

TEST REPORT

of

FCC Part 15 Subpart C

New Application; Class I PC; Class II PC

Product : Evoluent VerticalMouse 4 Wireless
Brand: N/A
Model: VM4RW
Model Difference: N/A
FCC ID: R6Y-VM4RW
FCC Rule Part: §15.249
Applicant: Evoluent
Address: 412 Hiller Street Belmont, CA 94002 United States

Test Performed by:

International Standards Laboratory

<Lung-Tan LAB>

*Site Registration No.

BSMI: SL2-IN-E-0013; MRA TW1036; TAF: 0997; IC: IC4067B-3;

*Address:

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Report No.: **ISL-13LR021FC**

Issue Date : **2013/01/31**

Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.

This report MUST not be used to claim product endorsement by TAF, NVLAP or any agency of the Government.

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VERIFICATION OF COMPLIANCE

Applicant: Evoluent
Product Description: Evoluent VerticalMouse 4 Wireless
Brand Name: N/A
FCC ID: R6Y-VM4RW
FCC Rule Part: §15.249
Model No.: VM4RW
Model Difference: N/A
Date of test: 2012/11/06 ~ 2012/11/09
Date of EUT Received: 2012/11/06

We hereby certify that:

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

Test By:



Date:

2013/01/31

Dion Chang / Engineer

Prepared By:



Date:

2013/01/31

Eva Kao / Technical Supervisor

Approved By:



Date:

2013/01/31

Vincent Su / Technical Manager

Version

Version No.	Date	Description
00	2013/01/31	Initial creation of document

Table of Contents

1	GENERAL INFORMATION	5
1.1	PRODUCT DESCRIPTION	5
1.2	RELATED SUBMITTAL(S) / GRANT (S)	5
1.3	TEST METHODOLOGY.....	5
1.4	TEST FACILITY	5
1.5	SPECIAL ACCESSORIES.....	5
1.6	EQUIPMENT MODIFICATIONS	6
2	SYSTEM TEST CONFIGURATION	7
2.1	EUT CONFIGURATION.....	7
2.2	EUT EXERCISE	7
2.3	TEST PROCEDURE.....	7
2.4	MEASUREMENT EQUIPMENT USED:	8
2.5	LIMITATION	9
2.6	CONFIGURATION OF TESTED SYSTEM.....	11
3	SUMMARY OF TEST RESULTS	12
4	DESCRIPTION OF TEST MODES	12
5	CONDUCTED EMISSIONS TEST	13
5.1	MEASUREMENT PROCEDURE:	13
5.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	13
5.3	MEASUREMENT EQUIPMENT USED:	13
5.4	MEASUREMENT RESULT:	13
6	RADIATED EMISSION TEST	14
6.1	MEASUREMENT PROCEDURE.....	14
6.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	14
6.3	MEASUREMENT EQUIPMENT USED:	15
6.4	FIELD STRENGTH CALCULATION	15
6.5	MEASUREMENT RESULT	16
7	99%, 20 DB BAND WIDTH MEASUREMENT.....	23
7.1	MEASUREMENT PROCEDURE.....	23
7.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	23
7.3	MEASUREMENT EQUIPMENT USED:	23
7.4	MEASUREMENT RESULTS:.....	23
	APPENDIX 1 PHOTOGRAPHS OF SETUP	26
	APPENDIX 2 PHOTOGRAPHS OF EUT	28

1 GENERAL INFORMATION

1.1 Product Description

Product Name:	Evoluent VerticalMouse 4 Wireless
Brand Name:	N/A
Model Name:	VM4RW
Model Difference:	N/A
Operation Frequency:	2403~2478MHz
Channel number:	20 channels
Modulation Type:	GFSK
Power Supply:	1.5V dc form 1*AAA battery
Antenna Type:	PCB Antenna type

Channel table

2403MHZ	2478MHZ	2453MHZ	2413MHZ	2466MHZ
2404MHZ	2474MHZ	2444MHZ	2424MHZ	2464MHZ
2405MHZ	2475MHZ	2445MHZ	2415MHZ	2465MHZ
2406MHZ	2476MHZ	2436MHZ	2456MHZ	2416MHZ

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **R6Y-VM4RW** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of **International Standards Laboratory** <Lung-Tan LAB> No. 120, Lane 180, San Ho Tsuen, Hsin Ho Rd., Lung-Tan Hsiang, Tao Yuan County 325, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number is: TW1036, Canada Registration Number: 4067B-3.

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

2 System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the engineering operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 8 and 13 of ANSI C63.4-2003.

