

EMC TEST REPORT



Report No.: 16070659-FCC-E

Supersede Report No.: N/A

Applicant	SMT TELECOMM HK LIMITED	
Product Name	Mobile Phone	
Model No.	X401	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2014, ANSI C63.4: 2014	
Test Date	May 12 to May 23, 2015	
Issue Date	June 07,2016	
Test Result	☒ Pass ☐ Fail	
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		
<i>Lucifer He</i>	<i>Chris You</i>	
Lucifer He Test Engineer	Chris You 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
16070659-FCC-E	NONE	Original	June 07,2016

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.	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: X401

Serial Model: N/A

Date EUT received: May 11, 2015

Test Date(s): May 12 to May 23, 2015

Equipment Category : JBP

Antenna Gain:

GSM850: -0.4 dBi
PCS1900: 0.5 dBi
UMTS-FDD Band V: -0.4dBi
UMTS-FDD Band II: 0.5dBi
Bluetooth/BLE: 0.4dBi
WIFI: 0.4 dBi

Type of Modulation:

GSM / GPRS: GMSK
UMTS-FDD: QPSK, 16QAM
802.11b/g/n: DSSS, OFDM
Bluetooth: GFSK, $\pi/4$ DQPSK, 8DPSK
BLE: GFSK

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
WIFI: 802.11b/g/n(20M): 2412-2462 MHz
WIFI: 802.11n(40M): 2422-2452 MHz
Bluetooth& BLE: 2402-2480 MHz

Number of Channels: GSM 850: 124CH

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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

Port: Power Port, Earphone Port, USB Port

Adapter:

Model: PC X401

Input: AC 100-240V; 50/60Hz 0.15A Max

Output: DC 5.0V; 0.5A

Input Power:

Battery:

Model: BP-X401

Spec: 3.7V 1200mAh

Charging Limit Voltage:4.2V

Trade Name : N/A

GPRS Multi-slot class 8/10/12

FCC ID: 2AIMEX401

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
-	-	-

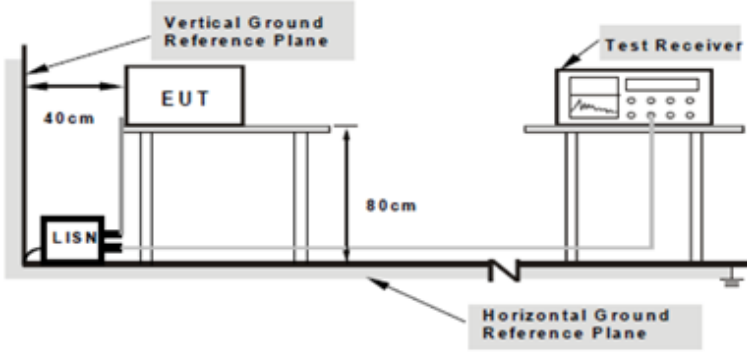
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	20C
Relative Humidity	52%
Atmospheric Pressure	1022mbar
Test date :	May 22, 2015
Tested By :	Lucifer 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 50W/50mH EUT LISN, connected to filtered mains.
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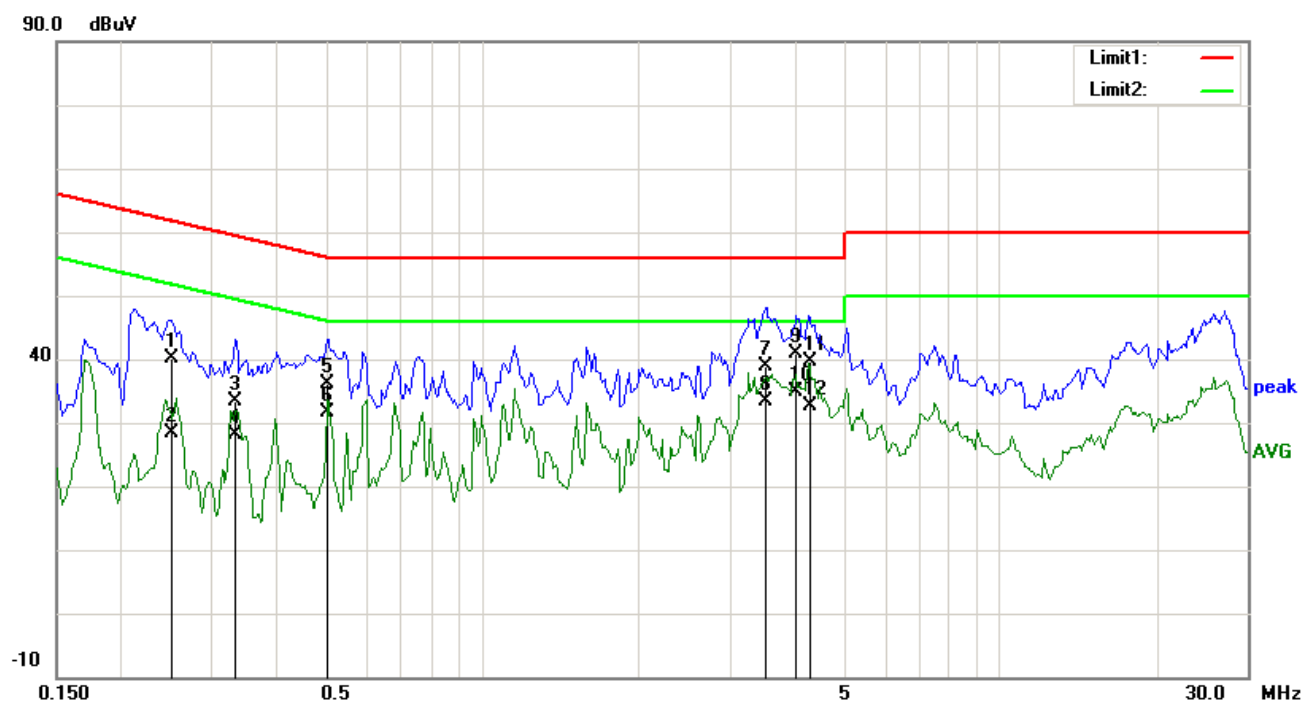
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	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. 4. All other supporting equipment were powered separately from another main supply. 5. The EUT was switched on and allowed to warm up to its normal 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 1: USB Mode

