

# EMC TEST REPORT



Report No.: 17071476-FCC-E

Supersede Report No: N/A

Applicant	Horizon Hobby, LLC	
Product Name	Inductrix	
Model No.	BLH8701	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2017, ANSI C63.4: 2014	
Test Date	December 28, 2017 to January 18, 2018	
Issue Date	January 19, 2018	
Test Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	
Equipment complied with the specification		<input checked="" type="checkbox"/>
Equipment did not comply with the specification		<input type="checkbox"/>
Evans He	David Huang	
Evans He 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**

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## 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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## CONTENTS

1. REPORT REVISION HISTORY .....	5
2. CUSTOMER INFORMATION .....	5
3. TEST SITE INFORMATION.....	5
4. EQUIPMENT UNDER TEST (EUT) INFORMATION .....	6
5. TEST SUMMARY .....	7
6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS .....	8
6.1 AC POWER LINE CONDUCTED EMISSIONS.....	8
6.2 RADIATED EMISSIONS.....	14
ANNEX A. TEST INSTRUMENT.....	18
ANNEX B. EUT AND TEST SETUP PHOTOGRAPHS.....	19
ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT.....	27
ANNEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST .....	30
ANNEX E. DECLARATION OF SIMILARITY .....	31

## 1. Report Revision History

Report No.	Report Version	Description	Issue Date
17071476-FCC-E	NONE	Original	January 19, 2018

## 2. Customer information

Applicant Name	Horizon Hobby, LLC
Applicant Add	4105 Fieldstone Road, Champaign, IL 61822, USA
Manufacturer	Yuneec International(China) Co., Ltd
Manufacturer Add	No.388 East Zhengwei Road, Jinxi Town, Kunshan, Jiangsu, 215324, China

## 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.	535293
IC Test Site No.	4842E-1
Test Software of Radiated Emission	Radiated Emission Program-To Shenzhen v2.0
Test Software of Conducted Emission	EZ-EMC(ver.lcp-03A1)

#### **4. Equipment under Test (EUT) Information**

Description of EUT: Inductrix

Main Model: BLH8701

Serial Model: N/A

Antenna Gain: 1dBi

Antenna Type: monopole antenna

Input Power: Battery  
Spec: 3.7V, 150mAh

Equipment Category : JBP

Type of Modulation: GFSK

RF Operating Frequency (ies): 2404-2476MHz

Number of Channels: 23CH

Trade Name : N/A

FCC ID: BRWBLH8701

Date EUT received: December 27, 2017

Test Date(s): December 28, 2017 to January 18, 2018

## 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: 2014	AC Power Line Conducted Emissions	Compliance
§15.109; ANSI C63.4: 2014	Radiated Emissions	Compliance

### Measurement Uncertainty

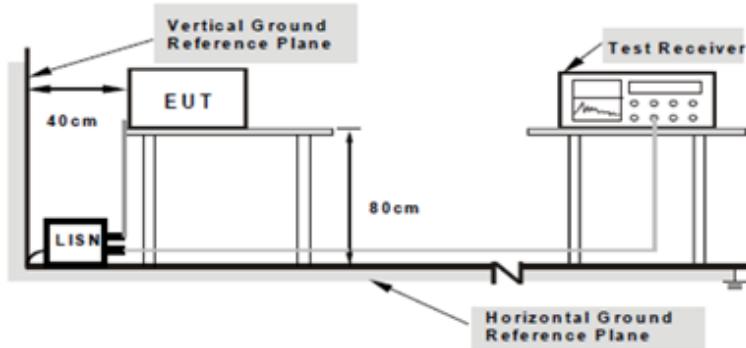
Parameter	Uncertainty
AC Power Line Conducted Emissions (150kHz~30MHz)	±3.11dB
Radiated Emission(30MHz~1GHz)	±5.12dB
Radiated Emission(1GHz~6GHz)	±5.34dB

## 6. Measurements, Examination And Derived Results

### 6.1 AC Power Line Conducted Emissions

Temperature	22°C
Relative Humidity	53%
Atmospheric Pressure	1008mbar
Test date :	January 02, 2018
Tested By :	Evans He

#### Requirement(s):

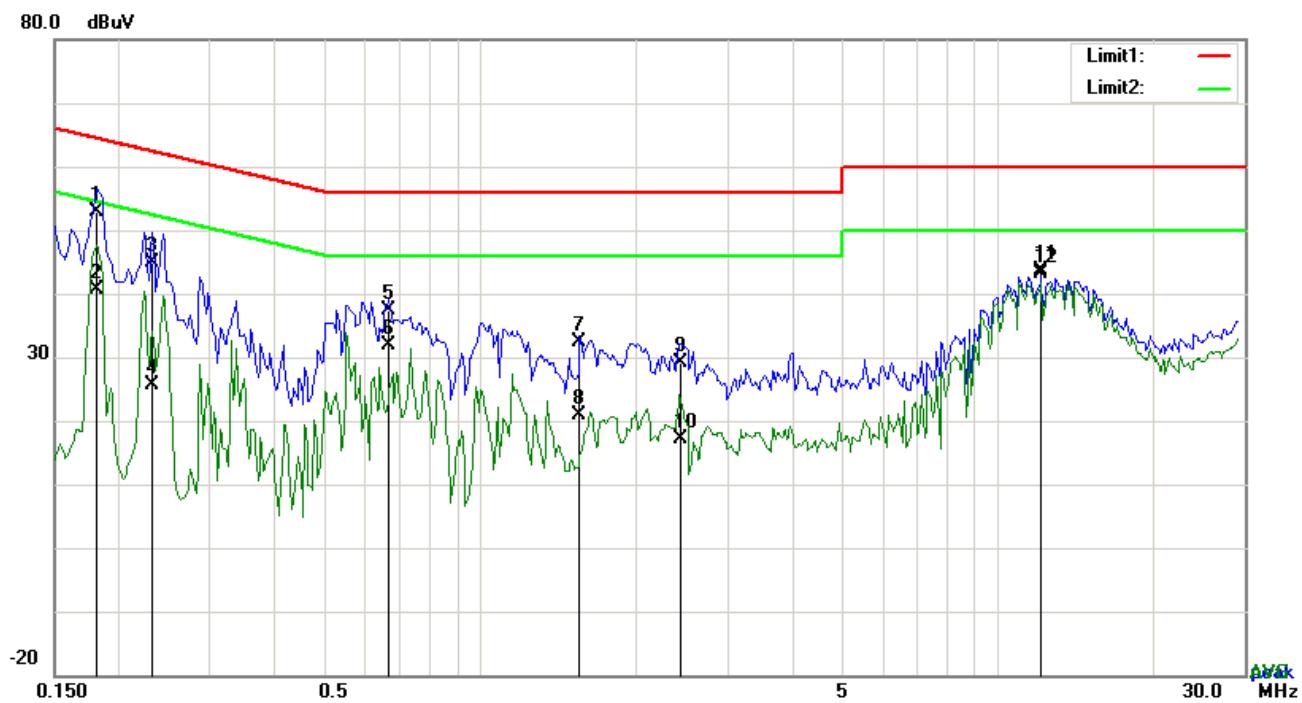
Spec	Item	Requirement	Applicable														
47CFR§15.107	a)	<p>For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 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.</p> <table border="1"> <thead> <tr> <th rowspan="2">Frequency ranges (MHz)</th> <th colspan="2">Limit (dB<math>\mu</math>V)</th> </tr> <tr> <th>QP</th> <th>Average</th> </tr> </thead> <tbody> <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> </tbody> </table>	Frequency ranges (MHz)	Limit (dB $\mu$ V)		QP	Average	0.15 ~ 0.5	66 – 56	56 – 46	0.5 ~ 5	56	46	5 ~ 30	60	50	<input checked="" type="checkbox"/>
Frequency ranges (MHz)	Limit (dB $\mu$ V)																
	QP	Average															
0.15 ~ 0.5	66 – 56	56 – 46															
0.5 ~ 5	56	46															
5 ~ 30	60	50															
Test Setup	 <p>The diagram illustrates the test setup for conducted emissions. An EUT (Equipment Under Test) is placed on a table. A LISN (Line Impedance Stabilization Network) is connected between the EUT and the power source. A test receiver is connected to the LISN. The setup is positioned on a horizontal ground reference plane. The distance between the LISN and the EUT is 40 cm, and the distance between the LISN and the test receiver is 80 cm. A vertical ground reference plane is also indicated.</p> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. Support units were connected to second LISN.</li> <li>2. Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.</li> </ol>																
Procedure	<ol style="list-style-type: none"> <li>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.</li> <li>2. The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.</li> </ol>																