2.4 Measurement Equipment Used:

AC Power Line Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Conduction 03 -1 Cable	WOKEN	CFD 300-NL	Conduction 0-1	06/28/2012	06/28/2013
EMI Receiver 12	ROHDE & SCHWARZ	ESCI	100804	07/13/2012	07/13/2013
LISN 07	FCC Inc.	FCC-LISN-50-100-4-02	07040	07/13/2012	07/13/2013
LISN 08	FCC	FCC-LISN50-25-2-01	07039	07/13/2012	07/13/2013

Chamber 14(966)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer 21(26.5GHz)	Agilent	N9010A	MY49060537	07/17/2012	07/16/2013
Spectrum Analyzer 20(6.5GHz)	Agilent	E4443A	MY48250315	05/24/2012	05/23/2013
Spectrum Analyzer 22(43GHz)	R&S	FSU43	100143	04/25/2012	04/24/2013
Loop Antenna9K-30M	A.H.SYSTEM	SAS-564	294	02/28/2012	02/27/2013
Bilog Antenna30-1G	Schaffner	CBL 6111B	2756	12/27/2012	12/26/2013
Horn antenna1-18G	COM-POWER	AH118	2011071401	03/01/2012	02/29/2013
Horn antenna1-18G(06)	EMCO	3117	0006665	10/15/2012	10/14/2013
Horn antenna18-26G(04)	Com-power	AH-826	081001	05/04/2011	05/03/2013
Preamplifier9-1000M	HP	8447D	NA	02/10/2012	02/09/2013
Preamplifier1-18G	MITEQ	AFS44-001018 00-25-10P-44	1329256	07/23/2012	07/22/2013
Preamplifier1-26G	EM	EM01M26G	NA	02/21/2012	02/20/2013
Cable1-18G	HUBER SUHNER	Sucoflex 106	NA	02/10/2012	02/09/2013
Cable UP to 1G	HUBER SUHNER	RG 214/U	NA	12/14/2012	12/13/2013
SUCOFLEX 1GHz~40GHz cable	HUBER SUHNER	Sucoflex 102	27963/2&3742 1/2	09/21/2011	09/20/2013
2.4G Filter	Micro-Tronics	Brm50702	76	10/22/2012	10/21/2013

2.5 Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 – 0.5	66 - 56	56 - 46
0.5 – 5	56	46
5 - 30	60	50

(2) Radiated Emission 15.249(a)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
2400 – 2483.5	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
24.0 – 24.25 GHz	250 mV/m (107.95dBuV/m)	2500 uV/m (67.95dBuV/m)	3

(3) Radiated Emission 15.249 (d)

Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209 as below, whichever is the lesser attenuation.

Frequency (MHz)	Field strength $\mu\text{V/m}$	Distance (m)	Field strength at 3m $\text{dB}\mu\text{V/m}$
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

(4) Radiated Emission 15.249(e)

For frequencies above 1000MHz, the above field strength limits are based on average limits. The peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation.

- Remark:
1. Emission level in $\text{dB}\mu\text{V/m} = 20 \log (\mu\text{V/m})$
 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
 4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ 15.205, then the general radiated emission limits in ξ 15.209 apply.

2.6 Configuration of Tested System

Fig. 2-1 Configuration of Radiated Emission Test

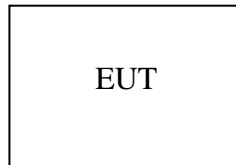


Table 2-2 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1	N/A					

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

3 Summary of Test Results

FCC Rules	Description Of Test	Result
§15.207	Conducted Emission	Compliant
§15.249(a)(d)(e)	Radiated Emission	Compliant
§15.215 (c)	99% ; 20dB band width Measurement	Compliant

4 Description of test modes

The EUT has been tested under operating condition with new battery.
The EUT is staying in continuous transmitting mode

Channel low (2403MHz) 、 mid (2453MHz) and high (2478MHz) with highest data rate are chosen for full testing.

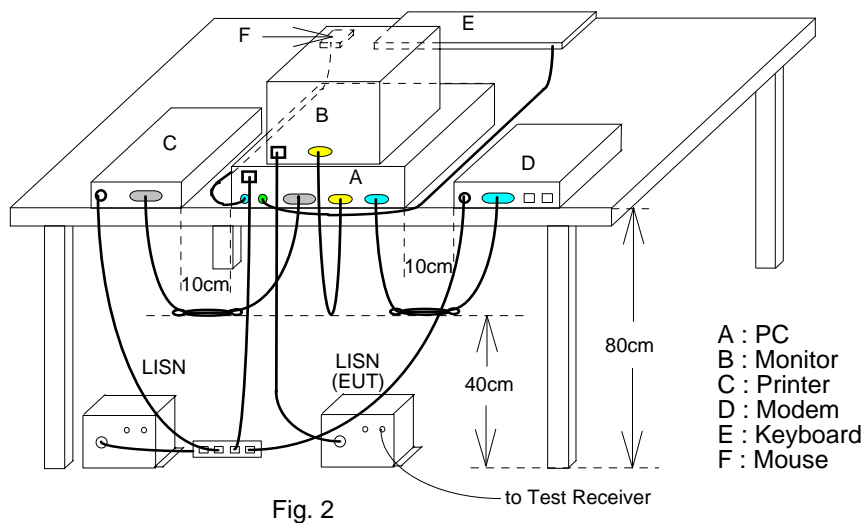
The field strength of spurious radiation emission was measured as EUT normal position (X mode).

5 Conducted Emissions Test

5.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Equipment Used:

Refer to section 2.4 in this report

5.4 Measurement Result:

N/A, The device is powered from battery.

