EMC TEST REPORT

Report No.: 15070227-FCC-E1

Supersede Report No.: N/A

Applicant	Leader Light Ltd.
Product Name	Bluetooth Speaker
Model No.	8034423
Serial No.	A-1509-0,B29,B30,B28
Test Standard	FCC Part 15 Subpart B Class B:2013, ANSI C63.4: 2009
Test Date	April 8, 2015~April 14, 2015
Issue Date	April 15, 2015
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

LiLi . Xia	Chris You	
LiLi Xia **Test Engineer**	**Chris You** **Checked By**	

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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

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
15070227-FCC-E1	NONE	Original	April 15, 2015

2. Customer information

Applicant Name	Leader Light Ltd.
Applicant Add	Rm303,Chinachem Golden Plaza,77Mody Road,Tsimshatsui,Kowloon,Hongkong
Manufacturer	Leader Light Ltd.
Manufacturer Add	Rm303,Chinachem Golden Plaza,77Mody Road,Tsimshatsui,Kowloon,Hongkong

3. Test site information

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.	718246
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

4. Equipment under Test (EUT) Information

Description of EUT:	Bluetooth Speaker
Main Model:	8034423
Serial Model:	A-1509-0,B29,B30,B28
Date EUT received:	April 7, 2015
Test Date(s):	April 8, 2015~April 14, 2015
Equipment Category：	JBP
Antenna Gain:	Bluetooth: 0 dBi
Type of Modulation:	Bluetooth: GFSK, π /4DQPSK, 8DPSK
RF Operating Frequency (ies):	Bluetooth: 2402-2480 MHz
Number of Channels:	Bluetooth: 79CH
Port:	Power Port, Earphone Port, USB Port
Input Power:	Battery: Model: ZKH523450AR Spec: 3.7V 1000mAh Limited charger voltage: 4.2V
Trade Name :	NA
GPRS/EGPRS Multi-slot class	N/A
FCC ID:	2AEKN8034423

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
§15.107; ANSI C63.4: 2009	AC Power Line Conducted Emissions	Compliance
§15.109; ANSI C63.4: 2009	Radiated Emissions	Compliance

Measurement Uncertainty

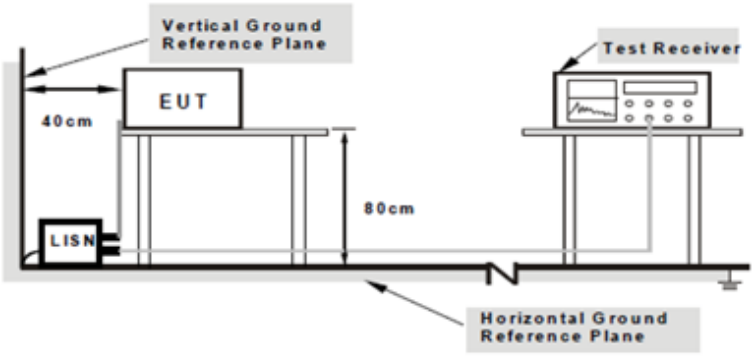
Emissions		
Test Item	**Description**	**Uncertainty**
Band Edge and Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	24°C
Relative Humidity	50%
Atmospheric Pressure	1020mbar
Test date :	March 13 to March 19, 2015
Tested By :	LiLi Xia

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.107</td><td>a)</td><td>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>
</td><td>☑</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 

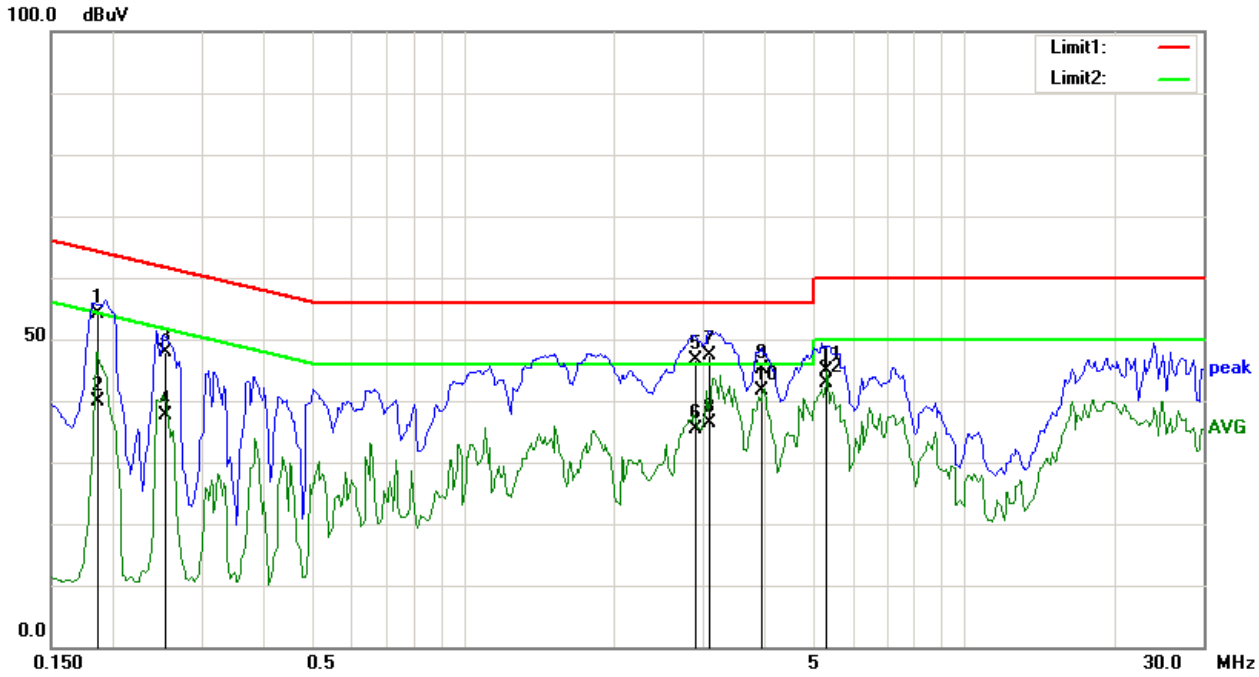
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT and supporting equipment were set up in accordance with the requirements of 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.</td></tr>
</table>

	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. 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

