



Report No.: FCC1912274 File Reference No.: 2020-01-10

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

Product: Wireless Bluetooth Mouse

Model No.: IMACM212W-WM

Brand Name: N/A

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: January 10, 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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#### 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: -Fax: --

## 1.3 Description of EUT

Product: Wireless Bluetooth Mouse

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

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

Shenzhen, China

Brand Name: N/A

Model Number: IMACM212W-WM

Additional Model Name N/A

Input Voltage: DC3.0V, 2pcs AAA batteries

Modulation Type: Bluetooth BRD/EDR : GFSK, Л/4D-QPSK, 8DPSK;

BLE: GFSK

Operation Frequency 2402-2480MHz

Channel Separation 1MHz for Bluetooth BRD/EDR; 2MHz for BLE

Antenna Designation PCB antenna with gain 0dBi Max

#### 1.4 Submitted Sample

1 Sample

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

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#### 1.5 Test Duration

2019-12-27 to 2020-01-09

## 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

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2.0 Test Equipment	M C /	N 1.1	C ' 131	D ( CC )	D D (
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal. 2019-06-21	Due Date
ESPI Test Receiver	R&S	ESPI 3			2020-06-20
LISN	R&S	EZH3-Z5	100294	2019-06-21	2020-06-20
LISN	R&S	EZH3-Z5	100253	2019-06-21	2020-06-20
Ultra Broadband ANT	R&S	HL562	100157	2019-06-21	2020-06-20
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2019-06-21	2020-06-20
Loop Antenna	EMCO	6507	00078608	2018-06-25	2021-06-24
Spectrum	R&S	FSIQ26	100292	2019-06-21	2020-06-20
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2019-06-21	2021-06-20
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2019-08-22	2020-08-21
Power sensor	Anritsu	MA2491A	32263	2019-08-22	2020-08-21
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	2019-06-21	2020-06-20
EMI Test Receiver	RS	ESH3	860904/006	2019-06-21	2020-06-20
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2019-06-21	2020-06-20
Spectrum	HP/Agilent	E4407B	MY50441392	2019-06-21	2020-06-20
Spectrum	RS	FSP	1164.4391.38	2019-01-20	2020-01-19
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA		2019-06-21	2020-06-20
RF Cable	Zhengdi	7m		2019-06-21	2020-06-20
RF Switch	EM	EMSW18	060391	2019-06-21	2020-06-20
Pre-Amplifier	Schwarebeck	BBV9743	#218	2019-06-21	2020-06-20
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2019-06-21	2020-06-20

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#### 3.0 Technical Details

## 3.1 Summary of test results

The E	UT has	been	tested	accord	ling to	o 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

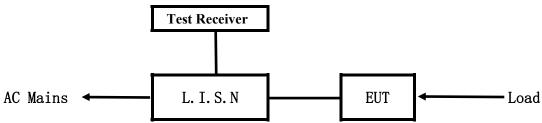
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#### 5. Power Line Conducted Emission Test

#### 5.1 Schematics of the test

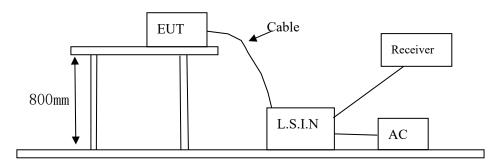


**EUT: Equipment Under Test** 

## 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	
Wireless Bluetooth Mouse	Star Technology Industrial Co., Ltd.	IMACM212W-WM	ZJEIMACM212	

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#### B. Internal Device

Device	Manufacturer	Model	FCC ID/SDOC
N/A			

#### C. Peripherals

Device	Manufacturer	Model	FCC ID/SDOC/DOC

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2014

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

## 5.5 Power line conducted Emission Limit according to Paragraph 15.107 and 15.207

Frequency(MHz) Quasi-peak	Class A Lir	nits (dB µ V)	Class B Limits (dB µ V)			
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level		
$0.15 \sim 0.50$	$\sim 0.50$ 79.0 66.0 66.0 66.0 66.0 79.0		56.0~46.0*			
$0.50 \sim 5.00$	73.0	60.0	56.0	46.0		
$5.00 \sim 30.00$	73.0	60.0	60.0	50.0		

Notes:

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

5.6 Test Results: 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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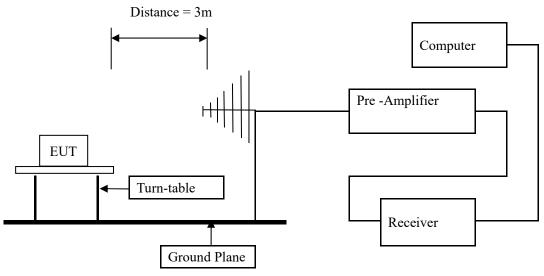
Date: 2020-01-10



#### **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**



- 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	ield Strength of Fundamental (3m) Field Strength of Harmonics (3m)					
(MHz)	mV/m	dBu	V/m	uV/m	dBuV/m		
2400-2483.5	50	94 (Average)	94 (Average) 114 (Peak) 500 5		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 µ 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. New battery were used during tests.
- 6. X,Y,Z axis of eut all have been tested, only worse case is reported.

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## 6.5 Test result

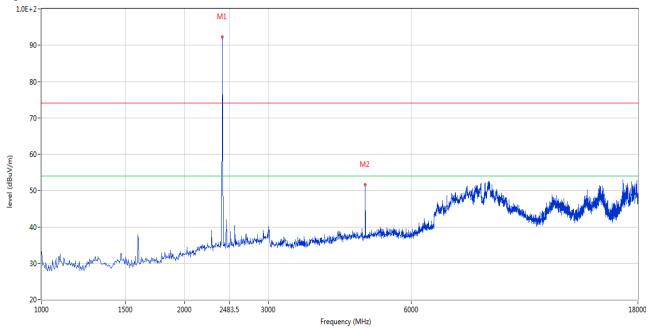
## A Fundamental & Harmonics Radiated Emission Data

#### **BLE Mode**

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

#### Horizontal

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



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
		)		)	(dB)					
1	2402.149	92.34	-3.57	94.0	-1.66	Peak	269.00	100	Н	Pass
2	4802.799	51.61	3.12	54.0	-2.39	Peak	287.00	100	Н	Pass

