

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.: RS

FCC ID: D12RS

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

Date of sample receipt: Jul. 14, 2012

Date of Test: Jul. 22-September 19, 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 logo for GTS Global Testing is overlaid with a handwritten signature in black ink. The logo contains the text 'GTS GLOBAL TESTING' and 'UNITED TECHNOLOGY SERVICES CO.' around the perimeter.

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

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
5 GENERAL INFORMATION	5
5.1 CLIENT INFORMATION	5
5.2 GENERAL DESCRIPTION OF E.U.T.	5
5.3 TEST MODE.....	5
5.4 TEST FACILITY.....	5
5.5 TEST LOCATION	6
5.6 DESCRIPTION OF SUPPORT UNITS	6
5.7 DEVIATION FROM STANDARDS.....	6
5.8 ABNORMALITIES FROM STANDARD CONDITIONS	6
5.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
6 TEST INSTRUMENTS LIST	7
7 TEST RESULTS AND MEASUREMENT DATA.....	8
7.1 CONDUCTED EMISSIONS.....	8
7.2 RADIATED EMISSION	11
8 TEST SETUP PHOTO	17
9 EUT CONSTRUCTIONAL DETAILS	19

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.:	RS
Power supply:	Model No.: UD3514080035G Input: AC 120V 60Hz Output: DC 8V

5.3 Test mode

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

5.4 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none">● 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.● 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.
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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. 04 2012	Jul. 03 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

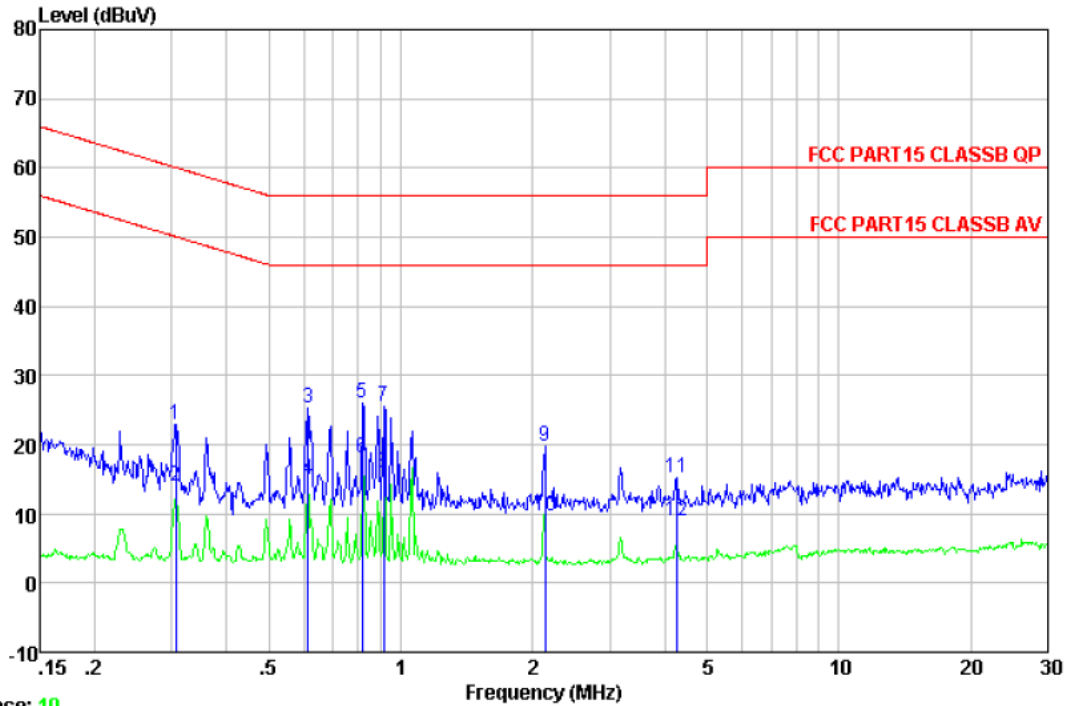
7 Test results and Measurement Data

7.1 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>Remark 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: ± 3.45 dB														
Test Instruments:	Refer to section 6 for details														
Test mode:	Refer to section 5.3 for details														
Test results:	Pass														

Measurement Data

Line:

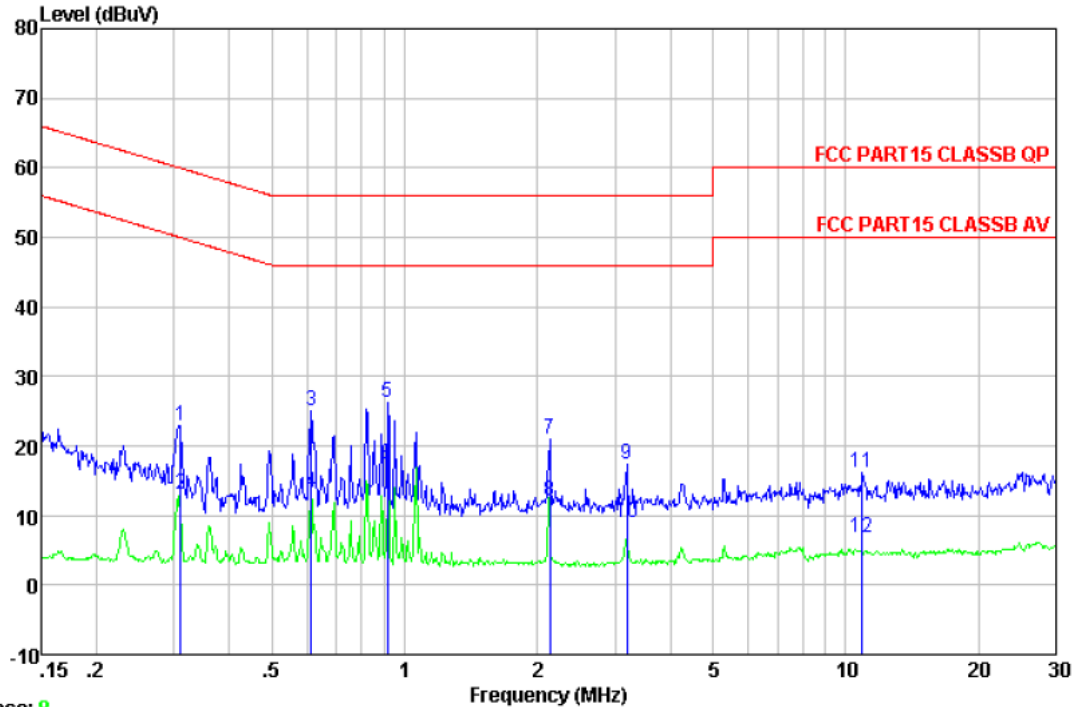


Trace: 10

Condition : FCC PART15 CLASSB QP LISN(2011) LINE
 Job No. : 408RF
 Test Mode : Receiving mode
 Test Engineer: Oscocar

