EMC TEST REPORT

Report No.: 17070667-FCC-E V1

Supersede Report No: N/A

Applicant	MOBIWIRE MOBILES (NINGBO) CO.,LTD
Product Name	4G Smartphone
Model No.	N504
Serial No.	N/A
Test Standard	FCC Part 15 Subpart B Class B:2016, ANSI C63.4: 2014
Test Date	August 11 to September 05, 2017
Issue Date	September 13, 2017
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Evans He	David Huang	
Evans He 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

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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
17070667-FCC-E	NONE	Original	September 06, 2017
17070667-FCC-E V1	V1	Updating the EUT photos	September 13, 2017

2. Customer information

Applicant Name	MOBIWIRE MOBILES (NINGBO) CO.,LTD
Applicant Add	No.999,Dacheng East Road,Fenghua,Zhejiang,China
Manufacturer	Mobiwire Mobiles (Ningbo) Co.,Ltd
Manufacturer Add	Mobiwire Mobiles,No. 999 Dacheng East Road Fenghua,Zhejiang China

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:	4G Smartphone
Main Model:	N504
Serial Model:	N/A
Antenna Gain:	GSM850: -3dBi PCS1900: -1dBi UMTS-FDD Band V: -3dBi UMTS-FDD Band II: -0.5dBi LTE Band IV: -1dBi WIFI: 0dBi Bluetooth/BLE: 0dBi GPS: 0dBi
Antenna Type:	PIFA Antenna
Input Power:	Adapter: Model: S005UA0500100 Input: AC100-240V~50/60Hz,150mA Output: DC 5.0V,1000mA Battery: Spec: 3.8V, 8.17Wh, 2150mAh
Equipment Category：	JBP
Type of Modulation:	GSM / GPRS: GMSK EGPRS: GMSK,8PSK UMTS-FDD: QPSK LTE Band: QPSK, 16QAM 802.11b/g/n: DSSS, OFDM Bluetooth: GFSK, π /4DQPSK, 8DPSK BLE: GFSK GPS: BPSK

RF Operating Frequency (ies):	GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz UMTS-FDD Band II TX:1852.4 ~ 1907.6 MHz; RX: 1932.4 ~ 1987.6 MHz LTE Band IV TX: 1710.7 ~ 1754.3 MHz; RX : 2110.7 ~ 2154.3 MHz WIFI: 802.11b/g/n(20M): 2412-2462 MHz WIFI: 802.11n(40M): 2422-2452 MHz Bluetooth& BLE: 2402-2480 MHz GPS: 1575.42 MHz
Number of Channels:	GSM 850: 124CH PCS1900: 299CH UMTS-FDD Band V : 102CH UMTS-FDD Band II : 277CH WIFI :802.11b/g/n(20M): 11CH WIFI :802.11n(40M): 7CH Bluetooth: 79CH BLE: 40CH GPS:1CH
Port:	USB Port, Earphone Port
Trade Name :	NOBLEX
FCC ID:	2ADA4N504
Date EUT received:	August 10, 2017
Test Date(s):	August 11 to September 05, 2017

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

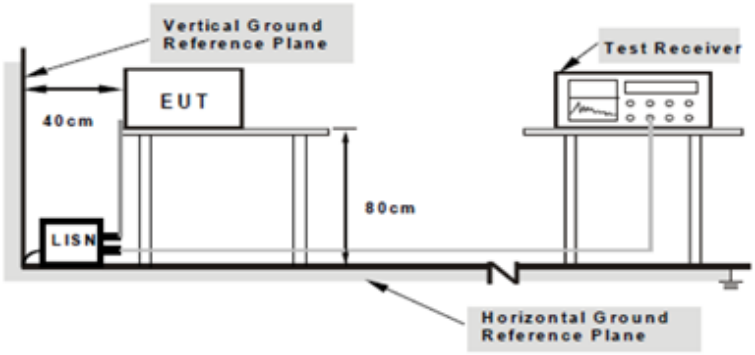
Parameter	Uncertainty
AC Power Line Conducted Emissions (150kHz~30MHz)	±3.11dB
Radiated Emission(30MHz~1GHz)	±5.12dB
Radiated Emission(1GHz~6GHz)	±5.34dB

6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	27℃
Relative Humidity	55%
Atmospheric Pressure	1023mbar
Test date :	August 22, 2017
Tested By :	Evans He

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.107</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"> 

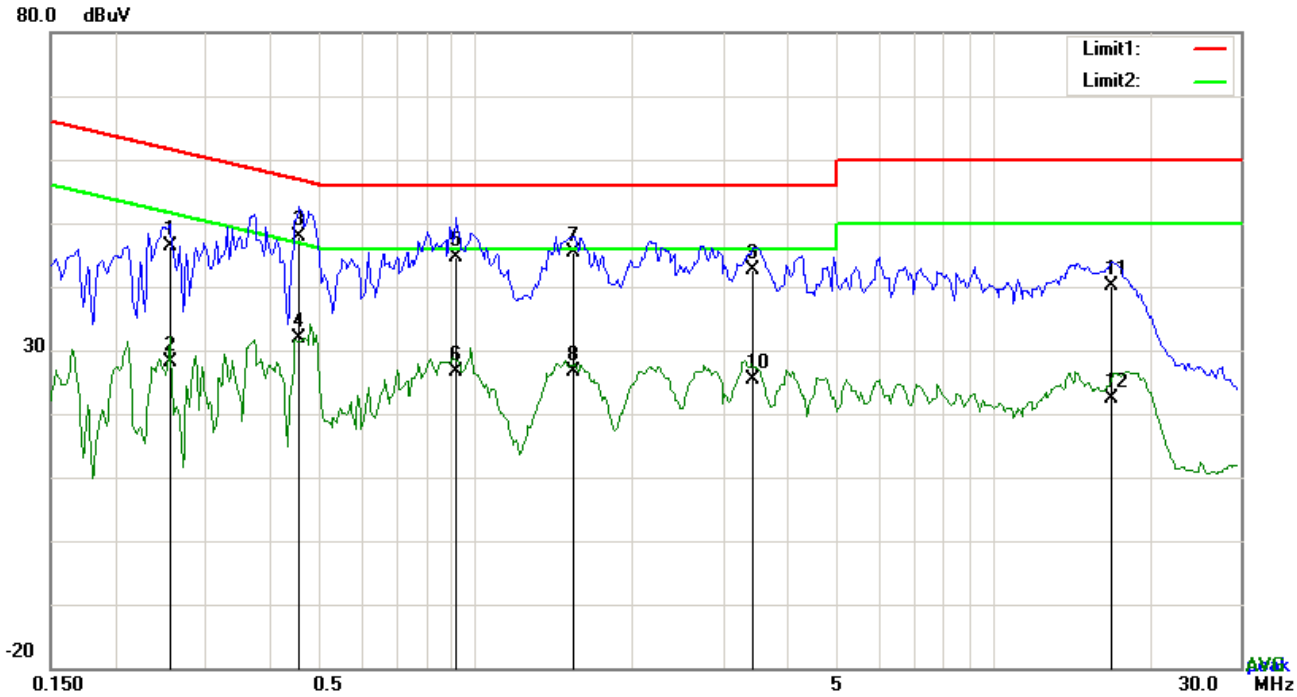
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT and supporting equipment were set up in accordance with the requirements of 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 50Ω /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 :	USB Mode

