EMC TEST REPORT



Report No.: 15050020-FCC-E

Applicant	b mobile HK Limited			
Product Name	Mobile pho	Mobile phone		
Model No.	AX680			
Serial No.	AX670			
Test Standard	FCC Part 1	5 Subpart B Class B:2014, A	NSI C63.4: 2014	
Test Date	June 04 to	June 04 to June 16, 2015		
Issue Date	June 16, 20	June 16, 2015		
Test Result	Pass Fail			
Equipment complied with the specification				
Equipment did not comply with the specification				
Winnie . 2	Winnie Zhang Chris You			
Winnie Zhang Test Engineer		Chris You 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

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



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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
15050020-FCC-E	NONE	Original	June 16, 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		
	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park		
Lab Address	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		



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4. Equipment under Test (EUT) Information

Description of EUT: Mobile phone

Main Model: AX680

Serial Model: AX670

Date EUT received: June 04, 2015

Test Date(s): June 04 to June 16, 2015

Equipment Category: JBP

GSM850: -1.87 dBi

PCS1900: -0.75dBi

UMTS-FDD Band V: -0.62dBi Antenna Gain:

UMTS-FDD Band II: -0.62dBi

Bluetooth/BLE: -0.7dBi

WIFI: -0.7dBi

GSM / GPRS: GMSK

EGPRS: GMSK, 8PSK UMTS-FDD: QPSK, 16QAM

Type of Modulation: 802.11b/g/n: DSSS, OFDM

Bluetooth: GFSK, π /4DQPSK, 8DPSK

BLE: GFSK GPS:BPSK

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;

RF Operating Frequency (ies): RX: 1932.4 ~ 1987.6 MHz

WIFI:802.11b/g/n(20M): 2412-2472 MHz WIFI:802.11n(40M): 2422-2462 MHz Bluetooth& BLE: 2402-2480 MHz

Biddiootiid BLE. 2402 2400 Will

GPS RX:1575.42 MHz



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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;

RF Operating Frequency (ies): RX: 1932.4 ~ 1987.6 MHz

WIFI:802.11b/g/n(20M): 2412-2472 MHz WIFI:802.11n(40M): 2422-2462 MHz Bluetooth& BLE: 2402-2480 MHz

GPS RX:1575.42 MHz

GSM 850: 124CH PCS1900: 299CH

UMTS-FDD Band V: 102CH

UMTS-FDD Band II: 277CH Number of Channels:

WIFI:802.11b/g/n(20M): 13CH

WIFI:802.11n(40M):9CH

Bluetooth: 79CH

BLE: 40CH

Port: Power Port, Earphone Port, USB Port

Battery:

Model: T-41

Spec: 3.7V 1500mAh 5.55Wh

Input Power: Adapter:

Input: AC 100-240V; 150mA Output: DC 5.0V; 500mA

Trade Name : Bmobile

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

FCC ID: ZSW-30-006



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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		
-	-	-		



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6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	22°C
Relative Humidity	52%
Atmospheric Pressure	1008mbar
Test date :	June 08, 2015
Tested By:	Winnie Zhang

Requirement(s):

Spec	Item	Requirement Applicable				
47CFR§15.	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.				V	
107		Frequency ranges	Limit (dBμV)		
		(MHz)	QP	Average		
		0.15 ~ 0.5	66 – 56	56 – 46		
		0.5 ~ 5	56	46		
		5 ~ 30 60 50				
Test Setup	Vertical Ground Reference Plane EUT Horizontal Ground Reference Plane					
	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.					
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. 					



