

# EMC5020 Wi-Fi/BLE IoT Module

Built-in 32-bit Soc, 2.4G Hz IEEE 802.11 b/g/n, Bluetooth 5.0  
ultra-high integration, rich peripherals

version: 0.4

Date: 2023-07-07

Number: DS0193EN

## Abstract

- **Input Voltage: 5.0V**
- **Operating Temperature: -30°C to +85°C**
- **Processor: TG7100C Wi-Fi/BLE Combo SoC**
  - Main frequency up to 192MHz
- **Memory**
  - 276K bytes SRAM
  - 128K bytes ROM
  - 1kbit eFuse
  - 2M bytes XIP Flash
- **Wi-Fi**
  - IEEE 802.11 b/g/n 1T1R 2.4GHz Single Frequency
  - Support HT20, up to 65Mbps@MCS7
  - Support WPA/WPA2 Personal/WPA2 Enterprise/WPA3
  - Support STA, SoftAP and Monitor
- **Bluetooth**
  - Comply with BLE 5.0, slave mode
  - Support BLE 5.0 Channel selection#2
  - Not support 2M PHY/coding PHY/ADV extension
  - Wi-Fi and BLE time division multiplexing, sharing the same PA and antenna
  - Set Wi-Fi network parameter
- **Peripherals**
  - 4 Pin connectors provide power and UART, soldering free
  - Board mounted PCB antenna, or use IPEX connector to connect external antenna
  - 21.6mm x 35.6mm
  - Optional plastic casing, wiring harness, and adhesive spraying/pouring process



- **Application Functions**
  - Support AliOS and MXOS operating system
  - Mass production firmware for typical
  - Access Tmall Genie quickly
- **Typical application**
  - smart home appliances
  - smart electric equipment
  - Industrial automation

- **Order Code**

Order code	Description
EMC5020-PZ15	On-board PCB board, -30°C to +85°C
EMC5020-EZ15	External IPEX connector antenna, -30°C to +85°C

**Order Code**

Example	EMC	5	02	0	-P	ZI5	-BOX1	-1	1	1	-CN
Product Series											
EMC = IoT Wi-Fi/BLE Combo Module											
Product Type											
5 = Welding free wireless module											
Typical target applications and features											
02 = IOT Application 2 Series											
Dimensions, Enhancements											
0 = 21.6mm x 35.6mm, 4 Pins UART connector											
RF Interface											
P = 2.4GHz on-board PCB antenna E = 2.4GHz IPEX external connector											
Other Parameter											
ZI5 = no PSRAM, 2M Flash, temperature: -30°C~85°C											
Shell											
[Omitted, followed by 3 parameters]=PCBA, without casing BOX1 = PCBA and spray box BOX2 = PCBA and glue box											
PCB Spray											
0 = no spray 1 = spray											
Including Shell											
0 = no shell 1 = with shell (Including internal and external screws)											
Install the module PCBA in the housing											
0 = Not assembled 1 = Shipped after assembly											
Wiring harness and handling											
CN = 4 Pins UART interface connector without soldering [Other]=Customized cable number, please contact MXCHIP for more information											

**Accessories**

Order Code	Description
MXKIT-Base	Development board for all EMC3020 modules
MXKIT-Core-3020	The development board core board for the EMC3020, used with MXKIT-Base
FX-3020	EMC3020 production fixture with accompanying test board: MXKIT-Base, MXKIT-Core-3020

## Release Note

Date	Version	Updates
2021-09-10	0.1	Initial version
2021-11-07	0.2	Update order code
2023-04-12	0.3	Update some power parameter
2023-07-17	0.4	Update 4pin connector dimension

## Copyright Notice

Without permission, it is prohibited to use or copy all or any part of this manual, especially for trademarks, model naming, part numbers and drawings.

## Content

<b>1. Introduction</b> .....	<b>3</b>
<b>2. Pin Definition</b> .....	<b>4</b>
2.1. Pin Arrangement.....	4
2.2. Pin Definition.....	4
<b>3. Electrical Parameter</b> .....	<b>7</b>
3.1. Absolute Electrical Parameters.....	7
3.2. Working Condition.....	7
3.3. Power Consumption of Typical Application .....	7
3.4. ESD .....	8
3.5. RF Parameter .....	8
3.5.1. Wi-Fi.....	8
3.5.2. Bluetooth RF parameter.....	9
<b>4. Antenna Information</b> .....	<b>10</b>
4.1. PCB antenna and usage.....	10
4.1.1. On-board PCB antenna parameter .....	10
4.1. PCB Antenna Clearance .....	10
4.2. External antenna parameters and use.....	10
4.2.1. SRRC Important statements .....	11
<b>5. Assembly and Package Dimensions</b> .....	<b>12</b>
5.1. Assembly Dimension .....	12
5.2. Dimensions and Packaging Drawing of 4PIN Horizontal Patch Socket Connector.....	12
5.3. Dimensional Drawing of Spray Box .....	13
5.4. Dimensional Drawing of Glue Box.....	14
5.5. Diagram of wire harness of glue box .....	14
<b>6. Production Guidelines</b> .....	<b>15</b>
6.1. Precautions .....	16
6.2. Secondary reflow temperature curve.....	16
6.3. Storage Condition .....	18
<b>7. Label</b> .....	<b>19</b>
<b>8. Sales and Technical Support Information</b> .....	<b>20</b>

