Quick Start Guide

HF-LPB100 &HF-LPB120 Rev1.1

www.hi-flying.com

1. Introduction of EVK

High-Flying provides evaluation kit for users to be familiar with the product and develop application quickly. The evaluation kit is shown as below, users can connect to HF-LPB100 or HF-LPB120 module with the RS-232 UART, RS485, USB (Internal UART-USB convertor) or wireless interface (webpage) to configure the parameters, manage the module or do some functional tests.

EVK list:

① HF-LPB100 or HF-LPB120 module: 1 Pcs

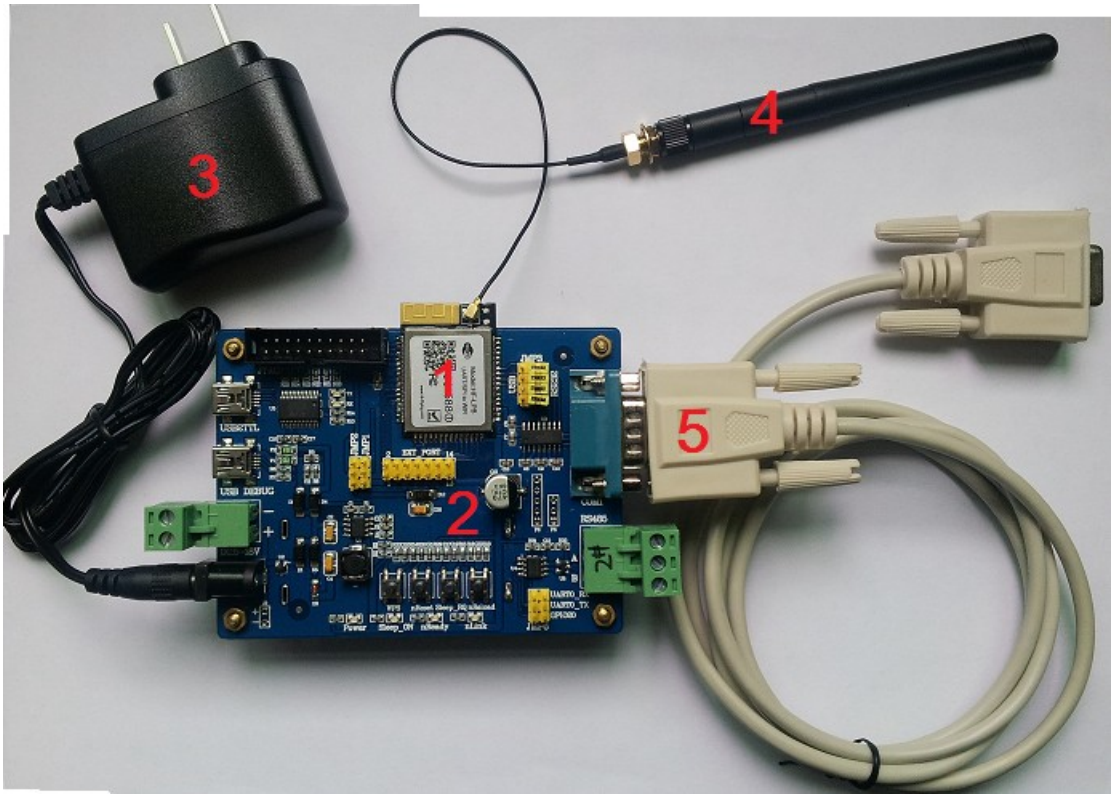
② HF-LPB100 or HF-LPB100 evaluation board: 1 Pcs

③ Power Adapter (DC5V/1A): 1 Pcs

④ Antenna (3dBi): 1 Pcs

⑤ Serial Line: 1 Pcs

or: USB line: 1 Pcs



2. Use Step

2.1 Connect Device

Notes:

The way to connect the module with the computer serial port is similar between HF-LPB100 and HF-LPB120. So in this case, we take HF-LPB100 as an example in this chapter.

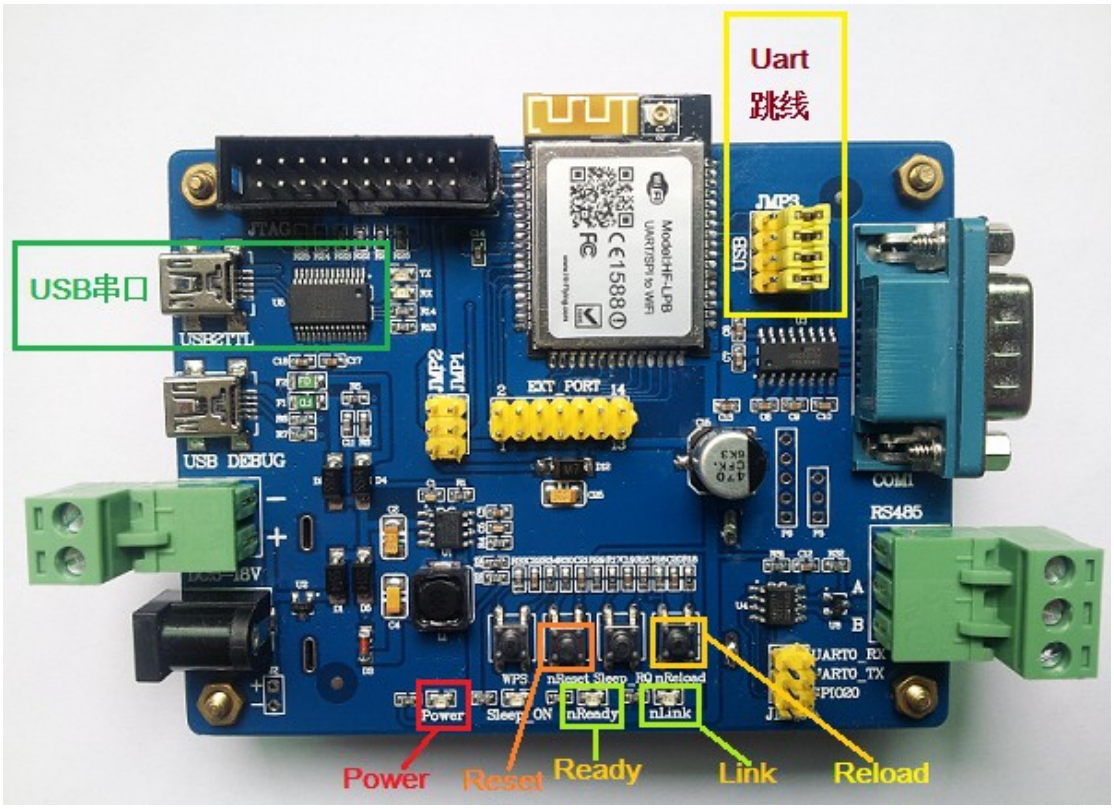
Power adapter③ connect to power, serial line⑤ connect to computer serial port.

After that, we can find that the "Power" LED is on, which indicates that the HF-LPB100 is power on.

After 2-3 seconds, the "nReady" LED light is on, which indicates that the module is launched successfully.

Notes:

Press down "nReload" key more than 3 seconds and loose, the yellow "nReady" LED is off; after 2-3 seconds, the "nReady" LED is on again, the module restore to factory default configuration)

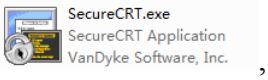


2.2 Serial setting:

2.2.1 Serial Tool: SecureCRT

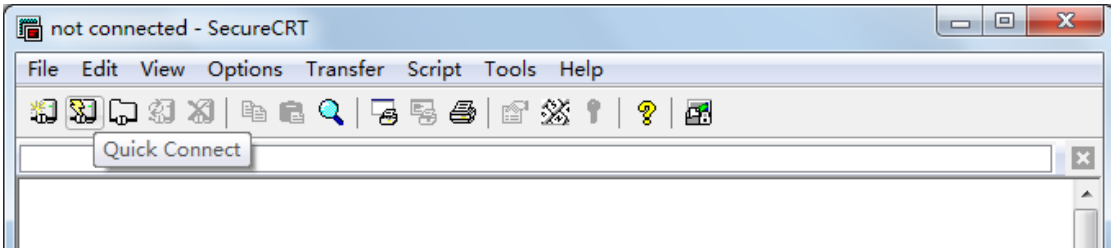
Download site:

http://www.hi-flying.com/download_detail_dc/&downloadsId=cf2dd62e-abb8-48ed-9a12-36d393aac9ab&comp_stats=comp-FrontDownloads_list01-dc.html

Decompress the file folder, find "SecureCRT", 

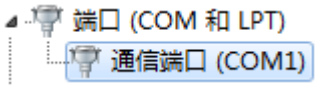
, click to

open, Click on the button  , create a connection.



2.2.2 Set Serial Parameter as follows:

protocol: Serial

port: computer port("My computer"->"device manager"->"port(COM and LPT)"as the left photo shows。 

)

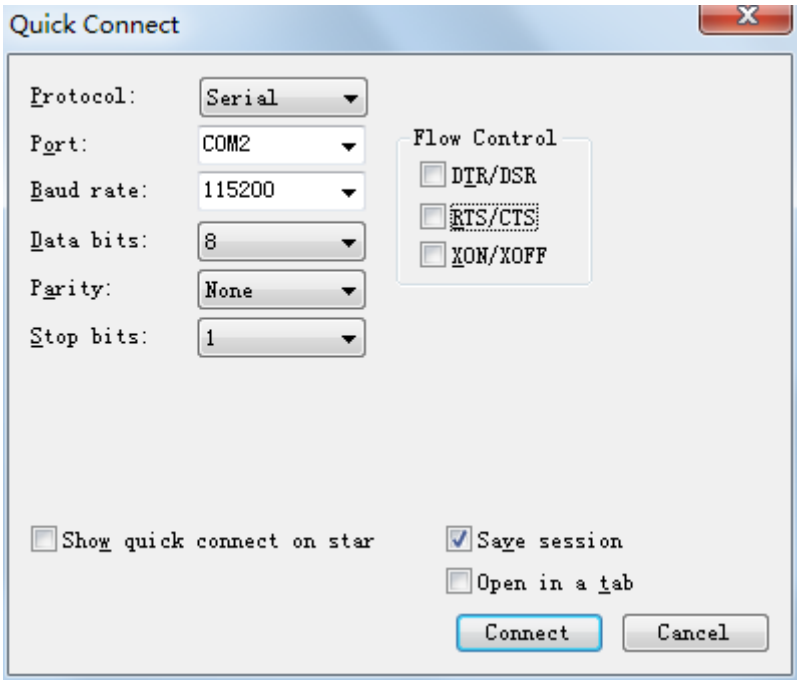
Baud rate: 115200 (HF-LPB100 default 115200)

Data bit: 8

Parity check: None

Stop bit: 1

Flow control: NONE(Please remove "√" in front of RTS/CTS)



