

QOGRISYS

欧飞信科技

O2072PB

Wi-Fi 7 Tri-band 2x2 MIMO

802.11be + Bluetooth 6.0

Module Datasheet

Cover of Approval Sheet

PRODUCT NAME	Part No.	Description
O2072PB	FWAAO2072PBD1	QCCA2072 PCIe 3.3V 2T2R 13*15*2.3 320MHz 1 1be BT6.0 UART External 2Antenna Shield CAN

Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

Maker Information:

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Revision History

Version	Date	Description	Draft	Approved
V0.1	2025-10-15	Preliminary Project version	EZX	Ben·Chen
V0.2	2025-11-12	Revise Company Logo and Address	EZX	Ben·Chen
V0.3	2026-02-04	Update WiFi power meter	EZX	Ben·Chen
V0.4	2026-04-20	Update module laser engraving information	EZX	Ben·Chen

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1. Overview

1.1 Introduction

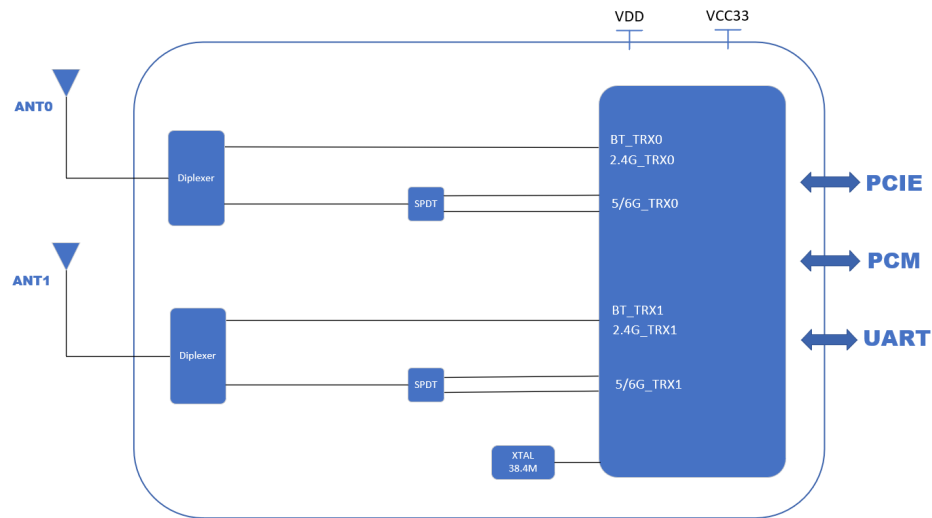
The O2072PB device is a highly integrated system on chip (SoC) supporting Wi-Fi 7 and Bluetooth 6.0. The O2072PB supports Wi-Fi operation on 2.4 GHz up to 40 MHz, 5 GHz up to 160 MHz or 6 GHz up to 320 MHz.

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 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)

1.3 Block Diagram



1.4 General Specification

Model Name	O2072PB
Product Description	Support WiFi7+BT6.0
Dimension	L x W x H: 15 x 13 x 2.3 (typical) mm
Wi-Fi Interface	PCle
BT Interface	UART/PCM
Operating temperature	TBD
Storage temperature	TBD

1.5 Recommended Operating Rating

Feature		Minimum	Type	Maximum	Units
Operating Temperature		TBD	25	TBD	°C
VCC		TBD	3.3	TBD	V
VDD		TBD	2.04	TBD	V
Power Consumption		VCC		VDD	
	TX (2.4G EHT40)	TBD		TBD	
	RX (2.4G EHT40)	TBD		TBD	
	TX (5G EHT160)	TBD		TBD	
	RX (5G EHT160)	TBD		TBD	
	TX (6G EHT320)	TBD		TBD	
	RX (6G EHT320)	TBD		TBD	
	BT TX (1M@7dBm)	TBD		TBD	

