

FCC CERTIFICATION  
On Behalf of  
Eastern Times Technology Co., Ltd.

Wireless Optical Mouse  
Model No.: DS-2134

FCC ID: TUV2134

Prepared for : Eastern Times Technology Co., Ltd.  
Address : Building 5, Penghua Industry Park, Heping Rd.(W),  
Longhua, Shenzhen, Guangdong, China

Prepared by : ACCURATE TECHNOLOGY CO. LTD  
Address : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.  
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Report Number : ATE20091157  
Date of Test : July 9, 2009  
Date of Report : July 10, 2009

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APPENDIX I ( TEST CURVES) (3 pages)

## Test Report Certification

Applicant : Eastern Times Technology Co., Ltd.  
Manufacturer : Eastern Times Technology Co., Ltd.  
EUT Description : Wireless Optical Mouse  
(A) MODEL NO.: DS-2134  
(B) SERIAL NO.: N/A  
(C) POWER SUPPLY: DC 3V (“AAA” batteries 2×)

Measurement Procedure Used:

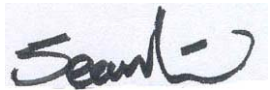
**FCC Rules and Regulations Part 15 Subpart C Section 15.227**  
**ANSI C63.4: 2003**

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 9, 2009

Prepared by :   
(Engineer)

Approved & Authorized Signer :   
(Manager)

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

EUT : Wireless Optical Mouse

Model Number : DS-2134

Power Supply : DC 3V (“AAA” batteries 2×)

Applicant : Eastern Times Technology Co., Ltd.  
Address : Building 5, Penghua Industry Park, Heping Rd.(W),  
Longhua, Shenzhen, Guangdong, China

Manufacturer : Eastern Times Technology Co., Ltd.  
Address : Building 5, Penghua Industry Park, Heping Rd.(W),  
Longhua, Shenzhen, Guangdong, China

Date of sample received : June 23, 2009

Date of Test : July 9, 2009

## 1.2. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC  
The Registration Number is 752051

Listed by Industry Canada  
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee  
for Laboratories  
The Certificate Registration Number is L3193

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  
(9kHz-30MHz) = 3.08dB, k=2

Radiated emission expanded uncertainty  
(30MHz-1000MHz) = 4.42dB, k=2

Radiated emission expanded uncertainty  
(Above 1GHz) = 4.06dB, 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	03.28.2010
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	03.28.2010
Spectrum Analyzer	Agilent	E7405A	MY45115511	03.28.2010
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	03.30.2010
Loop Antenna	Schwarzbeck	FMZB1516	1516131	03.28.2010
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	03.28.2010
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	12.19.2009
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	10.09.2009
LISN	Rohde&Schwarz	ESH3-Z5	100305	03.28.2010
LISN	Schwarzbeck	NLSK8126	8126431	03.28.2010

### 3. SUMMARY OF TEST RESULTS

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
Section 15.207	Conducted Emission	N/A
Section 15.209 Section 15.227(b)	Harmonics and Spurious Radiated Emission	Compliant
Section 15.227(a)	Fundamental Radiated Emission	Compliant
Section 15.227	Band Edge	Compliant

Remark: "N/A" means "Not applicable".

