AI-Link

WF-M620-RSC1

Features:

- **Supported WLAN Standards**
  IEEE Std. 802.11b
  IEEE Std. 802.11g
  IEEE Std. 802.11n
- **Chip Solution**
  MTK MT3620AN
- **Size**
  22.0mm*30.0mm*2.5mm

Product Name	Installation	Data Rate(max)	Band	Antenna Interface	Note
WF-M620-RSC1	SMD	72.2Mbps	2412MHz-2472MHz	IPEX/PCB Trace Antenna	DC 3.3V Power Supply

Sichuan AI-Link Technology Co.,Ltd
Add: Anzhou,Industrial park,Mianyang,Sichuan,China
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
Bai Lang	Ding Shuangpeng	Feng Jie	Model	WF-M620-RSC1
			Date	2019-3-14

Record of Modification

No	Date of modification	Main content of modification	Reason of modification	Serial number of modification	Confirm
Draft 1.0	20190314	Initial Release			Feng Jie

1. Brief Description

The WF-M620-RSC1 IoT module is based on the MediaTek MT3620AN,a highly integrated single chip,tricore WIFI MCU designed to meet the requirements of modern robust internet-connected devices.It leverages the Microsoft Azure Sphere security architecture to provide an unprecedented level of security to connected device manufacturers.For the lifetime of the device the Azure Sphere system provides device authentication and attestation,supports remote over-the-air software updates to maintain security in the face of evolving attacks,and automates error logging and reporting.

1.1 WIFI Feature

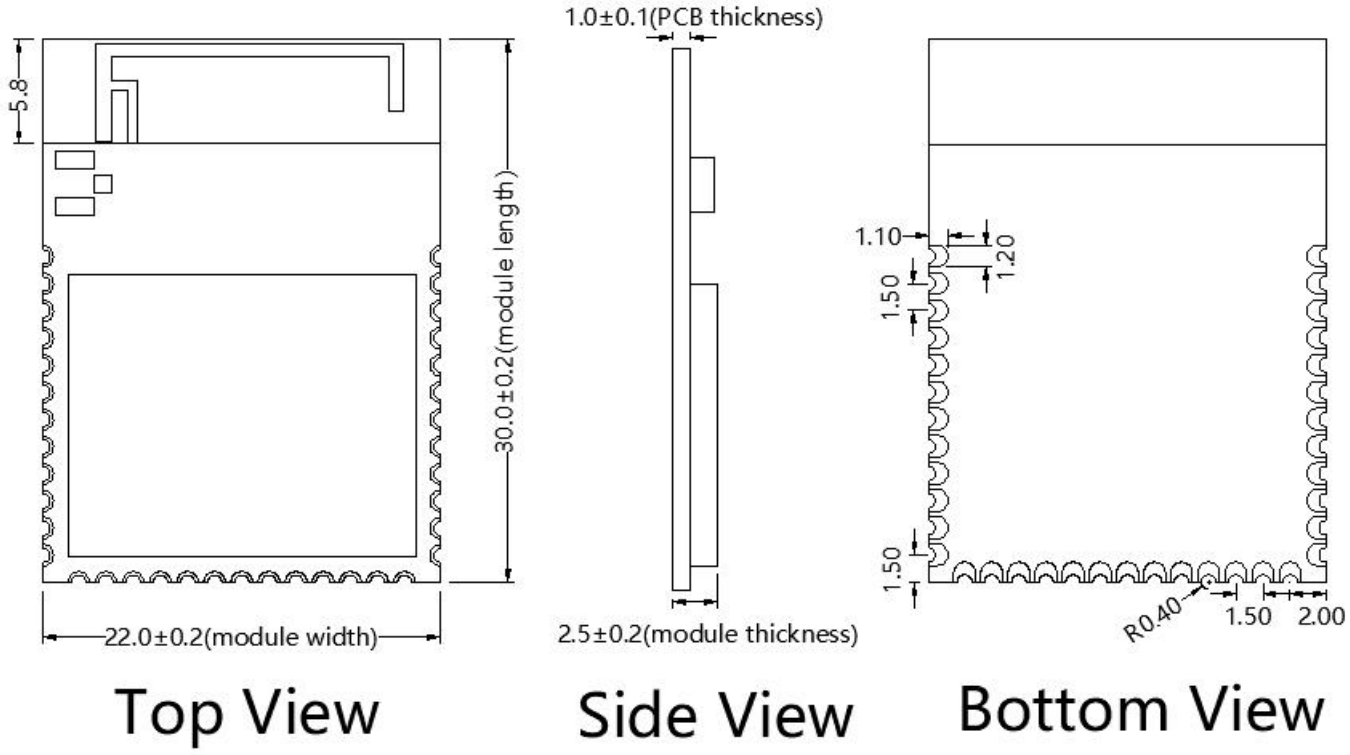
- Single band 2.4GHz ISM
- Supported IEEE 802.11b/g/n

