

EMC TEST REPORT



Report No.: 15050004-FCC-E1

Supersede Report No.: N/A

Applicant	b mobile HK Limited	
Product Name	Mobile phone	
Model No.	AX710	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2013, ANSI C63.4: 2009	
Test Date	March 26, 2015	
Issue Date	April 02, 2015	
Test Result	☒ Pass ☐ Fail	
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		
<i>Lili Xia</i>	<i>Chris You</i>	
LiLi Xia Test Engineer	Chris You 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

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
15050004-FCC-E1	NONE	Original	April 02, 2015

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: AX710

Serial Model: N/A

Date EUT received: March 20, 2015

Test Date(s): March 26, 2015

Equipment Category : JBP

Antenna Gain:

- GSM850: 2.8 dBi
- PCS1900: 3.2 dBi
- UMTS-FDD Band V: 3.1 dBi
- UMTS-FDD Band II: 3.1 dBi
- Bluetooth: 3.1 dBi
- WIFI: 3.2 dBi

Type of Modulation:

- GSM / GPRS: GMSK
- EGPRS: GMSK, 8PSK
- UMTS-FDD: QPSK
- 802.11b/g/n: DSSS, OFDM
- 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
- WIFI: 802.11b/g/n(20M): 2412-2462 MHz
- WIFI: 802.11n(40M): 2422-2452 MHz
- Bluetooth: 2402-2480 MHz

Number of Channels:

- GSM 850: 124CH
- PCS1900: 299CH

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UMTS-FDD Band V : 102CH

UMTS-FDD Band II : 277CH

WIFI :802.11b/g/n(20M): 11CH

WIFI :802.11n(40M): 7CH

Bluetooth: 79CH

Port: Power Port, Earphone Port, USB Port

Battery:

Model: 4502

Spec: 3.7V 1600mAh 5.92Wh

Input Power: Limited charger voltage: 4.20V

Adapter:

Input: AC 100-240V; 50/60Hz 0.15A

Output: DC 5.0V; 500mA

Trade Name : Bmobile

GPRS/EGPRS Multi-slot class 8/10/12

FCC ID: ZSW-30-008

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: 2009	AC Power Line Conducted Emissions	Compliance
§15.109; ANSI C63.4: 2009	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
-	-	-

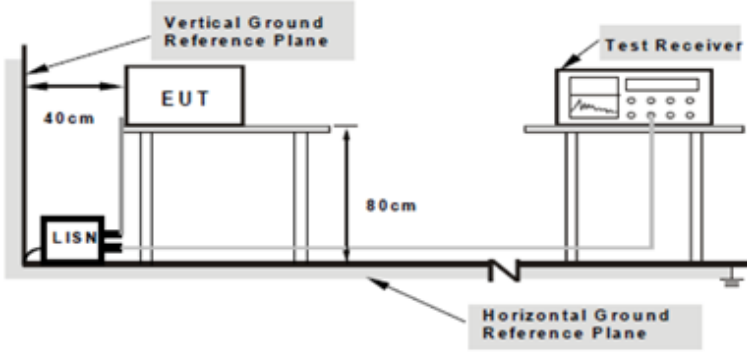
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	24°C
Relative Humidity	57%
Atmospheric Pressure	1007mbar
Test date :	March 26, 2015
Tested By :	LiLi Xia

