


EMC TEST REPORT



Report No.: 18070102-FCC-E

Supersede Report No: N/A

Applicant	Venture Global Ltd	
Product Name	Multi-Alert Receiver	
Model No.	MA-3000	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2017, ANSI C63.4: 2014	
Test Date	February 03 to March 25, 2018	
Issue Date	March 26, 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"/>	
<i>Evans He</i>	<i>David Huang</i>	
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

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
18070102-FCC-E	NONE	Original	March 26, 2018

2. Customer information

Applicant Name	Venture Global Ltd
Applicant Add	Room 1102, 11/F., Fabrico Industrial Building,78-84 Kwai Cheong Road, Kwai Chung, N.T., Hong Kong.
Manufacturer	Venture Global Ltd
Manufacturer Add	Room 1102, 11/F., Fabrico Industrial Building,78-84 Kwai Cheong Road, Kwai Chung, N.T., Hong Kong.

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:	Multi-Alert Receiver
Main Model:	MA-3000
Serial Model:	N/A
Input Power:	Spec: 3*1.5V battery
Equipment Category :	JBP
Port:	Pls refer to user' s manual
Trade Name :	N/A
FCC ID:	YAHMA3000
Date EUT received:	February 02, 2018
Test Date(s):	February 03 to March 25, 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

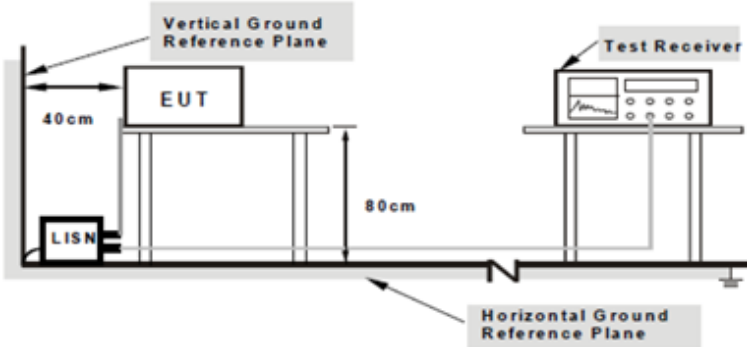
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	22°C
Relative Humidity	53%
Atmospheric Pressure	1008mbar
Test date :	March 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 [μ] 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 (dBμV)</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 (dBμV)		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 (dBμV)																
	QP	Average															
0.15 ~ 0.5	66 – 56	56 – 46															
0.5 ~ 5	56	46															
5 ~ 30	60	50															

Test Setup	 <p style="text-align: center;"> 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. </p>
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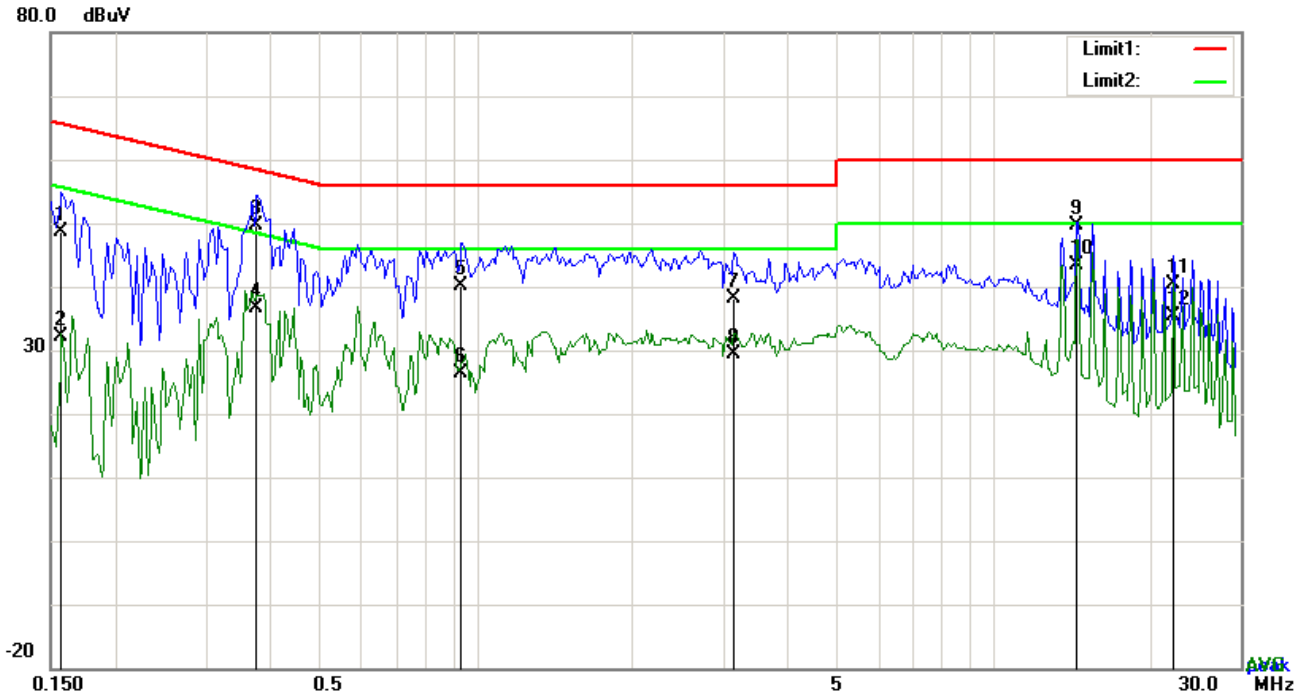
Procedure	<ol style="list-style-type: none"> The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table. The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.
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	<ol style="list-style-type: none"> 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	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data Yes N/A

Test Plot Yes (See below) N/A

Test Mode :	Working Mode
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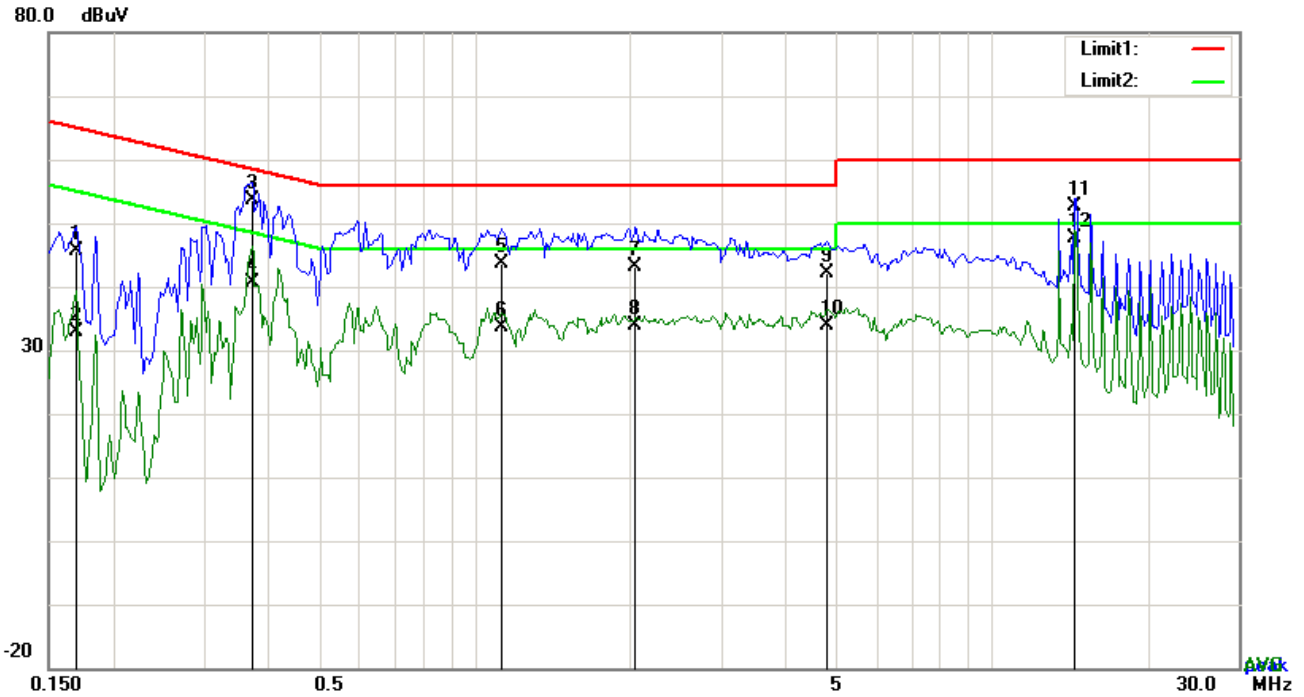


