

# FCC REPORT

**Applicant:** Computime Limited

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

**Equipment Under Test (EUT)**

Product Name: Wireless Thermostat Controller

Model No.: AAHZT3A, 4823701

**FCC ID:** D12AAHZT3A

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.249:2012

**Date of sample receipt:** May 06, 2013

**Date of Test:** May 07-14, 2013

**Date of report issued:** May 15, 2013

**Test Result :** PASS \*

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

Authorized Signature:

A circular logo for GTS (Global United Technology Services Co., Ltd.) is overlaid with a handwritten signature in black ink. The logo contains the text 'GTS' in the center, 'GLOBAL TESTING' below it, and 'GLOBAL TECHNOLOGY SERVICES CO., LTD.' around the perimeter. The number '130400' is also visible at the bottom of the logo.

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	May 15, 2013	Original

**Prepared By:** hank. yan **Date:** May 15, 2013  
**Project Engineer**

**Check By:** Hans. Hu **Date:** May 15, 2013  
**Reviewer**

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## 4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge	15.249 (d)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

*Pass: The EUT complies with the essential requirements in the standard.*

*N/A: not applicable.*

## 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 Electronics (shenzhen) Company Limited
Address of Manufacturer:	Computime Technology Park, DanZhuTou Cun, Buji, Longgang Region, Shenzhen, China

### 5.2 General Description of EUT

Product Name:	Wireless Thermostat Controller
Model No.:	AAHZT3A, 4823701
Test Model No.:	AAHZT3A
Remark:	4823701 and AAHZT3A are identical in the same interior structure, electrical circuits, components and appearance. The only difference is the model name for the marketing requirement.
Operation Frequency:	2405MHz~2480MHz
Channel numbers:	16
Channel separation:	5MHz
Modulation type:	O-QPSK
Antenna Type:	PCB Antenna
Antenna gain:	0dBi
Power supply:	AC 24V

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2405MHz	5	2425MHz	9	2445MHz	13	2465MHz
2	24010MHz	6	2430MHz	10	2450MHz	14	2470MHz
3	2415MHz	7	2435MHz	11	2455MHz	15	2475MHz
4	2420MHz	8	2440MHz	12	2460MHz	16	2480MHz

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2405MHz
The middle channel	2440MHz
The Highest channel	2480MHz

### 5.3 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

#### Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	X	Y	Z
Field Strength(dBuV/m)	101.34	103.17	102.51

#### Final Test Mode:

According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup":  
Y axis (see the test setup photo)

### 5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number
ET	AC/AC Linear Transformer	ETE40310F	N/A
Computime Limited	Relay artificial load	N/A	N/A

## 5.5 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 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.

## 5.6 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

## 5.7 Other Information Requested by the Customer

None.

## 6 Test Instruments list

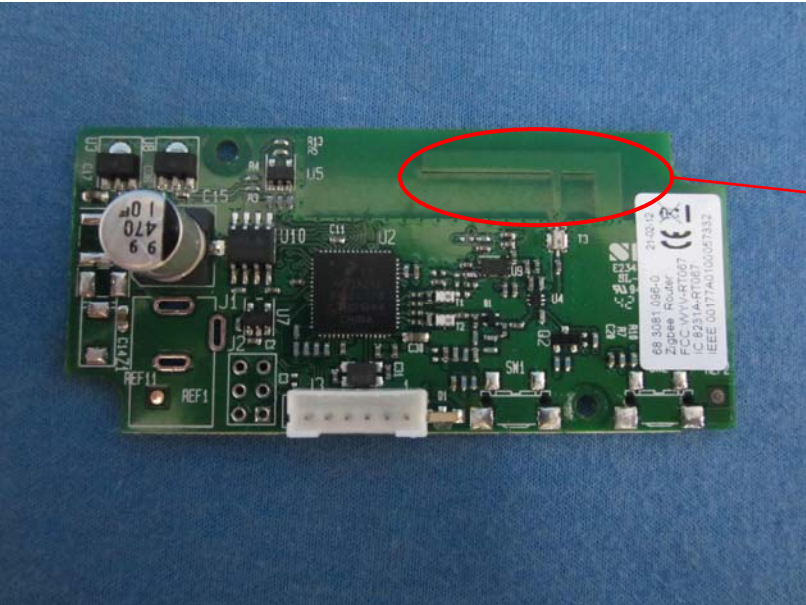
Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 29 2013	Mar. 28 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	Dec. 6, 2012	Dec. 5 2013
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 03 2012	Jul. 02 2013
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 23 2014	Feb. 22 2015
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 29 2012	June 28 2013
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 29 2013	Mar. 28 2014
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	Mar. 30 2013	Mar. 29 2014
10	Coaxial Cable	GTS	N/A	GTS211	Mar. 30 2013	Mar. 29 2014
11	Coaxial cable	GTS	N/A	GTS210	Mar. 30 2013	Mar. 29 2014
12	Coaxial Cable	GTS	N/A	GTS212	Mar. 30 2013	Mar. 29 2014
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 03 2012	Jul. 02 2013
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 03 2012	Jul. 02 2013
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 29 2012	June 28 2013
16	Band filter	Amindeon	82346	GTS219	Mar. 30 2013	Mar. 29 2014

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)	GTS264	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