	BT RX	TBD	TBD
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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	17	≦ -9
802.11g	@54Mbps	14	≦ -25
802.11be	@EHT20 MCS 13	11	≦ -38
802.11be	@EHT40 MCS 13	10	≦ -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	
	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 802.11ax: up to 1.2Gbps (5G 2x2 HE80) 802.11be:up to 2.8 Gbps data rate (2x2 5GHz 160MHz with 4K QAM modulation)		
Output Power, tolerance ± 1.5 dB			
Protocol Standard	Data Rate	Spec.(dBm)	EVM(dBm)
802.11a	@6Mbps	15.5	≦ -9
802.11a	@54Mbps	12.5	≦ -25
802.11be	@EHT20 MCS 13	10	≦ -38
802.11be	@EHT40 MCS 13	9.5	≦ -38
802.11be	@EHT80 MCS 13	9	≦ -38
802.11be	@EHT160 MCS 13	9	≦ -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	
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)
802.11Legacy OFDM	@6Mbps	14	≦ -9
802.11Legacy OFDM	@54Mbps	12	≦ -25
802.11be	@EHT20 MCS 13	9	≦ -38
802.11be	@EHT80 MCS 13	8	≦ -38
802.11be	@EHT160 MCS 13	8	≦ -38

802.11be	@EHT320 MCS 13	7	≤ -38
Receiver Sensitivity, OFDM modulation PER $\leq 10\%$			
Protocol Standard	Data Rate	Spec.(dBm)	
802.11a(20MHz)	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	

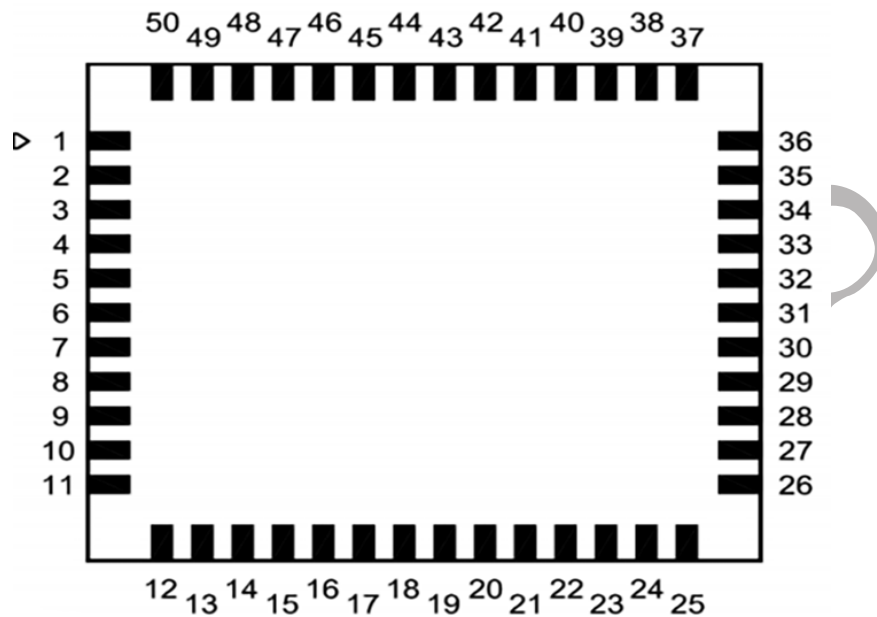
2.2 BT RF Specification

Feature	Description		
Operating Frequency	2.402~2.480GHz		
Number of Channels	79 channels		
Standards	Bluetooth V6.0		
Modulation	8DPSK, $\pi/4$ 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
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-97	
Sensitivity @ BER=0.01%		-96	

for $\pi/4$ -DQPSK (2Mbps)			
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-90	

3.Pin Assignments

3.1 Pin Outline



3.2 Pin Definition

Top side

NO	Name	Type	Description	Voltage
1	GND	-	Ground connections	
2	ANT0	I/O	RF I/O port chain0, Tri - Band Wi - Fi and BT chain0	
3	GND	-	Ground connections	
4	GND	-	Ground connections	
5	GND	-	Ground connections	
6	GND	-	Ground connections	
7	GND	-	Ground connections	
8	GND	-	Ground connections	
9	ANT1	I/O	RF I/O port chain1, Tri - Band Wi - Fi and BT chain1	
10	GND	-	Ground connections	
11	GND	-	Ground connections	

