



FCM940Q-P2 Product Specification

Module Name	WIFI Module
Part Number	48.01.001.0099-P2
Version	V1.1
Product Model	FCM940Q P2

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Check: 马保生

Approval:

Date: 2026-07-24



Document Revision History

版本	日期	作者	变更描述
Version 1.0	2025-10-28	卢定平	Draft
Version 1.1	2026-07-24	卢定平	Update module actual image



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1. General Description

1.1 Part Number

	Part Number
1	48.01.001.0099-P2

1.1.1 Model

FCM940Q-P2

1.2 Module Appearance

1.2.1 Module Appearance







1.3 Function Introduction

FCM940Q-P2 is a Wi-Fi module that supports dual-band 1x1 802.11 a/b/g/n HT20 and maximum MCS3 Wi-Fi functions, with 1.8 V or 3.3 V I/O support

2. Hardware Information

2.1 Operating Environment Requirements

Voltage	3.3V and 1.8V
Temperature	-30-75℃
Humidity	10-85%
Current	Average current is less than 50 mA

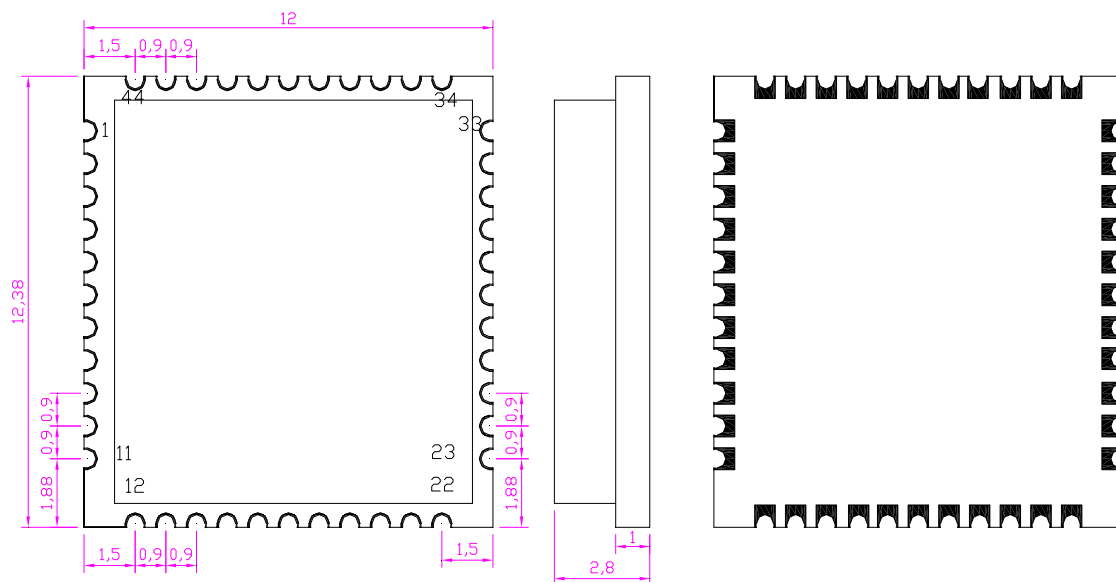
2.2 Storage Environment Requirements

Temperature	-30-75℃
Humidity	10-85%
Atmospheric Pressure	Standard Atmospheric Pressure $\pm 50\%$

The PCB dimensions and specifications are as follows, unit: mm, tolerance

12.00

12.38





The following 2.4 performance parameters are compiled in accordance with the test standards provided by the customer:

2.4 Performance

2.4.1 RF Conducted Output Power and Sensitivity

2G					
信道	测试项	上限值	目标值	下限值	单位
1, 6, 11	TX verify(power) 11b_11M	12	10	8	dBm
	TX verify(power) 11a/g_24M	12	10	8	dBm
	TX verify(power) 11n HT20_MCS3	12	10	8	dBm
	TX verify(evm 11b_11M)	-9		-999	dB
	TX verify(evm 11a/g_24M)	-16		-999	dB
	TX verify(evm 11n_MCS3)	-16		-999	dB
	TX verify(mask)	0		-999	%
	TX verify(freq error)	+10		-10	ppm
	RX verify (sensitivity 11a/g_24M)	-77		-999	10%
5G					
信道	测试项	上限值	目标值	下限值	单位
36, 64, 120, 157	TX verify(power) 11a/g_24M	12	10	8	dBm
	TX verify(power) 11n HT20_MCS3	12	10	8	dBm
	TX verify(evm 11a/g_24M)	-16		-999	dB
	TX verify(evm 11n_MCS3)	-16		-999	dB
	TX verify(mask)	0		-999	%
	TX verify(freq error)	+10		-10	ppm
	RX verify (sensitivity 11a/g_24M)	-77		-999	10%



2.5 BOM

Integrated Circuit	QCC- 730- 1- WLPSP90- HR- 03- 0- 02/WLPSP90 / Qualcomm / Ruilian
SMD Duplexer	LD18D2450LAN-D43/E-GSD
SMD Capacitor	0201/6.3V/2.2uF/±20%/X5R/Murata/GRM033R60J225ME15D
SMD Capacitor	0201/16V/100nF/±10%/X5R/Murata/GRM033R61C104KE84D
SMD Capacitor	0201/6.3V/4.7uF/±20%/X5R/Murata/GRM035R60J475ME15D
SMD Capacitor	0201/6.3V/1uF/±20%/X5R/Murata/GRM033R60J105MEA2J/50K
SMD Capacitor	0201/25V/1nF/±10%/X7R/Murata/GRM033R71E102KA01D
SMD Capacitor	0201/50V/100pF/±5%/COG/Murata/GRM0335C1H101JA01D
SMD Capacitor	0201/50V/1.5pF/±0.1pF/COG/Murata/GRM0335C1H1R5BA01D
SMD Capacitor	0201/50V/0.8pF/±0.1pF/COG/Murata/GRM0335C1HR80BA01D
SMD Capacitor	0201/6.3V/470nF/±20%/X5R/Murata/GRM033R60J474ME90D
SMD Capacitor	0201/25V/10pF/±5%/COG/Murata/GJM0335C1E100JB01
SMD Capacitor	0201/50V/6.2pF/±0.1pF/COG/Murata/GRM0335C1H6R2BA01D
SMD Capacitor	0603/10V/10uF/±20%/X5R/Murata/GRM188R61A106ME69D
SMD Resistor	0201 1/20W 0Ω ±1%
SMD Resistor	0201 1/20W 10KΩ ±1%
SMD Resistor	0201 1/20W 330KΩ ±1%

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SMD Resistor	0402 1/16W 0Ω ±1%
High-Frequency Thick-Film Inductor	0201/0.8nH/±0.1nH/muRata/LQP03TN0N8B02D
Power Inductor	2520/2.2uH/±20%/Isat (MAX)=1.8A/Irms (MAX)=1.95A/SPH252012H2R2MT/Sunlord
SMD Crystal Oscillator	SMD/2520/38.4MHz/6pF/10ppm/40/Jingweite/CM4038M40006T1035234
Shield Can	FCM94Q / Shield Can / 1110.651.8 / Nickel-Silver Alloy / T0.15
PCB	FCM94Q / 124141.81mm / 4-Layer, 80-panel / Immersion Gold / Green Solder Mask, White Silkscreen



FCM94Q物料清单.xls

2.6 Package Contents

Firmware Burning	Firmware
SN Programming	SN
GSD-MAC	GSD-MAC
Carrier Tape	WCTE3R1001 / Carrier Tape / 240.3 / 12122.64 / Black PS,
Cover Tape	WF07RT1000V / Heat-Seal, 21.3500M
ESD Vacuum Bag	360X430mm
Product Label	100*80/1000PCS/Reel
Desiccant	5G/Pouch
Carton Box	Carton Box / 390390275mm(Outer Dimension) / K=K
EPE Foam	EPE Foam / 148024010mm / White
EPE Foam	EPE Foam / 330330*10mm / White
Humidity Indicator Card	Humidity Indicator Card / 1060TPLH
Humidity-Sensitive Label	Level-3 Humidity Sensitive