## 7 Test results and Measurement Data

### 7.1 Antenna requirement:

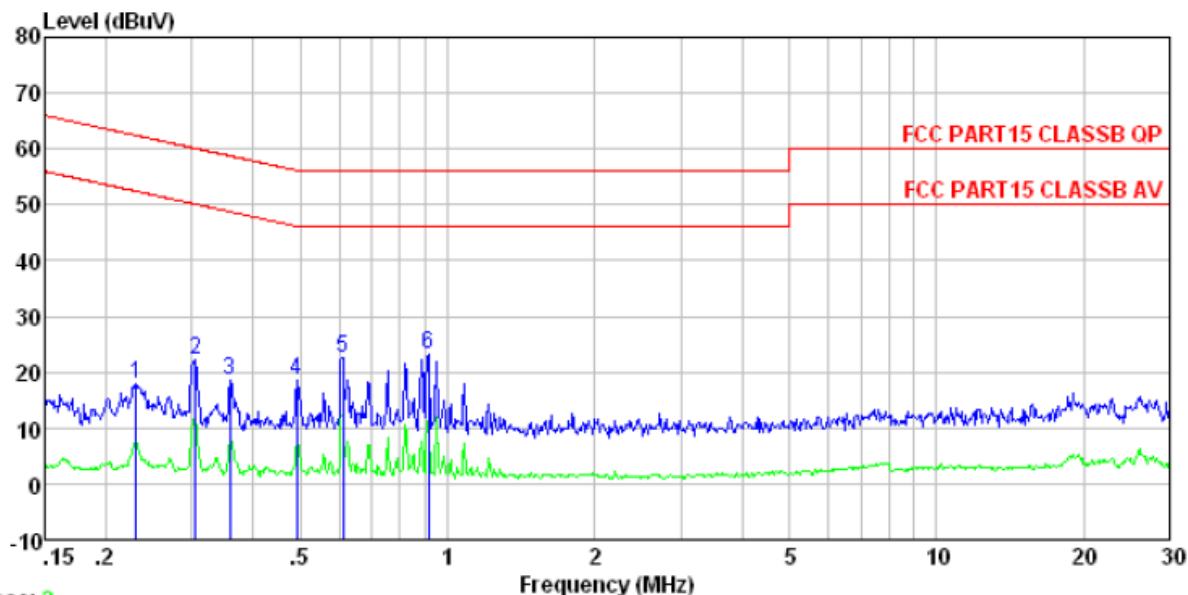
<b>Standard requirement:</b>	FCC Part15 C Section 15.203
<p><b>15.203 requirement:</b></p> <p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p>	
<p><b>E.U.T Antenna:</b></p> <p><i>The antenna is PCB antenna, the best case gain of the antenna is 0dBi</i></p>	
 <p style="text-align: right; color: red; font-weight: bold;">RF Antenna</p>	

## 7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.4:2003														
Test Frequency Range:	150KHz to 30MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</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>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p>* Decreases with the logarithm of the frequency.</p>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test setup:	<p>Remark  E.U.T: Equipment Under Test  LISN: Line Impedance Stabilization Network  Test table height=0.8m</p>														
Test procedure:	<ol style="list-style-type: none"> <li>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>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 refer to the block diagram of the test setup and photographs).</li> <li>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: 2003 on conducted measurement.</li> </ol>														
Test Instruments:	Refer to section 6.0 for details														
Test mode:	Refer to section 5.3 for details														
Test results:	Pass														

## Measurement data

Line:

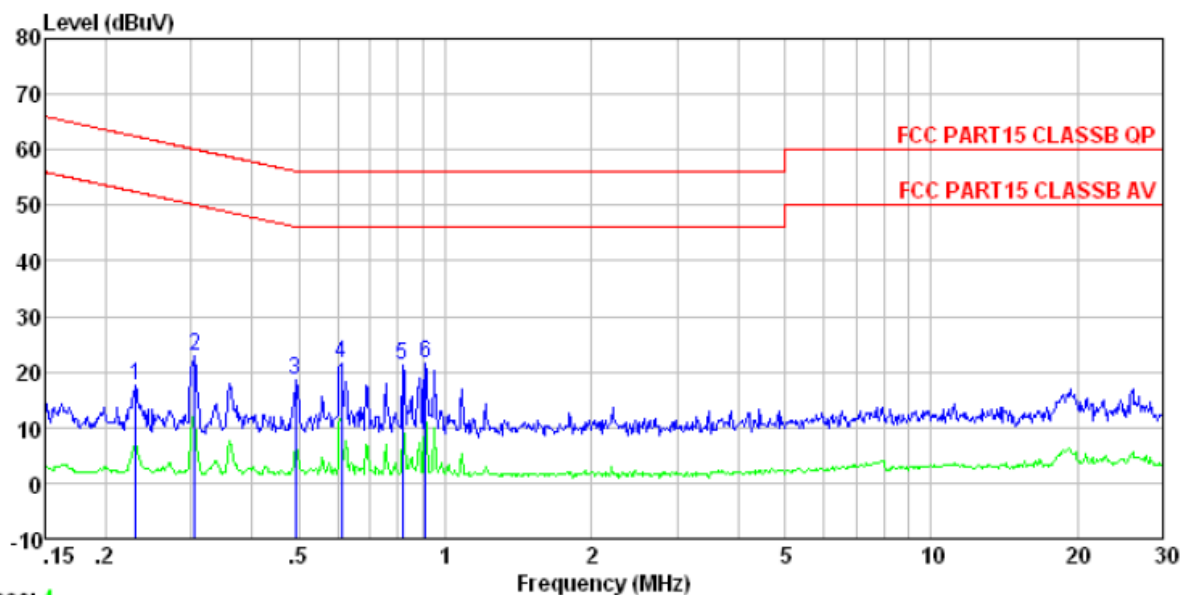


Trace: 2

Condition : FCC PART15 CLASSB QP LISN-2012 LINE  
 Job No. : 488RF  
 Test mode : Transmitting mode  
 Test Engineer: Edward

