



WiFi Module Manual

Model: GRJWB05-J6

FCC ID: 2ADAP-GRJWB05J6

IC: 12478A-GRJWB05J6

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 a 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) |
| | 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 | 1.5 dBi |

| | | |
|-----------------------------|-------------------|---------------------|
| | Impedance | 50-Ohm |
| electrical specification | Supply Voltage | +3.3V |
| | Connect | Internal Antenna |
| physical | Dimensions | 35.5mm×17.7mm±0.2mm |
| Operating Temperature | -- | -20-85 deg C. |

FCC Statement

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.

This equipment 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.

This module has been assessed against the following FCC rule parts: CFR 47 FCC Part 15 C (15.247, DTS and DSS) and CFR 47 FCC Part 15 E (NII). It is applicable to the modular transmitter

2.3

This radio transmitter 2ADAP-GRJWB05J6 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

The concrete contents to check are the following three points.

Must use a PCB antenna with a gain not exceeding those shown in the table below.

Should be installed so that the end user cannot modify the antenna

Feed line should be designed in 50ohm

Fine-tuning of return loss etc. can be performed using a matching network.

The antenna shall not be accessible for modification or change by the end user

2.4

The module complies with FCC Part 15.247 / Part 15.407 and applies for limited module approval.

Installation Guidance

The final host / module combination may also need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device. The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements.

The use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual. This module is a limit modules. host manufacturer should confirm with module manufacturer for the installation method in end system.

RF exposure evaluation when it is necessary to demonstrate compliance in a specific host.

2.5

Trace antenna designs: Not applicable.

The device must be professionally installed

The intended use is generally not for the general public. It is generally for industry/commercial use.

The connector is within the transmitter enclosure and can only be accessed by disassembly of the transmitter which is not normally required. the user has no access to the connector.

Installation must be controlled. Installation requires special training

2.6

This equipment 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 & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2.7

Antenna type and antenna gain for BLE/2.4G WIFI/5G WIFI:

| Antenna Type | MAX Antenna Gain (dBi) |
|--------------|------------------------|
| PCB | 1.5 |

Note: PCB Antenna is permanently attached and can't be replaced.

2.8

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: 2ADAP-GRJWB05J6" Any similar wording that expresses the same meaning may be used.

2.9

Testing of the host product with all the transmitters installed – referred to as the composite investigation test – is recommended, to verify that the host product meets all the applicable FCC rules. The radio spectrum is to be investigated with all the transmitters in the final host product functioning to determine that no emissions exceed the highest limit permitted for any one individual transmitter as required by Section 2.947(f). The host manufacturer is responsible to ensure that when their product operates as intended it does not have any emissions present that are out of compliance that were not present when the transmitters were tested individually.

If the modular transmitter has been fully tested by the module grantee on the required number of channels, modulation types, and modes, it should not be necessary for the host installer to re-test all the available transmitter modes or settings. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions).

The testing should check for emissions that may occur due to the intermixing of emissions with the other

transmitters, digital circuitry, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration.

2.10

Any company of the host device which install this modular should perform the test of radiated & conducted emission and spurious emission etc. according to FCC Part 15C: 15.247 and 15.209 & 15.207, 15B class B requirement, only if the test result comply with FCC part 15C: 15.247 and 15.209 & 15.207, 15B class B requirement. Then the host can be sold legally.

The host product manufacturer is responsible for compliance with any other FCC rules and a C2PC is required for each host when installed in any host.

2.11

The host manufacture is recommended to use D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties.

2.12

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

Detail instructions from module manufacturer

Separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.

The module is limited to OEM installation only.

The OEM integrator is responsible for ensuring that the end-user has manual instructions to remove or install the module.

Must use the device only in host devices that meet the FCC/ISED RF exposure category of mobile, which means the device is installed and used at distances of at least 20 cm from persons.

The end user manual shall include FCC Part 15 /ISED RSS GEN compliance statements related to the transmitter as shown in this manual.

The host product manufacturer is responsible for compliance with any other FCC rules and a C2PC is required for each host when installed in any host.

Any company of the host device which installs this modular should perform the test of radiated & conducted emission and spurious emission etc. according to FCC Part 15C: 15.247 and 15.209 & 15.207, 15B class B requirement, only if the test result complies with FCC part 15C: 15.247 and 15.209 & 15.207, 15B class B requirement. Then the host can be sold legally.

The host product manufacturer is responsible for compliance with any other FCC rules and a C2PC is required for each host when installed in any host.

This modular transmitter is only FCC-authorized for the specific rule parts (47CFR Part 15.247) 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.

Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host.

The use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual.

This module is stand-alone modular. If the end product will involve Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer has to consult with module manufacturer for the installation method in the end system.

Refer to the minimum antenna gain requirements and antenna type (PIFA) that are approved for use with this module detailed in the previous sections. The use of other antennas will require additional certification procedures for the host system with FCC and ISED Canada.

This equipment complies with FCC and ISED-Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed in host systems that are installed and operated with a minimum distance of 20cm between the radiator & people. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter except as permitted by FCC and ISED-Canada multie-transmitetr rules.

The module is limited to installation in mobile applications.

For a normal application, for example, A television, host systems that are installed and operated with a minimum distance of 20cm between the radiator and people.