	<ol style="list-style-type: none"> <li>3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.</li> <li>4. All other supporting equipment were powered separately from another main supply.</li> <li>5. The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>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.</li> <li>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.</li> <li>8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).</li> </ol>
Remark	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data  Yes  N/A

Test Plot  Yes (See below)  N/A

Test Mode : Charging Mode

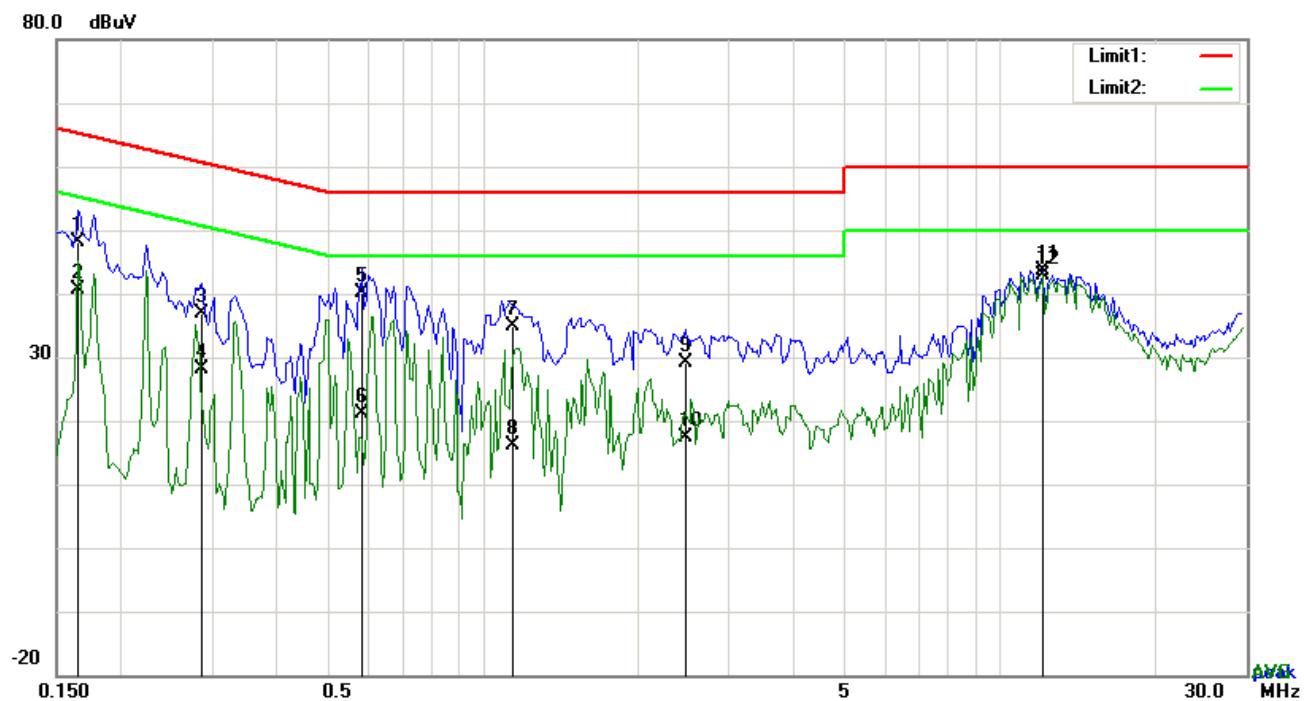


**Test Data**

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	L1	0.1812	42.88	QP	10.03	52.91	64.43	-11.52
2	L1	0.1812	30.68	AVG	10.03	40.71	54.43	-13.72
3	L1	0.2319	34.92	QP	10.03	44.95	62.38	-17.43
4	L1	0.2319	15.54	AVG	10.03	25.57	52.38	-26.81
5	L1	0.6648	27.40	QP	10.03	37.43	56.00	-18.57
6	L1	0.6648	21.92	AVG	10.03	31.95	46.00	-14.05
7	L1	1.5540	22.27	QP	10.04	32.31	56.00	-23.69
8	L1	1.5540	10.86	AVG	10.04	20.90	46.00	-25.10
9	L1	2.4346	18.99	QP	10.05	29.04	56.00	-26.96
10	L1	2.4346	7.01	AVG	10.05	17.06	46.00	-28.94
11	L1	12.1572	33.47	QP	10.18	43.65	60.00	-16.35
12	L1	12.1572	32.90	AVG	10.18	43.08	50.00	-6.92

