WMIOT604 Specification

V1.0.0

Document History

Version	Completion Date	Revision Record	Author	Auditor	Approver
V1.0.0	2018-09-20	Initial release	Linda	Ray	

Content

1   Summary

WMIOT604 is a Wi-Fi reference design module based on embedded Wi-Fi SoC chip (W600), which has stamp hole interface, small size and is easy to develop. The module can be easily applied to smart appliances, smart home, health care, smart toy, and wireless audio & video, industrial and other IoT fields. This specification provides technical standards for the physical properties, technical specifications, communication protocols, product functions, performance, stability, environmental adaptability, and security of the module.

2   Features

2.1   Interface

- ➢ stamp hole interface, spacing 1.5mmm
- ➢ Integrated 2 UART interface, support RTS/CTS, baud rate: 1200bps~2Mbps
- ➢ Integrated one high speed SPI controller, operating frequency: 0~50MHz
- ➢ Integrated PWM controller, max output/input frequency 20MHz
- ➢ Integrated I²C controller
- ➢ Integrated I²S controller
- ➢ Integrated GPIO controller

2.2   Wi-Fi

- ➢ Support GB15629.11-2006、IEEE802.11 b/g/e/i/d/k/r/s/w/n
- ➢ Support frequency range: 2.4~2.4835 GHz
- ➢ Support Wi-Fi WMM/WMM-PS/WPA/WPA2/WPS
- ➢ Support Wi-Fi Direct
- ➢ Support EDCA channel access
- ➢ Support 20/40M bandwidth
- ➢ Support STBC, Greenfield, Short-GI and reverse transmission
- ➢ Support RIFS interframe space
- ➢ Support AMPDU、AMSDU
- ➢ Support IEEE802.11n MCS 0~7, MCS32, transmission rate is up to 150Mbps
- ➢ Support Short Preamble in 2/5.5/11Mbps
- ➢ Support HT-immediate Compressed Block Ack, Normal Ack, No Ack
- ➢ Support CTS to self
- ➢ Support STA/AP/AP+STA function
- ➢ Support up to 32 multicast networks with different encryption methods in BSS

➢ As AP in BSS, the sum of sites and groups is up to 32 and in IBSS is up to 16

2.3 Others

➢ Programmable GPIO control signals

➢ Support AT+ instruction protocol(UART interface) base on ASCII

➢ Support network protocol: TCP/UDP/ICMP/DHCP/DNS/HTTP

➢ Support DHCP Server, DNS Server

➢ Support extensible WEB server

➢ Support firmware on line update

3 Specification

Table 3-1 Product Specification List

	item	parameter	comment
Wi-Fi	Support Wi-Fi protocol	IEEE802.11b/g/n	
	RF system impedance	50Ω	
	SWR	<-10dB	
	Frequency range	2.4~2.4835 GHz	
	Reception sensitivity	20MHz MCS7@-71dBm； 40MHz MCS7@-68dBm； 54Mbps@-73dBm； 11Mbps@-87dBm； 1Mbps@-95dBm；	
	Data rate in PHY	802.11n MCS 0~7 150Mbps	
	Modulation mode	DSSS, OFDM, DBPSK, DQPSK, CCK, QAM16/64	
	Output power	IEEE802.11b, DSSS 1Mbps, POUT = +17dBm； IEEE802.11g, OFDM 54Mbps, POUT = +12dBm； IEEE802.11n, OFDM MCS7, POUT = +10dBm；	
Hardware	Interface	UART, SPI, GPIO, PWM, I²C, I²S	
	Data rate	2Mbps@UART (Max) 50Mbps@SPI (Max)	
	Working voltage	3.0V – 3.6V	
	Working current	20mA~110mA	
	Working humidity	5%~90%（no condensation）	
	Storage temperature	-40~+125 ℃	
	Working temperature	-40~+85℃	

	Size	15.0mm×20.0mm	
Software	Network type	STA/AP/AP+STA/Wi-Fi Direct	
	Authentication	WEP/WPA-PSK/WPA2-PSK	
	Encryption	WEP64/WEP128/TKIP/CCMP(AES)	
	WPS	WPS	
	Energy conservation	PS-POLL/Standby	
	Network protocol	TCP/UDP/ARP/ICMP/DHCP/DNS/HTTP	
	Interface protocol	AT+ Command	

