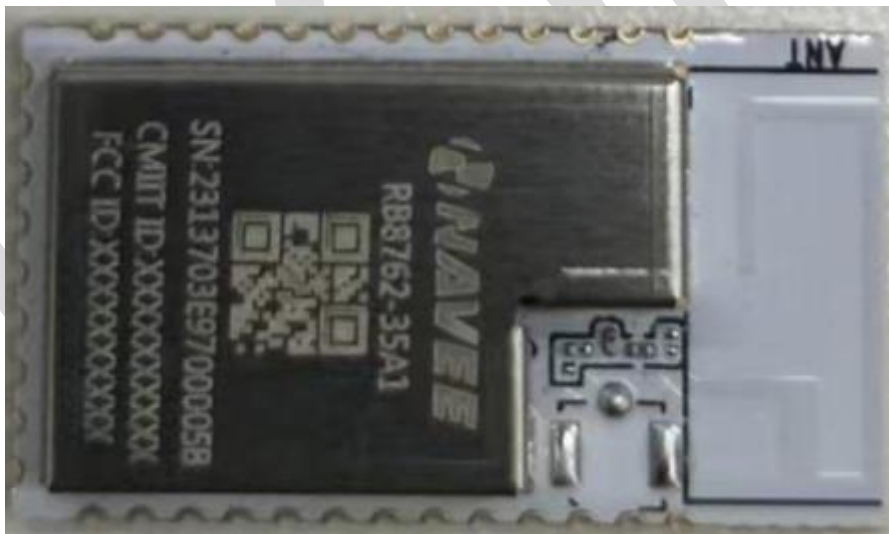


# RB8762-35A1

## Bluetooth Module



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## 1. Device Overview

### 1.1 Features

- Ultra-low consumption with intelligent PMU
- Supports Bluetooth 5.0 core specification
- Supports 2Mbps LE
- LE advertising extensions
- LE long range
- Additional Adv channel
- High duty cycle non-connectable Adv
- Supports multiple level low energy states
- Supports LE L2CAP connection oriented channel support
- Supports GAP, ATT/GATT, SMP, L2CAP
- Supports LE low duty directed advertising
- Supports LE data length extension feature
- Supports OTA programming mechanism for firmware upgrade

### 1.2 Applications

- Mesh LED
- Mice and wireless keyboards
- Game controllers & joysticks
- Voice remote controls
- Home automation
- Sensor network devices
- Amazon gadgets
- Intelligent Lighting

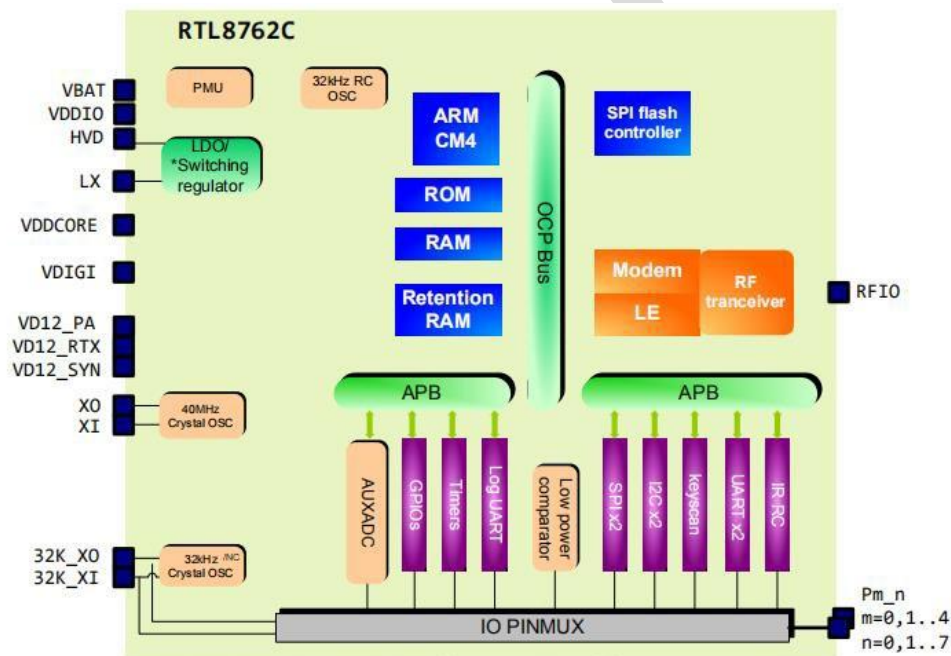
### 1.3 Descriptions

The RB8762-35A1 Bluetooth module is designed base on the Realtek RTL8762CMF that is an ultra-low power system on-chip solution for Bluetooth 5.0 low energy applications. It combines the excellent performance of a leading RF transceiver with a low-power ARM Cortex-M4F and rich powerful supporting features and peripherals. The embedded ARM Cortex-M4F 32-bit CPU features a 16-bit instruction set with 32-bit extensions (Thumb-2® technology) that delivers high-density code with a small memory footprint. By

using a single-cycle 32-bit multiplier, a 3-stage pipeline, and a Nested Vector Interrupt Controller (NVIC), the ARMCortex-M4F makes program execution simple and highly efficient.

The RB8762-35A1 module consists of three major parts: PCB antenna, 40MHz crystal and RTL8762CMF BLE chip. All of the module materials can withstand an ultimate ambient temperature of 105°C which makes the module very suitable for lamps or other occasions with high temperature requirements.

