Shenzhen Certification Technology Service Co., Ltd
2F, Building B, East Area of Nanchang Second Industrial Zone, Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China.

TEST REPORT

FCC ID: 2AAGDMSD-8010

Applicant	:	**ShenZhen Master Digital Technology Developing Co., Limited**
Address	:	**3rd Floor Bulding C, HuaFeng Second Industrial Park HangCheng Road GuShu Bao'an ShenZhen China**

Equipment under Test (EUT):

Name : 2.4G wireless empty mouse remote controller
Model : MSD-8010

Standards : FCC PART 15, SUBPART C : 2012 (Section 15.249)

Report No. : STI130504068

Date of Test : May 10-14, 2013

Date of Issue : May 15, 2013

Test Result :	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above

Authorized Signature

(Mark Zhu)
General Manager

The manufacture should ensure that all the products in series production are in conformity with the product sample detailed in this report.

If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of Shenzhen Certification Technology Service Co., Ltd. Or test done by Shenzhen Certification Technology Service Co., Ltd. Approvals in connection with, distribution or use of the product described in this report must be approved by Shenzhen Certification Technology Service Co., Ltd. Approvals in writing.

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Description **Page**

1 General Information

1.1 Description of Device (EUT)

Trade Name	:	Master 美仕达
EUT	:	2.4G wireless empty mouse remote controller
Model No.	:	MSD-8010
Type of Antenna	:	PCB Antenna
Antenna Specification	:	1.5 dBi
Operation Frequency	:	2411-2476MHz
Channel number	:	16
Modulation type	:	GFSK
Power Supply	:	DC 3.7V form battery or DC 5V From PC
Applicant	:	ShenZhen Master Digital Technology Developing Co.,Limited
Address	:	3rd Floor Bulding C, HuaFeng Second Industrial Park HangCheng Road GuShu Bao'an ShenZhen China
Manufacturer	:	ShenZhen Master Digital Technology Developing Co.,Limited
Address	:	3rd Floor Bulding C, HuaFeng Second Industrial Park HangCheng Road GuShu Bao'an ShenZhen China

1.2 Accessories of device (EUT)

Accessories 1 : Notebook
M/N : 4552G

1.3 Description of Test Facility

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
FCC Registered No.:197647
IC Registered No.: 8258B

2 EMC Equipment List

2.1 Assistant equipment used for test

Description	:	Notebook
Manufacturer	:	acer
Model No.	:	4552G

2.2 Block Diagram

2.3 Test mode

The test control to EUT work in Continuous TX mode, and select test channel, wireless mode

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
GFSK	Low :CH1	2411
	Middle: CH8	2440
	High: CH16	2476

Full channel:			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2411	9	2447
2	2414	10	2451
3	2417	11	2455
4	2424	12	2459
5	2429	13	2467
6	2433	14	2469
7	2436	15	2473
8	2440	16	2476

2.4 Test Conditions

Temperature range	21-25℃
Humidity range	40-75%
Pressure range	86-106kPa

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

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.50dB	
Uncertainty for Radiation Emission test in 3m chamber (Below 30MHz)	2.13 dB	Polarize: V
	2.57dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.04dB	Polarize: V
	3.02dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	3.84dB	Polarize: H
	3.56dB	Polarize: V
Uncertainty for radio frequency	1×10-9	
Uncertainty for conducted RF Power	0.65dB	
Uncertainty for temperature	0.6℃	
Uncertainty for humidity	3%	
Uncertainty for DC and low frequency voltages	0.06%	

2.6 Test Equipment

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	Nov. 16, 12	1Year
Spectrum analyzer	Agilent	E4407B	MY49510055	Oct. 31, 12	1Year
Receiver	R&S	ESCI	100492	Oct. 31, 12	1Year
Receiver	R&S	ESCI	101202	Oct. 31, 12	1Year
Bilog Antenna	SCHWARZBECK	VULB 9168	VULB9168-438	Mar.20, 13	1Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Oct. 31, 12	1Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Mar.20, 13	1Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	Mar.20, 13	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170 D(1432)	Mar.20, 13	1Year
Cable	Resenberger	N/A	No.1	Oct. 31, 12	1Year
Cable	SCHWARZBECK	N/A	No.2	Oct. 31, 12	1Year
Cable	SCHWARZBECK	N/A	No.3	Oct. 31, 12	1Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	Oct. 31, 12	1Year
Pre-amplifier	Quietek	AP-180C	CHM-060201 2	Oct. 31, 12	1Year

3 Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a 50ｕH LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25℃ with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3MHz above 1 GHz. The ambient temperature of the EUT was 25℃ with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.
Example:
Freq (MHz) METER READING + ACF + CABLE = FS
33.20 dBuV + 10.36 dB + 0.9 dB= 44.46 dBuV/m @ 3m
ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.

4 Summary of Measurement

Test Item	Test Requirement	Stanadard Paragraph	Result
Spurious Emission	FCC PART 15: 2012	Section 15.249&15.209	Compliance
Conduction Emission	FCC PART 15: 2012	Section 15.207	Compliance
Occupied bandwidth	FCC PART 15: 2012	Section 15.249	Compliance
Band edge Requirement	FCC PART 15: 2012	Section 15.249	Compliance
Antenna Requirement	FCC PART 15: 2012	Section 15.203	Compliance

Note: EUT can by powered with inside notebook, according to exploratory test, when powered by notebook have worse emissions, and also can make sure EUT have enough power for wireless work, so all the final test were performed with notebook.

5 POWER LINE CONDUCTED EMISSION

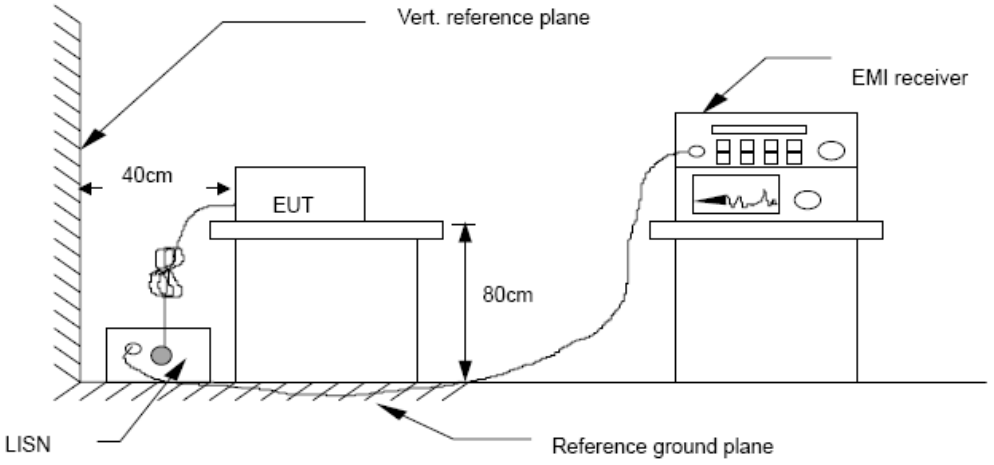
5.1 Conducted Emission Limits(15.209&249)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.The limit decreases in line with the logarithm of the frequency in the rang of 0.15 to 0.50 MHz.

5.2 Test Setup



5.3 Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4-2003 on Conducted Emission Measurement. m

The bandwidth of test receiver (R & S ESCS30) is set at 9 kHz.

5.4 Test Results

PASS

Detailed information please see the following page.

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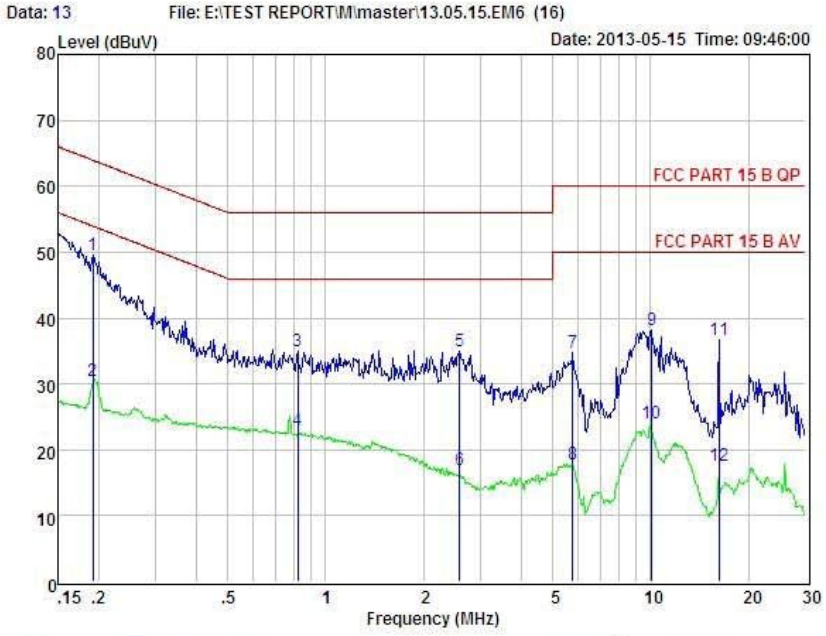

Condition : FCC PART 15 B QP POL: NEUTRAL Temp:24 ℃ Hum:56 %
EUT : 2.4G wireless empty mouse remote controller
Model No : MSD-8010
Test Mode : Link Mode
Power : DC 5V From PC AC 120V/60Hz
Test Engineer: Reak
Remark :

Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.192	39.61	0.03	-9.72	0.10	49.46	63.93	-14.47	QP
2	0.192	20.61	0.03	-9.72	0.10	30.46	53.93	-23.47	Average
3	0.822	25.08	0.02	-9.71	0.10	34.91	56.00	-21.09	QP
4	0.822	13.08	0.02	-9.71	0.10	22.91	46.00	-23.09	Average
5	2.581	25.08	0.06	-9.70	0.11	34.95	56.00	-21.05	QP
6	2.581	7.08	0.06	-9.70	0.11	16.95	46.00	-29.05	Average
7	5.774	24.93	0.11	-9.63	0.14	34.81	60.00	-25.19	QP
8	5.774	7.93	0.11	-9.63	0.14	17.81	50.00	-32.19	Average
9	10.072	28.16	0.18	-9.52	0.21	38.07	60.00	-21.93	QP
10	10.072	14.16	0.18	-9.52	0.21	24.07	50.00	-25.93	Average
11	16.226	26.74	0.25	-9.41	0.27	36.67	60.00	-23.33	QP
12	16.226	7.74	0.25	-9.41	0.27	17.67	50.00	-32.33	Average

