

# **Sychip Wireless-Uart**

# OEM User Guide

Version: 1.2

Release Date: October 20, 2012



# **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.

# JIAG Expand pins Uart Uart2 Image: Configuration of the set of the

#### **1.2** Sychip ES3 EVK Hardware Introduction

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.



🖳 Device Manager	
File Action View Help	
E- 📕 SCS-LLIU	
🕀 🧕 Computer	
🕀 🥌 Disk drives	
표 😼 Display adapters	
🕀 🥝 DVD/CD-ROM drives	
主 🎰 Human Interface Devices	
🗉 📹 IDE ATA/ATAPI controllers	
🕀 🦢 Keyboards	
🕀 🚭 libusb-win32 devices	
Mice and other pointing devices	
🛨 😻 Monitors	
主 🚚 Network adapters	
😑 🚽 Ports (COM & LPT)	
- 🖉 Communications Port (COM1)	
ECP Printer Port (LPT1)	
USB Serial Port (COM6)	
🗄 🦔 Processors	
🗄 🌑 SCSI and RAID controllers	
🕀 🧐 Sound, video and game controllers	
🕀 😼 System devices	
🗄 🕰 Universal Serial Bus controllers	

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<sup>[1]</sup>.

🎨 serial - HyperTerminal	-			
File Edit View Call Transfer Halp	COM1 Properties		? 🛛	
02 30 10 20 20 20 20 20 20 20 20 20 20 20 20 20	Port Settings			
	Bits per second: 1 Data bits: 8 Parity: N Stop bits: 1 Flow control: N	15200 Ione Restore D		

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<sup>[1]</sup>.



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

General Alternate Configuration	roperties ?
You can get IP settings assigned this capability. Otherwise, you ne the appropriate IP settings.	I automatically if your network supports ed to ask your network administrator for
💿 Obtain an IP address autor	natically
OUse the following IP addres	:8:
IP address:	(a) (a) (a)
Subnet mask:	
Default gateway:	
Obtain DNS server address	automatically
OUse the following DNS serv	ver addresses:
Preferred DNS server:	
Alternate DNS server:	14 (a a)
	Advanced
	OK Cancel

Figure 5. configuration the tcp/ip properties

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



网络任务	选择无线网络	
🛃 刷新网络列表	单击以下列表中的项目以连接到区域内的无线网络或获得	厚更多信息 (ੴ)。
为家庭或小型办公室设置无线网络	(( )) uap-E14A1C 未设置安全机制的无线网络	手动 ★ 1111
相关任务	由于没有在此网络上启用安全,其他人可以看 息。要连接到此网络,请单击"连接"。	<b>影见在此网络上发送的信</b>
(i) 了解无线网络		
	Sychip-Network	
党 史以自选网络的顺序	((Q))	
<ul> <li>史改自选网络的顺序</li> <li>少更改高级设置</li> </ul>	((P)) 行启用安全的无线网络(WPA)	Öller
<ul> <li>史改自述网络的肌明子</li> <li>更改高级设置</li> </ul>	((ロ))	
☆ 更改高级设置	((の))       ジュローク さんののとれていた。         ジュローク さんののとれていた。       ジュローク になった。         ((の))       SCSCame         ジュローク になった。       ジュローク になった。         ジュローク になった。       シュローク になった。         ジョコローク になった。       ショコローク になった。         ジョコローク になった。 <t< td=""><td>0000 0000</td></t<>	0000 0000
☆ 更改高级设置	((の))       ジュニュー コート・シュー         ジュニュー コート・シュー       ジュニュー コート・シュー         ((の))       ************************************	8880. 8880.

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:

	TCP Server   WDP Server   TCP/VDP Client   协议数据包   系统日志   晓风工作室	Connect button
	主机: 192 . 168 . 1 . 1 : 3000 协议: TCP ▼	断开
Server i	2	手动发送
	数据发送区2:	手动发送
	数据发送区3:	手动发送
	□ 定时发送 1000 ms □ 16进制发送   发送区轮发   TX:   0   RX:   0	计数清零
	数据显示区:□ 16进制显示   /*收发数据保存在当前目录下的logclient.txt中*/	清空数据

Figure 7. tcp client configuration

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





功能数据	日志 帮助 TCP Server   WDP Server [TCP/WDP Client] 协议数据包   系统日志   晓风工作室   - 选项	
で LUL	ダ 主机: 192 ,168 , 1 , 1 : 3000 协议: TCP _ 進 携	断开
TCP Send	数据发送区1: hello	_ 手动发送
data H	数据发送区2:	手动发送
	★ 数据发送区3:	手动发送
¥	「 定时发送 1000 ms 「 16进制发送 _ 发送区轮发 」 TX: 23 RX: 4	计数清零
Ĵ.	数据显示区:「16进制显示  /*收发数据保存在当前目录下的logclient.txt中*/	清空数据
TCP Receive	192.168.1.1:3000 d	
data	192.168.1.1:3000 o 192.168.1.1:3000 g	

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.



🍣 serial - HyperTerminal				-	
File Edit View Call Transfer Help	COM1 Properties Port Settings		? 🛛		
	Bits per second: Data bits: Parity: Stop bits: Flow control:	9600 8 None 1			

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<sup>[1]</sup>.

### **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.