

BM-8762CMF Bluetooth 5.0 BLE module

Description

The BM-8762CMF is an ultra-low-power system on-chip module for Bluetooth 5 low energy applications that combines the excellent performance of a leading RF transceiver with a low-power ARM Cortex-M4F and rich powerful supporting features and peripherals. It combines a BT Protocol Stack for GAP, ATT/GATT, SMP, L2CAP.

crypt/decrypt engine

- Embedded 4Mbits flash
- Flexible General Purpose IOs
- Hardware Keyscan and Quad-decoder
- Embedded IR transceiver
- 400kbps, 12bit, AUXADC

Application

- MESH LED

Features

- 16x10x1.85mm
18-pin
- Supports Bluetooth 5 core specification
- Supports Bluetooth mesh
- Supports 2Mbps LE
- LE advertising Extensions
- LE Long Range
- 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
- Generic Applications for GAP Central, Peripheral, Observer and Broadcaster Roles
- Supports AES128/192/256 en-

Revision History

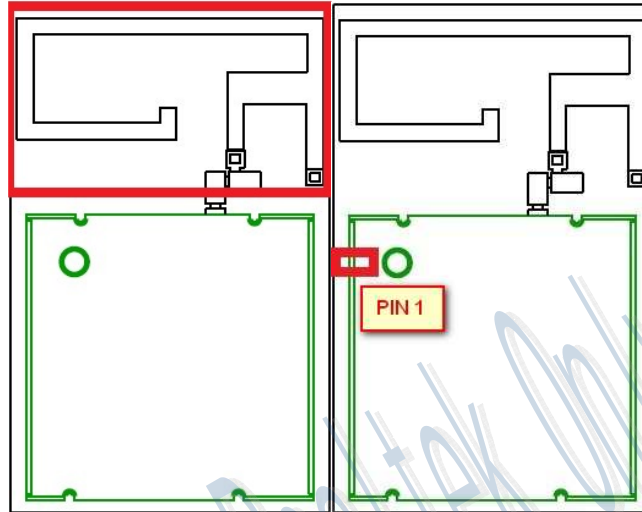
Version	Date	Change Description
1.0	09/06/2021	Initial release

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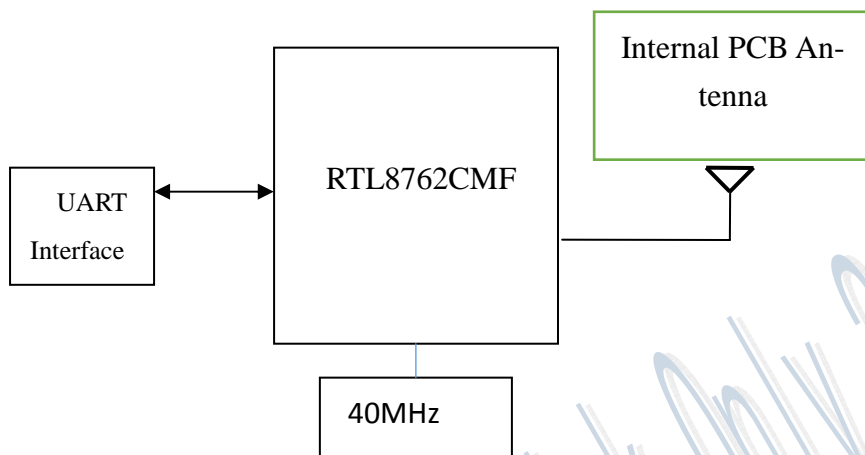
Note : All electrical and mechanical specifications may be changed by CC&C Technologies, Inc. without notice.

Factory options

- RF output by PCB 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	RF output external Antenna
2	GND	Ground	
3	P4_3	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
4	P4_2	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
5	P4_1	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
6	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.
7	P0_6	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
8	P0_5	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
9	GND	Ground	
10	VDDIO	PI	Supply input 3.3V power
11	P3_3	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
12	P3_2	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability.

