

FCC Report

Applicant: SHENZHEN GOLSOR ELECTRONIC TECHNOLOGY Co., Ltd.

Address of Applicant: East 7/F, #708, Building 3, SEG Technology Park, Huaqiangbei Road, Futian Dist., Shenzhen China

Equipment Under Test (EUT)

Product Name: AVT

Model No.: A-8-200

FCC ID: 2ADKO-A-8-200

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

Date of sample receipt: 23 October, 2014

Date of Test: 23 October ~ 07 November, 2014

Date of report issued: 09 November, 2014

Test Result : PASS *

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

Authorized Signature:



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.

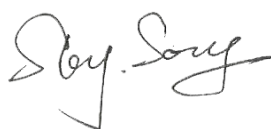
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2 Version

Version No.	Date	Description
00	09 November, 2014	Original

Prepared By:



Date:

09 November, 2014

Project Engineer

Check By:



Date:

09 November, 2014

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 EUT	5
5.3 TEST MODE	6
5.4 DESCRIPTION OF SUPPORT UNITS	6
5.5 TEST FACILITY	6
5.6 TEST LOCATION	6
6 TEST INSTRUMENTS LIST	7
7 TEST RESULTS AND MEASUREMENT DATA	8
7.1 ANTENNA REQUIREMENT:	8
7.2 RADIATED EMISSION METHOD	9
7.2.1 <i>Field Strength of The Fundamental Signal</i>	11
7.2.2 <i>Bandege</i>	12
7.2.3 <i>Spurious emissions</i>	13
7.3 20DB BANDWIDTH	17
8 TEST SETUP PHOTO	19
9 EUT CONSTRUCTIONAL DETAILS	20

4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious Emission	15.205/15.209	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

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

5 General Information

5.1 Client Information

Applicant:	SHENZHEN GOLSOR ELECTRONIC TECHNOLOGY Co., Ltd.
Address:	East 7/F, #708, Building 3, SEG Technology Park, Huaqiangbei Road, Futian Dist., Shenzhen China
Manufacturer:	SHENZHEN GOLSOR ELECTRONIC TECHNOLOGY Co., Ltd.
Address :	East 7/F, #708, Building 3, SEG Technology Park, Huaqiangbei Road, Futian Dist., Shenzhen China
Factory:	SHENZHEN GOLSOR ELECTRONIC TECHNOLOGY Co., Ltd.
Address:	East 7/F, #708, Building 3, SEG Technology Park, Huaqiangbei Road, Futian Dist., Shenzhen China

5.2 General Description of EUT

Product Name:	AVT
Model No.:	A-8-200
Operation Frequency:	5734MHz ~5867MHz
Channel numbers:	8
Channel separation:	19MHz
Modulation technology:	OFDM
Antenna Type:	External antenna
Antenna gain:	2dBi
Power supply:	DC 7.2V (Charge battery)

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channels which were tested. The Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Operation Frequency each of channel	
Channel	Frequency (MHz)
1	5734
2	5753
...	...
5	5810
...	...
7	5848
8	5867

5.3 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
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5.4 Description of Support Units

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, June 28, 2013.

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

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

5.6 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


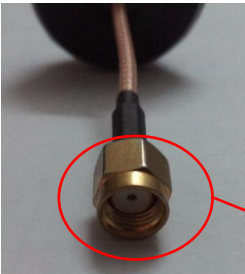

6 Test Instruments list

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 2014	Mar. 29 2015
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 2014	Jul. 02 2015
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 25 2014	Feb. 24 2015
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 29 2014	June 28 2015
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2014	Mar. 29 2015
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Mar. 30 2014	Mar. 29 2015
9	Coaxial Cable	GTS	N/A	GTS211	Mar. 30 2014	Mar. 29 2015
10	Coaxial cable	GTS	N/A	GTS210	Mar. 30 2014	Mar. 29 2015
11	Coaxial Cable	GTS	N/A	GTS212	Mar. 30 2014	Mar. 29 2015
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 03 2014	Jul. 02 2015
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 03 2014	Jul. 02 2015
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Jul. 03 2014	Jul. 02 2015
15	Band filter	Amindeon	82346	GTS219	Jul. 03 2014	Jul. 02 2015

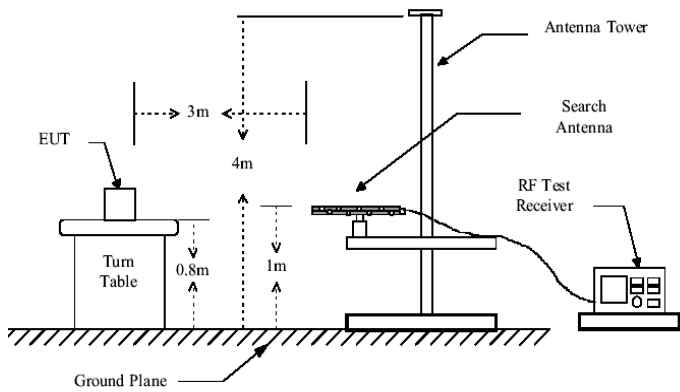
Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	Jul. 03 2014	Jul. 02 2015

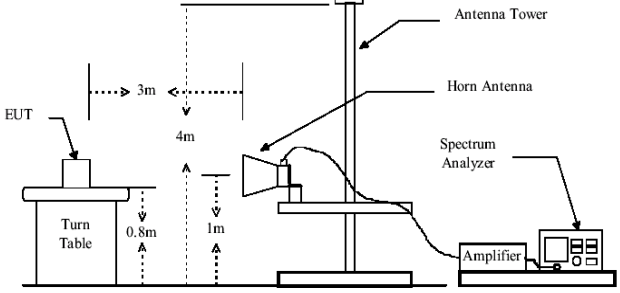
7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
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.	
E.U.T Antenna: <i>The antenna is non standard interface antenna, the best case gain of the antenna is 2.0dBi</i>	
 <p>RF Antenna</p>   <p>Antenna port</p>	

