

EMC TEST REPORT



Report No.: 17070523-FCC-E

Supersede Report No: N/A

Applicant	MFOURTEL MEXICO S.A. DE C.V.	
Product Name	LTE Mobile Phone	
Model No.	M4 SS4453-R	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2016, ANSI C63.4: 2014	
Test Date	July 04 to 12, 2017	
Issue Date	July 12, 2017	
Test Result	☒ Pass ☐ Fail	
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		
<i>Evans He</i>	<i>David Huang</i>	
Evans He 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
17070523-FCC-E	NONE	Original	July 12, 2017

2. Customer information

Applicant Name	MFOURTEL MEXICO S.A. DE C.V.
Applicant Add	Av. Ejército Nacional 436 Piso 3 Chapultepec Morales Miguel Hidalgo Distrito Federal 11570.
Manufacturer	CK Telecom Limited
Manufacturer Add	Technology Road.High-Tech Development Zone. Heyuan, Guangdong,P.R.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 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:	LTE Mobile Phone
Main Model:	M4 SS4453-R
Serial Model:	N/A
Antenna Gain:	GSM850: -0.5dBi PCS1900: 1dBi UMTS-FDD Band V: -0.5dBi UMTS-FDD Band II: 1dBi LTE Band II: 1dBi LTE Band IV: 1dBi LTE Band VII: 1.5dBi LTE Band XIII: -0.7dBi WIFI: -0.5dBi Bluetooth/BLE: -0.5dBi GPS: -1dBi
Antenna Type:	PIFA antenna
Input Power:	Adapter: Model: A8-501000 Input: AC100-240V~50/60Hz,150mA Output: DC 5.0V,1000mA Battery Model: M3000A Spec: 3.85V,11.55Wh,3000mAh Charge Limit: 4.4Vdc
Equipment Category :	JBP

Type of Modulation:	GSM / GPRS: GMSK EGPRS: GMSK,8PSK UMTS-FDD: QPSK LTE Band: QPSK, 16QAM 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 UMTS-FDD Band II TX:1852.4 ~ 1907.6 MHz; RX: 1932.4 ~ 1987.6 MHz LTE Band II TX: 1850.7~ 1909.3 MHz; RX : 1930.7 ~ 1989.3 MHz LTE Band IV TX: 1710.7 ~ 1754.3 MHz; RX : 2110.7 ~ 2154.3 MHz LTE Band VII TX: 2502.5 ~ 2567.5 MHz; RX : 2622.5 ~ 2687.5 MHz LTE Band XIII TX: 779.5 ~ 784.5MHz; RX : 748.5 ~ 753.5 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 UMTS-FDD Band II : 277CH 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 :	M4
Brand Name:	M4

FCC ID: CLN554453-R

Date EUT received: July 03, 2017

Test Date(s): July 04 to 12, 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)	±3.11dB
Radiated Emission(30MHz~1GHz)	±5.12dB
Radiated Emission(1GHz~6GHz)	±5.34dB

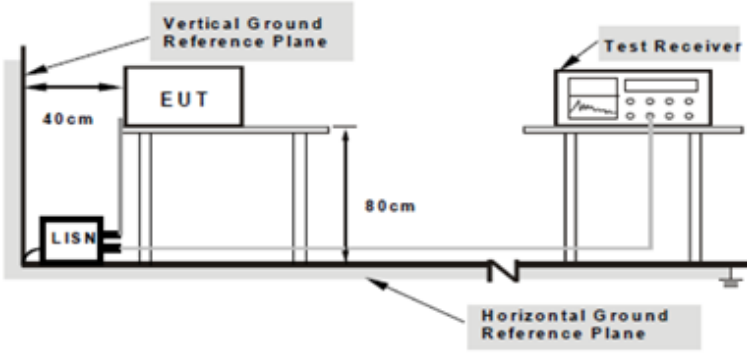
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	24°C
Relative Humidity	51%
Atmospheric Pressure	1012mbar
Test date :	July 03, 2017
Tested By :	Evans He

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.			
		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.
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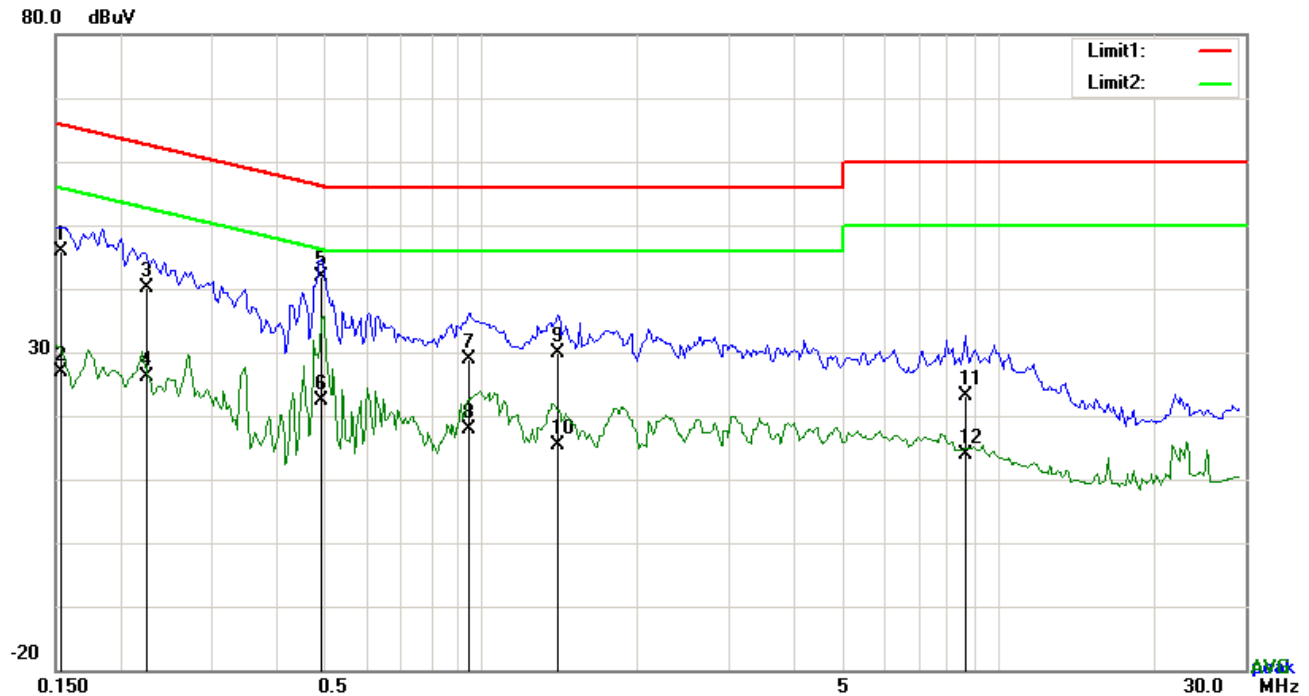
Procedure	- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table. - The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.
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	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 ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Mode : USB Mode

