SHENZHEN SHUANGCHI TECHNOLOGY CO., LTD

WIFI MODULE
M5Q10-B

User Manual

# 1、WIFI MODULE Description

1、WIFI MODULE Description：

M5Q10-B is a low cost low-power dissipation of General Wi-Fi module with UART USB. It's capable to transfer UART to internet. This module support IEEE 802.11b/g/n protocol TCP／IP，SSL. It is based on Qualcomm Atheros QCA4004.Currently the module is mainly applied in the field of electrical appliances product.

2、Electrical Characteristics：（Ta=25℃）

Items	Contents				
Specification	IEEE802.11g				
Mode	OFDM				
Channel	CH1 to CH11				
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps				
DC Characteristics	Min.	Typ.	Max.	Unit	Remark
1. DC current (Average) @5V input					
1) TX throughput mode	-	TBD	TBD	mA	
2) RX throughput mode	-	TBD	TBD	mA	
TX Characteristics	Min.	Typ.	Max.	Unit	
2. Spectrum Mask @ target power					
1) at fc +/- 11MHz	-	-	-20	dBr	
2) at fc +/- 20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-40	dBr	
3 Constellation Error(EVM)@ target power					
1) 6Mbps	-	-	-5	dB	
2) 9Mbps	-	-	-8	dB	
3) 12Mbps	-	-	-10	dB	
4) 18Mbps	-	-	-13	dB	
5) 24Mbps	-	-	-16	dB	
6) 36Mbps	-	-	-19	dB	
7) 48Mbps	-	-	-22	dB	
8) 54Mbps	-	-31	-25	dB	
4 Frequency Error	-25	0	+25	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity					
1) 6Mbps (PER ≦ 10%)	-	-	-85	dBm	

Items		Contents				
Specification		IEEE802.11n HT20 @ 2.4GHz				
Mode		OFDM				
Channel		CH1 to CH11				
Data rate (MCS index)		MCS0/1/2/3/4/5/6/7				
DC Characteristics		Min.	Typ.	Max.	Unit	Remark
1. DC current (Average) @5V input		-	-	-84	dBm	

2) TX throughput mode					
3) RX throughput mode					
TX Characteristics					
2. Spectrum Mask @target power					
1) at fc +/- 11MHz					
2) at fc +/- 20MHz					
3) at fc > +/-30MHz					
3. Constellation Error(EVM)@ target power					
1) MCS0					
2) MCS1					
3) MCS2					
4) MCS3					
5) MCS4					
6) MCS5					
7) MCS6					
8) MCS7					
4. Frequency Error					
RX Characteristics					
5. Minimum Input Level Sensitivity					
1) MCS0 (PER $\leq$ 10%)					
2) MCS1 (PER $\leq$ 10%)					
3) MCS2 (PER $\leq$ 10%)					
4) MCS3 (PER $\leq$ 10%)					
5) MCS4 (PER $\leq$ 10%)					
6) MCS5 (PER $\leq$ 10%)					
7) MCS6 (PER $\leq$ 10%)					
8) MCS7 (PER $\leq$ 10%)					
6. Maximum Input Level (PER $\leq$ 10%)					
2) 9Mbps (PER $\leq$ 10%)					
3) 12Mbps (PER $\leq$ 10%)	-	-	-82	dBm	
4) 18Mbps (PER $\leq$ 10%)	-	-	-80	dBm	
5) 24Mbps (PER $\leq$ 10%)	-	-	-77	dBm	
6) 36Mbps (PER $\leq$ 10%)	-	-	-73	dBm	
7) 48Mbps (PER $\leq$ 10%)	-	-	-69	dBm	
8) 54Mbps (PER$\leq$ 10%)	-	-74	-68	dBm	
7 Maximum Input Level (PER $\leq$ 10%)	-20	-10	-	dBm	

