EMC TEST REPORT



Report No.: 16071183-FCC-E Supersede Report No: N/A

Applicant	NEG TECHNOLOGY CO., LIMITED		
Product Name	Mobile Phone		
Model No.	SMART O2	2	
Serial No.	N/A		
Test Standard	FCC Part 1	5 Subpart B Class B:2015, A	NSI C63.4: 2014
Test Date	September 23 to October 16, 2016		
Issue Date	October 17, 2016		
Test Result	Pass Fail		
Equipment compl	Equipment complied with the specification		
Equipment did no	Equipment did not comply with the specification		
Loven	Tho	Dewid 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
South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn



Test Report	16071183-FCC-E
Page	2 of 31

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
- Country in togicin	Собра
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



Test Report	16071183-FCC-E
Page	3 of 31

This page has been left blank intentionally.



Test Report	16071183-FCC-E
Page	4 of 31

CONTENTSD

1.	REPORT REVISION HISTORY	5
2.	CUSTOMER INFORMATION	5
3.	TEST SITE INFORMATION	5
4.	EQUIPMENT UNDER TEST (EUT) INFORMATION	6
5.	TEST SUMMARY	8
6.	MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	9
6.1	AC POWER LINE CONDUCTED EMISSIONS	9
6.2	RADIATED EMISSIONS	15
ANI	NEX A. TEST INSTRUMENT	20
ANI	NEX B. EUT AND TEST SETUP PHOTOGRAPHS	21
ANI	NEX C. TEST SETUP AND SUPPORTING EQUIPMENT	27
ANI	NEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST	30
ANI	NEX E. DECLARATION OF SIMILARITY	31



Test Report	16071183-FCC-E
Page	5 of 31

1. Report Revision History

Report No.	Report Version	Description	Issue Date
16071183-FCC-E	NONE	Original	October 17, 2016

2. Customer information

Applicant Name	NEG TECHNOLOGY CO., LIMITED
Applicant Add	Rm 1406, Block B, Jinsejiari, Jingtian south road, Futian district, Shenzhen, China
Manufacturer	NEG TECHNOLOGY CO., LIMITED
Manufacturer Add	Rm 1406, Block B, Jinsejiari, Jingtian south road, Futian district, Shenzhen, China

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park
Lab Address	South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China
Lab Address	
	518108
FCC Test Site No.	718246
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0



Test Report	16071183-FCC-E
Page	6 of 31

4. Equipment under Test (EUT) Information

Main Model: SMART O2

Serial Model: N/A

GSM850: -0.45dBi

PCS1900: -0.53dBi

UMTS-FDD Band V: -0.46dBi

Antenna Gain: UMTS-FDD Band II:-0.51dBi

LTE Band IV: -0.51dBi

Bluetooth/BLE/WIFI: -1.1dBi

GPS: -1.5dBi

Antenna Type: PIFA antenna

Adapter:

Model: SMART O2

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

Output: DC 5.0V,1000mA

Input Power: Battery:

•

Model: SMART O2

Voltage limited of charging: 4.35V

Spec: 3.8V,2300mAh(8.74Wh)

Equipment Category: JBP

GSM / GPRS: GMSK EGPRS: GMSK,8PSK

UMTS-FDD: QPSK

Type of Modulation: LTE Band: QPSK, 16QAM

802.11b/g/n: DSSS, OFDM

Bluetooth: GFSK, π /4DQPSK, 8DPSK

BLE: GFSK GPS:BPSK



Test Report	16071183-FCC-E
Page	7 of 31

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: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 :

OWN

FCC ID:

2AAZ8-SMARTO2

Date EUT received:

September 22, 2016

Test Date(s):

September 23 to October 16, 2016



Test Report	16071183-FCC-E
Page	8 of 31

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		
-	-	-		



Test Report	16071183-FCC-E
Page	9 of 31

6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	22°C		
Relative Humidity	51%		
Atmospheric Pressure	1009mbar		
Test date :	October 09, 2016		
Tested By :	Loren Luo		

Requirement(s):

Spec	Item	Requirement Applicable					
47CFR§15.	a)	K					
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	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 rethe 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, α 						
	filte	ered mains.					



