USER MANUAL_V1

The device is a fully self-contained small form-factor, single stream, 802.11 b/g/n wifi module, which provides a wireless interface to any equipment with a Serial/GPIO/I2C/ADC interface for data transfer. It supports AP and STA wireless networking and support WIFI Direct mode. It integrates MAC, baseband processor, RF transceiver with power amplifier in hardware and all wifi protocol and configuration functionality and networking stack, in embedded firmware to make a fully self-contained 802.11 b/g/n wifi solution for a variety of applications.

Device Features

Single stream WIFI @2.4G with support for WEP security mode as well as WPA/WPA2
Fully self-contained serial-to-wireless functionality
Support IEEE802.11 b/g/n wireless standards
Support UART/PWM/ADC/I2C/GPIO data communication interface
Support work as STA/AP/AP+STA/WIFI direct mode
Support smart configuration
Support TLS/SSL and mDNS Protocal
Support PCB/External antenna option
Small size: 40.9mm*22.6mm*2.7mm

Device paremeters

Class	Item	Parameters
Wireless	Wireless standard	802.11 b/g/n
	Frequency range	2.412GHz~2.484GHz
	Transmit Power	802.11b:17dBm 802.11g:15dBm 802.11n:15dBm
	Receiver Sensitivity	802.11b<-78dBm 802.11g<-68dBm 802.11n<66dBm
	PCB antenna gain	1.5dB
Hardware	Operating voltage	3.1~3.6V
	Operating current	Max(tx):~210mA
	OPERATING temp	0~70℃
	size	40.9mm*22.6mm*2.7mm
	VIL	≤0.3VCC
	VIH	≥0.7VCC
	ESD(Human Body Model)	2kv@25℃
	ESD(Charged Device Model)	500v@25℃
software	Network type	STA/AP/STA+AP/WIFI Direct
	Security mechanisms	WEP/WPA/WAP2
	Encryption	WEP64/WEP128/TKIP/AES

