1. Overview

The 01WIMRA is a highly integrated single chip Module which has built in a 2x2 dual-band wireless LAN radio and Bluetooth radio.It supports IEEE 802.11a/b/g/n/ac standard and provides the highest PHY rate up to 867Mbps,offering feature-rich wireless connectivity and reliable throughput from an extended distance.It includes Bluetooth EDR and LE radio which complies with Bluetooth v2.1+EDR,v4.2,Low Energy, and v5.1,

2. Features

2.1 Platform

- Embedded high-performance 32-bit RISC microprocessor
- Integrate high efficiency switching regulator
- 40MHz crystal clock support with low power operation in sleep mode
- Best-in-class active and idle power consumption performance
- Fully Compliance with USB v2.0 specification
- Internal thermal sensor for temperature compensation and thermal protection.
- Self calibration.
- Advanced FDD/TDD mode Wi-Fi/Bluetooth coexistence scheme.
- Wi-Fi and Bluetooth over USB.

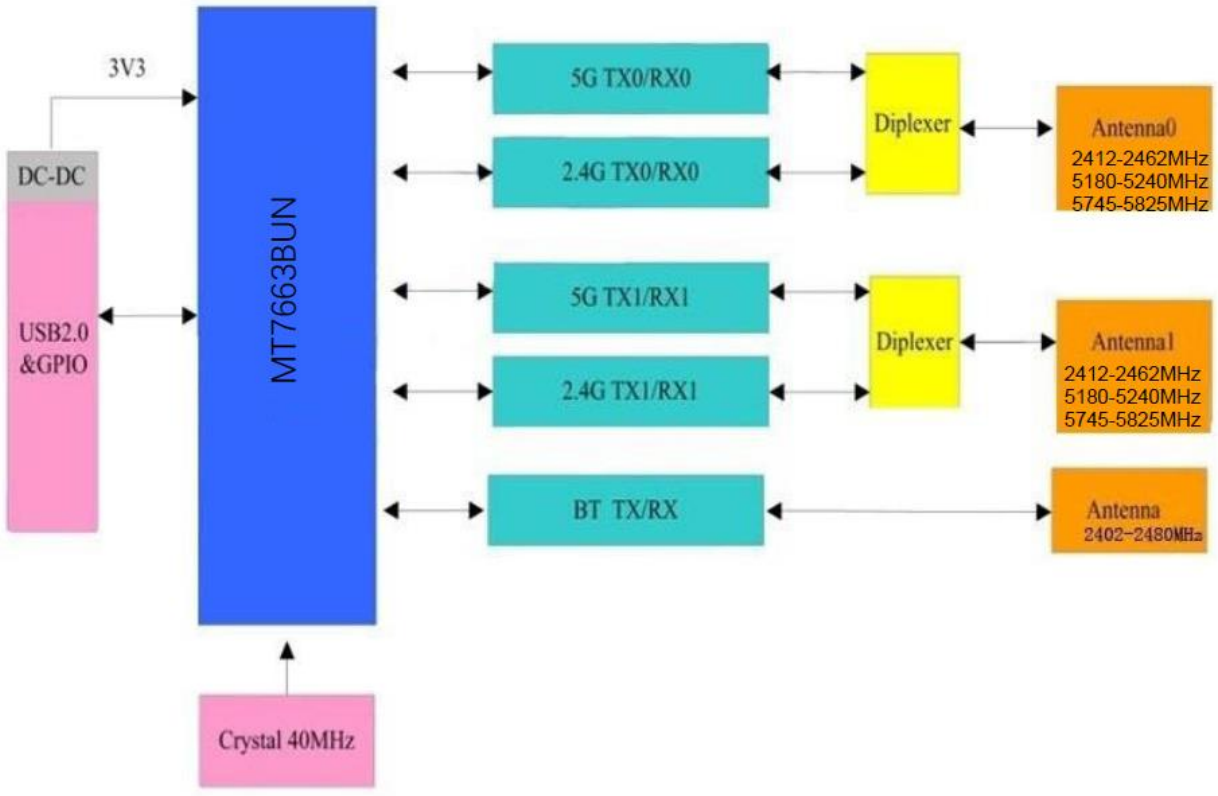
2.2 WLAN

- IEEE 802.11a/b/g/n11ac compliant
- Support 20/40MHz bandwidth in 2.4GHz band and 20/40/80MHz in 5GHz band, and.
- Dual-band 2T2R mode with data rate up to 867Mbps
- Greenfield,mixed mode,legacy modes support
- Integrated LNA,PA,and T/R switch
- Optional external LNA and PA support.
- IEEE 802.11d/e/h/i/j/k/r/v/w support
- Security support for WFA WPA/WPA2 /WPA3personal, WPS2.0
- Support MU-MIMO RX
- QoS support of WFA WMM, WMM PS

