

FCC CERTIFICATION  
On Behalf of  
Verbatim

Wireless Laser Desktop Mouse 2.4GHz  
Model No.: 96150

FCC ID: TL4096150

Prepared for : Verbatim  
Address : 1200 West W.T. Harris Blvd. Charlotte, North Carolina  
28262, USA  
Prepared by : ACCURATE TECHNOLOGY CO. LTD  
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Report Number : ATE20062722  
Date of Test : December 22, 2006  
Date of Report : December 25, 2006

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## Test Report Certification

Applicant : Verbatim  
 Manufacturer : Verbatim  
 EUT Description : Wireless Laser Desktop Mouse 2.4GHz  
 (A) MODEL NO.: 96150  
 (B) SERIAL NO.: N/A  
 (C) POWER SUPPLY: 2.4V DC ("AAA" battery Type×2)

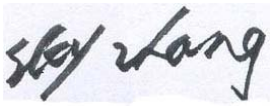
Measurement Procedure Used:

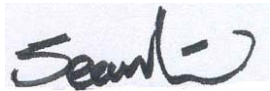
FCC Rules and Regulations Part 15 Subpart C Section 15.249 & ANSI C63.4: 2003

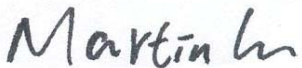
The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.249, Section 15.209, Section 15.207 limits. The measurement results are contained in 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 : December 22, 2006

Prepared by :   
 (Engineer)

Reviewer :   
 (Quality Manager)

Approved & Authorized Signer :   
 (Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT : Wireless Laser Desktop Mouse 2.4GHz  
 Model Number : 96150  
 Power Supply : DC2.4V("AAA" battery Type×2)  
 Operate Frequency : 2469MHz  
 Channel Number : 1  
 Applicant : Verbatim  
 Address : 1200 West W.T. Harris Blvd. Charlotte, North Carolina  
 28262, USA  
 Manufacturer : Verbatim  
 Address : 1200 West W.T. Harris Blvd. Charlotte, North Carolina  
 28262, USA  
 Date of sample received : December 06, 2006  
 Date of Test : December 22, 2006

### 1.2. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen, May 10, 2004  
 Accredited by FCC, May 10, 2004  
 The Certificate Registration Number is 253065  
 Accredited by Industry Canada, May 18, 2004  
 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**

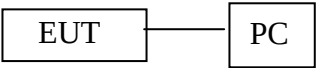
| Kind of equipment | Manufacturer  | Type     | S/N        | Calibrated until |
|-------------------|---------------|----------|------------|------------------|
| EMI Test Receiver | Rohde&Schwarz | ESCS30   | 100307     | 03.31.2007       |
| EMI Test Receiver | Rohde&Schwarz | ESI26    | 838786/013 | 01.28.2007       |
| Loop Antenna      | Schwarzbeck   | FMZB1516 | 113        | 01.28.2007       |
| Bilog Antenna     | Schwarzbeck   | VULB9163 | 9163-194   | 03.31.2007       |
| Bilog Antenna     | Chase         | CBL6112B | 2591       | 01.28.2007       |
| Horn Antenna      | Rohde&Schwarz | HF906    | 100013     | 01.28.2007       |
| 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     | 03.31.2007       |
| L.I.S.N.          | Rohde&Schwarz | ESH3-Z5  | 100310     | 03.31.2007       |

### 3. CONDUCTED EMISSION FOR FCC PART 15 SECTION

#### 15.107(A)

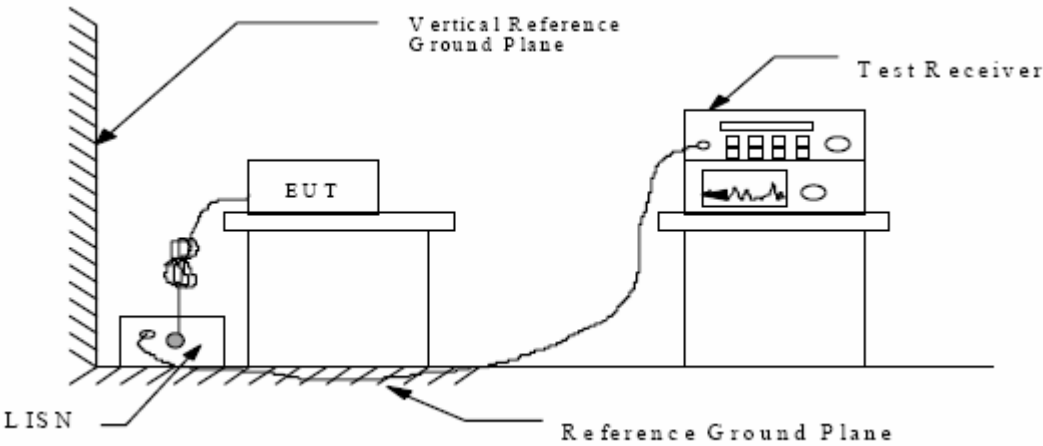
##### 3.1. Block Diagram of Test Setup

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



(EUT: Wireless Laser Desktop Mouse 2.4GHz)

###### 3.1.2. Shielding Room Test Setup Diagram



(EUT: Wireless Laser Desktop Mouse 2.4GHz)

##### 3.2. The Emission Limit For Section 15.107(a)

###### 3.2.1 Radiation Emission Measurement Limits According to Section 15.107(a)

| Frequency<br>(MHz) | Conducted Limit (dBμV) |           |
|--------------------|------------------------|-----------|
|                    | Quasi-peak             | Average   |
| 0.15 – 0.5         | 66 to 56*              | 56 to 46* |
| 0.5 - 5            | 56                     | 46        |
| 5 - 30             | 60                     | 50        |

\* Decreases with the logarithm of the frequency.

### 3.3.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.

#### 3.3.1. Wireless Laser Desktop Mouse 2.4GHz (EUT)

Model Number : 96150  
Serial Number : N/A  
Manufacturer : Verbatim

### 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 Charging modes (use USB cable connect to PC) measure it.

### 3.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2003 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

All the scanning waveforms are attached in Appendix I.

### 3.6. Power Line Conducted Emission Measurement Results

**PASS.**

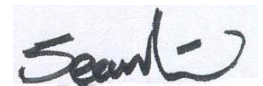
The frequency range from 150kHz to 30MHz is checked.

|               |                                     |                |                                   |
|---------------|-------------------------------------|----------------|-----------------------------------|
| Date of Test: | <u>December 22, 2006</u>            | Temperature:   | <u>24°C</u>                       |
| EUT:          | <u>Wireless Laser Desktop Mouse</u> | Humidity:      | <u>54%</u>                        |
|               | <u>2.4GHz</u>                       |                | <u>DC 5V power by PC usb port</u> |
| Model No.:    | <u>96150</u>                        | Power Supply:  | <u>PC power: AC120V/60Hz</u>      |
| Test Mode:    | <u>Connect to PC to Charging</u>    | Test Engineer: | <u>Andy</u>                       |

| Test Line | Frequency<br>MHz | Emission Level(dBμV) |      | Limits(dBμV) |      | Margin(dBμV) |      |
|-----------|------------------|----------------------|------|--------------|------|--------------|------|
|           |                  | QP                   | AV   | QP           | AV   | QP           | AV   |
| Va        | 0.190            | 40.3                 | 39.0 | 64.0         | 54.0 | 23.7         | 15.0 |
| Va        | 0.465            | 37.9                 | 37.7 | 56.6         | 46.6 | 18.7         | 8.9  |
| Va        | 21.550           | 32.1                 | 30.8 | 60.0         | 50.0 | 27.9         | 19.2 |
| Vb        | 0.460            | 38.4                 | 38.2 | 56.7         | 46.7 | 18.3         | 8.5  |
| Vb        | 2.180            | 37.5                 | 37.3 | 56.0         | 46.0 | 18.5         | 8.7  |
| Vb        | 2.650            | 36.5                 | 36.4 | 56.0         | 46.0 | 19.5         | 9.6  |

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

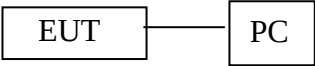
Reviewer :



