Sychip Wireless-Uart

OEM User Guide

Author: Lei Liu

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CHANGE HISTORY

Version	Date	Remarks	Name
1.0	09/25/2012	Release V1.0;	Lei Liu
1.1	10/10/2012	Fixed some bugs	Jin Li
1.2	10/20/2012	Optimized the document framework	Jin Li

1. Brief introduction

1.1 About this document

This document describes how to use the SyChip Wireless-Uart EVK. It contains hardware installation, tcp/udp connect, AT configuration commands.

Features:

Support IEEE802.11b/g/n Wireless Standards.

Support the wifi work at AP/STA mode.

Support WEP, WPA, WPA2 Security.

Support configurate uart interface easily.

Support TCP/IP/UDP network protocol stack.

Support send AT commands through uart to control the module.

Single +3.3v power supply.
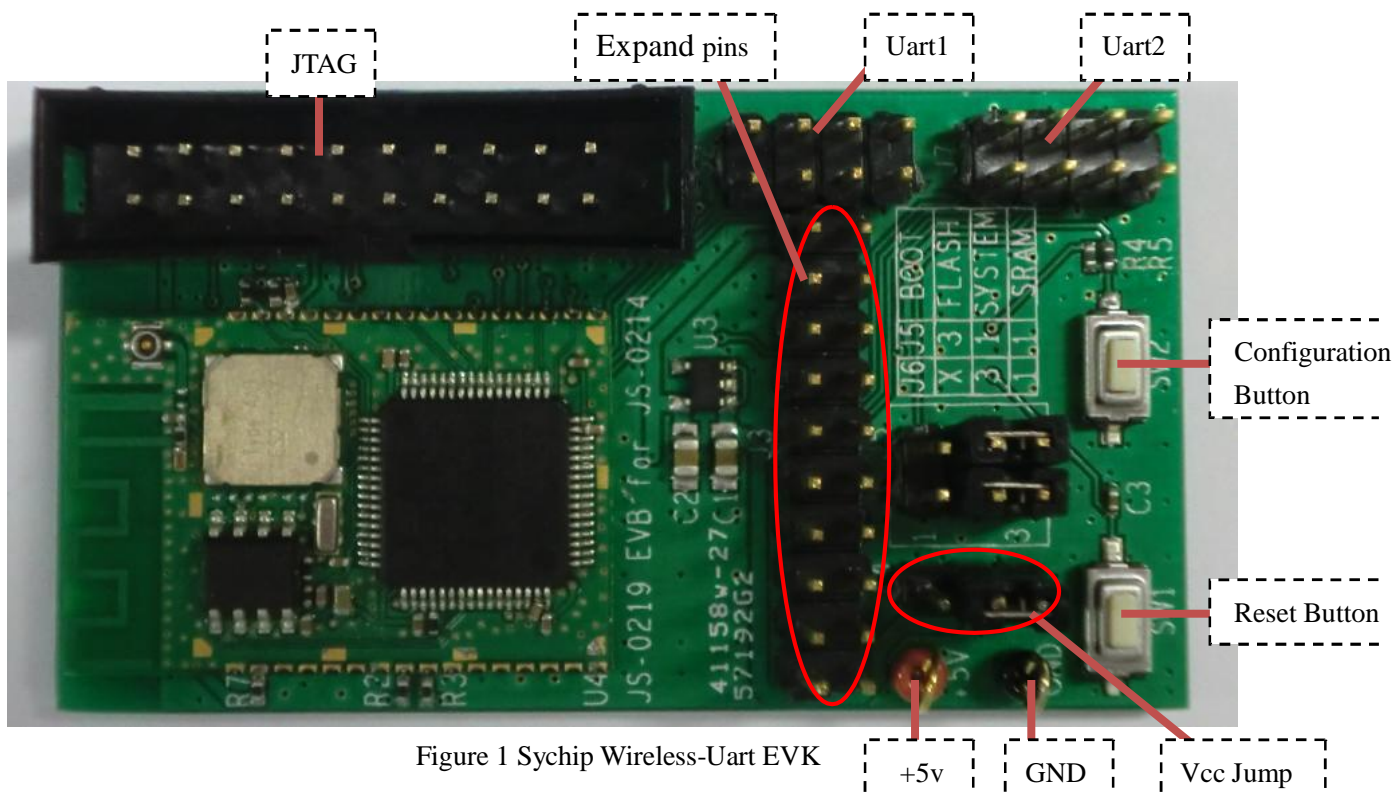
1.2 Sychip ES3 EVK Hardware Introduction

Figure 1 Sychip Wireless-Uart EVK

Figure 1 is Sychip Wireless-Uart EVK, it is composed of mcu, wifi, power, Uart1, Uart2, JTAG

interfaces etc.

