

EMC TEST REPORT



Report No.: 17070522-FCC-E

Supersede Report No: N/A

Applicant	MFOURTEL MEXICO S.A. DE C.V.	
Product Name	LTE Mobile Phone	
Model No.	M4 SS4458-R	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2016, ANSI C63.4: 2014	
Test Date	June 27 to July 11, 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

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
17070522-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 SS4458-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: CLN554458-R

Date EUT received: June 26, 2017

Test Date(s): June 27 to July 11, 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

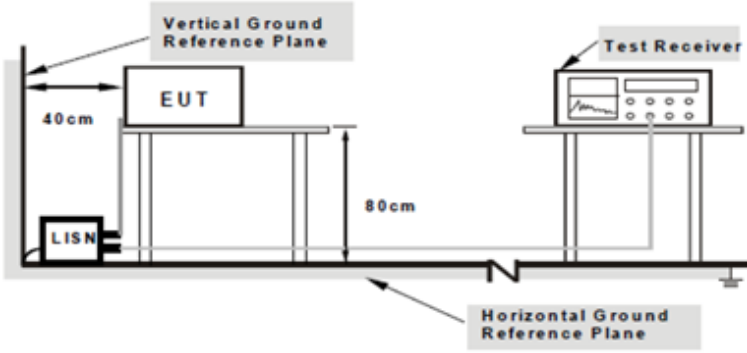
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	24°C
Relative Humidity	55%
Atmospheric Pressure	1013mbar
Test date :	July 05, 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.															
		<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.
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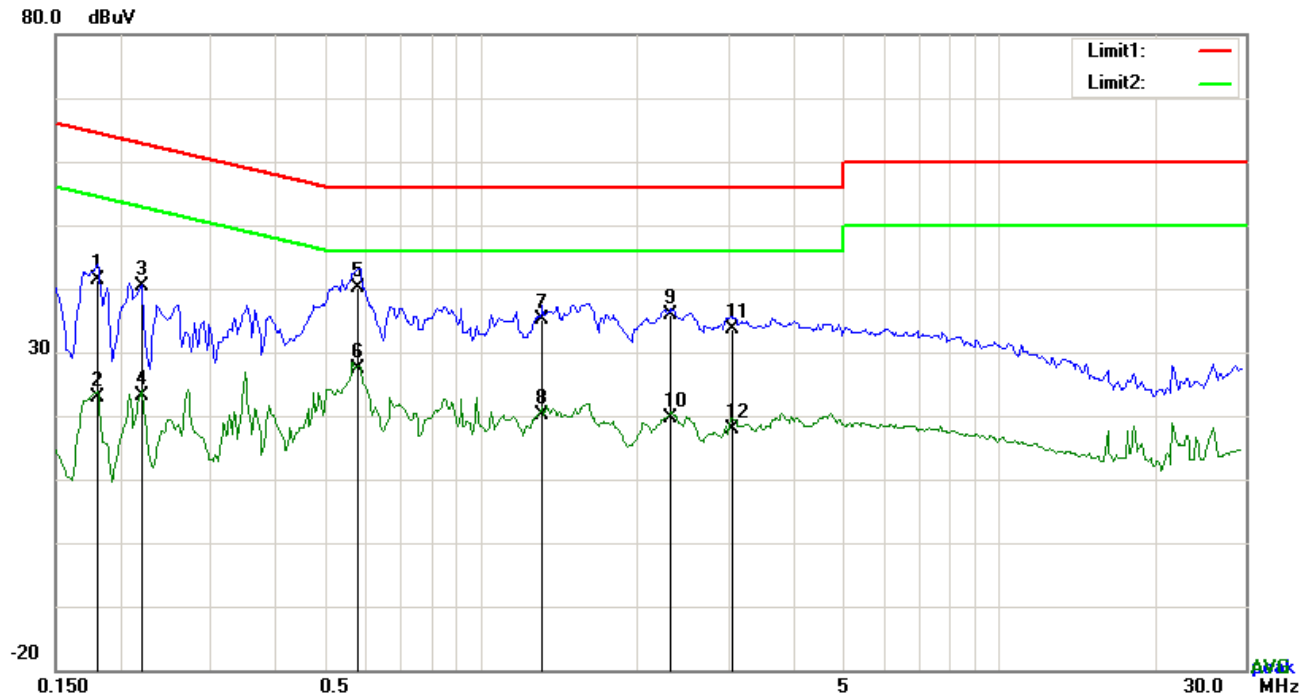
Procedure	- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table. - The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.
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	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

