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: 2ADBH–101

Applicant : ShenZhen DeFengYuan Technology Co.,Ltd
Address : 3007 Room, 30th Floor, SEG Plaza, Huaqiangbei Road, Futian District, Shenzhen, China

Equipment Under Test (EUT):

Name	:	Bluetooth keyboard Case
Model	:	7 inch，7.8 inch, 8 inch, 9.7 inch, 10.1 inch, 12.2 inch

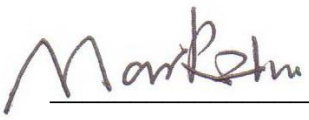
In Accordance with: FCC PART 15, SUBPART C : 2013 (Section 15.247)

Report No : CST-TCB140917054
Date of Test : September 19, 2014- September 26, 2014
Date of Issue : September 27, 2014

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.

Contents

1. General Information 4
1.1. Description of Device (EUT) 4
1.2. Accessories of device (EUT) 5
1.3. Test Lab information 5
2. Summary of test 6
2.1. Summary of test result 6
2.2. Assistant equipment used for test 6
2.3. Block Diagram 7
2.4. Test mode 7
2.5. Test Conditions 7
2.6. Measurement Uncertainty (95% confidence levels, k=2) 8
2.7. Test Equipment 9
3. Maximum Peak Output power 11
3.1. Limit 11
3.2. Test Procedure 11
3.3. Test Setup 11
3.4. Test Result 11
4. Bandwidth 12
4.1. Limit 12
4.2. Test Procedure 12
4.3. Test Result 12
5. Carrier Frequency Separation 15
5.1. Limit 15
5.2. Test Procedure 15
5.3. Test Result 15
6. Number Of Hopping Channel 16
6.1. Limit 16
6.2. Test Procedure 16
6.3. Test Result 16
7. Dwell Time 18
7.1. Test limit 18
7.2. Test Procedure 18
7.3. Test Results 18
8. Radiated emissions 21
8.1. Limit 21
8.2. Block Diagram of Test setup 22
8.3. Test Procedure 22
8.4. Test Result 23
9. Band Edge Compliance 29
9.1. Block Diagram of Test Setup 29
9.2. Limit 29
9.3. Test Procedure 29

9.4. Test Result 29
10. Power Line Conducted Emissions 38
10.1. Block Diagram of Test Setup 38
10.2. Limit 38
10.3. Test Procedure 38
10.4. Test Result 39
11. Antenna Requirements 42
11.1. Limit 42
11.2. Result 42
12. Test setup photo 43
12.1. Photos of Radiated emission 43
12.2. Photos of Conducted Emission test 44
13. Photos of EUT 45

1. General Information

1.1. Description of Device (EUT)

EUT	:	Bluetooth keyboard Case
Model No.	:	7 inch，7.8 inch, 8 inch, 9.7 inch, 10.1 inch, 12.2 inch
DIFF.	:	There's no difference between the models except the appearance color and model name, so all the test were performed on the model 10.1inch
Trade mark	:	N/A
Power supply	:	DC 3.7V from lithium battery.
Adapter	:	NIL
Radio Technology	:	Bluetooth 3.0
Operation frequency	:	2402-2480MHz
Modulation	:	GFSK
Antenna Type	:	Integrated Antenna, max gain 0dBi.
Applicant	:	ShenZhen DeFengYuan Technology Co.,Ltd
Address	:	3007 Room, 30th Floor, SEG Plaza, Huaqiangbei Road, Futian District, Shenzhen, China
Manufacturer		ShenZhen DeFengYuan Technology Co.,Ltd
Address		Guantian New Era Industrial Zone, Shiyan Town, Bao An District, Shenzhen

1.2. Accessories of device (EUT)

Accessories 1 : NIL

Type : NIL

1.3. Test Lab information

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.: 8528B

2. Summary of test

2.1. Summary of test result

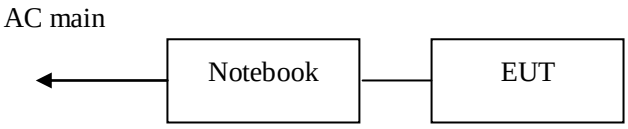
Description of Test Item	Standard	Results
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1) ANSI C63.4 :2003	PASS
Bandwidth	FCC Part 15: 15.215 ANSI C63.4 :2003	PASS
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1) ANSI C63.4 :2003	PASS
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.4 :2003	PASS
Dwell Time	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.4 :2003	PASS
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.4 :2003	PASS
Band Edge Compliance	FCC Part 15: 15.247(d) ANSI C63.4 :2003	PASS
Power Line Conducted Emissions	FCC Part 15: 15.207 ANSI C63.4 :2003	PASS
Antenna requirement	FCC Part 15: 15.203	PASS
Note: Test with the test procedure Bluetool.		

2.2. Assistant equipment used for test

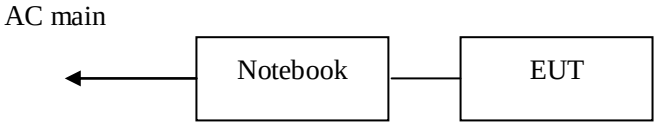
Description	:	NIL
Manufacturer	:	NIL
Model No.	:	NIL
Input	:	NIL
Output	:	NIL

2.3. Block Diagram

1, For radiated emissions test: EUT was placed on a turn table, which is 0.8 meter high above ground. EUT was be set into BT test mode by adb.exe software before test.



2, For Power Line Conducted Emissions Test: EUT was connected to power adapter by 1m USB line



2.4. Test mode

The test software "ASTTestTool.exe" was used to control 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	2402
	Middle: CH40	2441
	High: CH79	2480

2.5. Test Conditions

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

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

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.42dB	
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)	3.54dB	Polarize: V
	4.1dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V
Uncertainty for radio frequency	1×10-9	
Uncertainty for conducted RF Power	0.65dB	
Uncertainty for temperature	0.2℃	
Uncertainty for humidity	1%	
Uncertainty for DC and low frequency voltages	0.06%	

2.7. Test Equipment

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	Nov. 16, 13	1Year
Spectrum analyzer	Agilent	E4407B	MY49510055	Oct. 30, 13	1Year
Receiver	R&S	ESCI	101165	Oct. 30, 13	1Year
Receiver	R&S	ESCI	101202	Oct. 30, 13	1Year
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-438	Mar.11, 14	1Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	Mar.11, 14	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170 D(1432)	Mar.11, 14	1Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Mar.11, 14	1Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Oct. 30, 13	1Year
Cable	Resenberger	SUCOFLEX 104	MY6562/4	Oct. 30, 13	1Year
Cable	Resenberger	SUCOFLEX 104	309972/4	Oct. 30, 13	1Year
Cable	Resenberger	SUCOFLEX 104	329112/4	Oct. 30, 13	1Year
Power Meter	Anritsu	ML2487A	6K00001491	Oct. 30, 13	1Year
Power sensor	Anritsu	ML2491A	32516	Oct. 30, 13	1Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	Oct. 30, 13	1Year
Pre-amplifier	Quietek	AP-180C	CHM-0602012	Oct. 30, 13	1Year
Base station	Agilent	E5515C	GB44300243	Oct. 30, 13	1 Year
Temperature controller	Terchy	MHQ	120	Oct. 30, 13	1Year
Power divider	Anritsu	K240C	020346	Oct. 30, 13	1 Year
Signal Generator	ROHDE&SCHWA	CMU200	116785	Oct. 30, 13	1 Year

	RZ				
Attenuator	Agilent	8491B	MY39262165	Oct. 30, 13	1 Year
X-series USB Peak and Average Power Sensor	Agilent	U2021XA	MY54080020	2014.01.19	1Year
X-series USB Peak and Average Power Sensor	Agilent	U2021XA	MY54110001	2014.01.19	1 Year
4 Ch.Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063507	2014.01.19	1 Year

3. Maximum Peak Output power

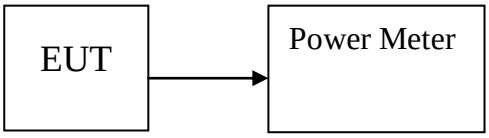
3.1. Limit

Please refer section15.247.
For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts, the e.i.r.p shall not exceed 4W

3.2. Test Procedure

The transmitter output is connected to the RF Power Meter. The RF Power Meter is set to the peak power detection.