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

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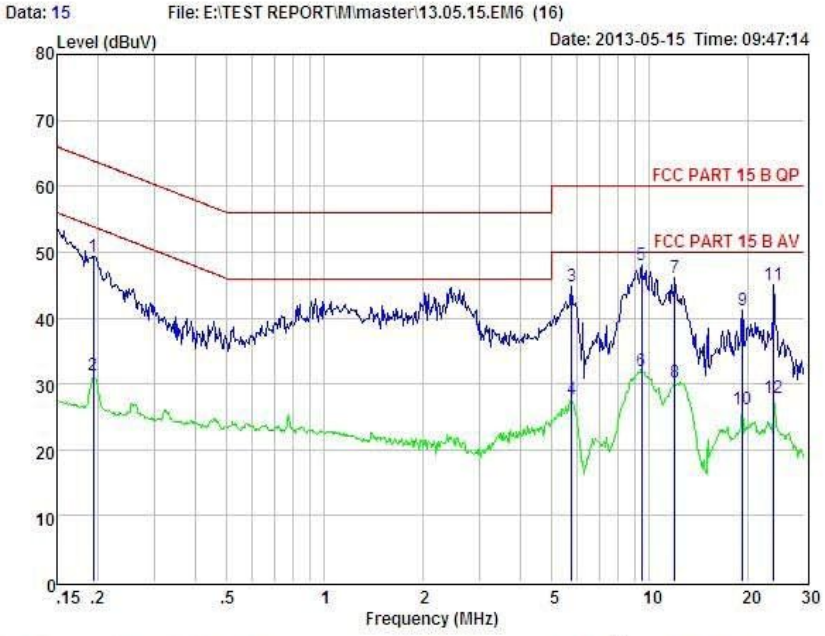


Condition : FCC PART 15 B QP POL: LINE Temp:24 ℃ Hum:56 %
EUT : 2.4G wireless empty mouse remote controller
Model No : MSD-8010
Test Mode : Link Mode
Power : DC 5V From PC AC 120V/60Hz
Test Engineer: Reak
Remark :

Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.194	39.56	0.03	-9.72	0.10	49.41	63.84	-14.43	QP
2	0.194	21.56	0.03	-9.72	0.10	31.41	53.84	-22.43	Average
3	5.774	34.88	0.11	-9.63	0.14	44.76	60.00	-15.24	QP
4	5.774	17.88	0.11	-9.63	0.14	27.76	50.00	-22.24	Average
5	9.451	38.28	0.17	-9.38	0.19	48.02	60.00	-11.98	QP
6	9.451	22.28	0.17	-9.38	0.19	32.02	50.00	-17.98	Average
7	11.996	36.20	0.26	-9.46	0.22	46.14	60.00	-13.86	QP
8	11.996	20.20	0.26	-9.46	0.22	30.14	50.00	-19.86	Average
9	19.326	30.97	0.30	-9.47	0.34	41.08	60.00	-18.92	QP
10	19.326	15.97	0.30	-9.47	0.34	26.08	50.00	-23.92	Average
11	24.142	34.51	0.44	-9.57	0.45	44.97	60.00	-15.03	QP
12	24.142	17.51	0.44	-9.57	0.45	27.97	50.00	-22.03	Average

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

6 Radiation Emission

6.1 Radiation Emission Limits(15.209&249 (a))

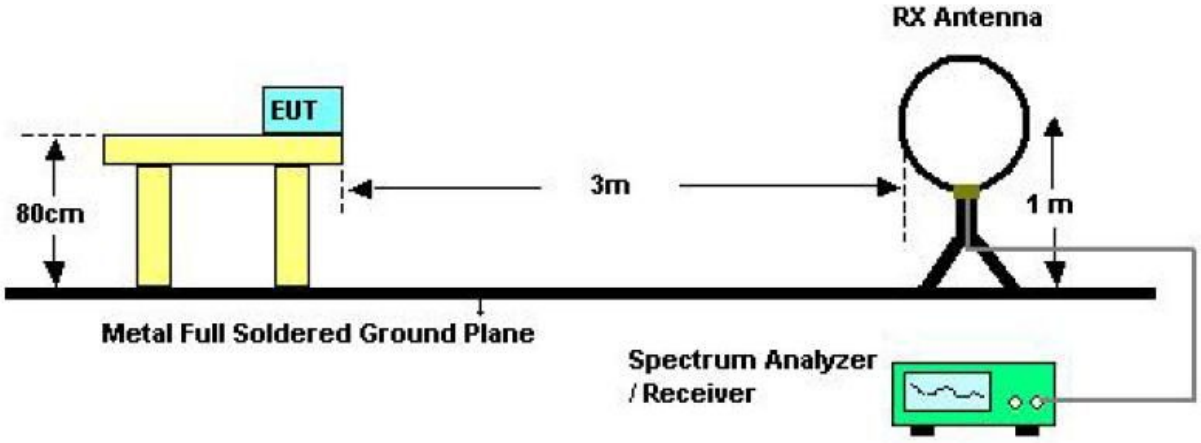
Frequency (MHZ)	**Field Strength Limits at 3 metres (watts,e.i.r.p.)**		
	uV/m	dB uV/m	Measurement distance(m)
0.009-0.490	2400/F(kHz)	XX	300
0.490-1.705	24000/F(kHz)	XX	30
1.705-30	30	29.5	30
30~88	100(3nW)	40	3
88~216	150(6.8nW)	43.5	3
216~960	200(12nW)	46	3
Above960	500(75nW)	54	3
Carrier frequency		93.97(AV)	3
Carrier frequency		113.97(PK)	3

NOTE:

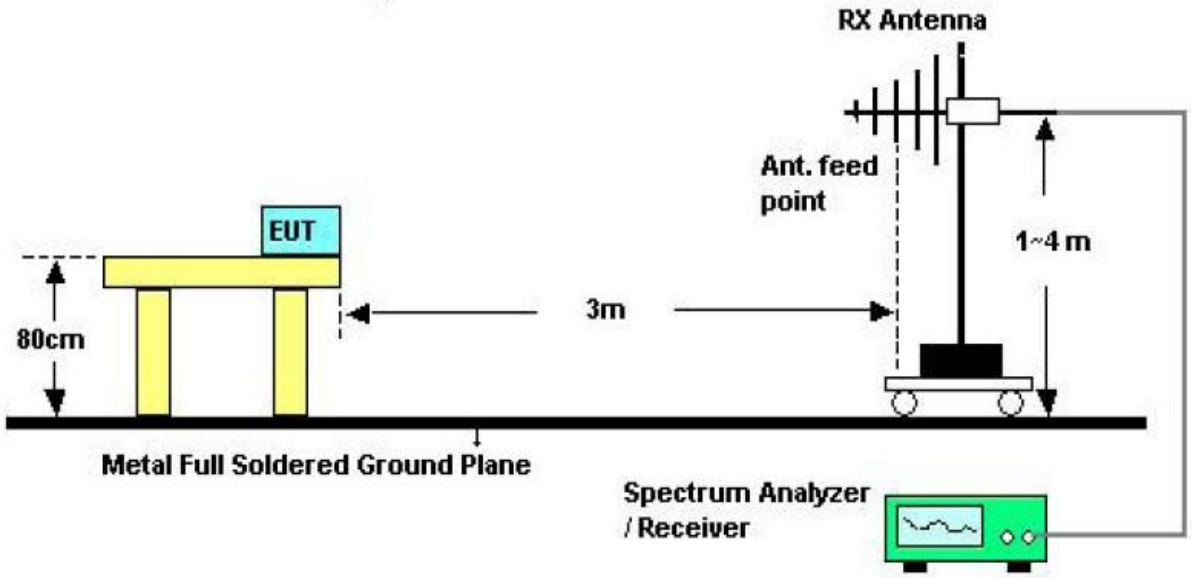
a) The tighter limit applies at the band edges.
b) Emission Level(dB uV/m)=20log Emission Level(Uv/m)

6.2 Test Setup

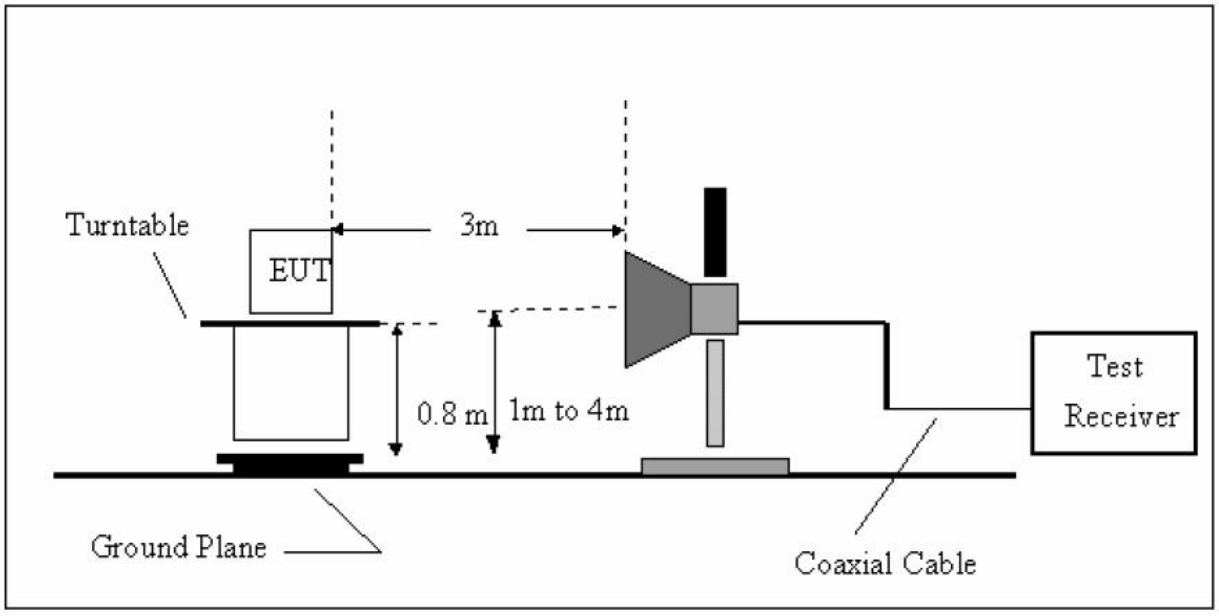
See the next page



Below 30MHZ Test Setup



Above 30MHZ Test Setup



Above 1GHZ Test Setup

6.3 Test Procedure

a) The measureing distance of 3m shall be used for measurements at frequency up to 1GHZ and above 1GHZ, The EUT was placed on a rotating 0.8 m high above ground,The table was rotated 360 degrees to determine the position of the highest radiation
b) The Test antenna shall vary between 1m and 4m,Both Horizontal and Vertical antenna are set ot make measurement.
c) The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range.Significent Peaks are then marked.and then Qusia Peak Detector mode remeasured
d) If Peak value comply with QP limit Below 1GHZ.The EUT deemed to comply with QP limit.But the Peak value and average value both need to comply with applicable limit above 1GHZ.
e) For the actual test configuration,please see the test setup photo.

