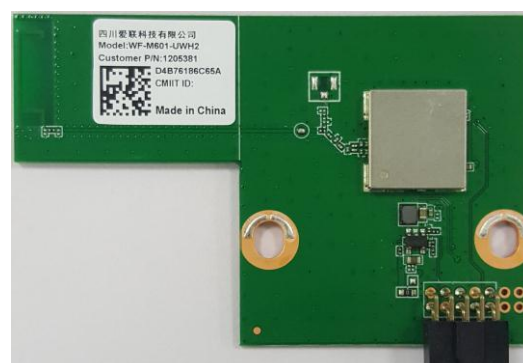


WF-M601-UWH2

Wireless Module

Features:

- **Supported WLAN Standards**
 - IEEE Std. 802.11b
 - IEEE Std. 802.11g
 - IEEE Std. 802.11n
- **Chip Solution**
 - MTK MT7601UN/B
- **Size**
 - 45.0mm*70.0mm*7.3mm



Model Overview:

Module Name	Installation	Supported Standards	Data Rate (max)	Band	Antenna Interface	Note
WF-M601-UWH2	Plugin	IEEE 802.11b/g/n	150Mbps	2.4 GHz	PCB ANT	5V power supply

Sichuan AI-Link Technology Co.,Ltd

Add: Anzhou, Industrial park, Mianyang, Sichuan

Web: <http://www.changhong.com>

Tel: +86-13881190925

Feedback of customer's Confirmation

We accept the specification after Confirmed

Customer name	Customer signature	Confirmation Date

Please feed back this paper and first paper after your signature by the address,thanks!

ADD: Anzhou,Industrial park,Mianyang,Sichuan

Factory: Sichuan AI-Link Technology Co.,Ltd.

Approved	Checked	Designed	Product	WiFi Module
	Ding Shuang Peng	Gao Tao	Model	WF-M601-UWH2
			Date	2018-11-30

Record of Modification

No	Date of modification	Main content of modification	Reason of modification	Serial number of modification	Confirm
V1.0	20181130	Initial Release			Gao Tao

1. Brief description:

WIFI MODULE WF-M601-UWH2 is based on MTK MT7601UN/B complied with IEEE 802.11b/g/n standard from 2.4GHz-2.5GHz.Supported for 150Mbps high speed wireless network connection.

