



Report No.: TW2011223E File Reference No.: 2020-12-16

Applicant: Shenzhen Star Sources Electronic Technology Co., Ltd.

Product: 2.4G Wireless PC Mouse

Model No.: ST-126

Brand Name: Ihome

Test Standards: FCC Part 15.249

Test Result: It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.249 regulations for the evaluation of

electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: December 16, 2020

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

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# **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

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# Test Report Conclusion

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11.0

Photo of Test Setup and EUT View.

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#### 1.0 General Details

#### 1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le

Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688 Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 744189 For 3m Anechoic Chamber

# 1.2 Applicant Details

Applicant: Shenzhen Star Sources Electronic Technology Co., Ltd.

Address: Room1102, Block 1st, Yi Luan Building, Xixiang Road 230, BaoAn District, Shenzhen,

China

Telephone: 0755-86397260 Fax: 0755-26609516

# 1.3 Description of EUT

Product: 2.4G Wireless PC Mouse

Manufacturer: Shenzhen Star Sources Electronic Technology Co., Ltd.

Address: Room 1102, Block 1st, Yi Luan Building, Xixiang Road 230, BaoAn District,

Shenzhen, China

Brand Name: Ihome
Model Number: ST-126
Additional Model Name N/A
Hardware Version: V2.1
Software Version: V0606

Serial No.: 20 10 000001

Input Voltage: DC3V, 2pcs AAA batteries

Modulation Type: GFSK

Operation Frequency 2408-2478MHz

#### Channel List:

Channel	1	2	3	4	5	6	7	8
Frequency (MHz)	2408	2437	2468	2421	2440	2478	2407	2435
Channel	9	10	11	12	13	14	15	16
Frequency (MHz)	2467	2410	2442	2455	2414	2428	2449	2441

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Antenna Designation

PCB antenna with gain 3.85dBi Max

1.4 Submitted Sample

2 Samples

1.5 Test Duration

2020-11-17 to 2020-12-16

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

Date: 2020-12-16



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	2018-02-07	2021-02-06
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	2020-01-16	2021-01-15
RF Cable	Zhengdi	ZT26-NJ-NJ-8		2020-06-23	2021-06-22
Ki Caoic	Zileligui	M/FA		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	2020-01-07	2021-01-06

#### 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 teste	d according	to the	following	specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Emission Test	N/A	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 and RSS-210	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

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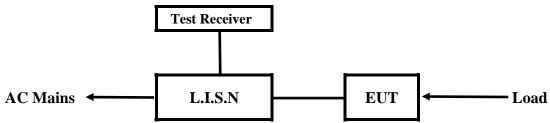
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#### 5. Power Line Conducted Emission Test

#### 5.1 Schematics of the test

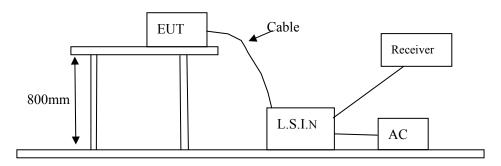


EUT: Equipment Under Test

# 5.2 Test Method and test Procedure

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

#### Block diagram of Test setup



# 5.3 Configuration of The EUT

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

One channels are provided to the EUT

# A. EUT

Device	Manufacturer	Model	FCC ID
	Shenzhen Star Sources		
2.4G Wireless PC Mouse	Electronic Technology Co.,	ST-126	ZJEST-316
	Ltd.		

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#### B. Internal Device

Device	Manufacturer	Model	FCC ID/SDOC
N/A			

# C. Peripherals

Device	Manufacturer	Model	Rating

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2014

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

6 6 1					
Enggyon av (MHz)	Limits (dBμV)				
Frequency(MHz)	Quasi-peak Level	Average Level			
0.15 ~ 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: N/A

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

Note: EUT powered by AAA battery, this test item not applicable.