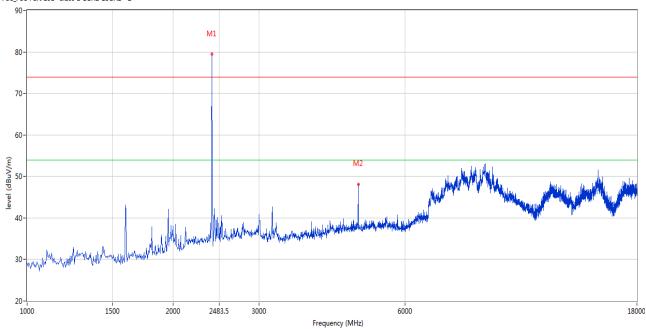
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## Vertical

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



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
		)		)	(dB)					
1	2402.149	79.48	-3.57	94.0	-14.52	Peak	5.00	100	V	Pass
2	4802.799	48.14	3.12	54.0	-5.86	Peak	147.00	100	V	Pass

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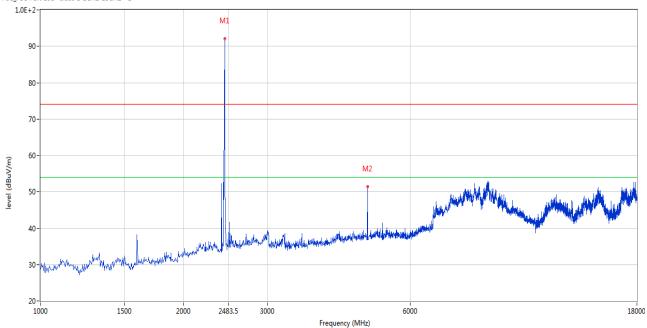
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Please refer to the following test plots for details: Middle Channel

#### Horizontal





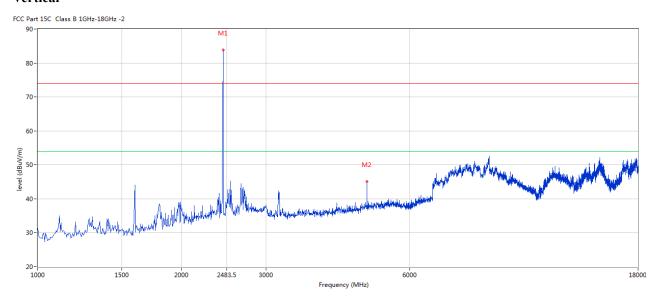
No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
		)		)	(dB)					
1	2440.390	92.10	-3.57	94.0	-1.90	Peak	272.00	100	Н	N/A
2	4879.280	51.47	3.20	54.0	-2.53	Peak	109.00	100	Н	Pass

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## Vertical



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
		)		)	(dB)					
1	2440.390	83.82	-3.57	94.0	-10.18	Peak	97.00	100	V	N/A
2	4879.280	45.10	3.20	54.0	-8.90	Peak	88.00	100	V	Pass

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

#### Horizontal

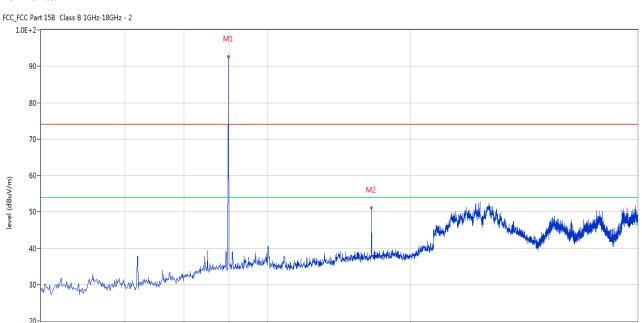
1000

1500

2000

2483.5

3000



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
		)		)	(dB)					
1	2479.630	92.64	-3.57	94.0	-1.36	Peak	279.00	100	Н	Pass
2	4960.010	50.99	3.36	54.0	-3.01	Peak	265.00	100	Н	Pass

Frequency (MHz)

6000

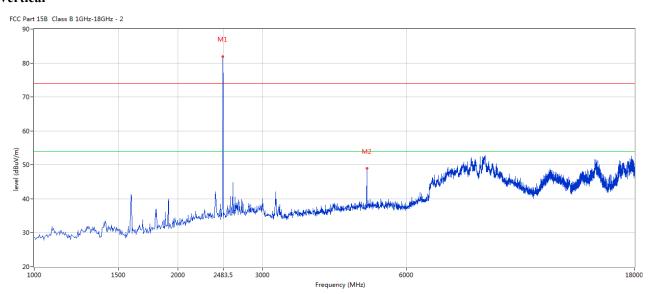
18000

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#### Vertical



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
		)		)	(dB)					
1	2479.630	81.96	-3.57	94.0	-12.04	Peak	13.00	100	V	Pass
2	4960.010	48.92	3.36	54.0	-5.08	Peak	77.00	100	V	Pass

For emission above 18GHz, It is only the floor noise. No necessary to take down.

Note: (1) For Radiated emission below 30MHz and above 18GHz, it is only the floor noise

- (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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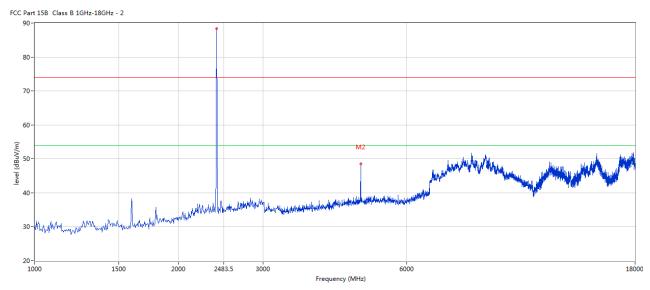
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## BT BDR/EDR Mode (GFSK Modulation was the worst case)

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

#### Horizontal



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
		)		)	(dB)					
1	2402.149	88.31	-3.57	94.0	-5.69	Peak	273.00	100	Н	Pass
2	4802.799	48.56	3.12	54.0	-5.44	Peak	273.00	100	Н	Pass

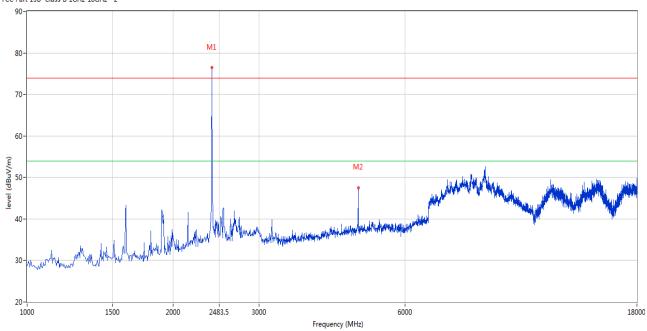
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#### Vertical

