Report No.: $\quad$ FCC1906058
File reference No.: 2019-06-15

Applicant: Shenzhen Star Sources Electronic Technology Co., Ltd.
Product: Mid-size Ergonomic Mouse

Model No.: BRM2020B, BRM2020Z, BRM2020R

Brand Name: brookstone

Test Standards: $\quad$ FCC Part 15.249

Test result:
It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4\&FCC Part 15 Subpart C, Paragraph 15.249 regulations for the evaluation of electromagnetic compatibility
Approved By

## gack Chung

Jack Chung

Manager

Dated:
June 15, 2019
Results appearing herein relate only to the sample tested The technical reports is issued errors and omissions exempt and is subject to withdrawal at

## SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

## Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

## CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

## FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.
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Date: 2019-06-15

### 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: (755) 83448688
Fax: (755) 83442996
Site on File with the Federal Communications Commission - United Sates
Registration Number: 744189
For 3m Anechoic Chamber
1.2 Applicant Details

Applicant: Shenzhen Star Sources Electronic Technology Co., Ltd.
Address: Room1102, Block 1st, Yi Luan Building, Xixiang Road 230, BaoAn District, Shenzhen, China

Telephone: 0755-86397260
Fax: 0755-26609516
1.3 Description of EUT

Product: Mid-size Ergonomic Mouse
Manufacturer: Shenzhen Star Sources Electronic Technology Co., Ltd.
Address: Room1102, Block 1st, Yi Luan Building, Xixiang Road 230, BaoAn District, Shenzhen, China
Brand Name: brookstone
Model Number: BRM2020B
Additional Model Name: BRM2020Z,BRM2020R
Input Voltage:
DC3.0V, 2pcs AAA batteries
Modulation Type:
GFSK
Operation Frequency 2402-2480MHz
Channel Seperation 2 MHz
Antenna Designation PCB antenna with gain 0dBi Max
Hardware Version: V1.1
Software Version: V2.2

### 1.4 Submitted Sample

2 Sample
1.5 Test Duration

209-06-05 to 2019-06-15
1.6 Test Uncertainty

Conducted Emissions Uncertainty $=3.6 \mathrm{~dB}$
Radiated Emissions below 1 GHz Uncertainty $=4.7 \mathrm{~dB}$
Radiated Emissions above 1 GHz Uncertainty $=6.0 \mathrm{~dB}$
Conducted Power Uncertainty $=6.0 \mathrm{~dB}$
Occupied Channel Bandwidth Uncertainty $=5 \%$
Conducted Emissions Uncertainty $=3.6 \mathrm{~dB}$
1.7 Test Engineer

The sample tested by


Print Name: Terry Tang

The report refers only to the sample tested and does not apply to the bulk.
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### 2.0 Test Equipment

| Instrument Type | Manufacturer | Model | Serial No. | Date of Cal. | Due Date |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ESPI Test Receiver | R\&S | ESPI 3 | 100379 | $2018-06-22$ | $2019-06-21$ |
| Ultra Broadband <br> ANT | R\&S | HL562 | 100157 | $2018-06-18$ | $2019-06-17$ |
| Loop Antenna | EMCO | 6507 | 00078608 | $2018-06-25$ | $2019-06-24$ |
| Spectrum | R\&S | FSIQ26 | 100292 | $2018-06-22$ | $2019-06-21$ |
| Horn Antenna | A-INFO | LB-180400-KF | J211060660 | $2018-06-25$ | $2019-06-24$ |
| Horn Antenna | R\&S | BBHA 9120D | $9120 \mathrm{D}-631$ | $2018-08-24$ | $2019-08-23$ |
| Bilog Antenna | Schwarebeck | VULB9163 | $9163 / 340$ | $2018-07-04$ | $2019-07-03$ |
| $9 * 6 * 6$ Anechoic | -- | -- | N/A | $2018-02-07$ | $2021-02-06$ |
| Spectrum | HP/Agilent | ESA-L1500A | US37451154 | $2018-06-22$ | $2019-06-21$ |
| Spectrum | RS | FSP | 1164.4391 .38 | $2019-01-18$ | $2020-01-17$ |
| RF Cable | Zhengdi | ZT26-NJ-NJ-8 | -- | $2018-05-23$ | $2020-05-22$ |
| RF Cable | Zhengdi | 7 m | -- | $2019-03-08$ | $2020-03-07$ |
| RF Switch | EM | EMSW18 | 060391 | $2018-06-22$ | $2019-06-21$ |
| Pre-Amplifier | Schwarebeck | BBV9743 | \#218 | $2018-06-22$ | $2019-06-21$ |
| Pre-Amplifier | HP/Agilent | $8449 B$ | $3008 A 00160$ | $2018-08-05$ | $2019-08-04$ |
| DC Power Supply | Jingtong | JT12098 | WYK-305 | 2018.08 .20 | $2019-08-19$ |
| LISN | SCHAFFNER | NNB42 | 00012 | $2019-01-08$ | $2020-01-07$ |

