RF TEST REPORT

Report No.: 18070713-FCC-R

Supersede Report No.: N/A

Applicant	Elec Technologies Group Limited
Product Name	Superior Wireless Charging Stand
Model No.	EP352TA
Serial No.	7141-35BK(All models have same circuits diagram, PCB Layout, construction and rated power,only different is the model name.)
Test Standard	FCC Part 15.207a, FCC Part 15.209, ANSI C63.10: 2013
Test Date	July 13 to 22, 2018
Issue Date	July 23, 2018
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Aaron Liang	David Huang	
Aaron Liang Test Engineer	David Huang 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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CONTENTS

1. Report Revision History

Report No.	Report Version	Description	Issue Date
18070713-FCC-R	NONE	Original	July 23, 2018

2. Customer information

Applicant Name	Elec Technologies Group Limited
Applicant Add	NO.11 Lianfeng Road, Dali Industrial Park, Qingxi Town, Dongguan City, Guangdong Province, China
Manufacturer	Elec Technologies Group Limited
Manufacturer Add	NO.11 Lianfeng Road, Dali Industrial Park, Qingxi Town, Dongguan City, Guangdong Province, China

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_EMC(ver.Icp-03A1)

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

4. Equipment under Test (EUT) Information

Description of EUT:	Superior Wireless Charging Stand
Main Model:	EP352TA
Serial Model:	7141-35BK(All models have same circuits diagram, PCB Layout, construction and rated power,only different is the model name.)
Date EUT received:	July 12, 2018
Test Date(s):	July 13 to 22, 2018
Port:	Please see the user’ s manual
Trade Name :	N/A
Input Power:	5V/2A; 9V/1.67A
FCC ID:	2ANED-EP352TA

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
§15.207 (a)	AC Power Line Conducted Emissions	Compliance
§15.209	Radiated Emissions	Compliance

Measurement Uncertainty

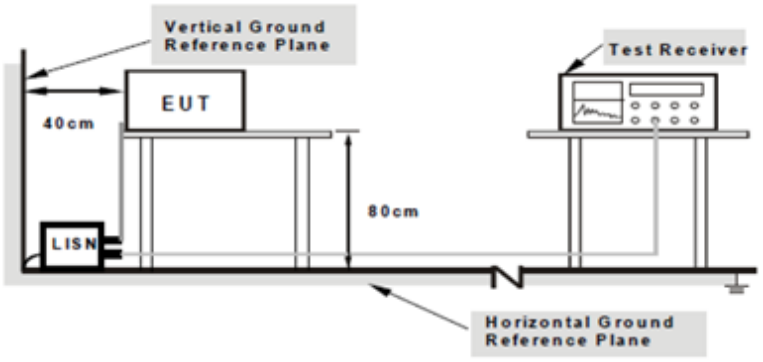
Emissions		
Test Item	**Description**	**Uncertainty**
Radiated Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	26℃
Relative Humidity	55%
Atmospheric Pressure	1017mbar
Test date :	July 18, 2018
Tested By :	Aaron Liang

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.207, RSS210 (A8.1)</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"> 

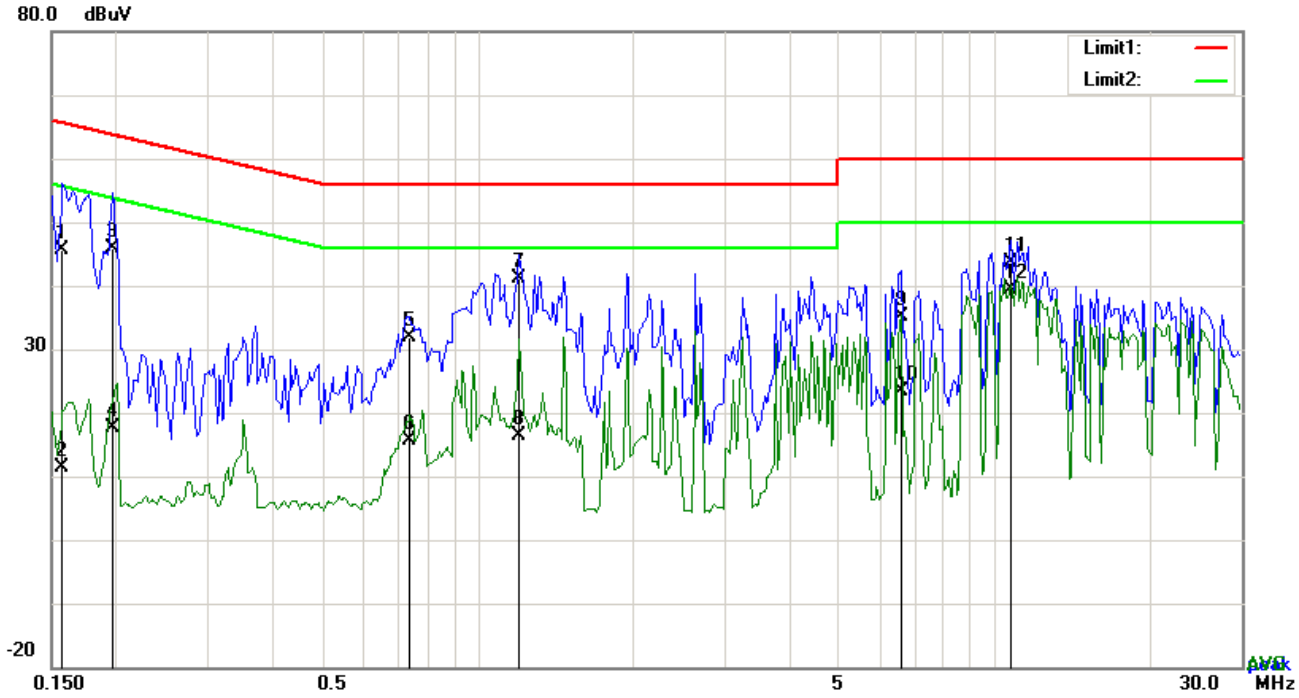
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT and supporting equipment were set up in accordance with the requirements of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

