



RADIO TEST REPORT

For

Mid Ocean Brands B.V.

Wireless USB Mouse

Test Model: MO8827

Prepared for : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Tel : (+86)755-82591330
Fax : (+86)755-82591332
Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : December 29, 2022
Number of tested samples : 2
Serial number : Prototype
Date of Test : December 29, 2022 ~ January 11, 2023
Date of Report : January 11, 2023





**RADIO TEST REPORT
ETSI EN 300 440 V2.2.1 (2018-07)**

Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range;
Harmonised Standard for access to radio spectrum

Report Reference No. : **LCSA113022168EA**
Date of Issue : January 11, 2023

Testing Laboratory Name : **Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure... : Full application of Harmonised standards
Partial application of Harmonised standards
Other standard testing method

Applicant's Name..... : **Mid Ocean Brands B.V.**
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Test Specification
Standard..... : ETSI EN 300 440 V2.2.1 (2018-07)
Test Report Form No. : LCSEMC-1.0
TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF..... : Dated 2011-03

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Test Item Description..... : **Wireless USB Mouse**
Trade Mark..... : N/A
Test Model : MO8827
Ratings : Mouse:3V \equiv by AAA battery*2
USB dongle: 5V \equiv
Result : **Positive**

Compiled by:

Supervised by:

Approved by:

Kay Hu/ Administrator

Cary Luo/ Technique principal

Gavin Liang/ Manager





RADIO -- TEST REPORT

Test Report No. : LCSA113022168EA	<u>January 11, 2023</u> Date of issue
--	--

Test Model..... : MO8827 EUT..... : Wireless USB Mouse
Applicant..... : Mid Ocean Brands B.V. Address..... : 7/F., Kings Tower,111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong Telephone..... : / Fax..... : /
Manufacturer..... : 114628 Address..... : / Telephone..... : / Fax..... : /
Factory..... : 114628 Address..... : / Telephone..... : / Fax..... : /

Test Result	Positive
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.





Revision History

Report Version	Issue Date	Revision Content	Revised By
000	January 11, 2023	Initial Issue	---





TABLE OF CONTENTS

- 1. GENERAL INFORMATION 6**
 - 1.1. PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 6
 - 1.2. OBJECTIVE 7
 - 1.3. RELATED SUBMITTAL(S)/GRANT(S) 7
 - 1.4. TEST METHODOLOGY 7
 - 1.5. FACILITIES 7
 - 1.6. HOST SYSTEM CONFIGURATION LIST AND DETAILS 7
 - 1.7. EXTERNAL I/O CABLE 7
 - 1.8. LABORATORY ACCREDITATIONS AND LISTINGS 7
 - 1.9. MEASUREMENT UNCERTAINTY 8
 - 1.10. DESCRIPTION OF TEST MODES 8
- 2. SYSTEM TEST CONFIGURATION 9**
 - 2.1. JUSTIFICATION 9
 - 2.2. EUT EXERCISE SOFTWARE 9
 - 2.3. SPECIAL ACCESSORIES 9
 - 2.4. BLOCK DIAGRAM/SCHEMATICS 9
 - 2.5. EQUIPMENT MODIFICATIONS 9
 - 2.6. CONFIGURATION OF TEST SETUP 9
- 3. SUMMARY OF TEST RESULTS 10**
- 4. EQUIVALENT ISOTROPICALLY RADIATED POWER (EIRP) 11**
 - 4.1. DEFINITION AND LIMIT 11
 - 4.2. TEST PROCEDURE 11
 - 4.3. TEST RESULT 12
- 5. PERMITTED RANGE OF OPERATING FREQUENCIES 13**
 - 5.1. DEFINITION AND LIMIT 13
 - 5.2. TEST PROCEDURE 13
 - 5.3. TEST RESULT 14
- 6. DUTY CYCLE 15**
 - 6.1. DEFINITION AND LIMIT 15
 - 6.2. TEST PROCEDURE 16
 - 6.3. TEST RESULT 16
- 7. TRANSMITTER SPURIOUS EMISSIONS 17**
 - 7.1. DEFINITION AND LIMIT 17
 - 7.2. TEST PROCEDURE 17
 - 7.3. TEST RESULT 19
- 8. RECEIVER SPURIOUS EMISSIONS 20**
 - 8.1. DEFINITION AND LIMIT 20
 - 8.2. TEST PROCEDURE 20
 - 8.3. TEST RESULT 20
- 9. ADJACENT CHANNEL SELECTIVITY 22**
 - 9.1. DEFINITION AND LIMIT 22
 - 9.2. TEST PROCEDURE 22
 - 9.3. TEST RESULT 22
- 10. BLOCKING OR DESENSITIZATION 23**
 - 10.1. DEFINITION AND LIMIT 23
 - 10.2. TEST PROCEDURE 23
 - 10.3. TEST RESULT 23
- 11. LIST OF MEASURING EQUIPMENT 24**
- 12. PHOTOGRAPHS OF TEST SETUP 25**
- 13. PHOTOGRAPHS OF THE EUT 26**





1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT	: Wireless USB Mouse
Test Model	: MO8827
Power Supply	: Mouse: 3V $\overline{=}$ by AAA battery*2 USB dongle: 5V $\overline{=}$
Hardware Version	: V1.0
Software Version	: V1.0
2.4G Transmit	:
Frequency Range	: 2407MHz, 2431MHz, 2455MHz, 2477MHz
Channel Number	: 4 channels
Modulation Type	: GFSK
Antenna Description	: PCB Antenna, 0dBi(max.)
2.4G Receive	:
Frequency Range	: 2407MHz, 2431MHz, 2455MHz, 2477MHz
Channel Number	: 4 channels
Modulation Type	: GFSK
Antenna Description	: PCB Antenna, 0dBi(max.)
Receiver category	: 1





1.2. Objective

This Type approval report is prepared on behalf of **Mid Ocean Brands B.V.** in accordance with ETSI EN 300 440 V2.2.1 (2018-07), Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonised Standard for access to radio spectrum

The objective is to determine compliance with ETSI EN 300 440 V2.2.1 (2018-07).

1.3. Related Submittal(s)/Grant(s)

No Related Submittals.

1.4. Test Methodology

All measurements contained in this report were conducted with ETSI EN 300 440 V2.2.1 (2018-07).

1.5. Facilities

All measurement facilities used to collect the measurement data are located at Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 32.

1.6. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
--	--	--	--	--

1.7. External I/O Cable

I/O Port Description	Quantity	Cable
--	--	--

1.8. Laboratory Accreditations And Listings

Site Description

EMC Lab. : NVLAP Accreditation Code is 600167-0.
 FCC Designation Number is CN5024.
 CAB identifier is CN0071.
 CNAS Registration Number is L4595.





1.9. Measurement Uncertainty

Test Item	Uncertainty
Radio Frequency	$\pm 0.9 \times 10^{-4}$
Total RF Power, Conducted	± 1.0 dB
RF Power Density, Conducted	± 1.8 dB
Spurious Emissions, Conducted	± 1.8 dB
All Emissions, Radiated	± 3.1 dB
Temperature	$\pm 0.5^{\circ}\text{C}$
Humidity	± 1 %
DC And Low Frequency Voltages	± 1 %

1.10. Description Of Test Modes

The EUT operates in the unlicensed 2407 MHz Band at 2.4GHz.

The EUT has been tested under operating condition. The transmitter and the receiver was tested separately.

This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.

All test modes were tested, only the result of the worst case was recorded in the report.

Test Mode	Channel	Frequency Range (MHz)
2.4G Transmit		
Tx	1	2407
	2	2431
	4	2477
2.4G Receive		
Rx	1	2407
	2	2431
	4	2477

***Note: The EUT was programmed to transmit continuously during testing (duty cycle = 100%).





2. SYSTEM TEST CONFIGURATION

2.1. Justification

The system was configured for testing in engineering mode.