(1)Power supply:

Vcc Jump(red circle marked) provides two different modes of power supply. If jump to the right pin, the module power on through the uart. If jump to the left pin, the module power on through the +5v and GND pin.

Note：Under normal circumstances using the uart power supply.

(2)Uart:

Uart pins function, uart1 is same to the uart2, according to the figure 1 position:

none	Rts	Rx	GND
none	Cts	Tx	Vdd_usb

(3)Button:

The EVK has 2 buttons: configuration button and reset button.

- Reset button:

  Press the reset button, the module will reset the device.

- Configuration button:

  Press the Configuration button for two or three seconds, press the reset button at the same time, the module into configuration function, customers can configurate all parameters through AT commands.

(4)Jtag:

The jtag's function is download the code and debug.

(5)Expand pins:

The expand pins is reserved for expansion functions.

2.   Wireless-Uart EVK Operation

2.1   Hardware installation
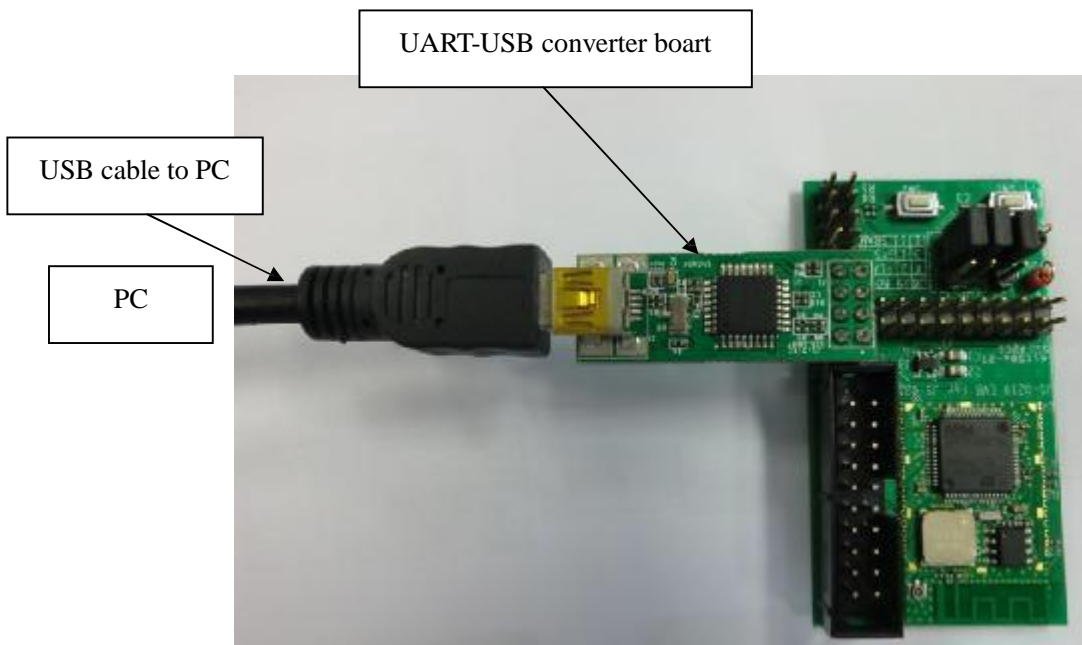
1. Connect EVK and PC through USB cable.

Figure 2. Wireless-Uart EVK Demo

Under Wireless-Uart EVK normal mode, uart1 connected as shown in figure 2. Power supply through uart1.