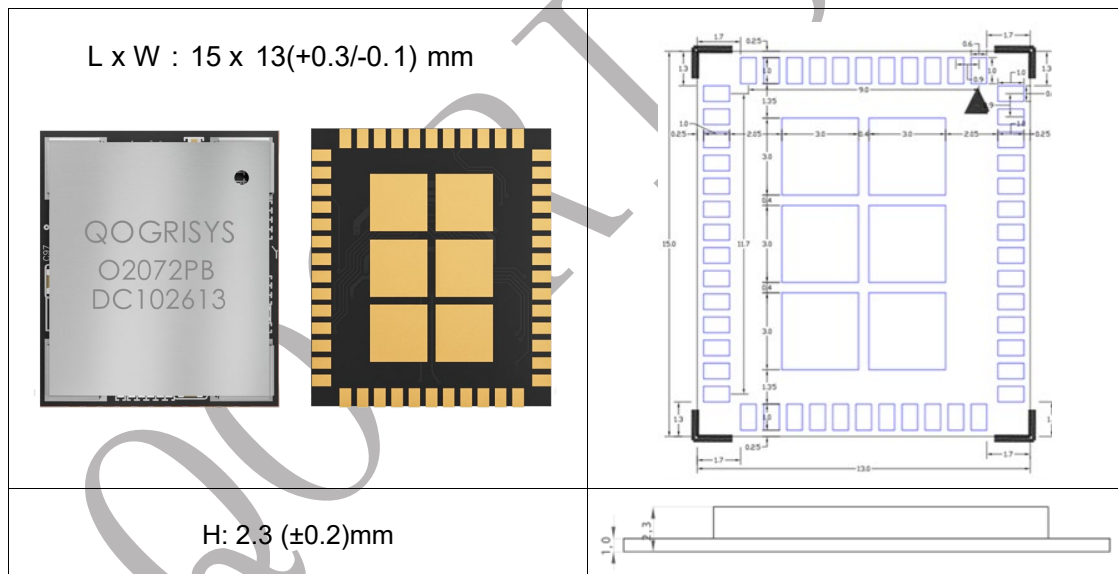
12	PREST	I	WLAN PCIe resets signal is an input signal.	3.3V
13	NC	-	NC	
14	WLAN_DEVICE_SOL	O	WLAN device sign of life, it tells the host that the Wi - Fi chip is alive or crash	1.8V
15	WL_DIS_N	I	WLAN enable signal. It's an input, active high to enable WLAN operation	1.8V
16	WLAN_HOST_SOL	I	WLAN host sign of life; it tells the Wi - Fi chip that the host is alive or crash.	1.8V
17	LTE_COEX_TXD	O	WSI interface for LTE co - existing interface with LTE modem to enable firmware communication.	1.8V
18	LTE_COEX_RXD	I		1.8V
19	PCM_OUT	O	PCM Data output	1.8V
20	PCM_IN	I	PCM data input	1.8V
21	PCM_SYNC	I/O	PCM sync signal	1.8V
22	PCM_CLK	I/O	PCM clock	1.8V
23	GND	-	Ground connections	
24	PCIE_WAKE	O	WLAN PCIe wake-up signal is an output signal. It's an open-drain signal that requires an external 10 K Ω pull- up resistor.	1.8V
25	NC	-	NC	
26	NC	-	NC	
27	GND	-	Ground connections	
28	NC	-	NC	
29	NC	-	NC	
30	GND	-	Ground connections	
31	NC	-	NC	
32	GND	-	Ground connections	
33	PECLK-	I/O	PCIE CLK-	
34	VDD	P	2.04V Power supply input	VDD
35	PECLK_+	I/O	PCIE CLK+	
36	VCC33	P	Main power voltage source input 3.3V	3.3V
37	CLK REQ	I/O	WLAN PCIe clock request signal is a bidirection signal. It's an open - drain signal that requires an external 10 K Ω pull - up resistor.	3.3V
38	BT_DIS_N	I	Bluetooth enable signal. It's an input, active high to enable Bluetooth operation.	1.8V
39	GND	-	Ground connections	

