

## BM-8762ESF BT 5.2 Module(PCB 2L,9x10)

### Description

The RTL8762E are ultra-low-power system on-chip solutions for Bluetooth 5.2 low energy and 2.4GHz proprietary multi-application that combine the excellent performance of a leading RF transceiver with a low-power ARM Cortex-M0+, power management unit, ADC, and smart I/O distribution controller.

The RTL8762E also embeds an IR transceiver, hardware key-scan, and Quad-decoder on a single IC within a QFN package.

### Application

- TV Remote Controller
- LE HID
- Beacon
- Home Automation
- Key Fob
- Toy

### Features

- Supports Bluetooth 5.2 core specification and 2.4GHz proprietary feature multi-protocol independently
- Supports 2Mbps LE
- Integrated MCU to execute Bluetooth protocol stack
- Supports multiple level Low Energy states
- Supports LE L2CAP Connection Oriented Channel Support
- Supports LE low duty directed advertising
- Supports LE data length extension feature
- Supports OTA (Over-the-Air) programming mechanism for firmware upgrade
- Supports Bluetooth Low Energy PHY
- Supports GAP, ATT/GATT, SMP, L2CAP
- ARM Cortex-M0+ CPU (Maximum 40MHz)

## Revision History

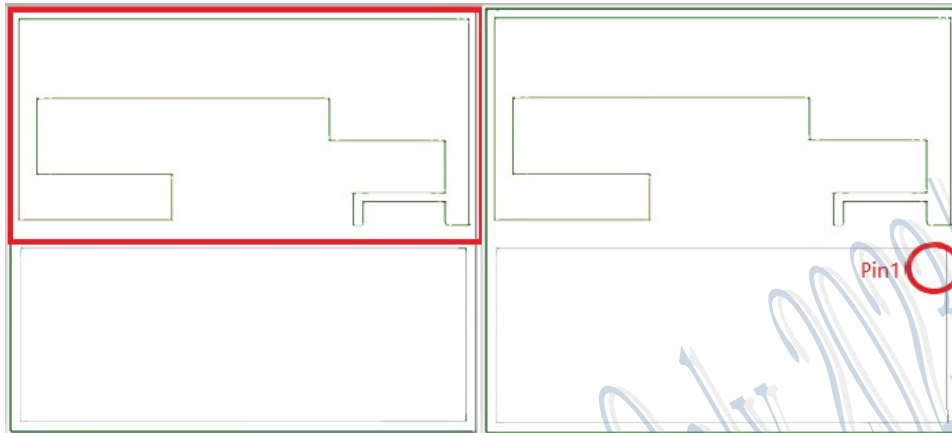
Version	Date	Change Description
1.0	10/17/2023	Initial release

Confidential For Realtek Only 2023/10/17

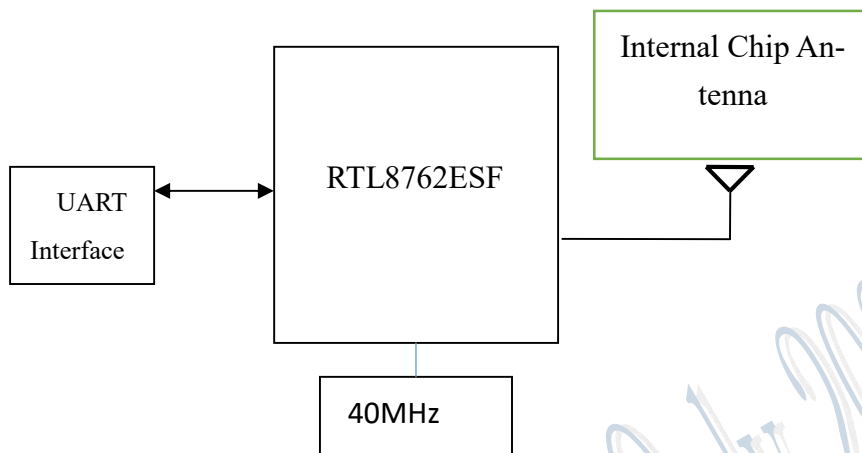
**Note :** All electrical and mechanical specifications may be changed by CC&C Technologies, Inc. without notice.

