MXCHIP®

Datasheet

EMC3290 Wi-Fi/BLE Module

Built-in ARM Cortex V8 dual-core processor, and Flash memory

2.4/5G Hz dual-frequency Wi-Fi, BLE 5.0, rich peripherals

Version：1.2 Date：2024-05-08 Number：DS0206EN

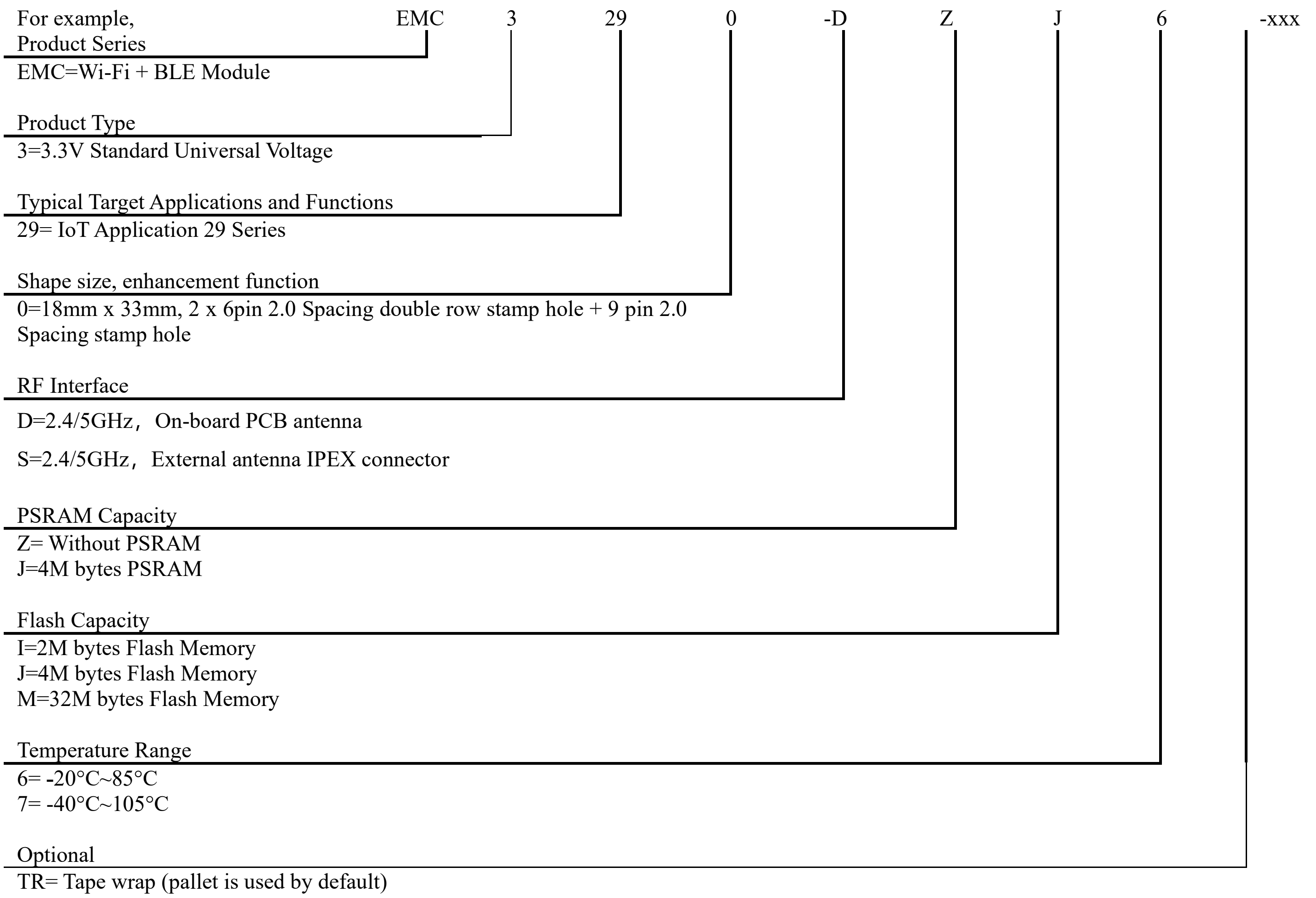
Abstract

- **Input voltage：3.0V~3.6V**
- **Processor：Dual-core CPU RTL8720DF**
  - Performance core KM4 ： Cortex-M33 with main frequency up to 200MHz.
  - Energy Efficiency Core KM0：Cortex-M23 with main frequency up to 20MHz.
  - SWD/JTAG simulation debugging interface.
- **Memory**
  - 512K bytes SRAM for KM4 core
  - 64K bytes SRAM for KM0 core
  - XIP flash memory from 4M bytes
- **Wi-Fi**
  - 802.11 a/b/g/n 1T1R 2.4/5GHz dual frequency.
  - Processing Wi-Fi messages using independent Microcontrollers.
  - Support low power TX/RX mode in short distance applications.
  - Support narrow-band mode: 10MHz bandwidth.
  - Support Antenna diversity.
  - Support the IEEE Power Save Model
- **BT 5.0 Low Energy**
  - Comply with Low Power Bluetooth 5.0 Standard.
  - Support high power mode (10dbm).
  - Wi-Fi and BLE time division multiplexing and share the same PA and antenna.
  - Support Bluetooth Master-Slave Mode and BLE mesh.
  - rates
- **Safety**
  - ARM Trust Zone-M Technology.
  - AES/DES/SHA Hardware Accelerator, Random Number Generator
  - Security boot Safe Start
  - Anti-reading mechanism: JTAG interface protection, flash encryption technology.
- **Peripherals**
  - 10 x GPIO
  - 1 x SPI、 1 x I2C、
  - 3 x PWM, 2 x ADC
  - 3 x UART
  - Low power RTC
- **Interface and Dimension**
  - Maintain pin compatibility with similar package modules.
  - RF Interface: PCB antenna, IPEX connector antenna
  - 18*33*3mm, stamp hole

