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欧飞信科技

O2072PM

Wi-Fi 7 Tri-band 2x2 MIMO

802.11be + Bluetooth 6.0

Module Datasheet

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Cover of Approval Sheet

PRODUCT NAME	Part No.	Description
O2072PM	FWAAO2072PM10	QCC2072 M.2 3.3V 2T2R 22*30*2.7mm 320MHz 11be BT6.0 UART External 2Antenna Shield CAN
	FWAAO2072PM20	QCC2072 M.2 3.3V 2T2R 22*30*2.7mm 320MHz 11be BT6.0 USB External 2Antenna Shield CAN

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Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

Maker Information:

OFEIXIN TECHNOLOGY LIMITED

Unit 902, Building 4, Guangming Fenghuang Square, Dongkeng Community,

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Revision History

Version	Date	Description	Draft	Approved
V1.0	2026-01-26	Preliminary Project version	EZX	Ben·Chen
V1.1	2026-03-02	Update module photos	EZX	Ben·Chen
V1.2	2026-04-20	Update module laser engraving information	EZX	Ben·Chen

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1.Overview

1.1 Introduction

The O2072PM device is a highly integrated system on chip (SoC) supporting Wi-Fi 7 and Bluetooth 6.0. The O2072PM supports Wi-Fi operation on 2.4 GHz up to 40 MHz, 5 GHz up to 160 MHz or 6 GHz up to 320 MHz.

The wireless module complies with IEEE 802.11 a/b/g/n/ac/ax/be 2x2 MIMO standard and it can achieve up to a speed of 5.8Gbps (2x2 6GHz 320MHz with 4K QAM modulation). The integrated module provides PCIe interface for Wi-Fi, UART/PCM or USB interface for Bluetooth.

1.2 Features

- Compliant with IEEE 802.11a/b/g/n/ac/ax/be
- Supports 320 MHz enhanced multilink single radio (MLSR and eMLSR)
- Support 2x2 Multi-User Multiple-Input Multiple-Output (MU-MIMO)
- Channel bandwidth up to 40 MHz at 2.4 GHz, up to 160 MHz at 5 GHz and up to 320 MHz at 6 GHz
- Supports up to 5.8 Gbps peak PHY rate with 4K QAM, MCS13,and 2x2 configuration
- Auxiliary radio for reduced listen power consumption and lower latency scanning
- Supports 802.11az Wi-Fi ranging
- Seamless antenna sharing with Bluetooth
- Dynamic Frequency Selection (DFS) radar detection
- Low-power PCIe (with L1 substate) interface
- Integrated close-loop power detector.
- Compliant with Bluetooth 6.0
- Support LE audio
- Support 2 Mbps Bluetooth Low Energy (BLE), BLE Long Range
- Supports high accuracy distance measurement (HADM) (channel sounding)
- Supports class 1 and class 2 power-level transmissions without requiring an external PA (power amplifier)

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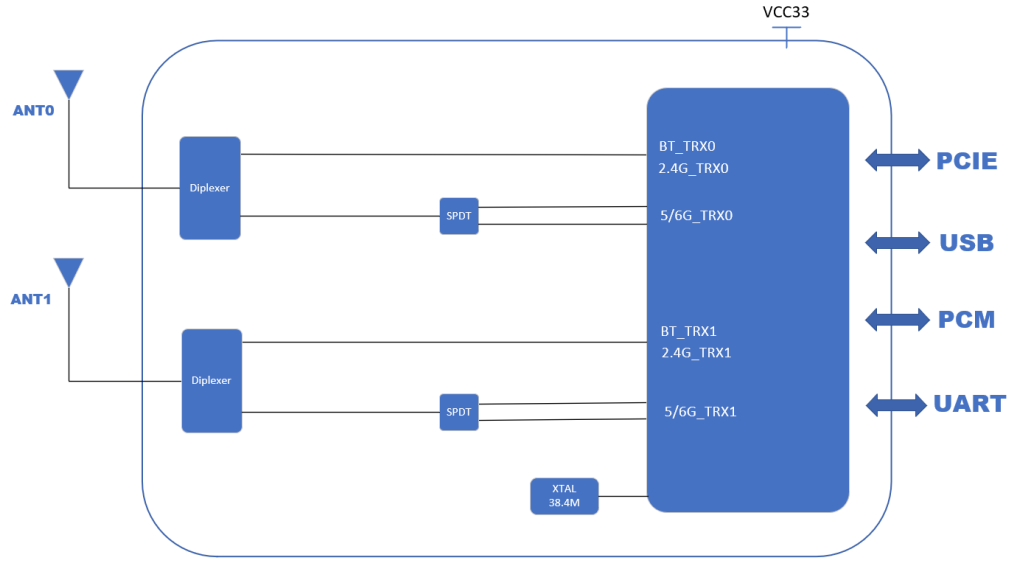
1.3 Block Diagram



