

HK NATER TECH LIMITED

MT7601+MT6622_CM模块承认书

客户名称

Customer: _____

样品名称

Description: MT7601+MT6622 CM 模块

客户料号

Customer P/N: _____

日期

Date: _____

客户栏 Customer		
核准Approve	审核Auditing	承认Admit

供应商栏 Provider		
核准Approve	审核Auditing	承认Admit

客户名称:

公司地址:

电话:

传真:

联系人:

E-mail:

供方名称: HK NATER TECH LIMITED

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尊敬的客户: 请收到我公司样品承认书三日内传首页, 谢谢!

SPECIFICATIONS

IEEE 802.11 b/g/n 2.4GHz 1T1R
BT+ Wi-Fi (1T1R) Module

MT7601+MT6622 Combo Module

Version 1.1

1. Introduction

MT7601+MT6622_CM is a Wi-Fi and Bluetooth device which includes

- _ 802.11 b/g/n
- _ PA
- _ LNA
- _ TR-Switch
- _ Bluetooth V2.1+EDR/ 3.0+HS

MT7601+MT6622_CM is the MT7601 and the MT6622 component :

MT7601 provides the best and most convenient connectivity functions. MT5931 implements advanced and sophisticated radio coexistence algorithms and hardware mechanisms. The enhanced overall quality for simultaneous voice, data, and audio/video transmission on mobile phone and Tablet PC can be achieved. The small package size with low power consumption reduces the PCB layout area.

MT6622 is a monolithic single chip that integrates Bluetooth v2.1+EDR. It can be incorporated in varieties of mobile platforms to provide Bluetooth connectivity.

2.Features

MT7601+MT6622_CM is the small size and low power module for IEEE 802.11b/g/n wireless LAN. MT7601+MT6622_CM is based on MT7601 and MT6622 solution.

- 2.4GHz single stream 802.11 b/g/n MAC/BB/RF
- Bluetooth :UART, PCM
- 802.11 b/g/n compliant
- Security:WFA WPA/WPA2 personal,WPS2.0,WAPI(hardware)
- Supports 802.11n optional features:STBC,A-MPDU,Bk-Ack,RIFS,MCS Feedback,20/40
- Supports 802.11w protected managed frames
- Interface:USB2.0

3.Ordering Information

Model	Description
MT7601+MT6622_CM	Wi-Fi Module,1T1R

4.Module Block Diagram

A simplified block diagram of the MT7601+MT6622_CM is depicted in the figure below. The connections between internal modules, as well as external interfaces can be found in figure 2.