## Table Catalog

<b>Table 1 Pin Definition</b> .....	<b>4</b>
<b>Table 2 TP Definition</b> .....	<b>4</b>
<b>Table 3 Working Mode Selection</b> .....	<b>5</b>
<b>Table 4 Absolute maximum parameter</b> .....	<b>7</b>
<b>Table 5 Working Temperature</b> .....	<b>7</b>
<b>Table 6 Power Consumption of Typical Application</b> .....	<b>7</b>
<b>Table 6 Electrostatic discharge parameters</b> .....	<b>8</b>
<b>Table 7 Wi-Fi RF parameter</b> .....	<b>8</b>
<b>Table 8 Output Power</b> .....	<b>9</b>
<b>Table 9 Frequency error</b> .....	<b>9</b>
<b>Table 10 EVM</b> .....	<b>9</b>
<b>Table 11 RX sensitivity</b> .....	<b>9</b>
<b>Table 12 Bluetooth TX/RX performance</b> .....	<b>9</b>

Table 13 on-board PCB antenna parameter.....	10
Table 14 Typical furnace temperature settings.....	16

## Figure Catalog

Figure 1 Hardware Block Diagram.....	3
Figure 2 Pin Arrangement.....	4
Figure 3 Antenna minimum clearance area (unit: mm) .....	10
Figure 4 Copper tube antenna size.....	11
Figure 5 Dimension drawing of external antenna connector .....	11
Figure 6 Assembly Dimension Diagram .....	12
Figure 7 Dimensions of 4 Pin Sockets (Unit: mm) .....	12
Figure 8 Dimensions of the Shell of the Glue Spray Box (Unit: mm) .....	13
Figure 9 Dimensions of the Cover Plate of the Spray Box Shell (Unit: mm) .....	13
Figure 10 Dimensional drawing of glue box.....	14
Figure 11 Dimensional Drawing of Glue Box Wire Harness (Unit: mm) .....	14
Figure 12 Humidity Card .....	15
Figure 13 Typical secondary reflux temperature profile .....	17
Figure 14 Storage Conditions Diagram .....	18
Figure 15 Label schematic diagram.....	19

# 1. Introduction

The EMC5020 series module has built-in Wi-Fi SoC, which can be connected through Wi-Fi network and connected to the IoT cloud platform, achieving voice control and remote control of apps. The solderless Wi-Fi/BLE Combo module is mainly used for IoT data communication. Connect to the main control system through a simple communication cable to provide internet data access services for devices. The supporting shell, wiring harness, and adhesive process make the use of the module very convenient, and have the characteristics of waterproof and moisture-proof, especially suitable for various household appliances and industrial products.

The EMC5020 module is equipped with an ultra high integration Wi-Fi/BLE Combo microcontroller, providing the necessary computing power and stable Wi-Fi/BLE connectivity for IoT data terminals. This chip integrates:

- RISC-V core with main frequency up to 192MHz
- 276K bytes of SRAM
- 2M Byte SPI Flash
- 2.4GHz Wi-Fi controller compliant with IEEE 802.11 b/g/n standard
- Low power Bluetooth controller compliant with Bluetooth 5.0 standard

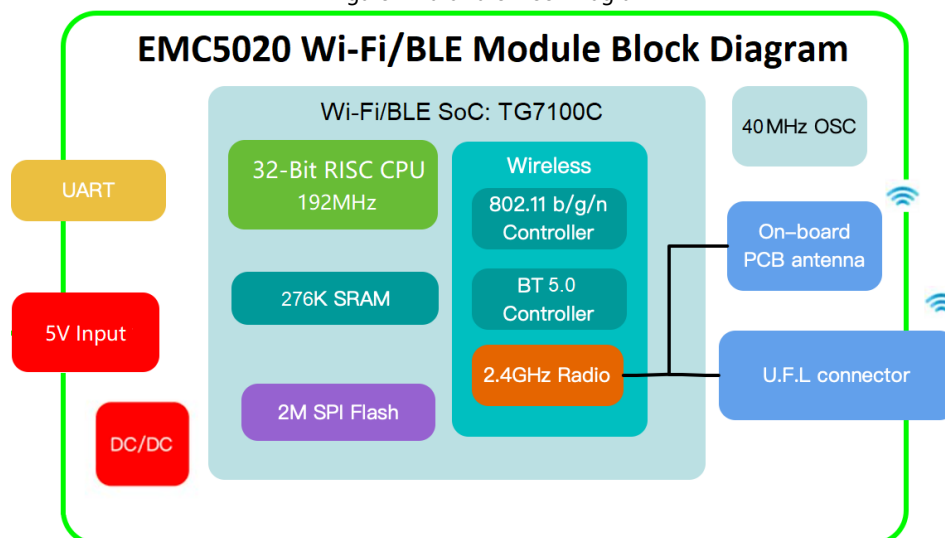
The EMC5020 module is powered by a 5V DC power supply on a 4PIN connector and communicates with the main control system through a 5V level UART interface, making it suitable for various smart home appliance application scenarios.

MXCHIP provides an MXOS software platform to support the development of the EMC5020 series modules, providing an efficient development environment, rich sample programs, and various typical applications to help customers quickly build Tmall Genie ecological products.

