

FCC 47 CFR MPE REPORT

Yunjing Intelligence Innovation (Shenzhen) Co., Ltd.

Robot Vacuum & Mop

Model Number: YJCC032

FCC ID: 2A942YJCC032

Applicant:	Yunjing Intelligence Innovation (Shenzhen) Co., Ltd.
Address:	A2901, Yunzhongcheng, Building 1, Vanke Yuncheng VI,
	Dashi 2nd Road, Xili Community, Xili Street, Nanshan District,
	Shenzhen, Guangdong, China
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong,
	China
Tel: 86-769-83081888-808	

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Maximum Permissible Exposure

1. Applicable Standards

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

1.1. Limits for Maximum Permissible Exposure (MPE)

(a) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

1.2. MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

2. Conducted Power Result

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)
BLE 1M	2402	5.99	3.972
	2440	6.17	4.140
	2480	5.46	3.516
IEEE 802.11b	2412	20.17	103.992
	2437	20.15	103.514
	2462	20.41	109.901
IEEE 802.11g	2412	23.08	203.236
	2437	23.23	210.378
	2462	23.47	222.331
IEEE 802.11n HT20	2412	22.51	178.238
	2437	22.82	191.426
	2462	23.14	206.063
IEEE 802.11n HT40	2422	24.07	255.270
	2437	24.18	261.818
	2452	24.38	274.157

3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
				(dBi)	(Linear)			
2.4G Band								
BLE	6.17	6±1	7	2.89	1.945	0.00194	1	Complies
IEEE 802.11b	20.41	20±1	21	2.89	1.945	0.04872	1	Complies
IEEE 802.11g	23.47	23±1	24	2.89	1.945	0.09721	1	Complies
IEEE 802.11n HT20	23.14	23±1	24	2.89	1.945	0.09721	1	Complies
IEEE 802.11n HT40	24.38	24±1	25	2.89	1.945	0.12238	1	Complies

End of Test Report