	Read Freq	LISN Level	Cable Factor	Cable Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.307	22.28	0.61	0.10	22.99	60.06	-37.07	Peak
2	0.307	13.39	0.61	0.10	14.10	50.06	-35.96	Average
3	0.614	24.66	0.53	0.10	25.29	56.00	-30.71	Peak
4	0.614	14.25	0.53	0.10	14.88	46.00	-31.12	Average
5	0.817	25.35	0.50	0.10	25.95	56.00	-30.05	Peak
6	0.817	17.48	0.50	0.10	18.08	46.00	-27.92	Average
7	0.914	25.04	0.49	0.10	25.63	56.00	-30.37	Peak
8	0.914	15.24	0.49	0.10	15.83	46.00	-30.17	Average
9	2.133	19.15	0.39	0.10	19.64	56.00	-36.36	Peak
10	2.133	9.28	0.39	0.10	9.77	46.00	-36.23	Average
11	4.269	14.85	0.32	0.10	15.27	56.00	-40.73	Peak
12	4.269	8.57	0.32	0.10	8.99	46.00	-37.01	Average

Neutral:



Trace: 8

Condition : FCC PART15 CLASSB QP LISN(2011) NEUTRAL
 Job No. : 408RF
 Test Mode : Receiving mode
 Test Engineer: Oscar

	Read Freq	LISN Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.310	22.22	0.61	0.10	22.93	59.97	-37.04	Peak
2	0.310	12.36	0.61	0.10	13.07	49.97	-36.90	Average
3	0.614	24.42	0.53	0.10	25.05	56.00	-30.95	Peak
4	0.614	12.69	0.53	0.10	13.32	46.00	-32.68	Average
5	0.914	25.61	0.49	0.10	26.20	56.00	-29.80	Peak
6	0.914	16.69	0.49	0.10	17.28	46.00	-28.72	Average
7	2.133	20.41	0.39	0.10	20.90	56.00	-35.10	Peak
8	2.133	11.47	0.39	0.10	11.96	46.00	-34.04	Average
9	3.190	16.95	0.35	0.10	17.40	56.00	-38.60	Peak
10	3.190	8.57	0.35	0.10	9.02	46.00	-36.98	Average
11	10.905	15.65	0.21	0.20	16.06	60.00	-43.94	Peak
12	10.905	6.35	0.21	0.20	6.76	50.00	-43.24	Average

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

7.2 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>3MHz</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	3MHz	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	3MHz	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"> 1. 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. 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 rota 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 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:	Passed		

Note:

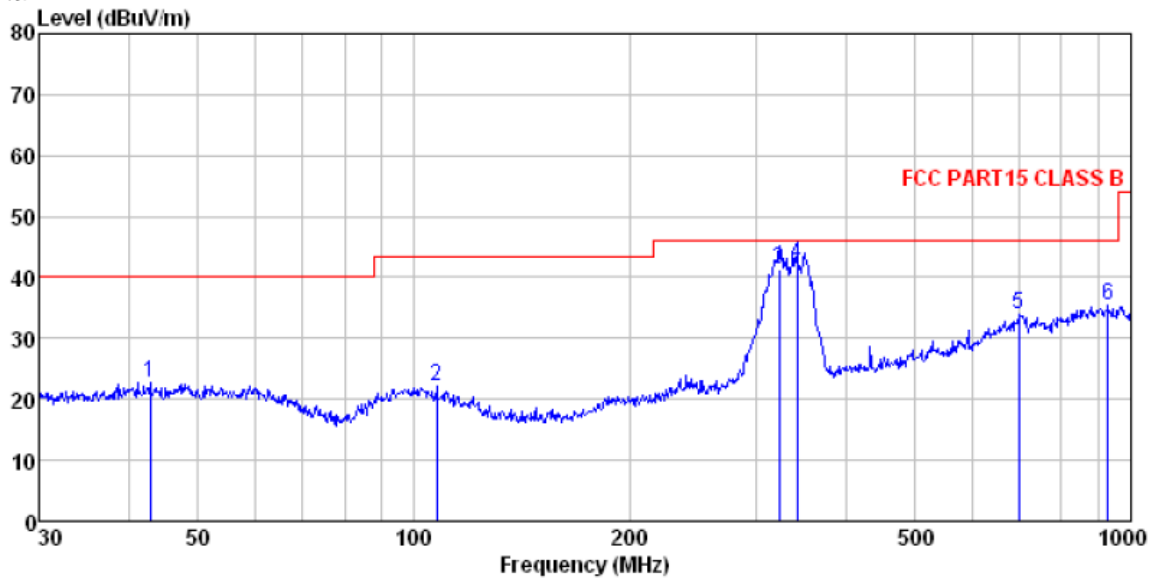
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

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

Measurement Data

Below 1GHz

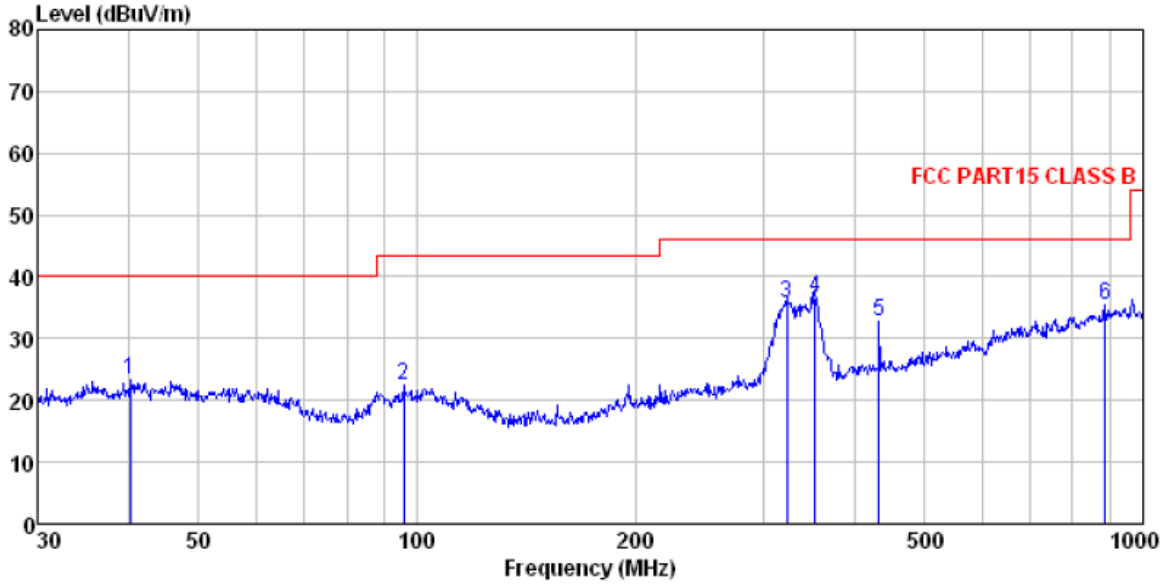
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163 -2012-05 HORIZONTAL
 Job No. : 408RF
 Test Mode : Receiving mode
 Test Engineer: Edward