The following diagram is the hardware block diagram of the EMC5020 module, mainly including:

- Wi-Fi/BLE microcontroller
- On-board or external antenna
- Power supply and communication interface

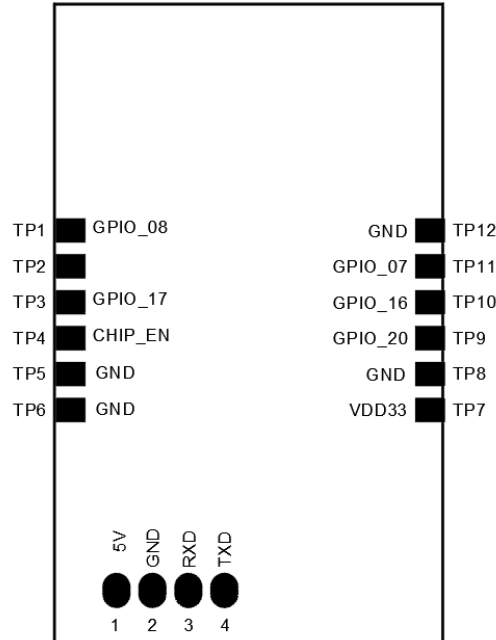
Figure 1 Hardware Block Diagram



## 2. Pin Definition

### 2.1. Pin Arrangement

Figure 2 Pin Arrangement



### 2.2. Pin Definition

Table 1 Pin Definition

Pin No.	Name	I/O Type	Function Description
1	VDD_5	Power	5V Power Input
2	VSS	GND	GND
3	GPIO_21	I/O	UART_RXD
4	GPIO_22	I/O	UART_TXD

Table 2 TP Definition

Pin No.	Name	I/O Type	Function Description
TP1	GPIO_8	I/O	ISP mode. If it is at high level during startup, enter ISP burning mode. Refer to <b>Table 3</b> for working mode selection.
TP2	NC	I/O	No Connect
TP3	GPIO_17	I/O	
TP4	CHIP_EN	I	Chip Enable
TP5	VSS	Power	GND
TP6	VSS	Power	GND
TP7	VDD	Power	3.3V Input
TP8	VSS	Power	GND



TP9	GPIO_20	I/O	STATUS, mode selection, Refer to <b>Table 3</b> for working mode selection.
TP10	GPIO_16	I/O	<ul style="list-style-type: none"> <li>▪ BOOT: mode selection please refer to Table 3 for working mode selection.</li> <li>▪ LOG_TXD: is used for debugging information output and should not be adjusted arbitrarily. External 1K resistor pull-down is provided to ensure that the module enters ATE mode while passing LOG_TXD sending data</li> </ul>
TP11	GPIO_07	I/O	LOG_RXD, used for debugging information input, do not adjust arbitrarily
TP12	VSS	Power	GND

**Attention:**

1. Module working mode selection signal. During the startup phase, the module detects the level of these pins and enters a specific operating state. The corresponding relationship between level and operating mode is shown in Table 3:

Table 3 Working Mode Selection

Working Mode	TP1 (ISP) Default: 0	TP10 (BOOT) Default: 1	TP9 (STATUS) Default: 1
ISP	1	用于数据输出	x
QC	0	0	0
ATE	0	0	1
APP	0	1	x

- (1). The QC, ATE, and APP modes are determined by the firmware provided by MXCHIP, and the detection conditions and functions can be adjusted by modifying the firmware. The ISP mode is a fixed hardware feature and cannot be modified.
- (2). When the module starts, the hardware and firmware will detect the status of ISP, BOOT, and STATUS to enter the corresponding working mode. Among them:
  - ISP mode is used for programming through serial port onboard Flash.
  - QC mode is used to self-check the hardware during production and generate QC information for the production device to check the quality of the module. The serial port for QC information exchange can be defined in the application program, which defaults to the application serial port output with a baud rate of 921600.
  - In ATE mode, a series of serial port commands are provided to place the radio frequency in a specific transceiver mode, allowing testing and calibration to be carried out through the instrument. ATE interactive serial port is LOG\_UART with a baud rate of 115200bps.
  - APP is the normal working mode for running applications. Debug serial port LOG\_ The default UART baud rate is 2000000.

1. LOG\_RXD/LOG\_TXD is used for debugging the input/output of serial port information. It should not be used during design and should be provided in a convenient way to facilitate software development.

2. CHIP\_ The EN pin is enabled by the chip and is effective at low levels. If not used, it can remain suspended.

3. The processing of chip pins within the module is as follows:

- CHIP\_ EN: 33K pull-up resistor.
- GPIO\_ 08:33K pull-down resistor.

### 3. Electrical Parameter

#### 3.1. Absolute Electrical Parameters

Running outside the absolute maximum rated value may cause permanent damage to module. Prolonged exposure to maximum rated conditions at the same time can affect the reliability of the module.

Table 4 Absolute maximum parameter

Symbol	Note	Min	Max	Unit
VCC_5-VSS	Input voltage on connector	-0.3	5.5	V
VDD-VSS	Input voltage on test pins	-0.3	3.6	V
V <sub>IN_5</sub>	Input voltage on any other connector pins	VSS-0.3	VCC_5+0.3	V
V <sub>IN_33</sub>	Input voltage on any other test pins	VSS-0.3	VDD+0.3	V

#### 3.2. Working Condition

Table 5 Working Temperature

Parameter	Description	Min.	Typical	Max	Unit
Ta	Working Temperature	-30	-	85	°C
V <sub>DD</sub>	Working Voltage	4.5	5	5.5	V

#### 3.3. Power Consumption of Typical Application

The module current testing environment is based on VDD=5V and is tested in a regular office application environment (the values measured in different testing environments may vary).

