



Report No.: TW2104193E File reference No.: 2021-05-13

Applicant: Eastern Times Technology Co.,Ltd

Product: WIRED & WIRELESS GAMING MOUSE

Model No.: M686RGB, DS-2835

Brand Name: 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

# Jack Chung

Jack Chung Manager

Dated: May 13, 2021

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

Report No.: TW2104193E Page 2 of 41

Date: 2021-05-13



# **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.

# 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

Report No.: TW2104193E

Date: 2021-05-13



# Test Report Conclusion

#### Content 1.0 General Details ..... 4 4 1.1 Test Lab Details.... 1.2 Applicant Details.... 4 1.3 Description of EUT .... 1.4 Submitted Sample.... 4 Test Duration. 1.5 5 1.6 5 Test Uncertainty. 1.7 Test By..... 5 List of Measurement Equipment..... 2.0 6 3.0 7 Technical Details..... 3.1 Summary of Test Results.... 7 3.2 7 Test Standards.... 4.0 EUT Modification. 7 Power Line Conducted Emission Test. 5.0 Schematics of the Test..... 5.1 8 5.2 Test Method and Test Procedure. Configuration of the EUT..... 5.3 8 5.4 EUT Operating Condition. Conducted Emission Limit. 9 5.5 5.6 Test Result. 6.0 Radiated Emission test.... 12 Test Method and Test Procedure. 6.1 12 6.2 Configuration of the EUT..... 12 6.3 EUT Operation Condition.... 12 Radiated Emission Limit. 6.4 13 6.5 Test Result. 14 7.0 Band Edge 23 7.1 Test Method and Test Procedure. 23 7.2 Radiated Test Setup. 23 7.3 Configuration of the EUT..... 23 7.4 EUT Operating Condition.... 23 7.5 Band Edge Limit..... 23 7.6 Band Edge Test Result. 24 8.0 Antenna Requirement..... 28 20dB bandwidth measurement... 9.0 29 10.0 FCC ID Label. 32

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

11.0

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

Photo of Test Setup and EUT View.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Date: 2021-05-13



#### 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: 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: WIRED & WIRELESS GAMING MOUSE

Manufacturer: Eastern Times Technology Co.,Ltd

Address: Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town,

Dongguan City, Guangdong, China.

Brand Name: REDRAGON
Model Number: M686RGB
Additional Model Name DS-2835
Hardware Version: V3.07

Software Version: CX52810 QFN56

Serial No.: RDM686RGB20083002821

Rating: DC3.7V, 62mA or DC5V, 280mA,

Built-in DC3.7V, 1000mAh, 3.7Wh Li-ion battery;

Modulation Type: GFSK

Operation Frequency: 2403-2480MHz

Channel Number: 16

Channel List (Unit: MHz): 2403, 2424, 2441, 2461, 2414, 2435, 2450, 2470, 2409, 2429, 2455, 2475,

2419, 2445, 2465, 2480

Antenna Designation PCB antenna with gain -1.85dBi Max (Declared by the applicant)

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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: TW2104193E Page 5 of 41

Date: 2021-05-13



1.4 Submitted Sample: 1 Sample

1.5 Test Duration

2021-04-15 to 2021-05-13

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

Terry Tang

The sample tested by

Print Name: Terry Tang

Page 6 of 41

Report No.: TW2104193E

Date: 2021-05-13



2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2020-06-23	2021-06-22
LISN	R&S	EZH3-Z5	100294	2020-06-23	2021-06-22
LISN	R&S	EZH3-Z5	100253	2020-06-23	2021-06-22
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2020-06-23	2021-06-22
Loop Antenna	EMCO	6507	00078608	2018-06-25	2021-06-24
Spectrum	R&S	FSIQ26	100292	2020-06-23	2021-06-22
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2020-06-23	2021-06-22
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2020-06-23	2021-06-22
Power sensor	Anritsu	MA2491A	32263	2020-06-23	2021-06-22
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic			N/A	2020-07-06	2021-07-05
EMI Test Receiver	RS	ESVB	826156/011	2020-06-23	2021-06-22
EMI Test Receiver	RS	ESH3	860904/006	2020-06-23	2021-06-22
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2020-06-23	2021-06-22
Spectrum	HP/Agilent	E4407B	MY50441392	2020-06-23	2021-06-22
Spectrum	RS	FSP	1164.4391.38	2021-01-16	2022-01-15
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/F		2020-06-23	2021-06-22
KI Caule	Zhengui	A		2020-00-23	2021-00-22
RF Cable	Zhengdi	7m		2020-06-23	2021-06-22
RF Switch	EM	EMSW18	060391	2020-06-23	2021-06-22
Pre-Amplifier	Schwarebeck	BBV9743	#218	2020-06-23	2021-06-22
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2020-06-23	2021-06-22
LISN	SCHAFFNER	NNB42	00012	2021-01-06	2022-01-05