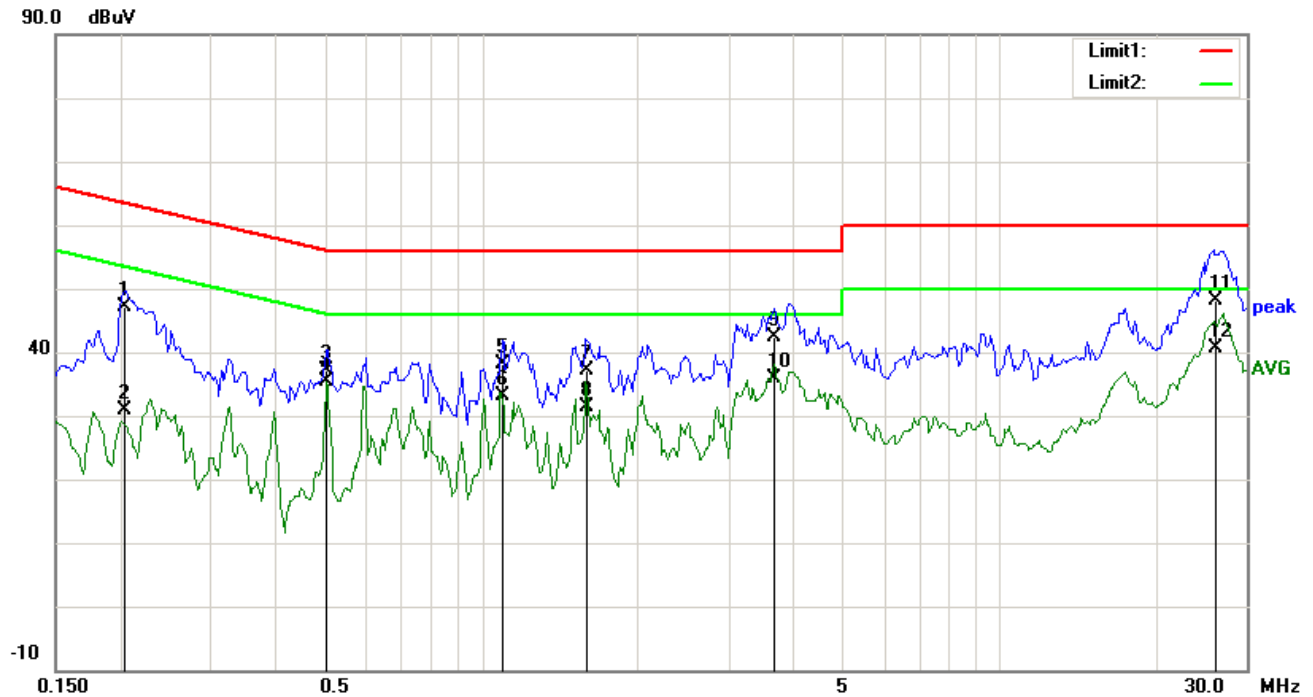


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)	
1	L1	0.2516	27.33	QP	12.82	40.15	61.70	-21.55	
2	L1	0.2516	15.58	AVG	12.82	28.40	51.70	-23.30	
3	L1	0.3336	20.93	QP	12.52	33.45	59.36	-25.91	
4	L1	0.3336	15.51	AVG	12.52	28.03	49.36	-21.33	
5	L1	0.5016	24.26	QP	11.90	36.16	56.00	-19.84	
6	L1	0.5016	19.72	AVG	11.90	31.62	46.00	-14.38	
7	L1	3.5234	27.58	QP	11.40	38.98	56.00	-17.02	
8	L1	3.5234	21.92	AVG	11.40	33.32	46.00	-12.68	
9	L1	4.0352	29.60	QP	11.40	41.00	56.00	-15.00	
10	L1	4.0352	23.48	AVG	11.40	34.88	46.00	-11.12	
11	L1	4.2918	28.12	QP	11.40	39.52	56.00	-16.48	
12	L1	4.2918	21.24	AVG	11.40	32.64	46.00	-13.36	