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FCM94Q包装清
单.xls

3. Packaging Technical Requirements

3.1 Packaging Solution

The finished module product consists of: Module + Carrier Tape + Anti-static Vacuum Bag + EPE Foam + Outer Carton

Transportation Packaging Method: The finished module product is packed in an anti-static bag, then placed into the inner box, and finally put into the outer carton for transportation

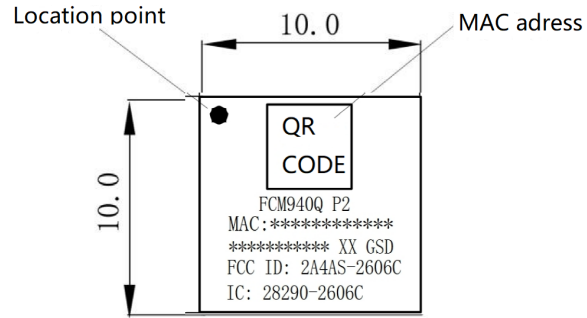
3.2 Label

Serial Number	Item	Specification
1	Quantity	1



Product Specification

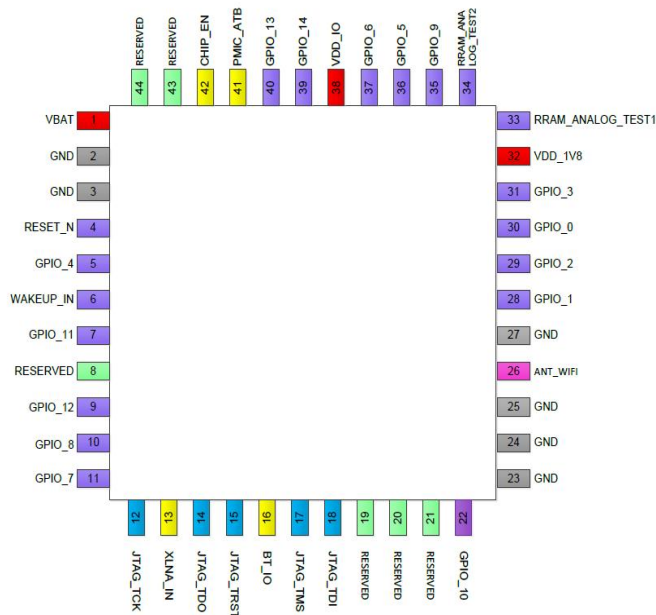
Version 1.1

2	Dimension	10mm*10mm
3	Label Position	On the front of the module, at the shielding cover position
4	Content	

4. Inspection Method

Definition of module pins refers to this document:

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FCM94Q Burn-in and
testingGPIO0626.xls

Refer to the manual test plan provided by the customer:



FCM940Q_RF
Testing
Guide.docx

QSG

A、FCC Radiation Exposure Statement

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.

This Module complies with FCC radiation exposure limits set forth for an uncontrolled environment

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This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Labelling instruction for Host Product integrator

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: 2A4AS-2606C" any similar wording that expresses the same meaning may be used. Installation Notice to Host Product Manufacturer

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 §2.1093 and difference antenna configurations.

Antenna configurations.

Antenna Change Notice to Host manufacturer

If you desire to increase antenna gain and either change antenna type or use same antenna type certified, a Class II permissive change application is required to be filed by us, or you (host manufacturer) can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

FCC other Parts, Part 15B Compliance Requirements for Host product manufacturer

This modular transmitter is only FCC authorized for the specific rule parts listed on our grant, host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

Host manufacturer in any case shall ensure host product which is installed and operating with the module is in compliant with Part 15B requirements.

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.

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**B、ISED Regulatory Compliance**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) This device may not cause interference.(2)This device must accept any interference, including interference that may cause undesired operation of the device.