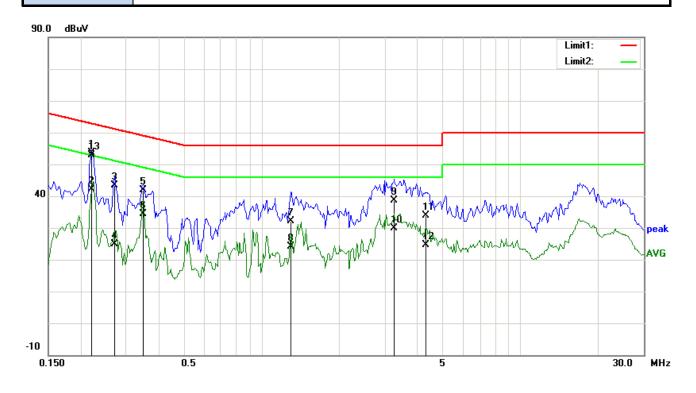
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	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss
	coaxial cable.
	4. All other supporting equipment were powered separately from another main supply.
	5. The EUT was switched on and allowed to warm up to its normal 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}



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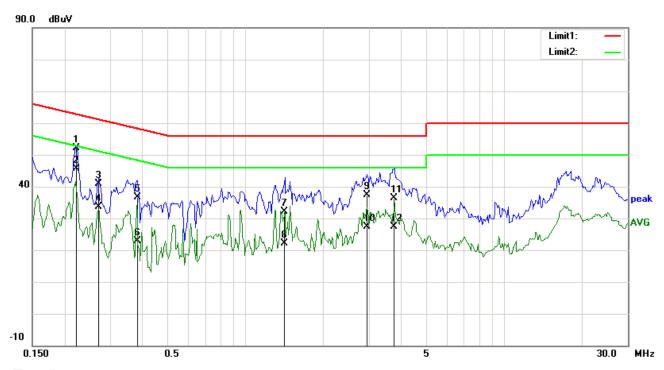
Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)	
1	L1	0.2203	40.65	QP	12.94	53.59	62.81	-9.22	
2	L1	0.2203	40.00	QP	12.94	52.94	62.81	-9.87	
3	L1	0.2203	29.23	AVG	12.94	42.17	52.81	-10.64	
4	L1	0.2711	30.65	QP	12.75	43.40	61.08	-17.68	
5	L1	0.2711	12.25	AVG	12.75	25.00	51.08	-26.08	
6	L1	0.3492	29.32	QP	12.46	41.78	58.98	-17.20	
7	L1	0.3492	21.87	AVG	12.46	34.33	48.98	-14.65	
8	L1	1.3023	20.62	QP	11.40	32.02	56.00	-23.98	
9	L1	1.3023	12.77	AVG	11.40	24.17	46.00	-21.83	
10	L1	3.2695	27.21	QP	11.40	38.61	56.00	-17.39	
11	L1	3.2695	18.40	AVG	11.40	29.80	46.00	-16.20	
12	L1	4.3203	22.41	QP	11.40	33.81	56.00	-22.19	



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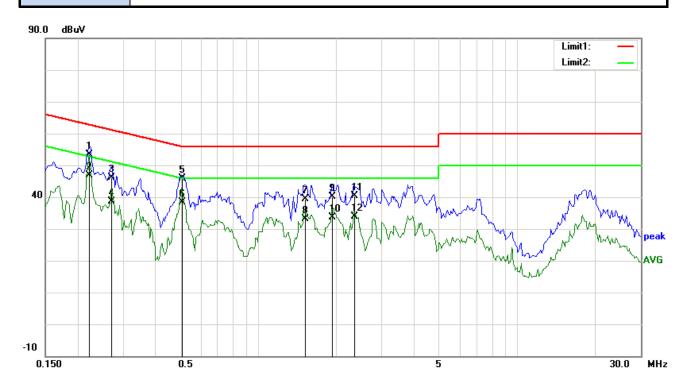
Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)	
1	N	0.2220	39.17	QP	12.93	52.10	62.74	-10.64	
2	N	0.2220	32.75	AVG	12.93	45.68	52.74	-7.06	
3	N	0.2711	28.16	QP	12.75	40.91	61.08	-20.17	
4	N	0.2711	20.96	AVG	12.75	33.71	51.08	-17.37	
5	N	0.3844	24.27	QP	12.33	36.60	58.18	-21.58	
6	N	0.3844	10.46	AVG	12.33	22.79	48.18	-25.39	
7	N	1.4107	20.62	QP	11.45	32.07	56.00	-23.93	
8	N	1.4107	10.80	AVG	11.45	22.25	46.00	-23.75	
9	N	2.9547	25.67	QP	11.64	37.31	56.00	-18.69	
10	N	2.9547	15.83	AVG	11.64	27.47	46.00	-18.53	
11	N	3.7395	24.56	QP	11.74	36.30	56.00	-19.70	
12	N	3.7395	15.54	AVG	11.74	27.28	46.00	-18.72	