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.230	18.02	-0.23	0.10	17.89	62.44	-44.55	QP
2	0.305	22.33	-0.22	0.10	22.21	60.10	-37.89	QP
3	0.360	18.65	-0.22	0.10	18.53	58.74	-40.21	QP
4	0.491	18.59	-0.21	0.10	18.48	56.14	-37.66	QP
5	0.611	22.72	-0.20	0.10	22.62	56.00	-33.38	QP
6	0.914	23.37	-0.21	0.10	23.26	56.00	-32.74	QP

Neutral:



Trace: 4  
 Condition : FCC PART15 CLASSB QP LISN-2012 NEUTRAL  
 Job No. : 488RF  
 Test mode : Transmitting mode  
 Test Engineer: Edward

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.230	17.64	-0.09	0.10	17.65	62.44	-44.79	QP
2	0.305	22.95	-0.09	0.10	22.96	60.10	-37.14	QP
3	0.491	18.47	-0.08	0.10	18.49	56.14	-37.65	QP
4	0.611	21.64	-0.08	0.10	21.66	56.00	-34.34	QP
5	0.817	21.13	-0.08	0.10	21.15	56.00	-34.85	QP
6	0.909	21.70	-0.09	0.10	21.71	56.00	-34.29	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss

### 7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.4:2003				
Test Frequency Range:	30MHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	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
Remark: For the Field Strength of Fundamental test, the RBW and VBW were set to 3MHz and 10MHz, due to the max 20dB bandwidth is 2.678MHz					
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)		Remark	
	2400MHz-2483.5MHz	94.00		Average Value	
		114.00		Peak Value	
Limit: (Spurious Emissions)	Frequency	Limit (dBuV/m @3m)		Remark	
	30MHz-88MHz	40.00		Quasi-peak Value	
	88MHz-216MHz	43.50		Quasi-peak Value	
	216MHz-960MHz	46.00		Quasi-peak Value	
	960MHz-1GHz	54.00		Quasi-peak Value	
	Above 1GHz	54.00		Average Value	
74.00		Peak Value			
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.				
Test setup:	<p>Below 1GHz</p> <p>Above 1GHz</p>				

	<p>The diagram illustrates the test setup. An EUT (Equipment Under Test) is placed on a turn table that is 0.8m above the ground. The turn table is rotated 360 degrees. The EUT is positioned 3m away from the antenna tower. The antenna tower is a variable-height structure with a horn antenna mounted on top. The antenna height is varied from 1m to 4m above the ground. The antenna is connected to a spectrum analyzer via an amplifier. The spectrum analyzer is used to measure the field strength of the EUT.</p>
<p>Test Procedure:</p>	<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> </ol>
<p>Test Instruments:</p>	<p>Refer to section 6.0 for details</p>
<p>Test mode:</p>	<p>Refer to section 5.3 for details</p>
<p>Test results:</p>	<p>Pass</p>

**Measurement data:**

## 7.3.1 Field Strength of The Fundamental Signal

### Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2405.00	99.18	27.58	5.39	30.18	101.97	114.00	-12.03	Horizontal
2405.00	97.13	27.58	5.39	30.18	99.92	114.00	-14.08	Vertical
2440.00	98.78	27.55	5.43	30.06	101.70	114.00	-12.30	Horizontal
2440.00	96.20	27.55	5.43	30.06	99.12	114.00	-14.88	Vertical
2480.00	100.11	27.52	5.47	29.93	103.17	114.00	-10.83	Horizontal
2480.00	97.37	27.52	5.47	29.93	100.43	114.00	-13.57	Vertical

### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2405.00	87.62	27.58	5.39	30.18	90.41	94.00	-3.59	Horizontal
2405.00	85.74	27.58	5.39	30.18	88.53	94.00	-5.47	Vertical
2440.00	86.33	27.55	5.43	30.06	89.25	94.00	-4.75	Horizontal
2440.00	83.59	27.55	5.43	30.06	86.51	94.00	-7.49	Vertical
2480.00	88.62	27.52	5.47	29.93	91.68	94.00	-2.32	Horizontal
2480.00	86.14	27.52	5.47	29.93	89.20	94.00	-4.80	Vertical

## 7.3.2 Spurious emissions

### ■ Below 1GHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
42.60	38.18	16.57	0.69	32.03	23.41	40.00	-16.59	Vertical
67.91	41.75	13.43	0.92	31.89	24.21	40.00	-15.79	Vertical
102.00	37.71	16.01	1.21	31.77	23.16	43.50	-20.34	Vertical
239.99	39.44	15.07	2.07	32.16	24.42	46.00	-21.58	Vertical
269.43	41.47	15.38	2.22	32.17	26.90	46.00	-19.10	Vertical
881.41	37.62	23.91	4.79	31.21	35.11	46.00	-10.89	Vertical
49.88	38.42	16.37	0.77	31.96	23.60	40.00	-16.40	Horizontal
60.49	37.86	15.65	0.86	31.94	22.43	40.00	-17.57	Horizontal
103.81	38.84	15.73	1.22	31.78	24.01	43.50	-19.49	Horizontal
278.07	39.08	15.67	2.26	32.17	24.84	46.00	-21.16	Horizontal
533.83	37.79	19.26	3.46	31.38	29.13	46.00	-16.87	Horizontal
796.18	40.10	23.01	4.45	31.31	36.25	46.00	-9.75	Horizontal



