

# RF Test Report

Report No.: AGC07777190401EE16

**PRODUCT DESIGNATION** : wireless mouse  
**BRAND NAME** : N/A  
**MODEL NAME** : M08117 LXW-273  
**CLIENT** : Mid Ocean Brands B.V  
**DATE OF ISSUE** : Apr. 25, 2019  
**STANDARD(S)** : EN 300 440 V2.2.1 (2018-07)  
**REPORT VERSION** : V1.0

**Attestation of Global Compliance (Shenzhen) Co., Ltd**

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### REPORT REVISE RECORD

| Report Version | Revise Time | Issued Date   | Valid Version | Notes           |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0           | /           | Apr. 25, 2019 | Valid         | Initial release |

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## TABLE OF CONTENTS

|                                                                   |           |
|-------------------------------------------------------------------|-----------|
| <b>1. TEST REPORT CERTIFICATION.....</b>                          | <b>4</b>  |
| <b>2. GENERAL INFORMATION .....</b>                               | <b>5</b>  |
| 2.1. DESCRIPTION OF EUT.....                                      | 5         |
| 2.2. TEST STANDARDS AND RESULTS.....                              | 6         |
| 2.3. TEST ITEMS AND THE RESULTS.....                              | 6         |
| 2.4. ENVIRONMENTAL CONDITIONS.....                                | 6         |
| <b>3. MEASUREMENT UNCERTAINTY.....</b>                            | <b>7</b>  |
| <b>4. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION.....</b> | <b>8</b>  |
| <b>5. ETSI EN 300 440 REQUIREMENTS.....</b>                       | <b>9</b>  |
| 5.1. EQUIVALENT ISOTROPICALLY RADIATED POWER (E.I.R.P.).....      | 9         |
| 5.2. PERMITTED RANGE OF OPERATING FREQUENCIES.....                | 11        |
| 5.3. UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN.....               | 13        |
| 5.4 DUTY CYCLE .....                                              | 19        |
| 5.5 BLOCKING OR DESENSITIZATION .....                             | 20        |
| 5.6. RECEIVER SPURIOUS EMISSIONS.....                             | 22        |
| <b>APPENDIX A: PHOTOGRAPHS OF TEST SETUP.....</b>                 | <b>24</b> |

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## 1. TEST REPORT CERTIFICATION

|                                 |                                                                  |
|---------------------------------|------------------------------------------------------------------|
| <b>Applicant</b>                | Mid Ocean Brands B.V                                             |
| <b>Address</b>                  | 7/F. Kings Tower, 111King Lam Street, Cheung Sha Wan. kowloon HK |
| <b>Manufacturer</b>             | Mid Ocean Brands B.V                                             |
| <b>Address</b>                  | 7/F. Kings Tower, 111King Lam Street, Cheung Sha Wan. kowloon HK |
| <b>Factory</b>                  | Mid Ocean Brands B.V                                             |
| <b>Address</b>                  | 7/F. Kings Tower, 111King Lam Street, Cheung Sha Wan. kowloon HK |
| <b>Product Designation</b>      | wireless mouse                                                   |
| <b>Brand Name</b>               | N/A                                                              |
| <b>Test Model</b>               | MO8117 LXW-273                                                   |
| <b>Date of test</b>             | Apr. 01, 2019 to Apr. 18, 2019                                   |
| <b>Deviation</b>                | None                                                             |
| <b>Test Result</b>              | Pass                                                             |
| <b>Condition of Test Sample</b> | Normal                                                           |

We, Attestation of Global Compliance (Shenzhen) Co., Ltd., for compliance with the requirements set forth in the European Standard ETSI EN 300 440 V2.2.1 The results of testing in this report apply to the product /system which were tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By



Erik Yang(Yang Jianmin)

Apr. 18, 2019

Reviewed By



Max Zhang(Zhang Yi)

Apr. 25, 2019

Approved By



 Forrest Lei(Lei Yonggang)  
 Authorized Officer

Apr. 25, 2019

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## 2. GENERAL INFORMATION

### 2.1. DESCRIPTION OF EUT

|                            |                                            |
|----------------------------|--------------------------------------------|
| <b>Operating Frequency</b> | 2405MHz-2470MHz                            |
| <b>Support Channels</b>    | 8 Channels                                 |
| <b>Modulation</b>          | GFSK                                       |
| <b>Hardware Version</b>    | Mouse: V10<br>Dongle: V10                  |
| <b>Software Version</b>    | Mouse: V10<br>Dongle: V10                  |
| <b>Antenna Type</b>        | Mouse: PCB Antenna<br>Dongle: PCB Antenna  |
| <b>Antenna Gain</b>        | Mouse: -7dBi<br>Dongle: -7dBi              |
| <b>Receiver category</b>   | 2                                          |
| <b>Power Supply</b>        | Mouse: DC 3.0V by battery<br>Dongle: DC 5V |
| <b>Test Frequency</b>      | 2405MHz, 2430MHz, 2470MHz                  |

1. For more details, please refer to the User's manual of the EUT.

| Channel Number | Frequency | Channel Number | Frequency |
|----------------|-----------|----------------|-----------|
| 1              | 2405MHz   | 5              | 2440MHz   |
| 2              | 2413MHz   | 6              | 2450MHz   |
| 3              | 2422MHz   | 7              | 2460MHz   |
| 4              | 2430MHz   | 8              | 2470MHz   |

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## 2.2. TEST STANDARDS AND RESULTS

The EUT has been tested according to ETSI EN 300 440 V2.2.1.

|                                             |                                                                                                                                                      |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ETSI EN 300 440<br/>V2.2.1 (2018-07)</b> | Short Range Devices (SRD);<br>Radio equipment to be used in the 1 GHz to 40 GHz frequency range;<br>Harmonised Standard for access to radio spectrum |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|