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



No.	Frequency	Results	Factor (dB)	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	2402.149	76.50	-3.57	94.0	-17.50	Peak	178.00	100	V	N/A
2	4802.799	47.54	3.12	54.0	-6.46	Peak	64.00	100	٧	Pass

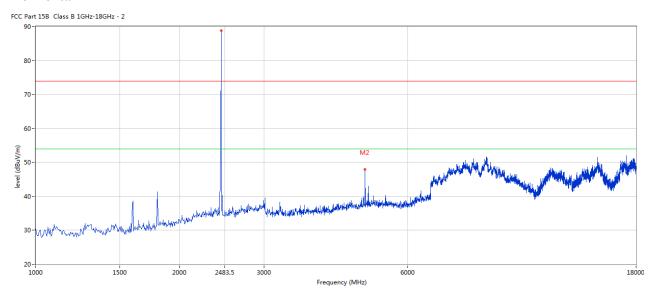
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Please refer to the following test plots for details: Middle Channel

#### Horizontal



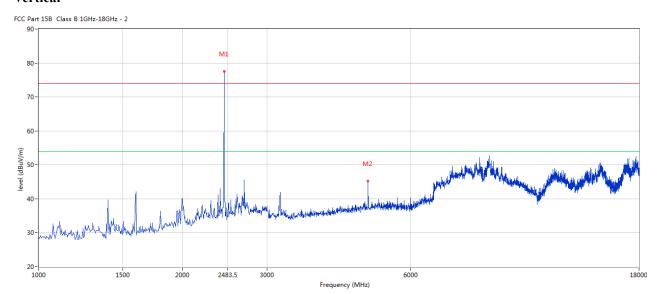
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	88.75	-3.57	94.0	-5.25	Peak	277.00	100	Н	Pass
2	4879.280	47.93	3.20	54.0	-6.07	Peak	117.00	100	Н	Pass

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## Vertical



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	2441	77.57	-3.57	94.0	-16.43	Peak	9.00	100	V	Pass
2	4879.280	45.28	3.20	54.0	-8.72	Peak	65.00	100	V	Pass

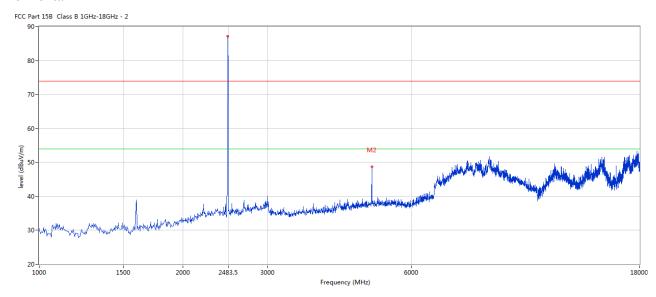
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Please refer to the following test plots for details: High Channel

#### Horizontal



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	2479.630	87.17	-3.57	94.0	-6.83	Peak	291.00	100	Н	N/A
2	4960.010	48.68	3.36	54.0	-5.32	Peak	277.00	100	Н	Pass

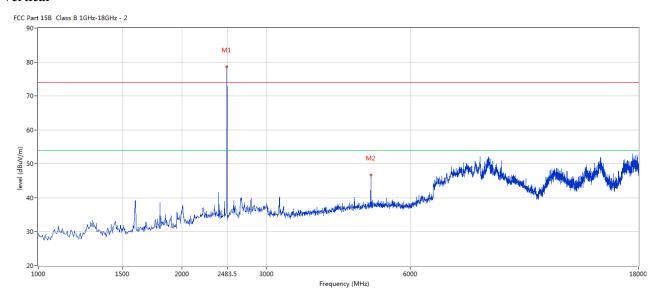
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#### Vertical



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	2479.630	78.57	-3.57	94.0	-25.43	Peak	57.00	100	V	N/A
2	4960.010	46.74	3.36	54.0	-7.26	Peak	66.00	100	V	Pass

For emission above 18GHz, It is only the floor noise. No necessary to take down.

Note:

- (1) For Radiated emission below 30MHz and above 18GHz, it is only the floor noise
- (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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# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

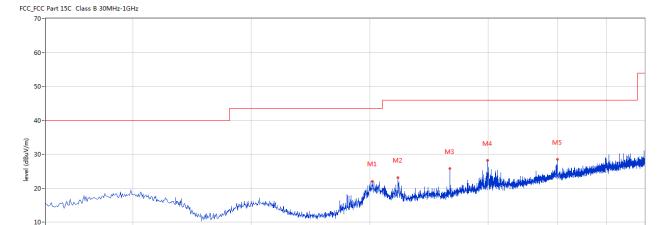
EUT set Condition: Keep Tx transmitting

Mode: BLE

**Results:** Pass

0.0

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			(cm)		
		)		)	(dB)					
1	203.102	22.15	-13.44	43.5	-21.35	Peak	100.00	200	Н	Pass
2	235.831	23.17	-12.45	46.0	-22.83	Peak	101.00	100	Н	Pass
3	319.958	25.81	-10.60	46.0	-20.19	Peak	0.00	200	Н	Pass
4	398.508	28.23	-8.65	46.0	-17.77	Peak	0.00	200	Н	Pass
5	599.733	28.47	-4.98	46.0	-17.53	Peak	0.00	200	Н	Pass

Frequency (MHz)

1000

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

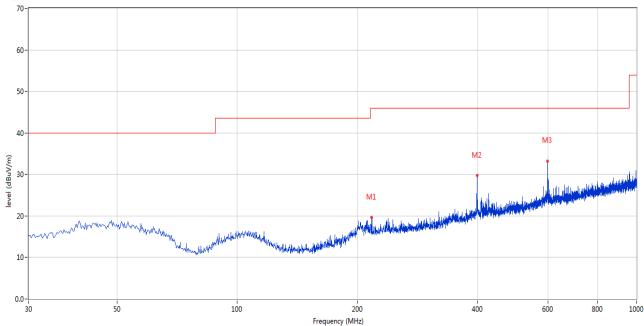
EUT set Condition: Keep Tx transmitting

Mode: BLE

Results: Pass

Please refer to following diagram for individual





No.	Frequency	Results	Factor (dB)	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	217.163	19.64	-13.49	46.0	-26.36	Peak	155.00	200	V	Pass
2	398.265	29.67	-8.67	46.0	-16.33	Peak	158.00	100	V	Pass
3	599.248	33.27	-5.04	46.0	-12.73	Peak	63.00	100	V	Pass

