
FCC Test Report

Report No.: AGC228120601-2F2

FCC ID : OAQYC-8362X0
PRODUCT DESIGNATION : 2.4 GHz wireless mouse module
BRAND NAME : N/A
MODEL NAME : YC-8362X0
CLIENT : Tunercom Technology Co., Ltd.
DATE OF ISSUE : July 16, 2012
STANDARD(S) : FCC Part 15 Rules
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd.

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VERIFICATION OF COMPLIANCE

Applicant	Tunercom Technology Co., Ltd.
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Manufacturer	Tunercom Technology Co., Ltd.
	The 6 th floor, Gate No.3 of HuaQiang logistics Building, Three-way of Longzhu, NanShan District, Shenzhen
Product Designation	2.4GHz wireless mouse module
Brand Name	N/A
Test Model	YC-8362X0
FCC ID	OAQYC-8362X0
Report Number	AGC228120601-2F2
Date of Test	July 05, 2012 to July 13, 2012

WE HEREBY CERTIFY THAT:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Tested By: Leo Lee
Leo Lee July 16,2012

Reviewed By: Forrest Lei
Forrest Lei July 16,2012

Approved By: Solger Zhang
Solger Zhang July 16,2012

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

The EUT is a 2.4GHz wireless mouse module designed as a "Communication Device". It is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following:

Operation Frequency	2.408 GHz to 2.478GHz
Max. Output Power	-2.24dBm
Modulation	GFSK
Number of channels	71
Antenna Designation	Integrated Antenna
Antenna Gain	0.8dBi
Hardware Version	1
Software Version	A
Power Supply	DC5V Supply by PC

1.2 TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	0	2408MHZ
	1	2409MHZ
	:	:
	34	2441 MHZ
	35	2442 MHZ
	36	2443 MHZ
	:	:
	69	2477 MHZ
	70	2478 MHZ

1.3 RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 1.0 MHz. In every connection one device is the master and the other one is slave.

1.4 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: OAQYC-8362X0**, filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

1.5 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.

1.6 MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

- Uncertainty of Conducted Emission, $U_c = \pm 2.75\text{dB}$
- Uncertainty of Radiated Emission, $U_c = \pm 3.2\text{dB}$

1.7 TEST FACILITY

All measurement facilities used to collect the measurement data are located at
Attestation of Global Compliance (Shenzhen) Co., Ltd.

2/F., Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003.
FCC register No.: 259865

1.8 SPECIAL ACCESSORIES

Refer to section 2.2.

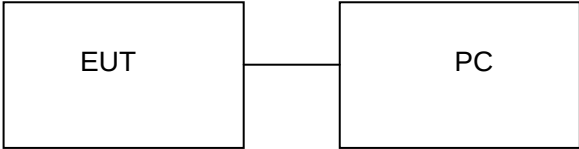
1.9 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 CONFIGURATION OF TESTED SYSTEM

Configure (Normal Hopping or Control continuous TX)



Note: All the accessories have been used during the test.

2.2 EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	2.4GHz wireless mouse module	N/A	YC-8362X0	EUT
2	PC	DELL	INSPIRON	A.E
3	Mouse	N/A	YC-5962X0	A.E

3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Peak Output Power	Compliant
§15.247	20 dB Bandwidth	Compliant
§15.247	Conducted Spurious Emission	Compliant
§15.207	Conduction Emission	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.247	Number of Hopping Frequency	Compliant
§15.247	Time of Occupancy	Compliant
§15.247	Frequency Separation	Compliant

4. DESCRIPTION OF TEST MODES

The EUT has been operated in GFSK modulation. The following operating modes were applied for the related test items. All 3axis have been tested.

No.	TEST MODES
1	Low Channel(TX)
2	Middle Channel(TX)
3	High Channel(TX)
4	Normal Hopping

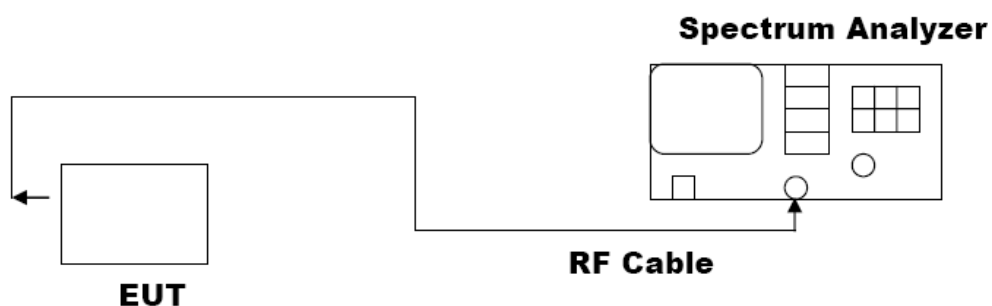
***Note: All the test modes were tested, only the result of the worst case was recorded in the report.

5. PEAK OUTPUT POWER

5.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
RBW > the 20 dB bandwidth of the emission being measured
VBW $\geq$ RBW; Sweep = auto; Detector function = peak.
5. Set SPA Trace 1 Max hold, then View.

5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



5.3 MEASUREMENT EQUIPMENT USED

Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	06/27/2012	06/26/2013

5.4 LIMITS AND MEASUREMENT RESULT

PEAK OUTPUT POWER MEASUREMENT RESULT FOR GFSK MODULATION			
Frequency (GHz)	Result (dBm)	Applicable Limits (dBm)	Pass or Fail
2.408	-2.24	30	Pass
2.442	-2.51	30	Pass
2.478	-2.89	30	Pass

6. 20 dB BANDWIDTH

6.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW $\geq$ 1% of the 20 dB bandwidth, VBW $\geq$ RBW; Sweep = auto; Detector function = peak
5. Set SPA Trace 1 Max hold, then View.

6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

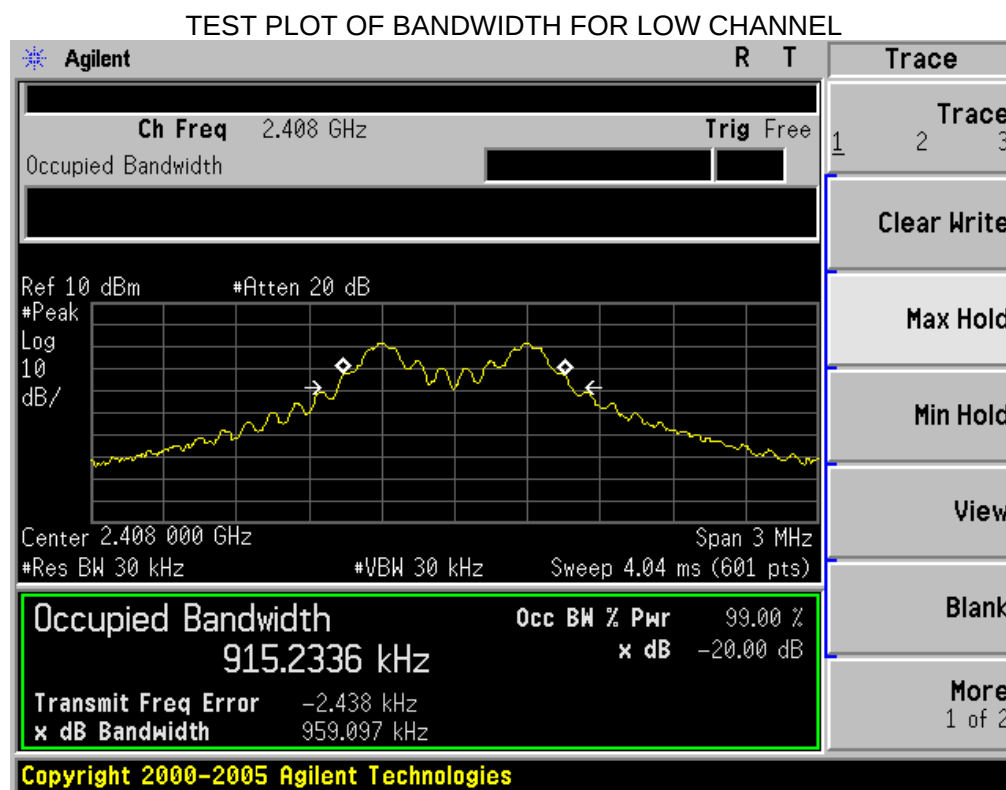
The same as described in Section 5.2

6.3 MEASUREMENT EQUIPMENT USED

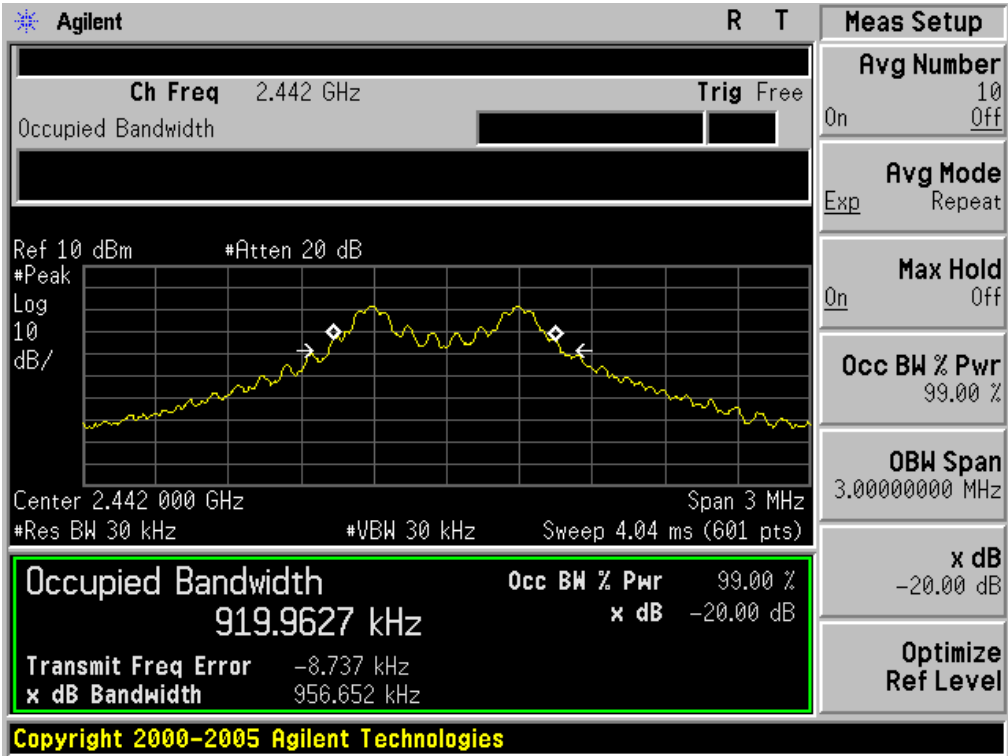
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6.4 LIMITS AND MEASUREMENT RESULTS