1.2 Hardware Feature

No.	Feature	Description
1	Main Chip	MT3620AN
2	RAM Capacity	approximately 5MB(including 256KB in each I/O subsystem and 4MB in the A7 application subsystem)
3	NOR-flash Capacity	16MB on-die and no external flash(The amount of flash that will be accessible to customer software is TBD)
4	Form Factor	37 pins(stamp hole)
5	Size	30 x 22 x 2.5mm±0.2mm
6	Interface	UART×2：ISU0(configured as SPI 0 or UART 0), ISU1(configured as SPI 1 or UART 1 or I2C 1) PWM×8：PWM4~PWM11 ADC×4：ADC0~3 GPIO：14 GPIO pins with multi-functions
7	Operation Voltage	3.3V+/-0.3
8	Current Consumption	(TBD)
9	Antenna Type	Integral PCB Trace Antenna/Option to fit IPEX connector for external antenna
10	Operating Temperature	-40°C to +85°C
11	Storage Temperature	-45°C to +135°C

2. Mechanical Specification(units:mm)

2.1 Mechanical Outline



NOTE:General tolerance **±0.2mm** unless otherwise stated

2.2 Pin Definition

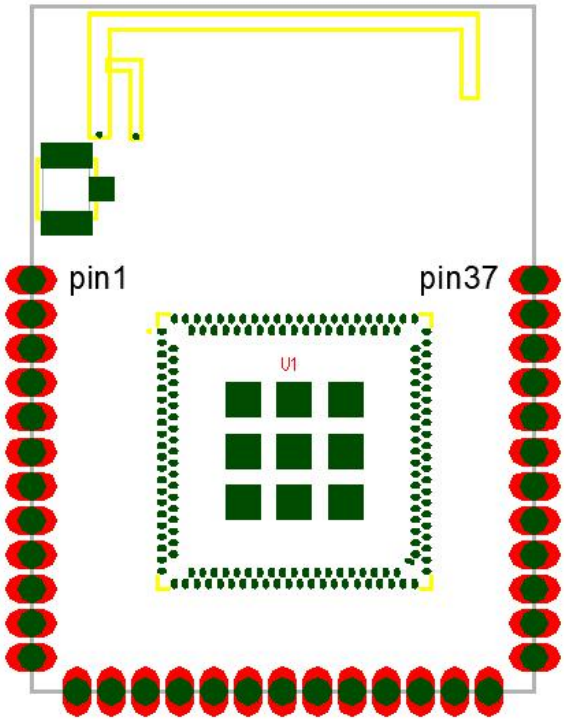


Figure 2.2 Pin assignment

Pin	Symbol	Type	Description	
1	GPIO41_ADC0/GPIO4_PWM4	AI/DIO	Configured as GPIO or ADC input or PWM output	
2	GPIO42_ADC1/GPIO5_PWM5	AI/DIO	Configured as GPIO or ADC input or PWM output	
3	GPIO43_ADC2/GPIO6_PWM6	AI/DIO	Configured as GPIO or ADC input or PWM output	
4	GPIO44_ADC3/GPIO7_PWM7	AI/DIO	Configured as GPIO or ADC input or PWM output	
5	GPIO26_SCLK0_TXD0/GPIO8 _PWM8	DIO	Configured as GPIO or ISU0 SPI CLK or UART0 TX or PWM output	
6	GPIO27_MOSI0_RTS0_SCL0/ GPIO9_PWM9	DIO	Configured as GPIO or ISU0 SPI MOSI or UART0 RTS or I2C0 CLK or PWM output	
7	GPIO28_MISO0_RXD0_SDA0 /GPIO10_PWM10	DIO	Configured as GPIO or ISU0 SPI MISO or UART0 RX or I2C0 DATA or PWM output	
8	GPIO29_CSA0_CTS0/GPIO11 _PWM11	DIO	Configured as GPIO or ISU0 SPI CSA or UART0 CTS or PWM output	
9	GPIO30_CSB0	DIO	Configured as GPIO or ISU0 SPI CSB	
10	GPIO32_MOSI1_RTS1_SCL1	DIO	Configured as GPIO or ISU1 SPI MOSI or UART1 RTS or I2C1 CLK	