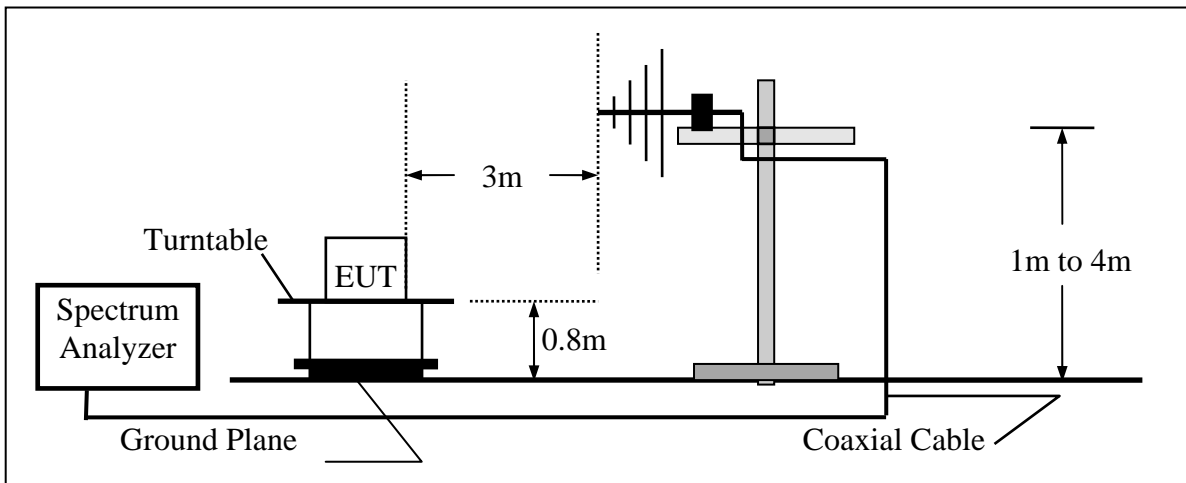
6 Radiated Emission Test

6.1 Measurement Procedure

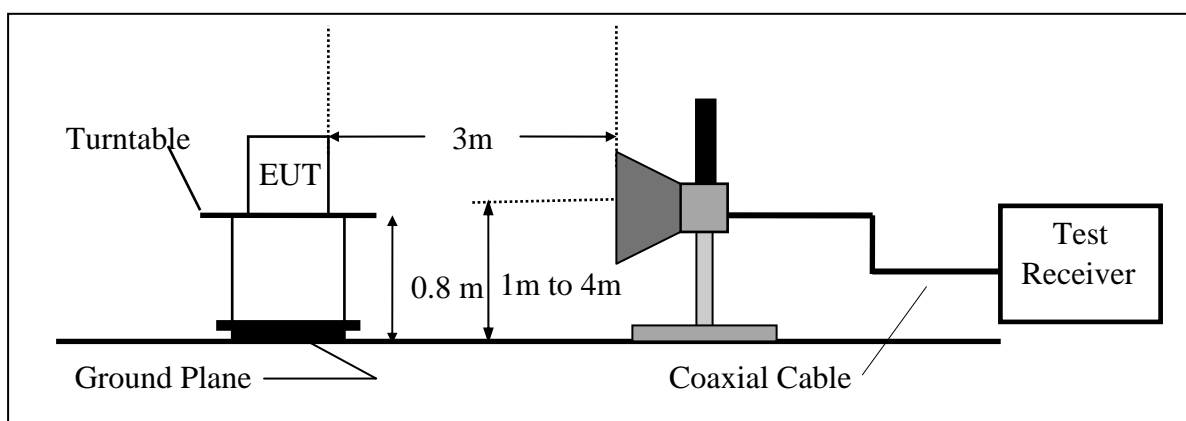
1. The EUT was placed on a turntable that is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

6.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



6.3 Measurement Equipment Used:

Refer to section 2.4 in this report

6.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

6.5 Measurement Result

Fundamental Emission Measurement Result

Operation Mode	: TX mode	Test Date	: 2012/11/09
Fundamental Frequency	: 2403 MHz, 2453 MHz, 2478MHz	Test By	: Dino
Temp	: 25 °C	Hum.	: 60%

CH Low:

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	2403.00	100.58	-11.22	89.36	114.00	-24.64	Peak	VERTICAL
1	2403.00	100.57	-11.22	89.35	114.00	-24.65	Peak	HORIZONTAL

CH Mid:

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	2453.00	100.86	-11.10	89.76	114.00	-24.24	Peak	VERTICAL
1	2453.01	102.29	-11.10	91.19	114.00	-22.81	Peak	HORIZONTAL

CH High:

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	2478.00	101.15	-11.03	90.12	114.00	-23.88	Peak	VERTICAL
1	2478.00	102.20	-11.03	91.17	114.00	-22.83	Peak	HORIZONTAL

Remark:

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum Average mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 10Hz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode :TX CH Low
 Fundamental Frequency :2403 MHz
 Temperature :25 °C