## 2.3. TEST ITEMS AND THE RESULTS

| No. | Basic Standard        | Test Type                                          | Result |
|-----|-----------------------|----------------------------------------------------|--------|
| 1   | ETSI EN 300 440 4.2.2 | Equivalent isotropically radiated power (e.i.r.p.) | Pass   |
| 2   | ETSI EN 300 440 4.2.3 | Permitted range of operating frequencies           | Pass   |
| 3   | ETSI EN 300 440 4.2.4 | Unwanted emissions in the spurious domain          | Pass   |
| 4   | ETSI EN 300 440 4.2.5 | Duty cycle                                         | Pass   |
| 5   | ETSI EN 300 440 4.2.6 | Additional requirements for FHSS equipment         | N/A    |
| 6   | ETSI EN 300 440 4.3.3 | Adjacent channel selectivity                       | N/A    |
| 7   | ETSI EN 300 440 4.3.4 | Blocking or desensitization                        | Pass   |
| 8   | ETSI EN 300 440 4.3.5 | Spurious emissions                                 | Pass   |

## 2.4. ENVIRONMENTAL CONDITIONS

- Temperature: -20-55°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

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### 3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

- Uncertainty of Radio Frequency,  $U_c = \pm 1 \times 10^{-7}$
- Uncertainty of total RF power, conducted,  $U_c = \pm 0.8\text{dB}$
- Uncertainty of RF power density, conducted,  $U_c = \pm 2.6\text{dB}$
- Uncertainty of spurious emissions, conducted,  $U_c = \pm 2.7\text{dB}$
- Uncertainty of spurious emissions, radiated,  $U_c = \pm 5.4\text{dB}$
- Uncertainty of Temperature:  $\pm 0.5^\circ\text{C}$
- Uncertainty of Humidity:  $\pm 1\%$
- Uncertainty of DC and low frequency voltages:  $\pm 2\%$

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#### 4. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

|                 |                                                                                                                                          |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Site</b>     | Attestation of Global Compliance (Shenzhen) Co., Ltd                                                                                     |
| <b>Location</b> | 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China |

| Description                          | Manufacturer | Model No.   | Calibration Date | Calibration Due. |
|--------------------------------------|--------------|-------------|------------------|------------------|
| MXG X-Series Vector Signal Generator | Agilent      | N5182B      | Sep. 20, 2018    | Sep. 19, 2019    |
| RF Analog Signal Generator           | Agilent      | N5171B      | Sep. 20, 2018    | Sep. 19, 2019    |
| EXA Signal Analyzer                  | Agilent      | N9010A      | Sep. 20, 2018    | Sep. 19, 2019    |
| USB Wideband Power Sensor            | Agilent      | U2021XA     | Sep. 20, 2018    | Sep. 19, 2019    |
| USB Wideband Power Sensor            | Agilent      | U2021XA     | Sep. 20, 2018    | Sep. 19, 2019    |
| USB Wideband Power Sensor            | Agilent      | U2021XA     | Sep. 20, 2018    | Sep. 19, 2019    |
| USB Wideband Power Sensor            | Agilent      | U2021XA     | Sep. 20, 2018    | Sep. 19, 2019    |
| ANTENNA                              | A.H.         | SAS-521-4   | Mar. 01, 2018    | Feb. 28, 2020    |
| ANTENNA                              | Schwarzbeck  | 9168        | Mar. 01, 2018    | Feb. 28, 2020    |
| HORN ANTENNA                         | E.M.         | EM-AH-10180 | Mar. 01, 2018    | Feb. 28, 2020    |
| HORN ANTENNA                         | ETS          | 3117        | Mar. 01, 2018    | Feb. 28, 2020    |
| RF Cable                             | SUIRONG      | 30MHZ-26GHZ | Mar. 01, 2018    | Feb. 28, 2020    |

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## 5. ETSI EN 300 440 REQUIREMENTS

### 5.1. EQUIVALENT ISOTROPICALLY RADIATED POWER (E.I.R.P.)

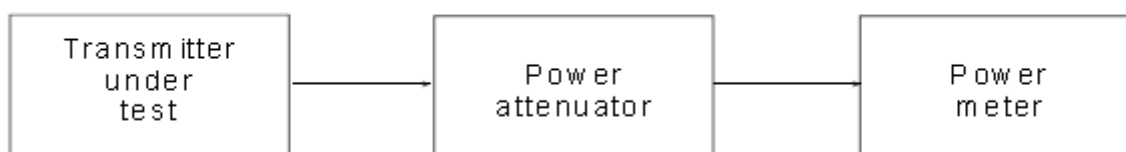
#### EN 300 440 Clause 4.2.2.4

Radiated Power  $\leq 10\text{mW}$  (10dBm) EIRP over Normal and Extreme conditions.

#### Test Configuration

Temperature and Voltage Measurement (under normal and extreme test conditions)

**Equipment measured as constant envelope modulation equipment**



#### Remarks:

For peak power measurements, a spectrum analyser or frequency-selective voltmeter shall be used and tuned to the Presenter carrier at which the highest level is detected.

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## TEST PROCEDURE

Please refer to ETSI EN 300 440 clause 4.2.2.3 for the test conditions and measurement method.

## TEST RESULTS

|                |           |           |               |
|----------------|-----------|-----------|---------------|
| Operation Mode | Single TX | Test Date | Apr. 16, 2019 |
| Temperature    | 25.5°C    | Tested by | Erik          |
| Humidity       | 55.0 % RH | Polarity  | --            |

Mouse:

| TEST CONDITIONS         |              | Mouse Transmitter Power (dBm) |              |         |             |         |
|-------------------------|--------------|-------------------------------|--------------|---------|-------------|---------|
|                         |              | Temp (25)°C                   | Temp (-10)°C |         | Temp (40)°C |         |
| CHANNEL                 | VOL<br>POWER | DC 3.0V                       | DC 2.7V      | DC 3.0V | DC 2.7V     | DC 3.0V |
| 2405MHz                 | EIRP         | 1.91                          | 1.80         | 1.89    | 1.86        | 1.52    |
| 2430MHz                 | EIRP         | 1.63                          | 1.26         | 1.26    | 1.37        | 1.34    |
| 2470MHz                 | EIRP         | 1.12                          | 1.11         | 0.69    | 0.81        | 1.00    |
| Limit                   |              | 10dBm                         |              |         |             |         |
| Measurement uncertainty |              | + 0.28dB / - 0.30dB           |              |         |             |         |