### 1.4 Functional Block Diagram



Note: Switching regulator is only in RTL8762CMF

Figure 1. Block Diagram of RTL8762CMF

## 2. Pin Configuration and Functions

### 2.1 Module Pin Diagram

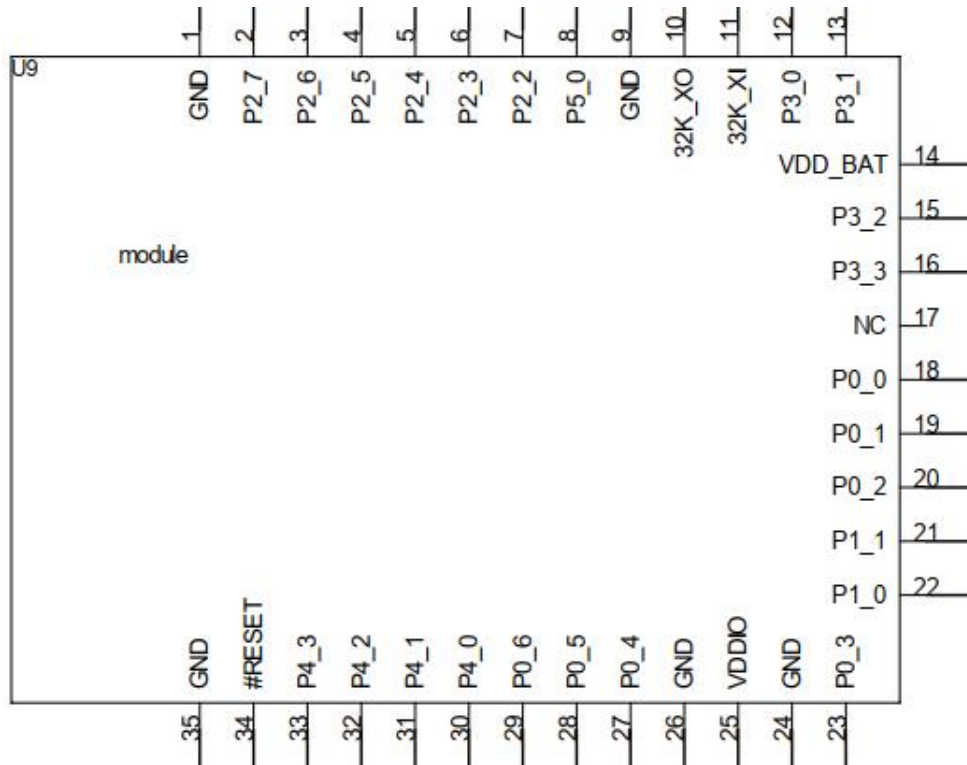


Figure 2. Pin Diagram of RB8762-35A1

## 2.2 Pin Functions

| Pin | Name | Hardware Default Pull setting(100K)Reset state | Description  |
|-----|------|--|--|
| 1   | GND  | Ground   | Ground   |
| 2   | P2_7 | Pull Down                                      | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>AUXADC input 7 |

|    |             |             |  |
|----|-------------|-------------|--|
| 3  | P2_6        | Pull Down   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>AUXADC input 6   |
| 4  | P2_5        | Pull Down   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>AUXADC input 5   |
| 5  | P2_4        | Pull Down   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>AUXADC input 4   |
| 6  | P2_3        | Pull Down   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>AUXADC input 3   |
| 7  | P2_2/SDA    | Pull Down   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>AUXADC input 2;<br>When a built-in gravity sensor is installed, external pins cannot be connected; |
| 8  | P5_0/SCK    | Pull Down   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down;<br>When a built-in gravity sensor is installed, external pins cannot be connected;                   |
| 9  | GND         | Ground      | Ground   |
| 10 | 32K_XO      | 32K_XO      | 40M crystal oscillator out   |
| 11 | 32K_XI/INT1 | 32K_XI/INT1 | 32K crystal oscillator IN(NC)/ Gravity sensor interrupt pin ; When a built-in gravity sensor is installed, external pins cannot be connected;  |
| 12 | P3_0        | Pull Up     | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>HCI_UART_TX(default)   |
| 13 | P3_1        | Pull Up     | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>HCI_UART_RX(default)   |
| 14 | VDD_BAT     | power       | Supply 1.8V~3.3V   |
| 15 | P3_2        | Pull Up     | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down   |

|    |           |           |   |
|----|-----------|-----------|---|
| 16 | P3_3      | Pull Up   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down  |
| 17 | NC        | NC        | NC  |
| 18 | P0_0      | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down  |
| 19 | P0_1      | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down  |
| 20 | P0_2/INT2 | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>Gravity sensor interrupt pin<br>When a built-in gravity sensor is installed, external pins cannot be connected; |
| 21 | P1_1      | Pull Up   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>SWDCLK(default)   |
| 22 | P1_0      | Pull Up   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down<br>SWDIO(default)  |
| 23 | P0_3      | Pull Up   | LOG_UART_TX<br>Power on trap: Pull-up for normal operation<br>Pull-down to bypass executing program code in flash   |
| 24 | GND       | Ground    | Ground  |
| 25 | VDDIO     | Power     | Supply 1.8V~3.3V power for digital IO PADs<br>VDDIO should be less than or equal to VDD_BAT   |
| 26 | GND       | Ground    | <ul style="list-style-type: none"> <li>• GPIO: P12</li> <li>• Keyboard scan output (column): KSO4</li> <li>• A/D converter input 23</li> </ul>  |
| 27 | P0_4      | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down  |
| 28 | P0_5      | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down  |
| 29 | P0_6      | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down  |
| 30 | P4_0      | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down  |

|    |       |           |  |
|----|-------|-----------|--|
| 31 | P4_1  | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down |
| 32 | P4_2  | Pull Down | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down |
| 33 | P4_3  | Pull Up   | General purpose IO; refer to the Pin Multiplexer Table<br>8mA driving capability<br>With wakeup function<br>With inter strong/weak pull-up and pull-down |
| 34 | RESET |           | Hardware reset pin, low active   |
| 35 | GND   | Ground    | Ground   |

Note: Pin Multiplexer

All GPIO pins are configurable via the built-in pin multiplexer(PINMUX), The table shows all GPIO pin configurations.All pins have an internal pull-up pull-down resistor for controlling GPIO\_PU and GPIO\_PD.