2.2. EUT Exercise Software

N/A.

2.3. Special Accessories

N/A.

2.4. Block Diagram/Schematics

Please refer to the related document.

2.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

2.6. Configuration of Test Setup

Please refer to the test setup photo.





3. SUMMARY OF TEST RESULTS

RULES ETSI EN 300 440 V2.1.1	DESCRIPTION OF TEST	RESULT
§ 4.2.2	Equivalent isotropically radiated power (EIRP)	Compliant
§ 4.2.3	Permitted range of operating frequencies	Compliant
§ 4.2.5	Duty cycle	Compliant
§ 4.2.4	Transmitter Spurious Emissions	Compliant
§ 4.3.3	Adjacent channel selectivity	Compliant
§ 4.3.4	Blocking or desensitization	Compliant
§ 4.3.5	Receiver Spurious Emissions	Compliant

Note: "N/A" means this test item is not applicable.



4. EQUIVALENT ISOTROPICALLY RADIATED POWER (EIRP)

4.1. Definition and Limit

The e.i.r.p. is defined as the maximum radiated power of the transmitter and its antenna. The transmitter maximum e.i.r.p. under normal and extreme test conditions shall not exceed the values given in following table.

Frequency Bands	Power	Application	Notes
2 400 MHz to 2 483,5 MHz	10 mW e.i.r.p.	Non-specific short range devices	
2 400 MHz to 2 483,5 MHz	25 mW e.i.r.p.	Radio determination devices	
(a) 2 446 MHz to 2 454 MHz	500 mW e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
(b) 2 446 MHz to 2 454 MHz	4 W e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
5 725 MHz to 5 875 MHz	25 mW e.i.r.p.	Non-specific short range devices	
9 200 MHz to 9 500 MHz	25 mW e.i.r.p.	Radio determination devices	
9 500 MHz to 9 975 MHz	25 mW e.i.r.p.	Radio determination devices	
10,5 GHz to 10,6 GHz	500 mW e.i.r.p.	Radio determination devices	
13,4 GHz to 14,0 GHz	25 mW e.i.r.p.	Radio determination devices	
17,1 GHz to 17,3 GHz	400 mW e.i.r.p.	Radio determination devices	See annex F
24,00 GHz to 24,25 GHz	100 mW e.i.r.p.	Non-specific short range devices and Radio determination devices	

4.2. Test Procedure

To measure e.i.r.p. it is first necessary to determine the appropriate method of measurement: see clauses 4.2.2.3.1 and 4.2.2.3.2. The -6 dB transmitter bandwidth shall be determined using a 100 kHz measuring bandwidth in order to establish which measurement method is applicable:

- clause 4.2.2.3.1 for Non spread spectrum transmitters with a -6 dB bandwidth of up to 20 MHz and spread

- spectrum transmitters with channel bandwidth of up to 1 MHz;

- clause 4.2.2.3.2 for all other transmitter bandwidths.

Using the applicable measurement procedure as described in clause 4.2.2.3.2 and annex B, the power output shall be measured and recorded in the test report. The method of measurement shall be documented in the test report.

Measurements shall be performed at normal test conditions (see clause 5.6).

Where possible, the equipment shall be able to operate in a continuous transmit mode for testing purposes.





4.3. Test Result

Environmental Conditions

Temperature/ Humidity:	24.2° C/ 53.1%	ATM Pressure:	100.9 kPa
Operator:	Joker Hu		

EIRP(Modulation: GFSK)--- 2.4G					
Low Channel fo =2407 MHz Vnor= DC 3.0V					
Temperature (°C)	Power Supplied (V)	Reading dBm	Antenna Gain (dBi)	EIRP dBm	Limit dBm
-10	DC 2.7V	1.96	0.00	1.96	10
	DC 3.0V	1.84	0.00	1.84	10
	DC 3.3V	1.93	0.00	1.93	10
25	DC 2.7V	1.95	0.00	1.95	10
	DC 3.0V	1.83	0.00	1.83	10
	DC 3.3V	1.98	0.00	1.98	10
45	DC 2.7V	1.96	0.00	1.96	10
	DC 3.0V	1.88	0.00	1.88	10
	DC 3.3V	1.99	0.00	1.99	10
Middle Channel fo =2431 MHz Vnor= DC 3.0V					
Temperature (°C)	Power Supplied (V)	Reading dBm	Antenna Gain (dBi)	EIRP dBm	Limit dBm
-10	DC 2.7V	1.87	0.00	1.87	10
	DC 3.0V	1.89	0.00	1.89	10
	DC 3.3V	1.81	0.00	1.81	10
25	DC 2.7V	1.82	0.00	1.82	10
	DC 3.0V	1.90	0.00	1.90	10
	DC 3.3V	1.82	0.00	1.82	10
45	DC 2.7V	1.83	0.00	1.83	10
	DC 3.0V	1.88	0.00	1.88	10
	DC 3.3V	1.87	0.00	1.87	10
High Channel fo =2477 MHz Vnor= DC 3.0V					
Temperature (°C)	Power Supplied (V)	Reading dBm	Antenna Gain (dBi)	EIRP dBm	Limit dBm
-10	DC 2.7V	1.74	0.00	1.74	10
	DC 3.0V	1.79	0.00	1.79	10
	DC 3.3V	1.72	0.00	1.72	10
25	DC 2.7V	1.80	0.00	1.80	10
	DC 3.0V	1.73	0.00	1.73	10
	DC 3.3V	1.77	0.00	1.77	10
45	DC 2.7V	1.73	0.00	1.73	10
	DC 3.0V	1.72	0.00	1.72	10
	DC 3.3V	1.77	0.00	1.77	10

Test Result: Pass



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Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

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5. PERMITTED RANGE OF OPERATING FREQUENCIES

5.1. Definition and Limit

The width of the power spectrum envelope is $f_H - f_L$ for a given operating frequency. In equipment that allows

adjustment or selection of different operating frequencies, the power envelope takes up different positions in the allowed band. The frequency range is determined by the lowest value of f_L and the highest value of f_H resulting from the adjustment of the equipment to the lowest and highest operating frequencies.

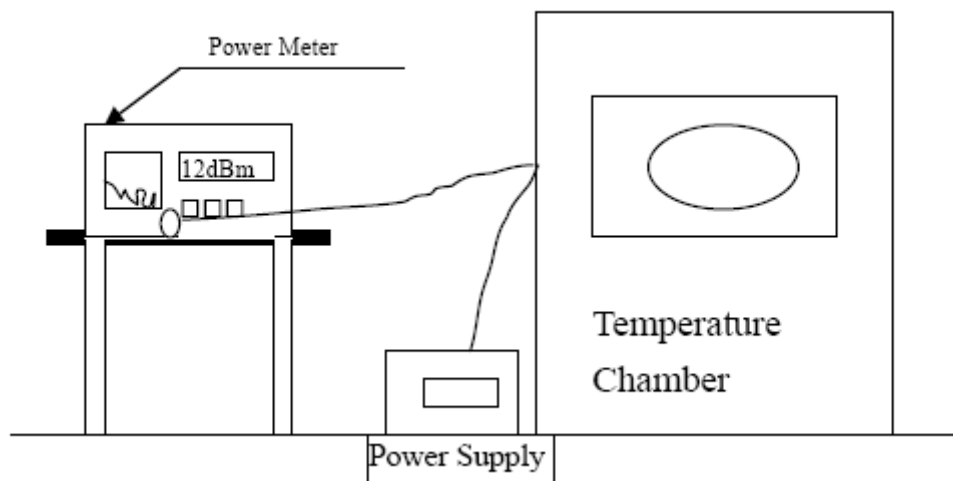
The occupied bandwidth (i.e. the bandwidth in which 99 % of the wanted emission is contained) of the transmitter shall fall within the assigned frequency band.

