

| Report No.:     | TW2310269-02E   |  |  |
|-----------------|---|--|--|
| Applicant:      | Eastern Times Technology Co.,Ltd  |  |  |
| Product:        | GAMING MOUSE  |  |  |
| Model No.:      | M806RGB-PRO, DS-2914, M806W-RGB-PRO   |  |  |
| Trademark:      | REDRAGON  |  |  |
| Test Standards: | FCC Part 15.249   |  |  |
| Test result:    | It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10 &FCC Part 15 Subpart C, Paragraph 15.249 regulations for the evaluation of electromagnetic compatibility |  |  |

Approved By

Terry lan

Terry Tang

Manager

Dated:

November 27, 2023

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:**

# 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.

# Industry Canada (IC) — Registration No.: 5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

# A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

# CAB identifier: CN0033

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#### 1.0 General Details

1.1 Test Lab Details

SHENZHEN TIMEWAY TESTING LABORATORIES. Name: 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 (755) 83442996 Fax: Site on File with the Federal Communications Commission - United Sates Registration Number: 744189 For 3m Anechoic Chamber 1.2 Applicant Details

Applicant: Eastern Times Technology Co.,Ltd Address: Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town, Dongguan City, Guangdong, China. Telephone: \_\_\_ Fax: ---

#### 1.3 Description of EUT

| Product:              | GAMING MOUSE  |
|-----------------------|---|
| Manufacturer:         | Eastern Times Technology Co.,Ltd  |
| Address:              | Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town,    |
|                       | Dongguan City, Guangdong, China.  |
| Trademark:            | REDRAGON  |
| Additional Trademark: | N/A   |
| Model Number:         | M806RGB-PRO   |
| Additional Model Name | DS-2914, M806W-RGB-PRO  |
| Hardware Version:     | 2914 TX V1  |
| Software Version:     | 31dac594  |
| Serial No.:           | RDM806RGB-PRO23051000716  |
| Rating:               | DC5V, 322mA or DC3.7V, 128mA  |
| Battery:              | DC3.7V, 1000mAh Li-ion battery  |
| Modulation Type:      | GFSK  |
| Operation Frequency:  | 2402-2480MHz  |
| Channel Separate:     | 1MHz  |
| Channel Number:       | 79  |
| Antenna Designation   | PCB antenna with gain -2.89dBi Max (Get from the antenna specification) |

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#### 1.4 Submitted Sample: 2 Samples

- 1.5 Test Duration 2023-10-21 to 2023-11-27
- 1.6 Test Uncertainty Conducted Emissions Uncertainty =3.6dB Radiated Emissions below 1GHz Uncertainty =4.7dB Radiated Emissions above 1GHz Uncertainty =6.0dB Conducted Power Uncertainty =6.0dB Occupied Channel Bandwidth Uncertainty =5% Conducted Emissions Uncertainty =3.6dB Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

#### 1.7 Test Engineer

Andy - Xing

The sample tested by

Print Name: Terry Tang

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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       | 2023-07-14   | 2024-07-13 |
| LISN               | R&S          | EZH3-Z5          | 100294       | 2023-07-14   | 2024-07-13 |
| LISN               | R&S          | EZH3-Z5          | 100253       | 2023-07-14   | 2024-07-13 |
| Impuls-Begrenzer   | R&S          | ESH3-Z2          | 100281       | 2023-07-14   | 2024-07-13 |
| Loop Antenna       | EMCO         | 6507             | 00078608     | 2022-07-18   | 2025-07-17 |
| Spectrum           | R&S          | FSIQ26           | 100292       | 2023-07-14   | 2024-07-13 |
| Horn Antenna       | A-INFO       | LB-180400-KF     | J211060660   | 2022-07-18   | 2025-07-17 |
| Horn Antenna       | R&S          | BBHA 9120D       | 9120D-631    | 2022-07-18   | 2024-07-17 |
| Power meter        | Anritsu      | ML2487A          | 6K00003613   | 2023-07-14   | 2024-07-13 |
| Power sensor       | Anritsu      | MA2491A          | 32263        | 2023-07-14   | 2024-07-13 |
| Bilog Antenna      | Schwarebeck  | VULB9163         | 9163/340     | 2022-07-18   | 2025-07-17 |
| 9*6*6 Anechoic     |              |                  | N/A          | 2022-07-26   | 2025-07-25 |
| EMI Test Receiver  | RS           | ESVB             | 826156/011   | 2023-07-14   | 2024-07-13 |
| EMI Test Receiver  | RS           | ESCS 30          | 834115/006   | 2023-07-14   | 2024-07-13 |
| Spectrum           | HP/Agilent   | E4407B           | MY50441392   | 2023-07-14   | 2024-07-13 |
| Spectrum           | RS           | FSP              | 1164.4391.38 | 2023-07-14   | 2024-07-13 |
| RF Cable           | Zhengdi      | ZT26-NJ-NJ-8M/FA |              | 2023-07-14   | 2024-07-13 |
| RF Cable           | Zhengdi      | 7m               |              | 2023-07-14   | 2024-07-13 |
| Pre-Amplifier      | Schwarebeck  | BBV9743          | #218         | 2023-07-14   | 2024-07-13 |
| Pre-Amplifier      | HP/Agilent   | 8449B            | 3008A00160   | 2023-07-14   | 2024-07-13 |
| LISN               | SCHAFFNER    | NNB42            | 00012        | 2023-07-14   | 2024-07-13 |
| ESPI Test Receiver | R&S          | ESPI 3           | 100379       | 2023-07-14   | 2024-07-13 |
| LISN               | R&S          | EZH3-Z5          | 100294       | 2023-07-14   | 2024-07-13 |

#### 2.2 Automation Test Software

For Conducted Emission Test

| Name   | Version           |  |
|--------|-------------------|--|
| EZ-EMC | Ver.EMC-CON 3A1.1 |  |

#### For Radiated Emissions

| Name  | Version |
|---|---------|
| EMI Test Software BL410-EV18.91                 | V18.905 |
| EMI Test Software BL410-EV18.806 High Frequency | V18.06  |