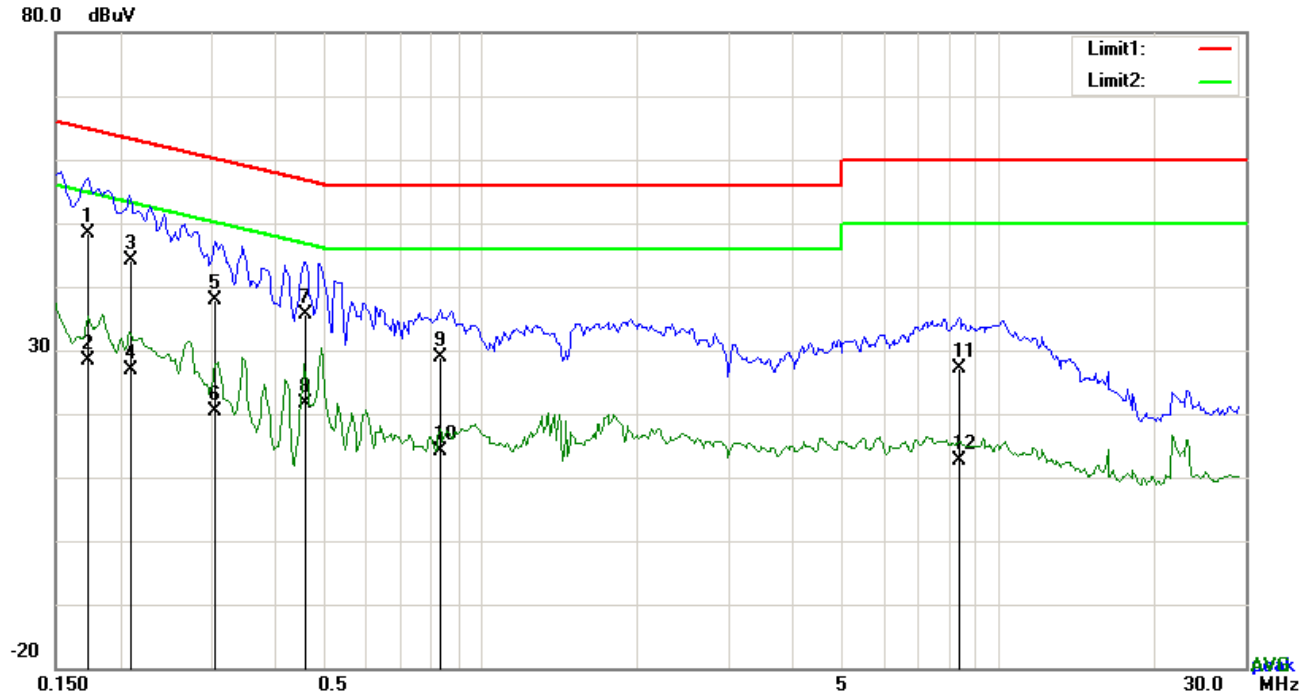


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.1539	45.81	QP	0.00	45.81	65.79	-19.98
2	L1	0.1539	26.99	AVG	0.00	26.99	55.79	-28.80
3	L1	0.2256	40.01	QP	0.00	40.01	62.61	-22.60
4	L1	0.2256	26.12	AVG	0.00	26.12	52.61	-26.49
5	L1	0.4893	41.95	QP	0.00	41.95	56.18	-14.23
6	L1	0.4893	22.37	AVG	0.00	22.37	46.18	-23.81
7	L1	0.9456	28.79	QP	0.00	28.79	56.00	-27.21
8	L1	0.9456	17.99	AVG	0.00	17.99	46.00	-28.01
9	L1	1.4097	29.82	QP	0.00	29.82	56.00	-26.18
10	L1	1.4097	15.30	AVG	0.00	15.30	46.00	-30.70
11	L1	8.6160	23.17	QP	0.00	23.17	60.00	-36.83
12	L1	8.6160	13.87	AVG	0.00	13.87	50.00	-36.13

Test Mode: USB Mode

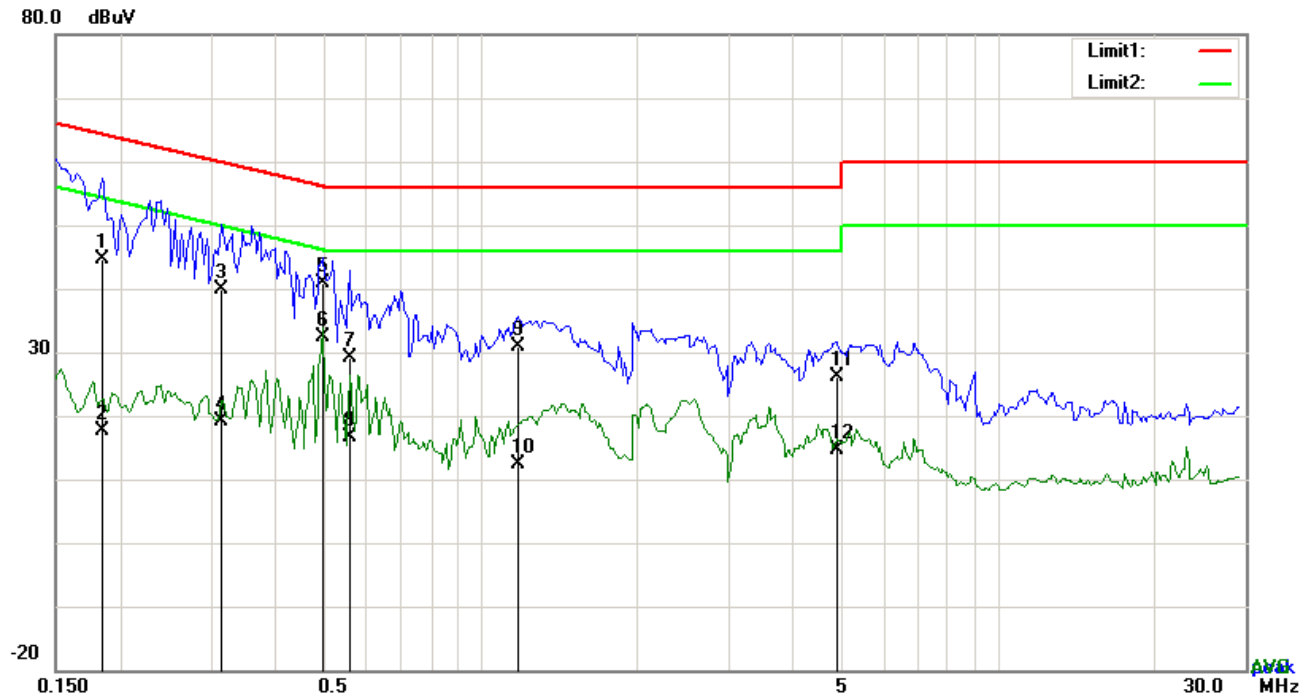


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.1734	38.25	QP	10.02	48.27	64.80	-16.53
2	N	0.1734	18.48	AVG	10.02	28.50	54.80	-26.30
3	N	0.2094	34.02	QP	10.02	44.04	63.23	-19.19
4	N	0.2094	16.84	AVG	10.02	26.86	53.23	-26.37
5	N	0.3060	27.97	QP	10.02	37.99	60.08	-22.09
6	N	0.3060	10.33	AVG	10.02	20.35	50.08	-29.73
7	N	0.4581	25.60	QP	10.02	35.62	56.73	-21.11
8	N	0.4581	11.49	AVG	10.02	21.51	46.73	-25.22
9	N	0.8325	18.96	QP	10.03	28.99	56.00	-27.01
10	N	0.8325	4.07	AVG	10.03	14.10	46.00	-31.90
11	N	8.3976	16.90	QP	10.12	27.02	60.00	-32.98
12	N	8.3976	2.47	AVG	10.12	12.59	50.00	-37.41

Test Mode : USB Mode

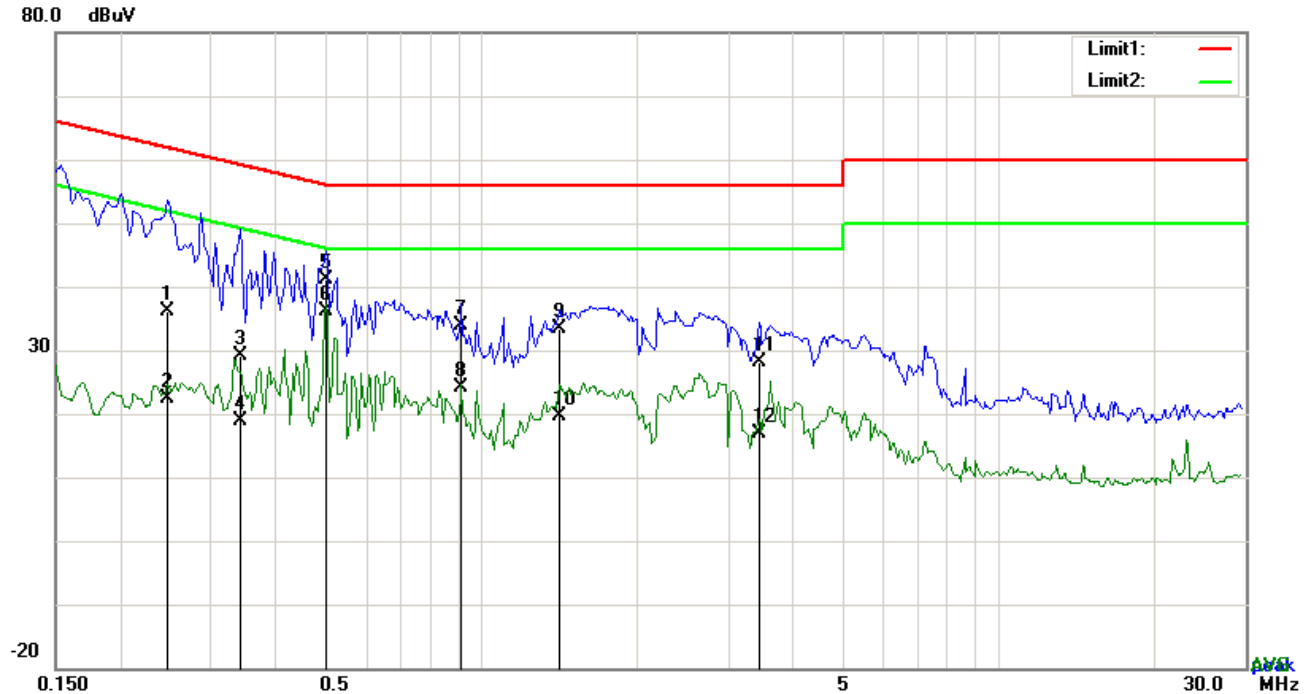


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1851	44.53	QP	0.00	44.53	64.25	-19.72
2	L1	0.1851	17.60	AVG	0.00	17.60	54.25	-36.65
3	L1	0.3138	39.88	QP	0.00	39.88	59.87	-19.99
4	L1	0.3138	19.20	AVG	0.00	19.20	49.87	-30.67
5	L1	0.4932	40.86	QP	0.00	40.86	56.11	-15.25
6	L1	0.4932	32.34	AVG	0.00	32.34	46.11	-13.77
7	L1	0.5556	29.18	QP	0.00	29.18	56.00	-26.82
8	L1	0.5556	16.60	AVG	0.00	16.60	46.00	-29.40
9	L1	1.1757	30.98	QP	0.00	30.98	56.00	-25.02
10	L1	1.1757	12.48	AVG	0.00	12.48	46.00	-33.52
11	L1	4.8486	26.08	QP	0.00	26.08	56.00	-29.92
12	L1	4.8486	14.60	AVG	0.00	14.60	46.00	-31.40

