

FCC CERTIFICATION  
On Behalf of  
Gajah International (HK) Co., Ltd.

RF Mouse  
Model No.: PAC168, PAC169

**FCC ID: UFKPAC168**

Prepared for : Gajah International (HK) Co., Ltd.  
Address : 9A, Block Yinxing, Huamaoxin Garden, 7001 Hongli West  
Road, Futian District, Shenzhen, Guangdong, P.R. China

Prepared by : ACCURATE TECHNOLOGY CO. LTD  
Address : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.  
Science & Industry Park, Nanshan, Shenzhen, Guangdong  
P.R. China

Tel: (0755) 26503290  
Fax: (0755) 26503396

Report Number : ATE20061337  
Date of Test : July 20, 2006  
Date of Report : July 24, 2006

# **TABLE OF CONTENTS**

| Description                                                                     | Page      |
|---------------------------------------------------------------------------------|-----------|
| Test Report Certification                                                       |           |
| <b>1. GENERAL INFORMATION .....</b>                                             | <b>4</b>  |
| 1.1. ....                                                                       | 4         |
| 1.2. Description of Test Facility .....                                         | 4         |
| 1.3. Measurement Uncertainty .....                                              | 4         |
| <b>2. MEASURING DEVICE AND TEST EQUIPMENT .....</b>                             | <b>5</b>  |
| <b>3. RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(B).....</b>              | <b>6</b>  |
| 3.1. Block Diagram of Test Setup.....                                           | 6         |
| 3.2. The Field Strength of Radiation Emission Measurement Limits.....           | 6         |
| 3.3. Configuration of EUT on Measurement .....                                  | 7         |
| 3.4. Operating Condition of EUT .....                                           | 7         |
| 3.5. Test Procedure .....                                                       | 7         |
| 3.6. The Field Strength of Radiation Emission Measurement Results .....         | 8         |
| <b>4. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(A) .....</b> | <b>9</b>  |
| 4.1. Block Diagram of Test Setup.....                                           | 9         |
| 4.2. The Emission Limit For Section 15.227(a) .....                             | 9         |
| 4.3. EUT Configuration on Measurement .....                                     | 10        |
| 4.4. Operating Condition of EUT .....                                           | 10        |
| 4.5. Test Procedure .....                                                       | 10        |
| 4.6. The Emission Measurement Result .....                                      | 11        |
| <b>5. BAND EDGES .....</b>                                                      | <b>12</b> |
| 5.1. The Requirement .....                                                      | 12        |
| 5.2. EUT Configuration on Measurement .....                                     | 12        |
| 5.3. Operating Condition of EUT .....                                           | 12        |
| 5.4. Test Procedure .....                                                       | 12        |
| 5.5. The Measurement Result .....                                               | 13        |
| APPENDIX I ( TEST CURVES) (3pages)                                              |           |

## Test Report Certification

Applicant : Gajah International (HK) Co., Ltd.  
 Manufacturer : Shenzhen Oliti Computer Technology Co., Ltd.  
 EUT Description : RF Mouse  
     (A) MODEL NO.: PAC168, PAC169  
     (B) SERIAL NO.: N/A  
     (C) POWER SUPPLY: 3.0V DC ("AAA" batteries 2×)

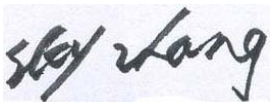
### Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.227: 2004 & ANSI C63.4: 2003

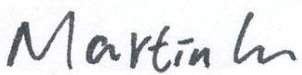
The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.227 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : July 20, 2006

Prepared by :   
 (Engineer)

Reviewer :   
 (Quality Manager)

Approved & Authorized Signer :   
 (Manager)

# 1. GENERAL INFORMATION

## Description of Device (EUT)

### 1.1.

|                         |   |                                                                                                                            |
|-------------------------|---|----------------------------------------------------------------------------------------------------------------------------|
| EUT                     | : | RF Mouse                                                                                                                   |
| Model Number            | : | PAC168, PAC169 (Note: The samples are same except the appearance Color are different, So we prepare PAC168 for test only.) |
| Power Supply            | : | 3.0V DC ("AAA" batteries 1 ×)                                                                                              |
| Applicant               | : | Gajah International (HK) Co., Ltd.                                                                                         |
| Address                 | : | 9A, Block Yinxing, Huamaoxin Garden, 7001 Hongli West Road, Futian District, Shenzhen, Guangdong, P.R. China               |
| Manufacturer            | : | Shenzhen Oliti Computer Technology Co., Ltd.                                                                               |
| Address                 | : | Fuqiao 1 <sup>st</sup> Industrial Zone, Qiaotou Village, Fuyong Town, Shenzhen, Guangdong, P.R. China                      |
| Date of sample received | : | July 18, 2006                                                                                                              |
| Date of Test            | : | July 20, 2006                                                                                                              |