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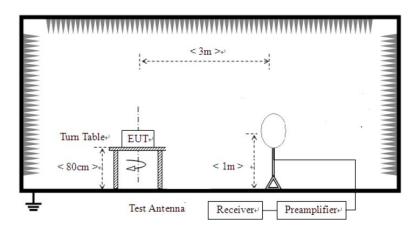


#### **6** Radiated Emission Test

- 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**

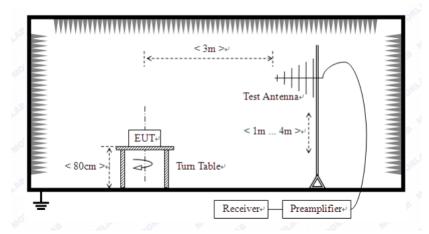
For radiated emissions from 9kHz to 30MHz



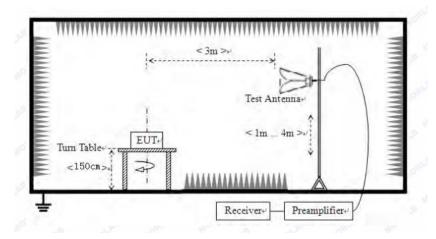
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#### For radiated emissions from 30MHz to1GHz



#### 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.
- 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)	Field Strength of Harmonics (3m)

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(MHz)	mV/m	dBuV/m		uV/m	dBuV/m	
2400-2483.5	50	94 (Average)	114 (Peak)	500	54 (Average)	74 (Peak)

Note:

- 1. RF Field Strength  $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 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 (dBμV/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 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 below 30MHz and above 18GHz, it was the floor noise.
- 6. New battery was used during tests.

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#### 6.5 Test result

#### A Fundamental & Harmonics Radiated Emission Data

Product:	2.4G Wireless PC Mouse	Test Mode:	Keep transmitting-Low Channel
Test Item:	Fundamental Radiated Emission	Temperature:	25℃
	Data		
Test Voltage:	DC3.0V	Humidity:	56%
Test Result:	Pass		

Frequency	Emission PK/AV	Horiz /	Limits PK/AV	Margin
(MHz)	(dBuV/m)	Vert	(dBuV/m)	(dB)
2408	93.74 (PK)/81.65(AV)	Н	114/94	-20.26/-12.35
2408	81.37 (PK)	V	114/94	-12.63
4816	50.92 (PK)	Н	74/54	-3.08
4816	49.75 (PK)	V	74/54	-4.25
7224		H/V	74/54	
9632		H/V	74/54	
12040		H/V	74/54	
14448		H/V	74/54	
16856		H/V	74/54	
19264		H/V	74/54	
21672		H/V	74/54	
24080		H/V	74/54	

Note: (1) PK= Peak, AV= Average

- (2) Emission Level = Reading Level + Antenna Factor + Cable Loss Pre-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
- (6) The PK emission level less than the AV limit. No necessary to record the AV emission level.

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Product:	2.4G Wireless PC Mouse	Test Mode:	Keep transmitting-Middle Channel
Test Item:	Fundamental Radiated Emission	Temperature:	25℃
	Data		
Test Voltage:	DC3.0V	Humidity:	56%
Test Result:	Pass		

Frequency	Emission PK/AV	Horiz /	Limits PK/AV	Margin
(MHz)	(dBuV/m)	Vert	(dBuV/m)	(dB)
2441	93.68 (PK)/81.29(AV)	Н	114/94	-30.32/-12.71
2441	83.92 (PK)	V	114/94	-10.08
4882	50.47 (PK)	Н	74/54	-3.53
4882	49.62 (PK)	V	74/54	-4.38
7323		H/V	74/54	
9764		H/V	74/54	
12205		H/V	74/54	
14646		H/V	74/54	
17087		H/V	74/54	
19528		H/V	74/54	
21969		H/V	74/54	
24410		H/V	74/54	

Note: (1) PK= Peak, AV= Average

- (2) Emission Level = Reading Level + Antenna Factor + Cable Loss Pre-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
- (6) The PK emission level less than the AV limit. No necessary to record the AV emission level.

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Product:	2.4G Wireless PC Mouse	Test Mode:	Keep transmitting-High Channel
Test Item:	Fundamental Radiated Emission	Temperature:	25℃
	Data		
Test Voltage:	DC3.0V	Humidity:	56%
Test Result:	Pass		

Frequency	Emission PK/AV	Horiz /	Limits PK/AV	Margin
(MHz)	(dBuV/m)	Vert	(dBuV/m)	(dB)
2478	93.56 (PK)/80.85(AV)	Н	114/94	-20.44/-13.15
2478	83.38 (PK)	V	114/94	-10.62
4956	49.44 (PK)	Н	74/54	-4.56
4956	50.19 (PK)	V	74/54	-3.81
7434		Н	74/54	
7434		V	74/54	
9912		H/V	74/54	
12390		H/V	74/54	
14868		H/V	74/54	
17346		H/V	74/54	
19824		H/V	74/54	
22302		H/V	74/54	
24780		H/V	74/54	