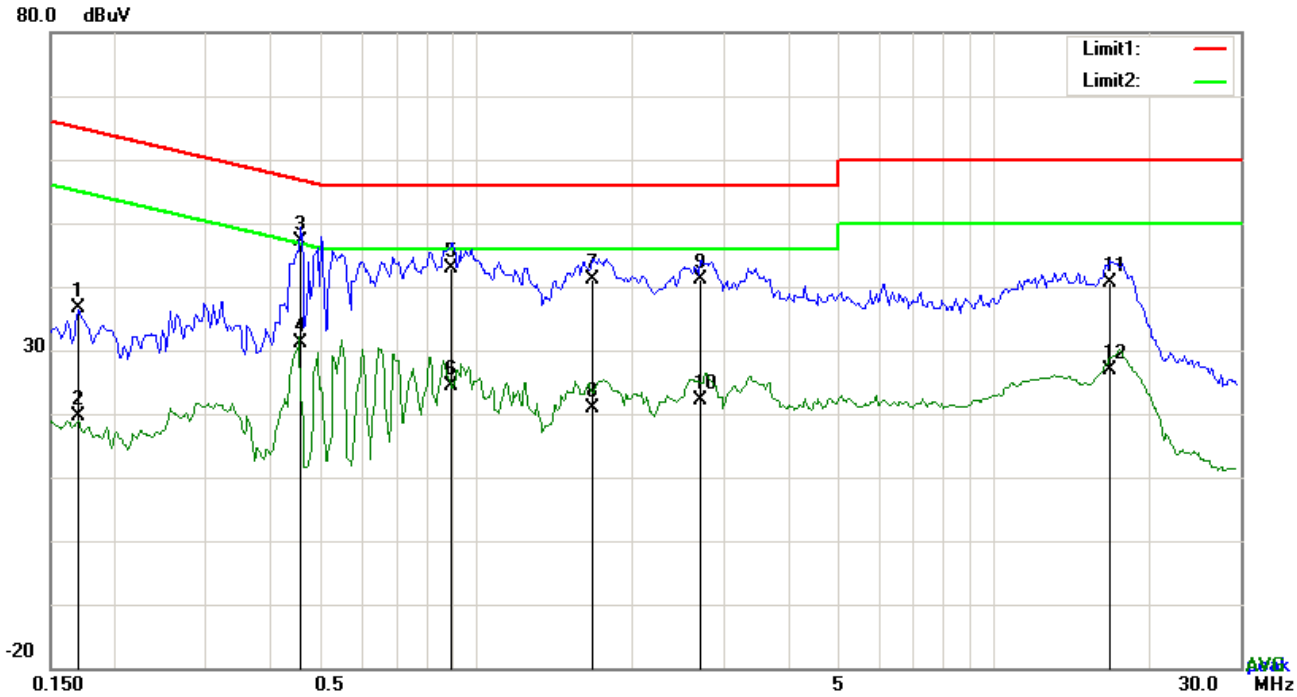


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.2553	36.37	QP	10.02	46.39	61.58	-15.19
2	L1	0.2553	18.02	AVG	10.02	28.04	51.58	-23.54
3	L1	0.4542	37.79	QP	10.02	47.81	56.80	-8.99
4	L1	0.4542	21.84	AVG	10.02	31.86	46.80	-14.94
5	L1	0.9105	34.70	QP	10.03	44.73	56.00	-11.27
6	L1	0.9105	16.48	AVG	10.03	26.51	46.00	-19.49
7	L1	1.5384	35.41	QP	10.04	45.45	56.00	-10.55
8	L1	1.5384	16.64	AVG	10.04	26.68	46.00	-19.32
9	L1	3.4251	32.57	QP	10.05	42.62	56.00	-13.38
10	L1	3.4251	15.43	AVG	10.05	25.48	46.00	-20.52
11	L1	16.9152	29.87	QP	10.22	40.09	60.00	-19.91
12	L1	16.9152	12.15	AVG	10.22	22.37	50.00	-27.63

Test Mode:	USB Mode

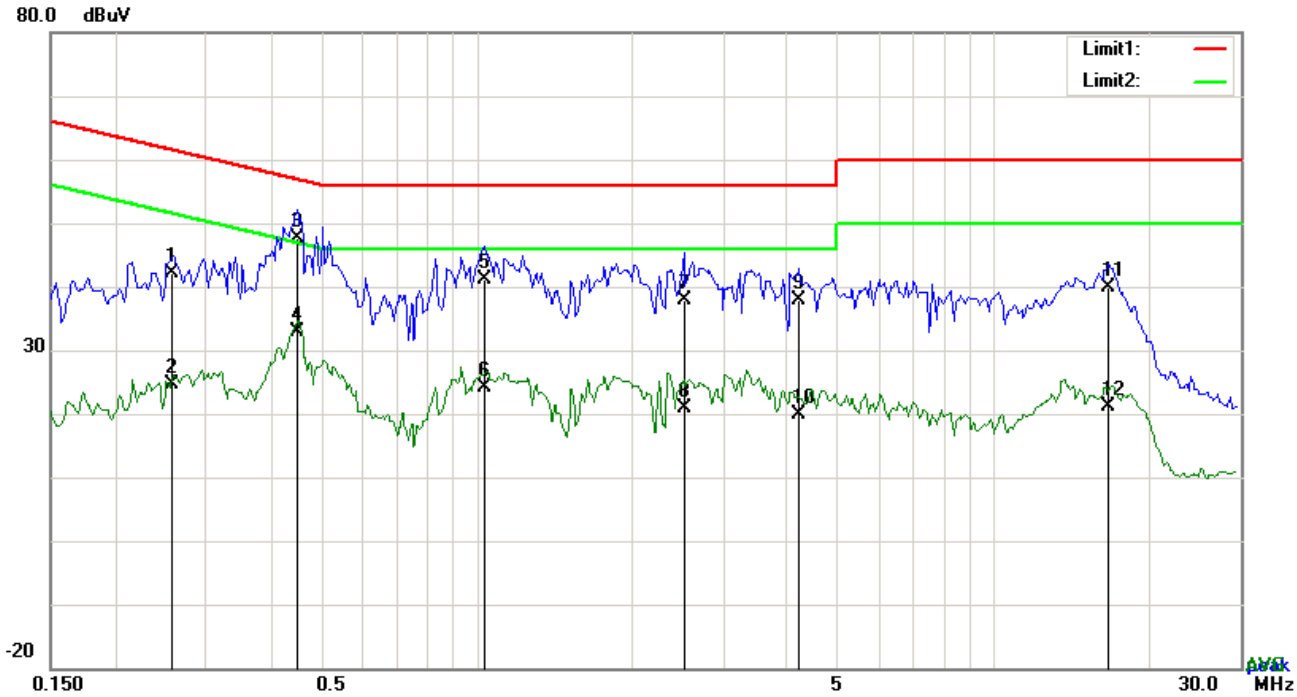


Test Data

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	26.63	QP	10.02	36.65	64.98	-28.33
2	N	0.1695	9.73	AVG	10.02	19.75	54.98	-35.23
3	N	0.4581	37.17	QP	10.02	47.19	56.73	-9.54
4	N	0.4581	21.20	AVG	10.02	31.22	46.73	-15.51
5	N	0.8988	32.85	QP	10.03	42.88	56.00	-13.12
6	N	0.8988	14.26	AVG	10.03	24.29	46.00	-21.71
7	N	1.6788	31.05	QP	10.04	41.09	56.00	-14.91
8	N	1.6788	10.91	AVG	10.04	20.95	46.00	-25.05
9	N	2.7201	31.16	QP	10.05	41.21	56.00	-14.79
10	N	2.7201	12.02	AVG	10.05	22.07	46.00	-23.93
11	N	16.7982	30.29	QP	10.22	40.51	60.00	-19.49
12	N	16.7982	16.73	AVG	10.22	26.95	50.00	-23.05