## Factory options

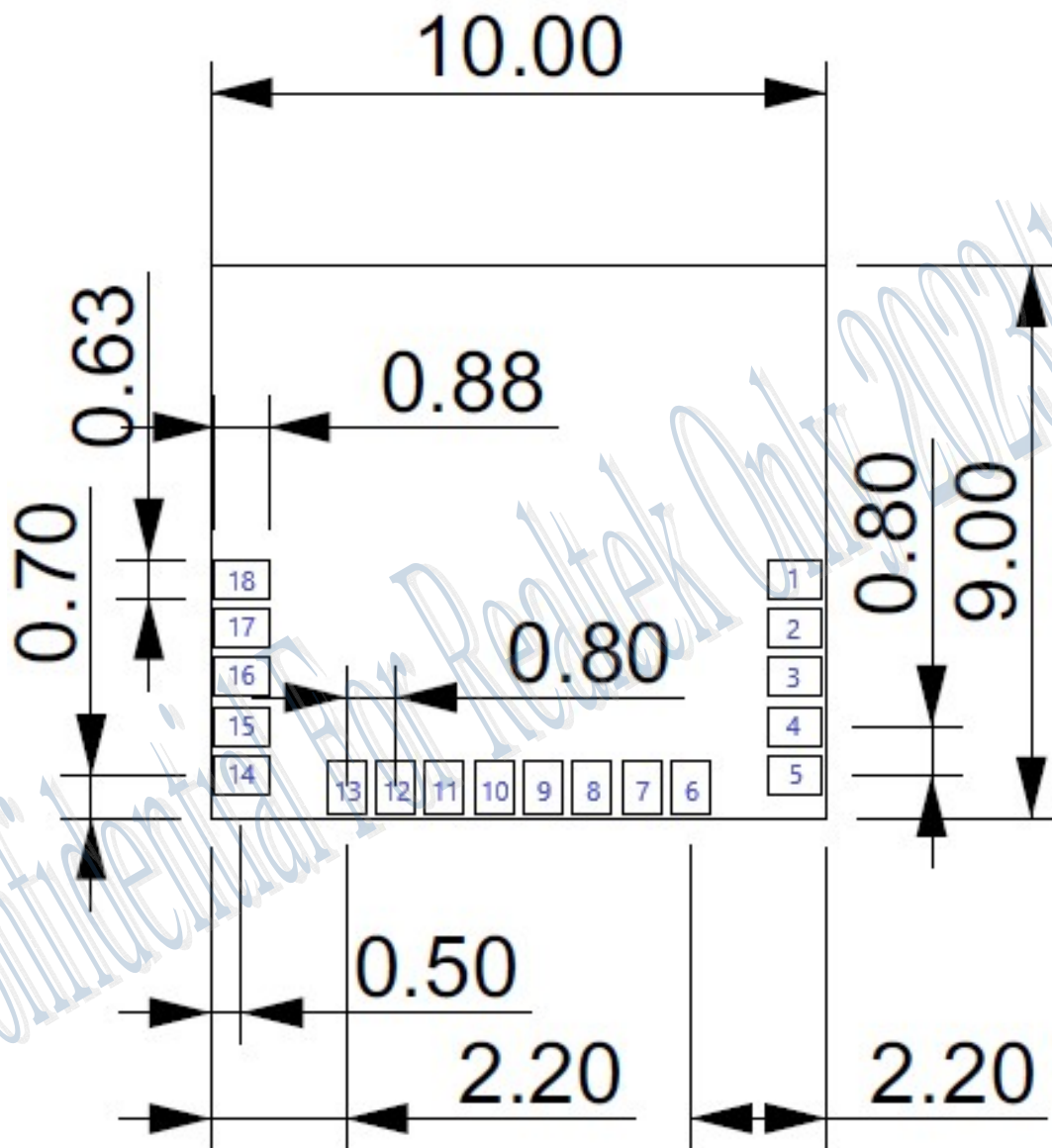
- RF output by Chip Antenna(RF type-1), DFN Pads(RF type-2)



## Block Diagram



**Pin Assignment (Top view)**



## Pin Definition

Pin	Pin Name	Pad Type	Description
1	RF_OUT	RF	
2	P2_7	IO	General purpose IO, refer to Table 8 Pin Multiplexer, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down. AUXADC input 3.
3	P2_6	IO	General purpose IO, refer to Table 8 Pin Multiplexer, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down. AUXADC input 2.
4	P2_4	IO	General purpose IO, refer to Table 8 Pin Multiplexer, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
5	P2_5	IO	General purpose IO, refer to Table 8 Pin Multiplexer, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
6	P3_0	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down. HCI_UART_TX (default).
7	P3_1	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down. HCI_UART_RX (default).
8	P1_1	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down. SWDCLK (default). With wakeup function. With internal strong/weak pull-up and pull-down

