

# RF EXPOSURE EVALUATION REPORT

**Application No.:** GZCR2408001015AT  
**Applicant:** LIAONING AROMA INTERNATIONAL TRADE CO., LTD  
**Address of Applicant:** No.11jia, Fuxinsanjie, Heping Dist., Shenyang, China  
**Manufacturer:** LIAONING AROMA INTERNATIONAL TRADE CO., LTD  
**Address of Manufacturer:** No.11jia, Fuxinsanjie, Heping Dist., Shenyang, China  
**Factory:** LIAONING AROMA INTERNATIONAL TRADE CO., LTD  
**Address of Factory:** No.11jia, Fuxinsanjie, Heping Dist., Shenyang, China  
**Product Name:** Microwave radar module  
**Model No.:** LD01, LD02, LD03, LD04, LD05, LD06, LD07, LD08, LD09, LD10, LD11, LD12, LD13, LD14, LD15 ♣  
 ♣ Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.  
**Standard(s) :** 47 CFR Part 2.1093  
**Date of Receipt:** 2024-08-28  
**Date of Evaluation:** 2024-09-09 to 2024-10-15  
**Date of Issue:** 2024-11-29

<b>Evaluation Result:</b>	<b>Pass*</b>
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\* In the configuration evaluated, the EUT complied with the standards specified above.

*Ricky Liu*

Ricky Liu  
Manager



SGS-CSTC Standards Technical Services Co., Ltd.  
Guangzhou Branch Testing Center EEC Laboratory

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SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

EMC-TRF-03 Rev 1.1

Report No.: GZCR240800101503

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Revision Record			
Version	Report No.	Date	Remark
01	GZCR240800101503	2024-11-29	Original

Authorized for issue by:			
		Luke Lin	
		Luke Lin/Project Engineer	
		Vico Cui	
		Vico Cui/Reviewer	

## 2 Evaluation Summary

Item	Standard	Method	Requirement	Result
RF Exposure	47 CFR Part 2.1093	47 CFR Part 2.1093	47 CFR Part 2.1093	Pass

**Note:**

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

**♣ Declaration of EUT Family Grouping:**

Model No.: LD01, LD02, LD03, LD04, LD05, LD06, LD07, LD08, LD09, LD10, LD11, LD12, LD13, LD14, LD15

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on model designation, appearance and colour.

Therefore only one model LD01 was tested in this report.



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## 4 General Information

### 4.1 Details of E.U.T.

Power supply: DC 4.5V = battery 'AA'\*3pcs  
 Cable(s): N/A  
 Operation Frequency: 5730MHz, 5803MHz, 5870MHz  
 Modulation Type: FMCW  
 Number of Channels: 3  
 Antenna Type: PCB Antenna  
 Antenna Gain: 2.09 dBi according to antenna specification

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

### 4.2 Evaluating Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,  
 No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,  
 Guangdong, China 510663  
 Tel: +86 20 82155555  
 No tests were sub-contracted.



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## 4.3 Facility

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

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

## 4.4 Deviation from Standards

None

## 4.5 Abnormalities from Standard Conditions

None



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## 5 Technical Requirements Specification

### 5.1 General Description of Applied Standards

#### 4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

### 5.2 RF Exposure Evaluation

#### 5.2.1 Limit & Test Method

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

**TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3–3.0 .....	614	1.63	*(100)	6
3.0–30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300 .....	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3–1.34 .....	614	1.63	*(100)	30
1.34–30 .....	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30–300 .....	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * P_i * R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$P_i$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



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### 5.2.2 Conclusion

#### 1, Maximum transmit power

The Power Data is based on the RF Test Report

GZCR240800101502

Test Mode	Test Channel[MHz]	Power[dBuV/m]	Test distance[m]
GFSK	5870	86.36	3

#### 2, RF Exposure Calculation

The max Radiated Power is 86.36 dBuV/m@ 3 m.

According to the formula, calculate the P test result:

$$E(\text{dBuV/m})@0.005\text{m} = E(\text{dBuV/m})@3\text{m} + 20 \cdot \log[E(\text{dBuV/m})@0.005\text{m}/3/0.005] = 141.92 \text{ (dBuV/m)}@3\text{m}$$

$$E(\text{V/m})@0.005\text{m} = 10^{[E(\text{dBuV/m})@0.005\text{m}/20]} \cdot 10^{-6} = 12.4782 \text{ (V/m)}@0.005\text{m}$$

$$P = (E \cdot d)^2 / 30 = 0.1298 \text{ mW}$$

	Evaluation method	Exempt Limit(mW)	Verdict
<input checked="" type="checkbox"/>	Blanket 1 mW Blanket Exemption	1mW	Yes
<input type="checkbox"/>	MPE-based Exemption(ERP)	7mW(ERP)	--
<input type="checkbox"/>	SAR-based Exemption( $P_{th}$ )	2.744mW	--

So, the SAR report is not required.



## 6 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for GZCR2408001015AT

- End of the Report -



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