2. Block diagram:

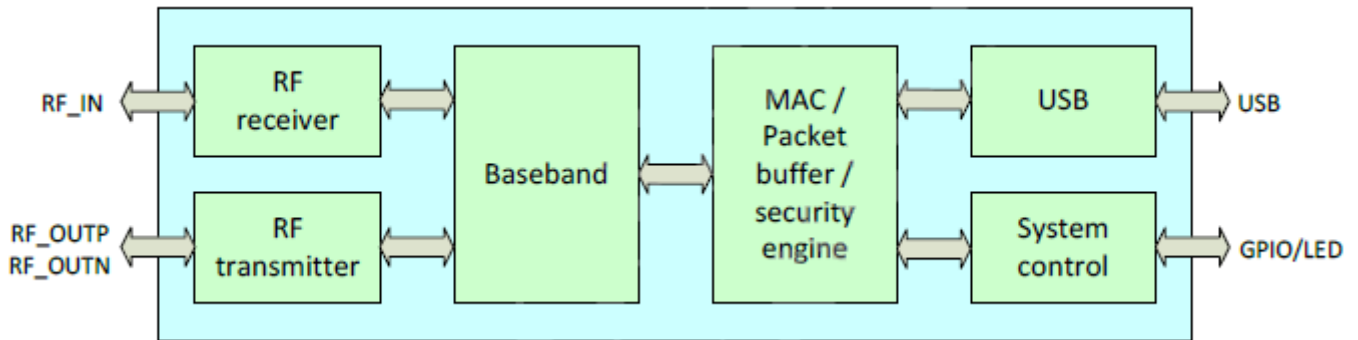
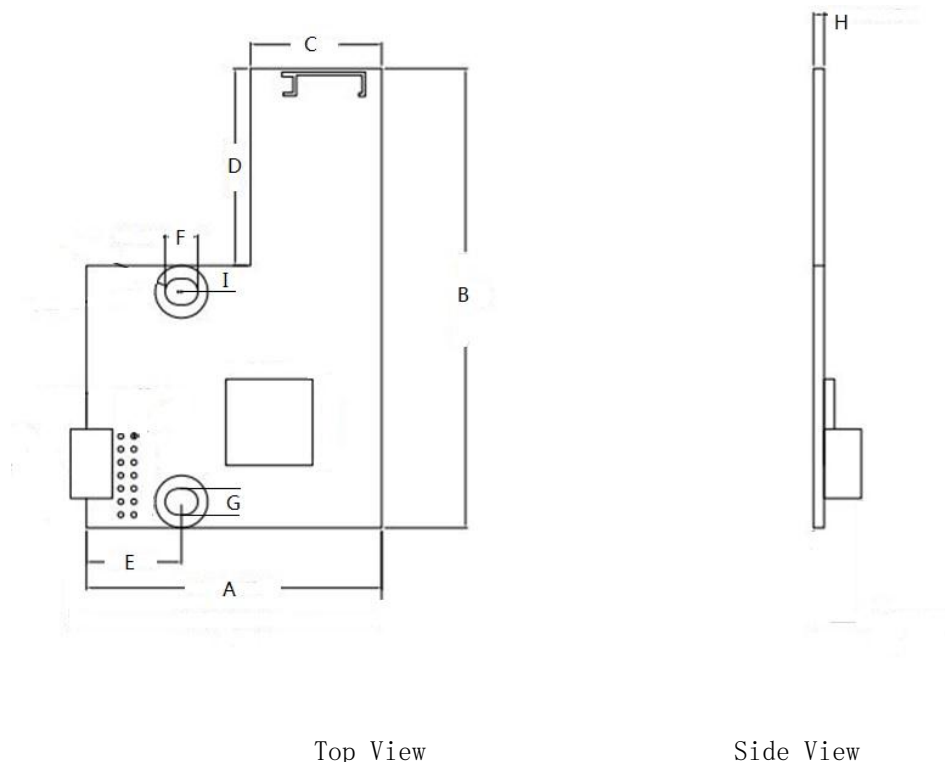


Figure 2.1 Block Diagram of MT7601

3. Package outline and Mounting:(units:mm)



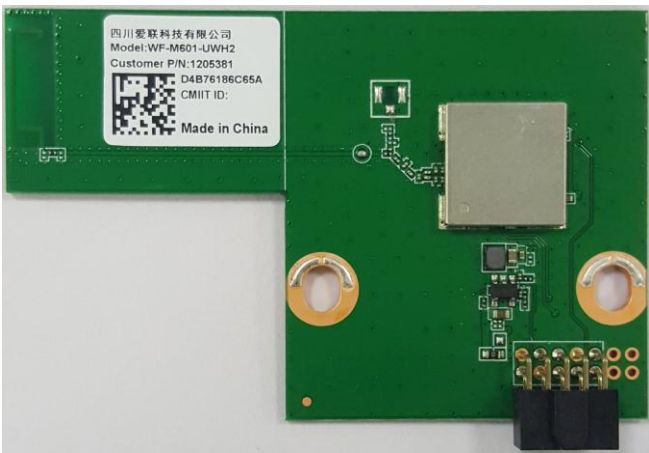
NOTE:General tolerance $\pm 0.3\text{mm}$ unless otherwise stated