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.1578	38.72	QP	10.03	48.75	65.58	-16.83
2	L1	0.1578	22.15	AVG	10.03	32.18	55.58	-23.40
3	L1	0.3762	39.63	QP	10.03	49.66	58.36	-8.70
4	L1	0.3762	26.54	AVG	10.03	36.57	48.36	-11.79
5	L1	0.9378	29.98	QP	10.03	40.01	56.00	-15.99
6	L1	0.9378	16.47	AVG	10.03	26.50	46.00	-19.50
7	L1	3.1482	28.07	QP	10.06	38.13	56.00	-17.87
8	L1	3.1482	19.32	AVG	10.06	29.38	46.00	-16.62
9	L1	14.5167	39.29	QP	10.22	49.51	60.00	-10.49
10	L1	14.5167	33.21	AVG	10.22	43.43	50.00	-6.57
11	L1	22.2582	30.05	QP	10.34	40.39	60.00	-19.61
12	L1	22.2582	25.14	AVG	10.34	35.48	50.00	-14.52

Test Mode :	Working Mode
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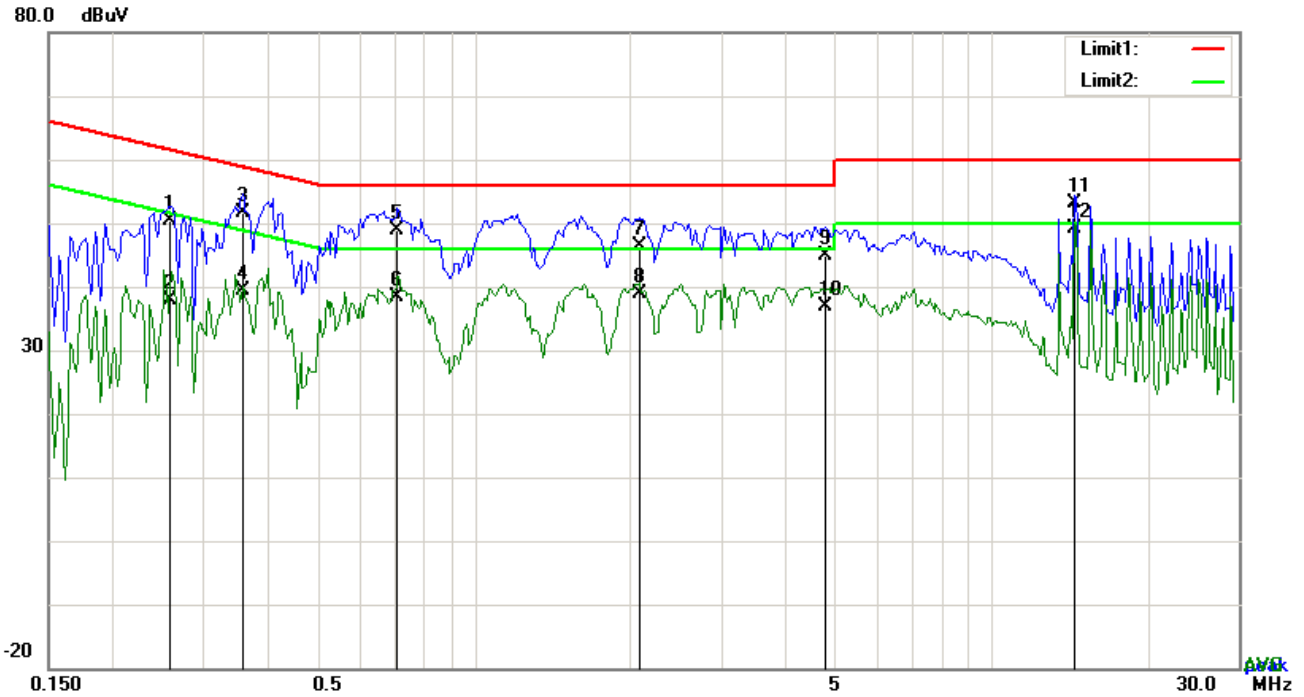


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.1695	35.50	QP	10.02	45.52	64.98	-19.46
2	N	0.1695	22.98	AVG	10.02	33.00	54.98	-21.98
3	N	0.3723	43.62	QP	10.02	53.64	58.45	-4.81
4	N	0.3723	30.58	AVG	10.02	40.60	48.45	-7.85
5	N	1.1250	33.49	QP	10.03	43.52	56.00	-12.48
6	N	1.1250	23.59	AVG	10.03	33.62	46.00	-12.38
7	N	2.0532	33.07	QP	10.04	43.11	56.00	-12.89
8	N	2.0532	23.78	AVG	10.04	33.82	46.00	-12.18
9	N	4.8096	31.94	QP	10.07	42.01	56.00	-13.99
10	N	4.8096	23.80	AVG	10.07	33.87	46.00	-12.13
11	N	14.5128	42.44	QP	10.19	52.63	60.00	-7.37
12	N	14.5128	37.43	AVG	10.19	47.62	50.00	-2.38

Test Mode :	Working Mode
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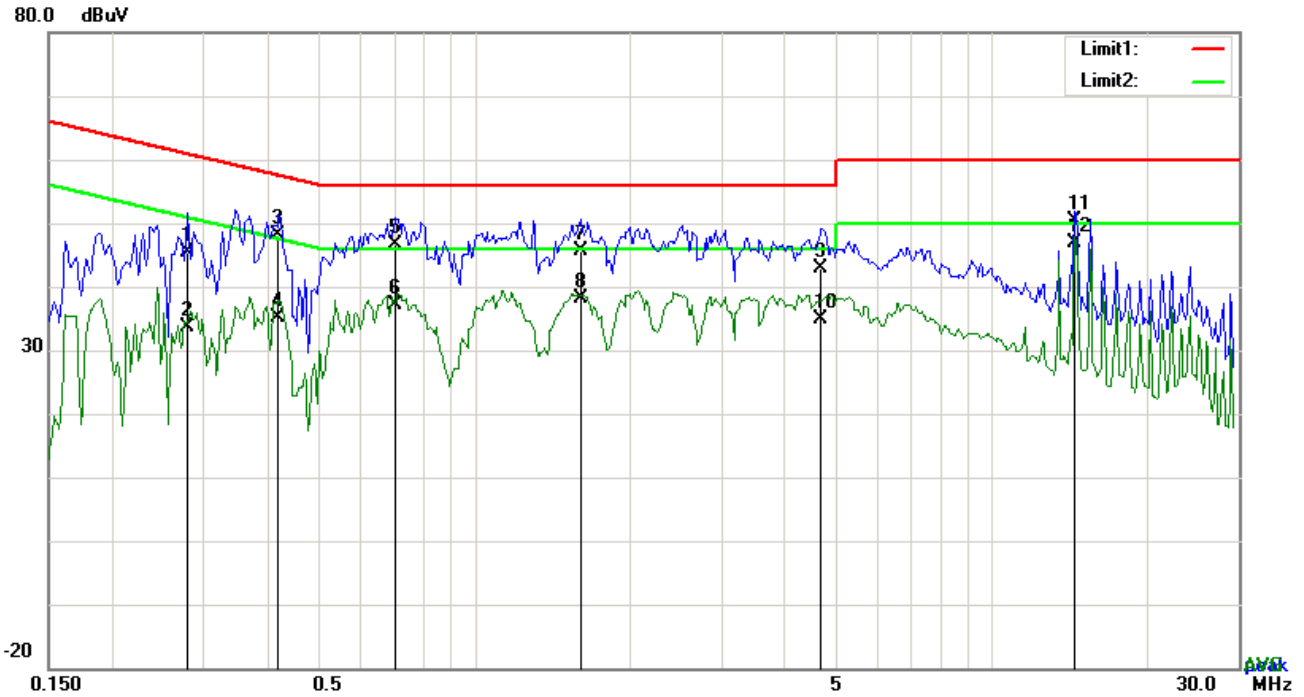