### 3.0 Technical Details

3.1 Summary of test results

| The EUT has been tested according to the following specifications: |  |  |  |
| :---: | :---: | :---: | :---: |
| Standard | Test Type | Result | Notes |
| FCC Part 15, Paragraph 15.207 | Conducted <br> Emission Test | N/A | Complies |
| FCC Part 15 Subpart C Paragraph 15.249(a) |  |  |  |
| \& 15.249(b) Limit | Field Strength <br> of <br> Fundamental | PASS | Complies |
| FCC Part 15, Paragraph 15.209 and RSS-210 | Radiated <br> Emission Test | PASS | Complies |
| FCC Part 15 Subpart C Paragraph 15.249(d) <br> Limit | Band Edge <br> Test | PASS | Complies |

### 3.2 Test Standards

FCC Part 15 Subpart C, Paragraph 15.249, ANSI C63.4 :2014 and ANSI C63.10:2013

### 4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

## 5. Power Line Conducted Emission Test

5.1 Schematics of the test


EUT: Equipment Under Test
5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2014.The Frequency spectrum From 0.15 MHz to 30 MHz was investigated. The LISN used was $50 \mathrm{ohm} / 50 \mathrm{uH}$ as specified by section 5.1 of ANSI C63.4-2014.

Block diagram of Test setup

5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2014. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.
One channels are provided to the EUT
A. EUT

| Device | Manufacturer | Model | FCC ID |
| :---: | :---: | :---: | :---: |
| Mid-size Ergonomic <br> Mouse | Shenzhen Star Sources Electronic <br> Technology Co., Ltd. | BRM2020B | ZJEST-397 |

Date: 2019-06-15
B. Internal Device

| Device | Manufacturer | Model | FCC ID/DOC |
| :---: | :---: | :---: | :---: |
| N/A |  |  |  |

C. Peripherals

| Device | Manufacturer | Model | Rating |
| :---: | :---: | :---: | :---: |
| -- | -- | -- | -- |

### 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4-2014
A Setup the EUT and simulators as shown on follow
B Enable AF signal and confirm EUT active to normal condition
5.5 Power line conducted Emission Limit according to Paragraph 15.107 and 15.207

| Frequency $(\mathrm{MHz})$ | Class A Limits $(\mathrm{dB} \mu \mathrm{V})$ |  | Class B |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Quasi-peak Level | Average Level | Quasi-peak Level | Average Level |
| $0.15 \sim 0.50$ | 79.0 | 66.0 | $66.0 \sim 56.0^{*}$ | $56.0 \sim 46.0^{*}$ |
| $0.50 \sim 5.00$ | 73.0 | 60.0 | 56.0 | 46.0 |
| $5.00 \sim 30.00$ | 73.0 | 60.0 | 60.0 | 50.0 |

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The tighter limit shall apply at the transition frequencies

### 5.6 Test Results

Pass
The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9 kHz .

