

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	2.4 GHz	IPEX/PCB Trace Antenna	DC 3.3V 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
Bai Lang	Ding Shuangpeng	Feng Jie	Model	WF-M620-RSC1
			Date	2019-5-25

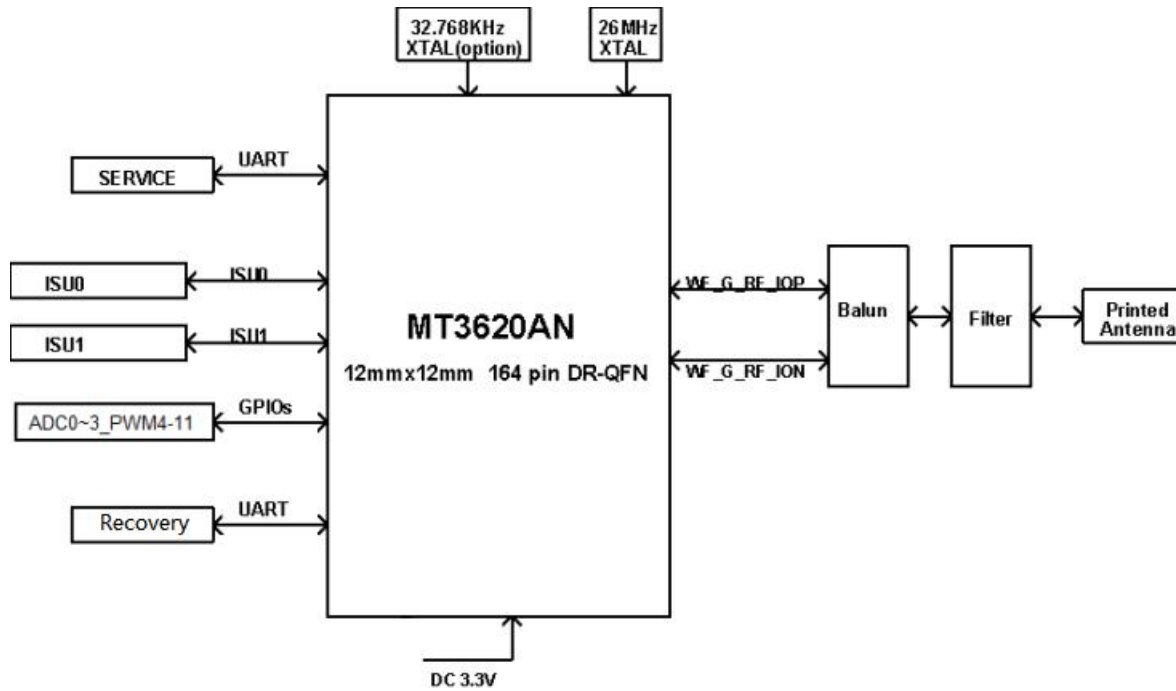
Record of Modification

[illegible]