4. Pin Definition:

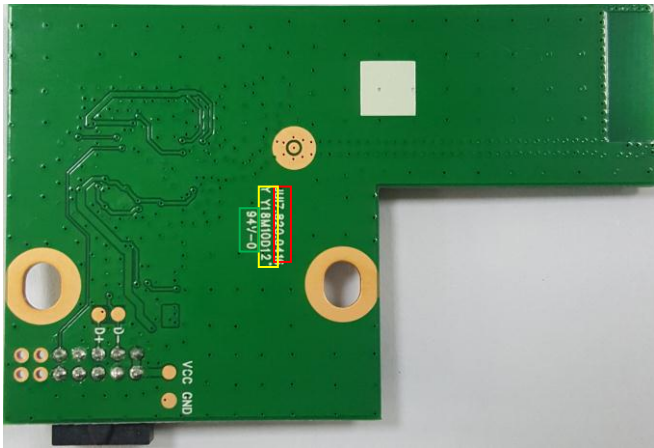
number	definition	number	definition
1	VCC	6	DP
2	VCC	7	WOW
3	GND	8	GND
4	DM	9	REG_ON
5	3D_SYNC	10	RST

Pin Definition

5. Product Pictures



TOP VIEW



BOTTOM VIEW

Silk Introduction:

- 1.The characters is the version of PCB in the red box;
- 2.The characters is PCB flame retardant in the green box;
- 3.The characters is the manufacture date of PCB in the yellow box;

6. Key Materials

Item	Category	MPN	Description	MFR	Note
1	IC	MT7601UN/B	40-QFN	MTK	
2	PCB	JUI7.820.0416	FR-4,2LAY	Sunlord IQPCB SHPCB	
3	Crystal Oscillator	SMD 3225,40M,15pF	40M	JWT Hosonic TXC	

7. General Requirements:

No.	Feature	Description
7-1	Operation Voltage	5V+/-0.5
7-2	Current Consumption	210mA @TX HT40 MCS7 15dBm 242mA @TX CCK 11M 19dBm
7-3	Operation Temperature	0°C to +60°C
7-4	Antenna Type	Integral antenna
7-5	USB	High Speed USB 2.0 Interface
7-6	Storage Temperature	-40°C to +125°C

8. RF Characteristics:

8-1 IEEE 802.11b Section:

Items	Contents				
Specification	IEEE802.11b				
Mode	CCK				
Channel	CH1 to CH13				
Data rate	1, 2, 5.5, 11Mbps				
	Min.	Typ.	Max.	Unit	Remark
TX Characteristics					
1. Power Levels(Calibrated)					
1) For Each antenna port	13	15	17	dBm	
2. Spectrum Mask @ target power					
1) fc +/-11MHz to +/-22MHz	-	-	-30	dBr	
2) fc > +/-22MHz	-	-	-50	dBr	
3 Constellation Error(EVM)@ target power					
1) 1Mbps	-	-	-10	dB	
2) 2Mbps	-	-	-10	dB	
3) 5.5Mbps	-	-	-10	dB	
4) 11Mbps	-	-	-10	dB	
4. Frequency Error	-10	-5	10	ppm	
RX Characteristics					
5 Minimum Input Level Sensitivity(each chain)	Min.	Typ.	Max.	Unit	
1) 1Mbps (FER $\leq$ 8%)	-		-83	dBm	
2) 2Mbps (FER $\leq$ 8%)	-		-80	dBm	
3) 5.5Mbps (FER $\leq$ 8%)	-		-79	dBm	
4) 11Mbps (FER $\leq$ 8%)	-		-76	dBm	
6 Maximum Input Level (FER $\leq$ 8%)	-10	-	-	dBm	

8-2 IEEE 802.11g Section:

Items	Contents				
Specification	IEEE802.11g				
Mode	OFDM				
Channel	CH1 to CH13				
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps				
	Min.	Typ.	Max.	Unit	Remark
TX Characteristics					
1. Power Levels					
1) For Each antenna port	11	13	15	dBm	
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	-	-	-25	dB	
4 Frequency Error	-10	-5	10	ppm	
RX Characteristics					
5 Minimum Input Level Sensitivity(each chain)					
1) 6Mbps (PER $\leq$ 10%)	-		-85	dBm	
2) 9Mbps (PER $\leq$ 10%)	-		-84	dBm	
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%)	-		-65	dBm	
6 Maximum Input Level (PER $\leq$ 10%)	-20	-	-	dBm	