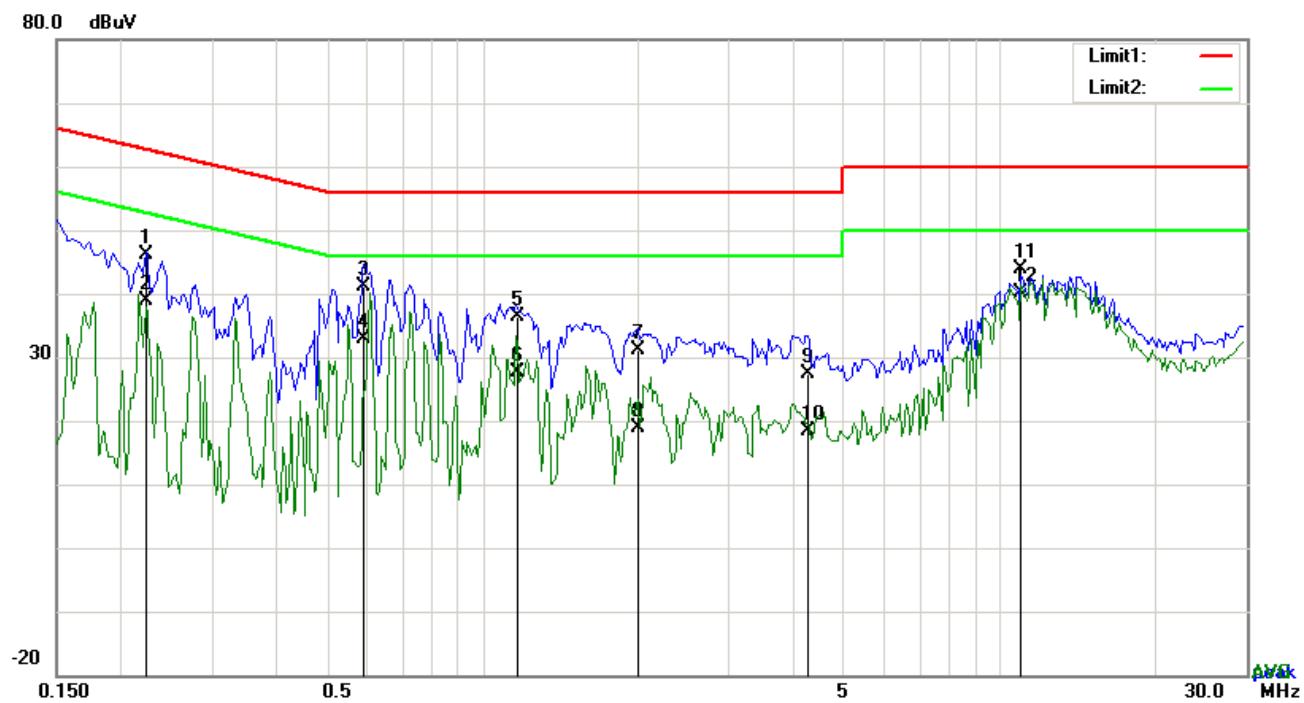
Test Mode : Charging Mode



Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	N	0.1656	38.23	QP	10.02	48.25	65.18	-16.93
2	N	0.1656	30.57	AVG	10.02	40.59	55.18	-14.59
3	N	0.2865	26.77	QP	10.02	36.79	60.63	-23.84
4	N	0.2865	18.02	AVG	10.02	28.04	50.63	-22.59
5	N	0.5868	30.05	QP	10.02	40.07	56.00	-15.93
6	N	0.5868	11.11	AVG	10.02	21.13	46.00	-24.87
7	N	1.1445	24.79	QP	10.03	34.82	56.00	-21.18
8	N	1.1445	6.21	AVG	10.03	16.24	46.00	-29.76
9	N	2.4666	18.97	QP	10.04	29.01	56.00	-26.99
10	N	2.4666	7.41	AVG	10.04	17.45	46.00	-28.55
11	N	12.1572	33.40	QP	10.17	43.57	60.00	-16.43
12	N	12.1572	32.79	AVG	10.17	42.96	50.00	-7.04

**Test Mode :** Charging Mode

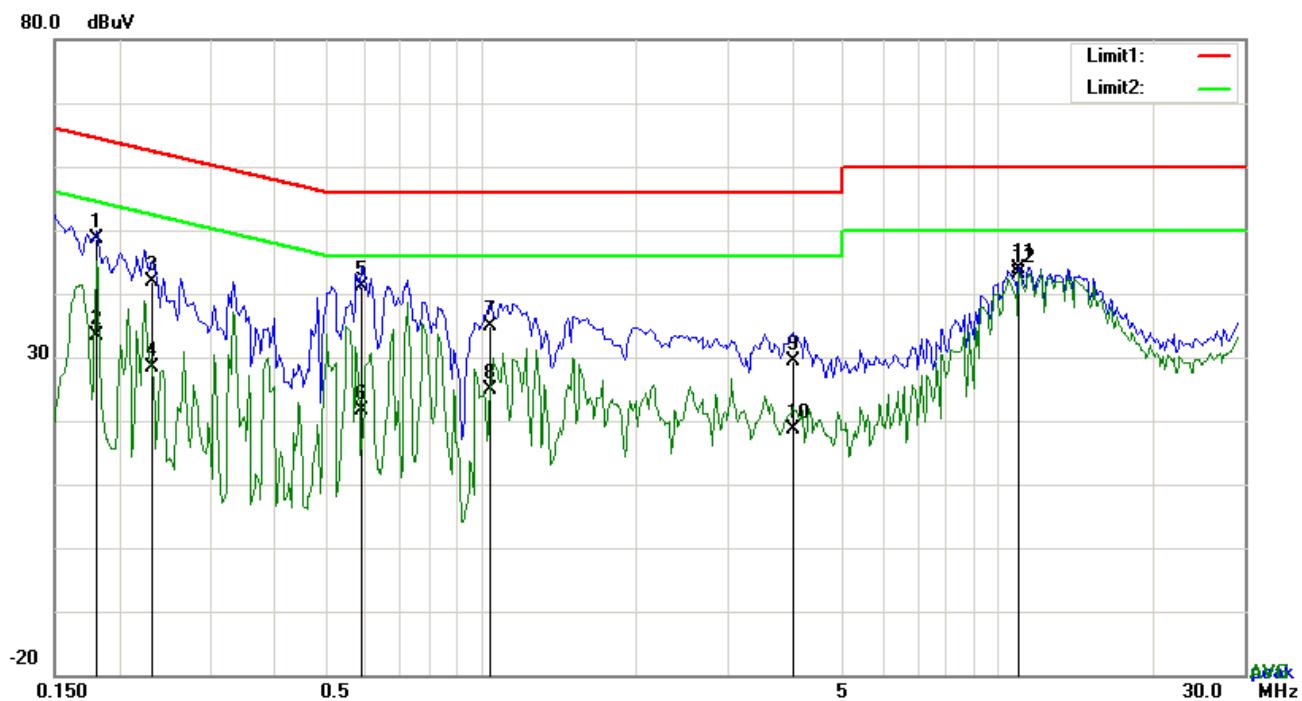


#### Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	L1	0.2241	36.02	QP	10.03	46.05	62.67	-16.62
2	L1	0.2241	28.76	AVG	10.03	38.79	52.67	-13.88
3	L1	0.5907	31.18	QP	10.03	41.21	56.00	-14.79
4	L1	0.5907	22.76	AVG	10.03	32.79	46.00	-13.21
5	L1	1.1657	26.38	QP	10.03	36.41	56.00	-19.59
6	L1	1.1657	17.49	AVG	10.03	27.52	46.00	-18.48
7	L1	1.9947	21.08	QP	10.04	31.12	56.00	-24.88
8	L1	1.9947	8.85	AVG	10.04	18.89	46.00	-27.11
9	L1	4.2558	17.25	QP	10.07	27.32	56.00	-28.68
10	L1	4.2558	8.37	AVG	10.07	18.44	46.00	-27.56
11	L1	10.9716	33.79	QP	10.16	43.95	60.00	-16.05
12	L1	10.9716	30.03	AVG	10.16	40.19	50.00	-9.81

