

Ecovacs Home Service Robotics Co., Ltd.

MPE ASSESSMENT REPORT

Report Type:

FCC Part §2.1091, §2.1093 and §1.1307(b) assessment report

Model:

DLX23

REPORT NUMBER:

230200388SHA-002

ISSUE DATE:

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DOCUMENT CONTROL NUMBER:

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Intertek Testing Services Shanghai Building No.86, 1198 Qinzhou Road (North) Caohejing Development Zone Shanghai 200233, China

Telephone: 86 21 6127 8200

www.intertek.com

Report no.: 230200388SHA-002

Applicant: Ecovacs Home Service Robotics Co., Ltd.

No.518 Songwei Road, Wusongjiang industry Park, Guoxiang Street,

Wuzhong District, Suzhou, Jiangsu, China.

Manufacturer: Ecovacs Home Service Robotics Co., Ltd.

No.518 Songwei Road, Wusongjiang industry Park, Guoxiang Street,

Wuzhong District, Suzhou, Jiangsu, China.

Factory 1: Ecovacs Robotics Co., Ltd.

No.518 Songwei Road, Wusongjiang industry Park, Guoxiang Street,

Wuzhong District, Suzhou, Jiangsu, China

Factory 2: Ecovacs Home Service Robotics Co., Ltd.

No.518 Songwei Road, Wusongjiang industry Park, Guoxiang Street,

Wuzhong District, Suzhou, Jiangsu, China.

FCC ID: 2A64B-DLX23

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06 FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

Zrie.li Okw

Project Engineer

PREPARED BY:

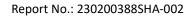
Eric Li

Reviewer

Wakeyou Wang

REVIEWED BY:

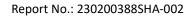
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Revision History

Report No.	Version	Description	Issued Date	
230200388SHA-002	Rev. 01	Initial issue of report	February 20, 2023	





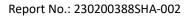
1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Floor Cleaning Robot
Type/Model:	DLX23
Description of EUT:	The EUT is a Floor Cleaning Robot, it supports WIFI functions, there is only one model. we test them and list the worst results in this report.
Rating:	20V DC 2.0A
EUT type:	☐ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample Identification No.:	0230205-06-002
Sample received date:	2023.02.09
Date of test:	2023.02.10-2023.02.18

1.2 Technical Specification

Frequency Band:	2400MHz ~ 2483.5MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20, IEEE 802.11n-HT40
	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)
	IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
	IEEE 802.11n-HT20: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
Type of Modulation:	IEEE 802.11n-HT40: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
	11 Channels for 802.11b, 802.11g and 802.11n(HT20)
Channel Number:	7 Channels for 802.11n(HT40)
Channel Separation:	5 MHz
Antenna:	FPC Antenna, 2.90dBi

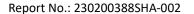




1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is	CNAS Accreditation Lab	
recognized,	Registration No. CNAS L0139	
certified, or	FCC Accredited Lab	
accredited by these	Designation Number: CN1175	
organizations:	Designation (Variable). C(VII) 5	
	IC Registration Lab	
	Registration code No.: 2042B-1	
	VCCI Registration Lab	
	Registration No.: R-4243, G-845, C-4723, T-2252	
	A2LA Accreditation Lab	
	Certificate Number: 3309.02	





2 MPE Assessment

Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

Frequency range	E-field strength	H-field strength	B-field	Equivalent plane wave	
	(V/m)	(A/m)	(uT)	power density	
				S _{eq} (W/m²)	
0-1 Hz	-	$3,2 \times 10^4$	4×10^{4}	-	
1-8 Hz	10 000	$3.2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-	
8-25 Hz	10 000	4 000/f	5 000/f	-	
0,025-0,8 kHz	250/f	4/f	5/f	-	
0,8-3 kHz	250/f	5	6,25	-	
3-150 kHz	87	5	6,25	-	
0,15-1 MHz	87	0,73/f	0,92/f	-	
1-10 MHz	87/f ^{1/2}	0,73/f	0,92/f	-	
10-400 MHz	28	0,073	0,092	2	
400-2 000 MHz	1,375 f ^{1/2}	0,0037 f ^{1/2}	0,0046 f ^{1/2}	f/200	
2-300 GHz	61	0,16	0,20	10	

Mobile device exposure for simultaneous transmission operations: the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is \leq 1.0



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2.2 Assessment Results

Power density (S) is calculated according to the formula:

 $S = PG / (4\pi R^2)$

Where $S = power density in mW/cm^2$

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

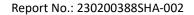
As we can see from the test report 230200388SHA-001:

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

Mode	Frequency band	Max Power	Antenna Gain	R	S	Limits
	(MHz)	dBm	dBi	(cm)	(mW/cm2)	(mW/cm2)
WIFI	2412-2462	17.32	2.90	20	0.0173	1

Note: 1 mW/cm2 from 1.310 Table 1

The MPE assessment value is $0.0173 \le 1.0$, therefore, the MPE requirement is deemed to be satisfied without test.





Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be
maintained between the antenna of this device and persons during device operation.
To ensure compliance, operations at closer than this distance is not recommended.