## 4. HARMONICS AND SPURIOUS RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(B)

### 4.1. Block Diagram of Test Setup

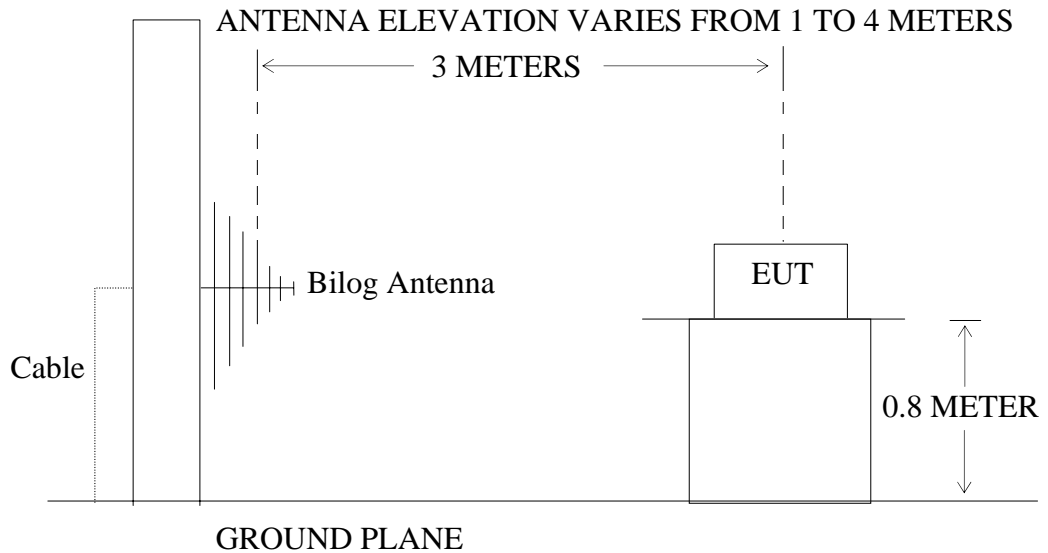
#### 4.1.1. Block diagram of connection between the EUT and simulators



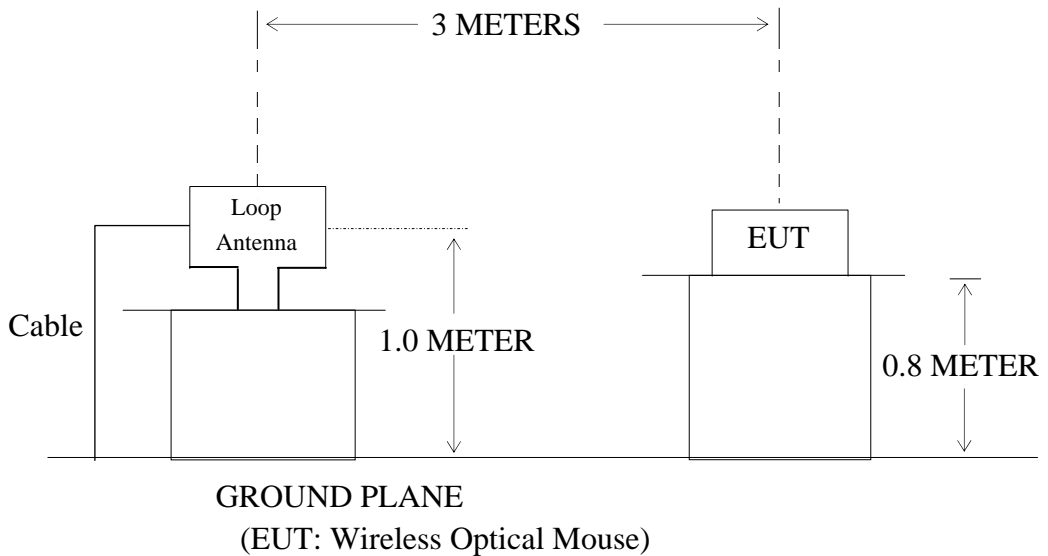
(EUT: Wireless Optical Mouse)

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

##### 4.1.2.1. Above 30MHz



##### 4.1.2.2. Below 30MHz





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

4.2.1. 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)

### Below 30MHz

Frequency (fundamental or spurious)	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490kHz	2400/F (F in kHz)	2400/377(F in kHz)	300
490-1705kHz	24000/F (F in kHz)	24000/377(F in kHz)	30
1705-30MHz	30	N/A	30

### Above 30MHz

Frequency (MHz)	Limit		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.
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dB $\mu$ V/m)	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	

## 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 Optical Mouse (EUT)

Model Number : DS-2134  
 Serial Number : N/A  
 Manufacturer : Eastern Times 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 modes and measure it.

## 4.5. Test Procedure

4.5.1. **Above 30MHz:** 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 C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz.

