FCC TEST REPORT

for

Targus International LLC

Wireless BlueTrace Mouse

Model Number: AMW573

FCC ID: OXM000070

Prepared for	:	Targus International LLC
Address	:	1211 North Miller Street Anaheim, CA 92806 USA
Prepared by	:	Keyway Testing Technology Co., Ltd.
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Report No.	:	17KWE025032F
Date of Test	:	Jan.13~18, 2017
Date of Report	:	Feb.09, 2017

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Keyway Testing Technology Co., Ltd.

Applicant: **Address:**	Targus International LLC 1211 North Miller Street Anaheim, CA 92806 USA		
Manufacturer: **Address:**	Acrox Technologies Co., Ltd. 4F., No.89, Minshan St., Neihu Dist.,Taipei City 114, Taiwan, R.O.C		
E.U.T:	Wireless BlueTrace Mouse		
Model Number:	AMW573		
Trade Name:	Targus	**Serial No.:**	------
Date of Receipt:	Jan.12, 2017	**Date of Test:**	Jan.13~18, 2017
Test Specification:	FCC Part 15, Subpart C Section 15.249: 2016 ANSI C63.10-2013		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. **Issue Date: Feb.09, 2017**		

Tested by:	Reviewed by:	Approved by:
Keven Wu / Engineer	Mark Li / Supervisor	Andy Gao / Supervisor

Other Aspects:

None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Keyway Testing Technology Co., Ltd.

1. TEST SUMMARY

Test Items	Test Requirement	Result
Conducted Emissions	15.207	N/A
Spurious Emissions	15.205(a)/15.209/15.249(d)	PASS
Fundamental emissions	15.249 (a)	PASS
Emissions from out of band	15.249(d)	PASS
Antenna Requirement	15.203	PASS

2. GENERAL PRODUCT INFORMATION

2.1. Product Function

Refer to Technical Construction Form and User Manual.

2.2. Description of Device (EUT)

Product Name:	Wireless BlueTrace Mouse
Model No.:	AMW573
Operation Frequency:	2408MHz-2474MHz
Channel numbers:	34
Modulation technology:	GFSK
Antenna Type:	PCB
Antenna gain:	0dBi
Power supply:	DC 1.5V (1.5V AA battery*1)

2.3. Independent Operation Modes

The basic operation modes are:

Test Mode	Frequency
Mode1	2408MHz
Mode2	2440MHz
Mode3	2474MHz

2.4. Channel List

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency		
1	2408MHz	10	2426MHz	19	2444MHz	28	2462MHz
2	2410MHz	11	2428MHz	20	2446MHz	29	2464MHz
3	2412MHz	12	2430MHz	21	2448MHz	30	2466MHz
4	2414MHz	13	2432MHz	22	2450MHz	31	2468MHz
5	2416MHz	14	2434MHz	23	2452MHz	32	2470MHz
6	2418MHz	15	2436MHz	24	2454MHz	33	2472MHz
7	2420MHz	16	2438MHz	25	2456MHz	34	2474MHz
8	2422MHz	17	2440MHz	26	2458MHz		
9	2424MHz	18	2442MHz	27	2460MHz		

2.5. TEST SITES

Lab Qualifications : 944 Shielded Room built by ETS-Lindgren, USA
Date of completion: March 28, 2011

966 Chamber built by ETS-Lindgren, USA
Date of completion: March 28, 2011

Certificated by TUV Rheinland, Germany.
Registration No.: UA 50207153
Date of registration: July 13, 2011

Certificated by UL, USA
Registration No.: 100567-237
Date of registration: December 1, 2011

Certificated by Intertek
Registration No.: 2011-RTL-L1-31
Date of registration: October 11, 2011

Certificated by Industry Canada
Registration No.: 9868A
Date of registration: December 8, 2011

Certificated by FCC, USA
Registration No.: 370994
Date of registration: February 21, 2012

Certificated by CNAS China
Registration No.: CNAS L5783
Date of registration: August 8, 2012

Name of Firm : Keyway Testing Technology Co., Ltd.

Site Location : Baishun Industrial Zone, Zhangmutou Town,
Dongguan, Guangdong, China

2.6. List of Test and Measurement Instruments

2.6.1. For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 09,16	Apr. 08,17
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	Apr. 09,16	Apr. 08,17
Artificial Mains Network (AUX)	Rohde&Schwarz	ENV216	101314	Apr. 09,16	Apr. 08,17
RF Cable	FUJIKURA	3D-2W	944 Cable	Apr. 09,16	Apr. 08,17