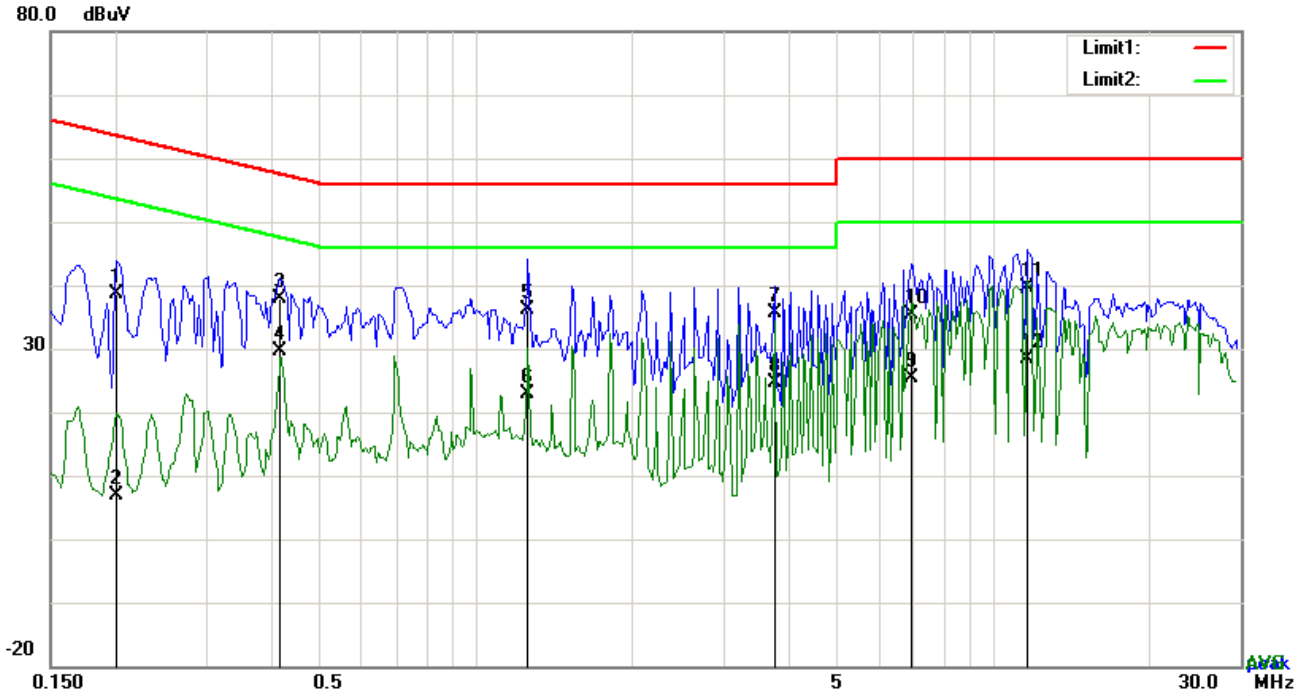


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	L1	0.1578	35.51	QP	10.03	45.54	65.58	-20.04
2	L1	0.1578	1.39	AVG	10.03	11.42	55.58	-44.16
3	L1	0.1968	35.82	QP	10.03	45.85	63.74	-17.89
4	L1	0.1968	7.70	AVG	10.03	17.73	53.74	-36.01
5	L1	0.7428	21.94	QP	10.03	31.97	56.00	-24.03
6	L1	0.7428	5.60	AVG	10.03	15.63	46.00	-30.37
7	L1	1.2030	31.14	QP	10.03	41.17	56.00	-14.83
8	L1	1.2030	6.29	AVG	10.03	16.32	46.00	-29.68
9	L1	6.6153	25.08	QP	10.10	35.18	60.00	-24.82
10	L1	6.6153	13.36	AVG	10.10	23.46	50.00	-26.54
11	L1	10.7415	33.56	QP	10.16	43.72	60.00	-16.28
12	L1	10.7415	29.33	AVG	10.16	39.49	50.00	-10.51

