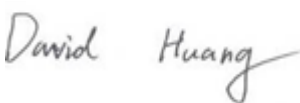


RF TEST REPORT



Report No.: 17071293-FCC-R

Supersede Report No.: N/A

Applicant	Dongguan Lingjie Electronics & Technology Co., Ltd	
Product Name	Wireless Mouse	
Main Model	I887	
Serial Model	N/A	
Test Standard	FCC Part 15.249: 2016; ANSI C63.10: 2013	
Test Date	November 21 to December 08, 2017	
Issue Date	December 09, 2017	
Test Result	☒ Pass ☐ Fail	
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		
		
Aaron Liang Test Engineer	David Huang Checked By	
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only		

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

Test Report No.	17071293-FCC-R
Page	3 of 39

This page has been left blank intentionally.

CONTENTS

1. REPORT REVISION HISTORY	5
2. CUSTOMER INFORMATION	5
3. TEST SITE INFORMATION	6
4. EQUIPMENT UNDER TEST (EUT) INFORMATION	7
5. TEST SUMMARY	8
6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	9
6.1 ANTENNA REQUIREMENT	9
6.2 AC LINE CONDUCTED EMISSIONS	10
6.3 RADIATED SPURIOUS EMISSIONS	12
6.4 FIELD STRENGTH MEASUREMENT	20
6.5 20DB BANDWIDTH TESTING	22
6.6 BAND EDGE	24
ANNEX A. TEST INSTRUMENT	26
ANNEX B. EUT AND TEST SETUP PHOTOGRAPHS	27
ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT	35
ANNEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST	38
ANNEX E. DECLARATION OF SIMILARITY.....	39

1. Report Revision History

Report No.	Report Version	Description	Issue Date
17071293-FCC-R	NONE	Original	December 09, 2017

2. Customer information

Applicant Name	Dongguan Lingjie Electronics & Technology Co., Ltd
Applicant Add	Building A(Floor 1-4) and B(Floor 1-5), No. 16 Zhenxing North Road, Taiyuan Community, Xiegang Town, Dongguan City, Guangdong Province, 523590, P.R.C
Manufacturer	Dongguan Lingjie Electronics & Technology Co., Ltd
Manufacturer Add	Building A(Floor 1-4) and B(Floor 1-5), No. 16 Zhenxing North Road, Taiyuan Community, Xiegang Town, Dongguan City, Guangdong Province, 523590, P.R.C

3. Test site information

Test Lab A:

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	535293
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

Test Lab B:

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	694825
IC Test Site No.	4842B-1
Test Software	EZ_EMG(ver.lcp-03A1)

Note: We just perform Radiated Spurious Emission above 18GHz in the test Lab. B.

4. Equipment under Test (EUT) Information

Description of EUT:	Wireless Mouse
Main Model:	I887
Serial Model:	N/A
Date EUT received:	November 22
Test Date(s):	November 21 to December 08, 2017
Antenna Gain:	-1.0dBi
Antenna Type:	PCB antenna
Power:	84.75dBuV/m
Type of Modulation:	GFSK
RF Operating Frequency (ies):	2402.85 - 2480.85MHz
Number of Channels:	16CH
Input Power:	DC 1.5V
Trade Name :	FD
FCC ID:	2ANBUI887

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	N/A
§15.205, §15.209, §15.249(a), §15.249(d)	Radiated Fundamental / Radiated Spurious Emissions	Compliance
§15.249(a)	Field Strength Measurement	Compliance
§15.249©	20 dB Bandwidth	Compliance
§15.249(d)	Band Edge	Compliance

Measurement Uncertainty

Emissions		
Test Item	Description	Uncertainty
Band Edge and Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

6.1 Antenna Requirement

Standard Requirement:

According to § 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. 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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.
- c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

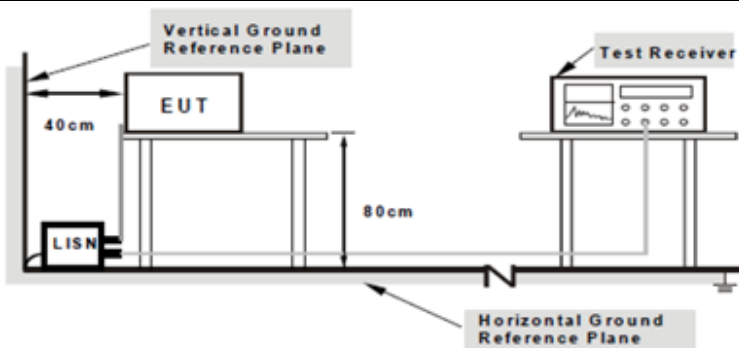
Antenna Connector Construction

A permanently attached PCB antenna, the gain is -1.0dBi.

Test Result: Pass

6.2 AC Line Conducted Emissions

Temperature	-----
Relative Humidity	-----
Atmospheric Pressure	-----
Test date :	-----
Tested By :	-----

Spec	Item	Requirement	Applicable														
§15.207	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu]H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges.															
		<table><tr><th rowspan="2">Frequency ranges (MHz)</th><th colspan="2">Limit (dBµV)</th></tr><tr><th>QP</th><th>Average</th></tr><tr><td>0.15 ~ 0.5</td><td>66 – 56</td><td>56 – 46</td></tr><tr><td>0.5 ~ 5</td><td>56</td><td>46</td></tr><tr><td>5 ~ 30</td><td>60</td><td>50</td></tr></table>		Frequency ranges (MHz)	Limit (dBµV)		QP	Average	0.15 ~ 0.5	66 – 56	56 – 46	0.5 ~ 5	56	46	5 ~ 30	60	50
		Frequency ranges (MHz)			Limit (dBµV)												
				QP	Average												
		0.15 ~ 0.5		66 – 56	56 – 46												
0.5 ~ 5	56	46															
5 ~ 30	60	50															
Test Setup		 Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.															
Procedure		1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table. 2. The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains. 3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.															

Test Report No.	17071293-FCC-R
Page	11 of 39

	4. All other supporting equipment were powered separately from another main supply. 5. The EUT was switched on and allowed to warm up to its normal operating condition. 6. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver. 7. High peaks, relative to the limit line, The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz. 8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).
Remark	
Result	☐ Pass ☐ Fail ☒ N/A