8-3 IEEE 802.11n HT20 Section:

Items	Contents				
Specification	IEEE802.11n HT20 @ 2.4GHz				
Mode	OFDM				
Channel	CH1 to CH13				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15				
	Min.	Typ.	Max.	Unit	Remark
TX Characteristics	Min.	Typ.	Max.	Unit	
2. Power Levels					
1) For Each antenna port	10	12	14	dBm	
3. Spectrum Mask @target power					
1) at fc +/-11MHz	-	-	-20	dBr	
2) at fc +/-20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-45	dBr	
4. Constellation Error(EVM)@ target power					
1) MCS0	-	-	-5	dB	
2) MCS1	-	-	-10	dB	
3) MCS2	-	-	-13	dB	
4) MCS3	-	-	-16	dB	
5) MCS4	-	-	-19	dB	
6) MCS5	-	-	-22	dB	
7) MCS6	-	-	-25	dB	
8) MCS7	-		-28	dB	
5. Frequency Error	-10	-	10	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
6. Minimum Input Level Sensitivity(each chain)					
1) MCS0 (PER $\leq$ 10%)	-		-82	dBm	
2) MCS1 (PER $\leq$ 10%)	-		-79	dBm	
3) MCS2 (PER $\leq$ 10%)	-		-77	dBm	
4) MCS3 (PER $\leq$ 10%)	-		-74	dBm	
5) MCS4 (PER $\leq$ 10%)	-		-70	dBm	
6) MCS5 (PER $\leq$ 10%)	-		-66	dBm	
7) MCS6 (PER $\leq$ 10%)	-		-65	dBm	
8) MCS7 (PER $\leq$ 10%)	-		-64	dBm	
7. Maximum Input Level (PER $\leq$ 10%)	-20	-	-	dBm	

