WFI32E02 Module
Regulatory Compliance Information

Revision 0.0
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This document covers the Regulatory Compliance information which will be part of the WFI32E02 Module datasheet and related documents shared with customers.

1.1 Antenna Considerations:

Table 1-1 provides the list of Approved antennas along with the manufacturer and part number details.

Slno.	P/N	Vendor	Antenna Gain @ 2.4GHz Band	Antenna type	Cable length/ Remarks
1	RFA-02-L2H1	Alead/ Aristotle	2 dBi	Dipole	150mm
2	RFA-02-C2H1-D034	Alead/ Aristotle	2 dBi	Dipole	150mm
3	RFA-02-D3	Alead/ Aristotle	2dBi	Dipole	150mm
4	RFDPA870920IMLB301	WALSIN	1.84 dBi	Dipole	200mm
5	RFDPA870920IMAB302	WALSIN	1.82 dBi	Dipole	200mm/ Black
6	RFDPA870920IMAB305	WALSIN	1.82 dBi	Dipole	200mm/ Grey
7	RFDPA870910IMAB308	WALSIN	2 dBi	Dipole	100mm
8	RFA-02-C2M2	Alead/ Aristotle	2 dBi	Dipole	RP-SMA to u.FL cable length of 100mm (Refer note 2 and 3)
9	RN-SMA-S-RP	Microchip	0.56 dBi	Dipole	RP-SMA to u.FL cable length of 100mm. (Refer note 2 and 3)

Note:

1) Antenna #1 to #11 are for WFI32E02UC/ WFI32E02UE
2) If the end-product using the Module is designed to have an antenna port that is accessible to the end-user than a unique (non-standard) antenna connector (as permissible by FCC) must be used (e.g. RP (Reverse Polarity)-SMA socket).
3) If an RF coaxial cable is used between the module RF output and the enclosure, then a unique (non-standard) antenna connector must be used in the enclosure wall for interface with antenna.

1.2 WFI32E02 Usage Instructions under Modular Approval

Table 1-2: Features and supported modes of operation

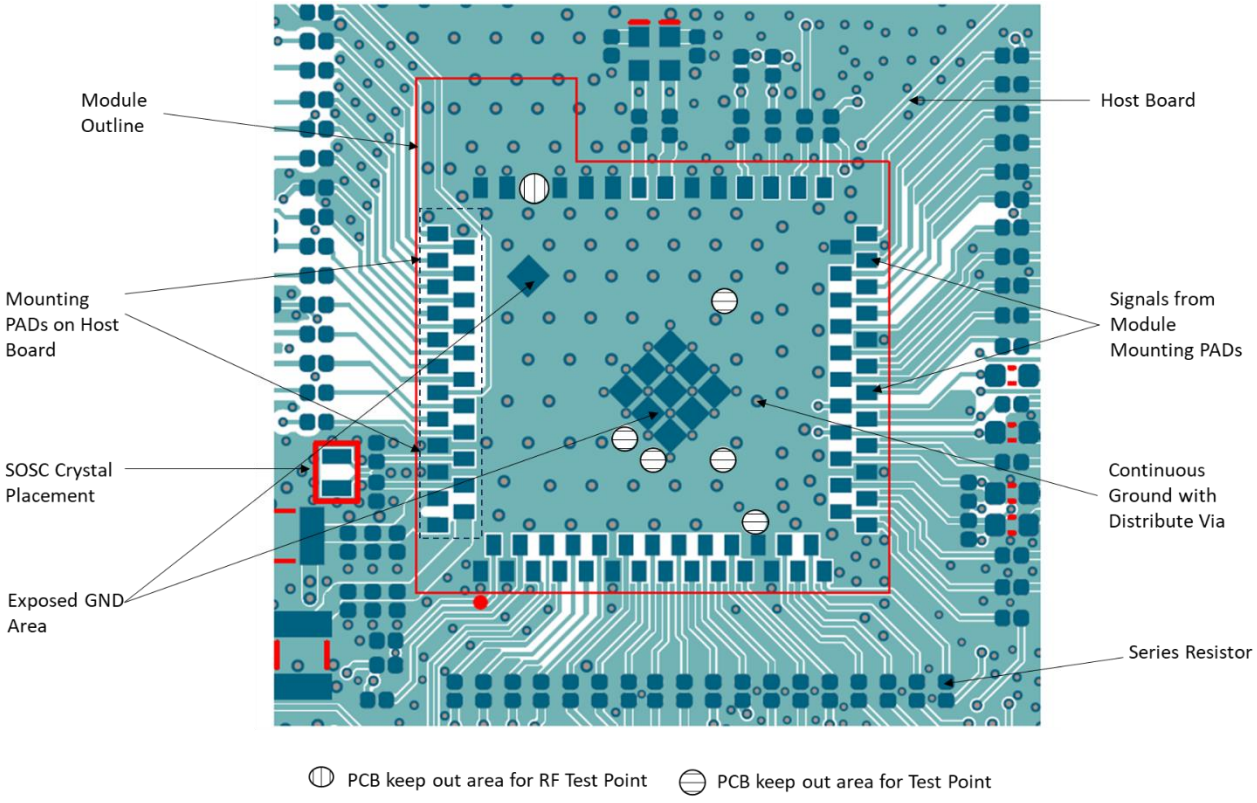
Frequency Range	Wi-Fi: 2.400 GHz ~ 2.4835 GHz (2.4 GHz ISM Band)
Number of Channels	Wi-Fi: 11 for North America