	Reserved resource	
	Network protocol	IPv4,TCP/UDP/FTP/HTTP,HTTPS,TLS,mDNS

Hardware
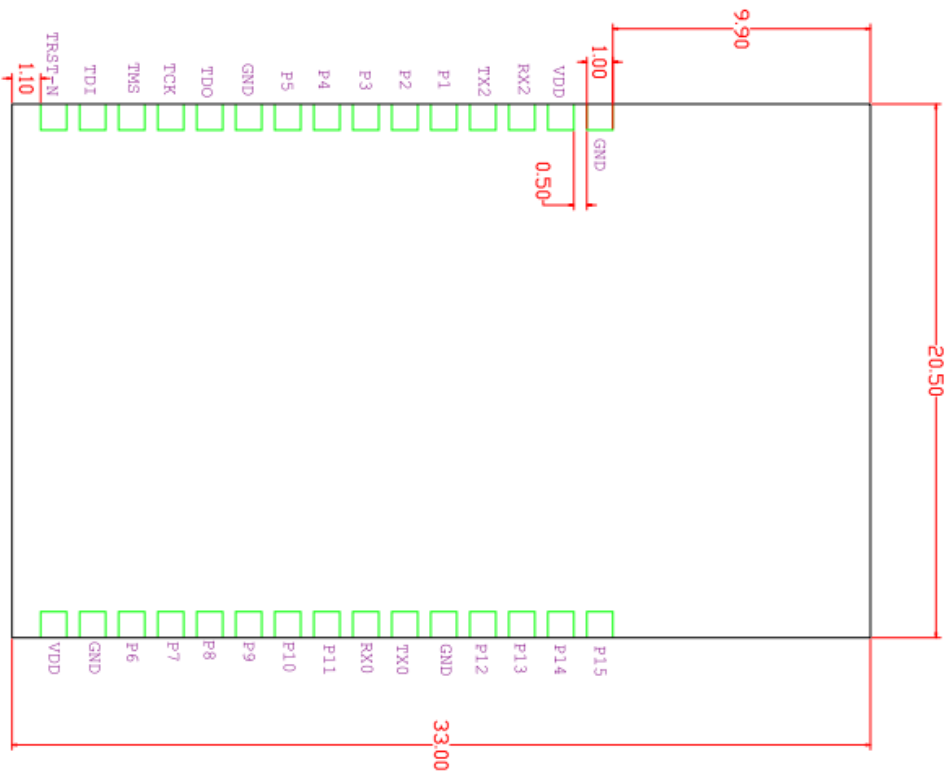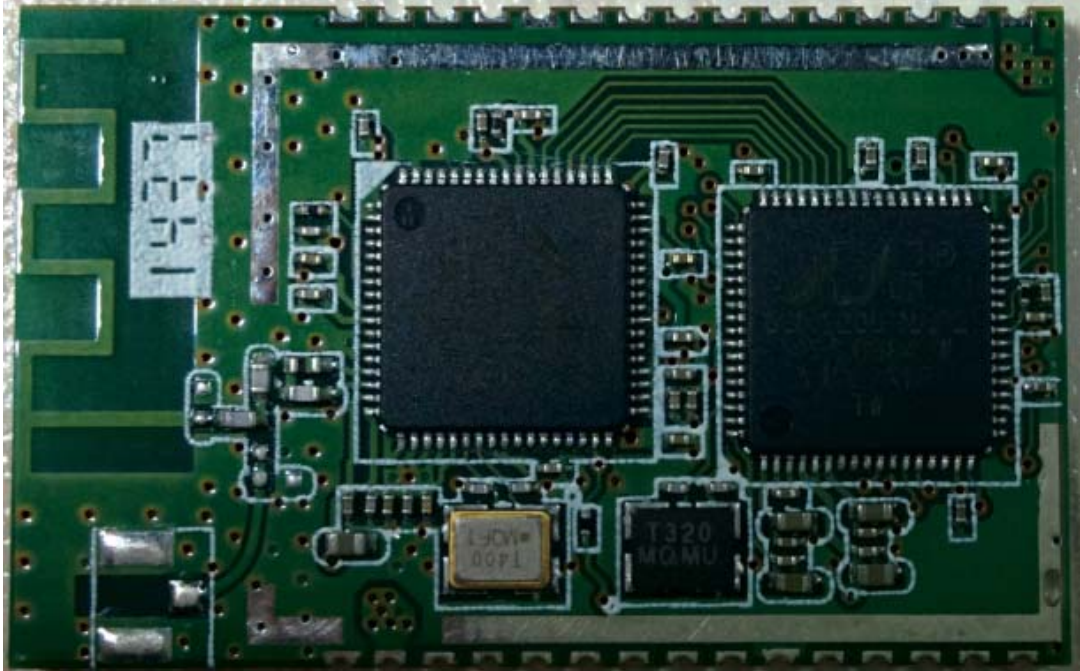
(Unit: mm)

Pin assignment

GND	GND
VDD	3.3V
RX2	GPIO79; GPT1_CH1; UART2_RX
TX2	GPIO78; GPT1_CH0; UART2_TX
P1	GPIO6; ADC0_IN1; GPT3_CH0
P2	GPIO7; ADC0_IN0; GPT3_CH1
P3	GPIO8; ADC1_IN0; GPT1_CH2; I2C1_SDA
P4	GPIO9; ADC1_IN1; GPT1_CH3; I2C1_SCL
P5	GPIO17; GPT0_CH5
GND	GND
TDO	JTAG TDO
TCK	JTAG TCK
TMS	JTAG TMS
TDI	JTAG TDI
TRST_N	JTAG TRST_N
VDD	3.3V
GND	GND
P6	GPIO27; BOOT
P7	GPIO28; GPT3_CH3
P8	GPIO29; GPT3_CH4
P9	GPIO30; GPT3_CH5
P10	GPIO44; I2C0_SDA
P11	GPIO45; I2C0_SCL
RX0	UART0_RX; GPIO75
TX0	UART0_TX; GPIO74
GND	GND
P12	GPIO63; SPI_CLK
P13	GPIO64; SPI_CS
P14	GPIO65; SPI_RX
P15	GPIO66; SPI_TX

