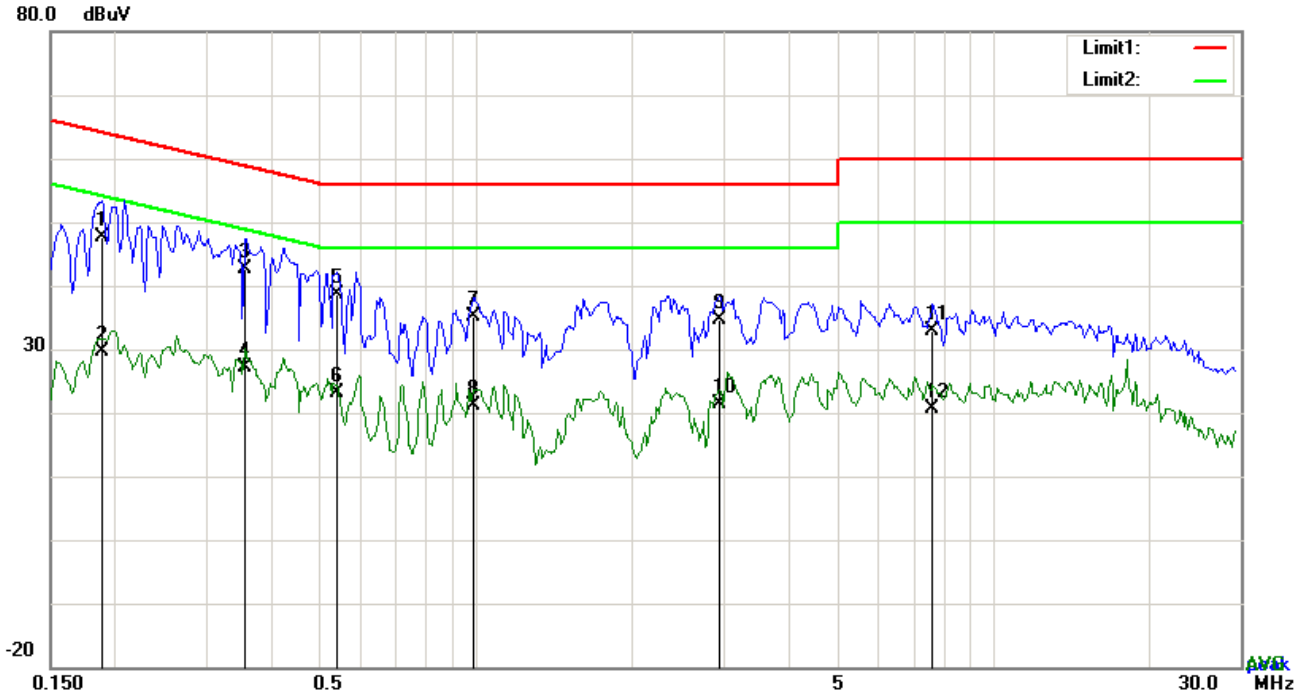
Test Mode:	Transmitting Mode

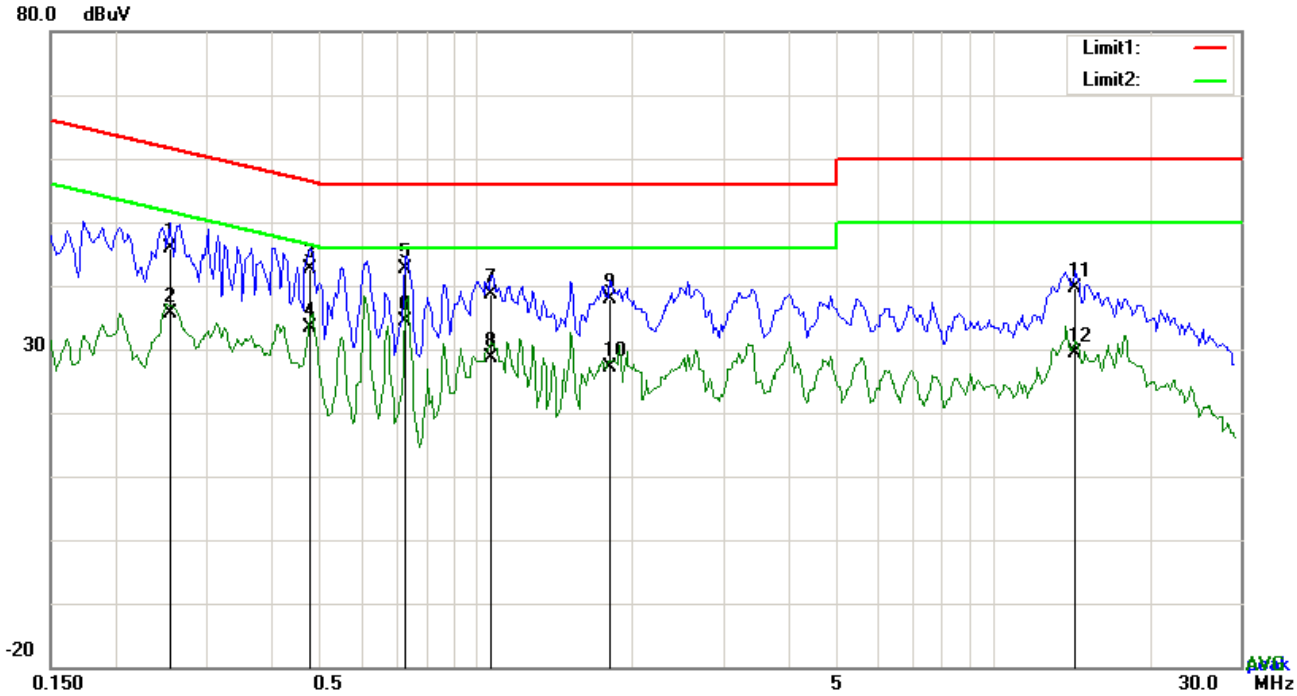


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	L1	0.1890	37.65	QP	10.03	47.68	64.08	-16.40
2	L1	0.1890	19.69	AVG	10.03	29.72	54.08	-24.36
3	L1	0.3567	32.57	QP	10.03	42.60	58.80	-16.20
4	L1	0.3567	17.15	AVG	10.03	27.18	48.80	-21.62
5	L1	0.5400	28.67	QP	10.03	38.70	56.00	-17.30
6	L1	0.5400	13.10	AVG	10.03	23.13	46.00	-22.87
7	L1	0.9885	25.00	QP	10.03	35.03	56.00	-20.97
8	L1	0.9885	11.22	AVG	10.03	21.25	46.00	-24.75
9	L1	2.9580	24.70	QP	10.05	34.75	56.00	-21.25
10	L1	2.9580	11.25	AVG	10.05	21.30	46.00	-24.70
11	L1	7.6332	22.72	QP	10.12	32.84	60.00	-27.16
12	L1	7.6332	10.57	AVG	10.12	20.69	50.00	-29.31

Test Mode:	Transmitting Mode



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	0.2553	35.78	QP	10.02	45.80	61.58	-15.78
2	N	0.2553	25.59	AVG	10.02	35.61	51.58	-15.97
3	N	0.4776	32.55	QP	10.02	42.57	56.38	-13.81
4	N	0.4776	23.33	AVG	10.02	33.35	46.38	-13.03
5	N	0.7311	32.68	QP	10.02	42.70	56.00	-13.30
6	N	0.7311	24.46	AVG	10.02	34.48	46.00	-11.52
7	N	1.0704	28.61	QP	10.03	38.64	56.00	-17.36
8	N	1.0704	18.72	AVG	10.03	28.75	46.00	-17.25
9	N	1.8153	27.94	QP	10.04	37.98	56.00	-18.02
10	N	1.8153	17.20	AVG	10.04	27.24	46.00	-18.76
11	N	14.3997	29.56	QP	10.19	39.75	60.00	-20.25
12	N	14.3997	19.30	AVG	10.19	29.49	50.00	-20.51

