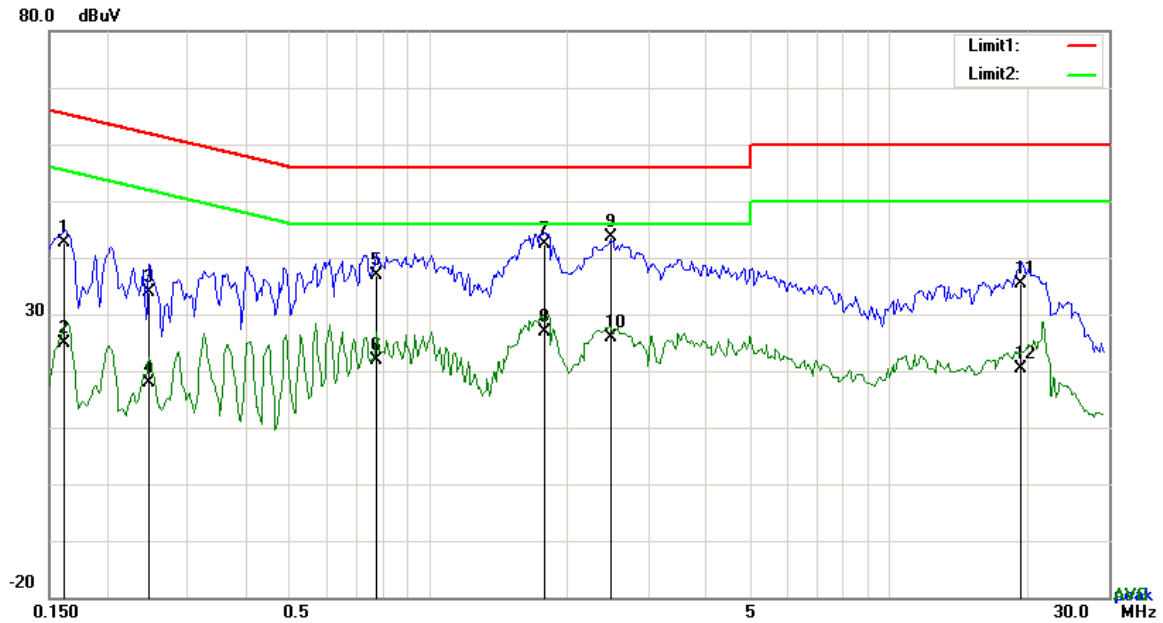


Test Mode: Transmitting Mode

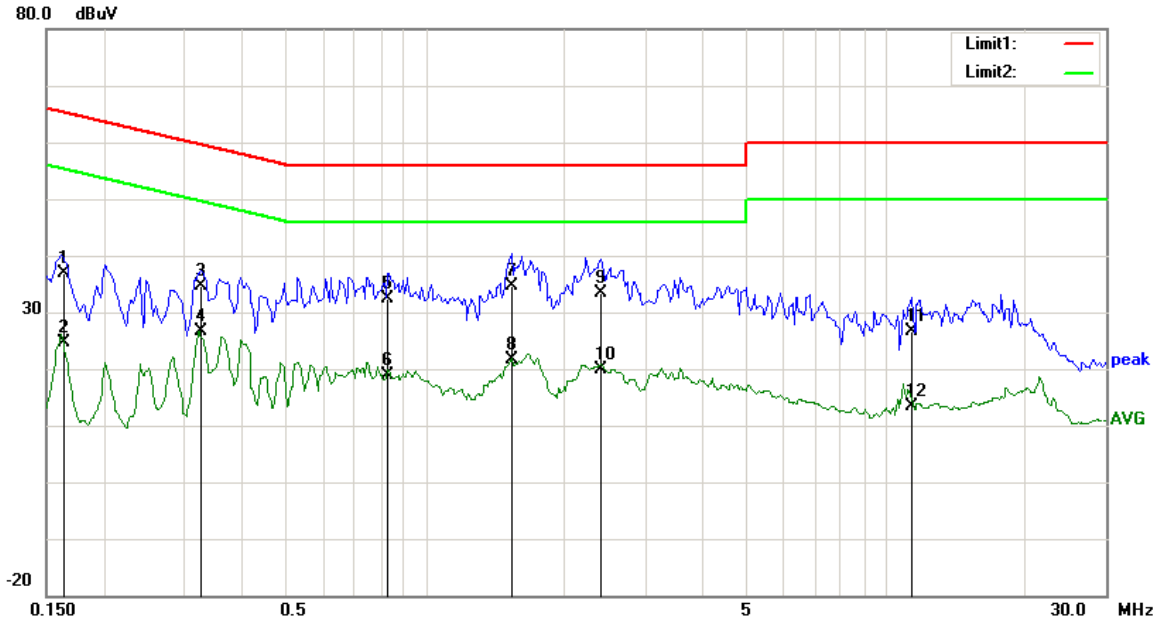


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	L1	0.1617	32.63	QP	10.03	42.66	65.38	-22.72
2	L1	0.1617	14.83	AVG	10.03	24.86	55.38	-30.52
3	L1	0.2475	23.73	QP	10.03	33.76	61.84	-28.08
4	L1	0.2475	7.93	AVG	10.03	17.96	51.84	-33.88
5	L1	0.7701	26.77	QP	10.03	36.80	56.00	-19.20
6	L1	0.7701	11.90	AVG	10.03	21.93	46.00	-24.07
7	L1	1.7880	32.26	QP	10.04	42.30	56.00	-13.70
8	L1	1.7880	16.83	AVG	10.04	26.87	46.00	-19.13
9	L1	2.4868	33.60	QP	10.05	43.65	56.00	-12.35
10	L1	2.4868	15.94	AVG	10.05	25.99	46.00	-20.01
11	L1	19.4190	24.99	QP	10.29	35.28	60.00	-24.72
12	L1	19.4190	10.14	AVG	10.29	20.43	50.00	-29.57