Test Mode : Charging Mode



*Test Data*

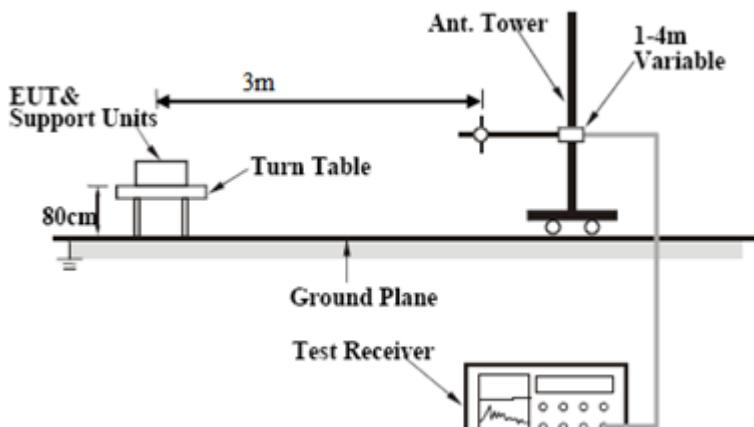
Phase Neutral Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	N	0.1812	38.50	QP	10.03	48.53	64.43	-15.90
2	N	0.1812	23.41	AVG	10.03	33.44	54.43	-20.99
3	N	0.2319	31.74	QP	10.03	41.77	62.38	-20.61
4	N	0.2319	18.27	AVG	10.03	28.30	52.38	-24.08
5	N	0.5907	31.04	QP	10.03	41.07	56.00	-14.93
6	N	0.5907	11.59	AVG	10.03	21.62	46.00	-24.38
7	N	1.0470	24.85	QP	10.03	34.88	56.00	-21.12
8	N	1.0470	14.91	AVG	10.03	24.94	46.00	-21.06
9	N	4.0257	19.27	QP	10.07	29.34	56.00	-26.66
10	N	4.0257	8.54	AVG	10.07	18.61	46.00	-27.39
11	N	10.9716	33.74	QP	10.16	43.90	60.00	-16.10
12	N	10.9716	33.02	AVG	10.16	43.18	50.00	-6.82

## 6.2 Radiated Emissions

Temperature	22°C
Relative Humidity	53%
Atmospheric Pressure	1008mbar
Test date :	January 02, 2018
Tested By :	Evans He

### Requirement(s):

Spec	Item	Requirement	Applicable										
47CFR§15. 109(d)	a)	<p>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</p> <table border="1"> <thead> <tr> <th>Frequency range (MHz)</th> <th>Field Strength (<math>\mu</math>V/m)</th> </tr> </thead> <tbody> <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> </tbody> </table>	Frequency range (MHz)	Field Strength ( $\mu$ V/m)	30 – 88	100	88 – 216	150	216 - 960	200	Above 960	500	<input checked="" type="checkbox"/>
Frequency range (MHz)	Field Strength ( $\mu$ V/m)												
30 – 88	100												
88 – 216	150												
216 - 960	200												
Above 960	500												
Test Setup		 <p>The diagram illustrates the test setup for radiated emissions. A 'Turn Table' is positioned on a 'Ground Plane'. An 'EUT &amp; Support Units' assembly is mounted on the turn table, with a vertical distance of '80cm' indicated. A '3m' horizontal distance separates the EUT from an 'Ant. Tower'. The 'Ant. Tower' is mounted on a vertical post and is connected to a 'Test Receiver' unit. The antenna height is adjustable, indicated by a '1-4m Variable' range.</p>											
Procedure		<ol style="list-style-type: none"> <li>1. The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>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:             <ol style="list-style-type: none"> <li>a. Vertical or horizontal polarization (whichever gave the higher emission level)</li> </ol> </li> </ol>											

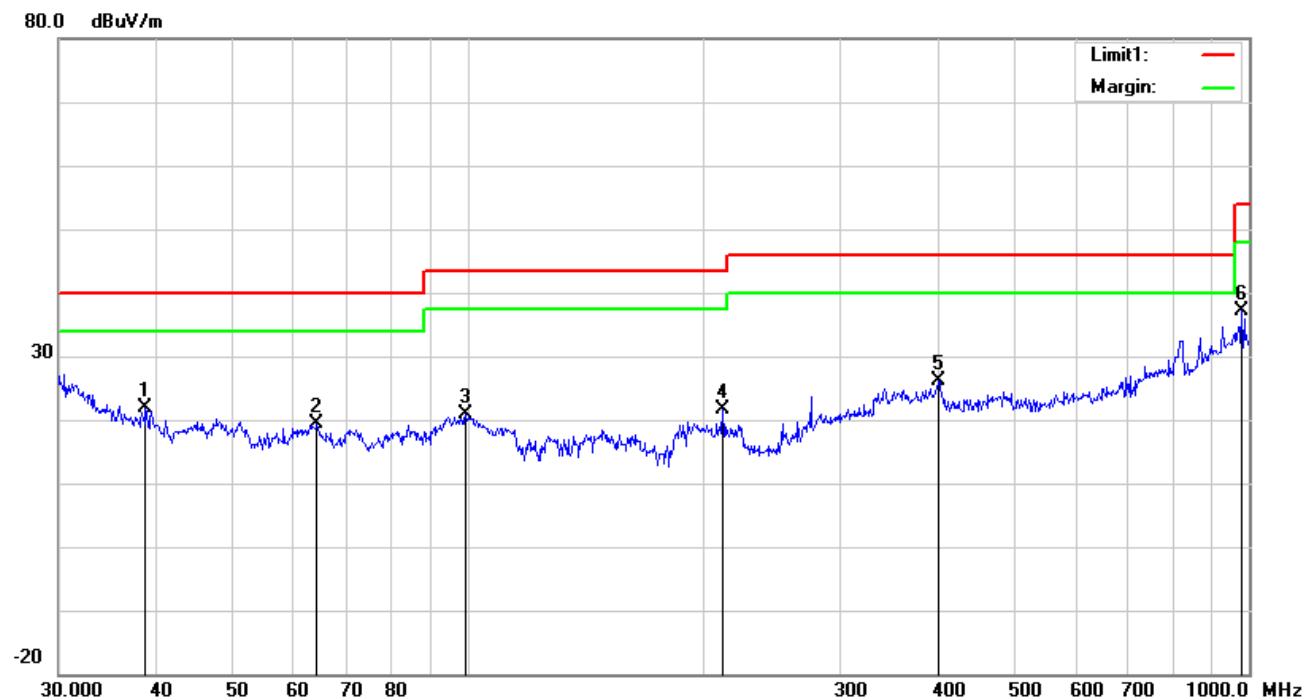
	<p>over a full rotation of the EUT) was chosen.</p> <p>b. The EUT was then rotated to the direction that gave the maximum emission.</p> <p>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</p> <p>3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz.</p> <p>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.</p> <p>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.</p> <ul style="list-style-type: none"> <li>■ 1 kHz (Duty cycle &lt; 98%) <input type="checkbox"/> 10 Hz (Duty cycle &gt; 98%)</li> </ul> <p>5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</p>
Remark	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data  Yes  N/A