2.6.2. For radiated emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 09,16	Apr. 08,17
System Simulator	Agilent	E5515C	GB43130245	Apr. 09,16	Apr. 08,17
Power Splitter	Weinschel	1506A	NW425	Apr. 09,16	Apr. 08,17
Bilog Antenna	ETS-LINDGREEN	3142D	135452	Apr. 09,16	Apr. 08,17
Spectrum Analyzer	Agilent	E4411B	MY4511304	Apr. 09,16	Apr. 08,17
Spectrum Analyzer	R&S	FSV40	132.1.3008K39 -100967	Apr. 09,16	Apr. 08,17
3m Semi-anechoic Chamber	ETS-LINDGREEN	966	KW01	Apr. 09,16	Apr. 08,17
Signal Amplifier	SONOMA	310	187016	Apr. 09,16	Apr. 08,17
Signal Amplifier	Agilent	8449B	3008A00251	Apr. 09,16	Apr. 08,17
RF Cable	IMRO	IMRO-400	966 Cable 1#	N/A	N/A
MULTI-DEVICE Controller	ETS-LINDGREEN	2090	126913	N/A	N/A
Horn Antenna	DAZE	ZN30701	11003	Apr. 09,16	Apr. 08,17
Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	Apr. 09,16	Apr. 08,17
Spectrum Analyzer	Agilent	8593E	3911A04271	Apr. 09,16	Apr. 08,17
Spectrum Analyzer	Agilent	E4408B	MY44211125	Apr. 09,16	Apr. 08,17
Signal Amplifier	DAZE	ZN3380C	11001	Apr. 09,16	Apr. 08,17
High Pass filter	Micro	HPM50111	324216	Apr. 09,16	Apr. 08,17
Filter	COM-MW	ZBSF-C836.5-25-X	KW032	Apr. 09,16	Apr. 08,17
Filter	COM-MW	ZBSF-C1747.5-75-X2	KW035	Apr. 09,16	Apr. 08,17
Filter	COM-MW	ZBSF-C1880-60-X2	KW037	Apr. 09,16	Apr. 08,17
DC Power Supply	LongWei	PS-305D	010964729	Apr. 09,16	Apr. 08,17
Constant temperature and humidity box	GF	GTH-800-40-1P	MAA9906-005	Apr. 09,16	Apr. 08,17
Splitter	Agilent	11636B	0025164	Apr. 27,15	Apr. 27,16
Loop Antenna	ARA	PLA-1030/B	1029	Apr. 22,16	Apr. 21,17

3. TEST SET-UP AND OPERATION MODES

3.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

3.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators

(EUT: Wireless BlueTrace Mouse)

3.3. Test Operation Mode and Test Software

None.

3.4. Special Accessories and Auxiliary Equipment

None.

3.5. Countermeasures to Achieve EMC Compliance

None.

4. EMISSION TEST RESULTS

4.1. Radiated Emission Test

4.1.1. Limit 15.209 limits

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

4.1.2. Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

4.1.3. Test setup

The EUT was placed on a turn table which was 0.8 m(above 1GHz, the table was 1.5m) above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz.

The frequency range from 30MHz to 10^{th} harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading-Preamp Factor.

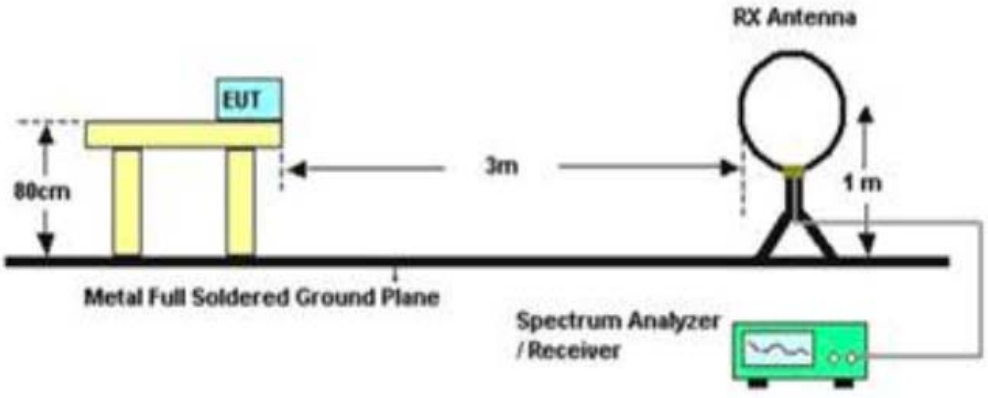
2. Measurement Uncertainty: ±3.2 dB at a level of confidence of 95%.

3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

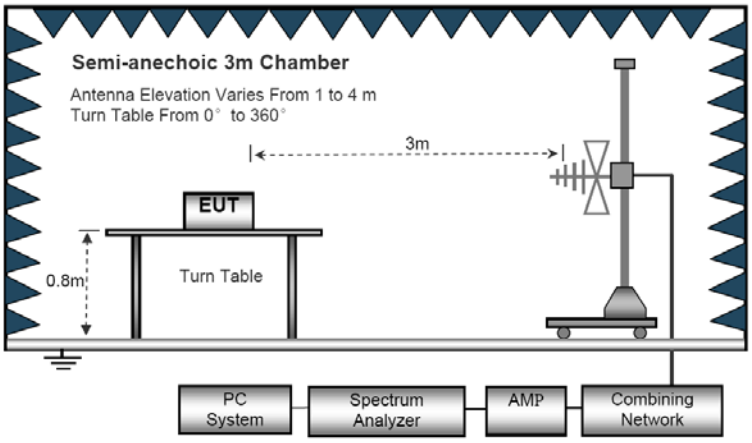
4. For emissions below 1GHz, pretest for all mode, The test data of the worst case condition(s) was reported on the following pages.

5. 5.EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report (Z orientation).

