RL865 Micro-power Multi-protocol Reader

User Manual

- Before you use this product, please read this manual carefully, and properly keep it for future reference.
- As our products continue improving, they may be changed without advanced notice.
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Version:V1.0

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1. Product Overview

1.1. Introduction

RL865 is a micro-power multi-protocol reader with high sensitivity reading and writing performance and fast anti-collision processing algorithm which supports reading multiple electronic tags of various protocols at the same time.

This product is widely used in desktop card issuance, access control, electronic bills, Libraries and other fields.

1.2. Product Features

- Operating frequency: 13.56MHz;
- Support ISO 15693,ISO 14443A and ISO 18000-3M3 standard;
- Support ISO 14443A protocol multi-card simultaneous reading;
- Support ISO 15693 protocol multi-card simultaneous reading;
- Support anti-collision treatment;
- Communication interface: USB;
- Power supply:150mA /5V.

1.3. Pictures

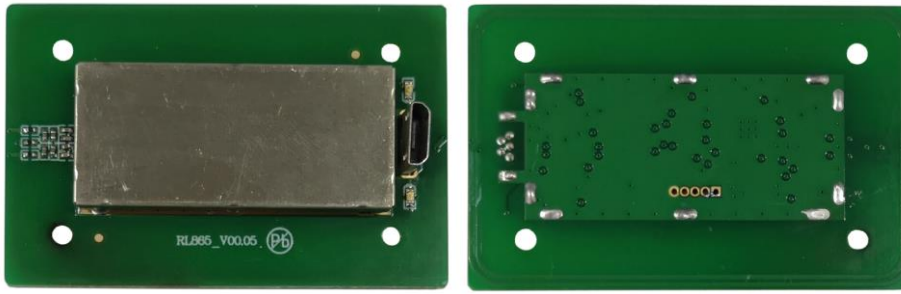

Figure 1 Front and back view of the product

1.4. Main Parameter

The technical parameters of the reader are as follows:

Table 1 Description of main technical parameters of the product

Parameter	Description
Operating Frequency	13.56Mhz
Support Standard	ISO 15693、ISO 14443A、ISO 18000-3M3
Communication Interface	USB
Voltage	150mA /5V
Maximum Recognition Distance	ISO 15693：11cm ISO 14443A：7cm
Standard Sizes	54×34.5mm
Maximum Operating Temperature	50℃

Note: ① Product specifications are approximate, please refer to the actual size;

② Due to continuous improvement of our products, technical parameters are subject to change without notice.

2. Hardware Interface Description

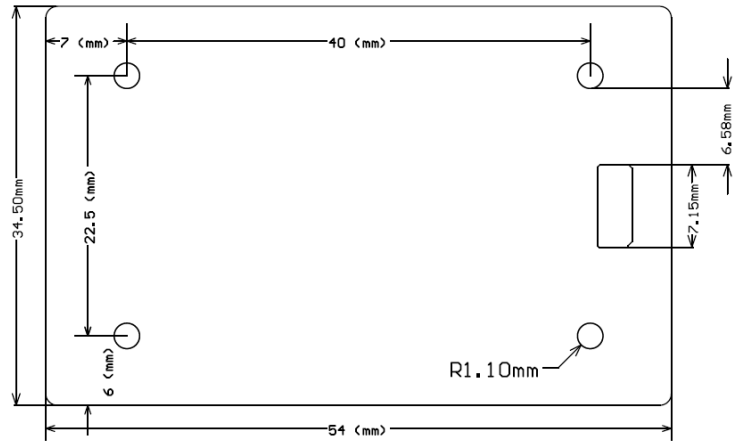

Figure 2 Product dimension (unit: mm)

3. Description Of Indicator Light

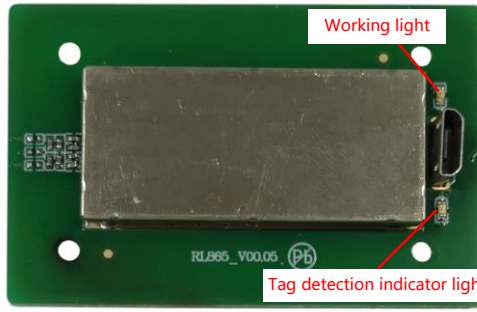

Figure 3 Schematic diagram of product indicators and interfaces

Table 2 Product indicator description

Type	Name	Functional Description
Device indicator light	Working light	After the device is powered on and the performance is normal, the light flashes red (slow flashing), and the light is not bright when it is abnormal; when the device is performing inventory work, the light flashes red quickly.
	Tag detection indicator light	When a tag is detected, this light flashes blue, otherwise this light does not light.