Test Plot  Yes (See below)  N/A

**Test Mode :** Charging Mode

*Below 1GHz*



*Test Data*

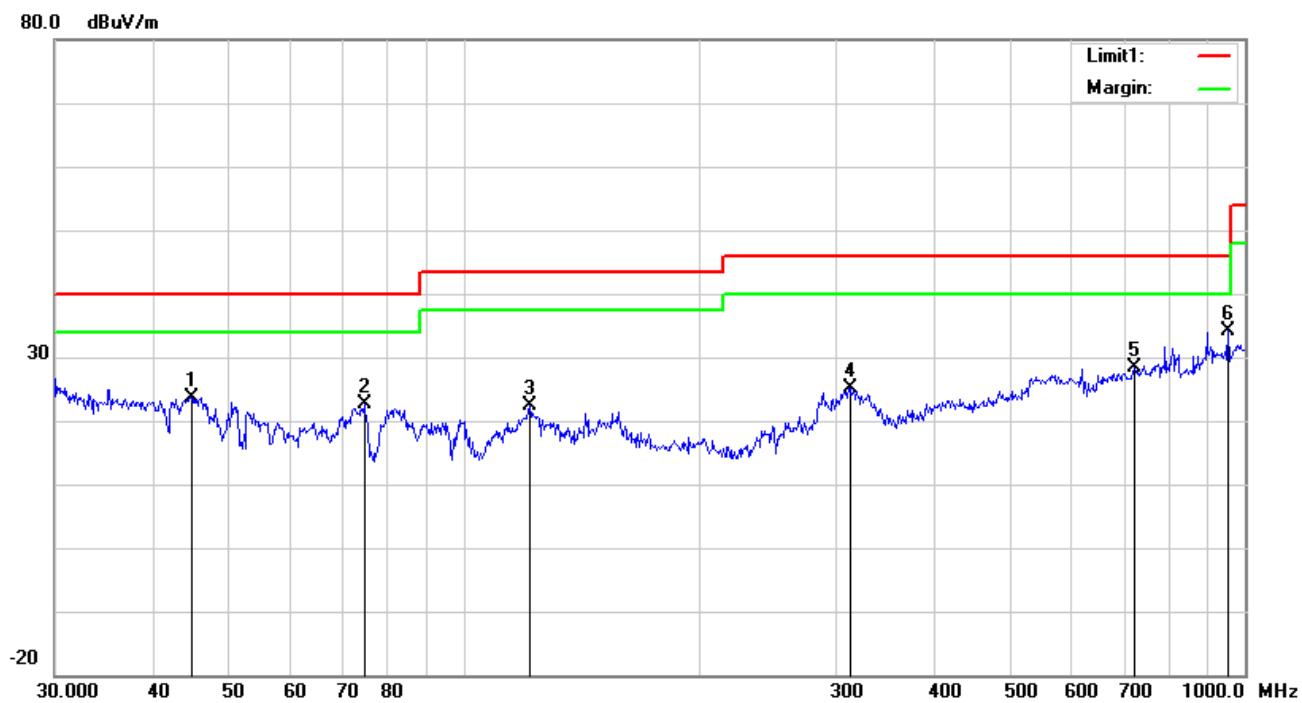
Horizontal Polarity Plot @3m

No.	P/L	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree
1	H	38.7518	28.58	peak	14.81	22.27	0.78	21.90	40.00	-18.10	100	155
2	H	64.2075	33.31	peak	7.51	22.40	0.86	19.28	40.00	-20.72	100	58
3	H	99.5281	31.78	peak	10.29	22.32	1.11	20.86	43.50	-22.64	100	253
4	H	212.2695	30.57	peak	11.93	22.36	1.58	21.72	43.50	-21.78	100	235
5	H	400.4319	30.33	peak	15.71	22.01	2.01	26.04	46.00	-19.96	100	332
6	H	979.1804	31.61	peak	22.90	20.73	3.35	37.13	54.00	-16.87	100	305

*Above 1GHz*

*Note: The frequency that above 1GHz is mainly from the environment noise.*

### Below 1GHz



### Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	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	V	38.7518	28.58	peak	14.81	22.27	0.78	21.90	40.00	-18.10	100	62
2	V	64.2075	33.31	peak	7.51	22.40	0.86	19.28	40.00	-20.72	100	231
3	V	99.5281	31.78	peak	10.29	22.32	1.11	20.86	43.50	-22.64	100	53
4	V	212.2695	30.57	peak	11.93	22.36	1.58	21.72	43.50	-21.78	100	304
5	V	400.4319	30.33	peak	15.71	22.01	2.01	26.04	46.00	-19.96	100	326
6	V	979.1804	31.61	peak	22.90	20.73	3.35	37.13	54.00	-16.87	100	182

### Above 1GHz

Note: The frequency that above 1GHz is mainly from the environment noise.

## Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
<b>AC Line Conducted Emissions</b>					
EMI test receiver	ESCS30	8471241027	09/15/2017	09/14/2018	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191106	09/23/2017	09/22/2018	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191107	09/23/2017	09/22/2018	<input checked="" type="checkbox"/>
LISN	ISN T800	34373	09/23/2017	09/22/2018	<input checked="" type="checkbox"/>
Transient Limiter	LIT-153	531118	08/30/2017	08/29/2018	<input checked="" type="checkbox"/>
<b>Radiated Emissions</b>					
EMI test receiver	ESL6	100262	09/15/2017	09/14/2018	<input checked="" type="checkbox"/>
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	08/30/2017	08/29/2018	<input checked="" type="checkbox"/>
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	<input checked="" type="checkbox"/>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/19/2017	09/18/2018	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna	AH-118	71259	09/22/2017	09/21/2018	<input checked="" type="checkbox"/>

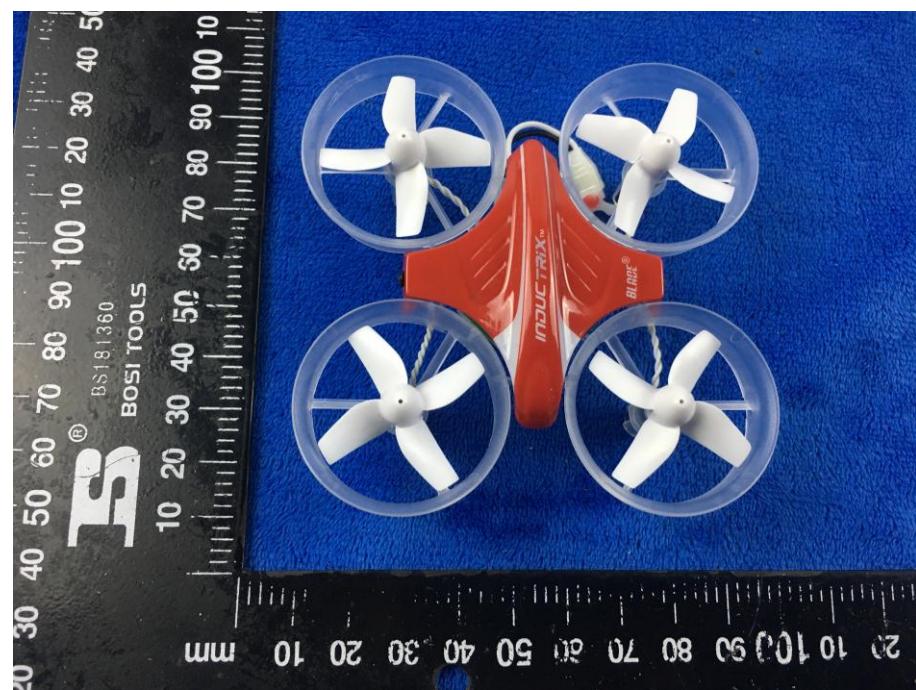
## Annex B. EUT And Test Setup Photographs