Test Data ☑ Yes ☐ N/A

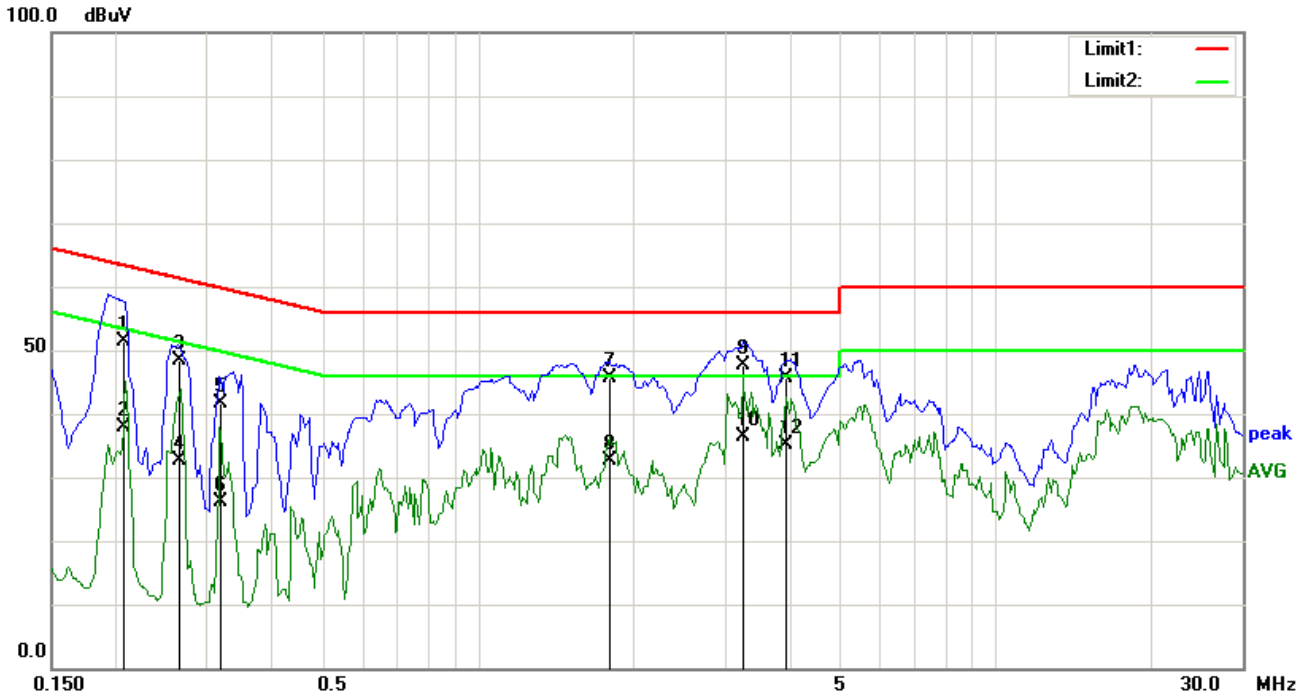
Test Plot ☑ Yes (See below) ☐ N/A

Test Mode 1:	Play ing music with PC



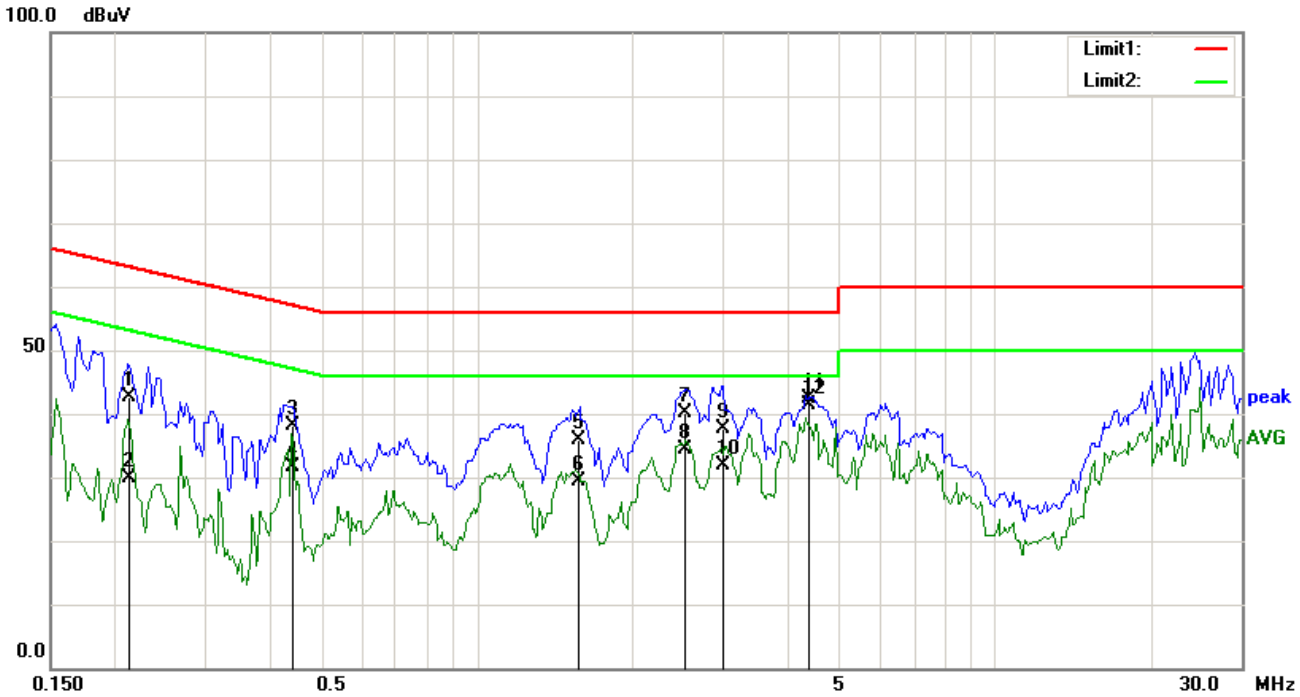
No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB}	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	L1	0.1864	42.74	QP	11.28	54.02	64.20	-10.18
2	L1	0.1864	28.56	AVG	11.28	39.84	54.20	-14.36
3	L1	0.2535	36.68	QP	11.25	47.93	61.64	-13.71
4	L1	0.2535	26.27	AVG	11.25	37.52	51.64	-14.12
5	L1	2.8998	35.80	QP	10.90	46.70	56.00	-9.30
6	L1	2.8998	24.48	AVG	10.90	35.38	46.00	-10.62
7	L1	3.0901	36.56	QP	10.90	47.46	56.00	-8.54
8	L1	3.0901	25.54	AVG	10.90	36.44	46.00	-9.56
9	L1	3.9430	34.17	QP	10.90	45.07	56.00	-10.93
10	L1	3.9430	30.75	AVG	10.90	41.65	46.00	-4.35
11	L1	5.3203	33.92	QP	10.89	44.81	60.00	-15.19
12	L1	5.3203	32.07	AVG	10.89	42.96	50.00	-7.04