The frequency range from 30MHz to 1000MHz is checked.

4.5.2. **Below 30MHz:** 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 ANSI C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9kHz in 9kHz-30MHz

The frequency range from 9kHz to 3MHz 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.

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

**PASS.**

The frequency range 30MHz to 1000MHz is investigated.

Date of Test:	<u>July 9, 2009</u>	Temperature:	<u>25°C</u>
EUT:	<u>Wireless Optical Mouse</u>	Humidity:	<u>52%</u>
Model No.:	<u>DS-2134</u>	Power Supply:	<u>DC 3V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Joe</u>

### Below 30MHz:

Polarization	Frequency (MHz)	Reading(dBμV/m) QP	Factor Corr.( dB)	Result(dBμV/m) QP	Limits(dBμV/m) QP	Margin(dBμV/m) QP
Horizontal	-	-	-	-	-	-
Vertical	-	-	-	-	-	-

### Above 30MHz:

Polarization	Frequency (MHz)	Reading(dBμV/m) QP	Factor Corr.( dB)	Result(dBμV/m) QP	Limits(dBμV/m) QP	Margin(dBμV/m) QP
Horizontal	54.0864	13.22	13.42	26.64	40.00	-13.36
Horizontal	81.1296	21.00	13.47	34.47	40.00	-5.53
Horizontal	135.2160	17.73	14.67	32.40	43.50	-11.10
Horizontal	162.2596	19.95	14.63	34.58	43.50	-8.92
Horizontal	243.3886	16.36	16.98	33.34	46.00	-12.66
Horizontal	270.4320	18.32	18.20	36.52	46.00	-9.48
Vertical	81.1296	9.31	13.80	23.11	40.00	-16.89
Vertical	135.2160	9.39	14.67	24.06	43.50	-19.44
Vertical	162.2596	9.83	14.63	24.46	43.50	-19.04
Vertical	270.4320	10.69	18.20	28.89	46.00	-17.11

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. 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:

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

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

3. The spectral diagrams in appendix I display the measurement of peak values.

## 5. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15

### SECTION 15.227(A)

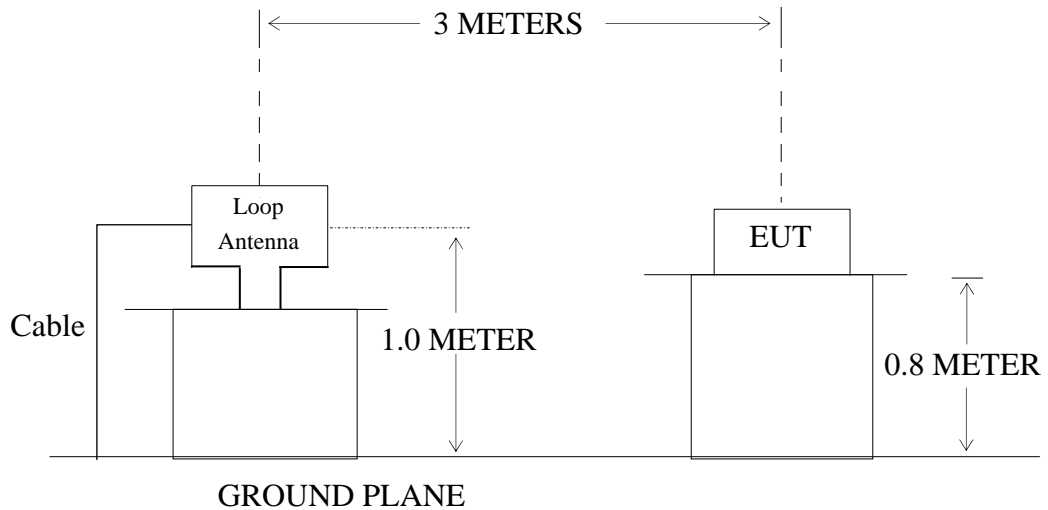
#### 5.1. Block Diagram of Test Setup

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



(EUT: Wireless Optical Mouse)

##### 5.1.2. Semi-Anechoic Chamber Test Setup Diagram



(EUT: Wireless Optical Mouse)

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

5.2.1. The field strength of any emission within this band shall not exceed 10,000 microvolts/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.