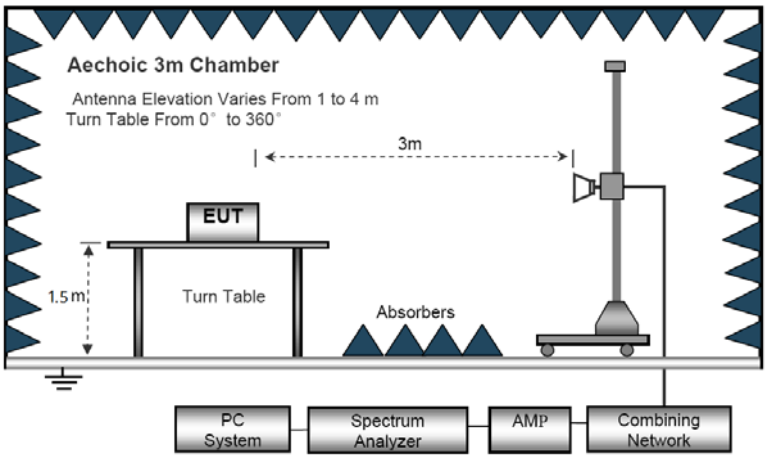
Radiated Emission Test-Up Frequency Below 30MHz



30MHz- 1GHz



Above 1GHz



Below 30MHz

EUT：	Wireless BlueTrace Mouse	Model Name ：	AMW573
Temperature：	25 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX
Test Voltage ：	DC 1.5V		

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

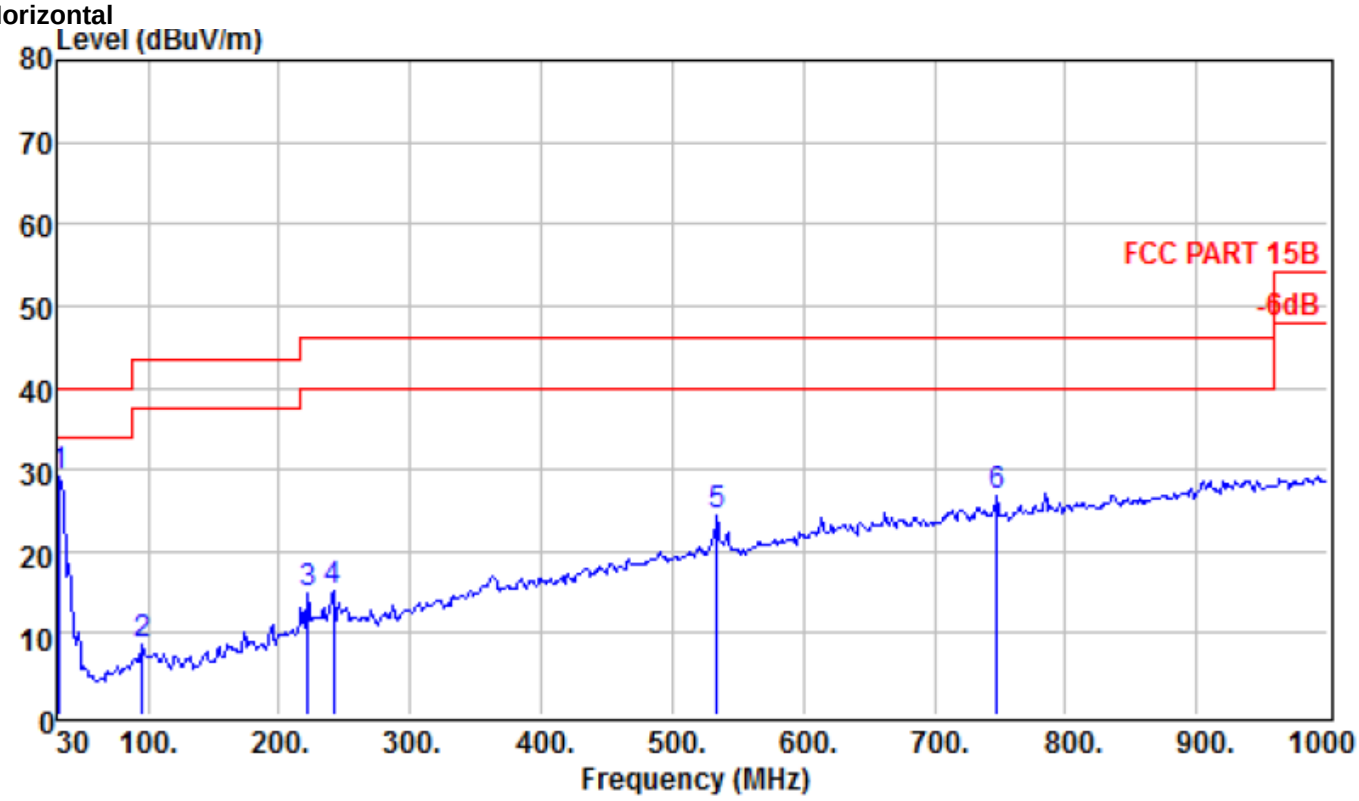
Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