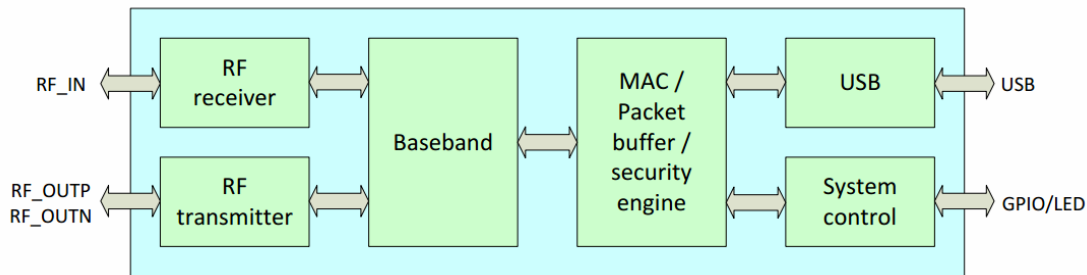


Figure 1 MT7601 block diagram

Figure 1 MT7601 functional block diagram

5.Block Diagram

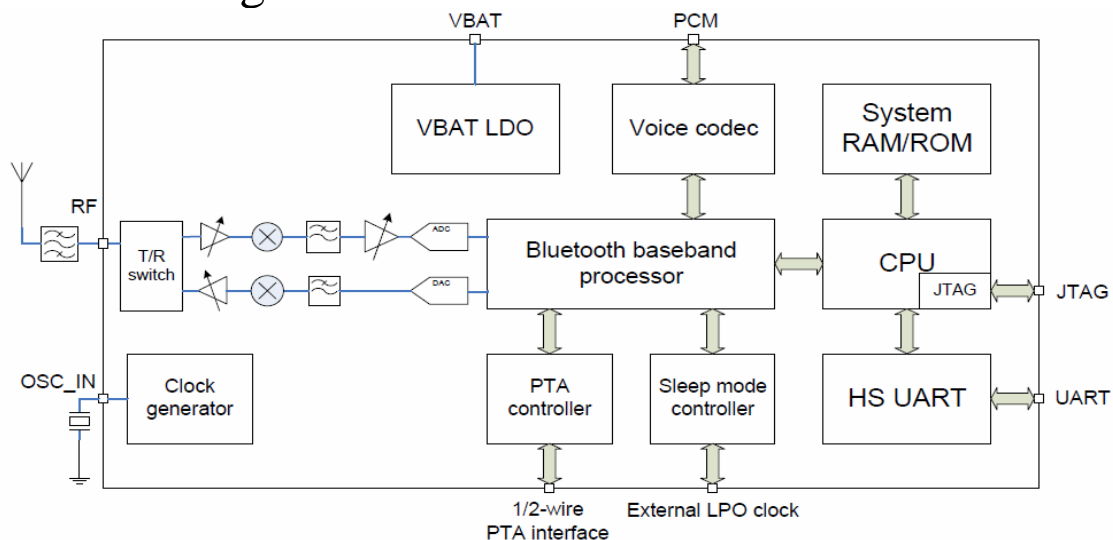


Figure 2 MT6622 block diagram

6. Absolute Maximum Ratings

Caution : The specifications in Table 1 define levels at which permanent damage to the device can occur. Function operation is not guaranteed under these conditions. Operating at absolute maximum conditions for extend periods can adversely affect the long-term reliability of the device.

Parameter	Min	Max	Unit
Storage Temperature	-45	+135℃	℃
Storage Humidity (40℃)	-	90%	%

< Table 1 Absolute Maximum Ratings > . Other conditions

- 1) Do not use or store modules in the corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are contained. Also, avoid exposure to moisture.
- 2) Store the modules where the temperature and relative humidity do not exceed 5 to 40 and 20 to 60%.
- 3) Assemble the modules within 6 months.
Check the soldering ability in case of 6 months over.

7 .Specification

Product Description	
Model Name	MT7601+MT6622-CM
Network Standard	IEEE 802.11b/g/n, BT 2.1+EDR/3.0+HS
Host Interface	USB / PCM
Operation Conditions	
Temperature	Storage : -45℃ ~ + 135℃ Operating : -45℃ ~ +85℃
Humidity	Operating : 10 ~ 95% (Non-Condensing) Storage : 5 ~ 95% (Non-Condensing)
Dimension	15mm X 15mm X 0.6mm (Max.)
Package	LGA
WiFi Part	
Standard	IEEE 802.11 b/g/n
Host Interface	USB
Bluetooth Part	
Standard	Bluetooth 2.1+EDR/3.0+HS
Host Interface	UART,PCM

8.Standard Test Conditions

The Test for electrical specification shall be performed under the following Condition unless otherwise specified.

- 1). Ambient condition
Temperature: $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
Humidity: $65\% \pm 5\%$ R.H.
- 2). Power supply voltages
2.8V input power at the Module
- 3). Current consumption over recommended range of supply voltage and operating conditions is like below.
When it's tested, it must be supplied more than 2 times of maximal current.

9. Electrical Specifications

1) DC Characteristics

Current Consumption	Min.	Typ.	Max.	Unit
TX Mode (MCS7)	-	190	-	mA
Idle and Associated state	-	90	-	

2) RF Characteristics for IEEE802.11b (11Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11b			
Mode	DSSS/CCK			
Channel frequency	2400 ~ 2483 MHz			
Data rate	1,2,5.5,11Mbps			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level	17	18	19	dBm
Spectrum Mask				
1 st side lobes (to fc ±11MHz)	-	-43	-30	dBr
2 nd side lobes (to fc ±22MHz)	-	-58	-50	dBr
Modulation Accuracy (EVM)	-	30	30	%
Power On/Off ramp	-	0.5	2.0	Usec
Freq. Tolerance	-13	-	13	ppm
Chip Clock Freq. Tolerance	-13	-	13	ppm
RX Characteristics	Min	Typ.	Max	Unit
Minimum Input Level Sens (FER ≤ 8%)	-	-88	-	dBm
Maximum Input Level (FER ≤ 8%)	-10	-	-	dBm