Test Data ☐ Yes ☒ N/A

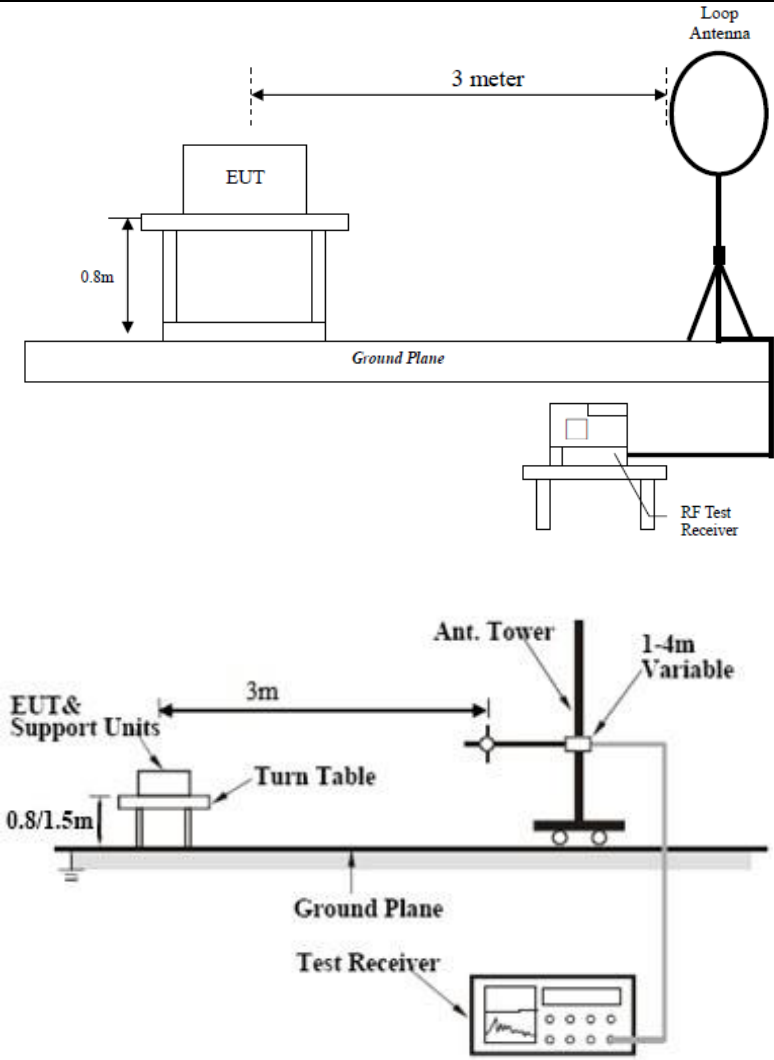
Test Plot ☐ Yes (See below) ☒ N/A

6.3 Radiated Spurious Emissions

Temperature	23 °C
Relative Humidity	55%
Atmospheric Pressure	1012mbar
Test date :	December 04, 2017
Tested By :	Aaron Liang

Requirement(s):

Spec	Requirement	Applicable																															
§15.209, §15.205, §15.249(a) & §15.249(d)	The emissions from the Low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges. The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following: <table><tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr><tr><td>902– 928 MHz</td><td>50</td><td>500</td></tr><tr><td>2400– 2483.5 MHz</td><td>50</td><td>500</td></tr><tr><td>5725– 5875 MHz</td><td>50</td><td>500</td></tr><tr><td>24.0– 24.25 GHz</td><td>250</td><td>2500</td></tr></table> (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 §15.209, whichever is the lesser attenuation. <table><tr><th>Frequency range (MHz)</th><th>Field Strength (µV/m)</th></tr><tr><td>0.009~0.490</td><td>2400/F(KHz)</td></tr><tr><td>0.490~1.705</td><td>24000/F(KHz)</td></tr><tr><td>1.705~30.0</td><td>30</td></tr><tr><td>30 – 88</td><td>100</td></tr><tr><td>88 – 216</td><td>150</td></tr><tr><td>216 960</td><td>200</td></tr><tr><td>Above 960</td><td>500</td></tr></table>	Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)	902– 928 MHz	50	500	2400– 2483.5 MHz	50	500	5725– 5875 MHz	50	500	24.0– 24.25 GHz	250	2500	Frequency range (MHz)	Field Strength (µV/m)	0.009~0.490	2400/F(KHz)	0.490~1.705	24000/F(KHz)	1.705~30.0	30	30 – 88	100	88 – 216	150	216 960	200	Above 960	500	
	Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)																														
	902– 928 MHz	50	500																														
	2400– 2483.5 MHz	50	500																														
	5725– 5875 MHz	50	500																														
	24.0– 24.25 GHz	250	2500																														
	Frequency range (MHz)	Field Strength (µV/m)																															
	0.009~0.490	2400/F(KHz)																															
	0.490~1.705	24000/F(KHz)																															
	1.705~30.0	30																															
30 – 88	100																																
88 – 216	150																																
216 960	200																																
Above 960	500																																

Test Setup	 The top diagram illustrates a side view of the test setup. It shows the EUT (Equipment Under Test) mounted on a stand that is 0.8m high. A loop antenna is positioned 3 meters away from the EUT. The antenna is connected to an RF Test Receiver. The entire setup is on a Ground Plane. The bottom diagram illustrates a top-down view of the test setup. It shows the EUT & Support Units mounted on a turn table that is 0.8/1.5m high. The turn table is connected to an Ant. Tower with a 1-4m Variable height. The antenna tower is connected to a Test Receiver. The entire setup is on a Ground Plane.
Procedure	- Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function - For emission frequencies measured below 1GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1GHZ, a pre-scan also be performed with a meter measuring distance before final test. - For emission frequencies measured below and above 1GHz, set the spectrum analyzer on a 100kHz and 1MHz resolution bandwidth respectively for each frequency measured in step 2. - The search antenna is to be raised and lowered over a range from 1 to 4m in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, the change the orientation of EUT on the test table over a range from 0 to 360°. With a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer.

Test Report No.	17071293-FCC-R
Page	14 of 39

	Vary the antenna position again and record the highest value as a final reading. - Repeat step 4 until all frequencies need to be measured was complete. - Repeat step5 with search antenna in vertical polarized orientations.
Remark	
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A
 Test Plot ☒ Yes (See below) ☐ N/A

Test Result:

Test Mode:	Transmitting Mode
------------	-------------------

Frequency range: 9KHz - 30MHz

Freq. (MHz)	Detection value	Factor (dB/m)	Reading (dBuV/m)	Result (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)
--	--	--	--	--	--	>20
--	--	--	--	--	--	>20

Note:

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

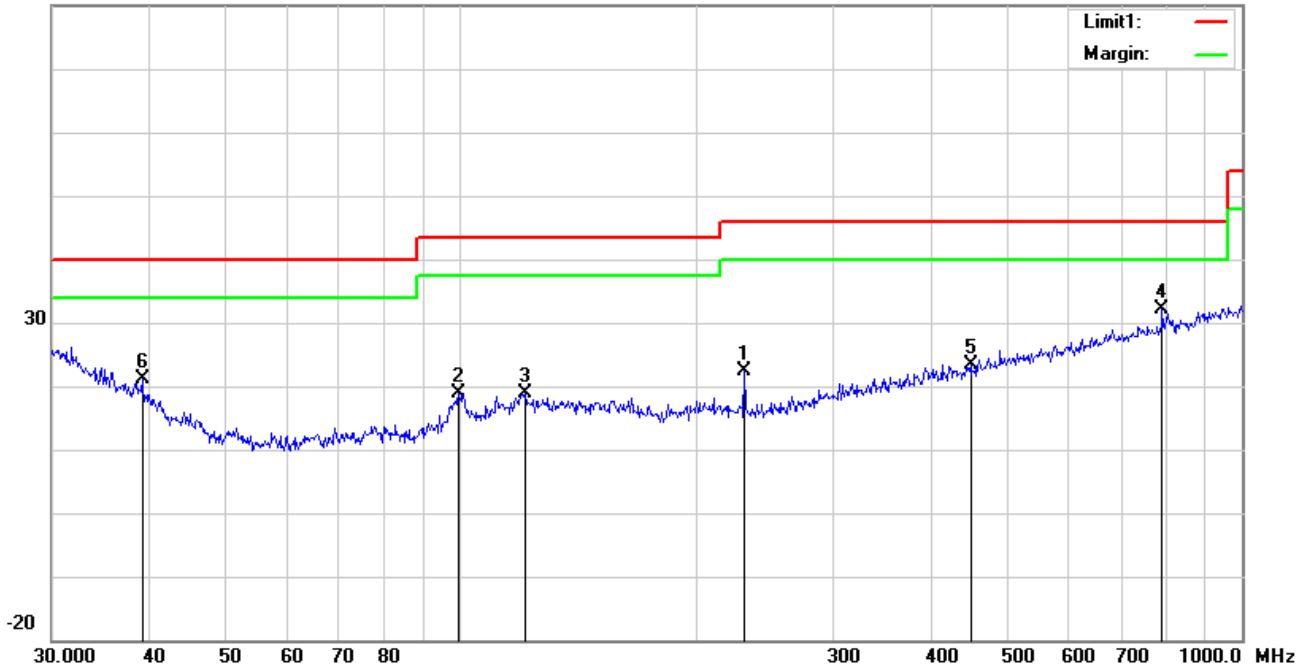
Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