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 Block Diagram



1.2 WIFI Feature

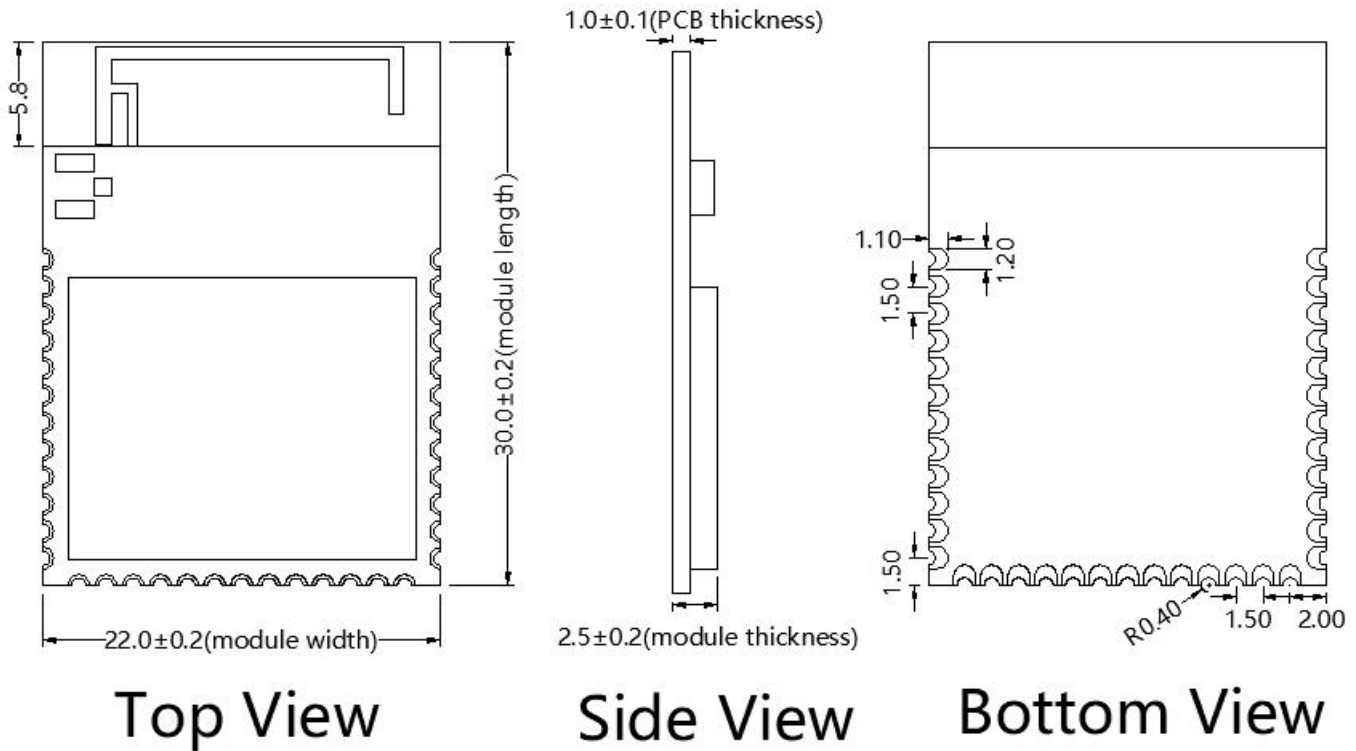
- Single band 2.4GHz ISM
- Supported IEEE 802.11b/g/n

1.3 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 ± 0.2 mm unless otherwise stated

