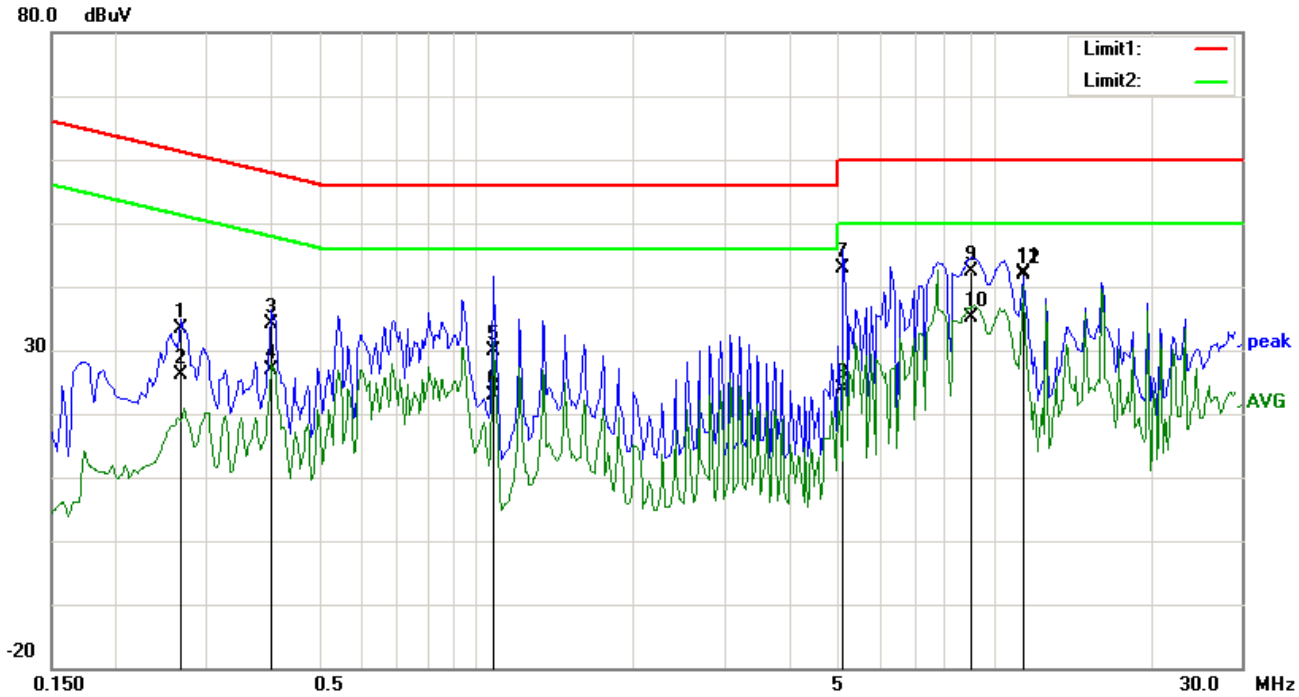
Test Mode:	Bluetooth Mode

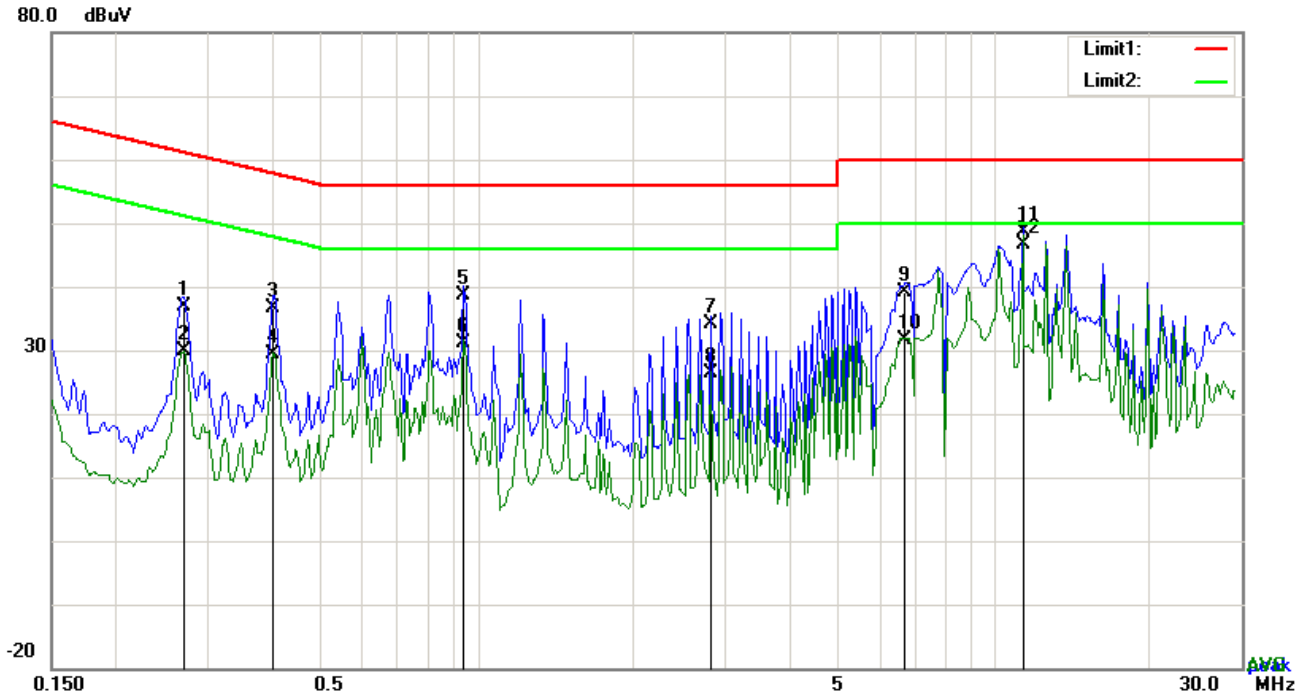


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.2670	23.38	QP	10.03	33.41	61.21	-27.80
2	L1	0.2670	16.11	AVG	10.03	26.14	51.21	-25.07
3	L1	0.3996	23.99	QP	10.03	34.02	57.86	-23.84
4	L1	0.3996	16.95	AVG	10.03	26.98	47.86	-20.88
5	L1	1.0743	19.89	QP	10.03	29.92	56.00	-26.08
6	L1	1.0743	12.86	AVG	10.03	22.89	46.00	-23.11
7	L1	5.0982	32.83	QP	10.08	42.91	60.00	-17.09
8	L1	5.0982	13.80	AVG	10.08	23.88	50.00	-26.12
9	L1	8.9904	32.27	QP	10.14	42.41	60.00	-17.59
10	L1	8.9904	25.11	AVG	10.14	35.25	50.00	-14.75
11	L1	11.3460	31.84	QP	10.17	42.01	60.00	-17.99
12	L1	11.3460	31.68	AVG	10.17	41.85	50.00	-8.15