Note: (1) PK= Peak, AV= Average

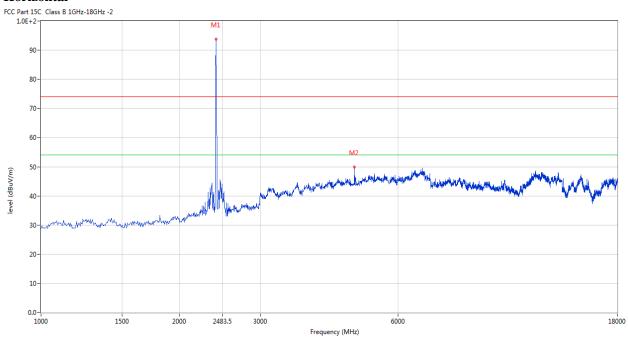
- (2) Emission Level = Reading Level + Antenna Factor + Cable Loss Pre-Amplifier
- (3)Margin=Emission-Limits
- (4)According to section 15.35(b), the peak limit is 20dB higher than the average limit
- (5) For test purpose, keep EUT continuous transmitting
- (6) The PK emission level less than the AV limit. No necessary to record the AV emission level.

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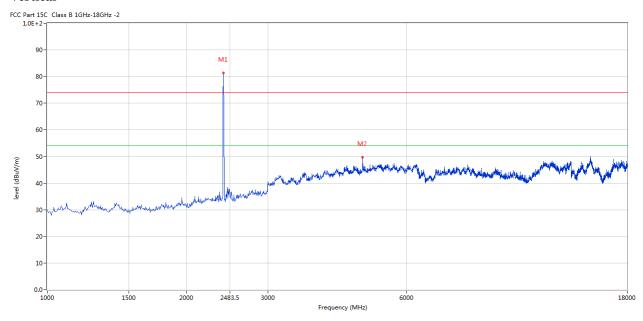


# Please refer to the following test plots for details: Low Channel

#### **Horizontal**



#### Vertical



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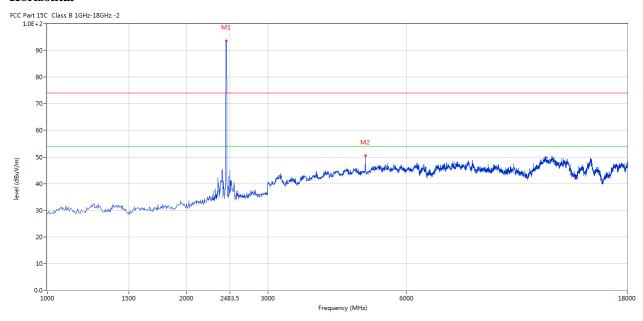
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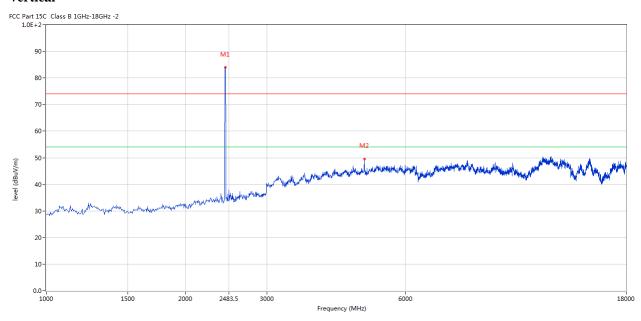


Please refer to the following test plots for details: Middle Channel

#### **Horizontal**



# Vertical



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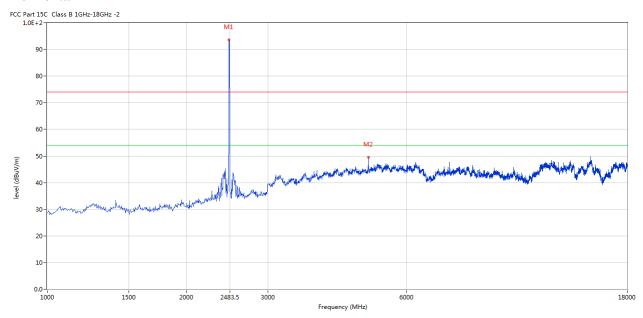
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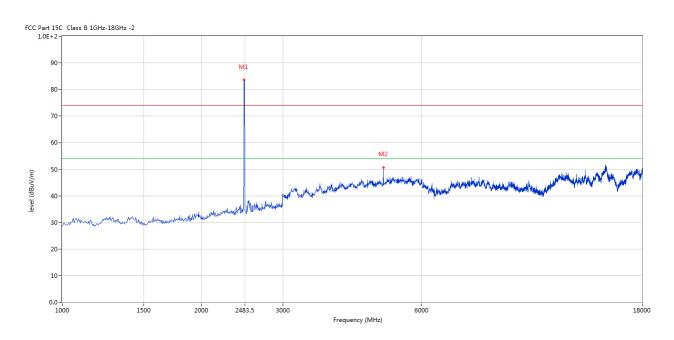