Dongle:

| TEST CONDITIONS         |              | Dongle Transmitter Power (dBm) |              |         |             |         |
|-------------------------|--------------|--------------------------------|--------------|---------|-------------|---------|
|                         |              | Temp (25)°C                    | Temp (-10)°C |         | Temp (40)°C |         |
| CHANNEL                 | VOL<br>POWER | DC 5.0V                        | DC 4.5V      | DC 5.5V | DC 4.5V     | DC 5.5V |
| 2405MHz                 | EIRP         | 2.09                           | 1.72         | 1.65    | 1.80        | 1.90    |
| 2430MHz                 | EIRP         | 1.74                           | 1.45         | 1.26    | 1.30        | 1.44    |
| 2470MHz                 | EIRP         | 1.61                           | 1.28         | 1.16    | 1.46        | 1.15    |
| Limit                   |              | 10dBm                          |              |         |             |         |
| Measurement uncertainty |              | + 0.28dB / - 0.30dB            |              |         |             |         |

**Conclusion: PASS**

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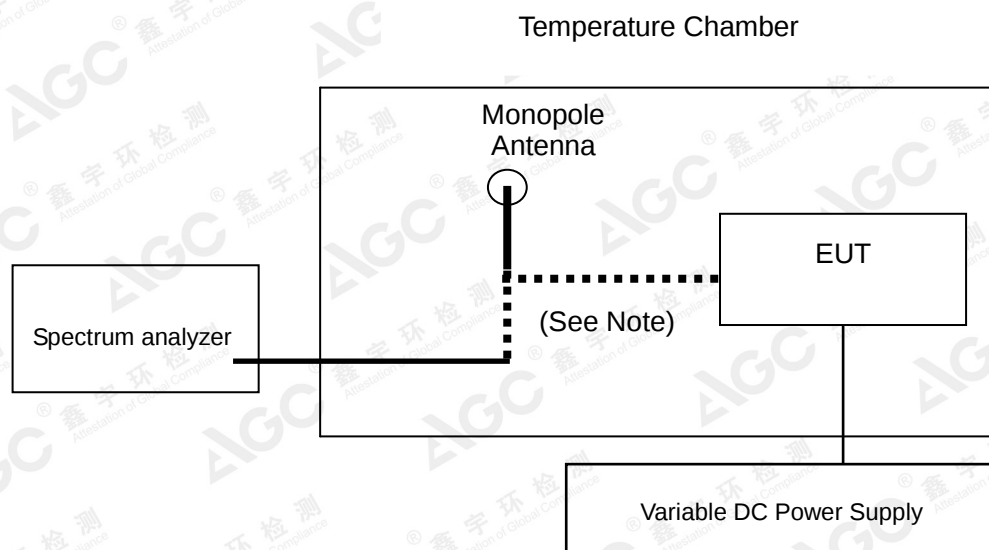
## 5.2. PERMITTED RANGE OF OPERATING FREQUENCIES

### ETSI EN 300 440 clause 4.2.3.5

For all equipment the frequency shall lie within the band 2.4GHz to 2.4835GHz ( $f_L > 2.4\text{GHz}$  and  $f_H < 2.4835\text{GHz}$ )

### TEST CONFIGURATION

Temperature and Voltage Measurement (under normal and extreme test conditions)



#### Remarks:

The spectrum analyzer could be connected to a monopole antenna or directly connected to the EUT, if the EUT has already employing an antenna connector.

### TEST PROCEDURE

Please refer to ETSI EN 300 440 clause 4.2.3.3 for the test conditions and measurement method.

## TEST RESULTS

Mouse:

| TEST CONDITION                               |         | Mouse Frequency Range |                |
|----------------------------------------------|---------|-----------------------|----------------|
|                                              |         | Low Frequency         | High Frequency |
| Temperature                                  | Voltage | MHz                   | MHz            |
| 25°C                                         | DC3.0V  | 2403.89               | 2471.26        |
| -10°C                                        | DC2.7V  | 2403.92               | 2471.22        |
|                                              | DC3.0V  | 2403.89               | 2471.24        |
| 40°C                                         | DC2.7V  | 2403.93               | 2471.23        |
|                                              | DC3.0V  | 2403.91               | 2471.26        |
| Measured frequencies<br>(lowest and Highest) |         | 2403.89               | 2471.26        |
| Limit                                        |         | FL > 2400MHz          | FH < 2483.5MHz |

Dongle:

| TEST CONDITION                               |         | Dongle Frequency Range |                |
|----------------------------------------------|---------|------------------------|----------------|
|                                              |         | Low Frequency          | High Frequency |
| Temperature                                  | Voltage | MHz                    | MHz            |
| 25°C                                         | DC5.0V  | 2403.86                | 2471.33        |
| -10°C                                        | DC4.5V  | 2403.83                | 2471.34        |
|                                              | DC5.5V  | 2403.84                | 2471.34        |
| 40°C                                         | DC4.5V  | 2403.84                | 2471.33        |
|                                              | DC5.5V  | 2403.85                | 2471.36        |
| Measured frequencies<br>(lowest and Highest) |         | 2403.04                | 2471.36        |
| Limit                                        |         | FL > 2400MHz           | FH < 2483.5MHz |

**Conclusion: PASS**

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### 5.3. UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

#### ETSI EN 300 440 clause 4.2.4

Unwanted emissions in the spurious domain (spurious emissions) are those at frequencies beyond the limit of 250 % of the necessary bandwidth above and below the centre frequency of the emission.