Test Mode :	USB Mode

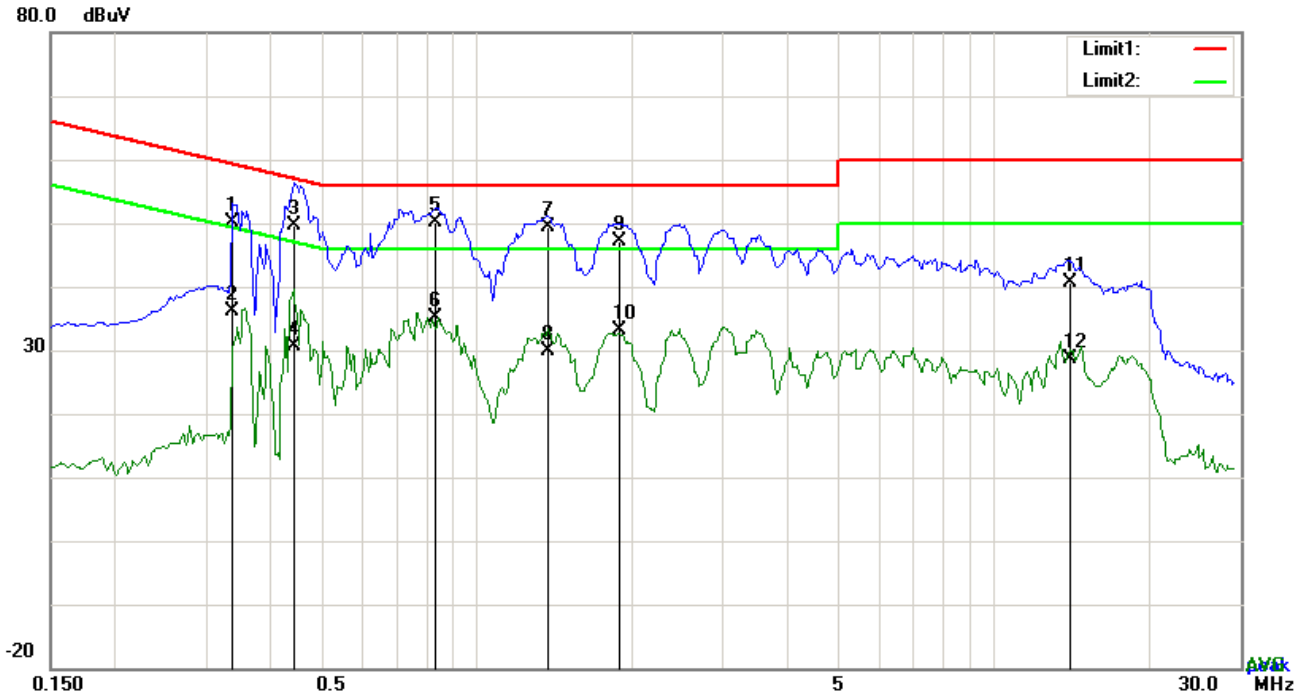


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.2575	32.11	QP	10.03	42.14	61.51	-19.37
2	L1	0.2575	14.65	AVG	10.03	24.68	51.51	-26.83
3	L1	0.4503	37.68	QP	10.03	47.71	56.87	-9.16
4	L1	0.4503	22.81	AVG	10.03	32.84	46.87	-14.03
5	L1	1.0353	31.15	QP	10.03	41.18	56.00	-14.82
6	L1	1.0353	13.98	AVG	10.03	24.01	46.00	-21.99
7	L1	2.5134	27.77	QP	10.05	37.82	56.00	-18.18
8	L1	2.5134	10.79	AVG	10.05	20.84	46.00	-25.16
9	L1	4.2129	27.91	QP	10.07	37.98	56.00	-18.02
10	L1	4.2129	9.87	AVG	10.07	19.94	46.00	-26.06
11	L1	16.7046	29.62	QP	10.25	39.87	60.00	-20.13
12	L1	16.7046	10.94	AVG	10.25	21.19	50.00	-28.81

Test Mode :	USB Mode



Test Data

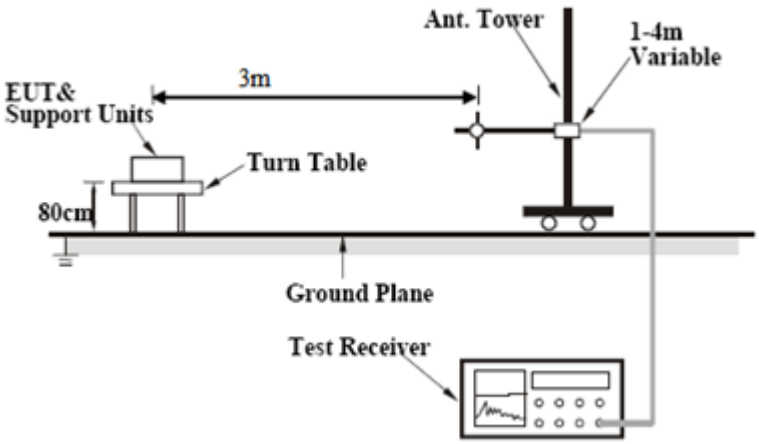
Phase Neutral Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.3372	40.20	QP	10.02	50.22	59.27	-9.05
2	N	0.3372	26.10	AVG	10.02	36.12	49.27	-13.15
3	N	0.4425	39.73	QP	10.02	49.75	57.01	-7.26
4	N	0.4425	20.73	AVG	10.02	30.75	47.01	-16.26
5	N	0.8325	40.07	QP	10.03	50.10	56.00	-5.90
6	N	0.8325	25.10	AVG	10.03	35.13	46.00	-10.87
7	N	1.3746	39.47	QP	10.03	49.50	56.00	-6.50
8	N	1.3746	19.80	AVG	10.03	29.83	46.00	-16.17
9	N	1.8894	37.04	QP	10.04	47.08	56.00	-8.92
10	N	1.8894	23.19	AVG	10.04	33.23	46.00	-12.77
11	N	13.9980	30.43	QP	10.19	40.62	60.00	-19.38
12	N	13.9980	18.35	AVG	10.19	28.54	50.00	-21.46

6.2 Radiated Emissions

Temperature	27℃
Relative Humidity	55%
Atmospheric Pressure	1023mbar
Test date :	August 22, 2017
Tested By :	Evans He

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.109(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>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>
<tr><td>Procedure</td><td colspan="3">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</td></tr>
</table>

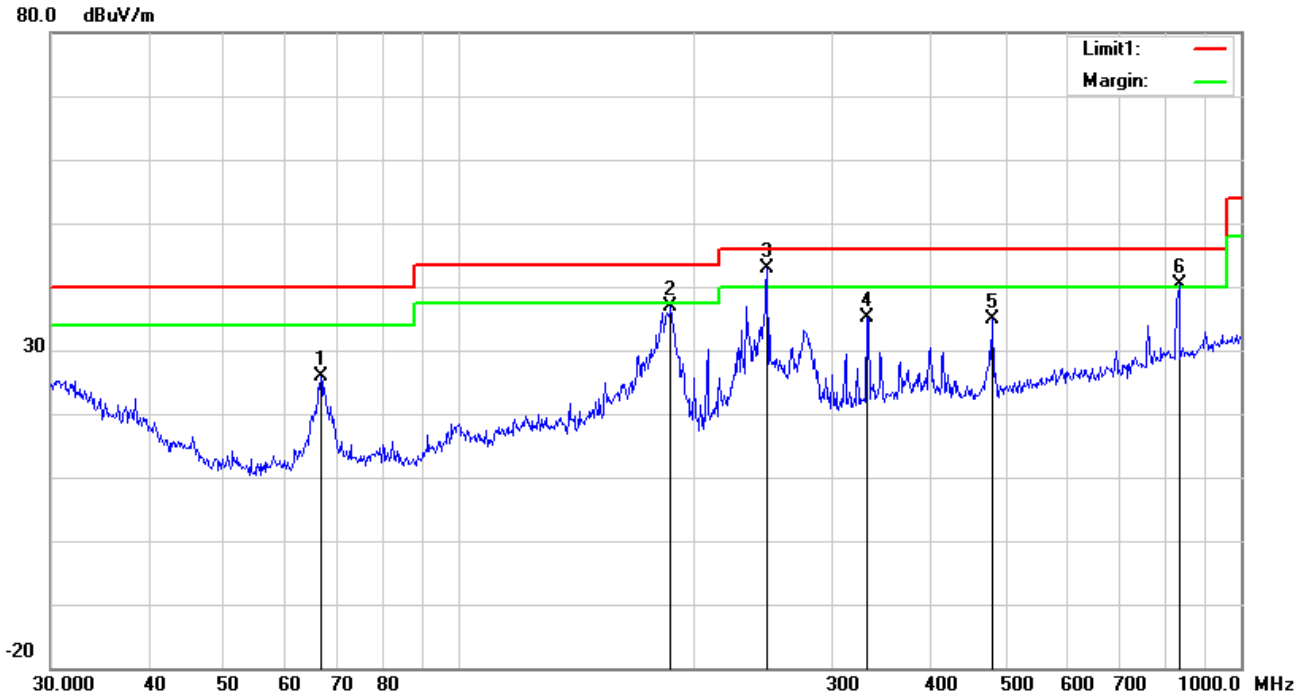
	over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 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 with Peak detection for Average Measurement as below at frequency above 1GHz. ■ 1 kHz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%) 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 Mode :	USB Mode