4. Device Connection Instructions

4.1. Device Connection Instructions

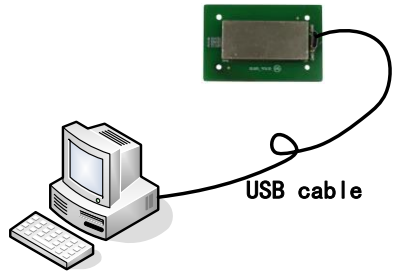

Figure 4 Connection diagram

After the device is connected and powered on normally, open the R-Tool folder of

the configuration tool and find the file R-Tool in the folder directory. Double-click this file to open the configuration tool, as shown below:

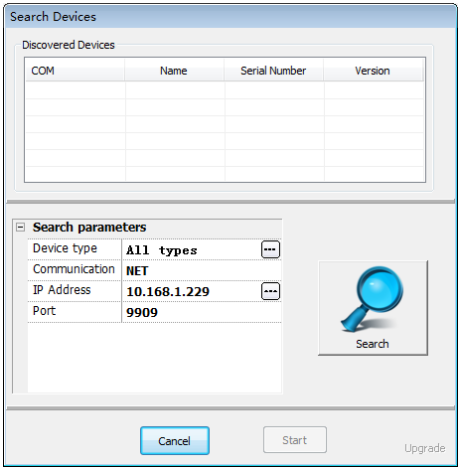

Figure 5 R-Tool connection interface

Since the device is connected via USB, you need to select "USB" in the [Communication Interface] item under [Search Parameters]. The search steps are as follows:

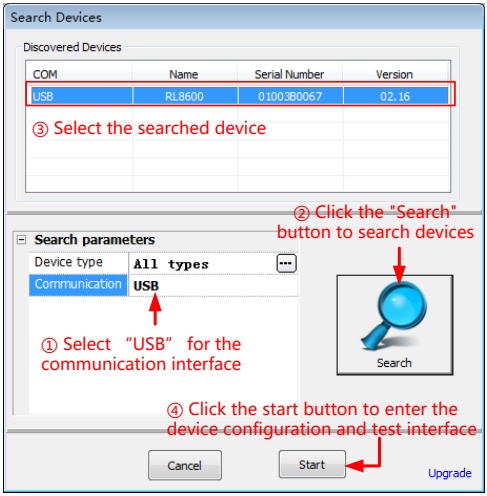

Figure 6 Connection steps

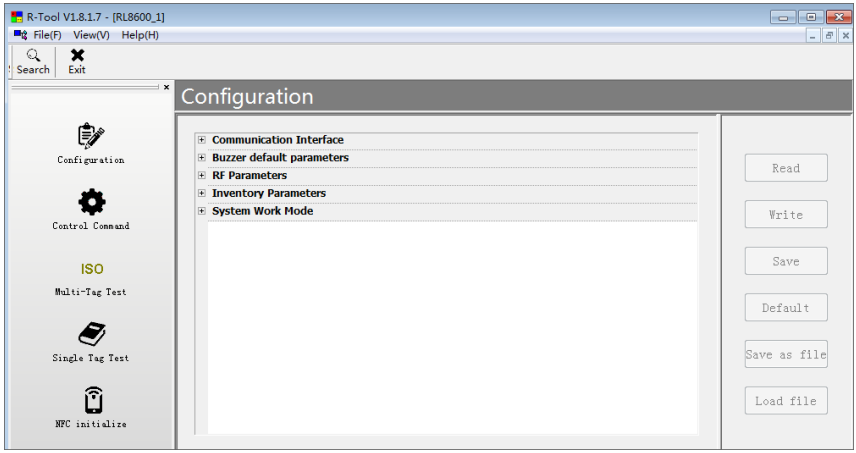

Figure 7 Enter the device configuration and test interface

4.2. Configuration Description Of Parameters

4.2.1. Communication Interface

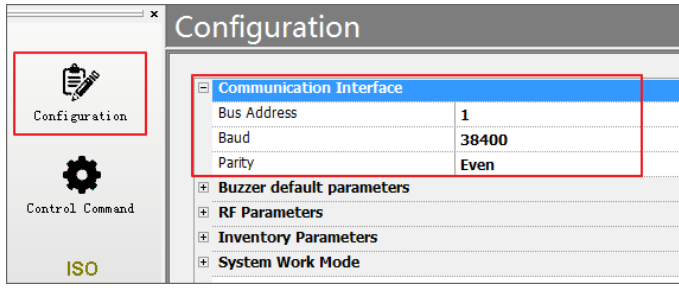

Figure 8 Configuration interface for communication interface

- **Bus Address:** between 1-255
- **Baud:** baud rate: 9600, 19200, 38400, 57600, 115200, 230400
- **Parity:** parity check type: None, Odd, Even

4.2.2. Buzzer Default Parameters

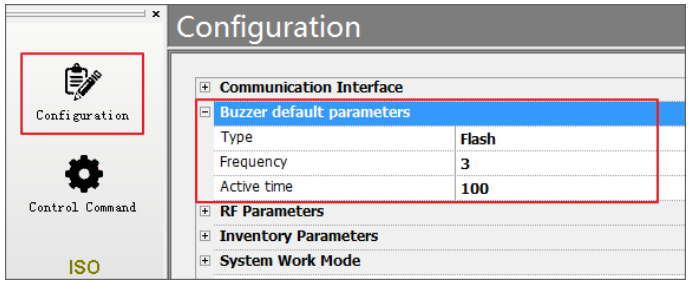

Figure 9 Configuration interface for buzzer default parameters

- **Type:** Unchanged, On, Off, Flash.
- **Frequency:** value range from 0 to 255, only applicable for the "Flash" type.
- **Active time:** the frequency of buzzer, only applicable for the "Flash" type.

Note: The device V00.02 and above (including V00.02 version) supports this function (buzzer is required).

4.2.3. RF Parameters

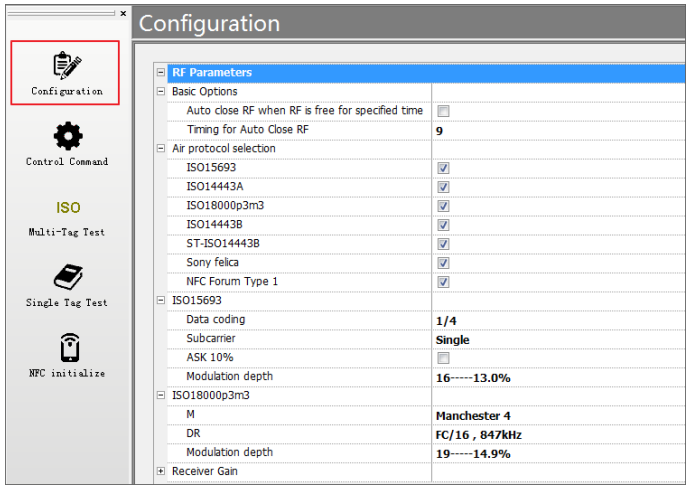

Figure 10 Configuration interface for RF parameters

- **Basic options**

1)Auto close RF when RF is free for specified time： in the host control mode, the

device will automatically close the RF if it does not receive a command of card reading or opening the RF.

2)Timing for Auto Close RF： Value range: 0-256, the RF enters the idle mode if no operation in a specified time.

- **Air protocol selection**

  1) ISO15693: Enable to count tags of ISO15693 air protocol.

  2) ISO14443A: Enable to count tags of ISO14443A air protocol.

  3) ISO18000p3m3: Enable to count tags of ISO18000p3m3 air protocol.