- **Application Functions**
  - Support AliOS and MXOS operating system
  - Provide major cloud platforms access SDK
  - Mass production firmware for typical applications
- **Typical applications**
  - Smart home appliances
  - Smart electric equipment
  - Industrial automation
- **Ordering Code**

Ordering Code	Notes
EMC3290-DZJ6	PCB Antenna, Temperature: -20~85℃
EMC3290-SZJ6	IPEX Antenna, Temperature: -20~85℃
EMC3290-DZJ7	PCB Antenna, Temperature: -40~105℃
EMC3290-SZJ7	IPEX Antenna, Temperature: -40~105℃

Order Code



Optional Model

Order Code	Description
MXKIT-Base	Development board motherboard, suitable for all EMC3290 modules.
MXKIT-Core-C3290	Development board core board for EMC3290 includes the EMC3290-P module. Used with MXKIT-Base.
FX-3290	EMC3290 Production fixture, including accompanying plate: MXKIT-Base， MXKIT-Core-3290.

Version Update Record

Date	Version	Update Items
2023-03-15	0.5	Initial Document.
2023-06-10	0.6	Update Bluetooth RF parameters. Update label information. Update Pin Definition.
2023-06-21	0.7	Add Module photograph. Update working temperature parameter.
2023-06-25	0.8	Modify Pin Definition. Update Working mode table.
2023-06-25	0.9	Add remarks for PA30 pin.
2023-08-21	1.0	Add order code.
2024-03-20	1.1	Modify Pin name.
2024-05-08	1.2	Update order code information

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Datasheet lower than 1.0 are for reference only and may be modified before mass production.

Catalog

Abstract 1

1. Introduction 5

2. Pin Definition 6
- 2.1. Pin Distribution 6
- 2.2. Pin Definition 6

3. Electrical Parameters 8
- 3.1. Absolute Maximum Parameter 8
- 3.2. Digital IO DC characteristic 8
- 3.3. Temperature 8
- 3.4. ESD 8
- 3.5. RF Parameter 9
  - 3.5.1. Basic RF Parameters 9
  - 3.5.2. Wi-Fi RF characteristics 9
- 3.6. Bluetooth RF characteristic 13

4. Antenna Information 14
- 4.1. Antenna Type 14
- 4.2. PCB Antenna Clearance 14
- 4.3. External Antenna Connector 14

5. Dimensions and Production Guidance 16
- 5.1. Assembly Dimension Diagram 16
- 5.2. Packing dimension diagram 16

6. Production Guidelines 17
- 6.1. Precautions 18
- 6.2. Storage Condition 18
- 6.3. Secondary Reflux Temperature Curve 18

7. Label Information 20

8. Sales and Technical Support Information 21

Table Catalog

Table 1 EMC3290 Pin Definition 6

Table 2 operation mode 7

Table 3 Absolute maximum parameter: voltage 8

Table 4 operating parameter: voltage and current 8

Table 5 Operation parameter 8

Table 6 Storage temperature and operation temperature 8

Table 7 Electrostatic discharge parameters 8

Table 8 RF Standard 9

Table 9 EMC3290 IEEE 802.11b TX/RX characteristics 9

Table 10 EMC3290 IEEE802.11g TX/RX characteristics 10

Table 11 EMC3290 IEEE802.11n-HT20 TX/RX characteristics 10

Table 12 EMC3290 IEEE802.11n-HT40 TX/RX characteristics 11
Table 13 EMC3290 IEEE802.11a TX/RX characteristics 11
Table 14 EMC3290 IEEE802.11n-HT20(5G) TX/RX characteristics 12
Table 15 EMC3290 IEEE802.11n-HT40(5G) TX/RX characteristics 12
Table 16 Bluetooth TX/RX Parameters 13
Table 17 EMC3290 Onboard PCB antenna parameter (2.4GHz) 14
Table 18 EMC3290 Onboard PCB antenna parameter (5GHz) 14

Figure Catalog

Figure 1 EMC3290 Hardware Block Diagram 5
Figure 2 Pin Arrangement 6
Figure 3 IO The power-on state interface 7
Figure 4 PCB Antenna Minimum Clearance（unit: mm） 14
Figure 5 Eternal antenna size 15
Figure 6 Dimension Diagram of External Antenna Connector 15
Figure 7 EMC3290 dimension（unit: mm） 16
Figure 8 EMC3290 packing dimension（unit: mm） 16
Figure 9 Humidity Card 17
Figure 10 Storage Conditions Diagram 18
Figure 11 Reference Secondary Reflux Temperature Curve 19
Figure 12 Module Label Schematic Diagram 20

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1. Introduction

EMC3290 is a high-performance module mainly used in applications of the Internet of Things. It has a dual-core microcontroller with ultra-high integration, supports 2.4/5GHz dual-band Wi-Fi and BLE 5.0 wireless communication technology, and includes large capacity Flash, RAM, meet various complex requirements in speech application.

The core of high performance is a 32-bit core with a main frequency up to 200 MHz. Based on the latest ARM v8-M architecture, it not only has low power consumption, but also can complete floating-point operation. The core frequency of high energy efficiency reaches 20MHz, which provides a simplified instruction system for ultra-low power applications, so that the system can keep standby for a long time.