Test Date : 2012/11/09
 Test By :Dino
 Humidity :60 %

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	360.77	25.56	-11.26	14.30	46.00	-31.70	Peak	VERTICAL
2	431.58	26.95	-9.87	17.08	46.00	-28.92	Peak	VERTICAL
3	625.58	26.42	-6.35	20.07	46.00	-25.93	Peak	VERTICAL
4	772.05	26.59	-3.67	22.92	46.00	-23.08	Peak	VERTICAL
5	888.45	26.59	-2.16	24.43	46.00	-21.57	Peak	VERTICAL
6	955.38	26.14	-1.23	24.91	46.00	-21.09	Peak	VERTICAL
1	448.07	26.33	-9.54	16.79	46.00	-29.21	Peak	HORIZONTAL
2	514.03	28.31	-8.76	19.55	46.00	-26.45	Peak	HORIZONTAL
3	644.01	27.69	-6.08	21.61	46.00	-24.39	Peak	HORIZONTAL
4	754.59	26.82	-3.81	23.01	46.00	-22.99	Peak	HORIZONTAL
5	840.92	27.21	-3.04	24.17	46.00	-21.83	Peak	HORIZONTAL
6	945.68	26.41	-1.31	25.10	46.00	-20.90	Peak	HORIZONTAL

Remark:

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.
- 4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode :TX CH Mid
 Fundamental Frequency :2453 MHz
 Temperature :25 °C

Test Date : 2012/11/09
 Test By :Dino
 Humidity :60 %

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	431.58	27.26	-9.87	17.39	46.00	-28.61	Peak	VERTICAL
2	517.91	26.97	-8.69	18.28	46.00	-27.72	Peak	VERTICAL
3	584.84	26.98	-7.13	19.85	46.00	-26.15	Peak	VERTICAL
4	733.25	26.49	-4.30	22.19	46.00	-23.81	Peak	VERTICAL
5	872.93	27.02	-2.47	24.55	46.00	-21.45	Peak	VERTICAL
6	944.71	26.08	-1.33	24.75	46.00	-21.25	Peak	VERTICAL
1	406.36	25.61	-10.45	15.16	46.00	-30.84	Peak	HORIZONTAL
2	571.26	26.83	-7.49	19.34	46.00	-26.66	Peak	HORIZONTAL
3	707.06	28.17	-5.03	23.14	46.00	-22.86	Peak	HORIZONTAL
4	765.26	26.64	-3.73	22.91	46.00	-23.09	Peak	HORIZONTAL
5	852.56	26.19	-2.90	23.29	46.00	-22.71	Peak	HORIZONTAL
6	952.47	26.24	-1.24	25.00	46.00	-21.00	Peak	HORIZONTAL

Remark:

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.
- 4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode :TX CH High Test Date : 2012/11/09
 Fundamental Frequency : 2478MHz Test By :Dino
 Temperature :25 °C Humidity :60 %

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	288.99	26.11	-12.71	13.40	46.00	-32.60	Peak	VERTICAL
2	407.33	26.08	-10.42	15.66	46.00	-30.34	Peak	VERTICAL
3	570.29	26.43	-7.51	18.92	46.00	-27.08	Peak	VERTICAL
4	788.54	25.93	-3.55	22.38	46.00	-23.62	Peak	VERTICAL
5	839.95	26.03	-3.06	22.97	46.00	-23.03	Peak	VERTICAL
6	951.50	25.33	-1.25	24.08	46.00	-21.92	Peak	VERTICAL
1	458.74	26.20	-9.42	16.78	46.00	-29.22	Peak	HORIZONTAL
2	559.62	26.17	-7.80	18.37	46.00	-27.63	Peak	HORIZONTAL
3	651.77	25.40	-5.96	19.44	46.00	-26.56	Peak	HORIZONTAL
4	712.88	26.82	-4.87	21.95	46.00	-24.05	Peak	HORIZONTAL
5	875.84	25.55	-2.42	23.13	46.00	-22.87	Peak	HORIZONTAL
6	924.34	26.36	-1.59	24.77	46.00	-21.23	Peak	HORIZONTAL

Remark:

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.
- 4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode : TX CH Low Test Date : 2012/11/09
 Fundamental Frequency : 2403 MHz Test By : Dino
 Temp : 25 °C Hum. : 60%

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	4806.00	43.53	-2.32	41.21	54.00	-12.79	Average	VERTICAL
2	4806.00	63.53	-2.32	61.21	74.00	-12.79	Peak	VERTICAL
3	7209.00	45.56	4.36	49.92	74.00	-24.08	Peak	VERTICAL
4	7203.00	---						VERTICAL
5	9612.00	---						VERTICAL
6	12015.00	---						VERTICAL
1	4806.00	51.38	-2.32	49.06	54.00	-4.94	Average	HORIZONTAL
2	4806.00	71.38	-2.32	69.06	74.00	-4.94	Peak	HORIZONTAL
3	7209.00	29.81	4.36	34.17	54.00	-19.83	Average	HORIZONTAL
4	7209.00	49.81	4.36	54.17	74.00	-19.83	Peak	HORIZONTAL
5	9612.00	---						HORIZONTAL
6	12015.00	---						HORIZONTAL

Remark:

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum Average mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 10Hz.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode : TX CH Mid Test Date : 2012/11/09
 Fundamental Frequency : 2453 MHz Test By : Dino
 Temp : 25 °C Hum. : 60%