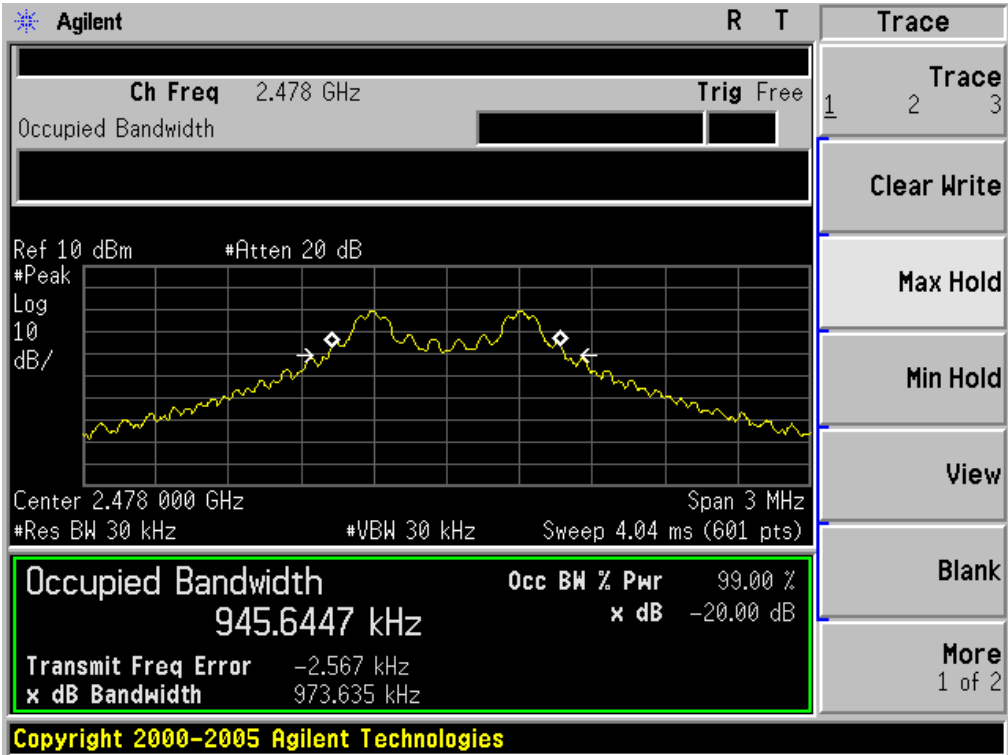
THE MEASUREMENT RESULT FOR GFSK MODULATION			
Applicable Limits	Measurement Result		
	Test Data (KHz)		Criteria
--	Low Channel	959.10	PASS
	Middle Channel	956.65	PASS
	High Channel	973.64	PASS



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



7. CONDUCTED SPURIOUS EMISSION

7.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set the Span = wide enough to capture the peak level of the in-band emission and all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic.
RBW = 100 kHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak.
5. Set SPA Trace 1 Max hold, then View.

7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 5.2

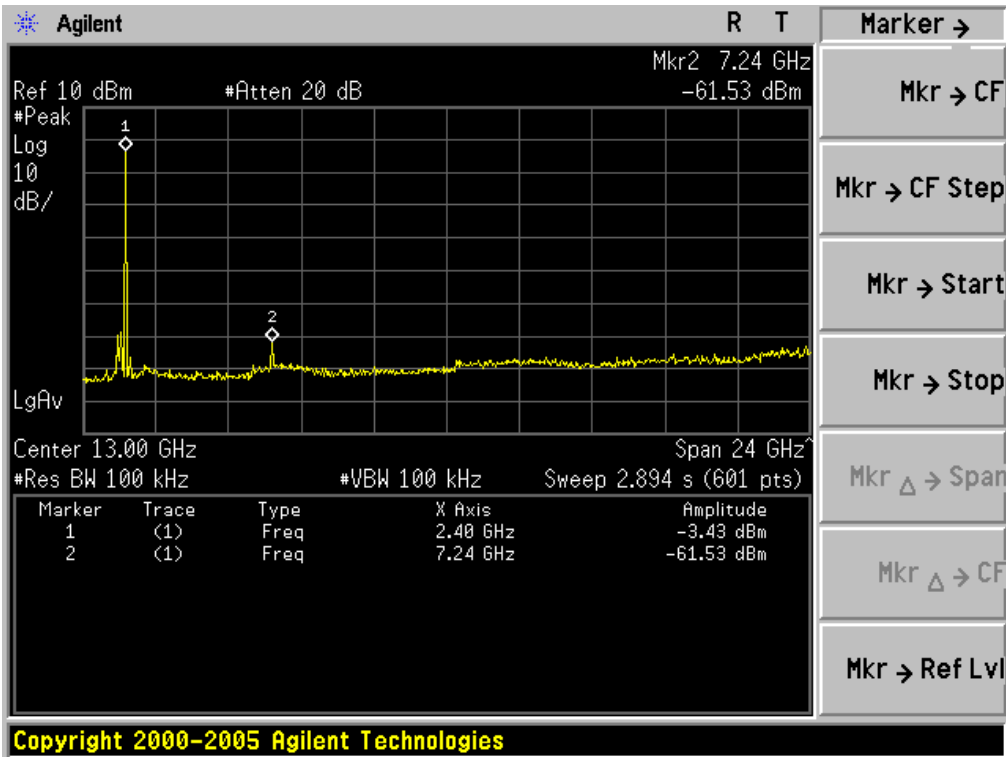
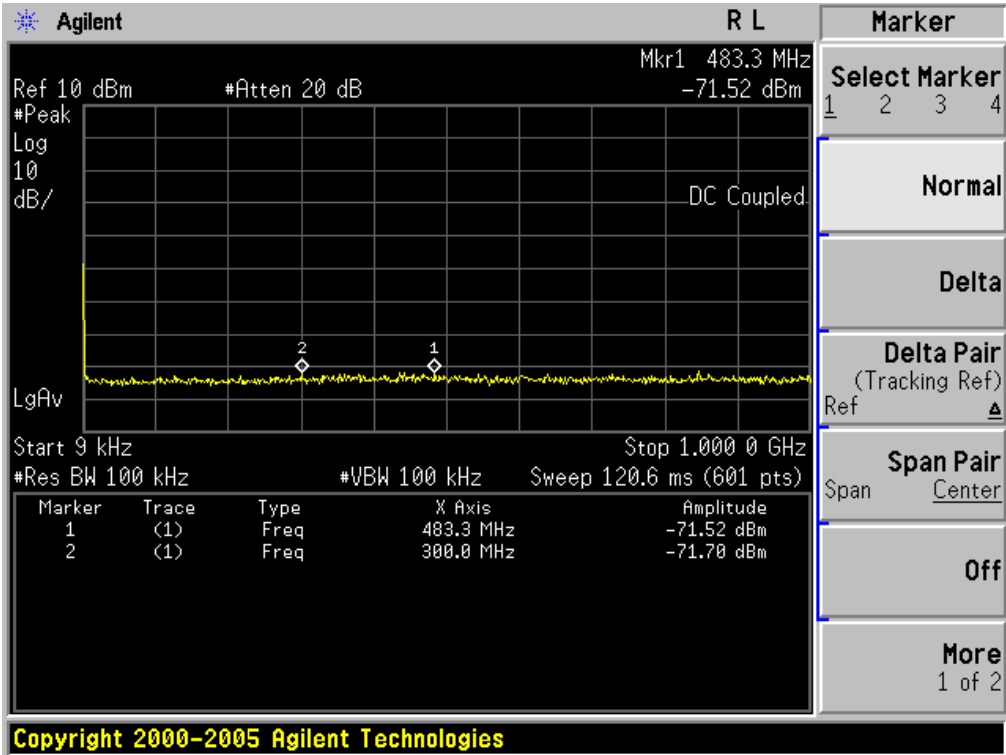
7.3 MEASUREMENT EQUIPMENT USED

The same as described in section 5.3

7.4 LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -20dBc than the limit Specified on the TOP Channel	PASS

TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE
FOR GFSK MODULATION IN LOW CHANNEL



8. RADIATED EMISSION

8.1 MEASUREMENT PROCEDURE

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

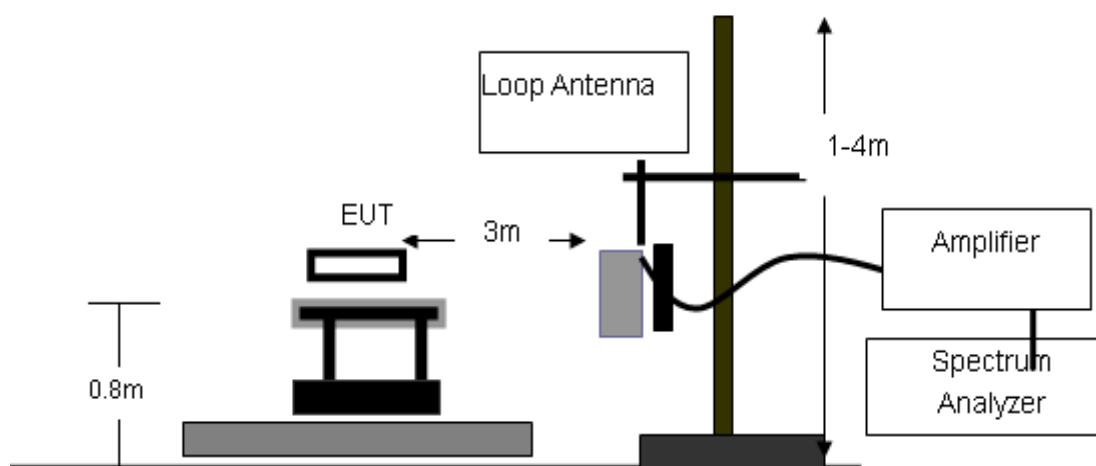
The following table is the setting of spectrum analyzer and receiver.'

Spectrum Parameter	Setting
Start Frequency	1GHz
Stop Frequency	26.5GHz
RB/VB(Emission in restricted band)	1MHz/1MHz for Peak, 1MHz/10Hz for Average
RB/VB(Emission in non-restricted band)	1MHz/1MHz for Peak

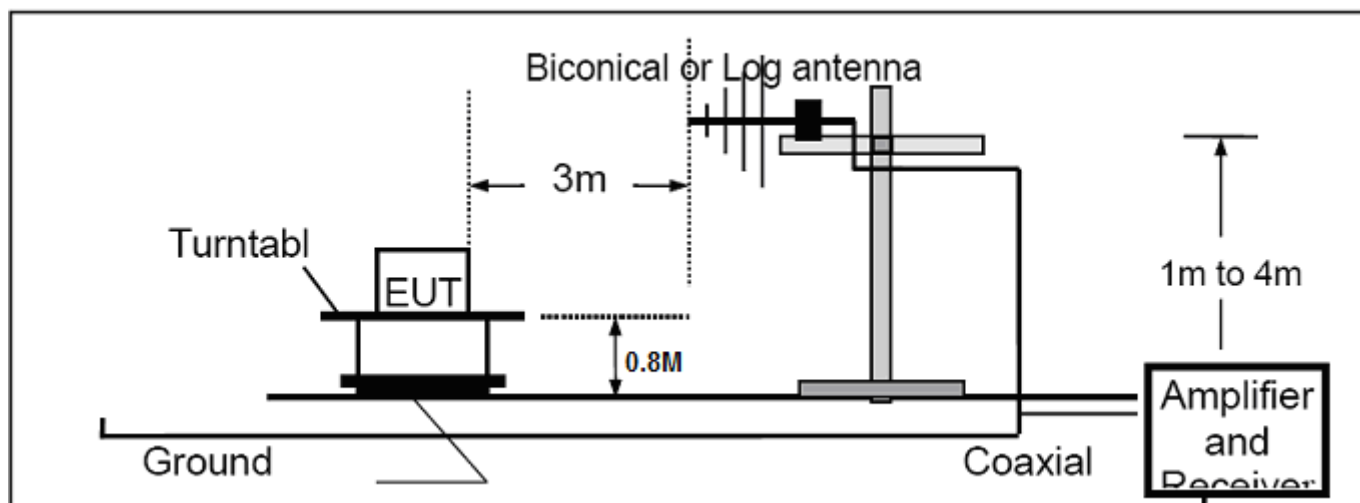
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

