



FCC TEST REPORT

FCC ID: 2AEDNA29

Product : 2.4GHz Wireless mouse receiver

Trade Name : N/A

SL-630010-BK

Model Number : SL-630010-XX(XX stands for
different product color)

Prepared for

Winspeed Co., Ltd.

14 F-1, No.2, Jian-Ba Rd., Chung-Ho District,
New Taipei City, Taiwan

Prepared by

Shenzhen POCE Technology Co., Ltd.

Room 502, Bldg. 1, Xinghua Garden, Baoan Road Xixiang,
Baoan District, Shenzhen, China

TEST RESULT CERTIFICATION


Applicant's name : Winspeed Co., Ltd.
Address : 14 F-1, No.2, Jian-Ba Rd., Chung-Ho District, New Taipei City,
Taiwan
Manufacturer's Name : Winspeed Co., Ltd.
Address : 14 F-1, No.2, Jian-Ba Rd., Chung-Ho District, New Taipei City,
Taiwan
Product description
Product name : 2.4GHz Wireless mouse receiver
FCC Part15B
Standards : ANSI C63.4:2014

This device described above has been tested by POCE, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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Date of Test :
Date (s) of performance of tests : 1 May 2016 ~7 May 2016
Date of Issue : 7 May 2016
Test Result : **Pass**

Testing Engineer : 
(Lynn Chen)

Technical Manager : 
(Carlen Liu)

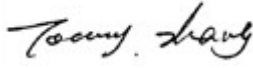
Authorized Signatory : 
(Tommy zhang)

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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part15B ANSI C63.4: 2014	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed.

1.1 TEST FACILITY

Shenzhen POCE Technology Co.,Ltd.

Add.: Room 502, Bldg. 1, Xinghua Garden, Baoan Road Xixiang, Baoan District, Shenzhen, China

FCC-Registration No.: 222278

1.2 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** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
POCE C01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
POCE A01	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~6GHz	5.0	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	2.4GHz Wireless mouse receiver	
Model Name	SL-630010-BK	
Serial No	SL-630010-XX(XX stands for different product color)	
Model Difference	All the same, only the color is different.	
Product Description	The EUT is a 2.4GHz Wireless mouse receiver.	
	Operating frequency:	OSC 16MHz
	Connecting I/O port:	USB
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Power Source	DC Voltage	
Power Rating	DC 5V from PC 120V/60Hz	

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Charging and data transmission

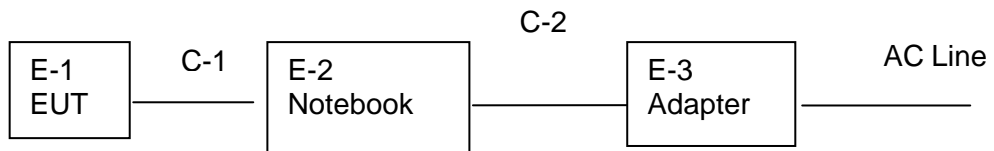
For Conducted Test	
Final Test Mode	Description
Mode 1	Charging and data transmission

For Radiated Test	
Final Test Mode	Description
Mode 1	Charging and data transmission

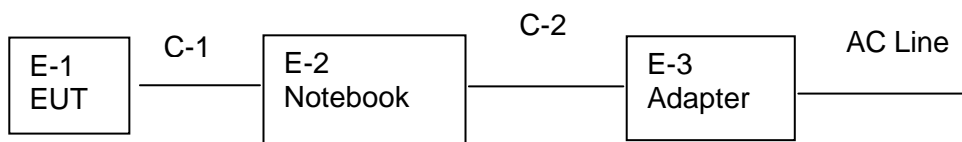
2.3 DESCRIPTION OF TEST SETUP

Mode 1:

CE:



RE:



2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	2.4GHz Wireless mouse receiver	N/A	SL-630010-BK	N/A	EUT
E-2	Notebook Computer	IBM	2366	N/A	
E-3	Adapter	IBM	08K8202	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	80cm	
C-2	NO	NO	80cm	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” means “shielded” “with core”; “NO” means “unshielded” “without core”.

