# EMC TEST REPORT



Report No.: 16070815-FCC-E Supersede Report No: N/A

Applicant	MOBIWIRE MOBILES (NINGBO) CO.,LTD		
Product Name	4G LTE SMARTPHONE		
Model No.	N503		
Serial No.	N/A		
Test Standard	FCC Part 15 Subpart B Class B:2015, ANSI C63.4: 2014		
Test Date	August 09 to September 05, 2016		
Issue Date	September 07, 2016		
Test Result	Pass Fail		
Equipment complied with the specification			
Equipment did not comply with the specification			
Loven	Luo	David Huang	
Loren Luo 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
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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.



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### **Accreditations for Conformity Assessment**

Scope
EMC, RF/Wireless, SAR, Telecom
EMC, RF/Wireless, SAR, Telecom
EMC, RF, Telecom, SAR, Safety
RF/Wireless, SAR, Telecom
EMC, RF, Telecom, SAR, Safety
EMI, EMS, RF, SAR, Telecom, Safety
EMI, RF/Wireless, SAR, Telecom
EMC, RF, SAR, Telecom
EMC, RF, SAR, Telecom, Safety



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# 1. Report Revision History

Report No.	Report Version	Description	Issue Date
16070815-FCC-E	NONE	Original	September 07, 2016

# 2. Customer information

Applicant Name	MOBIWIRE MOBILES (NINGBO) CO.,LTD
Applicant Add	No.999,Dacheng East Road,Fenghua City,Zhejiang
Manufacturer	MOBIWIRE MOBILES (NINGBO) CO.,LTD
Manufacturer Add	No.999,Dacheng East Road,Fenghua City,Zhejiang

# 3. Test site information

	1	
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:	4G LTE SMARTPHONE

Main Model: N503

Serial Model: N/A

GSM850: 0dBi

PCS1900: 1dBi UMTS-FDD Band V: 0dBi

Antenna Gain: UMTS-FDD Band II: 1dBi

LTE Band IV: 0.5dBi

Bluetooth/BLE/WIFI: -3dBi

GPS: -3dBi

Antenna Type: PIFA antenna

Adapter:

Model: S005UA0500100

Input: AC100-240V~50/60Hz,150mA

Input Power:
Output: DC 5.0V,1000mA

Battery:

Spec: 3.8V,2270mAh(8.63Wh)

Equipment Category : JBP

GSM / GPRS: GMSK

EGPRS: GMSK,8PSK

UMTS-FDD: QPSK

LTE Band: QPSK, 16QAM Type of Modulation:

802.11b/g/n: DSSS, OFDM

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

BLE: GFSK GPS:BPSK



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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;

RX: 1932.4 ~ 1987.6 MHz

RF Operating Frequency (ies):

LTE Band IV TX: 1710.7 ~ 1754.3 MHz; RX: 2110.7 ~ 2154.3 MHz

WIFI: 802.11b/g/n(20M): 2412-2462 MHz WIFI: 802.11n(40M): 2422-2452 MHz Bluetooth& BLE: 2402-2480 MHz

GPS: 1575.42 MHz

GSM 850: 124CH PCS1900: 299CH

UMTS-FDD Band V: 102CH UMTS-FDD Band II: 277CH

Number of Channels: WIFI

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

WIFI:802.11n(40M): 7CH

Bluetooth: 79CH

BLE: 40CH GPS:1CH

Port:

Power Port, Earphone Port, USB Port

Trade Name : Noblex

FCC ID: 2ADA4N503

Date EUT received: July 18, 2016

Test Date(s): August 09 to September 05, 2016



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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	24°C
Relative Humidity	53%
Atmospheric Pressure	1011mbar
Test date :	August 11, 2016
Tested By:	Loren Luo

#### Requirement(s):

Spec	Item	Requirement	Applicable			
47CFR§15.	a)	₹				
107		lower limit applies at th	Limit (			
		(MHz)	QP	Average		
		0.15 ~ 0.5	66 – 56	56 – 46		
		0.5 ~ 5	56	46		
		5 ~ 30	60 50			
Test Setup			scal Ground erence Plane	Test Receiver		
	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	<ol> <li>The EUT and supporting equipment were set up in accordance with the requirement 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 filtered mains.</li> </ol>					