2. Install USB-UART converter driver (FTDI D2xx driver). Customer can download from below website.

   http://www.ftdichip.com/Drivers/D2XX.htm

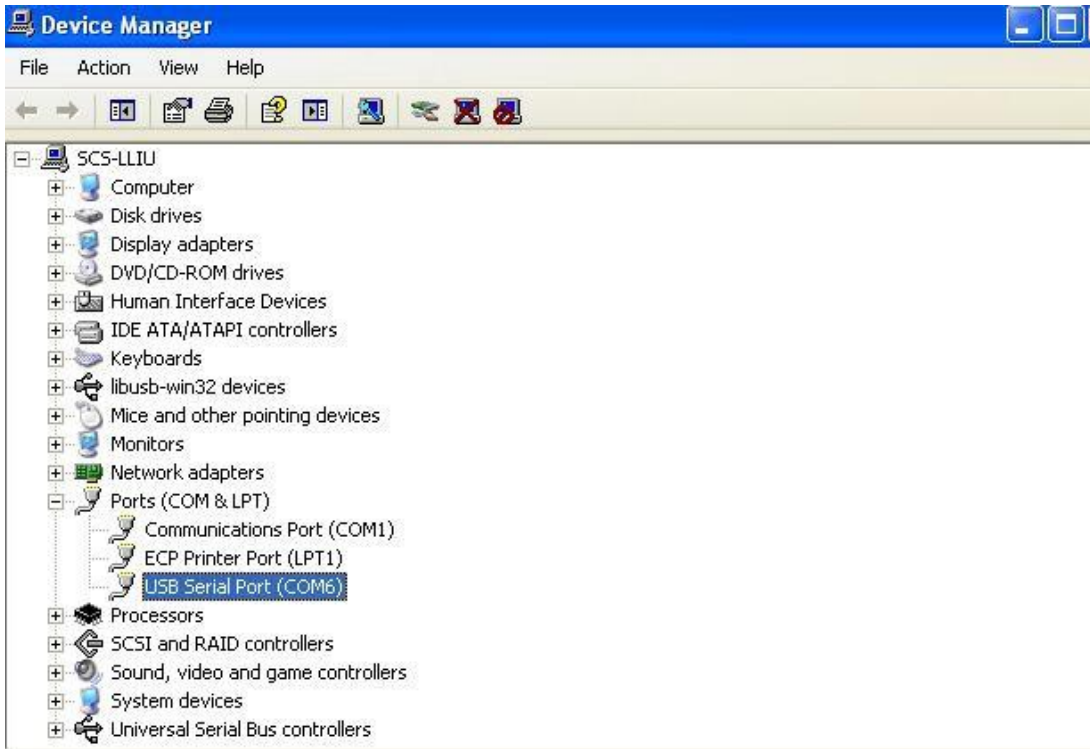3. Please open device manager. Customer can see USB Serial Port if driver install is succeeded.

Figure 3. usb serial port

4. Then open serial terminal on the pc side, set the relevant parameters as shown in the following figure. Baudrate = 115200, Data_bits = 8, Stop Bits = 1, pariyt = none, Flow Control = none. These values are factory setting.

