

EMC REPORT

Applicant: FLYSKY RC MODEL TECHNOLOGY CO., LTD
Address of Applicant: West building3, Huangjianyuan Ind Park QIAOLI North Gate
Changping Town Dongguan CN.

Equipment Under Test (EUT)

Product Name: 3CH Gun Radio

Model No.: FS-GT2B

Trade Mark:



Applicable standards: ETSI EN 301 489-17 V2.1.1 (2009-05)
ETSI EN 301 489-1 V1.9.2 (2011-09)

Date of sample receipt: May 07, 2012

Date of Test: May 07-14, 2012

Date of report issue: May 15, 2012

Test Result : Pass *

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

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 1999/5/EC are considered.



Robinson Lo
Laboratory Manager



The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of GTS International Electrical Approvals or testing done by GTS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by GTS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

2 Version

Version No.	Date	Description
00	May 15, 2012	Original

Prepared By:

Oscar. Li

Date:

May 15, 2012

Project Engineer

Check By:

Hans. Hu

Date:

May 15, 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 OPERATING MODES	6
5.4 DESCRIPTION OF SUPPORT UNITS	6
5.5 DEVIATION FROM STANDARDS	6
5.6 ABNORMALITIES FROM STANDARD CONDITIONS	6
5.7 OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
5.8 TEST FACILITY	6
5.9 TEST LOCATION	6
5.10 TEST INSTRUMENTS LIST	7
6 EMC REQUIREMENTS SPECIFICATION IN ETSI EN 301489-17	10
6.1 EMI (EMISSION)	10
6.1.1 Radiated Emission.....	10
6.1.2 Conducted Emissions.....	16
6.2 IMMUNITY.....	19
6.2.1 Electrostatic Discharge.....	20
6.2.2 Radiated Immunity.....	22
7 TEST SETUP PHOTO	24
8 EUT CONSTRUCTIONAL DETAILS	27

4 Test Summary

EMI Test				
Test Item	Test Requirement	Test Method	Application	Result
Radiated Emission	ETSI EN 301 489-17	ETSI EN301 489-1	Enclosure	Pass
Conducted Emission	ETSI EN 301 489-17	ETSI EN301 489-1	AC port	Pass
EMS Test				
ESD (Electrostatic Discharge)	ETSI EN 301 489-17	EN 61000-4-2	Enclosure	Pass
Radiated Immunity, 80MHz to 2.7 GHz	ETSI EN 301 489-17	EN 61000-4-3	Enclosure	Pass

Remark:

N/A: not applicable.

5 General Information

5.1 Client Information

Applicant:	FLYSKY RC MODEL TECHNOLOGY CO., LTD
Address of Applicant:	West building3, Huangjianyuan Ind Park QIAOLI North Gate Changping Town Dongguan CN.
Manufacturer:	FLYSKY RC MODEL TECHNOLOGY CO., LTD
Address of Manufacturer/	West building3, Huangjianyuan Ind Park QIAOLI North Gate Changping Town Dongguan CN.
Factory:	FLYSKY RC MODEL TECHNOLOGY CO., LTD
Address of Factory:	West building3, Huangjianyuan Ind Park QIAOLI North Gate Changping Town Dongguan CN.

5.2 General Description of E.U.T.

Product Name:	3CH Gun Radio
Model No.:	FS-GT2B
Operation Frequency:	2405.5MHz~2475.0MHz
Channel numbers:	16
Modulation technology:	GFSK
Antenna Type:	Integral
Antenna gain:	2dBi
Power supply:	DC 3.7V Li-ion Battery

5.3 Operating Modes

Operating mode	Detail description
Operation mode	Keep the EUT in normal operation mode.

5.4 Description of Support Units

None.

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None

5.7 Other Information Requested by the Customer

None

5.8 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.

5.9 Test Location

All tests were performed at:
<p>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</p>

5.10 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. 04 2011	Jul. 03 2012
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 25 2012	Feb. 24 2013
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 30 2011	June 29 2012
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2011	Mar. 29 2013
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Mar. 31 2012	Mar. 30 2013
9	Coaxial Cable	GTS	N/A	GTS211	Mar. 31 2012	Mar. 30 2013
10	Coaxial cable	GTS	N/A	GTS210	Mar. 31 2012	Mar. 30 2013
11	Coaxial Cable	GTS	N/A	GTS212	Mar. 31 2012	Mar. 30 2013
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 04 2011	Jul. 03 2012
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 04 2011	Jul. 03 2012
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 30 2011	June 29 2012
15	Band filter	Amindeon	82346	GTS219	Mar. 31 2012	Mar. 30 2013
16	Constant temperature and humidity box	Oregon Scientific	BA-888	GTS248	May 10 2012	May 09 2013
17	D.C. Power Supply	Instek	PS-3030	GTS232	May 10 2012	May 09 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)	GTS264	Sep. 08 2011	Sep. 07 2013
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jul. 04 2011	Jul. 03 2012
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	Jul. 04 2011	Jul. 03 2012
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 04 2011	Jul. 03 2012
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 04 2011	Jul. 03 2012
6	Coaxial Cable	GTS	N/A	GTS227	Jul. 04 2011	Jul. 03 2012
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

ESD:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	ESD Simulator	EMPEK	ESD-2030A	GTS242	Jul. 05 2011	Jul. 04 2012

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	GTS243	Jul. 06 2011	Jul. 05 2012
2	Barometer	ChangChun	DYM3	GTS255	July 11 2011	July 10 2012

Radiated Immunity:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	June 16 2011	June 15 2012
2	Signal Generator	Rohde & Schwarz	SML03	SEL0068	June 23 2011	June 22 2012
3	RF Amplifier 30M-1GHz	Amplifier Research	250W1000A	SEL0066	Nov. 05 2011	Nov. 04 2012
4	RF Amplifier 0.8-3.0GHz	Amplifier Research	60S1G3	SEL0065	Nov. 05 2011	Nov. 04 2012
5	Power Meter	Rohde & Schwarz	NRVD	SEL0069	June 23 2011	June 22 2012
6	Power Sensor	Rohde & Schwarz	URV5-Z2	SEL0071	June 23 2011	June 22 2012
7	Power Sensor	Rohde & Schwarz	URV5-Z2	SEL0072	June 23 2011	June 22 2012
8	Software EMC32	Rohde & Schwarz	EMC32-S	SEL0082	N/A	N/A
9	Log-periodic Antenna	Amplifier Research	AT1080	SEL0073	N/A	N/A
10	Antenna Tripod	Amplifier Research	TP1000A	SEL0074	N/A	N/A
11	High Gain Horn Antenna (0.8-5GHz)	Amplifier Research	AT4002A	SEL0075	N/A	N/A
12	Audio Analyzer	Rohde & Schwarz	UPL 16	SEL0076	June 23 2011	June 22 2012
13	Nexus conditioning amplifier	B&K	2690	SEL0078	June 23 2011	June 22 2012
14	Mouth simulator	B&K	4227	SEL0079	June 23 2011	June 22 2012
15	Sound level calibrator	B&K	4231	SEL0080	June 23 2011	June 22 2012
16	Universal radio communication tester	Rohde & Schwarz	CMU200	SEL0081	June 23 2011	June 22 2012

6 EMC Requirements Specification in ETSI EN 301489-17

6.1 EMI (Emission)

6.1.1 Radiated Emission

Test Requirement:	ETSI EN 301 489-17				
Test Method:	ETSI EN 301 489-1 and EN55016-2-3				
Test Frequency Range:	30MHz to 6GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	3MHz	Average Value	
Limit:	Frequency	Limit (dBuV/m @3m)		Remark	
	30MHz-230MHz	40.00		Quasi-peak Value	
	230MHz-1GHz	47.00		Quasi-peak Value	
	1GHz-3GHz	50.00		Average Value	
		70.00		Peak Value	
3GHz-6GHz	54.00		Average Value		
	74.00		Peak Value		
Test setup:	Below 1GHz				
Test setup:	Above 1GHz				

