

EMC Report

Product: Wireless Optical Mouse

Model No.: X-08

**Additional Model No.: DS-2472, DS-2712, DS-2567, DS-2572, M601WL,
M601WL-BA, DS-2772**

Trade Mark: N/A

Report No.: TCT180621E902

Issued Date: Jun. 22, 2018

Issued for:

Eastern Times Technology Co., Ltd.

**Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town,
Dongguan City, Guangdong, China.**

Issued By:

Shenzhen TCT Testing Technology Co., Ltd.

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This test report was based on TCT170608E015; only change additional model No.

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TABLE OF CONTENTS

1. Test Certification	3
2. Test Result Summary	4
3. EUT Description.....	5
4. Genera Information.....	6
4.1. Test environment and mode.....	6
4.2. Description of Support Units.....	6
4.3. Test Instruments List	7
5. Facilities and Accreditations	9
5.1. Facilities	9
5.2. Location	9
5.3. Measurement Uncertainty.....	9
6. Emission Test	10
6.1. Conducted Emission.....	10
6.2. Radiated Emission	13
6.3. Harmonic Current Emissions	19
6.4. Flicker and Voltage Fluctuation	19
7. Immunity Test	20
7.1. Performance Criteria	20
7.2. Surges	21
7.3. Electrical Fast Transient (EFT).....	21
7.4. Radio-frequency Continuous Conducted (CS)	21
7.5. Voltage Dips and Voltage Interruption	21
7.6. Electrostatic Discharge.....	21
7.7. Radio-frequency Electromagnetic Field Amplitude Modulated (RS)	25
8. Photographs of Test Configuration.....	27
9. Photographs of EUT	29

1. Test Certification

Product:	Wireless Optical Mouse
Model No.:	X-08
Additional Model No.:	DS-2472, DS-2712, DS-2567, DS-2572, M601WL, M601WL-BA, DS-2772
Trade Mark:	N/A
Applicant:	Eastern Times Technology Co., Ltd.
Address:	Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town, Dongguan City, Guangdong, China.
Manufacturer:	Eastern Times Technology Co., Ltd.
Address:	Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town, Dongguan City, Guangdong, China.
Date of Test:	Jun. 09, 2017 – Jun. 20, 2017
Applicable Standards:	Final draft ETSI EN 301 489-3 V2.1.1 (2017-03) Draft ETSI EN 301 489-1 V2.2.0 (2017-03)

The above equipment has been tested by Shenzhen TCT Testing Technology Co., Ltd., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

This report is covering the essential requirement of directive 2014/53/EU.

Tested By:

Brews Xu

Date:

Jun. 20, 2017

Brews Xu

Reviewed By:

Berry Zhao

Date:

Jun. 22, 2018

Berry Zhao

Approved By:



Tomsin

Date:

Jun. 22, 2018

2. Test Result Summary

EMI Test				
Test Item	Test Requirement	Test Method	Application	Result
Radiated Emission	ETSI EN301 489-1	EN 55032	Enclosure	PASS
Conducted Emission	ETSI EN301 489-1	EN 55032	AC port	PASS
Harmonic Current Emissions	ETSI EN301 489-1	EN 61000-3-2	AC port	N/A
Voltage Fluctuations and Flicker	ETSI EN301 489-1	EN 61000-3-3	AC port	N/A
EMS Test				
ESD (Electrostatic Discharge)	ETSI EN301 489-1	EN 61000-4-2	Enclosure	PASS
Radiated Immunity	ETSI EN301 489-1	EN 61000-4-3	Enclosure	PASS
EFT (Electrical Fast Transients)	ETSI EN301 489-1	EN 61000-4-4	AC port	N/A
Surge Immunity	ETSI EN301 489-1	EN 61000-4-5	AC port	N/A
Injected Currents	ETSI EN301 489-1	EN 61000-4-6	AC port	N/A
Voltage Dips and Interruptions	ETSI EN301 489-1	EN 61000-4-11	AC port	N/A
Note:				
1 Pass: Test item meets the requirement.				
2. N/A: Test case does not apply to the test object.				
3. The test result judgment is decided by the limit of test standard.				

3. EUT Description

Product Name:	Wireless Optical Mouse
Model :	X-08
Additional Model:	DS-2472, DS-2712, DS-2567, DS-2572, M601WL, M601WL-BA, DS-2772
Trade Mark:	N/A
Hardware Version:	V1.2
Software Version:	V1.0
Operation Frequency:	2408MHz~2474MHz
Modulation Technology:	FSK
Antenna Type:	PCB antenna
Antenna Gain:	Mouse: -2dBi Dongle: 0dBi
Power Supply:	DC 1.5V(Single AA Battery) for Mouse DC 5V from USB port for USB dongle
Remark:	All models above are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.

4. General Information

4.1. Test environment and mode

Item	Normal condition
Temperature	+25°C
Voltage	DC 1.5V
Humidity	56%
Atmospheric Pressure:	96 mbar
Test Mode:	
TM1	Operating

4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Computer	Inspiron 3668	/	/	DELL
Monitor	SE1918HV	/	/	DELL
Keyboard	/	/	/	DELL

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.3. Test Instruments List

Name	Model No.	Manufacturer	Date of Cal.	Due Date
Conducted Emission				
EMI Test Receiver	ESCS30	R&S	Sep. 28, 2017	Sep. 27, 2018
LISN-2	NSLK 8126	Schwarzbeck	Sep. 28, 2017	Sep. 27, 2018
Attenuator	CDG 60100	Schloder	Sep. 28, 2017	Sep. 27, 2018
Coaxial Cable	N/A	TCT	Sep. 28, 2017	Sep. 27, 2018
Radiated Emission				
EMI Test Receiver	ESVD	R&S	Sep. 28, 2017	Sep. 27, 2018
Spectrum Analyzer	FSEM	R&S	Sep. 28, 2017	Sep. 27, 2018
Amplifier	8447D	HP	Sep. 28, 2017	Sep. 27, 2018
Amplifier	EM30265	EM Electronics Corporation CO.,LTD	Sep. 28, 2017	Sep. 27, 2018
Broadband Antenna	VULB9163	Schwarzbeck	Sep. 28, 2017	Sep. 27, 2018
Horn Antenna	BBHA 9120D	Schwarzbeck	Sep. 28, 2017	Sep. 27, 2018
Ultra Broadband ANT	HL562	R&S	Sep. 28, 2017	Sep. 27, 2018
Universal Radio Communication Tester	CMU200	R&S	Sep. 28, 2017	Sep. 27, 2018
Coaxial Cable	N/A	TCT	Sep. 28, 2017	Sep. 27, 2018
Coaxial Cable	N/A	TCT	Sep. 28, 2017	Sep. 27, 2018
Coaxial Cable	N/A	TCT	Sep. 28, 2017	Sep. 27, 2018
Coaxial Cable	N/A	TCT	Sep. 28, 2017	Sep. 27, 2018
Loop antenna	ZN30900A	ZHINAN	Sep. 28, 2017	Sep. 27, 2018
Electrostatic Discharge				
Electrostatic Discharge Generator	ESD61002AG	Prima	Sep. 29, 2017	Sep. 28, 2018
Continuous Radiated Disturbances				
Signal Generator	2022D	Maconi	Sep. 29, 2017	Sep. 28, 2018
Power Amplifier	A00181-1000	M2S	Sep. 29, 2017	Sep. 28, 2018
Power Amplifier	AC8113/ 800-250A	M2S	Sep. 29, 2017	Sep. 28, 2018
Power Antenna	CBL6140A	SCHAFFNER	Sep. 29, 2017	Sep. 28, 2018
Universal Radio Communication Tester	CMU200	R&S	Sep. 29, 2017	Sep. 28, 2018

