

Page 1 of 32

FCC TEST REPORT

Product Name Bluetooth Mouse

Trade mark TeckNet or TECKNET

Model No. EWM01308

FCC ID : 2AK8Q-EWM013085

Report Number BLA-EMC-202011-A10603

Date of sample receipt : 2020/11/30

Date of Test : 2020/11/30 to 2020/12/21

Date of Issue : 2020/12/25

Test Standards FCC CFR Title 47 Part 15 Subpart C

Section 15.249

PASS Test result

Prepared for:

Shenzhen Unichain Technology Co., Ltd

201, 2nd Floor, Building C, Shanhai Commercial Plaza, Huangjunshan District, Bantian Street, Longgang District, Shenzhen, China

Prepared by:

BlueAsia of Technical Services(Shenzhen) Co.,Ltd. **IOT Test Centre of BlueAsia** No. 448 Bulong Road, Bantian Street, Longgang District, Shenzhen, China

TEL: +86-755-23059481

Compiled by:

Sven Imm 5 Approved by:

Review by:

Sweet linng

ices (\$2020/12/25 Date

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Add:No. 448, Bulong Road, Bantian Street, Longgang District, Shenzhen, China

Tel: +86-755-23059481 Email: marketing@cblueasia.com www.cblueasia.com





Page 2 of 32

Report Revise Record

Version No.	Date	Description
00	2020/12/25	Original





Page 3 of 32

Contents

		Page
1	COVER PAGE	1
RI	EPORT REVISE RECORD	2
CC	ONTENTS	3
1	TEST SUMMARY	4
2	GENERAL INFORMATION	5
3	GENERAL DESCRIPTION OF E.U.T.	5
4	DESCRIPTION OF TEST	6
5	DESCRIPTION OF SUPPORT UNITS	6
6	TEST ENVIRONMENT AND MODE	6
7	DESCRIPTION OF SUPPORT UNITS	6
	7.1 TEST LOCATION	6
	7.2 TEST FACILITY	7
	7.3 DEVIATION FROM STANDARDS	7
	7.4 ABNORMALITIES FROM STANDARD CONDITIONS	7
	7.5 OTHER INFORMATION REQUESTED BY THE CUSTOMER	7
	7.6 MEASUREMENT UNCERTAINTY (95% CONFIDENCE LEVELS, K=2)	8
8	EQUIPMENT LIST	9
9	TEST RESULTS AND MEASUREMENT DATA	10
	9.1 Antenna Requirement	10
	9.2 CONDUCTED EMISSIONS	11
	9.3 RADIATED EMISSION	12
	9.4 RESTRICTED BANDS AROUND FUNDAMENTAL FREQUENCY	23
	9.5 20dB Bandwidth	29
ΑF	PPENDIX 1 PHOTOGRAPHS OF TEST SETUP	31
٨٢	DDENDLY 2 DUOTOGD ADUS OF ELLT	22



Page 4 of 32

1 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	N/A
Field Strength of the Fundamental Signal	47 CFR Part 15 Subpart C Section 15.249 (a)	ANSI C63.10-2013	PASS
Spurious Emissions	47 CFR Part 15 Subpart C Section 15.249 (a)/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	requency ANSI C63.10-2013		PASS
20dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.215 (c)	ANSI C63.10-2013	PASS

Pass: The EUT complies with the essential requirements in the standard.

N/A: Not Applicable



Page 5 of 32

2 General Information

Applicant	Shenzhen Unichain Technology Co., Ltd			
Address	201, 2nd Floor, Building C, Shanhai Commercial Plaza, Huangjunshan District, Bantian Street, Longgang District, Shenzhen, China			
Manufacturer	Shenzhen Tianjie Electronic CO., Ltd			
Address	No.5, Xifa Road, Lin Village, Tangxia Town, Dongguan City, Guangdong Province, P. R. China			
Factory	N/A			
Address	N/A			
Product Name	Bluetooth Mouse			
Test Model No.	EWM01308			

3 General Description of E.U.T.

5 General Descript	ion of L.C.I.
Hardware version:	V1.0
Software version:	V3.0
Technical Parameter:	
Operating Frequency:	2403 MHz ~ 2480MHz
Device type:	Non-specific short range devices
Channel separation:	≥2MHz
Channel number:	16
Modulation:	GFSK
Antenna Type:	Chip Antenna
Antenna Gain	2.0dBi(Provided by the customer)
Power supply:	DC3.0V



Page 6 of 32

4 Description of test

Operation Frequency each of channel								
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	
1CH	2403 MHz	5CH	2407 MHz	9CH	2414 MHz	13CH	2419 MHz	
2CH	2426 MHz	6CH	2422 MHz	10CH	2436 MHz	14CH	2439 MHz	
3CH	2441 MHz	7CH	2445 MHz	11CH	2459 MHz	15CH	2453 MHz	
4CH	2463 MHz	8CH	2466 MHz	12CH	2473 MHz	16CH	2480 MHz	

Remark: The EUT operation in above frequency list, and used test software to control the EUT for staying in continuous transmitting and receiving mode. Channel 1, 3 and 16 were chosen for testing.

5 Description of Support Units

The EUT has been tested independently.

6 Test Environment and Mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1008 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with modulation.(new battery is used)

7 Description of Support Units

The EUT has been tested independently and or

The EUT has been tested with associated equipment below.