	Freq MHz	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Remark
		Level dBuV	Factor dB/m	Loss dB	Factor dB			
1	42.900	37.60	16.57	0.69	32.03	22.83	40.00	-17.17 QP
2	107.510	37.77	15.05	1.26	31.80	22.28	43.50	-21.22 QP
3	323.320	54.70	16.31	2.49	32.11	41.39	46.00	-4.61 QP
4	341.979	55.58	16.17	2.58	32.05	42.28	46.00	-3.72 QP
5	696.857	39.25	21.77	4.08	31.18	33.92	46.00	-12.08 QP
6	929.008	37.60	23.99	4.96	31.20	35.35	46.00	-10.65 QP

Vertical:

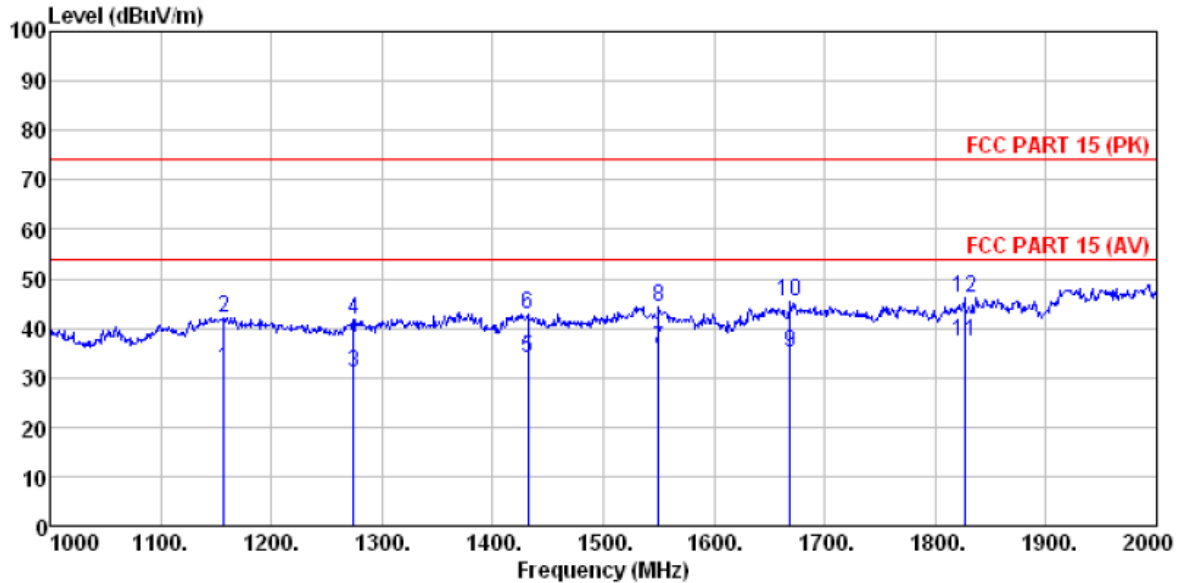


Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163 -2012-05 VERTICAL
 Job No. : 408RF
 Test Mode : Receiving mode
 Test Engineer: Edward

	Read	Antenna	Cable	Preamp	Level	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	40.276	38.04	16.58	0.66	32.06	23.22	40.00	-16.78 QP
2	95.762	37.11	15.99	1.16	31.74	22.52	43.50	-20.98 QP
3	323.320	49.04	16.31	2.49	32.11	35.73	46.00	-10.27 QP
4	352.943	49.72	16.35	2.64	32.02	36.69	46.00	-9.31 QP
5	432.546	43.89	17.54	3.01	31.78	32.66	46.00	-13.34 QP
6	887.610	37.80	23.96	4.80	31.20	35.36	46.00	-10.64 QP

Above 1GHz

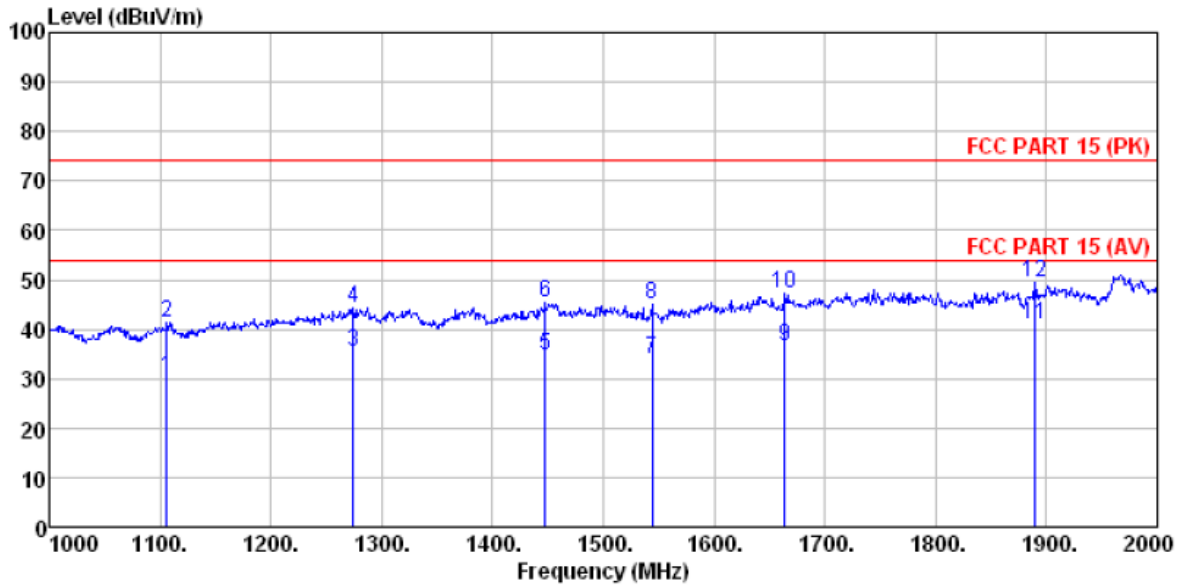
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL
 Job No. : 408RF
 Test Mode : Receiving mode
 Test Engineer: Oscar