Test Report	16071183-FCC-E
Page	10 of 31

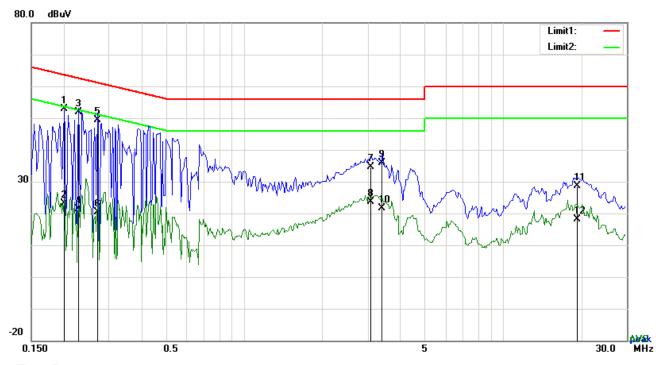
	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss
	coaxial cable.
	4. All other supporting equipment were powered separately from another main supply.
	5. The EUT was switched on and allowed to warm up to its normal operating condition.
	6. A scan was made on the NEUTRAL 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 Report	16071183-FCC-E
Page	11 of 31

Test Mode : USB Mode



Test Data

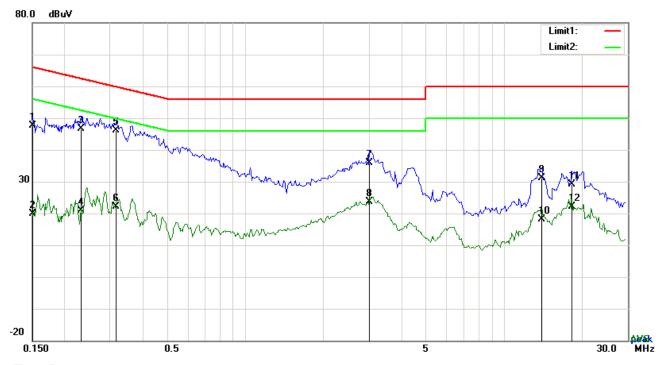
Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.2007	42.90	QP	10.03	52.93	63.58	-10.65
2	L1	0.2007	13.16	AVG	10.03	23.19	53.58	-30.39
3	L1	0.2280	41.93	QP	10.03	51.96	62.52	-10.56
4	L1	0.2280	11.42	AVG	10.03	21.45	52.52	-31.07
5	L1	0.2709	39.28	QP	10.03	49.31	61.09	-11.78
6	L1	0.2709	10.43	AVG	10.03	20.46	51.09	-30.63
7	L1	3.0780	24.65	QP	10.06	34.71	56.00	-21.29
8	L1	3.0780	13.56	AVG	10.06	23.62	46.00	-22.38
9	L1	3.4134	25.87	QP	10.06	35.93	56.00	-20.07
10	L1	3.4134	11.62	AVG	10.06	21.68	46.00	-24.32
11	L1	19.2942	18.24	QP	10.29	28.53	60.00	-31.47
12	L1	19.2942	7.92	AVG	10.29	18.21	50.00	-31.79