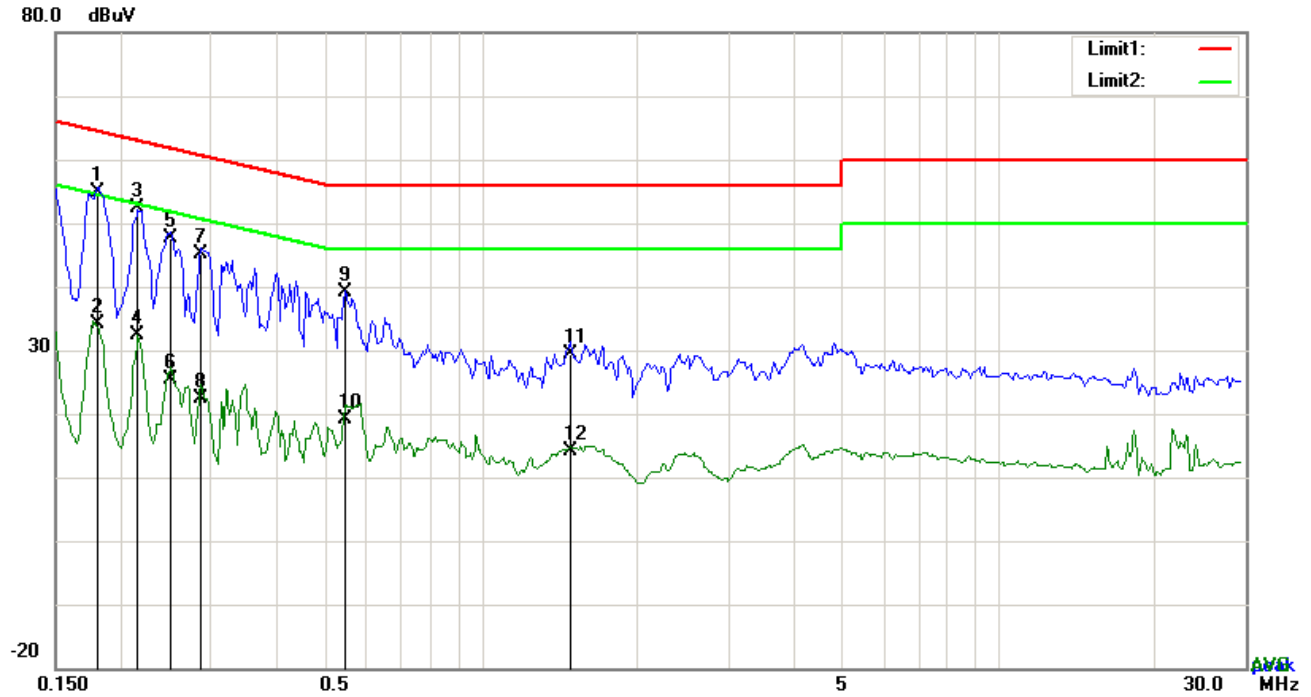


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.1812	31.35	QP	10.03	41.38	64.43	-23.05
2	L1	0.1812	12.80	AVG	10.03	22.83	54.43	-31.60
3	L1	0.2202	30.45	QP	10.03	40.48	62.81	-22.33
4	L1	0.2202	13.13	AVG	10.03	23.16	52.81	-29.65
5	L1	0.5790	30.13	QP	10.03	40.16	56.00	-15.84
6	L1	0.5790	17.38	AVG	10.03	27.41	46.00	-18.59
7	L1	1.3122	25.14	QP	10.03	35.17	56.00	-20.83
8	L1	1.3122	10.13	AVG	10.03	20.16	46.00	-25.84
9	L1	2.3262	25.78	QP	10.05	35.83	56.00	-20.17
10	L1	2.3262	9.47	AVG	10.05	19.52	46.00	-26.48
11	L1	3.0576	23.48	QP	10.06	33.54	56.00	-22.46
12	L1	3.0576	7.88	AVG	10.06	17.94	46.00	-28.06

Test Mode: USB Mode

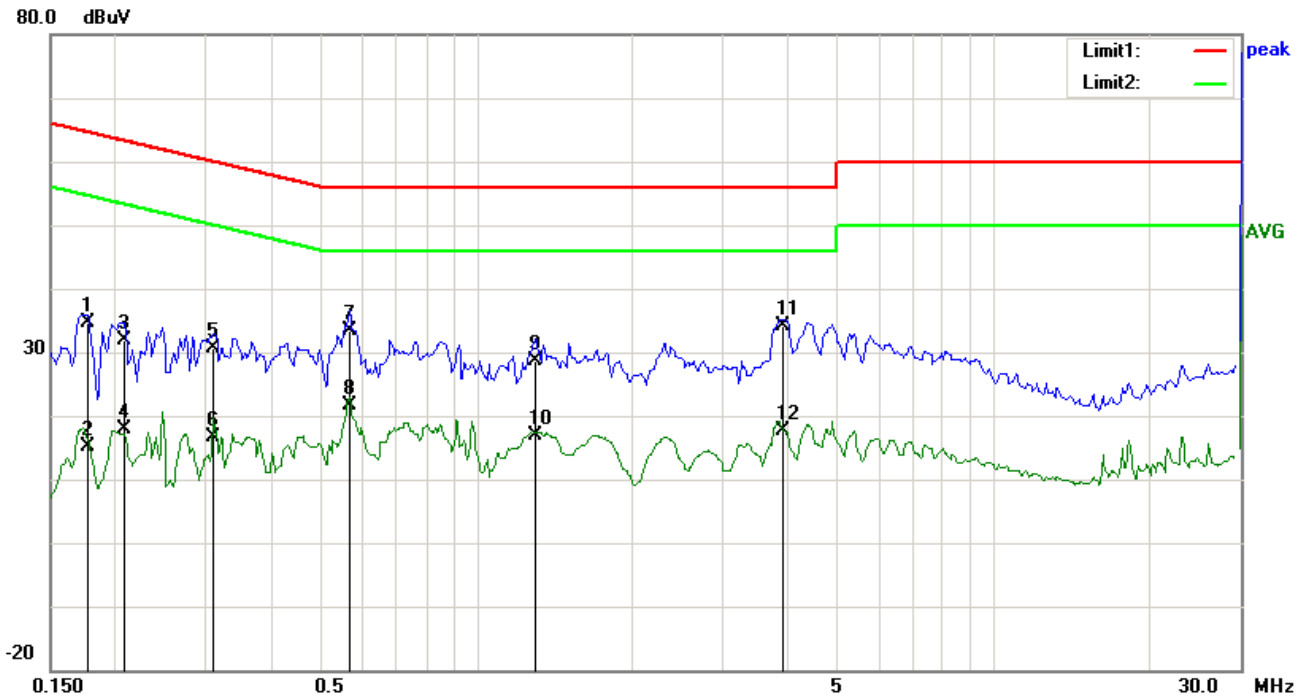


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.1812	44.82	QP	10.02	54.84	64.43	-9.59
2	N	0.1812	24.03	AVG	10.02	34.05	54.43	-20.38
3	N	0.2163	42.25	QP	10.02	52.27	62.96	-10.69
4	N	0.2163	22.44	AVG	10.02	32.46	52.96	-20.50
5	N	0.2514	37.65	QP	10.02	47.67	61.71	-14.04
6	N	0.2514	15.42	AVG	10.02	25.44	51.71	-26.27
7	N	0.2865	35.10	QP	10.02	45.12	60.63	-15.51
8	N	0.2865	12.36	AVG	10.02	22.38	50.63	-28.25
9	N	0.5439	29.09	QP	10.02	39.11	56.00	-16.89
10	N	0.5439	9.03	AVG	10.02	19.05	46.00	-26.95
11	N	1.4838	19.25	QP	10.03	29.28	56.00	-26.72
12	N	1.4838	4.21	AVG	10.03	14.24	46.00	-31.76

Test Mode :	USB Mode
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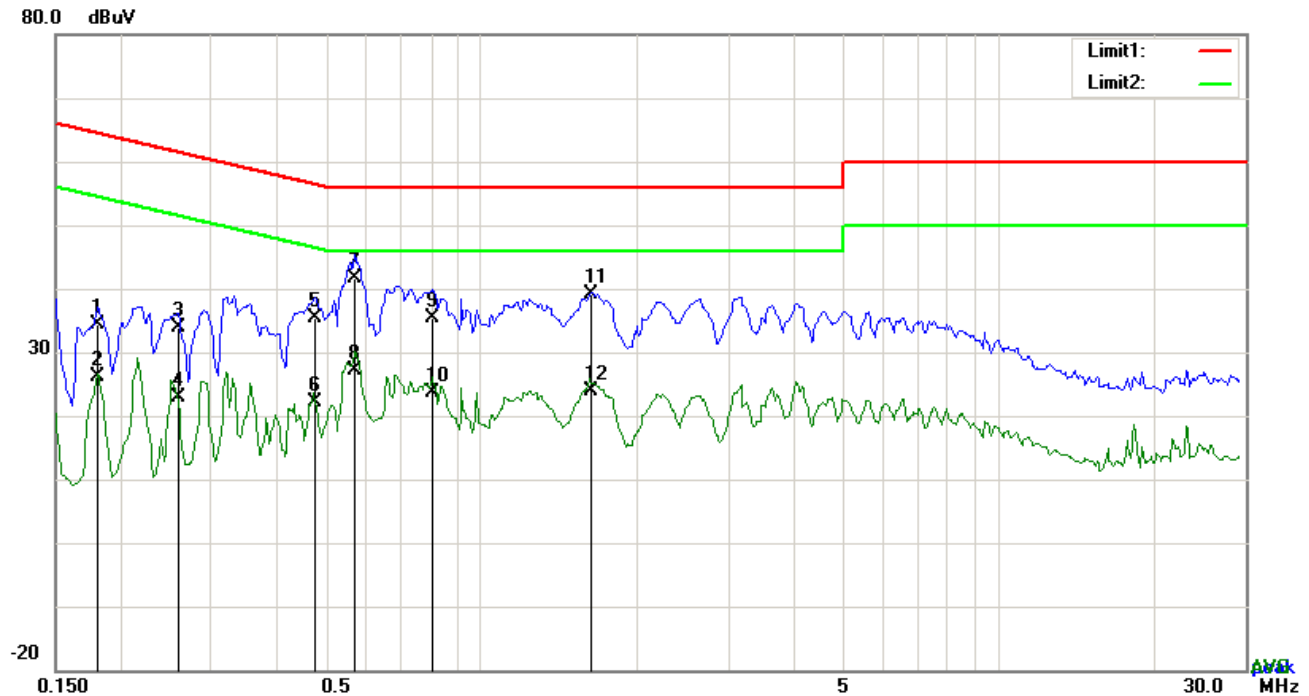