7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.249 and Section 15.209				
Test Method:	ANSI C63.4: 2003				
Test Frequency Range:	30MHz to 40GHz				
Test site:	Measurement Distance: 3m				
Receiver setup: (Field strength of the fundamental signal)	Value	Detector	RBW	VBW	
	Peak	Peak	10MHz	10MHz	
	Average	RMS	10MHz	10MHz	
Receiver setup: (Spurious Emissions)	Frequency	Detector	RBW	VBW	Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Peak		1MHz	10Hz	Average	
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Value
	5725MHz - 5875 MHz		94.00		Average
			114.00		Peak
Limit: (Spurious Emissions)	Frequency		Limit (dBuV/m @3m)		Value
	30MHz-88MHz		40.0		Quasi-peak
	88MHz-216MHz		43.5		Quasi-peak
	216MHz-960MHz		46.0		Quasi-peak
	960MHz-1GHz		54.0		Quasi-peak
	Above 1GHz		54.0		Average
			74.0		Peak
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				

	
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 Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Remark:

Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Measurement Data

7.2.1 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
5734	85.78	32.88	8.94	32.76	94.84	114.00	-19.16	Horizontal
5734	80.91	32.88	8.94	32.76	89.97	114.00	-24.03	Vertical
5810	88.14	32.46	9.14	32.41	97.33	114.00	-16.67	Horizontal
5810	83.51	32.46	9.14	32.41	92.70	114.00	-21.30	Vertical
5867	88.22	32.27	9.27	32.17	97.59	114.00	-16.41	Horizontal
5867	82.53	32.27	9.27	32.17	91.90	114.00	-22.10	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
5734	72.56	32.88	8.94	32.76	81.62	94.00	-12.38	Horizontal
5734	67.81	32.88	8.94	32.76	76.87	94.00	-17.13	Vertical
5810	75.36	32.46	9.14	32.41	84.55	94.00	-9.45	Horizontal
5810	70.78	32.46	9.14	32.41	79.97	94.00	-14.03	Vertical
5867	74.98	32.27	9.27	32.17	84.35	94.00	-9.65	Horizontal
5867	68.27	32.27	9.27	32.17	77.64	94.00	-16.36	Vertical

7.2.2 Bandedge

Test channel:	5734MHz
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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
5700	49.42	31.94	8.86	32.58	57.64	74.00	-16.36	Horizontal
5725	50.68	32.13	8.91	32.63	59.09	74.00	-14.91	Horizontal
5700	51.26	31.94	8.86	32.58	59.48	74.00	-14.52	Vertical
5725	53.84	32.13	8.91	32.63	62.25	74.00	-11.75	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
5700	34.49	31.94	8.86	32.58	42.71	54.00	-11.29	Horizontal
5725	35.16	32.13	8.91	32.63	43.57	54.00	-10.43	Horizontal
5700	36.88	31.94	8.86	32.58	45.10	54.00	-8.90	Vertical
5725	37.32	32.13	8.91	32.63	45.73	54.00	-8.27	Vertical

Test channel:	5867MHz
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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
5875	50.95	32.24	9.29	32.85	59.63	74.00	-14.37	Horizontal
5900	47.78	32.30	9.33	32.88	56.53	74.00	-17.47	Horizontal
5875	51.73	32.88	8.94	32.76	60.79	74.00	-13.21	Vertical
5900	49.25	32.88	8.94	32.76	58.31	74.00	-15.69	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
5875	35.16	32.24	9.29	32.85	43.84	54.00	-10.16	Horizontal
5900	33.83	32.30	9.33	32.88	42.58	54.00	-11.42	Horizontal
5875	38.35	32.88	8.94	32.76	47.41	54.00	-6.59	Vertical
5900	36.19	32.88	8.94	32.76	45.25	54.00	-8.75	Vertical

7.2.3 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
66.36	53.86	11.24	0.39	31.89	33.60	40.00	-6.40	Vertical
85.37	55.09	10.50	0.43	31.81	34.21	40.00	-5.79	Vertical
143.24	58.69	7.05	0.61	32.00	34.35	43.50	-9.15	Vertical
254.35	56.79	10.83	0.89	32.28	36.23	46.00	-9.77	Vertical
383.60	52.73	13.47	1.20	32.31	35.09	46.00	-10.91	Vertical
62.31	50.07	14.94	0.34	31.99	33.36	40.00	-6.64	Horizontal
78.35	51.60	10.50	0.43	31.81	30.72	40.00	-9.28	Horizontal
168.30	57.98	7.21	0.62	32.01	33.80	43.50	-9.70	Horizontal
255.35	59.84	10.83	0.89	32.28	39.28	46.00	-6.72	Horizontal
363.58	54.82	13.56	1.21	32.32	37.27	46.00	-8.73	Horizontal

■ Above 1GHz

Test channel:	5734MHz
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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
11468	37.04	39.85	10.16	38.15	48.90	74.00	-25.10	Horizontal
17202	31.27	40.51	14.60	36.15	50.23	74.00	-23.77	Horizontal
22936	*					74.00		Horizontal
28670	*					74.00		Horizontal
34404	*					74.00		Horizontal
11468	35.70	39.85	10.16	38.15	47.56	74.00	-26.44	Vertical
17202	29.56	40.51	14.60	36.15	48.52	74.00	-25.48	Vertical
22936	*					74.00		Vertical
28670	*					74.00		Vertical
34404	*					74.00		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
11468	24.89	39.85	10.16	38.15	36.75	54.00	-17.25	Horizontal
17202	19.75	40.51	14.60	36.15	38.71	54.00	-15.29	Horizontal
22936	*					54.00		Horizontal
28670	*					54.00		Horizontal
34404	*					54.00		Horizontal
11468	22.56	39.85	10.16	38.15	34.42	54.00	-19.58	Vertical
17202	17.19	40.51	14.60	36.15	36.15	54.00	-17.85	Vertical
22936	*					54.00		Vertical
28670	*					54.00		Vertical
34404	*					54.00		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:	5810MHz
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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
11620	37.54	39.71	10.20	38.10	49.35	74.00	-24.65	Vertical
17430	31.59	40.29	14.65	36.07	50.46	74.00	-23.54	Vertical
23240	*					74.00		Vertical
29050	*					74.00		Vertical
34860	*					74.00		Vertical
11620	36.04	39.71	10.20	38.10	47.85	74.00	-26.15	Horizontal
17430	29.62	40.29	14.65	36.07	48.49	74.00	-25.51	Horizontal
23240	*					74.00		Horizontal
29050	*					74.00		Horizontal
34860	*					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
11590	25.68	39.71	10.20	38.10	37.49	54.00	-16.51	Vertical
17385	20.86	40.29	14.65	36.07	39.73	54.00	-14.27	Vertical
23180	*					54.00		Vertical
28975	*					54.00		Vertical
34770	*					54.00		Vertical
11590	24.36	39.71	10.20	38.10	36.17	54.00	-17.83	Horizontal
17385	19.28	40.29	14.65	36.07	38.15	54.00	-15.85	Horizontal
23180	*					54.00		Horizontal
28975	*					54.00		Horizontal
34770	*					54.00		Horizontal

