

EMC TEST REPORT



Report No.: 15070474-FCC-E

Supersede Report No.:N/A

Applicant	Worldlinks Communications, L.L.C.	
Product Name	PHONE	
Model No.	R50L	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2014, ANSI C63.4: 2014	
Test Date	July 30 to August 13 , 2015	
Issue Date	August 21, 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

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

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

Test Report	15070474-FCC-E
Page	3 of 31

This page has been left blank intentionally.

CONTENTS

1. REPORT REVISION HISTORY	5
2. CUSTOMER INFORMATION	5
3. TEST SITE INFORMATION	5
4. EQUIPMENT UNDER TEST (EUT) INFORMATION	6
5. TEST SUMMARY	9
6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	10
6.1 AC POWER LINE CONDUCTED EMISSIONS.....	10
6.2 RADIATED EMISSIONS.....	16
ANNEX A. TEST INSTRUMENT.....	20
ANNEX B. EUT AND TEST SETUP PHOTOGRAPHS.....	21
ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT.....	27
ANNEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST	30
ANNEX E. DECLARATION OF SIMILARITY	31

1. Report Revision History

Report No.	Report Version	Description	Issue Date
15070474-FCC-E	NONE	Original	August 21, 2015

2. Customer information

Applicant Name	Worldlinks Communications, L.L.C.
Applicant Add	270 Center Drive Suite 230, Vernon Hills, IL. 60061
Manufacturer	Shenzhen VSDREAM Technology Co., Ltd
Manufacturer Add	4F, Headquarters Building, zhonghaixin Science&Technology Park,Bulan Road, Buji Ave, Longgang Dist., Shenzhen, Guangdong, China

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

4. Equipment under Test (EUT) Information

Description of EUT:	PHONE
Main Model:	R50L
Serial Model:	N/A
Antenna Gain:	GSM850: 0.08 dBi PCS1900: 0.8 dBi UMTS-FDD Band V: 0.08 dBi UMTS-FDD Band IV: 0.73 dBi UMTS-FDD Band II: 0.89 dBi Bluetooth/BLE: 0.93 dBi WIFI(2.4G): 0.93 dBi WIFI(5G): 1.82 dBi LTE Band 2: 0.88 dBi LTE Band 4: 0.75 dBi LTE Band 5: 0.07 dBi LTE Band 7: 1.42 dBi LTE Band 17: -1.73 dBi GPS:-0.32dBi
Input Power:	Battery: Model:AAP5-815 Standard Voltage:4.35V Rated Capacity:2150mAh Charging Voltage Limited: 4.35V Adapter: Model:KA25-0501000US Input: AC100-240V; 50/60Hz; 0.25A Output: DC 5.0V,1000mA
Trade Name :	REDDOTMOBILE
FCC ID:	2ADNIR50L
Date EUT received:	July 20, 2015

Equipment Category :

JBP

Type of Modulation:

GSM / GPRS: GMSK
EGPRS: GMSK, 8PSK
UMTS-FDD: QPSK, 16QAM
802.11a/b/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 IV TX: 1712.4 ~ 1752.6 MHz;
UMTS-FDD Band II TX: 1852.4 ~ 1907.6 MHz;
RX: 1932.4 ~ 1987.6 MHz
WIFI: 802.11b/g/n(20M): 2412-2462 MHz
WIFI: 802.11n(40M): 2422-2452 MHz
WIFI: 802.11a,n(20,40M): 5150-5250 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
LTE Band 17 TX: 706.5 ~ 713.5 MHz; RX : 736.5 ~ 743.5 MHz
GPS RX: 1575.42 MHz

Number of Channels:

GSM 850: 124CH
PCS1900: 299CH
UMTS-FDD Band V : 102CH
UMTS-FDD Band IV: 202CH
UMTS-FDD Band II : 277CH
WIFI : 802.11b/g/n(20M): 11CH
WIFI : 802.11n(40M): 7CH
Bluetooth: 79CH
BLE: 40CH
GPS: 1CH

Test Report	15070474-FCC-E
Page	8 of 31

Port: Power Port, Earphone Port, USB Port

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

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
-	-	-

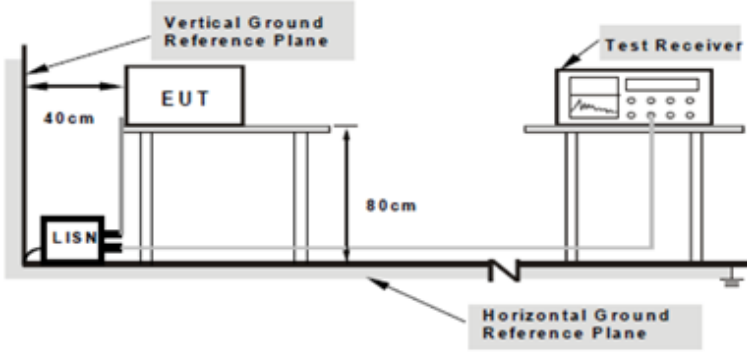
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1008mbar
Test date :	August 08, 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.
------------	---