## Note: EUT Powered by AAA battery, this item not applicable.

## 6 Radiated Emission Test

6.1 Test Method and test Procedure:
(1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
(2) The EUT, peripherals were put on the turntable which table size is $1 \mathrm{~m} \times 1.5 \mathrm{~m}$, table high 0.8 m . All set up is according to ANSI C63.10-2013.
(3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz . All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz (Note: for Fundamental frequency radiated emission measurement, $\mathrm{RBW}=3 \mathrm{MHz}, \mathrm{VBW}=10 \mathrm{MHz}$ ). Measurements were made at 3 meters.
(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
(5) The antenna polarization: Vertical polarization and Horizontal polarization.

## Block diagram of Test setup



### 6.2 Configuration of The EUT

Same as section 5.3 of this report
6.3 EUT Operating Condition

Same as section 5.4 of this report.

### 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

A FCC Part 15 Subpart C Paragraph 15.249(a) Limit

| Fundamental Frequency <br> (MHz) | Field Strength of Fundamental (3m) |  | Field Strength of Harmonics (3m) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\mathbf{m V} / \mathbf{m}$ | $\mathbf{d B u V} / \mathbf{m}$ |  | $\mathbf{u V} / \mathbf{m}$ | $\mathbf{d B u V / m}$ |  |
| $2400-2483.5$ | 50 | 94 (Average) | 114 (Peak) | 500 | 54 (Average) | 74 (Peak) |

Note: 1. RF Field Strength $(\mathrm{dBuV})=20 \log$ RF Voltage (uV)
2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.
B. $\quad$ Frequencies in restricted band are complied to limit on Paragraph 15.209.

| Frequency Range (MHz) | Distance (m) | Field strength (dB $\mu \mathrm{V} / \mathrm{m})$ |
| :---: | :---: | :---: |
| $30-88$ | 3 | 40.0 |
| $88-216$ | 3 | 43.5 |
| $216-960$ | 3 | 46.0 |
| Above 960 | 3 | 54.0 |

Note: 1. RF Voltage $(\mathrm{dBuV})=20$ log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
4. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position. 5. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from $30-1000 \mathrm{MHz}$.As to $1 \mathrm{G}-25 \mathrm{G}$, the final emission level got using PK. For fundamental measurement, PK detector used.
6. New batteries were used during tests.
6.5 Test result

A Fundamental \& Harmonics Radiated Emission Data

| Product: | Mid-size Ergonomic Mouse | Test Mode: | Keep transmitting-Low Channel |
| :--- | :--- | :--- | :--- |
| Test Item: | Fundamental Radiated Emission <br> Data | Temperature: | $25^{\circ} \mathrm{C}$ |
| Test Voltage: | DC3.0V | Humidity: | $56 \%$ |
| Test Result: | Pass |  |  |


| Frequency <br> $(\mathbf{M H z})$ | Emission PK/AV <br> $(\mathbf{d B u V} / \mathbf{m})$ | Horiz $/$ <br> Vert | Limits PK/AV <br> $(\mathbf{d B u} / \mathbf{m})$ | Margin <br> $(\mathbf{d B})$ |
| :---: | :---: | :---: | :---: | :---: |
| 2402 | $84.34(\mathrm{PK})$ | H | $114 / 94$ | -9.66 |
| 2402 | $80.09(\mathrm{PK})$ | V | $114 / 94$ | -13.91 |
| 4804 | $48.32(\mathrm{PK})$ | H | $74 / 54$ | -5.68 |
| 4804 | $48.84(\mathrm{PK})$ | V | $74 / 54$ | -5.16 |
| 7206 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 9608 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 12010 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 14412 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 16814 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 19216 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 21618 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 24020 | -- | $74 / 54$ | -- |  |