# 4. RADIATED EMISSION FOR FCC PART 15 SECTION 15.109(A)

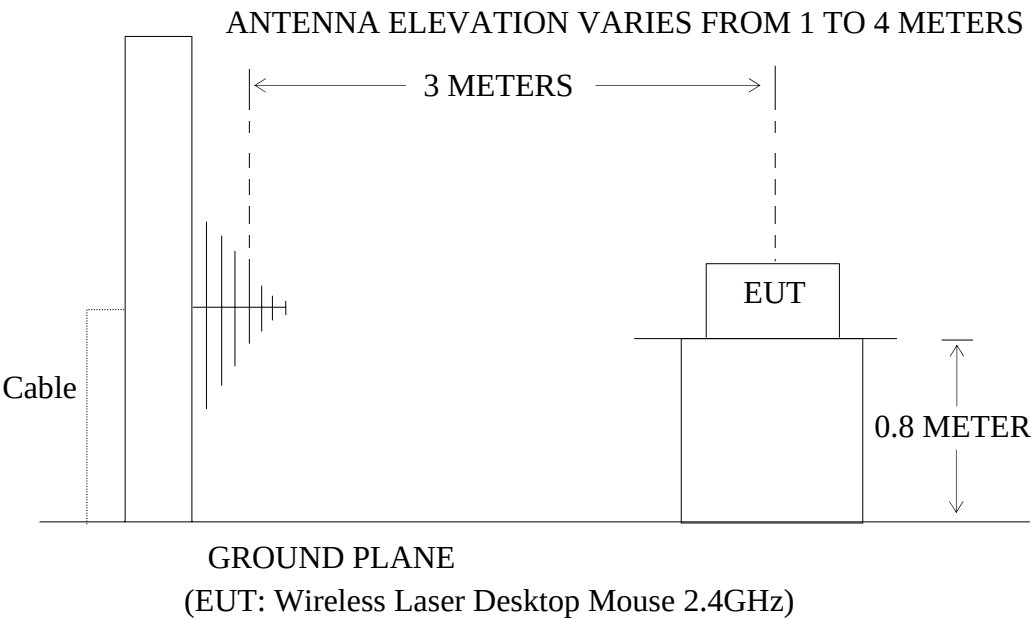
## 4.1. Block Diagram of Test Setup

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



(EUT: Wireless Laser Desktop Mouse 2.4GHz)

### 4.1.2. Anechoic Chamber Test Setup Diagram



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

### 4.2.1. Radiation Emission Measurement Limits According to Section 15.109(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<br>frequency bands<br>mention above, the |
|--------------------|---------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | 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                                                |                                                                                                                                                                                 |

|           |     |    |                                                                                        |
|-----------|-----|----|----------------------------------------------------------------------------------------|
| Above 960 | 500 | 54 | final measurement for frequencies below 1000MHz is performed with Quasi Peak detector. |
|-----------|-----|----|----------------------------------------------------------------------------------------|

#### 4.3. 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.

##### 4.3.1. Wireless Laser Desktop Mouse 2.4GHz (EUT)

Model Number : 96150  
Serial Number : N/A  
Manufacturer : Verbatim

#### 4.4. Operating Condition of EUT

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

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in Charging modes (use USB cable connect to PC) 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. 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.

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

##### **PASS.**

The frequency range 30MHz to 1000MHz is investigated.

|               |                                     |                |                                   |
|---------------|-------------------------------------|----------------|-----------------------------------|
| Date of Test: | <u>December 22, 2006</u>            | Temperature:   | <u>24°C</u>                       |
|               | <u>Wireless Laser Desktop Mouse</u> |                |                                   |
| EUT:          | <u>2.4GHz</u>                       | Humidity:      | <u>54%</u>                        |
|               |                                     |                | <u>5V DC power by PC usb port</u> |
| Model No.:    | <u>96150</u>                        | Power Supply:  | <u>PC power: AC120V/60Hz</u>      |
| Test Mode:    | <u>connect to PC to Charging</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   | 228.276         | 56.8                  | -22.2                | 34.6                 | 46                   | 11.4                 |
| Horizontal   | 333.246         | 55.9                  | -18.3                | 37.6                 | 46                   | 8.4                  |
| Horizontal   | 352.685         | 53.1                  | -17.7                | 35.4                 | 46                   | 10.6                 |
| Horizontal   | 440.160         | 49.6                  | -16.1                | 33.5                 | 46                   | 12.5                 |
| Vertical     | 131.082         | 51.6                  | -21.0                | 30.6                 | 43.5                 | 12.9                 |
| Vertical     | 461.543         | 52.6                  | -15.9                | 36.7                 | 46                   | 9.3                  |
| Vertical     | 480.982         | 47.8                  | -15.6                | 32.2                 | 46                   | 13.8                 |
| Vertical     | 566.513         | 47.8                  | -14.4                | 33.4                 | 46                   | 12.6                 |

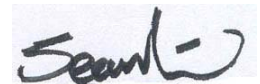
The spectral diagrams in appendix 1 display the measurement of un-weighted peak values.

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:

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

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

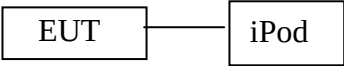
Reviewer :



# 5. FUNDAMENTAL AND HARMONICS RADIATED EMISSION MEASUREMENT

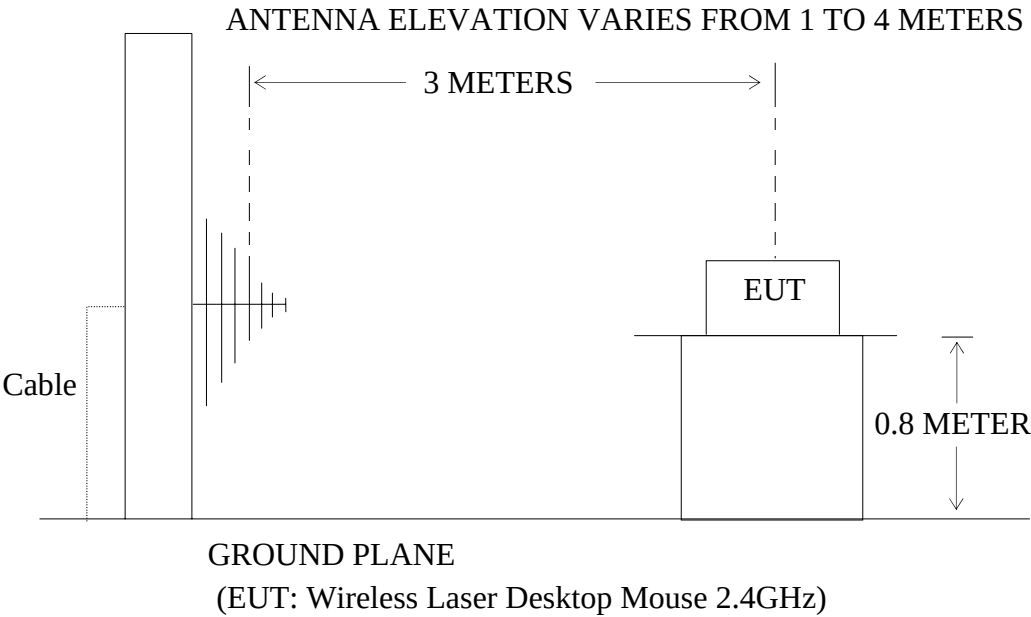
## 5.1. Block Diagram of Test Setup

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



(EUT: Wireless Laser Desktop Mouse 2.4GHz)

### 5.1.2. Anechoic Chamber Test Setup Diagram



## 5.2. The Emission Limit

3.2.1 For intentional radiators, According to section 15.249(a), Operation within the frequency band of 2.4 to 2.4835GHz, The fundamental field strength shall not exceed 94 dBμV/m and the harmonics shall not exceed 54 dBμV/m.

| Fundamental Frequency | Field Strength of Fundamental (millivolts/meter) | Field Strength of harmonics (microvolts/meter) |
|-----------------------|--------------------------------------------------|------------------------------------------------|
| 902-928MHz            | 50                                               | 500                                            |
| 2400-2483.5MHz        | 50                                               | 500                                            |
| 5725-5875MHz          | 50                                               | 500                                            |
| 24.0-24.25GHz         | 250                                              | 2500                                           |

3.2.2 According to section 15.249(e), as shown in section 15.35(b), The peak field strength

of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

### 5.3. 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.

#### 5.3.1. Wireless Laser Desktop Mouse 2.4GHz (EUT)

|               |   |          |
|---------------|---|----------|
| Model Number  | : | 96150    |
| Serial Number | : | N/A      |
| Manufacturer  | : | Verbatim |

### 5.4. Operating Condition of EUT

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

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX modes measure it.

