FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Applicant:	**Zaidtek Electronic Technology (Xiamen) Co., Ltd.**
Address:	**No.285, Wengjiao Road, Haicang District Xiamen, Fujian, China**
Product Name:	**Wireless Mouse**
Model Name:	**HM8388, HM8389**
Brand Name:	**Nil**
FCC ID:	**YVYHYXHM8387**
Report No.:	**MTE/DYY/A15030350**
Date of Issue:	**Mar. 20, 2015**

Issued by:	**Most Technology Service Co., Ltd.**
Address :	**No.5, Langshan 2nd Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China**
Tel :	**86-755-8617 0306**
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TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY 3
2. GENERAL INFORMATION 4
2.1 Product Information 4
2.2 Objective 5
2.3 Test Standards and Results 5
2.4 Environmental Conditions 5
2.5 MEASUREMENT UNCERTAINTY 5
3. TEST FACILITY 6
3.1TEST FACILITY 6
3.2 Test Conditions 6
3.3 Channel List 7
3.4 Description of Test Modes 7
3.5 Table of Parameters of Text Software Setting 8
3.6 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS 9
4. SETUP OF EQUIPMENT UNDER TEST 10
4.1 SUPPORT EQUIPMENT 10
4.2 TEST EQUIPMENT LIST 11
5. 47 CFR Part 15C 15.249 Requirements 12
5.1 Spurious Emission Test 12
5.1.1 Requirement 12
5.1.2 Test Description 13
5.1.3 Test Description 14
5.1.4 Test Result 14
5.2 20 dB Bandwidth 18
5.2.1 Definition 24
5.2.2 Block Diagram Of Test Setup 24
5.2.3 Test Result 24
5.3 Antenna Requirement 26
5.3.1 Definition 26
5.3.2 Evaluation Criteria 26
5.3.3 Evaluation Results 26
APPENDIX 1 27
PHOTOGRAPHS OF TEST SETUP 27

1. VERIFICATION OF CONFORMITY

Equipment Under Test:	Wireless Mouse
Brand Name:	Nil
Model Number:	HM8387
Series Number:	HM8389
Description of Differences:	Only difference in model name
FCC ID:	YVYHYXHM8387
Applicant:	Zaidtek Electronic Technology (Xiamen) Co., Ltd. No.285, Wengjiao Road, Haicang District Xiamen, Fujian, China
Manufacturer:	Zaidtek Electronic Technology (Xiamen) Co., Ltd. No.285, Wengjiao Road, Haicang District Xiamen, Fujian, China
Technical Standards:	47 CFR Part 15 Subpart C
File Number:	MTE/DYY/A15030350
Date of test:	Mar. 06-11, 2015
Deviation:	None
Condition of Test Sample:	Normal
Test Result:	PASS

The above equipment was tested by MOST for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Tested by (+ signature): Daisy

Daisy Yu Mar. 06-11, 2015

Review by (+ signature): Henry

MOST TECHNOLOGY SERVICE CO., LTD. APPROVED EMC & SAFETY

Henry Chen Mar. 16, 2015

Approved by (+ signature):

Mark Wen(Manager) Mar. 20, 2015

2. GENERAL INFORMATION

2.1 Product Information

Product:	Wireless Mouse
Trade Name:	Nil
Model Number:	HM8387
Series Number:	HM8388,HM8389
Description of Differences:	Only different in appearance and model name
Power Supply:	DC 3V by batteries
Frequency Range:	2409MHz -2476MHz
Modulation Type:	GFSK
Antenna Type:	PCB antenna
Antenna Gain:	0dBi
Channel Number:	8
Temperature Range:	0°C ~ +40°C

NOTE:

1. *For a more detailed features description about the EUT, please refer to User's Manual.*

2.2 Objective

Perform FCC Part 15 Subpart C tests for FCC Marking.

2.3 Test Standards and Results

Test items and the results are as bellow:

No.	Section	Description	Result	Date of Test
1	15.249(a) (d)	Spurious Emission	PASS	2015-03-12
2	15.207	Power Line Conducted Emission Test	N/A	---
3	15.249	20dB Bandwidth	PASS	2015-03-11
4	15.203	Antenna Requirement	PASS	2015-03-11

Note: 1. The test result judgment is decided by the limit of measurement standard
2. The information of measurement uncertainty is available upon the customer's request.

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35ºC
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

2.5 MEASUREMENT UNCERTAINTY

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

The report uncertainty of measurement y±U, where expended uncertainly U is based on a standard uncertainty multiplied by a coverage factor of k=2,Providing a level of confidence of approximately 95%

- Uncertainty of Conducted Emission, Uc = ±1.8dB
- Uncertainty of Radiated Emission, Uc = ±3.2dB

3. TEST FACILITY

3.1TEST FACILITY

Test Site:	Most Technology Service Co., Ltd.
Location:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong ,China
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014 and CISPR 16 requirements. The FCC Registration Number is **490827.** The **IC** Registration Number is **7103A-1.** The **CNAS** Registration Number is **CNAS L3573.**
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4:2014 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

3.2 Test Conditions

The EUT has been tested under normal operating（TX）.

