

EMC TEST REPORT



Report No.: 15050054-FCC-E

Supersede Report No.:N/A

Applicant	b mobile HK Limited	
Product Name	Mobile Phone	
Model No.	AX1010	
Serial No.	AX1005	
Test Standard	FCC Part 15 Subpart B Class B:2014, ANSI C63.4: 2014	
Test Date	November 24 to December 04, 2015	
Issue Date	December 08, 2015	
Test Result	☒ Pass ☐ Fail	
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		
<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

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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
15050054-FCC-E	NONE	Original	December 08, 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

Description of EUT:	Mobile Phone
Main Model:	AX1010
Serial Model:	AX1005
Date EUT received:	November 23,2015
Test Date(s):	November 24 to December 04, 2015
Antenna Gain:	GSM850: -3.3dBi PCS1900: -4.6dBi UMTS-FDD Band V: -3.4dBi UMTS-FDD Band II: -3.4dBi Bluetooth/BLE: -3.5dBi WIFI: -4.2dBi LTE Band 2: -5.2 dBi LTE Band 4: -4.1dBi LTE Band 5: -3.5dBi LTE Band 7: -2.9dBi GPS: -3.9dBi
Type of Modulation:	GSM / GPRS: GMSK EGPRS: GMSK, 8PSK UMTS-FDD: QPSK, 16QAM 802.11b/g/n: DSSS, OFDM Bluetooth: GFSK, π /4DQPSK, 8DPSK BLE: GFSK LTE Band: QPSK, 16QAM 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

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WIFI:802.11b/g/n(20M): 2412-2472 MHz
WIFI:802.11n(40M): 2422-2462 MHz
Bluetooth& BLE: 2402-2480 MHz
LTE Band 2 TX: 1852.5 ~ 1907.5 MHz; RX : 1932.5 ~ 1987.5 MHz
LTE Band 4 TX: 1712.5 ~ 1752.5 MHz; RX : 2112.5 ~ 2152.5 MHz
LTE Band 5 TX: 826.5 ~ 846.5 MHz; RX : 871.5 ~ 891.5 MHz
LTE Band 7 TX: 2502.5 ~ 2567.5 MHz; RX : 2622.5 ~ 2687.5 MHz
GPS RX:1575.42 MHz

GSM 850: 124CH
PCS1900: 299CH
UMTS-FDD Band V : 102CH
UMTS-FDD Band II : 277CH
WIFI :802.11b/g/n(20M): 13CH
WIFI :802.11n(40M): 9CH
Bluetooth: 79CH
BLE: 40CH
GPS:1CH

Number of Channels:

Battery:
Model:AX1010
Standard Voltage:DC3.8V
Rated Capacity:1450mAh,5.51Wh
Adapter:
Model:N/A
Input: AC100-240V; 50/60Hz; 0.15A
Output: DC 5.0V,700mA

Input Power:

Port: Power Port, Earphone Port, USB Port

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

Trade Name : Bmobile

FCC ID: ZSW-30-021

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
-	-	-

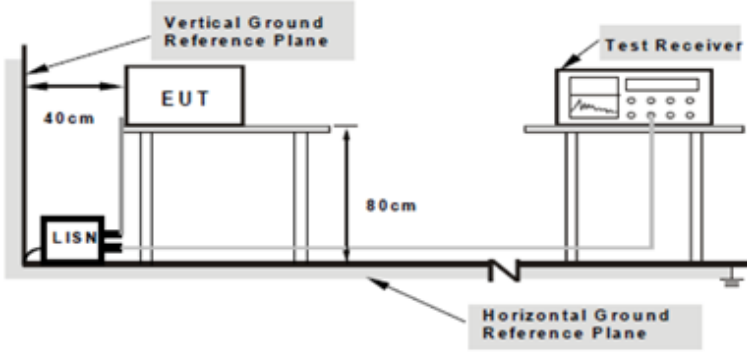
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	25°C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	November 24, 2015
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	 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 50Ω /50mH EUT LISN, connected to filtered mains.
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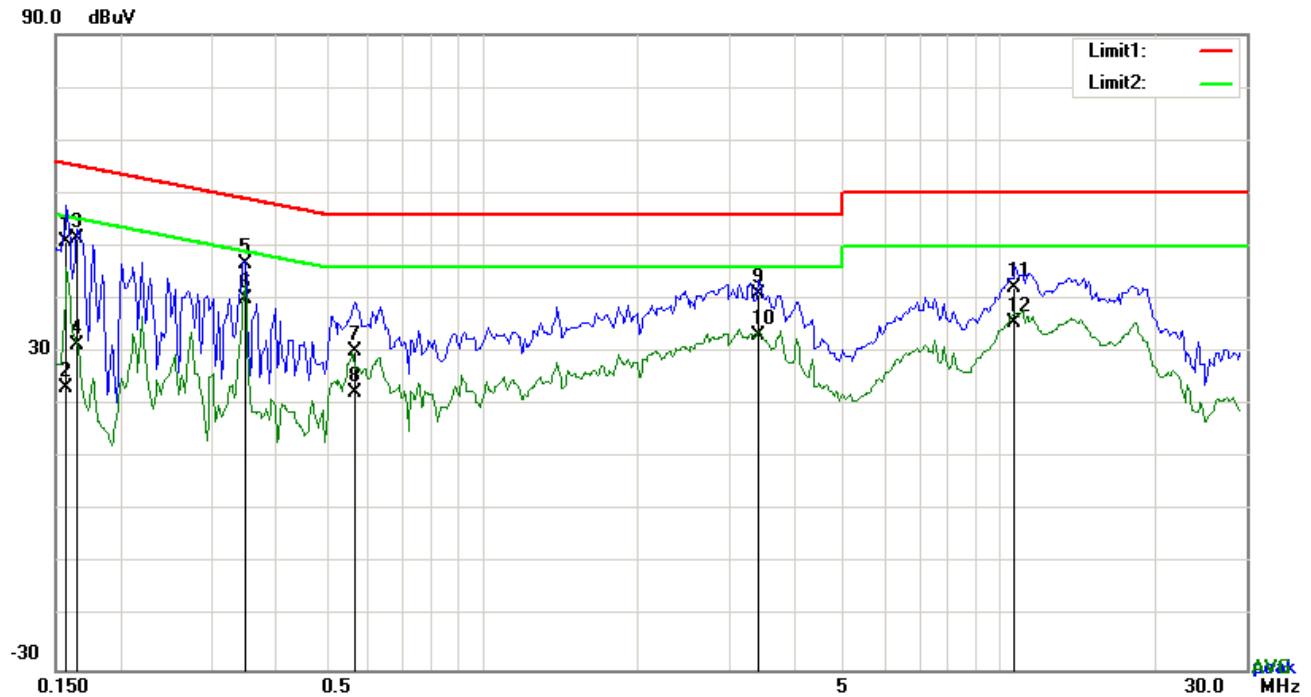
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	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. 4. All other supporting equipment were powered separately from another main supply. 5. The EUT was switched on and allowed to warm up to its normal 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 1 : USB Mode

