Step-by-Step Tutorial For Using LinkSprite UART-WIFI Module Model LS_UART_WIFI

Hardware needed

- A desktop/laptop PC with WiFi adaptor
- A WiFi router
- This Uart-Wifi module model number LS_UART_WIFI with antenna



- A Uart-serial port converter and cable. In this tutorial, an Arduino board is used as a UART-USB converter. Other serial interface, e.g. RS-232 is okay.
- Serial port cable. In this tutorial, USB cable is used.

Hardware Connection

- Use an Arduino board as a UART-USB converter. The MCU is removed. Only the FT232RL is used in this test. The schematic is shown below.
- Use an adaptor to connect the WiFi module to the Arduino board.
- Connect one end of a USB cable to the Ardunio board, and the other end to a PC.
- Connect the antenna to the WiFi module.



Pictures of the experiment setup:







Software needed

- X-CTU from digi.com
- PC test tool <u>http://www.linksprite.com/pub/Test%20Tools.rar</u>



Test Procedure

Step 1: Open X-CTU. Find which serial port the WiFi module is connected to. In this tutorial, it is COM4.

Note: For some reason, only COM1~COM4 is supported in the test tool software. If you find port COM5 or up in X-CTU, please change to a different COM port. .

😬 х-сти				
About				
PC Settings Range Test Terminal Modem Configuration				
Com Port Setup				
Select Com Port	<u> </u>			
USB Serial Port (CUM4)	Baud	19600 -		
	Flow Control	NONE		
	Data Bits	8 💌		
	Parity	NONE 💌		
	Stop Bits	1 💌		
	Tes	st / Query		
Host Setup User Com Ports Network Interface				
_API		1		
Enable API				
☐ Use escape characters (ATAP = 2)				
AT command Setup				
Command Character (CC) + 28				
Guard Time Before (BT) 1000				
Guard Time After (AT)				
Modem Flash Update				
No baud change				

Step 2: Open the server software. Select TCP, and port number 6000, and click on Start. Before TCP connection is connected, the Remote IP and remote Port both show "not connected".

WLANMTEST-Se	erverV1.32EN		
Server	Receive window RX(bytes): 0		Clear
Status	- Transmit window		
Remote IP not conncet Remote Port not connect	TX(bytes): 0	Sel File Send File	Send TXT

Step 3: In your PC start/run, type cmd and return. Find out your IP configuration by ipconfig. You can find the IP address, subnet mask, and default gateway. This information will be used in the Client configuration.

C:\WINDOWS\system32\cmd.exe	- 🗆	>
C:\Documents and Settings>		4
C:\Documents and Settings>		
C:\Documents and Settings>		
C:\Documents and Settings>		
C:\Documents and Settings>ipconfig		
Windows IP Configuration		
		-
Ethernet adapter Local Area Connection:		
Media State Media disconnected		
Ethernet adapter Wireless Network Connection:		
Connection-specific DNS Suffix . : hsd1.co.comcast.net.		
IP Address		
Subnet Mask		
Default Gateway : 192.168.0.1		
Ethernet adapter Network Connect Adapter:		
Media State · Media disconnected		
C:\Documents and Settings>		•

Step 4: Open the Client software. First click on Close under Serial Configure. Select correct serial port number that is found out in X-CTU. Select the baud rate. Then click on Open. This opens the serial port.

Step 5: Click on Scan under Control. The found WiFi network is shown in the output window. Record the channel number, BSSID, and SSID, which will be used in the configuration.

WLANTest-Client V1.50.073	30Pre	
Serial Configure COM4 115200 8 ByteSize No Parity 1 Stopbit Close ACK Clear Control Scan Join Leave TCP Reset Parameters Transmission repeat per 100 ms Stop Send IXT	Output Cmd/Msg Serial data [Info] Tcp is connected [Text] addafads addafads [Cmd] Get parameters [Info] Get parameters [Cmd] Get parameters [Cmd] Get parameters [Info] == == IDX Channel BSSID SSID 58 00-15-e9-eb-45-6a mtnview ==	
Sel File Send File Clear Status Bss info: Ssid=mtnview, Channel=6, Bssid=	TX(byte: =00-15-e9-eb-45-6a RX (byte	s): 0 es): 8

If you cannot find WiFi network, try the following

- 1. close serial port, select correct port number, and open it. Sometimes you need to repeat it for a few times
- 2. Reset by clicking on Reset under Control.
- 3. Unplug the USB cable and plug it again. This is a hard reset. After it, go back to 1.

Note. If you open multiple client test tool, you can only open the serial port in one client.