Please refer to the following test plots for details: High Channel

#### **Horizontal**



#### Vertical



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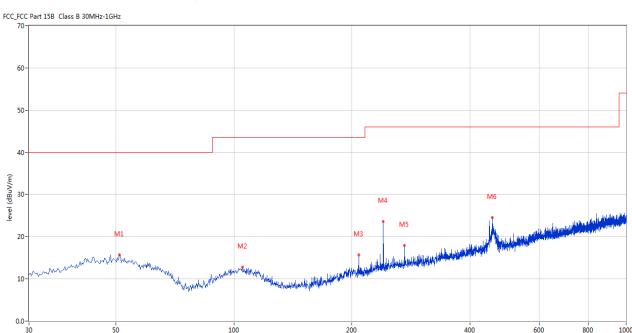


# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

**Results:** Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	51.092	15.69	-11.41	40.0	-24.31	Peak	199.00	100	Horizontal	Pass
2	105.156	12.80	-13.23	43.5	-30.70	Peak	224.00	100	Horizontal	Pass
3	207.951	15.69	-13.69	43.5	-27.81	Peak	126.00	200	Horizontal	Pass
4	240.195	23.56	-12.33	46.0	-22.44	Peak	273.00	100	Horizontal	Pass
5	271.955	17.98	-11.70	46.0	-28.02	Peak	108.00	100	Horizontal	Pass
6	456.208	24.58	-7.94	46.0	-21.42	Peak	256.00	100	Horizontal	Pass

Frequency (MHz)

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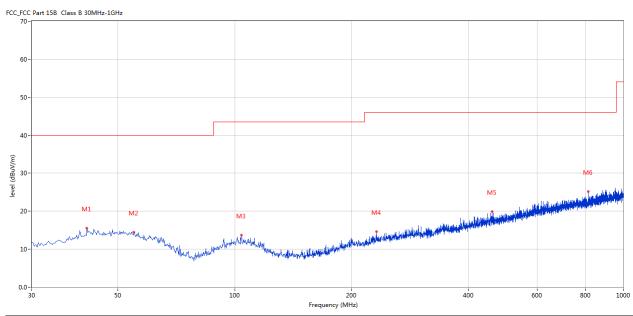


# Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	41.637	15.60	-11.82	40.0	-24.40	Peak	51.00	200	Vertical	Pass
2	54.971	14.49	-11.77	40.0	-25.51	Peak	230.00	100	Vertical	Pass
3	103.944	13.66	-13.33	43.5	-29.84	Peak	230.00	200	Vertical	Pass
4	231.467	14.59	-12.60	46.0	-31.41	Peak	109.00	200	Vertical	Pass
5	460.330	19.88	-7.87	46.0	-26.12	Peak	12.00	100	Vertical	Pass
6	812.594	25.22	-2.94	46.0	-20.78	Peak	359.00	200	Vertical	Pass

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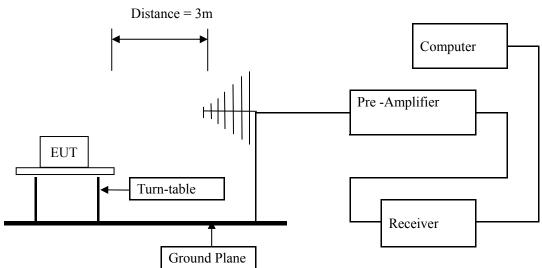


#### 7. Band Edge

#### 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=3MHz,VBW=10MHz and Peak detector used
- (3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (4) The antenna polarization: Vertical polarization and Horizontal polarization.

