

EMC TEST REPORT



Report No.: 17070925-FCC-E

Supersede Report No: N/A

Applicant	SMT TELECOMM HK LIMITED	
Product Name	Mobile Phone	
Model No.	X422A	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2016, ANSI C63.4: 2014	
Test Date	September 20 to October 09, 2017	
Issue Date	October 10, 2017	
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>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
17070925-FCC-E	NONE	Original	October 10, 2017

2. Customer information

Applicant Name	SMT TELECOMM HK LIMITED
Applicant Add	Unit C 8/F, CHARMHILL CTR 50 HILLWOOD RD TST KL
Manufacturer	SMT TELECOMM HK LIMITED
Manufacturer Add	Unit C 8/F, CHARMHILL CTR 50 HILLWOOD RD TST KL

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.	535293
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:	X422A
Serial Model:	N/A
Antenna Gain:	GSM850: -1.86dBi PCS1900: -0.09dBi UMTS-FDD Band V: -1.86dBi UMTS-FDD Band IV: -0.16dBi UMTS-FDD Band II: -0.09dBi WIFI: 0.37dBi Bluetooth/BLE: 0.37dBi
Antenna Type:	PIFA Antenna
Input Power:	Adapter: Model: PCX422 Input: AC100-240V~50/60Hz,0.15A Output: DC 5.0V~500mA Battery: Model: BPX422 Battery Capacity: 3.7V, 1300mAh Battery Voltage Limit: 4.2V
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

	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;
	RX : 2112.4 ~ 2152.6 MHz
RF Operating Frequency (ies):	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
	Bluetooth& BLE: 2402-2480 MHz
	GSM 850: 124CH
	PCS1900: 299CH
	UMTS-FDD Band V: 102CH
	UMTS-FDD Band IV: 202CH
Number of Channels:	UMTS-FDD Band II: 277CH
	WIFI :802.11b/g/n(20M): 11CH
	WIFI :802.11n(40M): 7CH
	Bluetooth: 79CH
	BLE: 40CH
Port:	USB Port, Earphone Port
Trade Name :	N/A
FCC ID:	2A1MEX422A
Date EUT received:	September 20, 2017
Test Date(s):	September 20 to October 09, 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

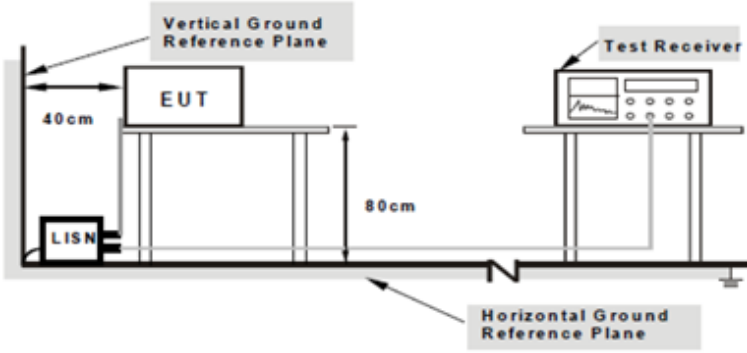
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	26°C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	September 25, 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	 <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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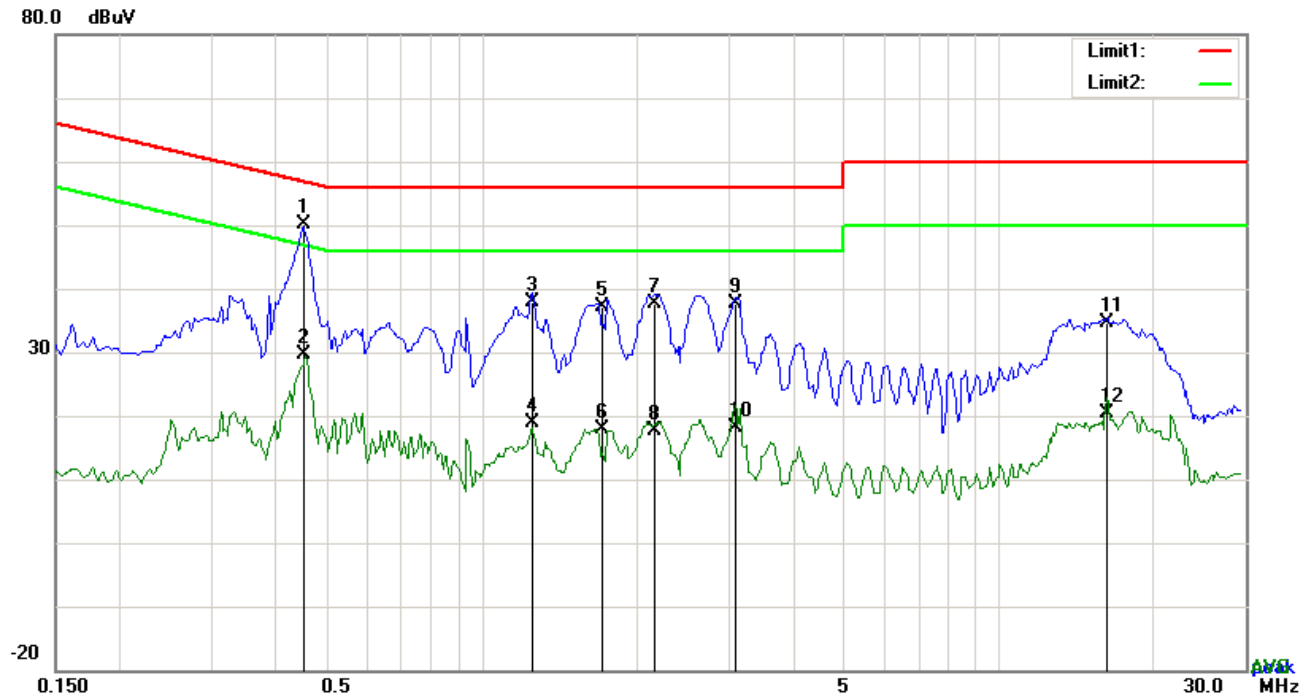
Procedure	<ol style="list-style-type: none"> The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table. The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.
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	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	<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