1) support equipment

Description	Manufacturer	Model No. Serial Number		Supplied by
Notebook computer	Lenovo	E470C	PF-10FB5C	/
	1	1	/	/

2) cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	1	/	/	/

7.1 Test Location

All tests were performed at:

BlueAsia of Technical Services(Shenzhen) Co., Ltd.

IOT Test Centre of BlueAsia

No. 448 Bulong Road, Bantian Street, Longgang District, Shenzhen, China

Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673

No tests were sub-contracted.



Page 7 of 32

7.2 Test Facility

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

FCC — Designation No.: CN1252

BlueAsia of Technical Services(Shenzhen) Co., Ltd 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 files. Designation CN1252.

ISED — CAB identifier No.: CN0028

BlueAsia of Technical Services(Shenzhen) Co., Ltd has been registered by Certification and Engineering Bureau of ISED for radio equipment testing with CAB identifier CN0028

7.3 Deviation from Standards

None.

7.4 Abnormalities from Standard Conditions

None.

7.5 Other Information Requested by the Customer

None.



Page 8 of 32

7.6 Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)
Note (1): The measurement up	ocertainty is for coverage factor	of k=2 and a lovel of confidence	o of 05%

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.



Page 9 of 32

8 Equipment List

Radi	Radiated Emission:								
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)			
1	3m SAC	SKET	9m*6 m*6m	966	06-10-2018	06-09-2023			
2	Broadband Antenna	SCHWARZBECK	VULB9168	00836 P:00227	07-14-2019	07-13-2021			
3	Horn Antenna	SCHWARZBECK	9120D	01892 P:00331	07-14-2019	07-13-2021			
4	EMI Test Software	EZ	EZ	N/A	N/A	N/A			
5	Pre-amplifier	SKET	N/A	N/A	07-19-2020	07-18-2021			
6	Spectrum analyzer	Rohde & Schwarz	FSP40	100817	05-24-2020	05-23-2021			
7	EMI Test Receiver	Rohde & Schwarz	ESR7	101199	03-21-2020	03-20-2021			
8	Controller	SKET	N/A	N/A	N/A	N/A			
9	Vector Signal Generator	Agilent	E4438C	MY45092582	05-24-2020	05-23-2021			
10	Signal Generator	Agilent	E8257D	MY44320250	05-24-2020	05-23-2021			
11	Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A			
12	Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A			
13	Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A			

Conduc	Conducted Emission								
ltem	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date			
1	EMI Test Receiver	Rohde & Schwarz	ESPI3	101082	06-10-2020	06-09-2021			
2	LISN	CHASE	MN2050D	1447	12-18-2020	12-17-2021			
3	LISN	Rohde & Schwarz	ENV216	3560.6550.15	07-19-2020	07-18-2021			
4	EMI Test Software	EZ	EZ	N/A	N/A	N/A			
5	Temperature Humidity Chamber	Mingle	TH101B	N/A	07-19-2020	07-18-2021			
6	Coaxial Cable	BlueAsia	BLA-XC-05	N/A	N/A	N/A			



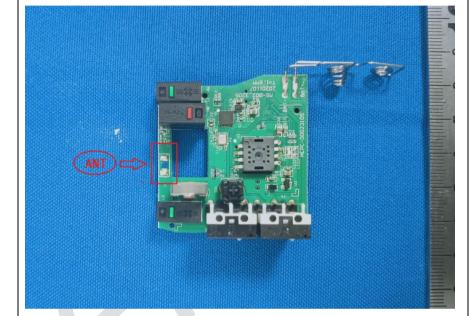
Page 10 of 32

9 Test results and Measurement Data9.1 Antenna Requirement

Standard requirement: 47 CFR Part 15C Section 15.203

15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.



EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.0dBi.



Page 11 of 32

9.2 Conducted Emissions

47 CFR Part 15C Section 15.207 **Test Requirement:**

Test Method: ANSI C63.10 150KHz to 30MHz **Test Frequency Range:**

Limit:

Erogueney rango (MUz)	Limit (dBµV)					
Frequency range (MHz)	Quasi-peak	Average				
0.15-0.5	66 to 56*	56 to 46*				
0.5-5	56	46				
5-30	60	50				

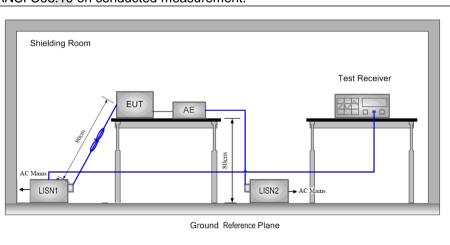
^{*} Decreases with the logarithm of the frequency.