	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	1157.000	33.64	25.06	4.43	31.43	31.70	54.00	-22.30 Average
2	1157.000	43.98	25.06	4.43	31.43	42.04	74.00	-31.96 Peak
3	1274.000	32.61	25.58	4.52	31.55	31.16	54.00	-22.84 Average
4	1274.000	43.15	25.58	4.52	31.55	41.70	74.00	-32.30 Peak
5	1432.000	35.64	25.42	4.64	31.69	34.01	54.00	-19.99 Average
6	1432.000	44.62	25.42	4.64	31.69	42.99	74.00	-31.01 Peak
7	1550.000	37.57	25.10	4.71	31.67	35.71	54.00	-18.29 Average
8	1550.000	46.07	25.10	4.71	31.67	44.21	74.00	-29.79 Peak
9	1669.000	36.69	24.91	4.78	31.51	34.87	54.00	-19.13 Average
10	1669.000	47.04	24.91	4.78	31.51	45.22	74.00	-28.78 Peak
11	1826.000	38.44	25.40	4.87	31.30	37.41	54.00	-16.59 Average
12	1826.000	47.12	25.40	4.87	31.30	46.09	74.00	-27.91 Peak

Vertical:

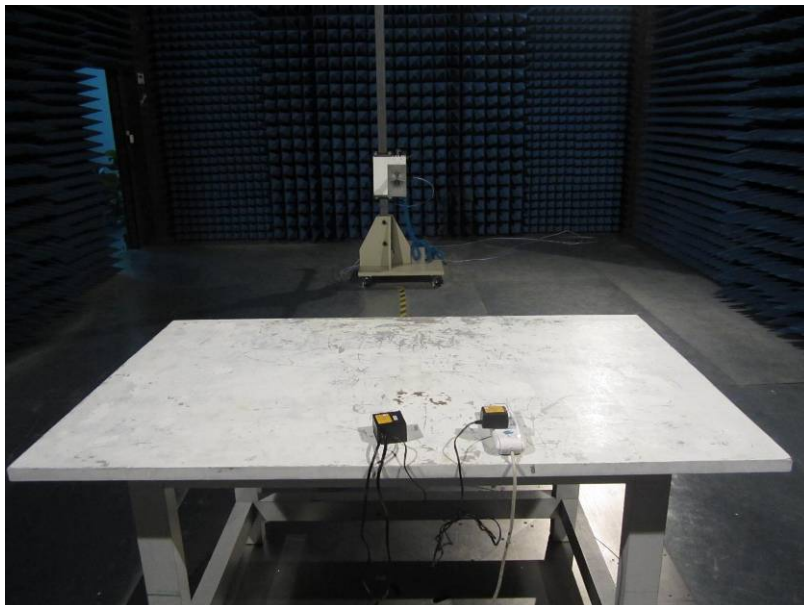
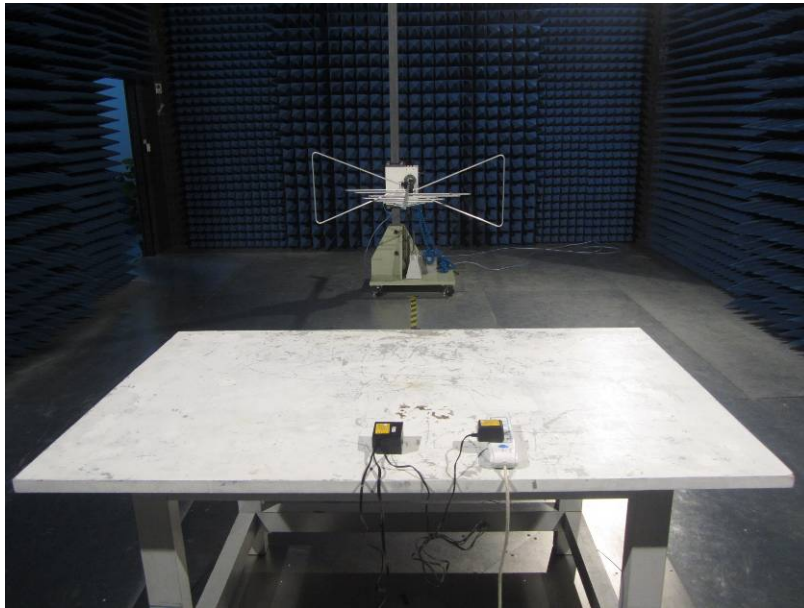


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL
 Job No. : 408RF
 Test Mode : Receiving mode
 Test Engineer: Osccar

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1106.000	32.61	24.79	4.39	31.37	30.42	54.00	-23.58	Average
2	1106.000	43.41	24.79	4.39	31.37	41.22	74.00	-32.78	Peak
3	1274.000	36.69	25.58	4.52	31.55	35.24	54.00	-18.76	Average
4	1274.000	45.91	25.58	4.52	31.55	44.46	74.00	-29.54	Peak
5	1448.000	36.21	25.35	4.65	31.71	34.50	54.00	-19.50	Average
6	1448.000	47.16	25.35	4.65	31.71	45.45	74.00	-28.55	Peak
7	1544.000	35.63	25.12	4.71	31.67	33.79	54.00	-20.21	Average
8	1544.000	46.78	25.12	4.71	31.67	44.94	74.00	-29.06	Peak
9	1664.000	38.55	24.89	4.78	31.51	36.71	54.00	-17.29	Average
10	1664.000	49.07	24.89	4.78	31.51	47.23	74.00	-26.77	Peak
11	1890.000	41.64	25.70	4.90	31.23	41.01	54.00	-12.99	Average
12	1890.000	50.07	25.70	4.90	31.23	49.44	74.00	-24.56	Peak