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#### **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 15.203                                      | Antenna<br>Requirement              | Pass   | Complies |
| FCC Part 15, Paragraph 15.207                                      | Conducted<br>Emission Test          | Pass   | Complies |
| FCC Part 15 Subpart C Paragraph 15.249(a)<br>& 15.249(b) Limit     | Field Strength<br>of<br>Fundamental | Pass   | Complies |
| FCC Part 15, Paragraph 15.209                                      | 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

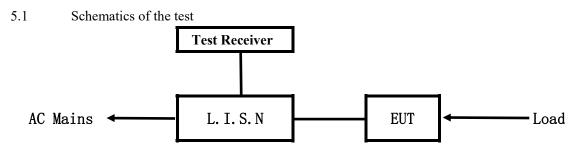
No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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### 5. Power Line Conducted Emission Test



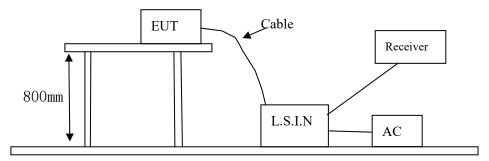
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum from 0.15MHz to 30MHz was investigated. The LISN used was 500hm/50uH as specified by section 5.1 of ANSI C63.10-2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below. 79 channels are provided to the EUT

| Device       | Manufacturer       | Model                 | FCC ID      |
|--------------|--------------------|-----------------------|-------------|
| GAMING MOUSE | Eastern Times      | M806RGB-PRO, DS-2914, | TUVDS-2914A |
| GAMING MOUSE | Technology Co.,Ltd | M806W-RGB-PRO         | 10VD5-2914A |

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B. Internal Device

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

C. Peripherals

| Device       | Manufacturer | Model           | Rating                            |
|--------------|--------------|-----------------|-----------------------------------|
| Power Supply | KEYU         | KA23-0502000DEU | Input: 100-240V~, 50/60Hz, 0.35A; |
|              |              |                 | Output: DC5V, 2A                  |

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013

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 15.207

| Frequency         | Limits (dB µ V)  |               |  |
|-------------------|------------------|---------------|--|
| (MHz)             | Quasi-peak Level | Average Level |  |
| $0.15~\sim~0.50$  | 66.0~56.0*       | 56.0~46.0*    |  |
| $0.50~\sim~5.00$  | 56.0             | 46.0          |  |
| $5.00~\sim~30.00$ | 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

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Conducted Emission on Live Terminal (150kHz to 30MHz) A: **EUT Operating Environment** Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa EUT set Condition: Charging and Communication by BT **Results: Pass** Please refer to following diagram for individual dBu¥ 80.0 70 FCC Part15 CE-Class C\_QP 60 FCC Part 5 CE-Class C\_AVe 50 40 peak 30 AVG 20 Manham 10 0 -10 -20 30.000 0.150 (MHz)

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Factor<br>(dB) | Level<br>(dBuV) | Limit<br>(dBuV) | Margin<br>(dB) | Detector | P/F |
|-----|--------------------|-------------------|----------------|-----------------|-----------------|----------------|----------|-----|
| 1   | 0.1578             | 37.67             | 9.78           | 47.45           | 65.58           | -18.13         | QP       | Р   |
| 2   | 0.1578             | 19.16             | 9.78           | 28.94           | 55.58           | -26.64         | AVG      | Р   |
| 3   | 0.4308             | 26.09             | 9.77           | 35.86           | 57.24           | -21.38         | QP       | Р   |
| 4   | 0.4308             | 23.91             | 9.77           | 33.68           | 47.24           | -13.56         | AVG      | Р   |
| 5   | 15.3630            | 15.24             | 10.40          | 25.64           | 60.00           | -34.36         | QP       | Р   |
| 6   | 15.3630            | 8.05              | 10.40          | 18.45           | 50.00           | -31.55         | AVG      | Р   |
| 7   | 25.7486            | 14.55             | 11.04          | 25.59           | 60.00           | -34.41         | QP       | Р   |
| 8   | 25.7486            | 7.40              | 11.04          | 18.44           | 50.00           | -31.56         | AVG      | Ρ   |

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz) **EUT Operating Environment** Temperature: 25℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa EUT set Condition: Charging and Communication by BT **Results: Pass** Please refer to following diagram for individual dBu¥ 80.0 70 FCC Part15 CE-Class C\_QP 60 FCC Part 5 CE-Class C\_AVe 50 40 peak 30 AVG 20 Mar 10 0 -10 -20 0.150 (MHz) 30.000

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Factor<br>(dB) | Level<br>(dBuV) | Limit<br>(dBuV)    | Margin<br>(dB) | Detector | P/F |
|-----|--------------------|-------------------|----------------|-----------------|--------------------|----------------|----------|-----|
| 1   | 0.1695             | 38.51             | 9.77           | 48.28           | 64.98              | -16.70         | QP       | Ρ   |
| 2   | 0.1695             | 23.76             | 9.77           | 33.53           | <mark>54.98</mark> | -21.45         | AVG      | Ρ   |
| 3   | 0.1968             | 29.98             | 9.75           | 39.73           | 63.74              | -24.01         | QP       | Ρ   |
| 4   | 0.1968             | 16.23             | 9.75           | 25.98           | 53.74              | -27.76         | AVG      | Ρ   |
| 5   | 3.9711             | 11.32             | 9.89           | 21.21           | 56.00              | -34.79         | QP       | Ρ   |
| 6   | 3.9711             | 2.41              | 9.89           | 12.30           | 46.00              | -33.70         | AVG      | Ρ   |
| 7   | 15.6945            | 13.78             | 10.42          | 24.20           | 60.00              | -35.80         | QP       | Ρ   |
| 8   | 15.6945            | <mark>6.57</mark> | 10.42          | 16.99           | 50.00              | -33.01         | AVG      | Ρ   |

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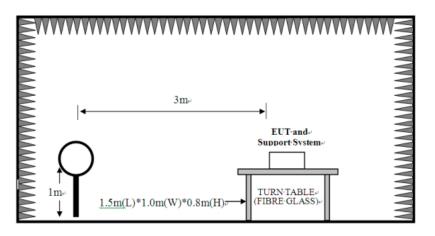


#### 6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- 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 1m x 1.5 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, RBW=3MHz, VBW=10MHz). 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

For radiated emissions from 9kHz to 30MHz

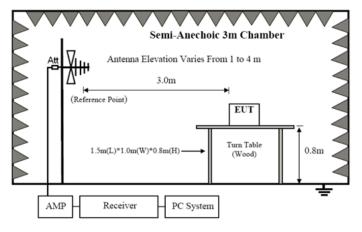


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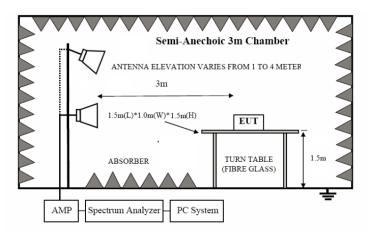
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For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



- 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.

