WiFi MODULE

2.4GHz ISM Band WiFi MODULE

Model: WS-WIFI
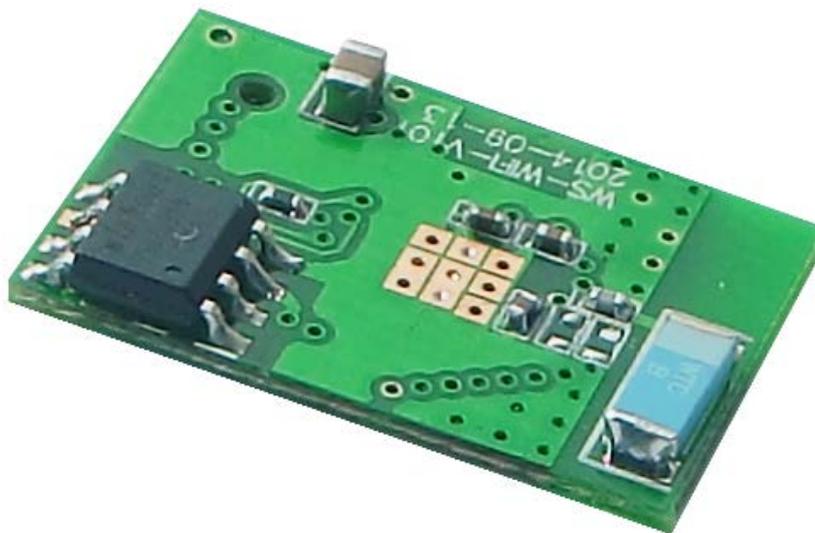
Version History

Version	Date	Changes
V0.01	September 10, 2014	1st. Edition
V0.02	October 14, 2015	2st. Edition

Important Event

- This product is in general use for the equipment on the premise of the development, design, manufacture. Do not use that require high security purposes, such as machinery or medical, aviation equipment, machinery and transport-related deaths are directly or indirectly related to the system.
- This product should be in this brochure by the instructions of the types and rated voltage power under the current proper use. If violation of this statement by the safety records of the supply operation, I am afraid our company cannot afford any of the responsibility.
- Do not self-decomposition, alteration, repair of the products also will cause fire, electric shock, fault, and dangerous. In addition, their decomposition, alteration, and repair the product, failure is not within the scope of warranty.
- The products are not waterproof, so please do not use and touch water. Take off and on also please note. Rain, spray, drinks, steam, sweat may be a failure.
- Use of this product, please be sure to use according to the statement recorded by the use of methods to operate. Please do not violate particular attention to the matter reminded to use.
- Please respect this statement recorded by the note. When consumers in contravention of this statement recorded note of the operation, I am afraid our company could not shoulder any responsibility.
- Products are defective, the Company will be responsible for free to amend the flaws, or to the same flawless product or its equivalent products in exchange. However, the Company does not assume based on the requirements of the flaw and loss responsibility.
- The Company reserves the right to retain without notice to users of the cases, the product of hardware / software (version upgrade) is with the right to edit.

Declaration

This product provides different frequency for user selection to meet different telecommunication regulation and FCC/CE on different countries.

Warranty

The warranty time is within one year from purchased date. The warranty scope are used in normal situation and none vandalism. (Some function harmful out of warranty scope and Vandalism are Un-warranty).

Un-warranty Scope Description

- Because the natural disaster, accident or human factor to cause the bad damage.
- Violate the product instruction manual to cause the damage of the products.
- The improper assemble causes damage.
- The products used the unsanctioned accessory to cause damaged.
- Overstep the allowed used environment to cause the products damaged.

Contact Us

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High integration wireless SOCs, designed for space and power constrained mobile platform designers.

It provides unsurpassed ability to embed Wi-Fi capabilities within other systems, or to function as a standalone application, with the lowest cost, and minimal space requirement.

Key Features
- 802.11 b/g/n protocol
- Wi-Fi Direct (P2P), soft-AP
- support DNS
- Standby power consumption of < 1.0mW

Applications
- Smart power plugs
- Home automation
- Mesh network
- Industrial wireless control
- Baby monitors
- Sensor networks
- Wearable electronics
- Wi-Fi location-aware devices
- IP Cameras
- Wi-Fi position system beacons