Test Mode : USB Mode



Test Data

Phase Neutral Plot at 240Vac, 60Hz

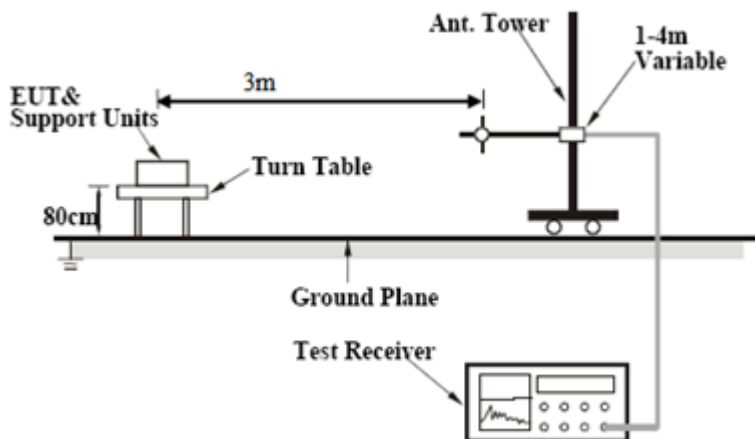
No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.2475	26.19	QP	10.02	36.21	61.84	-25.63
2	N	0.2475	12.30	AVG	10.02	22.32	51.84	-29.52
3	N	0.3411	19.14	QP	10.02	29.16	59.18	-30.02
4	N	0.3411	8.81	AVG	10.02	18.83	49.18	-30.35
5	N	0.5010	31.21	QP	10.02	41.23	56.00	-14.77
6	N	0.5010	26.21	AVG	10.02	36.23	46.00	-9.77
7	N	0.9144	23.78	QP	10.03	33.81	56.00	-22.19
8	N	0.9144	14.04	AVG	10.03	24.07	46.00	-21.93
9	N	1.4136	23.23	QP	10.03	33.26	56.00	-22.74
10	N	1.4136	9.60	AVG	10.03	19.63	46.00	-26.37
11	N	3.4407	18.19	QP	10.05	28.24	56.00	-27.76
12	N	3.4407	6.77	AVG	10.05	16.82	46.00	-29.18

6.2 Radiated Emissions

Temperature	24°C
Relative Humidity	51%
Atmospheric Pressure	1012mbar
Test date :	July 03, 2017
Tested By :	Evans He

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	☒	
		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	- 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: - Vertical or horizontal polarization (whichever gave the higher emission level
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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 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

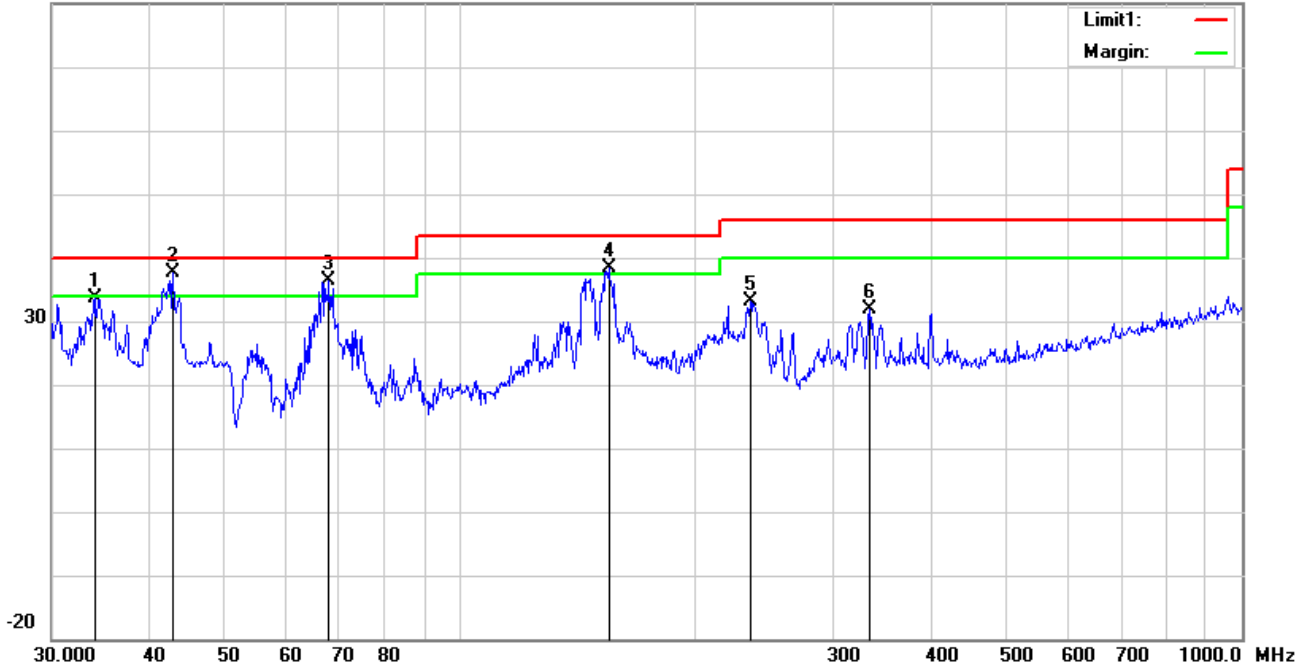
Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Mode : USB Mode

Below 1GHz

80.0 dBuV/m

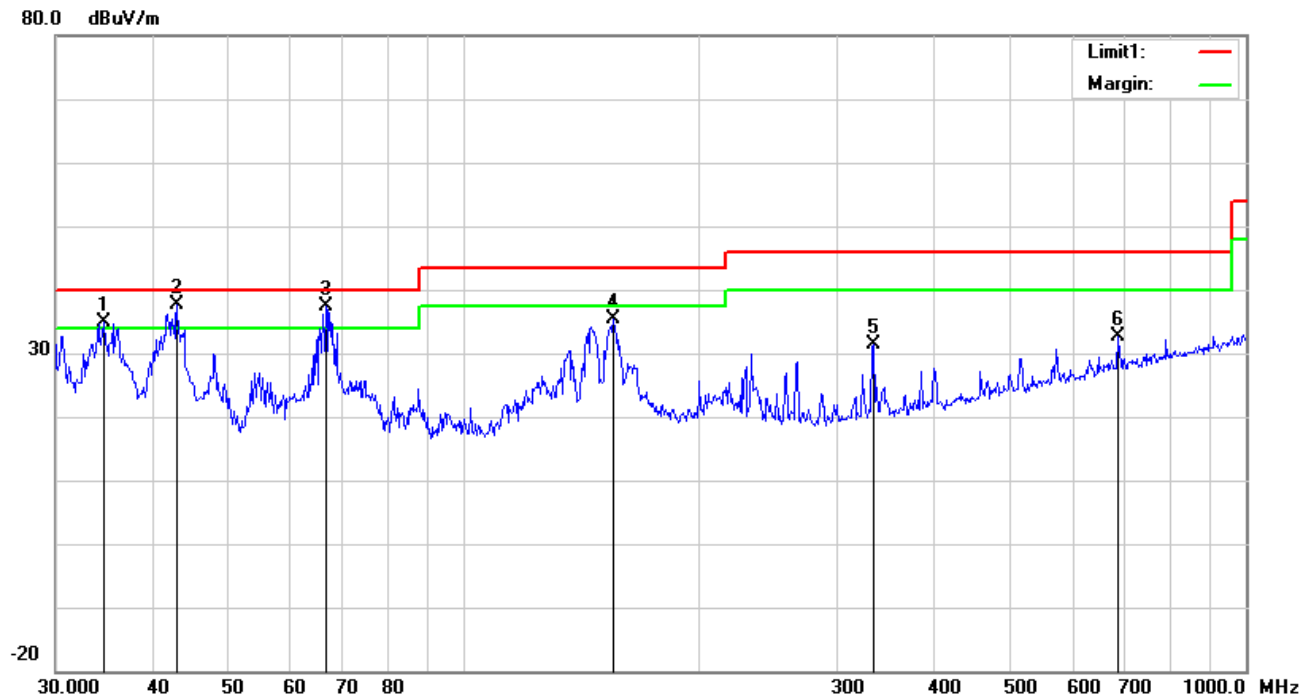


Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	H	34.0365	36.79	QP	18.29	22.26	0.73	33.55	40.00	-6.45	100	24
2	H	42.8998	47.24	QP	11.99	22.29	0.77	37.71	40.00	-2.29	100	286
3	H	67.9129	50.21	QP	7.70	22.39	0.94	36.46	40.00	-3.54	100	235
4	H	154.8205	46.62	QP	12.60	22.31	1.36	38.27	43.50	-5.23	100	117
5	H	234.9909	42.08	peak	11.61	22.32	1.65	33.02	46.00	-12.98	100	102
6	H	333.6867	37.80	peak	14.31	22.20	1.96	31.87	46.00	-14.13	100	215