Test Mode 1:	USB Mode
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Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)	
1	N	0.2047	34.18	QP	13.00	47.18	63.42	-16.24	
2	N	0.2047	17.92	AVG	13.00	30.92	53.42	-22.50	
3	N	0.5016	25.29	QP	11.90	37.19	56.00	-18.81	
4	N	0.5016	23.42	AVG	11.90	35.32	46.00	-10.68	
5	N	1.0992	26.64	QP	11.41	38.05	56.00	-17.95	
6	N	1.0992	21.71	AVG	11.41	33.12	46.00	-12.88	
7	N	1.5935	25.57	QP	11.47	37.04	56.00	-18.96	
8	N	1.5935	19.87	AVG	11.47	31.34	46.00	-14.66	
9	N	3.6680	30.56	QP	11.73	42.29	56.00	-13.71	
10	N	3.6680	24.15	AVG	11.73	35.88	46.00	-10.12	
11	N	26.1393	30.79	QP	17.43	48.22	60.00	-11.78	
12	N	26.1393	23.26	AVG	17.43	40.69	50.00	-9.31	

6.2 Radiated Emissions

Temperature	20°C
Relative Humidity	52%
Atmospheric Pressure	1022mbar
Test date :	May 22, 2015
Tested By :	Lucifer He

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	- 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

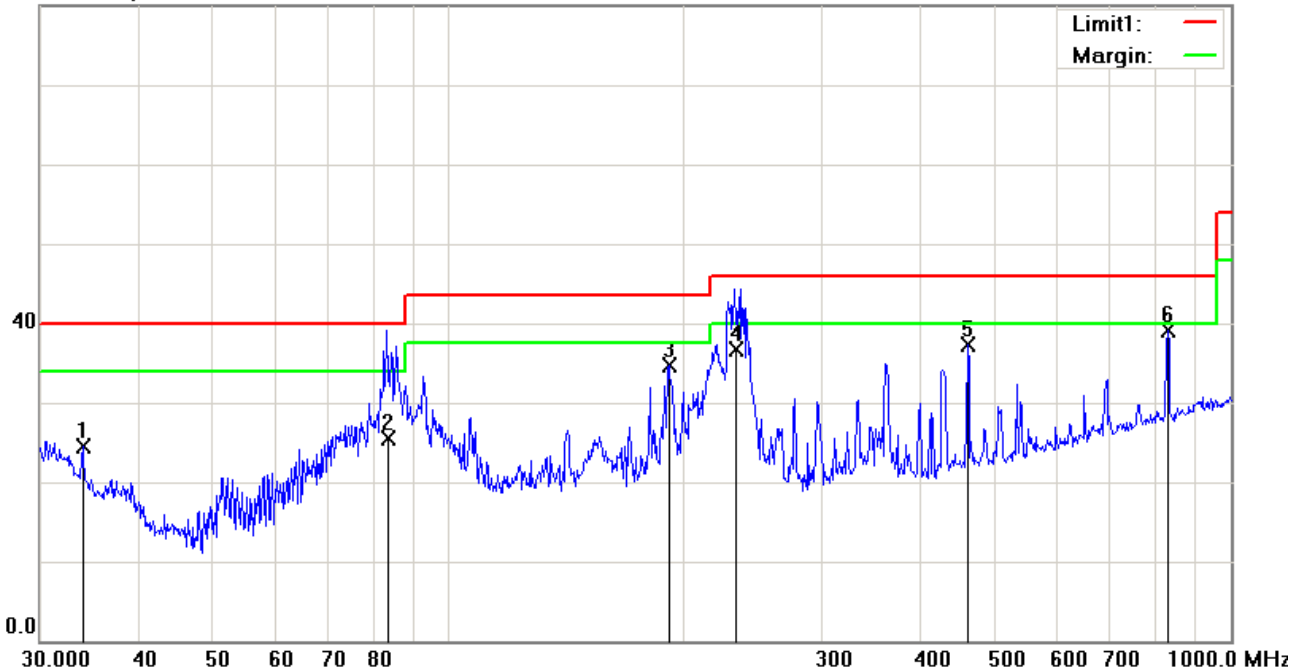
Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Mode: USB Mode