6.4 Test Equipment Setting For emission test.

For Peak setting

9KHZ~150KHZ	RBW 200HZ	VBW1KHZ
150KHZ~30MHZ	RBW 9KHZ	VBW 30KHZ
30MHZ~1GHZ	RBW 120KHZ	VBW 300KHZ
Above 1GHZ	RBW 1MHZ	VBW 3MHZ

For average setting:

Above 1GHz	RBW 1MHz	VBW 10Hz

6.5 Test Condition

Continual Transmitting in maximum power.

6.6 Test Result

PASS.

We have scanned the 10th harmonic from 9KHz to the EUT.
Detailed information please see the following page.

From **9KHz to 30MHz**: Conclusion: **PASS**

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

From **30MHz to 1000MHz**: Conclusion: **PASS**

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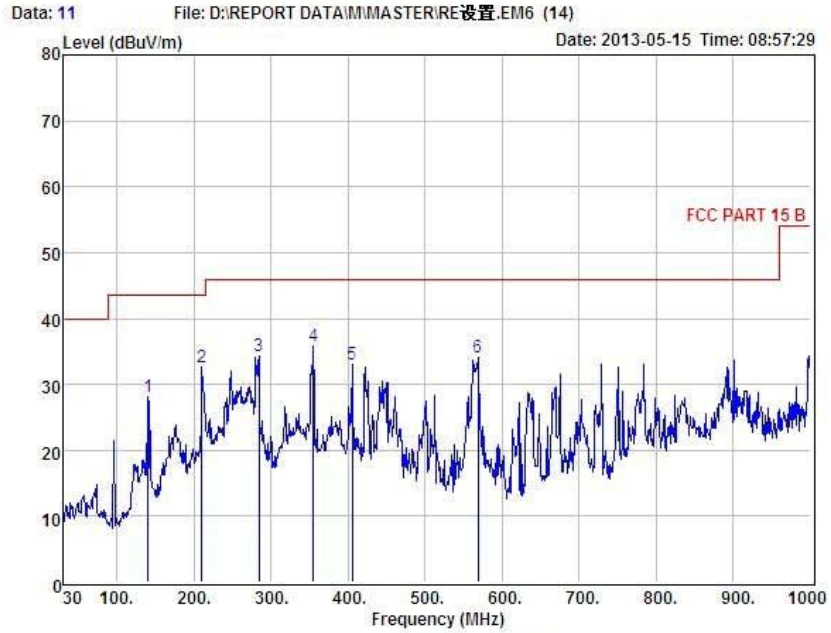


```
Condition      : FCC PART 15 B        3m       POL: HORIZONTAL
EUT            : 2.4G wireless empty mouse remote controller
Model No       : MSD-8010
Test Mode      : Link Mode
Power          : DC 5V From PC AC 120V/60Hz
Test Engineer  : Reak
Remark         :
Temp           : 24.2℃
Hum            : 54%
```

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	140.58	41.12	13.51	26.90	0.27	28.00	43.50	-15.50	QP
2	210.42	48.99	10.07	27.02	0.62	32.66	43.50	-10.84	QP
3	284.14	48.36	12.45	27.16	0.64	34.29	46.00	-11.71	QP
4	354.95	48.52	13.91	27.28	0.63	35.78	46.00	-10.22	QP
5	405.39	44.83	14.89	27.44	0.81	33.09	46.00	-12.91	QP
6	568.35	42.76	17.70	27.75	1.46	34.17	46.00	-11.83	QP

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

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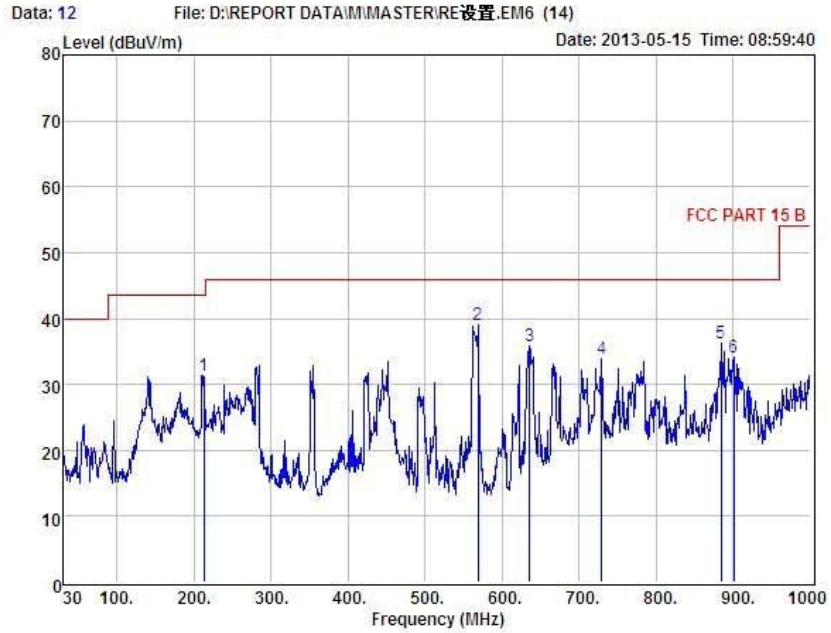


Condition : FCC PART 15 B 3m POL: VERTICAL
EUT : 2.4G wireless empty mouse remote controller
Model No : MSD-8010
Test Mode : Link Mode
Power : DC 5V From PC AC 120V/60Hz
Test Engineer : Reak
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	212.79	47.68	10.18	27.03	0.57	31.40	43.50	-12.10	QP
2	568.68	47.54	17.70	27.75	1.46	38.95	46.00	-7.05	QP
3	635.40	43.54	18.92	27.82	1.25	35.89	46.00	-10.11	QP
4	729.21	40.33	20.02	27.71	1.29	33.93	46.00	-12.07	QP
5	883.95	41.09	21.43	27.66	1.41	36.27	46.00	-9.73	QP
6	900.39	38.83	21.67	27.64	1.31	34.17	46.00	-11.83	QP

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

From **1000MHz to 25GHz**: Conclusion: **PASS**

Radiated Emissions Result of Inside band (2411MHz)

EUT	2.4G wireless empty mouse remote controller	**Model Name**	MSD-8010
Temperature	25°C	**Relative Humidity**	56%
Pressure	960hPa	**Test voltage**	DC 5V supply by Notebook
Test Mode	TX Low	**Antenna polarization**	Horizontal/Vertical

Channel Low(2411MHz)									
Fre. MHz	**Plority H/V**	**Reading dBuV**	**Antenna Factor dB**	**Cable Loss dB**	**Amplifier Gain dB**	**Correct Factor dB**	**Measure Result dBuV/m**	**Limit dBuV/m**	**Margin dB**
2411	H	85.47（PK）	27.61	3.94	34.97	-3.42	82.05	113.97	-31.92
2411	H	78.94 (AV)	27.61	3.94	34.97	-3.42	75.52	93.97	-18.45
--	H	--	--	--	--	--	--	--	--
2411	V	85.35（PK）	27.61	3.94	34.97	-3.42	81.93	113.97	-32.04
2411	V	78.25(AV)	27.61	3.94	34.97	-3.42	74.83	93.97	-19.14
--	V	--	--	--	--	--	--	--	--

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)**	**Margin (dB)**	**Remark**
					Peak (dBuV/m)	**AV (dBuV/m)**				
1318.44	H	47.59	---	-5.84	41.75	---	74.00	54.00	-12.25	Peak
1657.22	H	44.97	---	-4.65	40.32	---	74.00	54.00	-13.68	Peak
2139.66	H	46.62	---	-4.36	42.26	---	74.00	54.00	-11.74	Peak
4822.77	H	38.65	---	2.76	41.41	---	74.00	54.00	-12.59	Peak
N/A										
1486.55	V	46.11	---	-5.27	40.84	---	74.00	54.00	-13.16	Peak
2073.22	V	43.62	---	-4.49	39.13	---	74.00	54.00	-14.87	Peak
3462.55	V	42.36	---	-0.95	41.41	---	74.00	54.00	-12.59	Peak
4822.77	V	39.50		2.76	42.26	---	74.00	54.00	-11.74	Peak
N/A										

Notes: 1 --Means other frequency and mode comply with standard requirements and at least have 20dB margin.
Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain
Measurement Result=Reading + Correct Factor, Margin=Measurement Result-Limit
2 –Spectrum setting:
a. Peak setting 30MHz-1GHz,RBW=120KHz,VBW=300KHz.
b. AV setting 30MHz-1GHz,RBW=1MHz,VBW=10Hz.