Audio Analyzer	UPL 16	Rohde & Schwarz	Sep. 29, 2017	Sep. 28, 2018
MOUTH SIMULATOR	B&K	4227	N/A	N/A
SOUND LEVEL CALIBRATOR	B&K	4231	N/A	N/A
Antenna Tripod	TP1000A	Amplifier Research	N/A	N/A
High Gain Horn Antenna (0.8-6GHz)	AT4002A	Amplifier Research	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

5. Facilities and Accreditations

5.1. Facilities

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

- FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

5.2. Location

Shenzhen TCT Testing Technology Co., Ltd.

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

Tel: +86-755-27673339

5.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Temperature	$\pm 0.1^\circ\text{C}$
2	Humidity	$\pm 1.0\%$
3	Spurious Emissions, Conducted	$\pm 2.56\text{ dB}$
4	All Emissions, Radiated	$\pm 4.28\text{ dB}$

6. Emission Test

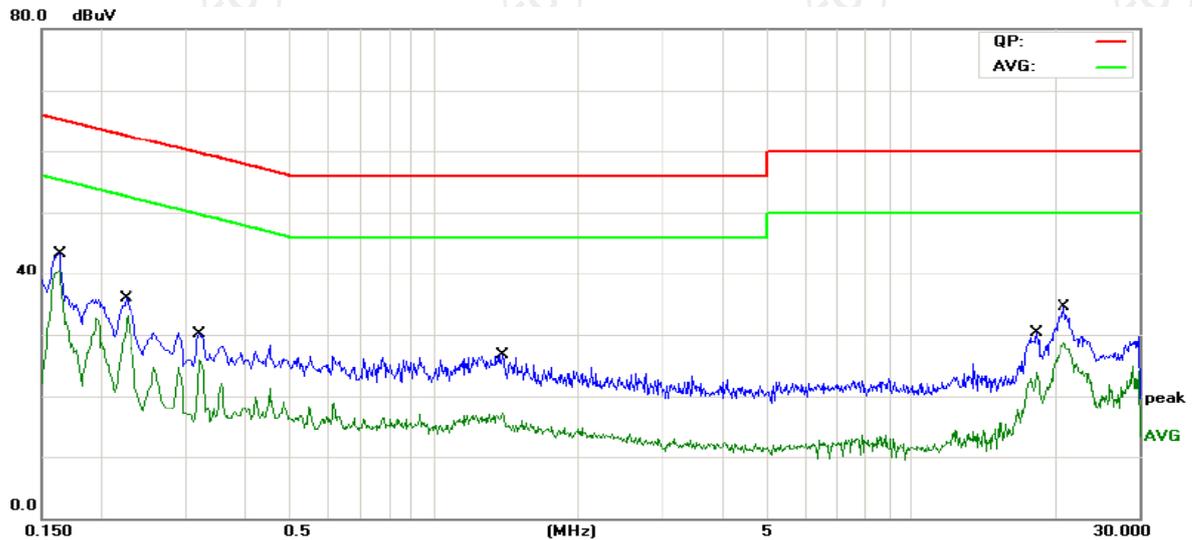
6.1. Conducted Emission

6.1.1. Test Specification

Test Requirement:	ETSI EN 301 489-1		
Test Method:	EN 55032		
Test Frequency Range:	150kHz to 30MHz		
Class / Severity: Class B	Class B		
Receiver Setup:	RBW=9kHz, VBW=30kHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		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.			
Test Setup:	<p><i>Remark:</i> E.U.T.: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>		
Test Procedure	<p>The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to EN55032 Class B on conducted measurement.</p>		
Test Instrument:	Refer to section 4.3 for details		
Test Mode:	Refer to section 4.1 for details		
Test Results:	PASS		

6.1.2. Test Data

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site Chamber #2 Phase: L1 Temperature: 23 (C)
Limit: EN55032 Class B Conduction(QP) Power: Humidity: 54 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1635	43.35	0.00	43.35	65.28	-21.93	QP	
2	*	0.1635	40.57	0.00	40.57	55.28	-14.71	AVG	
3		0.2268	35.87	0.00	35.87	62.56	-26.69	QP	
4		0.2268	33.10	0.00	33.10	52.56	-19.46	AVG	
5		0.3209	30.15	0.00	30.15	59.68	-29.53	QP	
6		0.3209	25.84	0.00	25.84	49.68	-23.84	AVG	
7		1.3870	26.71	0.00	26.71	56.00	-29.29	QP	
8		1.3870	17.15	0.00	17.15	46.00	-28.85	AVG	
9		18.3075	30.25	0.00	30.25	60.00	-29.75	QP	
10		18.3075	23.92	0.00	23.92	50.00	-26.08	AVG	
11		20.8673	34.50	0.00	34.50	60.00	-25.50	QP	
12		20.8673	28.63	0.00	28.63	50.00	-21.37	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

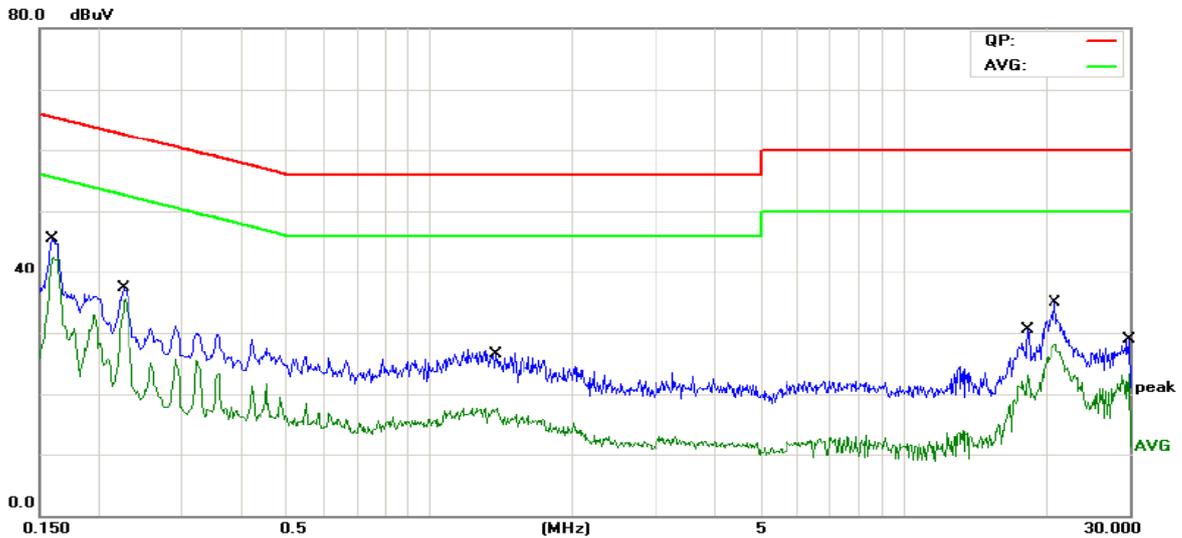
Margin (dB) = Measurement (dBuV) – Limits (dBuV)