* Normal Condition : 25°C, VDD= 3.3V

3) RF Characteristics for IEEE802.11g (54Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11g			
Mode	OFDM			
Channel frequency	2400 ~ 2483 MHz			
Data rate	6,9,12,18,24,36,48,54Mbps			
TX Characteristics	Min	Typ	Max	Unit
Power Level	14	15	16	dBm
Spectrum Mask				
at fc ± 11 MHz	-			
at fc ± 20 MHz	-			
at fc $\geq \pm 30$ MHz	-			
Constellation Error (EVM)	-			
Freq. Tolerance	-13		13	ppm
Chip Clock Freq. Tolerance	-13		13	ppm
RX Characteristics	Min	Typ	Max	Unit
Minimum Input Level Sens. (PER $\leq 10\%$)	-	-75		ppm
Maximum Input Level (PER $\leq 10\%$)	-20	-		ppm

*Normal Condition : 25°C, VDD=3.3V

4) RF Characteristics for IEEE802.11g/n (MCS7 mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11n - 2.4GHz			
Mode	OFDM			
Channel frequency	2400 ~ 2483 MHz			
Data rate	6.5,13,19.5,26.395,39.5,52,65Mbps,.....			
TX Characteristics	Min	Typ	Max	Unit
Power Level	14	15	16	dBm
Spectrum Mask				
at fc ± 11 MHz	-	-32	-20	dBr
at fc ± 20 MHz	-	-35	-28	dBr
at fc $\geq \pm 30$ MHz	-	-45	-40	dBr
Constellation Error (EVM)	-	-32	-28	dB
Freq. Tolerance	-13	-	13	ppm
Chip Clock Freq. Tolerance	-13	-	13	ppm
RX Characteristics	Min	Typ	Max	Unit
Minimum Input Level Sens.(HT20,PER $\leq 10\%$)	-	-71	-64	ppm
Minimum Input Level Sens.(HT40,PER $\leq 10\%$)		-70	-62	ppm
Maximum Input Level (PER $\leq 10\%$)	-20			ppm