3.3. Test Setup



3.4. Test Result

EUT: Bluetooth keyboard Case M/N: 10.1 inch					
Test date: 2014-09-25		Test site: RF site Tested by: Peter			
Mode	Freq (MHz)	PK Output Power (dBm)	PK Output Power (mW)	Limit (dBm)	Margin (dB)
GFSK	2402	-5.58	0.28	30	35.58
	2441	-5.62	0.27	30	35.62
	2480	-5.57	0.28	30	35.57
Conclusion: PASS					

4. Bandwidth

4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.2. Test Procedure

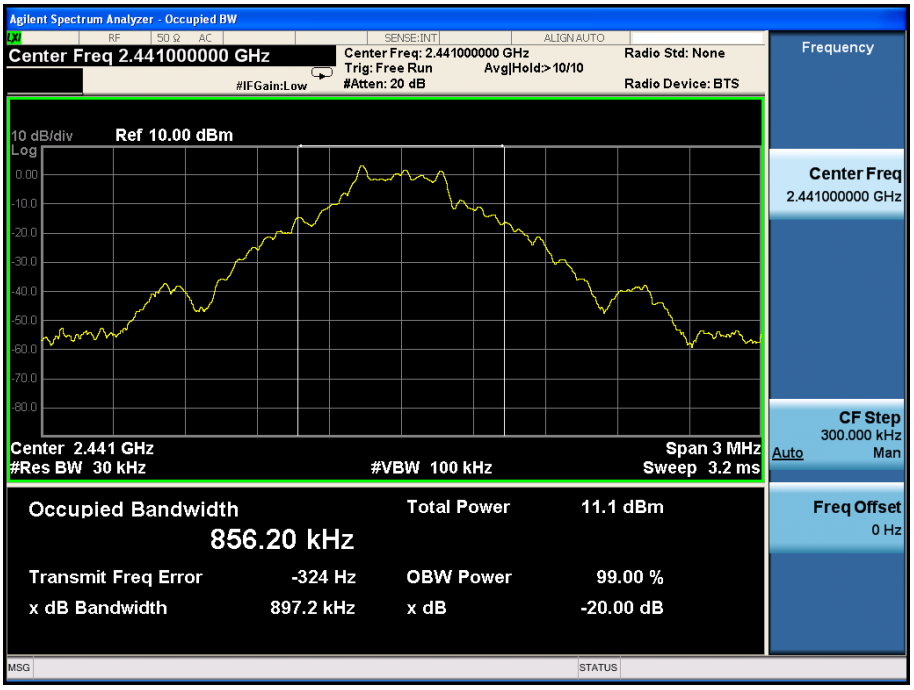
The transmitter output was coupled to a spectrum analyzer via a antenna. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 30kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

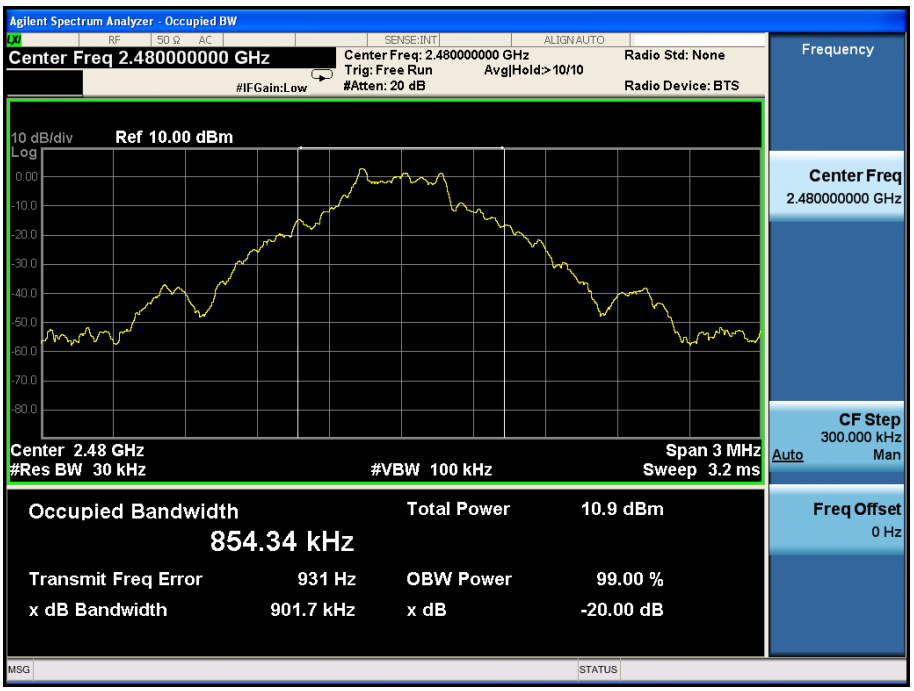
4.3. Test Result

EUT: Bluetooth keyboard Case M/N: 10.1 inch				
Test date: 2014-09-25	Test site: RF site	Tested by: Peter		
Mode	Freq (MHz)	20dB Bandwidth (MHz)	Limit (kHz)	Conclusion
GFSK	2402	0.8948	/	PASS
	2441	0.8972	/	PASS
	2480	0.9017	/	PASS

Orginal Test data For 20dB bandwidth

GFSK:




Agilent Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center Freq
2.480000000 GHz
CF Step
300.000 kHz
Auto
Man
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
854.34 kHz
Total Power
10.9 dBm
Freq Offset
0 Hz
Transmit Freq Error
931 Hz
OBW Power
99.00 %
x dB Bandwidth
901.7 kHz
x dB
-20.00 dB
MSG
STATUS

5. Carrier Frequency Separation

5.1. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW

5.2. Test Procedure

The transmitter output was coupled to a spectrum analyzer via a antenna. The carrier frequency was measured by spectrum analyzer with 30kHz RBW and 30kHz VBW.

5.3. Test Result

EUT: Bluetooth keyboard Case M/N: 10.1 inch				
Test date: 2014-09-25		Test site: RF site	Tested by: Simple	
Mode/Channel	Channel separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz) 2/3 20dB bandwidth	Conclusion
GFSK	1.014	0.8972	0.5981	PASS

Orginal test data for channel separation

GFSK

6. Number Of Hopping Channel

6.1. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

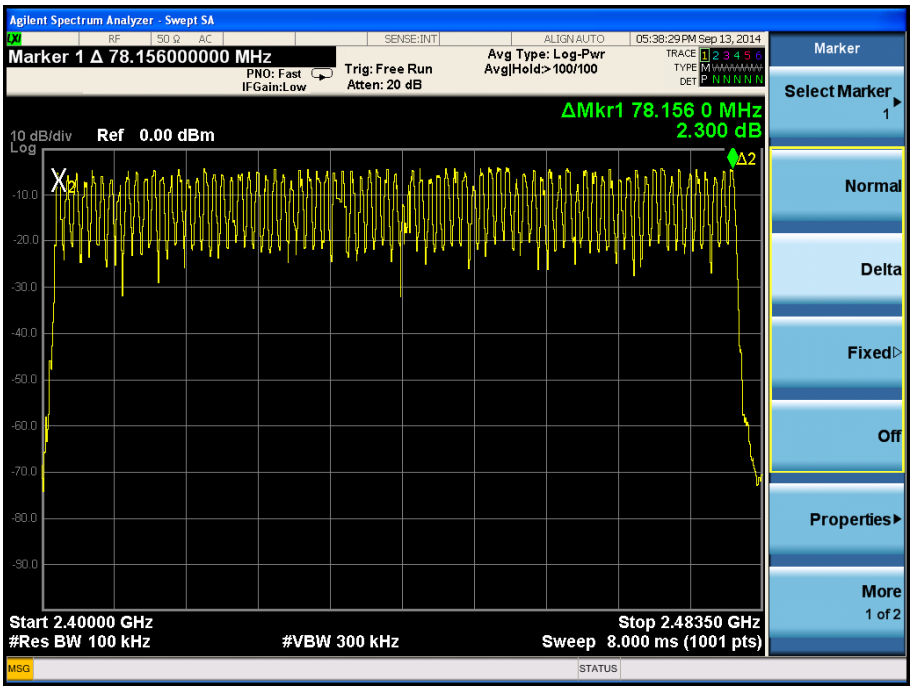
6.2. Test Procedure

The transmitter output was coupled to a spectrum analyzer via a antenna. The number of hopping channel was measured by spectrum analyzer with 300kHz RBW and 1MHz VBW.

6.3. Test Result

EUT: Bluetooth keyboard Case	M/N: 10.1 inch		
Test date: 2014-09-25	Test site: RF site	Tested by: Peter	
Mode	Number of hopping channel	Limit	Conclusion
GFSK	79	>15	PASS

Original test data for hopping channel number
GFSK



7. Dwell Time

7.1. Test limit

Please refer section15.247

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz. The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 sec- onds multiplied by the number of hopping channel employed.

7.2. Test Procedure

7.2.1. Place the EUT on the table and set it in transmitting mode.

7.2.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

7.2.3. Set center frequency of spectrum analyzer = operating frequency.

7.2.4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.

7.2.5. Repeat above procedures until all frequency measured were complete.

7.3. Test Results

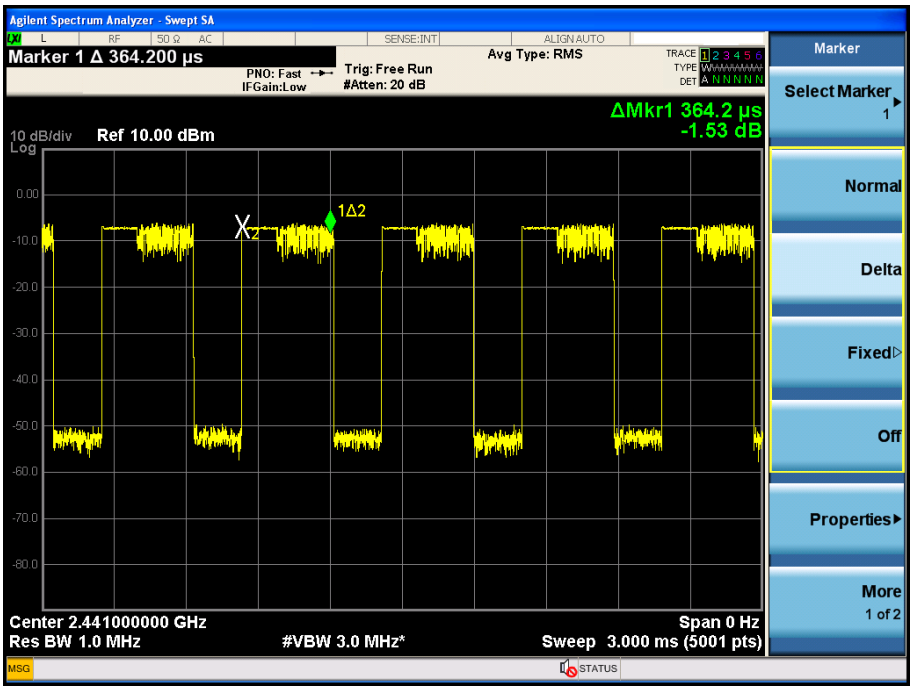
PASS.