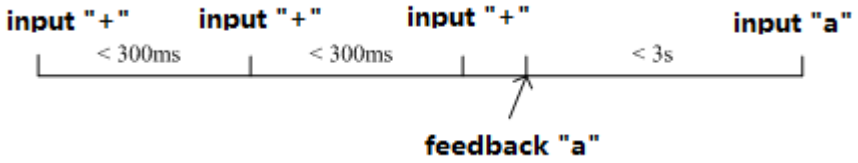
3. AT command configure

3.1 UART input “+++”, after module receive “+++”, and feedback “a” as confirmation;

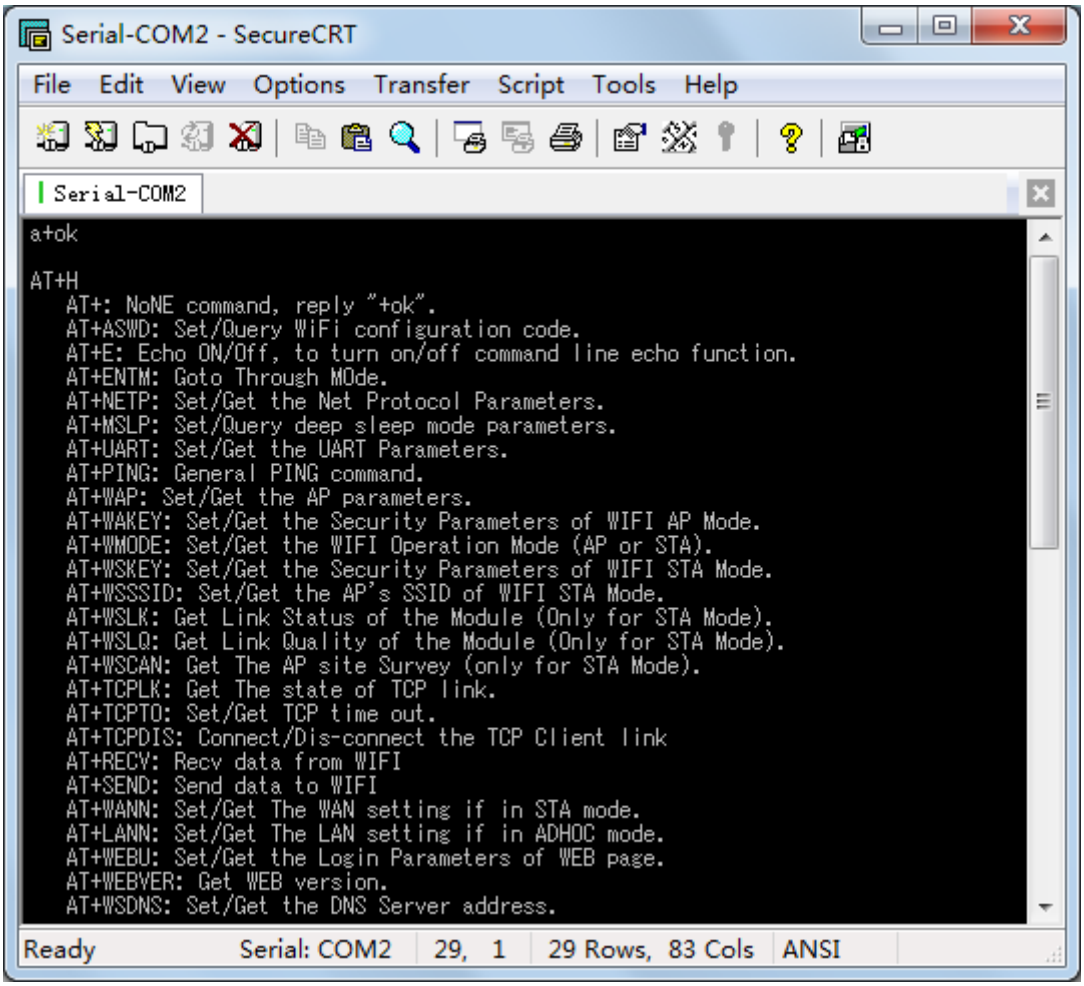
3.2 UART input “a”, after module receive “a” and feedback “+ok” to go into AT+ instruction set configuration mode.

<Notes>:

- When user input “+++” (No “Enter” key required), the UART port will display feedback information “a”, and not display input information”+++” as above UART display.
- Any other input or wrong step to UART port will cause the module still works as original mode (transparent transmission).



After entering command mode through serial tool, input “AT+H” and enter, will display all AT+ command as follow. Detail info please check “HF-LPB100 user Manuel” chapter 4 “AT command description.



Note:

■ When input “+++” (No “Enter” key required), the UART port will display feedback information “a”, but not ”+++” ;then input another “a”, will display feedback “+OK”, enter into command mode

If did not enter into command mode at first time, probably the space time is wrong when input, please try again by input “+++” and “a”.

4. Test Case

4.1 Test Case 1: Under AP mode, transparent transmit between UART and Wi-Fi

Notes:

In Case 1, HF-LPB100 and HF-LPB120 are the same in using such function. Therefore, we test HF-LPB100 in this example.

Prepare:

Install TCP/UDP test tool: TCPUDPDbg

Download site:

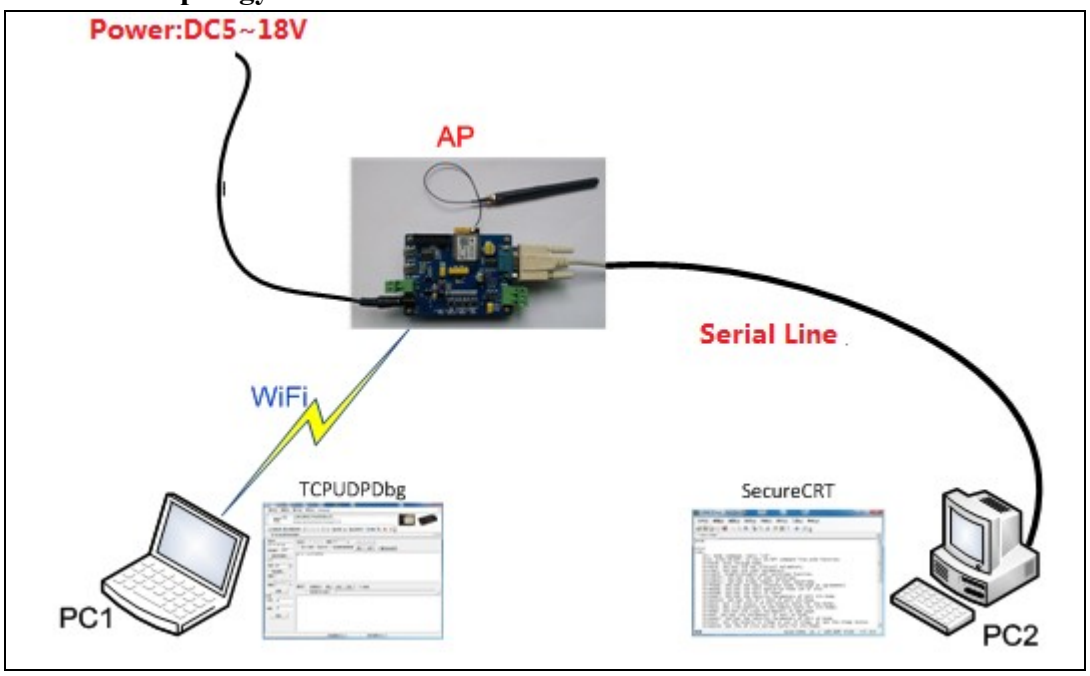
http://www.hi-flying.com/download_detail_dc/&downloadsId=0eb97afc-ea80-4f58-acd6-b34fc010207d&comp_stats=comp-FrontDownloads_list01-dc.html

Install serial tool: SecureCRT

Download site:

http://www.hi-flying.com/download_detail_dc/&downloadsId=cf2dd62e-abb8-48ed-9a12-36d393aac9ab&comp_stats=comp-FrontDownloads_list01-dc.html

4.1.1 Test Topology

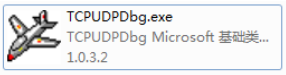


4.1.2 PC1 Connect to HF-LPB100 Module by Wireless

Configure the module by wireless (require a notebook with WIFI). Power up HF-LPB100 EVK, after 3 seconds, the Ready LED light turn on. At this time, user can search “HF-LPB” SSID through notebook. After connection, the Link Led light will turn on.

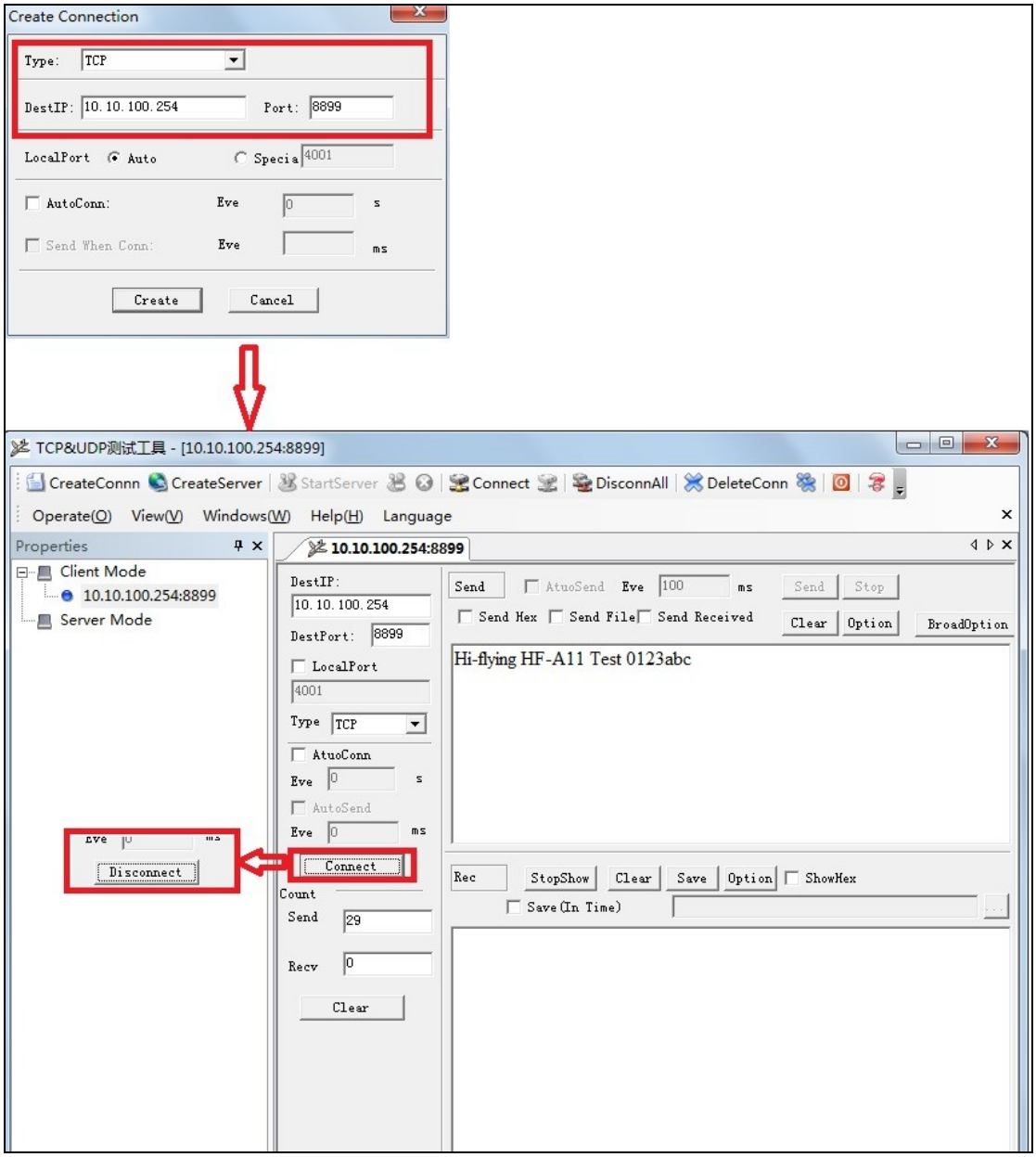
The SSID of module HF-LPB120 is HF-LPB120 under AP mode. It is shown as follows:

4.1.3 TCPUDP Test Tool Configure

Decompress “TCPUDPDbg”, select 

, open TCPUDP and create a TCP connect, configure as follow:

Press “create connection” and select “TCP’, target IP: 10.10.100.254, Port 8899. After connection, press “Connect”, input the data in the send area, such as “Hi-flying HF-A11 Test 0123abc”.