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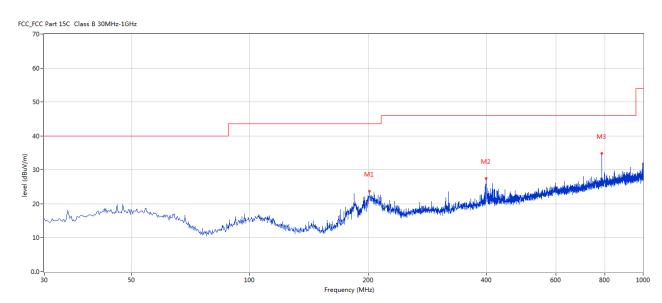
## Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Mode: Bluetooth BDR/EDR ( GFSK Modulation was the worst case)

Results: Pass

Please refer to following diagram for individual



No.	Frequen	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	cy (MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	201.405	23.68	-13.42	43.5	-19.82	Peak	74.00	100	Н	Pass
2	399.235	27.45	-8.60	46.0	-18.55	Peak	360.00	200	Н	Pass
3	785.684	34.78	-3.08	46.0	-11.22	Peak	107.00	100	Н	Pass

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

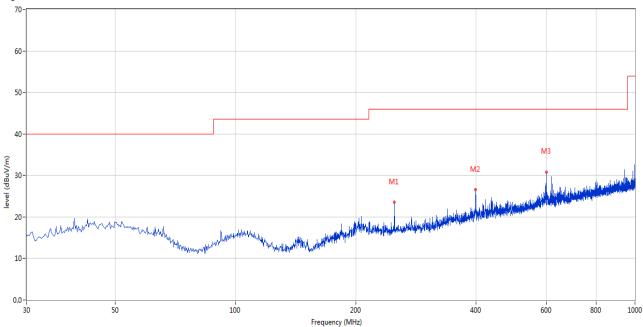
EUT set Condition: Keep Tx transmitting

Mode: Bluetooth BDR/EDR (GFSK Modulation was the worst case)

**Results:** Pass

Please refer to following diagram for individual





No.	Frequency	Results	Factor (dB)	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	249.893	23.59	-12.08	46.0	-22.41	Peak	33.00	100	V	Pass
2	398.750	26.55	-8.63	46.0	-19.45	Peak	63.00	100	V	Pass
3	599.975	30.83	-4.95	46.0	-15.17	Peak	128.00	100	٧	Pass

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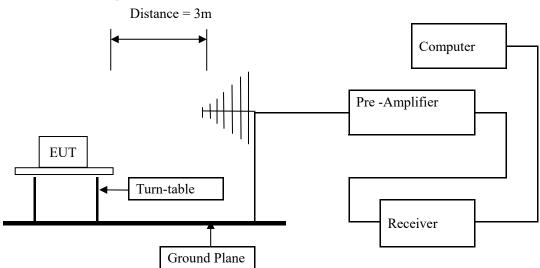


#### 7. Band Edge

#### 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=1MHz,VBW=3MHz 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

#### **BLE Mode**

	Pro	duct:	Wi	reless B	luetooth Mo	use	Pola	rity		Horizon	ıtal
	M	lode	]	Keeping	Transmittin	g	Test V	oltage		DC3.0	V
-	Temp	erature		24	deg. C,		Hum	idity		56% R	Н
	Test 1	Result:			Pass			-			
		5B Class B 1GHz-18GH	łz - 2								
1.	.0E+2-										
	90-									/*h	
										/ <b>\</b>	
	80-										
	_									<u> </u>	
	70-										
(III/AII	60-										
level (abuv/m)									N/W		
Ď	50-							A American	<b>/</b>		h
		i dii.					Unt	<b>/</b> /" \			W
	40-			n laa dha	Jan	a dalah da		W''	M <sup>r</sup>		- W.
	#						ANA TANAHAMAN	i in			Mound
	30- 2360	)									24:
		1	1	1	T	Frequency (M	Hz)	T	T	ı	_
No	٥.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1		2390	48.44	-3.53	54.0	-5.56	Peak	150.00	100	Н	Pass
	*	2400	38.14	-3.57	54.0	-15.86	AV	189.00	100	Н	Pass
2*		2400	68.89	-3.57	74.0	-5.11	Peak	189.00	100	Н	Pass

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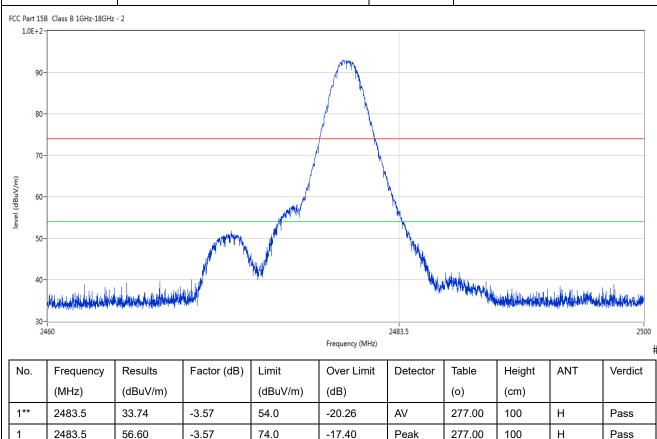
P	Product:	Wi	reless Bl	uetooth Mo	use	Detect	or		Vertical	
	Mode		Keeping	Transmitting	g	Test Vol	tage		DC3.0V	
Ter	mperature		24	deg. C,		Humid	ity		56% RH	
Tes	st Result:		]	Pass						
_FCC Pa 1.0E+2	art 15B Class B 1GHz-18G	Hz - 2								
90	)-									
80	)-								/hry	
70	)-									
60	)-								-	
50 40								rylldi.	\ 	
30	2360				Frequency (N	IHz)				
	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdic
0.	_	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
0.	(MHz)				-8.14	Peak	120.00	100	V	Pass
lo.	(MHz) 2390	45.86	-3.53	54.0	-0.14					
		45.86 33.60	-3.53 -3.57	54.0 54.0	-20.40	AV	45.00	100	V	Pass

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STING LAD	
	1

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Product:	Wireless Bluetooth Mouse	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		1