Below 1GHz

80.0 dBuV/m



Test Data

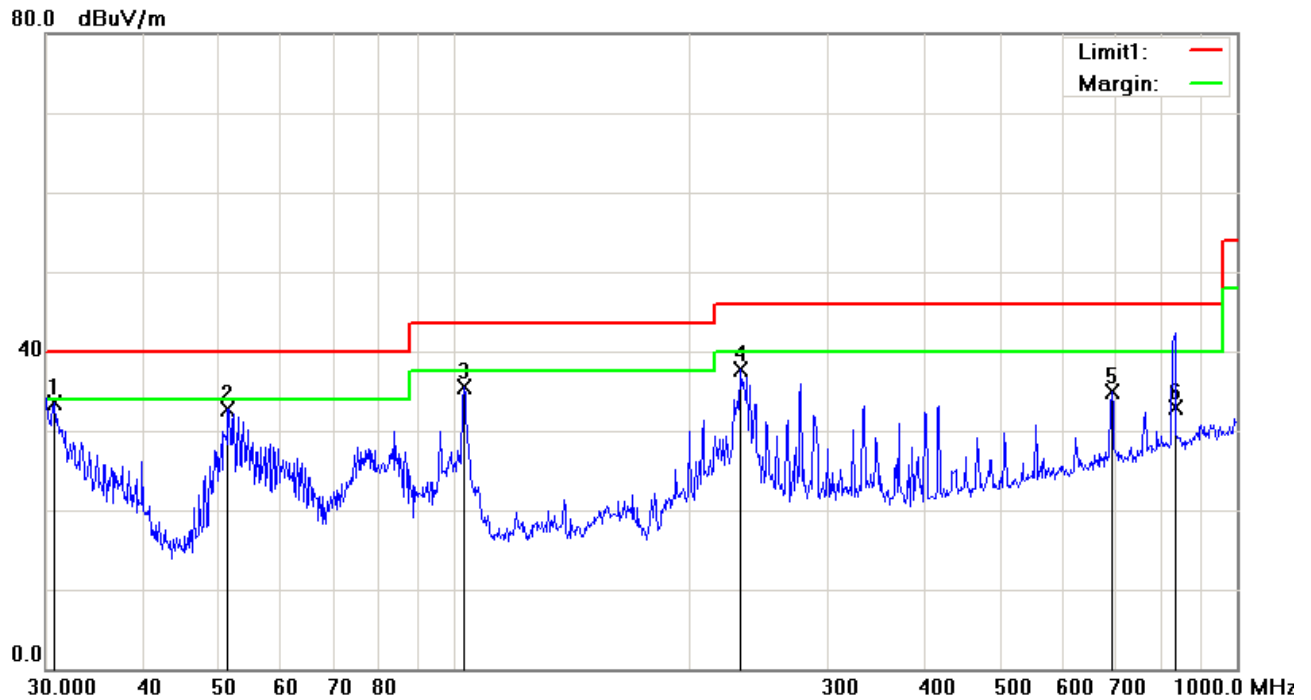
Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comment
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()	
1	H	34.0365	27.70	peak	-3.24	24.46	40.00	-15.54	100	42	
2	H	84.1001	39.00	QP	-13.55	25.45	40.00	-14.55	100	147	
3	H	191.0738	43.82	peak	-9.17	34.65	43.50	-8.85	100	252	
4	H	232.5431	45.73	QP	-9.04	36.69	46.00	-9.31	200	335	
5	H	460.7271	40.09	peak	-2.79	37.30	46.00	-8.70	100	285	
6	H	830.4002	35.53	peak	3.57	39.10	46.00	-6.90	100	173	

Above 1GHz

Note: The frequency that above 1GHz is mainly from the environment noise.

Below 1GHz



Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comment
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()	
1	V	30.7455	34.29	peak	-0.81	33.48	40.00	-6.52	100	205	
2	V	51.3005	46.04	peak	-13.33	32.71	40.00	-7.29	100	141	
3	V	102.7192	45.89	peak	-10.32	35.57	43.50	-7.93	100	239	
4	V	231.7179	46.75	peak	-9.02	37.73	46.00	-8.27	200	192	
5	V	691.9867	33.71	peak	1.28	34.99	46.00	-11.01	100	160	
6	V	832.5818	29.40	QP	3.60	33.00	46.00	-13.00	200	45	

Above 1GHz

Note: The frequency that above 1GHz is mainly from the environment noise.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/18/2014	09/17/2015	☒
Line Impedance Stabilization Network	LI-125A	191106	09/26/2014	09/25/2015	☒
Line Impedance Stabilization Network	LI-125A	191107	09/26/2014	09/25/2015	☒
LISN	ISN T800	34373	09/26/2014	09/25/2015	☒
Transient Limiter	LIT-153	531118	09/02/2014	09/01/2015	☒
Radiated Emissions					
EMI test receiver	ESL6	100262	09/18/2014	09/17/2015	☒
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/02/2014	09/01/2015	☒
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/25/2015	03/24/2016	☒
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/22/2014	09/21/2015	☒
Double Ridge Horn Antenna	AH-118	71259	09/25/2014	09/24/2015	☒