Radiated Emissions Result of Inside band (2440MHz)

EUT	2.4G wireless empty mouse remote controller	Model Name	MSD-8010
Temperature	25°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 5V supply by Notebook
Test Mode	TX Mid	Antenna polarization	Horizontal/Vertical

Channel Mid(2440 MHz)									
Fre. MHz	Plority H/V	Reading dBuV	Antenna Factor dB	Cable Loss dB	Amplifier Gain dB	Correct Factor dB	Measure Result dBuV/m	Limit dBuV/m	Margin dB
2440	H	87.53（PK）	27.60	3.97	34.97	-3.40	84.13	113.97	-29.84
2440	H	80.43 (AV)	27.60	3.97	34.97	-3.40	77.03	93.97	-16.94
--	H	--	--	--	--	--	--	--	--
2440	V	89.21（PK）	27.60	3.97	34.97	-3.40	85.81	113.97	-28.16
2440	V	82.56 (AV)	27.60	3.97	34.97	-3.40	79.16	93.97	-14.81
--	V	--	--	--	--	--	--	--	--

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)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1416.44	H	45.77	---	-5.29	40.48	---	74.00	54.00	-13.52	Peak
1832.54	H	45.70	---	-4.16	41.54	---	74.00	54.00	-12.46	Peak
2753.33	H	43.55	---	-2.38	41.17	---	74.00	54.00	-12.83	Peak
4880.77	H	39.34	---	2.91	42.25	---	74.00	54.00	-11.75	Peak
N/A										
1273.55	V	46.32	---	-5.96	40.36	---	74.00	54.00	-13.64	Peak
1678.44	V	47.08	---	-5.65	41.43	---	74.00	54.00	-12.57	Peak
2136.55	V	44.81	---	-4.36	40.45	---	74.00	54.00	-13.55	Peak
4880.77	V	39.00		2.91	41.91	---	74.00	54.00	-12.09	Peak
N/A										

Notes: 1 --Means other frequency and mode comply with standard requirements and at least have 20dB margin.
Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain
Measurement Result=Reading + Correct Factor
Margin=Measurement Result-Limit

2 –Spectrum setting:
a. Peak setting 30MHz-1GHz,RBW=120KHz,VBW=300KHz.
b. AV setting 30MHz-1GHz,RBW=1MHz,VBW=10Hz.

Radiated Emissions Result of Inside band (2476MHz)

EUT	2.4G wireless empty mouse remote controller	**Model Name**	MSD-8010
Temperature	25°C	**Relative Humidity**	56%
Pressure	960hPa	**Test voltage**	DC 5V supply by Notebook
Test Mode	TX High	**Antenna polarization**	Horizontal/Vertical

Channel High(2476MHz)									
Fre. MHz	**Plority H/V**	**Reading dBuV**	**Antenna Factor dB**	**Cable Loss dB**	**Amplifier Gain dB**	**Correct Factor dB**	**Measure Result dBuV/m**	**Limit dBuV/m**	**Margin dB**
2476	H	88.51（PK）	27.59	4.00	34.97	-3.38	85.13	113.97	-28.84
2476	H	82.17 (AV)	27.59	4.00	34.97	-3.38	78.79	93.97	-15.18
--	H	--	--	--	--	--	--	--	--
2476	V	91.77（PK）	27.59	4.00	34.97	-3.38	88.39	113.97	-25.58
2476	V	84.29 (AV)	27.59	4.00	34.97	-3.38	80.91	93.97	-13.06
--	V	--	--	--	--	--	--	--	--

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)**	**Margin (dB)**	**Remark**
					Peak (dBuV/m)	**AV (dBuV/m)**				
1566.77	H	46.49	---	-5.07	41.42	---	74.00	54.00	-12.58	Peak
2354.33	H	46.12	---	-4.59	41.53	---	74.00	54.00	-12.47	Peak
3658.22	H	40.82	---	-0.38	40.44	---	74.00	54.00	-13.56	Peak
4952.44	H	38.48	---	3.48	41.96	---	74.00	54.00	-12.04	Peak
N/A										
1289.22	V	48.07	---	-5.96	42.11	---	74.00	54.00	-11.89	Peak
1963.55	V	45.91	---	-4.64	41.27	---	74.00	54.00	-12.73	Peak
2675.33	V	43.26	---	-0.94	42.32	---	74.00	54.00	-11.68	Peak
4952.44	V	39.48		3.48	42.96	---	74.00	54.00	-11.04	Peak
N/A										

Notes: 1 --Means other frequency and mode comply with standard requirements and at least have 20dB margin.
Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain
Measurement Result=Reading + Correct Factor
Margin=Measurement Result-Limit

2 –Spectrum setting:
a. Peak setting 30MHz-1GHz,RBW=120KHz,VBW=300KHz.
b. AV setting 30MHz-1GHz,RBW=1MHz,VBW=10Hz.

7 Occupied bandwidth

7.1 Test limit

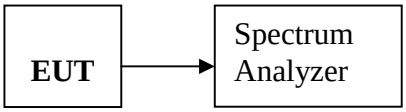
Please refer section15.249

7.2 Method of measurement

a)The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

b)The test receiver RBW set 30KHZ,VBW set 30KHZ,Sweep time set auto.

7.3 Test Setup

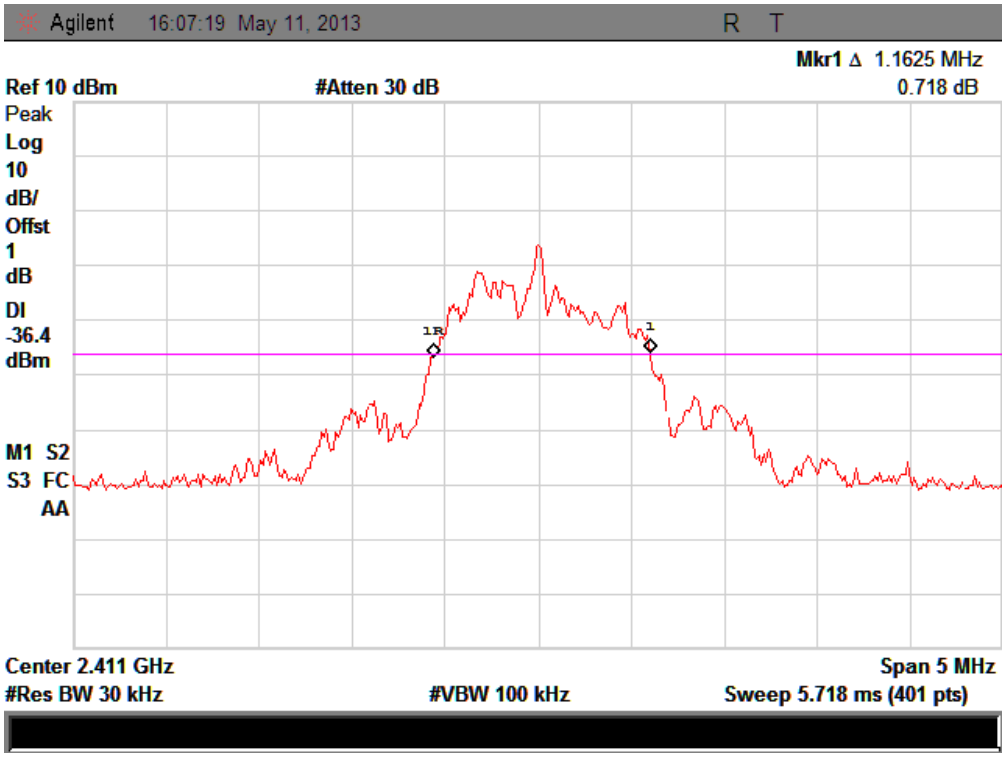


7.4 Test Results

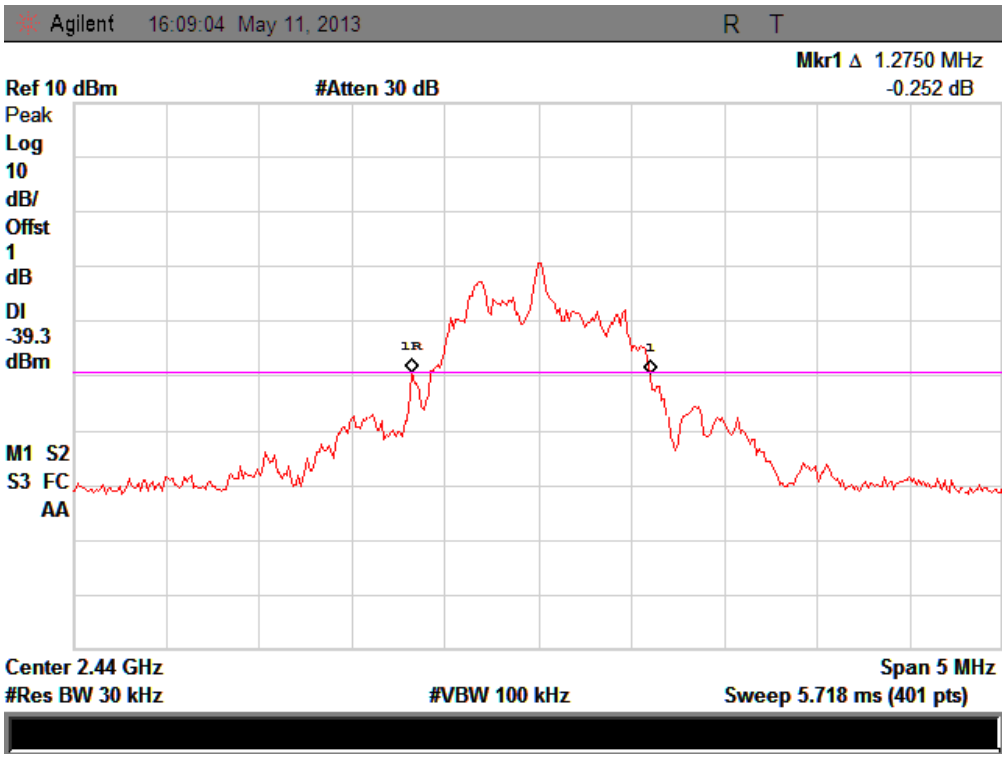
Detailed information please see the following page.

