

# UHF RFID Module Datasheet

## *GM204*



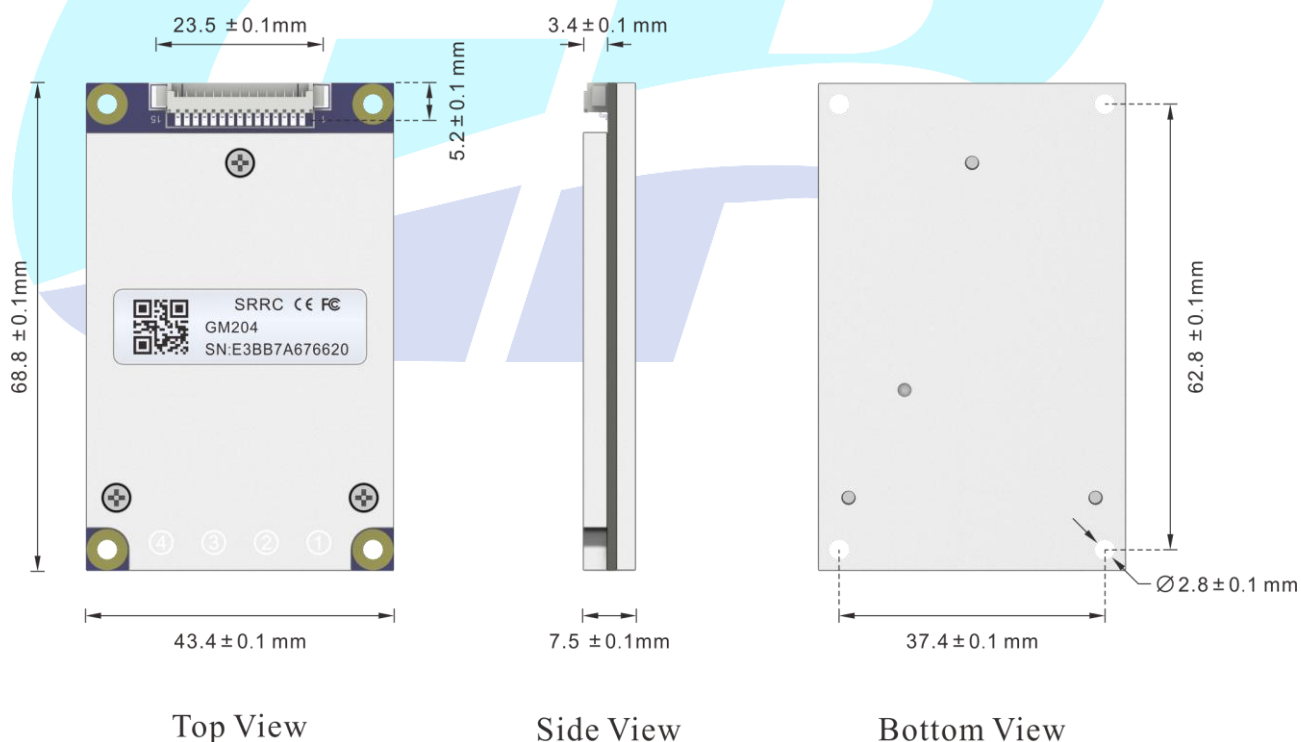
## Feature

GM204 is a 4-channel UHF RFID module with superior read/write capability, good channel isolation, small form factor and well stability. Those advantages enable it to be used in the complicate environment such as warehousing, logistics, production and etc.

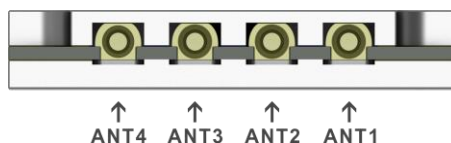
Key features:

- ✧ Employs best-in-class RF chip: Impinj Indy R2000 UHF RFID chip;
- ✧ Superior reading sensitivity, reaches -88dBm;
- ✧ Excellent Anti-collision algorithm, tag read rate reaches over 400pcs/second;
- ✧ Good channel isolation, reaches -40dB;
- ✧ Worldwide Gen2 platform, accommodate worldwide application;
- ✧ RF output, which can save external device payment;

## Dimension

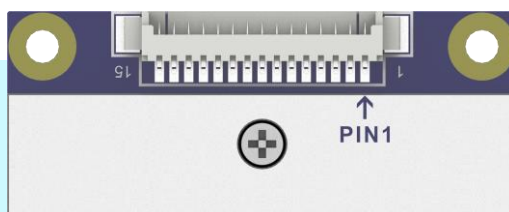


## Interface Definition



**Antenna Connectors: MMCX\_KE female**

**Digital/Power Connector: CON\_MOLEX\_53261\_1571**



**Digital Connector signal definition**

PIN #	Interface	Description
1	GND	Power supply & Digital Ground
2	GND	Power supply & Digital Ground
3	GND	Power supply& Digital Ground
4	VIN	Power supply input (+),4.5V-21V
5	VIN	Power supply input (+),4.5V-21V
6	VIN	Power supply input (+),4.5V-21V
7	UART_RX2	UART_RX2 Compatible with 3.3V TTL
8	UATR_TX2	UART_TX2 Compatible with 3.3V TTL
9	UART_RX1	UART_RX1 Compatible with 3.3VTTL
10	UATR_TX1	UART_TX1 Compatible with 3.3V TTL
11	GPIO4	General I/O Port, Compatible with 3.3V TTL
12	GPIO3	General I/O Port, Compatible with 3.3V TTL
13	GPIO2	General I/O Port, Compatible with 3.3V TTL
14	GPIO1	General I/O Port, Compatible with 3.3V TTL
15	MODULE_EN	Module enable signal, active high