Q.P. =Quasi-Peak

AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site Chamber #2 Phase: **N** Temperature: 23 (C)
Limit: EN55032 Class B Conduction(QP) Power: Humidity: 54 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1607	45.41	0.00	45.41	65.42	-20.01	QP	
2	*	0.1607	42.43	0.00	42.43	55.42	-12.99	AVG	
3		0.2268	37.30	0.00	37.30	62.56	-25.26	QP	
4		0.2268	35.52	0.00	35.52	52.56	-17.04	AVG	
5		1.3829	27.16	0.00	27.16	56.00	-28.84	QP	
6		1.3829	17.43	0.00	17.43	46.00	-28.57	AVG	
7		18.3075	30.53	0.00	30.53	60.00	-29.47	QP	
8		18.3075	23.01	0.00	23.01	50.00	-26.99	AVG	
9		20.8673	34.97	0.00	34.97	60.00	-25.03	QP	
10		20.8673	28.04	0.00	28.04	50.00	-21.96	AVG	
11		29.9175	28.85	0.00	28.85	60.00	-31.15	QP	
12		29.9175	23.38	0.00	23.38	50.00	-26.62	AVG	

Note:

- Freq. = Emission frequency in MHz
- Reading level (dBuV) = Receiver reading
- Corr. Factor (dB) = Antenna factor + Cable loss
- Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)
- Limit (dBuV) = Limit stated in standard
- Margin (dB) = Measurement (dBuV) – Limits (dBuV)
- Q.P. =Quasi-Peak
- AVG =average
- * is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

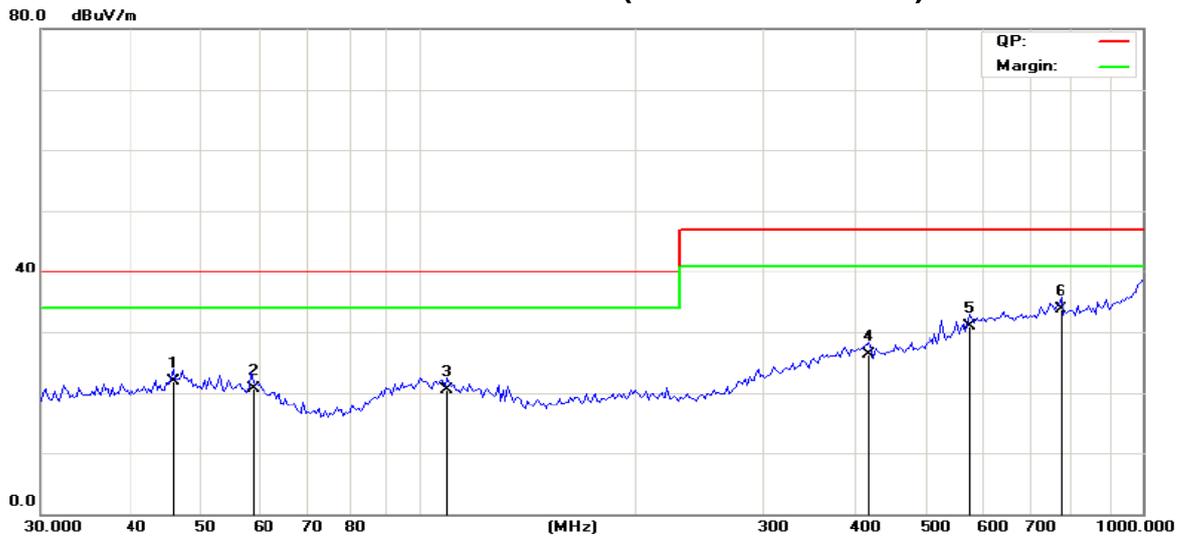
6.2. Radiated Emission

6.2.1. Test Specification

Test Requirement:	ETSI EN 301 489-1				
Test Method:	EN 55032				
Test Frequency Range:	30MHz to 6GHz				
Test Site:	Measurement Distance: 3m				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak Average	1MHz 1MHz	3MHz 10Hz	Peak Value Average Value
Limit:	Frequency	Limit (dBuV/m @3m)		Remark	
	30MHz-230MHz	40.0		Quasi-peak Value	
	230MHz-1GHz	47.0		Quasi-peak Value	
	1GHz-3GHz	50.0		Average Value	
		70.0		Peak Value	
	3GHz-6GHz	54.0		Average Value	
74.0		Peak Value			
Test Setup:	Below 1GHz				
Test Setup:	Above 1GHz				
Test Procedure:	From 30MHz to 1GHz:				

	<ol style="list-style-type: none"> 1. The radiated emissions test was conducted in a semi-anechoic chamber. 2. 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, but separated from metallic contact with the ground reference plane by 0.1m of insulation. 3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT. 4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization. <p>Above 1GHz:</p> <ol style="list-style-type: none"> 1. The radiated emissions test was conducted in a fully-anechoic chamber. 2. 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, but separated from metallic contact with the ground reference plane by 0.1m of insulation. 3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT. 4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.
Test Instrument:	Refer to section 4.3 for details
Test Mode:	Refer to section 4.1 for details
Test Results:	PASS

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



Site Chamber: Polarization: **Vertical** Temperature: 25 (C)
Limit: EN 55032 ClassB 3M Radiation Power: DC 5V Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		45.7331	28.79	-6.88	21.91	40.00	-18.09	QP	
2		58.8977	28.14	-7.36	20.78	40.00	-19.22	QP	
3		109.3110	27.51	-6.98	20.53	40.00	-19.47	QP	
4		418.3783	27.83	-1.59	26.24	47.00	-20.76	QP	
5		578.0357	29.36	1.45	30.81	47.00	-16.19	QP	
6	*	771.0475	28.29	5.37	33.66	47.00	-13.34	QP	