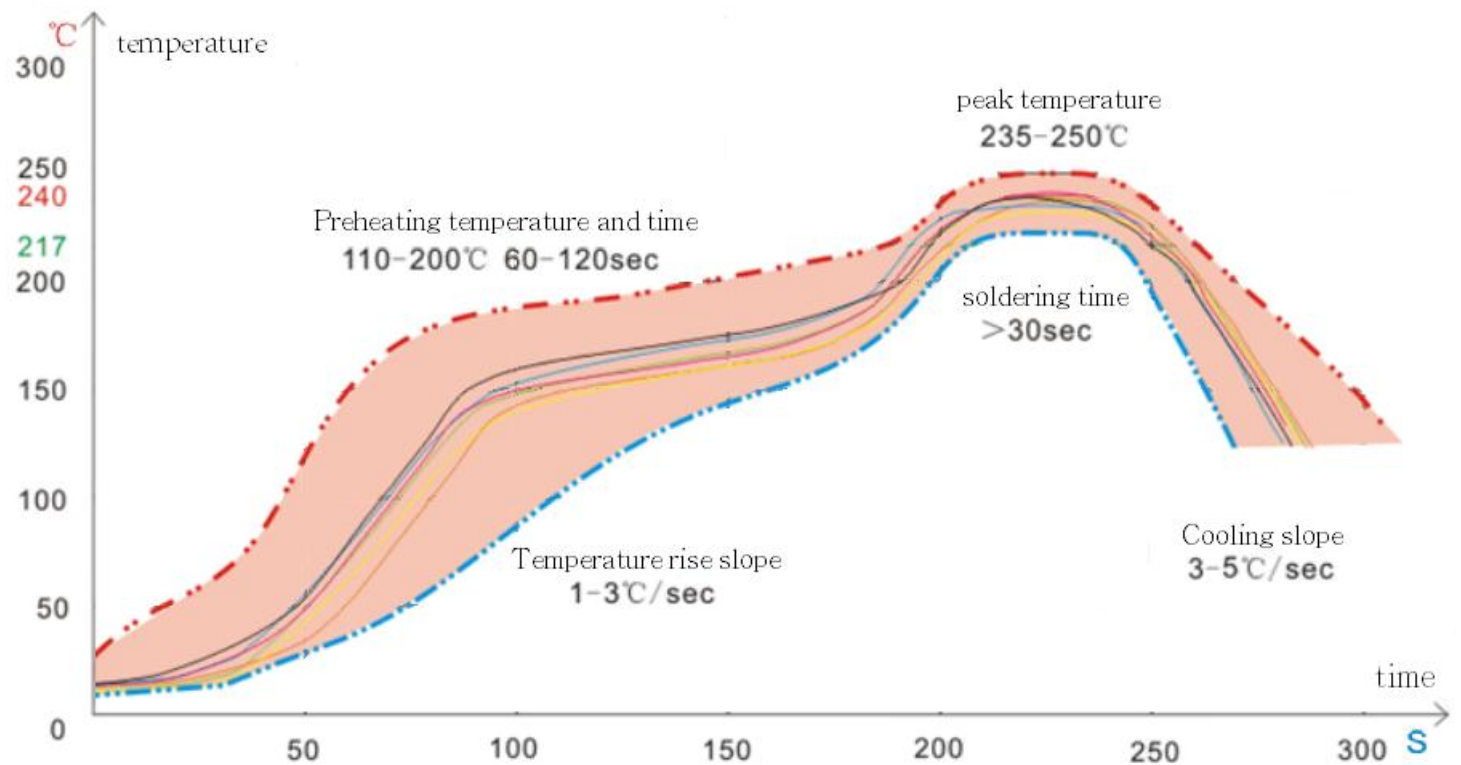
8-4 IEEE 802.11n HT40 Section:

Items	Contents				
Specification	IEEE802.11n HT40 @ 2.4GHz				
Mode	OFDM				
Channel	CH3 to CH11				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15				
	Min.	Typ.	Max.	Unit	Remark
TX Characteristics	Min.	Typ.	Max.	Unit	
1. Power Levels (Calibrated)					
1) For Each antenna port	10	12	14	dBm	
2. Spectrum Mask @target power					
1) at fc +/-22MHz	-	-	-20	dBr	
2) at fc +/-40MHz	-	-	-28	dBr	
3) at fc > +/-60MHz	-	-	-45	dBr	
3. Constellation Error(EVM)@target power					
1) MCS0	-	-	-5	dB	
2) MCS1	-	-	-10	dB	
3) MCS2	-	-	-13	dB	
4) MCS3	-	-	-16	dB	
5) MCS4	-	-	-19	dB	
6) MCS5	-	-	-22	dB	
7) MCS6	-	-	-25	dB	
8) MCS7	-		-28	dB	
4. Frequency Error	-10	-5	10	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5. Minimum Input Level Sensitivity(each chain)					
1) MCS0 (PER $\leq$ 10%)			-79	dBm	
2) MCS1 (PER $\leq$ 10%)			-76	dBm	
3) MCS2 (PER $\leq$ 10%)			-74	dBm	
4) MCS3 (PER $\leq$ 10%)			-71	dBm	
5) MCS4 (PER $\leq$ 10%)			-67	dBm	
6) MCS5 (PER $\leq$ 10%)			-63	dBm	
7) MCS6 (PER $\leq$ 10%)			-62	dBm	
8) MCS7 (PER $\leq$ 10%)	-		-61	dBm	
6. Maximum Input Level(PER $\leq$ 10%)	-20	-	-	dBm	

9. Software Requirements

The driver supports the following operating systems: Linux, Microsoft Windows XP, Vista and Win7.
Mfg. software tool version is MT7601 USB QA V1.0.9.0 or later.