			With wakeup function. With internal strong/weak pull-up and pull-down.
13	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).
14	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).
15	P2_6	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down. AUXADC input 6.
16	P2_7	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down. AUXADC input 7.
17	P5_0	IO	General purpose IO, refer Pin Multiplexer table. 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pull-down.
18	GND	Ground	

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

Pin Multiplexer Table

0	IDEL	25	reserved	50	SPI0_CLK (master only)	75	KEY_COL_17
1	reserved	26	reserved	51	SPI0_MO (master only)	76	KEY_COL_18
2	reserved	27	UART2_TX	52	SPI0_MI (master only)	77	KEY_COL_19
3	reserved	28	UART2_RX	53	SPI2W_DATA (master only)	78	KEY_ROW_0
4	reserved	29	UART1_TX	54	SPI2W_CLK (master only)	79	KEY_ROW_1
5	I2C0_CLK	30	UART1_RX	55	SPI2W_CS (master only)	80	KEY_ROW_2
6	I2C0_DAT	31	UART1_CTS	56	reserved	81	KEY_ROW_3
7	I2C1_CLK	32	UART1_RTS	57	reserved	82	KEY_ROW_4
8	I2C1_DAT	33	IRDA_TX	58	KEY_COL_0	83	KEY_ROW_5
9	PWM2_P	34	IRDA_RX	59	KEY_COL_1	84	KEY_ROW_6
10	PWM2_N	35	UART0_TX	60	KEY_COL_2	85	KEY_ROW_7
11	PWM3_P	36	UART0_RX	61	KEY_COL_3	86	KEY_ROW_8
12	PWM3_N	37	UART0_CTS	62	KEY_COL_4	87	KEY_ROW_9
13	PWM0	38	UART0_RTS	63	KEY_COL_5	88	KEY_ROW_10
14	PWM1	39	SPI1_SS_N_0 (master only)	64	KEY_COL_6	89	KEY_ROW_11
15	PWM2	40	SPI1_SS_N_1 (master only)	65	KEY_COL_7	90	DWGPI0
16	PWM3	41	SPI1_SS_N_2 (master only)	66	KEY_COL_8	-	-
17	PWM4	42	SPI1_CLK (master only)	67	KEY_COL_9	-	-
18	PWM5	43	SPI1_MO (master only)	68	KEY_COL_10	-	-
19	PWM6	44	SPI1_MI (master only)	69	KEY_COL_11	-	-
20	PWM7	45	SPI0_SS_N_0 (slave)	70	KEY_COL_12	-	-
21	reserved	46	SPI0_CLK (slave)	71	KEY_COL_13	-	-
22	reserved	47	SPI0_SO (slave)	72	KEY_COL_14	-	-
23	reserved	48	SPI0_SI (slave)	73	KEY_COL_15	-	-
24	reserved	49	SPI0_SS_N_0 (master only)	74	KEY_COL_16	-	-

SPECIFICATION

Product Name	Bluetooth 5.0 BLE Module
Model Number	E62
Frequency Range	2402~2480 MHz
Tx power	+7.5dBm(max)
Receiver sensitivity	-97dBm BLE(min)