This equipment complies with IC RSS - 102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Cet équipement est conforme aux limites d'exposition aux radiations IC CNR - 102 établies pour un environnement non contrôlé, Cet équipement doit être installé et utilisé avec une distance minimale de 20cm entre le radiateur et votre corps. Please notice that if the IC 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 IC:28290-2606C" any similar wording that expresses the same meaning may be used.

L'étiquette d'homologation d'un module d'Innovation, Sciences et Développement économique Canada devra être posée sur le produit hôte à un endroit bien en vue, en tout temps. En l'absence d'étiquette, le produit hôte doit porter une

étiquette sur laquelle figure le numéro d'homologation du module d'Innovation, Sciences et Développement économique Canada, précédé du mot « contient », ou d'une formulation similaire allant dans le même sens et qui va comme suit : Contient IC:28290-2606C est le numéro d'homologation du module

i. the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

ii. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands

5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

iii. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate; and

i. le dispositif utilisé dans la bande 5150-5250 MHz est réservé à une utilisation en intérieur afin de réduire le risque de brouillage préjudiciable aux systèmes mobiles par satellite dans le même canal;

ii. pour les dispositifs à antenne (s) détachable (s), le gain d'antenne maximal autorisé pour les dispositifs dans les bandes 5250-5350 MHz et 5470-5725 MHz doit être tel que l'équipement soit toujours conforme à la norme e.i.r.p. limite;

iii. pour les dispositifs à antenne (s) détachable (s), le gain d'antenne maximal autorisé pour les dispositifs de la bande 5725-5850 MHz doit être tel que l'équipement soit toujours conforme à la norme e.i.r.p. les limites, le cas échéant; et

Requirement per KDB996369 D03

2.2 List of applicable FCC rules

List the FCC rules that are applicable to the modular transmitter. These are the rules that specifically establish the bands of operation, the power, spurious emissions, and operating fundamental frequencies. DO NOT list compliance to unintentional-radiator rules (Part 15 Subpart B) since that is not a condition of a module grant that is extended to a host manufacturer. See also Section 2.10 below concerning the need to notify host manufacturers that further testing is required.³

Explanation: This module meets the requirements of FCC part 15C(15.247) and part 15E(15.407).

2.3 Summarize the specific operational use conditions

Describe use conditions that are applicable to the modular transmitter, including for example any limits on antennas, etc. For example, if point-to-point antennas are used that require reduction in power or compensation for cable loss, then this information must be in the instructions. If the use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual. In addition, certain information may also be needed, such as peak

gain per frequency band and minimum gain, specifically for master devices in 5 GHz DFS bands.

Explanation: The EUT has a Dipole Antenna, and the antenna use a permanently attached antenna which is not replaceable.

2.4 Limited module procedures

If a modular transmitter is approved as a "limited module," then the module manufacturer is responsible for approving the host environment that the limited module is used with. The manufacturer of a limited module must describe, both in the filing and in the installation instructions, the alternative means that the limited module manufacturer uses to verify that the host meets the necessary requirements to satisfy the module limiting conditions.

A limited module manufacturer has the flexibility to define its alternative method to address the conditions that limit the initial approval, such as: shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation. The alternative method could include that the limited module manufacturer reviews detailed test data or host designs prior to giving the host manufacturer approval.

This limited module procedure is also applicable for RF exposure evaluation when it is necessary to demonstrate compliance in a specific host. The module manufacturer must state how control of the product into which the modular transmitter will be installed will be maintained such that full compliance of the product is always ensured. For additional hosts other than the specific host originally granted with a limited module, a Class II permissive change is required on the module grant to register the additional host as a specific host also approved with the module.

Explanation: The module is not a limited module.

2.5 Trace antenna designs

For a modular transmitter with trace antenna designs, see the guidance in Question 11 of KDB

Publication 996369 D02 FAQ - Modules for Micro-Strip Antennas and traces. The integration information shall include for the TCB review the integration instructions for the following aspects: layout of trace design, parts list (BOM), antenna, connectors, and isolation requirements.