#### 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

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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: TW2104193E Page 7 of 41

Date: 2021-05-13



#### 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 Requirement	Pass	Complies
FCC Part 15, Paragraph 15.207	Conducted Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(a) & 15.249(b) Limit	Field Strength of Fundamental	Pass	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(d) Limit	Band Edge 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

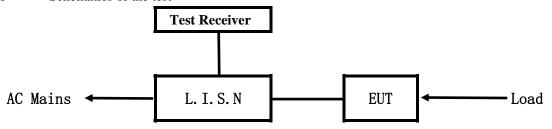
Report No.: TW2104193E

Date: 2021-05-13



#### 5. Power Line Conducted Emission Test

# 5.1 Schematics of the test

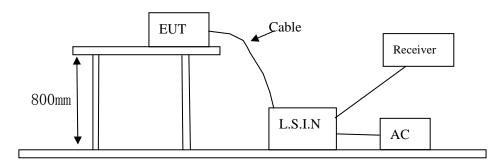


**EUT: Equipment Under Test** 

### 5.2 Test Method and test Procedure

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

#### 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.

One channels are provided to the EUT

#### A. EUT

Device	Manufacturer	Model	FCC ID
WIRED & WIRELESS	Footom Times Technology Co. Ltd.	M686RGB,	TUVDS-2835
GAMING MOUSE	Eastern Times Technology Co.,Ltd	DS-2835	

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

Report No.: TW2104193E Page 9 of 41

Date: 2021-05-13



#### 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 ~ 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

Date: 2021-05-13



### A: Conducted Emission on Live Terminal (150kHz to 30MHz)

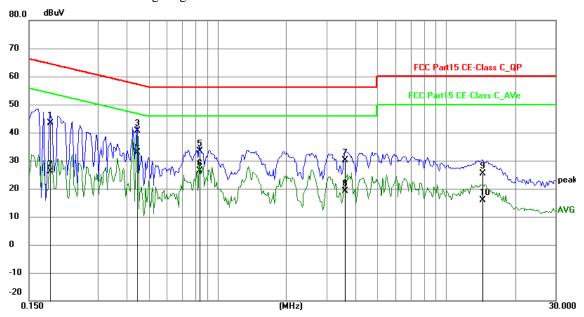
## **EUT Operating Environment**

Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Charging and Keep Transmitting** 

**Results: Pass** 

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1850	33.72	9.76	43.48	64.26	-20.78	QP	Р
2	0.1850	16.31	9.76	26.07	54.26	-28.19	AVG	Р
3	0.4464	30.74	9.77	40.51	56.94	-16.43	QP	Р
4	0.4464	23.21	9.77	32.98	46.94	-13.96	AVG	Р
5	0.8325	23.60	9.78	33.38	56.00	-22.62	QP	Р
6	0.8325	16.48	9.78	26.26	46.00	-19.74	AVG	Р
7	3.6123	20.14	9.87	30.01	56.00	-25.99	QP	Р
8	3.6123	9.17	9.87	19.04	46.00	-26.96	AVG	Р
9	14.3685	15.01	10.35	25.36	60.00	-34.64	QP	Р
10	14.3685	5.62	10.35	15.97	50.00	-34.03	AVG	Р

Report No.: TW2104193E

Date: 2021-05-13



### B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

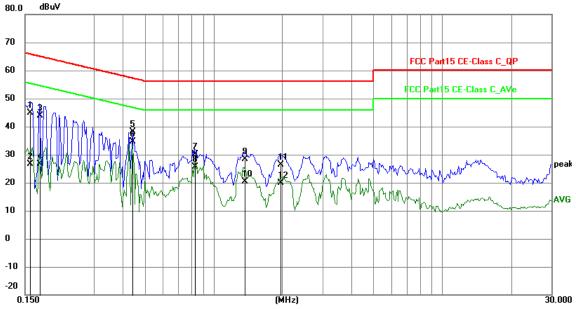
### **EUT Operating Environment**

Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Charging and Keep Transmitting** 