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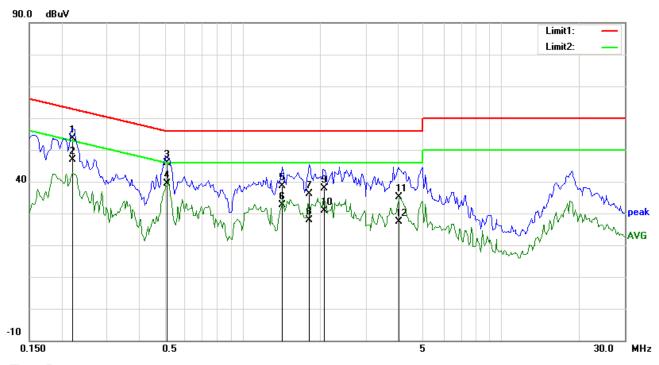
Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)	
1	L1	0.2242	40.44	QP	12.92	53.36	62.66	-9.30	
2	L1	0.2242	33.98	AVG	12.92	46.90	52.66	-5.76	
3	L1	0.2711	33.31	QP	12.75	46.06	61.08	-15.02	
4	L1	0.2711	25.96	AVG	12.75	38.71	51.08	-12.37	
5	L1	0.5094	33.90	QP	11.89	45.79	56.00	-10.21	
6	L1	0.5094	26.49	AVG	11.89	38.38	46.00	-7.62	
7	L1	1.5250	27.98	QP	11.40	39.38	56.00	-16.62	
8	L1	1.5250	21.83	AVG	11.40	33.23	46.00	-12.77	
9	L1	1.9284	28.82	QP	11.40	40.22	56.00	-15.78	
10	L1	1.9284	22.33	AVG	11.40	33.73	46.00	-12.27	
11	L1	2.3460	28.95	QP	11.40	40.35	56.00	-15.65	
12	L1	2.3460	22.38	AVG	11.40	33.78	46.00	-12.22	



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Test Data

Phase Neutral Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)	
1	N	0.2208	40.68	QP	12.94	53.62	62.79	-9.17	
2	N	0.2208	33.84	AVG	12.94	46.78	52.79	-6.01	
3	N	0.5101	33.92	QP	11.89	45.81	56.00	-10.19	
4	N	0.5101	27.48	AVG	11.89	39.37	46.00	-6.63	
5	N	1.4273	27.26	QP	11.45	38.71	56.00	-17.29	
6	N	1.4273	21.22	AVG	11.45	32.67	46.00	-13.33	
7	N	1.8141	24.65	QP	11.50	36.15	56.00	-19.85	
8	N	1.8141	16.35	AVG	11.50	27.85	46.00	-18.15	
9	N	2.0659	26.26	QP	11.53	37.79	56.00	-18.21	
10	N	2.0659	19.34	AVG	11.53	30.87	46.00	-15.13	
11	N	4.0469	23.30	QP	11.78	35.08	56.00	-20.92	
12	N	4.0469	15.52	AVG	11.78	27.30	46.00	-18.70	_



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6.2 Radiated Emissions

Temperature	22°C
Relative Humidity	52%
Atmospheric Pressure	1008mbar
Test date :	June 08, 2015
Tested By:	Winnie Zhang