Detailed information please see the following page.

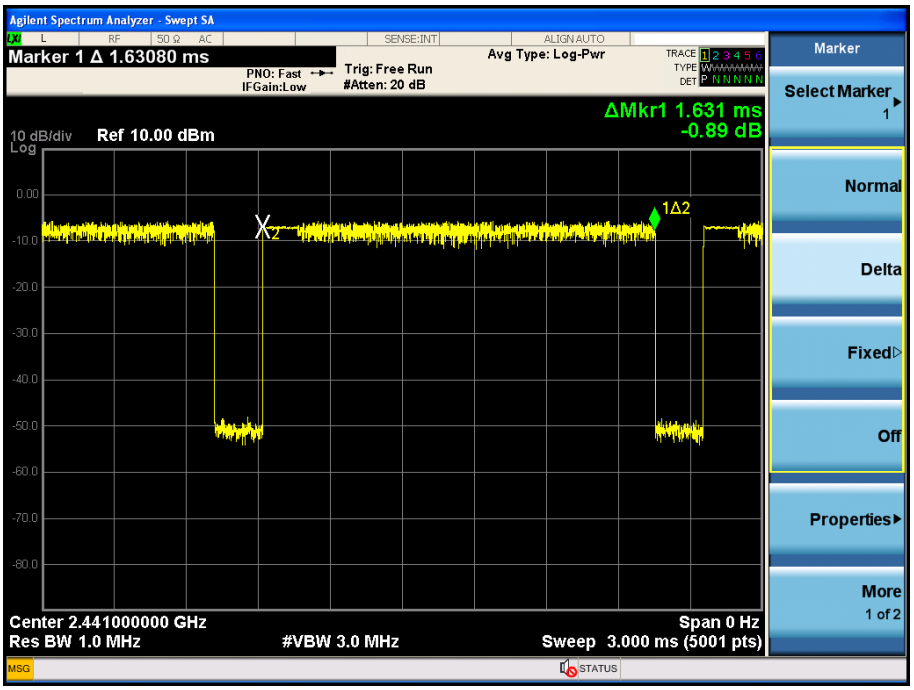
EUT: Bluetooth keyboard Case M/N: 10.1 inch						
Test date: 2014-09-25		Test site: RF site		Tested by: Peter		
Mode	Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limit (s)	Conclusion
GFSK	DH1	2441	0.3642	233.088	<0.4	PASS
	DH3	2441	1.631	347.947	<0.4	PASS
	DH5	2441	2.878	368.384	<0.4	PASS
Note: 1 A period time = 0.4 (s) * 79 = 31.6(s) 2 DH1 time slot = Pulse Duration * (1600/(1*79)) * A period time DH3 time slot = Pulse Duration * (1600/(3*79)) * A period time DH5 time slot = Pulse Duration * (1600/(5*79)) * A period time						

GFSK

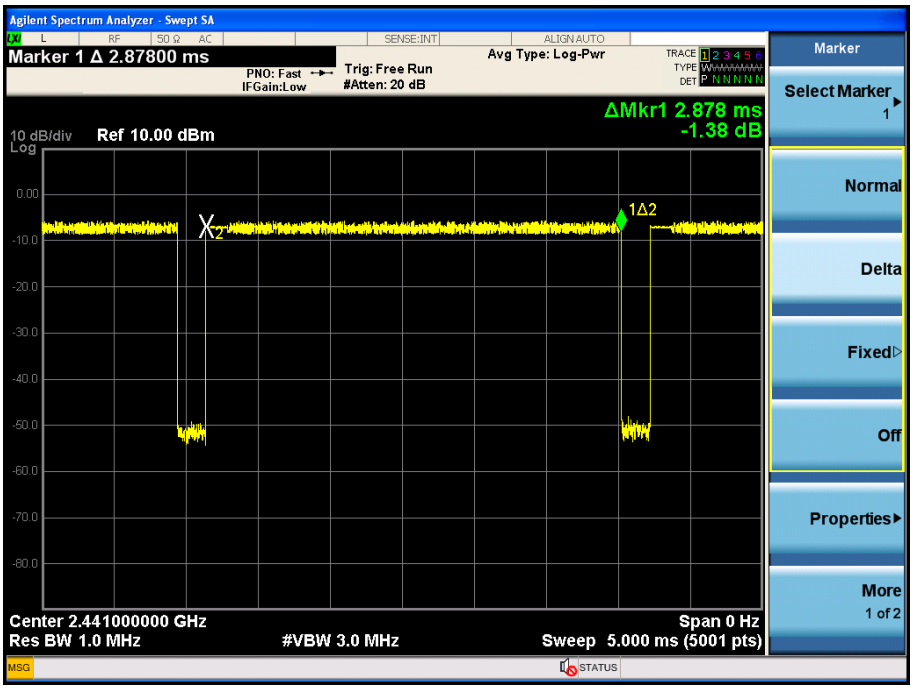
DH1:



DH3:


Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 1.63080 ms
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
ΔMkr1 1.631 ms
-0.89 dB
10 dB/div
Log
Ref 10.00 dBm
1Δ2
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 3.000 ms (5001 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

DH5


Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 2.87800 ms
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
ΔMkr1 2.878 ms
-1.38 dB
10 dB/div
Log
Ref 10.00 dBm
1Δ2
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 5.000 ms (5001 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

8. Radiated emissions

8.1. Limit

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.

15.205 Restricted frequency band

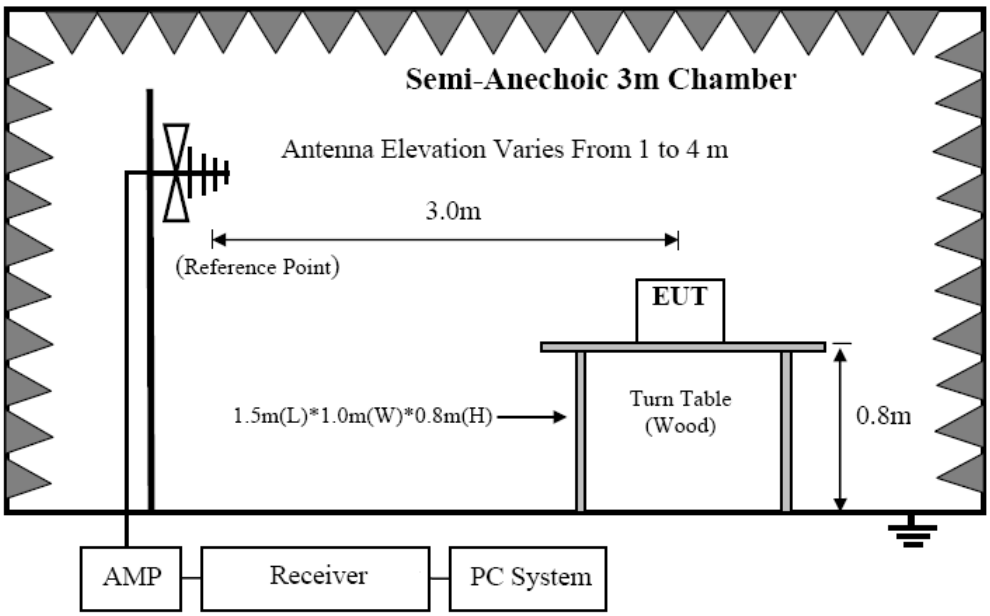
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 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])

15.209 Limit

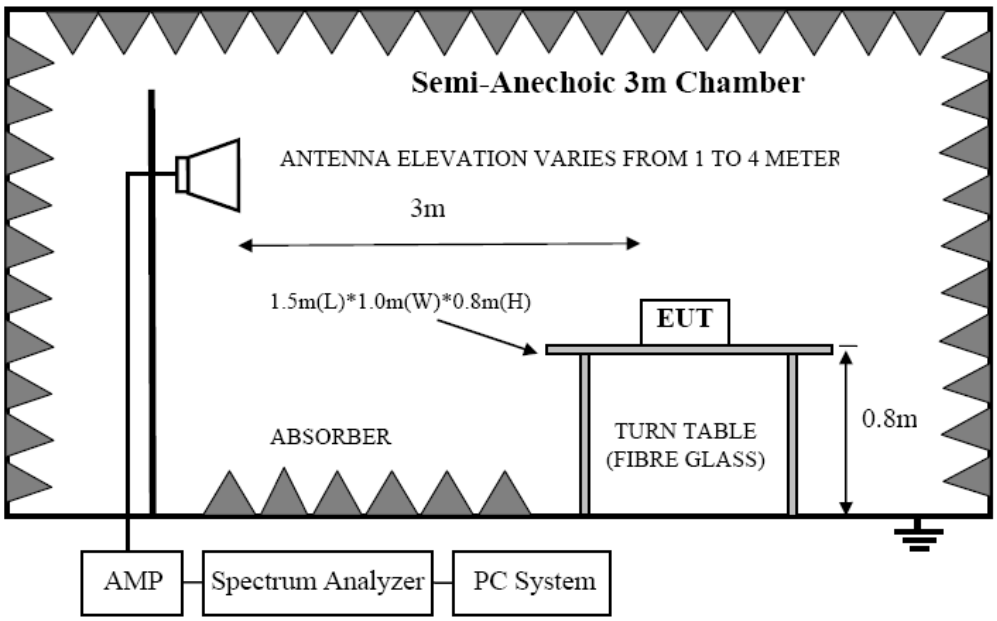
FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009-0.490	300	2400/F(KHz)	/
0.490-1.705	30	24000/F(KHz)	/
1.705-30	30	30	29.5
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

8.2. Block Diagram of Test setup

8.2.1. In 3m Anechoic Chamber Test Setup Diagram for below 1GHz



8.2.2. In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

8.3. Test Procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic

chamber.
(2) Setup EUT and simulator as shown in section 1.4 and 6.1
(3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
(a) Change work frequency or channel of device if practicable.
(b) Change modulation type of device if practicable.
(c) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
(4) Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated
(5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4 2003 on Radiated Emission test.
(6) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure.

