Ecovacs Home Service Robotics Co., Ltd.

MPE ASSESSMENT REPORT

Report Type:
FCC Part §2.1091 and §1.1307(b) assessment report

Model:
WG851-11

REPORT NUMBER:
2409B1499SHA-002

ISSUE DATE:
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TEST REPORT

Report no.: 2409B1499SHA-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-WG821

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:	**REVIEWED BY:**
	
Project Engineer Eric Li	Reviewer Wakeyou Wang

TEST REPORT

Revision History

Report No.	Version	Description	Issued Date
2409B1499SHA-002	Rev. 01	Initial issue of report	December 3, 2024

TEST REPORT

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Window Cleaning Robot
Type/Model:	WG851-11
Description of EUT:	The EUT is a Window Cleaning Robot, it supports Bluetooth functions, there are two Bluetooth module, WLT8016 is for Robot, WLT8016-W is for station, they are the same except antenna, we tested them and listed the worst results in this report.
Rating:	Working: 24Vdc, 4A Adapter: BLJ96W240400P-US: Input:100-240V~,50-60Hz,2.0A: Output: 24VDC, 4A
EUT type:	☒ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample Identification No.:	0231119-02-001
Sample received date:	2023.11.19
Date of test:	2023.11.20-2023.12.08

1.2 Technical Specification

Frequency Band:	2402MHz to 2480MHz
Support Standards:	Bluetooth Low Energy
Type of Modulation:	GFSK
Channel Number:	40
Data Rate	1MHz
Channel Separation:	2MHz
Antenna Information:	FPC Antenna in the station, gain is 3.0dBi, there are two alternative antennas, only one or the other working. the antenna 1 was the worst case, the data was list in this report. The antenna number refers to the internal photo. PCB antenna, -3.1dBi in the robot

1.3 Description of Test Facility

Name:	Intertek Testing Services (Shanghai FTZ) Co., Ltd
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
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The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L21189
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Member No: 3598 (Registration No.: R-14243, G-10845, C-14723, T-12252)
	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 (V/m)	H-field strength (A/m)	B-field (uT)	Equivalent plane wave power density S_{eq} (W/m^2)
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 ≤ 1.0**

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 2409B1499SHA-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)
Bluetooth	2402-2480	4.01	3.0	20	0.0010	1
	2402-2480	4.01	-3.1	20	0.0002	1

Note: 1 mW/cm2 from 1.310 Table 1

The sum of the MPE ratios assessment value is 0.001/1+0.0002/1=0.0012＜ 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 **********