Note:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

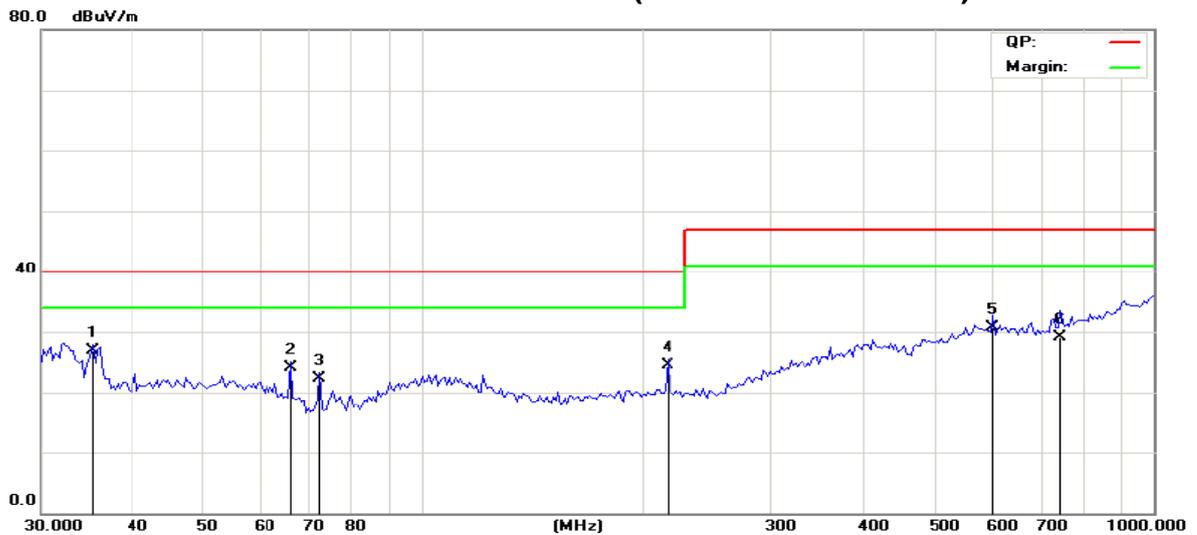
Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) – Limits (dBuV)

Any value more than 10dB below limit have not been specifically reported.

* is meaning the worst frequency has been tested in the test frequency range

Radiated Emission In Horizontal (1000MHz----6000MHz)



Site Chamber Polarization: **Horizontal** Temperature: 25 (C)
Limit: EN 55032 ClassB 3M Radiation Power: DC 5V Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	35.2625	34.41	-7.50	26.91	40.00	-13.09	QP	
2		65.9067	33.64	-9.60	24.04	40.00	-15.96	QP	
3		72.2111	33.43	-11.10	22.33	40.00	-17.67	QP	
4		216.1194	33.50	-9.07	24.43	40.00	-15.57	QP	
5		602.9287	28.35	2.43	30.78	47.00	-16.22	QP	
6		744.4265	24.18	4.90	29.08	47.00	-17.92	QP	

Note:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) – Limits (dBuV)

* is meaning the worst frequency has been tested in the test frequency range

6.3. Harmonic Current Emissions

6.3.1. Test Specification

Test Result:	EUT belongs to portable equipment, Not applicable
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6.4. Flicker and Voltage Fluctuation

6.4.1. Test Specification

Test result:	EUT belongs to portable equipment, Not applicable
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7. Immunity Test

7.1. Performance Criteria

Performance Criteria of ETSI EN 301 489-1, sub clause 6

Criteria	Performance Criteria
CT/CR	During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.
TT/TR	After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

Performance Criteria of ETSI EN 301 489-3, sub clause 6

Criteria	Performance Criteria
CT/CR	For equipment with primary function type I or II including ancillary equipment tested on a stand alone basis, the performance criteria A of the applicable device type as given in clause 6.3 shall apply. For equipment with primary function type II or III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.
TT/TR	For equipment with primary function type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria B of the applicable device type as given in clause 6.3 shall apply, except for power interruptions exceeding a certain time the performance criteria deviations are specified in clause 7.2.2. For equipment with primary function type II or III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

7.2. Surges

7.2.1. Test Specification

Test result:	EUT belongs to portable equipment, Not applicable
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7.3. Electrical Fast Transient (EFT)

7.3.1. Test Specification

Test result:	EUT belongs to portable equipment, Not applicable
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7.4. Radio-frequency Continuous Conducted (CS)

7.4.1. Test Specification

Test result:	EUT belongs to portable equipment, Not applicable
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7.5. Voltage Dips and Voltage Interruption

7.5.1. Test Specification

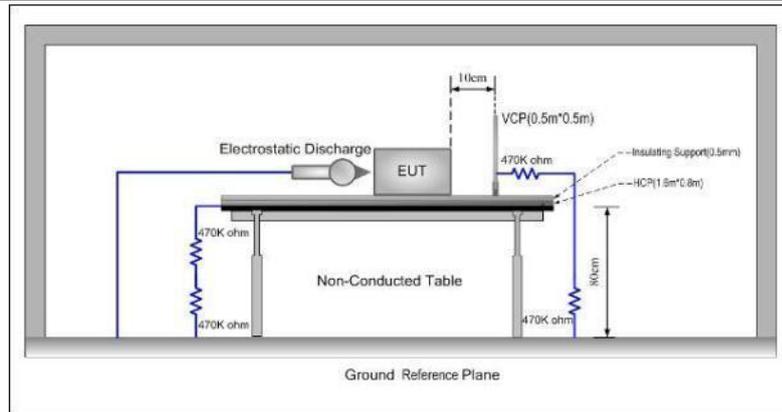
Test result:	EUT belongs to portable equipment, Not applicable
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7.6. Electrostatic Discharge

7.6.1. Test Specification

Test Requirement:	EN 301489-1
Test Method:	EN 61000-4-2
Discharge Voltage:	Contract Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$ Air Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 8\text{kV}$ HCP/VCP: $\pm 2\text{kV}$, $\pm 4\text{kV}$
Polarity:	Positive & Negative
Number of Discharge:	Contact Discharge: Minimum 25 times at each test point, Air Discharge: Minimum 10 times at each test point.
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

Test Setup:



Test Procedure:

1) Air discharge:

The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure was repeated until all the air discharge completed

2) Contact Discharge:

The test was applied on conductive surfaces of EUT. the generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated.

3) Indirect discharge for horizontal coupling plane

At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge. Consideration should be given to exposing all sides of the EUT.