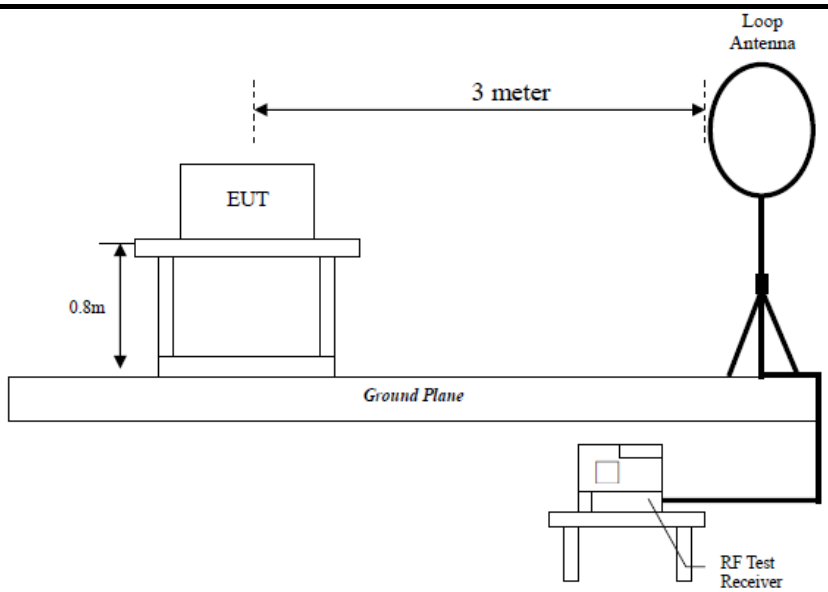
6.7 Radiated Spurious Emissions & Restricted Band

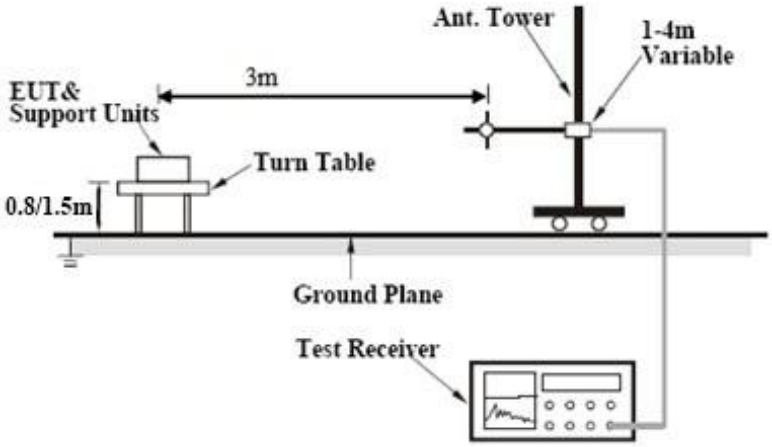
Temperature	24 °C
Relative Humidity	51%
Atmospheric Pressure	1027mbar
Test date :	May 27 & June 27, 2017
Tested By :	Loren Luo

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	Different RF configuration has been evaluated but not much difference was found. The data presented here is the worst case data with EUT under 802.11n – HT20-2437MHz mode.
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:

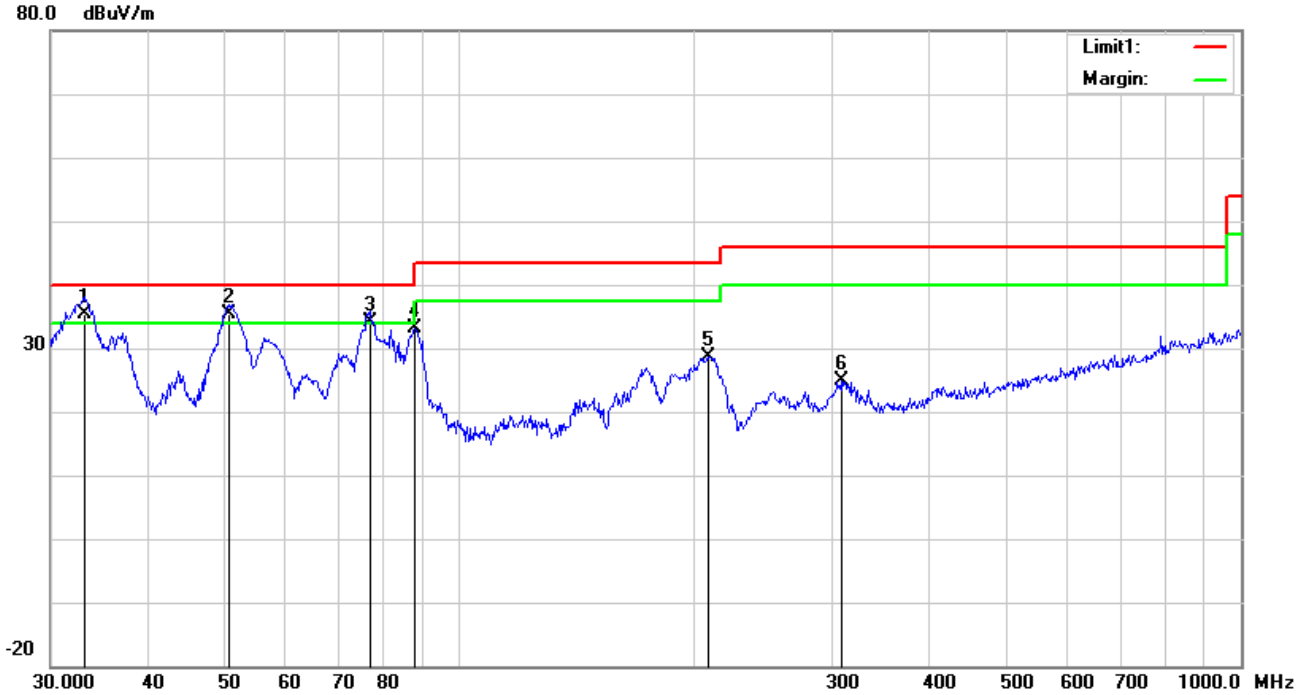
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

Test Mode:	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	V	33.0950	37.93	QP	19.02	22.26	0.71	35.40	40.00	-4.60	100	315
2	V	50.7637	48.76	QP	8.32	22.38	0.80	35.50	40.00	-4.50	100	12
3	V	76.7808	47.96	QP	7.66	22.41	0.99	34.20	40.00	-5.80	100	107
4	V	87.7248	46.51	peak	7.91	22.34	1.00	33.08	40.00	-6.92	100	232
5	V	207.8501	37.47	peak	11.99	22.37	1.57	28.66	43.50	-14.84	100	138
6	V	307.8313	31.60	peak	13.76	22.27	1.83	24.92	46.00	-21.08	100	104

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	37.1550	33.22	peak	15.98	22.26	0.77	27.71	40.00	-12.29	100	150
2	H	50.2325	33.98	peak	8.37	22.38	0.80	20.77	40.00	-19.23	100	96
3	H	75.9773	43.43	peak	7.68	22.40	0.98	29.69	40.00	-10.31	100	251
4	H	210.0482	40.76	peak	11.96	22.36	1.57	31.93	43.50	-11.57	200	305
5	H	251.1804	35.15	peak	11.45	22.29	1.70	26.01	46.00	-19.99	100	256
6	H	314.3765	35.47	peak	13.90	22.25	1.86	28.98	46.00	-17.02	100	216

Above 1GHz

Test Mode:	Transmitting Mode

Low Channel (2412 MHz) (b mode worst case)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4824	38.98	AV	V	33.8	6.86	32.69	46.95	54	-7.05
4824	37.78	AV	H	33.8	6.86	32.69	45.75	54	-8.25
4824	47.65	PK	V	33.8	6.86	32.69	55.62	74	-18.38
4824	48.1	PK	H	33.8	6.86	32.69	56.07	74	-17.93
17898	23.51	AV	V	45.12	11.57	32.11	48.09	54	-5.91
17898	22.56	AV	H	45.12	11.57	32.11	47.14	54	-6.86
17898	39.4	PK	V	45.12	11.57	32.11	63.98	74	-10.02
17898	39.47	PK	H	45.12	11.57	32.11	64.05	74	-9.95