4   Interface Signals

The layout and dimension information of module pins are shown in Figure 5-1.
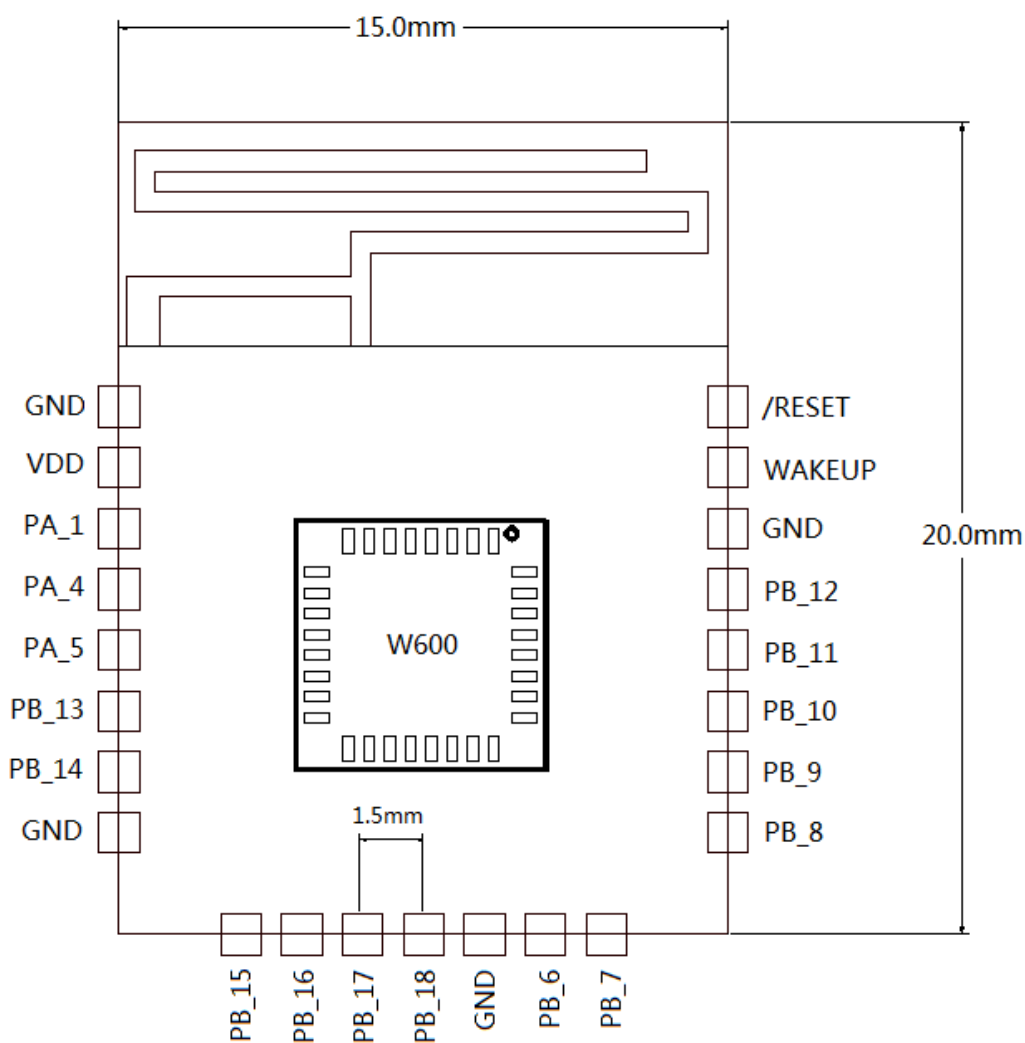

Figure 5-1 WMIOT604

The pin description is shown in Table 5-1:

Table 5-1 **Pin Description**

Pin No.	Pin Name	Type	Default function description	Multi-Function
1	GND	P	GND	
2	VDD	P	3.3V Power	
3	PA_1	I/O	Reserved	SIM_DATA、PWM_2、SPI(M/S)_CK、GPIOPA_1
4	PA_4	I/O	UART0_TX	PWM_5、SPI(M/S)_DO、I²S_M_SCL、GPIOPA_4
5	PA_5	I/O	UART0_RX	PWM_1、SPI(M/S)_DI、I²S_M_EXTCLK、GPIOPA_5
6	PB_13	I/O	PWM_2	I²C_SCL、SDIO_CMD、GPIOPB_13
7	PB_14	I/O	H_SPI_INT	PWM_5、I²C_DAT、I²S_S_SDA、GPIOPB_14
8	GND	P	GND	
9	PB_15	I/O	H_SPI_CS	PWM_4、SPI(M/S)_CS、I²S_S_SCL、GPIOPB_15
10	PB_16	I/O	H_SPI_CK	PWM_3、SPI(M/S)_CK、I²S_S_RL、GPIOPB_16
11	PB_17	I/O	H_SPI_DI	PWM_2、SPI(M/S)_DI、UART1_RX、GPIOPB_17
12	PB_18	I/O	H_SPI_DO	PWM_1、SPI(M/S)_DO、UART1_TX、GPIOPB_18
13	GND	P	GND	
14	PB_6	I/O	Reserved	SWDAT、UART0_RX、PWM_4、SIM_CLK、GPIOPB_6
15	PB_7	I/O	Reserved	SWCK、UART0_TX、SDIO_CMD、SPI(M/S)_CS、GPIOPB_7
16	PB_8	I/O	PWM_5	H_SPI_CK、SDIO_CK、I²S_M_SCL、GPIOPB_8
17	PB_9	I/O	UART1_CTS	H_SPI_INT、SDIO_DAT0、I²S_M_SDA、GPIOPB_9
18	PB_10	I/O	UART1_RTS	H_SPI_CS、SDIO_DAT1、I²S_M_RL、GPIOPB_10
19	PB_11	I/O	UART1_RX	H_SPI_DI、SDIO_DAT2、I²C_SCL、GPIOPB_11
20	PB_12	I/O	UART1_TX	H_SPI_DO、SDIO_DAT3、I²C_DAT、GPIOPB_12
21	GND	P	GND	
22	WAKEUP	I	WAKEUP	High Level Wake up
23	/RESET	I	RESET	Low Level Reset

5 Environmental adaptability

5.1 Low temperature working test

➢ Reference standard: GB/T 2423.1-2001;

➢ Under the ambient temperature is -40±1℃, the sample of the module can continuously work for 72 hours, and all the functions and functions are well maintained after the test.

5.2　Low temperature storage test

➢ Reference standard: GB/T 2423.1-2001

➢ Under the ambient temperature of -40℃, the sample of the module is placed for 72 hours, and all the functions and functions are well maintained after the test.

5.3　High temperature working test

➢ Reference standard: GB/T 2423.2-2001

➢ Under the ambient temperature is 85±1℃, the sample of the module can continuously work for 72 hours, and all the functions and functions are well maintained after the test.

5.4　High temperature storage test

➢ Reference standard: GB/T 2423.2-2001

➢ Under the ambient temperature of 125℃, the sample of the module is placed for 72 hours, and all the functions and functions are well maintained after the test.

5.5　Vibration test

➢ Reference standard: GB/T 4798.5-2007

➢ Random vibration, vibration direction: X, Y and Z axis, displacement and frequency refer to 5M3 level in GB/T 4798.5-2007, vibration time: each axis 60min. In detail, please refer to 5M3 level in GB/T 4798.5-2007.

5.6　Environment protection certificate

➢ Conform to the RoHS IEC62321-1:2013 standard

6　Reference design

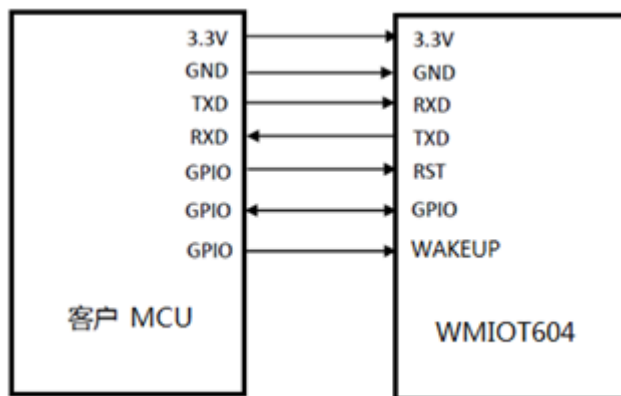The reference design is shown in Figure 6-1:

Figure 7-1 WMIOT604 reference design