

Test Report

Verified code: 443933

Report No.: E20240508268401-2

Customer: Shenzhen Malide Technology Co.,Ltd

Address: 201, Building A, No.26, Xinge Industrial Zone, Pinghu Street, Longgang District,
Shenzhen, China

Sample Name: TPMS

Sample Model: MLD-B08

Receive Sample Date: May.22,2024

Test Date: May.28,2024 ~ Jun.11,2024

Reference Document: 47 CFR 2.1091 Radio frequency radiation exposure evaluation:
mobile devices.

Test Result: Pass

Prepared by: Huang Lifang
Huang Lifang

Reviewed by: Wu Haoting
Wu Haoting

Approved by: Xiao Liang
Xiao Liang

GRG METROLOGY & TEST GROUP CO., LTD

Issued Date: 2024-06-26

GRG METROLOGY & TEST GROUP CO., LTD.

Address: No.163, Pingyun Road, West of Huangpu Avenue, Guangzhou, Guangdong, China

Tel: (+86) 400-602-0999 FAX: (+86) 020-38698685 Web: <http://www.grgtest.com>



Statement

1. The report is invalid without "special seal for inspection and testing"; some copies are invalid; The report is invalid if it is altered or missing; The report is invalid without the signature of the person who prepared, reviewed and approved it.
2. The sample information is provided by the client and responsible for its authenticity; The content of the report is only valid for the samples sent this time.
3. When there are reports in both Chinese and English, the Chinese version will prevail when the language problems are inconsistent.
4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.
5. Without the agreement of the laboratory, the client is not authorized to use the test results for unapproved propaganda.

----- The following blanks -----

TABLE OF CONTENTS

1. GENERAL DESCRIPTION OF EUT..... 5

1.1 APPLICANT 5

1.2 MANUFACTURER..... 5

1.3 FACTORY 5

1.4 BASIC DESCRIPTIONOF EQUIPMENTUNDER TEST 5

2. LABORATORY & ACCREDITATIONS 7

2.1 LABORATORY 7

2.2 ACCREDITATIONS 7

3. LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE 8

3.1 MEASUREMENT RESULTS 9

4. CONCLUSION 10

----- The following blanks -----

REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E20240508268401-2	Original Issue	2024-06-12

----- The following blanks -----

1. GENERAL DESCRIPTION OF EUT

1.1 APPLICANT

Name: Shenzhen Malide Technology Co.,Ltd
Address: 201, Building A, No.26, Xinge Industrial Zone, Pinghu Street, Longgang District, Shenzhen, China

1.2 MANUFACTURER

Name: Shenzhen Malide Technology Co.,Ltd
Address: 201, Building A, No.26, Xinge Industrial Zone, Pinghu Street, Longgang District, Shenzhen, China

1.3 FACTORY

Name: Shenzhen Malide Technology Co.,Ltd
Address: 201, Building A, No.26, Xinge Industrial Zone, Pinghu Street, Longgang District, Shenzhen, China

1.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: TPMS
Model No.: MLD-B08
Adding Model: MLD-B20
Models Difference: MLD-B08 and MLD-B20 have the same schematic diagram, same structure and other things. Only the model number is different.
Trade Name: Malide
FCC ID: 2AV7VMLD-B08
Power supply: DC 3V power supplied by button battery
Battery Specification: Model: CR1632
Nominal Capacity: 3V,140mAh
Frequency Band: 2402-2480MHz
Maximum Transmit Power: GFSK for 1Mbps:0.20dBm
Modulation type: GFSK for 1Mbps
Antenna Specification: External copper antenna with 0.45dBi gain (Max.)
Temperature Range: -20℃-85℃
Hardware Version: MLD_B08_V01_20211127
Software Version: V1.0

Sample No: E20240508268401-0001

Note: The basic description of the EUT is provided by the applicant. This report is made Solely on the basis of such data and/or information. We accept no responsibility for the authenticity and completeness of the above data and information and the validity of the results and/or conclusions.