For all equipment the frequency range shall lie within the frequency band given by clause 4.2.2.4, table 2. For

non-harmonized frequency bands the available frequency range may differ between national administrations.

5.2. Test Procedure

The equipment shall be able to operate in a continuous transmit mode for testing purposes. Please refer to ETSI EN 300 440 for the measurement method.





5.3. Test Result

Environmental Conditions

Temperature/ Humidity:	24.2° C/ 53.1%	ATM Pressure:	100.9 kPa
Operator:	Joker Hu		

Test Mode: Tx, GFSK--- 2.4G

Test Conditions		Frequency (MHz) at -30dBm/30KHz	
Temperature	Voltage(V)	f _L at Low Channel >2400MHz	f _H at High Channel (<2483.5MHz)
T _{min} = -10°C	DC 2.7V	2400.10	2480.06
	DC 3.0V	2400.06	2480.09
	DC 3.3V	2400.01	2480.06
T _{nor} = 25°C	DC 2.7V	2400.08	2480.09
	DC 3.0V	2400.05	2480.09
	DC 3.3V	2400.09	2480.06
T _{max} =45°C	DC 2.7V	2400.01	2480.05
	DC 3.0V	2400.08	2480.04
	DC 3.3V	2400.05	2480.11
Limit	f _H (2483.5MHz) - f _L (2400MHz) = 83.5MHz		

Test Result: Pass



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6. DUTY CYCLE

6.1. Definition and Limit

Duty cycle is the ratio expressed as a percentage, of the cumulative duration of transmissions

$$DC = \left(\frac{T_{on_cum}}{T_{obs}} \right) F_{obs}$$

Ton_cum within an observation interval Tobs. Fobs on an observation bandwidth Fobs.

Unless otherwise specified, Tobs is 1 hour and the observation bandwidth Fobs is the operational frequency band Each transmission consists of an RF emission, or sequence of RF emissions separated by intervals < TDis.

An equipment may operate on several bands simultaneously (i.e. multi transmissions), Duty Cycle of each band applies to each transmission.

It has to be noted that on some bands Duty Cycle value may depend on the presence of a primary radio service. Equipment may be triggered manually, by internal timing or by external stimulus. Depending on the method of triggering the timing may be predictable or random.

For manual operated or event dependant devices, with or without software controlled functions, the manufacturer shall declare whether the device once triggered, follows a pre-programmed cycle, or whether the transmitter remains on until the trigger is released or the device is manually reset. The manufacturer shall also give a description of the application for the device and include a typical usage pattern. The typical usage pattern as declared by the manufacturer shall be used to determine the duty cycle and compare to the limit in table 4.

For devices with a 100 % duty cycle transmitting an unmodulated carrier most of the time, a time-out shut-off facility shall be implemented in order to improve the efficient use of spectrum. The method of implementation shall be declared by the manufacturer.

Table Duty Cycle Limits

Frequency Band	Duty cycle	Application
2 400 MHz to 2 483,5 MHz	No Restriction	Generic use
2 400 MHz to 2 483,5 MHz	No Restriction	Detection, movement and alert applications
(a) 2 446 MHz to 2 454 MHz	No Restriction	RFID
(b) 2 446 MHz to 2 454 MHz	≤ 15 %	RFID
5 725 MHz to 5 875 MHz	No Restriction	Generic use
9 200 MHz to 9 500 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications
9 500 MHz to 9 975 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications
10,5 GHz to 10,6 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications
13,4 GHz to 14,0 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications
17,1 GHz to 17,3 GHz	DAA or equivalent techniques	Radiodetermination: GBSAR detecting and movement and alert applications
24,00 GHz to 24,25 GHz	No Restriction	Generic use and for Radiodetermination: radar, detection, movement and alert applications





6.2. Test Procedure

Please refer to ETSI EN 300 440 clause 4.2.5.3 for the measurement method.

An assessment of the overall Duty Cycle shall be made for a representative period of Tobs over the observation bandwidth Fobs. Unless otherwise specified, Tobs is 1 hour and the observation bandwidth Fobs is the operational frequency band.

The representative period shall be the most active one in normal use of the device. As a guide "Normal use" is considered as representing the behaviour of the device during transmission of 99 % of the [emissions] generated during its operational lifetime.

Procedures such setup, commissioning, and maintenance are not considered part of normal operation.

For manual operated or event dependant devices, with or without software controlled functions, the manufacturer shall declare whether the device once triggered, follows a pre-programmed cycle, or whether the transmitter remains on until the trigger is released or the device is manually reset. The manufacturer shall also give a description of the application for the device and include a typical usage pattern. The typical usage pattern as declared by the manufacturer shall be used to determine the duty cycle and compare to the limit in table 4.

Where an acknowledgement is required, the additional transmitter on-time shall be included and declared by the manufacturer.

6.3. Test Result

The EUT was programmed to transmit continuously during testing (duty cycle = 100%).



7. TRANSMITTER SPURIOUS EMISSIONS

7.1. Definition and Limit

Unwanted emissions in the spurious domain (spurious emissions) are those at frequencies beyond the limit of 250 % of the occupied bandwidth above and below the centre frequency of the emission. The occupied bandwidth is either measured or declared by the manufacturer.

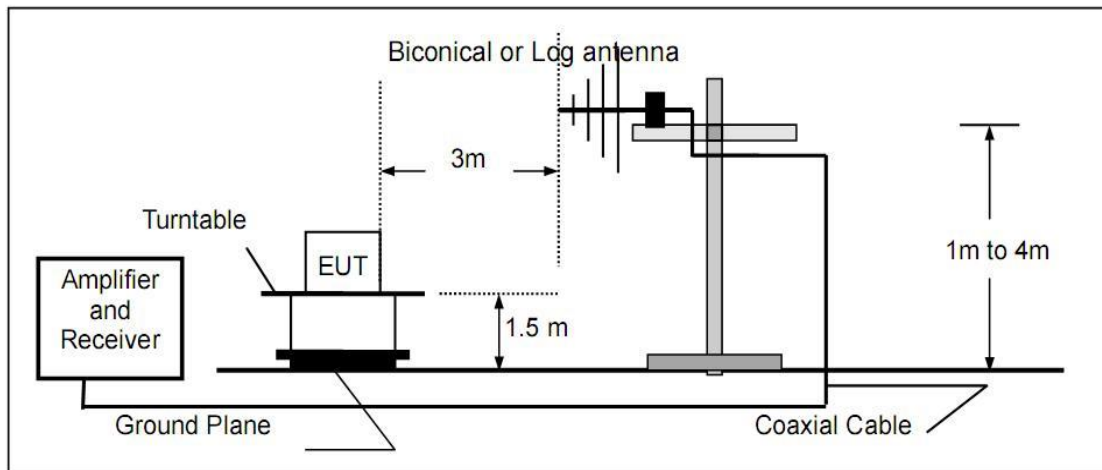
The maximum power limits of any unwanted emissions in the spurious domain are given in table 3.

