
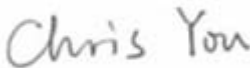



EMC TEST REPORT



Report No.: 15070087-FCC-R1

Supersede Report No.: N/A

Applicant	Changsha SunSky Electronic Design & Development Co., Ltd.	
Product Name	Voting Base Station	
Model No.	EA1200	
Test Standard	FCC Part 15 Subpart B Class B:2014, ANSI C63.4: 2014	
Test Date	April 14 to April 28, 2015	
Issue Date	May 4, 2015	
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"/>		
		
Kahn Yang 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

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
15070087-FCC-R1	NONE	Original	May 4, 2015


2. Customer information

Applicant Name	Changsha SunSky Electronic Design & Development Co., Ltd.
Applicant Add	Room1024, Building A, Biaozi Business Center No. 198 Xiang Fu Road, Changsha, China
Manufacturer	Changsha SunSky Electronic Design & Development Co., Ltd.
Manufacturer Add	Room1024, Building A, Biaozi Business Center No. 198 Xiang Fu Road, Changsha, 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	Radiated Emission Program-To Shenzhen v2.0

4. Equipment under Test (EUT) Information

Description of EUT:	Voting Base Station
Main Model:	EA1200
Serial Model:	N/A
Date EUT received:	April 14, 2015
Test Date(s):	April 14 to April 28, 2015
Type of Modulation:	GFSK
RF Operating Frequency (ies):	2403-2465 MHz
Equipment Category :	JBP
Input Power:	DC 5V Supply by USB Port
Trade Name :	 SunVote®
FCC ID:	WSVSUNVOTEBASE12X

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
-	-	-

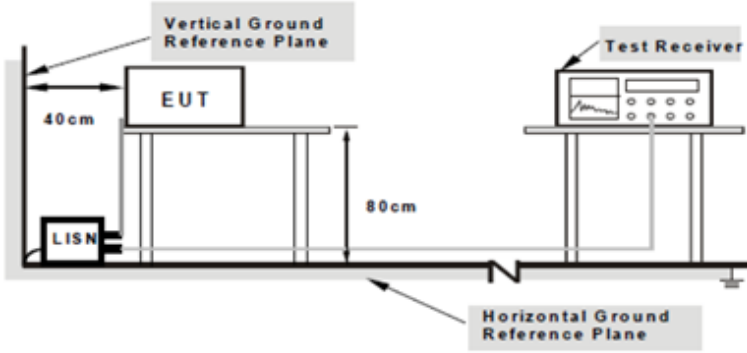
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature:	24°C
Relative Humidity:	56%
Atmospheric Pressure:	1012mbar
Test date:	April 28, 2015
Tested By:	Kahn Yang

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 50W/50mH EUT LISN, connected to filtered mains.
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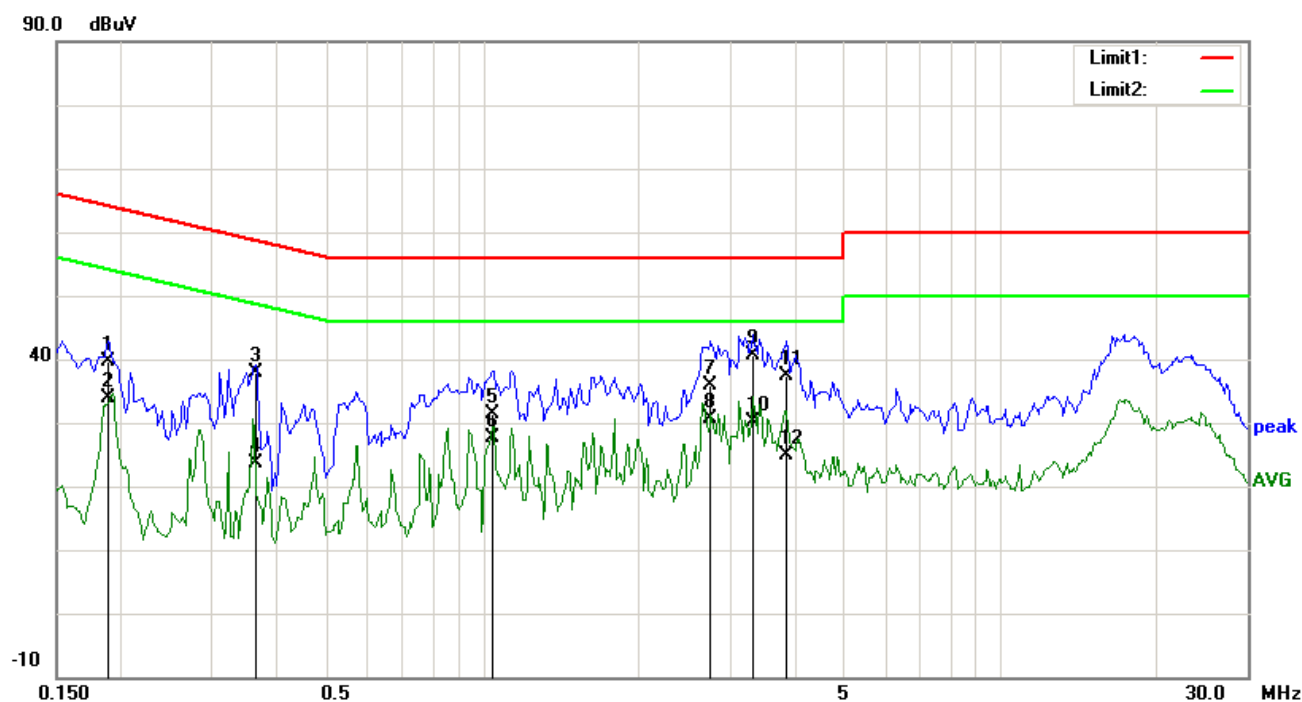
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	<p>3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.</p> <p>4. All other supporting equipment were powered separately from another main supply.</p> <p>5. The EUT was switched on and allowed to warm up to its normal operating condition.</p> <p>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.</p> <p>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.</p> <p>8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).</p>
Remark	
Result	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A