11	GPIO34_CSA1_CTS1	DIO	Configured as GPIO or ISU1 SPI CSA or UART1 CTS	
12,13 27 36,37	GND	G	Ground	
14	GPIO31_SCLK1_TXD1	DIO	Configured as GPIO or ISU1 SPI CLK or UART1 TX	
15	GPIO33_MISO1_RXD1_SDA1	DIO	Configured as GPIO or ISU1 SPI MISO or UART1 RX or I2C1 DATA	
16	GPIO35_CSB1	DIO	Configured as GPIO or ISU1 SPI CSB	
17	RECOVERY_CTS	DI	Azure Sphere flash re-imaging Recovery UART CTS	
18	RECOVERY_RTS	DO	Azure Sphere flash re-imaging Recovery UART RTS	
19	RECOVERY_TXD	DO	Azure Sphere flash re-imaging Recovery UART TXD	
20	RECOVERY_RXD	DI	Azure Sphere flash re-imaging Recovery UART RXD	
21	SWO	DO	ARM SWO debug output	For IO CM4F cores only; a single SWD channel is shared between them.
22	SWD_CLK	DI	ARM SWD clock	
23	SWD_DIO	DIO	ARM SWD debug output	
24	DEBUG_RTS	DO	Azure Sphere OS debug RTS/Strapping pin when MT3620 boot up	
25	DEBUG_TXD	DO	Azure Sphere OS debug TXD	
26	3V3	P	DC 3.3V Power Supply	
28	3V3_RTC	P	DC 3.3V for real-time clock	
29	EXT_PMU_EN	DO	Enable/disable external PMU when in deep sleep mode (RTC mode)	
30	WAKEUP	DI	Wake from deep sleep (RTC mode)	
31	SYSRST_N	DI	System reset	
32	SERVICE_TXD	DO	Azure Sphere Service UART TXD	The Azure Sphere Service UART supports provisioning, app updates, manufacturing test and in-field debugging.
33	SERVICE_RTS	DO	Azure Sphere Service UART RTS	
34	SERVICE_RXD	DI	Azure Sphere Service UART RXD	
35	SERVICE_CTS	DI	Azure Sphere Service UART CTS	

2.3 Product Pictures

TOP VIEW

BOTTOM VIEW

3. RF Characteristics:

3-1 IEEE 802.11b Section:

Items	Contents				
Specification	IEEE802.11b				
Mode	DBPSK, DQPSK and CCK and DSSS				
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 data rate	12	16	18	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	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity(each chain)					
1) 1Mbps (FER ≦8%)	-		-95	dBm	
2) 2Mbps (FER ≦8%)	-		-93	dBm	
3) 5.5Mbps (FER ≦8%)	-		-91	dBm	
4) 11Mbps (FER ≦8%)	-		-88	dBm	
6 Maximum Input Level (FER ≦8%)	-10	-	-	dBm	