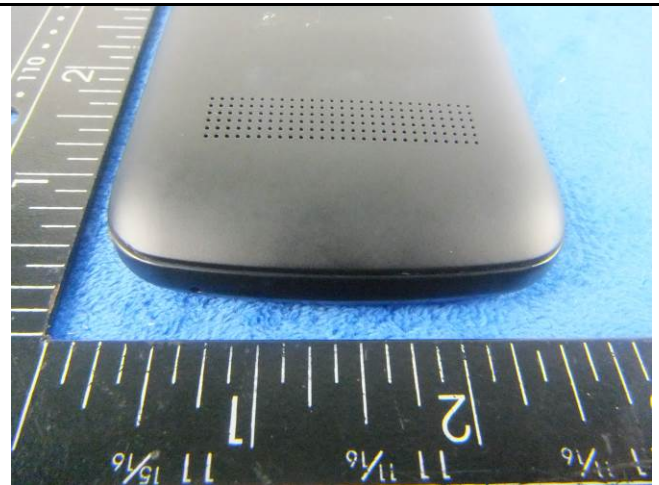
Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

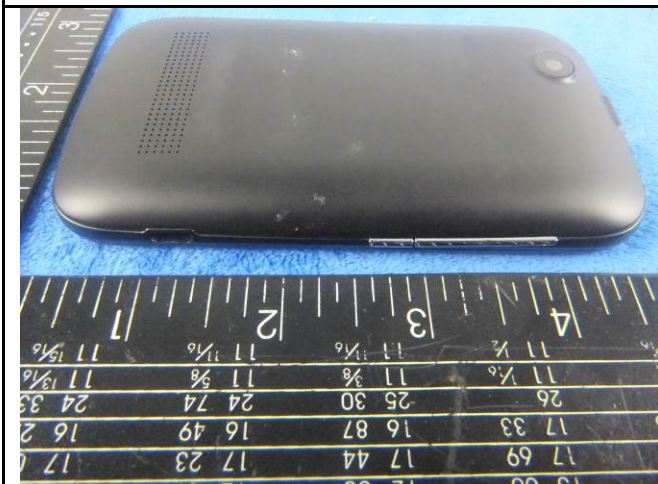




EUT - Top View



EUT - Bottom View



EUT - Left View



EUT - Right View

Annex B.ii. Photograph: EUT Internal Photo



Cover Off - Top View 1



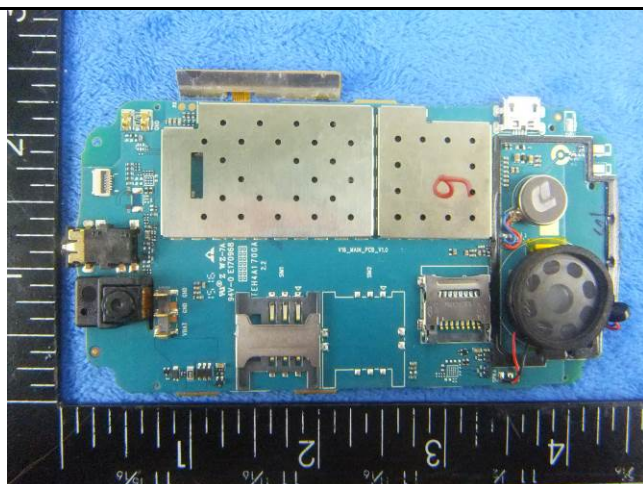
Cover Off - Top View 2



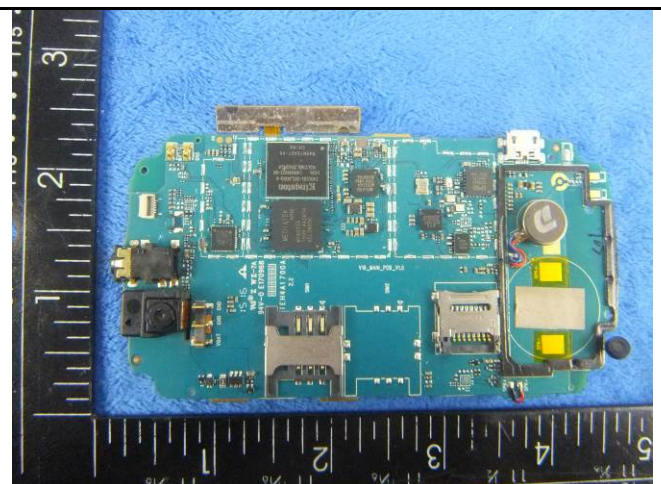
Battery - Top View



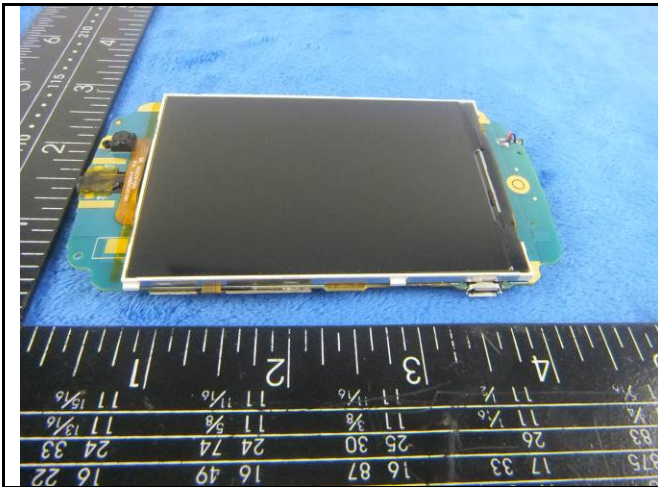
Battery - Bottom View



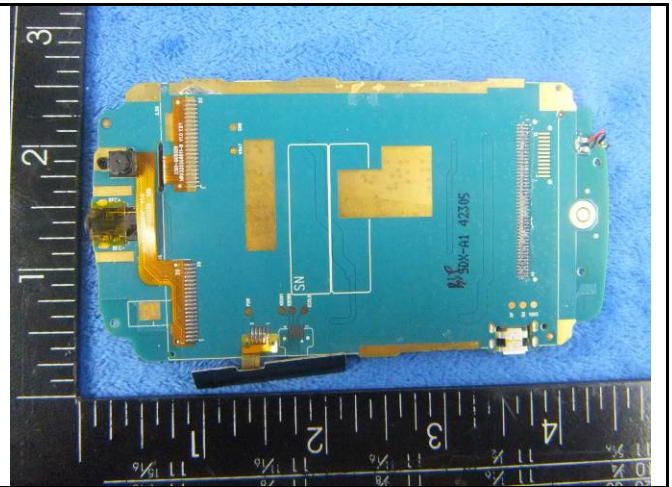
Mainboard With Shielding - Front View



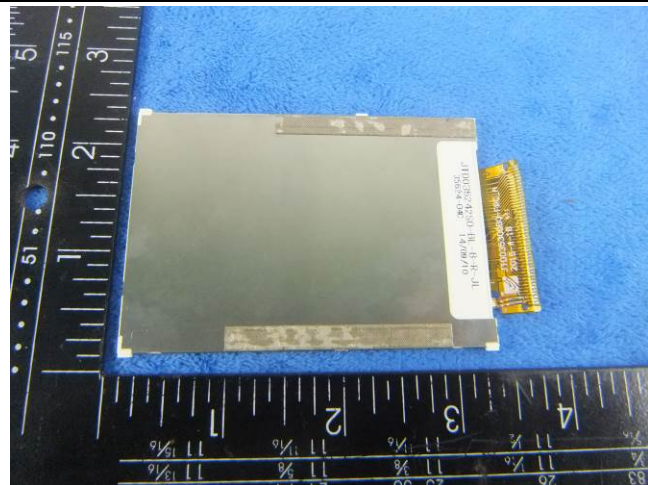
Mainboard Without Shielding - Front View