### 5.5. 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 ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 1MHz.

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

### PASS.

|               |                                     |                |                               |
|---------------|-------------------------------------|----------------|-------------------------------|
| Date of Test: | <u>December 22, 2006</u>            | Temperature:   | <u>24°C</u>                   |
|               | <u>Wireless Laser Desktop Mouse</u> |                |                               |
| EUT:          | <u>2.4GHz</u>                       | Humidity:      | <u>54%</u>                    |
|               |                                     |                | <u>2.4V DC ("AAA" battery</u> |
| Model No.:    | <u>96150</u>                        | Power Supply:  | <u>Type×2)</u>                |
| Test Mode:    | <u>TX</u>                           | Test Engineer: | <u>Andy</u>                   |

### Fundamental Radiated Emissions

| Frequency<br>(MHz) | Reading(dBμV/m) |      | Factor(dB)<br>Corr. | Result(dBμV/m) |      | Limit(dBμV/m) |      | Margin(dBμV/m) |      | Polarization |
|--------------------|-----------------|------|---------------------|----------------|------|---------------|------|----------------|------|--------------|
|                    | AV              | PEAK |                     | AV             | PEAK | AV            | PEAK | AV             | PEAK |              |
| 2469.040           | 66.9            | 70.0 | -3.4                | 63.5           | 66.6 | 94            | 114  | 31.5           | 47.4 | Vertical     |
| 2469.040           | 55.6            | 58.6 | -3.4                | 52.2           | 55.2 | 94            | 114  | 42.8           | 58.8 | Horizontal   |

### Harmonics Radiated Emissions

| Frequency<br>(MHz) | Reading(dBμV/m) |      | Factor(dB)<br>Corr. | Result(dBμV/m) |      | Limit(dBμV/m) |      | Margin(dBμV/m) |      | Polarization |
|--------------------|-----------------|------|---------------------|----------------|------|---------------|------|----------------|------|--------------|
|                    | AV              | PEAK |                     | AV             | PEAK | AV            | PEAK | AV             | PEAK |              |
| 4938.085           | 38.9            | 42.0 | 2.2                 | 41.1           | 44.2 | 54            | 74   | 12.9           | 29.8 | Vertical     |
| 4938.085           | 41.9            | 45.0 | 2.2                 | 44.1           | 47.2 | 54            | 74   | 9.9            | 26.8 | Horizontal   |

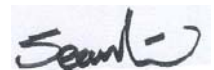
Note:

1. 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:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss – Amplifier Gain

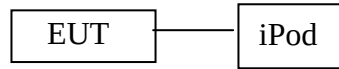
Reviewer :



## 6. RADIATED EMISSION FOR FCC PART 15 SECTION 15.249(D)

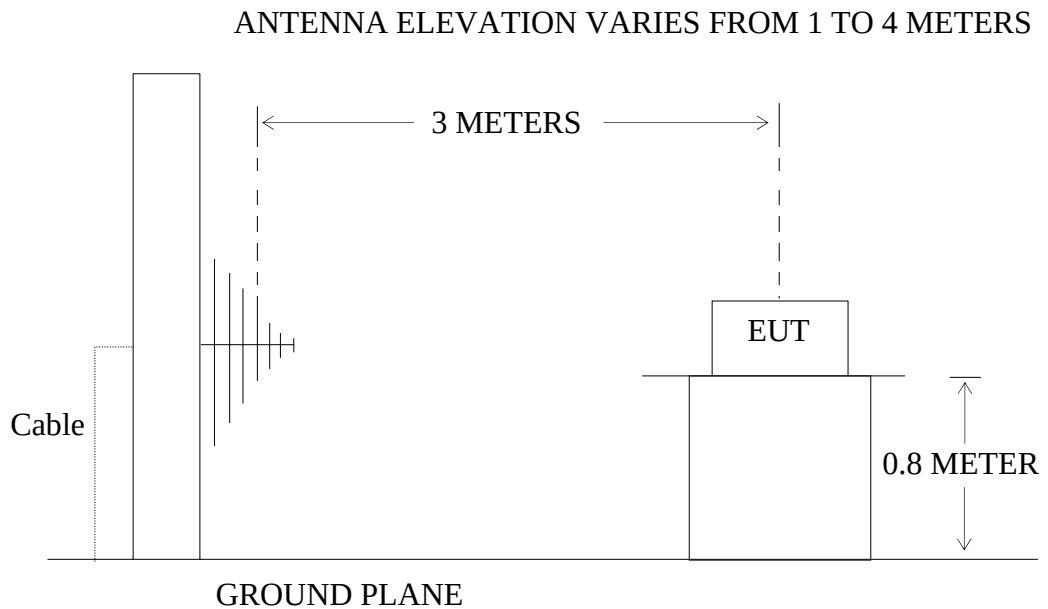
### 6.1. Block Diagram of Test Setup

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



(EUT: Wireless Laser Desktop Mouse 2.4GHz)

#### 6.1.2. Anechoic Chamber Test Setup Diagram



(EUT: Wireless Laser Desktop Mouse 2.4GHz)

### 6.2. The Emission Limit For Section 15.249(d)

4.2.1 Emission radiated outside of the specified frequency bands, except for harmonics, shall be comply with the general radiated emission limits in Section 15.209.

Radiation Emission Measurement Limits According to Section 15.209

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

|           |     |      |                                                                                                                                        |
|-----------|-----|------|----------------------------------------------------------------------------------------------------------------------------------------|
| 88 - 216  | 150 | 43.5 | Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector. |
| 216 - 960 | 200 | 46   |                                                                                                                                        |
| Above 960 | 500 | 54   |                                                                                                                                        |

### 6.3.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.

#### 6.3.1. Wireless Laser Desktop Mouse 2.4GHz (EUT)

Model Number : 96150  
Serial Number : N/A  
Manufacturer : Verbatim

### 6.4.Operating Condition of EUT

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

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it.

### 6.5.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 ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 120KHz in 30-1000MHz. and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz 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.

## 6.6.The Emission Measurement Result

**PASS.**

|               |                                     |                |                               |
|---------------|-------------------------------------|----------------|-------------------------------|
| Date of Test: | <u>December 22, 2006</u>            | Temperature:   | <u>24°C</u>                   |
|               | <u>Wireless Laser Desktop Mouse</u> |                |                               |
| EUT:          | <u>2.4GHz</u>                       | Humidity:      | <u>54%</u>                    |
|               |                                     |                | <u>2.4V DC ("AAA" battery</u> |
| Model No.:    | <u>96150</u>                        | Power Supply:  | <u>Type×2)</u>                |
| Test Mode:    | <u>TX</u>                           | Test Engineer: | <u>Andy</u>                   |

| Frequency<br>(MHz) | Reading(dBμV/m) |      | Factor(dB)<br>Corr. | Result(dBμV/m) |      | Limit(dBμV/m) |      | Margin(dBμV/m) |      | Polarization |
|--------------------|-----------------|------|---------------------|----------------|------|---------------|------|----------------|------|--------------|
|                    | AV              | PEAK |                     | AV             | PEAK | AV            | PEAK | AV             | PEAK |              |
| 1152.605           | 37.9            | 41.1 | -7.8                | 30.1           | 33.3 | 54            | 74   | 23.9           | 40.7 | Vertical     |
| 2836.573           | 42.7            | 44.8 | -2.3                | 40.4           | 42.5 | 54            | 74   | 13.6           | 31.5 | Vertical     |
| 1152.605           | 35.8            | 39.0 | -7.8                | 28.0           | 31.2 | 54            | 74   | 26.0           | 42.8 | Horizontal   |
| 2836.573           | 38.4            | 41.6 | -2.3                | 36.1           | 39.3 | 54            | 74   | 17.9           | 34.7 | Horizontal   |

Note:

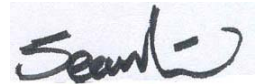
1. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss – Amplifier Gain

2. All the scanning waveforms are attached in Appendix I.

Reviewer :



## 7. BAND EDGES

### 7.1. The Requirement

- 5.1.1. Band Edge from 2400MHz to 2483.5MHz. Emission 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.