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	34.6385	38.58	QP	17.83	22.25	0.75	34.91	40.00	-5.09	100	14
2	V	42.8998	47.25	QP	11.99	22.29	0.77	37.72	40.00	-2.28	100	237
3	V	66.4989	51.31	QP	7.62	22.39	0.91	37.45	40.00	-2.55	100	88
4	V	154.8205	43.64	peak	12.60	22.31	1.36	35.29	43.50	-8.21	100	160
5	V	333.6867	37.34	peak	14.31	22.20	1.96	31.41	46.00	-14.59	200	78
6	V	684.7454	31.36	peak	20.03	21.39	2.57	32.57	46.00	-13.43	100	137

Above 1GHz

Frequency (MHz)	Read_level (dBμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Level (dBμV/m)	Factors (dB)	Limit (dBμV/m)	Margin (dB)	Detector (PK/AV)
1850.3	66.18	54	100	V	-15.96	50.22	74	-23.78	PK
2013.6	59.25	198	100	V	-14.9	44.35	74	-29.65	PK
2598.4	62.04	325	100	V	-13.42	48.62	74	-25.38	PK
1504.8	65.68	47	100	H	-18.52	47.16	74	-26.84	PK
2315.4	59.39	115	100	H	-14.17	45.22	74	-28.78	PK
2897.6	59.36	312	100	H	-12.98	46.38	74	-27.62	PK

*Note1: The highest frequency of the EUT is 2480 MHz, so the testing has been conformed to 5*2687.5MHz=13,438MHz.*

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	☒

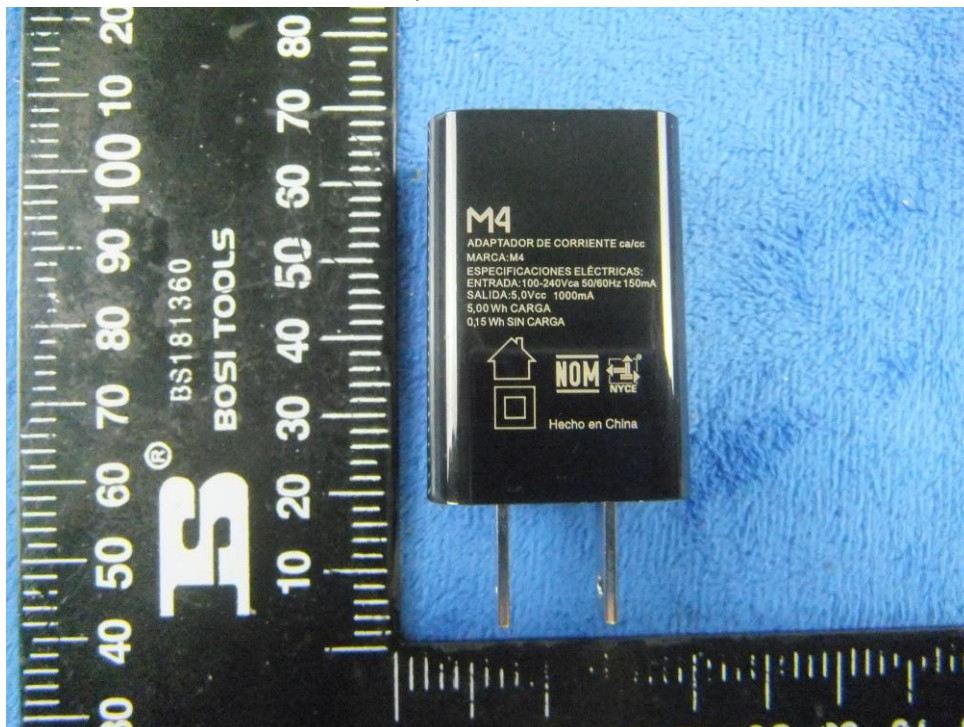
Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

