WizFi360

Application – Throughput

Version 1.1

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History

Ver	Date	Description
1.0	Aug.2019	Initial version
1.1	Sep.2019	Add command mode throughput test result

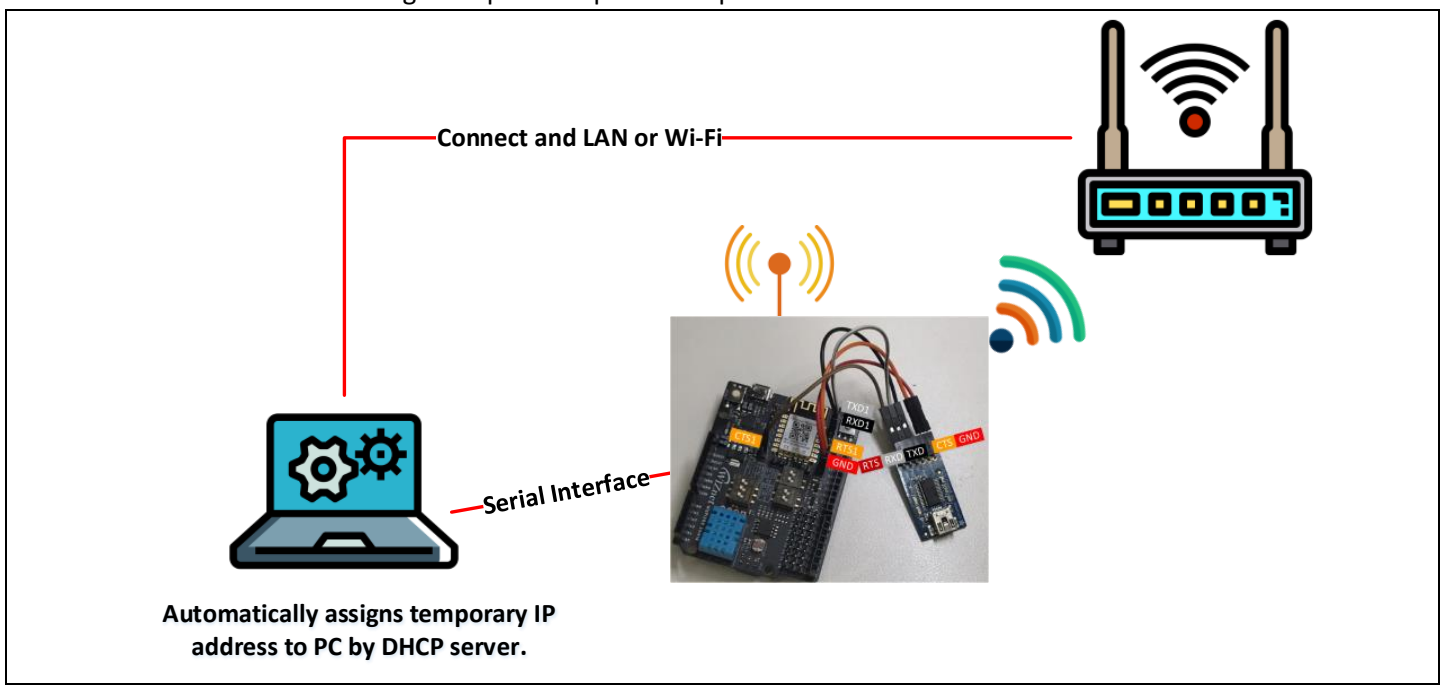
Contents

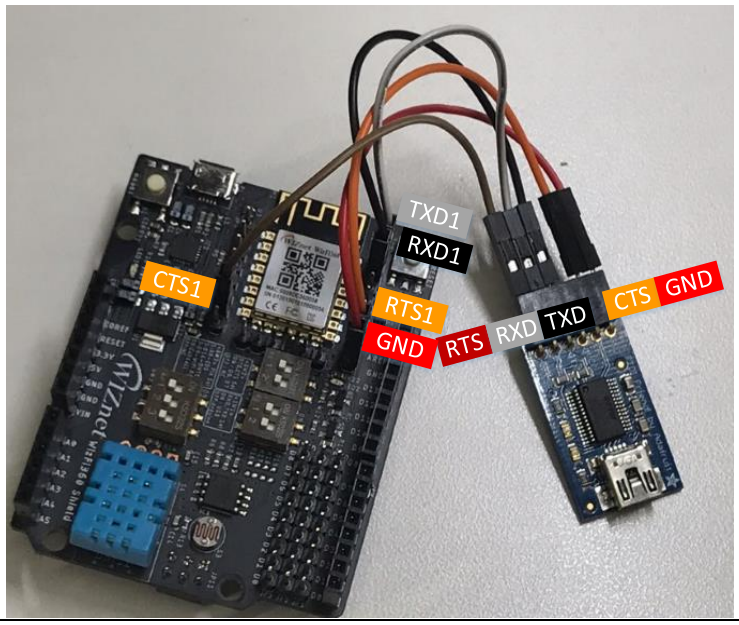
1. Test environment

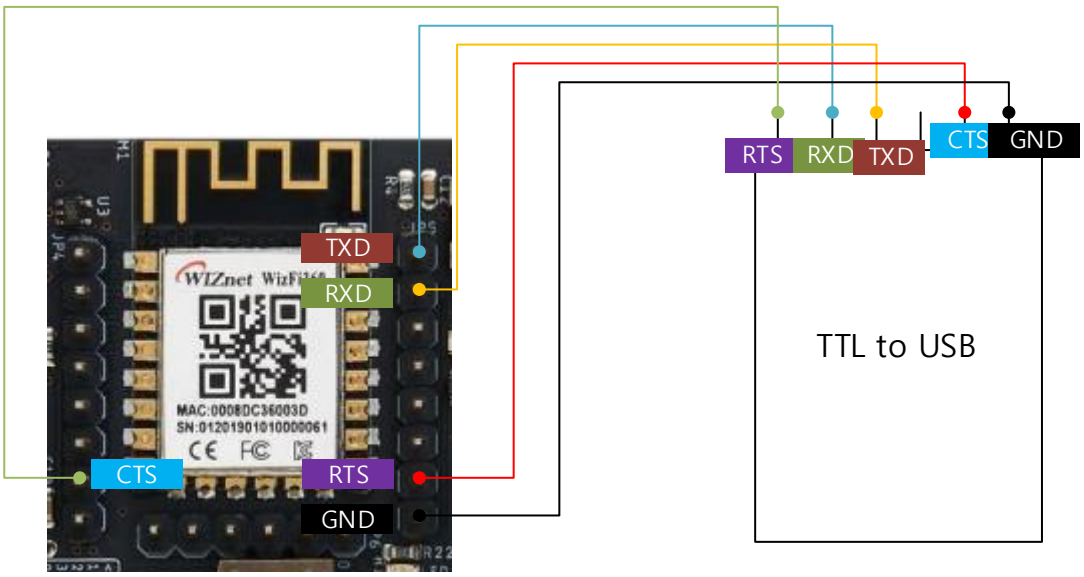
To UART throughput test, it controls using CTS / RTS is required.

- WizFi360 EVB or WizFi360io
- PC
- Serial Tool
  - YAT Serial Tool(Data Mode)
  - Python(Command Mode)
- 1Mbyte data file