Test Report	16071183-FCC-E
Page	12 of 31

Test Mode : USB Mode



Test Data

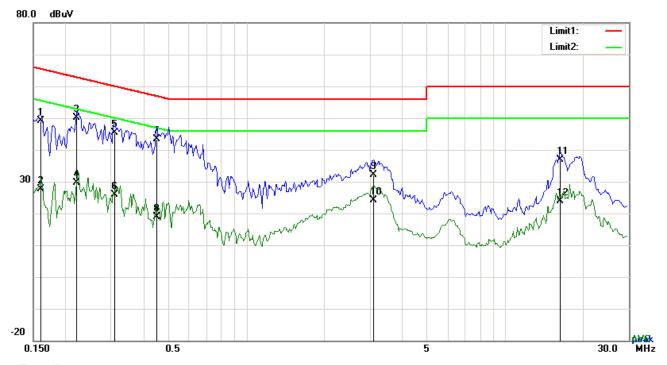
Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.1500	37.58	QP	10.02	47.60	66.00	-18.40
2	N	0.1500	9.92	AVG	10.02	19.94	56.00	-36.06
3	N	0.2319	36.68	QP	10.02	46.70	62.38	-15.68
4	N	0.2319	10.86	AVG	10.02	20.88	52.38	-31.50
5	N	0.3177	36.15	QP	10.02	46.17	59.77	-13.60
6	N	0.3177	12.13	AVG	10.02	22.15	49.77	-27.62
7	N	3.0195	25.92	QP	10.05	35.97	56.00	-20.03
8	Ν	3.0195	13.48	AVG	10.05	23.53	46.00	-22.47
9	N	13.9746	21.01	QP	10.19	31.20	60.00	-28.80
10	Ν	13.9746	7.95	AVG	10.19	18.14	50.00	-31.86
11	N	18.2451	18.94	QP	10.24	29.18	60.00	-30.82
12	N	18.2451	11.91	AVG	10.24	22.15	50.00	-27.85



Test Report	16071183-FCC-E
Page	13 of 31

|--|



Test Data

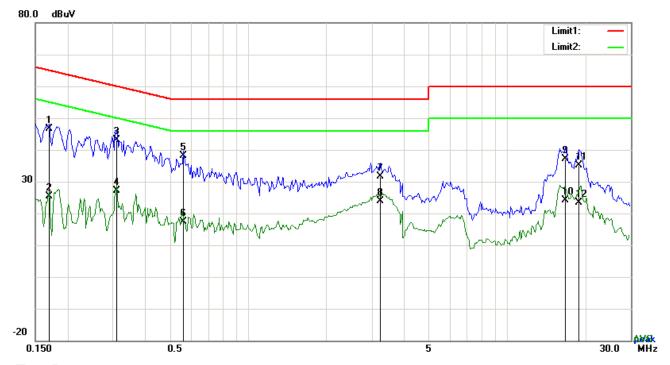
Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.1598	39.04	QP	10.03	49.07	65.47	-16.40
2	L1	0.1598	17.63	AVG	10.03	27.66	55.47	-27.81
3	L1	0.2202	39.99	QP	10.03	50.02	62.81	-12.79
4	L1	0.2202	19.55	AVG	10.03	29.58	52.81	-23.23
5	L1	0.3099	35.28	QP	10.03	45.31	59.97	-14.66
6	L1	0.3099	15.94	AVG	10.03	25.97	49.97	-24.00
7	L1	0.4503	33.38	QP	10.03	43.41	56.87	-13.46
8	L1	0.4503	8.94	AVG	10.03	18.97	46.87	-27.90
9	L1	3.0936	22.13	QP	10.06	32.19	56.00	-23.81
10	L1	3.0936	14.16	AVG	10.06	24.22	46.00	-21.78
11	L1	16.3107	26.71	QP	10.24	36.95	60.00	-23.05
12	L1	16.3107	13.52	AVG	10.24	23.76	50.00	-26.24



Test Report	16071183-FCC-E
Page	14 of 31

Test 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	0.1695	36.50	QP	10.02	46.52	64.98	-18.46
2	N	0.1695	15.38	AVG	10.02	25.40	54.98	-29.58
3	N	0.3099	32.99	QP	10.02	43.01	59.97	-16.96
4	N	0.3099	17.05	AVG	10.02	27.07	49.97	-22.90
5	N	0.5595	28.12	QP	10.02	38.14	56.00	-17.86
6	N	0.5595	7.31	AVG	10.02	17.33	46.00	-28.67
7	N	3.2340	21.54	QP	10.05	31.59	56.00	-24.41
8	N	3.2340	13.94	AVG	10.05	23.99	46.00	-22.01
9	N	16.8021	26.81	QP	10.22	37.03	60.00	-22.97
10	N	16.8021	13.86	AVG	10.22	24.08	50.00	-25.92
11	N	18.8730	24.93	QP	10.25	35.18	60.00	-24.82
12	N	18.8730	13.20	AVG	10.25	23.45	50.00	-26.55