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#### 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 | Field Stre | ength of Fundame | ntal (3m)  | Field S | trength of Harmo | nics (3m) |
|-----------------------|------------|------------------|------------|---------|------------------|-----------|
| (MHz)                 | mV/m       | dBu              | V/m        | uV/m    | dBu              | V/m       |
| 2400-2483.5           | 50         | 94 (Average)     | 114 (Peak) | 500     | 54 (Average)     | 74 (Peak) |

Note: 1. RF Field Strength  $(dBuV) = 20 \log RF$  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. Frequencies in restricted band are complied to limit on Paragraph 15.209.

|                       |              | ·····8                            |
|-----------------------|--------------|-----------------------------------|
| Frequency Range (MHz) | Distance (m) | Field strength (dB $\mu$ V/m)     |
| 0.009-0.490           | 3            | 20log(2400/F(kHz)) +40log (300/3) |
| 0.490-1.705           | 3            | 20log(24000/F(kHz)) +40log (30/3) |
| 1.705-30              | 3            | 69.5                              |
| 30-88                 | 3            | 40.0                              |
| 88-216                | 3            | 43.5                              |
| 216-960               | 3            | 46.0                              |
| Above 960             | 3            | 54.0                              |

Note: 1. RF Voltage  $(dBuV) = 20 \log RF$  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. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.

5. For radiated emissions from 9kHz to 30MHz, the emission level is much less than the limit for more than 20dB. No necessary to take down the record.

6. Battery full charged during tests.

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# 6.5 Test resultA Fundamental & Harmonics Radiated Emission Data

Please refer to the following test plots for details: Low Channel-2402MHz

#### Horizontal

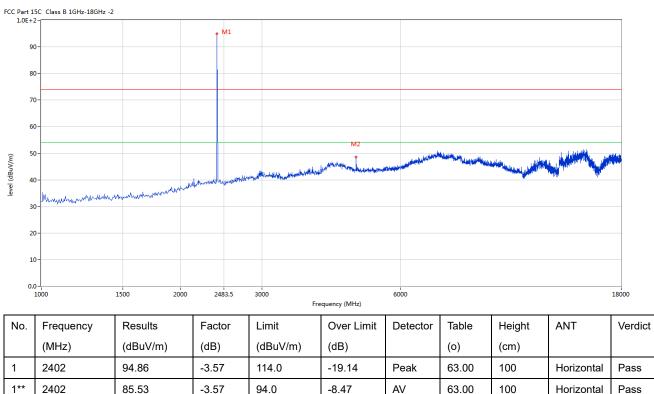
2

4802.799

48.52

3.12

74.0



-25.48

Peak

228.00

100

Horizontal

Pass

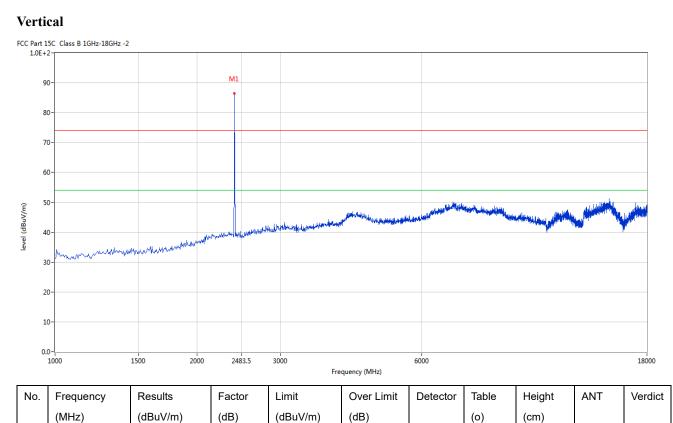
The report refers only to the sample tested and does not apply to the bulk.

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Pass

Vertical



-27.57

Peak

158.00

100

The report refers only to the sample tested and does not apply to the bulk.

86.43

1

2402

-3.57

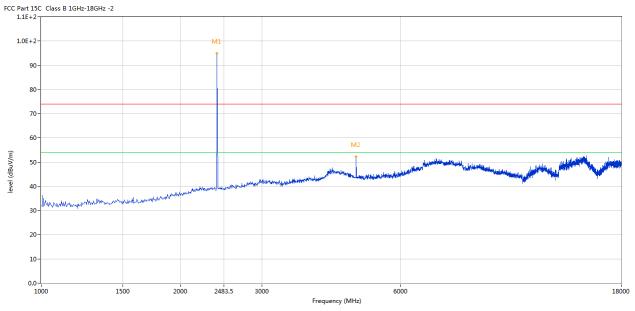
114.0

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# Please refer to the following test plots for details: Middle Channel-2441MHz

#### Horizontal

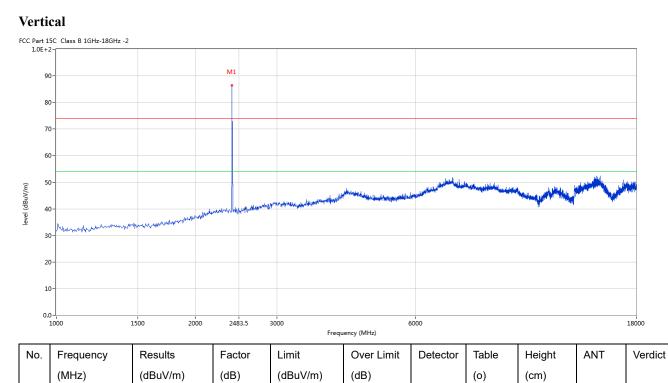


| No. | Frequency | Results  | Factor | Limit    | Over Limit | Detector | Table | Height | ANT        | Verdict |
|-----|-----------|----------|--------|----------|------------|----------|-------|--------|------------|---------|
|     | (MHz)     | (dBuV/m) | (dB)   | (dBuV/m) | (dB)       |          | (0)   | (cm)   |            |         |
| 1   | 2441      | 94.88    | -3.57  | 114.0    | -19.12     | Peak     | 73.00 | 100    | Horizontal | Pass    |
| 1** | 2441      | 85.75    | -3.57  | 94.0     | -8.25      | AV       | 73.00 | 100    | Horizontal | Pass    |
| 2   | 4881.799  | 52.12    | 3.12   | 74.0     | -21.88     | Peak     | 62.00 | 100    | Horizontal | Pass    |

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154.00

100

Vertical

Pass

Peak

The report refers only to the sample tested and does not apply to the bulk.