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	4906.00	44.23	-1.98	42.25	54.00	-11.75	Average	VERTICAL
2	4906.00	64.23	-1.98	62.25	74.00	-11.75	Peak	VERTICAL
3	7359.00	44.77	4.54	49.31	74.00	-24.69	Peak	VERTICAL
4	9812.00	---						VERTICAL
5	12265.00	---						VERTICAL
1	4906.00	51.64	-1.98	49.66	54.00	-4.34	Average	HORIZONTAL
2	4906.00	71.64	-1.98	69.66	74.00	-4.34	Peak	HORIZONTAL
3	7359.00	48.16	4.54	52.70	74.00	-21.30	Peak	HORIZONTAL
4	9812.00	---						HORIZONTAL
5	12265.00	---						HORIZONTAL

Remark:

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum Average mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 10Hz.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode : TX CH High Test Date : 2012/11/09
 Fundamental Frequency : 2478 MHz Test By : Dino
 Temp : 25 °C Hum. : 60%

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	4956.00	44.11	-1.82	42.29	54.00	-11.71	Average	VERTICAL
2	4956.00	64.11	-1.82	62.29	74.00	-11.71	Peak	VERTICAL
3	7434.00	46.55	4.64	51.19	74.00	-22.81	Peak	VERTICAL
4	7434.00	---						VERTICAL
5	9912.00	---						VERTICAL
6	12390.00	---						VERTICAL
1	4956.00	51.71	-1.82	49.89	54.00	-4.11	Average	HORIZONTAL
2	4956.00	71.71	-1.82	69.89	74.00	-4.11	Peak	HORIZONTAL
3	7434.00	30.20	4.64	34.84	54.00	-19.16	Average	HORIZONTAL
4	7434.00	50.21	4.64	54.85	74.00	-19.15	Peak	HORIZONTAL
5	9912.00	---						HORIZONTAL
6	12390.00	---						HORIZONTAL

Remark:

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum Average mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 10Hz.

7 99%, 20 dB Band Width Measurement

7.1 Measurement Procedure

- 1 Place the EUT on the table and set it in transmitting mode.
- 2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3 Set the spectrum analyzer as RBW=1% of the approximate emission bandwidth, VBW = 3 times RBW, Span= approximately 20dB below the peak level. Sweep=auto
- 4 Turn on the 99% bandwidth function, max reading.
- 5 Repeat above procedures until all frequency measured were complete.

7.2 Test SET-UP (Block Diagram of Configuration)

Same as 4.2 Radiated Emission Measurement.