  4) ISO14443B: Enable to count tags of ISO14443B air protocol.

- **ISO15693**

  1) Data coding: 1/4, 1/256.

  2) Subcarrier: single negative carrier, double negative carrier.

  3) ASK 10%: ASK modulation depth setting takes effect after the button is ticked. Otherwise, it is ASK 100%.

  4) ASK modulation depth: 0.5% -60%

- **ISO18000p3m3**

  1)M: Manchester 2,Manchester 4

  2) DR:FC/16847khz, FC/32424khz

  3) Modulation depth:0.5%-29%

- **Receiver Gain:** set according to the default value, it is not recommended to modify.

4.2.4. Inventory Parameters

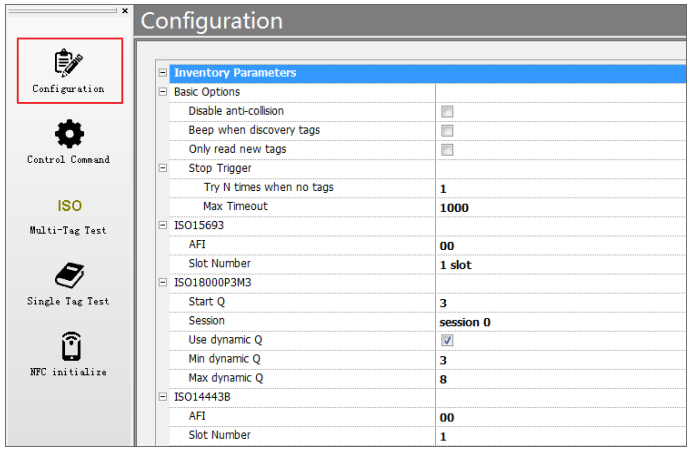

Figure 11 Configuration interface for inventory parameters

- **Basic options**

  1) Disable anti-collision: whether to turn off anti-collision function.

  2) Beep when discovery tags: set whether the buzzer buzzes when the tag is detected.

  3) Only read new tags: each tag is only read once, when it does not leave the antenna sensing area.

  4) Stop Trigger

  Try N times when no tags: set the number of attempts if no new tags are found.

  Max Timeout: set the time of stopping trigger due to timeout.

- **ISO15693**

  1) AFI: 00-FF.Note: 00 means not to enable.

  2)Slot Number: 1 Slot, 16 Slot.

- **ISO18000p3m3**

  1) Start Q:0-15.

  2) Session: session 0, session 2.

  3) Use dynamic Q:whether to enable dynamic Q value.

  4) Min dynamic Q: set the minimum dynamic Q value.

  5) Max dynamic Q: set the maximum dynamic Q value.

- **ISO14443B**

  1) AFI: 00-FF.Note: 00 means not to enable.

  2) Slot Number: 1,2,4,8,16.

4.2.5. System Work Mode

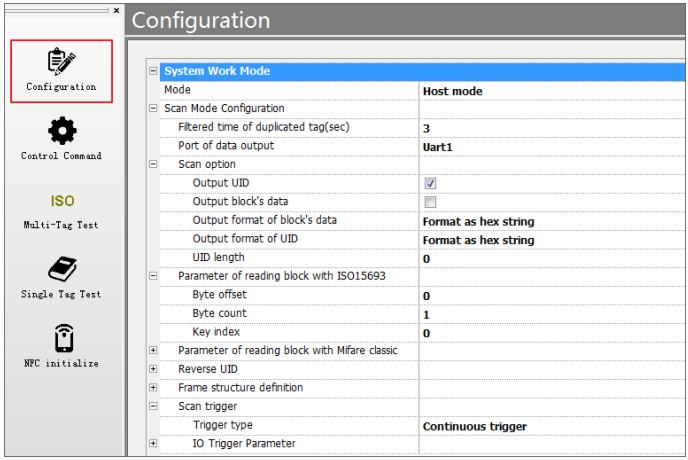

Figure 12 Configuration interface for system work mode

- **Mode:**

  1) Host mode: the host software needs to send commands.