**Results: Pass** 

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1578	35.04	9.78	44.82	65.58	-20.76	QP	Р
2	0.1578	16.84	9.78	26.62	55.58	-28.96	AVG	Р
3	0.1734	34.22	9.77	43.99	64.80	-20.81	QP	Р
4	0.1734	16.77	9.77	26.54	54.80	-28.26	AVG	Р
5	0.4425	28.31	9.77	38.08	57.01	-18.93	QP	Р
6	0.4425	24.78	9.77	34.55	47.01	-12.46	AVG	Р
7	0.8286	20.35	9.78	30.13	56.00	-25.87	QP	Р
8	0.8286	15.78	9.78	25.56	46.00	-20.44	AVG	Р
9	1.3707	18.66	9.79	28.45	56.00	-27.55	QP	Р
10	1.3707	10.67	9.79	20.46	46.00	-25.54	AVG	Р
11	1.9596	16.70	9.80	26.50	56.00	-29.50	QP	Р
12	1.9596	10.17	9.80	19.97	46.00	-26.03	AVG	Р

Report No.: TW2104193E Page 12 of 41

Date: 2021-05-13

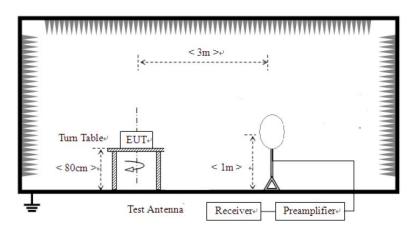


#### **6** Radiated Emission Test

- 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 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



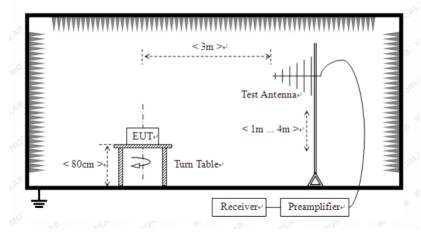
Page 13 of 41

Report No.: TW2104193E

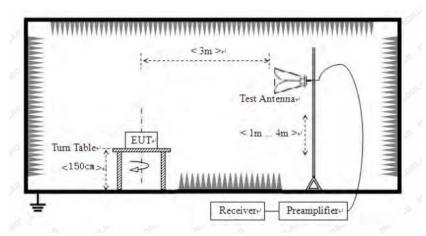
Date: 2021-05-13



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.

Report No.: TW2104193E Page 14 of 41

Date: 2021-05-13



#### 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 Strength of Fundamental (3m)			ol (3m) Field Strength of Harmonics (3m)		
(MHz)	mV/m	dBuV/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.

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/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  $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 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. Battery full charged during tests.

Report No.: TW2104193E Page 15 of 41

Date: 2021-05-13

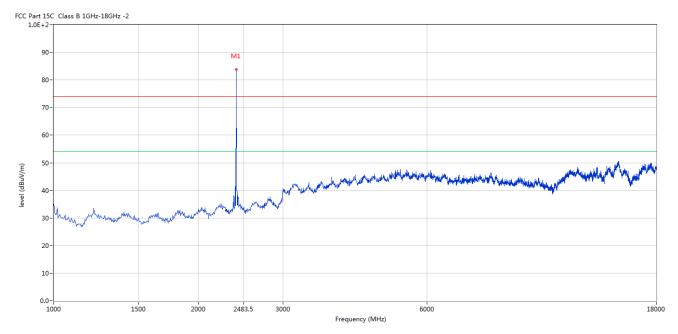


#### 6.5 Test result

# A Fundamental & Harmonics Radiated Emission Data

Please refer to the following test plots for details: Low Channel-2403MHz

#### Horizontal



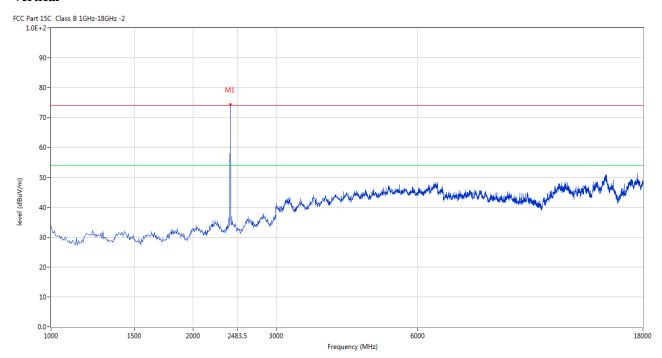
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2402.500	84.34	-3.57	114.0	-33.66	Peak	262.00	100	Horizontal	Pass

Report No.: TW2104193E Page 16 of 41

Date: 2021-05-13



#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2402.500	74.32	-3.57	114.0	-39.68	Peak	0.00	100	Vertical	Pass