The level of spurious emissions shall be measured as either:

- a)
  - i) Their power level in a specified load (conducted emission); and
  - ii) Their effective radiated power when radiated by the cabinet and structure of the equipment (cabinet radiation); or
- b) Their effective radiated power when radiated by the cabinet and the integral or dedicated antenna, in the case of equipment fitted with such an antenna and no permanent RF connector.

For measurements above 1 000 MHz the peak value shall be measured using a spectrum analyser. The "max hold" function of a spectrum analyser shall be used. For measurements up to 1 000 MHz the quasi-peak detector set in accordance with the specification of CISPR 16 [1] shall be used.

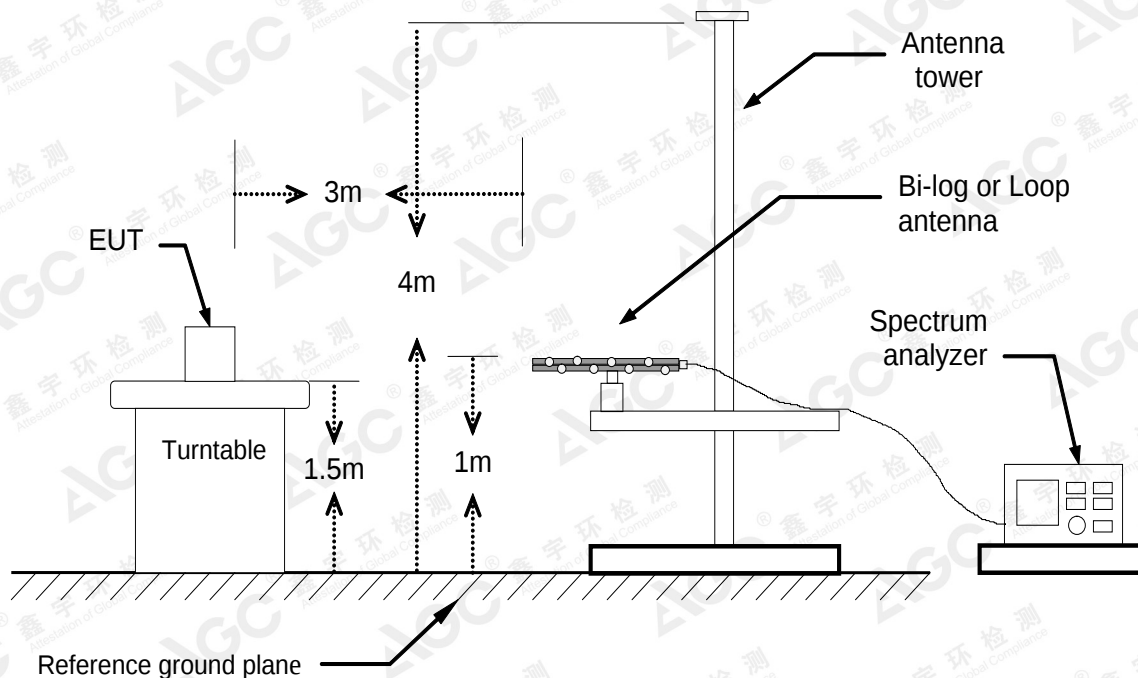
The power of any spurious emission shall not exceed the following values given in table 5.

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

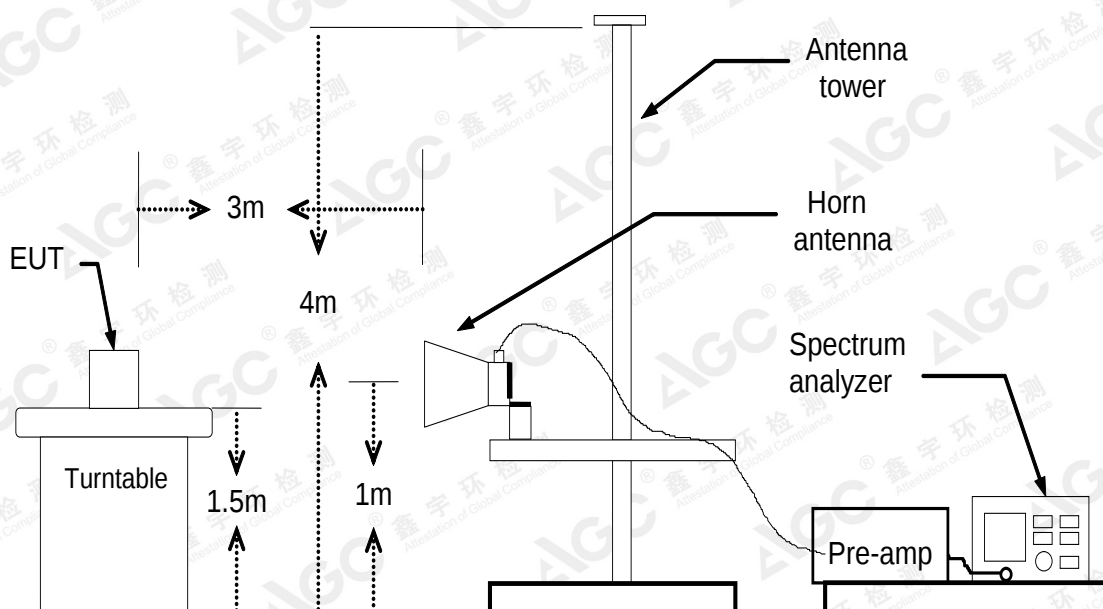
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## Test Configuration

### Below 1GHz



### Above 1GHz



## TEST PROCEDURE

Please refer to ETSI EN 300 440 clause 4.2.4.3 for the test conditions and measurement methods.