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.
-----------	--

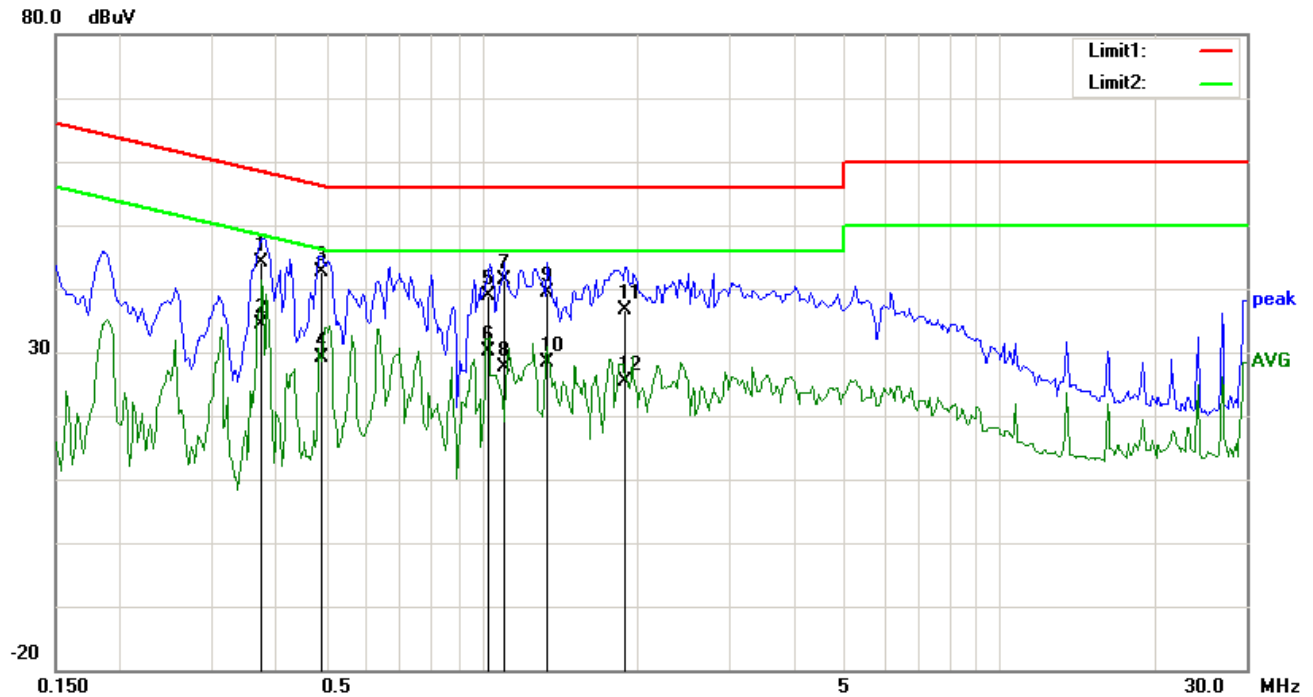
Test Report	15070474-FCC-E
Page	11 of 31

	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 Mode : USB Mode

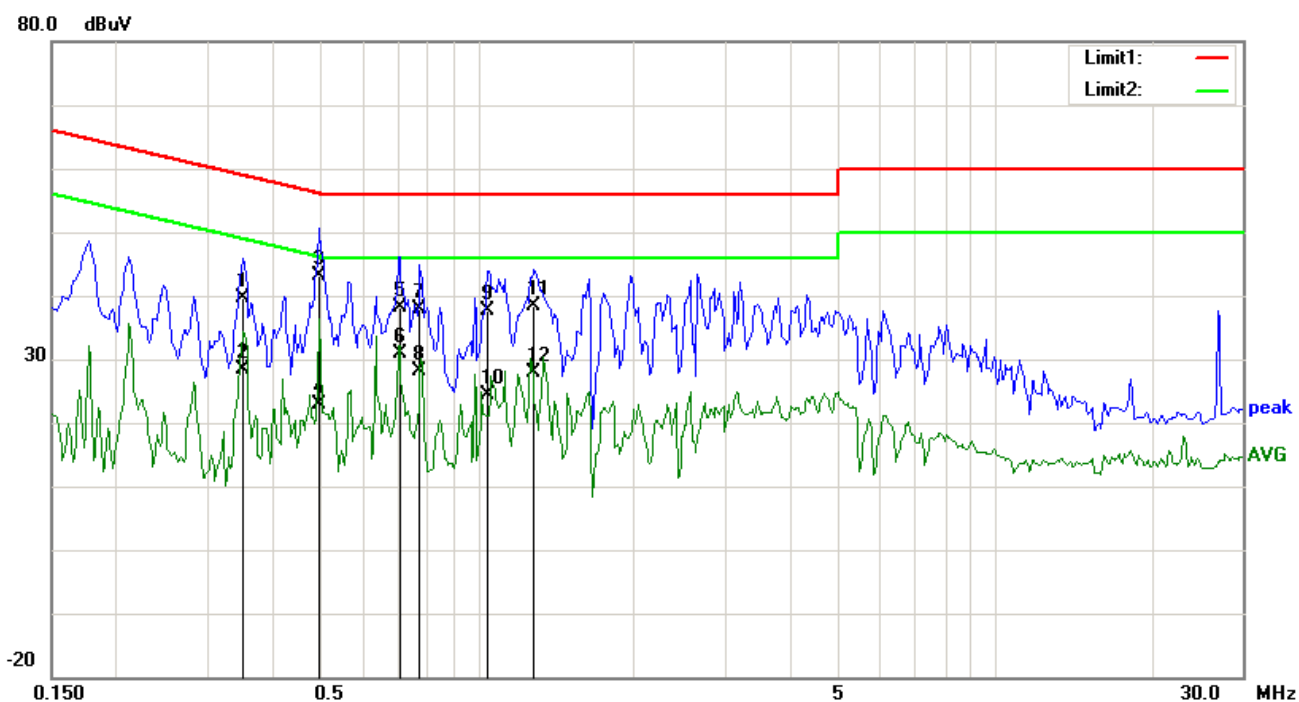


Test Data

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	0.3766	34.11	QP	10.03	44.14	58.35	-14.21	
2	L1	0.3766	24.23	AVG	10.03	34.26	48.35	-14.09	
3	L1	0.4898	32.50	QP	10.03	42.53	56.17	-13.64	
4	L1	0.4898	19.02	AVG	10.03	29.05	46.17	-17.12	
5	L1	1.0265	28.73	QP	10.03	38.76	56.00	-17.24	
6	L1	1.0265	20.22	AVG	10.03	30.25	46.00	-15.75	
7	L1	1.1031	31.23	QP	10.03	41.26	56.00	-14.74	
8	L1	1.1031	17.56	AVG	10.03	27.59	46.00	-18.41	
9	L1	1.3375	29.33	QP	10.03	39.36	56.00	-16.64	
10	L1	1.3375	18.44	AVG	10.03	28.47	46.00	-17.53	
11	L1	1.8961	26.54	QP	10.04	36.58	56.00	-19.42	
12	L1	1.8961	15.32	AVG	10.04	25.36	46.00	-20.64	