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.2575	40.37	QP	10.03	50.40	61.51	-11.11
2	L1	0.2575	27.84	AVG	10.03	37.87	51.51	-13.64
3	L1	0.3567	41.69	QP	10.03	51.72	58.80	-7.08
4	L1	0.3567	29.24	AVG	10.03	39.27	48.80	-9.53
5	L1	0.7116	38.87	QP	10.03	48.90	56.00	-7.10
6	L1	0.7116	28.25	AVG	10.03	38.28	46.00	-7.72
7	L1	2.0805	36.46	QP	10.04	46.50	56.00	-9.50
8	L1	2.0805	28.91	AVG	10.04	38.95	46.00	-7.05
9	L1	4.7706	34.81	QP	10.08	44.89	56.00	-11.11
10	L1	4.7706	26.77	AVG	10.08	36.85	46.00	-9.15
11	L1	14.5128	42.96	QP	10.22	53.18	60.00	-6.82
12	L1	14.5128	38.84	AVG	10.22	49.06	50.00	-0.94

Test Mode :	Working Mode
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Test Data

Phase Neutral Plot at 240Vac, 60Hz

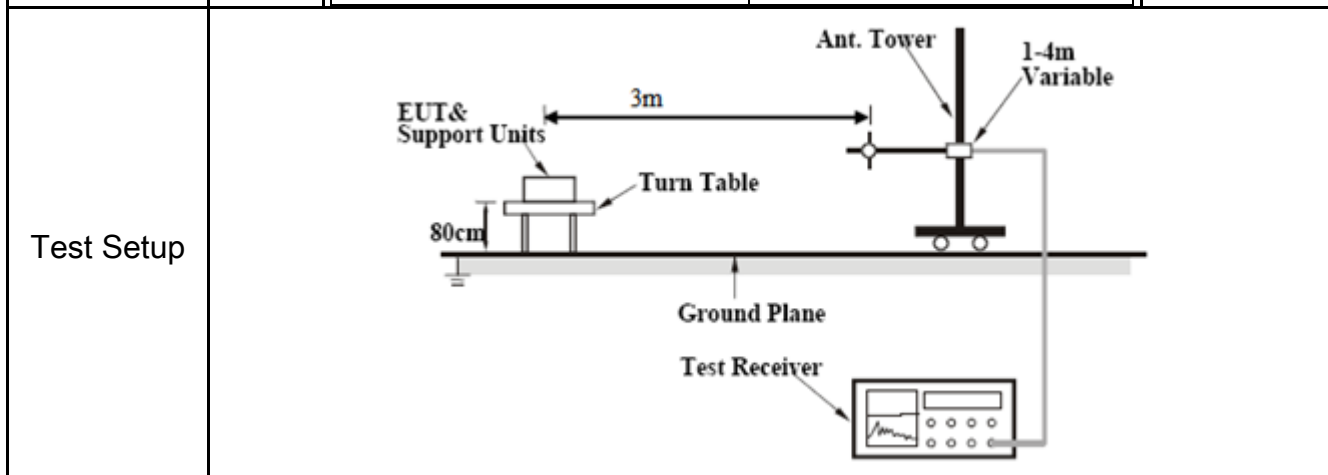
No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.2787	35.35	QP	10.02	45.37	60.85	-15.48
2	N	0.2787	23.73	AVG	10.02	33.75	50.85	-17.10
3	N	0.4191	38.01	QP	10.02	48.03	57.47	-9.44
4	N	0.4191	25.17	AVG	10.02	35.19	47.47	-12.28
5	N	0.7038	36.62	QP	10.02	46.64	56.00	-9.36
6	N	0.7038	27.01	AVG	10.02	37.03	46.00	-8.97
7	N	1.6047	35.54	QP	10.04	45.58	56.00	-10.42
8	N	1.6047	28.09	AVG	10.04	38.13	46.00	-7.87
9	N	4.6731	32.74	QP	10.07	42.81	56.00	-13.19
10	N	4.6731	24.84	AVG	10.07	34.91	46.00	-11.09
11	N	14.5089	40.13	QP	10.19	50.32	60.00	-9.68
12	N	14.5089	36.74	AVG	10.19	46.93	50.00	-3.07

6.2 Radiated Emissions

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

Requirement(s):

Spec	Item	Requirement	Applicable										
47CFR§15.109(d)	a)	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	<input checked="" type="checkbox"/>										
		<table border="1"> <thead> <tr> <th>Frequency range (MHz)</th> <th>Field Strength ($\mu\text{V}/\text{m}$)</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 ($\mu\text{V}/\text{m}$)	30 – 88	100	88 – 216	150	216 - 960	200	Above 960	500
		Frequency range (MHz)		Field Strength ($\mu\text{V}/\text{m}$)									
		30 – 88		100									
		88 – 216		150									
216 - 960	200												
Above 960	500												



Procedure	<ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> a. Vertical or horizontal polarization (whichever gave the higher emission level
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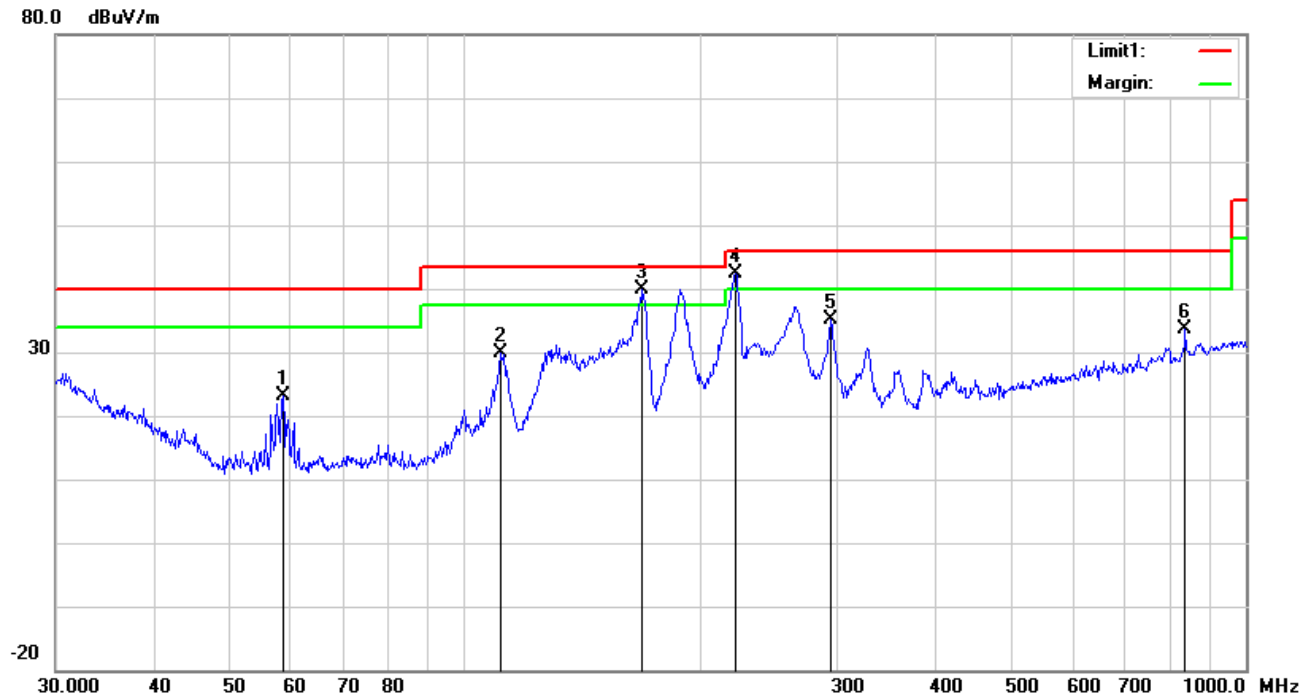
	<p>over a full rotation of the EUT) was chosen.</p> <p>b. The EUT was then rotated to the direction that gave the maximum emission.</p> <p>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</p> <p>3. The resolution bandwidth and video bandwidth of test receiver/spectrum 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. 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%)</p> <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 1:	Charging By Adapter Mode
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Below 1GHz