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**MOUSE TEST RESULT**  
**Mouse Operating Mode**

| NO.                                                 | Frequency         | Measurement Bandwidth | Level  | Limit      | Margin |
|-----------------------------------------------------|-------------------|-----------------------|--------|------------|--------|
|                                                     | MHz               | KHz                   | EIRP   | dBm        | dB     |
| <b>TX:2405MHz ,Antenna Polarization: Vertical</b>   |                   |                       |        |            |        |
| 1                                                   | 4810              | 1000                  | -36.68 | -30        | 4.36   |
| 2                                                   | 7215              | 1000                  | -37.23 | -30        | 8.94   |
| 3                                                   | 9620              | 1000                  | \      | -30        | >20    |
| 4                                                   | 12025             | 1000                  | \      | -30        | >20    |
| 5                                                   | Other(25-1000)    | 100                   | \      | -36 or -54 | >20    |
| 6                                                   | Other(1000-25000) | 1000                  | \      | -30        | >20    |
| <b>TX:2405MHz ,Antenna Polarization: Horizontal</b> |                   |                       |        |            |        |
| 1                                                   | 4810              | 1000                  | -36.53 | -30        | 5.57   |
| 2                                                   | 7215              | 1000                  | -38.46 | -30        | 10.06  |
| 3                                                   | 9620              | 1000                  | \      | -30        | >20    |
| 4                                                   | 12025             | 1000                  | \      | -30        | >20    |
| 5                                                   | Other(25-1000)    | 100                   | \      | -36 or -54 | >20    |
| 6                                                   | Other(1000-25000) | 1000                  | \      | -30        | >20    |
| <b>TX:2430MHz ,Antenna Polarization: Vertical</b>   |                   |                       |        |            |        |
| 1                                                   | 4860              | 1000                  | -37.26 | -30        | 4.62   |
| 2                                                   | 7290              | 1000                  | -38.43 | -30        | 9.68   |
| 3                                                   | 9720              | 1000                  | \      | -30        | >20    |
| 4                                                   | 12150             | 1000                  | \      | -30        | >20    |
| 5                                                   | Other(25-1000)    | 100                   | \      | -36 or -54 | >20    |
| 6                                                   | Other(1000-25000) | 1000                  | \      | -30        | >20    |
| <b>TX:2430MHz ,Antenna Polarization: Horizontal</b> |                   |                       |        |            |        |
| 1                                                   | 4860              | 1000                  | -37.83 | -30        | 5.13   |
| 2                                                   | 7290              | 1000                  | -38.57 | -30        | 10.21  |
| 3                                                   | 9720              | 1000                  | \      | -30        | >20    |
| 4                                                   | 12150             | 1000                  | \      | -30        | >20    |
| 5                                                   | Other(25-1000)    | 100                   | \      | -36 or -54 | >20    |
| 6                                                   | Other(1000-25000) | 1000                  | \      | -30        | >20    |

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| TX:2470MHz ,Antenna Polarization: Vertical   |                   |      |        |            |       |
|----------------------------------------------|-------------------|------|--------|------------|-------|
| 1                                            | 4940              | 1000 | -38.93 | -30        | 4.75  |
| 2                                            | 7410              | 1000 | -39.42 | -30        | 9.81  |
| 3                                            | 9880              | 1000 | \      | -30        | >20   |
| 4                                            | 12350             | 1000 | \      | -30        | >20   |
| 5                                            | Other(25-1000)    | 100  | \      | -36 or -54 | >20   |
| 6                                            | Other(1000-25000) | 1000 | \      | -30        | >20   |
| TX:2470MHz ,Antenna Polarization: Horizontal |                   |      |        |            |       |
| 1                                            | 4940              | 1000 | -38.73 | -30        | 5.52  |
| 2                                            | 7410              | 1000 | -40.18 | -30        | 10.44 |
| 3                                            | 9880              | 1000 | \      | -30        | >20   |
| 4                                            | 12350             | 1000 | \      | -30        | >20   |
| 5                                            | Other(25-1000)    | 100  | \      | -36 or -54 | >20   |
| 6                                            | Other(1000-25000) | 1000 | \      | -30        | >20   |
| Measurement uncertainty:±3.2dB               |                   |      |        |            |       |

**Mouse Standby Mode**

| NO.                                            | Frequency  | Measurement Bandwidth | Level | Limit | Margin |
|------------------------------------------------|------------|-----------------------|-------|-------|--------|
|                                                | MHz        | KHz                   | EIRP  | dBm   | dB     |
| Standby Mode ,Antenna Polarization: Vertical   |            |                       |       |       |        |
| 1                                              | 25-1000    | 100                   | \     | -57   | >20    |
| 2                                              | 1000-25000 | 1000                  | \     | -47   | >20    |
| Standby Mode ,Antenna Polarization: Horizontal |            |                       |       |       |        |
| 1                                              | 25-1000    | 100                   | \     | -57   | >20    |
| 2                                              | 1000-25000 | 1000                  | \     | -47   | >20    |

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**Dongle Operating Mode**

| NO.                                                 | Frequency         | Measurement Bandwidth | Level  | Limit      | Margin |
|-----------------------------------------------------|-------------------|-----------------------|--------|------------|--------|
|                                                     | MHz               | KHz                   | EIRP   | dBm        | dB     |
| <b>TX:2405MHz ,Antenna Polarization: Vertical</b>   |                   |                       |        |            |        |
| 1                                                   | 4810              | 1000                  | -36.29 | -30        | 6.45   |
| 2                                                   | 7215              | 1000                  | -42.36 | -30        | 12.71  |
| 3                                                   | 9620              | 1000                  | \      | -30        | >20    |
| 4                                                   | 12025             | 1000                  | \      | -30        | >20    |
| 5                                                   | Other(25-1000)    | 100                   | \      | -36 or -54 | >20    |
| 6                                                   | Other(1000-25000) | 1000                  | \      | -30        | >20    |
| <b>TX:2405MHz ,Antenna Polarization: Horizontal</b> |                   |                       |        |            |        |
| 1                                                   | 4810              | 1000                  | -36.35 | -30        | 7.33   |
| 2                                                   | 7215              | 1000                  | -42.86 | -30        | 13.26  |
| 3                                                   | 9620              | 1000                  | \      | -30        | >20    |
| 4                                                   | 12025             | 1000                  | \      | -30        | >20    |
| 5                                                   | Other(25-1000)    | 100                   | \      | -36 or -54 | >20    |
| 6                                                   | Other(1000-25000) | 1000                  | \      | -30        | >20    |
| <b>TX:2430MHz ,Antenna Polarization: Vertical</b>   |                   |                       |        |            |        |
| 1                                                   | 4860              | 1000                  | -36.72 | -30        | 6.54   |
| 2                                                   | 7290              | 1000                  | -42.16 | -30        | 12.85  |
| 3                                                   | 9720              | 1000                  | \      | -30        | >20    |
| 4                                                   | 12150             | 1000                  | \      | -30        | >20    |
| 5                                                   | Other(25-1000)    | 100                   | \      | -36 or -54 | >20    |
| 6                                                   | Other(1000-25000) | 1000                  | \      | -30        | >20    |
| <b>TX:2430MHz ,Antenna Polarization: Horizontal</b> |                   |                       |        |            |        |
| 1                                                   | 4860              | 1000                  | -36.97 | -30        | 7.17   |
| 2                                                   | 7290              | 1000                  | -43.28 | -30        | 13.39  |
| 3                                                   | 9720              | 1000                  | \      | -30        | >20    |
| 4                                                   | 12150             | 1000                  | \      | -30        | >20    |
| 5                                                   | Other(25-1000)    | 100                   | \      | -36 or -54 | >20    |
| 6                                                   | Other(1000-25000) | 1000                  | \      | -30        | >20    |