- a) Information that includes permitted variances (e.g, trace boundary limits, thickness, length, width, shape(s), dielectric constant, and impedance as applicable for each type of antenna);
- b) Each design shall be considered a different type (e.g., antenna length in multiple(s) of frequency, the wavelength, and antenna shape (traces in phase) can affect antenna gain and must be considered);
- c) The parameters shall be provided in a manner permitting host manufacturers to design the printed circuit (PC) board layout;
- d) Appropriate parts by manufacturer and specifications;
- e) Test procedures for design verification; and
- f) Production test procedures for ensuring compliance.

The module grantee shall provide a notice that any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify the module grantee that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the grantee, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

Explanation: Yes, The module with trace antenna designs, and This manual has been shown the layout of trace design, antenna, connectors, and isolation requirements.

2.6 RF exposure considerations

It is essential for module grantees to clearly and explicitly state the RF exposure conditions that permit a host product manufacturer to use the module. Two types of instructions are required for RF exposure information: (1) to the host product manufacturer, to define the application conditions (mobile, portable - xx cm from a person's body); and (2) additional text needed for the host product manufacturer to provide to end users in their end-product manuals. If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).

Explanation: This module complies with FCC RF radiation exposure limits set forth for an uncontrolled environment, This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body." This module is designed to comply with the FCC statement, FCC ID :2A4AS-2606C.

2.7 Antennas

A list of antennas included in the application for certification must be provided in the instructions. For modular transmitters approved as limited modules, all applicable professional installer instructions must be included as part of the information to the host product manufacturer. The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc. (note that for example an "omni-directional antenna" is not considered to be a specific "antenna type")).

For situations where the host product manufacturer is responsible for an external connector, for example with an RF pin and antenna trace design, the integration instructions shall inform the installer that unique antenna connector must be used on the Part 15 authorized transmitters used in the host product. The module manufacturers shall provide a list of acceptable unique connectors. Explanation: The EUT has Dipole Antenna, and the antenna use a permanently

attached antenna which is unique.

2.8 Label and compliance information

Grantees are responsible for the continued compliance of their modules to the FCC rules. This includes advising host product manufacturers that they need to provide a physical or e-label stating "Contains FCCID" with their finished product. See Guidelines for Labeling and User Information for RF Devices – KDB Publication 784748.

Explanation: The host system using this module, should have label in a visible area indicated the following texts: "Contains FCC ID: 2A4AS-2606C, Contains IC: 28290-2606C".

2.9 Information on test modes and additional testing requirements

Additional guidance for testing host products is given in KDB Publication 996369 D04 Module Integration Guide. Test modes should take into consideration different operational conditions for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

The grantee should provide information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host.

Grantees can increase the utility of their modular transmitters by providing special means, modes, or instructions that simulates or characterizes a connection by enabling a transmitter. This can greatly simplify a host manufacturer's determination that a module as installed in a host complies with FCC requirements.

Explanation: Top band can increase the utility of our modular transmitters by providing instructions that simulates or characterizes a connection by enabling a transmitter.

2.10 Additional testing, Part 15 Subpart B disclaimer

The grantee should include a statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Explanation: The module without unintentional-radiator digital circuitry, so the module does not require an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B.

Frequency range	Manufacturer	Peak gain	Impedance	Antenna type
2402~2480MHz	SHENZHENLINRONG TECHNOLOGYCO., LTD	2.89dBi	50 Ω	Dipole Antenna
2412~2462MHz	SHENZHENLINRONG TECHNOLOGYCO., LTD	2.55dBi	50 Ω	Dipole Antenna
5150~5250MHz	SHENZHENLINRONG TECHNOLOGYCO., LTD	2.55dBi	50 Ω	Dipole Antenna
5250~5350MHz	SHENZHENLINRONG TECHNOLOGYCO., LTD	2.55dBi	50 Ω	Dipole Antenna
5470~5725MHz	SHENZHENLINRONG TECHNOLOGYCO., LTD	2.55dBi	50 Ω	Dipole Antenna
5725~5850MHz	SHENZHENLINRONG TECHNOLOGYCO., LTD	2.55dBi	50 Ω	Dipole Antenna