Test Mode:	Normal Working

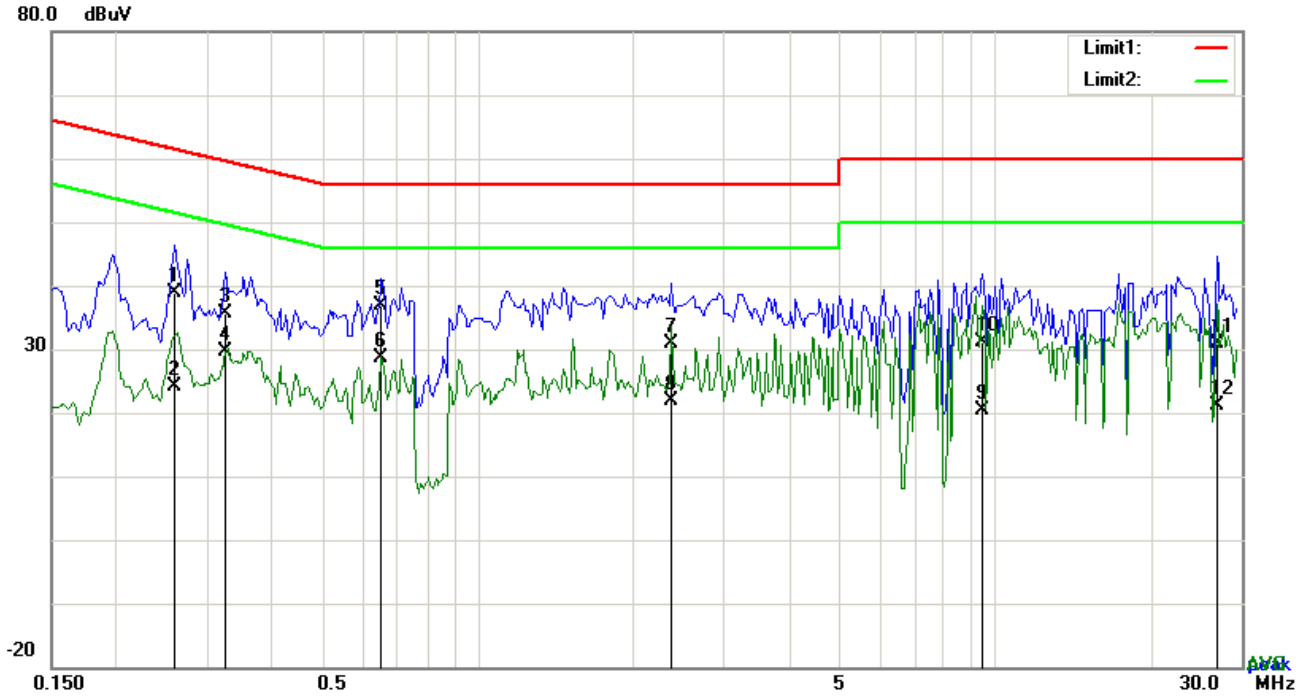


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	N	0.2007	28.71	QP	10.03	38.74	63.58	-24.84
2	N	0.2007	-3.08	AVG	10.03	6.95	53.58	-46.63
3	N	0.4152	27.84	QP	10.03	37.87	57.54	-19.67
4	N	0.4152	19.50	AVG	10.03	29.53	47.54	-18.01
5	N	1.2576	26.00	QP	10.03	36.03	56.00	-19.97
6	N	1.2576	12.92	AVG	10.03	22.95	46.00	-23.05
7	N	3.7683	25.63	QP	10.06	35.69	56.00	-20.31
8	N	3.7683	14.49	AVG	10.06	24.55	46.00	-21.45
9	N	6.9468	15.27	QP	10.11	25.38	60.00	-34.62
10	N	6.9468	25.18	AVG	10.11	35.29	50.00	-14.71
11	N	11.5761	29.47	QP	10.17	39.64	60.00	-20.36
12	N	11.5761	18.21	AVG	10.17	28.38	50.00	-21.62

