

# FCC Test Report

## Part 15 subpart C

### Client Information:

Applicant: Guangzhou Maipai Electronics Co.,Ltd.  
Applicant add.: Room 202, No.94, Shinan Road, Xianchong Village, Qiaonan Street,  
Panyu District of Guangzhou.

### Product Information:

Product Name: wireless mouse  
Model No.: M7111  
Derivative model No.: N/A  
Brand Name: N/A

Standards: CFR 47 FCC PART 15 SUBPART C:2013 section 249

### Prepared By:

**Dongguan Yaxu (AiT) Technology Limited**

Add. : No. 22, Jinqianling Third Street, Jitigang, Huangjiang, Dongguan,  
Guangdong, China.

Date of Receipt: Nov. 30, 2015

Date of Test: Dec. 01~ 10, 2015

Date of Issue: Dec. 10, 2015

Test Result: Pass

This device described above has been tested by Dongguan Yaxu (AiT) Technology Limited, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

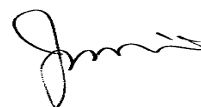
ATT SZ commissioned AiT(Dongguan) to test the device described above, and then AiT(Dongguan) use the UTL(Dongguan)'s test site do this case.

This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by:



Approved by:



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## 2 Test Summary

### 2.1 Compliance with FCC Part 15 subpart C

| Test | Test Requirement | Standard Paragraph | Result |
|------|------------------|--------------------|--------|
|------|------------------|--------------------|--------|

|                                        |                                                     |                                      |      |
|----------------------------------------|-----------------------------------------------------|--------------------------------------|------|
| Field Strength of Fundamental          | FCC PART 15 C section 15.249 (a)                    | ANSI C63.10: Clause 6.6              | PASS |
| Field Strength of Unwanted Emissions   | FCC PART 15 C section 15.249 (a) section 15.249 (d) | ANSI C63.10: Clause 6.4, 6.6 and 6.7 | PASS |
| Band Edges                             | FCC PART 15 C section 15.249 (d)                    | ANSI C63.10: Clause 6.9.2            | PASS |
| Occupied Bandwidth                     | FCC PART 15 C section 15.215(c)                     | ANSI C63.10: Clause 6.9.1            | PASS |
| Conducted Emissions at Mains Terminals | FCC PART 15 C section 15.207                        | ANSI C63.10: Clause 6.2              | N/A  |

**Remark:**

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radio Frequency.

ANSI C63.10: the detail version is ANSI C63.10:2009 in the whole report.

## 2.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, the maximum value of the uncertainty as below:

| No. | Item                         | Uncertainty |
|-----|------------------------------|-------------|
| 1   | Conducted Emission Test      | 1.20dB      |
| 2   | Radiated Emission Test       | 3.30dB      |
| 3   | RF power,conducted           | 0.16dB      |
| 4   | RF power density,conducted   | 0.24dB      |
| 5   | Spurious emissions,conducted | 0.21dB      |
| 6   | All emissions,radiated(<1G)  | 4.68dB      |
| 7   | All emissions,radiated(>1G)  | 4.89dB      |

### 3 Test Facility

**.FCC- Registration No: 248337**

DongGuan Yaxu(AiT) Technology Limited  
No. 22,JinQianLing Street 3, JiTiGang Village, Huang-Jiang Town, DongGuan, Guangdong, 523757 China.

#### 3.1 Deviation from standard

None

#### 3.2 Abnormalities from standard conditions

None

## 4 General Information

### 4.1 General Description of EUT

|                       |                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------|
| Manufacturer:         | Guangzhou Maipai Electronics Co.,Ltd.                                                        |
| Manufacturer Address: | Room 202,No.94,Shinan Road,Xianchong Village,Qiaonan Street,<br>Panyu District of Guangzhou. |
| EUT Name:             | wireless mouse                                                                               |
| Model No.:            | M7111                                                                                        |
| FCC ID:               | 2AFVEM7111                                                                                   |
| Operation frequency:  | 2409 MHz to 2476 MHz                                                                         |
| Number of channel:    | 8 channels                                                                                   |
| Modulation Type :     | MSK                                                                                          |
| Antenna Type:         | Internal antenna(PCB)                                                                        |
| Antenna Gain:         | 0 dBi                                                                                        |
| HW:                   | ASY_TLSR8566_V1.0                                                                            |
| SW:                   | V1.1                                                                                         |
| Brand Name:           | N/A                                                                                          |
| Serial No:            | N/A                                                                                          |
| Derivative model No.: | N/A                                                                                          |



|                     |                             |
|---------------------|-----------------------------|
| Power Supply Range: | DC 3.0V(2*1.5V AAA battery) |
| Power Supply:       | DC 3.0V from battery        |
| Power Cord:         | N/A                         |
| Signal Cable:       | N/A                         |

Note: This device supports 250kbps, 1Mbps, 2Mbps. because of the firmware limitation, this product only supports 250kbps data rate. And users cannot enable other data rates by themselves.

| Description of Channel: |                 |         |                 |
|-------------------------|-----------------|---------|-----------------|
| Channel                 | Frequency (MHz) | Channel | Frequency (MHz) |
| 1                       | 2409            | 5       | 2445            |
| 2                       | 2417            | 6       | 2455            |
| 3                       | 2426            | 7       | 2465            |
| 4                       | 2440            | 8       | 2476            |

## 5 Description of Test conditions

### 5.1 E.U.T. Operation

**Test Voltage:** DC 3.0V from battery(user new batteries)

**Temperature:** 20.0 -25.0 °C

**Humidity:** 38-50 % RH

**Atmospheric Pressure:** 1000 -1010 mbar

**Test frequencies and frequency range:** According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

According to the 15.33 (a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

**Number of fundamental frequencies to be tested in EUT transmit band**

| Frequency range in which device operates | Number of frequencies | Location in frequency range of operation    |
|------------------------------------------|-----------------------|---------------------------------------------|
| 1 MHz or less                            | 1                     | Middle                                      |
| 1 MHz to 10 MHz                          | 2                     | 1 near top and 1 near bottom                |
| More than 10 MHz                         | 3                     | 1 near top, 1 near middle and 1 near bottom |

**Frequency range of radiated emission measurements**

| Lowest frequency generated in the device | Upper frequency range of measurement                                                                        |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 9 kHz to below 10 GHz                    | 10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower                             |
| At or above 10 GHz to below 30 GHz       | 5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower                             |
| At or above 30 GHz                       | 5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified |

## 5.2 EUT Peripheral List

| No. | Equipment | Manufacturer | Model No. | Serial No. | Power cord | signal cable |
|-----|-----------|--------------|-----------|------------|------------|--------------|
| 1   | N/A       | N/A          | N/A       | N/A        | N/A        | N/A          |

## 5.3 Test Peripheral List

| No. | Equipment | Manufacturer | Model No. | Serial No. | Power cord | signal cable |
|-----|-----------|--------------|-----------|------------|------------|--------------|
| 1   | N/A       | N/A          | N/A       | N/A        | N/A        | N/A          |

## 5.4 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.

| Pretest Mode | Description |
|--------------|-------------|
| Mode 1       | CH1         |
| Mode 2       | CH4         |
| Mode 3       | CH8         |

| For Conducted Emission |             |
|------------------------|-------------|
| Final Test Mode        | Description |
| /                      | /           |

| For Radiated Emission |             |
|-----------------------|-------------|
| Final Test Mode       | Description |
| Mode 1                | CH1         |
| Mode 2                | CH4         |
| Mode 3                | CH8         |