Table: spurious emissions

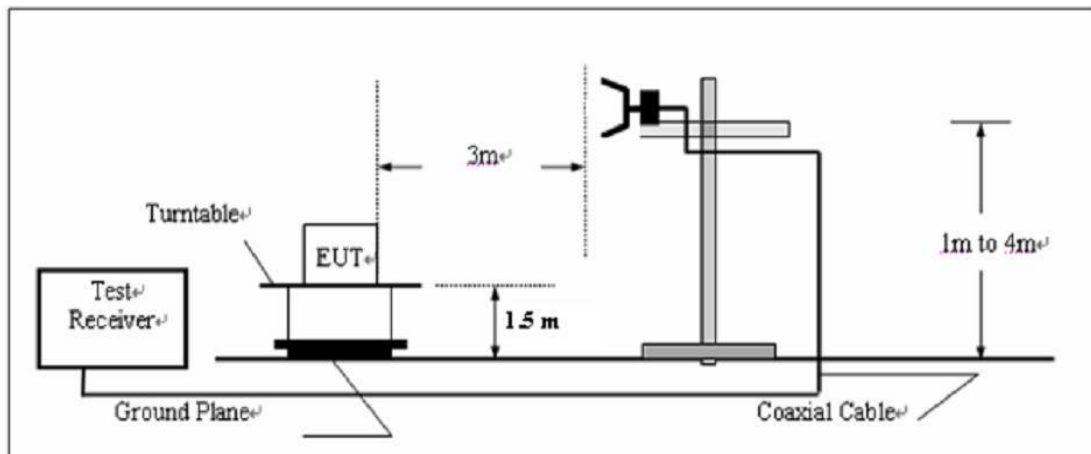
Frequency ranges	47 MHz to 74 MHz 87,5 MHz to 108 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤ 1 000 MHz	Frequencies > 1 000 MHz
State			
Operating	4 nW	250 nW	1 μW
Standby	2 nW	2 nW	20 nW

7.2. Test Procedure

Radiated Below 1GHz



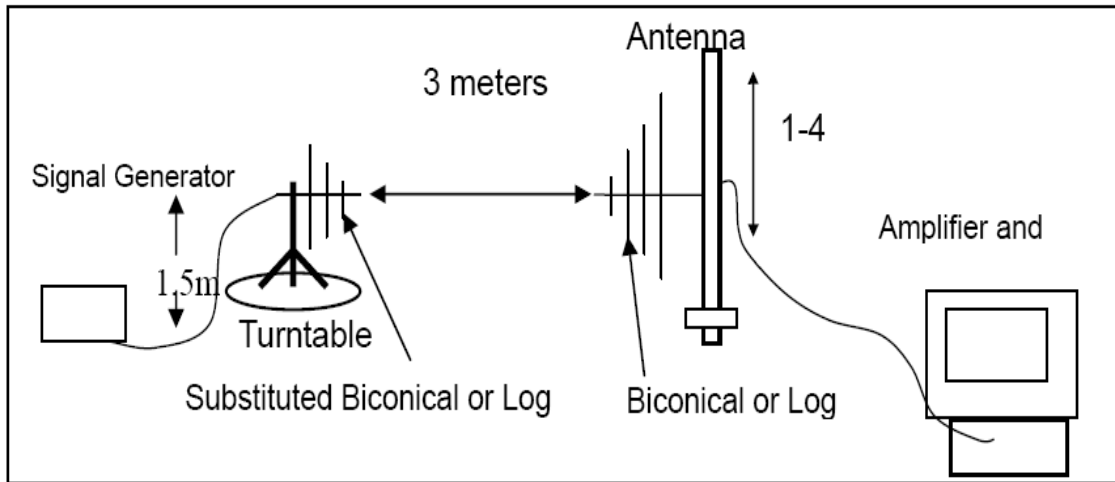
Radiated Above 1GHz



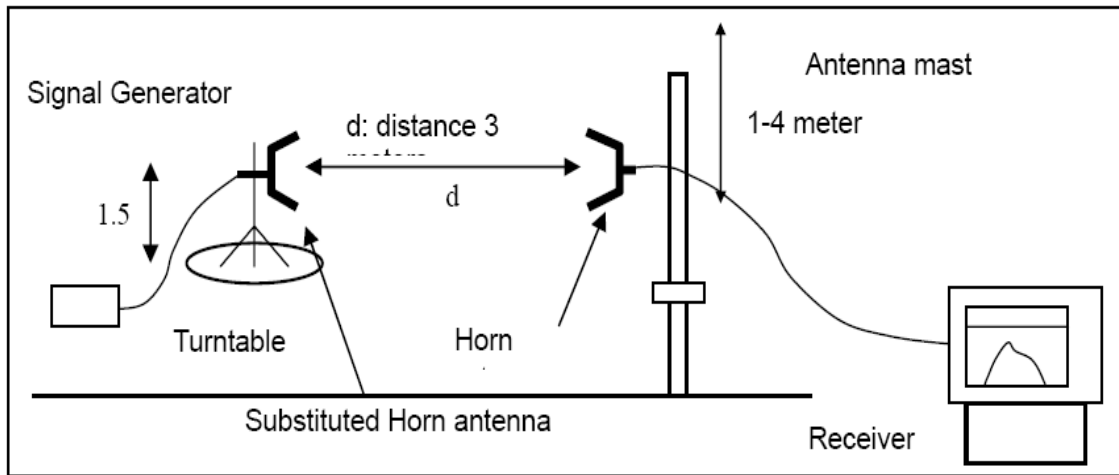


Substitution Method: (Radiated Emissions)

Radiated Below 1GHz



Radiated Above 1 GHz





7.3. Test Result

Environmental Conditions

Temperature/ Humidity:	24.2° C/ 53.1%	ATM Pressure:	100.9 kPa
Operator:	Joker Hu		

Test mode: GFSK---2.4G

Measurement Data

Lowest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	Polarization (H/V)	Level(dBm)		
86.04	H	-42.84	-36.00	Pass
61.12	V	-66.89	-54.00	
892.87	H	-45.71	-36.00	
889.50	V	-42.96	-36.00	
4805.42	H	-38.47	-30.00	
4802.67	V	-35.78	-30.00	
7205.38	H	-40.01	-30.00	
7202.68	V	-41.04	-30.00	
Highest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	Polarization (H/V)	Level(dBm)		
67.52	H	-64.35	-54.00	Pass
122.52	V	-47.30	-36.00	
715.57	H	-68.59	-54.00	
878.27	V	-42.16	-36.00	
4803.82	H	-43.37	-30.00	
4804.07	V	-39.25	-30.00	
7203.41	H	-36.20	-30.00	
7205.90	V	-42.12	-30.00	



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

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8. RECEIVER SPURIOUS EMISSIONS

8.1. Definition and Limit

Spurious radiations from the receiver are components at any frequency, radiated by the equipment and antenna.

This requirement applies to all receivers, except receivers used in combination with permanently co-located transmitters continuously transmitting. Co-located is defined as < 3 m. In these cases the receivers will be tested together with the transmitter in operating mode.

The power of any spurious emission shall not exceed 2 nW in the range 25 MHz to 1 GHz and shall not exceed 20 nW on frequencies above 1 GHz.

8.2. Test Procedure

Please refer to ETSI EN 300 440 clause 4.3.5.3 for the measurement method.

8.3. Test Result

Pass



Shenzhen LCS Compliance Testing Laboratory Ltd.

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**Environmental Conditions**

Temperature/ Humidity:	24.2° C/ 53.1%	ATM Pressure:	100.9 kPa
Operator:	Joker Hu		

Test Mode: Receiving--- 2.4G

Measurement Data

Lowest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	Polarization (H/V)	Level(dBm)		
386.53	H	-70.90	-57.00	Pass
358.62	V	-67.23	-57.00	
966.95	H	-61.96	-57.00	
741.56	V	-66.62	-57.00	
1077.61	H	-68.32	-47.00	
1266.76	V	-59.05	-47.00	
2856.28	H	-70.21	-47.00	
2998.87	V	-67.34	-47.00	
Highest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	Polarization (H/V)	Level(dBm)		
223.15	H	-60.01	-57.00	Pass
35.40	V	-69.63	-57.00	
604.12	H	-64.48	-57.00	
543.54	V	-64.32	-57.00	
1454.07	H	-64.18	-47.00	
1025.59	V	-59.51	-47.00	
2951.56	H	-55.89	-47.00	
2819.89	V	-69.64	-47.00	



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Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

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9. ADJACENT CHANNEL SELECTIVITY

9.1. Definition and Limit

The adjacent channel selectivity is a measure of the capability of the receiver to operate satisfactorily in the presence of an unwanted signal that differs in frequency from the wanted signal by an amount equal to the adjacent channel separation for which the equipment is intended.