2.3 Bluetooth

- Bluetooth 5 dual mode for 2x the speed
- Bluetooth specification v2.1+EDR
- Bluetooth v4.2 Low Energy(LE)
- Standard HCI interface over USB super-speed,high-speed and full-speed mode
- Best-in-class BT/Wi-Fi coexistence performance
- Scatternet support:Up to 7 piconets simultaneously with background inquiry/page scan
- Up to 7 simulaneous active ACL links
- Support SCO and SCO link with re-transmission
- Support wide-band speech
- Integrated high efficiency PA and TSSI

3. Block Diavgram



4. General Specification

Model	01WIMRA
Product Name	WLAN 11a/b/g/n/ac USB2.0　2T2R + Bluetooth 5.1module
Major Chipset	CDW-U57663U-01
Standard	802.11a/b/g/n/ac
Modulation Method	BPSK/ QPSK/ 16-QAM/ 64-QAM/256-QAM
Frequency Band	2.4GHz and 5GHz ISM Band
WiFi Interface	USB2.0
BT Interface	USB2.0
Operating Temperature	-20° C ~ 70° C
Storage Temperature	-40° C ~ 85°C
Humidity	5% to 90% maximum
Dimension	21.2x18.0x2.6mm (LxWxH)±0.25mm

5. Electrical Characteristics

5.1 WiFi Section:

2.4GHz RF Specification

Feature	**Description**
WLAN Standard	IEEE 802.11a/b/g/n/ac WiFi compliant
Frequency Range	2.412 GHz ~ 2.462 GHz (2.4 GHz ISM Band)
Number of Channels	2.4GHz：Ch1 ~ Ch11
Modulation	802.11b : DQPSK, DBPSK, CCK 802.11 g/n：OFDM /64-QAM,16-QAM, QPSK, BPSK
Output Power	802.11b /11Mbps : 18.0dBm ± 1dB @ EVM ≤ -15dB
	802.11g /54Mbps : 18.0 dBm ± 1dB @ EVM ≤ -28dB
	802.11n HT20 /MCS7 : 18.0 dBm ± 1dB @ EVM ≤ -30dB
	802.11n HT40 /MCS7 : 18.0 dBm ± 1dB @ EVM ≤ -30dB
Receive Sensitivity 11b,20MHz　@8%PER	- 1Mbps,PER @ -98 dBm, typical
	- 11Mbps,PER @ -89dBm, typical
Receive Sensitivity	- 6Mbps,PER @ -95dBm, typical

	- 54Mbps,PER @ -75 dBm, typical
Receive Sensitivity 11n,20MHz @10%PER	- MCS=0,PER @ -95 dBm, typical
	- MCS=7,PER @ -74 dBm, typical
Receive Sensitivity 11n,40MHz @10%PER	- MCS=0,PER @ -91dBm, typical
	- MCS=7,PER @ -72 dBm, typical

5GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11a/n/ac 2x2, WiFi compliant
Frequency Range	5.180 GHz ~ 5.240 GHz,5.745 GHz ~ 5.825 GHz (5.0 GHz ISM Band)
Number of Channels	5.0GHz：Please see the table
Modulation	802.11a：OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11n：OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11ac : OFDM /256-QAMs
Output Power	802.11a 54Mbps: 18.0 dBm ± 1dB @ EVM ≤ -25dB
	802.11n HT20 /MCS7 : 18.0 dBm ± 1dB @ EVM ≤ -28dB
	802.11n HT40 /MCS7 : 18.0 dBm ± 1dB @ EVM ≤ -28dB
	802.11ac VHT20 /MCS8 : 18.0 dBm ± 1dB @ EVM ≤ -30dB
	802.11ac VHT40 /MCS9 : 18.0 dBm ± 1dB @ EVM ≤ -32dB
	802.11ac VHT80 /MCS9 : 18.0 dBm ± 1dB @ EVM ≤ -32dB
Receive Sensitivity 11a,20MHz @10%PER	- 6Mbps ,PER @ -92 dBm, typical
	- 54Mbps,PER @ -75 dBm, typical
Receive Sensitivity 11n,20MHz @10%PER	- MCS=0,PER @ -92 dBm, typical
	- MCS=7,PER @ -73 dBm, typical
Receive Sensitivity 11n,40MHz @10%PER	- MCS=0,PER @ -88 dBm, typical
	- MCS=7,PER @ -71 dBm, typical
Receive Sensitivity 11ac,20MHz @10%PER	- MCS=0, NSS1 PER @ -90 dBm, typical
	- MCS=8, NSS1 PER @ -69 dBm, typical
Receive Sensitivity 11ac,40MHz @10%PER	- MCS=0, NSS1 PER @ -87 dBm, typical
	- MCS=9, NSS1 PER @ -65 dBm, typical
Receive Sensitivity 11ac,80MHz @10%PER	- MCS=0, NSS1 PER @ -84 dBm, typical
	- MCS=9, NSS1 PER @ -62 dBm, typical