### Pin Multiplexer Table

|    |                |    |                           |    |                          |    |             |     |            |     |          |
|----|----------------|----|---------------------------|----|--------------------------|----|-------------|-----|------------|-----|----------|
| 0  | IDEL           | 25 | qdec_phase_a_z            | 50 | SPI0_CLK (master only)   | 75 | KEY_COL_17  | 100 | Reserved   | 125 | Reserved |
| 1  | HCI_UART_TX    | 26 | qdec_phase_b_z            | 51 | SPI0_MO (master only)    | 76 | KEY_COL_18  | 101 | Reserved   | 126 | Reserved |
| 2  | HCI_UART_RX    | 27 | UART2_TX                  | 52 | SPI0_MI (master only)    | 77 | KEY_COL_19  | 102 | PDM (clk)  | 127 | MCLK     |
| 3  | HCI_UART_CTS   | 28 | UART2_RX                  | 53 | SPI2W_DATA (master only) | 78 | KEY_ROW_0   | 103 | PDM (data) |     |          |
| 4  | HCI_UART_RTS   | 29 | UART1_TX                  | 54 | SPI2W_CLK (master only)  | 79 | KEY_ROW_1   | 104 | UART2_CTS  |     |          |
| 5  | I2C0_CLK       | 30 | UART1_RX                  | 55 | SPI2W_CS (master only)   | 80 | KEY_ROW_2   | 105 | UART2_RTS  |     |          |
| 6  | I2C0_DAT       | 31 | UART1_CTS                 | 56 | SWD_CLK                  | 81 | KEY_ROW_3   | 106 | Reserved   |     |          |
| 7  | I2C1_CLK       | 32 | UART1_RTS                 | 57 | SWD_DIO                  | 82 | KEY_ROW_4   | 107 | Reserved   |     |          |
| 8  | I2C1_DAT       | 33 | IRDA_TX                   | 58 | KEY_COL_0                | 83 | KEY_ROW_5   | 108 | Reserved   |     |          |
| 9  | PWM2_P         | 34 | IRDA_RX                   | 59 | KEY_COL_1                | 84 | KEY_ROW_6   | 109 | Reserved   |     |          |
| 10 | PWM2_N         | 35 | UART0_TX                  | 60 | KEY_COL_2                | 85 | KEY_ROW_7   | 110 | Reserved   |     |          |
| 11 | PWM3_P         | 36 | UART0_RX                  | 61 | KEY_COL_3                | 86 | KEY_ROW_8   | 111 | Reserved   |     |          |
| 12 | PWM3_N         | 37 | UART0_CTS                 | 62 | KEY_COL_4                | 87 | KEY_ROW_9   | 112 | Reserved   |     |          |
| 13 | PWM0           | 38 | UART0_RTS                 | 63 | KEY_COL_5                | 88 | KEY_ROW_10  | 113 | Reserved   |     |          |
| 14 | PWM1           | 39 | SPH_SS_N_0 (master only)  | 64 | KEY_COL_6                | 89 | KEY_ROW_11  | 114 | Reserved   |     |          |
| 15 | PWM2           | 40 | SPH_SS_N_1 (master only)  | 65 | KEY_COL_7                | 90 | DWGPI0      | 115 | Reserved   |     |          |
| 16 | PWM3           | 41 | SPH_SS_N_2 (master only)  | 66 | KEY_COL_8                | 91 | I2S_LRCLK   | 116 | Reserved   |     |          |
| 17 | PWM4           | 42 | SPI1_CLK (master only)    | 67 | KEY_COL_9                | 92 | I2S_BCLK    | 117 | EN_EXPA    |     |          |
| 18 | PWM5           | 43 | SPH_MO (master only)      | 68 | KEY_COL_10               | 93 | I2S_ADCCDAT | 118 | EN_EXLNA   |     |          |
| 19 | PWM6           | 44 | SPH_MI (master only)      | 69 | KEY_COL_11               | 94 | I2S_DACDAT  | 119 | ANT_SW0    |     |          |
| 20 | PWM7           | 45 | SPI0_SS_N_0 (slave)       | 70 | KEY_COL_12               | 95 | Reserved    | 120 | ANT_SW1    |     |          |
| 21 | qdec_phase_a_x | 46 | SPI0_CLK (slave)          | 71 | KEY_COL_13               | 96 | DMIC1_CLK   | 121 | ANT_SW2    |     |          |
| 22 | qdec_phase_b_x | 47 | SPI0_SO (slave)           | 72 | KEY_COL_14               | 97 | DMIC1_DAT   | 122 | ANT_SW3    |     |          |
| 23 | qdec_phase_a_y | 48 | SPI0_SI (slave)           | 73 | KEY_COL_15               | 98 | Reserved    | 123 | Reserved   |     |          |
| 24 | qdec_phase_b_y | 49 | SPI0_SS_N_0 (master only) | 74 | KEY_COL_16               | 99 | Reserved    | 124 | Reserved   |     |          |

## 3. Specifications

### 3.1 Absolute Maximum Rating

1) Power supply voltage:

VDDIO: 1.8V~3.3V



VDD\_BAT:1.8V~3.3V

Note: VDDIO should be less than or equal to VDD\_BAT.