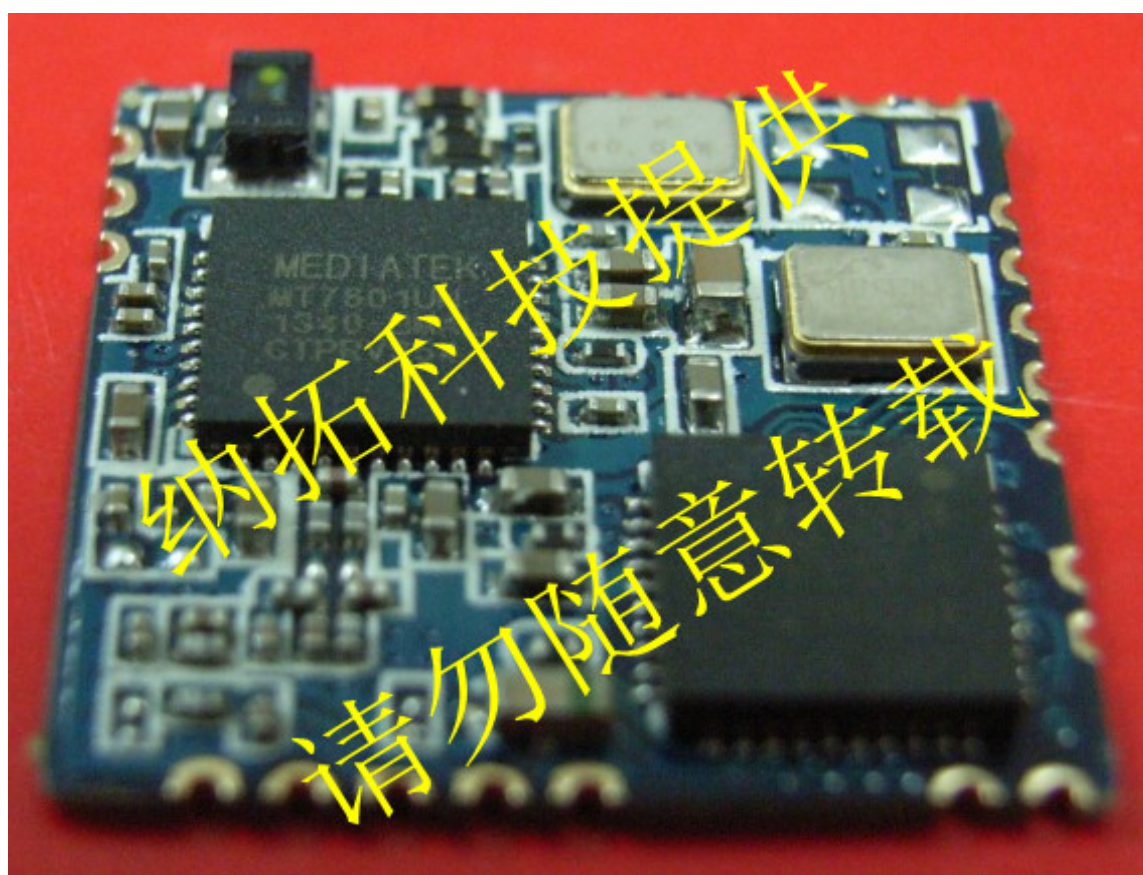
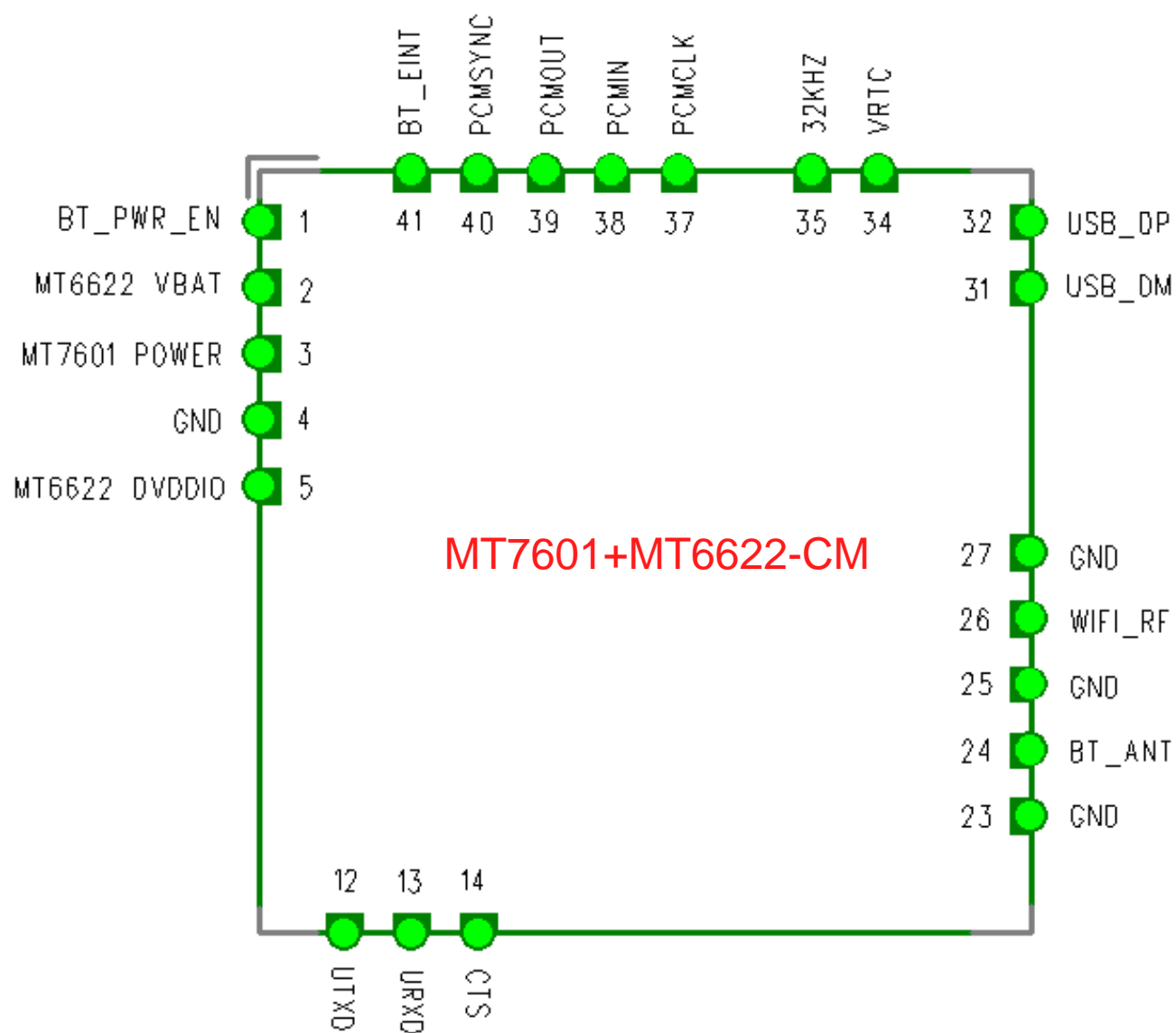
10. Bluetooth Specification