The availability of some specific channels and/or operational frequency bands are country dependent and should be programmed at the Host product factory to match the intended destination. Regulatory bodies prohibit exposing the settings to the end user. This requirement needs to be taken care of via Host implementation.

The Host product manufacturer must ensure that the RF behavior adheres to the certification (e.g. FCC, ISED) requirements when the module is installed in the final Host product.

1.3 WFI32E02 Usage Instructions under Modular Approval

Host Board Top Layer Instructions:



The top layer (underneath the module) of the host PCB must be ground with as many GND vias as possible.

2.1 United States

The WFI32E02 modules have received Federal Communications Commission (FCC) CFR47 Telecommunications, Part 15 Subpart C “Intentional Radiators” single-modular approval in accordance with Part 15.212 Modular Transmitter approval. Single modular transmitter approval is defined as a complete RF transmission sub-assembly, designed to be incorporated into another device, that must demonstrate compliance with FCC rules and policies independent of any host. A transmitter with a modular grant can be installed in different end-use products (referred to as a host, host product, or host device) by the grantee or other equipment manufacturer, then the host product may not require additional testing or equipment authorization for the transmitter function provided by that specific module or limited module device.

The user must comply with all of the instructions provided by the Grantee, which indicate installation and/or operating conditions necessary for compliance. Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

A host product itself is required to comply with all other applicable FCC equipment authorization regulations, requirements, and equipment functions that are not associated with the transmitter module portion. For example, compliance must be demonstrated: to regulations for other transmitter components within a host product; to requirements for unintentional radiators (Part 15 Subpart B), such as digital devices, computer peripherals, radio receivers, etc.; and to additional authorization requirements for the non-transmitter functions on the transmitter module (i.e., SDoC or Certification) as appropriate (e.g., Bluetooth and Wi-Fi transmitter modules may also contain digital logic functions).

2.1.1 Labeling and User Information Requirements

The WFI32E02 module has been labeled with its own FCC ID number. If the FCC ID is not visible when the module is installed inside another device, then the outside of the finished product into which the module is installed must display a label referring to the enclosed module. This exterior label can use wording as follows:

For the WFI32E02UE, WFI32E02UC:

Contains Transmitter Module FCC ID: 2ADHKWFI32E02
or
Contains FCC ID: 2ADHKWFI32E02

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.