Table 6 Power Consumption of Typical Application

Mode	Note	Performance @25°C			
		Min	Typical	Max	Unit
RX	11b	-	36	-	mA
	11g	-	38	-	
	11n	-	38	-	
TX	11b - 11Mbps	Duty 50%	85	-	
		Duty 99%	156	-	
	11g - 54Mbps	Duty 50%	68	-	
		Duty 99%	142	-	
	11n - MCS7	Duty 50%	62	-	
		Duty 99%	136	-	
MCU	Run	Freq@ 192MHz	16	-	
	Standby	Freq@ <10MHz	1.5	-	
Sleep	PDS7	Fast recover	8.4	-	uA
Hibernate	HBN	RTC or GPIO	0.4	-	

Shut down	-	-	-	0.1	-	
-----------	---	---	---	-----	---	--

### 3.4. ESD

Table 7 Electrostatic discharge parameters

Symbol	Name	Name	Level	Max.	Unit
V <sub>ESD</sub> (HBM)	Electrostatic discharge voltage (Human body model)	TA= +25 °C comply with JESD22-A114	2	2000	V
V <sub>ESD</sub> (CDM)	Electrostatic discharge voltage (Discharge equipment model)	TA = +25 °C comply with JESD22-C101	II	500	

### 3.5. RF Parameter

#### 3.5.1. Wi-Fi

Table 8 Wi-Fi RF parameter

Item	Specification
Operating Frequency	2.412~2.484GHz
Channel BW	20MHz
Antenna Interface	1T1R, Single stream
Wi-Fi Standard	IEEE 802.11b/g/n
Modulation Type	11b: DBPSK, DQPSK, CCK for DSSS 11g: BPSK, QPSK, 16QAM, 64QAM for OFDM 11n: MCS0~7, OFDM
Data Rates	802.11b: 1, 2, 5.5 and 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps 802.11n: MCS0~7, up to 65Mbps
Antenna type	One U.F.L connector for external antenna PCB printed ANT (Reserve)

**Note:** The typical values of the following Tx test data are recorded under normal temperature environment and Tx lasts about 20s.

**TX performance**

Table 9 Output Power

TX Characteristics	Min.	Typical	Max.	Unit
Power@11Mbps, 802.11b	14	16.5	18	dBm
Power@54Mbps, 802.11g	13	14.5	16	dBm
Power@HT20, MCS7,802.11n	11	12.5	14	dBm

Table 10 Frequency error

TX Characteristics	Min.	Typical	Max.	Unit
Frequency Error	-15	-	+15	ppm

Table 11 EVM

TX Characteristics	Min.	Typical	Max.	Unit
EVM@11Mbps, 802.11b	-	-20	-10	dB
EVM@54Mbps, 802.11g	-	-29	-25	dB
EVM@HT20, MCS7,802.11n	-	-30	-27	dB

**RX performance**

Table 12 RX sensitivity

RX Characteristics	Min.	Typical	Max.	Unit
<b>Minimum Input Level Sensitivity</b>				
PER <sub>≤8%</sub> @11Mbps,802.11b	-	-88	-	dBm
PER <sub>≤10%</sub> @54Mbps,802.11g	-	-73	-	dBm
PER <sub>≤10%</sub> @HT20, MCS7, 802.11n	-	-71	-	dBm

**3.5.2. Bluetooth RF parameter**

Table 13 Bluetooth TX/RX performance

Item	Min	Typical	Max	Unit
TX_AVERAGE	3	6	8	dBm
Frequency Drift Error	-	-4	-	KHz
<b>Modulation characteristics:</b>				
ΔF1avg	-	250	-	KHz
ΔF2avg/ΔF1avg	-	0.9	-	
ΔF2max	-	220	-	KHz
<b>RX Characteristics</b>				
Minimum Sensitivity	-	-95	-	dBm

## 4. Antenna Information

The EMC5020 is available in both PCB antenna and external antenna, please refer to the order code. No IPX antenna connector is soldered on the module using the PCB antenna. By connecting an external antenna through an IPX connector, better RF performance can be obtained.

### 4.1. PCB antenna and usage

#### 4.1.1. On-board PCB antenna parameter

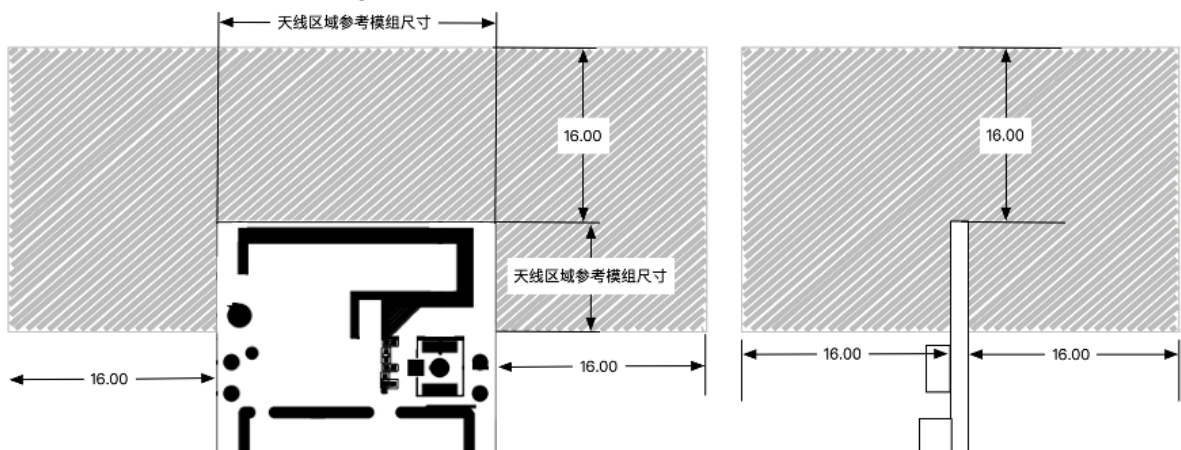
Table 14 on-board PCB antenna parameter

Item	Min.	Typical	Max.	Unit
Frequency	2400		2500	MHz
Impedance		50		$\Omega$
VSWR			2	
Gain	$\leq 2\text{dBi}$			
Efficiency	$> 70\%$ or $> -1.54\text{dB}$			

### 4.1. PCB Antenna Clearance

When using the PCB antenna on the module, you need to make sure that the motherboard PCB is at least 16mm away from other metallic devices, connectors, PCB through-hole, alignment, and copper cladding. The shaded area in the diagram below indicates that the area needs to be kept away from metal devices, sensors, interference sources, and other materials that may cause signal interference.

