

RW962B

User Manual

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Series	RW962B

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Legal Notice

Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Rolling Wireless modem are used in a normal manner with a well-constructed network, the Rolling Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Rolling Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Rolling Wireless modem, or for failure of the Rolling Wireless modem to transmit or receive such data.

Safety and Hazards

Do not operate the Rolling Wireless modem in areas where cellular modems are not advised without proper device certifications. These areas include environments where cellular radio can interfere such as explosive atmospheres, medical equipment, or any other equipment which may be susceptible to any form of radio interference. The Rolling Wireless modem can transmit signals that could interfere with this equipment. Do not operate the Rolling Wireless modem in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Rolling Wireless modem **MUST BE POWERED OFF**. When operating, the Rolling Wireless modem can transmit signals that could interfere with various onboard systems.

NOTE: Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Rolling Wireless modems may be used at this time.

The driver or operator of any vehicle should not operate the Rolling Wireless modem while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

Limitations of Liability

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Corporate and product information	Web: https://www.rollingwireless.com/

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1 Product Overview

1.1 Product Information

RW962B is a Wi-Fi 6/6E & Bluetooth 5.3 automotive module. The module supports 2 × 2 MU-MIMO.

1.2 General Features

The following table lists the specifications of the RW962B module.

Table 1. RW962B Specifications

ITEM	SPECIFICATIONS
Input Power Supplies	Three main power supplies: 0.95V / 1.35V / 1.95V Interface voltage: 1.8V For RW962B: <ul style="list-style-type: none"> Internal 2.4G PA power supply voltage: 1.8V Internal 5G PA power supply voltage: 1.8V
WLAN protocols	IEEE 802.11a/b/g/n/ac/ax
Wi-Fi	802.11b: 1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps 802.11g: 6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps, 48 Mbps, 54 Mbps 802.11n: MCS0-7 for HT20/40 802.11a: 6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps, 48 Mbps, 54 Mbps 802.11ac: MCS0-8 for VHT20, MCS0-9 for 40/80 802.11ax: MCS0-11 for HT20/40/80/160
Wi-Fi Operating mode	AP; STA
Wi-Fi modem	BPSK, QPSK, CCK, 16QAM, 64QAM, 256QAM. Maximum modem: 1024QAM
Bluetooth protocol	BT5.3(BR/EDR+BLE): PBAP/HFP/A2DP
Bluetooth modem	GFSK, 8-DPSK, π/4-DQPSK
Wi-Fi/BT interface	Wi-Fi: <ul style="list-style-type: none"> PCIe Interface WLAN EN WLAN Debug UART Bluetooth: <ul style="list-style-type: none"> PCM/I2S Digital Audio Interface BT_EN BT UART

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ITEM	SPECIFICATIONS
	<ul style="list-style-type: none"> BT Debug UART
Antenna interface	RW962B: <ul style="list-style-type: none"> 5G WIFI0, BT 2.4G/5G WIFI1 2.4G WIFI0
Coexistence interfaces	LTE Coexistence N79-WLAN Coexistence PTA Coexistence
JTAG interface	Not support
Physical feature	Dimension: 23 mm × 23 mm × 2.65 mm
Temperature	Operating temperature: -40°C to +85°C
RoHS	RoHS compliant

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2 Application Interfaces

2.1 Overview

RW962B module includes 112 LGA pads that can be used for platform development.

Power supply
PCIe interface for WLAN
UART for Bluetooth
PCM interface for Audio
WLAN/BT ⇌ LTE, and WLAN ⇌ 5G NR coexistence interfaces
Antenna interface

Power Supply

RW962B provides power supply input pins as the following table.

Table 2. Power Pins

PIN NAME	IO	PIN NO.	DESCRIPTION	MAXIMUM CURRENT
VDD_PA_A	PI	101, 102	For RW962B: Not used.	2000mA
VDD_PA_B	PI	105, 106	2.4G/5G internal PA and 2.4G/5G WiFi/BT TRX switch power supply, 1.71V-2.2V, nominal value 1.8V	2000mA
VDD_CORE_VH	PI	77, 83	Kernel high voltage, 1.85V-2.1V, nominal value 1.95V	415mA
VDD_CORE_VM	PI	89	Kernel mid voltage, 1.28V-1.45V, nominal value 1.35V	435mA
VDD_CORE_VL	PI	79, 85, 86	Kernel low voltage, 0.9V-1V, nominal value 0.95V	1700mA
VDDIO_1V8	PI	71	I/O voltage, 1.71V-1.89V, nominal value 1.8V	50mA
GND	-		Ground. All GND pins must be grounded.	

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2.2 Antenna Interfaces

RW962B uses a 2 × 2 MIMO antenna plan. The following information describes the antennas.

2.2.1 RF Antenna Interface Configuration

RW962B provides 2 Wi-Fi antenna interfaces that support 2.4 GHz and 5~6G GHz bands and one antenna interface for BT. The antenna interfaces are defined in the following table.