- WiFi Router(exclude when it use in softAP mode)

When data mode uses, it sets RTS/CTS in flow control the using the YAT Serial Tool and it sets DTR as Data Read signal.
When command mode uses, it sets the AT+CIPSENDBUF=2048 as maximum length of the data to be transmitted and it sends data of 2048 length. Repeat the previous operation.




TXD1
RXD1
CTS1
RTS1
GND
RTS
RXD
TXD
CTS
GND


TXD
RXD
CTS
RTS
GND
RTS
RXD
TXD
CTS
GND
TTL to USB

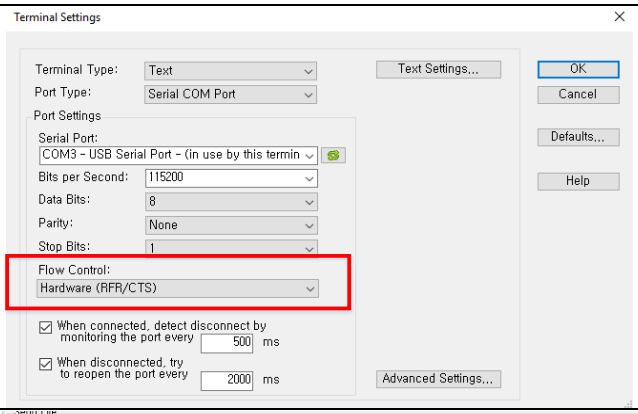
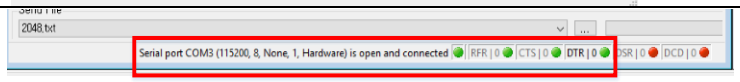
2. Using Serial command