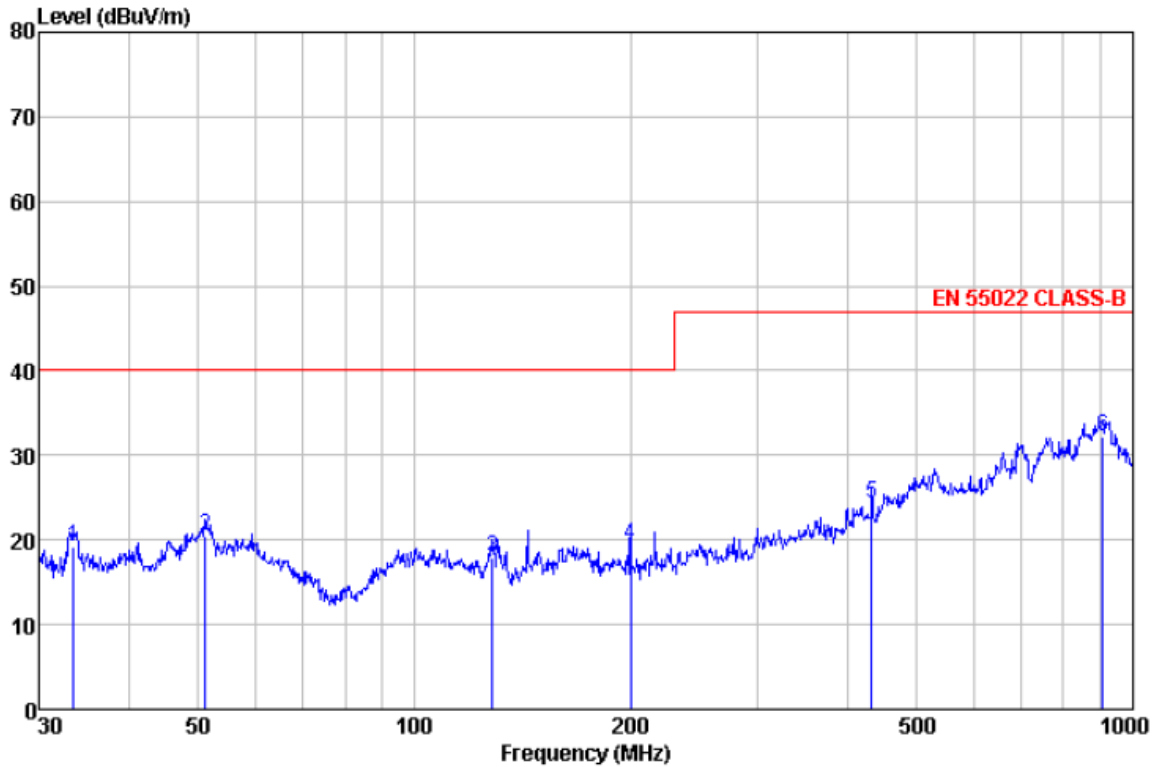
<p>Test Procedure:</p>	<p>■ From 30MHz to 1GHz:</p> <ol style="list-style-type: none"> 1. The radiated emissions test was conducted in a semi-anechoic chamber. 2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation. 3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT. 4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization. <p>■ Above 1GHz:</p> <ol style="list-style-type: none"> 1. The radiated emissions test was conducted in a fully-anechoic chamber. 2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation. 3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT. 4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.
<p>Test environment:</p>	<p>Temp.: 25 °C Humid.: 50% Press.: 1 010mbar</p>
<p>Measurement Record:</p>	<p>Uncertainty: ± 4.5dB</p>
<p>Test Instruments:</p>	<p>Refer to section 5.10 for details</p>
<p>Test mode:</p>	<p>Refer to section 5.3 for details</p>
<p>Test results:</p>	<p>Pass</p>

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.

■ Below 1GHz

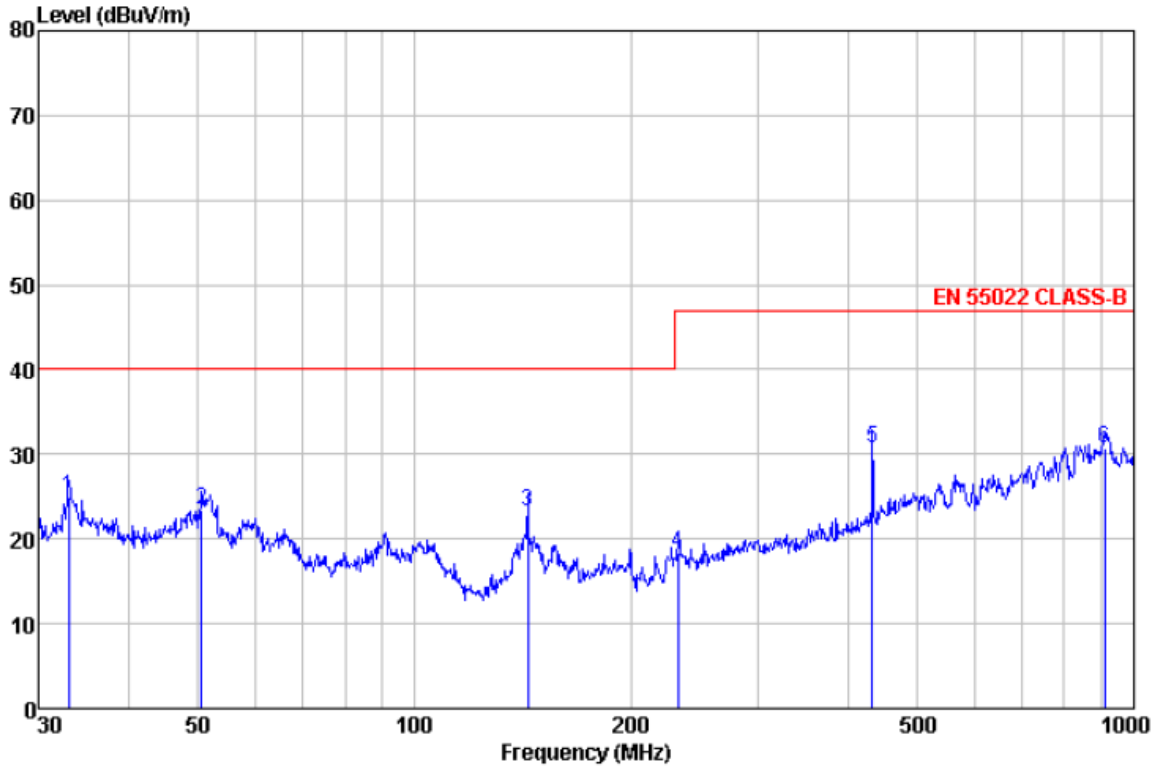
Horizontal:



Site : 3m chamber
 Condition : EN 55022 CLASS-B 3m VULB9163-2012 HORIZONTAL
 Job No. : 403RF
 Test Mode : Charging mode
 Test Engineer: Osccar

	Freq	Read	Antenna	Cable	Preamp	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	33.562	39.63	11.64	0.14	32.23	19.18	40.00	-20.82 QP
2	51.121	37.50	14.82	0.18	32.01	20.49	40.00	-19.51 QP
3	128.563	36.86	12.69	0.31	31.86	18.00	40.00	-22.00 QP
4	199.986	41.08	10.09	0.46	32.27	19.36	40.00	-20.64 QP
5	432.546	39.47	16.07	0.85	32.09	24.30	47.00	-22.70 QP
6	906.482	36.89	24.94	1.74	31.46	32.11	47.00	-14.89 QP

Vertical:

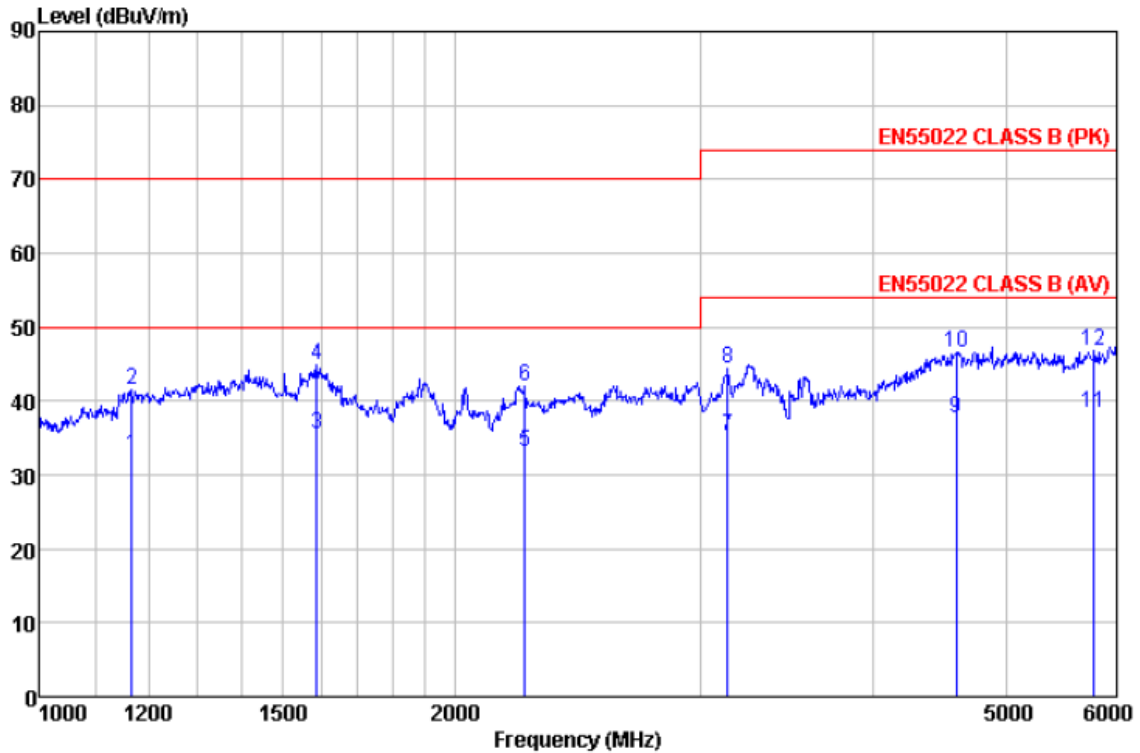


Site : 3m chamber
 Condition : EN 55022 CLASS-B 3m VULB9163-2012 VERTICAL
 Job No. : 403RF
 Test Mode : Charging mode
 Test Engineer: Oscar

	Freq	ReadAntenna	Cable Preamp	Limit	Over				
	MHz	Level	Loss Factor	Line	Limit	Remark			
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	33.095	42.27	14.78	0.14	32.23	24.96	40.00	-15.04	QP
2	50.586	41.21	14.18	0.18	32.01	23.56	40.00	-16.44	QP
3	143.830	42.11	12.86	0.31	31.95	23.33	40.00	-16.67	QP
4	232.532	39.23	10.78	0.51	32.28	18.24	47.00	-28.76	QP
5	432.546	46.52	15.53	0.85	32.09	30.81	47.00	-16.19	QP
6	909.667	36.07	24.35	1.74	31.47	30.69	47.00	-16.31	QP

■ Above 1GHz

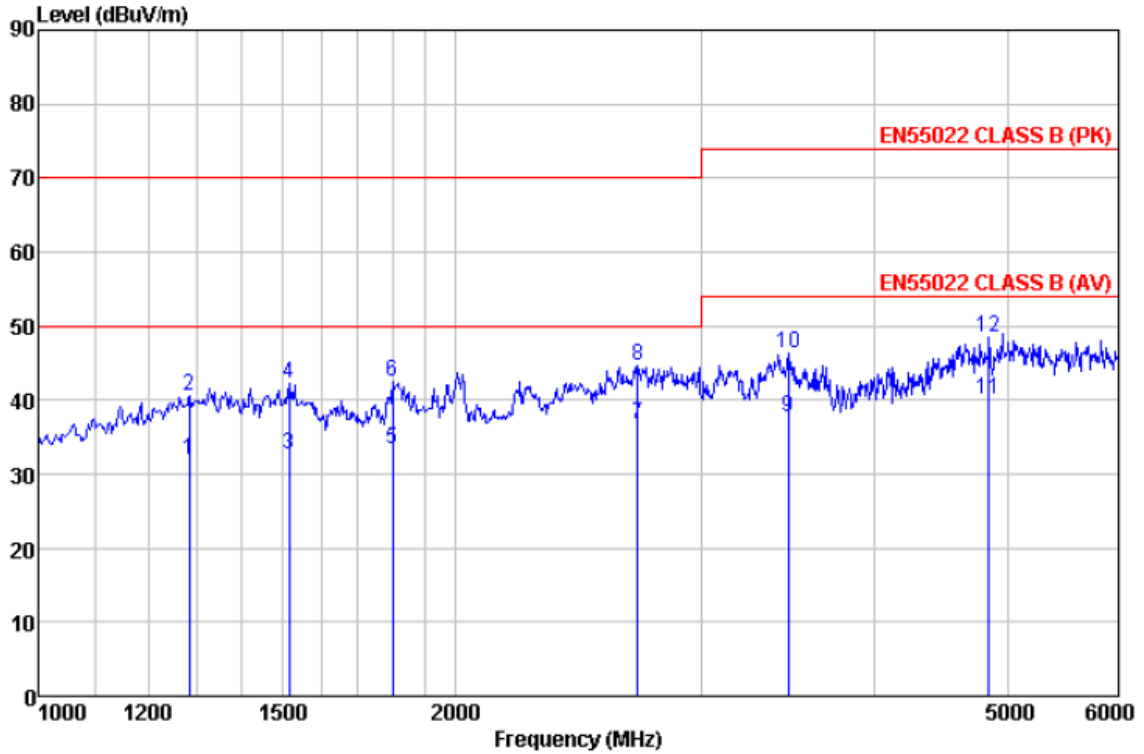
Horizontal:



Site : 3m chamber
 Condition : EN55022 CLASS B (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL
 Job No. : 403RF
 Test Mode : Transmitting mode
 Test Engineer: Osccar

	ReadAntenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1166.597	23.56	25.15	2.35	18.46	32.60	50.00	-17.40 Average
2	1166.597	32.49	25.15	2.35	18.46	41.53	70.00	-28.47 Peak
3	1587.680	34.19	25.00	2.52	26.15	35.56	50.00	-14.44 Average
4	1587.680	43.50	25.00	2.52	26.15	44.87	70.00	-25.13 Peak
5	2243.604	32.66	28.01	3.04	30.56	33.15	50.00	-16.85 Average
6	2243.604	41.52	28.01	3.04	30.56	42.01	70.00	-27.99 Peak
7	3142.235	31.99	28.84	4.00	29.44	35.39	54.00	-18.61 Average
8	3142.235	40.97	28.84	4.00	29.44	44.37	74.00	-29.63 Peak
9	4594.167	25.66	31.51	4.96	24.42	37.71	54.00	-16.29 Average
10	4594.167	34.62	31.51	4.96	24.42	46.67	74.00	-27.33 Peak
11	5778.433	23.77	32.61	5.89	23.86	38.41	54.00	-15.59 Average
12	5778.433	32.16	32.61	5.89	23.86	46.80	74.00	-27.20 Peak

Vertical:



Site : 3m chamber
 Condition : EN55022 CLASS B (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL
 Job No. : 403RF
 Test Mode : Transmitting mode
 Test Engineer: Osccar