7.3 Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

7.4 Measurement Results:

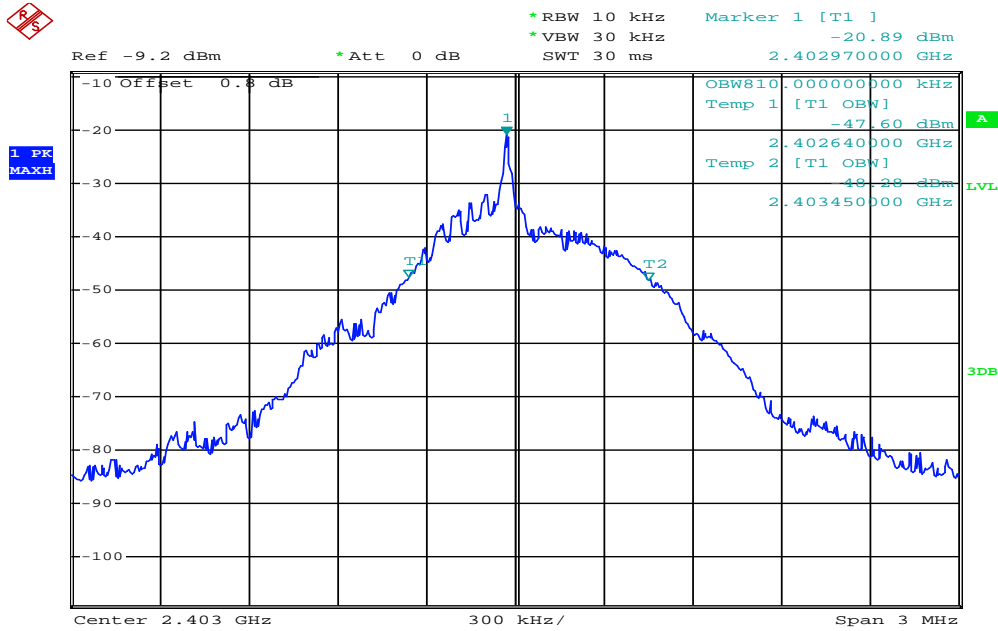
2403 Channel = 810 kHz

2453 Channel = 828 kHz

2478 Channel = 840 kHz

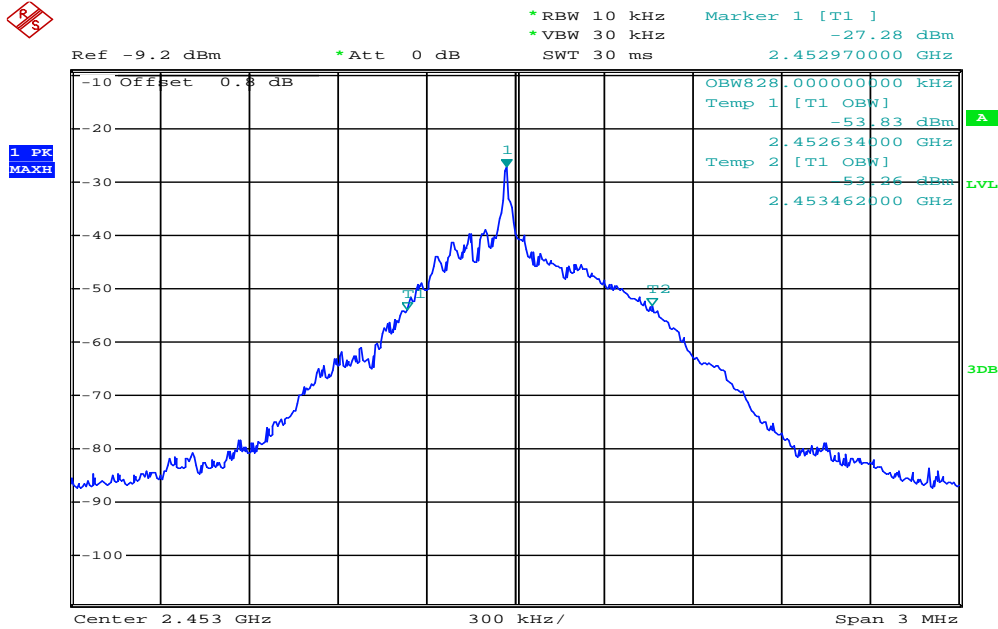
Refer to attached data chart.