40	UART_TXD	O	Bluetooth UART interface	1.8V
41	UART_RXD	I	Bluetooth UART interface	1.8V
42	UART_RTS	O	Bluetooth UART interface	1.8V
43	UART_CTS	I	Bluetooth UART interface	1.8V
44	PCIE_RXN	I	PCIE RX -	
45	PCIE_RXP	I	PCIE RX+	
46	PCIE_TXN	O	PCIE TX -	
47	PCIE_TXP	O	PCIE TX+	
48	NC	-	NC	
49	BLE_OOB_WAKE	I	BLE out of band wake up signal	1.8V
50	NC	-	NC	

4. Dimensions

4.1 Physical Dimensions and Module Photo

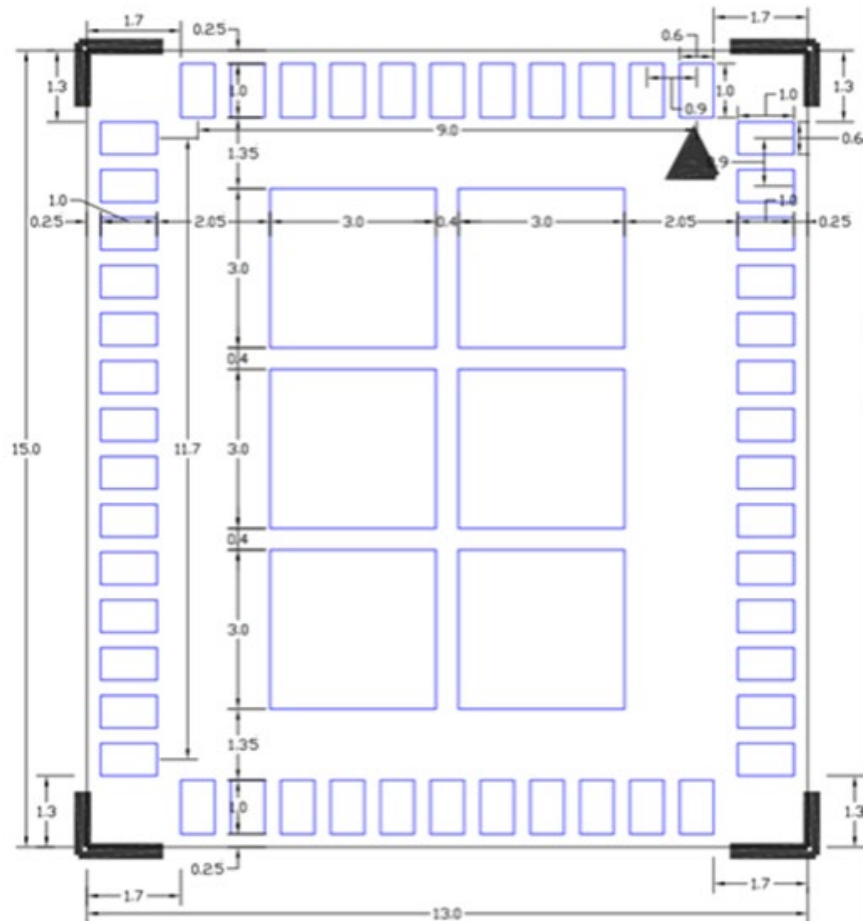
(Unit: mm)



