



## WiFi Module Manual

Model: GRJWB05-J10      FCC ID: 2ADAP-GRJWB05J10      IC: 12478A-GRJWB05J10

### Gree Electric Appliances, Inc. of Zhuhai

- Please read this manual carefully before operation and keep it well for future reference.
- Due to product improvement, Gree reserves the right to change contents of this manual without prior notice.
- Gree Electric Appliances, Inc. of Zhuhai reserves the final right to interpret this manual.

## 1、General Functions

The wireless module complies with IEEE 802.11 a/b/g/n standard and it can achieve up to a speed of 65Mbps with single stream in 802.11n , 54Mbps as specified in IEEE 802.11a/g, or 11Mbps for IEEE 802.11b to connect to the wireless LAN.This compact module is a total solution for a combination of Wi-Fi 802.11 a/b/g/n technologies with Microcontroller Processor. The main control chip of this module is highly integrated with Bluetooth low-power controller, with UART interface. It combines Bluetooth protocol, BLE baseband, MODEM and BLE RF-IN chips. It also supports GATT-based applications and MESH device applications based on BLE users, and supports Bluetooth 5.0 low power consumption.

This compact module is a total solution for a combination of Wi-Fi 802.11a/b/g/n technologies with Microcontroller Processor. The module is specifically developed for embedded system devices. Detailed Instruction of WiFi Module.

## 2、Technique Parameters

Table1. Module Parameters

Categories	Feature	parameters
Wireless specification	Operating Bands	2.4G: FCC:2412 MHz to 2462 MHz for 802.11 b/g/n(HT40) RED:2412MHz to 2472 MHz for 802.11b/g/n(HT40) 2402MHz to 2480 MHz for BLE 5G: 5150MHz to 5825 MHz for 802.11 a/n(HT40)
	power	2.4G: 802.11b: $18 \pm 2\text{dBm}$ 802.11g: $14 \pm 2\text{dBm}$ 802.11n: $13 \pm 2\text{dBm}$ 5G: 802.11a: $12 \pm 2\text{dBm}$ BLE: $6 \pm 2\text{dBm}$
	Protocol	IEEE 802.11 a/b/g/n
	frequency modulation mode	CCK、OFDM、GFSK
	Receive Sensitivity	802.11b<-90.5dBm@11Mbps 802.11a/g<-77.5dBm@54Mbps 802.11n<-72dBm@MCS7
	Data Rate	WIFI:

		802.11b: 1/2/5.5/11 Mbps 802.11a/g: 6/9/12/18/24/36/48/54 Mbps 802.11n(HT20):6.5/13/19.5/26/39/52/58.5/65 Mbps 802.11n(HT40):13.5/27/40.5/54/81/108/121.5/135Mbps BLE rate: 1 Mbps
	Antenna gain max	2.4G:1.85 dBi 5G:1.52dBi
	Impedance	50-Ohm
electrical specification	Supply Voltage	+3.3V
	Connect	Internal Antenna
physical	Dimensions	30mm×17.7mm±0.2mm
Operating Temperature	--	-20-85 deg C.

### 3、Circuit Description

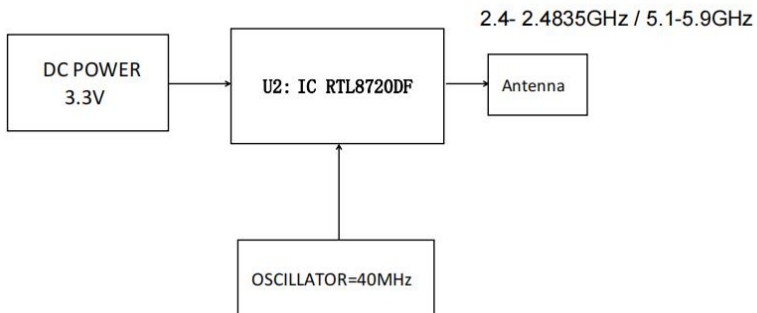


Figure1. Circuit Diagram

WiFi module has an independent power management system, and the system provides a high quality of power supply for the whole module. The Excellent matching circuit in RF-Front ensures that the signal has minimal signal loss and radiation. Oscillator Y1 provides the IC U2 with the required oscillation frequency to enable the IC U2 to work normally. Duplexer isolates the transmitting and receiving signals to ensure that the receiving and transmitting can work normally at the same time. The IC U1 provides the interfaces for a variety of peripherals (Timer, PWM, Interrupt, AD, the Debug) from the module to the baseboard. Each peripheral that connects to the MCU I/O pins can choose between two different I/O pin locations with the provided flexibility in various applications.

Hereby, [Name of manufacturer], declares that this [type of equipment] is in compliance with the essential requirements and other relevant provisions of RE Directive 2014/53/EU. A copy of the full DoC is attached.