Test Mode 1:	Play ing music with PC



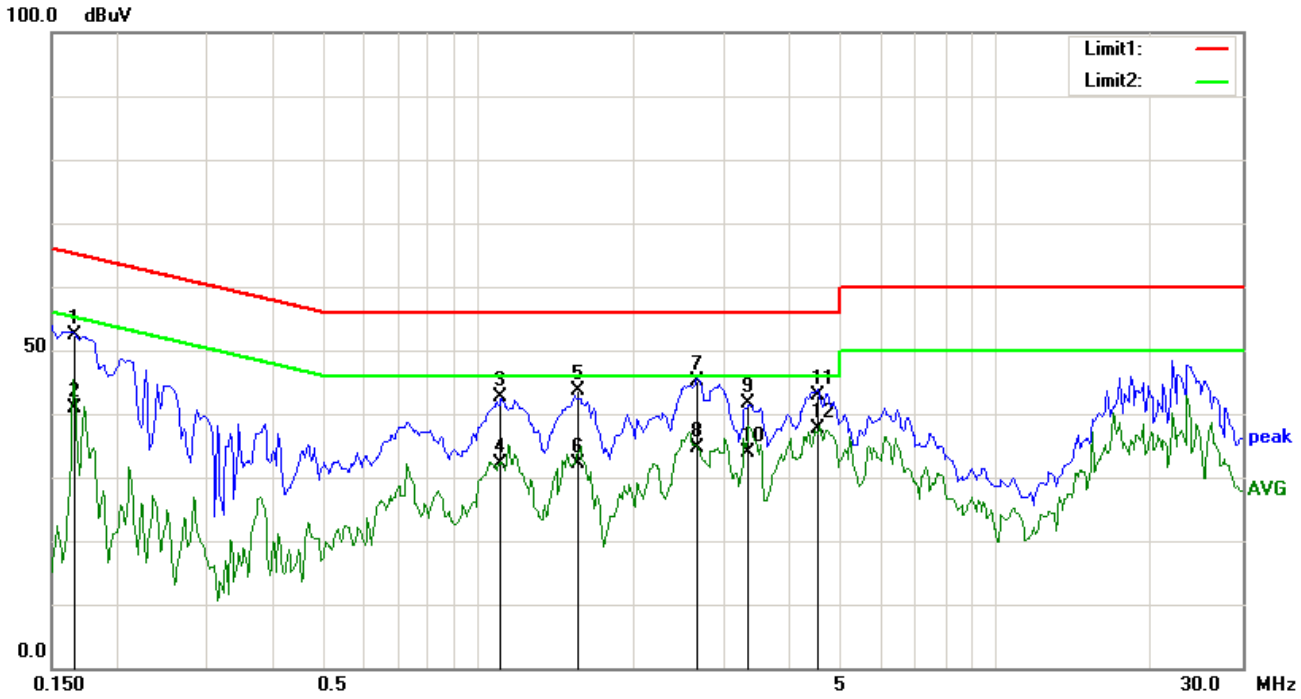
No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB}	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	N	0.2072	51.30	QP	0.00	51.30	63.32	-12.02
2	N	0.2072	37.79	AVG	0.00	37.79	53.32	-15.53
3	N	0.2644	48.37	QP	0.00	48.37	61.29	-12.92
4	N	0.2644	32.61	AVG	0.00	32.61	51.29	-18.68
5	N	0.3183	41.64	QP	0.00	41.64	59.75	-18.11
6	N	0.3183	26.10	AVG	0.00	26.10	49.75	-23.65
7	N	1.8000	45.67	QP	0.00	45.67	56.00	-10.33
8	N	1.8000	32.53	AVG	0.00	32.53	46.00	-13.47
9	N	3.2583	47.68	QP	0.00	47.68	56.00	-8.32
10	N	3.2583	36.26	AVG	0.00	36.26	46.00	-9.74
11	N	3.9430	45.56	QP	0.00	45.56	56.00	-10.44
12	N	3.9430	35.12	AVG	0.00	35.12	46.00	-10.88

Test Mode 2:	Aux in



No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB}	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	L1	0.2128	31.37	QP	11.27	42.64	63.10	-20.46
2	L1	0.2128	18.69	AVG	11.27	29.96	53.10	-23.14
3	L1	0.4397	27.07	QP	11.16	38.23	57.07	-18.84
4	L1	0.4397	20.48	AVG	11.16	31.64	47.07	-15.43
5	L1	1.5684	24.91	QP	10.90	35.81	56.00	-20.19
6	L1	1.5684	18.45	AVG	10.90	29.35	46.00	-16.65
7	L1	2.5289	29.26	QP	10.90	40.16	56.00	-15.84
8	L1	2.5289	23.46	AVG	10.90	34.36	46.00	-11.64
9	L1	2.9977	26.66	QP	10.90	37.56	56.00	-18.44
10	L1	2.9977	20.95	AVG	10.90	31.85	46.00	-14.15
11	L1	4.4023	31.46	QP	10.90	42.36	56.00	-13.64
12	L1	4.4023	30.44	AVG	10.90	41.34	46.00	-4.66

Test Mode 2:	AUX in

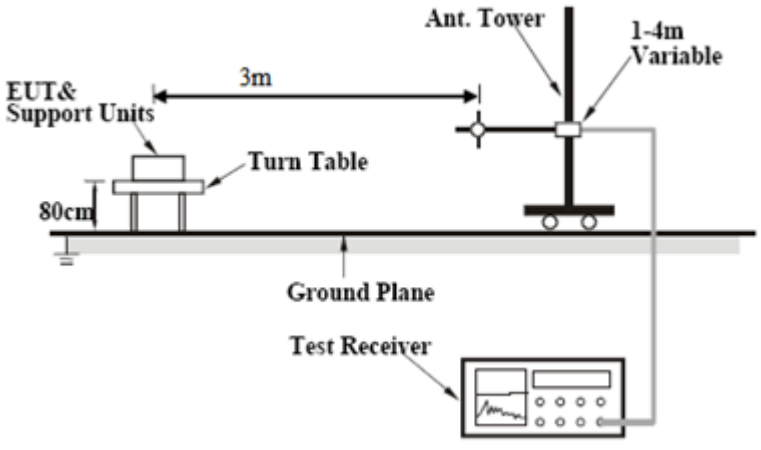


No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB}	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	N	0.1659	52.27	QP	0.00	52.27	65.16	-12.89
2	N	0.1659	40.85	AVG	0.00	40.85	55.16	-14.31
3	N	1.1109	42.70	QP	0.00	42.70	56.00	-13.30
4	N	1.1109	32.04	AVG	0.00	32.04	46.00	-13.96
5	N	1.5601	43.51	QP	0.00	43.51	56.00	-12.49
6	N	1.5601	32.24	AVG	0.00	32.24	46.00	-13.76
7	N	2.6578	45.11	QP	0.00	45.11	56.00	-10.89
8	N	2.6578	34.75	AVG	0.00	34.75	46.00	-11.25
9	N	3.3359	41.62	QP	0.00	41.62	56.00	-14.38
10	N	3.3359	33.83	AVG	0.00	33.83	46.00	-12.17
11	N	4.5352	42.79	QP	0.00	42.79	56.00	-13.21
12	N	4.5352	37.66	AVG	0.00	37.66	46.00	-8.34

6.2 Radiated Emissions

Temperature	21°C
Relative Humidity	56%
Atmospheric Pressure	1017mbar
Test date :	March 16, 2015
Tested By :	LiLi Xia

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.107(d)</td><td>a)</td><td>Except higher limit as specified elsewhere in other section, 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
<table>
<tr><th>Frequency range (MHz)</th><th>Field Strength (μV/m)</th></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></td><td>☑</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 
</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
a. Vertical or horizontal polarization (whichever gave the higher emission level</td></tr>
</table>

