

# Ecovacs Robotics Co., Ltd.

## MPE ASSESSMENT REPORT

**Report Type:**

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

**Model:**

DLX34

**REPORT NUMBER:**

2311A1357SHA-002

**ISSUE DATE:**

January 8, 2024

**DOCUMENT CONTROL NUMBER:**

TTRFFCCMPE-01\_V1 © 2018 Intertek



**Applicant:** Ecovacs Robotics Co., Ltd.  
No.518 Songwei Road,Wusongjiang industry Park, Guoxiang Street,  
Wuzhong District, Suzhou, Jiangsu, China.

**Manufacturer:** Ecovacs Robotics Co., Ltd.  
No.518 Songwei Road,Wusongjiang industry Park, Guoxiang Street,  
Wuzhong District, Suzhou, Jiangsu, China.

**Factory:** Shenzhen Jashen Technology Co., Ltd.  
No.201, Building 3, Second Industrial Zone, Wantou, Hongxing  
Community, Songgang Street, BAOAN DISTRICT, Shenzhen 518105  
China

**FCC ID:** 2AZAT-DLX34

**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 Part1.1307(b)

**PREPARED BY:**

Project Engineer  
Eric Li

**REVIEWED BY:**

Reviewer  
Wakeyou Wang

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

## Revision History

| Report No.       | Version | Description             | Issued Date     |
|------------------|---------|-------------------------|-----------------|
| 2311A1357SHA-002 | Rev. 01 | Initial issue of report | January 8, 2024 |
|                  |         |                         |                 |
|                  |         |                         |                 |

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

|                            |                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Product name:              | Floor Cleaning Robot                                                                                                                           |
| Type/Model:                | DLX34                                                                                                                                          |
| Description of EUT:        | The EUT is a Floor Cleaning Robot, it supports WIFI function, there is only one model. we test them and list the worst results in this report. |
| Rating:                    | 20V DC 2.0A<br>Docking Station(CH2331):<br>Input: 20V DC, 1.2A<br>Output: 20V DC, 1.2A                                                         |
| EUT type:                  | <input type="checkbox"/> Table top <input checked="" type="checkbox"/> Floor standing                                                          |
| Software Version:          | /                                                                                                                                              |
| Hardware Version:          | /                                                                                                                                              |
| Sample Identification No.: | 0231125-02-001                                                                                                                                 |
| Sample received date:      | 2023.11.25                                                                                                                                     |
| Date of test:              | 2023.11.28-2023.12.05                                                                                                                          |

### 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                                                                                                                                          |
| Type of Modulation: | IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)<br>IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)<br>IEEE 802.11n-HT20: OFDM (64-QAM, 16-QAM, QPSK, BPSK)<br>IEEE 802.11n-HT40: OFDM (64-QAM, 16-QAM, QPSK, BPSK) |
| Channel Number:     | 11 Channels for 802.11b, 802.11g and 802.11n(HT20)<br>7 Channels for 802.11n(HT40)                                                                                                                        |
| Channel Separation: | 5 MHz                                                                                                                                                                                                     |
| Antenna:            | PCB Antenna, 2.25dBi                                                                                                                                                                                      |

### 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 recognized, certified, or accredited by these organizations: | CNAS Accreditation Lab<br>Registration No. CNAS L0139                                              |
|                                                                                   | FCC Accredited Lab<br>Designation Number: CN0175                                                   |
|                                                                                   | IC Registration Lab<br>CAB identifier.: CN0014                                                     |
|                                                                                   | VCCI Registration Lab<br>Member No: 3598 (Registration No.:<br>R-14243, G-10845, C-14723, T-12252) |
|                                                                                   | A2LA Accreditation Lab<br>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<br>(V/m) | H-field strength<br>(A/m) | B-field<br>(uT)     | Equivalent plane wave<br>power density<br>$S_{eq}$ (W/m <sup>2</sup> ) |
|-----------------|---------------------------|---------------------------|---------------------|------------------------------------------------------------------------|
| 0-1 Hz          | -                         | $3,2 \times 10^4$         | $4 \times 10^4$     | -                                                                      |
| 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  $\leq 1.0$**

## TEST REPORT

### 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<sup>2</sup>

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 2311A1357SHA-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/cm <sup>2</sup> ) | (mW/cm <sup>2</sup> ) |
| WIFI | 2412-2462      | 14.54     | 2.25         | 20   | 0.0097                | 1                     |

Note: 1 mW/cm<sup>2</sup> from 1.310 Table 1

The MPE assessment value is  $0.0097 < 1.0$ , 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.

\*\*\*\*\* END \*\*\*\*\*