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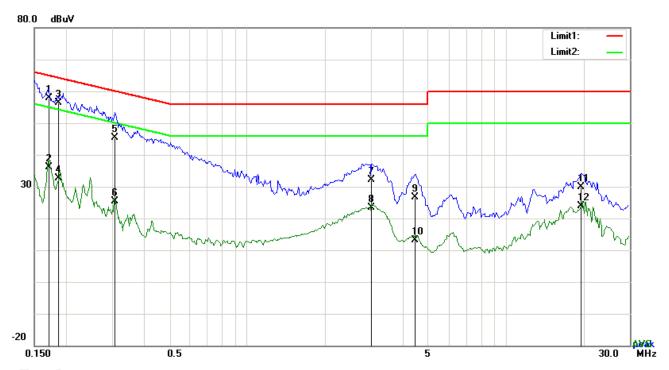
	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss
	coaxial cable.
	4. All other supporting equipment were powered separately from another main supply.
	5. The EUT was switched on and allowed to warm up to its normal operating condition.
	6. A scan was made on the NEUTRAL 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 : USB Mode



Test Data

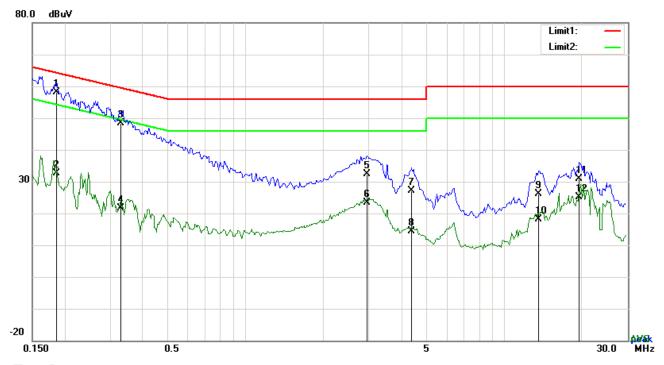
#### Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.1703	47.79	QP	10.03	57.82	64.95	-7.13
2	L1	0.1703	26.15	AVG	10.03	36.18	54.95	-18.77
3	L1	0.1854	46.42	QP	10.03	56.45	64.24	-7.79
4	L1	0.1854	22.53	AVG	10.03	32.56	54.24	-21.68
5	L1	0.3067	35.40	QP	10.03	45.43	60.06	-14.63
6	L1	0.3067	15.32	AVG	10.03	25.35	50.06	-24.71
7	L1	3.0156	22.01	QP	10.06	32.07	56.00	-23.93
8	L1	3.0156	13.39	AVG	10.06	23.45	46.00	-22.55
9	L1	4.4469	16.55	QP	10.07	26.62	56.00	-29.38
10	L1	4.4469	3.07	AVG	10.07	13.14	46.00	-32.86
11	L1	19.4853	19.54	QP	10.29	29.83	60.00	-30.17
12	L1	19.4853	13.59	AVG	10.29	23.88	50.00	-26.12



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Test Mode :
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#### Test Data

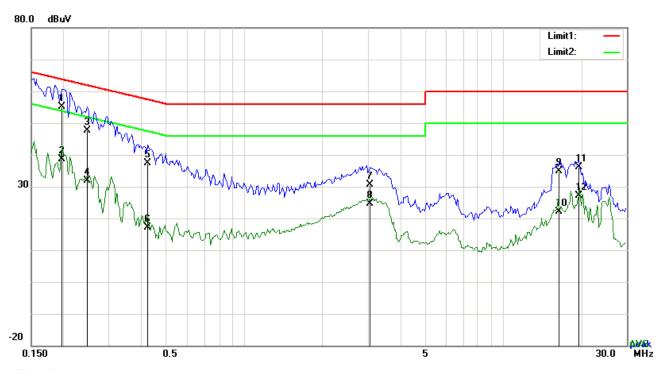
## Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1854	48.23	QP	10.02	58.25	64.24	-5.99
2	Ν	0.1854	22.62	AVG	10.02	32.64	54.24	-21.60
3	Ν	0.3303	38.44	QP	10.02	48.46	59.44	-10.98
4	N	0.3303	11.51	AVG	10.02	21.53	49.44	-27.91
5	Ν	2.9502	22.35	QP	10.05	32.40	56.00	-23.60
6	Ν	2.9502	13.28	AVG	10.05	23.33	46.00	-22.67
7	Ν	4.3845	17.07	QP	10.06	27.13	56.00	-28.87
8	Ν	4.3845	4.26	AVG	10.06	14.32	46.00	-31.68
9	N	13.5846	16.07	QP	10.18	26.25	60.00	-33.75
10	Ν	13.5846	7.86	AVG	10.18	18.04	50.00	-31.96
11	N	19.4658	20.64	QP	10.25	30.89	60.00	-29.11
12	N	19.4658	14.88	AVG	10.25	25.13	50.00	-24.87