Step 6: Configure the module setting by clicking on Parameters. Set the channel number, BSSID, SSID from Step 5. Select TCP in data type. Set the local IP, which is the IP address of the WiFi module. You can use any valid IP address in your WiFi sub network. Set the Gateway to the Default Gateway from Step 3. Set the Server IP to the IP Address from Step 3. Set the Mask to the Subnet Mask from Step 3.

Select service port that is same as the port number in the Server software.

If you WiFi network has authentication protection, such as WEP, then set the WEP length, and the Key. This key is your password to access your WiFi network.

Set the System parameters, including baud rate. This baud rate must be same as the one set in the Server.

Before you save your parameters, do not forget to check the box before each parameter. Only the checked parameters will be saved. Now click on Save to save the parameters to the module.

🕌 Parameters Configura	ıtion				? 🗙
Wireless Network					
Param Group	Group1 💌	Privacy	Type	WEP	
Channel	6 💌		1720		
BSSID	00-15-e9-eb-45-6a	OPEN WEP C	CMP		
SSID	mtnview	Len : 64bits	*	Sel : 1 💌	
📃 Data Type	TCP 💌	Key1: 8f,77,4	a1,30,12		
🖌 Local IP	192.168.0.220	Key2 : 00,00,	00,00,00		
🗹 Mask	255.255.255.0 💌	Key3: 00,00,	00,00,00		
🗹 Gateway	192.168.0.1	Key4: 00,00,	00,00,00		
Server IP	192.168.0.7				
Service Port	6000				
Server MAC	ff-ff-ff-ff-ff-ff				
System					
AutoConnectAP	OFF V TCP Ser	ver Mode ON 💌		Save	
📃 Serial Baudrate	115200 💌 🗌 Transpa	rent Mode 🛛 🛛 🔽			
Local MAC	00-1f-a4-a7-06-04			Exit	
Tork Node					

Step 7: Join a WiFi network by clicking on Join. Select which group of parameters to be used. If successful, the output window will show "Join successfully". Otherwise, the output window will show "leave bss".

Step 8: Connect TCP by clicking on "Connect". If successful, the output window will show "Connect successfully". Otherwise, the output window will show "TCP is disconnected". After it is connected, the Server software will show the remote IP

and port, which are the IP address and port of the WiFi module.

Note: try a few times if you have difficulty connecting the TCP. One possible cause is the power supply of the USB cable to the WiFi module is not enough. If so, use a separate DC power supply to drive the WiFi module.

Step 9: Send text message from the Client or the Server. The Server or the Client will show the text message that it receives from the sender.

WLANMTEST-ServerV1.32EN	WLANTest-Client V1.50.0730Pre	
Server Receive window TCP RX(bytes): 10 Port 6000 Start Stop	Serial Configure Output COM4 Info 115200 Image: Configure 8 ByteSize Image: Configure No Parity Close Info] Top is disconnected [Cnd] Get parameters [Info] Top is disconnected [Cnd] Join to bss '1 [Info] Join to bss '1 [Info] Join to use stilly [Cnd] Join to bss '1 [Info] Join successfully [Cnd] Top is disconnected [Cnd] Top connect [Info] Top is connected [Cnd] Top connect [Info] Top is connected [Cnd] Top connect	
Status Transmit window Remote IP TX(bytes): 0 192.168.0.220 TX(bytes): 0 Remote Port 10024	Transmission Input aghrehrher aghrehrher Stop Send TXT Sel File Send File Clear Clear Status TX(bytes): 10 Ssid=mtnview, Channel=6, Bssid=00-15-e9-eb-45-6a RX (bytes): 0	

Step 10: Test above procedure using X-CTU.

First set UART parameters: baud=115200, flow control=No, Data bits=8, Parity=None, Stop bit=1.

Example : Scan network

Compose HEX message AA 84 00 04 13 00 31 04 55 00 00 00 00 00 00, click on Send Data. The returned message shows that the WiFi network Ej.mtnview is found.

🕂 X-СТU [СОМ4]		
About		
PC Settings Range Test Terminal Modem Co	nfiguration	
Line Status Assert	Close Assemble Clea Com Port Packet Scree	r Show n Hex
1.U\$ @BEj.mtn∨iew]	-
Sond Dacket		X
AA 84 00 04 13 00 31 04 55 00 00 00 00 00 00 00		
Byte count: 15	Display Close	∣
Close Send Data		
	Due 20 hotes	
COM4 J115200 8-N-1 FLOW:NUNE	HX: 39 Dytes	

For details of the UATT data format and protocol, please refer to the user's manual. Note: Another easier way how to do the programming is to look at the serial data window in the Client software. All the sent and received commands in the Cmd/Msg window are interpreted in serial data window in HEX data format.

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