### 1.2. Description of Test Facility

|               |   |                                                                                                                                                                                                                                         |
|---------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EMC Lab       | : | Accredited by TUV Rheinland Shenzhen, May 10, 2004<br>Accredited by FCC, May 10, 2004<br>The Certificate Registration Number is 253065<br>Accredited by Industry Canada, May 18, 2004<br>The Certificate Registration Number is IC 5077 |
| Name of Firm  | : | ACCURATE TECHNOLOGY CO. LTD                                                                                                                                                                                                             |
| Site Location | : | F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China                                                                                                                   |

### 1.3. Measurement Uncertainty

|                                         |   |             |
|-----------------------------------------|---|-------------|
| Conducted emission expanded uncertainty | = | 2.23dB, k=2 |
| Radiated emission expanded uncertainty  | = | 4.12dB, k=2 |

## 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment**

| Kind of equipment | Manufacturer  | Type     | S/N        | Calibrated until |
|-------------------|---------------|----------|------------|------------------|
| EMI Test Receiver | Rohde&Schwarz | ESCS30   | 100307     | 03.31.2007       |
| EMI Test Receiver | Rohde&Schwarz | ESI26    | 838786/013 | 01.02.2007       |
| Loop Antenna      | Schwarzbeck   | FMZB1516 | 113        | 01.02.2007       |
| Bilog Antenna     | Schwarzbeck   | VULB9163 | 9163-194   | 03.31.2007       |
| Bilog Antenna     | Chase         | CBL6112B | 2591       | 03.31.2007       |
| Horn Antenna      | Rohde&Schwarz | HF906    | 100013     | 01.02.2007       |
| Spectrum Analyzer | Anritsu       | MS2651B  | 6200238856 | 03.31.2007       |
| Pre-Amplifier     | Agilent       | 8447D    | 2944A10619 | 03.31.2007       |
| L.I.S.N.          | Rohde&Schwarz | ESH3-Z5  | 100305     | 12.16.2006       |
| L.I.S.N.          | Rohde&Schwarz | ESH3-Z5  | 100310     | 12.16.2006       |