### 5.3.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.

#### 5.3.1.Wireless Optical Mouse (EUT)

Model Number : DS-2134  
Serial Number : N/A  
Manufacturer : Eastern Times Technology Co., Ltd.

### 5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in TX mode and 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. A 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 ANSI C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

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

## 5.6.The Emission Measurement Result

**PASS.**

Date of Test:	July 9, 2009	Temperature:	25°C
EUT:	Wireless Optical Mouse	Humidity:	50%
Model No.:	DS-2134	Power Supply:	DC 3V
Test Mode:	TX	Test Engineer:	Joe

### Fundamental Radiated Emissions

Test conditions		Fundamental Frequency	
		27.045MHz	
T <sub>nom</sub> (25°C)	V <sub>nom</sub> (DC 3V)	(dBμV/m)/ ( μ V/m)	(dBμV/m)/( μ V/m)
		PEAK	AV
		48.46/264.85	45.80/194.98
limit		100/100,000	80/10,000
Note: Measurement was performed with modulated signal with average detector and peak detector.			

## 6. BAND EDGES

### 6.1.The Requirement

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

### 6.2.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.

#### 6.2.1.Wireless Optical Mouse (EUT)

Model Number : DS-2134  
Serial Number : N/A  
Manufacturer : Eastern Times Technology Co., Ltd.

### 6.3.Operating Condition of EUT

6.3.1.Setup the EUT and simulator as shown as Section 5.1.

6.3.2.Turn on the power of all equipment.

6.3.3.Let the EUT work in TX mode and measure it.

### 6.4.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 10kHz.

## 6.5. The Measurement Result

**The EUT does meet the requirement.**

The spectral diagrams attached in appendix 1.