### Annex B.i. Photograph: EUT External Photo

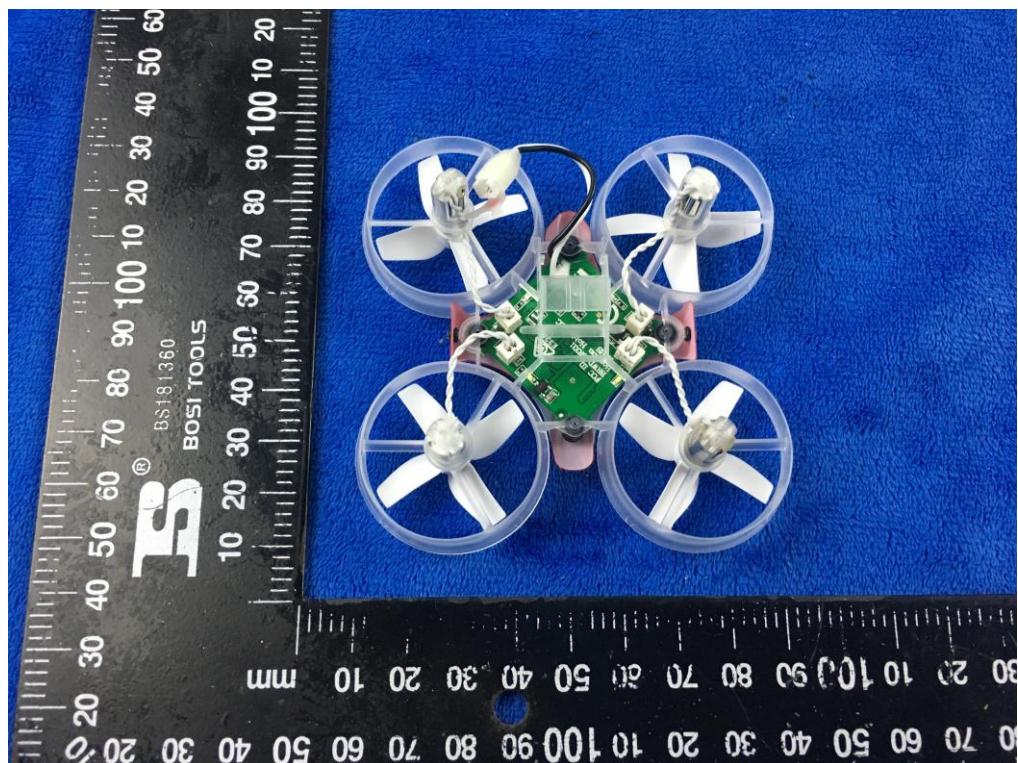
Whole Package View



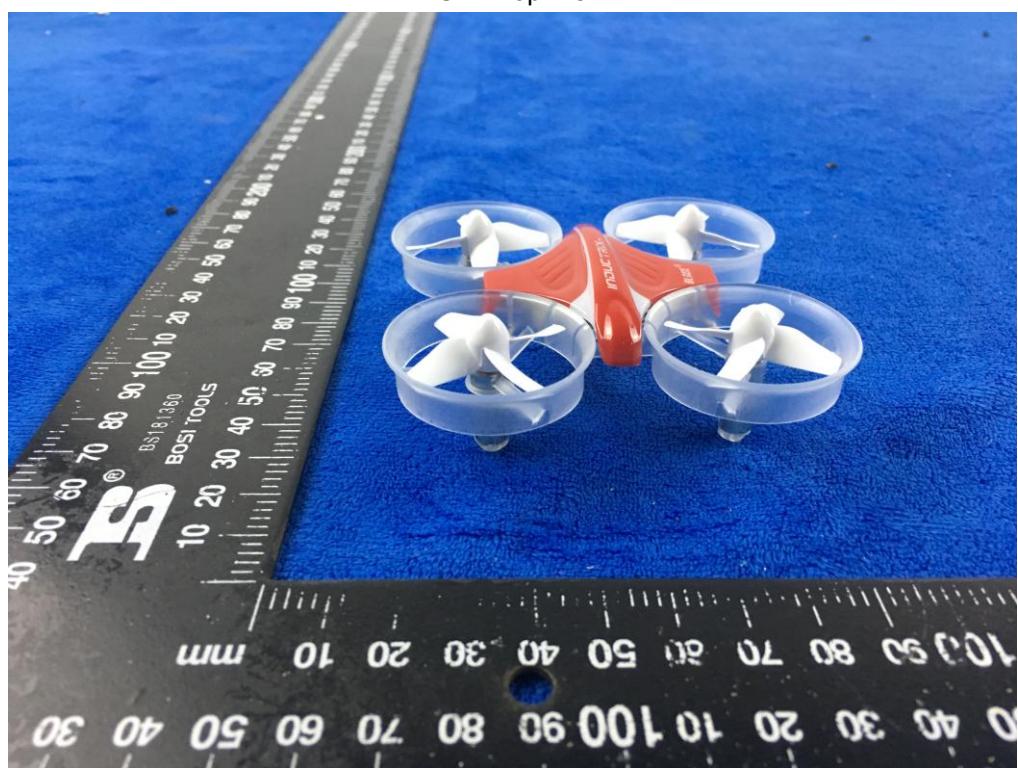
EUT - Front View



EUT - Rear View



EUT - Top View



EUT - Bottom View



EUT - Left View



EUT - Right View



Label View

**Inductrix**  
**BLH8701**  
**FCC ID: BRWBLH8701**  
**IC:6157A-BLH8701**

Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View



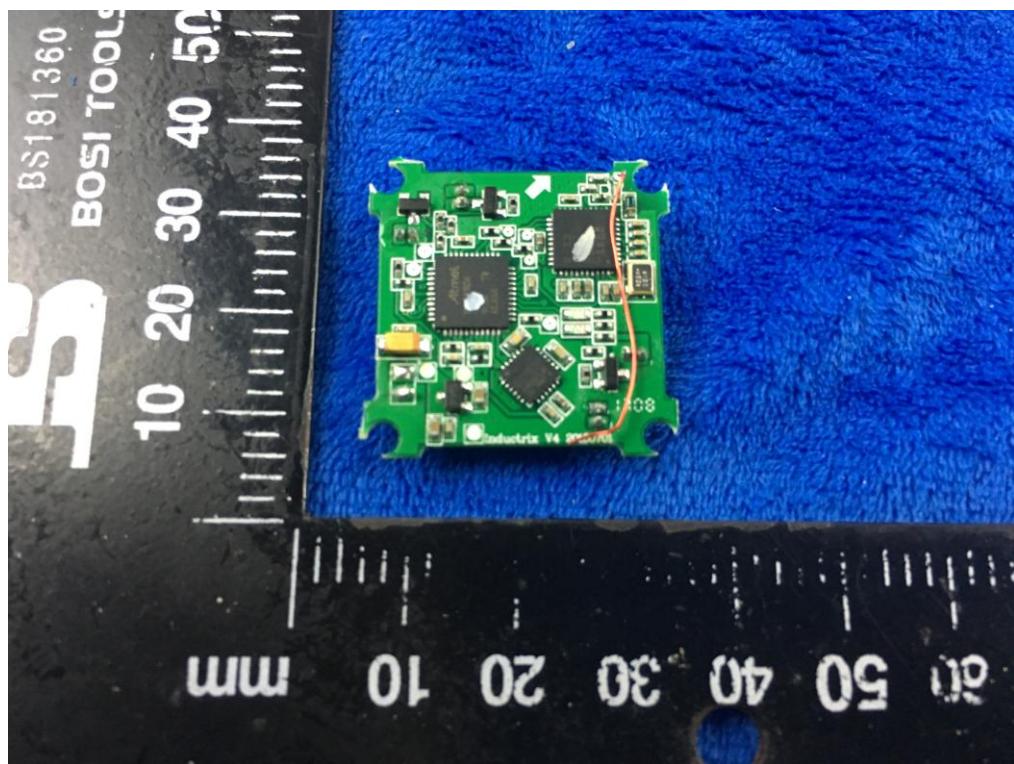
Battery - Front View



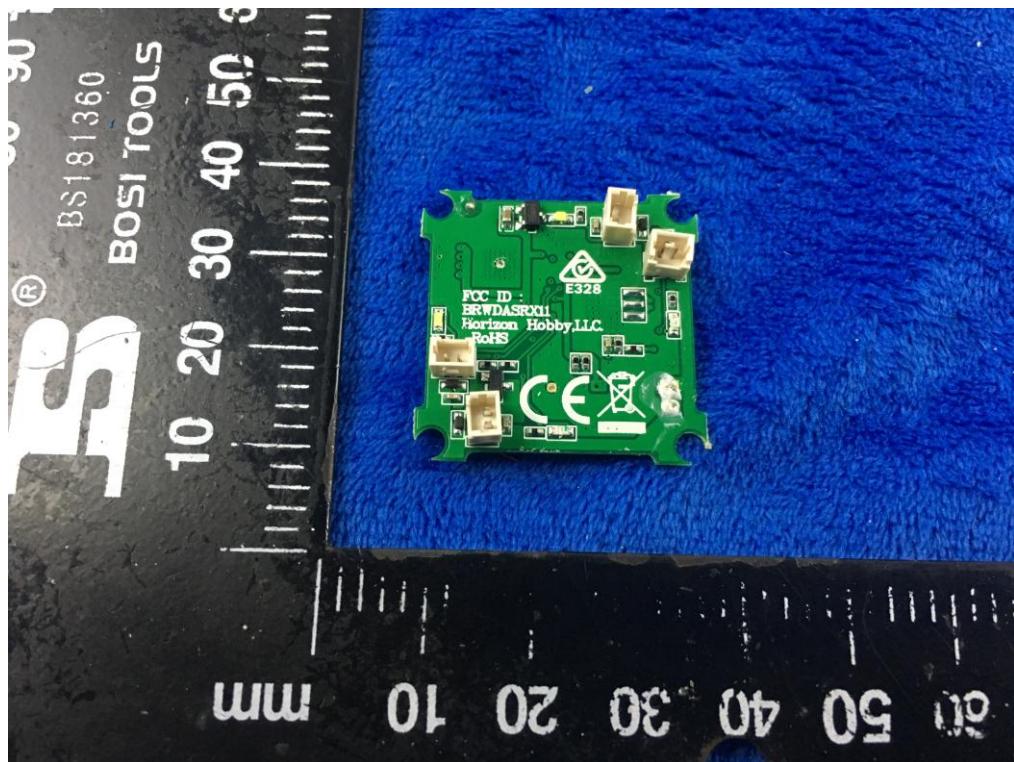
Battery - Rear View



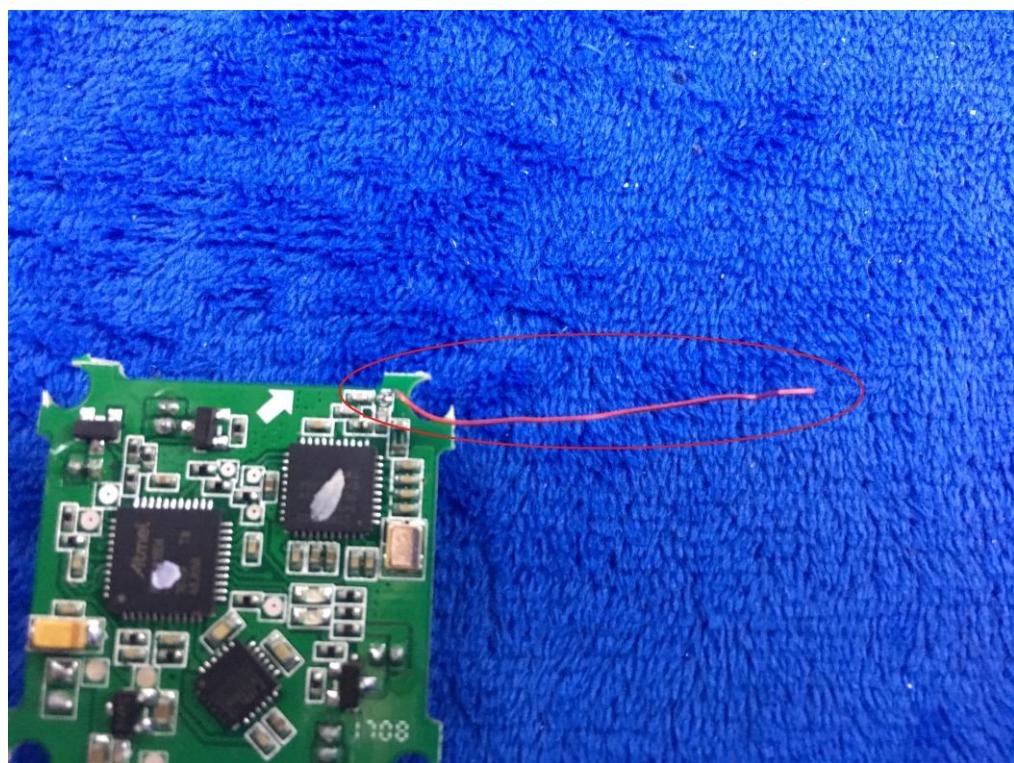
Mainboard - Front View



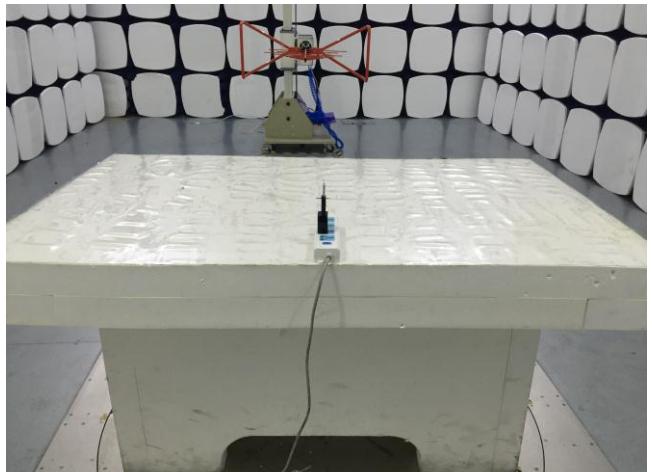
Mainboard – Rear View



Antenna View