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

Test Mode: 2.4G Mode

30MHz -1GHz

80.0 dBuV/m

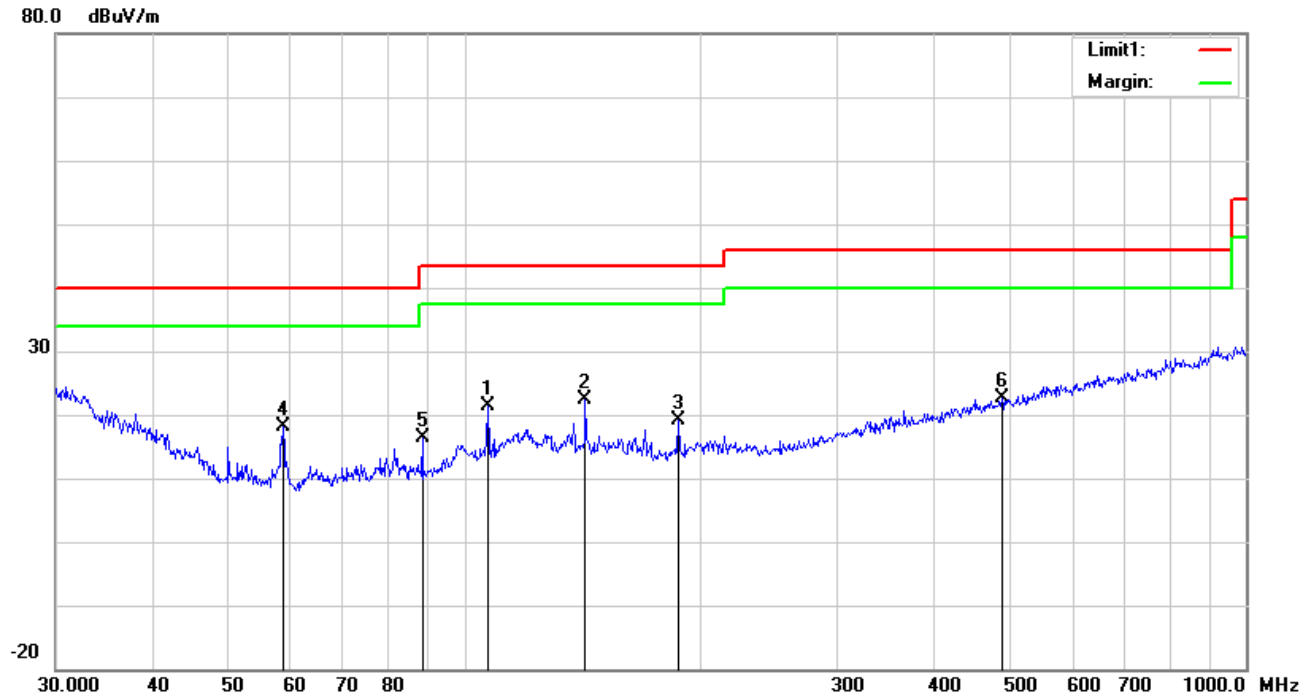


Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detect or	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	H	230.9068	31.44	peak	11.67	22.32	1.64	22.43	46.00	-23.57	100	311
2	H	99.5281	29.85	peak	10.29	22.32	1.11	18.93	43.50	-24.57	100	154
3	H	121.1231	26.14	peak	13.83	22.36	1.16	18.77	43.50	-24.73	200	59
4	H	790.6188	29.05	peak	21.29	21.17	2.94	32.11	46.00	-13.89	100	239
5	H	449.5558	26.52	peak	16.69	21.91	2.13	23.43	46.00	-22.57	100	136
6	H	39.1616	28.11	peak	14.51	22.27	0.78	21.13	40.00	-18.87	100	234

30MHz -1GHz



Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detect or	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr ee
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	V	107.1337	30.78	peak	11.65	22.33	1.16	21.26	43.50	-22.24	100	317
2	V	142.8244	30.96	peak	12.60	22.39	1.29	22.46	43.50	-21.04	100	233
3	V	187.7530	28.42	peak	11.43	22.30	1.50	19.05	43.50	-24.45	100	37
4	V	58.6126	32.21	peak	7.45	22.41	0.76	18.01	40.00	-21.99	100	311
5	V	88.3421	29.69	peak	7.93	22.34	0.99	16.27	43.50	-27.23	100	157
6	V	487.3151	24.70	peak	17.45	21.84	2.35	22.66	46.00	-23.34	100	288

Above 1GHz

Test Mode:	2.4G Mode
-------------------	------------------

Low Channel: GFSK Mode (Worst Case) (2402.85 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4805.7	44.19	AV	V	33.39	7.22	48.46	36.34	54	-17.66
4805.7	42.64	AV	H	33.39	7.22	48.46	34.79	54	-19.21
4805.7	67.75	PK	V	33.39	7.22	48.46	59.9	74	-14.1
4805.7	67.15	PK	H	33.39	7.22	48.46	59.3	74	-14.7
8916	19.04	AV	V	38.84	8.46	49.22	17.12	54	-36.88
8916	18.61	AV	H	38.84	8.46	49.22	16.69	54	-37.31
8916	38.72	PK	V	38.84	8.46	49.22	36.8	74	-37.2
8916	42.03	PK	H	38.84	8.46	49.22	40.11	74	-33.89

Middle Channel: GFSK Mode (Worst Case) (2441.85 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4883.7	44.85	AV	V	33.62	7.53	48.36	37.64	54	-16.36
4883.7	46.06	AV	H	33.62	7.53	48.36	38.85	54	-15.15
4883.7	66.88	PK	V	33.62	7.53	48.36	59.67	74	-14.33
4883.7	63.84	PK	H	33.62	7.53	48.36	56.63	74	-17.37
13455	18.68	AV	V	41.56	13.44	46.09	27.59	54	-26.41
13455	18	AV	H	41.56	13.44	46.09	26.91	54	-27.09
13455	37.84	PK	V	41.56	13.44	46.09	46.75	74	-27.25
13455	38.67	PK	H	41.56	13.44	46.09	47.58	74	-26.42