2.2 Pin Definition

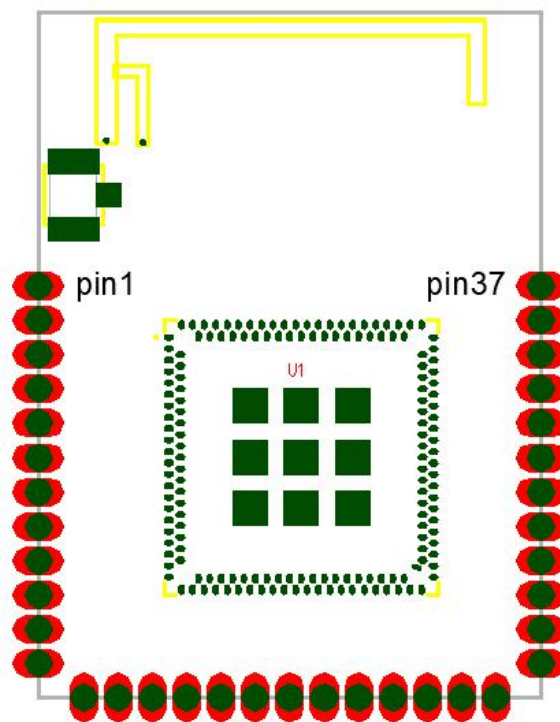


Figure 2.2 Pin assignment

Pin#	Pin name	Type	Description		
1	GPIO41_ADC0/GPIO4_PWM4	ADIO/DIO	GPIO multiplexed with ADC input or PWM output		
2	GPIO42_ADC1/GPIO5_PWM5	ADIO/DIO	GPIO multiplexed with ADC input or PWM output		
3	GPIO43_ADC2/GPIO6_PWM6	ADIO/DIO	GPIO multiplexed with ADC input or PWM output		
4	GPIO44_ADC3/GPIO7_PWM7	ADIO/DIO	GPIO multiplexed with ADC input or PWM output		
5	GPIO26_SCLK0_TXD0/GPIO8_PWM8	DIO/DIO	GPIO multiplexed with ISU0 ^[1] functions(SPI CLK/UART TX) or PWM output		
6	GPIO27_MOSI0_RTS0_SCL0/GPIO9_PWM9	DIO/DIO	GPIO multiplexed with ISU0 functions(SPI MOSI/UART RTS/I2C CLK) or PWM output		
7	GPIO28_MISO0_RXD0_SDA0/GPIO10_PWM10	DIO/DIO	GPIO multiplexed with ISU0 functions(SPI MISO/UART RX/I2C DATA) or PWM output		
8	GPIO29_CSA0_CTS0/GPIO11_PWM11	DIO/DIO	GPIO multiplexed with ISU0 functions(SPI CSA/UART CTS) or PWM output		
9	GPIO30_CSB0	DIO	GPIO multiplexed with ISU0 functions(SPI CSB) or PWM output		
10	GPIO32_MOSI1_RTS1_SCL1	DIO	GPIO multiplexed with ISU1 functions(SPI MOSI/UART RTS/I2C CLK)		
11	GPIO34_CSA1_CTS1	DIO	GPIO multiplexed with ISU1 functions(SPI CSA/UART CTS)		
12	GND	G	Ground		
13	GND	G	Ground		
14	GPIO31_SCLK1_TXD1	DIO	GPIO multiplexed with ISU1 functions(SPI CLK/UART TX)		
15	GPIO33_MISO1_RXD1_SDA1	DIO	GPIO multiplexed with ISU1 functions(SPI MISO/UART RX/I2C DATA)		
16	GPIO35_CSB1	DIO	GPIO multiplexed with ISU1 functions(SPI CSB)		
17	RECOVERY_CTS	DI	Azure Sphere flash re-imaging Recovery UART CTS	Recovery UART is for upgrading the Azure Sphere OS without connection to the Internet.	
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	SWD is used for programming and debugging the 2X Cortex-M4 on MT3620.A single SWD channel is shared between two Cortex-M4.	
22	SWD_CLK	DI	ARM SWD clock		
23	SWD_DIO	DIO	ARM SWD data		
24	DEBUG_RTS	DO	Azure Sphere OS debug RTS /Strapping pin when MT3620 boot up	Debug UART is for Microsoft use only.	
25	DEBUG_TXD	DO	Azure Sphere OS debug TXD		
26	3V3	P	DC 3.3V Power Supply		
27	GND	G	Ground		
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,active low.		
32	SERVICE_TXD	DO	Azure Sphere Service UART TXD	Service UART is the main interface for PC to communicate with the Azure Sphere OS.Core A7 app debugging, sideload, manufacturing test, getting device ID operation all use the Service UART port.	
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		
36	GND	G	Ground		
37	GND	G	Ground		

Note:

- 1.ISU is a serial communication block supporting I2C,SPI and UART interfaces.
- 2.The power supply for all GPIO pins is 3.3V.
- 3.The MT3620AN ADC VREF maximum is 2.5V.The module WF-M620-RSC1 has ADC VERF hooked up internally to 2.5V.Should not input >2.5V when using the ADC because the ADC will not read any value higher than 2.5V.If the ADC pin is not configured for ADC operation,then 3.3V input is ok.
- 4.In order to expose more pin functions of MT3620 on the small number of available module pins,two MT3620 pins share one module pin on module pin 1-8.At chip startup there should be no issue since all of these pins default to input. And please be careful when use these pins.