The adjacent channel selectivity of the equipment under specified conditions shall not be less than -30 dBm + k.

The correction factor, k, is as follows:

$$k = -20\log f - 10\log BW$$

Where:

- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

The factor k is limited within the following:

- -40 dB < k < 0 dB.

The measured adjacent channel selectivity shall be stated in the test report.

9.2. Test Procedure

Please refer to ETSI EN 300 440 clause 4.3.3.3 for the measurement method.

9.3. Test Result

Pass

2.4G				
Test Channel	Lower or upper	Test Value (dBm)	Limit (dBm)	Verdict
2407 MHz	Lower	-9.59	≥-42.40	Pass
	Upper	-9.62	≥-42.40	Pass
2431 MHz	Lower	-10.11	≥-42.49	Pass
	Upper	-9.88	≥-42.49	Pass
2477 MHz	Lower	-9.97	≥-42.65	Pass
	Upper	-9.90	≥-42.65	Pass

As declared by the manufacture, the receiver channel bandwidth is 3.5MHz.





10. BLOCKING OR DESENSITIZATION

10.1. Definition and Limit

Blocking is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of an unwanted input signal at any frequencies other than those of the spurious responses or the adjacent channels or bands, see clauses 4.3.3 and 4.3.4.

The blocking level, for any frequency within the specified ranges, shall not be less than the values given in table 6, except at frequencies on which spurious responses are found.

Table 6: Limits for blocking or desensitization

Receiver category	Limit
1	-30 dBm + k
2	-45 dBm + k
3	-60 dBm + k

The correction factor, k, is as follows:

$$k = -20\log f - 10\log BW$$

- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

The factor k is limited within the following:

$$- 40 < k < 0 \text{ dB}$$

10.2. Test Procedure

Please refer to ETSI EN 300 440 clause 4.3.4.3 for the measurement method.

10.3. Test Result

Pass

2.4G				
Test Channel	Lower or upper	Test Value (dBm)	Limit (dBm)	Verdict
2407 MHz	Lower	-10.77	≥-57.40	Pass
	Upper	-10.18	≥-57.40	Pass
2431 MHz	Lower	-10.67	≥-57.49	Pass
	Upper	-10.13	≥-57.49	Pass
2477 MHz	Lower	-10.36	≥-57.65	Pass
	Upper	-10.15	≥-57.65	Pass





11. LIST OF MEASURING EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2022-10-29	2023-10-28
2	DC Power Supply	Agilent	E3642A	N/A	2022-10-29	2023-10-28
3	Temperature & Humidity Chamber	GUANGZHOU GOGNWEN	GDS-100	70932	2022-10-06	2023-10-05
4	EMI Test Software	Farad	EZ	/	N/A	N/A
5	3m Full Anechoic Chamber	MRDIANZI	FAC-3M	MR009	2021-09-25	2024-09-24
6	Positioning Controller	Max-Full	MF7802BS	MF780208586	N/A	N/A
7	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2021-08-29	2024-08-28
8	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
9	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
10	EMI Test Receiver	R&S	ESR 7	101181	2022-06-16	2023-06-15
11	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2022-10-29	2023-10-28
12	Broadband Preamplifier	/	BP-01M18G	P190501	2022-06-16	2023-06-15
13	MXG Vector Signal Generator	Agilent	E4438C	MY42081396(6G)	2022-06-16	2023-06-15
14	ESG Vector Signal Generator	Agilent	E4438C	MY49072627(3G)	2022-06-16	2023-06-15



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12. PHOTOGRAPHS OF TEST SETUP