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1773	24.68	QP	10.03	34.71	64.61	-29.90
2	L1	0.1773	5.20	AVG	10.03	15.23	54.61	-39.38
3	L1	0.2085	21.77	QP	10.03	31.80	63.26	-31.46
4	L1	0.2085	7.91	AVG	10.03	17.94	53.26	-35.32
5	L1	0.3099	20.67	QP	10.03	30.70	59.97	-29.27
6	L1	0.3099	6.67	AVG	10.03	16.70	49.97	-33.27
7	L1	0.5673	23.31	QP	10.03	33.34	56.00	-22.66
8	L1	0.5673	11.54	AVG	10.03	21.57	46.00	-24.43
9	L1	1.3005	18.50	QP	10.03	28.53	56.00	-27.47
10	L1	1.3005	6.93	AVG	10.03	16.96	46.00	-29.04
11	L1	3.9087	24.03	QP	10.07	34.10	56.00	-21.90
12	L1	3.9087	7.51	AVG	10.07	17.58	46.00	-28.42

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	0.1812	24.32	QP	10.02	34.34	64.43	-30.09
2	N	0.1812	16.12	AVG	10.02	26.14	54.43	-28.29
3	N	0.2592	23.81	QP	10.02	33.83	61.46	-27.63
4	N	0.2592	12.90	AVG	10.02	22.92	51.46	-28.54
5	N	0.4776	25.47	QP	10.02	35.49	56.38	-20.89
6	N	0.4776	12.05	AVG	10.02	22.07	46.38	-24.31
7	N	0.5673	31.55	QP	10.02	41.57	56.00	-14.43
8	N	0.5673	17.09	AVG	10.02	27.11	46.00	-18.89
9	N	0.8013	25.30	QP	10.03	35.33	56.00	-20.67
10	N	0.8013	13.59	AVG	10.03	23.62	46.00	-22.38
11	N	1.6320	29.11	QP	10.04	39.15	56.00	-16.85
12	N	1.6320	13.91	AVG	10.04	23.95	46.00	-22.05

6.2 Radiated Emissions

Temperature	24°C
Relative Humidity	55%
Atmospheric Pressure	1013mbar
Test date :	July 05, 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

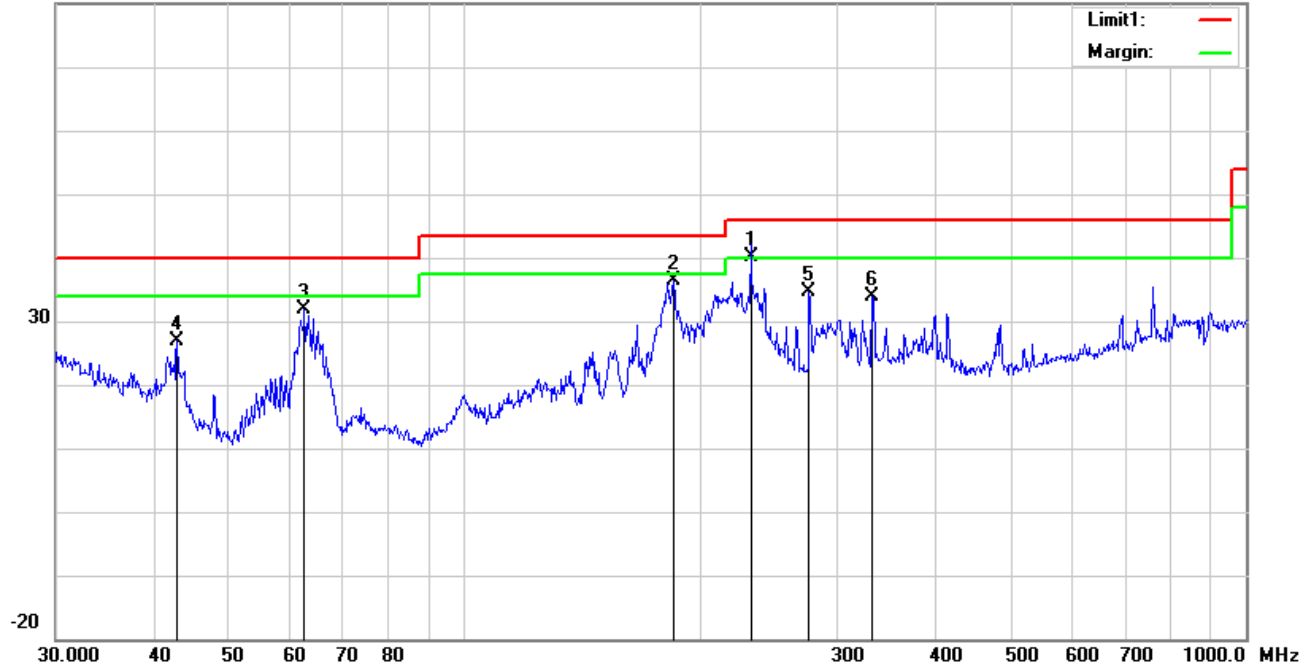
Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Mode : USB Mode

