

FCC 47 CFR MPE REPORT

Shenzhen KingChuang Smart Navi Technology Co., Ltd.

Robot Vacuum Cleaner

Model Number: SL62

Additional Model: SL61, SL61A, SL61B, SL61C, SL61D, SDL61, SDL61A, SDL61B, SDL61C, SDL61D, L9700, L9700 Plus, L9700 Pro, L9700 Ultra, L9700 Max, SL62, SL62A, SL62B, SL62C, SL62D, SDL62, SDL62A, SDL62B, SDL62C, SDL62D, SL63, SL63A, SL63B, SL63C, SL63D, SDL63, SL64, SL64A, SL64B, SL64C, SL64D, SDL64, SDL64A, SDL64B, SDL64C, SDL64D, SL65, SL65A, SL65B, SL65C, SL65D, SDL65, SDL65A, SDL65B, SDL65C, SDL65D

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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	5.71	3.724
	2440	5.52	3.565
	2480	5.41	3.475
IEEE 802.11b	2412	14.95	31.261
	2437	14.36	27.290
	2462	14.21	26.363
IEEE 802.11g	2412	15.32	34.041
	2437	15.16	32.810
	2462	14.91	30.974
IEEE 802.11n HT20	2412	15.26	33.574
	2437	15.02	31.769
	2462	14.78	30.061
IEEE 802.11n HT40	2422	15.29	33.806
	2437	15.24	33.420
	2452	15.01	31.696

3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW /cm ²)	Limited of Power Density (S) (mW /cm ²)	Test Result
				(dBi)	(Linear)			
BLE	5.71	5 ±1	6	4.5	2.818	0.00223	1	Complies
IEEE 802.11b	14.95	14 ±1	15	4.5	2.818	0.01773	1	Complies
IEEE 802.11g	15.32	15 ±1	16	4.5	2.818	0.02232	1	Complies
IEEE 802.11n HT20	15.26	15 ±1	16	4.5	2.818	0.02232	1	Complies
IEEE 802.11n HT40	15.29	15 ±1	16	4.5	2.818	0.02232	1	Complies

End of Test Report