Note:

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

- (2) The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

## 6 Equipments List for All Test Items

| No | Test Equipment                      | Manufacturer | Model No         | Serial No   | Cal. Date  | Cal. Due Date |
|----|-------------------------------------|--------------|------------------|-------------|------------|---------------|
| 1  | Spectrum Analyzer                   | ADVANTEST    | R3182            | 150900201   | 2015.06.29 | 2016.06.28    |
| 2  | EMI Measuring Receiver              | R&S          | ESR              | 101660      | 2014.12.12 | 2015.12.11    |
| 3  | Low Noise Pre Amplifier             | Tsj          | MLA-10K01-B01-27 | 1205323     | 2015.06.29 | 2016.06.28    |
| 4  | Low Noise Pre Amplifier             | Tsj          | MLA-0120-A02-34  | 2648A04738  | 2015.12.02 | 2016.12.01    |
| 5  | TRILOG Super Broadband test Antenna | SCHWARZBEC K | VULB9160         | 9160-3206   | 2015.12.03 | 2016.12.02    |
| 6  | Broadband Horn Antenna              | SCHWARZBEC K | BBHA9120D        | 452         | 2015.12.03 | 2016.12.02    |
| 7  | SHF-EHF Horn                        | SCHWARZBEC K | BBHA9170         | BBHA9170367 | 2015.12.03 | 2016.12.02    |
| 8  | Loop Antenna                        | ARA          | PLA-1030/B       | 1029        | 2015.03.20 | 2016.03.19    |
| 9  | Radiated Cable 1# (30MHz-1GHz)      | FUJIKURA     | 5D-2W            | 01          | 2015.01.04 | 2016.01.03    |
| 10 | Radiated Cable 2# (1GHz -25GHz)     | FUJIKURA     | 10D2W            | 02          | 2014.12.25 | 2015.12.24    |
| 11 | Conducted Cable 1#(9KHz-30MHz)      | FUJIKURA     | 1D-2W            | 01          | 2015.01.04 | 2016.01.03    |
| 12 | SMA Antenna connector               | Dosin        | Dosin-SMA        | N/A         | N/A        | N/A           |

Note: The SMA antenna connector is soldered on the PCB board in order to perform conducted tests and this SMA antenna connector is listed in the equipment list.

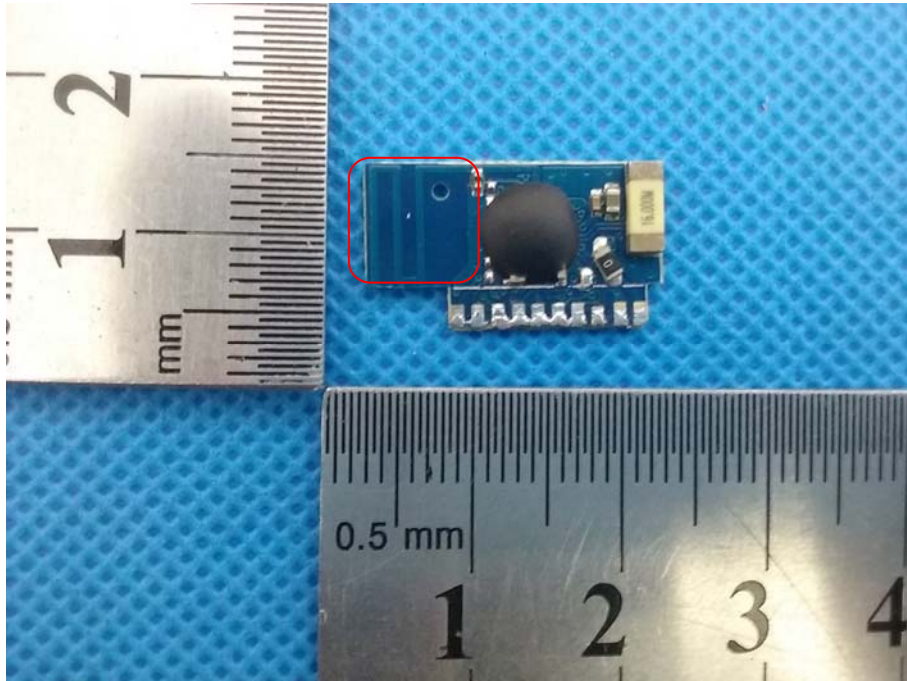
## 7 Test Result

### 7.1 Antenna Requirement

#### Standard requirement

#### EUT Antenna

The antenna is Internal antenna(PCB) and no consideration of replacement. The maximum gain of the antenna is 0 dBi.



**Test result:** The unit does meet the FCC requirements.

## 7.2 Field Strength of Fundamental& Field Strength of Unwanted Emissions&

### Band Edge

Test Requirement: FCC Part15 C section 15.249

(a) Except as provided in paragraph (b) 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 (dB $\mu$ V/m @ 3m) | Field Strength of Harmonics (dB $\mu$ V/m @ 3m) |
|-----------------------------|---------------------------------------------------|-------------------------------------------------|
| 902 to 928                  | 94.0                                              | 54.0                                            |
| 2400 to 2483.5              | 94.0                                              | 54.0                                            |
| 5725 to 5875                | 94.0                                              | 54.0                                            |
| 24000 to 24250              | 108.0                                             | 68.0                                            |

(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 Section 15.209, whichever is the lesser attenuation.

Limits: The fundamental frequency rang is in the frequency band of the EUT is 2409 MHz ~ 2476MHz.

The limit for AVG field strength dB $\mu$ V/m for the fundamental frequency = 94.0 dB $\mu$ V/m.

The limit for Peak field strength dB $\mu$ V/m for the fundamental frequency = 114.0 dB $\mu$ V/m.

No fundamental is allowed in the restricted bands.

The limit for AVG field strength dB $\mu$ V/m for the harmonics and other above 1G frequencies = 54.0 dB $\mu$ V/m.

The limit for Peak field strength dB $\mu$ V/m for the harmonics and other above 1G frequencies = 74.0 dB $\mu$ V/m.

Test Method: ANSI C63.10: Clause 6.4, 6.6 and 6.7 for Field Strength of Fundamental& Field Strength of Unwanted Emissions  
ANSI C63.10: Clause 6.9.2 for Band Edge

Status: Pre-test the EUT in continuous transmitting mode with setup as stand-alone in X, Y, Z threes axes, found the worst case is X axes and report the data.

Measurement Distance: 3m (Semi-Anechoic Chamber)

Frequency range: 9 kHz – 25 GHz for transmitting mode.

Test instrumentation resolution bandwidth

9 kHz (9 kHz - 30 MHz), 120 kHz (30 MHz - 1000 MHz), 1 MHz (1000 MHz – 25 GHz)

Detector:

For PK and QP value:

RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz

VBW  $\geq$  RBW

Sweep = auto

Detector function = peak

Trace = max hold

For AV value:

RBW = 1 MHz for  $f \geq 1$  GHz,

VBW = 10 Hz

Sweep = auto

Detector function = peak

Trace = max hold

**Test Procedure:****1) 9 kHz to 30 MHz emissions:**

For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.10. The centre of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

**2) 30 MHz to 1 GHz emissions:**

For testing performed with the bi-log type antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

**3) 1 GHz to 25 GHz emissions:**

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2007 was used to perform radiated emission test above 1 GHz.