Frequency	20dB bandwidth
Low :CH1: 2411MHz	1.1625MHz
Middle: CH40: 2440MHz	1.2750MHz
High: CH79:2476MHz	1.1625MHz

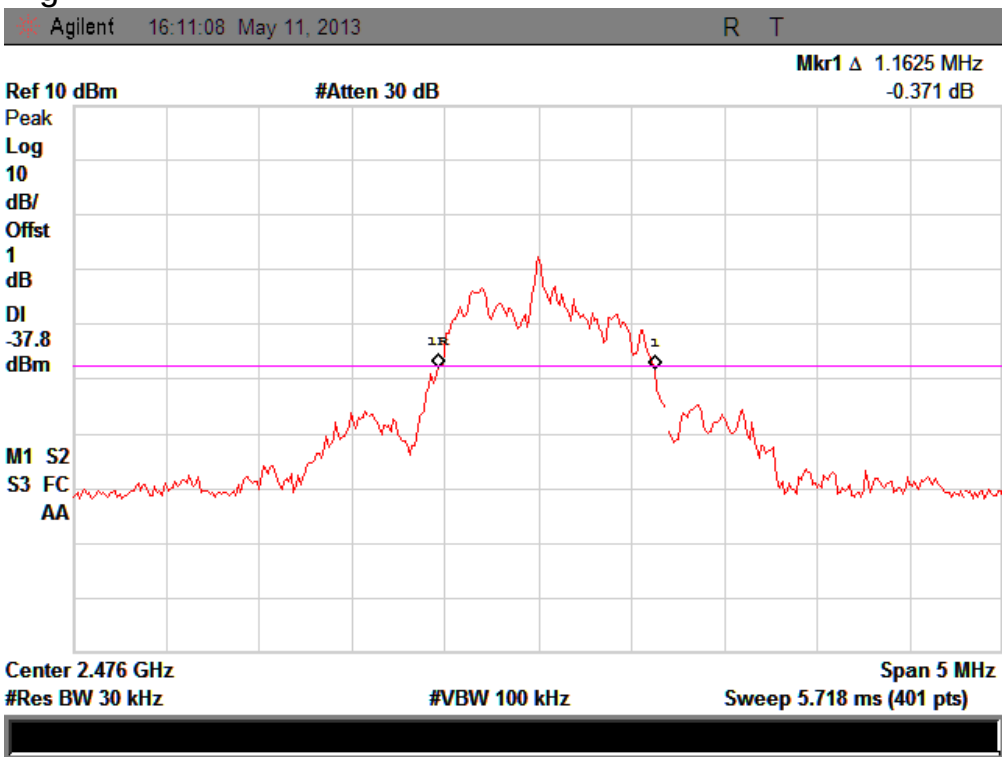
CH Low:


Agilent 16:07:19 May 11, 2013
R T
Mkr1 Δ 1.1625 MHz
0.718 dB
Ref 10 dBm
#Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
Dl
-36.4
dBm
M1 S2
S3 FC
AA
1R
1
Center 2.411 GHz
Span 5 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 5.718 ms (401 pts)

CH Mid:


Agilent 16:09:04 May 11, 2013
R T
Mkr1 Δ 1.2750 MHz
-0.252 dB
Ref 10 dBm
#Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
Dl
-39.3
dBm
M1 S2
S3 FC
AA
1R
1
Center 2.44 GHz
Span 5 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 5.718 ms (401 pts)

CH High:


Agilent 16:11:08 May 11, 2013
R T
Mkr1 Δ 1.1625 MHz
-0.371 dB
Ref 10 dBm
#Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
Dl
-37.8
dBm
M1 S2
S3 FC
AA
1R
1
Center 2.476 GHz
Span 5 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 5.718 ms (401 pts)

8 Band Edge Check

8.1 Test limit

Please refer section15.249 and section 15.205.

249(d) 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.

249(e) As show in section 15.35(b), for frequencies above 1000MHz,the above field strength limits in paragraphs (a) and (b) of this section 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. For point-to-point operation under paragraph (b) of this section, the peak filed strength shall not exceed 2500 millivolts/meter at 3meters along the antenna azimuth.

8.2 Test Procedure

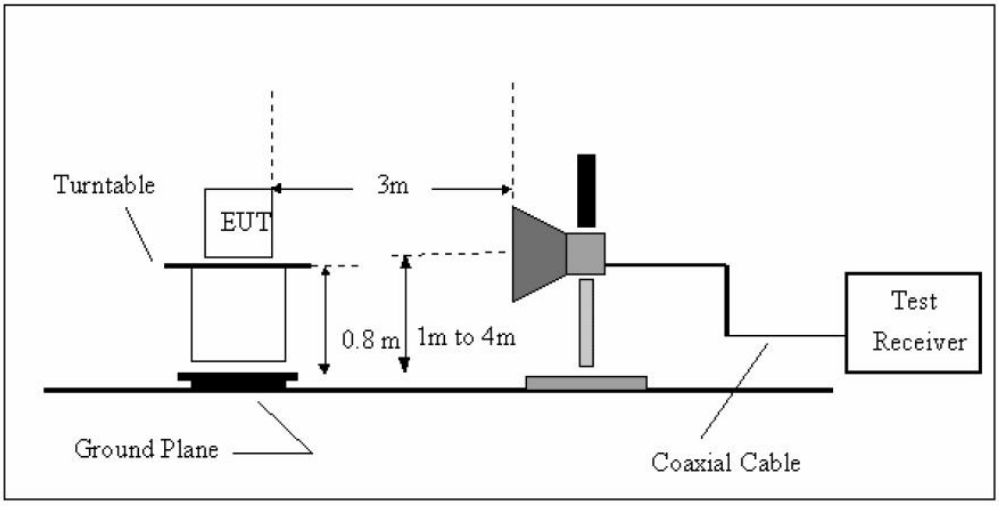
8.2.1. The measuring distance of 3m shall be used for measurements at frequency above 1GHZ, The EUT was placed on a rotating 0.8 m high above ground, The table was rotated 360 degrees to determine the position of the highest radiation.

8.2.2. The Test antenna shall vary between 1m and 4m,Both Horizontal and Vertical antenna are set ot make measurement.

8.2.3. 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 AVG Detector mode premeasured

8.2.4. For the actual test configuration, please see the test setup photo.

8.3 Test Setup



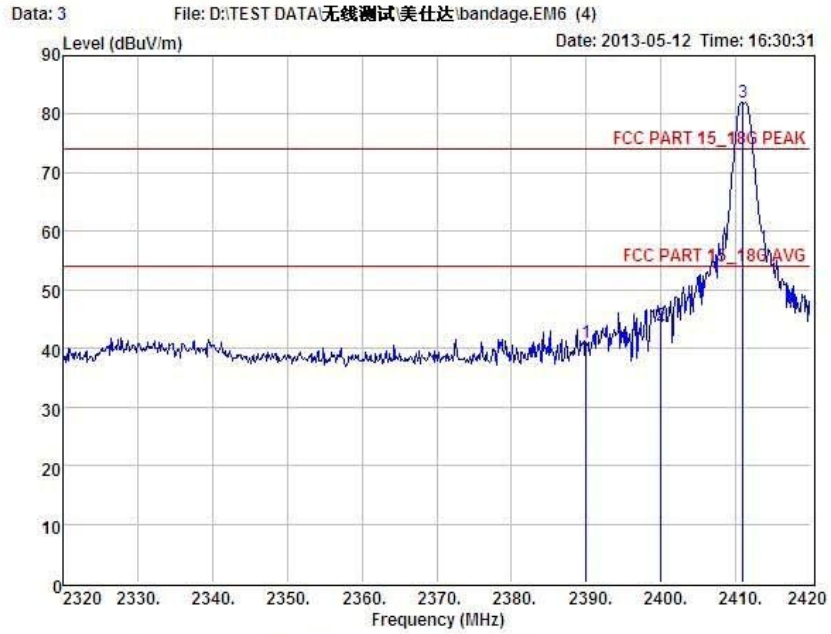
8.4 Test Result

PASS.

Detailed information please see the following page.

CH Low :

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

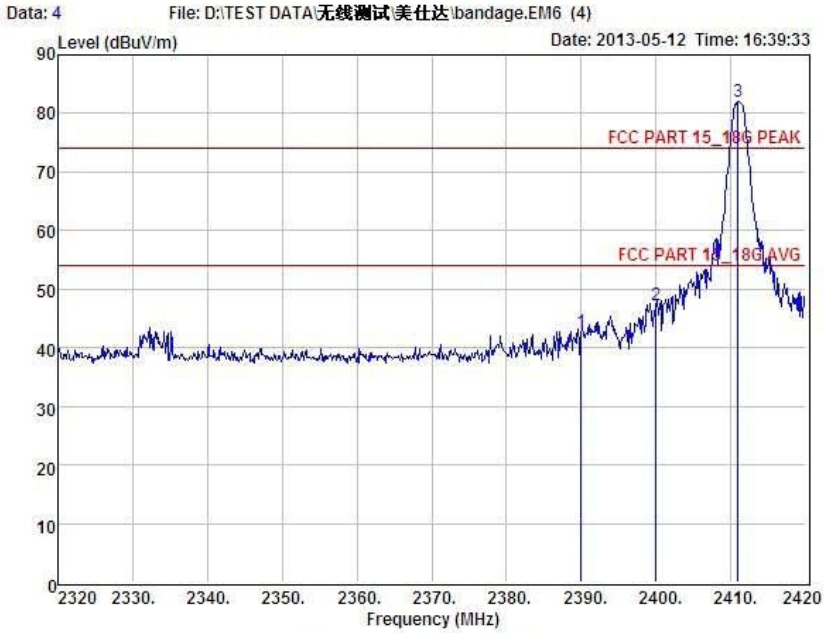



```
Condition      : FCC PART 15_18G PEAK 3m       POL: VERTICAL
EUT            : 2.4G wireless empty mouse remote controller
Model No       : MSD-8010
Test Mode      : TX Low channel: 2411MHz
Power          : DC 5V From PC with AC 120V/60Hz
Test Engineer  : Simple
Remark         : STI130504068
Temp           :
Hum            :
```

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	44.42	27.62	34.97	3.92	40.99	74.00	-33.01	Peak
2	2400.00	47.25	27.62	34.97	3.94	43.84	74.00	-30.16	Peak
3	2411.00	85.35	27.61	34.97	3.94	81.93	74.00	7.93	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