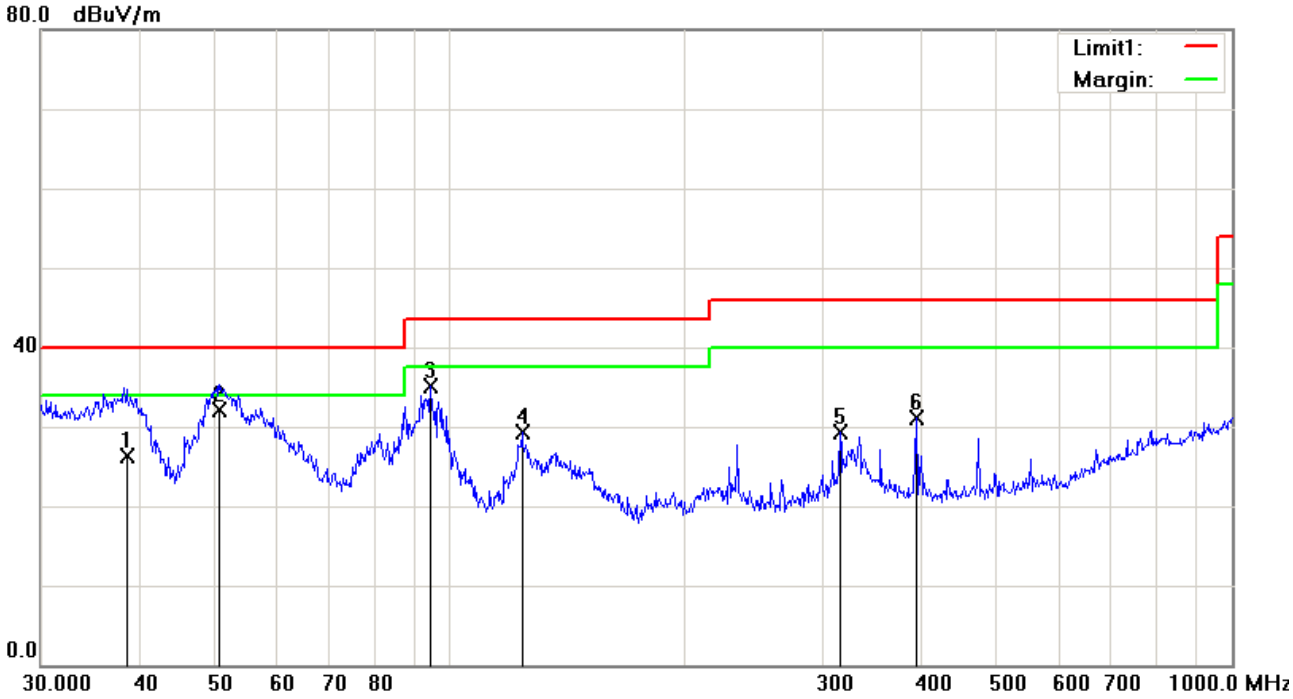
	over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz. 4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth with Peak detection for Average Measurement as below at frequency above 1GHz. ■ 1 kHz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%) 5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

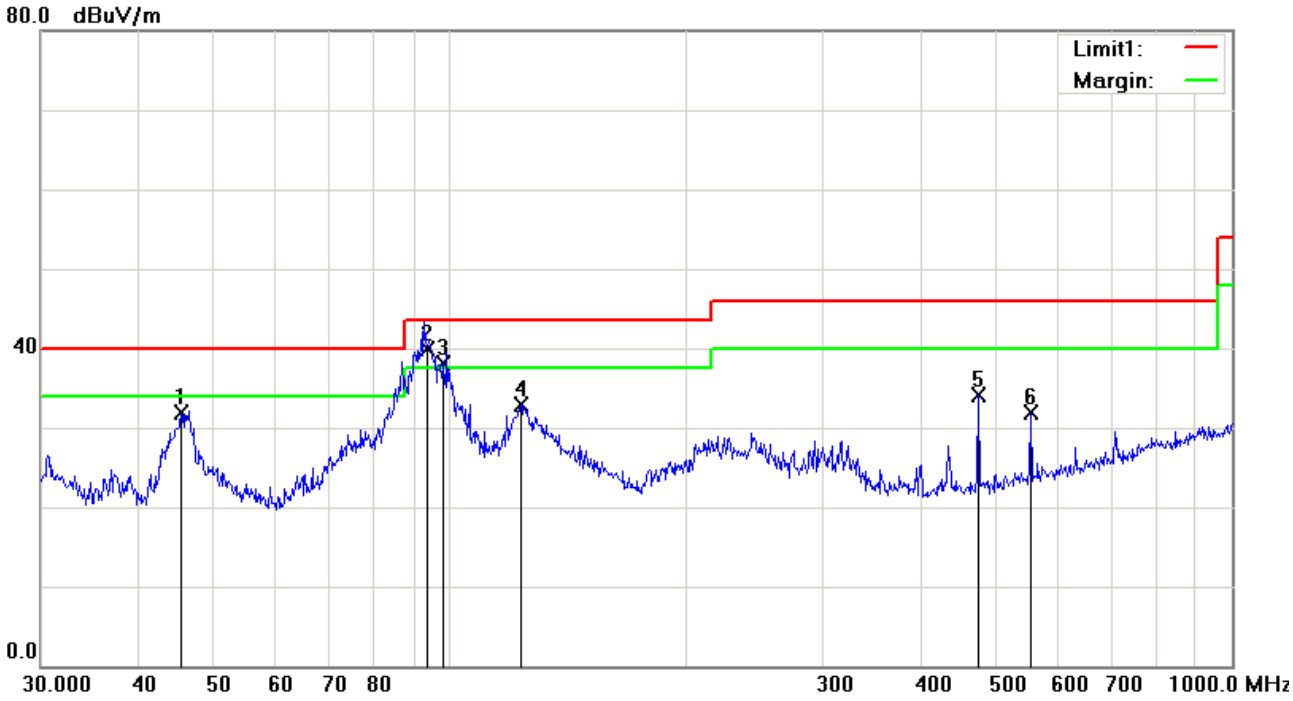
Test Mode 1:	Play ing music with PC

(Below 1GHz)



No.	P/L	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree ( )
1	V	38.7815	32.91	QP	-6.64	26.27	40.00	-13.73	200	138
2	V	50.9395	46.22	QP	-14.08	32.14	40.00	-7.86	100	247
3	V	94.4284	47.95	peak	-12.94	35.01	43.50	-8.49	200	90
4	V	123.6985	37.21	peak	-7.83	29.38	43.50	-14.12	200	105
5	V	315.4808	35.45	peak	-6.21	29.24	46.00	-16.76	100	124
6	V	394.8545	34.94	peak	-3.93	31.01	46.00	-14.99	100	229

Note: The above 1GHz frequency was pre-scanned and the result which was 20dB lower than the limit line per 15.109 was not recorded.