4.1.4 PC2 Serial Tool Configure

PC2 connect to HF-LPB100 through serial line, click “SecureCRT” to create a connection, detail setting as follow:

Protocol: Serial

Port: computer COM port

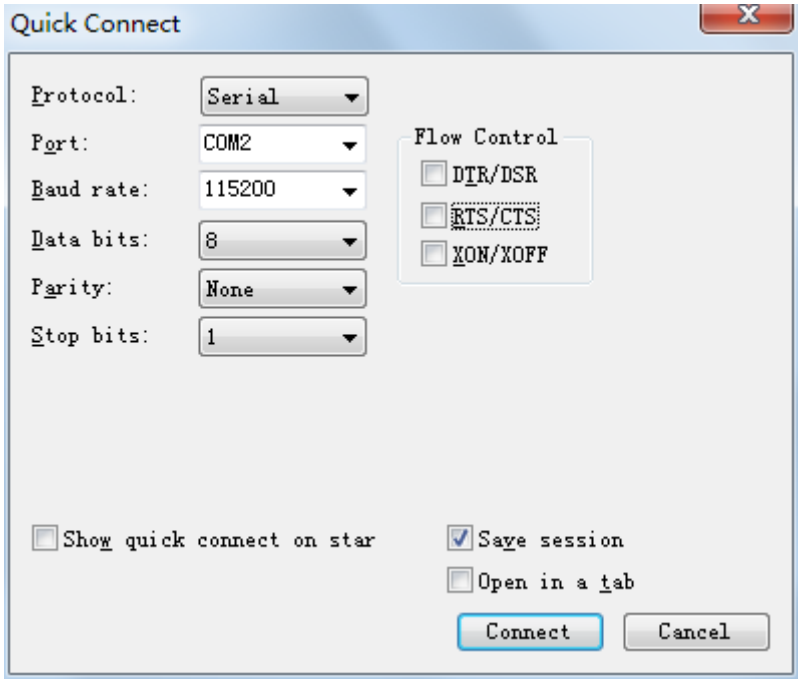
Baud rate: 115200

Data bit: 8

Parity check: None

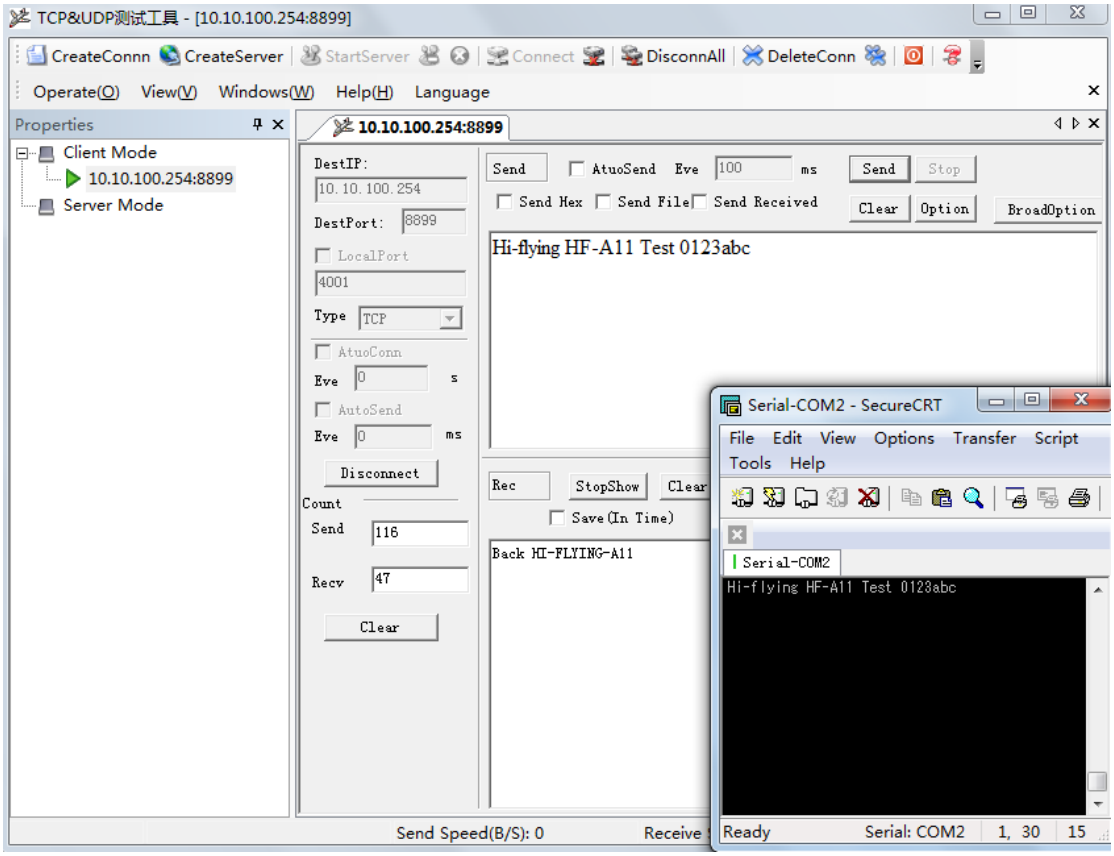
Stop bit: 1

Flow control: none (Please remove “√” in front of RTS/CTS)

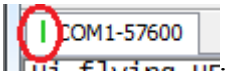


4.1.5 Data Transparent Transmit

After connect with COM port, enter into transparent transmit mode. Then user can run data transmit test. As below photo, press “send” on TCPUCP test tool interface, the data will be transmitted directly to COM port. Meanwhile, input message in COM port tool, the message will be transmitted to TCPUCP receive area directly, such as “Back HI-FLYING-A11”



Notes:

- Use“SecureCRT”serial tool, after connection with COM port, there is a green sign “|”, 

If it is red, it indicates that the COM port is disconnect
- When transmit, the message inputted in “SecureCRT” will not display in SecureCRT interface, but transmitted to receive area in “TCPUCP test tool interface”
- If “SecureCRT” already enters into command mode, input“AT+ENTM”and enter into transparent transmit mode, or press Reset to enter into transparent transmit mode
- When module work in AP mode, it allows max 2 STA device connecting.

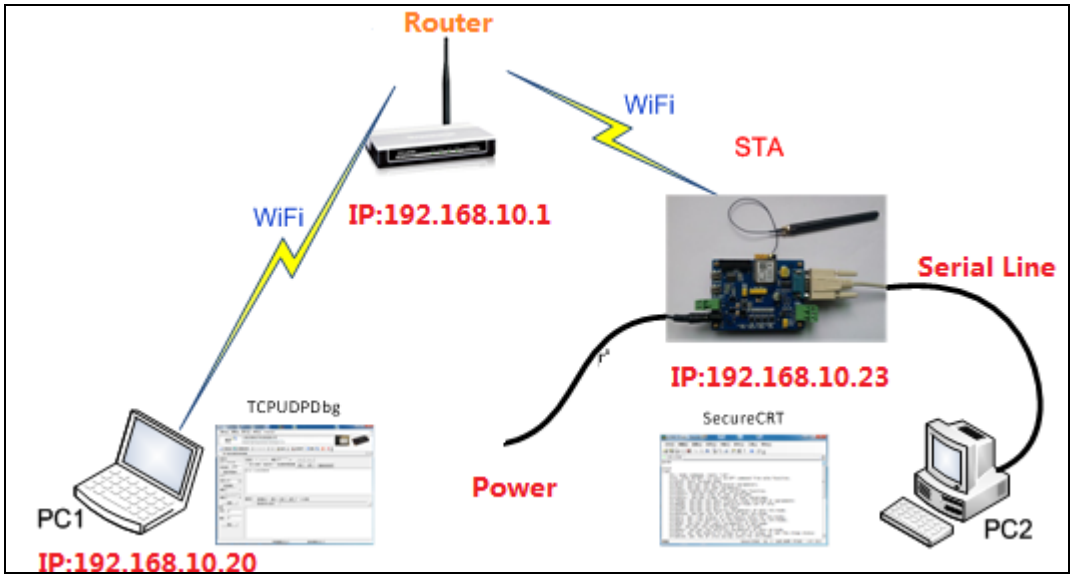
4.2 Test Case 2:

HF-LPB100 as STA mode, connect with router, transparent transmit between UART and Wi-Fi. Notes:

When compares to HF-LPB100, HF-LPB120 does not support webpage configuration, so please pay attention.

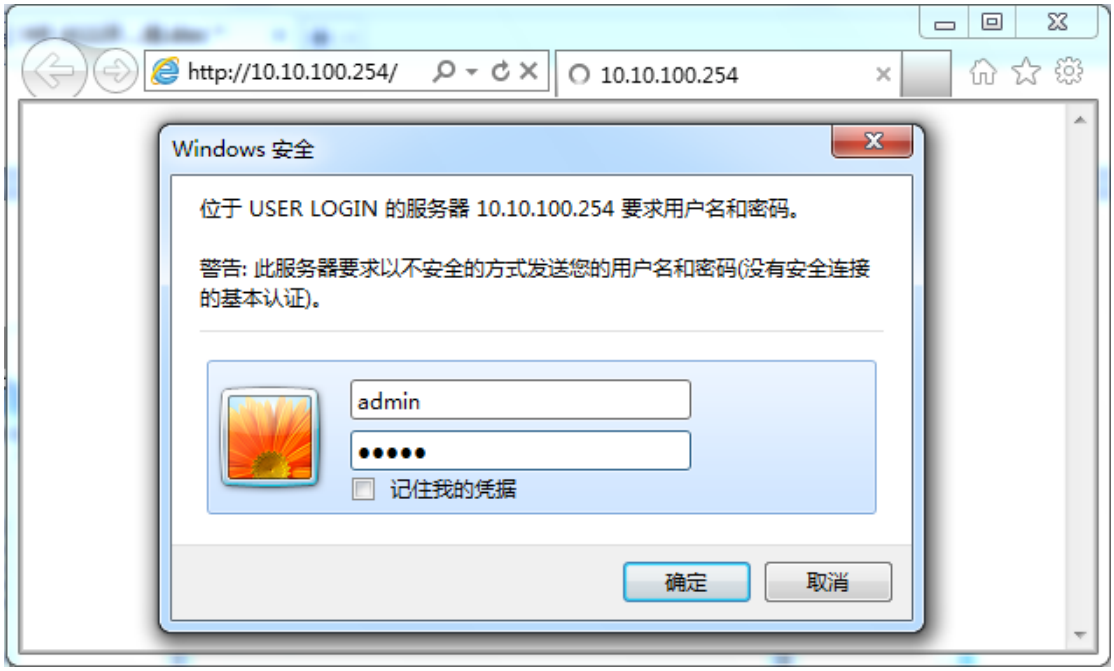
Please install “SecureCRT” and TCP/IPD” test tool before test.

4.2.1 Test Topology:



4.2.2 HF-LPB100 work mode configuration

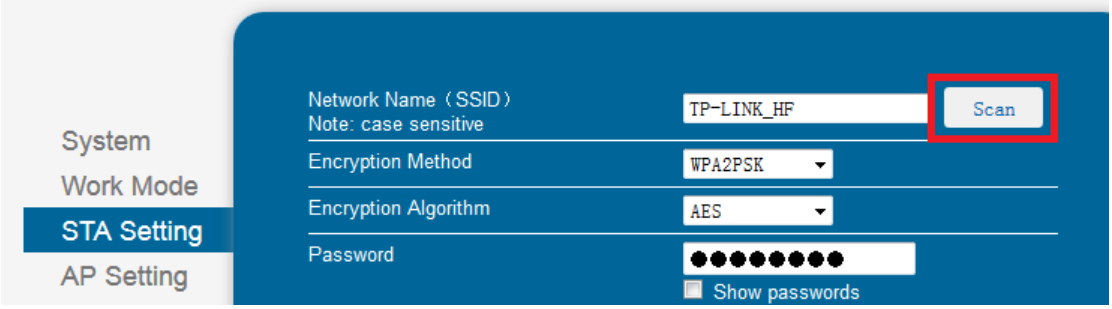
At first, HF-LPB100 work under AP mode, PC1 connect to HF-LPB100 by wireless. Input http://10.10.100.254, then input user and password, both of them are “admin”.