99% Band Width test Plot CH Low



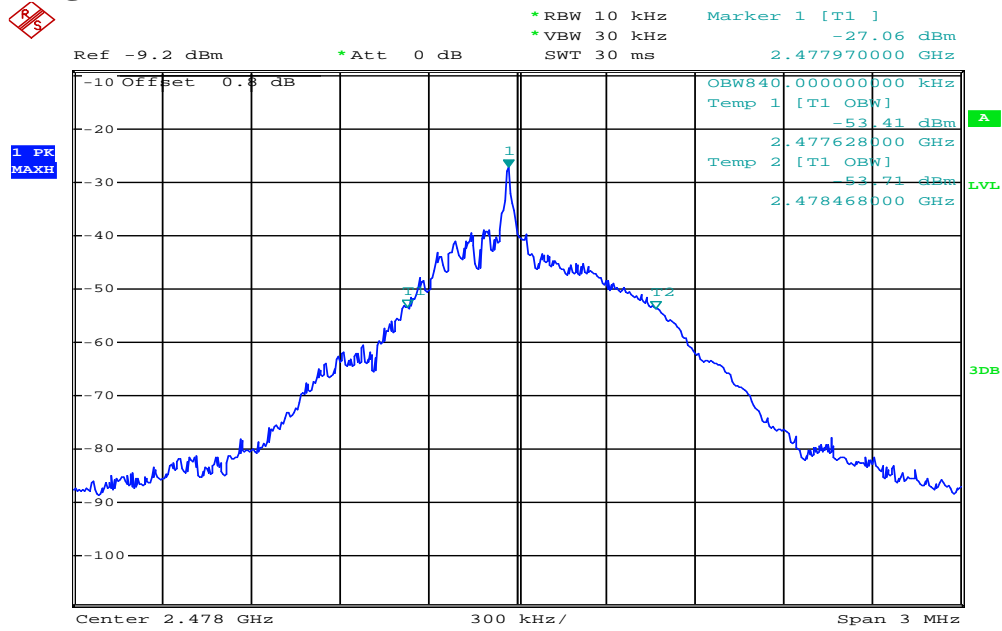
Date: 8.NOV.2012 15:09:30

CH Mid



Date: 8.NOV.2012 15:05:43

CH High

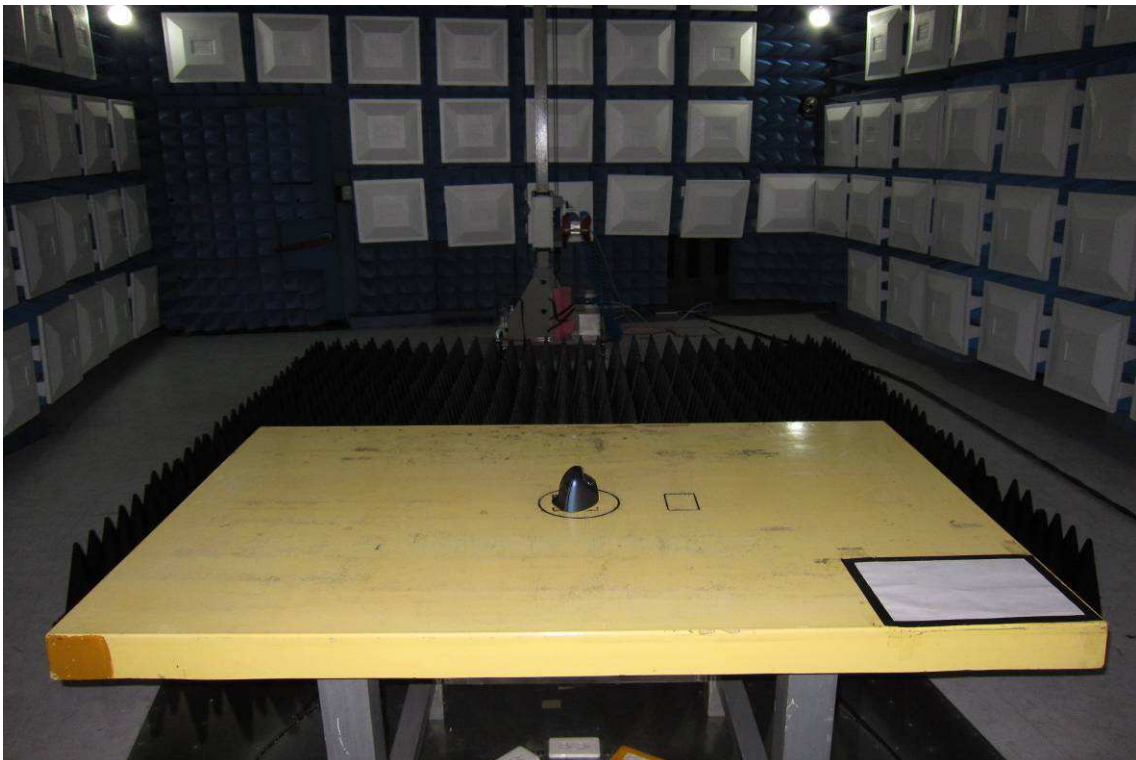
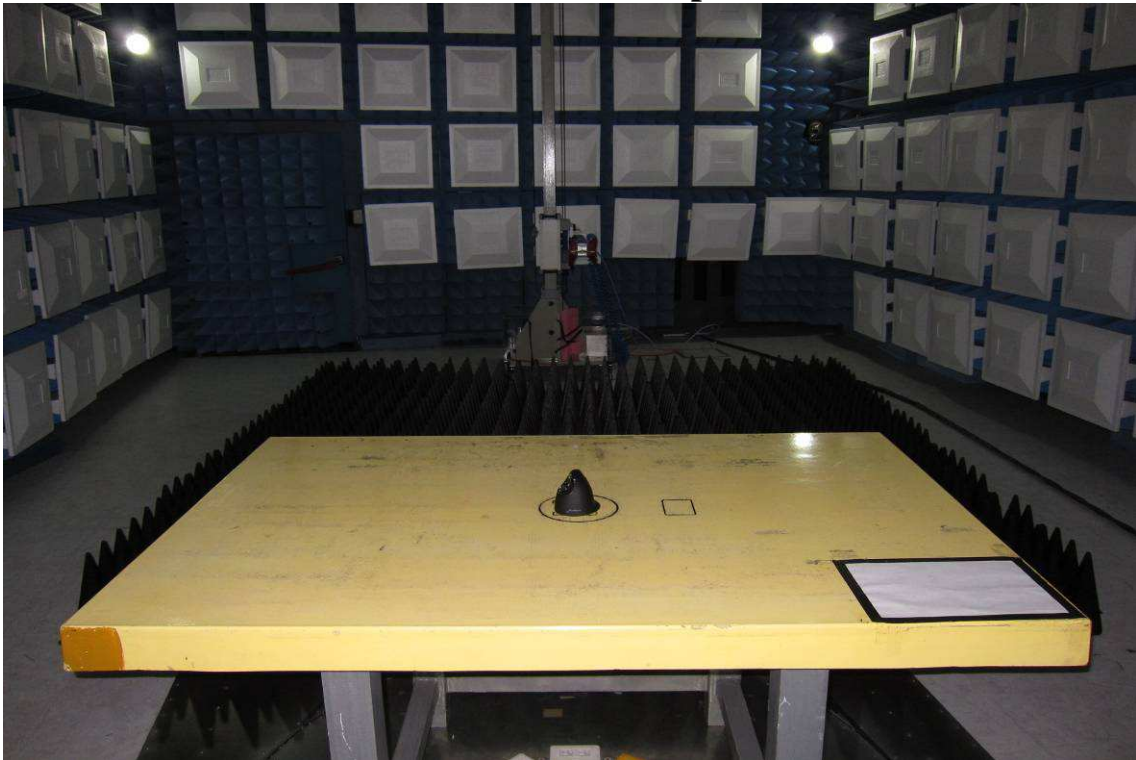


Date: 8.NOV.2012 15:07:37

APPENDIX 1

PHOTOGRAPHS OF SETUP

Radiated Emission Setup Photos



APPENDIX 2

PHOTOGRAPHS OF EUT

EUT 1.



EUT 2.



EUT 3.