- 2) Operation temperature range: -30°C~+105°C
- 3) Storage temperature range: -40°C~+125°C

### 3.2 Power Consumption

Condition: VDD\_BAT=3V, VDDIO=3V, Ambient Temperature: 25°C

#### 1) Low Power Mode

| Power Mode | Always on Registers | 32k RCOSC/XTAL | Retention SRAM | CPU | Wakeup Method   | Current Consumption(Typical)             |
|------------|---------------------|----------------|----------------|-----|-----------------|--|
| Power down | ON                  | OFF            | OFF            | OFF | Wakeup by GPIO  | 450nA                                    |
| Deep LPS   | ON                  | ON             | Retention      | OFF | Wakeup by timer | 2.5uA(with 160K SRAM in retention state) |

#### 2) Active Mode

Condition: VDD\_BAT=3V, VDDIO=3V, Ambient Temperature: 25°C

| Power Mode                      | Current Consumption(Typical) |
|---------------------------------|------------------------------|
| Active RX mode                  | 7.3mA                        |
| Active TX mode(TX power:0dBm)   | 7.9mA                        |
| Active TX mode(TX power:4dBm)   | 9.6mA                        |
| Active TX mode(TX power:7.5dBm) | 11.3mA                       |

### 3.3 RF Characteristics

#### 1) Receiver RF Specifications

| Parameter                | Condition         | Min. | Typ. | Max. |
|--------------------------|-------------------|------|------|------|
| Frequency Range(MHz)     |                   | 2402 |      | 2480 |
| Sensitivity(dBm)         | PER≤30.8%         | -94  |      |      |
| Maximum Input Level(dBm) | PER≤30.8%         |      | -1   |      |
| C/I                      | C/Ico-channel(dB) | 21   |      |      |
|                          | C/I+1MHz(dB)      | 15   |      |      |
|                          | C/I-1MHz(dB)      | 15   |      |      |
|                          | C/I+2MHz(dB)      | -17  |      |      |
|                          | C/I-2MHz(dB)      | -15  |      |      |
|                          | C/I+3MHz(dB)      | -27  |      |      |
|                          | C/Iimage(dB)      | -9   |      |      |
|                          | C/Iimage+1MHz(dB) | -15  |      |      |
|                          | C/Iimage-1MHz(dB) | -15  |      |      |
| Blocker Power(dBm)       | 30~2000MHz,       | -30  |      |      |

|                                 |  |     |     |  |
|---------------------------------|--|-----|-----|--|
|                                 | Wanted signal level=-67dBm   |     |     |  |
|                                 | 2003~2399MHz,<br>Wanted signal level=-67dBm  | -35 |     |  |
|                                 | 2484~2997MHz,<br>Wanted signal level=-67dBm  | -35 |     |  |
|                                 | 3000MHz~12.75GHz,<br>Wanted signal level=-67dBm  | -30 |     |  |
| Max PER Report Integrity        | Wanted signal:-30dBm   |     | 50% |  |
| Max Intermodulation level (dBm) | Wanted signal(f0):-64dBm<br>Worst intermodulation level@2f1-f2=f0,<br> f1-f2 =nMHz, n=3,4,5... | -50 |     |  |

Note1: Do not include spur channel;

Note2: Depend on PCB design and registers setting.

## 2) Transmitter RF Specifications

| Parameter                            | Condition                     | Min. | Typ.          | Max. |
|--------------------------------------|-------------------------------|------|---------------|------|
| Maximum Output Power (dBm)           | Conducted                     | -    | -             | 8    |
| Adjacent Channel Power Ratio (dBm)   | +2MHz                         | -    | -             | -20  |
|                                      | -2MHz                         | -    | -             | -20  |
|                                      | ≥+3MHz                        | -    | -             | -30  |
|                                      | ≤-3MHz                        | -    | -             | -30  |
| Modulation Characteristics           | $\Delta f_{1avg}$ (kHz)       | -    | 250           | -    |
|                                      | $\Delta f_{2max}$ (kHz)       | 185  | -             | -    |
|                                      | $\Delta f_{2max}$             | -    | 100           | -    |
|                                      | $\Delta f_{2max}$ PassRate(%) | -    | 0.88          | -    |
| Carrier Frequency Offset and Drift   | Average Fn(kHz)               | -    | 12.5          | -    |
|                                      | Drift Rate(kHz/50us)          | -    | 10            | -    |
|                                      | Avg Rate(kHz/50us)            | -    | 10            | -    |
|                                      | Max Rate(kHz/50us)            | -    | 10            | -    |
| Output power of second harmonic(dBm) | -                             | -    | -50<br>(note) | -    |
| Output power of third harmonic(dBm)  | -                             | -    | -50<br>(note) | -    |

Note: Tested by EVB with RF PI network.