8.4. Test Result

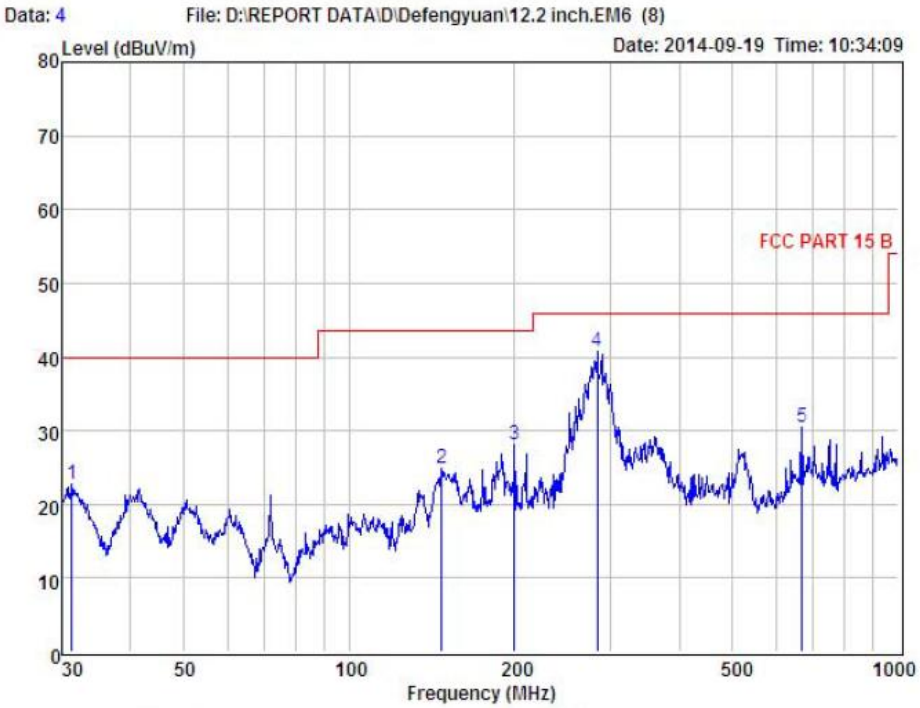
We have scanned the 10th harmonic from 9KHz to the EUT.
Detailed information please see the following page.

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

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

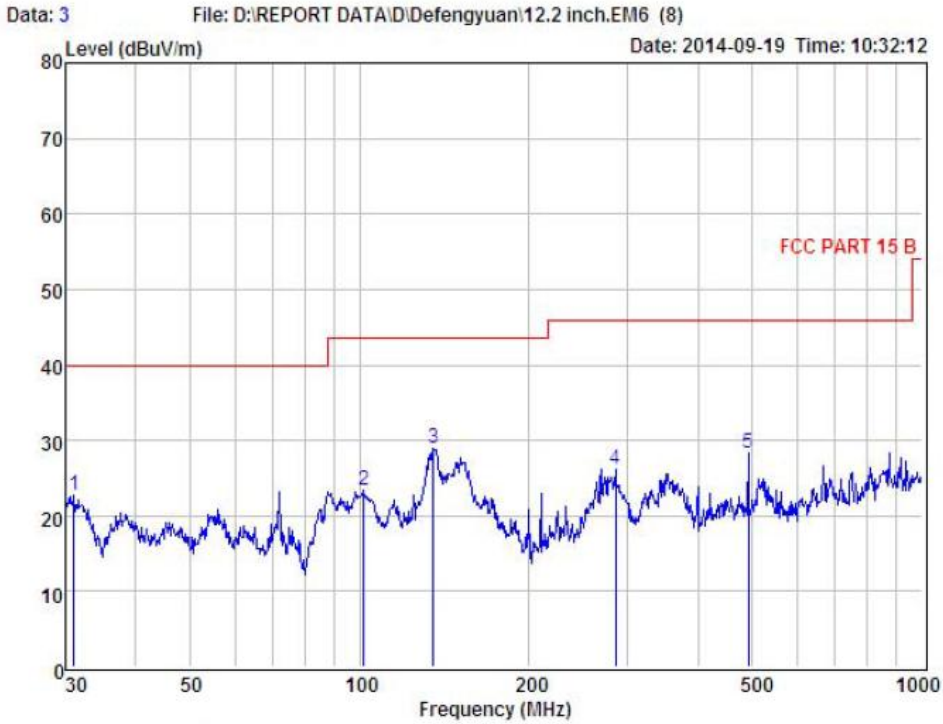


Condition : FCC PART 15 B 3m POL: HORIZONTAL
EUT : Bluetooth Keyboard
Model No :
Test Mode :
Power : DC 5V From AC 120V/60Hz
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	31.29	34.90	13.28	25.51	0.07	22.74	40.00	-17.26	Peak
2	147.40	37.57	13.90	26.90	0.37	24.94	43.50	-18.56	Peak
3	199.99	44.74	9.90	26.97	0.43	28.10	43.50	-15.40	Peak
4	282.99	51.84	12.45	24.16	0.56	40.69	46.00	-5.31	Peak
5	668.14	35.96	19.30	25.78	1.01	30.49	46.00	-15.51	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 B        3m       POL: VERTICAL
EUT            : Bluetooth Keyboard
Model No       :
Test Mode      :
Power          : DC 5V From AC 120V/60Hz
Test Engineer  :
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	31.07	34.89	13.28	25.51	0.07	22.73	40.00	-17.27	Peak
2	101.64	39.59	10.35	26.84	0.34	23.44	43.50	-20.06	Peak
3	135.51	42.29	13.08	26.89	0.45	28.93	43.50	-14.57	Peak
4	284.98	37.16	12.50	24.16	0.67	26.17	46.00	-19.83	Peak
5	490.74	35.48	16.41	24.60	1.08	28.37	46.00	-17.63	Peak

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

Remark: All modes have been tested, and only worst data of GFSK mode, Channel 2402MHz was listed in this report.

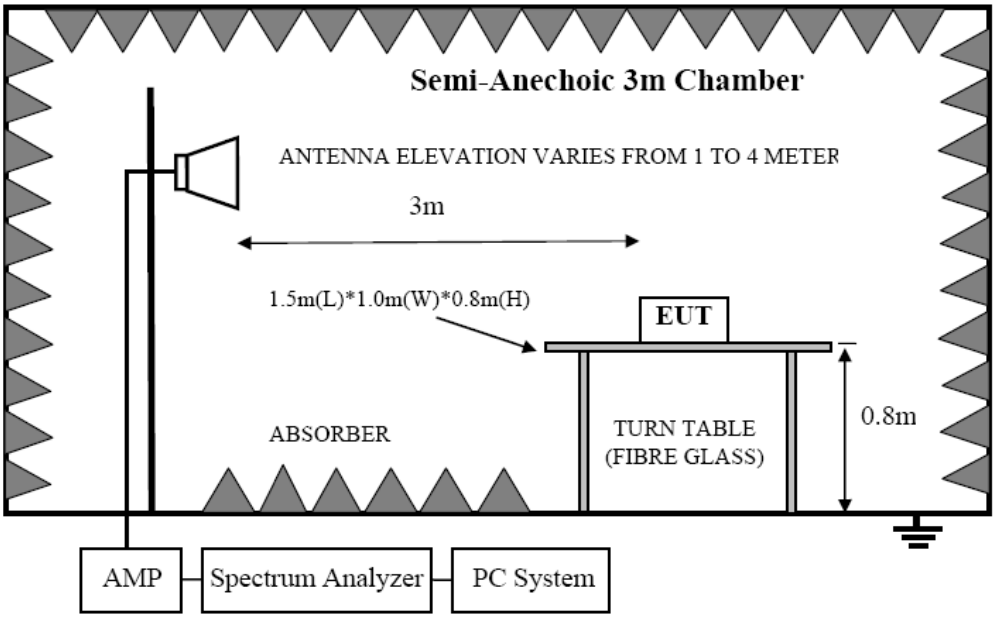
1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth keyboard Case M/N: 10.1 inch									
Power: DC 3.7V From battery									
Test date: 2014-09-25 Test site: 3m Chamber Tested by: Peter									
Test mode: GFSK Tx CH1 2402MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804	44.28	33.95	10.18	34.26	54.15	74	19.85	PK
2	4804	31.26	33.95	10.18	34.26	41.13	54	12.87	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	40.63	33.95	10.18	34.26	50.5	74	23.5	PK
2	4804	30.85	33.95	10.18	34.26	40.72	54	13.28	AV
3	7206	/							
4	9608	/							
5	12010	/							
Note: 1, Measuring frequency from 1GHz to 25GHz 2, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth keyboard Case M/N: 10.1 inch									
Power: DC 3.7V From battery									
Test date: 2014-09-25 Test site: 3m Chamber Tested by: Peter									
Test mode: GFSK Tx CH40 2441MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4882	40.87	33.93	10.2	34.29	50.71	74	23.29	PK
2	4882	30.56	33.93	10.2	34.29	40.4	54	13.6	AV
3	7323	/							
4	9764	/							
5	12205	/							
Antenna Polarity: Horizontal									
1	4882	41.72	33.93	10.2	34.29	51.56	74	22.44	PK
2	4882	30.69	33.93	10.2	34.29	40.53	54	13.47	AV
3	7323	/							
4	9764	/							
5	12205	/							
Note: 1, Measuring frequency from 1GHz to 25GHz 2, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth keyboard Case M/N: 10.1 inch									
Power: DC 3.7V From battery									
Test date: 2014-09-25 Test site: 3m Chamber Tested by: Peter									
Test mode: GFSK Tx CH79 2480MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960	41.29	33.98	10.22	34.25	51.24	74	22.76	PK
2	4960	31.12	33.98	10.22	34.25	41.07	54	12.93	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	40.29	33.98	10.22	34.25	50.24	74	23.76	PK
2	4960	30.63	33.98	10.22	34.25	40.58	54	13.42	AV
3	7440	/							
4	9920	/							
5	12400	/							
Note: 1, Measuring frequency from 1GHz to 25GHz 2, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