Bluetooth Specification Conditions : VBAT=3.3V ; Temp:25°C

Feature	Description		
General Specification			
Bluetooth Standard	Bluetooth V3.3 of 1, 2 and 3 Mbps.		
Host Interface	UART		
Antenna Reference	Small antennas with 0~2 dBi peak gain		
Frequency Band	2.400 GHz ~ 2483.5 GHz		
Number of Channels	79 channels		
Modulation	FHSS, GFSK, DPSK, DQPSK		
RF Specification			
	Min	Typical	Max
Output Power (Class 1.5)		10	
Output Power (Class 2)		2	
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-86	
Sensitivity @ BER=0.01% for $\pi/4$ -DQPSK (2Mbps)		-86	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-80	
Maximum Input Level	GFSK (1Mbps):-20dBm		
	$\pi/4$ -DQPSK (2Mbps) :-20dBm		
	8DPSK (3Mbps) :-20dBm		

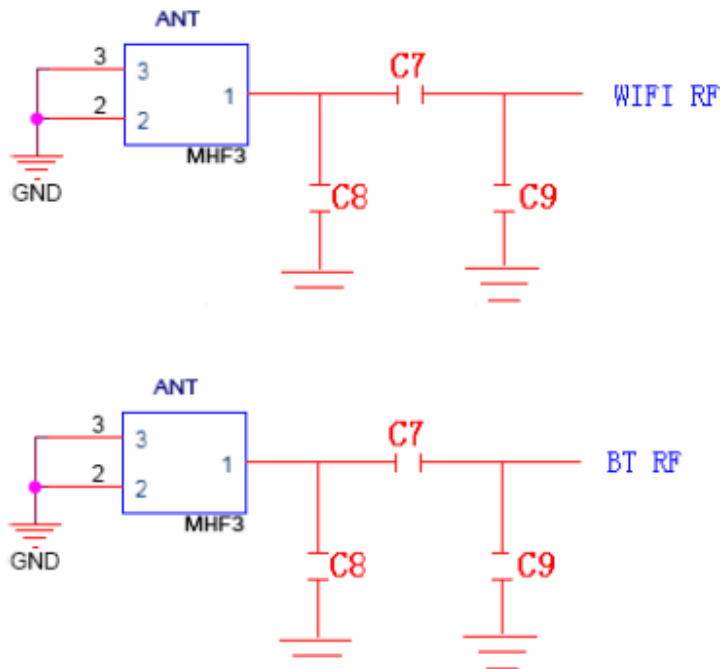
11. Pin Definition

Pin	Definition	I/O	Power	Description
1	BT PWR EN			BT POWER enable
2	MT6622 VBAT			3.2V~4.3V
3	MT7601 POWER			3.3±0.1V
4	GND			Ground
5	MT6622 DVDDIO			1.8V ~ 3.3V
6-11	NC			
12	UART_UTXD			UART
13	UART_URXD			UART
14	UART_CTS			High-Speed UART CTS
15-22	NC			
23	GND			Ground
24	BT ANT			BT ANT
25	GND			Ground
26	WIFI_ANT			WIFI_RFPORT
27	GND			Ground
28-30	NC			
31	USB_DM			D-
32	USB_DP			D+
33	NC			
34	VRTC			1.8V / 2.8V / 3.3V
35	32KHZ	O		RTC 32.768KHZ clock input port , External platform input to the module
36	NC			
37	PCM CLK	I/O		PCM
38	PCM IN	I/O		PCM
39	PCM OUT	I		PCM
40	PCM SYNC	I/O		PCM
41	BT_EINT	I/O		BT interrupt pin
42	NC			



