

RF Exposure Evaluation Report

Product : Robosen Grimlock G1 Flagship Robot
Trade mark : N/A
Model/Type reference : GSEG
Serial Number : N/A
Report Number : EED32P80418202
FCC ID : 2ATN WGSEG
Date of Issue : Apr. 21, 2023
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
47 CFR Part 2.1091
47 CFR Part 2.1093
447498 D04 Interim General RF
Exposure Guidance v01
Test result : PASS

Prepared for:

Robosen Robotics (ShenZhen) Co., Ltd.
**A3703, Bldg 11, Shenzhen Bay ECO-Tech Park, No.16, Gaoxin South
Science and Tech Rd., Nanshan Dist., Shenzhen, Guangdong, China**

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Compiled by:

Frazer Li

Frazer Li

Reviewed by:

Tom Chen

Tom Chen

Approved by:

Aaron Ma

Aaron Ma

Date:

Apr. 21, 2023



Check No.: 1139220223

2 Version

Version No.	Date	Description
00	Apr. 21, 2023	Original

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 GENERAL INFORMATION	4
4.1 CLIENT INFORMATION	4
4.2 GENERAL DESCRIPTION OF EUT	4
4.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	4
4.4 TEST LOCATION	5
4.5 DEVIATION FROM STANDARDS	5
4.6 ABNORMALITIES FROM STANDARD CONDITIONS	5
4.7 OTHER INFORMATION REQUESTED BY THE CUSTOMER	5
5 SAR EVALUATION	6
5.1 RF EXPOSURE COMPLIANCE REQUIREMENT	6
5.1.1 <i>Limits</i>	6
5.1.2 <i>Test Procedure</i>	6
5.1.3 <i>EUT RF Exposure Evaluation</i>	7

4 General Information

4.1 Client Information

Applicant:	Robosen Robotics (ShenZhen) Co., Ltd.
Address of Applicant:	A3703, Bldg 11, Shenzhen Bay ECO-Tech Park, No.16, Gaoxin South Science and Tech Rd., Nanshan Dist.,Shenzhen, Guangdong, China
Manufacturer:	Robosen Robotics (ShenZhen) Co., Ltd.
Address of Manufacturer:	A3703, Bldg 11, Shenzhen Bay ECO-Tech Park, No.16, Gaoxin South Science and Tech Rd., Nanshan Dist.,Shenzhen, Guangdong, China
Factory:	Dongguan Wirear Electronics Limited.
Address of Factory:	No. 7, Yihong Road, Changtang Industrial Zone, Yantian Village, Fenggang Town, Dongguan City, Guangdong Province, China

4.2 General Description of EUT

Product Name:	Robosen Grimlock G1 Flagship Robot
Model No.(EUT):	GSEG
Trade Mark:	N/A

4.3 Product Specification subjective to this standard

Frequency Range:	2402MHz~2480MHz	
Modulation Type:	GFSK	
Test Power Grade:	Default	
Test Software of EUT:	AtmosicMP.exe	
Antenna Type:	Internal Antenna	
Antenna Gain:	-0.79dBi	
Power Supply:	Adapter 1:	Model: TYPE-C30UC Input: 100-240V~50/60Hz,0.8A Output: 5V,3A;9V,3A;12V,2.5A;15V,2A; 20V,1.5A;MAX:30W
	Adapter 2:	Model: GW-30PD300U Input: 100-240V~50/60Hz,1A MAX Output: 5V,3A;9V,3A;12V,2.5A;15V,2A; 20V,1.5A;30W MAX
	Battery:	DC 11.1V 2500mAh
Sample Received Date:	Mar. 28, 2023	
Sample tested Date:	Mar. 28, 2023 to Apr. 12, 2023	
Remark:	Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.	

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

5.1.3 EUT RF Exposure Evaluation

For Stand alone:

For BLE

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	Result
2402	1.69	-0.79	0.9	-1.25	0.750	2.788	PASS

Note:

① EIRP=conducted power+antenna gain;

② ERP=EIRP-2.15

③ The test data please refer to the EED32P80418201, and only the worst case data was recorded in the report.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***