The field strength of radiation emission was measured in the following position: EUT lie-down position (X axis).

The following data show X axis setup.

Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report.

3.3 Channel List

Channel List for GFSK Mode					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2409MHz	04	2440MHz	07	2465MHz
02	2417MHz	05	2445MHz	08	2476MHz
03	2426MHz	06	2455MHz		

3.4 Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level, Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively

Pre-test Mode	Description
Mode 1	GFSK CH01/CH04/CH8

Note:

The measurements are performed at the highest, middle, lowest available channels.

3.5 Table of Parameters of Text Software Setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level, the RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of Mouse

Test software Version	Test channels		
GFSK Mode	2409MHz	2440MHz	2476MHz

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4:2014,Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable 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 maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4:2014.

3.6 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

4. SETUP OF EQUIPMENT UNDER TEST

4.1 SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
Notebook	Lenovo	E425	R9-KZL4B	1.6m Un-shielded	1.8m Un-shielded

Remark:

All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.2 TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at Most for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calibration date	Calibration Interval
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2015/03/10	1 Year
2	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2015/03/10	1 Year
3	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2015/03/07	1 Year
4	Terminator	Hubersuhner	50Ω	No.1	2015/03/07	1 Year
5	RF Cable	SchwarzBeck	N/A	No.1	2015/03/07	1 Year
6	Test Receiver	Rohde & Schwarz	ESPI	101202	2015/03/10	1 Year
7	Bilog Antenna	Sunol	JB3	A121206	2015/03/14	1 Year
8	Horn Antenna	SCHWARZBECK	BBHA9120D	756	2015/03/14	1 Year
9	Horn Antenna	Penn Engineering	9034	8376	2015/03/14	1 Year
10	Cable	Resenberger	N/A	NO.1	2015/03/07	1 Year
11	Cable	SchwarzBeck	N/A	NO.2	2015/03/07	1 Year
12	Cable	SchwarzBeck	N/A	NO.3	2015/03/07	1 Year
13	DC Power Filter	DuoJi	DL2×30B	N/A	2015/03/07	1 Year
14	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2015/03/07	1 Year
15	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2015/03/07	1 Year
16	Test Receiver	Rohde & Schwarz	ESCI	100492	2015/03/10	1 Year
17	Absorbing Clamp	Luthi	MDS21	3635	2015/03/12	1 Year
18	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2015/03/07	1 Year
19	AC Power Source	Kikusui	AC40MA	LM003232	2015/03/10	1 Year
20	Test Analyzer	Kikusui	KHA1000	LM003720	2015/03/10	1 Year
21	Line Impendence Network	Kikusui	LIN40MA-PCR-L	LM002352	2015/03/10	1 Year
22	ESD Tester	Kikusui	KES4021	LM003537	2015/03/07	1 Year
23	EMCPRO System	EM Test	UCS-500-M4	V0648102026	2015/03/10	1 Year
24	Signal Generator	IFR	2032	203002/100	2015/03/10	1 Year
25	Amplifier	A&R	150W1000	301584	2015/03/14	1 Year
26	CDN	FCC	FCC-801-M2-25	47	2015/03/10	1 Year
27	CDN	FCC	FCC-801-M3-25	107	2015/03/10	1 Year
28	EM Injection Clamp	FCC	F-203I-23mm	403	2015/03/10	1 Year
29	RF Cable	MIYAZAKI	N/A	No.1/No.2	2015/03/10	1 Year
30	Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU200	0304789	2015/03/10	1 Year
31	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2015/03/10	1 Year
32	Telecommunication Test Equipment	R&S	CMU200	N/A	2015/03/07	1 Year
33	8 Loop Antenna	ARA	PLA-1030/B	1029	2015/01/10	1 Year

NOTE: *Equipments listed above have been calibrated and are in the period of validation.*

5. 47 CFR Part 15C 15.249 Requirements

5.1 Spurious Emission Test

5.1.1 Requirement

According to FCC section 15.249(a):

Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

According to FCC section 15.249(d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

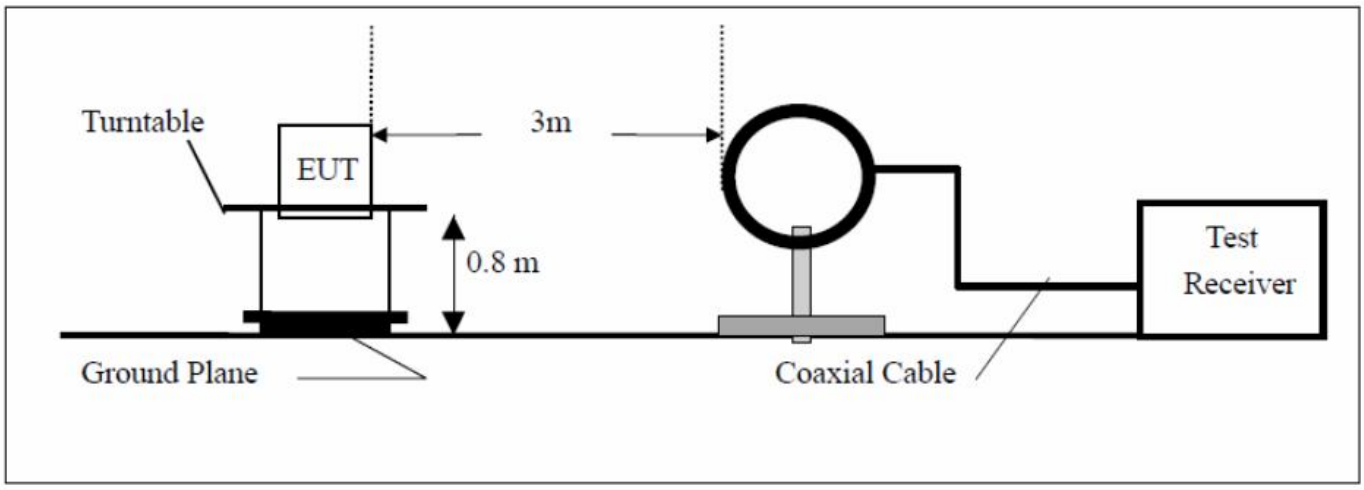
In the above emission table, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