Test Mode:	Bluetooth Mode



Test Data

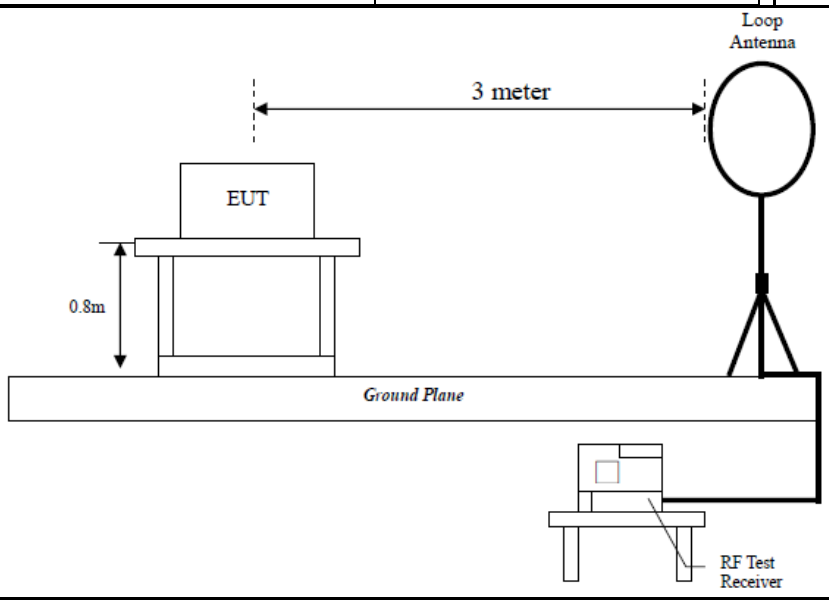
Phase Neutral Plot at 240Vac, 60Hz

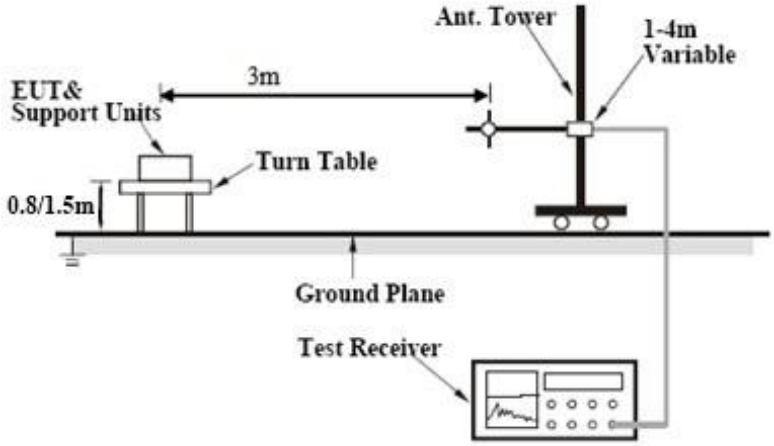
No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.2709	26.89	QP	10.02	36.91	61.09	-24.18
2	N	0.2709	19.74	AVG	10.02	29.76	51.09	-21.33
3	N	0.4035	26.70	QP	10.02	36.72	57.78	-21.06
4	N	0.4035	19.39	AVG	10.02	29.41	47.78	-18.37
5	N	0.9417	28.52	QP	10.03	38.55	56.00	-17.45
6	N	0.9417	21.14	AVG	10.03	31.17	46.00	-14.83
7	N	2.8254	24.01	QP	10.05	34.06	56.00	-21.94
8	N	2.8254	16.40	AVG	10.05	26.45	46.00	-19.55
9	N	6.7284	29.07	QP	10.09	39.16	60.00	-20.84
10	N	6.7284	21.54	AVG	10.09	31.63	50.00	-18.37
11	N	11.3616	38.51	QP	10.16	48.67	60.00	-11.33
12	N	11.3616	36.55	AVG	10.16	46.71	50.00	-3.29

6.9 Radiated Emissions & Restricted Band

Temperature	24℃
Relative Humidity	55%
Atmospheric Pressure	1015mbar
Test date :	May 05, 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§15.205, §15.209, §15.247(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>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>Test Setup</td><td colspan="3"> 
</td></tr>
</table>



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:	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:

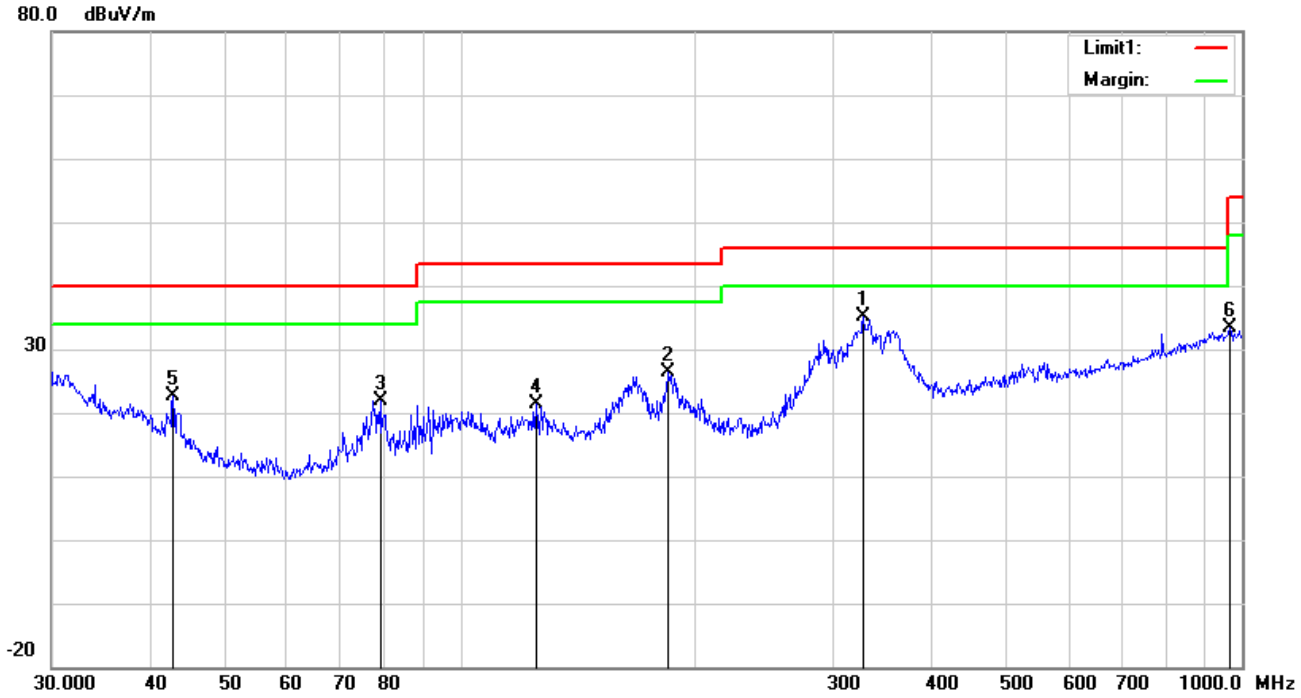
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

Test Mode:	Bluetooth Mode

30MHz -1GHz

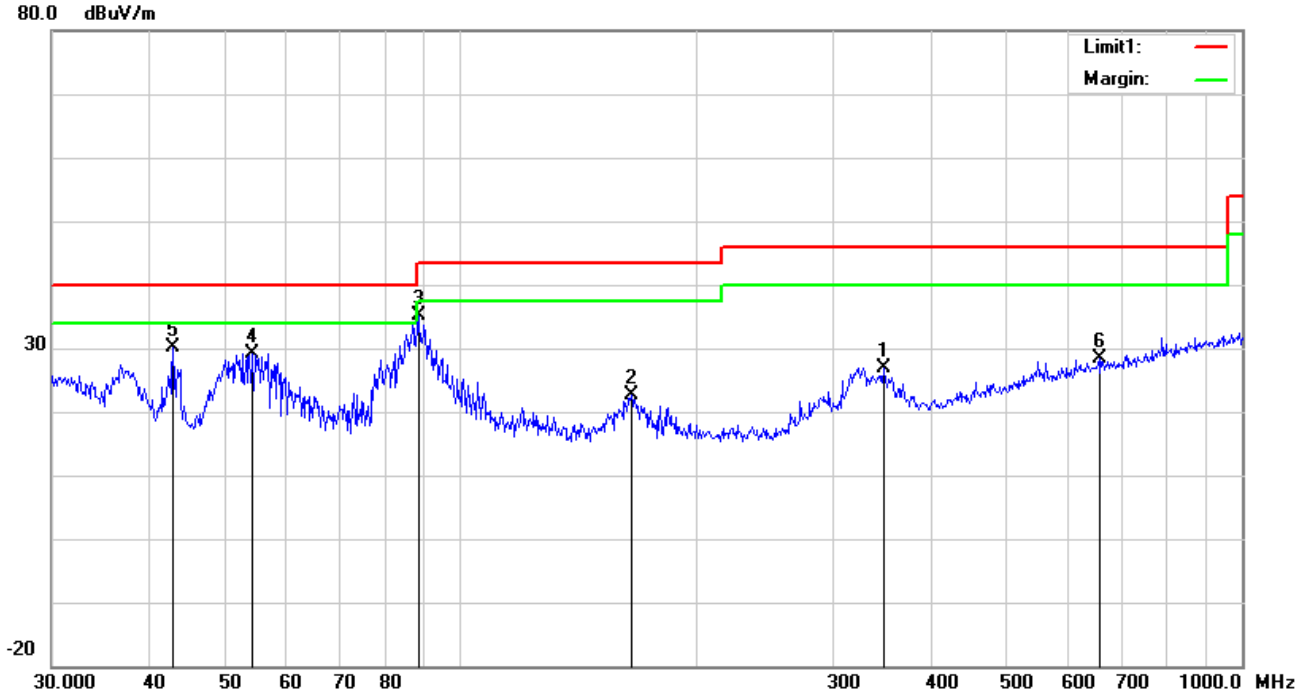


Test Data

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	H	327.8873	41.28	peak	14.19	22.21	1.93	35.19	46.00	-10.81	100	186
2	H	184.4898	36.01	peak	11.25	22.28	1.44	26.42	43.50	-17.08	100	120
3	H	78.9652	35.62	peak	7.62	22.42	1.03	21.85	40.00	-18.15	100	222
4	H	125.0066	28.88	peak	13.57	22.37	1.18	21.26	43.50	-22.24	100	74
5	H	42.8998	32.11	peak	11.99	22.29	0.77	22.58	40.00	-17.42	100	315
6	H	965.5421	28.00	peak	22.83	20.76	3.26	33.33	54.00	-20.67	200	222

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	V	348.0274	32.48	peak	14.61	22.16	2.03	26.96	46.00	-19.04	100	266
2	V	165.4867	31.31	peak	12.16	22.26	1.37	22.58	43.50	-20.92	100	251
3	V	88.3421	48.52	peak	7.93	22.34	0.99	35.10	43.50	-8.40	200	78
4	V	54.2610	42.81	peak	7.93	22.39	0.78	29.13	40.00	-10.87	100	78
5	V	42.8998	39.64	peak	11.99	22.29	0.77	30.11	40.00	-9.89	100	70
6	V	656.5300	27.60	peak	19.72	21.46	2.62	28.48	46.00	-17.52	100	254