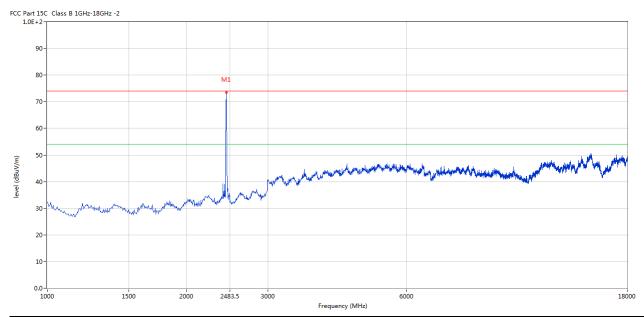
Report No.: TW2104193E Page 17 of 41

Date: 2021-05-13



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

#### **Horizontal**



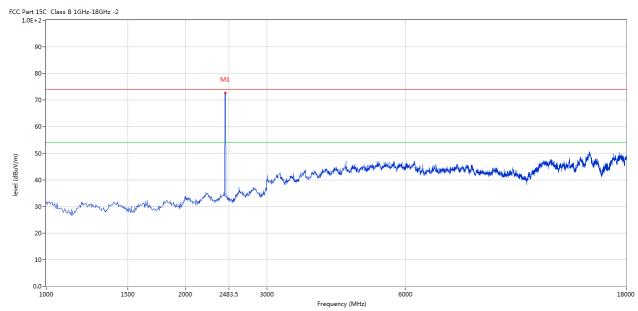
Ī	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
	1	2440.750	73.43	-3.57	114.0	-40.57	Peak	360.00	100	Horizontal	Pass

Report No.: TW2104193E Page 18 of 41

Date: 2021-05-13



#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2440.750	72.77	-3.57	114.0	-41.23	Peak	220.00	100	Vertical	Pass

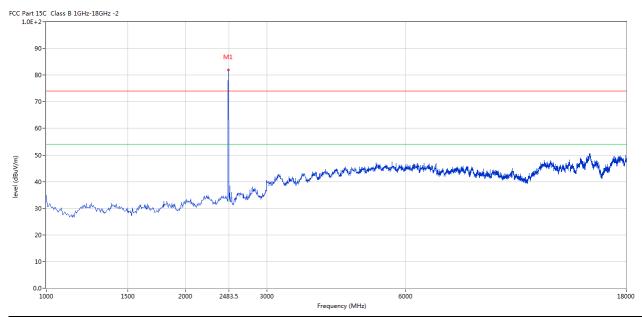
Report No.: TW2104193E Page 19 of 41

Date: 2021-05-13



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

#### Horizontal



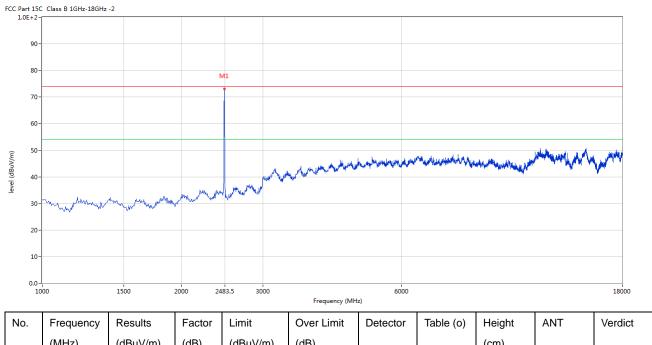
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2479.000	81.84	-3.57	114.0	-32.16	Peak	257.00	100	Horizontal	Pass

Report No.: TW2104193E Page 20 of 41

Date: 2021-05-13



#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2479.000	73.04	-3.57	114.0	-40.96	Peak	270.00	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.

Report No.: TW2104193E Page 21 of 41

Date: 2021-05-13

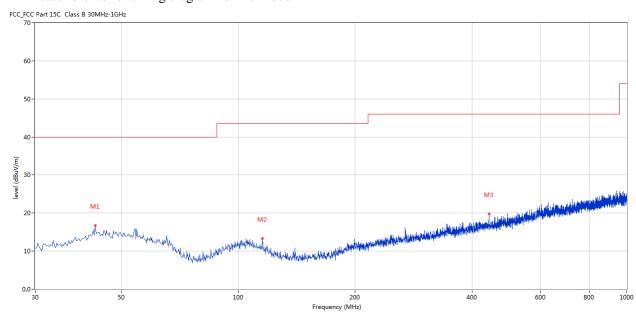


# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

**Results:** Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	42.849	16.69	-11.52	40.0	-23.31	Peak	43.00	100	Horizontal	Pass
2	115.339	13.28	-14.48	43.5	-30.22	Peak	282.00	100	Horizontal	Pass
3	442.632	19.83	-7.94	46.0	-26.17	Peak	187.00	100	Horizontal	Pass