	No.	Frequency	Results	Factor (dB)	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
	1**	2483.5	33.74	-3.57	54.0	-20.26	AV	277.00	100	Н	Pass
	1	2483.5	56.60	-3.57	74.0	-17.40	Peak	277.00	100	Н	Pass
Г											

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

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rr(	oduct:	Wir	eless Bl	uetooth Mo	use	Detect	or		Vertical	
N	/Iode	K	leeping '	Transmitting	g	Test Volt	age		DC3.0V	
Temp	perature		24 (	łeg. C,		Humid	ity		56% RH	
Test	Result:		I	Pass						
2483	3.5MHz	PK (dBμV	7/m)		-	Limi		7	4 dBμV/n	n
2483	3.5MHz	AV (dBμV	7/m)		-	Limi		5	4 dBμV/n	n
Part 15B 90-	Class B 1GHz-18GHz - 2									
80-					Mary .					
					+					
70-					/ \					
					- / A					
60-					/ \					
60-				/		M1				
50-				مهابلاند		M1				
	da Hicara da	Nust 11 td	III dadhaha	. ] [ ]		M1		ladhraktaridhra		
40-		JANAN AMANAN MANAN	A A A A A A A A A A A A A A A A A A A	A HARDON MARKAN		M1				
			My department of the second	NA CONTRACTOR OF THE PARTY OF T	Frequency (MHz)	2483.5				250
30- 2460	Frequency	Results	Factor	Limit	Frequency (MHz)  Over Limit	2483.5	Table	Height	ANT	
30-	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	1	2483.5	Table (o)	Height (cm)	ANT	250 Verdict

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## Bluetooth BDR/EDR Mode (GFSK Modulation was the worst case): Only worst data reported

P	roduct:	W	ireless B	luetooth Mo	ouse	Pol	arity		Horizon	tal
	Mode		Keeping	Transmittin	g	Test V	/oltage		DC3.0	V
Ten	nperature		24	deg. C,		Hun	nidity		56% R	Н
Tes	t Result:			Pass		-				
CC Part 15	B Class B 1GHz-18GHz - 2	2				•	1			
70- 70- 80- 80- 80- 80- 80- 80- 80- 80- 80- 8	ما الله الله الله الله الله الله الله ال	ال الأخواب والمالك		Male to restrict to						
1717	and the second of passes in terror transport to a fairle of	olin ali Man Alband Misanan si An Masa ani an	AMPRICA HINDRA		where the Marchael Laborat	10				2410
30- 2360			_		Frequency (MHz	:)				#
2360	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
2360 No.	Frequency			(dBuV/m)	Limit (dB)			(cm)		
2360	(MHz)	(dBuV/m)	(dB)	(dbdv/iii)				1		
2360		(dBuV/m) 44.58	(dB) -3.53	54.0	-9.42	Peak	159.00	100	Н	Pass
2360 No.	(MHz)	, ,	· '	, ,	-9.42 -10.17	Peak AV	159.00 182.00	100	H	Pass Pass

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Pr	oduct:	Wii	reless Blu	etooth Mous	se	Detector	ſ	,	Vertical	
N	Mode	k	Keeping T	ransmitting		Test Volta	ge	I	DC3.0V	
Tem	perature		24 d	eg. C,		Humidit	y	5	56% RH	
Test	Result:		Pa	ass						
FCC Part 15B	Class B 1GHz-18GHz - 2									
70- 60- 60- 50- 40-										
			بيقيف بفيدا للقينف المشاهدات							. 1
30-2360		(CININALA INTERNALA PARTA	المسترا المستراه المستراه المستراه المستراه المستراة المستراة المستراة المستراة المستراة المستراة المستراة الم	an illimitation	Frequency (MHz)					2410
30-	Frequency	Results	Factor	Limit	Frequency (MHz)  Over Limit	Detector	Table	Height	ANT	2410 Verdict
30-	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	· ·	Detector	Table (o)	Height (cm)	ANT	
30- 2360					Over Limit	Detector Peak		_	ANT	

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Pı	roduct:	Wi	reless Bl	uetooth Mo	use	Polari	ty	I	Torizontal	
]	Mode	F	Keeping '	Transmitting	g	Test Vol	tage		DC3.0V	
Ten	nperature		24 (	deg. C,		Humid	ity		56% RH	
Tes	t Result:		I	Pass						
CC Part 15E	3 Class B 1GHz-18GHz - 2									
80-										
70-					/	\				
(m/\mu) 60 - 60 - 60 - 60 - 60 - 60 - 60 - 60				- January -	/	M1				
50-			A CONTRACTOR OF THE PARTY OF TH							
		Herbigharian bankan banka		NAME OF THE PROPERTY OF THE PR		N <sub>u</sub>			de de la companya de	
30 - 2460					Frequency (MHz)	2483.5				2500
	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
No.		(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
No.	(MHz)	(ubuv/III)	(ub)	(/						

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rr	oduct:	Win	reless Bl	uetooth Mo	use	Detect	or		Vertical	
N	Mode	K	Keeping '	Transmitting	g	Test Volt	age		DC3.0V	
Tem	perature		24 (	deg. C,		Humid	ity		56% RH	
Test	Result:		J	Pass						
2483	3.5MHz	PK (dBμV	7/m)		-	Limit	t	7	4 dBμV/n	n
248	3.5MHz	AV (dBμV	7/m)		-	Limit	t	5	4 dBμV/n	n
90-	Class B 1GHz-18GHz - 2	!								
80-					<u> </u>					
					$\longrightarrow$					
70-										
60-						\				
50-						<b>A</b>				
						M1				
40-				All the second		M1	MhuJuyh		N-44, MAN	
			Mark the state of		Frequency (MHz)	2483.5	uMhiniLlinkyhi	White Middle And Mark	V <sup>N</sup> +ALAN <sup>N</sup> HA	250
30- 2460	Frequency	Results	Factor	Limit	Frequency (MHz)  Over Limit	Market	Table	Height	ANT	250 Verdict
30-	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	<u> </u>	2483.5	Table (o)	Height (cm)	ANT	

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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 0dBi Max. It fulfills the requirement of this section.