1.4 General Specification

Model Name	O2072PM
Product Description	Support WiFi7+BT6.0
Dimension	L x W x H: 22 x 30 x 2.5 (typical) mm
Wi-Fi Interface	M.2 2230 Key E
BT Interface	UART/PCM or USB
Operting temperature	-30°C to 85°C
Storage temperature	-45°C to 125°C[a b]

a: The storage temperature range applies when the device is in the OFF state (the de vice is not assembled in any platform and is not electrically connected to any voltage o r I/O signals). Damage may occur when the device is subjected to this temperature fo r any length of time.

b: For devices shipped in tape and reel, the storage temperature range is [+15°C +35° C] and relative humidity (RH) is < 90%.

Qogrisys recommends allowing the device to return to ambient room temperature befor e usage.

1.5 Recommended Operating Rating

Feature		Minimum	Type	Maximum	Units
Operating Temperature		-30	25	85	°C
VCC		3.15	3.3	3.45	V
Power Consumption (Type VCC)*	TX (2.4G EHT40)	620mA			
	RX (2.4G EHT40)	368mA			
	TX (5G EHT160)	952mA			
	RX (5G EHT160)	424mA			

	TX (6G EHT320)	1285mA
	RX (6G EHT320)	745mA
	BT TX（1DH5@8dBm）	102mA
	BT RX	59mA

Note: Test the current when NSS=1

2. RF Specification

2.1 Wi-Fi RF Specification

2.4GHz RF Specification			
Feature	Description		
Operating Frequency	2.400～2.4835GHz		
Standards	Wi-Fi: IEEE 802.11b/g/n/ax/be & Wi-Fi compliant		
Operating Channel	2.4GHz : Ch1~13		
Modulation	802.11b : CCK 802.11 g/n/ax/be : OFDM/4K-QAM、1024-QAM、256-QAM、64-QAM、16-QAM、QPSK、BPSK		
PHY Data rates	Wi-Fi:802.11b:11,5.5,2,1Mbps 802.11g:54,48,36,24,18,12,9,6Mbps 802.11n: up to 300Mbps 802.11ax: up to 600Mbps 802.11be: up to 700Mbps		
Output Power, tolerance ± 1.5 dB			
Protocol Standard	Data Rate	Spec.(dBm)	EVM(dBm)
802.11b	@1Mbps	18	≦-9
802.11g	@54Mbps	15	≦-25
802.11be	@EHT20 MCS 13	12	≦-38
802.11be	@EHT40 MCS 13	11	≦-38
Receiver Sensitivity, CCK modulation PER≦8%、OFDM modulation PER≦10%			
Protocol Standard	Data Rate	Spec.(dBm)	
802.11b(20MHz)	1Mbps	-85	
	11Mbps	-79	
802.11g(20MHz)	6Mbps	-85	
	54Mbps	-67	
802.11n(20MHz)	MCS 0 NSS1	-85	
	MCS 7 NSS1	-67	
802.11n(40MHz)	MCS 0 NSS1	-82	

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	MCS 7 NSS1	-64	
802.11ax(20MHz)	MCS 0 NSS1	-85	
	MCS 11 NSS1	-55	
802.11ax(40MHz)	MCS 0 NSS1	-82	
	MCS 11 NSS1	-52	
802.11be(20MHz)	MCS 0 NSS1	-85	
	MCS 13 NSS1	-49	
802.11be(40MHz)	MCS 0 NSS1	-82	
	MCS 13 NSS1	-47	
5GHz RF Specification			
Feature	Description		
Operating Frequency	5G:5.15 GHz ~ 5.845 GHz (5.0 GHz ISM Band)		
Standards	Wi-Fi: IEEE 802.11 a/n/ac/ax/be 2x2, Wi-Fi compliant		
Modulation	802.11 a/n/ac/ax/be ： OFDM /4K-QAM、1024-QAM、256-QAM、64-QAM、16-QAM、QPSK、BPSK		
PHY Data rates	Wi-Fi: 802.11a:54,48,36,24,18,12,9,6Mbps 802.11n: up to 300Mbps 802.11ac: up to 800Mbps（5G 2x2 VHT80） 802.11be:up to 5.8 Gbps data rate (2x2 6GHz 320MHz with 4K QAM modulation)		
Output Power, tolerance ± 1.5 dB			
Protocol Standard	Data Rate	Spec.(dBm)	EVM(dBm)
802.11a	@6Mbps	16.5	≦-9
802.11a	@54Mbps	13.5	≦-25
802.11be	@EHT20 MCS 13	11	≦-38
802.11be	@EHT40 MCS 13	10.5	≦-38
802.11be	@EHT80 MCS 13	10	≦-38
802.11be	@EHT160 MCS 13	10	≦-38
Receiver Sensitivity,OFDM modulation PER≦10%			
Protocol Standard	Data Rate	Spec.(dBm)	
802.11a(20MHz)	6Mbps	-85	
	54Mbps	-67	
802.11n(20MHz)	MCS 0 NSS1	-85	
	MCS 7 NSS1	-67	
802.11n(40MHz)	MCS 0 NSS1	-82	
	MCS 7 NSS1	-67	

