EMC TEST REPORT

Report No.: 17070197-FCC-E

Supersede Report No: N/A

Applicant	MOVILTELCO TRADE, S.L.
Product Name	Mobile phone
Model No.	L509
Serial No.	L591、L592、L593
Test Standard	FCC Part 15 Subpart B Class B:2016, ANSI C63.4: 2014
Test Date	March 18 to March 27, 2017
Issue Date	March 28, 2017
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Evans He	David Huang	
Evans He Test Engineer	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

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
17070197-FCC-E	NONE	Original	March 28, 2017

2. Customer information

Applicant Name	MOVILTELCO TRADE, S.L.
Applicant Add	Street:ABTAO,25-1Floor A-office MADRID-SPAIN
Manufacturer	MOVILTELCO TRADE, S.L.
Manufacturer Add	Street:ABTAO,25-1Floor A-office MADRID-SPAIN

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 of Radiated Emission	Radiated Emission Program-To Shenzhen v2.0
Test Software of Conducted Emission	EZ-EMC(ver.lcp-03A1)

4. Equipment under Test (EUT) Information

Description of EUT:	Mobile phone
Main Model:	L509
Serial Model:	L591、L592、L593
Antenna Gain:	GSM850: -5.28dBi PCS1900:-3.32dBi UMTS-FDD Band V: -5.28dBi WIFI: -3.45dBi Bluetooth/BLE: -3.45dBi GPS: -3.26dBi
Antenna Type:	PIFA antenna
Input Power:	Adapter: Model: L509 Input: AC100-240V~50/60Hz,0.20A Output: DC 5.0V,1000mA Battery: Model: L509 Spec : 3.8V,2300mAh,8.74Wh
Equipment Category：	JBP
Type of Modulation:	GSM / GPRS: GMSK EGPRS: GMSK,8PSK UMTS-FDD: QPSK 802.11b/g/n: DSSS, OFDM Bluetooth: GFSK, π /4DQPSK, 8DPSK BLE: GFSK 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 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
Number of Channels:	GSM 850: 124CH PCS1900: 299CH UMTS-FDD Band V: 102CH WIFI :802.11b/g/n(20M): 11CH WIFI :802.11n(40M): 7CH Bluetooth: 79CH BLE: 40CH GPS:1CH
Port:	USB Port, Earphone Port
Trade Name :	Mtt/movistar
FCC ID:	2ACQKTELCO011
Date EUT received:	March 17, 2017
Test Date(s):	March 18 to March 27, 2017

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

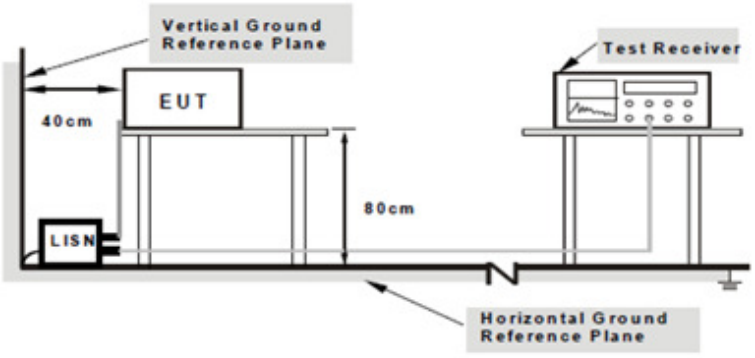
Parameter	Uncertainty
AC Power Line Conducted Emissions (150kHz~30MHz)	±3.71dB
Radiated Emission(30MHz~1GHz)	±5.12dB
Radiated Emission(1GHz~6GHz)	±5.34dB

6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	24 °C
Relative Humidity	56%
Atmospheric Pressure	1023mbar
Test date :	March 23, 2017
Tested By :	Evans He

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.107</td><td>a)</td><td>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></td><td>☑</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 

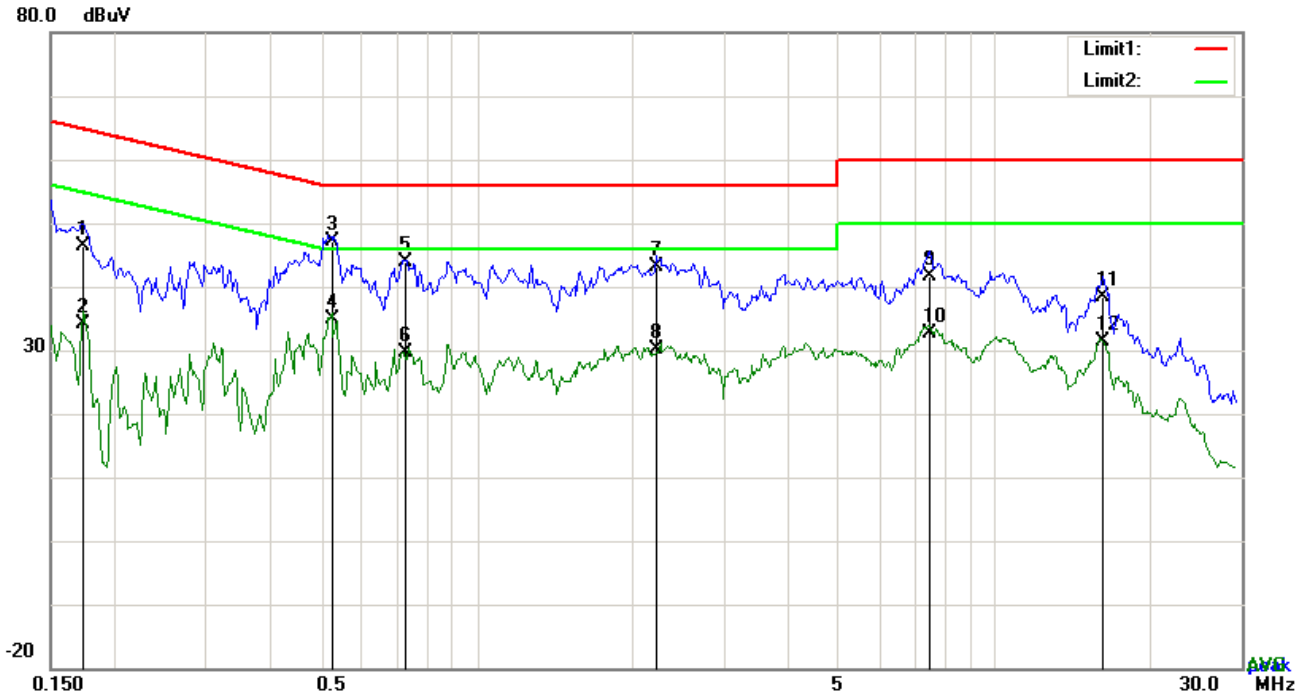
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.
2. The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.</td></tr>
</table>

	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

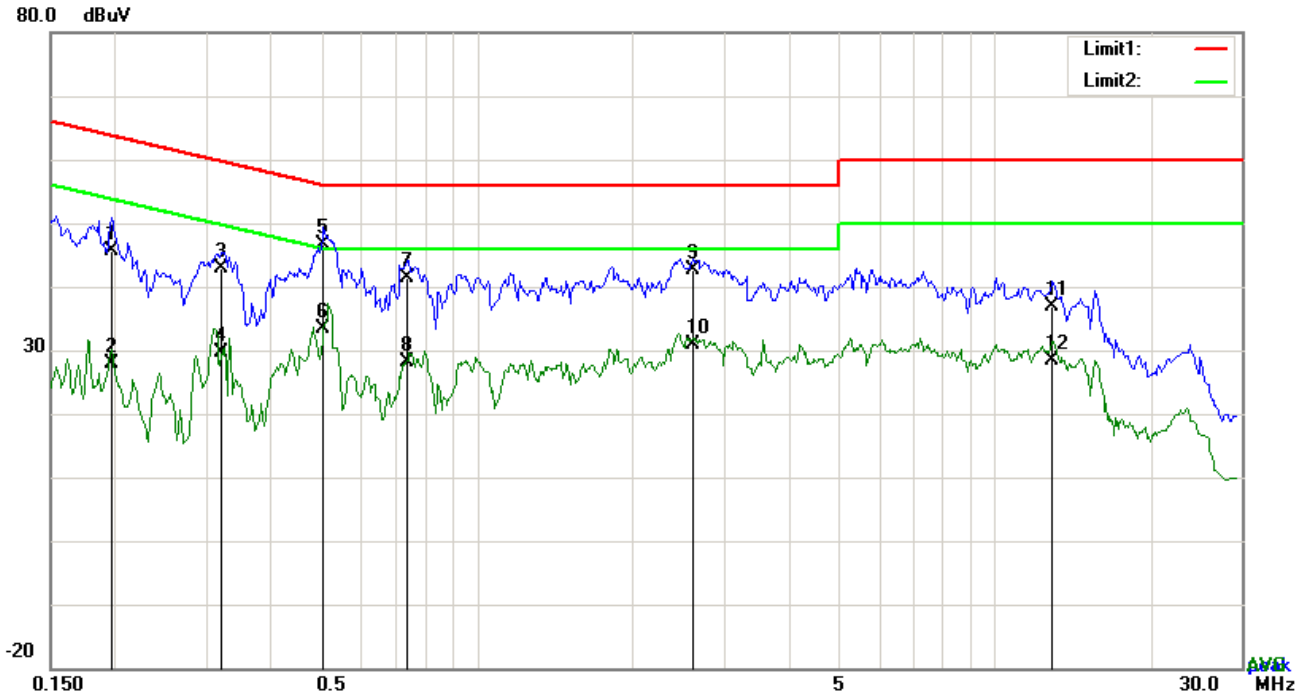


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1734	36.32	QP	10.03	46.35	64.80	-18.45
2	L1	0.1734	24.18	AVG	10.03	34.21	54.80	-20.59
3	L1	0.5244	37.18	QP	10.03	47.21	56.00	-8.79
4	L1	0.5244	24.92	AVG	10.03	34.95	46.00	-11.05
5	L1	0.7311	33.89	QP	10.03	43.92	56.00	-12.08
6	L1	0.7311	19.52	AVG	10.03	29.55	46.00	-16.45
7	L1	2.2209	33.11	QP	10.05	43.16	56.00	-12.84
8	L1	2.2209	20.05	AVG	10.05	30.10	46.00	-15.90
9	L1	7.5045	31.52	QP	10.12	41.64	60.00	-18.36
10	L1	7.5045	22.61	AVG	10.12	32.73	50.00	-17.27
11	L1	16.1508	28.09	QP	10.24	38.33	60.00	-21.67
12	L1	16.1508	21.23	AVG	10.24	31.47	50.00	-18.53

Test Mode :	USB Mode

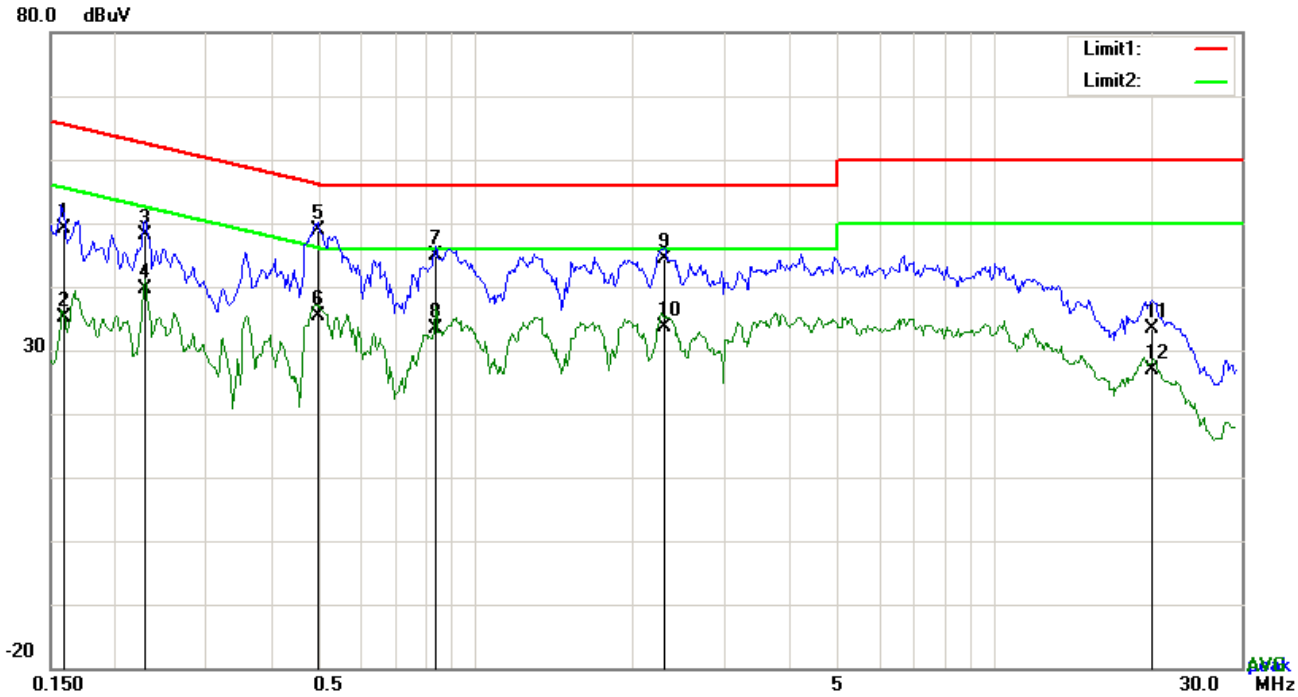


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1968	35.73	QP	10.02	45.75	63.74	-17.99
2	N	0.1968	17.94	AVG	10.02	27.96	53.74	-25.78
3	N	0.3216	32.90	QP	10.02	42.92	59.67	-16.75
4	N	0.3216	19.53	AVG	10.02	29.55	49.67	-20.12
5	N	0.5049	36.73	QP	10.02	46.75	56.00	-9.25
6	N	0.5049	23.33	AVG	10.02	33.35	46.00	-12.65
7	N	0.7350	31.47	QP	10.02	41.49	56.00	-14.51
8	N	0.7350	18.01	AVG	10.02	28.03	46.00	-17.97
9	N	2.6187	32.68	QP	10.05	42.73	56.00	-13.27
10	N	2.6187	20.83	AVG	10.05	30.88	46.00	-15.12
11	N	12.9606	26.71	QP	10.18	36.89	60.00	-23.11
12	N	12.9606	18.09	AVG	10.18	28.27	50.00	-21.73

Test Mode :	USB Mode

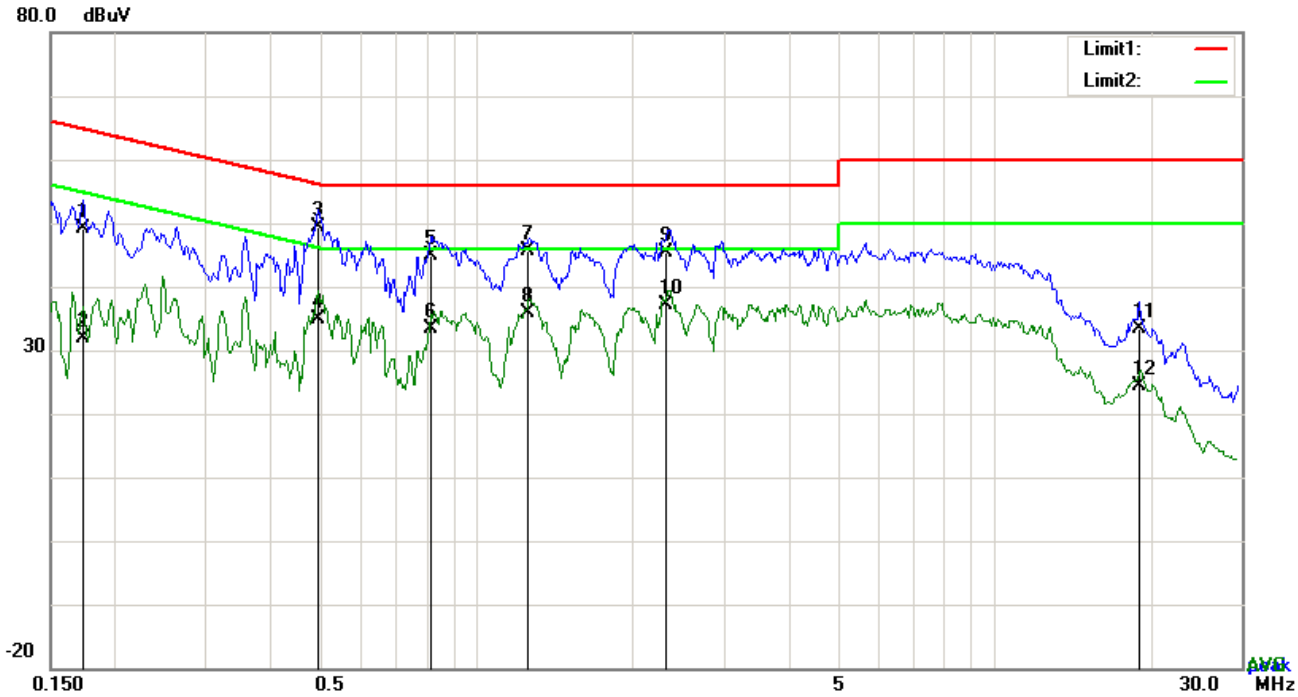


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1590	39.01	QP	10.03	49.04	65.52	-16.48
2	L1	0.1590	25.09	AVG	10.03	35.12	55.52	-20.40
3	L1	0.2280	38.04	QP	10.03	48.07	62.52	-14.45
4	L1	0.2280	29.51	AVG	10.03	39.54	52.52	-12.98
5	L1	0.4932	38.94	QP	10.03	48.97	56.11	-7.14
6	L1	0.4932	25.29	AVG	10.03	35.32	46.11	-10.79
7	L1	0.8325	34.75	QP	10.03	44.78	56.00	-11.22
8	L1	0.8325	23.42	AVG	10.03	33.45	46.00	-12.55
9	L1	2.3028	34.40	QP	10.05	44.45	56.00	-11.55
10	L1	2.3028	23.48	AVG	10.05	33.53	46.00	-12.47
11	L1	20.1093	23.14	QP	10.30	33.44	60.00	-26.56
12	L1	20.1093	16.49	AVG	10.30	26.79	50.00	-23.21

Test Mode :	USB Mode



Test Data

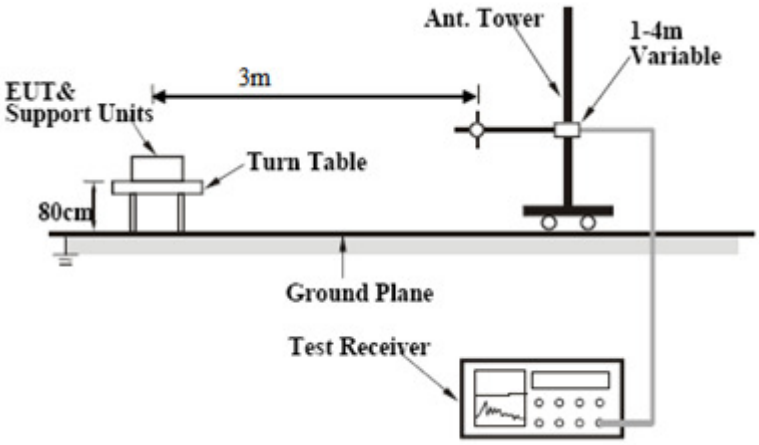
Phase Neutral Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1734	39.15	QP	10.02	49.17	64.80	-15.63
2	N	0.1734	21.81	AVG	10.02	31.83	54.80	-22.97
3	N	0.4932	39.28	QP	10.02	49.30	56.11	-6.81
4	N	0.4932	24.92	AVG	10.02	34.94	46.11	-11.17
5	N	0.8169	34.94	QP	10.03	44.97	56.00	-11.03
6	N	0.8169	23.27	AVG	10.03	33.30	46.00	-12.70
7	N	1.2576	35.65	QP	10.03	45.68	56.00	-10.32
8	N	1.2576	25.78	AVG	10.03	35.81	46.00	-10.19
9	N	2.3223	35.42	QP	10.04	45.46	56.00	-10.54
10	N	2.3223	27.09	AVG	10.04	37.13	46.00	-8.87
11	N	19.0290	23.10	QP	10.25	33.35	60.00	-26.65
12	N	19.0290	14.08	AVG	10.25	24.33	50.00	-25.67

6.2 Radiated Emissions

Temperature	24 °C
Relative Humidity	56%
Atmospheric Pressure	1023mbar
Test date :	March 23 & 28, 2017
Tested By :	Evans He

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.109(d)</td><td>a)</td><td>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></td><td>☑</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 
</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. 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</td></tr>
</table>

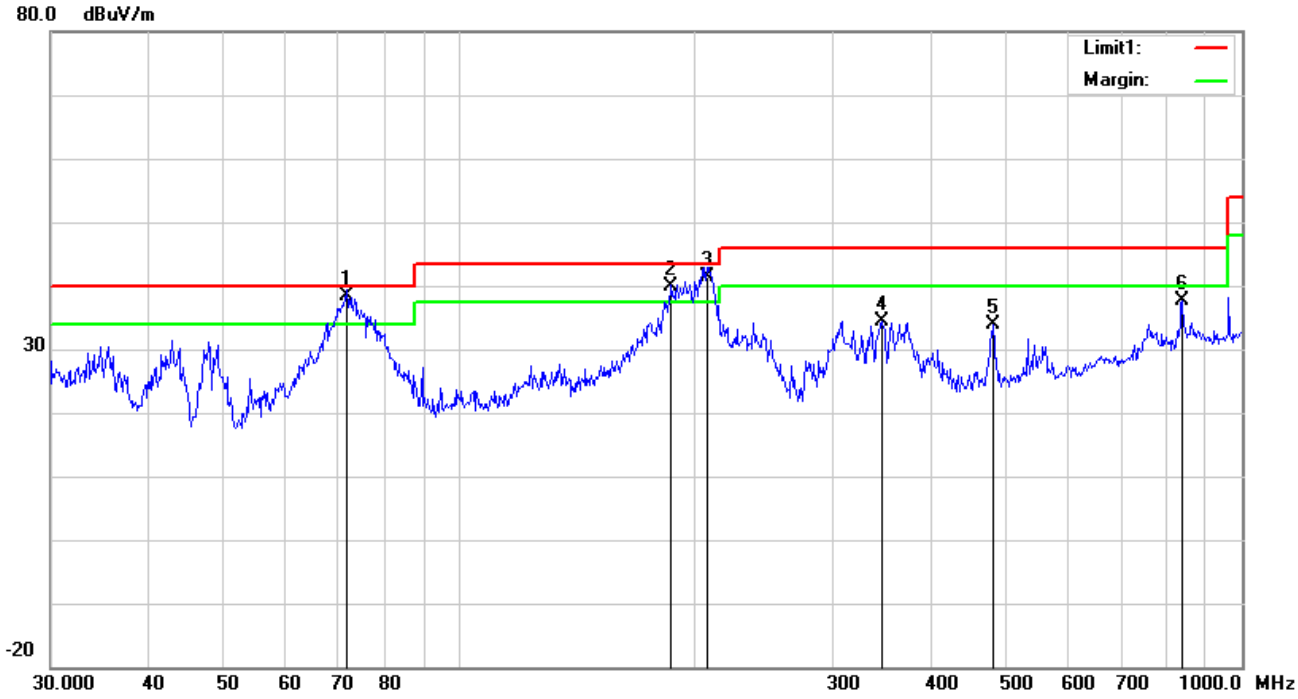
	over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz. 4. The 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

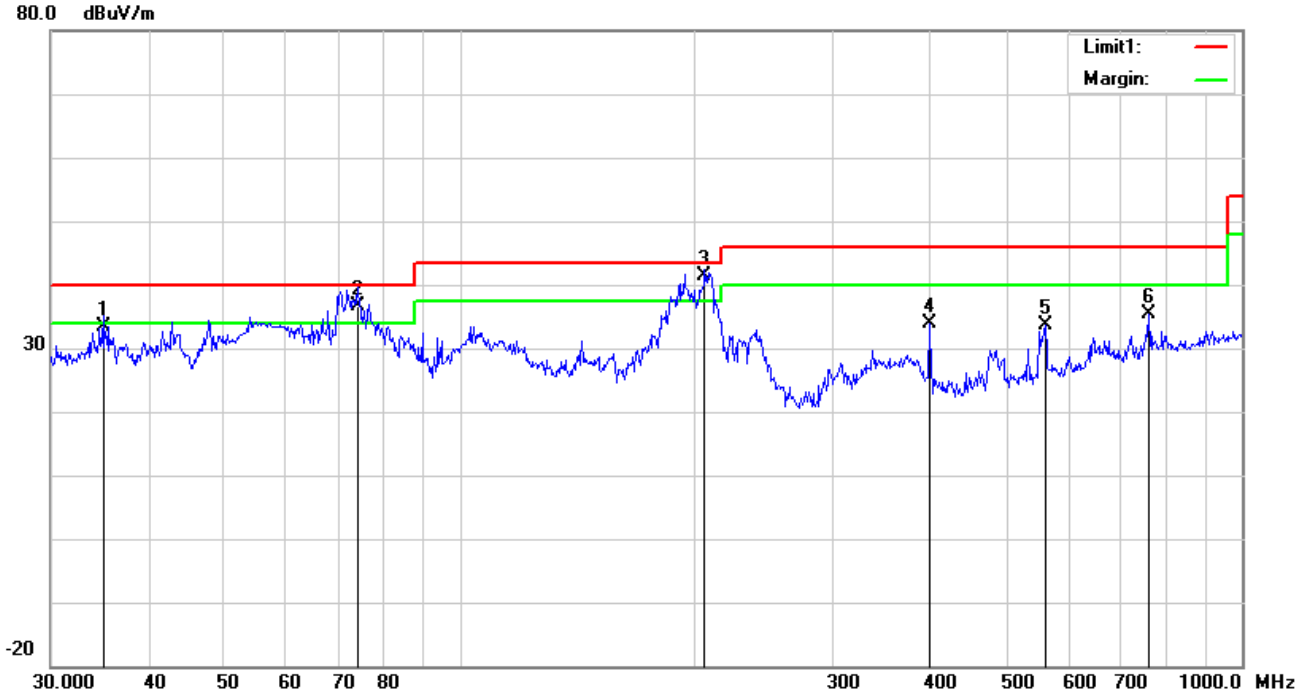


Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	H	71.8320	51.16	QP	7.76	22.39	0.97	37.50	40.00	-2.50	100	42
2	H	186.4409	49.36	QP	11.35	22.29	1.48	39.90	43.50	-3.60	200	25
3	H	207.1226	50.11	QP	12.00	22.37	1.56	41.30	43.50	-2.20	100	222
4	H	346.8092	39.98	peak	14.58	22.16	2.02	34.42	46.00	-11.58	100	203
5	H	480.5276	36.00	peak	17.31	21.85	2.31	33.77	46.00	-12.23	100	304
6	H	839.1818	34.05	peak	21.83	21.04	2.89	37.73	46.00	-8.27	100	186

Below 1GHz



Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	V	35.0048	37.34	QP	17.55	22.25	0.76	33.40	40.00	-6.60	100	310
2	V	74.1351	50.42	QP	7.72	22.40	0.96	36.70	40.00	-3.30	200	69
3	V	205.6751	50.29	QP	12.02	22.37	1.56	41.50	43.50	-2.00	100	127
4	V	399.0302	38.30	peak	15.68	22.01	2.01	33.98	46.00	-12.02	100	334
5	V	560.6928	34.30	peak	18.55	21.67	2.48	33.66	46.00	-12.34	100	244
6	V	760.7036	32.71	peak	20.93	21.23	2.89	35.30	46.00	-10.70	100	183

Above 1GHz

Frequency (MHz)	Reading (dBμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Factors (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector (PK/AV)
1113.45	64.32	55	100	V	-20.13	44.19	74	-29.81	PK
1802.73	69.87	149	100	V	-16.51	53.36	74	-20.64	PK
2163.58	58.41	97	200	V	-14.54	43.87	74	-30.13	PK
1349.83	63.25	68	300	H	-19.24	44.01	74	-29.99	PK
2671.55	59.66	123	100	H	-13.32	46.34	74	-27.66	PK
1991.32	55.43	205	100	H	-15.03	40.4	74	-33.6	PK

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

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

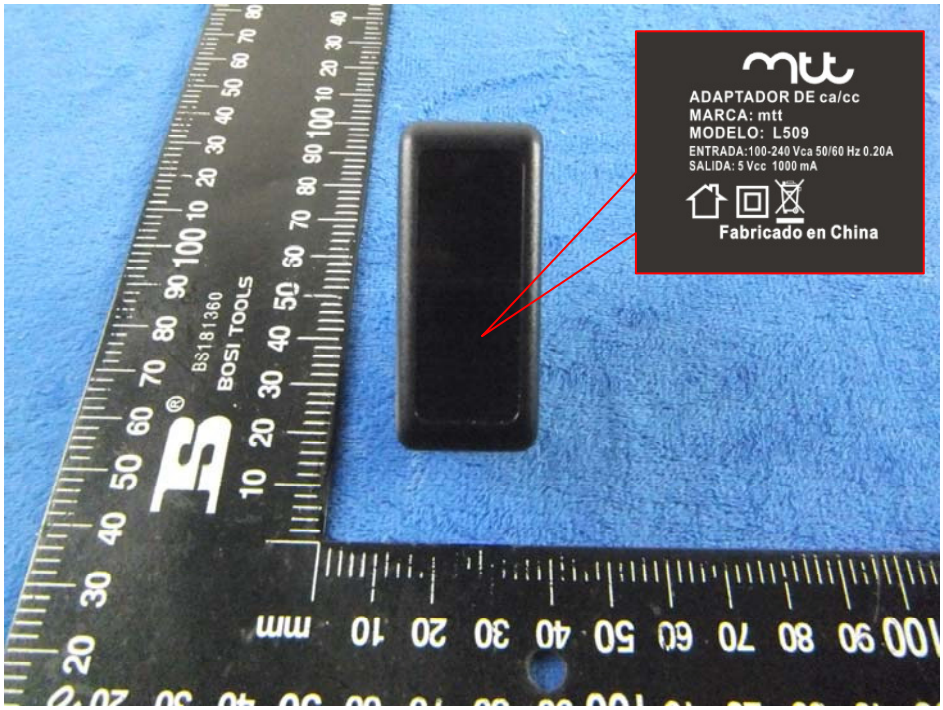
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/16/2016	09/15/2017	☑
Line Impedance Stabilization Network	LI-125A	191106	09/24/2016	09/23/2017	☑
Line Impedance Stabilization Network	LI-125A	191107	09/24/2016	09/23/2017	☑
LISN	ISN 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	03/23/2017	03/22/2018	☑
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	☑

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

Whole Package View

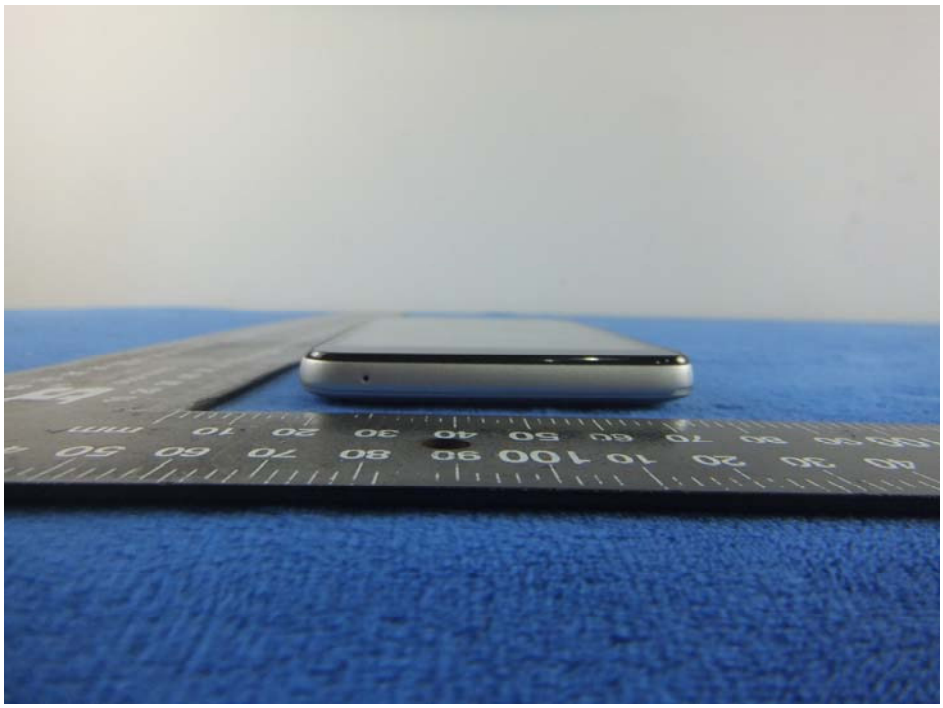
Adapter - Front View



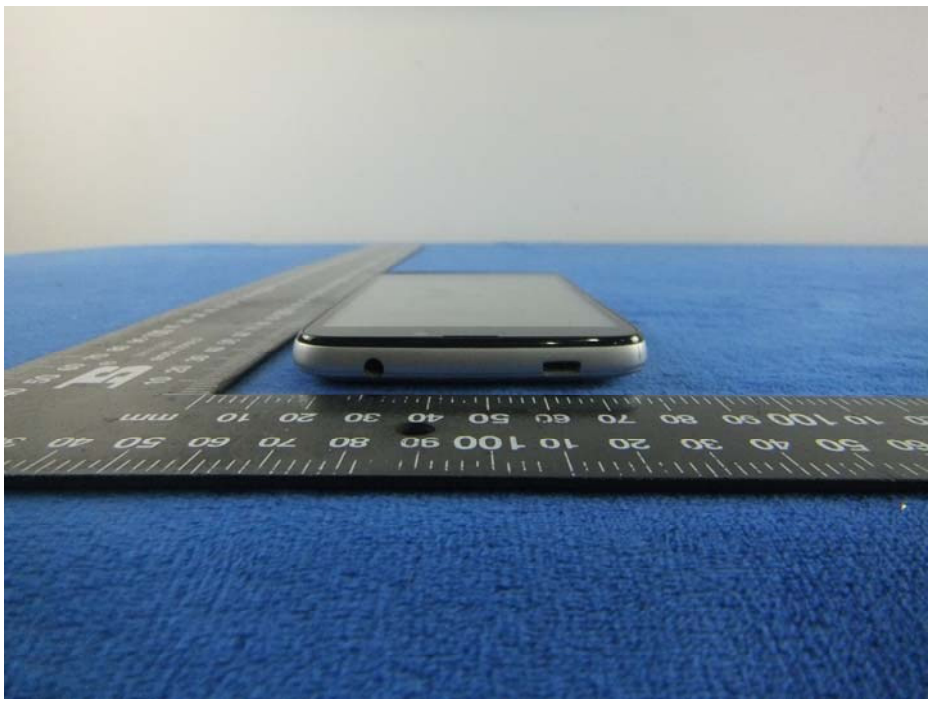
EUT - Front View

EUT - Rear View

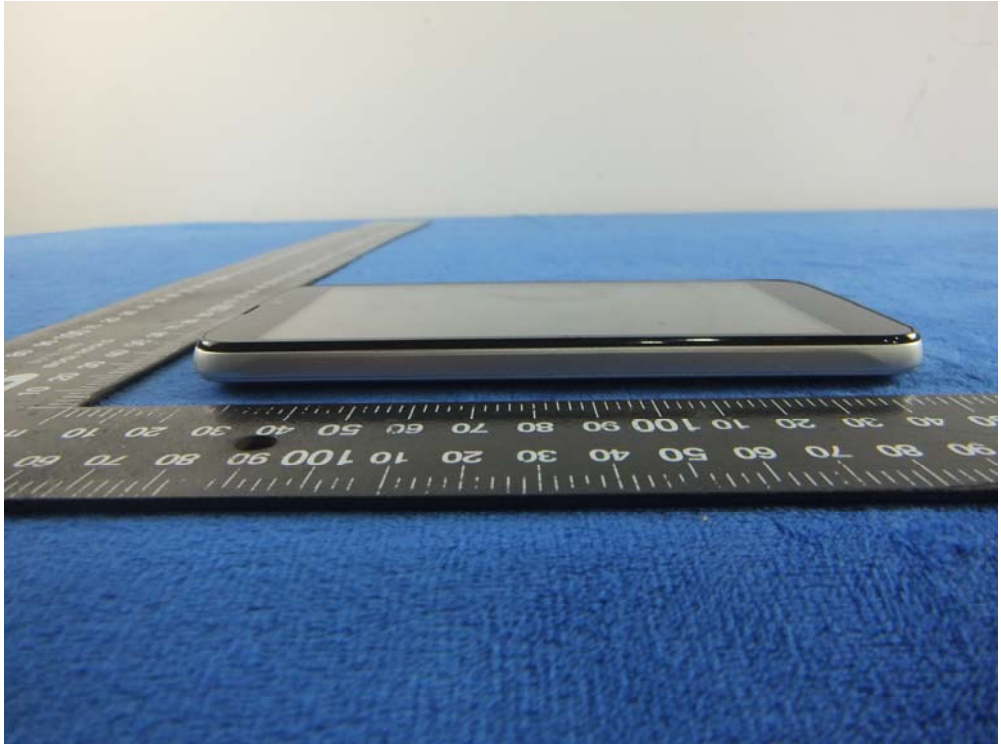
EUT - Top View



EUT - Bottom View



EUT - Left View



EUT - Right View

Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1

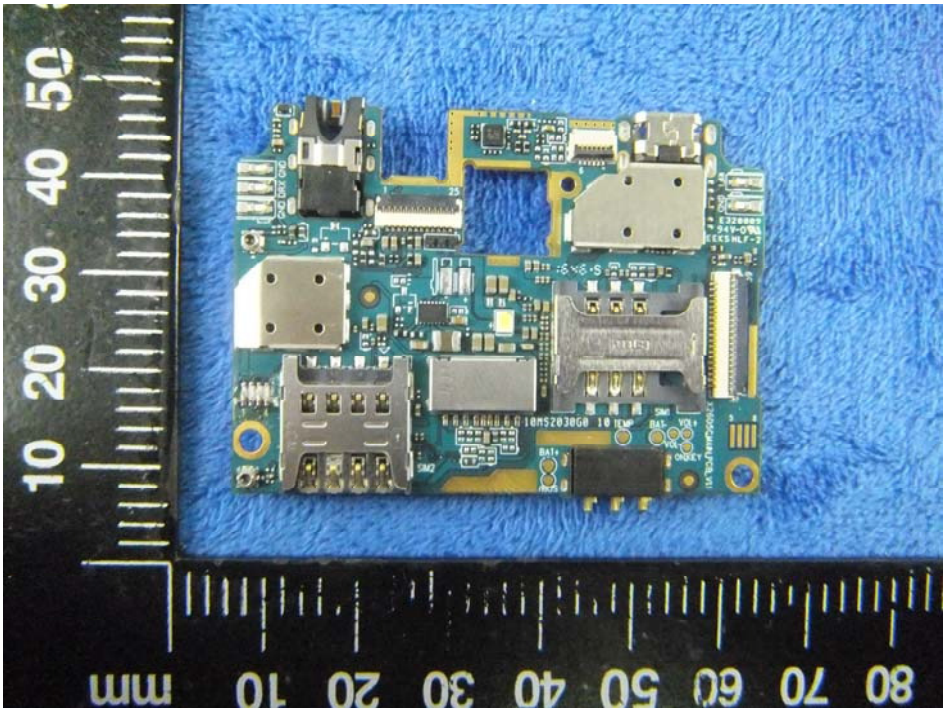
Cover Off - Top View 2

Cover Off - Top View 3

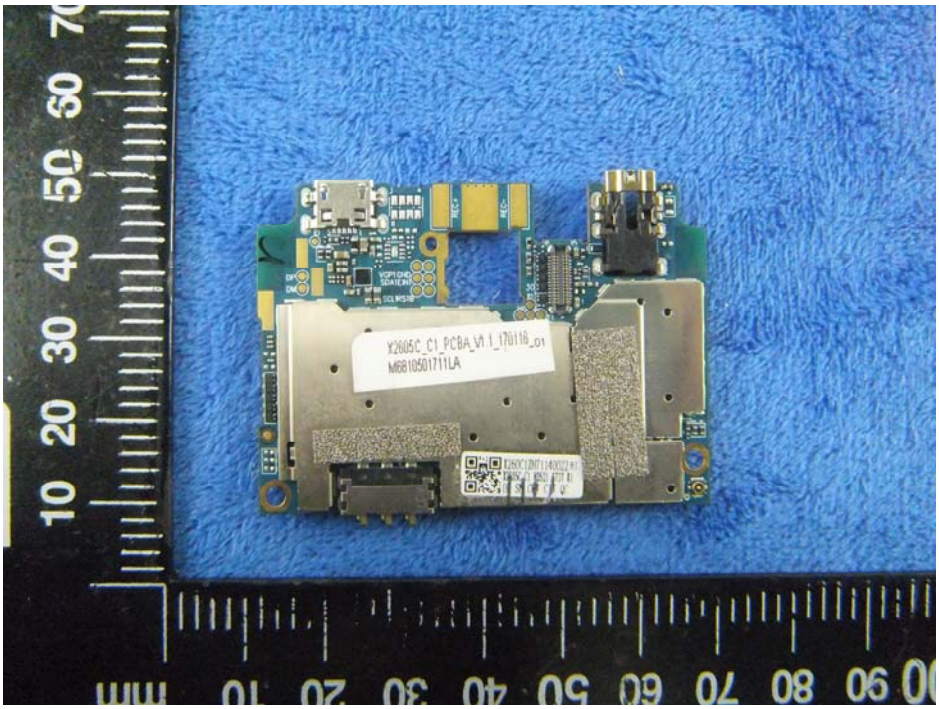
Battery - Front View

Battery - Rear View

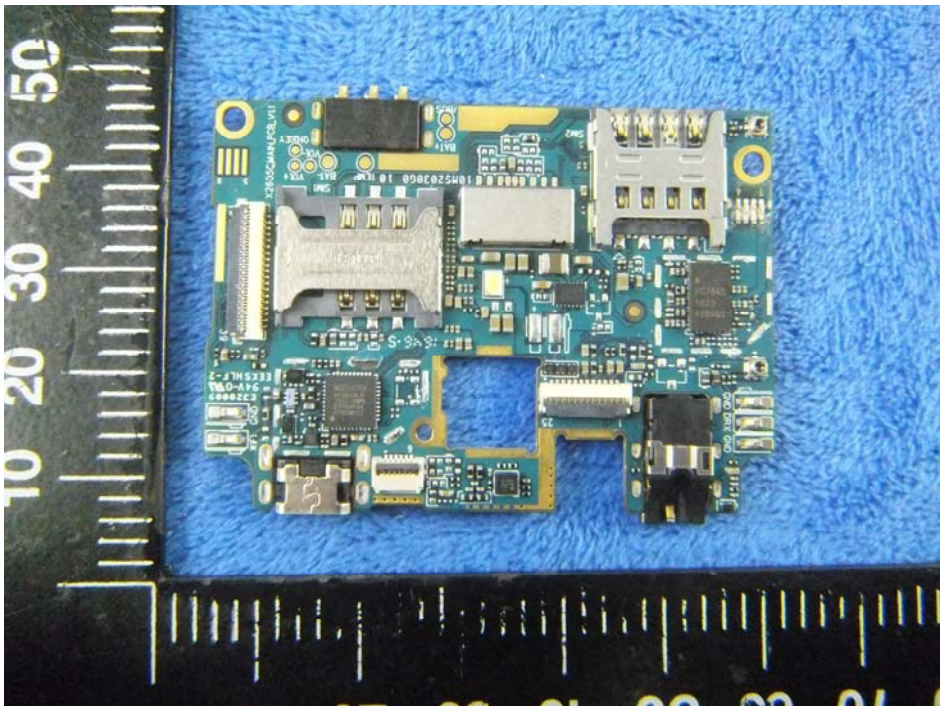
Small board - Front View



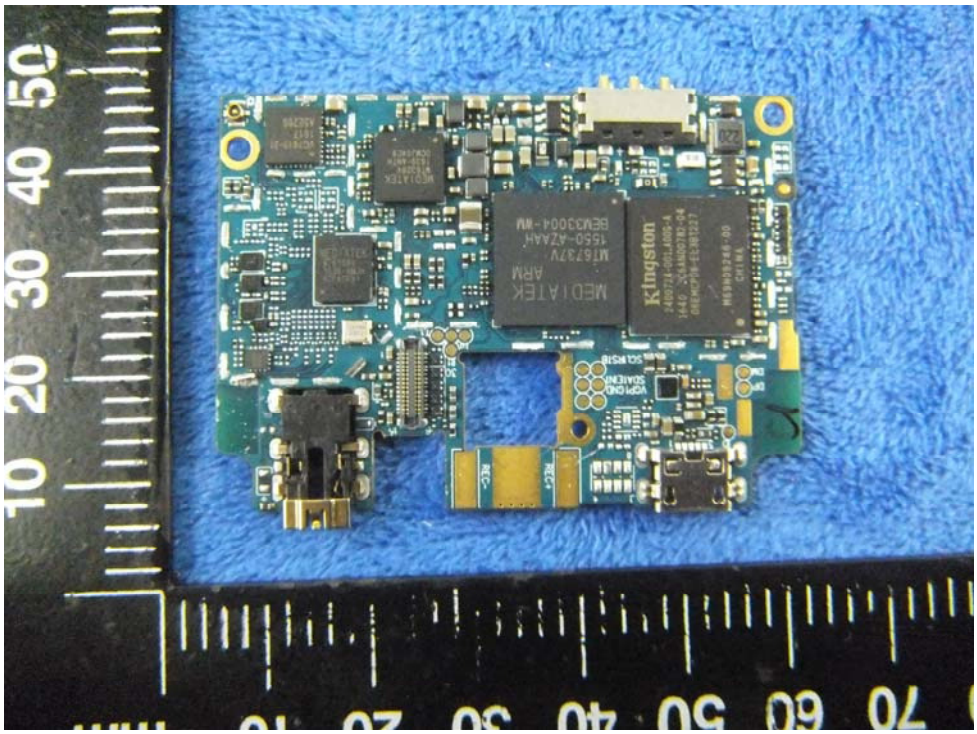
Small board - Rear View



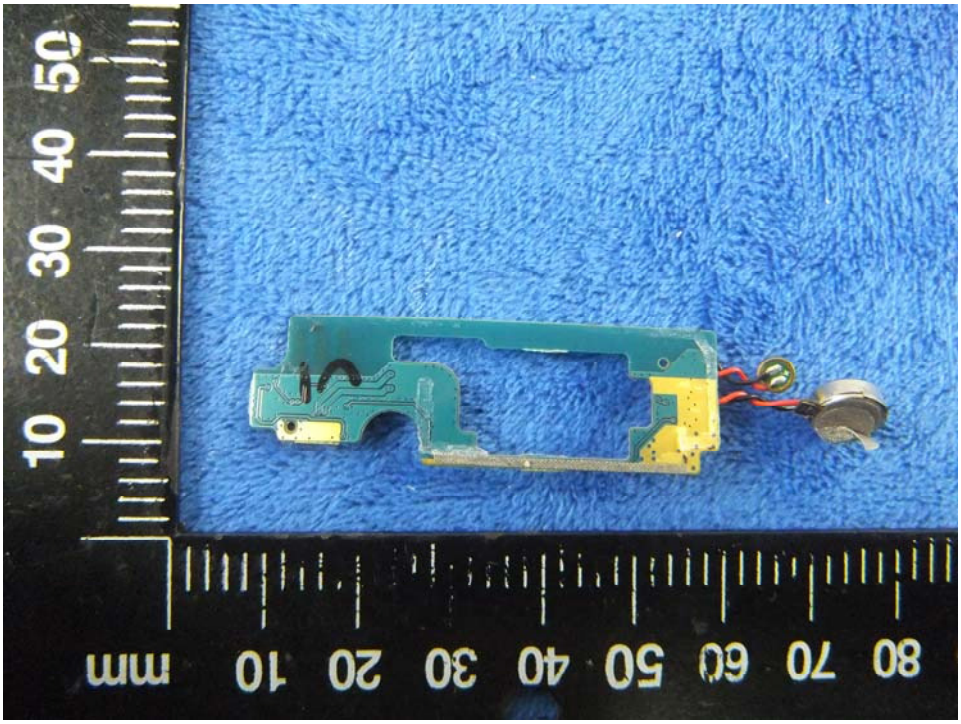
Mainboard - Front View



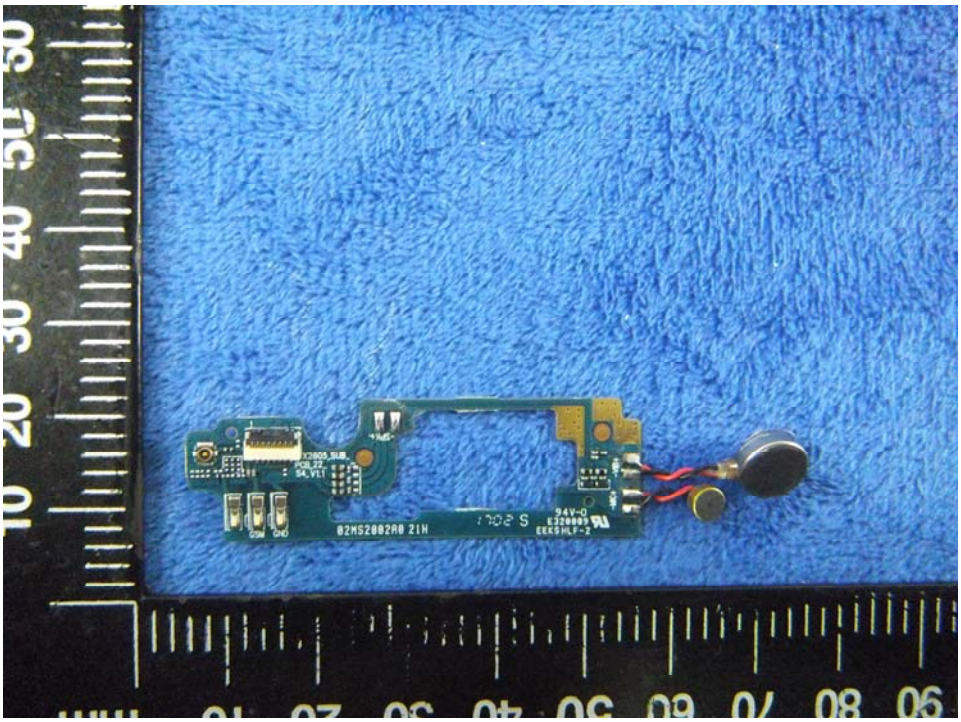
Mainboard - Rear View



Connected Mainboard – Front View

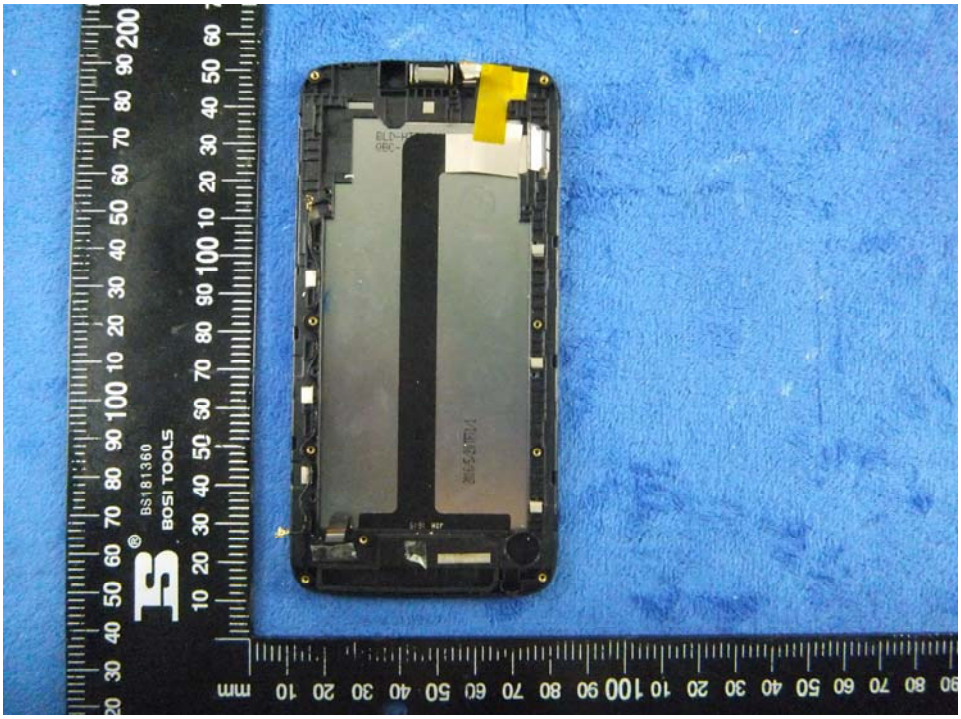


Connected Mainboard - Rear View



LCD – Front View

LCD – Rear View



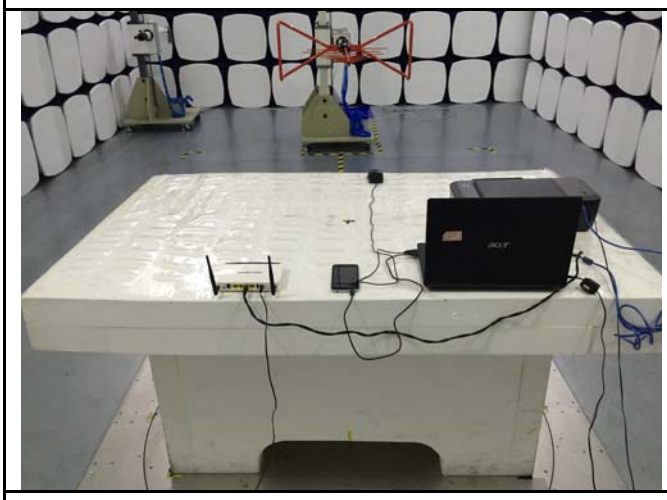
GSM/PCS/UMTS - Antenna View

BT/WIFI/GPS - Antenna View

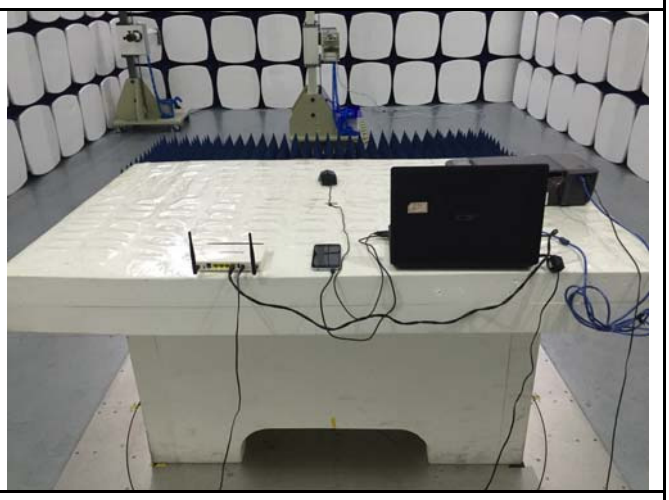
Annex B.iii. Photograph: Test Setup Photo

Conducted Emissions Test Setup – Front View

Conducted Emissions Test Setup – Side View



Radiated Emissions Test Setup Below 1GHz

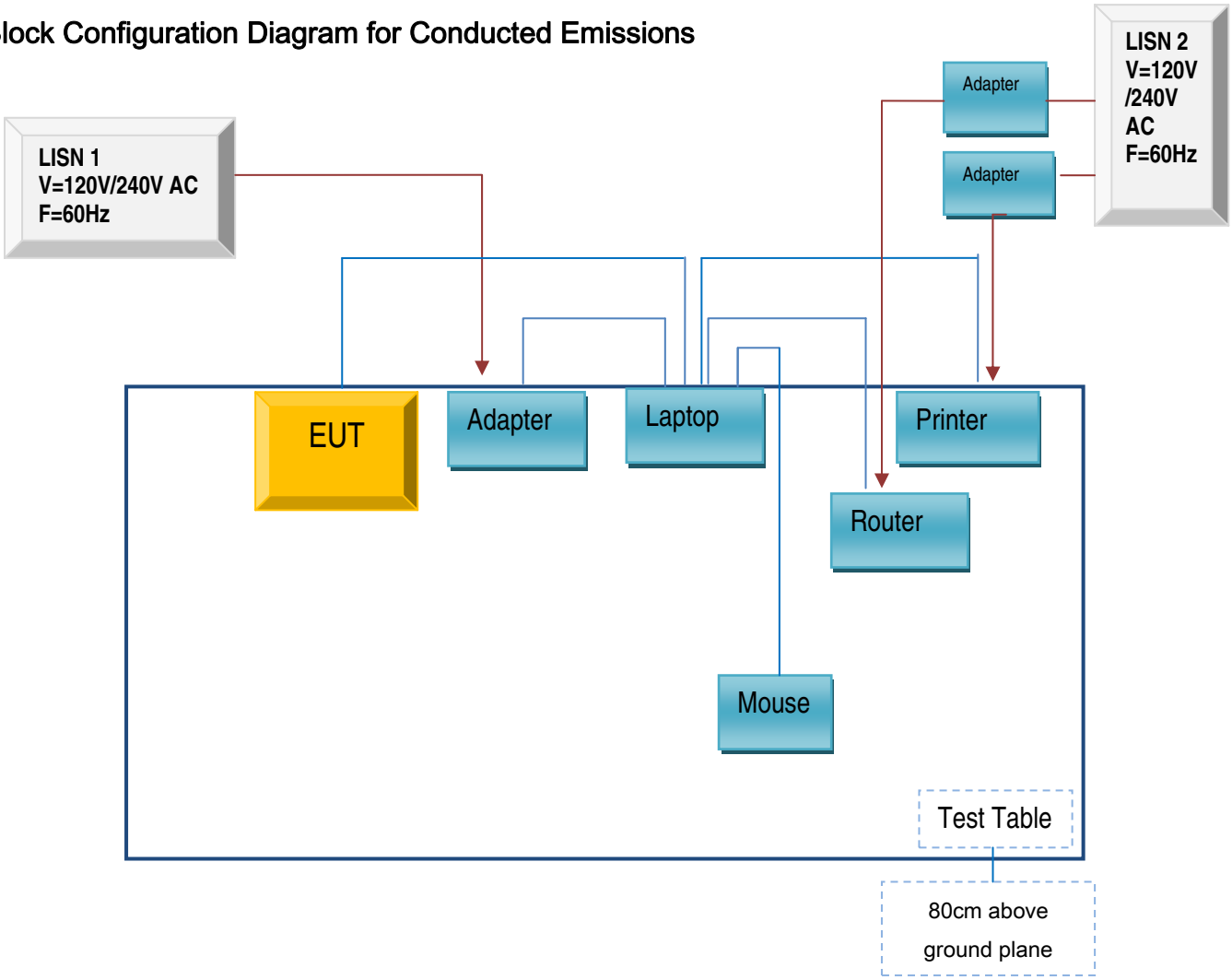


Radiated Emissions Test Setup Above 1GHz

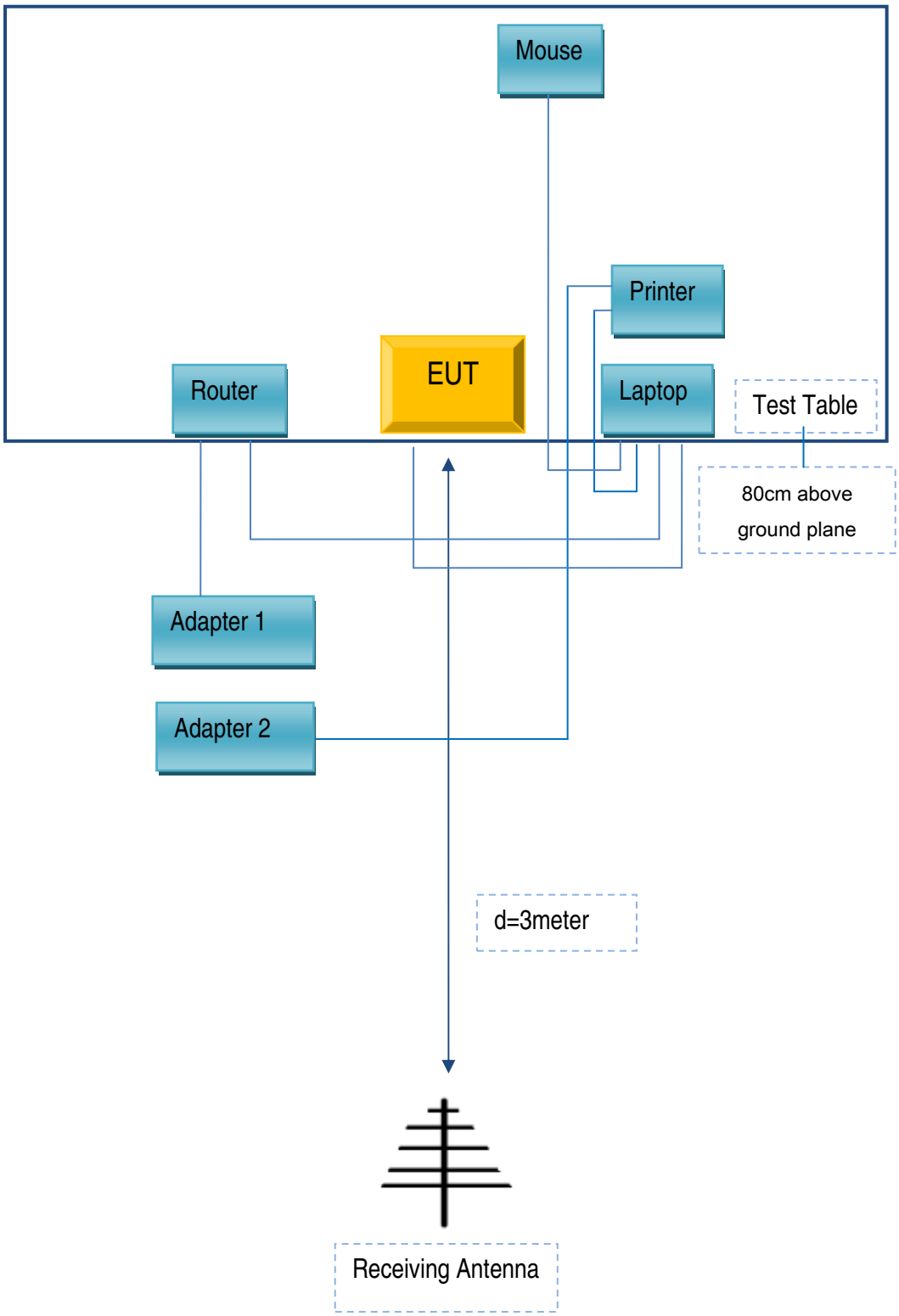
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C. 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

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

Please see the attachment

Annex E. DECLARATION OF SIMILARITY

MOVIL TELCO TRADE, S.L

To: SIEMIC ,775 Montague Expressway, Milpitas, CA 95035,USA

Declaration Letter

Dear Sir,

For our business issue and marketing requirement, we would like to list 4 model numbers on the **FCC ID** certificates and reports, as following:

Model No.:L509

We declare that the difference of these is listed as below:

Main Model No	Serial Model No	Difference
L509	L591, L592, L593	Only color is not the same, Circuit schematic and PCB are the same

Thank you!

Signature:

Printed name/title:JOSE LUIS ROZPIDE/ manager

Tel:034-912213073

Fax:34 91 2213102

Address:Street:AB TAO,25-1Floor A-office MADRID-SPAIN