# EMC TEST REPORT



Report No.: 15050057-FCC-E
Supersede Report No.:N/A

Applicant	b mobile H	K Limited	
Product Name	Mobile pho	one	
Model No.	AX605		
Serial No.	N/A		
Test Standard	FCC Part	15 Subpart B Class B:2014, A	NSI C63.4: 2014
Test Date	December	12 to December 31, 2015	
Issue Date	December	31, 2015	
Test Result	Pass	Fail	
Equipment compl	ied with the	specification	
Equipment did no	t comply witl	n the specification	
Winnie. Z	Themy	David Huang	
Winnie Zh Test Engir		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

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**

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#### **Accreditations for Conformity Assessment**

	<u></u>
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
15050057-FCC-E	NONE	Original	December 31, 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: AX605

Serial Model: N/A

Date EUT received: December11,2015

Test Date(s): December 12 to December 31, 2015

GSM850: -1dBi PCS1900: 0dBi

UMTS-FDD Band V: 0dBi

Antenna Gain: UMTS-FDD Band II: 0dBi

Bluetooth: 0.5dBi WIFI: 0.5dBi

GPS: -2dBi

GSM / GPRS: GMSK EGPRS: GMSK, 8PSK

Type of Modulation: UMTS-FDD: QPSK, 16QAM

802.11b/g/n: DSSS, OFDM

Bluetooth: GFSK,  $\pi$  /4DQPSK, 8DPSK

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: 2402-2480 MHz GPS RX:1575.42 MHz



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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

GPS:1CH

Battery:

Model:A3506

Standard Voltage:DC3.7V

Rated Capacity:1300mAh,4.81Wh

Input Power: Adapter:

Model:N/A

Input: AC100-240V; 50/60Hz; 0.15A

Output: DC 5.0V,500mA

Port: Power Port, Earphone Port, USB Port

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

Trade Name : Bmobile

FCC ID: ZSW-30-022



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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	25°C		
Relative Humidity	57%		
Atmospheric Pressure	1024mbar		
Test date :	December 24, 2015		
Tested By :	Winnie Zhang		

#### Requirement(s):

Spec	Item	Requirement Applicable						
47CFR§15.	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.						
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  80cm  Horizontal Ground							
Procedure	<ol> <li>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.</li> <li>The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.</li> </ol>							



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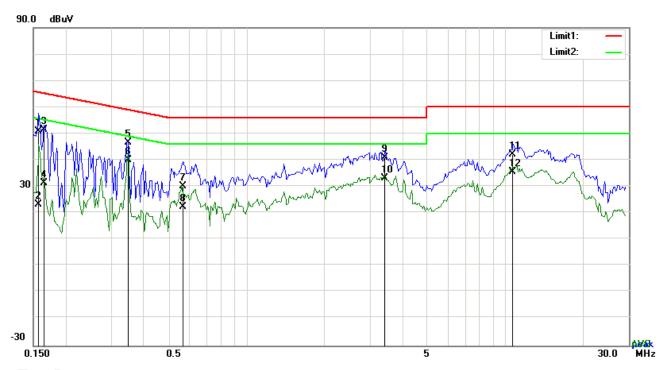
	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss
	coaxial cable.
	4. All other supporting equipment were powered separately from another main supply.
	5. The EUT was switched on and allowed to warm up to its normal operating condition.
	6. A scan was made on the NEUTRAL 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	□ <sub>N/A</sub>
Test Plot	Yes (See below)	□ <sub>N/A</sub>