8 Test Setup Photo

Radiated Emission



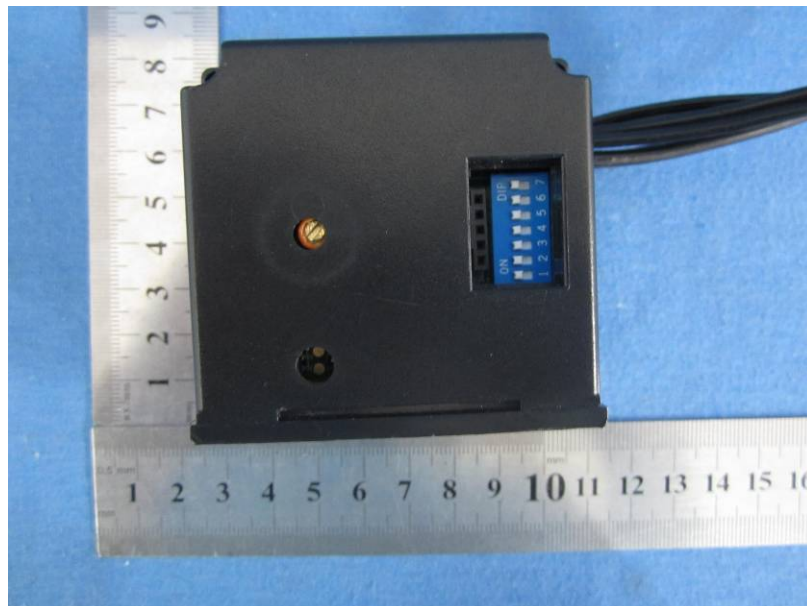
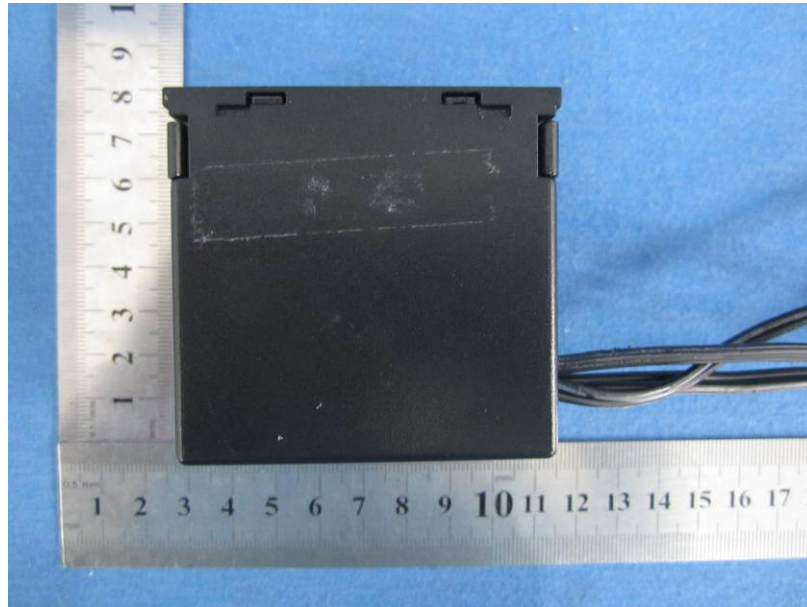
Conducted Emission

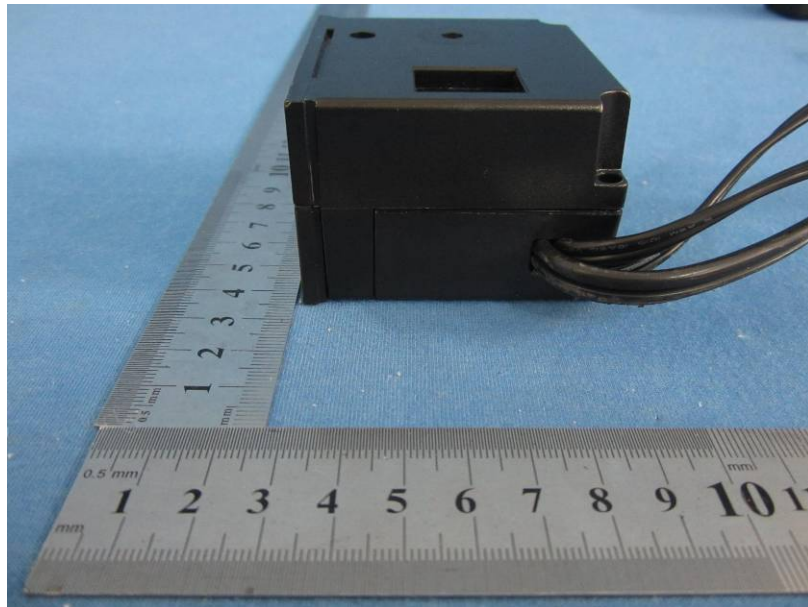
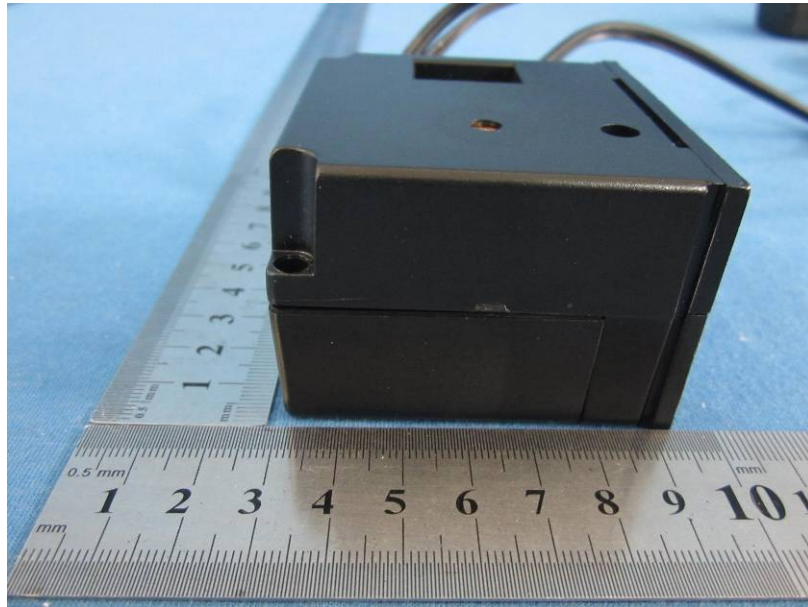