Whole Package View



Adapter - Label View



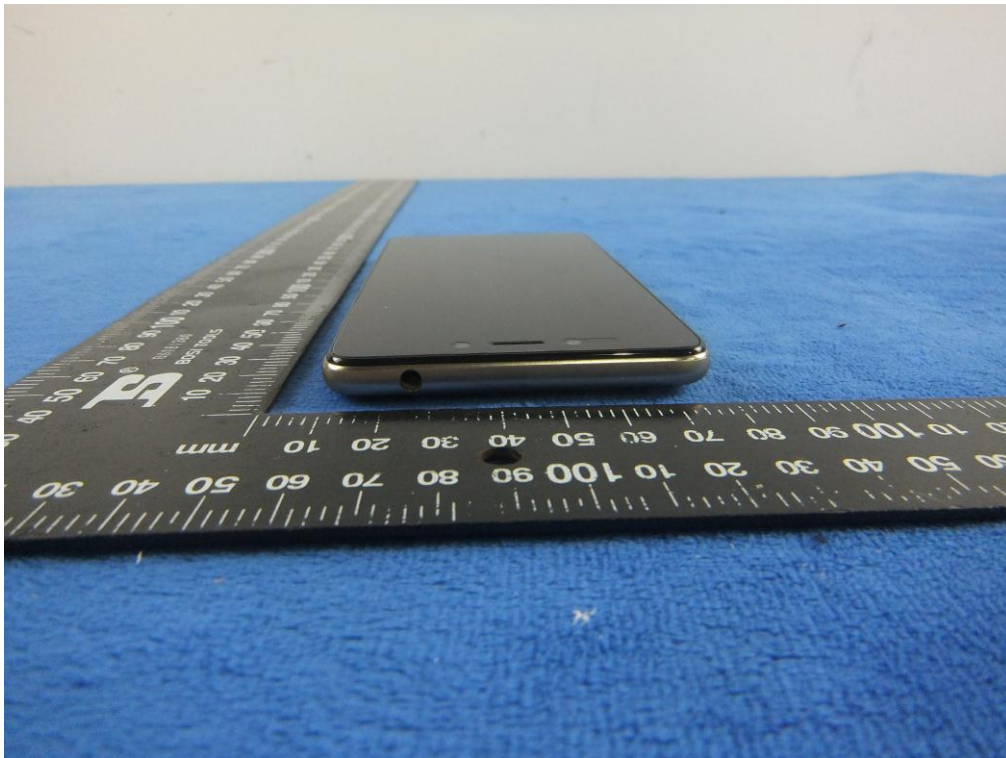
EUT - Front View



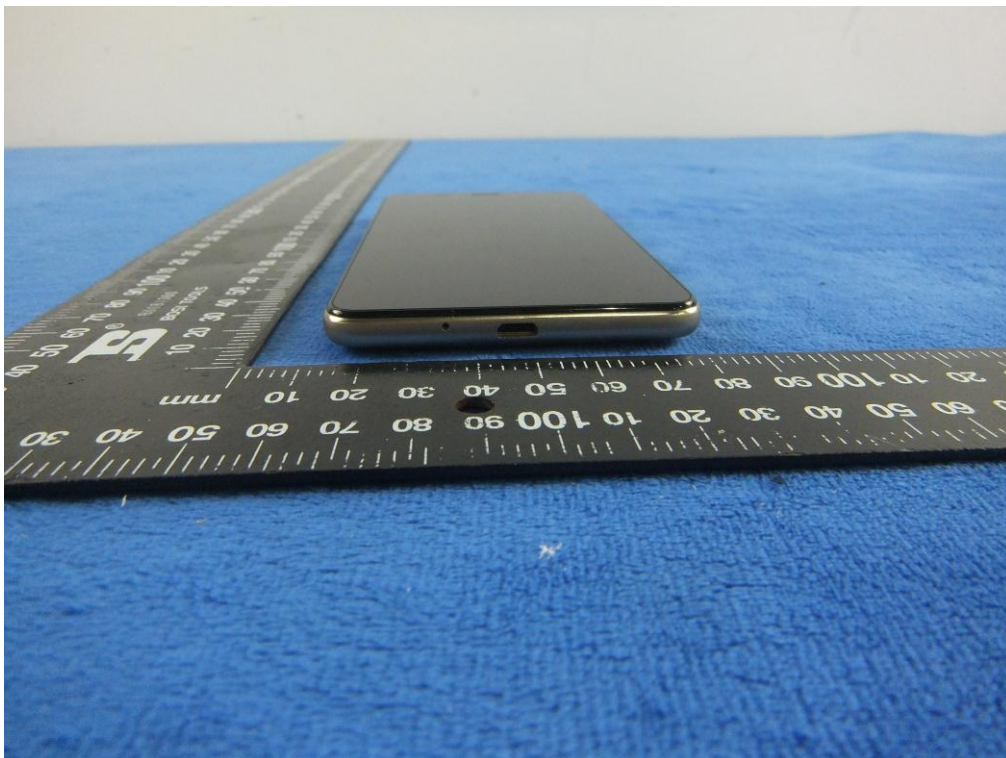
EUT - Rear View



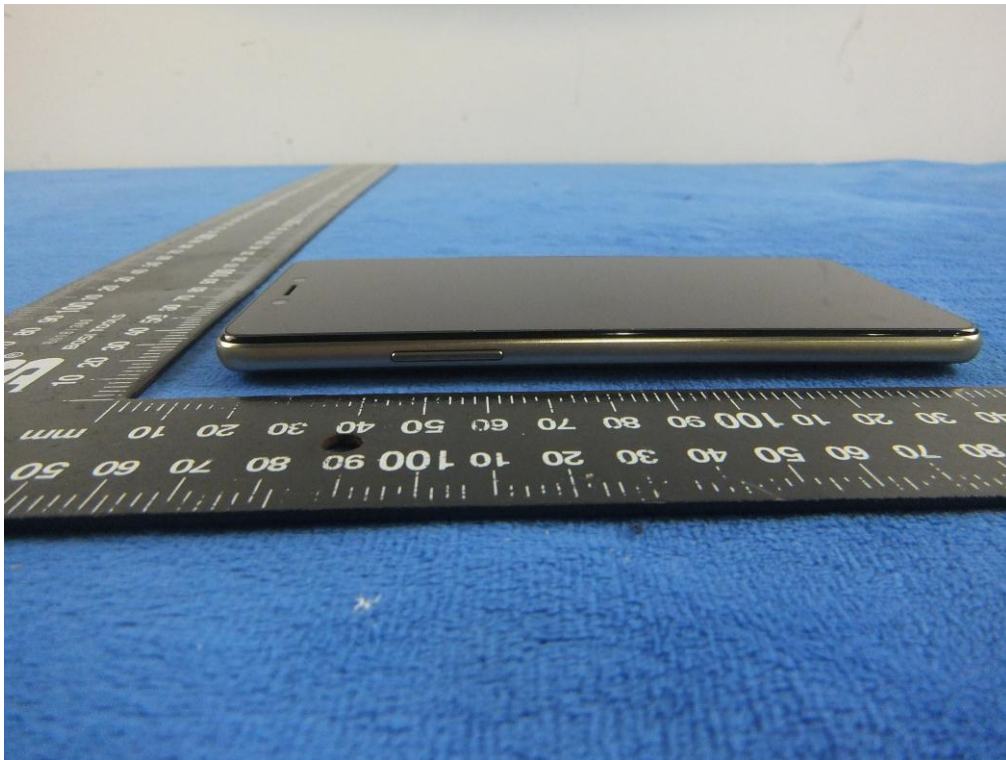
EUT - Top View



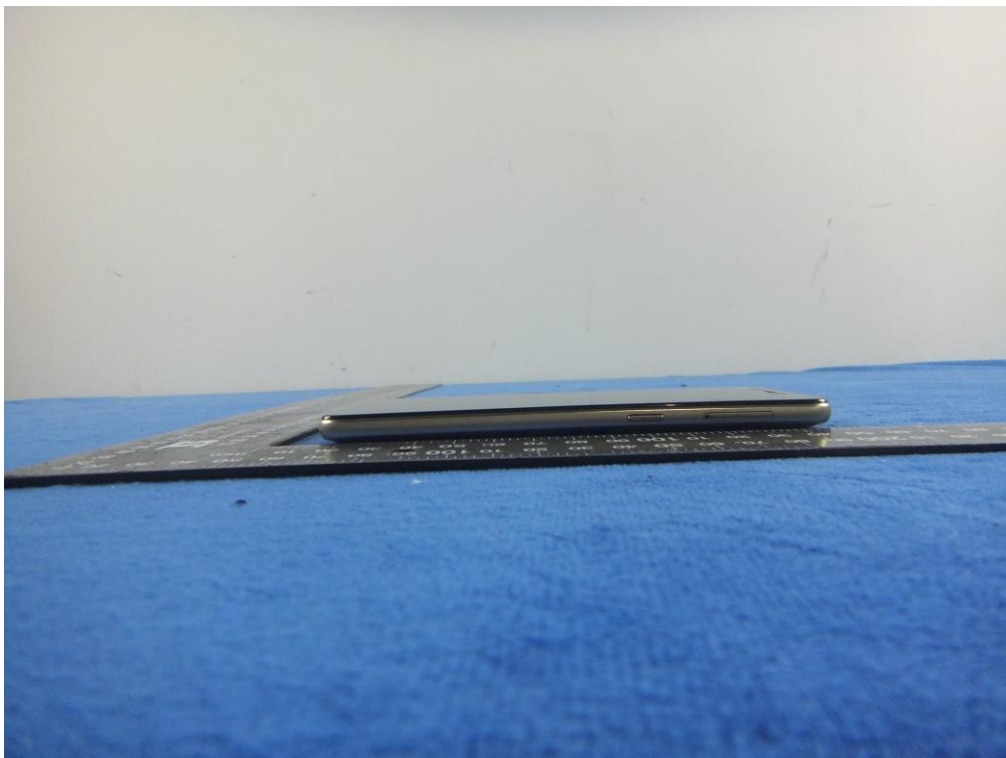
EUT - Bottom View



EUT - Left View



EUT - Right View



Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1