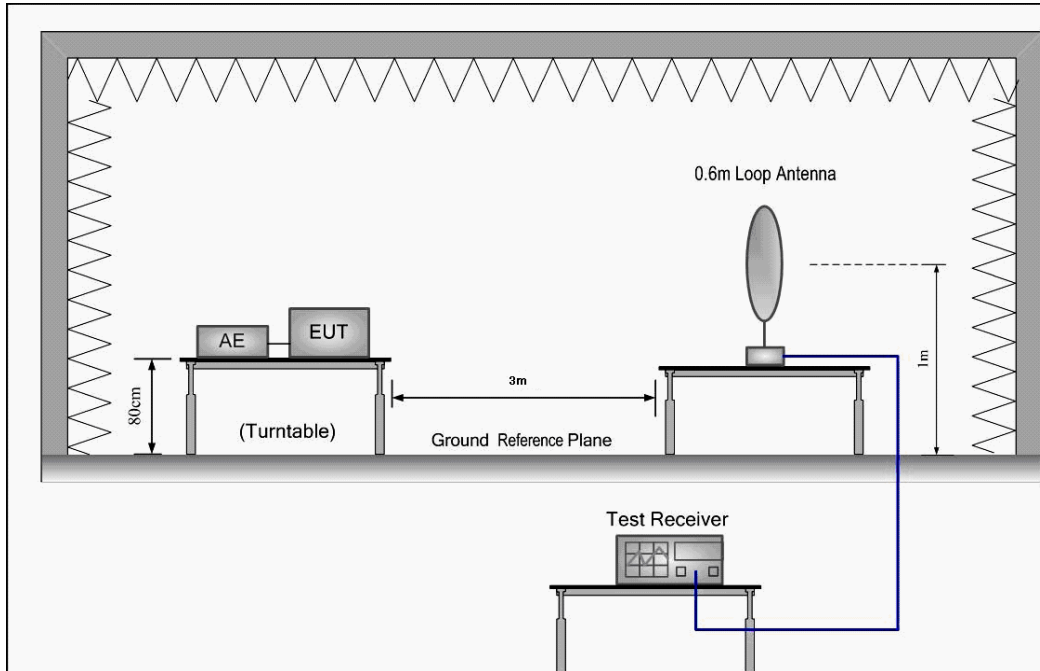
For testing performed with the horn antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360°, the antenna height scan between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

For the radiated emission test above 1GHz:

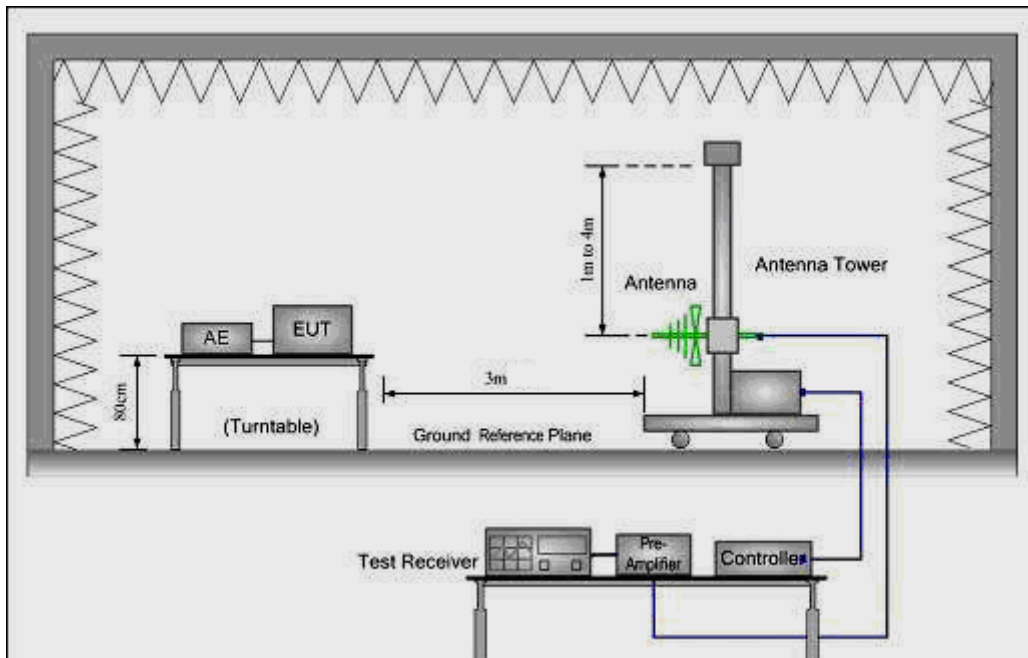
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

### Test Configuration:

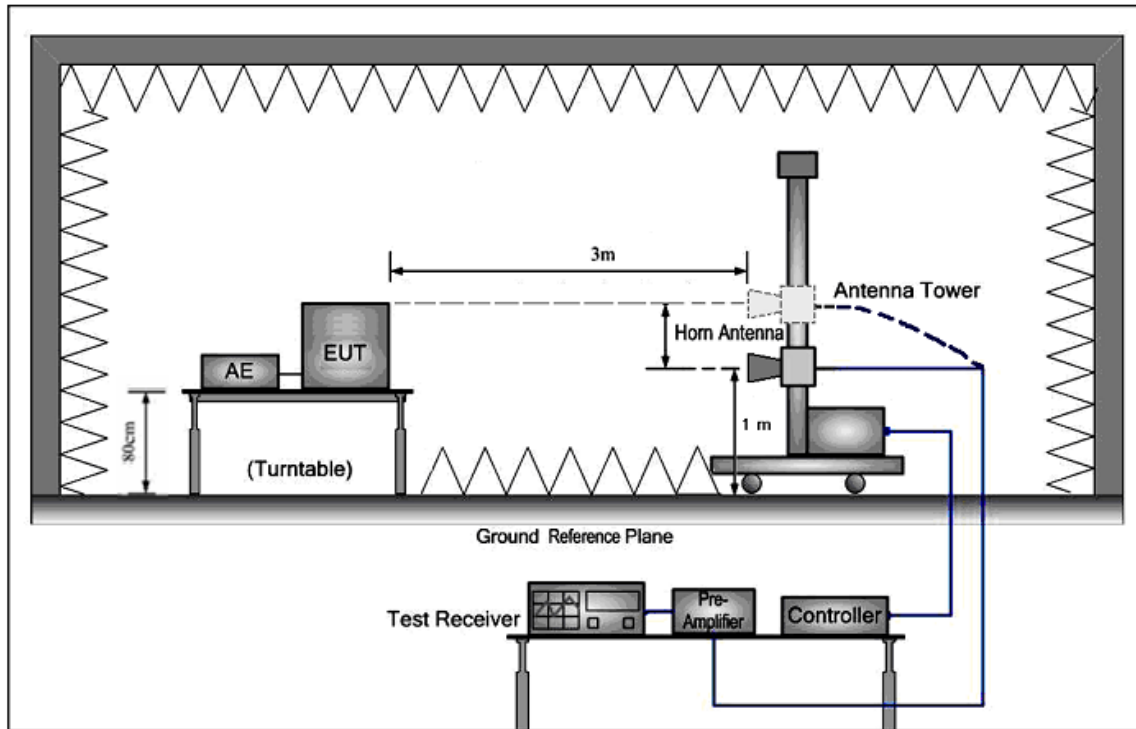
- 1) 9 kHz to 30 MHz emissions:



- 2) 30 MHz to 1 GHz emissions:



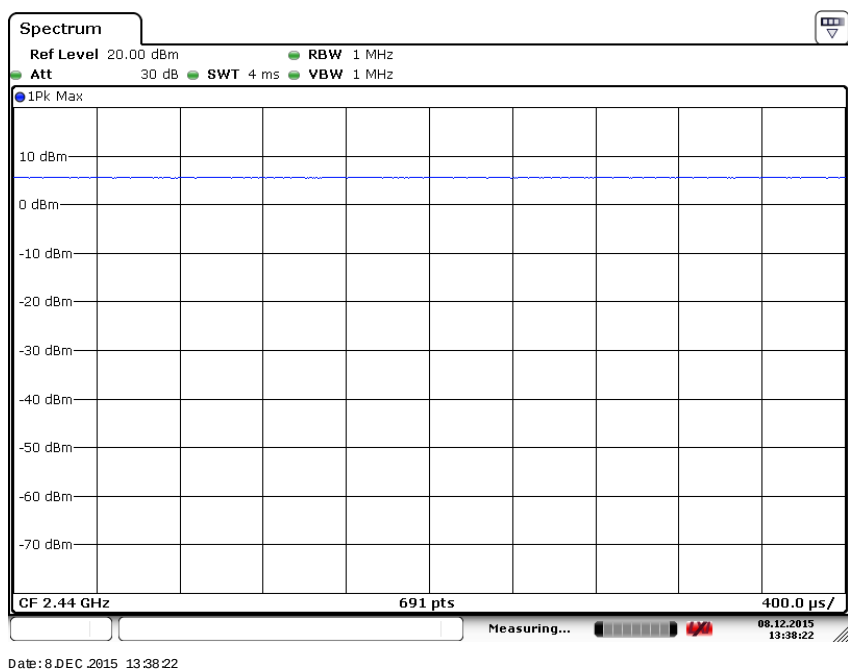
3) 1 GHz to 10 GHz emissions:



The field strength is calculated by adding the Antenna Factor, Cable Loss & Pre-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Loss – Preamplifier Factor

## 7.2.1 Duty cycle measurement:



## 7.2.2 Fundamental field strength measurement:

| Frequency<br>(MHz) | Meter<br>Reading<br>(dBμV) | Factor<br>(dB) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector<br>Type | Antenna<br>polarization |
|--------------------|----------------------------|----------------|-------------------------------|--------------------|----------------|------------------|-------------------------|
| 2409               | 95.68                      | -5.55          | 90.13                         | 114                | -23.87         | Peak             | V                       |
| 2409               | 84.67                      | -5.55          | 79.12                         | 94                 | -14.88         | AVG              | V                       |
| 2409               | 94.38                      | -5.55          | 88.83                         | 114                | -25.17         | Peak             | H                       |
| 2409               | 83                         | -5.55          | 77.45                         | 94                 | -16.55         | AVG              | H                       |
| 2440               | 93.68                      | -5.36          | 88.32                         | 114                | -25.68         | Peak             | V                       |
| 2440               | 83.12                      | -5.36          | 77.76                         | 94                 | -16.24         | AVG              | V                       |
| 2440               | 94.67                      | -5.36          | 89.31                         | 114                | -24.69         | Peak             | H                       |
| 2440               | 84.67                      | -5.36          | 79.31                         | 94                 | -14.69         | AVG              | H                       |
| 2476               | 96.11                      | -5.01          | 91.1                          | 114                | -22.9          | Peak             | V                       |
| 2476               | 85.98                      | -5.01          | 80.97                         | 94                 | -13.03         | AVG              | V                       |
| 2476               | 98.67                      | -5.01          | 93.66                         | 114                | -20.34         | Peak             | H                       |
| 2476               | 87.86                      | -5.01          | 82.85                         | 94                 | -11.15         | AVG              | H                       |

Note: Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss– Pre-amplifier.

### 7.2.3 Radiated Emissions Test Data

#### 9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

#### 30 MHz~1 GHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

|                      |                                                        |                    |                      |
|----------------------|--------------------------------------------------------|--------------------|----------------------|
| EUT:                 | wireless mouse                                         | Model Name :       | M7111                |
| Temperature:         | 25 °C                                                  | Test Data          | 2015-12-03           |
| Pressure:            | 1010 hPa                                               | Relative Humidity: | 60%                  |
| Test Mode :          | TX 2440 mode(worse-case)                               | Test Voltage :     | DC 3.0V from battery |
| Measurement Distance | 3 m                                                    | Frenqucy Range     | 30MHz to 1GHz        |
| RBW/VBW              | 100KHz / 300KHz for spectrum, RBW=120KHz for receiver. |                    |                      |

##### (a) Antenna polarization: Horizontal

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 39.67           | 31.27                | -11.78              | 19.49                  | 40             | -20.51      | QUASI-PEAK    |
| 80.25           | 33.68                | -16.68              | 17                     | 40             | -23         | QUASI-PEAK    |
| 144.64          | 35.85                | -13.17              | 22.68                  | 43.5           | -20.82      | QUASI-PEAK    |
| 240.17          | 34.61                | -11.25              | 23.36                  | 46             | -22.64      | QUASI-PEAK    |
| 460.25          | 32                   | -8.67               | 23.33                  | 46             | -22.67      | QUASI-PEAK    |
| 551.78          | 35.83                | -4.52               | 31.31                  | 46             | -14.69      | QUASI-PEAK    |

##### (b) Antenna polarization: Vertical

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 45.68           | 38.65                | -11.38              | 27.27                  | 40             | -12.73      | QUASI-PEAK    |
| 121.35          | 40                   | -17.66              | 22.34                  | 43.5           | -21.16      | QUASI-PEAK    |
| 277.13          | 34.67                | -11.35              | 23.32                  | 43.5           | -20.18      | QUASI-PEAK    |
| 392.54          | 35.24                | -9.12               | 26.12                  | 46             | -19.88      | QUASI-PEAK    |
| 443.28          | 33.51                | -5.37               | 28.14                  | 46             | -17.86      | QUASI-PEAK    |
| 516.38          | 40.39                | -4.38               | 36.01                  | 46             | -9.99       | QUASI-PEAK    |

Note:

Measurement Level = Reading Level + Factor  
Factor=Ant Factor + Cable Loss– Pre-amplifier.