Requirement(s):

Spec	Item	Requirement		Applicable
47CFR§15.	a)	emissions from the low-power radio exceed the field strength levels spe the level of any unwanted emission	<	
107(d)	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)			
30 - 88 100 88 - 216 150 216 960 200 Above 960 500 FUT& Support Units Turn Table				
		88 – 216	150	
		216 960	200	
		Above 960	500	
Test Setup		Support Units Turn Table	Variable Variable	-
Procedure	2.	The test was carried out at the selecte characterization. Maximization of the changing the antenna polarization, an manner:	ed frequency points obtained from emissions, was carried out by rot d adjusting the antenna height in	ating the EUT, the following



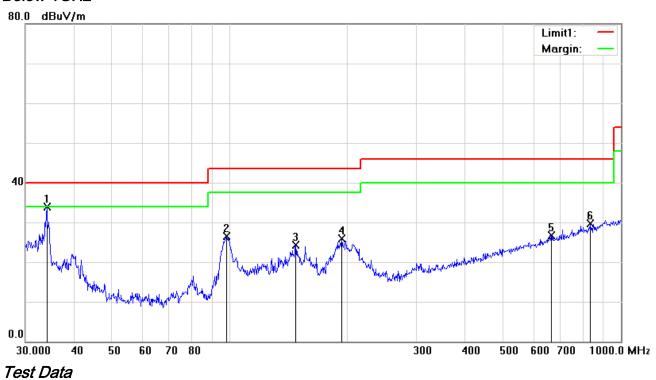
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			over a full rotation of the EUT) was chosen.					
		b.	The EUT was then rotated to the direction that gave the maximum					
			emission.					
		C.	Finally, the antenna height was adjusted to the height that gave the maximum					
			emission.					
	3.	3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyst						
	120 kHz for Quasiy Peak detection at frequency below 1GHz.							
	4.	The reso	olution bandwidth of test receiver/spectrum analyzer is 1MHz and video					
		bandwi	dth is 3MHz with Peak detection for Peak measurement at frequency above					
		1GHz.						
		The re	solution bandwidth of test receiver/spectrum analyzer is 1MHz and the video					
		bandw	ridth with Peak detection for Average Measurement as below at frequency					
		above	1GHz.					
		■ 1 kH	Iz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%)					
	5.	Steps 2	2 and 3 were repeated for the next frequency point, until all selected frequency					
		points v	vere measured.					
Remark								
Result	Pa	SS	Fail					
Test Data	Yes		□ _{N/A}					
	1							
Test Plot	Yes (S	ee belo	w) N/A					



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Below 1GHz



Horizontal Polarity Plot @3m

No.	P/L	Frequency	Readin g	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comme nt
		(MHz)	(dBuV/ m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()	
1	Н	34.0365	37.07	peak	-3.24	33.83	40.00	-6.17	100	132	
2	Н	98.1419	37.80	peak	-11.30	26.50	43.50	-17.00	200	190	
3	Н	147.4036	32.65	peak	-8.44	24.21	43.50	-19.29	200	235	
4	Н	193.0945	34.89	peak	-9.08	25.81	43.50	-17.69	100	113	
5	Н	663.4729	25.78	peak	0.97	26.75	46.00	-19.25	100	42	
6	Н	836.2443	26.09	peak	3.64	29.73	46.00	-16.27	161	0	