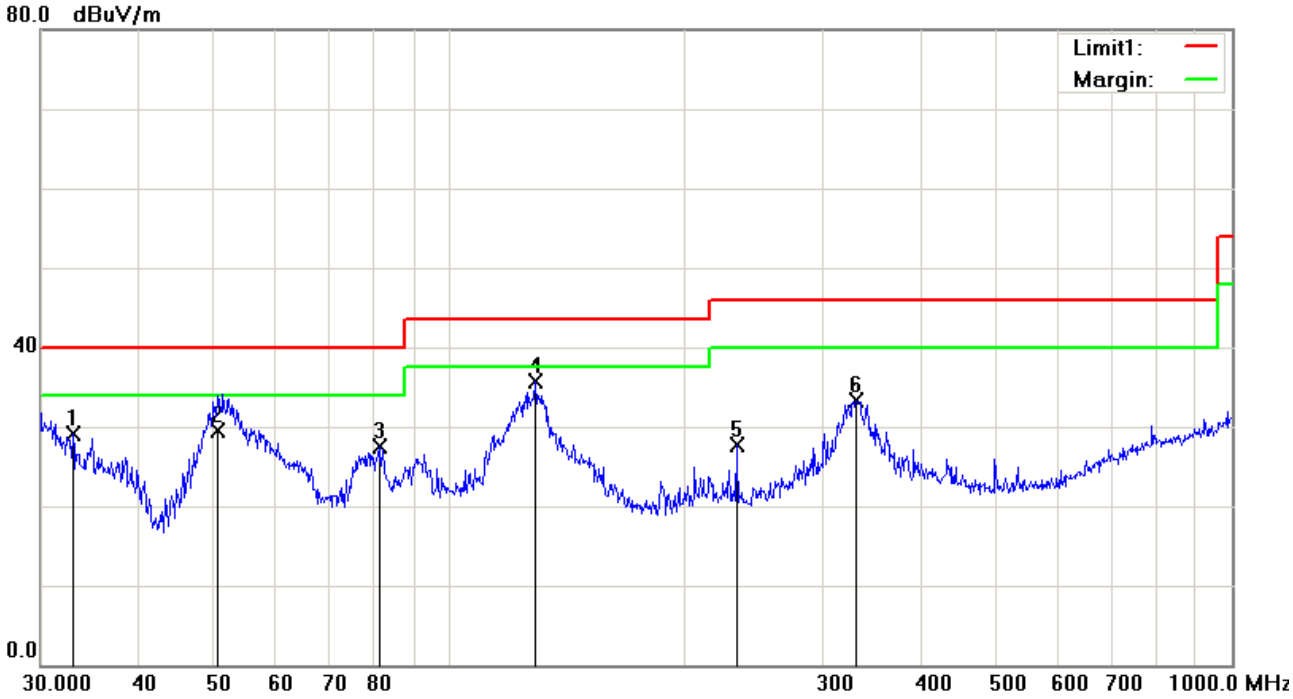


No.	P/L	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree ( )
1	H	45.3755	33.26	peak	-1.31	31.95	40.00	-8.05	200	159
2	H	93.7143	52.38	QP	-12.45	39.93	43.50	-3.57	200	171
3	H	98.2366	49.31	QP	-11.27	38.04	43.50	-5.46	200	149
4	H	123.2655	40.44	peak	-7.51	32.93	43.50	-10.57	200	200
5	H	473.8347	36.44	peak	-2.41	34.03	46.00	-11.97	200	17
6	H	552.8833	32.59	peak	-0.77	31.82	46.00	-14.18	200	232

Note: The above 1GHz frequency was pre-scanned and the result which was 20dB lower than the limit line per 15.109 was not recorded.

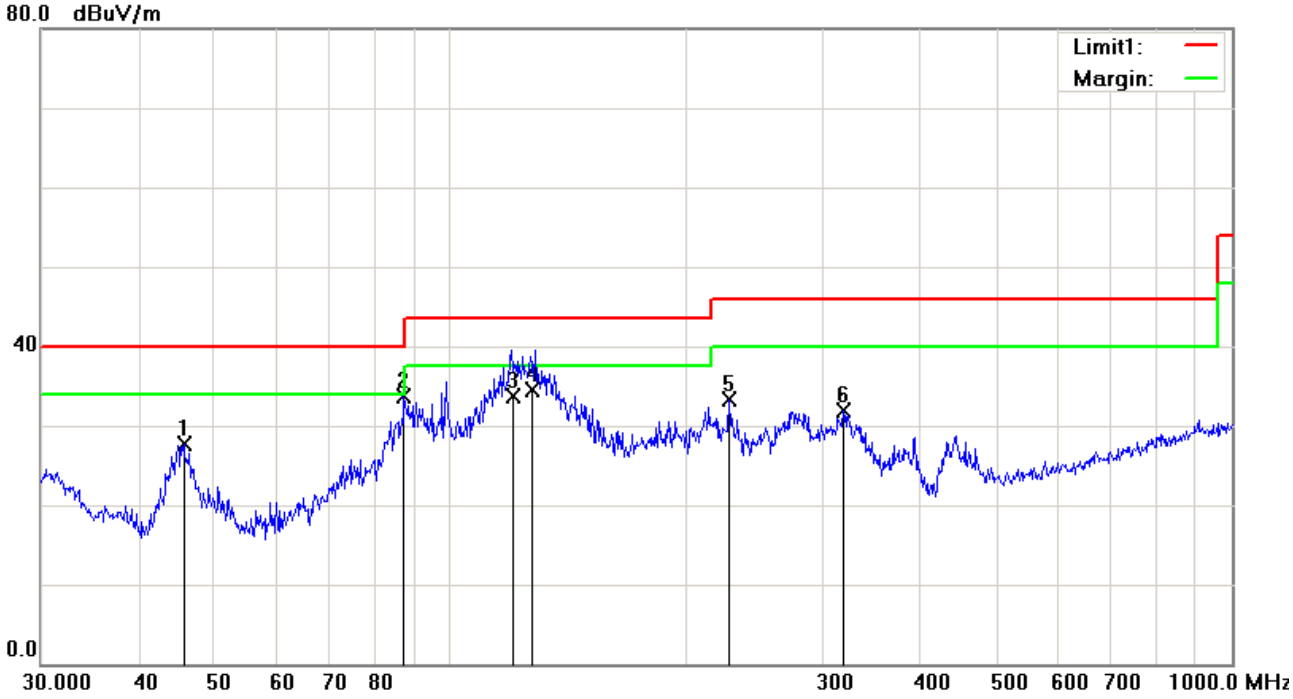
Test Mode 2:	AUX IN

(Below 1GHz)



No.	P/L	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree ( )
1	V	32.9791	32.16	peak	-3.05	29.11	40.00	-10.89	100	315
2	V	50.7510	43.54	QP	-14.08	29.46	40.00	-10.54	200	172
3	V	81.2117	41.35	peak	-13.77	27.58	40.00	-12.42	100	256
4	V	128.5630	43.28	peak	-7.60	35.68	43.50	-7.82	200	244
5	V	232.5318	35.22	peak	-7.46	27.76	46.00	-18.24	100	194
6	V	330.1949	39.14	peak	-5.75	33.39	46.00	-12.61	100	150

Note: The above 1GHz frequency was pre-scanned and the result which was 20dB lower than the limit line per 15.109 was not recorded.



No.	P/L	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree ( )
1	H	45.6948	29.86	peak	-2.12	27.74	40.00	-12.26	200	7
2	H	87.4177	47.16	peak	-13.44	33.72	40.00	-6.28	200	199
3	H	120.6936	41.13	QP	-7.35	33.78	43.50	-9.72	100	184
4	H	128.0175	42.31	QP	-7.81	34.50	43.50	-9.00	200	188
5	H	227.6906	42.25	peak	-8.99	33.26	46.00	-12.74	100	192
6	H	318.8170	38.25	peak	-6.36	31.89	46.00	-14.11	100	214

