TEST REPORT

Applicant: Ambient, LLC dba Ambient Weather

Address of Applicant: 6845 W. Frye Road, Chandler, AZ 85226

Equipment Under Test (EUT)

Product Name: Weather Station

Model No.: WS11, WS110, WS111, WS112,WS115, WS116

FCC ID : S2SWS11

Applicable standards: FCC CFR Title 47 Part 15 Subpart B:2013

Date of sample receipt: Jul. 20, 2014

Date of Test: Jul. 20-25, 2014

Date of report issued: Jul. 25, 2014

Test Result : Pass *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*Jul. 25, 2014*	*Original*

Prepared by: Sam. Gao ***Date:*** *Jul. 25, 2014*

Project Engineer

Reviewed by: hank. yan ***Date:*** *Jul. 25, 2014*

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part15.107	Pass
Radiated Emissions	Part15.109	Pass

Pass: The EUT comply with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	Ambient, LLC dba Ambient Weather
Address of Applicant:	6845 W. Frye Road, Chandler, AZ 85226
Manufacturer:	Shenzhen Kello Sciece Technology Co., Ltd.
Address of Manufacturer:	32nd Building Area B Tanglang Industrial Park Xili Shenzhen Guangdong China
Factory:	Shenzhen Kello Sciece Technology Co., Ltd.
Address of Factory:	32nd Building Area B Tanglang Industrial Park Xili Shenzhen Guangdong China

5.2 General Description of EUT

Product Name:	Weather Station
Model No.:	WS11, WS110, WS111, WS112,WS115, WS116
Receiver Frequency:	433.92MHz
Modulation type:	ASK
Antenna gain:	2dBi
Power Supply:	Model No.:MKD-350600500 Input:AC 120V 60Hz 55mA Output:DC 6.0V 500mA

5.3 Test mode and Test voltage

Test mode:	
Receiver mode	Keep the EUT in the Receiver mode(new battery is used during all test)
Test voltage:	
AC 120V 60Hz	

5.4 Description of Support Units

None.

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None.

5.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. to ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

● **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

● **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.

5.8 Test Location

Tests were performed at:

Global United Technology Services Co., Ltd.
Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China
Tel: 0755-27798480
Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	Mar. 28 2014	Mar. 27 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	Jun. 29 2014	Jun. 28 2015
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	Jun. 29 2014	Jun. 28 2015
5	Double -ridged waveguide horn	SCHWARZBECK	9120D	GTS208	Jun. 29 2014	Jun. 28 2015
6	RF Amplifier	HP	8347A	GTS204	Jun. 29 2014	Jun. 28 2015
7	Preamplifier	HP	8349B	GTS206	Jun. 29 2014	Jun. 28 2015
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	Jul. 06 2014	Jul. 05 2015
10	Coaxial Cable	GTS	N/A	GTS211	Jul. 06 2014	Jul. 05 2015
11	Thermo meter	N/A	N/A	GTS256	Jul. 01 2014	Jun. 30 2015

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	Sep. 07 2013	Sep. 06 2014
2	EMI Test Receiver	R&S	ESCS30	GTS223	Jun. 29 2014	Jun. 28 2015
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	Jun. 29 2014	Jun. 28 2015
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jun. 29 2014	Jun. 28 2015
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	Jun. 29 2014	Jun. 28 2015
6	Coaxial Cable	GTS	N/A	GTS227	Jul. 06 2014	Jul. 05 2015
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	Jul. 01 2014	Jun. 30 2015

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
1	Barometer	ChangChun	DYM3	GTS257	Jul. 28 2013	Jul. 27 2014

7 Test Results and Measurement Data

7.1 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109
Test Method:	ANSI C63.4:2009
Test Frequency Range:	30MHz to 2GHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Receiver setup:	

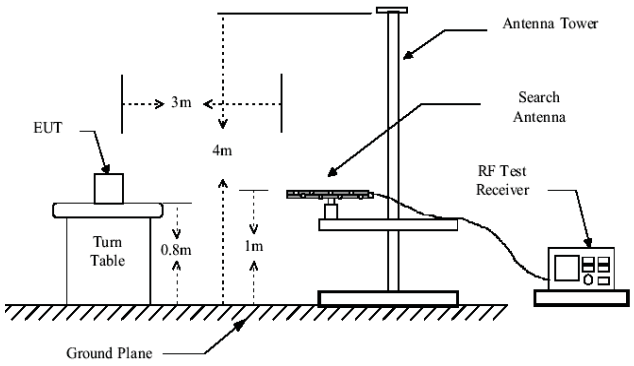
Frequency	Detector	RBW	VBW	Value
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Average	1MHz	3MHz	Average

Limit:

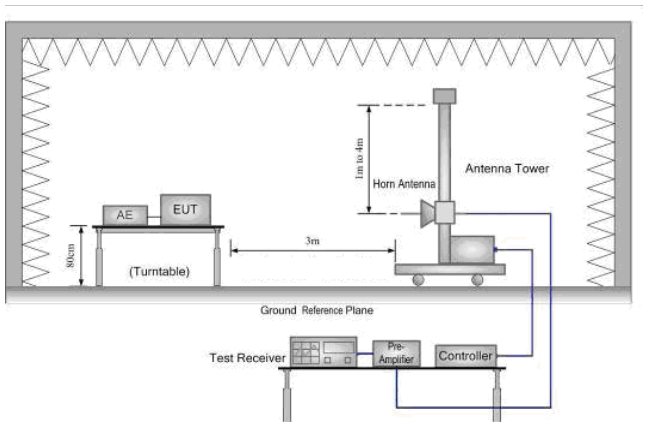
Frequency	Limit (dBμV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

Test setup:

Below 1GHz



Above 1GHz



Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test environment:	Temp.: 25 C Humid.: 52% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Receiver mode
Test results:	Pass

Note:

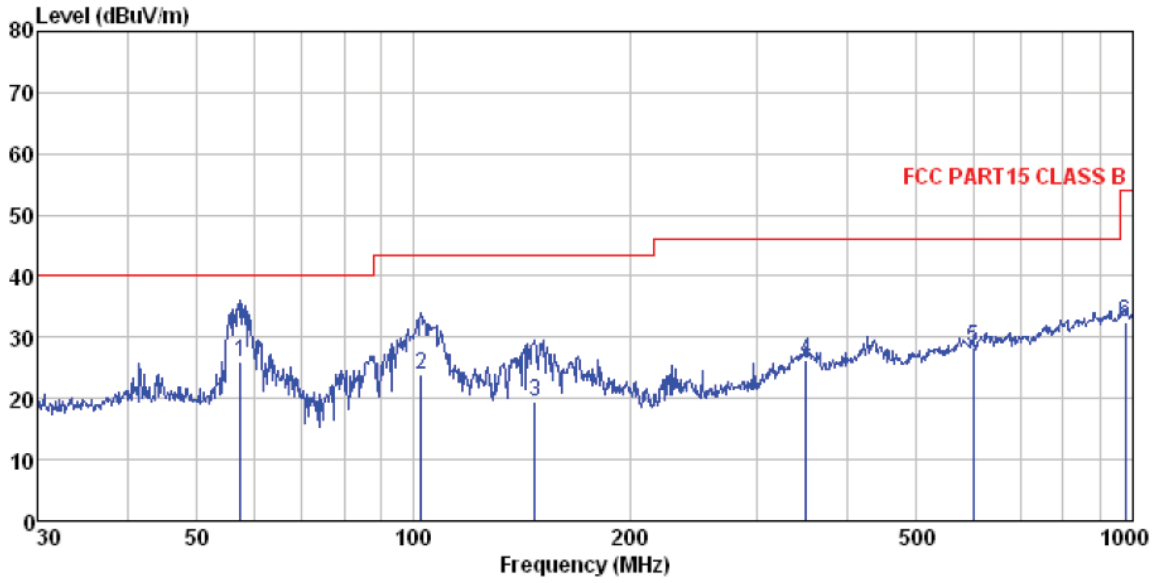
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

Measurement Data

Below 1GHz:

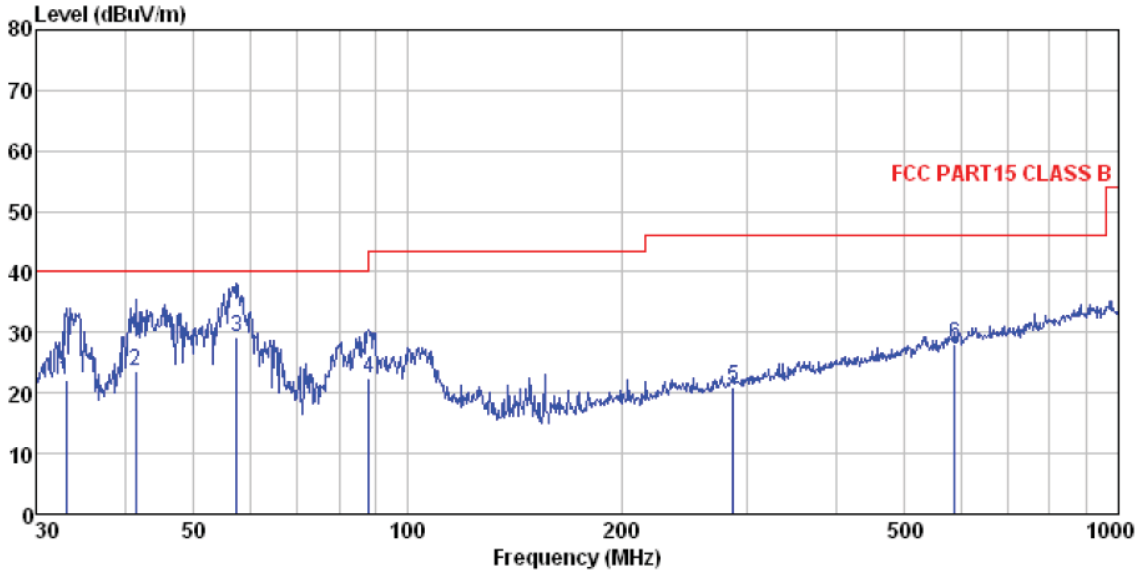
Test mode:	Receiver mode	Antenna Polarity:	Horizontal



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-2013M HORIZONTAL
Job No. : 1212RF
Test Mode : Receiver mode
Test Engineer: Mike

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	57.392	42.19	14.85	0.84	31.94	25.94	40.00	-14.06	QP
2	102.360	39.58	14.92	1.21	31.77	23.94	43.50	-19.56	QP
3	147.404	39.62	10.24	1.55	31.97	19.44	43.50	-24.06	QP
4	351.708	39.44	16.30	2.63	32.02	26.35	46.00	-19.65	QP
5	599.321	35.23	20.45	3.72	31.04	28.36	46.00	-17.64	QP
6	975.753	35.10	23.59	5.14	31.23	32.60	54.00	-21.40	QP

Test mode:	Receiver mode	Antenna Polarity:	Vertical

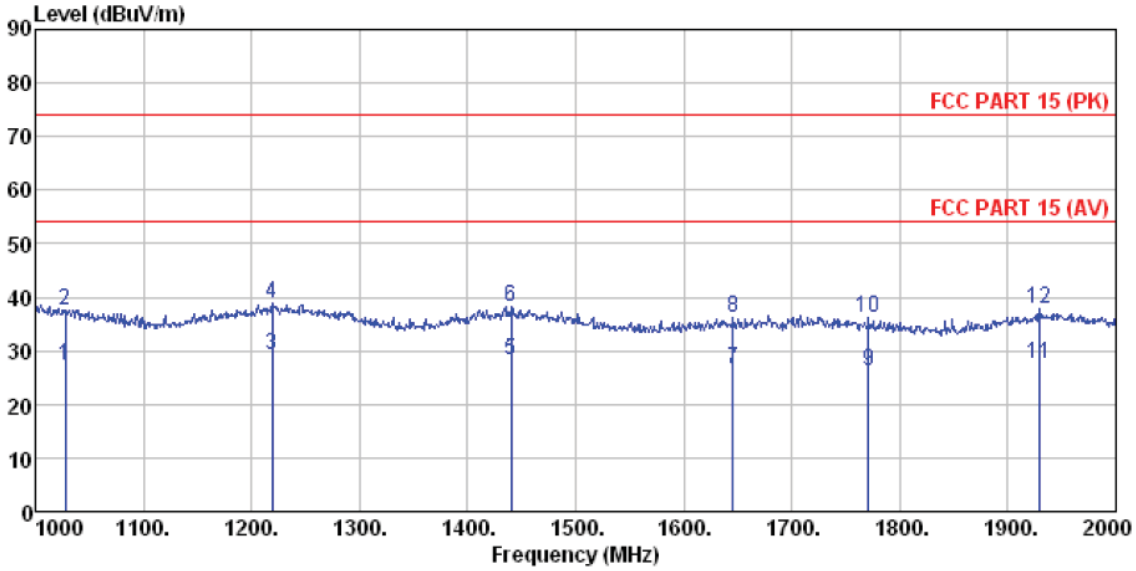


Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-2013M VERTICAL
Job No. : 1212RF
Test Mode : Receiver mode
Test Engineer: Mike

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	33.095	39.16	14.31	0.59	32.06	22.00	40.00	-18.00	QP
2	41.422	39.29	15.57	0.68	32.04	23.50	40.00	-16.50	QP
3	57.392	45.33	14.85	0.84	31.94	29.08	40.00	-10.92	QP
4	88.033	39.65	13.32	1.09	31.73	22.33	43.50	-21.17	QP
5	286.982	35.94	14.81	2.30	32.18	20.87	46.00	-25.13	QP
6	588.905	35.30	20.29	3.68	31.09	28.18	46.00	-17.82	QP

Above 1GHz:

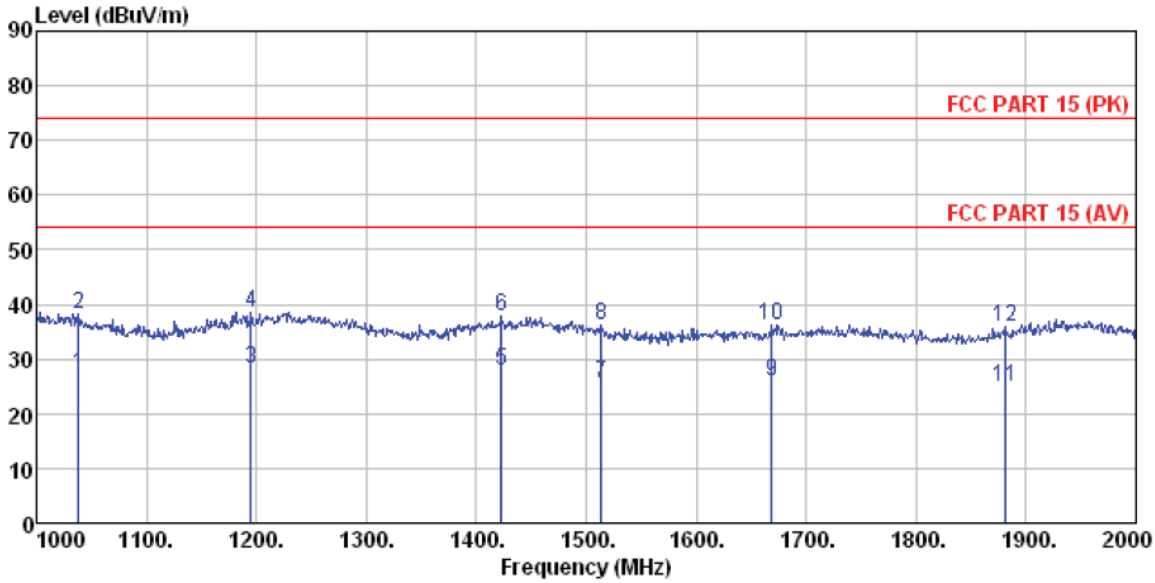
Test mode:	Receiver mode	Antenna Polarity:	Horizontal



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL
Job No. : 1212RF
Test Mode : Receiver mode
Test Engineer: Mike

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1028.000	31.02	24.57	4.32	32.81	27.10	54.00	-26.90	Average
2	1028.000	41.51	24.57	4.32	32.81	37.59	74.00	-36.41	Peak
3	1219.000	32.55	25.43	4.48	33.13	29.33	54.00	-24.67	Average
4	1219.000	42.05	25.43	4.48	33.13	38.83	74.00	-35.17	Peak
5	1440.000	31.55	25.38	4.64	33.50	28.07	54.00	-25.93	Average
6	1440.000	41.56	25.38	4.64	33.50	38.08	74.00	-35.92	Peak
7	1646.000	30.65	24.87	4.77	33.85	26.44	54.00	-27.56	Average
8	1646.000	40.26	24.87	4.77	33.85	36.05	74.00	-37.95	Peak
9	1771.000	30.14	25.17	4.84	34.05	26.10	54.00	-27.90	Average
10	1771.000	40.23	25.17	4.84	34.05	36.19	74.00	-37.81	Peak
11	1929.000	31.02	25.86	4.92	34.34	27.46	54.00	-26.54	Average
12	1929.000	41.33	25.86	4.92	34.34	37.77	74.00	-36.23	Peak

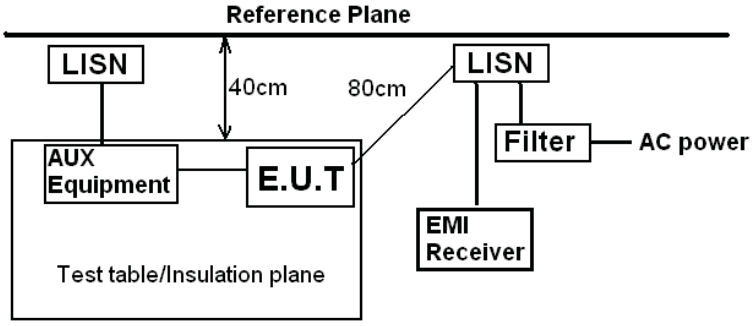
Test mode:	Receiver mode	Antenna Polarity:	Vertical



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL
Job No. : 1212RF
Test Mode : Receiver mode
Test Engineer: Mike

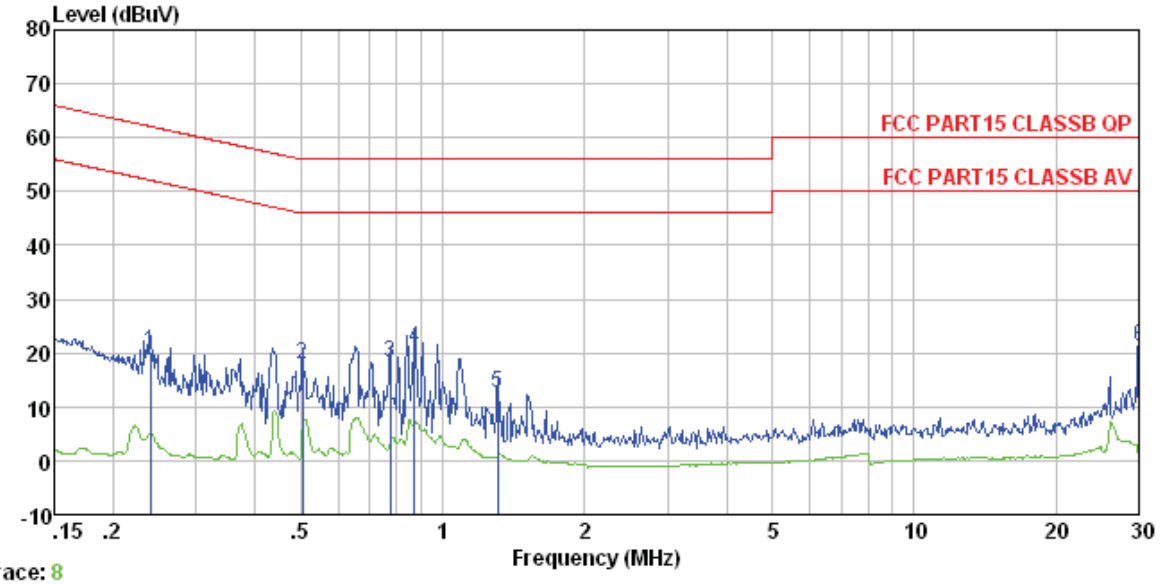
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1038.000	31.05	24.60	4.33	32.81	27.17	54.00	-26.83	Average
2	1038.000	41.96	24.60	4.33	32.81	38.08	74.00	-35.92	Peak
3	1195.000	31.55	25.33	4.46	33.07	28.27	54.00	-25.73	Average
4	1195.000	41.95	25.33	4.46	33.07	38.67	74.00	-35.33	Peak
5	1423.000	31.35	25.47	4.63	33.47	27.98	54.00	-26.02	Average
6	1423.000	41.35	25.47	4.63	33.47	37.98	74.00	-36.02	Peak
7	1514.000	29.46	25.20	4.69	33.62	25.73	54.00	-28.27	Average
8	1514.000	39.94	25.20	4.69	33.62	36.21	74.00	-37.79	Peak
9	1669.000	30.13	24.91	4.78	33.88	25.94	54.00	-28.06	Average
10	1669.000	40.31	24.91	4.78	33.88	36.12	74.00	-37.88	Peak
11	1881.000	28.47	25.67	4.90	34.26	24.78	54.00	-29.22	Average
12	1881.000	39.41	25.67	4.90	34.26	35.72	74.00	-38.28	Peak

7.2 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107
Test Method:	ANSI C63.4:2009
Test Frequency Range:	150kHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9kHz, VBW=30kHz
Limit:	<table><tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBμV)</td></tr><tr><td>Quasi-peak</td><td>Average</td></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>0.5-30</td><td>60</td><td>50</td></tr></table>
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test procedure	1. The EUT and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.
Test environment:	Temp.: 25 C Humid.: 52% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Operation mode
Test results:	Pass

Measurement Data

Test mode:	Receiver mode	Phase Polarity:	Line

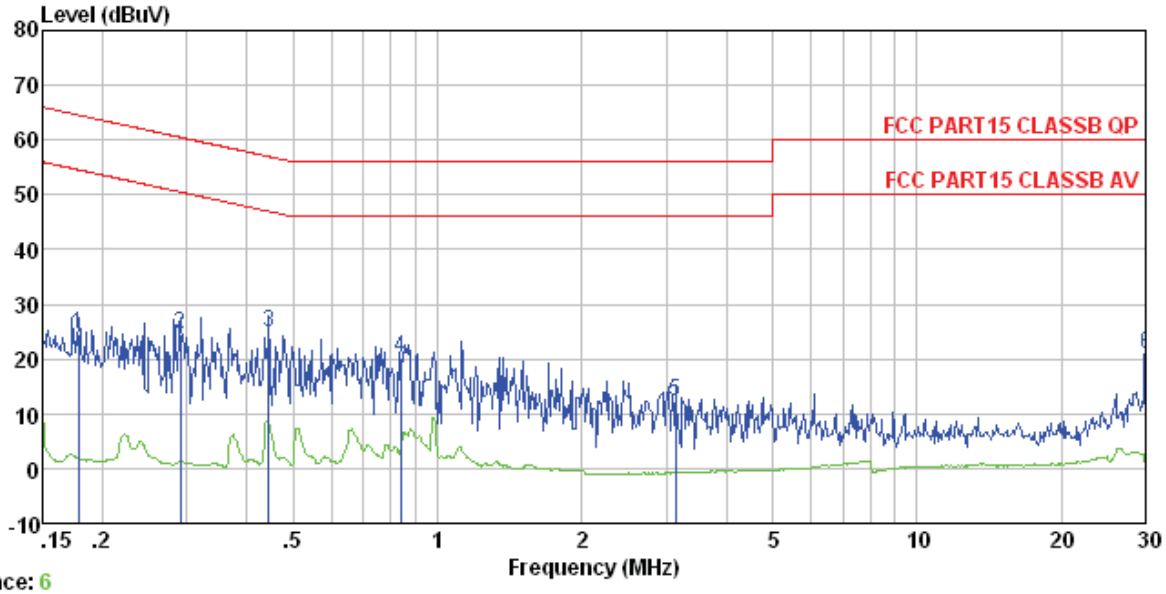


Trace: 8

Condition : FCC PART15 CLASSB QP LISN-2013 LINE
Job No. : 1212RF
Test mode : Receiver mode
Test Engineer: Qing

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.240	20.13	0.12	0.12	20.37	62.08	-41.71	QP
2	0.505	17.80	0.12	0.11	18.03	56.00	-37.97	QP
3	0.775	18.07	0.14	0.13	18.34	56.00	-37.66	QP
4	0.871	20.62	0.14	0.13	20.89	56.00	-35.11	QP
5	1.310	12.34	0.12	0.13	12.59	56.00	-43.41	QP
6	30.000	20.41	0.73	0.24	21.38	60.00	-38.62	QP

Test mode:	Receiver mode	Phase Polarity:	Neutral



Trace: 6

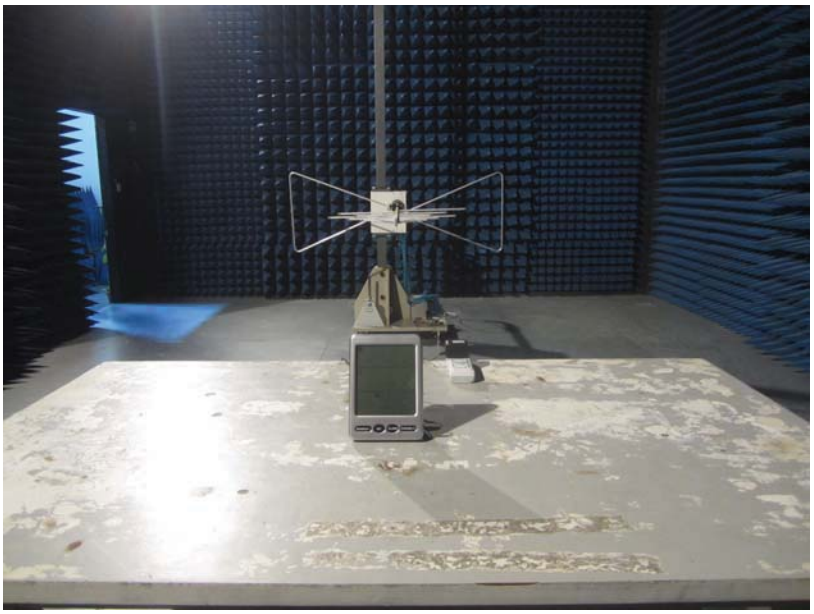
Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL
Job No. : 1212RF
Test mode : Receiver mode
Test Engineer: Qing

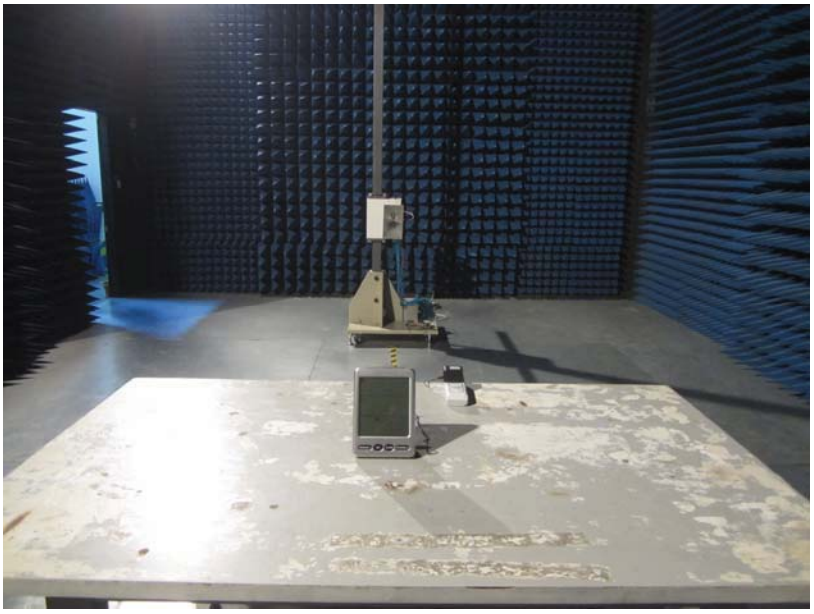
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.179	24.25	0.07	0.13	24.45	64.55	-40.10	QP
2	0.291	24.46	0.06	0.10	24.62	60.50	-35.88	QP
3	0.444	24.63	0.06	0.11	24.80	56.98	-32.18	QP
4	0.839	20.03	0.07	0.13	20.23	56.00	-35.77	QP
5	3.140	12.06	0.12	0.15	12.33	56.00	-43.67	QP
6	30.000	19.86	0.67	0.24	20.77	60.00	-39.23	QP

Remark: If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

8 Test Setup Photo

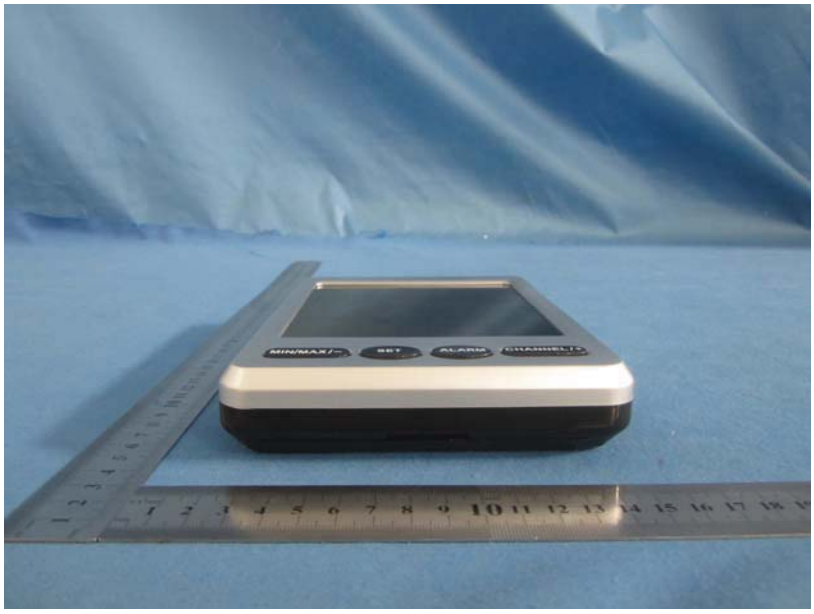
Radiated Emission

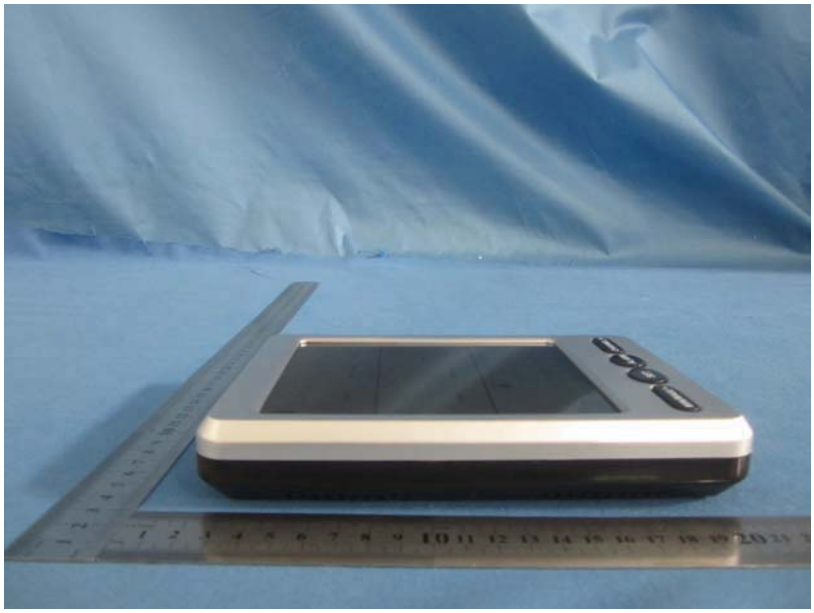


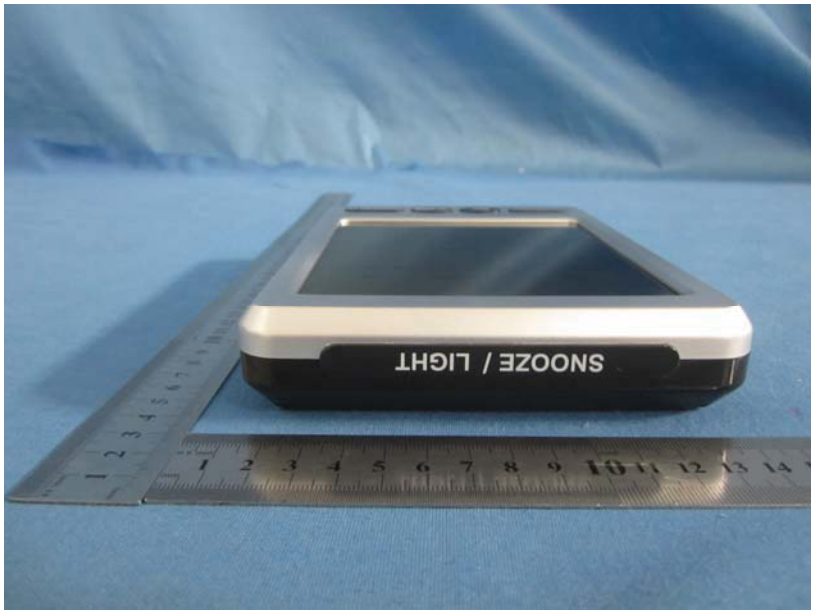


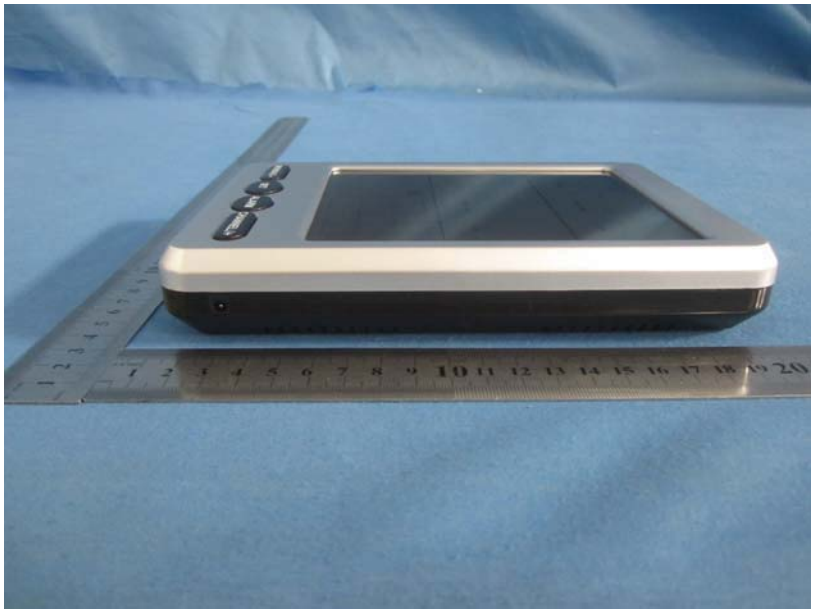
Conducted Emission

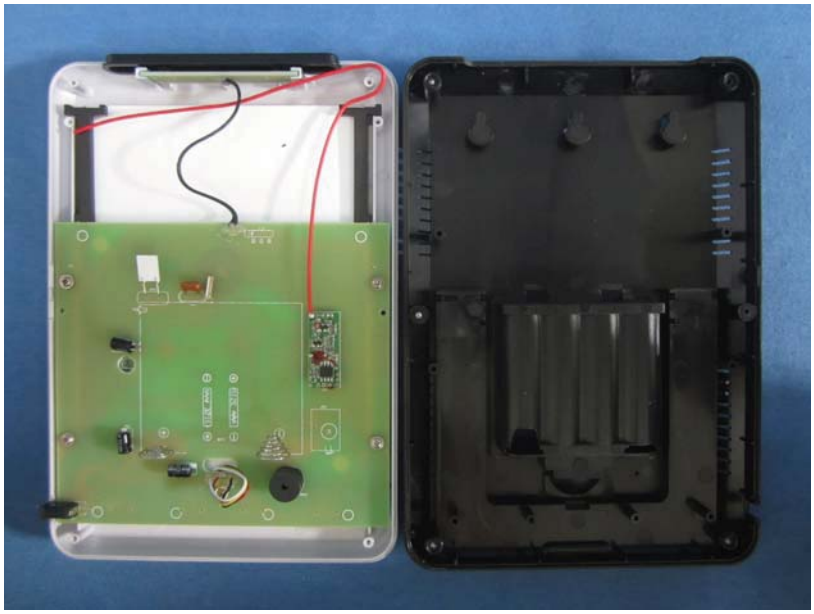
9 EUT Constructional Details

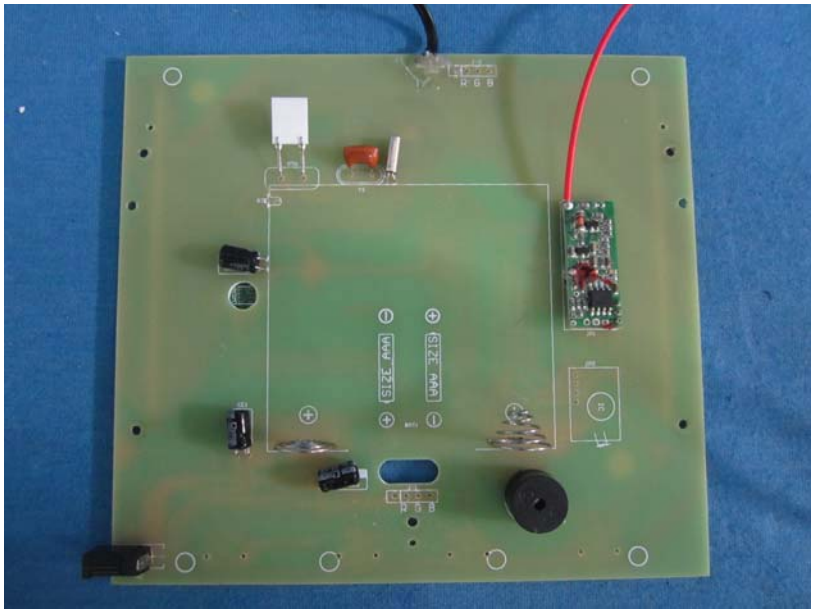


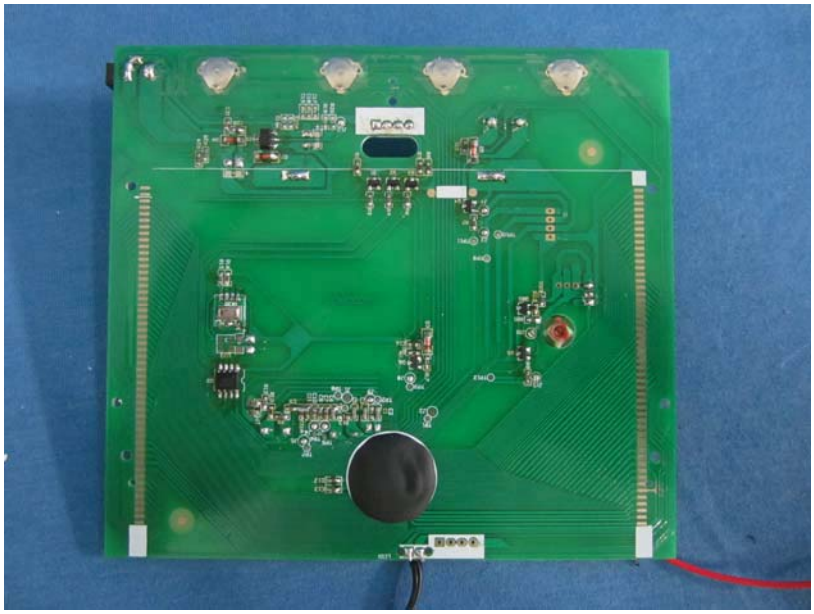


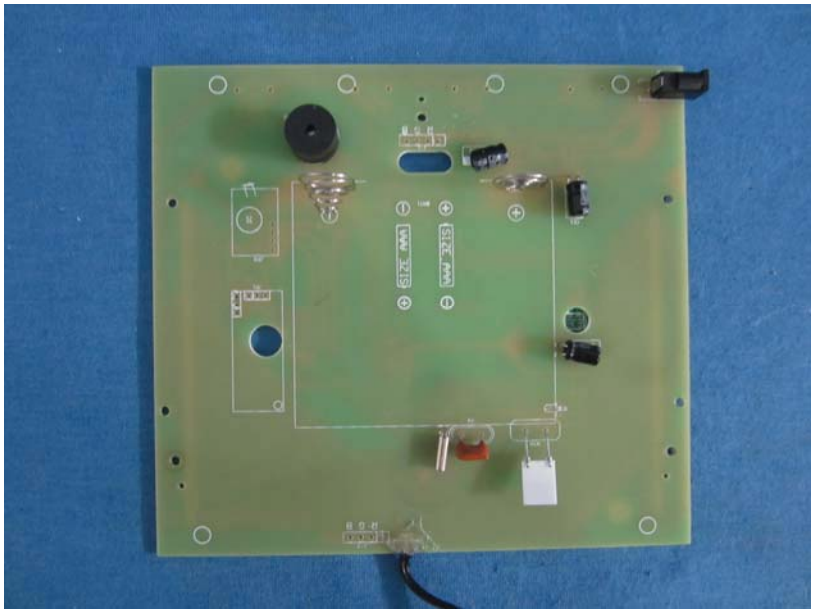

SNOOZE / LIGHT

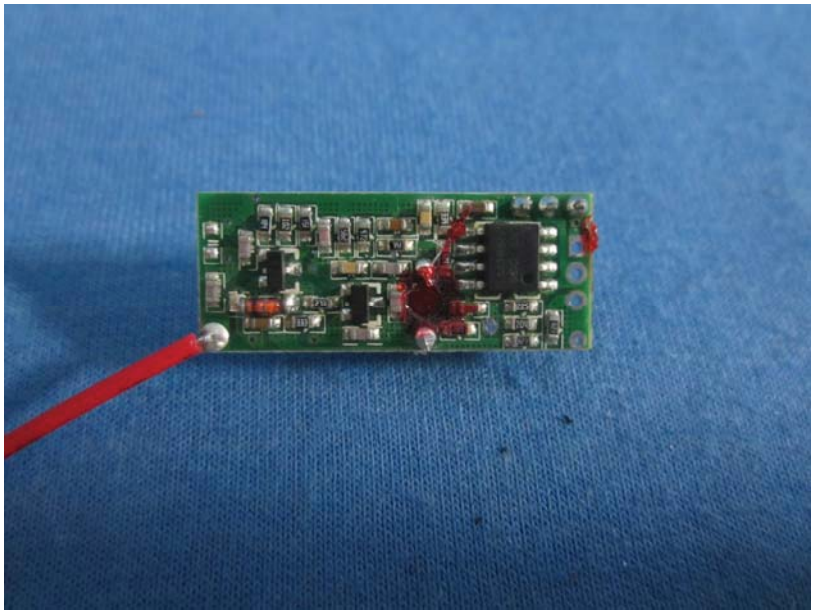


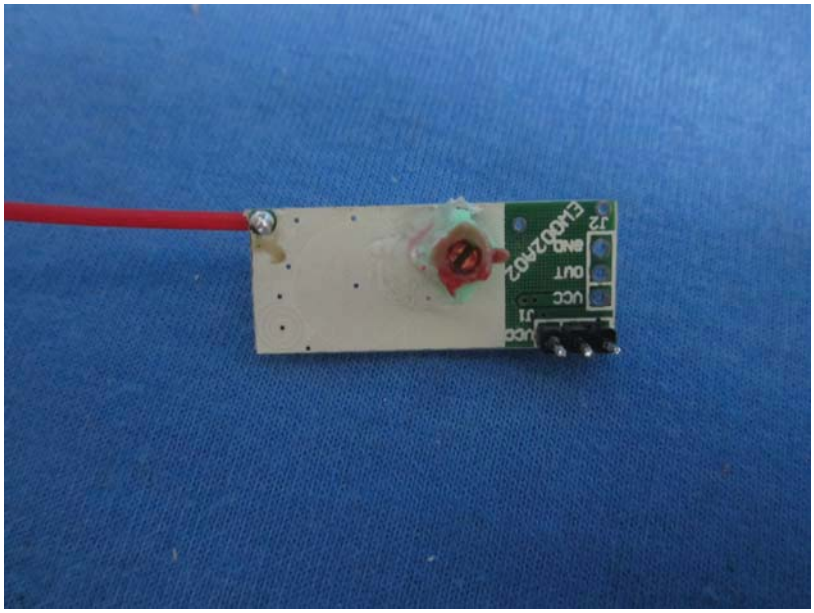


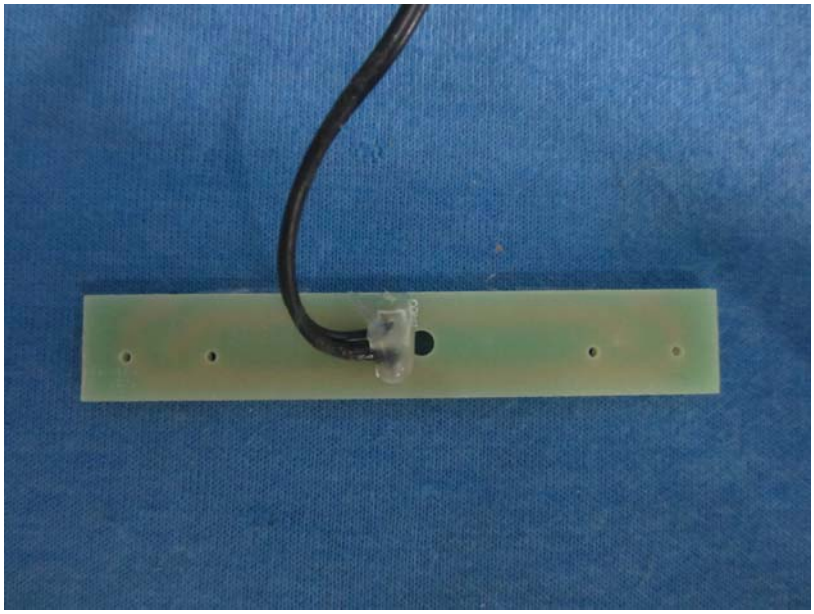


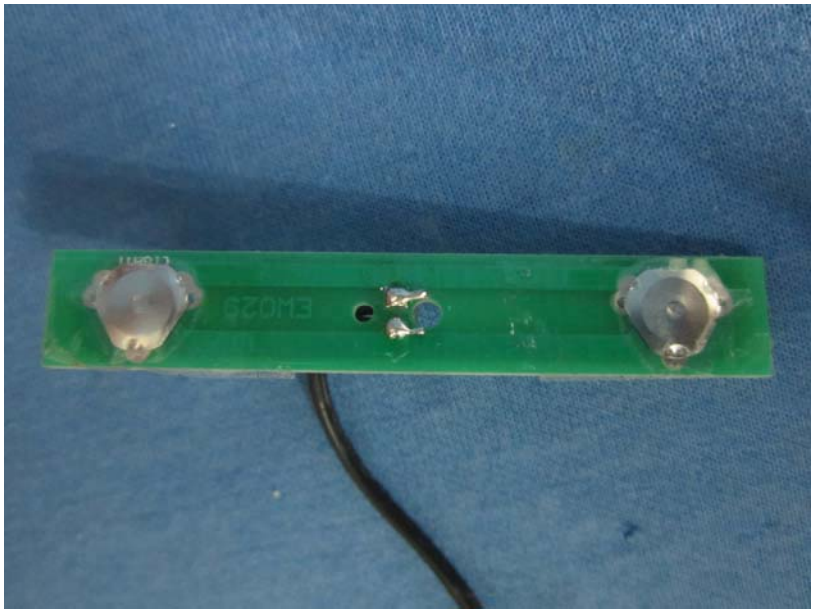







J2
GND
OUT
VCC
J1
VCC






AC/DC ADAPTOR
CLASS 2 ADAPTOR
MODEL:MKD-350600500
INPUT:120V AC 60Hz 55mA
OUTPUT:6.0V DC 500mA
3G67
E149533
LISTED
YYMM
THIS UNIT SHALL BE CORRECTLY
ORIENTATED IN A VERTICAL OR
FLOOR MOUNT POSTION
MADE IN CHINA

------End ------