High Channel: GFSK Mode (Worst Case) (2480.85 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4961.7	42.02	AV	V	33.89	7.86	48.31	35.46	54	-18.54
4961.7	49.8	AV	H	33.89	7.86	48.31	43.24	54	-10.76
4961.7	65.54	PK	V	33.89	7.86	48.31	58.98	74	-15.02
4961.7	65.09	PK	H	33.89	7.86	48.31	58.53	74	-15.47
17829	20.33	AV	V	43.05	19.54	44.86	38.06	54	-15.94
17829	18.92	AV	H	43.05	19.54	44.86	36.65	54	-17.35
17829	38.57	PK	V	43.05	19.54	44.86	56.3	74	-17.7
17829	40.11	PK	H	43.05	19.54	44.86	57.84	74	-16.16

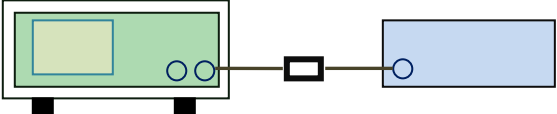
Note:

- 1, The testing has been conformed to $10 \times 2480.85 \text{ MHz} = 24,808.5 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit
- 3, X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.
- 4, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.

6.4 Field Strength Measurement

Temperature	23 °C
Relative Humidity	55%
Atmospheric Pressure	1012mbar
Test date :	December 04, 2017
Tested By :	Aaron Liang

Requirement(s):

Spec	Requirement	Applicable															
§15.249(a)	<table border="1"> <thead> <tr> <th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/ meter)</th><th>Field strength of harmonics (microvolts/ meter)</th></tr> </thead> <tbody> <tr> <td>902–928 MHz</td><td>50</td><td>500</td></tr> <tr> <td>2400–2483.5 MHz</td><td>50</td><td>500</td></tr> <tr> <td>5725–5875 MHz</td><td>50</td><td>500</td></tr> <tr> <td>24.0–24.25 GHz</td><td>250</td><td>2500</td></tr> </tbody> </table>	Fundamental frequency	Field strength of fundamental (millivolts/ meter)	Field strength of harmonics (microvolts/ meter)	902–928 MHz	50	500	2400–2483.5 MHz	50	500	5725–5875 MHz	50	500	24.0–24.25 GHz	250	2500	☒
Fundamental frequency	Field strength of fundamental (millivolts/ meter)	Field strength of harmonics (microvolts/ meter)															
902–928 MHz	50	500															
2400–2483.5 MHz	50	500															
5725–5875 MHz	50	500															
24.0–24.25 GHz	250	2500															
Test Setup	 Spectrum Analyzer EUT																
Test Procedure	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.																
Remark																	
Result	☒ Pass ☐ Fail																

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Mode:	2.4G Mode
-------------------	------------------

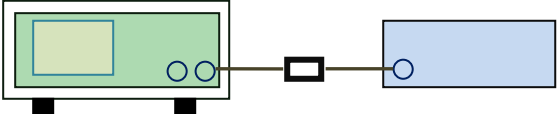
Field Strength Measurement

P/L	Frequency	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB/m)	(dB)	
H	2402.85	92.99	-18.1	74.89	114	-39.11	peak
H	2402.85	78.25	-18.1	60.15	94	-33.85	AVG
V	2402.85	102.85	-18.1	84.75	114	-29.25	peak
V	2402.85	87.04	-18.1	68.94	94	-25.06	AVG
H	2441.85	93.3	-18.05	75.25	114	-38.75	peak
H	2441.85	79.5	-18.05	61.45	94	-32.55	AVG
V	2441.85	96.67	-18.05	78.62	114	-35.38	peak
V	2441.85	83.26	-18.05	65.21	94	-28.79	AVG
H	2480.85	95.33	-18.03	77.3	114	-36.7	peak
H	2480.85	80.68	-18.03	62.65	94	-31.35	AVG
V	2480.85	97.79	-18.03	79.76	114	-34.24	peak
V	2480.85	83.15	-18.03	65.12	94	-28.88	AVG

6.5 20dB Bandwidth Testing

Temperature	25 °C
Relative Humidity	54%
Atmospheric Pressure	1010mbar
Test date :	December 06, 2017
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§15.215(c)	a)	Radiated Emissions Measurement Uncertainty All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz (3m & 10m) & 1GHz above (3m) is +5.6/-4.5dB.	☒
Test Setup	 Spectrum Analyzer EUT		
Test Procedure	- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. - Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value. - Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth. - Repeat above procedures until all frequencies measured were complete.		
Remark			

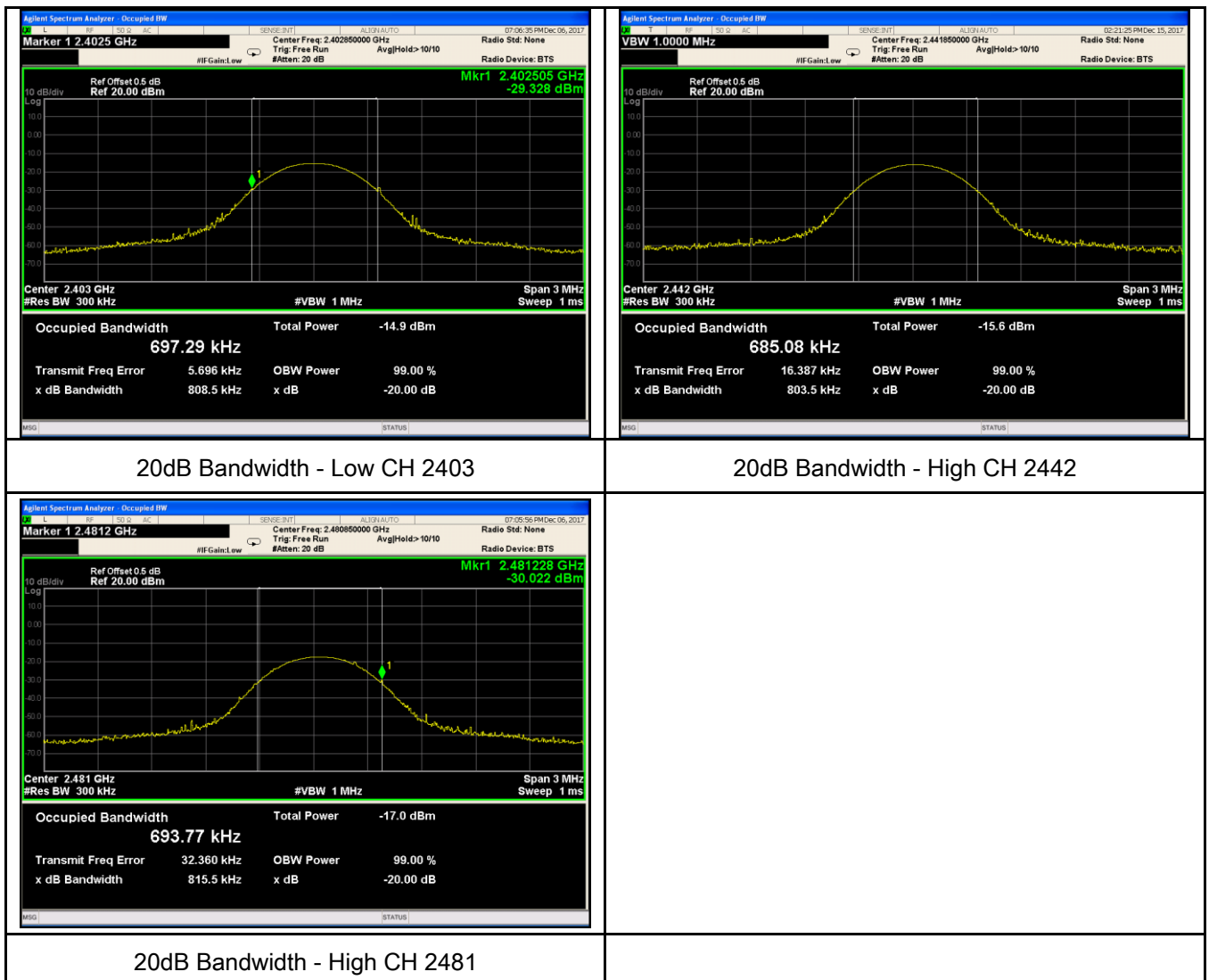
Result	☒ Pass	☐ Fail
Test Data	☒ Yes	☐ N/A
Test Plot	☒ Yes (See below)	☐ N/A