Below 1GHz

80.0 dBuV/m

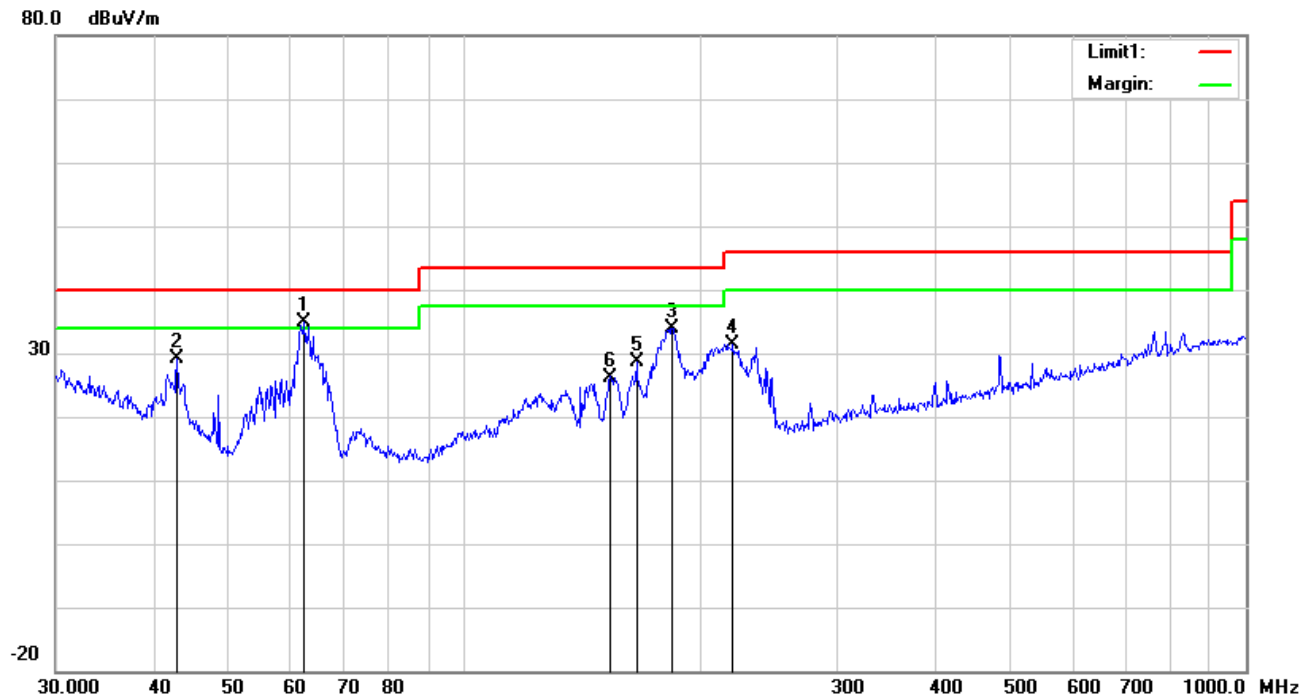


Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency	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	232.5318	49.26	QP	11.64	22.32	1.64	40.22	46.00	-5.78	100	281
2	H	185.1379	45.88	peak	11.28	22.28	1.45	36.33	43.50	-7.17	100	23
3	H	62.4314	46.13	peak	7.42	22.40	0.81	31.96	40.00	-8.04	100	284
4	H	42.8998	36.45	peak	11.99	22.29	0.77	26.92	40.00	-13.08	100	29
5	H	276.1236	42.73	peak	12.55	22.29	1.75	34.74	46.00	-11.26	100	88
6	H	332.5187	39.91	peak	14.28	22.20	1.95	33.94	46.00	-12.06	100	159

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	62.4314	49.05	QP	7.42	22.40	0.81	34.88	40.00	-5.12	100	233
2	V	42.8998	38.60	peak	11.99	22.29	0.77	29.07	40.00	-10.93	200	10
3	V	184.4898	43.58	peak	11.25	22.28	1.44	33.99	43.50	-9.51	100	208
4	V	220.6171	40.42	peak	11.81	22.34	1.61	31.50	46.00	-14.50	100	327
5	V	166.0680	37.44	peak	12.11	22.26	1.37	28.66	43.50	-14.84	100	123
6	V	153.7385	34.60	peak	12.60	22.31	1.36	26.25	43.50	-17.25	100	62

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)
2320.3	64.35	62	100	V	-14.35	50	74	-24.00	PK
1521.1	66.63	218	100	V	-18.21	48.42	74	-25.58	PK
2496.1	64.13	195	100	V	-14.35	49.78	74	-24.22	PK
1785.1	61.79	235	100	H	-16.76	45.03	74	-28.97	PK
1291.4	68.58	168	100	H	-19.67	48.91	74	-25.09	PK
1890.1	60.28	305	100	H	-15.66	44.62	74	-29.38	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.

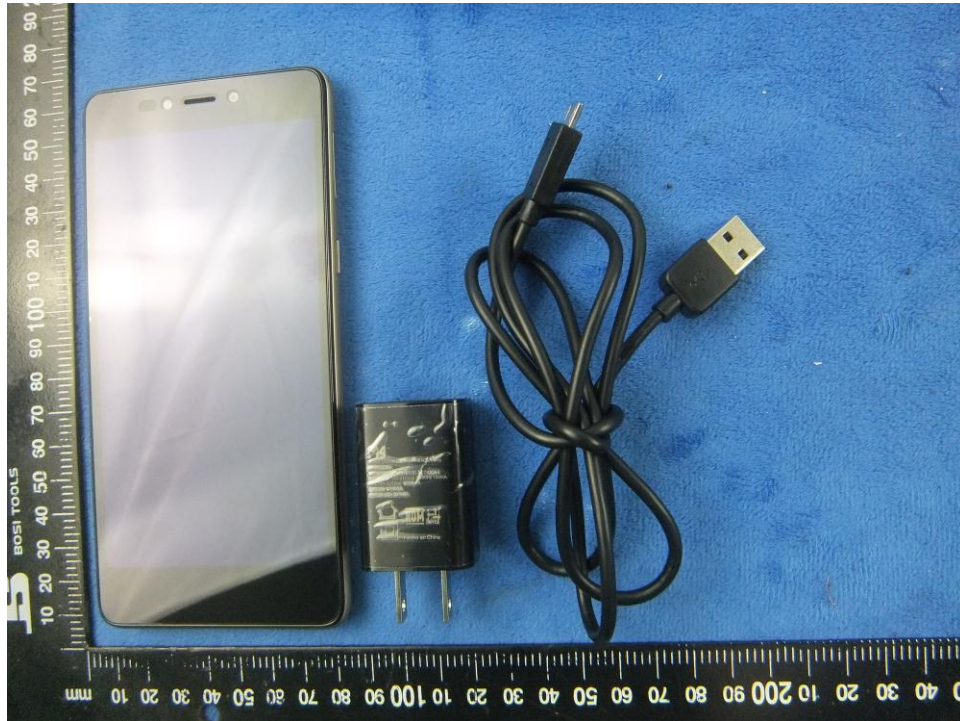
Annex A. TEST INSTRUMENT

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	☒
ISN	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