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802.11ac(20MHz)	MCS 0 NSS1	-85	
	MCS 9 NSS1	-60	
802.11ac(40MHz)	MCS 0 NSS1	-82	
	MCS 9 NSS1	-57	
802.11ac(80MHz)	MCS 0 NSS1	-79	
	MCS 9 NSS1	-54	
802.11ax(20MHz)	MCS 0 NSS1	-85	
	MCS 11 NSS1	-55	
802.11ax(40MHz)	MCS 0 NSS1	-82	
	MCS 11 NSS1	-52	
802.11ax(80MHz)	MCS 0 NSS1	-79	
	MCS 11 NSS1	-49	
802.11ax(160MHz)	MCS 0 NSS1	-76	
	MCS 11 NSS1	-46	
802.11be(20MHz)	MCS 0 NSS1	-85	
	MCS 13 NSS1	-49	
802.11be(40MHz)	MCS 0 NSS1	-82	
	MCS 13 NSS1	-46	
802.11be(80MHz)	MCS 0 NSS1	-79	
	MCS 13 NSS1	-43	
802.11be(160MHz)	MCS 0 NSS1	-76	
	MCS 13 NSS1	-40	
6GHz RF Specification			
Feature	Description		
Operating Frequency	6G: 5.925 GHz ~ 7.125 GHz		
Standards	Wi-Fi: IEEE 802.11 a/ax/be 2x2, Wi-Fi compliant		
Modulation	802.11 a/ax/be : OFDM 4096-QAM、1024-QAM、256-QAM、64-QAM、16-QAM、QPSK、BPSK		
PHY Data rates	Wi-Fi: OFDM:54,48,36,24,18,12,9,6Mbps 802.11be:up to 5.8Gbps data rate(2x2 6GHz 320MHz with 4K QAM modulation)		
Output Power, tolerance ± 1.5 dB			
Protocol Standard	Data Rate	Spec.(dBm)	EVM(dBm)
802.11 Legacy OFDM	@6Mbps	15	≦-9
802.11 Legacy OFDM	@54Mbps	13	≦-25

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802.11be	@EHT20 MCS 13	10	≦-38
802.11be	@EHT80 MCS 13	9	≦-38
802.11be	@EHT160 MCS 13	9	≦-38
802.11be	@EHT320 MCS 13	8	≦-38
Receiver Sensitivity,OFDM modulation PER≦10%			
Protocol Standard	Data Rate	Spec.(dBm)	
802.11 LegacyOFDM	6Mbps	-85	
	54Mbps	-67	
802.11ax(20MHz)	MCS 0 NSS1	-85	
	MCS 11 NSS1	-55	
802.11ax(40MHz)	MCS 0 NSS1	-82	
	MCS 11 NSS1	-52	
802.11ax(80MHz)	MCS 0 NSS1	-79	
	MCS 11 NSS1	-49	
802.11ax(160MHz)	MCS 0 NSS1	-76	
	MCS 11 NSS1	-46	
802.11be(20MHz)	MCS 0 NSS1	-85	
	MCS 13 NSS1	-49	
802.11be(40MHz)	MCS 0 NSS1	-82	
	MCS 13 NSS1	-46	
802.11be(80MHz)	MCS 0 NSS1	-79	
	MCS 13 NSS1	-43	
802.11be(160MHz)	MCS 0 NSS1	-76	
	MCS 13 NSS1	-40	
802.11be(320MHz)	MCS 0 NSS1	-73	
	MCS 13 NSS1	-37	

2.2 BT RF Specification

Feature	Description		
Operating Frequency	2.402～2.480GHz		
Number of Channels	79 channels		
Standards	Bluetooth V6.0		
Modulation	8DPSK, π/4 DQPSK, GFSK		
PHY Data rates	Supports 2Mbps Bluetooth Low Energy(BLE),BLE Long Range		
Output Power(BLE)	Min(dBm)	Typical(dBm)	Max(dBm)
	6.5	8	9.5

