

FCC REPORT

Applicant: Shenzhen Bondidea Technology Co., LTD

Address of Applicant: 10th building, Honghualing Industrial Park, Qingsh, Shenzhen, China

Equipment Under Test (EUT)

Product Name: Wireless Ring Mouse

Model No.: RING 1

FCC ID: Y4P-RING1

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249:2015

Date of sample receipt: July 18, 2016

Date of Test: July 18-22, 2016

Date of report issued: July 22, 2016

Test Result : PASS *

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

Authorized Signature:

A circular blue stamp with the text "GTS GLOBAL TESTING SERVICES CO., LTD." around the perimeter. In the center, it says "GTS" and "GLOBAL TESTING". 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	July 22, 2016	Original

Prepared By:

Yang. Liu

Date:

July 22, 2016

Project Engineer

Check By:

Andy. Wu

Date:

July 22, 2016

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.

Remark: Test according to ANSI C63.10 2013 and ANSI C63.4: 2014

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 26.5GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(1)

Note (1): The measurement uncertainty is for coverage factor of $k=2$ and a level of confidence of 95%.

5 General Information

5.1 Client Information

Applicant:	Shenzhen Bondidea Technology Co., LTD
Address of Applicant:	10th building, Honghualing Industrial Park, Qingsh, Shenzhen, China
Manufacturer/Factory:	Shenzhen Bondidea Technology Co., LTD
Address of Manufacturer/Factory:	10th building, Honghualing Industrial Park, Qingsh, Shenzhen, China

5.2 General Description of EUT

Product Name:	Wireless Ring Mouse
Model No.:	RING 1
Operation Frequency:	2406MHz~2475MHz
Channel numbers:	42
Modulation type:	GFSK
Antenna Type:	PCB antenna
Antenna gain:	1.76 dBi (declare by Applicant)
Power supply:	DC 3.7V 80mAh Lithium Battery

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2406MHz	12	2425MHz	23	2442MHz	34	2459MHz
2	2407MHz	13	2426MHz	24	2443MHz	35	2461MHz
3	2409MHz	14	2427MHz	25	2445MHz	36	2462MHz
4	2410MHz	15	2429MHz	26	2446MHz	37	2466MHz
5	2413MHz	16	2430MHz	27	2450MHz	38	2467MHz
6	2414MHz	17	2434MHz	28	2451MHz	39	2469MHz
7	2418MHz	18	2435MHz	29	2453MHz	40	2470MHz
8	2419MHz	19	2437MHz	30	2454MHz	41	2474MHz
9	2421MHz	20	2438MHz	31	2455MHz	42	2475MHz
10	2422MHz	21	2439MHz	32	2457MHz		
11	2423MHz	22	2441MHz	33	2458MHz		

Note:

In section 15.31(m), regards to the operating frequency range from 1 to 10 MHz, the Lowest frequency and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2406.0MHz
The middle channel	2445.0MHz
The Highest channel	2475.0 MHz

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>	

Pre-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)	84.26	85.57	83.50

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
Emerson Network Power	USB Charger	A1299	N/A	DoC

5.5 Test Facility

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

- **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, June 22, 2016.

- **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.

5.6 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

5.7 Description of Support Units

None.

5.8 Other Information Requested by the Customer

None.

6 Test Instruments list

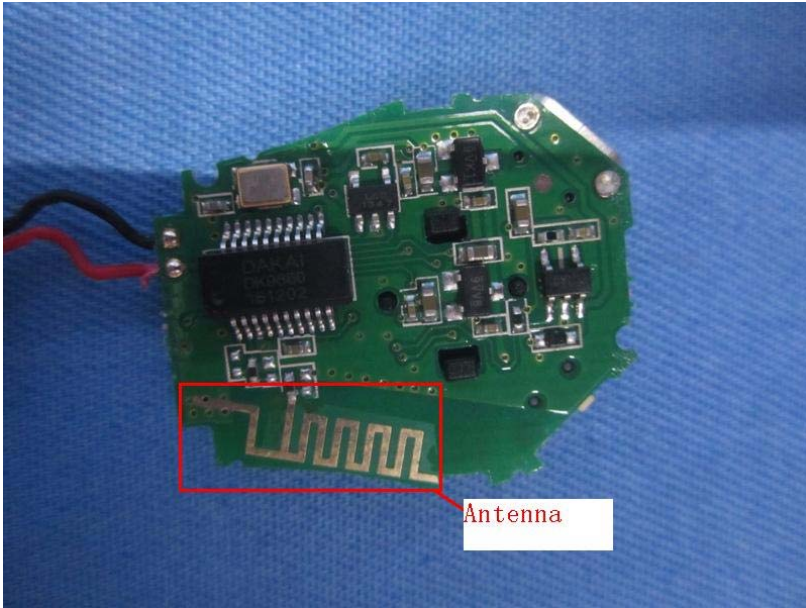
Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July.03 2015	July.02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	Jun 29 2016	Jun 28 2017
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jun 29 2016	Jun 28 2017
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Jun 29 2016	Jun 28 2017
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 25 2016	June 24 2017
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 26 2016	Mar. 25 2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	Mar. 27 2016	Mar. 26 2017
10	Coaxial Cable	GTS	N/A	GTS211	Mar. 27 2016	Mar. 26 2017
11	Coaxial cable	GTS	N/A	GTS210	Mar. 27 2016	Mar. 26 2017
12	Coaxial Cable	GTS	N/A	GTS212	Mar. 27 2016	Mar. 26 2017
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jun 29 2016	Jun 28 2017
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jun 29 2016	Jun 28 2017
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 25 2016	June 24 2017
16	Band filter	Amindeon	82346	GTS219	Mar. 27 2016	Mar. 26 2017