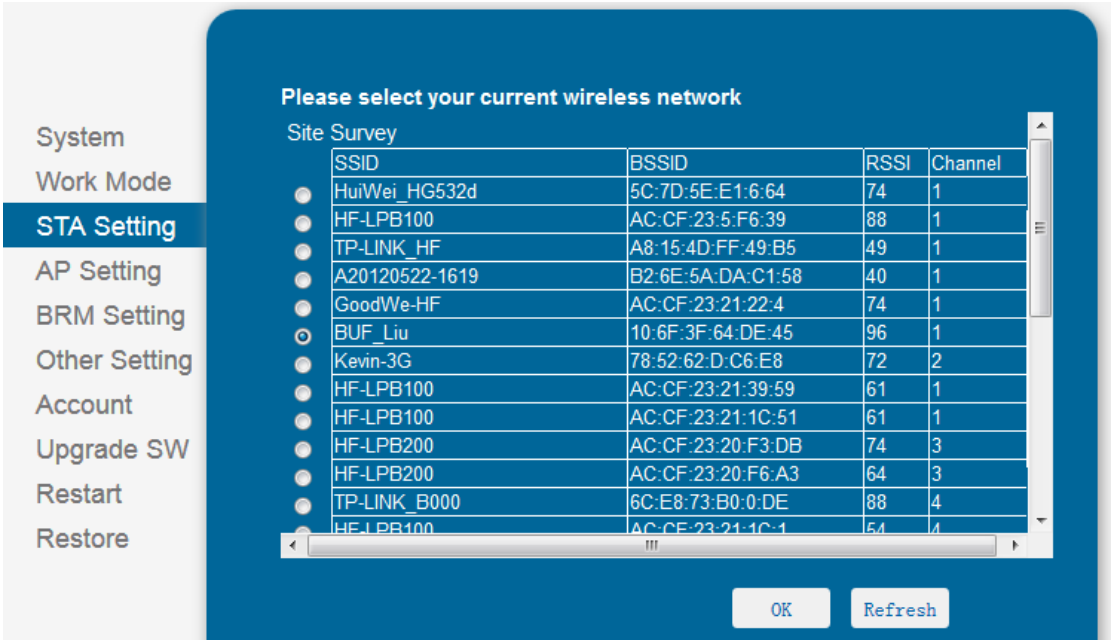


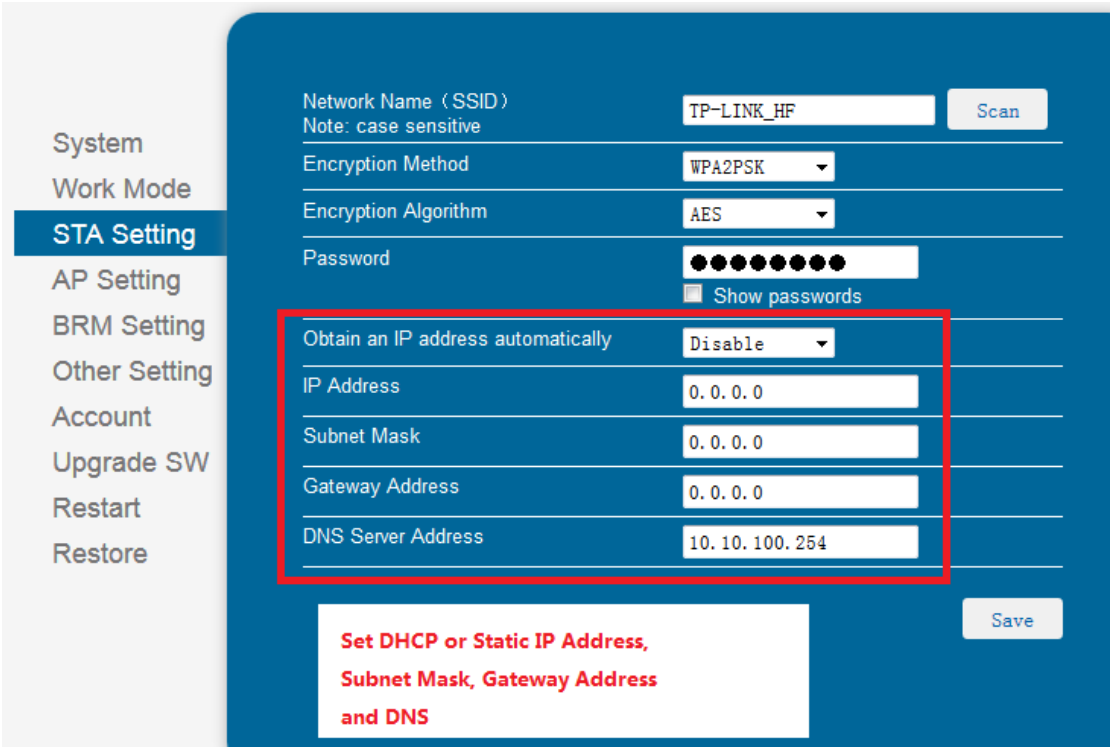
Second, enter “mode setting” menu, change setting as follow: select STA mode

and reserve.

Third, enter STA setting menu, click "Search" button. The AP list will be displayed, select the wireless network, press confirm and input password of router. (If did not find the target AP when search, please refresh or move HF-LPB100 module to a place near to router)



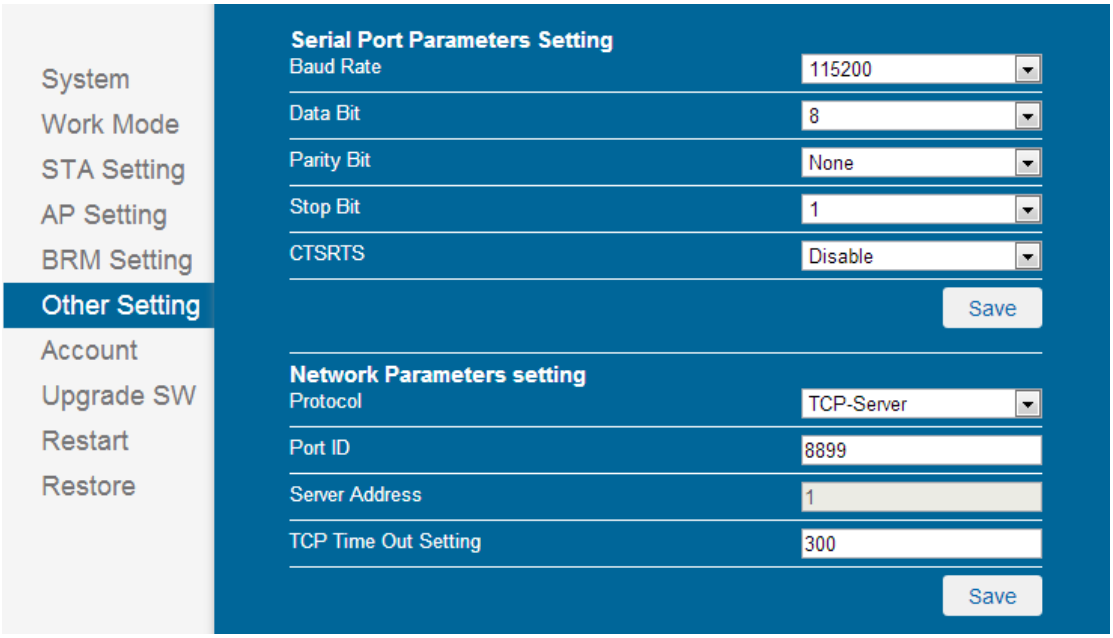




When connect to router as STA, in order to find IP address of HF-LPB100 correctly, user can set static IP manually.

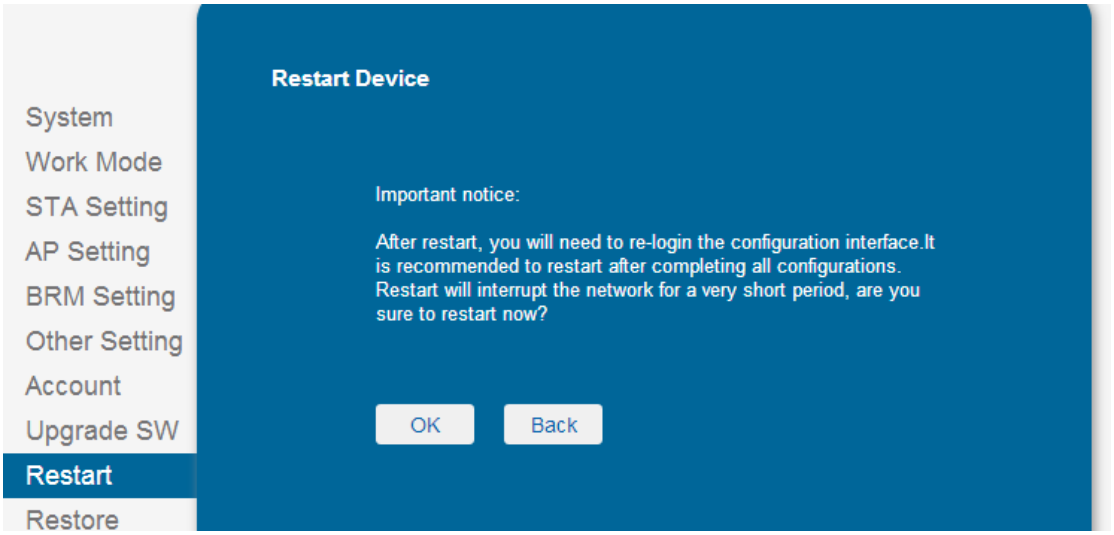
Forth, serial and network parameter setting.

If not specific demand, can apply default setting to run the rest.



If connect to serial port of device directly, requires to configure the matched serial parameter; if connect to server, requires to configure the matched network parameter.