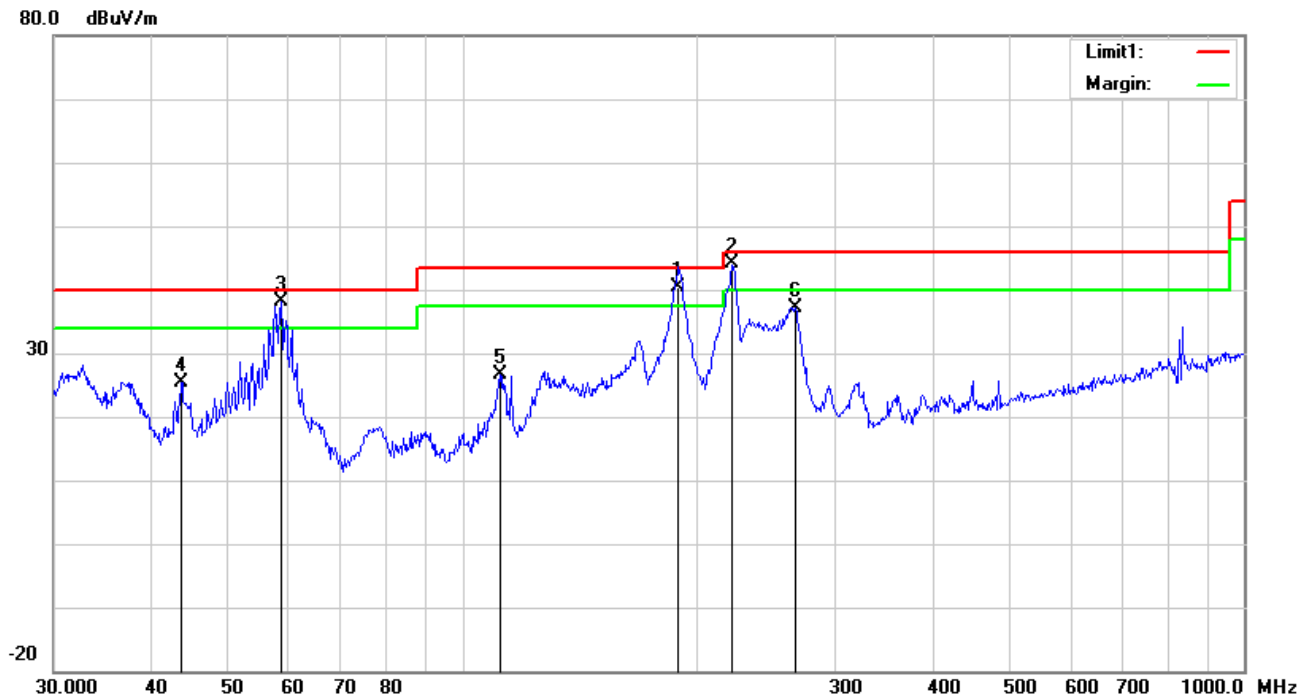


Test Data

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	58.6126	37.43	peak	7.45	22.41	0.76	23.23	40.00	-16.77	100	302
2	H	111.3468	38.63	peak	12.39	22.34	1.17	29.85	43.50	-13.65	100	211
3	H	169.0054	49.01	QP	11.88	22.26	1.36	39.99	43.50	-3.51	100	268
4	H	222.1698	51.31	QP	11.79	22.34	1.61	42.37	46.00	-3.63	100	271
5	H	294.1137	42.33	peak	13.34	22.29	1.78	35.16	46.00	-10.84	100	78
6	H	836.2443	29.91	peak	21.80	21.05	2.89	33.55	46.00	-12.45	100	106

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	189.0743	49.69	QP	11.50	22.31	1.52	40.40	43.50	-3.10	100	202
2	V	221.3921	53.17	QP	11.80	22.34	1.61	44.24	46.00	-1.76	100	46
3	V	58.6126	52.29	QP	7.45	22.41	0.76	38.09	40.00	-1.91	200	152
4	V	43.6585	35.53	peak	11.49	22.29	0.76	25.49	40.00	-14.51	100	250
5	V	111.7380	35.31	peak	12.45	22.34	1.17	26.59	43.50	-16.91	100	119
6	V	266.6089	45.54	peak	12.13	22.29	1.73	37.11	46.00	-8.89	100	252

Above 1GHz

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

Test Mode 2:	Charging By Battery Mode
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Below 1GHz