## 4. Application, Implementation, and Layout

### 4.1 Application Diagram

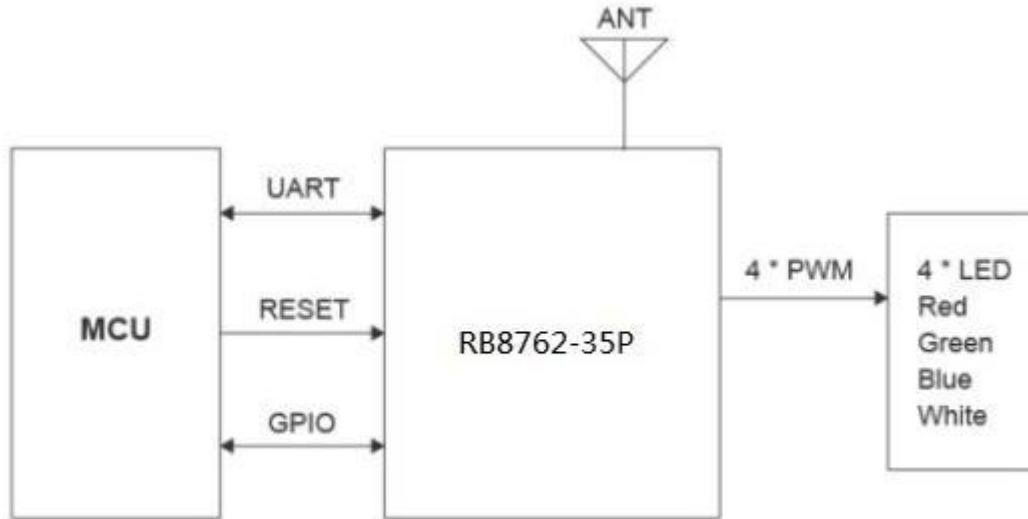


Figure 3. Remote Control Block Diagram of RB8762-35A1

### 4.2 Typical Application Circuit

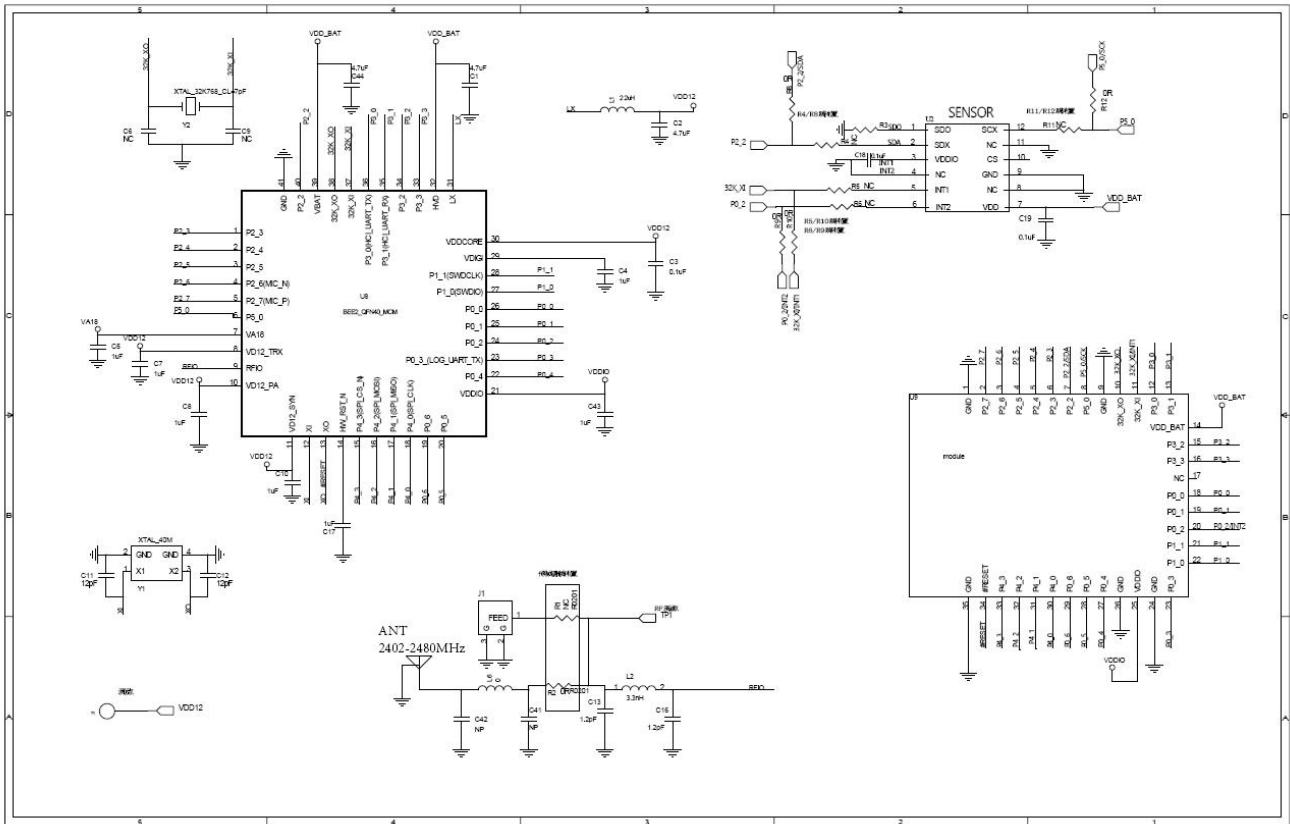


Figure 4. Mesh LED schematic of RB8762-35A1

### 4.3 Layout Guideline

1. Keep RF traces with 50 Ohm impedance.
2. The antenna needs to have enough clearance area.
3. The filter capacitor should be as close as possible to the module.
4. Do not place strong interference lines under the module.