Note: (1) $P K=$ Peak, $A V=$ Average
(2) Emission Level = Reading Level + Antenna Factor + Cable Loss.
(3)Margin=Emission-Limits
(4)According to section $15.35(\mathrm{~b})$, the peak limit is 20 dB higher than the average limit
(5) For test purpose, keep EUT continuous transmitting

| Product: | Mid-size Ergonomic Mouse | Test Mode: | Keep transmitting-Middle Channel |
| :--- | :--- | :--- | :--- |
| Test Item: | Fundamental Radiated Emission <br> Data | Temperature: | $25^{\circ} \mathrm{C}$ |
| Test Voltage: | DC3.0V | Humidity: | $56 \%$ |
| Test Result: | Pass |  |  |


| Frequency <br> $\mathbf{( M H z )}$ | Emission PK/AV <br> $\mathbf{( d B u V / m )}$ | Horiz / <br> Vert | Limits PK/AV <br> $(\mathbf{d B u V / m})$ | Margin <br> $\mathbf{( d B )}$ |
| :---: | :---: | :---: | :---: | :---: |
| 2440 | $85.58(\mathrm{PK})$ | H | $114 / 94$ | -8.42 |
| 2440 | $77.87(\mathrm{PK})$ | V | $114 / 94$ | -16.13 |
| 4880 | $49.62(\mathrm{PK})$ | H | $74 / 54$ | -4.38 |
| 4880 | $49.62(\mathrm{PK})$ | V | $74 / 54$ | -4.38 |
| 7320 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 9760 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 12200 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 14640 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 17080 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 19520 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 21960 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 24400 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |

Note: (1) PK= Peak, AV= Average
(2) Emission Level $=$ Reading Level + Antenna Factor + Cable Loss.
(3)Margin=Emission-Limits
(4)According to section $15.35(\mathrm{~b})$, the peak limit is 20 dB higher than the average limit
(5) For test purpose, keep EUT continuous transmitting

| Product: | Mid-size Ergonomic Mouse | Test Mode: | Keep transmitting-High Channel |
| :--- | :--- | :--- | :--- |
| Test Item: | Fundamental Radiated Emission <br> Data | Temperature: | $25^{\circ} \mathrm{C}$ |
| Test Voltage: | DC3.0V | Humidity: | $56 \%$ |
| Test Result: | Pass |  |  |


| Frequency <br> $\mathbf{( M H z )}$ | Emission PK/AV <br> $(\mathbf{d B u V} / \mathbf{m})$ | Horiz / <br> Vert | Limits PK/AV <br> $(\mathbf{d B u} / \mathbf{m})$ | Margin <br> $\mathbf{( d B})$ |
| :---: | :---: | :---: | :---: | :---: |
| 2480 | $86.90(\mathrm{PK})$ | H | $114 / 94$ | -7.1 |
| 2480 | $75.33(\mathrm{PK})$ | V | $114 / 94$ | -18.67 |
| 4960 | $49.64(\mathrm{PK})$ | H | $74 / 54$ | -4.36 |
| 4960 | $49.89(\mathrm{PK})$ | V | $74 / 54$ | -4.11 |
| 7440 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 9920 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 12400 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 14880 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 17360 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 19840 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 22320 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |
| 24800 | -- | $\mathrm{H} / \mathrm{V}$ | $74 / 54$ | -- |

Note: (1) PK= Peak, AV= Average
(2) Emission Level $=$ Reading Level + Antenna Factor + Cable Loss.
(3)Margin=Emission-Limits
(4)According to section $15.35(\mathrm{~b})$, the peak limit is 20 dB higher than the average limit
(5) For test purpose, keep EUT continuous transmitting

Please refer to the following test plots for details: Low Channel
Horizontal
FCC Part 15B Class B 1GHz-18GHz - 2


Vertical
FCC Part 15B Class B $1 \mathrm{GHz}-18 \mathrm{GHz}$ - 2


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Please refer to the following test plots for details: Middle Channel
Horizontal
FCC Part 15B Class B $1 \mathrm{GHz}-18 \mathrm{GHz}$ - 2