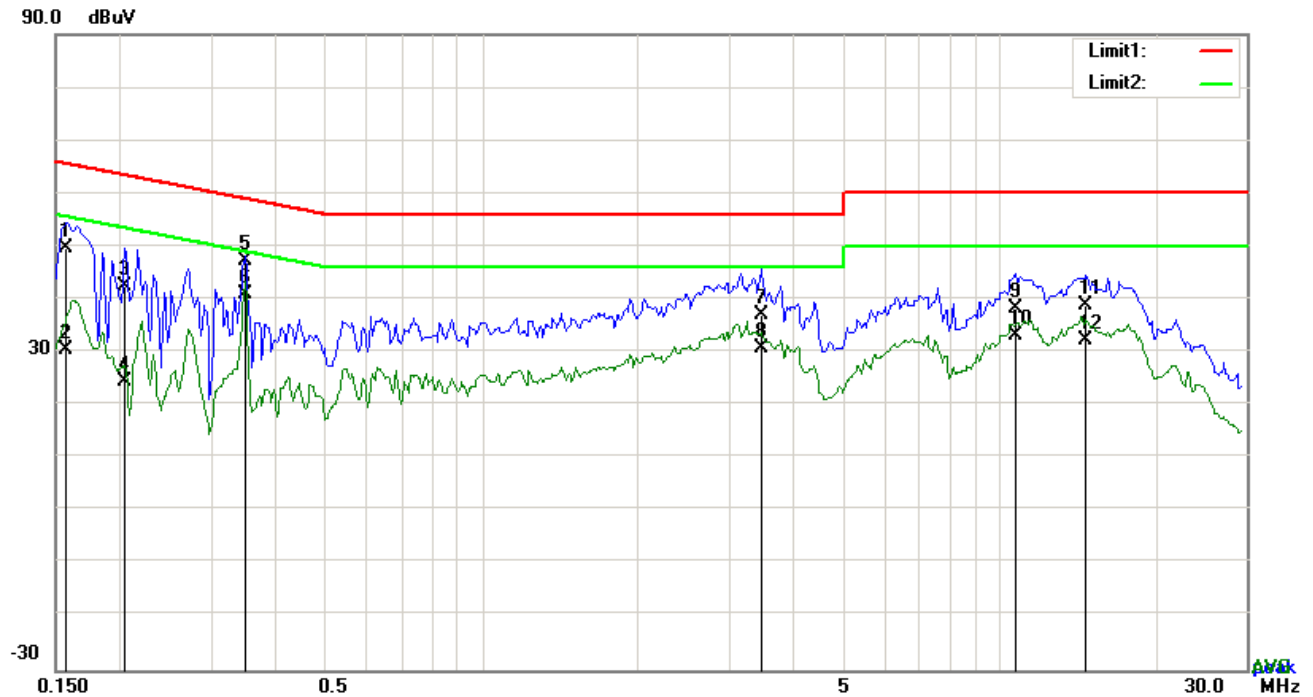


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1578	40.97	QP	10.03	51.00	65.58	-14.58
2	L1	0.1578	13.28	AVG	10.03	23.31	55.58	-32.27
3	L1	0.1656	41.37	QP	10.03	51.40	65.18	-13.78
4	L1	0.1656	21.43	AVG	10.03	31.46	55.18	-23.72
5	L1	0.3489	36.61	QP	10.03	46.64	58.99	-12.35
6	L1	0.3489	30.06	AVG	10.03	40.09	48.99	-8.90
7	L1	0.5673	20.26	QP	10.03	30.29	56.00	-25.71
8	L1	0.5673	12.41	AVG	10.03	22.44	46.00	-23.56
9	L1	3.4212	30.87	QP	10.06	40.93	56.00	-15.07
10	L1	3.4212	23.11	AVG	10.06	33.17	46.00	-12.83
11	L1	10.7298	31.95	QP	10.16	42.11	60.00	-17.89
12	L1	10.7298	25.38	AVG	10.16	35.54	50.00	-14.46