Above 1GHz

Test Mode:	Transmitting Mode

Frequency	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emission Level	Limits	Margin	Detector	Polarity
(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(PK/AV)	(H/V)
Low Channel:8DPSK Mode(Worst Case)-2402MHz									
2390	36.85	28.72	3.36	26.32	42.61	74	-31.39	peak	Vertical
4804	29.14	32.94	3.98	27.49	38.57	54	-15.43	Average	Vertical
4804	37.38	32.94	3.98	27.49	46.81	74	-27.19	peak	Vertical
7203	30.25	25.28	5.51	27.94	33.10	54	-20.90	Average	Vertical
7203	39.41	25.28	5.51	27.94	42.26	74	-31.74	peak	Vertical
2390	37.98	28.72	3.36	26.32	43.74	74	-30.26	peak	Horizontal
4804	30.25	32.94	3.98	27.49	39.68	54	-14.32	Average	Horizontal
4804	40.47	32.94	3.98	27.49	49.90	74	-24.10	peak	Horizontal
7203	31.58	25.28	5.51	27.94	34.43	54	-19.57	Average	Horizontal
7203	40.35	25.28	5.51	27.94	43.20	74	-30.80	peak	Horizontal
Middle Channel:8DPSK Mode(Worst Case)-2441MHz									
4880	30.25	32.11	4.04	27.53	38.87	54	-15.13	Average	Vertical
4880	36.14	32.11	4.04	27.53	44.76	74	-29.24	peak	Vertical
7324	30.78	24.33	5.58	27.96	32.73	54	-21.27	Average	Vertical
7324	38.25	24.33	5.58	27.96	40.20	74	-33.80	peak	Vertical
4880	29.10	32.11	4.04	27.53	37.72	54	-16.28	Average	Horizontal
4880	40.14	32.11	4.04	27.53	48.76	74	-25.24	peak	Horizontal
7324	33.33	24.33	5.58	27.96	35.28	54	-18.72	Average	Horizontal
7324	39.12	24.33	5.58	27.96	41.07	74	-32.93	peak	Horizontal
High Channel:8DPSK Mode(Worst Case)-2480MHz									
2483.2	37.25	28.79	3.48	26.34	43.18	74	-30.82	peak	Vertical
4959.2	30.15	31.32	4.12	27.58	38.01	54	-15.99	Average	Vertical
4959.2	38.78	31.32	4.12	27.58	46.64	74	-27.36	peak	Vertical
74340	29.32	24.38	5.68	27.99	31.39	54	-22.61	Average	Vertical
74340	41.52	24.38	5.68	27.99	43.59	74	-30.41	peak	Vertical
2483.2	39.98	28.79	3.48	26.34	45.91	74	-28.09	peak	Horizontal
4959.2	28.36	31.32	4.12	27.58	36.22	54	-17.78	Average	Horizontal
4959.2	39.89	31.32	4.12	27.58	47.75	74	-26.25	peak	Horizontal
74340	32.55	24.38	5.68	27.99	34.62	54	-19.38	Average	Horizontal
74340	40.38	24.38	5.68	27.99	42.45	74	-31.55	peak	Horizontal

Note:

*1, The testing has been conformed to 10*2480MHz=24,800MHz*
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.

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	☐
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	☑
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. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