5.2 Bluetooth Section:

Feature	Description		
General Specification			
Bluetooth Standard	Bluetooth V2.1+EDR,V4.2,V5.1		
Host Interface	USB2.0		
Frequency Band	2402 MHz ~ 2480 MHz		
Number of Channels	79 channels		
Modulation	FHSS, GFSK, DPSK, DQPSK		
RF Specification			
	Min	**Typical**	**Max**
Output Power		3 dBm ± 1 dB	
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-86 dBm	
Sensitivity @ BER=0.01% for π/4-DQPSK (2Mbps)		-86 dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-80 dBm	
Maximum Input Level	GFSK (1Mbps):-20dBm		
	π/4-DQPSK (2Mbps) :-20dBm		
	8DPSK (3Mbps) :-20dBm		

6. Electrical Characteristics

6.1 WLAN current consumption

Description	TYP	Unit
Sleep mode, radio off	1.23	mA
2.4GHz RX Power saving, DTIM=1	2.39	mA
2.4GHz RX Active, HT20, MCS15	132	mA
2.4GHz TX CCK, 11Mbps @ 21dBm	417	mA
2.4GHz TX HT20, MCS15 @ 17.5dBm	596	mA
2.4GHz TX HT20, MCS8 @ 18dBm	652	mA
5GHz VHT80 RX Listen, 2RX	157	mA
5GHz RX Active, VHT80, MCS9, Nss=2	236	mA
5GHz TX VHT80, MCS9, Nss=2 @ 15dBm	717	mA
5GHz TX VHT80, MCS0, Nss=2 @ 17dBm	775	mA