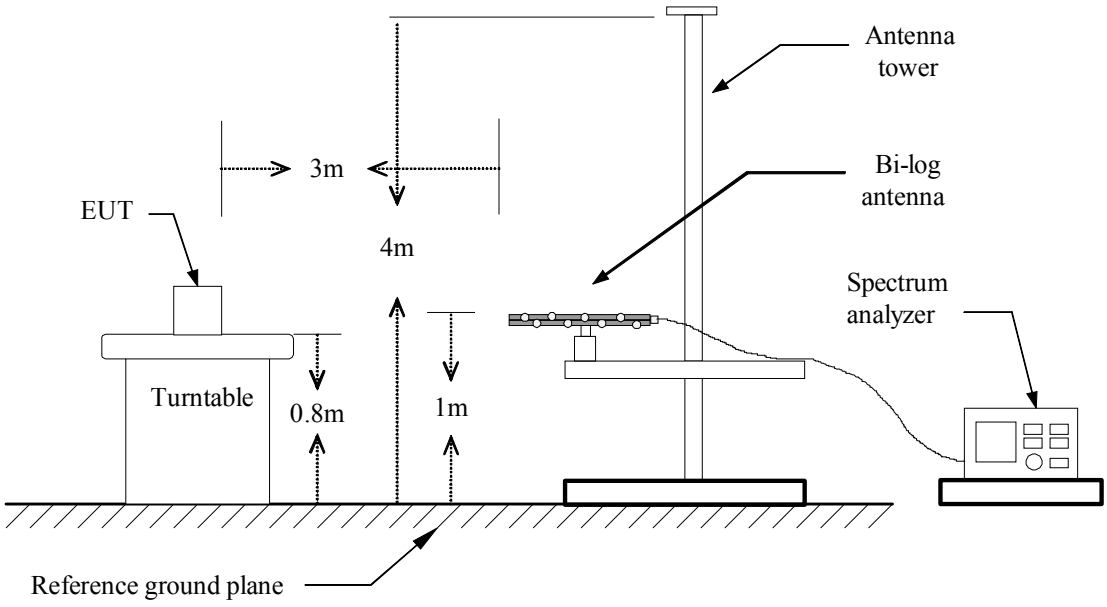
5.1.2 Test Description

Test Setup:

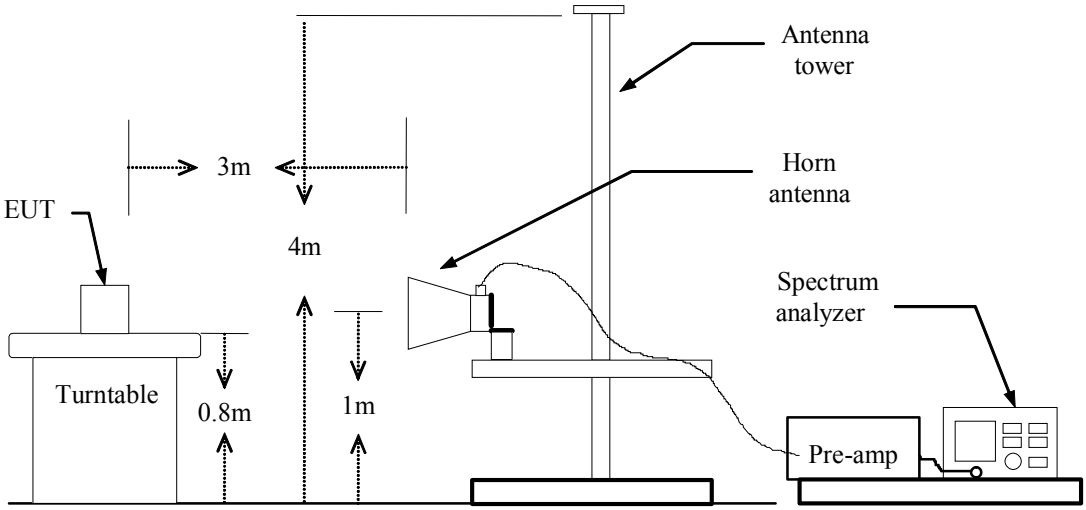
From 9KHz to 30MHz:



From 30MHz to 1GHz:



Above 1GHz:



5.1.3 Test Description

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz: RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

   Above 1GHz PEAK: RBW=VBW=1MHz / Sweep=AUTO
   AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

5.1.4 Test Result

From 9 KHz to 30MHz:

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
N/A	H								>20
N/A	V								>20

-Note: No test data was detected in below 30MHz.

