

EMC TEST REPORT



Report No.: 16050006-FCC-E

Supersede Report No.:N/A

Applicant	b mobile HK Limited	
Product Name	Mobile Phone	
Model No.	W170+	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2015, ANSI C63.4: 2014	
Test Date	February 16 to March 02 , 2016	
Issue Date	March 02, 2016	
Test Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	
Equipment complied with the specification <input checked="" type="checkbox"/>		
Equipment did not comply with the specification <input type="checkbox"/>		
<i>Winnie Zhang</i>	<i>David Huang</i>	
Winnie Zhang Test Engineer	David Huang Checked By	
This test report may be reproduced in full only 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

Test Report	16050006-FCC-E
Page	3 of 30

This page has been left blank intentionally.

CONTENTS

1. REPORT REVISION HISTORY	5
2. CUSTOMER INFORMATION	5
3. TEST SITE INFORMATION	5
4. EQUIPMENT UNDER TEST (EUT) INFORMATION	6
5. TEST SUMMARY	8
6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	9
6.1 AC POWER LINE CONDUCTED EMISSIONS	9
6.2 RADIATED EMISSIONS	15
ANNEX A. TEST INSTRUMENT	20
ANNEX B. EUT AND TEST SETUP PHOTOGRAPHS	21
ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT	26
ANNEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST	29
ANNEX E. DECLARATION OF SIMILARITY	30

1. Report Revision History

Report No.	Report Version	Description	Issue Date
16050006-FCC-E	NONE	Original	March 02, 2016

2. Customer information

Applicant Name	b mobile HK Limited
Applicant Add	Flat 18; 14/F Block 1; Golden Industrial Building;16-26 Kwai Tak Street; Kwai Chung;New Territories; Hong Kong
Manufacturer	b mobile HK Limited
Manufacturer Add	Flat 18; 14/F Block 1; Golden Industrial Building;16-26 Kwai Tak Street; Kwai Chung;New Territories; Hong Kong

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.	718246
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

4. Equipment under Test (EUT) Information

Description of EUT:	Mobile Phone
Main Model:	W170+
Serial Model:	N/A
Antenna Gain:	GSM850: 0.6dBi PCS1900: 0.8dBi UMTS-FDD Band V: 1.0dBi UMTS-FDD Band II:1.0dBi Bluetooth: 0.8 dBi
Input Power:	Adapter: Model:N/A Input: AC 100-240V; 50/60Hz;0.15A Output: DC 5.0V,500mA Battery: Model: W170+ Capacity: DC3.7V,1000mAh,3.7Wh
Equipment Category :	JBP
Type of Modulation:	GSM / GPRS: GMSK EGPRS: GMSK,8PSK UMTS-FDD: QPSK, 16QAM Bluetooth: GFSK, π /4DQPSK, 8DPSK
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 Bluetooth: 2402-2480 MHz

	GSM 850: 124CH
	PCS1900: 299CH
Number of Channels:	UMTS-FDD Band V : 102CH
	UMTS-FDD Band II : 277CH
	Bluetooth: 79CH
Port:	Power Port, Earphone Port, USB Port
Trade Name :	Bmobile
FCC ID:	ZSW-10-005
Date EUT received:	February 15 , 2016
Test Date(s):	February 16 to March 02 , 2016

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


Emissions		
Test Item	Description	Uncertainty
Band Edge and Radiated Spurious 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
-	-	-

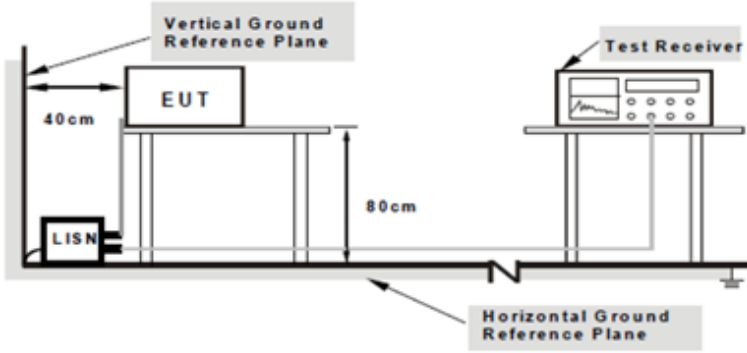
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	22°C
Relative Humidity	59%
Atmospheric Pressure	1017mbar
Test date :	February 17, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable														
47CFR§15.107	a)	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>	Frequency ranges (MHz)	Limit (dBµV)		QP	Average	0.15 ~ 0.5	66 – 56	56 – 46	0.5 ~ 5	56	46	5 ~ 30	60	50	
Frequency ranges (MHz)	Limit (dBµV)																
	QP	Average															
0.15 ~ 0.5	66 – 56	56 – 46															
0.5 ~ 5	56	46															
5 ~ 30	60	50															

Test Setup	 <p>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.</p>
------------	---

Procedure	<ol style="list-style-type: none"> 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. The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.
-----------	--