### 7.2. 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.

#### 7.2.1. Wireless Laser Desktop Mouse 2.4GHz (EUT)

|               |   |          |
|---------------|---|----------|
| Model Number  | : | 96150    |
| Serial Number | : | N/A      |
| Manufacturer  | : | Verbatim |

### 7.3. Operating Condition of EUT

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

7.3.2. Turn on the power of all equipment.

7.3.3. Let the EUT work in TX modes measure it.

### 7.4. Test Procedure

5.4.1. Measure the fundamental amplitude appearing on spectral display and set it as a reference level. measure the lower band edge amplitude. Get the delta amplitude and edge frequency.

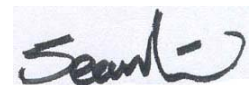
5.4.2. Repeat above procedures , Measure the fundamental amplitude appearing on spectral display and set it as a reference level. measure the upper band edge amplitude. Get the delta amplitude and edge frequency.

## 7.5. The Measurement Result

### **Pass**

We are tested Emission radiated outside of the 2400M-2483.5MHz frequency bands, except for harmonics, comply with the general radiated emission limits in Section 15.209. Please see page 27 to 32.

Reviewer :

A handwritten signature in black ink, appearing to read "Sean", is placed over a light blue rectangular background. The signature is written in a cursive, stylized font.

## 8. ANTENNA REQUIREMENT

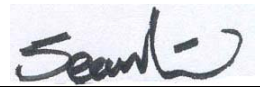
### 8.1. The Requirement

- 7.1.1. According to Section 15.203, 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.

### 8.2. Antenna Construction

The antenna is PCB layout antenna, no consideration of replacement.

Reviewer :

A handwritten signature in black ink, appearing to read "Sean", is placed over a light blue rectangular background. The signature is written in a cursive, stylized font.

## APPENDIX I (Test Curves)

CONDUCTION EMISSION STANDARD FCC PART15B

22. Dec 06 16:35

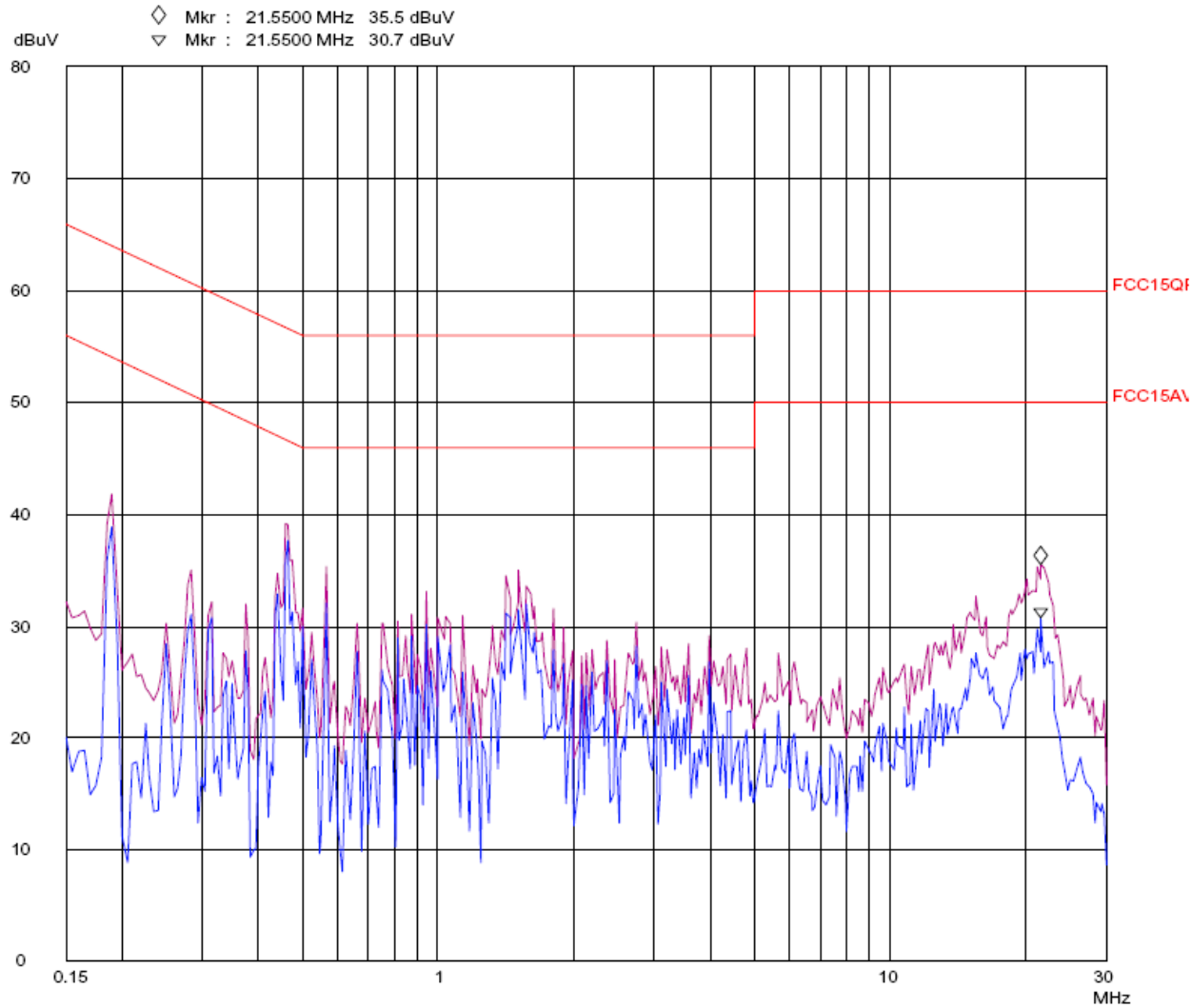
EUT: Wireless Laser Desktop Mouse 2.4GHz  
Manuf: Verbatim  
Op Cond: CONNECT TO PC  
Operator: Andy.tan  
Test Spec: Va 120V/60Hz  
Comment: Tem24°C Humi34%  
m/n:96150 Sample no.:064230

Scan Settings (3 Ranges)

| Frequencies |      |      | Receiver Settings |          |              |              |
|-------------|------|------|-------------------|----------|--------------|--------------|
| Start       | Stop | Step | IF BW             | Detector | M-Time       | Atten Preamp |
| 150k        | 2M   | 5k   | 9k                | PK+AV    | 10ms AUTO LN | OFF          |
| 2M          | 10M  | 10k  | 9k                | PK+AV    | 1ms AUTO LN  | OFF          |
| 10M         | 30M  | 25k  | 9k                | PK+AV    | 1ms AUTO LN  | OFF          |

Final Measurement: x QP / + AV  
Meas Time: 1 s

| Transducer No. | Start | Stop | Name   |
|----------------|-------|------|--------|
| 1              | 9k    | 30M  | confac |



## CONDUCTION EMISSION STANDARD FCC PART15B

22. Dec 06 16:45

EUT: Wireless Laser Desktop Mouse 2.4GHz  
 Manuf: Verbatim  
 Op Cond: CONNECT TO PC  
 Operator: Andy.tan  
 Test Spec: Vb 120V/60Hz  
 Comment: Tem24°C Humi34%  
 m/n:96150 Sample no.:064230