Test Result: Pass

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Product:	Wireless	Bluetooth	Mouse		T	est Mode:		Keep tran	smitting	
Mode	Keepi	ng Transm	itting		Te	est Voltage		DC3	.0V	
Temperature		24 deg. C,			I	Humidity		56%	RH	
Test Result:		Pass				Detector		PK		
OdB Bandwidth		1.094MHz								
	Marker	1 [T1 n	dB]	RI	ЗW	30 kF	Iz RI	z RF Att 10 dB		
Ref Lvl	ndB	20.	00 dB	VI	ВW	100 kF	łz	z		
0 dBm	BW :	1.094188	38 MHz	Sī	ИT	8.5 ms	s Uı	nit	dBm	ı
						<b>v</b> <sub>1</sub>	[T1]	-8	.18 dBm	
1.0								2.40200	902 GHz	ľ
-10			$/ \setminus_{\sim} /$	M		ndB		20	.00 dB	
		_^		V	١	BW _ ▽¬	[T1]	1.09418	838 MHz	
-20		$\wedge$			7	/^^\		2.40147		
		Ţ∱				\\#\\\#\\\#	[T1]	-27	.99 dBm	
-30		,J				\ <u></u>		2.40256	814 GHz	11
IMAX						Y				1
-40	My /						Ma)	$\sqrt{}$		
-50								<u> </u>	/	
-60									What	
-70										
-80										
-90										
100										
Center 2.4	02 GHz		300 k	Hz/				Spa	n 3 MHz	•

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Product:	Wireless	Bluetooth Mouse		Test Mode:		Keep tra	ansmitting	
Mode	Keepin	g Transmitting		Test Voltage	;	DC	C3.0V	
Temperature	2	4 deg. C,		Humidity		56%	% RH	
Test Result:		Pass		Detector		]	PK	
20dB Bandwidth	1.	094MHz						
Ŕ <b>A</b>	Marker	1 [T1 ndB]	RB	W 30 k	Hz Rl	F Att	10 dB	
Ref Lvl	ndB	20.00 dB	VB	W 100 k	Hz			
0 dBm	BW 1	.09418838 MHz	SW	T 8.5 m	s Ui	nit	dBm	
0				<b>v</b> <sub>1</sub>	[T1]	-8	3.39 dBm	7
			<u></u>			2.44000	902 GHz	A
-10		/\m/	1\_	ndE	3	20	0.00 dB	
		~	V	BW ▼ <sub>T</sub> :	5-43	1.09418		
-20		$\sim$		\\^\^\\	[T1]	2.43947	.81 dBm /395 GHz	
		T/L		VA T	[T1]	-28	3.06 dBm	
-30		J				2.44056	814 GHz	
1MAX				l	$\mathcal{L}$			1MA
-40					1	$\wedge$		
	/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\				\ /"	V \		
-50	<del>V   \/-</del>				( <sub>M</sub> )	$\mathcal{N}$		
Madda A						A	/	
-60 <mark>  ~\ -                                 </mark>							m	
							, A	
-70								
-80								
-90								
-100			_					
Center 2.	44 GHz	300	kHz/			Spa	an 3 MHz	
Date: 9.0	JAN.2020 13:	38:41						

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Product:		Wireless	Bluetooth	Mouse	7	Test Mode:	:	Keep tra	ansmitting	
Mode		Keepin	g Transmi	tting	Т	est Voltage	e	DC	C3.0V	
Temperature		2	4 deg. C,			Humidity		569	% RH	
Test Result:			Pass			Detector		]	PK	
0dB Bandwidth		1.	.094MHz	Hz						
Ŕ <b>A</b>		Marker	1 [T1 r	ndB]	RBW	30 k	Hz R	F Att	10 dB	
Ref Lvl		ndB	20.	00 dB	VBW	100 k				
0 dBm		BW 1	L.094188	338 MHz	SWT	8.5 m	ns U	nit	dBm	l
						<b>v</b> <sub>1</sub>	[T1]	- 8	3.30 dBm	A
								2.48000	301 GHz	Α.
-10				/\m/	1~	ndI	3	20	0.00 dB	
			^	0.0	V \	BW ▼ <sub>T</sub>		1.09418		
-20					1	/^^\ \ T	[ [T1]	-28 2.47947	.56 dBm	
			ŢĮ.			\5\\	! 2 [T1]	-25	395 GHz	
-30			N			,		2.48056	814 GHz	
1MAX		/	•			(	η			1MA
-40							\			
		$\bigvee$						$\bigvee \setminus $		
-50	<del>/\</del>	V						1	/	
-60									Carry Carry	
-70										
-80										
-90										
-100										
Center 2	.48 GHz	z	•	300	kHz/	•	•	Spa	an 3 MHz	1
Date: 9.	TAN 20	20 12.	40.40							

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Product:		Wireless	Bluetooth	Mouse		Test N	Iode:		G]	FSK	
Mode		Keep	transmitti	ng		Test Vo	oltage		DC	23.0V	
Temperature		2	24 deg. C,			Humi	dity		56%	% RH	
Test Result:			Pass		Detector PK		PK				
OdB Bandwidth		0.0		.872MHz							
r)		Marker	1 [T1 r	ndB]	RB	W :	30 kH	z RI	7 Att	10 dB	
Ref Lvl		ndB	20.	00 dB	VB	W 10	00 kH	z			
0 dBm		BW 87	1.743486	97 kHz	SW	Т 8	.5 ms	Ur	nit	dBm	ı
							<b>v</b> <sub>1</sub>	[T1]	-11	.34 dBm	Α
1.0				1					2.40184	669 GHz	
-10				100			ndB		20	.00 dB	
					$\mathcal{M}$		BW ∇ <sub>T</sub> :	87	1.74348		
-20				$\mathcal{N}$		4	▼ ·T· I	[T1]	2.40155	.64 dBm 210 GHz	1
			~			Ψ.	$\nabla_{\mathrm{T}2}$	[T1]	-31	.37 dBm	
-30			TA			Vr.	2	3	2.40242	385 GHz	
1MAX						Ì	<b>\</b>				1M2
-40		/						ζ,			
-50	<i></i>	W							m		
-60 -60	ľ								W	wither	
-70											
-80											
-90											
-100											
Center 2	.402 G	Hz		300	kHz/				Spa	ın 3 MHz	-
Date: 9	.JAN.20	20 11	:31:41								