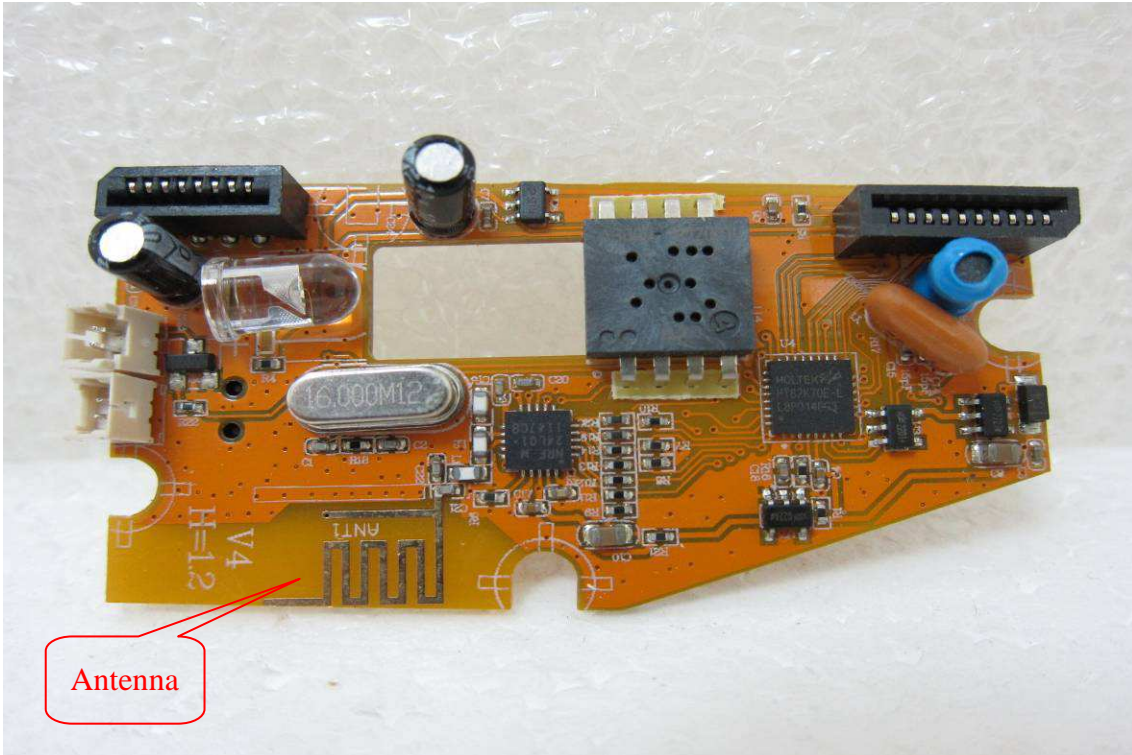
EUT 4.



EUT 5.

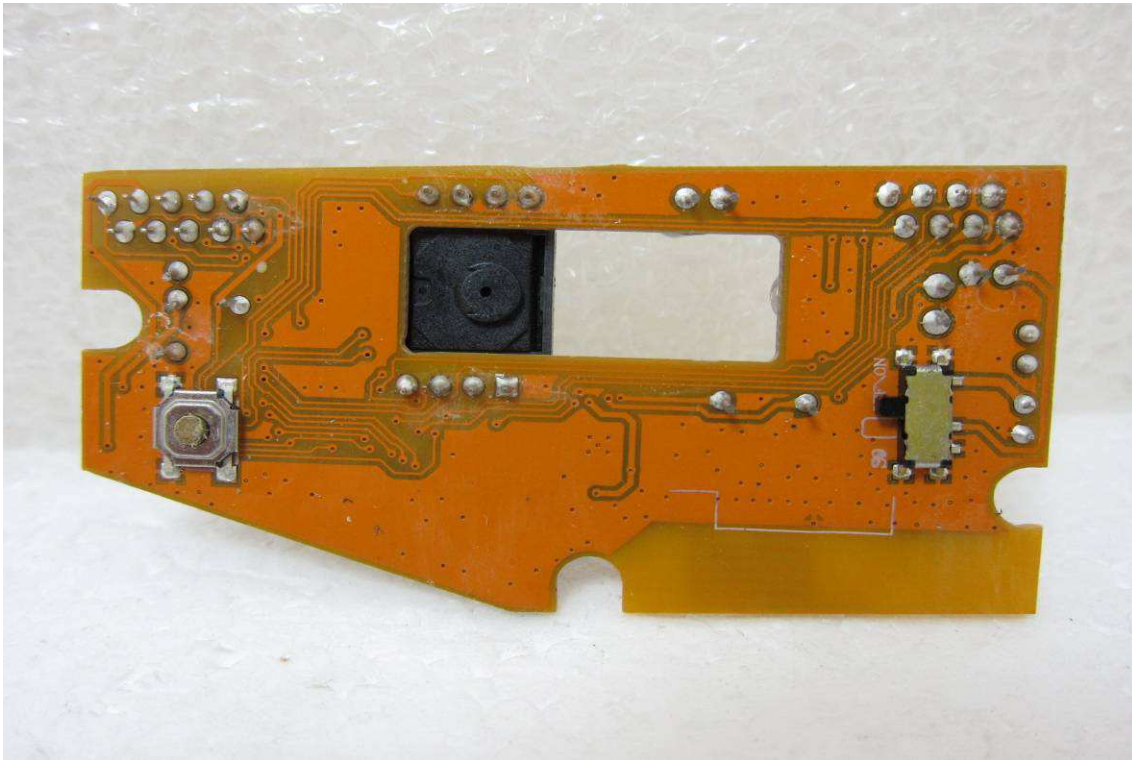


EUT 6.



Antenna

EUT 7.



~ End of Report ~