Test Mode:	Normal Working

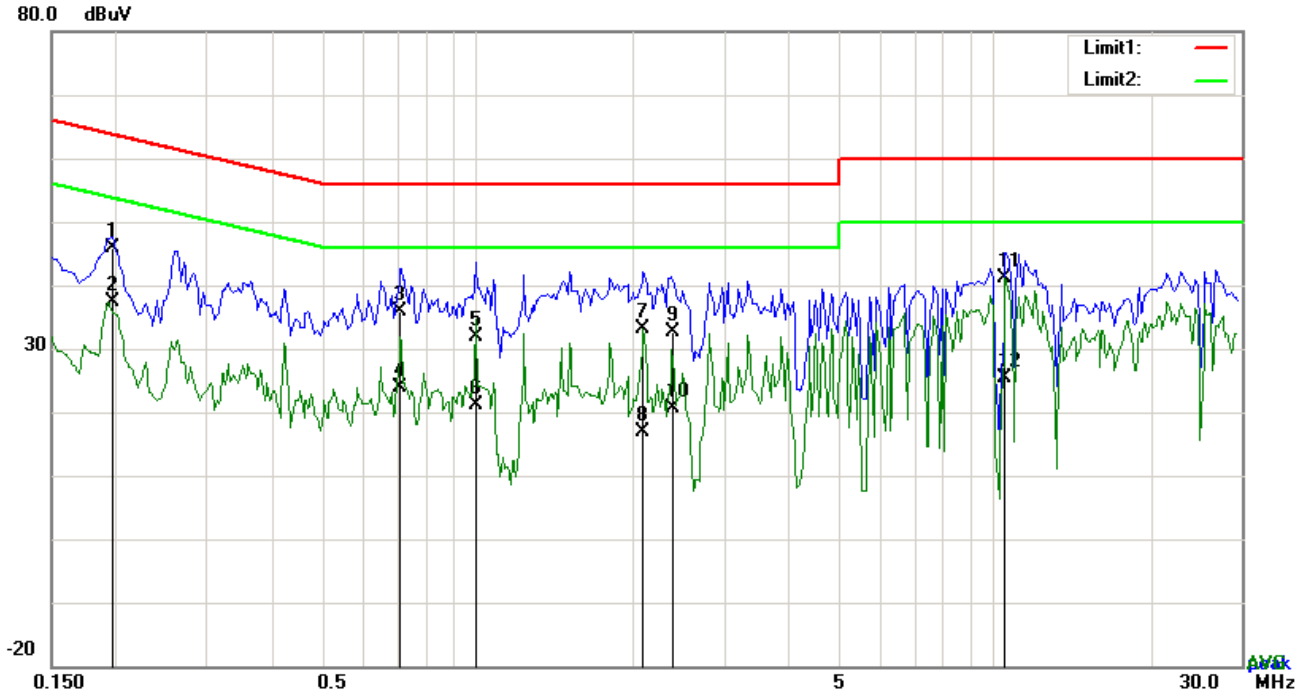


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	L1	0.2592	28.97	QP	10.03	39.00	61.46	-22.46
2	L1	0.2592	14.01	AVG	10.03	24.04	51.46	-27.42
3	L1	0.3255	25.68	QP	10.03	35.71	59.57	-23.86
4	L1	0.3255	19.56	AVG	10.03	29.59	49.57	-19.98
5	L1	0.6531	26.85	QP	10.03	36.88	56.00	-19.12
6	L1	0.6531	18.59	AVG	10.03	28.62	46.00	-17.38
7	L1	2.3652	20.88	QP	10.05	30.93	56.00	-25.07
8	L1	2.3652	11.87	AVG	10.05	21.92	46.00	-24.08
9	L1	9.4623	10.20	QP	10.14	20.34	60.00	-39.66
10	L1	9.4623	21.08	AVG	10.14	31.22	50.00	-18.78
11	L1	26.9187	20.34	QP	10.43	30.77	60.00	-29.23
12	L1	26.9187	10.60	AVG	10.43	21.03	50.00	-28.97

