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

Wired &Wireless Mouse Model No.: DS-2128(PCB 2128-X)

FCC ID: TUVDS2128TX

Prepared for : Eastern Times Technology Co., Ltd.

Address : Building 5, Penghua Industry Park, Heping Rd.(W),

Longhua, Shenzhen, Guangdong, P.R. China

Prepared by : ACCURATE TECHNOLOGY CO. LTD

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Report Number : ATE20062552
Date of Test : December 01, 2006
Date of Report : December 05, 2006

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# **Test Report Certification**

Applicant : Eastern Times Technology Co., Ltd.

Manufacturer : Eastern Times Technology Co., Ltd.

EUT Description : Wired & Wireless Mouse

(A) MODEL NO.: DS-2128(PCB 2128-X)

(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, Section 15.107, Section 15.109: 2006

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 Section 15.107, Section 15.109limits. 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 01, 2006	
Prepared by :	sky Long	
	(Engineer)	
Reviewer:	Sean()	
	(Quality Manager)	
Approved & Authorized Signer:	Martinh	
	(Manager)	

#### 1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT : Wired & Wireless Mouse

Model Number : DS-2128(PCB 2128-X)

Power Supply : 3.0V DC ("AAA" batteries  $2\times$ ), Can use USB cable to

charge and operation.

Applicant : Eastern Times Technology Co., Ltd.

Address : Building 5, Penghua Industry Park, Heping Rd.(W),

Longhua, Shenzhen, Guangdong, P.R. China

Manufacturer : Eastern Times Technology Co., Ltd.

Address : Building 5, Penghua Industry Park, Heping Rd.(W),

Longhua, Shenzhen, Guangdong, P.R. China

Date of sample received: November 28, 2006

Date of Test : December 01, 2006

1.2.Description of Test Facility

EMC Lab : Accredited by FCC

The Certificate Registration Number is 274801

Accredited by Industry Canada

The Certificate Registration Number is IC4174

Accredited by China National Accreditation Committee

for Laboratories

The Certificate Registration Number is L0579

Name of Firm : Shenzhen Academy of Metrology& Quality Inspection

Site Location : Bldg. Metrology& Quality Inspection, Longzhu Road,

Nanshan, Shenzhen, Guangdong, P.R. China

1.3. Measurement Uncertainty

Conducted emission expanded uncertainty = 3.5dB, k=2

Radiated emission expanded uncertainty = 4.5 dB, k=2

# 2. MEASURING DEVICE AND TEST EQUIPMENT

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

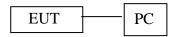
Kind of equipment	Manufacturer	Туре	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	03.31.2007
EMI Test Receiver	Rohde&Schwarz	ESI26	838786/013	01.28.2007
Loop Antenna	Schwarzbeck	FMZB1516	113	01.28.2007
Bilog Antenna	Schwarzbeck	VULB9163	9163-194	03.31.2007
Bilog Antenna	Chase	CBL6112B	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)

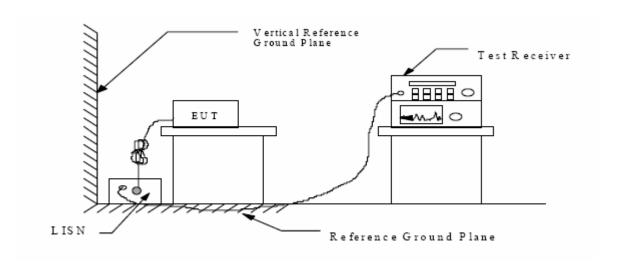
# 3.1.Block Diagram of Test Setup

3.1.1.Block diagram of connection between the EUT and simulators



(EUT: Wired &Wireless Mouse)

# 3.1.2. Shielding Room Test Setup Diagram



(EUT: Wired &Wireless Mouse)

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

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

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

<sup>\*</sup> 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. Wired & Wireless Mouse (EUT)

Model Number : DS-2128(PCB 2128-X)

Serial Number : N/A

Manufacturer : Eastern Times 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 wired 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 500hm 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: December 01, 2006