Middle Channel (2437 MHz) (b mode worst case)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4874	38.68	AV	V	33.6	6.82	32.71	46.39	54	-7.61
4874	38.69	AV	H	33.6	6.82	32.71	46.4	54	-7.6
4874	48.01	PK	V	33.6	6.82	32.71	55.72	74	-18.28
4874	47.58	PK	H	33.6	6.82	32.71	55.29	74	-18.71
17927	24.21	AV	V	45.17	11.63	32.18	48.83	54	-5.17
17927	22.86	AV	H	45.17	11.63	32.18	47.48	54	-6.52
17927	40.37	PK	V	45.17	11.63	32.18	64.99	74	-9.01
17927	39.83	PK	H	45.17	11.63	32.18	64.45	74	-9.55

High Channel (2462 MHz) (b mode worst case)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4924	39.53	AV	V	33.83	6.95	32.79	47.52	54	-6.48
4924	39.07	AV	H	33.83	6.95	32.79	47.06	54	-6.94
4924	46.98	PK	V	33.83	6.95	32.79	54.97	74	-19.03
4924	48.2	PK	H	33.83	6.95	32.79	56.19	74	-17.81
17920	23.59	AV	V	45.19	11.61	32.24	48.15	54	-5.85
17920	23.35	AV	H	45.19	11.61	32.24	47.91	54	-6.09
17920	39.56	PK	V	45.19	11.61	32.24	64.12	74	-9.88
17920	39.72	PK	H	45.19	11.61	32.24	64.28	74	-9.72

Note:

*1, The testing has been conformed to 10*2462MHz=24,620MHz*

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.

Annex A. TEST INSTRUMENT

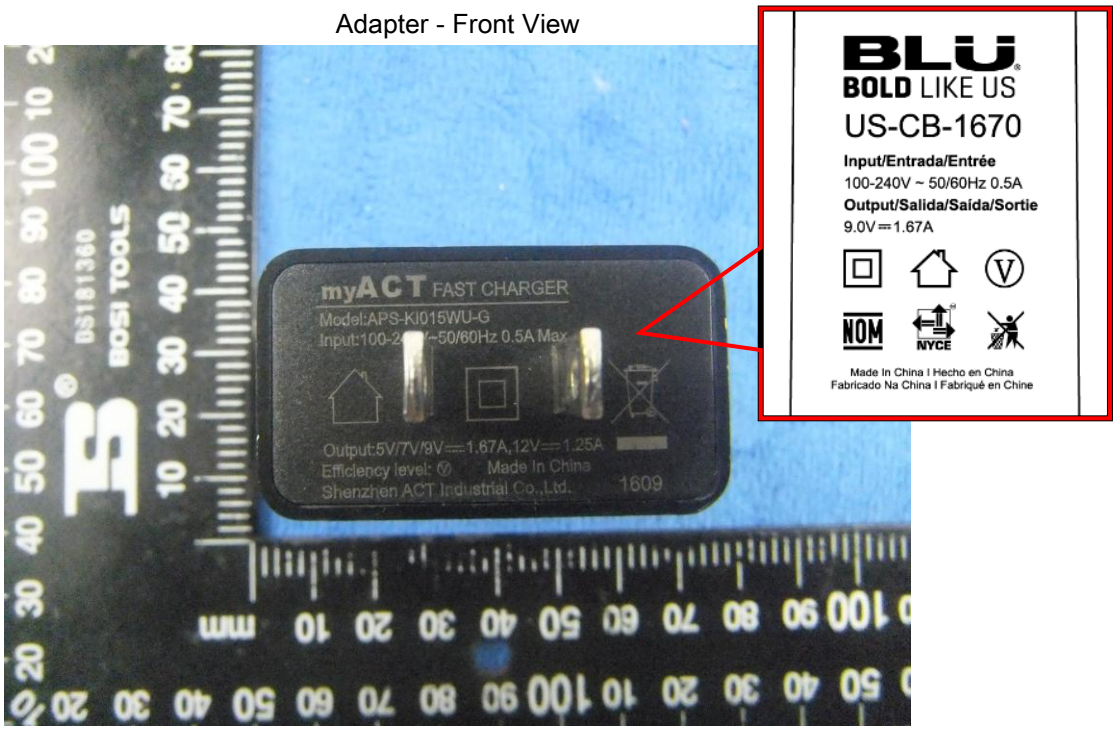
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted					
EMI test receiver	ESCS30	8471241027	09/16/2016	09/15/2017	☑
Line Impedance	LI-125A	191106	09/24/2016	09/23/2017	☑
Line Impedance	LI-125A	191107	09/24/2016	09/23/2017	☑
LISN	ISN T800	34373	09/24/2016	09/23/2017	☑
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/23/2016	09/22/2017	☑
Transient Limiter	LIT-153	531118	08/31/2016	08/30/2017	☑
RF conducted test					
Agilent ESA-E SERIES	E4407B	MY45108319	09/16/2016	09/15/2017	☑
Power Splitter	1#	1#	08/31/2016	08/30/2017	☑
DC Power Supply	E3640A	MY40004013	09/16/2016	09/15/2017	☑
Radiated Emissions					
EMI test receiver	ESL6	100262	09/16/2016	09/15/2017	☑
Positioning Controller	UC3000	MF780208282	11/18/2016	11/17/2017	☑
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	08/31/2016	08/30/2017	☑
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	☑
Active Antenna (9kHz-30MHz)	AL-130	121031	10/13/2016	10/12/2017	☑
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/20/2016	09/19/2017	☑
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/23/2016	09/22/2017	☑
Universal Radio Communication Tester	CMU200	121393	09/24/2016	09/23/2017	☑

Annex B. EUT and Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

Whole Package View

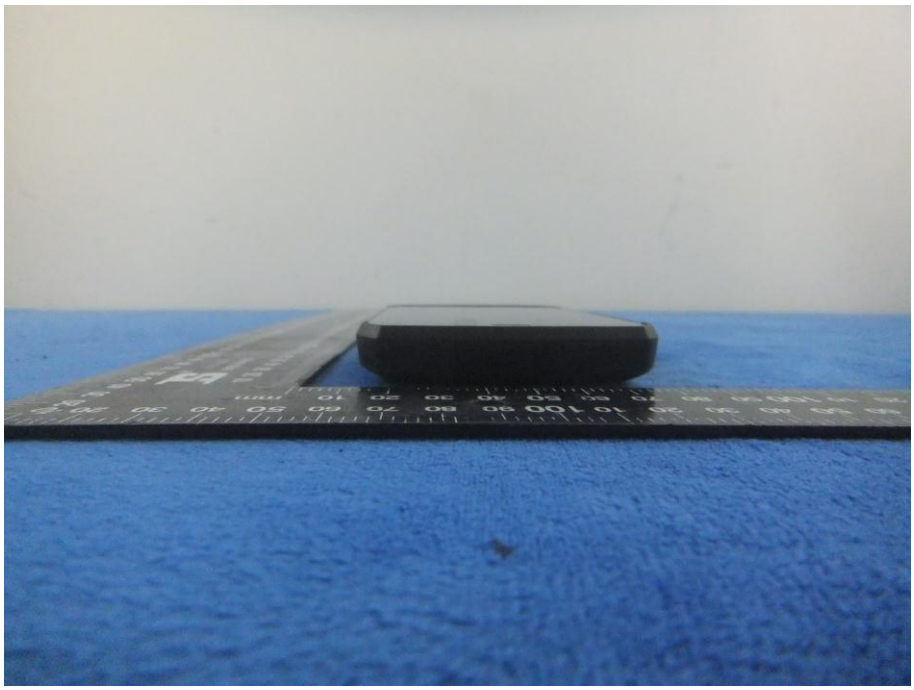
Adapter - Front View



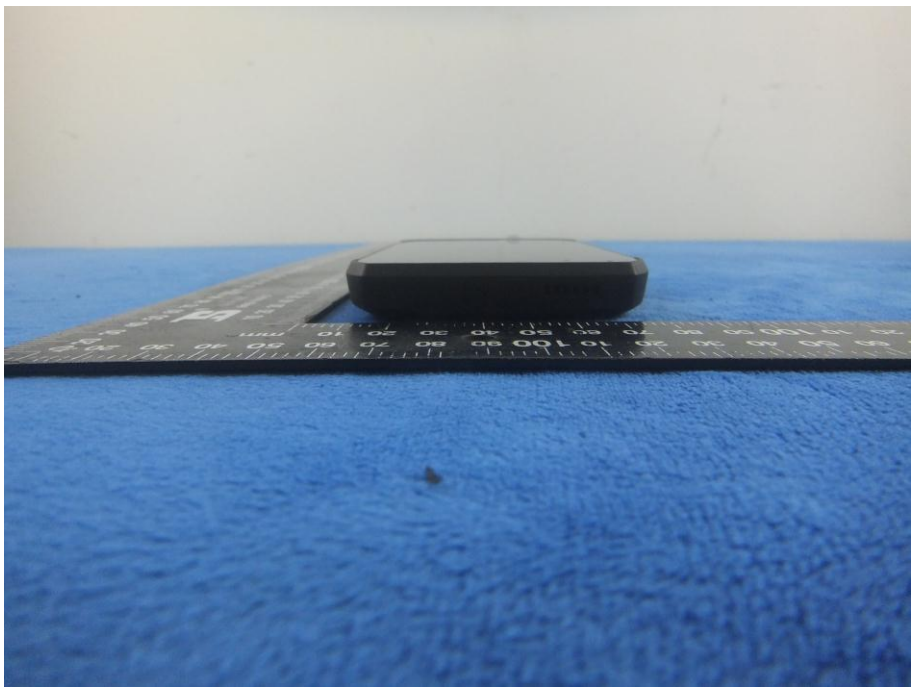
EUT - Front View

EUT - Rear View

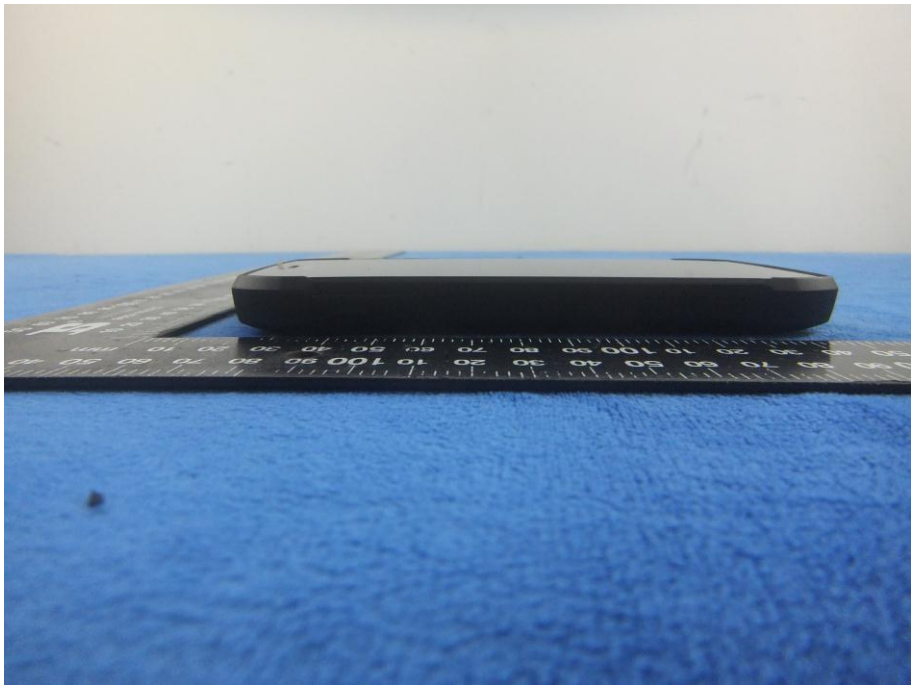
EUT - Top View



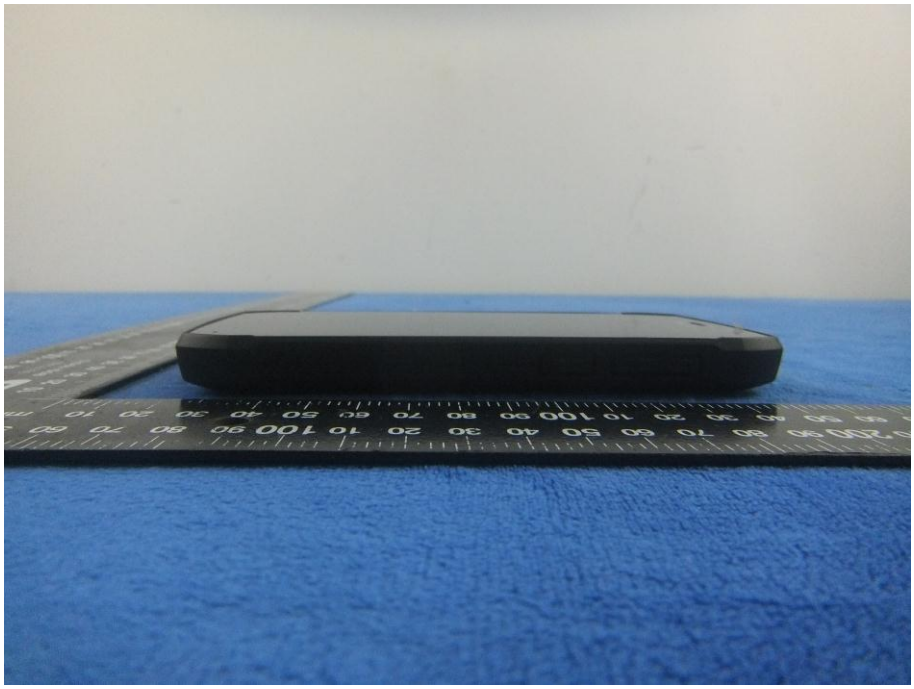
EUT - Bottom View



EUT - Left View



EUT - Right View

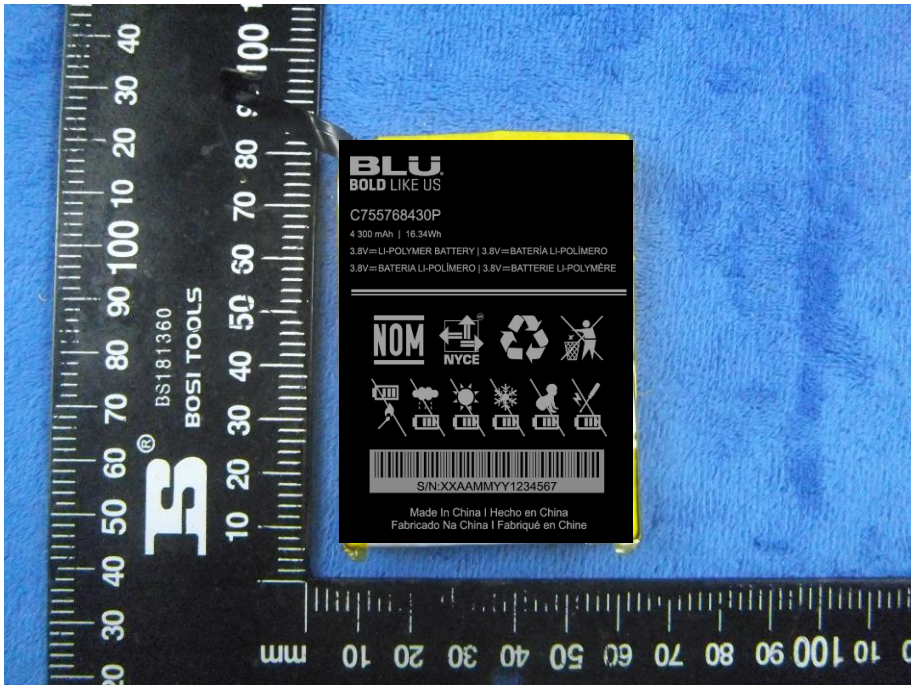


Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1

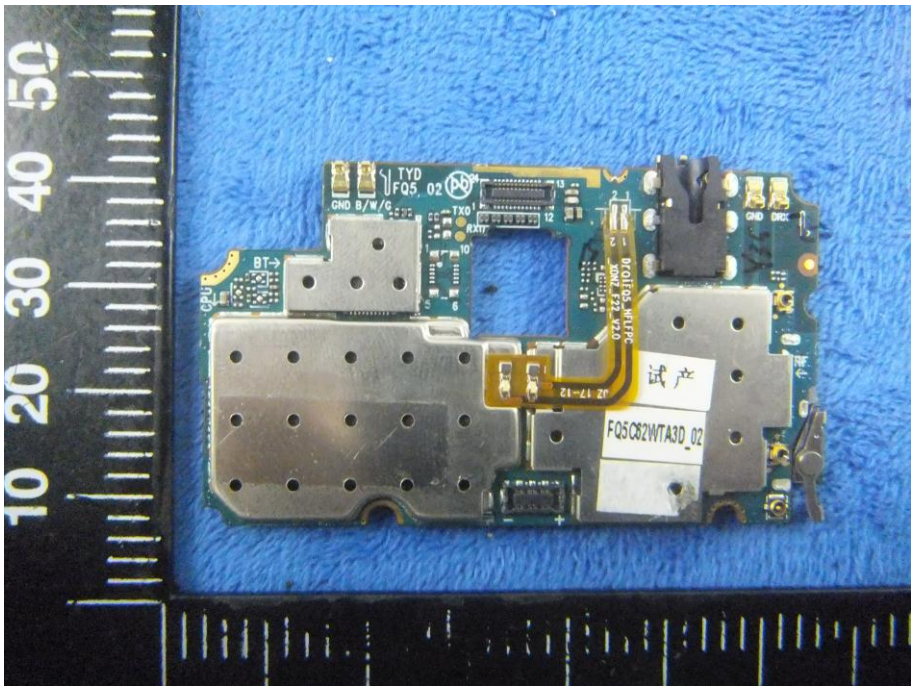
Cover Off - Top View 2

Battery - Front View

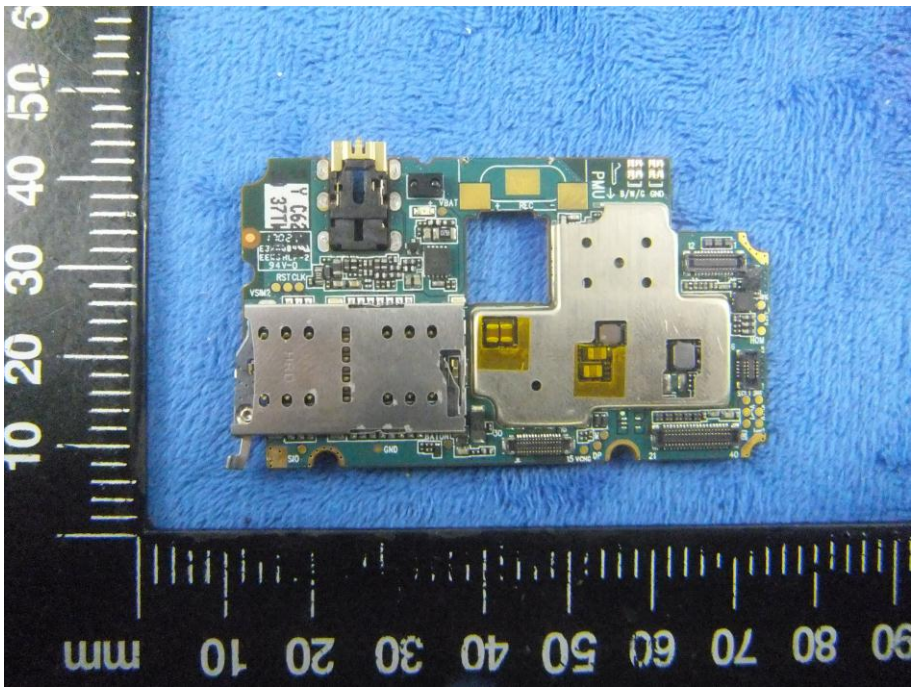


Battery - Rear View

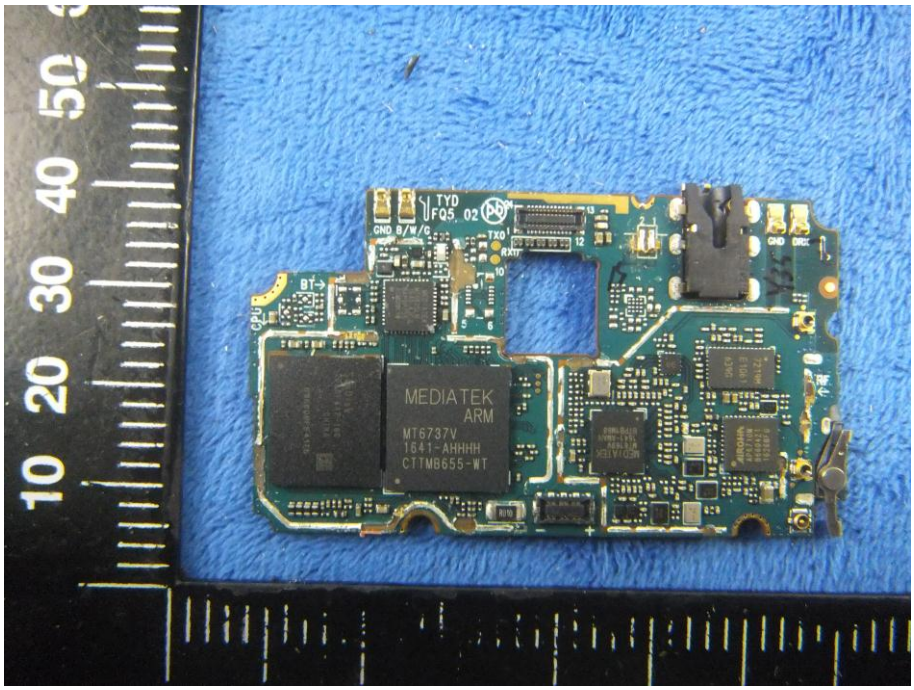
Mainboard with Shielding - Front View



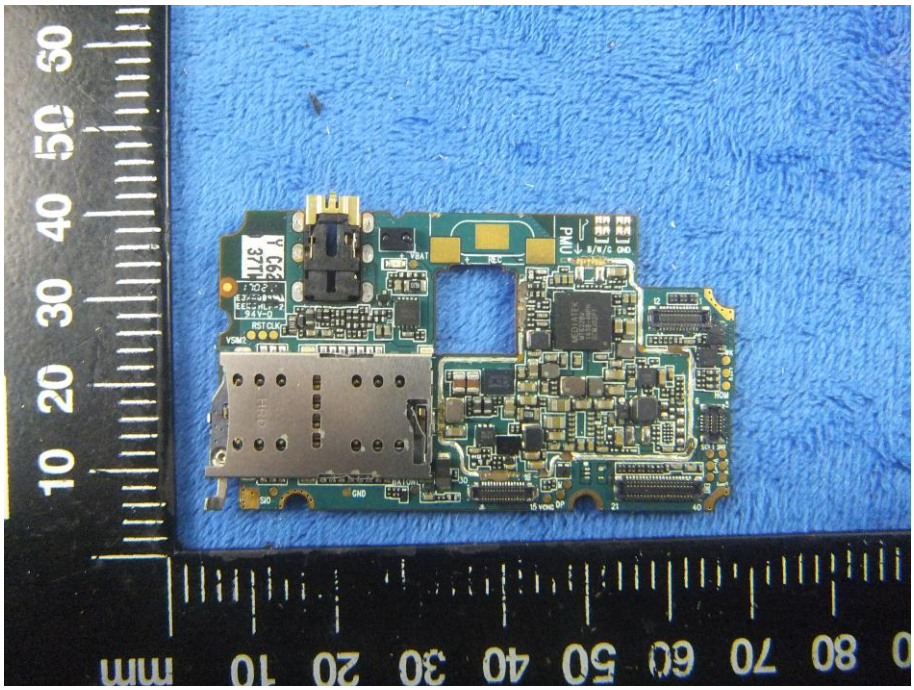
Mainboard without Shielding - Rear View



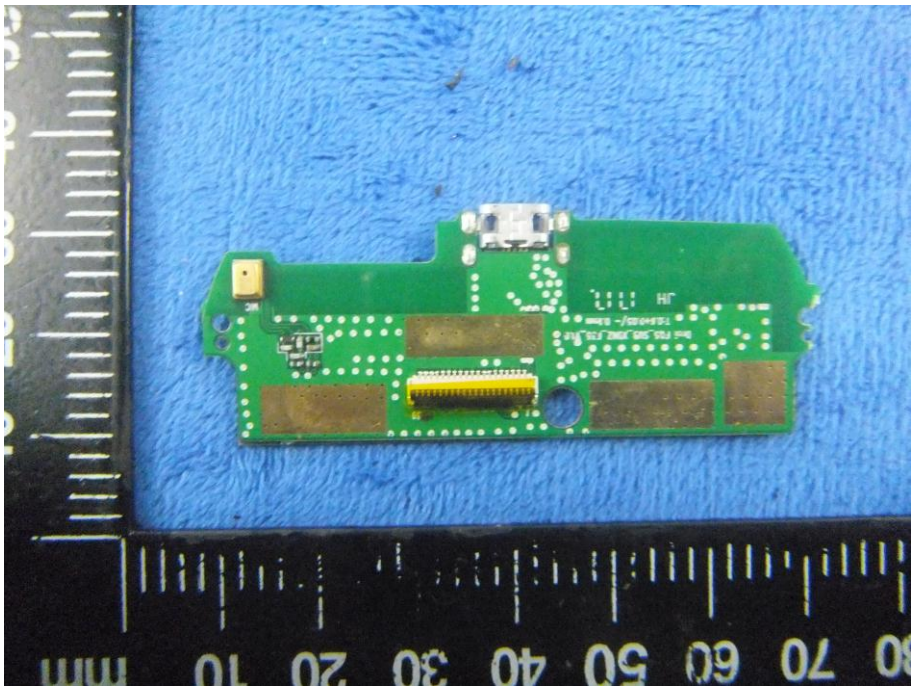
Mainboard without Shielding - Front View