Test Mode:	Normal Working



Test Data

Phase Neutral Plot at 240Vac, 60Hz

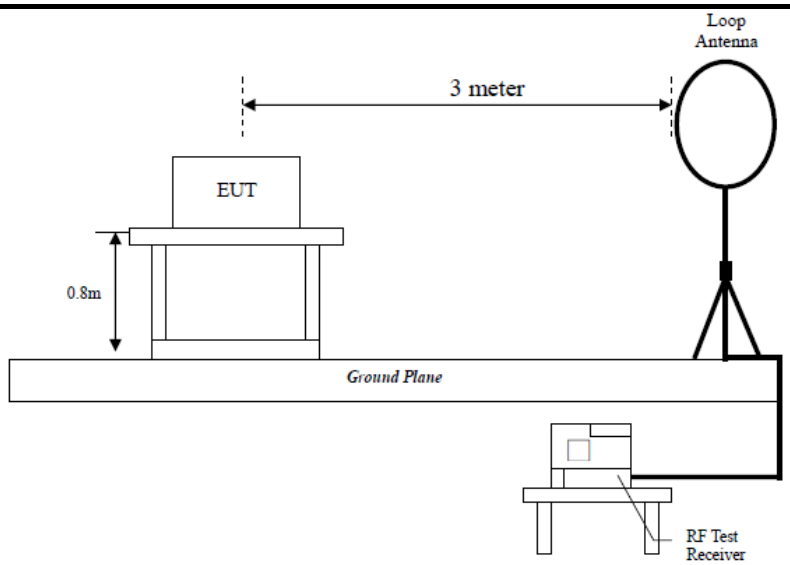
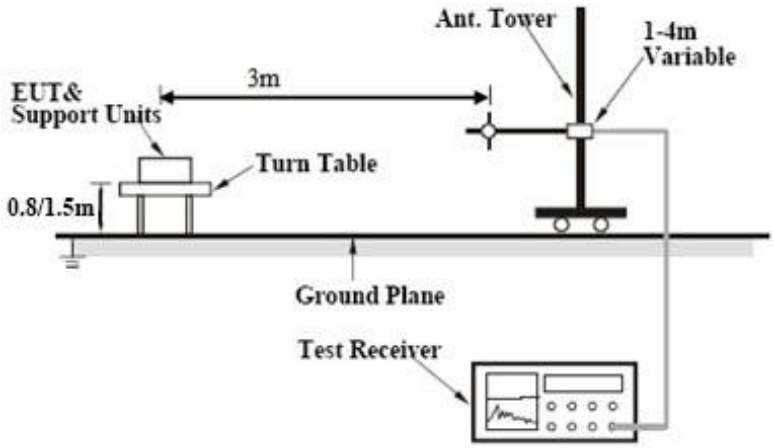
No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	N	0.1968	35.94	QP	10.02	45.96	63.74	-17.78
2	N	0.1968	27.38	AVG	10.02	37.40	53.74	-16.34
3	N	0.7116	25.98	QP	10.02	36.00	56.00	-20.00
4	N	0.7116	13.77	AVG	10.02	23.79	46.00	-22.21
5	N	0.9924	21.87	QP	10.03	31.90	56.00	-24.10
6	N	0.9924	11.03	AVG	10.03	21.06	46.00	-24.94
7	N	2.0961	23.02	QP	10.04	33.06	56.00	-22.94
8	N	2.0961	6.87	AVG	10.04	16.91	46.00	-29.09
9	N	2.3836	22.53	QP	10.04	32.57	56.00	-23.43
10	N	2.3836	10.48	AVG	10.04	20.52	46.00	-25.48
11	N	10.5036	30.96	QP	10.15	41.11	60.00	-18.89
12	N	10.5036	15.15	AVG	10.15	25.30	50.00	-24.70

6.2 Radiated Emissions

Temperature	26℃
Relative Humidity	55%
Atmospheric Pressure	1017mbar
Test date :	July 18, 2018
Tested By :	Aaron Liang

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td rowspan="3">47CFR§15.247(d), RSS210 (A8.5)</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>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></td><td>☑</td></tr>
<tr><td>b)</td><td>For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required
☒ 20 dB down ☐ 30 dB down</td><td>☑</td></tr>
<tr><td>c)</td><td>or restricted band, emission must also comply with the radiated emission limits specified in 15.209</td><td>☑</td></tr>
</table>

Test Setup	 
Procedure	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 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 is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz. 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 Result:

Test Mode:	Normal Working

Frequency range: 9KHz - 30MHz

Freq. (MHz)	Detection value	Factor (dB/m)	Reading (dBuV/m)	Result (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)
1.92	QP	14.5	42.8	57.3	69.5	-12.2
15.07	QP	16.1	38.9	55	69.5	-14.5

Note:

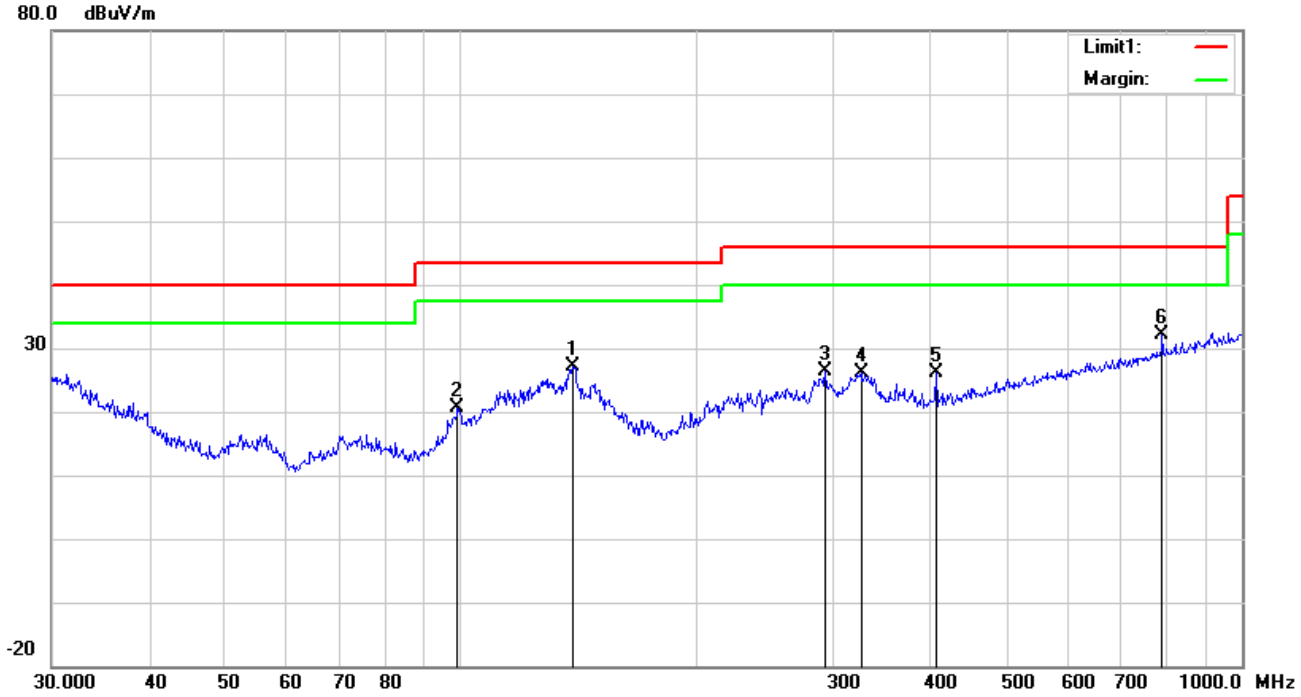
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

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

Test Mode:	Transmitting Mode

30MHz -1GHz



Test Data

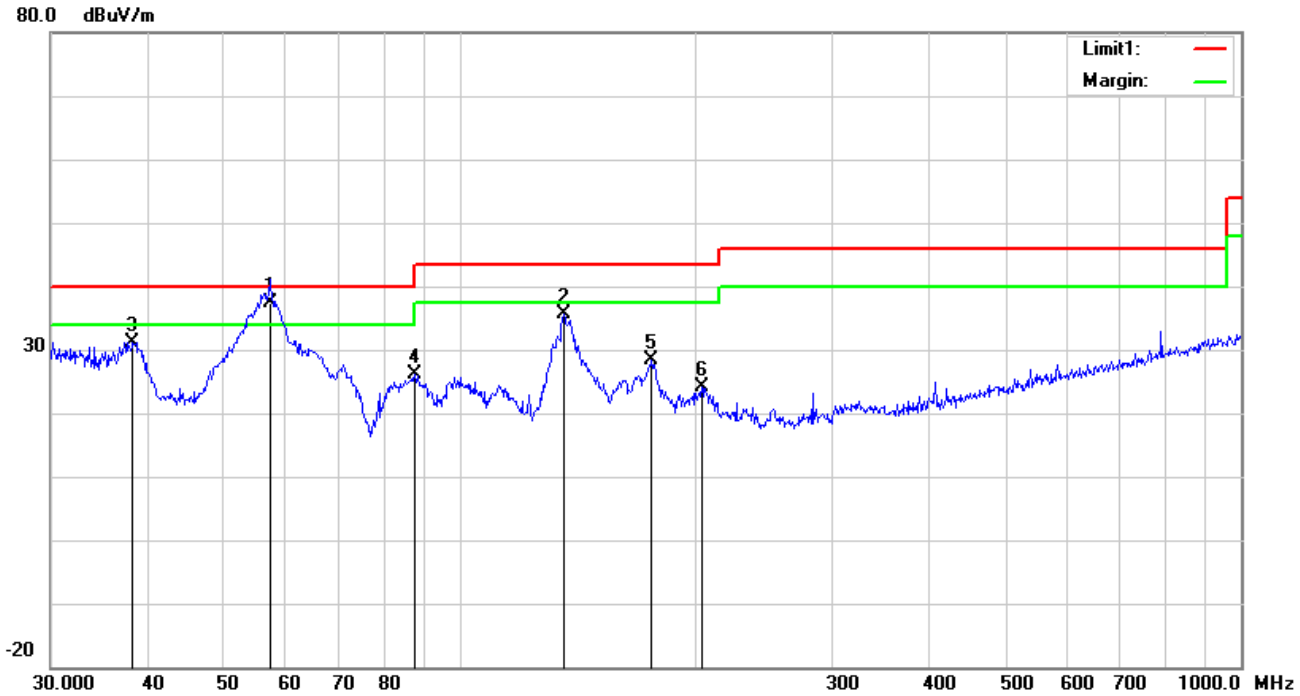
Vertical Polarity Plot @3m

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	H	139.3613	35.61	peak	12.64	22.41	1.27	27.11	43.50	-16.39	100	219
2	H	99.1797	31.56	peak	10.20	22.32	1.10	20.54	43.50	-22.96	100	284
3	H	293.0842	33.59	peak	13.30	22.29	1.78	26.38	46.00	-19.62	100	333
4	H	325.5958	32.36	peak	14.14	22.22	1.92	26.20	46.00	-19.80	100	276
5	H	406.0880	30.18	peak	15.82	22.00	2.02	26.02	46.00	-19.98	100	117
6	H	790.6188	29.09	peak	21.29	21.17	2.94	32.15	46.00	-13.85	100	89