EUT: Wired & Wireless Mouse

Humidity: 51%

DC 5V power by PC usb port

Model No.: DS-2128(PCB 2128-X)

Test Mode: Wired Connect to PC

Temperature: 22°C

Humidity: 51%

DC 5V power by PC usb port

PC power: AC120V/60Hz

Andy

Test Line	Frequency MHz	Emission L QP	evel(dBµV) AV	Limits( QP	(dBμV) AV	Margin QP	(dBµV) AV
		_	·	_ `		_ `	1
Va	0.190	45.4	36.9	64.0	54.0	18.6	17.1
Va	0.515	36.2	28.0	56.0	46.0	19.8	18.0
Va	0.935	37.9	28.4	56.0	46.0	18.1	17.6
Va	13.770	36.6	27.1	60.0	50.0	23.4	22.9
Va	26.200	35.5	30.4	60.0	50.0	24.5	19.6
Vb	0.190	42.6	32.2	64.0	54.0	21.4	21.8
Vb	0.515	36.3	28.3	56.0	46.0	19.7	17.7
Vb	0.935	38.0	28.6	56.0	46.0	18.0	17.4
Vb	13.850	44.3	28.3	60.0	50.0	15.7	21.7
Vb	26.320	36.0	30.7	60.0	50.0	24.0	19.3

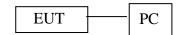
The spectral diagrams in appendix I display the measurement of un-weighted peak values.

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

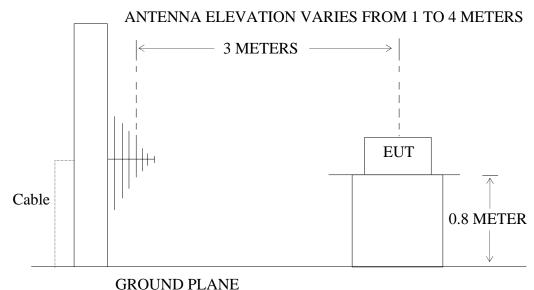
# 4.1.Block Diagram of Test Setup

4.1.1.Block diagram of connection between the EUT and simulators



(EUT: Wired &Wireless Mouse)

# 4.1.2. Anechoic Chamber Test Setup Diagram



(EUT: Wired &Wireless Mouse)

# 4.2. The Field Strength of Radiation Emission Measurement Limits

#### 4.2.1. Radiation Emission Measurement Limits According to Section 15.109(a)

	Limit,			
Frequency (MHz)	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBµV/m)	The final measurement in band 9-90kHz, 110-490kHz and	
30 - 88	100	40	above 1000MHz is performed with	
88 - 216	150	43.5	Average detector. Except those frequency bands	
216 - 960	200	46	mention above, the	

# 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. Wired & Wireless Mouse (EUT)

Model Number : DS-2128(PCB 2128-X)

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 3.1.

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in Wired 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: December 01, 2006

EUT: Wired & Wireless Mouse

Humidity: 51%

5V DC power by PC usb port

Model No.: DS-2128(PCB 2128-X)

Test Mode: Wired connect to PC

Test Engineer: Andy

Polarization	Frequency (MHz)	Reading(dBμV/m)  QP	Factor Corr.( dB)	Result(dBμV/m) QP	Limits(dBµV/m) QP	Margin(dBμV/m) QP
Horizontal	223.030	24.2	9.7	33.9	46	12.1
Horizontal	390.840	24.5	14.7	39.2	46	6.8
Horizontal	449.040	24.3	16.0	40.3	46	5.7
Vertical	219.150	24.3	8.8	33.1	46	12.9
Vertical	440.310	21.5	16.2	37.7	46	8.3
Vertical	440.310	17.3	20.6	37.9	46	8.1

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:

Result = Reading + Corrected Factor

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

Reviewer:	Sound	=	

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

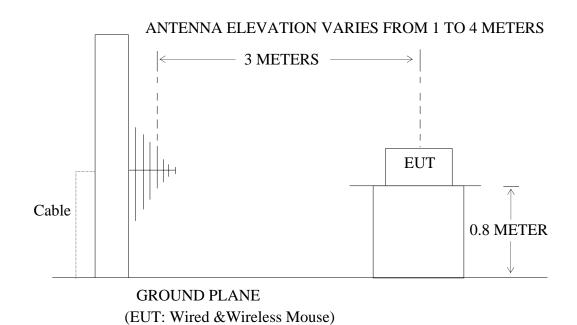
# 5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Wired &Wireless Mouse)