## Scan Settings (3 Ranges)

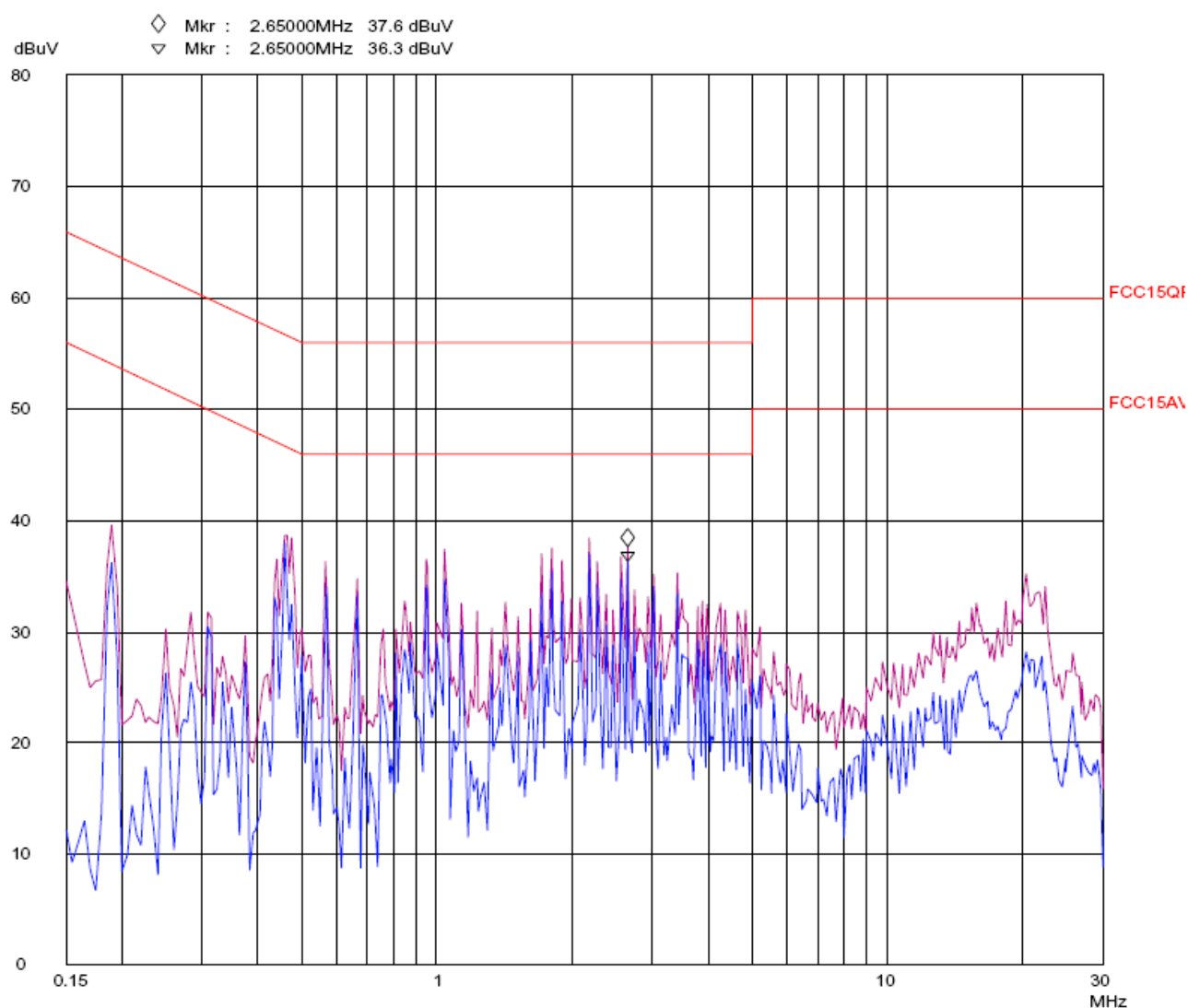
| Frequencies |      |      | Receiver Settings |          |        |       |        |
|-------------|------|------|-------------------|----------|--------|-------|--------|
| Start       | Stop | Step | IF BW             | Detector | M-Time | Atten | Preamp |
| 150k        | 2M   | 5k   | 9k                | PK+AV    | 10ms   | AUTO  | LN OFF |
| 2M          | 10M  | 10k  | 9k                | PK+AV    | 1ms    | AUTO  | LN OFF |
| 10M         | 30M  | 25k  | 9k                | PK+AV    | 1ms    | AUTO  | LN OFF |

Final Measurement: x QP / + AV

Meas Time: 1 s

Transducer No. Start Stop Name

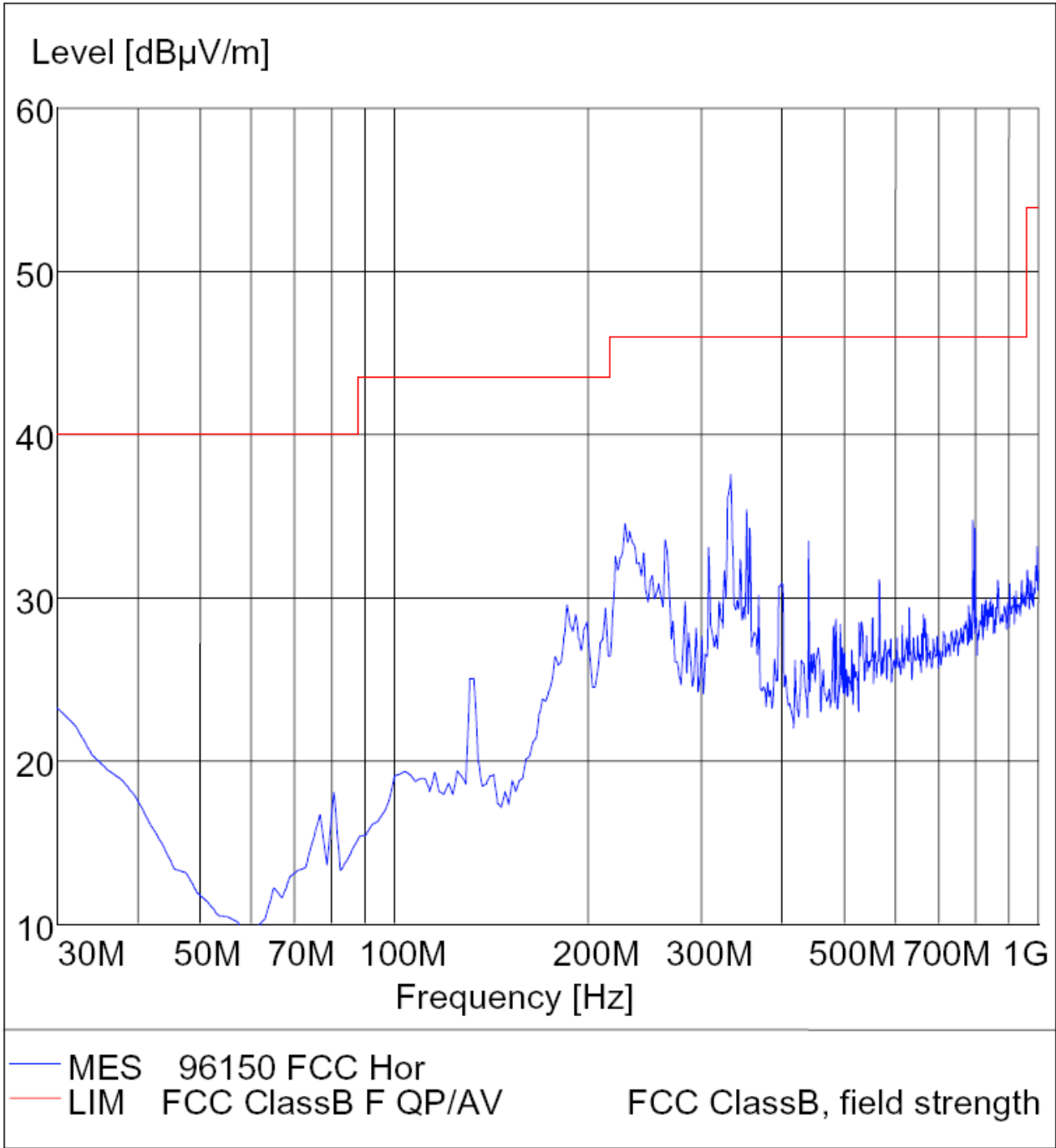
1 9k 30M confac



Radiated Disturbance

FCC Part 15

EUT: Wireless Laser Desktop Mouse 2.4GHz  
Manufacturer: Verbatim  
Operating Condition: Connect to PC  
Test Site: ATC EMC Lab.SAC  
Operator: Andy  
Test Specification: Horizontal  
Comment : DC 5V Power by PC