Figure 3 Antenna minimum clearance area (unit: mm)

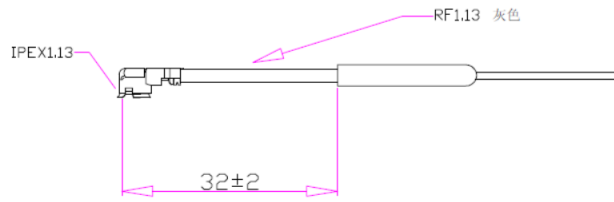


### 4.2. External antenna parameters and use

Users can choose 2.4G antennas in different form factors with a gain of no more than 2dBi according to the application environment.

The following is a copper antenna for an IPEX connector commonly used by MXCHIP.

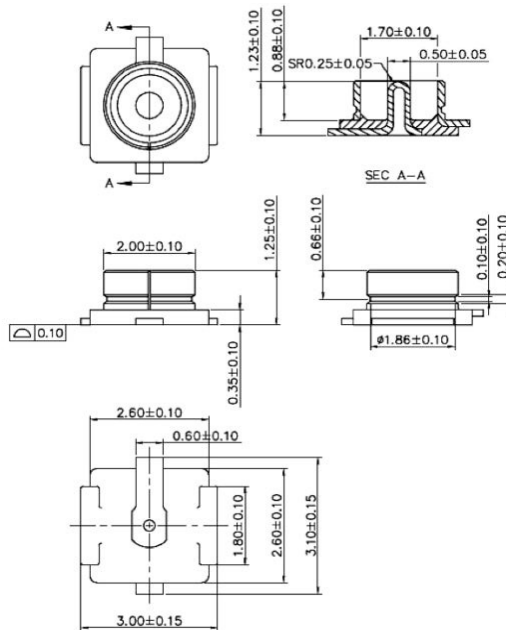
Figure 4 Copper tube antenna size



- Frequency range: 2400-2500 MHz
- Input impedance: 50 OHM
- VSWR: < 2.0
- Gain: 2.0 DBI
- Polarization: vertical
- Directionality: Omnidirectional
- Copper tube: 4.4\*23mm
- Wire: 1.13 grey wire L-82mm

External antenna IPEX seat size:

Figure 5 Dimension drawing of external antenna connector



#### 4.2.1. SRRC Important statements

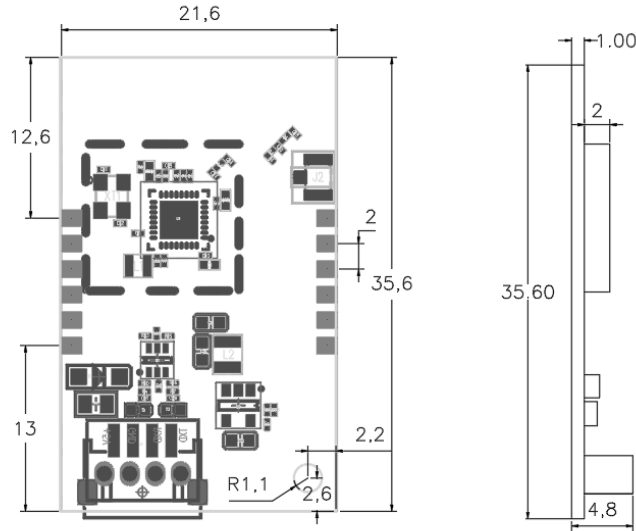
The SRRC type approval number obtained for module models using an external antenna base has the (M) suffix and any module with the (M) suffix is specifically declared as follows.

Type approval of a module does not imply that the end equipment in which the module is embedded or in which it is used complies with the relevant radio regulations or standards, and the end equipment manufacturer is responsible for the conformity of the technical characteristics of the product with the radio regulations or standards.

## 5. Assembly and Package Dimensions

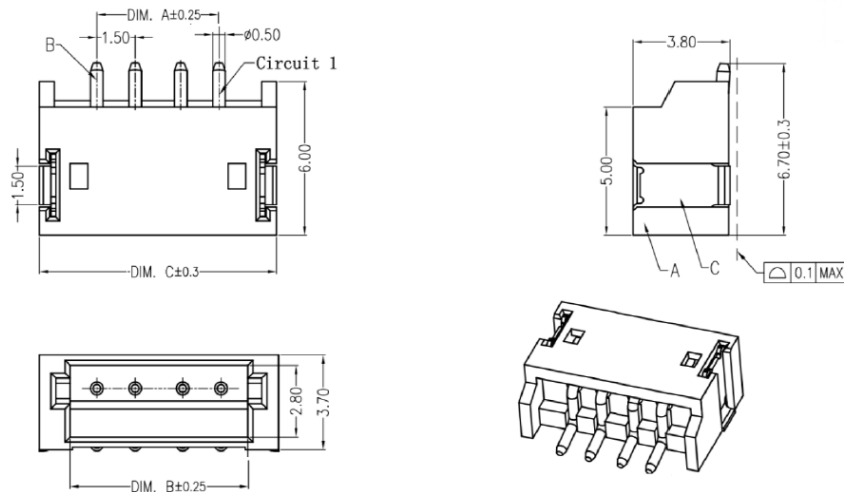
### 5.1. Assembly Dimension

Figure 6 Assembly Dimension Diagram  
(unit: mm, tolerance:  $\pm 0.1$ , outside tolerance  $\pm 0.2$ )