Test Mode : USB Mode

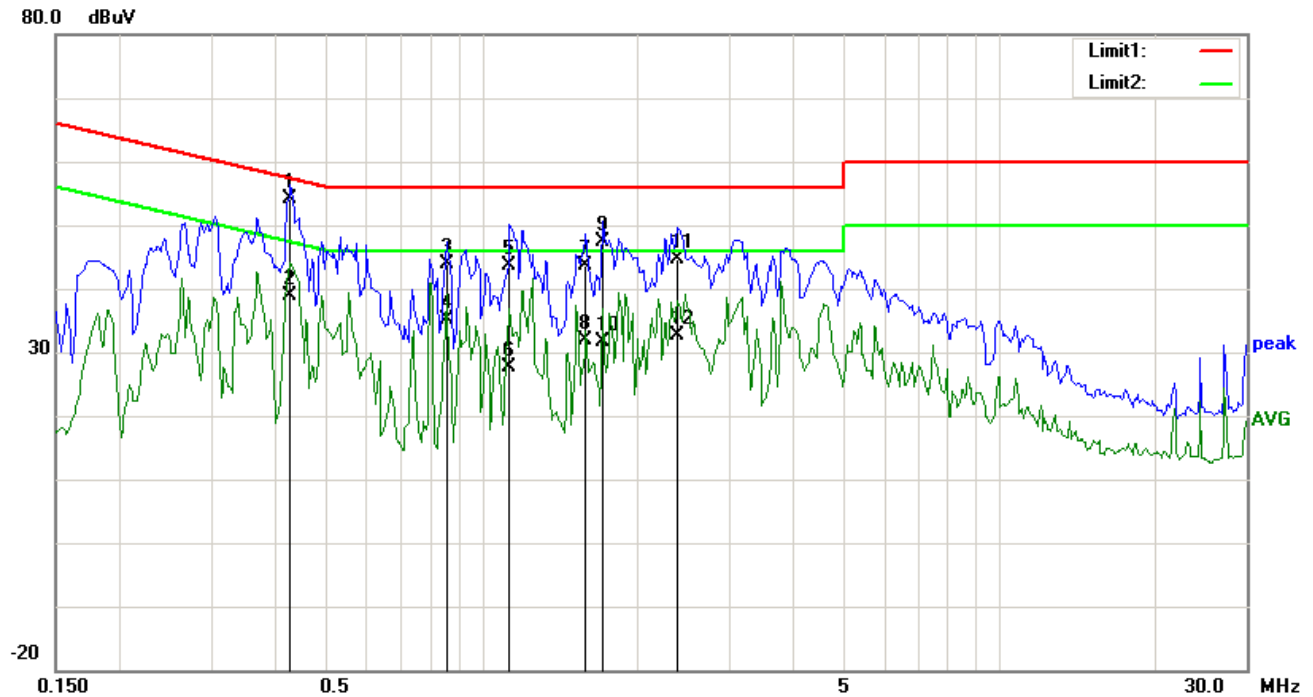


Test Data

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	0.3531	29.52	QP	10.02	39.54	58.89	-19.35	
2	N	0.3531	18.32	AVG	10.02	28.34	48.89	-20.55	
3	N	0.4938	33.23	QP	10.02	43.25	56.10	-12.85	
4	N	0.4938	12.94	AVG	10.02	22.96	46.10	-23.14	
5	N	0.7047	28.17	QP	10.02	38.19	56.00	-17.81	
6	N	0.7047	20.78	AVG	10.02	30.80	46.00	-15.20	
7	N	0.7750	27.88	QP	10.03	37.91	56.00	-18.09	
8	N	0.7750	18.16	AVG	10.03	28.19	46.00	-17.81	
9	N	1.0484	27.51	QP	10.03	37.54	56.00	-18.46	
10	N	1.0484	14.34	AVG	10.03	24.37	46.00	-21.63	
11	N	1.2867	28.43	QP	10.03	38.46	56.00	-17.54	
12	N	1.2867	17.82	AVG	10.03	27.85	46.00	-18.15	