4) Indirect discharge for vertical coupling plane

At least 10 single discharges were applied to the centre of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Test Instrument:

Refer to Section 4.3 for Details

Test Mode:

Refer to Section 4.1 for Details

Test Results:

PASS

7.6.2. Test data

Test points:	I: Please refer to red rings as below plots			
	II: Please refer to yellow rings as below plots			
Air Discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observations (Performance Criterion)	Result
± 2, ± 4	Contact	II	TT/TR	PASS
± 2, ± 4, ± 8	Air	I	TT/TR	PASS
Indirect Discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observation Performance	Result
± 2, ± 4	HCP-Bottom/Top/ Front/Back/Left/ Right	Edge of the HCP	TT/TR	PASS
± 2, ± 4	VCP-Front/Back /Left/Right	Centre of the VCP	TT/TR	PASS

Test point as follows:



7.7. Radio-frequency Electromagnetic Field Amplitude Modulated (RS)

7.7.1. Test Specification

Test Requirement:	ETSI EN 301 489-1
Test Method:	EN 61000-4-3
Frequency Range:	80MHz to 6.0GHz
Test Level:	3V/m
Modulation:	80%, 1kHz Amplitude Modulation
Test Setup:	
Test Procedure:	<ol style="list-style-type: none"> 1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items. 2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate centre of the cable to form a bundle 30 cm to 40 cm in length. 3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area). 4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceeding 1 % of the preceding frequency value. 5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than

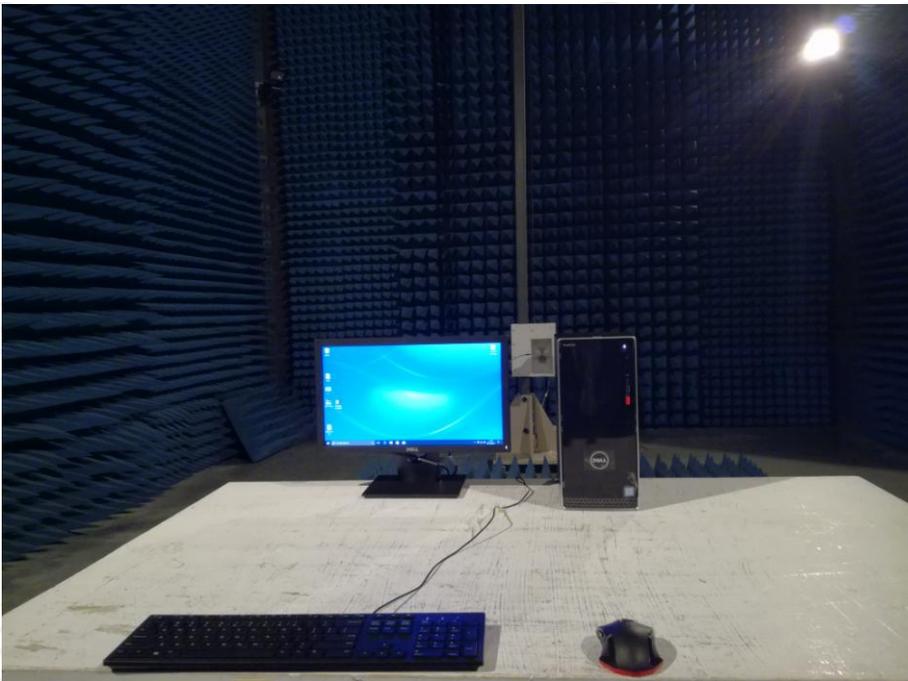
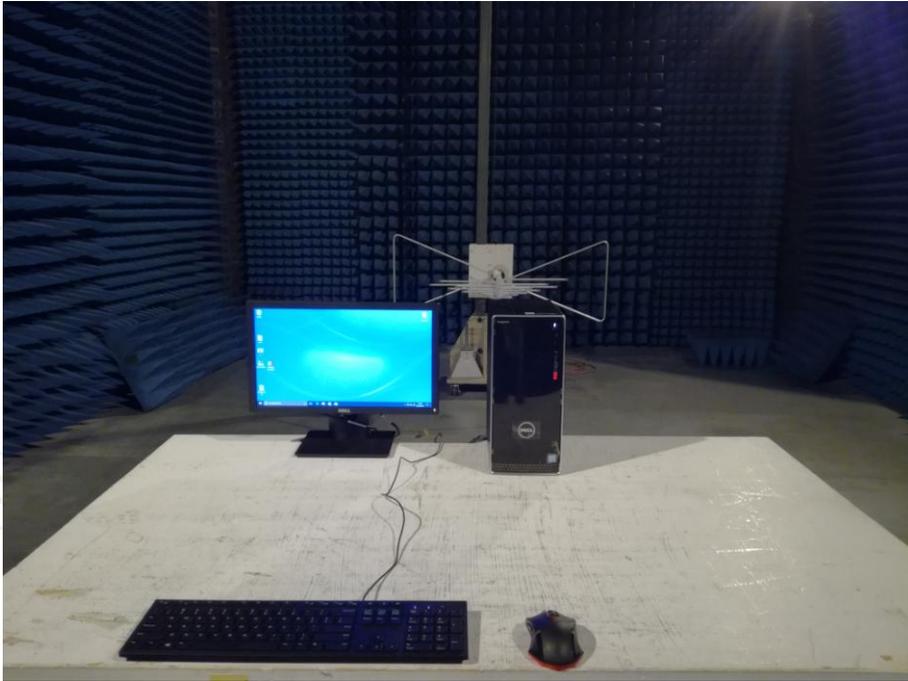
	<p>0,5 s.</p> <p>6. The test normally was performed with the generating antenna facing each side of the EUT.</p> <p>7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally.</p> <p>The EUT was performed in a configuration to actual installation conditions, a video camera and/or audio monitor were used to monitor the performance of the EUT.</p>
Test Instrument:	Refer to Section 4.3 for Details
Test Mode:	Refer to Section 4.1 for Details
Test Result:	PASS

7.7.2. Test data

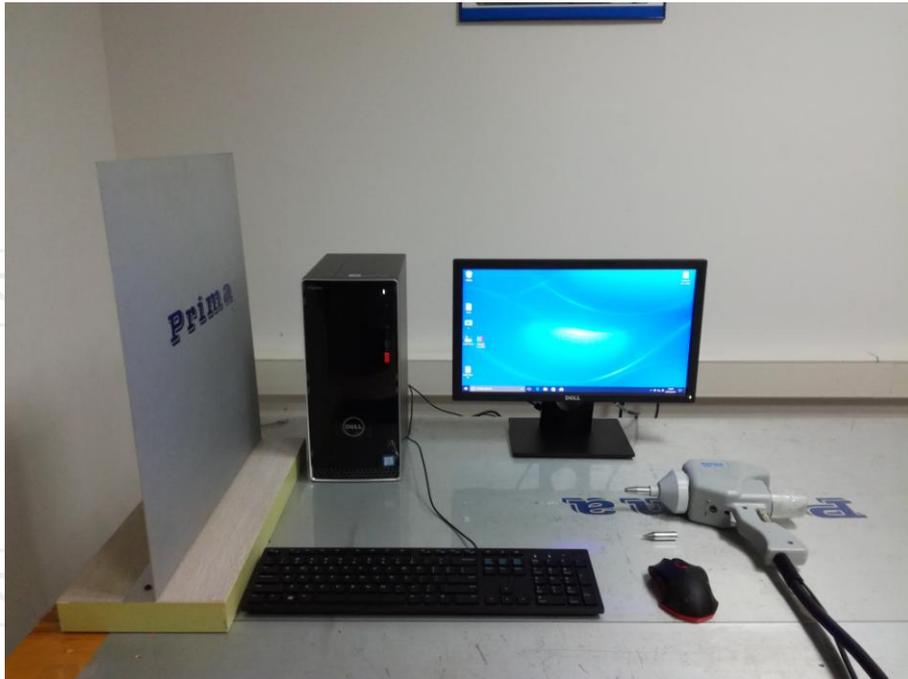
Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)
80 MHz-1 GHz 1.4GHz-6.0GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3 seconds	V	Front	CT/CR
			H		
			V	Rear	
			H		
			V	Left	
			H		
			V	Right	
			H		
			V	Top	
			H		
			V	Bottom	
			H		