Test Mode : USB Mode

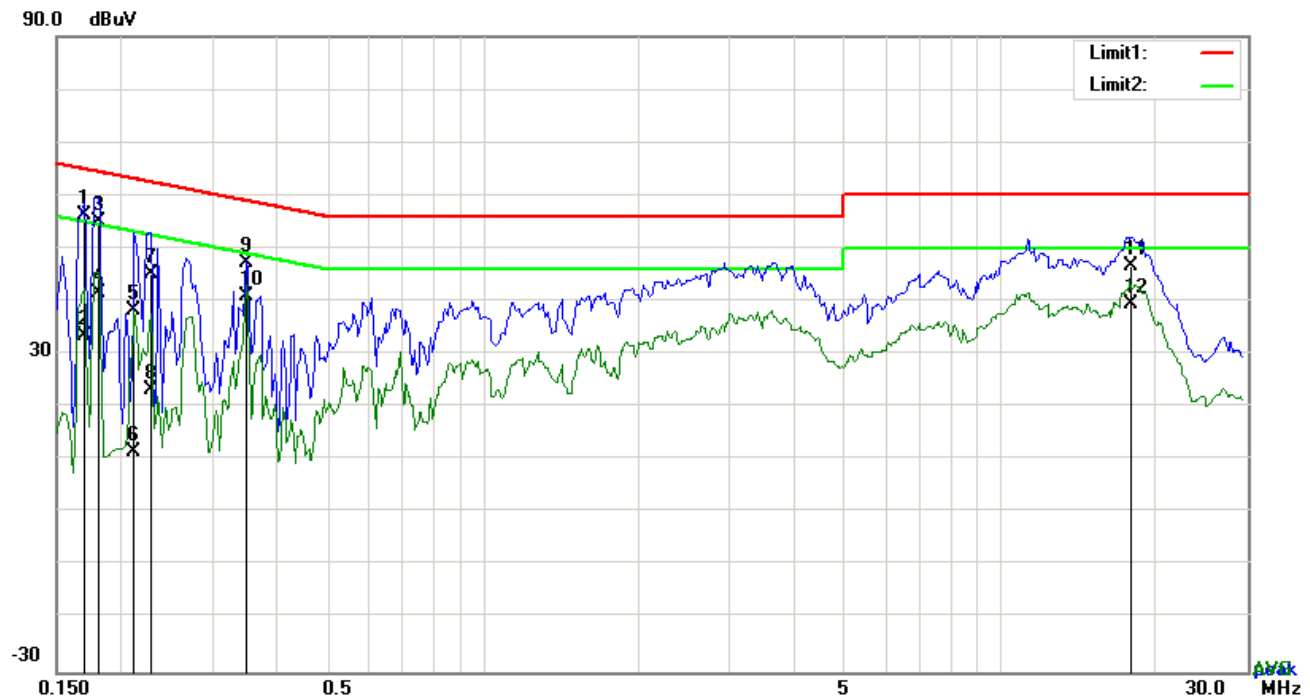


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1578	39.51	QP	10.02	49.53	65.58	-16.05
2	N	0.1578	20.40	AVG	10.02	30.42	55.58	-25.16
3	N	0.2046	32.56	QP	10.02	42.58	63.42	-20.84
4	N	0.2046	14.47	AVG	10.02	24.49	53.42	-28.93
5	N	0.3489	37.36	QP	10.02	47.38	58.99	-11.61
6	N	0.3489	31.05	AVG	10.02	41.07	48.99	-7.92
7	N	3.4641	26.86	QP	10.05	36.91	56.00	-19.09
8	N	3.4641	20.72	AVG	10.05	30.77	46.00	-15.23
9	N	10.7844	28.22	QP	10.15	38.37	60.00	-21.63
10	N	10.7844	23.11	AVG	10.15	33.26	50.00	-16.74
11	N	14.7390	28.65	QP	10.20	38.85	60.00	-21.15
12	N	14.7390	22.17	AVG	10.20	32.37	50.00	-17.63