# APPENDIX I (Test Curves)



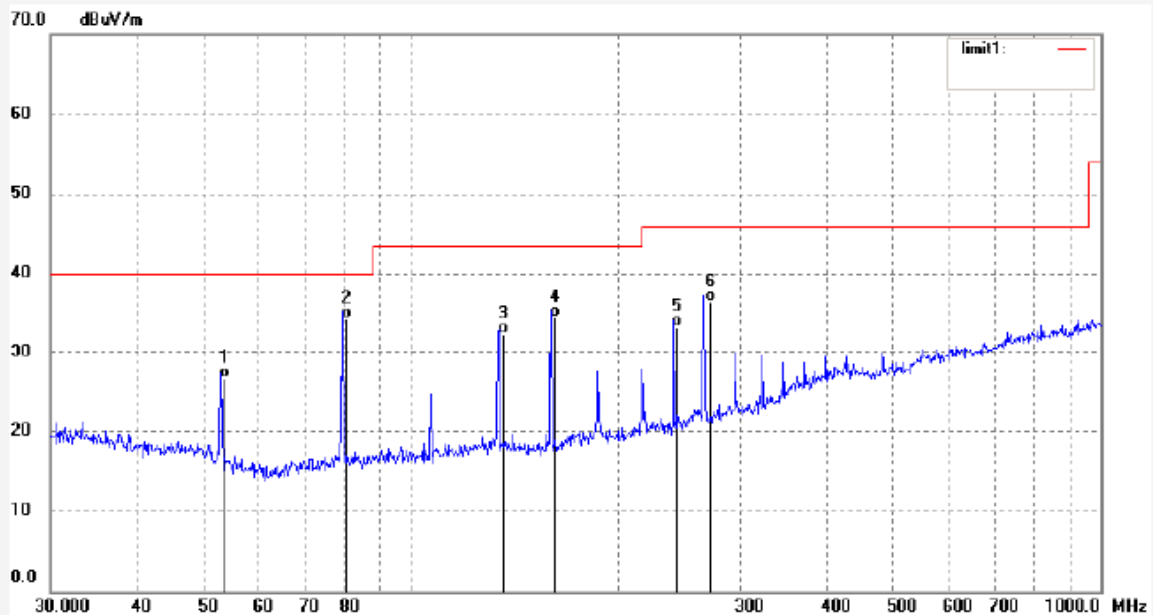
**ACCURATE TECHNOLOGY CO., LTD.**

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RTTE #2141	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3V
Test item: Radiation Test	Date: 09/07/09/
Temp.( C)/Hum.(%) 25 C / 50 %	Time: 8/43/33
EUT: Wireless Optical Mouse	Engineer Signature: Joe
Mode: TX	Distance: 3m
Model: DS-2134	
Manufacturer: Eastern Times Technology Co., Ltd	

Note: Sample No.:091347 Report No.:ATE20091157



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	54.0864	13.22	13.42	26.64	40.00	-13.36	QP			
2	81.1296	21.00	13.47	34.47	40.00	-5.53	QP			
3	135.2160	17.73	14.67	32.40	43.50	-11.10	QP			
4	162.2596	19.95	14.63	34.58	43.50	-8.92	QP			
5	243.3886	16.36	16.98	33.34	46.00	-12.66	QP			
6	270.4320	18.32	18.20	36.52	46.00	-9.48	QP			



**ACCURATE TECHNOLOGY CO., LTD.**

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Science & Industry Park,Nanshan Shenzhen,P.R.China

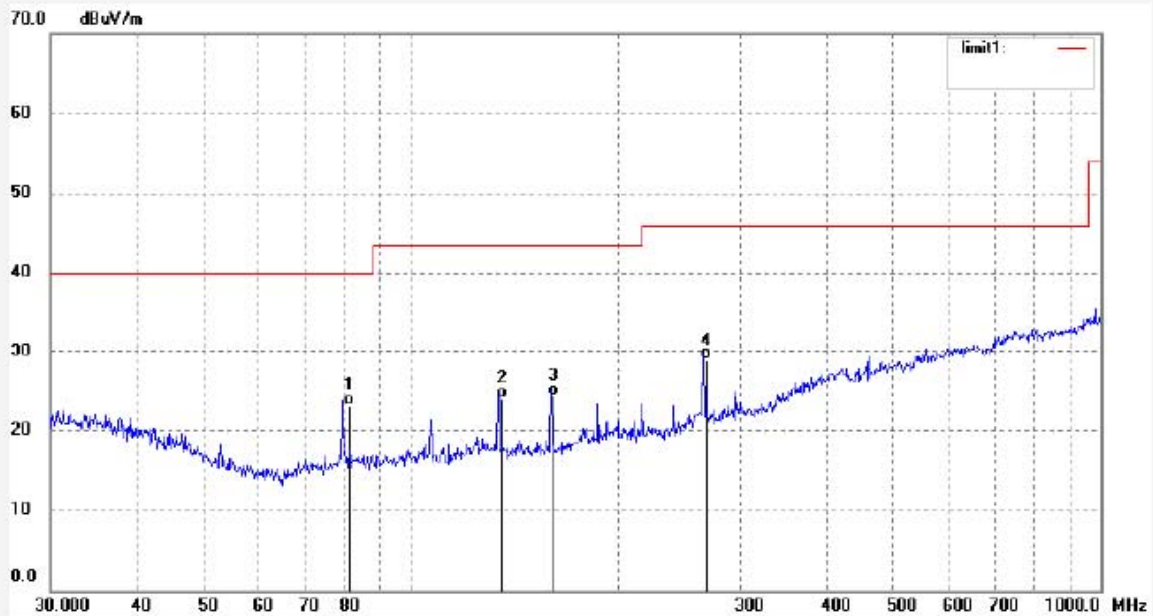
Site: 966 chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RTTE #2142  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 50 %  
EUT: Wireless Optical Mouse  
Mode: TX  
Model: DS-2134

Polarization: Vertical  
Power Source: DC 3V  
Date: 09/07/09/  
Time: 8/46/19  
Engineer Signature: Joe  
Distance: 3m