5.1.2. Anechoic Chamber Test Setup Diagram



# 5.2. The Field Strength of Radiation Emission Measurement Limits

5.2.1. 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)

1			` '	
	Limit,			
Frequency	Field Strength of	Field Strength of	The final measurement	
(MHz)	Quasi-peak Value	Quasi-peak Value	in band 9-90kHz,	
,	(microvolts/m)	$(dB\mu V/m)$	110-490kHz and	
30 - 88	100	40	above 1000MHz is performed with	
88 - 216	150	43.5	Average detector.  Except those	

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

# 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. Wired & Wireless Mouse (EUT)

Model Number : DS-2128(PCB 2128-X)

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 3.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX modes(on) 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 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.

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

The frequency range 30MHz to 1000MHz is investigated.

Date of Test:December 01, 2006Temperature:22°CEUT:Wired &Wireless MouseHumidity:51%Model No.:DS-2128(PCB 2128-X)Power Supply:3.0V DC ("AAA"battery 2×)Test Mode:TXTest Engineer:Andy

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

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

- 1. Remark "- " means that the emission level is too low to be measured.
- 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:

Result = Reading + Corrected Factor

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

Reviewer:	Sean	=
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# 6. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(A)

# 6.1.Block Diagram of Test Setup

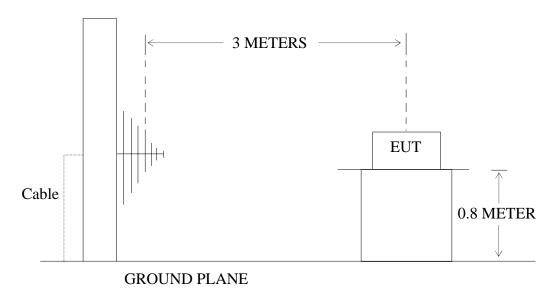
6.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Wired &Wireless Mouse)

6.1.2. Anechoic Chamber Test Setup Diagram

#### ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS



(EUT: Wired &Wireless Mouse)

# 6.2. 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.

# 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. Wired & Wireless Mouse (EUT)

Model Number : DS-2128(PCB 2128-X)

Serial Number : N/A

Manufacturer : Eastern Times Technology Co., Ltd.

# 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 mode (On) 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. 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

# 6.6. The Emission Measurement Result

# PASS.

Date of Test:	December 01, 2006	Temperature:	22°C
EUT:	Wired &Wireless Mouse	Humidity:	51%
Model No.:	DS-2128(PCB 2128-X)	Power Supply:	3.0V DC ("AAA"battery 2×)
Test Mode:	TX	Test Engineer:	Andy

# **Fundamental Radiated Emissions**

Test conditions		Fundamental 1	Fundamental Frequency		
		27.045N	27.045MHz		
	Unit	$(dB\mu V/m)/(\mu V/m)$	$(dB\mu V/m)/(\mu V/m)$		
$T_{nom}(25^{\circ}C)$		PEAK	AV		
		45.7/193	40.4/105		
limit		100/100,000	80/10,000		
Note: Measurement was performed with modulated signal with average detector and peak					

Note: Measurement was performed with modulated signal with average detector and peak detector.

The spectral diagrams in appendix 1.

Reviewer:	Sean	

# 7. BAND EDGES

# 7.1.The Requirement

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

# 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. Wired & Wireless Mouse (EUT)

Model Number : DS-2128(PCB 2128-X)

Serial Number : N/A

Manufacturer : Eastern Times Technology Co., Ltd.

# 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 mode (On) measure it.

# 7.4.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.

# 7.5. The Measurement Result

# The EUT does meet the FCC requirement.

The spectral diagrams in appendix 1.