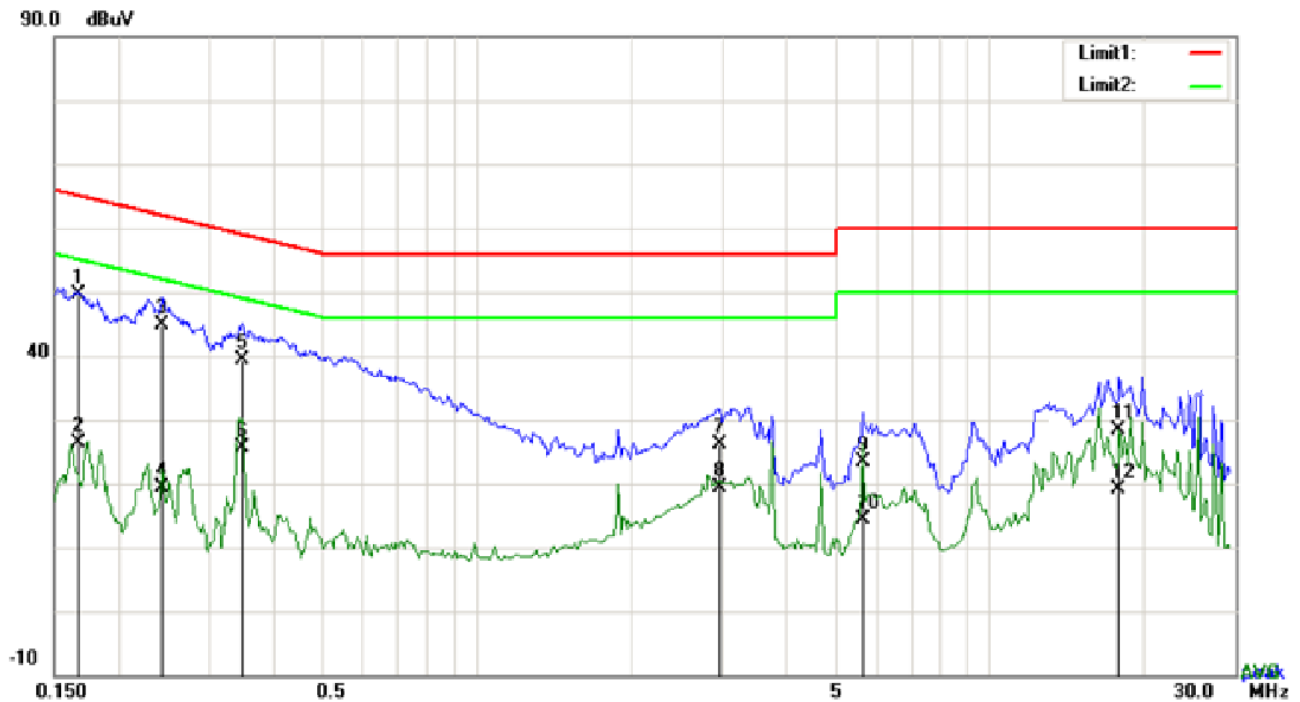
Test Report	16050006-FCC-E
Page	10 of 30

	<p>3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.</p> <p>4. All other supporting equipment were powered separately from another main supply.</p> <p>5. The EUT was switched on and allowed to warm up to its normal operating condition.</p> <p>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.</p> <p>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.</p> <p>8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).</p>
Remark	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Mode : USB Mode

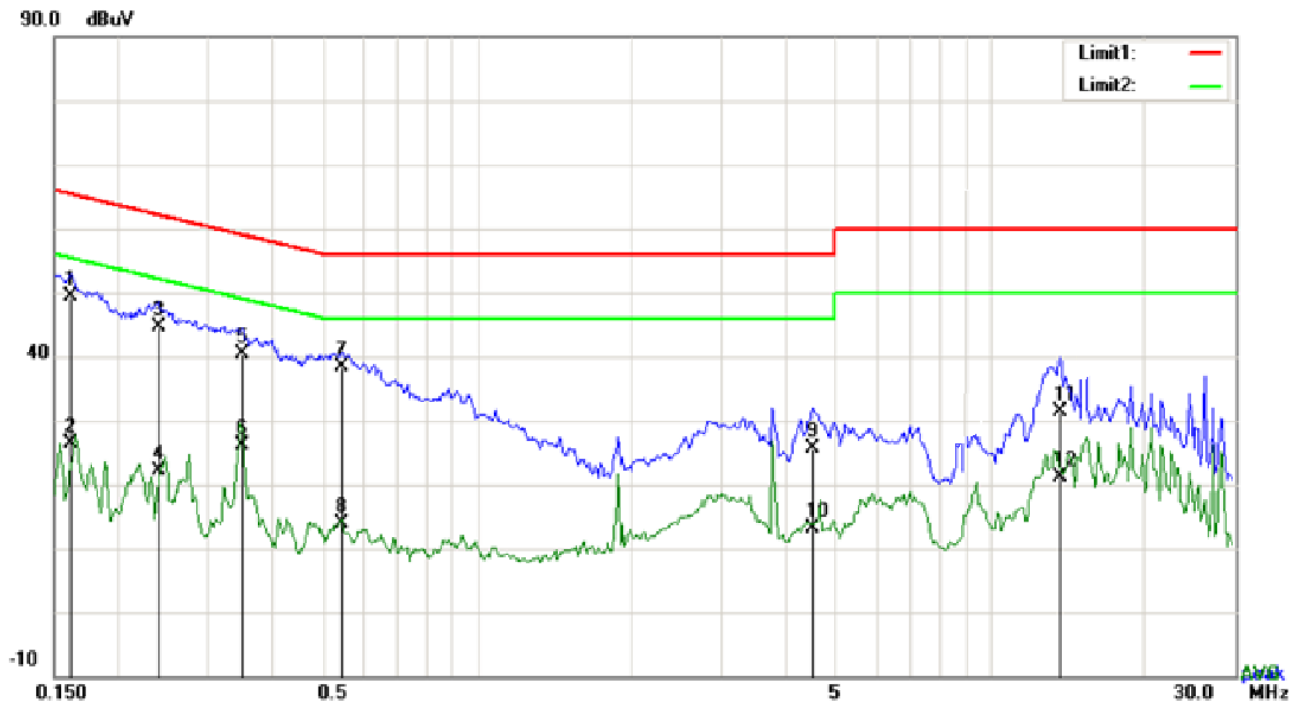


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.1668	36.61	QP	13.14	49.75	65.12	-15.37
2	L1	0.1668	13.18	AVG	13.14	26.32	55.12	-28.80
3	L1	0.2436	32.05	QP	12.85	44.90	61.97	-17.07
4	L1	0.2436	6.57	AVG	12.85	19.42	51.97	-32.55
5	L1	0.3489	26.92	QP	12.46	39.38	58.99	-19.61
6	L1	0.3489	13.24	AVG	12.46	25.70	48.99	-23.29
7	L1	2.9619	14.65	QP	11.40	26.05	56.00	-29.95
8	L1	2.9619	7.95	AVG	11.40	19.35	46.00	-26.65
9	L1	5.6247	11.85	QP	11.62	23.47	60.00	-36.53
10	L1	5.6247	2.88	AVG	11.62	14.50	50.00	-35.50
11	L1	17.8200	13.68	QP	14.69	28.37	60.00	-31.63
12	L1	17.8200	4.38	AVG	14.69	19.07	50.00	-30.93