			SWDCLK(default)
9	P1_0	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down SWDIO(default)
10	P0_3	IO	LOG_UART_TX. Power on trap: Pull-up for normal operation Pull-down to bypass executing program code in flash (PAD internal pull-up by default)
11	GND	Ground	
12	GND	Ground	
13	VBAT	PI	Supply input 3.3V power
14	P4_0	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
15	P4_1	IO	General purpose IO, refer to Table 8 Pin Multiplexer, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
16	RESET	Reset	Hardware reset pin, low active.
17	GND	Ground	
18	GND	Ground	

I: Input  
 O: Output  
 P: Power  
 PI: Power input  
 RF: RF OUT

## SPECIFICATION

Product Name	BT 5.2 Module(PCB 2L,9x10)
Model Number	E66
Frequency Range	2402~2480 MHz
Tx power	+7.5dBm(max)
Receiver sensitivity	-97dBm BLE(min)

### Power Voltage Range

Symbol	Description	Min.	Typ.	Max.	Units
VDDIO	3.3V Supply Voltage	3.0	3.3	3.6	V
	Operating Temperature	-40	25	+85	°C

Note : +85 °C, Relative Humidity 95%  
-40 °C, Relative Humidity 0%, non-condensing

### Digital logic characteristics (3.3V I/O operation)

parameter	Condition	Min.	Typ.	Max.	Unit
High level input voltage	VDDIO=3.3V	2.0	3.3	3.6	V
Low level input voltage	VDDIO=3.3V	-	0	0.9	V
High level output voltage	VDDIO=3.3V	2.97	-	3.3	V
Low level output voltage	VDDIO=3.3V	0	-	0.33	V
Pull high and pull low resister	VDDIO=3.3V Strong pull/weak pull	-	10/100	-	KOhm



**Module dimension**

ITEM	DESCRIPTION	DATE	TOL	0~6	6~30	30~80	80~180	180~300	300~800	UNIT	SCALE	DESCRIPTION	MODEL NO:	APPROVAL
				0.05	0.1	0.15	0.2	0.25	0.3	MM	0.1X	E66-pcb		
													DWG NO:	DESIGNED
													PARTS NO:	DRAWING
														JEFF

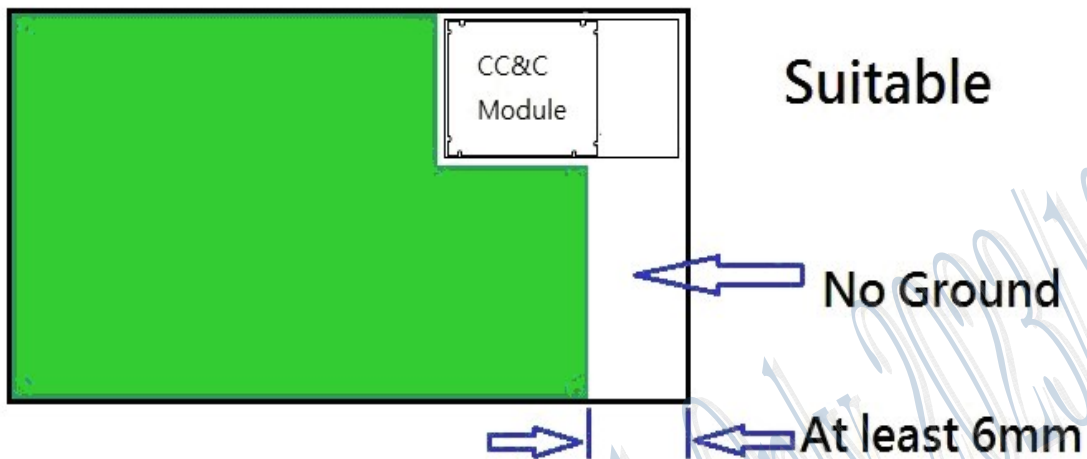
  

The technical drawing illustrates the dimensions of a PCB module. The top view shows a rectangular module with a width of 9 mm and a height of 10 mm. A detailed view of the top edge shows a width of 0.7 mm, a central feature width of 0.8 mm, and a distance of 2.2 mm from the edge to the center. The bottom view shows a width of 0.7 mm and a distance of 2.2 mm from the edge to the center. A side view shows a thickness of 0.6 mm and a distance of 1.95 mm from the bottom edge to the top surface. A perspective view shows the module's profile with a height of 0.88 mm and a width of 0.63 mm.