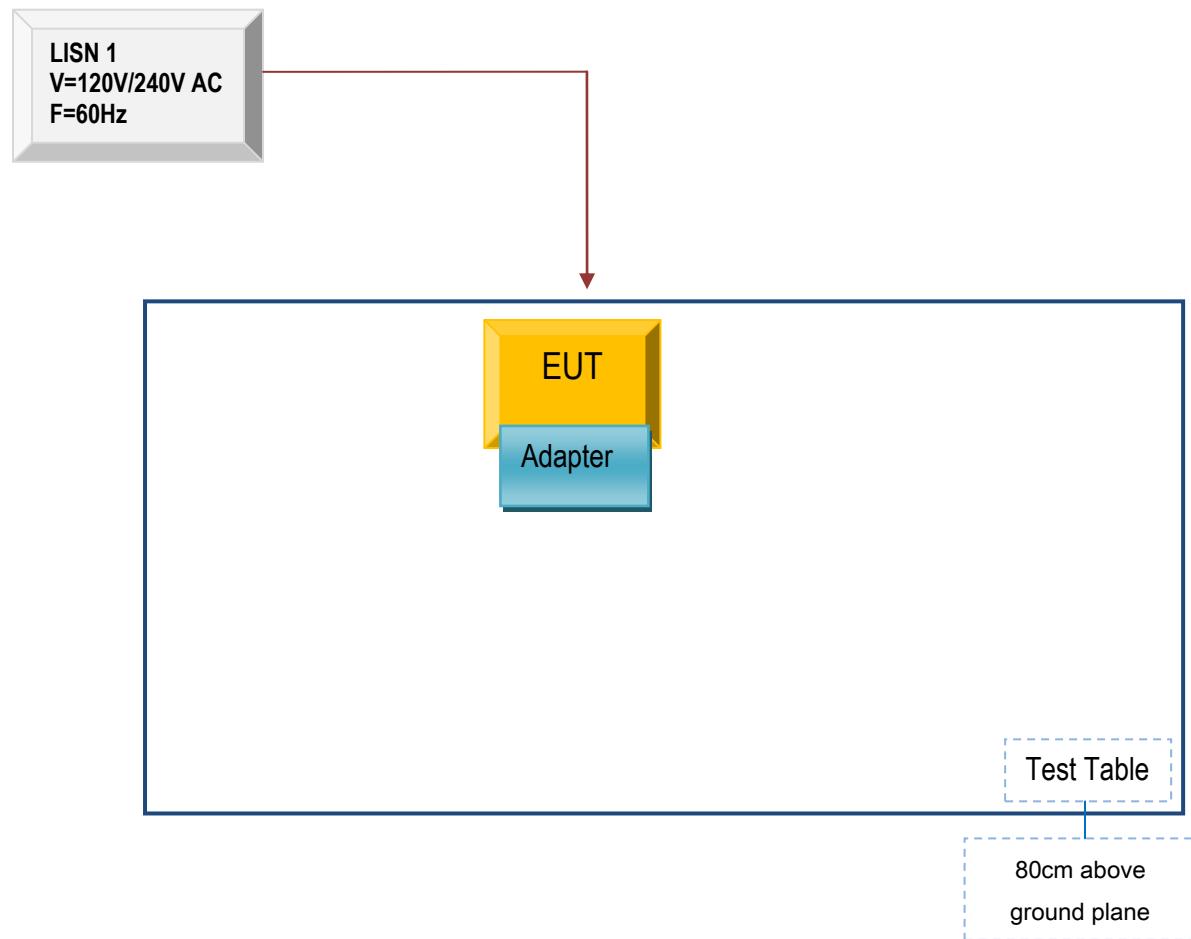
**Annex B.iii. Photograph: Test Setup Photo**

 A photograph showing a wooden table in a laboratory setting. Various electrical equipment, including a power strip and a device on a stand, are connected to the table and the wall. Cables are visible on the floor and wall.	 A photograph showing a side view of the wooden table setup. A power strip is on the table, and cables are visible on the floor and wall.
Conducted Emissions Test Setup – Front View	Conducted Emissions Test Setup – Side View
 A photograph of a test setup in an anechoic chamber. A device is mounted on a stand in the center of the chamber, which is lined with white foam panels. A probe is connected to the device and extends towards the floor.	