If the end-user really needed to install in host systems that are installed and operated with a distance less than 20cm between the radiator & people, for example, a cell phone or laptop, the host systems need to comply with the requirements in KDB 996369 D03 OEM Manual v01 and KDB 996369 D04 Module Integration Guide v02.

The module is not intended for the public, it must be professionally installed.

The typical application for the module:

| | |
|------------|---------|
| Television | Monitor |
|------------|---------|

For other devices, a special driver needs to be installed on the host before starting normal use for the module, and it is different for different kinds of hosts.

Please contact us for more details before installing on a host.

For more information, please refer to the KDB 996369 D03 OEM Manual v01 and KDB 996369 D04 Module Integration Guide v02.

The end user manual shall include FCC Part 15 /ISED RSS GEN compliance statements related to the transmitter as shown below in addition to any other relevant statements or labeling requirements from e.g FCC Part 15 or the Canadian ICES standards.

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 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.

To ensure compliance with FCC and ISED RF exposure requirements this device must be installed to provide a minimum of 20cm between the device and people.

Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host according to FCC Part 15.247, RSS-247, and FCC part 15 E.

This modular transmitter is only FCC authorized for the specific rule parts (47CFR Part 15.247) listed on the grant, the host product manufacturer is responsible for compliance with any other FCC rules and a C2PC is required for each host when installed in any host.

The use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual.

This module is stand-alone modular. If the end product will involve Multiple simultaneous transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer has to consult with module manufacturer for the installation method in the end system.

Canada Statement

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie 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'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Please notice that if the ISED certification 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: 12478A-GRJWB05J6" any similar wording that expresses the same meaning may be used.

l'appareil hôte doit porter une étiquette donnant le numéro de certification du module d'Industrie Canada, précédé des mots « Contient un module d'émission », du mot « IC: 12478A-GRJWB05J6 » ou d'une formulation similaire exprimant le même sens, comme suit

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

Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS 102 et la conformité à l'exposition de RSS-102 RF, utilisateurs peut obtenir l'information canadienne sur l'exposition et la conformité de rf.

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 a minimum distance of 20 centimeters between the radiator and your body.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

Antenna type and antenna gain for BLE/2.4G WIFI/5G WIFI:

| Antenna Type | MAX Antenna Gain (dBi) |
|--------------|------------------------|
| PCB | 1.5 |

Note: PCB Antenna is permanently attached and can't be replaced.

The host product manufacturer is responsible for compliance with any other ISED rules and a C4PC is required for each host when installed in any host.

Le fabricant du produit hôte est responsable de la conformité à toute autre règle d'ISDE et, lorsqu'il est installé dans un hôte, chaque hôte nécessite un c4pc.

Notice to OEM integrator

Must use the device only in host devices that meet the FCC/ISED RF exposure category of mobile, which means the device is installed and used at distances of at least 20cm from persons.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The end user manual shall include FCC Part 15 /ISED RSS GEN compliance statements related to the transmitter as shown in this manual (FCC/Canada statement).

The host product manufacturer is responsible for compliance with any other FCC rules and a C2PC is required for each host when installed in any host.

Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host.

The use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual.

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

Any company of the host device which install this modular should perform the test of radiated & conducted emission and spurious emission etc. according to FCC Part 15C: 15.247 and 15.209 & 15.207, 15B class B requirement, only if the test result comply with FCC part 15C: 15.247 and 15.209 & 15.207, 15B class B requirement. Then the host can be sold legally.

This modular transmitter is only FCC authorized for the specific rule parts (47CFR Part 15.247 and 15.407) 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.

Host manufacturer is strongly recommended to confirm compliance with FCC/ISED

requirements for the transmitter when the module is installed in the host.

Must have on the host device a label showing Contains FCC ID:2ADAP-GRJWB05J6 or IC:12478A-GRJWB05J6

Both FCC ID and IC ID are not to be placed on the host at the same time and only hosts going into the US can use the FCC ID and only hosts going into Canada can use the IC ID.

Installer should put it in the manual :

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

L'hôte doit utiliser l'instrument uniquement dans des dispositifs qui répondent à la fcc / (catégorie d'exposition rf mobile, ce qui signifie le dispositif est installé et utilisé à une distance d'au moins 20 cm de personnes.

le manuel de l'utilisateur final doit inclure la partie 15 / (fac rss gen déclarations de conformité relatives à l'émetteur que de montrer dans ce manuel.

le fabricant est responsable de la conformité de l'hôte, le système d'accueil avec le module installé avec toutes les autres exigences applicables du système comme la partie 15 b, ices - 003.

accueillir le fabricant est fortement recommandé de confirmer la conformité avec les exigences de la fcc / (émetteur lorsque le module est installé dans l'hôte.

le dispositif d'accueil doivent avoir une étiquette indiquant contient FCC ID:2ADAP-GRJWB05J6, IC: 12478A-GRJWB05J6

Les personnes chargées de l'installation devraient figurer dans le manuel:

Les dispositifs fonctionnant dans la bande de 5 150 à 5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

Doit avoir sur l'appareil hôte une étiquette indiquant Contient l'ID FCC ID:2ADAP-GRJWB05J6 ou IC:12478A-GRJWB05J6 L'ID FCC et l'ID IC ne doivent pas être placés sur l'hôte en même temps et seuls les hôtes se rendant aux États-Unis peuvent utiliser l'ID FCC et seuls les hôtes se rendant au Canada peuvent utiliser l'ID IC.

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