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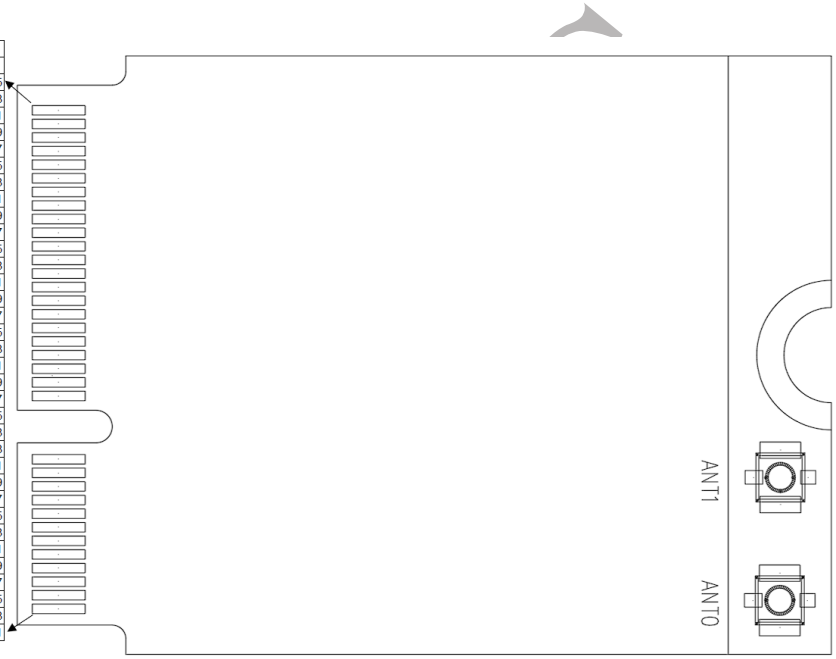
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-97	
Sensitivity @ BER=0.01% for π/4-DQPSK (2Mbps)		-96	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-90	

3.Pin Assignments

3.1 Pin Outline

Bottom		Top	
77	GND13		
76	GND12	GND10	75
74	3.3V_4	NC	73
72	3.3V_3	NC	71
70	NC	GND9	69
68	NC	NC	67
66	NC	NC	65
64	NC	GND8	63
62	NC	NC	61
60	NC	NC	59
58	NC	GND7	57
56	NC	PEWAKE0#(I/O)(0/3.3V)	55
54	NC	CLKREQ0#(I/O)(0/3.3V)	53
52	PERST0#(I)(0/3.3V)	GND6	51
50	NC	REFCLKN0	49
48	LTE_COEX_RXD(0/1.8V)	REFCLKP0	47
46	LTE_COEX_TXD(0/1.8V)	GND5	45
44	WLAN DEVICE SOL	PETN0	43
42	WLAN HOST SOL	PETP0	41
40	NC	GND4	39
38	NC	PERN0	37
36	UART_CTS(I)(0/1.8V)	PERP0	35
34	UART_RTS(O)(0/1.8V)	GND3	33
32	UART_RXD(I)(0/1.8V)	NC	23
22	UART_TXD(O)(O/1.8V)	NC	21
20	UART_WAKE#(0/3.3V)	NC	19
18	GND11	NC	17
16	NC	NC	15
14	PCM_IN(O)(0/1.8V)	NC	13
12	PCM_OUT(O)(0/1.8V)	NC	11
10	PCM_SYNC(I/O)(0/1.8V)	NC	9
8	PCM_CLK(I/O)(0/1.8V)	GND2	7
6	NC	USB_D-	5
4	3.3V_2	USB_D+	3
2	3.3V_1	GND1	1



3.2 Pin Definition

Top side

NO	Name	Type	Description	Voltage
1	GND1	-	Ground	
3	BT USB D+	I/O	The usb1.1 interface is only valid for BT USB modules	
5	BT USB D1	I/O	The usb1.1 interface is only valid for BT USB modules	
7	GND2	-	Ground	
9	NC	-		
11	NC	-		
13	NC	-		
15	NC	-		
17	NC	-		

19	NC	-		
21	NC	-		
23	NC	-		
33	GND3	-	Ground	
35	PERP0	I	PCIe RX0 differential signals	
37	PERN0	I		
39	GND4	-	Ground	
41	PETP0	O	PCIe TX0 differential signals	
43	PETN0	O		
45	GND5	-	Ground	
47	REFCLKP0	I	PCIe clock differential input signal	
49	REFCLKN0	I		
51	GND6	-	Ground	
53	CLKREQ0#(I/O)(0/3.3V) ①	I/O	PCIe reference clock request signal, open drain,active low	3.3V
55	PEWAKE0#(I/O)(0/3.3V) ①	I/O	PCIe wake up host, open drain, active low	3.3V
57	GND7	-	Ground	
59	NC	-	RESERVED	
61	NC	-	RESERVED	
63	GND8	-	Ground	
65	NC	-	RESERVED	
67	NC	-	RESERVED	
69	GND9	-	Ground	
71	NC	-	RESERVED	
73	NC	-	RESERVED	
75	GND10	-	Ground	