Test Data ☐ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☐ N/A

Test Mode 1: USB Mode

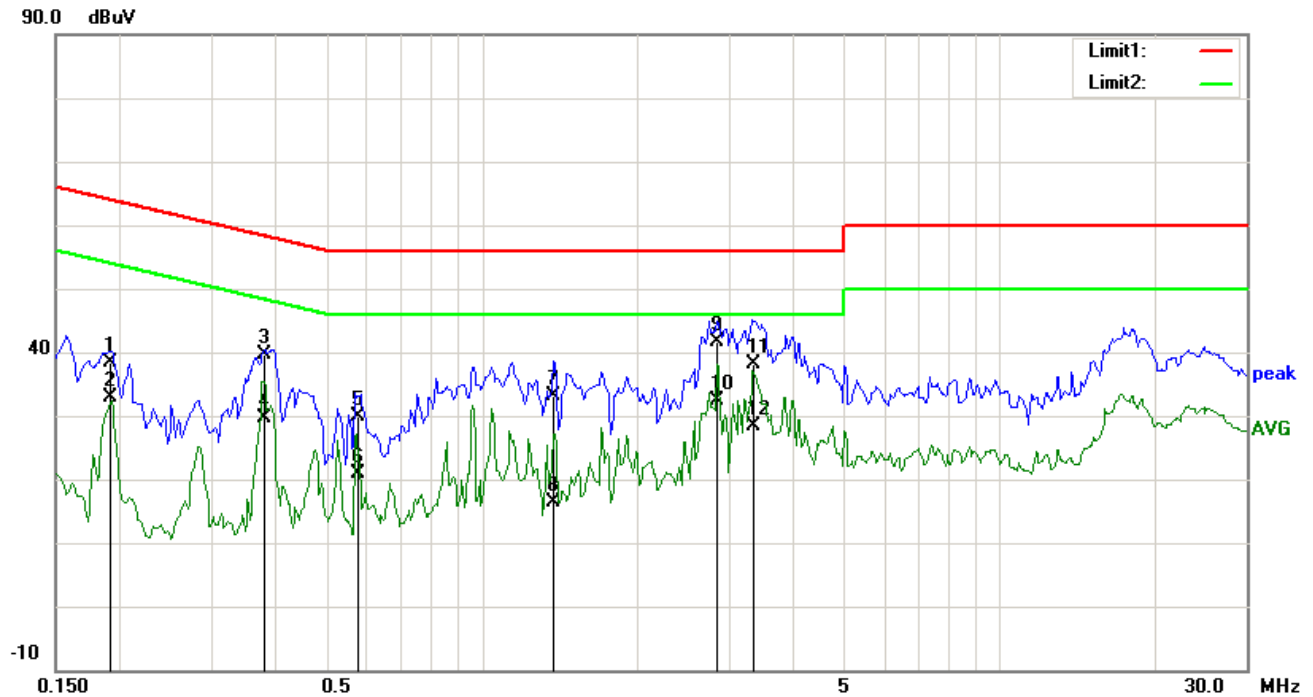


Test Data

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	0.1891	26.68	QP	13.05	39.73	64.08	-24.35	
2	L1	0.1891	20.83	AVG	13.05	33.88	54.08	-20.20	
3	L1	0.3648	25.57	QP	12.40	37.97	58.62	-20.65	
4	L1	0.3648	11.30	AVG	12.40	23.70	48.62	-24.92	
5	L1	1.0484	19.93	QP	11.40	31.33	56.00	-24.67	
6	L1	1.0484	16.23	AVG	11.40	27.63	46.00	-18.37	
7	L1	2.7555	24.42	QP	11.40	35.82	56.00	-20.18	
8	L1	2.7555	19.14	AVG	11.40	30.54	46.00	-15.46	
9	L1	3.3281	29.17	QP	11.40	40.57	56.00	-15.43	
10	L1	3.3281	18.80	AVG	11.40	30.20	46.00	-15.80	
11	L1	3.8750	26.04	QP	11.40	37.44	56.00	-18.56	
12	L1	3.8750	13.52	AVG	11.40	24.92	46.00	-21.08	