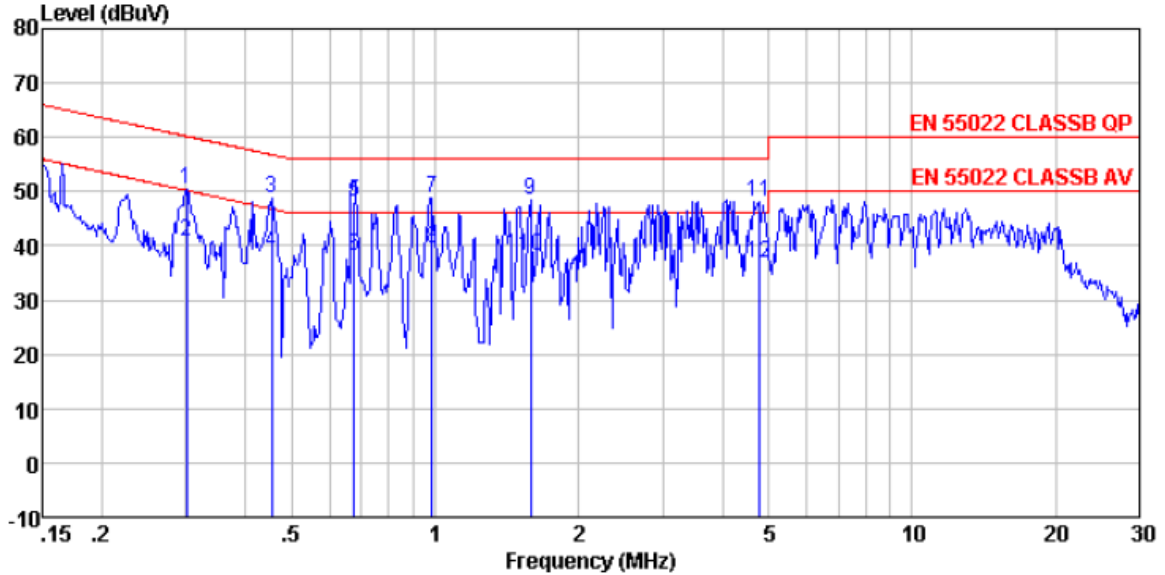
	Read Freq	Antenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1285.113	23.65	25.60	2.39	19.81	31.83	50.00	-18.17	Average
2	1285.113	32.39	25.60	2.39	19.81	40.57	70.00	-29.43	Peak
3	1515.413	29.11	25.20	2.48	24.05	32.74	50.00	-17.26	Average
4	1515.413	38.49	25.20	2.48	24.05	42.12	70.00	-27.88	Peak
5	1799.839	34.57	25.27	2.63	29.20	33.27	50.00	-16.73	Average
6	1799.839	43.68	25.27	2.63	29.20	42.38	70.00	-27.62	Peak
7	2703.174	35.11	28.17	3.73	30.41	36.60	50.00	-13.40	Average
8	2703.174	43.04	28.17	3.73	30.41	44.53	70.00	-25.47	Peak
9	3467.664	32.61	28.87	4.13	27.99	37.62	54.00	-16.38	Average
10	3467.664	41.31	28.87	4.13	27.99	46.32	74.00	-27.68	Peak
11	4839.195	26.94	31.81	5.36	24.05	40.06	54.00	-13.94	Average
12	4839.195	35.39	31.81	5.36	24.05	48.51	74.00	-25.49	Peak

6.1.2 Conducted Emissions

Test Requirement:	ETSI EN 301 489-17					
Test Method:	ETSI EN 301 489-1					
Test Frequency Range:	150kHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9kHz, VBW=30kHz					
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:	<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"> 1. 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. 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 refers 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 EN55022 Class B on conducted measurement. 					
Test Instruments:	Temp.:	24 °C	Humid.:	51%	Press.:	1 010mbar
Measurement Record:	Uncertainty: ± 3.45dB					
Test Instruments:	Refer to section 5.10 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

Measurement Data

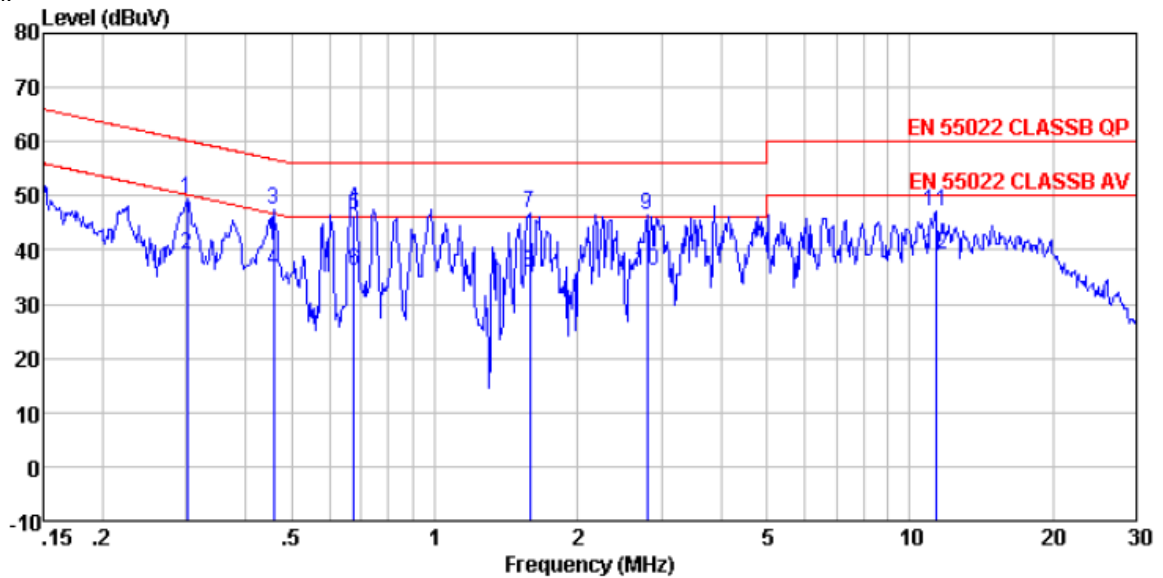
Live:



Condition : EN 55022 CLASSB QP LISN(2011) LINE
 Job No. : 403RF
 Test Mode : Charging mode
 Test Engineer: Osccar

	Read Freq	Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.302	49.67	0.61	0.10	50.38	60.19	-9.81	Peak
2	0.302	40.21	0.61	0.10	40.92	50.19	-9.27	Average
3	0.454	48.09	0.57	0.10	48.76	56.80	-8.04	Peak
4	0.454	38.29	0.57	0.10	38.96	46.80	-7.84	Average
5	0.675	47.55	0.52	0.10	48.17	56.00	-7.83	Peak
6	0.675	37.59	0.52	0.10	38.21	46.00	-7.79	Average
7	0.984	48.25	0.48	0.10	48.83	56.00	-7.17	Peak
8	0.984	38.95	0.48	0.10	39.53	46.00	-6.47	Average
9	1.585	47.83	0.43	0.10	48.36	56.00	-7.64	Peak
10	1.585	37.54	0.43	0.10	38.07	46.00	-7.93	Average
11	4.772	47.78	0.30	0.10	48.18	56.00	-7.82	Peak
12	4.772	36.57	0.30	0.10	36.97	46.00	-9.03	Average

Neutral:



Condition : EN 55022 CLASSB QP LISN(2011) NEUTRAL
 Job No. : 403RF
 Test Mode : Charging mode
 Test Engineer: Osccar

	Read Freq	LISN Level	Cable Factor	Cable Loss	Limit Level	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dB	
1	0.302	48.61	0.61	0.10	49.32	60.19	-10.87 Peak
2	0.302	38.48	0.61	0.10	39.19	50.19	-11.00 Average
3	0.459	46.71	0.56	0.10	47.37	56.71	-9.34 Peak
4	0.459	35.39	0.56	0.10	36.05	46.71	-10.66 Average
5	0.675	45.81	0.52	0.10	46.43	56.00	-9.57 Peak
6	0.675	35.69	0.52	0.10	36.31	46.00	-9.69 Average
7	1.585	46.41	0.43	0.10	46.94	56.00	-9.06 Peak
8	1.585	35.39	0.43	0.10	35.92	46.00	-10.08 Average
9	2.794	45.95	0.36	0.10	46.41	56.00	-9.59 Peak
10	2.794	35.69	0.36	0.10	36.15	46.00	-9.85 Average
11	11.377	46.87	0.21	0.20	47.28	60.00	-12.72 Peak
12	11.377	38.59	0.21	0.20	39.00	50.00	-11.00 Average

Notes:

1. An initial pre-scan was performed on the live 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

6.2 Immunity

Performance Criteria of ETSI EN 301 489-17, sub clause 6.2 table 1.		
Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance (see note 1). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance (see note 1). No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2).
<p>NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.</p> <p>If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.</p> <p>NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed.</p> <p>If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.</p>		

6.2.1 Electrostatic Discharge

Test Requirement:	ETSI EN 301 489-17
Test Method:	EN 61000-4-2
Discharge Voltage:	Contact Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$ Air Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 8\text{kV}$ HCP/VCP: $\pm 2\text{kV}$, $\pm 4\text{kV}$
Polarity:	Positive & Negative
Number of Discharge:	Contact Discharge: Minimum 25 times at each test point, Air Discharge: Minimum 10 times at each test point.
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum
Limit:	Criteria B
Test setup:	
Test Procedure:	<p>Air discharge:</p> <ol style="list-style-type: none"> 1. The test was applied on non-conductive surfaces of EUT. 2. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. 3. After each discharge, the discharge electrode was removed from the EUT. 4. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. 5. This procedure was repeated until all the air discharge completed <p>Contact Discharge:</p> <ol style="list-style-type: none"> 1. The test was applied on conductive surfaces of EUT. 2. the generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. 3. the tip of the discharge electrode was touch the EUT before the discharge switch was operated. <p>Indirect discharge for horizontal coupling plane</p> <ol style="list-style-type: none"> 1. At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. 2. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