86.47

-3.57

114.0

-27.53

2441

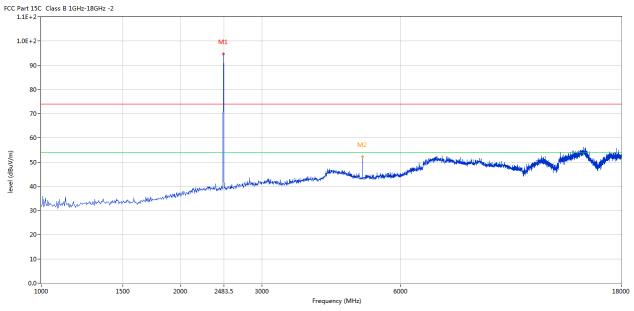
1

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## Please refer to the following test plots for details: High Channel-2480MHz

#### Horizontal

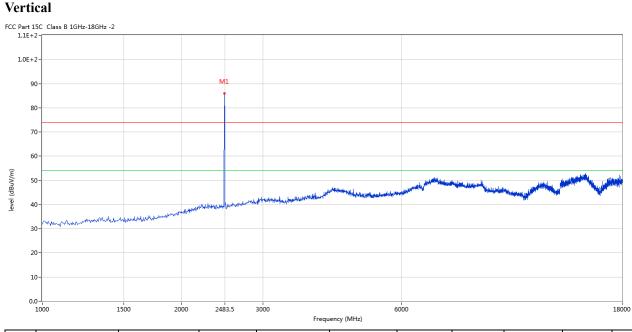


| No. | Frequency | Results  | Factor | Limit    | Over Limit | Detector | Table | Height | ANT        | Verdict |
|-----|-----------|----------|--------|----------|------------|----------|-------|--------|------------|---------|
|     | (MHz)     | (dBuV/m) | (dB)   | (dBuV/m) | (dB)       |          | (0)   | (cm)   |            |         |
| 1   | 2480      | 94.65    | -3.57  | 114.0    | -19.35     | Peak     | 85.00 | 100    | Horizontal | Pass    |
| 1** | 2480      | 85.37    | -3.57  | 94.0     | -8.63      | AV       | 85.00 | 100    | Horizontal | Pass    |
| 2   | 4960.010  | 52.28    | 3.36   | 74.0     | -21.72     | Peak     | 85.00 | 100    | Horizontal | Pass    |

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| No. | Frequency | Results  | Factor | Limit    | Over Limit | Detector | Table  | Height | ANT      | Verdict |
|-----|-----------|----------|--------|----------|------------|----------|--------|--------|----------|---------|
|     | (MHz)     | (dBuV/m) | (dB)   | (dBuV/m) | (dB)       |          | (o)    | (cm)   |          |         |
| 1   | 2480      | 86.04    | -3.57  | 114.0    | -27.96     | Peak     | 187.00 | 100    | Vertical | Pass    |

Note: (2) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier

(3) Margin=Emission-Limits

- (4) According to section 15.35(b), the peak limit is 20dB higher than the average limit
- (5) For test purpose, keep EUT continuous transmitting
- (5) For emission above 18GHz and Below 30MHz, It is only the floor noise. No necessary to take down.
- (6) the measured PK value less than the AV limit.

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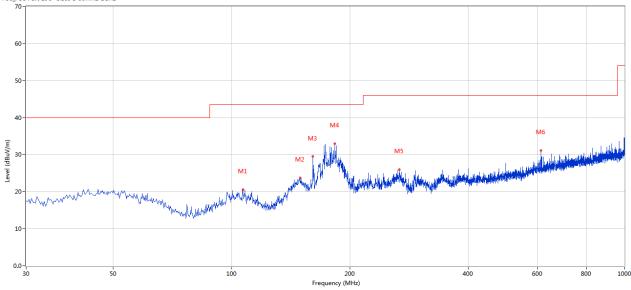
# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

### Results: Pass

Please refer to following diagram for individual

FCC\_FCC Part 15C Class B 30MHz-1GHz



| No. | Frequency | Results  | Factor | Limit    | Margin | Detector | Table    | Height | Antenna    | Verdict |
|-----|-----------|----------|--------|----------|--------|----------|----------|--------|------------|---------|
|     | (MHz)     | (dBuV/m) | (dB)   | (dBuV/m) | (dB)   |          | (Degree) | (cm)   |            |         |
| 1   | 106.853   | 20.58    | -13.38 | 43.5     | 22.92  | Peak     | 262.00   | 100    | Horizontal | Pass    |
| 2   | 149.280   | 23.72    | -17.09 | 43.5     | 19.78  | Peak     | 293.00   | 100    | Horizontal | Pass    |
| 3   | 161.160   | 29.47    | -16.36 | 43.5     | 14.03  | Peak     | 281.00   | 100    | Horizontal | Pass    |
| 4   | 183.222   | 32.98    | -14.95 | 43.5     | 10.52  | Peak     | 289.00   | 100    | Horizontal | Pass    |
| 5   | 267.348   | 25.97    | -11.74 | 46.0     | 20.03  | Peak     | 276.00   | 100    | Horizontal | Pass    |
| 6   | 612.097   | 31.12    | -5.11  | 46.0     | 14.88  | Peak     | 290.00   | 100    | Horizontal | Pass    |