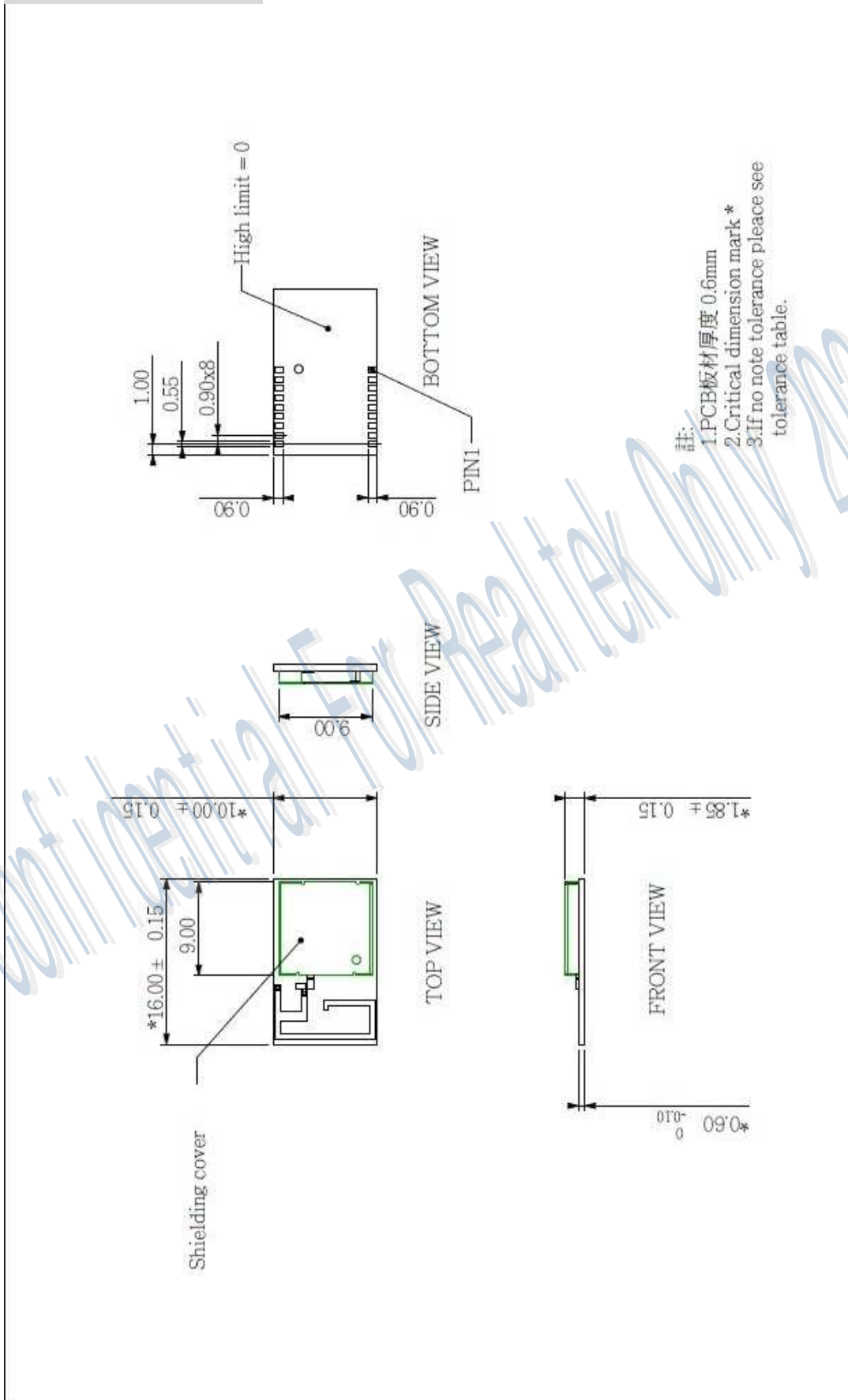
Power Voltage Range

Symbol	Description	Min.	Typ.	Max.	Units
VDDIO	3.3V Supply Voltage	3.0	3.3	3.6	V
	Operating Temperature	-20	25	+85	°C

Digital logic characteristics (3.3V I/O operation)

symbol	parameter	Min.	Typ.	Max.	Unit
Vih	High level input voltage	2.0	3.3	3.6	V
Vil	Low level input voltage	-	0	0.9	V
Voh	High level output voltage	2.97	-	3.3	V
Vol	Low level output voltage	0	-	0.33	V