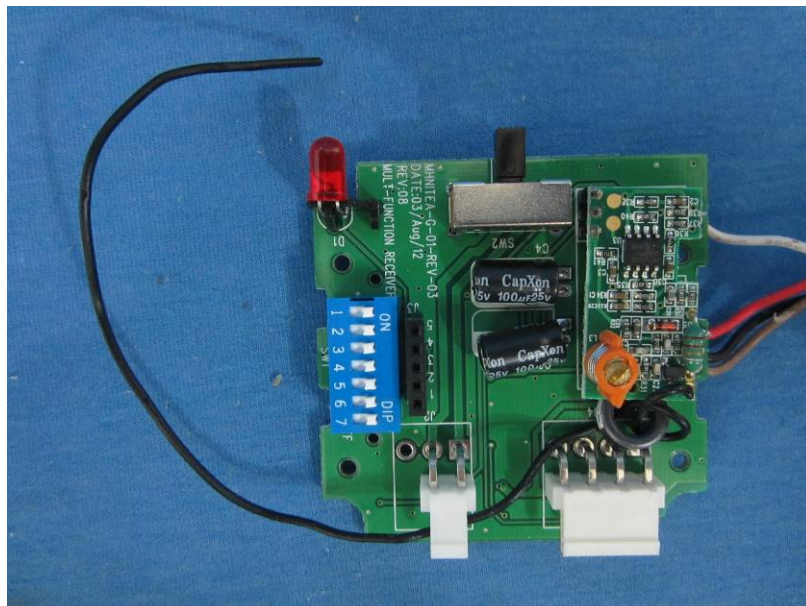
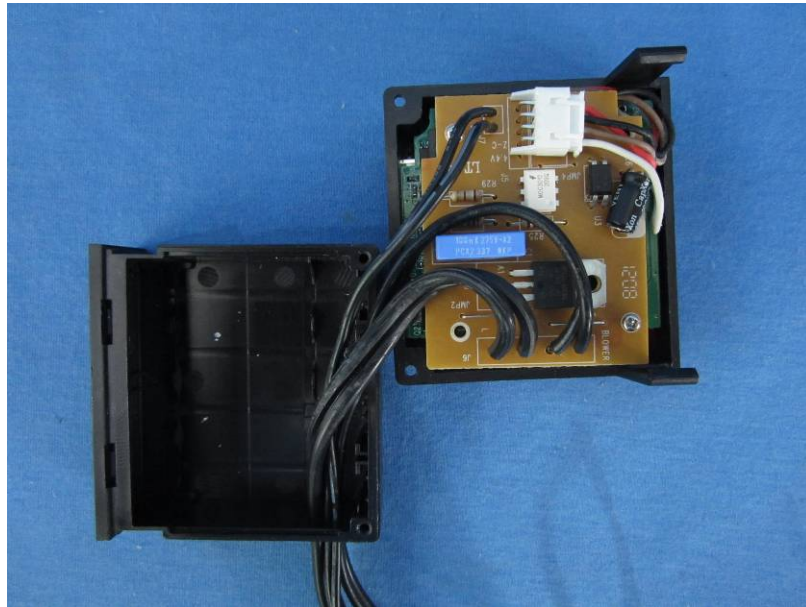
9 EUT Constructional Details

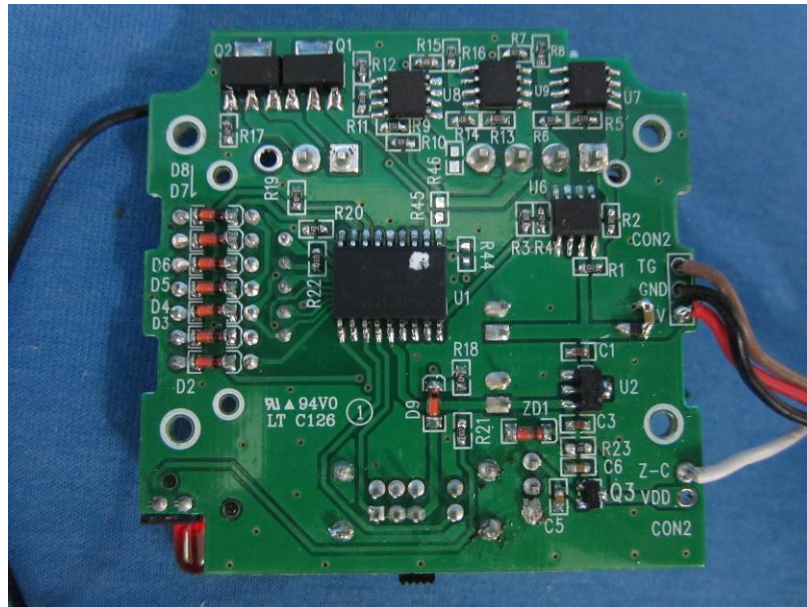
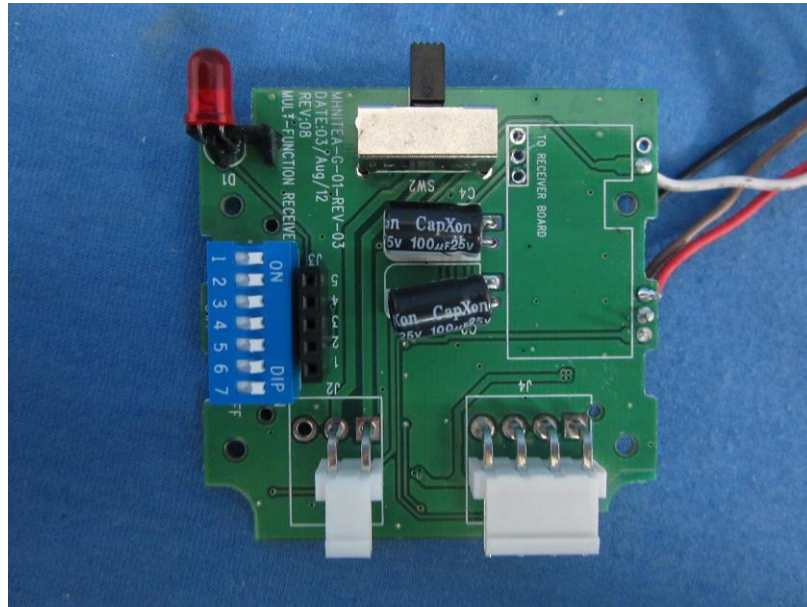