Report No.: TW2104193E Page 22 of 41

Date: 2021-05-13

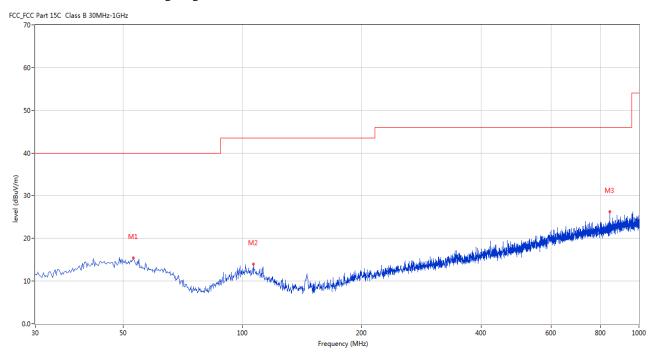


### Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

**Results:** Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	53.032	15.43	-11.50	40.0	-24.57	Peak	257.00	100	Vertical	Pass
2	106.611	14.02	-13.36	43.5	-29.48	Peak	159.00	100	Vertical	Pass
3	843.384	26.23	-2.76	46.0	-19.77	Peak	69.00	100	Vertical	Pass

Report No.: TW2104193E

Date: 2021-05-13

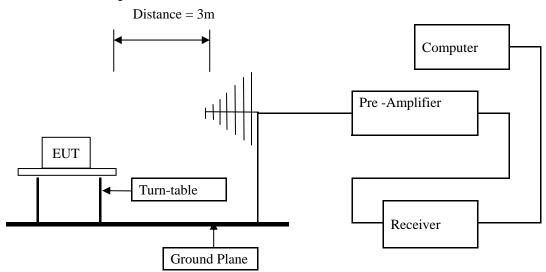


#### 7. Band Edge

#### 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=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.

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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

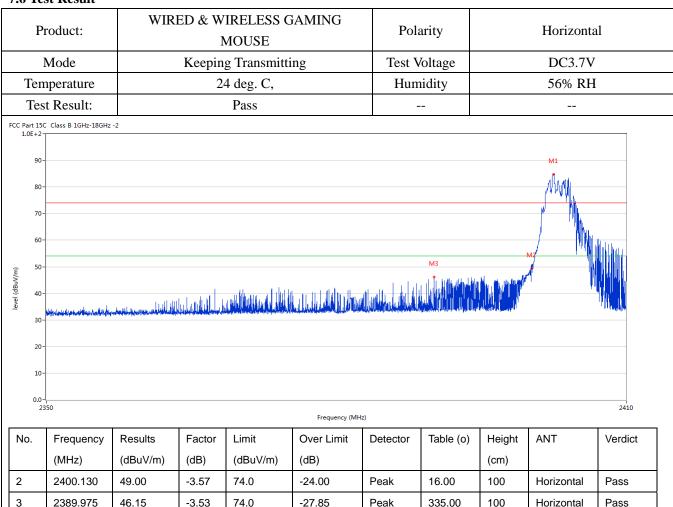
In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: TW2104193E Page 24 of 41