Test Mode 1: USB Mode



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	0.1914	25.24	QP	13.05	38.29	63.98	-25.69	
2	N	0.1914	19.84	AVG	13.05	32.89	53.98	-21.09	
3	N	0.3805	27.40	QP	12.34	39.74	58.27	-18.53	
4	N	0.3805	17.39	AVG	12.34	29.73	48.27	-18.54	
5	N	0.5762	18.09	QP	11.82	29.91	56.00	-26.09	
6	N	0.5762	8.99	AVG	11.82	20.81	46.00	-25.19	
7	N	1.3805	21.69	QP	11.45	33.14	56.00	-22.86	
8	N	1.3805	4.88	AVG	11.45	16.33	46.00	-29.67	
9	N	2.8531	30.11	QP	11.63	41.74	56.00	-14.26	
10	N	2.8531	20.74	AVG	11.63	32.37	46.00	-13.63	
11	N	3.3458	26.32	QP	11.69	38.01	56.00	-17.99	
12	N	3.3458	16.71	AVG	11.69	28.40	46.00	-17.60	

6.2 Radiated Emissions

Temperature	24°C
Relative Humidity	56%
Atmospheric Pressure	1012mbar
Test date :	April 28, 2015
Tested By :	Kahn Yang

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	
------------	--

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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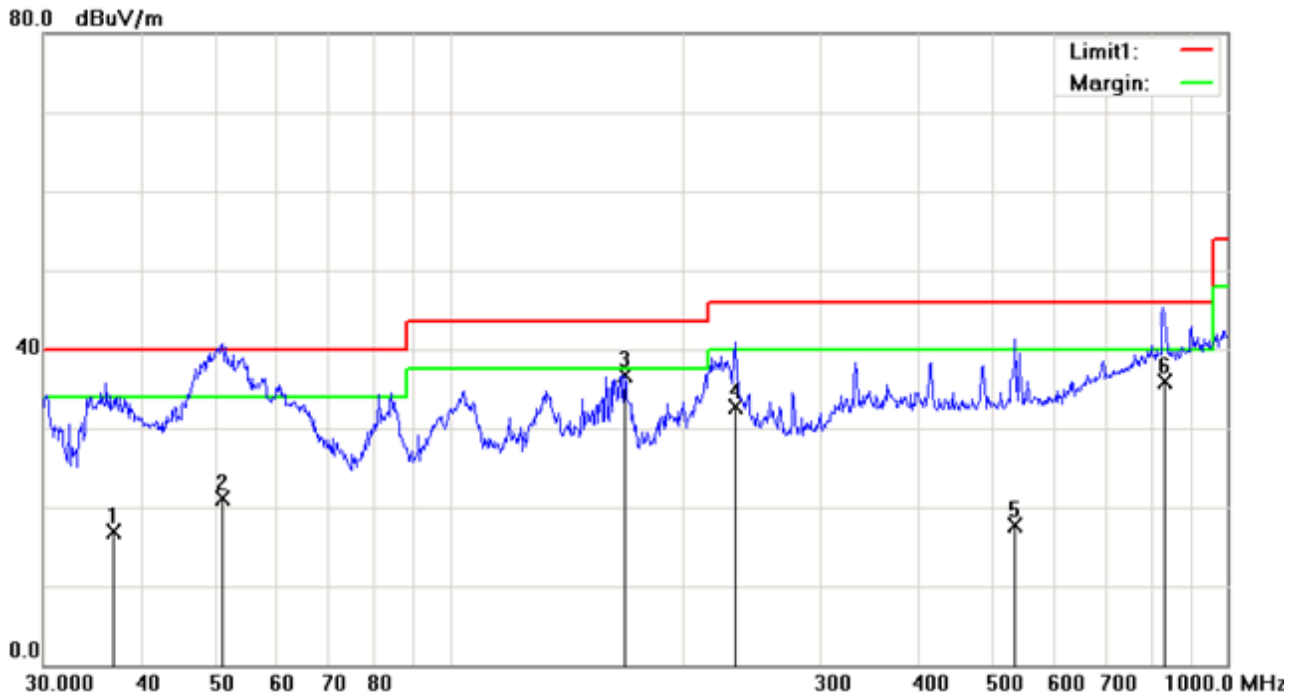
	<p>over a full rotation of the EUT) was chosen.</p> <p>b. The EUT was then rotated to the direction that gave the maximum emission.</p> <p>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</p> <p>3. The resolution bandwidth and video bandwidth of test receiver/spectrum 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)