A user's manual for the finished product should include the following 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 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

Additional information on labeling and user information requirements for Part 15 devices can be found in KDB Publication 784748, which is available at the FCC Office of Engineering and Technology (OET) Laboratory Division Knowledge Database (KDB) https://apps.fcc.gov/oetcf/kdb/index.cfm

2.1.2 RF Exposure

All transmitters regulated by FCC must comply with RF exposure requirements. KDB 447498 General RF Exposure Guidance provides guidance in determining whether proposed or existing transmitting facilities, operations or devices comply with limits for human exposure to Radio Frequency (RF) fields adopted by the Federal Communications Commission (FCC).

From the FCC Grant: Output power listed is conducted. This transmitter is restricted for use with the specific antenna(s) tested in this application for Certification.

In the end product, the antenna(s) used with this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operation in conjunction with any other antenna or transmitter. User and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying the RF exposure compliance.

2.1.3 Approved Antenna Types

To maintain modular approval in the United States, only the antenna types that have been tested shall be used. It is permissible to use a different antenna, provided the same antenna type and antenna gain (equal to or less than) is used. An antenna type comprises antennas having similar in-band and out-of band radiation patterns.

Antennas approved for WFI32E02 module with the antenna types are listed in Table 1-1.

2.1.4 Helpful Websites

Federal Communications Commission (FCC): http://www.fcc.gov
FCC Office of Engineering and Technology (OET) Laboratory Division Knowledge Database (KDB): https://apps.fcc.gov/oetcf/kdb/index.cfm

3.1 Canada

The WFI32E02 module has been certified for use in Canada under Innovation, Science and Economic Development Canada (ISED, formerly Industry Canada) Radio Standards Procedure (RSP) RSP-100, Radio Standards Specifi- cation (RSS) RSS-Gen and RSS-247. Modular approval permits the installation of a module in a host device without the need to recertify the device.

3.1.1 Labeling and User Information Requirements

Label Requirements (from RSP-100 Issue 11, Section 3): The host device shall be properly labeled to identify the module within the host device.

The Innovation, Science and Economic Development Canada certification label of a module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labeled to display the Innovation, Science and Economic Development Canada certification number of the module, preceded by the words “Contains”, or similar wording expressing the same meaning, as follows:

For the WFI32E02UE, WFI32E02UC:

Contains transmitter module IC: 20266-WFI32E02
Wireless MCU Module with IEEE® 802.11 b/g/n

User Manual Notice for License-Exempt Radio Apparatus (from Section 8.4 RSS-Gen, Issue 5, April 2018): User manuals for license-exempt radio apparatus shall contain the following or equivalent notice in a conspicuous location in the user manual or alternatively on the device or both:

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, and
(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.

Transmitter Antenna (From Section 6.8 RSS-GEN, Issue 5, April 2018): User manuals, for transmitters shall display the following notice in a conspicuous location:

This radio transmitter [IC: 20266-WFI32E02] has been approved by Innovation, Science and Economic Development Canada 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.

Le présent émetteur radio [IC: 20266-WFI32E02] a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi) and required impedance for each.

3.1.2 RF Exposure

All transmitters regulated by ISED must comply with RF exposure requirements listed in RSS-102 - Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands).
This transmitter is restricted for use with a specific antenna tested in this application for certification, and must not be co-located or operating in conjunction with any other antenna or transmitters within a host device, except in accordance with Canada multi-transmitter product procedures.

The module antenna must be installed to meet the RF exposure compliance separation distance of “20 cm” and any additional testing and authorization process as required.
The host integrator installing this module into their product must ensure that the final composite product complies with the ISED requirements by a technical assessment.

L'antenne du module doit être installé pour répondre à la conformité en matière d'exposition RF distance de séparation de 20 "cm" et tout d'autres tests et processus d'autorisation au besoin.
L'hôte integrator l'installation de ce module dans leur produit final doit s'assurer que le produit est conforme à la composite Exigences ISED par une évaluation technique.

3.1.3 Approved Antenna Types

Antennas approved for WFI32E02 module with the antenna types are listed in Table 1-1.

3.1.4 Helpful Web Sites

Industry Canada: http://www.ic.gc.ca/