## Vertical

FCC Part 15B Class B 1GHz-18GHz - 2


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Please refer to the following test plots for details: High Channel

## Horizontal



## Vertical



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For emission above 18 GHz , It is only the floor noise. No necessary to take down.
B. General Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

## Results: Pass

Please refer to following diagram for individual


The report refers only to the sample tested and does not apply to the bulk.
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## Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

## Results: Pass

Please refer to following diagram for individual


The report refers only to the sample tested and does not apply to the bulk.
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Date: 2019-06-15

## 7. Band Edge

### 7.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
(2) Set Spectrum as RBW $=1 \mathrm{MHz}, \mathrm{VBW}=3 \mathrm{MHz}$ and Peak detector used
(3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
(4) The antenna polarization: Vertical polarization and Horizontal polarization.

Note: for Fundamental frequency radiated emission measurement, RBW $=3 \mathrm{MHz}, \mathrm{VBW}=10 \mathrm{MHz}$.

## 7. 2 Radiated Test Setup

$$
\text { Distance }=3 \mathrm{~m}
$$



For the actual test configuration, please refer to the related items - Photos of Testing

### 7.3 Configuration of The EUT

Same as section 5.3 of this report

### 7.4 EUT Operating Condition

Same as section 5.4 of this report.

### 7.5 Band Edge Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.
7.6 Test Result

| Product: | Mid-size Ergonomic Mouse |  | Polarity | Horizontal |
| :---: | :---: | :---: | :---: | :---: |
| Mode | Keeping Transmitting |  | Test Voltage | DC3.0V |
| Temperature | 24 deg. C, |  | Humidity | $56 \% \mathrm{RH}$ |
| Test Result: | Pass |  | -- | -- |
| 2400 MHz | PK $(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | 61.89 | Limit | $74 \mathrm{~dB} \mathrm{\mu V} / \mathrm{m}$ |
| 2400 MHz | $\mathrm{AV}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | 40.16 | Limit | $54 \mathrm{~dB} \mathrm{\mu V} / \mathrm{m}$ |
| 2390 MHz | PK $(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | 36.61 | Limit | $74 \mathrm{~dB} \mu \mathrm{~V} / \mathrm{m}$ |
| 2390 MHz | $\mathrm{AV}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | -- | Limit | $54 \mathrm{~dB} \mathrm{\mu V/m}$ |



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| Product: | Mid-size Ergonomic Mouse |  | Detector | Vertical |
| :---: | :---: | :---: | :---: | :---: |
| Mode | Keeping Transmitting |  | Test Voltage | DC3.0V |
| Temperature | 24 deg. C, |  | Humidity | $56 \% \mathrm{RH}$ |
| Test Result: | Pass |  | -- | -- |
| 2400 MHz | PK $(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | 61.92 | Limit | $74 \mathrm{~dB} \mu \mathrm{~V} / \mathrm{m}$ |
| 2400 MHz | $\mathrm{AV}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | 40.22 | Limit | $54 \mathrm{~dB} \mu \mathrm{~V} / \mathrm{m}$ |
| 2390 MHz | $\mathrm{PK}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | 38.09 | Limit | $74 \mathrm{~dB} \mathrm{\mu V/m}$ |
| 2390 MHz | $\mathrm{AV}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | -- | Limit | $54 \mathrm{~dB} \mu \mathrm{~V} / \mathrm{m}$ |