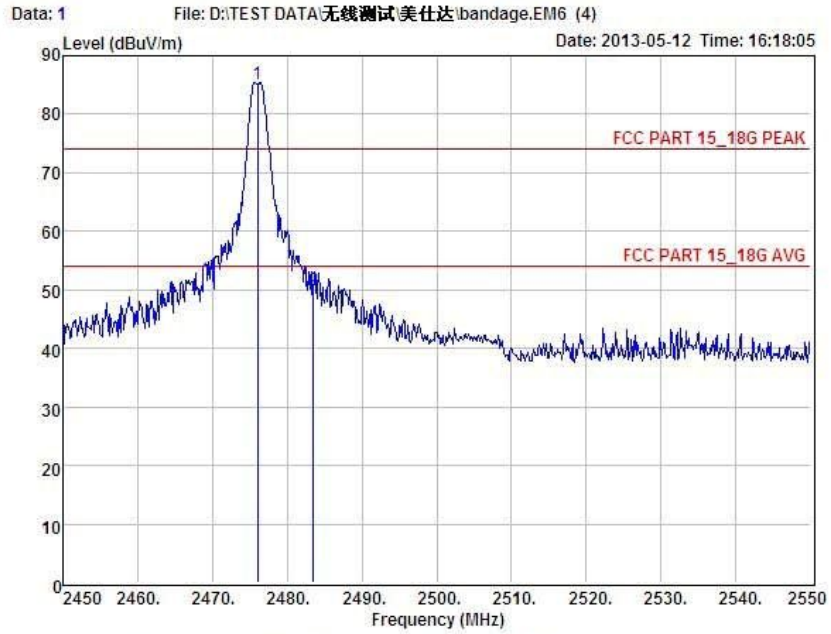

```
Condition      : FCC PART 15_18G PEAK 3m       POL: HORIZONTAL
EUT            : 2.4G wireless empty mouse remote controller
Model No       : MSD-8010
Test Mode      : TX Low channel: 2411MHz
Power          : DC 5V From PC with AC 120V/60Hz
Test Engineer  : Simple
Remark         : STI130504068
Temp           :
Hum            :
```

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	46.09	27.62	34.97	3.92	42.66	74.00	-31.34	Peak
2	2400.00	50.64	27.62	34.97	3.94	47.23	74.00	-26.77	Peak
3	2411.00	85.47	27.61	34.97	3.94	82.05	74.00	8.05	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

CH High :

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

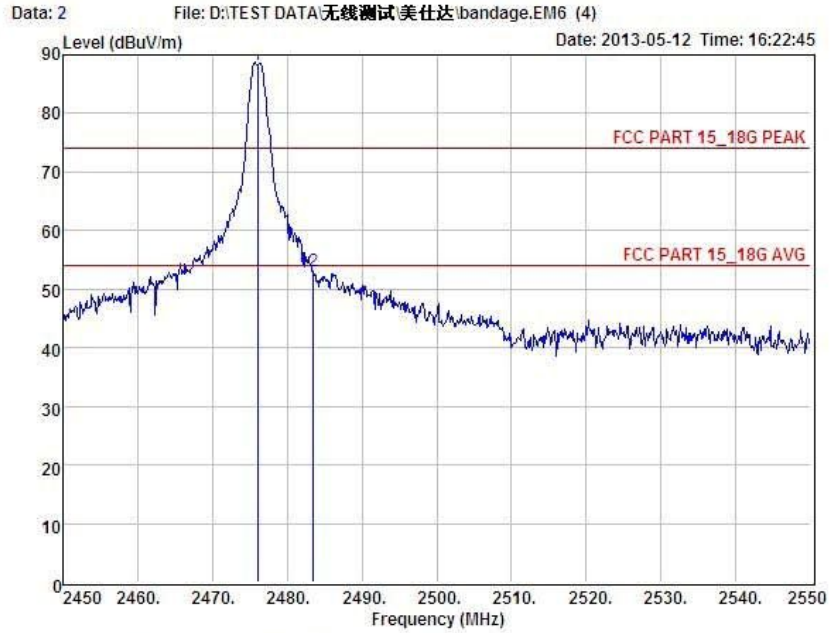



```
Condition      : FCC PART 15_18G PEAK 3m       POL: HORIZONTAL
EUT            : 2.4G wireless empty mouse remote controller
Model No       : MSD-8010
Test Mode      : TX High channel: 2476MHz
Power          : DC 5V From PC with AC 120V/60Hz
Test Engineer  : Simple
Remark         : STI130504068
Temp           :
Hum            :
```

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2476.00	88.51	27.59	34.97	4.00	85.13	74.00	11.13	Peak
2	2483.50	53.29	27.59	34.97	4.00	49.91	74.00	-24.09	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : 2.4G wireless empty mouse remote controller
Model No : MSD-8010
Test Mode : TX High channel: 2476MHz
Power : DC 5V From PC with AC 120V/60Hz
Test Engineer : Simple
Remark : STI130504068
Temp :
Hum :

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2476.00	91.77	27.59	34.97	4.00	88.39	74.00	14.39	Peak
2	2483.50	56.49	27.59	34.97	4.00	53.11	74.00	-20.89	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

9 Antenna Requirement

9.1 Standard 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 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.

9.2 Antenna Connected Construction

The directional gains of antenna used for transmitting is 1.5 dBi, and the antenna connector is de- signed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

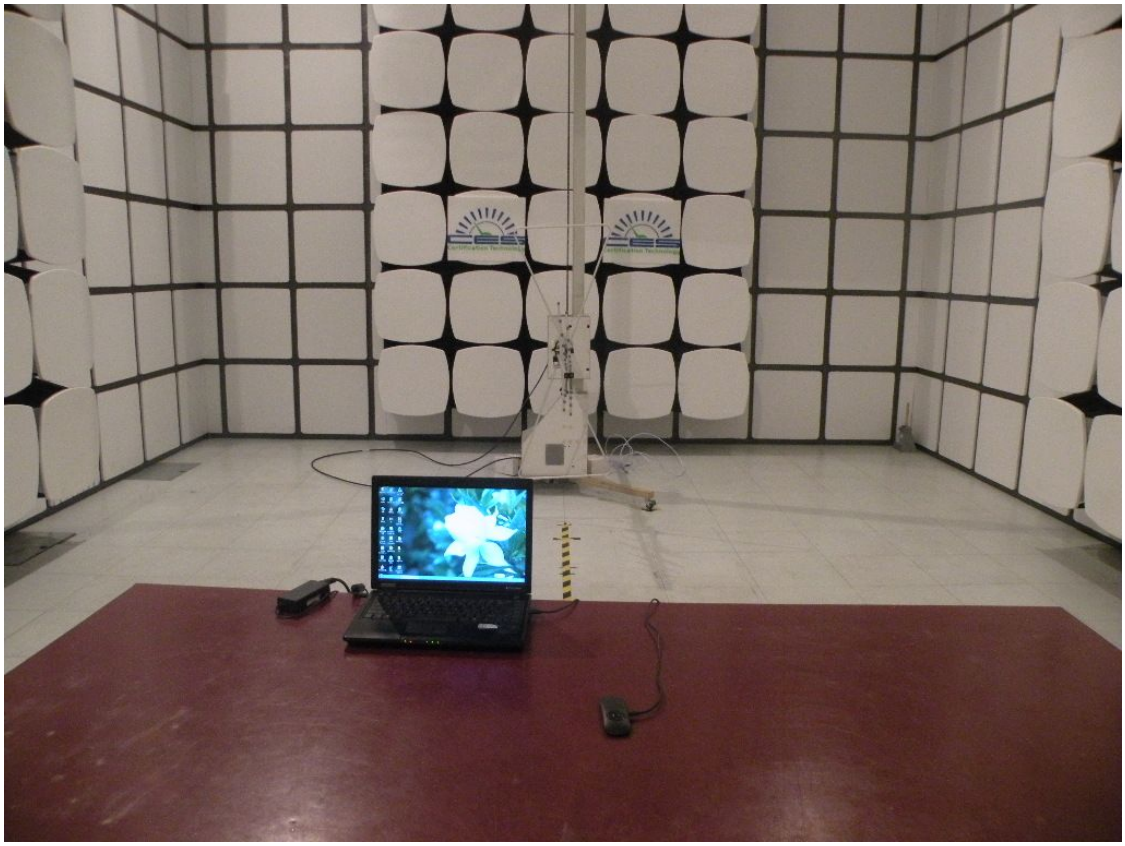
9.3 Result

The EUT antenna is PCB Antenna. It comply with the standard requirement.