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	 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.
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Procedure	- 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 50W/50mH EUT LISN, connected to filtered mains.
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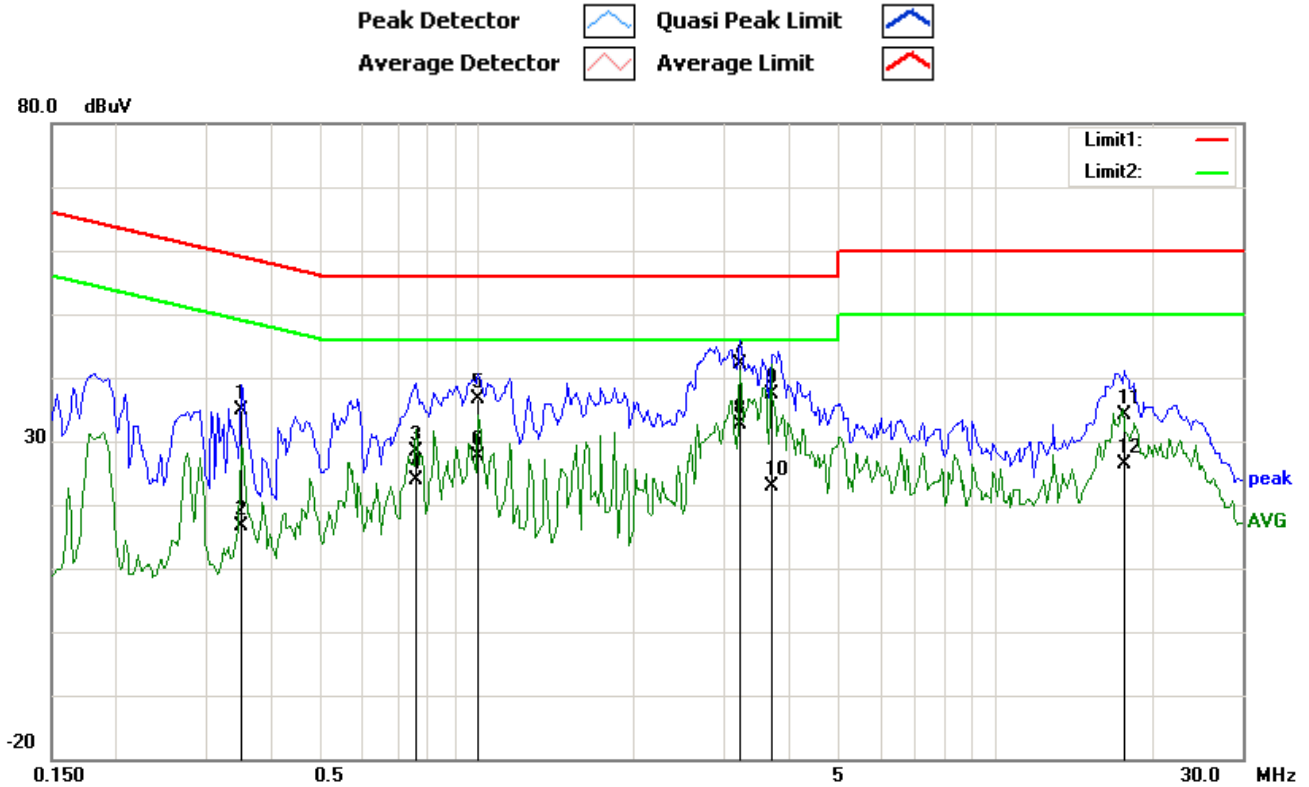
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	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. 4. All other supporting equipment were powered separately from another main supply. 5. The EUT was switched on and allowed to warm up to its normal 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 : Charging & Downloading

