

EMC TEST REPORT



Report No.: 15070819-FCC-E2

Supersede Report No.: N/A

Applicant	Shenzhen Creative Industry Co., Ltd.	
Product Name	Video Baby Monitor	
Model No.	OT240M	
Serial No.	N/A	
Test Standard	FCC Part 15 Subpart B Class B:2014, ANSI C63.4: 2014	
Test Date	September 10 to November 05, 2015	
Issue Date	November 11, 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"/>	
<i>Winnie Zhang</i>	<i>David Huang</i>	
Winnie Zhang 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
15070819-FCC-E2	NONE	Original	October 14, 2015

2. Customer information

Applicant Name	Shenzhen Creative Industry Co., Ltd.
Applicant Add	2/F, Block 3, Nanyou Tian'an Industry Town, Guangd, Shenzhen, China,518054
Manufacturer	MC Devices Co., Ltd.
Manufacturer Add	Suite 516 BLD 4, National Software Base, Ke ji zhong 2 Road, Shenzhen Hi-Tech Park, Shenzhen, 518.57, 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:	Video Baby Monitor
Main Model:	OT240M
Serial Model:	N/A
Date EUT received:	September 09, 2015
Test Date(s):	September 10 to November 05, 2015
Equipment Category :	CYY
Antenna Gain:	FHSS: 3dBi 433MHz Receiver: 0dBi
Type of Modulation:	FHSS
RF Operating Frequency (ies):	FHSS: 2409.75-2475 MHz Receiver: 433MHz
Number of Channels:	FHSS: 19CH Receiver: 1CH
Port:	USB Port
Input Power:	Adapter: Model :PS10E050K2000UU Input :100-240Vac, 50/60Hz, 0.35A Output :5.0Vdc, 2000mA
Trade Name :	N/A
FCC ID:	A49IPC240

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
-	-	-

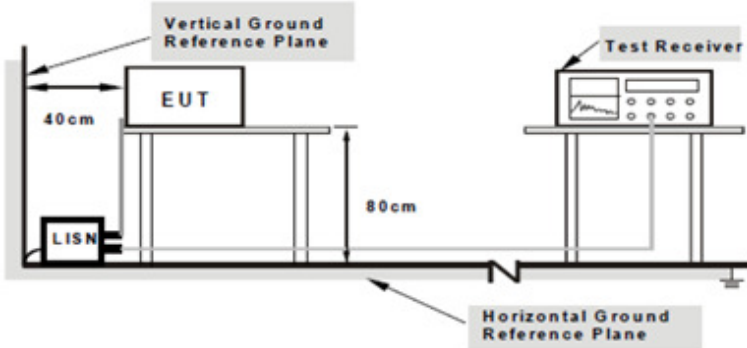
6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	23°C
Relative Humidity	54%
Atmospheric Pressure	1030mbar
Test date :	October 30, 2015
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable														
47CFR§15.107	a)	<p>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 [μ] H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges.</p> <table border="1"> <thead> <tr> <th rowspan="2">Frequency ranges (MHz)</th> <th colspan="2">Limit (dBμV)</th> </tr> <tr> <th>QP</th> <th>Average</th> </tr> </thead> <tbody> <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> </tbody> </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	<input checked="" type="checkbox"/>
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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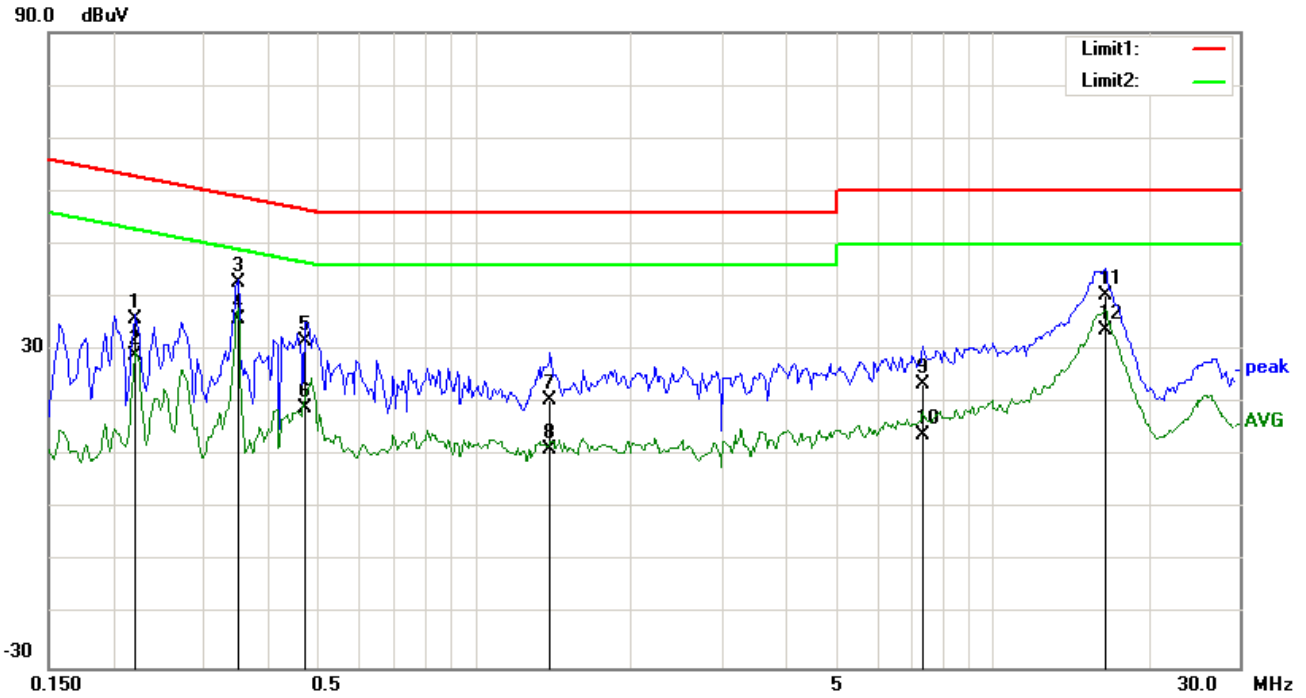
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	<ol style="list-style-type: none"> 3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. 4. All other supporting equipment were powered separately from another main supply. 5. The EUT was switched on and 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 1:	Receiver 433MHz Mode
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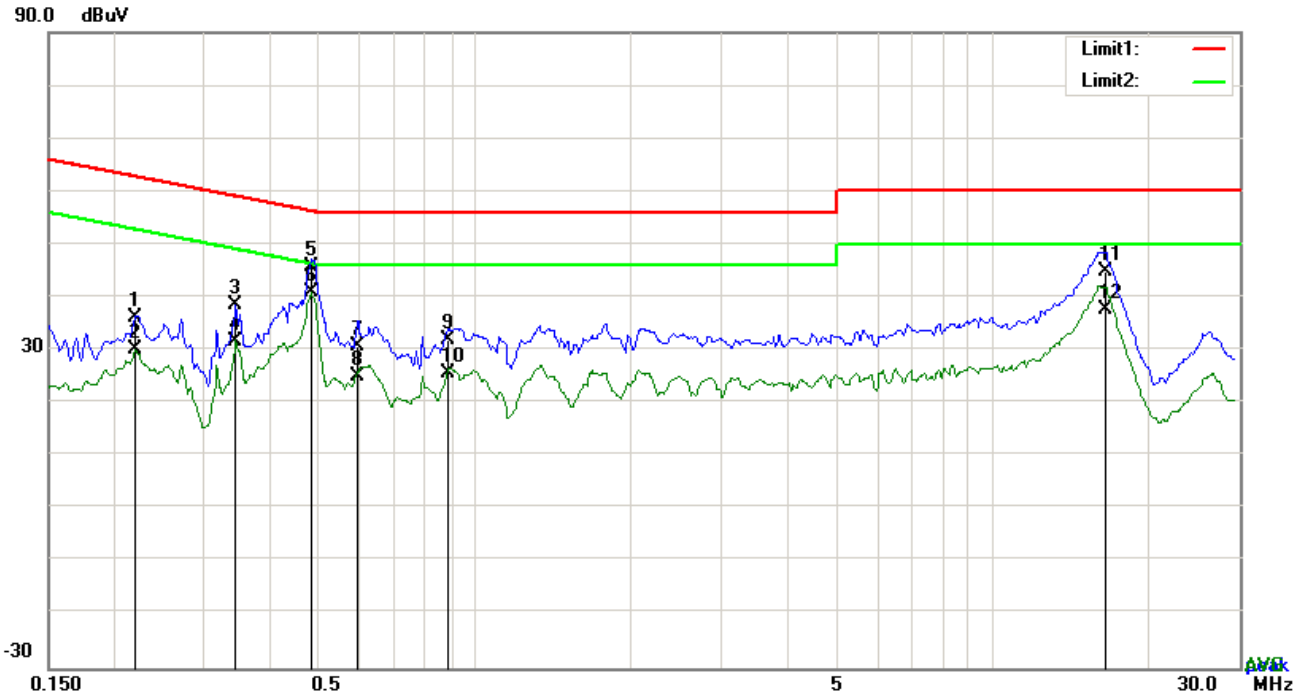


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.2202	25.86	QP	10.03	35.89	62.81	-26.92
2	L1	0.2202	18.83	AVG	10.03	28.86	52.81	-23.95
3	L1	0.3489	32.59	QP	10.03	42.62	58.99	-16.37
4	L1	0.3489	25.90	AVG	10.03	35.93	48.99	-13.06
5	L1	0.4698	21.59	QP	10.03	31.62	56.52	-24.90
6	L1	0.4698	9.04	AVG	10.03	19.07	46.52	-27.45
7	L1	1.3980	10.38	QP	10.03	20.41	56.00	-35.59
8	L1	1.3980	1.21	AVG	10.03	11.24	46.00	-34.76
9	L1	7.3446	13.45	QP	10.11	23.56	60.00	-36.44
10	L1	7.3446	3.88	AVG	10.11	13.99	50.00	-36.01
11	L1	16.5369	30.00	QP	10.25	40.25	60.00	-19.75
12	L1	16.5369	23.54	AVG	10.25	33.79	50.00	-16.21

Test Mode 1:	Receiver 433MHz Mode
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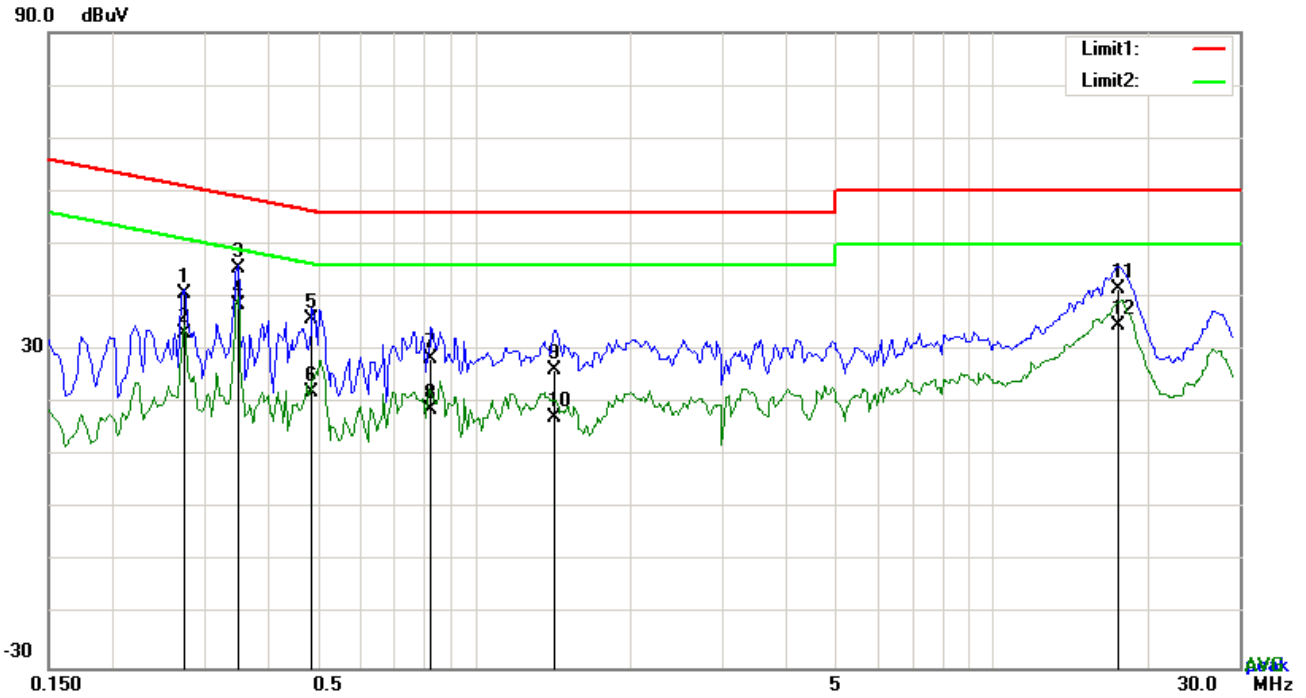


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.2202	26.19	QP	10.02	36.21	62.81	-26.60
2	N	0.2202	20.25	AVG	10.02	30.27	52.81	-22.54
3	N	0.3450	28.42	QP	10.02	38.44	59.08	-20.64
4	N	0.3450	21.63	AVG	10.02	31.65	49.08	-17.43
5	N	0.4815	35.58	QP	10.02	45.60	56.31	-10.71
6	N	0.4815	31.03	AVG	10.02	41.05	46.31	-5.26
7	N	0.5946	20.74	QP	10.02	30.76	56.00	-25.24
8	N	0.5946	15.05	AVG	10.02	25.07	46.00	-20.93
9	N	0.8871	22.00	QP	10.03	32.03	56.00	-23.97
10	N	0.8871	15.48	AVG	10.03	25.51	46.00	-20.49
11	N	16.5525	34.74	QP	10.22	44.96	60.00	-15.04
12	N	16.5525	27.52	AVG	10.22	37.74	50.00	-12.26

Test Mode 1:	Receiver 433MHz Mode
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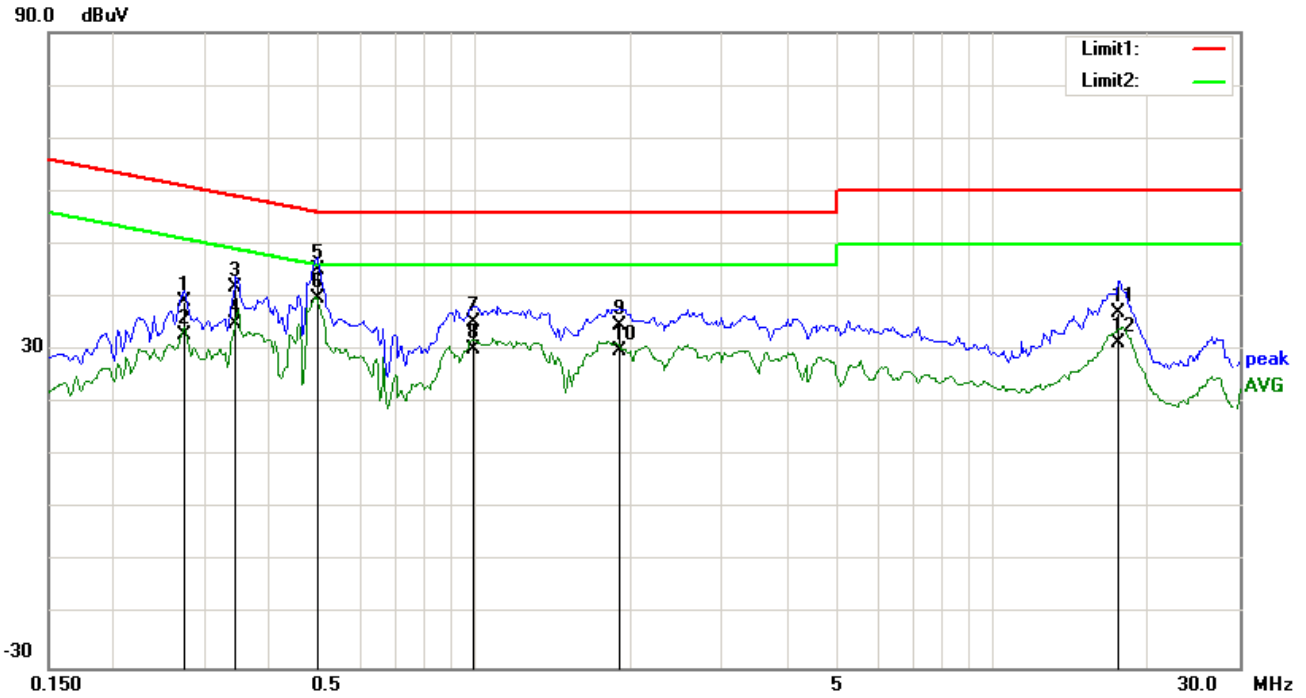


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.2748	30.65	QP	10.03	40.68	60.97	-20.29
2	L1	0.2748	23.11	AVG	10.03	33.14	50.97	-17.83
3	L1	0.3489	35.53	QP	10.03	45.56	58.99	-13.43
4	L1	0.3489	28.45	AVG	10.03	38.48	48.99	-10.51
5	L1	0.4854	25.85	QP	10.03	35.88	56.25	-20.37
6	L1	0.4854	12.15	AVG	10.03	22.18	46.25	-24.07
7	L1	0.8247	18.20	QP	10.03	28.23	56.00	-27.77
8	L1	0.8247	8.78	AVG	10.03	18.81	46.00	-27.19
9	L1	1.4331	16.19	QP	10.04	26.23	56.00	-29.77
10	L1	1.4331	7.20	AVG	10.04	17.24	46.00	-28.76
11	L1	17.5392	31.31	QP	10.26	41.57	60.00	-18.43
12	L1	17.5392	24.40	AVG	10.26	34.66	50.00	-15.34

Test Mode 1:	Receiver 433MHz Mode
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Test Data

Phase Neutral Plot at 240Vac, 60Hz

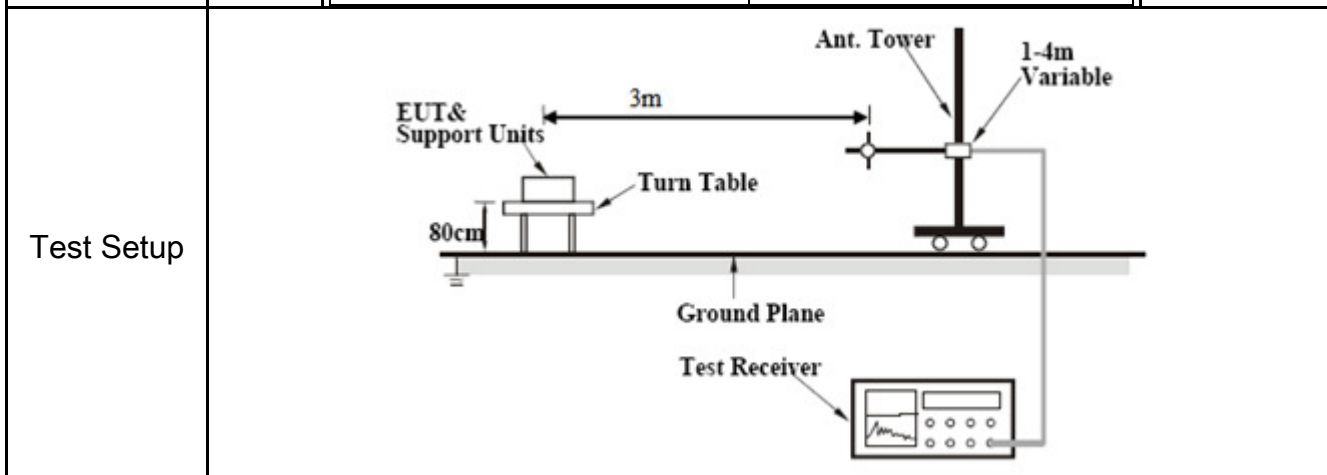
No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.2748	29.20	QP	10.02	39.22	60.97	-21.75
2	N	0.2748	22.69	AVG	10.02	32.71	50.97	-18.26
3	N	0.3450	31.92	QP	10.02	41.94	59.08	-17.14
4	N	0.3450	25.04	AVG	10.02	35.06	49.08	-14.02
5	N	0.4971	35.08	QP	10.02	45.10	56.05	-10.95
6	N	0.4971	29.66	AVG	10.02	39.68	46.05	-6.37
7	N	0.9963	25.21	QP	10.03	35.24	56.00	-20.76
8	N	0.9963	20.22	AVG	10.03	30.25	46.00	-15.75
9	N	1.9050	24.76	QP	10.04	34.80	56.00	-21.20
10	N	1.9050	19.79	AVG	10.04	29.83	46.00	-16.17
11	N	17.5626	26.81	QP	10.23	37.04	60.00	-22.96
12	N	17.5626	21.22	AVG	10.23	31.45	50.00	-18.55

6.2 Radiated Emissions

Temperature	23°C
Relative Humidity	54%
Atmospheric Pressure	1030mbar
Test date :	October 30, 2015
Tested By :	Winnie Zhang

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	<input checked="" type="checkbox"/>										
		<table border="1"> <thead> <tr> <th>Frequency range (MHz)</th> <th>Field Strength ($\mu\text{V/m}$)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">30 – 88</td> <td style="text-align: center;">100</td> </tr> <tr> <td style="text-align: center;">88 – 216</td> <td style="text-align: center;">150</td> </tr> <tr> <td style="text-align: center;">216 960</td> <td style="text-align: center;">200</td> </tr> <tr> <td style="text-align: center;">Above 960</td> <td style="text-align: center;">500</td> </tr> </tbody> </table>		Frequency range (MHz)	Field Strength ($\mu\text{V/m}$)	30 – 88	100	88 – 216	150	216 960	200	Above 960	500
		Frequency range (MHz)		Field Strength ($\mu\text{V/m}$)									
		30 – 88		100									
		88 – 216		150									
216 960	200												
Above 960	500												



Procedure	1.	2.
	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:
	a.	Vertical or horizontal polarization (whichever gave the higher emission level

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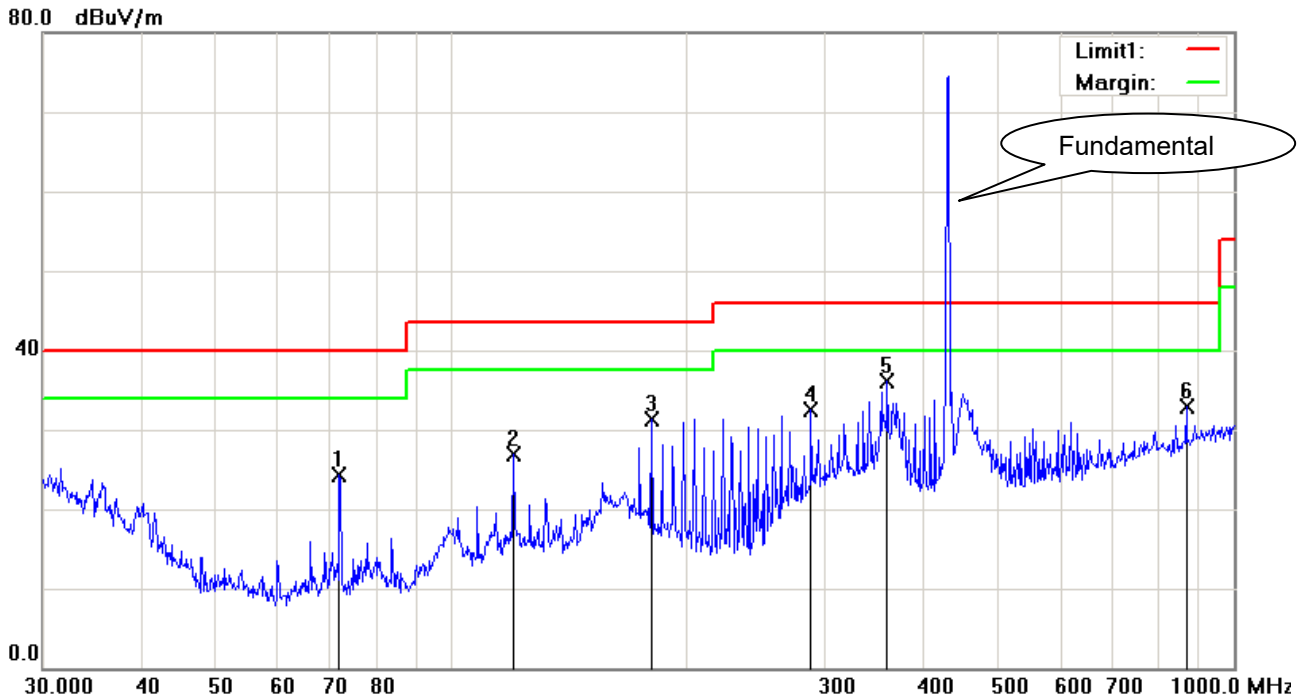
	<p>over a full rotation of the EUT) was chosen.</p> <p>b. The EUT was then rotated to the direction that gave the maximum emission.</p> <p>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</p> <p>3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy 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. 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%)</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 1:	Receiver 433MHz Mode
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Below 1GHz



Test Data

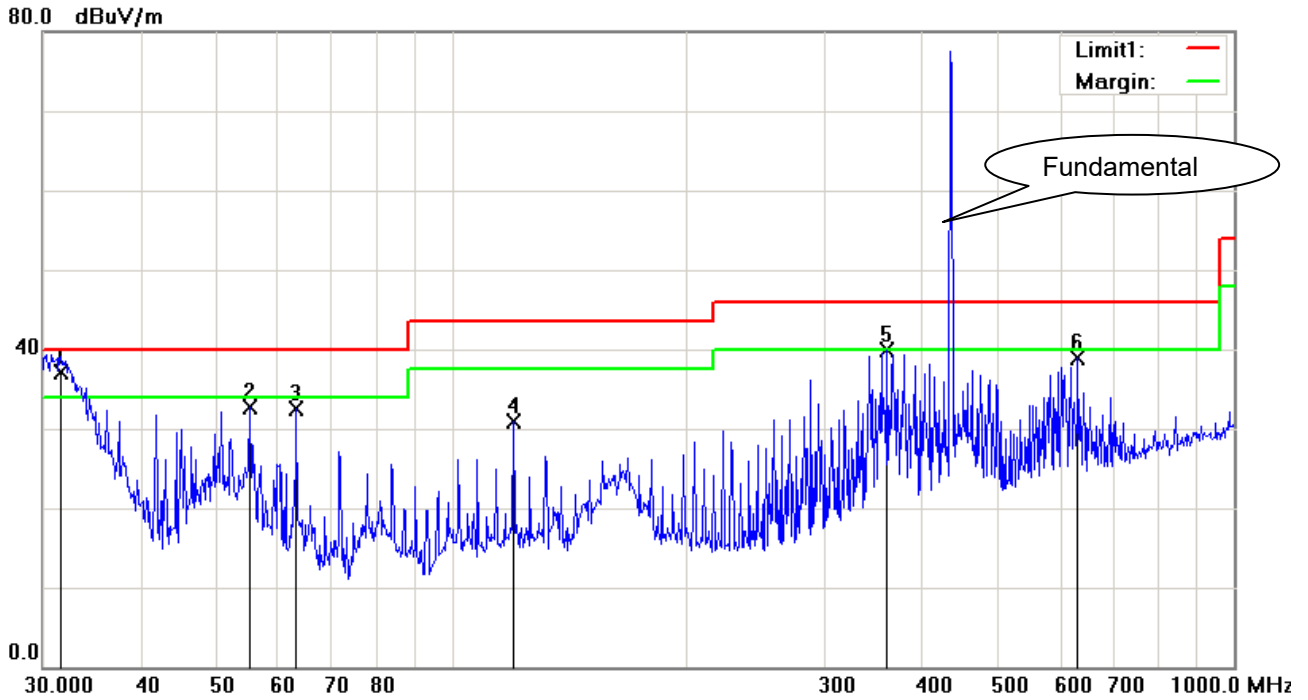
Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	H	71.8320	37.89	peak	-13.66	24.23	40.00	-15.77	100	181
2	H	119.8556	34.31	peak	-7.33	26.98	43.50	-16.52	100	248
3	H	180.0165	41.26	peak	-9.89	31.37	43.50	-12.13	100	113
4	H	287.9904	39.99	peak	-7.45	32.54	46.00	-13.46	100	31
6	H	360.4477	41.38	peak	-5.22	36.16	46.00	-9.84	100	244

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
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	V	31.6202	38.55	QP	-1.45	37.10	40.00	-2.90	100	141
2	V	55.2207	46.50	peak	-13.79	32.71	40.00	-7.29	100	6
3	V	63.3132	46.69	peak	-14.09	32.60	40.00	-7.40	100	6
4	V	119.8556	38.31	peak	-7.33	30.98	43.50	-12.52	100	283
6	V	360.4477	45.17	peak	-5.22	39.95	46.00	-6.05	100	177

Above 1GHz

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

Annex A. TEST INSTRUMENT

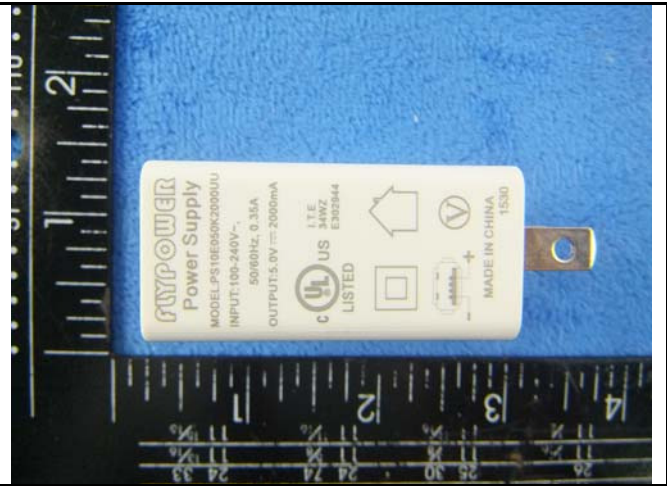
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
EMI test receiver	ESCS30	8471241027	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191106	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
Line Impedance Stabilization Network	LI-125A	191107	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
LISN	ISN T800	34373	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
Transient Limiter	LIT-153	531118	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>
Radiated Emissions					
EMI test receiver	ESL6	100262	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/01/2015	08/31/2016	<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	09/21/2015	09/20/2016	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna	AH-118	71259	09/24/2015	09/23/2016	<input checked="" type="checkbox"/>

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo



Whole Package - Top View



Adapter - Front View



EUT – Front View



EUT – Rear View



EUT - Top View



EUT - Bottom View

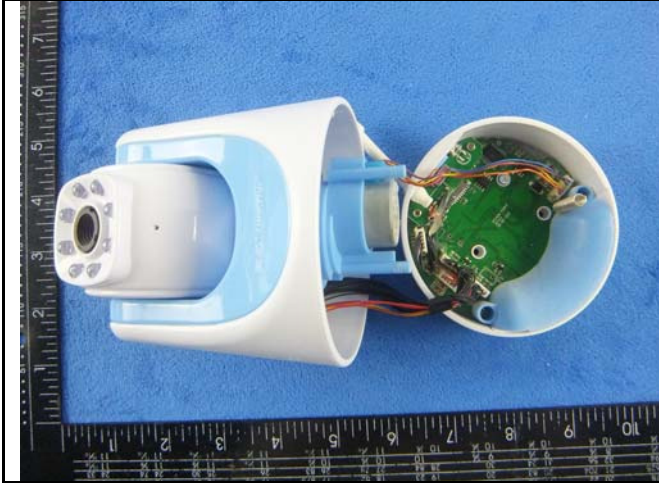


EUT - Left View

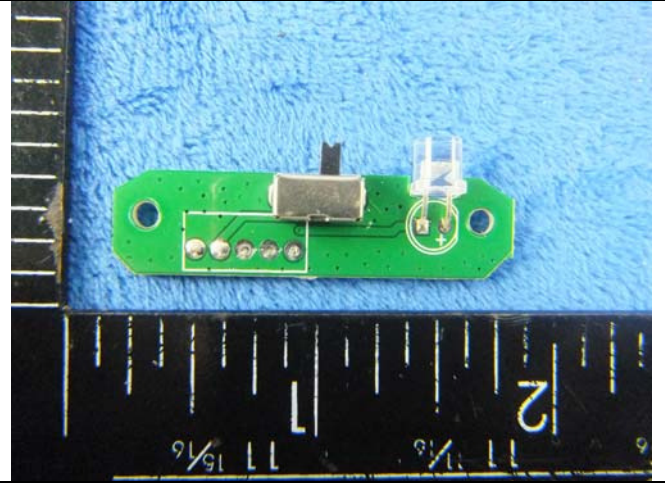


EUT - Right View

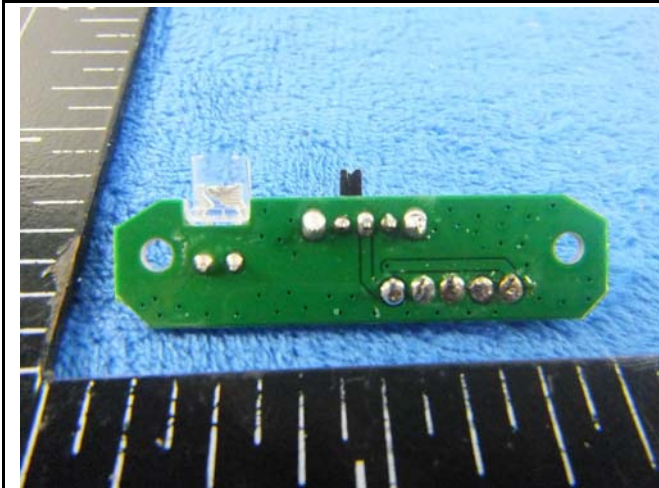
Annex B.ii. Photograph: EUT Internal Photo



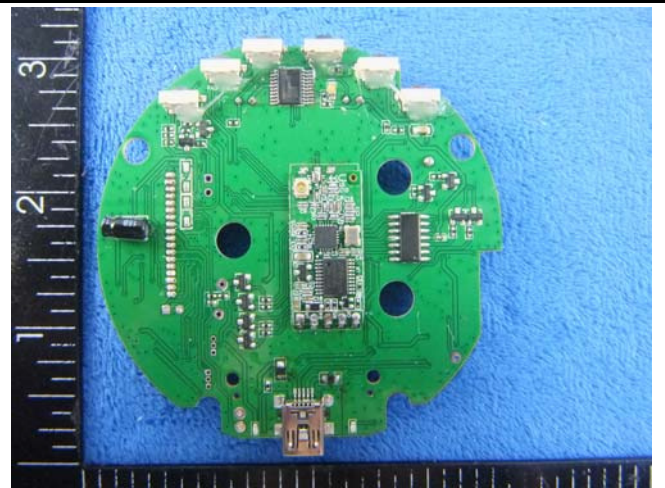
EUT - Uncover Front View 1



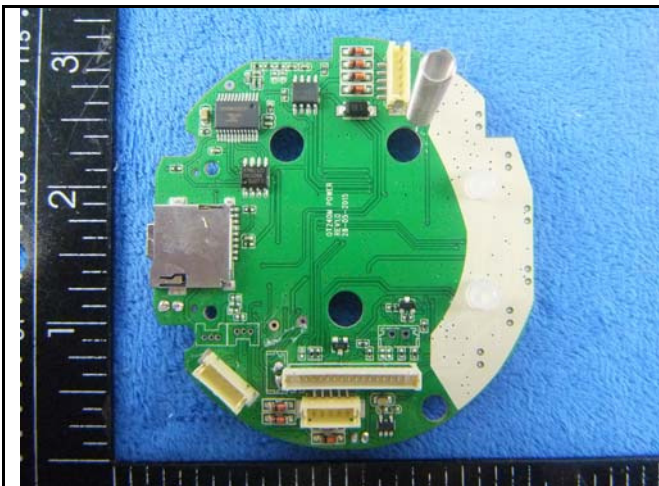
Small Mainboard - Front View



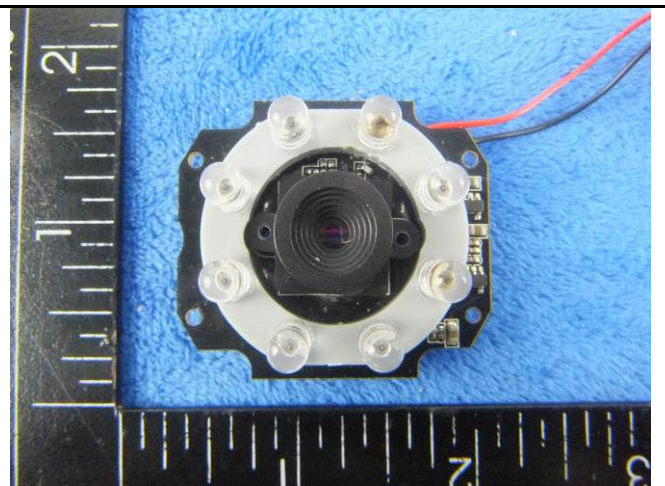
Small Mainboard - Rear View



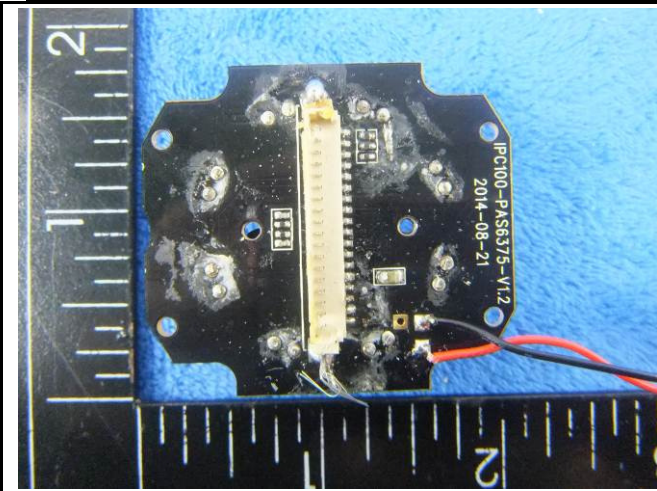
Mainboard - Front View



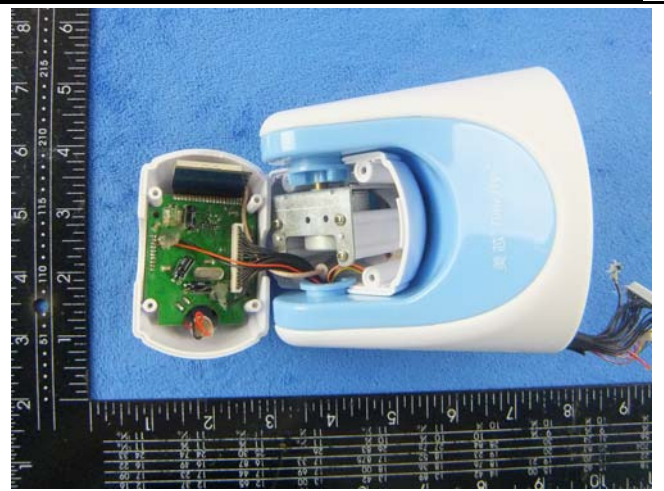
Mainboard - Rear View



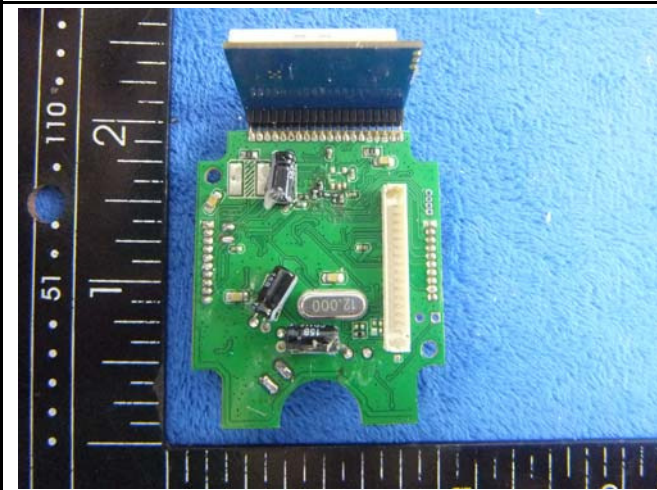
Camera - Front View



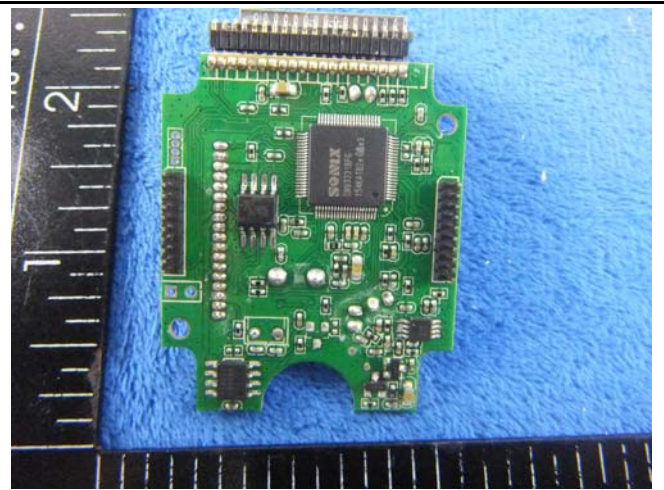
Camera - Rear View



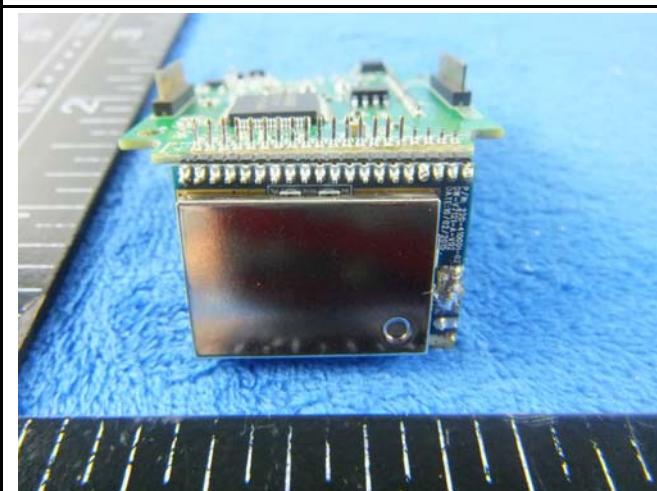
EUT - Uncover Front View 2



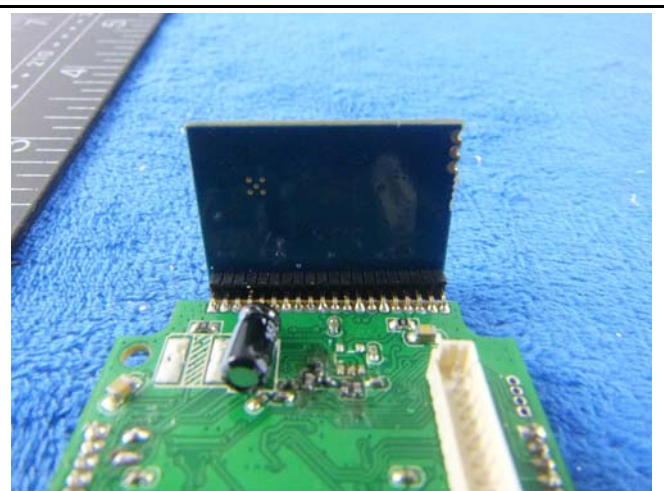
Connecting Board- Front View



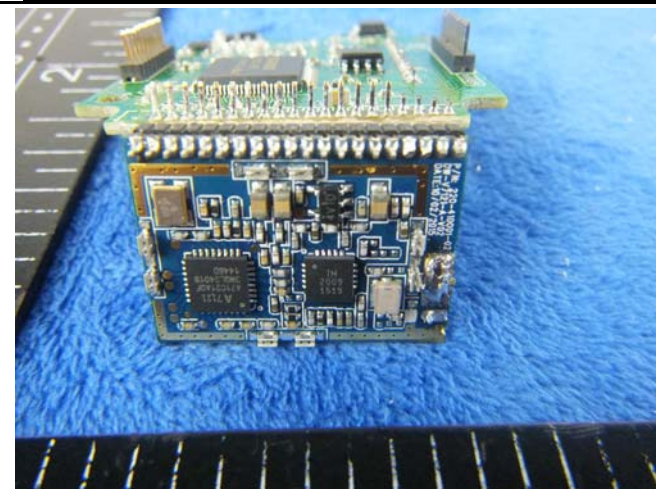
Connecting Board - Rear View



FHSS Board with Shielding - Front View



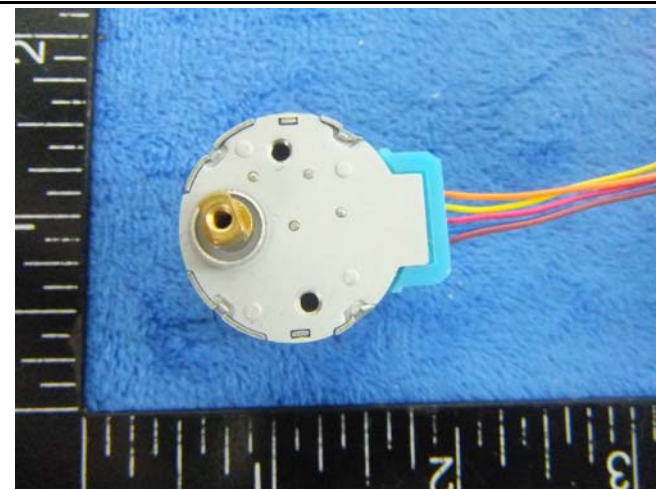
FHSS Board - Rear View



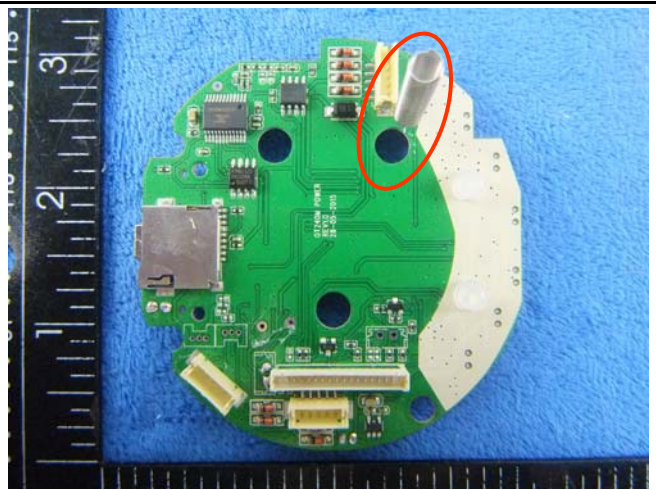
FHSS Board without shielding - Front View



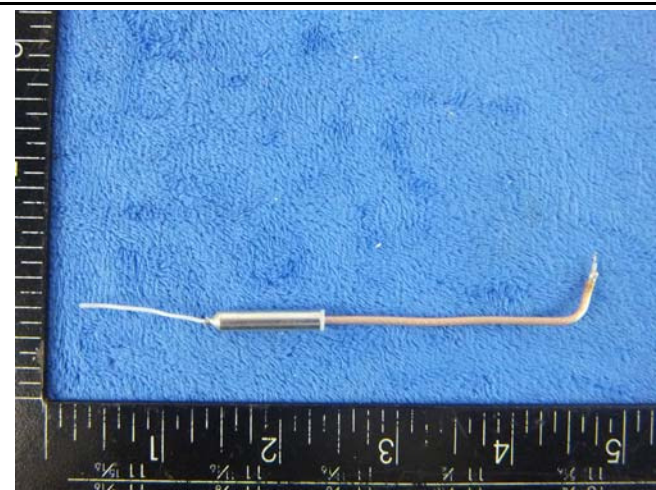
Motor – Front View



Motor – Rear View



433MHz Receiver - Antenna View



FHSS- Antenna View

Annex B.iii. Photograph: Test Setup Photo



Conducted Emissions Test Setup – 433MHz Front View



Conducted Emissions Test Setup – 433MHz Side View



Radiated Emissions Test Setup Below 1GHz– 433MHz Front View

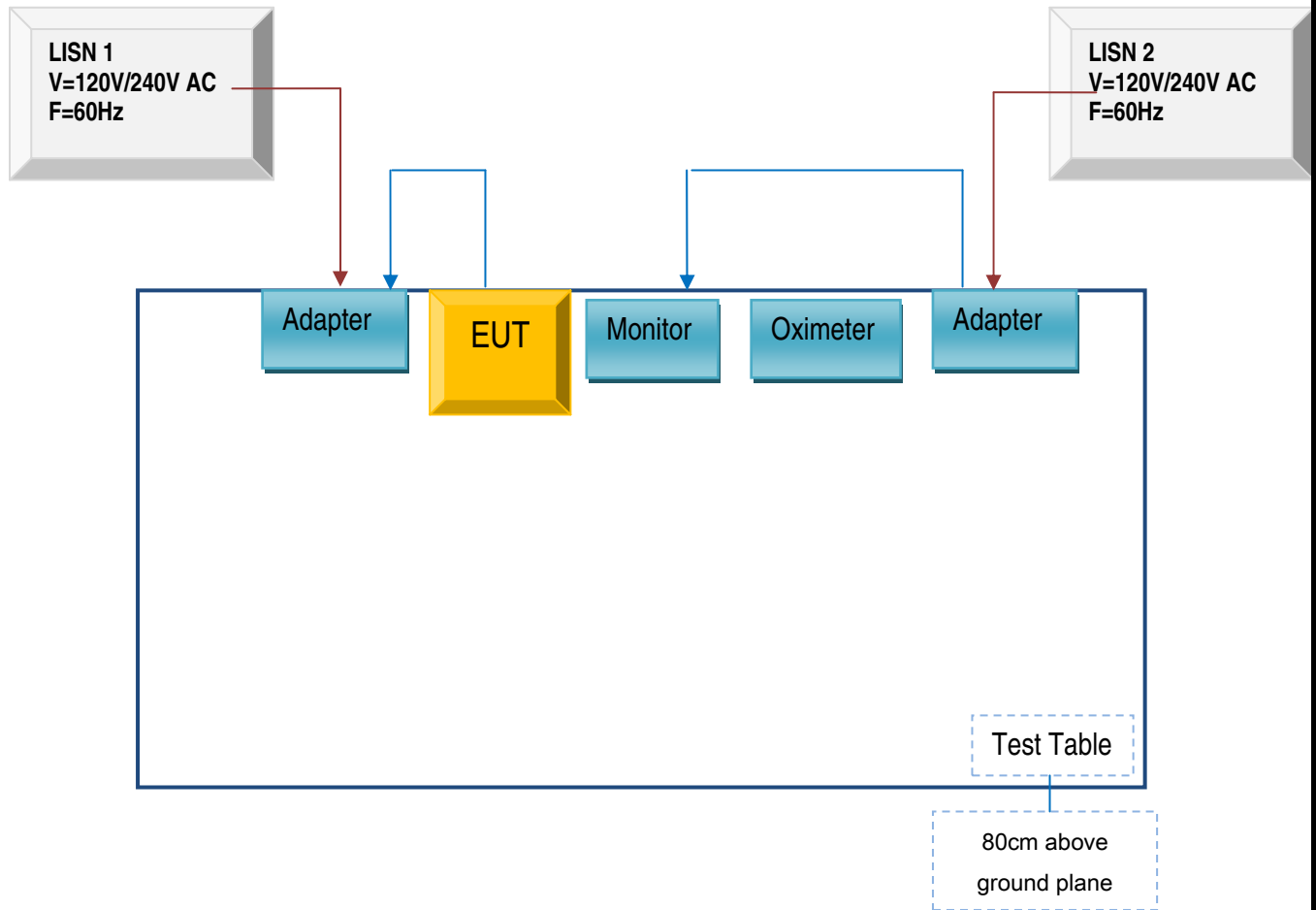


Radiated Emissions Test Setup Above 1GHz – 433MHz Side View

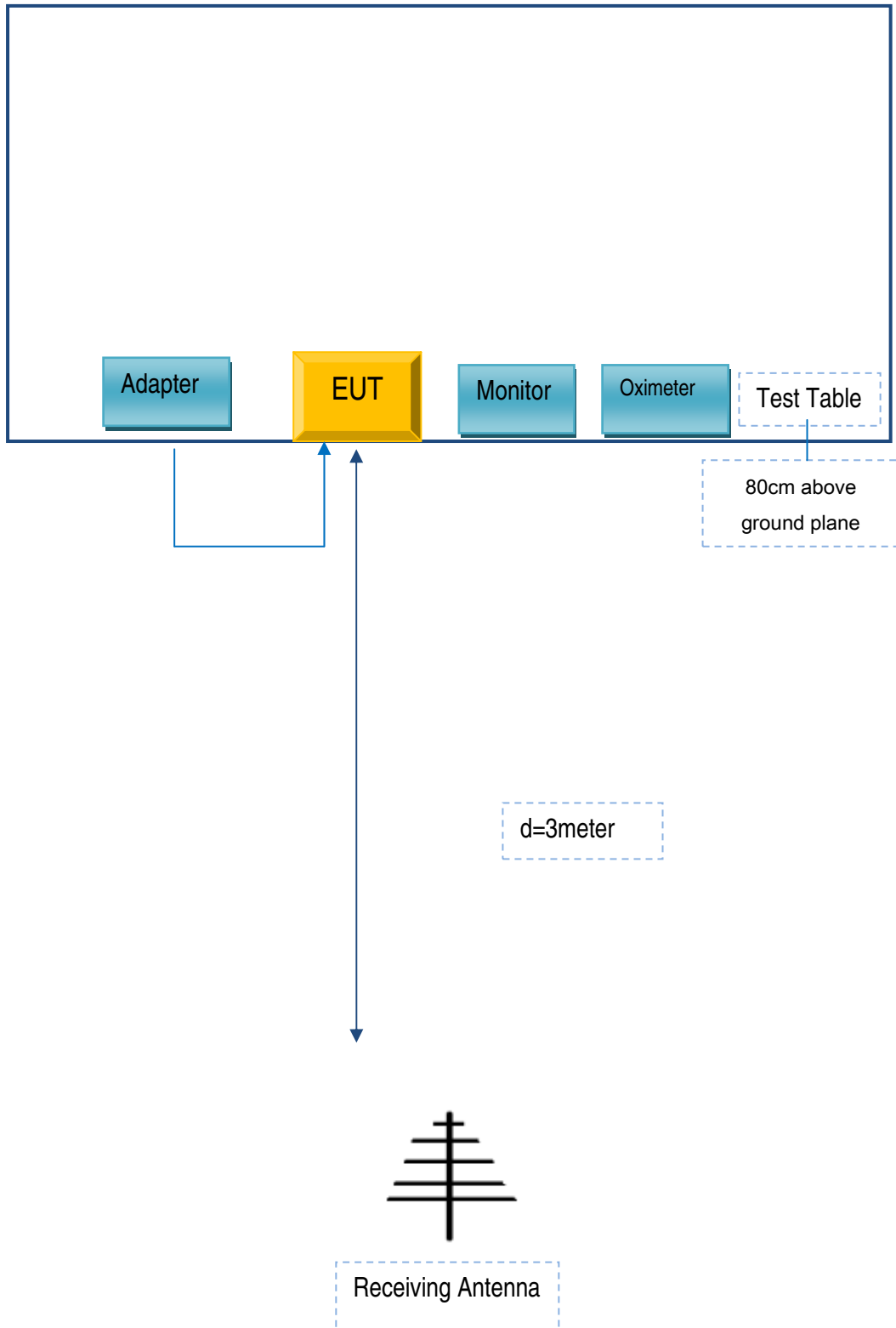
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

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	Serial No
Shenzhen Creative Industry Co., Ltd.	Adapter	PS10E050K2000UU	KL15032015
Shenzhen Creative Industry Co., Ltd.	Monitor	N/A	N/A
Shenzhen Creative Industry Co., Ltd.	Oximerer	PC-68A	N/A

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	XM18702253

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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