Module dimension

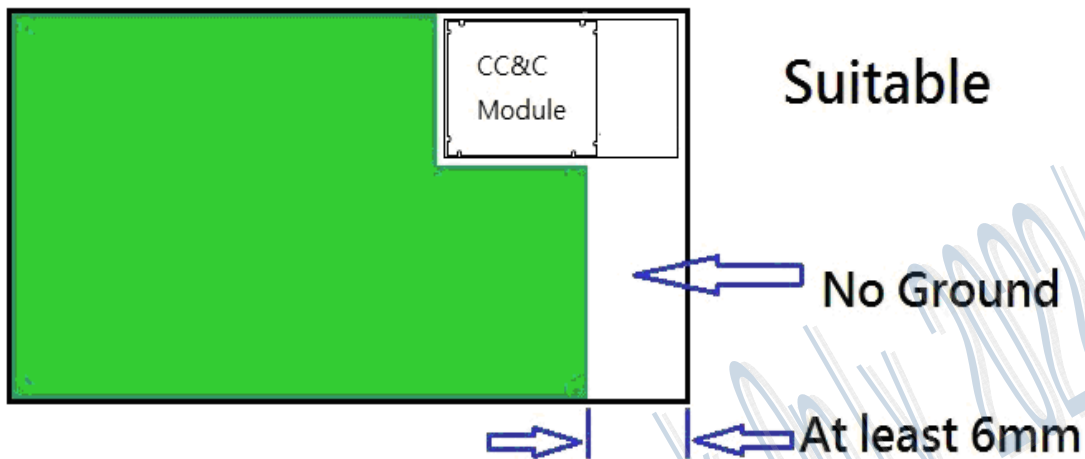


ITEM	DESCRIPTION	DATE	CC&C TECHNOLOGIES, INC.					SCALE			DESCRIPTION			APPROVAL				
			DIM.	TOL.	DATE	REV.	Q'TY	UNIT	MM	Q'TY	PCB	DRG	REV	Q'TY	DESIGNED	DRAWING		
			11-4	0.05	0.08	0.12	0.20	0.25	0.30									

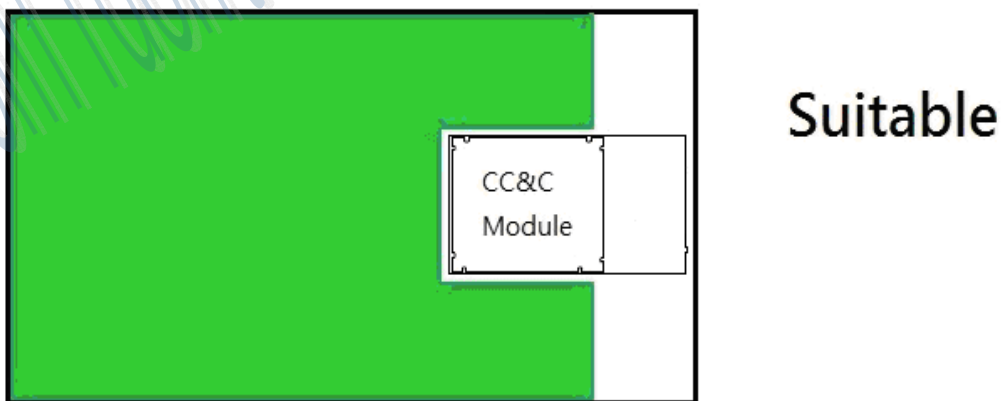
Placement Guideline

RF type-1

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

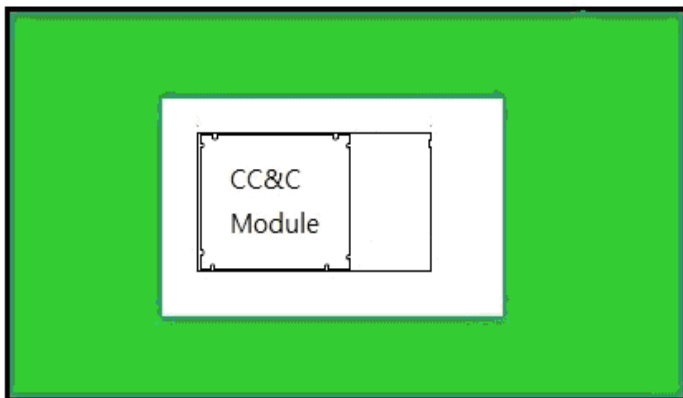


On the corner



Near the edge

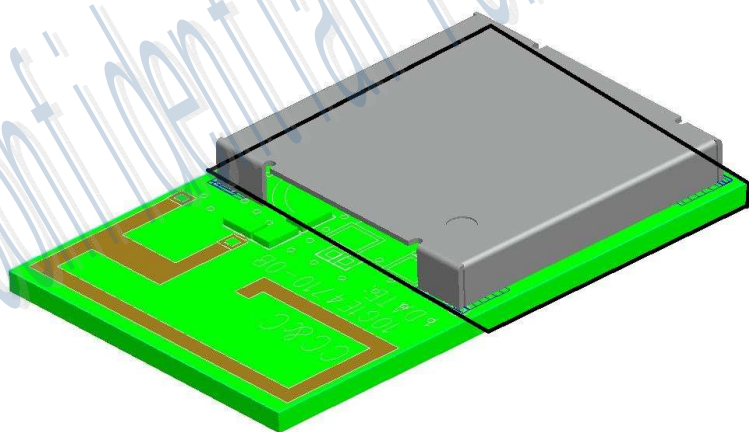
However, placing BM-8762CMF inside the main board affects the RF performance and may reduce the RF range significantly.