8.2 TEST SETUP

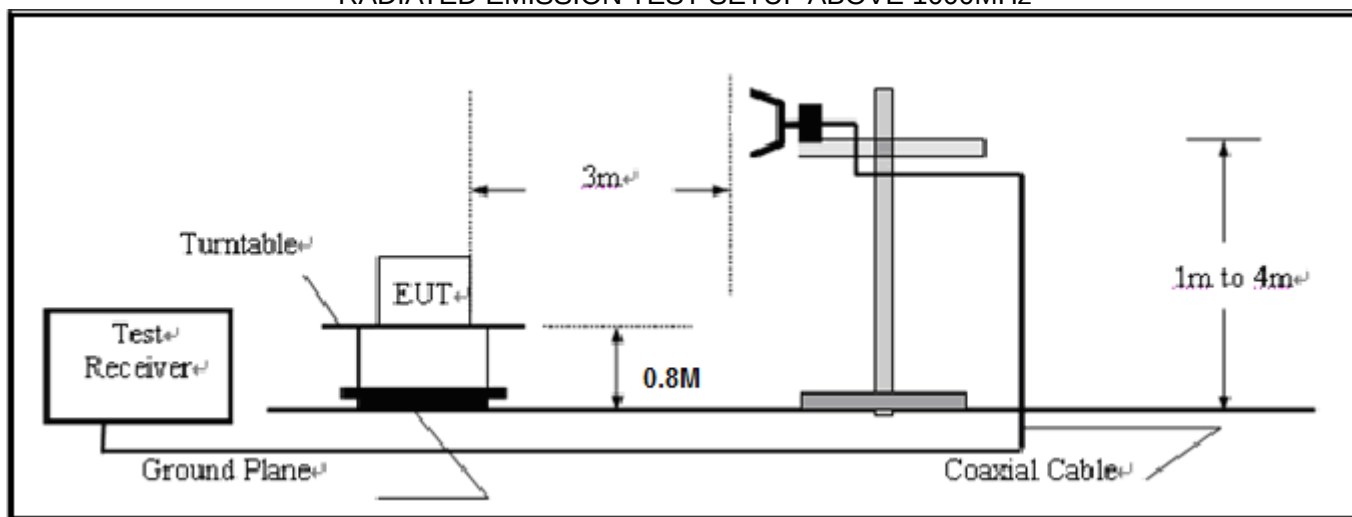
RADIATED EMISSION TEST SETUP BELOW 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



8.3 TEST EQUIPMENT LIST

Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	06/27/2012	06/26/2013
Amplifier	EM	EM30180	0607030	06/27/2012	06/26/2013
Horn Antenna	EM	EM-AH-10180	N/A	06/27/2012	06/26/2013
EMI Test Receiver	Rohde & Schwarz	ESCI	N/A	06/27/2012	06/26/2013
Amplifier	EM	EM30180	N/A	06/27/2012	06/26/2013
Biological Antenna	A.H. Systems Inc.	SAS-521-4	N/A	06/27/2012	06/26/2013
Loop Antenna	Daze	ZN30900N	SEL0097	06/27/2012	06/26/2013
Isolation Transformer	LETEAC	LTBK	--	06/27/2012	06/26/2013

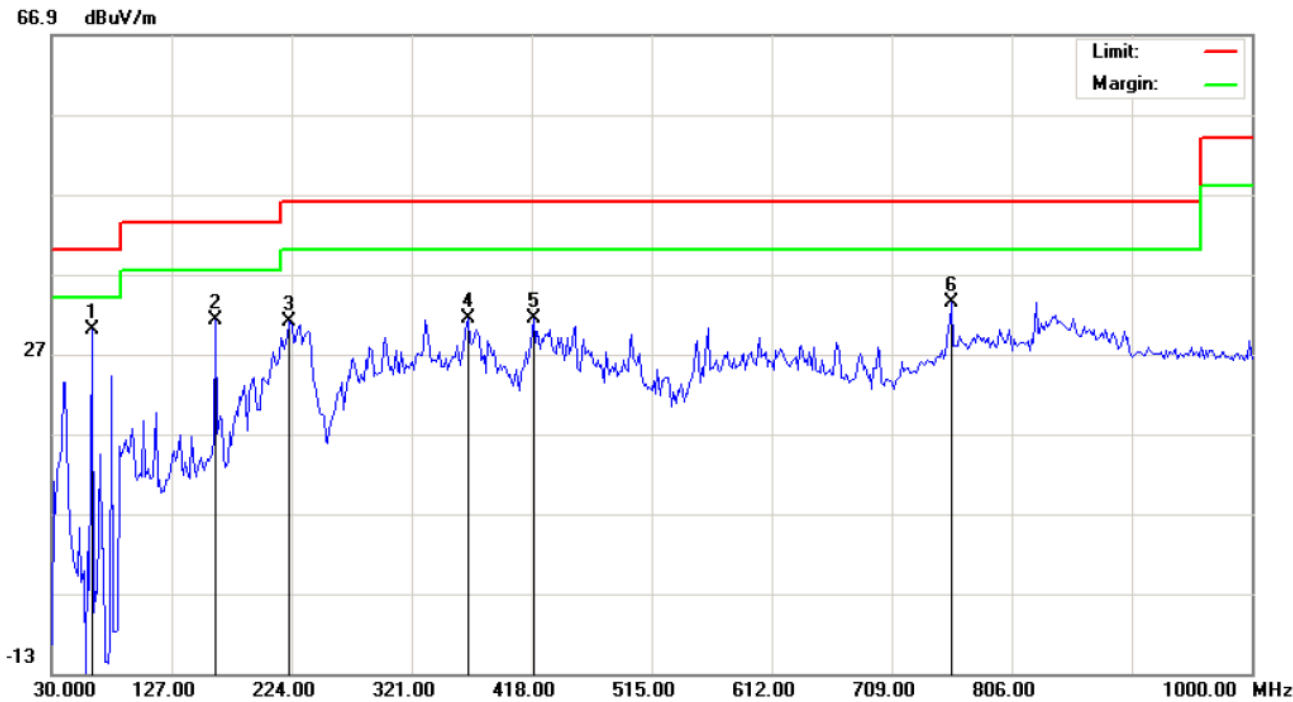
8.4 TEST RESULT

The worst case is Normal Hopping Mode.

RADIATED EMISSION BELOW 30MHZ

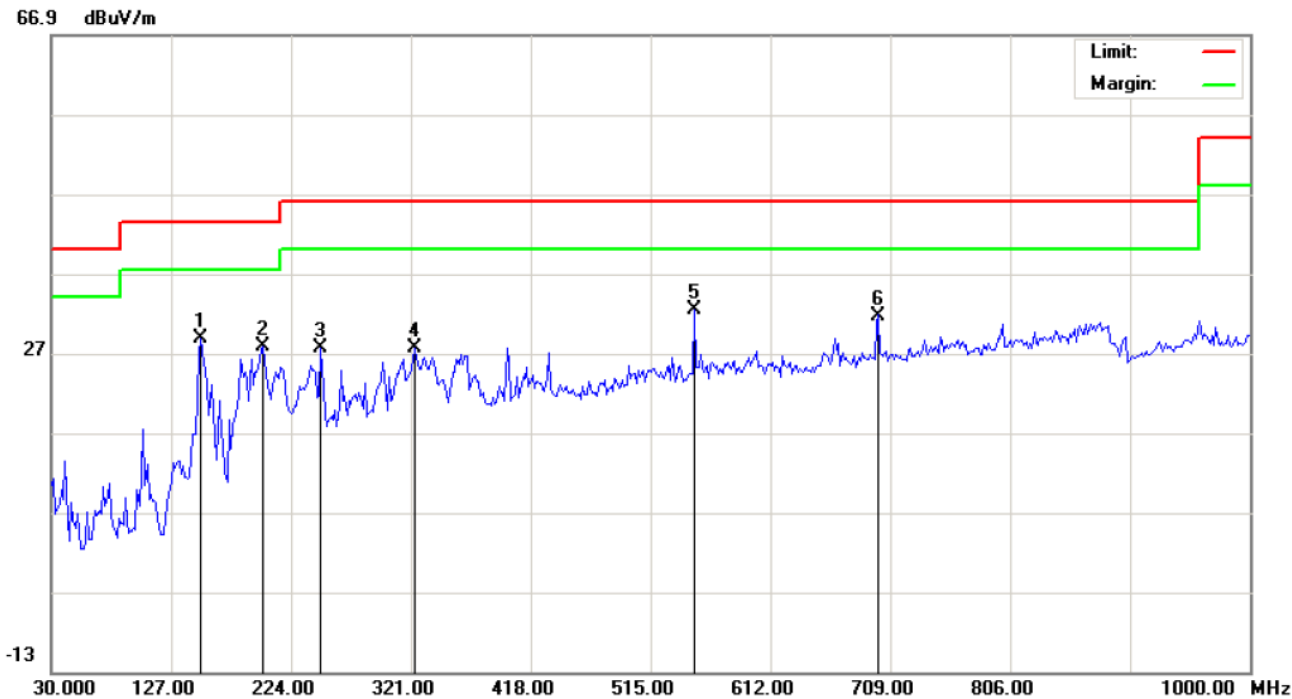
No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ



Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation	Power:	Humidity: 60 %
EUT: 2.4GHz wireless mouse module	Distance: 3m	
M/N: YC-8362X0		
Mode: Normal Hopping		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	62.3333	26.52	3.48	30.00	40.00	-10.00	peak			
2		162.5667	17.97	13.20	31.17	43.50	-12.33	peak			
3		222.3833	18.44	12.48	30.92	46.00	-15.08	peak			
4		366.2667	12.34	19.15	31.49	46.00	-14.51	peak			
5		419.6167	11.12	20.35	31.47	46.00	-14.53	peak			
6		757.5000	6.02	27.29	33.31	46.00	-12.69	peak			