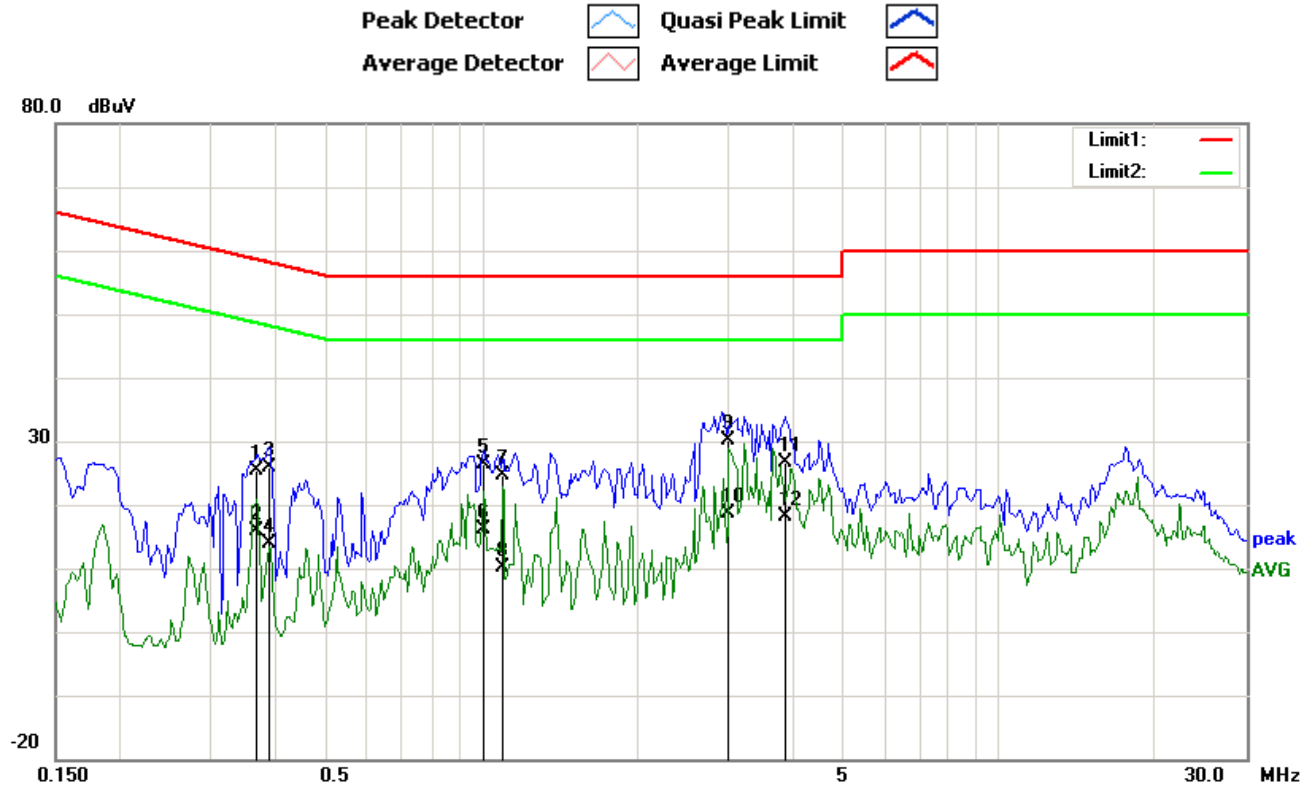


Test Data

Phase Line Plot at 230Vac, 50Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)	
1	L1	0.3492	23.76	QP	11.21	34.97	58.98	-24.01	
2	L1	0.3492	5.32	AVG	11.21	16.53	48.98	-32.45	
3	L1	0.7594	17.48	QP	11.01	28.49	56.00	-27.51	
4	L1	0.7594	12.95	AVG	11.01	23.96	46.00	-22.04	
5	L1	1.0016	25.82	QP	10.90	36.72	56.00	-19.28	
6	L1	1.0016	16.61	AVG	10.90	27.51	46.00	-18.49	
7	L1	3.2070	31.30	QP	10.90	42.20	56.00	-13.80	
8	L1	3.2070	21.66	AVG	10.90	32.56	46.00	-13.44	
9	L1	3.7109	26.44	QP	10.90	37.34	56.00	-18.66	
10	L1	3.7109	12.04	AVG	10.90	22.94	46.00	-23.06	
11	L1	17.6641	23.31	QP	10.88	34.19	60.00	-25.81	
12	L1	17.6641	15.57	AVG	10.88	26.45	50.00	-23.55	

Test Mode : Charging & Downloading



Test Data

Phase Neutral Plot at 230Vac, 50Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)	
1	N	0.3688	25.33	QP	0.00	25.33	58.53	-33.20	
2	N	0.3688	15.98	AVG	0.00	15.98	48.53	-32.55	
3	N	0.3883	25.82	QP	0.00	25.82	58.10	-32.28	
4	N	0.3883	13.86	AVG	0.00	13.86	48.10	-34.24	
5	N	1.0055	26.26	QP	0.00	26.26	56.00	-29.74	
6	N	1.0055	16.20	AVG	0.00	16.20	46.00	-29.80	
7	N	1.0992	24.74	QP	0.00	24.74	56.00	-31.26	
8	N	1.0992	10.10	AVG	0.00	10.10	46.00	-35.90	
9	N	3.0039	30.24	QP	0.00	30.24	56.00	-25.76	
10	N	3.0039	18.55	AVG	0.00	18.55	46.00	-27.45	
11	N	3.8603	26.63	QP	0.00	26.63	56.00	-29.37	
12	N	3.8603	18.14	AVG	0.00	18.14	46.00	-27.86	

6.2 Radiated Emissions

Temperature	24°C
Relative Humidity	57%
Atmospheric Pressure	1007mbar
Test date :	March 26, 2015
Tested By :	LiLi Xia

Requirement(s):

Spec	Item	Requirement	Applicable										
47CFR§15.107(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											
		<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>		Frequency range (MHz)	Field Strength (µV/m)	30 – 88	100	88 – 216	150	216 960	200	Above 960	500
		Frequency range (MHz)		Field Strength (µV/m)									
		30 – 88		100									
		88 – 216		150									
		216 960		200									
Above 960	500												
Test Setup													
Procedure	1. 2.	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: a. Vertical or horizontal polarizati (whichever gave the higher emission level											

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	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 Quasi 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