# APPENDIX I (Test Curves)

#### CONDUCTION EMISSION STANDARD FCC PART 15B 01. Dec 06 13:50

 EUT:
 Wired&wireless Mouse

 Manuf:
 Eastern Times

 Op Cond:
 CONNECT TO PC

 Operator:
 Andy.tan

 Test Spec:
 Va 120V/60Hz

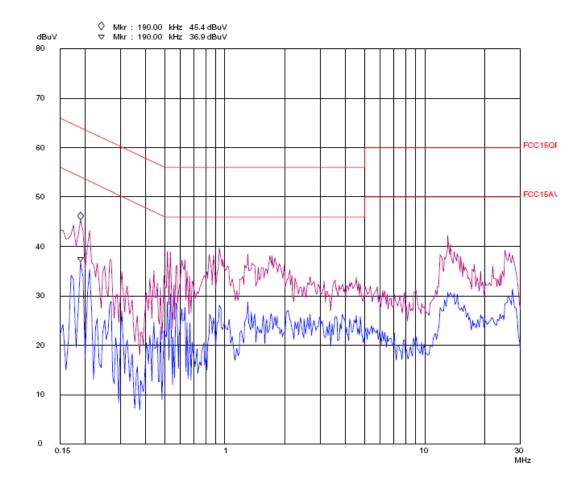
 Comment:
 Tem25°C Humi55%

m/n:DS-2128(PCB 2128-X) Sample no.:064081

#### Scan Settings (3 Ranges)

 Final Measurement: x QP / + AV
 Transducer No. Start
 Stop
 Name

 Meas Time:
 1 s
 1 9k
 30M
 confac



# CONDUCTION EMISSION STANDARD FCC PART15B 01. Dec 06 13:53

 EUT:
 Wired&wireless Mouse

 Manuf:
 Eastern Times

 Op Cond:
 CONNECT TO PC

 Operator:
 Andy.tan

 Test Spec:
 Vb 120V/60Hz

 Comment:
 Tem25°C Humi55%

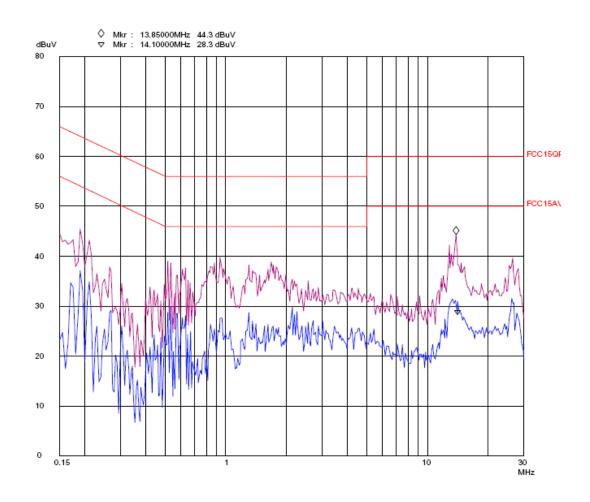
m/n:DS-2128(PCB 2128-X) Sample no.:064081

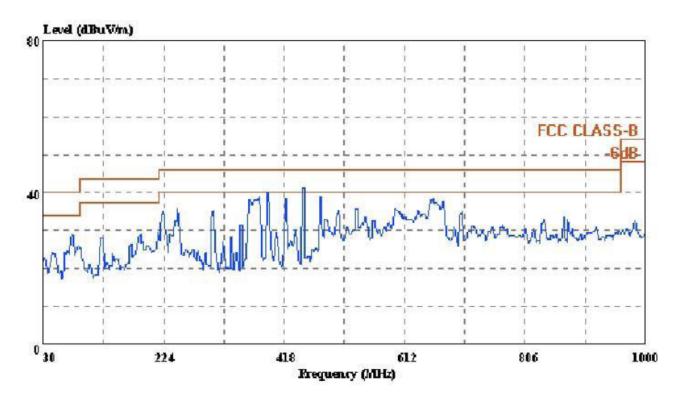
#### Scan Settings (3 Ranges)