Bottom side

NO	Name	Type	Description	Voltage
2	3_3V_1	P	Power supply	3.3V
4	3_3V_2	P	Power supply	3.3V
6	NC	-	RESERVED	
8	PCM_CLK	I/O	BT PCM clock（Only valid for UART modules）	1.8V
10	PCM_SYNC	I/O	BT PCM sync（Only valid for UART modules）	1.8V

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12	PCM_OUT	O	BT PCM data out（Only valid for UART modules）	1.8V
14	PCM_IN	I	BT PCM data in（Only valid for UART modules）	1.8V
16	NC	-	RESERVED	
18	GND11	-	Ground	
20	UART_WAKE_N	O	BT wake up host signal（Only valid for UART modules）	3.3V
22	UART_TXD(O)(0/1.8V)	O	BT UART interface（Only valid for UART modules）	1.8V
32	UART_RXD(I)(0/1.8V)	I		1.8V
34	UART_RTS(O)(0/1.8V)	O	BT UART request to send（Only valid for UART modules）	1.8V
36	UART_CTS(I)(0/1.8V)	I	BT UART clear to send（Only valid for UART modules）	1.8V
38	NC	-		
40	NC	-		
42	WLAN HOST SOL	I	Host signs of life	
44	WLAN DEVICE SOL	O	Device signs of life	
46	LTE_COEX_TXD	O	RESERVED/LTE coexistence UART TXD	1.8V
48	LTE_COEX_RXD	I	RESERVED/LTE coexistence UART RXD	1.8V
50	NC	-		
52	PERST0#(I)(0/3.3V) ①	I	PCIe reset module,internal weak pull down	3.3V
54	NC	-	RESERVED	
56	NC	-	RESERVED	
58	NC	-	RESERVED	
60	NC	-	RESERVED	
62	NC	-		
64	NC	-		
66	NC	-		
68	NC	-		
70	NC			
72	3_3V_3	P	Power supply	3.3V
74	3_3V_4	P	Power supply	3.3V

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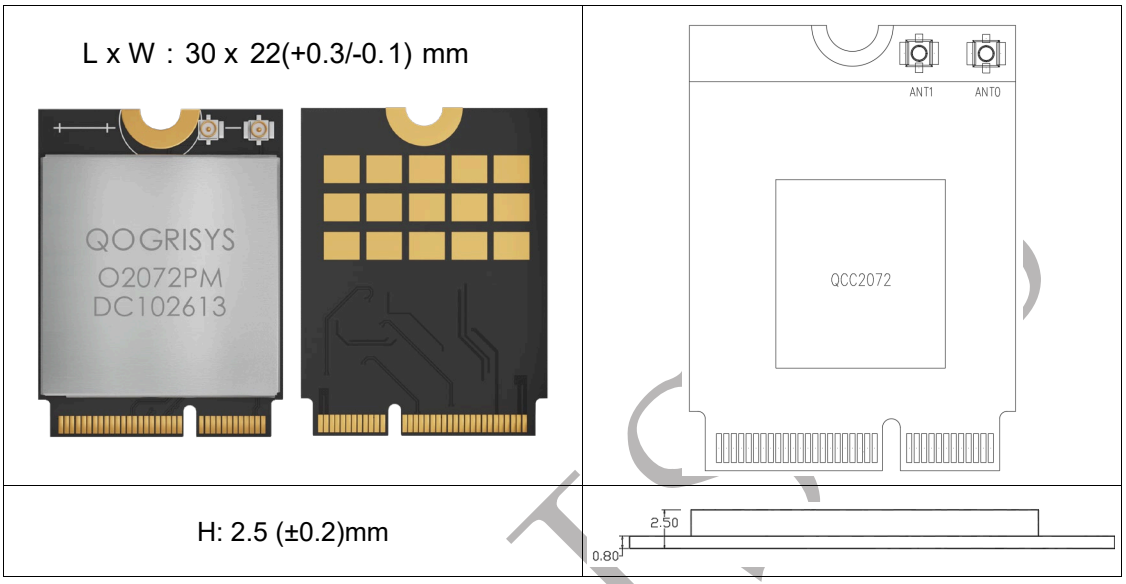
Note：The I/O level of the pin marked ① is 3.3V, and the other I/O level is 1.8V。