10. Refelow Standard Condition



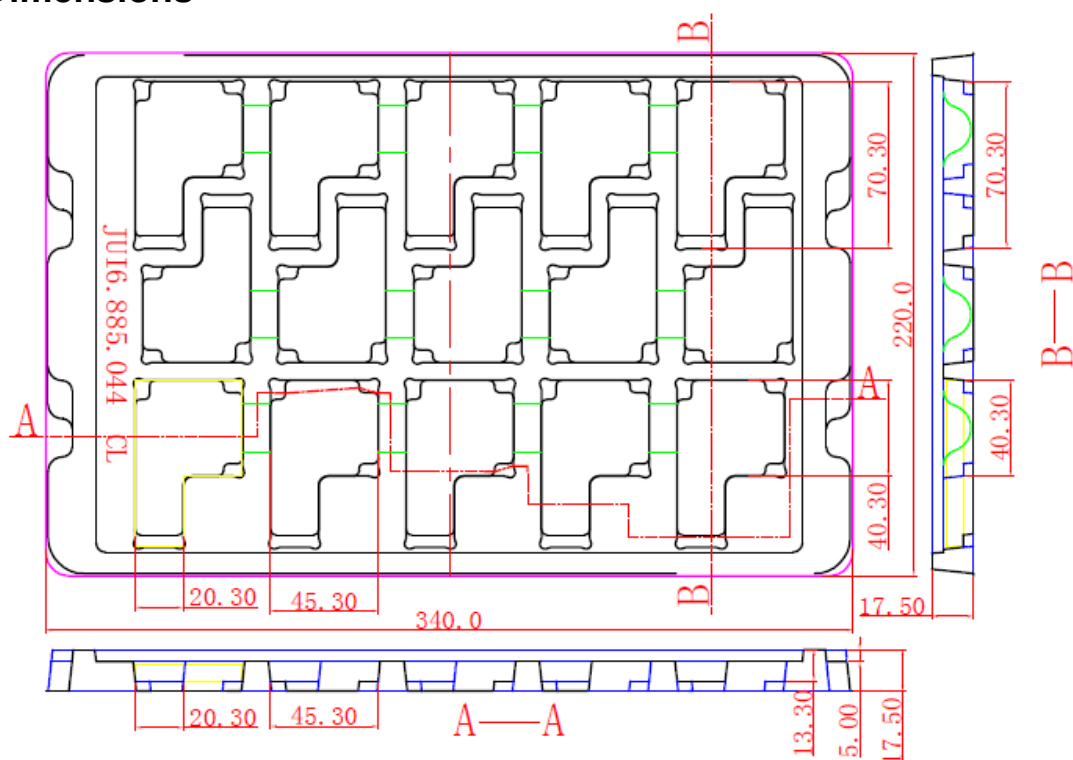
11. Mechanical, Environmental and Reliability Tests

Test Items		Test Conditions	Qty	Criteria Condition
4-1	Drop test	The packed samples within 100Kg can be tested Drop height: Face Side: 800/600/450mm Edge line: 600/450/350mm Drop time: 1 each Face and edge.	1xBox	After drop test, the outer box and inner box will not be broken by appearance visual inspection.
4-2	Vibration test	X-Y-Z direction, first Frequency changing from 10Hz to 30Hz to 10Hz ,amplitude 0.75mm, 5 times vibrations, then frequency Changing from 30Hz to 55 Hz to 30 Hz, amplitude 0.15mm, 5 time vibration.	3	After test, the Appearance, Power EVM and Frequency error shall be satisfied with the specification.
4-3	Impact test	Impact acceleration: 50m/sec ² ; Impact duration: 16ms; Impact times: 1000.	3	After test, the Appearance, Power EVM and Frequency error shall be satisfied with the specification.