80.0 dBuV/m

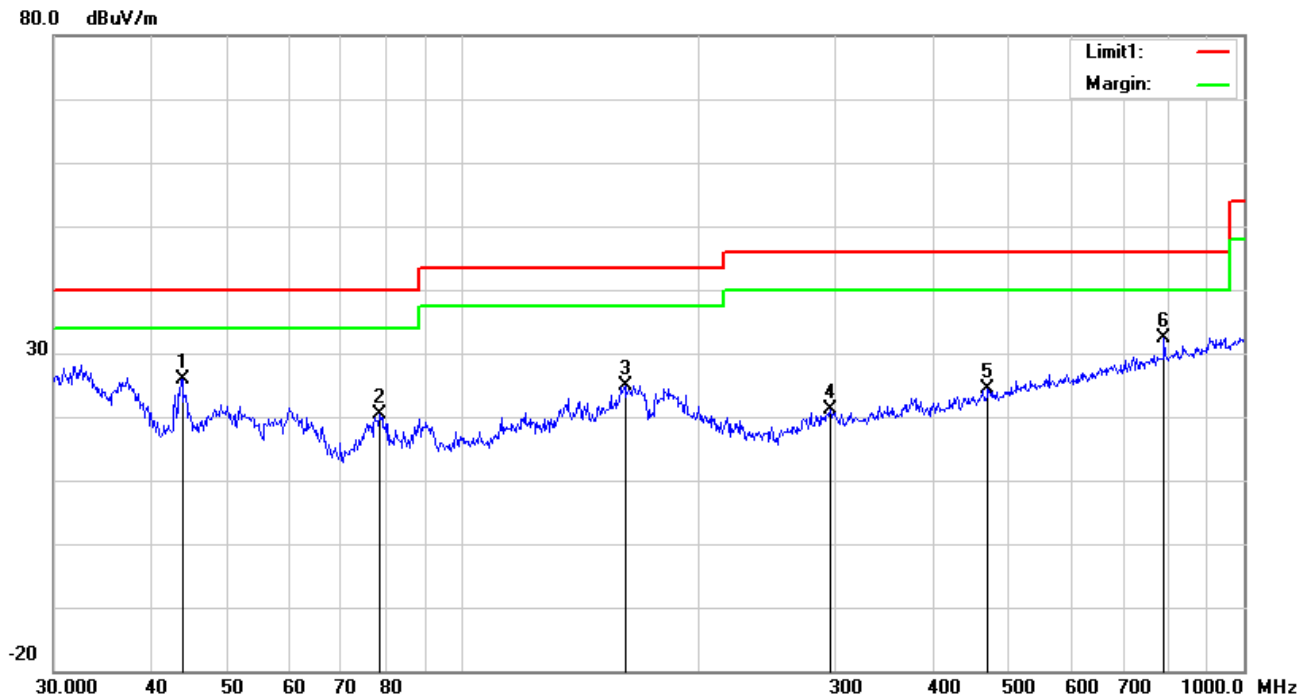


Test Data

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	375.9385	32.21	peak	15.19	22.08	2.02	27.34	46.00	-18.66	100	168
2	H	182.5592	32.81	peak	11.14	22.27	1.41	23.09	43.50	-20.41	200	334
3	H	100.2286	28.67	peak	10.44	22.32	1.12	17.91	43.50	-25.59	100	98
4	H	43.8119	28.82	peak	11.38	22.29	0.76	18.67	40.00	-21.33	100	319
5	H	58.4074	26.62	peak	7.48	22.41	0.76	12.45	40.00	-27.55	100	187
6	H	790.6188	25.84	peak	21.29	21.17	2.94	28.90	46.00	-17.10	100	10

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	43.8119	36.07	peak	11.38	22.29	0.76	25.92	40.00	-14.08	100	213
2	V	78.4134	34.21	peak	7.63	22.41	1.02	20.45	40.00	-19.55	100	139
3	V	161.4742	33.24	peak	12.48	22.27	1.39	24.84	43.50	-18.66	100	133
4	V	296.1836	28.28	peak	13.43	22.29	1.78	21.20	46.00	-24.80	100	209
5	V	470.5232	26.93	peak	17.11	21.87	2.25	24.42	46.00	-21.58	100	62
6	V	790.6188	29.31	peak	21.29	21.17	2.94	32.37	46.00	-13.63	100	148

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
AC Line Conducted Emissions					
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"/>
Radiated Emissions					
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

