

# UHF RFID Module

## Model: SR-MU921B



### General Description

SR-MU921B is a high-performance UHF RFID Reader Module, which is designed with low-power dissipation and high integrated RFID chip. It is low-power dissipation, cost-effective, small size, etc. It can be widely used in logistics tracking, commodity inventory, cargo sorting, vehicle management, personnel management, asset management, medical systems, cold chain management, temperature monitoring, power monitoring, anti-counterfeiting systems and production process control and many other applications.

### Features

- \* Designed with low power dissipation and high integrated RFID chip solution
- \* Support EU 840~868MHz, US 902~928MHz working frequency (or Customized).
- \* Support EPC Global UHF class 1 gen2 / ISO18000-6C protocol RFID tags.
- \* Support temperature sensor RFID tag, moisture Sensor RFID tag and some other sensor RFID tags.
- \* Optimized multiple tags inventory algorithm, speed is more than 100 per second
- \* FHSS or Fix Frequency transmission
- \* RF output power up to 30dBm (1dbm step adjustable)
- \* Support IAP firmware upgrading.
- \* Low-dissipation design with single +5V power supply
- \* Support 4 GPIO ports GPIO, I/O Control for RS-485 port and indication I/O for Read Tag.
- \* Support 4 external antennas with MCX socket
- \* Support UART (3.3V TTL level) interface.
- \* Effective distance 25m with 12dBi linear polarized antenna and E41 tag.
- \* Provide DEMO and SDK for development
- \* Support development based on Windows, Android, Linux etc. and C, C#, JAVA etc.

## Specification

Main Function	
Protocol	EPC Global UHF Class 1 Gen 2 / ISO 18000-6C
Support tags	Normal tag; Temperature sensor tag; Moisture sensor tag
RSSI	Support
RF Parameter	
Frequency	902.25~927.75MHz at option; Fixed or FHSS
RF output power	28.636dBm
Step power	1dBm
Signal width	< 250KHz
Antenna port	4 ports MCX
Tag Reading	
Reading distance	>25m
Writing distance	>6m
Multiple tag reading speed	>100pcs/s
	2dBi circular polarized antenna, standard E41 testing card.
Communication Parameter	
Interface	+3.3V TTL UART RS232
	4 ports GPIO (+3.3V TTL Level)
	1 port RS485
	1 ports tag access output indication
Baud rate	9600, 19200, 28800, 38400, 57600, 115200bps at option
Power Parameter	
Operating Voltage	DC 5.0V (+3.7V~+5.5V)
Operating Current	≤1.0A / DC 5V
Standby Current	≤50mA / DC 5V
Working Environment	
Operating Temperature	-20~+65C°
Storage Temperature	-30~+85C°
Operating Humidity	<95%RH (+25C°) Non-condensing
Mechanical Parameter	
Dimension	63*33*8mm
Weight	29g

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

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.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

**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.

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.

## **Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01**

### **2.2 List of applicable FCC rules**

The SR-MU921B is an UHF Module with ASK modulated systems .It operates on the 902-928MHz band and, therefore, is within U.S. FCC part 15.247 standard.

### **2.3 Specific operational use conditions**

The EUT is a UHF Module

Operation Frequency: 902.25 MHz~927.75MHz

Modulation Type: ASK

Number Of Channel: 52 channels

Antenna Designation: Panel Antenna

Antenna Gain: 2dBi

Adopt low power dissipation, high performance, long distanceRFID module design; RF output power up to 30 dBm (1dbm step adjustable);Built-in 2 dBi circular polarized antenna, effective distance over 10 m; Support command, Auto and trigger working mode;\*Low power dissipation with single +12V DC power supply;Support RS232, RS485, Wiegand and Trigger interfaces;Support EPC, TID and USER inventory in independently or conjunctively ;

### **2.4 Limited module procedures**

not applicable; Single Modular Approval Request

### **2.5 Trace antenna designs**

Not applicable;

### **2.6 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.

### **2.7 Antennas**

The SR-MU921B is an UHF Module beams signals and communicates with its antenna, which is Panel Antenna. The PCB Antenna gain is 2dBi. 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.

### **2.8 Label and compliance information**

The final end product must be label in a visible area with the following

Host must Contains FCC ID: 2AW9GSR-MU921B. If the size of the end product is larger than 24x16mm, 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.

### **2.9 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.

### **2.10 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: 902.25-927.75MHz 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:

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.

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