Test Mode : USB Mode

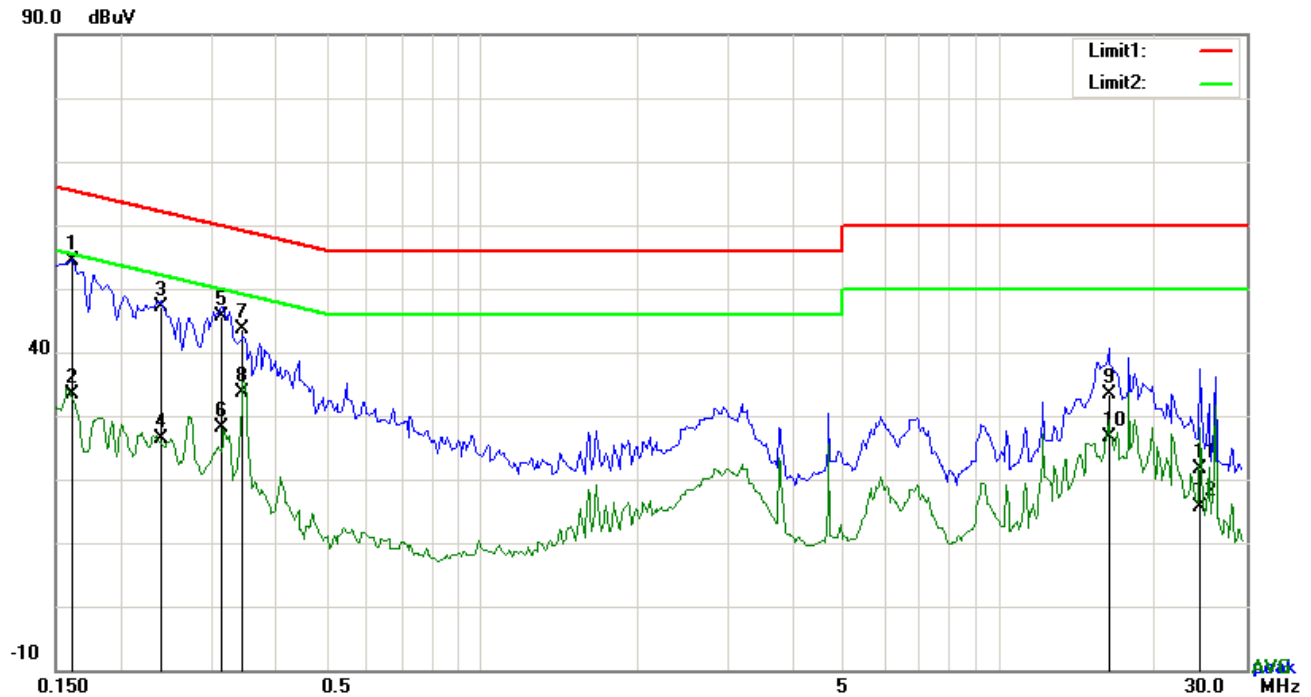


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1617	36.15	QP	13.16	49.31	65.38	-16.07
2	N	0.1617	13.17	AVG	13.16	26.33	55.38	-29.05
3	N	0.2397	31.72	QP	12.87	44.59	62.11	-17.52
4	N	0.2397	9.15	AVG	12.87	22.02	52.11	-30.09
5	N	0.3489	27.88	QP	12.46	40.34	58.99	-18.65
6	N	0.3489	13.59	AVG	12.46	26.05	48.99	-22.94
7	N	0.5439	26.53	QP	11.86	38.39	56.00	-17.61
8	N	0.5439	2.09	AVG	11.86	13.95	46.00	-32.05
9	N	4.5093	13.67	QP	11.84	25.51	56.00	-30.49
10	N	4.5093	1.37	AVG	11.84	13.21	46.00	-32.79
11	N	13.6509	17.37	QP	13.89	31.26	60.00	-28.74
12	N	13.6509	7.18	AVG	13.89	21.07	50.00	-28.93