- **Station Mode**

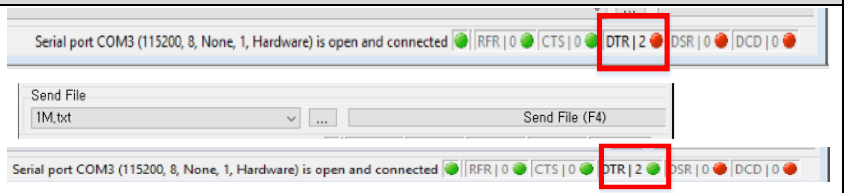
AT command	Terminal
AT AT+CWMODE_CUR=1 AT+CWDHCP_CUR=1,1 AT+CWLAP AT+CWJAP_CUR="wizms1","maker0701" AT+CIPSTA_CUR?	AT<CR><LF> <CR><LF> OK<CR><LF> AT+CWMODE_CUR=1<CR><LF> <CR><LF> OK<CR><LF> AT+CWDHCP_CUR=1,1<CR><LF> <CR><LF> OK<CR><LF> AT+CWLAP<CR><LF> +CWLAP:(4,"DIR-815_Wiznet",-59,"[redacted]",1)<CR><LF> +CWLAP:(0,"ESP_574935",-71,"[redacted]",1)<CR><LF> +CWLAP:(3,"##WIZnet_irina",-46,"[redacted]",1)<CR><LF> +CWLAP:(3,"Matthew2.4",-63,"[redacted]",2)<CR><LF> +CWLAP:(3,"rena",-46,"[redacted]",3)<CR><LF> +CWLAP:(0,"iptime",-67,"[redacted]",4)<CR><LF> +CWLAP:(3,"Dap",-63,"[redacted]",5)<CR><LF> +CWLAP:(0,"ESP_577CC7",-67,"[redacted]",6)<CR><LF> +CWLAP:(3,"wizms1",-63,"[redacted]",6)<CR><LF> +CWLAP:(0,"Wizfi360",-69,"[redacted]",6)<CR><LF> +CWLAP:(4,"DLINK-IPv6",-55,"[redacted]",10)<CR><LF> +CWLAP:(0,"iptime",-59,"[redacted]",11)<CR><LF> +CWLAP:(3,"WIZnet_Scott",-51,"[redacted]",11)<CR><LF> +CWLAP:(0,"WizFi360_A1B2D1",-69,"[redacted]",11)<CR><LF> +CWLAP:(3,"Teddy_AP",-57,"[redacted]",13)<CR><LF> <CR><LF> OK<CR><LF> AT+CWJAP_CUR="wizms1","maker0701"<CR><LF> WIFI DISCONNECT<CR><LF> WIFI CONNECTED<CR><LF> WIFI GOT IP<CR><LF> <CR><LF> OK<CR><LF> AT+CIPSTA_CUR?<CR><LF> +CIPSTA_CUR:ip:"192.168.1.120"<CR><LF> +CIPSTA_CUR:gateway:"192.168.1.1"<CR><LF> +CIPSTA_CUR:netmask:"255.255.255.0"<CR><LF> <CR><LF> OK<CR><LF>

- **UART CTS/RTS Setting**

AT command	Terminal
AT+CWUART_CUR = 115200,8,1,0,1	AT+UART_CUR=115200,8,1,0,1<CR><LF> <CR><LF> OK<CR><LF>
Terminal Setting	

1. Pressing Ctrl+Shift+S and Open the Terminal Settings window 2. You have to change the Hardware(RFR/CTS) in Flow Control	
3. If you can see under the terminal window that the CTS/DTR is green	

- **TCP Client /Data mode**

AT command	Terminal
AT+CIPSTART="TCP","192.168.100.27",5001 AT+CIPMODE=1 AT+CIPSEND	AT+CIPSTART="TCP","192.168.100.27",5001<CR><LF> CONNECT<CR><LF> <CR><LF> OK<CR><LF> AT+CIPMODE=1<CR><LF> <CR><LF> OK<CR><LF> AT+CIPSEND<CR><LF> <CR><LF> >
	Terminal Setting
1. When DTR is red, it sends the 1M.txt 2. If you click the DTR, it changes the DTR is green and it is sending the data through Serial	

- **TCP Client / Command mode**

AT command	Terminal
AT+CIPSTART="TCP","192.168.100.27",5001 AT+CIPMODE=0 AT+CIPSENDBUF=2048 Send the 1Mbyte.txt	AT+CIPSTART="TCP","192.168.100.27",5001<CR><LF> CONNECT<CR><LF> <CR><LF> OK<CR><LF> AT+CIPMODE=0<CR><LF> AT+CIPMODE=0<CR><LF> <CR><LF> OK<CR><LF> AT+CIPSENDBUF=2048<CR><LF> AT+CIPSENDBUF=2048<CR><LF> 1,0<CR><LF> <CR><LF> OK<CR><LF> >

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3. The result of UART Throughput

PC sends the 1Mbyte through serial of WizFi360(UART1) and WizFi360 send the data to TCP Server.

Baud rate	Data mode		Command mode	
	Time	Speed(bit/s)	Time	Speed(bit/s)
115200	123s	66K	93.9s	87.2K
921600	16.3s	502K	14.0s	585.1K
1000000	14.9s	550K	13.0s	630.2K
1250000	12.7s	645K	11.0s	744.7K
1500000	10.5s	780K	10.0s	819.2K
2000000	9.7s	845K	8.0s	1.0M

We measured the time from the start of data transfer to the end of data transfer using the wireshark tool, see Appendix 1.

Appendix 1

Baud rate	Data mode	Command mode
115200	123s : 66Kbit/s	11.0s : 744.7Kbit/s
921600	16.3s :502Kbit/s	10.0s : 819.2Kbit/s
1000000	14.9s : 550Kbit/s	8.0s : 1.0Mbit/s
1250000	12.7s : 645Kbit/s	11.0s : 744.7Kbit/s
1500000	10.5s : 780Kbit/s	10.0s : 819.2Kbit/s
2000000	9.7s : 845Kbit/s	8.0s : 1.0Mbit/s