Test Report	16071183-FCC-E
Page	15 of 31

6.2 Radiated Emissions

Temperature	22°C
Relative Humidity	51%
Atmospheric Pressure	1009mbar
Test date :	October 09, 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 spe the level of any unwanted emission the fundamental emission. The tight edges Frequency range (MHz) 30 - 88 88 - 216 216 960	o-frequency devices shall not cified in the following table and s shall not exceed the level of ter limit applies at the band Field Strength (µV/m) 100 150 200	V
Test Setup	Above 960 Ant. Tower Variable Support Units Ground Plane Test Receiver			
Procedure	2.	The EUT was switched on and allowed to warm up to its normal operating condition.		



Test Report	16071183-FCC-E
Page	16 of 31

		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 Quasiy Peak detection at frequency below 1GHz.
	4. The r	esolution bandwidth of test receiver/spectrum analyzer is 1MHz and video
	band	dwidth is 3MHz with Peak detection for Peak measurement at frequency above
	1GF	lz.
	The	e resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video
	bar	ndwidth with Peak detection for Average Measurement as below at frequency
	abo	ove 1GHz.
	■ 1	kHz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%)
	5. Step	s 2 and 3 were repeated for the next frequency point, until all selected frequency
	poin	ts were measured.
Remark		
Keman		
Result	Pass	☐ Fail
	7	
Test Data	Yes	N/A
Test Plot	Yes (See be	elow)



Test Report	16071183-FCC-E
Page	17 of 31

Test Mode : USB Mode

Below 1GHz



Test Data

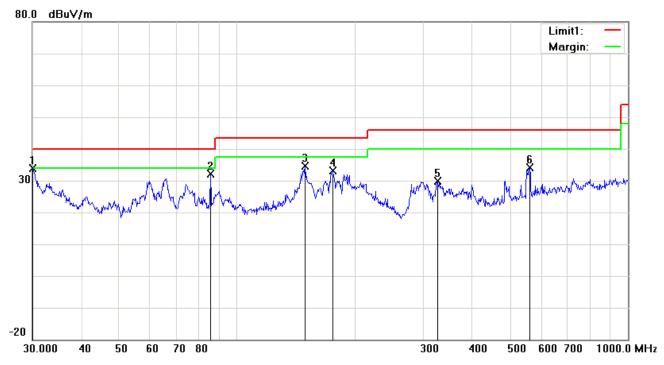
Horizontal Polarity Plot @3m

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	31.1798	25.73	peak	-1.13	24.60	40.00	-15.40	100	64
2	Н	65.5727	40.31	peak	-13.92	26.39	40.00	-13.61	100	139
3	Н	175.6516	43.16	peak	-9.54	33.62	43.50	-9.88	100	360
4	Н	212.2695	42.56	peak	-8.85	33.71	43.50	-9.79	100	59
5	Н	302.4812	39.89	peak	-6.83	33.06	46.00	-12.94	100	158
6	Н	560.6928	35.73	peak	-0.64	35.09	46.00	-10.91	100	21



Test Report	16071183-FCC-E
Page	18 of 31

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	>	30.1054	34.15	QP	-0.34	33.81	40.00	-6.19	100	360
2	٧	85.5977	45.72	peak	-13.48	32.24	40.00	-7.76	100	164
3	V	149.4857	43.00	peak	-8.40	34.60	43.50	-8.90	100	59
4	٧	175.6516	42.70	peak	-9.54	33.16	43.50	-10.34	100	28
5	V	325.5958	35.93	peak	-6.16	29.77	46.00	-16.23	100	46
6	٧	560.6928	34.87	peak	-0.64	34.23	46.00	-11.77	100	173