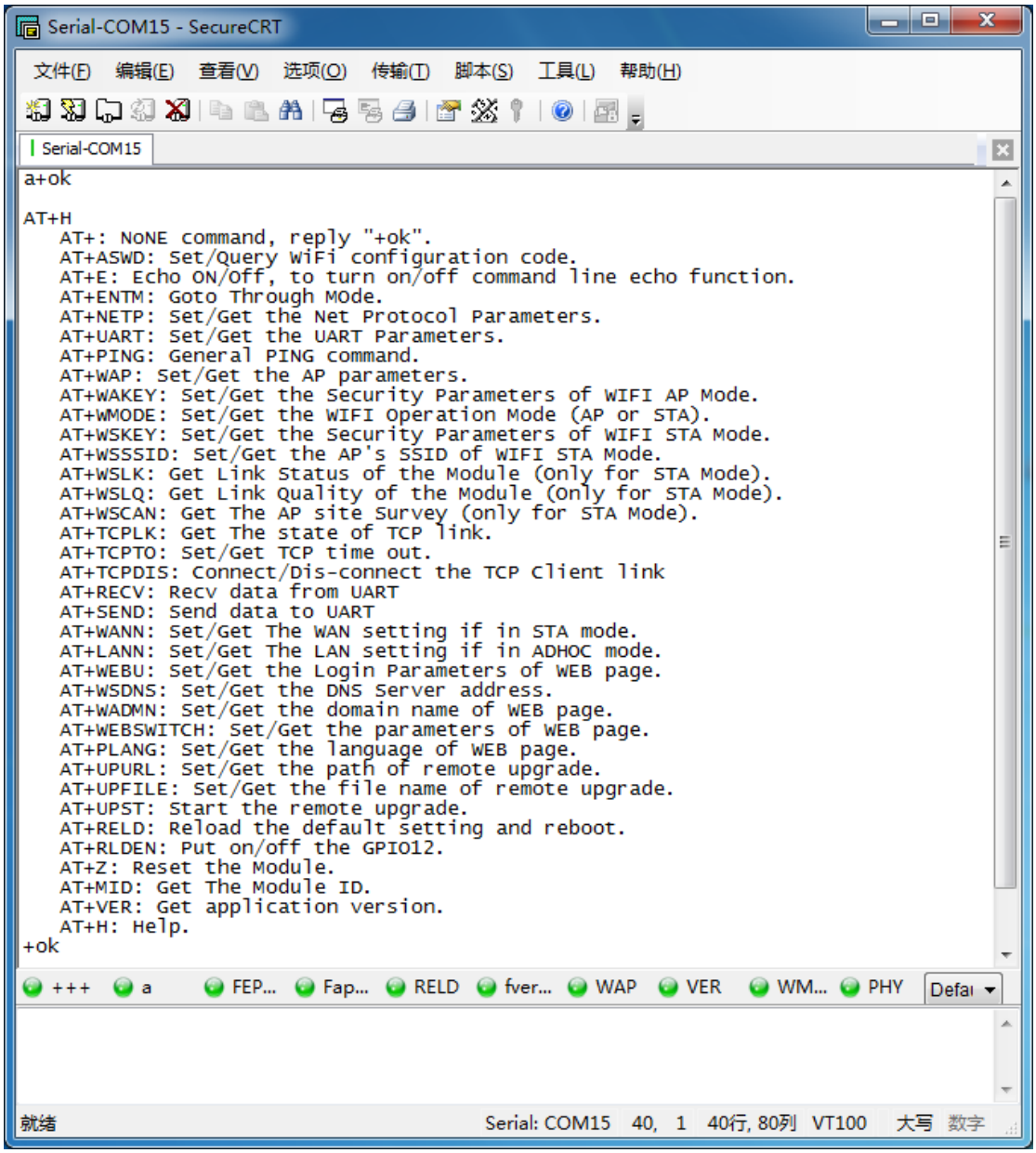
Fifth, after all parameter is configured, enter "restart" menu and press "ok" button, the module will restart.



After restart, when the "Link" LED light turn on, it indicates the module already connected to router.

4.2.3 HF-LPB120 work mode configuration

Because HF-LPB120 cannot support webpage configuration, it is suggested to use serial port to configure. The specific steps are shown as follows:
First, enter into the AT command configure by command configuration in chapter 3.



Second, search the AP nearby and take the following figure as an example:


```
AT+WSCAN
+ok=Ch,SSID,BSSID,RSSI
1,HF-LPB100,AC:CF:23:91:15:4D,OPEN/NONE,47
1,HF-LPB100,AC:CF:23:6D:4E:45,OPEN/NONE,64
1,What's My sec,00:0E:E8:B6:57:2C,WPA2PSK/AES,88
1,double_kill,14:75:90:9E:10:0A,WPAPSKWPA2PSK/AES,78
1,UPGRADE-AP_bbbb,A4:56:02:52:4D:F5,WPAPSKWPA2PSK/AES,100
1,HF-LPT120,AC:CF:23:08:07:05,OPEN/NONE,72
1,hf_jing,14:75:90:0B:C4:84,WPAPSKWPA2PSK/AES,72
1,onePlus,00:0E:E8:B6:5E:F4,WPA2PSK/AES,45
1,HF-Repeater,AC:CF:23:5B:8B:A0,OPEN/NONE,64
1,LWT,00:0E:E8:B6:47:14,WPAPSKWPA2PSK/AES,59
2,FAST_3016_FLH,F4:6A:92:0C:30:16,WPAPSKWPA2PSK/AES,84
1,TOTOLINK_B77CD8,B8:55:10:B7:7C:DC,WPAPSKWPA2PSK/AES,54
1,HF-LPB120,AC:CF:23:A1:3E:EB,OPEN/NONE,64
4,Banana,14:75:90:0B:C6:96,WPA2PSK/AES,84
5,UPGRADE-AP,74:EA:3A:27:E3:54,OPEN/NONE,54
5,UPGRADE-AP,B8:55:10:B7:39:54,OPEN/NONE,52
6,NETGEAR25,04:A1:51:15:22:6A,WPA2PSK/AES,100
6,TP_LQJ,14:75:90:B5:BE:3A,WPAPSKWPA2PSK/AES,100
6,ChinaNet-demon,14:75:90:0B:C6:B2,WPAPSKWPA2PSK/AES,80
6,TP-LINK_WR941N,D8:15:0D:D7:E5:44,WPAPSKWPA2PSK/TKIPAES,78
8,Tenda_3B7420,C8:3A:35:3B:74:20,WPAPSK/AES,70
11,HiWiFi_3C3C70,D4:EE:07:3C:3C:70,WPAPSKWPA2PSK/AES,92
9,Lab-test-ap,C8:3A:35:2F:BA:E0,WPAPSKWPA2PSK/AES,40
9,UPGRADE-AP-mxj,00:0E:E8:B6:49:AC,OPEN/NONE,61
11,wanstar,AC:CF:23:42:6B:98,WPA2PSK/TKIP,28
10,zjl,96:A8:2E:DF:8E:41,WPA2PSK/AES,88
11,IOT-LINK_Beck,14:75:90:0B:C6:AE,WPAPSKWPA2PSK/AES,100
11,ChinaNet,30:49:3B:02:1A:67,OPEN/NONE,16
11,TL-WR703N_5C4E,14:E6:E4:EA:5C:4E,WPAPSKWPA2PSK/AES,70
11,TP-LINK_60com,88:25:93:4D:3C:9C,WPAPSKWPA2PSK/AES,59
11,TP-LINK_9276,EC:26:CA:75:92:76,WPAPSKWPA2PSK/AES,82
11,HF-A11x_AP,AC:CF:23:43:91:84,OPEN/NONE,59
11,123,AC:29:3A:9D:2F:ED,WPA2PSK/AES,25
11,HF-Meeting-Room,80:89:17:D6:41:88,WPA2PSK/AES,66
11,UPGRADE-AP-NSZ,14:75:90:B5:CE:A6,WPAPSKWPA2PSK/AES,70
11,HF_yanshi,00:0E:E8:B6:48:80,WPAPSKWPA2PSK/AES,76
11,Marco_Sun's iMac,AC:29:3A:92:54:E1,WPA2PSK/AES,74
```

Type the command AT+WSCAN, and then you will see some information like channel, SSID of the AP nearby.

```
AT+WSSSID=UPGRADE-AP_bbbb
+ok

AT+WSKEY=wpapsk,aes,12345678
+ok

AT+WMODE=sta
+ok
```

There are totally three commands in the figure above. The first one is used to set the SSID of the related AP. The second one is to set the encryption parameter of STA. (Note that the three parameters stand for authentication mode, encryption algorithm and the key respectively) The last one is about the work mode.

Third, set the parameters of network and serial port.

```
AT+WANN
+ok=DHCP,10.10.10.16,255.255.255.0,10.10.10.1

AT+NETP
+ok=TCP,Server,8899,10.10.100.254

AT+UART
+ok=115200,8,1,None,NFC
```


Among all the commands above, AT+WANN is used to set network parameters and there are four parameters which represent IP mode of STA, IP address of STA, the subnet mask of STA and gateway address of STA respectively.(In this case, the costumer can also set static IP according to special requirements)
AT+NETP is used to set parameters of network protocol, there are four parameters which stand for type of protocol, network mode, port and the IP address or domain name under client mode.
AT+UART is the command to check and modify the information in serial port. It has five parameters, and they are baud rate, data bits, stop bits, check bits and hardware flow control. If there are no special requirements, it is suggested to use default mode.

Four, after setting all the parameters, you must reset the module. After restart, when the "Link" LED light turns on, it indicates the module already connected to router.

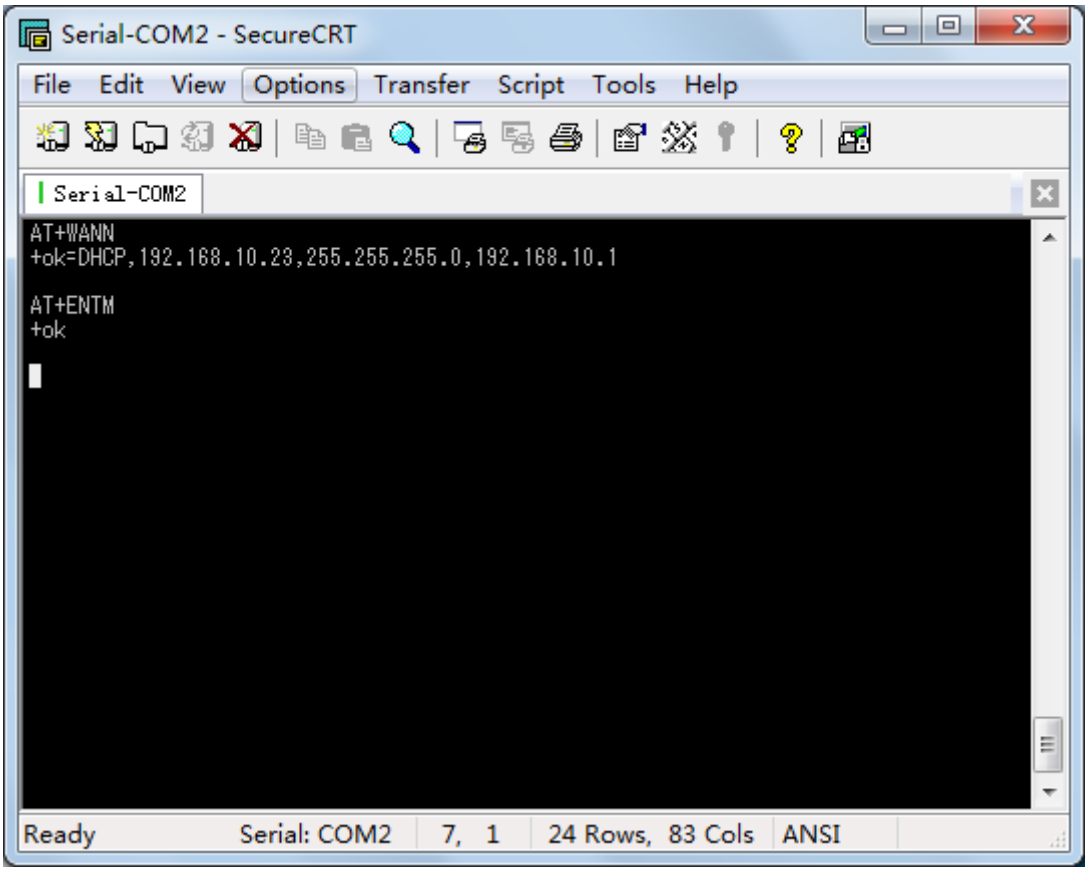
4.2.4 PC2 serial configuration and check

Check the IP address of HF-LPB100 which connected to router, this IP address can set static or automatically acquire from router.