Date: 2021-05-13



#### 7.6 Test Result



Page 25 of 41 Report No.: TW2104193E

Date: 2021-05-13



Pr	roduct:	WIRE		RELESS G OUSE	AMING	Detec	tor	V	Vertical	
N	Mode		Keeping	Transmitti	ng	Test Vol	tage	Γ	OC3.7V	
Tem	nperature		24	deg. C,		Humid	lity	5	6% RH	
Test	t Result:			Pass						
Part 15C	Class B 1GHz-18GHz	-2								
10212										
90-										
80-									M1	
70-									/ YM	
									/ 1	
60-								Mal	/ '\ <u>\</u>	
60 - 50 -								Ma <sup>M</sup>		
50-							والمرابع المرابع المرا			
50-	and become of the base of connections	-chies mit dennis france en standenska etterande av standensk	والإستان المساوار العراق المساورة والمساورة وا	na na daga sa kalanda da kana sa kana da kana sa kana da kana sa kana da kana da kana da kana da kana da kana d	المنابعة والمتعارض والمتعا	tr bod a dala a d <sup>a</sup> la dala				
50-	and be a someth short day and construction	ng kit sing ili ding ilip kangga pagan dan dan diling sakip sa inj	મુંદ્રતા કર્યા	pasoulus dividis de	أحاجها فالطفه فسنع يسحدنها	le bed a delecció MIN				
50-	and dry an acid hit the last section work who	مداده والاستعادة والمستعادة والمس	inggang melikang kangsana sana sa	yekan di sakil periasi delepuna k	بالميدية المطاولة المستدرية والمستدرية والمس					
50 - 40 - 30 -	and be a survey showled as a shown and and	ng kit sing di ding digi bangan pangan kandan kiling sabiga sing	hystogyandik sagal espensi disib sa	pa, pod na tiv oplika vide plana de li pana de	المعامية المتاولية المستخدسيان	la bad a dala cia dala Mili				
50- 40- 30- 20-	and dry an act hit the last sentence of white	ng king sang sanggap kanangan ng makabah, dikenankan sang	મેન્ડ્રના સ્થાપિત માત્રી અ <b>રા</b> શિ સ્થાપ્ત કરે છે. મેન્ડ્રિયા સ્થાપ્ત સ્થાપ્ત સ્થાપ્ત સ્થાપ્ત સ્થાપ્ત સ્થાપ્ત સ્થાપત	yekandushi pilacid pinacid penan	بالميدية المطاولة المدادة المد					
50- 40- 30-		-Lite and demand to come as a standard with manifes and	des adapt medicate principal and an	passad nestro del destruto del quanto de	Frequency (MH:					2410
30- 10-		Results		And			Table (o)	Height	ANT	2410 Verdic

No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	2400.085	48.59	-3.57	74.0	-25.41	Peak	169.00	100	Vertical	Pass
3	2390.110	35.17	-3.53	74.0	-38.83	Peak	278.00	100	Vertical	Pass

Page 26 of 41 Report No.: TW2104193E

Date: 2021-05-13



P	roduct:	WIRE		IRELESS O MOUSE	SAMING	Polari	ty		Horizonta	al
]	Mode		Keeping	g Transmitti	ng	Test Vol	tage		DC3.7V	•
Ten	nperature		24	l deg. C,		Humid	lity		56% RH	[
Tes	st Result:			Pass						
90			A Property Company		2483.5 Frequency (MH	z)				2500
lo.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdi

No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	2483.500	47.84	-3.57	74.0	-26.16	Peak	258.00	100	Horizontal	Pass

Report No.: TW2104193E Page 27 of 41

Date: 2021-05-13



Product:			WIRE		IRELESS G MOUSE	AMING	MING Detector			Vertical				
	N	Mode		Keeping	g Transmitti	ng	Test Vol	ltage	DC3.7V					
-	Гет	perature		24 deg. C,				lity	5	56% RH				
	Test	t Result:			Pass									
	90	Class B 1GHz-18GHz	-2		www.					de hill had a said a side, and be a h	had allowed by the			
	0.0- 24	70				2483.5 Frequency (MH	z)				2500			
No	<b>)</b> .	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict			
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)					
		2483.312	49.68	-3.57	74.0	-24.32	Peak	39.00	100	Vertical	Pass			

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

2. 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.

Report No.: TW2104193E Page 28 of 41

Date: 2021-05-13



### 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 -1.85dBi Max. It fulfills the requirement of this section. Test Result: Pass

Page 29 of 41

Date: 2021-05-13

Report No.: TW2104193E



Product:	WIRED & WIRELESS GAMING MOUSE						est Mode:	Keep transmitting				
Mode		Keepii	ng Transm	itting		Test Voltage			DC3	.7V		
Temperature		2	24 deg. C,			Humidity			56%	RH		
Test Result:		Pass					Detector		PK			
20dB Bandwidth		2.325MHz										
Ref Lvl 10 dBm	Ma: nd: BW	В	1 [T1 r 20.	00 dB	VI	BW BW √T	100 ki 300 ki 5 m	Hz	F Att	20 dB	n	
10							<b>v</b> <sub>1</sub>	[T1]	-7 2.40243	.08 dBr 387 GHz	A	
-10			1	<u></u>	\		ndB BW ▼ <sub>T</sub>	[T1]	2.32464	.08 dBr	<u> </u>	
-20		m1~	<del>\</del>	h	M	M	Now	[T1]	2.40182 -27 2.40414	265 GHz .25 dBr 729 GHz		
-30		7						\rightarrow \frac{1}{2}				
-40	/Mh/	/							~~~~~	L		
-50										Vall		
-60												
-70												
-80												
-90												
Center 2.	403 GHz			500	kHz/				Spa	n 5 MHz		