Note: Under the configuration mode, the uart parameters are same to the factory setting[1].
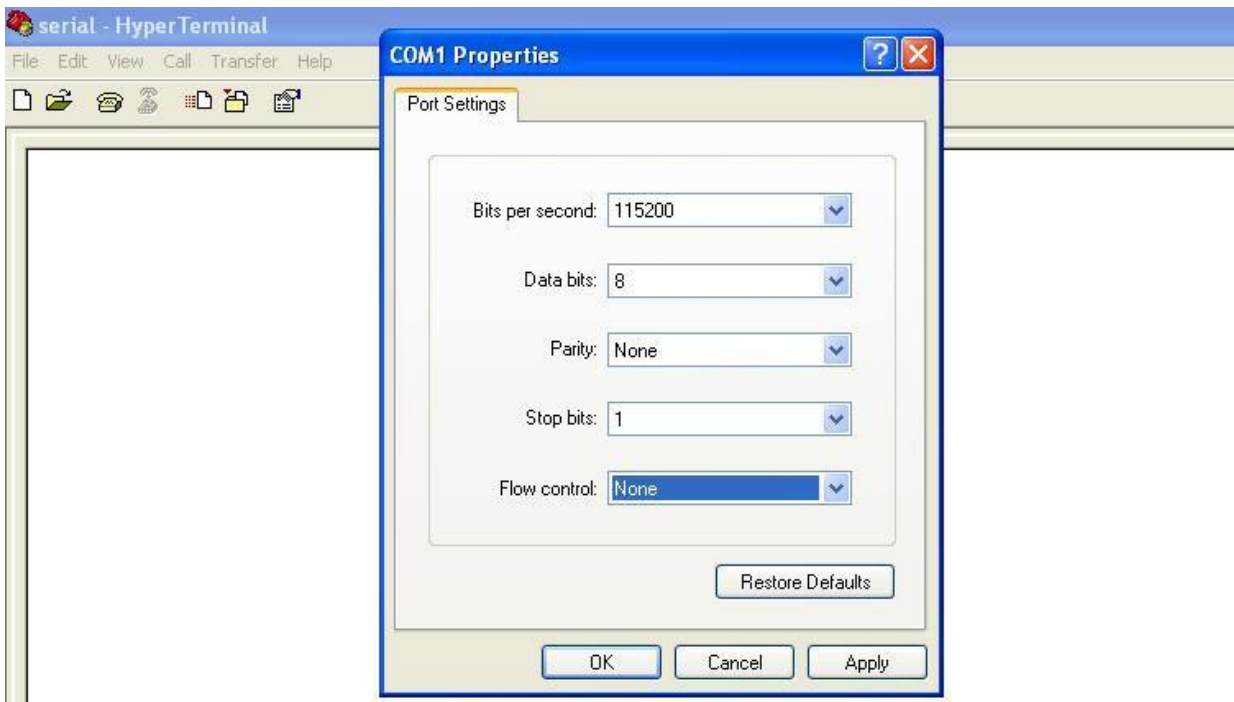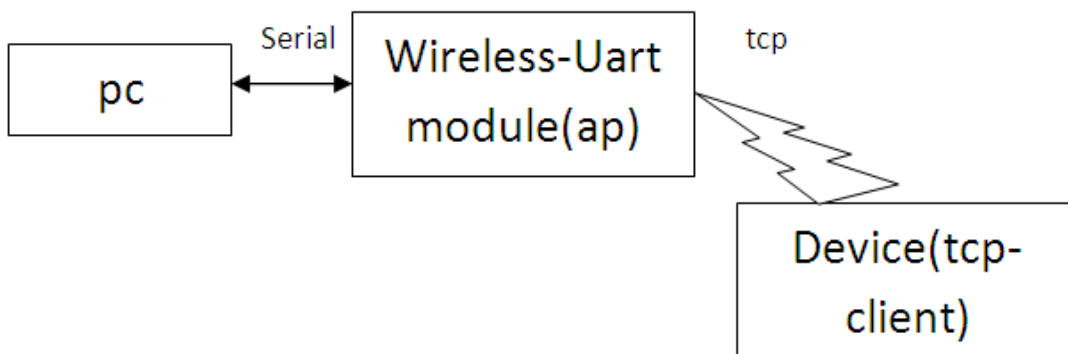

Figure 4. uart configuration

2.2 Work Mode

2.2.1 TCP Server mode

Once EVK power on, the module start at factory setting mode[1].

1. Configuration the device's TCP/IP properties.
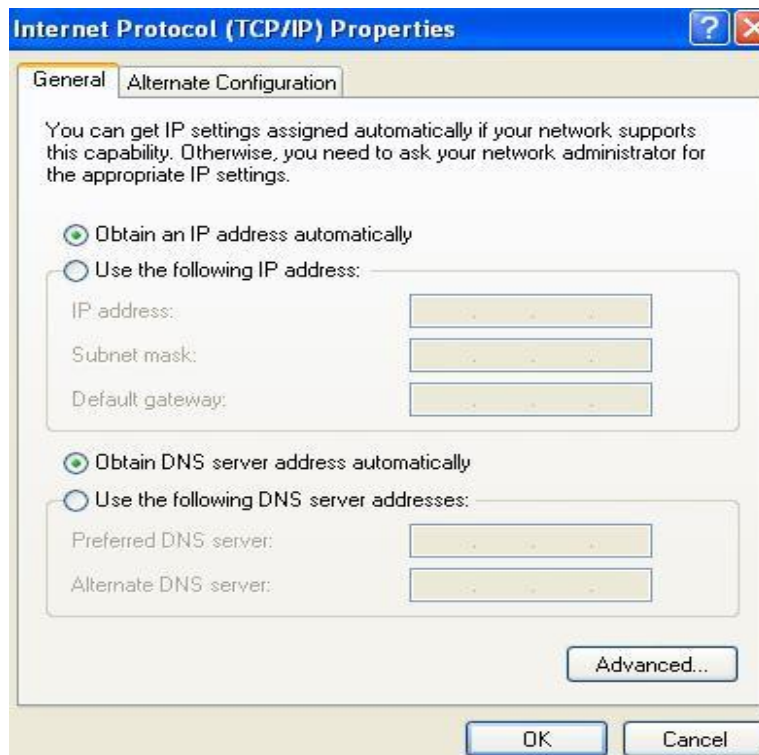   Obtain an ip address automatically, show as figure 5.