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## Test Mode 1 : USB Mode



#### Test Data

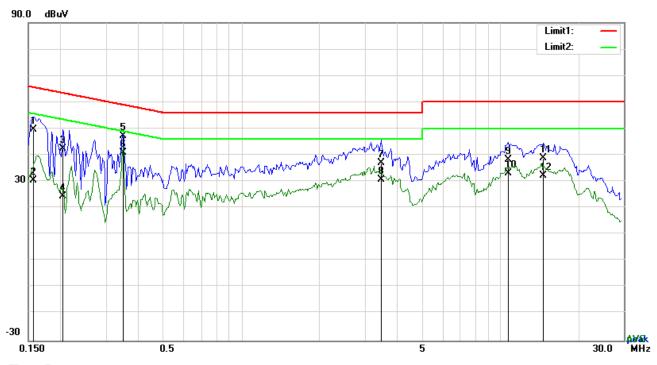
#### Phase Line Plot at 120Vac, 60Hz

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



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Test Mode : USB Mode



#### Test Data

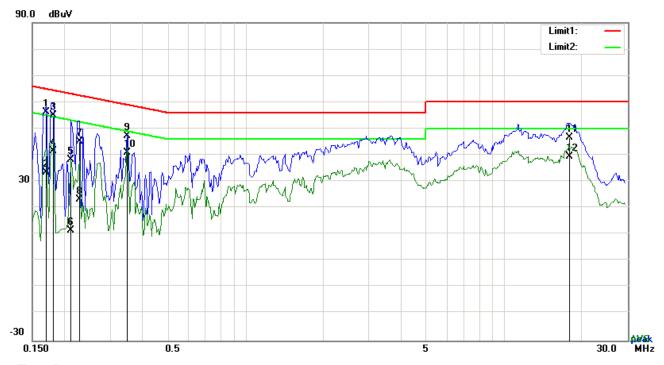
#### Phase Neutral Plot at 120Vac, 60Hz

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	Ν	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	Ν	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	Ν	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



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Test Mode : USB Mode



#### Test Data

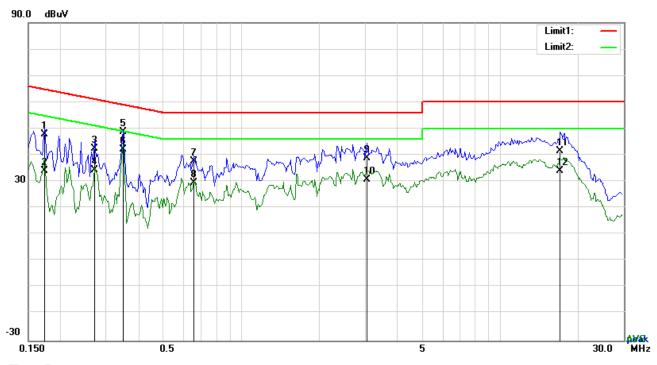
#### Phase Line Plot at 240Vac, 60Hz

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



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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



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## 6.2 Radiated Emissions

Temperature	25°C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	December 24, 2015
Tested By:	Winnie Zhang

#### Requirement(s):

Spec	Item	m Requirement Applicable				
47CFR§15. 109(d)	a)	Except higher limit as specified else emissions from the low-power radio exceed the field strength levels spet the level of any unwanted emission the fundamental emission. The tight edges  Frequency range (MHz)  30 - 88  88 - 216  216 960	p-frequency devices shall not ecified in the following table and as shall not exceed the level of	<b>Y</b>		
		Above 960	500			
Test Setup		Ant. Tower  Support Units  Turn Table  Ground Plane  Test Receiver				
Procedure	2.	1 1				



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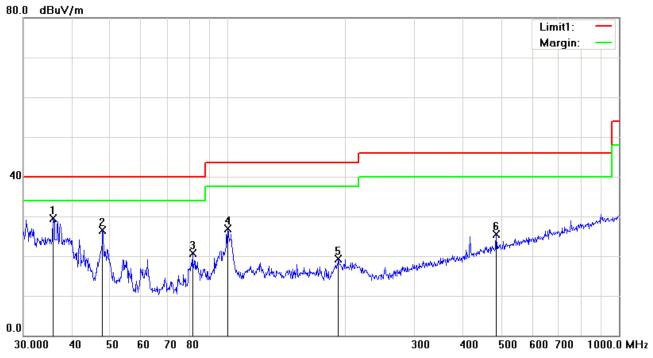
		over a full rotation of the EUT) was chosen.
	b.	The EUT was then rotated to the direction that gave the maximum
		emission.
	C.	Finally, the antenna height was adjusted to the height that gave the maximum
		emission.
	3. The r	esolution bandwidth and video bandwidth of test receiver/spectrum analyzer is
	120 k	Hz for Quasiy Peak detection at frequency below 1GHz.
	4. The re	solution bandwidth of test receiver/spectrum analyzer is 1MHz and video
	band	width is 3MHz with Peak detection for Peak measurement at frequency above
	1GHz	<b>z</b> .
	The	resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video
	band	dwidth with Peak detection for Average Measurement as below at frequency
	abov	ve 1GHz.
	■ 11	kHz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%)
	5. Steps	s 2 and 3 were repeated for the next frequency point, until all selected frequency
	points	s were measured.
Remark		
Result	Pass	☐ Fail
I.	7	
Test Data	Yes	N/A
Test Plot	Yes (See be	low)



