RF Exposure Evaluation Report

Applicant:	PORTMAN ELECTRONICS (DONGGUAN) CO., LTD.
Address of Applicant:	NO#10, Luyi 2 Road, Keyuancheng, Tangxia Town, DONGGUAN CITY, GUANGDONG PROVINCE CHINA 523718
Equipment Under Test (EUT)	
Product Name:	CAR ALARM
Model No.:	91P
FCC ID:	TBQT44
Applicable standards:	KDB 447498 D04 Interim General RF Exposure Guidance v01
Date of sample receipt:	29 Nov., 2022
Date of Test:	30 Nov., to 19 Dec., 2022
Date of report issue:	20 Dec., 2022
Test Result:	PASS

Tested by:	Test Engineer	***Date:***	*20 Dec., 2022*
Reviewed by:	Project Engineer	***Date:***	*20 Dec., 2022*
Approved by:	Manager	***Date:***	*20 Dec., 2022*

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

1 Version

Version No.	Date	Description
00	*20 Dec., 2022*	*Original*

2 Contents

3 General Information

3.1 Client Information

Applicant:	PORTMAN ELECTRONICS (DONGGUAN) CO., LTD.
Address:	NO#10, Luyi 2 Road, Keyuancheng, Tangxia Town, DONGGUAN CITY, GUANGDONG PROVINCE CHINA 523718
Manufacturer:	DONGGUAN PORTMAN ELECTRONIC SCIENCE AND TECHNOLOGY CO., LTD.
Address:	NO.10, LUYI 2 ROAD, TANGXIA TOWN, DONGGUAN CITY GUANGDONG PROVINCE

3.2 General Description of E.U.T.

Product Name:	CAR ALARM
Model No.:	91P
Operation Frequency:	433.92 MHz
Modulation technology:	OOK
Antenna Type:	PCB Antenna
Antenna gain:	-6 dBi
Power Supply:	DC 3V (CR2032 battery)
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

3.3 Operating Modes

Operating mode	Detail description
Tx mode	Keep the EUT in continuously transmitting mode

3.4 Additions to, Deviations, or Exclusions from the Method

No

3.5 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

3.6 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website:http://jyt.lets.com

4 Technical Requirements Specification

4.1 Limits

According to KDB 447498 D04 Interim General RF Exposure Guidance v01 RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices.

RF Exposure Test Exemptions for Single Source

SAR-based Exemption

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 Pth (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). Pth is given by Formula (B.2). and f is in GHz, d is the separation distance (cm), and ERP20cm is per Formula (B.1).

$$P_{\text{th}}\,(\text{mW}) = ERP_{20\,\text{cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

Formula (B.1)

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

where

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

Formula (B.2)

4.2 Result

According to the calculation formula of power:
EIRP = P*G = $(E*d)^2/30$, So P=$(E*d)^2/(30*G)$.
Where:
P = transmitter output power in watts,
G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator (unitless),
E = electric field strength in V/m, --- $10^{((dBuV/m)/20)}/10^6$,
d = measurement distance in meters (m)---3m,

SAR-based Exemption:

Frequency (MHz)	Distance (mm)	ERP20cm（mW）	Limit for SAR test exemption(mW)
433.92	5	885.20	23.17

Thus, Worse case below:

Frequency (MHz)	Maximum field strength@3m (dBuV/m)	Maximum field strength@3m (V/m)	Antenna Gain (dBi)	Antenna Gain (numeric)	Distance (m)	Output power (mW)
433.92	90.14	0.0321	-6	0.25	3	1.23

4.3 Conclusion

Cuz 1.23 mW < 23.17 mW, the device is exempt from the SAR test and satisfies RF exposure evaluation.

------End of report------