8. Photographs of Test Configuration

Radiated Emission



ESD



CE



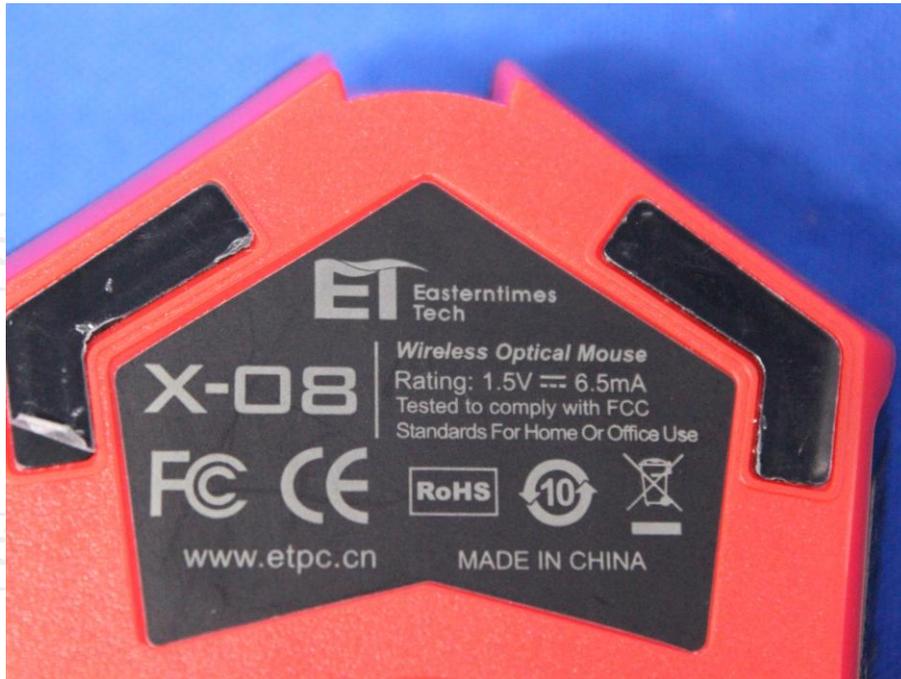
9. Photographs of EUT

Outside View

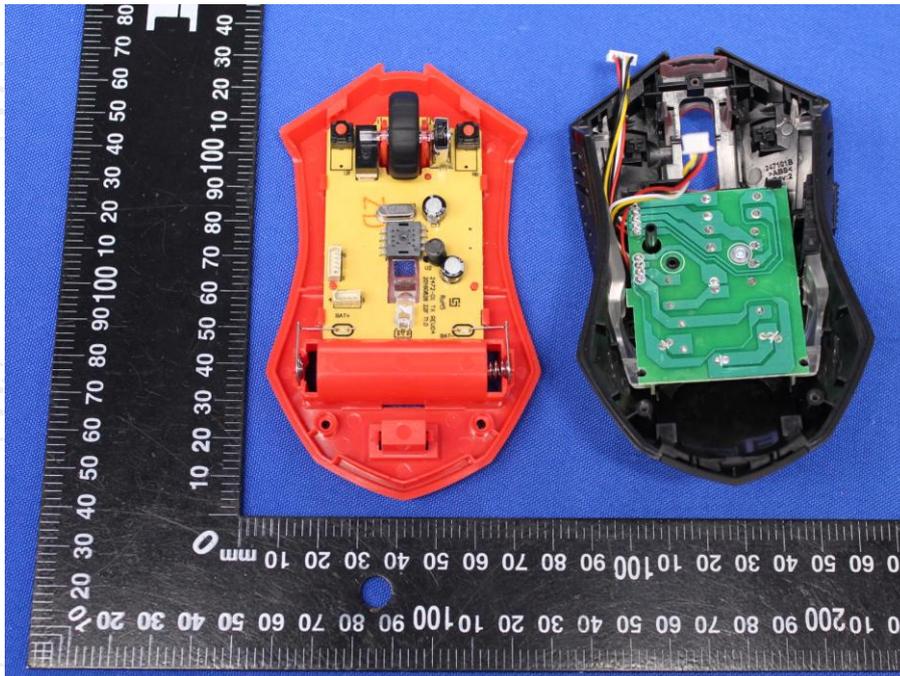


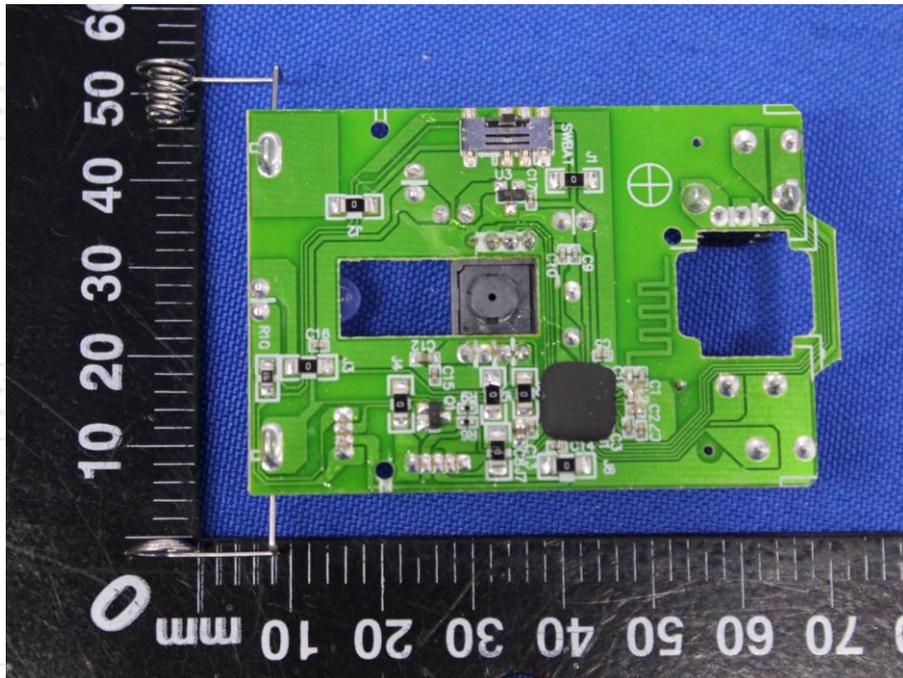
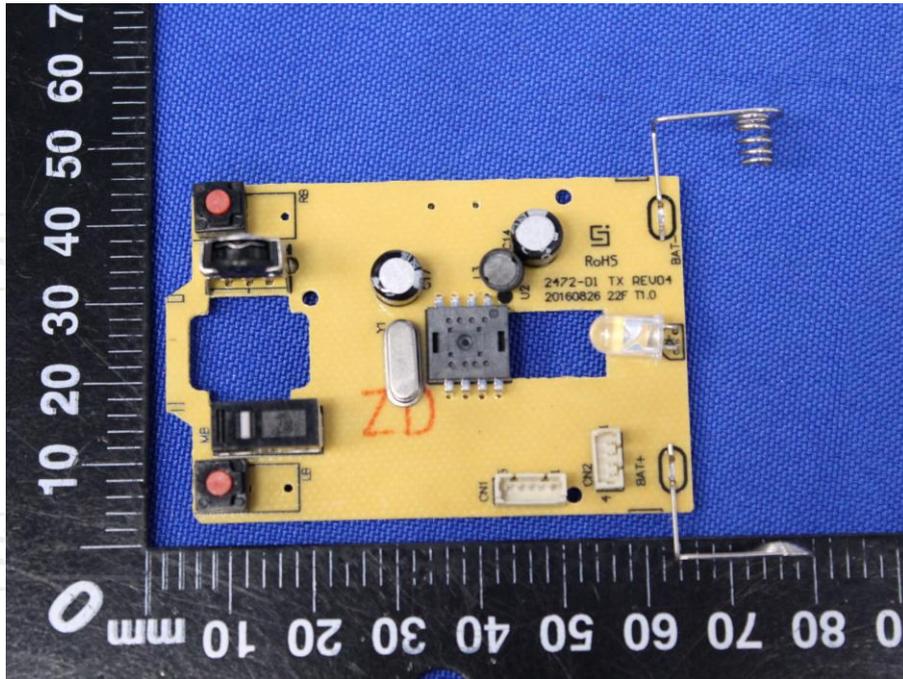