2.5 MEASUREMENT INSTRUMENTS LIST

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	EMI Test Receiver	R&S	ESU8	100316	2015/10/25	2016/10/24
2	Double Ridged Horn Antenna (0.8GHz-18GHz)	R&S	HF907	100276	2015/11/01	2016/10/31
3	Log-periodic Dipole Antenna (30MHz-1GHz)	R&S	HL223	100435	2015/11/01	2016/10/31
4	Biconical Antenna (9K-30MHz)	R&S	HK116	100431	2015/10/25	2016/10/24
5	Pre-amplifier	Schwarzbeck	VULB 9163	9163-462	2016/04/12	2017/04/11
6	Signal Conditioning Unit	R&S	SCU-08	10008	2015/10/25	2016/10/24
7	Rod Antenna (9K-30MHz)	R&S	HFH2-Z6	100386	2015/11/01	2016/10/31
8	Pre-amplifier	R&S	SCU-01	10049	2015/10/25	2016/10/24
9	Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	2015/11/01	2016/10/31
10	Spectrum Analyzer	Agilent	E4407B	MY45109572	2015/11/01	2016/10/31

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESU8	100316	2015/10/25	2016/10/24
	Current Probe	R&S	EZ-17	100532	2015/10/25	2016/10/24
3	Two Line V-Network	R&S	ENV216	101109	2015/10/25	2016/10/24
4	Passive Voltage Probe	R&S	ESH2-Z3	100169	2015/10/25	2016/10/24
5	V-Network	R&S	ESH3-Z6	100694	2015/10/25	2016/10/24
6	V-Network	R&S	ESH3-Z6	100690	2015/10/25	2016/10/24
7	Artificial mains	R&S	ESH2-Z5	100309	2015/10/25	2016/10/24
8	Pulse Limiter	R&S	ESH3-Z2	101242	2015/10/25	2016/10/24

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

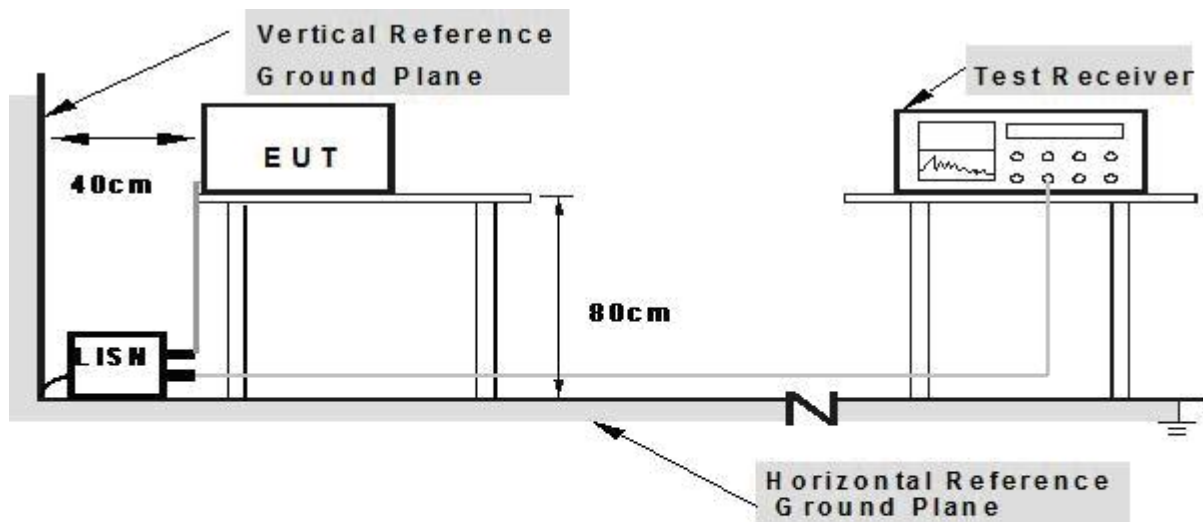
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



- Note: 1. Support units were connected to second LISN.**
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.5 TEST RESULTS