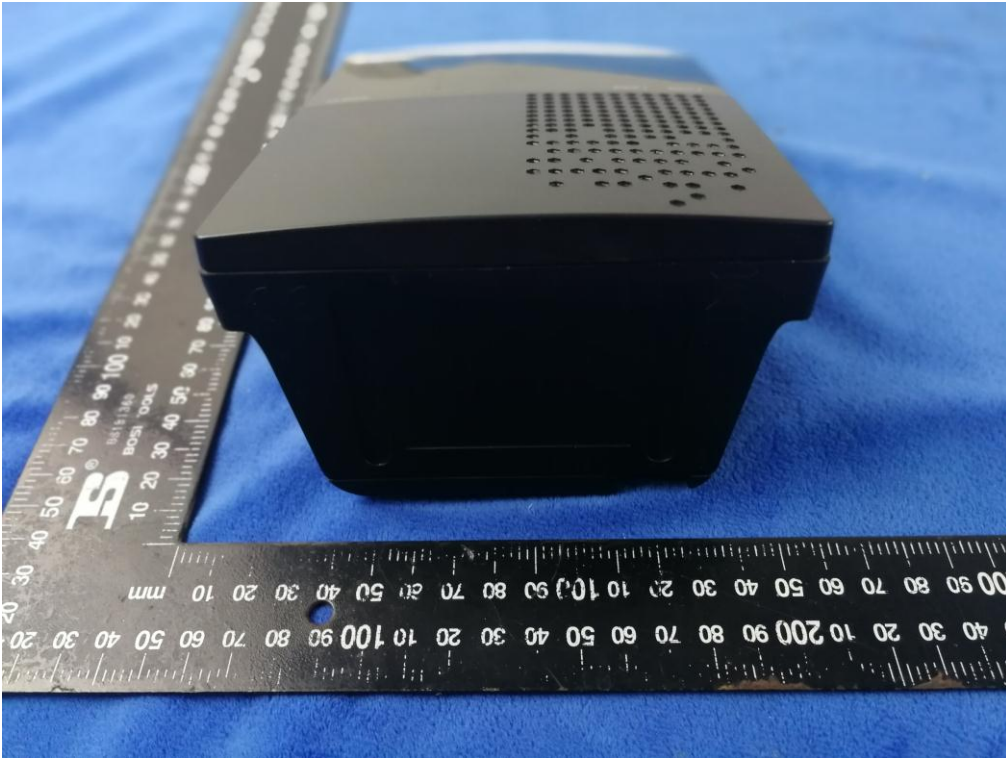
EUT - Front View



EUT - Rear View



EUT - Top View



EUT - Bottom View



EUT - Left View

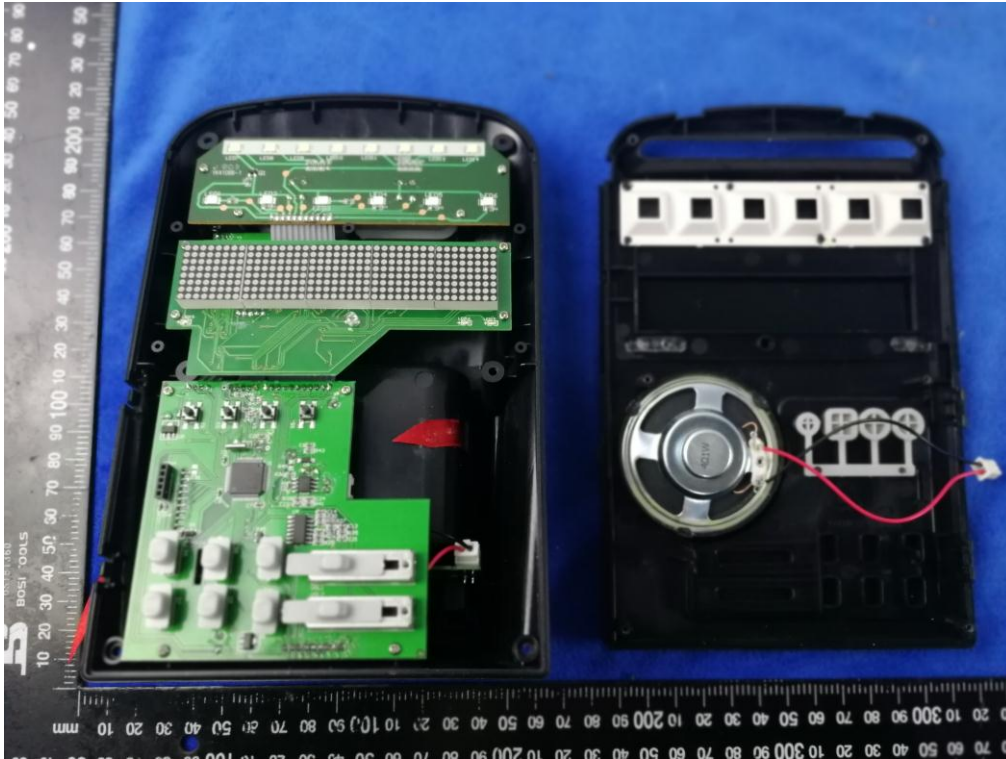


EUT - Right View

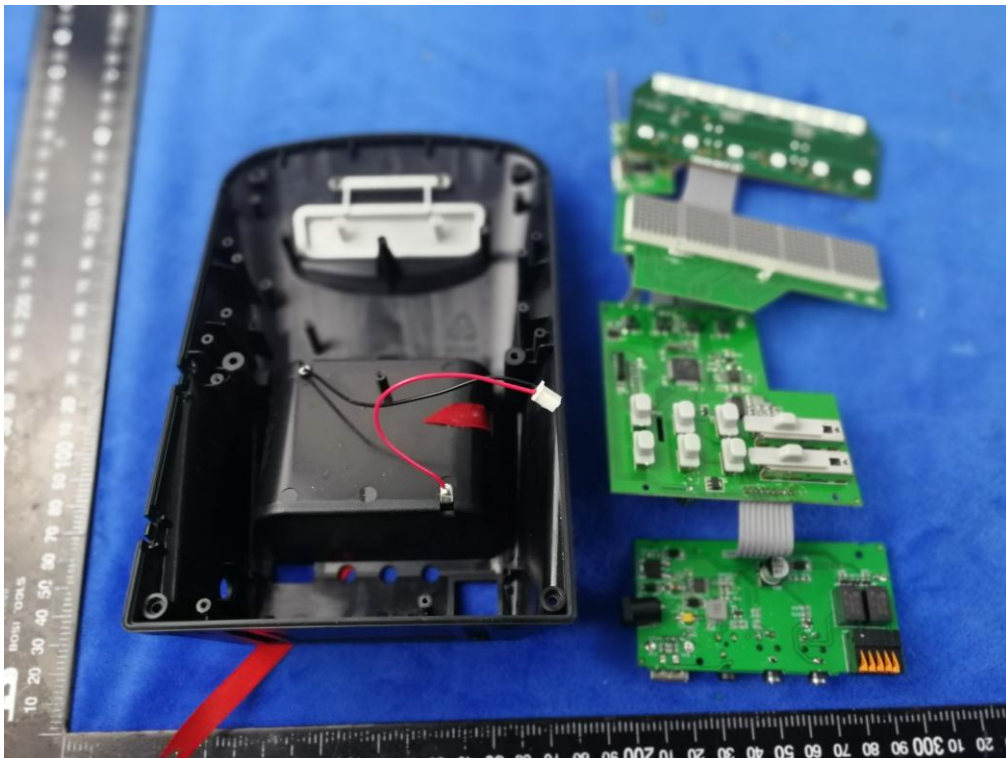


Annex B.ii. Photograph: EUT Internal Photo

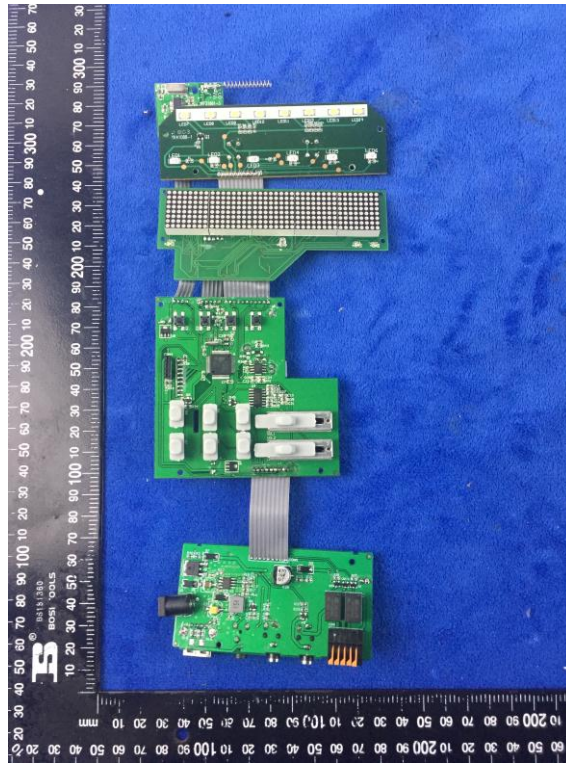
Cover Off - Top View 1



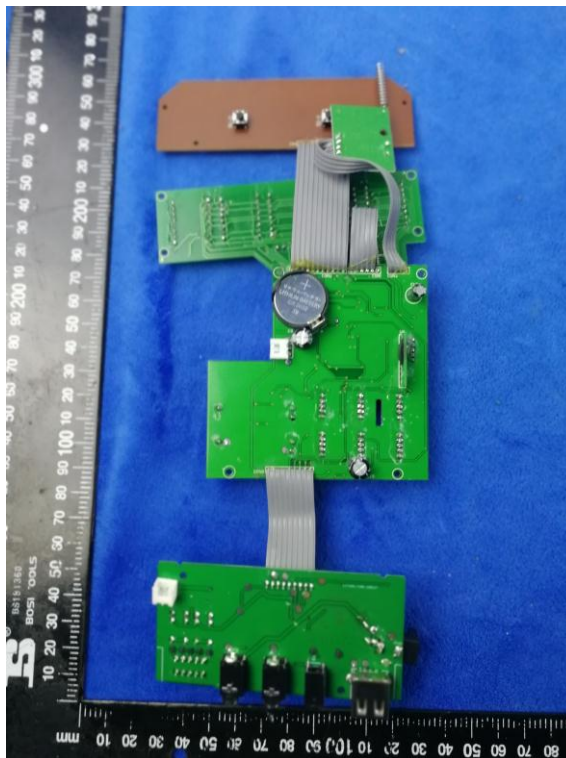
Cover Off - Top View 2



Mainboard - Front View