GPIO

Each GPIO can be configured by software as an input or output

Programmable control for GPIO interrupt,

4mA current sink/source capability for 3.3v I/O supply

RTC(Real time clock)

The RTC is an independent 32-bit hardware timer, providing a continuously running counter
that can be supplied to a customer clock-calendar and timer interrupt.

GPT(General purpose timer)

A 32-bit counter with programmable clock divider and pre-scalar

Input capture for external inputs
Edge-aligned and Center-aligned PWM

ADC
The ADC module has a programmable resolution from 10 to 16 bits.
Flexible gain buffer setting of 2x, 1x, 0.5x
Highest throughput rate with 10-bit resolution is 250ksample/s

UART
UART0 for debug; UART2 used to communicate with other device.

I2C
Three speeds: standard mode(100kb/s), fast mode(400kb/s), high-speed mode(3.4Mb/s)
Clock synchronization
Master or slave I2C operation, multi-master, multi-slave operation, and arbitration support
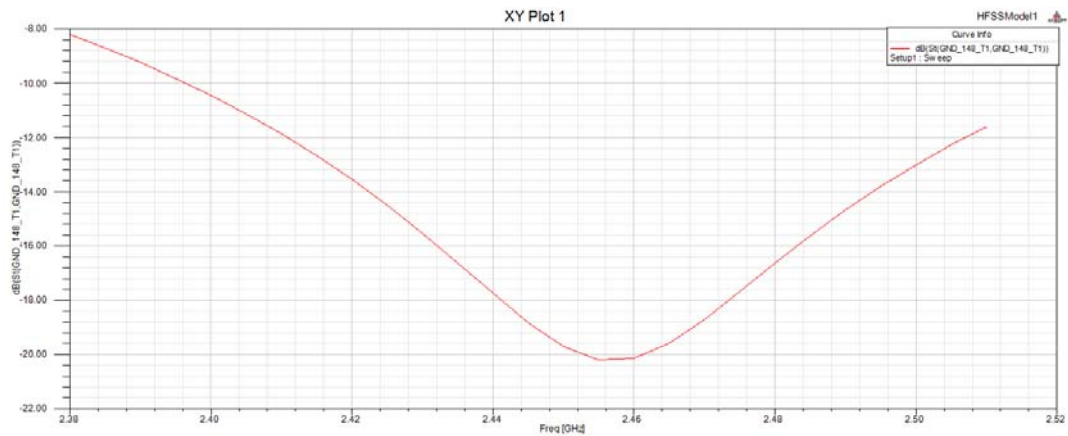
JTAG
Just for firmware burning

Antenna

When customer selects the on-board chip antenna, the antenna must away from metal or high components at least 15mm, and do not put any components or copper under the antenna, it also can not be shielded by any meal enclosure.
As the simulation result show, **the pcb antenna has 1.5dB gain and its S11<-14dB between 2.4GHz~2.5GHz**
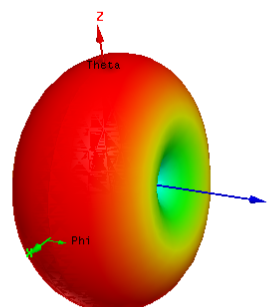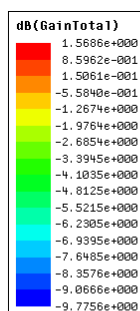
The device also supports external antenna. The parameters required are as followed:

Frequency range	2.4G~2.5G
Impedance	50Ohm
VSWR	<2
Return loss	<-10dB
Connector type	IPEX

Warning

1. This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device mustaccept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.