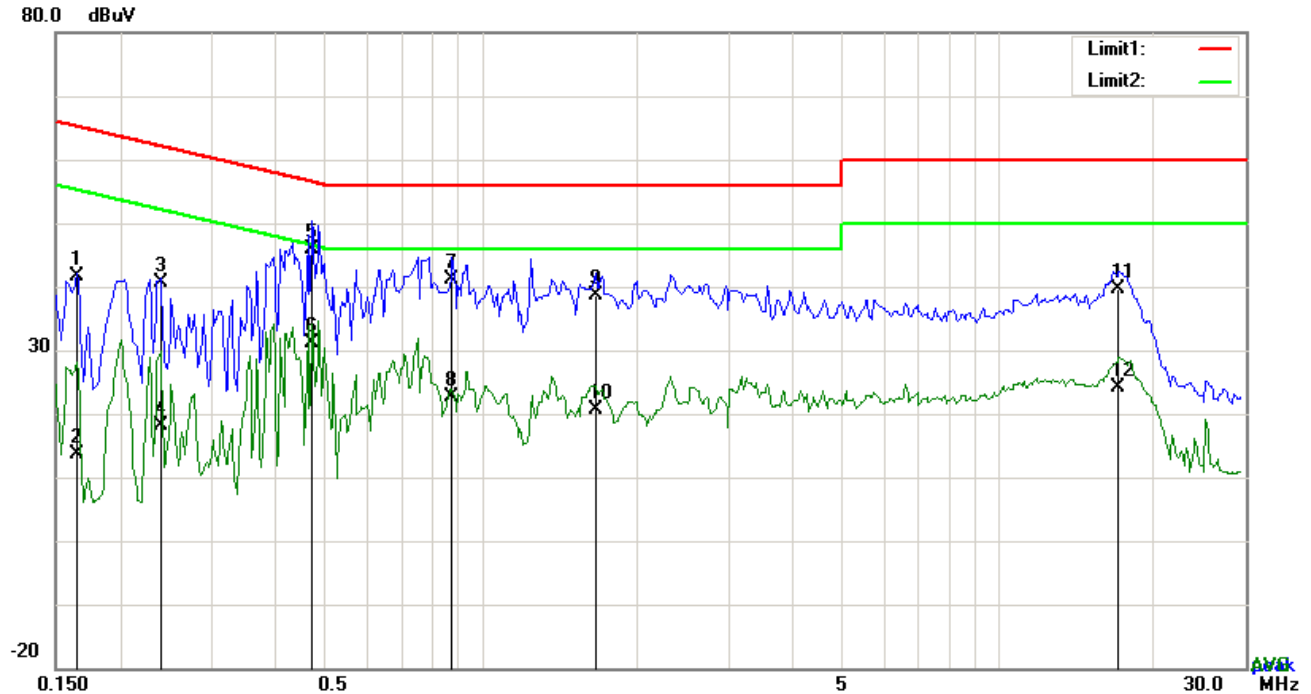


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.4542	37.98	QP	12.07	50.05	56.80	-6.75
2	L1	0.4542	17.67	AVG	12.07	29.74	46.80	-17.06
3	L1	1.2537	26.44	QP	11.40	37.84	56.00	-18.16
4	L1	1.2537	7.39	AVG	11.40	18.79	46.00	-27.21
5	L1	1.7100	25.66	QP	11.40	37.06	56.00	-18.94
6	L1	1.7100	6.36	AVG	11.40	17.76	46.00	-28.24
7	L1	2.1663	26.11	QP	11.40	37.51	56.00	-18.49
8	L1	2.1663	6.16	AVG	11.40	17.56	46.00	-28.44
9	L1	3.1014	26.17	QP	11.40	37.57	56.00	-18.43
10	L1	3.1014	6.77	AVG	11.40	18.17	46.00	-27.83
11	L1	16.1664	20.16	QP	14.37	34.53	60.00	-25.47
12	L1	16.1664	6.02	AVG	14.37	20.39	50.00	-29.61