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Test Mode : USB Mode



Test Data

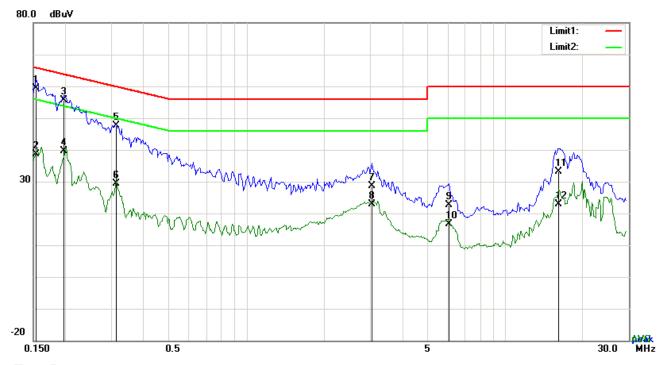
#### Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.1968	45.08	QP	10.03	55.11	63.74	-8.63
2	L1	0.1968	28.71	AVG	10.03	38.74	53.74	-15.00
3	L1	0.2475	37.59	QP	10.03	47.62	61.84	-14.22
4	L1	0.2475	21.80	AVG	10.03	31.83	51.84	-20.01
5	L1	0.4230	27.45	QP	10.03	37.48	57.39	-19.91
6	L1	0.4230	7.14	AVG	10.03	17.17	47.39	-30.22
7	L1	3.0663	20.45	QP	10.06	30.51	56.00	-25.49
8	L1	3.0663	14.64	AVG	10.06	24.70	46.00	-21.30
9	L1	16.3985	24.70	QP	10.25	34.95	60.00	-25.05
10	L1	16.3985	11.97	AVG	10.25	22.22	50.00	-27.78
11	L1	19.5789	25.83	QP	10.29	36.12	60.00	-23.88
12	L1	19.5789	16.79	AVG	10.29	27.08	50.00	-22.92



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#### 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	0.1539	49.47	QP	10.02	59.49	65.79	-6.30
2	N	0.1539	28.49	AVG	10.02	38.51	55.79	-17.28
3	N	0.1968	45.54	QP	10.02	55.56	63.74	-8.18
4	N	0.1968	29.62	AVG	10.02	39.64	53.74	-14.10
5	N	0.3138	37.61	QP	10.02	47.63	59.87	-12.24
6	N	0.3138	19.33	AVG	10.02	29.35	49.87	-20.52
7	N	3.0507	18.67	QP	10.05	28.72	56.00	-27.28
8	N	3.0507	12.75	AVG	10.05	22.80	46.00	-23.20
9	N	6.0654	12.60	QP	10.08	22.68	60.00	-37.32
10	N	6.0654	6.64	AVG	10.08	16.72	50.00	-33.28
11	N	16.1001	22.85	QP	10.21	33.06	60.00	-26.94
12	N	16.1001	12.67	AVG	10.21	22.88	50.00	-27.12



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## 6.2 Radiated Emissions

Temperature	22°C
Relative Humidity	55%
Atmospheric Pressure	1013mbar
Test date :	August 13, 2016
Tested By :	Loren Luo

#### Requirement(s):

Spec	Item	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)	<b>&gt;</b>		
, ,		30 – 88	Field Strength (μV/m) 100		
		88 - 216	150		
		216 960	200		
		Above 960	500		
Test Setup		Ant. Tower  Support Units  Turn Table  Ground Plane  Test Receiver			
Procedure	2.				



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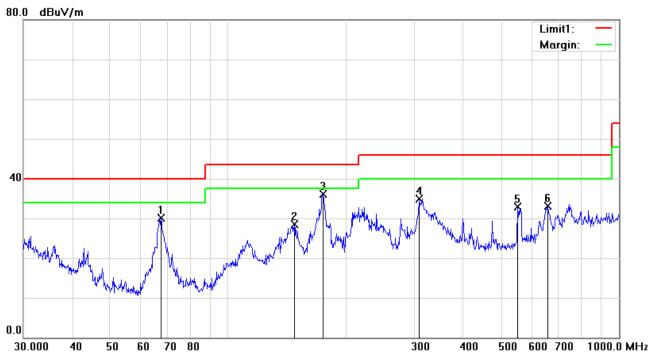
			over a full rotation of the EUT) was chosen.
		b.	The EUT was then rotated to the direction that gave the maximum
			emission.
		C.	Finally, the antenna height was adjusted to the height that gave the maximum
			emission.
	3.	The res	solution bandwidth and video bandwidth of test receiver/spectrum analyzer is
		120 kH	z for Quasiy Peak detection at frequency below 1GHz.
	4.	The res	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	esolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video
		bandv	vidth with Peak detection for Average Measurement as below at frequency
		above	1GHz.
		■ 1 kŀ	Hz (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	were measured.
Remark			
Result	Pa	ss	Fail
	7		
Test Data	Yes		N/A
Test Plot	Yes (S	ee belo	w) N/A