20dB Bandwidth measurement result

CH	Fundamental Frequency (MHz)	20dB Bandwidth (MHz)	Result
Low	2403	0.8085	Pass
Mid	2442	0.8035	Pass
High	2481	0.8155	Pass

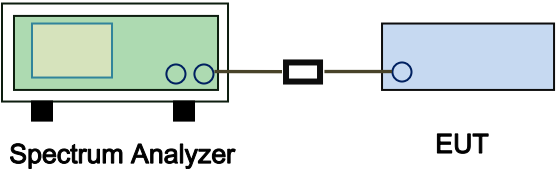
Test Plots

20dB Bandwidth measurement result



6.6 Band Edge

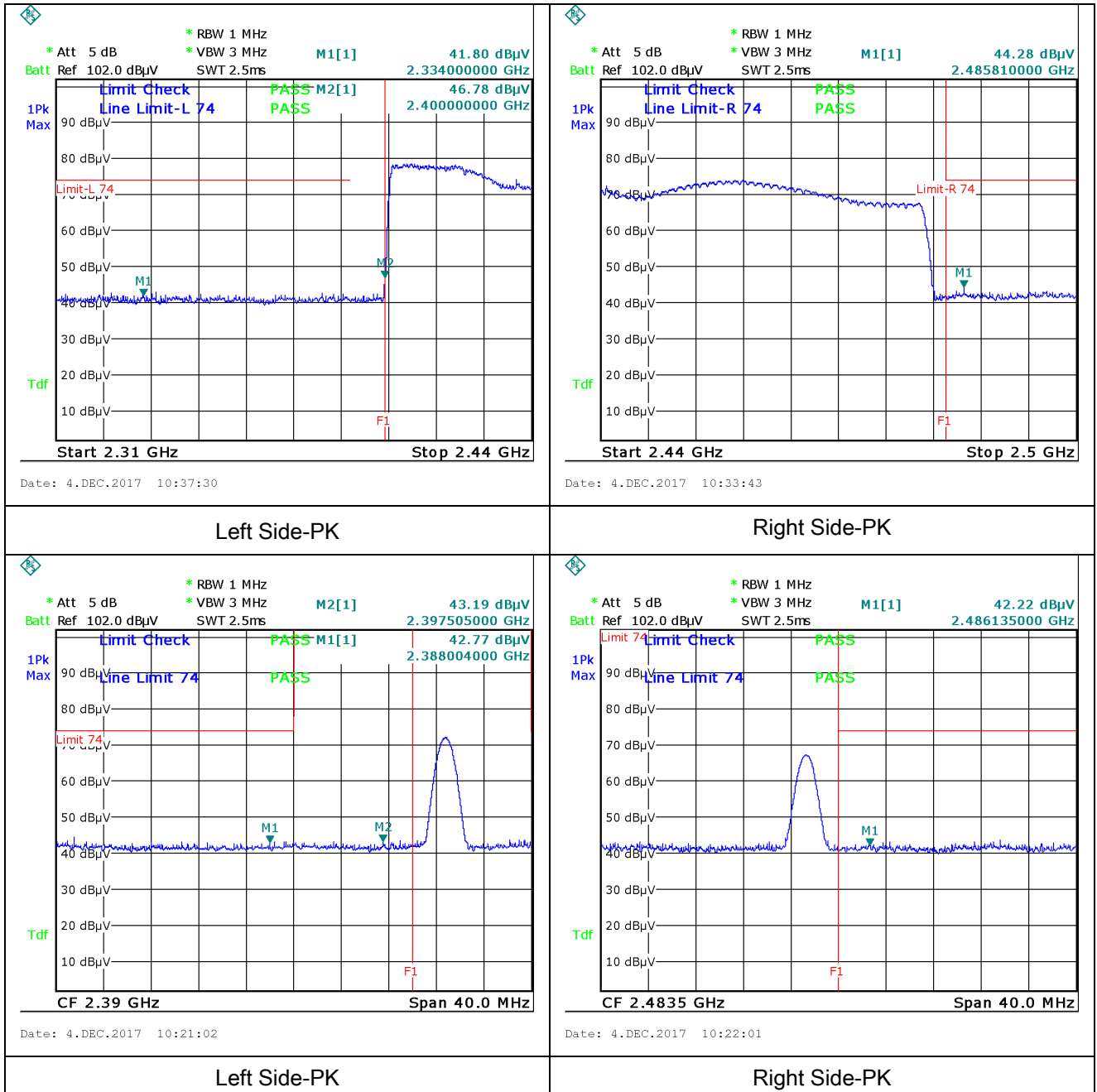
Temperature	23 °C
Relative Humidity	55%
Atmospheric Pressure	1012mbar
Test date :	December 04, 2017
Tested By :	Aaron Liang

Spec	Item	Requirement	Applicable
§15.249(d)	a)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.	☒
Test Setup	 Spectrum Analyzer EUT		
Test Procedure	- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. - Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range. - Set both RBW and VBW of spectrum analyzer to 1MHz. - Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. - Repeat above procedures until all measured frequencies were complete.		
Remark			
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Plots



Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted					
EMI test receiver	ESCS30	8471241027	09/15/2017	09/14/2018	☒
Line Impedance	LI-125A	191106	09/23/2017	09/22/2018	☒
Line Impedance	LI-125A	191107	09/23/2017	09/22/2018	☒
ISN	ISN T800	34373	09/23/2017	09/22/2018	☒
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/22/2017	09/21/2018	☒
Transient Limiter	LIT-153	531118	08/30/2017	08/29/2018	☒
RF conducted test					
Agilent ESA-E SERIES	E4407B	MY45108319	09/15/2017	09/14/2018	☒
Power Splitter	1#	1#	08/30/2017	08/29/2018	☒
DC Power Supply	E3640A	MY40004013	09/15/2017	09/14/2018	☒
Radiated Emissions					
EMI test receiver	ESL6	100262	09/15/2017	09/14/2018	☒
Positioning Controller	UC3000	MF780208282	11/17/2017	11/16/2018	☒
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	08/30/2017	08/29/2018	☒
Active Antenna (9kHz-30MHz)	AL-130	121031	10/12/2017	10/11/2018	☒
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	☒
Active Antenna (9kHz-30MHz)	AL-130	121031	10/12/2017	10/11/2018	☒
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/19/2017	09/18/2018	☒
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/22/2017	09/21/2018	☒
Universal Radio Communication Tester	CMU200	121393	09/23/2017	09/22/2018	☒

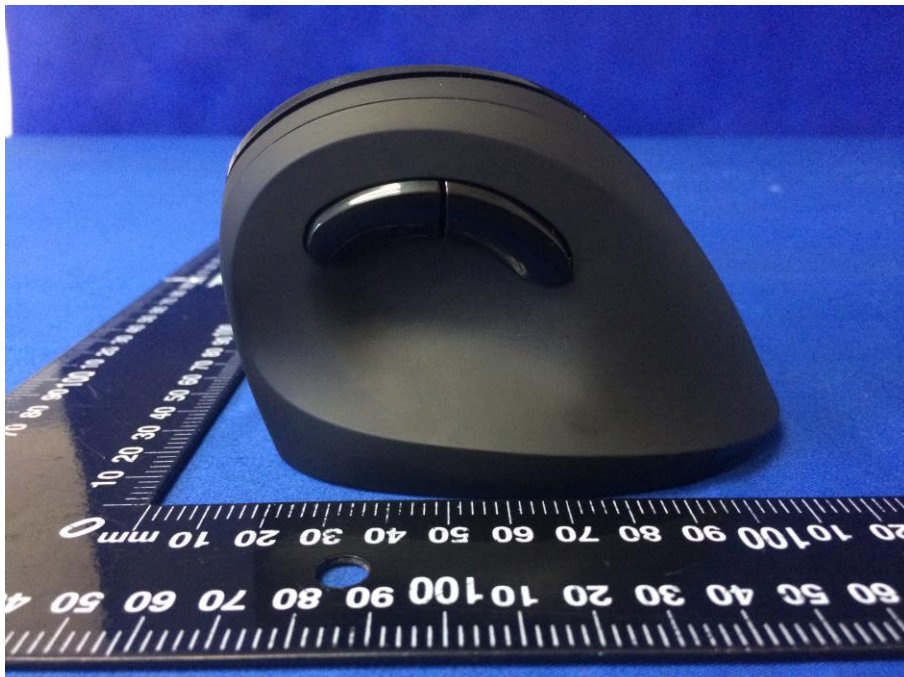
Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

EUT - Front View



EUT - Rear View



EUT - Top View(keyboard)



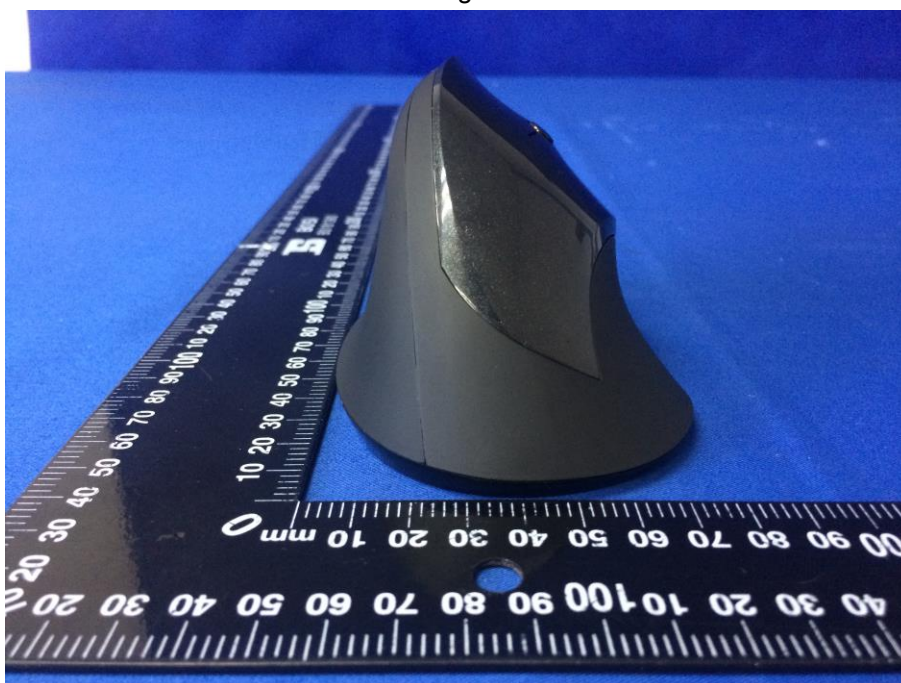
EUT - Bottom View(keyboard)