From 30MHz to 1GHz:

The following test mode(s) were scanned during the preliminary test:

Preliminary Radiated Emission Test				
Frequency Range Investigated		9KHz TO 26 GHz		
Mode of operation	Date	Report No.	Data#	Worst Mode
GFSK	2015-03-09	MTE/DYY/A15030350	HM8387(V, H)	☒

Note:

The GFSK Low channel modulation type was the worst case condition, The worse test data was shown on the summary data page.

Compliance Laboratory
Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong ,China
Tel: 0755-86026850 Fax: 0755-26013350

Radiated Emission Measurement

File :HM8387 Data :#2 Date: 2015-3-9 Time: 17:47:33

Site Chamber #1
Limit: FCC Part15 B 3M Radiation
EUT: Wireless Mouse
M/N: HM8387
Mode: GFSK -CH1
Note:

Polarization: *Vertical*
Power: DC 3.0V by batteries

Temperature: 24.3
Humidity: 54.8 %
Distance: 3m

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	31.9546	10.20	21.79	31.99	40.00	-8.01	QP			
2		52.7600	21.09	10.44	31.53	40.00	-8.47	QP			
3		68.6310	18.43	11.57	30.00	40.00	-10.00	QP			
4		224.5193	20.20	16.39	36.59	46.00	-9.41	QP			
5		245.0900	19.40	17.30	36.70	46.00	-9.30	QP			
6		324.4561	20.13	17.00	37.13	46.00	-8.87	QP			

*:Maximum data x:Over limit !:over margin

Engineer Signature: Kang

Compliance Laboratory
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Radiated Emission Measurement

Site Chamber #1
Limit: FCC Part15 B 3M Radiation
EUT: Wireless Mouse
M/N: HM8387
Mode: GFSK-CH1
Note:

Polarization: *Horizontal*
Power: DC 3.0V by batteries

Temperature: 24.3
Humidity: 54.8 %
Distance: 3m

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		161.4742	19.94	17.29	37.23	43.50	-6.27	QP			
2		205.6750	18.51	16.55	35.06	43.50	-8.44	QP			
3		253.8366	17.35	17.48	34.83	46.00	-11.17	QP			
4		324.0161	21.80	17.00	38.80	46.00	-7.20	QP			
5	*	389.3549	22.10	18.29	40.39	46.00	-5.61	QP			
6		704.2261	11.04	24.70	35.74	46.00	-10.26	QP			

*:Maximum data x:Over limit !:over margin

Engineer Signature: Kang

Above 1 GHz

Compliance Laboratory
Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
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Tel: 0755-86026850 Fax: 0755-26013350

Radiated Emission Measurement

File :HM8387 Data :#11 Date: 2015-3-12 Time: 8:15:21

Site site #1 Polarization: *Vertical* Temperature: 23.0
Limit: FCC 1000M-25000M PEAK-TX1 Power: DC 3V by Batteries Humidity: 51.8 %
EUT: Wireless Mouse Distance: 3m
M/N: HM8387
Mode: GFSK-CH1
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1960.000	56.35	-6.41	49.94	74.00	-24.06	peak			
2		1960.000	51.20	-6.41	44.79	54.00	-9.21	AVG			
3		2400.000	54.32	-8.43	45.89	74.00	-28.11	peak			
4		2400.000	50.10	-8.43	41.67	54.00	-12.33	AVG			
5		2409.000	98.57	-8.41	90.16	114.0	-23.84	peak			
6	*	2409.000	93.62	-8.41	85.21	94.00	-8.79	AVG			
7		2483.500	51.34	-8.29	43.05	74.00	-30.95	peak			
8		2483.500	46.97	-8.29	38.68	54.00	-15.32	AVG			
9		4900.000	52.91	-5.00	47.91	74.00	-26.09	peak			
10		4900.000	47.30	-5.00	42.30	54.00	-11.70	AVG			

*:Maximum data x:Over limit !:over margin

Engineer Signature: John

Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong ,China
Tel: 0755-86026850 Fax: 0755-26013350

Radiated Emission Measurement

Site site #1
Limit: FCC 1000M-25000M PEAK-TX1
EUT: Wireless Mouse
M/N: HM8387
Mode: GFSK-CH1
Note:

Polarization: *Horizontal*
Power: DC 3V by Batteries
Distance: 3m

Temperature: 23.0
Humidity: 51.8 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1060.000	61.14	-9.32	51.82	74.00	-22.18	peak			
2	*	1060.000	56.22	-9.32	46.90	54.00	-7.10	AVG			
3		2400.000	52.98	-8.43	44.55	74.00	-29.45	peak			
4		2400.000	46.98	-8.43	38.55	54.00	-15.45	AVG			
5		2409.000	99.08	-8.41	90.67	114.0	-23.33	peak			
6		2409.000	93.21	-8.41	84.80	94.00	-9.20	AVG			
7		2483.500	52.93	-8.29	44.64	74.00	-29.36	peak			
8		2483.500	46.63	-8.29	38.34	54.00	-15.66	AVG			
9		4900.000	54.92	-5.00	49.92	74.00	-24.08	peak			
10		4900.000	51.04	-5.00	46.04	54.00	-7.96	AVG			