Test Mode: USB Mode

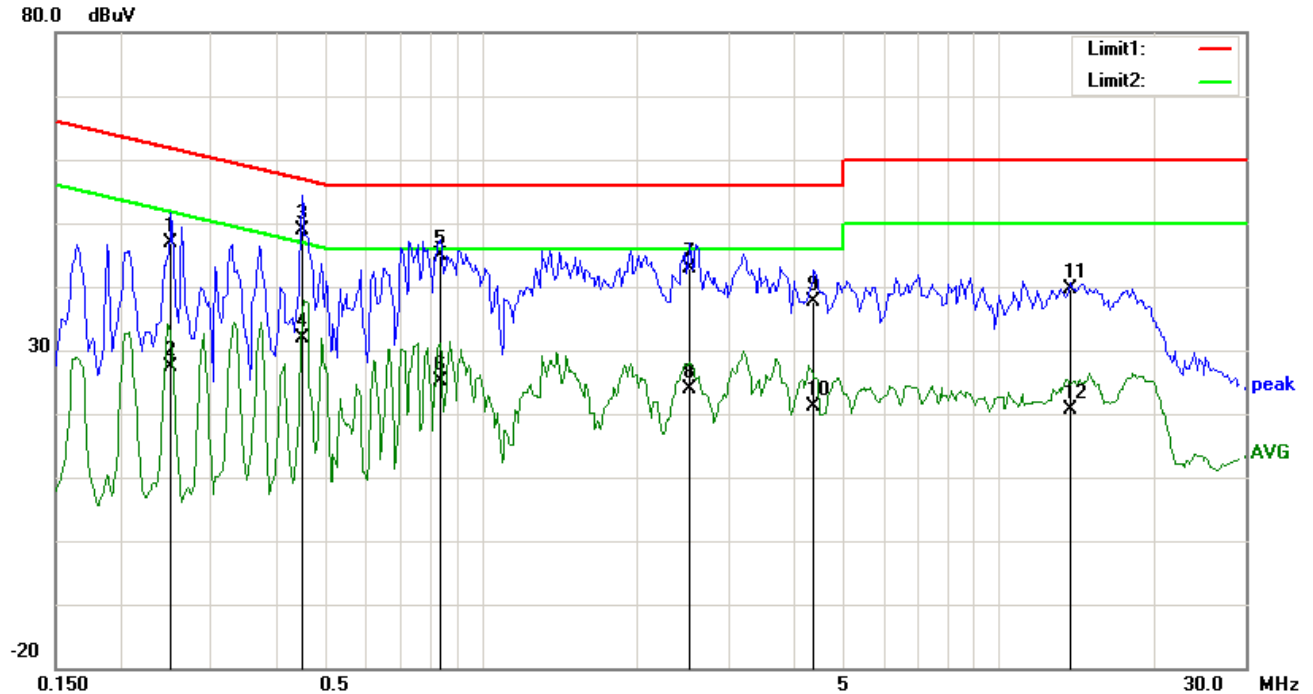


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.1656	28.41	QP	13.14	41.55	65.18	-23.63
2	N	0.1656	0.38	AVG	13.14	13.52	55.18	-41.66
3	N	0.2397	27.68	QP	12.87	40.55	62.11	-21.56
4	N	0.2397	5.33	AVG	12.87	18.20	52.11	-33.91
5	N	0.4698	33.87	QP	12.01	45.88	56.52	-10.64
6	N	0.4698	19.11	AVG	12.01	31.12	46.52	-15.40
7	N	0.8793	29.60	QP	11.52	41.12	56.00	-14.88
8	N	0.8793	11.05	AVG	11.52	22.57	46.00	-23.43
9	N	1.6671	27.19	QP	11.40	38.59	56.00	-17.41
10	N	1.6671	9.12	AVG	11.40	20.52	46.00	-25.48
11	N	17.0205	25.14	QP	14.53	39.67	60.00	-20.33
12	N	17.0205	9.63	AVG	14.53	24.16	50.00	-25.84