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Test Mode :
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#### Below 1GHz



#### Test Data

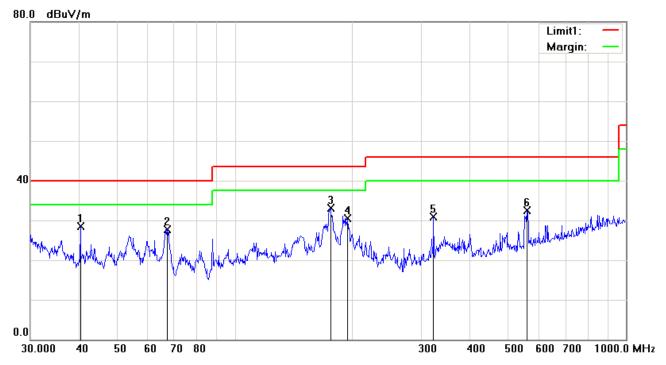
## Horizontal Polarity Plot @3m

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	67.4382	43.97	peak	-13.79	30.18	40.00	-9.82	100	142
2	Н	147.9214	36.84	peak	-8.42	28.42	43.50	-15.08	100	286
3	Н	175.0368	45.57	peak	-9.49	36.08	43.50	-7.42	100	121
4	Н	307.8313	41.52	peak	-6.68	34.84	46.00	-11.16	100	325
5	Н	550.9480	33.71	peak	-0.80	32.91	46.00	-13.09	100	160
6	Н	658.8362	32.20	peak	0.91	33.11	46.00	-12.89	100	225



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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	>	40.2757	36.30	peak	-7.77	28.53	40.00	-11.47	100	208
2	٧	67.2022	41.57	peak	-13.81	27.76	40.00	-12.24	100	134
3	V	175.6516	42.66	peak	-9.54	33.12	43.50	-10.38	100	121
4	V	194.4534	39.53	peak	-9.01	30.52	43.50	-12.98	100	134
5	V	322.1886	37.23	peak	-6.26	30.97	46.00	-15.03	100	355
6	٧	558.7302	33.13	peak	-0.67	32.46	46.00	-13.54	100	142



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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)
793.56	51.3	52	137	V	-21.36	74	-22.7	PK
1075.26	52.03	136	146	V	-24.03	74	-21.97	PK
1123.55	53.44	87	157	V	-22.5	74	-20.56	PK
896.53	55.02	72	263	Н	-20.15	74	-18.98	PK
1532.65	49.38	113	252	Н	-21.33	74	-24.62	PK
1067.9	48.77	156	196	Н	-20.19	74	-25.23	PK

Note1: The highest frequency of the EUT is 2480 MHz, so the testing has been conformed to 5\*2472MHz=12,360MHz.

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

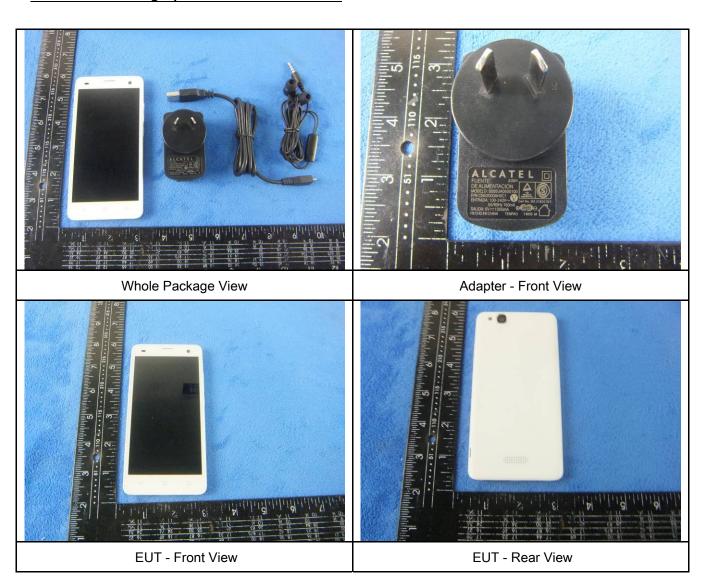
Instrument	Model	Serial#	Cal Date	Cal Due	In use		
AC Line Conducted Emissions							
EMI test receiver	ESCS30	8471241027	09/17/2015	09/16/2016	•		
Line Impedance Stabilization Network	LI-125A	191106	09/25/2015	09/24/2016	V		
Line Impedance Stabilization Network	LI-125A	191107	09/25/2015	09/24/2016	<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	<b>(</b>		
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/24/2016	03/23/2017	<u>&lt;</u>		
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	<b>\</b>		
Double Ridge Horn Antenna	AH-118	71259	09/24/2015	09/23/2016	<b>\</b>		