Above 1GHz

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

30MHz -1GHz



Test Data

Horizontal 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	57.1914	51.42	QP	7.61	22.40	0.77	37.40	40.00	-2.60	100	12
2	V	135.9822	43.97	peak	12.86	22.40	1.24	35.67	43.50	-7.83	200	349
3	V	38.2120	37.44	peak	15.21	22.27	0.78	31.16	40.00	-8.84	100	151
4	V	87.7248	39.54	peak	7.91	22.34	1.00	26.11	40.00	-13.89	100	262
5	V	176.2686	37.96	peak	11.30	22.25	1.36	28.37	43.50	-15.13	100	126
6	V	204.2377	32.79	peak	12.04	22.37	1.55	24.01	43.50	-19.49	100	315

Above 1GHz

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

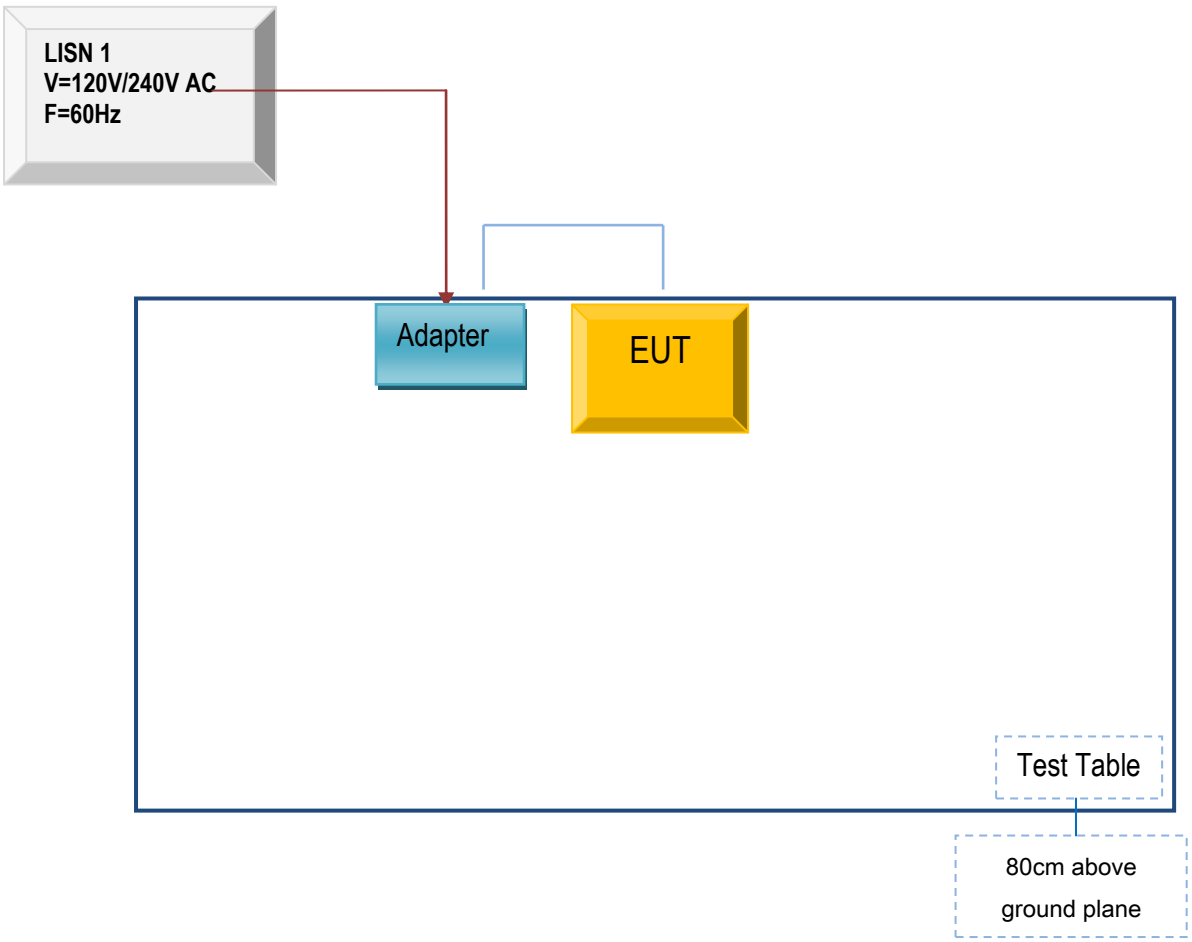
Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted					
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	☐
Transient Limiter	LIT-153	531118	08/30/2017	08/29/2018	☐
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	☑
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/22/2018	03/21/2019	☑
Horn Antenna	BBHA9170	3145226D1	09/27/2017	09/26/2018	☑
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	☑