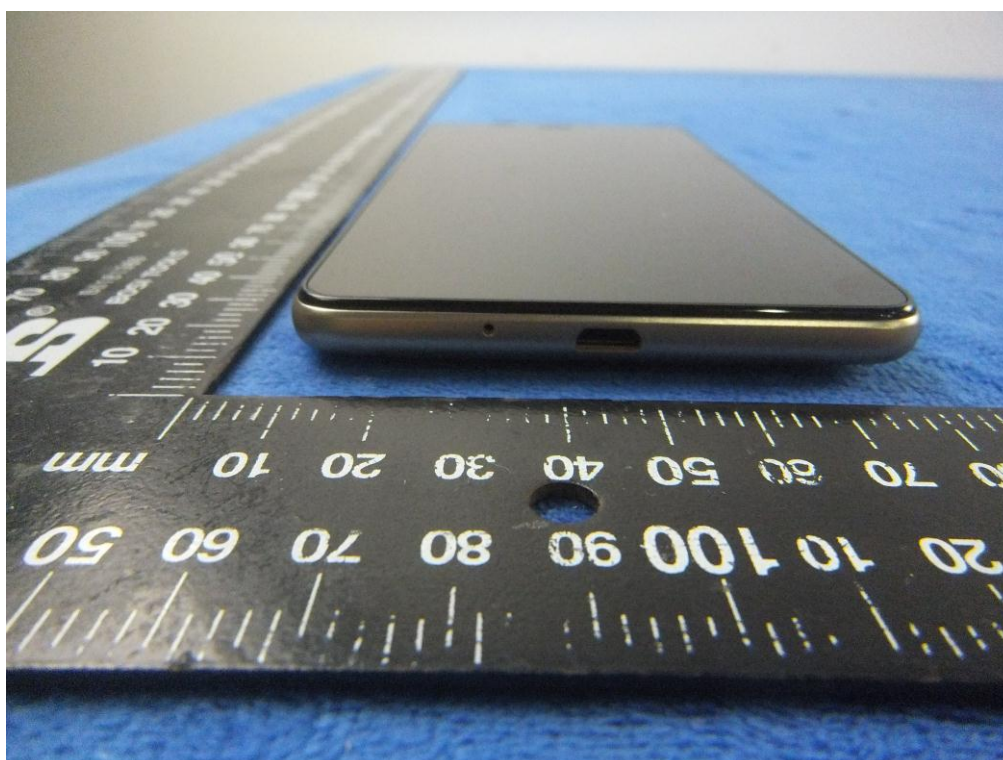
EUT - Rear View



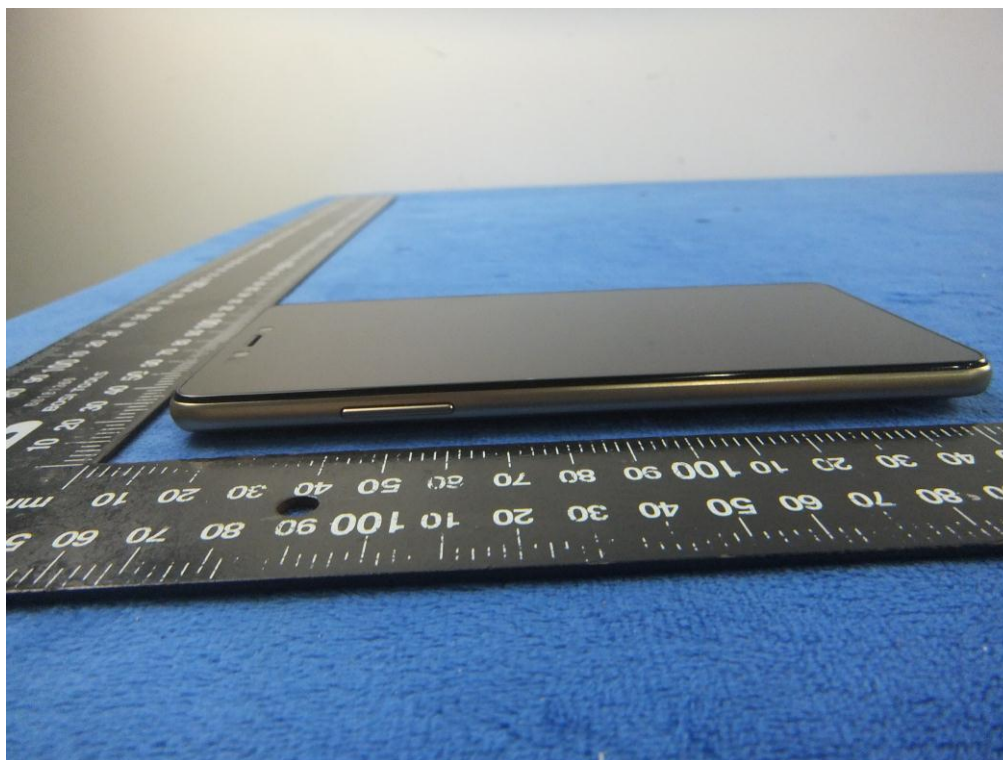
EUT - Top View



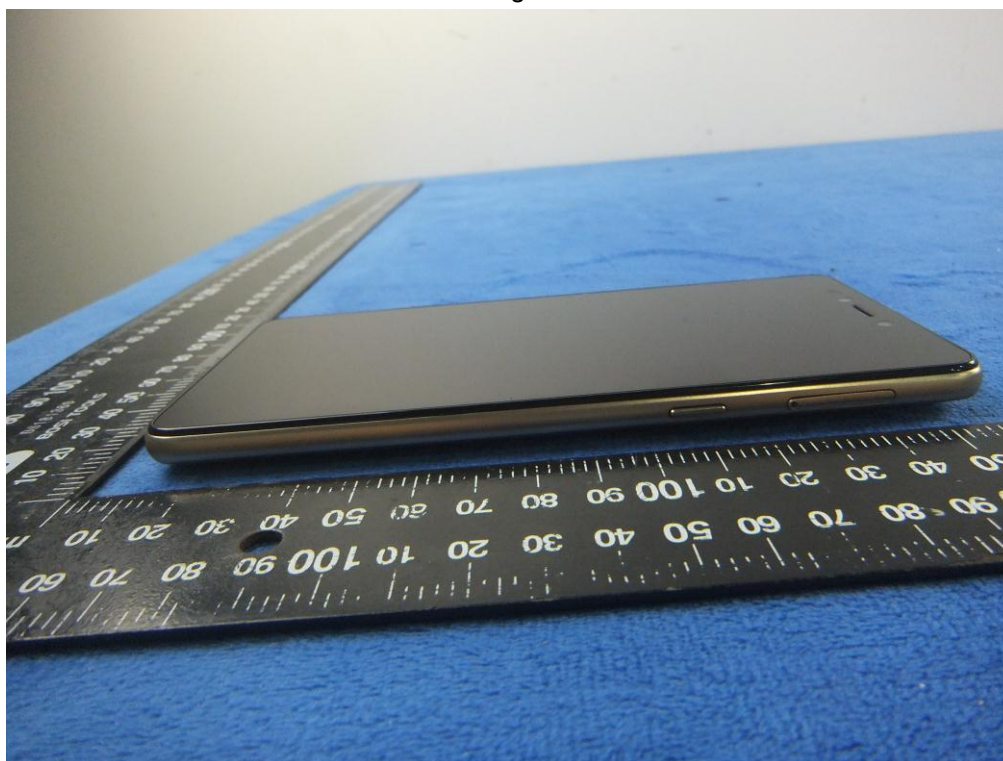
EUT - Bottom View



EUT - Left View



EUT - Right View



Cover Off - Top View 1



Cover Off - Top View 2



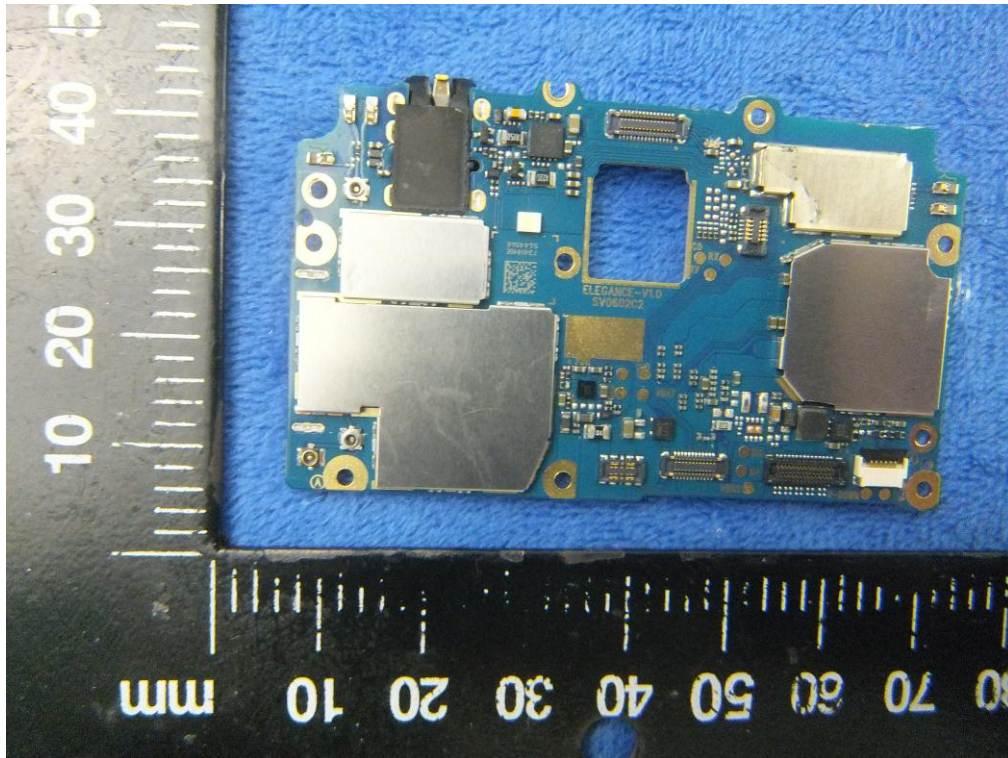