	<p>3. Consideration should be given to exposing all sides of the EUT.</p> <p>Indirect discharge for vertical coupling plane</p> <p>1. At least 10 single discharges were applied to the center of one vertical edge of the coupling plane.</p> <p>2. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT.</p> <p>3. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.</p>
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1 010mbar
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

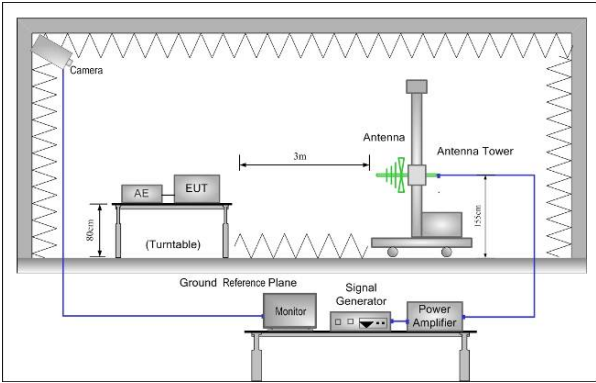
Measurement Record:

Test points:	I: All Metal, Screw			
	II: Control key, All plastic seams, cover seams, LED Light			
Direct discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observations Performance	Result
± 2, ± 4	Contact	I	A	Pass
± 2, ± 4, ± 8	Air	II	A	Pass
Indirect discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observation Performance	Result
± 2, ± 4	HCP-Bottom/Top/ Front/Back/Left/Right	Edge of the HCP	A	Pass
± 2, ± 4	VCP-Front/Back /Left/Right	Center of the VCP	A	Pass

Remark:

A: Normal performance within the specification limits.

6.2.2 Radiated Immunity

Test Requirement:	ETSI EN 301 489-17
Test Method:	EN 61000-4-3
Frequency range:	80MHz to 1GHz, 1.4GHz to 2.7GHz
Test Level:	3V/m
Modulation:	80%, 1kHz Amplitude Modulation
Performance Criterion:	Criteria A
Test setup:	
Test Procedure:	<ol style="list-style-type: none"> 1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items. 2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length. 3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area). 4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value. 5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0,5 s. 6. The test normally was performed with the generating antenna facing each side of the EUT. 7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally. 8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.

Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 010mbar
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Record:

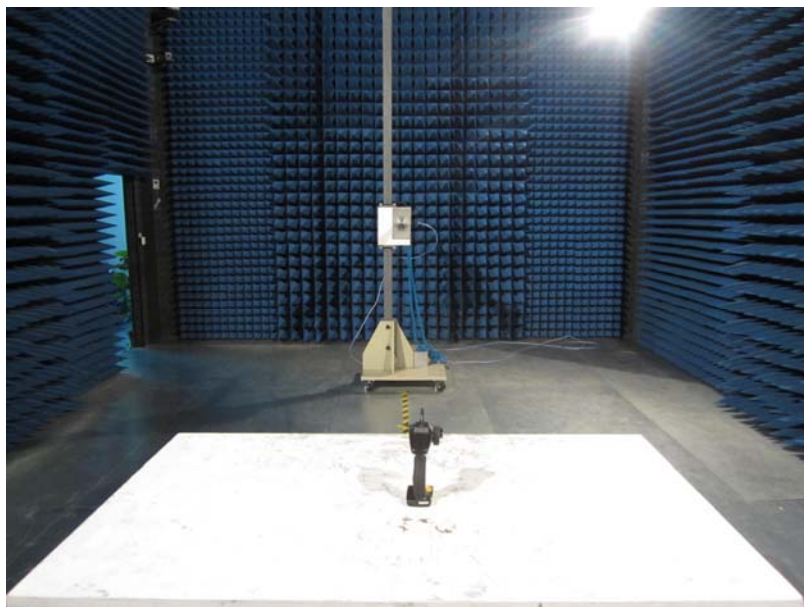
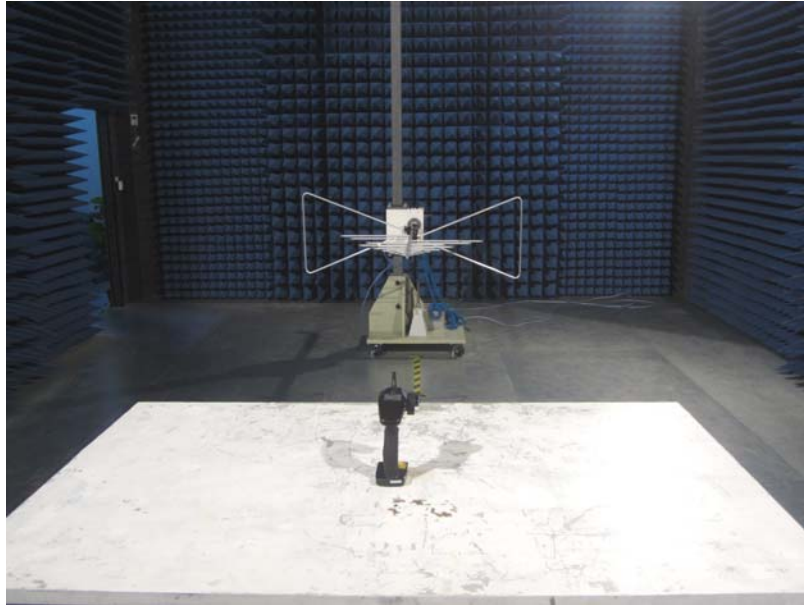
Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)
80 MHz-1 GHz 1.4GHz-2.7GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A
			H		A
			V	Rear	A
			H		A
			V	Left	A
			H		A
			V	Right	A
			H		A
			V	Top	A
			H		A
			V	Bottom	A
			H		A

Remarks:

A: Normal performance within the specification limits.

