

D5-40 User Manual

FCC ID: 2BC3H2316A

General

Power supply: The radio module use the LDO N4 to provide power for radio chip.

Transmitting: During the transmitting stage, the CPU of main board sends the data to the AT86RF215 through the SPI interface. When the AT86RF215 gets emission instruction from CPU, it will go into transmitting mode and modulate data up to radio band, The modulated RF signal passes through the filter and is radiated by the chip antenna.

Receiving: During the receiving stage, the AT86RF215 gets a receipt instruction from CPU, it will go into receiving mode. The RF signal is received from antenna, And then it goes through the filter into the AT86RF215. The demodulation of AT86RF215 is responsible for retrieving the sent data from the received signal, after demodulated the data will send to CPU through SPI interface.

Frequency range: 2405-2480MHz.

Modulation: O-QPSK.

Max EIRP: 20 dBm.

Antenna port: Antenna 3.

The compliance of KDB 996369 D02 Module Q&A v02 Question 11:

Only internal chip antenna, so this requirement does not apply to this product.

The requirement for KDB 996369 D03:

1 List of applicable FCC rules

FCC Part 15. 247

2 Summarize the specific operational use conditions

None.

3 Limited module procedures

The module is a single module, so this requirement is not applicable to the product.

4 Trace antenna designs

Only internal chip antenna, so this requirement does not apply to this product.

5 RF exposure considerations

The SAR requirement is deemed to be satisfied without test

6 Antennas

For 2.4G Band:

Ant3: Internal chip antenna, 4dBi;

7 Label and compliance information

If this certified module is installed inside the host device, then the outside of the host must be labeled with "Contains FCC ID: 2BC3H2316A and IC: 31388-2316A".

8 Information on test modes and additional testing requirements

The host manufacturer can use software to make the transmit continuously.

9 Additional testing, Part 15 Subpart B disclaimer

The module only complies with the FCC Part 15.247. If the module is installed in the host device, the host manufacturer is responsible for the compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. For example, if the host manufacturer markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the host manufacturer shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

FCC & IC application:

This device complies with Part 15 of the FCC Rules / Industry Canada licence-exempt RSS standard(s). 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.

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, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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

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.

Information for the OEM Integrators

This device is intended for OEM integrators only. Please see the full grant of equipment document for restrictions.

Label Information to the End User by the OEM or Integrators

If the FCC ID of this module is not visible when it is installed inside another device, then the outside of the device into which the module is installed must be label with "Contains FCC ID: 2BC3H2316A and IC: 31388-2316A".

Antenna caution

This radio module IC:31388-2316A 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.

Gain of antenna: 4dBi max for Chip antenna.

Type of antenna: 50ohm, Chip antenna.

Le présent émetteur radio IC:31388-2316Aa 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. Gain d'antenne: 4dBi maximal

C2PC test plan

The modular has no RF shielding as required in §15.212(a) (1)(i) and it cannot be tested in a stand-alone configuration as required in §15.212(a)(1)(v), as required in KDB 996369 D01 V03, C2PC is required for every different specific host using the module.

The following tests will be performed according to FCC Part 15.247 on the host which installed this LMA:

(The module only supports one modulation, data rate and bandwidth, so all tests will be performed at the same modulation, data rate and bandwidth.)

Check the operation frequency range

Verify 2405MHz and 2480MHz channels to ensure the OFR falls within 2400-2483.5MHz.

Conducted RF output power

Original module report: Max. peak power: 12.69dBm@2440MHz.

Verify the 2405MHz, 2440MHz and 2480MHz channels to ensure that the Conducted RF output power is not greater than 12.69dBm.

Radiated Emissions (band edge)

Verify 2405MHz and 2480MHz channels to ensure that the host also meets band edge requirements.

Radiated Spurious Emissions

Verify the 2405MHz, 2440MHz and 2480MHz channels to ensure that the host also meets Radiated Spurious Emissions requirements.

Power Line Conducted Emission(FCC Part 15.207)