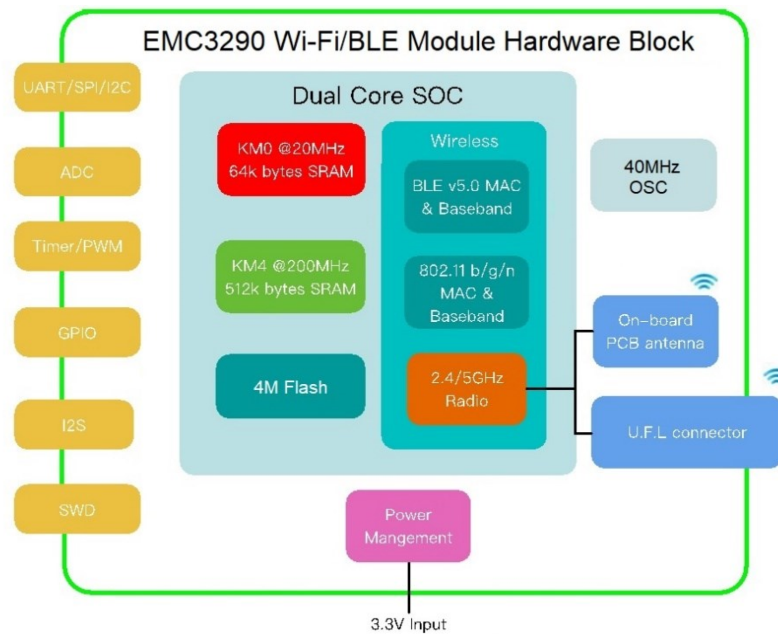
2.4/5GHz dual-band Wi-Fi guarantees stable Internet connection at any time. BLE 5.0 technology can not only facilitate users to complete the rapid configuration of products, but also realize the intelligent networking of a large number of local devices through Mesh technology.

Shanghai MXCHIP provides MXOS software platform to support the development of EMC3290, providing an efficient development environment, rich sample programs and typical applications.

The following diagram is the hardware block diagram of EMC3290 module, which mainly includes:

- Dual-core wireless microcontroller
- Flash memory with optional capacity
- Plate-borne antenna or external antenna pedestal

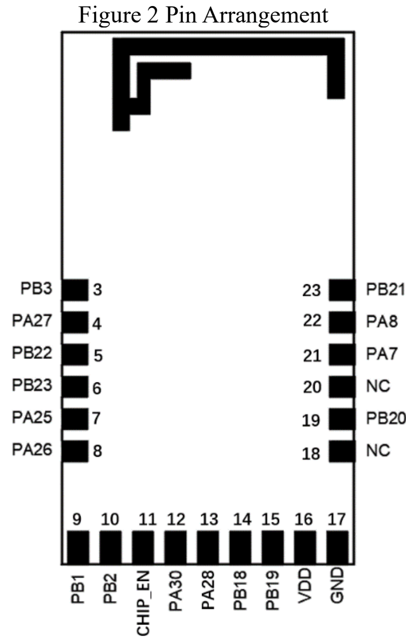
Figure 1 EMC3290 Hardware Block Diagram



2. Pin Definition

2.1. Pin Distribution

Figure 2 Pin Arrangement



2.2. Pin Definition

Table 1 EMC3290 Pin Definition

Pin No.	Name	I/O	Recommended Function
3	PB3	I/O	SWD_CLK：SWD debugging
4	PA27	I/O	SWD_DIO：SWD debugging
5	PB22	I/O	ADC4
6	PB23	I/O	ADC5
7	PA25	I/O	I2C_SCL
8	PA26	I/O	I2C_SDA
9	PB1	I/O	UART_TXD, application serial port
10	PB2	I/O	UART_RXD, application serial port
11	CHIP_EN(3) (5)	I/O	RESET
12	PA30	I/O	PWM7
13	PA28	I/O	PWM6
14	PB18	I/O	HS_UART0_RXD
15	PB19	I/O	HS_UART0_TXD
16	VDD	I/O	VDD
17	GND	I/O	GND
18	NC	I/O	-
19	PB20(1)	I/O	BOOT, refer to Table 2 for operating mode selection
20	NC	I/O	-
21	PA7	I/O	Debug_TXD，debugging/download serial port
22	PA8	I/O	Debug_RXD，debugging/download serial port
23	PB21	I/O	EASYLINK, refer to Table 2 for operating mode selection

Notes：

1. Module working mode selection signal. During the startup phase, the module detects the level of these pins and enters a specific working state. The correspondence between level and working mode is shown in Table 2:

Table 2 operation mode

Operation mode		**PA7（Debug_TXD）Default: 1**	**PB20（BOOT）Default: 1**	**PB21（EASYLINK）Default: 1**
ISP Program Mode		0	not detect	not detect
Test mode		1	not detect	not detect
Normal	QC	no detect	0	0
	ATE	no detect	0	1
	APP	no detect	1	not detect

(1) ISP Program Mode, Test mode and Normal mode are detected by hardware at startup. PA7, because it is a function of hardware solidification, it cannot be modified.

(2) QC, ATE and APP modes are judged by the firmware provided by MXCHIP, and the detection conditions and functions can be adjusted by modifying the firmware.

(3) ISP Program Mode function contempt: In the startup phase, if the processor hardware detects that the levels of PA1 are low(Using a pull-down 1K resistor is suggested), it enters ISP programming mode. In the ISP programming mode, the flash of the module can be programmed through Debug UART (PA7, PA8).

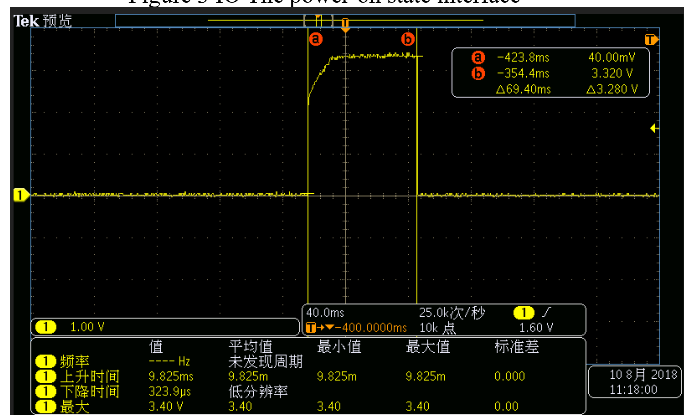
(4) Test mode is the reserved mode of the chip and will not be used.