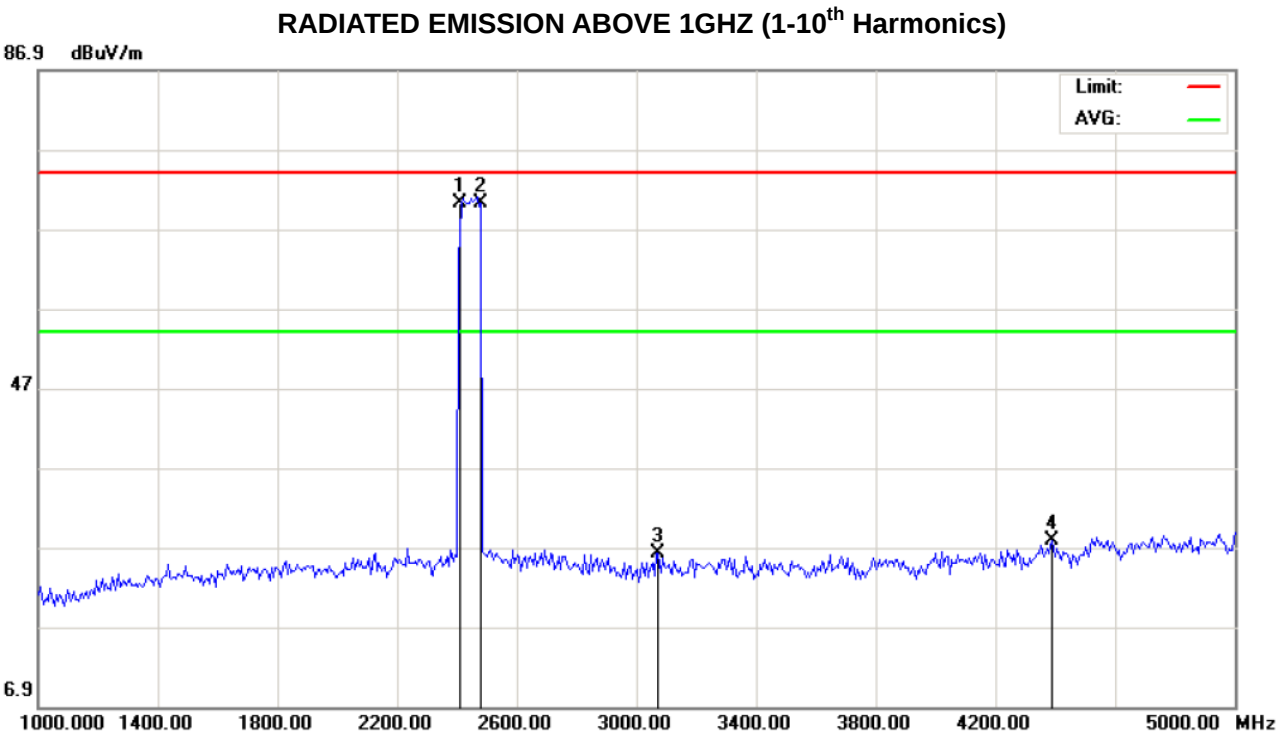


Site: site #1
Limit: FCC Class B 3M Radiation
EUT: 2.4GHz wireless mouse module
M/N: YC-8362X0
Mode: Normal Hopping
Note:

Polarization: Vertical
Power:
Distance: 3m

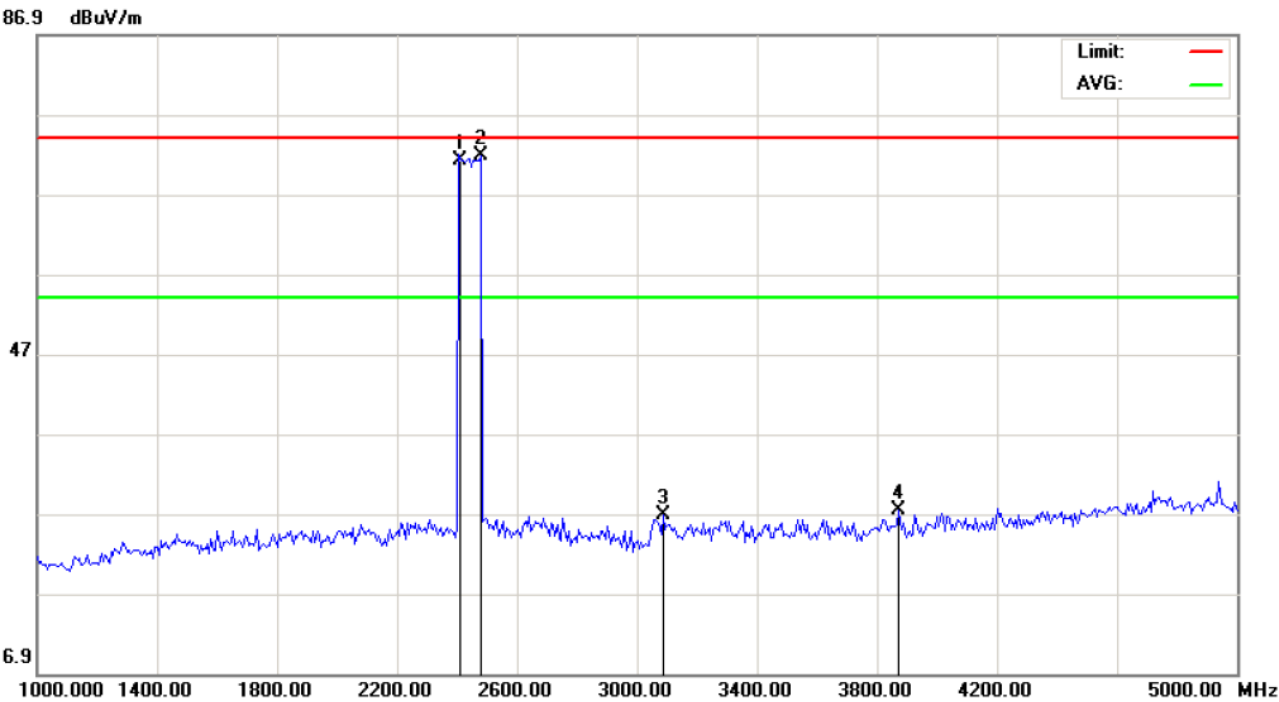
Temperature: 26
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		151.2500	10.33	18.55	28.88	43.50	-14.62	peak			
2		201.3667	19.75	8.12	27.87	43.50	-15.63	peak			
3		248.2500	13.30	14.23	27.53	46.00	-18.47	peak			
4		324.2333	9.07	18.45	27.52	46.00	-18.48	peak			
5	*	550.5667	8.70	23.74	32.44	46.00	-13.56	peak			
6		699.3000	5.10	26.60	31.70	46.00	-14.30	peak			



Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: 2.4GHz wireless mouse module	Distance: 3m	
M/N: YC-8362X0		
Mode: Normal Hopping		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2408.000	78.61	-8.37	70.24	74.00	-3.76	peak			
2		2478.000	78.33	-8.09	70.24	74.00	-3.76	peak			
3		3073.333	34.74	-8.58	26.16	74.00	-47.84	peak			
4		4386.667	32.95	-5.06	27.89	74.00	-46.11	peak			



Site: site #1 Polarization: *Vertical* Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 2.4GHz wireless mouse module Distance: 3m
M/N: YC-8362X0
Mode: Normal Hopping
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2408.000	79.66	-8.37	71.29	74.00	-2.71	peak			
2	*	2478.000	79.99	-8.09	71.90	74.00	-2.10	peak			
3		3086.667	35.44	-8.55	26.89	74.00	-47.11	peak			
4		3873.333	34.61	-7.24	27.37	74.00	-46.63	peak			

Note: 5~25GHz at least have 20dB margin. No recording in the test report.
Factor=Antenna Factor+ Cable loss-Amplifier gain, Over=Measurement-Limit.

9. BAND EDGES EMISSION

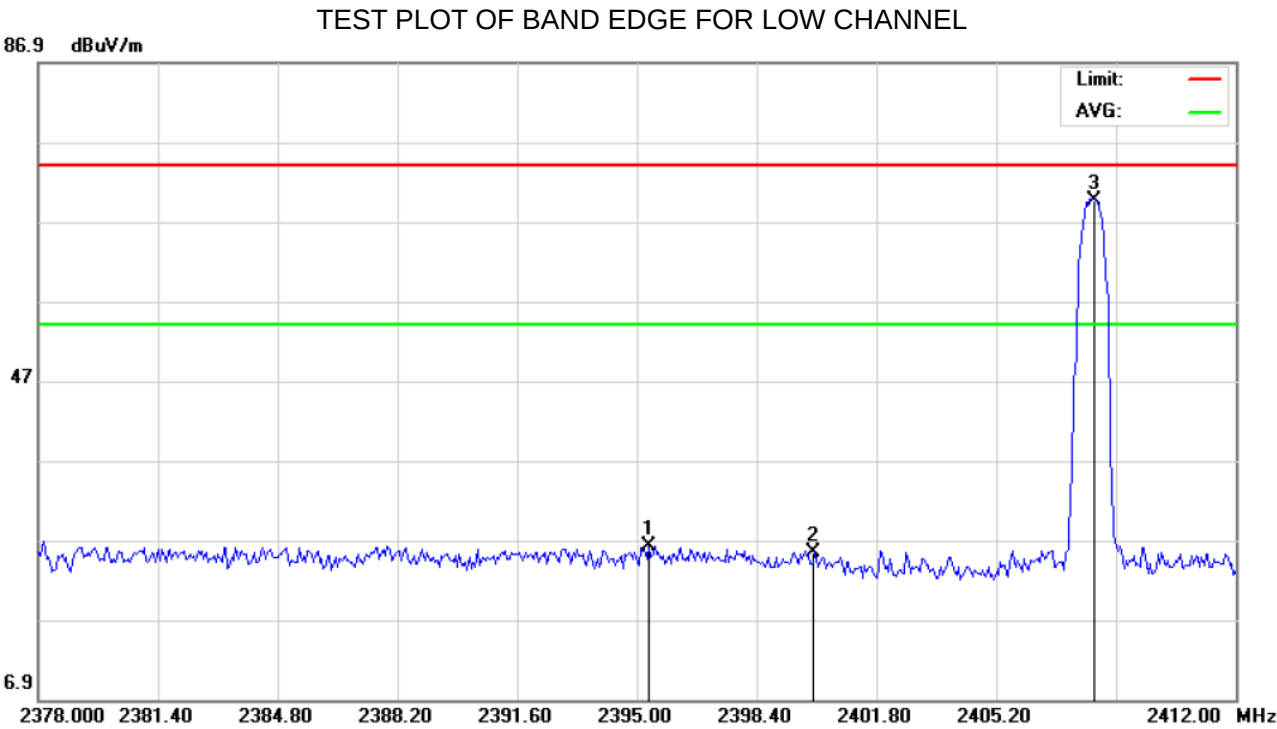
9.1 MEASUREMENT PROCEDURE

- 1. Set the EUT Work on the top, the bottom operation frequency individually.
- 2. Set SPA Start or Stop Frequency = Operation Frequency, RBW>=1%span, VBW>=RBW
- 3. The band edges was measured and recorded.