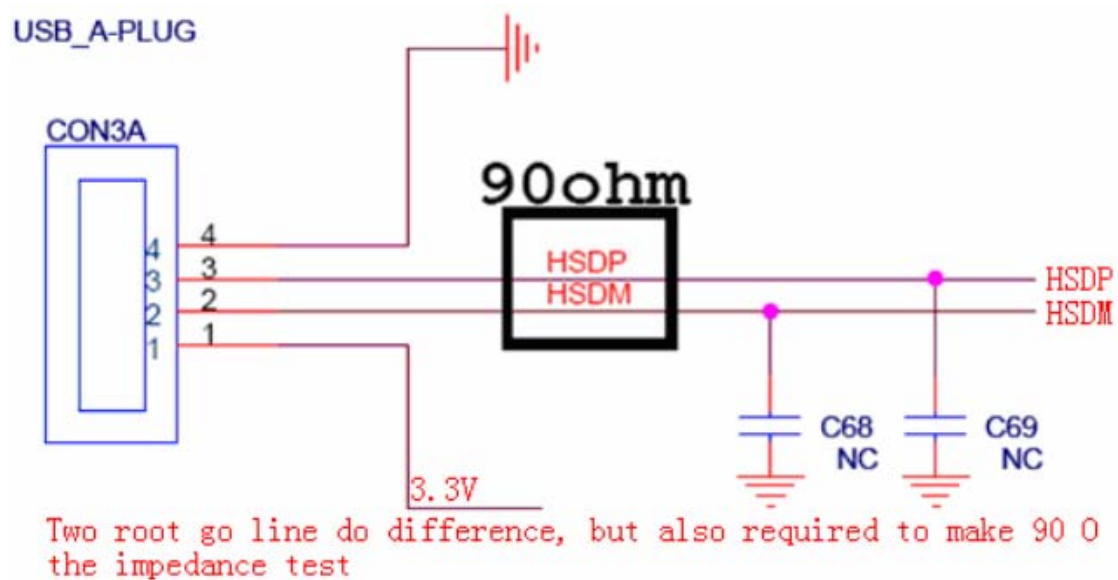
12. Peripheral principle diagram reference

1.WIFI\BT RF Circuit reference pictures .