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu H + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Test Setup:

www.cblueasia.com

Test Procedure:



Keep the EUT in transmitting mode **Test Mode:**

Refer to section 5.11 for details **Instruments Used:**

Test Results: N/A

BlueAsia of Technical Services(Shenzhen) Co.,Ltd. Tel: +86-755-23059481 Email: marketing@cblueasia.com



Page 12 of 32

9.3 Radiated Emission

Test Requirement:	47 CFR Part 15C Section 1	5.249 and 15.2	09			
Test Method:	ANSI C63.10					
Test Site:	Measurement Distance: 3m	n (Semi-Anecho	ic Chamber)			
	Frequency	Detector	RBW	VBW	Remark	
	0.009MHz-0.090MHz	Peak	10kHz	30KHz	Peak	
	0.009MHz-0.090MHz	Average	10kHz	30KHz	Average	
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30KHz	Quasi-peak	
Receiver Setup:	0.110MHz-0.490MHz	Peak	10kHz	30KHz	Peak	
Receiver Setup.	0.110MHz-0.490MHz	Average	10kHz	30KHz	Average	
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak	
	30MHz-1GHz	Quasi-peak	120kHz	300KHz	Quasi-peak	
	Above 1GHz	Peak	1MHz	3MHz	Peak	
	Above IGHZ	Peak	1MHz	1MHz 10Hz		
Tool Column					•	

Test Setup:

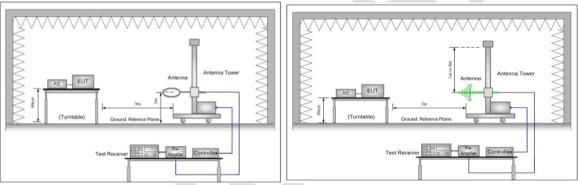


Figure 1. Below 30MHz

Figure 2. 30MHz to 1GHz

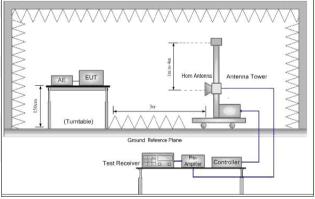


Figure 3. Above 1GHz

Test Procedure:

Below 1GHz test procedure as below:

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below



Page 13 of 32

30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to 16ind the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. **Above 16Hz test procedure as below:** Different between above is the test site, change from Semi-Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. **Frequency** Field strength** Limit** (idβμV/m)** Remark** Measurement distance (m) 0.009MHz-0.490MHz 24000/F (kHz) 300 1.705MHz-30MHz 300 300 1.705MHz-30MHz 300 300 30MHz-88MHz 100 40.0 Quasi-peak 3 216MHz-960MHz 24000/F (kHz) 300 30MHz-88MHz 150 43.5 Quasi-peak 3 216MHz-960MHz 2500 54.0 Quasi-peak 3 Above 1GHz 500 54.0 Quasi-peak 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emission is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. **Limit:** Frequency** Limit (dBµV/m @3m) Remark** Prequency Evalue Prest Mode:** Transmitting mode** **Frequency** Limit (dBµV/m @3m) Remark** Prequency Transmitting mode** **Frequency** Limit (dBµV/m @3m) Remark** Preparation of the fundamental signal)** **Intervence Transmi	.					: 13 Of 32						
The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be rested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Above 1GHz test procedure as below: Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter (Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength (microvolt/meter) (dBµV/m) Remark distance (m) 0.009MHz-0.490MHz 2400/F (kHz) 300 1.705MHz-30MHz 24000/F (kHz) 300 1.705MHz-30MHz 30MHz-88MHz 100 40.0 Quasi-peak 3 1.705MHz-960MHz 24000/F (kHz) 30 30 and 30						able was turned						
Maximum Hold Mode. ff the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Above 1GHz test procedure as below: Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength Limit (dBµV/m) Measurement distance (m)						l Randwidth with						
If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Above 1GHz test procedure as below: Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength (microvolt/meter) (dBµV/m) Remark Measurement distance (m) 0.009MHz-0.490MHz 2400/F(kHz) 300 1.705MHz-30MHz 30 300 0.490MHz-1.705MHz 24000/F(kHz) 300 1.705MHz-30MHz 30 300 30MHz-88MHz 100 40.0 Quasi-peak 3 88MHz-216MHz 150 43.5 Quasi-peak 3 88MHz-216MHz 200 46.0 Quasi-peak 3 Above 1GHz 500 54.0 Average 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: Frequency Limit (dBµV/m @3m) Remark Peak Value Field strength of the fundamental signal) Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Pretest the EUT at Transmitting mode			ı was sel lu fedk l	Jeleci Functi	ion and Specified	i Danuwiuth With						
then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. **Above 16Hz test procedure as below:** Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change from table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. **Frequency** Frequency** Field strength (microvolt/meter) (dBµV/m) Remark Measurement distance (m)			the EUT in peak m	ode was 10	dB lower than th	e limit specified,						
using peak, quasi-peak or average method as specified and then reported in a data sheet. Above 1GHz test procedure as below: Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength (microvolt/meter) (dBµV/m) Remark distance (m) 0.009MHz-0.490MHz 2400/F (kHz) 300 0.490MHz-1.705MHz 24000/F (kHz) 300 1.705MHz-30MHz 30 30 30MHz-88MHz 100 40.0 Quasi-peak 3 88MHz-216MHz 150 43.5 Quasi-peak 3 88MHz-216MHz 150 43.5 Quasi-peak 3 88MHz-216MHz 150 43.5 Quasi-peak 3 960MHz-1GHz 500 54.0 Quasi-peak 3 Above 1GHz 500 54.0 Average 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: Frequency Limit (dBµV/m @3m) Remark (Field strength of the fundamental signal) Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Pretest the EUT at Transmitting mode												
Sheet. Above 1GHz test procedure as below: Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength (microvolt/meter) 0.009MHz-0.490MHz 2400/F (kHz) 300 0.490MHz-1.705MHz 24000/F (kHz) 300 1.705MHz-30MHz 30 30 30MJ-2.88MHz 100 40.0 Quasi-peak 3 30MJ-2.88MHz 216MHz 150 43.5 Quasi-peak 3 216MHz-960MHz 200 46.0 Quasi-peak 3 Above 1GHz 500 54.0 Quasi-peak 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: (Field strength of the fundamental signal) Instruments Used: Frequency Frequency Limit (dBµV/m @3m) Remark Pake Value Frequency Frequency Limit (dBµV/m @3m) Remark Pake Value Frequency Frequency Limit (dBµV/m @3m) Peak Value Frequency Frequen												
Above 1GHz test procedure as below: Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength (microvolt/meter) (dBµV/m) Remark distance (m) 0.009MHz-0.490MHz 2400/F (kHz) 300 1.705MHz-30MHz 30 300 1.705MHz-30MHz 30 300 1.705MHz-30MHz 100 40.0 Quasi-peak 3 88MHz-216MHz 150 43.5 Quasi-peak 3 88MHz-216MHz 150 43.5 Quasi-peak 3 88MHz-216MHz 500 54.0 Quasi-peak 3 Above 1GHz 500 54.0 Quasi-peak 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: Frequency Limit (dBµV/m @3m) Remark (Field strength of the fundamental signal) Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Pretest the EUT at Transmitting mode												
Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency												
distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength (Ichit (IGh∪V/m) Remark Measurement distance (m) 0.009MHz-0.490MHz 2400/F (kHz) - 300 0.490MHz-1.705MHz 24000/F (kHz) - 300 1.705MHz-30MHz 30 - 30 30MHz-88MHz 100 40.0 Quasi-peak 3 30MHz-88MHz 150 43.5 Quasi-peak 3 216MHz-960MHz 150 43.5 Quasi-peak 3 216MHz-960MHz 200 46.0 Quasi-peak 3 960MHz-1GHz 500 54.0 Quasi-peak 3 Above 1GHz 500 54.0 Average 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Frequency Limit (dBμV/m @3m) Remark (Field strength of the fundamental signal) Instruments Used: Exploratory Test Mode: Pretest the EUT at Transmitting mode												
Test the EUT in the lowest channel, middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength (microvolt/meter) Limit (dBμV/m) Remark distance (m) 0.009MHz-0.490MHz 2400/F (kHz) 300 0.490MHz-1.705MHz 24000/F (kHz) 300 1.705MHz-30MHz 30 30 30 30 1.705MHz-30MHz 30 30 30 30 30 30 30 30 30 30 30 30 30 30			•	e 0.8 meter	to 1.5 meter(At	pove 18GHz the						
The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. Frequency Field strength (dBµV/m) Remark Measurement distance (m) 0.009MHz-0.490MHz 2400/F (kHz) 300 0.490MHz-1.705MHz 24000/F (kHz) 300 1.705MHz-30MHz 30 30 30MHz-88MHz 100 40.0 Quasi-peak 3 88MHz-216MHz 150 43.5 Quasi-peak 3 216MHz-960MHz 200 46.0 Quasi-peak 3 960MHz-1GHz 500 54.0 Quasi-peak 3 Above 1GHz 500 54.0 Average 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: (Field strength of the fundamental signal) Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Pretest the EUT at Transmitting mode			,	e channel th	e Highest channe	el						
Repeat above procedures until all frequencies measured was complete. Frequency Field strength (microvolt/meter) Limit (dBµV/m) Remark distance (m)												
Frequency Field strength (microvolt/meter) Limit (dBµV/m) Remark Measurement distance (m)												
Frequency		Repeat above procedure			d was complete.	Manageman						
0.009MHz-0.490MHz		Frequency			Remark	711000						
Limit: (Spurious Emissions) 1.705MHz-30MHz 24000/F (kHz) - - 30 Spurious Emissions 30MHz-88MHz 100 40.0 Quasi-peak 3 88MHz-216MHz 150 43.5 Quasi-peak 3 216MHz-960MHz 200 46.0 Quasi-peak 3 960MHz-1GHz 500 54.0 Quasi-peak 3 Above 1GHz 500 54.0 Average 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: Frequency Limit (dBμV/m @3m) Remark (Field strength of the fundamental signal) 94.0 Average Value Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Transmitting mode Final Test Mode: Pretest the EUT at Transmitting mode			,	(aBµv/m)		` ,						
1.705MHz-30MHz 30		0.009MHz-0.490MHz	2400/F (kHz)	-	-	300						
Limit: (Spurious Emissions) 30MHz-88MHz		0.490MHz-1.705MHz	24000/F (kHz)	-		30						
Spurious Emissions 88MHz-216MHz		1.705MHz-30MHz	30	-	-	30						
(Spurious Emissions) 88MHz-216MHz	l imit·	30MHz-88MHz	100	40.0	Quasi-peak	3						
216MHz-960MHz 200 46.0 Quasi-peak 3 960MHz-1GHz 500 54.0 Quasi-peak 3 Above 1GHz 500 54.0 Average 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: (Field strength of the fundamental signal) Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Pretest the EUT at Transmitting mode Pretest the EUT at Transmitting mode		88MHz-216MHz	150	43.5	Quasi-peak	3						
Above 1GHz 500 54.0 Average 3 Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: (Field strength of the fundamental signal) Instruments Used: Refer to section 5.11 for details Transmitting mode Pretest the EUT at Transmitting mode	(Opanious Ennionis)	216MHz-960MHz	200	46.0	Quasi-peak	3						
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: (Field strength of the fundamental signal) Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Pretest the EUT at Transmitting mode		960MHz-1GHz	500	54.0	Quasi-peak	3						
is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. Limit: (Field strength of the fundamental signal) Instruments Used: Exploratory Test Mode: Frequency Limit (dBμV/m @3m) Remark 94.0 Average Value 114.0 Peak Value Transmitting mode Pretest the EUT at Transmitting mode		Above 1GHz	500	54.0	Average	3						
(Field strength of the fundamental signal) Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Transmitting mode Final Test Mode: Pretest the EUT at Transmitting mode		is 20dB above th equipment under	e maximum permit test. This peak lii	tted average	emission limit a	pplicable to the						
fundamental signal) Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Transmitting mode Final Test Mode: Pretest the EUT at Transmitting mode	Limit:	Frequency	Limit (dBµV/	m @3m)	Remark							
Instruments Used: Refer to section 5.11 for details Exploratory Test Mode: Transmitting mode Final Test Mode: Pretest the EUT at Transmitting mode	(Field strength of the	2400MH- 2492 FMH	94.0)	Average Value							
Exploratory Test Mode: Transmitting mode Pretest the EUT at Transmitting mode	fundamental signal)	2400WIHZ-2463.5IVIH	114.0	0	Peak Value							
Mode: Transmitting mode Final Test Mode: Pretest the EUT at Transmitting mode		Refer to section 5.11 for	details									
C C C C C C C C C C C C C C C C C C C		Transmitting mode										
Test Results: Pass	Final Test Mode:	Pretest the EUT at Transmitting mode										
	Test Results:	Pass										