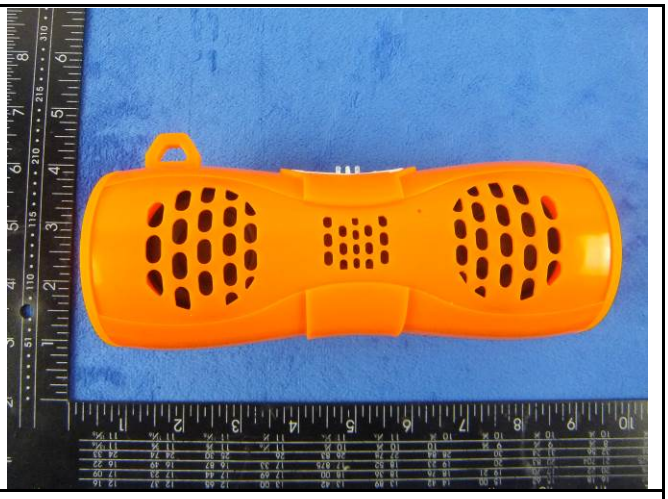
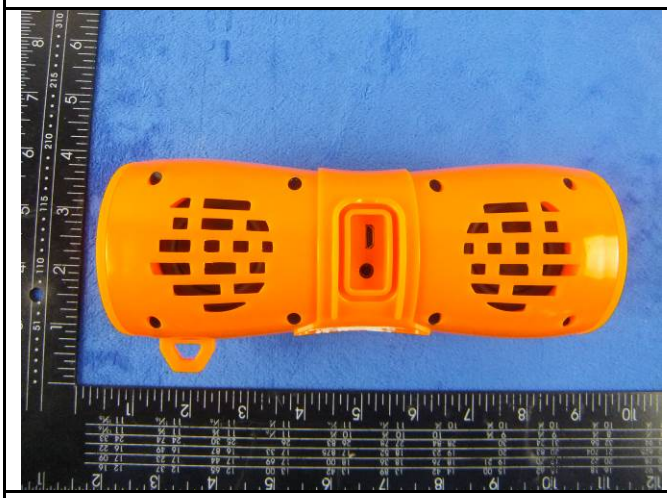
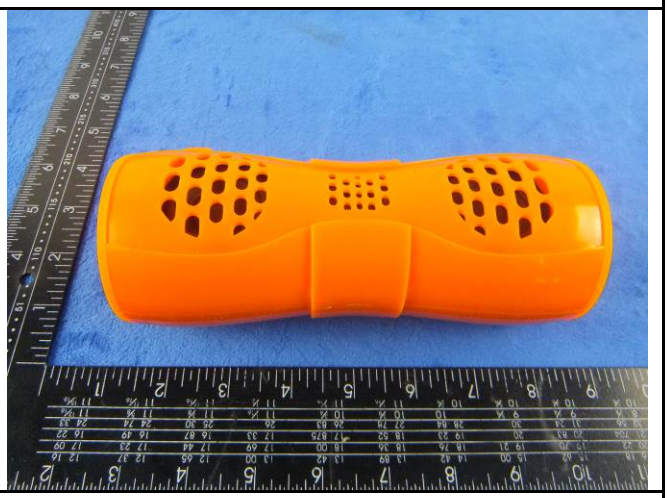
Note: The above 1GHz frequency was pre-scanned and the result which was 20dB lower than the limit line per 15.109 was not recorded.

Annex A. TEST INSTRUMENT

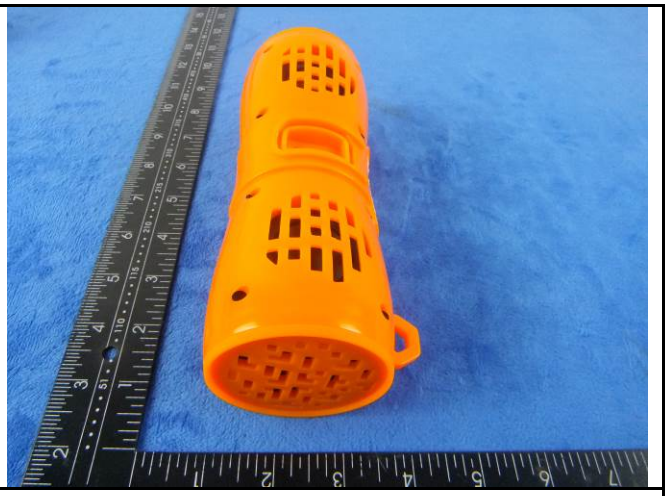
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/18/2014	09/17/2015	☑
Line Impedance Stabilization Network	LI-125A	191106	09/26/2014	09/25/2015	☑
Line Impedance Stabilization Network	LI-125A	191107	09/26/2014	09/25/2015	☑
LISN	ISN T800	34373	09/26/2014	09/25/2015	☑
Transient Limiter	LIT-153	531118	09/02/2014	09/01/2015	☑
Radiated Emissions					
EMI test receiver	ESL6	100262	09/18/2014	09/17/2015	☑
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/02/2014	09/01/2015	☑
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	10/04/2015	10/04/2016	☑
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/22/2014	09/21/2015	☑
Double Ridge Horn Antenna	AH-118	71259	09/25/2014	09/24/2015	☑

Annex B. EUT And Test Setup Photographs

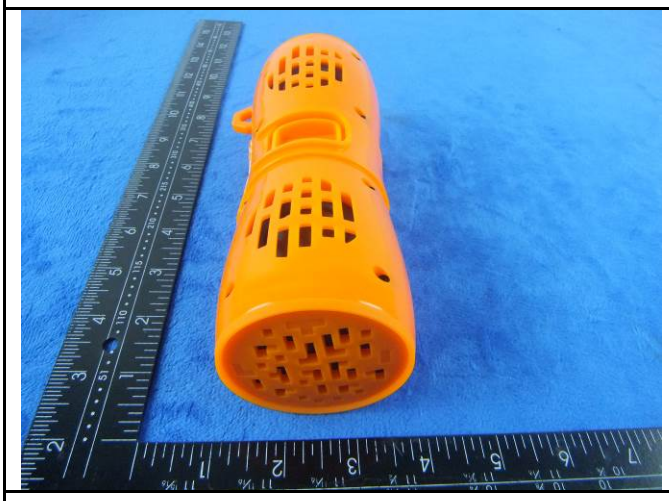
Annex B.i. Photograph: EUT External Photo

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Whole Package - Top View</td><td>EUT - Front View</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>EUT - Rear View</td><td>EUT - Left View</td></tr>
</table>

EUT - Right View

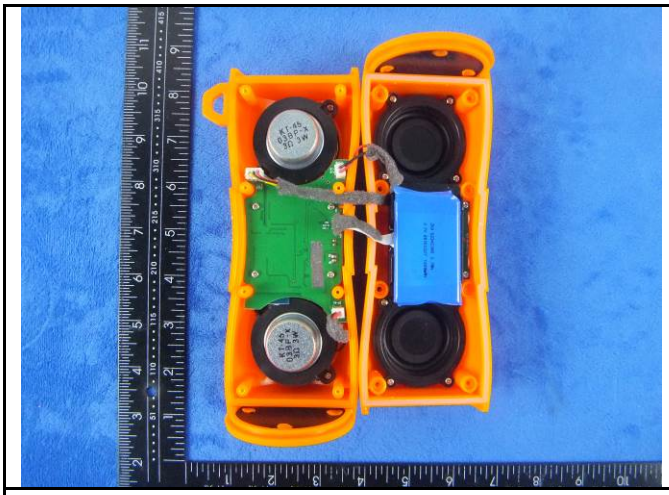


EUT - Top View

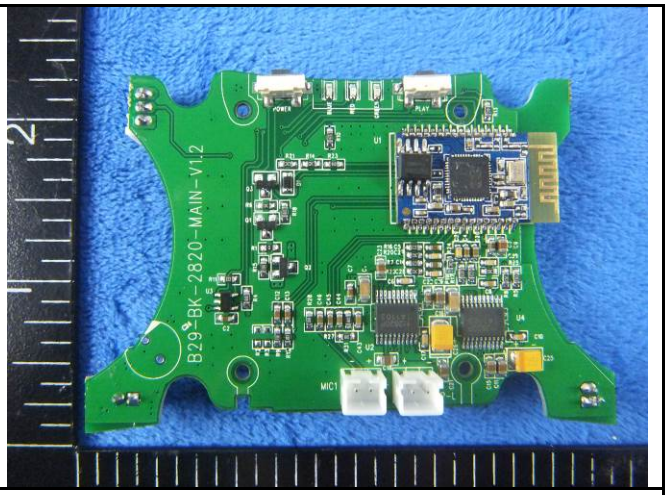


EUT - Bottom View

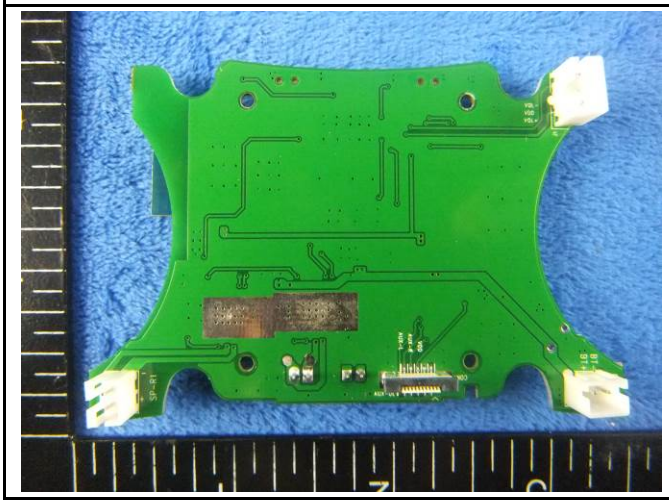
Annex B.ii. Photograph: EUT Internal Photo