### Above 1GHz Field Strength of Unwanted Emissions Measurement

|                      |                                                                                            |                    |                      |
|----------------------|--------------------------------------------------------------------------------------------|--------------------|----------------------|
| EUT:                 | wireless mouse                                                                             | Model Name :       | M7111                |
| Temperature:         | 25 °C                                                                                      | Test Data          | 2015-12-03           |
| Pressure:            | 1010 hPa                                                                                   | Relative Humidity: | 60%                  |
| Test Mode :          | TX mode                                                                                    | Test Voltage :     | DC 3.0V from battery |
| Measurement Distance | 3 m                                                                                        | Frenqucy Range     | 1GHz to 25GHz        |
| RBW/VBW              | 1MHz/1MHz for Peak, 1MHz/10Hz for Average.<br>non-restricted band: 100KHz/300KHz for Peak. |                    |                      |

#### (a) Antenna polarization: Horizontal

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 4818            | 55.16                | 5.06                | 60.22                  | 74             | -13.78      | PEAK          |
| 4818            | 44.38                | 5.06                | 49.44                  | 54             | -4.56       | AVERAGE       |
| 7227            | 42.85                | 7.03                | 49.88                  | 74             | -24.12      | PEAK          |
| 7227            | 42.38                | 7.03                | 49.41                  | 54             | -4.59       | AVERAGE       |
| 9636            | 35.17                | 10.63               | 45.8                   | 74             | -28.2       | PEAK          |
| 9636            | 26.97                | 10.63               | 37.6                   | 54             | -16.4       | AVERAGE       |

#### (b) Antenna polarization: Vertical

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 4818            | 54.68                | 5.06                | 59.74                  | 74             | -14.26      | PEAK          |
| 4818            | 43.18                | 5.06                | 48.24                  | 54             | -5.76       | AVERAGE       |
| 7227            | 46.37                | 7.03                | 53.4                   | 74             | -20.6       | PEAK          |
| 7227            | 37.15                | 7.03                | 44.18                  | 54             | -9.82       | AVERAGE       |
| 9636            | 36.55                | 10.63               | 47.18                  | 74             | -26.82      | PEAK          |
| 9636            | 26.97                | 10.63               | 37.6                   | 54             | -16.4       | AVERAGE       |

Note:

**10~25GHz at least have 20dB margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss– Pre-amplifier.

Low Channel: 2409 MHz

(a) Antenna polarization: Horizontal

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 4880            | 55.97                | 5.14                | 61.11                  | 74             | -12.89      | PEAK          |
| 4880            | 45.64                | 5.14                | 50.78                  | 54             | -3.22       | AVERAGE       |
| 7320            | 50.19                | 7.52                | 57.71                  | 74             | -16.29      | PEAK          |
| 7320            | 40.33                | 7.52                | 47.85                  | 54             | -6.15       | AVERAGE       |
| 9760            | 47.69                | 11.36               | 59.05                  | 74             | -14.95      | PEAK          |
| 9760            | 37.14                | 11.36               | 48.5                   | 54             | -5.5        | AVERAGE       |

(b) Antenna polarization: Vertical

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 4880            | 55.97                | 5.14                | 61.11                  | 74             | -12.89      | PEAK          |
| 4880            | 45.72                | 5.14                | 50.86                  | 54             | -3.14       | AVERAGE       |
| 7320            | 52                   | 7.52                | 59.52                  | 74             | -14.48      | PEAK          |
| 7320            | 41.99                | 7.52                | 49.51                  | 54             | -4.49       | AVERAGE       |
| 9760            | 43.37                | 11.36               | 54.73                  | 74             | -19.27      | PEAK          |
| 9760            | 32.87                | 11.36               | 44.23                  | 54             | -9.77       | AVERAGE       |

Note:

**10~25GHz at least have 20dB margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss– Pre-amplifier.

Middle Channel: 2440 MHz

(a) Antenna polarization: Horizontal

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 4952            | 52.67                | 5.22                | 57.89                  | 74             | -16.11      | PEAK          |
| 4952            | 42.22                | 5.22                | 47.44                  | 54             | -6.56       | AVERAGE       |
| 7428            | 51.17                | 8.06                | 59.23                  | 74             | -14.77      | PEAK          |
| 7428            | 41.38                | 8.06                | 49.44                  | 54             | -4.56       | AVERAGE       |
| 9904            | 47.16                | 12.1                | 59.26                  | 74             | -14.74      | PEAK          |
| 9904            | 37.22                | 12.1                | 49.32                  | 54             | -4.68       | AVERAGE       |

(b) Antenna polarization: Vertical

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 4952            | 50.67                | 5.22                | 55.89                  | 74             | -18.11      | PEAK          |
| 4952            | 41.12                | 5.22                | 46.34                  | 54             | -7.66       | AVERAGE       |
| 7428            | 48                   | 8.06                | 56.06                  | 74             | -17.94      | PEAK          |
| 7428            | 37.68                | 8.06                | 45.74                  | 54             | -8.26       | AVERAGE       |
| 9904            | 44.16                | 12.1                | 56.26                  | 74             | -17.74      | PEAK          |
| 9904            | 34.02                | 12.1                | 46.12                  | 54             | -7.88       | AVERAGE       |

Note:

**10~25GHz at least have 20dB margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss– Pre-amplifier.

High Channel: 2476MHz

## 7.2.4 Band Edge Measurement:

| Ant.Pol.<br>H/V | Freq.<br>(MHz) | Reading        |              | Ant/CF<br>CF(dB) | Act              |                | Limit            |                |
|-----------------|----------------|----------------|--------------|------------------|------------------|----------------|------------------|----------------|
|                 |                | Peak<br>(dBuv) | AV<br>(dBuv) |                  | Peak<br>(dBuv/m) | AV<br>(dBuv/m) | Peak<br>(dBuv/m) | AV<br>(dBuv/m) |
| Lowest 2409 MHz |                |                |              |                  |                  |                |                  |                |
| V               | 2400           | 43.15          | 32.97        | -5.72            | 37.43            | 27.25          | 74               | 54             |
| H               | 2400           | 42.33          | 32.17        | -5.72            | 36.61            | 26.45          | 74               | 54             |
| Highest 2476MHz |                |                |              |                  |                  |                |                  |                |
| V               | 2483.5         | 42.98          | 31.05        | -4.98            | 38               | 26.07          | 74               | 54             |
| H               | 2483.5         | 35.74          | 27.11        | -4.98            | 30.76            | 22.13          | 74               | 54             |

Remark:

1). The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Loss – Preamplifier Factor.

**Test result: The unit does meet the FCC requirements.**

## 7.2.5 Restricted Bands Measurement:

|              |                                                                                                                                                                                                                                                                                                            |                    |                      |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|
| EUT:         | wireless mouse                                                                                                                                                                                                                                                                                             | Model Name :       | M7111                |
| Temperature: | 25 °C                                                                                                                                                                                                                                                                                                      | Test Data          | 2015-12-03           |
| Pressure:    | 1010 hPa                                                                                                                                                                                                                                                                                                   | Relative Humidity: | 60%                  |
| Test Mode :  | TX mode                                                                                                                                                                                                                                                                                                    | Test Voltage :     | DC 3.0V from battery |
| Note:        | 1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz.<br>2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz.<br>3. The data of 2390MHz and 2483.5MHz was the worst. |                    |                      |

| Ant.Pol.<br>H/V | Freq.<br>(MHz) | Reading        |              | Ant/CF<br>CF(dB) | Act              |                | Limit            |                |
|-----------------|----------------|----------------|--------------|------------------|------------------|----------------|------------------|----------------|
|                 |                | Peak<br>(dBuv) | AV<br>(dBuv) |                  | Peak<br>(dBuv/m) | AV<br>(dBuv/m) | Peak<br>(dBuv/m) | AV<br>(dBuv/m) |
| V               | 2390           | 40.17          | 30.87        | -5.79            | 34.38            | 25.08          | 74               | 54             |
| H               | 2390           | 39.68          | 29.78        | -5.79            | 33.89            | 23.99          | 74               | 54             |
| V               | 2483.5         | 40.52          | 30.65        | -4.98            | 35.54            | 25.67          | 74               | 54             |
| H               | 2483.5         | 40.22          | 30.11        | -4.98            | 35.24            | 25.13          | 74               | 54             |