# 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.

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#### 7.6 Test Result

P	roduct:		2.4G Wi	reless PC M	louse	Pol	arity		Horizontal	
]	Mode		Keepin	g Transmitt	ing	Test V	/oltage		DC3.0V	
Ten	nperature		2	4 deg. C,		Hun	nidity		56% RH	
Tes	st Result:			Pass		-				
C Part 150 1.0E+2-	C Class B 1GHz-18GHz	-2								
90-										
80-									-	
70-										
									-	
60-								1	<b>N</b>	
								J	<del></del>	
		permanen					/	<i>,</i>	1	
					. In	ر ایمواموسیار	annight grinning god	<i></i>	M.	ha silikha kana ka a sa
50-	A Commission of the Commission		igagadori elektrologia para de la constanta de		one with the second	nazione de distributivo de la descripto de la	and the second s	,f	M	head the said of t
	A Commission of the Commission		id a rainte e de la companya de la c		بالمستناف المستناف المستناف والمستناف والمستنا	nasirand distribution di adiaba	astronius paradis primatori		1	head the second second
50-	A Commission of the Commission	Mericant	الموادية والمتأوية والمتأو		جوعة المطالبية والمسافقة المسافقة المسافقة المسافقة المسافقة المسافقة المسافقة المسافقة المسافقة المسافقة المس	and the state of t	assair ann deirind	, f		ha will be hard had be
50- 40- 30- 20-	A Commission of the Commission	Mariana	destroken producer p		بالمستعمد المستعمل ا	معادية والمستعدمة والمستعددة والمستعددة والمستعددة والمستعددة والمستعددة والمستعددة والمستعددة والمستعددة والم	nistania made di prima del di seria di prima	<i>f</i>		ha sil sha washin shirt
50 - 40 - 30 -	A Commission of the Commission	Marinarell	nd the state of th		<i>؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞؞</i> ؞؞؞؞؞؞؞؞	nasirpand de distribution de la	and the state of t	<i>,</i>		ha sili sha sanada da ka
30- 20- 10-	A Company of the Comp	Marinaria	ing angle of a state of the sta		بود. ما المالية المالي	nancon de de la companya de la comp	asterior de la companya de la compa	<i>,</i>		2420
50- 40- 30- 20- 10-		Marinary	ng at white the state of the st		Frequency (Mt	tz)	nestroire de primer de la constitución de la consti	<i>,</i>		2420
30- 20- 10- 23-		Results	Factor	Limit	Frequency (Mt	Detector	Table (o)	Height	ANT	
50- 40- 30- 20- 10- 0.0- 23	350	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)		1	Table (o)	Height (cm)	ANT	
30- 20- 10-	sso Frequency				Over Limit	1	Table (o)	_	ANT Horizontal	2420  Verdic

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

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P	Product:	4	2.4G Wire	eless PC Mou	use	Detec	tor		Vertical	
	Mode		Keeping	Transmittin	g	Test Vo	ltage		DC3.0V	
Ter	mperature		24	deg. C,		Humic	dity		56% RH	
Tes	st Result:			Pass						
Part 15 1.0E+2	5C Class B 1GHz-18GHz	-2								
90	)-									
80	)-								<b>\</b>	
70	)-								$\downarrow$	
								f	<b>\</b>	
60	)-								-	
60 50										
	)									
50 40	a-	esta anti-anti-anti-anti-anti-anti-anti-anti-	ni pijd o <sub>r de</sub> doc i içidi yayan şiralla	derikke, worden bestelle en der der schen bestelle en der der schen bestelle en der der schen bestelle en der	n.j.n.u.singhilly Dorth Atombal June Sale	estropologico de la propositiva de la p	outerough a sector about the pro-			obligated when perhaps here.
50 40 30	-	ing p <sup>ossion w</sup> hich and coloridar	ni pişk nede sinen i kalikanışını, in silka	denticus of the second of the	المسارسة الم	risch der flatigen Lebel in 2014, ein eine	المعتقد المستنبة المعتقدة الم			observation palpris e
50 40 30 20	5 - Japan Marian	esservice and high control blown	olejdani, deriziden gezete	inderstand of the second s	المراجعة الإسلامة المراجعة الإسلامة المراجعة الإسلامة المراجعة الإسلامة المراجعة المراجعة الإسلامة المراجعة ال	નાં તે હિંદ ફર્મ હો ફર્મ માટે લેવન કે પ્રાપ્ત કરવાના પ્ર	المعادلة الم			obligant de sain palgrés e
50 40 30	5 - Japan Marian	nggir <sup>angga ma</sup> khipangulakhimi	oleşilerin kerişiklengezirile	dentina arpare distance de la casa	nd, water had the Berth when had been to be	rainte de policies de la compansión de la c	المعادلة الم			obbando in pelorire
50 40 30 20 10	- James Marian San San San San San San San San San S	nsejer <sup>osto ma</sup> ktok ostovalskom	olejda da keri isklenga zirelle	derikaturikat dikkanakin egalas kirjaj	Frequency (MH		المجاولة المستواط المتعادث المستوادة المستوانة المستوانة المستوانة المستوانة المستوانة المستوانة المستوانة الم			2420
50 40 30 20 10 0.0 2	- Julian de Arante de Aran	Results	Factor	Limit			Table (o)	Height	ANT	2420
50 40 30 20 10 0.0 2			Factor (dB)		Frequency (MH	z)		Height (cm)		2420
50 40 30 20 10	Frequency	Results		Limit	Frequency (MH	z)				