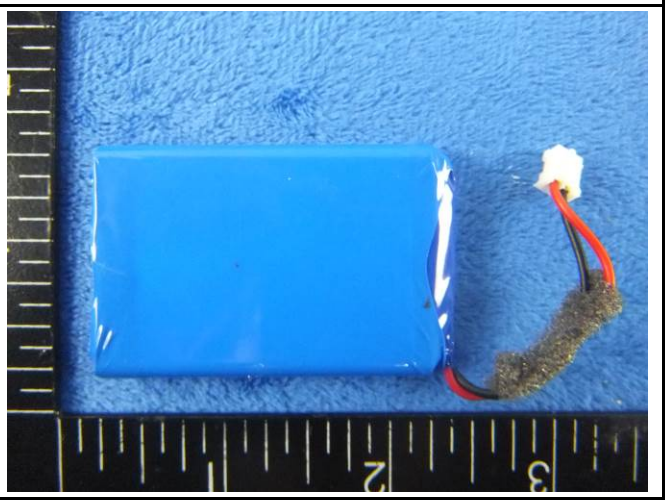
Cover Off - Top View



Mainborad With Shielding - Front View

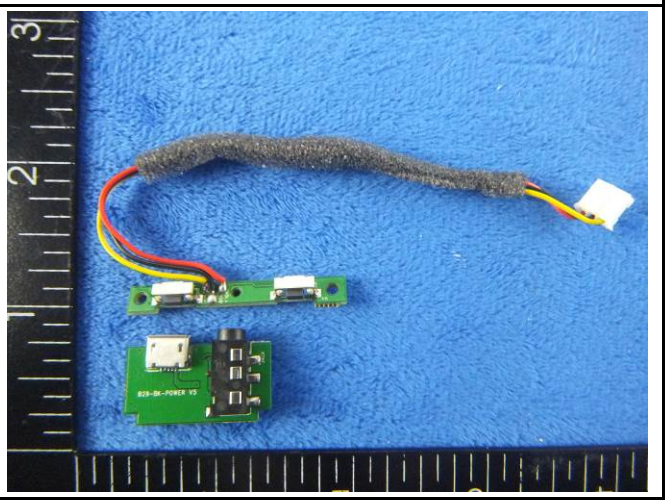


Mainborad Without Shielding - Rear View

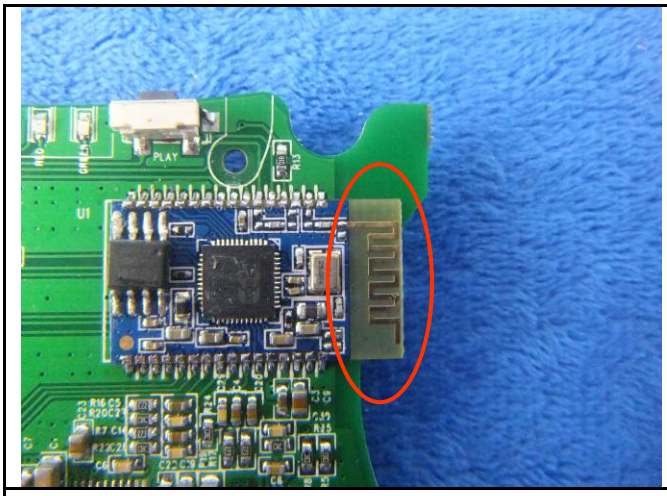


Battery - Front View

Battery - Rear View

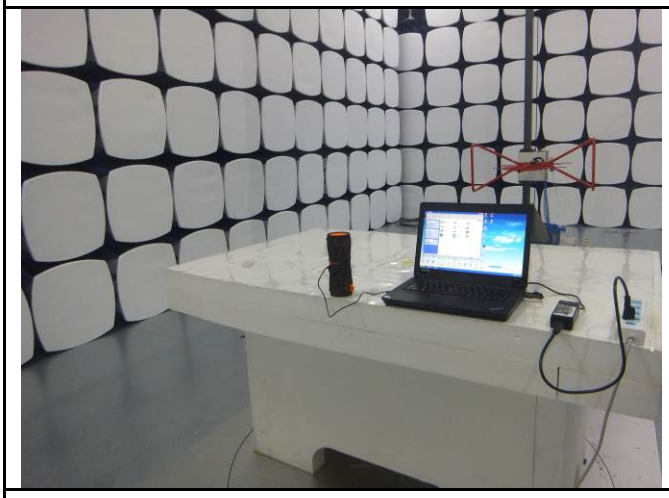


LCD - Rear View



BT Antenna View

Annex B.iii. Photograph: Test Setup Photo

	
Conducted Emissions Test Setup – Front View	Conducted Emissions Test Setup – Side View
	
Radiated Spurious Emissions Test Setup Below 1GHz	Radiated Spurious Emissions Test Setup Above 1GHz