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	Jun 29 2016	Jun 28 2017
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jun 29 2016	Jun 28 2017
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	Jun 29 2016	Jun 28 2017
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jun 29 2016	Jun 28 2017
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jun 29 2016	Jun 28 2017
6	Coaxial Cable	GTS	N/A	GTS227	Jun 29 2016	Jun 28 2017
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	July 06 2016	July 05 2017

7 Test results and Measurement Data

7.1 Antenna requirement

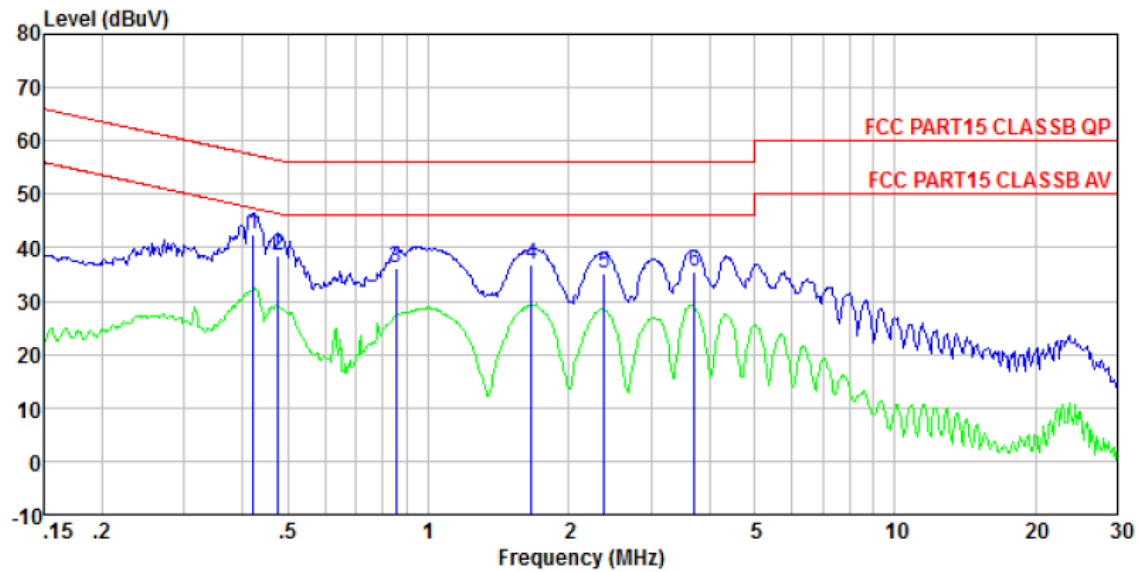
Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling 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.	
EUT Antenna:	
<i>The antenna is PCB antenna, the best case gain of the antenna is 1.76dBi</i> 	

7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto		
Limit:	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
* Decreases with the logarithm of the frequency.			
Test setup:	Reference Plane Test table/Insulation plane <i>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</i>		
Test procedure:	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. 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). 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 C63.10:2013 on conducted measurement.		
Test Instruments:	Refer to section 6.0 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement data:

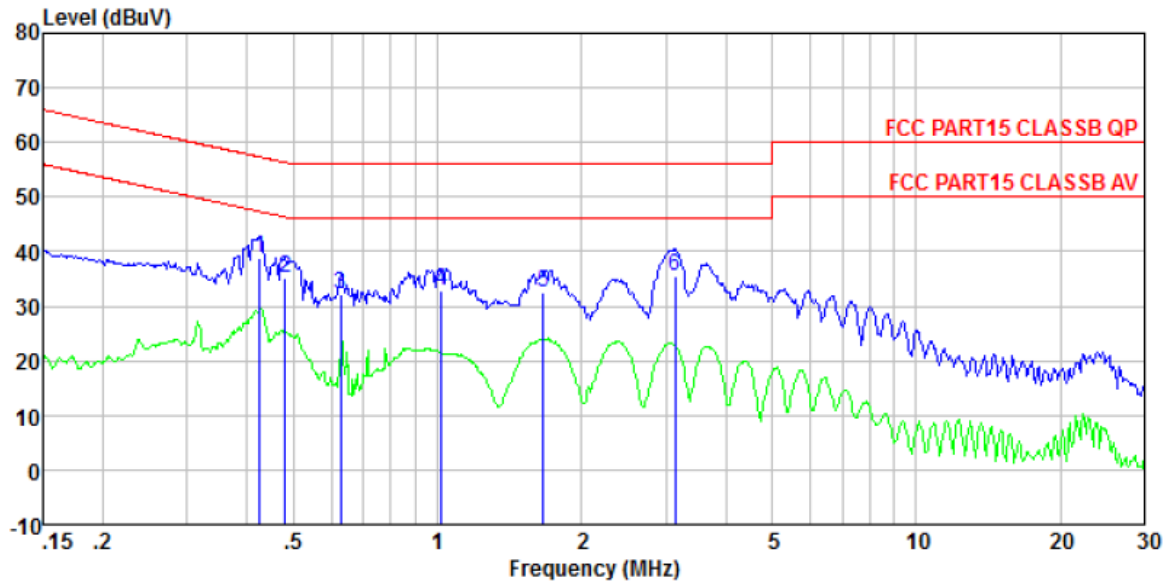
Line:



Site : Shielded room
Condition : FCC PART15 CLASSB QP LISN-2013 LINE
Job No. : 0100
Test Mode : 2.4G mode
Test Engineer: Boy

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.421	42.25	0.12	0.11	42.48	57.42	-14.94	QP
2	0.476	38.42	0.12	0.11	38.65	56.41	-17.76	QP
3	0.853	36.00	0.14	0.13	36.27	56.00	-19.73	QP
4	1.662	36.71	0.12	0.14	36.97	56.00	-19.03	QP
5	2.384	34.75	0.13	0.15	35.03	56.00	-20.97	QP
6	3.720	35.23	0.19	0.15	35.57	56.00	-20.43	QP

Neutral:



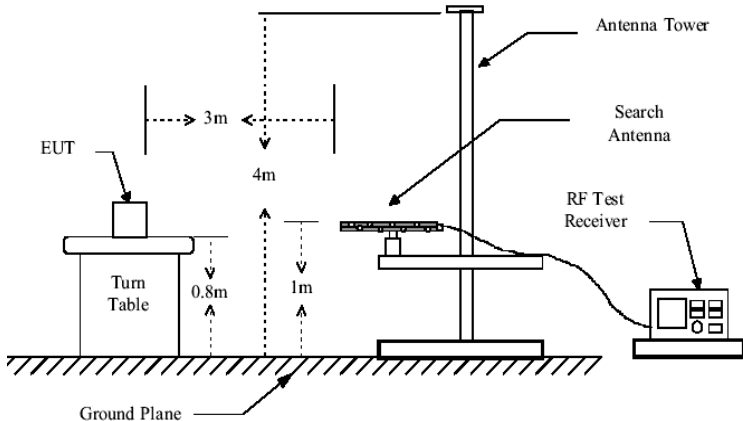
Site : Shielded room
Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL
Job No. : 0100
Test Mode : 2.4G mode
Test Engineer: Boy

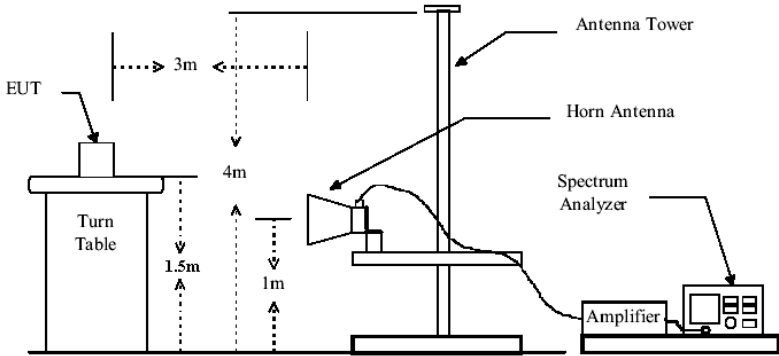
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.426	38.59	0.06	0.11	38.76	57.33	-18.57	QP
2	0.481	35.08	0.06	0.11	35.25	56.32	-21.07	QP
3	0.627	32.05	0.07	0.12	32.24	56.00	-23.76	QP
4	1.021	32.60	0.07	0.13	32.80	56.00	-23.20	QP
5	1.662	32.31	0.09	0.14	32.54	56.00	-23.46	QP
6	3.140	35.23	0.12	0.15	35.50	56.00	-20.50	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
4. 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

7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
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
		Peak	1MHz	10Hz	Average Value
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Remark
	2400MHz-2483.5MHz		94.00		Average 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:	Below 1GHz				
					