### Remark:

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode.
- (2) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (3) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

## 7.3 Occupied Bandwidth

Test Requirement: FCC Part 15 C section 15.215

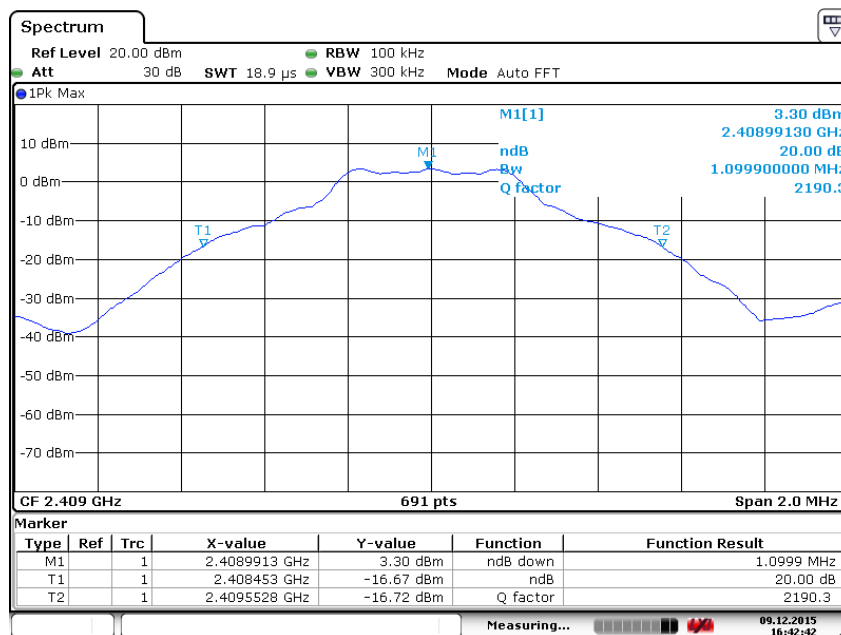
(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific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

Test Method: ANSI C63.10: Clause 6.9.1

Operation within the band 2409 MHz to 2476 MHz

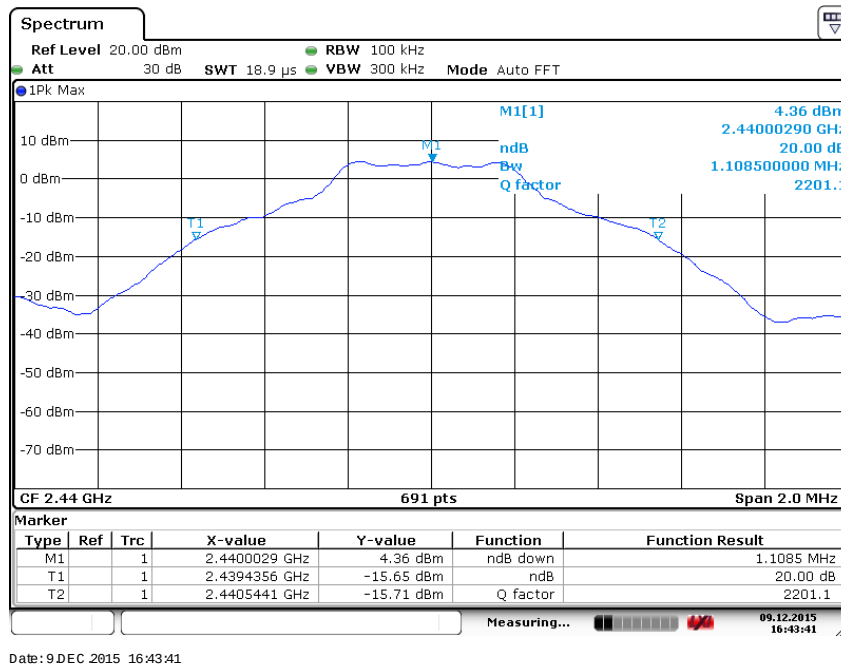
Method of measurement: A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken.

### Test in the frequency 2409 MHz (20 dB bandwidth)

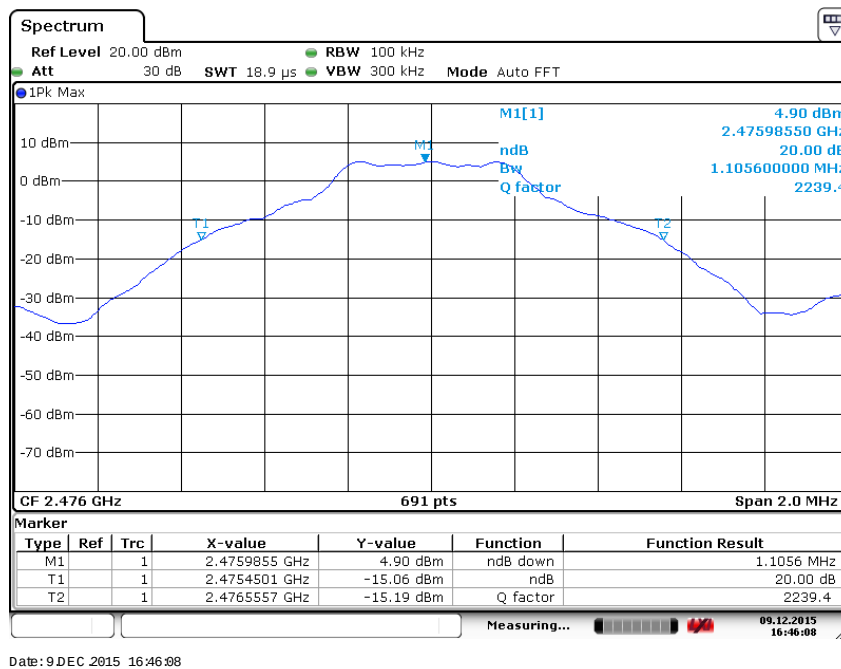


Date: 9 DEC 2015 16:42:42

### Test in the frequency 2440 MHz (20 dB bandwidth)



### Test in the frequency 2476MHz (20 dB bandwidth)



## 7.4 Conducted Emissions at Mains Terminals 150 kHz to 30 MHz

|                          |                                                |
|--------------------------|------------------------------------------------|
| <b>Test Requirement:</b> | FCC Part 15 C section 15.207                   |
| <b>Test Method:</b>      | ANSI C63.10: Clause 6.2                        |
| <b>Frequency Range:</b>  | 150 kHz to 30 MHz                              |
| <b>Detector:</b>         | Peak for pre-scan (9 kHz Resolution Bandwidth) |
| <b>Test Result</b>       | N/A (Please see the remark as below)           |

Remark: Because the EUT employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Measurements to demonstrate compliance with the conducted limits are not required for devices.