  2) Scan mode: the inventory can be automatically completed, even if the host software does not send commands; scan setting in the scan mode should be configured in advance.

- **Scan Mode Configuration:**

  1) Filtered time of duplicated tag(sec): the tag can only be counted again after leaving the specified time.

  2) Port of data output: Uart1 output, USBHID output, virtual keyboard output, Wiegand 26, Wiegand 34.

  3) Scan option

  ① Output UID: output the tag UID.

  ② Output block's data: output the content of the data block (not including the security status byte).

③ Output format of block's data:

A. Format as hex string.

B. Format as ASCII.

④ Output format of UID:

A. Format as hex string.

B. Format as LSB 3 bytes convert to integer string.

C. Format as LSB 4 bytes convert to integer string.

D. Format as compliant with Wiegand.

E. Format as compliant with Wiegand fix 8 bytes.

⑤ UID length: 0-8, 0 for unlimited length, output of a complete UID.

4) Parameter of reading block with ISO15693

Byte offset: the offset of the first byte to be read.

Byte count: the number of bytes to be read.

Note: The parameters listed here are commonly used parameter configurations. For other parameter settings, please consult our technicians for configuration.

4.3. Testing

4.3.1. Multi-tags Inventory Testing

After entering the main interface of R-Tool test software, select "ISO Multi-Tag Test" ,carry out the procedure as shown in the following figure ①, ② and ③ for tags inventory test:

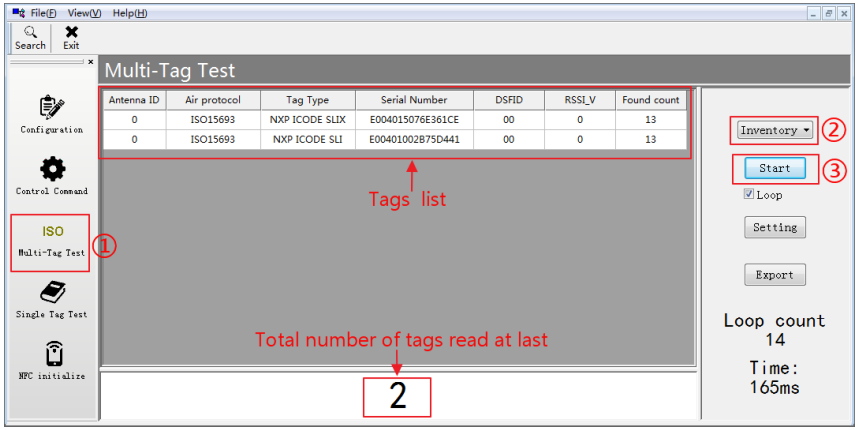

Figure 13 Multi-Tag inventory test steps

Note:

Step 1: Select the menu "ISO Multi-Tag Test" in the main interface of the software;

Step 2: Select the "Inventory " in the drop-down list above the "Start" button;

Step 3: Click the "Start" button to carry out the inventory testing.

4.3.2. Single Tag Operation Testing

In the main interface of R-Tool test software, select " Single Tag Test" , carry out the procedure as shown in the following figure ①,②, ③, ④ and ⑤ for tags test:

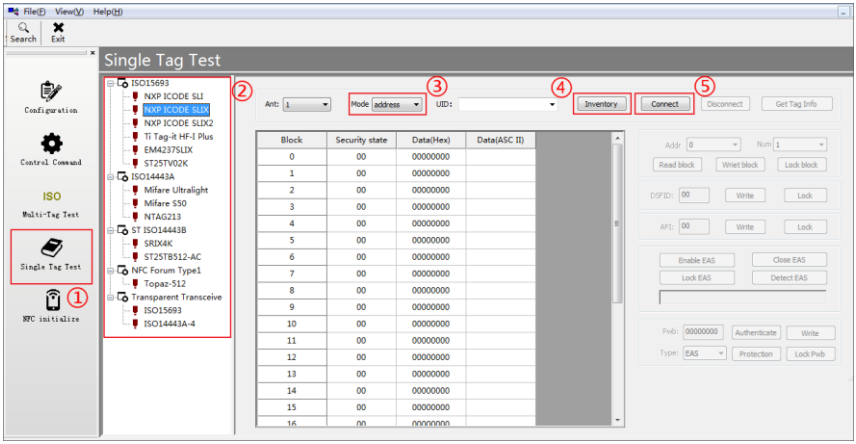

Figure 14 Single tag operation test steps

Note:

Step 1: In the software main interface, select the menu "Single Tag Test";

Step 2: In the "Single Tag Test" interface, select the type of tag to be operated;

Step 3: mode: none address, address.