Size
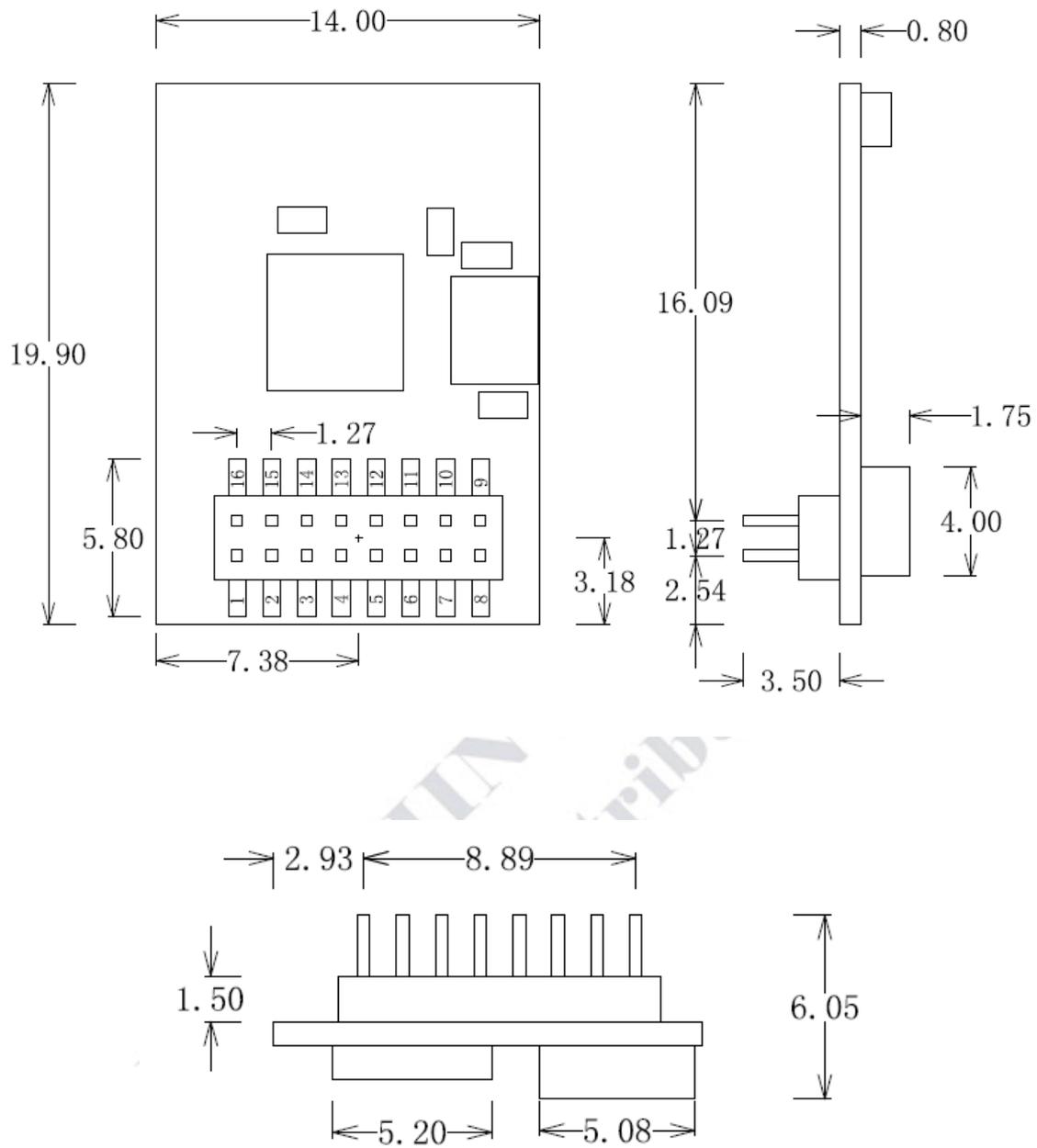
Pin Function

Pin	Pad name	Pin type	Function
1	GPIO15	I/O	General Purpose I/O
2	GPIO13	I/O	General Purpose I/O
3	IO_VDD	POWER	Digital and IO power supply（1.8V-3.3V）
4	GPIO12	I/O	General Purpose I/O
5	Sleep	I	Deep-sleep/Wakeup
6	RST	I	External reset signal（low level active ）
7	CH_PD	I	Active module hardware turn off
8	GND	POWER	Ground
9	VDD33	POWER	3.0V-3.3V simulation power supply
10	UTXD	O	UART interface
11	URXD	I	UART interface
12	GPIO5	I/O	General Purpose I/O
13	GPIO14	I/O	General Purpose I/O
14	GPIO4	I/O	General Purpose I/O
15	GPIO0	I/O	General Purpose I/O
16	GPIO2	I/O	General Purpose I/O