### 5.2. Dimensions and Packaging Drawing of 4PIN Horizontal Patch Socket Connector

Figure 7 Dimensions of 4 Pin Sockets (Unit: mm)



Circuits	Dimensions(mm)		
	DIM.A	DIM.B	DIM.C
04	4.50	6.60	9.00
05	6.00	8.10	10.50



### 5.3. Dimensional Drawing of Spray Box

Figure 8 Dimensions of the Shell of the Glue Spray Box (Unit: mm)

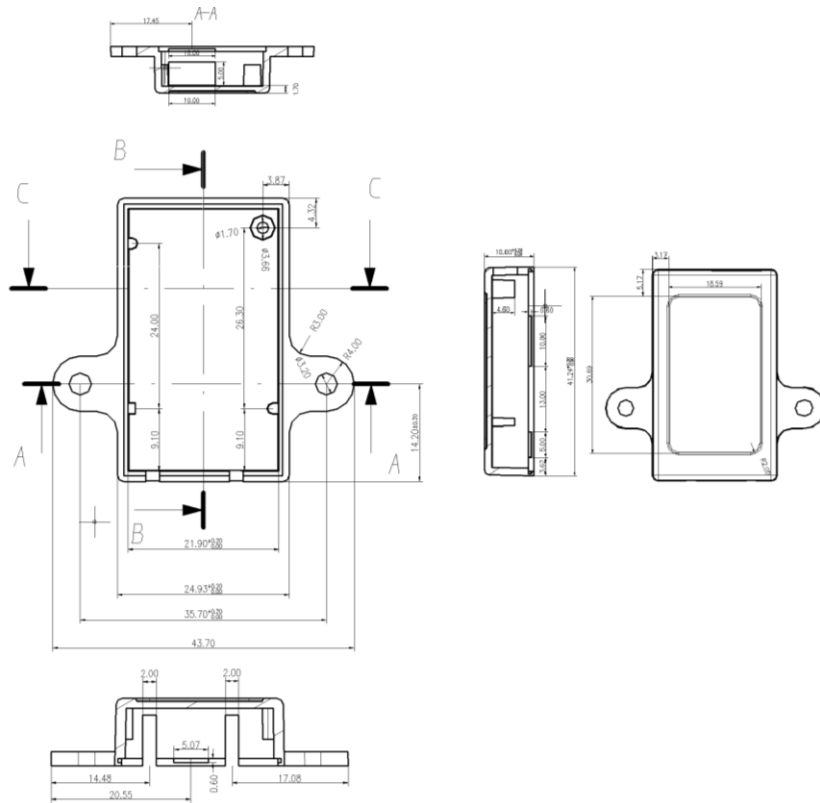
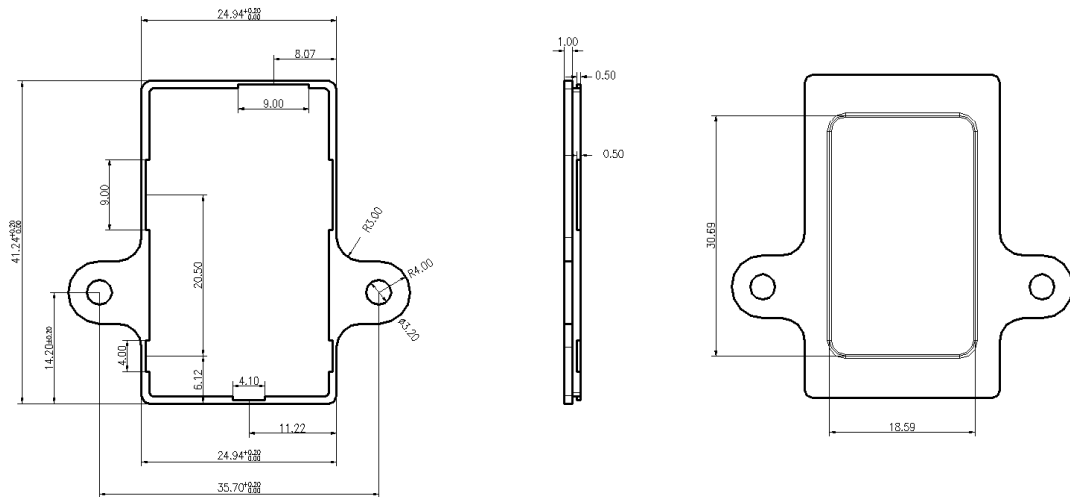
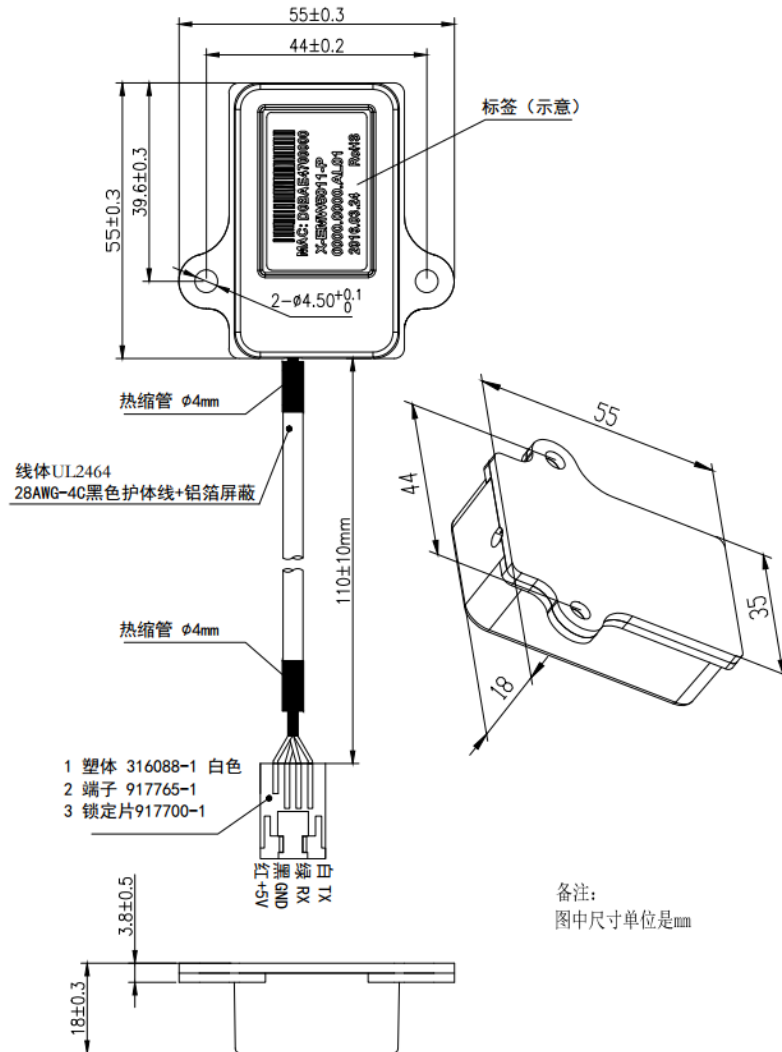