2、Circuit Schematic
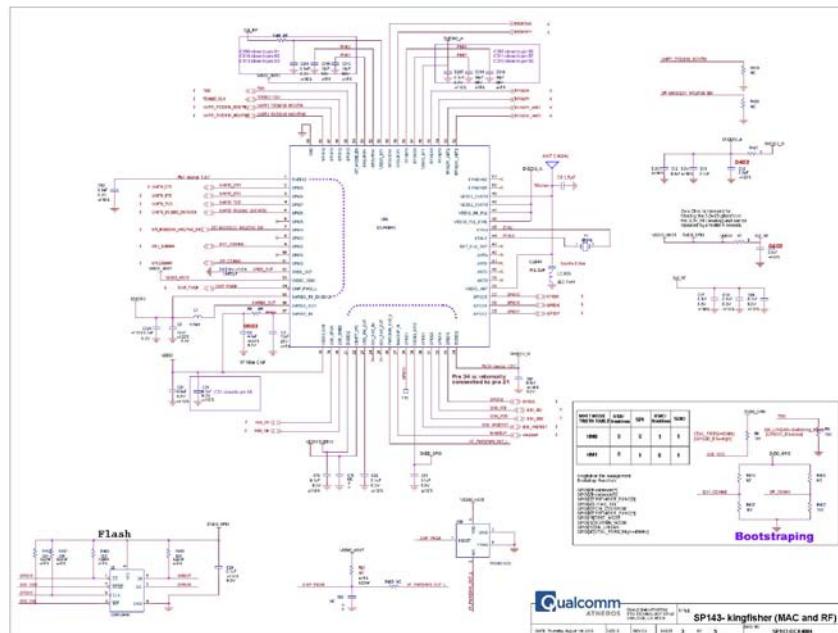
3、Circuit Block Diagram
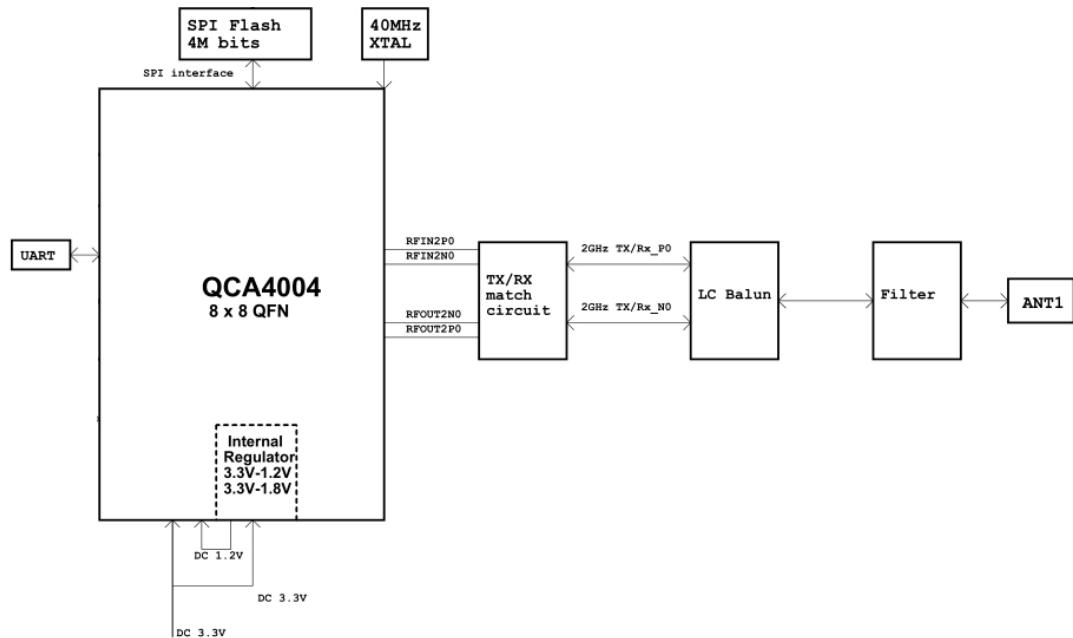
4、Interface Specifications

(Top View)

Left side pins (top to bottom):
- DVDD12 — 1
- GPIO9 — 2
- GPIO8 — 3
- GPIO7 — 4
- GPIO6 — 5
- GPIO5 — 6
- GPIO4 — 7
- GPIO3 — 8
- GPIO2 — 9
- GPIO1 — 10
- GPIO0 — 11
- SREG_OUT — 12
- VDDIO_HOST — 13
- CHIP_PWD_L — 14
- SWREG_FB_DVDD12 — 15
- SWREG_OUT — 16
- SWREG_IN — 17

Top side pins (left to right):
- 68 GPIO10
- 67 GPIO11
- 66 GPIO12
- 65 GPIO13
- 64 IOT_MODE_EN
- 63 RFOUT5P1
- 62 RFOUT5N1
- 61 VDD33_RF1
- 60 RFOUT2NT
- 59 RFOUT2P1
- 58 RFIN5P1
- 57 RFIN5N1
- 56 VDD12_RF1
- 55 RFIN2N1
- 54 RFIN2P1
- 53 RFIN2P1_ANT2
- 52 RFIN2N1_ANT2

Right side pins (top to bottom):
- 51 — XPABIAS2
- 50 — XPABIAS5
- 49 — VDD33_SYNTH
- 48 — VDD12_SYNTH
- 47 — VDD12_BB_PLL
- 46 — VDD33_PLL_XTAL
- 45 — XTALI
- 44 — XTALO
- 43 — EXT_CLK_OUT
- 42 — ANTA
- 41 — ANTB
- 40 — ANTC
- 39 — ANTD
- 38 — VDD33_ANT
- 37 — GPIO15
- 36 — GPIO16
- 35 — GPIO17

Bottom side pins (left to right):
- 18 VDD33_USB
- 19 USB_DPOS
- 20 USB_DNEG
- 21 DVDD12
- 22 VBATT_3P3
- 23 VDD_1P8_OUT
- 24 32K_OSC_IN
- 25 32K_OSC_OUT
- 26 PWRDWN_OUT_L
- 27 WAKEUP_L
- 28 GPIO31
- 29 VDDIO_GPIO
- 30 GPIO21
- 31 GPIO20
- 32 GPIO19
- 33 GPIO18
- 34 DVDD12

## 5、Module Dimensioned Drawing
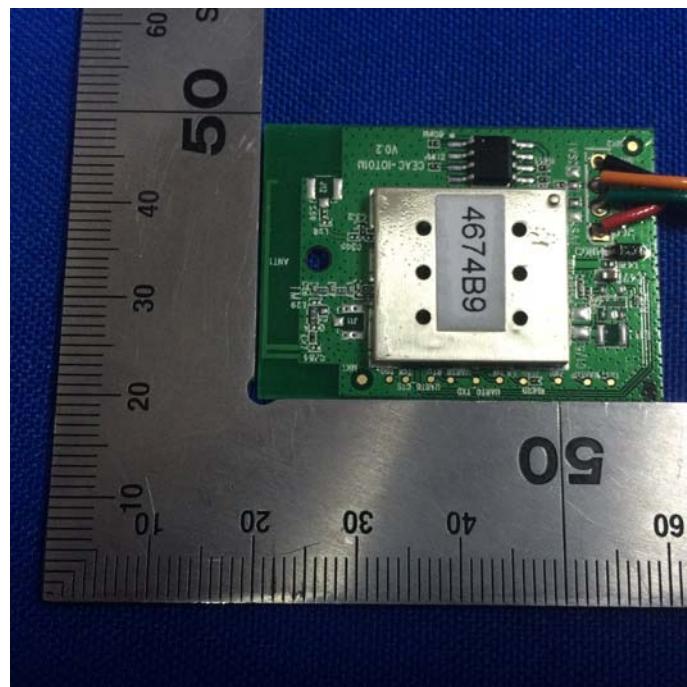
Front View

Back View

6
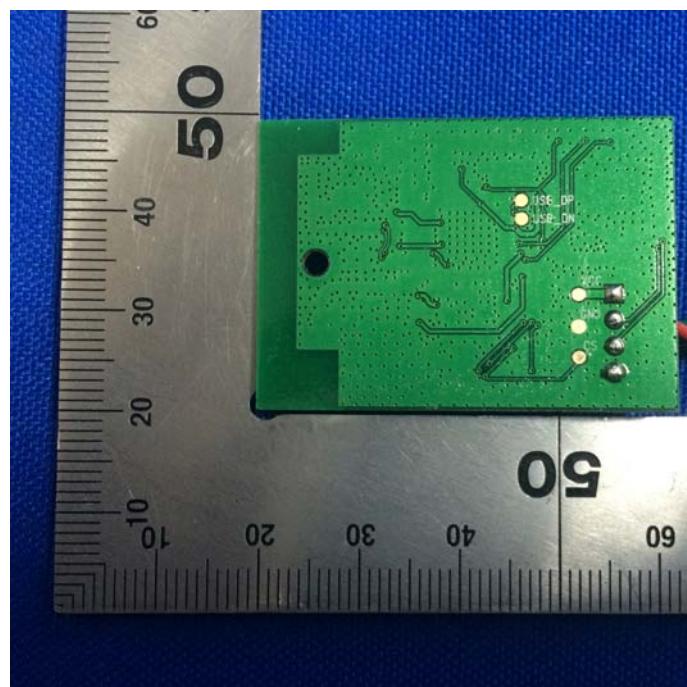
6、Circuit Schematic Description

1：Connect 3.3 V power supply to WIFI module

2: 4M bits Flash is used to store the TCP/IP protocol stack and functional code.