EUT :	2.4GHz Wireless mouse receiver	Model Name. :	SL-630010-BK
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2016-5-23
Test Mode :	Mode 1	Phase :	L
Test Voltage :	DC 5V from PC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.1660	49.46	10.45	59.91	65.15	-5.24	QP
0.2180	33.76	10.44	44.20	52.89	-8.69	AVG
0.9700	31.25	10.41	41.66	46.00	-4.34	AVG
1.2980	33.85	10.41	44.26	56.00	-11.74	QP
10.3700	30.71	10.63	41.34	60.00	-18.66	QP
10.3700	27.68	10.63	38.31	50.00	-11.69	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit

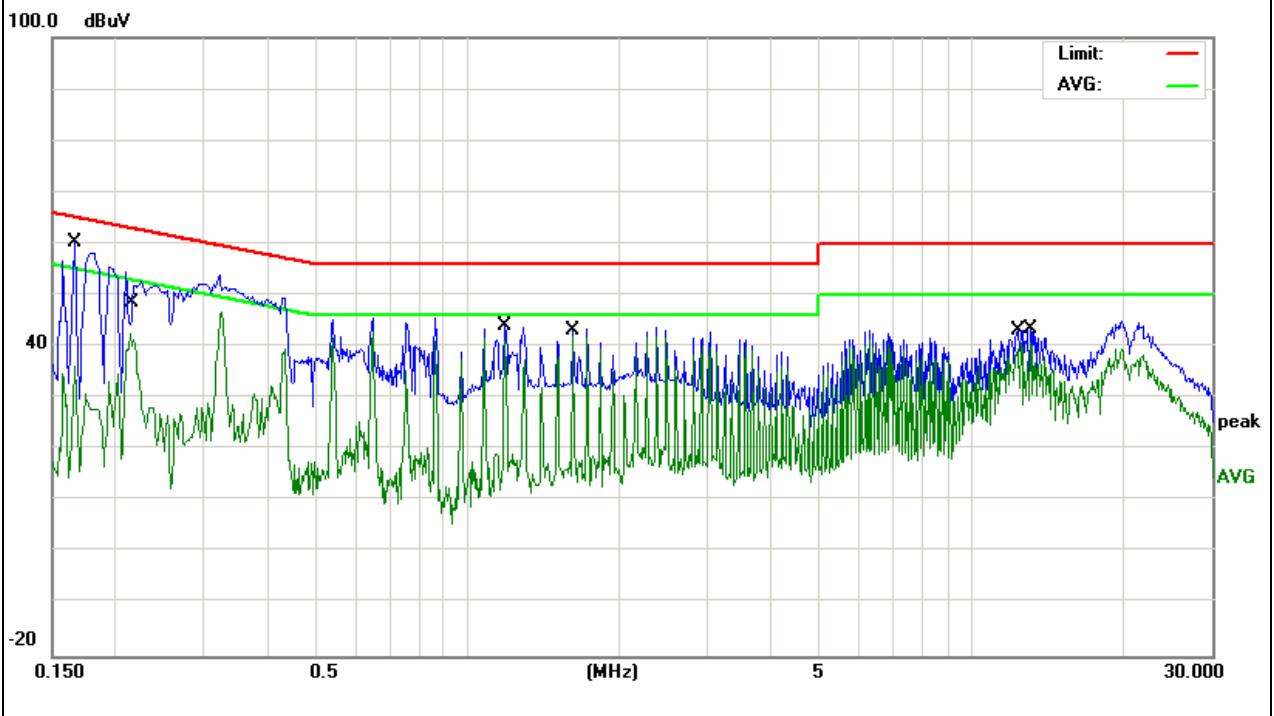


EUT :	2.4GHz Wireless mouse receiver	Model Name. :	SL-630010-BK
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2016-5-23
Test Mode :	Mode 1	Phase :	N
Test Voltage :	DC 5V from PC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.1660	49.81	10.34	60.15	65.15	-5.00	QP
0.2140	32.17	10.43	42.60	53.04	-10.44	AVG
1.1900	33.68	10.45	44.13	56.00	-11.87	QP
1.6220	31.61	10.44	42.05	46.00	-3.95	AVG
12.5340	30.03	10.71	40.74	50.00	-9.26	AVG
13.0740	32.76	10.72	43.48	60.00	-16.52	QP