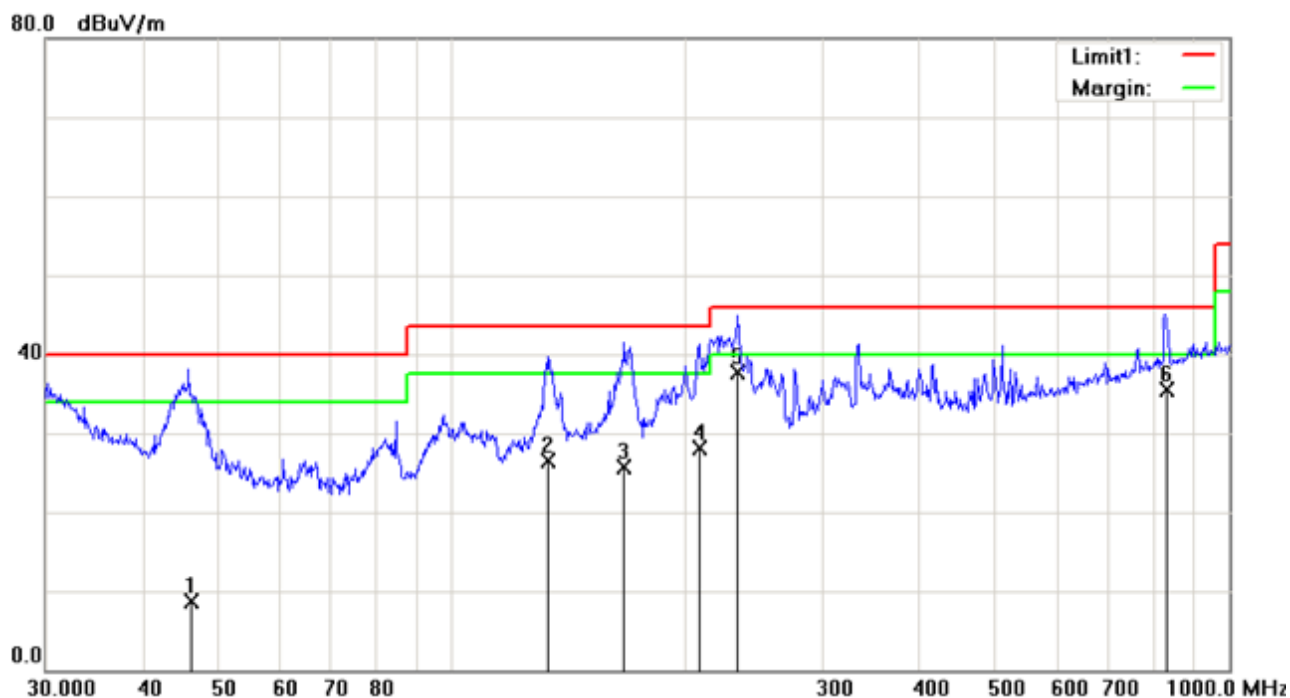
Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency (MHz)	Reading (dBμV/m)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (°)
1	V	36.8331	22.12	QP	-5.27	16.85	40.00	-23.15	100	161
2	V	50.8181	35.21	QP	-14.08	21.13	40.00	-18.87	100	244
3	V	167.8243	45.12	peak	-8.40	36.72	43.50	-6.78	200	154
4	V	232.3660	40.15	QP	-7.46	32.69	46.00	-13.31	200	207
5	V	532.9030	19.74	QP	-2.11	17.63	46.00	-28.37	118	360
6	V	831.0376	32.16	QP	3.82	35.98	46.00	-10.02	100	45

Above 1GHz

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



Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency (MHz)	Reading (dBμV/m)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (°)
1	H	46.3088	12.49	QP	-3.70	8.79	40.00	-31.21	100	188
2	H	133.0512	34.71	QP	-8.12	26.59	43.50	-16.91	200	252
3	H	166.5435	34.61	QP	-8.81	25.80	43.50	-17.70	200	237
4	H	207.7542	36.88	QP	-8.82	28.06	43.50	-15.44	100	96
5	H	233.0870	46.68	QP	-9.03	37.65	46.00	-8.35	100	100
6	H	830.7259	31.99	QP	3.57	35.56	46.00	-10.44	200	233

Above 1GHz

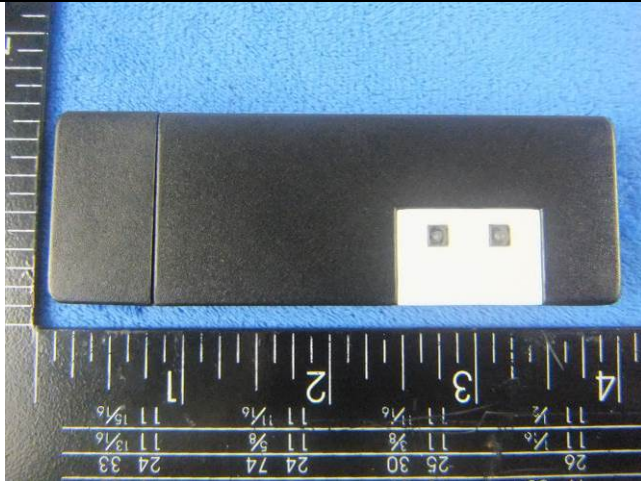
Note: The frequency that above 1GHz is mainly from the environment noise.