9.2 TEST SET-UP

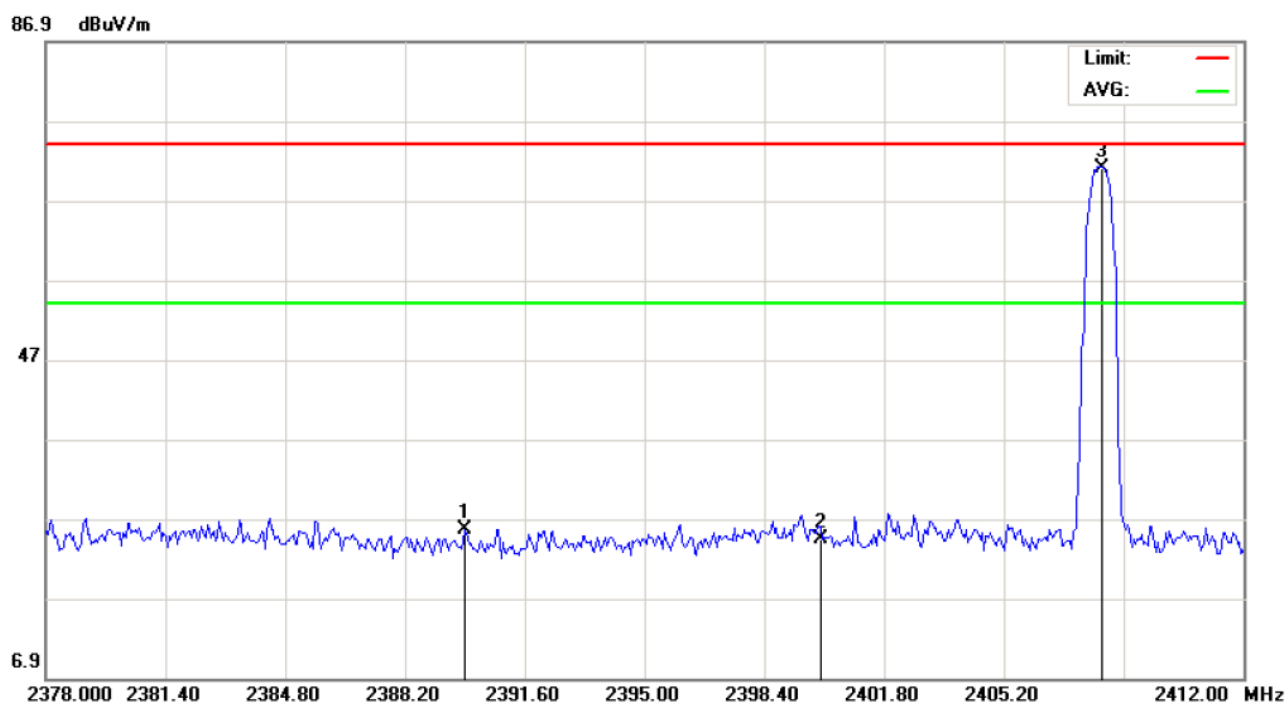
The same as described in section 8.2

9.3 TEST RESULT



Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: 2.4GHz wireless mouse module	Distance: 3m	
M/N: YC-8362X0		
Mode: Low Channel-TX		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2395.340	34.67	-8.42	26.25	74.00	-47.75	peak			
2		2400.000	33.88	-8.40	25.48	74.00	-48.52	peak			
3	*	2408.000	77.92	-8.37	69.55	74.00	-4.45	peak			



Temperature: 26

Humidity: 60 %

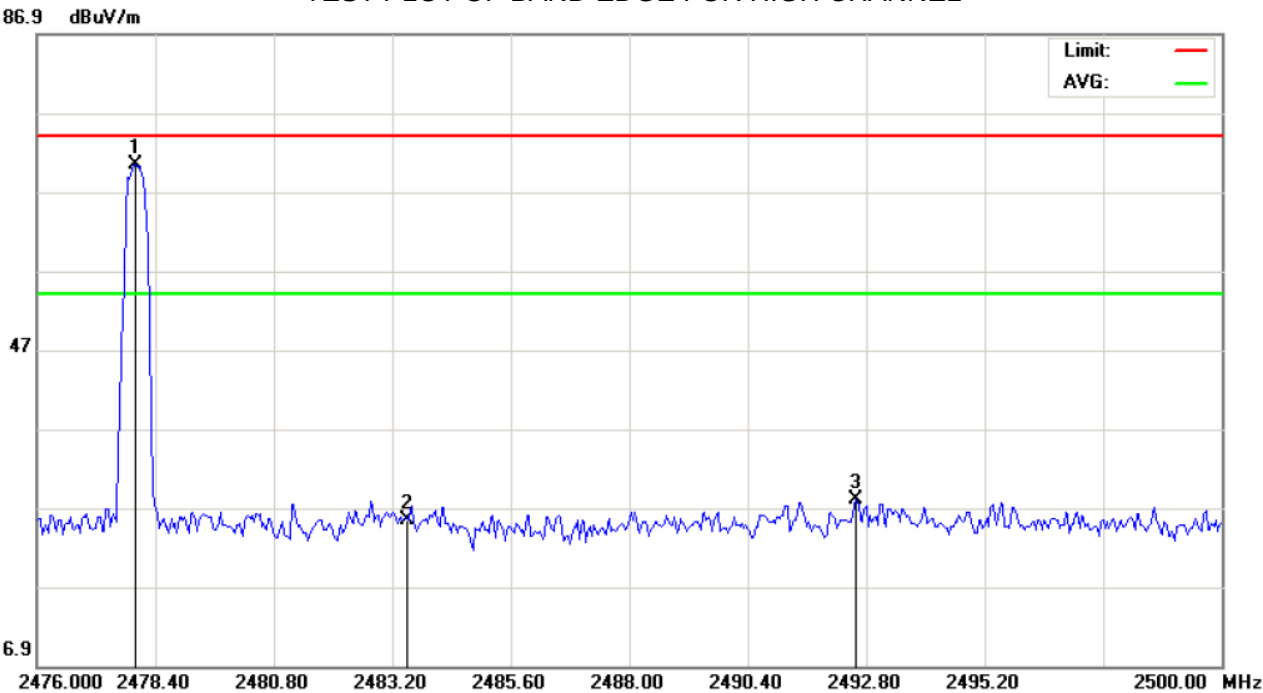
Distance: 3m

Mode: Low Channel-TX

Note:

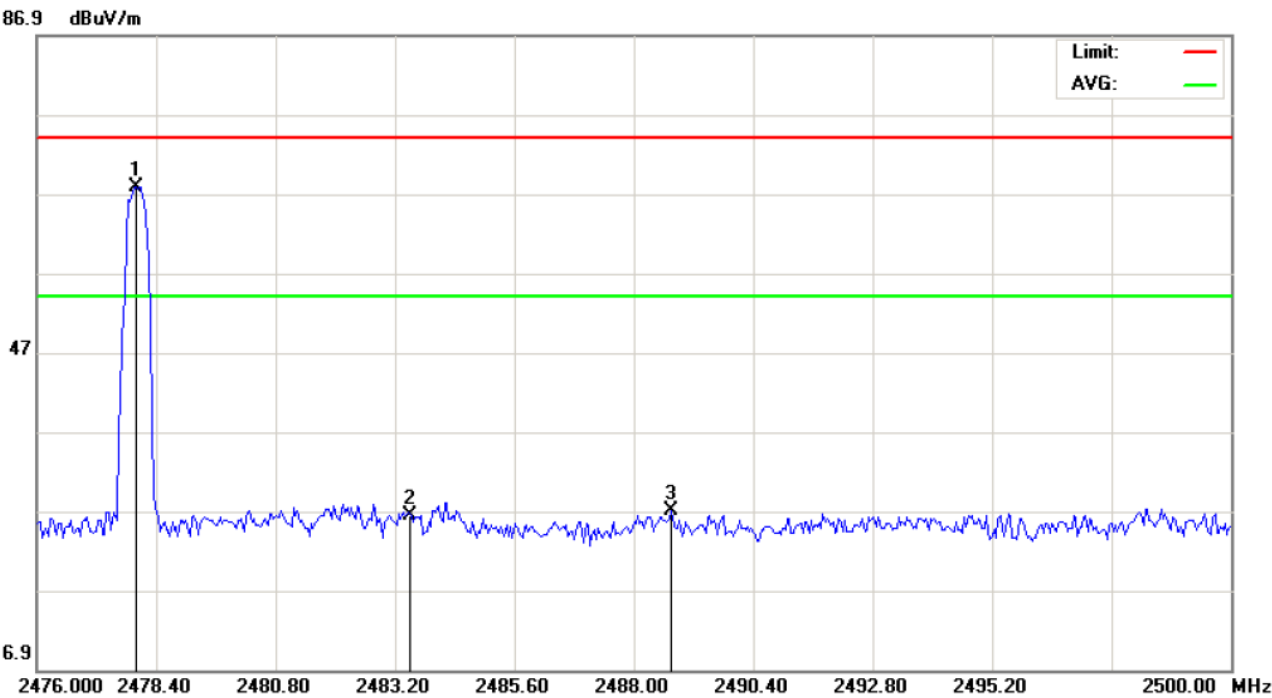
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2389.900	34.11	-8.44	25.67	74.00	-48.33	peak			
2		2400.000	32.88	-8.40	24.48	74.00	-49.52	peak			
3	*	2408.000	79.42	-8.37	71.05	74.00	-2.95	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL



Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: 2.4GHz wireless mouse module	Distance: 3m	
M/N: YC-8362X0		
Mode: High Channel-TX		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2478.000	78.48	-8.09	70.39	74.00	-3.61	peak			
2		2483.500	33.45	-8.07	25.38	74.00	-48.62	peak			
3		2492.600	35.96	-8.03	27.93	74.00	-46.07	peak			



Site: site #1 Polarization: *Vertical* Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 2.4GHz wireless mouse module Distance: 3m
M/N: YC-8362X0
Mode: High Channel-TX
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2478.000	75.98	-8.09	67.89	74.00	-6.11	peak			
2		2483.500	34.45	-8.07	26.38	74.00	-47.62	peak			
3		2488.760	34.97	-8.04	26.93	74.00	-47.07	peak			

10. NUMBER OF HOPPING FREQUENCY

10.1 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 RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer Start = 2.4GHz Stop = 2.4835GHz
4. Set the Spectrum Analyzer as RBW>=1%span, VBW>=RBW.

10.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 5.2
Conducted Method.

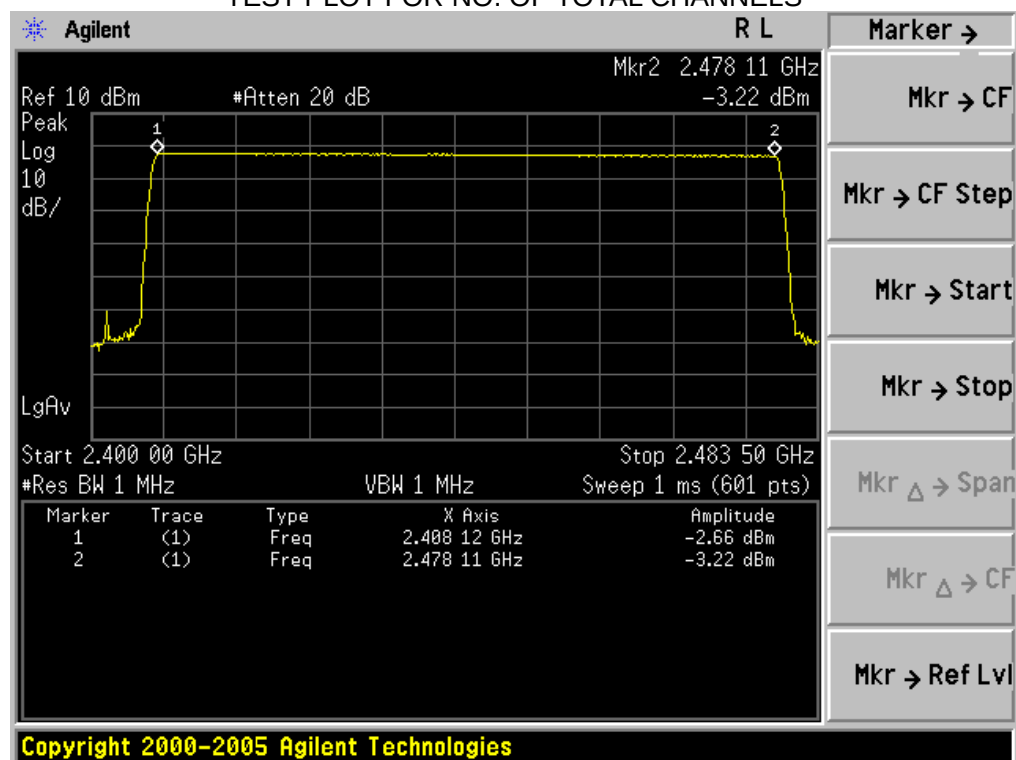
10.3 MEASUREMENT EQUIPMENT USED

The Same as described in section 5.3

10.4 LIMITS AND MEASUREMENT RESULT

TOTAL NO. OF HOPPING CHANNEL	LIMIT (NO. OF CH)	MEASUREMENT (NO. OF CH)	RESULT
	>=15	71	PASS

TEST PLOT FOR NO. OF TOTAL CHANNELS



11. TIME OF OCCUPANCY (DWELL TIME)

11.1 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 RF cable from the antenna port to the spectrum analyzer.
3. Set Span = zero span, centered on a hopping channel.
4. Set the spectrum analyzer as RBW=1MHz, VBW>=RBW, Span = 0 Hz.

