

FCC 47 CFR MPE REPORT

TCL OVERSEAS MARKETING LTD

Robot Vacuum Cleaner

Model Number: B600A

Additional Model: B610A

FCC ID: 2AZVS-B600A

Prepared for:	TCL OVERSEAS MARKETING LTD
	7/F., BUILDING 22E, 22 SCIENCE PARK EAST AVENUE, HONG KONG
	SCIENCE PARK, SHATIN, HONG KONG
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R2106157
Date of Test:	May 27~Jul. 19, 2021
Date of Report:	Jul. 22, 2021



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

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

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)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	16.82	0.0481	16±2	3.2	2.089
	2437	16.85	0.0484	16±2	3.2	2.089
	2462	16.83	0.0482	16±2	3.2	2.089
IEEE 802.11g	2412	21.73	0.1489	21±2	3.2	2.089
	2437	21.79	0.1510	21±2	3.2	2.089
	2462	21.76	0.1500	21±2	3.2	2.089
IEEE 802.11n HT20	2412	21.74	0.1493	21±2	3.2	2.089
	2437	21.76	0.1500	21±2	3.2	2.089
	2462	21.83	0.1524	21±2	3.2	2.089
IEEE 802.11n HT40	2422	17.34	0.0542	17±2	3.2	2.089
	2437	17.35	0.0543	17±2	3.2	2.089
	2452	17.35	0.0543	17±2	3.2	2.089

3. Calculated Result and Limit

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm ²)	Limited of Power Density (S) (mW/cm ²)	Test Result
		(dBi)	(Linear)			
2.4G Band						
IEEE 802.11b	18	3.2	2.089	0.0262	1	Complies
IEEE 802.11g	23	3.2	2.089	0.0829	1	Complies
IEEE 802.11n HT20	23	3.2	2.089	0.0829	1	Complies
IEEE 802.11n HT40	19	3.2	2.089	0.0330	1	Complies

End of Test Report