Below 1GHz

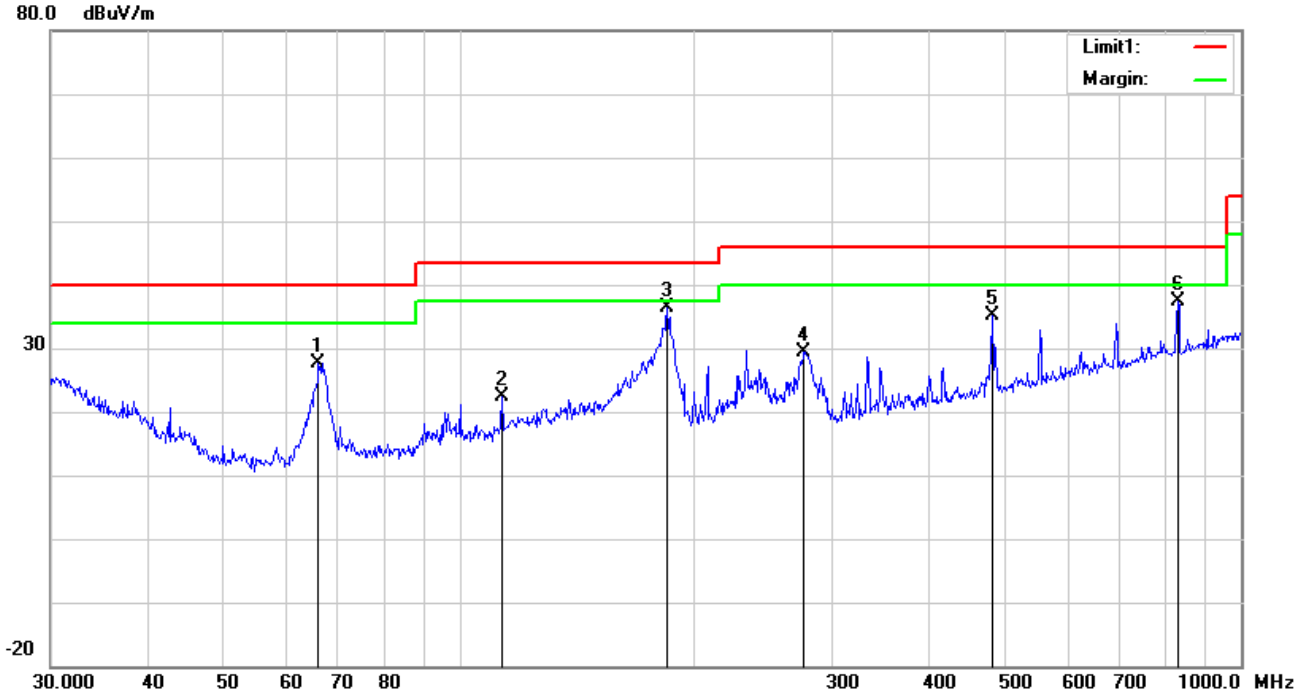


Test Data

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	66.4989	39.77	peak	7.62	22.39	0.91	25.91	40.00	-14.09	100	351
2	H	186.4409	46.33	peak	11.35	22.29	1.48	36.87	43.50	-6.63	100	198
3	H	247.6819	51.94	QP	11.43	22.29	1.69	42.77	46.00	-3.23	100	179
4	H	332.5187	41.15	peak	14.28	22.20	1.95	35.18	46.00	-10.82	100	149
5	H	480.5276	37.07	peak	17.31	21.85	2.31	34.84	46.00	-11.16	100	93
6	H	833.3171	36.87	QP	21.77	21.06	2.90	40.48	46.00	-5.52	100	149

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	66.0342	41.58	peak	7.60	22.39	0.90	27.69	40.00	-12.31	100	258
2	V	113.3163	30.94	peak	12.73	22.35	1.17	22.49	43.50	-21.01	100	341
3	V	184.4898	46.06	peak	11.25	22.28	1.44	36.47	43.50	-7.03	100	8
4	V	276.1236	37.48	peak	12.55	22.29	1.75	29.49	46.00	-16.51	100	156
5	V	480.5276	37.40	peak	17.31	21.85	2.31	35.17	46.00	-10.83	100	204
6	V	830.4002	33.75	peak	21.73	21.07	2.91	37.32	46.00	-8.68	100	58

Above 1GHz

Frequency (MHz)	Read_level (dBμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Level (dBμV/m)	Factors (dB)	Limit (dBμV/m)	Margin (dB)	Detector (PK/AV)
1245.9	67.77	115	100	V	-19.65	48.12	74	-25.88	PK
1526.4	65.18	134	100	V	-18.21	46.97	74	-27.03	PK
2017.8	58.15	92	100	V	-14.9	43.25	74	-30.75	PK
1432.6	64.14	75	100	H	-18.95	45.19	74	-28.81	PK
1729.5	64.11	43	100	H	-16.76	47.35	74	-26.65	PK
2316.7	60.39	162	100	H	-14.17	46.22	74	-27.78	PK

*Note1: The highest frequency of the EUT is 2480 MHz, so the testing has been conformed to 5*2480MHz=12,400MHz.*

Note2: The frequency that above 3GHz is mainly from the environment noise.

Note3: The AV measurement performed, more than 20dB below limit so AV test data was not presented.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/16/2016	09/15/2017	☑
Line Impedance Stabilization Network	LI-125A	191106	09/24/2016	09/23/2017	☑
Line Impedance Stabilization Network	LI-125A	191107	09/24/2016	09/23/2017	☑
ISN	ISN T800	34373	09/24/2016	09/23/2017	☑
Transient Limiter	LIT-153	531118	08/31/2016	08/30/2017	☑
Radiated Emissions					
EMI test receiver	ESL6	100262	09/16/2016	09/15/2017	☑
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	☑
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/20/2016	09/19/2017	☑
Double Ridge Horn Antenna	AH-118	71259	09/23/2016	09/22/2017	☑