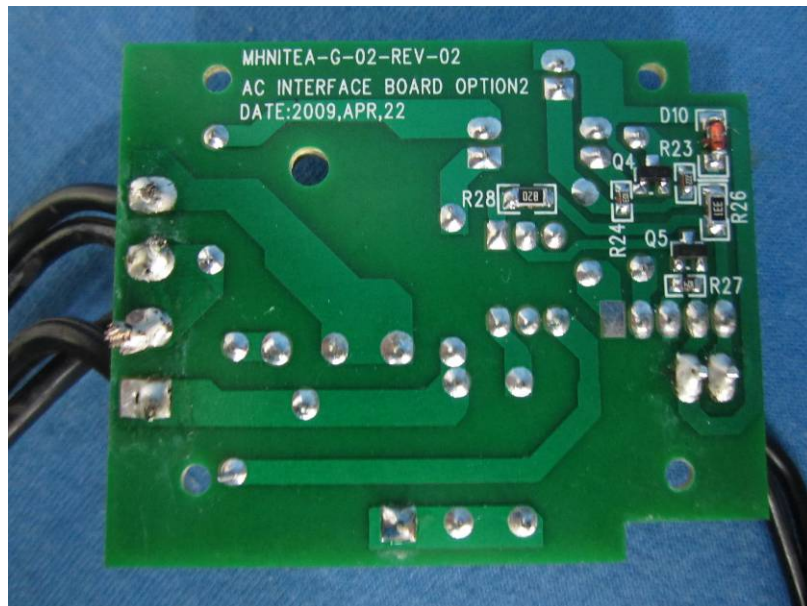
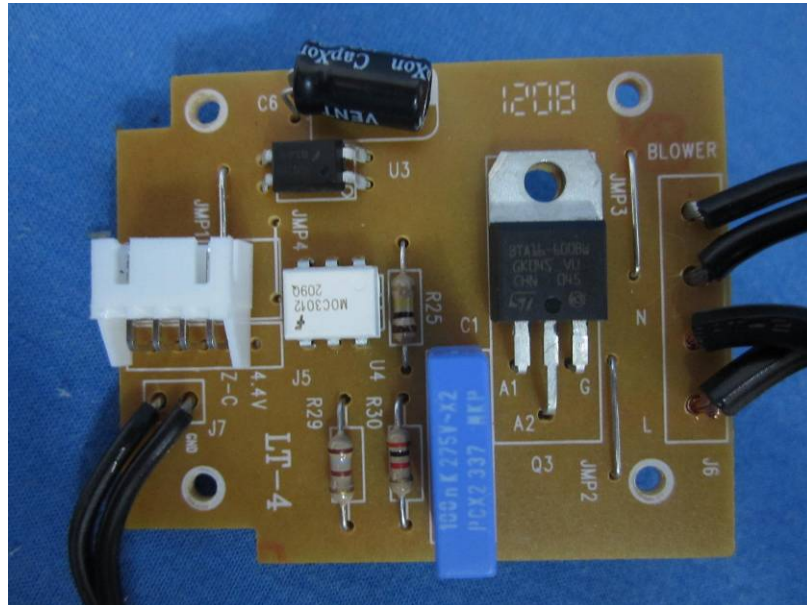


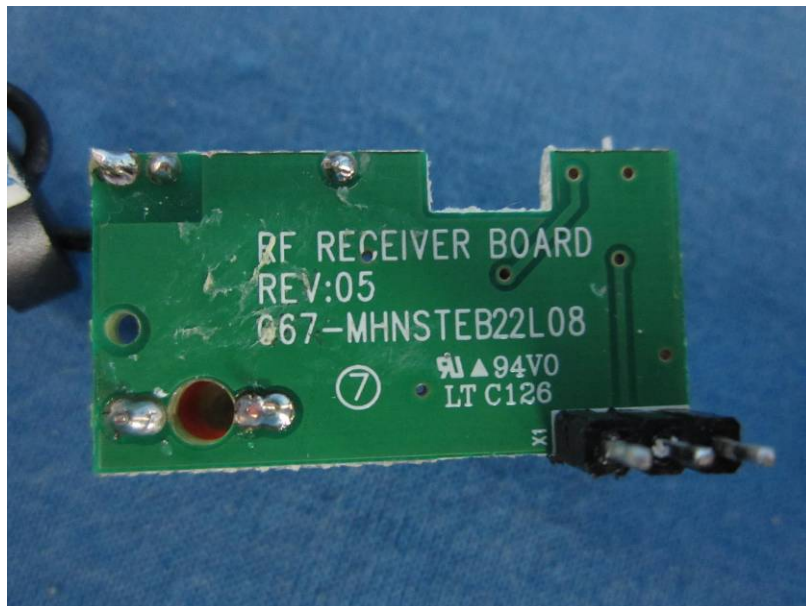
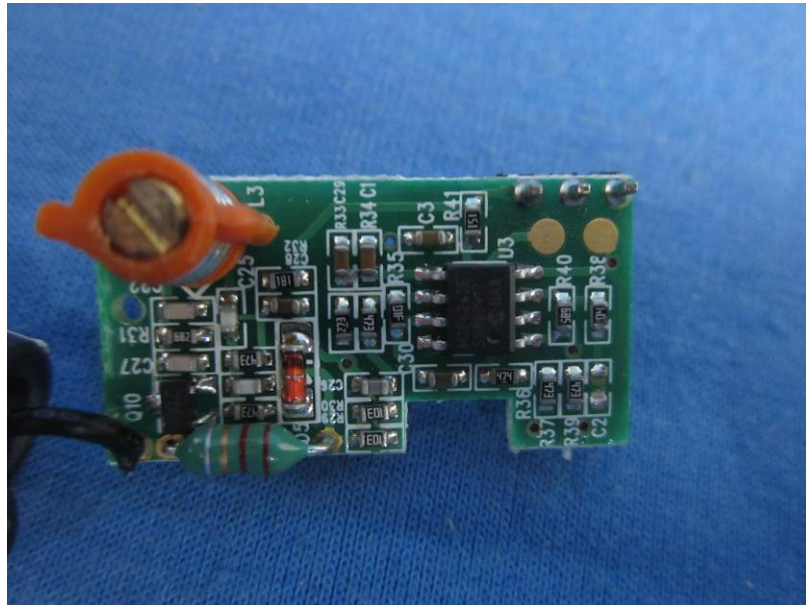