9. Band Edge Compliance

9.1. Block Diagram of Test Setup



9.2. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz and 5725MHz to 5850MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

9.3. Test Procedure

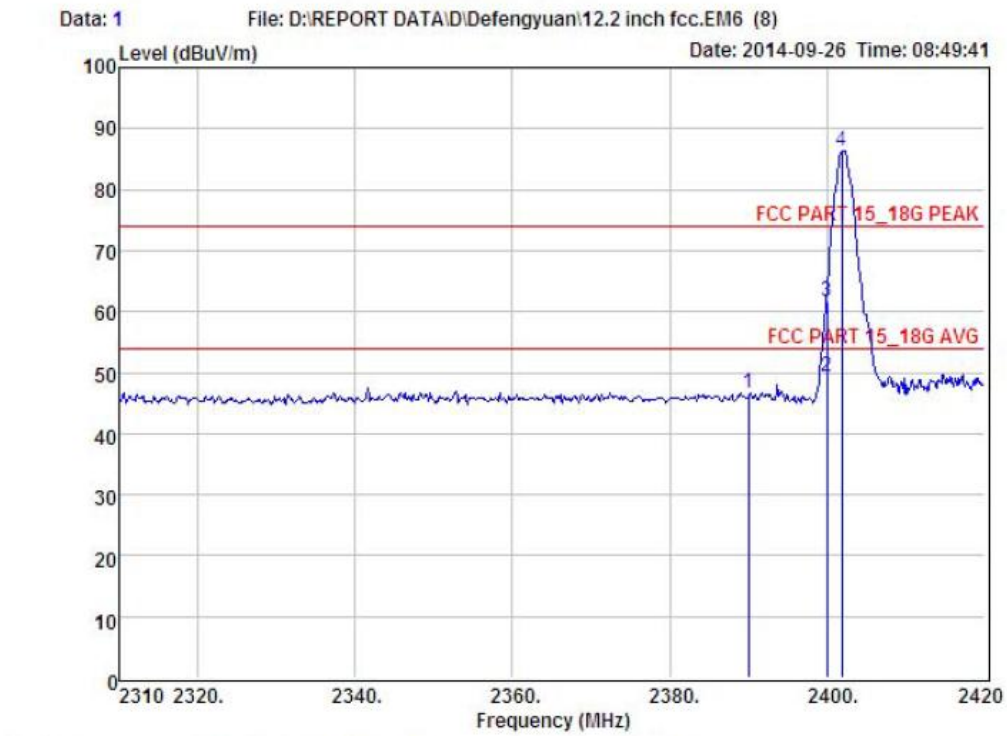
Same with clause 6.3 except change investigated frequency range from 2310MHz to 2415MHz, 2475MHz to 2500MHz.

9.4. Test Result

PASS. (See below detailed test data)

GFSK
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

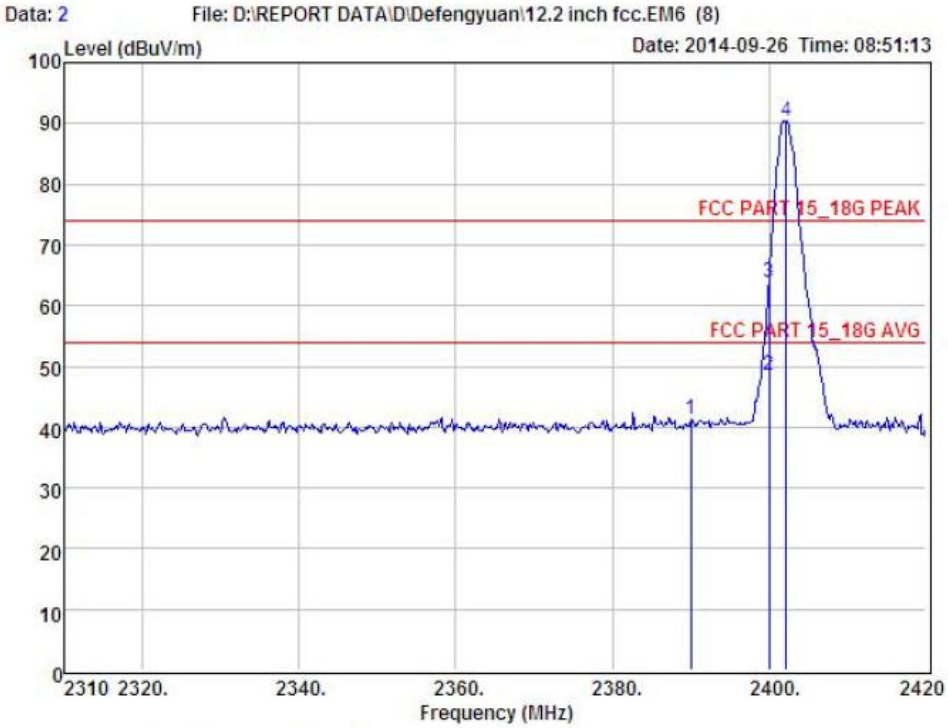


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT :
Model No :
Test Mode : GFSK-TX 2402
Power :
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	49.96	27.62	34.97	3.92	46.53	74.00	-27.47	Peak
2	2400.00	52.70	27.62	34.97	3.94	49.29	54.00	-4.71	Average
3	2400.00	65.05	27.62	34.97	3.94	61.64	74.00	-12.36	Peak
4	2401.85	89.86	27.62	34.97	3.94	86.45	74.00	12.45	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



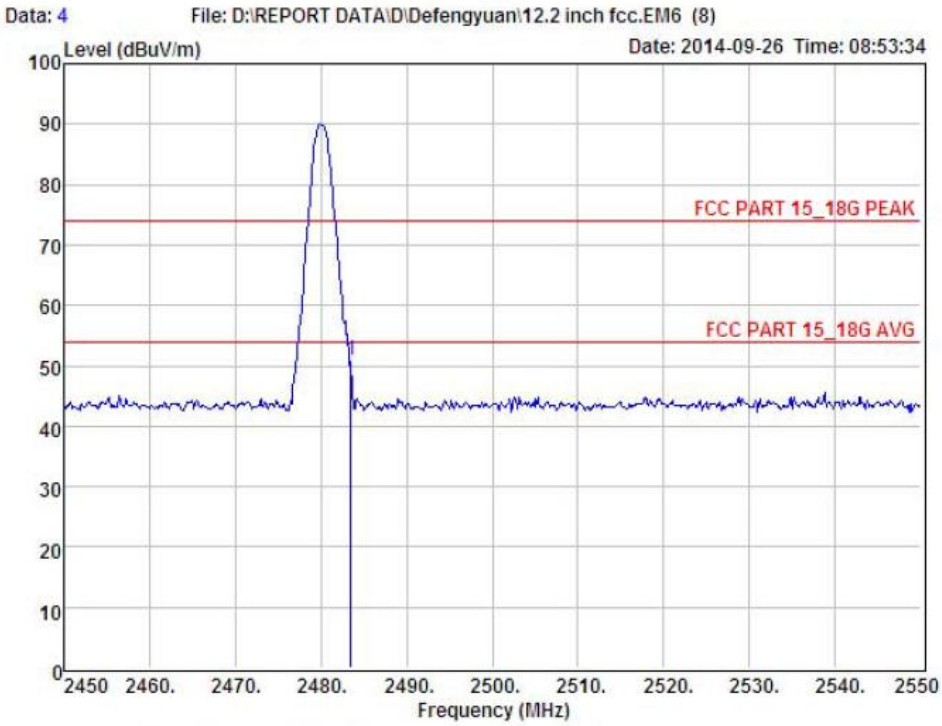
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT :
Model No :
Test Mode : GFSK-TX 2402
Power :
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	44.69	27.62	34.97	3.92	41.26	74.00	-32.74	Peak
2	2400.00	52.00	27.62	34.97	3.94	48.59	54.00	-5.41	Average
3	2400.00	67.20	27.62	34.97	3.94	63.79	74.00	-10.21	Peak
4	2402.18	93.80	27.62	34.97	3.94	90.39	74.00	16.39	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