Unsuitable

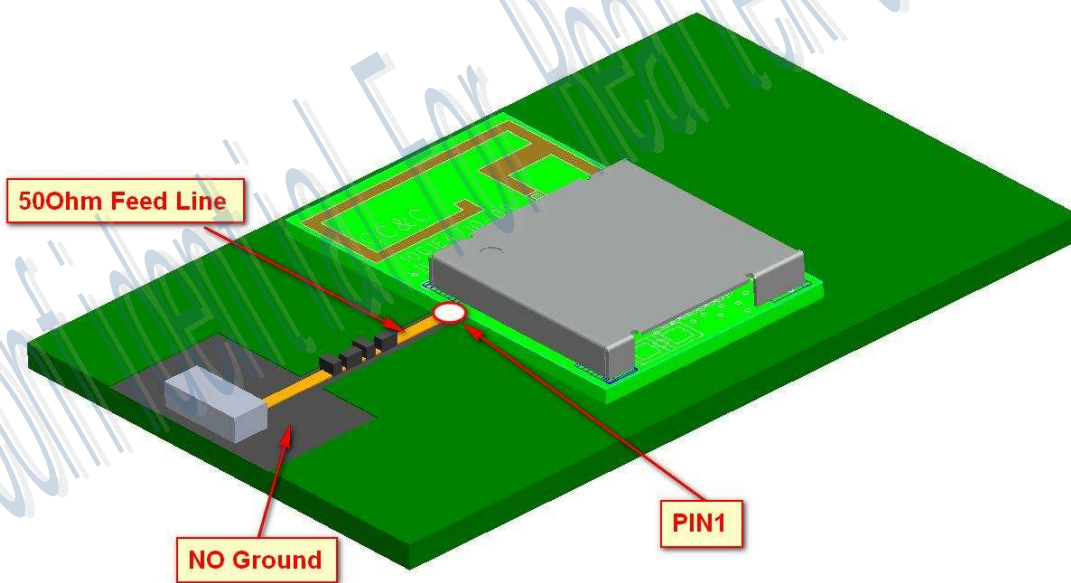
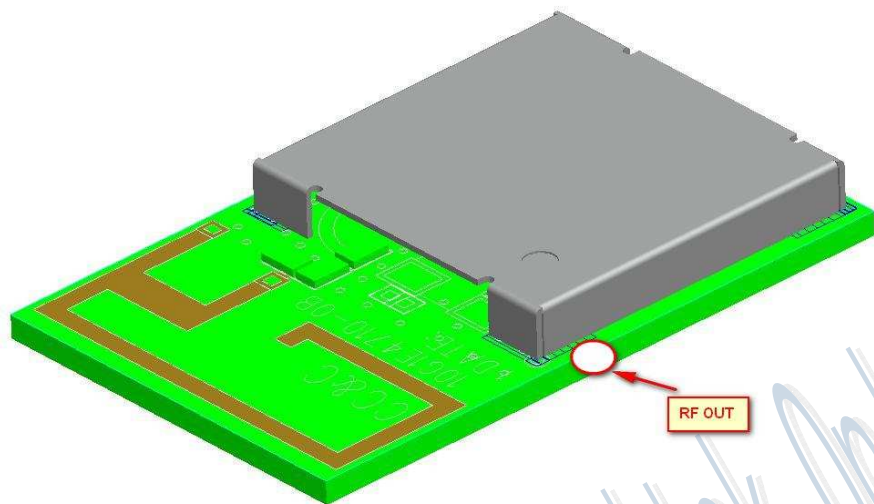
RF type-2