Test Mode : USB Mode

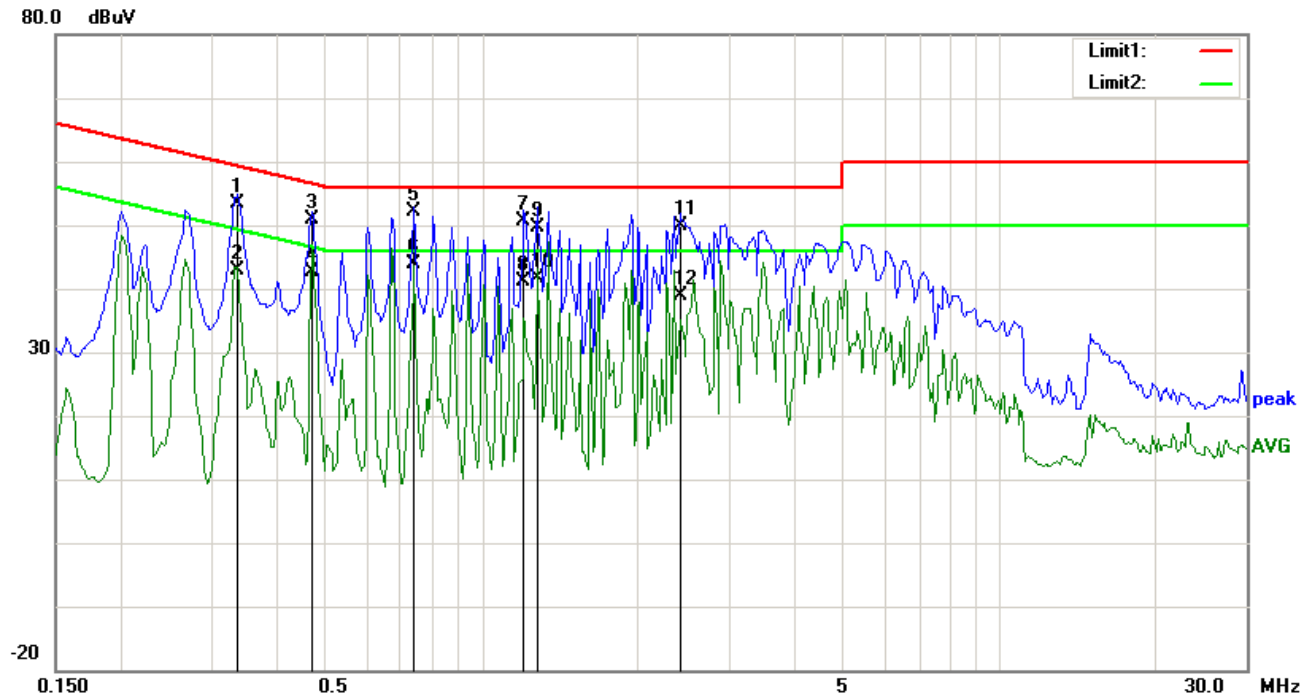


Test Data

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	0.4273	44.00	QP	10.03	54.03	57.31	-3.28	
2	L1	0.4273	28.95	AVG	10.03	38.98	47.31	-8.33	
3	L1	0.8531	33.94	QP	10.03	43.97	56.00	-12.03	
4	L1	0.8531	25.03	AVG	10.03	35.06	46.00	-10.94	
5	L1	1.1305	33.56	QP	10.03	43.59	56.00	-12.41	
6	L1	1.1305	17.56	AVG	10.03	27.59	46.00	-18.41	
7	L1	1.5875	33.52	QP	10.04	43.56	56.00	-12.44	
8	L1	1.5875	21.86	AVG	10.04	31.90	46.00	-14.10	
9	L1	1.7086	37.27	QP	10.04	47.31	56.00	-8.69	
10	L1	1.7086	21.52	AVG	10.04	31.56	46.00	-14.44	
11	L1	2.3922	34.67	QP	10.05	44.72	56.00	-11.28	
12	L1	2.3922	22.57	AVG	10.05	32.62	46.00	-13.38	

Test Mode : USB Mode



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	0.3375	43.28	QP	10.02	53.30	59.26	-5.96	
2	N	0.3375	32.77	AVG	10.02	42.79	49.26	-6.47	
3	N	0.4703	40.93	QP	10.02	50.95	56.51	-5.56	
4	N	0.4703	32.72	AVG	10.02	42.74	46.51	-3.77	
5	N	0.7398	42.07	QP	10.02	52.09	56.00	-3.91	
6	N	0.7398	33.79	AVG	10.02	43.81	46.00	-2.19	
7	N	1.2086	40.72	QP	10.03	50.75	56.00	-5.25	
8	N	1.2086	31.16	AVG	10.03	41.19	46.00	-4.81	
9	N	1.2789	39.61	QP	10.03	49.64	56.00	-6.36	
10	N	1.2789	31.54	AVG	10.03	41.57	46.00	-4.43	
11	N	2.4195	39.82	QP	10.04	49.86	56.00	-6.14	
12	N	2.4195	28.76	AVG	10.04	38.80	46.00	-7.20	

6.2 Radiated Emissions

Temperature	23°C
Relative Humidity	55%
Atmospheric Pressure	1031mbar
Test date :	July 31, 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	☒										
		<table><tr><th>Frequency range (MHz)</th><th>Field Strength (µV/m)</th></tr><tr><td>30 – 88</td><td>100</td></tr><tr><td>88 – 216</td><td>150</td></tr><tr><td>216 960</td><td>200</td></tr><tr><td>Above 960</td><td>500</td></tr></table>		Frequency range (MHz)	Field Strength (µV/m)	30 – 88	100	88 – 216	150	216 960	200	Above 960	500
		Frequency range (MHz)		Field Strength (µV/m)									
		30 – 88		100									
		88 – 216		150									
		216 960		200									
Above 960	500												
Test Setup	The diagram illustrates the test setup. A Ground Plane is at the base. On the left, a Turn Table is positioned 80cm above the ground plane, supporting the EUT & Support Units. To the right, an Ant. Tower is located 3m from the Turn Table. The antenna on the tower is adjustable, with a height range of 1-4m Variable. A Test Receiver is connected to the antenna via a cable.												
Procedure	1. 2.	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: a. Vertical or horizontal polarization (whichever gave the higher emission level											

Test Report	15070474-FCC-E
Page	17 of 31

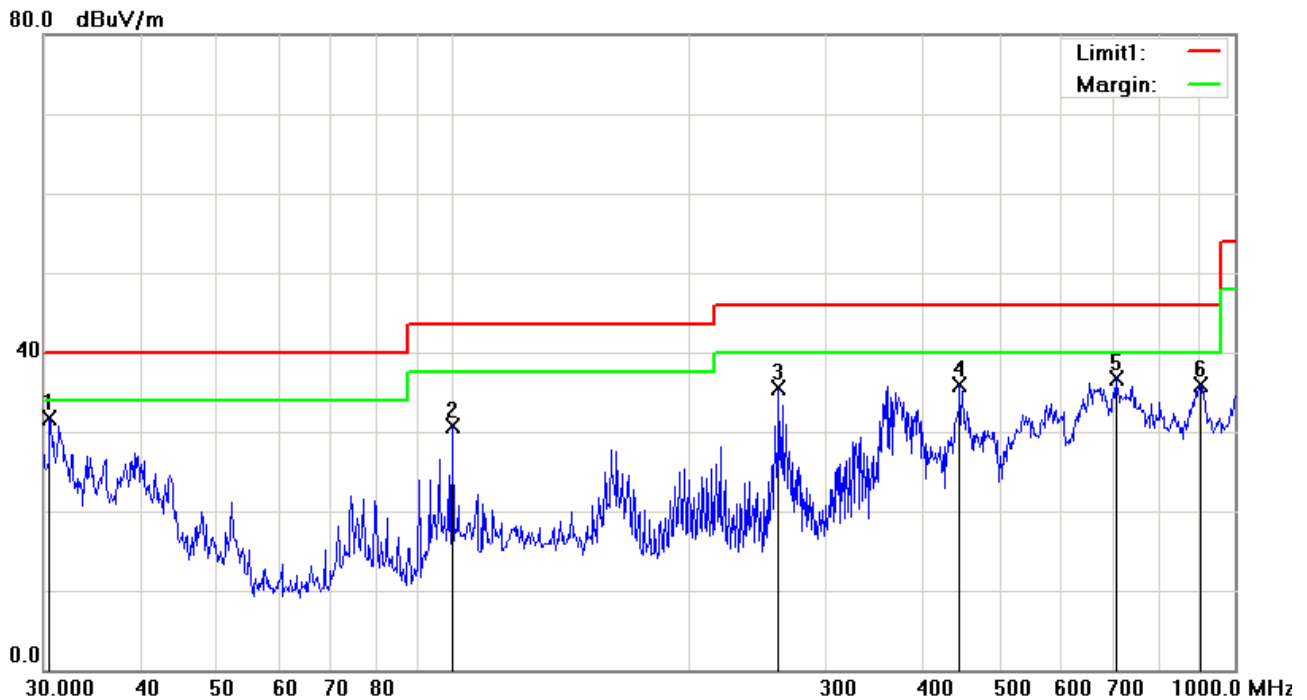
	over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120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