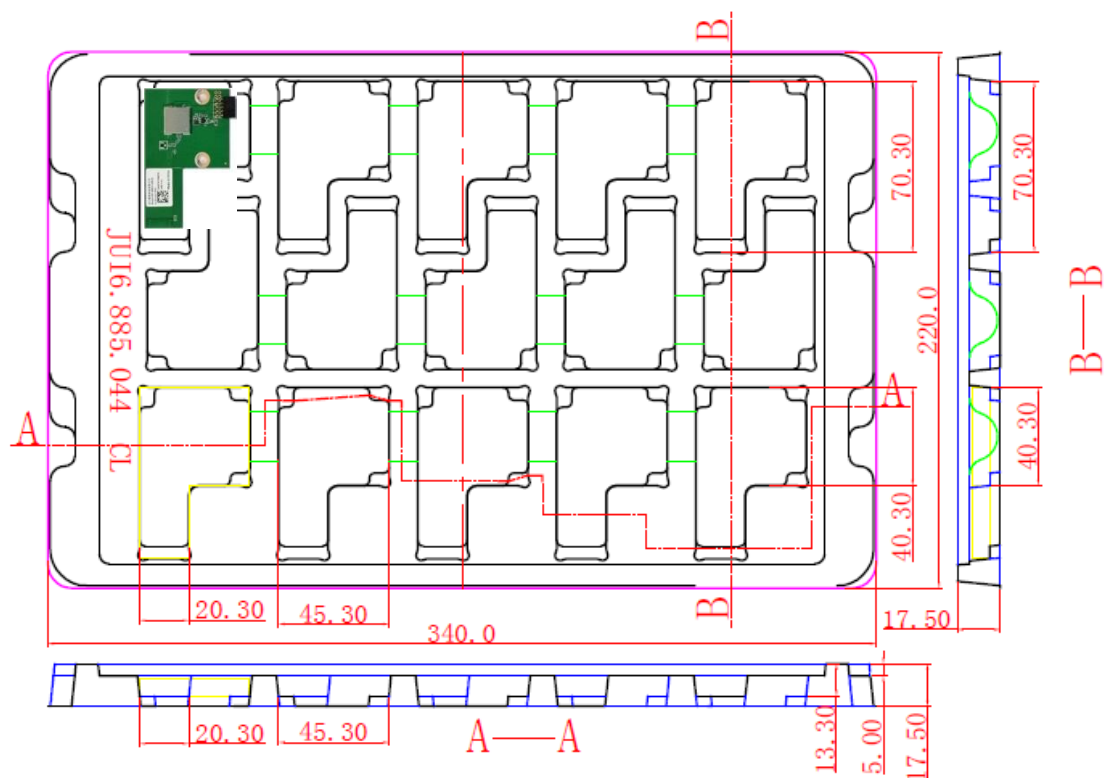
4-4	Soldering ability test	Soldering temperature: $235\pm 5^{\circ}\text{C}$ Soldering duration: $2\pm 0.5\text{S}$	3	1. After soldering, the soldered area must be covered by a smooth bright solder layer, some deficiencies such as a small amount of the pinhole, not wetting are allowed, but the deficiencies can not be in the same place; 2. At least 90% of soldered area shall be covered continuously by the soldering material.
4-5	Humidity test	Leave samples in $40\pm 3^{\circ}\text{C}$, 93% RH @ 96 hours	3	Leave samples in standard test condition for 2 hours then test, the Appearance, Power, EVM and Frequency error functional parameter shall be satisfied with the test specification.
4-6	High temperature load life test	Thermostat cabinet temperature: $55\pm 5^{\circ}\text{C}$ Applied voltage: 110% rated voltage Working duration: 200 hour (Supply Voltage Cycle 23h power on, 1h power off)	60	After test, leave samples in standard condition for 1 hour and test, Power, EVM and Frequency error shall be satisfied with the test specification.
4-7	High temperature load test	Temperature: $55\pm 5^{\circ}\text{C}$ Samples work for 16 hours	3	After test, the Appearance, Power, EVM and Frequency error shall be Satisfied with the test specification.
4-8	Low temperature storage test	Leave the samples in $-25\pm 3^{\circ}\text{C}$ @24 hours	3	Leave samples in standard test condition for 2 hours then test, the Appearance, Power, EVM and Frequency error shall be satisfied with the test specification.
4-9	Low temperature load test	Leave samples in $-15\pm 3^{\circ}\text{C}$ @ 2 hours, samples' function shall be normal, the let samples work for 1 hour	3	After test, leave the samples in standard condition and tested the Appearance, Power, EVM and Frequency error shall be satisfied with the test specification.
4-10	Temperature circle test	One cycle duration $-10\pm 3^{\circ}\text{C}$ @3H $40\pm 3^{\circ}\text{C}$ @3H Total cycle: 10x	3	After test, leave the samples in standard condition and tested Power EVM and Frequency error shall be qualified and all the characters shall be satisfied with the test specification.
4-11	Continuous TP test	Twice cycle duration $-10\pm 3^{\circ}\text{C}$ @4H $+60\pm 3^{\circ}\text{C}$ @4H, $+25^{\circ}\text{C}$ @2H@2H	3	During test, There will not been appeared signal disconnection or interruption between DUT and AP.
4-12	ESD	Discharge voltage: 2kV C: 150pF Discharge resistance: 330Ω Positive 10 times 1 time for each second	3	The products can recoverable smoothly after ESD test.