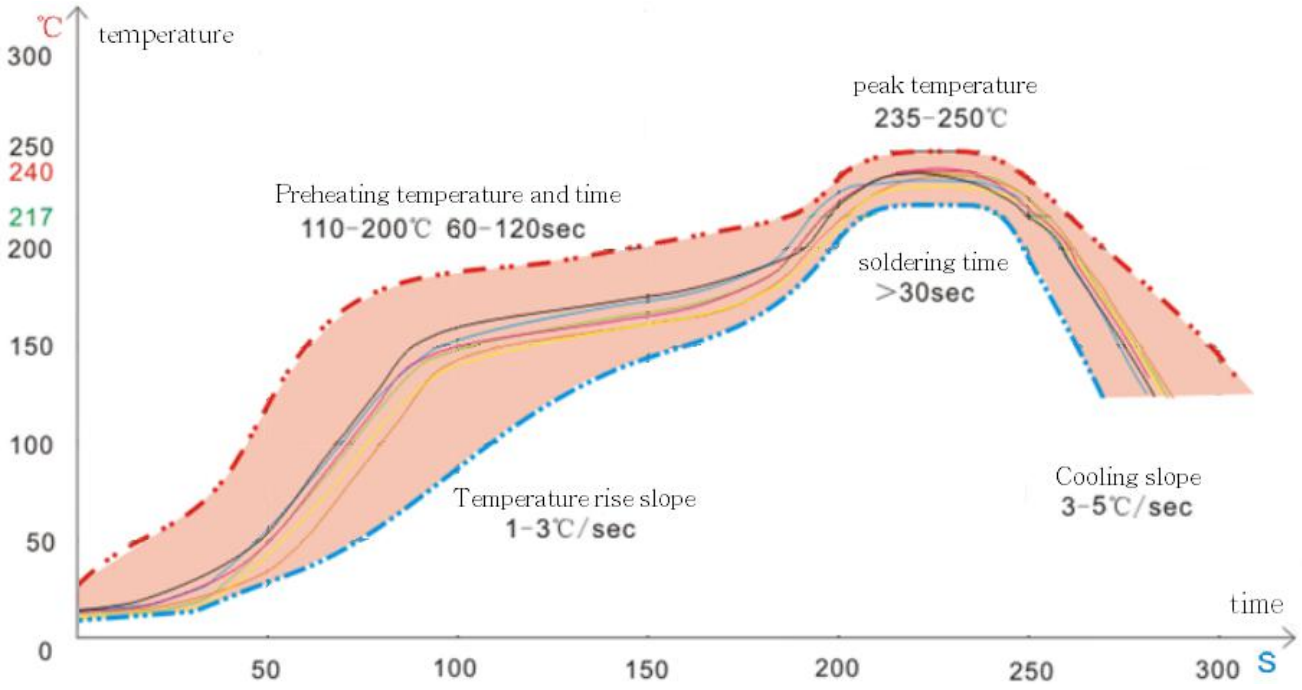
3-2 IEEE 802.11g Section:

Items	Contents				
Specification	IEEE802.11g				
Mode	BPSK, QPSK, 16QAM, 64QAM and 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 data rate	13	15	17	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	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity(each chain)					
1) 6Mbps (PER ≦10%)	-		-92	dBm	
2) 9Mbps (PER ≦10%)	-		-90	dBm	
3) 12Mbps (PER ≦10%)	-		-88	dBm	
4) 18Mbps (PER ≦10%)	-		-86	dBm	
5) 24Mbps (PER ≦10%)	-		-83	dBm	
6) 36Mbps (PER ≦10%)	-		-81	dBm	
7) 48Mbps (PER ≦10%)	-		-76	dBm	
8) 54Mbps (PER ≦10%)	-		-74	dBm	
6 Maximum Input Level (PER ≦10%)	-20	-	-	dBm	

3-3 IEEE 802.11n HT20 Section:

Items	Contents				
Specification	IEEE802.11n HT20 @ 2.4GHz				
Mode	BPSK, QPSK, 16QAM, 64QAM and OFDM				
Channel	CH1 to CH13				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
2. Power Levels					
1) For Each antenna port	12	14	17	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 ≦10%)	-		-90	dBm	
2) MCS1 (PER ≦10%)	-		-88	dBm	
3) MCS2 (PER ≦10%)	-		-85	dBm	
4) MCS3 (PER ≦10%)	-		-83	dBm	
5) MCS4 (PER ≦10%)	-		-80	dBm	
6) MCS5 (PER ≦10%)	-		-75	dBm	
7) MCS6 (PER ≦10%)	-		-73	dBm	
8) MCS7 (PER ≦10%)	-		-73	dBm	
7. Maximum Input Level (PER ≦10%)	-20	-	-	dBm	

4. Refelow Standard Condition



5. Key Materials

Item	Category	MPN	Description	MFR	Notes
1	IC	MT3620AN	165-QFN	MTK	
2	PCB	JUI7.820.0392-5	FR-4,4LAY	Sunlord IQPCB SHPCB	
3	Crystal Oscillator	-	26MHz,2520,11pF±10ppm,-20~75℃; 32.768KHZ,2012,11pF±20ppm,-40~85℃;	JWT Hosonic ACX	