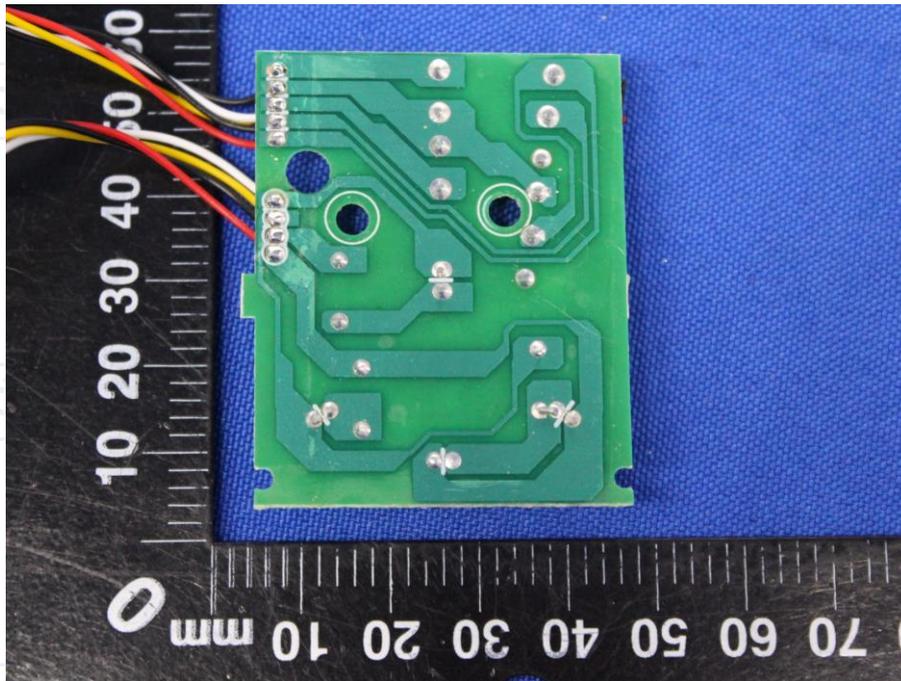
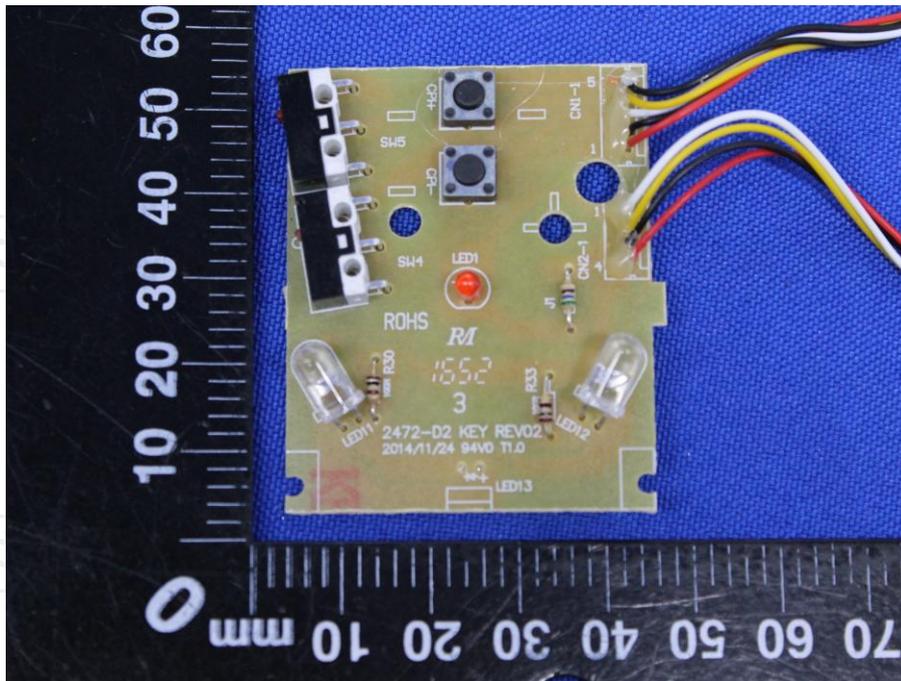