	Above 1GHz				

	 The diagram illustrates the test setup. An EUT (Equipment Under Test) is placed on a Turn Table at a height of 1.5m. The Turn Table is 3m away from an Antenna Tower. The Antenna Tower has a Horn Antenna at a height of 4m. A Spectrum Analyzer is connected to the Antenna Tower via an Amplifier. The distance between the EUT and the Antenna Tower is 3m. The height of the Antenna Tower is 4m. The height of the Turn Table is 1.5m. The height of the Antenna is 1m.
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) 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 Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2406.00	85.79	27.57	5.40	33.99	84.77	114.00	-29.23	Vertical
2406.00	84.28	27.57	5.40	33.99	83.26	114.00	-30.74	Horizontal
2445.00	84.68	27.48	5.43	33.96	83.63	114.00	-30.37	Vertical
2445.00	83.43	27.48	5.43	33.96	82.38	114.00	-31.62	Horizontal
2475.00	86.50	27.52	5.47	33.92	85.57	114.00	-28.43	Vertical
2475.00	84.20	27.52	5.47	33.92	83.27	114.00	-30.73	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2406.00	76.21	27.57	5.40	33.99	75.19	94.00	-18.81	Vertical
2406.00	74.51	27.57	5.40	33.99	73.49	94.00	-20.51	Horizontal
2445.00	74.79	27.48	5.43	33.96	73.74	94.00	-20.26	Vertical
2445.00	72.13	27.48	5.43	33.96	71.08	94.00	-22.92	Horizontal
2475.00	76.83	27.52	5.47	33.92	75.90	94.00	-18.10	Vertical
2475.00	74.54	27.52	5.47	33.92	73.61	94.00	-20.39	Horizontal

NOTE:RBW 3MHz VBW 3MHz peak detector is used for PK value , RMS detector is for AV value

7.3.2 Spurious emissions

■ Below 1GHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
37.03	31.17	14.82	0.63	30.06	16.56	40.00	-23.44	Vertical
50.23	32.13	15.25	0.77	30.00	18.15	40.00	-21.85	Vertical
116.13	36.83	13.10	1.33	29.59	21.67	43.50	-21.83	Vertical
128.56	37.39	11.12	1.43	29.52	20.42	43.50	-23.08	Vertical
447.98	32.08	17.57	3.08	29.40	23.33	46.00	-22.67	Vertical
801.79	27.89	22.06	4.46	29.20	25.21	46.00	-20.79	Vertical
37.95	24.03	15.06	0.64	30.05	9.68	40.00	-30.32	Horizontal
52.95	23.69	15.11	0.80	29.98	9.62	40.00	-30.38	Horizontal
115.73	38.63	13.21	1.33	29.60	23.57	43.50	-19.93	Horizontal
202.81	38.95	12.64	1.86	29.23	24.22	43.50	-19.28	Horizontal
404.67	28.98	17.18	2.88	29.49	19.55	46.00	-26.45	Horizontal
798.98	26.69	22.06	4.45	29.20	24.00	46.00	-22.00	Horizontal

■ Above 1GHz

Test channel:	Lowest channel(2406MHz)
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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
4812.00	30.05	31.78	8.61	32.09	38.35	74.00	-35.65	Vertical
7218.00	28.62	36.15	11.66	31.99	44.44	74.00	-29.56	Vertical
9624.00	26.34	38.01	14.14	31.60	46.89	74.00	-27.11	Vertical
12030.00	*							Vertical
14436.00	*							Vertical
4812.00	30.92	31.78	8.61	32.09	39.22	74.00	-34.78	Horizontal
7218.00	26.92	36.15	11.66	31.99	42.74	74.00	-31.26	Horizontal
9624.00	26.47	38.01	14.14	31.60	47.02	74.00	-26.98	Horizontal
12030.00	*							Horizontal
14436.00	*							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
4812.00	20.05	31.78	8.61	32.09	28.35	54.00	-25.65	Vertical
7218.00	14.62	36.15	11.66	31.99	30.44	54.00	-23.56	Vertical
9624.00	13.41	38.01	14.14	31.60	33.96	54.00	-20.04	Vertical
12030.00	*							Vertical
14436.00	*							Vertical
4812.00	18.79	31.78	8.61	32.09	27.09	54.00	-26.91	Horizontal
7218.00	14.39	36.15	11.66	31.99	30.21	54.00	-23.79	Horizontal
9624.00	11.57	38.01	14.14	31.60	32.12	54.00	-21.88	Horizontal
12030.00	*							Horizontal
14436.00	*							Horizontal

Remark:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

Test channel:	Middle channel(2445.0MHz)
---------------	---------------------------

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
4890.00	30.58	31.86	8.67	32.13	38.98	74.00	-35.02	Vertical
7335.00	27.14	36.41	11.72	31.88	43.39	74.00	-30.61	Vertical
9780.00	25.97	38.43	14.27	31.62	47.05	74.00	-26.95	Vertical
12225.00	*							Vertical
14670.00	*							Vertical
4890.00	30.26	31.86	8.67	32.13	38.66	74.00	-35.34	Horizontal
7335.00	27.23	36.41	11.72	31.88	43.48	74.00	-30.52	Horizontal
9780.00	26.56	38.43	14.27	31.62	47.64	74.00	-26.36	Horizontal
12225.00								Horizontal
14670.00								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
4890.00	18.82	31.86	8.67	32.13	27.22	54.00	-26.78	Vertical
7335.00	15.00	36.41	11.72	31.88	31.25	54.00	-22.75	Vertical
9780.00	11.79	38.43	14.27	31.62	32.87	54.00	-21.13	Vertical
12225.00	*							Vertical
14670.00	*							Vertical
4890.00	18.55	31.86	8.67	32.13	26.95	54.00	-27.05	Horizontal
7335.00	13.73	36.41	11.72	31.88	29.98	54.00	-24.02	Horizontal
9780.00	12.28	38.43	14.27	31.62	33.36	54.00	-20.64	Horizontal
12225.00	*							Vertical
14670.00	*							Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