Test Mode: Transmitting Mode

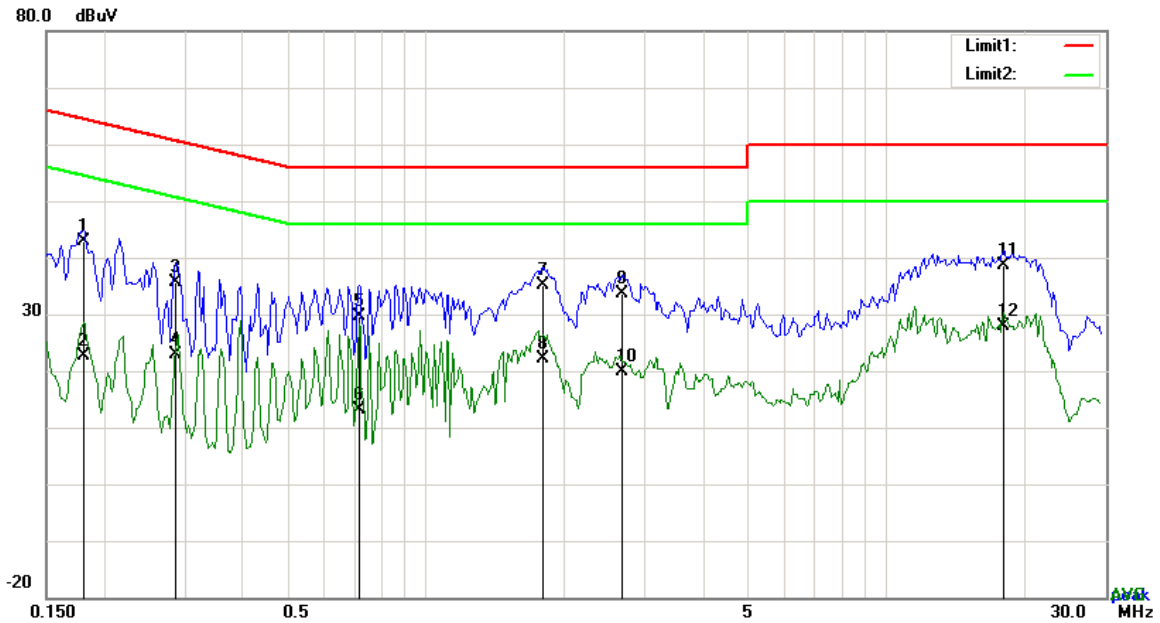


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	N	0.1641	26.97	QP	10.02	36.99	65.25	-28.26
2	N	0.1641	14.58	AVG	10.02	24.60	55.25	-30.65
3	N	0.3255	24.71	QP	10.02	34.73	59.57	-24.84
4	N	0.3255	16.49	AVG	10.02	26.51	49.57	-23.06
5	N	0.8286	22.32	QP	10.03	32.35	56.00	-23.65
6	N	0.8286	8.97	AVG	10.03	19.00	46.00	-27.00
7	N	1.5423	24.67	QP	10.04	34.71	56.00	-21.29
8	N	1.5423	11.51	AVG	10.04	21.55	46.00	-24.45
9	N	2.3964	23.32	QP	10.04	33.36	56.00	-22.64
10	N	2.3964	9.84	AVG	10.04	19.88	46.00	-26.12
11	N	11.3616	16.56	QP	10.16	26.72	60.00	-33.28
12	N	11.3616	3.18	AVG	10.16	13.34	50.00	-36.66

Test Mode: Transmitting Mode

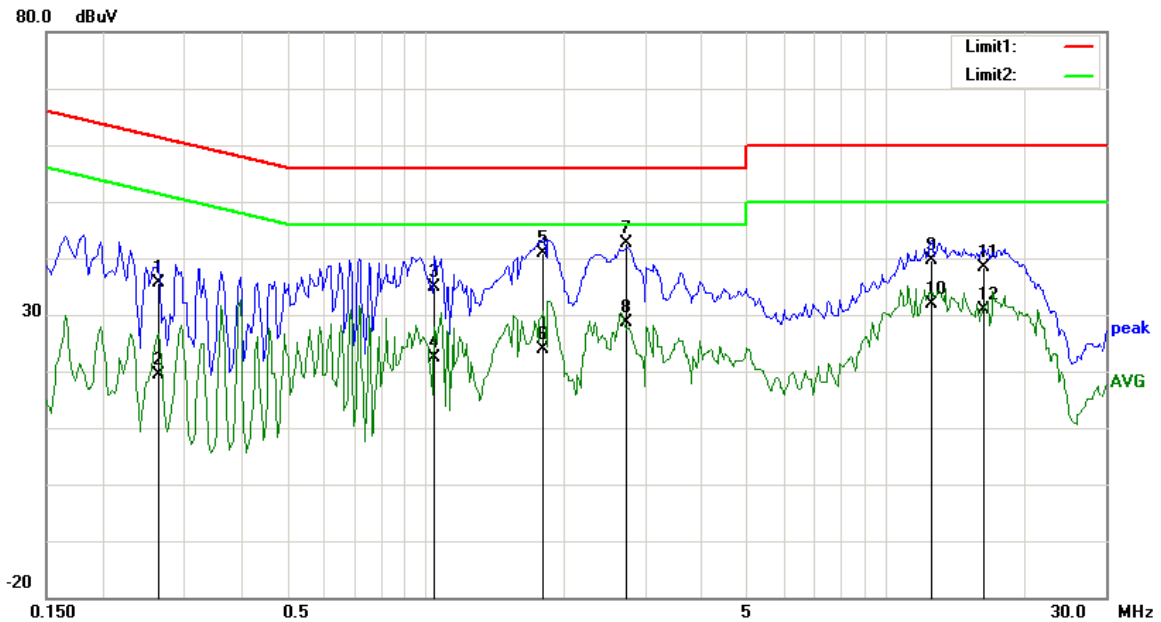


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	L1	0.1812	32.84	QP	10.03	42.87	64.43	-21.56
2	L1	0.1812	12.71	AVG	10.03	22.74	54.43	-31.69
3	L1	0.2865	25.72	QP	10.03	35.75	60.63	-24.88
4	L1	0.2865	12.89	AVG	10.03	22.92	50.63	-27.71
5	L1	0.7194	19.57	QP	10.03	29.60	56.00	-26.40
6	L1	0.7194	3.09	AVG	10.03	13.12	46.00	-32.88
7	L1	1.7919	25.10	QP	10.04	35.14	56.00	-20.86
8	L1	1.7919	12.14	AVG	10.04	22.18	46.00	-23.82
9	L1	2.6772	23.50	QP	10.05	33.55	56.00	-22.45
10	L1	2.6772	9.82	AVG	10.05	19.87	46.00	-26.13
11	L1	17.9604	28.43	QP	10.27	38.70	60.00	-21.30
12	L1	17.9604	17.59	AVG	10.27	27.86	50.00	-22.14

Test Mode:	Transmitting Mode
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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	0.2631	25.50	QP	10.02	35.52	61.33	-25.81
2	N	0.2631	9.42	AVG	10.02	19.44	51.33	-31.89
3	N	1.0431	24.78	QP	10.03	34.81	56.00	-21.19
4	N	1.0431	12.47	AVG	10.03	22.50	46.00	-23.50
5	N	1.8036	30.96	QP	10.04	41.00	56.00	-15.00
6	N	1.8036	13.92	AVG	10.04	23.96	46.00	-22.04
7	N	2.7318	32.59	QP	10.05	42.64	56.00	-13.36
8	N	2.7318	18.62	AVG	10.05	28.67	46.00	-17.33
9	N	12.5628	29.44	QP	10.17	39.61	60.00	-20.39
10	N	12.5628	21.83	AVG	10.17	32.00	50.00	-18.00
11	N	16.2522	28.20	QP	10.22	38.42	60.00	-21.58
12	N	16.2522	20.76	AVG	10.22	30.98	50.00	-19.02

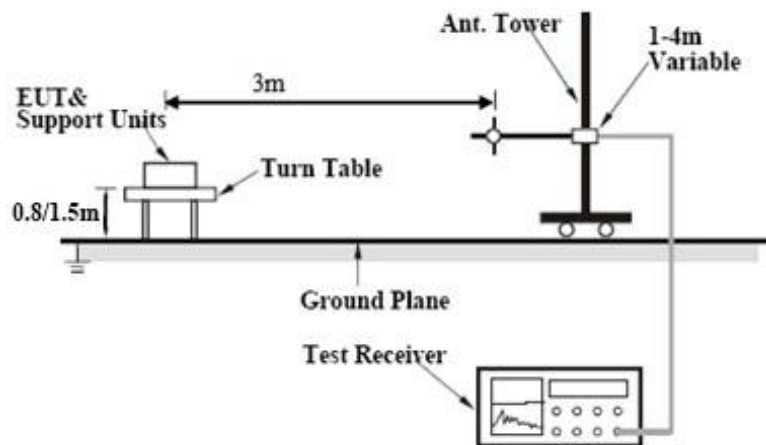
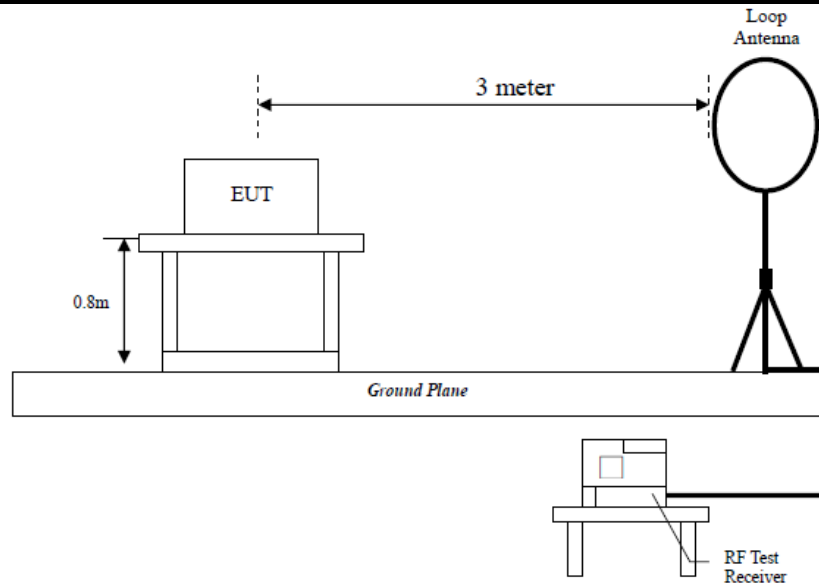
6.7 Radiated Spurious Emissions & Restricted Band

Temperature	25 °C
Relative Humidity	51%
Atmospheric Pressure	1020mbar
Test date :	September 14, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	Requirement	Applicable																
47CFR§15.247(d), RSS210 (A8.5)	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	☒																
		<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>		Frequency range (MHz)	Field Strength (µV/m)	0.009~0.490	2400/F(KHz)	0.490~1.705	24000/F(KHz)	1.705~30.0	30	30 – 88	100	88 – 216	150	216 960	200	Above 960	500
		Frequency range (MHz)		Field Strength (µV/m)															
		0.009~0.490		2400/F(KHz)															
		0.490~1.705		24000/F(KHz)															
		1.705~30.0		30															
		30 – 88		100															
		88 – 216		150															
		216 960		200															
	Above 960	500																	
b)	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	☒																	
	c)		or restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒															

Test Setup



Procedure

- The EUT was switched on and allowed to warm up to its normal operating condition.
- 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:
 - Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
 - The EUT was then rotated to the direction that gave the maximum emission.
 - Finally, the antenna height was adjusted to the height that gave the maximum emission.
- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi Peak detection at frequency below 1GHz.
- 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.

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	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
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Frequency range: 9KHz - 30MHz

Freq.	Detection	Factor	Reading	Result	Limit@3m	Margin
(MHz)	value	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
--	--	--	--	--	--	>20
--	--	--	--	--	--	>20

Note:

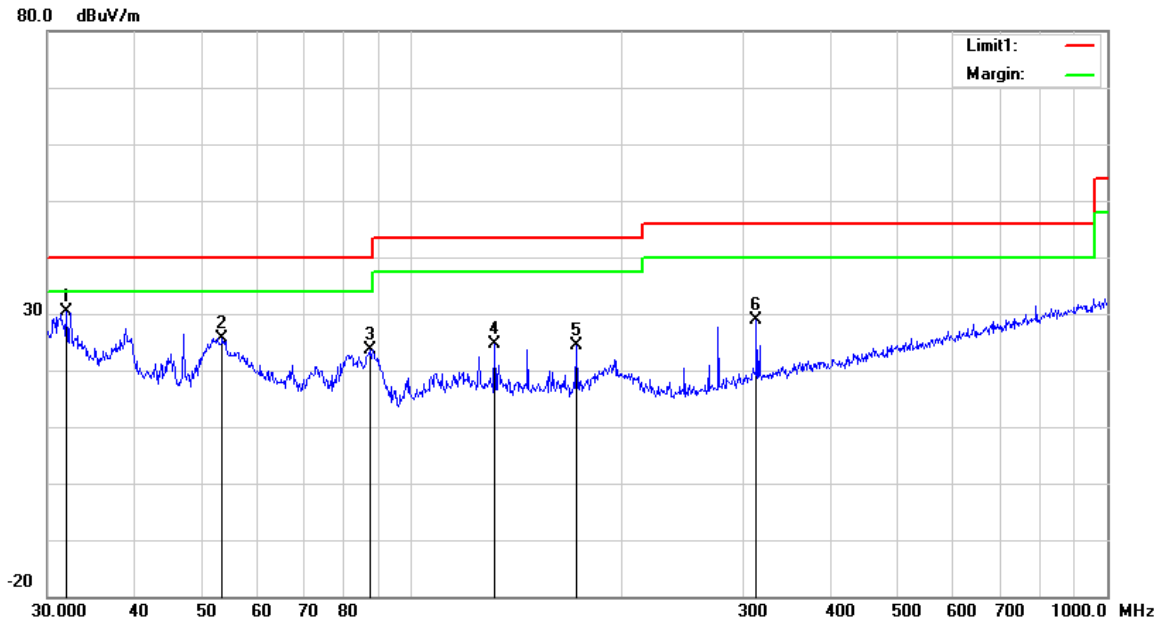
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

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

Test Mode: Transmitting Mode

30MHz -1GHz

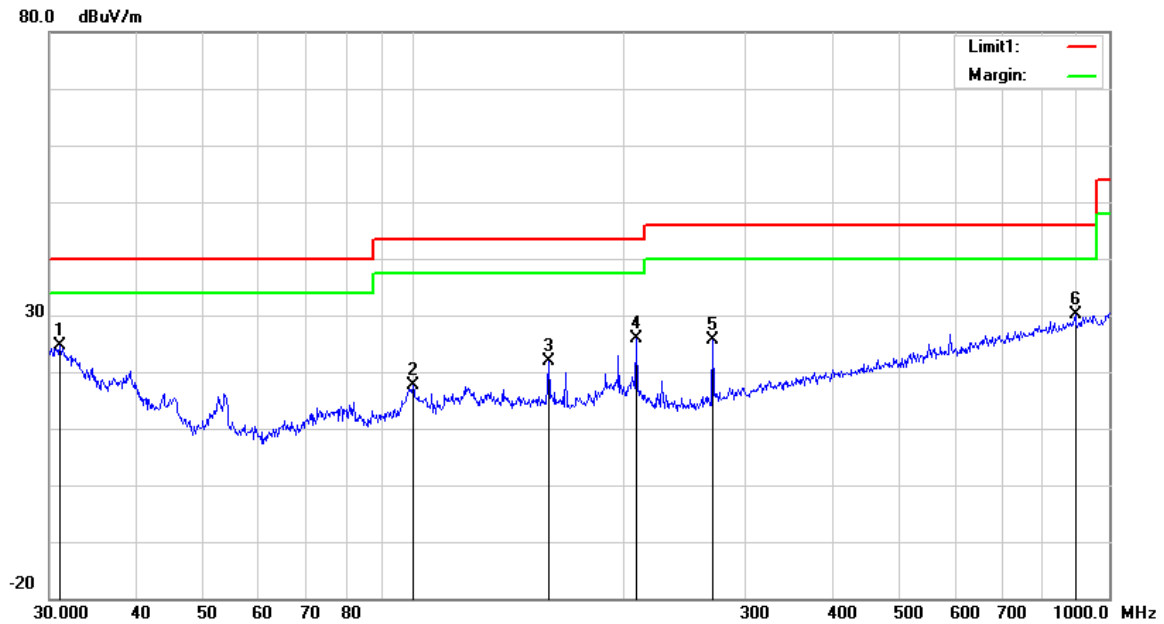


Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detect or	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr ee
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	V	31.9546	32.06	peak	19.89	22.27	0.67	30.35	40.00	-9.65	100	319
2	V	53.5052	39.24	peak	8.01	22.39	0.79	25.65	40.00	-14.35	100	123
3	V	87.1117	37.07	peak	7.88	22.35	1.02	23.62	40.00	-16.38	100	265
4	V	131.7577	32.55	peak	13.14	22.39	1.21	24.51	43.50	-18.99	200	46
5	V	172.5988	33.62	peak	11.59	22.26	1.36	24.31	43.50	-19.19	100	18
6	V	313.2760	35.47	peak	13.88	22.25	1.86	28.96	46.00	-17.04	100	237

30MHz -1GHz



Test Data

Horizontal Polarity Plot @3m

N o.	P/ L	Frequency (MHz)	Reading (dBuV/m)	Detect or	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degr ee ()
1	H	31.0706	25.70	peak	20.58	22.27	0.65	24.66	40.00	-15.34	100	275
2	H	99.8777	28.42	peak	10.37	22.32	1.12	17.59	43.50	-25.91	100	315
3	H	156.4578	30.14	peak	12.60	22.29	1.37	21.82	43.50	-21.68	100	159
4	H	209.3129	34.62	peak	11.97	22.36	1.57	25.80	43.50	-17.70	200	6
5	H	269.4284	33.82	peak	12.25	22.29	1.73	25.51	46.00	-20.49	100	200
6	H	893.8567	25.46	peak	22.43	20.90	3.05	30.04	46.00	-15.96	100	245

Above 1GHz

Test Mode:	Transmitting Mode
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Low Channel (2412 MHz) (g 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	39.46	AV	V	33.39	7.22	48.46	31.61	54	-22.39
4824	37.11	AV	H	33.39	7.22	48.46	29.26	54	-24.74
4824	49.53	PK	V	33.39	7.22	48.46	41.68	74	-32.32
4824	48.62	PK	H	33.39	7.22	48.46	40.77	74	-33.23
6524	24.33	AV	V	35.52	7.84	48.71	18.98	54	-35.02
6524	22.51	AV	H	35.52	7.84	48.71	17.16	54	-36.84
6524	43.16	PK	V	35.52	7.84	48.71	37.81	74	-36.19
6524	42.85	PK	H	35.52	7.84	48.71	37.5	74	-36.5

Middle Channel (2437 MHz) (n40 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	39.27	AV	V	33.62	7.53	48.36	32.06	54	-21.94
4874	38.61	AV	H	33.62	7.53	48.36	31.4	54	-22.6
4874	51.23	PK	V	33.62	7.53	48.36	44.02	74	-29.98
4874	50.47	PK	H	33.62	7.53	48.36	43.26	74	-30.74
11521	26.48	AV	V	39.93	12.47	46.83	32.05	54	-21.95
11521	24.51	AV	H	39.93	12.47	46.83	30.08	54	-23.92
11521	43.55	PK	V	39.93	12.47	46.83	49.12	74	-24.88
11521	42.91	PK	H	39.93	12.47	46.83	48.48	74	-25.52

High Channel (2452 MHz) (n40 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)
4904	38.52	AV	V	33.74	7.78	48.34	31.7	54	-22.3
4904	37.24	AV	H	33.74	7.78	48.34	30.42	54	-23.58
4904	49.62	PK	V	33.74	7.78	48.34	42.8	74	-31.2
4904	48.25	PK	H	33.74	7.78	48.34	41.43	74	-32.57
17016	23.66	AV	V	40.17	16.78	45.66	34.95	54	-19.05
17016	23.05	AV	H	40.17	16.78	45.66	34.34	54	-19.66
17016	42.18	PK	V	40.17	16.78	45.66	53.47	74	-20.53
17016	41.62	PK	H	40.17	16.78	45.66	52.91	74	-21.09

Note:

- 1, The testing has been conformed to $10 \times 2462 \text{ MHz} = 24,620 \text{ MHz}$
- 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	09/16/2016	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	☒
ISN	ISN T800	34373	09/24/2016	09/23/2017	☐
Transient Limiter	LIT-153	531118	08/30/2017	08/29/2018	☒
RF conducted test					
Agilent ESA-E SERIES	E4407B	MY45108319	09/16/2016	09/15/2017	☒
Power Splitter	1#	1#	08/30/2017	08/29/2018	☒
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	08/30/2017	08/29/2018	☒
Horn Antenna	BBHA9170	3145226D1	09/28/2016	09/27/2017	☒
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	☒

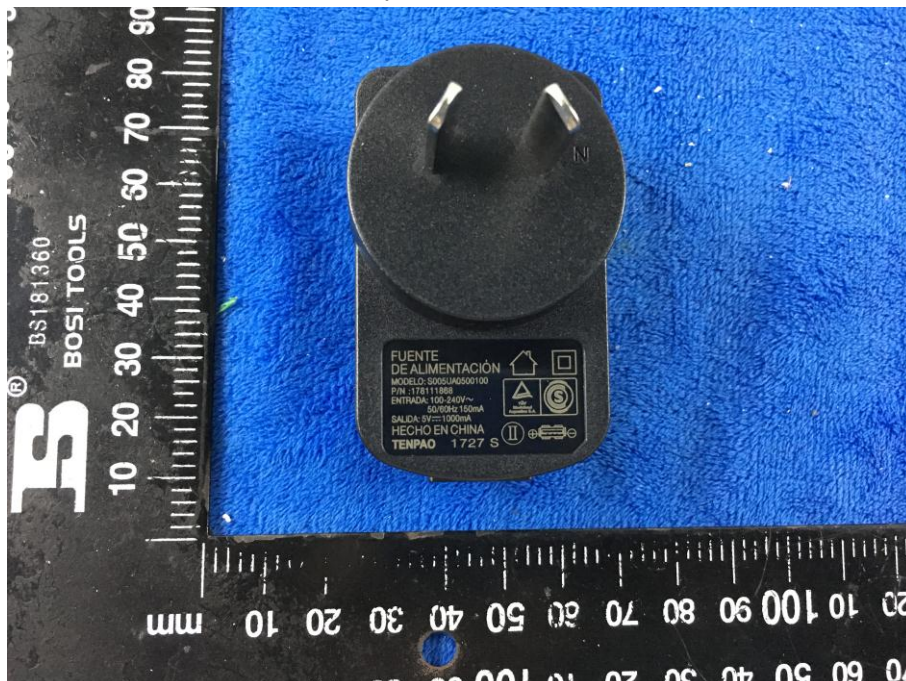
Annex B. EUT and Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