Annex A. TEST INSTRUMENT

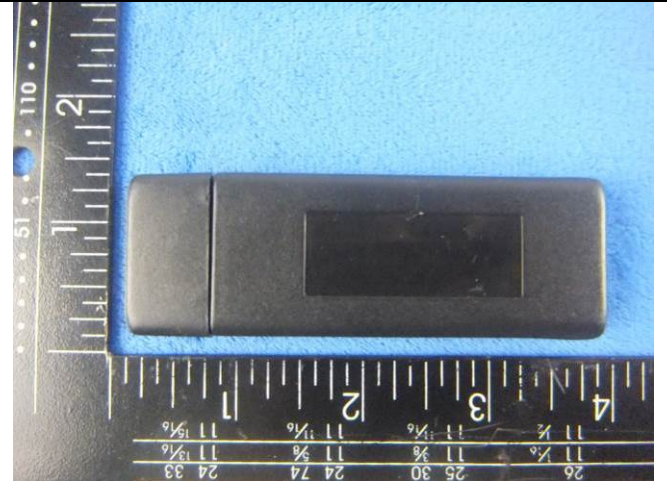
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/18/2014	09/17/2015	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191106	09/26/2014	09/25/2015	<input checked="" type="checkbox"/>
Line Impedance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

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo



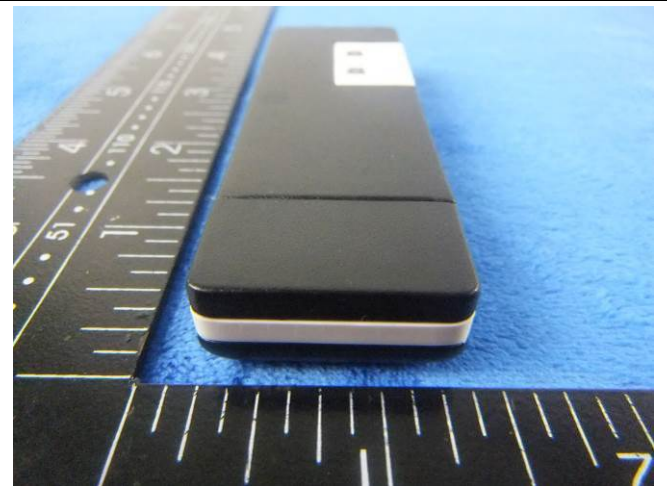
EUT - Front View



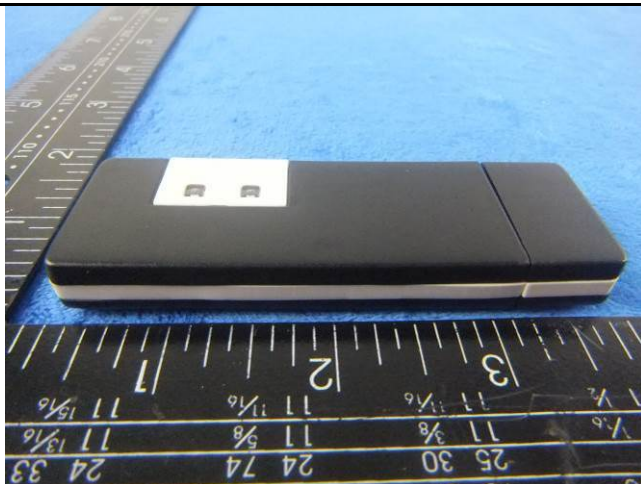
EUT - Rear View



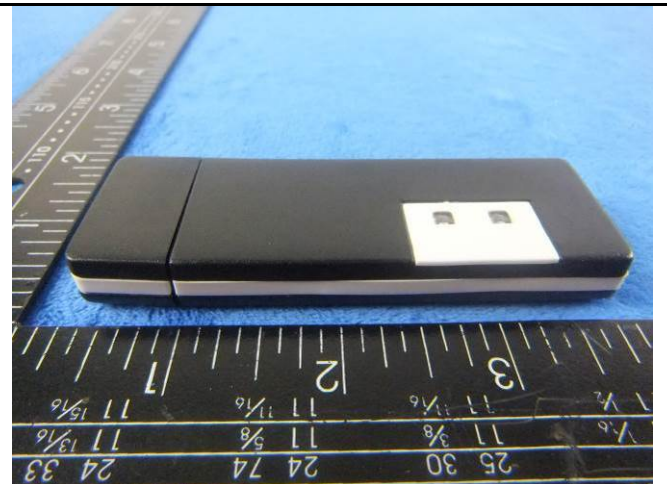
EUT - Top View



EUT - Bottom View

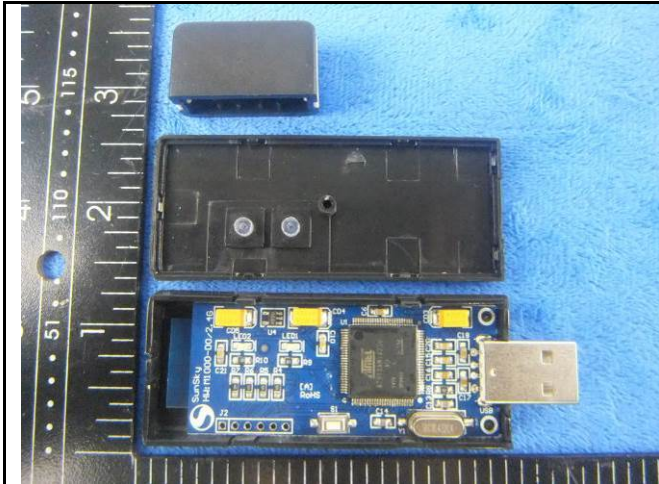


EUT - Left View

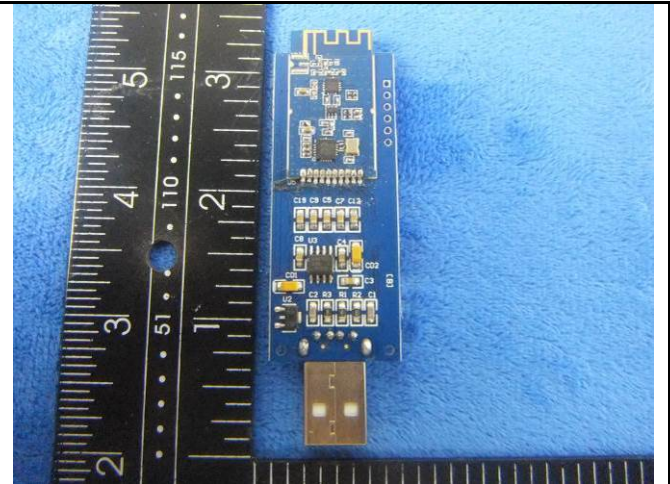


EUT - Right View

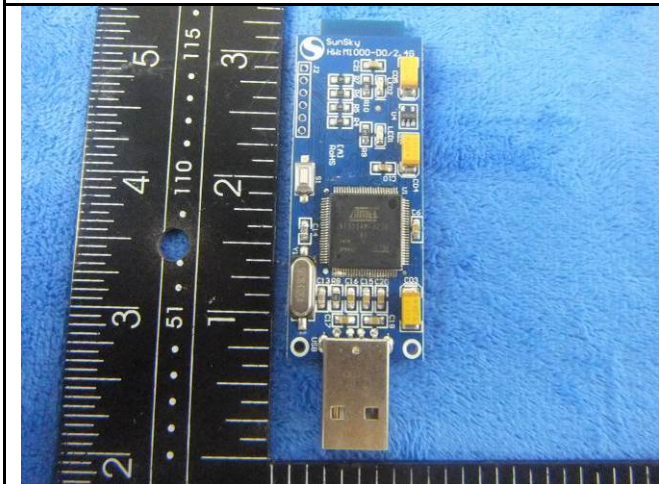
Annex B.ii. Photograph: EUT Internal Photo