Table 3. Antenna Interface Definition

PIN NAME	PIN	RW962B	IO	REMARKS
WL_RF0	45	5G WIFI0, BT	AIO	50Ω impedance
WL_RF1	54	2.4G/5G WIFI1	AIO	50Ω impedance
BT_RF	37	2.4G WIFI0	AIO	50Ω impedance

2.2.2 Operating Frequency

Table 4. Operating Frequency of the Module

BAND	FREQUENCY	UNIT
2.4GHz WLAN	2402 to 2483.5 5150 to 5350	MHz
5GHz WLAN	5150 to 5350 5490 to 5730 5735 to 5855	MHz
BT	2402 to 2483.5	MHz

2.2.3 Antenna Specifications Requirements

The RW962B module provides two Wi-Fi receiving and transmitting antenna interfaces. The following table lists antenna requirements.

Table 5. Antenna Requirements

RW962B MODULE ANTENNA REQUIREMENTS	
ITEM	SPECIFICATIONS
Frequency range	2402MHz to 2483.5MHz 5150MHz to 7125MHz

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VSWR	VSWR < 2:1
Antenna efficiency	> 30%
Max input power (W)	2.5W
Input impedance (Ω)	50
Line insertion loss	< 1.5dB (2402MHz to 2483.5MHz) < 2dB (5150 MHz to 5850 MHz) < 2.5dB (5945 MHz to 7125 MHz)
Polarization type	Vertical

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3 Structural Specification

3.1 Product Appearance

The following figures show the appearance of the RW962B module.

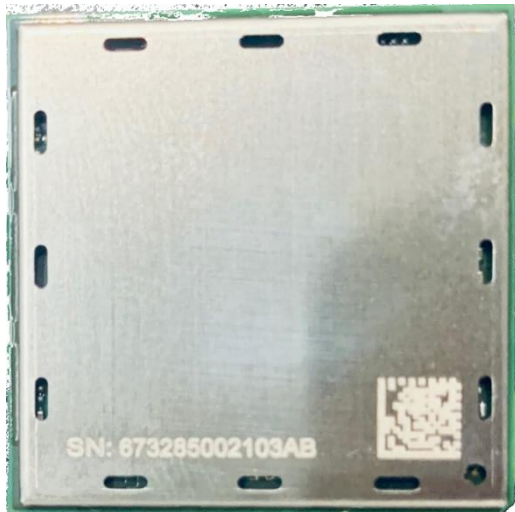


Figure 1. Top View of the Module

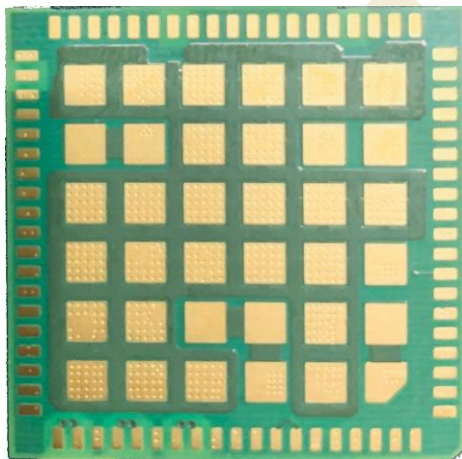


Figure 2. Bottom View of the Module

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4 Warning

4.1 FCC regulatory compliance statement

§15.19 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.

§15.21 Information to user

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

- List of applicable FCC rules:

47 CFR Part 15.247, 47 CFR Part 15.407

- Summarize the specific operational use conditions

This module can be used in IOT devices, the input voltage to the module is nominally 4V.

- Limited module procedures

This module is a single module.

- Trace antenna designs

The antenna is not a trace antenna.

- RF exposure considerations

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

- Antennas

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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.

- **Label and compliance information**

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: 2AX2URW962B" any similar wording that expresses the same meaning may be used.

§ 15.19 Labelling requirements shall be complied on end user device.

Labelling rules for special device, please refer to §2.925, § 15.19 (a)(5) and relevant KDB publications. For E-label, please refer to §2.935.

- **Information on test modes and additional testing requirements**

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.

- **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.

Please note that For a Class B or Class A digital device or peripheral, the instructions furnished the user manual of the end-user product shall include statement set out in §15.105 *Information to the user* or such similar statement and place it in a prominent location in the text of host product manual. Original texts as following:

For Class B

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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4.2 ISED Compliance Statements

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.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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.

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.

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: 26644-RW962B" 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 : 26644-RW962B est le numéro d'homologation du module.

RF Exposure Compliance

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. 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 émetteur ne doit pas être colocalisé ou fonctionner en conjonction avec une autre antenne ou un autre émetteur. Cet équipement doit être installé et utilisé avec une distance minimale de 20cm entre le radiateur et votre corps.

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