7 Test Setup Photo

Radiated Emission



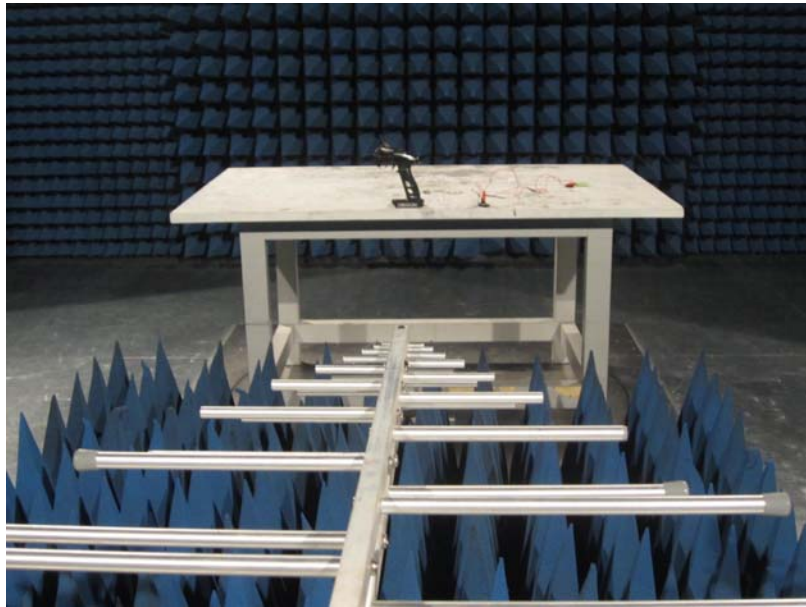
Conducted Emission



ESD



RS



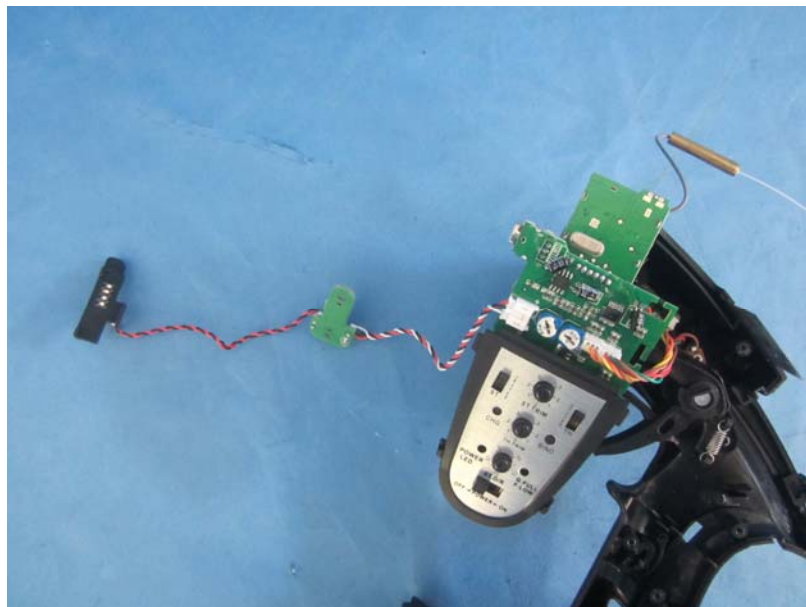
8 EUT Constructional Details

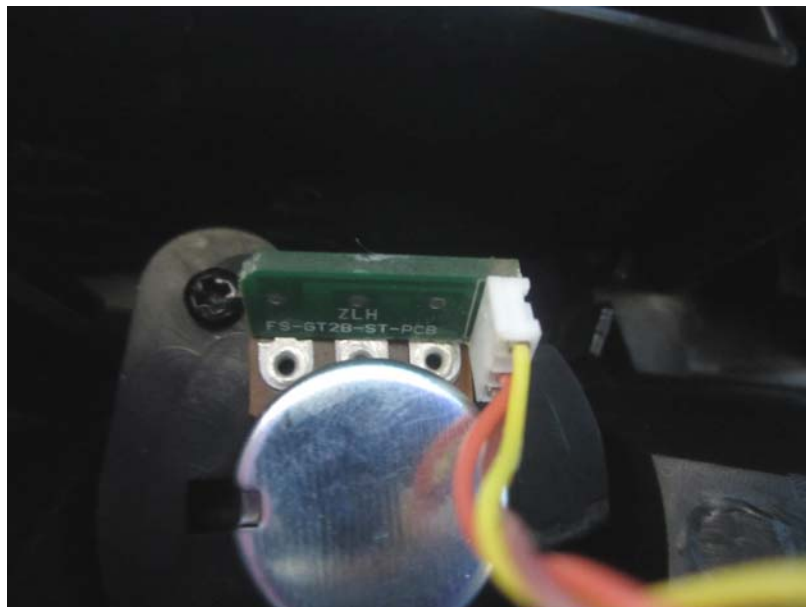
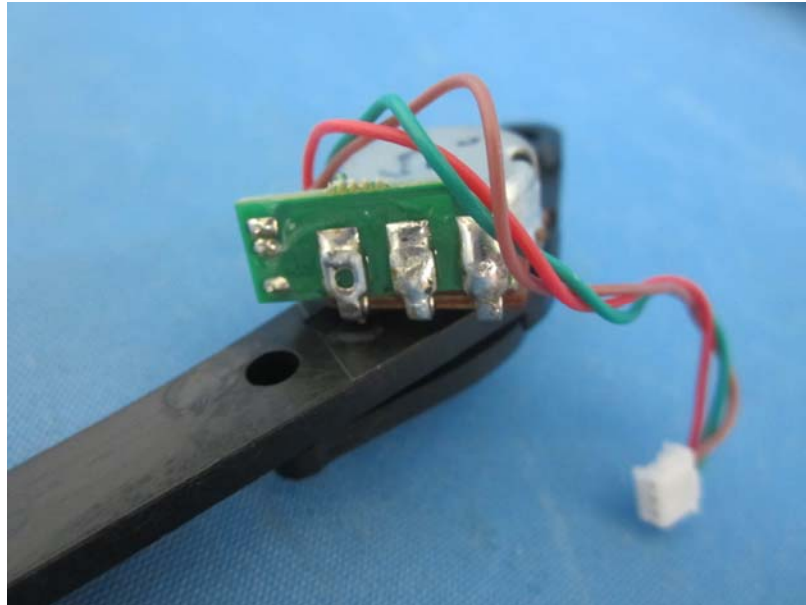
Tx

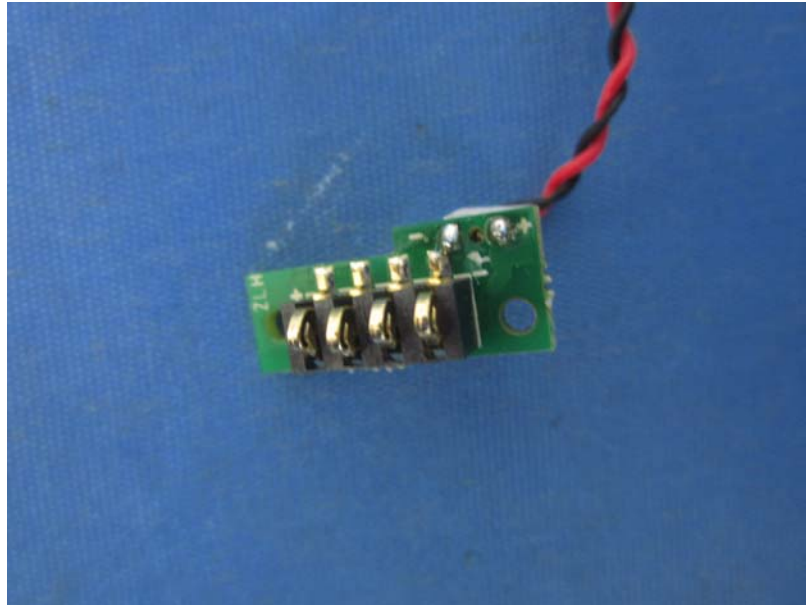


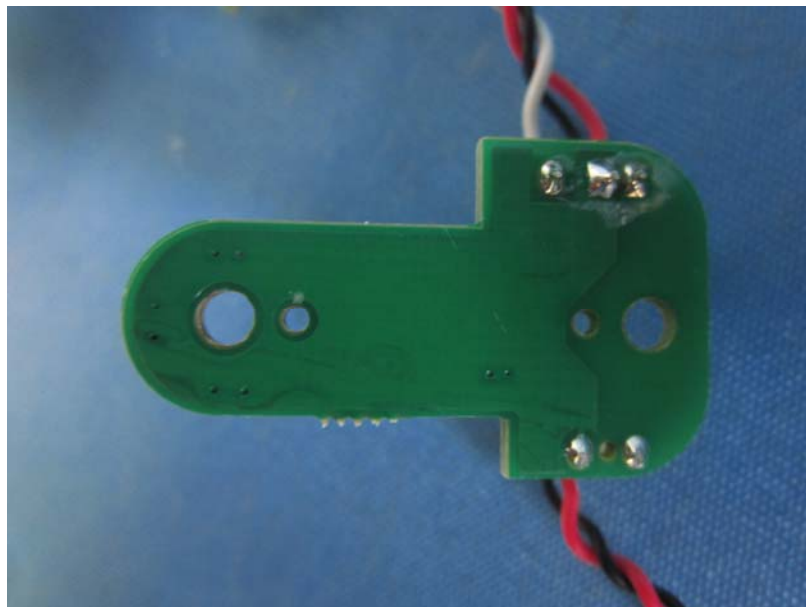
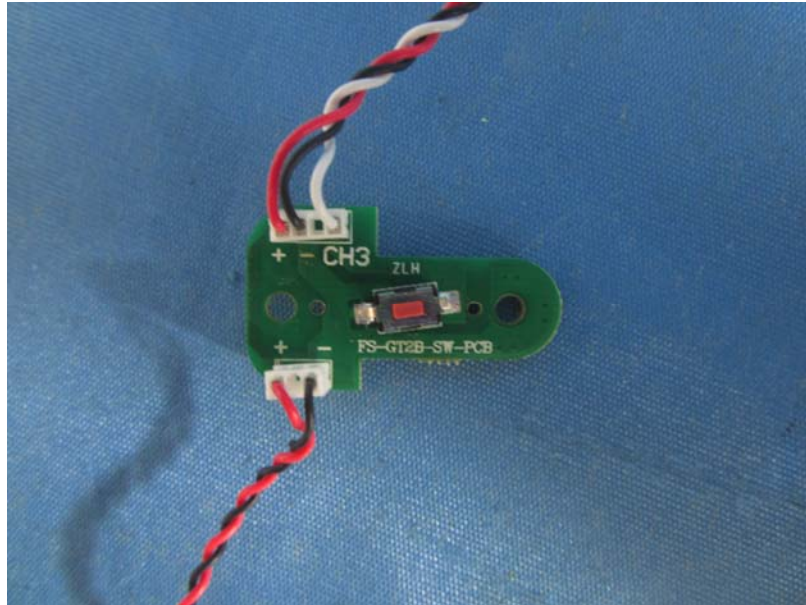