Below 1GHz

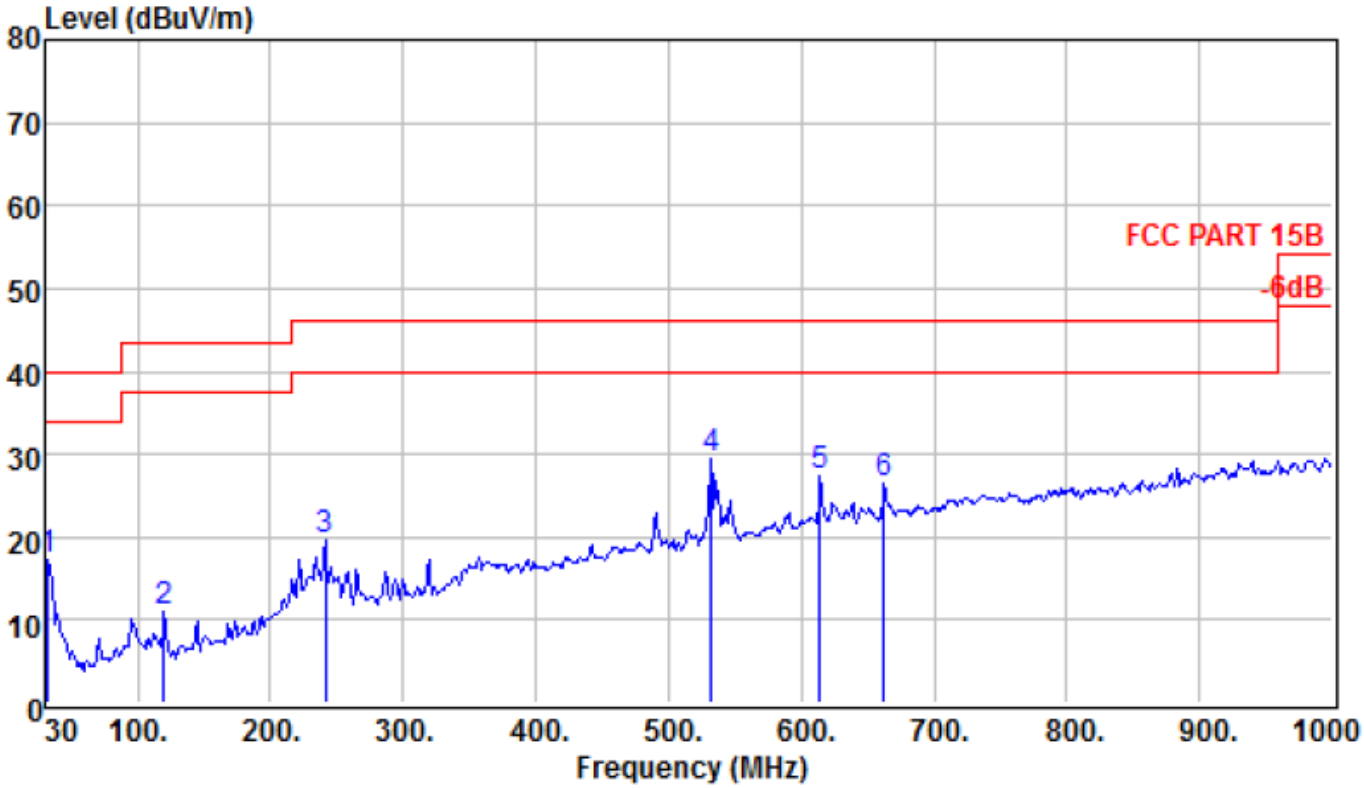
EUT：	Wireless BlueTrace Mouse	Model Name ：	AMW573
Temperature：	25 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX
Test Voltage ：	DC 1.5V		

Horizontal



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	31.940	42.47	17.66	0.56	31.40	29.29	40.00	-10.71	QP
2	95.960	29.63	9.40	0.94	31.35	8.62	43.50	-34.88	QP
3	222.060	32.15	12.06	1.53	30.96	14.78	46.00	-31.22	QP
4	241.460	31.99	12.66	1.61	30.95	15.31	46.00	-30.69	QP
5	534.400	32.79	19.31	3.03	30.77	24.36	46.00	-21.64	QP
6	747.800	30.62	22.78	4.04	30.67	26.77	46.00	-19.23	QP

Vertical



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	31.940	30.46	17.66	0.56	31.40	17.28	40.00	-22.72	QP
2	119.240	32.49	8.56	1.12	31.24	10.93	43.50	-32.57	QP
3	241.460	36.44	12.66	1.61	30.95	19.76	46.00	-26.24	QP
4	532.460	37.94	19.29	3.03	30.76	29.50	46.00	-16.50	QP
5	613.940	33.59	20.99	3.38	30.63	27.33	46.00	-18.67	QP
6	662.440	31.76	21.70	3.69	30.81	26.34	46.00	-19.66	QP