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

Whole Package View

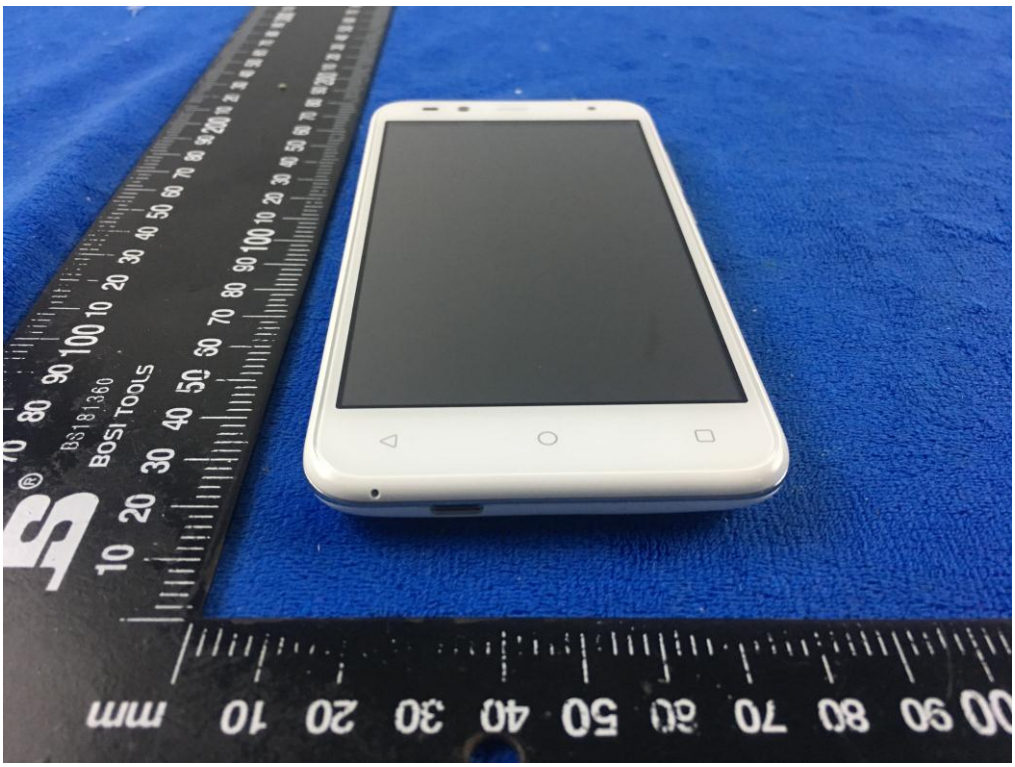
Adapter - Lable View

EUT - Front View

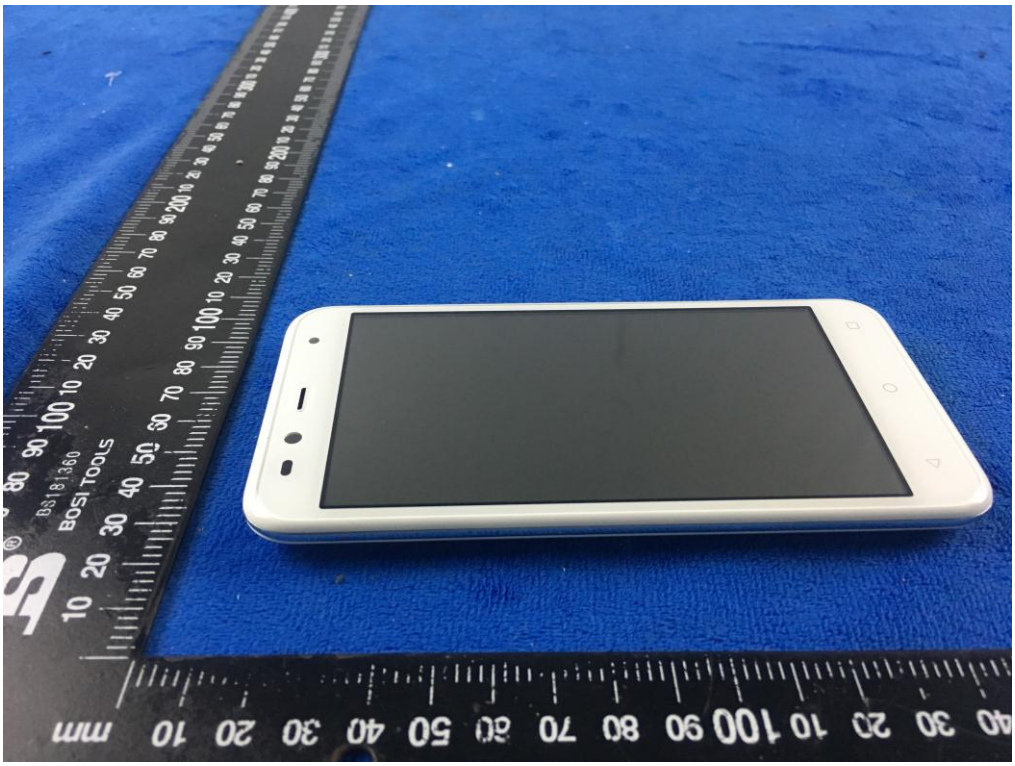
EUT - Rear View

EUT - Top View

EUT - Bottom View



EUT - Left View



EUT - Right View

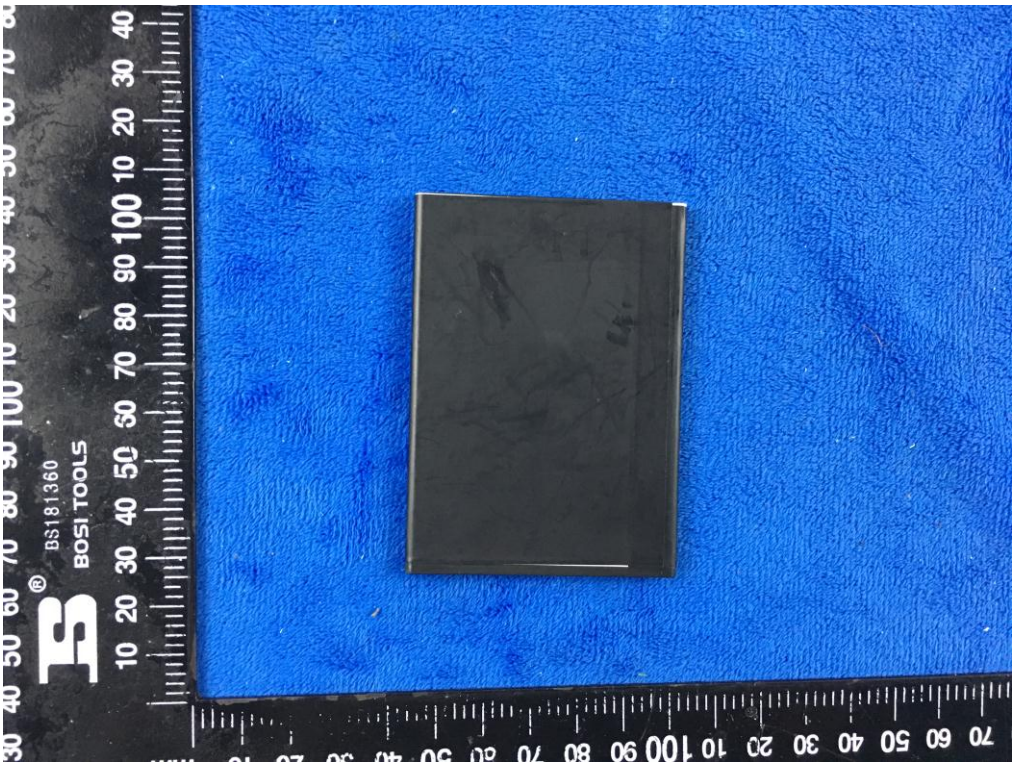
Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1