Battery - Front View



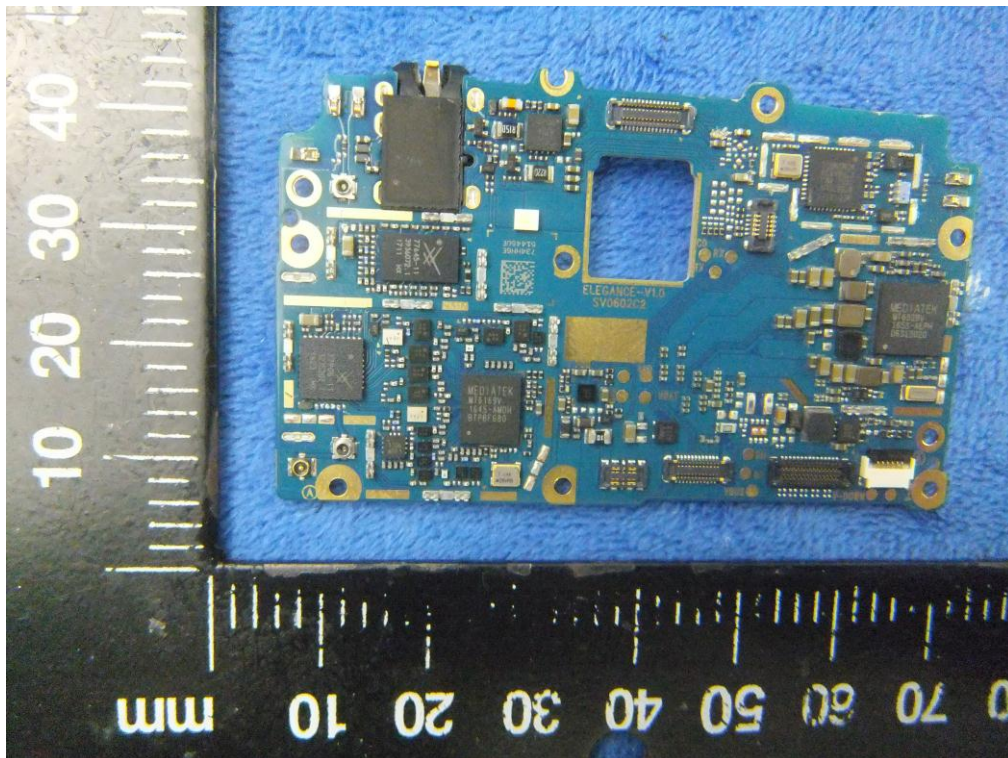
Battery - Rear View



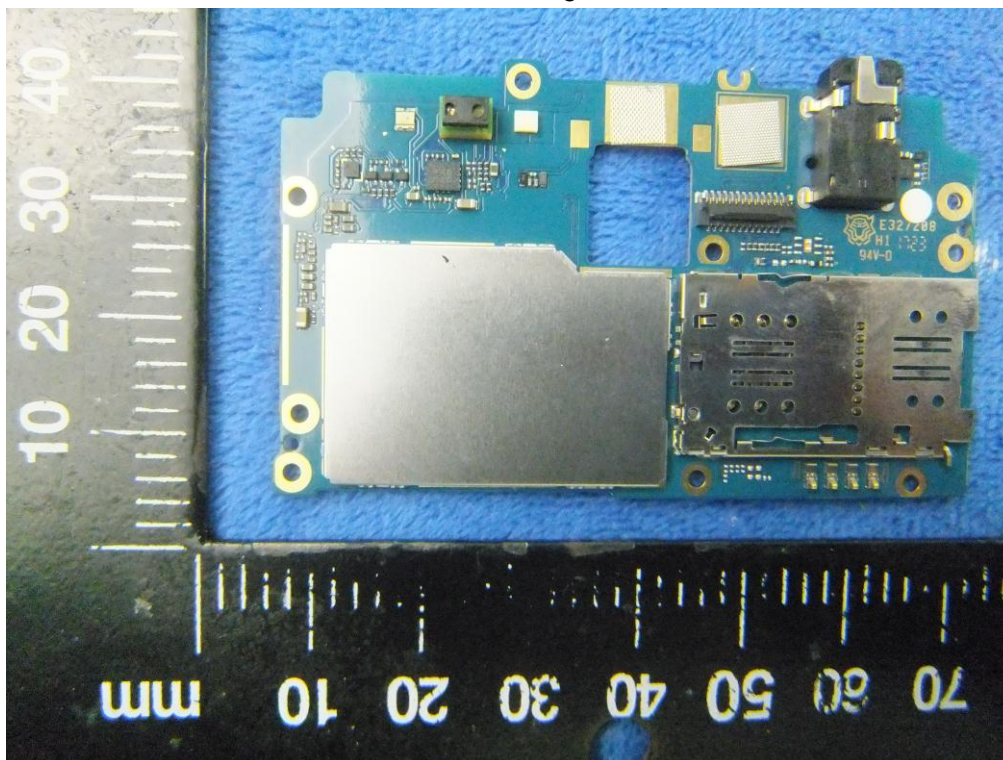
Mainboard with Shielding - Front View



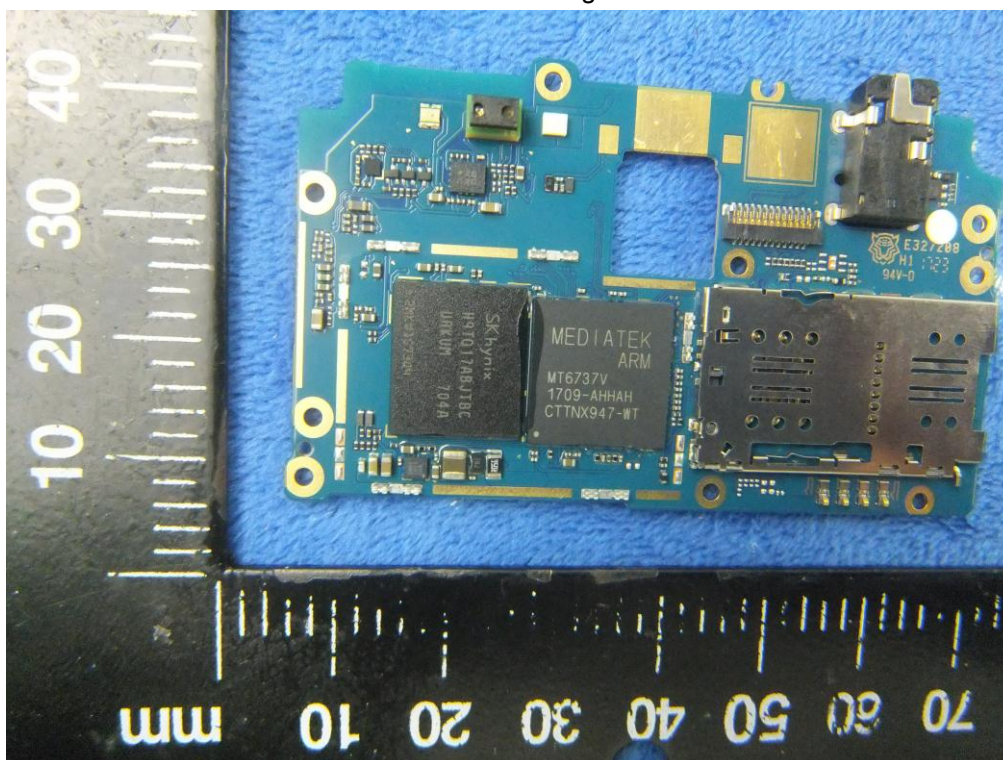
Mainboard without Shielding - Front View



Mainboard with Shielding – Rear View



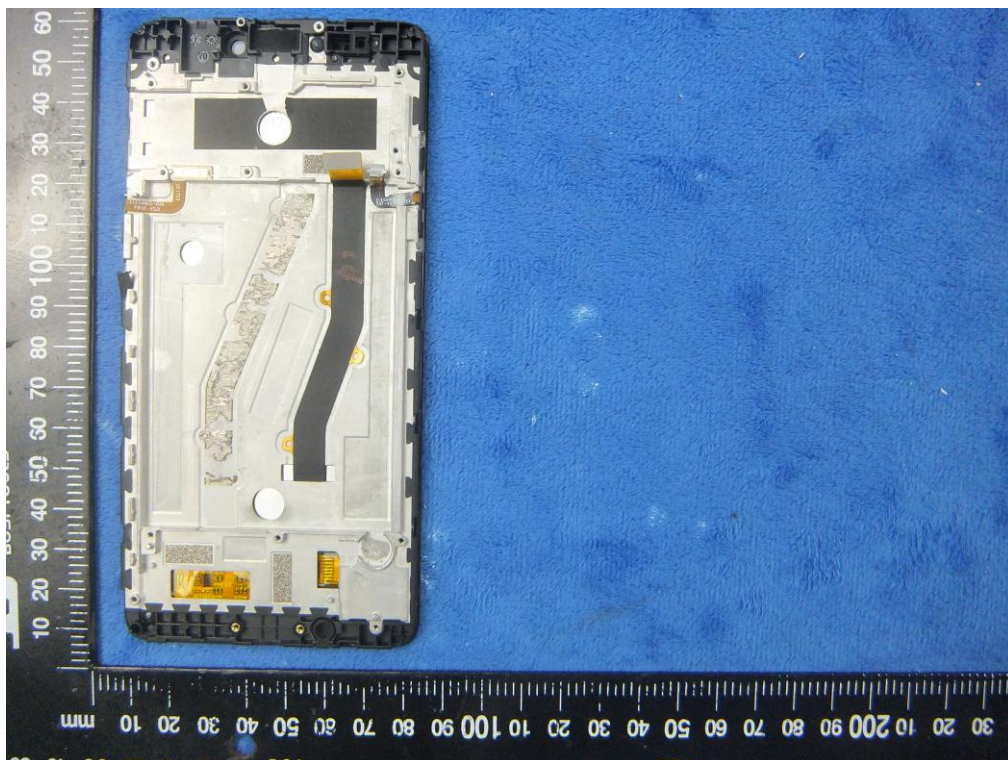