(5) After the startup is completed, when the processor runs the firmware provided by MXCHIP, the firmware detects the status of PB20 and PB21 to enter the corresponding working mode. among them:

- 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.
- In the ATE mode, a series of serial commands are provided to make the radio frequency in a specific transceiver mode, so that the instrument can be tested and calibrated.
- APP is the normal working mode for running applications.

2. The Debug UART serial port is used for the input / output of debugging information. Do not use it during design and provide as easy a way as possible to facilitate software development.
3. PA30 and CHIP_EN pin are internal pull-up. The CHIP_EN pin is an enable reset pin, which is active low and can be left floating if not used.
4. Please keep the unused pins floating. It should be noted that the IO port is in a floating state at startup. If you need to configure the state of the pin through software, you need to wait until the code in the bootloader starts to execute. The time from when the module is powered on to when the code in the bootloader is executed will be affected by the flash startup time. Therefore, if you need IO to be in a certain level state at startup, you need to use a 100k resistor on the pin to pull up and down. Figure 3 shows the level change of the IO port whose software is configured as a low level after being pulled up by an external 100K resistor in the floating state. It can be seen that the time from the power-on of the module to the controllable IO port software is 69.4ms, and the time during which the IO is pulled to the high level is about 20ms.

Figure 3 IO The power-on state interface



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3. Electrical Parameters

3.1. Absolute Maximum Parameter

Modules operating outside the absolute maximum ratings may cause permanent damage. At the same time, long-term exposure to the maximum rating conditions will affect the reliability of the module.

Table 3 Absolute maximum parameter: voltage

Symbol	Ratings	Min	Max	Unit
VDD–VSS	Voltage	–0.3	3.6	V
VIN	Input voltage on any other pin	VSS−0.3	VDD+0.3	V

Table 4 operating parameter: voltage and current

Symbol	Note	Specification			
		Min.	Typical	Max.	Unit
V_{DD}	Voltage	3.0	3.3	3.6	V
I_{VDD}	3.3V Rating Current (with internal regulator and integrated CMOS PA)			450	mA

3.2. Digital IO DC characteristic

The electrical characteristics of the module's digital IO port are described in Table 12 under 3.3V power supply.

Table 5 Operation parameter

Symbol	Note	Conditions	Specification			
			Min.	Typical	Max.	Unit
V_{IH}	Input-High Voltage	LVTTL	2.0	-	-	V
V_{IL}	Input-Low Voltage	LVTTL	-	-	0.8	V
V_{OH}	Output-High Voltage	LVTTL	2.4	-	-	V
V_{OL}	Output-Low Voltage	LVTTL	-	-	0.4	V
I_{IL}	Input-Leakage Current	V_{IN} = 3.3V/0V	-10	±1	10	µA

3.3. Temperature

Table 6 Storage temperature and operation temperature

Symbol	Ratings	Min.	Max	Unit
T_{STG}	Storage temperature	–55	125	°C
T_A	Ambient Operating Temperature (Please refer to the order code for details)	-40	105	°C
T_J	Junction Temperature	0	125	°C

3.4. ESD

Table 7 Electrostatic discharge parameters

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

3.5. RF Parameter

3.5.1. Basic RF Parameters

Table 8 RF Standard

Item		Specification	
Operating Frequency		2.4G Band：2400~2483MHz，5G Band：5180~5825MHz	
Specification	Wi-Fi	IEEE802.11b/g/n(2.4G)，802.11a/n(5G)	
	Bluetooth	Bluetooth 5.0	
Modulation Type	Wi-Fi	11b: DBPSK, DQPSK, CCK for DSSS 11g/a/n: BPSK, QPSK, 16QAM, 64QAM for OFDM 11g: BPSK, QPSK, 16QAM, 64QAM for OFDM 11n: MCS0~7, OFDM	
	Bluetooth	GFSK	
Data Rates	Wi-Fi	20MHz	11b：1,2,5.5和11Mbps 11g /a: 6,9,12,18,24,36,48,54Mbps 11n_HT20: MCS0~7, up to 72Mbps
		40MHz	11n_HT40(2.4G&5G): MCS0~7, up to 150Mbps
	Bluetooth	2MHz	1Mbps，2Mbps（BT 5.0）
Antenna type		One U.F.L connector for external antenna PCB printed ANT (Reserve)	
Antenna Interface		1T1R, single-stream	

3.5.2. Wi-Fi RF characteristics

IEEE 802.11b mode

Table 9 EMC3290 IEEE 802.11b TX/RX characteristics

Item	**Description**			
Mode	IEEE802.11b			
Channel	CH1 to CH13			
Data Rates	1, 2, 5.5, 11Mbps			
TX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Transmitter Output Power				
11b Target Power@1Mbps	15.0	16.5	18.0	dBm
11b Target Power@11Mbps	15.0	16.5	18.0	dBm
Spectrum Mask @ target power				
fc +/-11MHz to +/-22MHz	-	-	-30	dB
fc > +/-22MHz	-	-	-50	dB
Frequency Error	-10	-2	+10	ppm
Constellation Error (peak EVM) @target power				
1~11Mbps	-	-	35%（or -11dB）	
RX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Minimum Input Level Sensitivity				
1Mbps (FER≦8%)	-	-98	-	dBm
11Mbps (FER≦8%)	-	-88	-	dBm

IEEE802.11g mode

Table 10 EMC3290 IEEE802.11g TX/RX characteristics

Item	**Description**			
Mode	IEEE802.11g			
Channel	CH1 to CH13			
Data Rates	6, 9, 12, 18, 24, 36, 48, 54Mbps			
TX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Transmitter Output Power				
11g Target Power@6Mbps	13.5	15.0	16.5	dBm
11g Target Power@54Mbps	13.0	14.5	16	dBm
Spectrum Mask @ target power				
fc +/- 11MHz	-	-	-20	dB
fc +/- 20MHz	-	-	-28	dB
fc > +/-30MHz			-40	dB
Frequency Error	-10	-2	+10	ppm
Constellation Error (peak EVM) @target power				
6Mbps	-	-30	-5	dBm
54Mbps	-	-30	-25	dBm
RX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Minimum Input Level Sensitivity				
6Mbps (FER≦10%)	-	-93	-	dBm
54Mbps (FER≦10%)	-	-76	-	dBm