Test channel:	Highest channel (2475.0MHz)
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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
4950.00	31.17	31.91	8.71	32.16	39.63	74.00	-34.37	Vertical
7425.00	27.35	36.56	11.79	31.80	43.90	74.00	-30.10	Vertical
9900.00	26.63	38.81	14.35	31.85	47.94	74.00	-26.06	Vertical
12375.00	*							Vertical
14850.00	*							Vertical
4950.00	31.49	31.91	8.71	32.16	39.95	74.00	-34.05	Horizontal
7425.00	26.95	36.56	11.79	31.80	43.50	74.00	-30.50	Horizontal
9900.00	26.83	38.81	14.35	31.85	48.14	74.00	-25.86	Horizontal
12375.00	*							Horizontal
14850.00	*							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
4950.00	18.85	31.91	8.71	32.16	27.31	54.00	-26.69	Vertical
7425.00	13.67	36.56	11.79	31.80	30.22	54.00	-23.78	Vertical
9900.00	11.82	38.81	14.35	31.85	33.13	54.00	-20.87	Vertical
12375.00	*							Vertical
14850.00	*							Vertical
4950.00	18.54	31.91	8.71	32.16	27.00	54.00	-27.00	Horizontal
7425.00	13.93	36.56	11.79	31.80	30.48	54.00	-23.52	Horizontal
9900.00	12.20	38.81	14.35	31.85	33.51	54.00	-20.49	Horizontal
12375.00	*							Horizontal
14850.00	*							Horizontal

Remark:

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

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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	36.78	27.59	5.38	30.18	39.57	74.00	-34.43	Horizontal
2400.00	52.70	27.58	5.39	30.18	55.49	74.00	-18.51	Horizontal
2390.00	36.75	27.59	5.38	30.18	39.54	74.00	-34.46	Vertical
2400.00	54.08	27.58	5.39	30.18	56.87	74.00	-17.13	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	28.71	27.59	5.38	30.18	31.50	54.00	-22.50	Horizontal
2400.00	39.59	27.58	5.39	30.18	42.38	54.00	-11.62	Horizontal
2390.00	28.22	27.59	5.38	30.18	31.01	54.00	-22.99	Vertical
2400.00	40.65	27.58	5.39	30.18	43.44	54.00	-10.56	Vertical

Test channel:	Highest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	38.16	27.53	5.47	29.93	41.23	74.00	-32.77	Horizontal
2500.00	38.49	27.55	5.49	29.93	41.60	74.00	-32.40	Horizontal
2483.50	37.99	27.53	5.47	29.93	41.06	74.00	-32.94	Vertical
2500.00	38.91	27.55	5.49	29.93	42.02	74.00	-31.98	Vertical

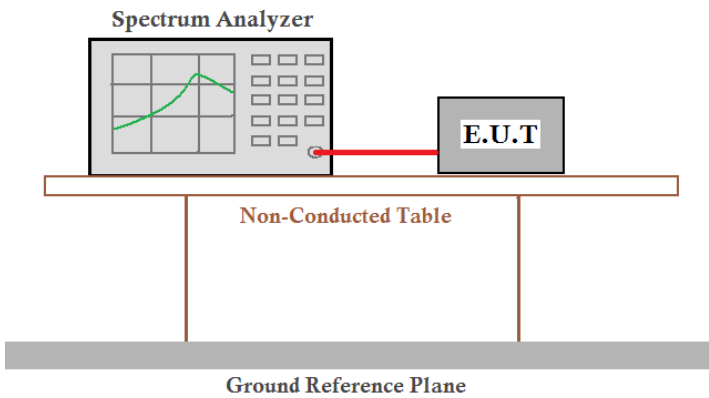
Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	31.47	27.53	5.47	29.93	34.54	54.00	-19.46	Horizontal
2500.00	30.34	27.55	5.49	29.93	33.45	54.00	-20.55	Horizontal
2483.50	32.17	27.53	5.47	29.93	35.24	54.00	-18.76	Vertical
2500.00	29.75	27.55	5.49	29.93	32.86	54.00	-21.14	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