Transmit Spurious Emission below 1GHz & above 1GHz



Receive Spurious Emission below 1GHz & above 1GHz



13. PHOTOGRAPHS OF THE EUT



Fig. 1



Fig. 2





Fig. 3



Fig. 4





Fig. 5



Fig. 6





Fig. 7



Fig. 8



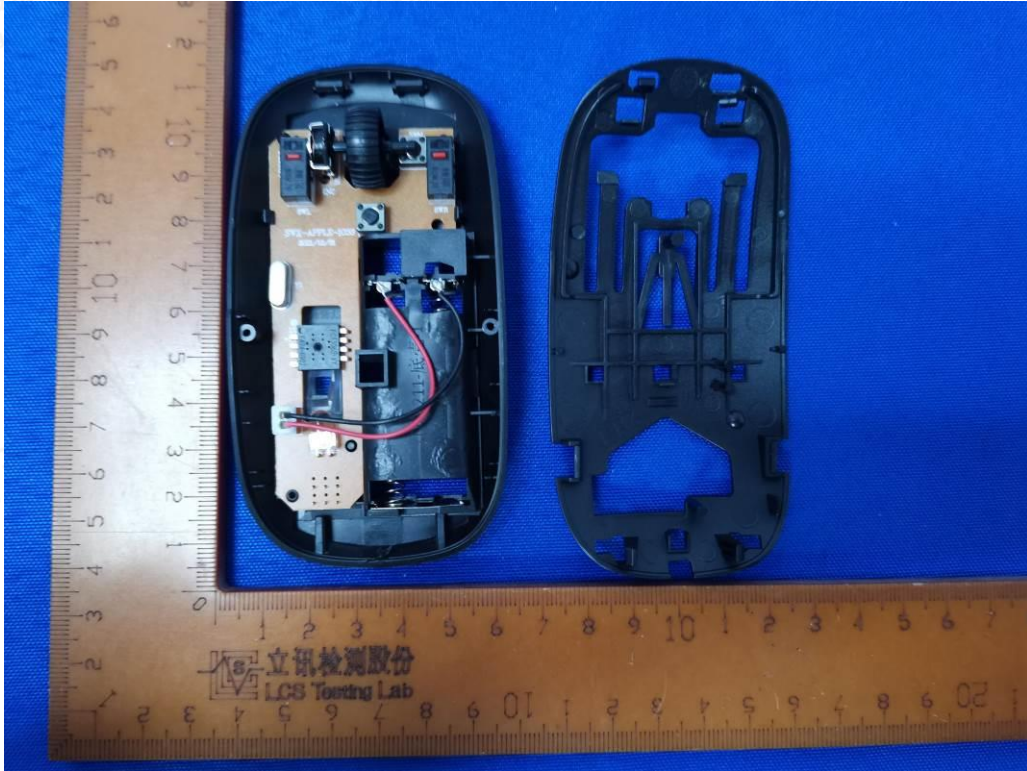


Fig. 9

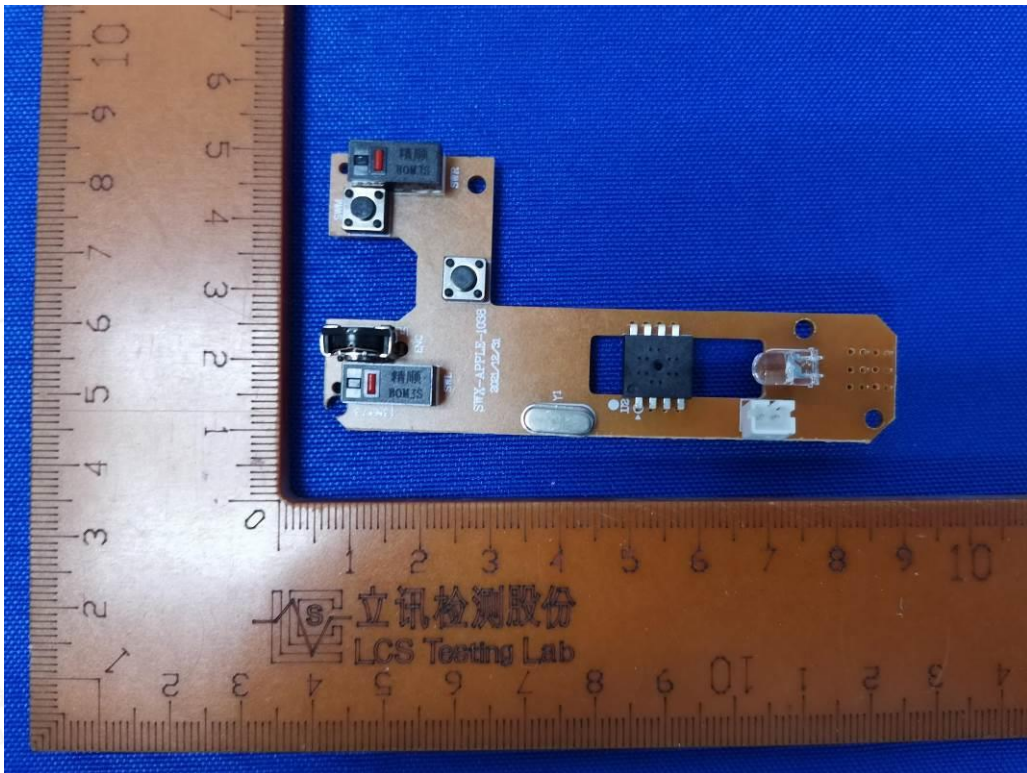


Fig. 10



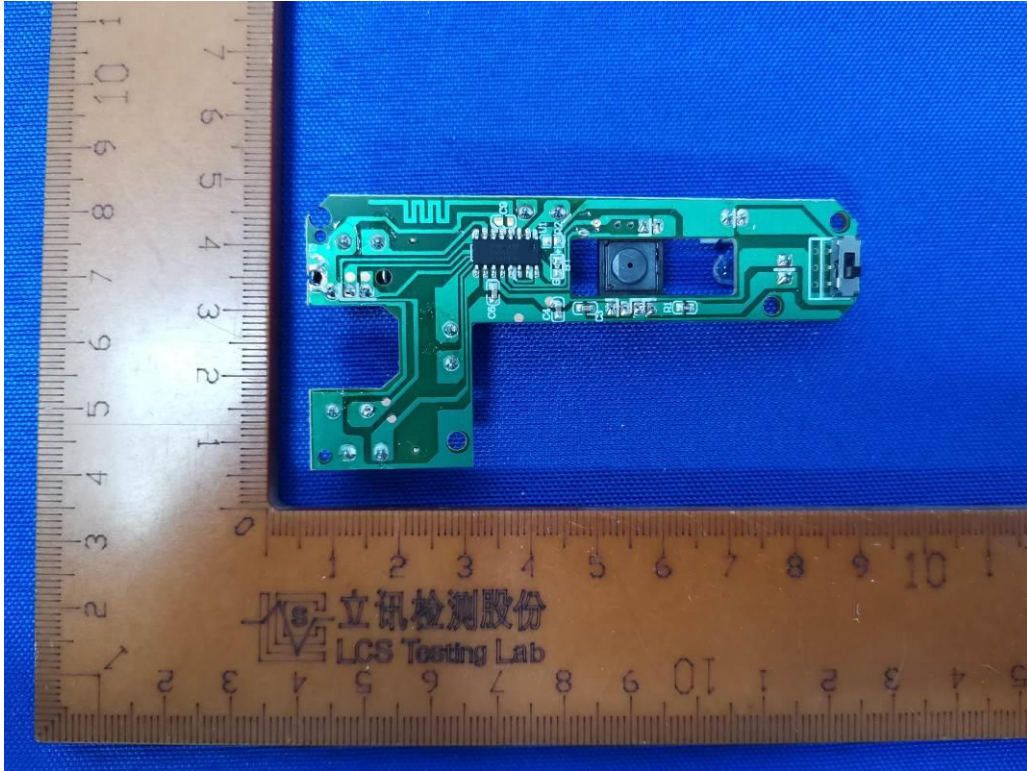


Fig. 11

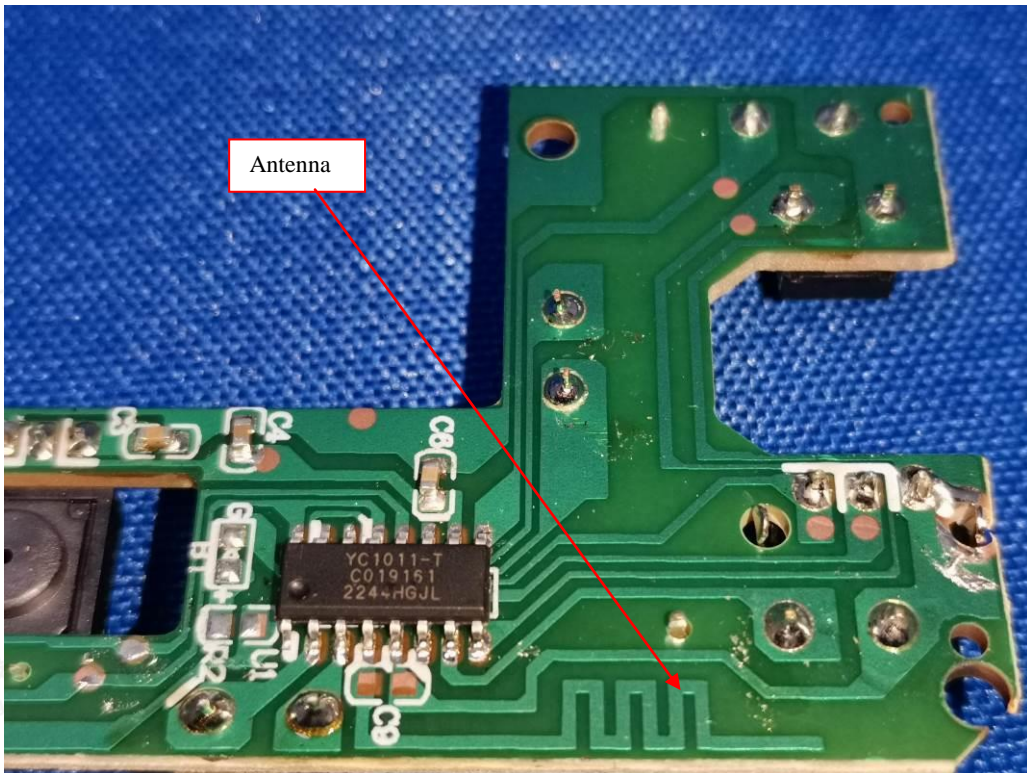


Fig. 12



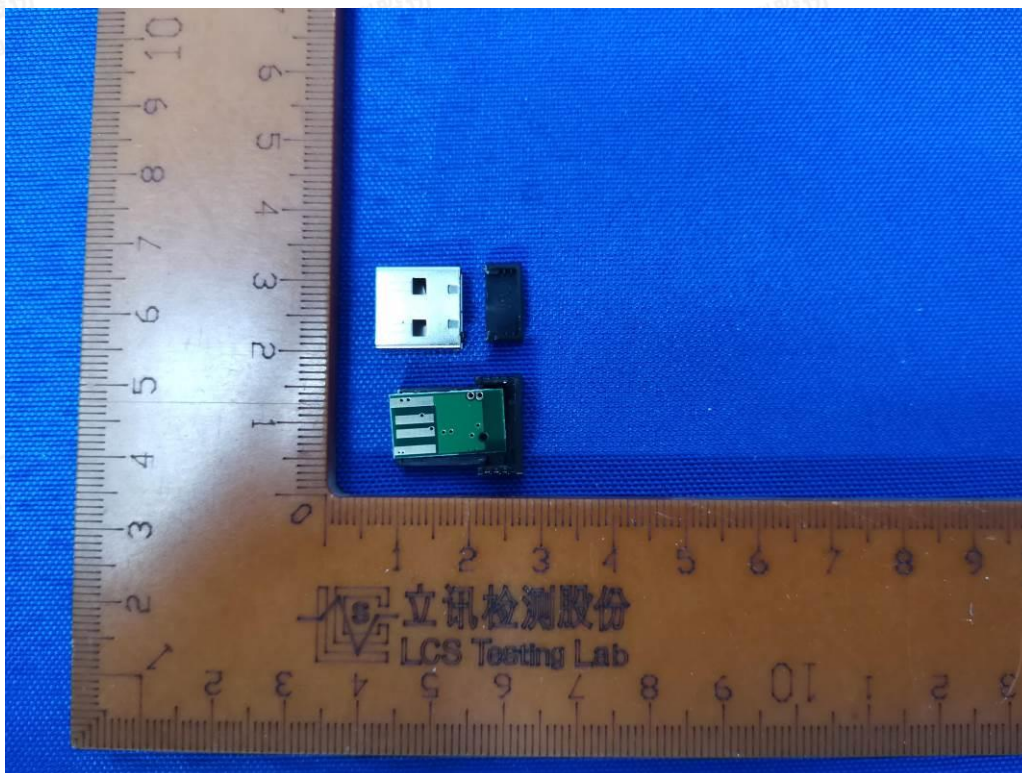


Fig. 13

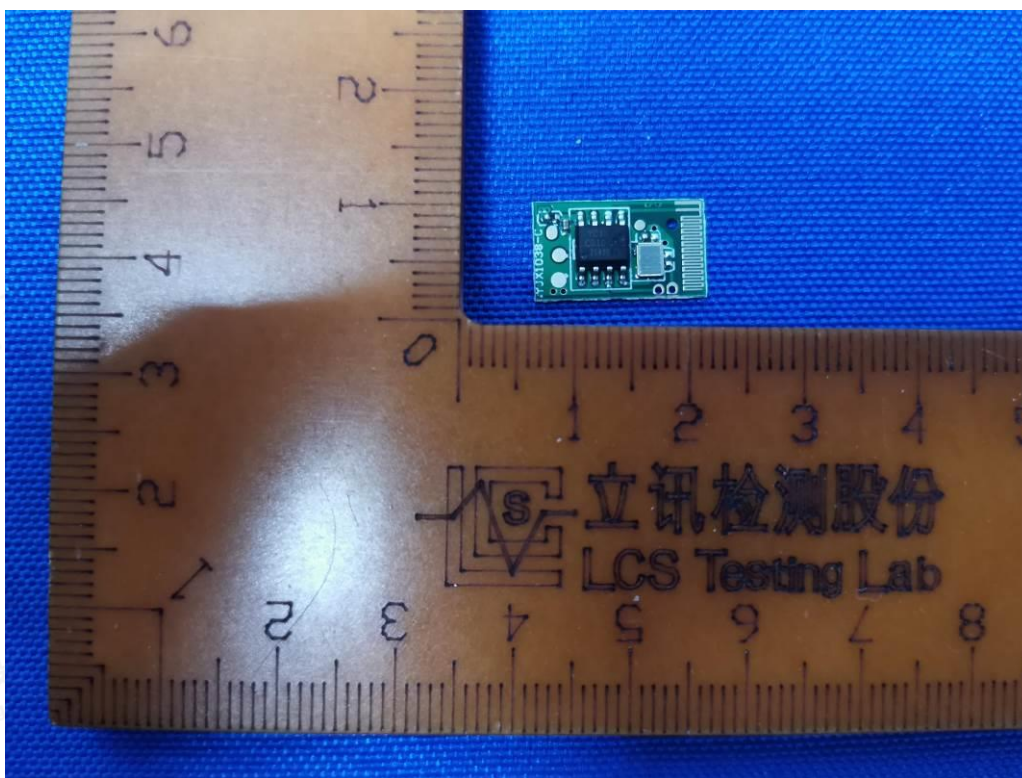


Fig. 14



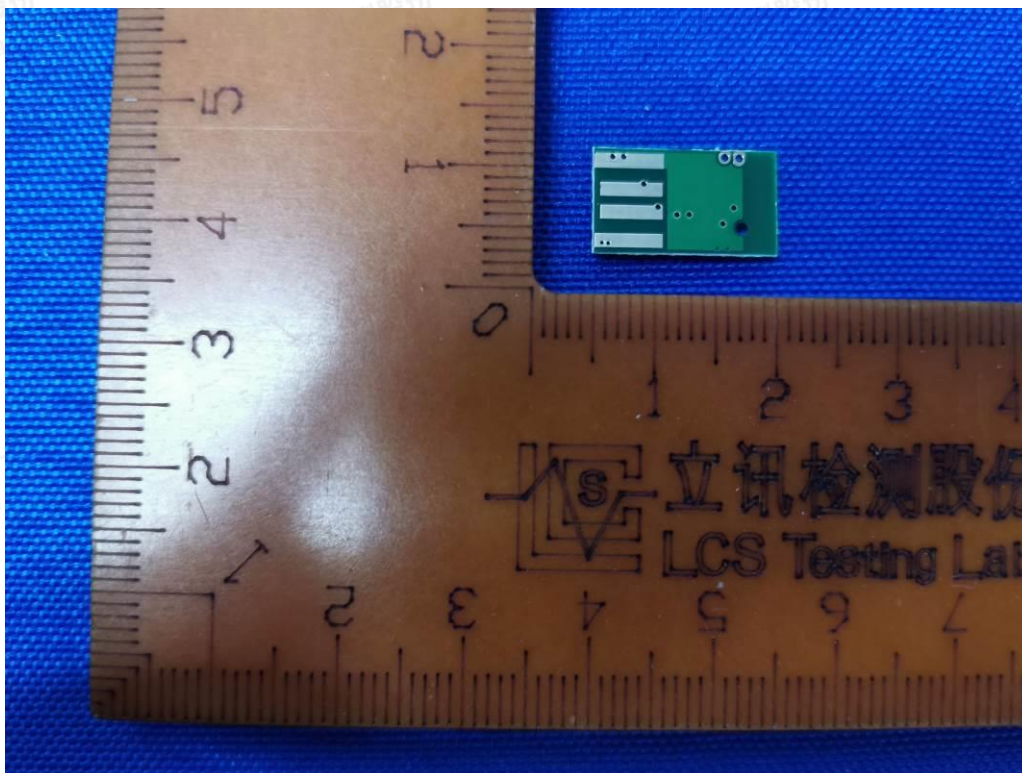


Fig. 15

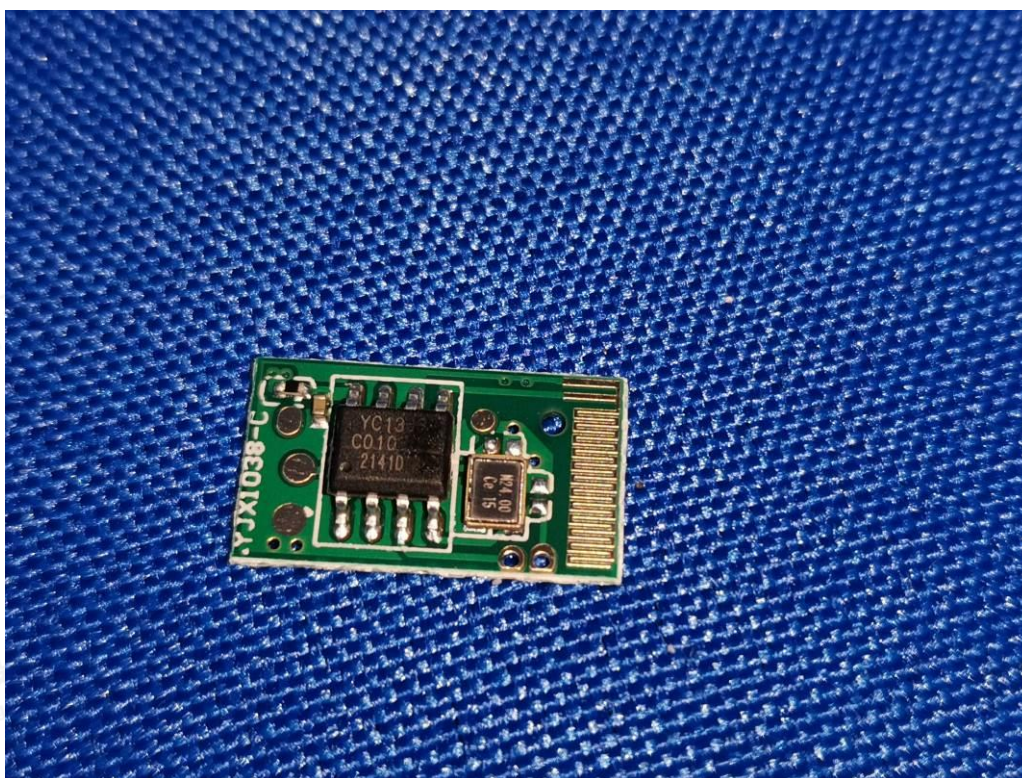


Fig. 16





-----THE END OF REPORT-----





HEALTH TEST REPORT

For

Mid Ocean Brands B.V.

Wireless USB Mouse

Test Model: MO8827

Prepared for : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan,
Kowloon, Hong Kong

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : Room 101, 201, Building A and Room 301, Building C, Juji
Industrial Park, Yabianxueziwei, Shajing Street, Bao'an
District, Shenzhen, Guangdong, China

Tel : (+86)755-82591330
Fax : (+86)755-82591332
Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : December 29, 2022
Number of tested samples : 2
Serial number : Prototype
Date of Test : December 29, 2022 ~ January 11, 2023
Date of Report : January 11, 2023





**HEALTH TEST REPORT
EN 62479: 2010 & EN 50663: 2017**

Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz)

Report Reference No.	: LCSA113022175EA
Date of Issue.....	: January 11, 2023
Testing Laboratory Name.....	: Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure ...	: Full application of Harmonised standards <input checked="" type="checkbox"/> Partial application of Harmonised standards <input type="checkbox"/> Other standard testing method <input type="checkbox"/>
Applicant's Name.....	: Mid Ocean Brands B.V.
Address	: 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Test Specification	
Standard	: EN 62479: 2010 EN 50663: 2017
Test Report Form No.	: LCSEMC-1.0
TRF Originator	: Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	: Dated 2011-03
Shenzhen LCS Compliance Testing Laboratory Ltd. All rights reserved.	
This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen LCS Compliance Testing Laboratory Ltd. is acknowledged as copyright owner and source of the material. Shenzhen LCS Compliance Testing Laboratory Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.	
Test Item Description.	: Wireless USB Mouse
Trade Mark	: N/A
Test Model	: MO8827
Ratings	: Mouse: 3V $\overline{=}$ by AAA battery*2 USB dongle: 5V $\overline{=}$
Result	: Positive

Compiled by:

Kay Hu/ Administrator

Supervised by:

Cary Luo/ Technique principal

Approved by:

Gavin Liang/ Manager





HEALTH --TEST REPORT

Test Report No. : LCSA113022175EA	<u>January 11, 2023</u> Date of issue
--	--

Test Model.....	: MO8827
EUT.....	: Wireless USB Mouse
Applicant.....	: Mid Ocean Brands B.V.
Address.....	: 7/F., Kings Tower,111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: 114628
Address.....	: /
Telephone.....	: /
Fax.....	: /
Factory.....	: 114628
Address.....	: /
Telephone.....	: /
Fax.....	: /

Test Result	Positive
--------------------	-----------------

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.





Revision History

Report Version	Issue Date	Revision Content	Revised By
000	January 11, 2023	Initial Issue	---





1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT : Wireless USB Mouse
Test Model : MO8827
Power Supply : Mouse: 3V $\overline{=}$ by AAA battery*2
USB dongle: 5V $\overline{=}$
Hardware Version : V1.0
Software Version : V1.0
2.4G Transmit :
Frequency Range : 2407MHz, 2431MHz, 2455MHz, 2477MHz
Channel Number : 4 channels
Modulation Type : GFSK
Antenna Description : PCB Antenna, 0dBi(max.)
2.4G Receive :
Frequency Range : 2407MHz, 2431MHz, 2455MHz, 2477MHz
Channel Number : 4 channels
Modulation Type : GFSK
Antenna Description : PCB Antenna, 0dBi(max.)
Receiver category : 1





1.2. Objective

According to its specifications, the EUT must comply with the requirements of the following standards:

EN 62479: 2010 – Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz)

EN 50663: 2017 – Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz)

1.3. Test Methodology

All measurements contained in this report were conducted with EN 62479: 2010 and EN 50663: 2017.

1.4. Facilities

All measurement facilities used to collect the measurement data are located at Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China .