Remark:

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

Test channel:	5867MHz
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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
11734	37.67	39.61	10.23	37.95	49.56	74.00	-24.44	Vertical
17601	32.49	40.05	14.71	36.04	51.21	74.00	-22.79	Vertical
23468	*					74.00		Vertical
29335	*					74.00		Vertical
35202	*					74.00		Vertical
11734	36.17	39.61	10.23	37.95	48.06	74.00	-25.94	Horizontal
17601	30.52	40.05	14.71	36.04	49.24	74.00	-24.76	Horizontal
23468	*					74.00		Horizontal
29335	*					74.00		Horizontal
35202	*					74.00		Horizontal

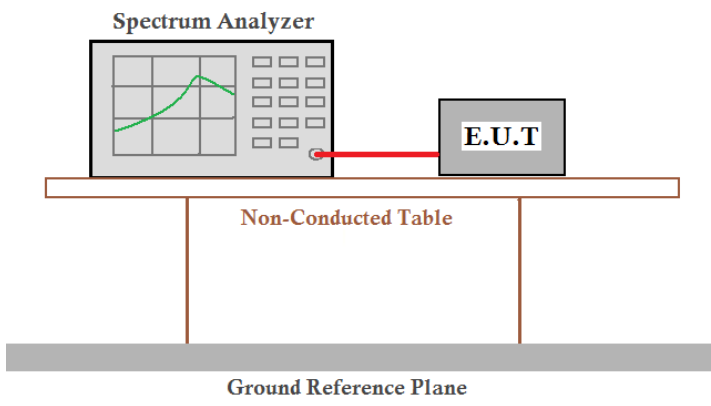
Average value:

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
11734	25.70	39.61	10.23	37.95	37.59	54.00	-16.41	Vertical
17601	22.46	40.05	14.71	36.04	41.18	54.00	-12.82	Vertical
23468	*					54.00		Vertical
29335	*					54.00		Vertical
35202	*					54.00		Vertical
11734	24.38	39.61	10.23	37.95	36.27	54.00	-17.73	Horizontal
17601	20.88	40.05	14.71	36.04	39.60	54.00	-14.40	Horizontal
23468	*					54.00		Horizontal
29335	*					54.00		Horizontal
35202	*					54.00		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.

7.3 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003
Limit:	N/A
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 the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table 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

Test channel	20dB bandwidth (MHz)	Limit	Result
5734	6.974	\	Pass
5810	7.010	\	
5867	7.097	\	

Test plot as follows:



5734MHz



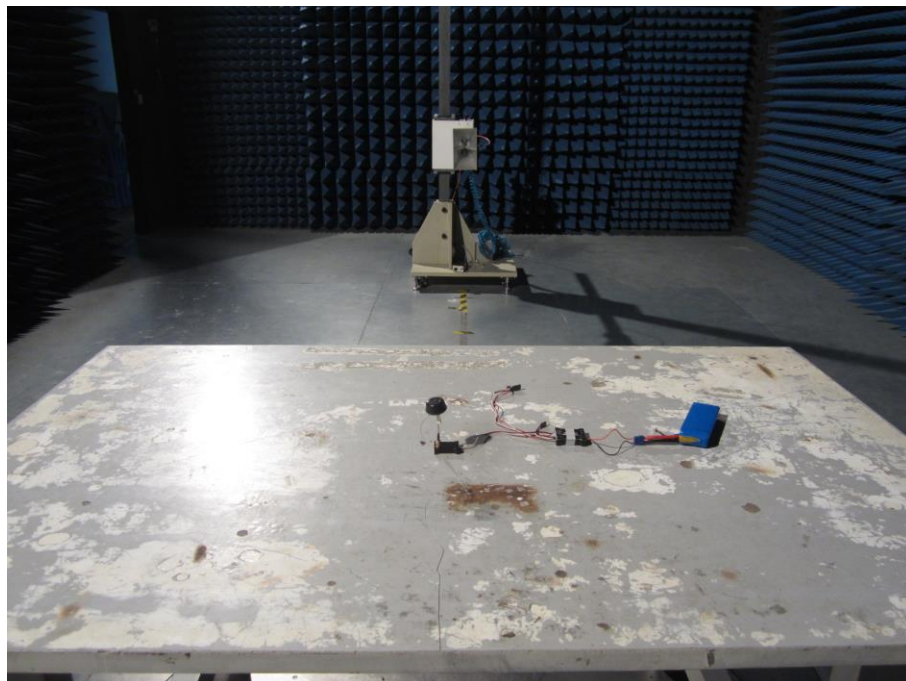
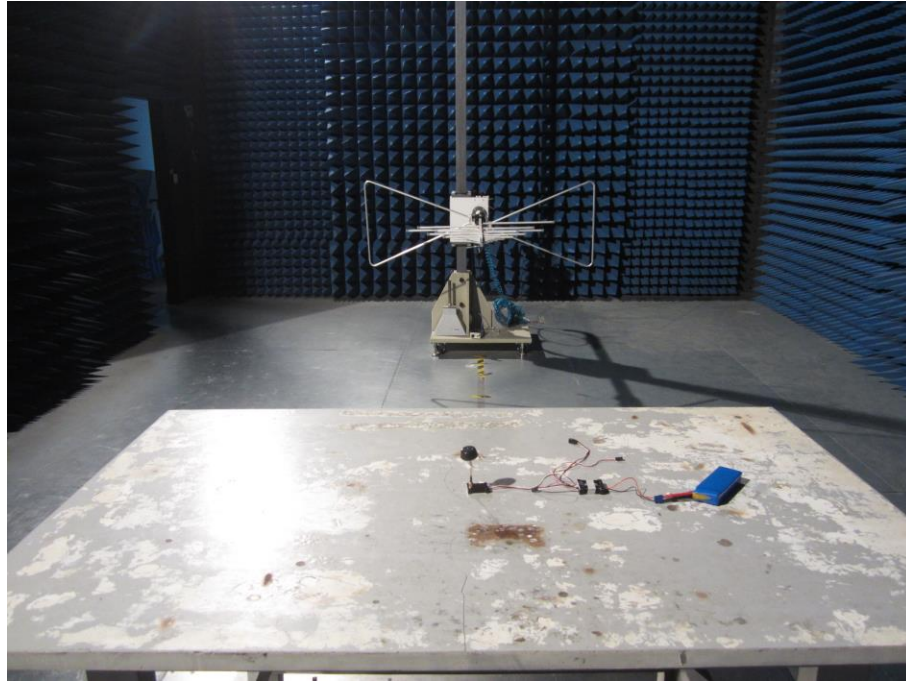
5810MHz