FCC Part 158 Class 8 16Hz-18GHz-2


| No. | Frequency <br> $(\mathrm{MHz})$ | Results <br> $(\mathrm{dBuV} / \mathrm{m})$ | Factor <br> $(\mathrm{dB})$ | Limit <br> $(\mathrm{dBuV} / \mathrm{m})$ | Over Limit <br> $(\mathrm{dB})$ | Detector | Table <br> $(\mathrm{o})$ | Height <br> $(\mathrm{cm})$ | ANT | Verdict |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | 2402.007 | 80.09 | -3.57 | 74.0 | 6.09 | Peak | 181.00 | 100 | V | N/A |
| 2 | 2390.000 | 38.09 | -3.53 | 74.0 | -35.91 | Peak | 18.00 | 100 | V | Pass |
| 3 | 2400.000 | 61.92 | -3.57 | 74.0 | -12.08 | Peak | 181.00 | 100 | V | Pass |
| 4 | 2400.000 | 40.22 | -3.57 | 54.0 | -13.78 | AV | 181.00 | 100 | V | Pass |

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| Product: | Mid-size Ergonomic Mouse |  | Polarity | Horizontal |
| :---: | :---: | :---: | :---: | :---: |
| Mode | Keeping Transmitting |  | Test Voltage | DC3.0V |
| Temperature | 24 deg. C, |  | Humidity | $56 \% \mathrm{RH}$ |
| Test Result: | Pass |  | -- | -- |
| 2483.5 MHz | PK $(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | 50.29 | Limit | $74 \mathrm{~dB} \mu \mathrm{~V} / \mathrm{m}$ |
| 2483.5 MHz | $\mathrm{AV}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | -- | Limit | $54 \mathrm{~dB} \mathrm{\mu V/m}$ |



| No. | Frequency <br> $(\mathrm{MHz})$ | Results <br> $(\mathrm{dBuV} / \mathrm{m}$ <br> $)$ | Factor <br> $(\mathrm{dB})$ | Limit <br> $(\mathrm{dBuV} / \mathrm{m}$ <br> $)$ | Over <br> Limit <br> $(\mathrm{dB})$ | Detector | Table (o) | Height <br> $(\mathrm{cm})$ | ANT | Verdict |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | 2483.500 | 50.29 | -3.57 | 74.0 | -23.71 | Peak | 0.00 | 100 | H | Pass |
| 2 | 2480.040 | 86.94 | -3.57 | 74.0 | 12.94 | Peak | 0.00 | 100 | H | N/A |

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| Product: | Mid-size Ergonomic Mouse |  | Detector |
| :---: | :---: | :---: | :---: |
| Mode | Keeping Transmitting |  | Test Voltage |
| Temperature | 24 deg. C, |  | Humidity |
| Test Result: | Pass |  | -- |
| 2483.5 MHz | PK $(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | 41.12 | Limit |
| 2483.5 MHz | $\mathrm{AV}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})$ | -- | Limit |

FCC Part 15B Class B $1 \mathrm{GHz}-18 \mathrm{GHz}-2$


| No. | Frequency <br> $(\mathrm{MHz})$ | Results <br> $(\mathrm{dBuV} / \mathrm{m}$ <br> $)$ | Factor <br> $(\mathrm{dB})$ | Limit <br> $(\mathrm{dBuV} / \mathrm{m}$ <br> $)$ | Over <br> Limit <br> $(\mathrm{dB})$ | Detector | Table (o) | Height <br> $(\mathrm{cm})$ | ANT | Verdict |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | 2480.010 | 76.52 | -3.57 | 74.0 | 2.52 | Peak | 45.00 | 100 | V | N/A |
| 2 | 2483.5 | 41.12 | -3.57 | 74.0 | -32.88 | Peak | 188.00 | 100 | V | Pass |

Note: The PK emission level less than the AV limit. No necessary to record the AV emission level.

### 8.0 Antenna Requirement

## Applicable Standard

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
This product has a PCB antenna. The antenna gain is 0 dBi Max. It fulfills the requirement of this section. Test Result: Pass

Date: 2019-06-15
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### 10.0 FCC ID Label

## FCC ID: ZJEST-397

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:


### 11.0 Photo of testing

11.1 Conducted test View

N/A
11.2 Radiated emission test view


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11.3 Photographs - EUT


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Outside View


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Outside View


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Inside view


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Inside view


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Inside view

--End of the report--
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