Page 30 of 41

Report No.: TW2104193E

Date: 2021-05-13



Product:	WIRED & WIRELESS GAMING MOUSE Keeping Transmitting						Test Mode: Test Voltage		Keep transmitting			
Mode									DC3.7V			
Temperature		2	4 deg. C,			Humidity			56% RH			
Test Result:			Pass			Detector			PK			
20dB Bandwidth		2.	325MHz									
Ref Lvl 10 dBm		ndB	1 [T1 n 20. 2.324649	00 dB	V	BW BW WT	100 k 300 k 5 m	Hz	F Att	20 dB		
0							▼1 ndF	[T1]	2.44101 20 2.32464	.00 dB	A	
-10						$\mathcal{M}$	▼ <sub>T</sub>	[T1]	-25 2.43982 -25 2.44214	.35 dBm 265 GHz .04 dBm		
-30		T						F2	2. 11211	1 ANAIN	1MA	
-40		<b>W</b>						\u	Many	1 0 000		
-50												
-60												
-70												
-80												
-90 Center 2 Date: 12	.441 GH		:00:40	500	kHz/				Spa	ın 5 MHz		

Page 31 of 41

Report No.: TW2104193E

Date: 2021-05-13



Product:	WIRED & WIRELESS GAMING MOUSE					Test Mode:		Keep transmitting		
Mode	Keeping Transmitting					Test Voltage		DC3.7V		
Temperature	2	24 deg. C,			]	Humidity		56% RH		
Test Result:		Pass			Detector			PK		
20dB Bandwidth	2.244MHz									
Ref Lvl 10 dBm	ndB	1 [T1 no 20.0 2.2444889	00 dB	V	BW BW WT	100 k 300 k 5 m	Hz	F Att	20 dB	
0				\		v1 ndE BW	[T1]	-1 2.47940 20 2.24448	.00 dB	A
-10 -20	<b>***</b>			\.\	~~V	V <sub>T</sub> ?	[T1] C2	2.47887 -21 2.48111		1MA
-30 -40							- Vu	mully m	Number 1	IMA
-50										
-60										
-70										
-80										
Center 2		5:51:40	500 k	Hz/				Spa	n 5 MHz	