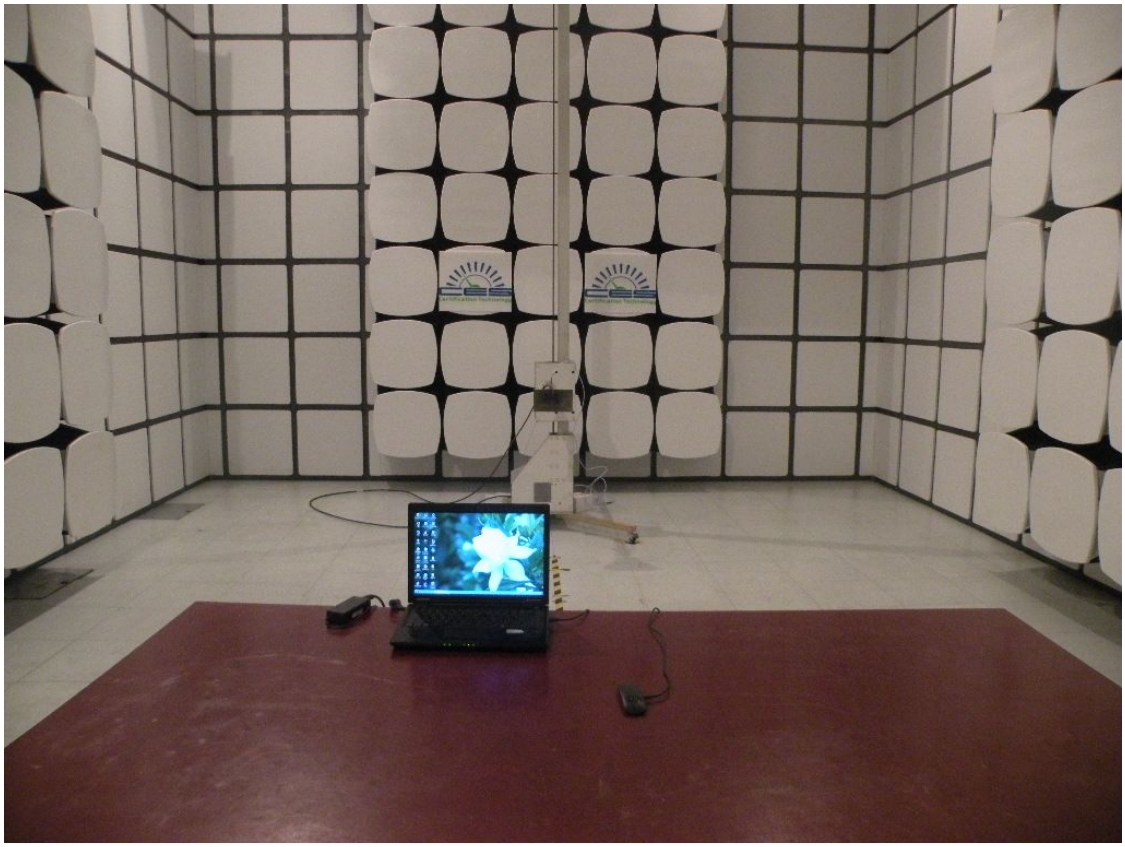
10 Photographs of Test Setup

Photographs-Radiated Emission Test Setup in Chamber

Below 1G



Above 1G

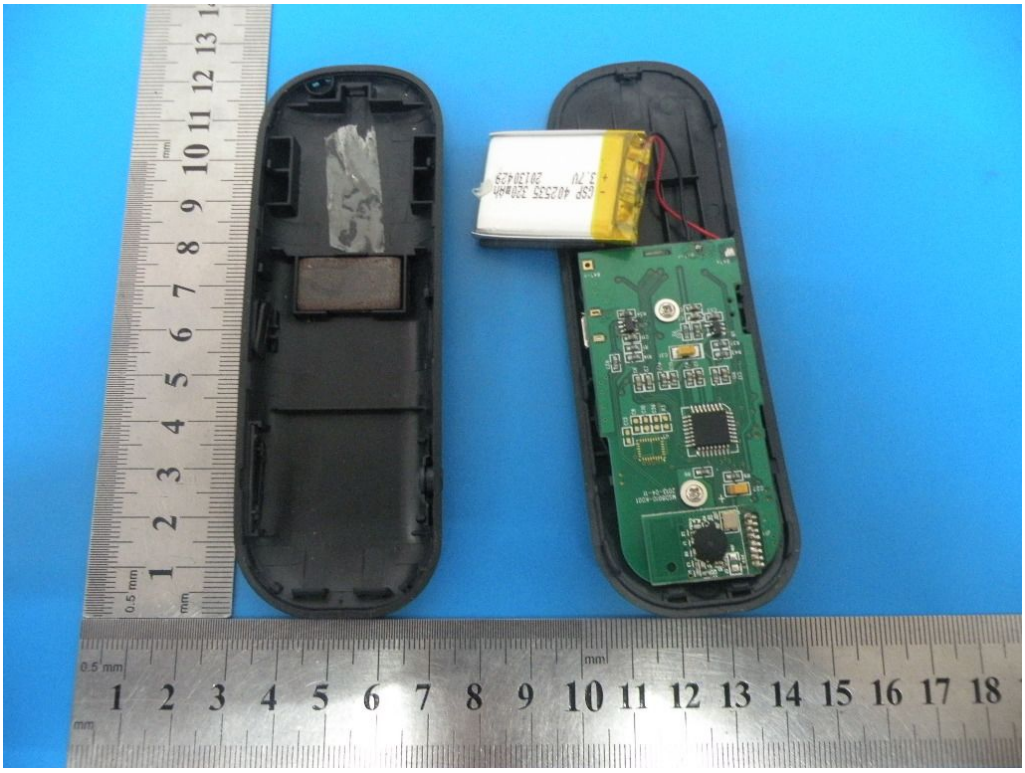


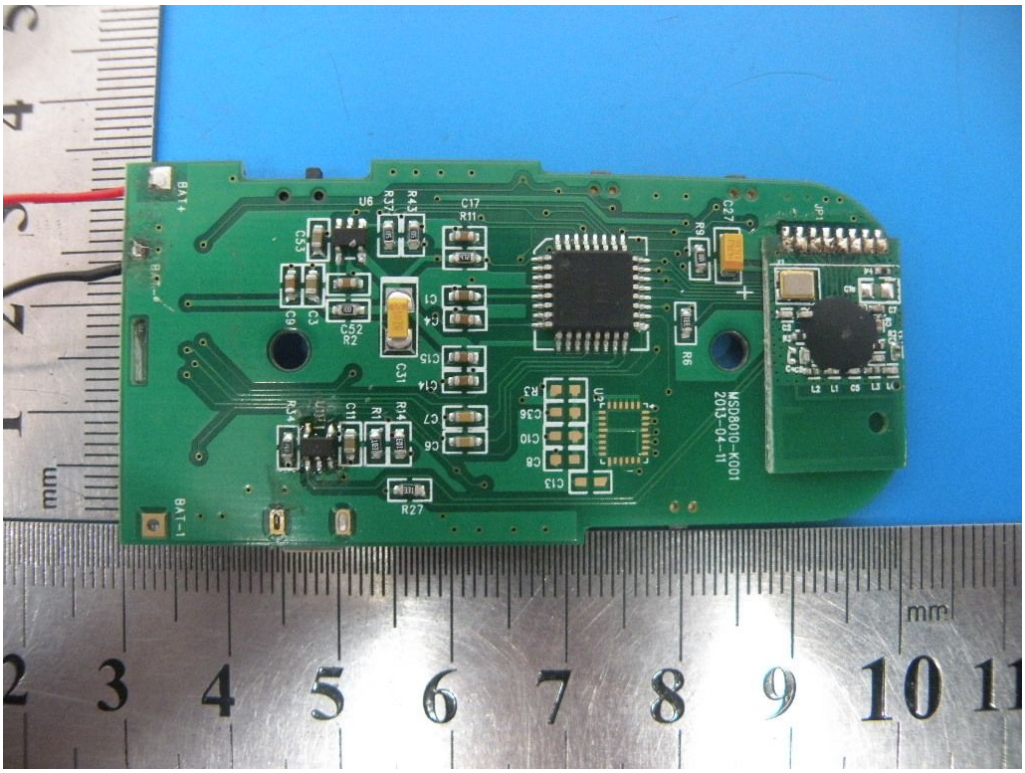
Photographs-Conducted Emission Test Setup