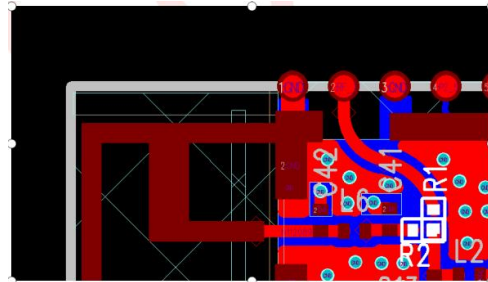


Figure 5. RF Interface Selection

## 5. Mechanical and Package

### 5.1 Mechanical Dimension

PCB thickness: 1.0mm. Module thickness: 3.4mm±0.25mm

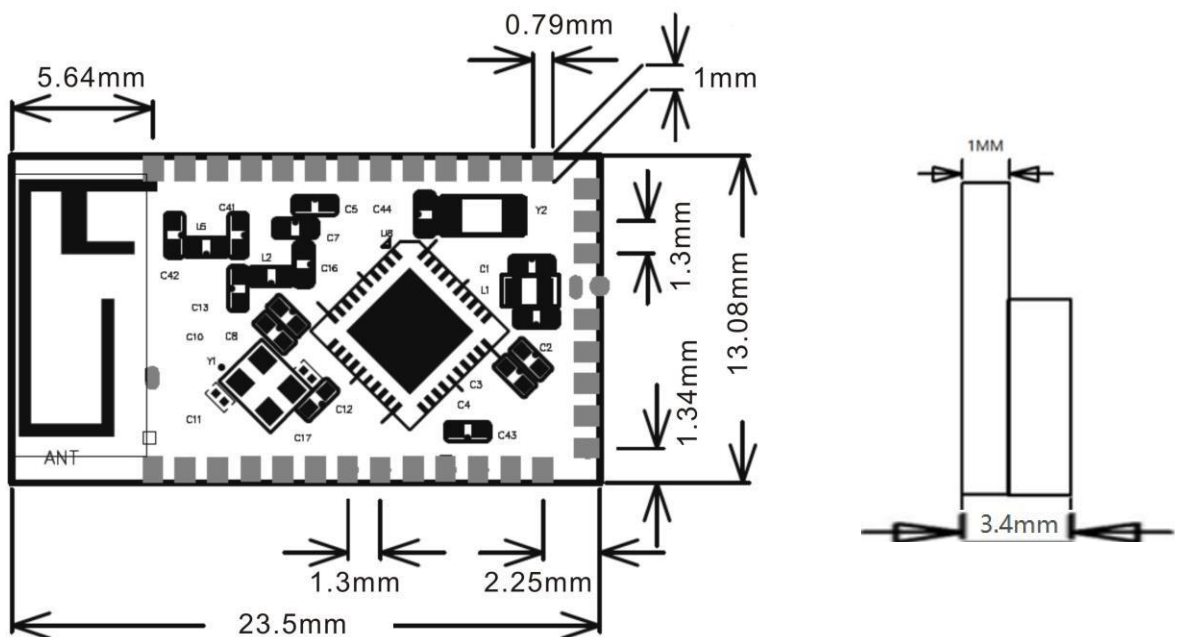


Figure 6. Mechanical Dimension of RB8762-35A1

Note: Unit is mm. Size tolerance:±0.13mm.

### 5.2 Recommended PCB Footprint

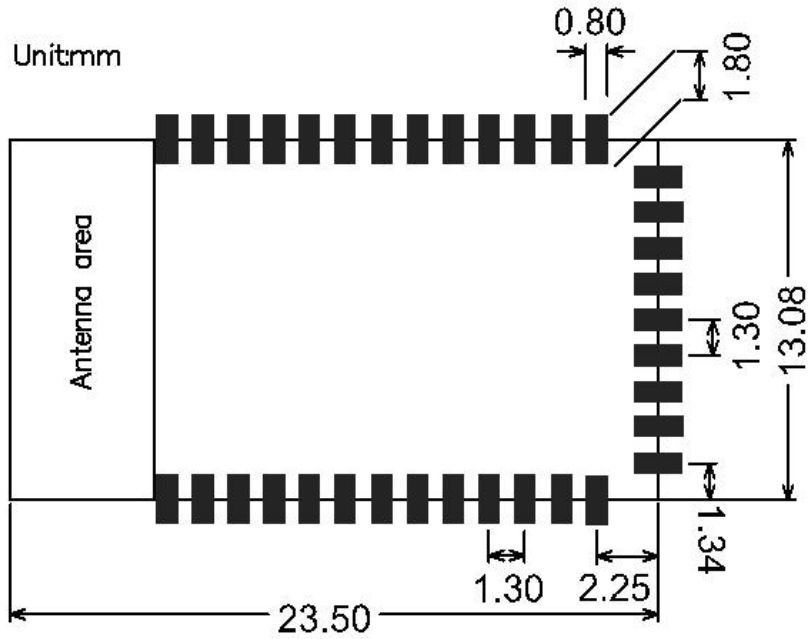


Figure 7. Recommended PCB Footprint of RB8762-35A1

### 5.3 Package Information

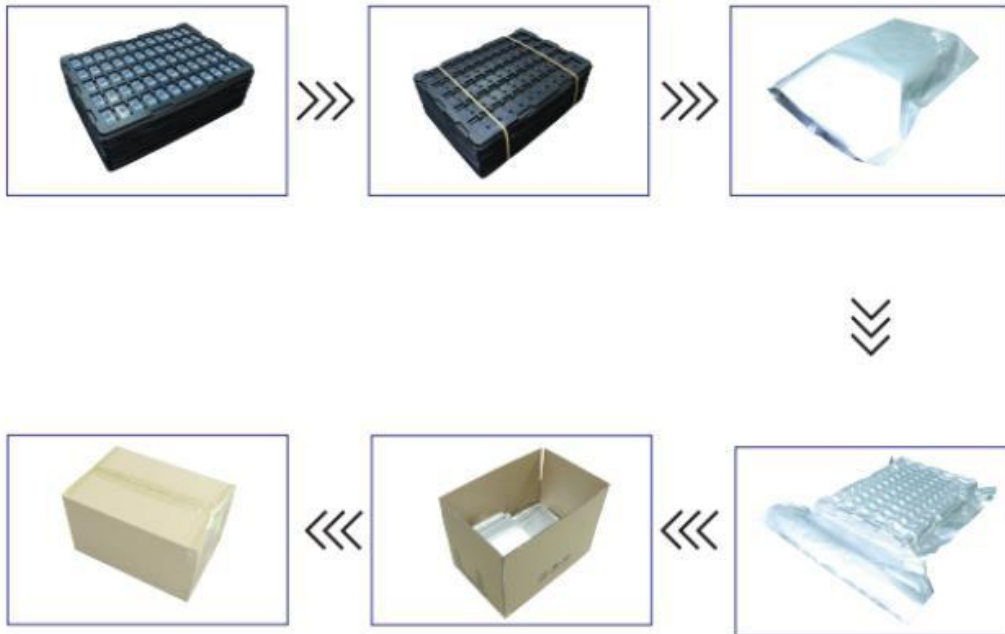


Figure 8. Brief Packaging Process of RB8762-35A1 Modules

### 6. Thermal Reflow

Referred to IPC/JEDEC standard.