Report No.: TW2104193E Page 32 of 41

Date: 2021-05-13

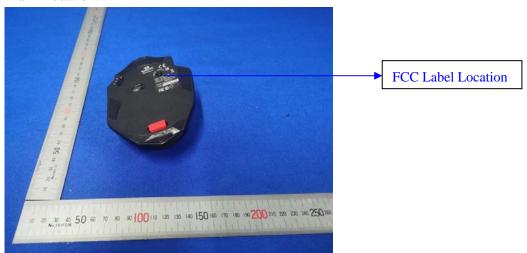


#### 10.0 FCC ID Label

#### FCC ID: TUVDS-2835

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:**



Page 33 of 41 Report No.: TW2104193E

Date: 2021-05-13



#### 11.0 Photo of testing

#### 11.1 Conducted test View--



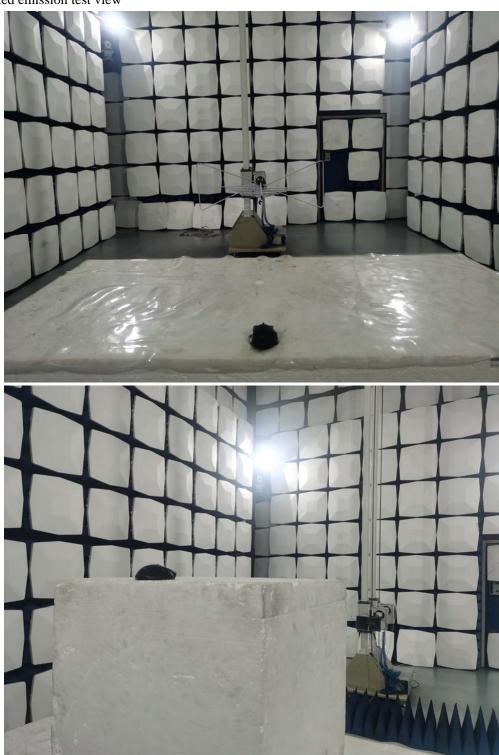
Page 34 of 41

Report No.: TW2104193E

Date: 2021-05-13



#### Radiated emission test view



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: TW2104193E

Date: 2021-05-13



#### 11.2 Photographs - EUT

#### Outside View



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: TW2104193E

Date: 2021-05-13



## Photographs - EUT

Outside View



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: TW2104193E Page 37 of 41

Date: 2021-05-13



#### Outside view



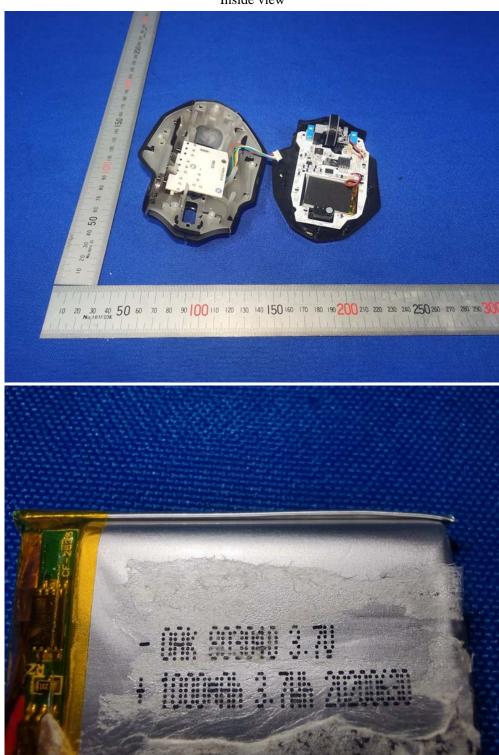
Page 38 of 41

Report No.: TW2104193E

Date: 2021-05-13



Inside view



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

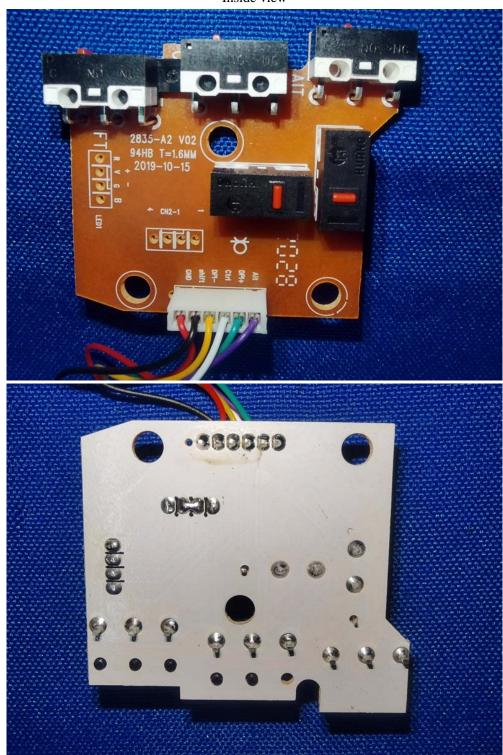
Page 39 of 41

Report No.: TW2104193E

Date: 2021-05-13



Inside view



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

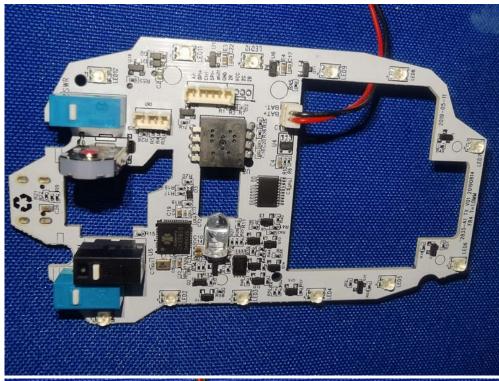
Page 40 of 41

Report No.: TW2104193E

Date: 2021-05-13



Inside view





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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

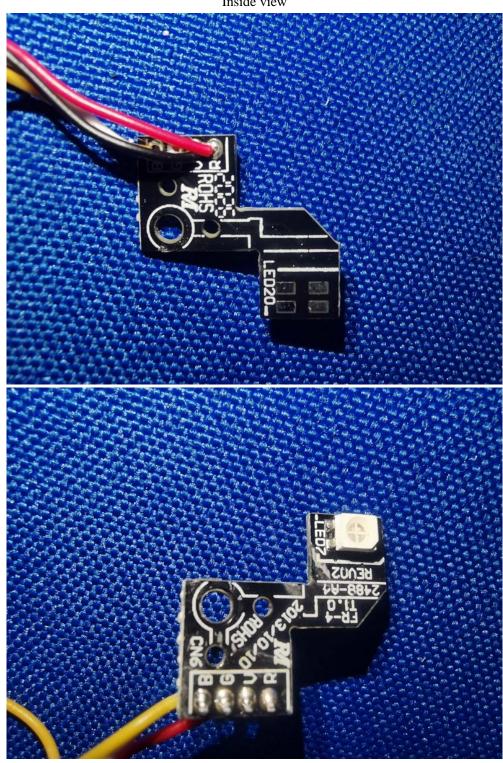
Page 41 of 41

Report No.: TW2104193E

Date: 2021-05-13



Inside view



-- End of the report--

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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to