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Test Mode 1: USB Mode

### Below 1GHz



#### Test Data

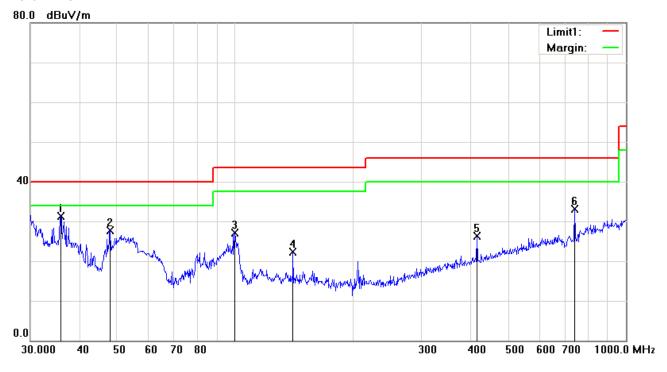
### Horizontal Polarity Plot @3m

No.	P/L	Frequency	Readin g	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/ m)		(dB/m)	(dBuV/m )	(dBuV/m)	(dB)	(cm)	( )
1	Н	35.7491	33.93	peak	-4.49	29.44	40.00	-10.56	100	323
2	Н	47.8260	38.63	peak	-12.20	26.43	40.00	-13.57	100	297
3	Н	81.2117	34.33	peak	-13.71	20.62	40.00	-19.38	100	79
4	Н	99.8777	37.78	peak	-10.83	26.95	43.50	-16.55	100	349
5	Н	191.7450	28.46	peak	-9.14	19.32	43.50	-24.18	100	49
6	Н	485.6093	27.65	peak	-2.09	25.56	46.00	-20.44	100	23



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#### Below 1GHz



#### Test Data

### Vertical Polarity Plot @3m

No.	P/L	Frequency	Readin g	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/ m)		(dB/m)	(dBuV/m )	(dBuV/m)	(dB)	(cm)	( )
1	>	35.8747	35.92	peak	-4.58	31.34	40.00	-8.66	100	64
2	٧	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	٧	416.1791	30.20	peak	-3.91	26.29	46.00	-19.71	100	161
6	٧	739.6605	30.92	peak	2.20	33.12	46.00	-12.88	100	14



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#### Above 1GHz

Frequency (MHz)	Amplitude (dΒμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Factors (dB)	Limit (dBµV/m)	Margin (dB)	Detector (PK/AV)
1565.77	53.55	48	167	٧	-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	Н	-21.15	74	-22.86	PK
2850.11	51.99	123	200	Н	-21.23	74	-23.01	PK
1809.51	52.24	45	165	Н	-20.77	74	-22.76	PK

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

Note 2: 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.



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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	09/17/2015	09/16/2016	>			
Line Impedance Stabilization Network	LI-125A	191106	09/25/2015	09/24/2016	V			
Line Impedance Stabilization Network	LI-125A	191107	09/25/2015	09/24/2016	<b>\</b>			
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	V			
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/25/2015	03/24/2016	<u>&lt;</u>			
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	<u> </u>			
Double Ridge Horn Antenna	AH-118	71259	09/24/2015	09/23/2016	<u>S</u>			



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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 - Left View



EUT - Right View



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#### Annex B.ii. Photograph: EUT Internal Photo





Cover Off - Top View 1

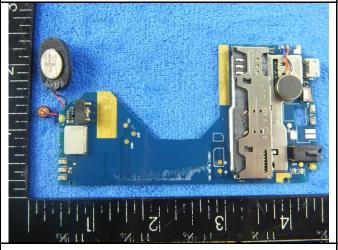
Cover Off - Top View 2



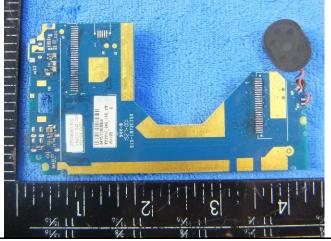


Battery - Front View

Battery - Rear View



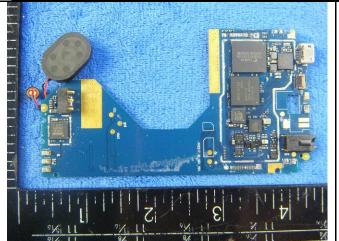
Mainbard with Shielding - Front View



Mainbard with Shielding - Rear View

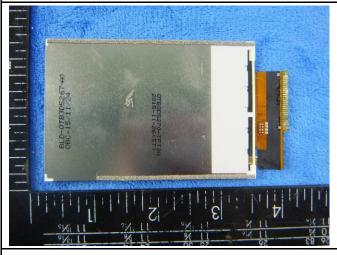


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Mainboard without shielding - Front View