### 3. RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(B)

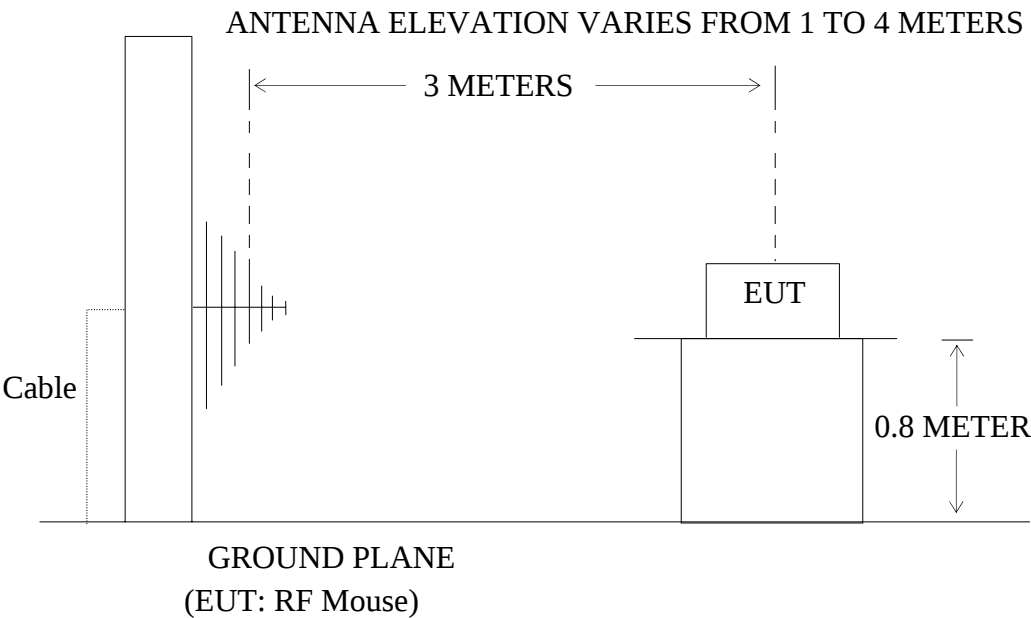
#### 3.1. Block Diagram of Test Setup

##### 3.1.1. Block diagram of connection between the EUT and simulators



(EUT: RF Mouse)

##### 3.1.2. Anechoic Chamber Test Setup Diagram



#### 3.2. The Field Strength of Radiation Emission Measurement Limits

3.2.1. The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209

Radiation Emission Measurement Limits According to Section 15.209(a)

| Frequency<br>(MHz) | Limit,                                                  |                                                   | The final measurement<br>in band 9-90kHz,<br>110-490kHz and<br>above 1000MHz is<br>performed with<br>Average detector.<br>Except those |
|--------------------|---------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
|                    | Field Strength of<br>Quasi-peak Value<br>(microvolts/m) | Field Strength of<br>Quasi-peak Value<br>(dBμV/m) |                                                                                                                                        |
| 30 - 88            | 100                                                     | 40                                                |                                                                                                                                        |
| 88 - 216           | 150                                                     | 43.5                                              |                                                                                                                                        |

|           |     |    |                                                                                                                           |
|-----------|-----|----|---------------------------------------------------------------------------------------------------------------------------|
| 216 - 960 | 200 | 46 | frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector. |
| Above 960 | 500 | 54 |                                                                                                                           |

### 3.3.Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 3.3.1. RF Mouse (EUT)

Model Number : PAC168  
 Serial Number : N/A  
 Manufacturer : Shenzhen Oliti Computer Technology Co., Ltd.

### 3.4.Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in TX modes(on) measure it.

### 3.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to FCC Part 15 Subpart C on radiated emission measurement.

The bandwidth of test receiver (R&S ESCS30) is set at 120KHz in 30-1000MHz.  
 The frequency range from 30MHz to 1000MHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

### 3.6.The Field Strength of Radiation Emission Measurement Results

#### **PASS.**

The frequency range 30MHz to 1000MHz is investigated.

|               |                      |                |                                  |
|---------------|----------------------|----------------|----------------------------------|
| Date of Test: | <u>July 20, 2005</u> | Temperature:   | <u>22°C</u>                      |
| EUT:          | <u>RF Mouse</u>      | Humidity:      | <u>50%</u>                       |
| Model No.:    | <u>PAC168</u>        | Power Supply:  | <u>3.0V DC ("AAA"battery 2×)</u> |
| Test Mode:    | <u>TX</u>            | Test Engineer: | <u>Andy</u>                      |

| Polarization | Frequency (MHz) | Reading(dBμV/m)<br>QP | Factor<br>Corr.( dB) | Result(dBμV/m)<br>QP | Limits(dBμV/m)<br>QP | Margin(dBμV/m)<br>QP |
|--------------|-----------------|-----------------------|----------------------|----------------------|----------------------|----------------------|
| Horizontal   | 234.670         | 16.5                  | 9.7                  | 26.2                 | 46                   | 19.8                 |
| Horizontal   | 268.620         | 16.6                  | 10.8                 | 27.4                 | 46                   | 18.6                 |
| Horizontal   | 363.680         | 16.5                  | 14.1                 | 30.6                 | 46                   | 15.4                 |
| Horizontal   | 384.050         | 16.2                  | 14.6                 | 30.8                 | 46                   | 15.2                 |
| Horizontal   | 391.810         | 15.0                  | 14.8                 | 29.8                 | 46                   | 16.2                 |
| Horizontal   | 402.480         | 14.7                  | 15.0                 | 29.7                 | 46                   | 16.3                 |
| Vertical     | 393.750         | 15.9                  | 14.8                 | 30.7                 | 46                   | 15.3                 |
| Vertical     | 402.480         | 16.3                  | 15.0                 | 31.3                 | 46                   | 14.7                 |
| Vertical     | 413.150         | 16.6                  | 15.5                 | 32.1                 | 46                   | 13.9                 |
| Vertical     | 428.670         | 15.2                  | 15.9                 | 31.1                 | 46                   | 14.9                 |
| Vertical     | 438.370         | 15.4                  | 16.2                 | 31.6                 | 46                   | 14.4                 |
| Vertical     | 447.100         | 14.2                  | 16.4                 | 30.6                 | 46                   | 15.4                 |

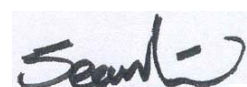
The spectral diagrams in appendix 1 display the measurement of un-weighted peak values.

The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

Reviewer :

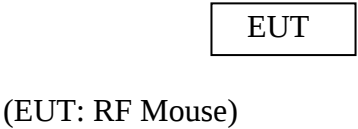


## 4. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15

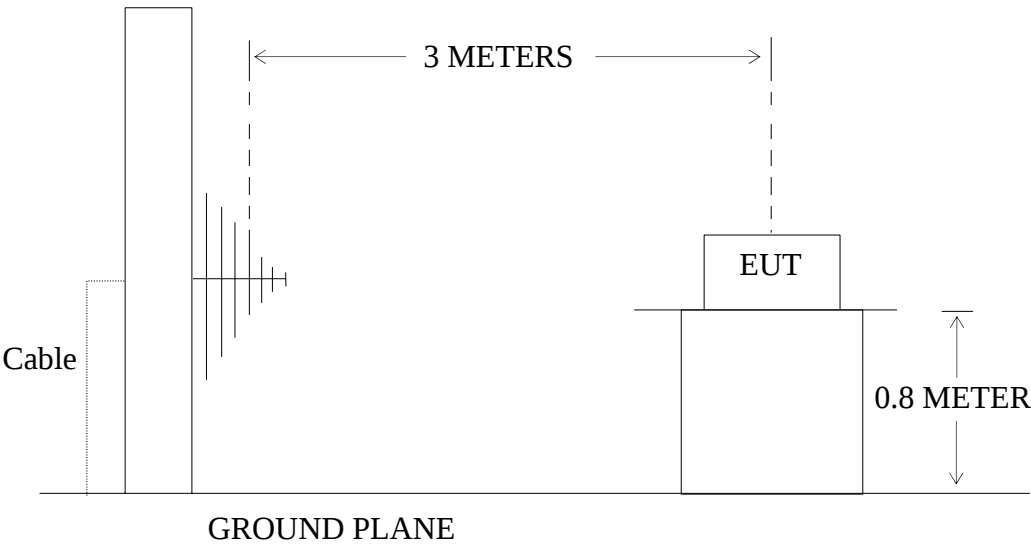
### SECTION 15.227(A)

#### 4.1. Block Diagram of Test Setup

##### 4.1.1. Block diagram of connection between the EUT and simulators



##### 4.1.2. Anechoic Chamber Test Setup Diagram



(EUT: RF Mouse)

#### 4.2. The Emission Limit For Section 15.227(a)

4.2.1 The field strength of any emission within this band shall not exceed 10,000microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emission apply.

### 4.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 4.3.1. RF Mouse (EUT)

Model Number : PAC168  
Serial Number : N/A  
Manufacturer : Shenzhen Oliti Computer Technology Co., Ltd.

### 4.4.Operating Condition of EUT

4.4.1.Setup the EUT and simulator as shown as Section 4.1.

4.4.2.Turn on the power of all equipment.

4.4.3.Let the EUT work in TX mode (On) measure it.

### 4.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. calibrated Loop antenna is used as receiving antenna. In order to find the maximum emission levels, all of the interface cables must be manipulated according to FCC Part 15 on radiated emission measurement.