*:Maximum data x:Over limit !:over margin

Engineer Signature: John

Compliance Laboratory
Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong ,China
Tel: 0755-86026850 Fax: 0755-26013350

Radiated Emission Measurement

File :HM8387 Data :#13 Date: 2015-3-12 Time: 9:37:33

Site site #1 Polarization: *Vertical* Temperature: 23.0
Limit: FCC 1000M-25000M PEAK-TX2 Power: DC 3V by Batteries Humidity: 51.8 %
EUT: Wireless Mouse Distance: 3m
M/N: HM8387
Mode: GFSK-CH4
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1060.000	59.13	-9.32	49.81	74.00	-24.19	peak			
2	*	1060.000	53.52	-9.32	44.20	54.00	-9.80	AVG			
3		2400.000	52.63	-8.43	44.20	74.00	-29.80	peak			
4		2400.000	46.11	-8.43	37.68	54.00	-16.32	AVG			
5		2442.000	92.25	-8.36	83.89	114.0	-30.11	peak			
6		2442.000	89.33	-8.36	80.97	94.00	-13.03	AVG			
7		2483.500	52.18	-8.29	43.89	74.00	-30.11	peak			
8		2483.500	46.51	-8.29	38.22	54.00	-15.78	AVG			
9		5200.000	50.01	-4.49	45.52	74.00	-28.48	peak			
10		5200.000	45.55	-4.49	41.06	54.00	-12.94	AVG			

*:Maximum data x:Over limit !:over margin

Engineer Signature: John

Compliance Laboratory
Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong ,China
Tel: 0755-86026850 Fax: 0755-26013350

Radiated Emission Measurement

File :HM8387 Data :#14 Date: 2015-3-12 Time: 10:06:05

Site site #1 Polarization: *Horizontal* Temperature: 23.0
Limit: FCC 1000M-25000M PEAK-TX2 Power: DC 3V by Batteries Humidity: 51.8 %
EUT: Wireless Mouse Distance: 3m
M/N: HM8387
Mode: GFSK-CH4
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1120.000	58.66	-9.05	49.61	74.00	-24.39	peak			
2		1120.000	52.14	-9.05	43.09	54.00	-10.91	AVG			
3		2400.000	54.47	-8.43	46.04	74.00	-27.96	peak			
4		2400.000	50.10	-8.43	41.67	54.00	-12.33	AVG			
5		2442.000	99.92	-8.36	91.56	114.0	-22.44	peak			
6		2442.000	93.14	-8.36	84.78	94.00	-9.22	AVG			
7		2483.500	54.78	-8.29	46.49	74.00	-27.51	peak			
8		2483.500	50.98	-8.29	42.69	54.00	-11.31	AVG			
9		4960.000	54.55	-4.27	50.28	74.00	-23.72	peak			
10	*	4960.000	49.21	-4.27	44.94	54.00	-9.06	AVG			

*:Maximum data x:Over limit !:over margin

Engineer Signature: John

Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong ,China
Tel: 0755-86026850 Fax: 0755-26013350

Radiated Emission Measurement

File :HM8387 Data :#15 Date: 2015-3-12 Time: 10:16:33

Site site #1 Polarization: *Vertical* Temperature: 23.0
Limit: FCC 1000M-25000M PEAK-TX3 Power: DC 3V by Batteries Humidity: 51.8 %
EUT: Wireless Mouse Distance: 3m
M/N: HM8387
Mode: GFSK-CH8
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1120.000	58.66	-9.05	49.61	74.00	-24.39	peak			
2		1120.000	53.98	-9.05	44.93	54.00	-9.07	AVG			
3		2400.000	54.47	-8.43	46.04	74.00	-27.96	peak			
4		2400.000	51.87	-8.43	43.44	54.00	-10.56	AVG			
5		2476.000	99.86	-8.30	91.56	114.0	-22.44	peak			
6		2476.000	93.80	-8.30	85.50	94.00	-8.50	AVG			
7		2483.500	54.10	-8.29	45.81	74.00	-28.19	peak			
8		2483.500	49.31	-8.29	41.02	54.00	-12.98	AVG			
9		4960.000	54.55	-4.27	50.28	74.00	-23.72	peak			
10	*	4960.000	49.88	-4.27	45.61	54.00	-8.39	AVG			

*:Maximum data x:Over limit !:over margin

Engineer Signature: John

Compliance Laboratory
Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong ,China
Tel: 0755-86026850 Fax: 0755-26013350