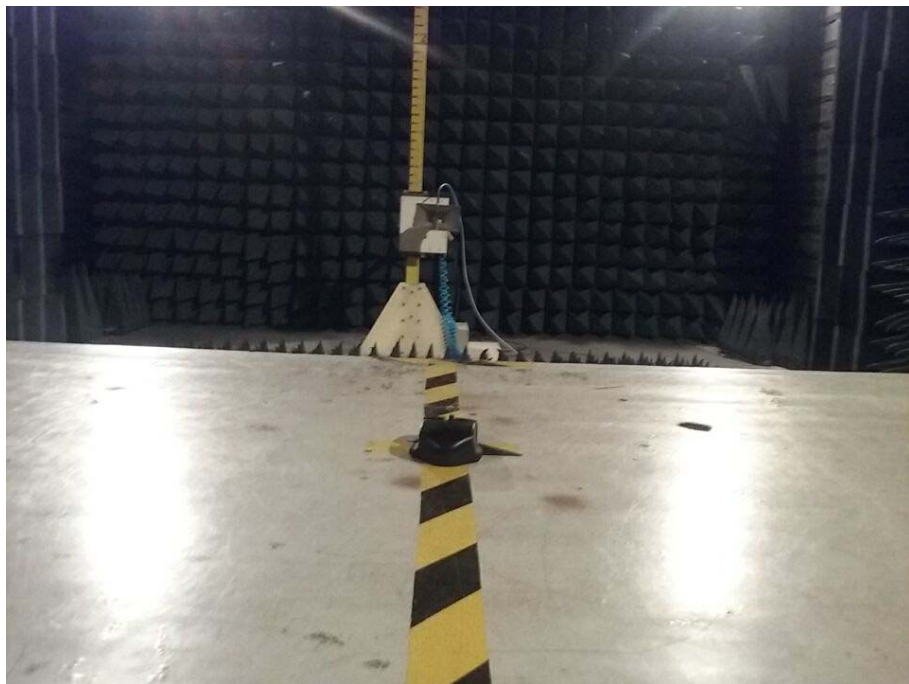
## 8 Photographs

### 8.1 Radiated Emission Test Setup

Below 1G



Above 1G

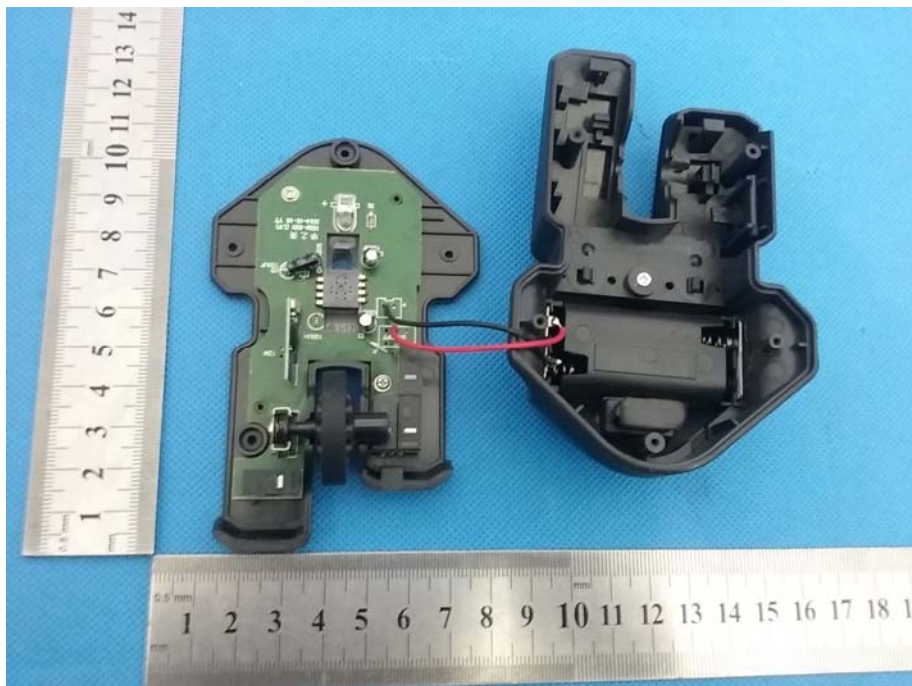


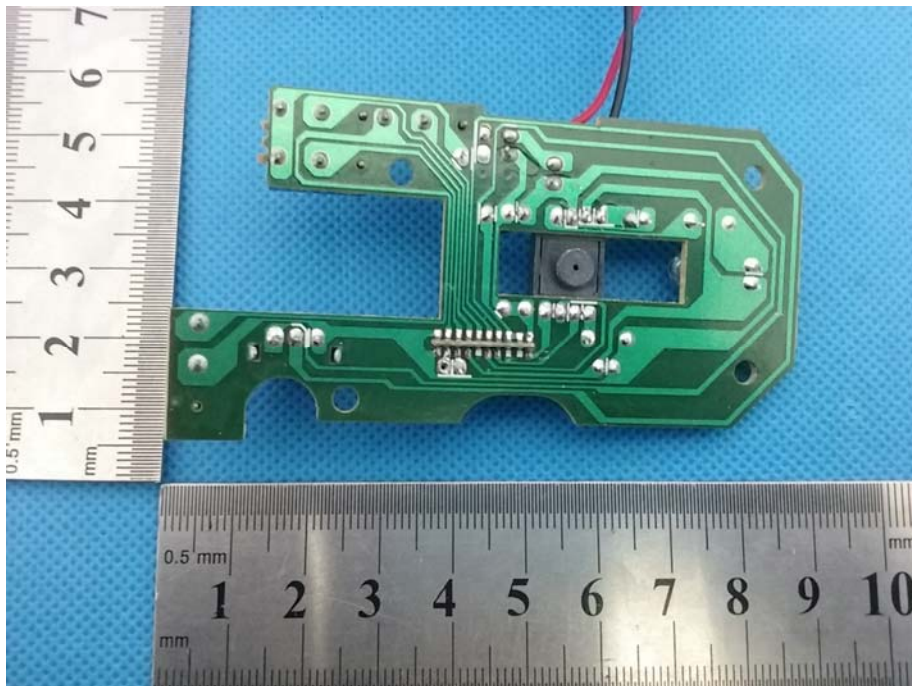
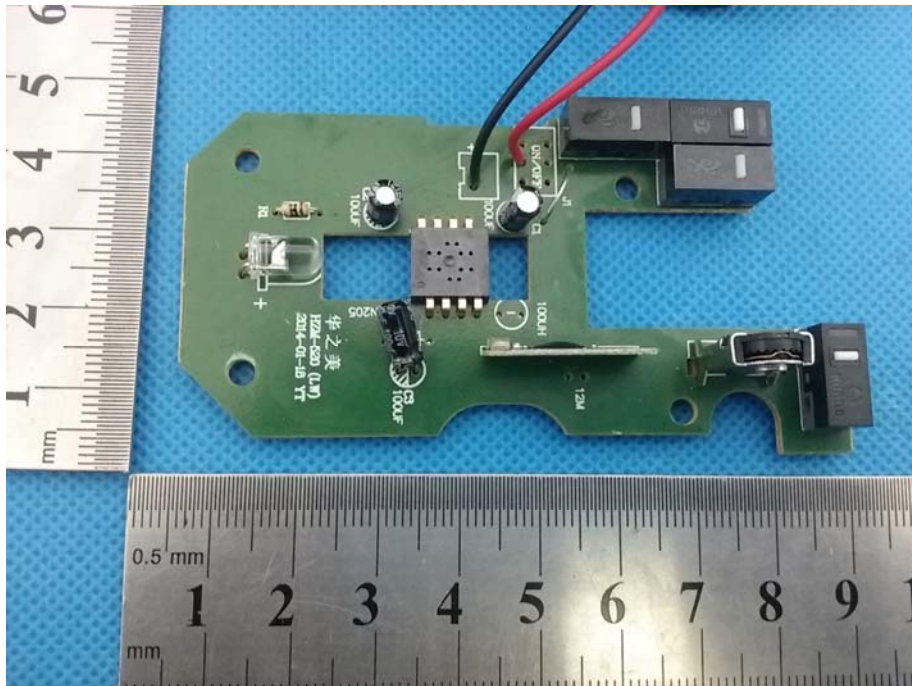
## 9 EUT Constructional Details