■ Above 1GHz

Test channel:	Lowest channel
---------------	----------------

**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4810.00	38.72	31.78	8.60	24.17	54.93	74.00	-19.07	Vertical
7215.00	37.11	36.15	11.65	26.39	58.52	74.00	-15.48	Vertical
9620.00	34.97	38.01	14.14	25.45	61.67	74.00	-12.33	Vertical
12025.00	*					74.00		Vertical
14430.00	*					74.00		Vertical
4810.00	34.82	31.78	8.60	24.17	51.03	74.00	-22.97	Horizontal
7215.00	35.00	36.15	11.65	26.39	56.41	74.00	-17.59	Horizontal
9620.00	31.67	38.01	14.14	25.45	58.37	74.00	-15.63	Horizontal
12025.00	*					74.00		Horizontal
14430.00	*					74.00		Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4810.00	25.01	31.78	8.60	24.17	41.22	54.00	-12.78	Vertical
7215.00	24.05	36.15	11.65	26.39	45.46	54.00	-8.54	Vertical
9620.00	20.35	38.01	14.14	25.45	47.05	54.00	-6.95	Vertical
12025.00	*					54.00		Vertical
14430.00	*					54.00		Vertical
4810.00	20.93	31.78	8.60	24.17	37.14	54.00	-16.86	Horizontal
7215.00	21.04	36.15	11.65	26.39	42.45	54.00	-11.55	Horizontal
9620.00	21.18	38.01	14.14	25.45	47.88	54.00	-6.12	Horizontal
12025.00	*					54.00		Horizontal
14430.00	*					54.00		Horizontal

**Remark:**

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *“\*”*, means this data is the too weak instrument of signal is unable to test.

Test channel:	Middle channel
---------------	----------------

**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	39.17	31.85	8.66	24.10	55.58	74.00	-18.42	Vertical
7320.00	38.29	36.37	11.72	26.71	59.67	74.00	-14.33	Vertical
9760.00	34.39	38.35	14.25	25.36	61.63	74.00	-12.37	Vertical
12200.00	*					74.00		Vertical
14640.00	*					74.00		Vertical
4880.00	35.46	31.85	8.66	24.10	51.87	74.00	-22.13	Horizontal
7320.00	34.10	36.37	11.72	26.71	55.48	74.00	-18.52	Horizontal
9760.00	30.69	38.35	14.25	25.36	57.93	74.00	-16.07	Horizontal
12200.00	*					74.00		Horizontal
14640.00	*					74.00		Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	25.46	31.85	8.66	24.10	41.87	54.00	-12.13	Vertical
7320.00	24.12	36.37	11.72	26.71	45.50	54.00	-8.50	Vertical
9760.00	19.14	38.35	14.25	25.36	46.38	54.00	-7.62	Vertical
12200.00	*					54.00		Vertical
14640.00	*					54.00		Vertical
4880.00	21.57	31.85	8.66	24.10	37.98	54.00	-16.02	Horizontal
7320.00	21.11	36.37	11.72	26.71	42.49	54.00	-11.51	Horizontal
9760.00	20.48	38.35	14.25	25.36	47.72	54.00	-6.28	Horizontal
12200.00	*					54.00		Horizontal
14640.00	*					54.00		Horizontal

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. “\*”, means this data is the too weak instrument of signal is unable to test.

Test channel:	Highest channel
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**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	37.98	31.93	8.73	24.03	54.61	74.00	-19.39	Vertical
7440.00	37.31	36.59	11.79	27.03	58.66	74.00	-15.34	Vertical
9920.00	31.92	38.81	14.38	25.26	59.85	74.00	-14.15	Vertical
12400.00	*					74.00		Vertical
14880.00	*					74.00		Vertical
4960.00	35.06	31.93	8.73	24.03	51.69	74.00	-22.31	Horizontal
7440.00	34.31	36.59	11.79	27.03	55.66	74.00	-18.34	Horizontal
9920.00	29.23	38.81	14.38	25.26	57.16	74.00	-16.84	Horizontal
12400.00	*					74.00		Horizontal
14880.00	*					74.00		Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	24.27	31.93	8.73	24.03	40.90	54.00	-13.10	Vertical
7440.00	24.67	36.59	11.79	27.03	46.02	54.00	-7.98	Vertical
9920.00	18.72	38.81	14.38	25.26	46.65	54.00	-7.35	Vertical
12400.00	*					54.00		Vertical
14880.00	*					54.00		Vertical
4960.00	21.17	31.93	8.73	24.03	37.80	54.00	-16.20	Horizontal
7440.00	21.72	36.59	11.79	27.03	43.07	54.00	-10.93	Horizontal
9920.00	19.87	38.81	14.38	25.26	47.80	54.00	-6.20	Horizontal
12400.00	*					54.00		Horizontal
14880.00	*					54.00		Horizontal

**Remark:**

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *“\*” means this data is too weak instrument of signal is unable to test.*

### 7.3.3 Bandedge emissions

All of the restriction bands were tested, and only the data of worst case was exhibited.

Test channel:	Lowest channel
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**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	47.65	27.59	5.38	30.18	50.44	74.00	-23.56	Horizontal
2400.00	54.23	27.58	5.39	30.18	57.02	74.00	-16.98	Horizontal
2390.00	45.68	27.59	5.38	30.18	48.47	74.00	-25.53	Vertical
2400.00	52.39	27.58	5.39	30.18	55.18	74.00	-18.82	Vertical

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	36.66	27.59	5.38	30.18	39.45	54.00	-14.55	Horizontal
2400.00	42.95	27.58	5.39	30.18	45.74	54.00	-8.26	Horizontal
2390.00	35.48	27.59	5.38	30.18	38.27	54.00	-15.73	Vertical
2400.00	41.55	27.58	5.39	30.18	44.34	54.00	-9.66	Vertical