IEEE802.11n-HT20(2.4G) mode

Table 11 EMC3290 IEEE802.11n-HT20 TX/RX characteristics

Item	**Description**			
Mode	IEEE802.11n HT20			
Channel	CH1 to CH13			
Data Rates	MCS0/1/2/3/4/5/6/7, up to 65Mbps			
TX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Transmitter Output Power				
11n Target Power@MCS0	13.5	14.5	16	dBm
11n Target Power@ MCS7	12.5	14	15.5	dBm
Spectrum Mask @ target power				
fc +/- 11MHz	-	-	-20	dB
fc +/- 20MHz	-	-	-28	dB
fc > +/-30MHz			-45	dB
Frequency Error	-10	-2	+10	ppm
Constellation Error (peak EVM) @target power				
MCS0	-	-30	-5	dBm
MCS7	-	-31	-27	dBm
RX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**

Minimum Input Level Sensitivity				
MCS0 (FER≦10%)	-	-93	-93	dBm
MCS7 (FER≦10%)	-	-73.5	-73	dBm

IEEE802.11n-HT40(2.4G) mode

Table 12 EMC3290 IEEE802.11n-HT40 TX/RX characteristics

Item	**Description**			
Mode	IEEE802.11n HT40			
Channel	CH1 to CH13			
Data Rates	MCS0/1/2/3/4/5/6/7, up to 135Mbps			
TX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Transmitter Output Power				
11n Target Power@MCS0	13.5	14.5	16	dBm
11n Target Power@ MCS7	12.5	14	15.5	dBm
Spectrum Mask @ target power				
fc +/- 22MHz	-	-	-20	dB
fc +/- 40MHz	-	-	-28	dB
fc > +/-60MHz	-	-	-45	dB
Frequency Error	-10	-2	+10	ppm
Constellation Error (peak EVM) @target power				
MCS0	-	-30	-5	dBm
MCS7	-	-32	-27	dBm
RX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Minimum Input Level Sensitivity				
MCS0 (FER≦10%)	-	-90	-	dBm
MCS7 (FER≦10%)	-	-71.5	-	dBm

IEEE802.11a mode

Table 13 EMC3290 IEEE802.11a TX/RX characteristics

Item	**Description**			
Mode	IEEE802.11a			
Channel	CH36 to CH165			
Data Rates	6, 9, 12, 18, 24, 36, 48, 54Mbps			
TX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Transmitter Output Power				
11g Target Power@6Mbps	12.5	14	15.5	dBm
11g Target Power@54Mbps	11.5	13	14.5	dBm
Spectrum Mask @ target power				
fc +/- 11MHz	-	-	-20	dBr
fc +/- 20MHz	-	-	-28	dBr
fc > +/-30MHz			-40	dBr
Frequency Error	-10	-2	+10	ppm
Constellation Error (peak EVM) @target power				

MCS0	-	-29	-5	dBm
MCS7	-	-29	-25	dBm
RX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Minimum Input Level Sensitivity				
6Mbps (FER≦10%)	-	-89	-	dBm
54Mbps (FER≦10%)	-	-74.5	-	dBm

IEEE802.11n HT20(5G) mode

Table 14 EMC3290 IEEE802.11n-HT20(5G) TX/RX characteristics

Item	**Description**			
Mode	IEEE802.11n(5G) HT20			
Channel	CH36 to CH165			
Data Rates	MCS0/1/2/3/4/5/6/7, up to 65Mbps			
TX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Transmitter Output Power				
11n Target Power@MCS0	11.5	13	14.5	dBm
11n Target Power@MCS7	10.5	12	13.5	dBm
Spectrum Mask @ target power				
fc +/- 11MHz	-	-	-20	dB
fc +/- 20MHz	-	-	-28	dB
fc > +/-30MHz	-	-	-45	dB
Frequency Error	-10	-2	+10	ppm
Constellation Error (peak EVM) @target power				
MCS0	-	-28	-5	dBm
MCS7	-	-30	-27	dBm
RX Characteristics	Min.	Typical.	Max.	Unit
Minimum Input Level Sensitivity				
MCS0 (FER≦10%)	-	-92.5	-	dBm
MCS7 (FER≦10%)	-	-72	-	dBm

IEEE802.11n HT40(5G) mode

Table 15 EMC3290 IEEE802.11n-HT40(5G) TX/RX characteristics

Item	Description			
Mode	IEEE802.11n(5G) HT40			
Channel	CH36 to CH165			
Data Rates	MCS0/1/2/3/4/5/6/7, up to 135Mbps			
TX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Transmitter Output Power				
11n Target Power@MCS0	11.5	13	14.5	dBm
11n Target Power@MCS7	10.5	12	13.5	dBm
Spectrum Mask @ target power				
fc +/- 11MHz	-	-	-20	dBr
fc +/- 20MHz	-	-	-28	dBr

fc > +/-30MHz			-45	dBr
Frequency Error	-10	-2	+10	ppm
Constellation Error (peak EVM) @target power				
MCS0	-	-28	-5	dBm
MCS7	-	-30	-27	dBm
RX Characteristics	**Min.**	**Typical.**	**Max.**	**Unit**
Minimum Input Level Sensitivity				
MCS0 (FER≦10%)	-	-89	-	dBm
MCS7 (FER≦10%)	-	-69	-	dBm