Test Mode : USB Mode

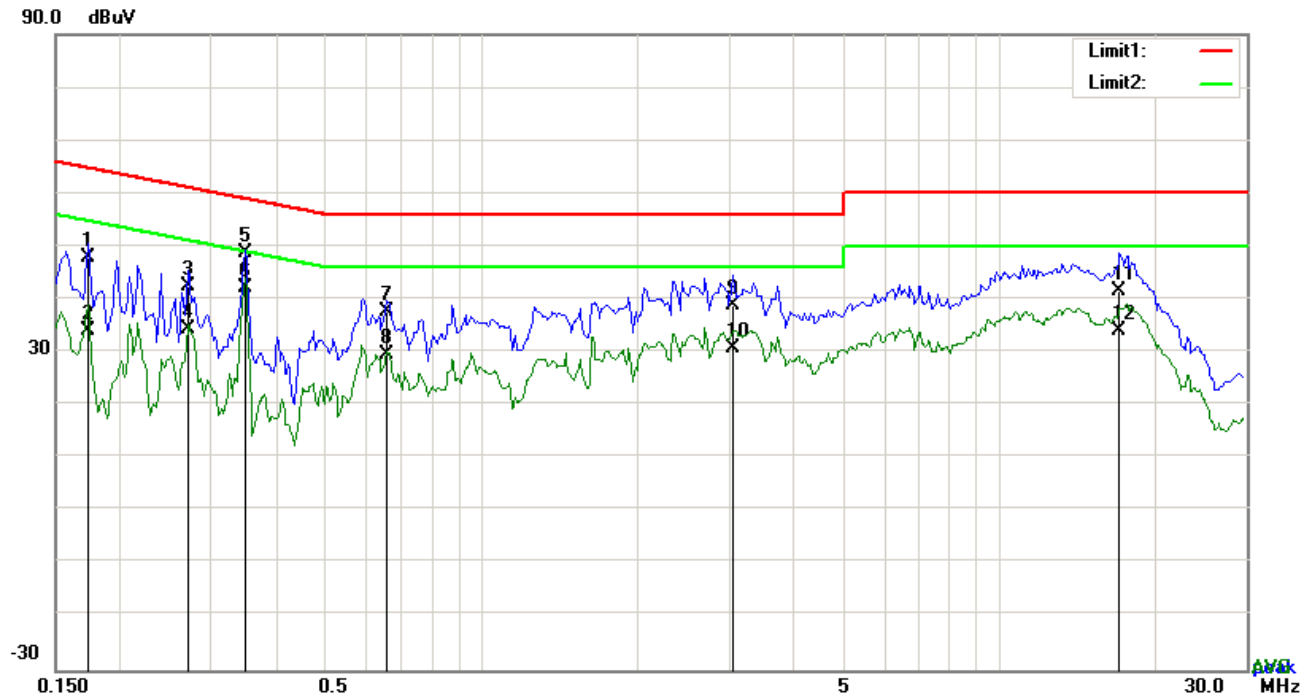


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1695	46.13	QP	10.03	56.16	64.98	-8.82
2	L1	0.1695	23.32	AVG	10.03	33.35	54.98	-21.63
3	L1	0.1812	45.12	QP	10.03	55.15	64.43	-9.28
4	L1	0.1812	31.54	AVG	10.03	41.57	54.43	-12.86
5	L1	0.2124	28.29	QP	10.03	38.32	63.11	-24.79
6	L1	0.2124	1.60	AVG	10.03	11.63	53.11	-41.48
7	L1	0.2280	35.19	QP	10.03	45.22	62.52	-17.30
8	L1	0.2280	13.18	AVG	10.03	23.21	52.52	-29.31
9	L1	0.3489	37.29	QP	10.03	47.32	58.99	-11.67
10	L1	0.3489	30.78	AVG	10.03	40.81	48.99	-8.18
11	L1	17.9370	36.47	QP	10.27	46.74	60.00	-13.26
12	L1	17.9370	29.31	AVG	10.27	39.58	50.00	-10.42

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	0.1734	37.81	QP	10.02	47.83	64.80	-16.97
2	N	0.1734	23.94	AVG	10.02	33.96	54.80	-20.84
3	N	0.2709	32.39	QP	10.02	42.41	61.09	-18.68
4	N	0.2709	24.33	AVG	10.02	34.35	51.09	-16.74
5	N	0.3489	38.70	QP	10.02	48.72	58.99	-10.27
6	N	0.3489	32.06	AVG	10.02	42.08	48.99	-6.91
7	N	0.6570	27.56	QP	10.02	37.58	56.00	-18.42
8	N	0.6570	19.39	AVG	10.02	29.41	46.00	-16.59
9	N	3.0546	28.91	QP	10.05	38.96	56.00	-17.04
10	N	3.0546	20.64	AVG	10.05	30.69	46.00	-15.31
11	N	17.0595	31.45	QP	10.22	41.67	60.00	-18.33
12	N	17.0595	23.71	AVG	10.22	33.93	50.00	-16.07

6.2 Radiated Emissions

Temperature	22°C
Relative Humidity	58%
Atmospheric Pressure	1025mbar
Test date :	November 25, 2015
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		
		Frequency range (MHz)		Field Strength (µV/m)
		30 – 88		100
		88 – 216		150
		216 960		200
		Above 960		500

Test Setup	
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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
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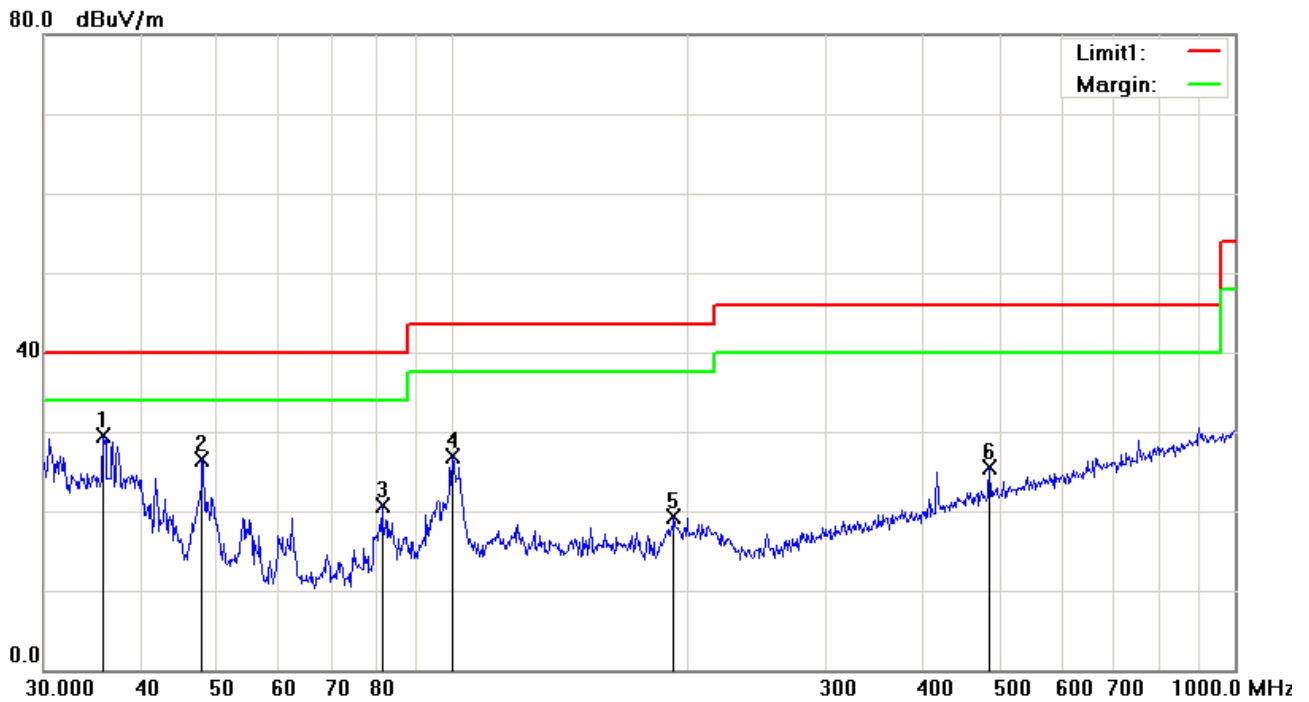
	over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 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 1: USB Mode

Below 1GHz

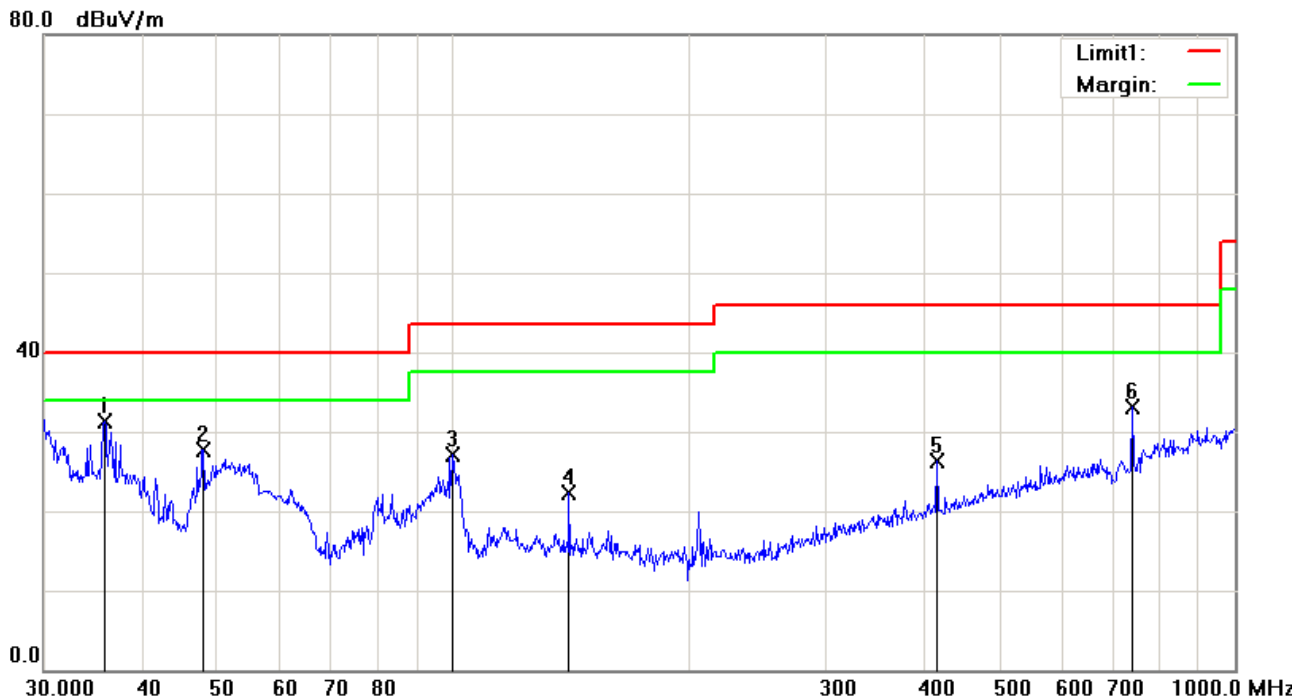


Test Data

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	35.7491	33.93	peak	-4.49	29.44	40.00	-10.56	100	323
2	H	47.8260	38.63	peak	-12.20	26.43	40.00	-13.57	100	297
3	H	81.2117	34.33	peak	-13.71	20.62	40.00	-19.38	100	79
4	H	99.8777	37.78	peak	-10.83	26.95	43.50	-16.55	100	349
5	H	191.7450	28.46	peak	-9.14	19.32	43.50	-24.18	100	49
6	H	485.6093	27.65	peak	-2.09	25.56	46.00	-20.44	100	23

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	35.92	peak	-4.58	31.34	40.00	-8.66	100	64
2	V	47.9940	39.98	peak	-12.28	27.70	40.00	-12.30	100	188
3	V	99.8777	38.02	peak	-10.83	27.19	43.50	-16.31	100	214
4	V	140.8351	30.77	peak	-8.52	22.25	43.50	-21.25	100	14
5	V	416.1791	30.20	peak	-3.91	26.29	46.00	-19.71	100	161
6	V	739.6605	30.92	peak	2.20	33.12	46.00	-12.88	100	14

Above 1GHz

Frequency (MHz)	Amplitude (dBμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Factors (dB)	Limit (dBμV/m)	Margin (dB)	Detector (PK/AV)
1565.77	53.55	48	167	V	-22.26	74	-20.45	PK
2045.19	58.12	134	164	V	-21.13	74	-15.88	PK
1611.4	54.23	64	145	V	-23.32	74	-20.77	PK
2155.42	52.14	38	249	H	-21.15	74	-22.86	PK
2850.11	51.99	123	200	H	-21.23	74	-23.01	PK
1809.51	52.24	45	165	H	-20.77	74	-22.76	PK

Note1: The highest frequency of the EUT is 2480 MHz, so the testing has been conformed to $5 \times 2480 \text{ MHz} = 12,400 \text{ MHz}$.

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	☒
Line Impedance Stabilization Network	LI-125A	191106	09/25/2015	09/24/2016	☒
Line Impedance Stabilization Network	LI-125A	191107	09/25/2015	09/24/2016	☒
LISN	ISN T800	34373	09/25/2015	09/24/2016	☒
Transient Limiter	LIT-153	531118	09/01/2015	08/31/2016	☒
Radiated Emissions					
EMI test receiver	ESL6	100262	09/17/2015	09/16/2016	☒
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/01/2015	08/31/2016	☒
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/25/2015	03/24/2016	☒
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	☒
Double Ridge Horn Antenna	AH-118	71259	09/24/2015	09/23/2016	☒

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



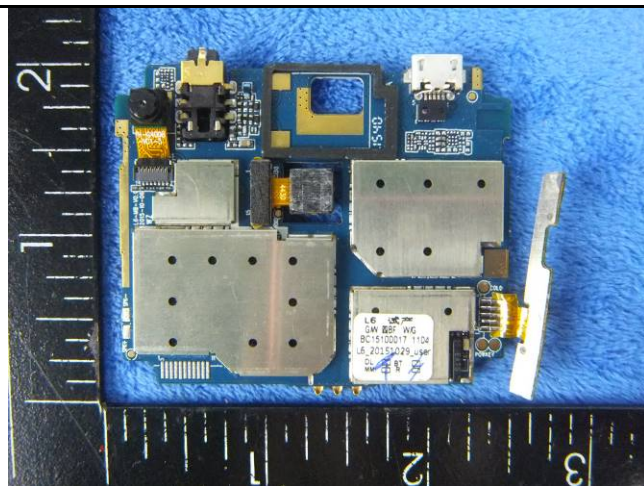
Cover Off - Top View 2



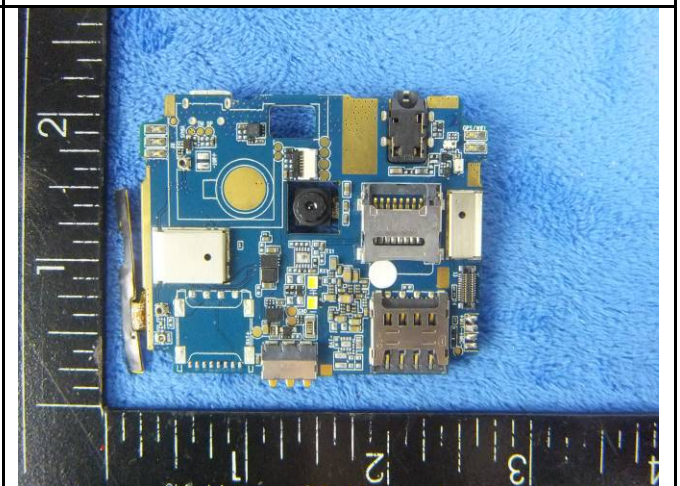
Battery - Front View



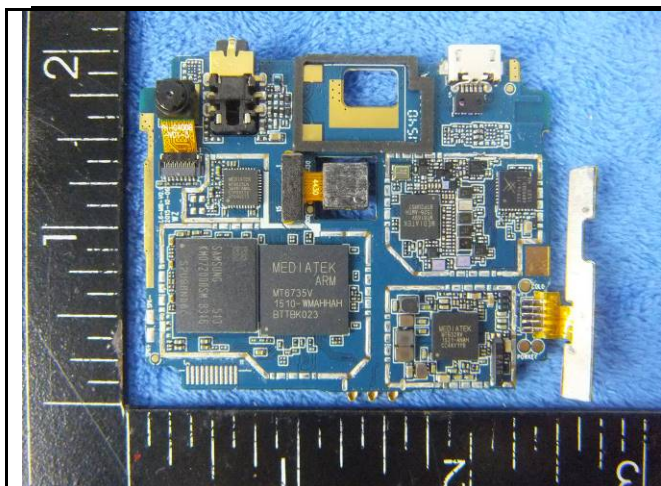
Battery - Rear View



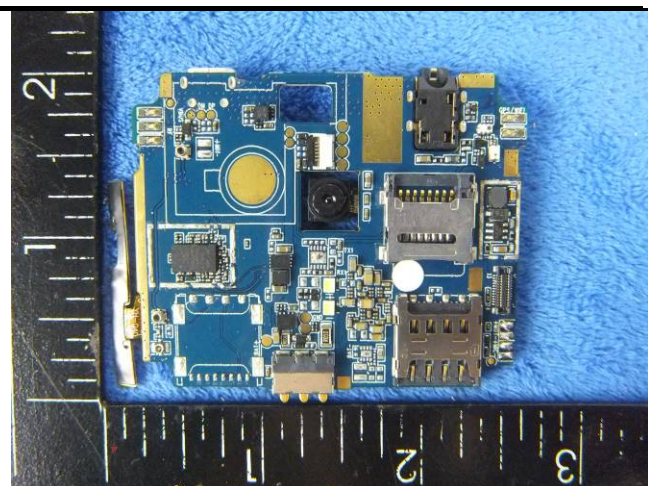
Mainboard with Shielding - Front View



Mainboard with Shielding - Rear View



Mainboard without shielding - Front View



Mainboard without Shielding - Rear View



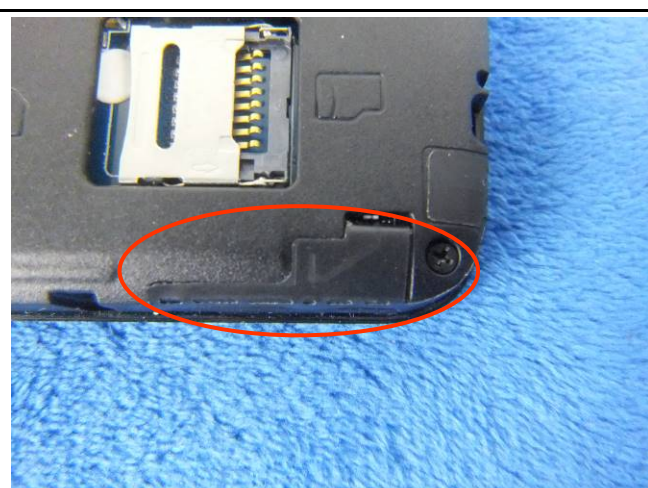
LCD - Front View



LCD - Rear View



GSM/PCS/UMTS-FDD/LTE - Antenna View



WIFI/BT/BLE/GPS - Antenna View

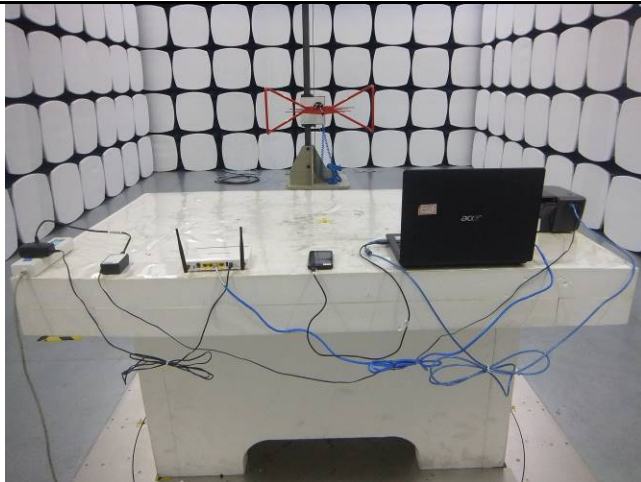
Annex B.iii. Photograph: Test Setup Photo



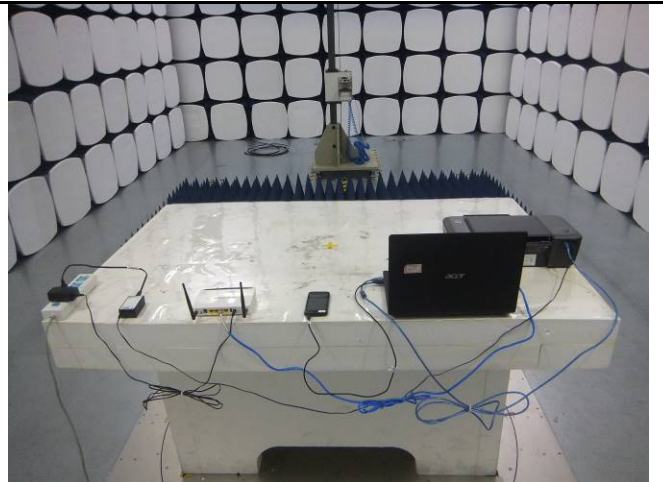
Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup – Side View