Test Mode : USB Mode

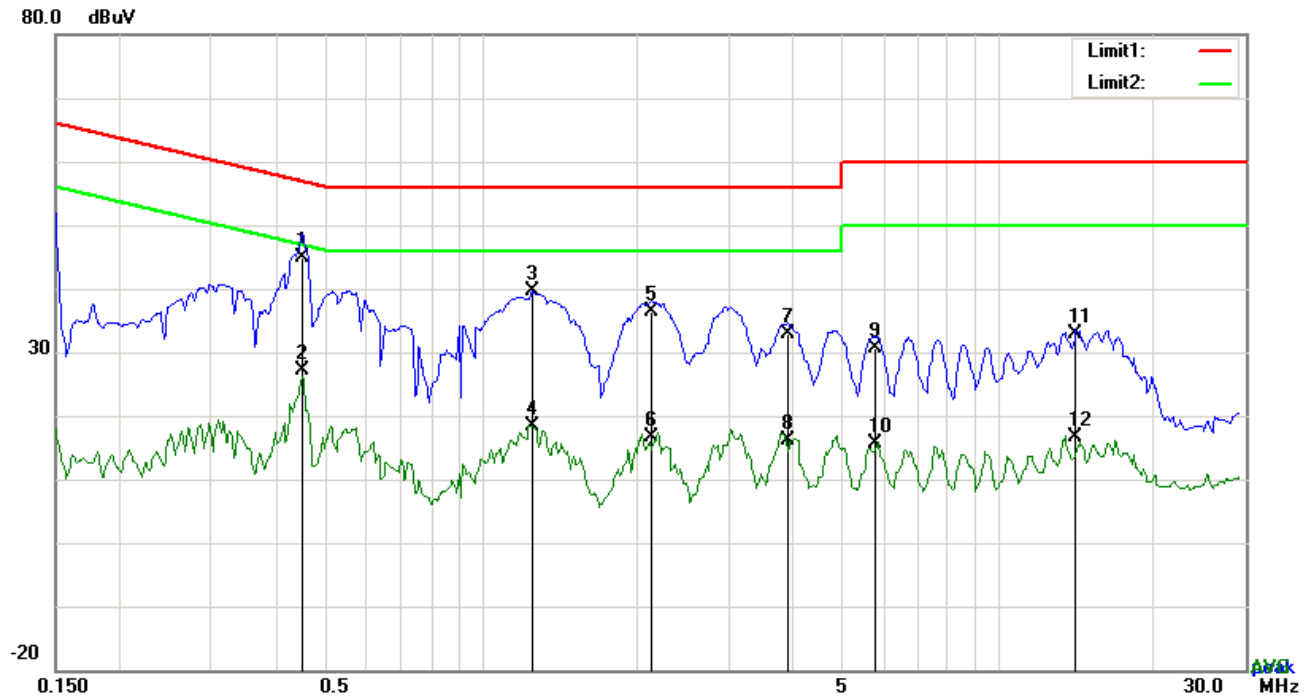


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.2514	34.00	QP	12.82	46.82	61.71	-14.89
2	L1	0.2514	14.52	AVG	12.82	27.34	51.71	-24.37
3	L1	0.4503	36.80	QP	12.08	48.88	56.87	-7.99
4	L1	0.4503	19.83	AVG	12.08	31.91	46.87	-14.96
5	L1	0.8325	33.39	QP	11.57	44.96	56.00	-11.04
6	L1	0.8325	13.44	AVG	11.57	25.01	46.00	-20.99
7	L1	2.5212	31.48	QP	11.40	42.88	56.00	-13.12
8	L1	2.5212	12.47	AVG	11.40	23.87	46.00	-22.13
9	L1	4.4001	26.35	QP	11.40	37.75	56.00	-18.25
10	L1	4.4001	9.61	AVG	11.40	21.01	46.00	-24.99
11	L1	13.7367	25.81	QP	13.91	39.72	60.00	-20.28
12	L1	13.7367	6.72	AVG	13.91	20.63	50.00	-29.37