11.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 5.2
Conducted Method

11.3 MEASUREMENT EQUIPMENT USED

The same as described in section 5.3

11.4 LIMITS AND MEASUREMENT RESULT

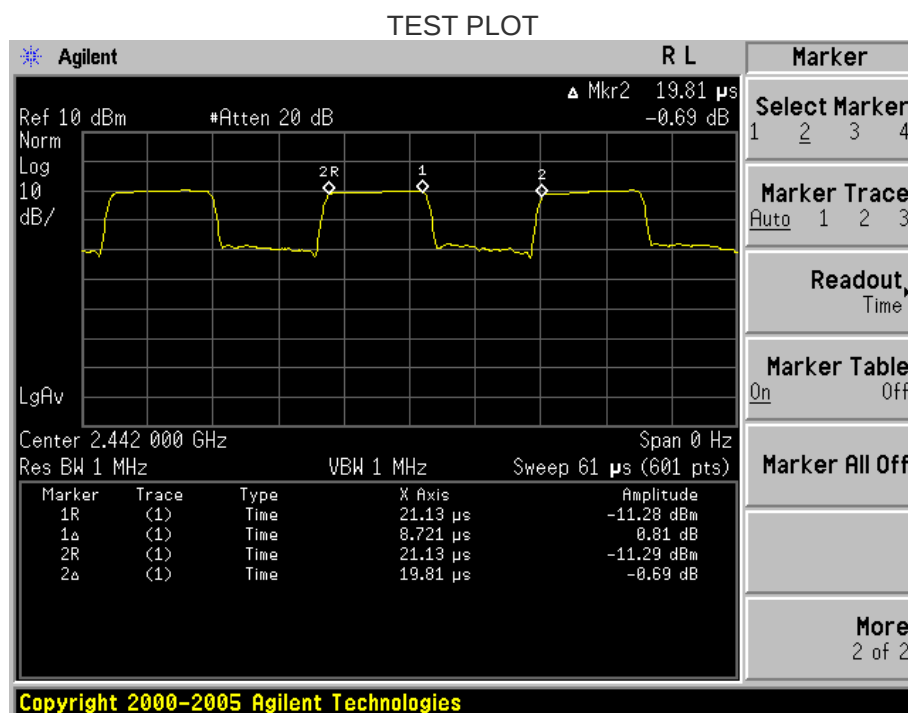
Middle Channel: (worst test result)

Test Result (mS)	Limit (mS)	Pass / Fail
12.50	400	Pass

Interval Time of Two Pluse = 19.81us

Duration of A Pluse = 8.721us

Dwell Time = $71 \times 0.4(S) \times 8.721us / 19.81us = 12.50ms$



12. FREQUENCY SEPARATION

12.1 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 RF cable from the antenna port to the spectrum analyzer
3. Set Span = wide enough to capture the peaks of two adjacent channels Resolution (or IF) Bandwidth (RBW) $\geq 1\%$ of the span Video (or Average) Bandwidth (VBW) $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold

12.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 5.2

12.3 MEASUREMENT EQUIPMENT USED

The same as described in section 5.3

12.4 LIMITS AND MEASUREMENT RESULT

TEST RESULT			
CHANNEL	CHANNEL SEPARATION	LIMIT	RESULT
	KHz	KHz	
CH00-CH01	1000	≥ 25 KHz or 2/3 20 dB BW	Pass

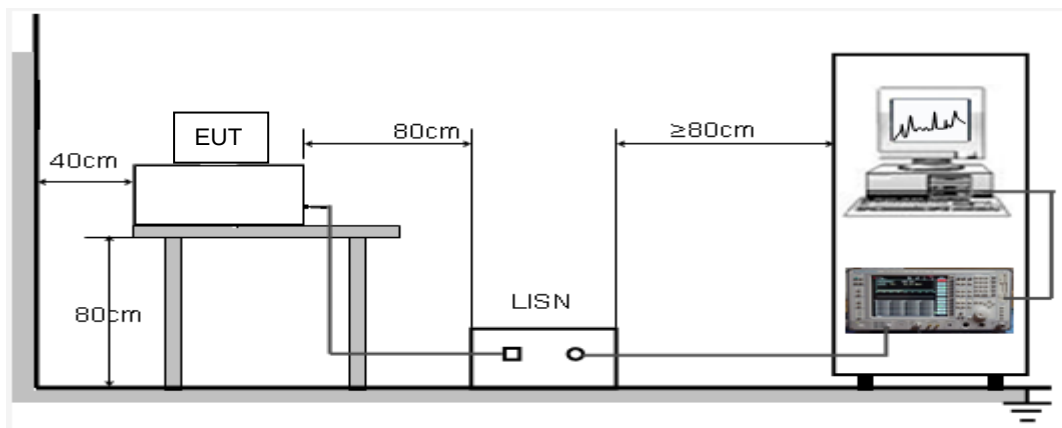
13. CONDUCTED EMISSION

13.1 LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

****Note:** 1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

13.2 BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



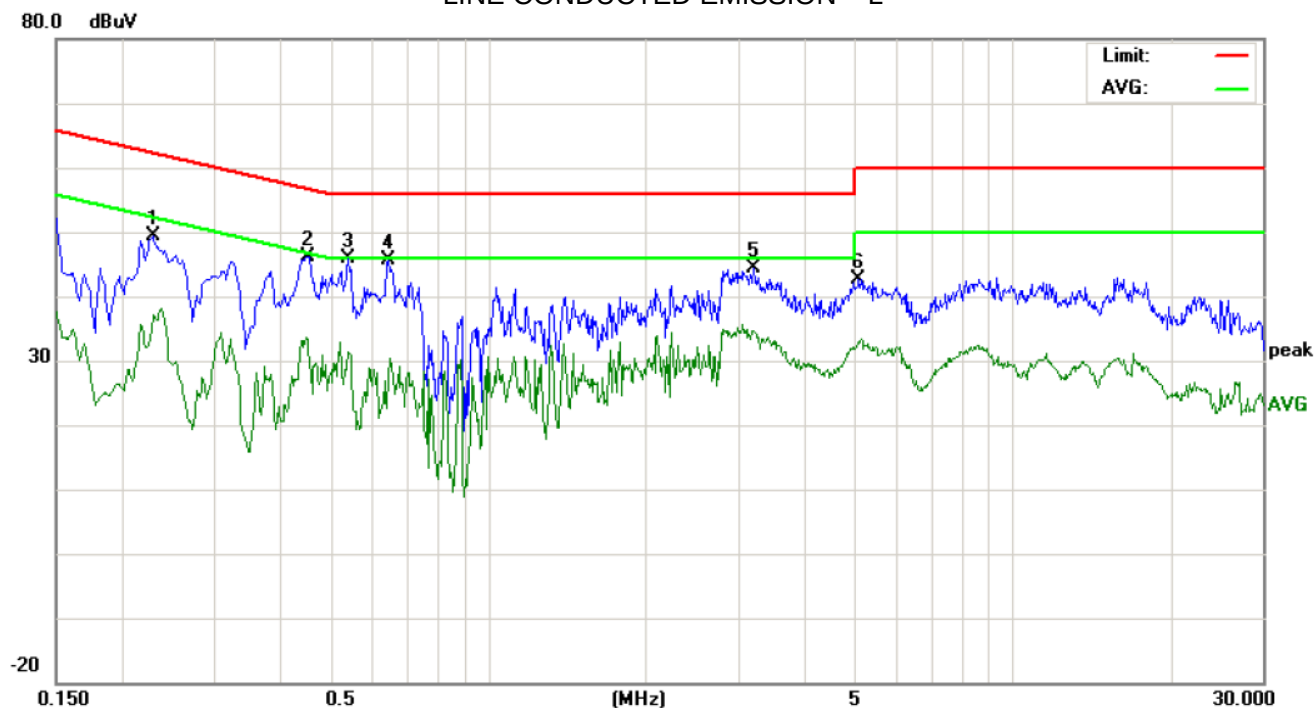
13.3 PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received DC5V power by PC which received 120V/60Hz power through a LISN.
- 5) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 6) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 7) During the above scans, the emissions were maximized by cable manipulation.
- 8) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
- 9) Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.

The test data of the worst case condition(s) was reported on the Summary Data page.