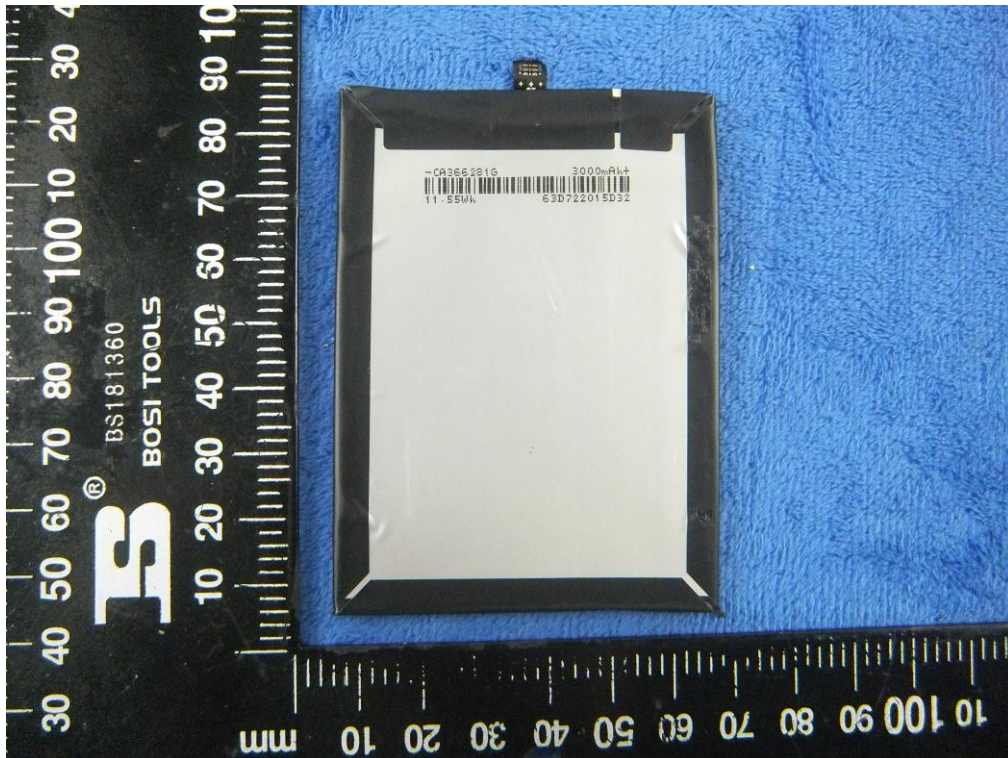
Cover Off - Top View 2



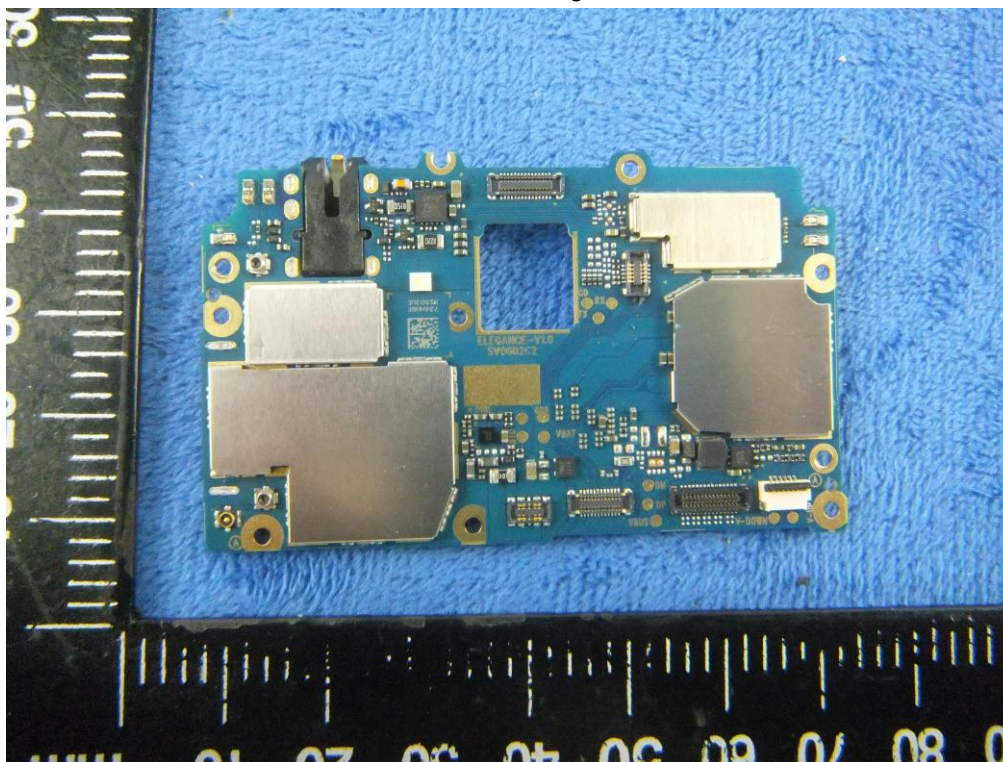
Battery - Front View



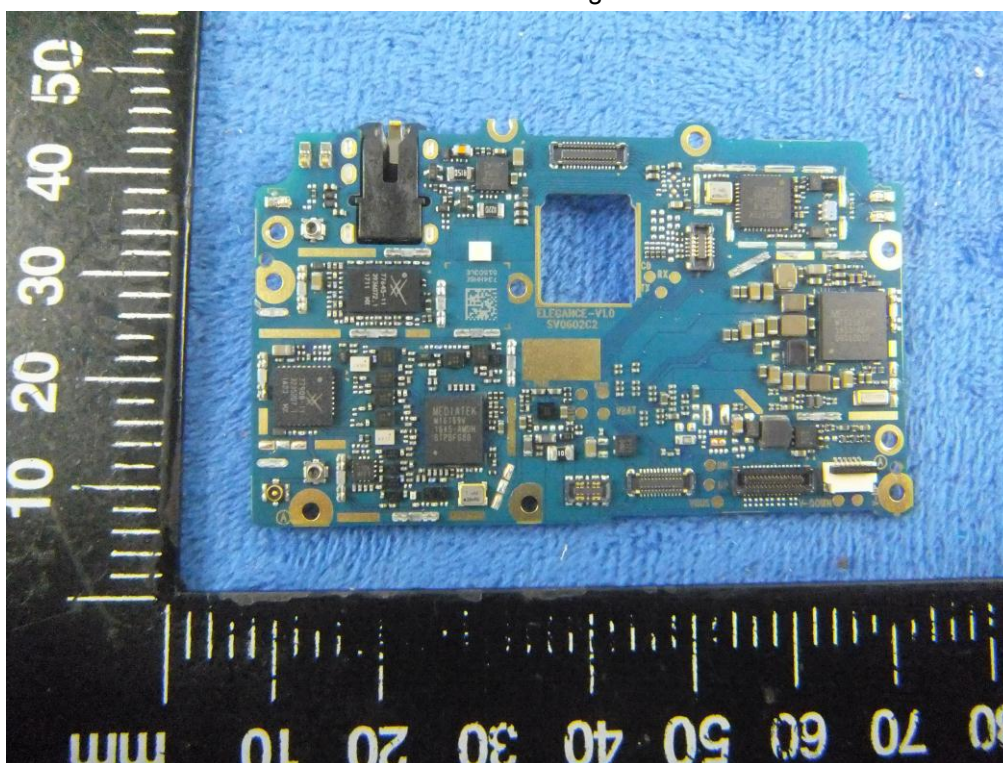
Battery - Rear View



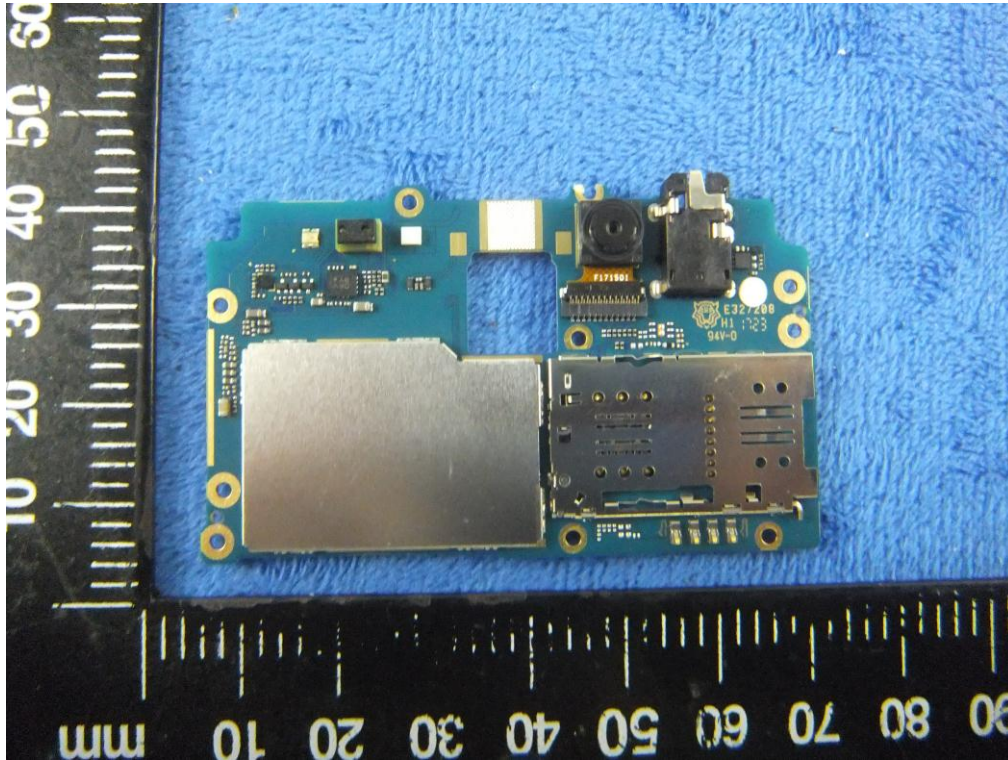
Mainboard with Shielding - Front View



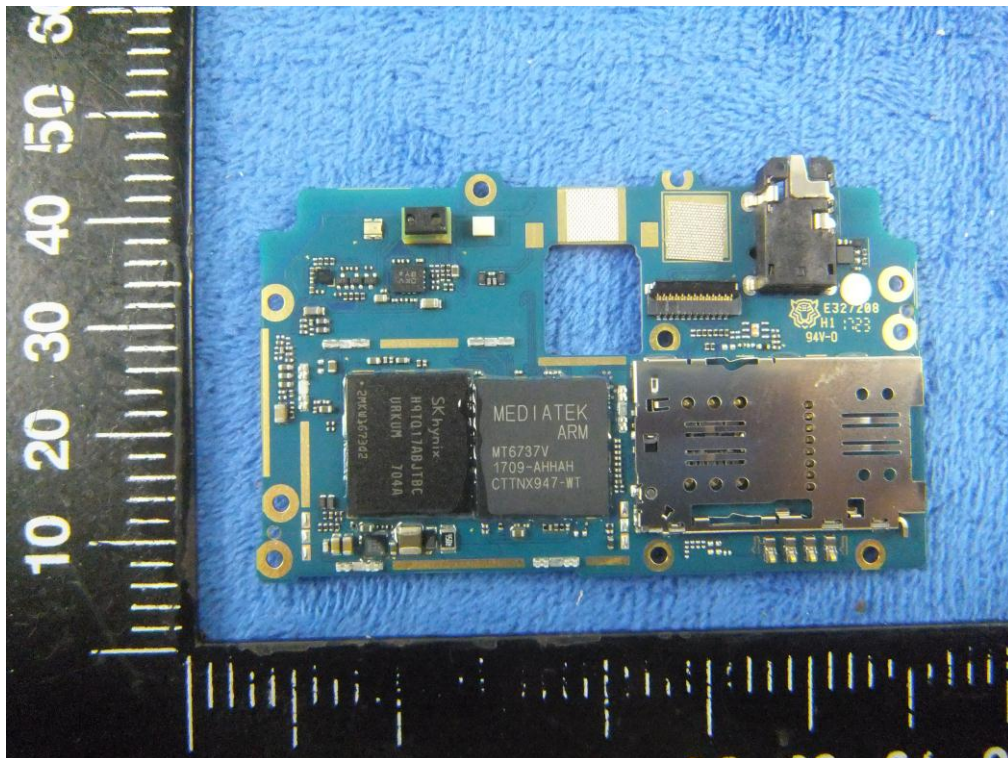
Mainboard without Shielding - Front View