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Notes:

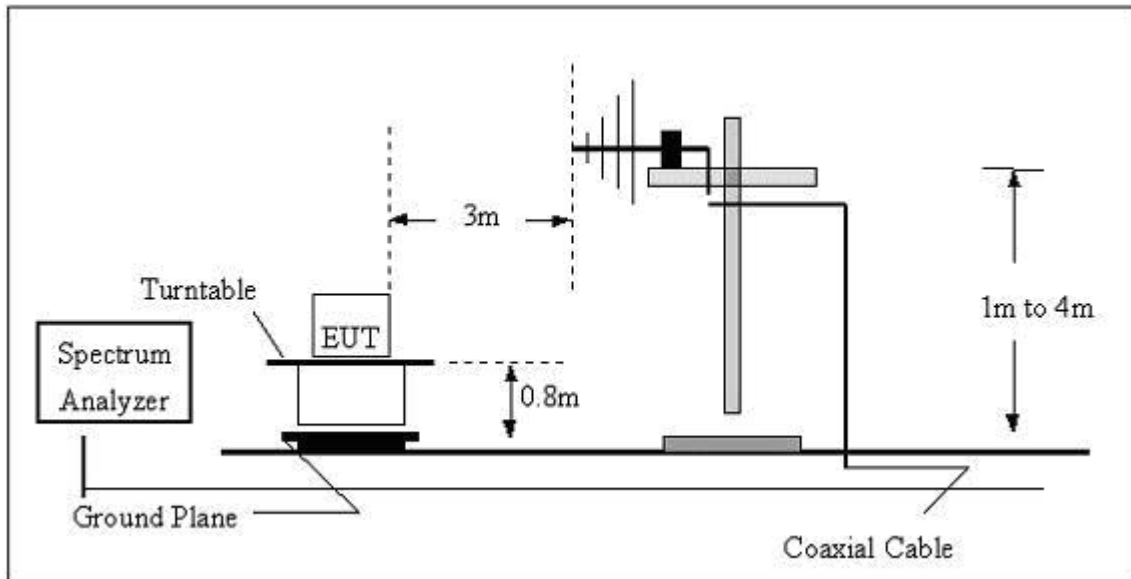
- (1) The limit for radiated test was performed according to as following:
FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

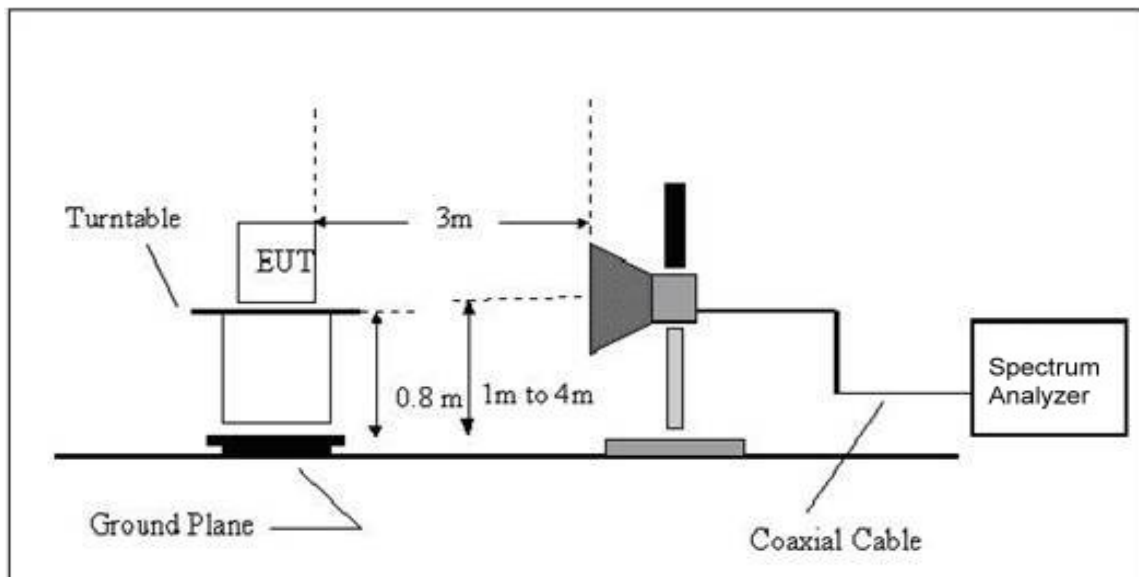
- a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