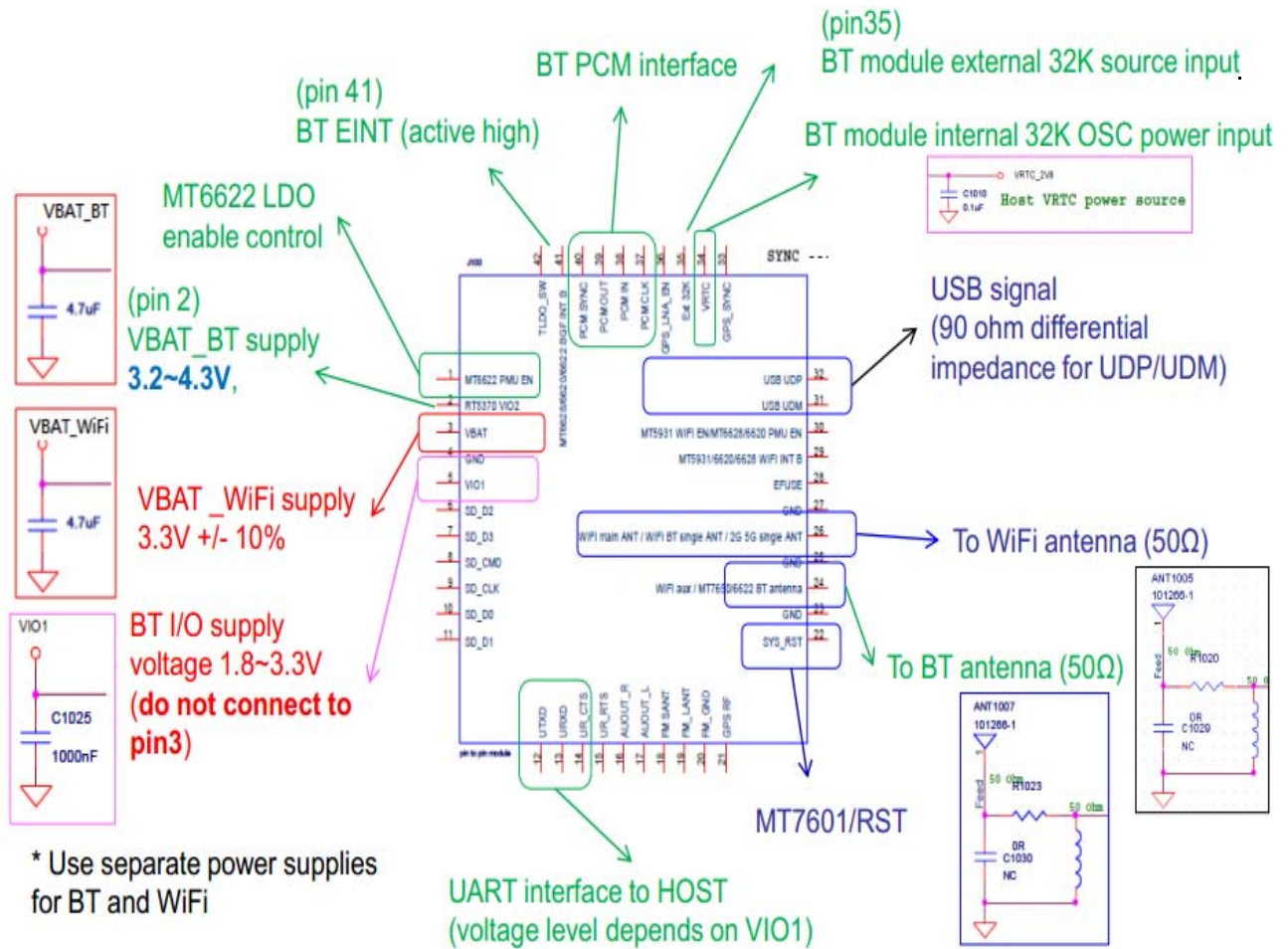


注：以上 RF 走线要做50 欧的阻抗，走线不能走 90 度，走线不能长于15MM 。

2.USB interface Circuit reference pictures.