Radiated Spurious Emissions Test Setup Below 1GHz

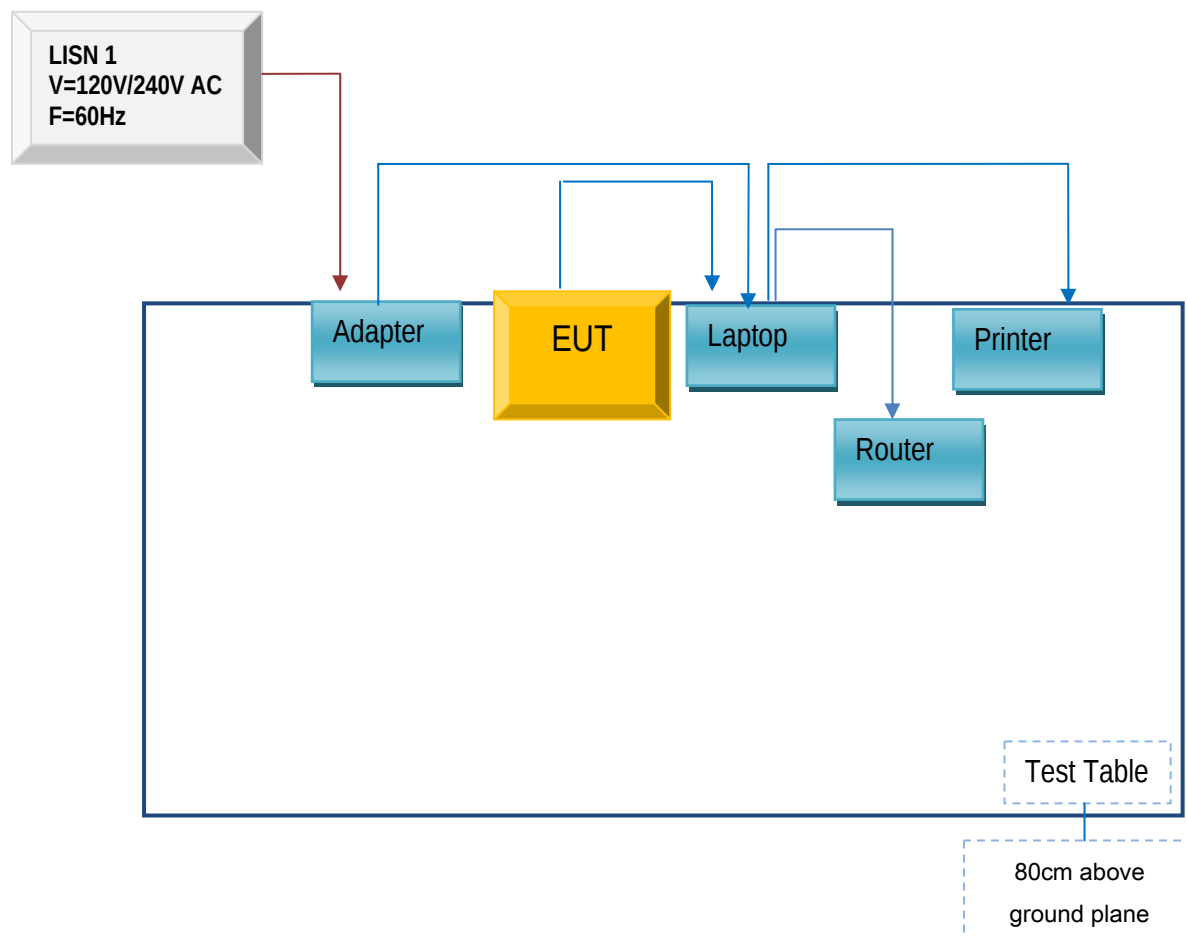


Radiated Spurious Emissions Test Setup Above 1GHz

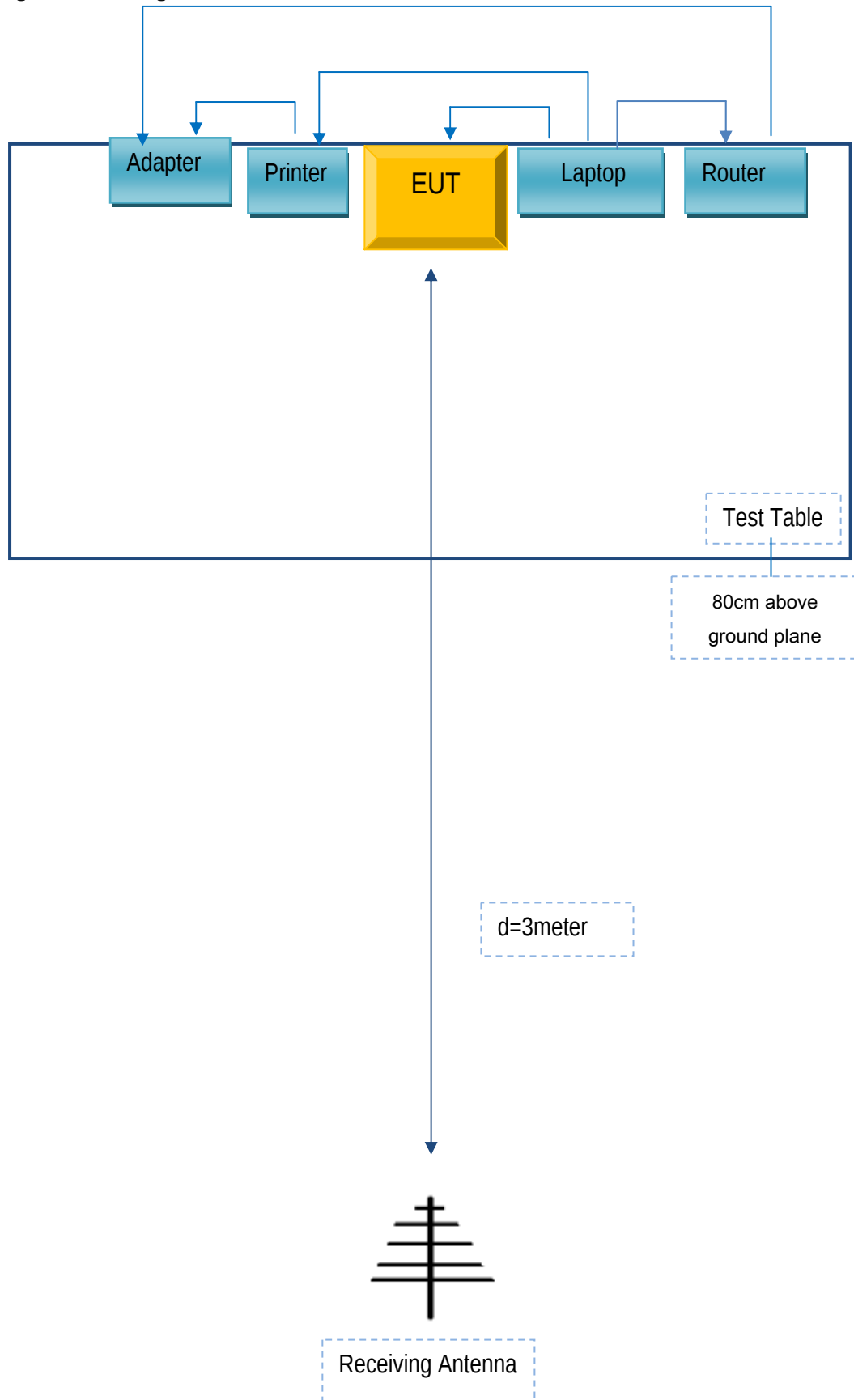
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

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.

Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
Lenovo	Lenovo Laptop	E40& 0579A52	LR-1EHRX
GOLDWEB	Router	R102	1202032094
HP	Printer	VCVRA-1003	CN36M19JWX
DELL	Mouse	E100	912NMTUT41481
b mobile HK Limited	Adapter	N/A	CX12503647

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	2m	N/A
RJ45 Cable	Un-shielding	No	2m	N/A
Router Power cable	Un-shielding	No	2m	N/A
Printer Power cable	Un-shielding	No	2m	N/A
USB Cable	Un-shielding	No	0.8m	KH13054266

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

Please see Attachment

Annex E. DECLARATION OF SIMILARITY

b Mobile HK Limited

To SIEMIC Inc
775 Montague Expressway
Milpitas, CA 95035.

Statement

We, b Mobile HK limited apply a multiple-listing certification for the below models.

Product Name: Mobile phone

Model number: AX1010/AX1005

FCC ID: ZSW-30-021

We hereby state that these models are identical in interior structure, electrical circuits and components, and just model name is different for the marketing requirement.

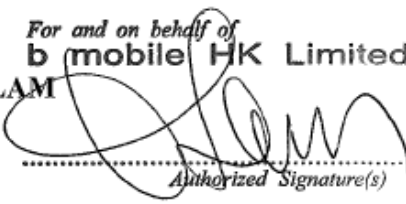
Your assistance on this matter is highly appreciated.

Sincerely,

Name: KA SHING LAM

Title: Director

Signature:

For and on behalf of
b mobile HK Limited

Authorized Signature(s)