6. Package

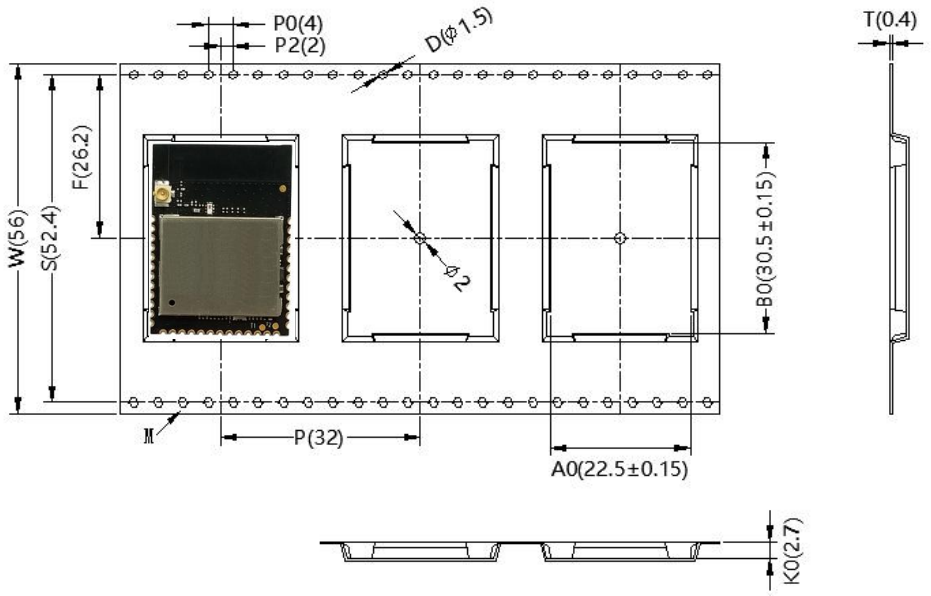


Figure 13.1 Dimensions of Tape

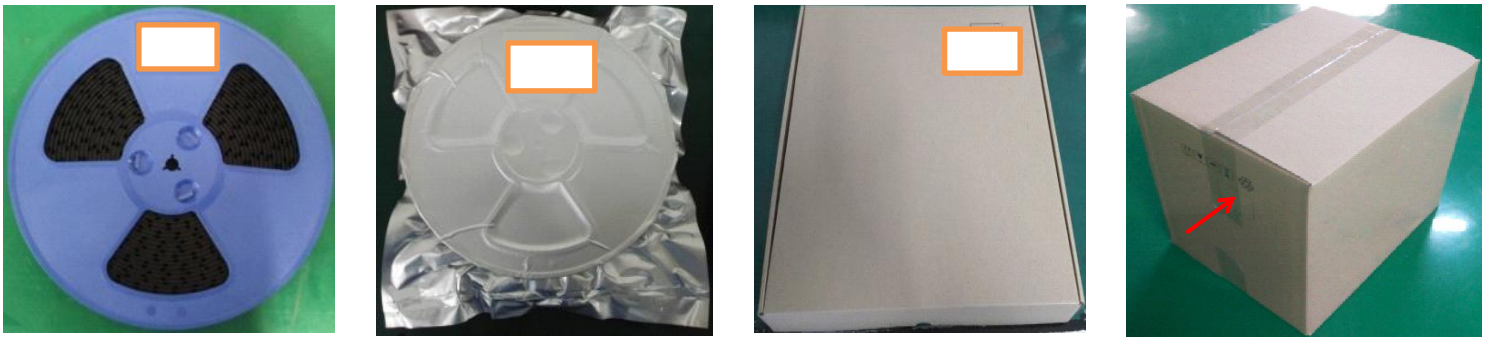


Figure 13.2 Packaging Details

Notes:
1.Dimensions of the inner box:355mm*355mm*72mm;
Dimensions of the Outer case:370mm*370mm*300mm;
2.600PCS modules per tape,1 tape for each inner box,4 inner boxes for each outer case,and total 2400PCS modules per outer case;

7. FCC Statement

FCC regulatory information:

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.

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

End Device Labelling

Please notice that 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 FCC ID: 2AOKI-WFM620RSC1” any similar wording that expresses the same meaning may be used.

RF Exposure Compliance

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

Installation Notice

The module is limited to OEM installation ONLY. The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.
The module is limited to installation in mobile application; A separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.

FCC Part 15B Compliance of End Device

The OEM integrator is responsible for ensuring that the host product which is installed and operating with the module is in compliant with Part 15B unintentional Radiator requirements, please note that For a Class B digital device or peripheral, the instructions furnished the user manual of the end-user product shall include the following or similar statement, placed in a prominent location in the text of the manual:
Note: 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.

8. CE Statement

Hereby, [Sichuan AI-Link Technology Co.,Ltd.] declares that the radio equipment type [WF-M620-RSC1] is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet
http://www.ilinkthings.com/product