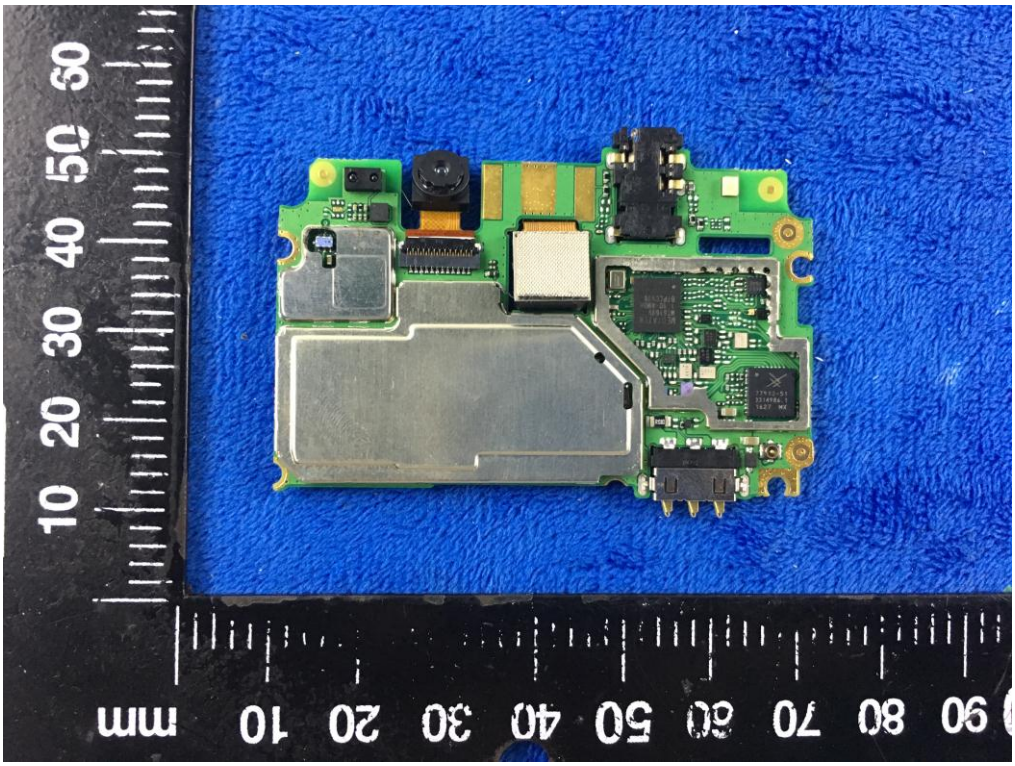
Cover Off - Top View 2

Battery - Front View

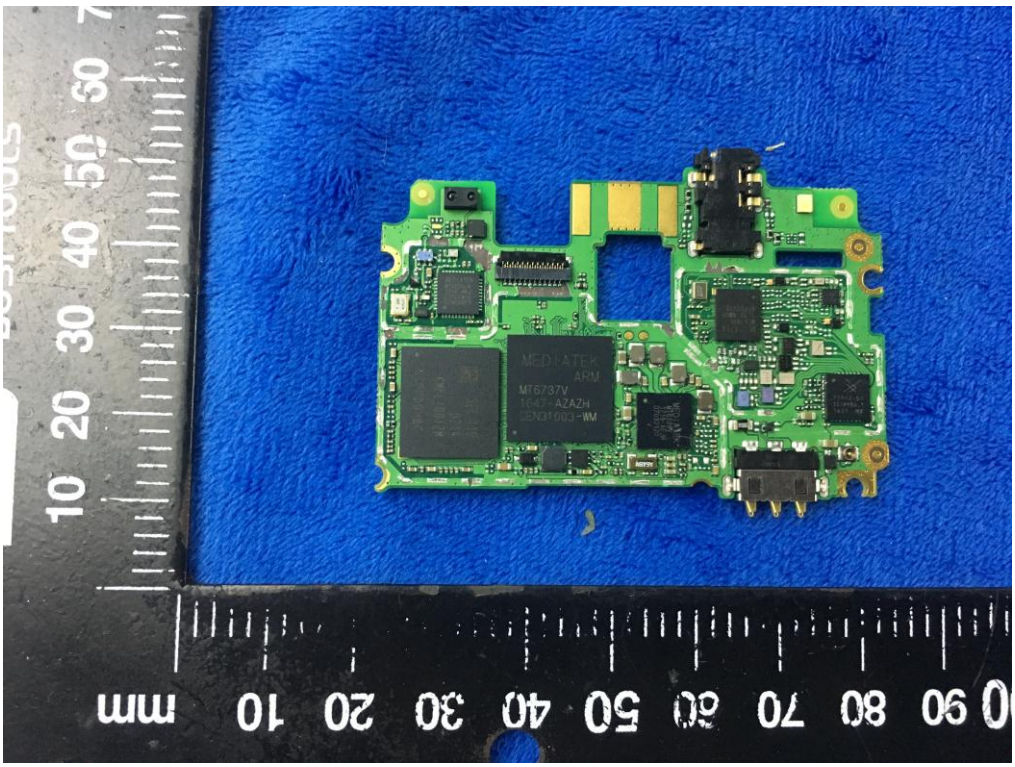
Battery - Rear View



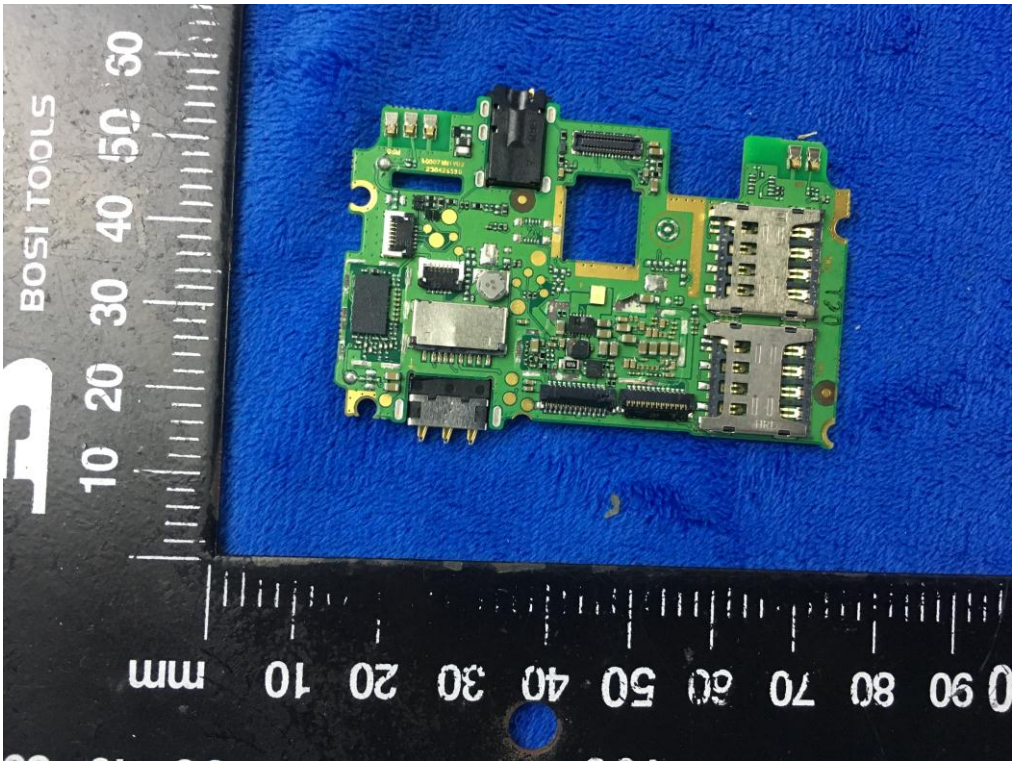
Mainboard with Shielding - Front View



Mainboard without Shielding - Front View



Mainboard – Rear View