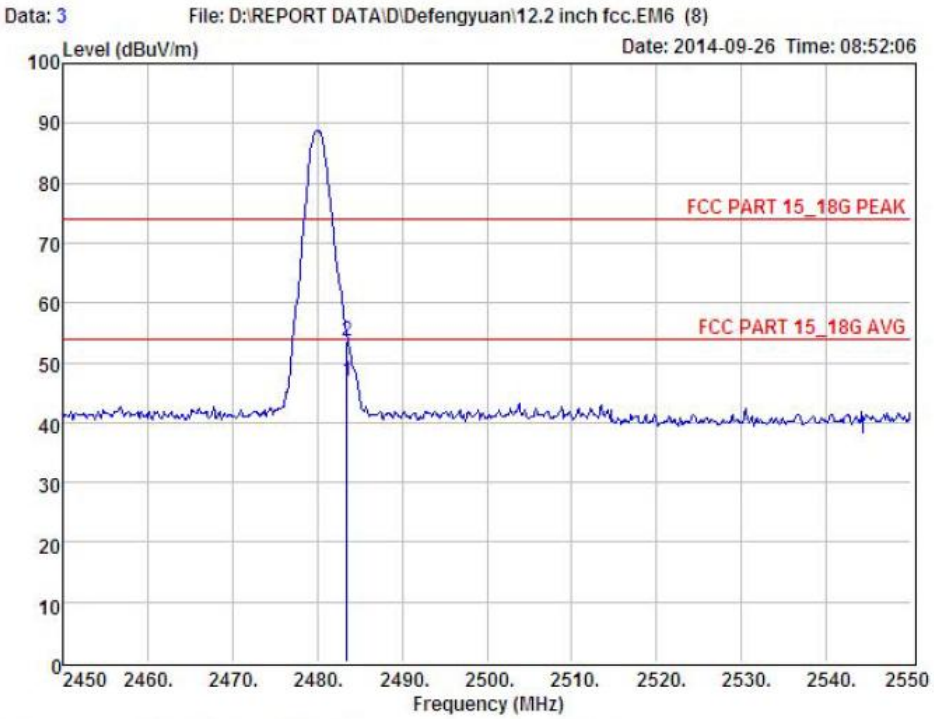


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT :
Model No :
Test Mode : GFSK-TX 2480
Power :
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	54.29	27.59	34.97	4.00	50.91	74.00	-23.09	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 :
Model No :
Test Mode : GFSK-TX 2480
Power :
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

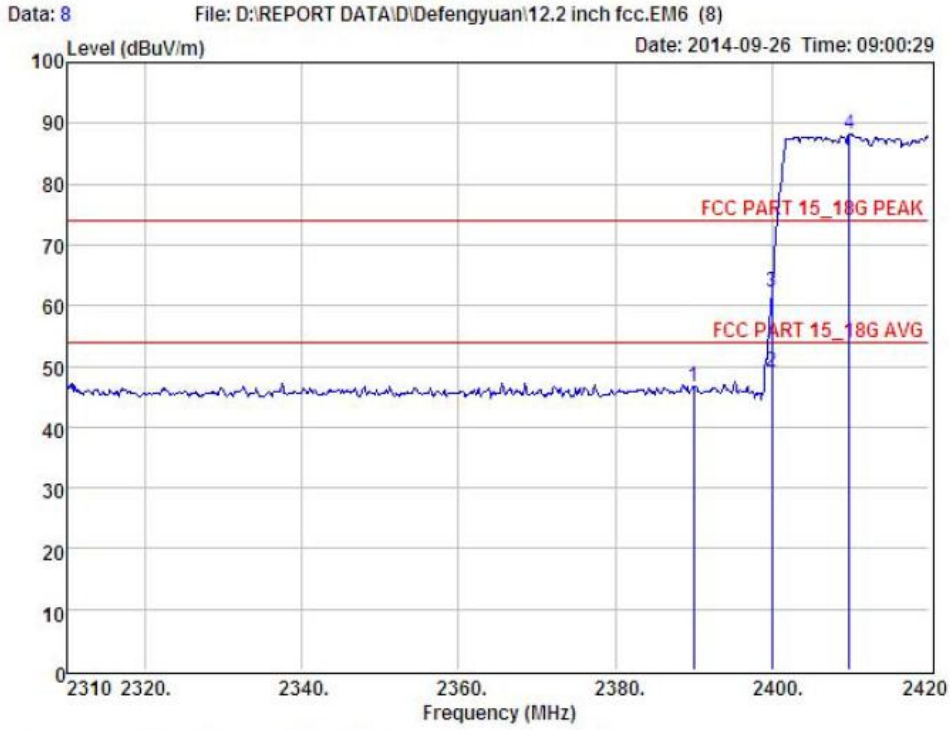
Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	50.35	27.59	34.97	4.00	46.97	54.00	-7.03	Average
2	2483.50	56.98	27.59	34.97	4.00	53.60	74.00	-20.40	Peak

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

Hopping

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

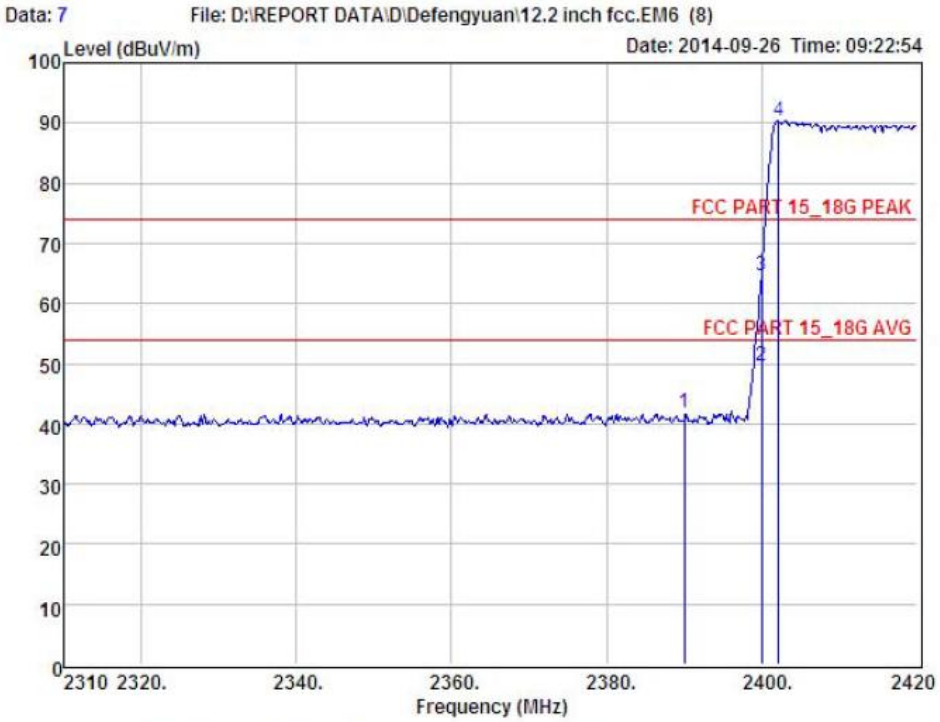


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT :
Model No :
Test Mode : GFSK-TX Hopping
Power :
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	50.01	27.62	34.97	3.92	46.58	74.00	-27.42	Peak
2	2400.00	52.36	27.62	34.97	3.94	48.95	54.00	-5.05	Average
3	2400.00	65.57	27.62	34.97	3.94	62.16	74.00	-11.84	Peak
4	2409.88	91.71	27.61	34.97	3.94	88.29	74.00	14.29	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



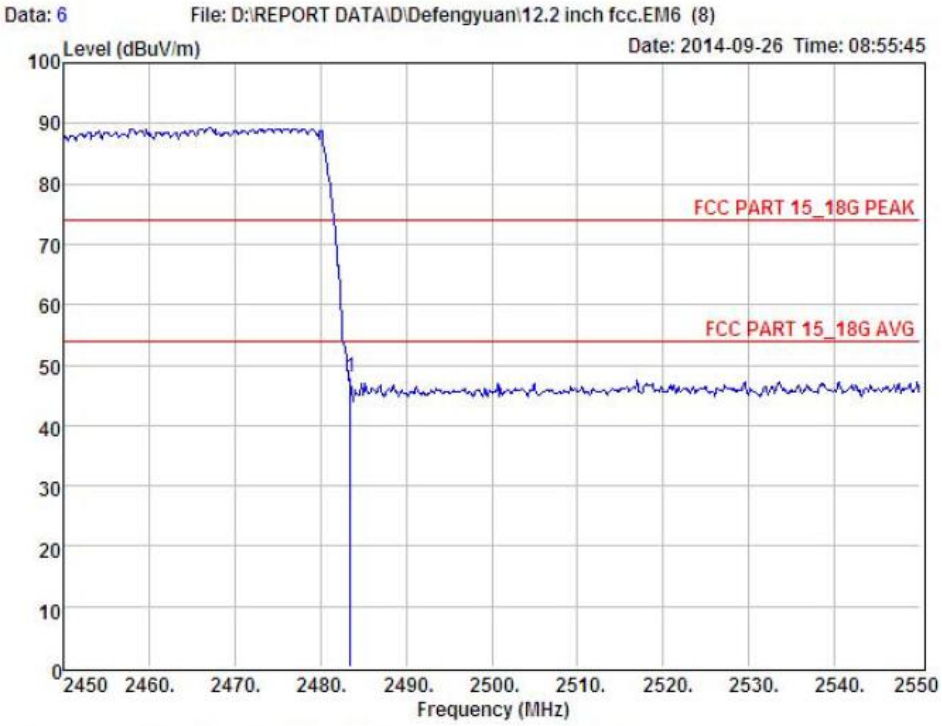
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT :
Model No :
Test Mode : GFSK-TX Hopping
Power :
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	45.14	27.62	34.97	3.92	41.71	74.00	-32.29	Peak
2	2400.00	53.00	27.62	34.97	3.94	49.59	54.00	-4.41	Average
3	2400.00	68.00	27.62	34.97	3.94	64.59	74.00	-9.41	Peak
4	2402.18	93.74	27.62	34.97	3.94	90.33	74.00	16.33	Peak