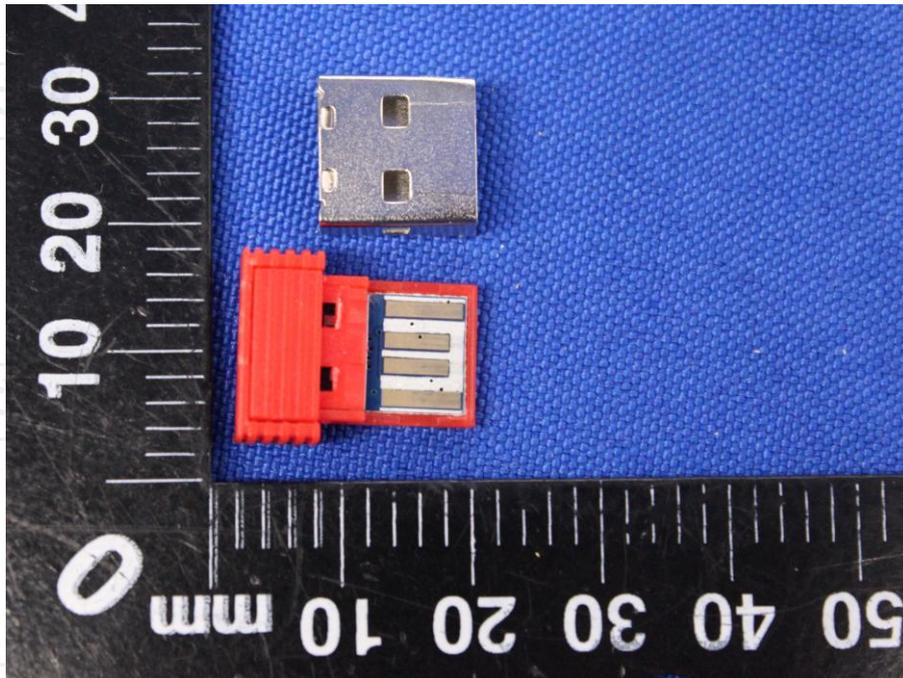
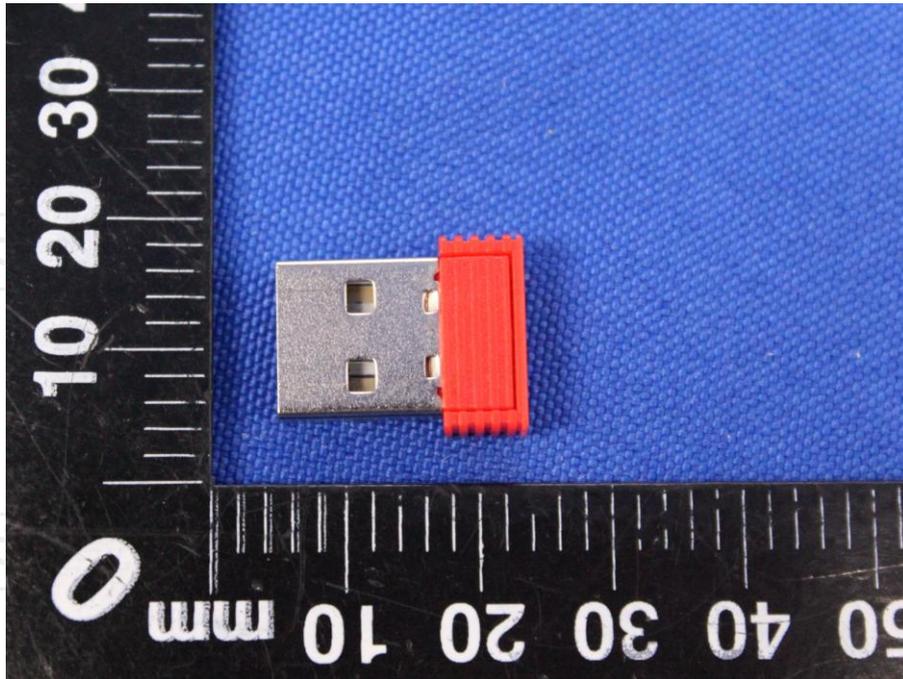


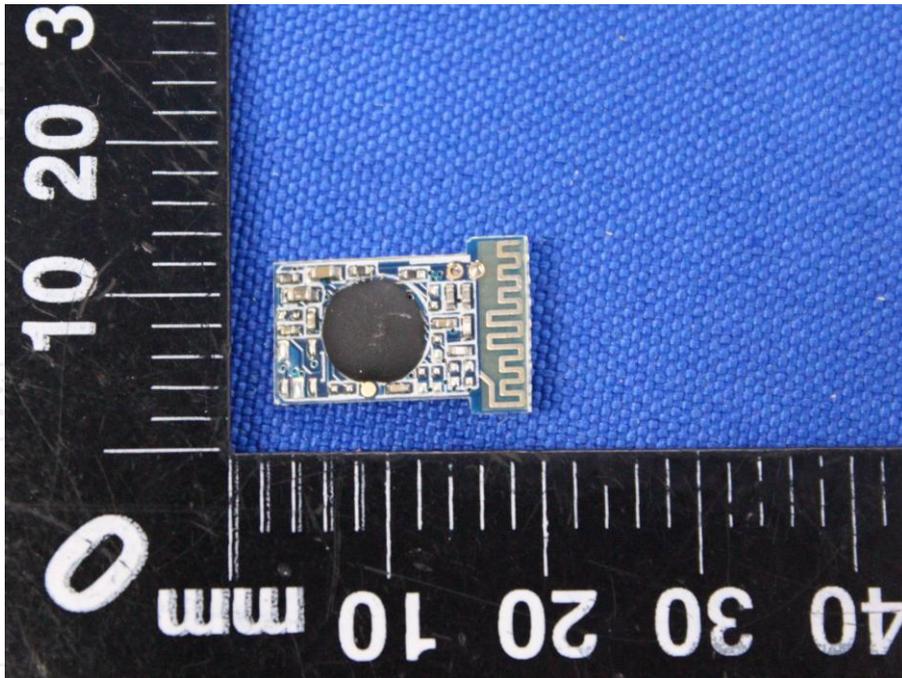
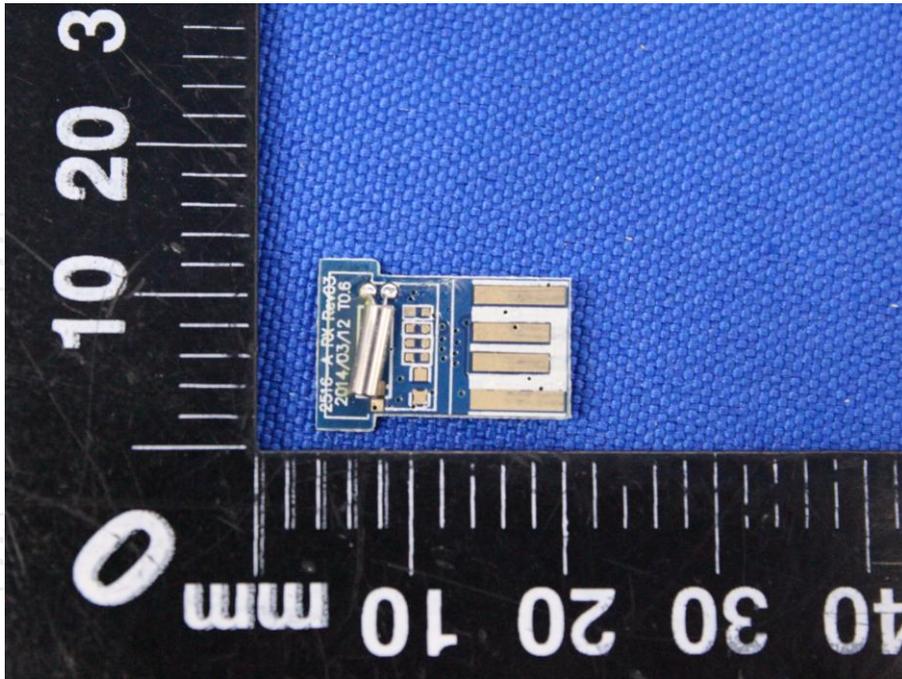
Inside View











*****END OF REPORT*****