Radiated Emissions Test Setup Below 1GHz	

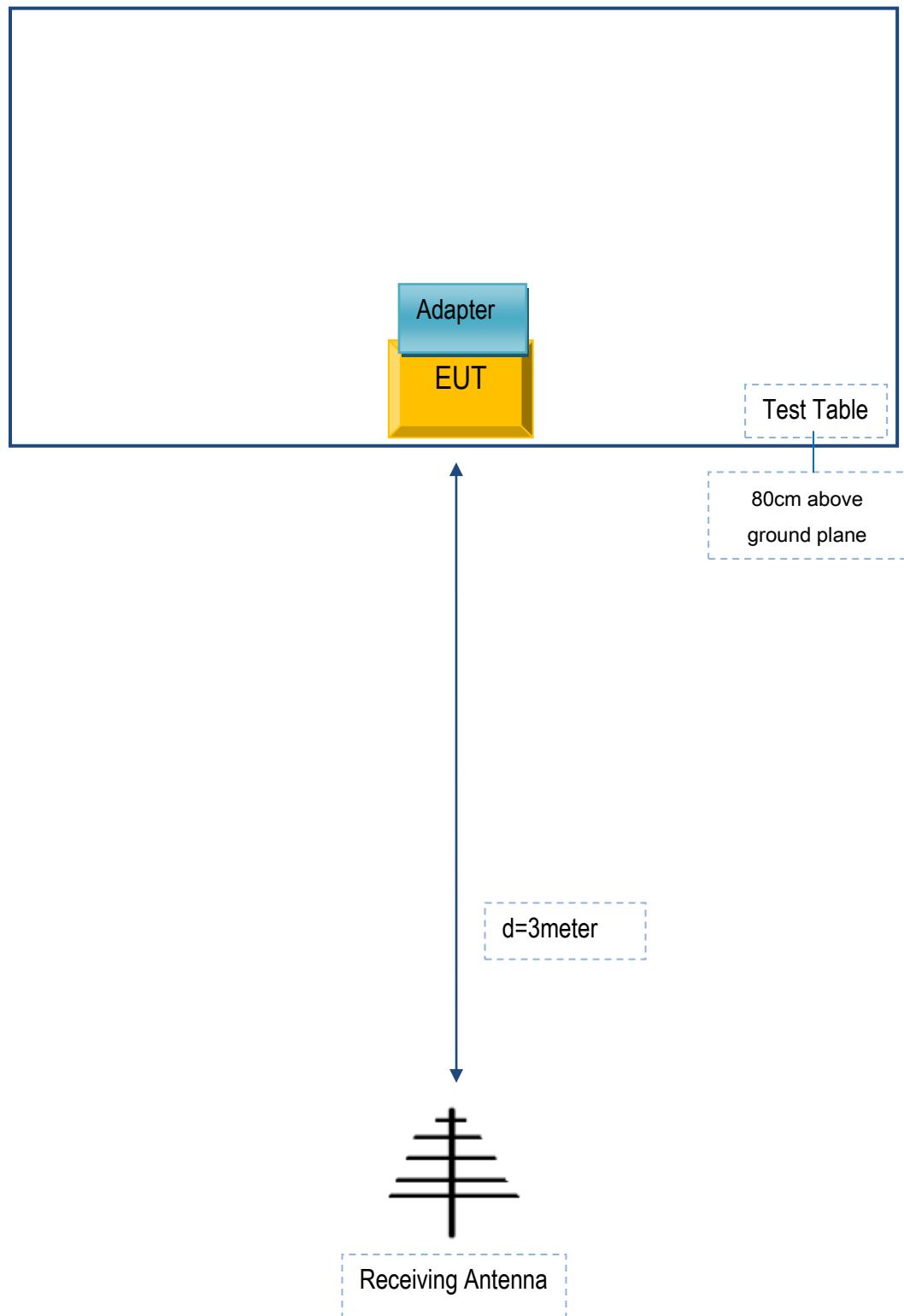
## Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

### Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



## Block Configuration Diagram for Radiated Emissions



## Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

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

### Supporting Equipment:

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

### Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
N/A	N/A	N/A	N/A	N/A

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

Please see the attachment

## Annex E. DECLARATION OF SIMILARITY

N/A