Peak temperature: <250°C

Number of times:  $\leq 2$

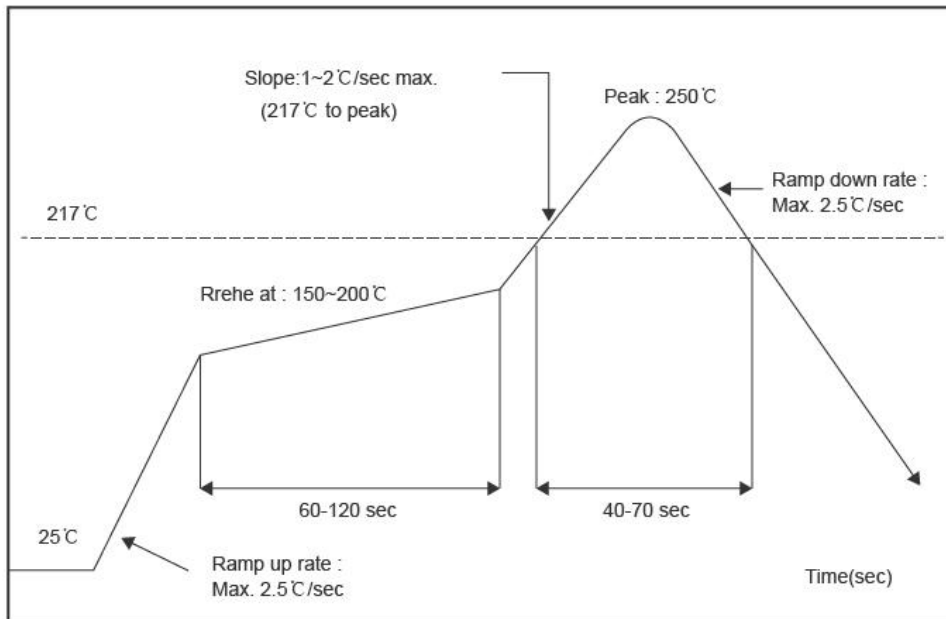


Figure 9. Recommended Reflow for Lead Free Solder

Note: The module is recommended not to go through reflow oven twice.

### 7. Ordering Information

| Part NO.    | Working Voltage                      | ANT     | Shielding Cover | Remark |
|-------------|--------------------------------------|---------|-----------------|--------|
| RB8762-35A1 | VDDIO:1.8V~3.3V<br>VDD_BAT:1.8V~3.3V | PCB ANT | Not Included    |        |

### 8. Revision History

| Version | Change Content  | Reviser | Date       |
|---------|-----------------|---------|------------|
| V0.1    | Initial Version | Mql     | 2023.08.03 |
|         |                 |         |            |
|         |                 |         |            |

## 9.FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:  
This device may not cause harmful interference, and  
This device must accept any interference received, including interference that may cause undesired operation.

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

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.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

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

## 2.2 List of applicable FCC rules

FCC Part 15 Subpart C 15.247

## 2.3 Specific operational use conditions

|                     |   |                    |
|---------------------|---|--------------------|
| Operation Frequency | : | 2402MHz to 2480MHz |
| Number of Channel   | : | 40                 |
| Modulation Type     | : | GFSK               |
| Antenna Type        | : | PCB Antenna        |
| Antenna Gain(Peak)  | : | 1.22 dBi           |

The module can be used for mobile or portable applications with a **maximum 1.22 dBi antenna**. The host manufacturer installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation. The host manufacturer 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. The end user manual shall include all required regulatory information/warning as show in this manual.



## 2.4 Limited module procedures

Not applicable. The module is a Single module and complies with the requirement of FCC Part 15.212.

## 2.5 Trace antenna designs

Not applicable. The module has a fixed antenna.



## 2.6 RF exposure considerations

The device can be used in portable exposure condition without restriction and if RF exposure statement or module layout is changed, then the host product manufacturer required to take responsibility of the module through a change in FCC ID or new application. The FCC ID of the module cannot be used on the final product. In these circumstances, the host manufacturer will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

## 2.7 Antennas

Antenna Specification are as follows:

Antenna Type: PCB antenna

Antenna Gain(Peak): 1.22 dBi (Provided by customer)

This device is intended only for host manufacturers under the following conditions: The transmitter module may not be co-located with any other transmitter or antenna;

The module shall be only used with the PCB antenna(s) that has been originally tested and certified with this module. The antenna must be either permanently attached or employ a 'unique' antenna couple.

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

## 2.8 Label and compliance information

Host product manufacturers need to provide a physical or e-label stating "Contains FCC ID :2A4GZ-RB876235A1 With their finished product."

## 2.9 Information on test modes and additional testing requirements

|                     |   |                    |
|---------------------|---|--------------------|
| Operation Frequency | : | 2402MHz to 2480MHz |
| Number of Channel   | : | 40                 |
| Modulation Type     | : | GFSK               |
| Antenna Type        | : | PCB Antenna        |
| Antenna Gain(Peak)  | : | 1.22 dBi           |

Host manufacturer must perform test of radiated & conducted emission and spurious emission, etc according to the actual test modes for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product. Only when all the test results of test modes comply with FCC requirements, then the end product can be sold legally.