13.4 TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION – L



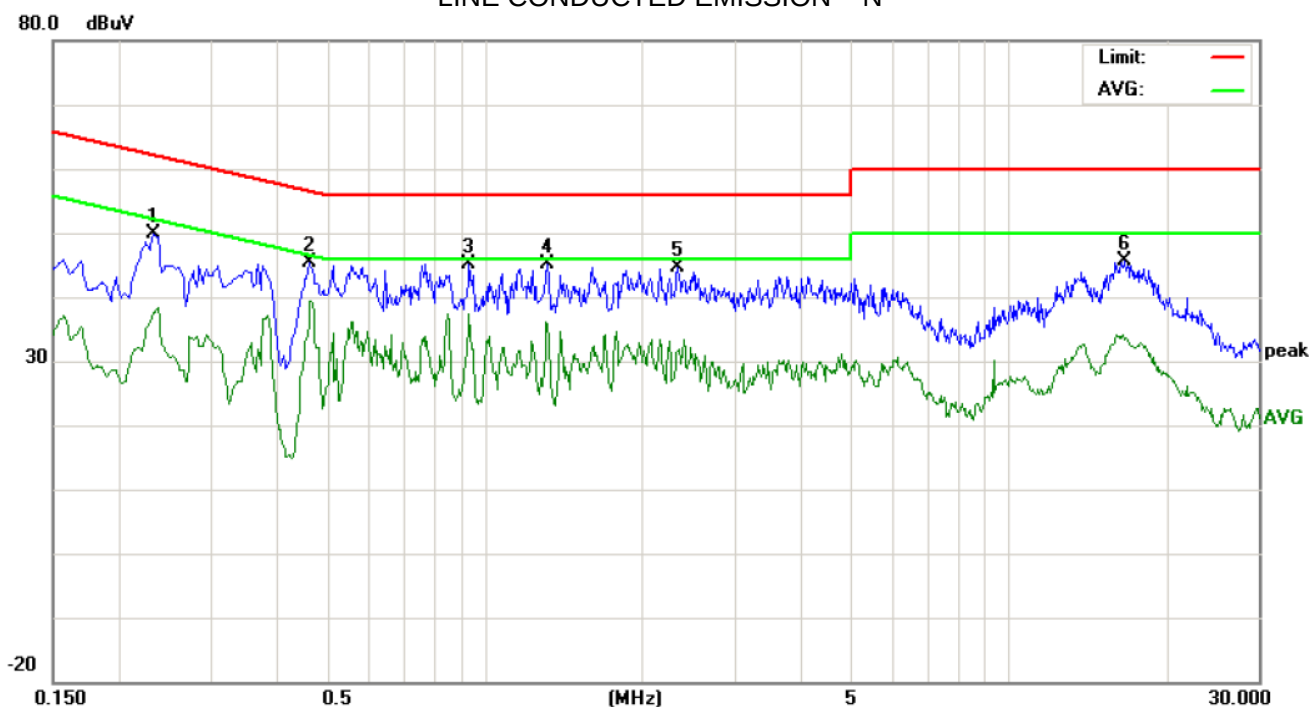
Site: Conduction
Limit: FCC Class B Conduction(QP)
EUT: 2.4GHZ wireless mouse module
M/N: YC-8362X0
Mode: Normal Hopping
Note:

Phase: **L1**
Power: AC 120V/60Hz

Temperature: 26
Humidity: 60 %

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.2300	39.14		26.97	10.25	49.39		37.22	62.45	52.45	-13.06	-15.23	P	
2	0.4540	35.73		22.15	10.37	46.10		32.52	56.80	46.80	-10.70	-14.28	P	
3	0.5420	35.55		20.95	10.36	45.91		31.31	56.00	46.00	-10.09	-14.69	P	
4	0.6460	35.36		17.30	10.33	45.69		27.63	56.00	46.00	-10.31	-18.37	P	
5	3.2180	33.77		24.07	10.53	44.30		34.60	56.00	46.00	-11.70	-11.40	P	
6	5.1060	32.39		22.53	10.24	42.63		32.77	60.00	50.00	-17.37	-17.23	P	

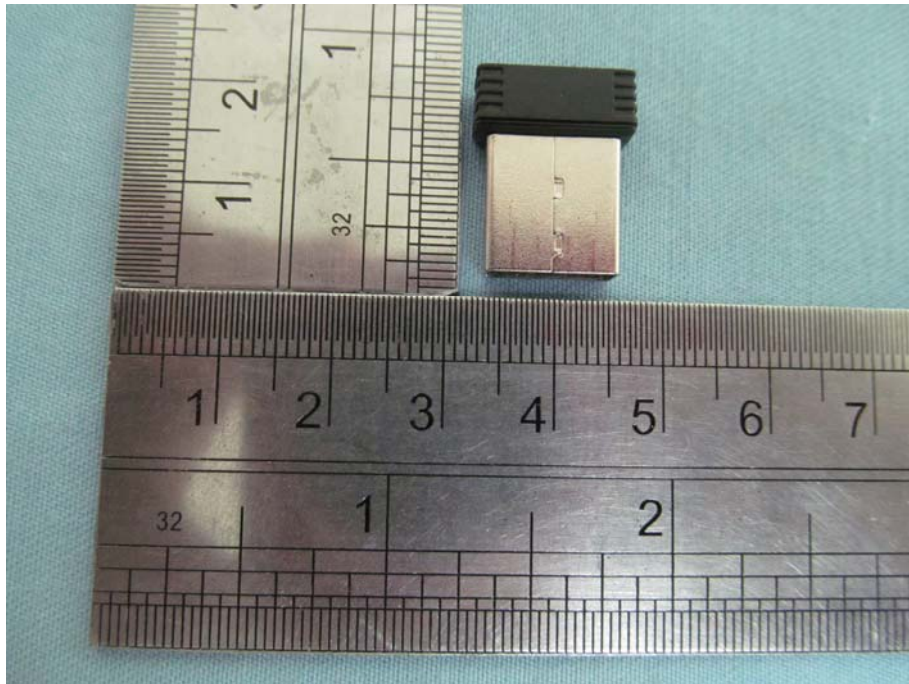
LINE CONDUCTED EMISSION – N



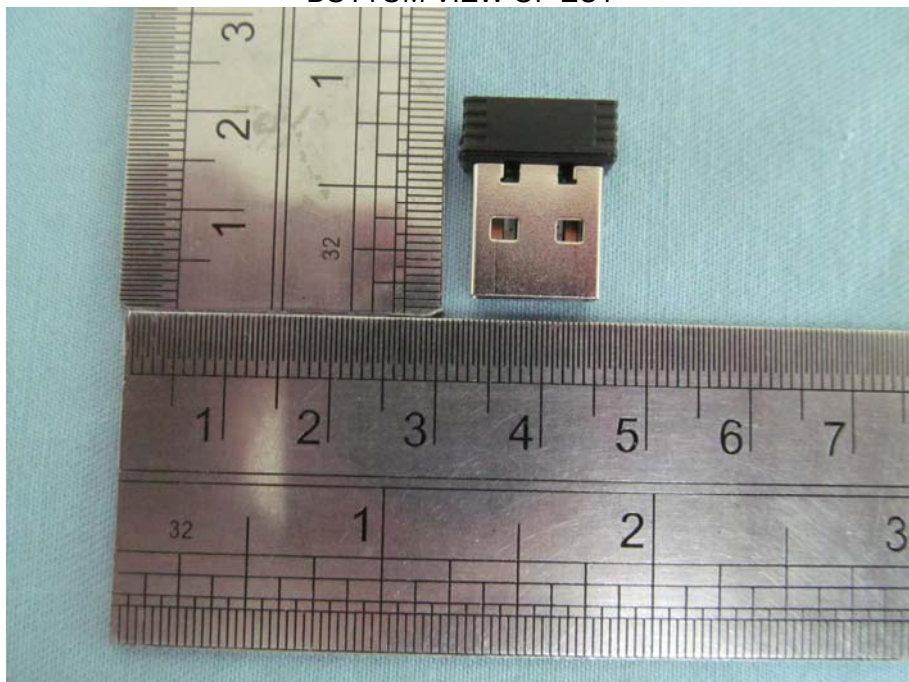
Site: Conduction Phase: **N** Temperature: 26
Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 60 %
EUT: 2.4GHZ wireless mouse module
M/N: YC-8362X0
Mode: Normal Hopping
Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.2340	39.63		27.29	10.25	49.88		37.54	62.30	52.30	-12.42	-14.76	P	
2	0.4620	35.10		25.51	10.37	45.47		35.88	56.66	46.66	-11.19	-10.78	P	
3	0.9340	34.72		27.07	10.40	45.12		37.47	56.00	46.00	-10.88	-8.53	P	
4	1.3180	34.71		25.56	10.38	45.09		35.94	56.00	46.00	-10.91	-10.06	P	
5	2.3420	34.24		21.20	10.36	44.60		31.56	56.00	46.00	-11.40	-14.44	P	
6	16.7380	35.47		23.36	10.12	45.59		33.48	60.00	50.00	-14.41	-16.52	P	