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| TX:2470MHz ,Antenna Polarization: Vertical   |                   |      |        |            |       |
|----------------------------------------------|-------------------|------|--------|------------|-------|
| 1                                            | 4940              | 1000 | -38.76 | -30        | 7.12  |
| 2                                            | 7410              | 1000 | -42.53 | -30        | 13.02 |
| 3                                            | 9880              | 1000 | \      | -30        | >20   |
| 4                                            | 12350             | 1000 | \      | -30        | >20   |
| 5                                            | Other(25-1000)    | 100  | \      | -36 or -54 | >20   |
| 6                                            | Other(1000-25000) | 1000 | \      | -30        | >20   |
| TX:2470MHz ,Antenna Polarization: Horizontal |                   |      |        |            |       |
| 1                                            | 4940              | 1000 | -38.53 | -30        | 7.62  |
| 2                                            | 7410              | 1000 | -43.21 | -30        | 13.97 |
| 3                                            | 9880              | 1000 | \      | -30        | >20   |
| 4                                            | 12350             | 1000 | \      | -30        | >20   |
| 5                                            | Other(25-1000)    | 100  | \      | -36 or -54 | >20   |
| 6                                            | Other(1000-25000) | 1000 | \      | -30        | >20   |
| Measurement uncertainty:±3.2dB               |                   |      |        |            |       |

#### Dongle Standby Mode

| NO.                                            | Frequency  | Measurement Bandwidth | Level | Limit | Margin |
|------------------------------------------------|------------|-----------------------|-------|-------|--------|
|                                                | MHz        | KHz                   | EIRP  | dBm   | dB     |
| Standby Mode ,Antenna Polarization: Vertical   |            |                       |       |       |        |
| 1                                              | 25-1000    | 100                   | \     | -57   | >20    |
| 2                                              | 1000-25000 | 1000                  | \     | -47   | >20    |
| Standby Mode ,Antenna Polarization: Horizontal |            |                       |       |       |        |
| 1                                              | 25-1000    | 100                   | \     | -57   | >20    |
| 2                                              | 1000-25000 | 1000                  | \     | -47   | >20    |

Notes: “\” in the table above means that the emissions are too small to be measured and are at least 10 dB below the limit.

**Conclusion: PASS**

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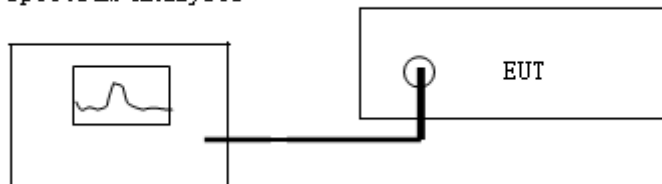
## 5.4 DUTY CYCLE

### ETSI EN 300 440 clause 4.2.5.4:

Limit: up to 100%

### Test Configuration

Spectrum Analyser



### TEST PROCEDURE

Please refer to ETSI EN 300 440 clause 4.2.5.3 for the test conditions and measurement methods.

### TEST RESULTS

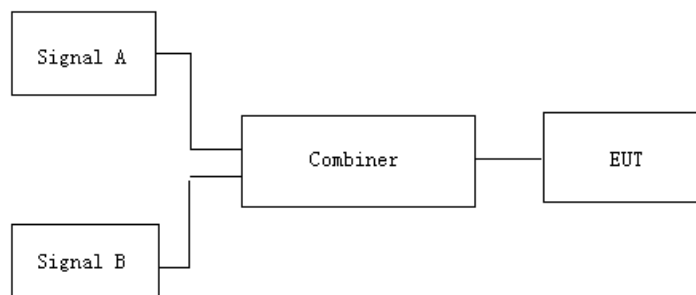
Note: Since the duty cycle limit is up to 100% for the device, it is deemed to comply without testing.

**Conclusion: PASS**

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## 5.5 BLOCKING OR DESENSITIZATION

### TEST SETUP:



### TEST LIMITS:

The blocking level, for any frequency within the specified ranges, shall not be less than the values given in table 7, except at frequencies on which spurious responses are found.

**Table 7: Limits for blocking or desensitization**

| Receiver category | Limit       |
|-------------------|-------------|
| 1                 | -30 dBm + k |
| 2                 | -45 dBm + k |
| 3                 | No limit    |

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:  $0 < k \leq 40$  dB.