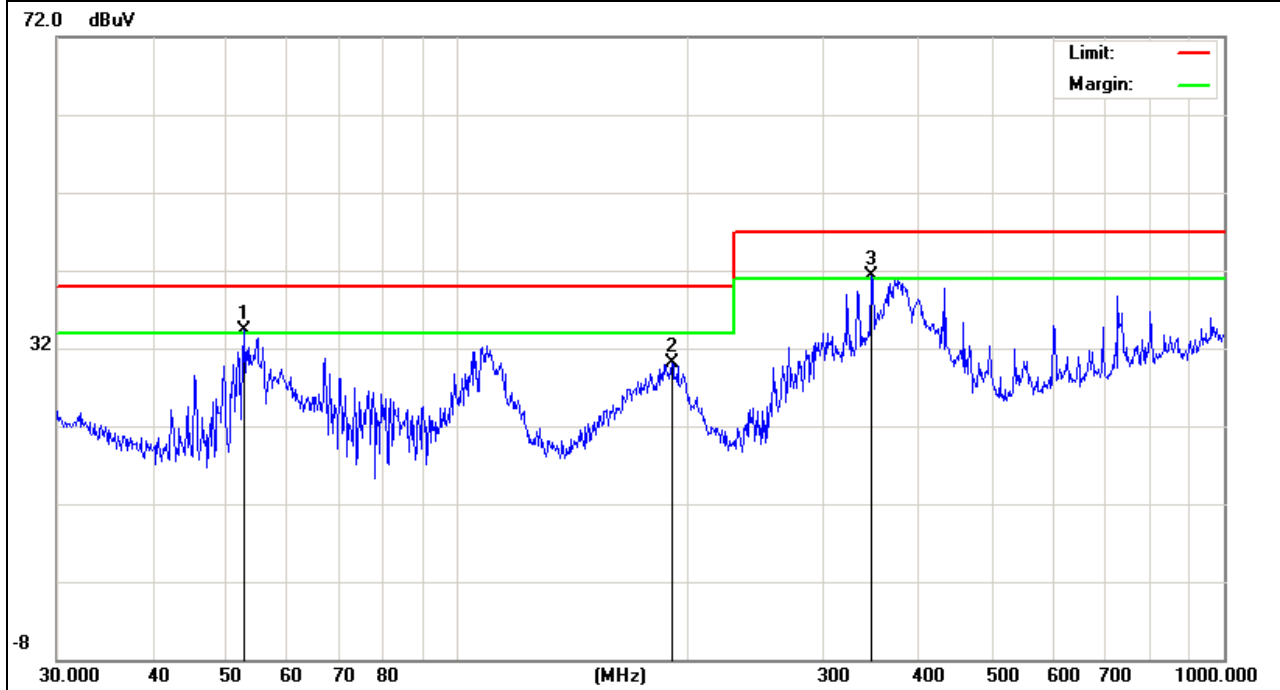
3.2.5 TEST RESULTS

EUT :	2.4GHz Wireless mouse receiver	Model Name :	SL-630010-BK
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2016-05-28
Test Mode :	Charging and discharging	Polarization :	Horizontal
Test Power :	DC 5V from PC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
52.7599	27.30	6.92	34.22	40.00	-5.78	QP
190.4050	21.46	8.74	30.20	40.00	-9.80	QP
346.8091	26.05	15.28	41.33	47.00	-5.67	QP

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Antenna Factor + Cable Loss.
3. N/A means All Data have pass Limit