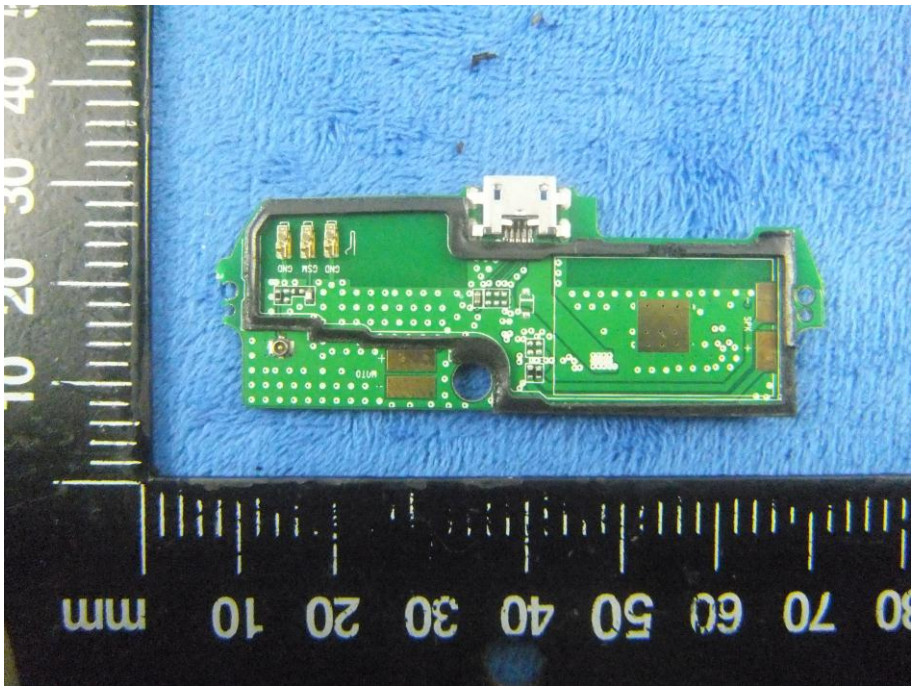
Mainboard without Shielding - Rear View



Small Mainboard - Front View

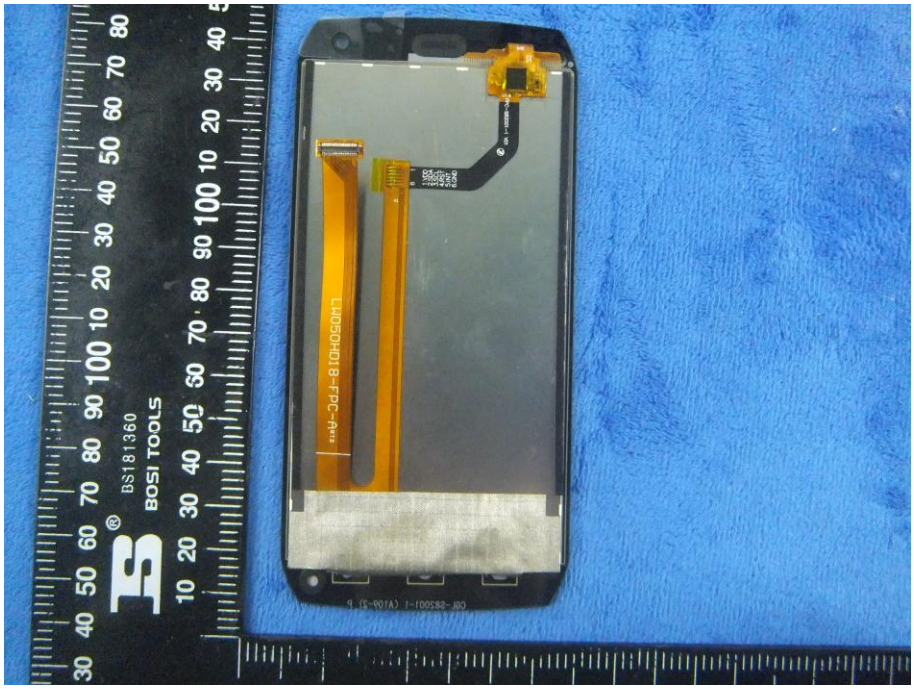


Small Mainboard - Rear View

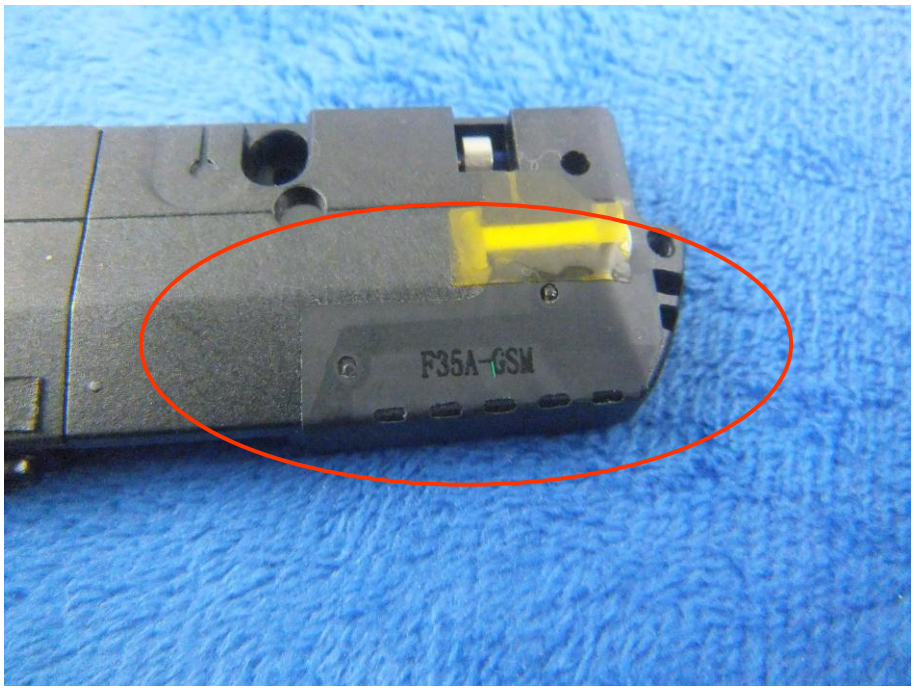


LCD – Front View

LCD – Rear View

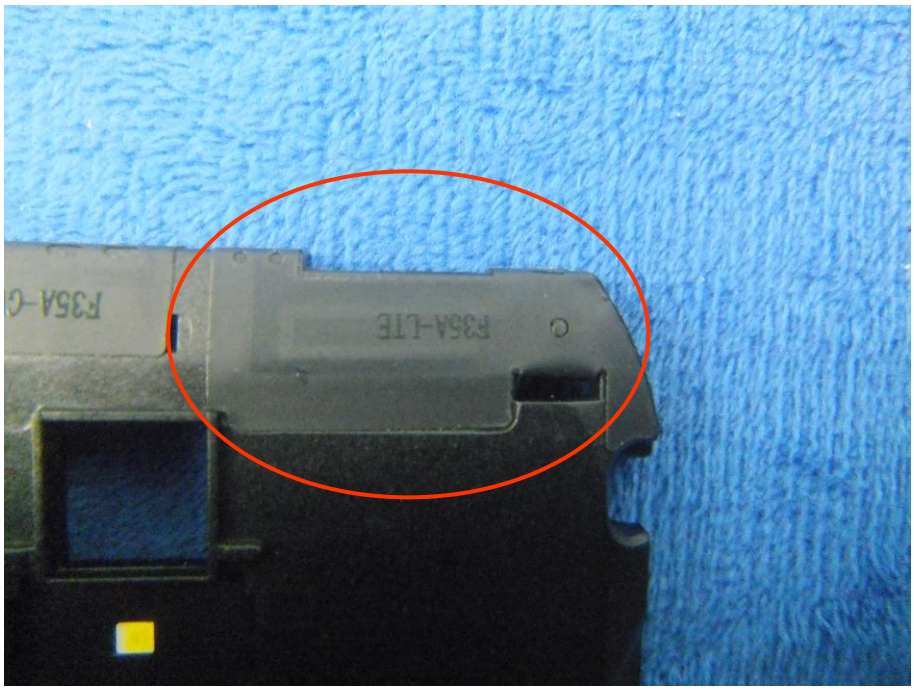