Frequencies			11	-  Receiver Settings			
Start	Stop	Step	IË B\	N Detecto	r M-Time	Atten P	reamp
150k	2M	5k	9k	PK+AV	10ms AU	TO LN	OFF
2M	10M	10k	9k	PK+AV	1ms AU	TO LN	OFF
10M	30M	25k	9k	PK+AV	1ms At	ITO I N	OFF

 Final Measurement: x QP / + AV
 Transducer No. Start
 Stop
 Name

 Meas Time:
 1 s
 1 9k
 30M
 confac



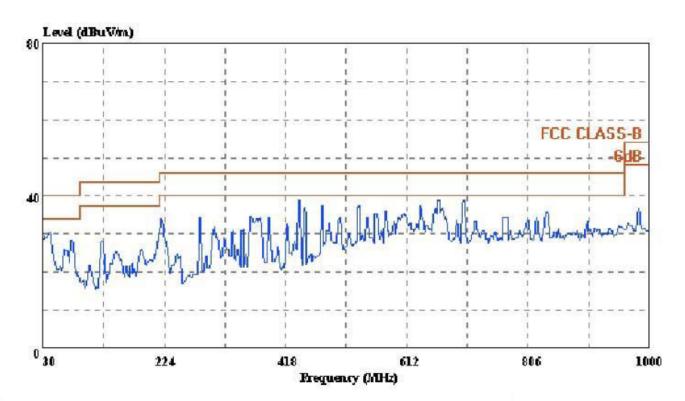


Condition: FCC CLASS-B 3m ATC VULB9163(NEW) HORIZONTAL

eut : Wired&wireless Mouse

power : USB 5.0V memo : CONNECT TO PC manuf : Eastern Times

sample no.: 064081

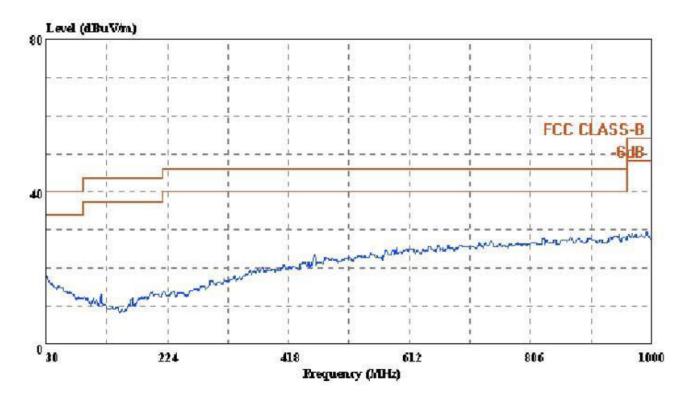


Condition: FCC CLASS-B 3m ATC VULB9163 (NEW) VERTICAL

eut : Wired&wireless Mouse

power : USB 5.0V memo : CONNECT TO PC manuf : Eastern Times

sample no.: 064081



Condition: FCC CLASS-B 3m ATC VULB9163(NEW) HORIZONTAL

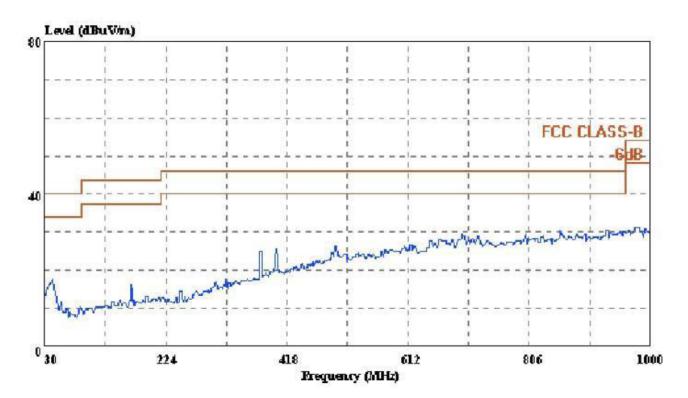
eut : Wired&wireless Mouse

power : DC 3.0V

memo : TX

manuf : Easterm Times

sample no.: 064081



Condition: FCC CLASS-B 3m ATC VULB9163 (NEW) VERTICAL

eut : Wired&wireless Mouse

power : DC 3.0V memo : TX

manuf : Easterm Times

sample no.: 064081