Whole Package View



Adapter - Label View



EUT - Front View



EUT - Rear View



EUT - Top View



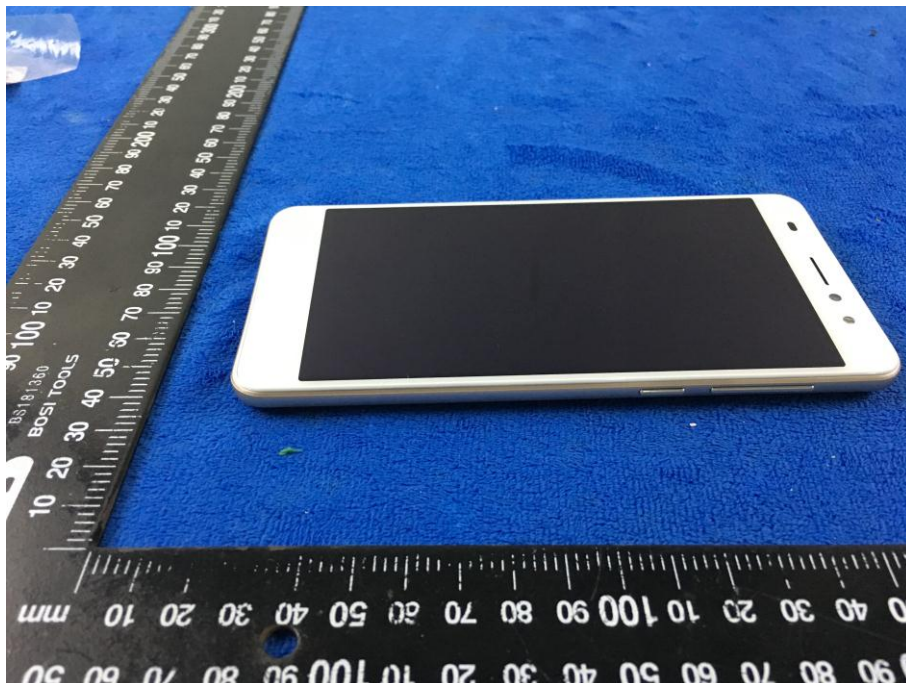
EUT - Bottom View



EUT - Left View



EUT - Right View



Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1



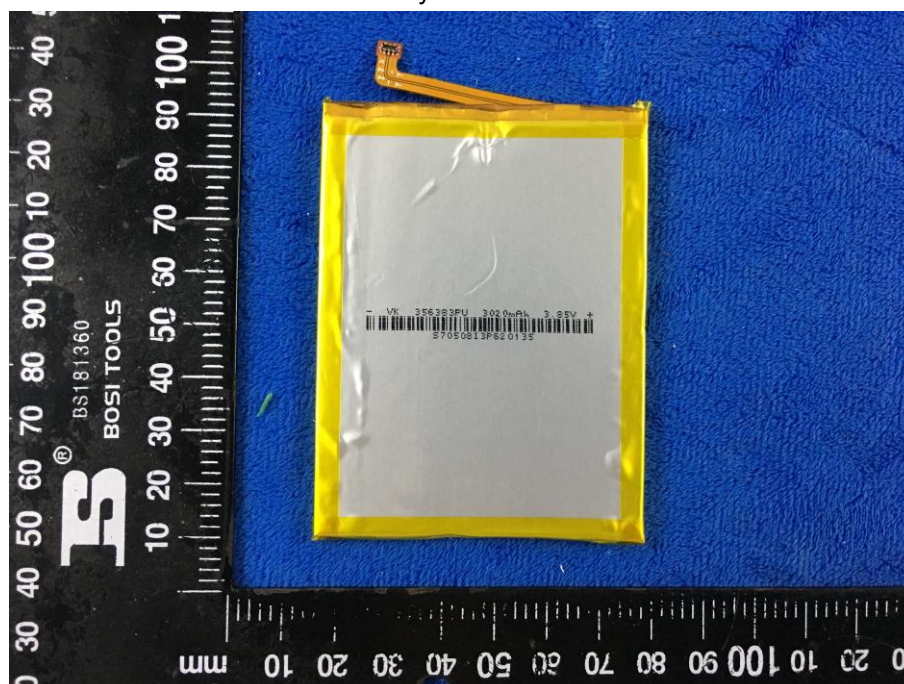
Cover Off - Top View 2



Battery - Front View