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

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P	roduct:	2	2.4G Wir	eless PC M	ouse	Polar	rity		Horizontal	
	Mode		Keeping	g Transmitti	ing	Test Vo	ltage		DC3.0V	
Ten	nperature		24	4 deg. C,		Humie	dity		56% RH	
Tes	st Result:			Pass						
Part 150	C Class B 1GHz-18GHz	-2								
90-										
70-										
60-										
						1012				
50-			. 4			MALL				
50- 40- 30-		يغوا مستعوا كالمنته فتط بالكليك عرضه فأ	and suckery of the second second	/		Marin Control	hales formation the state of th	المستود المدود ا	gaden sakan sikan alkan sakan adalah	natha a dhina a dhina
40-	and the second second second	الاوام ستعين أبالية المتعادلة المتعا	and and and an				hara faranda da d	المستوه بالمستدر إعدن بالم	gadini sagaratikan ali mesan madan ha	ng an the State of
40- 30-	A CONTRACTOR OF THE PARTY OF TH	الاوام عندان الأوام المنافعة ا	ale subsequent and subsequent				h day been a been been been been been been be	hanna kalanda kalanda	gadens against de est est en	newholi deliko kanan
40- 30- 20- 10-		الإمام خلافة المراجعة والمام المراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة وا	and a substantial of the substan				Andrew Marie Control of the Control	olunique de constituent de la	gater square desired and an analysis of	must be the deliberation
40- 30- 20- 10-		Noderatelly debrief filled by the stand	ada sakata ka a a a a a a a a a a a a a a a a		Frequency (MF	2483.5	And the second section of the second	hangahan kelarin da	galan pagasarigang agi atternasiyan da	2500
40- 30- 20- 10- 0.0- 24	and the second second second	Results	Factor	Limit	Frequency (MF	2483.5	Table (o)	Height	ANT	1
40- 30- 20- 10- 0.0- 24	160		Factor (dB)	Limit (dBuV/m)	1	2483.5 Iz)				1
40- 30- 20- 10-	i <sub>60</sub> Frequency	Results		-	Over Limit	2483.5 Iz)		Height		2500  Verdict