Page 14 of 32

Measurement Data Field Strength Of The Fundamental Signal

Peak value:

i can value.						
Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Antenna Polaxis
2403	98.87	-10.26	88.61	114.00	-25.39	Н
2403	95.64	-10.60	85.04	114.00	-28.96	V
2441	98.60	-10.38	88.22	114.00	-25.78	Н
2441	95.18	-10.75	84.43	114.00	-29.57	V
2480	97.25	-10.52	86.73	114.00	-27.27	Н
2480	95.13	-10.91	84.22	114.00	-29.78	V

Average value:

Average valu	C.					
Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Antenna Polaxis
2403	98.15	-10.26	87.89	94	-6.11	Н
2403	95.11	-10.60	84.51	94	-9.49	V
2441	97.10	-10.38	87.32	94	-6.68	Н
2441	94.67	-10.75	83.92	94	-10.08	V
2480	96.65	-10.52	86.13	94	-7.87	Н
2480	94.91	-10.91	84.00	94	-10.00	V

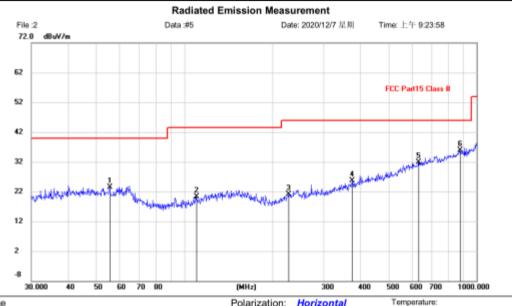
NOTE: RBW 3MHz VBW 10MHz , PK detector is for PK value ,RMS detector is for AV value.

Page 15 of 32

Spurious Emissions

30MHz~1GHz (QP) Test mode: Transmitting

Horizontal:



Limit: FCC Part15 Class B

EUT: Bluetooth Mouse M/N: EWM01308

Mode: TX Note:

Polarization: Horizontal

Humidity:

Power:

Distance: 3m

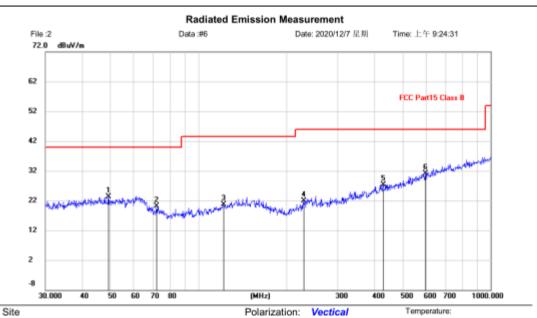
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		55.6094	-0.06	23.64	23.58	40.00	-16.42	QP			
2		109.7960	-1.13	21.43	20.30	43.50	-23.20	QP			
3		227.6906	-0.79	21.98	21.19	46.00	-24.81	QP			
4		375.9385	-0.44	26.23	25.79	46.00	-20.21	QP			
5		631.6884	0.22	31.76	31.98	46.00	-14.02	QP			
6	*	875.2470	0.77	35.21	35.98	46.00	-10.02	QP			

Humidity:





Vertical:



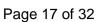
Limit: FCC Part15 Class B EUT: Bluetooth Mouse M/N: EWM01308

Mode: TX Note:

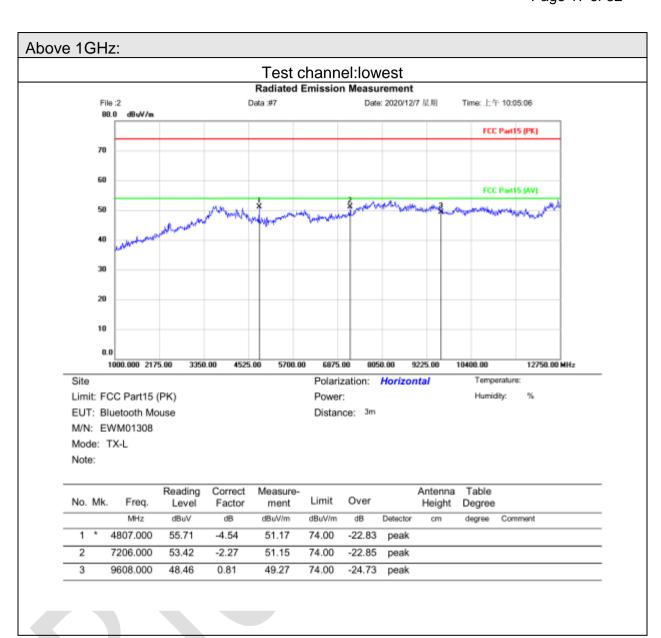
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	49.3594	-0.92	24.26	23.34	40.00	-16.66	QP			
2	72.0843	-0.43	20.52	20.09	40.00	-19.91	QP			
3	121.5486	-1.91	22.52	20.61	43.50	-22.89	QP			
4	229.2931	-0.10	22.10	22.00	46.00	-24.00	QP			
5	428.0193	-0.32	27.59	27.27	46.00	-18.73	QP			
6 *	599.3212	-0.12	31.26	31.14	46.00	-14.86	QP			

Power:

Distance: 3m

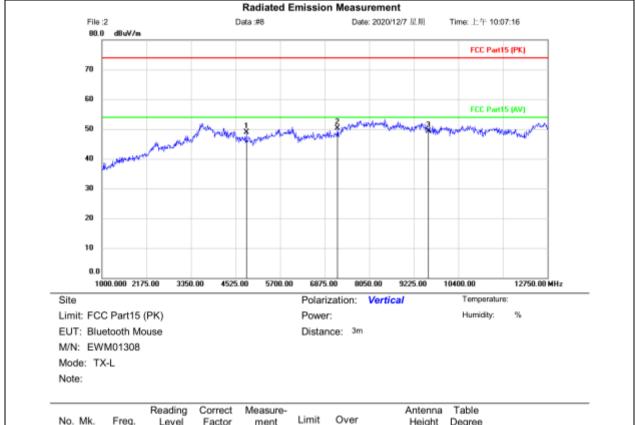








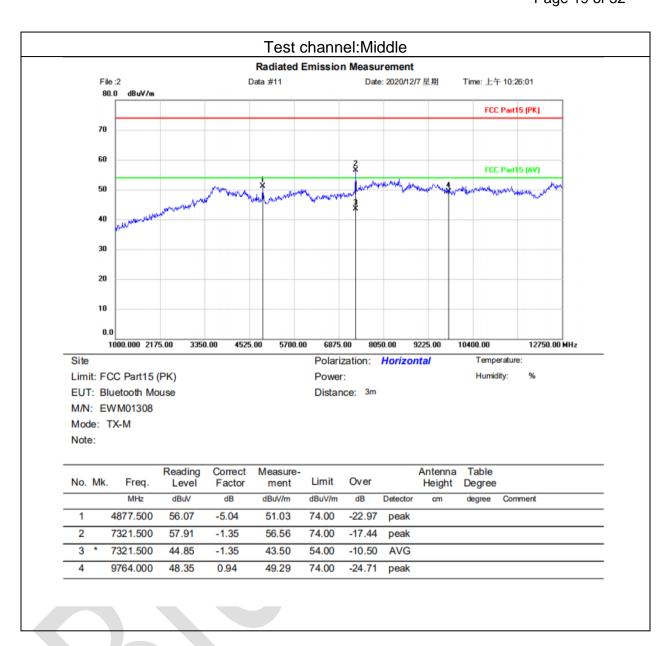
Page 18 of 32







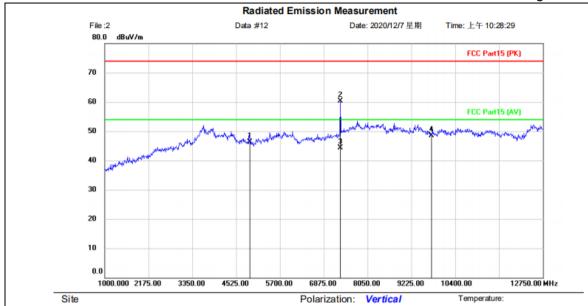




Humidity:



Page 20 of 32



Limit: FCC Part15 (PK) EUT: Bluetooth Mouse

M/N: EWM01308 Mode: TX-M Note:

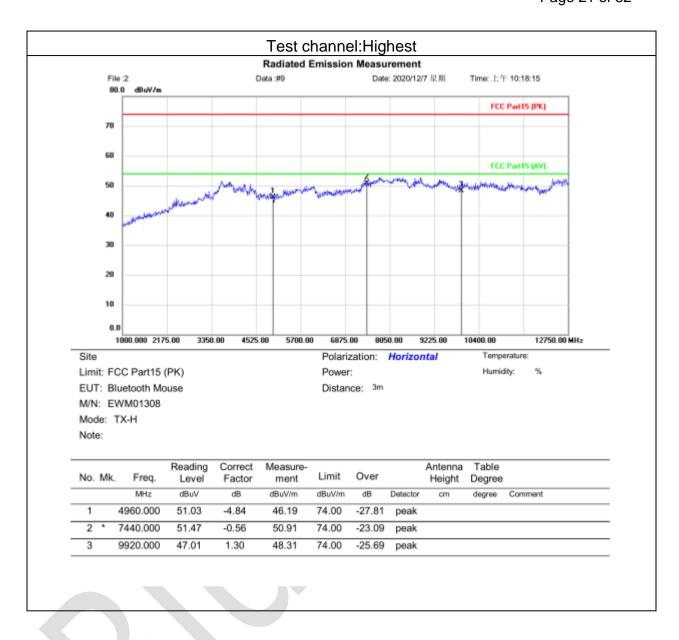
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4882.000	51.30	-5.07	46.23	74.00	-27.77	peak			
2		7321.500	61.75	-1.48	60.27	74.00	-13.73	peak			
3	*	7321.500	45.85	-1.48	44.37	54.00	-9.63	AVG			
4		9764.000	47.64	0.91	48.55	74.00	-25.45	peak			

Power:

Distance: 3m

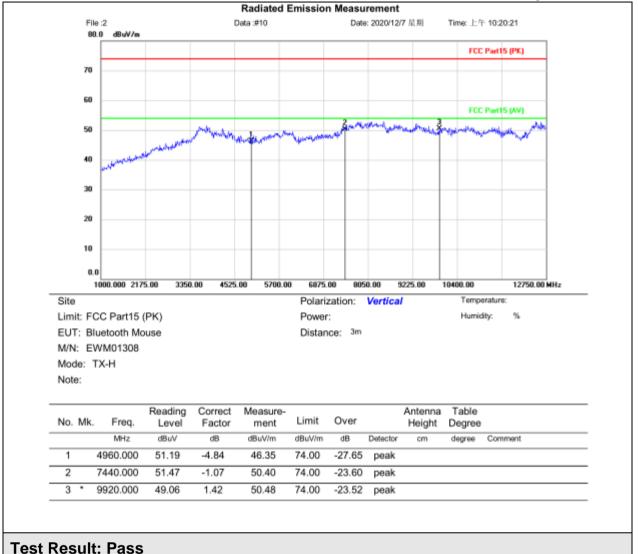








Page 22 of 32



Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Correct Factor

Correct Factor = Antenna Factor + Cable Factor - Preamplifier Factor

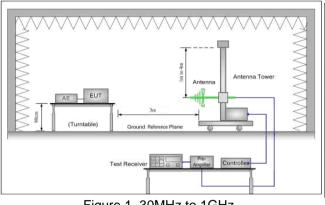
- 2) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3) As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.
- 4) Fundamental frequency is blocked by filter to show only suprious emission.



Page 23 of 32

9.4 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Tost Setup:	



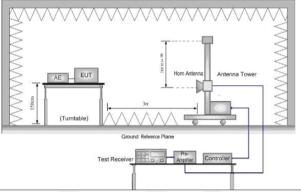


Figure 1. 30MHz to 1GHz

Figure 2. Above 1 GHz

Test Procedure:

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
- Test the EUT in the lowest channel, the Highest channel h.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
- j. Repeat above procedures until all frequencies measured was complete.



Page 24 of 32

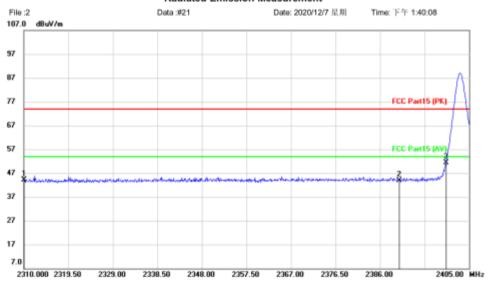
Limit(band edge):	harmonics, shall be attenuated fundamental or to the general r	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.								
	Frequency	Limit (dBµV/m @3m)	Remark							
	30MHz-88MHz	40.0	Quasi-peak Value							
	88MHz-216MHz	43.5	Quasi-peak Value							
	216MHz-960MHz	46.0	Quasi-peak Value							
	960MHz-1GHz	54.0	Quasi-peak Value							
	Above 1GHz	54.0	Average Value							
	Above IGHZ	74.0	Peak Value							
Instruments Used:	Refer to section 5.11 for details	3								
Exploratory Test Mode:	Transmitting mode									
Final Test Mode:	Pretest the EUT at Transmitting	g mode								
Test Results:	Pass									

Page 25 of 32

Band edge test data (Radiated Emission)

Lowest channel—Horizontal

Radiated Emission Measurement



Site

Limit: FCC Part15 (PK) EUT: Bluetooth Mouse M/N: EWM01308

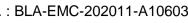
Mode: TX-L Note:

Polanzation.	HOTIZOTILAT	remperature.
Power:		Humidity:

Distance: 3m

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	55.69	-11.49	44.20	74.00	-29.80	peak			
2		2390.000	54.19	-10.22	43.97	74.00	-30.03	peak			
3	*	2400.000	61.56	-10.25	51.31	74.00	-22.69	peak			

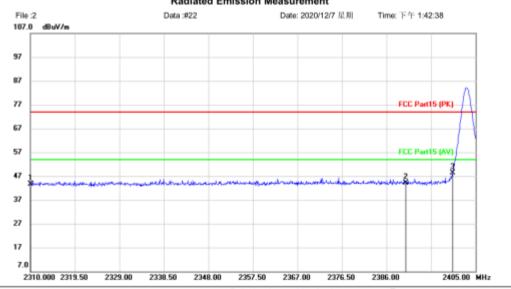




Page 26 of 32



Lowest channel—Vertical Radiated Emission Measurement



Site

Limit: FCC Part15 (PK) EUT: Bluetooth Mouse

M/N: EWM01308 Mode: TX-L Note:

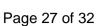
Polarization: Vertical Temperature: Power:

Distance: 3m

Humidity:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	55.30	-11.78	43.52	74.00	-30.48	peak			
2		2390.000	54.72	-10.55	44.17	74.00	-29.83	peak			
3	*	2400.000	58.91	-10.59	48.32	74.00	-25.68	peak			

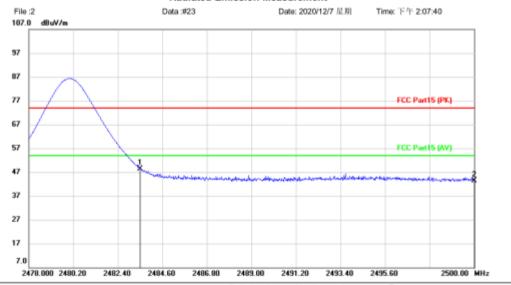






Highest channel-- Horizontal

Radiated Emission Measurement



Site

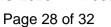
Limit: FCC Part15 (PK) EUT: Bluetooth Mouse M/N: EWM01308

Mode: TX-H Note: Polarization: Horizontal Temperature
Power: Humidity:

Distance: 3m

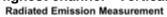
No.	Mk	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	2483.500	58.94	-10.53	48.41	74.00	-25.59	peak			
2		2500.000	54.06	-10.58	43.48	74.00	-30.52	peak			

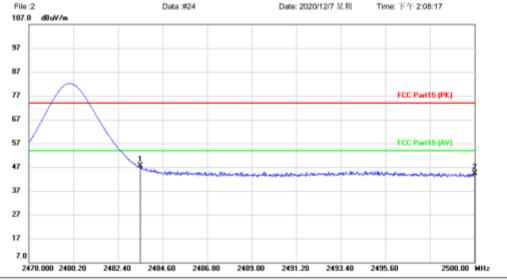






Highest channel-- Vertical





Site

Limit: FCC Part15 (PK)

EUT: Bluetooth Mouse M/N: EWM01308

Polarization: Vertical Temperature Humidity: Power:

Distance: 3m

Mode: TX-H Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	2483.500	58.48	-10.92	47.56	74.00	-26.44	peak			
2		2500.000	55.29	-10.98	44.31	74.00	-29.69	peak			

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Correct Factor

Correct Factor = Antenna Factor + Cable Factor - Preamplifier Factor



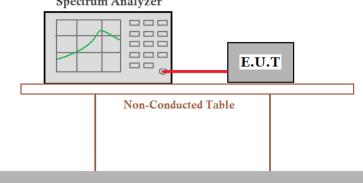
Page 29 of 32

9.5 20dB Bandwidth

Test Requirement: 47 CFR Part 15C Section 15.215

Test Method: ANSI C63.10

Test Setup: Spectrum Analyzer



Ground Reference Plane

Instruments Used: Refer to section 5.11 for details

Exploratory Test Mode: Transmitting mode

Pretest the EUT at Transmitting mode Final Test Mode:

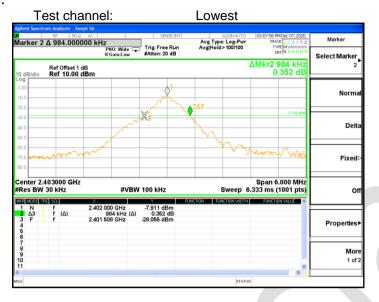
Limit: N/A
Test Results: Pass

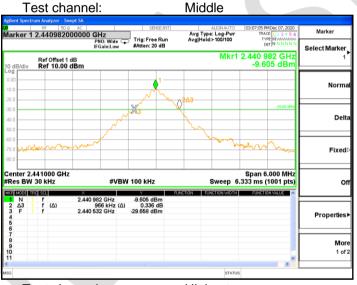
Measurement Data

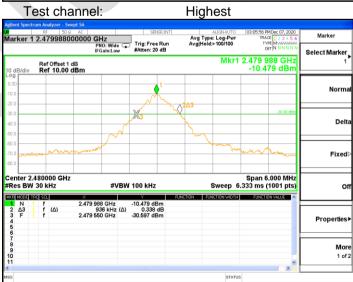
Test channel	20dB bandwidth (MHz)	Results		
Lowest	0.984	Pass		
Middle	0.966	Pass		
Highest	0.936	Pass		



Test plot as follows:









Page 31 of 32

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP





Radiated spurious emission Test Setup-3(Above 1GHz)





Page 32 of 32

APPENDIX 2 PHOTOGRAPHS OF EUT

Reference to the test report No. BLA-EMC-202011-A10602

*** End of Report ***

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of BlueAsia, this report can't be reproduced except in full.