Test channel:	Highest channel
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**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	55.36	27.53	5.47	29.93	58.43	74.00	-15.57	Horizontal
2500.00	46.34	27.55	5.49	29.93	49.45	74.00	-24.55	Horizontal
2483.50	52.17	27.53	5.47	29.93	55.24	74.00	-18.76	Vertical
2500.00	45.28	27.55	5.49	29.93	48.39	74.00	-25.61	Vertical

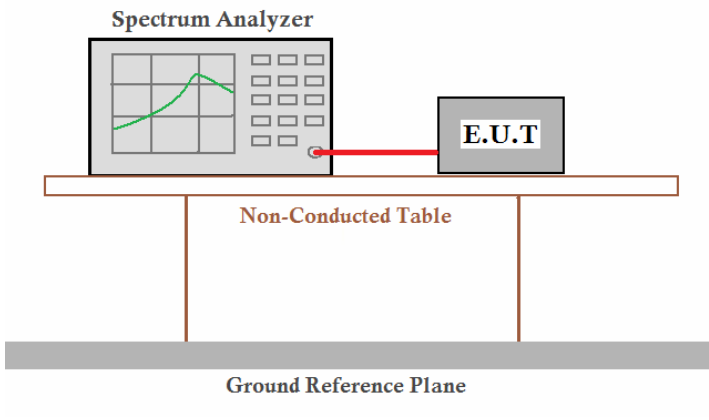
**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	44.65	27.53	5.47	29.93	47.72	54.00	-6.28	Horizontal
2500.00	35.27	27.55	5.49	29.93	38.38	54.00	-15.62	Horizontal
2483.50	41.73	27.53	5.47	29.93	44.80	54.00	-9.20	Vertical
2500.00	34.40	27.55	5.49	29.93	37.51	54.00	-16.49	Vertical

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor

## 7.4 20dB Occupy Bandwidth

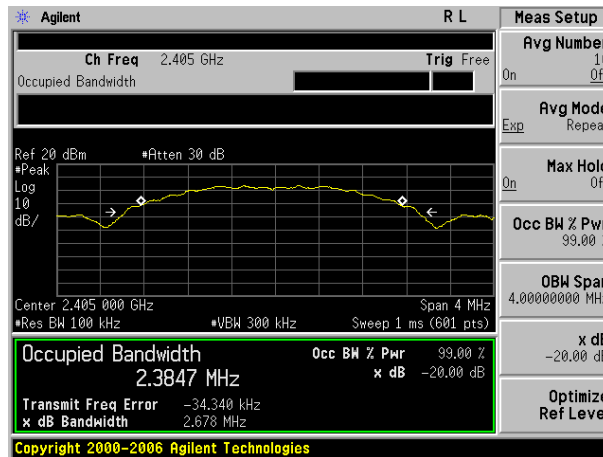
Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.4:2003
Limit:	Operation Frequency range 2400MHz~2483.5MHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

### Measurement Data

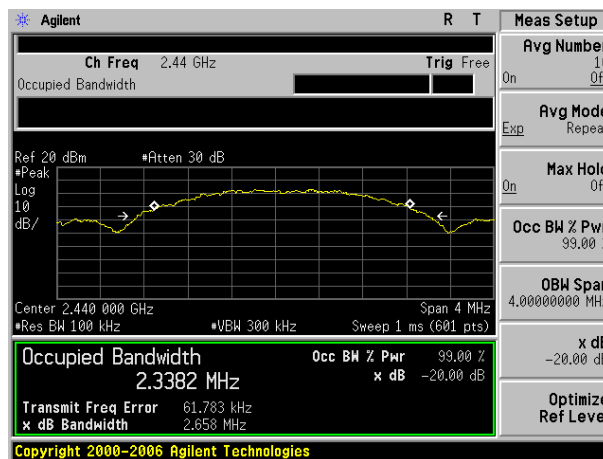
Worst case GFSK modulation

Test channel	20dB bandwidth(MHz)	Result
Lowest	2.678	Pass
Middle	2.658	Pass
Highest	2.669	Pass

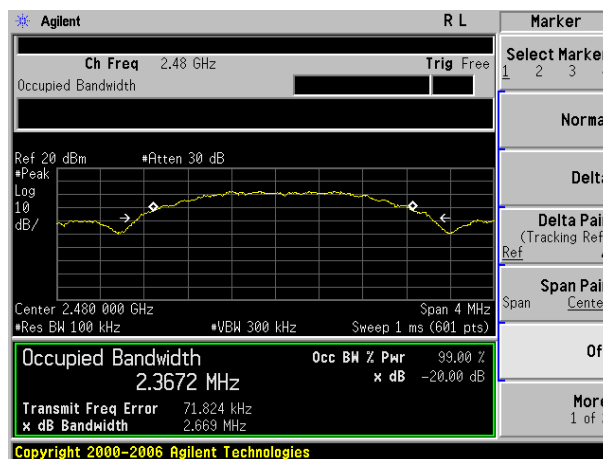
Test plot as follows:



Lowest channel



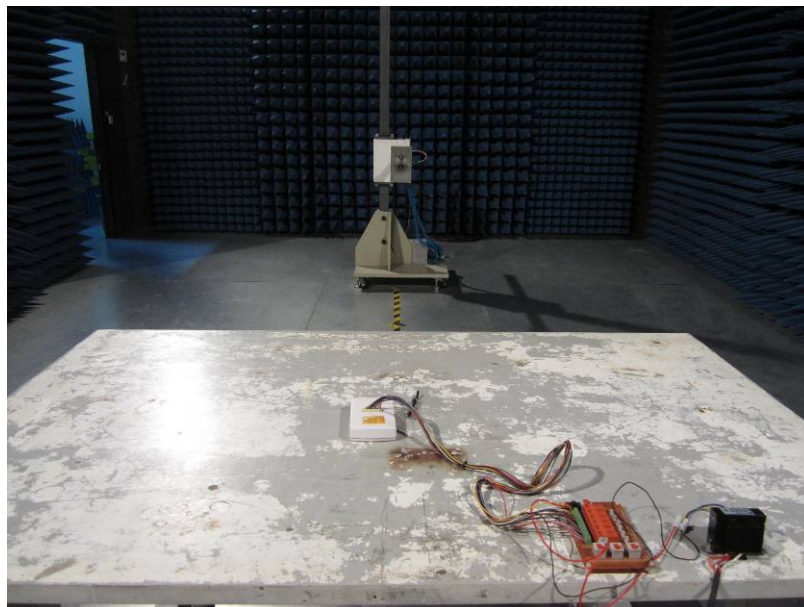
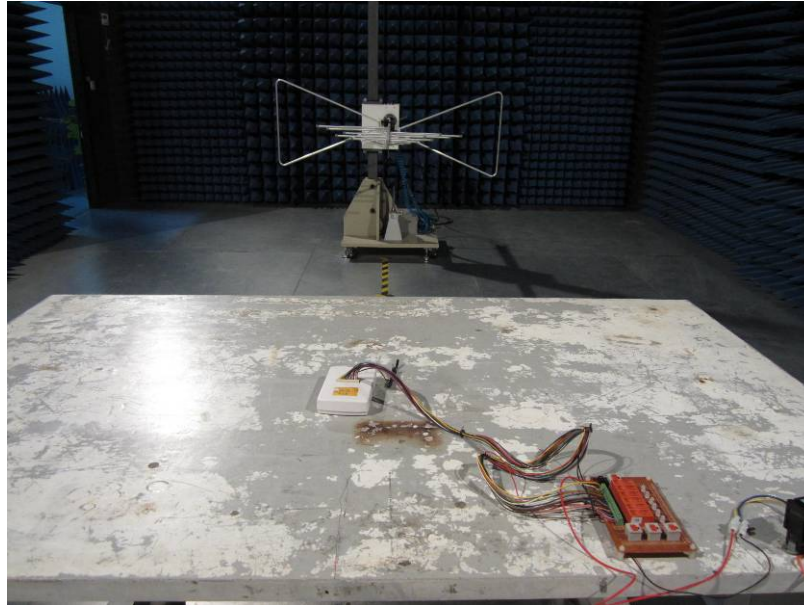
Middle channel



Highest channel

## 8 Test Setup Photo

Radiated Emission



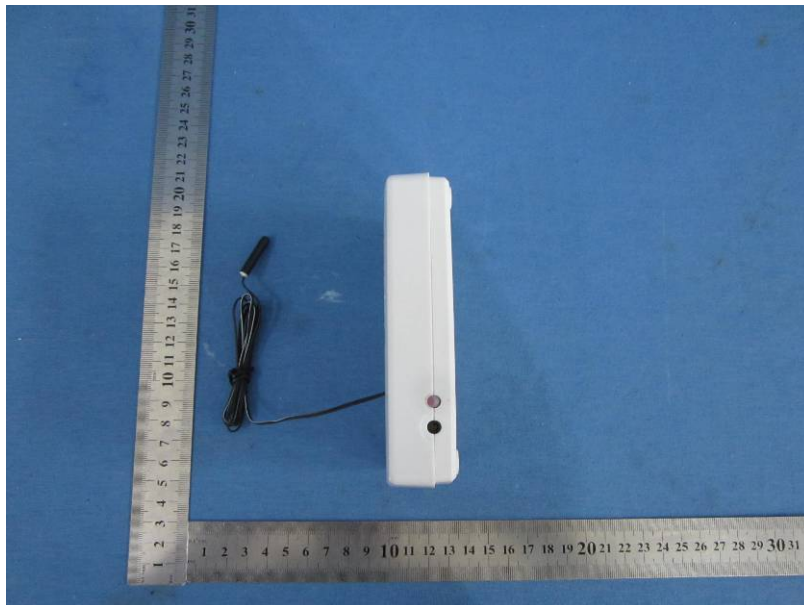
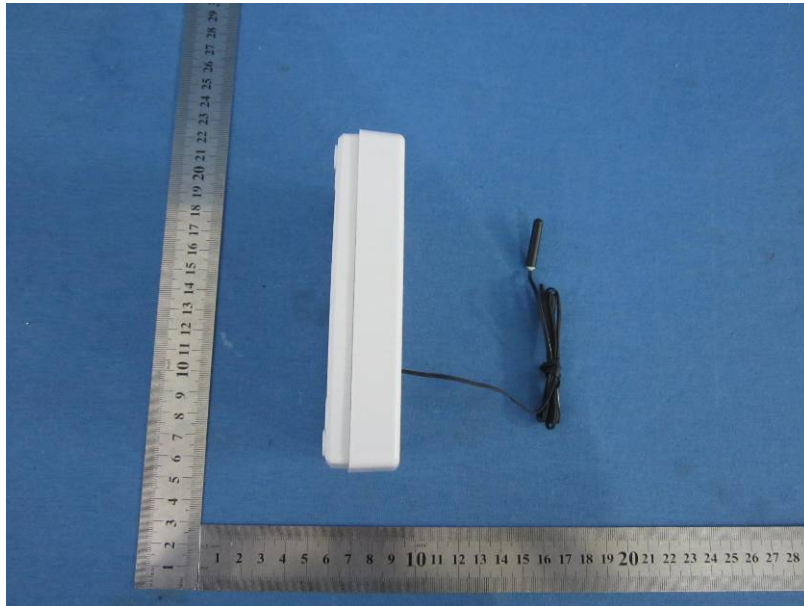
## Conducted Emission