4.Dimensions

4.1 Physical Dimensions and Module Photo

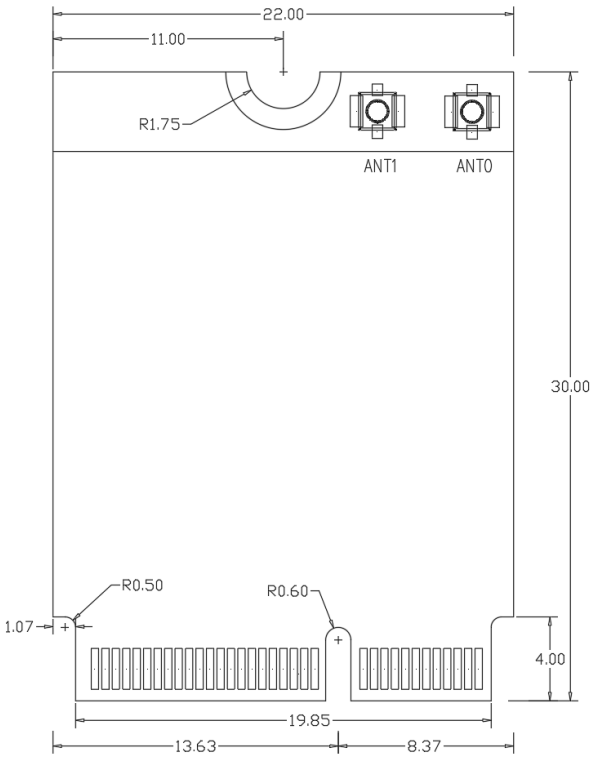
(Unit: mm)



4.2 Module Physical Dimensions

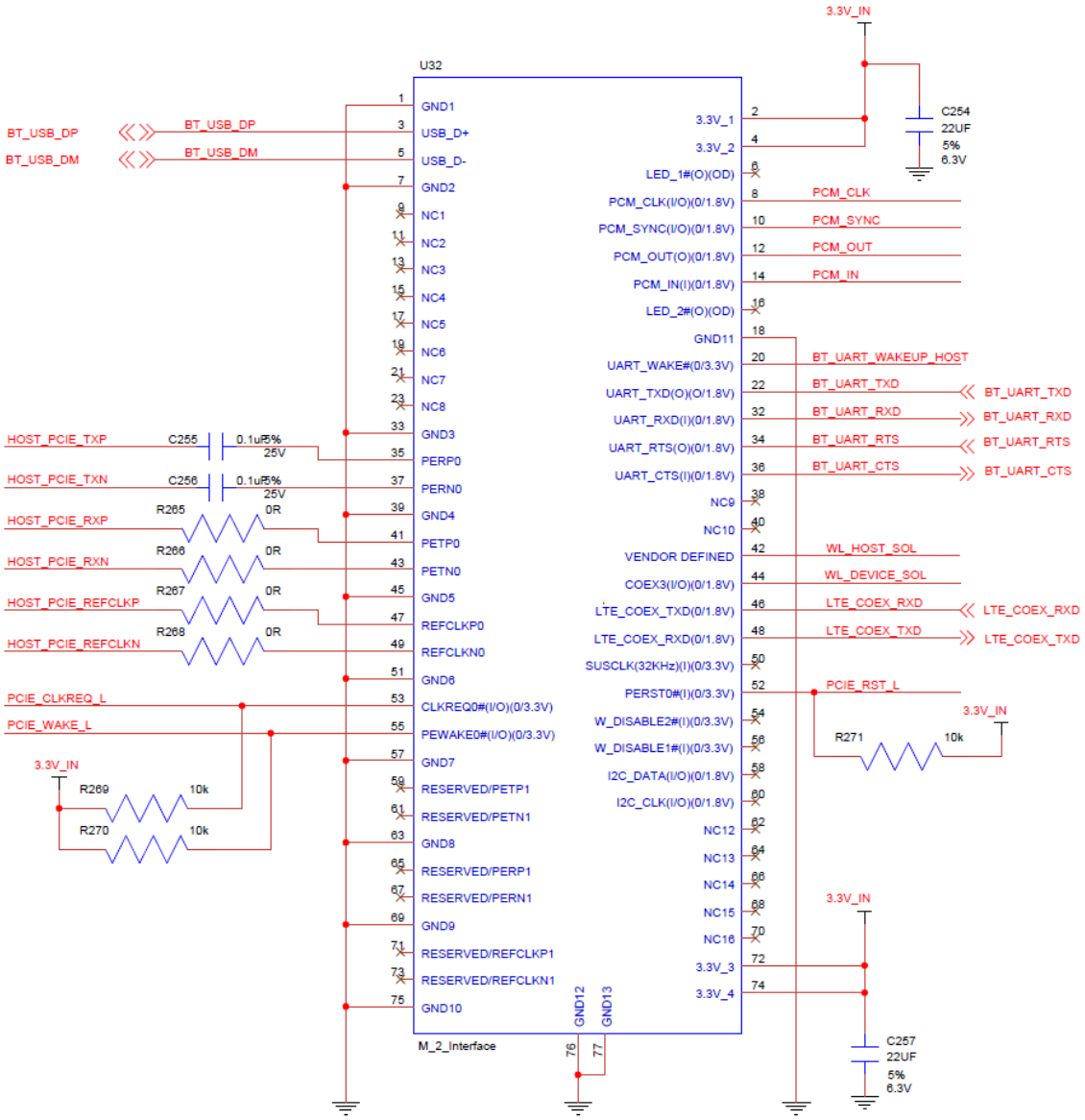
(Unit: mm)