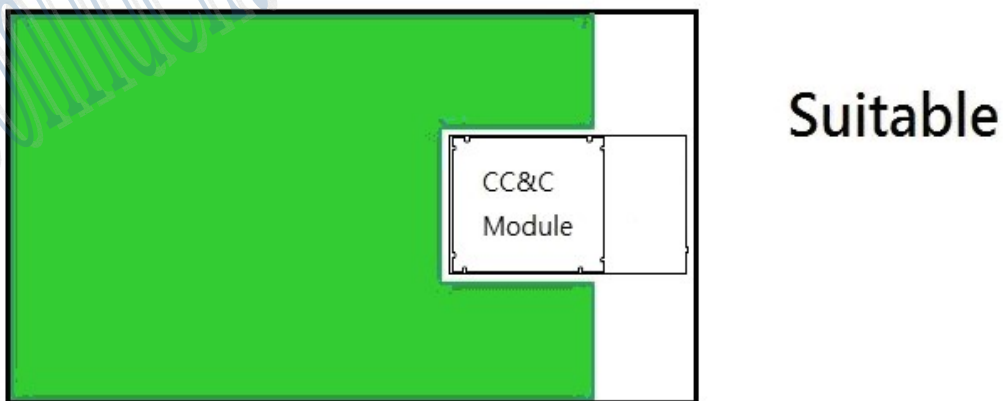
## Placement Guideline

### RF type-1

It is recommended that BM-8762ESF be placed on the corner of the main board or near the edge as shown below.

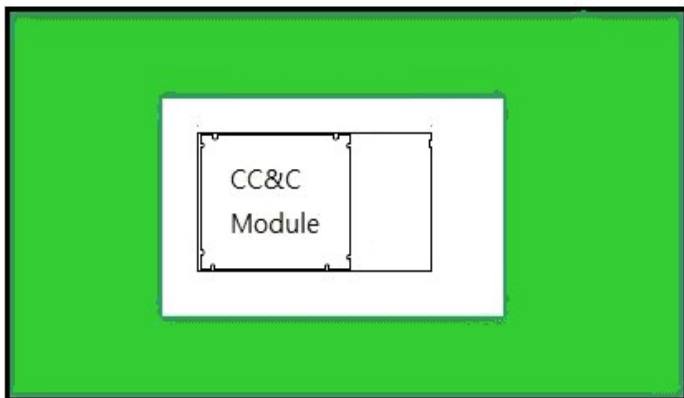


On the corner



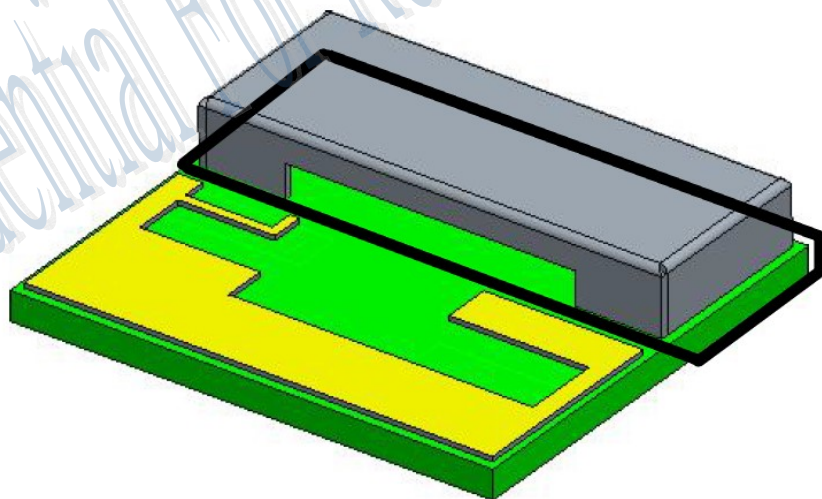
Near the edge

**However, placing BM-8762ESF inside the main board affects the RF performance and may reduce the RF range significantly.**