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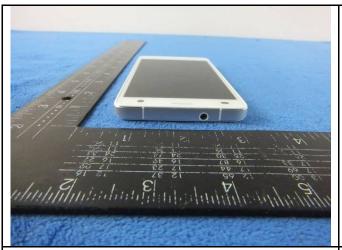
## Annex B. EUT And Test Setup Photographs

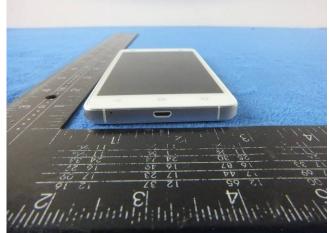
#### Annex B.i. Photograph: EUT External Photo





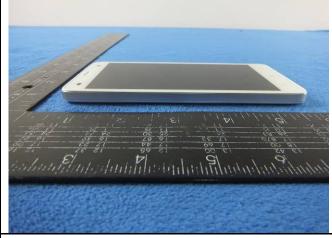
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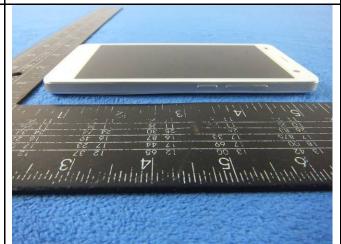


EUT - Top View

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 - Front View

Battery - Rear View



Mainboard with Shielding - Front View



Mainboard without Shielding - Front View

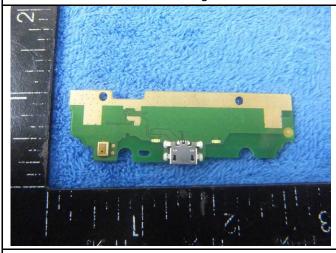


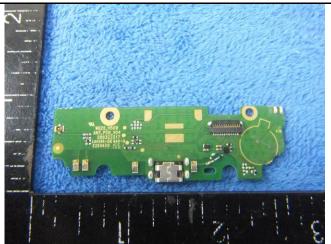
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Mainboard with Shielding - Rear View

Mainboard without Shielding - Rear View





Small Board - Front View

Small Board - Rear View



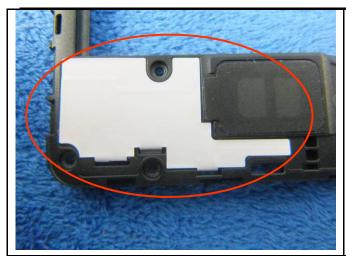


LCD - Front View

LCD - Rear View



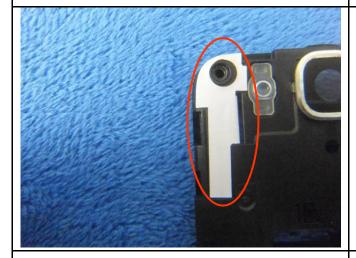
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GSM/PCS/UMTS-FDD Antenna View

WIFI/BT/BLE/GPS - Antenna View

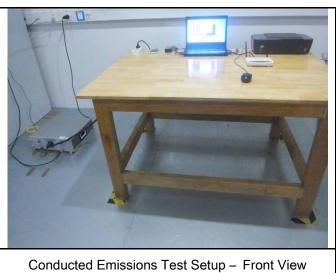


LTE Antenna View



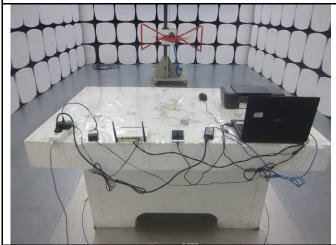
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## Annex B.iii. Photograph: Test Setup Photo