### TEST PROCEDURE:

- Two signal generators A and B shall be connected to the receiver via a combining network to the receiver.
- Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal. Signal generator B shall be unmodulated and shall be adjusted to a test frequency at approximately 10 times, 20 times and 50 times of the receive channel bandwidth above upper band edge of the receive channel.
- Initially signal generator B shall be switched off and using signal generator A the level that still gives sufficient response shall be established. The output level of generator A shall then be increased by 3 dB.
- Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.
- The measurement shall be repeated with the test frequency for signal generator B at approximately 10 times, 20 times and 50 times of the receive channel bandwidth below the lower band edge of the receive channel.
- The blocking or desensitization shall be recorded as the level in dBm of lowest level of the unwanted signal (generator B).

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**TEST RESULT:**

Mouse:

| Blocking or Desensitization                                      |                             |                            |                                       |
|------------------------------------------------------------------|-----------------------------|----------------------------|---------------------------------------|
| Receiver category: 2                                             |                             |                            |                                       |
| Coupling method: Test antenna to the receiver integrated antenna |                             |                            |                                       |
| Minimum receiver channel bandwidth (RXBW):MHz                    |                             | 2.303                      |                                       |
| RX Lower band edge (LBE):MHz                                     |                             | 2403.848                   |                                       |
| RX Upper band edge (UBE):MHz                                     |                             | 2471.152                   |                                       |
| Unwanted Frequency Offset (MHz)                                  | Unwanted Signal Level (dBm) | Unwanted Level Limit (dBm) | Verdict                               |
| LBE – 50 x RXBW                                                  | -36                         | ≥ -45.0+k                  | Comply with receiver category 2 limit |
| LBE – 20 x RXBW                                                  | -35                         | ≥ -45.0+k                  |                                       |
| LBE – 10 x RXBW                                                  | -33                         | ≥ -45.0+k                  |                                       |
| UBE + 10 x RXBW                                                  | -33                         | ≥ -45.0+k                  |                                       |
| UBE + 20 x RXBW                                                  | -34                         | ≥ -45.0+k                  |                                       |
| UBE + 50 x RXBW                                                  | -36                         | ≥ -45.0+k                  |                                       |
| Measurement uncertainty: 6 dB                                    |                             |                            |                                       |

Dongle:

| Blocking or Desensitization                                      |                             |                            |                                       |
|------------------------------------------------------------------|-----------------------------|----------------------------|---------------------------------------|
| Receiver category: 2                                             |                             |                            |                                       |
| Coupling method: Test antenna to the receiver integrated antenna |                             |                            |                                       |
| Minimum receiver channel bandwidth (RXBW):MHz                    |                             | 2.290                      |                                       |
| RX Lower band edge (LBE):MHz                                     |                             | 2403.855                   |                                       |
| RX Upper band edge (UBE):MHz                                     |                             | 2471.145                   |                                       |
| Unwanted Frequency Offset (MHz)                                  | Unwanted Signal Level (dBm) | Unwanted Level Limit (dBm) | Verdict                               |
| LBE – 50 x RXBW                                                  | -38                         | ≥ -45.0+k                  | Comply with receiver category 2 limit |
| LBE – 20 x RXBW                                                  | -36                         | ≥ -45.0+k                  |                                       |
| LBE – 10 x RXBW                                                  | -35                         | ≥ -45.0+k                  |                                       |
| UBE + 10 x RXBW                                                  | -34                         | ≥ -45.0+k                  |                                       |
| UBE + 20 x RXBW                                                  | -36                         | ≥ -45.0+k                  |                                       |
| UBE + 50 x RXBW                                                  | -37                         | ≥ -45.0+k                  |                                       |
| Measurement uncertainty: 6 dB                                    |                             |                            |                                       |

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## 5.6. RECEIVER SPURIOUS EMISSIONS

### ETSI EN 300 440 clause 4.3.5

These requirements do not apply to receivers used in combination with permanently co-located Presenters continuously transmitting. Co-located is defined as < 3 m. In these cases the receivers will be tested together with the Presenter in operating mode

The spurious emissions of the receivers shall not exceed the values in tables in the indicated bands:

| Frequency Range | Limit when in stand-by |
|-----------------|------------------------|
| 25 MHz to 1 GHz | -57dBm                 |
| Above 1 GHz     | -47dBm                 |

## TEST CONFIGURATION

### Radiated Spurious Emissions

Same as section 5.3 in this test report

## TEST PROCEDURE

Please refer to ETSI EN 300 440 clause 4.3.5.3 for the test conditions and measurement methods.

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## TEST RESULTS

### Measurement Data for Mouse (worst case 2470MHz)

| Frequency<br>(MHz) | Spurious Emission |            | Limit<br>(dBm)                    | Test<br>Result |
|--------------------|-------------------|------------|-----------------------------------|----------------|
|                    | polarization      | Level(dBm) |                                   |                |
| 192.75             | Vertical          | -57.65     | 2nW/<br>-57dBm<br>below<br>1GHz,  | Pass           |
| 270.10             | V                 | -58.25     |                                   |                |
| 528.88             | V                 | -59.77     |                                   |                |
| 744.19             | V                 | -59.28     |                                   |                |
| 934.14             | V                 | -59.10     |                                   |                |
| 1534.82            | V                 | -58.02     |                                   |                |
| Other(25-26000)    | V                 | --         |                                   |                |
| 196.01             | Horizontal        | -58.11     | 20nW/<br>-47dBm<br>above<br>1GHz. |                |
| 465.48             | H                 | -62.34     |                                   |                |
| 686.25             | H                 | -60.68     |                                   |                |
| 706.33             | H                 | -58.68     |                                   |                |
| 957.67             | H                 | -59.17     |                                   |                |
| 1540.60            | H                 | -57.50     |                                   |                |
| Other(25-26000)    | V                 | --         |                                   |                |