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Product:	Wireless 1	Bluetooth Mouse	Т	est Mode:		GFSK
Mode	Keep	transmitting	Te	est Voltage	Γ	OC3.0V
Temperature	24	4 deg. C,	]	Humidity	5	6% RH
Test Result:		Pass		Detector		PK
20dB Bandwidth	0.	866MHz				
Ref Lvl	Marker ndB	1 [T1 ndB] 20.00 dB	RBW VBW	30 kHz		10 dB
0 dBm	BW 865	.73146293 kHz	SWT	8.5 ms	Unit	dBm
-10		1 March		ndB		84669 GHz 20.00 dB
-20			W/	٨	2.440!	31.38 dBm 55210 GHz
-30		TA C		V <sub>T2</sub> ▼ <sub>T2</sub>	2.441	31.10 dBm 41784 GHz 1MA
-40		/		Y	٨	
-60					\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	A
-70 H					`	"Munder.
-80						
-90						
-100 Center 2.	.441 GHz	300	kHz/		Sı	pan 3 MHz
Date: 9.	JAN.2020 11:	34:33				

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Product:		Wireless	Bluetooth	Mouse		Test Mode:		G:	FSK	
Mode		Keep	transmitti	ng	,	Test Voltage	е	DC	23.0V	
Temperature		2	4 deg. C,			Humidity		569	% RH	
Test Result:			Pass			Detector		]	PK	
20dB Bandwidth		0.	872MHz							
Ref Lvl		ndB		00 dB	RBW VBW	100 k	Hz	F Att	10 dB	
0 dBm		BW 871	L.743486	597 kHz	SWT	8.5 m	ıs Uı	nit	dBm	
-10				1		▼ <sub>1</sub>	[T1]	-11 2.47985	.28 dBm	A
-20					M	BW $\nabla_{\mathrm{T}}$	87 L [T1]	71.74348		
-30			TA TA	<i>,</i>		V <sub>T2</sub> ∇ <sub>T</sub>	? [T1]	2.47955 -31 2.48042	210 GHz .42 dBm 385 GHz	
1MAX -40		ſ	<i></i>			Ty	h			1MA
-50							"			
-60		W						M		
-70 Mary								W <sub>1</sub>	Mulun	
-80										
-90										
-100 Center	2.48 GH:	z		300	kHz/			Spa	ın 3 MHz	ı
Date: 9	.JAN.20	20 13:	27:50							

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Product:	Wireless Bluetooth Mouse	Test Mode:	Л/4D-QPSK
Mode	Keep transmitting	Test Voltage	DC3.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.242MHz		
Ref Lvl	Marker 1 [T1 ndB] ndB 20.00 dB BW 1.24248497 MHz	RBW 30 kHz VBW 100 kHz SWT 11.5 ms	
-10 -20 -30 1MAX -40 -50 -60 -70	1.24240497 MH2	ndB BW VT)	T1] -11.32 dBm 2.40184369 GHz 20.00 dB 1.24248497 MHz -31.28 dBm 2.40136273 GHz -31.63 dBm 2.40260521 GHz 1MA
-90			
Center 2.40	02 GHz 400	kHz/	Span 4 MHz
Date: 9.JA	N.2020 13:35:07		

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Product:	Wireless I	Bluetooth Mouse	Test M	ode:	Л/4Г	O-QPSK
Mode	Keep	transmitting	Test Vo	ltage	DC	C3.0V
Temperature	24	4 deg. C,	Humio	dity	569	% RH
Test Result:		Pass	Detec	tor	PK	
0dB Bandwidth	1.	251MHz				
Ref Lvl 0 dBm	ndB	1 [T1 ndB] 20.00 dB .25050100 MHz	VBW 10	0 kHz 0 kHz 5 ms	RF Att	10 dB
-10 -20 -30 1MAX -40 -50 -60 -70		TT.	Many	V1 [T1]  ndB  BW  VT1 [T1]	-1: 2.44084 20 1.25050 1 -3: 2.44035	.54 dBm 369 GHz .00 dB 100 MHz .59 dBm
-90						
-100 G	441 GT	100	1.77			4 25-
Center 2			kHz/		Spa	an 4 MHz
Date: 9.	JAN.2020 13:	34:33				

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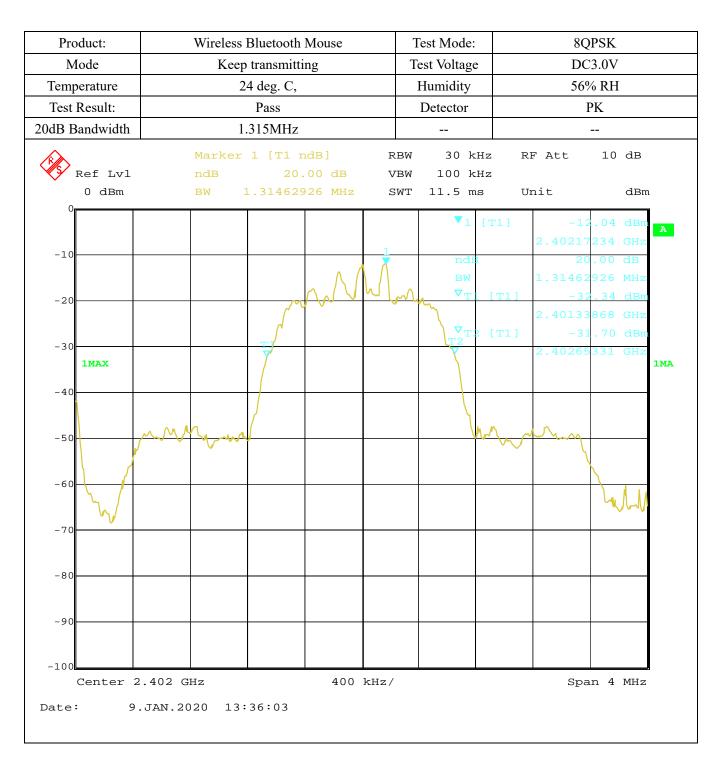


Product:	Wireless	Bluetooth N	Mouse	-	Test Mode:		Л/4Д	O-QPSK	
Mode	Keep	transmittir	ng	Г	est Voltage	;	DC	23.0V	
Temperature	2	4 deg. C,			Humidity		56% RH PK		
Test Result:		Pass			Detector				
20dB Bandwidth	1.	.251MHz							
Ref Lvl	Marker ndB	1 [T1 no	dB] 00 dB	RBW VBW	30 k 100 k		F Att	10 dB	
0 dBm	BW 3	L.250501	00 MHz	SWT	11.5 m	s U	nit	dBm	
0			1		<b>v</b> <sub>1</sub>	[T1]	-11 2.47984	.25 dBm 369 GHz	Α
-20				Man	ndF BW ∇ <sub>Ti</sub>	3 L [T1]	20 1.25050 -31	.00 dB 100 MHz .30 dBm	
-30		T	V		$\bigvee_{\mathbb{T}^2} \nabla_{\mathbb{T}^2}$	2 [T1]	2.47935	.23 dBm	
1MAX					4		2.48060		1MA
-50						1	Λ.,		
-60							<b> </b>	Ŋ	
-70									
-80									
-90									
	.48 GHz	<u> </u>	400	kHz/			Spa	ın 4 MHz	
-100 Center 2. Date: 9.0		30:02	400	kHz/			Spa	ın 4 MHz	