**Unsuitable**

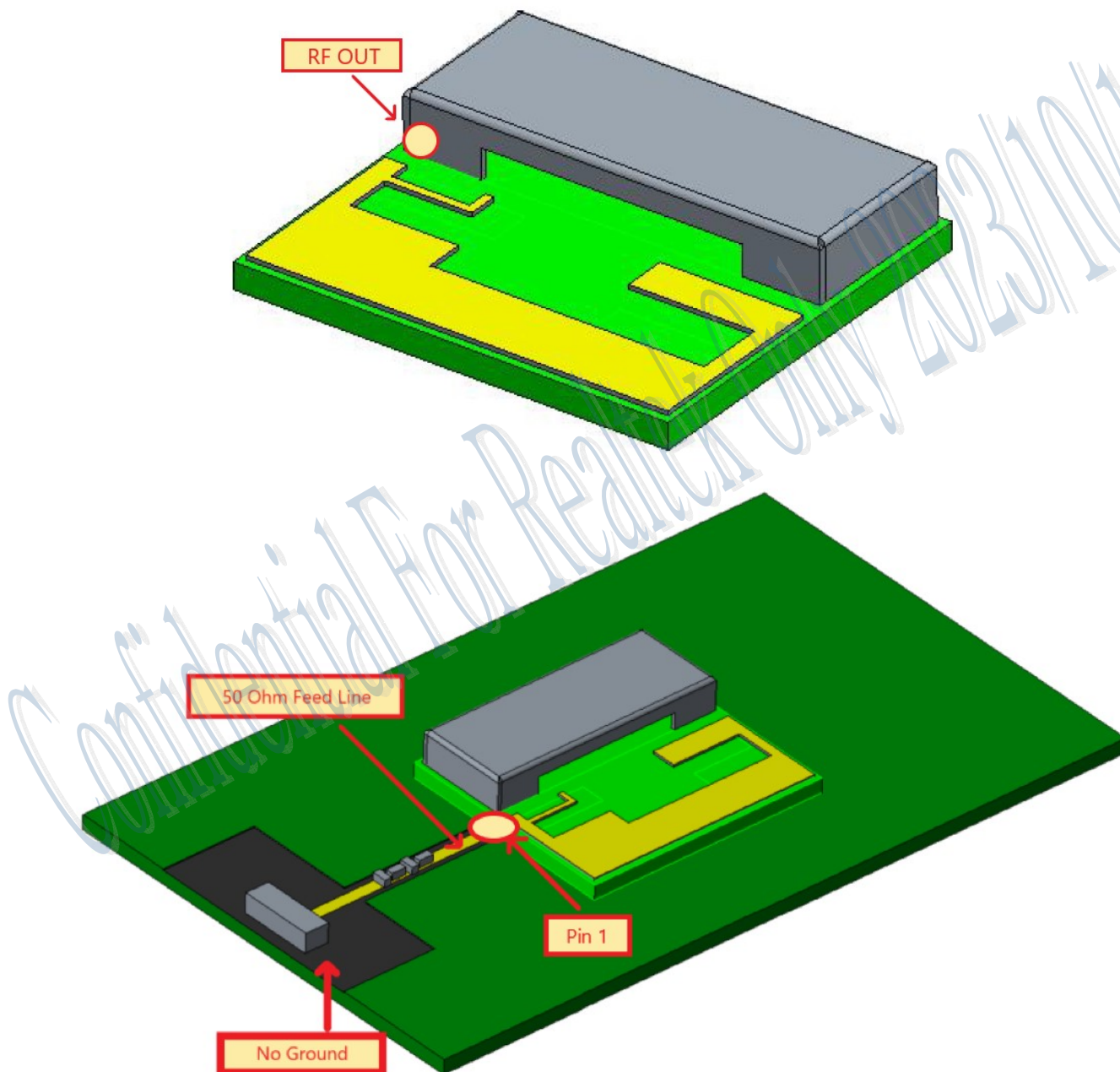
- In order to get a better RF performance, please don't put any trace or copper plane under Black frame of the module.



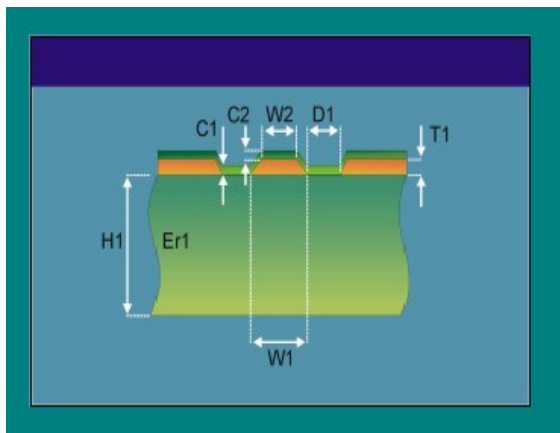
## RF type-2

- **RF out**

Please have the impedance of feed lines to be 50 ohms from RF output pin to Antenna.



50 Ohm Feed Line:



- H1: 30 ~ 60 mil
- Er1: 4.2
- W1: 20 mil
- W2: 20 mil
- D1: 5 mil
- C1: 0.7 mil
- C2: 0.7 mil
- T1: 1.4 mil (1 oz)

Impedance: 51 ~ 53 Ohm

Confidential For Realtek Only 2023/01/17