Hardware Specification

Characteristic	Min	Typical	Max	Unit
Supply Voltage Range	3	3.3	3.6	V
Spread Spectrum Method		Direct Sequence		
Current Consumption		802.11b：210 802.11g：145 802.11n：135		mA
Operating frequency	2414MHz		2487	MHz
Output power	19	20	21	dBm
Receiver Sensitivity, 8% PER: 1 Mbps RF Data Rate		-98		dBm
6 Mbps RF Data Rate		-93		dBm
11 Mbps RF Data Rate		-91		dBm
54 Mbps RF Data Rate		-75		dBm
Spread Spectrum Method		Direct Sequence		
Antenna		Integral Chip Antenna		
Digital I/O:				
Logic Low Input Level	-0.3		0.25*VDDIO	V
Logic High Input Level	0.75*VDDIO		3.6	V
Logic Low Output Level			0.1*VDDIO	V
Logic High Output Level	0.8*VDDIO			V
VDDIO	1.7		3.6	V
Operating Temperature Range	-20		85	℃
Dimensions		19.9*13.5*3		mm

AT Format

- Baud rate at 115200, use option "send new line" for each command
- x is the commands

Set	Inquiry	Test	Execute
AT+<x>=<…>	AT+<x>?	AT+<x>=?	AT+<x>
AT+CWMODE=<mode>	AT+CWMODE?	AT+CWMODE=?	-
Set the network mode	Check current mode	Return which modes supported	-

ommands

- carefully there are must be no any spaces between the " and IP address or port

Commands	Description	Type	Set/Execute	Inquiry	test	Parameters and Examples
AT+RST	restart the module	basic	-	-	-	-
AT+GMR	Check firmware version	basic				
AT+CWMODE	Wifi mode	wifi	AT+CWMODE=<mode>	AT+CWMODE?		1= Sta, 2= AP, 3=both, Sat is the default mode of router, AP is a normal mode for devices
AT+CWJAP	join the AP	wifi	AT+ CWJAP =<ssid>,< pwd >	AT+ CWJAP?	-	ssid = ssid, pwd = wifi password
AT+CWLAP	list the AP	wifi	AT+CWLAP			
AT+CWQAP	quit the AP	wifi	AT+CWQAP	AT+CWQAP=?		
AT+ CWSAP	set the parameters of AP	wifi	AT+ CWSAP= <ssid>,<pwd>,<chl>, <ecn>	AT+ CWSAP?		ssid, pwd, chl = channel, ecn = encryption Connect to your router: ： AT+CWJAP="www.rf.net.tw","1234567890"; and check if connected: AT+CWJAP?
AT+CWLIF	Check join devices'IP	wifi	AT+CWLIF			
AT+ CIPSTATUS	get the connection status	TCP/IP	AT+ CIPSTATUS			<id>,<type>,<addr>,<port>,<tetype>=client or server mode

AT+CIPSTART	set up TCP or UDP connection	TCP/IP	1)single connection (+CIPMUX=0) AT+CIPSTART= <type>,<addr>,<port>; 2) multiple connection (+CIPMUX=1) AT+CIPSTART= <id><type>,<addr>, <port>	-	AT+CIPSTART= ?	id = 0-4, type = TCP/UDP, addr = IP address, port= port Connect to another TCP server, set multiple connection first: AT+CIPMUX=1; connect: AT+CIPSTART=4,"TCP","X1.X2.X3.X4",9999
AT+CIPMODE	Set data transmission mode	TCP/IP	AT+CIPMODE=<mode>	AT+CIPMODE?		0 not data mode, 1 data mode, return "Link is builded"
AT+CIPSEND	send data	TCP/IP	1)single connection(+CIPMUX=0) AT+CIPSEND=<length>; 2) multiple connection (+CIPMUX=1) AT+CIPSEND= <id>,<length>		AT+CIPSEND= ?	send data: AT+CIPSEND=4,15 and then enter the data
AT+CIPCLOSE	close TCP or UDP connection	TCP/IP	AT+CIPCLOSE=<id> or AT+CIPCLOSE		AT+CIPCLOSE= ?	
AT+CIFSR	Get IP address	TCP/IP	AT+CIFSR		AT+ CIFSR=?	
AT+ CIPMUX	set mutiple connection	TCP/IP	AT+ CIPMUX=<mode>	AT+ CIPMUX?		0 for single connection 1 for mutiple connection
AT+ CIPSERVER	set as server	TCP/IP	AT+ CIPSERVER= <mode>[,<port>]			mode 0 to close server mode, mode 1 to open; port = port turn on as a TCP server: AT+CIPSERVER=1,8888, check the self server IP address: AT+CIFSR=?
AT+CIPSTP	Set the server	TCP/IP	AT+CIPSTP=<time>	AT+CIPSTP?		<time>0~28800 in second

	timeout					
+IPD	received data					For single connection mode (CIPMUX=0):+IPD<len> For multi connection mode(CIPMUX=1):+IPD<id>,<len>,<data>