Whole Package View

EUT - Front View

EUT - Rear View

EUT - Bottom View 1

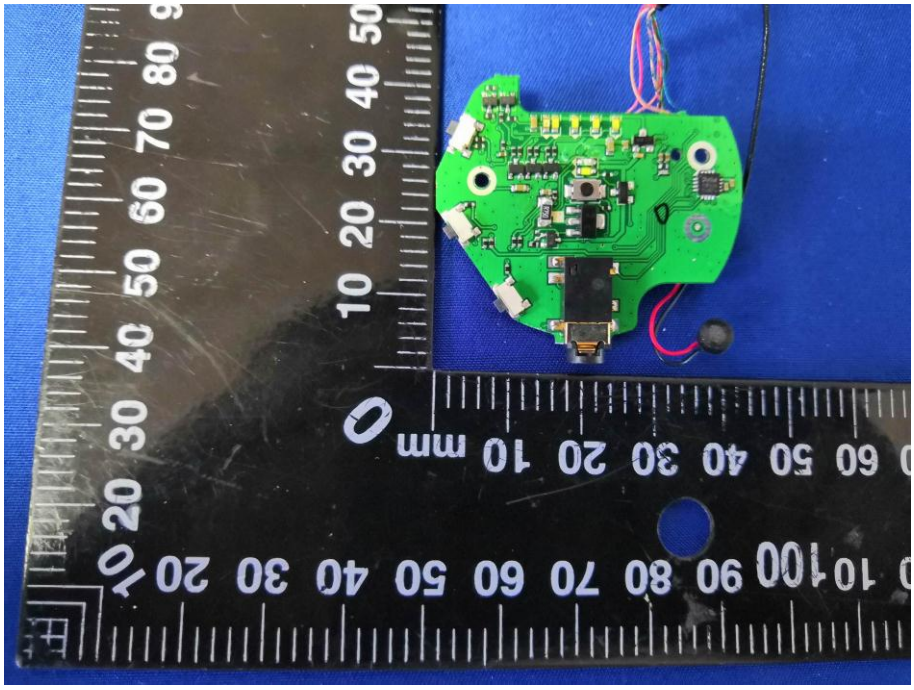
EUT - Bottom View 2

EUT – Top View

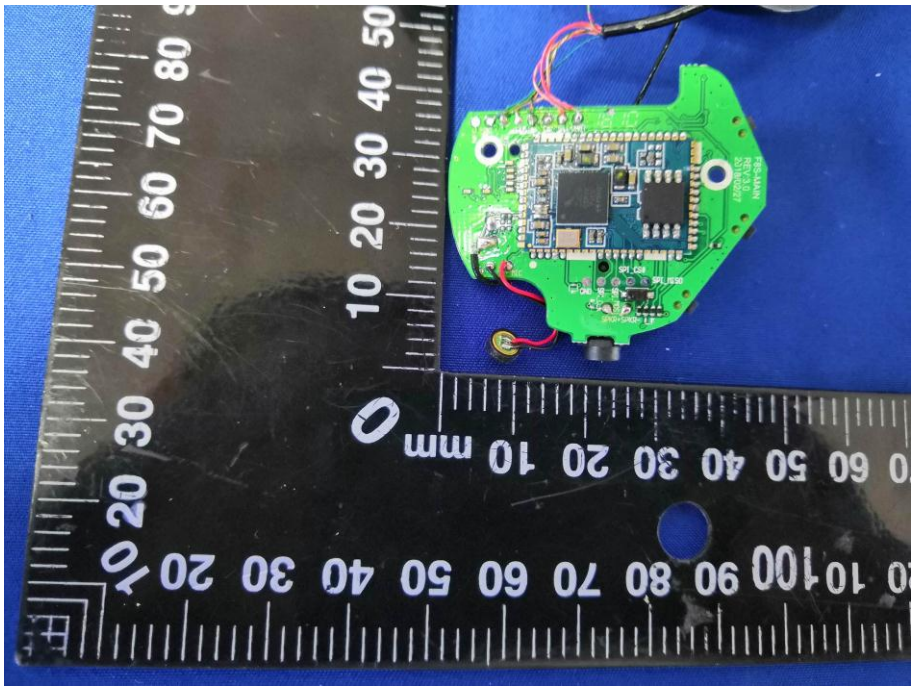
EUT - Right View

Annex B.ii. Photograph: EUT Internal Photo