3: Rx/Tx circuits used for connect with a third party, make the data interaction.

4: Uart interface used for development and debugging

5: QCA4004's function is connect Rx/Tx with terminal transmits and receive data, and through WIFI Transmit the data to a server or through WIFI receive user's control behavior and executed, make the terminal which connected WIFI to realize the corresponding function.

7、PCB Layout
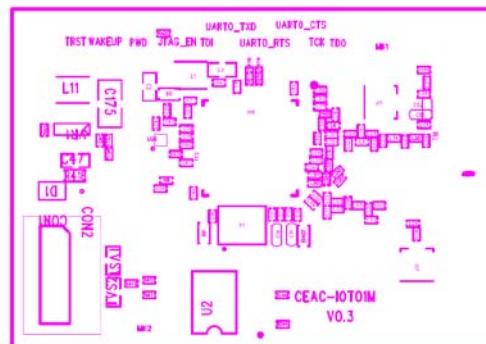
Top Overlay
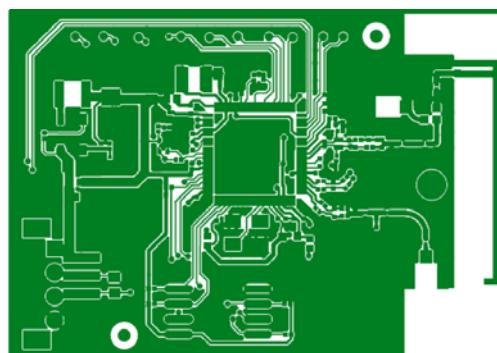
Top Circuit Layer
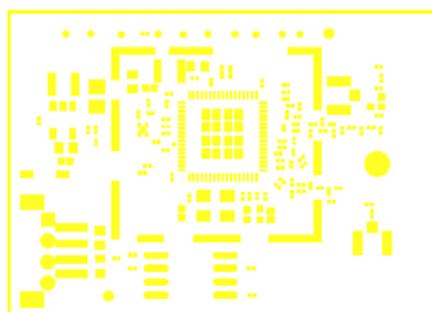
Top Paste
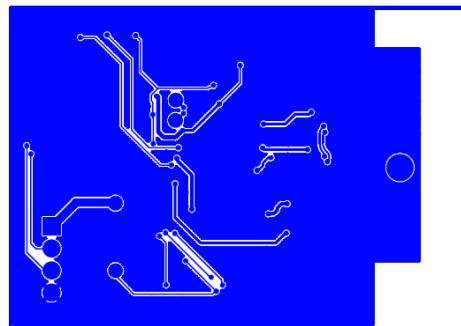
Bottom Circuit Layer
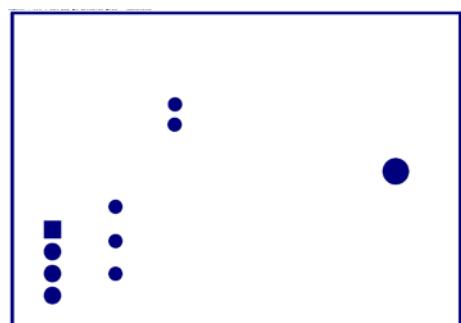
Bottom Paste
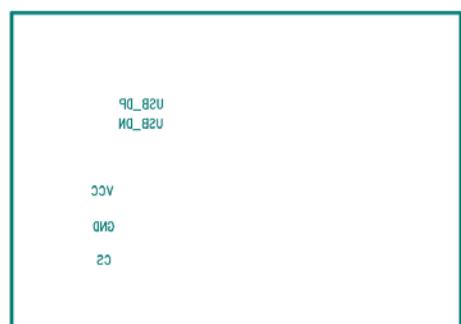
Bottom Overlay

8、Antenna SPEC

Antenna Type: PCB Antenna
Antenna Gain: 1.8dBi
Manufacturer: Shenzhen Shuangchi CO., Ltd.

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 must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement
The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device, for example, USB dongle like transmitters is forbidden.

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2ADVXM5Q10-B Or Contains FCC ID: 2ADVXM5Q10-B"

When the module is installed inside another device, the user manual of this device must contain below warning statements;
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.
(2) This device must accept 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.
The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product