3.6. Bluetooth RF characteristic

Table 16 Bluetooth TX/RX Parameters

Item	Data Rate	Min	Typical	Max	Unit
POWER_AVERAGE	LE_1M	6	8	10	dBm
Frequency Drift Error	LE_1M	-50	-7	50	KHz
Carrier frequency offset and drift at NOC:					
ΔFn max	LE_1M	-150	5.8	150	KHz
|F0-Fn|	LE_1M		3.7	50	KHz
|F1-F0|	LE_1M		4.6	20	KHz
|Fn-Fn5|	LE_1M		0.9	20	KHz
Modulation characteristics:					
ΔF1avg	LE_1M	225	247	275	KHz
ΔF2avg	LE_1M	185	225	275	KHz
ΔF2avg/ΔF1avg	LE_1M	0.8	0.92		KHz
ΔF2max	LE_1M	185	231		KHz
RX Characteristics					
Minimum Sensitivity PER ≤30.8%	LE_1M	-	-98	-97	dBm

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4. Antenna Information

4.1. Antenna Type

EMC3290 has two specifications: PCB antenna and IPX connector. Please refer to order code.

Table 17 EMC3290 Onboard PCB antenna parameter (2.4GHz)

Item	Min.	Typical	Max.	Unit
Frequency	2400		2500	MHz
Impedance		50		Ω
VSWR			2	
Gain	-0.37dBi			
Efficiency	47%			

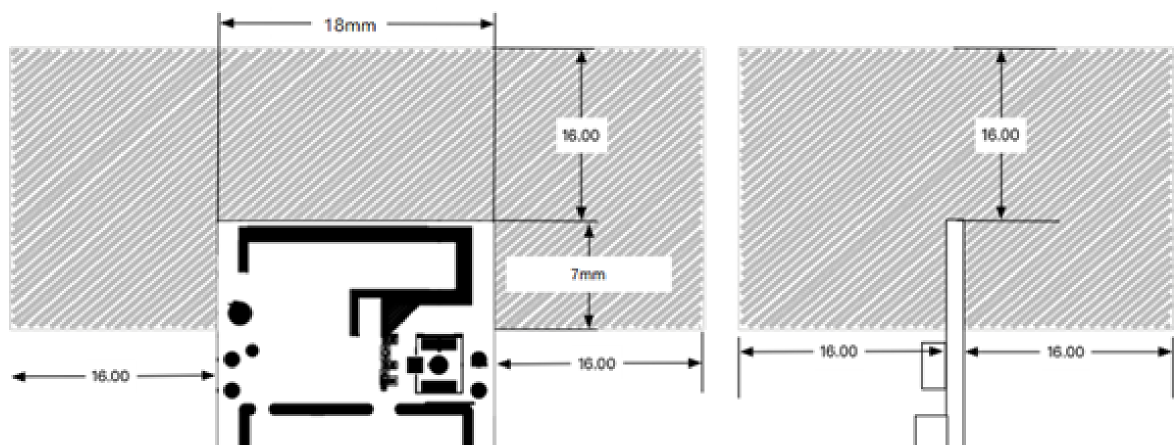
Table 18 EMC3290 Onboard PCB antenna parameter (5GHz)

Item	Min.	Typical	Max.	Unit
Frequency	5100		5800	MHz
Impedance		50		Ω
VSWR			2	
Gain	-0.69dBi			
Efficiency	42%			

4.2. PCB Antenna Clearance

When using PCB antenna in WIFI module, it is necessary to ensure that PCB and other metal devices are at least 16 mm away from the motherboard. The shaded areas in the figure below need to be far away from metal devices, sensors, interference sources and other materials that may cause signal interference.

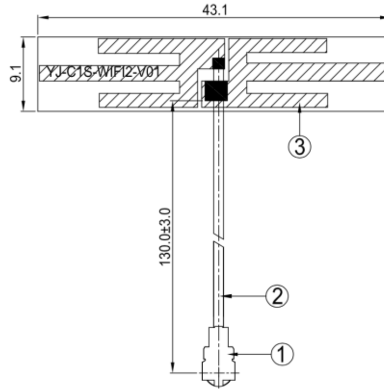
Figure 4 PCB Antenna Minimum Clearance（unit: mm）



4.3. External Antenna Connector

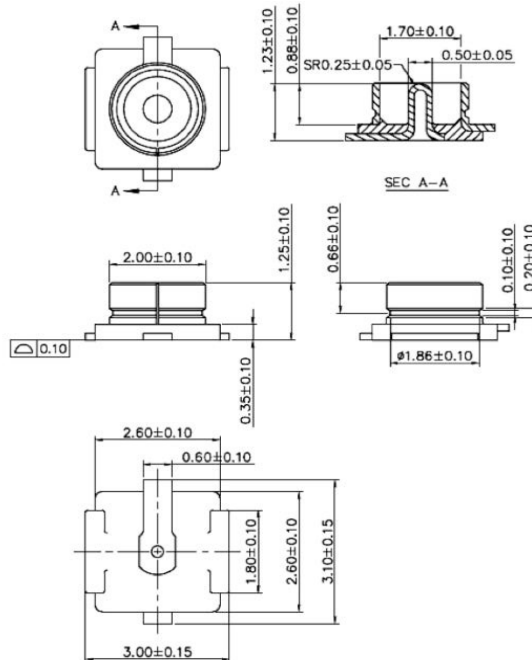
Users can select 2.4G & 5G antennas with different external dimensions and gains of no more than 2dBi depending on the application environment. The following is a copper tube antenna for an IPEX connector commonly used by MXCHIP.