Test Mode : USB Mode



Test Data


Phase Neutral Plot at 240Vac, 60Hz

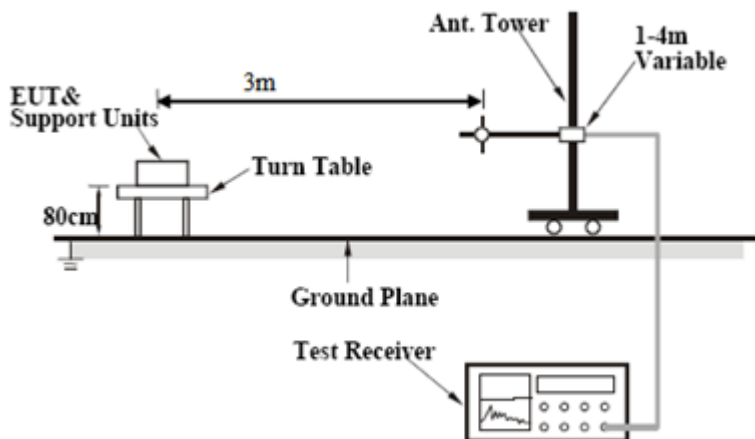
No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.4503	32.69	QP	12.08	44.77	56.87	-12.10
2	N	0.4503	15.14	AVG	12.08	27.22	46.87	-19.65
3	N	1.2498	28.28	QP	11.43	39.71	56.00	-16.29
4	N	1.2498	6.94	AVG	11.43	18.37	46.00	-27.63
5	N	2.1273	24.84	QP	11.54	36.38	56.00	-19.62
6	N	2.1273	5.16	AVG	11.54	16.70	46.00	-29.30
7	N	3.9048	21.00	QP	11.76	32.76	56.00	-23.24
8	N	3.9048	4.34	AVG	11.76	16.10	46.00	-29.90
9	N	5.7885	18.50	QP	12.11	30.61	60.00	-29.39
10	N	5.7885	3.43	AVG	12.11	15.54	50.00	-34.46
11	N	14.0994	18.91	QP	13.98	32.89	60.00	-27.11
12	N	14.0994	2.71	AVG	13.98	16.69	50.00	-33.31

6.2 Radiated Emissions

Temperature	26°C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	September 25, 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	<ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> Vertical or horizontal polarization (whichever gave the higher emission level
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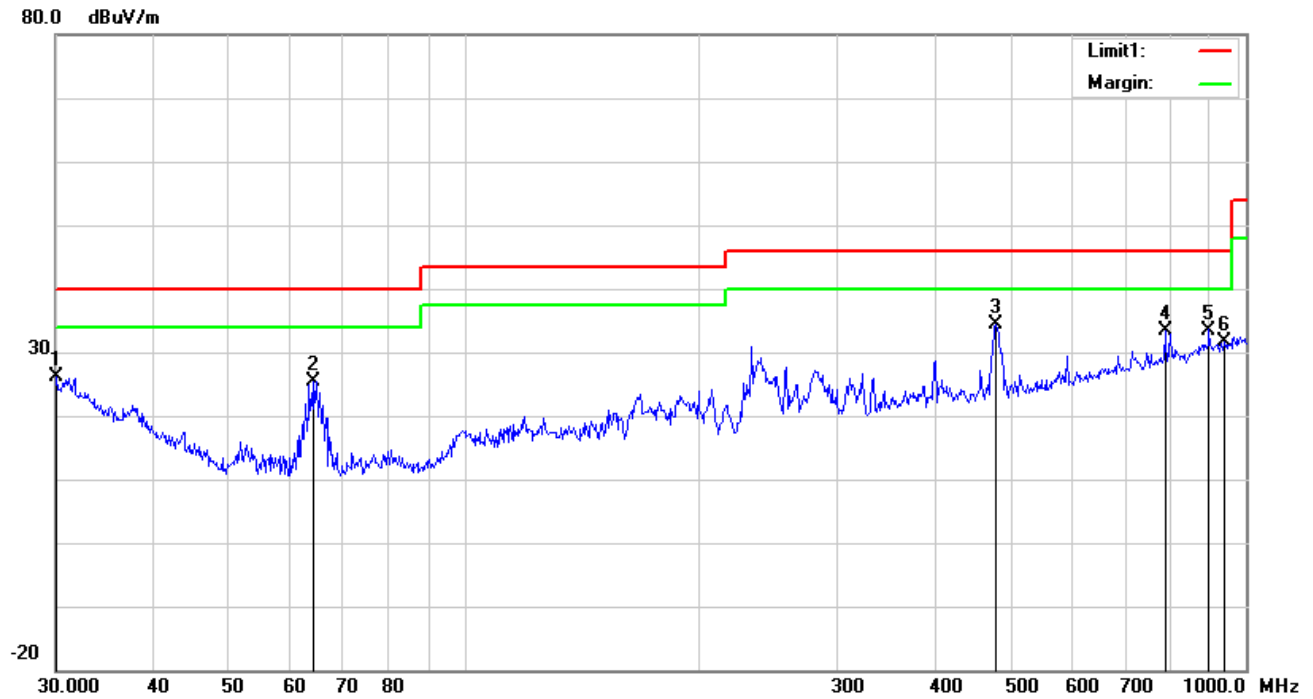
	<p>over a full rotation of the EUT) was chosen.</p> <p>b. The EUT was then rotated to the direction that gave the maximum emission.</p> <p>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</p> <p>3. The resolution bandwidth and video bandwidth of test receiver/spectrum 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 < 98%) □ 10 Hz (Duty cycle > 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