Transmit frequency of EU:

WiFi: 2412-2472MHz / 5180-5825MHz

BLE: 2402-2480MHz

Maximum transmit power: <20dBm

## 4、 Pin Definition

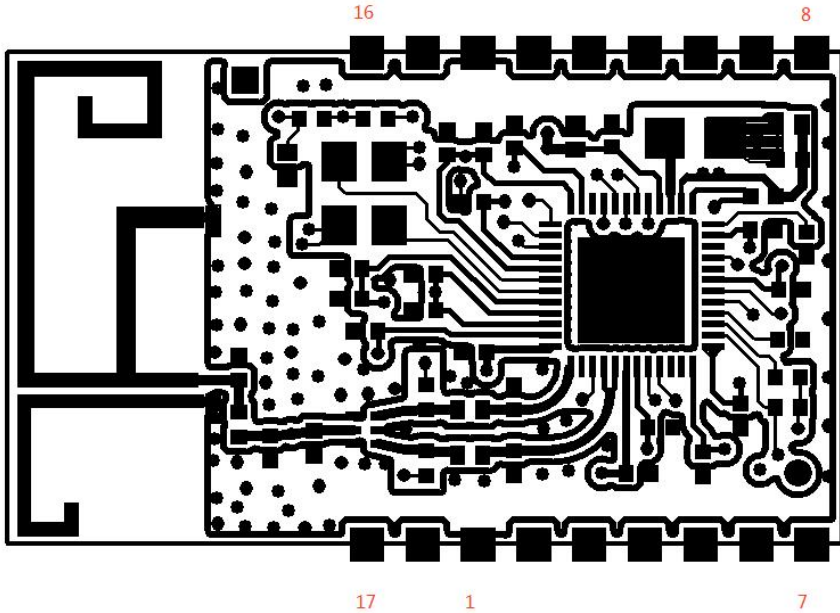


Figure2. Pin Definition

Table2. Pin Definition

PIN	Name	Mode
2,13	VCC	+3.3V
3	ADC	ADC
4	TX	UART_TX
5	RX	UART_RX
6	LP_I2C_SDA	LP_I2C_SDA
7	LP_I2C_SCL	LP_I2C_SCL
1,14	GND	Ground
9	RX	LOG_RX
8	TX	LOG_TX

11	I2C_SCL	I2C_SCL
10	I2C_SDA	I2C_SDA
12	SPI_MOSI	SPI_MOSI
15	SPI_MISO	SPI_MISO
16	PB22	I/O
17	/	/
18	PA27	I/O

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC KDB 996369 D03 for module certification: 1. List of applicable FCC rules and Canada rules:

The module complies with FCC Part 15.247, FCC Part 15.407 and Canada RSS-247.

2. Summarize the specific operational use conditions:

The module has been certified for Fix/Mobile applications. The host product operating conditions must be such that there is a minimum separation distance of 20 cm (or possibly greater than 20 cm) between the antenna radiating structures and nearby persons. The host manufacturer is obligated to confirm the use conditions of the host product to ensure that distance specified in the instructions is met. In this case the host product is classified as either a mobile device or a fixed device for RF exposure purposes. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

3. Limited module procedures:

Not applicable.

#### 4. Trace antenna designs:

Not applicable.

#### 5. RF exposure considerations:

This equipment complies with FCC's and IC's RF radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must be installed and operated to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter. Installers must ensure that 20cm separation distance will be maintained between the device and users.

#### DÉCLARATION D' IC SUR L' EXPOSITION AUX RADIATIONS:

Cet appareil est conforme aux limites d' exposition au rayonnement RF stipulées par la FCC et l' IC pour une utilisation dans un environnement non contrôlé. Les antennes utilisées pour cet émetteur doivent être installées et doivent fonctionner à au moins 20 cm de distance des utilisateurs et ne doivent pas être placées près d' autres antennes ou émetteurs ou fonctionner avec ceux-ci. Les installateurs doivent s' assurer qu' une distance de 20 cm sépare l' appareil des utilisateurs.

Note: the OEM product manuals must include a statement in order to alert the users of FCC RF exposure compliance.

#### 6. Label and compliance information:

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.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or changes to this equipment. Such modifications or changes could void the user ' s authority to operate the equipment.

Warning: Changes or modifications to this unit 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 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.

ISED 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 CNRD' 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' en compromettre le fonctionnement.

The system integrator must place an exterior label on the outside of the final product housing the GRJWB05-J10 Modules. Below is the contents that must be included on this label.

OEM Labeling Requirements:

NOTICE: The OEM must make sure that FCC labeling requirements are met. This includes a clearly visible exterior label on the outside of the final product housing that displays the contents shown in below:

Contains FCC ID: 2ADAP-GRJWB05J10

Contains IC: 12478A-GRJWB05J10

7. Information on test modes and additional testing requirements:

When testing host product, the host manufacture should follow FCC KDB Publication996369 D04

Module Integration Guide for testing the host products. The host manufacturer may operate their product during the measurements. In setting up the configurations, if the pairing and call box options for testing

does not work, then the host product manufacturer should coordinate with the module manufacturer for access to test mode software. For wireless LAN, the product under test is set into a link/association with a partnering WLAN device, as per the normal intended use of the product. To ease testing, the product under test is set to transmit at a high duty cycle, such as by sending a file or streaming some media content. Alternatively, a Wi-Fi test set may be used. Simultaneously transmitting modules installed in the host should be all active.

#### 8. Additional testing, Part 15 Subpart B disclaimer:

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) list 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. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed when contains digital circuitry

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