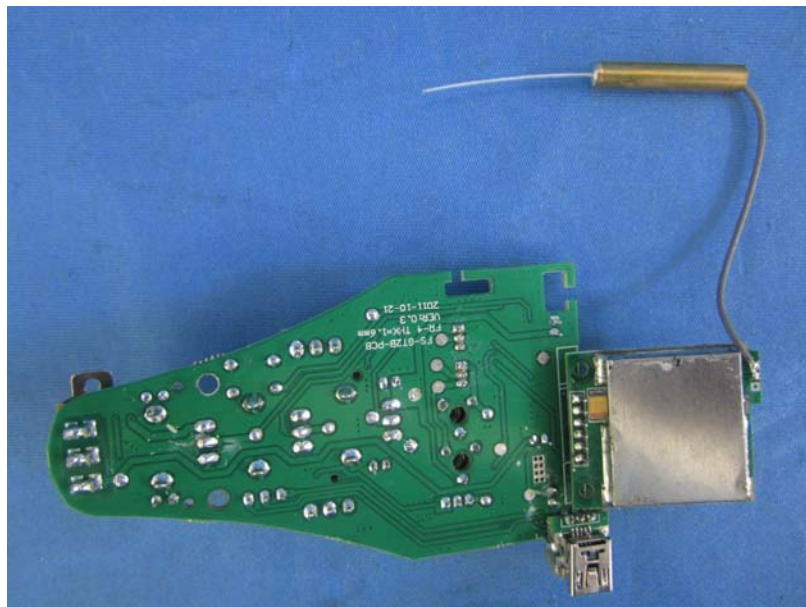
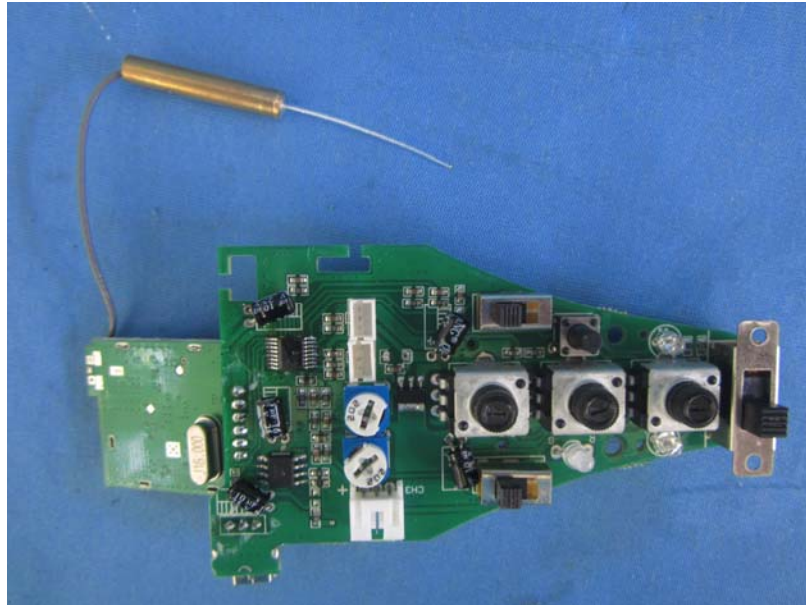


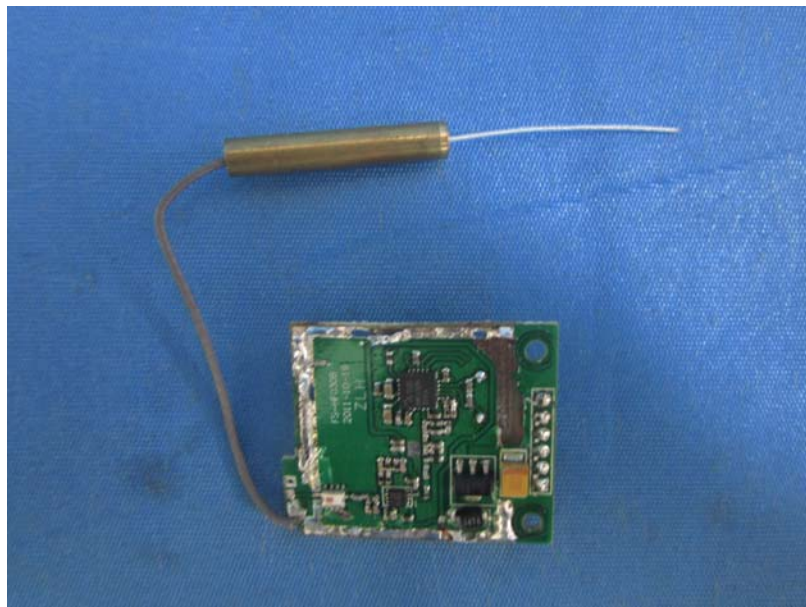
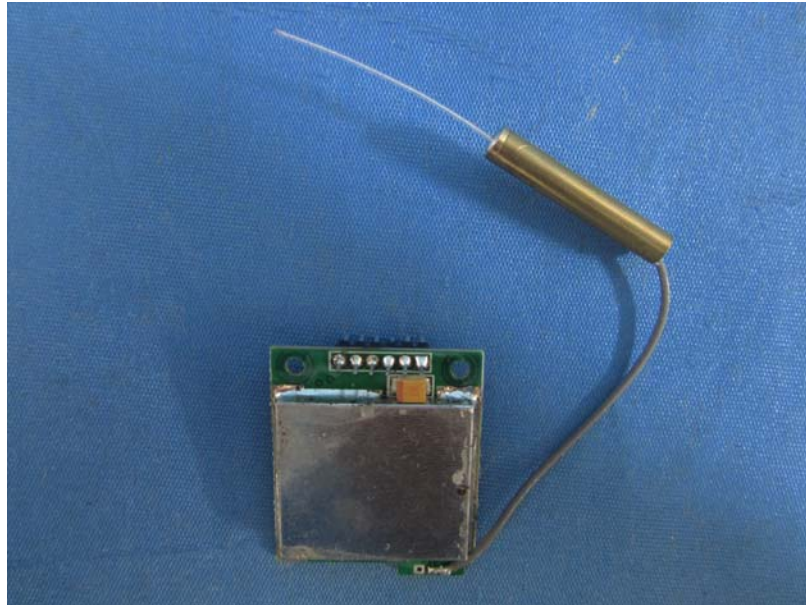