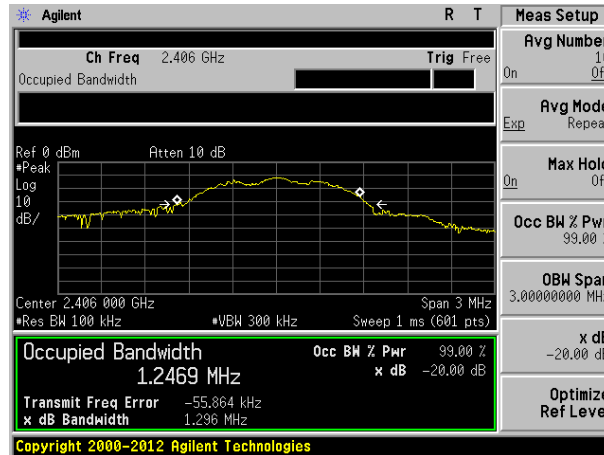
7.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.10:2013
Limit:	Operation Frequency range 2400MHz~2483.5MHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

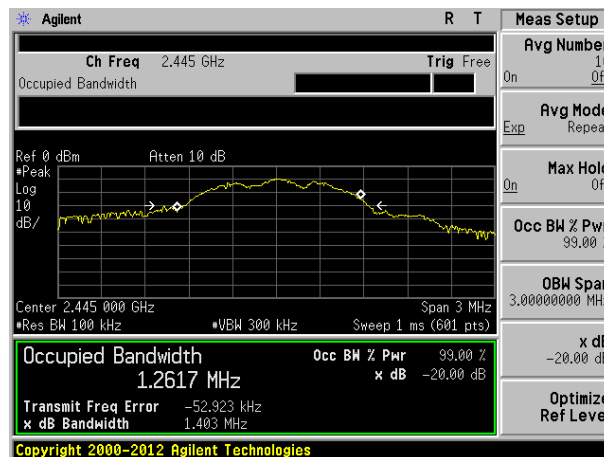
Measurement Data

Test channel	20dB bandwidth(MHz)	Result
Lowest	1.296	Pass
Middle	1.403	Pass
Highest	1.346	Pass

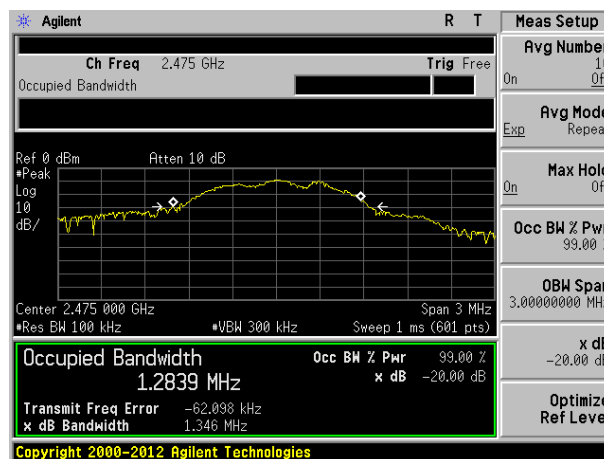
Test plot as follows:



Lowest channel



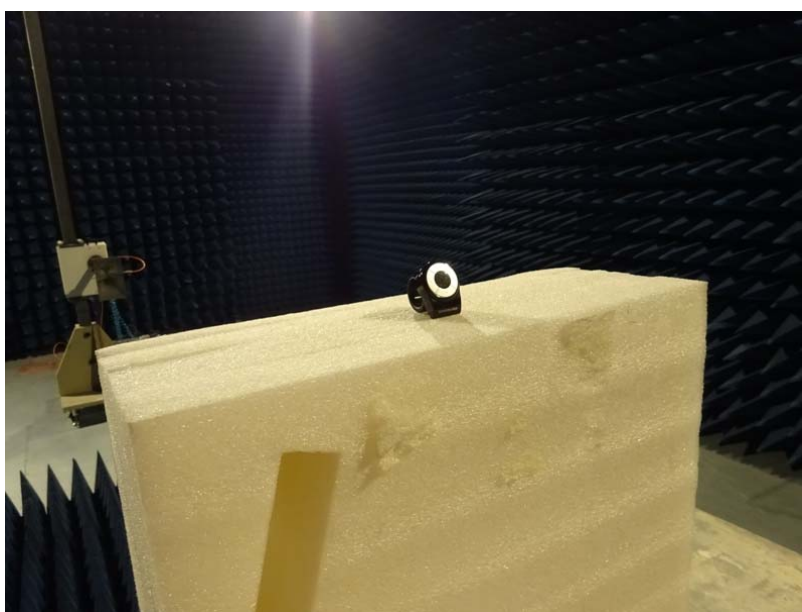
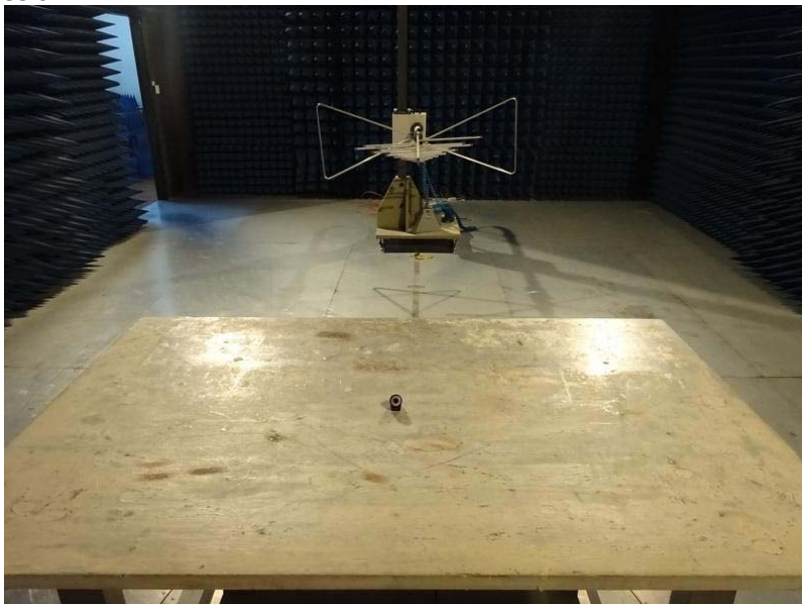
Middle channel