Mainboard with Shielding – Rear View



Mainboard without Shielding – Rear View



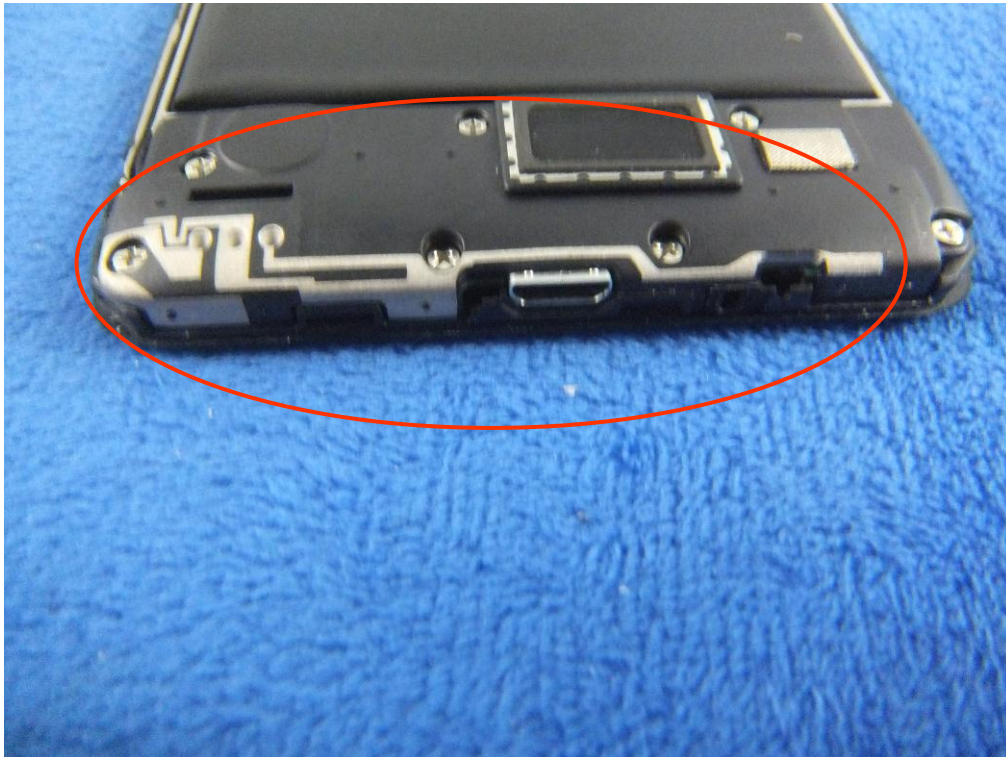
LCD – Front View



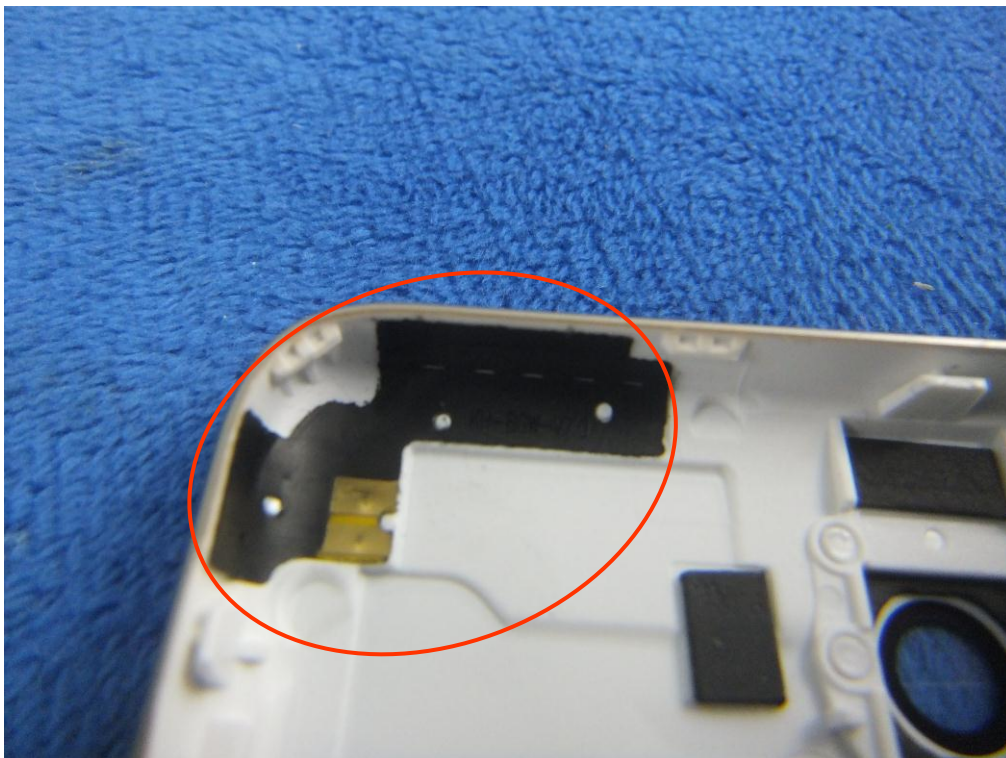
LCD – Rear View



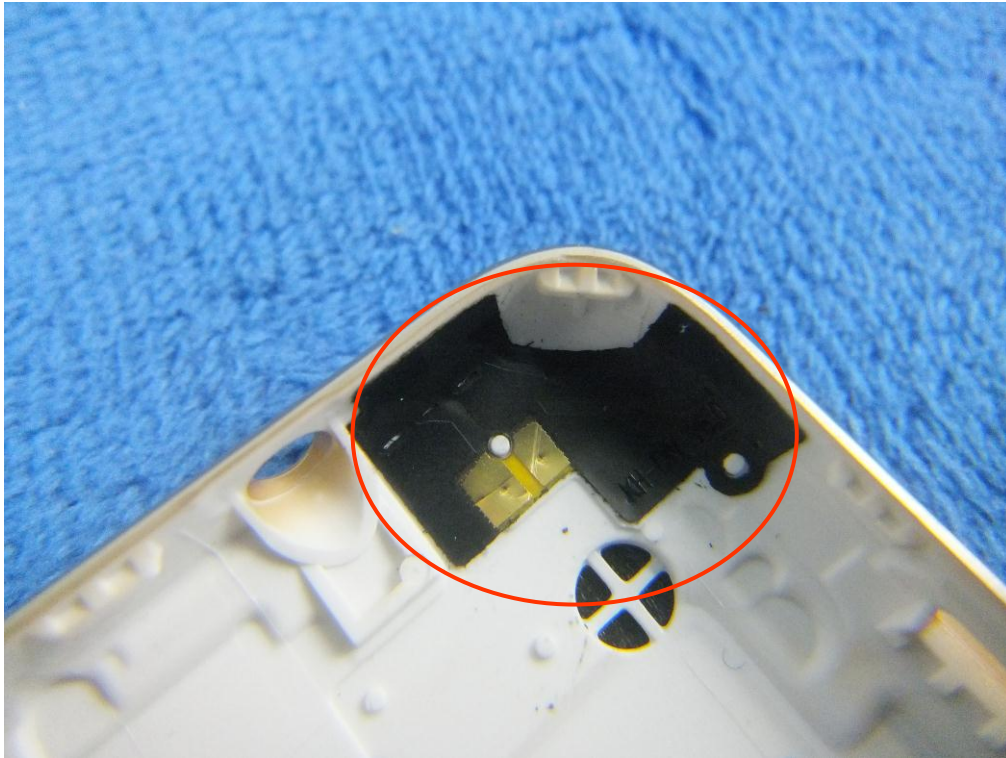
GSM/PCS/UMTS-FDD Antenna View



WIFI/BT/BLE - Antenna View



LTE - Antenna View



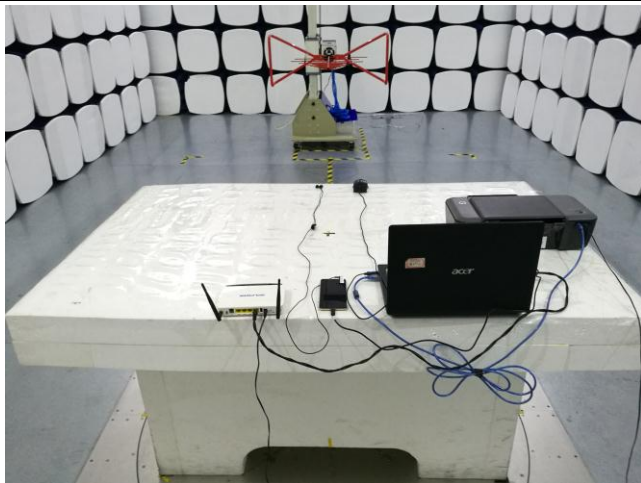
Annex B.iii. Photograph: Test Setup Photo