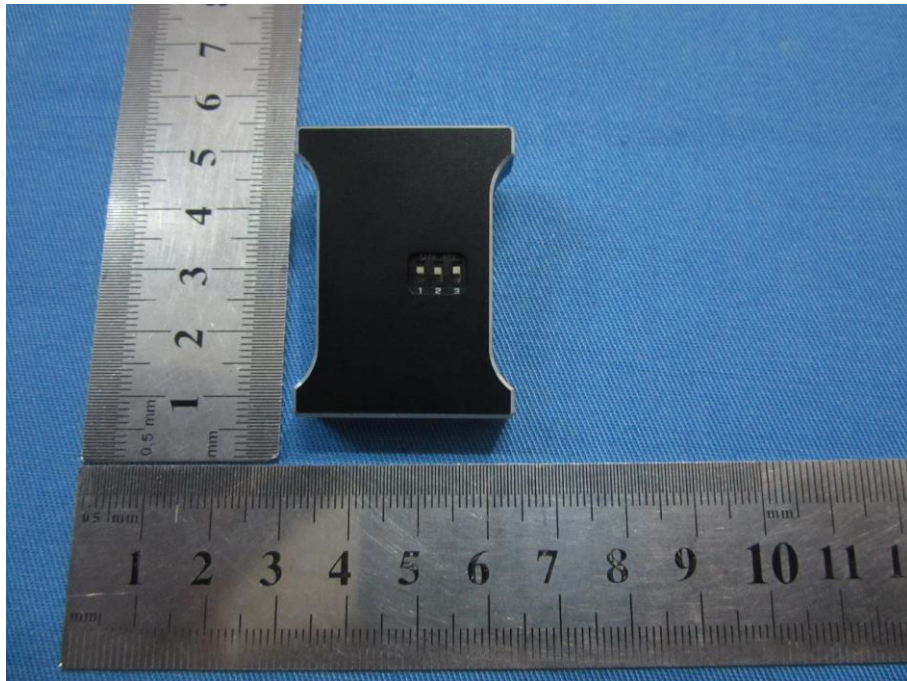
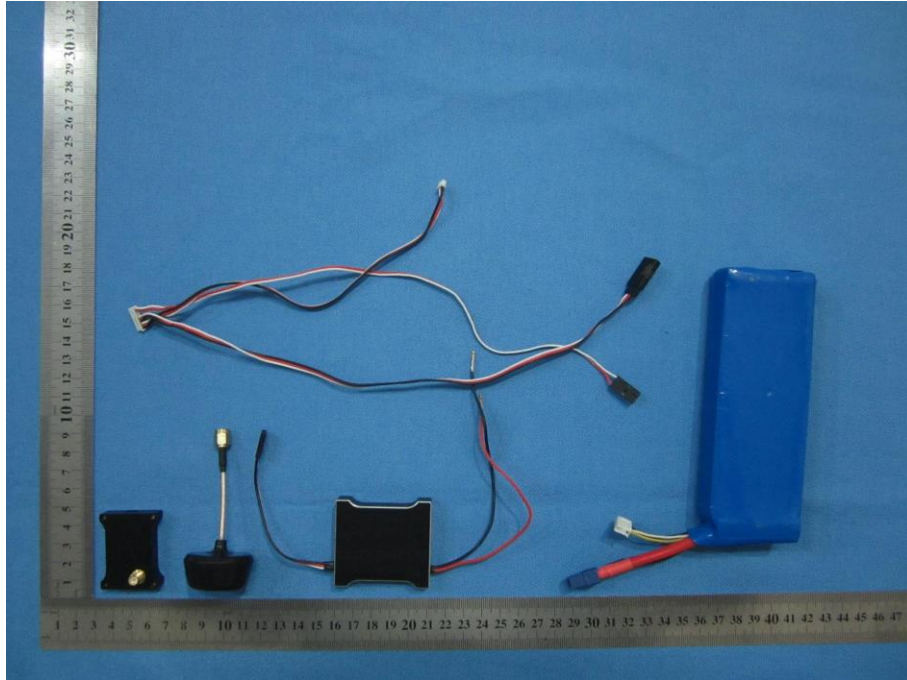
5867MHz