Highest channel

8 Test Setup Photo

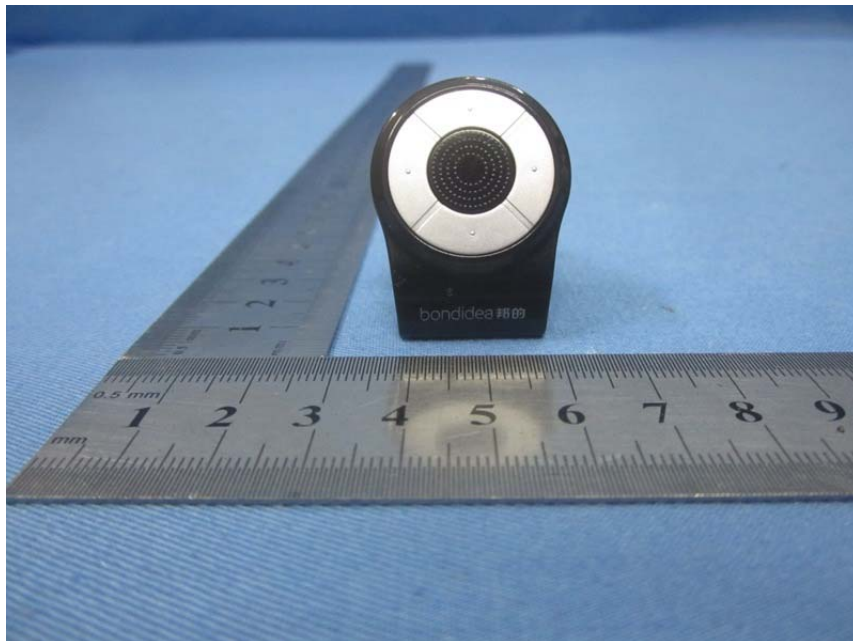
Radiated Emission



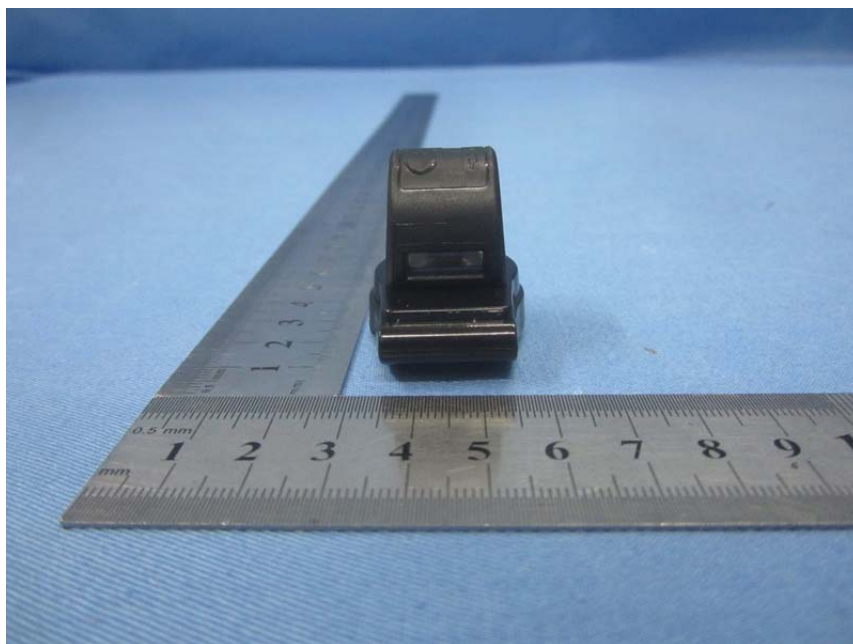
Conducted Emission



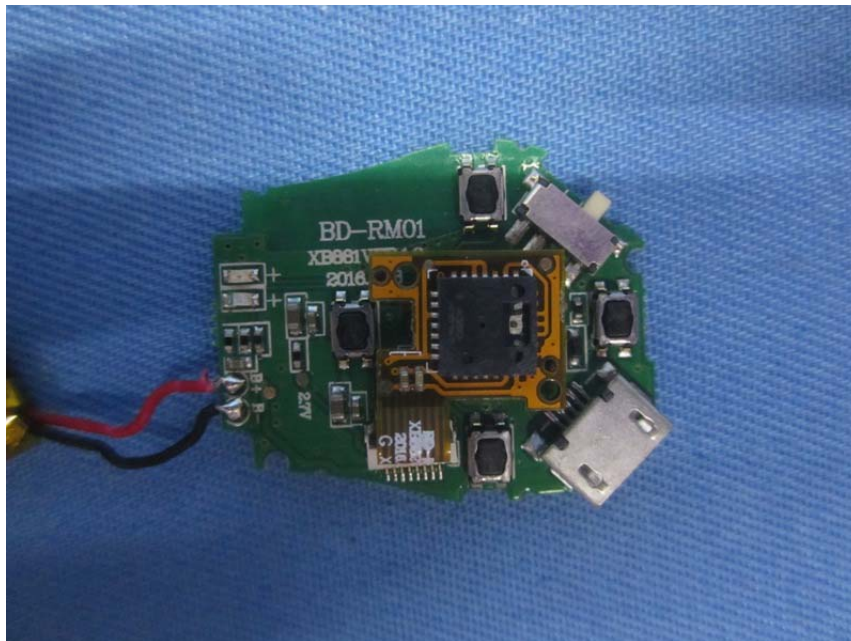