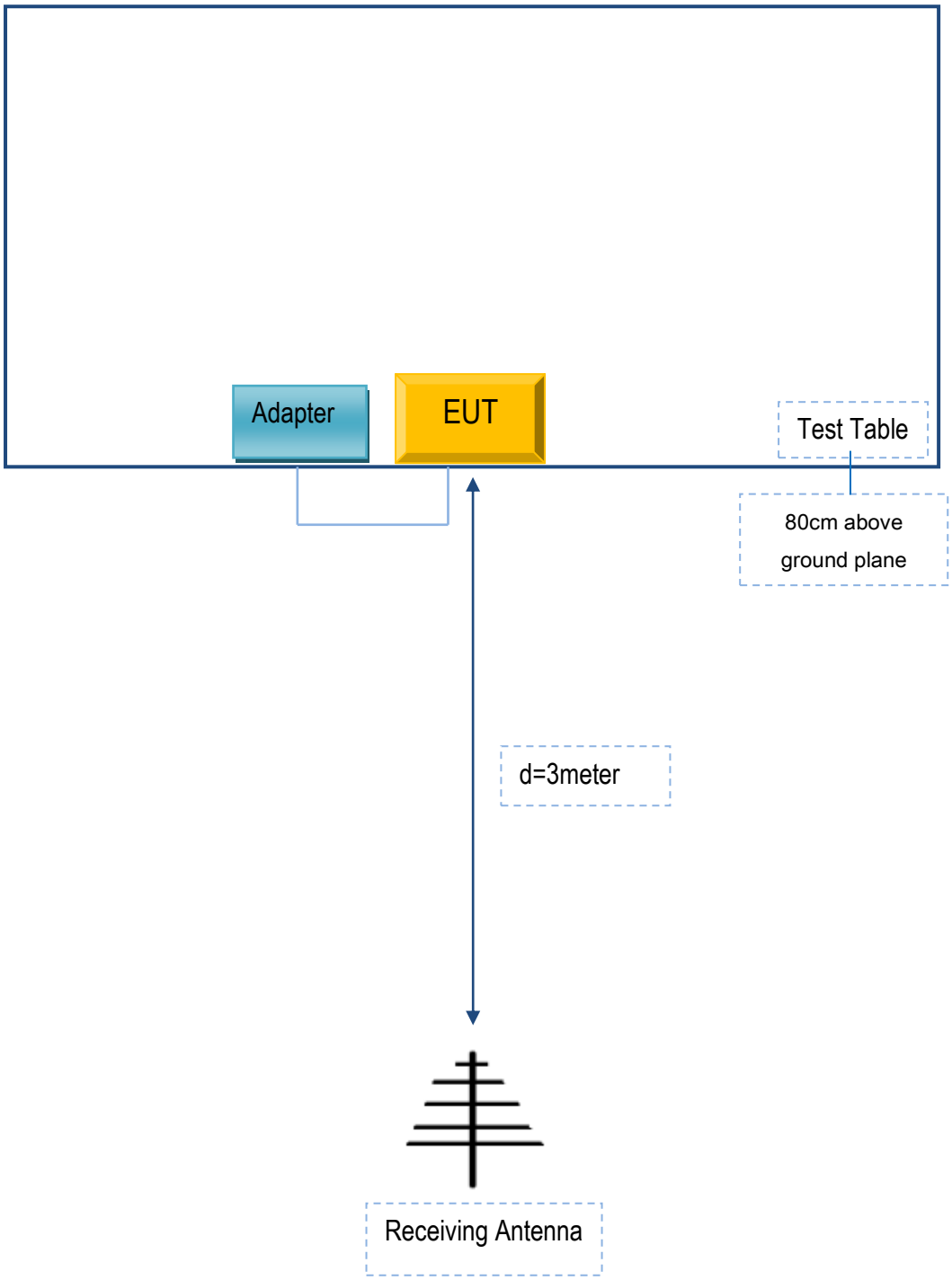
Annex B. TEST SETUP AND SUPPORTING EQUIPMENT

Annex B.i. TEST SET UP BLOCK

Block Configuration Diagram for AC Line Conducted Emissions



Block Configuration Diagram for Radiated Emissions （Below 1GHz）.



Annex C. il. 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
Lenovo	Laptop	E40	N/A
TECNO	Adapter	A8-501000	N/A

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	N/A

Annex C. User Manual / Block Diagram / Schematics / Partlist/ DECLARATION OF SIMILARITY

Please see the attachment