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 32.

1.5. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
--	--	--	--	--

1.6. External I/O Cable

I/O Port Description	Quantity	Cable
--	--	--





1.7. Equipment

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

1.8. Laboratory Accreditations And Listings

Site

Description

EMC Lab. : NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
CAB identifier is CN0071.
CNAS Registration Number is L4595.

Name of Firm : Shenzhen LCS Compliance Testing Laboratory Ltd.

Site Location : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China



1.9. Measurement Uncertainty

Test Item	Uncertainty
Radio Frequency	0.9 x 10 ⁻⁴
Total RF Power, Conducted	1.0 dB
RF Power Density, Conducted	1.8 dB
Spurious Emissions, Conducted	1.8 dB
All Emissions, Radiated	3.1 dB
Temperature	0.5°C
Humidity	1 %
DC And Low Frequency Voltages	1 %





2. HUMAN EXPOSURE TO THE ELECTROMAGNETIC FIELDS

2.1 Test Methodology

2.1.1. General description of applied standards

According to its specifications, the EUT must comply with the requirements of the following standards:

EN 62479- Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)

EN 50663- Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz).

2.1.2. Description of test modes

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

2.2 Test limit

If the average power emitted by apparatus operating in the frequency range 10 MHz – 300GHz is less than or equal to 20 mW and the transmitting peak power is less than 20 W then the apparatus is deemed to comply with the basic restrictions without testing.



2.3 Test Results

Since Max. output power for 2.4G is 1.58mW (1.99dBm According to radio test report LCSA113022168EA) less than 20mW specified in EN 62479 and EN 50663. This unit will not generate the harmful EM emission above the reference level as specified in EC Council Recommendation (1999/519/EC).

The unit complies with the EN 62479 and EN 50663 for RF exposure requirement.

No non-compliance noted.

-----THE END OF TEST REPORT-----



Shenzhen LCS Compliance Testing Laboratory Ltd.

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