Below 1GHz



Test Data

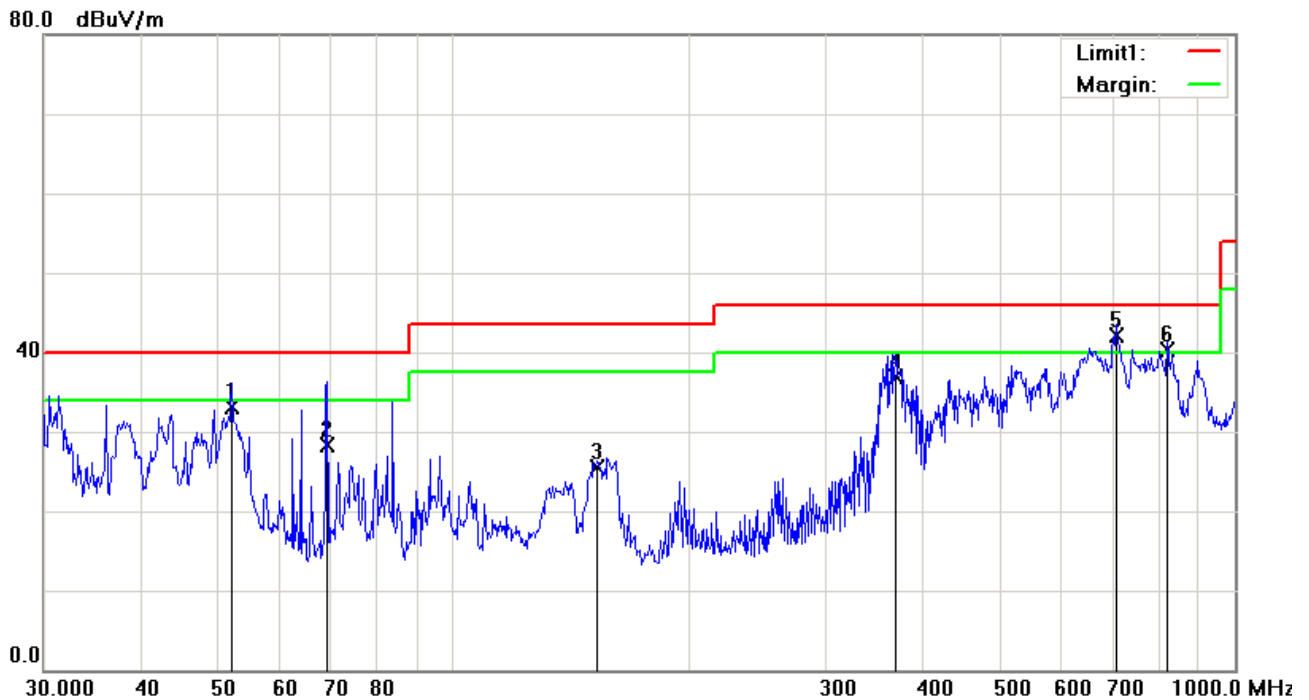
Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comment
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()	
1	H	30.5306	32.46	peak	-0.66	31.80	40.00	-8.20	153	0	
2	H	99.8777	41.44	peak	-10.83	30.61	43.50	-12.89	200	149	
3	H	261.0583	44.10	peak	-8.68	35.42	46.00	-10.58	100	229	
4	H	444.8514	39.08	peak	-3.20	35.88	46.00	-10.12	100	109	
5	H	704.2261	35.22	peak	1.47	36.69	46.00	-9.31	100	248	
6	H	903.3094	31.12	peak	4.73	35.85	46.00	-10.15	200	317	

Above 1GHz

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

Below 1GHz



Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comment
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()	
1	V	52.2079	46.55	QP	-13.44	33.11	40.00	-6.89	100	168	
2	V	69.1141	41.90	QP	-13.66	28.24	40.00	-11.76	200	214	
3	V	152.6641	33.90	QP	-8.37	25.53	43.50	-17.97	200	214	
4	V	368.1116	42.01	QP	-5.04	36.97	46.00	-9.03	100	243	
5	V	704.2261	40.65	QP	1.47	42.12	46.00	-3.88	100	257	
6	V	818.8341	36.77	QP	3.44	40.21	46.00	-5.79	100	104	

Above 1GHz

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

Annex A. TEST INSTRUMENT

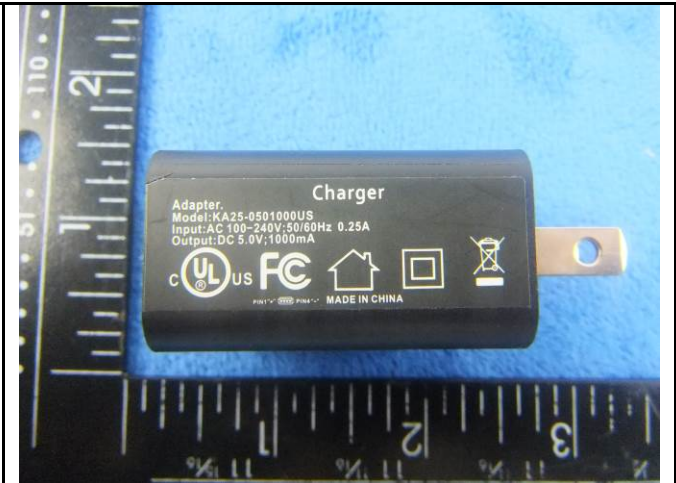
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/18/2014	09/17/2015	☒
Line Impedance Stabilization Network	LI-125A	191106	09/26/2014	09/25/2015	☒
Line Impedance Stabilization Network	LI-125A	191107	09/26/2014	09/25/2015	☒
LISN	ISN 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	☒