Test Report	16071183-FCC-E
Page	19 of 31

Above 1GHz

Frequency (MHz)	Amplitude (dΒμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Factors (dB)	Limit (dBµV/m)	Margin (dB)	Detector (PK/AV)
1548.25	50.88	80	166	V	-22.48	74	-23.12	PK
2066.83	49.27	97	121	V	-22.67	74	-24.73	PK
1674.18	50.32	65	177	V	-22.76	74	-23.68	PK
2157.45	49.67	77	168	Н	-22.92	74	-24.33	PK
2889.57	48.14	43	170	Н	-22.41	74	-25.86	PK
1876.48	50.55	79	125	Н	-22.63	74	-23.45	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.



Test Report	16071183-FCC-E
Page	20 of 31

Annex A. TEST INSTRUMENT

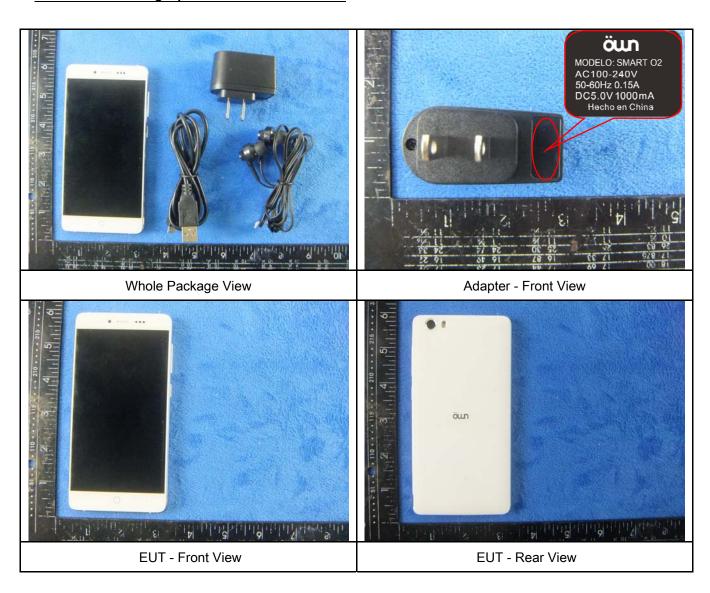
Instrument	Model	Serial#	Cal Date	Cal Due	In use		
AC Line Conducted Emissions							
EMI test receiver	ESCS30	8471241027	09/16/2016	09/15/2017	>		
Line Impedance Stabilization Network	LI-125A	191106	09/24/2016	09/23/2017	>		
Line Impedance Stabilization Network	LI-125A	191107	09/24/2016	09/23/2017	(
LISN	ISN T800	34373	09/24/2016	09/23/2017	<		
Transient Limiter	LIT-153	531118	08/31/2016	08/30/2017	<		
Radiated Emissions							
EMI test receiver	ESL6	100262	09/16/2016	09/15/2017	>		
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	08/31/2016	08/30/2017	>		
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/24/2016	03/23/2017	>		
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/20/2016	09/19/2017	\		
Double Ridge Horn Antenna	AH-118	71259	09/23/2016	09/22/2017	\		



Test Report	16071183-FCC-E
Page	21 of 31

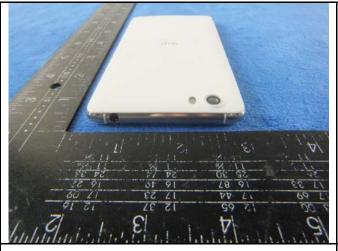
Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo





Test Report	16071183-FCC-E
Page	22 of 31



EUT - Top View

EUT - Bottom View



EUT - Left View



EUT - Right View



Test Report	16071183-FCC-E
Page	23 of 31

Annex B.ii. Photograph: EUT Internal Photo





Cover Off - Top View 1

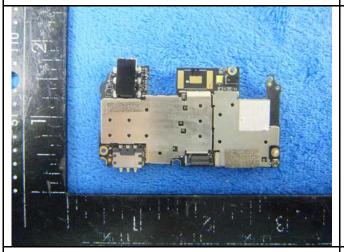
Cover Off - Top View 2



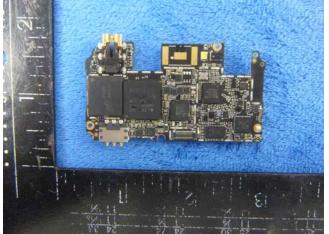


Battery - Front View

Battery - Rear View



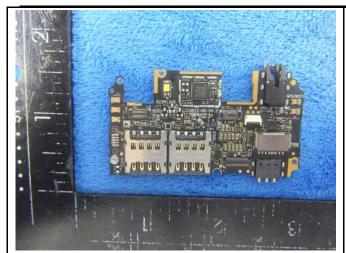
Mainboard with Shielding - Front View

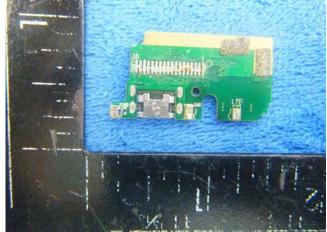


Mainboard without Shielding - Front View



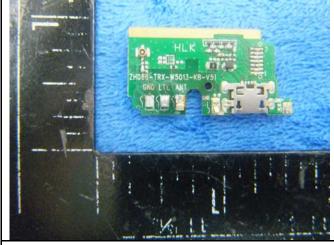
Test Report	16071183-FCC-E	
Page	24 of 31	