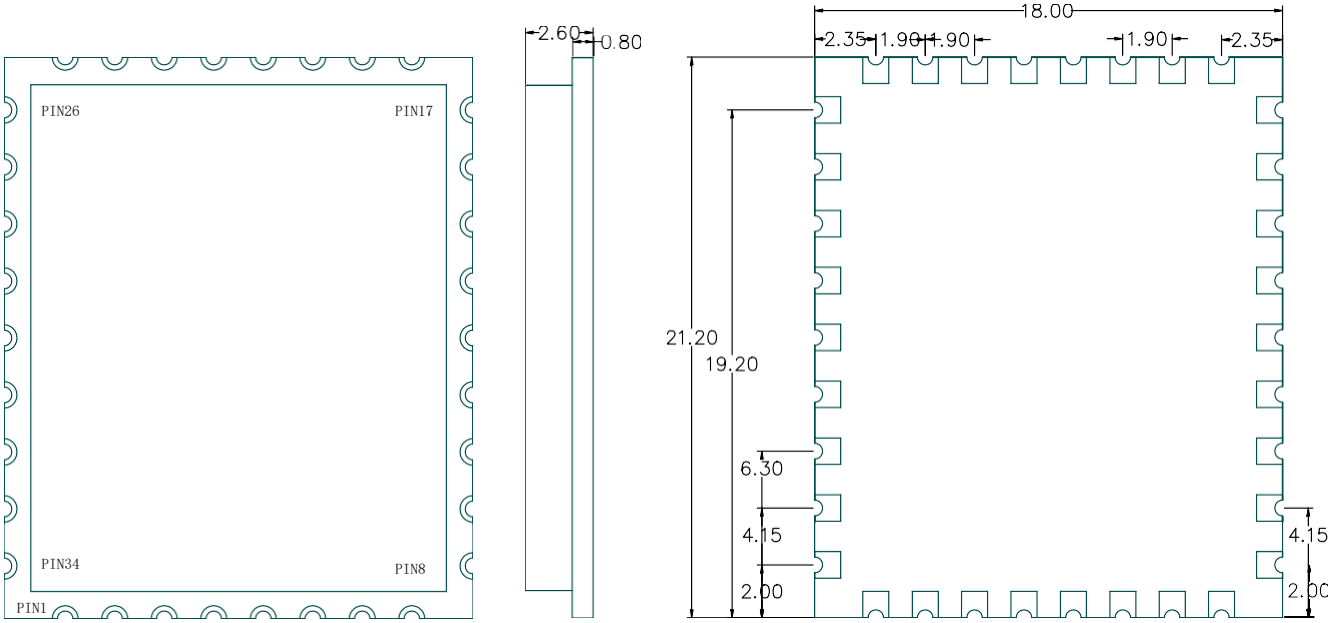
6.2 Bluetooth current consumption

Description	TYP	Unit
Sleep mode, radio off	1.73	mA
Bluetooth TX @ 15dBm	86.5	mA
Bluetooth RX	29.4	mA
Bluetooth SCO connection, HV3 packets+sniff mode+scan (Page scan internal=1.28sec,inquiry scan interval=2.56s,sniff interval=500ms)	3.2	mA
Bluetooth page scan+inquiry scan (Page scan interval=1.28s,inquiry scan interval=2.56s)	2.14	mA
Bluetooth page scan (Page scan interval=1.28s)	1.92	mA

7. Supplier

Supplier list	
Name of Material	Supplier brand
Main chip	MTK
Crystal	FK/TKD /muRata/TXC/JWT/ HOSONIC/ Siward
PCB	Bomin/Benchuang/E-Tech
Diplexer	ACX/Walsin/GLEAD/TDK/ Sunlord
Inductor	Sunlord/CHILISIN/SAMWHA/TDK
Capacitance	SAMSUNG /EYANG/ WALSIN/ muRata/TAIYO/ Darfon
Resistor	UniOhm /YAGEO/ WALSIN
DC-DC	RYCHIP/ZILLTEK

8. Pin Description and PCB size



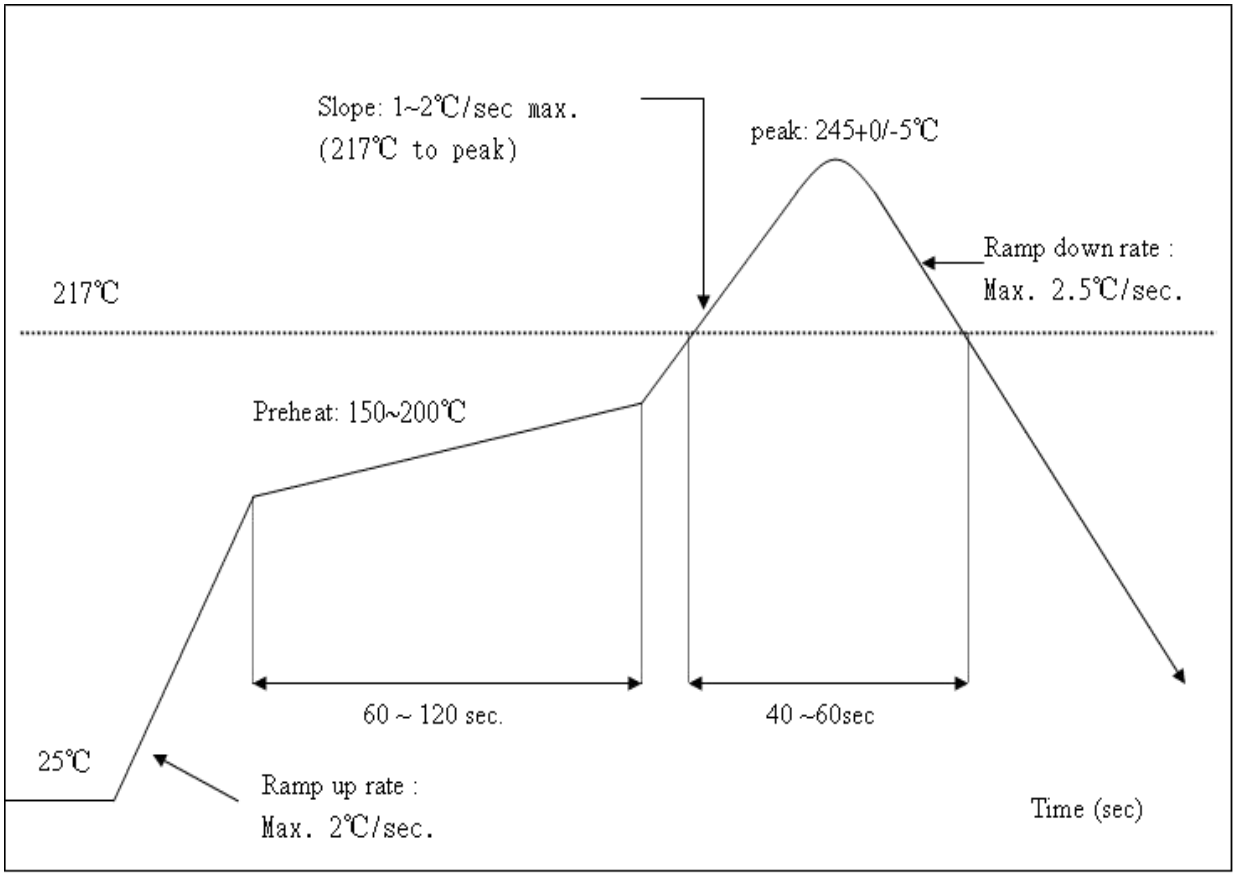
NO.	Symbol	Description
1	WOW	Wake up system via wifi,low active
2	RESET	System reset CDW-U57663U-01, lowactive
3	GND	Ground connections
4	USB_DP	USB data+
5	USB_DM	USB data-
6	+3.3V	Power supply 3.3V(1500mA)
7-15	GND	Ground connections
16\22\27	NC	
17-18	GND	Ground connections
19	WIFI1_RF	WIFI1_RF Out put
20\21\23\25 \26\28	GND	Ground connections
24	WIFI0_RF	WIFI0_RF Out put
29	BT_RF	BT_RF Out put
30-33	GND	Ground connections
34	WoBT	Wake up system via BT,low active