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo



Whole Package - Top View



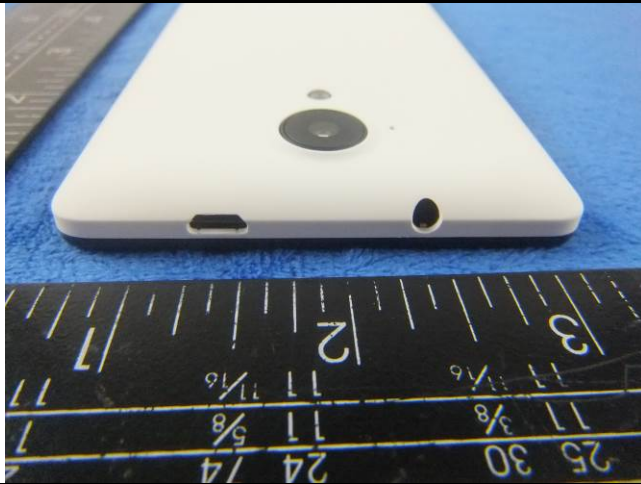
Adapter - Front View



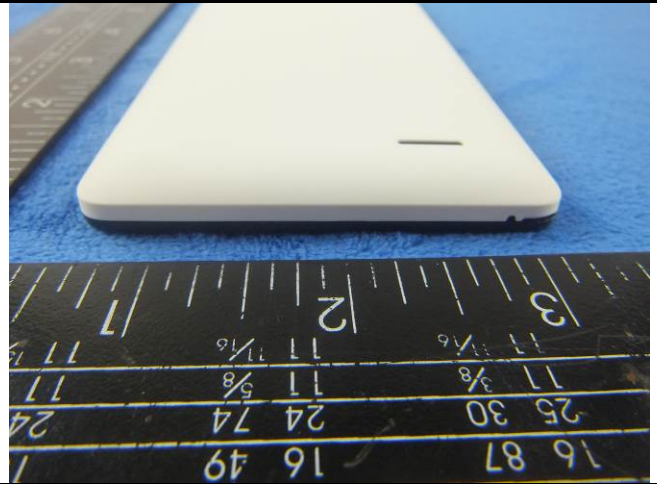
EUT - Front View



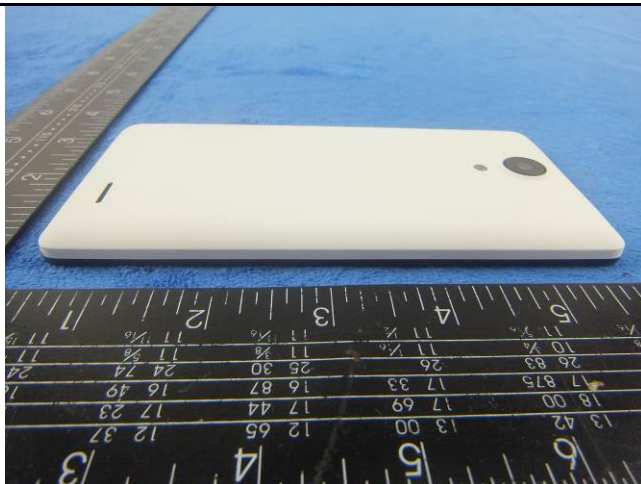
EUT - Rear View



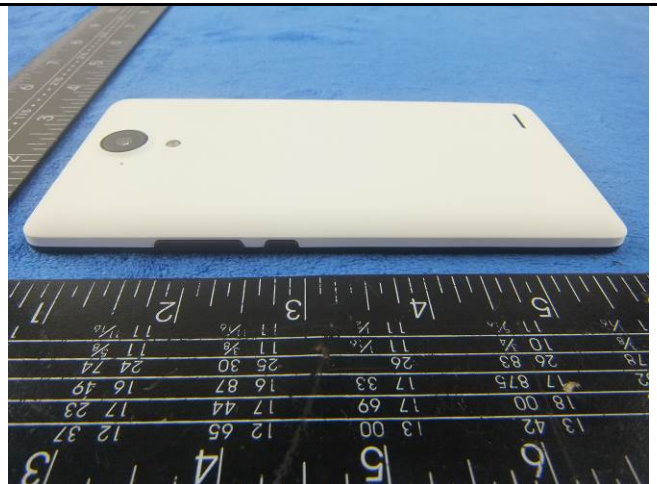
EUT - Top View



EUT - Bottom View



EUT - Left View



EUT - Right View

Annex B.ii. Photograph: EUT Internal Photo



Cover Off - Top View 1



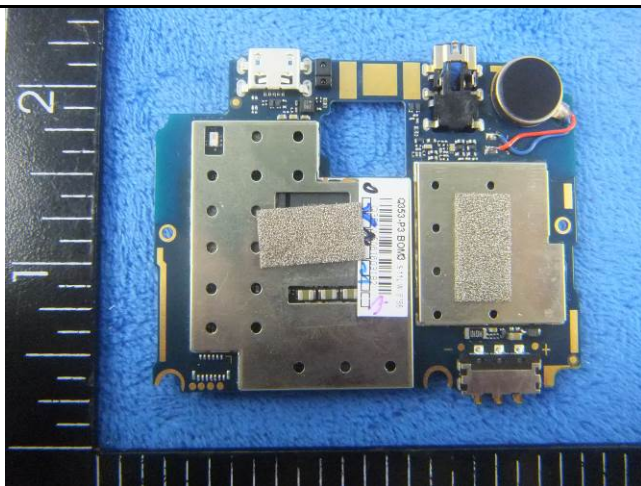
Cover Off - Top View 2



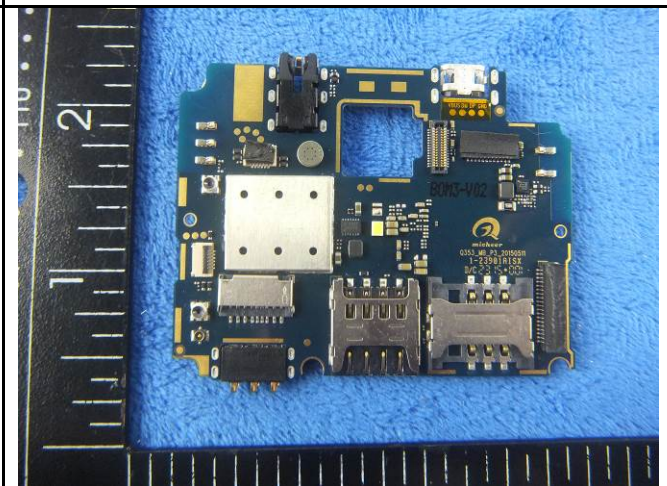
Battery - Top View