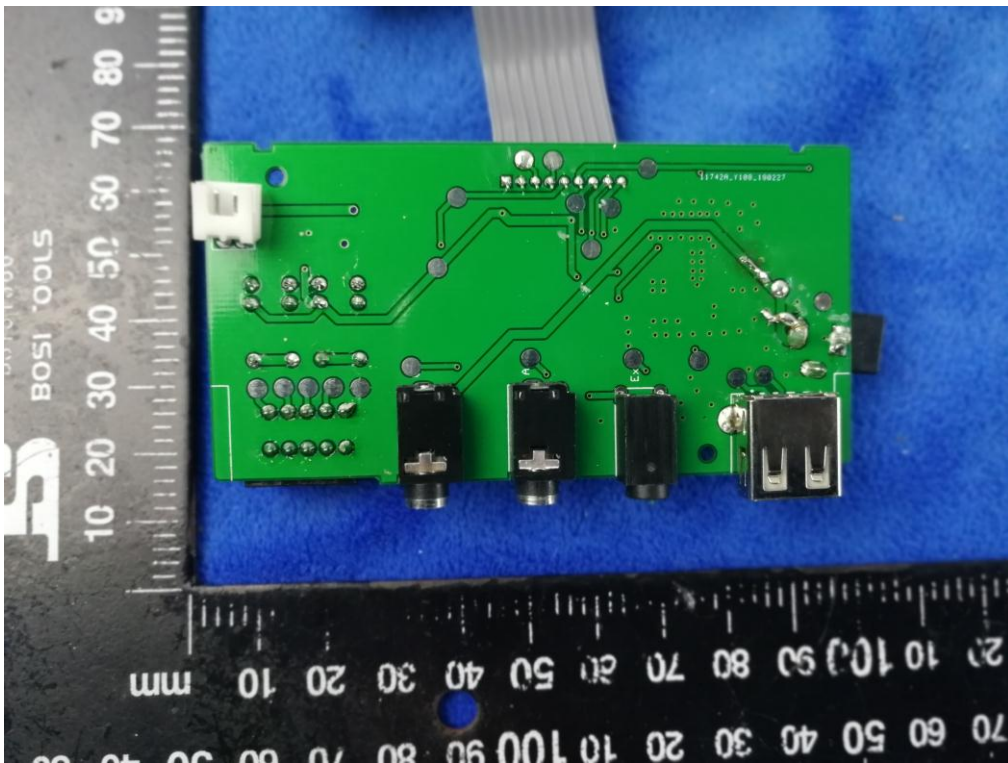
Mainboard - Rear View



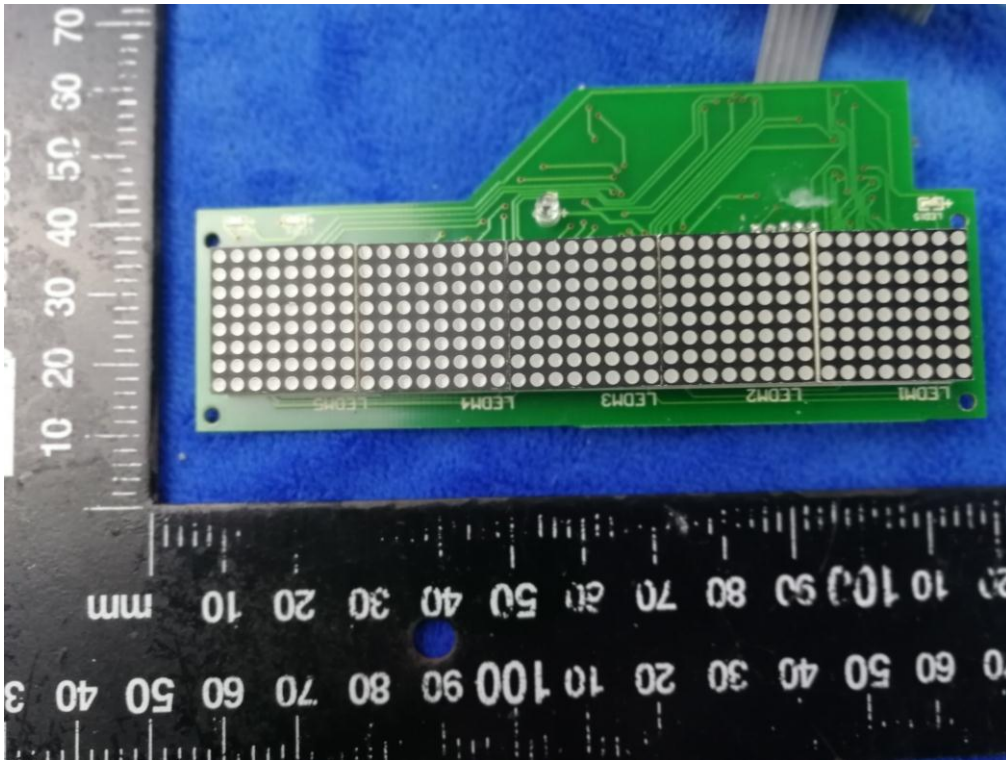
Smallboard – Front View



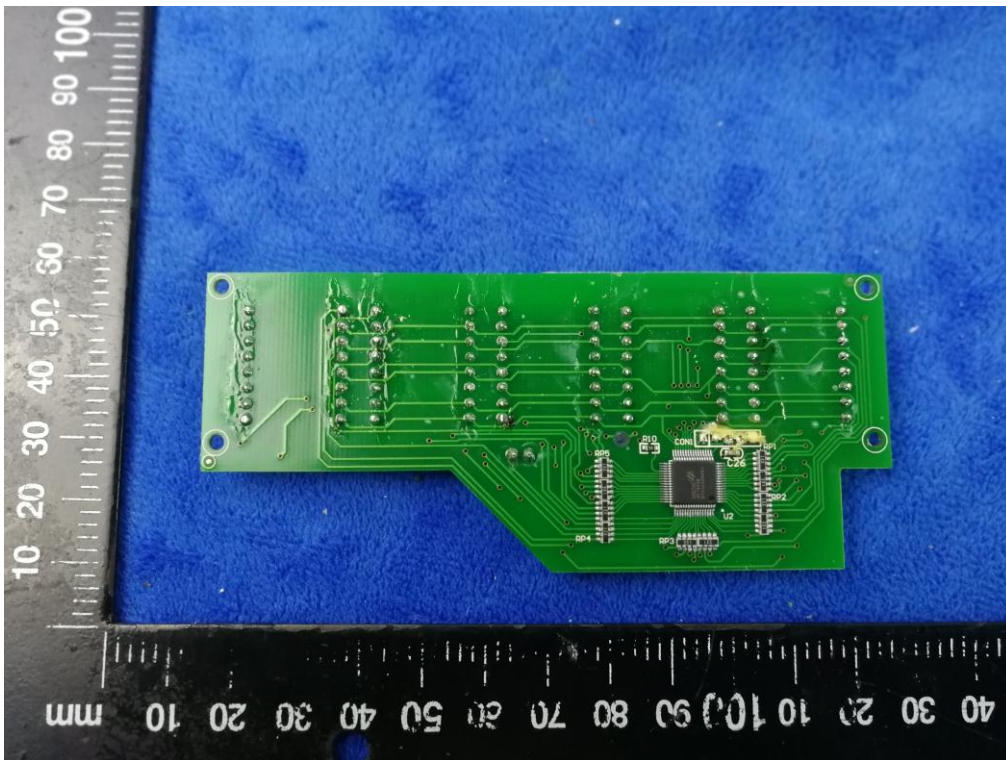
Smallboard – Rear View



LED – Front View



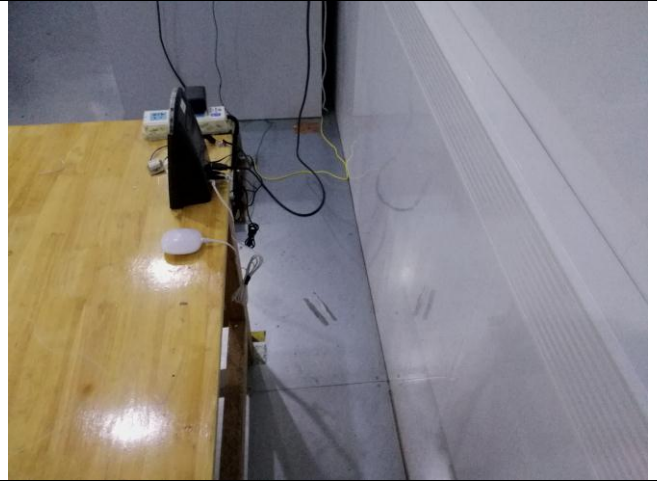
LED – Rear View



Annex B.iii. Photograph: Test Setup Photo



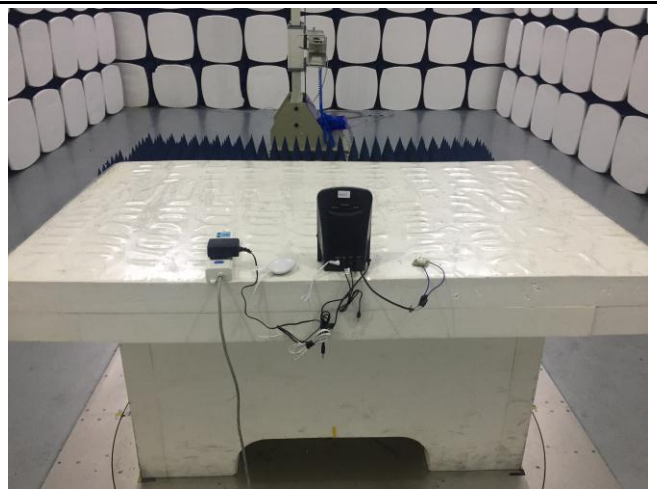
Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup – Side View