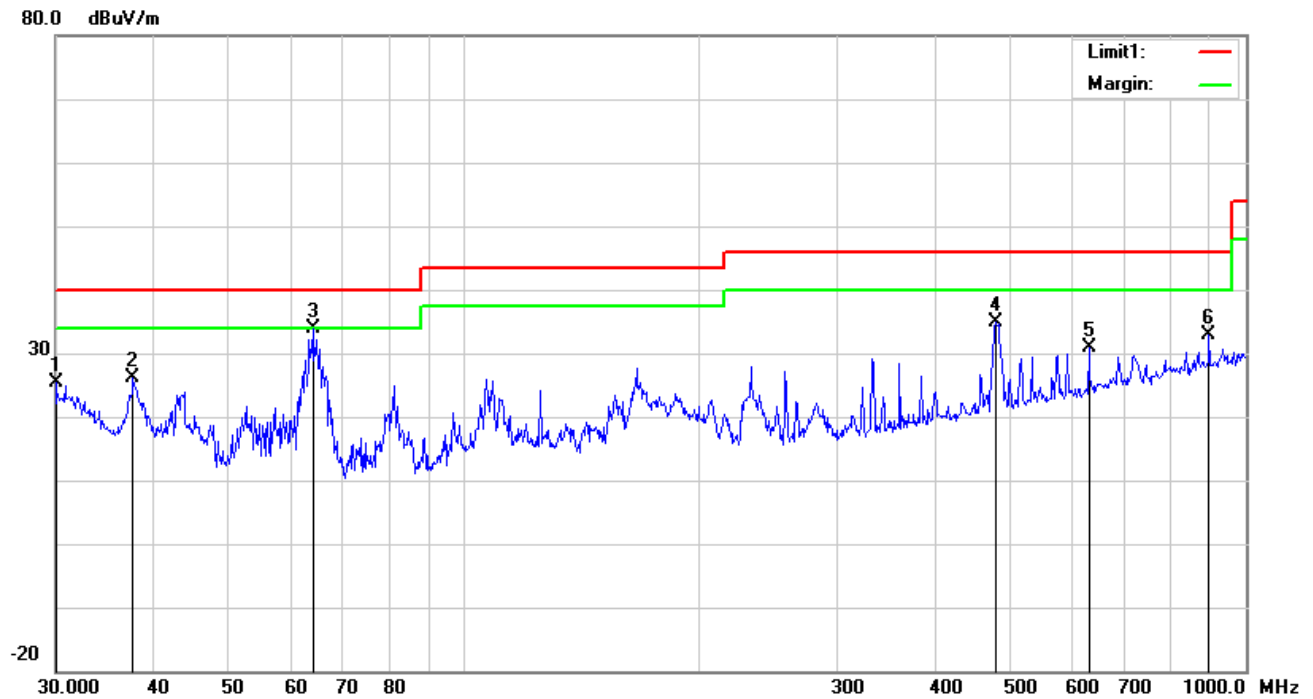


Test Data

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	30.1054	26.56	peak	21.32	22.28	0.62	26.22	40.00	-13.78	100	265
2	H	63.9828	39.54	peak	7.50	22.40	0.85	25.49	40.00	-14.51	200	29
3	H	478.8456	36.71	peak	17.28	21.85	2.30	34.44	46.00	-11.56	100	285
4	H	787.8513	30.31	peak	21.25	21.18	2.94	33.32	46.00	-12.68	100	183
5	H	896.9965	28.86	peak	22.47	20.89	3.06	33.50	46.00	-12.50	100	32
6	H	938.8326	26.55	peak	22.69	20.81	3.15	31.58	46.00	-14.42	100	284

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	30.0000	25.61	peak	21.40	22.28	0.62	25.35	40.00	-14.65	100	201
2	V	37.6798	32.05	peak	15.59	22.27	0.78	26.15	40.00	-13.85	100	351
3	V	63.9828	47.86	QP	7.50	22.40	0.85	33.81	40.00	-6.19	200	21
4	V	478.8456	37.26	peak	17.28	21.85	2.30	34.99	46.00	-11.01	100	165
5	V	629.4772	30.44	peak	19.42	21.52	2.57	30.91	46.00	-15.09	100	15
6	V	896.9965	28.14	peak	22.47	20.89	3.06	32.78	46.00	-13.22	100	315