EUT - Left View



EUT - Right View

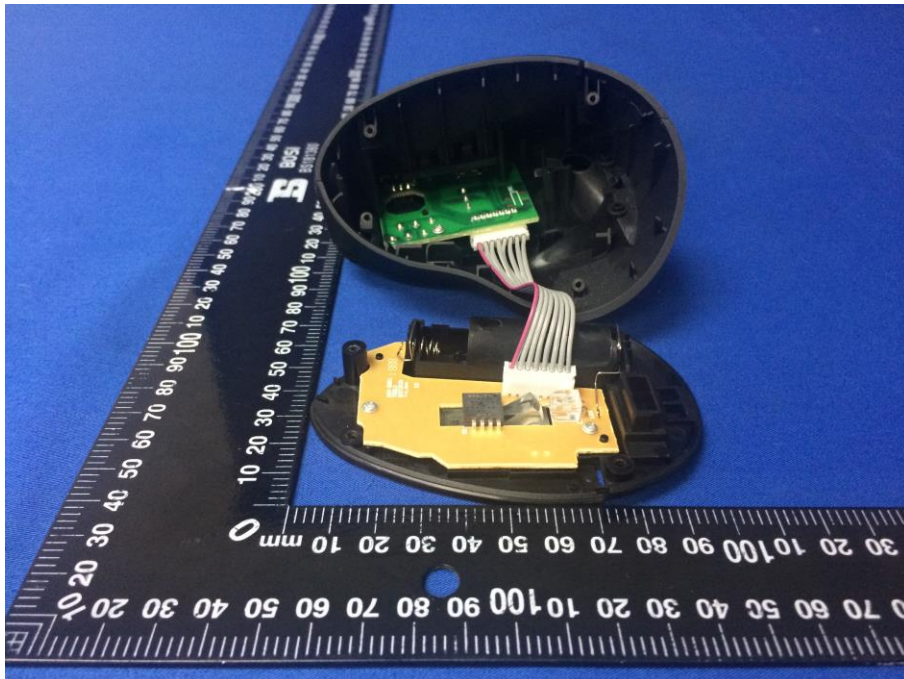


Annex B.ii. Photograph: EUT Internal Photo

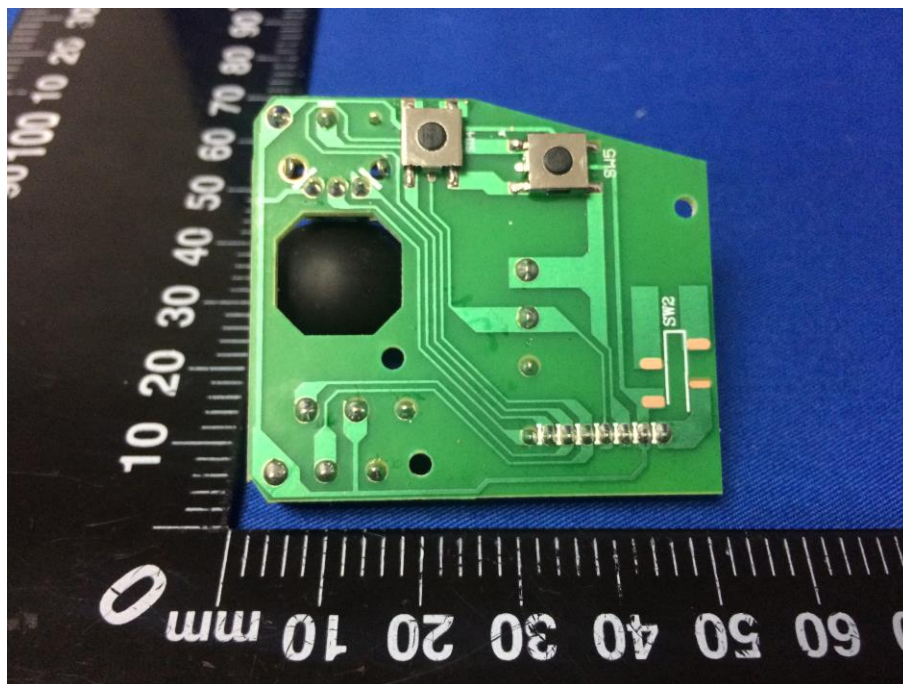
Cover Off - Top View 1



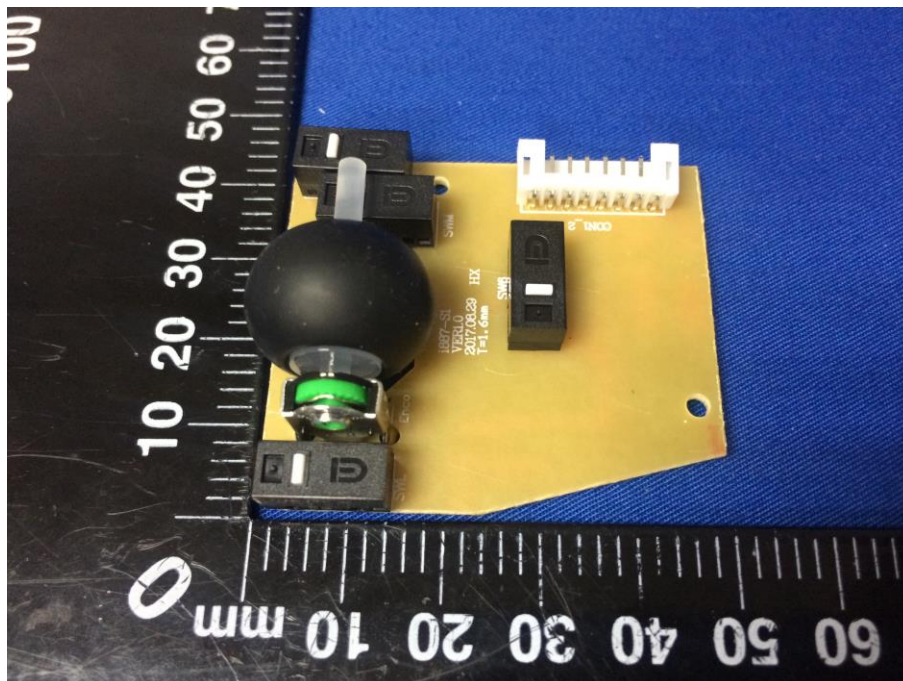
Cover Off - Top View 2



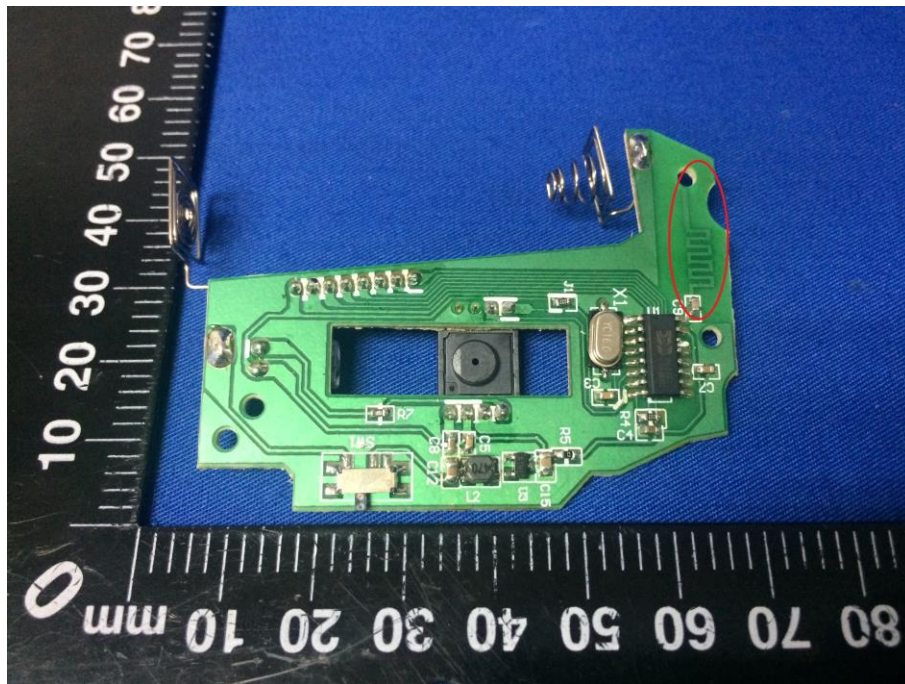
Mainboard - Front View



Mainboard – Rear View



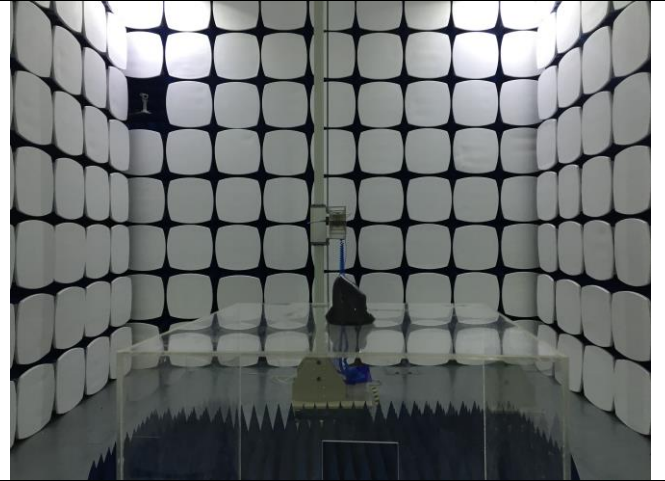
Antenna View



Annex B.iii. Photograph: Test Setup Photo



Radiated Spurious Emissions Test Setup Below 1GHz