Mainboard without Shielding – Rear View



LCD – Front View



LCD – Rear View



GSM/PCS/UMTS-FDD Antenna View



WIFI/BT/BLE - Antenna View



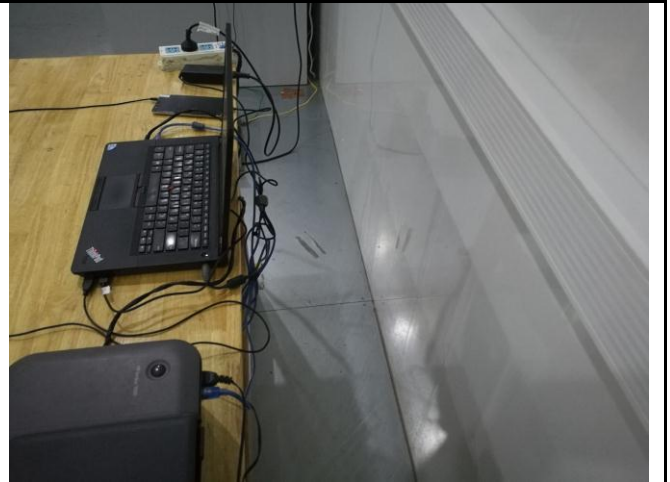
LTE - Antenna View



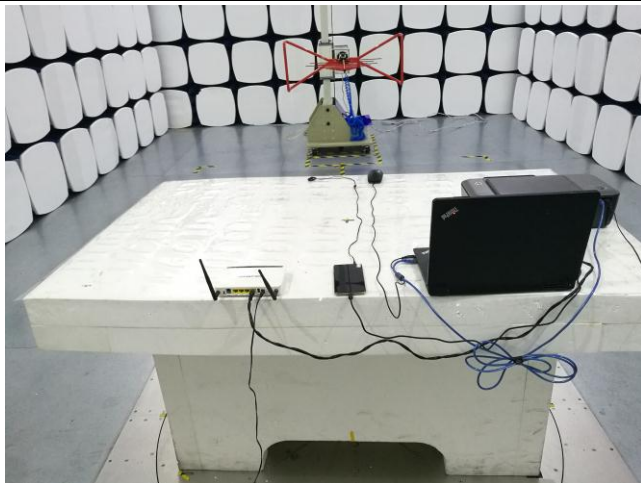
Annex B.iii. Photograph: Test Setup Photo



Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup – Side View



Radiated Emissions Test Setup Below 1GHz



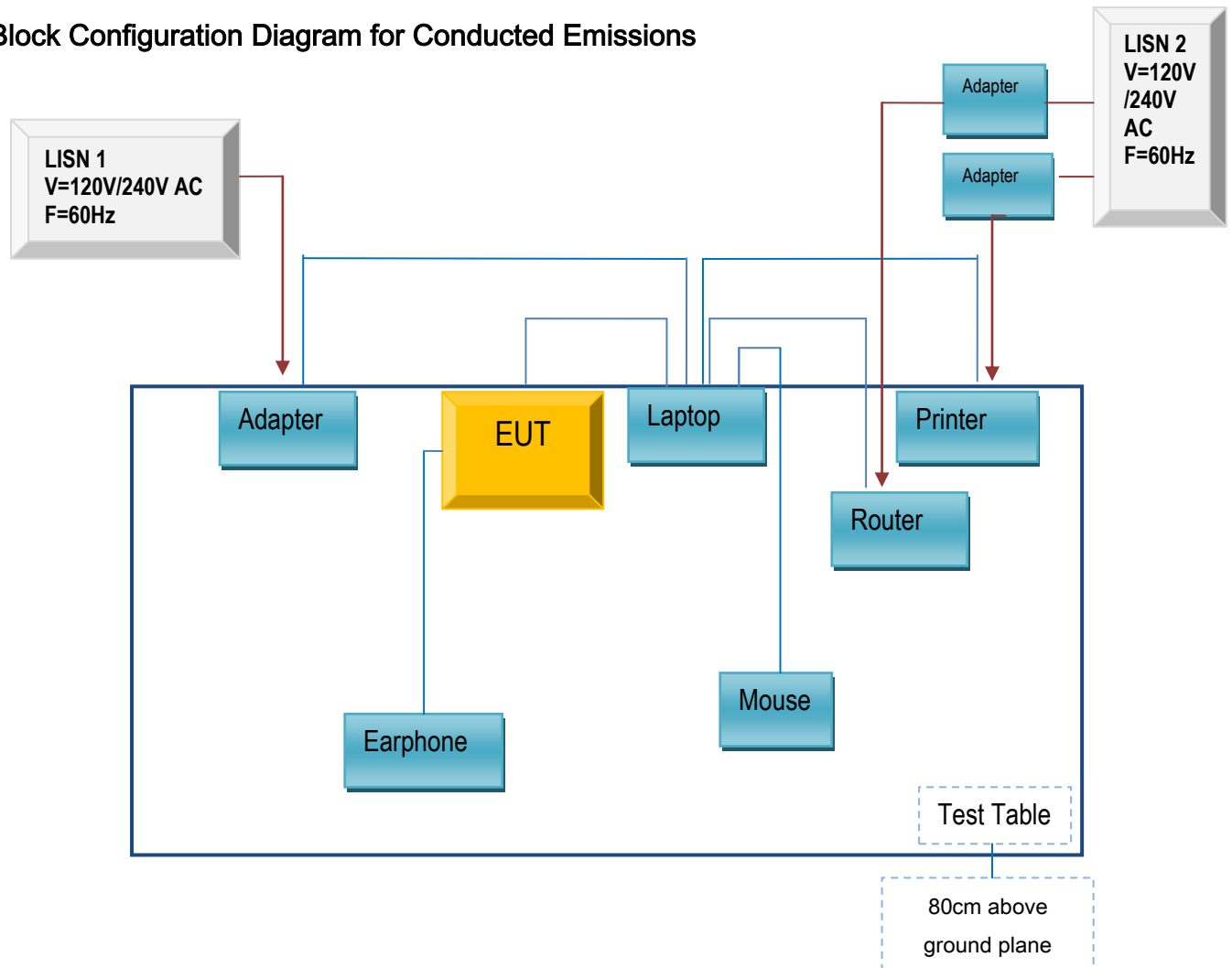
Radiated Emissions Test Setup Above 1GHz

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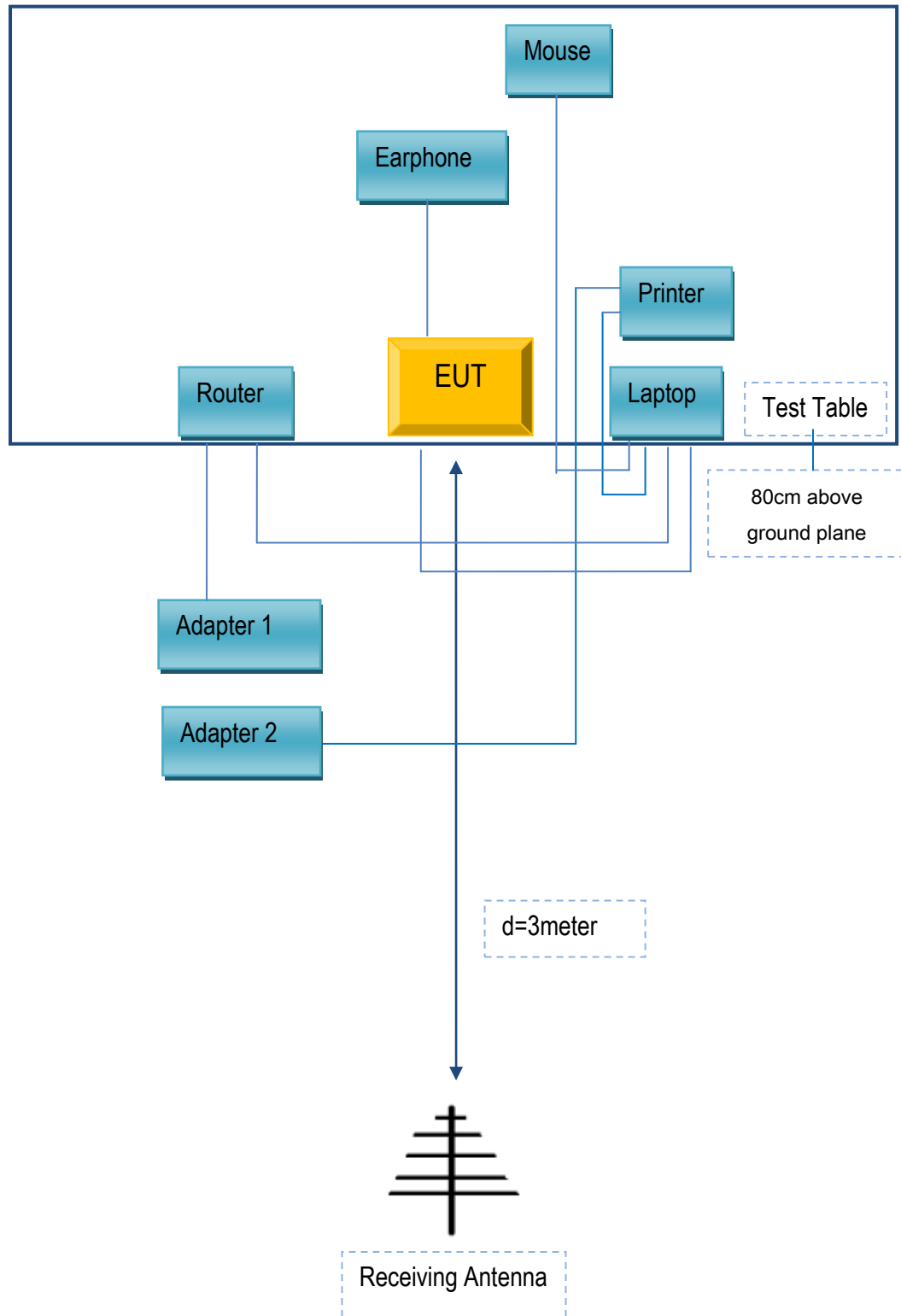
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

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