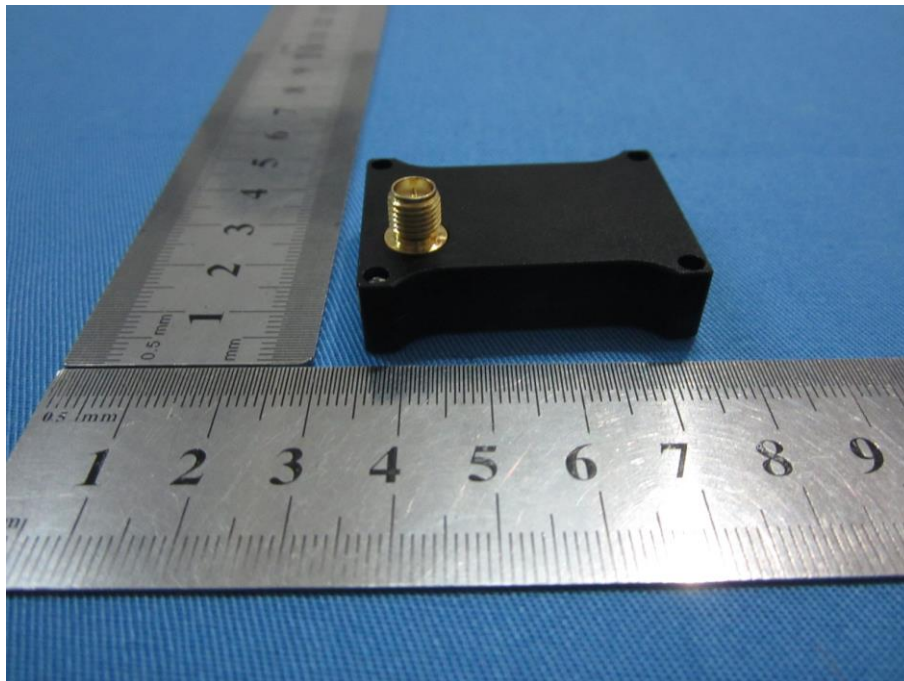
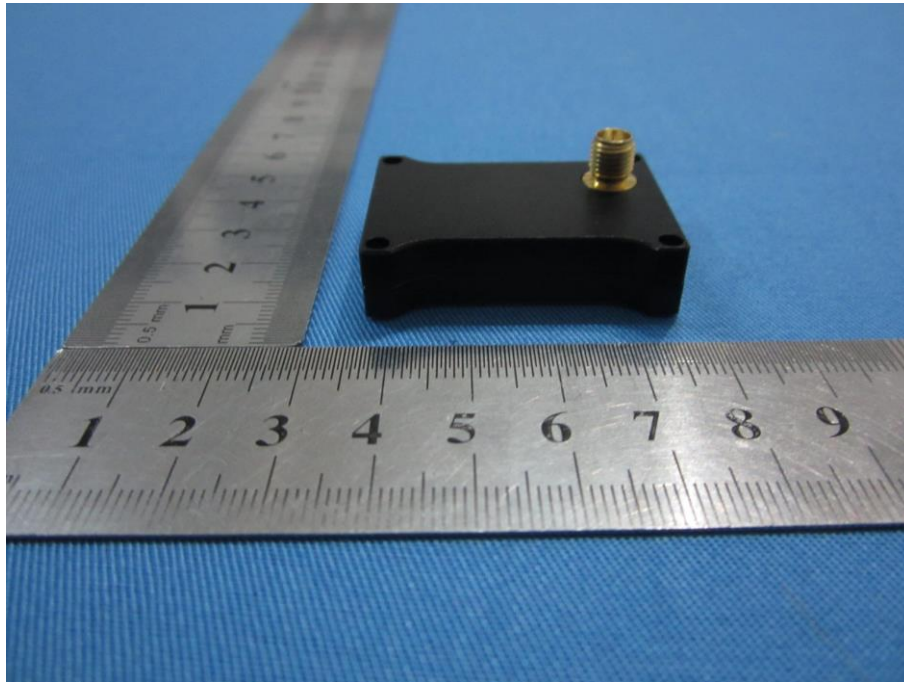
8 Test Setup Photo

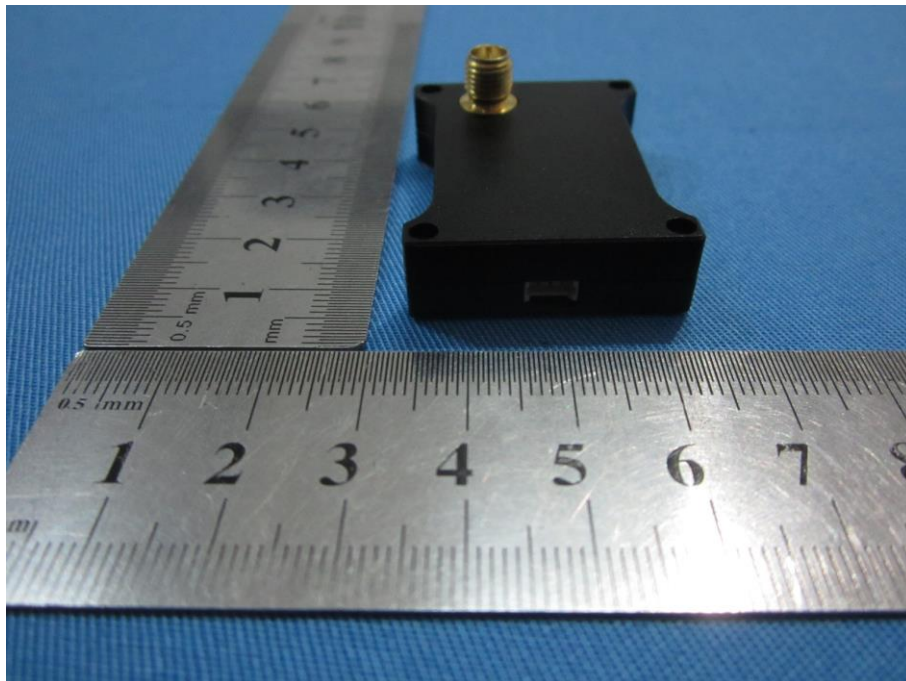
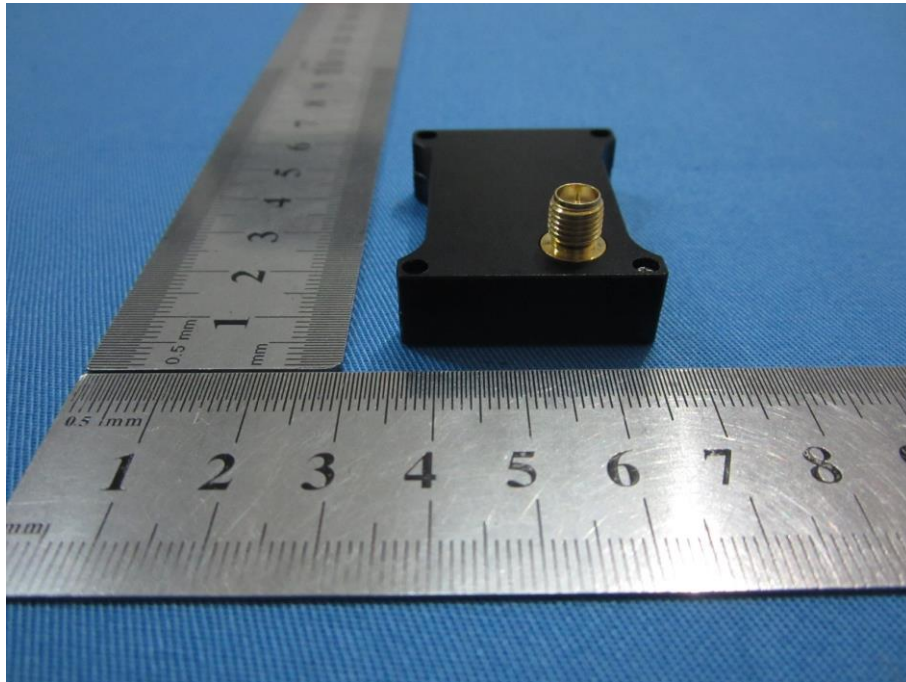
Radiated Emission