Radiated Emission Measurement

File :HM8387 Data :#16 Date: 2015-3-12 Time: 10:28:11

Site site #1 Polarization: *Horizontal* Temperature: 23.0
Limit: FCC 1000M-25000M PEAK-TX3 Power: DC 3V by Batteries Humidity: 51.8 %
EUT: Wireless Mouse Distance: 3m
M/N: HM8387
Mode: GFSK-CH8
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1060.000	61.47	-9.32	52.15	74.00	-21.85	peak			
2	*	1060.000	56.21	-9.32	46.89	54.00	-7.11	AVG			
3		2400.000	55.44	-8.43	47.01	74.00	-26.99	peak			
4		2400.000	51.24	-8.43	42.81	54.00	-11.19	AVG			
5		2476.000	99.36	-8.30	91.06	114.0	-22.94	peak			
6		2476.000	93.28	-8.30	84.98	94.00	-9.02	AVG			
7		2483.500	55.34	-8.29	47.05	74.00	-26.95	peak			
8		2483.500	51.47	-8.29	43.18	54.00	-10.82	AVG			
9		4960.000	54.22	-4.27	49.95	74.00	-24.05	peak			
10		4960.000	50.99	-4.27	46.72	54.00	-7.28	AVG			

*:Maximum data x:Over limit !:over margin

Engineer Signature: John

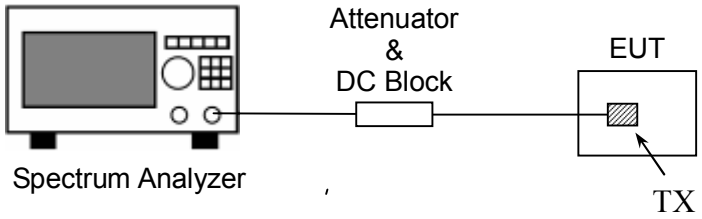
5.2 20 dB Bandwidth

5.2.1 Definition

Intentional radiators operating under the alternative provisions to the general emission limits, as Contained in §§15.217 through 15.257 and in sub-part E of this part, must be designed to ensure that the 20 dB Bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific Rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

5.2.2 Block Diagram Of Test Setup

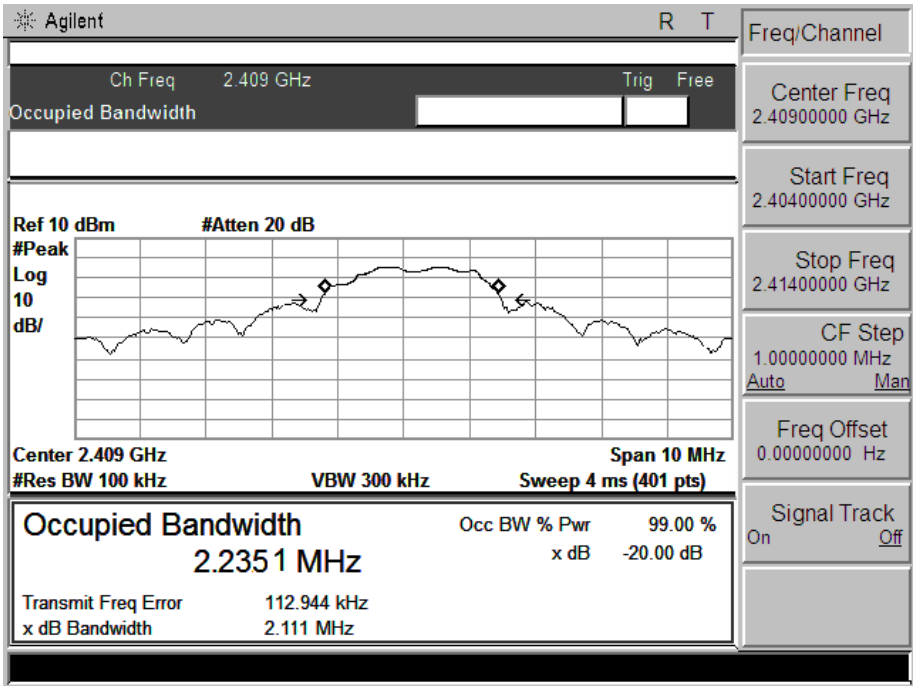
The EUT is powered by the Battery, is coupled to the Spectrum Analyzer (SA) through the Attenuator/DC Block. The path loss as the factor is calibrated to correct the reading. During the measurement, the EUT is activated and is set to operate at maximum power. The RF load attached to the EUT antenna terminal is 50Ohm.