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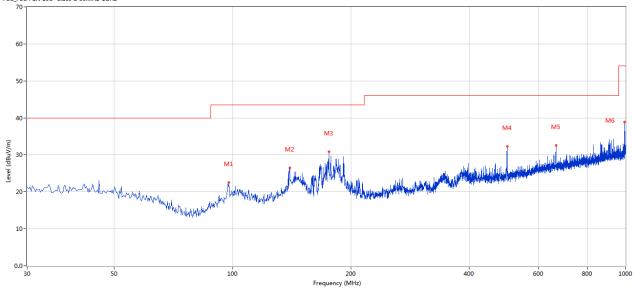
## Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

#### Results: Pass

#### Please refer to following diagram for individual

FCC\_FCC Part 15C Class B 30MHz-1GHz



| No. | Frequency | Results  | Factor | Limit    | Margin | Detector | Table    | Height | Antenna  | Verdict |
|-----|-----------|----------|--------|----------|--------|----------|----------|--------|----------|---------|
|     | (MHz)     | (dBuV/m) | (dB)   | (dBuV/m) | (dB)   |          | (Degree) | (cm)   |          |         |
| 1   | 97.883    | 22.52    | -13.75 | 43.5     | 20.98  | Peak     | 180.00   | 100    | Vertical | Pass    |
| 2   | 139.825   | 26.47    | -17.19 | 43.5     | 17.03  | Peak     | 208.00   | 100    | Vertical | Pass    |
| 3   | 175.706   | 30.80    | -15.59 | 43.5     | 12.70  | Peak     | 201.00   | 100    | Vertical | Pass    |
| 4   | 499.605   | 32.27    | -6.94  | 46.0     | 13.73  | Peak     | 243.00   | 100    | Vertical | Pass    |
| 5   | 666.403   | 32.60    | -4.50  | 46.0     | 13.40  | Peak     | 119.00   | 100    | Vertical | Pass    |
| 6   | 995.394   | 38.83    | -1.26  | 54.0     | 15.17  | Peak     | 357.00   | 100    | Vertical | Pass    |

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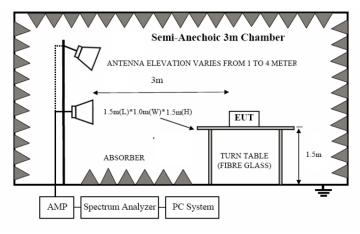


### 7. Band Edge

#### 7.1 Test Method and test Procedure:

- 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=1MHz, VBW=3MHz and Peak detector used for PK value. RBW=1MHz, VBW=10Hz and Peak detector used for AV value.
- (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.

#### 7.2 Radiated Test Setup



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.

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#### 7.6 Test Result

|                                  | Product:  | U.   | AMING M   | IOUSE                                       | PO  | olarity                        |               | Ho                                     | rizontal   |                         |
|----------------------------------|---|--|---|---|---|--------------------------------|---------------|--|--|-------------------------|
|                                  | Mode  | Kee  | eping Trans   | smitting                                    | Test  | Voltage                        |               | D                                      | C3.7V  |                         |
| Te                               | mperature   |  | 24 deg.   | C,  | Hu  | midity                         |               | 56                                     | 5% RH  |                         |
| Τe                               | est Result:   |  | Pass  |   |   |                                |               |  |  |                         |
| 2 Part 1<br>1.1E+                | 15C Class B 1GHz-18GHz                                      | z -2   |   |   |   |                                |               |  |  |                         |
| 1.0E+                            |   |  |   |   |   |                                |               | M1                                     |  |                         |
|                                  |   |  |   |   |   |                                |               | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |  |                         |
| g                                | 90-   |  |   |   |   |                                |               |  |  |                         |
| 8                                | 30-   |  |   |   |   |                                | للإن          | $\sim$                                 |  |                         |
| 7                                | 70-   |  |   |   |   |                                | , W           |  | 1  |                         |
| 6                                | 50-   |  |   |   |   |                                |               |  | <u> </u>   |                         |
|                                  |   |  |   |   |   |                                | V             |  | ×.   |                         |
|                                  |   |  |   |   |   |                                | V M2          |  | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~  |                         |
| 5                                | 50-   |  |   |   | M2  |                                | المعامل       |  | - North  |                         |
| 5                                |   | culous fast A has a lot according to a sour                    | 11.17.19.19.19.19.19.19.19.19.19.19.19.19.19.   | Harvessiers also heavest and hand her races | M3<br>dijilili Alikanunio dantika   | unit burted they officially    |               |  | and the second sec   | N, Installe             |
|                                  |   | udrastast. Altas san tanan tanaka karanga                      | تار المراجع ال  | tigen jahos da filinte dis attactiones er   | M3<br>et.tillen.teoret.et.tille   | unin bis the start fails       |               |  | and the second sec   | Ar, Instalia            |
| З                                | 10-   | ednestav Abaselo tanastavat kiseva                             | ni jaja kata da ta sa kata ya k | พระหนุ่มอาร์ de frankreite effective and    | M3<br>deskiller and the second se | uninder taken tribala          |               |  | and the second s | Autostatu               |
| 3                                | 10  | edmetari flærstørder av de | nippipe Menuselan dar   | Henrissini, juliuteste sitesiteste soo      | M3<br>Addited Hannesserverster  | unsin deserted the protocology |               |  | and the second s | <sup>a</sup> t, houteda |
| 3<br>2<br>1                      | 10  | ednestan Haserlanderastrastrastrastrastra                      | ni jezek de kana kana ya kana y | ngensgans ja kunstenise uitenise var        | M3<br>dubilition and a state  | underheiten teinet             | Hall          |  | and the second s | Avdeutete               |
| 3<br>2<br>1<br>0                 | 10  | ednestan Haseriana, ander ander ander ander ander ander and    | 20.57755-1475-1475-1475-1475-1475-1475-1475   |   | M3<br>duite fille August of the fille<br>Frequency (MHz)  | under her mit her              |               |  |  | 2410                    |
| 3<br>2<br>1                      | 10  | Results  | Factor  |   |   | Detector                       | Table         | Height                                 | ANT  | 2410                    |
| 3<br>2<br>1<br>0.                | 10  |  |   |   | Frequency (MHz)   |                                | Table<br>(0)  | Height<br>(cm)                         |  | 2410                    |
| 3<br>2<br>1<br>0.                | 10-<br>00-<br>10-<br>10-<br>10-<br>10-<br>2370<br>Frequency | Results  | Factor  | Limit                                       | Frequency (MHz)   |                                |               | -                                      |  | 2410                    |
| 3<br>2<br>1<br>0<br>No.          | 10  | Results<br>(dBuV/m)  | Factor<br>(dB)  | Limit<br>(dBuV/m)                           | Frequency (MHz)<br>Over Limit<br>(dB)   | Detector                       | (o)           | (cm)                                   | ANT  | 2410<br>Verdi           |
| 3<br>2<br>1<br>0.<br><b>NO</b> . | 10-<br>10-<br>10-<br>10-<br>10-<br>10-<br>10-<br>10-        | Results<br>(dBuV/m)<br>94.81                                   | Factor<br>(dB)<br>-3.57   | Limit<br>(dBuV/m)<br>74.0                   | Frequency (MHz)<br>Over Limit<br>(dB)<br>20.81  | Detector<br>Peak               | (o)<br>253.00 | (cm)<br>100                            | ANT<br>Horizontal  | 2410<br>Verdia          |