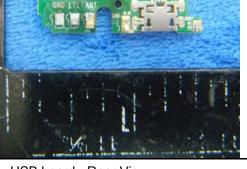




Mainboard - Rear View

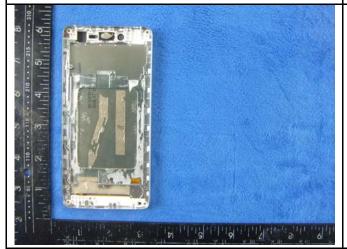
USB board - Front View



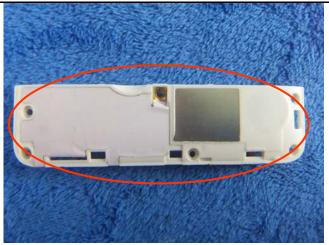




USB board - Rear View LCD - Front View



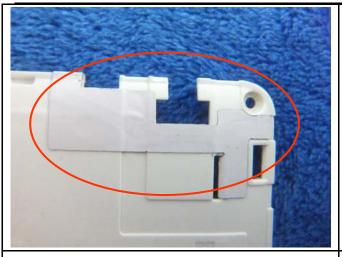




GSM/PCS/UMTS-FDD Antenna View



Test Report	16071183-FCC-E
Page	25 of 31





WIFI/BT/BLE/GPS - Antenna View

LTE Antenna View

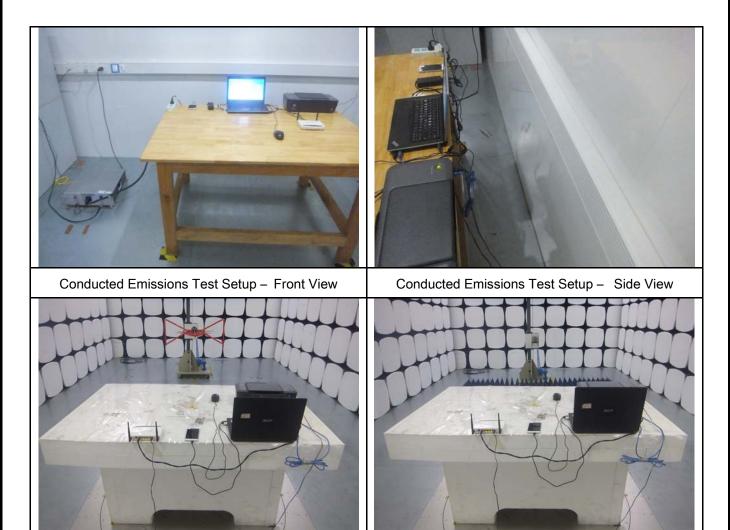


Test Report	16071183-FCC-E
Page	26 of 31

Radiated Emissions Test Setup Above 1GHz

Annex B.iii. Photograph: Test Setup Photo

Radiated Emissions Test Setup Below 1GHz

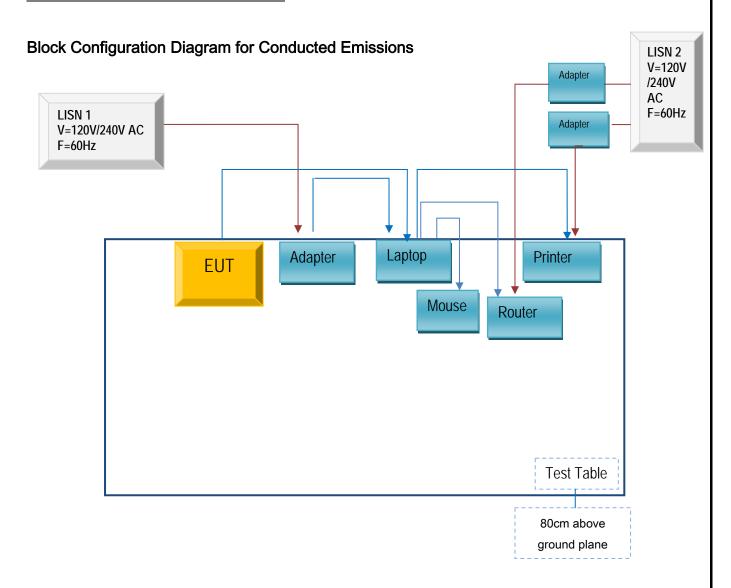




Test Report	16071183-FCC-E
Page	27 of 31

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

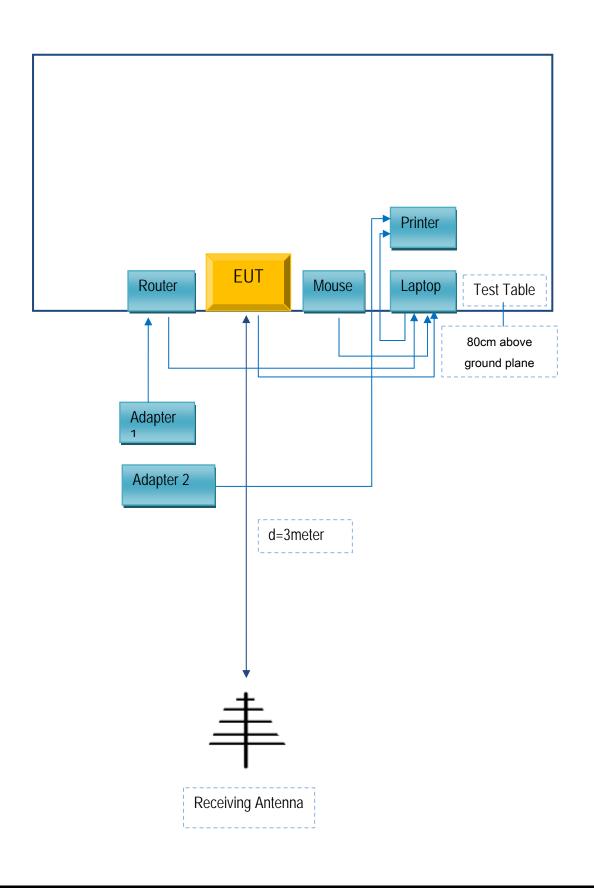
Annex C.ii. TEST SET UP BLOCK





Test Report	16071183-FCC-E
Page	28 of 31

Block Configuration Diagram for Radiated Emissions





Test Report	16071183-FCC-E
Page	29 of 31

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
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



Test Report	16071183-FCC-E
Page	30 of 31

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

Please see the attachment



Test Report	16071183-FCC-E
Page	31 of 31

Annex E. DECLARATION OF SIMILARITY

N/A