Test Mode : USB Mode

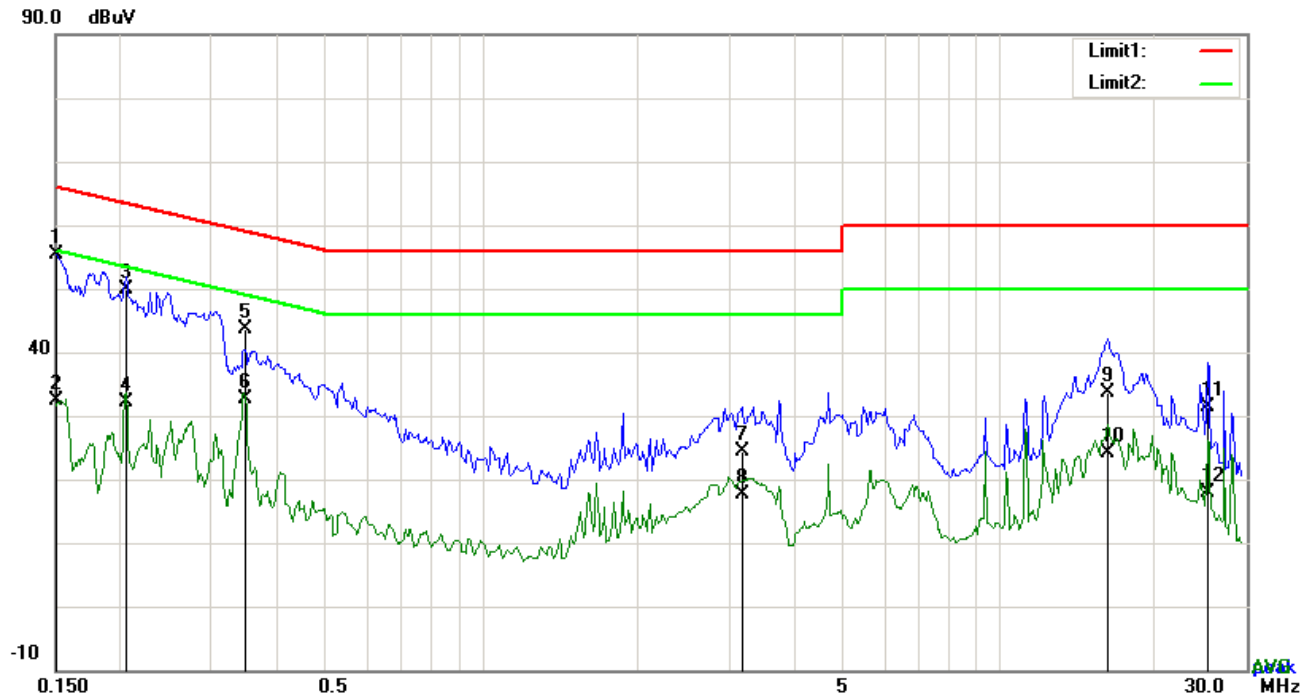


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1617	41.21	QP	13.16	54.37	65.38	-11.01
2	L1	0.1617	20.14	AVG	13.16	33.30	55.38	-22.08
3	L1	0.2397	34.23	QP	12.87	47.10	62.11	-15.01
4	L1	0.2397	13.55	AVG	12.87	26.42	52.11	-25.69
5	L1	0.3138	33.00	QP	12.59	45.59	59.87	-14.28
6	L1	0.3138	15.62	AVG	12.59	28.21	49.87	-21.66
7	L1	0.3450	31.14	QP	12.48	43.62	59.08	-15.46
8	L1	0.3450	21.18	AVG	12.48	33.66	49.08	-15.42
9	L1	16.2288	18.94	QP	14.38	33.32	60.00	-26.68
10	L1	16.2288	12.16	AVG	14.38	26.54	50.00	-23.46
11	L1	24.3995	7.15	QP	14.53	21.68	60.00	-38.32
12	L1	24.3995	1.16	AVG	14.53	15.69	50.00	-34.31

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	0.1500	42.28	QP	13.20	55.48	66.00	-10.52
2	N	0.1500	19.08	AVG	13.20	32.28	56.00	-23.72
3	N	0.2050	36.94	QP	13.00	49.94	63.41	-13.47
4	N	0.2050	19.17	AVG	13.00	32.17	53.41	-21.24
5	N	0.3489	31.08	QP	12.46	43.54	58.99	-15.45
6	N	0.3489	20.26	AVG	12.46	32.72	48.99	-16.27
7	N	3.1833	12.64	QP	11.67	24.31	56.00	-31.69
8	N	3.1833	5.94	AVG	11.67	17.61	46.00	-28.39
9	N	16.1430	19.38	QP	14.37	33.75	60.00	-26.25
10	N	16.1430	9.87	AVG	14.37	24.24	50.00	-25.76
11	N	25.3119	14.22	QP	17.12	31.34	60.00	-28.66
12	N	25.3119	0.70	AVG	17.12	17.82	50.00	-32.18

6.2 Radiated Emissions

Temperature	23°C
Relative Humidity	51%
Atmospheric Pressure	1018mbar
Test date :	February 18, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable	
47CFR§15.109(d)	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	<div><input checked="" type="checkbox"/></div>	
		Frequency range (MHz)		Field Strength (µV/m)
		30 – 88		100
		88 – 216		150
		216 960		200
		Above 960		500

Test Setup	
------------	--

Procedure	<ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> Vertical or horizontal polarization (whichever gave the higher emission level
-----------	--

Test Report	16050006-FCC-E
Page	16 of 30

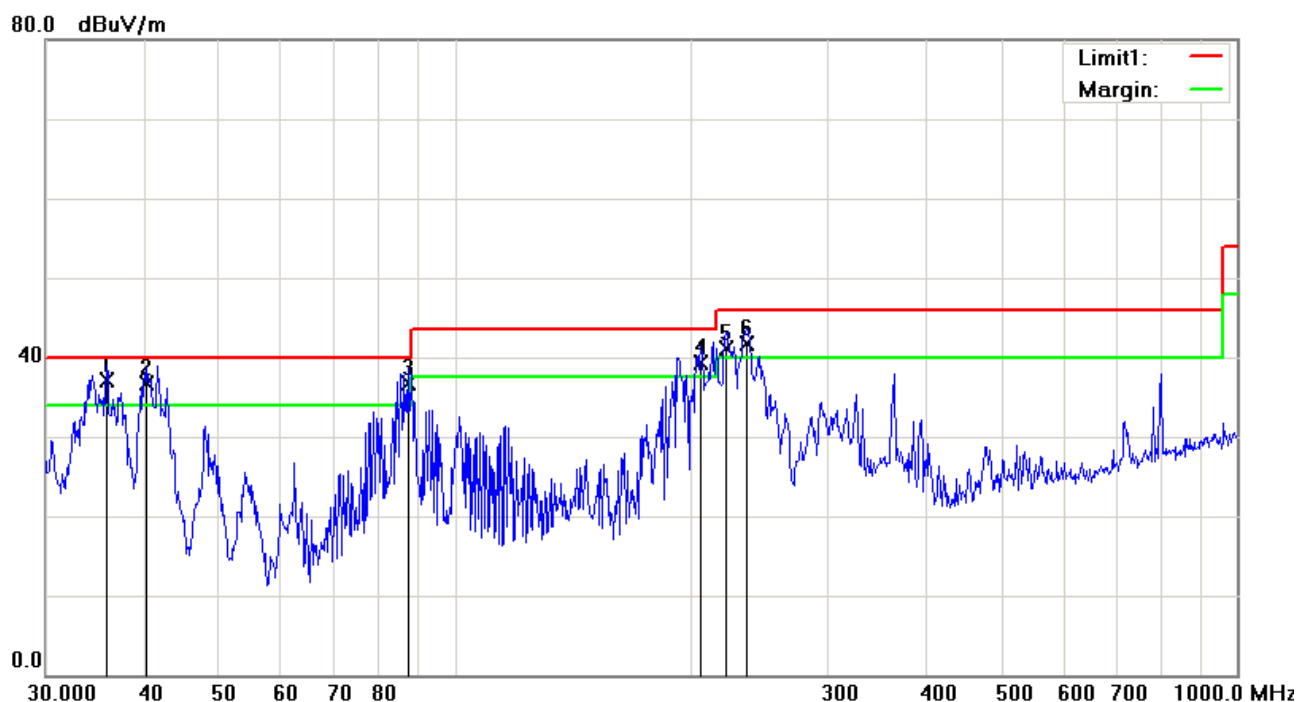
	<p>over a full rotation of the EUT) was chosen.</p> <p>b. The EUT was then rotated to the direction that gave the maximum emission.</p> <p>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</p> <p>3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi Peak detection at frequency below 1GHz.</p> <p>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.</p> <p>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.</p> <p>■ 1 kHz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%)</p> <p>5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</p>
Remark	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Mode : USB Mode