9. Recommended Reflow Profile

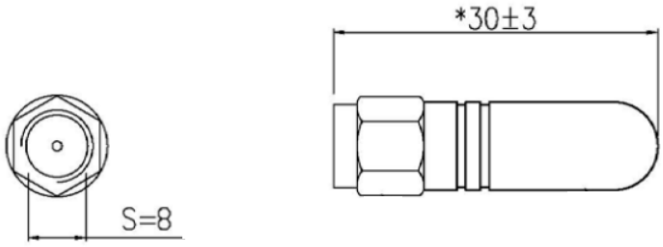
ReferredIPC/JEDEC standard.

Peak Temperature: <250°C

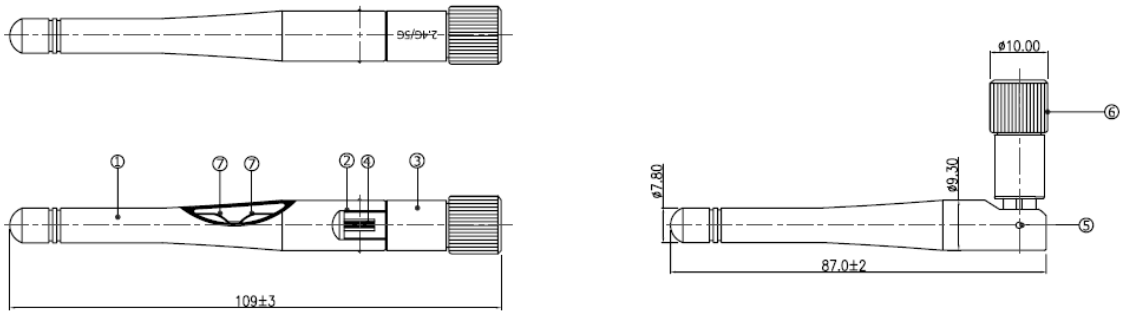
Number of Times: 2 times



The antenna type used in the product is external antenna, Antenna gain of all antennas is 2.0dBi.
Bluetooth Antenna：



Wi-Fi Antenna：



No.	PART NAME	DESCRIPTION	Q'TY	REMARK
7	GROUND TUBE	BRASS	2	
6	CONNECTOR	SMA STRIAGHT PLUG/REVERSE	1	
5	RIVET	POM,COLOR:BLACK	2	
4	CABLE	RG-178 CABLE,50Ω	1	
3	BOTTOM BASE	PC+PBT,COLOR:BLACK	1	
2	UPPER BASE	PC,COLOR:BLACK	1	
1	ANTENNA CAP	TPE,COLOR:BLACK	1	

The 01WIMRA can only designed to be used in large-screen TVS and other products, not directly connected to a notebook/laptop.

Installation diagram

ESD CAUTION

The 01WIMRA is ESD (electrostatic discharge) sensitive device and may be damaged with ESD or spike voltage. Although 01WIMRA is with built-in ESD protection circuitry, please handle with care to avoid the permanent malfunction or the performance degradation.

FCC STATEMENT

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 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/ TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.