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| -                  | Product:   | G   | AMING M   | OUSE                               | Det  | tector   |                        | Vert           | tical                                 |  |
|--------------------|--|---|---|------------------------------------|--|--|------------------------|----------------|---------------------------------------|--|
|                    | Mode   | Kee   | eping Trans   | smitting                           | Test   | Voltage  |                        | DC3            | 3.7V                                  |  |
| Te                 | mperature  |   | 24 deg.   | C,                                 | Hur  | nidity   |                        | 56%            | RH                                    |  |
| Te                 | est Result:  |   | Pass  |                                    |  |  |                        | -              | -                                     |  |
| C Part 1<br>1.1E+  | 15C Class B 1GHz-18GHz   | -2  |   |                                    |  |  |                        |                |                                       |  |
|                    |  |   |   |                                    |  |  |                        |                |                                       |  |
| 1.0E+              | +2-  |   |   |                                    |  |  |                        |                |                                       |  |
| ġ                  | 90-  |   |   |                                    |  |  |                        | M1             |                                       |  |
| 8                  | BO-  |   |   |                                    |  |  |                        | NYN            |                                       |  |
| 7                  | 70-  |   |   |                                    |  |  |                        | M h            |                                       |  |
|                    | 50-  |   |   |                                    |  |  | V                      | ۱ <u>۱</u>     | t.                                    |  |
|                    | 50-  |   |   |                                    |  |  | W                      |                | K                                     |  |
|                    |  |   |   |                                    |  |  | r                      |                | 14                                    |  |
| 5                  | 50 -   |   |   |                                    |  |  | M2                     |                | N.                                    |  |
| 5                  | 50 -<br>40 -   | thereign block and the second state of the                      | a da de martin da se a la manda   | hat were to have been devided for  | M3   | an hima chanacadalia alas  | M2                     |                | N. N.                                 | and as miles   |
|                    | 40-  | ildigenilge Warenen is between version all der obside           | að Byflynthiling Brank Í Leinengiler  | halvingeintachaiseigeilgeiteiter   |  | ica futuri anta anta tagantasi   | MM2<br>•               |                | N. N.                                 | herichen aussie  |
| 3                  | 40-<br>http://www.ananaliation.com<br>30-  | iddaetdad) lewwerijk Norwenijk feredaet                         | að dyster meðing det er ti skuper sjóler  | halintersinlarkanangalankaikar     |  | iic <u>h</u> aiseonarathaise   | M2                     |                | N. North                              | hysiologic and the   |
| 3                  | 40 - Huyn Hawnen, Skitteld<br>30 -<br>20 -   | isklardige Viewensje Astronoslange forskier                     | ad Baharan ding Basari Jangargika   | hatinerentarhenarigadeutarter      |  | น <sub>ารโปล</sub> ะกรุงาร์ <del>และสาวไปสูงใจจ</del> ั  | MM2                    |                | North Maria                           |  |
| 3                  | 40-<br>http://www.ananaliation.com<br>30-  | iiligaaliga Harman Jahar sa | ni daya kerenda ya kere | beskenseningen sonderen beskenster |  | se for the second s | MM2<br>•               |                | N.                                    | by information of the second |
| 3<br>2<br>1        | 40 - Huyn Hawnen, Skitteld<br>30 -<br>20 -   | รัดสินคาร์แปรโปนากการ์เล็กให้เราการอยิตารสู่สำหะไม่เก           | ni galyanning konsi jayangin  | hationerentarhourregidenheiter     |  | us hierordenner begeben  | Hand Hand              |                | N N N N N N N N N N N N N N N N N N N |  |
| 3                  | 40 - Hugen Handler and Handler |   |   |                                    | finalast might die |  |                        |                |                                       | 24   |
| 3                  | 40 - Huywita shirana shiribidd<br>30 -<br>20 -   | Results   | Factor  | Limit                              | สีของร่างเขารัฐเหล่างเขารัฐเหลืองหรือง<br>             | Detector   | Table                  | Height         | ANT                                   | 24<br>Verdic   |
| 3<br>2<br>1<br>0   | 40 - Hugen Handler and Handler |   |   |                                    | finalast might die |  |                        | Height<br>(cm) |                                       | 24   |
| 1<br>0<br>No.      | 40   | Results   | Factor  | Limit                              | Frequency (MHz)  |  | Table                  | -              |                                       | 24   |
| ء<br>1<br>0<br>No. | 40   | Results<br>(dBuV/m)   | Factor<br>(dB)  | Limit<br>(dBuV/m)                  | Frequency (MHz) Over Limit (dB)                        | Detector   | Table<br>(0)           | (cm)           | ANT                                   | 24<br>Verdio   |
| 3<br>2<br>1<br>0   | 40   | Results<br>(dBuV/m)<br>86.23                                    | Factor<br>(dB)<br>-3.57   | Limit<br>(dBuV/m)<br>74.0          | Frequency (MHz) Over Limit (dB) 12.23                  | Detector<br>Peak   | Table<br>(o)<br>154.00 | (cm)<br>100    | ANT                                   | 24<br>Verdic   |