Figure 9 Dimensions of the Cover Plate of the Spray Box Shell (Unit: mm)



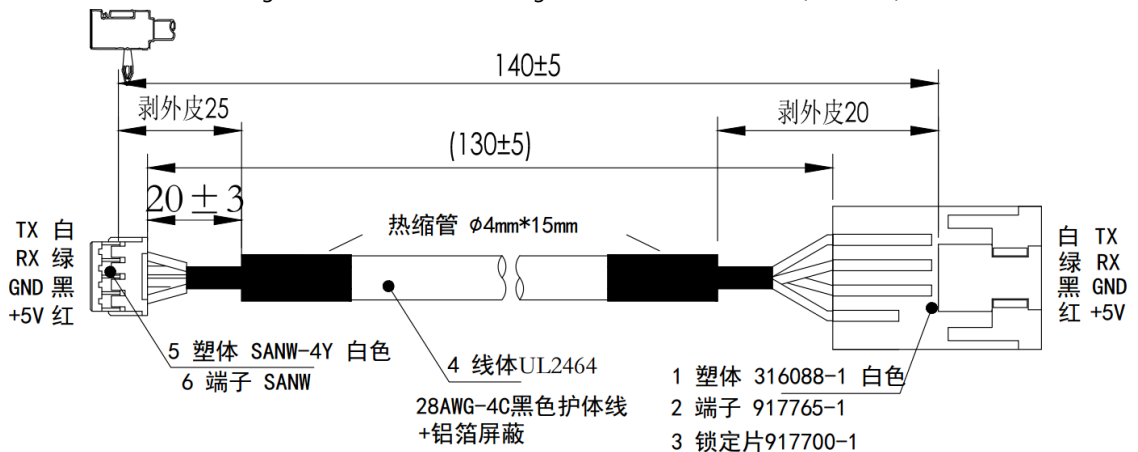
### 5.4. Dimensional Drawing of Glue Box

Figure 10 Dimensional drawing of glue box



### 5.5. Diagram of wire harness of glue box

Figure 11 Dimensional Drawing of Glue Box Wire Harness (Unit: mm)



## 6. Production Guidelines

MXCHIP stamp port packaging module must be SMT machine patches, module humidity sensitivity grade MSL3, after unpacking more than a fixed time patches to bake module.

- SMT patches require instruments
  - Reflow bonding machine
  - AOI detector
  - 6-8mm suction nozzle
- Baking requires equipment:
  - Cabinet oven
  - Anti-static, high temperature tray
  - Antistatic and heat resistant gloves

The storage conditions of MXCHIP module are as follows:

- Moisture-proof bags must be stored in an environment with temperature < 30 degree C and humidity < 85% RH.
- A humidity indicator card is installed in the sealed package.

Figure 12 Humidity Card



After the module is split, if the humidity card shows pink, it needs to be baked.

The baking parameters are as follows:

- The baking temperature is  $120^{\circ}\text{C} \pm 5^{\circ}\text{C}$  and the baking time is 4 hours.
- The alarm temperature is set to  $130^{\circ}\text{C}$ .
- SMT patches can be made after cooling <  $36^{\circ}\text{C}$  under natural conditions.
- Drying times: 1 time.
- If there is no welding after baking for more than 12 hours, please bake again.

If the disassembly time exceeds 3 months, SMT process is forbidden to weld this batch of modules, because PCB gold deposition process, over 3 months, pad oxidation is serious, SMT patch is likely to lead to virtual welding, leak welding, resulting in various problems, our company does not assume the corresponding responsibility.