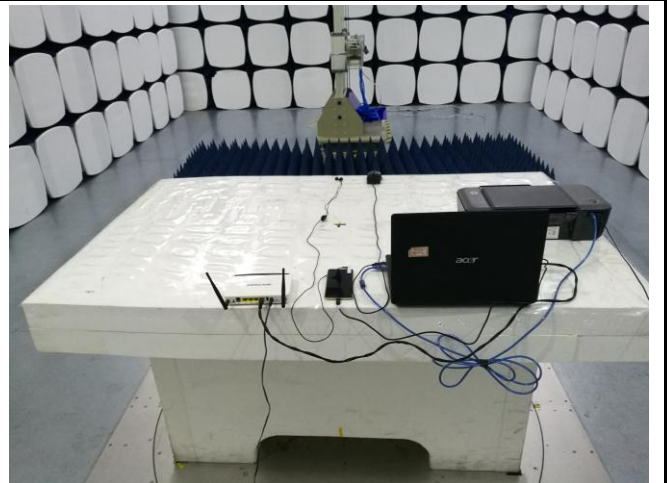
Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup – Side View



Radiated Emissions Test Setup Below 1GHz

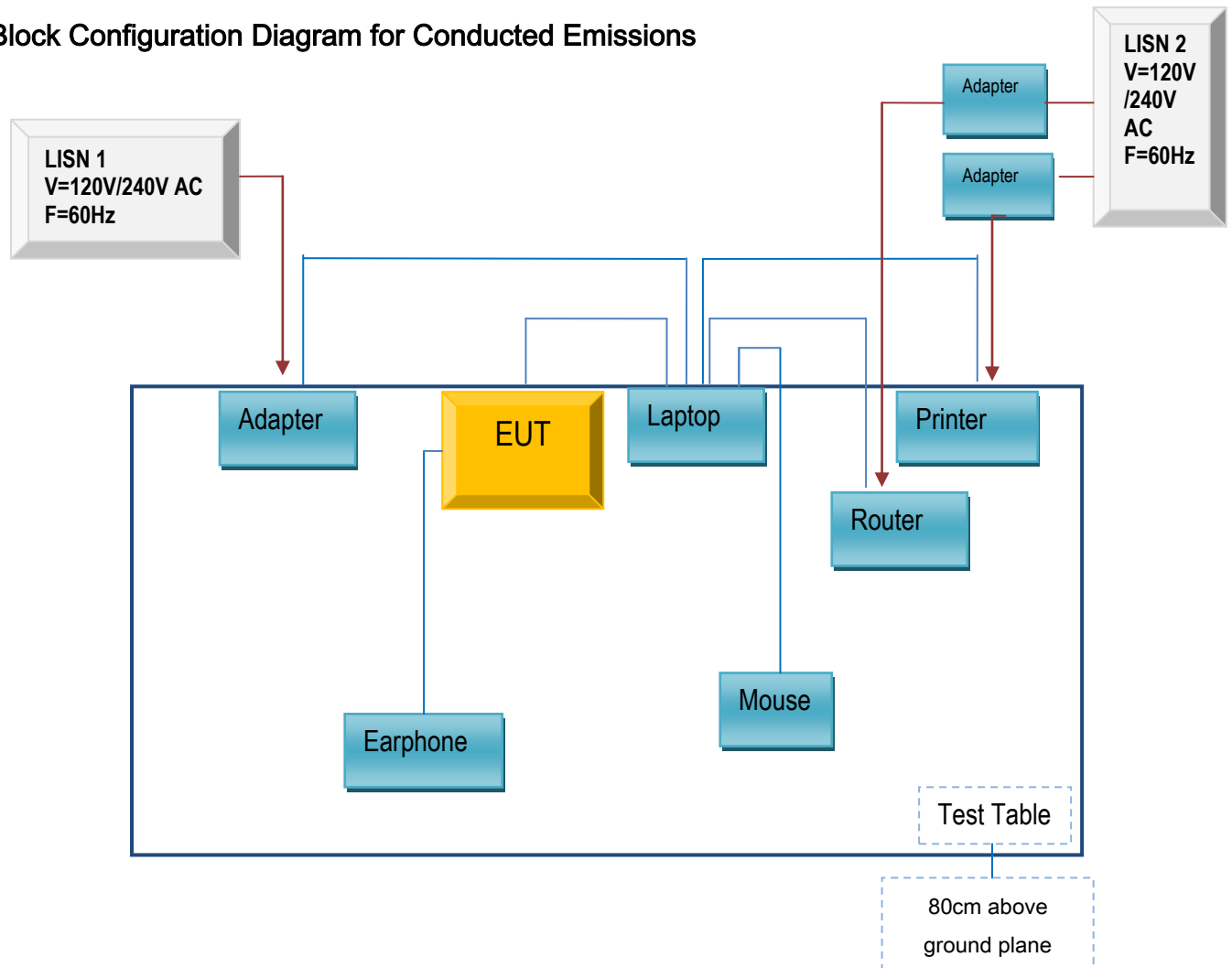


Radiated Emissions Test Setup Above 1GHz

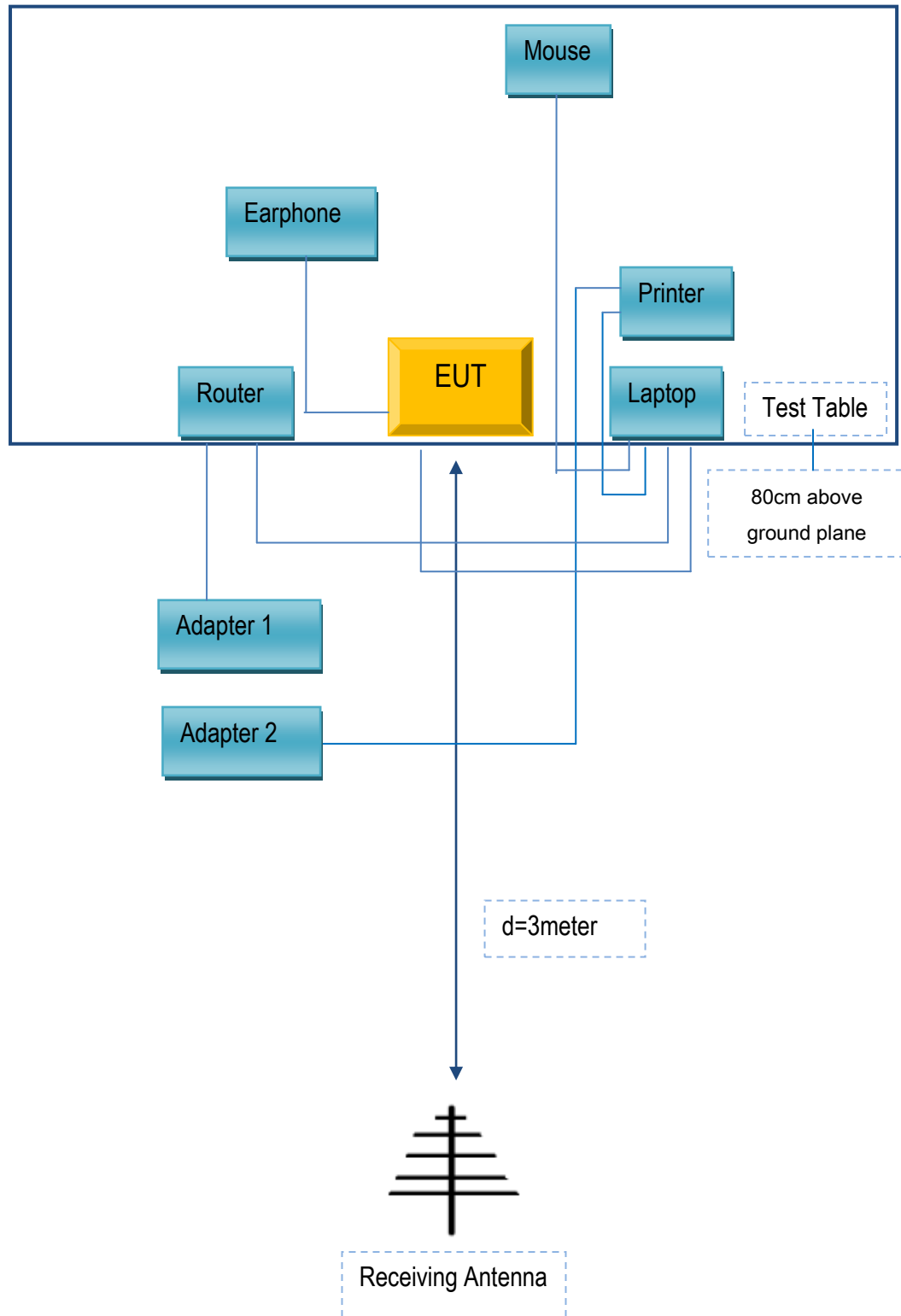
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C. 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	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
MFOURTEL MEXICO S.A. DE C.V.	Earphone	M4 SS4453-R	N/A

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

N/A