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|                 | Product:                                | (   | GAMING         | MOUSE             |  | Polarity                               |                   | Н  | orizontal                               |                       |
|-----------------|---|---|----------------|-------------------|--|--|-------------------|--|---|-----------------------|
|                 | Mode                                    | K   | eeping Tra     | insmitting        | Te   | est Voltage                            |                   | Ι  | DC3.7V                                  |                       |
| Те              | emperature                              |   | 24 deg         | g. C,             | ]  | Humidity                               |                   | 5  | 56% RH                                  |                       |
| Т               | est Result:                             |   | Pas            | s                 |  |  |                   |  |   |                       |
| CC Part<br>1.1E | 15C Class B 1GHz-18GH:<br>+2-r          | z -2  |                |                   |  |  |                   |  |   |                       |
|                 |   |   |                |                   |  |  |                   |  |   |                       |
| 1.0E-           | +2-                                     |   | الاليمين       | 11<br>~           |  |  |                   |  |   |                       |
| 1               | 90-                                     |   | M              | 2                 |  |  |                   |  |   |                       |
| 4               | 80-                                     |   | 1              | W                 |  |  |                   |  |   |                       |
| :               | 70-                                     |   | June .         | hay               |  |  |                   |  |   |                       |
|                 | 60-                                     |   | , mb           | - Wy              | 4  |  |                   |  |   |                       |
| (m/)            | 50-                                     |   |                | M                 | Why  |  |                   |  |   |                       |
|                 |   | <b>v</b>  |                | IMI2              | 2 47 700                                     |  |                   |  |   |                       |
| el (dBi         | 40                                      | and the second se |                | •                 | When a                                       |  | A ii              |  |   |                       |
| _               | 40-                                     | He buller He  |                | •                 | hand   | lan din tan                            | Aykiii            | Hojakalon Antilan managan ma                   | an secologican antipolocospeciality. As | hulunadhuithi         |
| _               | 40-<br>1                                | He beater and   |                | •                 | When we want                                 | ller of the local second second second | Aykati kunant     | eleja kulture na marene na se                  | na asventena netikokonstalikoko         | huinaadh uithigi      |
| -               |   | He half for the second s |                | •                 |  | tion of the Carolina and the sta       | .Aykeet bernere   | nda hananana                                   | an esradian natiotheologuidheola        | unanan unita          |
| -               | 30-                                     | He bester He  |                | •                 | h www.                                       | lassafik Useekaanserkinense            | n Antest Ionneri  | ฟรุ่มไปสารางราชสาราง                           | ao guartese antigé astachaite dhe       | ihalasa dalah yajidad |
| <u>.</u>        | 30-<br>20-<br>10-                       | He Jackber He   |                | •                 |  | lanseller Linnertransserlere sta       | n Untert Uranseri | nighdon san san san san san san san san san sa | no escortese-notice/notice/notice/in/ha |                       |
| :               | 20-<br>10-                              |   |                | 248:              |  | land North Contract of the pro-        | n Urter Urnane    | **************************************         |   |                       |
| :               | 30-<br>20-<br>10-                       | Results   | Factor         | 2483<br>Limit     | 3.5  | Detector                               | Table             | Height   | ANT                                     | 250<br>Verdic         |
| :<br>:<br>:     | 10-<br>2470                             |   | Factor<br>(dB) |                   | 3.5<br>Frequency (MHz)                       |  |                   |  |   | 250                   |
| :<br>:<br>:     | 30-<br>20-<br>10-<br>2470<br>Frequency  | Results   |                | Limit             | 3.5<br>Frequency (MHz)<br>Over Limit         |  | Table             | Height   |   | 25                    |
| No.             | 20-<br>10-<br>2470   Frequency<br>(MHz) | Results<br>(dBuV/m)   | (dB)           | Limit<br>(dBuV/m) | 3.5<br>Frequency (MHz)<br>Over Limit<br>(dB) | Detector                               | Table<br>(o)      | Height<br>(cm)                                 | ANT                                     | 25<br>Verdic          |

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| ]                   | Product:   | G                                      | AMING N | MOUSE        | D  | etector                                   |  | Ve   | rtical                                  |                  |
|---------------------|--|--|---------|--------------|--|---|--|--|---|------------------|
| Mode<br>Temperature |  | Keeping Transmitting<br>24 deg. C,     |         |              |  | Test Voltage<br>Humidity                  |  | DC3.7V<br>56% RH   |   |                  |
|                     |  |  |         |              |  |   |  |  |   |                  |
| CC Part 1<br>1.1E+  | 15C Class B 1GHz-18GHz<br>2-                     | -2                                     |         |              |  |   |  |  |   |                  |
| 1.0E+               | 2-   |  |         |              |  |   |  |  |   |                  |
|                     |  |  | M1      |              |  |   |  |  |   |                  |
| 9                   |  |  | Jung-   | <b>`</b>     |  |   |  |  |   |                  |
| 8                   |  |  | 1       | $\mathbf{i}$ |  |   |  |  |   |                  |
| 7                   | 0-   |  | X       |              |  |   |  |  |   |                  |
| 6                   | i0 -   |  | J. C.   |              |  |   |  |  |   |                  |
| (m/)<br>5           | i0-  | /                                      | (       | M2           |  |   |  |  |   |                  |
| evel (dBuV/m)<br>4  | 10-  | X                                      |         |              | Market Contraction                       |   |  |  |   |                  |
| <u>₩</u><br>3       | angenen bis elden her verstilt is eingen itter i | weedge broken velver vijnike bier de m |         |              | Managel Managel Strange and a start when | and the state of the second of the second | the second state of the second | the and the state of the second state of the s | gerleigensteineilig, werktein, son biek | ,*126, pl. (1982 |
|                     |  |  |         |              |  |   |  |  |   |                  |
| 2                   | 0-   |  |         |              |  |   |  |  |   |                  |
| 1                   | .0-  |  |         |              |  |   |  |  |   |                  |
| 0.                  | .0   |  |         | 2483.5       |  |   |  |  |   | 2500             |
|                     | 1  |  |         | F            | requency (MHz)                           | 1   |  | 1  |   |                  |
| No.                 | Frequency  | Results                                | Factor  | Limit        | Over Limit                               | Detector                                  | Table  | Height   | ANT                                     | Verdic           |
|                     | (MHz)  | (dBuV/m)                               | (dB)    | (dBuV/m)     | (dB)                                     |   | (0)  | (cm)   |   |                  |
| 1                   | 2479.875   | 85.85                                  | -3.57   | 74.0         | 11.85                                    | Peak                                      | 180.00   | 100  | Vertical                                | N/A              |
|                     | 2483.500   | 50.79                                  | -3.57   | 74.0         | -23.21                                   | Peak                                      | 180.00   | 100  | Vertical                                | Pass             |

Note: 1. The PK emission level less than the AV limit. No necessary to record the AV emission level.

