

# EMC TEST REPORT



Report No.: 16070468-FCC-E

Supersede Report No.: N/A

Applicant	NEG TECHNOLOGY CO., LIMITED	
Product Name	Mobile Phone	
Model No.	F1022	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2015, ANSI C63.4: 2014	
Test Date	April 26 to May 09, 2016	
Issue Date	May 10, 2016	
Test Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	
Equipment complied with the specification <input checked="" type="checkbox"/>		
Equipment did not comply with the specification <input type="checkbox"/>		
<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**

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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
16070468-FCC-E	NONE	Original	May 10, 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
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:	Mobile Phone
Main Model:	F1022
Serial Model:	N/A
Date EUT received:	April 25, 2016
Test Date(s):	April 26 to May 09, 2016
Equipment Category :	Class B
Antenna Gain:	GSM850: 0.8dBi PCS1900: 1.0dBi Bluetooth: 1.0dBi
Type of Modulation:	GSM / GPRS: GMSK Bluetooth: GFSK, $\pi$ /4DQPSK, 8DPSK
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 Bluetooth: 2402-2480 MHz
Number of Channels:	GSM 850: 124CH PCS1900: 299CH Bluetooth: 79CH
Port:	Power Port, Earphone Port, USB Port

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Adapter :

Model:F1022

Input: AC 100-240V~50/60Hz,150mA

Output: DC 5.0V,500mA

Input Power:

Battery:

Model: F1022

Spec:3.7V,2.96Wh

Battery Capacity:800mAh

Limited charger voltage :4.2V

Trade Name :

OWN

FCC ID:

2AAZ8-F1022

GPRS 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
-	-	-

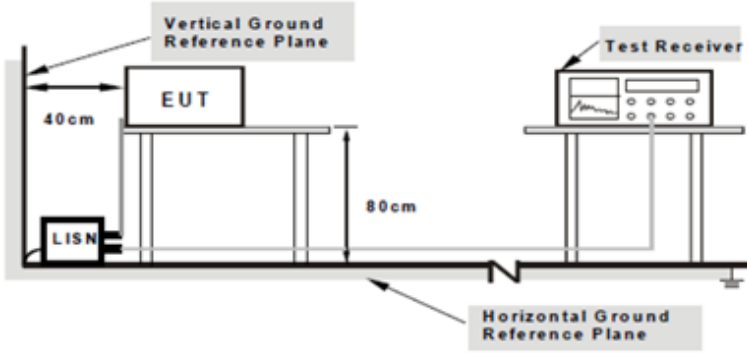
## 6. Measurements, Examination And Derived Results

### 6.1 AC Power Line Conducted Emissions

Temperature	24°C
Relative Humidity	51%
Atmospheric Pressure	1027mbar
Test date :	April 27, 2016
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	 <p>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.</p>
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Procedure	<ol style="list-style-type: none"> <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 50W/50mH EUT LISN, connected to filtered mains.</li> </ol>
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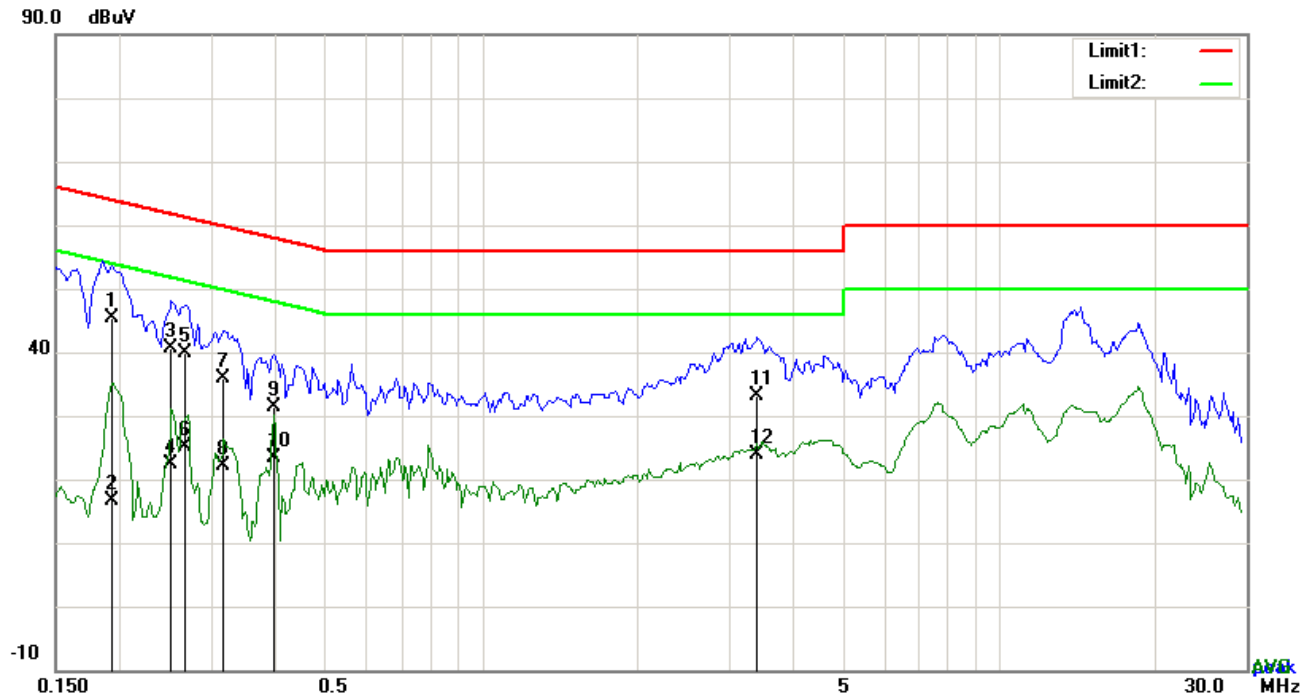
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	<p>3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.</p> <p>4. All other supporting equipment were powered separately from another main supply.</p> <p>5. The EUT was switched on and allowed to warm up to its normal operating condition.</p> <p>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.</p> <p>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.</p> <p>8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).</p>
Remark	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

**Test Mode:** USB Mode

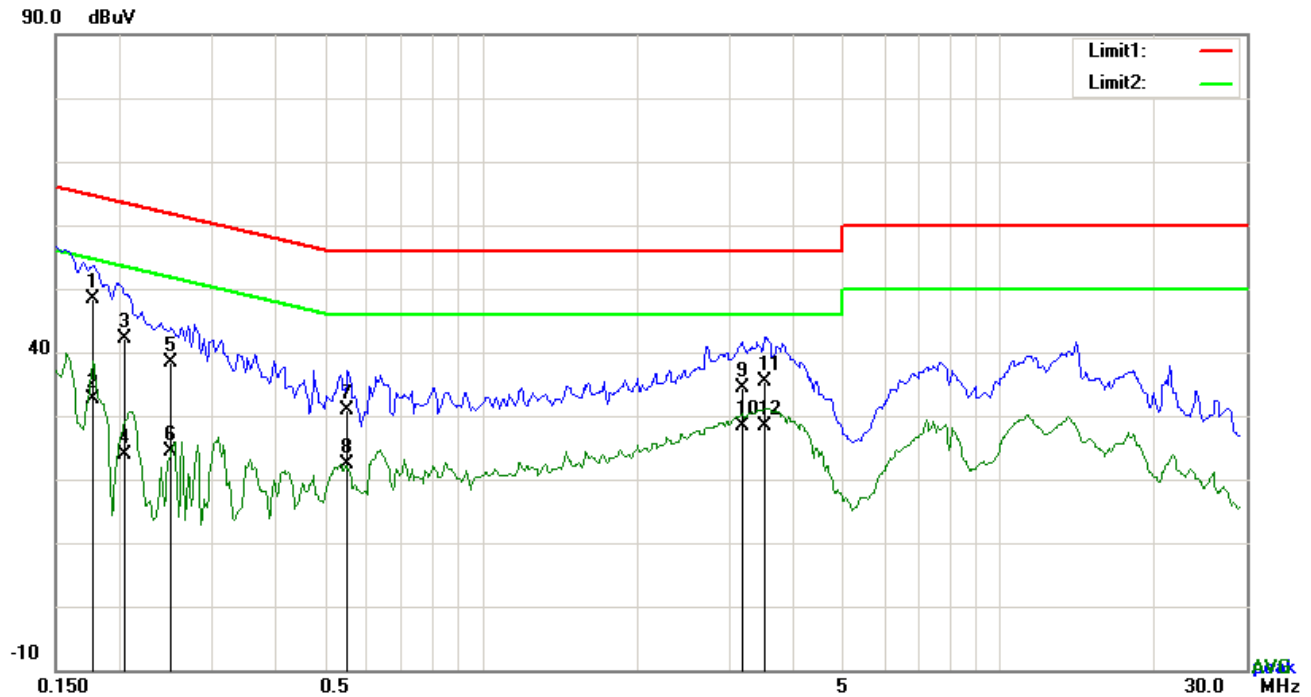


**Test Data**

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

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1929	35.39	QP	10.03	45.42	63.91	-18.49
2	L1	0.1929	6.72	AVG	10.03	16.75	53.91	-37.16
3	L1	0.2514	30.65	QP	10.03	40.68	61.71	-21.03
4	L1	0.2514	12.32	AVG	10.03	22.35	51.71	-29.36
5	L1	0.2670	29.84	QP	10.03	39.87	61.21	-21.34
6	L1	0.2670	14.98	AVG	10.03	25.01	51.21	-26.20
7	L1	0.3177	25.85	QP	10.03	35.88	59.77	-23.89
8	L1	0.3177	11.99	AVG	10.03	22.02	49.77	-27.75
9	L1	0.3957	21.27	QP	10.03	31.30	57.94	-26.64
10	L1	0.3957	13.40	AVG	10.03	23.43	47.94	-24.51
11	L1	3.4056	23.01	QP	10.06	33.07	56.00	-22.93
12	L1	3.4056	13.85	AVG	10.06	23.91	46.00	-22.09

**Test Mode:** USB Mode

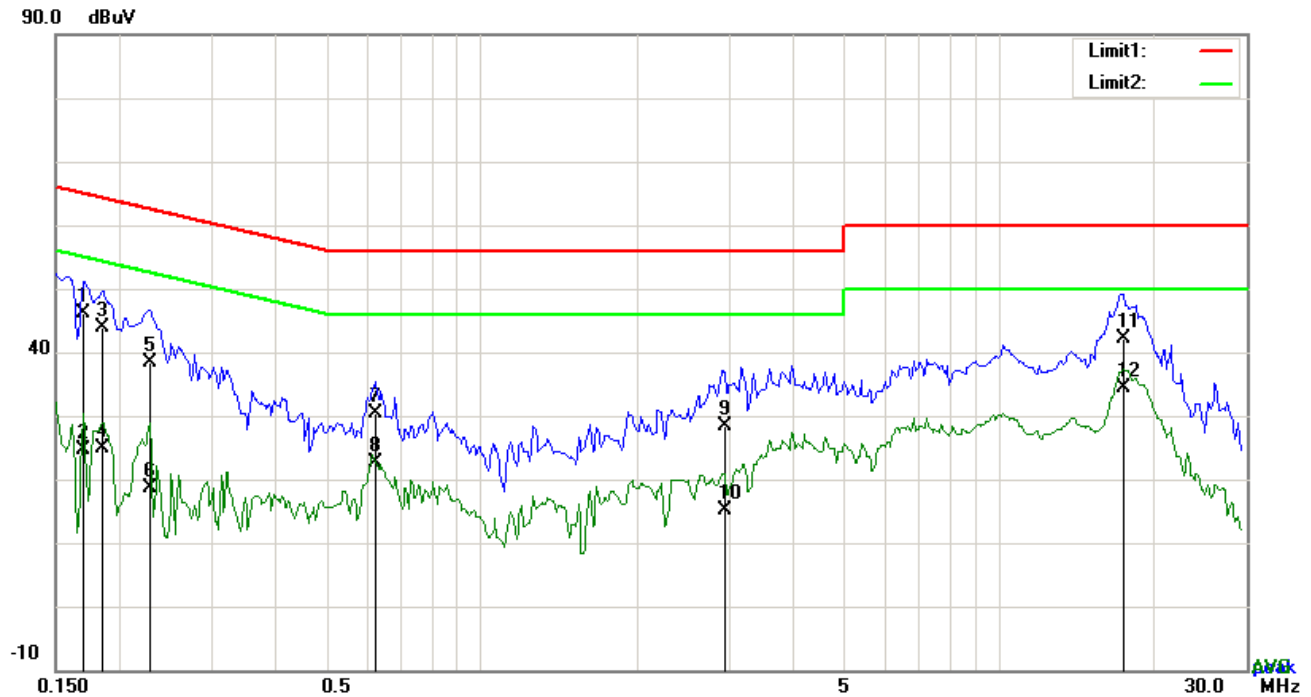


### Test Data

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

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1773	38.46	QP	10.02	48.48	64.61	-16.13
2	N	0.1773	22.49	AVG	10.02	32.51	54.61	-22.10
3	N	0.2046	32.22	QP	10.02	42.24	63.42	-21.18
4	N	0.2046	13.96	AVG	10.02	23.98	53.42	-29.44
5	N	0.2514	28.41	QP	10.02	38.43	61.71	-23.28
6	N	0.2514	14.38	AVG	10.02	24.40	51.71	-27.31
7	N	0.5517	20.80	QP	10.02	30.82	56.00	-25.18
8	N	0.5517	12.42	AVG	10.02	22.44	46.00	-23.56
9	N	3.1872	24.37	QP	10.05	34.42	56.00	-21.58
10	N	3.1872	18.28	AVG	10.05	28.33	46.00	-17.67
11	N	3.5109	25.35	QP	10.06	35.41	56.00	-20.59
12	N	3.5109	18.23	AVG	10.06	28.29	46.00	-17.71

**Test Mode:** USB Mode

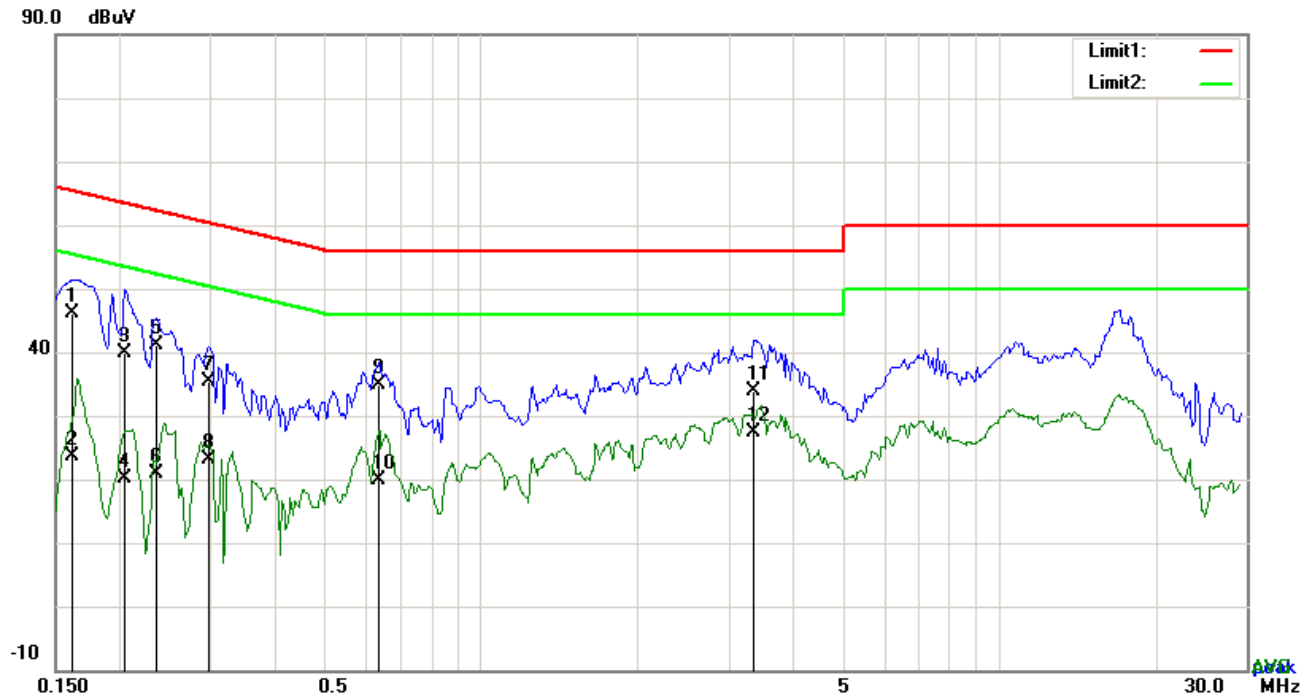


### Test Data

### 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	36.04	QP	10.03	46.07	64.98	-18.91
2	L1	0.1695	14.67	AVG	10.03	24.70	54.98	-30.28
3	L1	0.1851	33.91	QP	10.03	43.94	64.25	-20.31
4	L1	0.1851	14.73	AVG	10.03	24.76	54.25	-29.49
5	L1	0.2280	28.41	QP	10.03	38.44	62.52	-24.08
6	L1	0.2280	8.60	AVG	10.03	18.63	52.52	-33.89
7	L1	0.6219	20.24	QP	10.03	30.27	56.00	-25.73
8	L1	0.6219	12.49	AVG	10.03	22.52	46.00	-23.48
9	L1	2.9463	18.33	QP	10.05	28.38	56.00	-27.62
10	L1	2.9463	5.20	AVG	10.05	15.25	46.00	-30.75
11	L1	17.3715	31.99	QP	10.26	42.25	60.00	-17.75
12	L1	17.3715	24.09	AVG	10.26	34.35	50.00	-15.65

**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	0.1617	36.01	QP	10.02	46.03	65.38	-19.35
2	N	0.1617	13.68	AVG	10.02	23.70	55.38	-31.68
3	N	0.2046	29.84	QP	10.02	39.86	63.42	-23.56
4	N	0.2046	10.21	AVG	10.02	20.23	53.42	-33.19
5	N	0.2358	31.11	QP	10.02	41.13	62.24	-21.11
6	N	0.2358	10.85	AVG	10.02	20.87	52.24	-31.37
7	N	0.2982	25.32	QP	10.02	35.34	60.29	-24.95
8	N	0.2982	13.17	AVG	10.02	23.19	50.29	-27.10
9	N	0.6336	24.81	QP	10.02	34.83	56.00	-21.17
10	N	0.6336	9.80	AVG	10.02	19.82	46.00	-26.18
11	N	3.3627	23.79	QP	10.05	33.84	56.00	-22.16
12	N	3.3627	17.26	AVG	10.05	27.31	46.00	-18.69

## 6.2 Radiated Emissions

Temperature	24°C
Relative Humidity	51%
Atmospheric Pressure	1027mbar
Test date :	April 27, 2016
Tested By :	Winnie Zhang

### Requirement(s):

Spec	Item	Requirement	Applicable	
47CFR§15.107(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		
		Frequency range (MHz)		Field Strength (µV/m)
		30 – 88		100
		88 – 216		150
		216 960		200
		Above 960		500

Test Setup	
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Procedure	<ol style="list-style-type: none"> <li>The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>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: <ol style="list-style-type: none"> <li>Vertical or horizontal polarization (whichever gave the higher emission level</li> </ol> </li> </ol>
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	<p>over a full rotation of the EUT) was chosen.</p> <p>b. The EUT was then rotated to the direction that gave the maximum emission.</p> <p>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</p> <p>3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi Peak detection at frequency below 1GHz.</p> <p>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.</p> <p>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.</p> <p>■ 1 kHz (Duty cycle &lt; 98%) □ 10 Hz (Duty cycle &gt; 98%)</p> <p>5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</p>
Remark	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

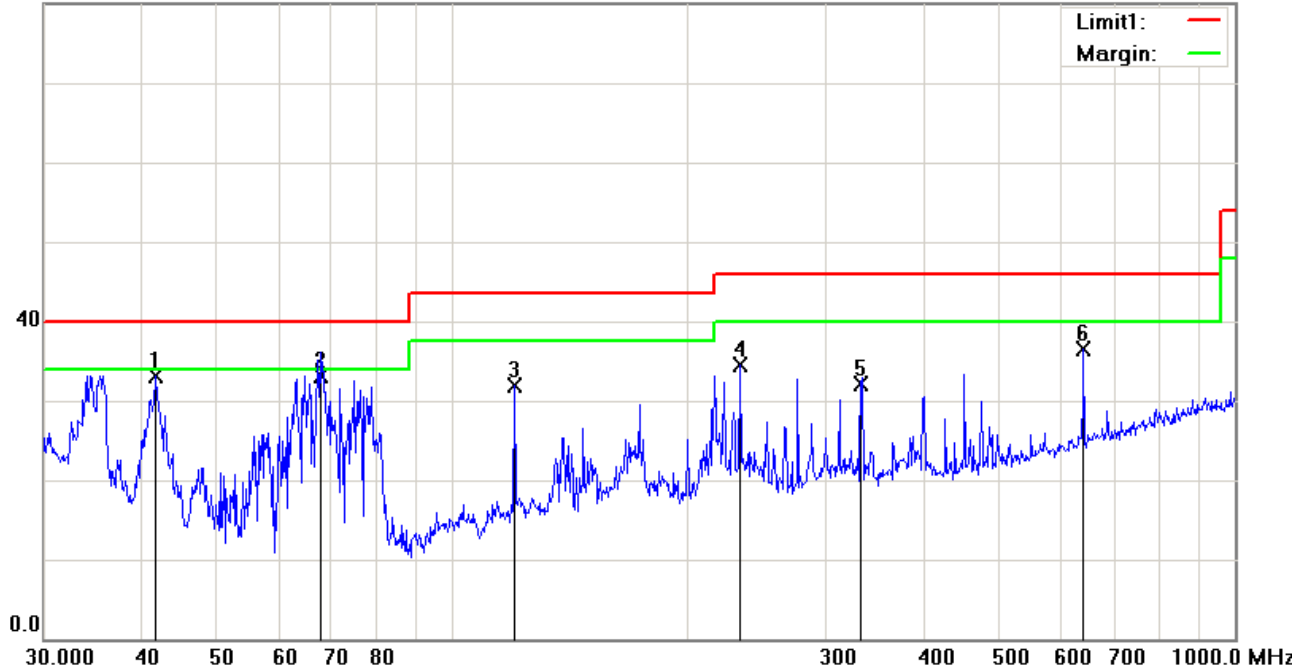
Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

**Test Mode : USB Mode**

**Below 1GHz**

80.0 dBuV/m

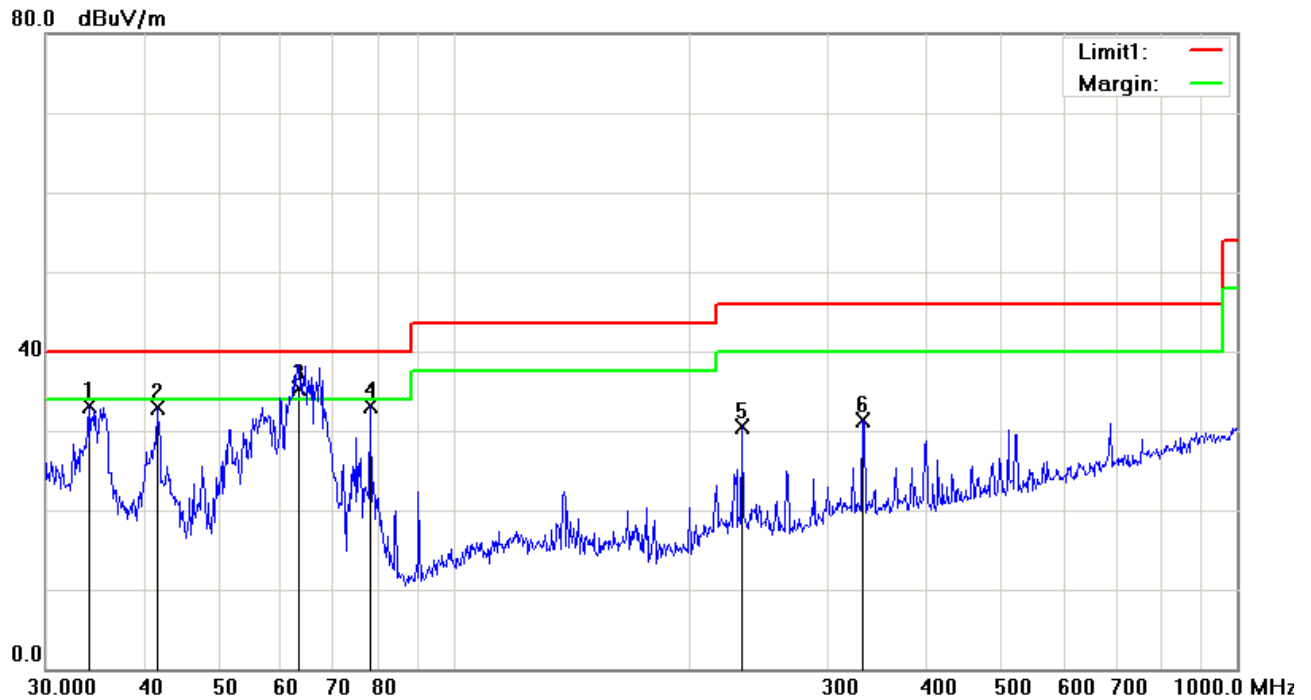


**Test Data**

**Horizontal Polarity Plot @3m**

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	( )
1	H	41.7130	41.86	peak	-8.73	33.13	40.00	-6.87	100	158
2	H	67.6751	46.80	QP	-13.78	33.02	40.00	-6.98	100	169
3	H	119.8556	39.33	peak	-7.33	32.00	43.50	-11.50	100	359
4	H	233.3487	43.48	peak	-9.04	34.44	46.00	-11.56	100	94
5	H	332.5187	38.02	peak	-5.97	32.05	46.00	-13.95	100	229
6	H	640.6110	35.85	peak	0.66	36.51	46.00	-9.49	100	154

## Below 1GHz



## Test Data

### Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	( )
1	V	34.0365	36.37	peak	-3.24	33.13	40.00	-6.87	100	352
2	V	41.7130	41.65	peak	-8.73	32.92	40.00	-7.08	100	10
3	V	63.0916	49.36	QP	-14.12	35.24	40.00	-4.76	100	3
4	V	77.8654	46.93	peak	-13.76	33.17	40.00	-6.83	100	29
5	V	233.3487	39.47	peak	-9.04	30.43	46.00	-15.57	100	164
6	V	332.5187	37.36	peak	-5.97	31.39	46.00	-14.61	100	44

### *Above 1GHz*

Frequency (MHz)	Amplitude (dBμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Factors (dB)	Limit (dBμV/m)	Margin (dB)	Detector (PK/AV)
733.3	48.92	65	153	V	-22.32	74	-25.08	PK
1022.35	56.33	42	134	V	-21.33	74	-17.67	PK
1345.69	52.34	79	169	V	-22.65	74	-21.66	PK
897.33	51.02	89	220	H	-23.42	74	-22.98	PK
1011.25	57.62	66	210	H	-21.47	74	-16.38	PK
1635.46	56.6	112	186	H	-20.95	74	-17.4	PK

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

*Note2: The frequency that above 3GHz is mainly from the environment noise.*

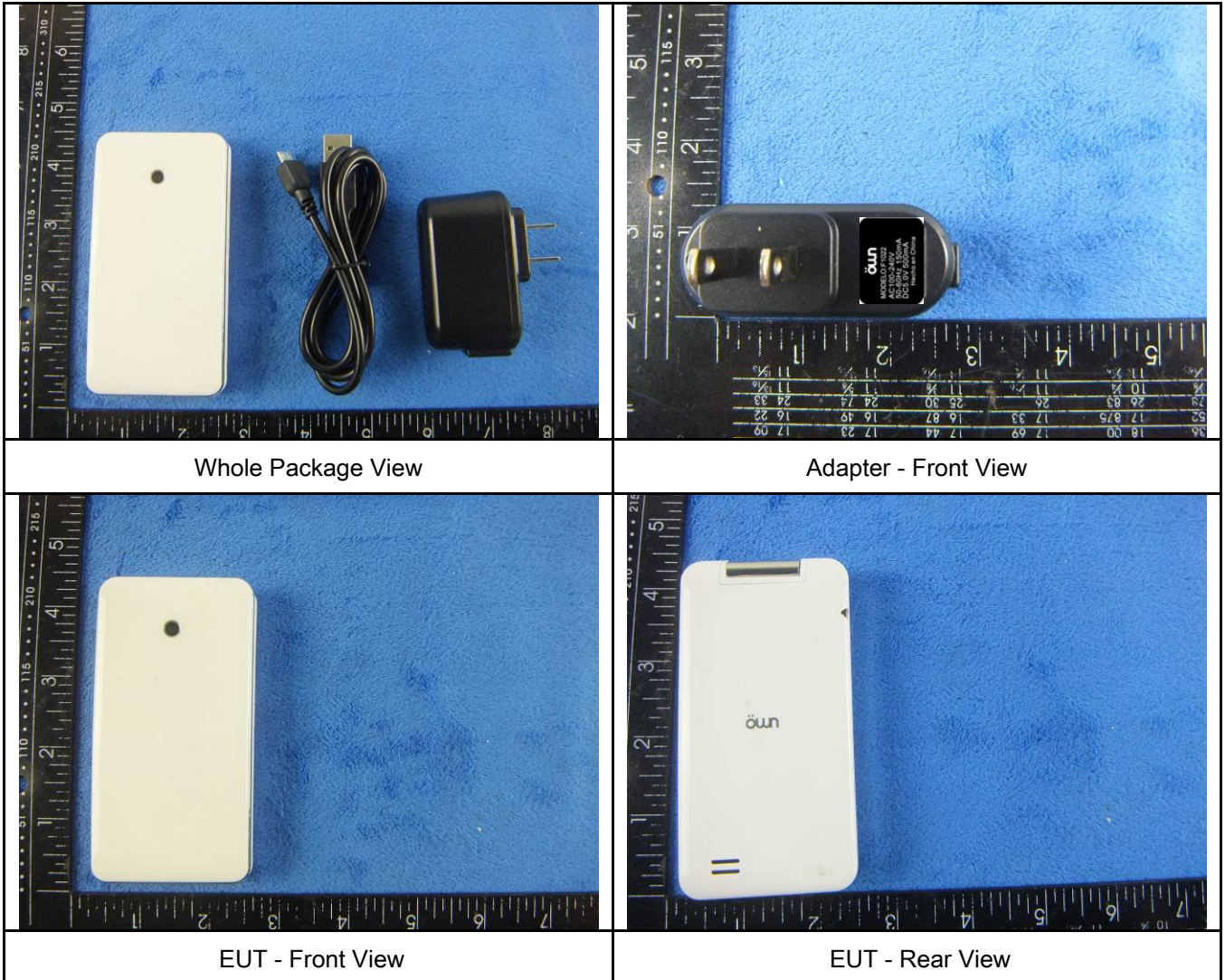
*Note3: The AV measurement performed, more than 20dB below limit so AV test data was not presented.*

## Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
<b>AC Line Conducted Emissions</b>					
EMI test receiver	ESCS30	8471241027	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191106	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191107	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
LISN	ISN T800	34373	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
Transient Limiter	LIT-153	531118	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>
<b>Radiated Emissions</b>					
EMI test receiver	ESL6	100262	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/24/2016	03/23/2017	<input checked="" type="checkbox"/>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna	AH-118	71259	09/24/2015	09/23/2016	<input checked="" type="checkbox"/>

## Annex B. EUT And Test Setup Photographs

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





EUT - Top View



EUT - Bottom View



EUT - Left View

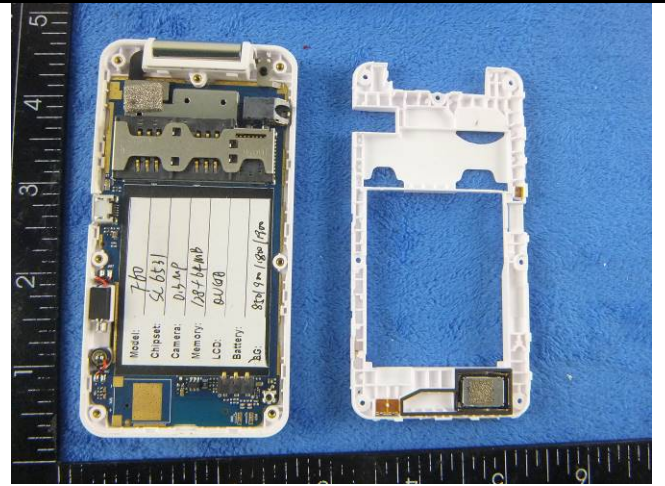


EUT - Right View

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



Cover Off - Top View 1



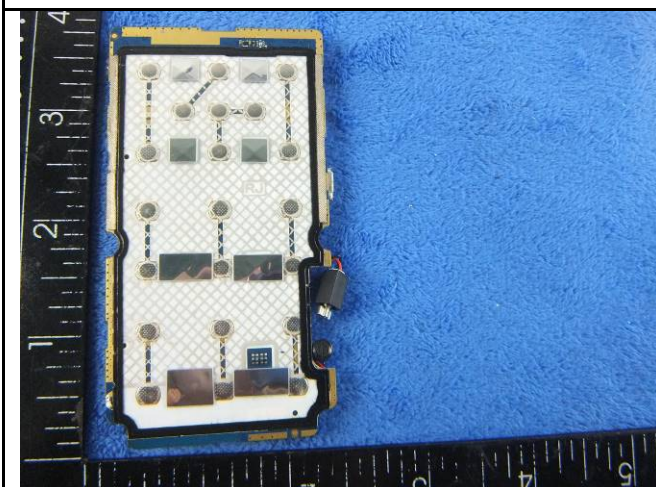
Cover Off - Top View 2



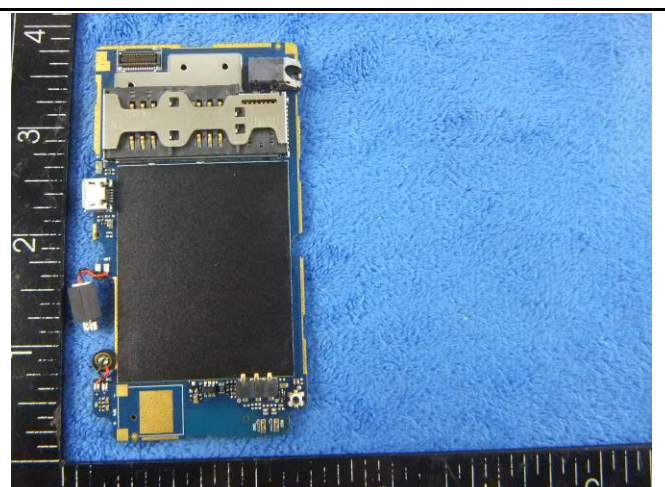
Battery - Front View



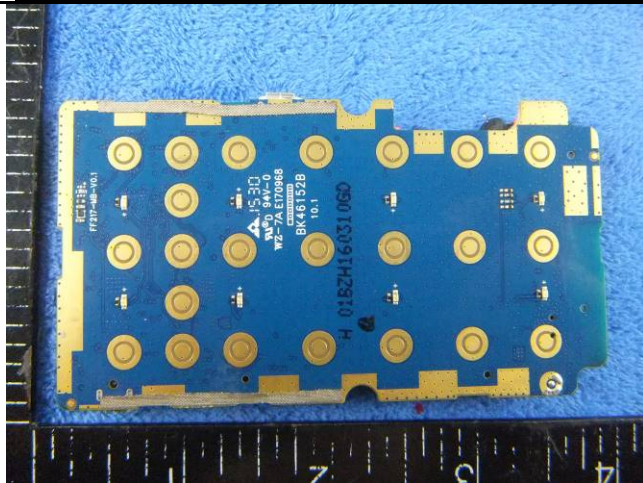
Battery - Rear View



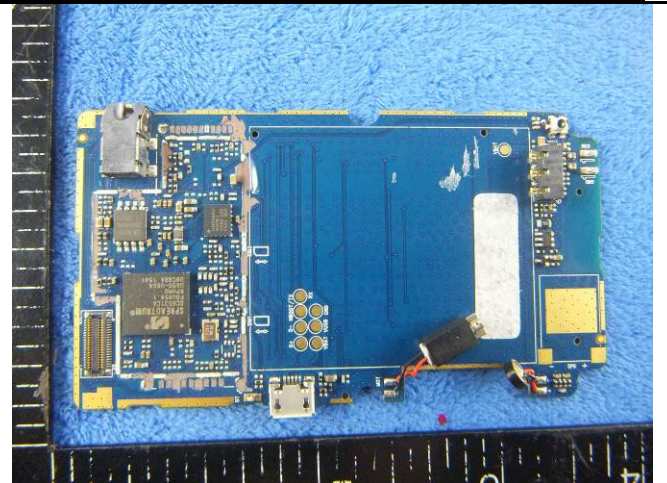
Mainboard with Shielding - Front View



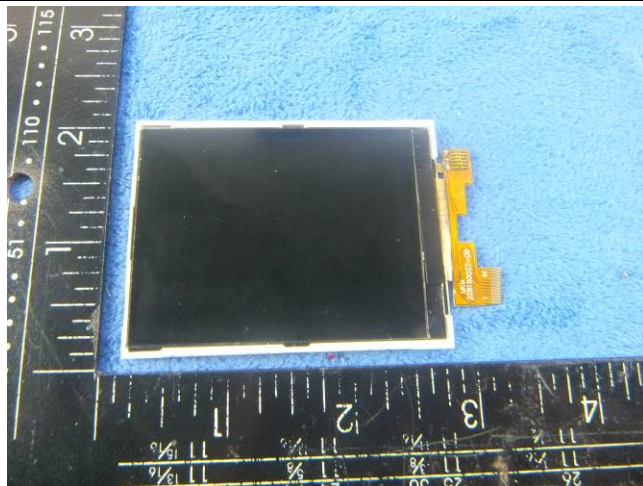
Mainboard with Shielding - Rear View



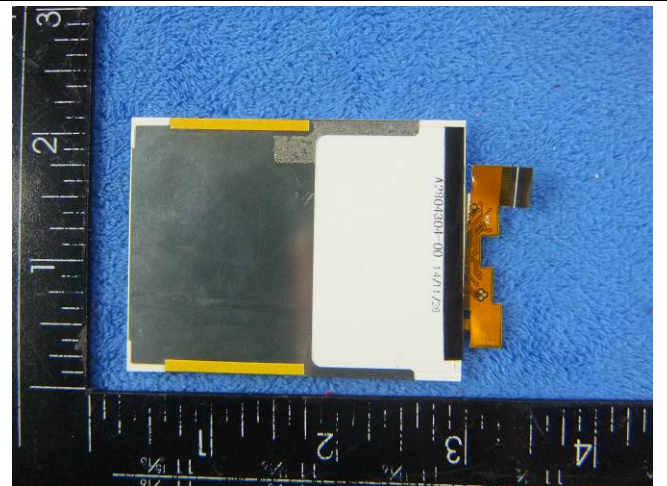
Mainboard without Shielding - Front View



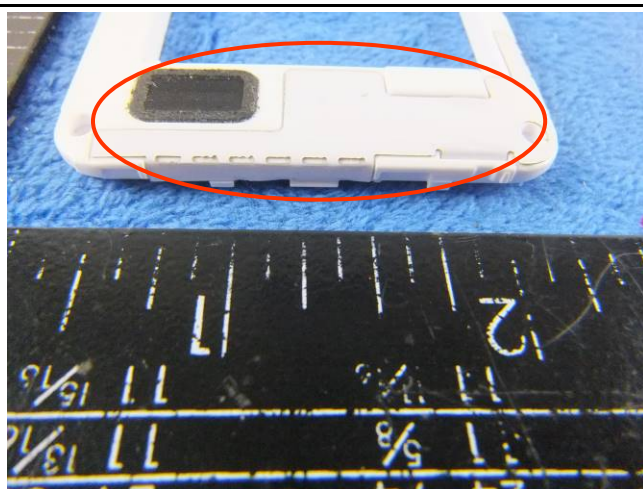
Mainboard without Shielding - Rear View



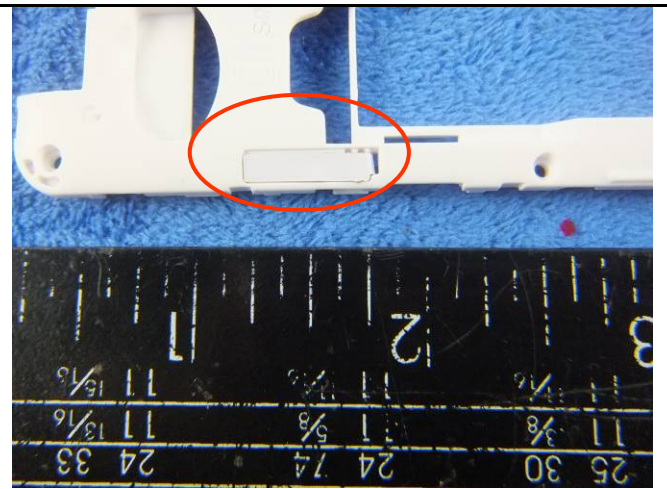
LCD - Front View



LCD - Rear View



GSM/PCS- Antenna View



BT - Antenna View

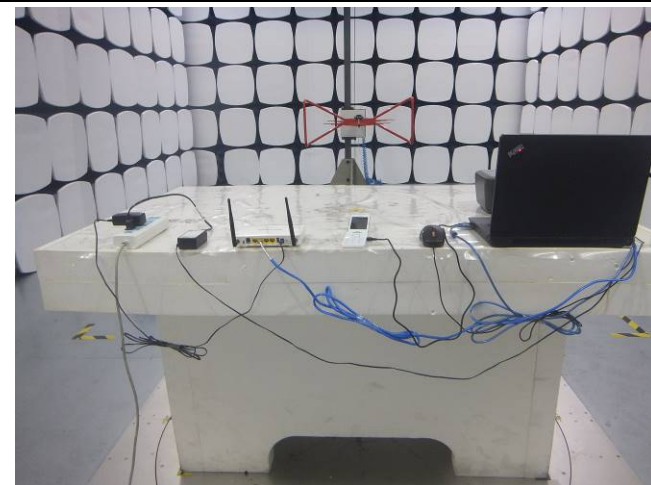
**Annex B.iii. Photograph: Test Setup Photo**



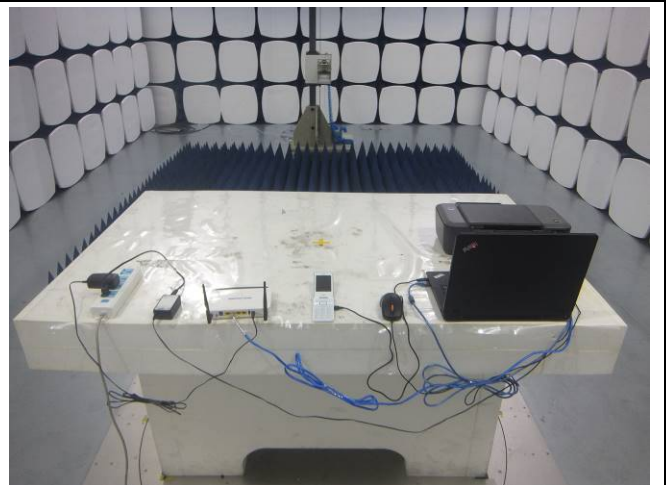
Conducted Emissions Test Setup – TF Card Front View



Conducted Emissions Test Setup – TF Card Side View



Radiated Emissions Test Setup Below 1GHz - TF Card Front View

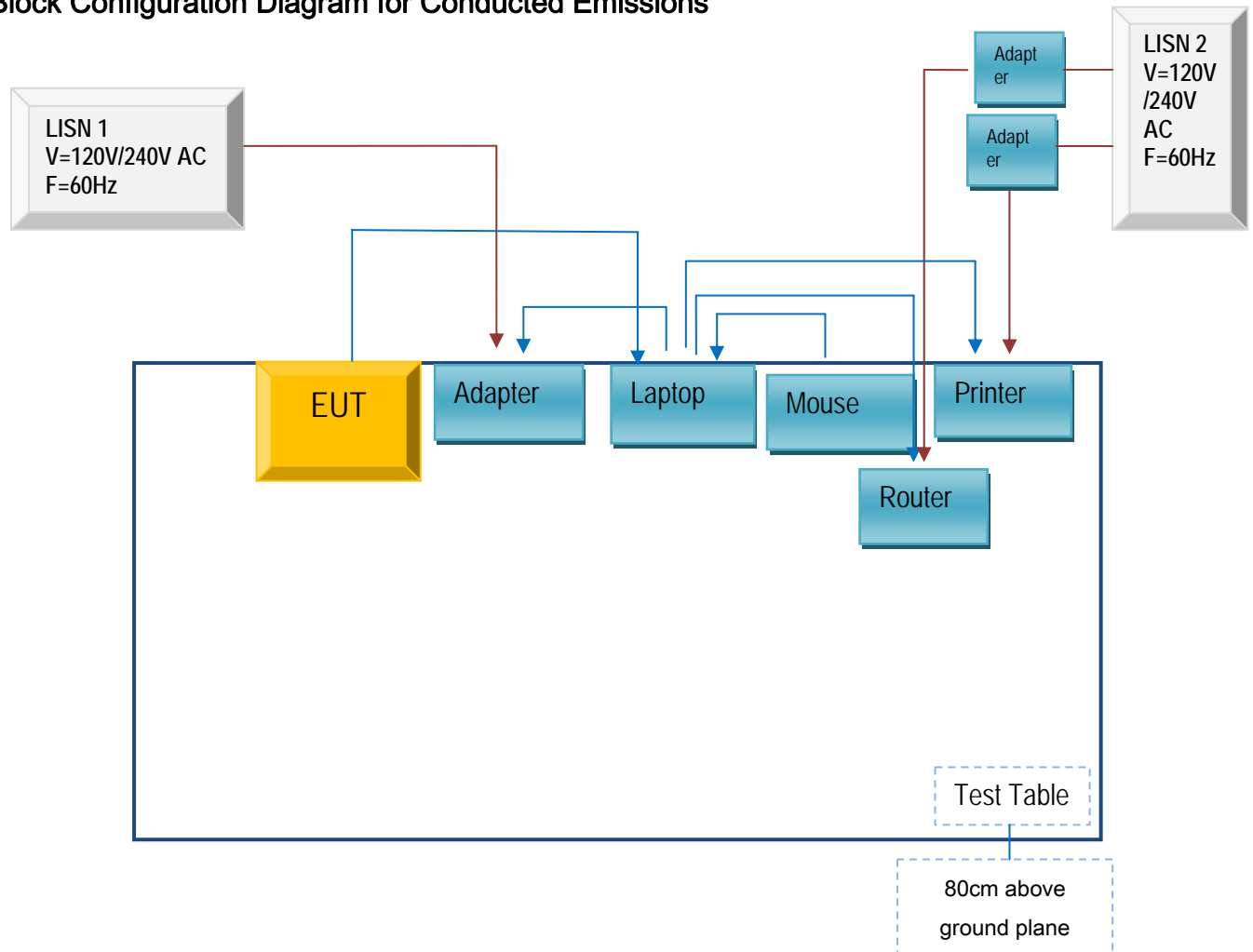


Radiated Emissions Test Setup Above 1GHz - TF Card Side View

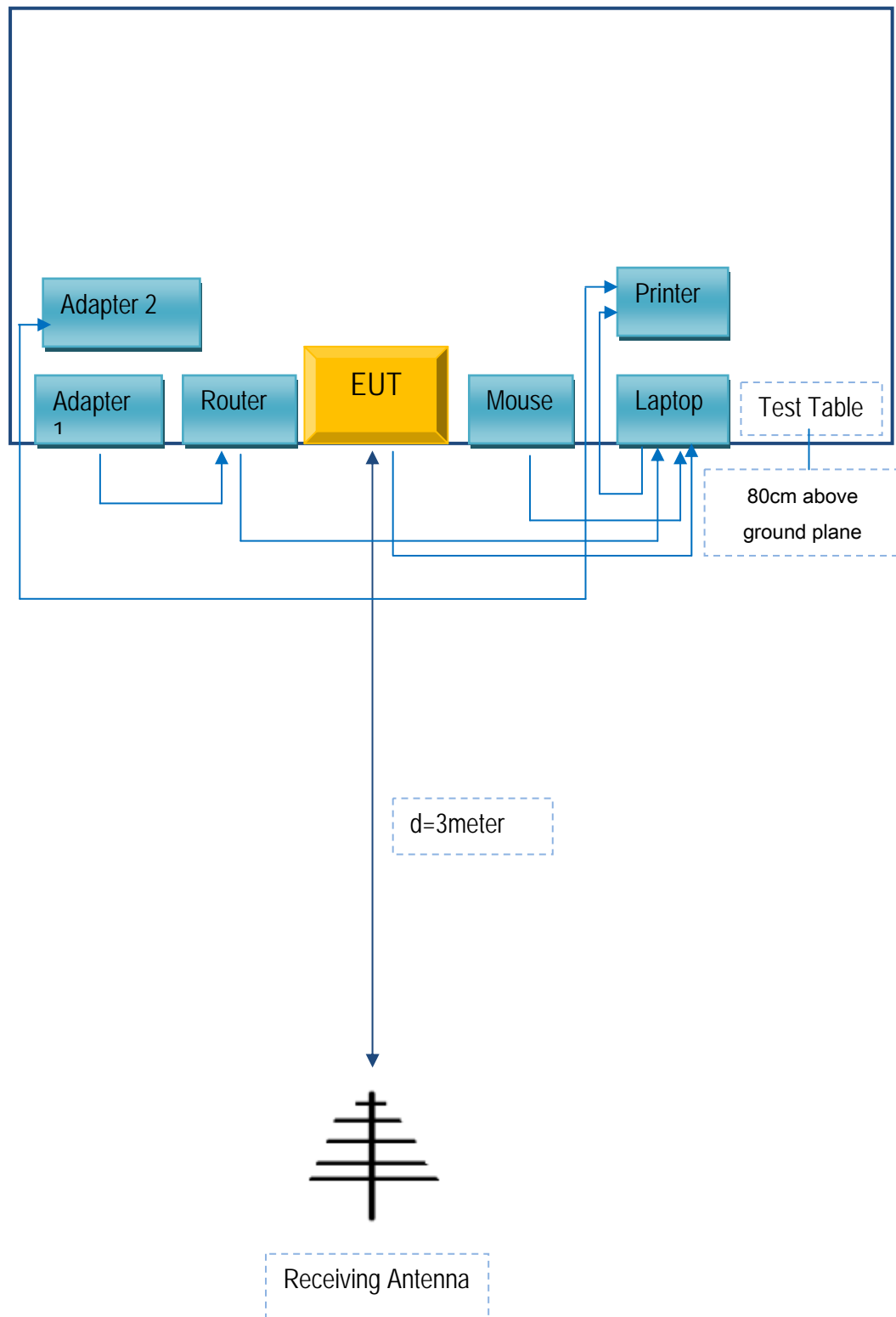
## Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

### 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.

### **Supporting equipment:**

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

### **Supporting Cable:**

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	2m	JX120051274
RJ45 Cable	Un-shielding	No	2m	KX156327541
Router Power cable	Un-shielding	No	2m	13274630Z
Printer Power cable	Un-shielding	No	2m	127581031
USB Cable	Un-shielding	No	0.8m	ST1274111

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

N/A

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## Annex E. DECLARATION OF SIMILARITY

N/A