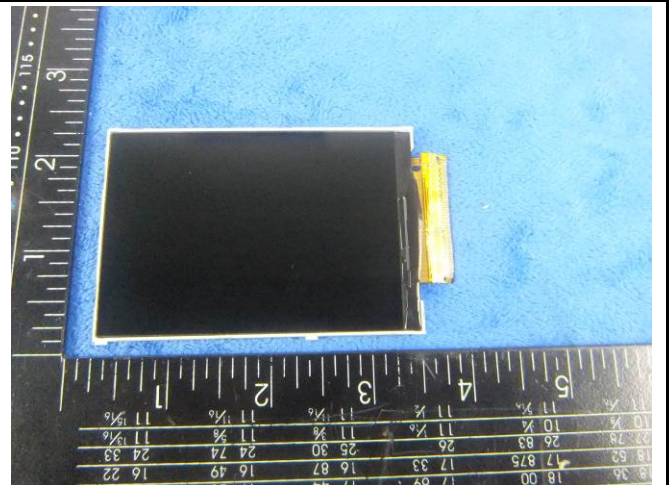
Mainboard With Shielding - Rear View



Mainboard Without Shielding - Rear View



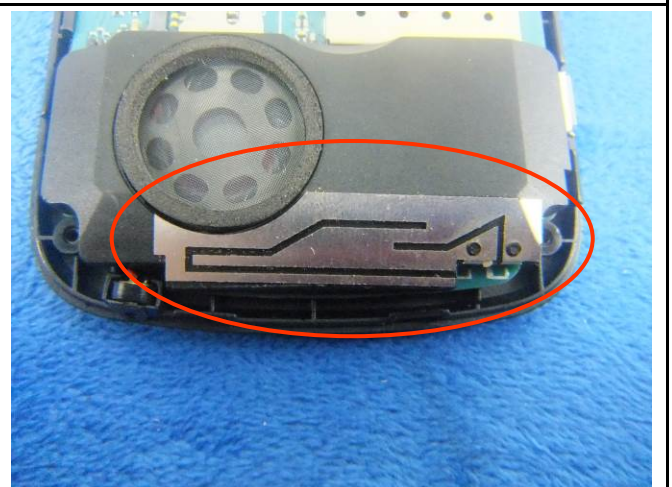
LCD - Rear View



LCD - Front View



WIFI/BT/BLE - Antenna View

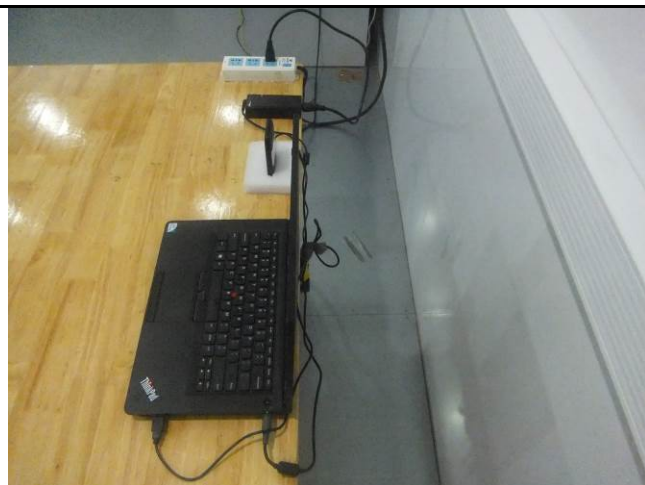


GSM/PCS/UMTS-FDD Antenna View

Annex B.iii. Photograph: Test Setup Photo



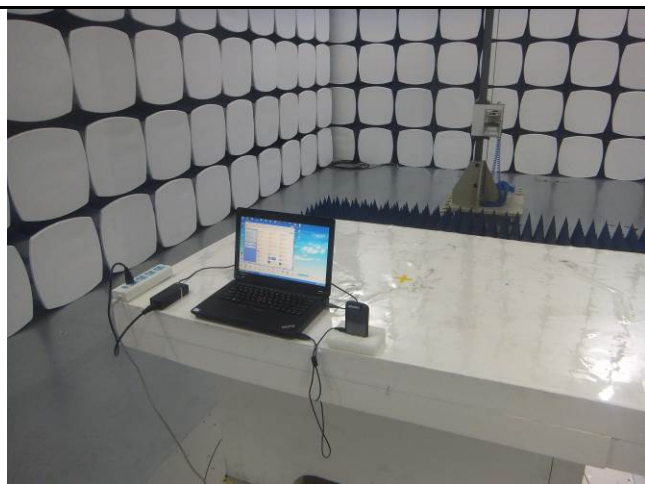
Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup – Side View