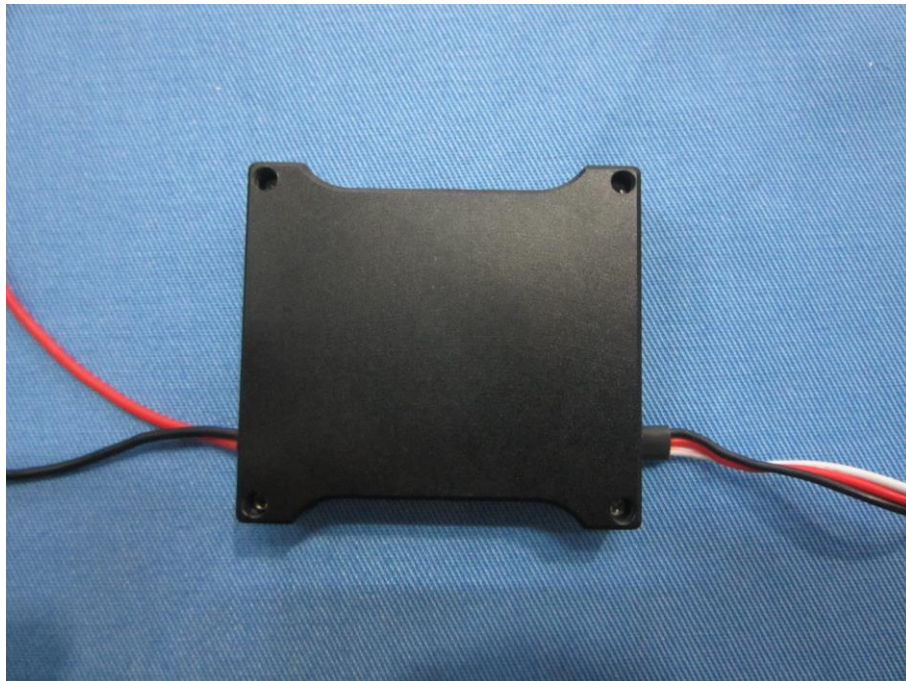
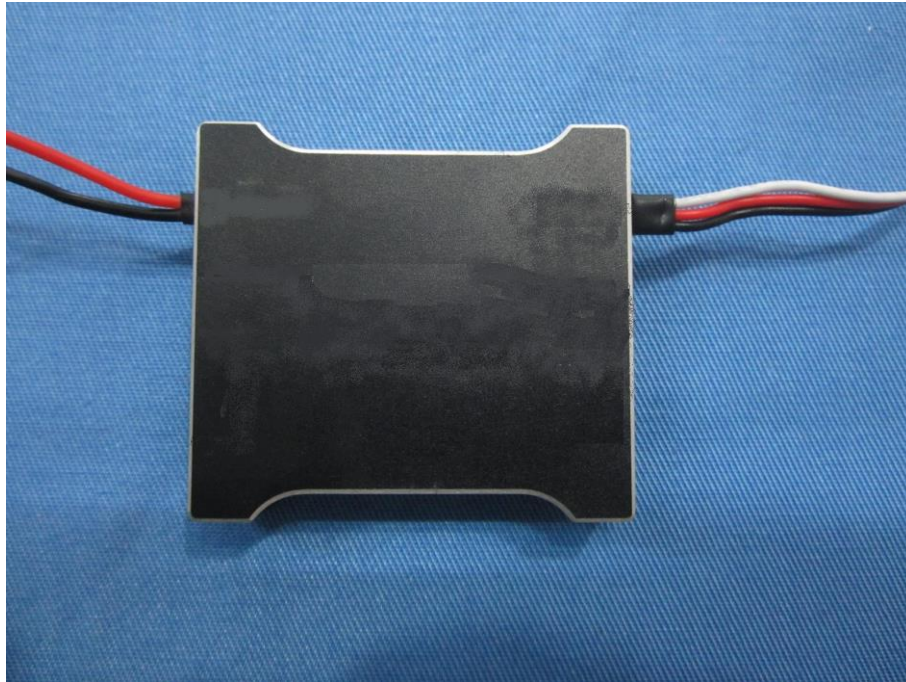