Before SMT patch, ESD (Electrostatic Discharge, Electrostatic Release) protection should be applied to the module.

SMT patches should be made according to the reflow curve. The peak temperature is 250 C.

In order to ensure the qualified rate of reflow soldering, 10% of the first patches should be taken for visual inspection and AOI testing to ensure the rationality of furnace temperature control, device adsorption mode and placement mode, and 5-10 patches per hour are recommended for visual inspection and AOI testing in subsequent batch production.

## 6.1. Precautions

- Operators of each station must wear static gloves during the entire production process.
- Do not exceed the baking time when baking.
- It is strictly forbidden to add explosive, flammable, or corrosive substances during baking.
- When baking, the module uses a high temperature tray to be placed in the oven to keep the air circulation between each module while avoiding direct contact between the module and the inner wall of the oven.
- When baking, please close the oven door to ensure that the oven is closed to prevent temperature leakage and affect the baking effect.
- Try not to open the door when the oven is running. If it must be opened, try to shorten the time for opening the door.
- After baking, the module should be naturally cooled to <36°C before wearing the static gloves to avoid burns.
- When operating, strictly guard against water or dirt on the bottom of the module.

The temperature and humidity control level of MXCHIP factory module is Level 3, and the storage and baking conditions are based on IPC/JEDEC J-STD-020.

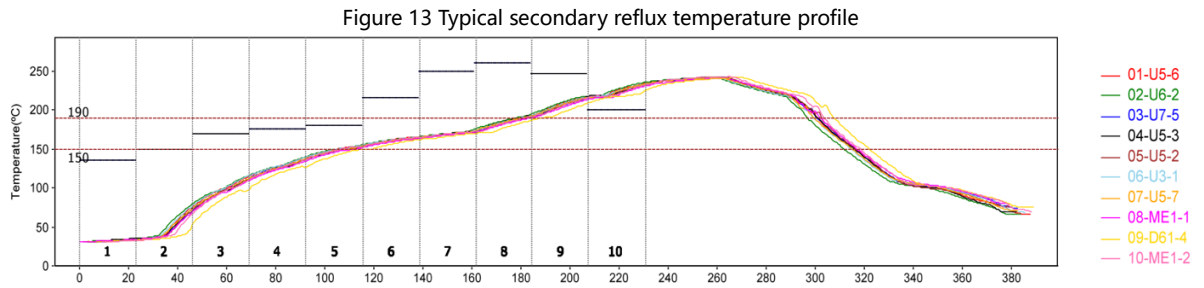
## 6.2. Secondary reflow temperature curve

Recommended solder paste type: SAC305, lead free. No more than 2 reflow cycles. Peak temperature not to exceed 245°C. The following is a typical furnace temperature profile setting.

Table 15 Typical furnace temperature settings

Furnace settings	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10
Upper temperature zone setting	135	150	170	175	180	215	250	260	247	200


Lower temperature zone setting	135	150	170	175	180	215	250	260	247	200
--------------------------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



- 30°C ~ 150°C preheating temperature rise: 0-3°C/s, typical value: 1.2°C/s
- 150°C ~ 190°C immersion time: 60-100second, typical value: 72second
- Peak temperature: 245°C, typical value: 242°C
- Time above 220°C: 50 sec. to 90 sec. Typical value: 70 sec.
- 217°C cooling speed: -3 ~ 0°C/s, typical value: -2.0°C/s

### 6.3. Storage Condition

Figure 14 Storage Conditions Diagram



**CAUTION**  
This bag contains  
**MOISTURE-SENSITIVE DEVICES**

**LEVEL**  
**3**

If Blank, see adjacent bar code label

1. Calculated shelf life in sealed bag: 12 months at <math><40^{\circ}\text{C}</math> and <math><90\%</math> relative humidity (RH)
2. Peak package body temperature: 260 °C  
If Blank, see adjacent bar code label
3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must
  - a) Mounted within: 168 hrs. of factory conditions  
If Blank, see adjacent bar code label
  - $\leq 30^{\circ}\text{C}/60\% \text{RH}$ , OR
  - b) Stored at <math><10\%</math> RH
4. Devices require bake, before mounting, if:
  - a) Humidity Indicator Card is > 10% when read at  $23 \pm 5^{\circ}\text{C}$
  - b) 3a or 3b not met.
5. If baking is required, devices may be baked for 48 hrs. at  $125 \pm 5^{\circ}\text{C}$

**Note:** If device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC/JEDEC J-STD-033 for bake procedure

Bag Seal Date: \_\_\_\_\_  
If Blank, see adjacent bar code label

**Note:** Level and body temperature defined by IPC/JEDEC J-STD-020

## 7. Label

Figure 15 Label schematic diagram



1. MXCHIP: Company Logo
2. CMIIT ID: SRRC Model Authorization ID
3. EMC5020-P: Product Main Type
4. Z15: Product Auxiliary Model
5. X2137: Production serial number
6. B0F8936C39CA: MAC Address

**Note: Due to production batch and version and other reasons, the above label diagram is for reference only, please prevail in kind.**

## 8. Sales and Technical Support Information

If you need to consult or purchase this product, please call Shanghai MXCHIP Information Technology Co., Ltd. during office hours.

Office hours: Monday to Friday morning: 9:00-12:00, afternoon: 13:00-18:00

Contact Tel: +86-21-52655026

Address: 9th Floor, Building B, 2145 Jinshajiang Road, Putuo District, Shanghai

Zip code: 200333

Email: [sales@mxchip.com](mailto:sales@mxchip.com)



