

RF Exposure Report

Report No.: MFBBEK-WTW-P21010196S

FCC ID: J9C-QCNFA765

Test Model: QCNFA765

Received Date: 2024/7/30

Test Date: 2024/12/18

Issued Date: 2025/5/5

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FCC Registration /

Designation Number: 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
MFBBEK-WTW-P21010196S	Original release.	2025/5/5

1 Certificate of Conformity

Product: Wi-Fi 6E BT 5.2 M.2 2230 Module
Brand: Qualcomm
Test Model: QCNFA765
Sample Status: Engineering sample
Applicant: Qualcomm Technologies, Inc.
Test Date: 2024/12/18
FCC Rule Part: FCC Part 2 (Section 2.1091)
Standards: KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Pettie Chen , **Date:** 2025/5/5
Pettie Chen / Senior Specialist

Approved by : Jeremy Lin , **Date:** 2025/5/5
Jeremy Lin / Project Engineer

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

f = Frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

2.3 Classification

The antenna of this product, under normal use condition, is at least 20 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain0/1	HONGBO	260-25094	3.53	2.4~2.4835	0.76	PIFA	i-pex(MHF 4L)	300
				3.06	5.15~5.25	1.16			
				3.07	5.25~5.35	1.18			
				4.81	5.47~5.725	1.2			
				4.2	5.725~5.850	1.27			
2	Chain0/1	HONGBO	260-25083	5.09	5.850~5.895	1.29	PIFA	i-pex(MHF 4L)	300
				5.14	5.925~6.425	1.32			
				5.09	6.425~6.525	1.35			
				5.16	6.525~6.875	1.4			
				5.12	6.875~7.125	1.45			
3	Chain0/1	HONGBO	260-25084	3.22	2.4~2.4835	0.5	Monopole	i-pex(MHF 4L)	200
				3.35	5.150~5.250	0.76			
				3.42	5.250~5.350	0.78			
				4.77	5.470~5.725	0.81			
				4.72	5.725~5.850	0.85			
				4.71	5.850~5.895	0.86			
				4.75	5.925~6.425	0.87			
				4.29	6.425~6.525	0.91			
				4.81	6.525~6.875	0.96			
				4.74	6.875~7.125	0.98			

*Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2.5 Calculation Result

Frequency Band (MHz)		Max Average Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN 2.4 GHz	2412-2462	24.50	6.54	20	0.253	1
WLAN 5 GHz	5180-5320 5500-5825	22.50	7.82	20	0.214	1
WLAN 5.9 GHz	5845-5885	20	8.10	20	0.128	1
WLAN 6 GHz (STD)	5935-7115	22.50	8.17	20	0.232	1
WLAN 6 GHz (VLP)	5935-7115	5.78	8.15	20	0.005	1
Bluetooth	2402-2480	16	3.53	20	0.018	1

Note:

1. This power include tune-up tolerance range that specified in QCNFA765 Tune Up power table.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. Directional gain
 2.4GHz: Directional gain = 3.53dBi + 10log(2) = 6.54dBi
 5.0GHz: Directional gain = 4.81dBi + 10log(2) = 7.82dBi
 5.9GHz: Directional gain = 5.09dBi + 10log(2) = 8.10dBi
 6.0GHz:
 U-NII-5: Directional gain = 5.14dBi + 10log(2) = 8.15dBi
 U-NII-7: Directional gain = 5.16dBi + 10log(2) = 8.17dBi
4. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

Conclusion:

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

1. WLAN 2.4GHz + WLAN 5GHz = $0.253 / 1 + 0.214 / 1 = 0.467$
2. WLAN 2.4GHz + WLAN 5.9GHz = $0.253 / 1 + 0.128 / 1 = 0.381$
3. WLAN 2.4GHz + WLAN 6GHz = $0.253 / 1 + 0.232 / 1 = 0.485$
4. WLAN 5GHz + Bluetooth = $0.214 / 1 + 0.018 / 1 = 0.232$
5. WLAN 5.9GHz + Bluetooth = $0.128 / 1 + 0.018 / 1 = 0.146$
6. WLAN 6GHz + Bluetooth = $0.232 / 1 + 0.018 / 1 = 0.25$

Therefore, the maximum calculations of above situations are less than the "1" limit.

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