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)
1429.8	62.13	134	100	V	-18.97	43.16	74	-30.84	PK
1647.3	65.37	115	100	V	-17.76	47.61	74	-26.39	PK
2106.5	58.77	208	100	V	-14.49	44.28	74	-29.72	PK
1328.9	66.7	36	100	H	-19.36	47.34	74	-26.66	PK
1751.4	63.67	305	100	H	-16.76	46.91	74	-27.09	PK
2633.8	58.59	197	100	H	-13.31	45.28	74	-28.72	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
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/15/2017	09/14/2018	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191106	09/23/2017	09/22/2018	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191107	09/23/2017	09/22/2018	<input checked="" type="checkbox"/>
ISN	ISN T800	34373	09/23/2017	09/22/2018	<input checked="" type="checkbox"/>
Transient Limiter	LIT-153	531118	08/30/2017	08/29/2018	<input checked="" type="checkbox"/>
Radiated Emissions					
EMI test receiver	ESL6	100262	09/15/2017	09/14/2018	<input checked="" type="checkbox"/>
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	08/30/2017	08/29/2018	<input checked="" type="checkbox"/>
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	<input checked="" type="checkbox"/>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/19/2017	09/18/2018	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna	AH-118	71259	09/22/2017	09/21/2018	<input checked="" type="checkbox"/>

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

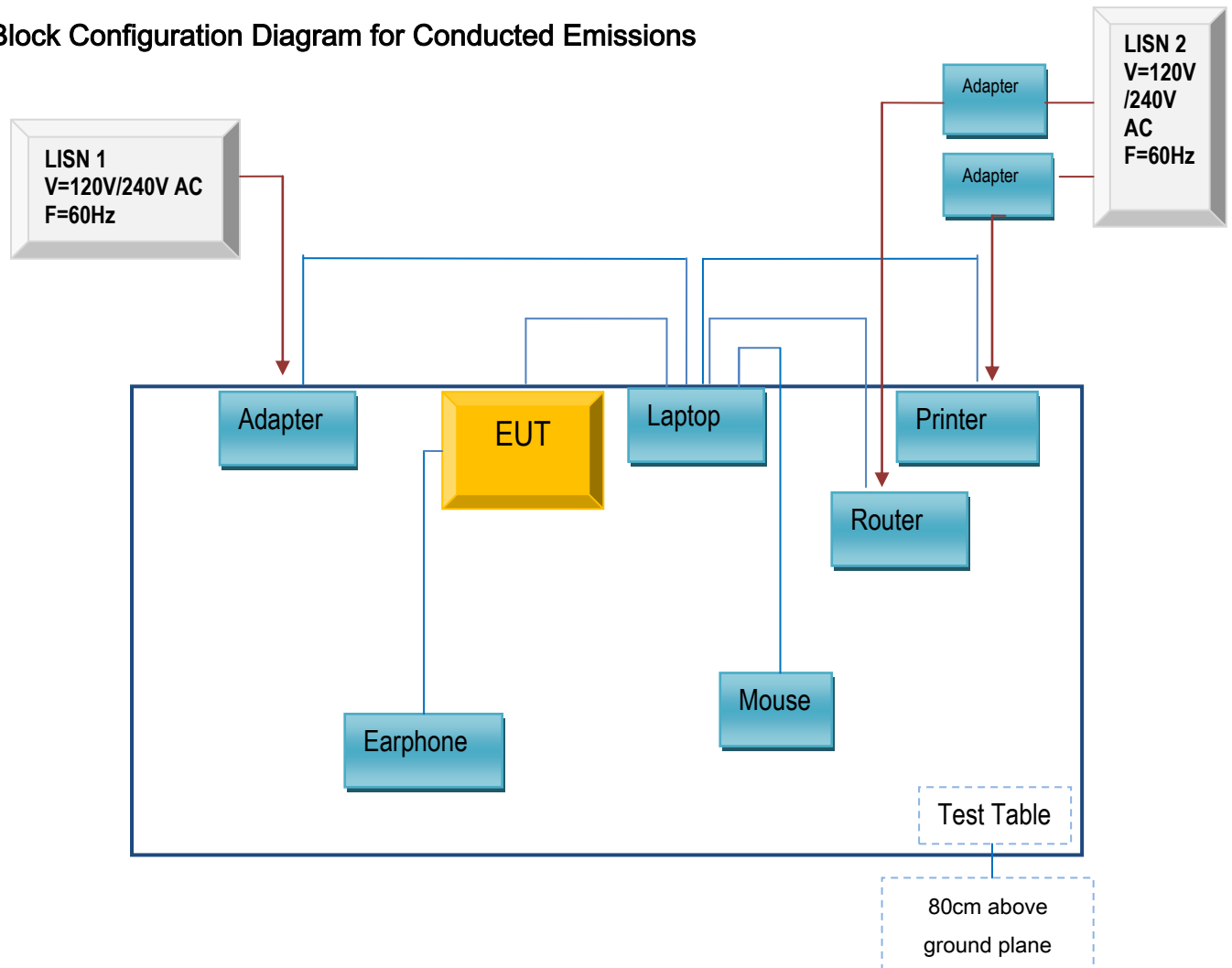
Annex B.ii. Photograph: EUT Internal Photo