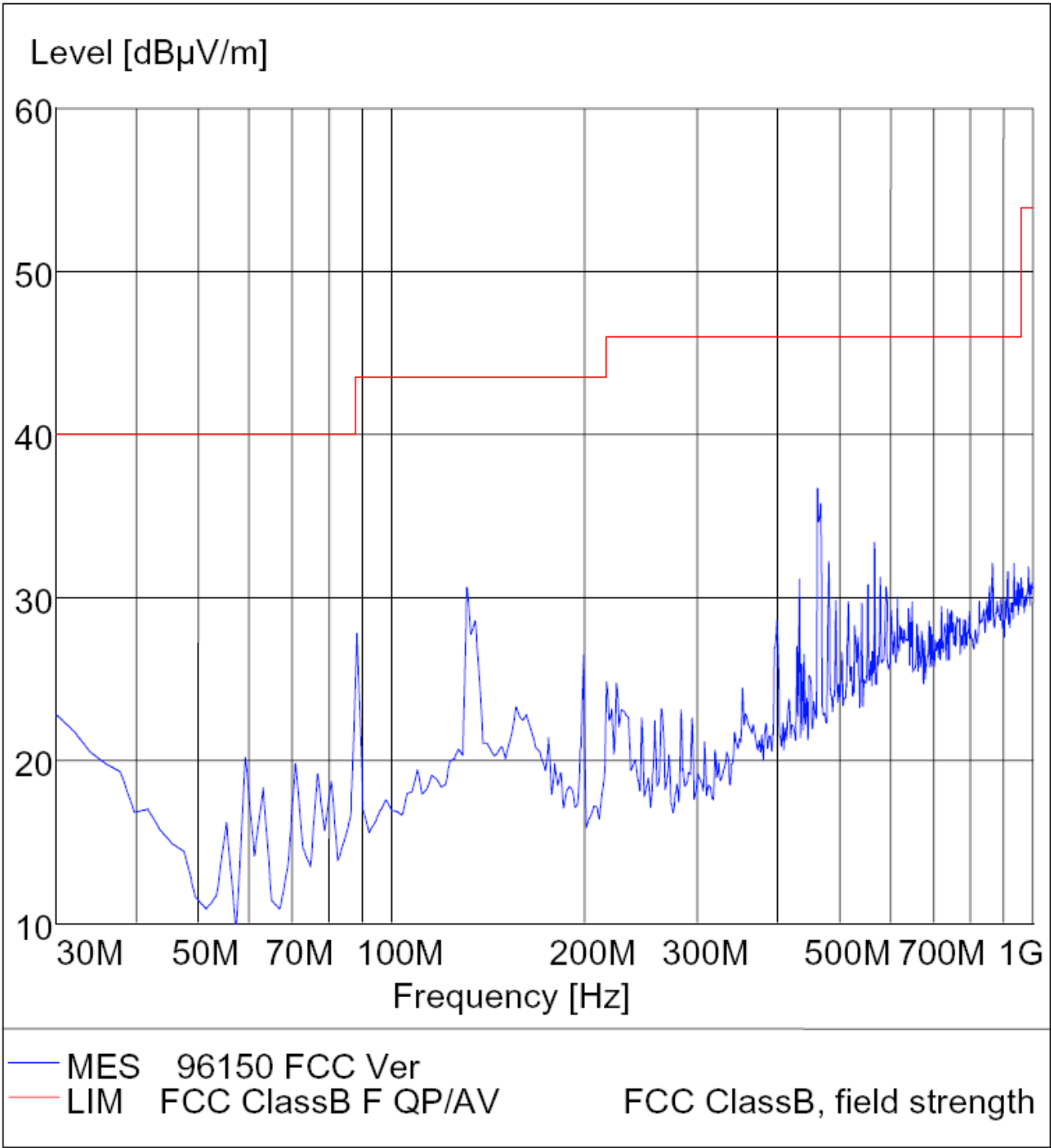


Radiated Disturbance

FCC Part 15

EUT: Wireless Laser Desktop Mouse 2.4GHz  
Manufacturer: Verbatim  
Operating Condition: Connect to PC  
Test Site: ATC EMC Lab.SAC  
Operator: Andy  
Test Specification: Vertical  
Comment : DC 5V power by PC

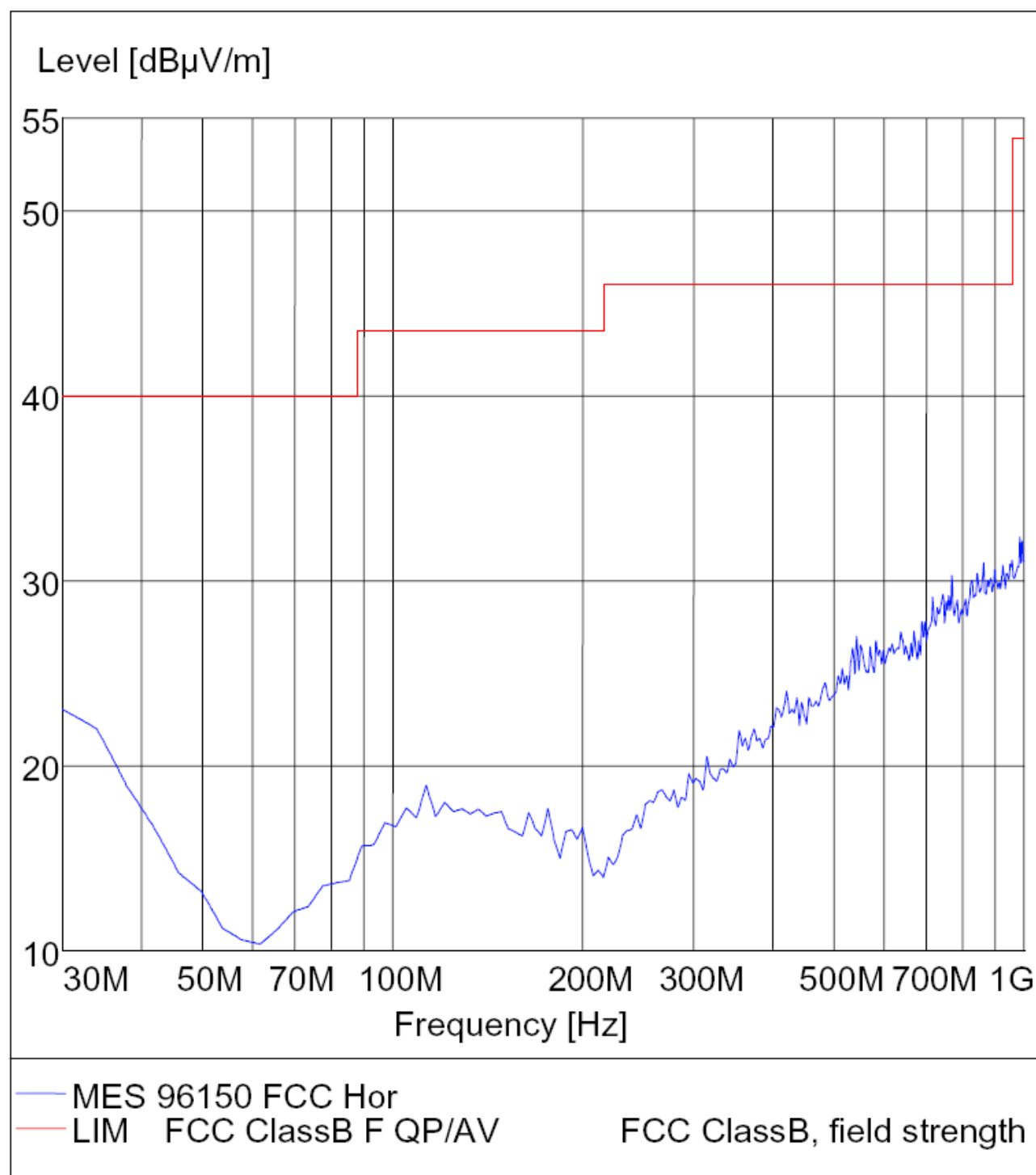
M/N: 96150



**Radiated Disturbance****FCC Part 15**

EUT: Wireless Laser Desktop Mouse 2.4GHz  
 Manufacturer: Verbatim  
 Operating Condition: TX  
 Test Site: ATC EMC Lab.SAC  
 Operator: Andy  
 Test Specification: Horizontal  
 Comment : DC 2.4V

M/N: 96150



Radiated Disturbance

FCC Part 15

EUT: Wireless Laser Desktop Mouse 2.4GHzM/N: 96150

Manufacturer: Verbatim

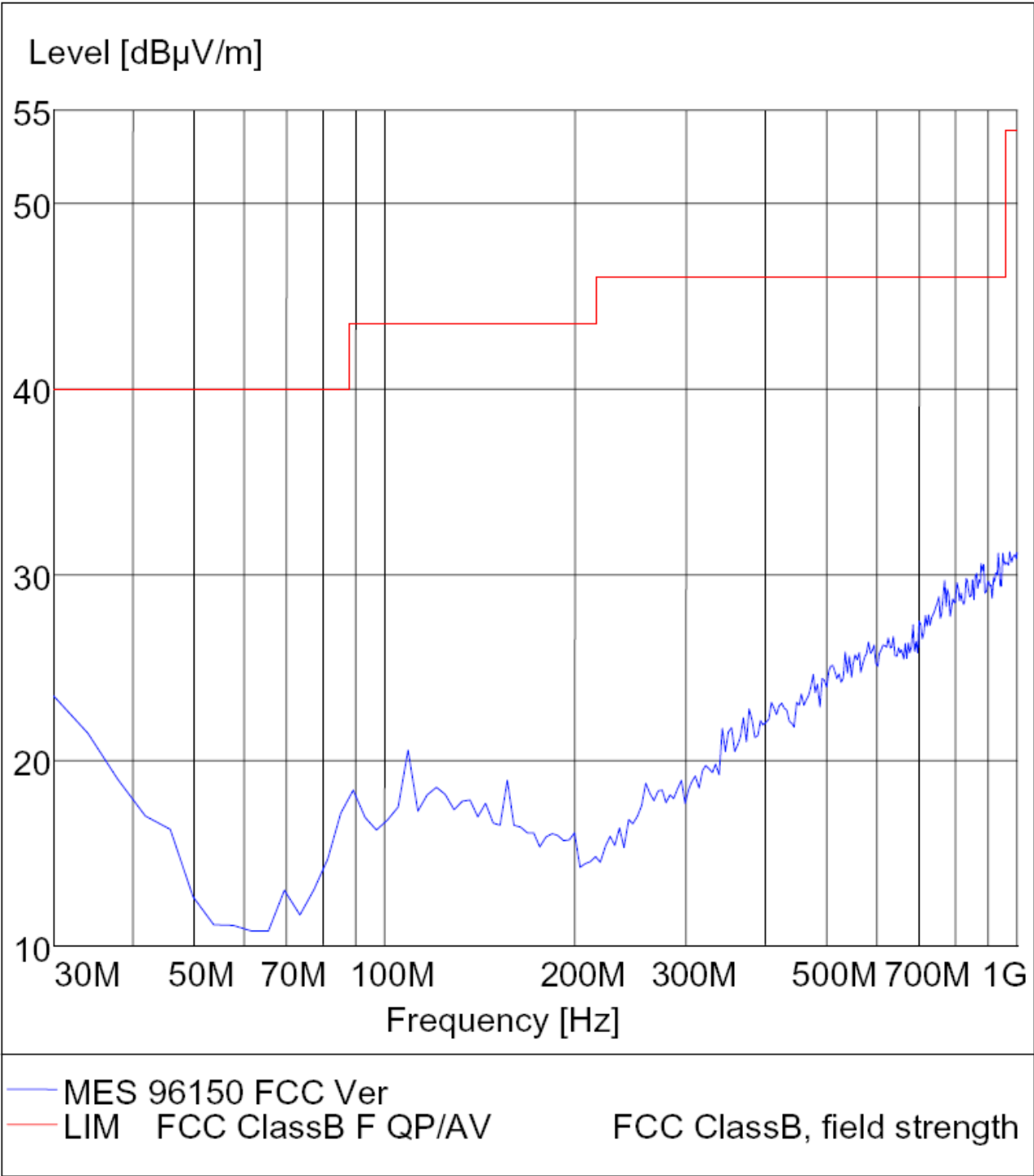
Operating Condition: TX

Test Site: ATC EMC Lab.SAC

Operator: Andy

Test Specification: Vertical

Comment: DC 2.4V



Radiated Disturbance

FCC Part 15

EUT: Wireless Laser Desktop Mouse 2.4GHzM/N: 96150

Manufacturer: Verbatim

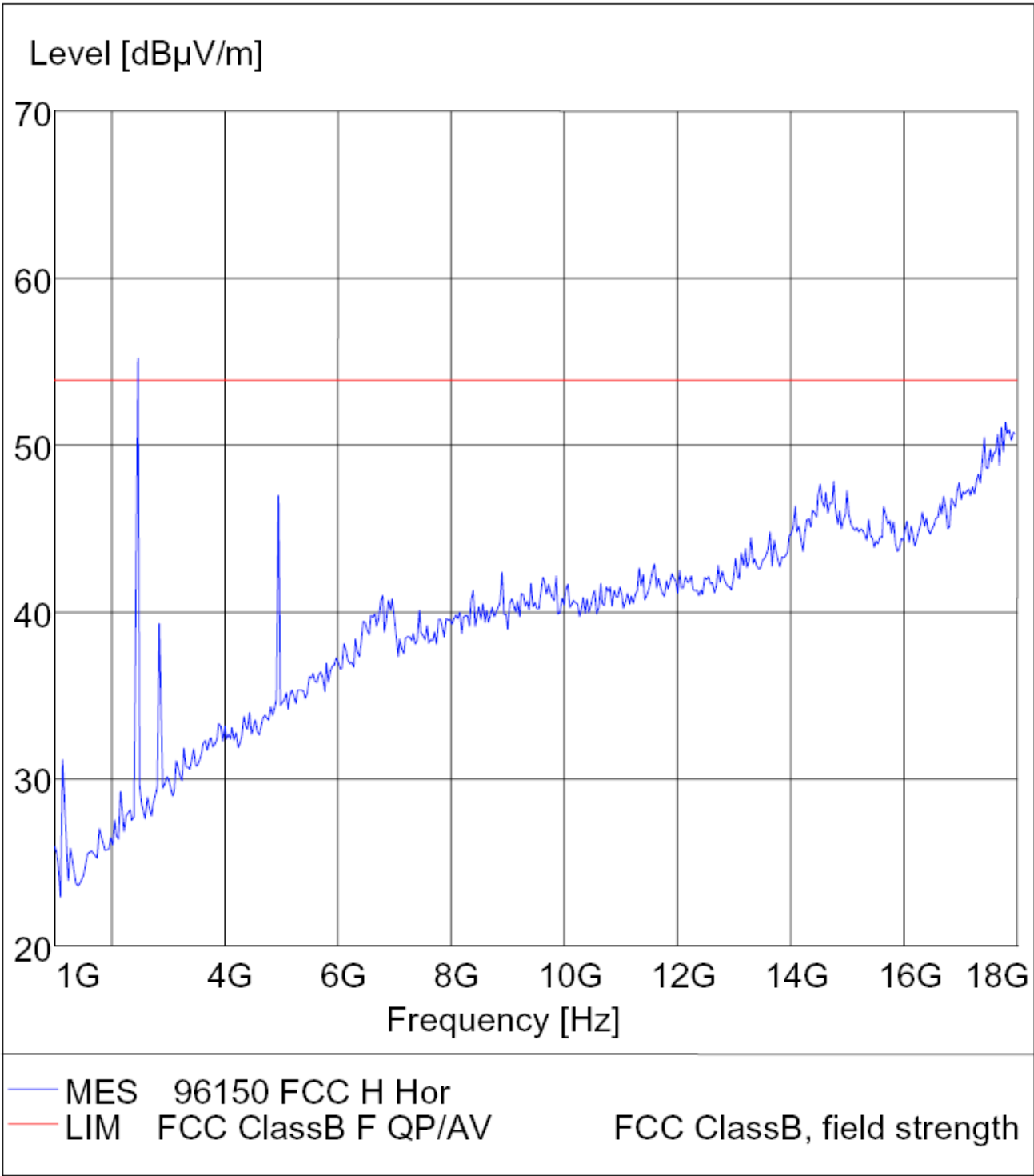
Operating Condition: TX

Test Site: ATC EMC Lab.SAC

Operator: Andy

Test Specification: Horizontal

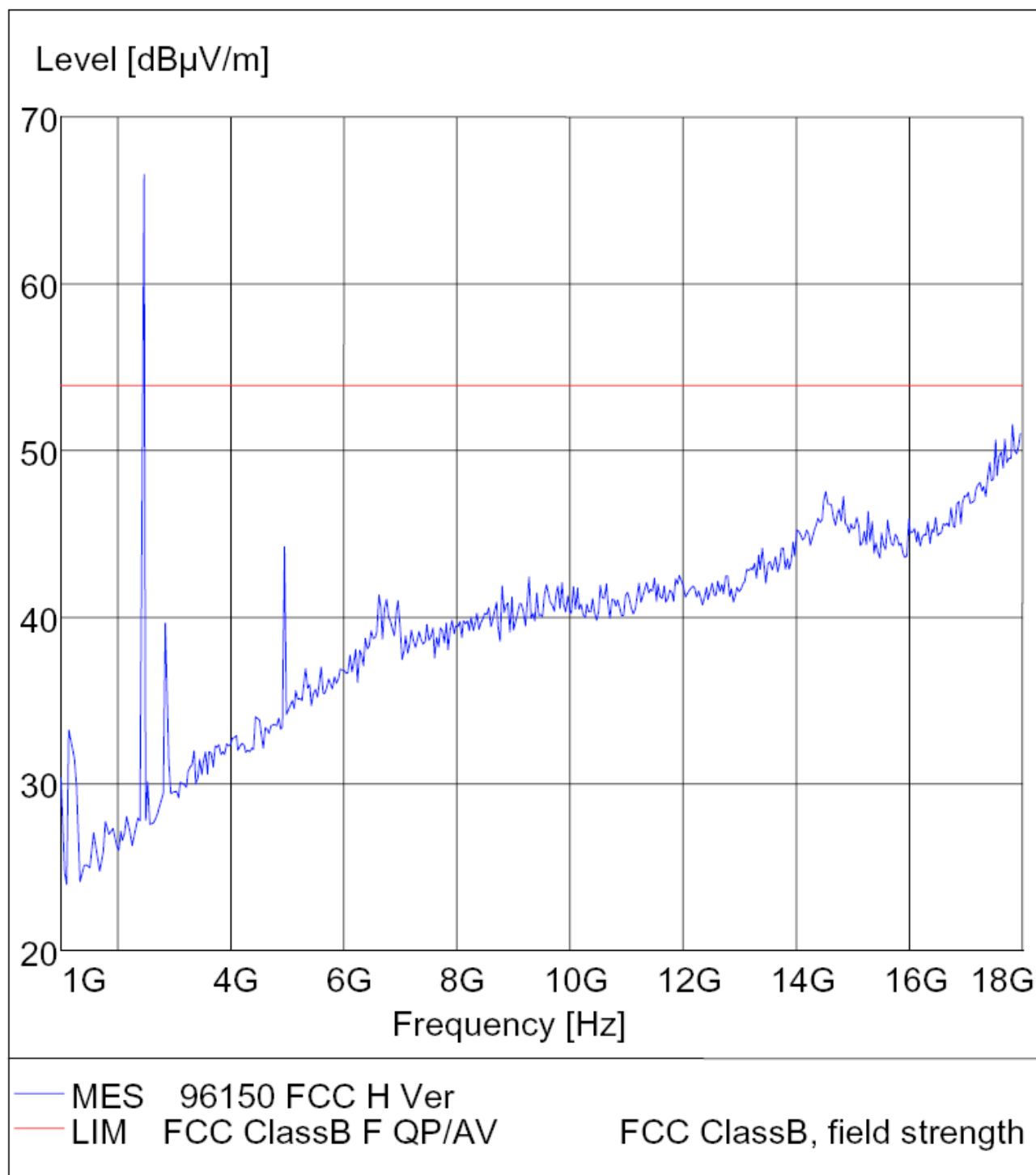
Comment : DC 2.4V



**Radiated Disturbance****FCC Part 15**

EUT: Wireless Laser Desktop Mouse 2.4GHz  