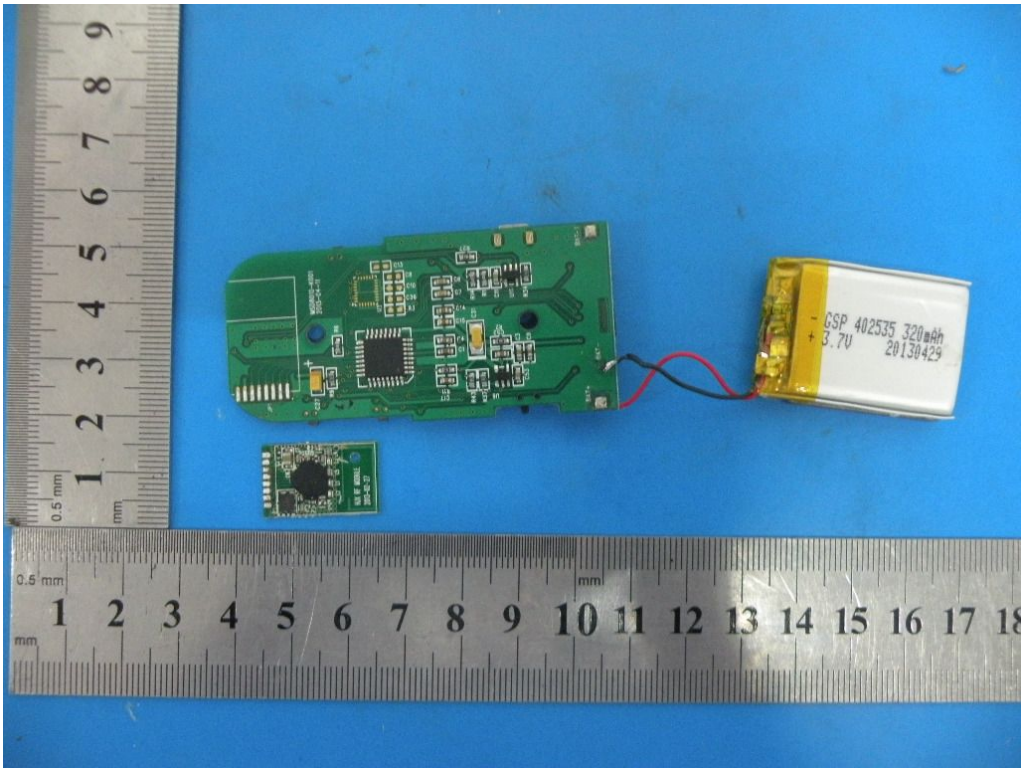
11 Photographs of EUT

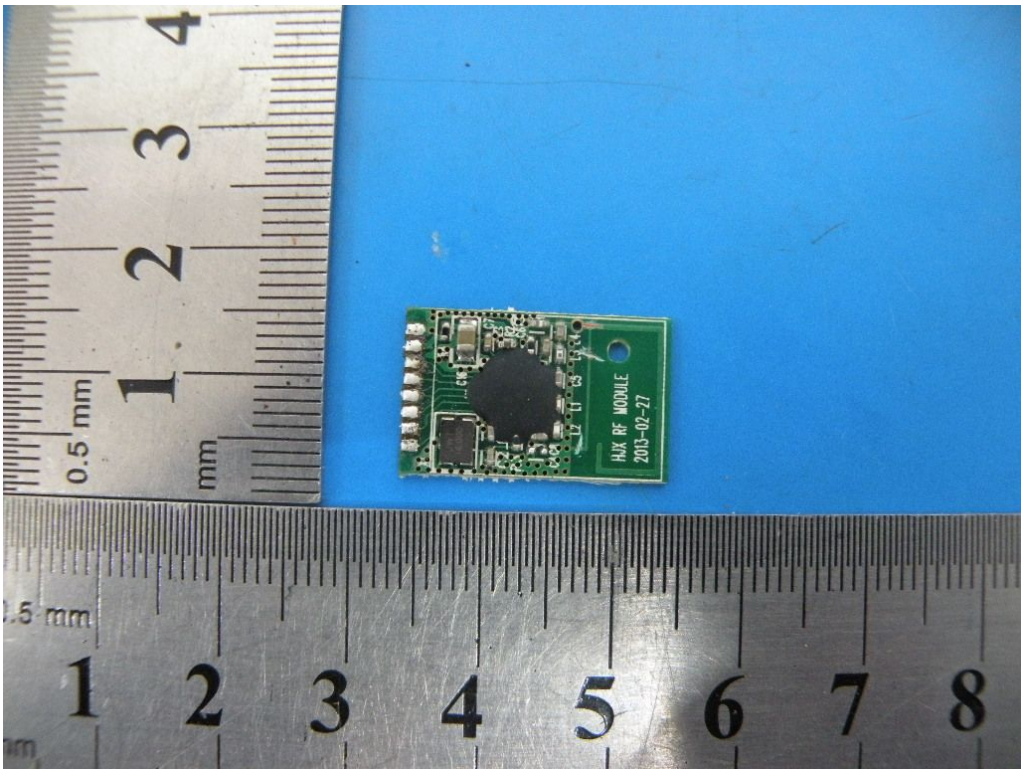

5 6 7 8 9 10 11 12 13

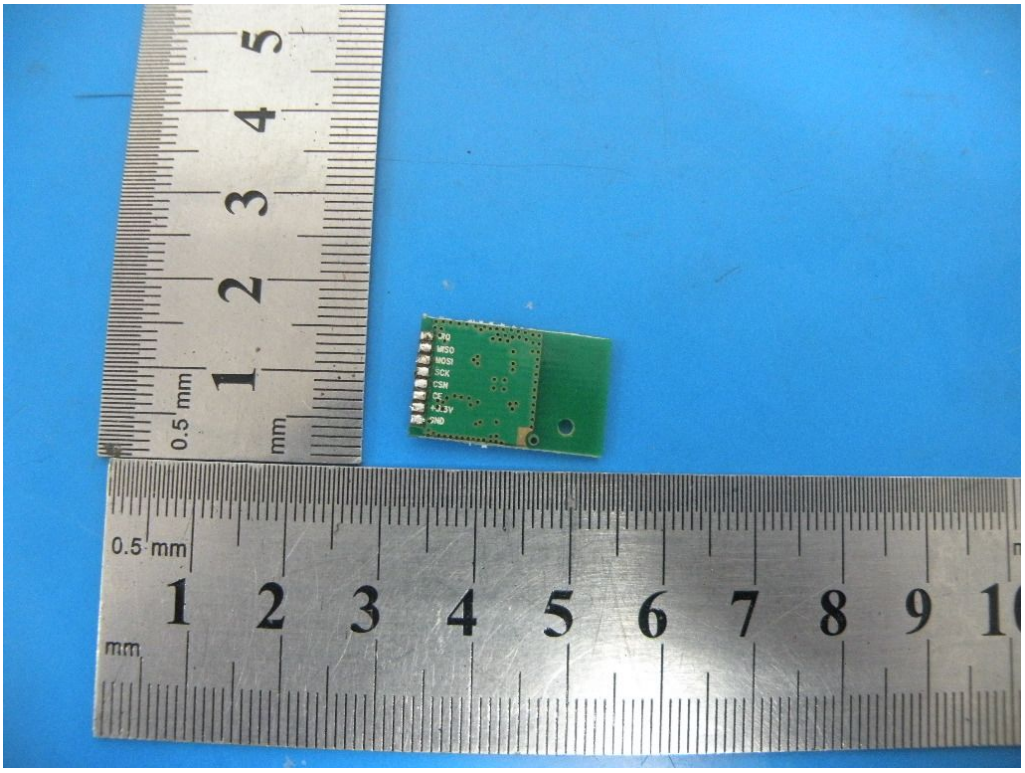

OK
1 2 3 4 5 6 7
3 4 5 6 7 8 9

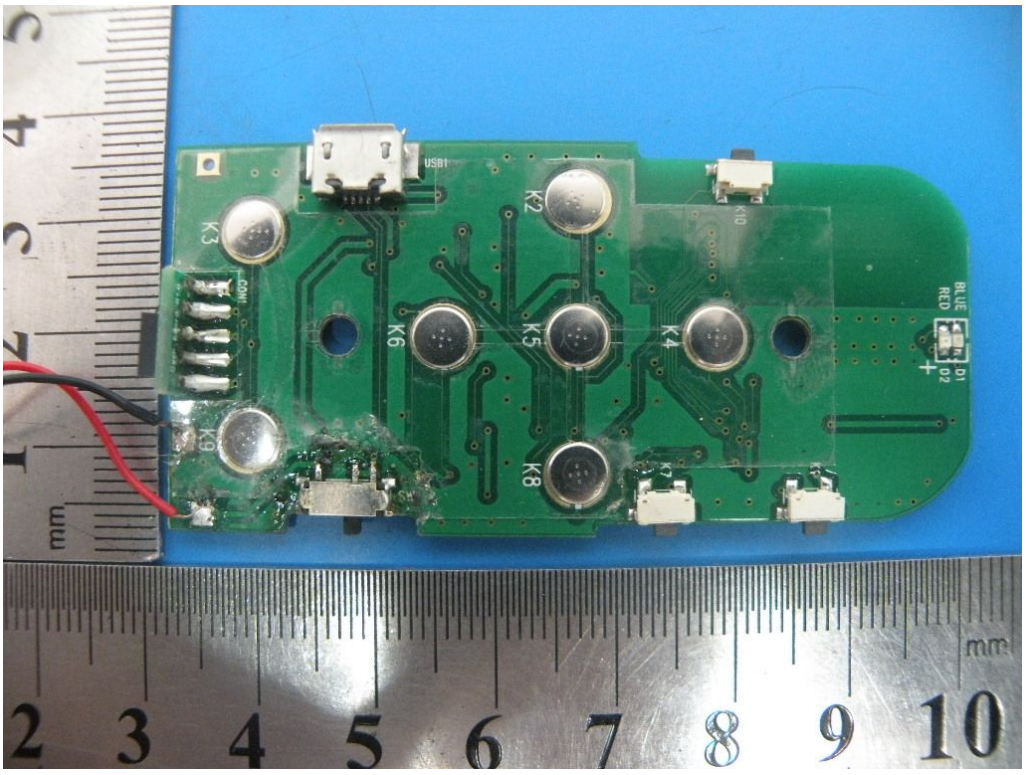


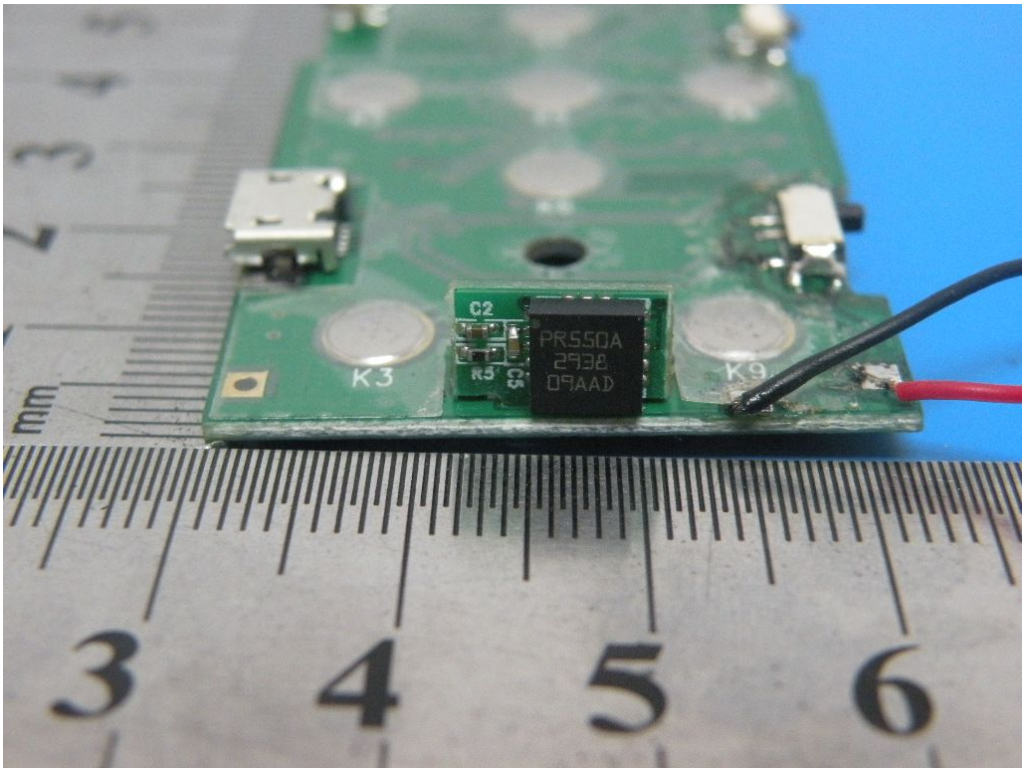



GSP 402535 320mAh
3.7V
20130429


HJX RF MODULE
2013-02-27


0.5 mm
mm
1 2 3 4 5 6 7 8 9


USB1
K2
K3
K6
K5
K4
K8
K9
BLUE
RED
D1
D2
mm
2 3 4 5 6 7 8 9 10



-------END OF THE REPORT-------