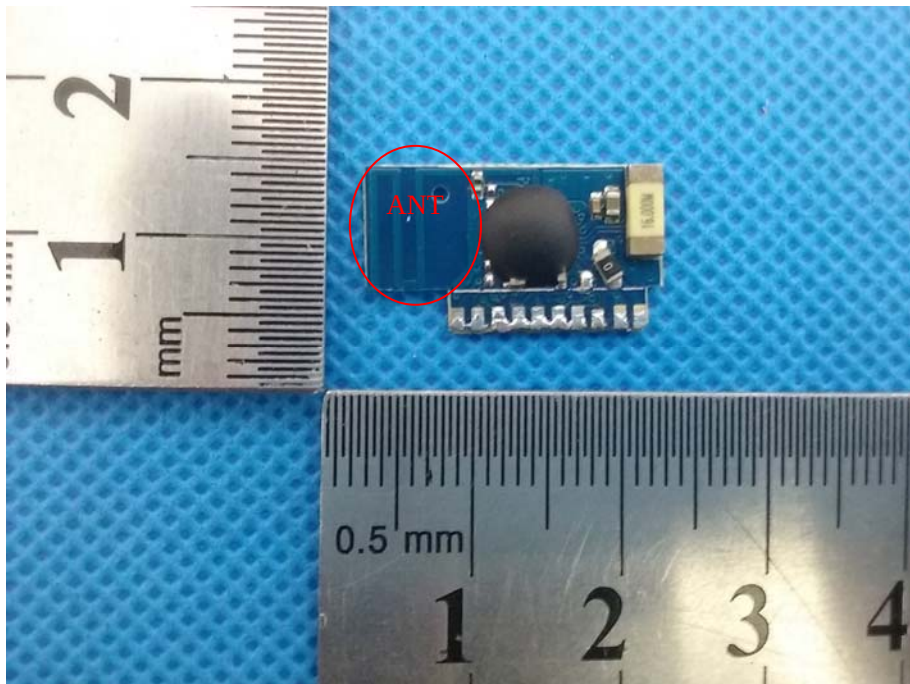
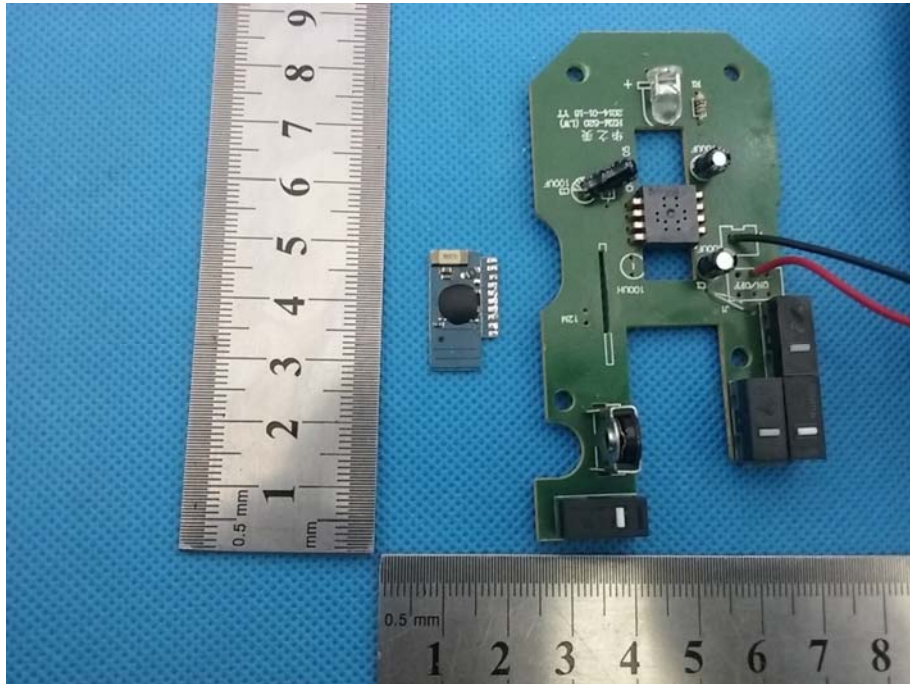


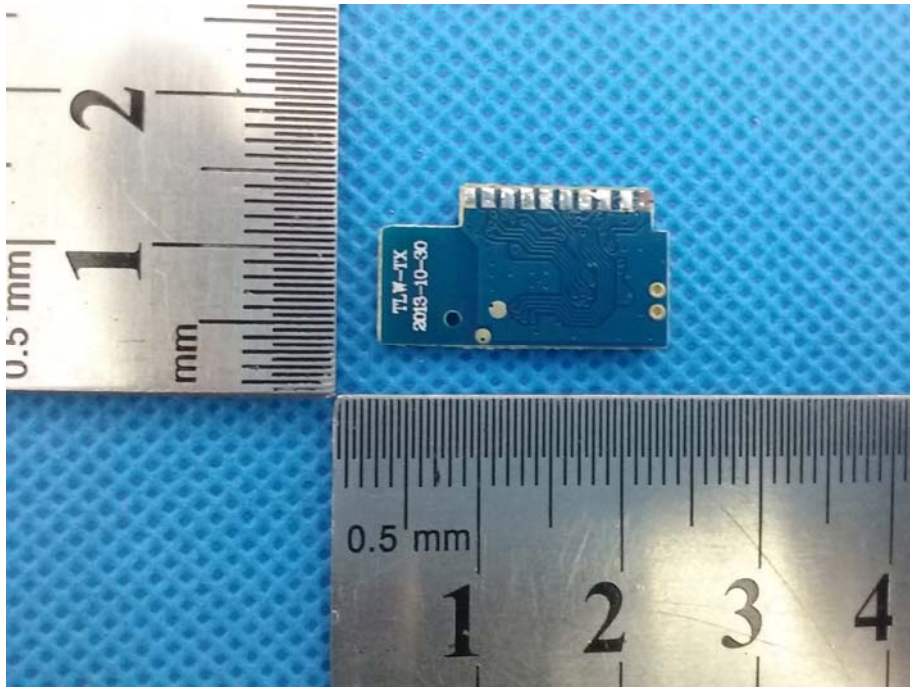












**\*\*End of report\*\***