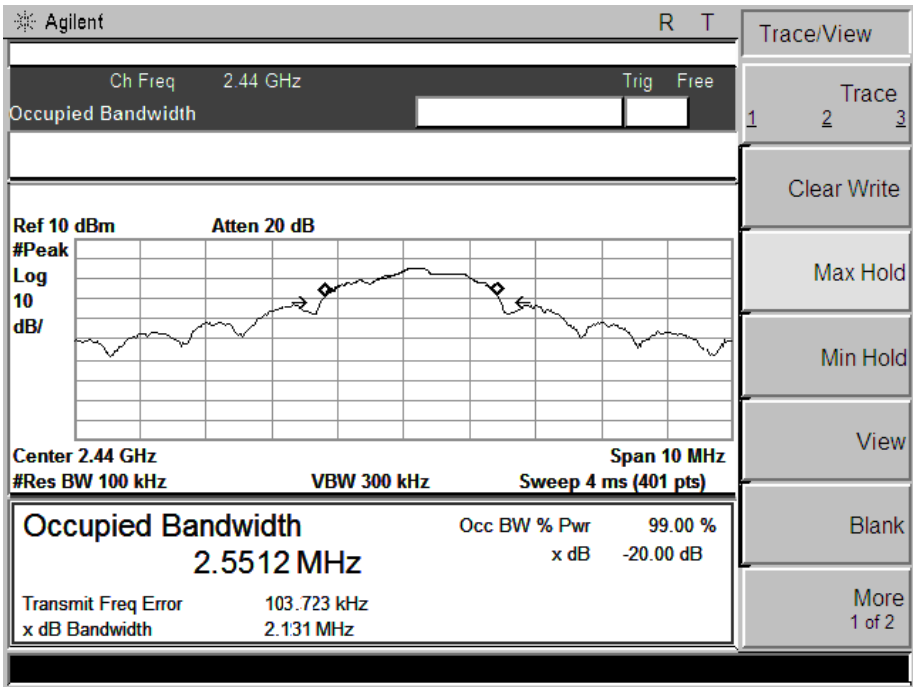
5.2.3 Test Result

GFSK Modulation test result:

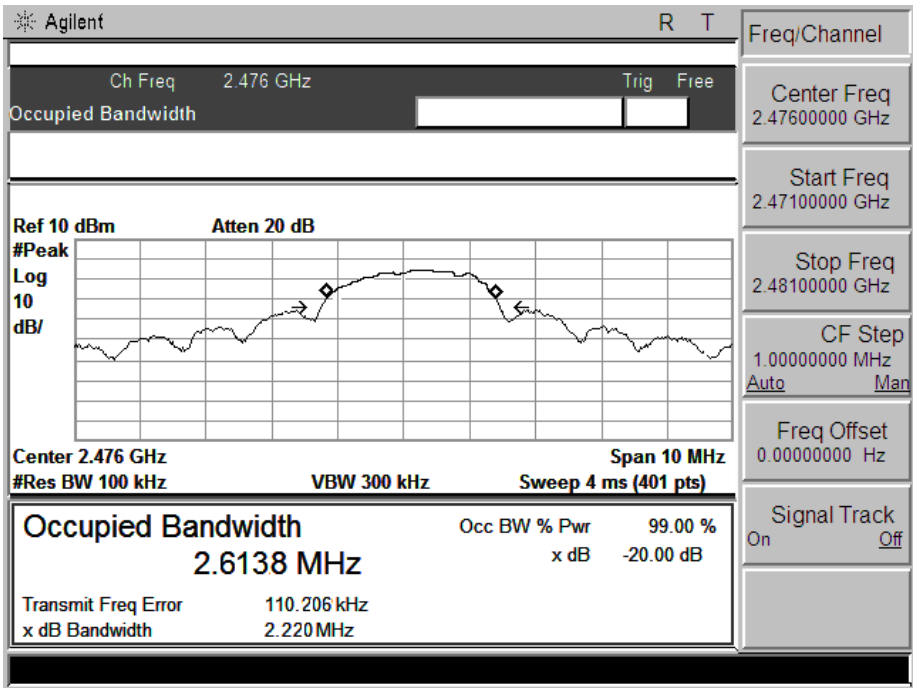
Channel	Frequency (MHz)	Test Result(MHz)
1	2409	2.111
4	2440	2.131
8	2476	2.220



CH Low



CH MID



CH High

5.3 Antenna Requirement

5.3.1 Definition

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, An analysis of the EUT was performed to determine compliance with FCC Section 15.203. This section requires specific handling and control of antennas used for devices subject to regulations.

5.3.2 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

(a) Antenna must be permanently attached to the unit.

(b) Antenna must use a unique type of connector to attach to the EUT.

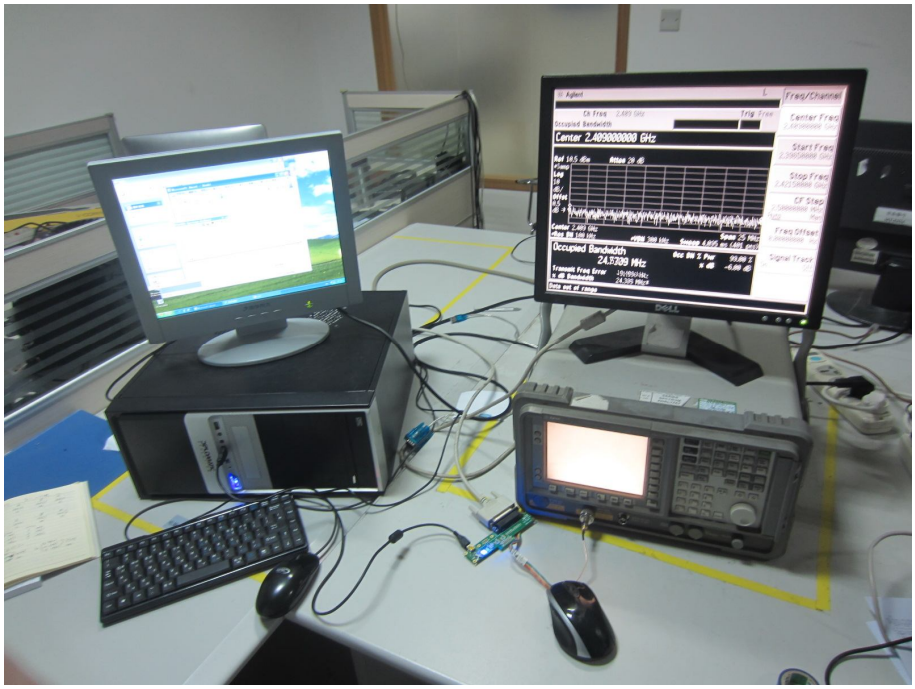
(c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