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Product:	Wireless 1	Bluetooth Mouse	Т	est Mode:	80	)PSK
Mode	Keep	transmitting	To	est Voltage	DO	C3.0V
Temperature	24	4 deg. C,		Humidity	569	% RH
Test Result:		Pass		Detector		PK
20dB Bandwidth	1.	315MHz				
Ref Lvl	ndB	1 [T1 ndB] 20.00 dB	RBW VBW	30 kHz	1	10 dB
0 dBm	BW 1	.31462926 MHz	SWT	11.5 ms	Unit	dBm
-10		Λ /	1	v1 ['	2.44116 2.31462	0.00 dB
-20			h/ Lm	V <sub>T</sub>	T1] -3 2.44033 [T1] -3	
-30 1MAX -40				V	2.44169	331 GHz <b>1MA</b>
-50	MM			Mu	Market State of the State of th	
-60						M
-70 -80						
-90						
-100 Center 2.4	441 GHz	400	kHz/		Spa	an 4 MHz
Date: 9.J	AN.2020 13:	33:30				

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Product:	Wireless Bluetooth I	Mouse	Test Mode:	8QPS	K
Mode	Keep transmittir	ng	Test Voltage	DC3.0	)V
Temperature	24 deg. C,		Humidity	56% R	EH .
Test Result:	Pass		Detector	PK	
20dB Bandwidth	1.307MHz				
	Marker 1 [T1 n		BW 30 kHz		0 dB
Ref Lvl 0 dBm	ndB 20. BW 1.306613		BW 100 kHz WT 11.5 ms	Unit	dBm
0			<b>▼</b> 1 [5	r1] -11.7	7 dBm
-10		1			3 GHz
		$\wedge$ $\wedge$	ndB BW	20.0 1.3066132	
-20		<u> </u>	V <sub>T</sub> 1	[T1] -31.3	4 dBm
		·		2.4793466	
-30	<u> </u>		$\nabla_{\mathrm{T2}}$	[T1] -31.5 2.4806533	55 dBm 1 GHz
1MAX				2.4800333	1 GHZ
-40					
-50	1\1\1\1\1\1\1\1\1\1\1\1\1\1\1\1\1\1\1\		₩ <sub>w</sub>		
-60				1	munul
-70					
-80					
-90					
-100					
Center 2.48	GHz	400 kHz/		Span	4 MHz
Date: 9.JAN	1.2020 13:31:50				

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Date: 2020-01-10

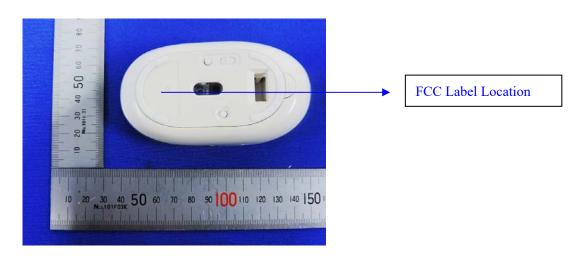


## 10.0 FCC ID Label

### FCC ID: ZJEIMACM212

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:



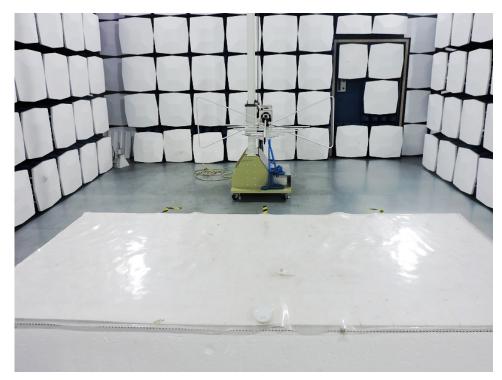
Report No.: FCC1912274

Date: 2020-01-10



#### 11.0 Photo of testing

#### 11.1 Radiated emission test view





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Date: 2020-01-10



# 11.2 Photographs – EUT

Outside View





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Date: 2020-01-10



## 11.3 Photographs – EUT

## Outside View





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Inside view





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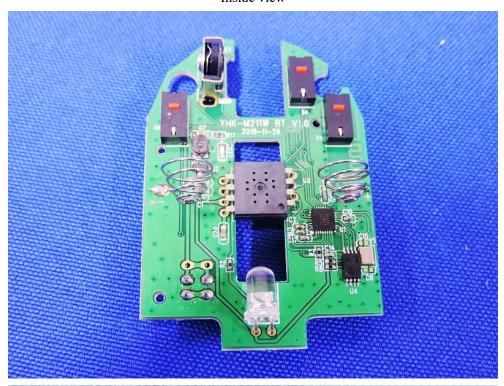
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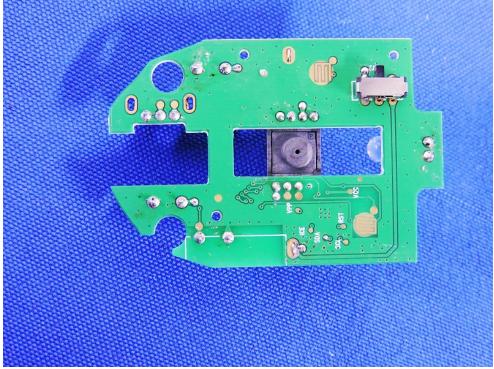
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Inside view





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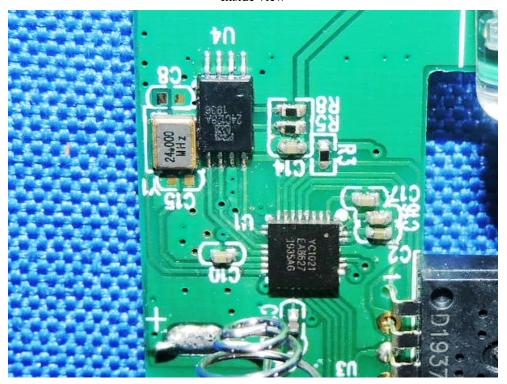
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Inside view



-- End of the report--