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	Product:	2	2.4G Wireless PC Mouse I Keeping Transmitting Te					Vertical DC3.0V 56% RH			
	Mode										
Temperature			24 deg. C,				nidity				
Γ	Test Result:			Pass							
	t 15C Class B 1GHz-18GHz E+2-	: -2									
	90-										
	80-										
	70-										
	60-					<b>V.</b>					
	50-					1					
	40-	رىدىدى ئالىدى ئىل ئامۇرىلى ئىلى دىدىدىن دىدى	والتراجع المتعارض الم			1	ingaalagiiyayd glob, pi kayaa isaa ka jil	بالمنافرة والمنافرة المنافرة والمنافرة	المرافع المعاملة الم	ومحتماة فالمحار وتعييم	
		والمتواجعة أيته المراس ومناوب نانة	يعاد والمعالمة المعالمة المعادد المعاد			1	hadaladayiqtiyissasiisiqtir.il	أوالم والمراجعة المراجعة والمراجعة و	day da	normal plans and	
	40-	المتعادد الم	والمستوا فيتنا أفيانه فالمستوا فيستو				المستعمل الم	Angenipalist bengan denkanskelist	day ad direct distribution of the state of t	and the state of t	
	40- 10-10-10-10-10-10-10-10-10-10-10-10-10-1	asienakaan ofisikasieka olikasieka olikasieka	يعادية المستوا المستوان المستو				<sup>ho</sup> ral adisputably execution in the	المتعاوضة والمتعاوضة والمتعاوض وا	dos de describiblissas de la companya de la company	negative property	
	30-	azir ngaban meknekelekelekelekelekelekelekelekelekele	and and the state of the state				<sup>in</sup> nada <sub>n</sub> dan dan penganan dan da	desperiptive temperature acceptive	dan di dan dalah di sepanjan dan di dan	neverkely vil derview	
	40- 10-10-10-10-10-10-10-10-10-10-10-10-10-1	a karangan dan karangan dan karangan karangan karangan karangan karangan karangan karangan karangan karangan k	rent nederled produces			2483.5	<sup>in</sup> national philipse and security	Anglanip dipit interpret a pas dipitativi	Los L. horrestabilities anticomos privile	2500	
	30- 20- 10- 2460		Ecoto-	Limit	Frequency (MH	z)				2500	
	30- 20- 10- 2460 Frequency	Results	Factor	Limit	Over Limit			) Height	ANT		
No.	30- 20- 10- 2460		Factor (dB)	Limit (dBuV/m) 54.0		z)				2500	

Note: 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. The antenna gain is 3.85 Max. It fulfills the requirement of this section. Test Result: Pass

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Product:	2.4G Wireless PC Mouse					Test Mode:		Keep transmitting			
Mode	Keeping Transmitting					Test Voltage		DC3.0V			
Temperature	24 deg. C,					Humidity		56% RH			
Test Result:		Pass			Detector			P	K		
dB Bandwidth	2.645MHz				-						
<u>,                                      </u>	Marker	1 [T1 r	ndB]	RI	3W	30 k	Hz I	RF Att	10 dB		
Ref Lvl	ndB	20	.00 dB	VE	BW 1	100 k	Hz				
0 dBm	BW 2	.645290	058 MHz	SV	٧T	28 m	s (	Jnit	dBm	Į.	
0						<b>v</b> <sub>1</sub>	[T1]	-2	5.05 dBm	A	
								2.4078	0962 GHz	-	
-10						ndE	3	2	0.00 dB		
						BW		2.6452			
-20			1			$\nabla_{\mathbf{T}}$	[T1]	-4	4.50 dBm		
				LA ata		▽	T1]	2.4066	8737  GHz $5.24  dBm$		
-30			Win a ma	www	1.	1 2	. [11]	2.4093	3.24 GBIII 3267 GHz		
1MAX		,	<i>I</i> <sup>1</sup>		4			2.1093	3207 G112	1M	
-40		T 1			4	_					
		N			1						
-50	M	NIN W				W	U				
-60	N.N						V				
and many	My My						WW	Many and	Wu		
70									hullm		
-80											
-90											
100 Center 2.408	CUE		1 1 1	Hz/				Gnor	n 10 MHz	 	

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Product:	2.4G Wireless PC Mouse					Test Mode	:	Keep transmitting			
Mode	Keeping Transmitting					est Voltag	ge	DC3.0V			
Temperature		24			Humidity		56% RH				
Test Result:	Pass 2.745MHz					Detector			PK		
20dB Bandwidth											
Ref Lvl		Marker ndB		ndB] 00 dB	RBW VBW	30 ] 100 ]		RF Att	10 dB		
0 dBm			. 745490		SWT	28 r		Unit	dBm	ı	
0					I	ı	<u> </u>				
						<b>v</b> <sub>1</sub>	[T1]	-25	.00 dBm	A	
-10						nd	10	2.44078	958 GHz		
						BW		2.74549	098 MHz		
-20						$\nabla_{\mathrm{T}}$	1 [T1]	-44	.12 dBm		
				1				2.43964	729 GHz		
-30				~~\\\\	My	$ ightharpoons_{ m T}$	2 [T1]	-44	.95 dBm		
1MAX				7	Y			2.44239	279 GHz	1M2	
			ام ا	W		١.					
-40			TJ			T2					
-50		<u>/w</u>	W			hu	Wy.				
-60	2	- Jan Jan -					M				
4	ym yn	<b>U</b> WV						Mylin	Μ.,		
-70	J.								Myldeny		
-80											
-90											
-100 Center 2	. 441 CI	-Hz		1 M	Hz/			Span	10 MHz		
	1.DEC.2		:18:06	± 1·1	<b>-</b> ,			Span			