## 2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for FCC Part 15 Subpart C 15.247 and that 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. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

## 2.11 Note EMI Considerations

Host manufacture is recommended to use D04 Module Integration Guide recommending as "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.

## 2.12 How to make changes

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. According to the KDB 996369 D02 Q&A Q12, that a host manufacture only needs to do an evaluation (i.e., no C2PC required when no emission exceeds the limit of any individual device (including unintentional radiators) as a composite. The host manufacturer must fix any failure.

## IC STATEMENT

English: "

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

this device may not cause interference, and

this device must accept any interference, including interference that may cause undesired operation of the device."

French: "

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 :

l'appareil ne doit pas produire de brouillage, et

l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est

susceptible d'en compromettre le fonctionnement."

L'appareil a été évalué pour répondre aux exigences générales d'exposition aux RF. L'appareil peut être utilisé sans restriction dans des conditions d'exposition portables.

RF warning statement:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

These specific instructions will detail how to configure all of the control and operating parameters that are accessible by the host product for power control to ensure host compliance with the requirements of RSS-102:

## Integration instructions for host product manufacturers according to RSS-102 — Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

### 2.2 List of applicable ISED rules

RSS-247 — Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

### 2.3 Specific operational use conditions

|                     |   |                    |
|---------------------|---|--------------------|
| Operation Frequency | : | 2402MHz to 2480MHz |
| Number of Channel   | : | 40                 |
| Modulation Type     | : | GFSK               |
| Antenna Type        | : | PCB Antenna        |
| Antenna Gain(Peak)  | : | 1.22 dBi           |

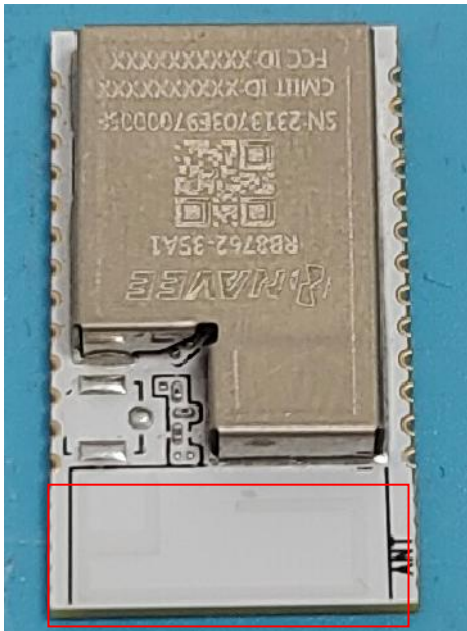
The module can be used for mobile or portable applications with a **maximum 1.22 dBi antenna**. The host manufacturer installing this module into their product must ensure that the final composite product complies with the RSS-102 requirements by a technical assessment or evaluation to the RSS-102 rules, including the transmitter operation. The host manufacturer 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. The end user manual shall include all required regulatory information/warning as show in this manual.

### 2.4 Limited module procedures

Not applicable. The module is a Single module and complies with the requirement of RSS-Gen — General Requirements for Compliance of Radio Apparatus

### 2.5 Trace antenna designs

Not applicable. The module has a fixed antenna.



## 2.6 RF exposure considerations

The device can be used in portable exposure condition without restriction and if RF exposure statement or module layout is changed, then the host product manufacturer required to take responsibility of the module through a change in IC ID or new application. The IC ID of the module cannot be used on the final product. In these circumstances, the host manufacturer will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate ISED authorization.

## 2.7 Antennas

Antenna Specification are as follows:

Antenna Type: PCB antenna

Antenna Gain(Peak): 1.22 dBi (Provided by customer)

This device is intended only for host manufacturers under the following conditions: The transmitter module may not be co-located with any other transmitter or antenna;

The module shall be only used with the PCB antenna(s) that has been originally tested and certified with this module. The antenna must be either permanently attached or employ a 'unique' antenna couple.

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

## 2.8 Label and compliance information

Host product manufacturers need to provide a physical or e-label stating "Contains IC ID :28570-RB876235A1 With their finished product.

## 2.9 Information on test modes and additional testing requirements

|                     |   |                    |
|---------------------|---|--------------------|
| Operation Frequency | : | 2402MHz to 2480MHz |
| Number of Channel   | : | 40                 |
| Modulation Type     | : | GFSK               |

|                    |   |             |
|--------------------|---|-------------|
| Antenna Type       | : | PCB Antenna |
| Antenna Gain(Peak) | : | 1.22 dBi    |

Host manufacturer must perform test of radiated & conducted emission and spurious emission, etc according to the actual test modes for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product. Only when all the test results of test modes comply with ISED requirements, then the end product can be sold legally.

## 2.10 Additional testing, Canada license-exempt RSS standard portion

Modular transmitters are ISED authorized for part RSS-247 only, and Host product manufacturers are responsible for complying with any other ISED rules applicable to the host product. The main unit does not fall within the scope of certification granted for modular transmitters. If grantees market their product, the product complies with the Industry Canada license-exempt RSS standard portion (when it also contains unintentional radiator digital circuitry), then the grantee should provide notification that the final host product still requires the modular transmitter host installed for additional compliance test.

## 2.11 Note EMI Considerations

Host manufacturer is recommended to use RSS-102 Module Integration Guide recommending as "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.

## 2.12 How to make changes

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. According to the RSS-102 that a host manufacturer only needs to do an evaluation (i.e., no C2PC required when no emission exceeds the limit of any individual device (including unintentional radiators) as a composite. The host manufacturer must fix any failure.