Mode 1 is the worst mode. only worst case is presented in the report

Above 1GHz

Frequency	Meter Reading	antenna Factor	cable loss	preamp factor	Emission Level	Limits	Margin	Detector Type	Comment
(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
low channel(2408MHz)									
2408	75.97	28.73	7.39	26.32	85.77	114.00	-28.23	Pk	Horizontal
2408	73.63	28.73	7.39	26.32	83.43	94.00	-10.57	AV	Horizontal
4816	30.32	32.94	12.01	27.49	47.78	74.00	-26.22	Pk	Horizontal
4816	27.16	32.94	12.01	27.49	44.62	54.00	-9.38	AV	Horizontal
7224	31.98	25.29	16.61	27.94	45.94	74.00	-28.06	Pk	Horizontal
7224	29.94	25.29	16.61	27.94	43.9	54.00	-10.1	AV	Horizontal
2408	65.89	28.73	7.39	26.32	75.69	114.00	-38.31	Pk	Vertical
2408	63.18	28.73	7.39	26.32	72.98	94.00	-21.02	AV	Vertical
4816	28.98	32.94	12.01	27.49	46.44	74.00	-27.56	Pk	Vertical
4816	26.82	32.94	12.01	27.49	44.28	54.00	-9.72	AV	Vertical
7224	31.06	25.29	16.61	27.94	45.02	74.00	-28.98	Pk	Vertical
7224	28.47	25.29	16.61	27.94	42.43	54.00	-11.57	AV	Vertical
Middle channel(2440MHz)									
2440	75.23	28.76	7.48	26.33	85.14	114.00	-28.86	Pk	Horizontal
2440	73.34	28.76	7.48	26.33	83.25	94.00	-10.75	AV	Horizontal
4880	30.59	32.11	12.19	27.53	47.36	74.00	-26.64	Pk	Horizontal
4880	28	32.11	12.19	27.53	44.77	54.00	-9.23	AV	Horizontal
7320	32.85	24.33	16.62	27.96	45.84	74.00	-28.16	Pk	Horizontal
7320	30.33	24.33	16.62	27.96	43.32	54.00	-10.68	AV	Horizontal
2440	65.94	28.76	7.48	26.33	75.85	114.00	-38.15	Pk	Vertical
2440	63.15	28.76	7.48	26.33	73.06	94.00	-20.94	AV	Vertical
4880	29.62	32.11	12.19	27.53	46.39	74.00	-27.61	Pk	Vertical
4880	27.6	32.11	12.19	27.53	44.37	54.00	-9.63	AV	Vertical
7320	32.36	24.33	16.62	27.96	45.35	74.00	-28.65	Pk	Vertical
7320	29.63	24.33	16.62	27.96	42.62	54.00	-11.38	AV	Vertical
High channel(2474MHz)									
2474	76.59	28.79	7.57	26.34	86.61	114.00	-27.39	Pk	Horizontal
2474	74.45	28.79	7.57	26.34	84.47	94.00	-9.53	AV	Horizontal
4948	29.82	32.28	12.32	27.57	46.85	74.00	-27.15	Pk	Horizontal
4948	27.34	32.28	12.32	27.57	44.37	54.00	-9.63	AV	Horizontal
7422	32.24	24.37	16.62	27.98	45.25	74.00	-28.75	Pk	Horizontal
7422	29.85	24.37	16.62	27.98	42.86	54.00	-11.14	AV	Horizontal
2474	64.36	28.79	7.57	26.34	74.38	114.00	-39.62	Pk	Vertical
2474	62.07	28.79	7.57	26.34	72.09	94.00	-21.91	AV	Vertical
4948	29.08	32.28	12.32	27.57	46.11	74.00	-27.89	Pk	Vertical
4948	26.75	32.28	12.32	27.57	43.78	54.00	-10.22	AV	Vertical
7422	32.83	24.37	16.62	27.98	45.84	74.00	-28.16	Pk	Vertical
7422	30.56	24.37	16.62	27.98	43.57	54.00	-10.43	AV	Vertical

Note: Absolute Level= ReadingLevel+antenna Factor+cable loss-preamp factor,

Over Limit= Absolute Level – Limit

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.

5. BAND EDGE COMPLIANCE TEST

According to 15.249(d)

5.1. Limits

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 § 15.209, whichever is the lesser attenuation.

5.2. Test setup

The EUT was placed on a turn table which was 1.5 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

Set to span from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency

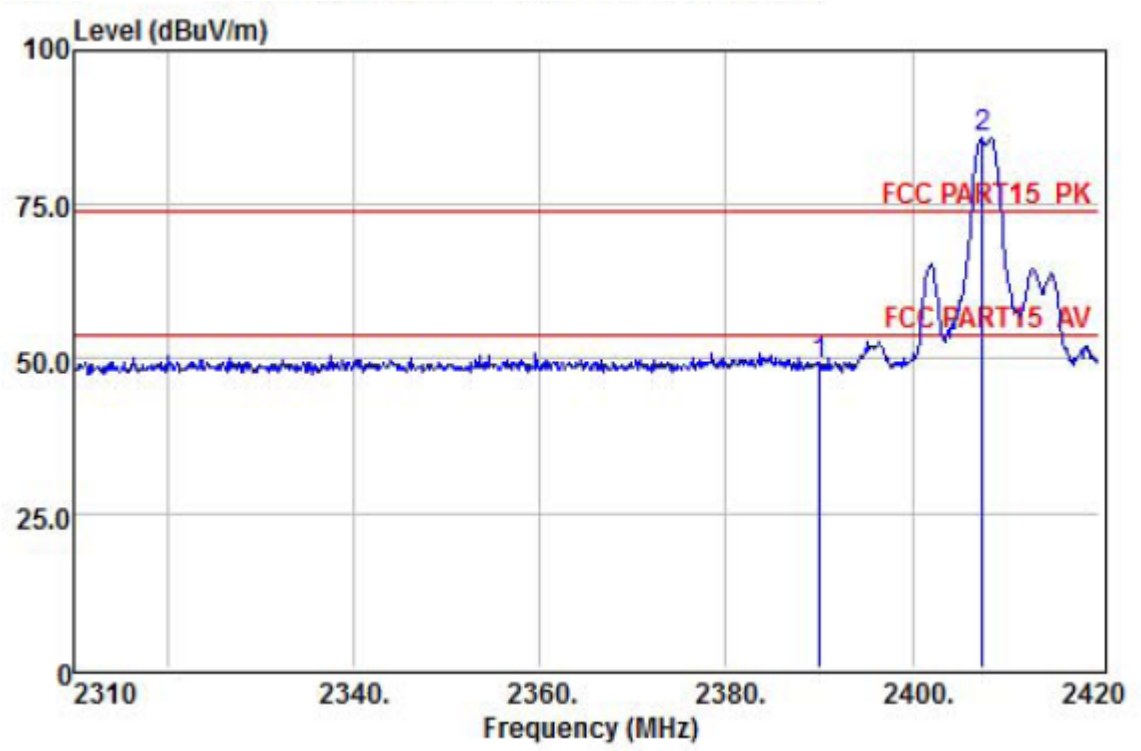
The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure. For all test, used peak detector.

Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

For radiated test as follows:

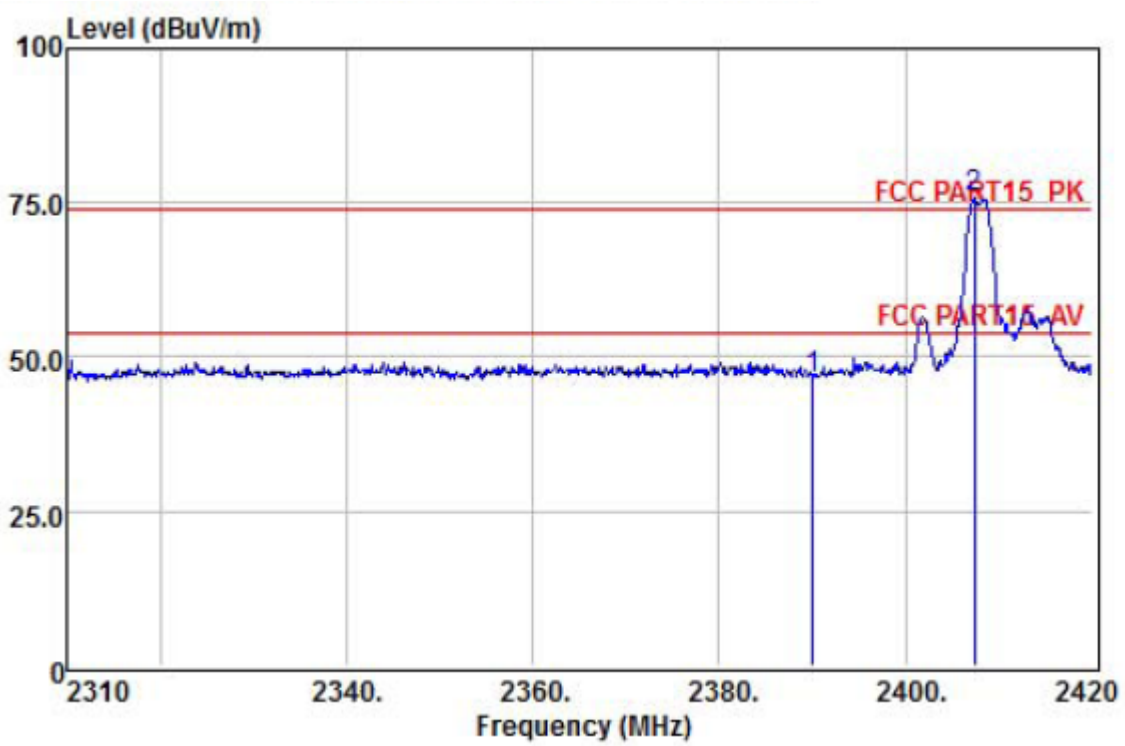
EUT：	Wireless BlueTrace Mouse	Model Name ：	AMW573
Temperature：	25 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX
Test Voltage ：	DC 1.5V		