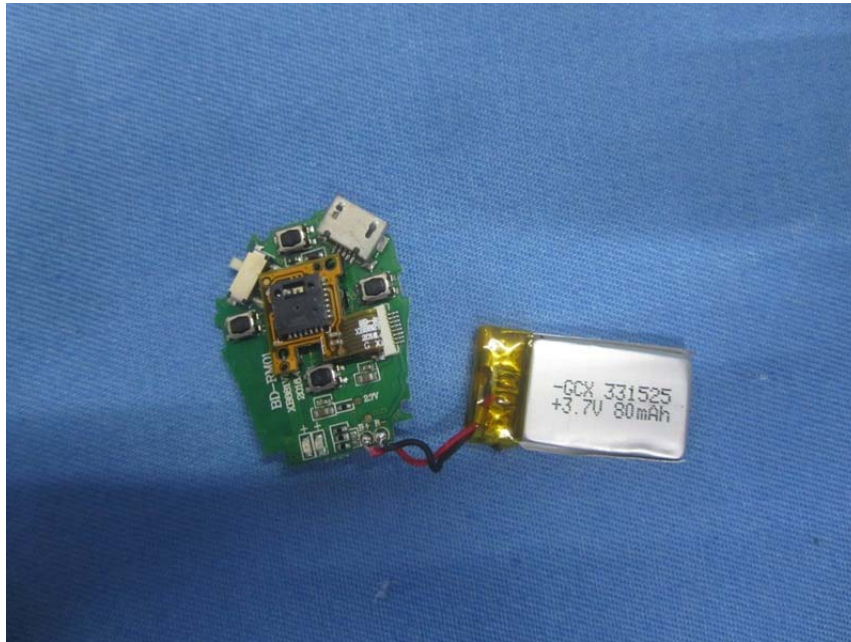
9 EUT Constructional Details

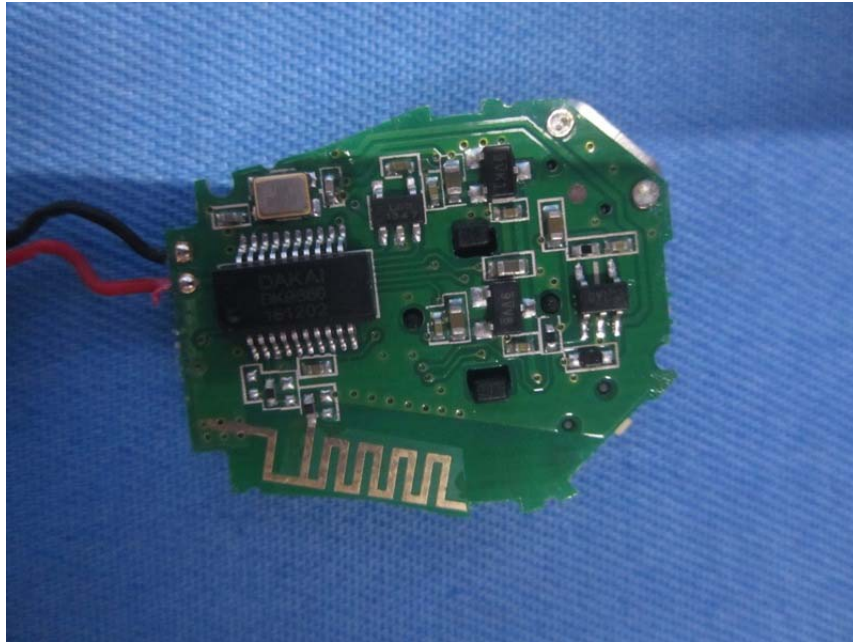












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