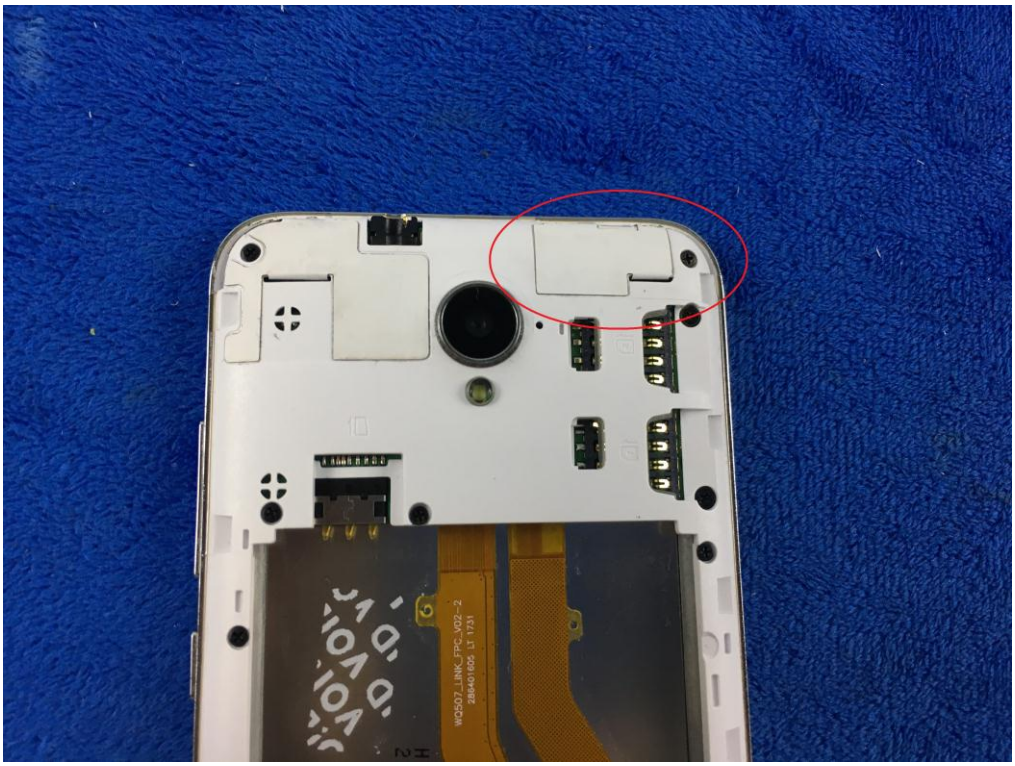


LCD – Front View

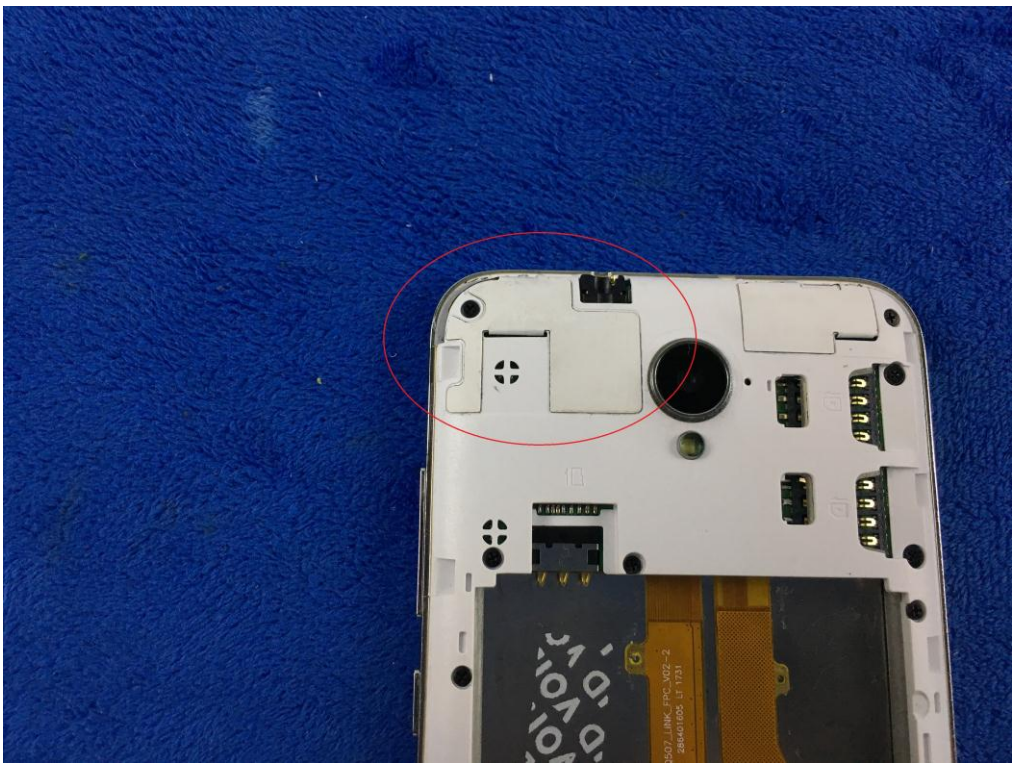
LCD – Rear View

GSM/PCS/UMTS-FDD Antenna View

WIFI/BT/BLE/GPS - Antenna View



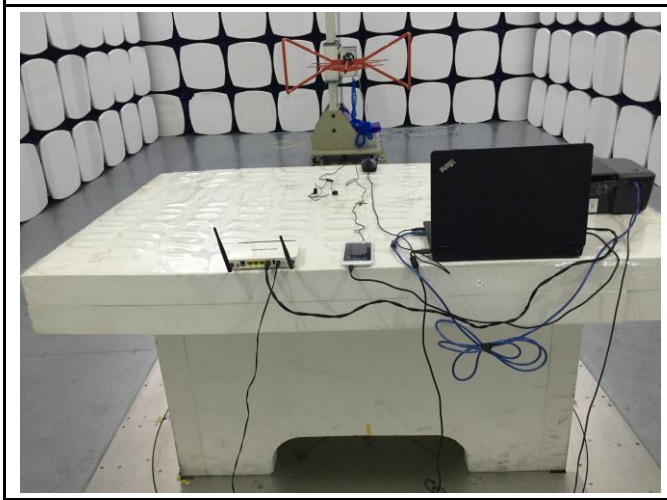
LTE - Antenna View



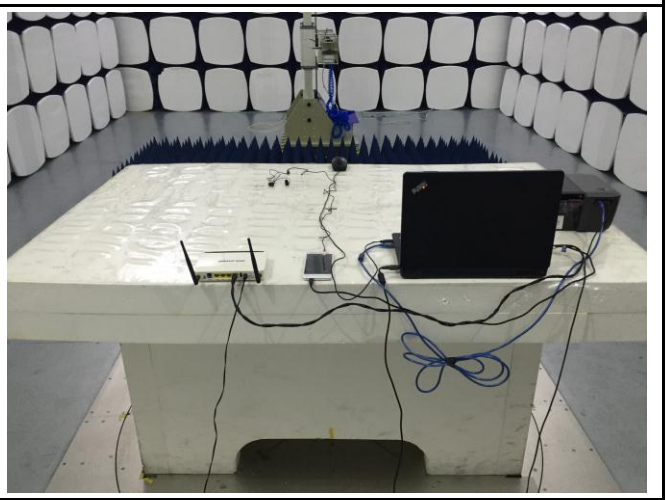
Annex B.iii. Photograph: Test Setup Photo