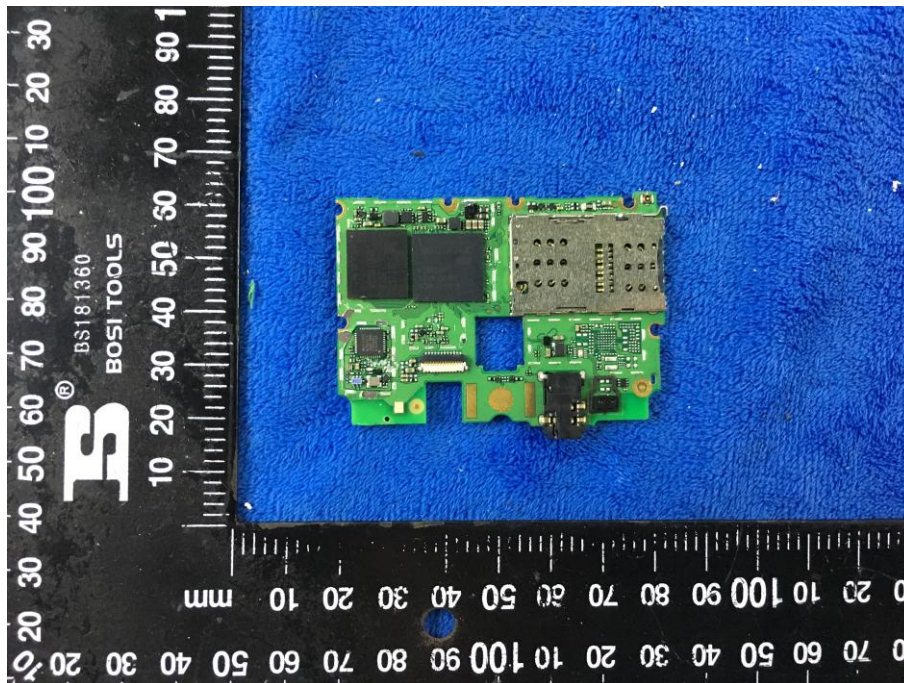
Battery - Rear View



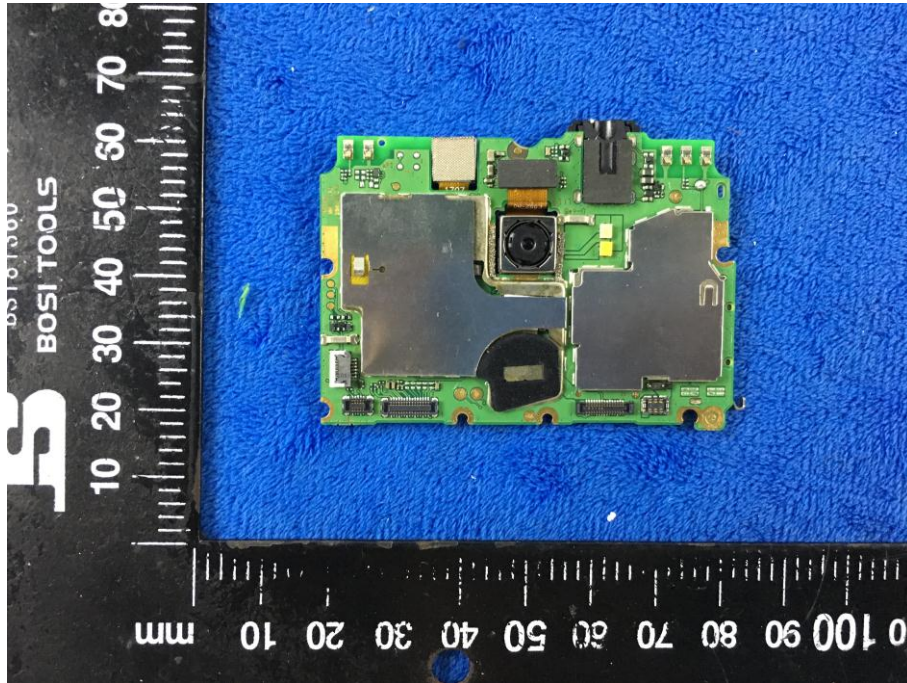
Small Mainboard - Front View



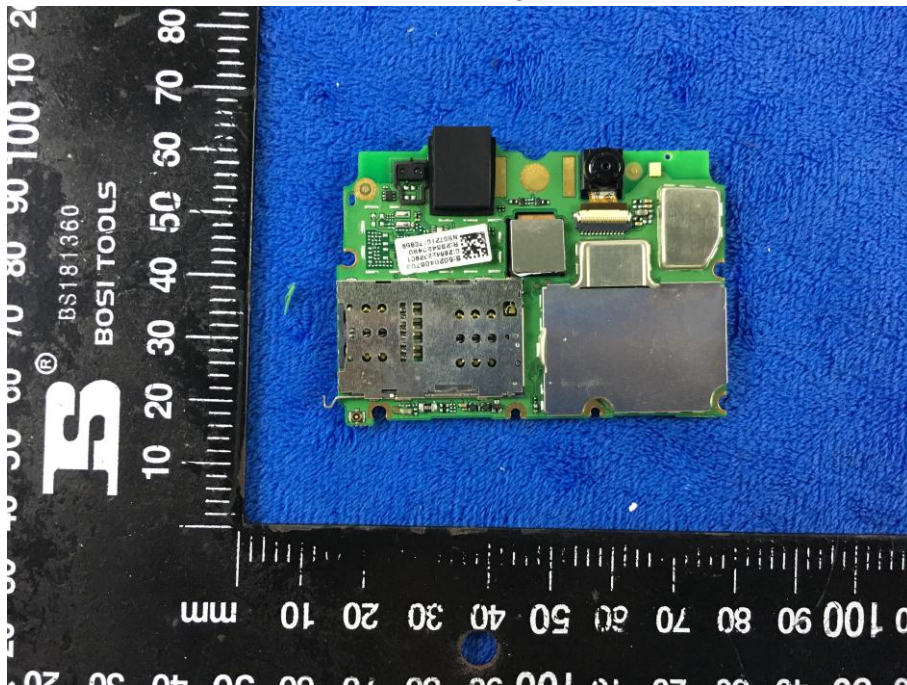
Small Mainboard - Rear View



Mainboard with Shielding – Front View



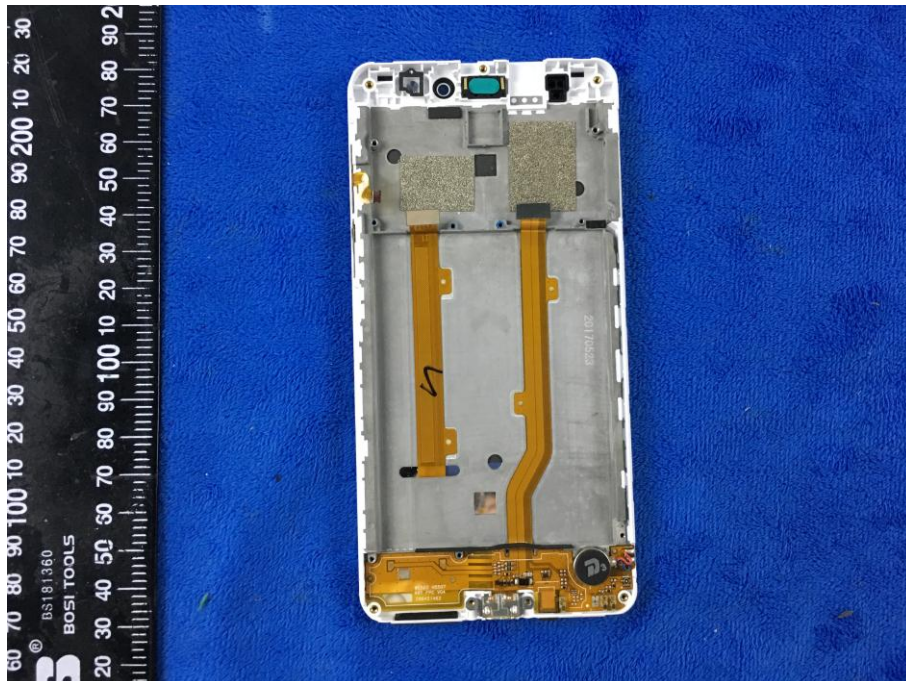
Mainboard with Shielding – Rear View



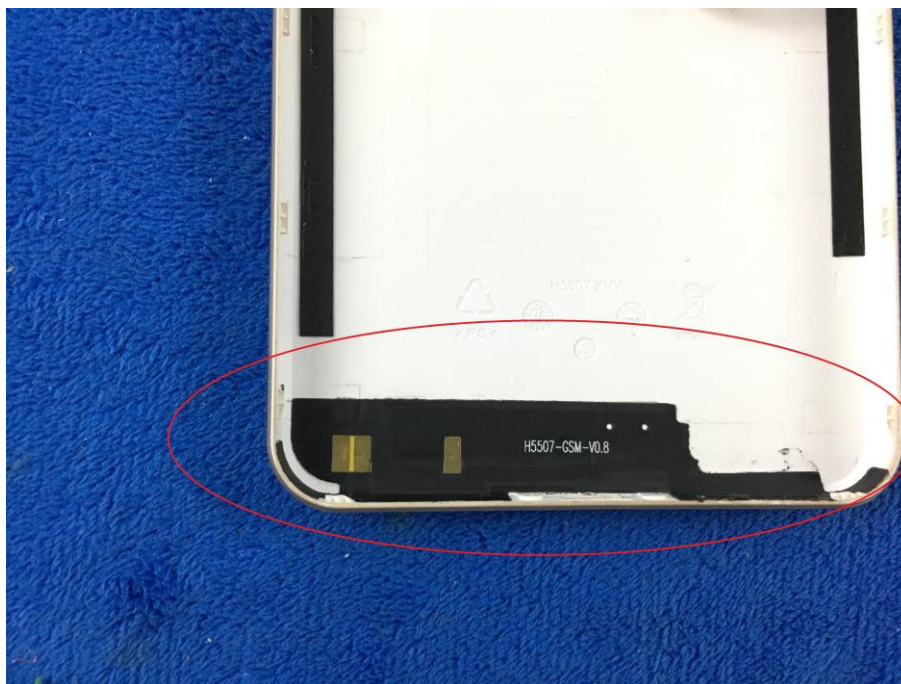
LCD – Front View