Below 1GHz

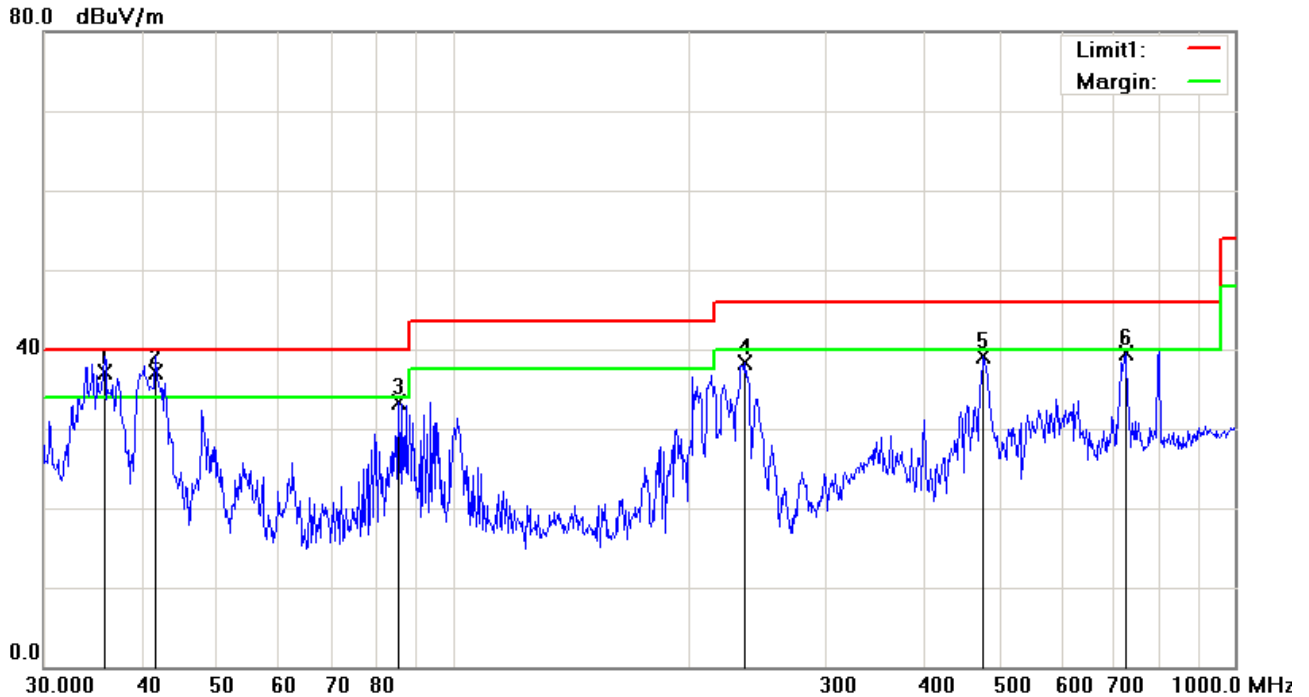


Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	H	35.8747	41.61	QP	-4.58	37.03	40.00	-2.97	100	89
2	H	40.2757	44.50	QP	-7.77	36.73	40.00	-3.27	100	160
3	H	87.1117	50.22	QP	-13.45	36.77	40.00	-3.23	100	0
4	H	206.3976	48.20	QP	-8.80	39.40	43.50	-4.10	100	108
5	H	222.1698	50.12	QP	-8.94	41.18	46.00	-4.82	100	108
6	H	235.8164	50.83	QP	-9.07	41.76	46.00	-4.24	100	126

Below 1GHz



Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	V	35.8747	41.75	QP	-4.58	37.17	40.00	-2.83	100	87
2	V	41.7130	45.79	QP	-8.73	37.06	40.00	-2.94	100	87
3	V	85.2981	46.79	peak	-13.50	33.29	40.00	-6.71	100	109
4	V	236.6447	47.39	peak	-9.06	38.33	46.00	-7.67	100	184
5	V	477.1694	41.49	peak	-2.33	39.16	46.00	-6.84	100	267
6	V	724.2611	37.58	peak	1.88	39.46	46.00	-6.54	100	34

Above 1GHz

Frequency (MHz)	Amplitude (dBμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Factors (dB)	Limit (dBμV/m)	Margin (dB)	Detector (PK/AV)
1194.09	53.77	52	158	V	-23.72	74	-20.23	PK
1329.615	63.11	132	158	V	-21.33	74	-10.89	PK
1610.602	62.66	82	176	V	-25.73	74	-11.34	PK
1196.231	50.83	77	212	H	-22.95	74	-23.17	PK
1327.235	56.76	167	203	H	-21.77	74	-17.24	PK
1553.908	57.63	61	173	H	-22.39	74	-16.37	PK

Note1: The highest frequency of the EUT is 2480 MHz, so the testing has been conformed to $10 \times 2480 \text{ MHz} = 24,800 \text{ MHz}$.