## Specification

RFID Features	
RF Chip	Indy R2000
Air Interface Protocol	EPCglobal Gen2(ISO 18000-6C)
Working Frequency	China: 920-925MHz (SRRC) America: 902-928MHz (FCC part 15.247) Europe: 865-868MHz (ETSI EN 302 208) 840-960MHz: Can be customized according to needs and local status <b>Warning:frequency setting should conform to local laws and regulations!</b>
Output Power	5-33dBm adjustable,step Interval 1 dB,precision ±1dB
Max Output Power	8W @33dBm
Reading Rate	>400 tag/s
Receiving Sensitivity	-88dBm
Isolation	-40dB
Communication Port	UART, compatible with 3.3V TTL Baud Rate: 115200bps(default)
Antenna Connector	4 channel 50Ω RF connector MMCX female
Antenna Type	Panel Antenna
Antenna Gain	2.5dBi
Tag RSSI	Support
Ambient Temp Monitor	Support
Power Supply	
Input Voltage	4.5V-21VDC
Standby Mode Power Consumption (EN High)	0.5W
Turn-off mode Power Consumption (EN Low)	1uW
Physical Characteristics	
Dimension	68.8mm*43.4mm*7.5mm
Weight	58.0g
Color	Black
Working Ambient	
Operating Temp.	-20 ℃ to +55 ℃
Storage Temp.	-40℃~+85℃
Humidity	10%~95%RH

## INTEGRATION INSTRUCTIONS

### FCC rules

The GM204 is an UHF RFID Module with frequency hopping using an ASK modulation. It operates on the 902-928 MHz band and, therefore, is within U.S. FCC part 15.247 standard.

### Modular installation instruction

- 1,GM204 Integrates high-speed GPIO and peripheral interface. Please pay attention to the installation direction (pin direction).
- 2,Antenna could not be in no-load state when module is working. During debugging, it is suggested to add 50 ohms load to the antenna port to avoid damage or performance degradation of the module under long-time no-load condition.
- 3,When the module needs to output 31dBm or more power,it needs a voltage supply of 5.0V or more to achieve the expected output power.
- 4,When working at full load, it is recommended that the entire bottom surface of the module be attached to the housing or heat dissipation plate, and it is not recommended to conduct heat dissipation through air or screw column heat conduction.
- 5,UART1 and UART2 are serial ports with the same priority.The port which receives commands returns information.

### Trace antenna designs

Not Applicable

### RF exposure considerations

To maintain compliance with FCC' s RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

### Antennas

The GM204 is an UHF RFID Module beams signals and communicates with its antenna, which is Panel Antenna. The Panel Antenna gain is 2.5dBi

### LABEL OF THE END PRODUCT

The final end product must be labeled in a visible area with the following " Contains FCC ID: 2AR6AGM204. If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of 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.

### Information on test modes and additional testing requirements

Data transfer module demo board can control the EUT work in RF test mode at specified test channel.

### **Additional testing, Part 15 Subpart B disclaimer**

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

### **ATTENTION**

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) This device and its antenna(s) must not be co - located with any other transmitters except in accordance with FCC multi - transmitter product procedures. Referring to the multi - transmitter policy, multiple transmitter(s) and module(s) can be operated simultaneously without C2P.
- 3) For all products market in US, OEM has to limit the Operating Frequency: 902.75MHz~927.25MHz by supplied firmware programming tool. OEM shall not supply any tool or info to the end - user regarding to Regulatory Domain change.

### **USERS MANUAL OF THE END PRODUCT:**

In the user manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio - frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of 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.

#### FCC WARNING

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.

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

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 generate, 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.



RED

Manufacturer's Name: Shenzhen Genrace Technology Co.,Ltd.

Product Name: UHF RFID Module

Trade Mark: 



Model number: GM204

Operating Temperature: -20 °C to +55 °C

Hereby, Shenzhen Genrace Technology Co.,Ltd declares that this UHF RFID Module product is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

A copy of the Declaration of Conformity can be found at Website: [http //www.genrace.com](http://www.genrace.com)

- ☐ The device complies with RF specifications when the device used at 20cm from your body.
- ☐ CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

Care for the environment! Must not be discarded with household waste!

RF Specification:

Function	Operation Frequency	Max RF ERP:	Limit
UHF	865-868MHz	25.33dBm (e.r.p.)	≤ 500 mW (e.r.p.)



This product can be used across EU member states.