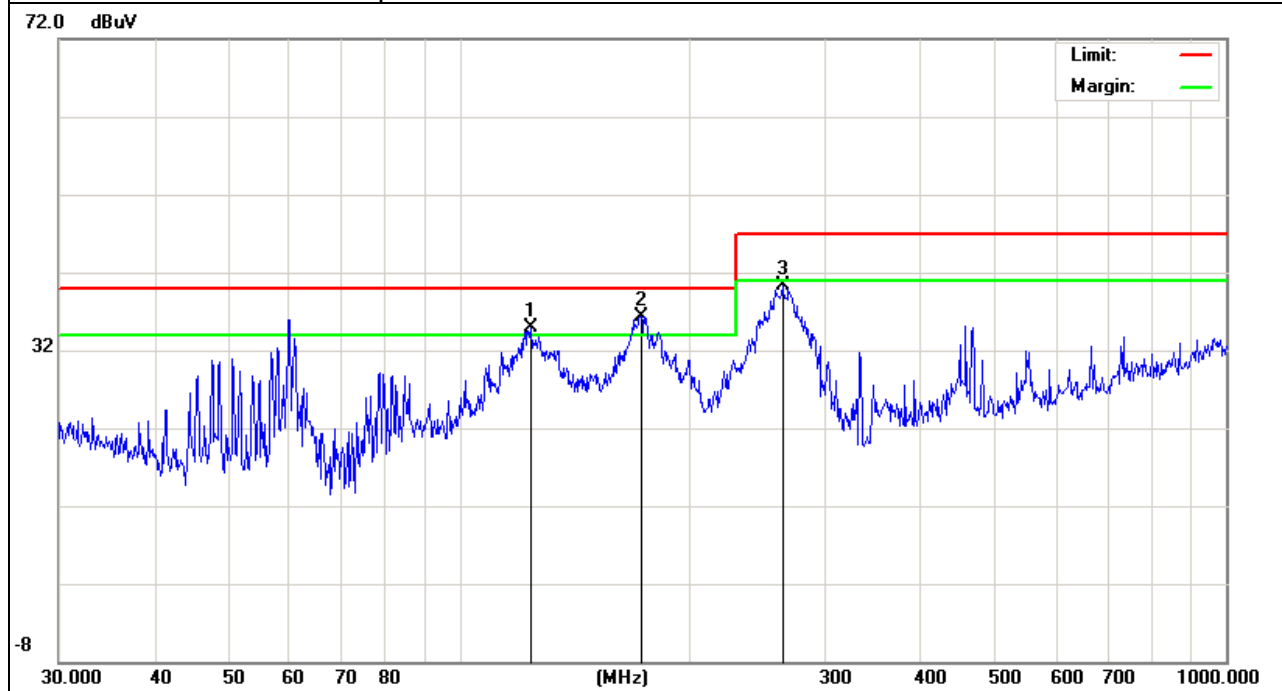


EUT :	2.4GHz Wireless mouse receiver	Model Name :	SL-630010-BK
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2016-05-28
Test Mode :	Charging and discharging	Polarization :	Vertical
Test Power :	DC 5V from PC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
123.6984	23.03	11.87	34.90	40.00	-5.10	QP
172.5988	26.55	9.85	36.40	40.00	-3.60	QP
263.8190	26.41	13.99	40.40	47.00	-6.60	QP

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Antenna Factor + Cable Loss.
3. N/A means All Data have pass Limit



3.2.6 TEST RESULTS(Above 1GHz)

EUT :	2.4GHz Wireless mouse receiver	Model Name :	SL-630010-BK
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2016-05-28