----- The following blanks -----

2. LABORATORY & ACCREDITATIONS

2.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

Add.: No.1301 Guangguang Road Xinlan Community, Guanlan Street, Longhua District
Shenzhen, 518110, People's Republic of China.
P.C.: 518110
Tel : 0755-61180008
Fax: 0755-61180008

2.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada ISED (Company Number: 24897, CAB identifier:CN0069)

USA FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site,
<http://www.grgtest.com>

----- The following blanks -----

3. LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE

According to the KDB 447498 D04 Interim General RF Exposure Guidance v01, General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table 4.1 to support an exemption from further evaluation from 300 kHz through 100 GHz.

TABLE 4.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency			Minimum Distance			Threshold ERP
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	$1,920 R^2$
1.34	–	30	35.6 m	–	1.6 m	$3,450 R^2/f^2$
30	–	300	1.6 m	–	159 mm	$3.83 R^2$
300	–	1,500	159 mm	–	31.8 mm	$0.0128 R^2 f$
1,500	–	100,000	31.8 mm	–	0.5 mm	$19.2 R^2$
Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.						

For mobile devices that are not exempt per Table 4.1 at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in §1.1310 is necessary if the ERP of the device is greater than $ERP_{20\text{cm}}$ in Formula (4.1).

$$P_{\text{th}} (\text{mW}) = ERP_{20 \text{ cm}} (\text{mW}) = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (4.1)$$

In accordance with KDB447498D04 Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (Evaluated_k term) shall be used to determine exemption for simultaneous transmission according to Formula

$$\text{MPE Ratio} = \sum_{j=1}^p \frac{ERP_j}{ERP_{\text{th},j}} < 1$$

ERP_j : the available maximum time-averaged power or the ERP, whichever is greater, of fixed, mobile, or portable RF source j .

$ERP_{\text{th},j}$: exemption threshold ERP for fixed, mobile, or portable RF source j , at a distance of at least $\lambda/2\pi$, according to the applicable § 1.1307(b)(3)(i)(C) Table 1 formula at the location in question.

the sum of the ratios of the applicable terms for SAR-based, MPE-based and measured SAR or MPE shall be less than 1, to determine simultaneous transmission exposure compliance.

3.1 MEASUREMENT RESULTS

Predication of MPE limit at a given distance

$EIRP(dBm) = \text{Maximum Tune-up Output power (dBm)} + \text{Maximum antenna gain (dBi)}$

$ERP(dBm) = EIRP(dBm) - 2.15$

R= minimum distance to the center of radiation of the antenna

From the EUT RF output power, the minimum mobile separation distance, $d=20\text{cm}$, as well as the maximum gain of the used as following information, the RF power ERP can be obtained.

Table 1 Antenna Specification

Frequency Band	Antenna type	Internal Identification	Maximum antenna gain (dBi)
2402-2480	External copper antenna	Antenna 1	0.45dBi

Table 2 Transmit Power for ERP & Maximum Conducted Output Power

Antenna type	Maximum Conducted output peak Power (dBm)	Target Maximum Conducted Output peak Power (dBm)	Tolerance (dB)	Maximum Tune-up Maximum Conducted Output peak Power (dBm)	Maximum Tune-up ERP (dBm)
External copper antenna	0.20	0.50	± 1	1.50	-0.20

Note:

- 1) The maximum output Power of BLE were refer to the module report.
- 2) Maximum Tune-up ERP of External copper antenna = Maximum Tune-up Maximum Conducted Output peak Power + antenna gain -2.15= $1.50 + 0.45 - 2.15 = -0.20 \text{ dBm}$

STANDALONE MPE

Mode	Antenna type	Frequency (MHz)	Maximum Tune-up ERP (dBm)	Maximum Tune-up ERP (mW)	Threshold ERP (mW)	Verdict
BLE	External copper antenna	2402	-0.20	0.955	768	PASS

Remark:

- a. RF Exposure use distance is 20cm from manufacturer declaration of user manual.
- b. Threshold $ERP(W) = 19.2R^2(W) = 19.2 * 0.2 * 0.2(W) = 0.7680(W) = 768(mW)$.

4. CONCLUSION

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

----- End of Report -----