Horizontal -Low



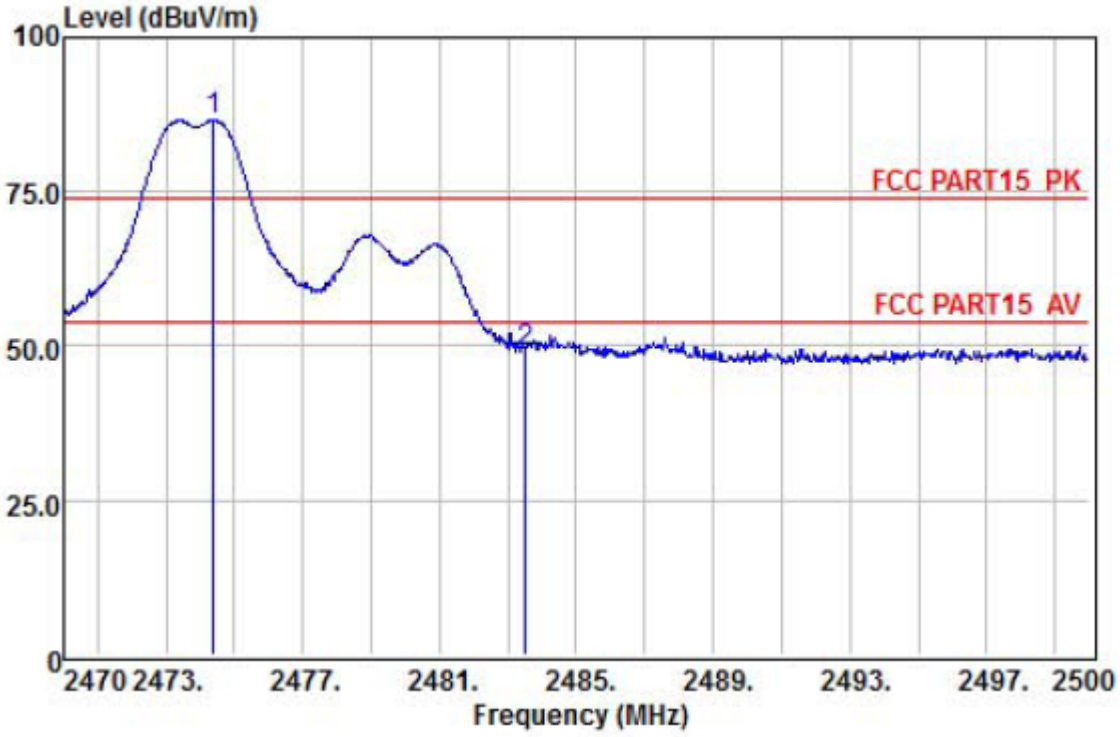
	Freq	Read Level	Preamp Factor	Antenna Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	2390.00	39.28	26.32	28.72	7.34	49.02	74.00	-24.98	Peak
2 *	2407.46	75.97	26.32	28.73	7.39	85.77	74.00	11.77	Peak

Vertical -Low



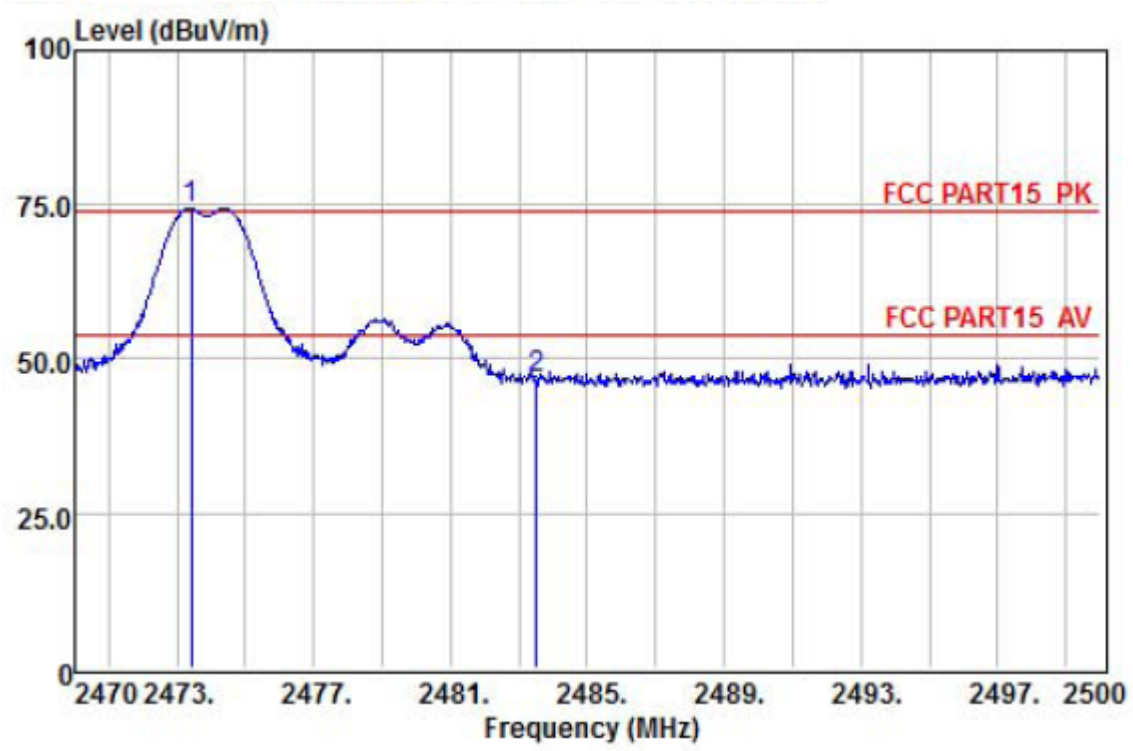
	Freq	Read Level	Preamp Factor	Antenna Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	2390.00	36.83	26.32	28.72	7.34	46.57	74.00	-27.43	Peak
2 *	2407.35	65.89	26.32	28.73	7.39	75.69	74.00	1.69	Peak

Horizontal -High



	Freq	Read Level	Preamp Factor	Antenna Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1 *	2474.38	76.59	26.34	28.79	7.57	86.61	74.00	12.61	Peak
2	2483.50	39.08	26.34	28.79	7.57	49.10	74.00	-24.90	Peak

Vertical -High



	Freq	Read Level	Preamp Factor	Antenna Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1 *	2473.39	64.41	26.34	28.79	7.52	74.38	74.00	0.38	Peak
2	2483.50	36.66	26.34	28.79	7.57	46.68	74.00	-27.32	Peak

If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

6. ANTENNA REQUIREMENTS

According to 15.203

6.1. Limits

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. 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.

6.2. Result

The antennas used for this product is PCB antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 0dBi.