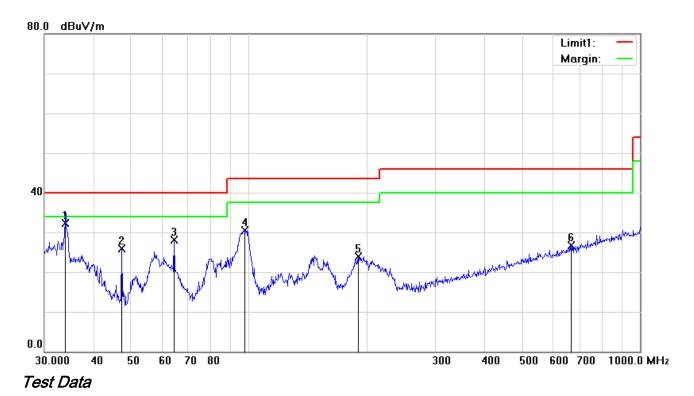
Above 1GHz

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



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Below 1GHz



Vertical Polarity Plot @3m

No.	P/L	Frequency	Readin g	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comme
		(MHz)	(dBuV/ m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()	
1	V	33.9170	35.47	QP	-3.15	32.32	40.00	-7.68	100	149	
2	V	47.3255	37.83	peak	-11.98	25.85	40.00	-14.15	100	201	
3	٧	64.4331	42.10	peak	-14.01	28.09	40.00	-11.91	100	231	
4	V	97.4560	42.06	peak	-11.48	30.58	43.50	-12.92	100	78	
5	V	190.4050	33.04	peak	-9.21	23.83	43.50	-19.67	200	207	
6	V	668.1423	25.78	peak	1.02	26.80	46.00	-19.20	100	261	

Above 1GHz

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



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Annex A. TEST INSTRUMENT

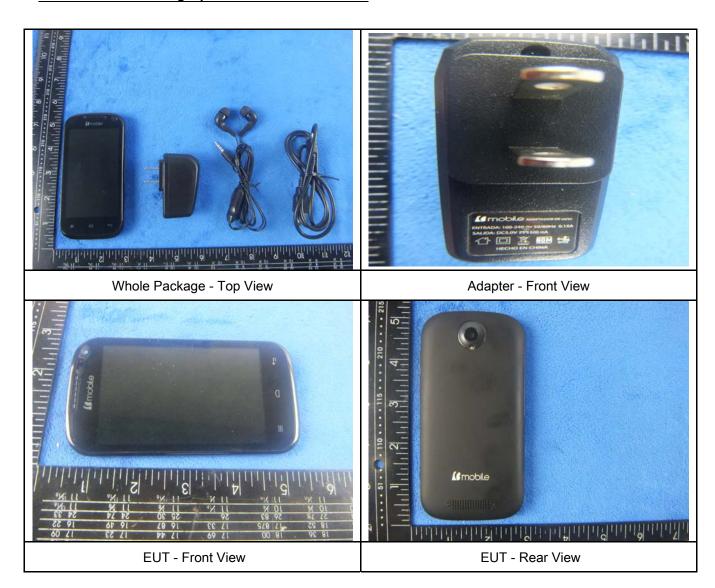
Instrument	Model	Serial #	Cal Date	Cal Due	In use	
AC Line Conducted Emissions						
EMI test receiver	ESCS30	8471241027	09/18/2014	09/17/2015	•	
Line Impedance Stabilization Network	LI-125A	191106	09/26/2014	09/25/2015	>	
Line Impedance Stabilization Network	LI-125A	191107	09/26/2014	09/25/2015	<u><</u>	
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 (1 ~ 26.5GHz)	8449B	3008A02402	03/25/2015	03/24/2016	(
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	>	



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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 - Right View



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Annex B.ii. Photograph: EUT Internal Photo





Cover Off - Top View 1

Cover Off - Top View 2



Battery - Top View



Battery - Bottom View



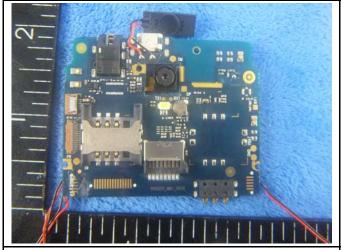
Mainborad With Shielding - Front View



Mainborad With out Shielding - Front View



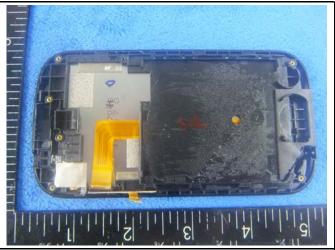
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Mainborad With Shielding - rear View