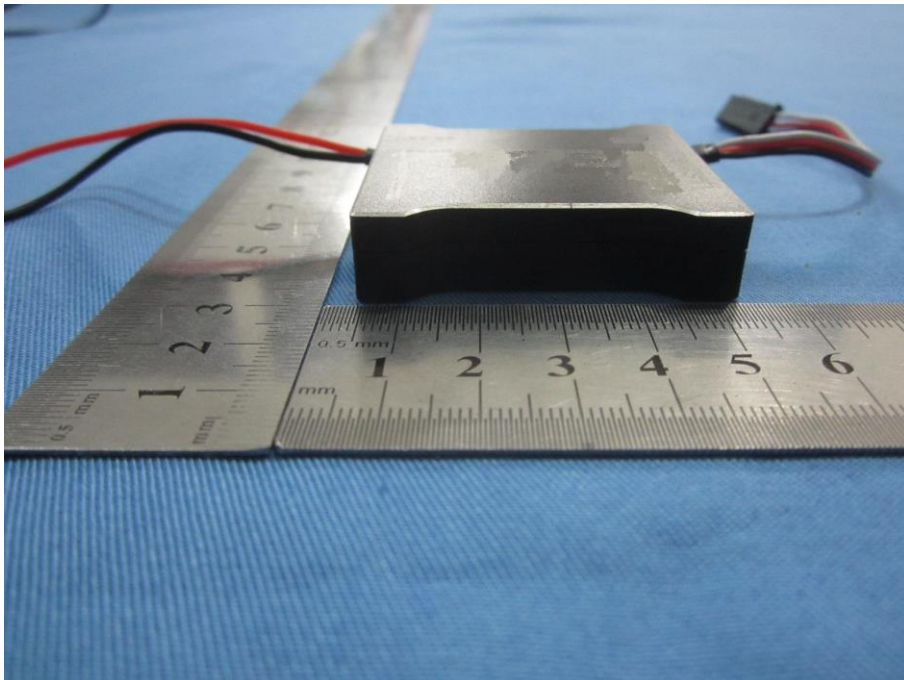
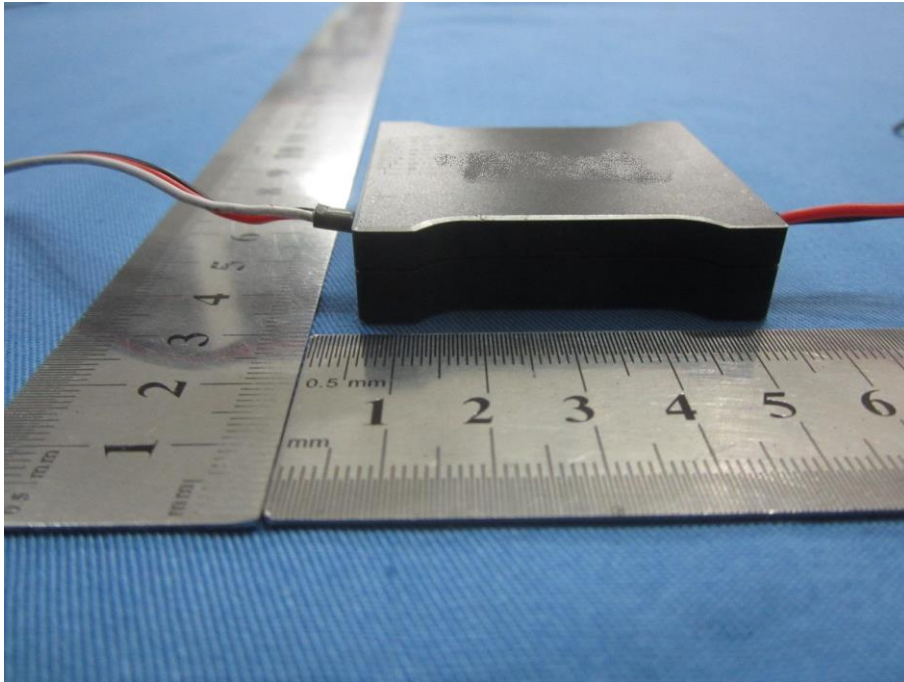
9 EUT Constructional Details

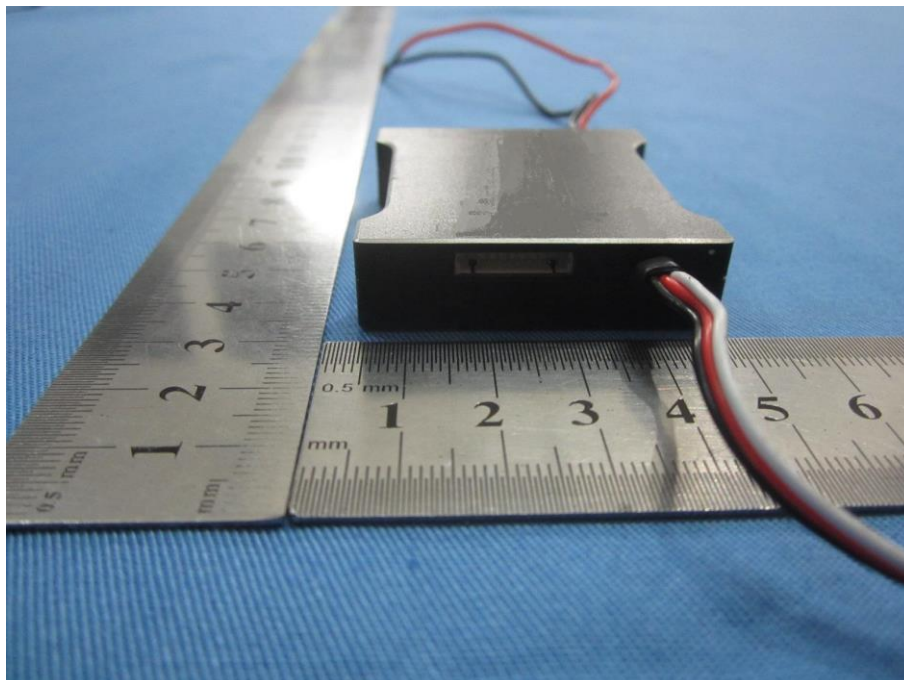
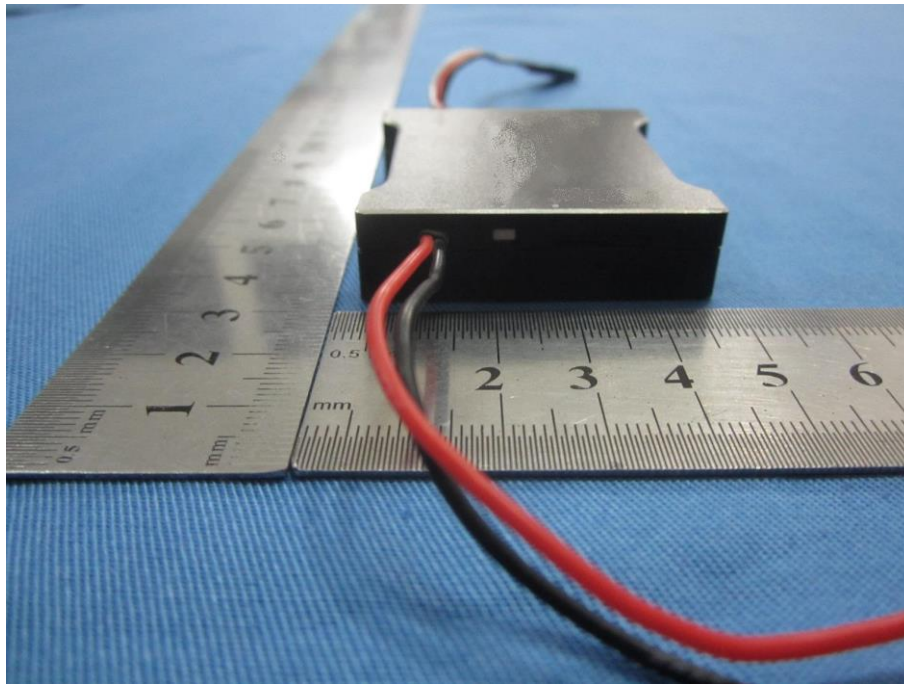