< TOP VIEW >



5 Reference Design

5.1 Reference schematic



Note：

a） The power supply “3.3V_IN” switching noise is less than 100mV and the ripple is less than 30 mV.

b） PCIe differential signals should be followed 90 Ohm impedance.

5.2 External Antenna

When the customer selects an external antenna, the external antenna selected must meet the parameter requirements specified ,Impedance 50Ω

5.3 Real-world Testing

2.4G Real-world Testing					
Protocol Standard		channel	Power (dBm)	EVM(dB)	Rx Sensitivity (dBm)
802.11g(54Mps)	ANT0	2412	15.1	-38.0	-77
		2437	15.2	-37.8	-77
		2472	14.9	-38.4	-77
	ANT1	2412	14.9	-36.4	-77
		2437	14.8	-38.2	-77
		2472	14.8	-38.0	-77
802.11be(EHT20_MCS13)	ANT0	2412	11.9	-42.8	-60
		2437	12.0	-43.0	-60
		2472	11.9	-43.6	-60
	ANT1	2412	12.5	-43.3	-60
		2437	12.4	-44.6	-60
		2472	12.5	-43.0	-60
802.11be(EHT40_MCS13)	ANT0	2422	11.1	-44.3	-57
		2462	11.1	-43.2	-57
	ANT1	2422	11.4	-41.7	-57
		2462	11.5	-43.3	-57
5G Real-world Testing					
Protocol Standard		channel	Power (dBm)	EVM(dB)	Rx Sensitivity (dBm)
802.11a(54Mps)	ANT0	5180	13.9	-36.5	-76
		5600	13.3	-37.2	-76
		5825	13.5	-39.1	-76
	ANT1	5180	14.1	-39.3	-76
		5600	13.1	-40.6	-76
		5825	13.2	-37.8	-76
802.11be(EHT20_MCS13)	ANT0	5180	11.3	-43.1	-59
		5600	10.4	-41.4	-59
		5825	10.9	-40.9	-59
	ANT1	5180	11.5	-42.2	-59
		5600	10.2	-43.5	-59
		5825	10.9	-42.0	-59

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802.11be(EHT80_MCS13)	ANT0	5290	10.0	-41.5	-52
		5690	9.0	-42.7	-52
		5775	9.7	-41.3	-52
	ANT1	5290	10.2	-42.9	-52
		5690	9.2	-42.9	-52
		5775	9.6	-41.0	-52
802.11be(EHT160_MCS13)	ANT0	5250	9.9	-40.5	-50
		5570	8.9	-41.2	-50
	ANT1	5250	10.3	-40.0	-50
		5570	9.2	-41.5	-50
6G Real-world Testing					
Protocol Standard		channel	Power (dBm)	EVM(dB)	Rx Sensitivity (dBm)
802.11be(EHT20_MCS0)	ANT0	5955	15.6	-16.8	-94
		6695	14.4	-17.3	-94
		7115	15.3	-17.4	-94
	ANT1	5955	15.3	-16.6	-94
		6695	15.0	-16.8	-94
		7115	15.4	-16.6	-94
802.11be(EHT160_MCS13)	ANT0	6025	9.5	-41.3	-50
		6505	8.3	-40.5	-50
		6985	8.6	-40.7	-50
	ANT1	6025	9.3	-42.7	-50
		6505	8.9	-41.1	-50
		6985	8.9	-41.3	-50
802.11be(EHT320_MCS13)	ANT0	6105	8.3	-40.1	-47
		6425	8.0	-40.2	-46
		6745	7.7	-40.8	-46
	ANT1	6105	8.5	-40.1	-46
		6425	7.6	-41.3	-47
		6745	8.2	-41.3	-46