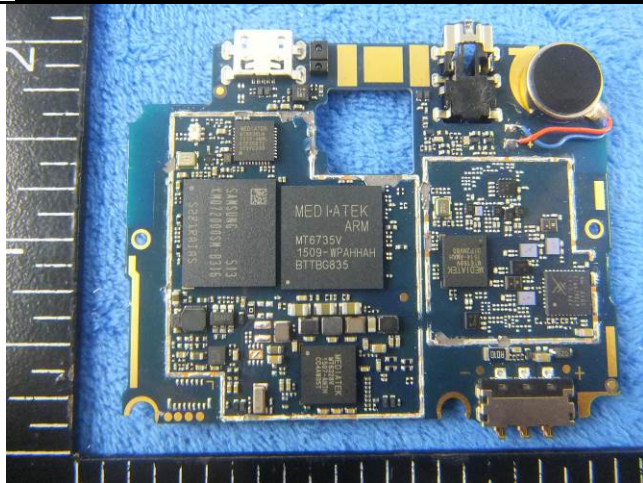
Battery - Bottom View



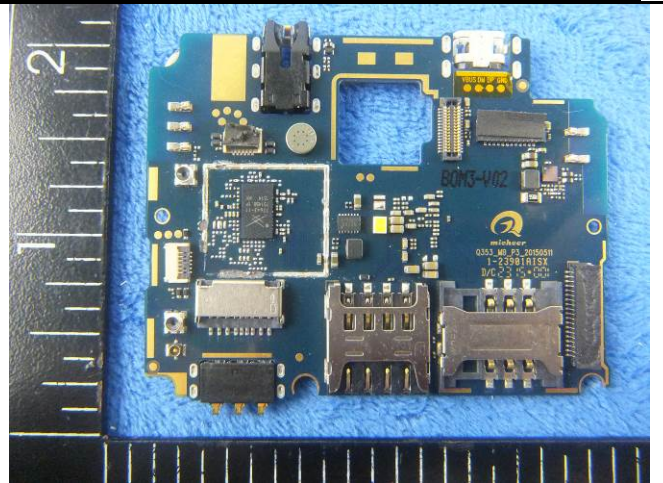
Mainboard with Shielding - Front View



Mainboard with Shielding - Rear View



Mainboard without shielding - Front View



Mainboard without Shielding - Rear View



LCD - Front View



LCD - Rear View

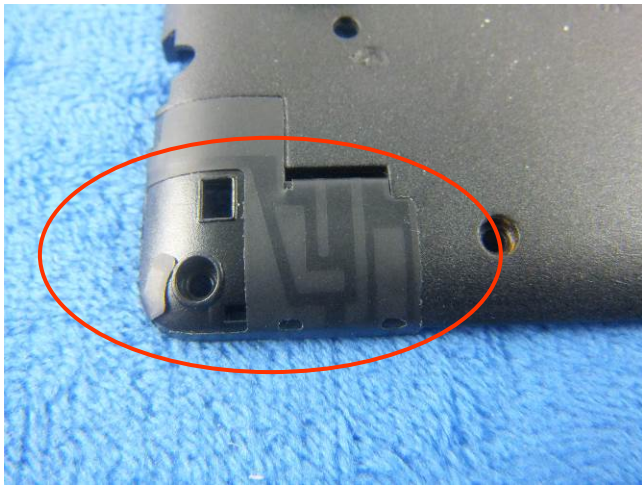


GSM/PCS/UMTS-FDD/LTE Antenna View



WIFI/BT/BLE - Antenna View

Test Report	15070474-FCC-E
Page	25 of 31



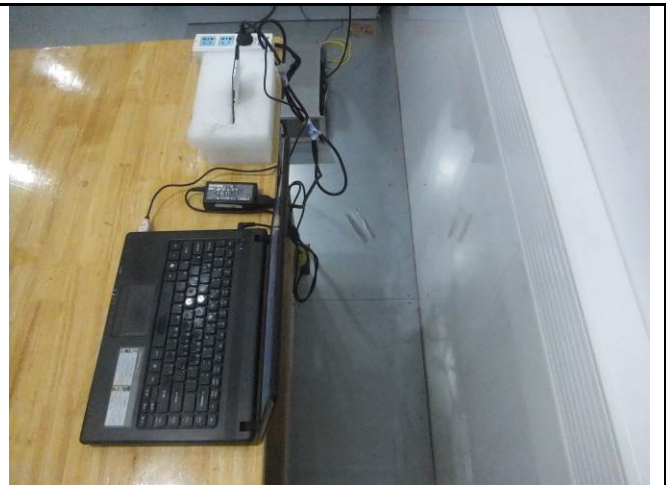
GPS - Antenna View

Test Report	15070474-FCC-E
Page	26 of 31

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