Conducted Emissions Test Setup – Front View

Conducted Emissions Test Setup – Side View

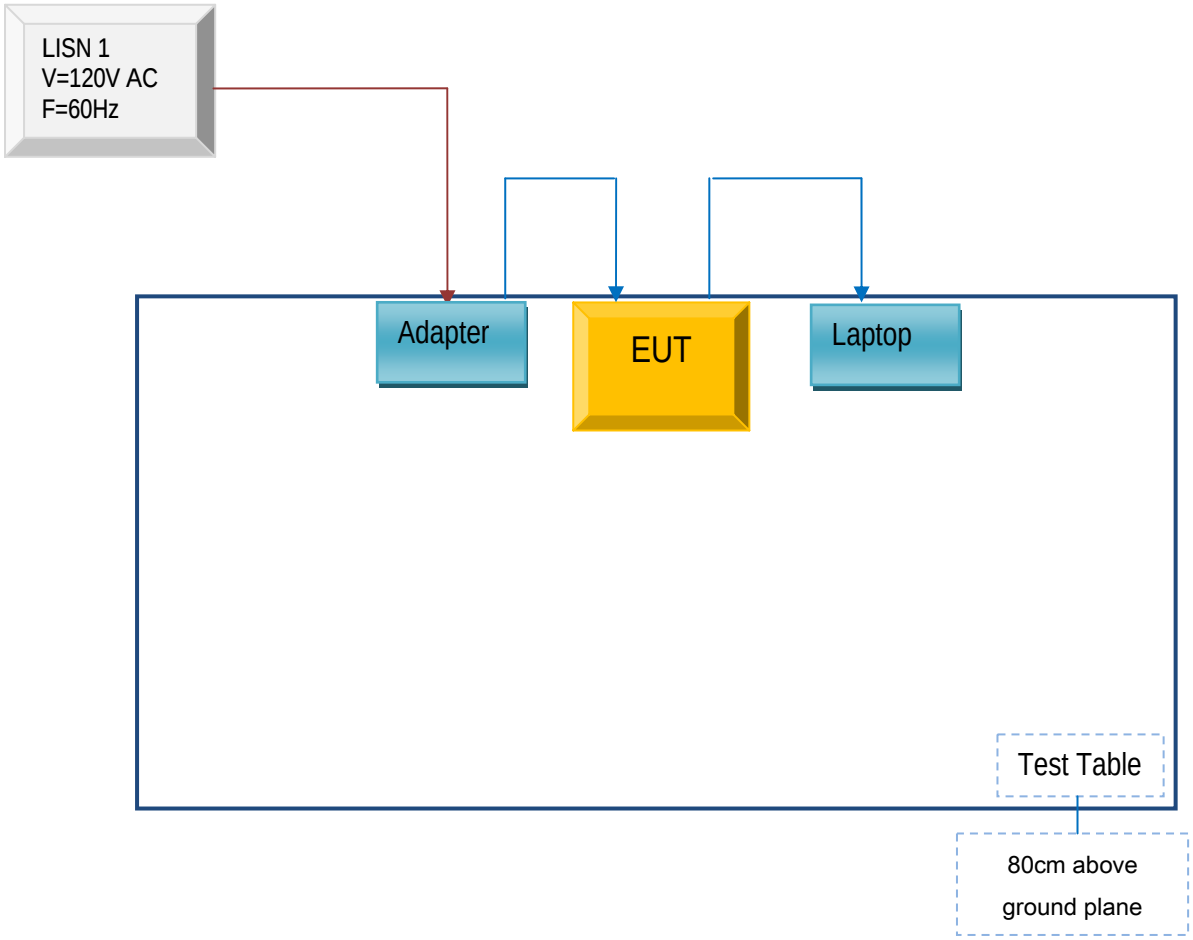
Radiated Spurious Emissions Test Setup Below 1GHz

Radiated Spurious Emissions Test Setup Above 1GHz

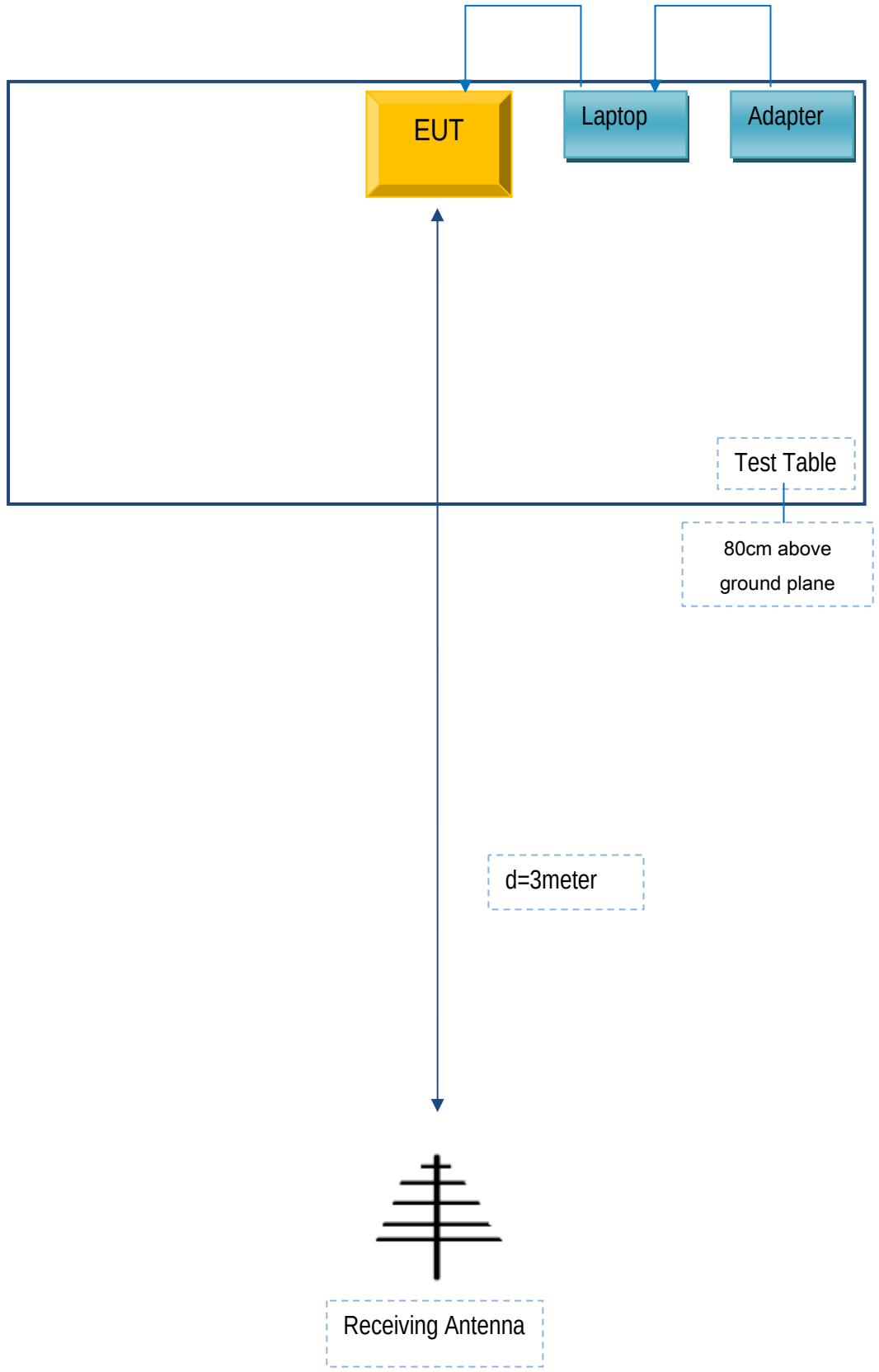
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C. il. SUPPORTING EQUIPMENT DESCRIPTION

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

Manufacturer	Equipment Description	Model	Calibration Date	Calibration Due Date
Lenovo	Lenovo Laptop	E40& 0579A52	N/A	N/A

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

Please see Attachment

Annex E. DECLARATION OF SIMILARITY

Leader Light Ltd

To: SIEMIC , 775 Montague Expressway, Milpitas, CA 95035,USA

Declaration Letter

Dear Sir,

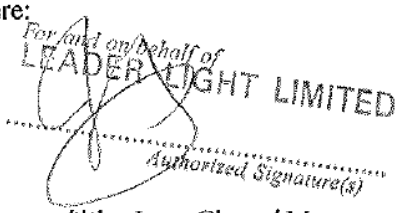
For our business issue and marketing requirement, we would like to list 5 model numbers on the FCC certificates and reports, as following:

Model No.: 8034423, A-1509-0,B29,B30,B28
We declare that , 8034423, A-1509-0,B29,B30,B28 PCB ,Antenna and Appearance shape , accessories are the same . the difference of these is listed as below:

Main Model No	Serial Model No	Difference
8034423	A-1509-0,B29,B30,B28	Different model name

Thank you!

Signature:



Printed name/title: Jerry Chow / Manager
Tel: 00852-23116632
Fax: 00852-23116343
Address: Rm303,Chinachem Golden Plaza,77Mody Road,Tsimshatsui,Kowloon,Hongkong