### Measurement Data for Dongle (worst case 2470MHz)

| Frequency<br>(MHz) | Spurious Emission |            | Limit<br>(dBm)                    | Test<br>Result |
|--------------------|-------------------|------------|-----------------------------------|----------------|
|                    | polarization      | Level(dBm) |                                   |                |
| 196.40             | Vertical          | -58.27     | 2nW/<br>-57dBm<br>below<br>1GHz,  | Pass           |
| 265.67             | V                 | -59.84     |                                   |                |
| 531.28             | V                 | -59.89     |                                   |                |
| 747.95             | V                 | -60.46     |                                   |                |
| 931.36             | V                 | -59.57     |                                   |                |
| 1536.67            | V                 | -58.04     |                                   |                |
| Other(25-26000)    | V                 | --         |                                   |                |
| 195.50             | Horizontal        | -56.90     | 20nW/<br>-47dBm<br>above<br>1GHz. |                |
| 465.89             | H                 | -62.57     |                                   |                |
| 684.92             | H                 | -60.89     |                                   |                |
| 706.18             | H                 | -60.06     |                                   |                |
| 953.82             | H                 | -57.67     |                                   |                |
| 1538.55            | H                 | -57.41     |                                   |                |
| Other(25-26000)    | V                 | --         |                                   |                |

### Notes:

- Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- All the modes had been tested, only the worst case recorded in the report.

### Conclusion: PASS

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**APPENDIX A: PHOTOGRAPHS OF TEST SETUP**  
**RADIATED SPURIOUS EMISSION TEST SETUP-MOUSE**



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RADIATED SPURIOUS EMISSION TEST SETUP- DONGLE



----END OF REPORT----

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# Health Test Report

Report No.: AGC07777190401EH02

**PRODUCT DESIGNATION** : wireless mouse  
**BRAND NAME** : N/A  
**MODEL NAME** : M08117 LXW-273  
**CLIENT** : Mid Ocean Brands B.V  
**DATE OF ISSUE** : Apr. 25, 2019  
**STANDARD(S)** : EN 62479:2010  
**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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### Report Revise Record

| Report Version | Revise Time | Issued Date   | Valid Version | Notes           |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0           | /           | Apr. 25, 2019 | Valid         | Initial release |

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## TABLE OF CONTENTS

|                                           |          |
|-------------------------------------------|----------|
| <b>1. TEST REPORT CERTIFICATION .....</b> | <b>4</b> |
| <b>2. GENERAL INFORMATION .....</b>       | <b>5</b> |
| 2.1. DESCRIPTION OF EUT .....             | 5        |
| <b>3. TEST RESULT .....</b>               | <b>6</b> |

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## 1. TEST REPORT CERTIFICATION

|                                 |                                                                  |
|---------------------------------|------------------------------------------------------------------|
| <b>Applicant</b>                | Mid Ocean Brands B.V                                             |
| <b>Address</b>                  | 7/F. Kings Tower, 111King Lam Street, Cheung Sha Wan. kowloon HK |
| <b>Manufacturer</b>             | Mid Ocean Brands B.V                                             |
| <b>Address</b>                  | 7/F. Kings Tower, 111King Lam Street, Cheung Sha Wan. kowloon HK |
| <b>Factory</b>                  | Mid Ocean Brands B.V                                             |
| <b>Address</b>                  | 7/F. Kings Tower, 111King Lam Street, Cheung Sha Wan. kowloon HK |
| <b>Product Designation</b>      | wireless mouse                                                   |
| <b>Brand Name</b>               | N/A                                                              |
| <b>Test Model</b>               | MO8117 LXW-273                                                   |
| <b>Date of test</b>             | Apr. 01, 2019 to Apr. 18, 2019                                   |
| <b>Deviation</b>                | None                                                             |
| <b>Condition of Test Sample</b> | Normal                                                           |
| <b>Test Result</b>              | Pass                                                             |
| <b>Report Template</b>          | AGCRT-EC-EMC                                                     |

We, Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in the European Standard EN 62479. The results of testing in this report apply to the product/system which was tested only.

Tested By



Erik Yang(Yang Jianmin)

Apr. 18, 2019

Reviewed By



Max Zhang(Zhang Yi)

Apr. 25, 2019

Approved By



 Forrest Lei(Lei Yonggang)  
 Authorized Officer

Apr. 25, 2019

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## 2. GENERAL INFORMATION

### 2.1. DESCRIPTION OF EUT

Note: the following data is based on the information by the applicant.

|                     |                                            |
|---------------------|--------------------------------------------|
| Operating Frequency | 2405MHz-2470MHz                            |
| Support Channels    | 8 Channels                                 |
| Modulation          | GFSK                                       |
| Hardware Version    | Mouse: V10<br>Dongle: V10                  |
| Software Version    | Mouse: V10<br>Dongle: V10                  |
| Antenna Type        | Mouse: PCB Antenna<br>Dongle: PCB Antenna  |
| Antenna Gain        | Mouse: -7dBi<br>Dongle: -7dBi              |
| Receiver category   | 2                                          |
| Power Supply        | Mouse: DC 3.0V by battery<br>Dongle: DC 5V |
| Test Frequency      | 2405MHz, 2430MHz, 2470MHz                  |

**Note:**

1. For more details, please refer to the User's manual of the EUT.

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### 3. TEST RESULT

#### Mouse

| Maximum Emissions Level |                  |                |            |        |
|-------------------------|------------------|----------------|------------|--------|
| Frequency(MHz)          | EIRP Level (dBm) | EIRP Level(mW) | Limit (mW) | Result |
| 2405                    | 1.91             | 1.5524         | 20         | Pass   |
| 2430                    | 1.63             | 1.4555         | 20         | Pass   |
| 2470                    | 1.12             | 1.2942         | 20         | Pass   |

Remark:

Pass: The EUT complies with the essential requirements in the standard.

#### Dongle

| Maximum Emissions Level |                  |                |            |        |
|-------------------------|------------------|----------------|------------|--------|
| Frequency(MHz)          | EIRP Level (dBm) | EIRP Level(mW) | Limit (mW) | Result |
| 2405                    | 2.09             | 1.6181         | 20         | Pass   |
| 2430                    | 1.74             | 1.4928         | 20         | Pass   |
| 2470                    | 1.61             | 1.4488         | 20         | Pass   |

Remark:

Pass: The EUT complies with the essential requirements in the standard.

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