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

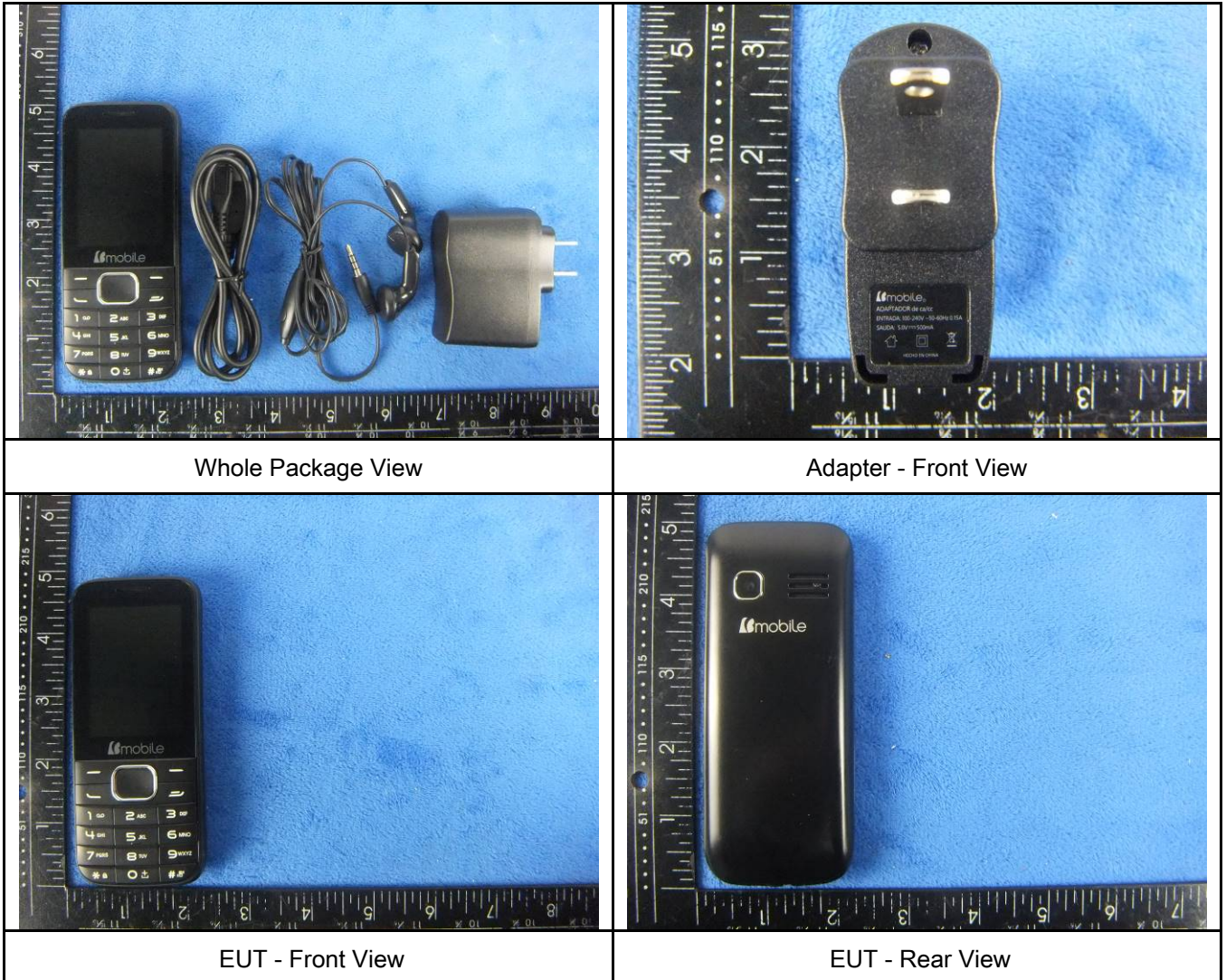
Note3: The AV measurement performed, more than 20dB below limit so AV test data was not presented.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191106	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191107	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
LISN	ISN T800	34373	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
Transient Limiter	LIT-153	531118	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>
Radiated Emissions					
EMI test receiver	ESL6	100262	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/25/2015	03/24/2016	<input checked="" type="checkbox"/>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna	AH-118	71259	09/24/2015	09/23/2016	<input checked="" type="checkbox"/>