Figure 5. configuration the tcp/ip properties

2. Scan and join the module ap on the device.
   Show as figure 6.

Figure 6. scan and join the module ap

3.   Open tcp client on device side.

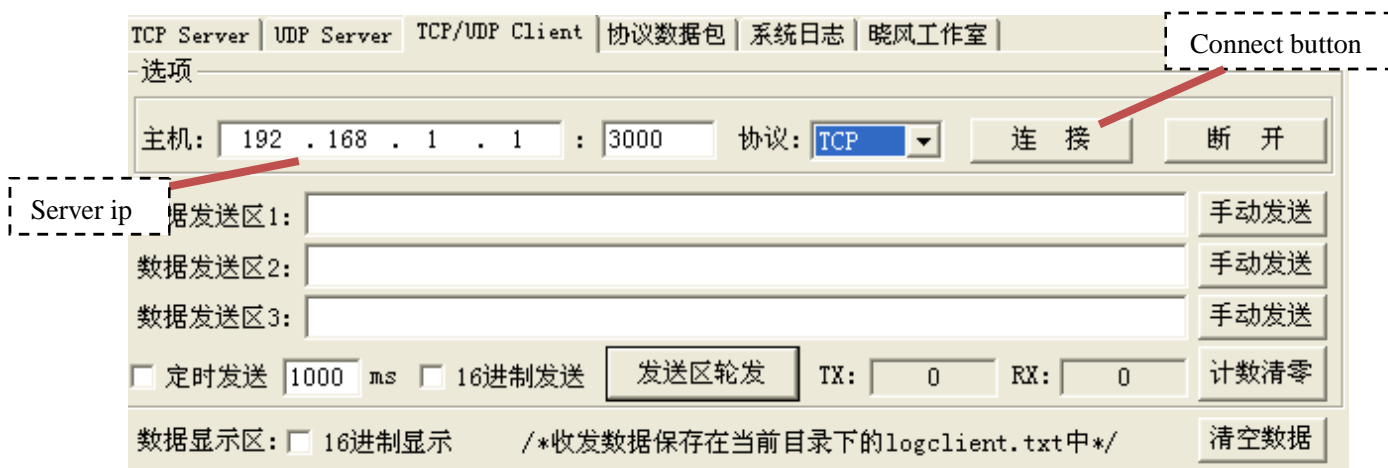Set the server ip_addr=192.168.1.1, port=3000. Protocal=TCP. As show in the following figure:

Figure 7. tcp client configuration

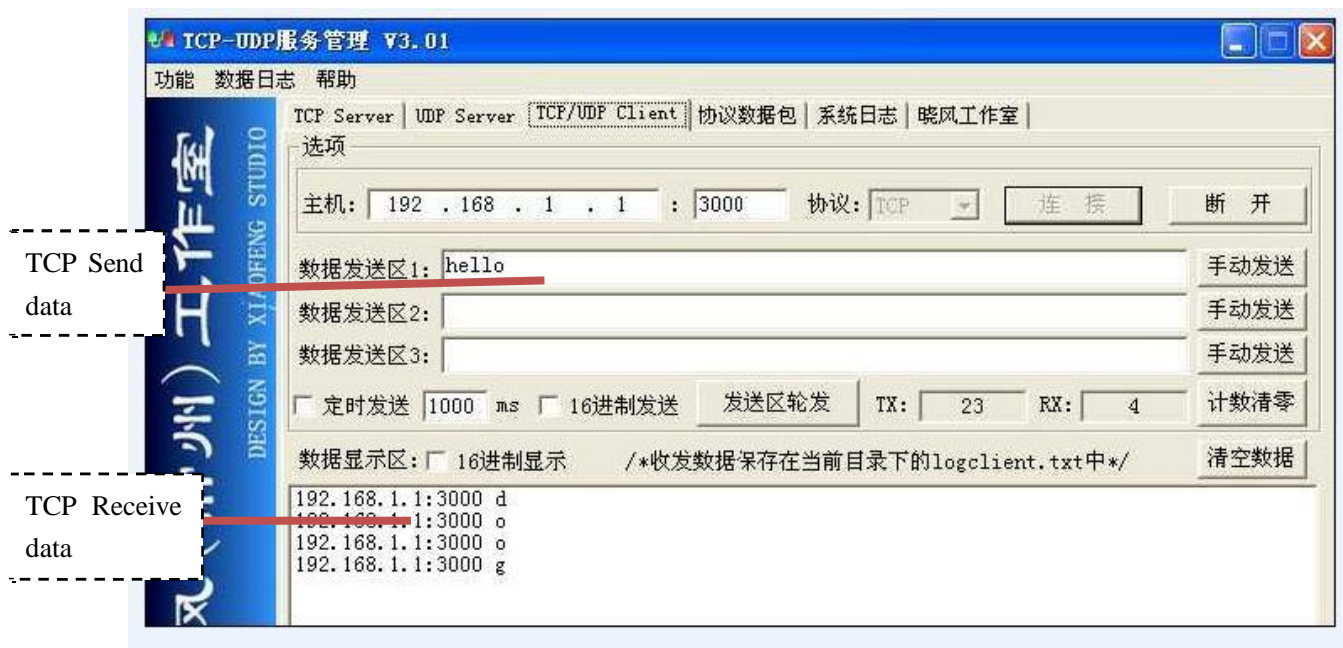4.   Click the connect button, achieved the transparent transmission.

Figure 8. tcp client transmission data on device

Figure 9. uart transmission data on PC

This is the end of factory setting work mode.

2.2.2 TCP Client mode

2.2.3 UDP Server/Client mode

2.4 Webpage Demo

2.1 SystemInfo

2.3 AT configuration commands

If customers press the configuration button when reset the device, the module into the configuration mode. AT commands can use the uppercase or lowercase letters, but the parameters must be set as special value, case-sensitive.

AT commands application:

- help /?:

  Input "help" or "?" <CR>. This command can show all the commands and use information.

```
> help
AT Console Commands:
    help
        - Print the AT commands and use information.
    at+sys <CR>
        - get sys version and hardware information.
    at+scan <CR>
        - scan wifi network.
    at+uart [<baudrate> <data_bits> <stop_bits> <parity> <flow_ctrl>]<CR>
        - uart config.
    at+wifi [<sta/ap> <ssid> <channel> <security> [passphrase]]<CR>
        - wifi config.
    at+network [<dhcpd> <dhcpc> <ip_addr> <net_mask> <gw_addr>]<CR>
        - network config.
    at+work [<tcp/udp> <client/server> <ip_addr> <port>]<CR>
        - work config.
    at+restore <CR>
        - restore factory setting.
    at+reboot <CR>
        - reboot device.
```

- Tcp-client transmission configure.

  Tcp-client work mode's topology structure:
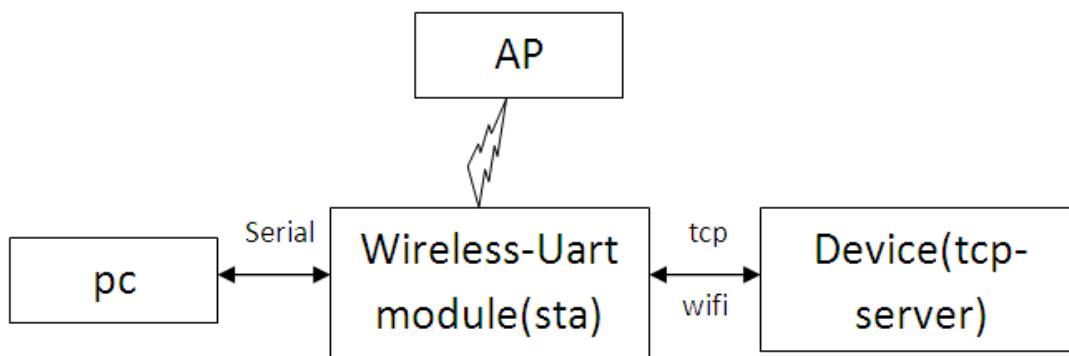
(1) Uart parameters configuration