Description: The test environment is: temperature 25 °C humidity 60%

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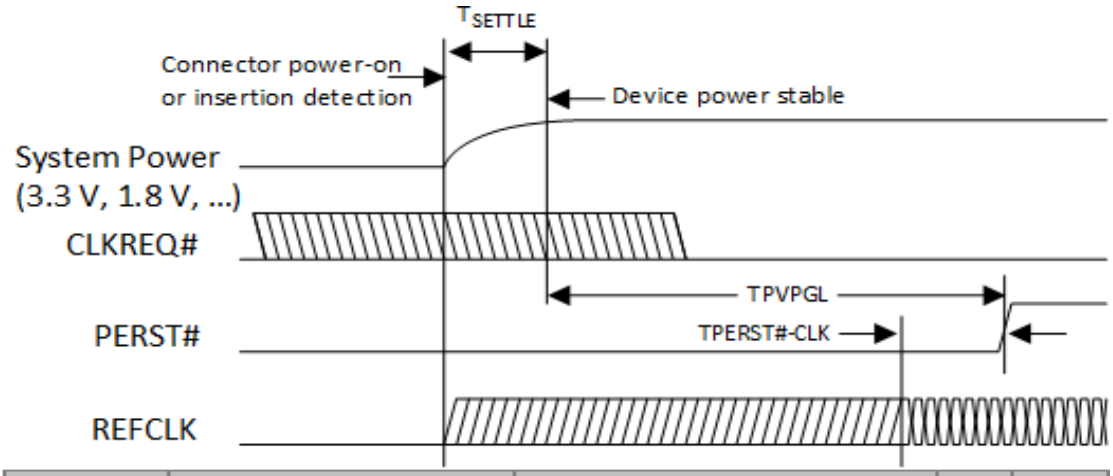
6 Host Interface Timing Diagram

6.1 PCIe powerup sequence timing

Supports PCIe Gen 3 interface for WLAN.

Compliant to PCIe Gen 3 powerup sequence timing.



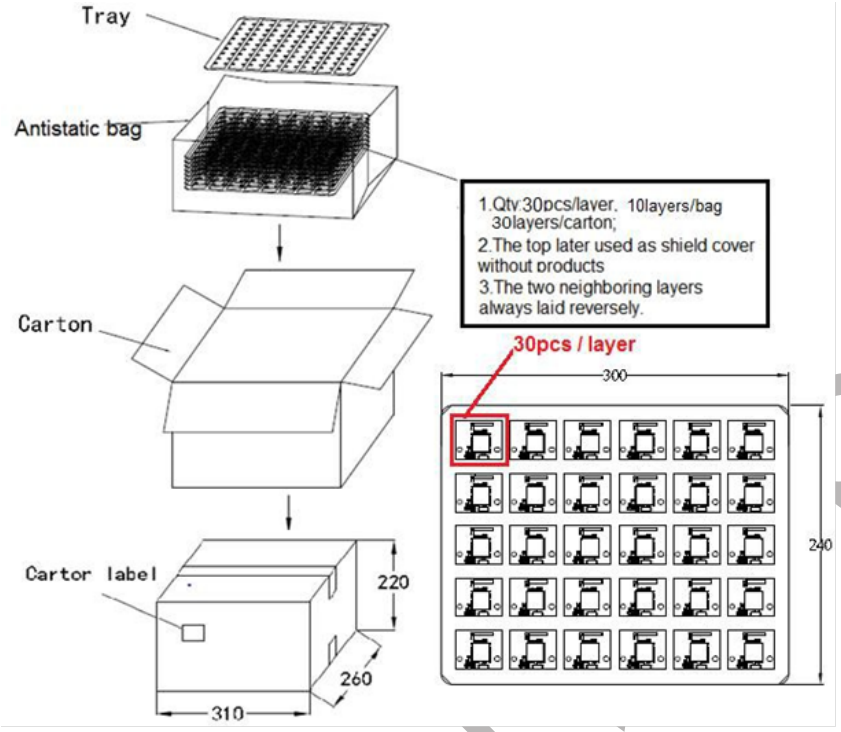
Symbol	Parameter	Min	Max	Units
T_{PVPGL}	Power Valid* to PERST# input inactive	Implementation specific; recommended 50 ms		ms
$T_{PERST\#-CLK}$	REFCLK stable before PERST# inactive	100		µs

Note: *Power Valid when all the voltage supply rails have reached their respective V_{min}.

QOGRISYS

7 Package

7.1 Reel



7.2 Storage Temperature And Humidity

The Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDEC J-STD-020, take care all the relatives requirements for using this kind of components.

Moreover, the customer has to take care of the following conditions:

a） Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH).

b） Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5.

c）The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition.

d） “IPC/JEDEC J-STD-033A paragraph 5.2” is respected.

e） Baking is required if conditions b) or c) are not respected.

f）Baking is required if the humidity indicator inside the bag indicates 10% RH or more.

THE END