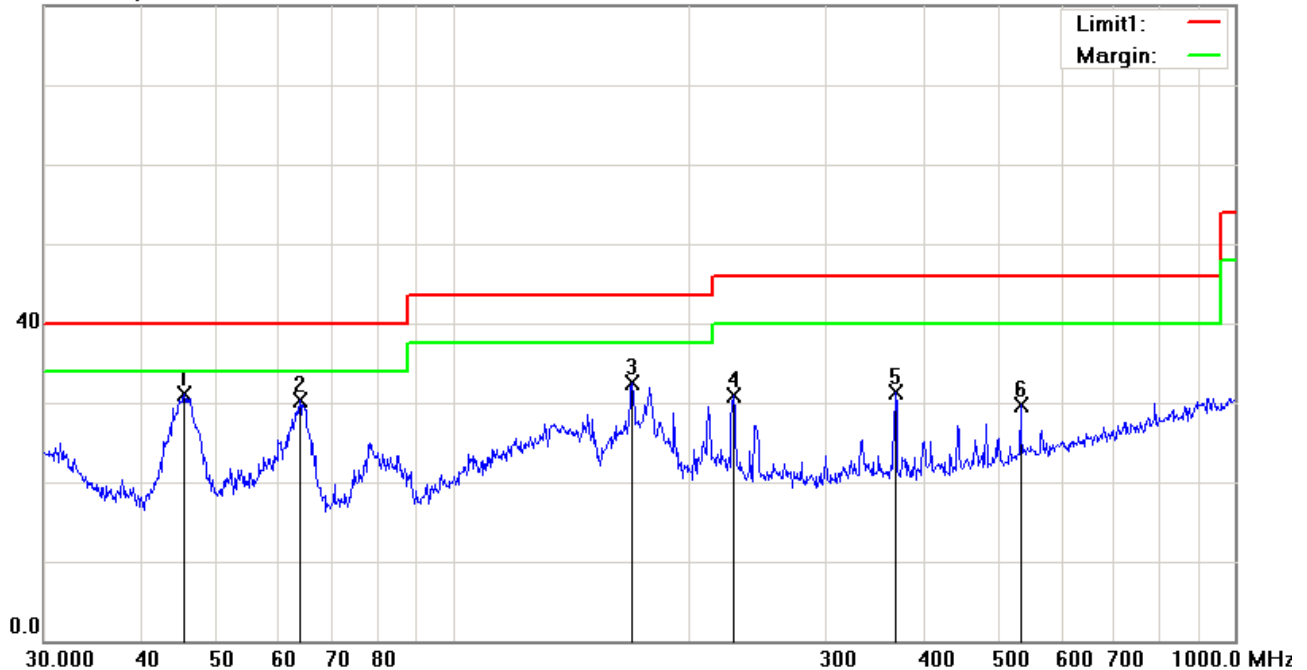
Test Plot ☒ Yes (See below) ☐ N/A

Test Mode : Charging & Downloading

Below 1GHz

Peak Detector 
Quasi Peak Limit 

80.0 dBuV/m



Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comment
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()	
1	H	45.3755	32.45	peak	-1.31	31.14	40.00	-8.86	200	166	
2	H	63.7588	44.35	peak	-14.06	30.29	40.00	-9.71	200	166	
3	H	169.5990	41.62	peak	-9.07	32.55	43.50	-10.95	200	124	
4	H	228.4904	39.97	peak	-9.00	30.97	46.00	-15.03	100	182	
5	H	368.1116	36.39	peak	-5.04	31.35	46.00	-14.65	120	360	
6	H	531.9635	30.85	peak	-1.13	29.72	46.00	-16.28	200	237	