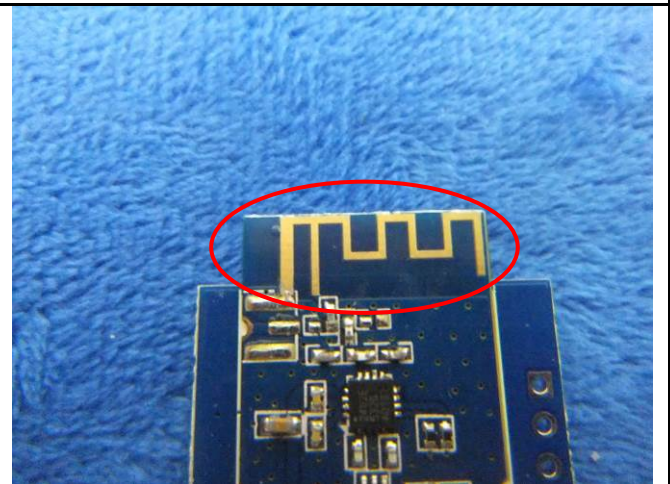
EUT - Uncover Front View



Mainboard - Front View



Mainboard - Rear View

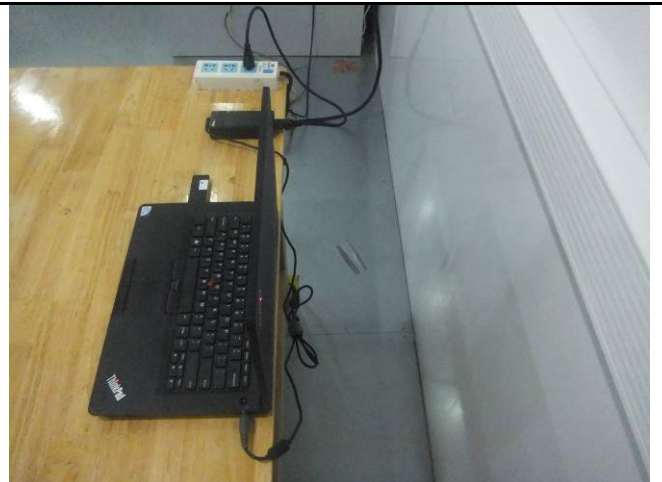


Antenna View

Annex B.iii. Photograph: Test Setup Photo



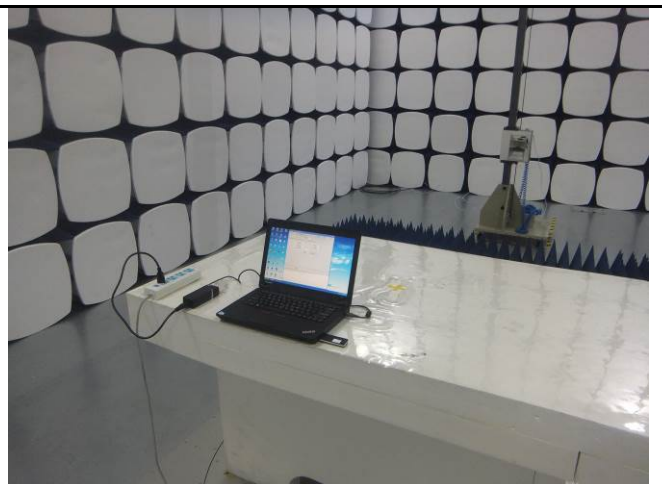
Conducted Emissions Test Setup Front View



