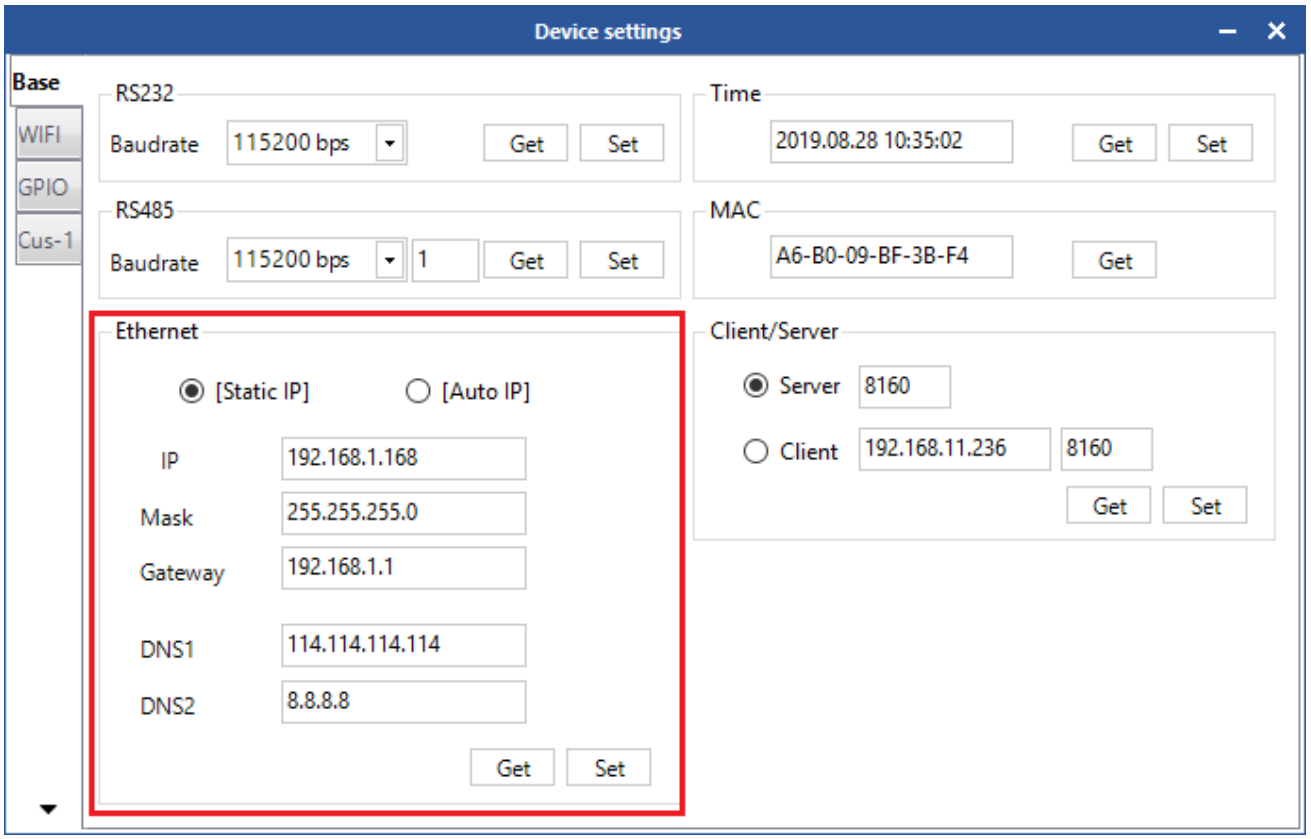


Figure 4.4.3.1 Ethernet parameter

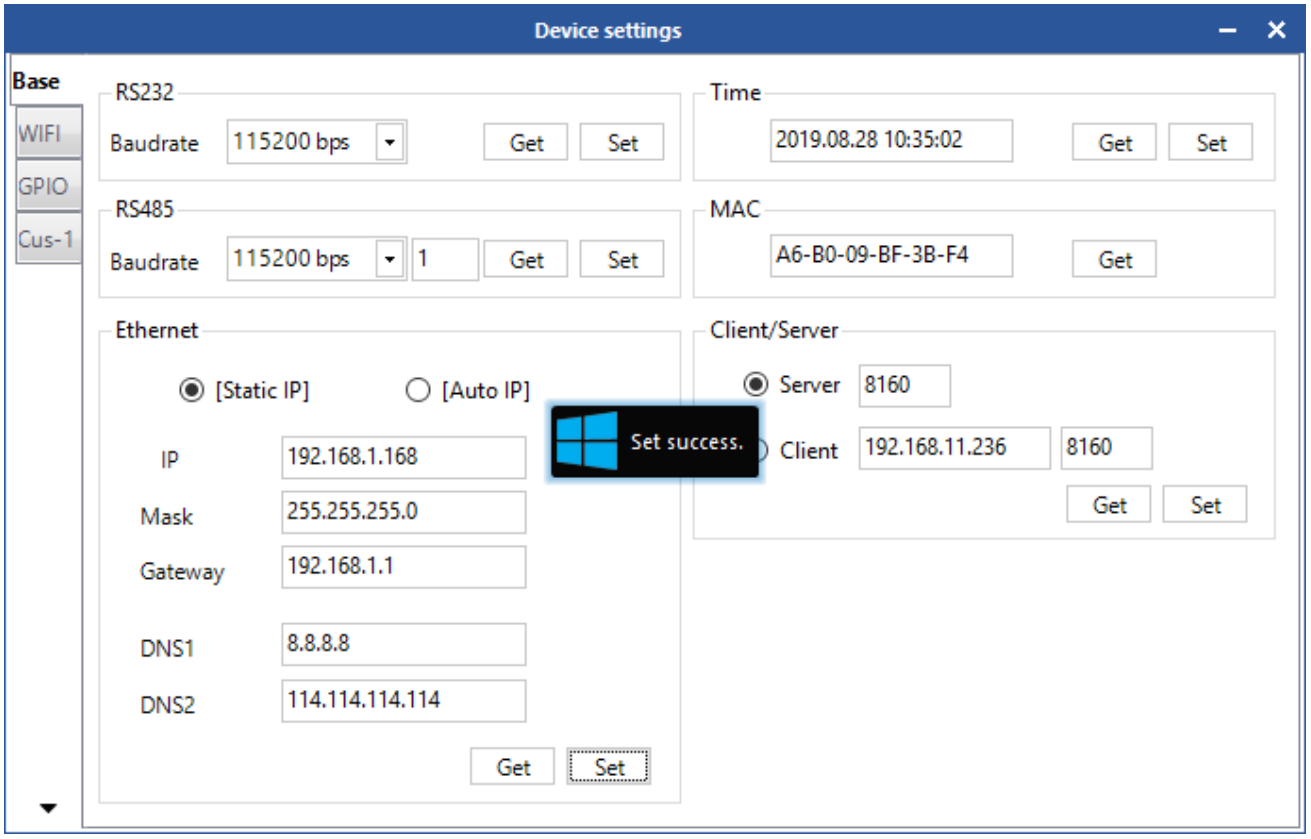


Figure 4.4.3.2 Acquire IP Automatically

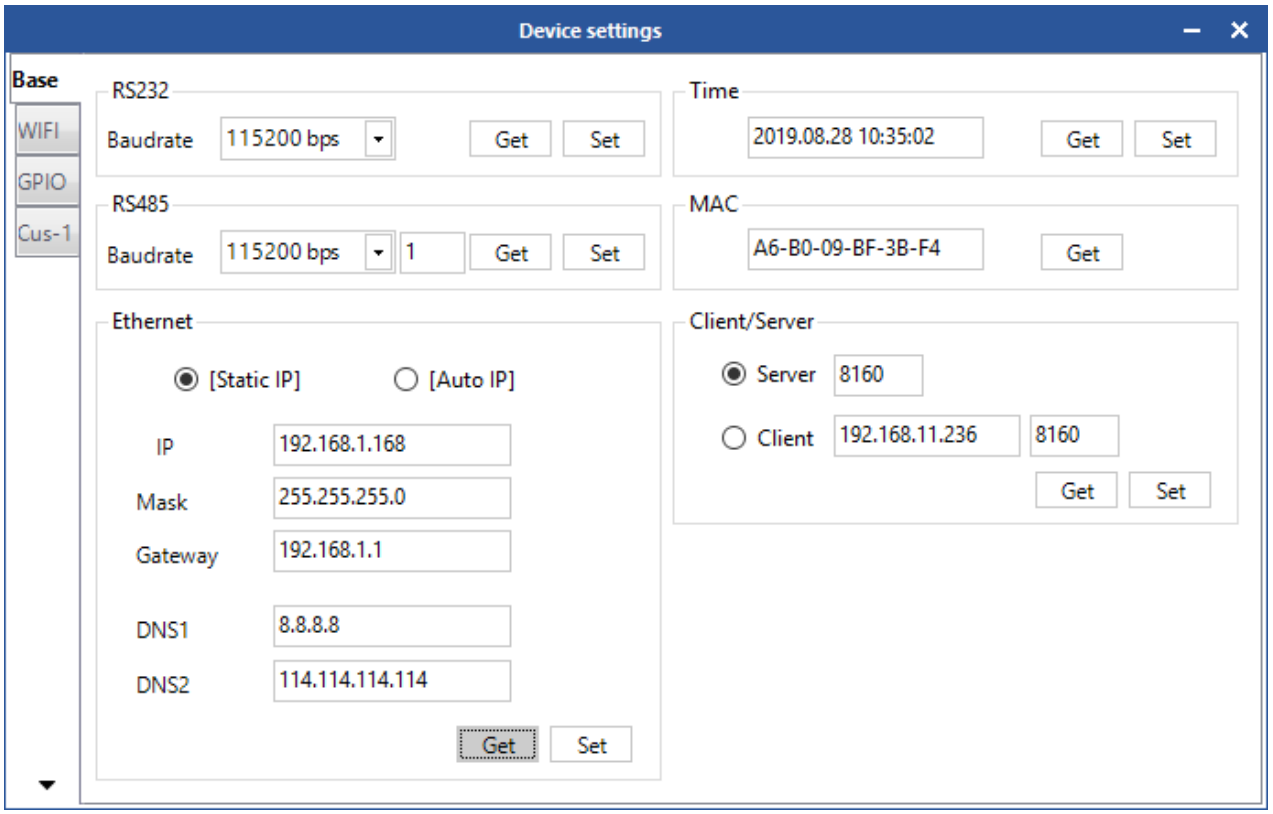


Figure 4.4.3.3 IP Parameter

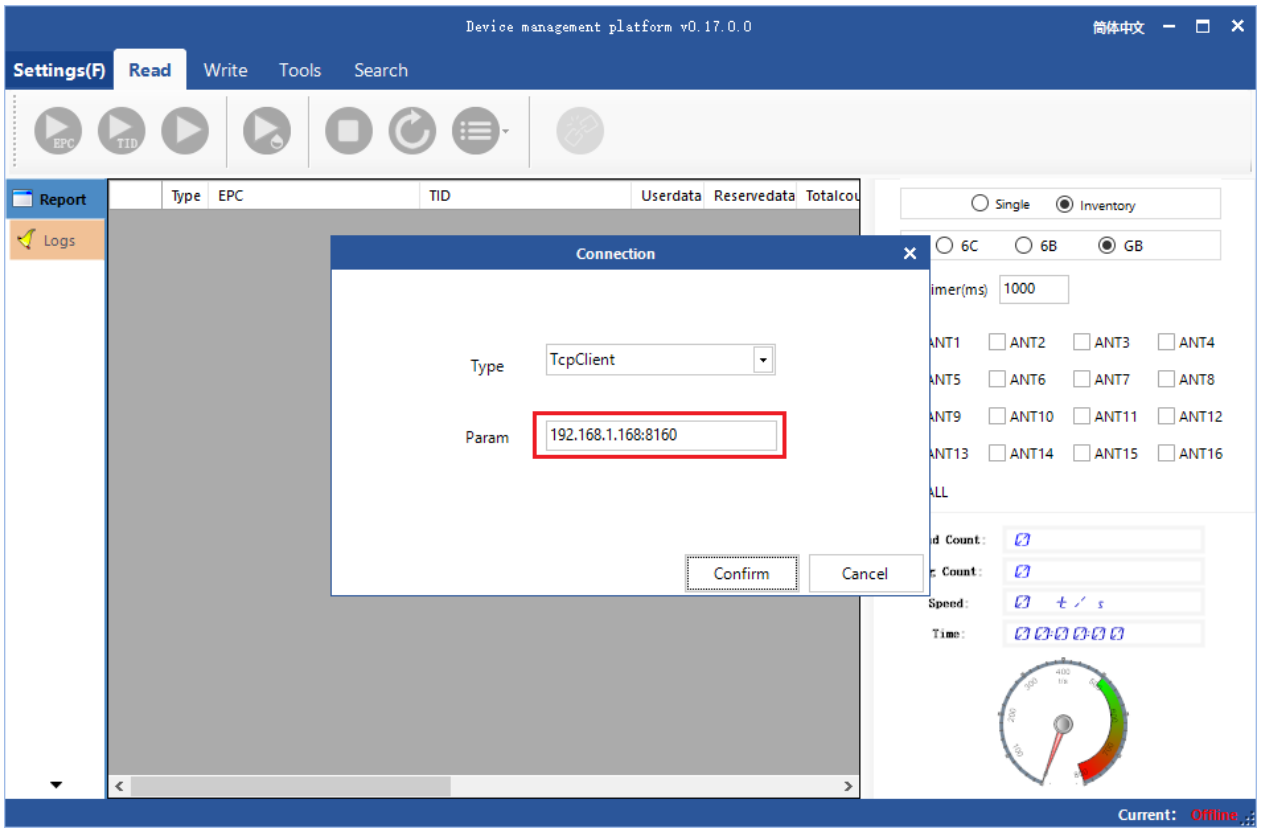


Figure 4.4.3.4 TCP Connection

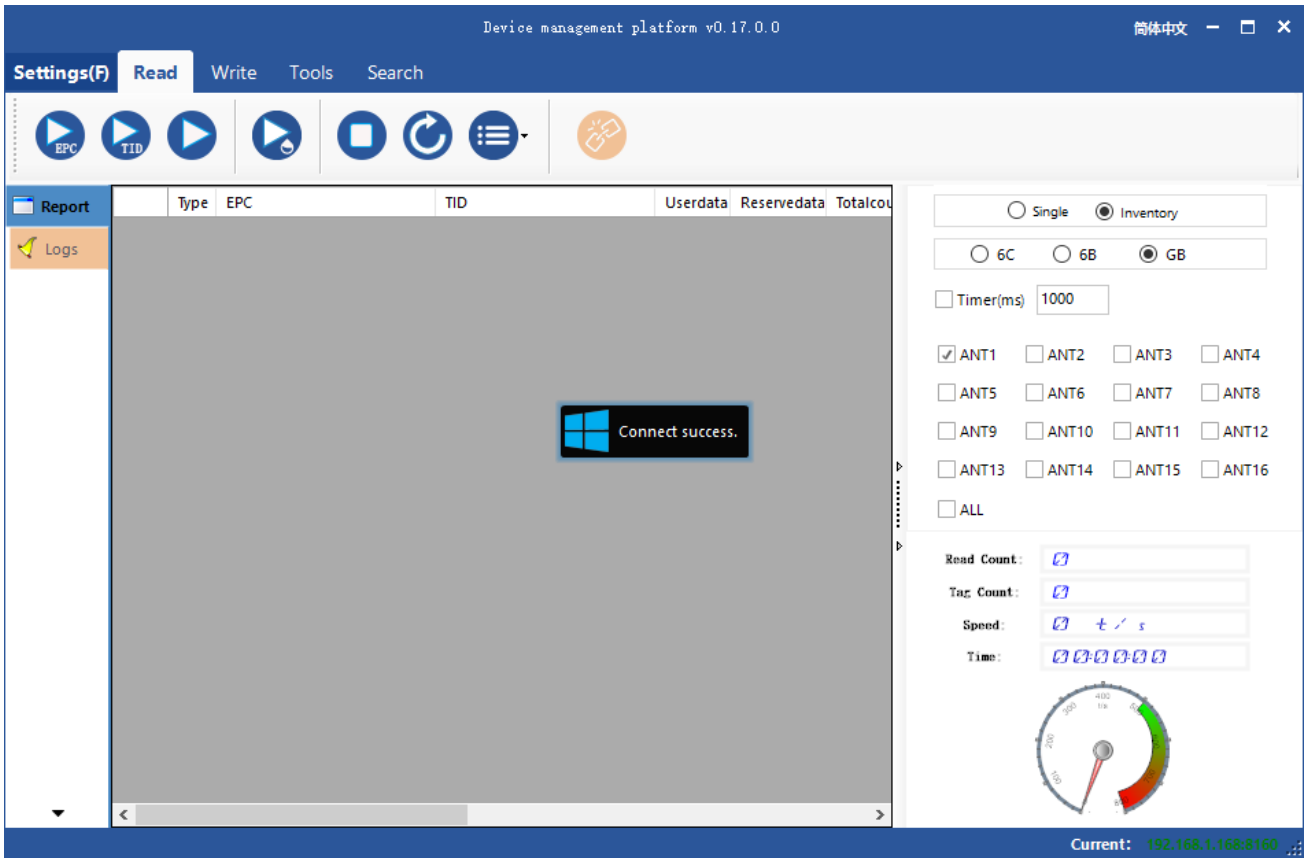


Figure 4.4.3.5 TCP Connect Success

4.4.4 Reader Time

The reader time is on the top right of the reader as shown in Figure 4.4.4.1. Click “Get” to acquire the time of the reader. The time is based on UTC and displayed according to the current time zone. Double click the text box to fill in the current system time automatically. Click setting to set the reader time as shown in Figure 4.4.4.2 .

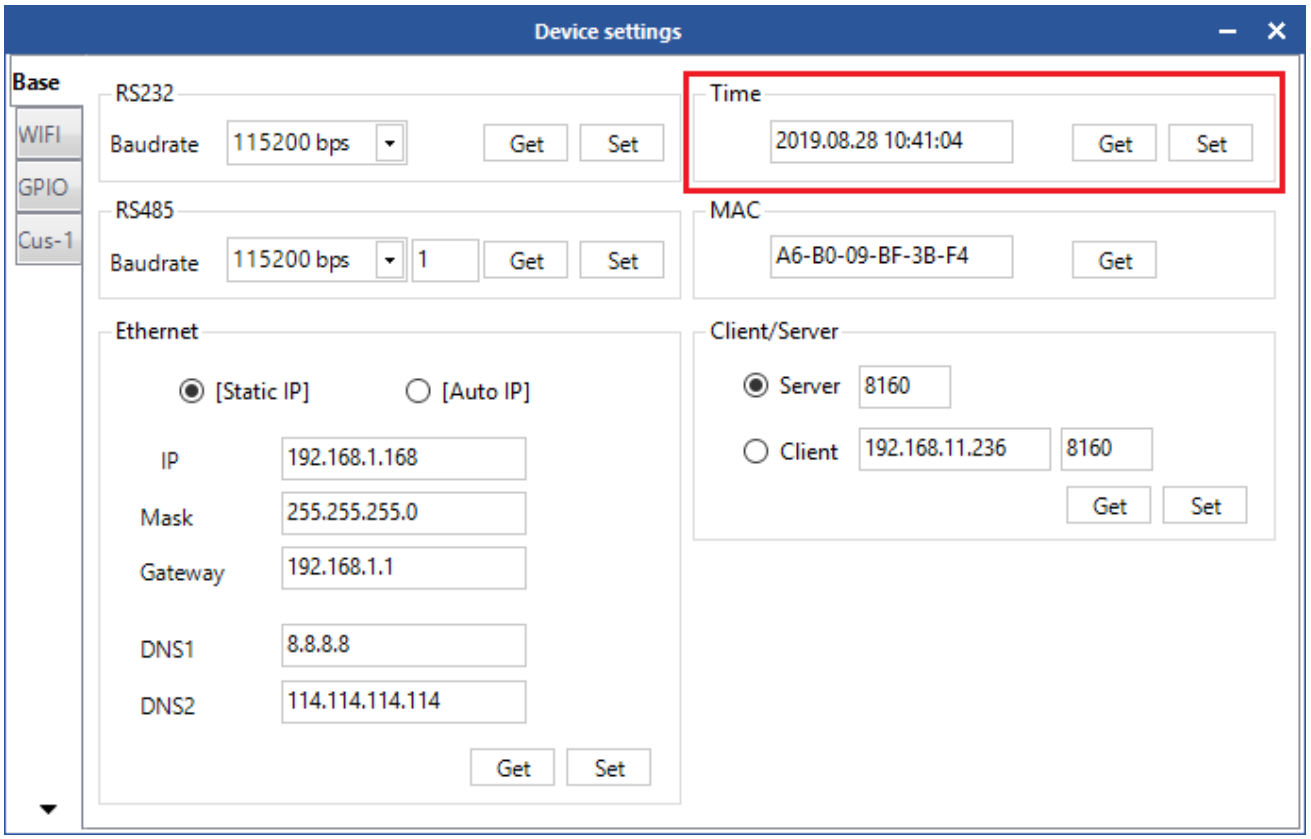


Figure 4.4.4.1 Get the Reader Time

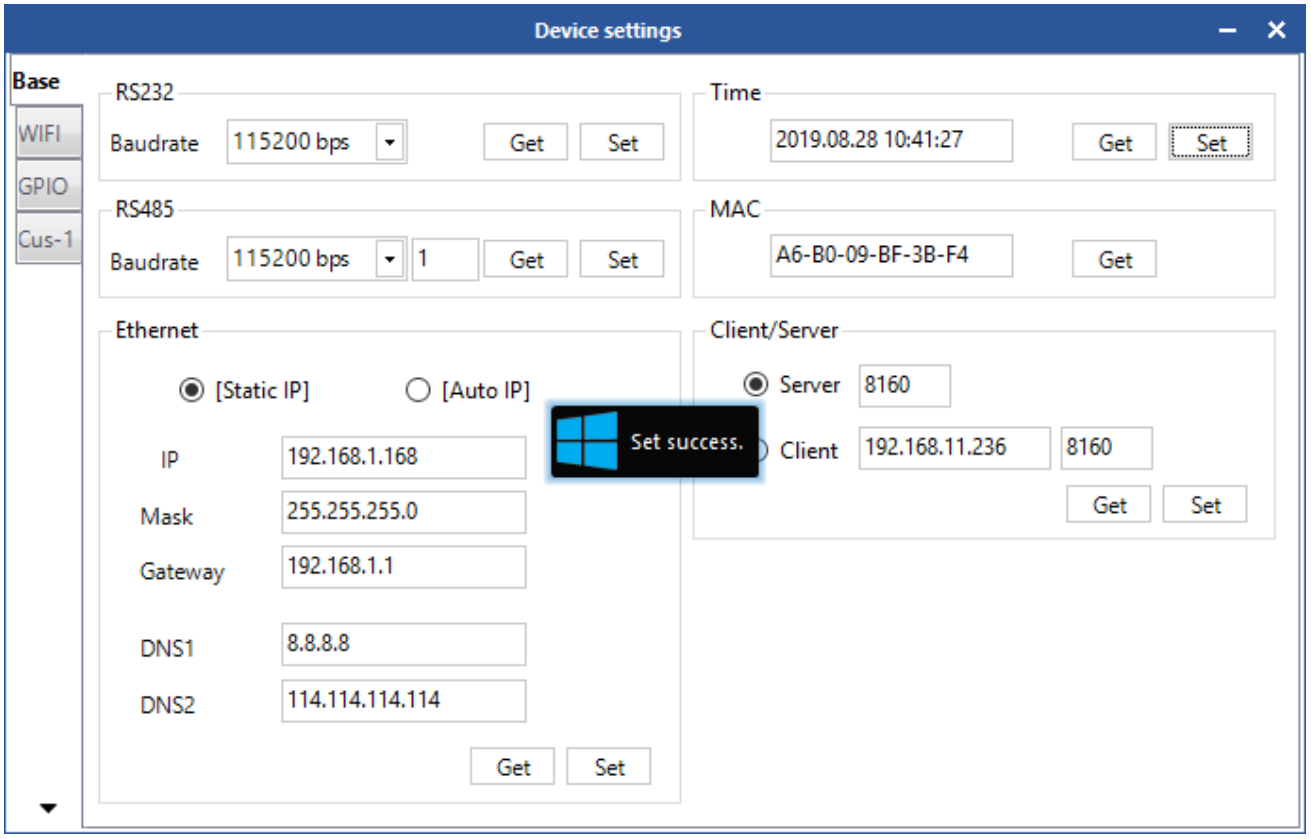


Figure 4.4.4.2 Reader Time Setting

4.4.5 Reader MAC

The MAC parameter is on the top right of the popup as shown in Figure 4.4.5. Click “Get” to acquire the MAC parameter of the reader.

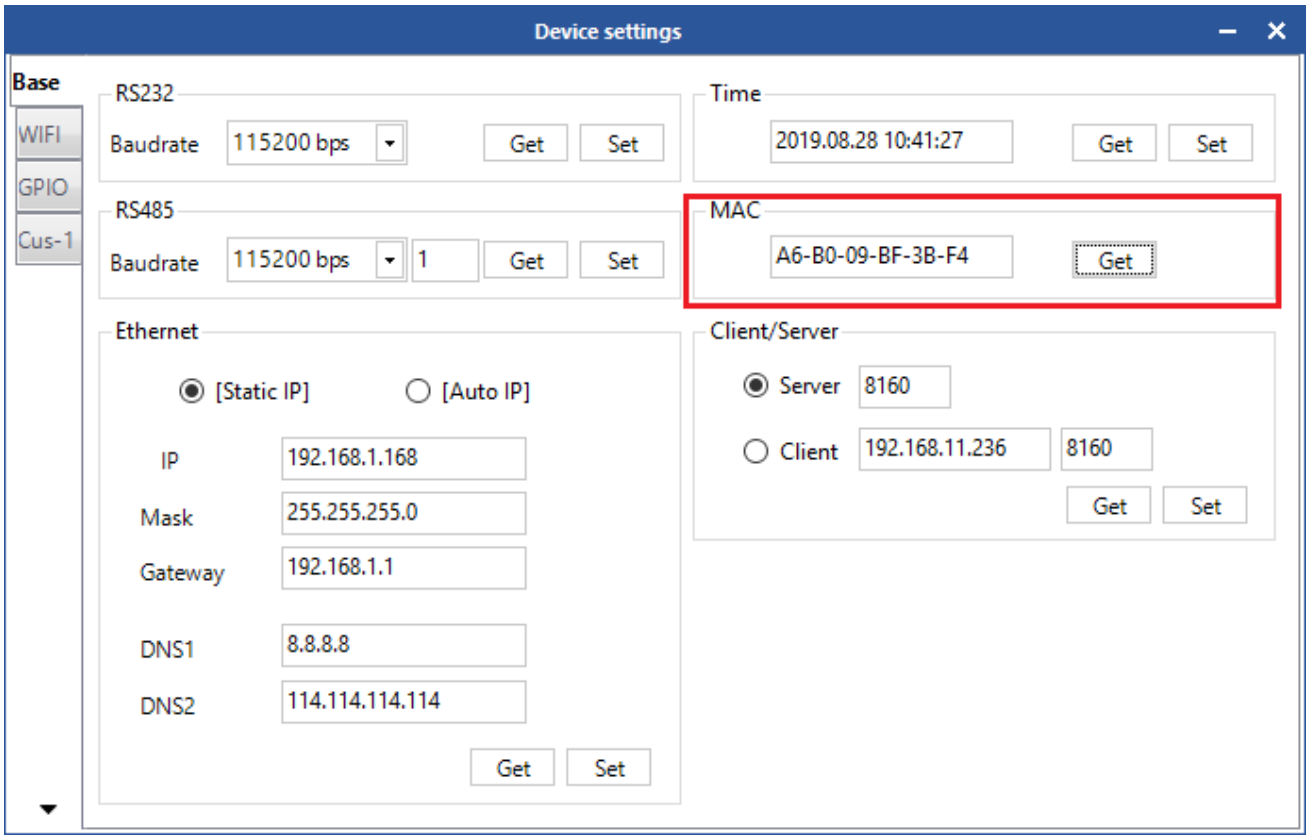


Figure 4.4.5 Reader MAC

4.4.6 TCP Server/Client Mode

The TCP server/client mode parameter is on the lower right of the popup as shown in Figure 4.4.6.1. Click “Get” to acquire the TCP server/client mode parameter of the reader. If it is configured to be client mode, this IP should be fill in the IP of the user’s computer, then click Setting as shown in Figure 4.4.6.2. The default port is 8160.