Figure 5 Eternal antenna size



- Frequency Range: 2.4-2.5GHz 5.15-5.85GHz z
- Input independence: 50 Ohm
- SWR: < 2.0
- Gain：3.0dBi@2.4-2.5GHz 5.9dBi@5.15-5.85GHz
- Polarization: vertical
- Directionality: Omnidirectional
- Copper tube: 4.4*23mm: 4.4*23mm
- RL: < -10 dB
- Cable: O.D.1.13mm//L=130mm, Blue

Figure 6 Dimension Diagram of External Antenna Connector



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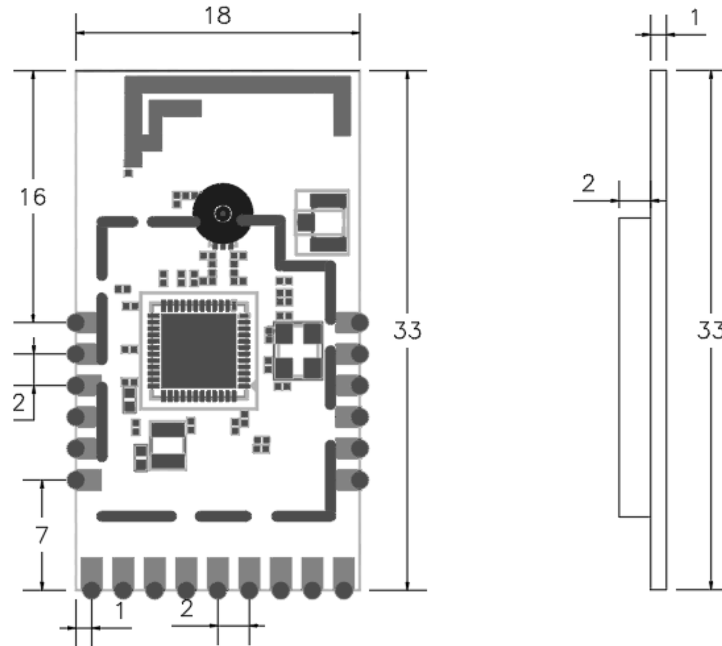
5. Dimensions and Production Guidance

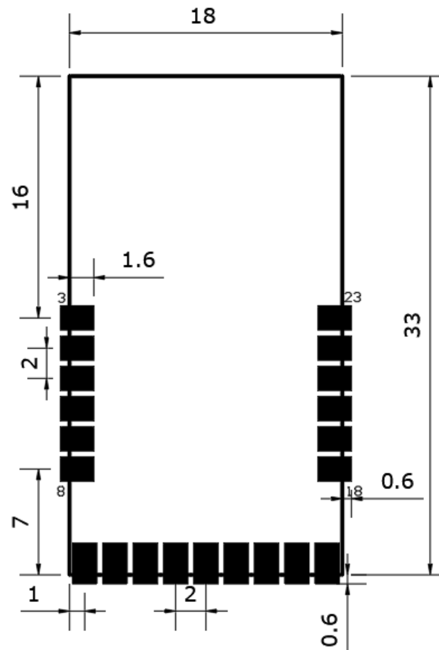
5.1. Assembly Dimension Diagram

Figure 7 EMC3290 dimension（unit: mm）



5.2. Packing dimension diagram

Figure 8 EMC3290 packing dimension（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 9 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℃±5℃ and the baking time is 4 hours.
- The alarm temperature is set to 130℃.
- SMT patches can be made after cooling < 36℃ 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. The reflow temperature curve is shown in Chapter 9, Figure 11.

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.

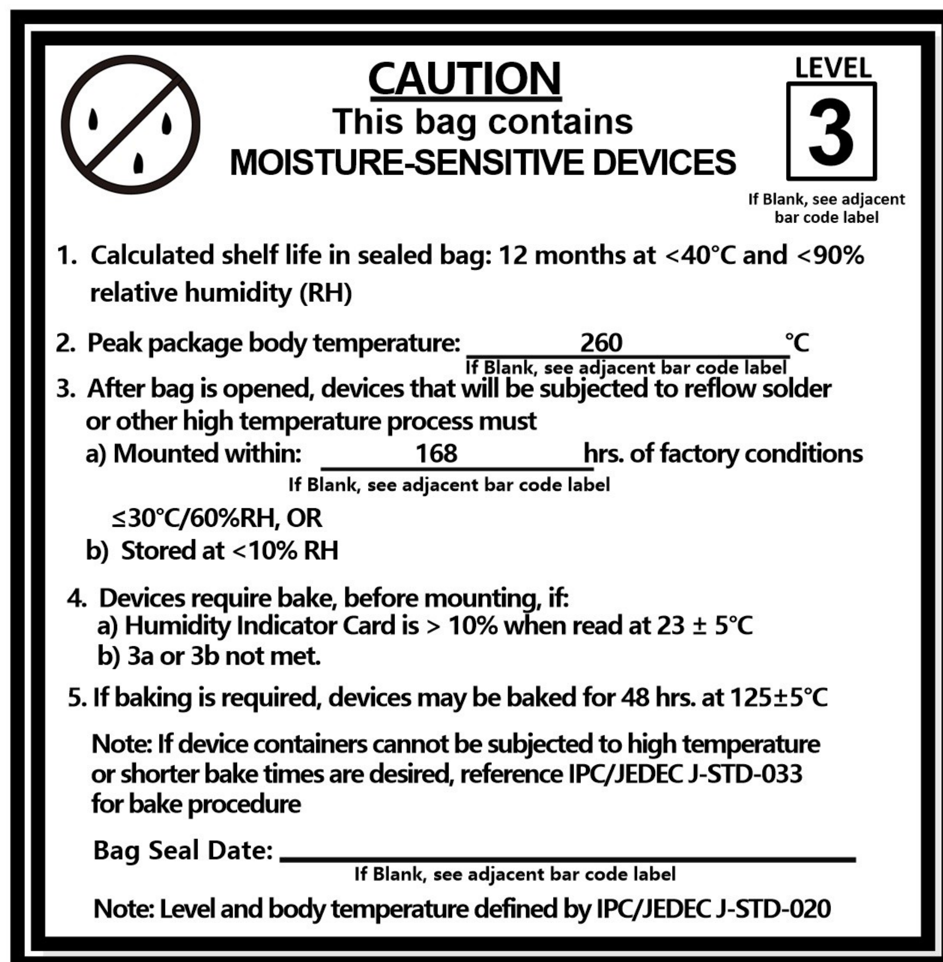
6.1. Precautions

- 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 Level3, and the storage and baking conditions are based on IPC/JEDEC J-STD-020.