Conducted Emissions Test Setup Side View



Radiated Spurious Emissions Test Setup Below 1GHz

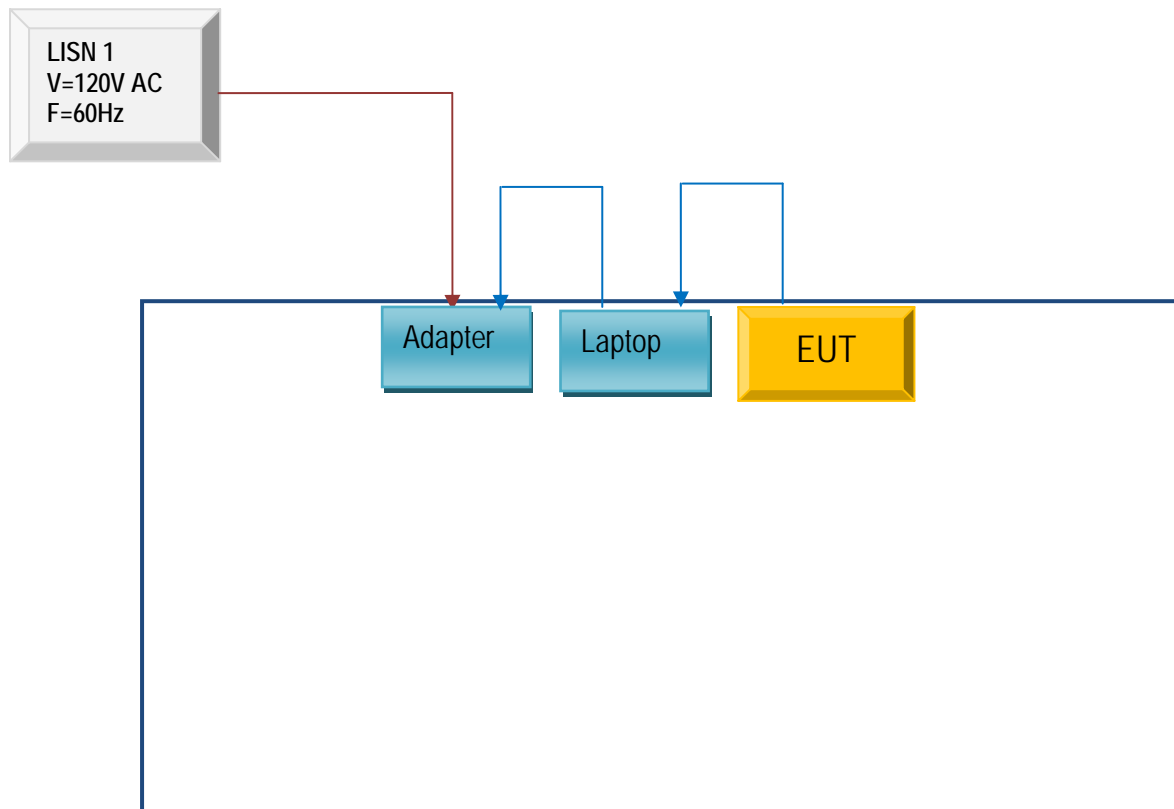


Radiated Spurious Emissions Test Setup Above
1GHz

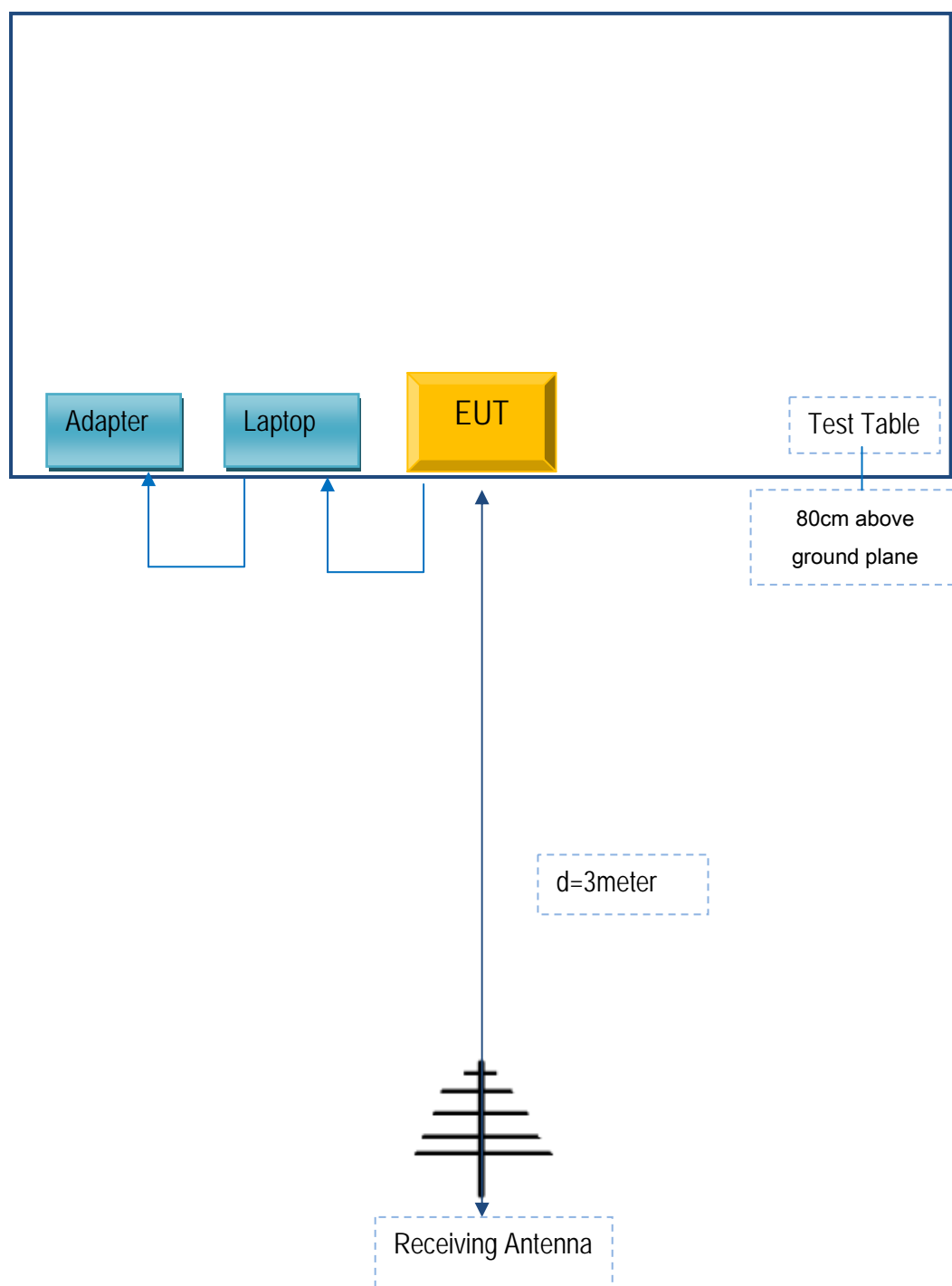
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for AC Line 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.

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