

Module User Manual

802.11a/b/g/n WiFi & BLE 4.2 Module 1T1R

It is a highly integrated single-chip 802.11a/b/g/n 1T1R WLAN, and an integrated Bluetooth Low Energy 4.2 combo chip with USB 2.0 multi-function. It combines a WLAN MAC, a 1T1R capable WLAN baseband, BT Protocol Stack, BT Baseband, modem, and WLAN/BT RF in a combo chip. It provides a complete solution for a high-performance integrated wireless LAN and Bluetooth controller.

General

QFN40 5 x 5 mm

802.11a/b/g/n 1T1R WLAN and Bluetooth Low Energy (BLE) 4.2 combo chip

Host Interface

Complies with USB2.0 for WLAN and BT controller

USB Multi-Function for both BT (USB function 0) and WLAN (USB function 1)

USB LPM and USB Selective Suspend supported

Important Notice to OEM integrators

1. This module is limited to OEM installation ONLY.
2. This module is limited to installation in mobile or fixed applications, according to Part 2.1091(b).
3. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations
4. For FCC Part 15.31 (h) and (k): The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with Part 15 Subpart B, the host manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions). The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in Part 15 Subpart B or emissions are complaint with the transmitter(s) rule(s). The Grantee will provide guidance to the host manufacturer for Part 15 B requirements if needed.

IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

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

“Contains Transmitter Module FCC ID:2AG7C-R833 or Contains FCC ID:2AG7C-R833 ”.

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an

antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of antenna requirements according to 15.203.

Federal Communication Commission Interference 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 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.

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.

FCC Radiation Exposure Statement:

This equipment complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment.

The module must be installed in the host device.

This End equipment should be installed and operated with a minimum distance of 20cm centimeters between the radiator and your body.

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

- (i) 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;
- (ii) the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit; and
- (iii) the maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01r01

2.2 List of applicable FCC rules

CFR 47 FCC Part 15 Subpart C and F has been investigated. It is applicable to the modular transmitter

2.3 Specific operational use conditions

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.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

The device has been evaluated to meet general RF exposure requirement. The device can be used in mobile exposure condition with a minimum distance of 20cm centimeters between the radiator and your body.

2.7 Antennas

This radio transmitter FCC ID: 2AG7C-R833 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.

Antenna: YJC-6N055-G09

FPC antenna with IPEX connector, 3.82dBi(Max.) for 2.4G Band and 3.6dBi(Max.) for 5G Band,

Frequency (MHz)	2400-2480	5150-5250	5250-5350	5500-5700	5745-5825
Gain (dBi)	3.82	2.99	2.29	3.6	3.14

Antenna: 112010218

Omni antenna with IPEX connector, 2.91dBi(Max.) for 2.4G Band and 3.81dBi(Max.) for 5G Band,

Frequency (MHz)	2400-2480	5150-5250	5250-5350	5500-5700	5745-5825
Gain (dBi)	2.91	3.81	3.65	3.25	3.63

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following" Contains FCC ID: 2AG7C-R833".

2.9 Information on test modes and additional testing requirements

Host manufacturer installed this modular with single modular approval should perform the test of radiated emission and spurious emission according to FCC part 15C, Part 15E, 15.209, 15.207 requirement, only if the test result comply with FCC part 15C, Part 15E, 15.209, 15.207 requirement, then the host can be sold legally.

2.10 Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B.

2.11 Note EMI Considerations

Host manufacture installed this modular with single modular approval should be recommending "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.

Host manufacture installed this modular with single modular approval should be recommending "For EMC/radio-parameter compliance purposes, when an evaluation is done by the grantee or host provider (see Clause IX in KDB Publication 996369 D01) and there are no additional emissions generated due

to simultaneous-transmission operations compared to single transmitter operations testing (i.e., not transmitting simultaneously), it is not necessary to file the additional simultaneous transmission test data. The host manufacturer is responsible for ensuring compliance with the applicable FCC rules for the transmitters operating individually and simultaneously. This includes compliance for the summation of all emissions from all outputs occupying the same or overlapping frequency ranges, as defined by the applicable rules.