If need to change the uart parameters:

Example: BaudRate=9600, DataBits=8, StopBits=1, Parity=none, FlowCtrl=none.

```
> at+uart 9600 8 1 0 0
OK
```

(2) Wifi parameters configuration

If need to change the wifi mode as client:

Example connect h3c ssid: sta/ap=sta, ssid=h3c, channel=1, security=open

```
> at+wifi sta h3c 1 open
OK
```

(3) Network parameters configuration

If need to change the network parameters:

Example enable the dhcpc, not use the static ip: dhcpd=0, dhcpc=1, ip_addr=0.0.0.0, net_mask=0.0.0.0, gw_addr=0.0.0.0.
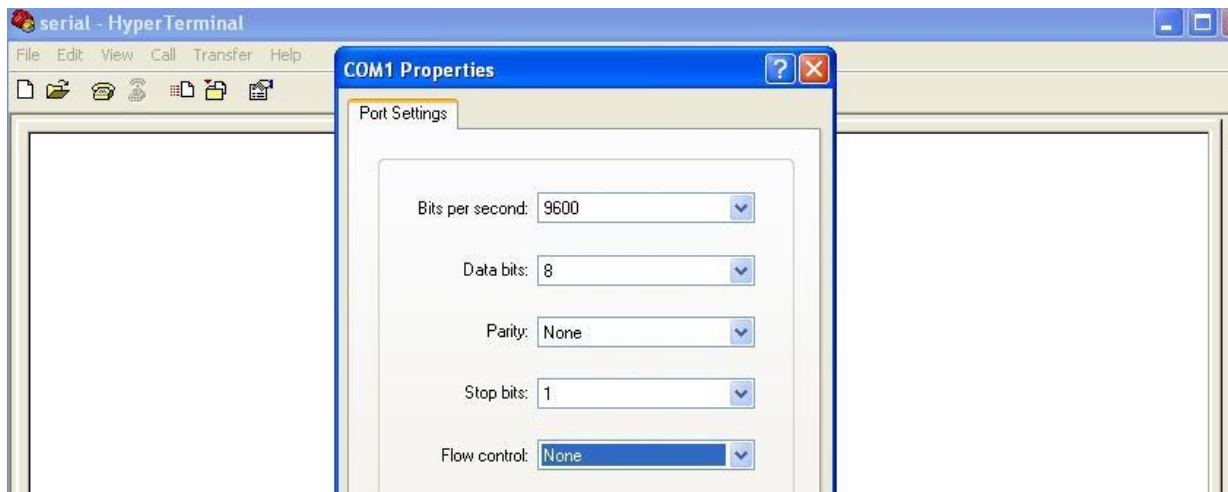
```
> at+network 0 1 0.0.0.0 0.0.0.0 0.0.0.0
OK
```

(4) Work module configuration

If need to change the work parameters:

Example change the work_mode as client: tcp/udp=tcp, client/server=client, ip_addr=10.3.1.80, port=3000.

```
> at+work tcp client 10.3.1.80 3000
OK
```

After the configuration, Open serial terminal on the pc side.

Then press the reset button, or input at+reboot command, the module into the tcp-client transmission work mode.

All AT commands parameters's value and function please reference document[1].

3.   Reference documents

- [1] Sychip wireless-uart interface.doc.

Statement

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 used in 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.

In accordance with FCC Part 15C, this module is listed as a Limited Modular Transmitter device.

Therefore, the final host product must be submitted to [Sychip] for confirmation that the installation of the module into the host is in compliance with the regulations of FCC and IC Canada. Specifically, if an antenna other than the model documented in the Filing is

used, a Class 2 Permissive Change must be filed with the FCC.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

FCC Label Instructions

The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: [VPYAAF]" or "Contains FCC ID: [VPYAAF]." Any similar wording that expresses the same meaning may be used.

To satisfy FCC RF Exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.