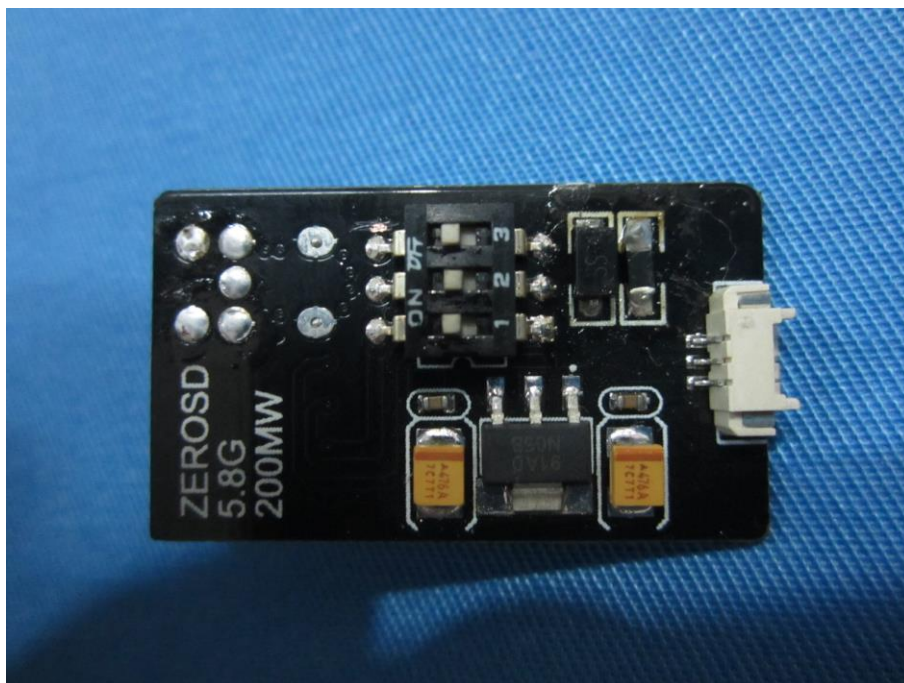
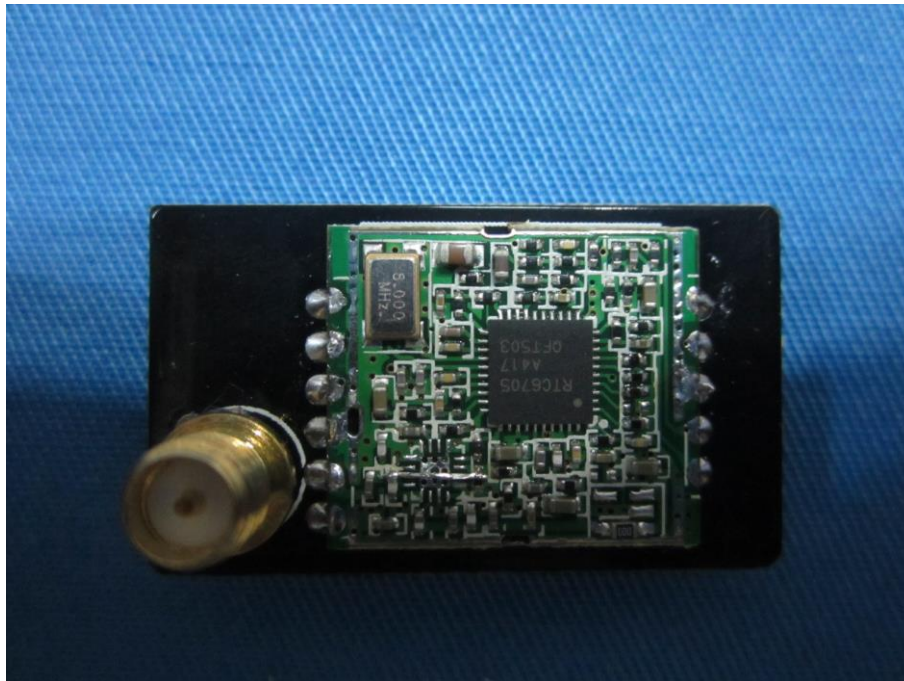


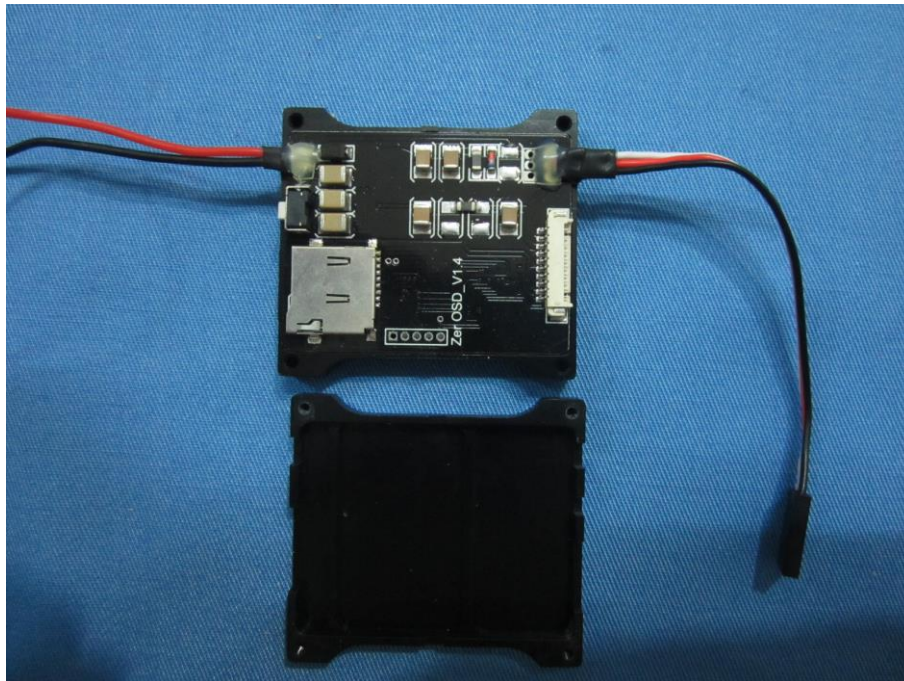












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