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo



Test Report	16050006-FCC-E
Page	22 of 30



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



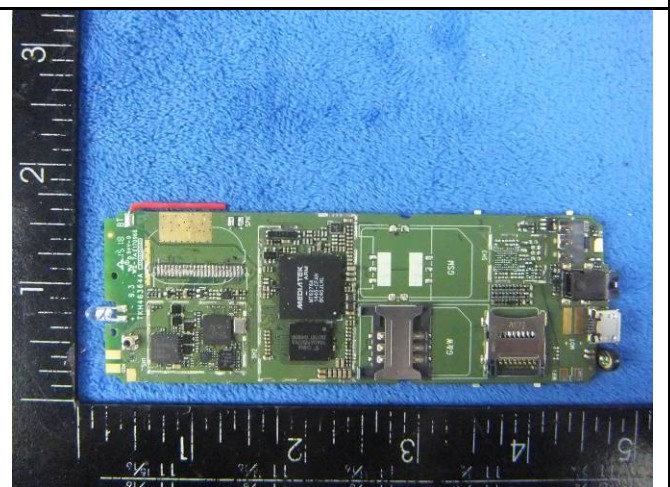
Battery - Front View



Battery - Rear View

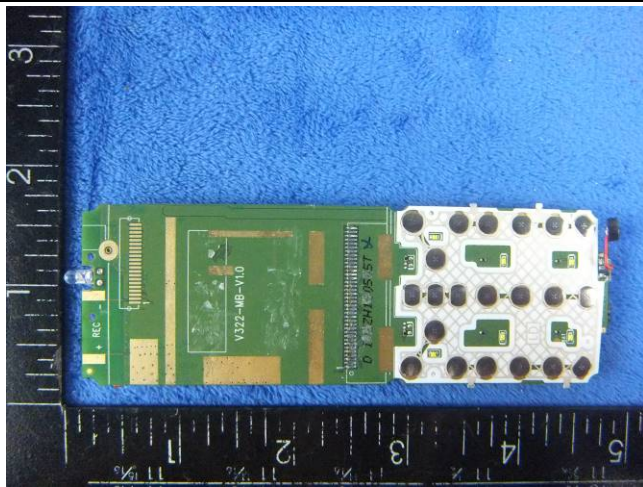


Mainboard with Shielding - Front View

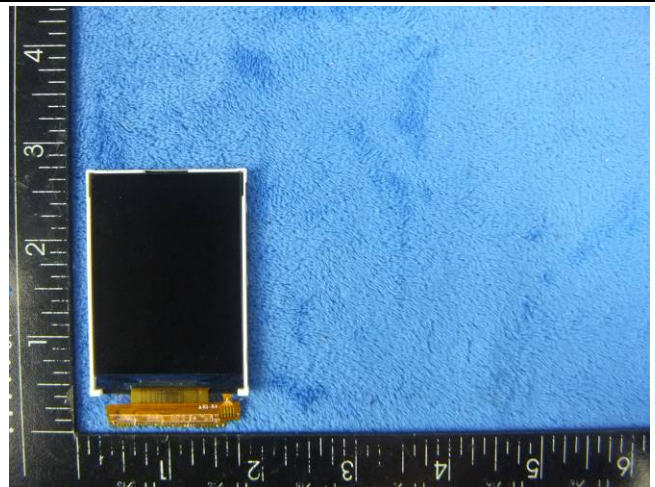


Mainboard without Shielding - Front View

Test Report	16050006-FCC-E
Page	24 of 30



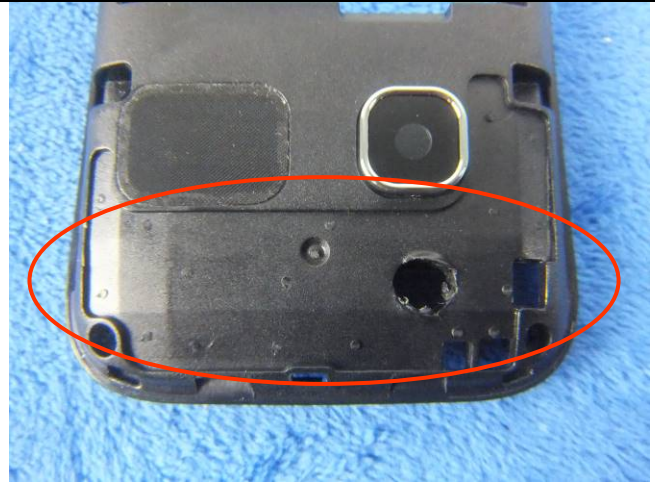
Mainboard - Rear View



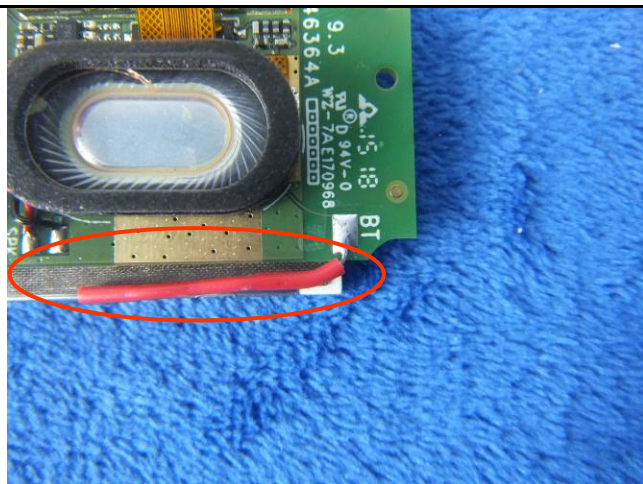
LCD - Front View



LCD - Rear View



GSM/PCS/UMTS-FDD Antenna View



BT - Antenna View

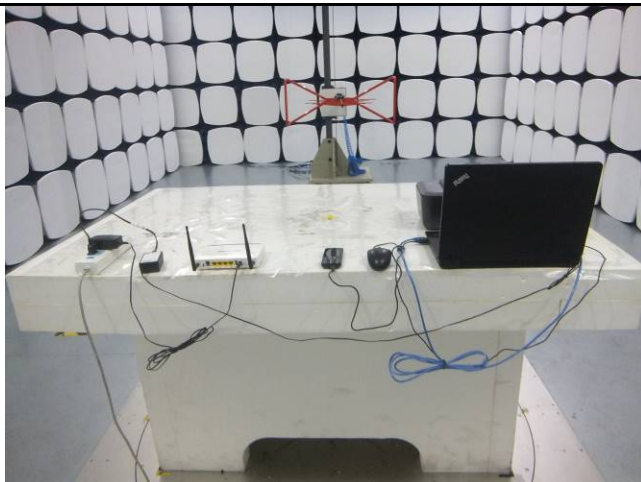
Annex B.iii. Photograph: Test Setup Photo



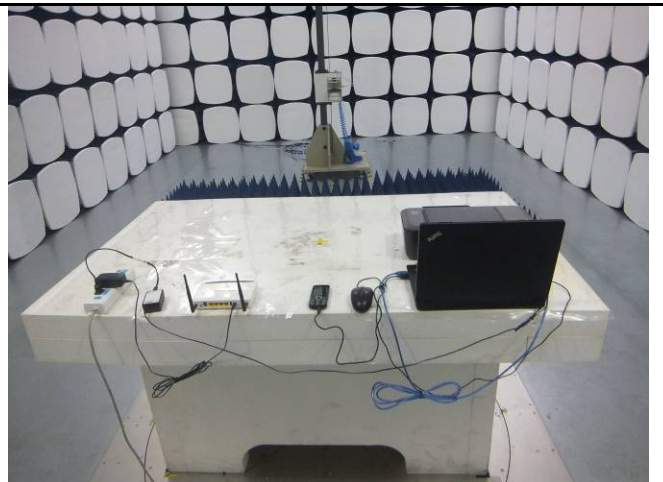
Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup – Side View