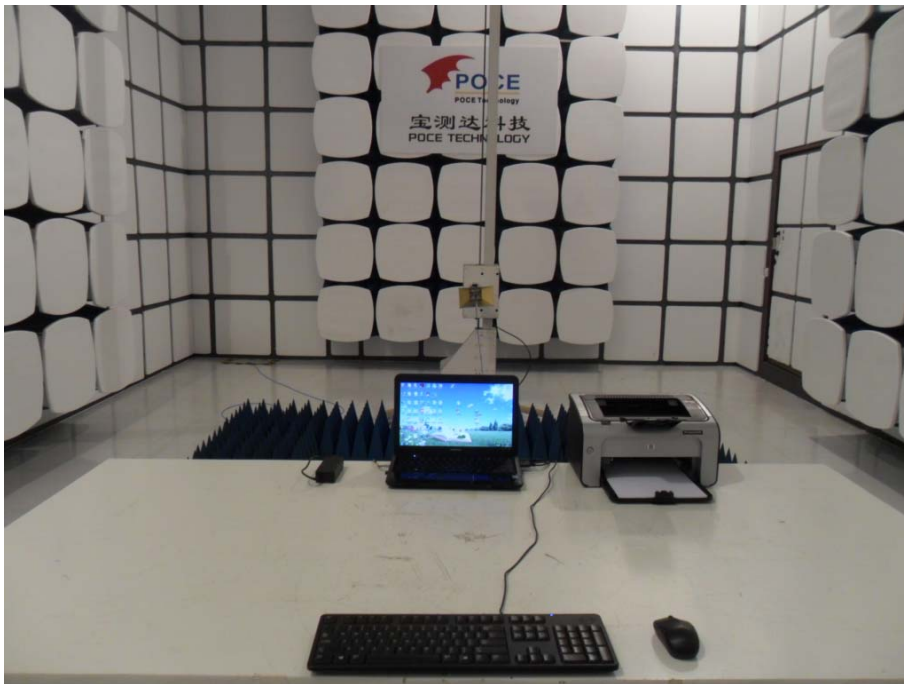
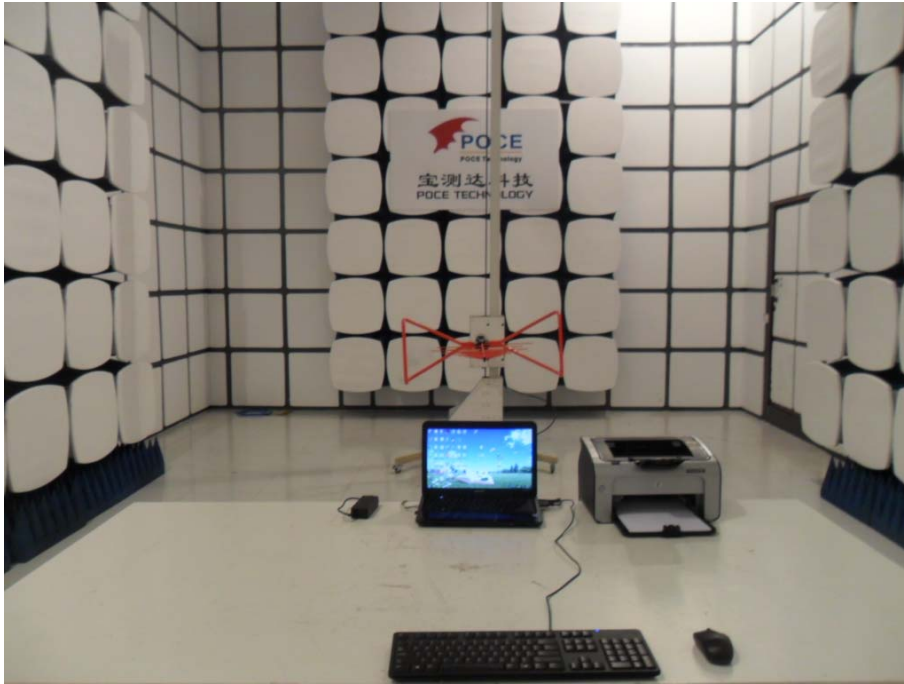
Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak margin (dBuV/m)	AV margin (dBuV/m)
					Peak (dBuV/m)	AV (dBuV/m)				
1097.45	H	57.54	41.28	5.15	62.69	46.43	74.00	54.00	-11.31	-7.57
2866.31	H	52.23	38.29	9.45	61.68	47.74	74.00	54.00	-12.32	-6.26
N/A										
1069.67	V	52.67	37.55	5.15	57.82	42.70	74.00	54.00	-16.18	-11.30
2896.73	V	49.35	32.14	9.45	58.80	41.59	74.00	54.00	-15.20	-12.41
N/A										

Notes:

1. Measuring frequencies from 1 GHz to 13GHz.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode of the emission shown in Actual FS column.
3. The frequency that above 3GHz is mainly from the environment noise.

4. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos