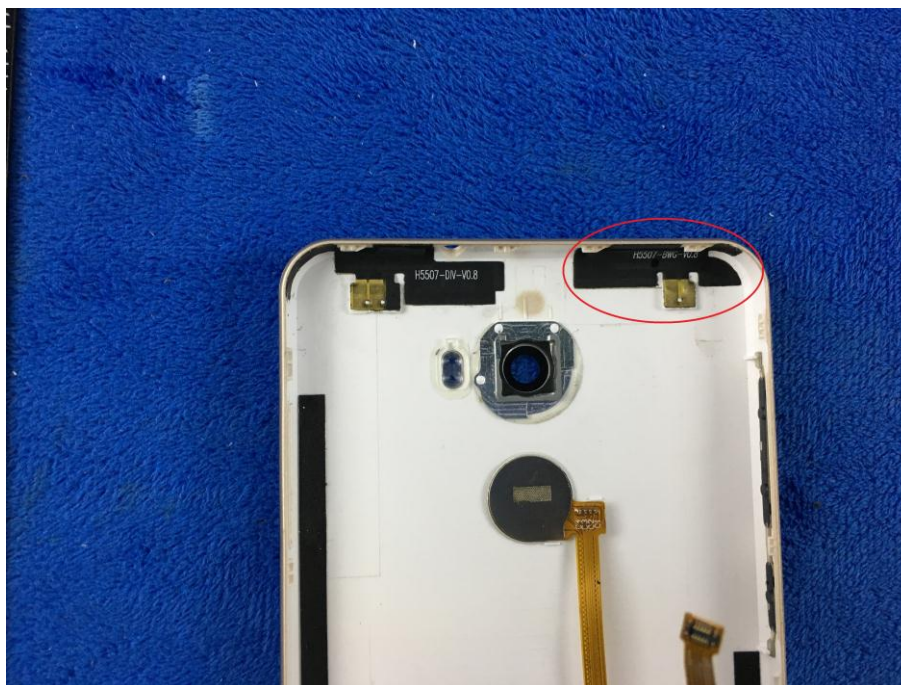
LCD – Rear View



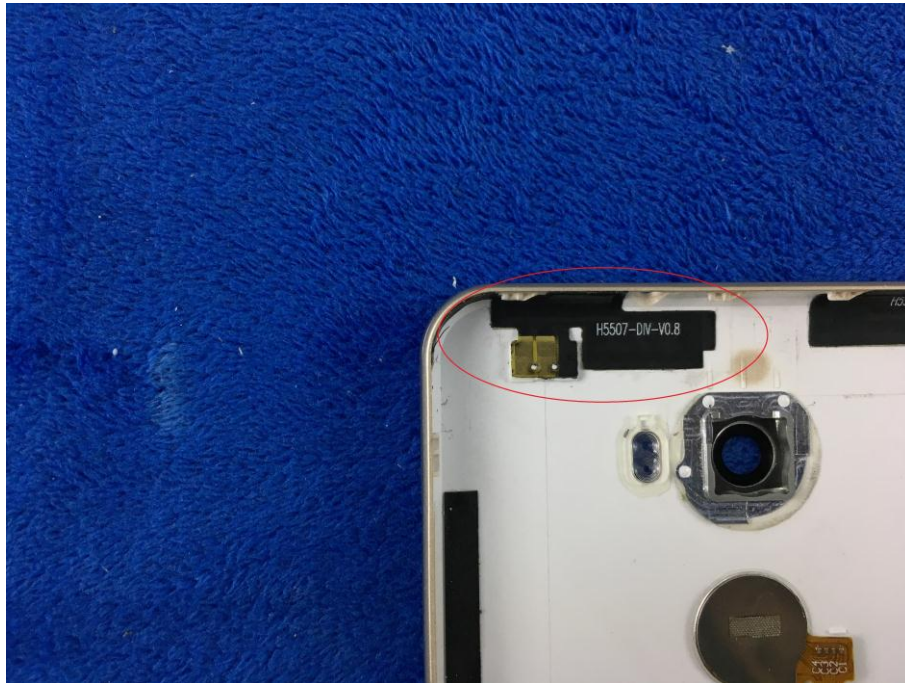
GSM/PCS/UMTS-FDD - Antenna View



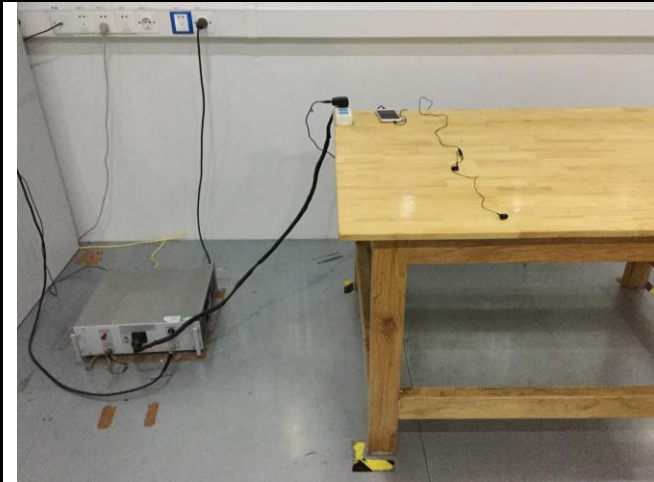
WIFI/BT/BLE/GPS - Antenna View



LTE - Antenna View



Annex B.iii. Photograph: Test Setup Photo



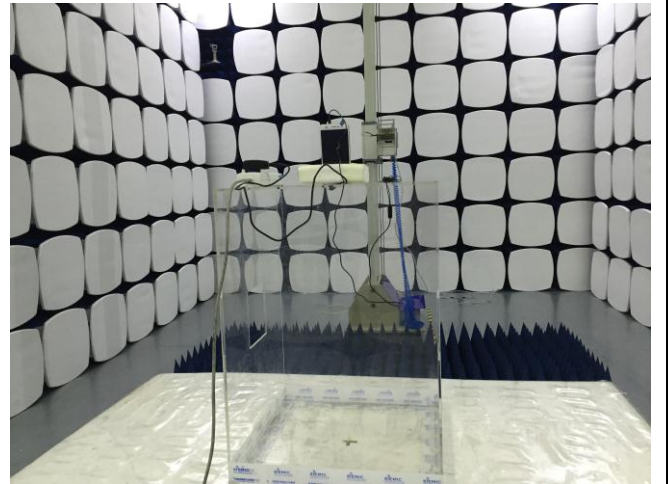
Conducted Emissions Test Setup Front View