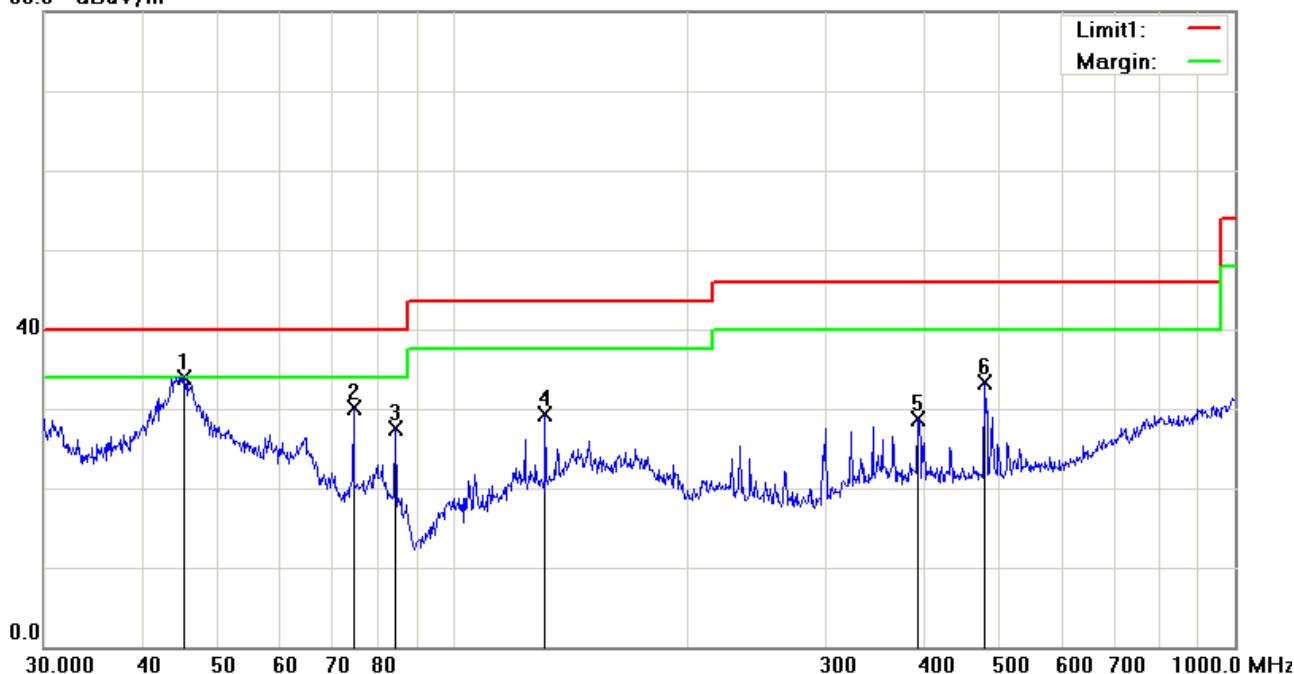
Above 1GHz

Note: The frequency that above 1GHz is mainly from the environment noise.

Below 1GHz

Peak Detector 
Quasi Peak Limit 

80.0 dBuV/m



Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comment
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()	
1	V	45.3755	45.74	peak	-11.74	34.00	40.00	-6.00	100	79	
2	V	74.6569	43.87	peak	-13.73	30.14	40.00	-9.86	113	360	
3	V	84.4054	41.23	peak	-13.75	27.48	40.00	-12.52	113	360	
4	V	131.2965	36.85	peak	-7.47	29.38	43.50	-14.12	106	360	
5	V	393.4724	32.77	peak	-3.98	28.79	46.00	-17.21	166	360	
6	V	478.8456	35.96	peak	-2.72	33.24	46.00	-12.76	100	358	

Above 1GHz

Note: The frequency that above 1GHz is mainly from the environment noise.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/18/2014	09/17/2015	☒
Line Impedance Stabilization Network	LI-125A	191106	09/26/2014	09/25/2015	☒
Line Impedance Stabilization Network	LI-125A	191107	09/26/2014	09/25/2015	☒
LISN	ISN T800	34373	09/26/2014	09/25/2015	☒
Transient Limiter	LIT-153	531118	09/02/2014	09/01/2015	☒
Radiated Emissions					
EMI test receiver	ESL6	100262	09/18/2014	09/17/2015	☒
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/02/2014	09/01/2015	☒
Microwave Preamplifier (0.5 ~ 18GHz)	PAM-118	443008	09/02/2014	09/01/2015	☒
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/22/2014	09/21/2015	☒
Double Ridge Horn Antenna	AH-118	71259	09/25/2014	09/24/2015	☒

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo



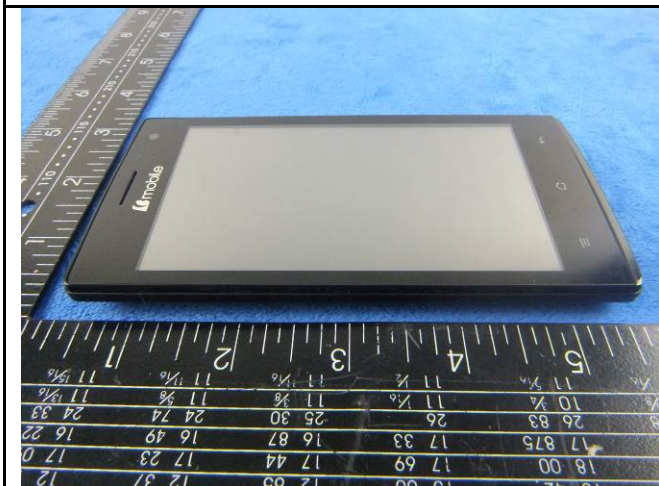
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EUT - Top View