Manufacturer: Verbatim  
Operating Condition: TX  
Test Site: ATC EMC Lab.SAC  
Operator: Andy  
Test Specification: Horizontal  
Comment : DC 2.4V

M/N: 96150

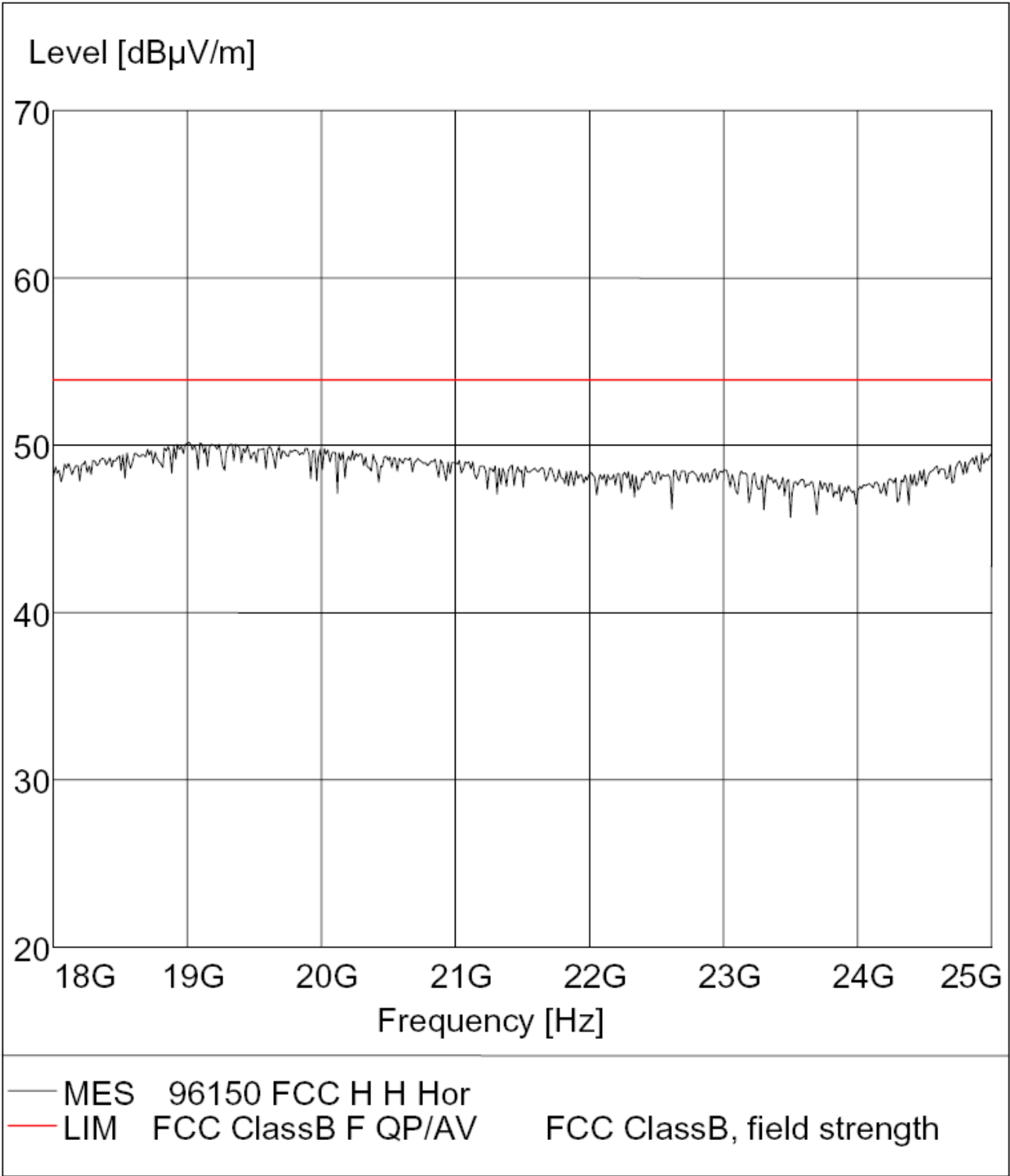


Radiated Disturbance

FCC Part 15

EUT: Wireless Laser Desktop Mouse 2.4GHz  
Manufacturer: Verbatim  
Operating Condition: TX  
Test Site: ATC EMC Lab.SAC  
Operator: Andy  
Test Specification: Horizontal  
Comment : DC 2.4V

M/N: 96150



Radiated Disturbance

FCC Part 15

EUT: Wireless Laser Desktop Mouse 2.4GHzM/N: 96150

Manufacturer: Verbatim

Operating Condition: TX

Test Site: ATC EMC Lab.SAC

Operator: Andy

Test Specification: Vertical

Comment : DC 2.4V