Radiated Emissions Test Setup Below 1GHz

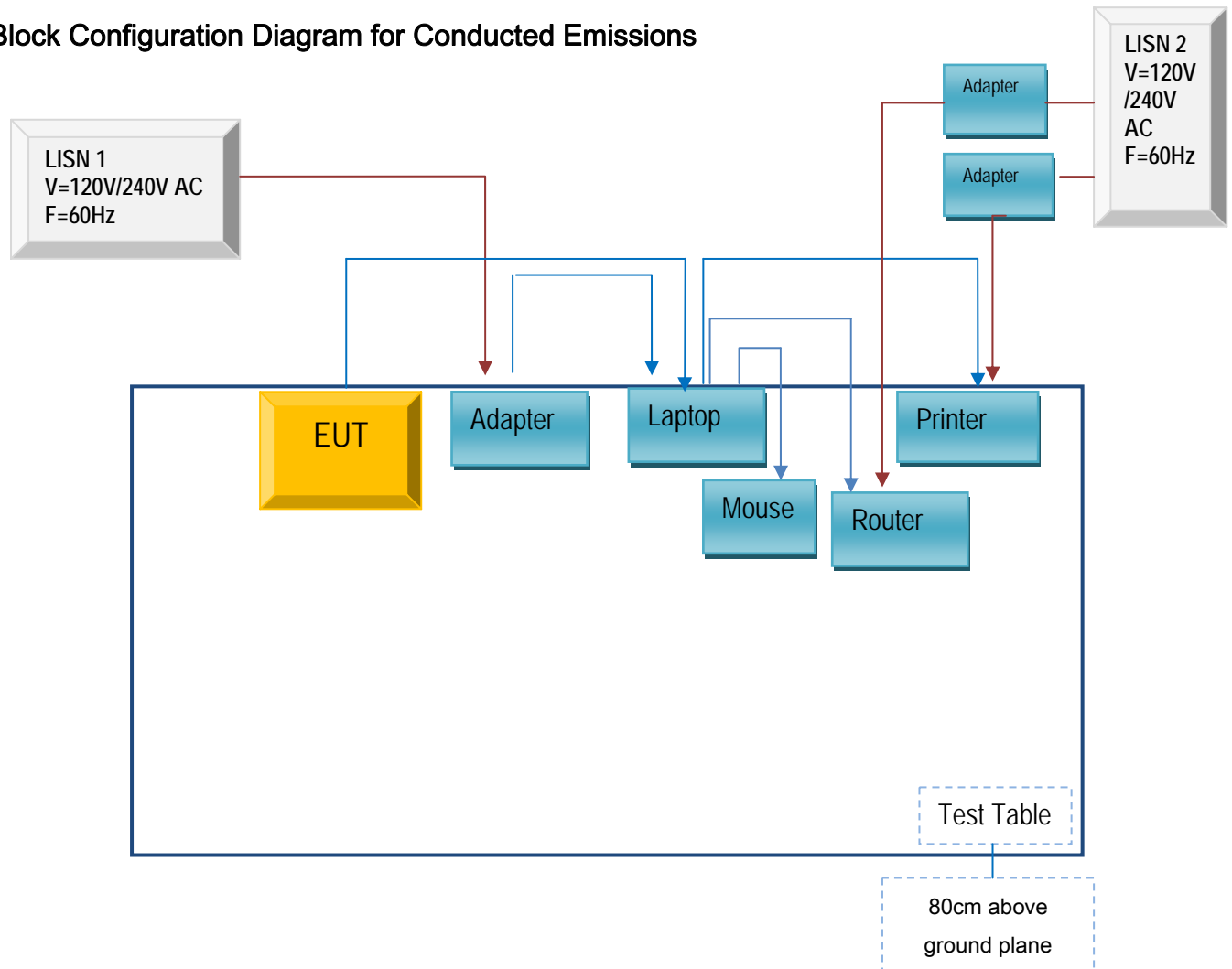


Radiated Emissions Test Setup Above 1GHz

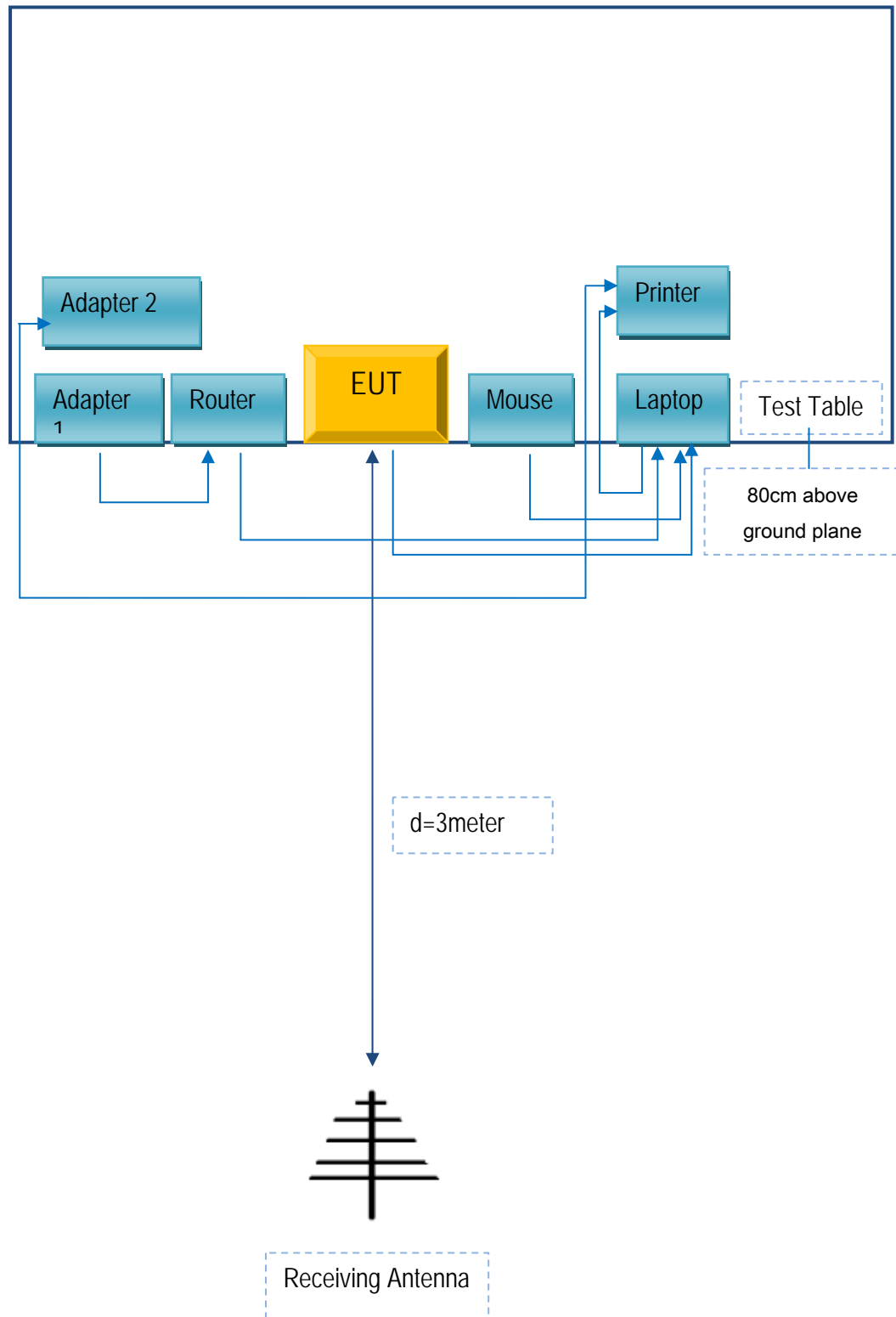
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C. 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
Lenovo	Laptop	E40	LR-1EHRX
GOLDWEB	Router	R102	1202032094
HP	Printer	VCVRA-1003	CN36M19JWX
DELL	Mouse	E100	912NMTUT41481

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	JX120051274
USB Cable	Un-shielding	No	2m	JX110725002
RJ45 Cable	Un-shielding	No	2m	KX156327541
Router Power cable	Un-shielding	No	2m	13274630Z
Printer Power cable	Un-shielding	No	2m	127581031

Test Report	16050006-FCC-E
Page	29 of 30

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

N/A

Test Report	16050006-FCC-E
Page	30 of 30

Annex E. DECLARATION OF SIMILARITY

N/A