EUT - Bottom View



EUT - Left View

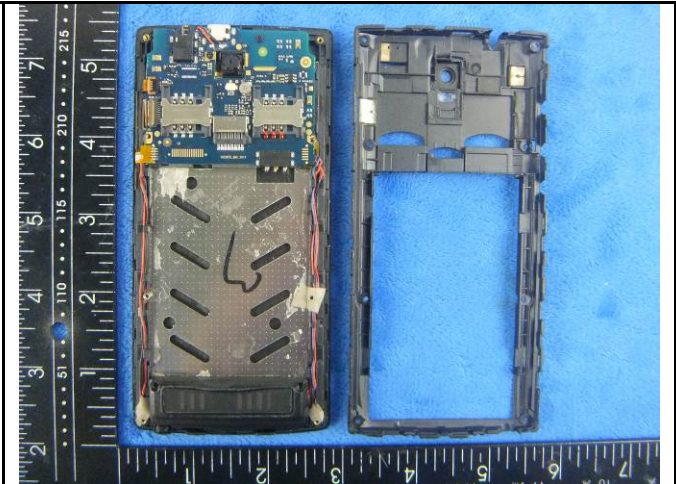


EUT - Right View

Annex B.ii. Photograph: EUT Internal Photo



Cover Off - Top View 1



Cover Off - Top View 2



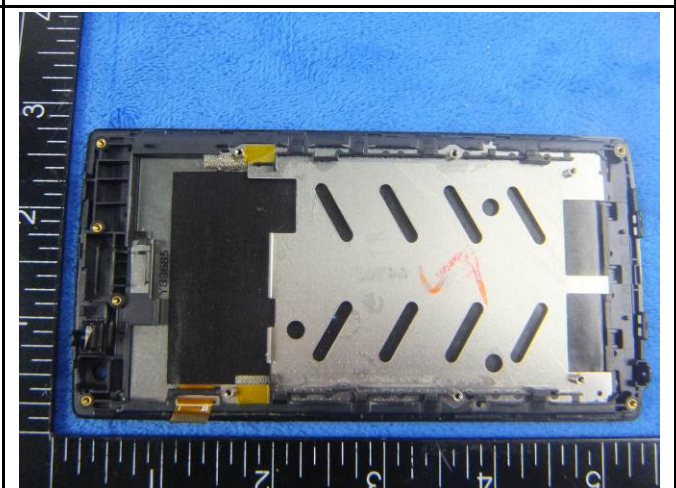
Battery - Front View



Battery - Rear View



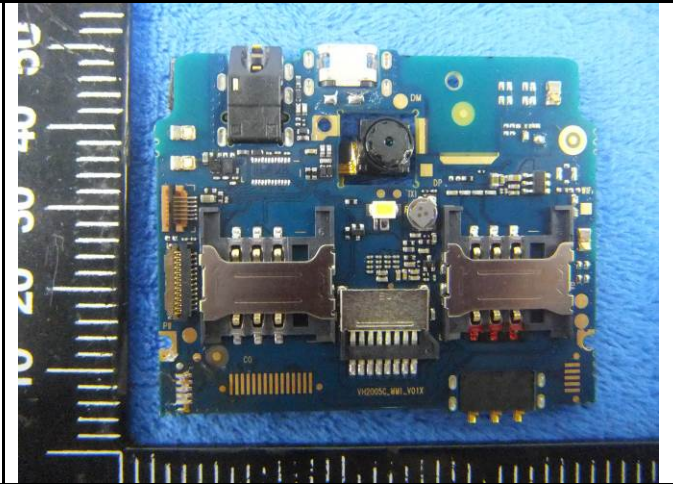
LCD - Front View



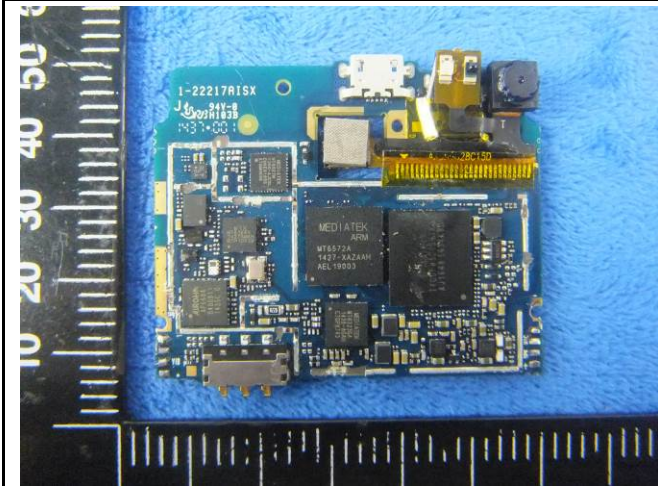
LCD - Rear View



Mainborad With Shielding - Front View



Mainborad Without Shielding - Front View



Mainborad - Rear View



GSM/PCS/UMTS/ -FDD Antenna View



BT/WIFI Antenna View

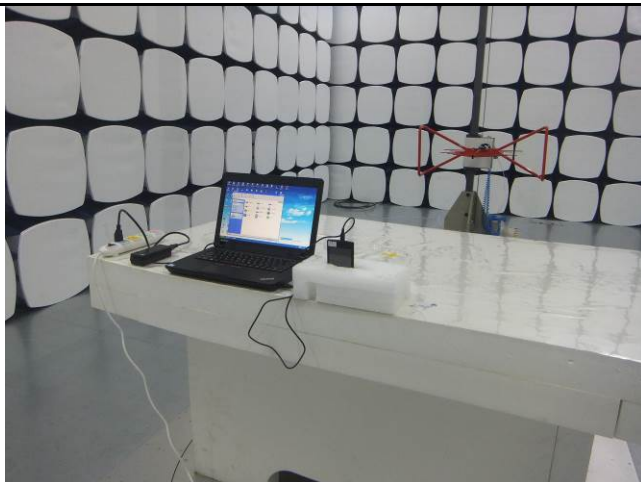
Annex B.iii. Photograph: Test Setup Photo



Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup – Side View



Radiated Spurious Emissions Test Setup Below 1GHz

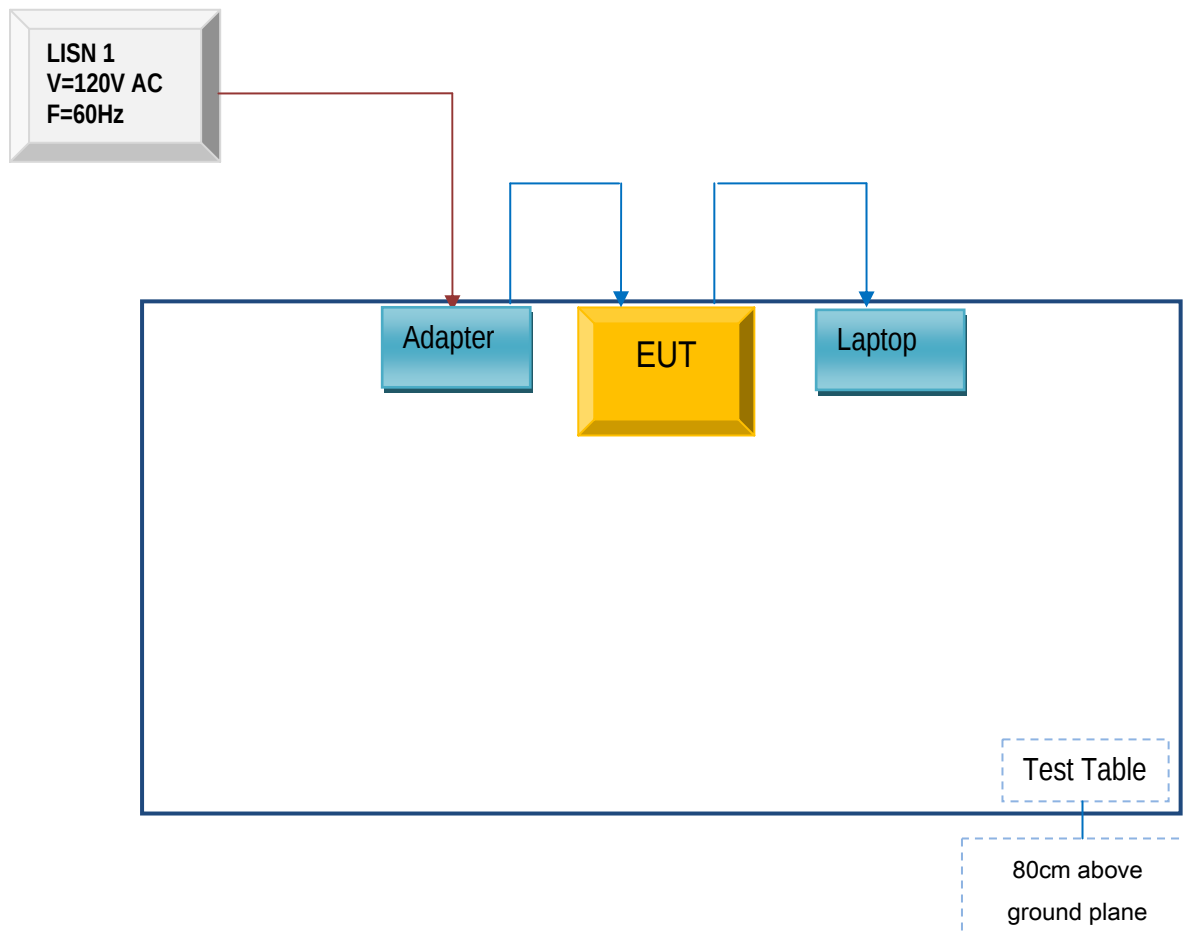


Radiated Spurious Emissions Test Setup Above
1GHz

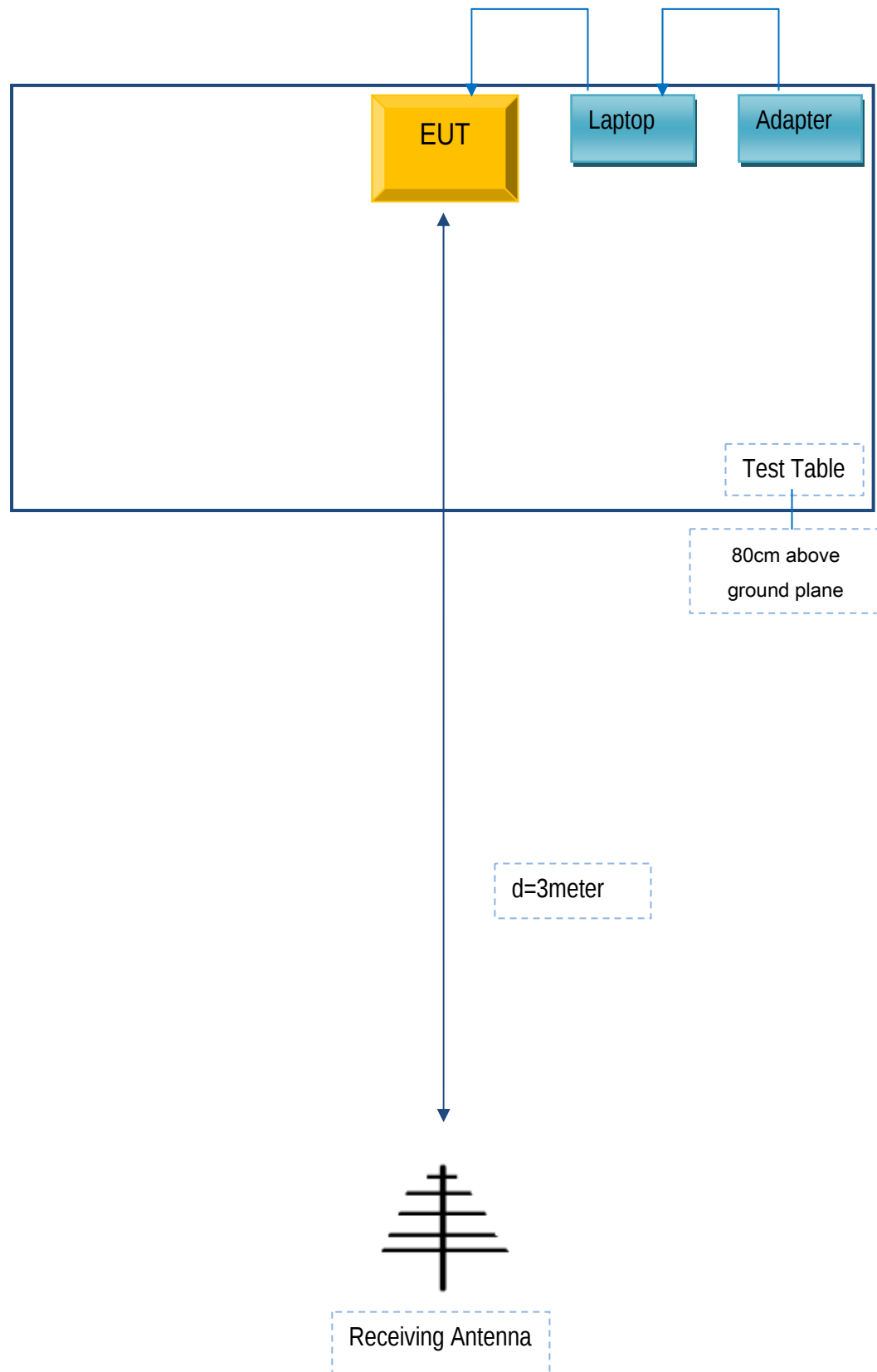
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for 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.

Manufacturer	Equipment Description	Model	Calibration Date	Calibration Due Date
Lenovo	Lenovo Laptop	E40& 0579A52	N/A	N/A

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

Please see Attachment

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Annex E. DECLARATION OF SIMILARITY

N/A