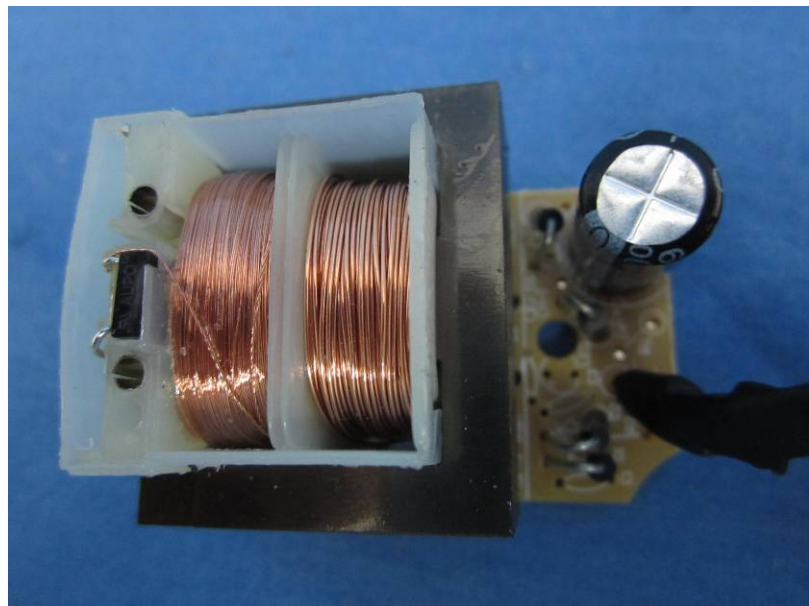
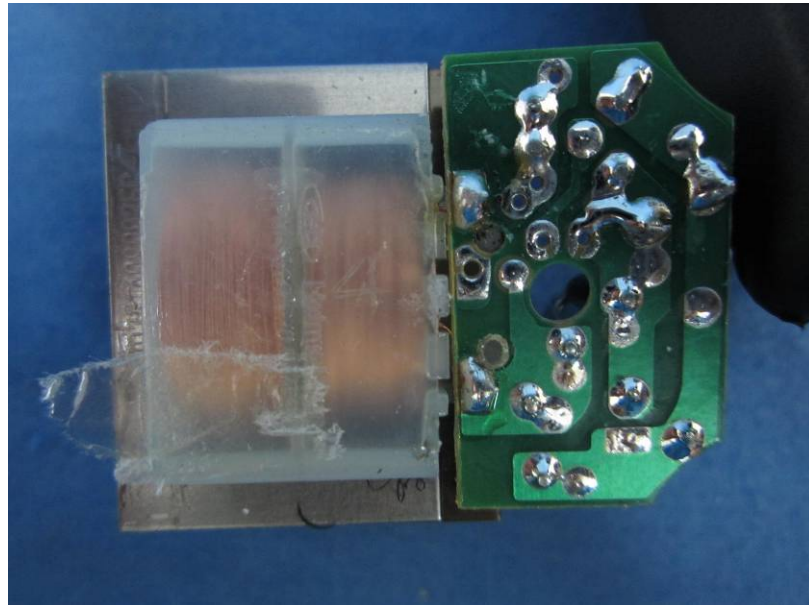


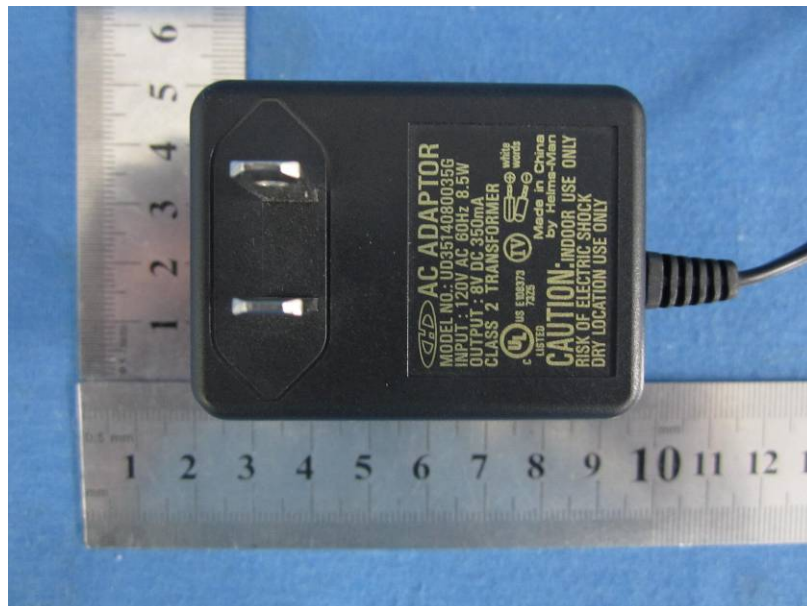
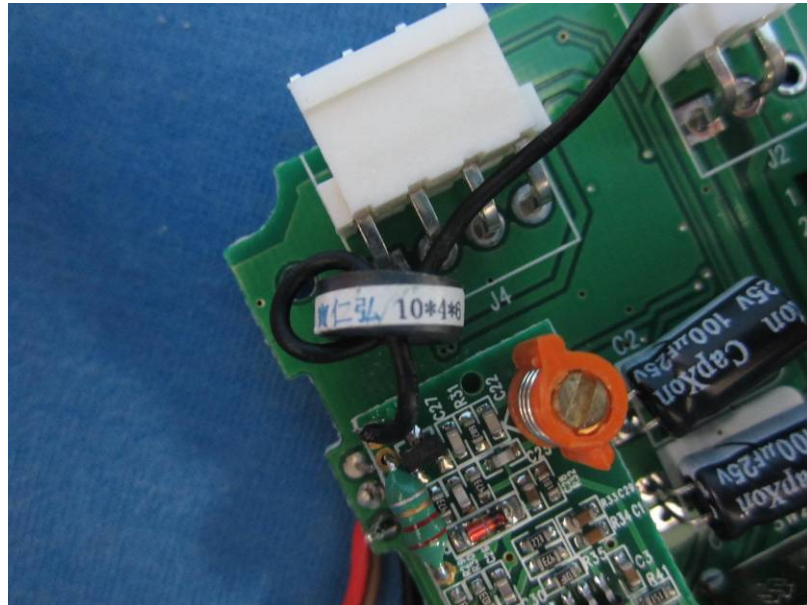












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