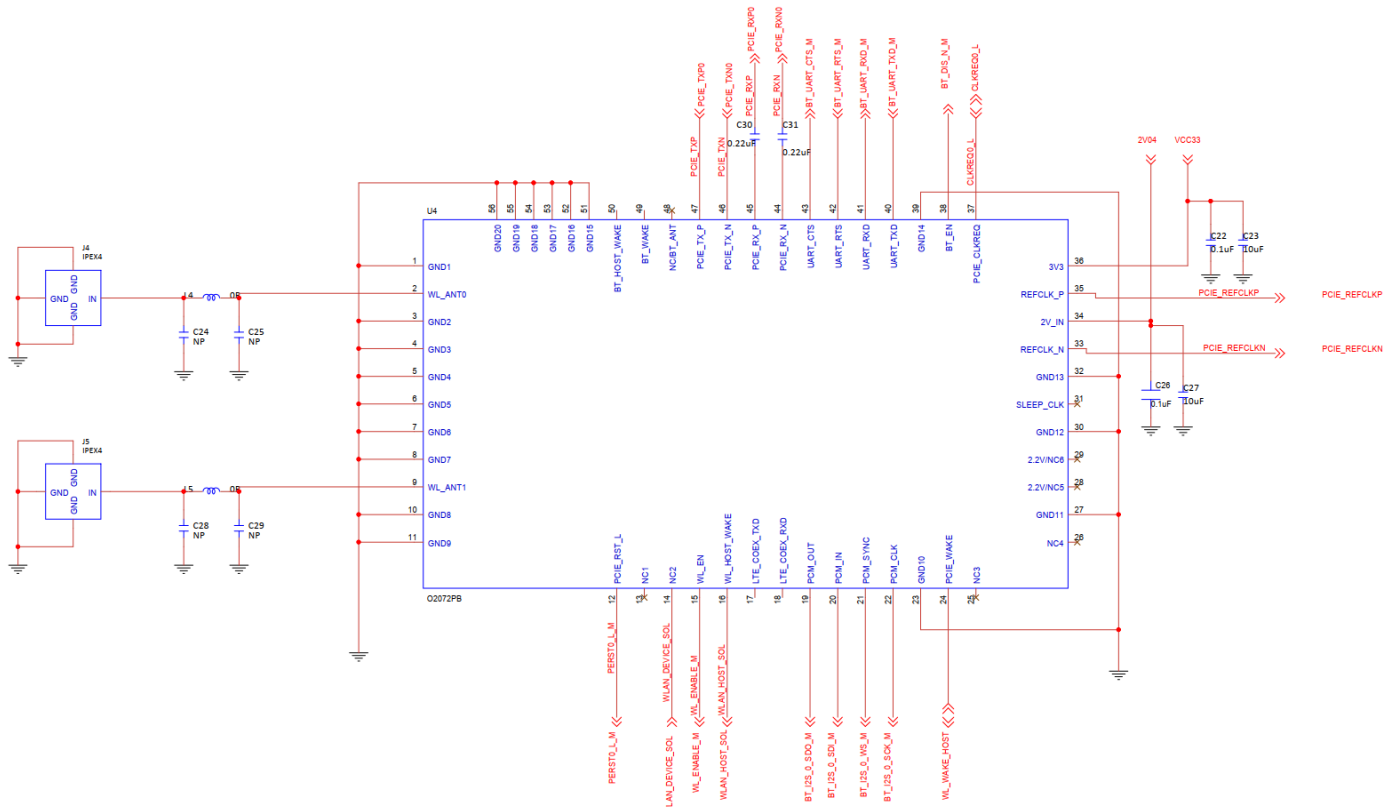
4.2 Module Physical Dimensions

(Unit: mm)

< TOP VIEW >



5.1 Reference schematic



- 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.

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(54Mbps)	ANT0	2412	TBD	TBD	TBD
		2437	TBD	TBD	TBD
		2472	TBD	TBD	TBD
	ANT1	2412	TBD	TBD	TBD
		2437	TBD	TBD	TBD
		2472	TBD	TBD	TBD
802.11be(EHT20_MCS13)	ANT0	2412	TBD	TBD	TBD
		2437	TBD	TBD	TBD
		2472	TBD	TBD	TBD
	ANT1	2412	TBD	TBD	TBD
		2437	TBD	TBD	TBD
		2472	TBD	TBD	TBD
802.11be(EHT40_MCS13)	ANT0	2422	TBD	TBD	TBD
		2462	TBD	TBD	TBD
	ANT1	2422	TBD	TBD	TBD
		2462	TBD	TBD	TBD
5G Real-world Testing					
Protocol Standard		channel	Power (dBm)	EVM(dB)	Rx Sensitivity (dBm)
802.11a(54Mbps)	ANT0	5180	TBD	TBD	TBD
		5600	TBD	TBD	TBD
		5825	TBD	TBD	TBD
	ANT1	5180	TBD	TBD	TBD
		5600	TBD	TBD	TBD
		5825	TBD	TBD	TBD
802.11be(EHT20_MCS13)	ANT0	5180	TBD	TBD	TBD
		5600	TBD	TBD	TBD
		5825	TBD	TBD	TBD
	ANT1	5180	TBD	TBD	TBD
		5600	TBD	TBD	TBD
		5825	TBD	TBD	TBD

802.11be(EHT80_MCS13)	ANT0	5290	TBD	TBD	TBD
		5690	TBD	TBD	TBD
		5775	TBD	TBD	TBD
	ANT1	5290	TBD	TBD	TBD
		5690	TBD	TBD	TBD
		5775	TBD	TBD	TBD
802.11be(EHT160_MCS13)	ANT0	5250	TBD	TBD	TBD
		5570	TBD	TBD	TBD
	ANT1	5250	TBD	TBD	TBD
		5570	TBD	TBD	TBD
6G Real-world Testing					
Protocol Standard		channel	Power (dBm)	EVM(dB)	Rx Sensitivity (dBm)
802.11be(EHT20_MCS0)	ANT0	5955	TBD	TBD	TBD
		6695	TBD	TBD	TBD
		7115	TBD	TBD	TBD
	ANT1	5955	TBD	TBD	TBD
		6695	TBD	TBD	TBD
		7115	TBD	TBD	TBD
802.11be(EHT160_MCS13)	ANT0	6025	TBD	TBD	TBD
		6505	TBD	TBD	TBD
		6985	TBD	TBD	TBD
	ANT1	6025	TBD	TBD	TBD
		6505	TBD	TBD	TBD
		6985	TBD	TBD	TBD
802.11be(EHT320_MCS13)	ANT0	6105	TBD	TBD	TBD
		6425	TBD	TBD	TBD
		6745	TBD	TBD	TBD
	ANT1	6105	TBD	TBD	TBD
		6425	TBD	TBD	TBD
		6745	TBD	TBD	TBD

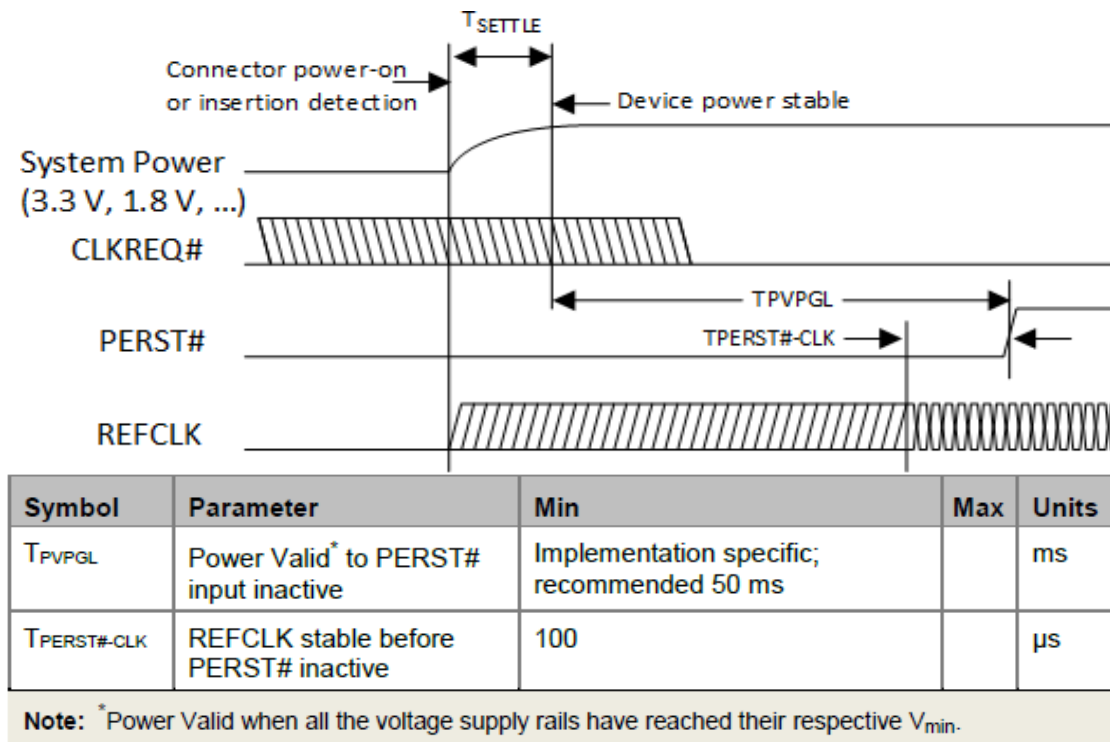
Description: The test environment is: temperature 25 °C humidity 60%

6 Host Interface Timing Diagram

6.1 PCIe powerup sequence timing

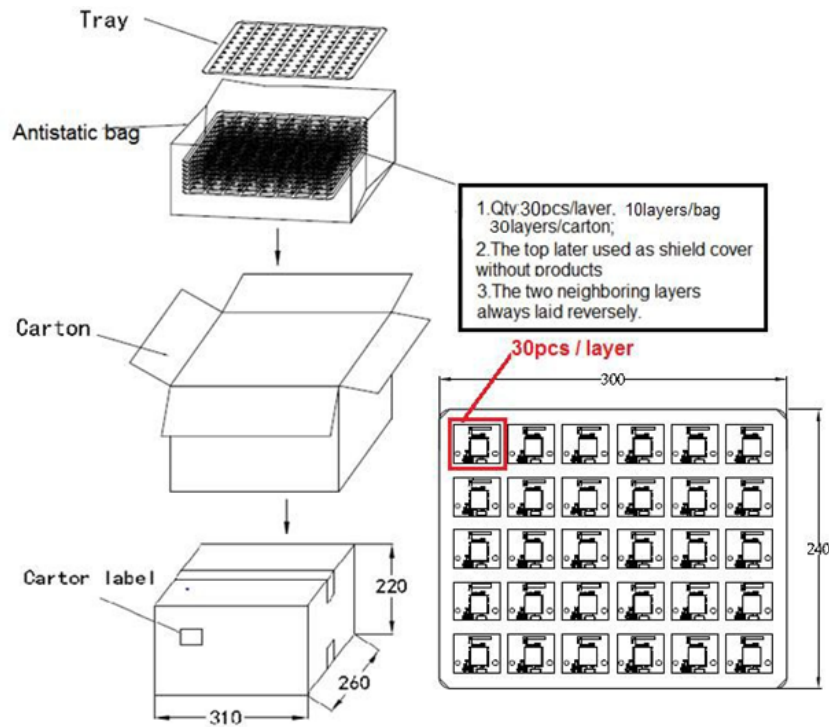
Supports PCIe Gen 3 interface for WLAN.

Compliant to PCIe Gen 3 powerup sequence timing.



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:

- Calculated shelf life in sealed bag: 12 months at $<40^{\circ}\text{C}$ and $<90\%$ relative humidity (RH).
- Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5.
- The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition.
- "IPC/JEDEC J-STD-033A paragraph 5.2" is respected.
- Baking is required if conditions b) or c) are not respected.
- Baking is required if the humidity indicator inside the bag indicates 10% RH or more.

THE END