Annex B.iii. Photograph: Test Setup Photo

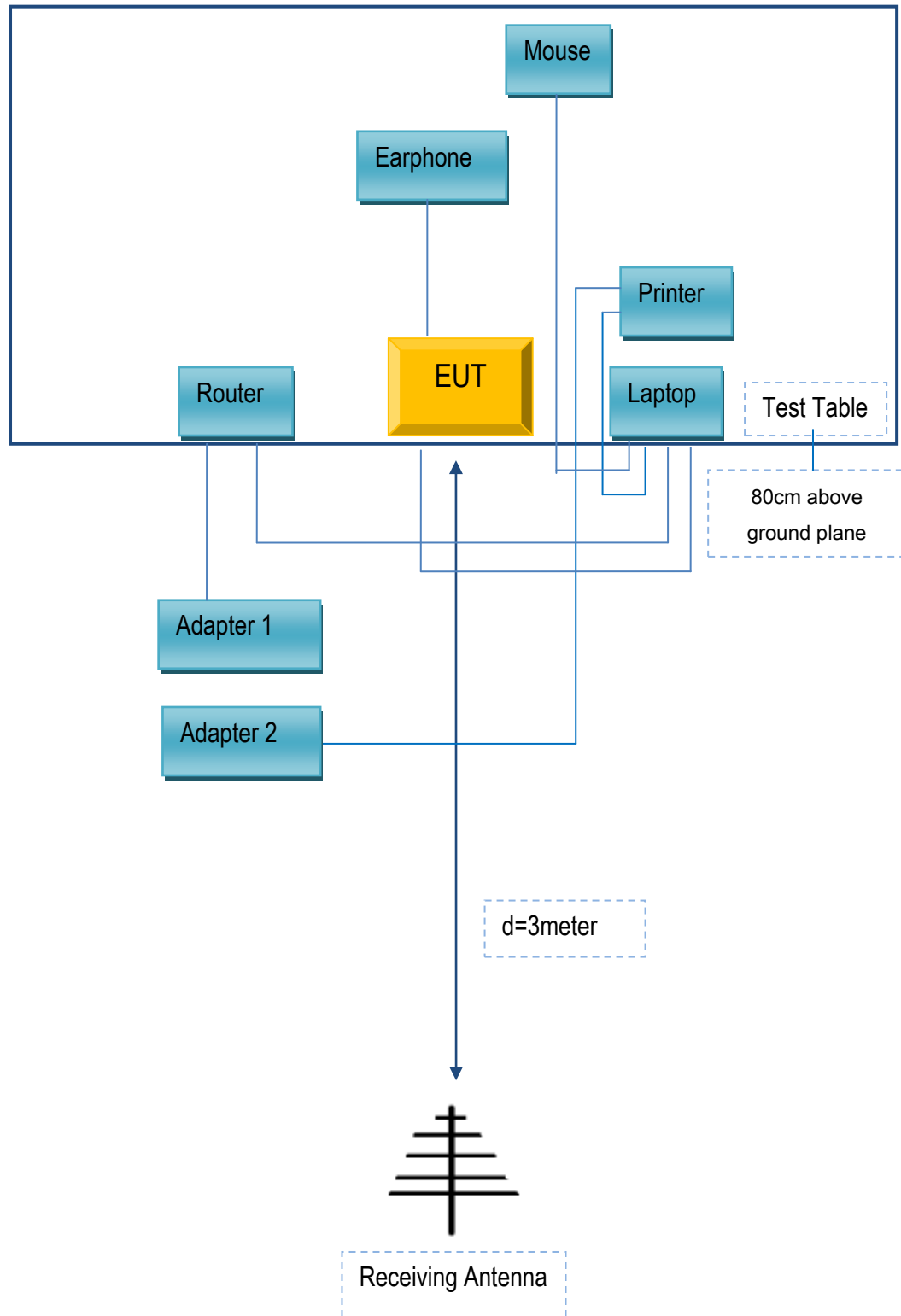
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

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
SMT TELECOMM HK LIMITED	Earphone	X422A	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