(1) Static set: in STA setting. Disable "acquire IP address automatically", then you can set IP address manually

(2) Acquire IP address automatic: PC2 connect to HF-LPB100 through serial port, and enter command mode, input "AT+WANN", the feedback message is the IP address, for example. "+ok=DHCP,192.168.10.23,255.255.255.0,192.168.10.1", then the IP address of HF-LPB100 is "192.168.10.23", please remember this IP address

Then input "AT+ENTM" enters into transparent transmit



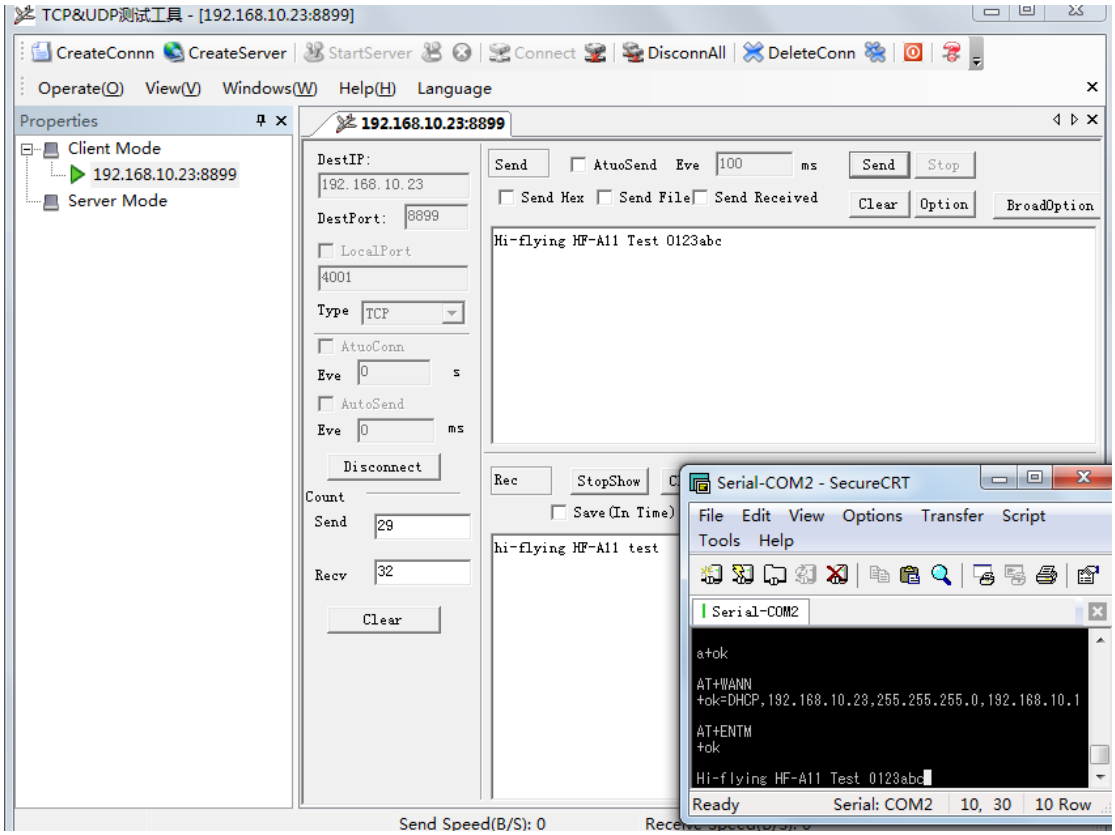
4.2.5 TCPUDP test tool configuration

PC1 connect to "wireless router", open TCPUDP and create a TCP connect, details set as follow:

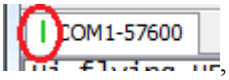
Press "create connect" and select TCP, target IP:192.168.10.23 (This IP is acquired automatically) port: 8899

4.2.6 Data Transparent Transmit

After TCPUDP finished the connection, press "connect" button, input message in send area, such as "Hi-flying HF-LPB100 Test 0123abc". Under the condition of COM connected, user can run the data transparent transmit test. As below photo shows: press send on TCPUDP interface, the message will be transparent transmitted directly to COM; meanwhile, input message on COM port tool, the message will be transparent transmitted directly to TCPUDP, such as "hi-flying HF-A11 test"



Notes:

■ when use “SecureCRT” serial tool, and once connected with COM port successfully ,there will be a green “|” sign, as 

, if is shows red, then it indicates COM port disconnected.

■ When transparent transmit through serial, the message inputted in “SecureCRT” will not displayed in “SecureCRT” interface, but displayed in “TCPUDP” receiving area.

■ If already input “+++” and enter command mode by “SecureCRT” serial tool, then user can input “AT+ENTM” switch to transparent transmit mode, or press Reset button to enter transparent transmit mode.

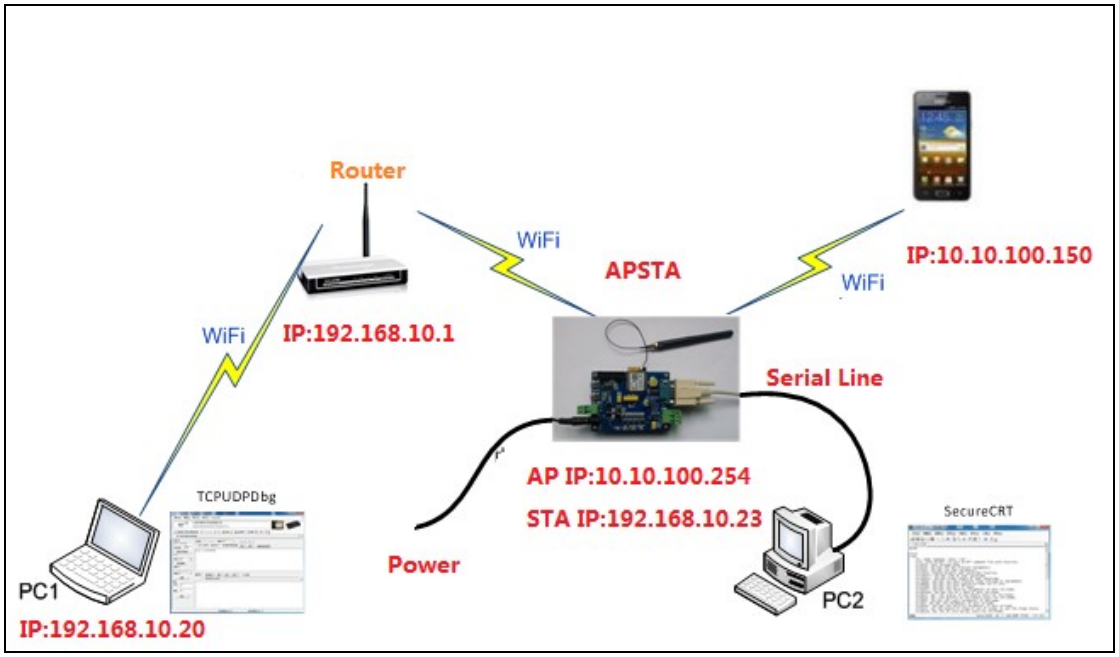
■ The target IP address in TCPUDP test tool is the IP address module acquired from wireless router, can check the IP address by input “AT+WANN”.

4.3 Test Case 3: HF-LPB100 or HF-LPB120 work under AP+STA mode, STA connect with wireless router, phone connect with LPB100 AP, and realize double socket communication

Notes: HF-LPB120 cannot support for ATSTA mode, so please DO NOT test this example by using HF-LPB120.

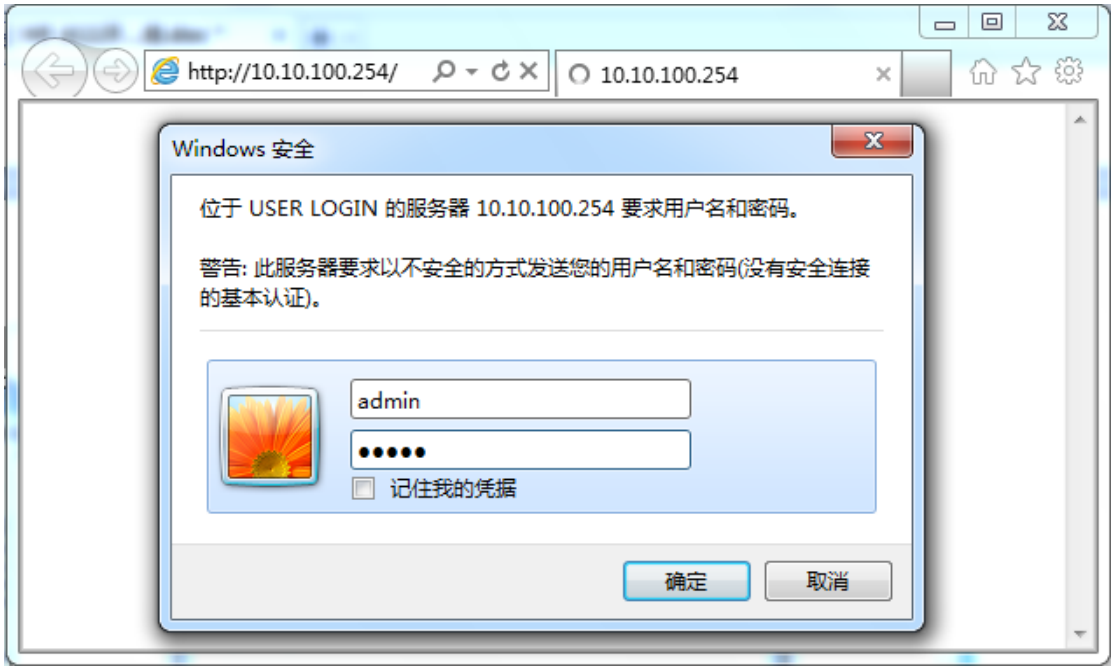
Please install “SecureCRT” serial test tool as Test Case 1.

4.3.1 Test Topology:

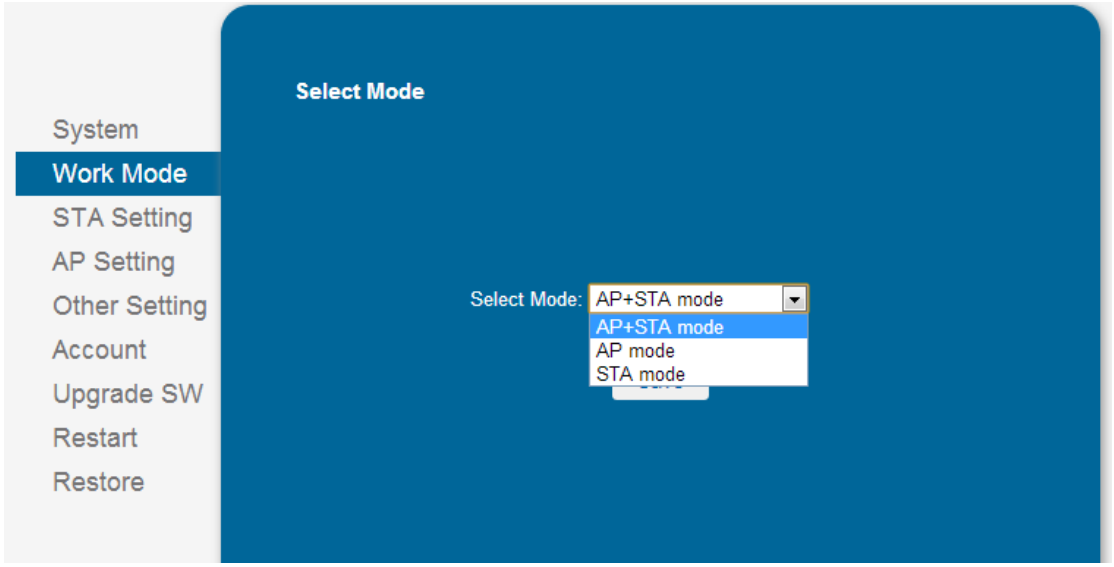


4.3.2 HF-LPB100 work mode configuration

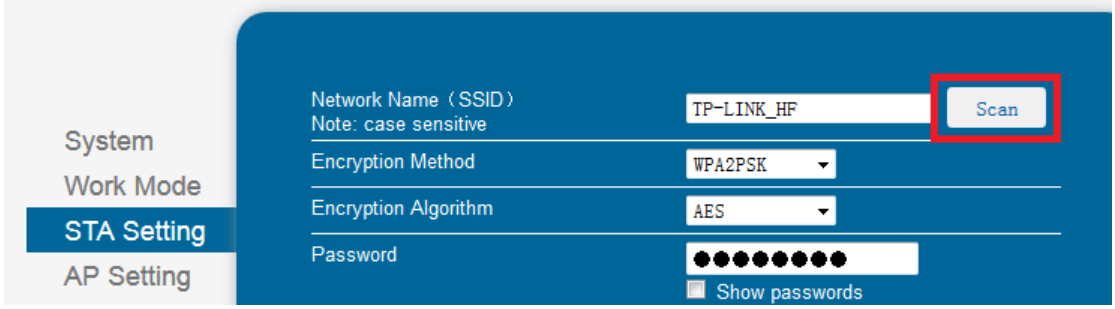
At first, HF-LPB100 work under AP mode, PC1 connect to HF-LPB100 by wireless. Input http://10.10.100.254, then input user and password, both of them are “admin”.