6.2. Storage Condition

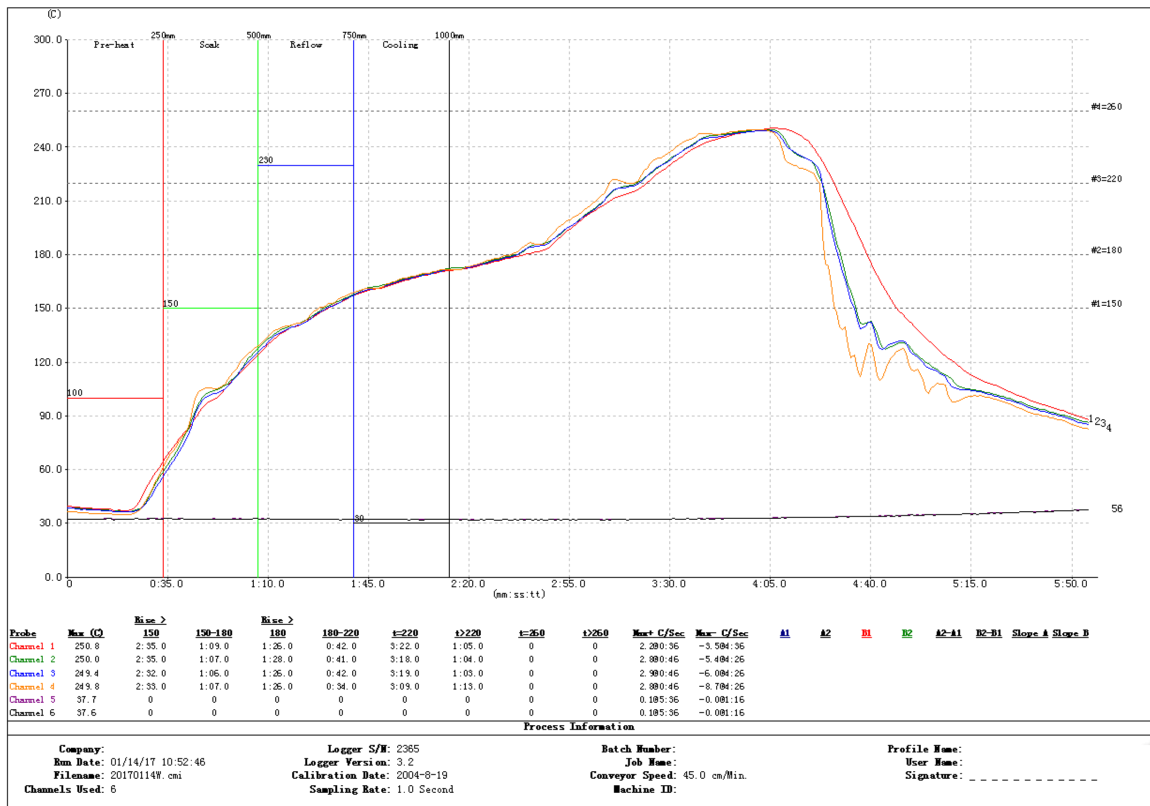
Figure 10 Storage Conditions Diagram



6.3. Secondary Reflux Temperature Curve

We recommend solder paste model: SAC305, lead-free. No more than 2 reflux times.

Figure 11 Reference Secondary Reflux Temperature Curve



Probe	Max (C)	Rise > 150	150-180	Rise > 180	180-220	t=220	t>220	t=260	t>260	Max+ C/Sec	Max- C/Sec	A1	A2	B1	B2	A2-A1	B2-B1	Slope A	Slope B
Channel 1	250.8	2:35.0	1:09.0	1:26.0	0:42.0	3:22.0	1:05.0	0	0	2.200:36	-3.504:36								
Channel 2	250.0	2:35.0	1:07.0	1:28.0	0:41.0	3:18.0	1:04.0	0	0	2.800:46	-5.404:26								
Channel 3	249.4	2:32.0	1:06.0	1:26.0	0:42.0	3:19.0	1:03.0	0	0	2.900:46	-6.004:26								
Channel 4	249.8	2:33.0	1:07.0	1:26.0	0:34.0	3:09.0	1:13.0	0	0	2.800:46	-8.704:26								
Channel 5	37.7	0	0	0	0	0	0	0	0	0.105:36	-0.001:16								
Channel 6	37.6	0	0	0	0	0	0	0	0	0.105:36	-0.001:16								

Process Information

Company:		**Logger S/N:**	2365	**Batch Number:**		**Profile Name:**	
Run Date:	01/14/17 10:52:46	**Logger Version:**	3.2	**Job Name:**		**User Name:**	
Filename:	20170114W.cmi	**Calibration Date:**	2004-8-19	**Conveyor Speed:**	45.0 cm/Min.	**Signature:**	_ _ _ _ _ _ _ _ _ _ _ _
Channels Used:	6	**Sampling Rate:**	1.0 Second	**Machine ID:**			

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7. Label Information

Figure 12 Module Label Schematic Diagram

1. MXCHIP: Company Logo.
2. EMC3290-D: Product Model.
3. CMIIT ID: SRRC Model Authorization ID.
4. FCC ID: FCC Certification ID.
5. JJ5: Sub Model, refer to order code for detail.
6. X1952: Production Serial Number.
7. B0F8936C39CA: MAC Address.
8. QR Code: Mac Address QR Code.

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, No 5, Lane 2145 Jinshajiang Road, Putuo District, Shanghai

Zip code: 200333

Email: sales@mxchip.com

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