12.Package

(1) Tray Dimensions



(2) the Direction of Product in Tray



NB Statement

Herby, Sichuan AI-Link Technology Co., Ltd. declares that this Wireless Module, WF-M601-UWH2 is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. In accordance with Article 10(2) and Article 10(10), this product allowed to be used in all EU member states.

Use the Wireless Module in the environment with the temperature between 0℃ and 60℃

Operation Frequency: 2412MHz~2472MHz (802.11b/802.11g/802.11n(HT20))
2422MHz~2462MHz (802.11n(HT40))

Max Output Power: 0.0222W

Manufacturer: Sichuan AI-Link Technology Co., Ltd.
Address: Anzhou, Industrial park, Mianyang, Sichuan, China
Tel: +860816-2438701
Fax: +860816-2438701
E-mail: caixia.hu@changhong.com

FCC Statement

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

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.

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.

DECLARATION OF CONFORMITY

I hereby declare that the product..

Product:..

Product Name: Wireless Module..

Model: WF-M601-UWH2..

Brand Name: N/A..

Hardware Version: JUI7.820.0416..

Software Version: MT7601 USB QA V1.0.9.0 [0520]..

(Name of product, type or model, batch or serial number)..

satisfies all the technical regulations applicable to the product within the scope of Council ..
Directives 2014/53/EU, 2014/35/EU and 2014/30/EU; and declare that the same application has not ..
been lodged with any other notified body...

EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011+A2: 2013

Draft ETSI EN 300 328 V2.2.0 (2017-11)

Draft ETSI EN 301 489-17 V3.2.0 (2017-03)

Draft ETSI EN 301 489-1 V2.2.0 (2017-03)

EN62311:2008

(Title(s) of regulations, standards, etc.)..

II essential radio test suites have been carried out..

NOTIFIED BODY: MiCOM Labs Inc..

– **Address:..**

575 Boulder Court..

Pleasanton, California 94566..

USA..

Identification Number: 2280..

MANUFACTURER or AUTHORISED REPRESENTATIVE:..

– **Address:..**

Sichuan AI-Link Technology Co., Ltd..

Anzhou, Industrial park, Mianyang, Sichuan, China..

This declaration is issued under the sole responsibility of the manufacturer and, if applicable, his authori
representative...

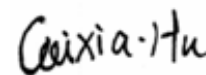
Point of contact:..

Caixia Hu, +86- 0816-2438701/+86- 0816-2438701..

(Name, telephone and fax number)..

2018-12-14..

(Place, date of issue)..



(Signature)..

Caixia Hu, Engineer..

(Name and title in block letters)..