GSM/PCS/UMTS - Antenna View

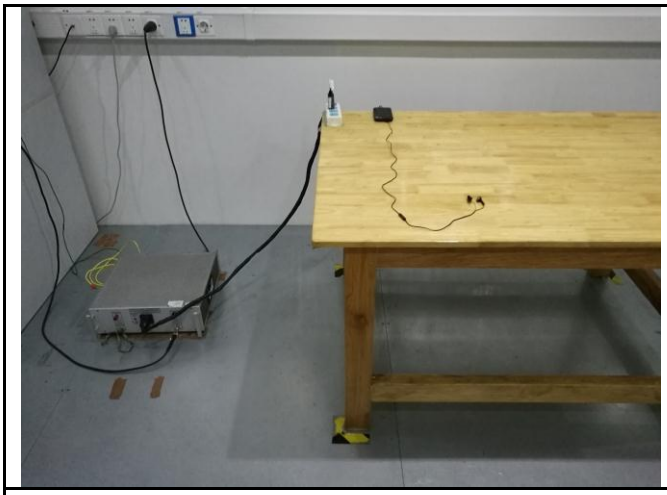
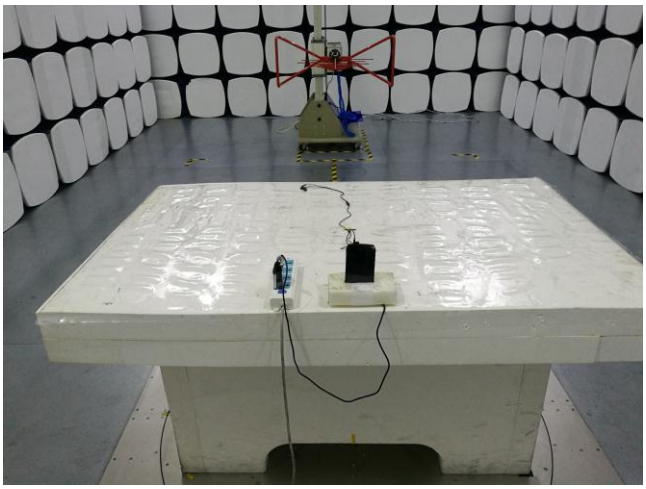
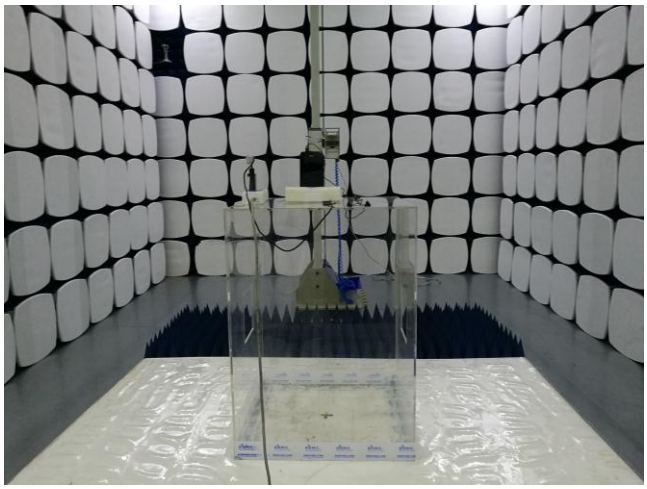


BT/WIFI - Antenna View

LTE - Antenna View



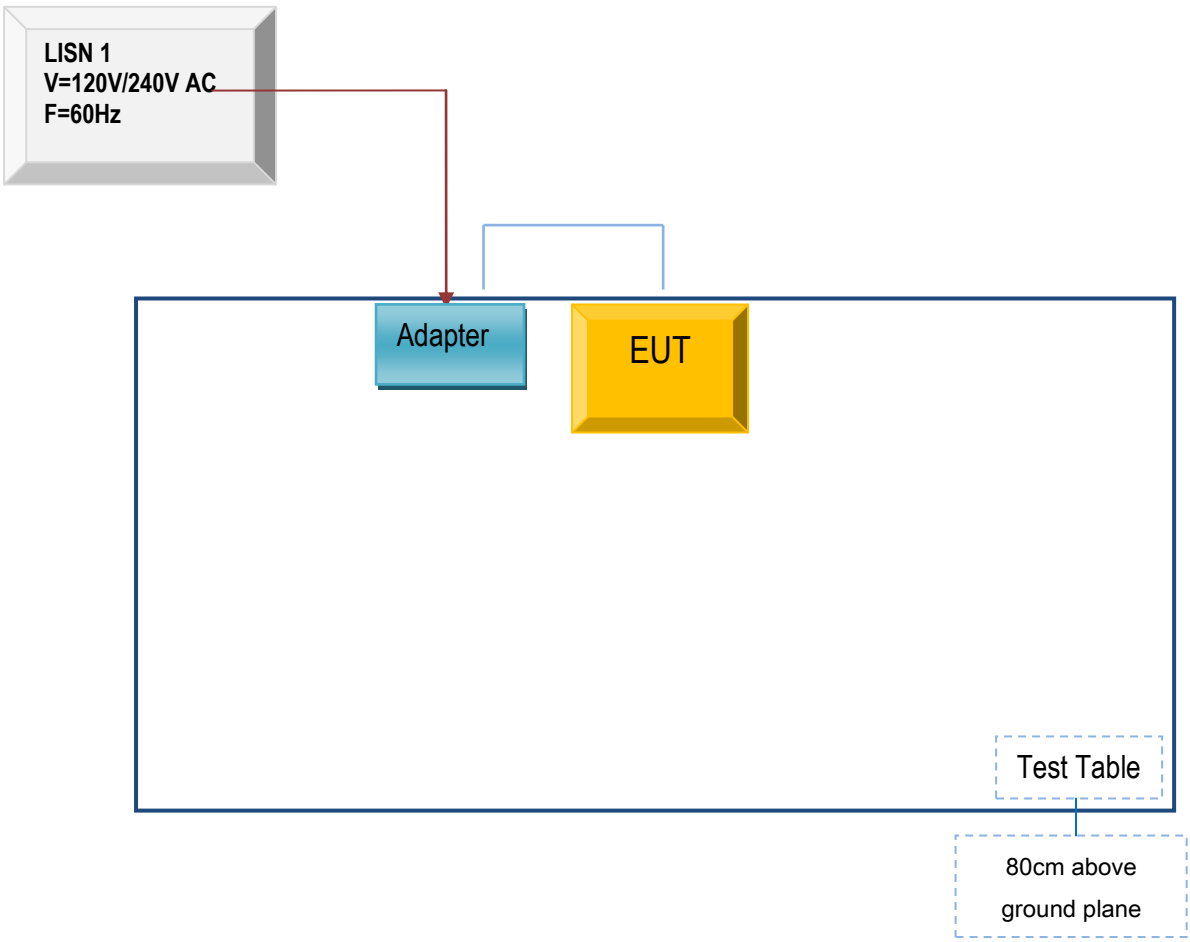
Annex B.iii. Photograph: Test Setup Photo