Conducted Emissions Test Setup – Front View

Conducted Emissions Test Setup – Side View



Radiated Emissions Test Setup Below 1GHz

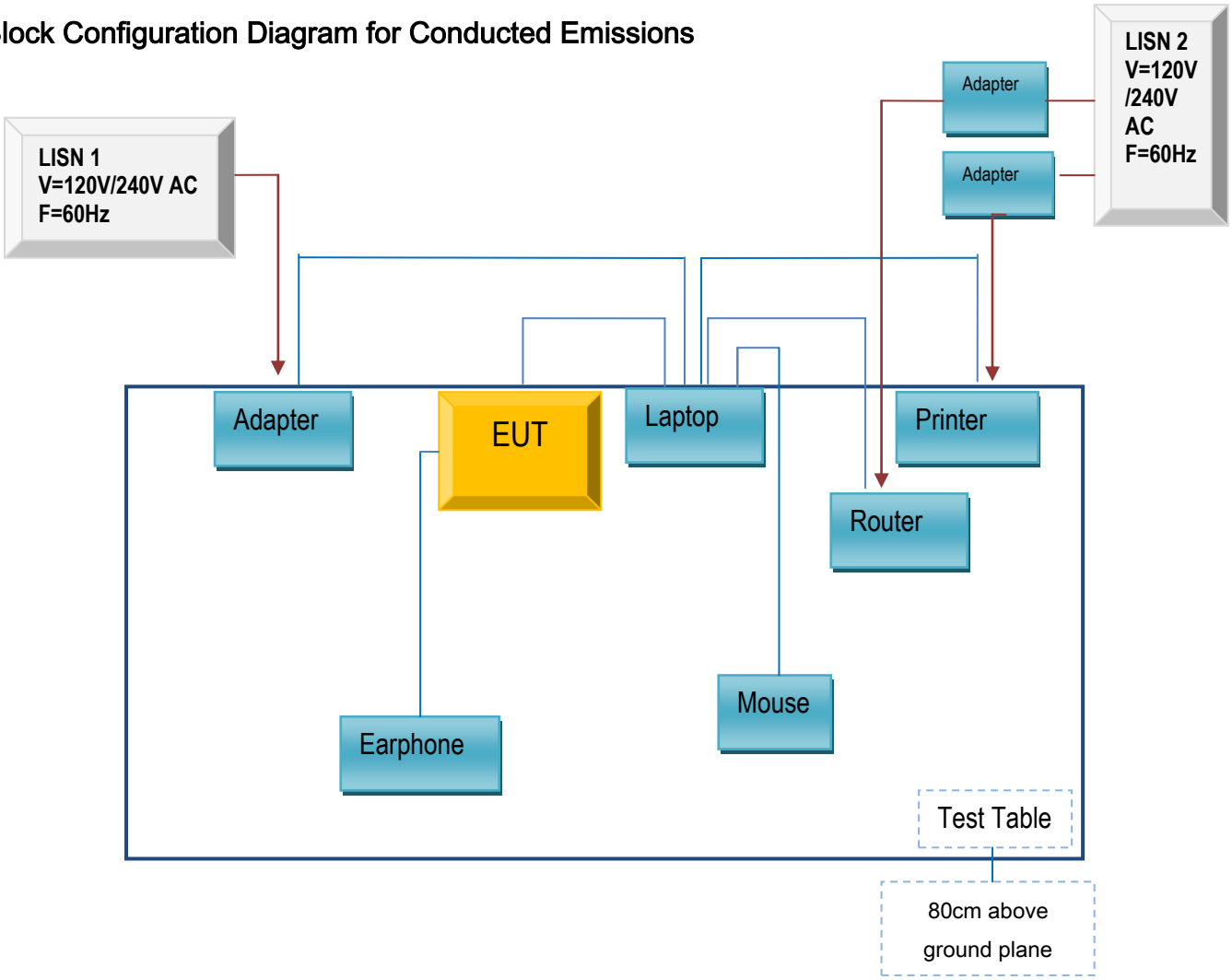


Radiated Emissions Test Setup Above 1GHz

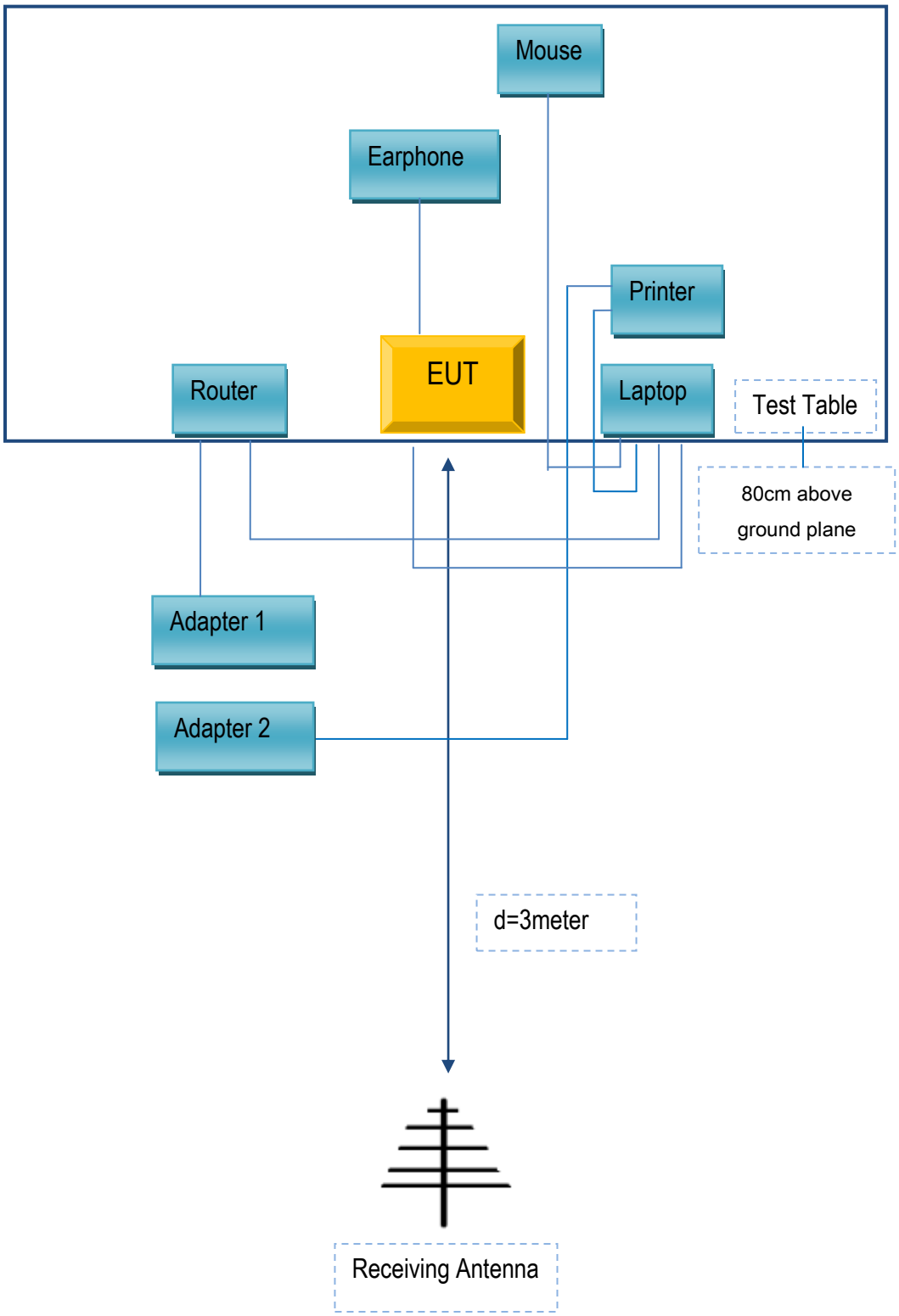
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C. 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
GOLDWEB	Router	R102	1202032094
Lenovo	AC Adapter	42T4416	21D9JU
HP	Printer	VCVRA-1003	CN36M19JWX
DELL	Mouse	E100	912NMTUT41481
BULL	Socket	GN-403	GN201203
MOBIWIRE MOBILES (NINGBO) CO.,LTD	Earphone	N504	N/A

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	2m	JX120051274
USB Cable	Un-shielding	No	2m	CBA3000AH0C1
RJ45 Cable	Un-shielding	No	2m	KX156327541
Router Power cable	Un-shielding	No	2m	13274630Z
Printer Power cable	Un-shielding	No	2m	127581031
Power Cable	Un-shielding	No	0.8m	GT211032

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

Please see the attachment

Annex E. DECLARATION OF SIMILARITY

N/A