

# **User manual**

(for EC2820)

**FCC ID: 2A6NFEC2820**

**IC: 28568-EC2820**

# EC2820

KAGA FEI Co., Ltd.

This module should be installed in the host device according to the interface specification.

## 1) Japan Regulatory Information

- a) This module is approved with the specific antenna on this module.
- b) Please ensure that your product can bear a label with the following information. If the product is so small that it is not practicable to place the label, please place it in the instruction manual and package.

This product installs a radio system which has been approved as a radio station in a low power data communication system based on the Radio Law.

EC2820 : 005-103119

## 2) Canada Regulatory Information

The following information must be indicated on the host device of this module;

- a) This device complies with Innovation, Science and Economic Development Canada's applicable 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'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'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

- b) This product is certified as type of the portable device with Science and Economic Development Canada Rules. To maintain compliance with RF Exposure requirement, please use within specification of this product and have a separation distance of minimum 15 mm between the user and/or bystander and the antenna and /or radiating element.

This distance ensures that the output power (e.i.r.p.) of EC2820 is below the SAR evaluation Exemption limits defined in RSS-102 issue 5.

Ce produit est certifié comme type de l'appareil portable avec Règles de Innovation, Sciences et Développement économique Canada. Pour maintenir l'acquiescement avec exigence Exposition de RF, veuillez utiliser dans spécification de ce produit et respecter une distance de séparation d'au moins 15 mm entre l'utilisateur et / ou un tiers et l'antenne et / ou l'élément rayonnant.

Cette distance garantit que la puissance de sortie (p.i.r.e.) d'EC2820 est inférieure aux limites d'exemption de l'évaluation SAR définies dans le numéro 5 de la norme RSS-102.

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- c) Please notify certified ID by either one of the following method on your product.

-Contains IC : 28568-EC2820

Spécifiez ID certifiée dans votre produit par une de méthode suivante.

-Contains IC : 28568-EC2820

3) FCC Regulatory Information

- a) This device complies with part 15 of the FCC Rules.

-Part 15 Subpart C

- b) The following statement shall be indicated on the host device or the user manual of the host device; 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.

- c) Please notify certified ID by either one of the following method on your product.

-Contains Transmitter Module FCC ID: 2A6NFEC2820

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- d) The following statement shall be indicated in the user manual of the host device; CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the use's authority to operate the equipment.

- e) The modular transmitter is only FCC authorized for the specific rule parts (Part 15 Subpart C) listed on the grant, and 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.

- f) This product is certified as type of the portable device with FCC Rules. To maintain compliance with RF Exposure requirement, please use within specification of this product.

- g) The following statement shall be indicated in the user manual of the host device; The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

- h) This module can change the output power depending on the circumstances by the application software which is developed by module installer. Any end user cannot change the output power.

- i) Antenna List

|                  |               |
|------------------|---------------|
| No.1             |               |
| Antenna Category | Monopole      |
| Antenna Type     | PCB antenna   |
| Dimensions       | 9.0mm x 2.7mm |

4) CE Regulatory Information

- a) When your end product installs this module, it is required to proceed additional certification processes before placing on the market in EU member states to make your products fully comply with relative EU standards.

- b) KAGA FEI can provide you the test reports of conducted measurement portion for the radio module. You can utilize the test reports for the certification processes of your end product as it requires radio testing.

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|             |              |
|-------------|--------------|
| Control No. | Control name |
| (1/2)       | Pin Layout   |

**Pin Descriptions**

| Pin | Pin name       | Pin function                | Description                                                                      |
|-----|----------------|-----------------------------|----------------------------------------------------------------------------------|
| 1   | VDD            | Power                       | Power supply                                                                     |
| 2   | VDDH           | Power                       | High voltage power supply                                                        |
| 3   | GND            | Power                       | Ground                                                                           |
| 4   | VBUS           | Power                       | 5 V input for USB 3.3 V regulator                                                |
| 5   | GND            | Power                       | Ground                                                                           |
| 6   | D-             | USB                         | USB D-                                                                           |
| 7   | D+             | USB                         | USB D+                                                                           |
| 8   | GND            | Power                       | Ground                                                                           |
| 9   | P0.04<br>AIN2  | Digital I/O<br>Analog input | General purpose I/O<br>Analog input                                              |
| 10  | P0.05<br>AIN3  | Digital I/O<br>Analog input | General purpose I/O<br>Analog input                                              |
| 11  | P0.06          | Digital I/O                 | General purpose I/O                                                              |
| 12  | P0.07          | Digital I/O                 | General purpose I/O                                                              |
| 13  | GND            | Power                       | Ground                                                                           |
| 14  | SWDIO          | Debug                       | Serial wire debug I/O for debug and programming                                  |
| 15  | SWDCLK         | Debug                       | Serial wire debug clock input for debug and programming                          |
| 16  | P0.15          | Digital I/O                 | General purpose I/O                                                              |
| 17  | P0.20          | Digital I/O                 | General purpose I/O                                                              |
| 18  | P0.17          | Digital I/O                 | General purpose I/O                                                              |
| 19  | P0.16          | Digital I/O                 | General purpose I/O                                                              |
| 20  | P0.18<br>RESET | Digital I/O                 | General purpose I/O<br>Configurable as pin RESET (Factory default : GPIO)        |
| 21  | GND            | Power                       | Ground                                                                           |
| 22  | OUT_MOD        | RF In/Out                   | RF I/O pin. It should be connected to Pin 23 OUT_ANT for normal operation.       |
| 23  | OUT_ANT        | Antenna In/Out              | Internal antenna. It should be connected to Pin 22 OUT_MOD for normal operation. |
| 24  | P0.02<br>AIN0  | Digital I/O<br>Analog input | General purpose I/O<br>Analog input                                              |
| 25  | P0.03<br>AIN1  | Digital I/O<br>Analog input | General purpose I/O<br>Analog input                                              |

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|             |              |
|-------------|--------------|
| Control No. | Control name |
| (2/2)       | Pin Layout   |

| Pin     | Pin name | Pin function | Description         |
|---------|----------|--------------|---------------------|
| 26      | P0.28    | Digital I/O  | General purpose I/O |
| 27      | P0.30    | Digital I/O  | General purpose I/O |
| 28 - 36 | GND      | Power        | Ground              |
| 37      | P0.14    | Digital I/O  | General purpose I/O |
| 38      | GND      | Power        | Ground              |
| 39      | P0.29    | Digital I/O  | General purpose I/O |
| 40      | P0.08    | Digital I/O  | General purpose I/O |
| 41 - 43 | GND      | Power        | Ground              |
| 44      | GND      | Power        | Ground Center pad   |
| 45      | GND      | Power        | Ground Center pad   |
| 46      | GND      | Power        | Ground Corner pad   |
| 47      | GND      | Power        | Ground Corner pad   |