	
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

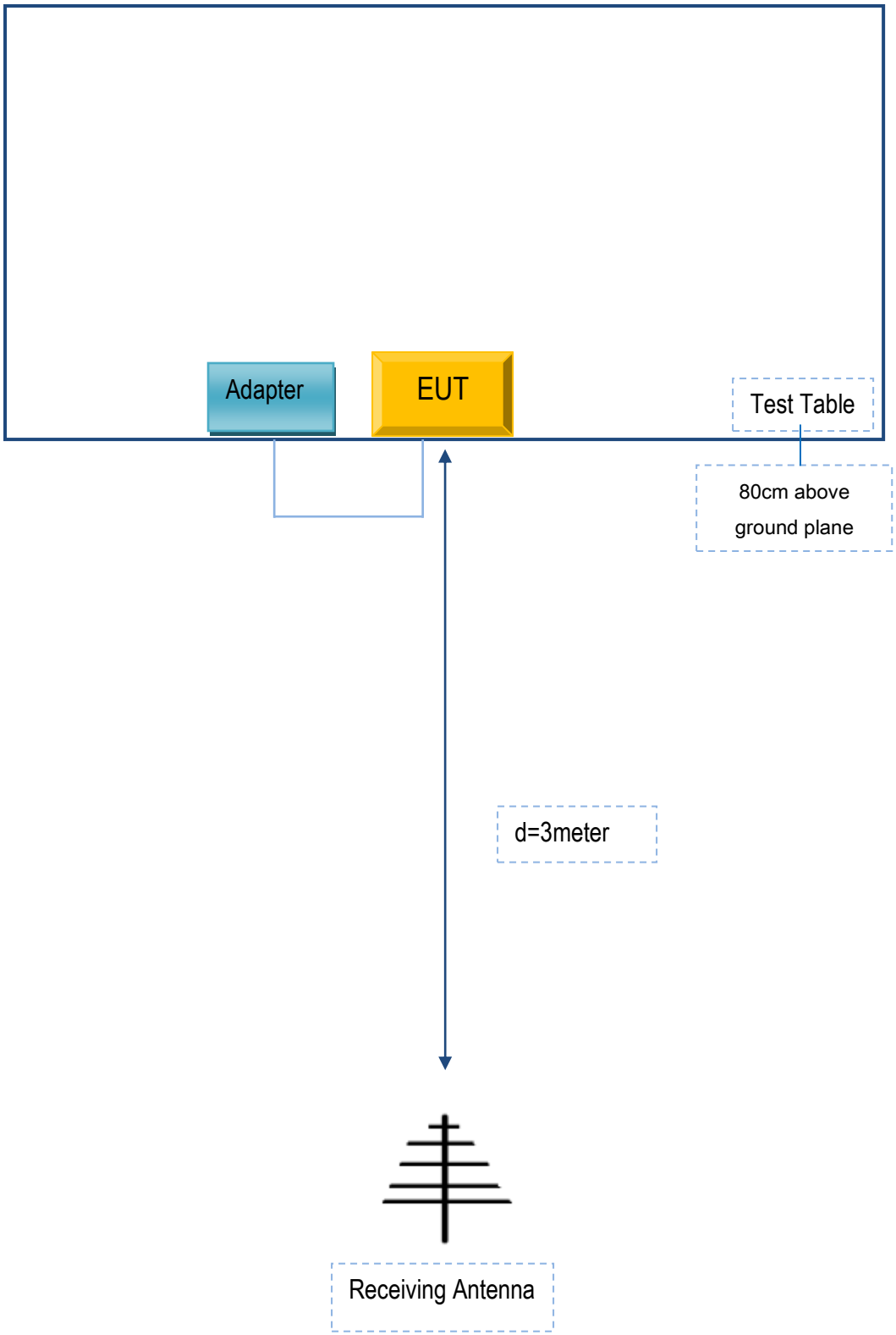
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

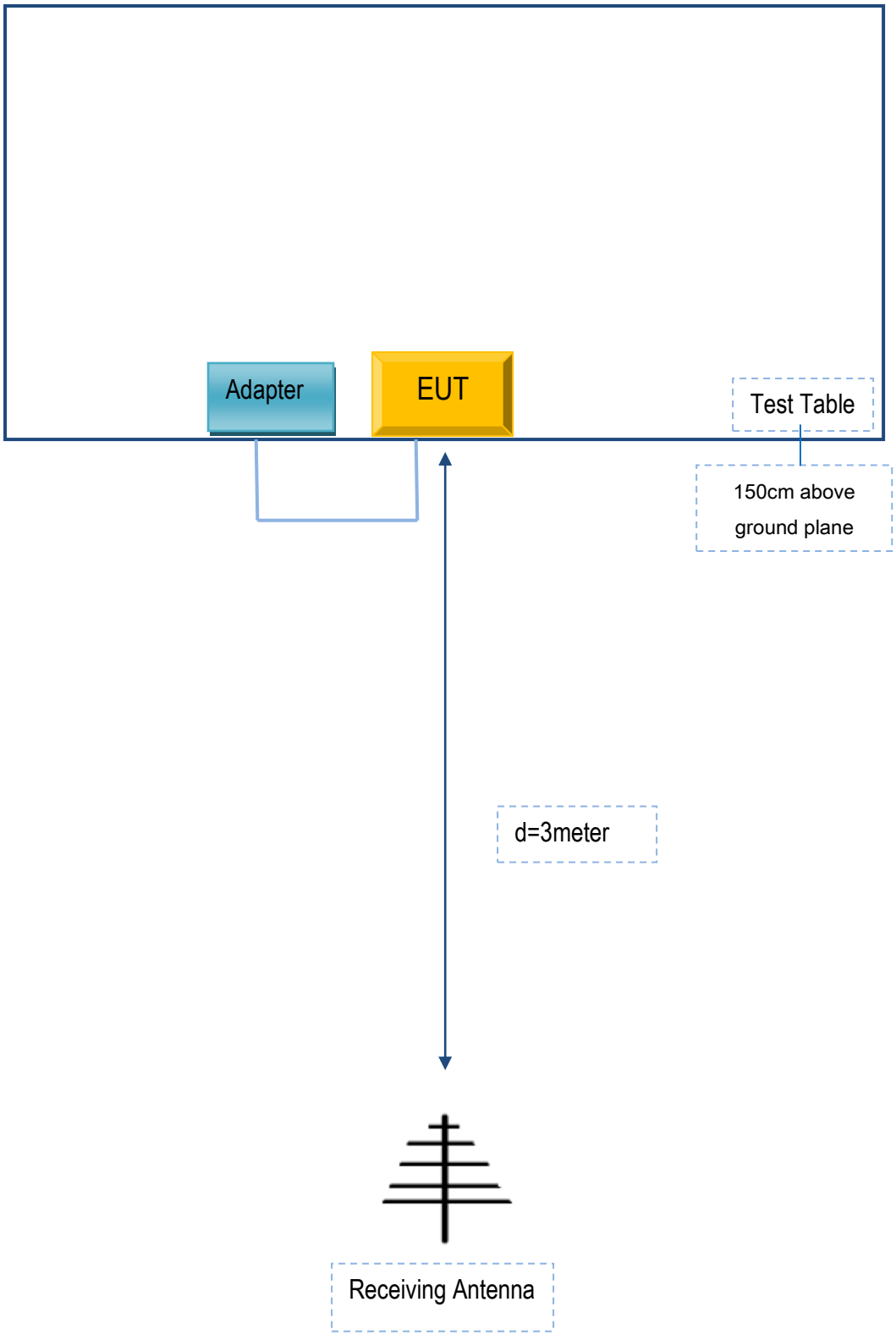
Block Configuration Diagram for AC Line Conducted Emissions



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
BLU Products, Inc.	Adapter	US-CB-1670	SO542

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	SO542

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

Please see the attachment

Annex E. DECLARATION OF SIMILARITY

N/A