2.3 Product Pictures



TOP VIEW



BOTTOM VIEW

3. RF Characteristics:

3-1 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 data rate	14	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	-	-23	-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 ≤ 8%)	-	-98	-95	dBm	

2) 2Mbps (FER $\leq 8\%$)	-	-95	-93	dBm	
3) 5.5Mbps (FER $\leq 8\%$)	-	-93	-91	dBm	
4) 11Mbps (FER $\leq 8\%$)	-	-90	-88	dBm	
6 Maximum Input Level (FER $\leq 8\%$)	-10	-	-	dBm	

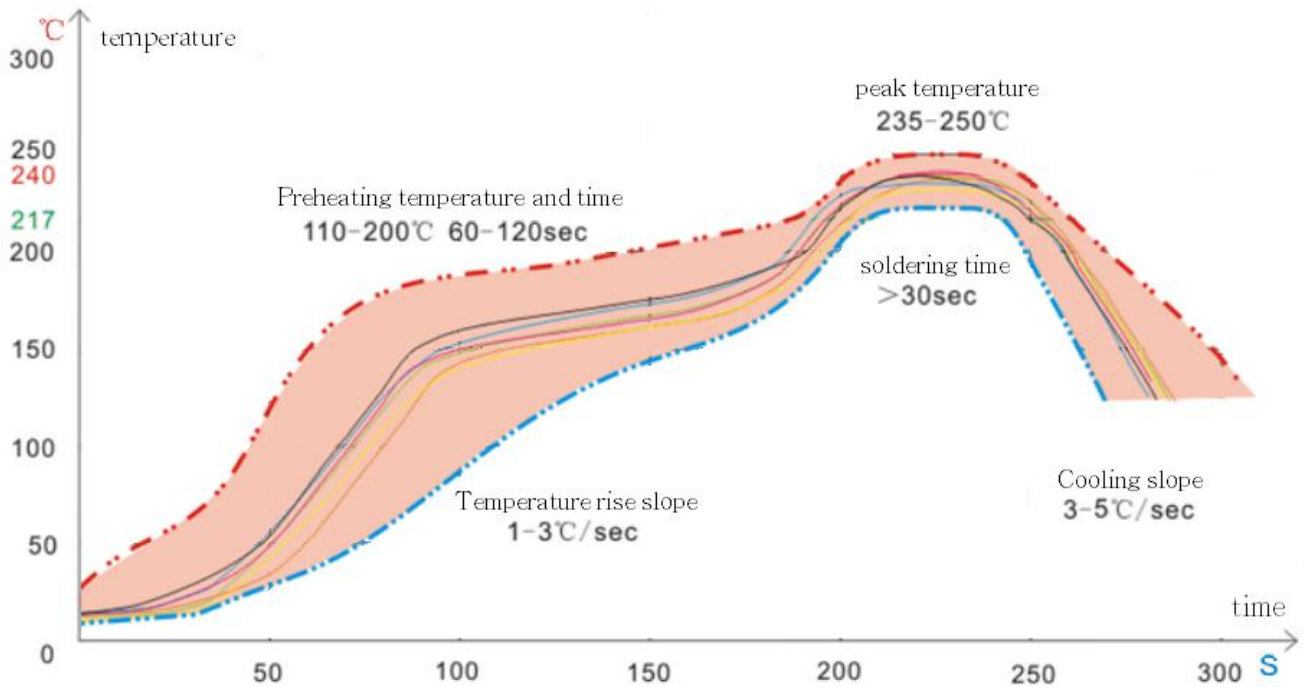
3-2 IEEE 802.11g Section:

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 data rate	13	15	17	dBm	
2. Spectrum Mask @ target power					
1) at $f_c \pm 11\text{MHz}$	-	-	-20	dB	
2) at $f_c \pm 20\text{MHz}$	-	-	-28	dB	
3) at $f_c > \pm 30\text{MHz}$	-	-	-40	dB	
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	-	-37	-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 $\leq 10\%$)	-	-95	-92	dBm	
2) 9Mbps (PER $\leq 10\%$)	-	-92	-90	dBm	
3) 12Mbps (PER $\leq 10\%$)	-	-90	-88	dBm	
4) 18Mbps (PER $\leq 10\%$)	-	-88	-86	dBm	
5) 24Mbps (PER $\leq 10\%$)	-	-85	-83	dBm	
6) 36Mbps (PER $\leq 10\%$)	-	-83	-81	dBm	
7) 48Mbps (PER $\leq 10\%$)	-	-78	-76	dBm	
8) 54Mbps (PER $\leq 10\%$)	-	-76	-74	dBm	
6 Maximum Input Level (PER $\leq 10\%$)	-20	-	-	dBm	

3-3 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				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
2. Power Levels					
1) For Each antenna port	12	14	16	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	-	-37	-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%)	-	-94	-90	dBm	
2) MCS1 (PER \leq 10%)	-	-90	-88	dBm	
3) MCS2 (PER \leq 10%)	-	-87	-85	dBm	
4) MCS3 (PER \leq 10%)	-	-85	-83	dBm	
5) MCS4 (PER \leq 10%)	-	-82	-80	dBm	
6) MCS5 (PER \leq 10%)	-	-77	-75	dBm	
7) MCS6 (PER \leq 10%)	-	-75	-73	dBm	
8) MCS7 (PER \leq 10%)	-	-75	-73	dBm	
7. Maximum Input Level (PER \leq 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°C; 32.768KHZ,2012,11p F±20ppm,-40~85°C;	JWT Hosonic TXC	

6. Package

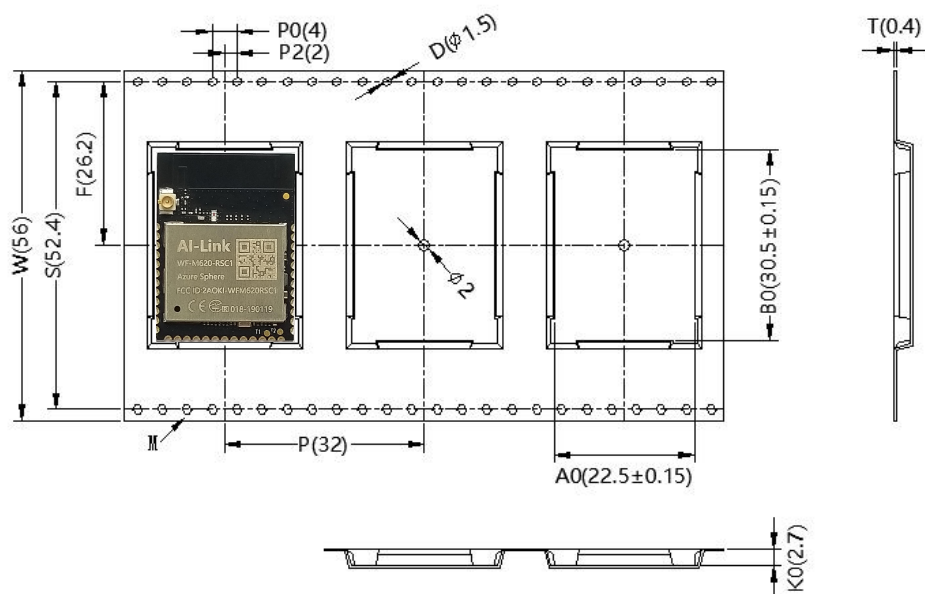


Figure 13.1 Dimensions of Tape



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;