7. PHOTOGRAPHS OF TEST SET-UP

Radiated Emission Test

8. PHOTOGRAPHS OF THE EUT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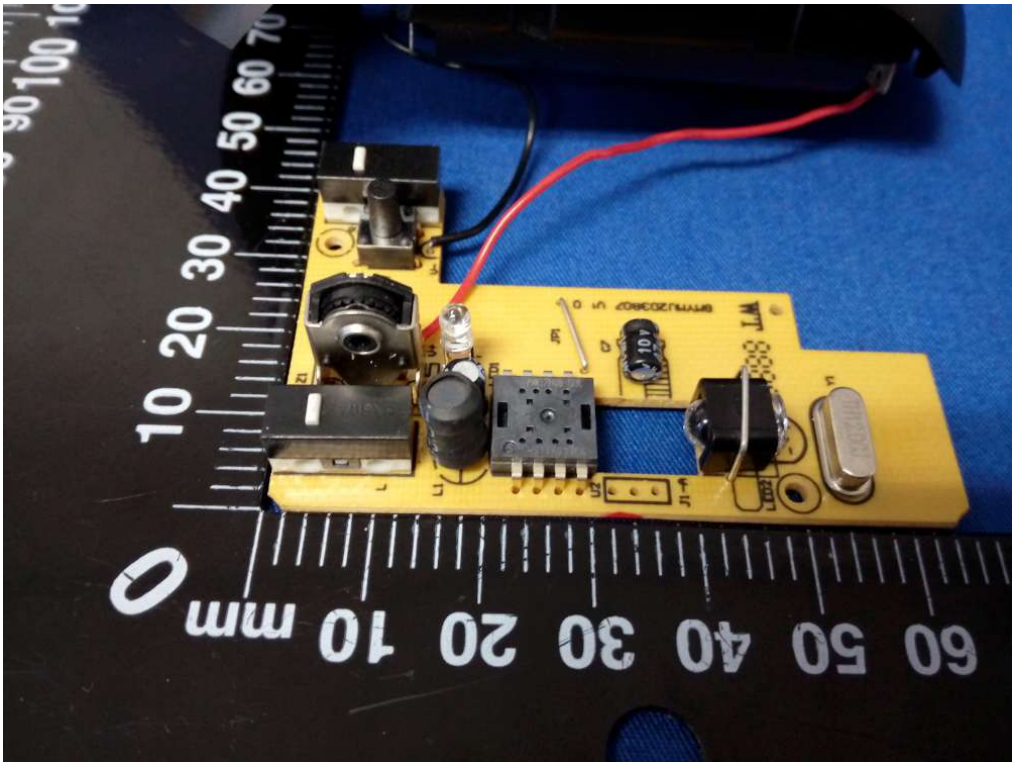

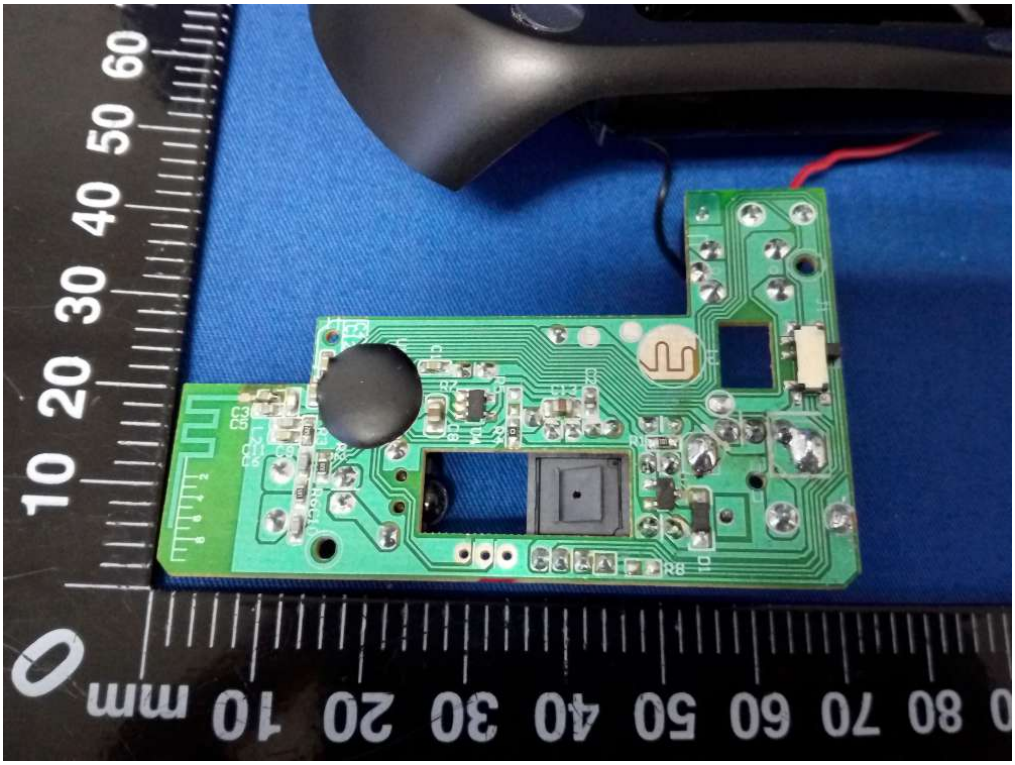

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