Conducted Emissions Test Setup Side View



Radiated Spurious Emissions Test Setup Below 1GHz

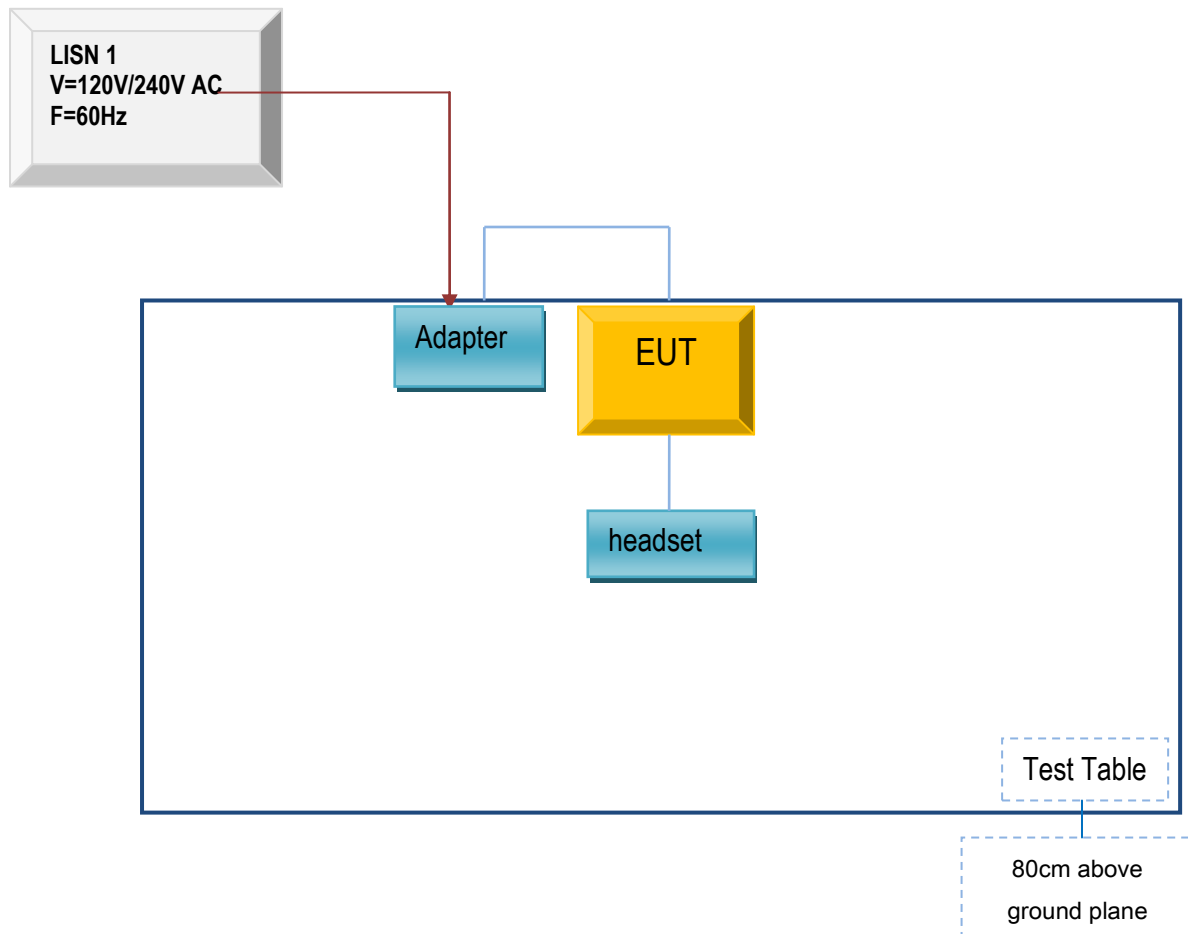


Radiated Spurious Emissions Test Setup Above
1GHz

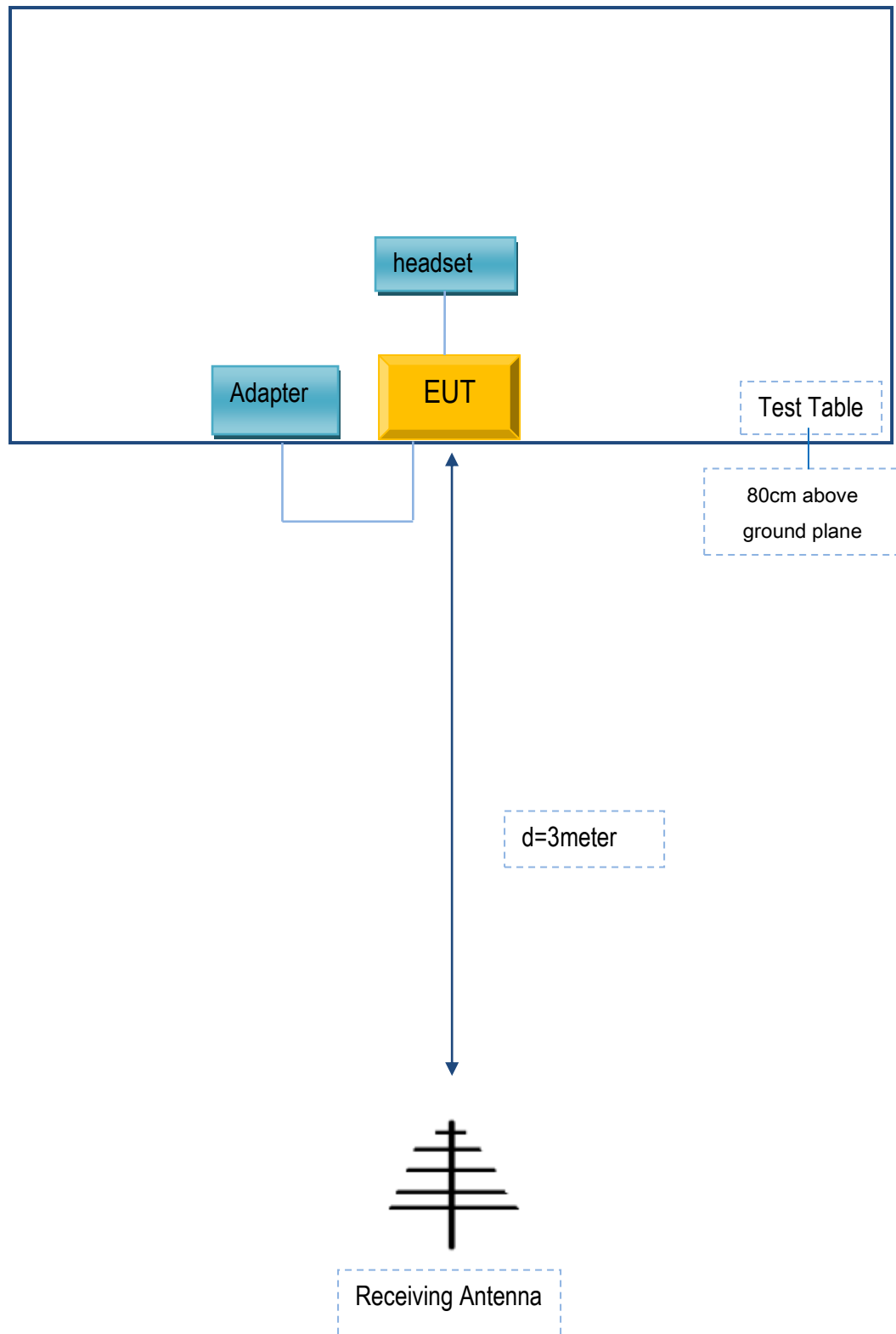
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

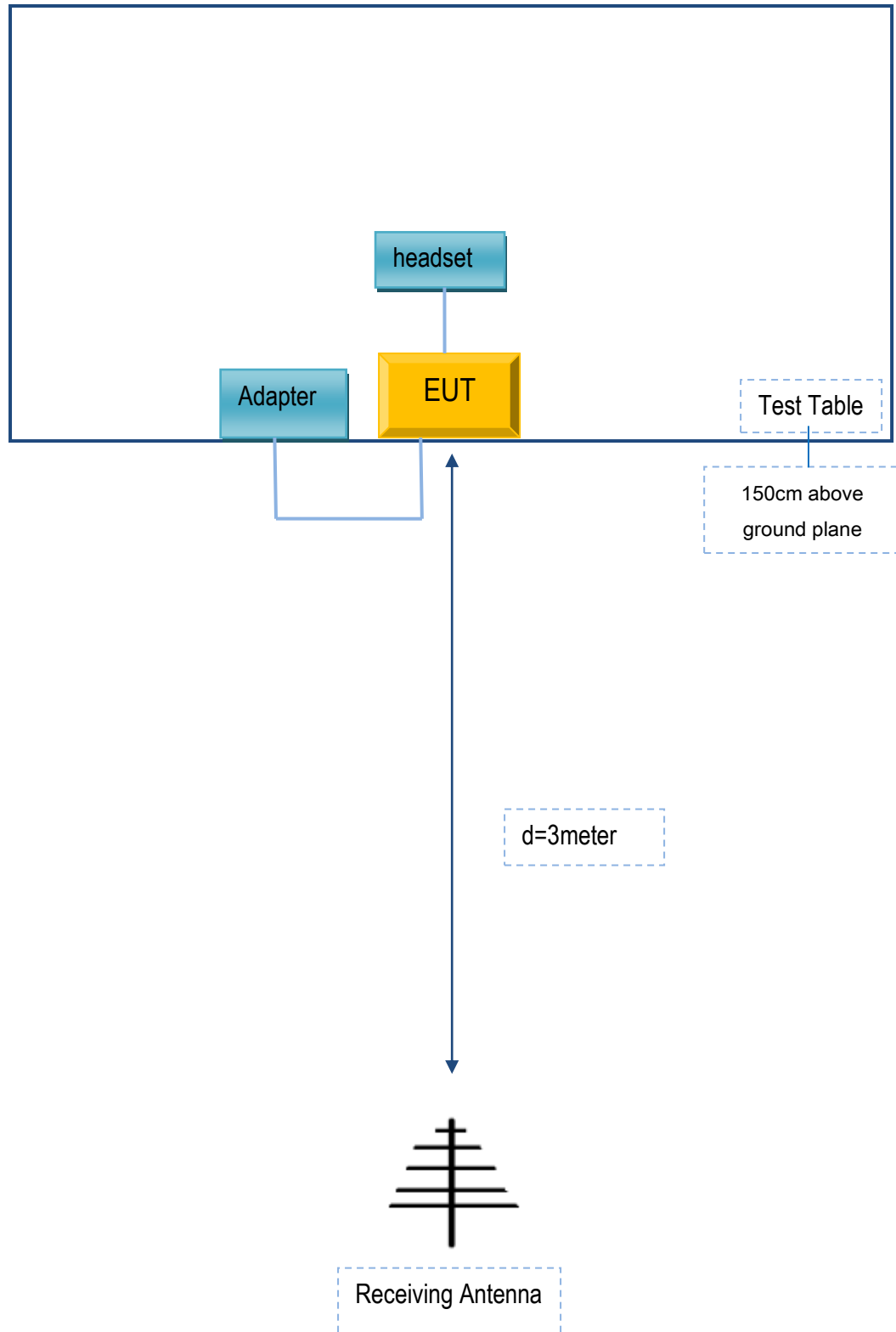
Block Configuration Diagram for AC Line Conducted Emissions



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



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



Annex C. 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
Mobiwire Mobiles (Ningbo) Co.,Ltd	Adapter	S005UA0500100	N/A
Mobiwire Mobiles (Ningbo) Co.,Ltd	headset	N552	N/A

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
Power Cable	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