5.3.3 Evaluation Results

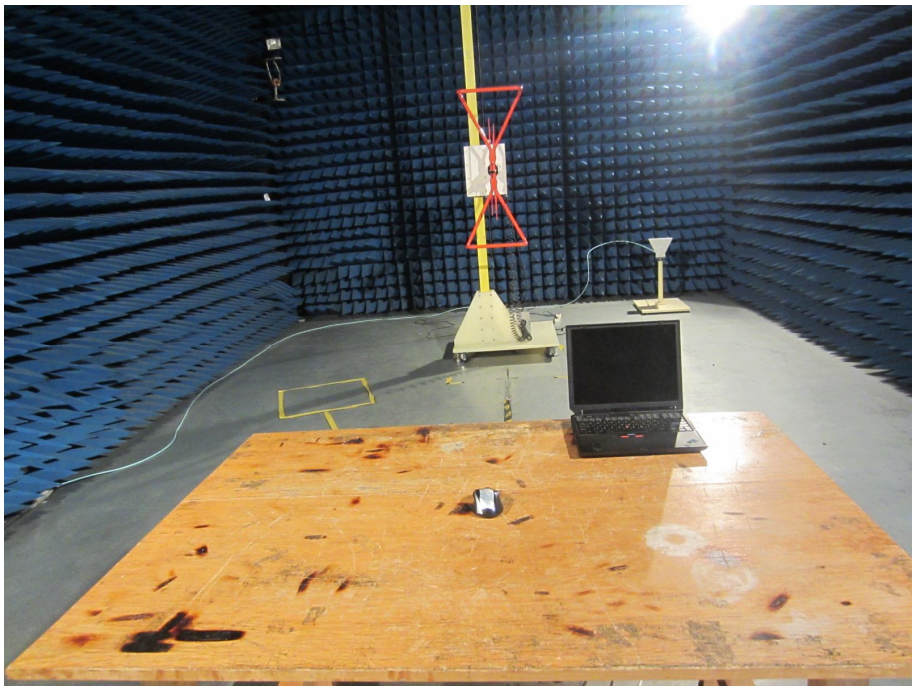
The antenna used in this product is PCB antenna. The antenna is permanently attached. It is inaccessible to the user.

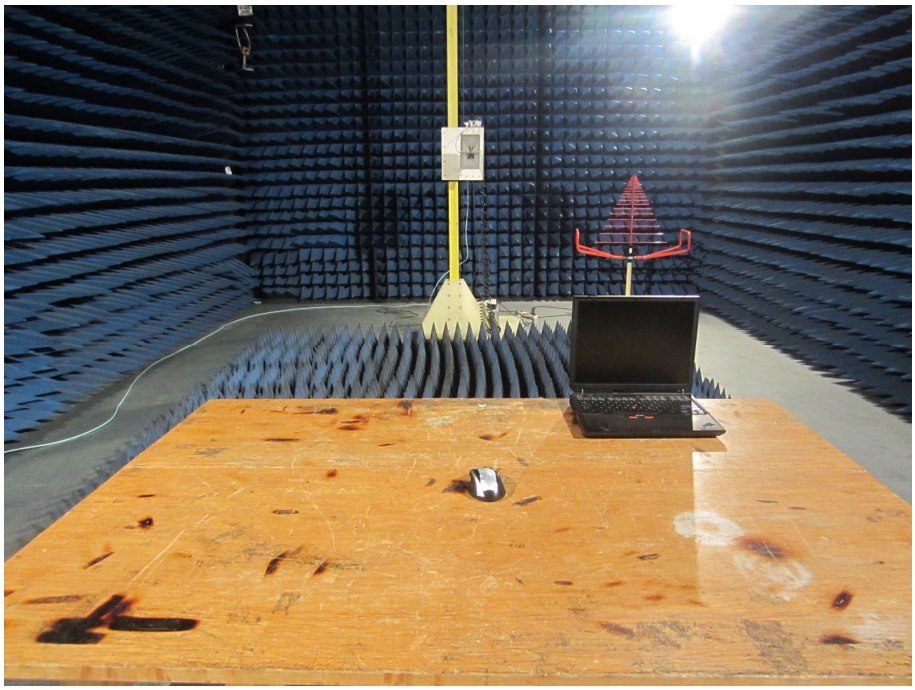
APPENDIX 1
PHOTOGRAPHS OF TEST SETUP

CONDUCTED TEST SETUP



RE TEST SETUP





------END OF REPORT------