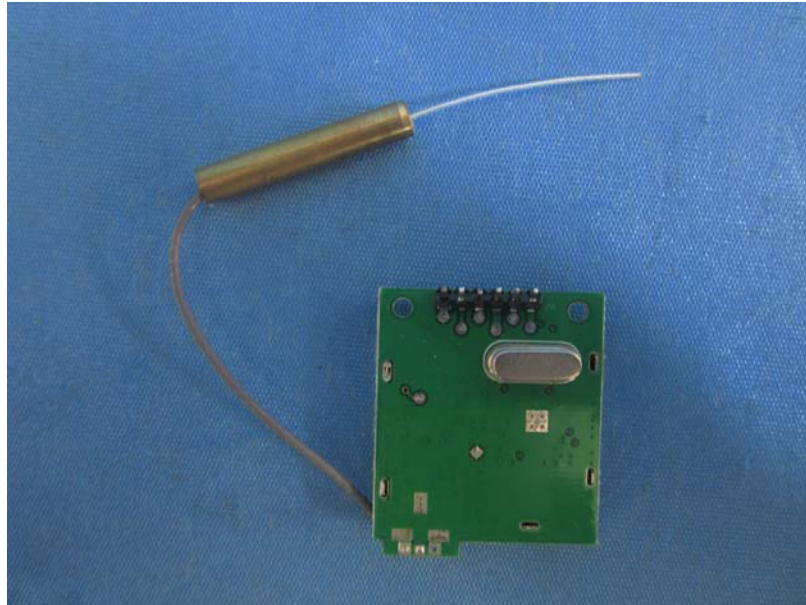




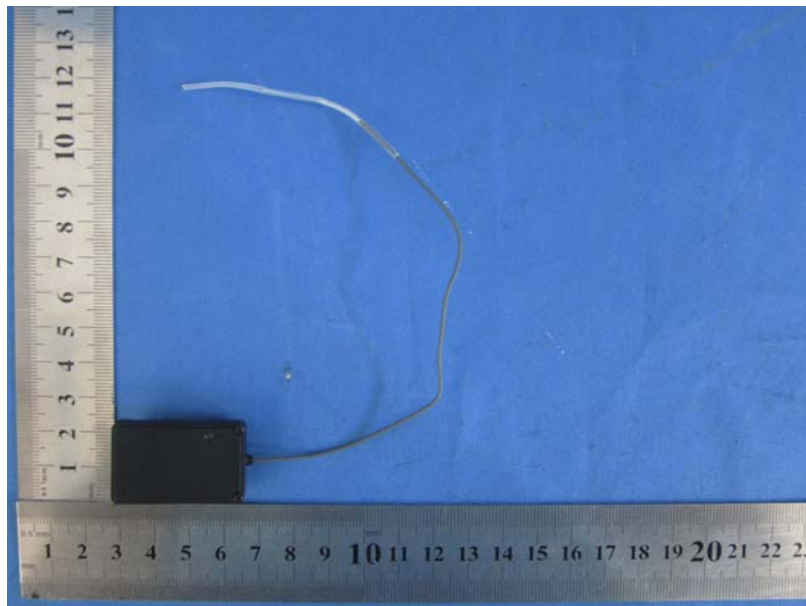
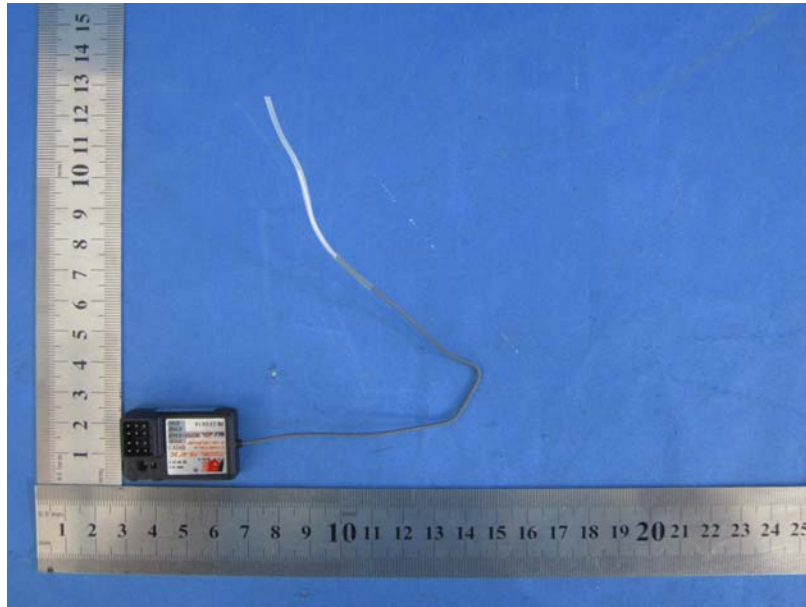


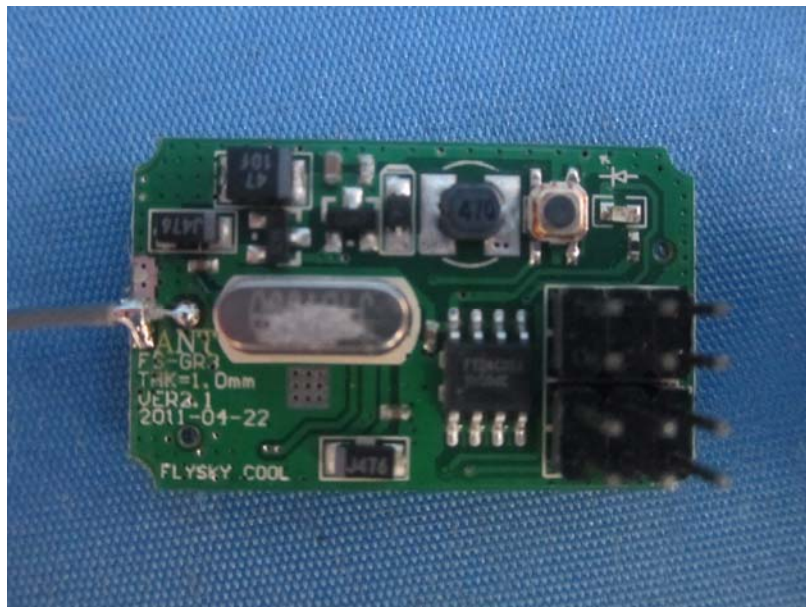
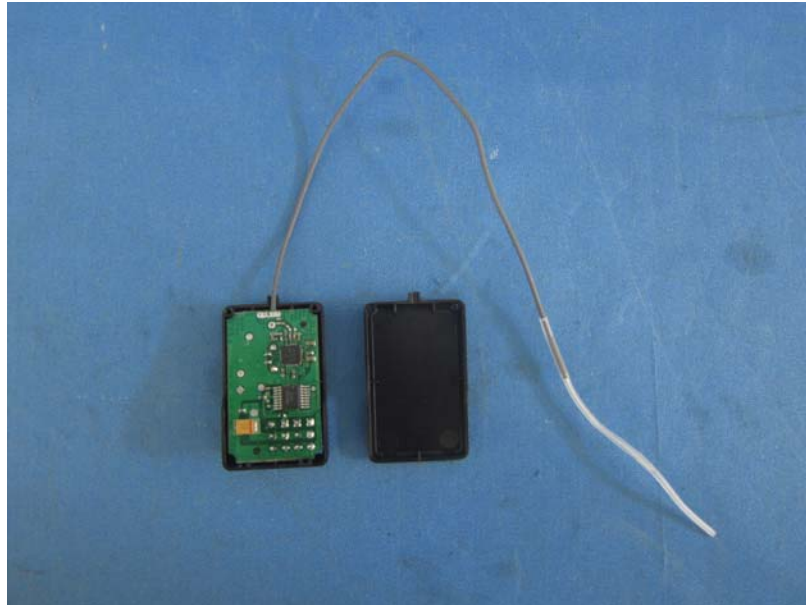


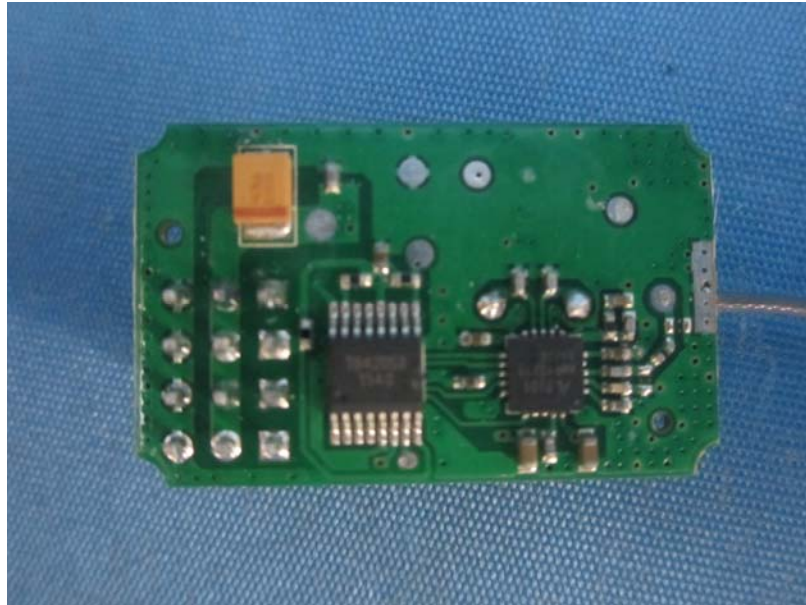




Rx







-----End-----