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

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

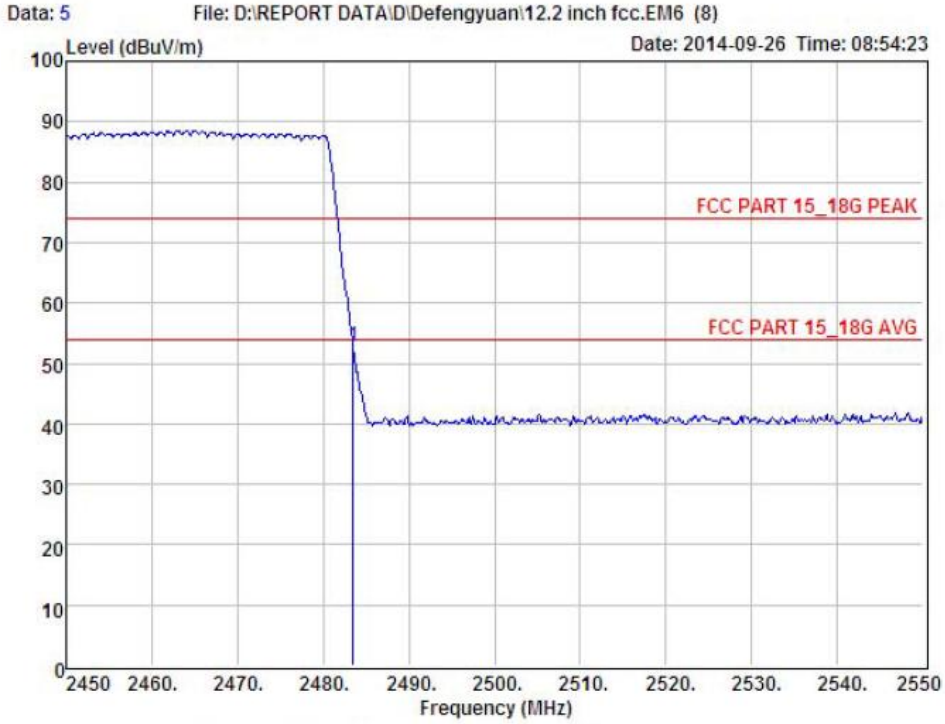


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT :
Model No :
Test Mode : GFSK-TX Hopping
Power :
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	51.42	27.59	34.97	4.00	48.04	74.00	-25.96	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



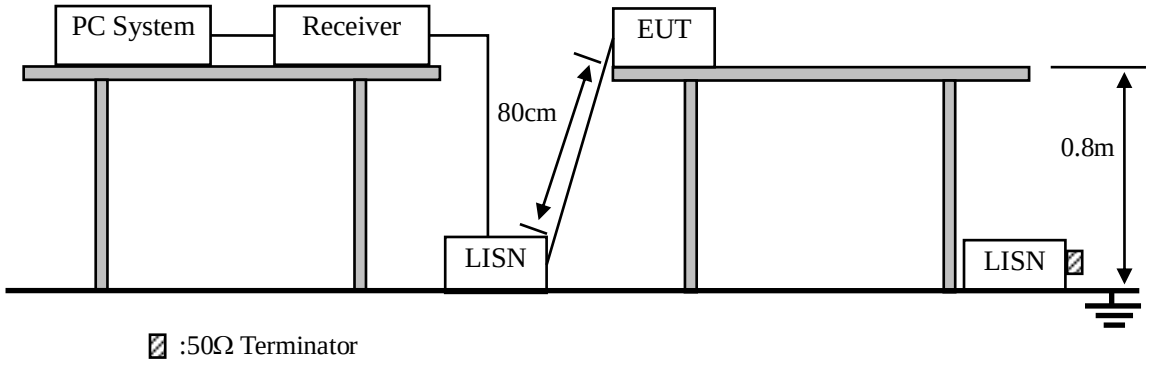
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT :
Model No :
Test Mode : GFSK-TX Hopping
Power :
Test Engineer :
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	56.09	27.59	34.97	4.00	52.71	74.00	-21.29	Peak

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

10. Power Line Conducted Emissions

10.1. Block Diagram of Test Setup



10.2. Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

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

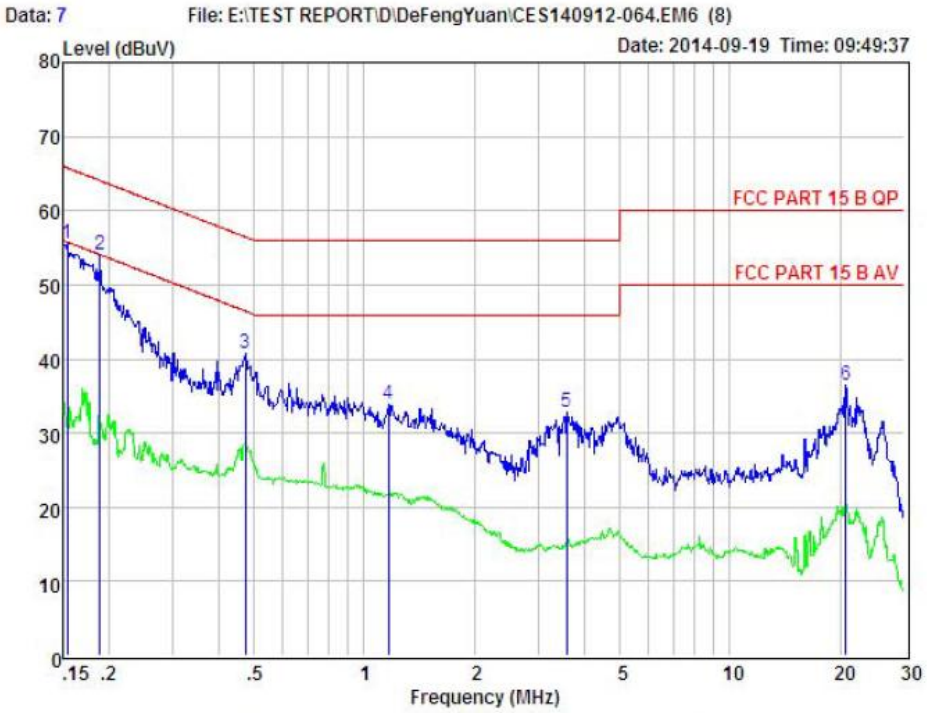
10.3. Test Procedure

(1) The EUT was placed on a non-metallic table, 80cm above the ground plane.
(2) Setup the EUT and simulator as shown in 10.1
(3) The EUT Power connected to the power mains through a power adapter and a line impedance stabilization network (L.I.S.N1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N2), this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4 2003 on conducted Emission test.
(4) The bandwidth of test receiver is set at 10KHz.
(5) The frequency range from 150 KHz to 30MHz is checked.

10.4.Test Result

PASS. (See below detailed test data)

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

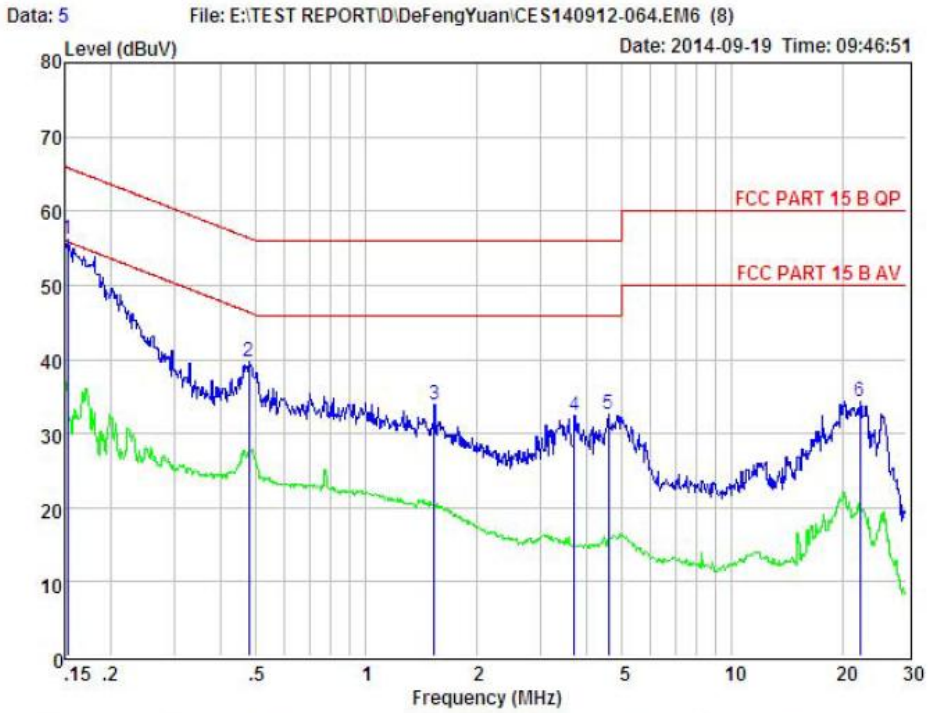


Condition : FCC PART 15 B QP POL: LINE Temp:24 ℃ Hum:56 %
EUT :
Model No :
Test Mode : TX and Charging
Power : DC 5V From PC AC 120V/60Hz
Test Engineer:
Remark :

Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.154	45.78	0.03	-9.72	0.10	55.63	65.78	-10.15	Peak
2	0.189	44.20	0.03	-9.72	0.10	54.05	64.06	-10.01	Peak
3	0.474	30.81	0.03	-9.72	0.10	40.66	56.45	-15.79	Peak
4	1.166	24.01	0.04	-9.71	0.10	33.86	56.00	-22.14	Peak
5	3.584	22.83	0.08	-9.69	0.12	32.72	56.00	-23.28	Peak
6	20.814	26.19	0.33	-9.51	0.37	36.40	60.00	-23.60	Peak

Remarks: Level = Read + LISN 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 B QP              POL: NEUTRAL  Temp:24 ℃   Hum:56 %
EUT           :
Model No      :
Test Mode     : TX and Charging
Power         : DC 5V From  PC AC 120V/60Hz
Test Engineer:
Remark        :
```

Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.152	46.43	0.03	-9.72	0.10	56.28	65.87	-9.59	Peak
2	0.479	29.88	0.03	-9.72	0.10	39.73	56.36	-16.63	Peak
3	1.535	24.03	0.05	-9.71	0.10	33.89	56.00	-22.11	Peak
4	3.700	22.45	0.08	-9.69	0.12	32.34	56.00	-23.66	Peak
5	4.598	22.72	0.09	-9.68	0.12	32.61	56.00	-23.39	Peak
6	22.416	24.05	0.40	-9.54	0.41	34.40	60.00	-25.60	Peak

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

Note: If QP Result comply with AV limit, AV Result is deemed to comply with AV limit

11. Antenna Requirements

11.1. Limit

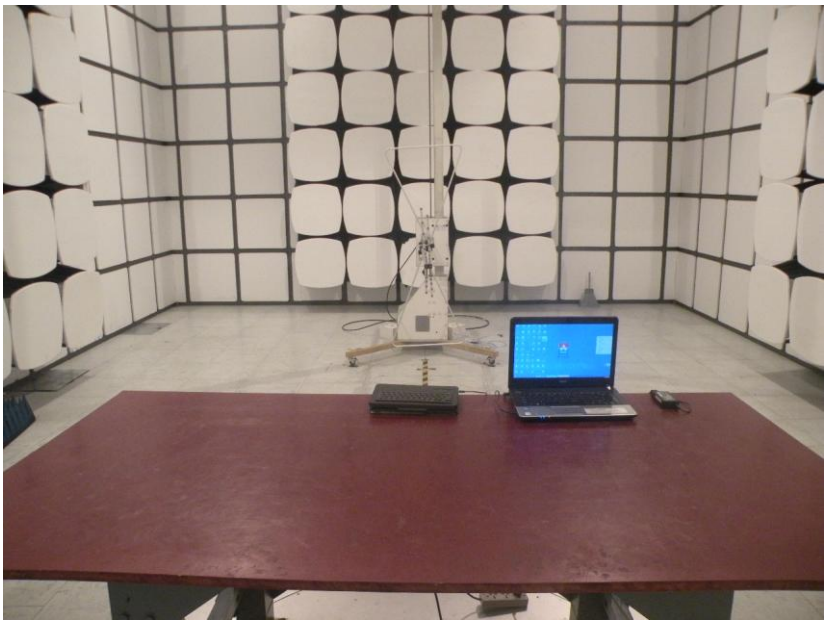
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

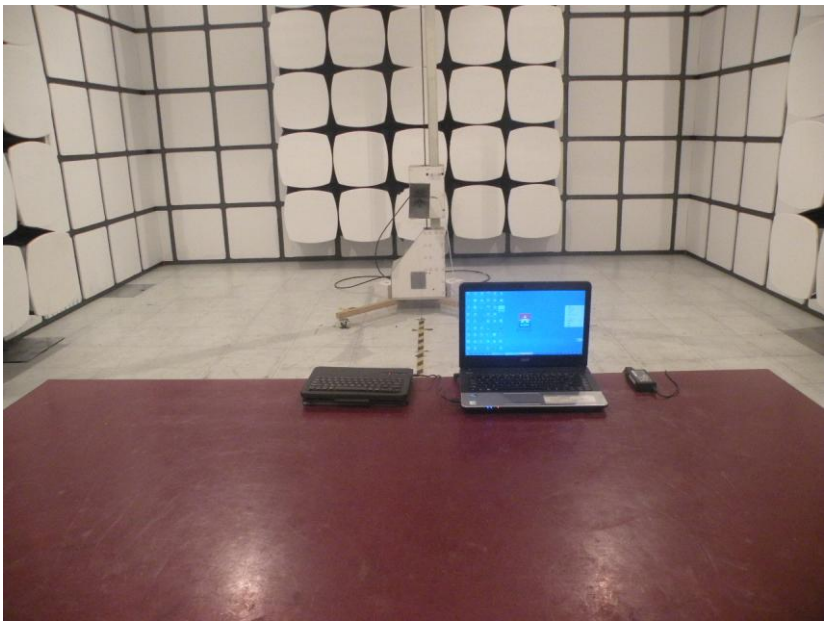
11.2. Result

The antennas used for this product are PCB Antenna for Bluetooth, 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 for Bluetooth.

12. Test setup photo

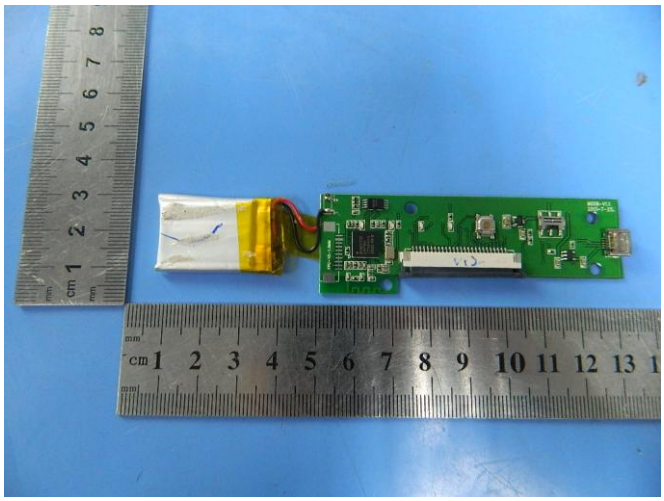
12.1. Photos of Radiated emission

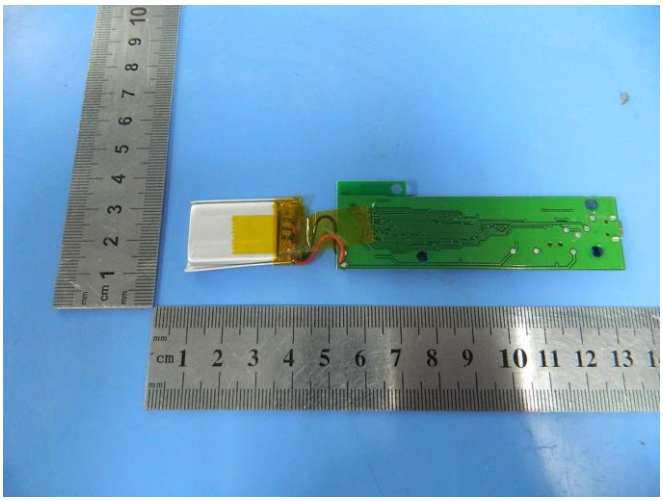


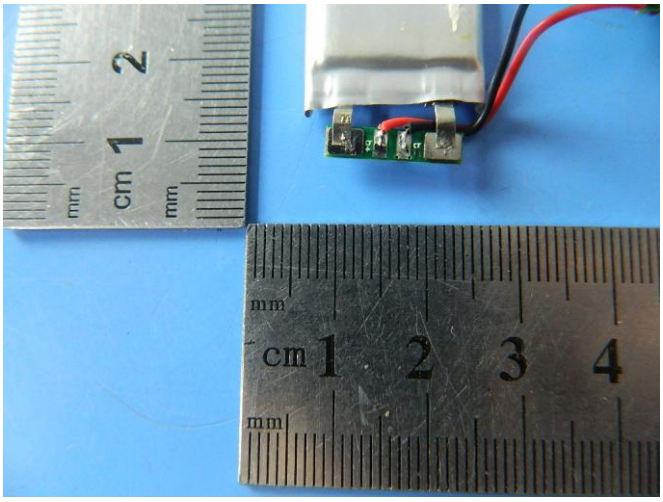


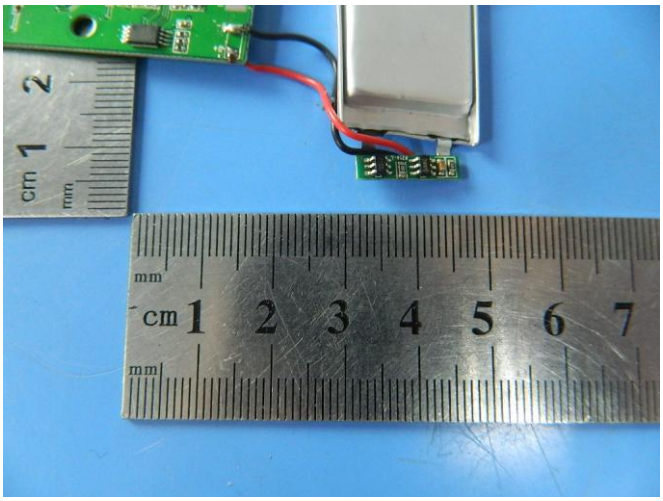
12.2.Photos of Conducted Emission test

13. Photos of EUT









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