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#### 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 with gain -2.89dBi maximum. It fulfills the requirement of this section. Test Result: Pass

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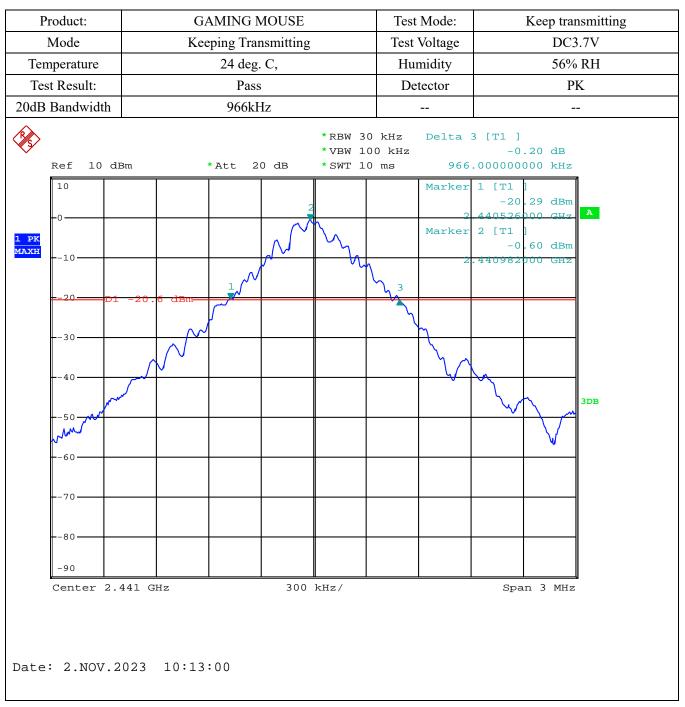


|   | GAMING MOUSE         | Test Mod  | le: Keep transmitting  |
|---|----------------------|---|--|
| Mode  | Keeping Transmitting | Test Volta  |  |
| Temperature   | 24 deg. C,           | Humidit   |  |
| Test Result:  | Pass                 | Detecto   |  |
| 0dB Bandwidth   | 1.080MHz             |   |  |
| DdB Bandwidth         Ref       10         10       -0         -0       -10         -20       D1         -30       -10         -40       -30         -40       -60         -70       -80         -90       -20.40 | 3m * Att 20 dB       | RBW 30 kHz Delt<br>VBW 100 kHz<br>SWT 10 ms<br>Mark<br>Mark | a 3 [T1 ]<br>-0.71 dB<br>1.080000000 MHz<br>ter 1 [T1 ]<br>-20.50 dBm<br>2.401424000 GHz A |

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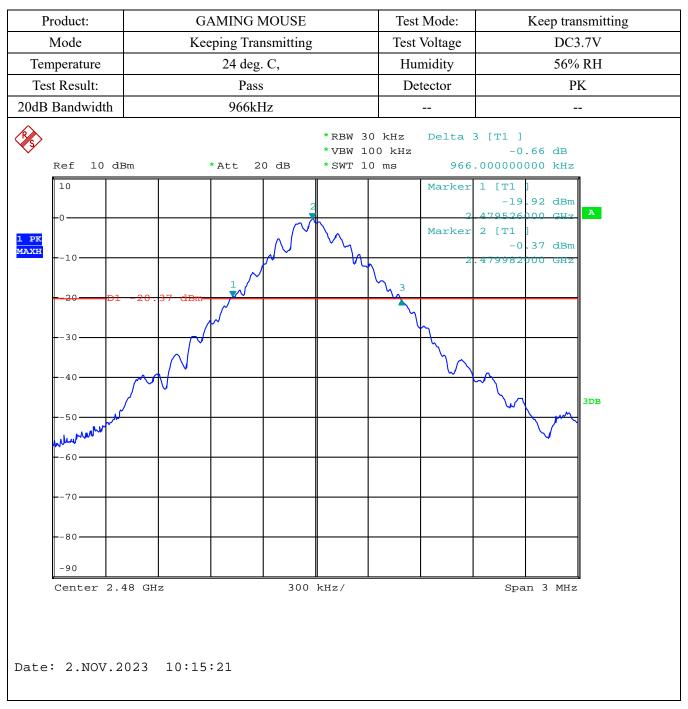




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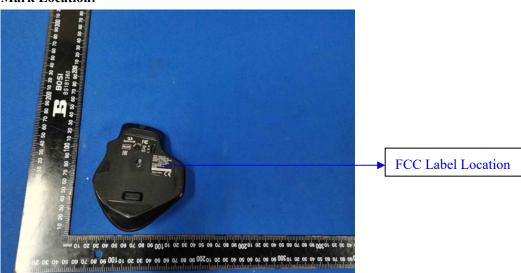


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#### 10.0 FCC ID Label

#### FCC ID: TUVDS-2914A

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:** 

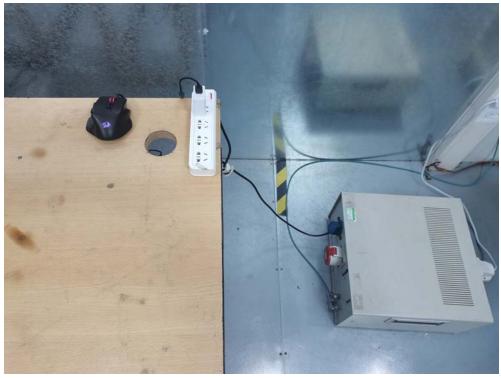
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#### 11.0 Photo of testing

11.1 Conducted test View--



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Radiated emission test view



#### Photographs – EUT

Please refer test report TW2310269-01E

#### --End of the report--

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