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

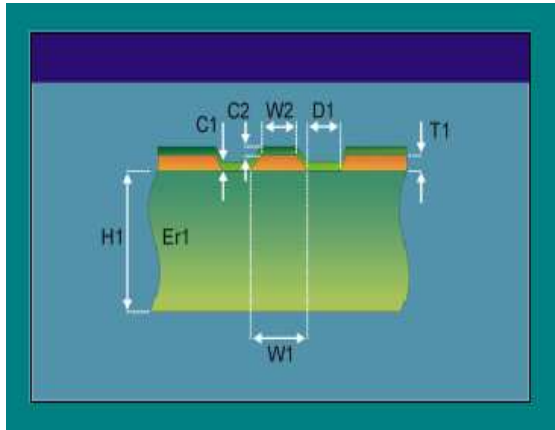


● **RF out**

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



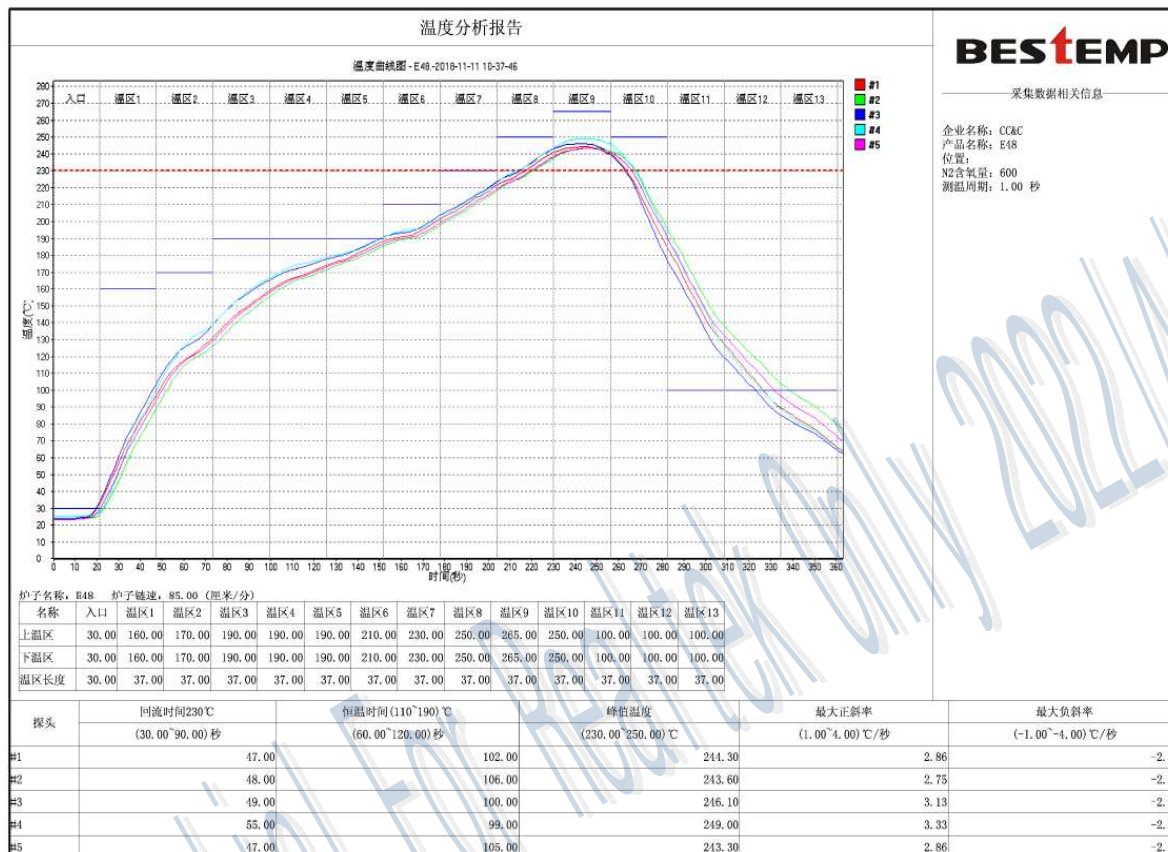
50 Ohm Feed Line:



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

Reference – Temperature Reflow Chart



Reflow Notice:

1. If the system PCBA is double side design, please reflow the side without this module first.
2. Don't let the solder machine temperature over 250°C or follow solder paste vendors's recommended temperature.
3. The Ramp-up temperature speed is 1-4°C per second, the Ramp-down temperature speed is 1-4°C per second.
4. This temperature reflow chart is for reference only, it depends on the manufacturing machine's characters requirement.

This module is surface mount device; please refer below conditions for drying before solder reflow processes. (extracted from IPC/JEDEC J-STD-033B.1)

Bake @ 125°C		Bake @ 90°C		Bake @ 40°C	
Exceeding floor Life By > 72h	Exceeding floor Life By ≤ 72h	Exceeding floor Life By > 72h	Exceeding floor Life By ≤ 72h	Exceeding floor Life By > 72h	Exceeding floor Life By ≤ 72h
9 hours	7 hours	33 hours	23 hours	13 days	9 days