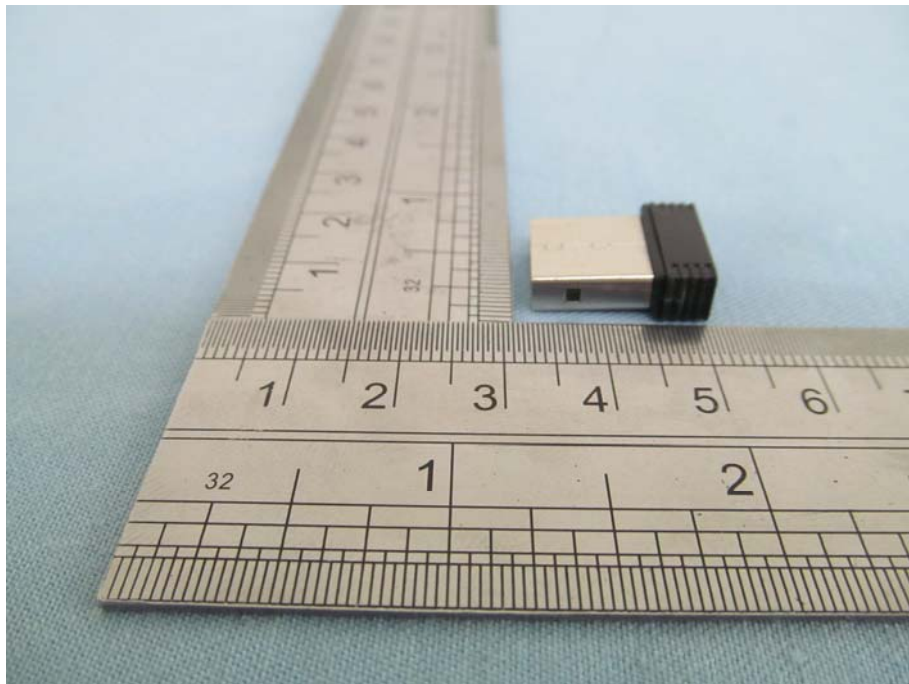
APPENDIX I
PHOTOGRAPHS OF THE EUT
TOP VIEW OF EUT



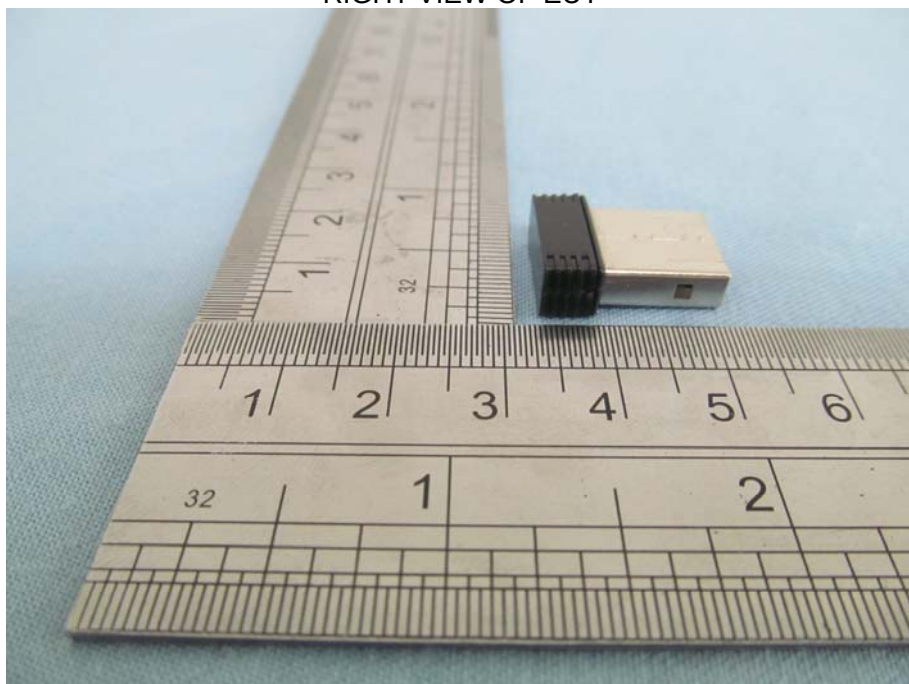
BOTTOM VIEW OF EUT



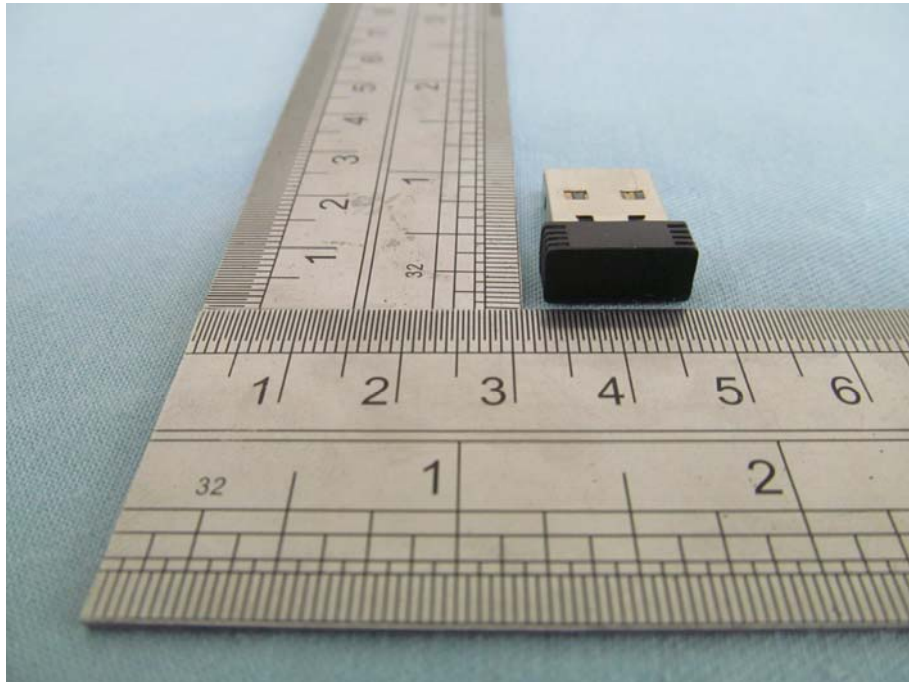
LEFT VIEW OF EUT



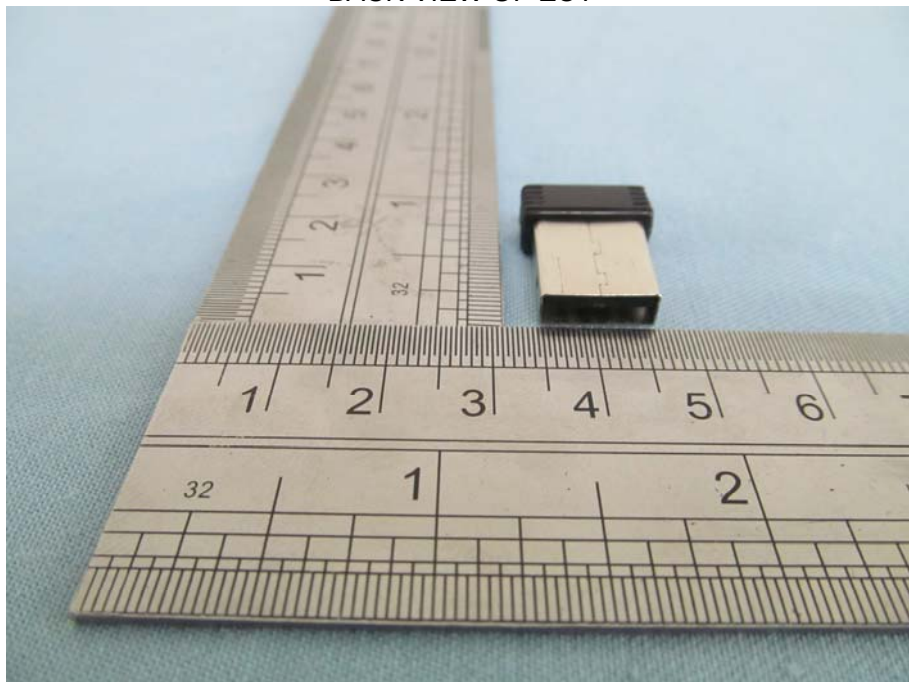
RIGHT VIEW OF EUT



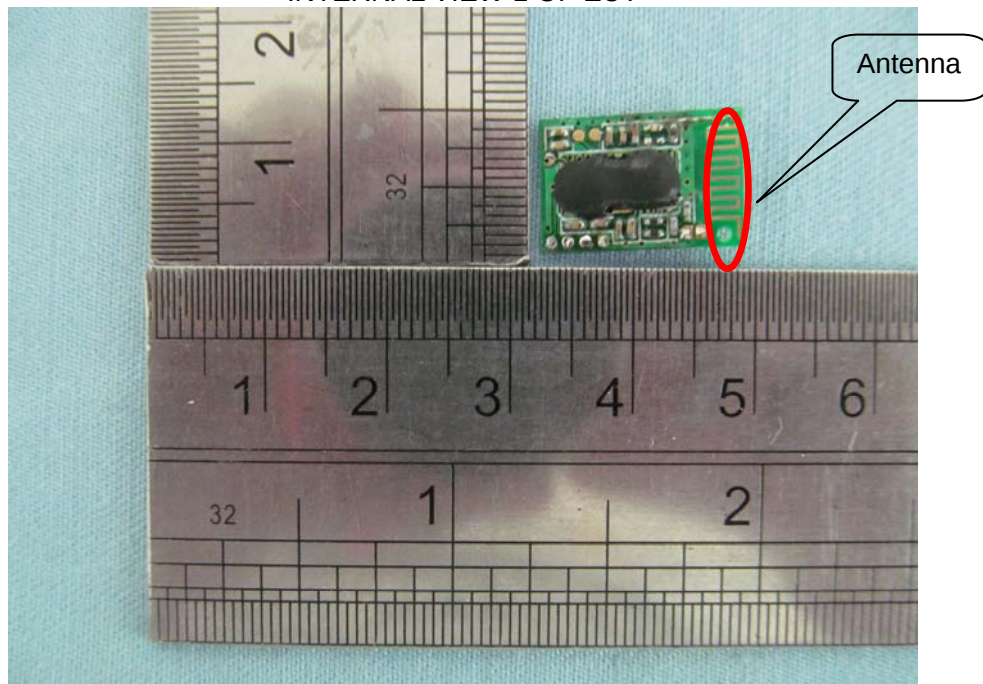
FRONT VIEW OF EUT



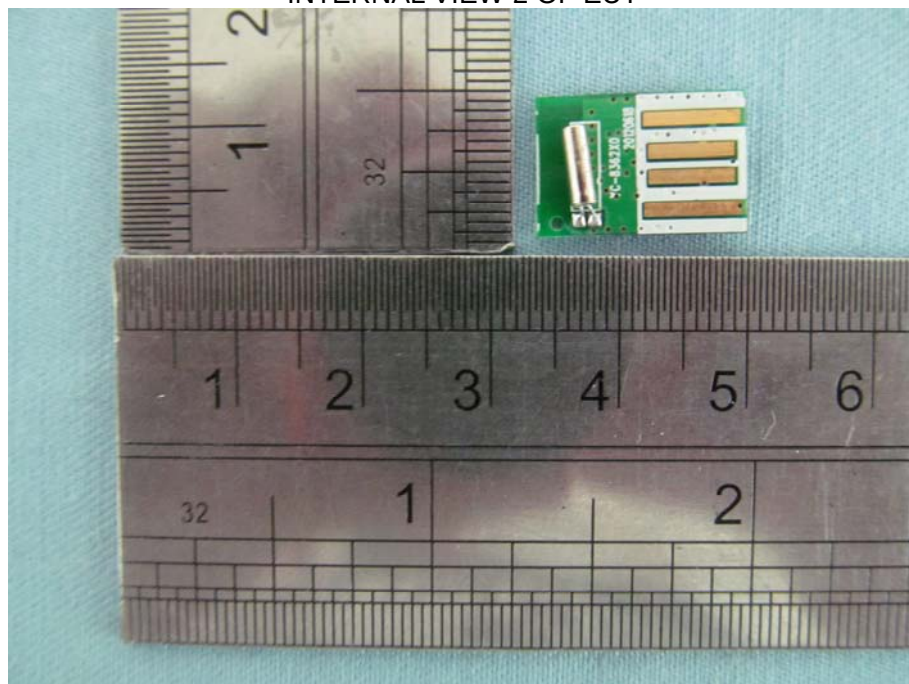
BACK VIEW OF EUT



INTERNAL VIEW-1 OF EUT



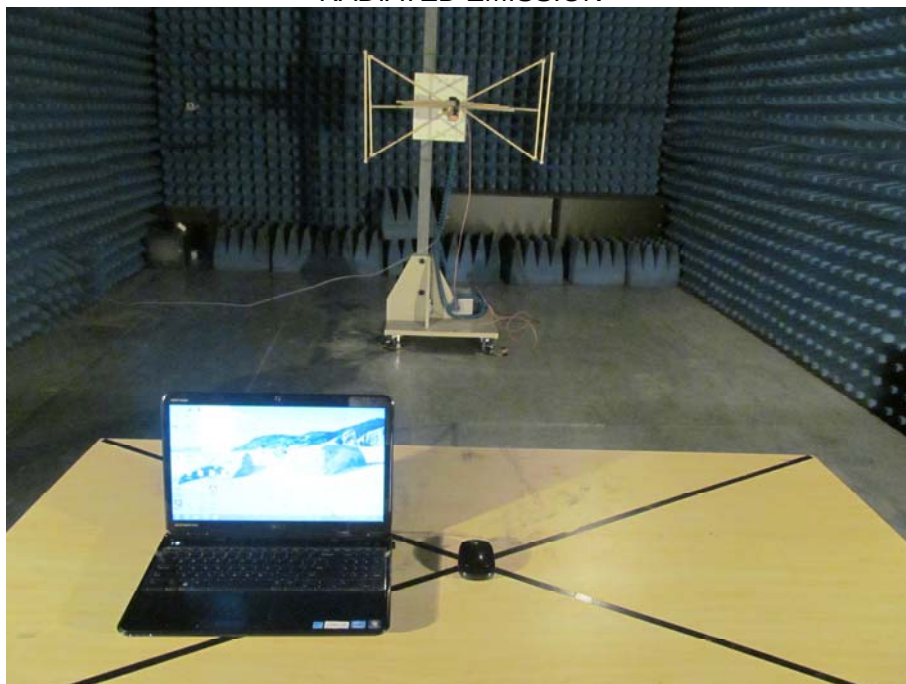
INTERNAL VIEW-2 OF EUT



APPENDIX II
PHOTOGRAPHS OF THE TEST SETUP
CONDUCTED EMISSION



RADIATED EMISSION



----END OF REPORT----