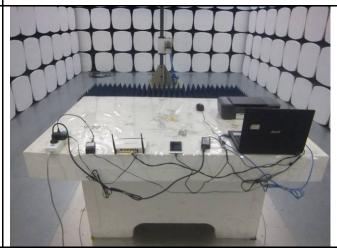




Conducted Emissions Test Setup - Side View



Radiated Emissions Test Setup Below 1GHz



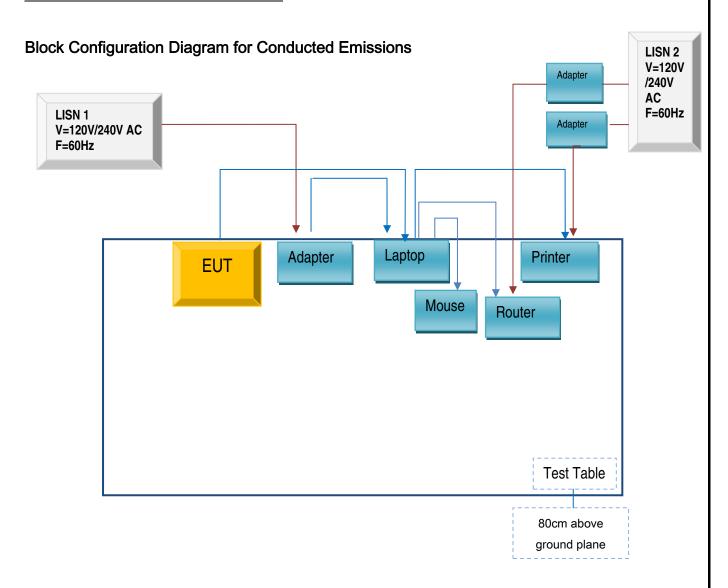
Radiated Emissions Test Setup Above 1GHz



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## Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

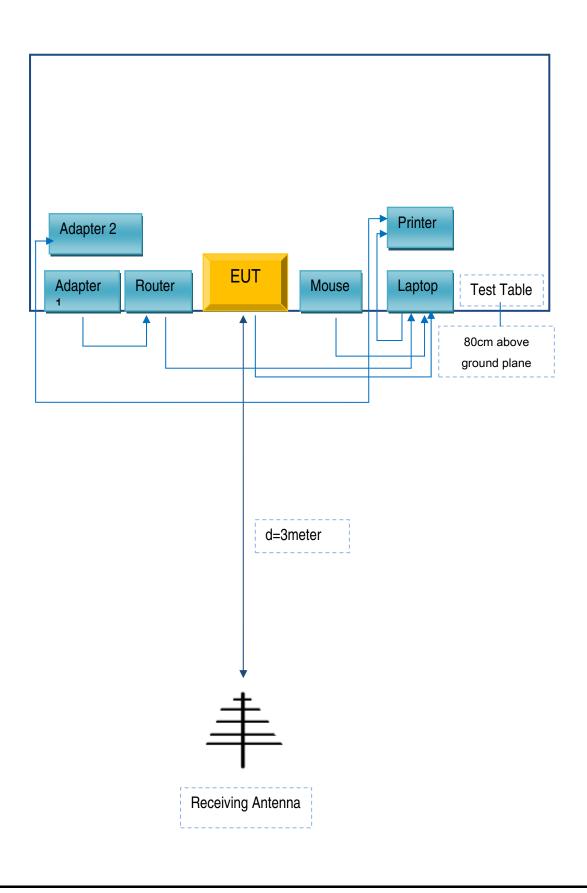
#### Annex C.ii. TEST SET UP BLOCK





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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.

#### Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
Lenovo	Laptop	E40	LR-1EHRX
GOLDWEB	Router	R102	1202032094
MOBIWIRE MOBILES (NINGBO) CO.,LTD	Adapter	S005UA0500100	CBA3000AH0C1
Lenovo	AC Adapter	42T4416	21D9JU
HP	Printer	VCVRA-1003	CN36M19JWX
DELL	Mouse	E100	912NMTUT41481
BULL	Socket	GN-403	GN201203

#### Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	2m	JX120051274
USB Cable	Un-shielding	No	2m	CBA3000AH0C1
RJ45 Cable	Un-shielding	No	2m	KX156327541
Router Power cable	Un-shielding	No	2m	13274630Z
Printer Power cable	Un-shielding	No	2m	127581031
Power Cable	Un-shielding	No	0.8m	GT211032



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

Please see the attachment



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## Annex E. DECLARATION OF SIMILARITY

N/A