Disconnect and go back to the main interface after setting, select Connect Device ->Tcp Server,then the tcp server interface will pop up as shown in Figure 4.4.6.3. Click Start Monitoring as shown in Figure 4.4.6.4, there will be prompt saying the connection is successful after a few seconds. Then click Stop Monitoring or close the popup directly.

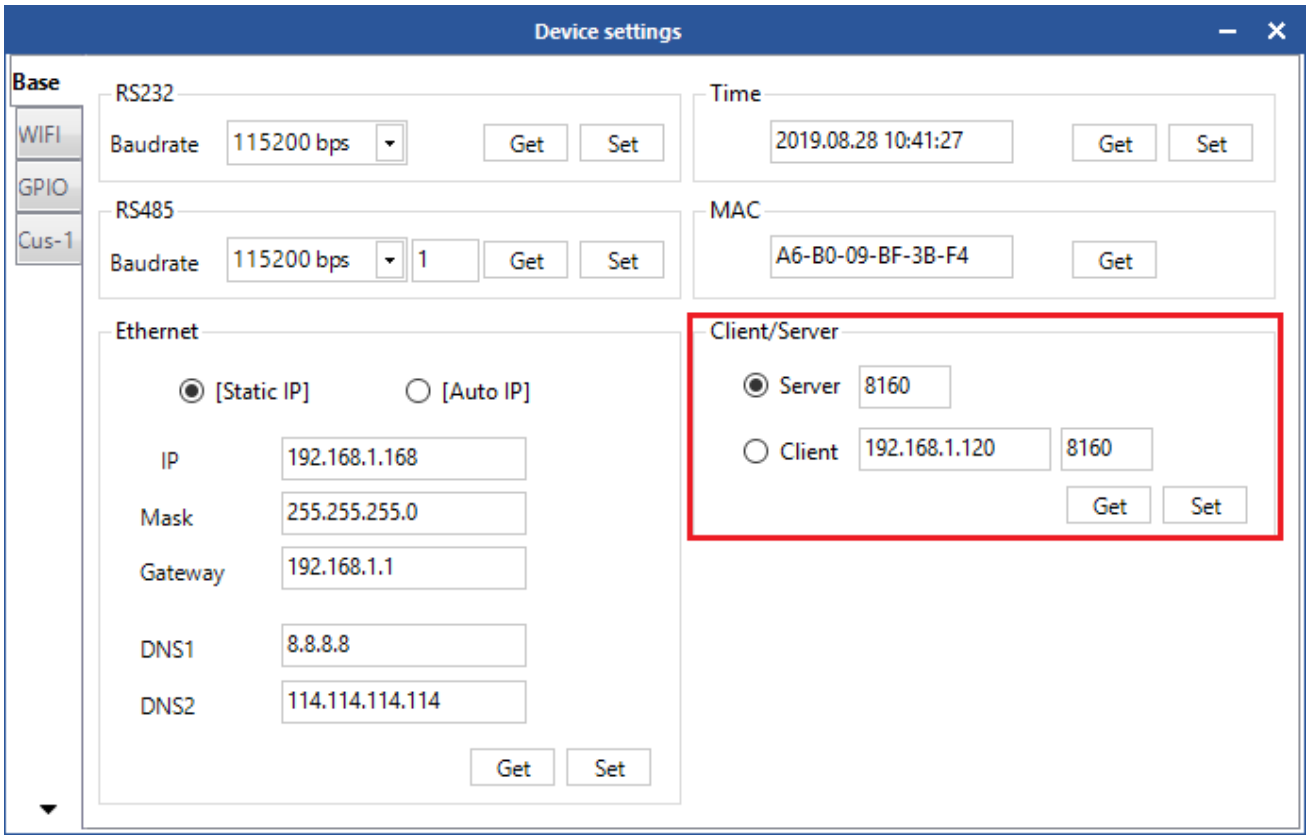


Figure 4.4.6.1 TCP Server/Client Mode Parameter

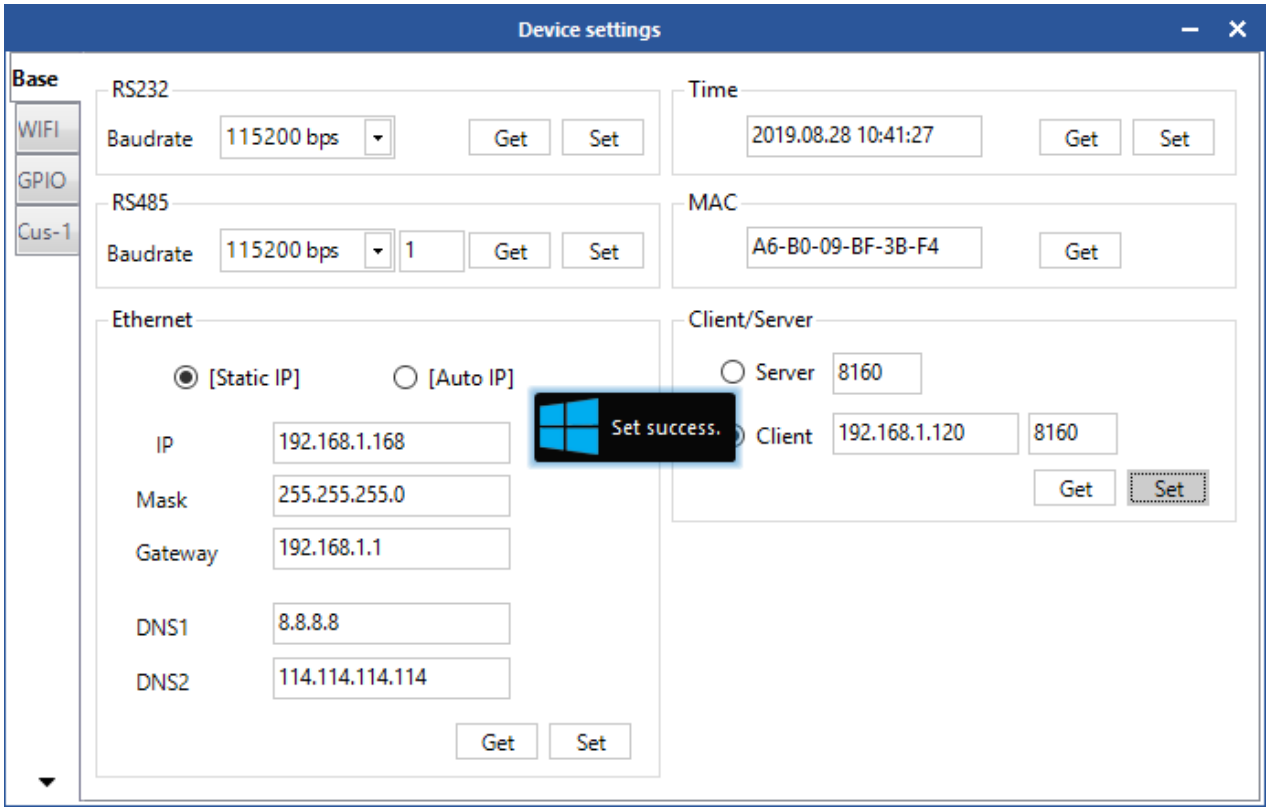


Figure 4.4.6.2 Set TCP Server/Client Mode Parameter

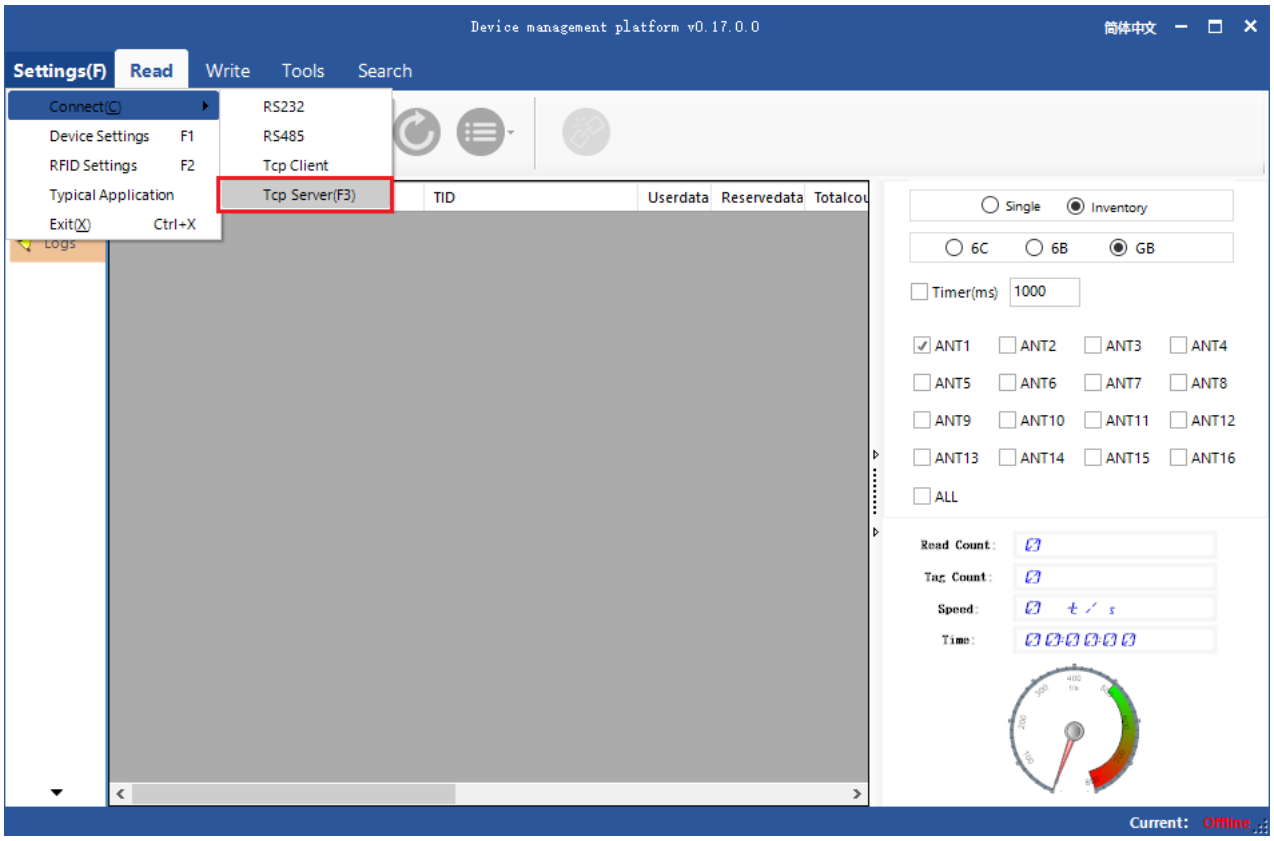


Figure 4.4.6.3 TCP Client Mode

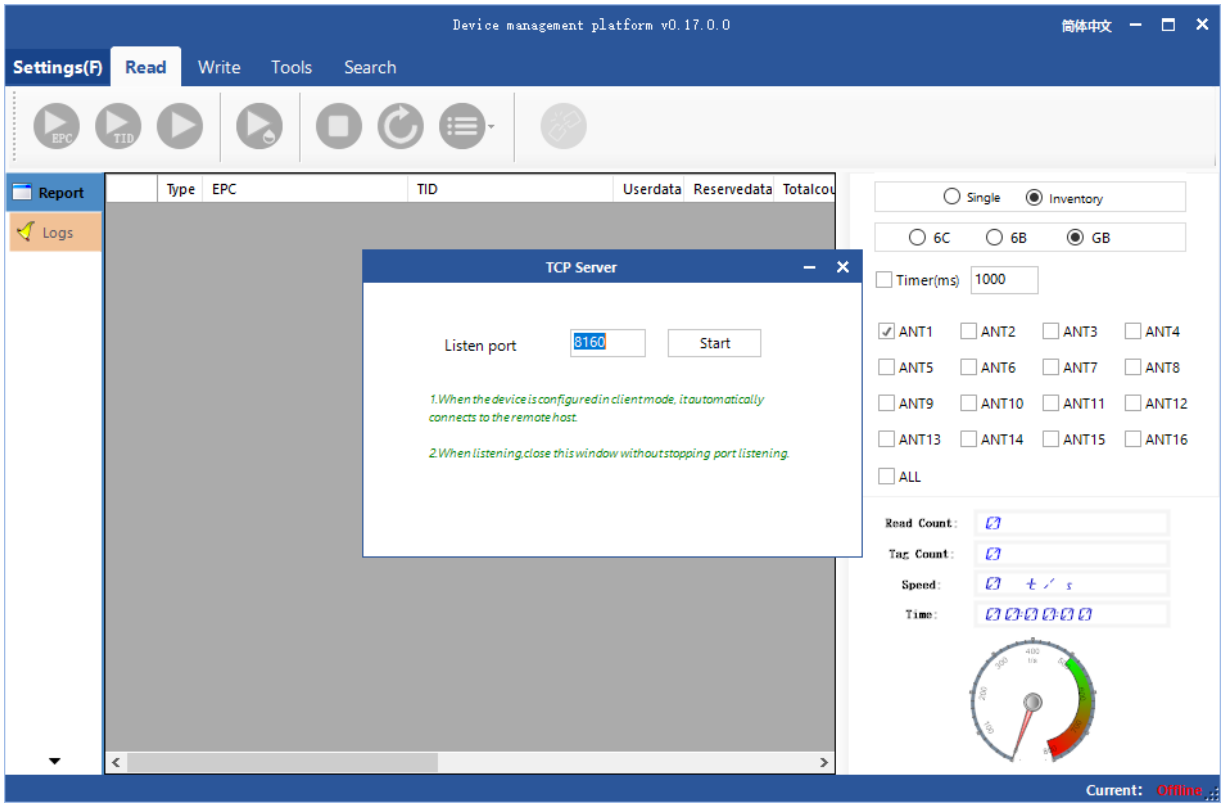


Figure 4.4.6.4 Monitoring Port

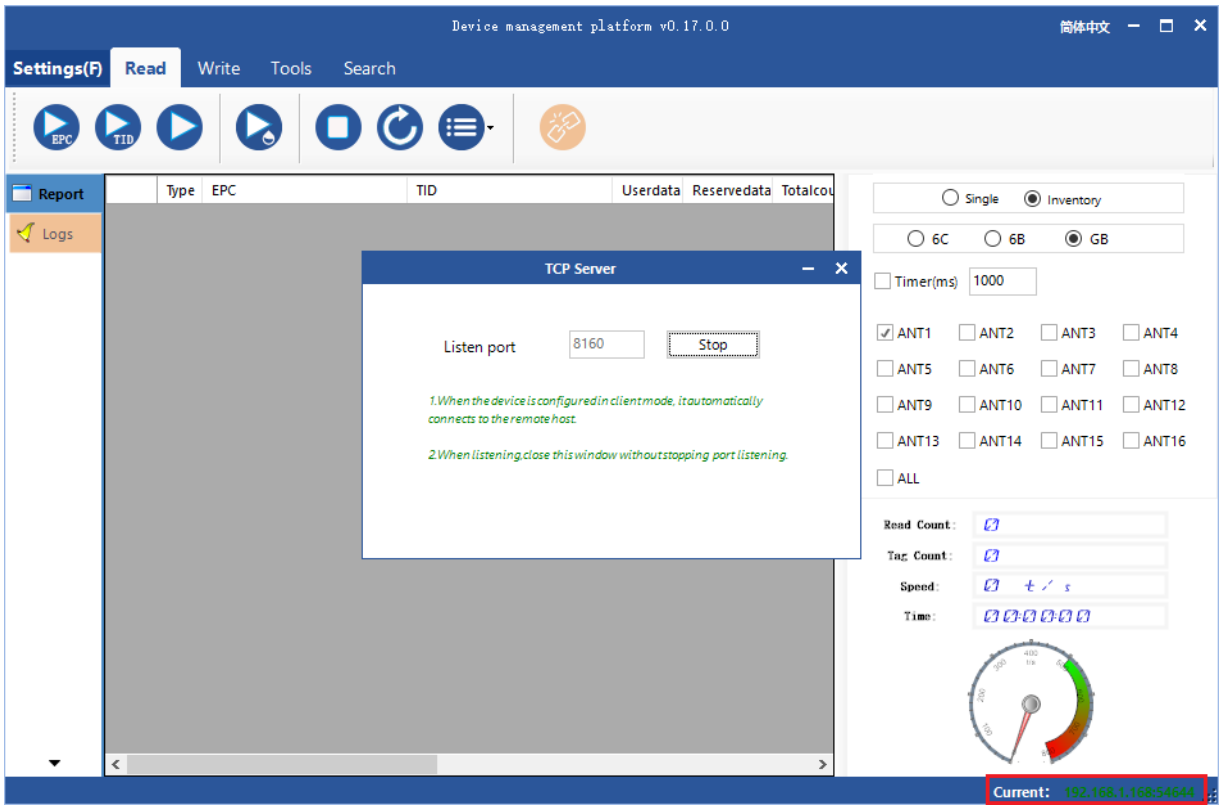


Figure 4.4.6.5 Connection success

4.5 WIFI Configuration

Select Device Control in the main interface of the Demo ->Device Configuration and the dialog box will pop up. Select WIFI on the left of the popup and enter WIFI controlling interface as shown in Figure 4.5 .

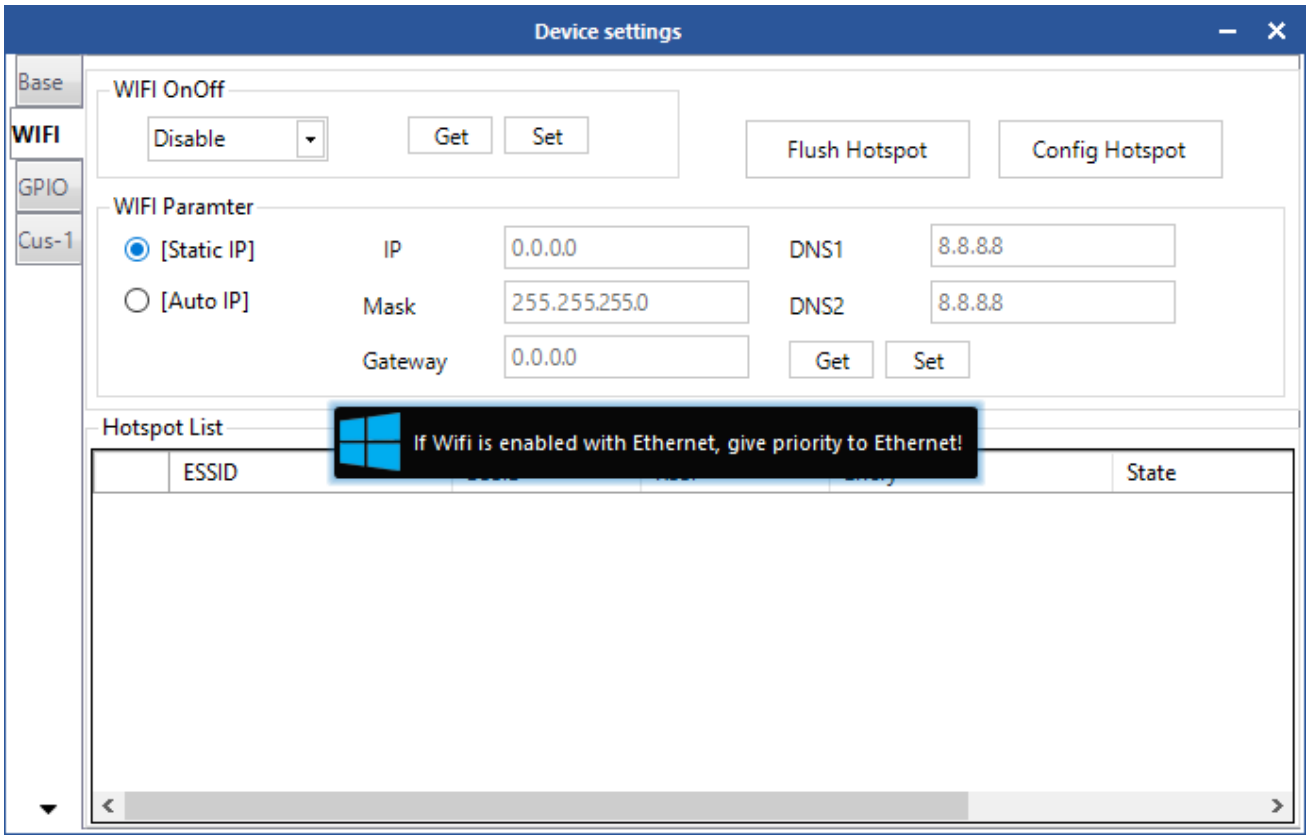


Figure 4.5 WIFI Configuration

4.5.1 WIFI Switch Configuration

The WIFI switch configuration on the top left, through which the WIFI switch can be configured as shown in Figure 4.5.1.1. The current device WIFI is disabled. Select WIFI Enabled, click “Set” to switch on the WIFI as shown in Figure 4.5.1.2. It would be better to get the WIFI for double checking after setting .

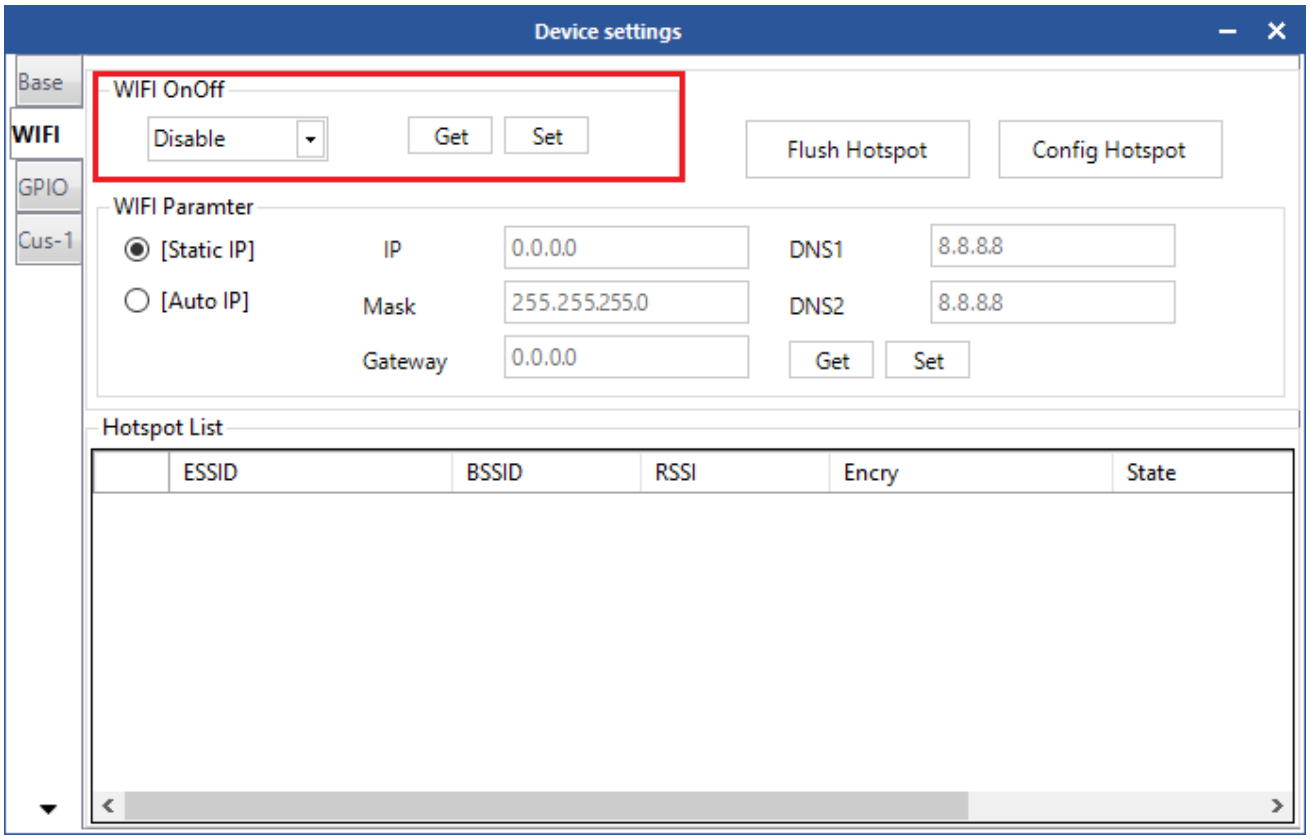


Figure 4.5.1.1 WIFI switch

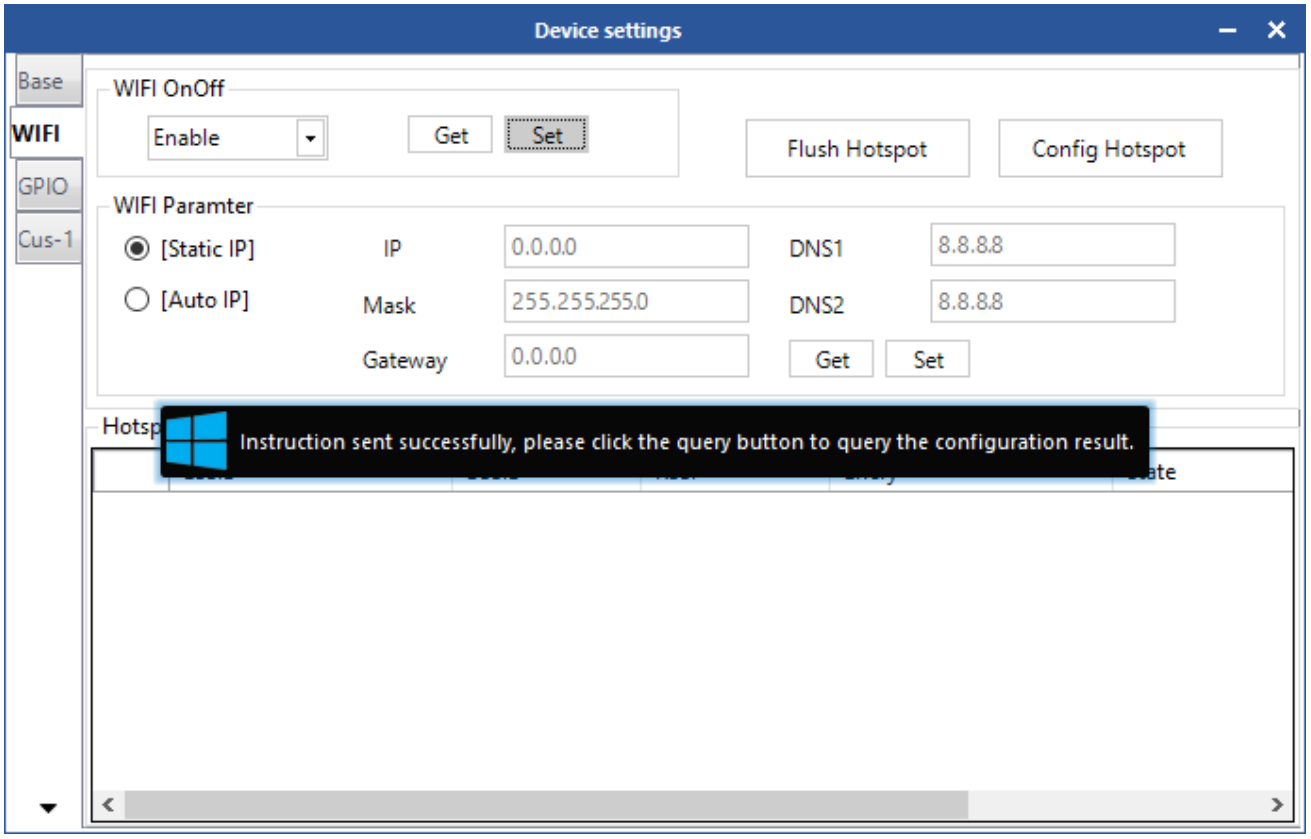


Figure 4.5.1.2 WIFI switch configuration

4.5.2 WIFI Hotspot Configuration

The hotspot configuration is on the top right of the interface(as shown in Figure 4.5.2.1). When the WIFI is on, click Reload Hotspot , then the current WIFI hotspot will be in the hotspot list(as shown in Figure 4.5.2.2). Select one hotspot of them, click Hotspot Configuration and a WIFI hotspot Connection interface will pop up.

Click “Confirm” after filling in the password, then the Configured Successfully prompt will come out (as shown in Figure 4.5.2.3). Reload the hotspot list, and check if the status of the hotspot is current after putting in the password. If yes, then WIFI is connected.

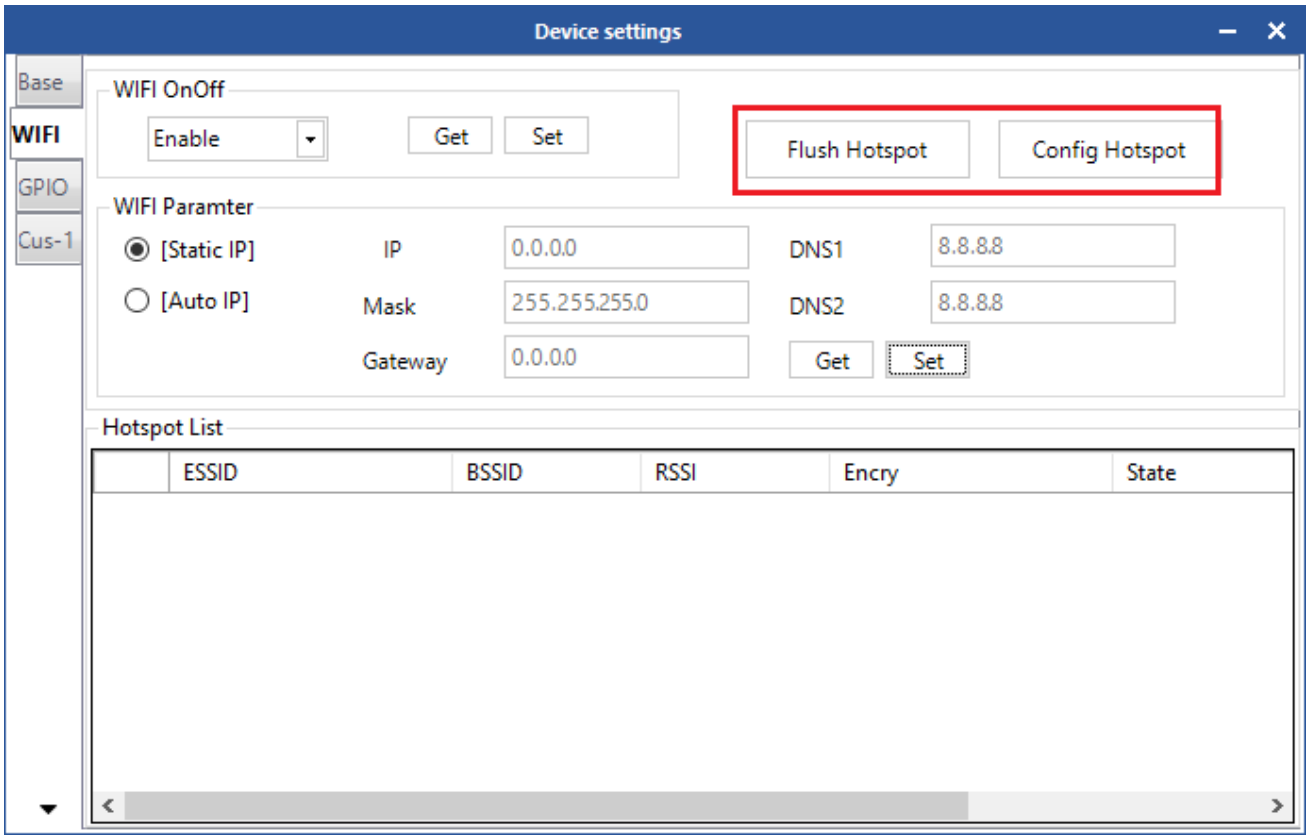


Figure 4.5.2.1 WIFI Hotspot Configuration

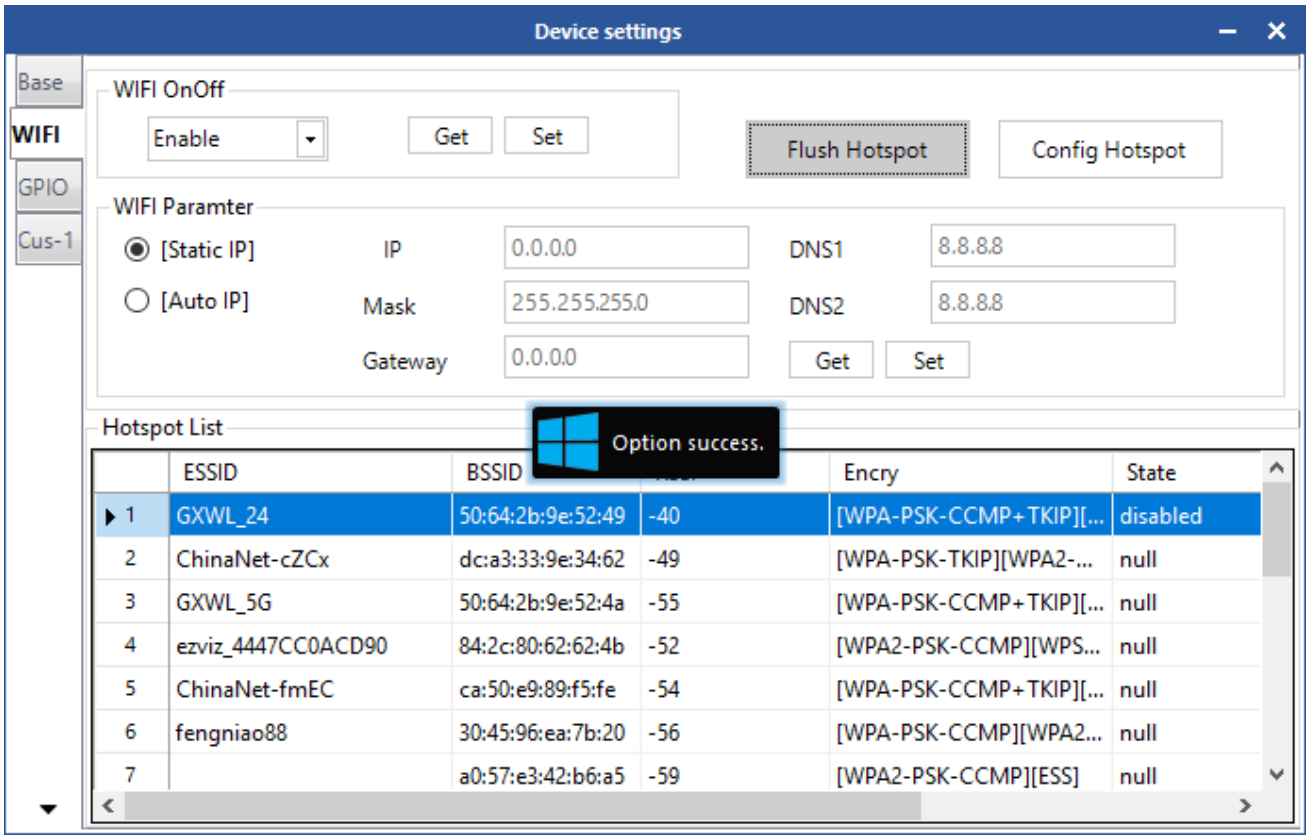


Figure 4.5.2.2 Hotspot List

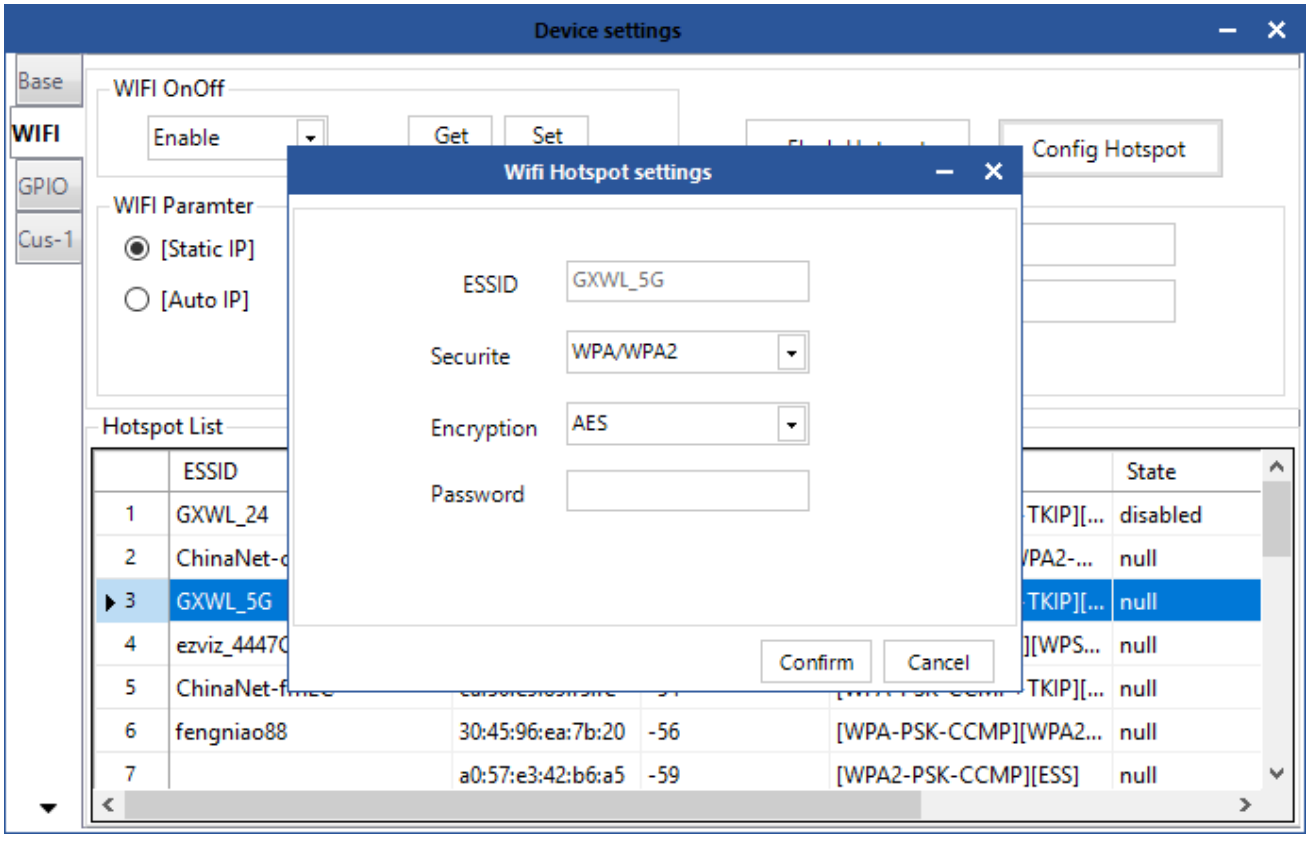


Figure 4.5.2.3 WIFI Hotspot Connection

4.5.3 WIFI Parameter Configuration

The WIFI parameter is in the middle of the interface of the Demo (as shown in Figure 4.5.3.1). Choose a WIFI hotspot whose status is current to configure the WIFI parameter. And click “Get” to check the parameter of the current hotspot. as shown in Figure 4.5.3.2. Click Setting after filling in related parameter, then there will be configured successfully prompt as shown in Figure 4.5.3.3. The parameter can be double checked by clicking “Get” if needed.

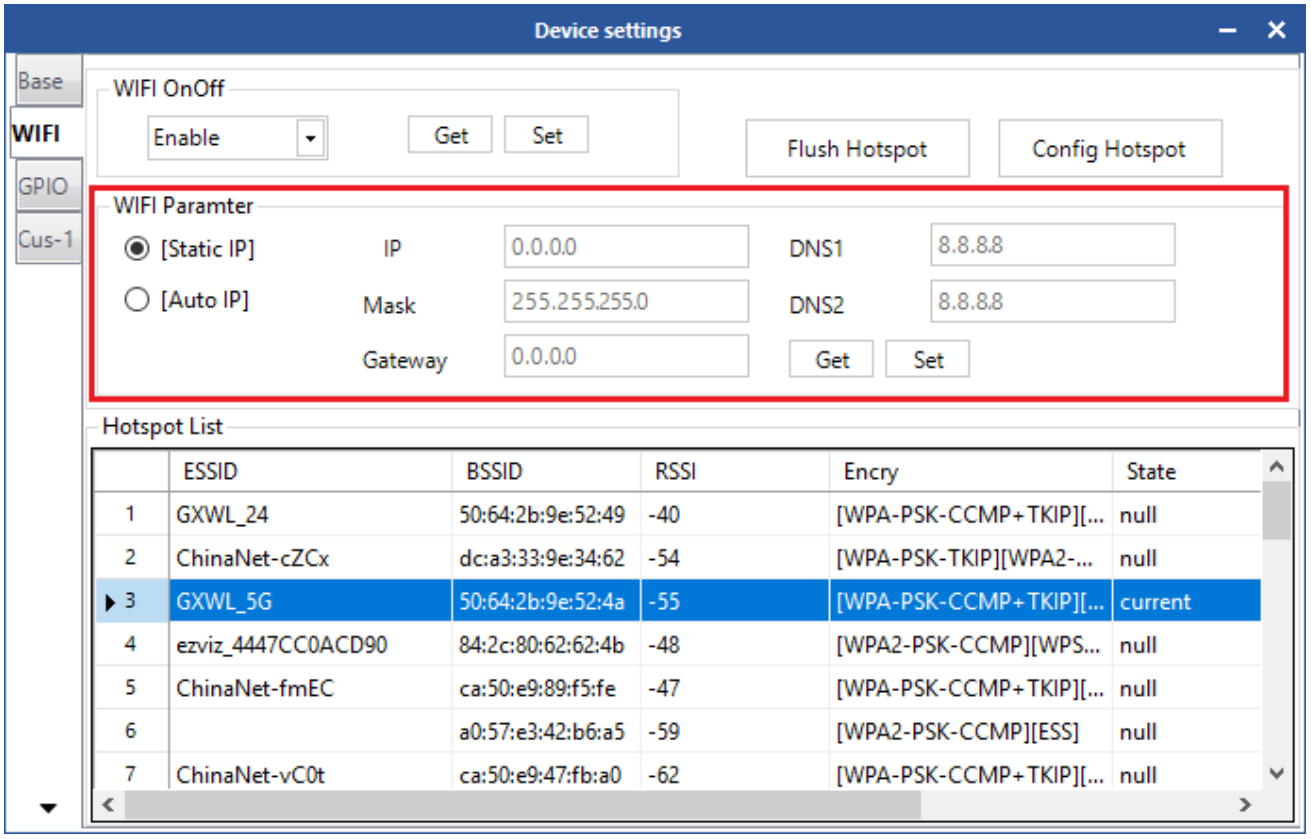


Figure 4.5.3.1 WIFI Hotspot Parameter

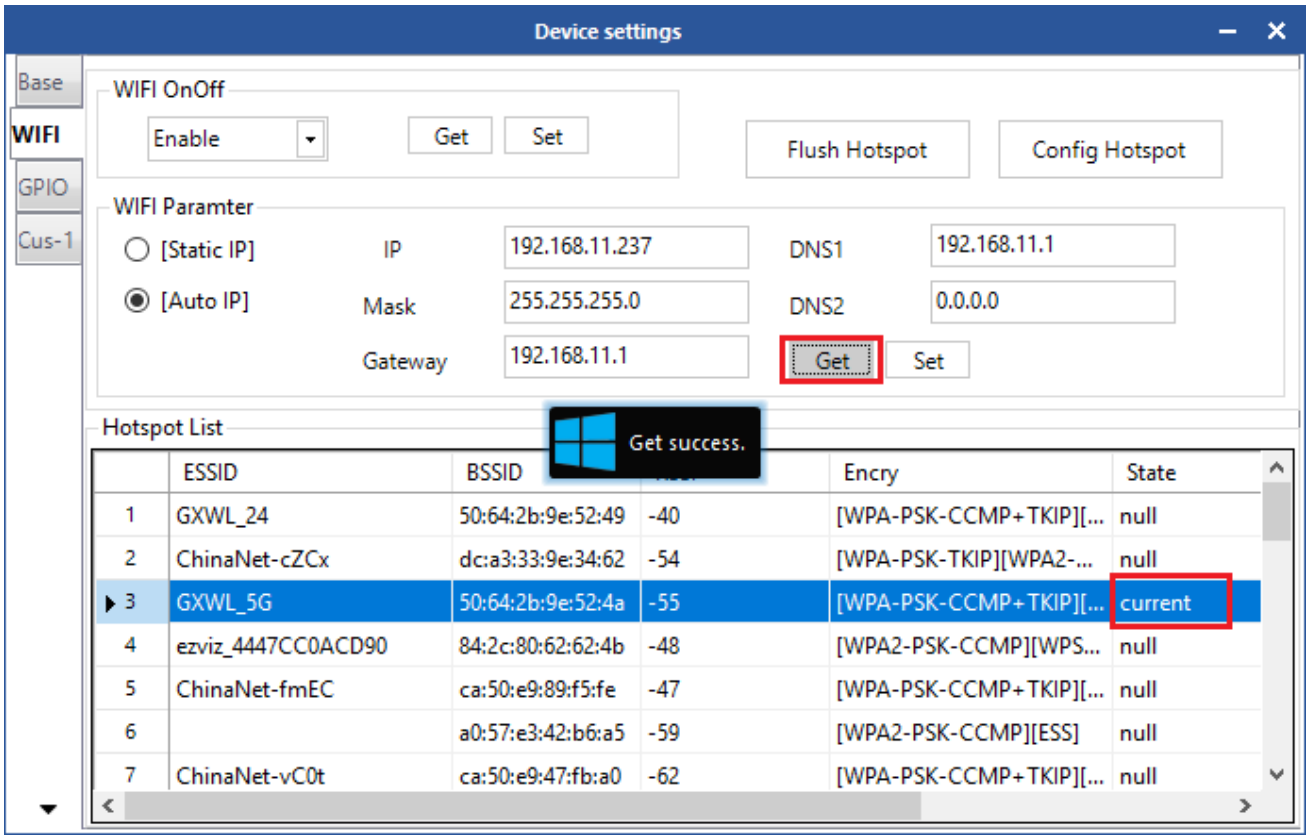


Figure 4.5.3.2 WIFI Hotspot Parameter Get

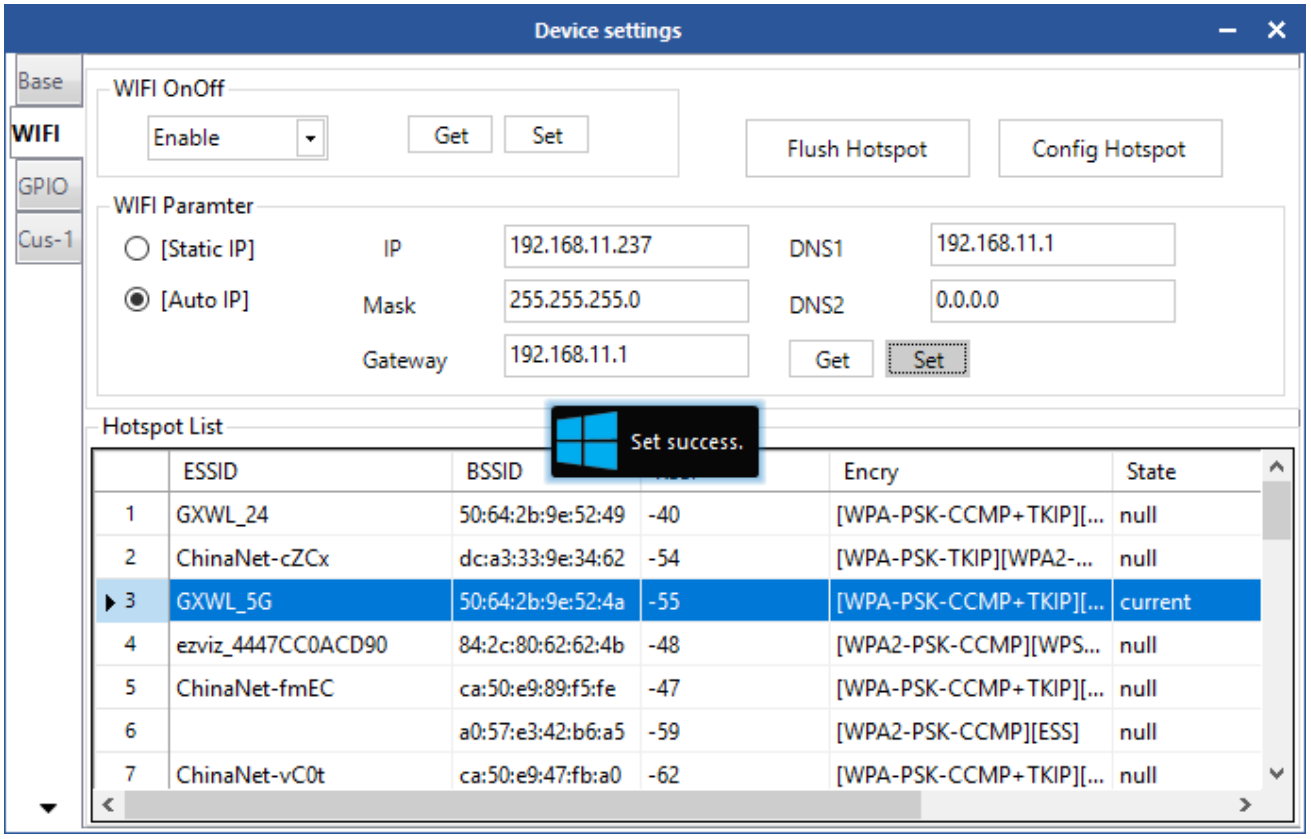


Figure 4.5.3.3 WIFI Hotspot Parameter Configuration

4.6 GPI/O Configuration

Select Device Control in the main interface of the Demo->Device Configuration, and the dialog box will pop up. Select GPIO on the left of the popup and enter the GPIO controlling interface as shown in Figure 4.6 .

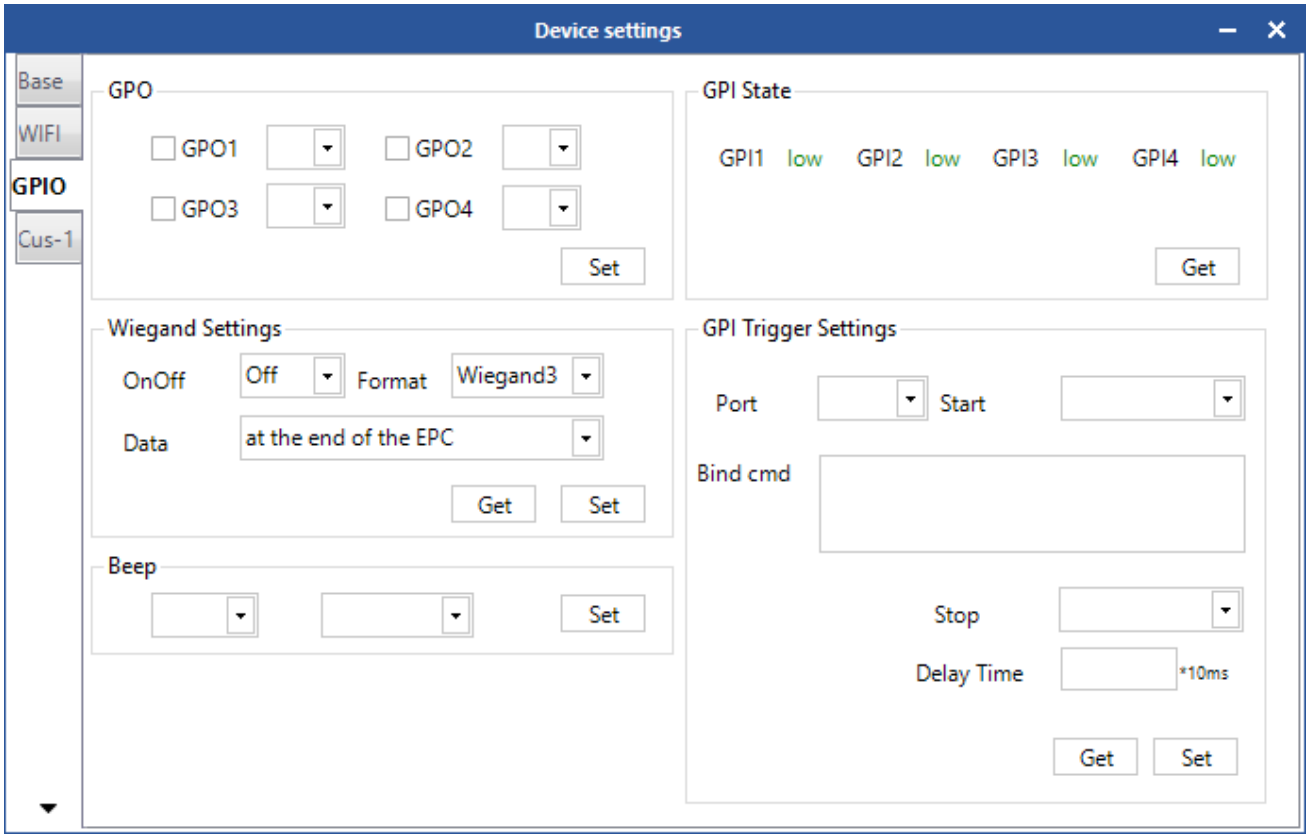


Figure 4.6 GPIO Configuration

4.6.1 GPO Configuration

GPO configuration is on the top left of the interface, through which the electrical level of the GPO can be configured as shown in Figure 4.6.1. The low electrical level will be on and high electrical level will be off, if it is connected with a relay. If it is connected with a optocoupler, the electrical levels remain unchanged.

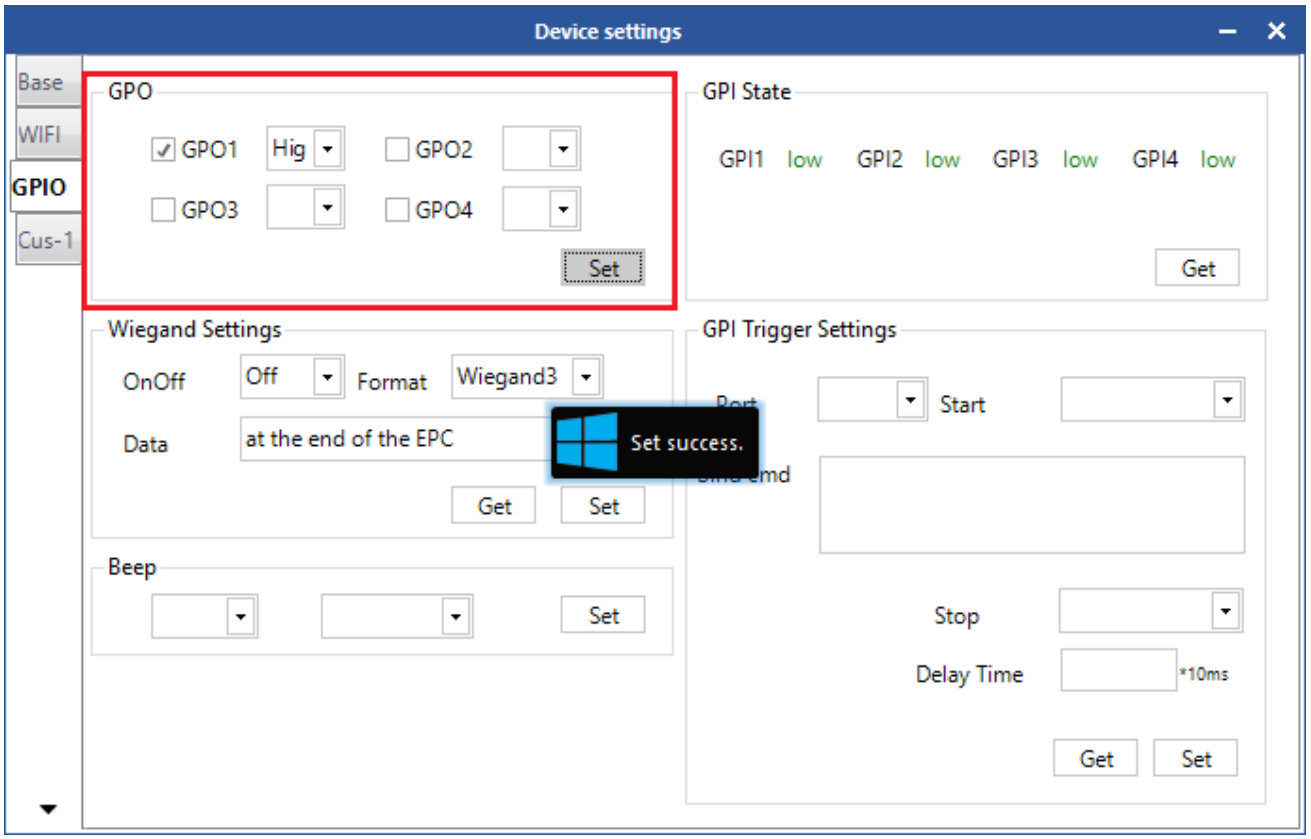


Figure 4.6.1 GPO Configuration

4.6.2 GPI State Get

The GPI state is on the top right of the interface. Through which the GPI state can be queried as shown in Figure 4.6.2.

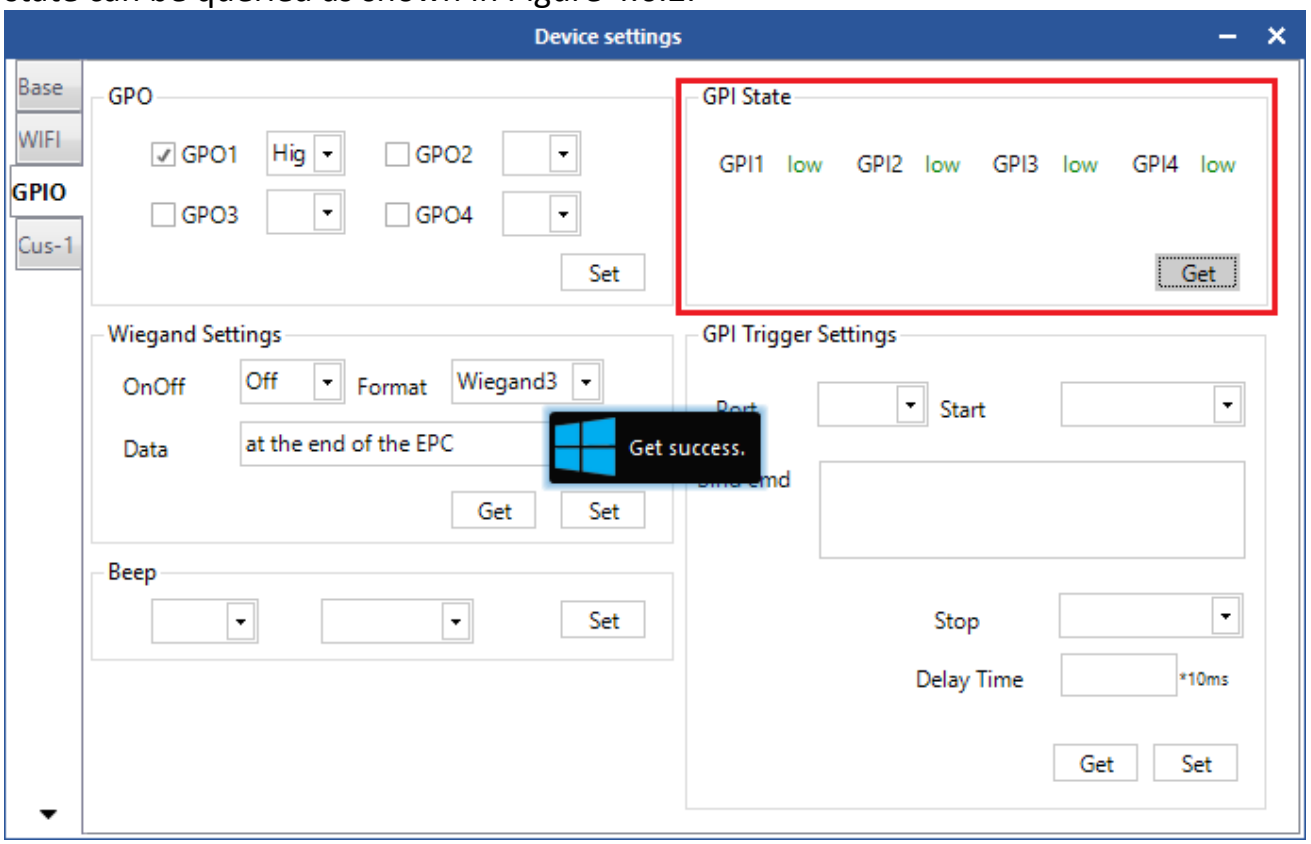
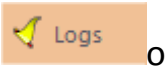


Figure 4.6.2 GPI State Get

4.6.3 GPI Operation Configuration

The GPI operation is on the lower right of the interface. Select a GPI port number, and click “Get” to check the related configuration of the port as shown in Figure 4.6.3.1. There are multiple conditions optional for trigger condition and Stop condition. Trigger instructions can be written according to communication protocols or extract directly from logs with the following methods:

1. Suppose that a port (GPI1) need to be configured to read the TID of the 6C tag after triggering. Operations are detailed in Read TID, as shown in Figure 4.6.3.2 and Figure 4.6.3.3 ;

2. Click 

on the left to switch and an interface as shown in Figure 4.6.3.4 will be seen ;

3. Find data with “send-[MsgBaseInventoryEpc]-[5A000102100008000000010102 0006ED08]” in the log interface and extract” 5A00010210000800000001010200 06ED 08” from it ;

4. Remove the 2-digit frame header and 4-digit check code in the end. 00010210000800000001010200 06 is the TID command for tag reading. Other command can be also acquired with the same operation ;

5. Open GPIO interface, select GPI 1 get as shown in Figure 4.6.3.1. Select trigger condition and stop condition, fill the command from step 4 in the trigger command, then click Configure as shown in Figure 4.6.3.4. When the configuration is successful, the reader reads the TID operation of 6C tag when the electrical level of GPI1 port is high and stop reading when the electrical level is low .

When the stop condition is "delay stop", the specific delay time can be filled in at delay time area (0 means infinite delay time). And the unit is 10ms. The reader will stop after corresponding period when the stop condition is triggered if the configuration is done.

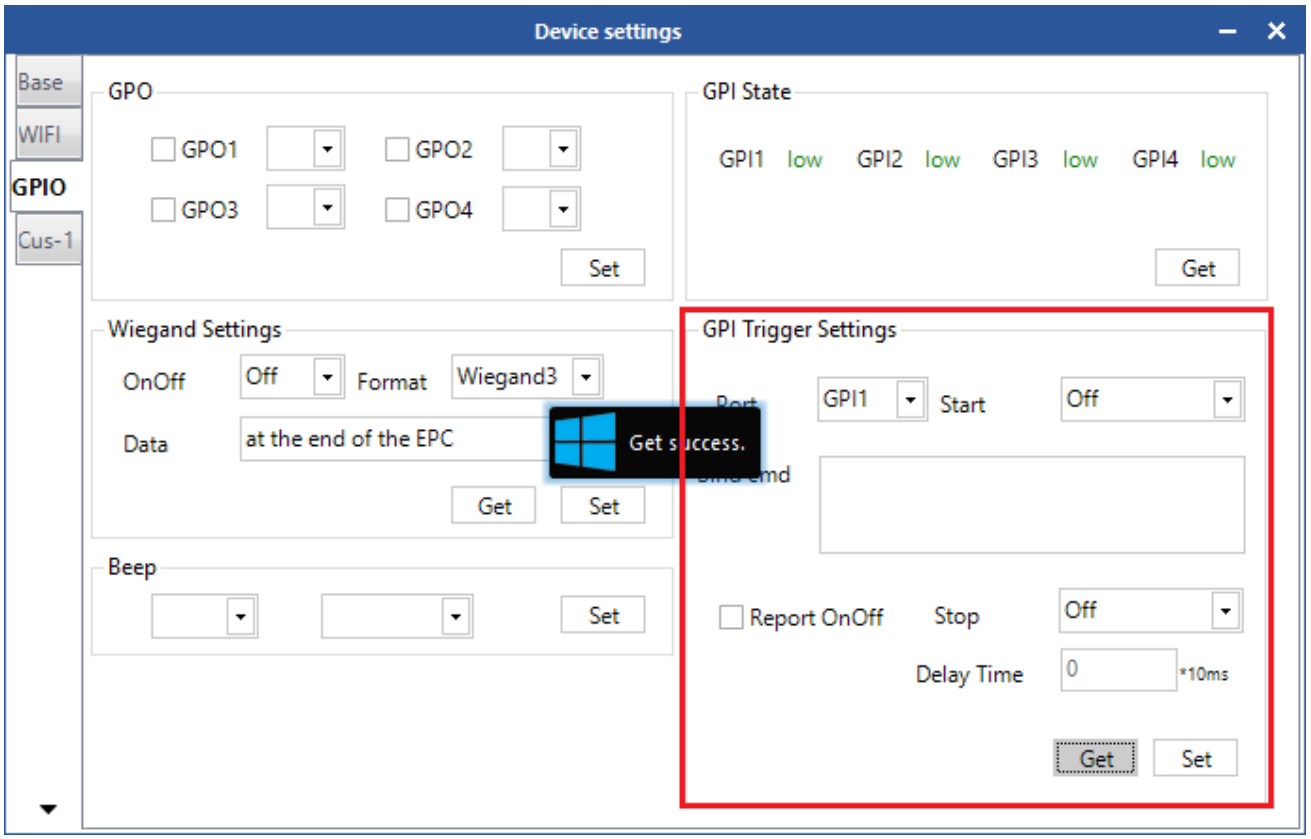


Figure 4.6.3.1 GPI Operation Get

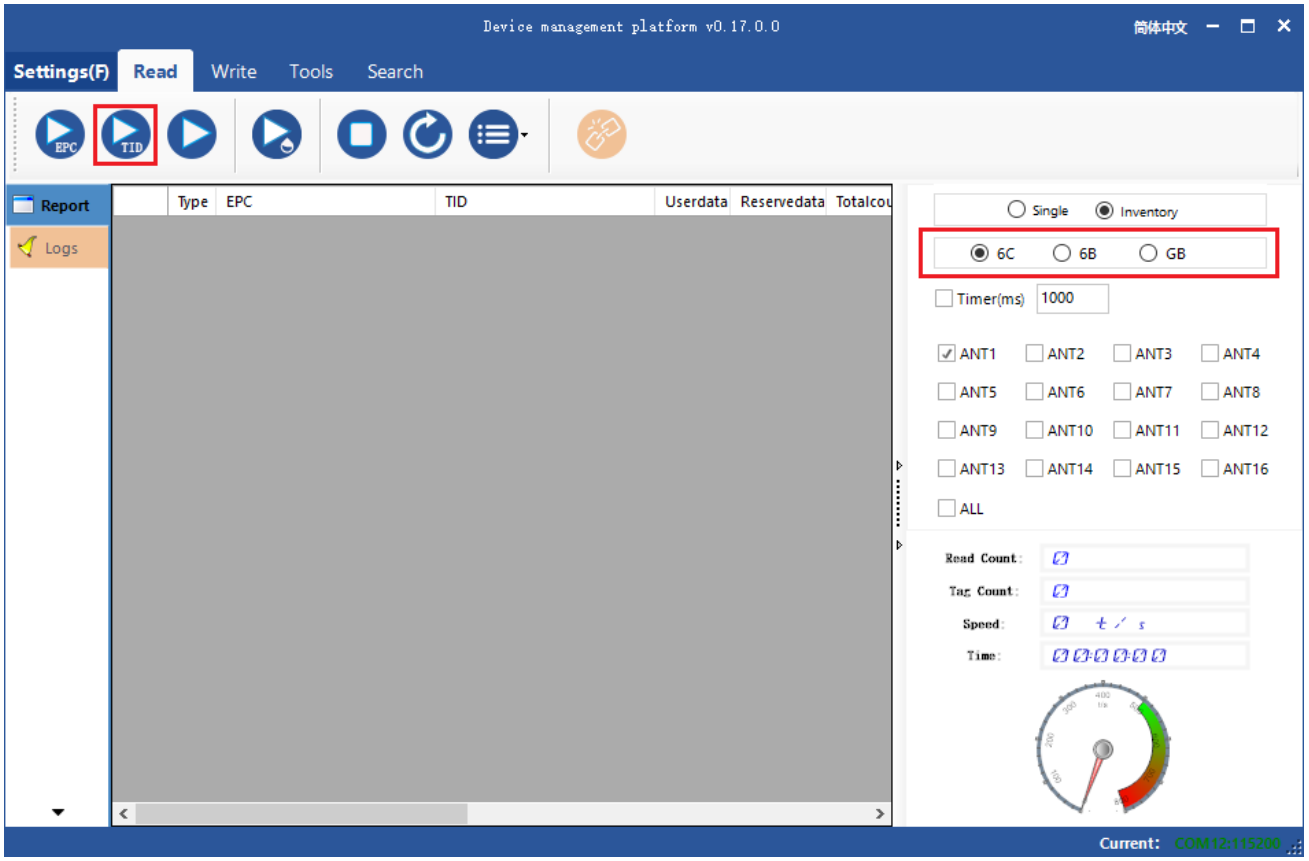


Figure 4.6.3.2 Main Interface

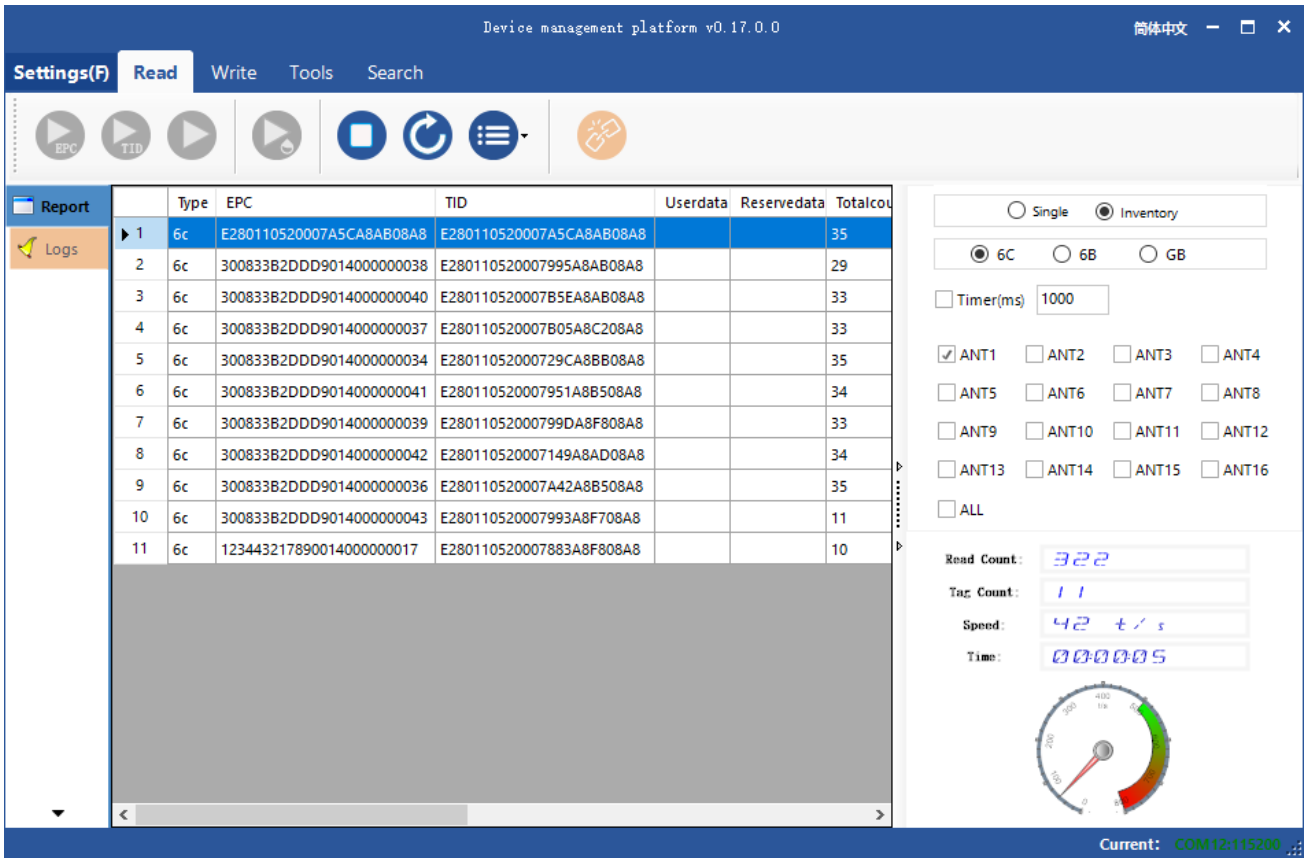


Figure 4.6.3.3 Read TID of 6C tag

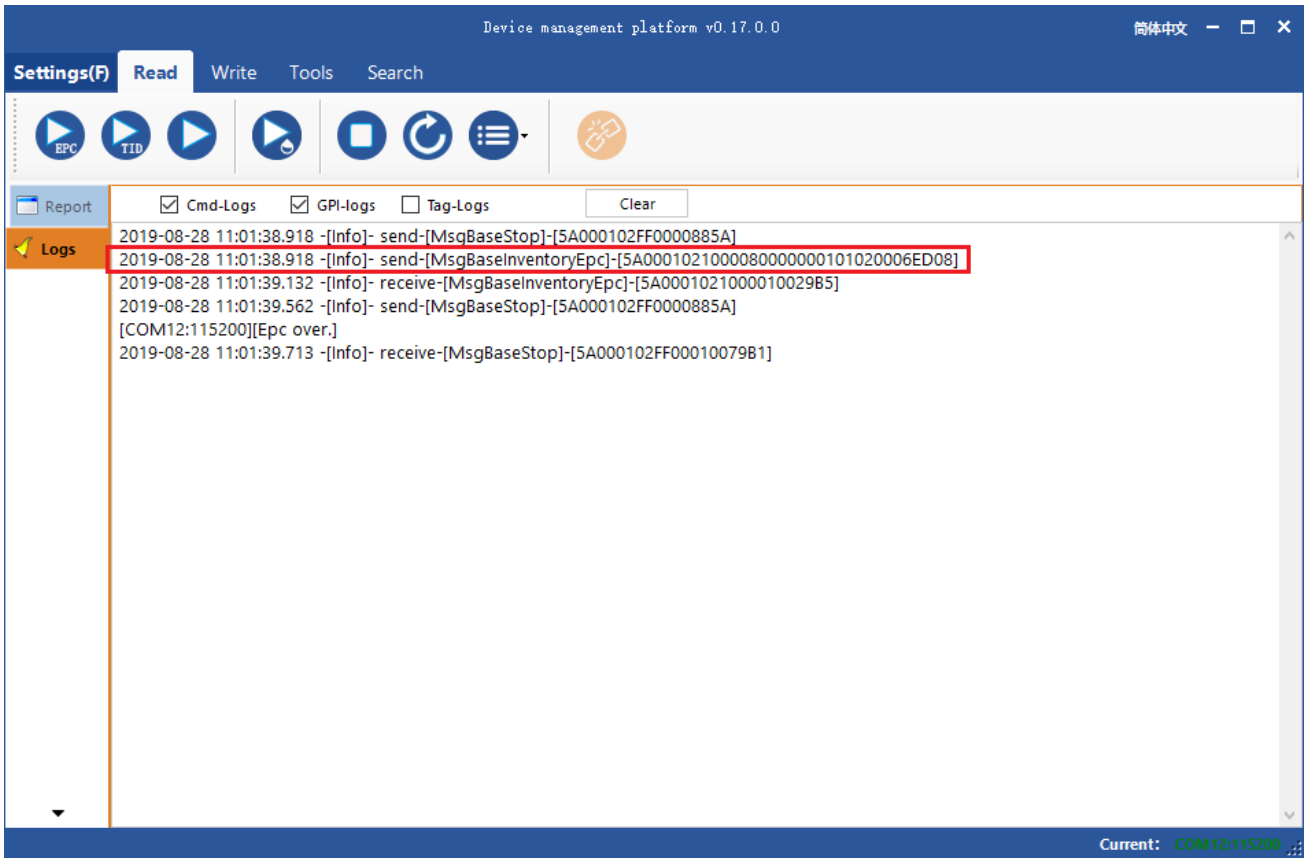


Figure 4.6.3.3 Log

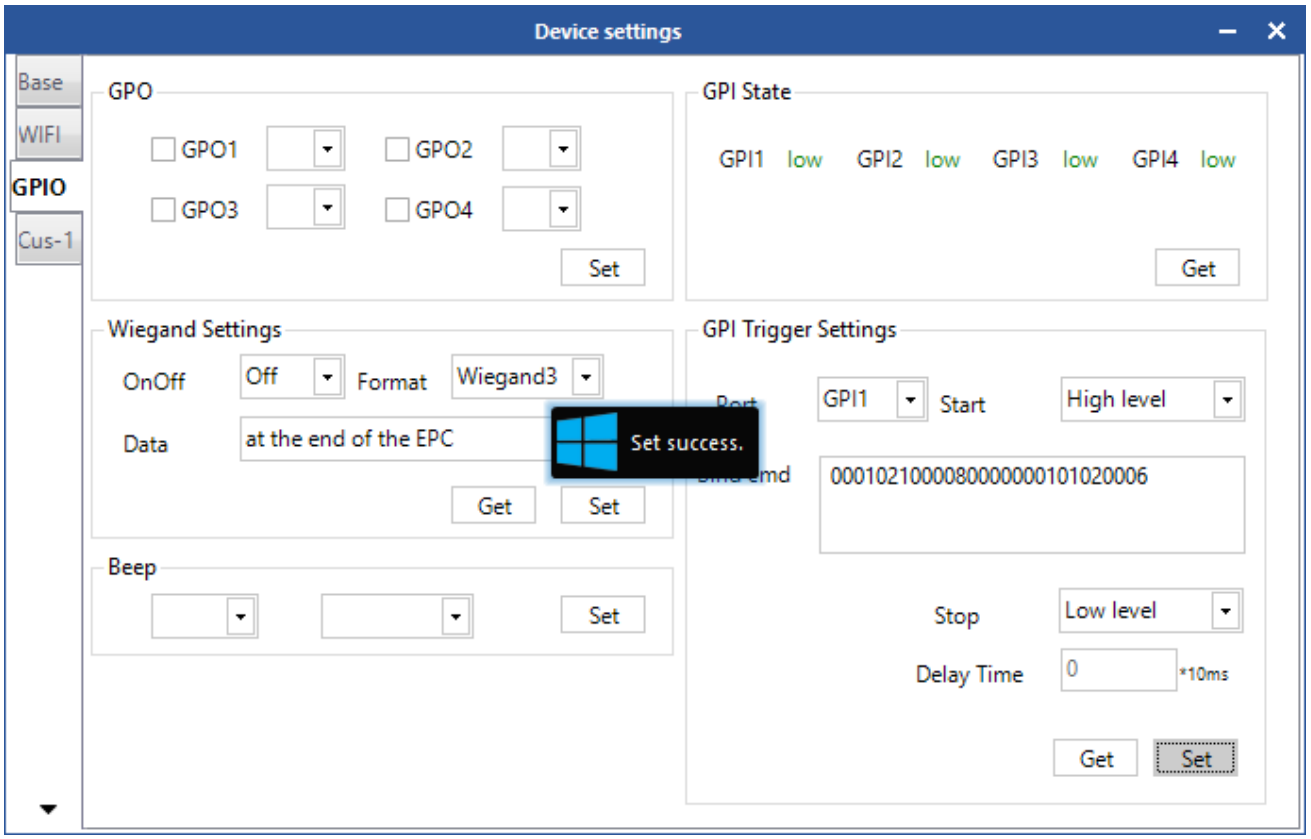


Figure 4.6.3.4 GPI Operation Configuration

4.7 RFID Configuration

Select Device Control in the main interface of the Demo-> RFID Configuration and the dialog will pop up as shown in Figure 4.7 .

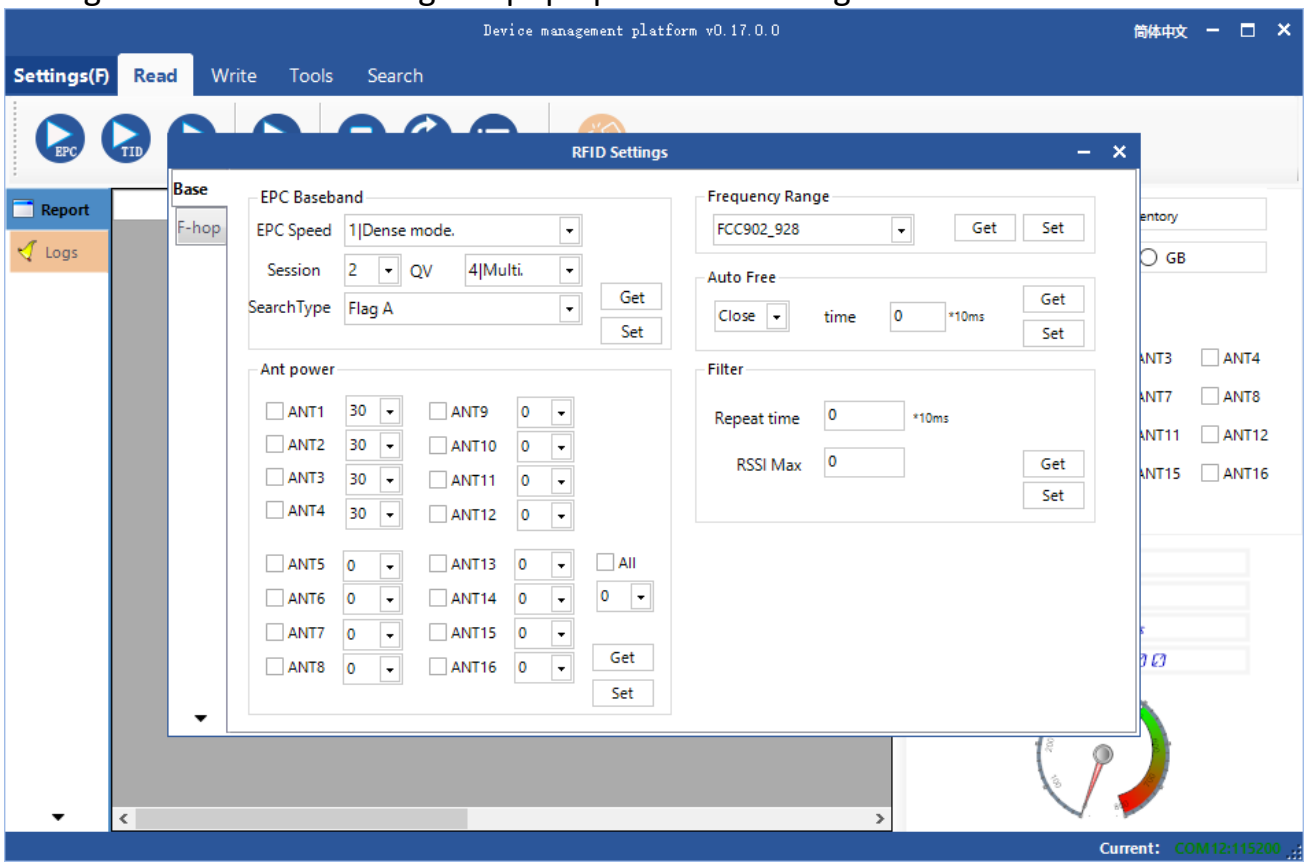


Figure 4.7 RFID Configuration

4.7.1 EPC Baseband Parameter

The EPC baseband parameter is on the top left as shown in Figure 4.7.1. Click “Get” to acquire the EPC baseband parameter. And click Setting to set the EPC baseband parameter.

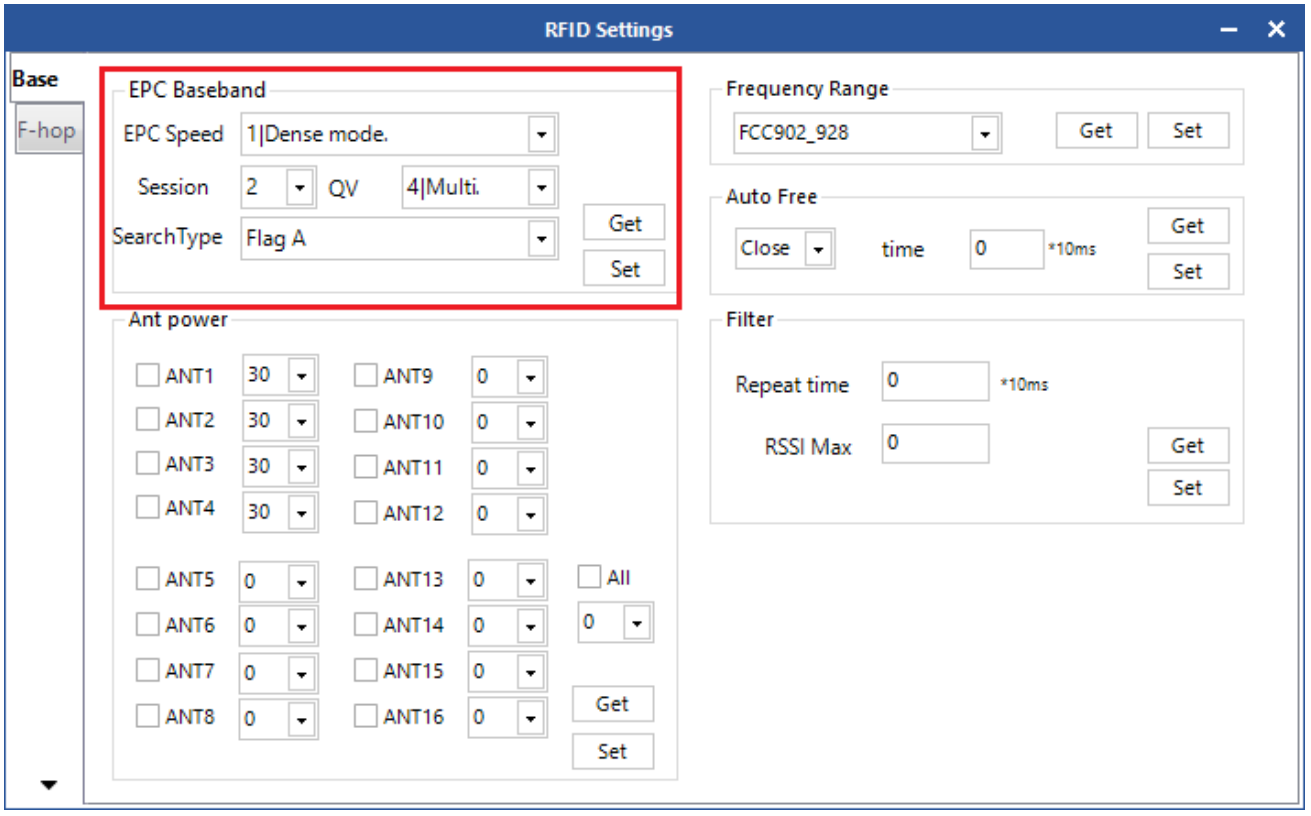


Figure 4.7.1 Baseband Parameter Configuration

R/W effect changes with the changing of the baseband parameter configuration (the configuration can be customized according to the real application, but under the guidance of our engineer).

There are 6 choices for EPC baseband rate: Tair=25us, FM0, LHF=40KHz; dense reading mode; Tair=25us, Miller4, LHF=300KHz; fast reading mode; Tari=25us, Miller4, LHF=320KHz; 255/AUTO .

4 choices for Session:0 ; 1 ; 2 ; 3 .

16 choices for Q value:0/single tag; 1; 2; 3; 4/multiple tag; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15 .

3 choices for tag searching: A side inventory-taking; B side inventory-taking; A|B double sides inventory-taking .

4.7.2 Power Configuration for Antenna Port

The antenna port is on the lower left as shown in Figure 4.7.2. Click “Get” to acquire the antenna power. And click Setting to set the antenna power.

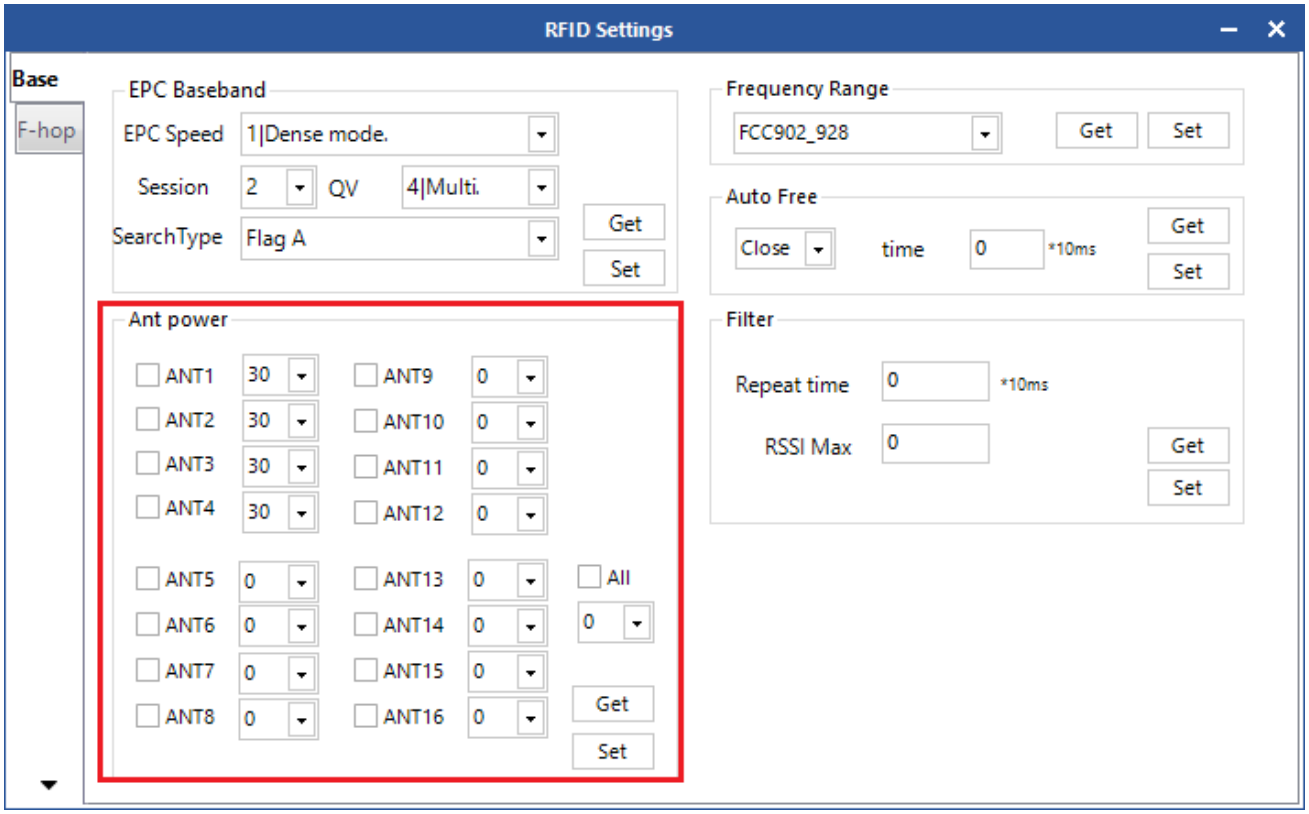


Figure 4.7.2 Power Configuration for Antenna Port

Select the corresponding antenna port(connected with antenna), and select corresponding power value from the power list. Then click Set, and the Configured Successfully prompt will pop up.

4.7.3 Auto-idleness Configuration

Automatic idle mode means: when in constantly reading, the reader will enter idle state automatically for power saving for a period if no tag is read for 3 round constantly. When the idle state is over time, the reader will start reading again as shown in Figure 4.7.3.

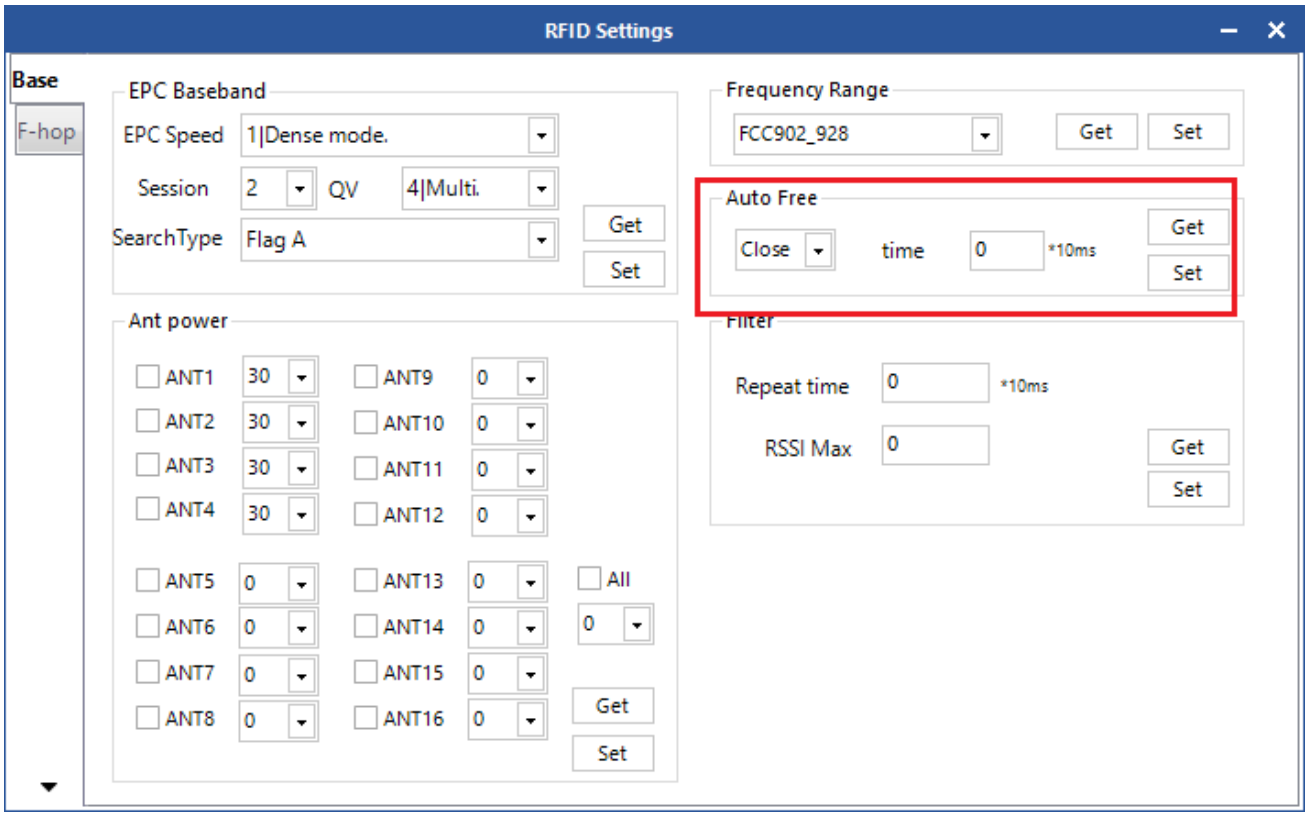


Figure 4.7.3 Automatic Idleness Configuration

4.7.4 Tag Filtering

The antenna power is on the lower left as shown in Figure 4.7.4. Click “Get” to acquire the tag uploading parameter. And click Setting to set the tag uploading parameter.

Filtering Time: means during a reading instruction execution period, the same tag content can only be uploaded once in repeated tag filtering time, 0~65535,the time unit is 10ms.

RSSI threshold value:give up uploading and discard when the RSSI value of the tag is lower than the threshold value.

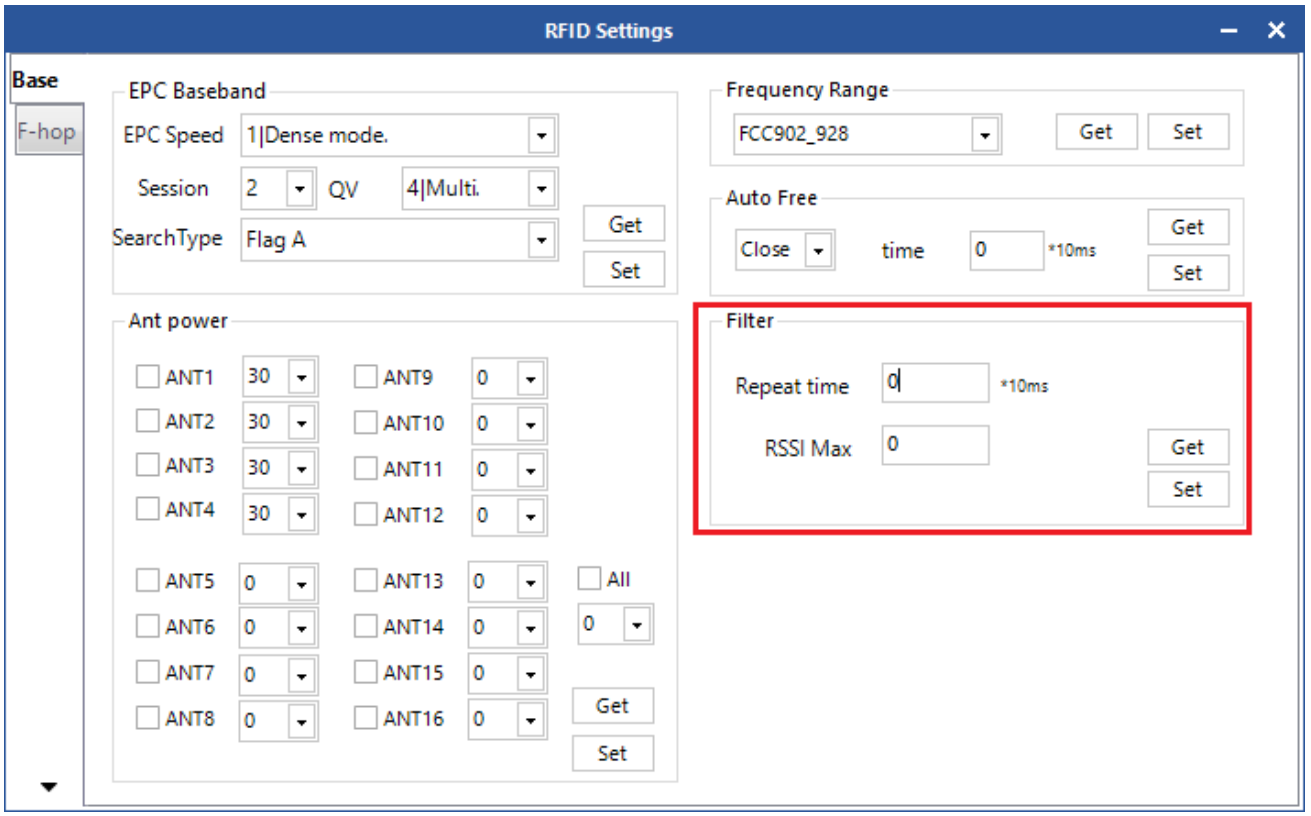


Figure 4.7.4 Tag Filtering

4.7.5 Hopping Frequency Management

Select hopping frequency in the menu bar on the left as shown in Figure 4.7.5.1. Select FCC902~928MHz in the Working frequency range spinner (as shown in Figure 4.7.5.2). Click Set Frequency Range, then select single frequency(as shown in Figure 4.7.5.4) in the frequency list on the left. Click" > " to import it to the list box on the right. Then click Set again. To choose full frequency range, just click >>. All frequency is in the list box on the right. All frequency in the list box on the right will be removed if << is clicked.

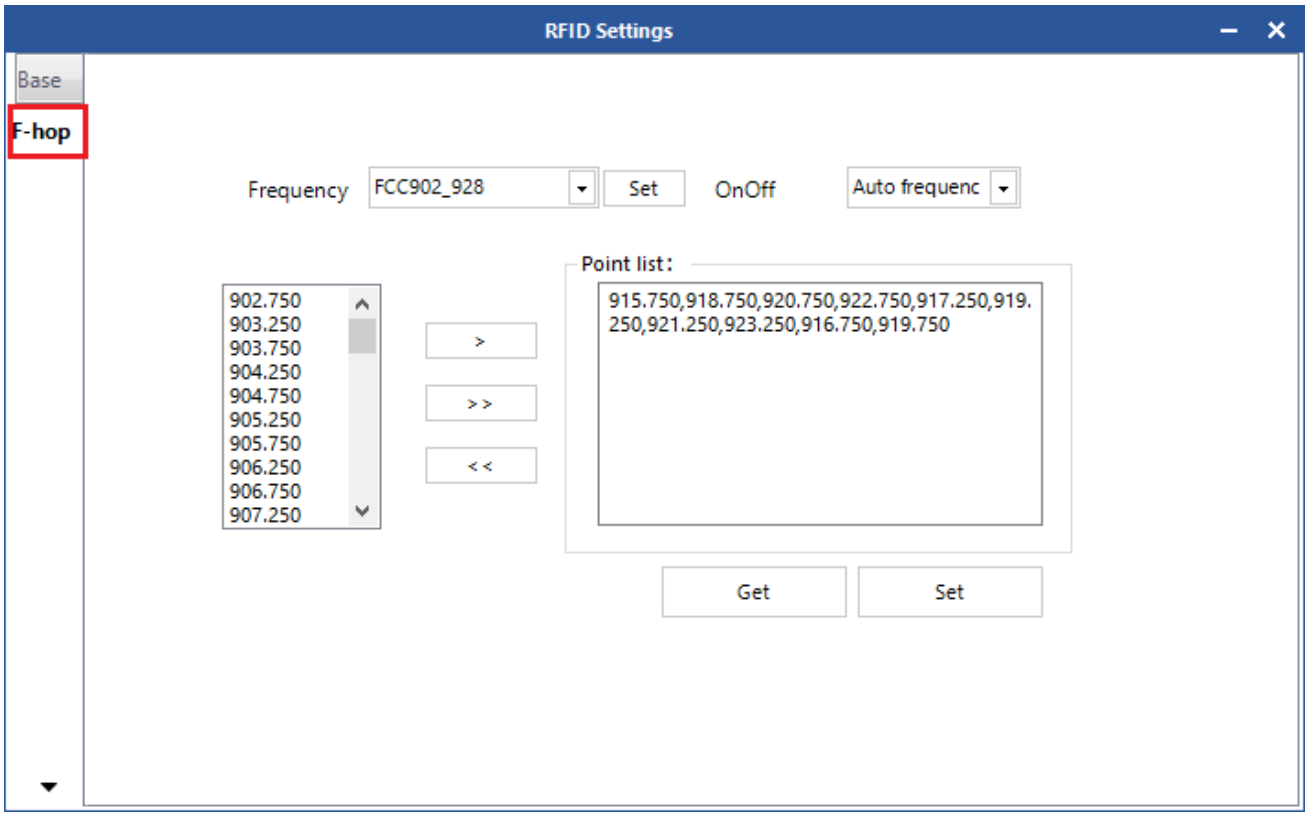


Figure 4.7.5.1 Hopping Frequency Management

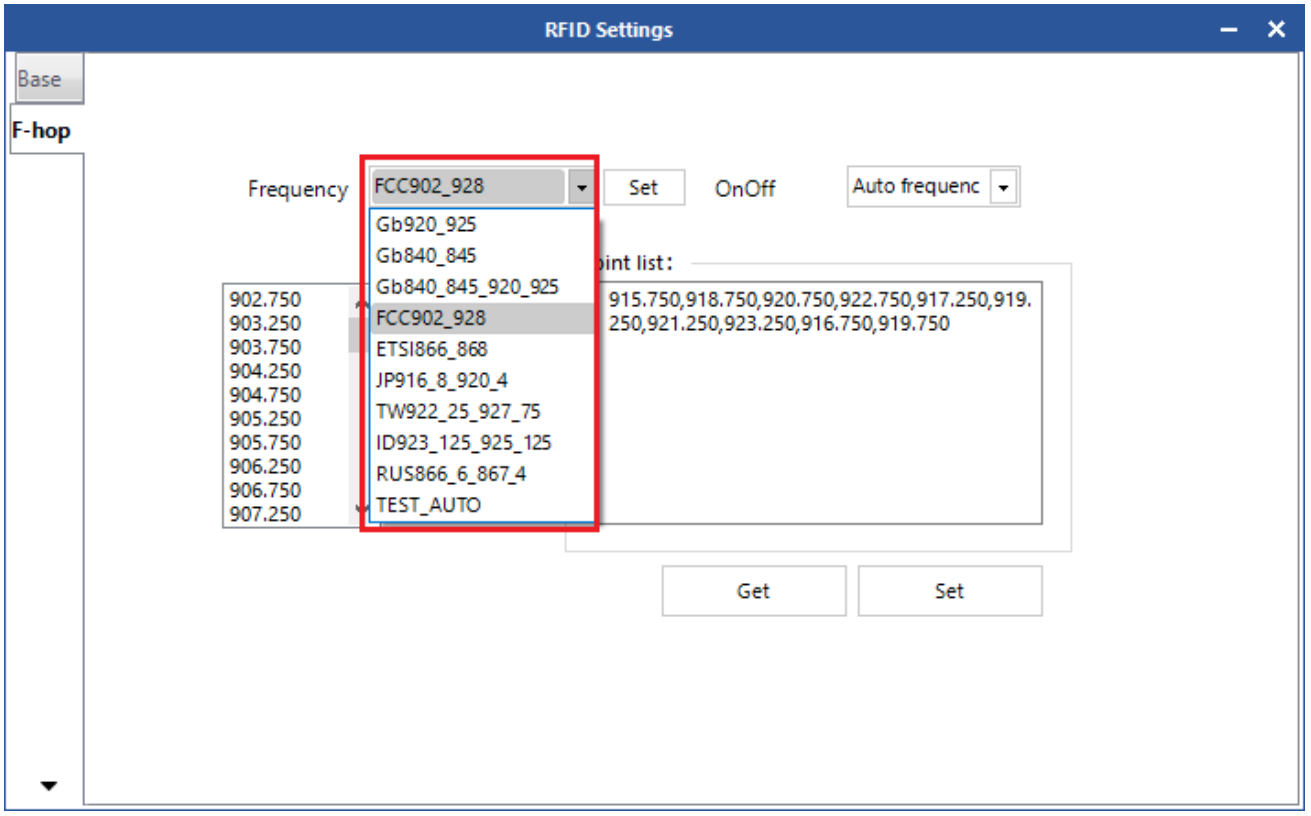


Figure 4.7.5.2 Working Frequency Range Selection

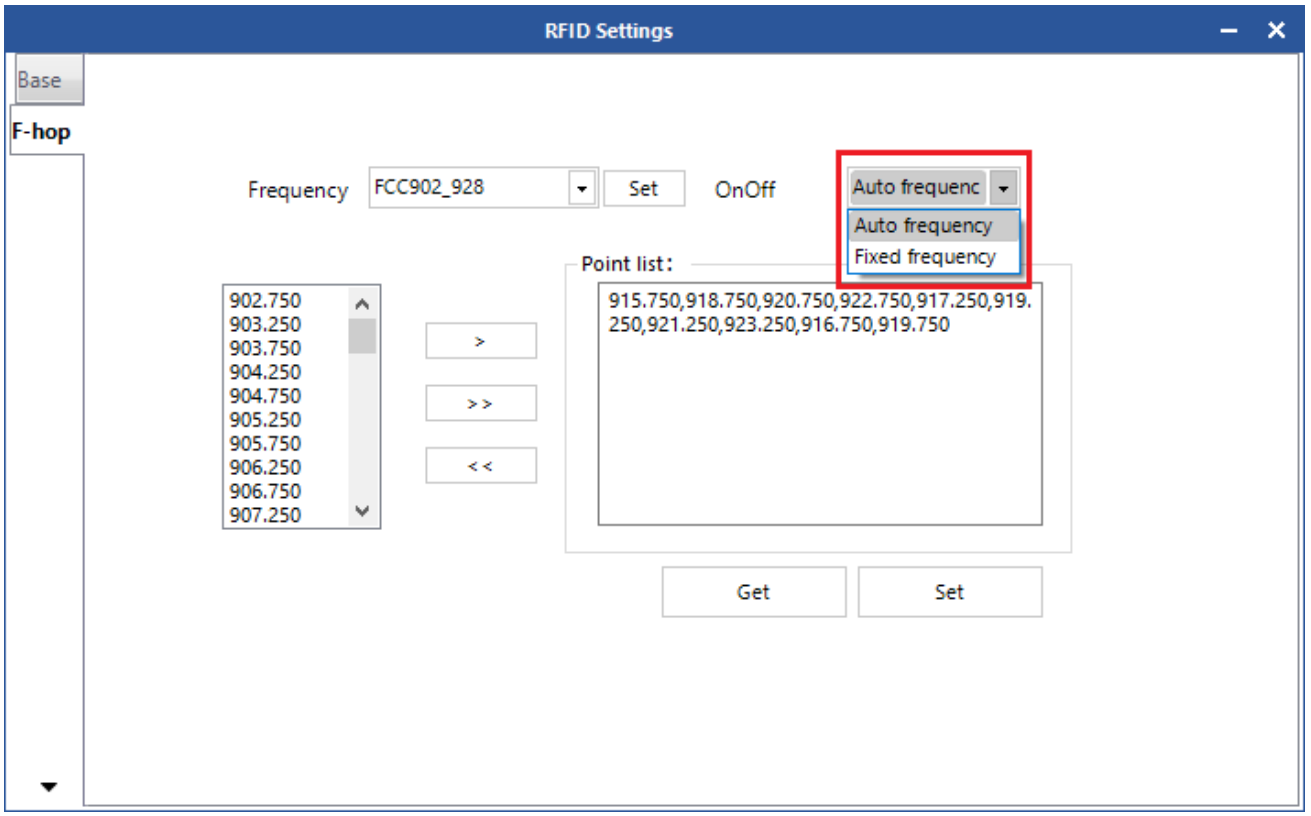


Figure 4.7.5.3 Hopping Frequency Switch Selection

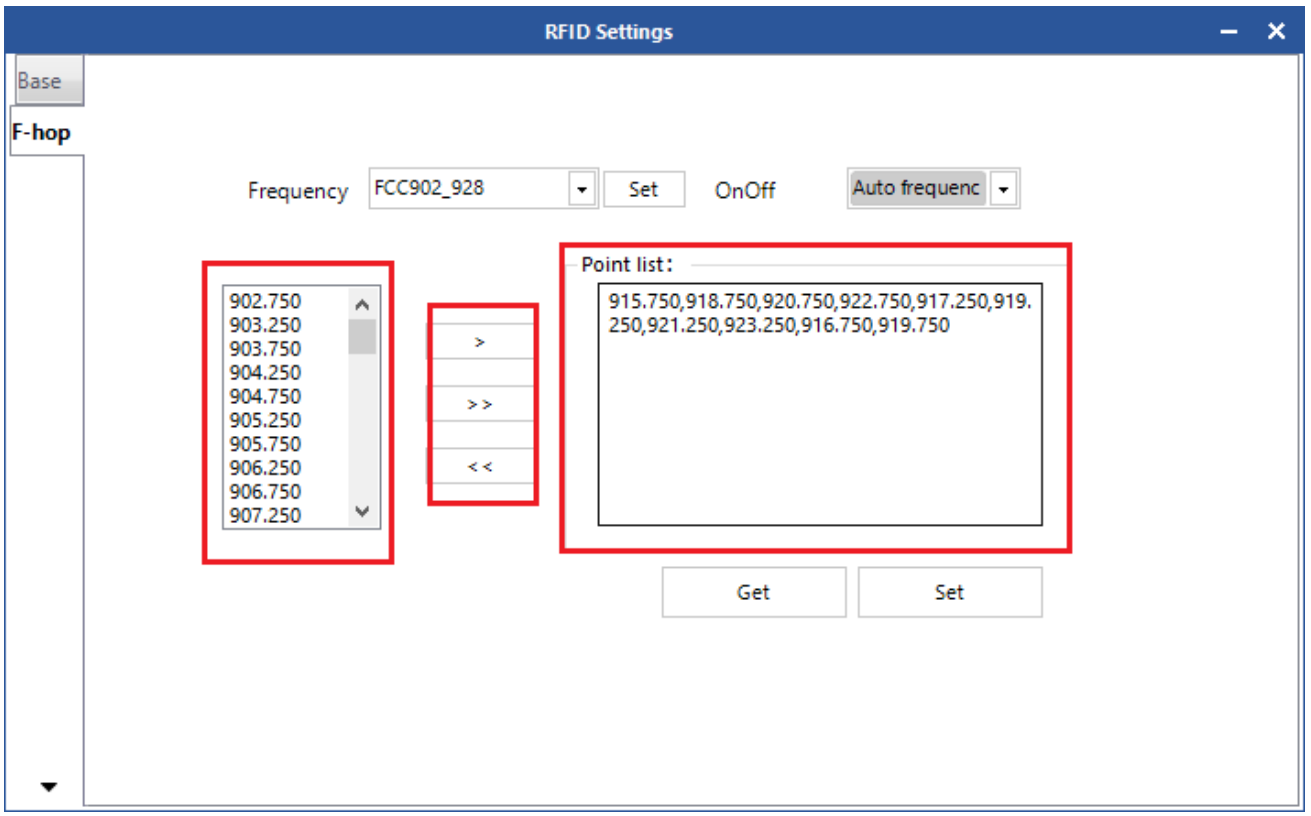


Figure 4.7.5.4 Frequency Selection

Notes: When doing this setting, the purpose of the automatic operations is to avoid the external signal interference. Normally it is defaulted to be automatically(as shown in the spinner of Figure 4.7.5.3).

4.8 Other Configurations

4.8.1 Wiegand Communication Parameter Configuration

Select Device Control in the main interface of the Demo->Device Configuration, and the dialog box will pop up. Select GPIO on the left popup. The Wiegand Configuration is at the lower left. Click “Get” to check the Wiegand communication parameter of the current device as shown in Figure 4.8.1.1.

There are 3 types of Wiegand communication: Wiegand 26, Wiegand 34 and Wiegand 66. Reader extracts the end data of EPC code or TID code according to Wiegand communication format and outputs it through Wiegand signal. It extracts 3 bytes at the end for Wiegand 26 , 4 bytes for Wiegand 34 format and 8 bytes for Wiegand 66 format. There are 2 types for data transfer: Transfer EPC end data and transfer TID end data. Click Set after selecting corresponding parameters as shown in Figure 4.8.1.2.

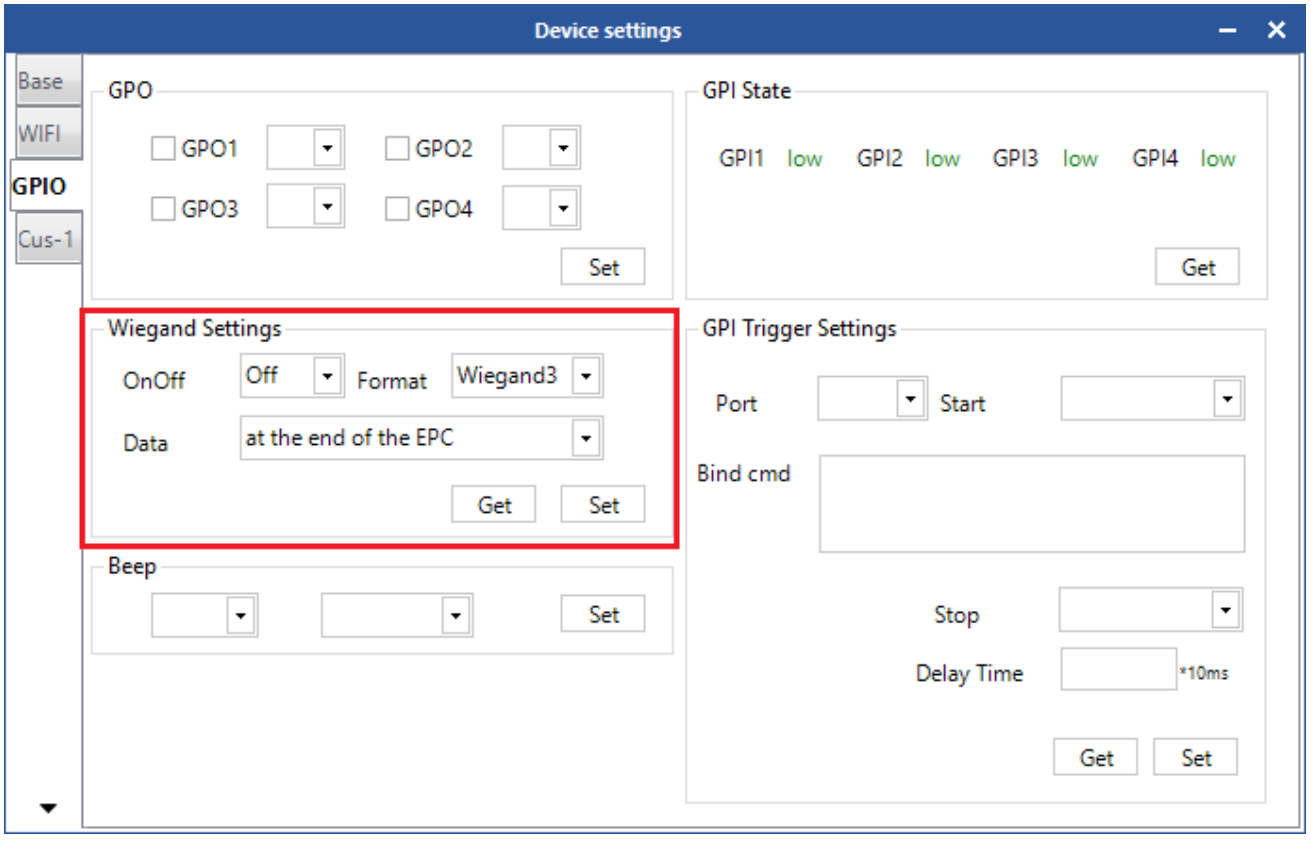


Figure 4.8.1.1 Wiegand Communication Parameter Get

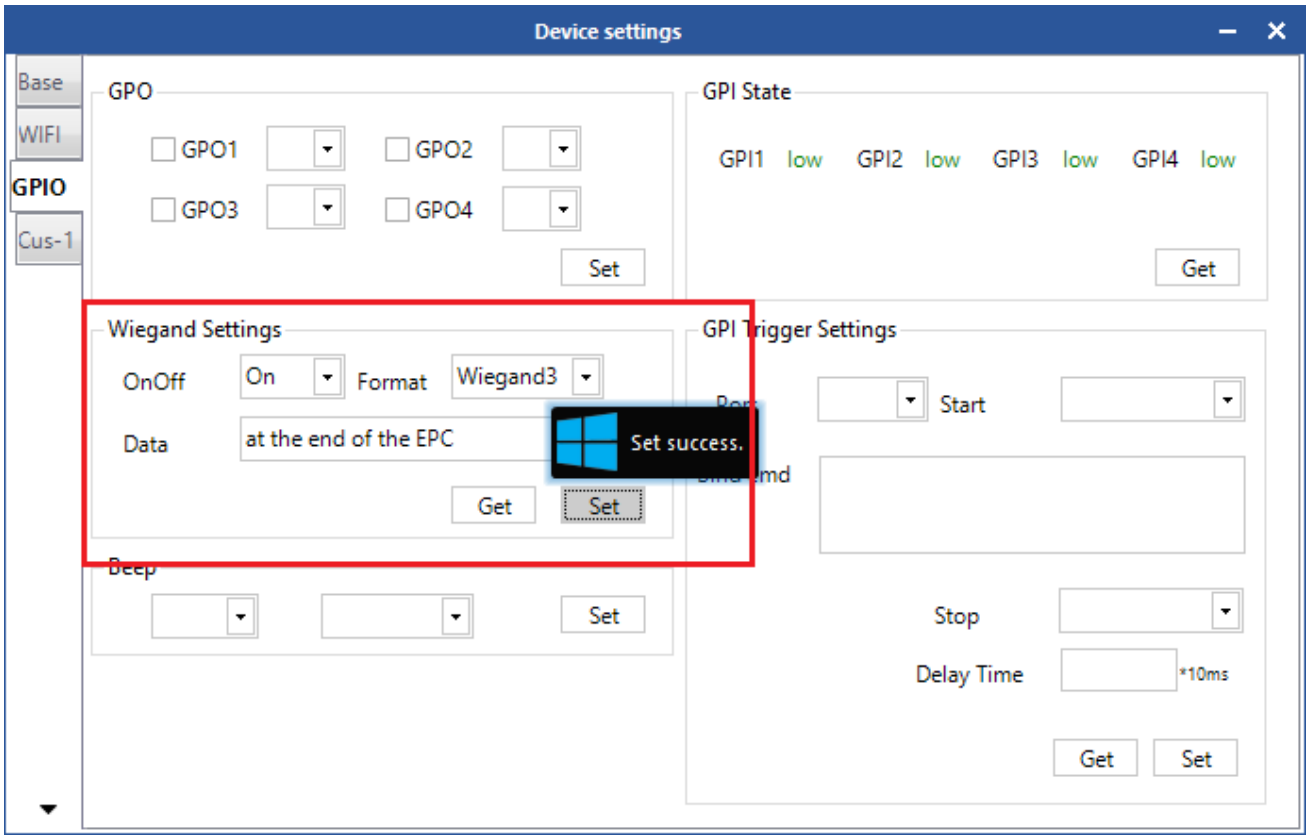


Figure 4.8.1.2 Wiegand Communication Parameter Configuration

4.8.2 Buzzer Control

Select Device Control in the main interface of the Demo->Device Configuration, and the dialog box will pop up. Select GPIO in the popup on the left. The Buzzer Control is on the lower left. Click Set to set the state of the buzzer as shown in Figure 4.8.2.

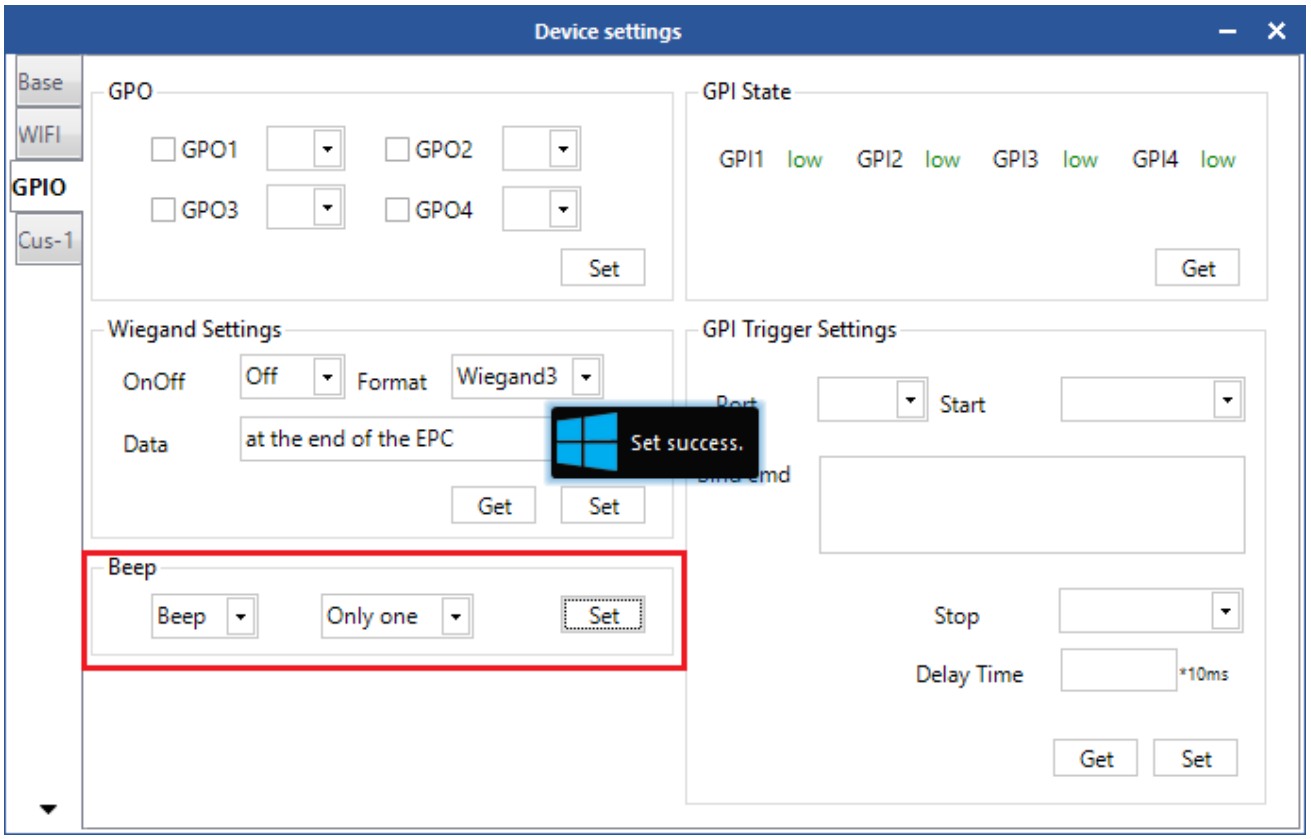


Figure 4.8.2 Buzzer Control

4.8.3 EAS Alarm

Select Device Control in the main interface of the Demo -> Device Configuration, and the dialog box will pop up. Select Custom-1 in the popup on the left as shown in Figure 4.8.3. This operation is used for configuration for matching alarm parameters. “matching succeeded operation” will be performed when the tags meet the matching condition is read. And “match failed operation” will be performed when the tags fail to meet the matching condition is read. The matching rules are as below:

The calculated result of the mask Bitwise AND and zone data to be matched in the tag is A. And the result of the mask Bitwise AND and zone data matched is B. If A is equal to B, then the matching is successfully, and then the EAS match-successfully operation shall be performed. Conversely, the EAS match-failed operation shall be performed.

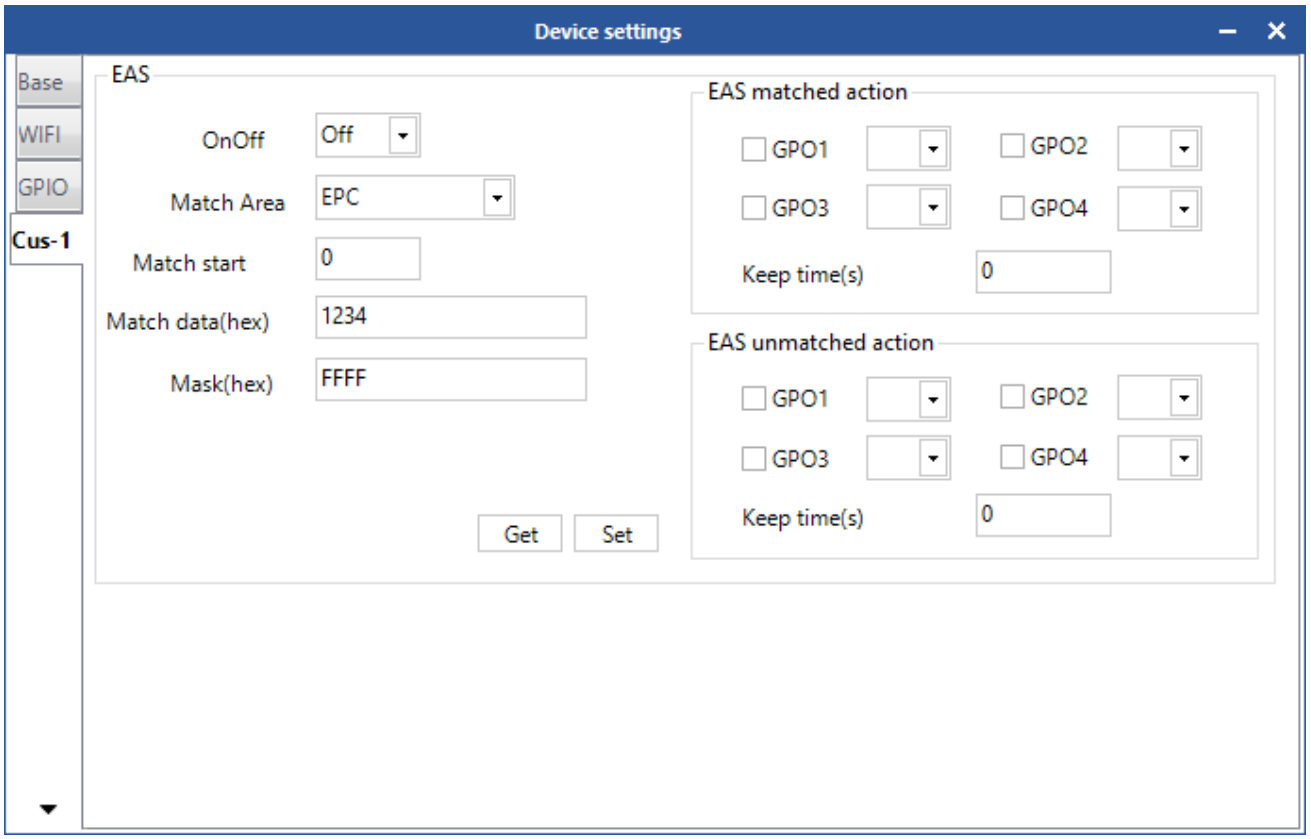


Figure 4.8.3 EAS Alarm

4.9 Tools

4.9.1 Restart

Select Tools ->“ ”Restart as shown in Figure 4.9.1.1. Click the icon, and the Command Sent Successfully prompt will pop up as shown in Figure 4.9.1.2.

The reader will restart when it receives this message. And the restart is finished when the beep from the buzzer is heard.

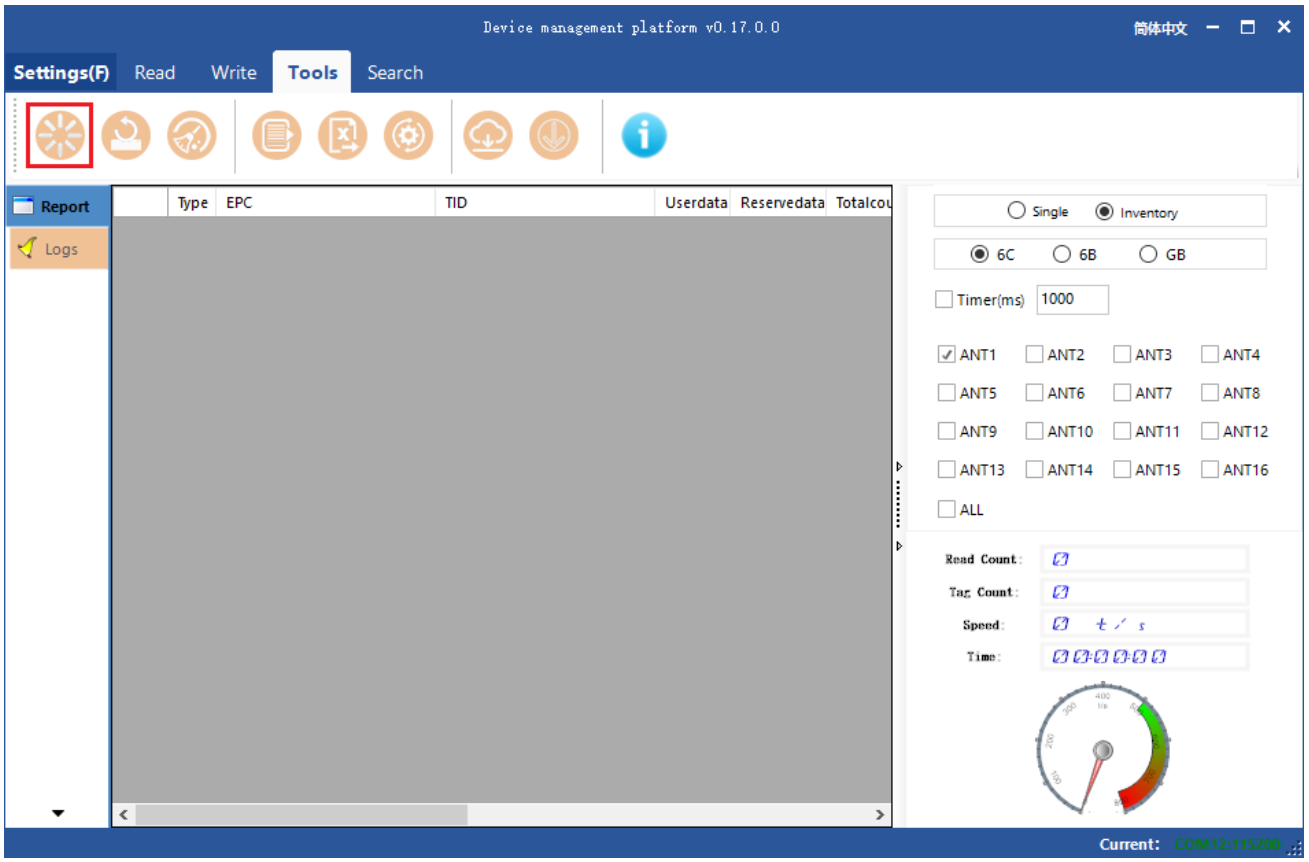


Figure 4.9.1.1 Restart

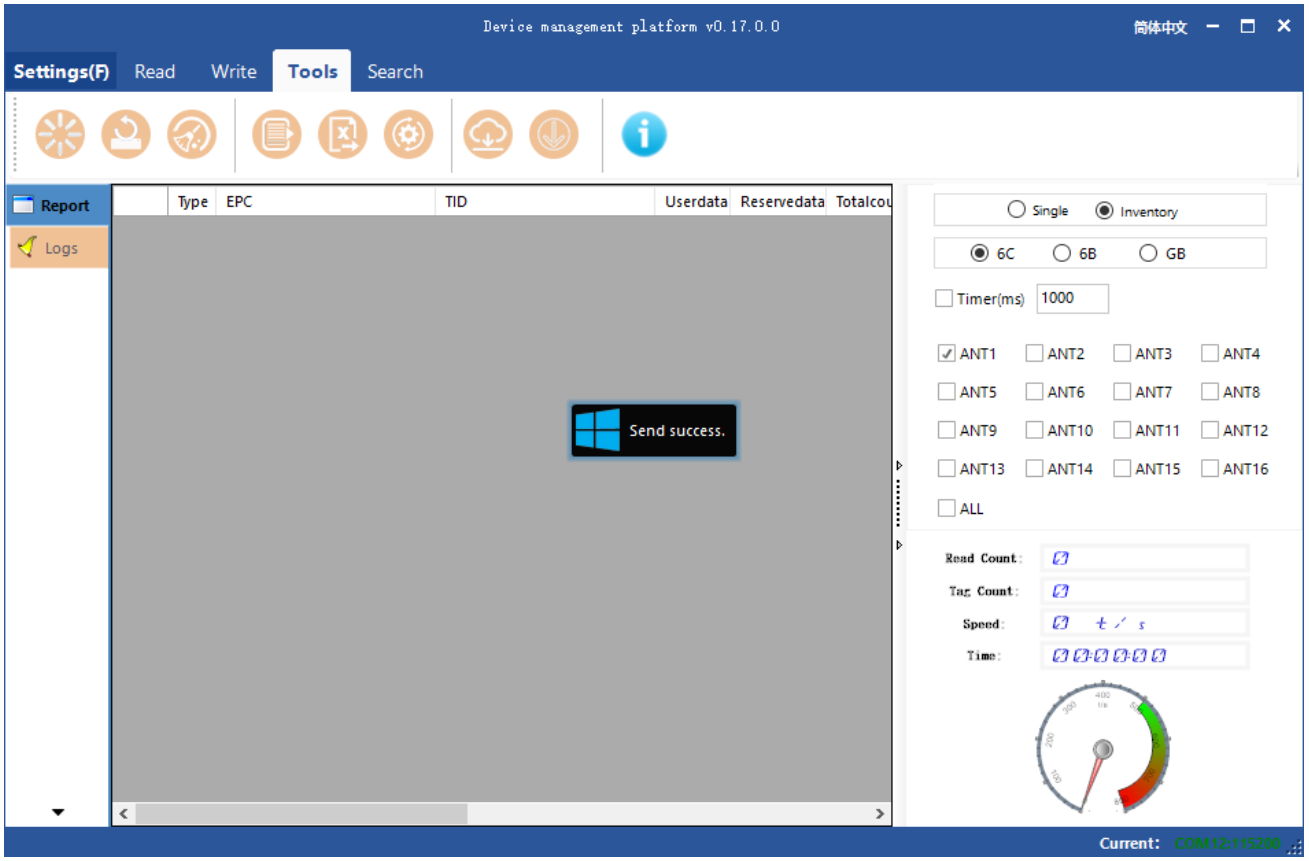


Figure 4.9.1.2 Command Sent Successfully

4.9.2 Restore Factory Setting

Select Tools in the main interface ->“ ”Factory Reset as shown in Figure 4.9.2.1. Click the icon, and the prompt “Factory Reset?” will pop up as shown in Figure 4.9.2.2. This operation will restore all parameters, including RFID configuration parameters, to factory setting except for system time and MAC address.

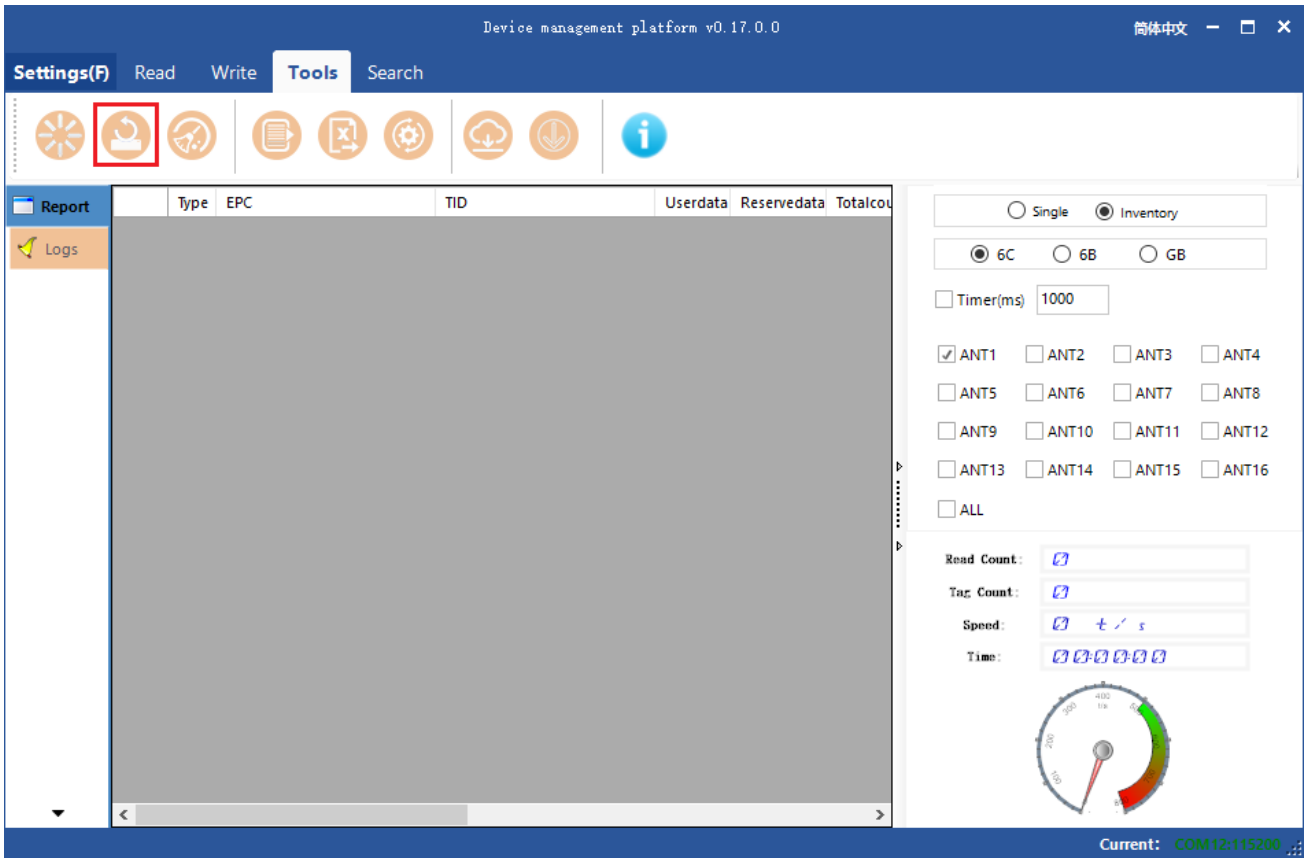


Figure 4.9.2.1 Factory Reset

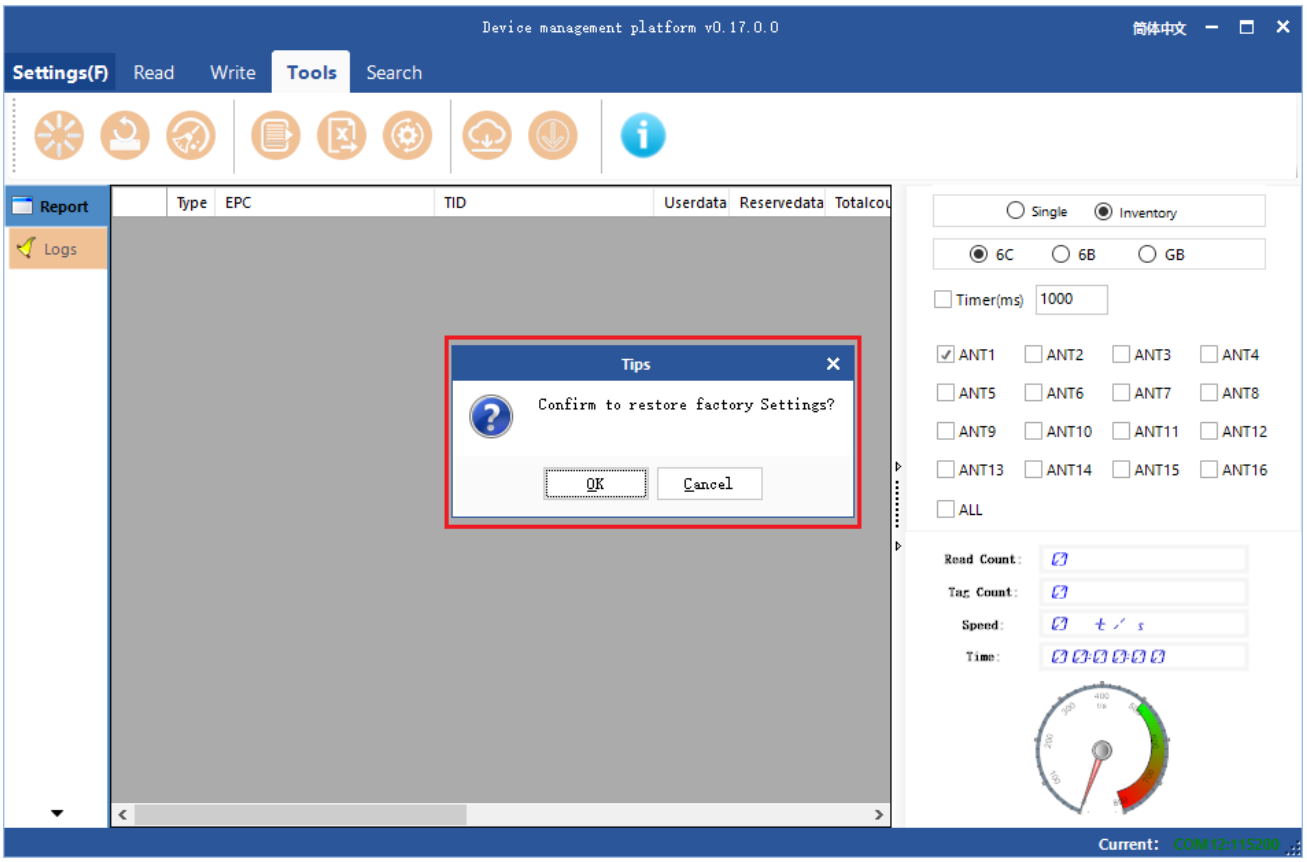


Figure 4.9.2.2 Prompt

4.9.3 Data Export

Select Tools ->“  ” export the text(or”  ”export the spreadsheet), and a dialog will pop up as shown in Figure 4.9.3. Then choose the path for the files to be saved.

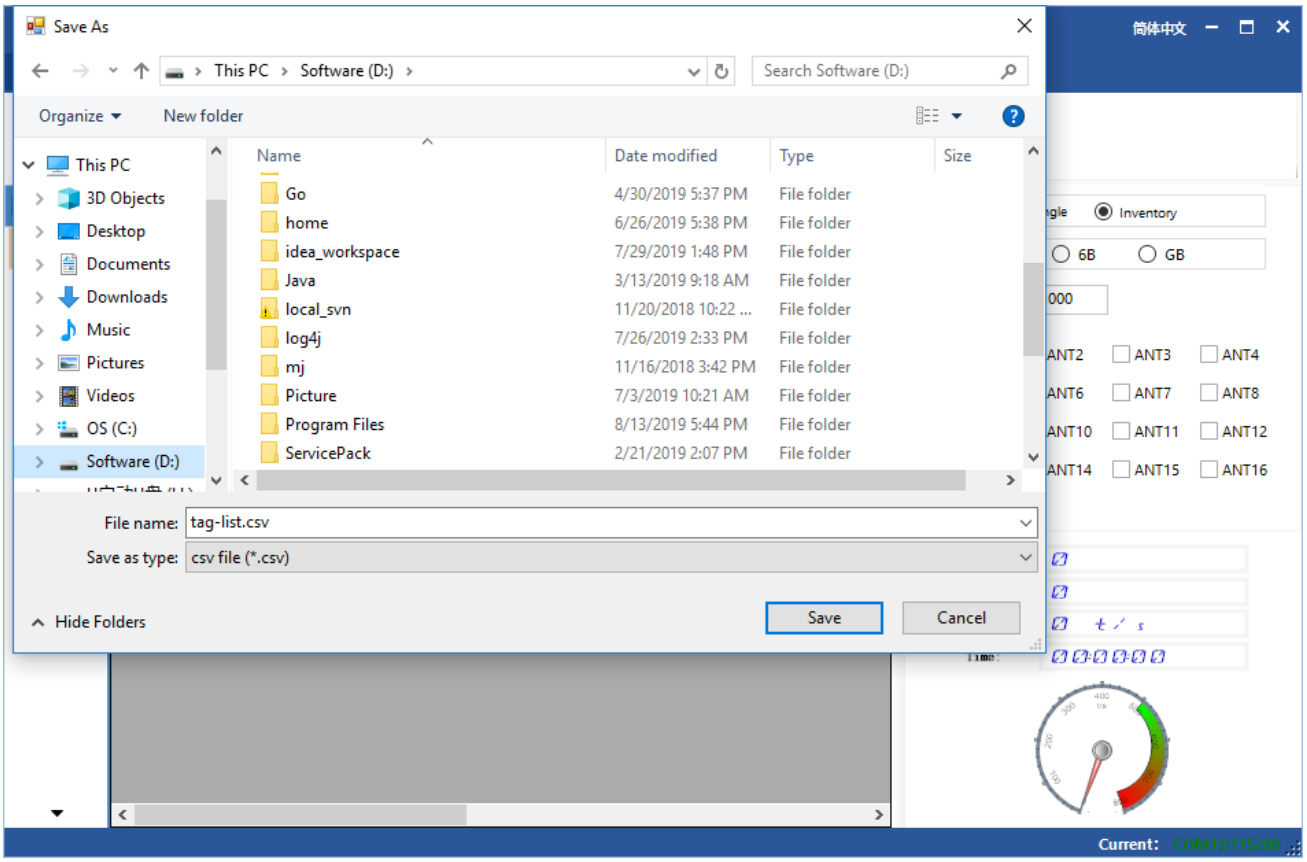


Figure 4.9.3 Data Export

The tag data supports data export and the exporting format can be .csv and .xls(Excel datasheet).

4.9.4 Upgrade

It supports baseband software (underlying software) upgrading and application software (system application software) upgrading. Select Tools -> “” upgrade baseband (or “” upgrade application). And the dialog box will pop up as shown in Figure 4.9.4.

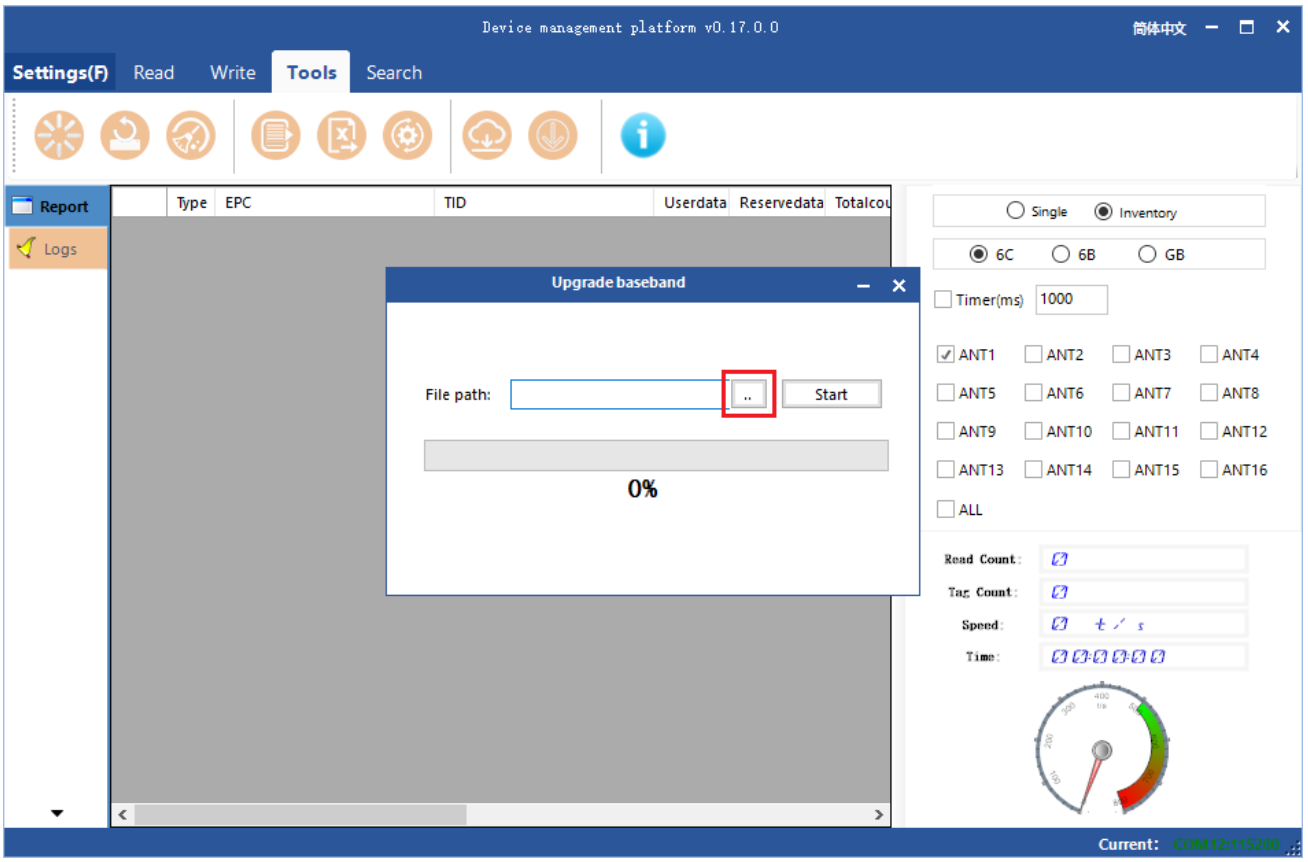


Figure 4.9.4.1 upgrade baseband

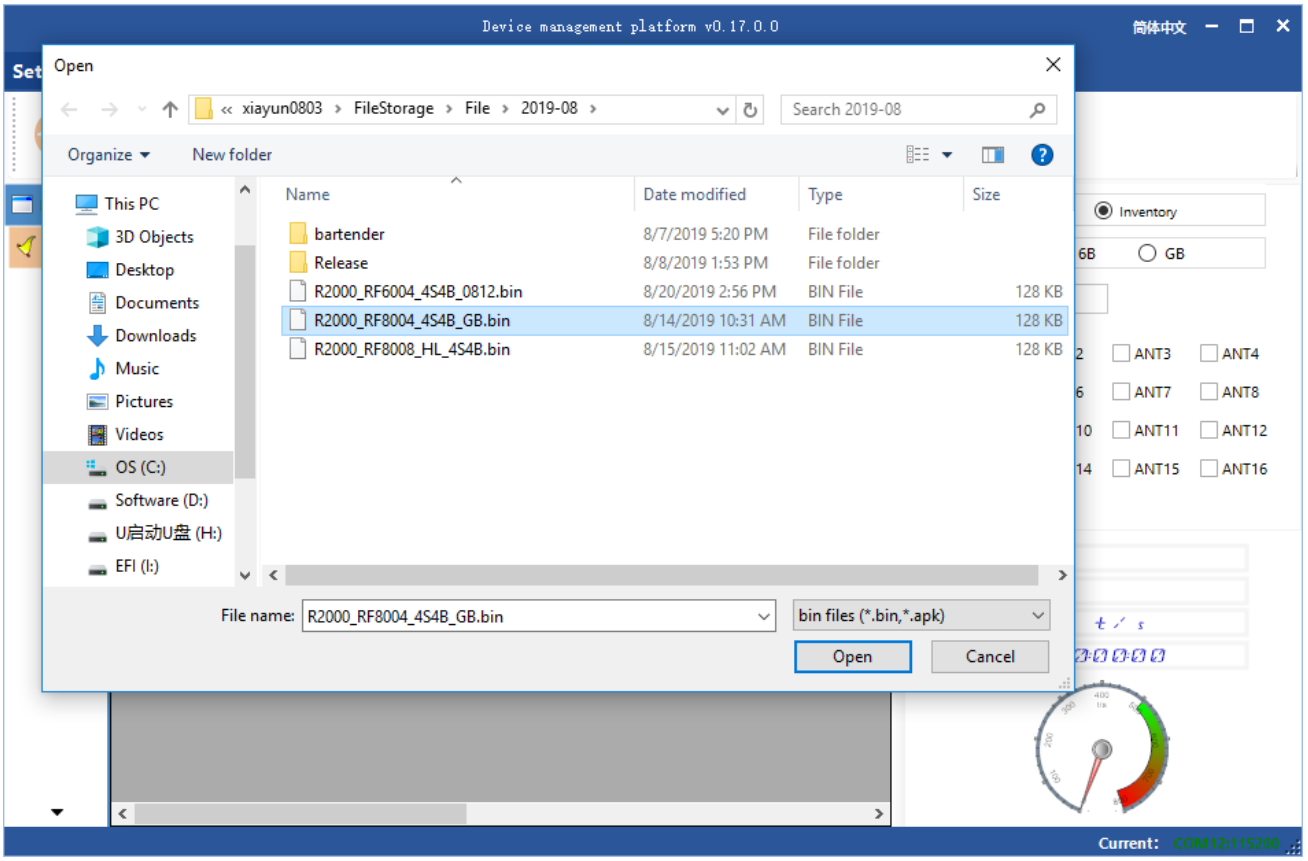


Figure 4.9.4.2 Select Upgrade Files

Find the path to the required. bin(.apk) upgrading file in the Upgrade File list as shown in Figure 4.9.4.3, click Start. The baseband is upgraded

when the upgrading progress bar shows 100%. And then the Upgraded Successfully prompt will pop up. Then click “OK” to restart as shown in Figure 4.9.4.4 .

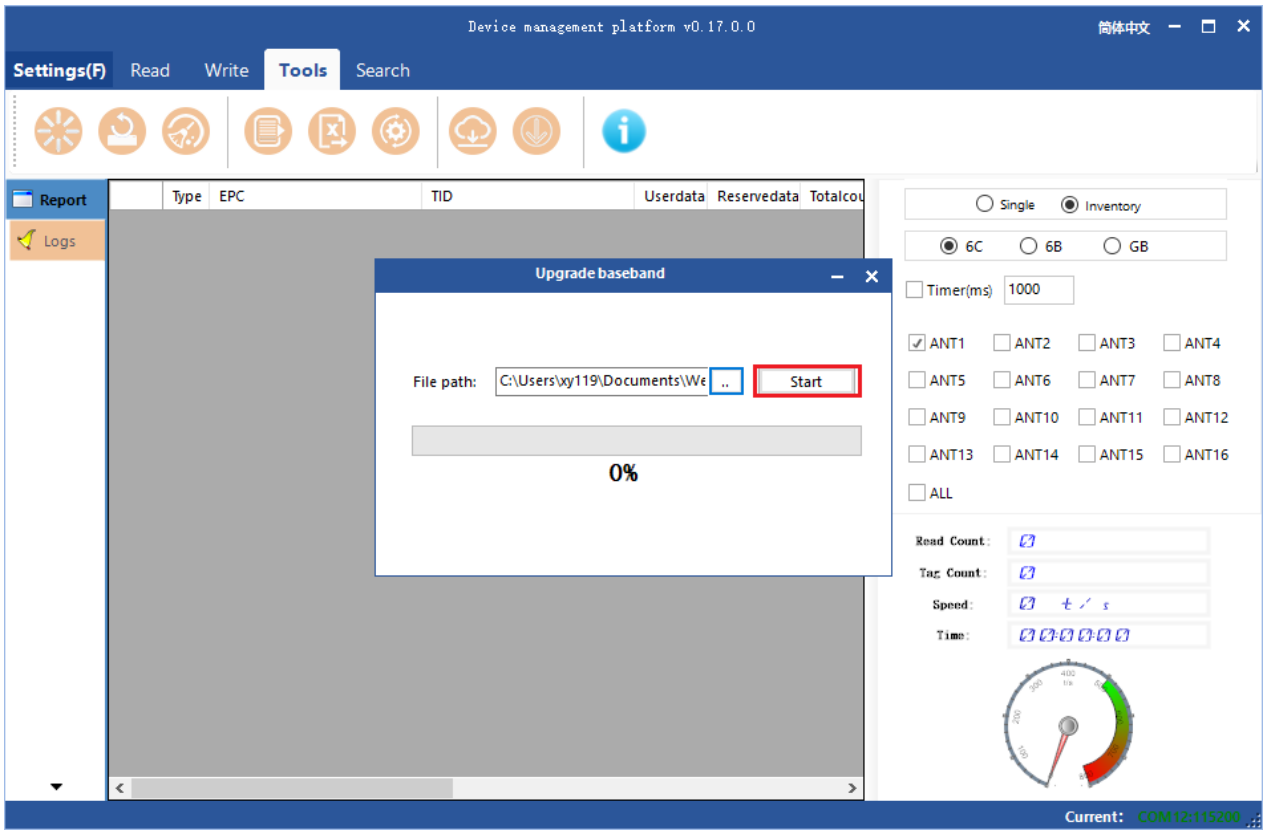


Figure 4.9.4.3 Upgrading baseband

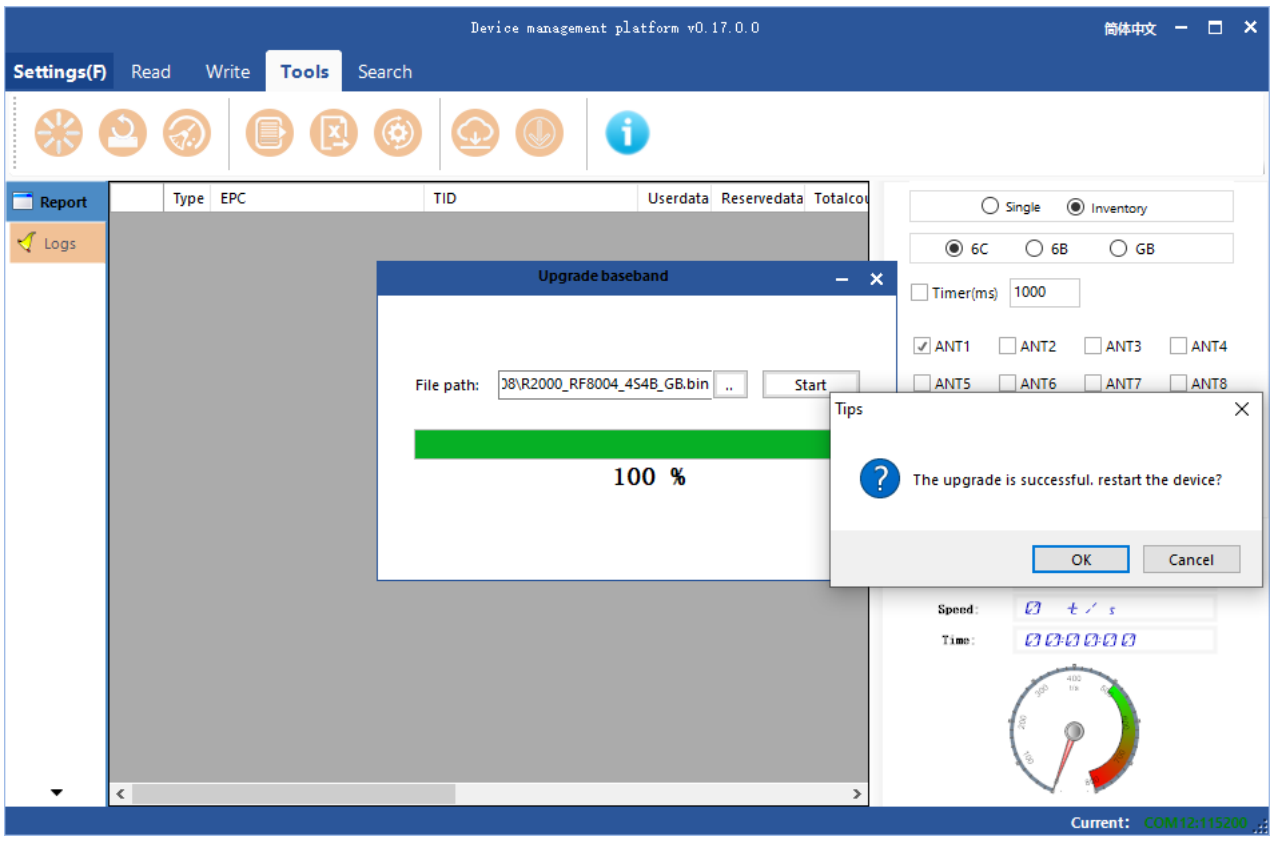


Figure 4.9.4.4 Restart Confirm

The upgrading process of baseband software is the same as the application software. And the detail operation is the same also.

4.9.5 Custom Command

Select Tools ->“ ” Custom Command as shown in Figure 4.9.5.1. Click the icon, and a custom command sending popup will come out as shown in Figure 4.9.5.2.

Head: data frame header, defaulted to be 5A

Command: can be written according to the communication protocol of the reader, or extract by double clicking lines of the log window (detailed in GPI Operation Configuration)

CRC: check code(automatically generated by filling in command and head and clicking the CRC text box).

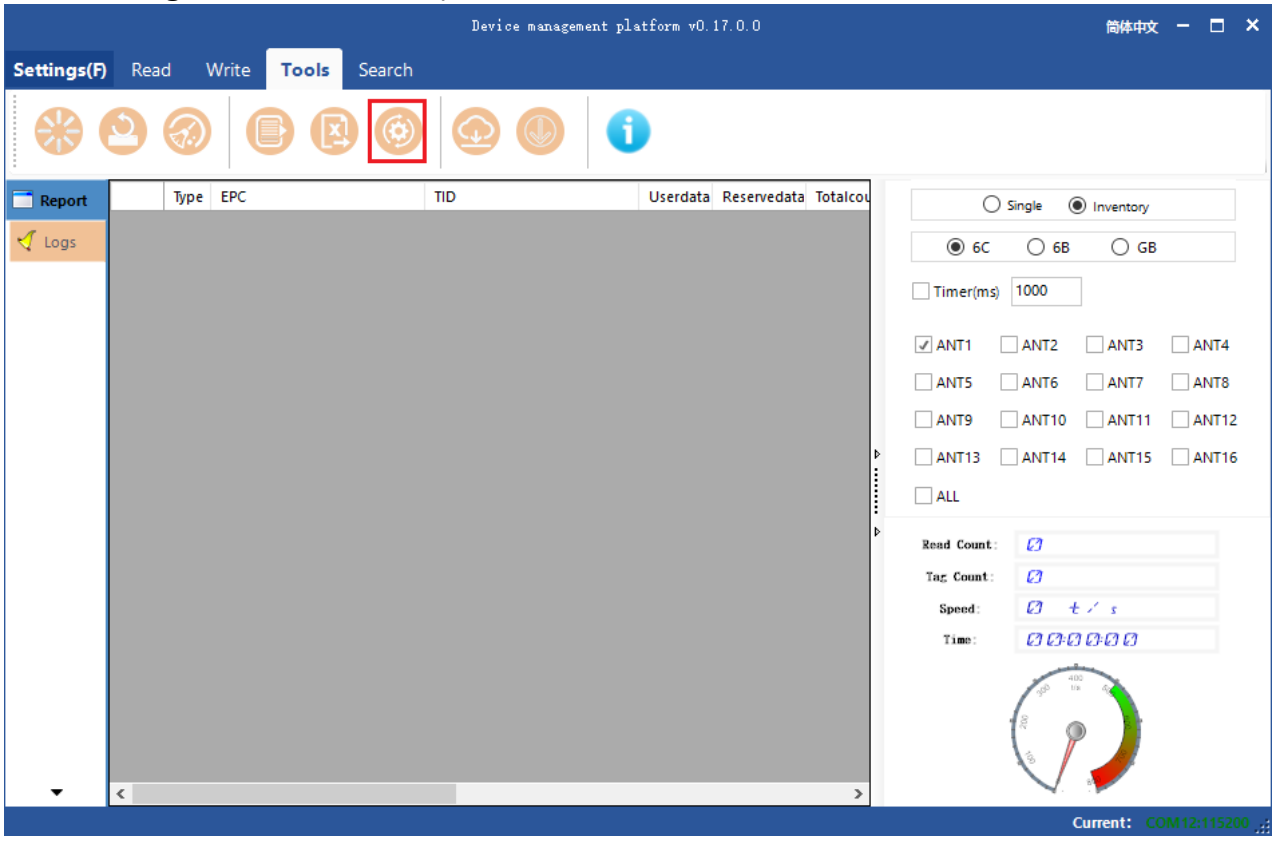


Figure 4.9.5.1 Custom Command

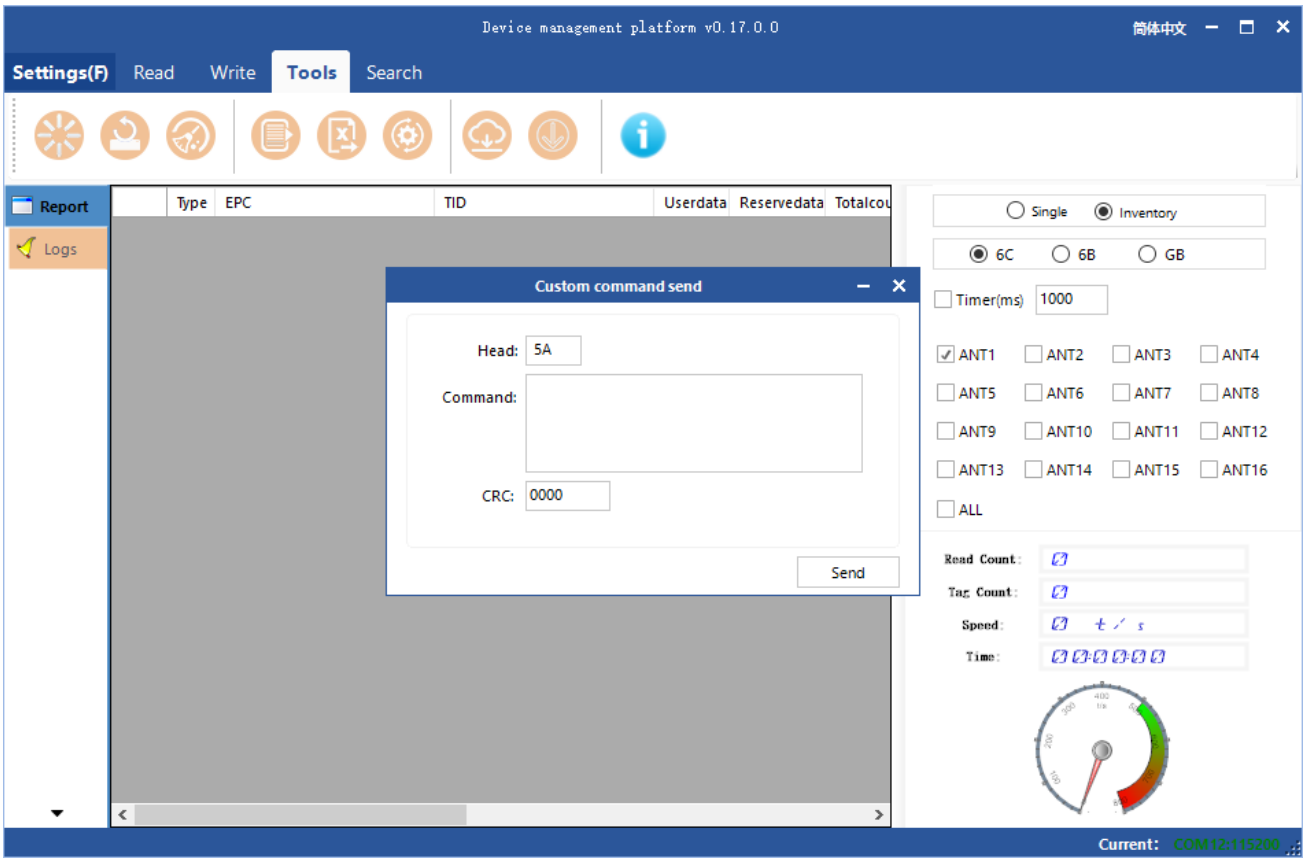


Figure 4.9.5.2 Custom Command Sending

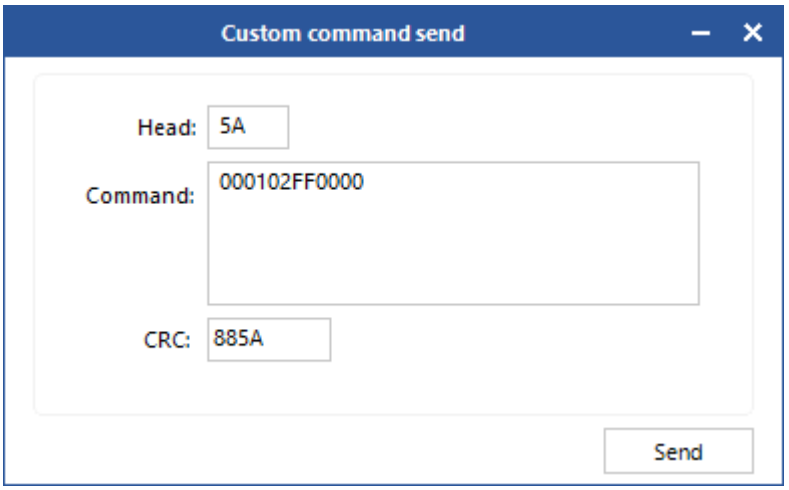


Figure 4.9.5.3 Send Custom Command

4.9.6 Device Info

Select Tools ->“ ”Device Info as shown in Figure 4.9.6.1. Click the icon and a Device Info window will pop up as shown in Figure 4.9.6.2.

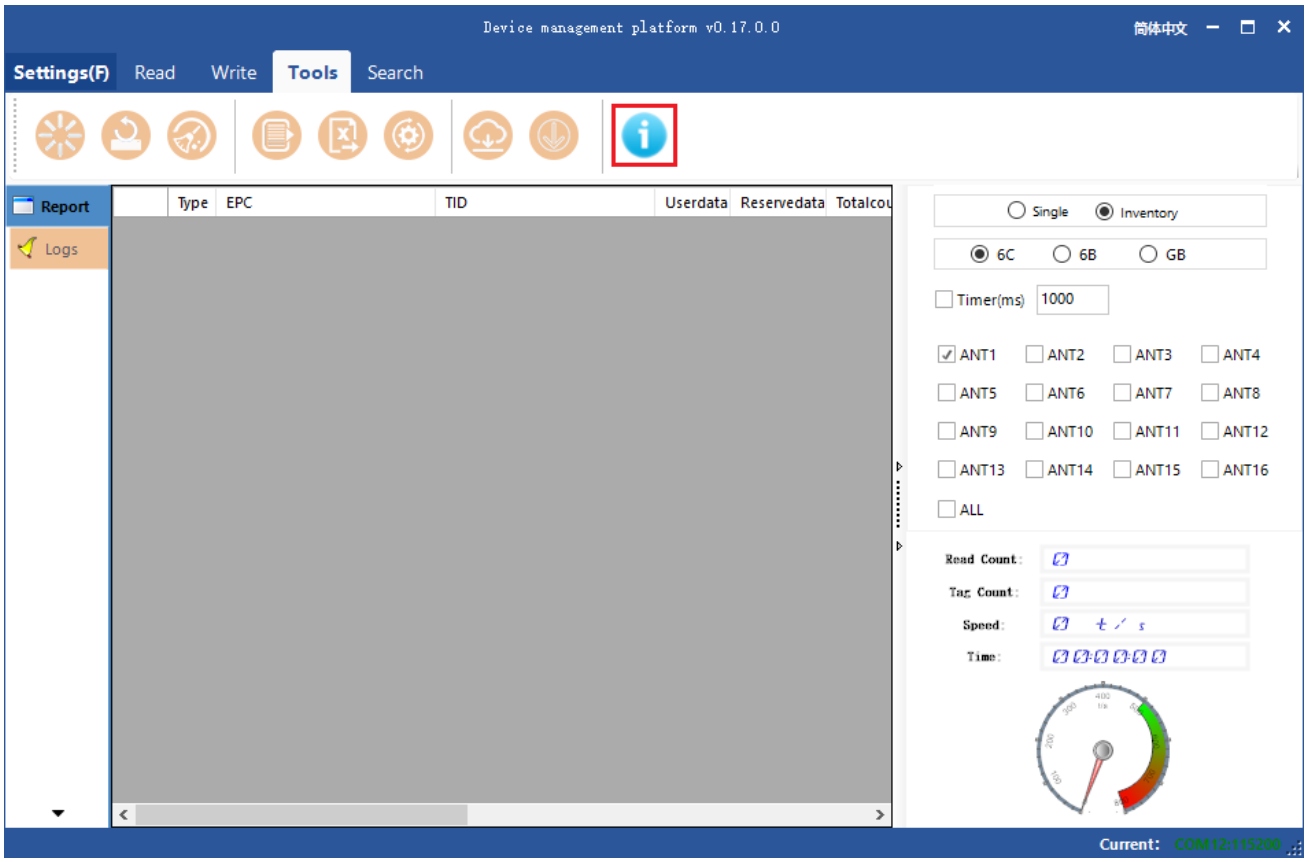


Figure 4.9.6.1 Device Info

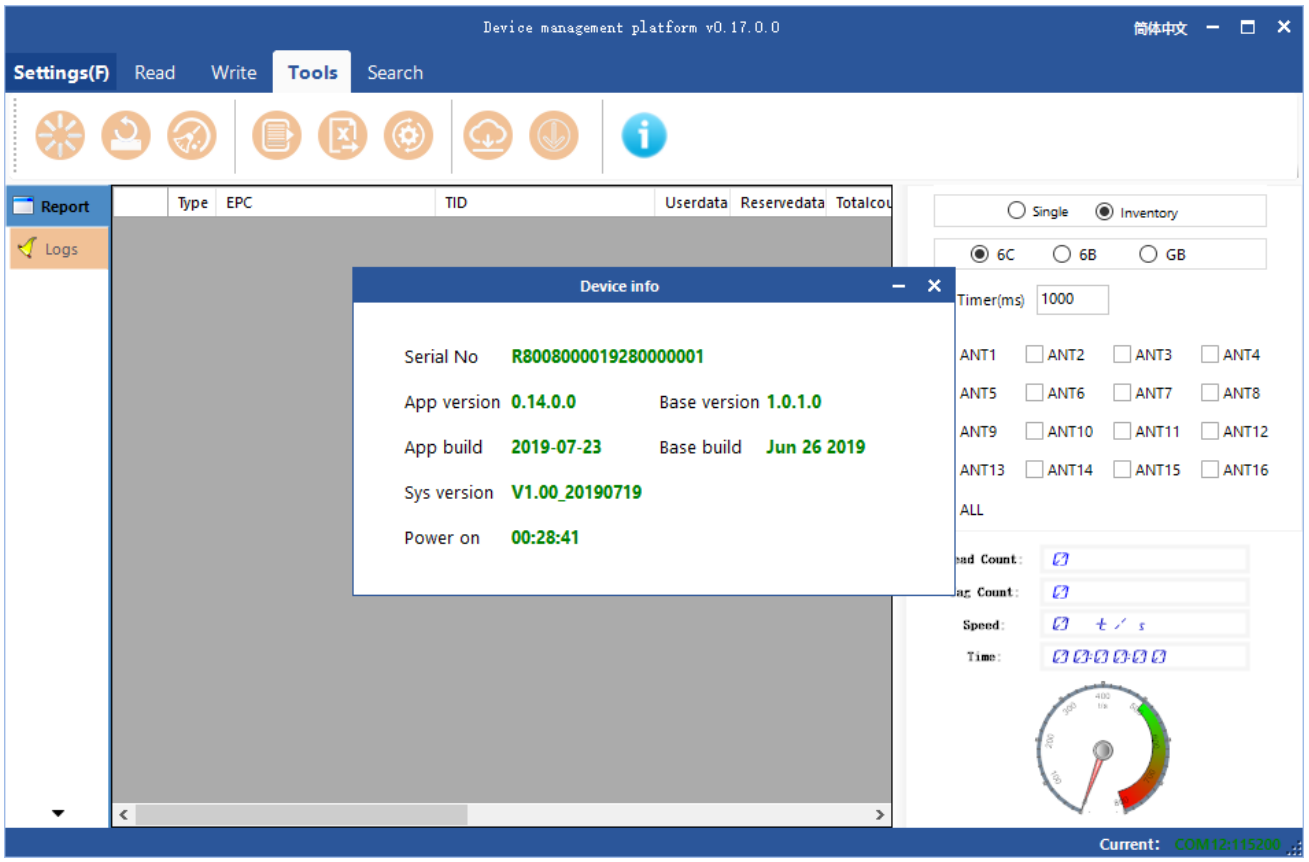


Figure 4.9.6.2 Device Info Popup

4.9.7 Devices Search

Select Device searching in the main interface of the Demo -> Device Search (as shown in Figure 4.9.7.1) and then a dialog box will pop up as shown in Figure 4.9.7.2. Open the popup, and the reader will start searching the devices with the same network segment as the computer. And the devices will be in the list as shown in Figure 4.9.7.3.

Notes: This function is also workable when the demo is not connected with any device.

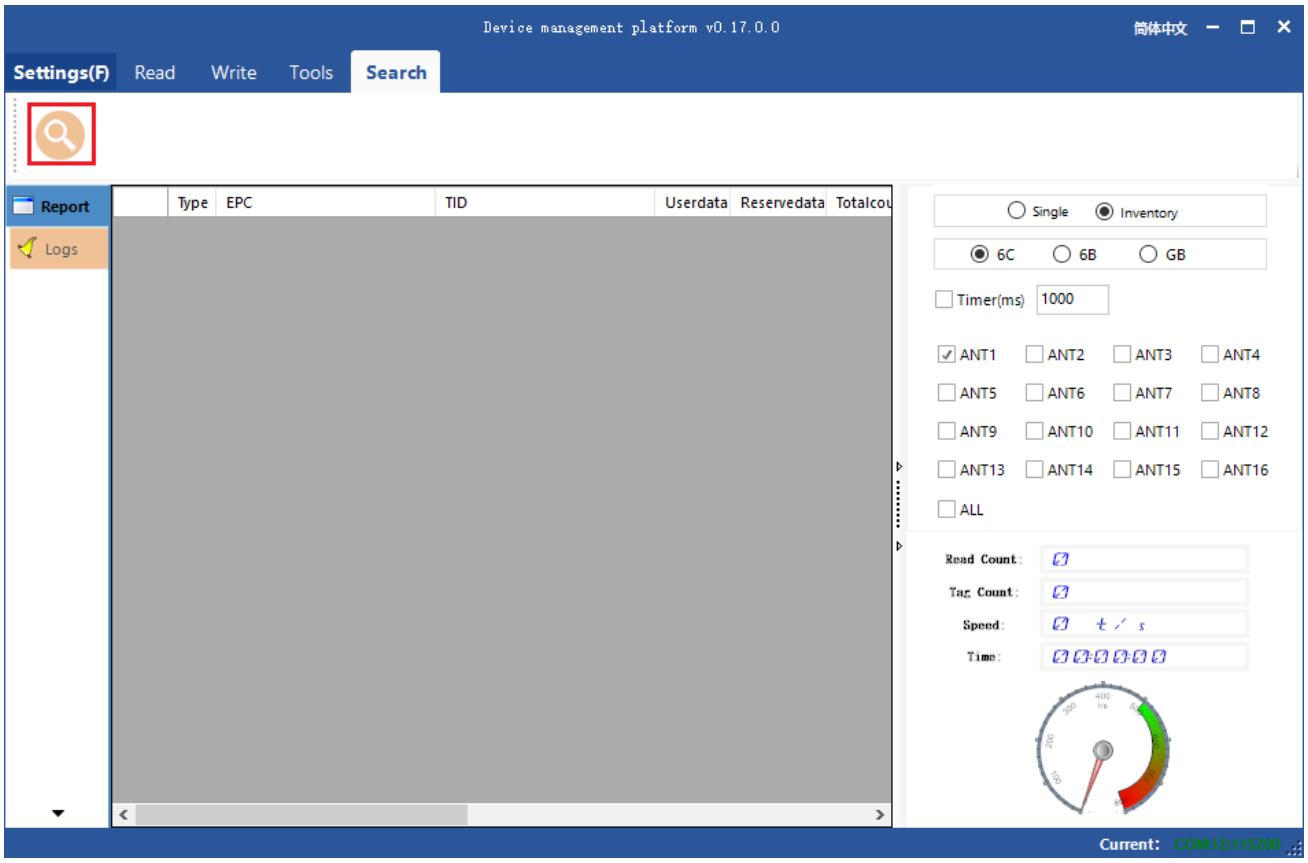


Figure 4.9.7.1 Network Devices Searching

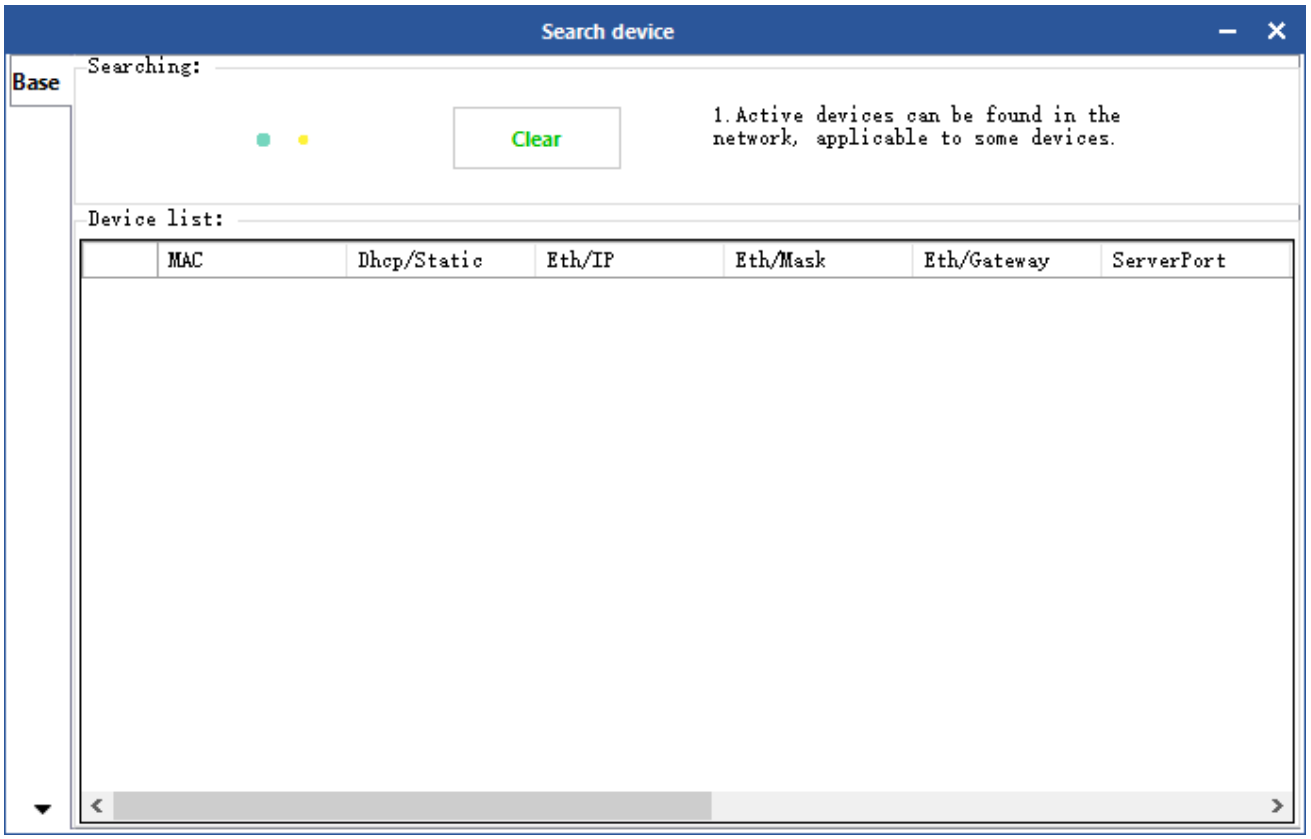


Figure 4.9.7.2 Searching Devices

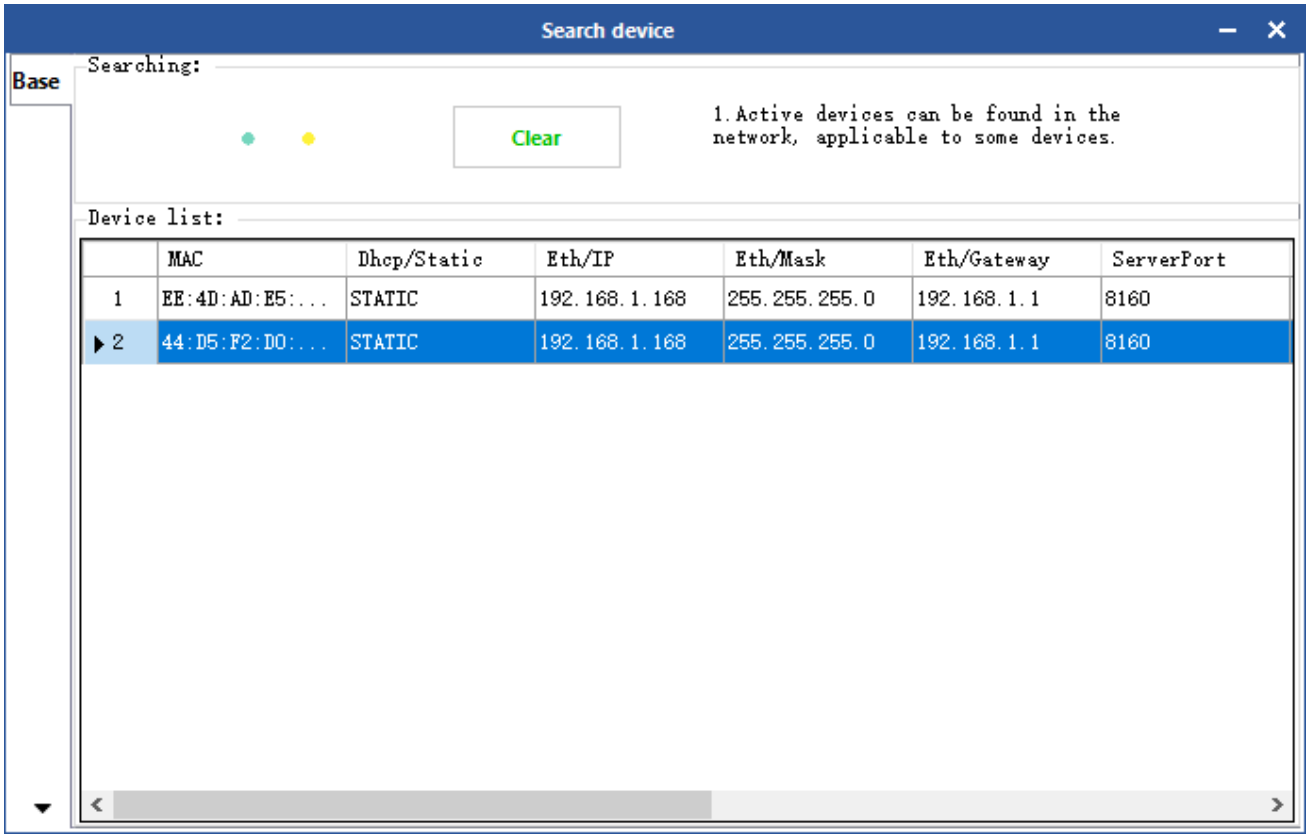


Figure 4.9.7.3 Searching Devices Successfully

FCC WARNING

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

15.105 Information to the user.
(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

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 usedin

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.
This equipment complies with FCC radiation exposure limits set forth for an uncon- trolled environment. This equipment should be installed and operated with minimum distance 20

cm between the radiator and your body.
Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination.

The firmware setting is not accessible by the end user.

The final end product must be labelled in a visible area with the following: “Contains Transmitter Module “FCC ID: 2AUF7RF-N6801”

Requirement per KDB996369 D03

2.2 List of applicable FCC rules

List the FCC rules that are applicable to the modular transmitter. These are the rules that specifically establish the bands of operation, the power, spurious emissions, and operating fundamental frequencies. DO NOT list compliance to unintentional-radiator rules (Part 15 Subpart B) since that is not a condition of a module grant that is extended to a host manufacturer. See alsoSection

2.10 below concerning the need to notify host manufacturers that further testing is required.3

Explanation: This module meets the requirements of FCC part 15C (15.247).it Specifically identified AC Power Line Conducted Emission, Radiated Spurious emissions, Band edge and RF Conducted Spurious Emissions, Conducted Peak Output Power, Bandwidth, Power Spectral Density, Antenna Requirement.

2.3 Summarize the specific operational use conditions

Describe use conditions that are applicable to the modular transmitter, including for example any limits on antennas, etc. For example, if point-to- point antennas are used that require reduction in power or compensation for cable loss, then this information must be in the instructions. If the use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual. In addition, certain information may also be needed, such as peak gain per frequency band and minimum gain, specifically for master devices in 5 GHz DFS bands.

Explanation: The product antenna uses an irreplaceable antenna with a gain of 6.29dBi

2.4 Single Modular

If a modular transmitter is approved as a "Single Modular," then the module manufacturer isresponsible for approving the host environment that the Single Modular is used with. The manufacturer of a Single Modular must describe, both in the filing and in the installation instructions, the alternative means that the Single Modular manufacturer uses to verify that the host meets the necessary requirements to satisfy the module limiting conditions.

A Single Modular manufacturer has the flexibility to define its alternative method to address the conditions that limit the initial approval, such as: shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation. The alternative method could include that the limited

module manufacturer reviews detailed test data or host designs prior to giving the host manufacturer approval.

This Single Modular procedure is also applicable for RF exposure evaluation when it is necessary to demonstrate compliance in a specific host. The module manufacturer must state how control of the product into which the modular transmitter will be installed will be maintained such that full compliance of the product is always ensured. For additional hosts other than the specific host originally granted with a limited

module, a Class II permissive change is required on the module grant to register the additional host as a specific host also approved with the module. **Explanation:** The module is a single module.

2.5 Trace antenna designs

For a modular transmitter with trace antenna designs, see the guidance in Question 11 of KDB Publication 996369 D02 FAQ – Modules for Micro-Strip Antennas and traces. The integration information shall include for the TCB review the integration instructions for the following aspects: layout of trace design, parts list (BOM), antenna, connectors, and isolation requirements.

Information that includes permitted variances (e.g., trace boundary limits, thickness, length, width, shape(s), dielectric constant, and impedance as applicable for each type of antenna); b) Each design shall be considered a different type (e.g., antenna length in multiple(s) of frequency, the wavelength, and antenna shape (traces in phase) can affect antenna gain and must be considered); c) The parameters shall be provided in a manner permitting host manufacturers to design the printed circuit (PC) board layout; d) Appropriate parts by manufacturer and specifications; e) Test procedures for design verification; and f) Production test procedures for ensuring compliance

The module grantee shall provide a notice that any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify the module grantee that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the grantee, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application

2.6 **RF exposure considerations**

It is essential for module grantees to clearly and explicitly state the RF exposure conditions that permit a host product manufacturer to use the module. Two types of instructions are required for RF exposure information: (1) to the host product manufacturer, to define the applicationconditions

(mobile, portable – xx cm from a person's body); and (2) additional text needed for the host product manufacturer to provide to end users in their end-product manuals. If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).

Explanation: The module complies with FCC radiofrequency radiation exposure limits for uncontrolled environments. The device is installed and operated with a distance of more than 20 cm between the radiator and your body." This module follows FCC statement design, FCC ID: 2AUF7RF-N6801

2.7Antennas

A list of antennas included in the application for certification must be provided in the instructions. For modular transmitters approved as limited modules, all applicable professional installer instructions must be included as part of the information to the host product manufacturer. The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc. (note that for example an “omni-directional antenna” is not considered to be a specific “antenna type”).

For situations where the host product manufacturer is responsible for an external connector, for example with an RF pin and antenna trace design, the integration instructions shall inform the installer that unique antenna connector must be used on the Part 15 authorized transmitters used in the host product.

The module manufacturers shall provide a list of acceptable unique connectors.

Explanation: The product antenna uses an irreplaceable antenna with a gain of 6.29dBi

2.7 Label and compliance information

Grantees are responsible for the continued compliance of their modules to the FCC rules. This

includes advising host product manufacturers that they need to provide a physical or e-label stating “Contains FCC ID” with their finished product. See Guidelines for Labeling and User Information for RF Devices – KDB Publication 784748.

Explanation: The host system using this module, should have label in a visible area indicated the following texts: "Contains FCC ID: 2AUF7RF-N6801

2.8 Information on test modes and additional testing requirements5 Additional guidance for testing host products is given in KDB Publication 996369 D04 Module Integration Guide. Test modes should take into consideration different operational conditions for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

The grantee should provide information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host.

Grantees can increase the utility of their modular transmitters by providing special means, modes, or instructions that simulates or characterizes a connection by enabling a transmitter. This can greatly simplify a host manufacturer’s determination that a module as installed in a host complies with FCC requirements.

Explanation: Shenzhen Nation RFID Technology Co., Ltd. can increase the utility of our modular transmitters by providing instructions that simulates or characterizes a connection by enabling a transmitter.

2.9 Additional testing, Part 15 Subpart B disclaimer

The grantee should include a statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product

as being Part 15

Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Explanation: The module without unintentional-radiator digital circuity, so the module does not require an evaluation by FCC Part 15 Subpart B. The host shoule be evaluated by the FCC Subpart B.