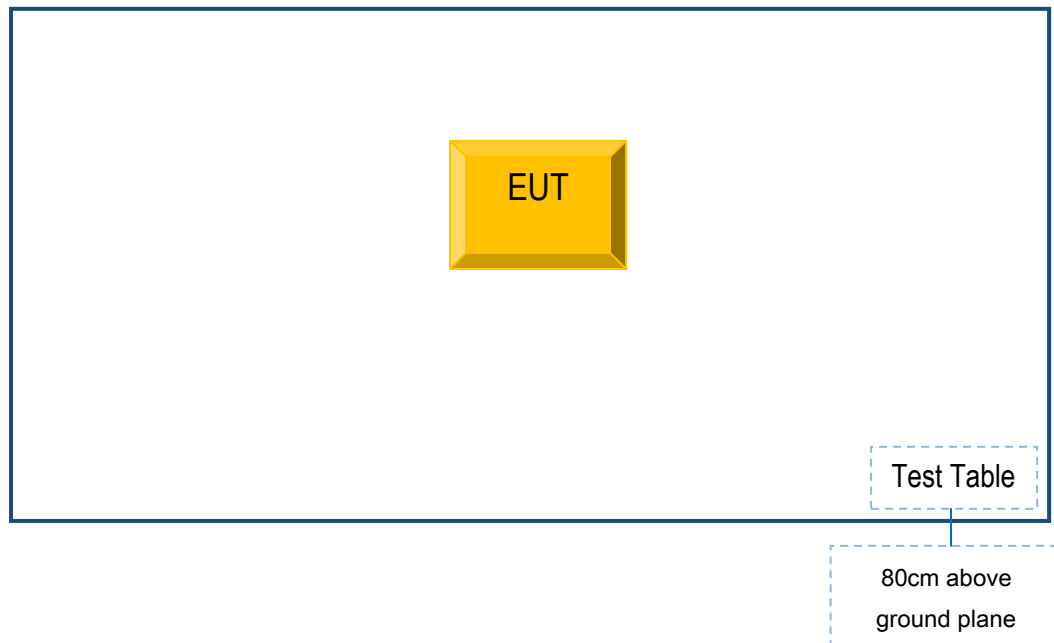
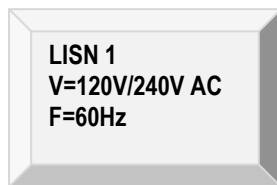


Radiated Spurious Emissions Test Setup Above
1GHz

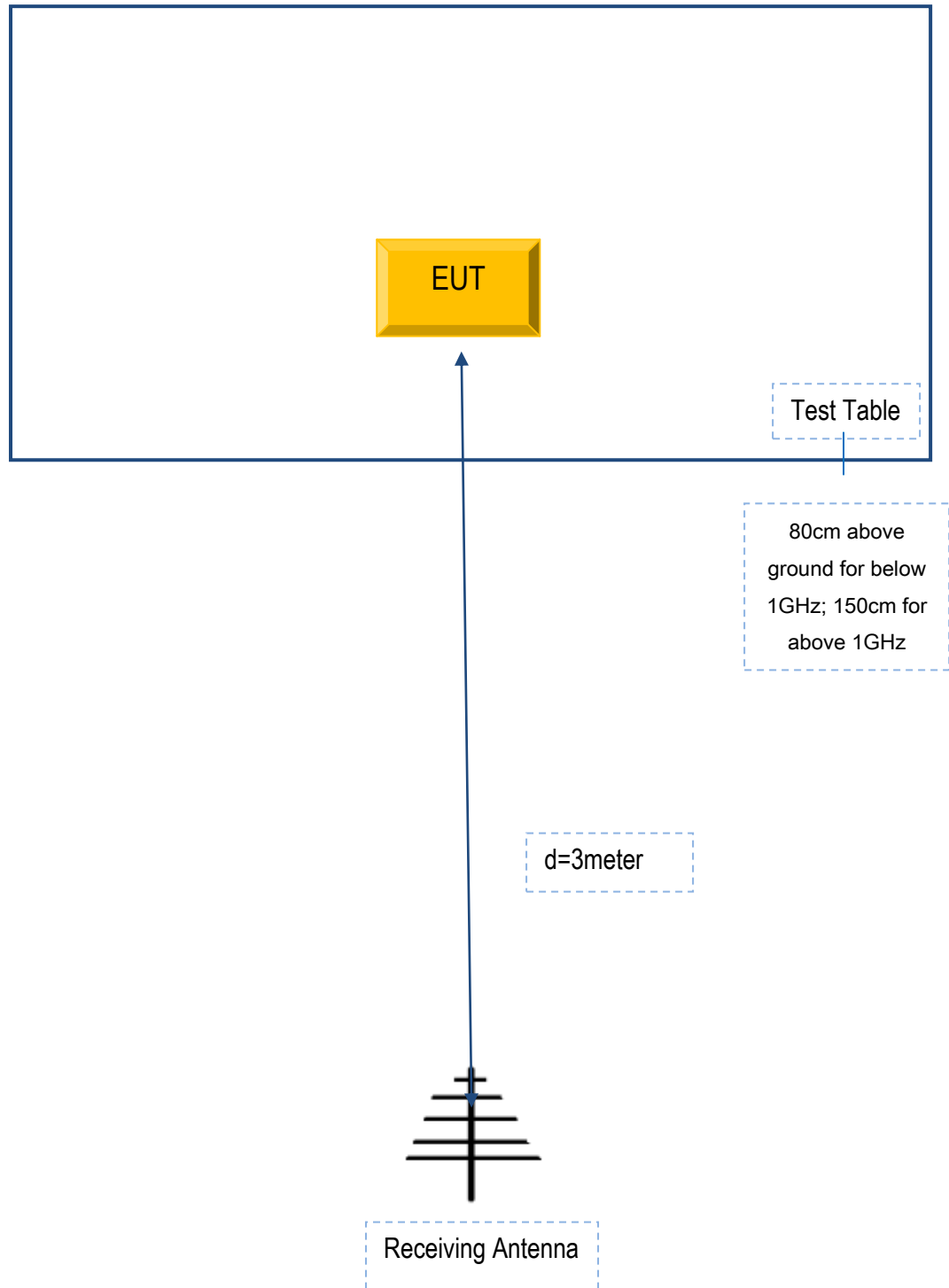
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for AC Line Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description	Model	Serial No.
N/A	N/A	N/A	N/A

Test Report No.	17071293-FCC-R
Page	38 of 39

Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see attachment

Annex E. DECLARATION OF SIMILARITY

N/A