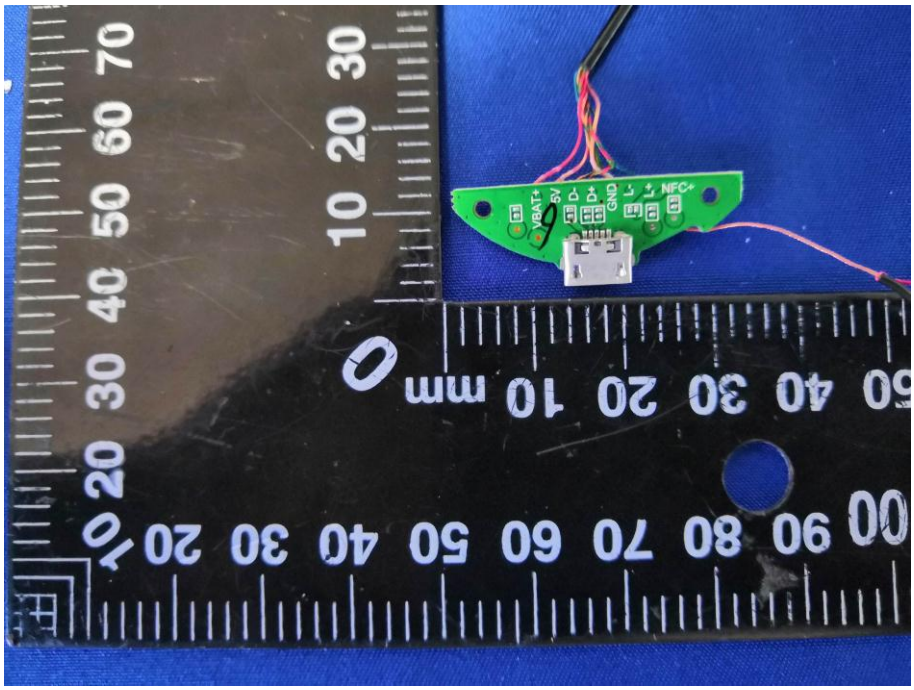
Mainboard - Front View



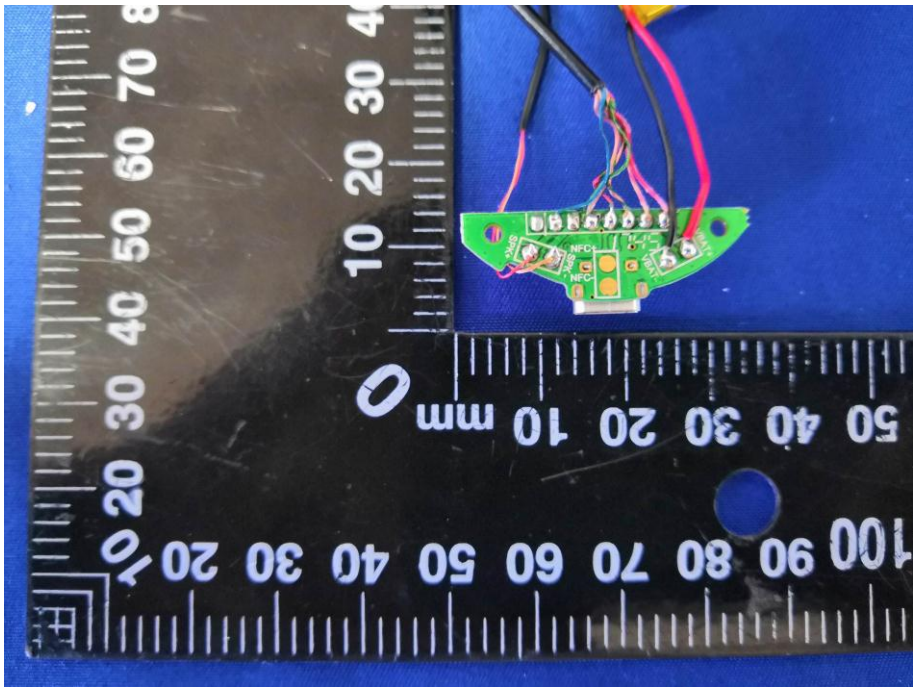
Mainboard – Rear View



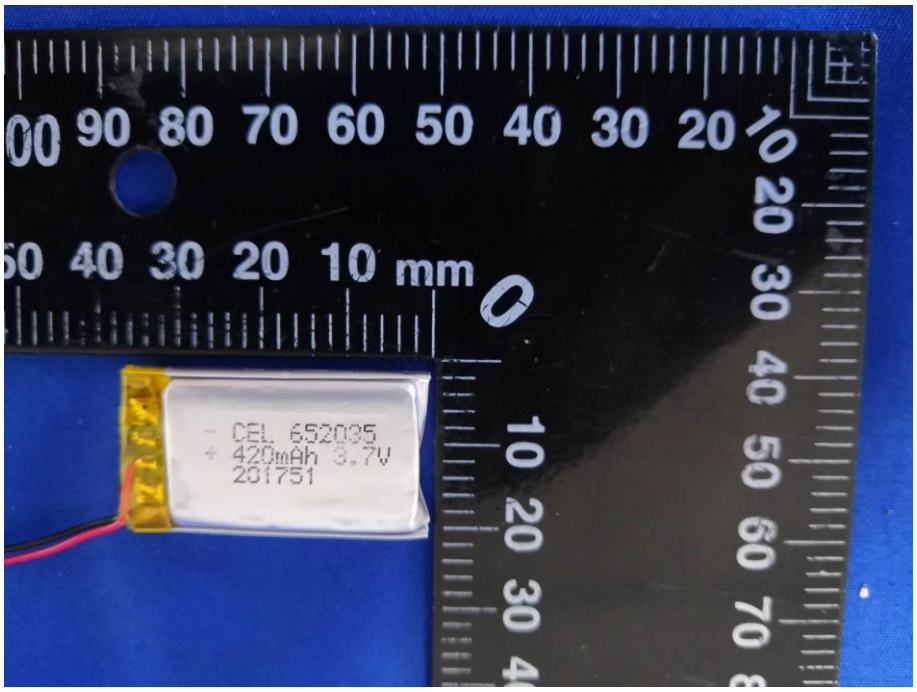
Small board - Front View



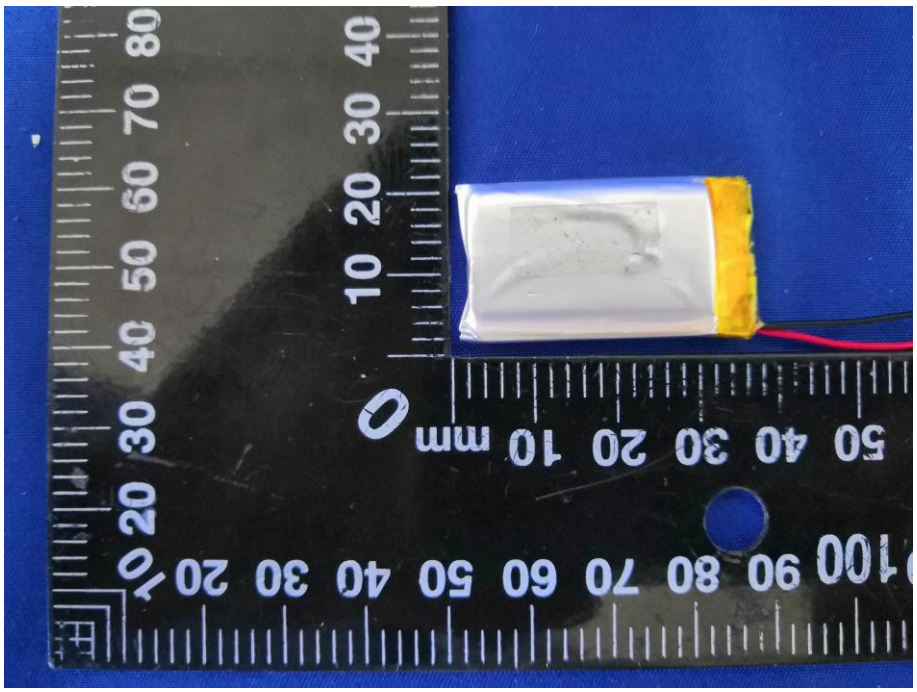
Small board - Rear View



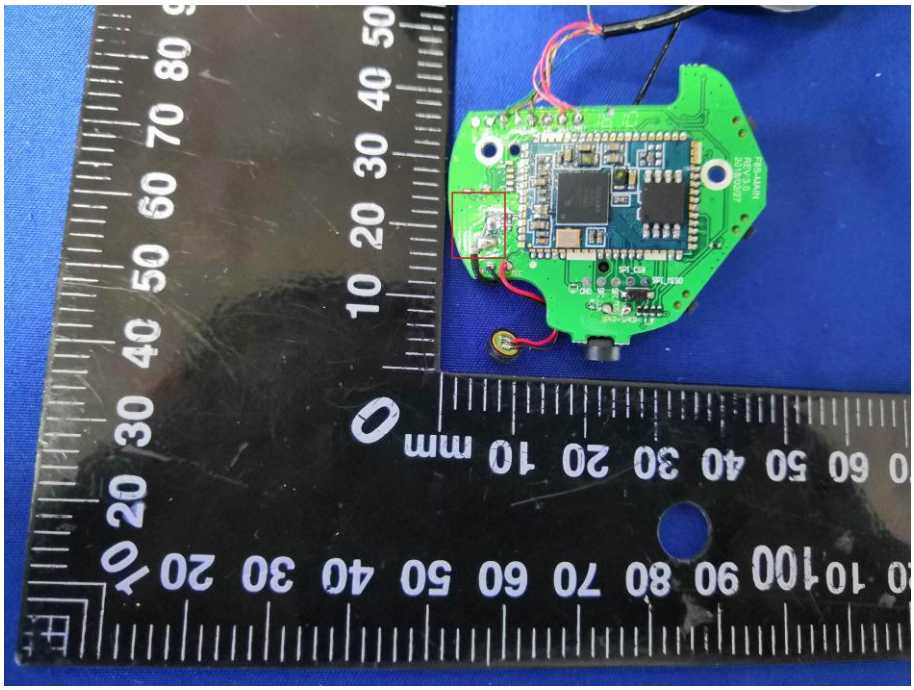
Battery - Front View



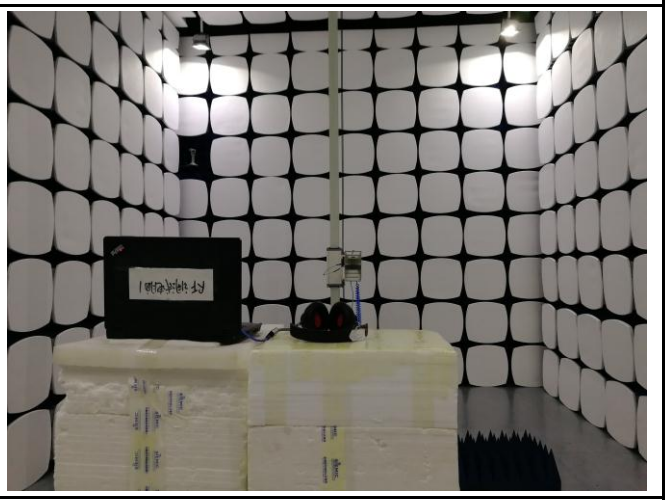
Battery - Rear View



BT - Antenna View



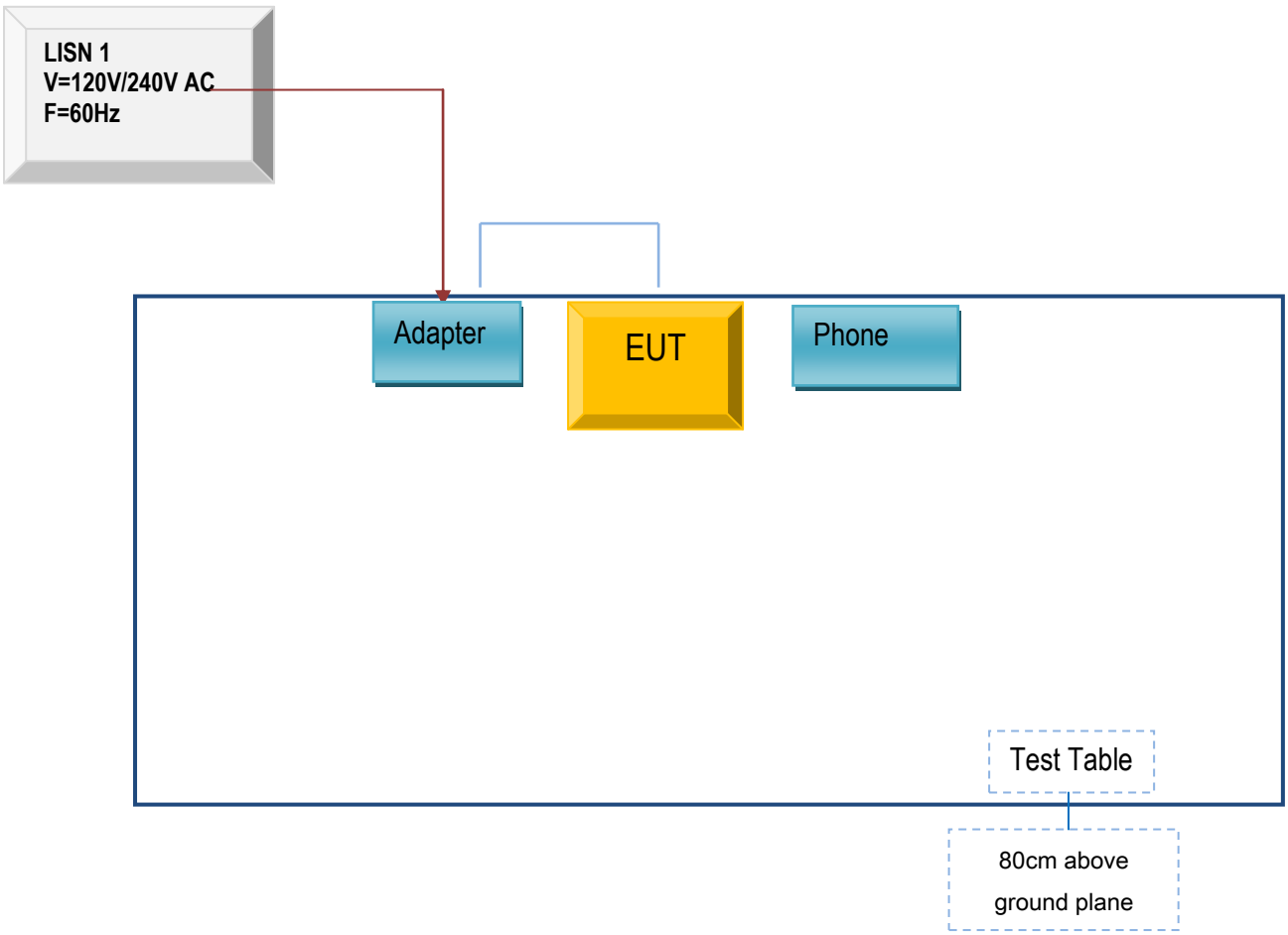
Annex B.iii. Photograph: Test Setup Photo