Radiated Spurious Emissions Test Setup Below 1GHz

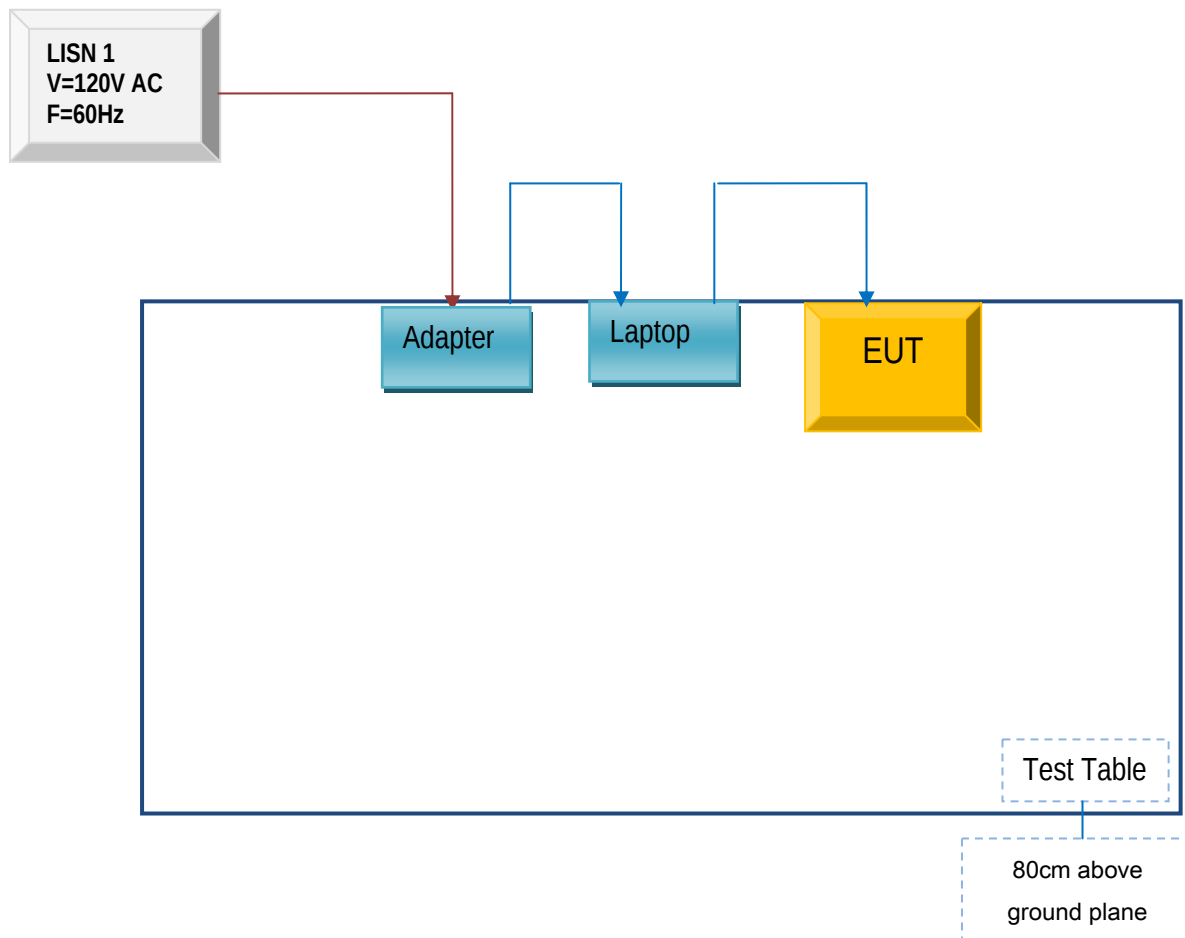


Radiated Spurious Emissions Test Setup Above
1GHz

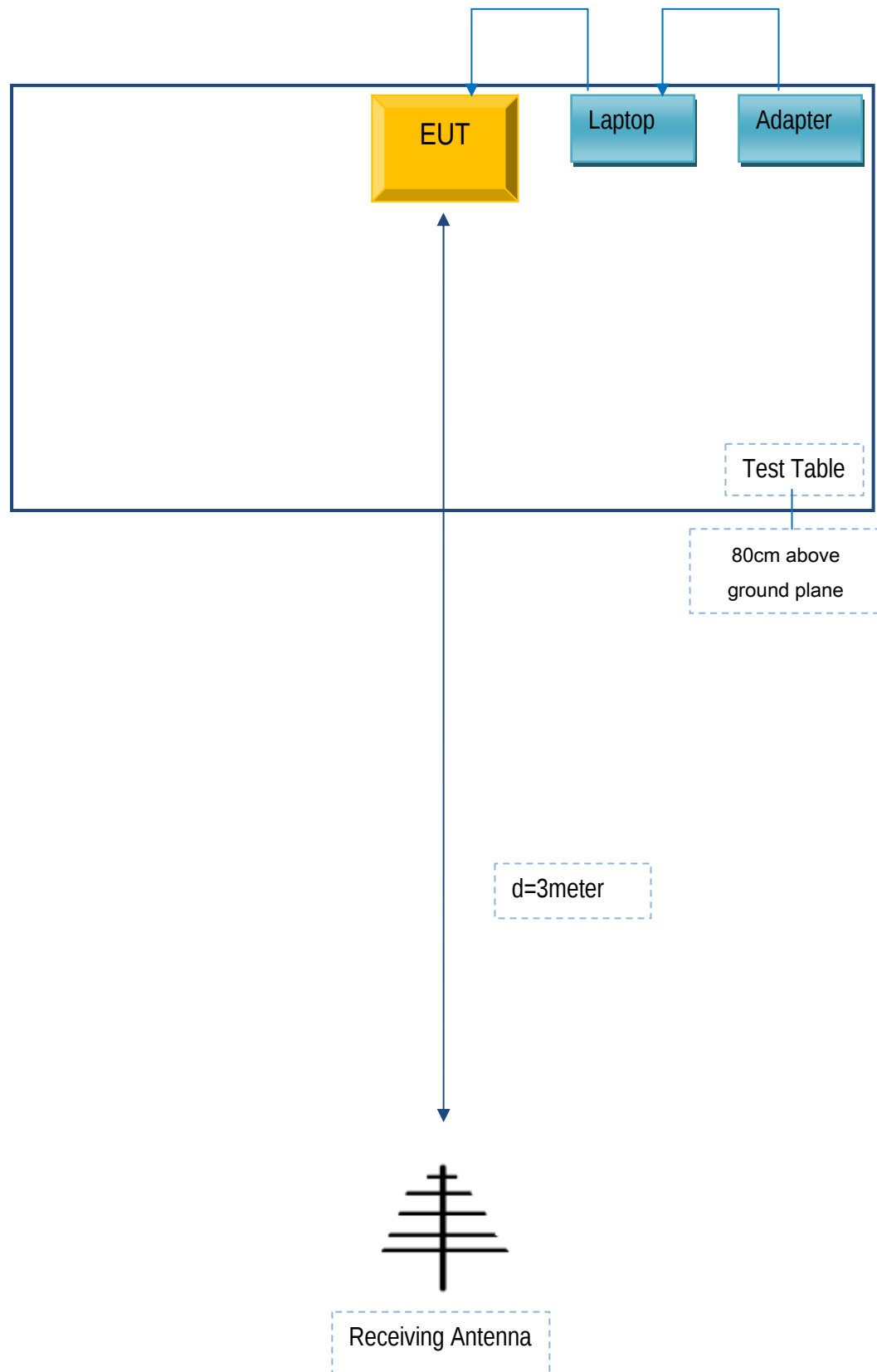
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



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Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description	Model	Calibration Date	Calibration Due Date
Lenovo	Lenovo Laptop	E40& 0579A52	N/A	N/A

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

Please see Attachment

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Annex E. DECLARATION OF SIMILARITY

N/A