1) For a single tag, select the "none address" mode.

2) For multiple tags, select the "address" mode.

Step 4: Click the "Inventory" button to display the UID list in UID drop-down box.

Step 5: 1) For a single tag: click the "Connect" button;

2) For multiple tags: in UID drop-down box, select the tags required to be operated, and then click the "Connect" button;

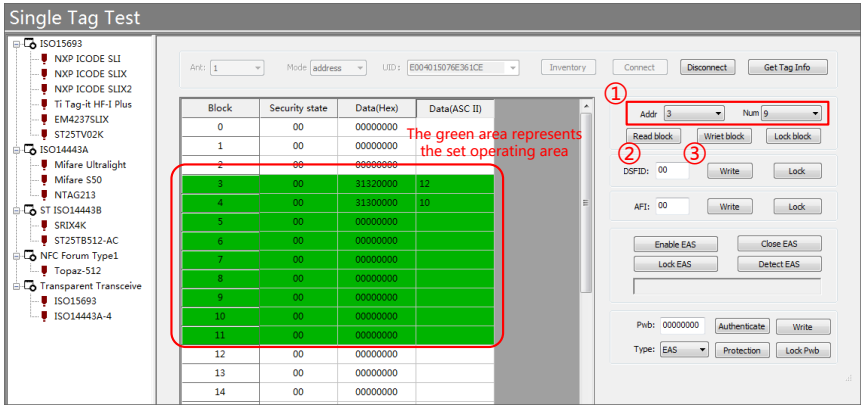

Figure 15 Single tag reading and writing steps

Steps:

1) Set the data block of the tag to be operated in the Addr drop-down box and the Num drop-down box. After setting, the operable data block is displayed in green indicating that it can be operated;

2) Click [Read Block] to read the data value of the data block selected in step 1;

3) Write the value in the line (green area) of the data block whose value should be written, and then click [Write Block];

4) After the operation is completed, click the [Disconnect] button to disconnect the tag connection.

5. Technical Support

- **Download link for development data and testing**

  https://www.gzandea.com/download.php

- **Call for equipment debugging and technical support**

  Mobile phone: 138 0251 4535 180 2712 4253

  Fixed telephone: 0086-20-32039552

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules and 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.

NOTE: 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.

FCC& IC Radiation Exposure Statement:
This equipment complies with FCC and Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
Déclaration d'IC sur l'exposition aux radiations:
Cet équipement est conforme aux limites d'exposition aux radiations définies par le Canada pour des environnements non contrôlés. Cet équipement doit être installé et utilisé à une distance minimum de 20 cm entre l'antenne et votre corps.
Cet émetteur ne doit pas être installé au même endroit ni utilisé avec une autre antenne ou un autre émetteur.

The module in this product is labeled with its own FCC ID No. and IC ID No.. The FCC ID and IC ID and is not visible when the module is installed inside another device. Therefore, the outside of the device into which the module is installed must also display a label referring to the module. The final end device must be labeled in a visible area with the following:

“Contains FCC ID: 2AFI8-RL865”

“Contains IC:26251-RL865”

Le module de ce produit est é tiquet é avec son propre FCC ID No. et IC ID No.. L’ FCC ID et IC ID et n’ est pas visible lorsque le module est install é à l’ int é rieur d’ un autre appareil. Par cons é quent, l’ ext é rieur de l’ appareil dans lequel le module est install é doit é galement afficher une é tiquette se r é f é rant au module. Le dispositif final doit ê tre é tiquet é dans une zone visible avec les é l é ments suivants :

"Contient FCC ID : 2AFI8-RL865"

"Contient IC :26251-RL865"

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