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Product:	2.4G Wireless PC Mouse					Test Mode:	:	Keep transmitting		
Mode	Keeping Transmitting					Test Voltage	e	DC3.0V		
Temperature		24 deg. C,						56%	% RH	
Test Result:		Pass							PK	
20dB Bandwidth		2.946MHz								
Ref Lvl		arker dB	1 [T1 n 20.	.dB] 00 dB	RBW VBW			RF Att	10 dB	
0 dBm	В	W 2	.945891	78 MHz	SWT	28 m	ns (	Jnit	dBm	
O						<b>V</b> <sub>1</sub>	[T1]	-23 2.47778	.45 dBm 958 GHz	Α
-10						ndI BW	8	20	.00 dB 178 MHz	
-20				1		∇ <sub>T</sub>	l [T1]	-43	.11 dBm	
-30					ww	$oldsymbol{ abla}_{\mathrm{T}}$	2 [T1]	2.47652 -43	705 GHz	
1MAX			لمر	$\int_{\mathcal{C}}$	V	h.		2.47947	295 GHz	1MA
-40						TZ				
-50		Ju Vu V	W			<b>*</b>	M			
-60 <b></b>	m m	- <sup>C</sup>					<u> </u>	Mul	4.	
-70 M									W. W.	
-80										
-90										
-100	2.478 GHz			1 M	Hz/			Span	10 MHz	
-100 Center	2.478 GHz		:19:32	1 M	Hz/			Span	10 MHz	

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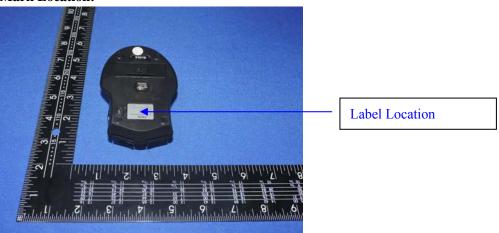


#### 10.0 FCC ID Label

#### FCC ID: ZJEST-316

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:**

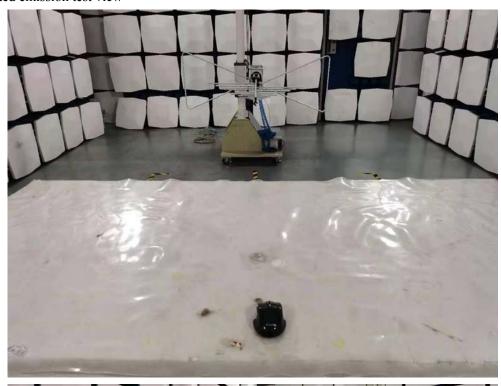


Date: 2020-12-16



# 11.0 Photo of testing

# 11.1 Radiated emission test view





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# 11.2 Photographs – EUT

# Outside View





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Outside View





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Outside View





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Inside view





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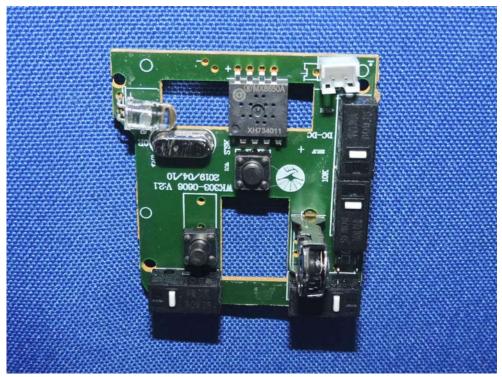
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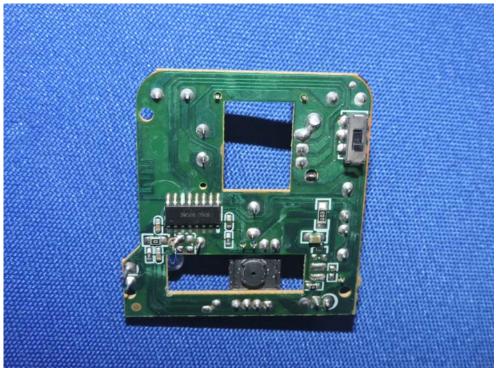
Report No.: TW2011223E

Date: 2020-12-16



# Inside view





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# Inside view



-- End of the report--