LCD front View





LCD Rear View

GPS- Antenna View





WIFI - Antenna View

GSM Antenna View



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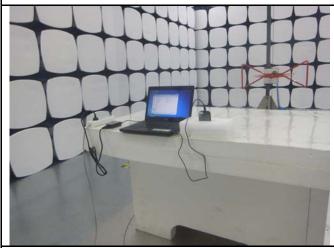
Annex B.iii. Photograph: Test Setup Photo



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

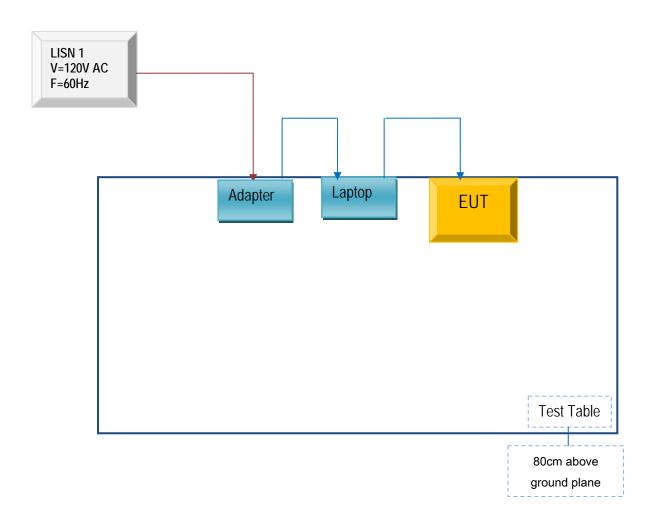


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Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

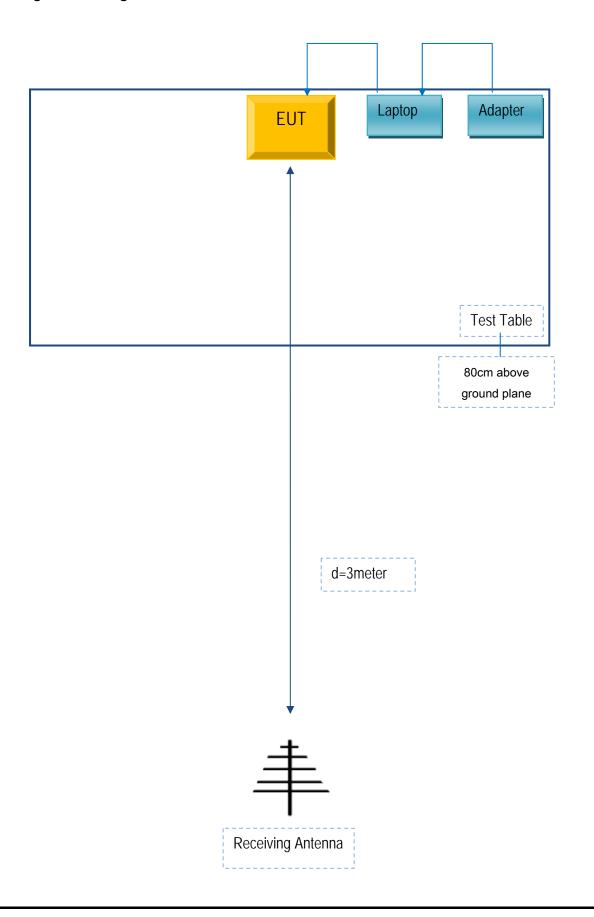
Block Configuration Diagram for Conducted Emissions





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Block Configuration Diagram for Radiated Emissions





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Annex C. il. 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

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: AX680/ AX670

FCC ID: ZSW-30-006

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: