

TEST REPORT

Applicant: Computime Limited

Address of Applicant: 17/F, Great Eagle Centre, 23 Harbour Road, Wanchai, Hong Kong

Equipment Under Test (EUT)

Product Name: Receiver

Model No.: RE

FCC ID: D12RE

Applicable standards: FCC CFR Title 47 Part 15 Subpart B:2010

Date of sample receipt: Jun. 18, 2012

Date of Test: September 18-20, 2012

Date of report issued: September 20, 2012

Test Result : PASS *

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

Authorized Signature:

A circular blue stamp with the text "GLOBAL TECHNOLOGY SERVICES CO." around the perimeter and "GTS GLOBAL TESTING" in the center. A handwritten signature in black ink is written over the stamp.

Robinson Lo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	September 20, 2012	Original

Prepared by:

Oscar. Li

Date:

September 20, 2012

Project Engineer

Reviewed by:

Hans. Hu

Date:

September 20, 2012

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 complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	Computime Limited
Address of Applicant:	17/F, Great Eagle Centre, 23 Harbour Road, Wanchai, Hong Kong
Manufacturer:	Computime Limited
Address of Manufacturer:	17/F, Great Eagle Centre, 23 Harbour Road, Wanchai, Hong Kong
Factory:	Computime Electronics (shenzhen) Company Limited
Address of Factory:	Computime Technology Park, DanZhuTou Cun, Buji, Longgang Region, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	Receiver
Model No.:	RE
Power supply:	Model No.: GPU280600005WD00 Input: AC 120V 60Hz Output: DC 6V

5.3 Test mode and voltage

Test mode:	
Receiving mode	Keep the receiver working in continuous receiving mode

5.4 Test Facility

<p>● FCC —Registration No.: 600491 Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, July 20, 2010.</p> <p>● Industry Canada (IC) 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-1.</p>

5.5 Test Location

All 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

5.6 Description of Support Units

None.

5.7 Deviation from Standards

Biconical, log.per. antenna and horn antenna were used instead of dipole antenna. Semi-anechoic Chamber was used as alternation of open air test sites, and all test suites were performed with radiated method in it.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.

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	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 30 2011	Mar. 29 2013
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 03 2012	Jul. 02 2013
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 26 2012	Feb. 25 2013
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	Mar. 10 2012	Mar. 09 2013
6	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 03 2012	Jul. 02 2013
7	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 03 2012	Jul. 02 2013
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	Jul. 03 2012	Jul. 02 2013
10	Coaxial Cable	GTS	N/A	GTS211	Jul. 03 2012	Jul. 02 2013
11	Thermo meter	KTJ	TA328	GTS256	Jul. 06 2012	Jul. 05 2013

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	7.0(L)x3.0(W)x3.0(H)	GTS252	Sep. 08 2011	Sep. 07 2013
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jul. 03 2012	Jul. 02 2013
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	Jul. 03 2012	Jul. 02 2013
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 03 2012	Jul. 02 2013
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 03 2012	Jul. 02 2013
6	Coaxial Cable	GTS	N/A	GTS227	Jul. 03 2012	Jul. 02 2013
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	Jul. 05 2012	Jul. 06 2013

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	July 10 2012	July 09 2013

7 Test results and Measurement Data

7.1 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109																							
Test Method:	ANSI C63.4:2003																							
Test Frequency Range:	30MHz to 2000MHz																							
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)																							
Receiver setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120kHz</td> <td>300kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td>AV</td> <td>1MHz</td> <td>10Hz</td> <td>Average Value</td> </tr> </tbody> </table>				Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	AV	1MHz	10Hz	Average Value	
Frequency	Detector	RBW	VBW	Remark																				
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value																				
Above 1GHz	Peak	1MHz	3MHz	Peak Value																				
	AV	1MHz	10Hz	Average Value																				
Limit:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBuV/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-88MHz</td> <td>40.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td>88MHz-216MHz</td> <td>43.5</td> <td>Quasi-peak Value</td> </tr> <tr> <td>216MHz-960MHz</td> <td>46.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td>960MHz-1GHz</td> <td>54.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>54.0</td> <td>Average Value</td> </tr> <tr> <td>74.0</td> <td>Peak Value</td> </tr> </tbody> </table>				Frequency	Limit (dBuV/m @3m)	Remark	30MHz-88MHz	40.0	Quasi-peak Value	88MHz-216MHz	43.5	Quasi-peak Value	216MHz-960MHz	46.0	Quasi-peak Value	960MHz-1GHz	54.0	Quasi-peak Value	Above 1GHz	54.0	Average Value	74.0	Peak Value
Frequency	Limit (dBuV/m @3m)	Remark																						
30MHz-88MHz	40.0	Quasi-peak Value																						
88MHz-216MHz	43.5	Quasi-peak Value																						
216MHz-960MHz	46.0	Quasi-peak Value																						
960MHz-1GHz	54.0	Quasi-peak Value																						
Above 1GHz	54.0	Average Value																						
	74.0	Peak Value																						
Test Procedure:	<ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 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. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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 setup:	Below 1GHz																							

	<p>Above 1GHz</p>
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Measurement Record:	Uncertainty: ± 4.5dB
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Note:

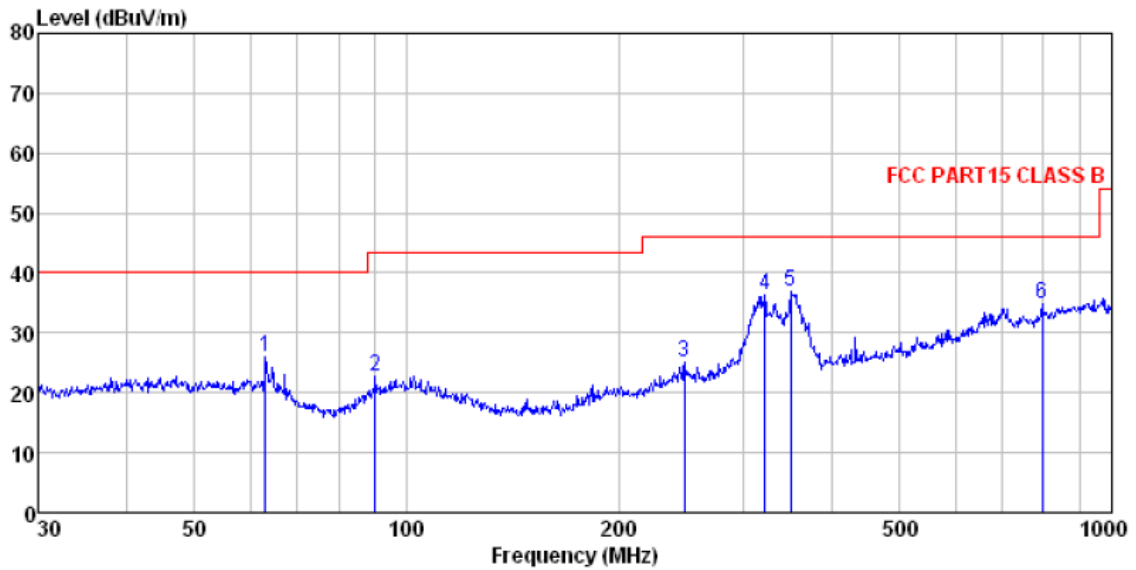
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

Measurement Data

Below 1GHz

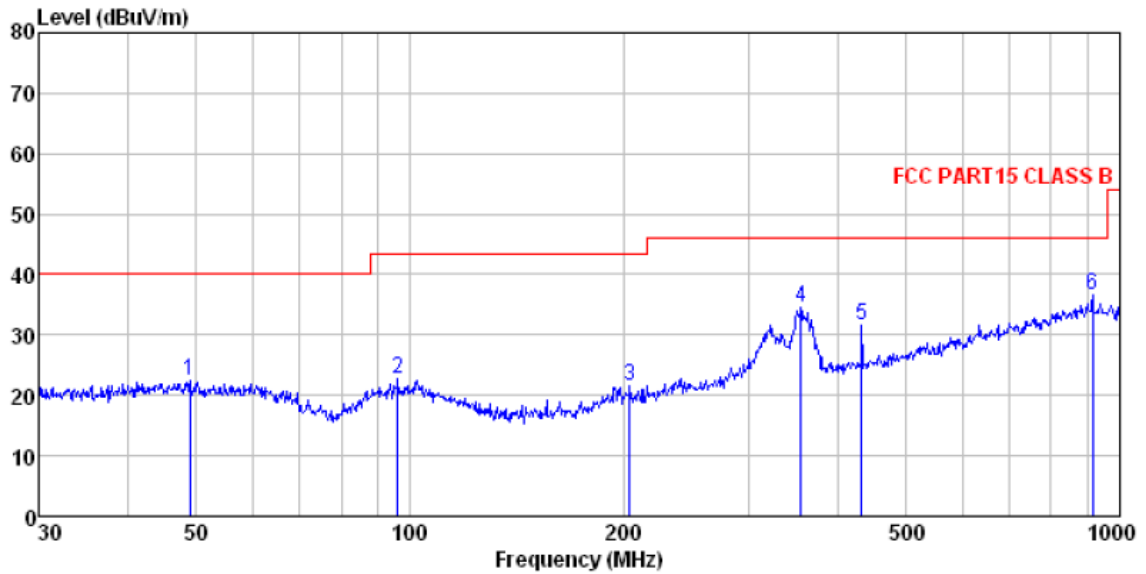
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163 -2012-05 HORIZONTAL
 Job No. : 645RF
 Test Mode : Receiving mode
 Test Engineer: Edward

	Freq MHz	ReadAntenna		Cable Preamp		Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Remark
		Level dBuV	Factor dB/m	Loss dB	Factor dB				
1	63.092	41.64	15.29	0.89	31.92	25.90	40.00	-14.10	QP
2	90.220	38.12	15.28	1.11	31.72	22.79	43.50	-20.71	QP
3	247.682	39.94	15.08	2.11	32.16	24.97	46.00	-21.03	QP
4	322.189	49.53	16.31	2.48	32.11	36.21	46.00	-9.79	QP
5	350.477	49.98	16.30	2.62	32.02	36.88	46.00	-9.12	QP
6	796.183	38.60	23.01	4.45	31.31	34.75	46.00	-11.25	QP

Vertical:

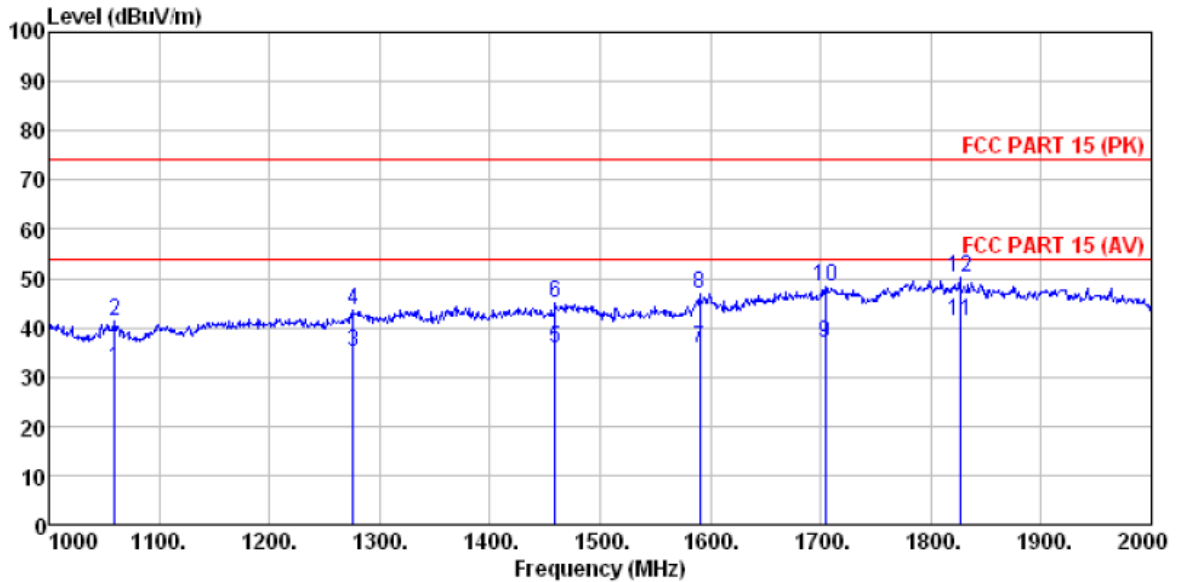


Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163 -2012-05 VERTICAL
 Job No. : 645RF
 Test Mode : Receiving mode
 Test Engineer: Edward

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	49.014	37.34	16.41	0.76	31.97	22.54	40.00 -17.46 QP
2	96.099	37.38	15.99	1.16	31.75	22.78	43.50 -20.72 QP
3	204.238	38.22	13.75	1.86	32.14	21.69	43.50 -21.81 QP
4	355.427	47.54	16.38	2.64	32.01	34.55	46.00 -11.45 QP
5	432.546	42.94	17.54	3.01	31.78	31.71	46.00 -14.29 QP
6	916.069	38.83	24.03	4.91	31.19	36.58	46.00 -9.42 QP

Above 1GHz

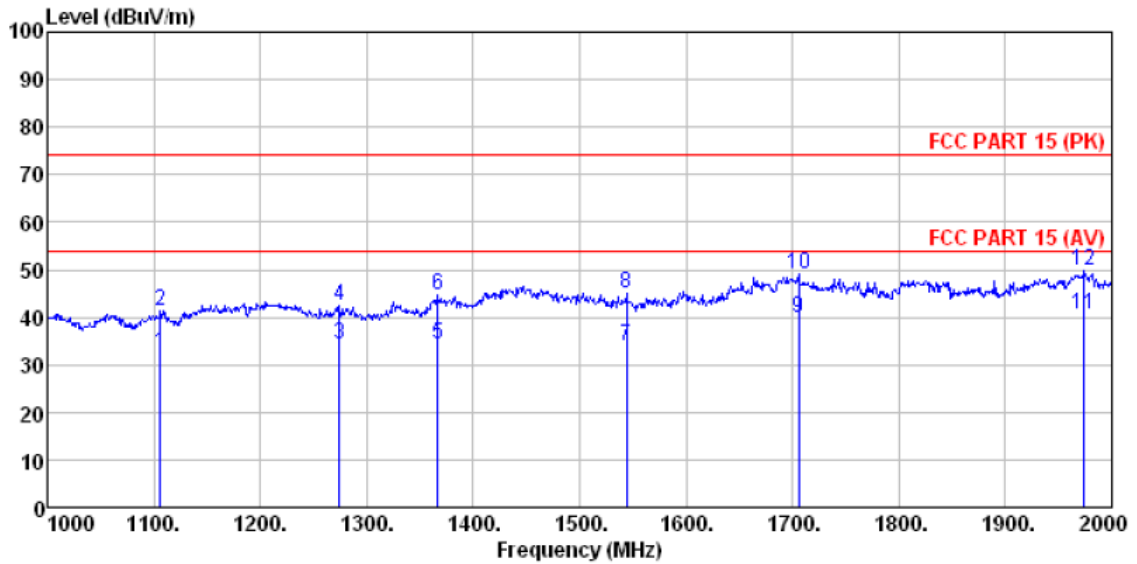
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL
 Job No. : 645RF
 Test Mode : Receiving mode
 Test Engineer: Osccar

	Read	Antenna	Cable	Preamp	Limit	Over			
-----	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
-----	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	-----
1	1060.000	34.20	24.65	4.35	31.32	31.88	54.00	-22.12	Average
2	1060.000	43.48	24.65	4.35	31.32	41.16	74.00	-32.84	Peak
3	1276.000	36.36	25.59	4.52	31.55	34.92	54.00	-19.08	Average
4	1276.000	45.12	25.59	4.52	31.55	43.68	74.00	-30.32	Peak
5	1459.000	37.63	25.33	4.66	31.72	35.90	54.00	-18.10	Average
6	1459.000	46.59	25.33	4.66	31.72	44.86	74.00	-29.14	Peak
7	1590.000	37.66	25.00	4.74	31.61	35.79	54.00	-18.21	Average
8	1590.000	48.83	25.00	4.74	31.61	46.96	74.00	-27.04	Peak
9	1704.000	38.61	24.99	4.80	31.46	36.94	54.00	-17.06	Average
10	1704.000	49.87	24.99	4.80	31.46	48.20	74.00	-25.80	Peak
11	1826.000	42.36	25.40	4.87	31.30	41.33	54.00	-12.67	Average
12	1826.000	51.12	25.40	4.87	31.30	50.09	74.00	-23.91	Peak

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL
 Job No. : 645RF
 Test Mode : Receiving mode
 Test Engineer: Oscar

	ReadAntenna	Cable	Preamp	Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1106.000	34.61	24.79	4.39	31.37	32.42	54.00	-21.58 Average
2	1106.000	43.41	24.79	4.39	31.37	41.22	74.00	-32.78 Peak
3	1274.000	35.61	25.58	4.52	31.55	34.16	54.00	-19.84 Average
4	1274.000	43.91	25.58	4.52	31.55	42.46	74.00	-31.54 Peak
5	1367.000	35.62	25.67	4.59	31.64	34.24	54.00	-19.76 Average
6	1367.000	46.12	25.67	4.59	31.64	44.74	74.00	-29.26 Peak
7	1544.000	35.96	25.12	4.71	31.67	34.12	54.00	-19.88 Average
8	1544.000	46.78	25.12	4.71	31.67	44.94	74.00	-29.06 Peak
9	1706.000	41.64	24.99	4.81	31.46	39.98	54.00	-14.02 Average
10	1706.000	50.59	24.99	4.81	31.46	48.93	74.00	-25.07 Peak
11	1974.000	40.64	26.01	4.95	31.13	40.47	54.00	-13.53 Average
12	1974.000	50.16	26.01	4.95	31.13	49.99	74.00	-24.01 Peak

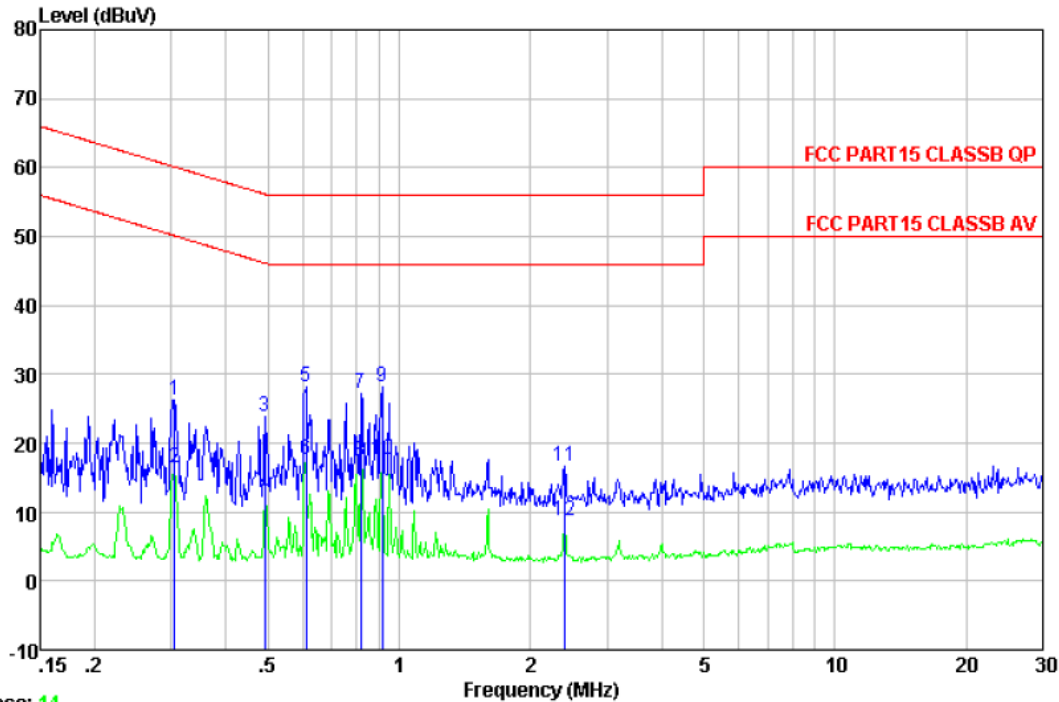
7.2 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107														
Test Method:	ANSI C63.4:2003														
Test Frequency Range:	150kHz to 30MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9kHz, VBW=30kHz														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBμV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <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> </tbody> </table>	Frequency range (MHz)	Limit (dB μ V)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	0.5-30	60	50
Frequency range (MHz)	Limit (dB μ V)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
0.5-30	60	50													
Test procedure	<p>The E.U.T 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. 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). 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: 2003 on conducted measurement.</p>														
Test setup:	<p><i>Remark:</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>														
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar														
Measurement Record:	Uncertainty: \pm 3.45dB														
Test Instruments:	Refer to section 6 for details														
Test mode:	Refer to section 5.3 for details														
Test results:	Pass														

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

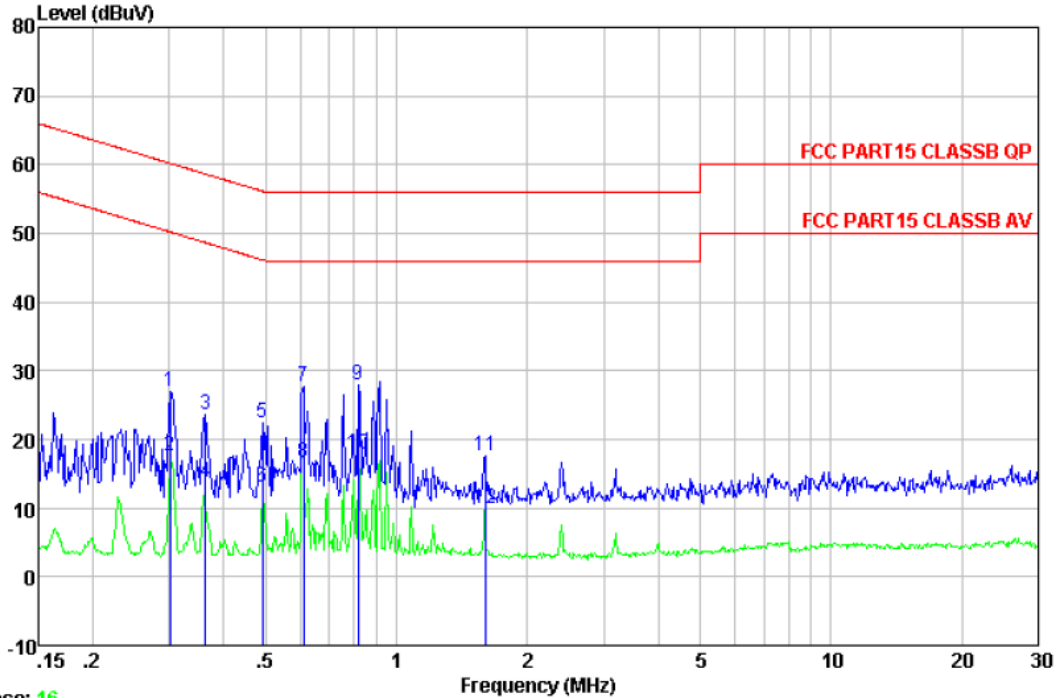
Line:



Trace: 14
 Condition : FCC PART15 CLASSB QP LISN-2012 LINE
 Job No. : 645RF
 Test Mode : Receiving mode
 Test Engineer: Blue

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.305	26.45	-0.22	0.10	26.33	60.10	-33.77	QP
2	0.305	16.61	-0.22	0.10	16.49	50.10	-33.61	Average
3	0.491	23.98	-0.21	0.10	23.87	56.14	-32.27	QP
4	0.491	12.63	-0.21	0.10	12.52	46.14	-33.62	Average
5	0.611	28.27	-0.20	0.10	28.17	56.00	-27.83	QP
6	0.611	17.63	-0.20	0.10	17.53	46.00	-28.47	Average
7	0.817	27.41	-0.20	0.10	27.31	56.00	-28.69	QP
8	0.817	17.47	-0.20	0.10	17.37	46.00	-28.63	Average
9	0.914	28.24	-0.21	0.10	28.13	56.00	-27.87	QP
10	0.914	17.64	-0.21	0.10	17.53	46.00	-28.47	Average
11	2.396	16.77	-0.24	0.10	16.63	56.00	-39.37	QP
12	2.396	8.97	-0.24	0.10	8.83	46.00	-37.17	Average

Neutral



Trace: 16
 Condition : FCC PART15 CLASSB QP LISN-2012 NEUTRAL
 Job No. : 645RF
 Test Mode : Receiving mode
 Test Engineer: Blue

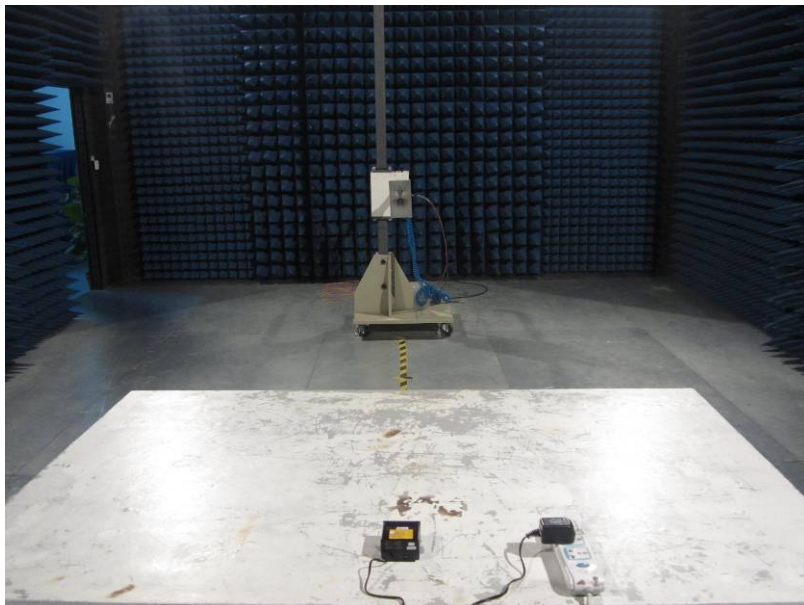
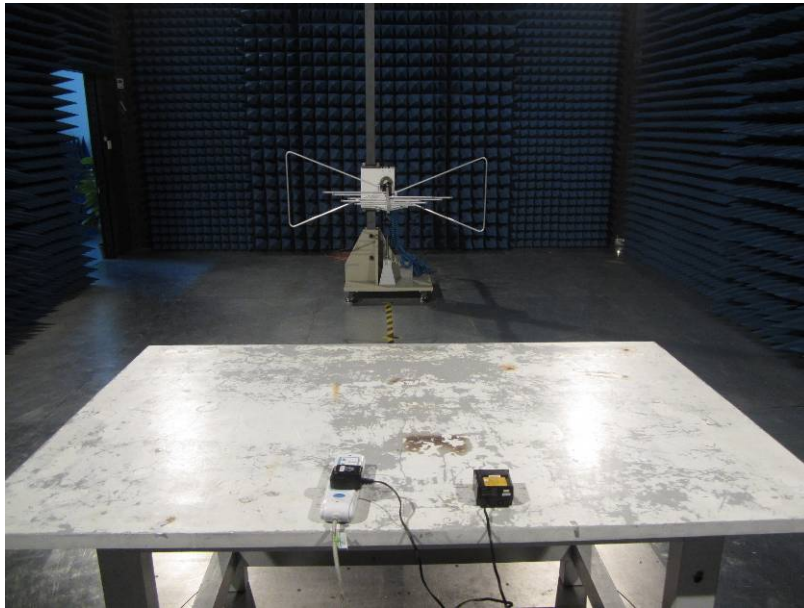
	Read Freq	Level	LISN Factor	Cable Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.302	26.86	-0.09	0.10	26.87	60.19	-33.32	QP
2	0.302	17.54	-0.09	0.10	17.55	50.19	-32.64	Average
3	0.363	23.52	-0.08	0.10	23.54	58.65	-35.11	QP
4	0.363	13.64	-0.08	0.10	13.66	48.65	-34.99	Average
5	0.491	22.45	-0.08	0.10	22.47	56.14	-33.67	QP
6	0.491	12.94	-0.08	0.10	12.96	46.14	-33.18	Average
7	0.611	27.71	-0.08	0.10	27.73	56.00	-28.27	QP
8	0.611	16.55	-0.08	0.10	16.57	46.00	-29.43	Average
9	0.817	27.88	-0.08	0.10	27.90	56.00	-28.10	QP
10	0.817	17.88	-0.08	0.10	17.90	46.00	-28.10	Average
11	1.602	17.54	-0.10	0.10	17.54	56.00	-38.46	QP
12	1.602	9.98	-0.10	0.10	9.98	46.00	-36.02	Average

Notes:

1. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

8 Test Setup Photo

Radiated Emission

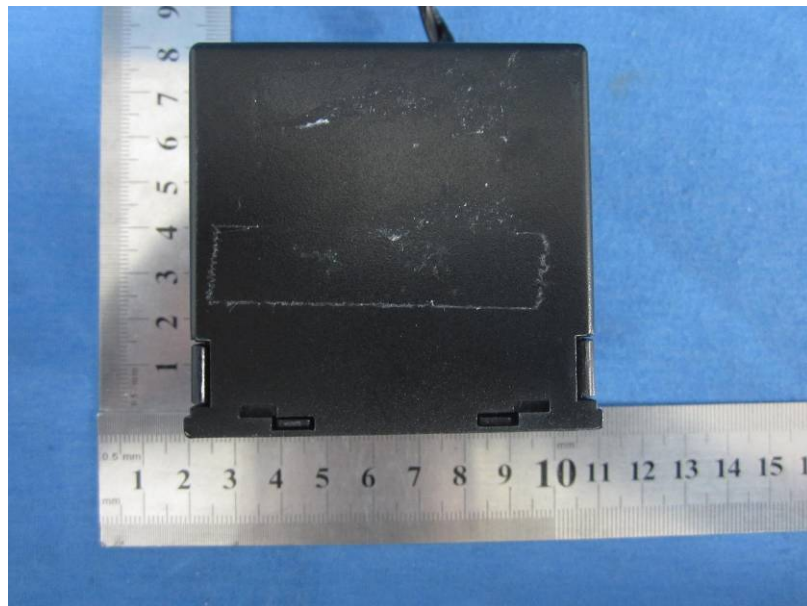
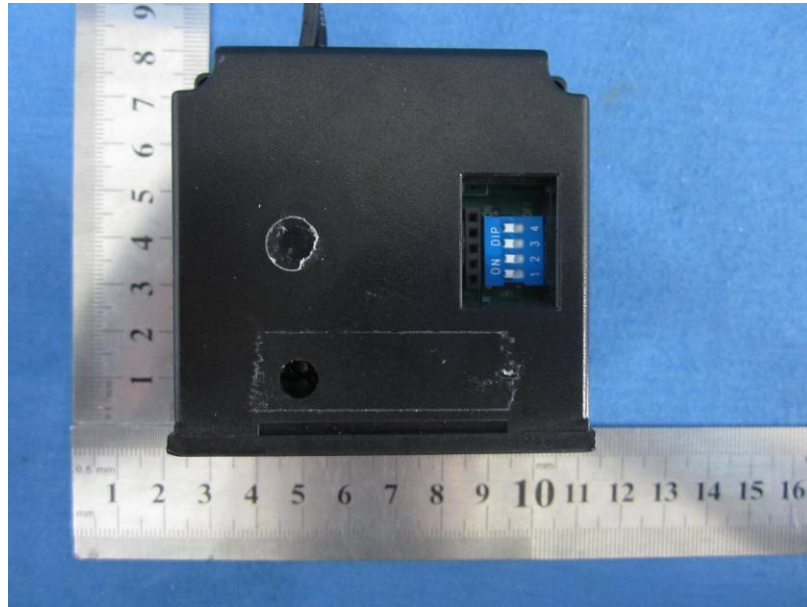


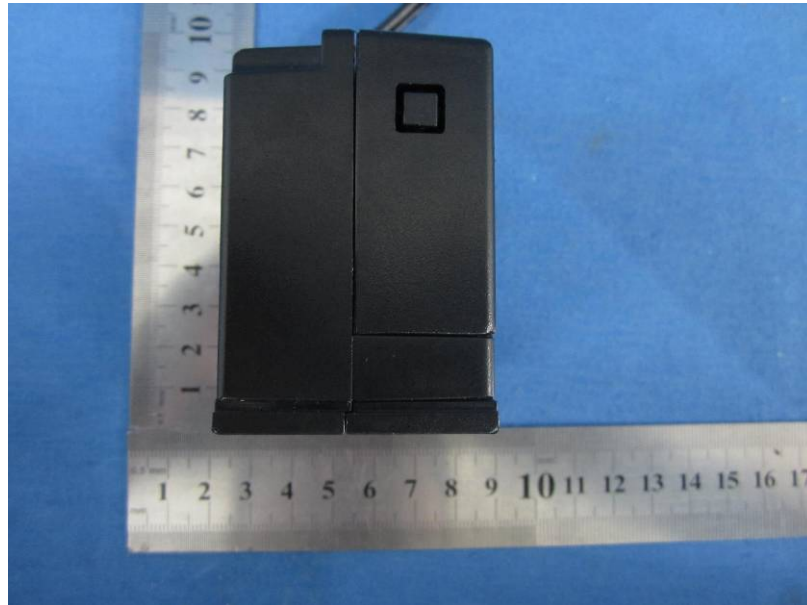
Conducted Emissions

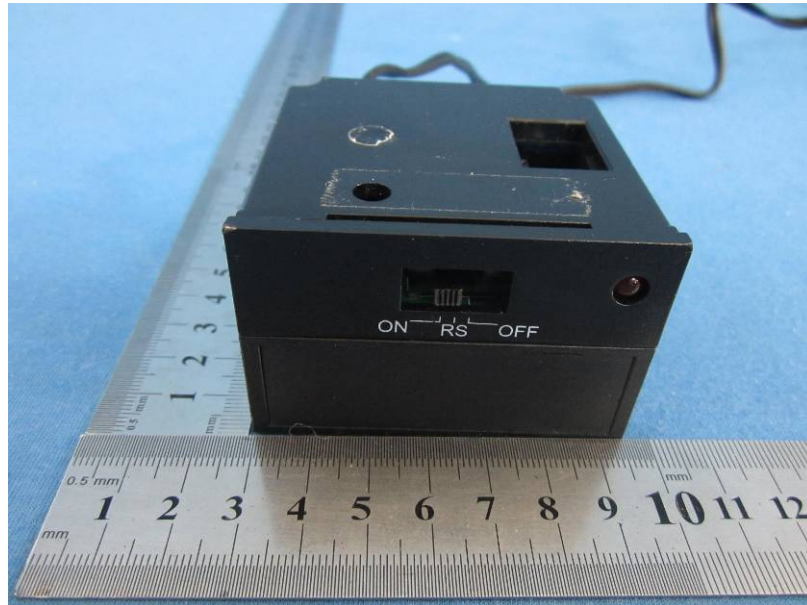


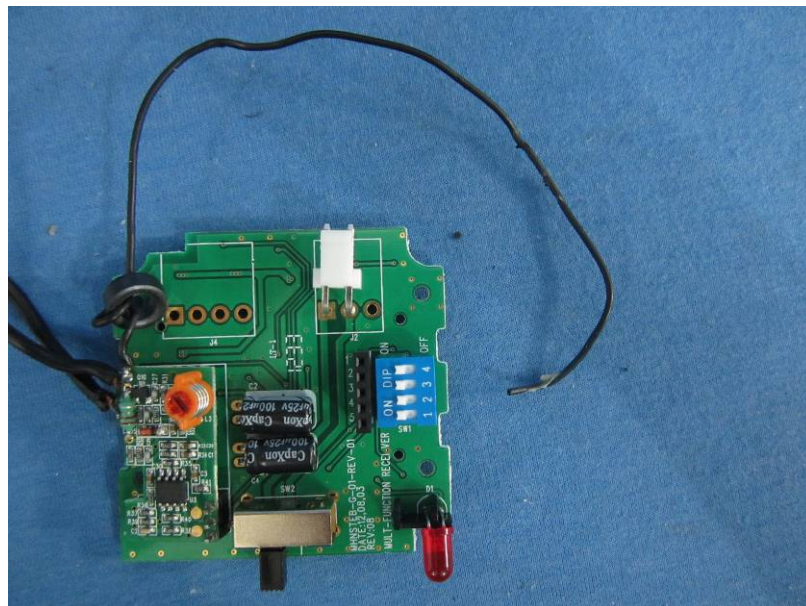
9 EUT Constructional Details

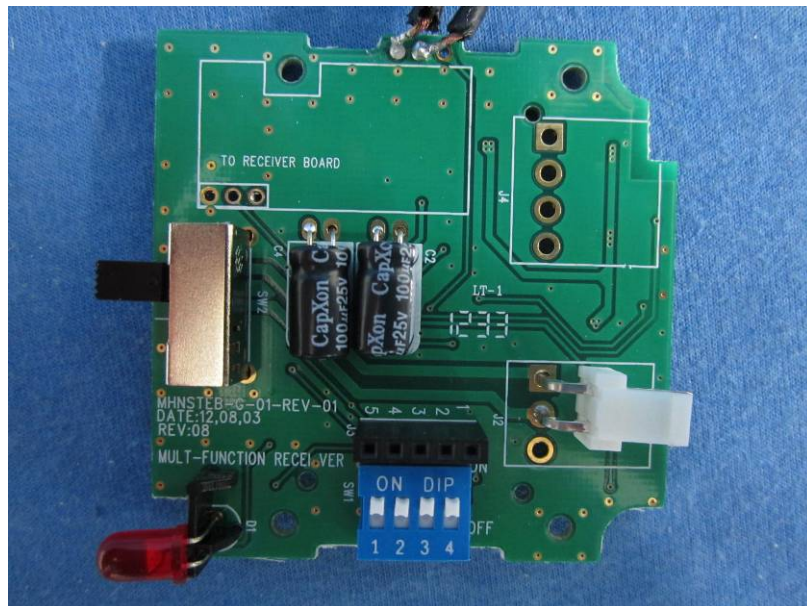
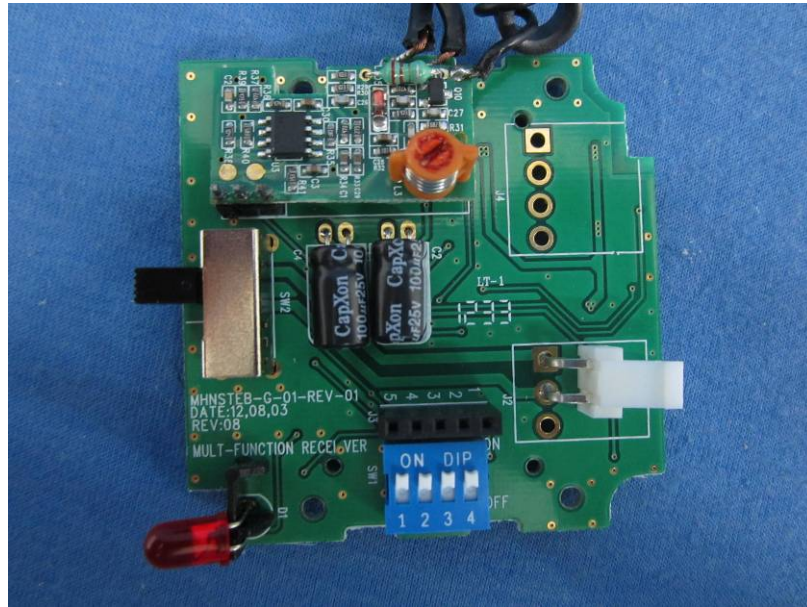


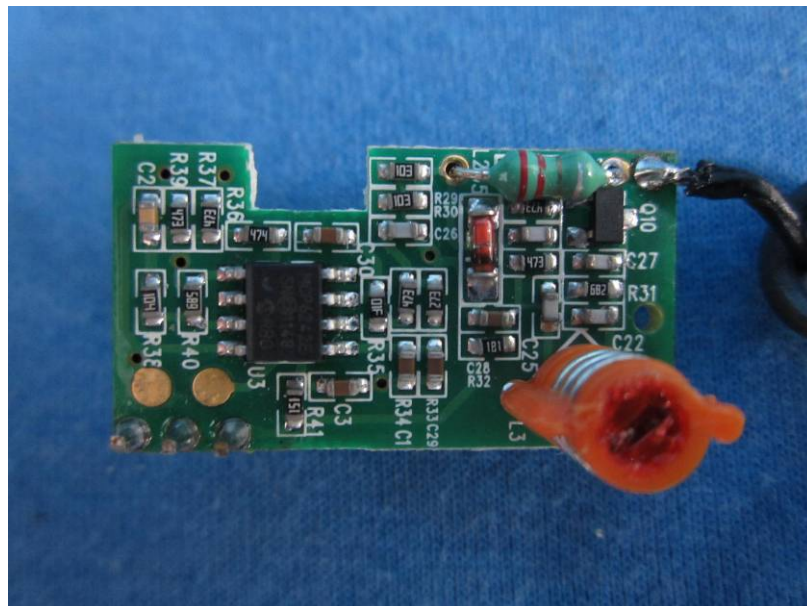
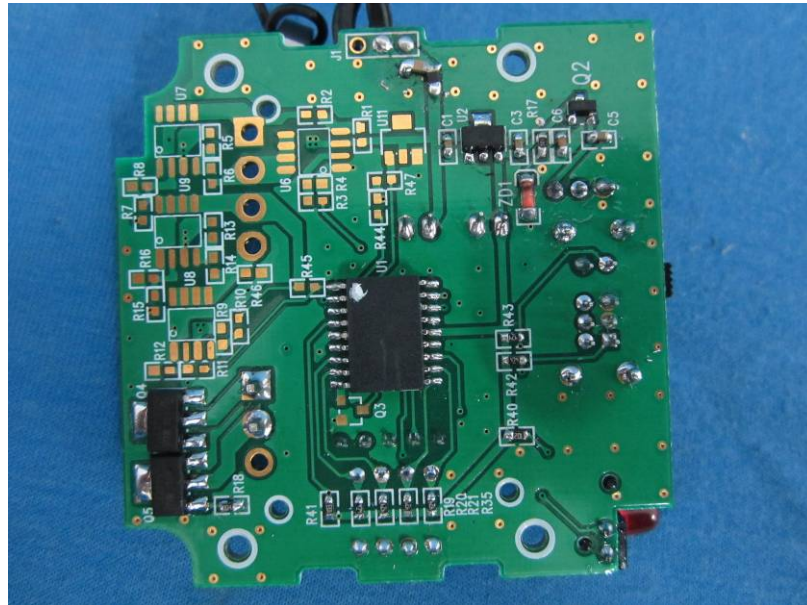


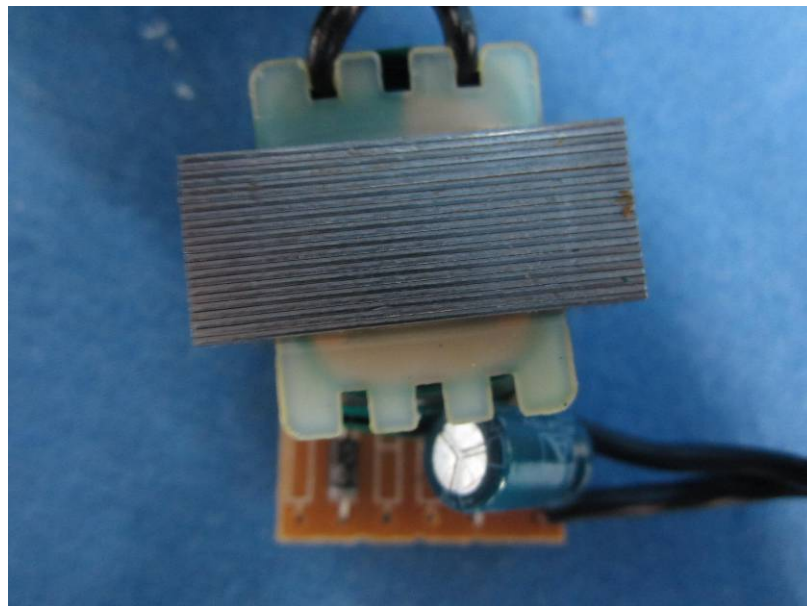


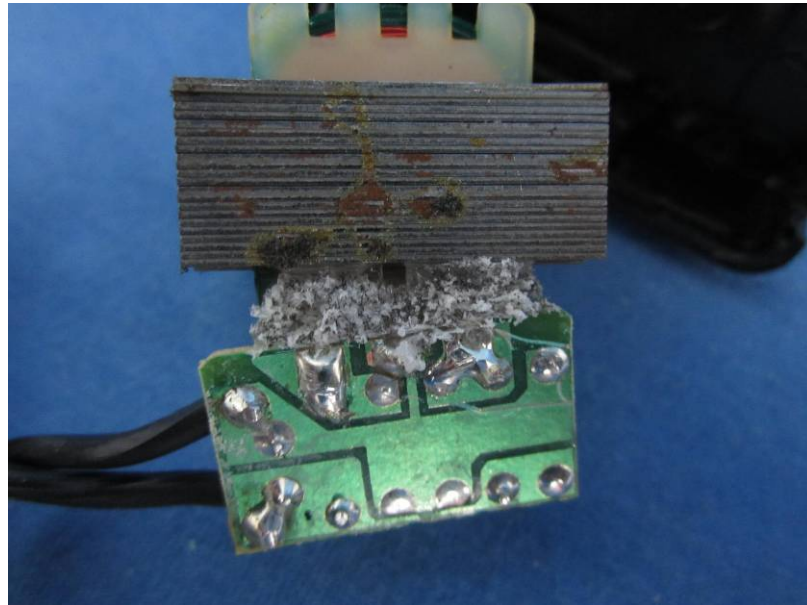












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