LCD - Front View

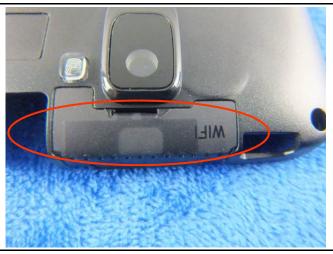




LCD - Rear View

GSM/PCS/UMTS-FDD - Antenna View





GPS - Antenna View

WIFI/BT - Antenna View

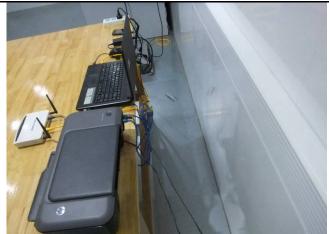


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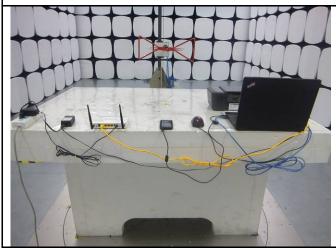
## Annex B.iii. Photograph: Test Setup Photo



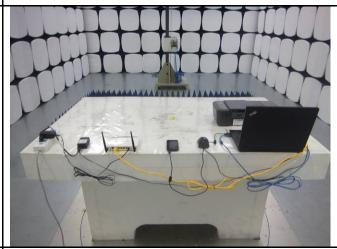
Conducted Emissions Test Setup - Front View



Conducted Emissions Test Setup - Side View



Radiated Spurious Emissions Test Setup Below 1GHz



Radiated Spurious Emissions Test Setup Above 1GHz

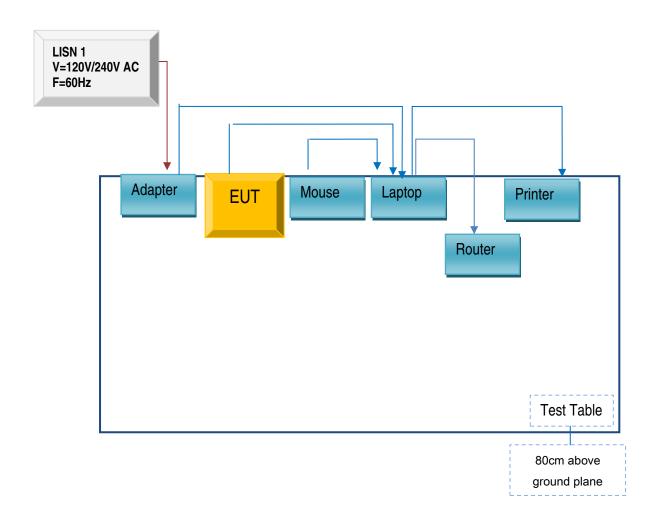


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## Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

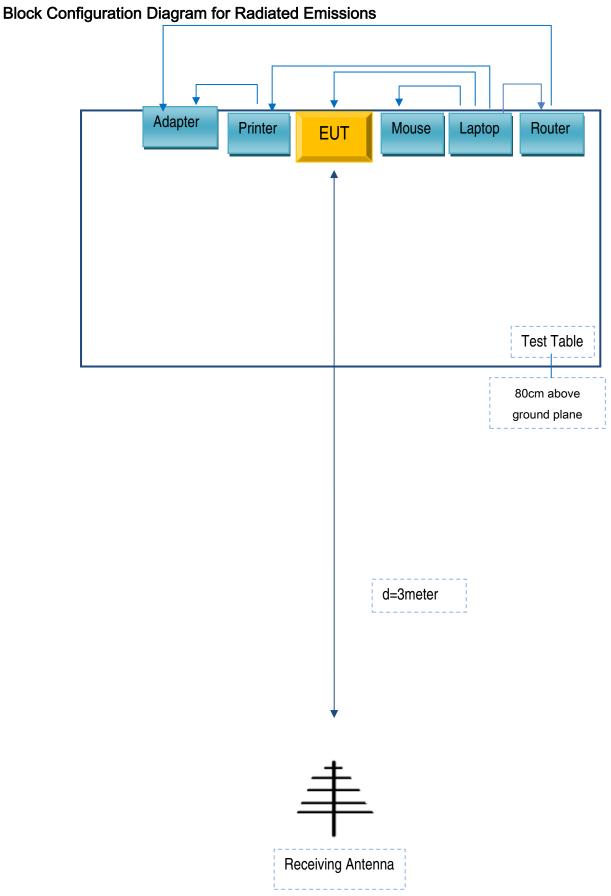
#### Annex C.ii. TEST SET UP BLOCK

#### **Block Configuration Diagram for Conducted Emissions**





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### Annex C. il. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

#### Supporting Euquipment:

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	KH130452136



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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