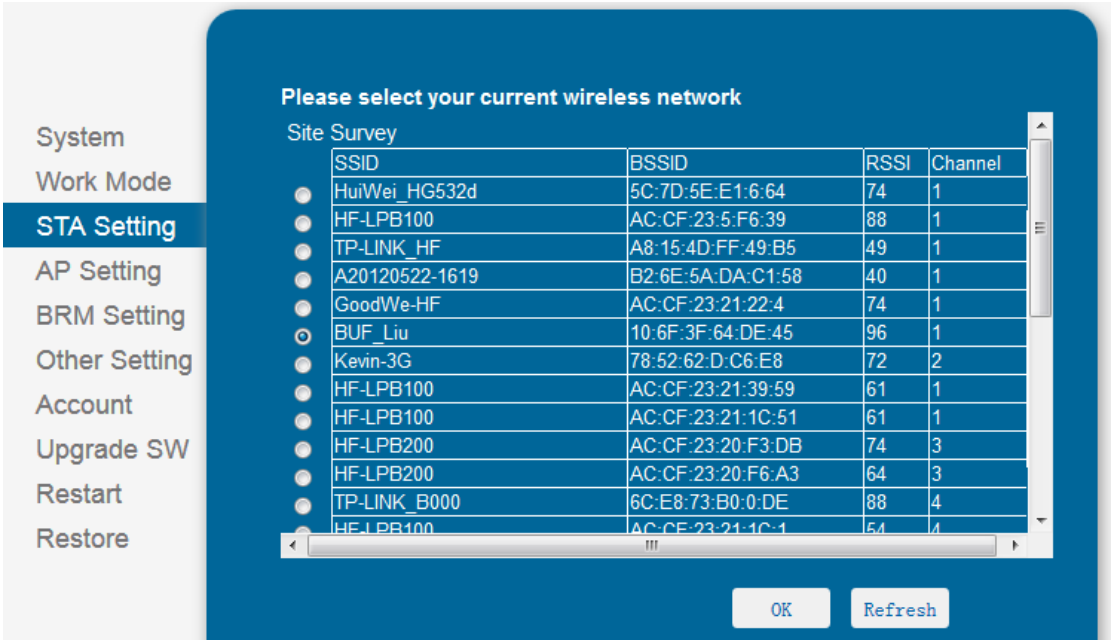


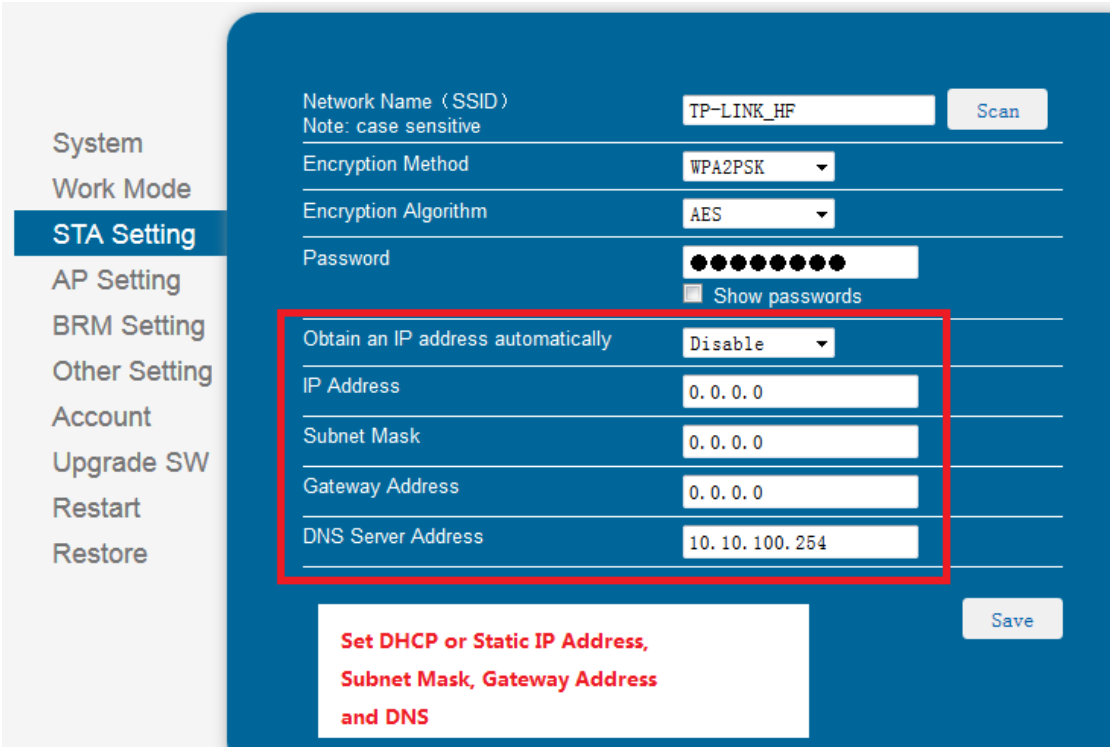
Second, enter “mode setting” menu, change setting as follow: select APSTA mode and reserve.



Third, enter STA setting menu, click “Search” button. The AP list will be displayed, select the wireless network, press confirm and input password of router.
(If did not find the target AP when search, please refresh or move HF-LPB100 module to a place near to router)



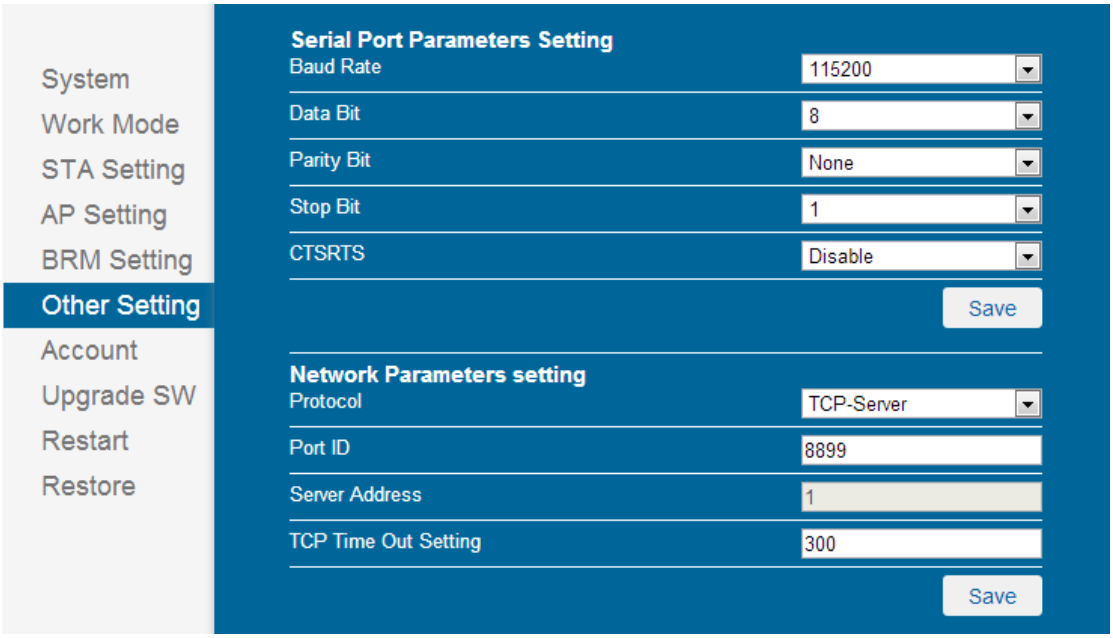




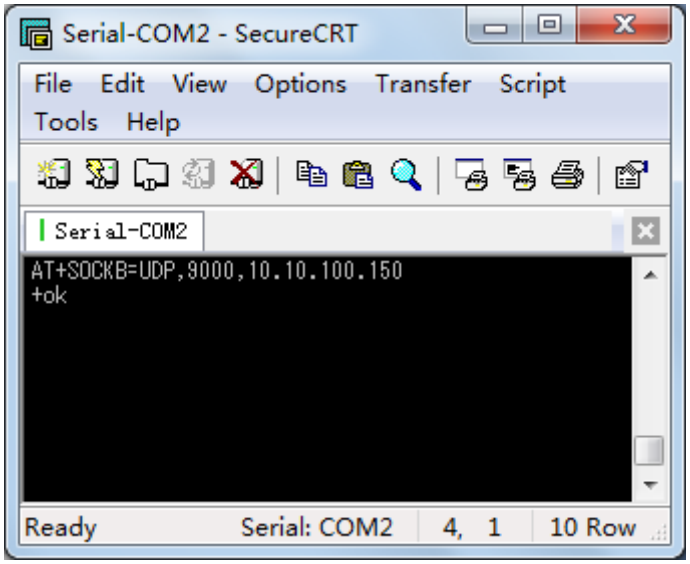
When connect to router as STA, in order to find IP address of HF-LPB100 correctly, user can set static IP manually.

Forth, serial and network parameter setting.

If not specific demand, can apply default setting to run the rest.

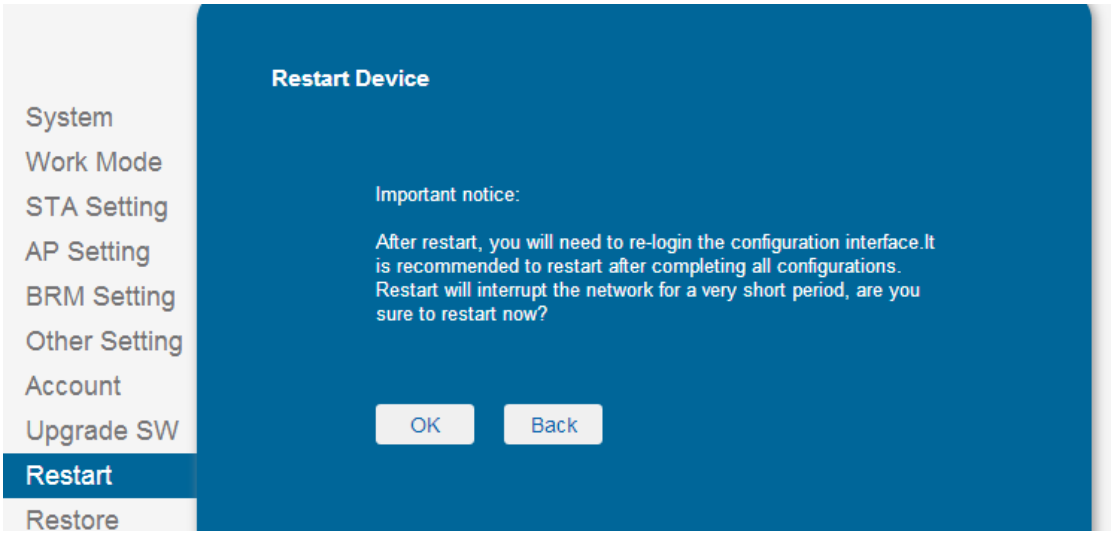


Enable the Socket B function via serial tool. "AT+SOCKB=UDP,9000,10.10.100.150" to enable Socket B work as UDP protocol, source and destination port: 9000, destination IP:10.10.100.150



If connect to serial port of device directly, requires to configure the matched serial parameter; if connect to server, requires to configure the matched network parameter.

Fifth, after all parameter is configured, enter "restart" menu and press "ok" button, the module will restart.



After restart, when the "Link" LED light turn on, it indicates the module already connected to router.

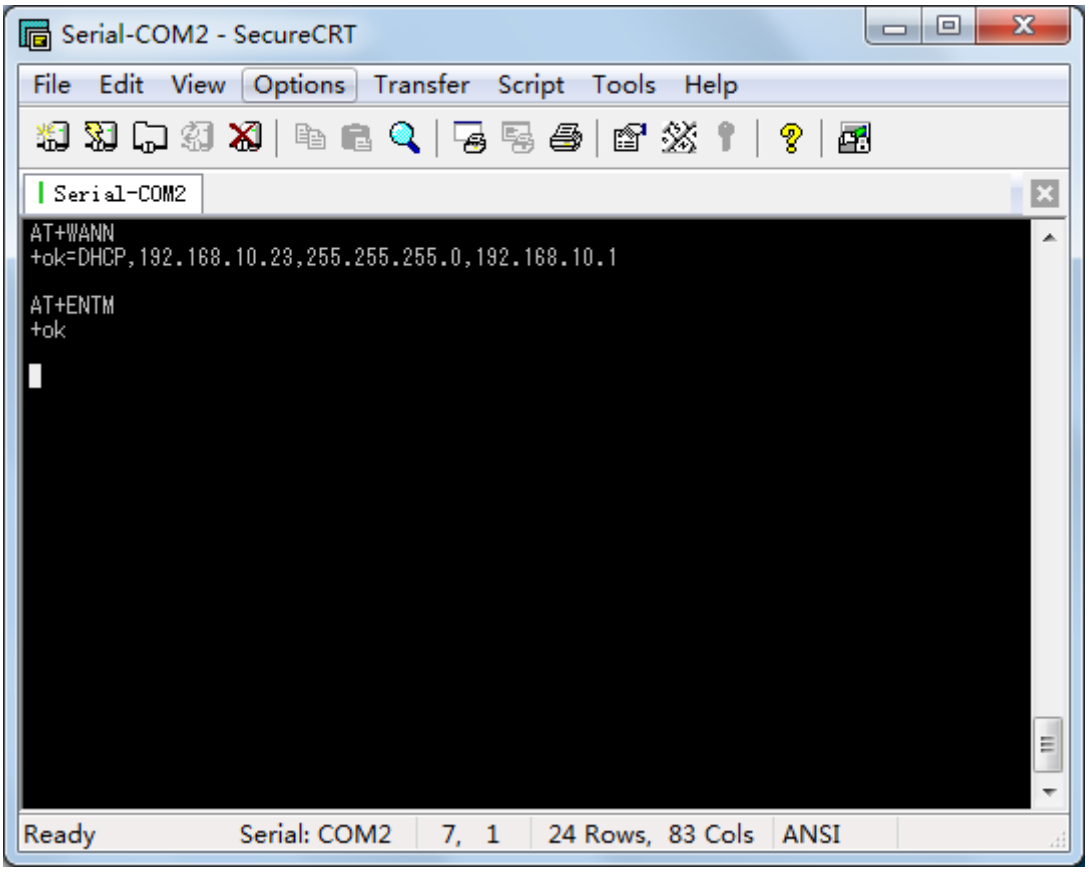
4.2.3 PC2 serial configuration and check

Check the IP address of HF-LPB100 which connected to router, this IP address can set static or automatically acquire from router.

(1) Static set: in STA setting. Disable "acquire IP address automatically", then you can set IP address manually

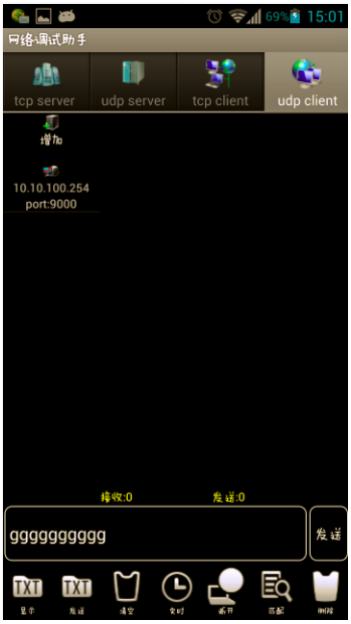
(2) Acquire IP address automatic: PC2 connect to HF-LPB100 through serial port, and enter command mode, input "AT+WANN", the feedback message is the IP address, for example. "+ok=DHCP,192.168.10.23,255.255.255.0,192.168.10.1", then the IP address of HF-LPB100 is "192.168.10.23", please remember this IP address

Then input "AT+ENTM" enters into transparent transmit



4.3.4 Smart Phone Configure

Install Network Debug Assistant APP and create a UDP socket like the following picture.



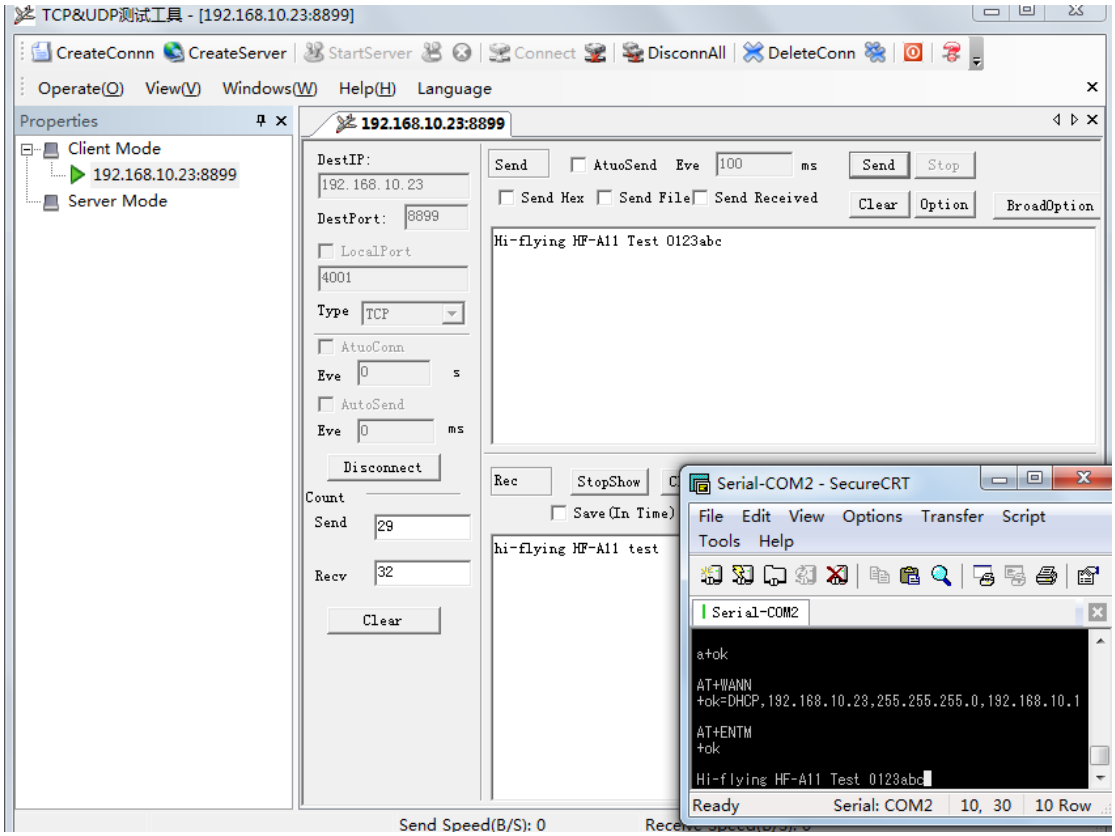
4.3.5 TCPUDP Test Tool Configure

PC1 connect to “wireless router”, open TCPUDP and create a TCP connect, details set as follow:

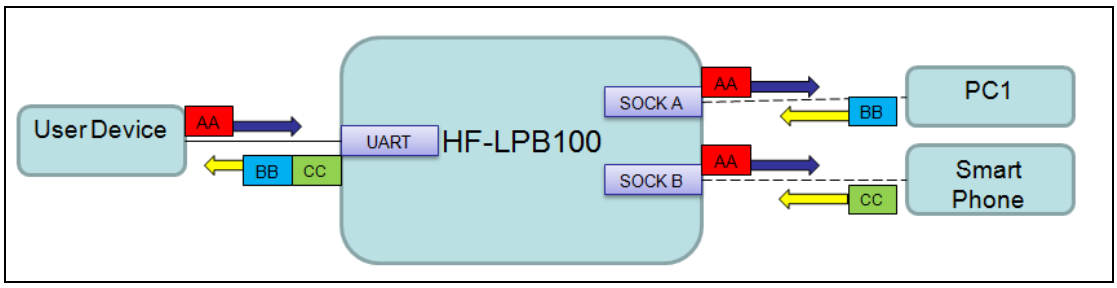
Press “create connect” and select TCP, target IP:192.168.10.23 (This IP is acquired automatically) port: 8899

4.3.6 Data Transparent Transmit

After TCPUDP finished the connection, press “connect” button, input message in send area, such as “Hi-flying HF-LPB100 Test 0123abc”. Under the condition of COM connected, user can run the data transparent transmit test. As below photo shows: press send on TCPUDP interface, any message from PC1 via TCP protocol or from Smart Phone via UDP protocol will be transparent transmitted directly to COM; meanwhile, input message on COM port tool, the message will be transparent transmitted directly to TCPUDP(PC1) and UDP(Smart Phone), such as “hi-flying HF-A11 test”

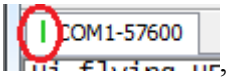


The data flow chart is the following picture:



Notes:

■ when use “SecureCRT” serial tool, and once connected with COM port

successfully ,there will be a green "|" sign, as 

, if is shows red, then it indicates COM port disconnected.

■ When transparent transmit through serial, the message inputted in "SecureCRT" will not displayed in "SecureCRT" interface, but displayed in "TCPUDP" receiving area.

■ If already input "+++" and enter command mode by "SecureCRT" serial tool, then user can input "AT+ENTM" switch to transparent transmit mode, or press Reset button to enter transparent transmit mode.

■ The target IP address in TCPUDP test tool is the IP address module acquired from wireless router, can check the IP address by input "AT+WANN".

■ When module work in "APSTA" mode, it allows only one STA device connecting to it's AP.