

RF Exposure Report

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FCC ID: UDX-60079011

Test Model: MR46-HW

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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
MFBCKS-WTW-P21030821A	Original release.	2022/6/10

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

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 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 33 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

WLAN Directional gain table – 4TX				
Frequency range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector	
2.4 ~ 2.4835	7.74	PIFA	i-pex(MHF)	
5.15 ~ 5.25	8.40			
5.25 ~ 5.35	8.93			
5.47 ~ 5.725	8.51			
5.725 ~ 5.85	8.11			
WLAN Directional gain table – 2TX				
Frequency range (GHz)	Antenna Combine Type	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4 ~ 2.4835	2.4G Ant. 1+4	6.12	PIFA	i-pex(MHF)
5.15 ~ 5.25	5.15G Ant. 1+3	6.62		
5.25 ~ 5.35	5.35G Ant. 1+2	7.50		
5.47 ~ 5.725	5.55G Ant. 3+4	7.71		
5.725 ~ 5.85	5.85G Ant. 3+4	7.27		
Bluetooth antenna spec.				
Antenna Net Gain (dBi)	Frequency range (GHz)	Antenna Type	Antenna Connector	
4.24	2.4 ~ 2.4835	PIFA	i-pex(MHF)	

Note: More detailed information, please refer to operating description.

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

2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN 2.4GHz	2437	825.254	3.70	33	0.14137	1
WLAN 5GHz	5745	881.839	4.51	33	0.18203	1
BT-LE	2402	4.009	4.24	33	0.00078	1

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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

$$WLAN\ 2.4GHz + WLAN\ 5GHz + Bluetooth = 0.14137 / 1 + 0.18203 / 1 + 0.00078 / 1 = 0.32418$$

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

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