	
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

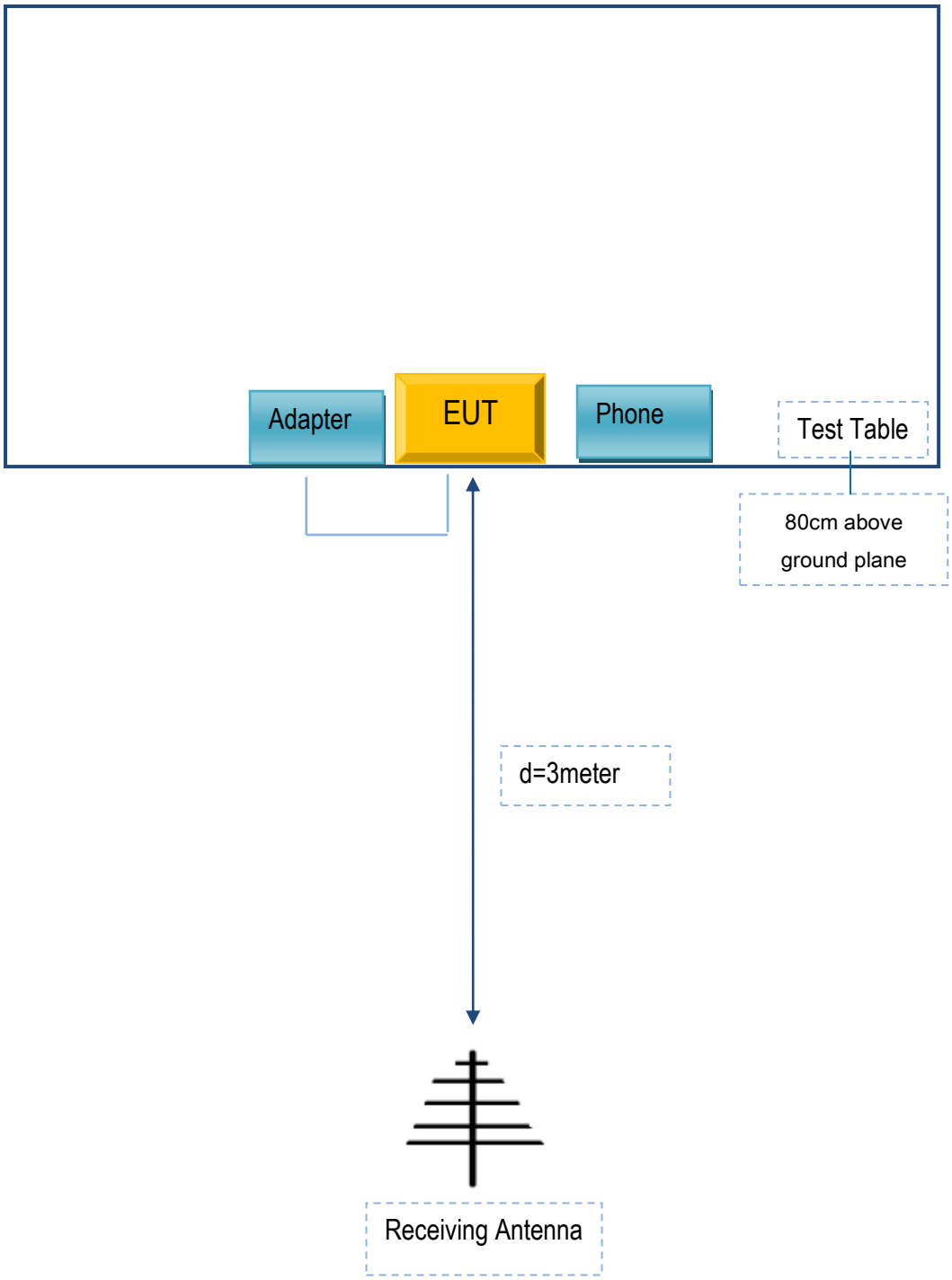
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

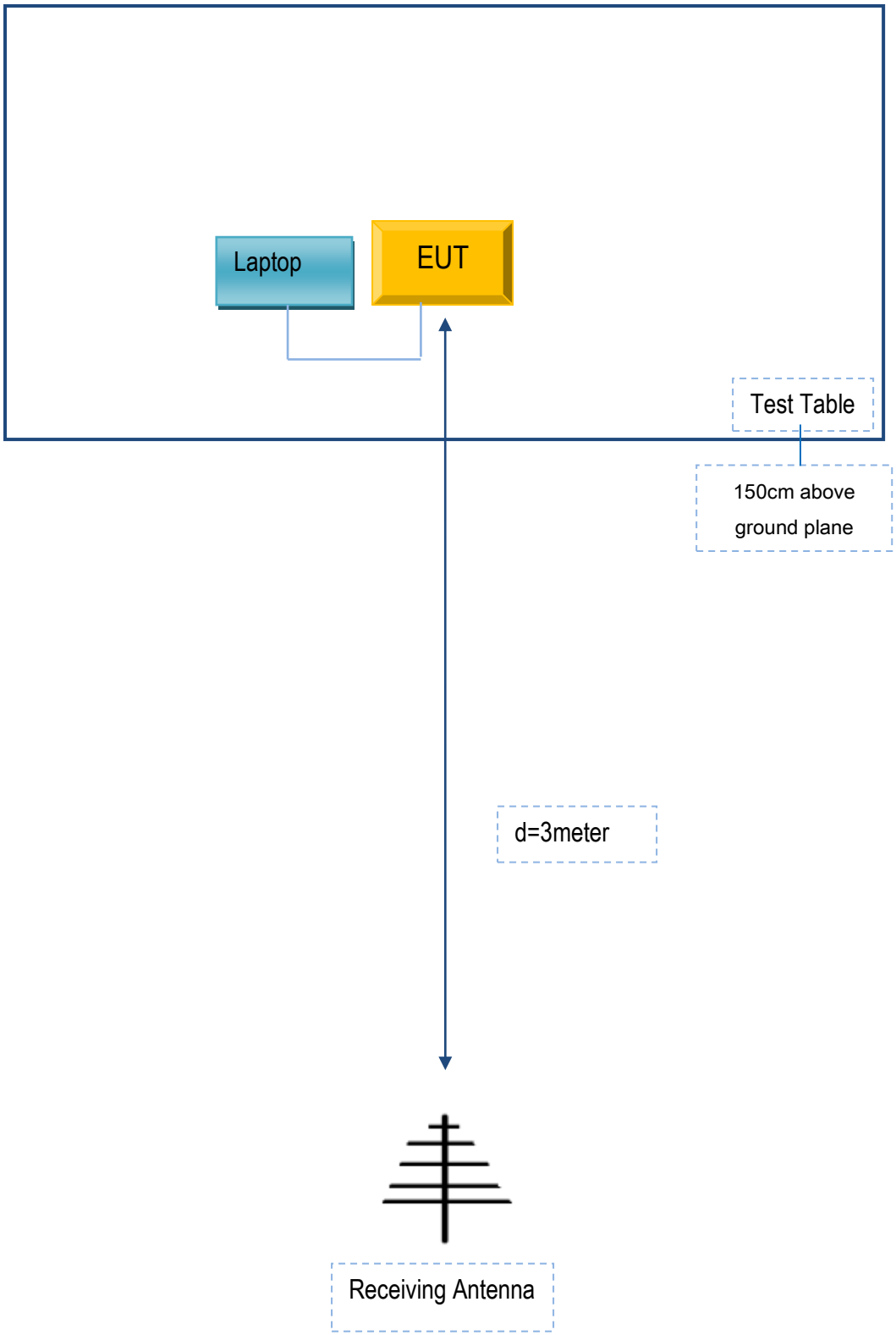
Block Configuration Diagram for AC Line Conducted Emissions



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



Block Configuration Diagram for Radiated Emissions （Above 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	LR-1EHRX
Huawei	Phone	Honor 9	N/A

Supporting Cable:

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

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

Please see the attachment

Annex E. DECLARATION OF SIMILARITY

N/A