Manufacturer: Eastern Times Technology Co., Ltd

Note: Sample No.:091347 Report No.:ATE20091157

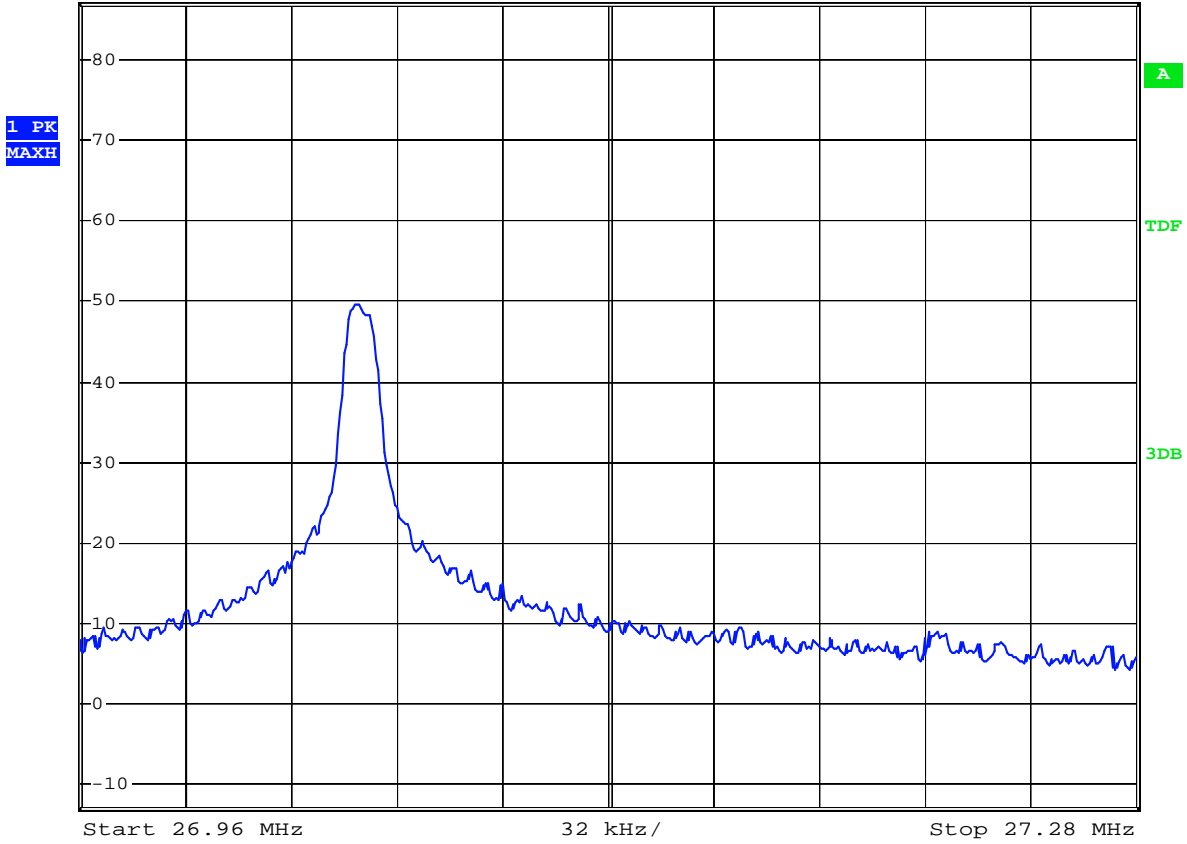


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	81.1296	9.31	13.80	23.11	40.00	-16.89	QP			
2	135.2160	9.39	14.67	24.06	43.50	-19.44	QP			
3	162.2596	9.83	14.63	24.46	43.50	-19.04	QP			
4	270.4320	10.69	18.20	28.89	46.00	-17.11	QP			



\*RBW 3 kHz  
VBW 10 kHz  
SWT 40 ms

Ref 87 dB $\mu$ V \*Att 0 dB



Date: 9.JUL.2009 10:46:45