Radiated Emissions Test Setup Below 1GHz

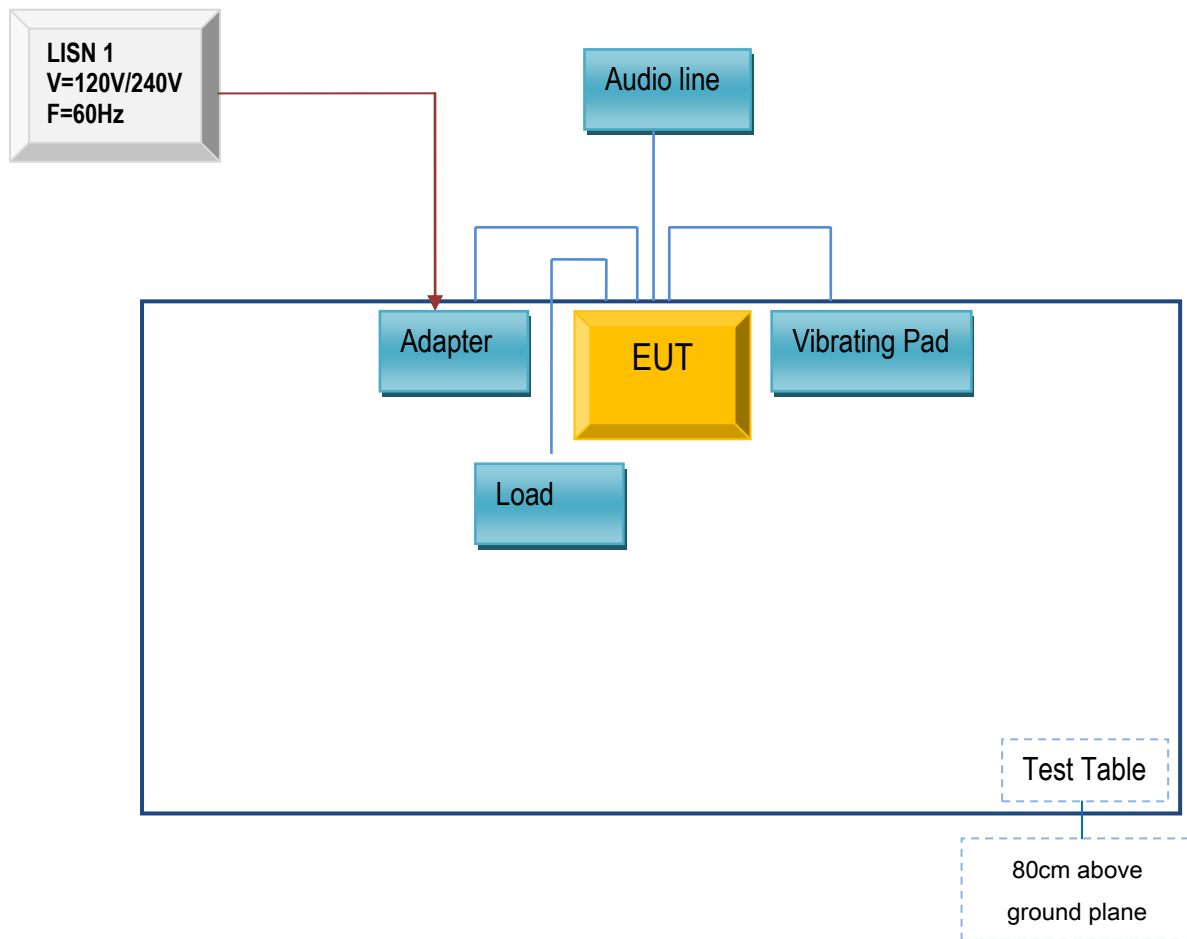


Radiated Emissions Test Setup Above 1GHz

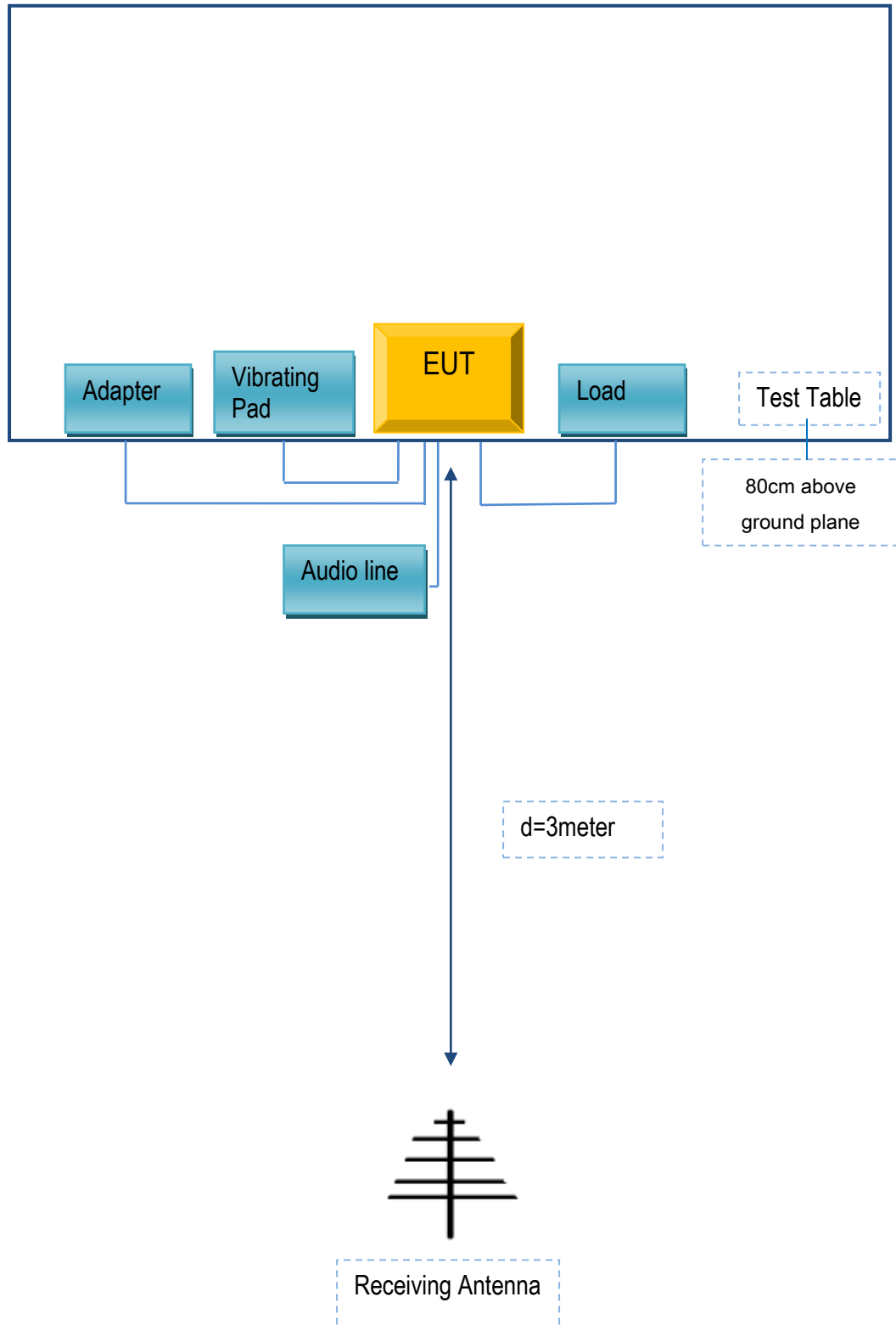
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C. 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
Venture Global Ltd	Vibrating Pad	N/A	N/A
Venture Global Ltd	Adaptor	HKP18-1201200dU	N/A
N/A	Load	N/A	N/A

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
Power Cable	Un-shielding	No	1m	N/A
Audio Cable	Un-shielding	No	1m	N/A
Vibrating Pad Cable	Un-shielding	No	1m	N/A
Load Cable	Un-shielding	No	0.5m	N/A

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

Please see the attachment

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Annex E. DECLARATION OF SIMILARITY

N/A