The bandwidth of test receiver (R&S ESCS30) is set at 9KHz in 9kHz-30MHz

## 4.6.The Emission Measurement Result

**PASS.**

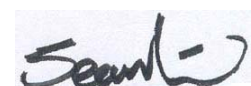
|               |               |                |                           |
|---------------|---------------|----------------|---------------------------|
| Date of Test: | July 20, 2005 | Temperature:   | 22°C                      |
| EUT:          | RF Mouse      | Humidity:      | 50%                       |
| Model No.:    | PAC168        | Power Supply:  | 3.0V DC ("AAA"battery 2×) |
| Test Mode:    | TX            | Test Engineer: | Andy                      |

### Fundamental Radiated Emissions

| Test conditions                                                                                |      | Fundamental Frequency   |                           |
|------------------------------------------------------------------------------------------------|------|-------------------------|---------------------------|
|                                                                                                |      | 27.045MHz               |                           |
| T <sub>nom</sub> (20°C)                                                                        | Unit | (dBμV/m)/( μ V/m)<br>AV | (dBμV/m)/( μ V/m)<br>PEAK |
|                                                                                                |      | 50.7/343                | 53.5/473                  |
| limit                                                                                          |      | 80/10,000               | 100/100,000               |
| Note: Measurement was performed with modulated signal with average detector and peak detector. |      |                         |                           |

The spectral diagrams in appendix 1.

Reviewer :



## 5. BAND EDGES

### 5.1.The Requirement

5.1.1. The wanted emission within the band 26.96-27.28MHz.

### 5.2.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 5.2.1.RF Mouse (EUT)

|               |   |                                              |
|---------------|---|----------------------------------------------|
| Model Number  | : | PAC168                                       |
| Serial Number | : | N/A                                          |
| Manufacturer  | : | Shenzhen Oliti Computer Technology Co., Ltd. |

### 5.3.Operating Condition of EUT

5.3.1.Setup the EUT and simulator as shown as Section 4.1.

5.3.2.Turn on the power of all equipment.

5.3.3.Let the EUT work in TX mode (On) measure it.

### 5.4.Test Procedure

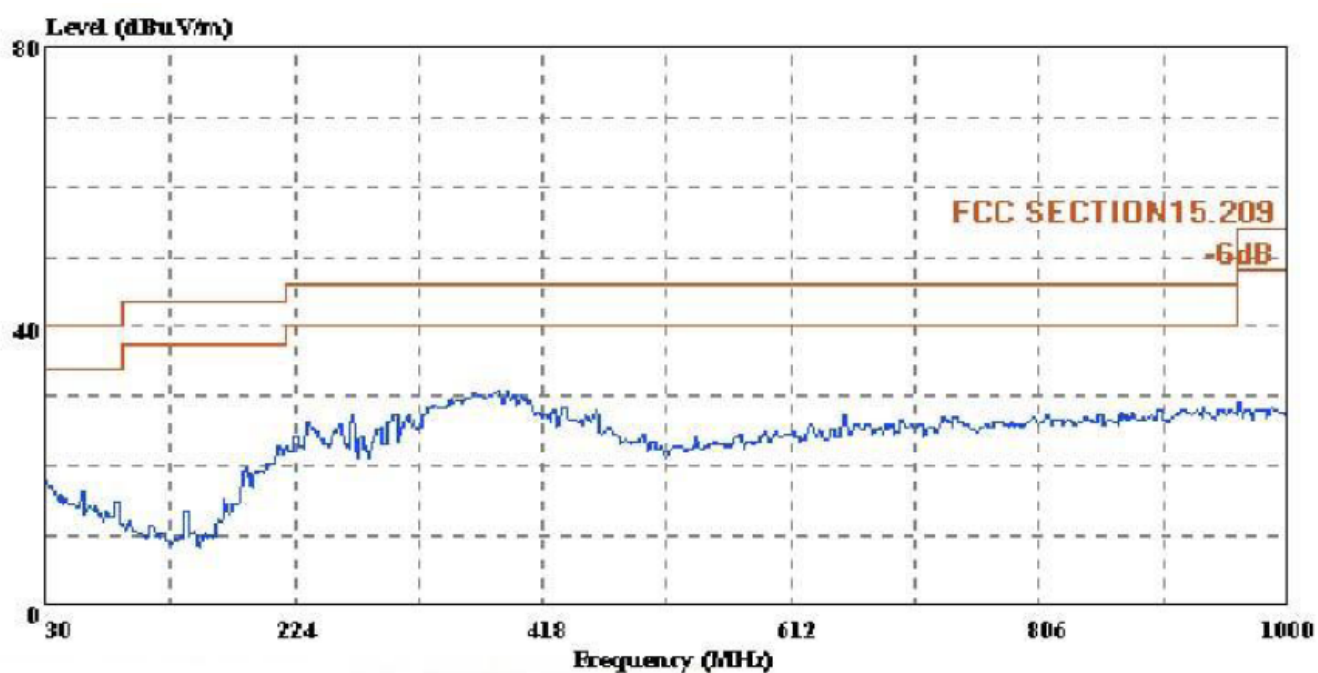
The transmitter output was fed into the spectrum analyzer and photo was taken. The vertical scale is set to 10dB per division; the horizontal scale is set to 32kHz per division. Star frequency are 26.96MHz, stop frequency are 27.28MHz .  
RBW are 3kHz, VBW are 3kHz, Sweep time are 50ms.

## 5.5.The Measurement Result

**The EUT does meet the FCC requirement.**

The spectral diagrams in appendix 1.

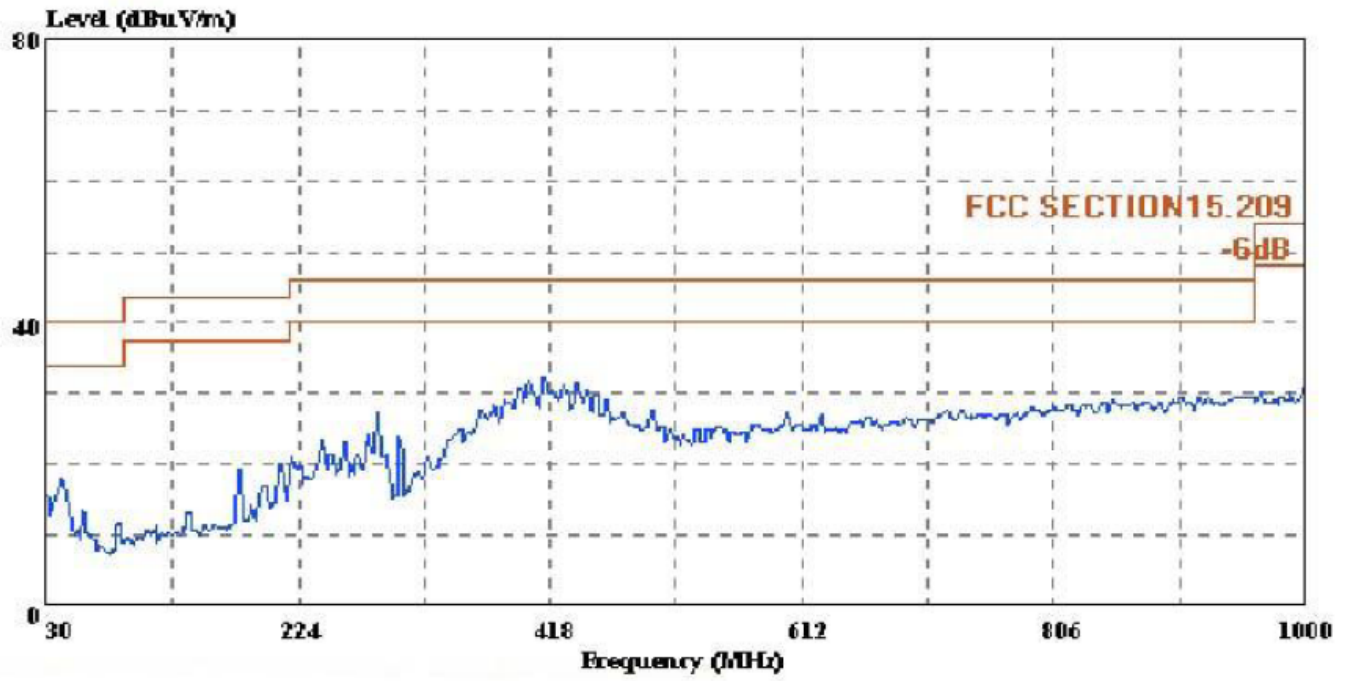
# APPENDIX I (Test Curves)



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC VULB9163 (NEW) HORIZONTAL  
 eut : RF MOUSE M/N: PAC168  
 power : DC 3.0V  
 memo : TX  
 manuf : Gajah International  
 sample no.: 061996



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC VULB9163 (NEW) VERTICAL  
eut : RF MOUSE M/N: PAC168  
power : DC 3.0V  
memo : TX  
manuf : Gajah International  
sample no.: 061996