MT7601+MT6622 SCH



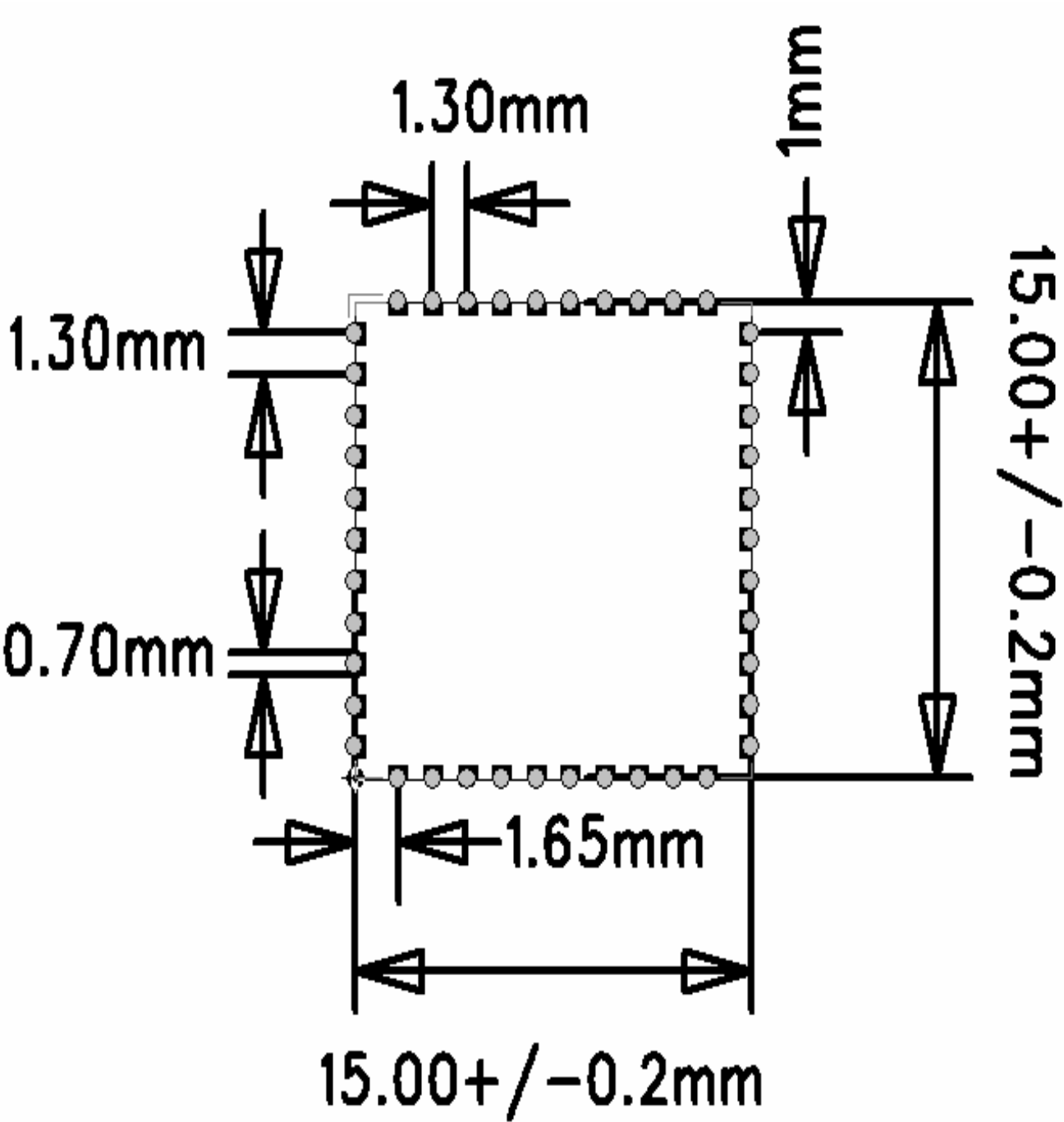
Current consumption

請務必提供兩組獨立的電源，分別供給MT7601 and MT6622

- MT7601 input voltage 為3.3V, 最大耗電流約為190 mA
建議選取 3.3V regulator 供電能力為 190mA 的1.5~2 倍。
- MT6622 input voltage 為3.2~4.3V, 最大耗電流約為50 mA ,
建議選取 regulator 供電能力為 50mA 的2 倍。
- MT6622 BT I/O supply voltage 1.8~3.3V, 請勿使用與MT7601連動的電源。

15. Size reference

Mechanical			
Dimensions (mm)	Length	Width	Height
	15	15	1.8
	(Tolerance:±0.2mm)	(Tolerance:±0.2mm)	(Tolerance:±0.2mm)



16. Environment Tests

Item	Test Conditions	Specifications
Heat Load	Initial values are measured at standard test condition. Leave samples in $60^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 96 ± 5 hours, and in standard test condition for 30 minutes, then take measurements within 1 hour. - Supply voltage : standard $\pm 5\%$ - Supply voltage cycle : 1.5h on, 0.5h off	•TX Power : $\pm 4\text{dB}$ Max Min Input Level : $\pm 4\text{dB}$ Max
Humidity Load Test	Initial values are measured at standard test condition. Leave samples in $40^{\circ}\text{C} \pm 5^{\circ}\text{C}$, 90 ~ 95% RH for 96 ± 5 hours, and in standard test condition for 30 minutes, then take measurements within 1 hour. - Supply voltage : standard $+ 5\%$ - Supply voltage cycle : 1.5h on, 0.5h off	
Cold Test	Initial values are measured at standard test condition. Leave samples in $-10^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 96 ± 5 hours, and in standard ambient for 1 hour with Standard power Supply then take measurements within 1 hour.	
Temperature	Take measurements in standard test condition. Temp. : $-10^{\circ}\text{C} \sim +80^{\circ}\text{C}$ Duration : 30 min Ramp-up & Ramp-down for 5 min Cycle : 100cycle	

17. Recommended Reflow Profile