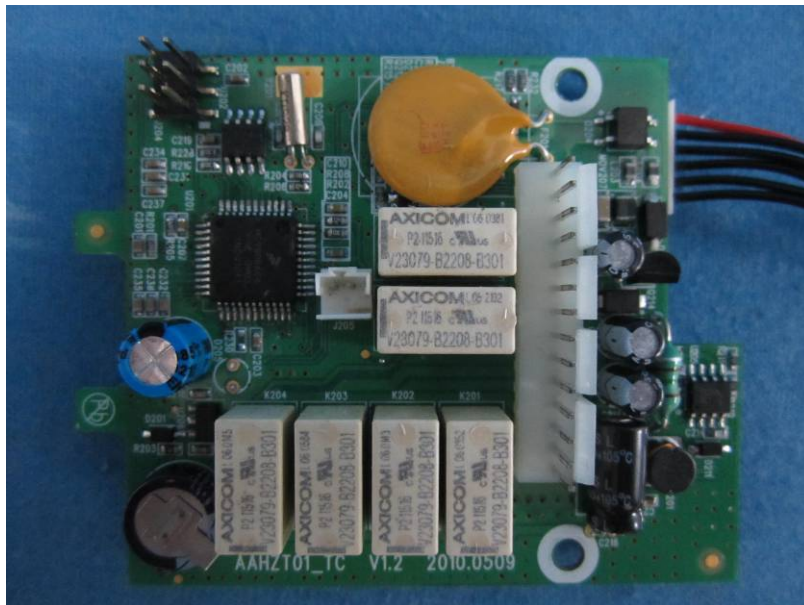
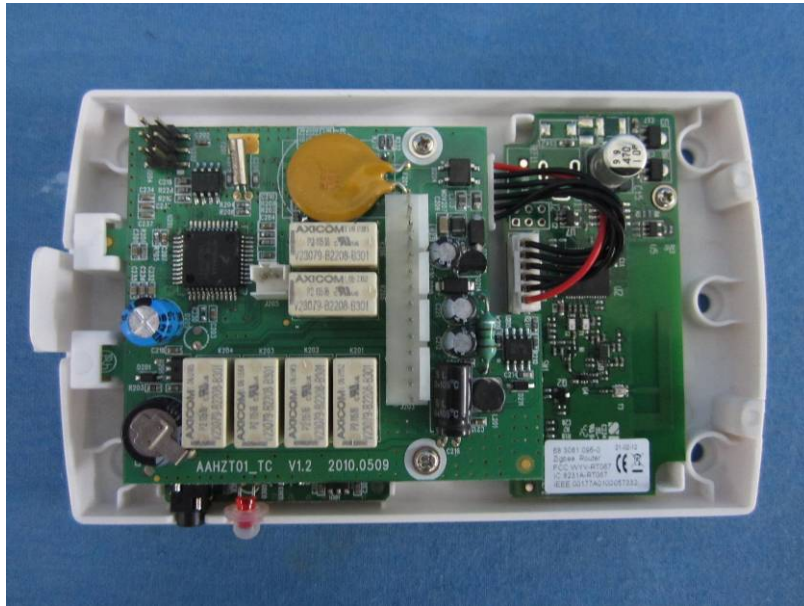


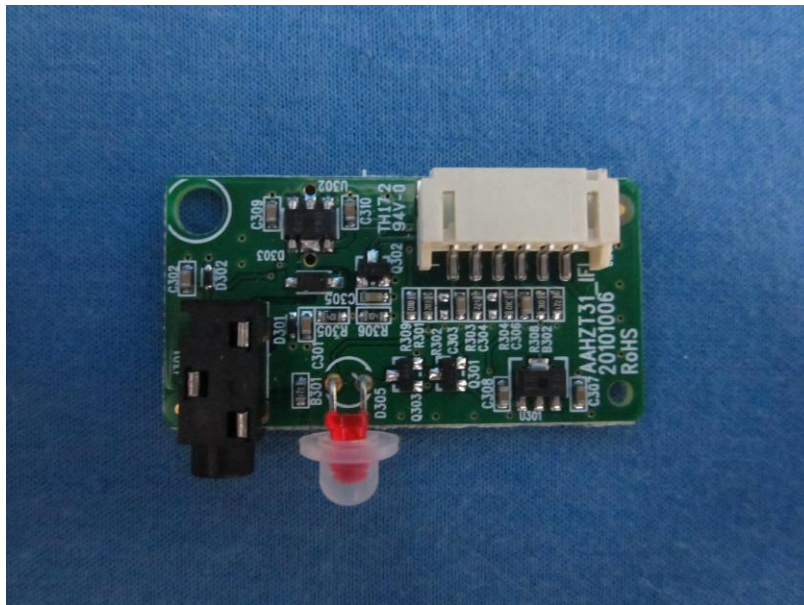
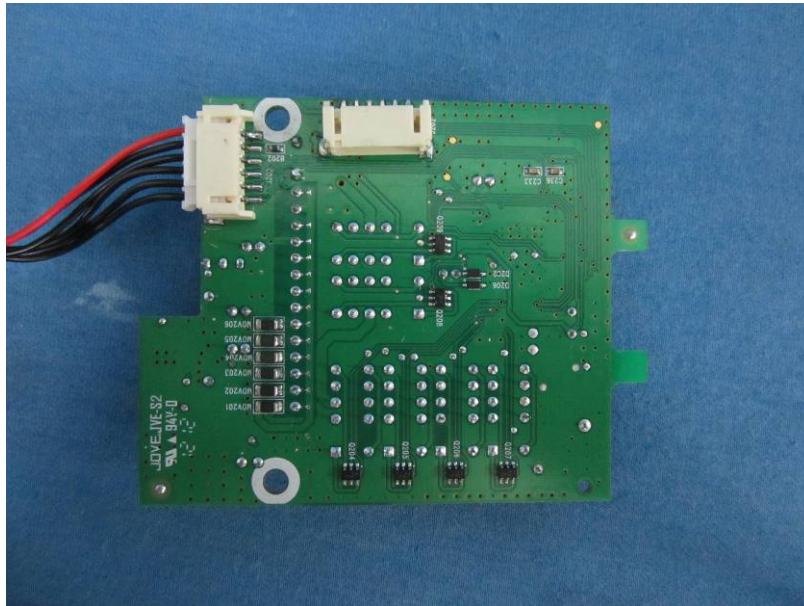
## 9 EUT Constructional Details