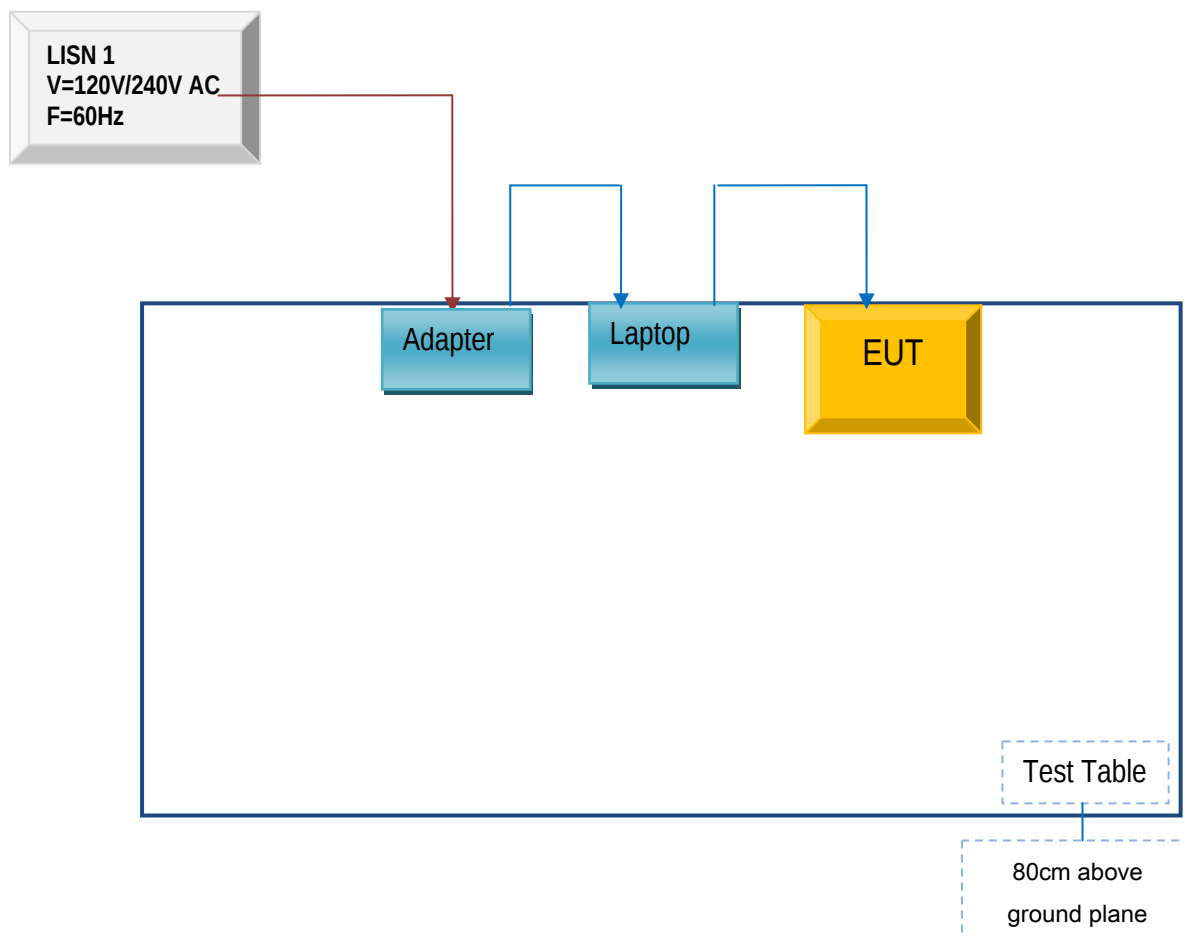


Radiated Spurious Emissions Test Setup Above
1GHz

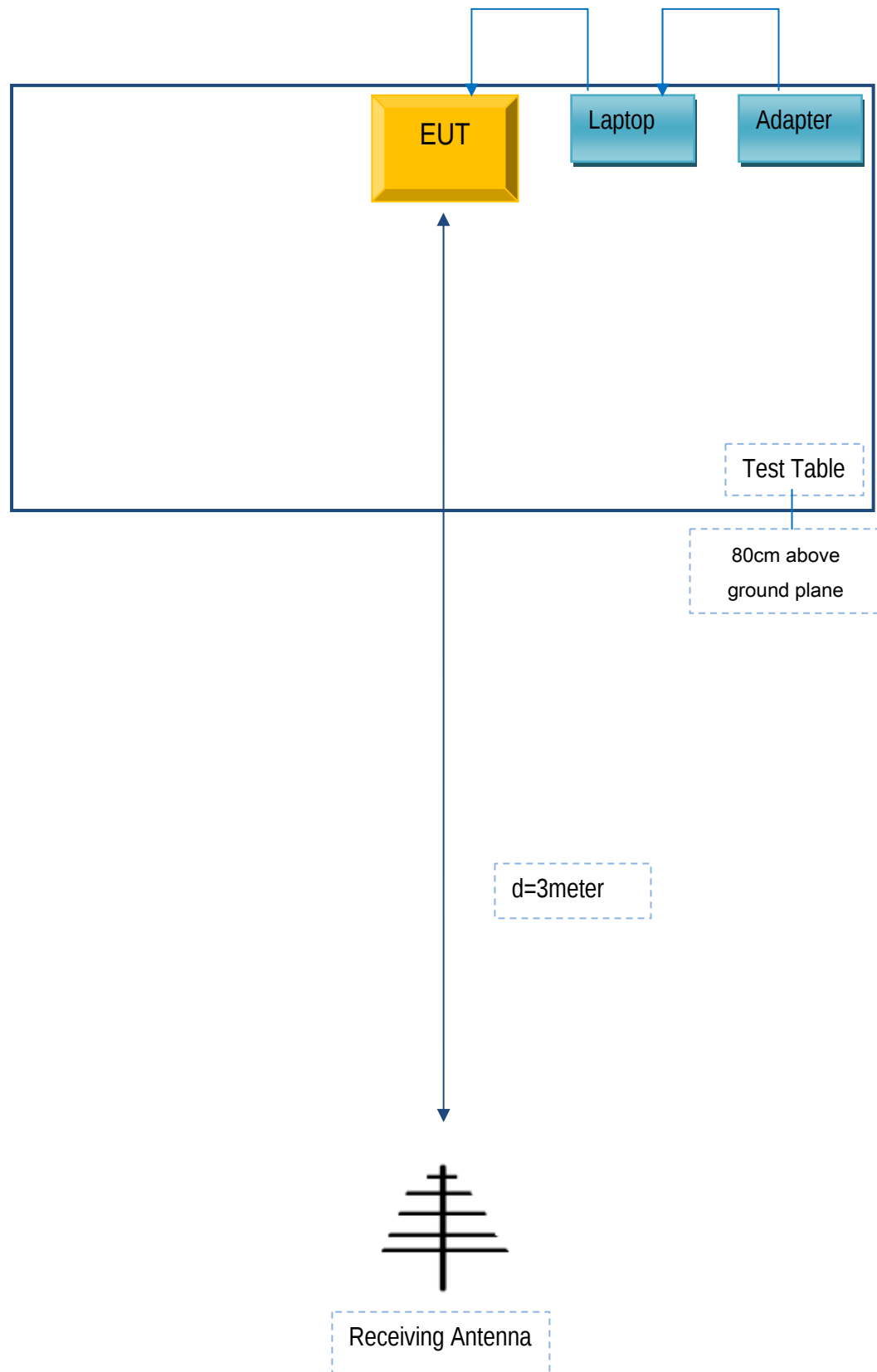
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

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.

Manufacturer	Equipment Description	Model	Calibration Date	Calibration Due Date
Lenovo	Lenovo Laptop	E40& 0579A52	N/A	N/A

Test Report	15070474-FCC-E
Page	30 of 31

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

Please see Attachment

Test Report	15070474-FCC-E
Page	31 of 31

Annex E. DECLARATION OF SIMILARITY

N/A