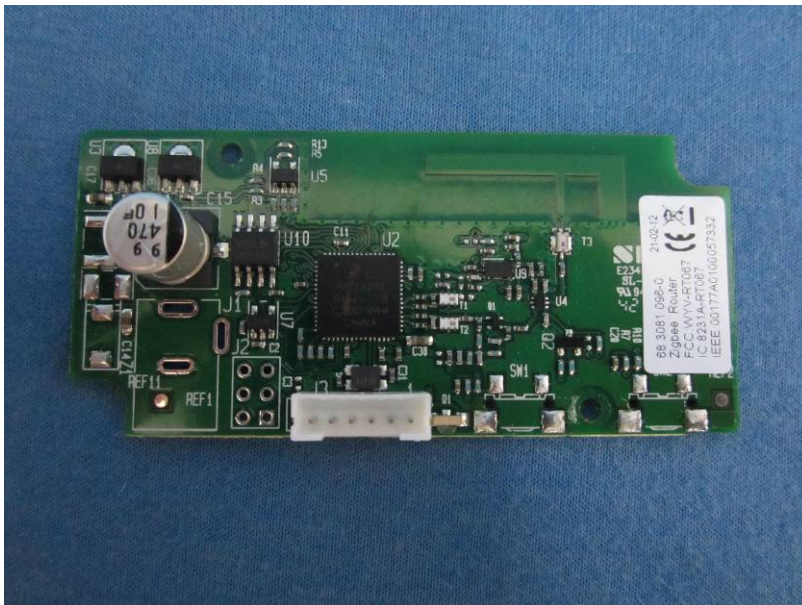
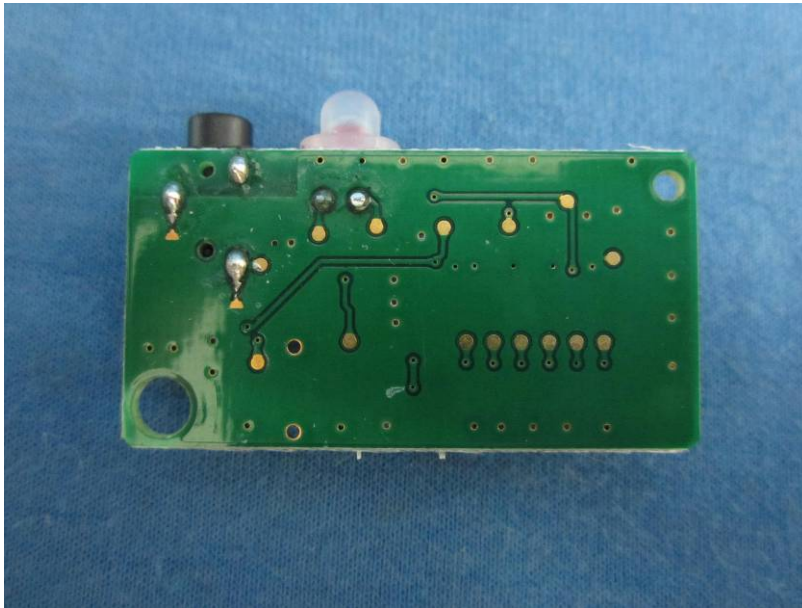


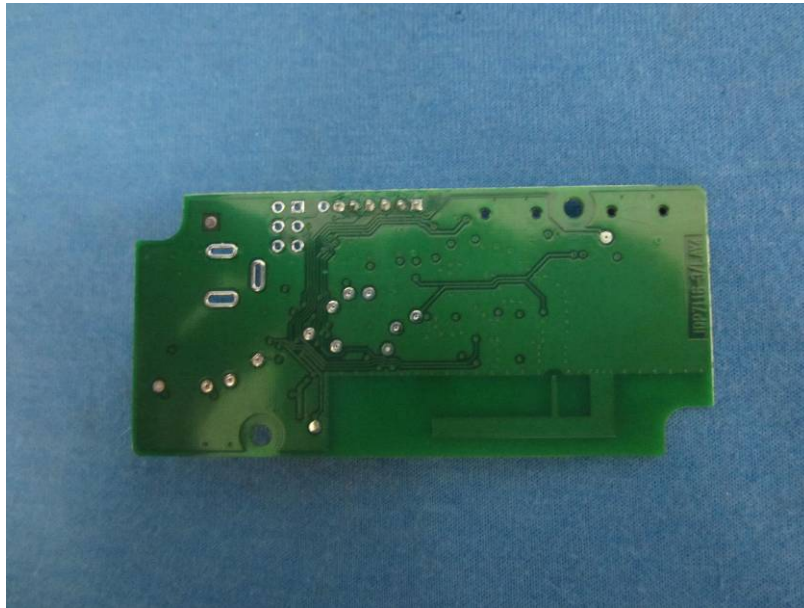












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