

APPLICATION FOR CERTIFICATION
On Behalf of

SHARPER Innovations Ltd.

Mini Rechargeable Wireless Optical Mouse

Model Number: MW-701

Prepared for : SHARPER Innovations Ltd.
14/F., Block A, Chung Mei Centre, 15 Hing Yip Street,
Kwun Tong, Hong Kong

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block,
Shenzhen Science & Industrial Park,
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Report Number : ACS-F05198
Date of Test : Jun.02~07, 2005
Date of Report : Jun.23, 2005

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TEST REPORT DECLARATION

Applicant : SHARPER Innovations Ltd.
 Manufacturer : SHARPER Electronic Factory
 EUT Description : Mini Rechargeable Wireless Optical Mouse
 (A) MODEL NO. : MW-701
 (B) SERIAL NO. : F2005062301
 (C) POWER SUPPLY : DC 3V

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Apr, 2004.

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) 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 limits both radiated and conducted emissions. The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. 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 AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

This report must not be used by the applicant to claim product endorsement by NVLAP or any agency of the U.S. Government.

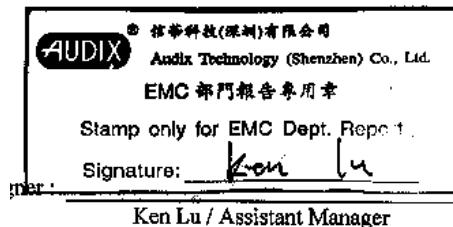
Date of Test : Jun.02~07, 2005

Prepared by : Vammi Zeng
 Vammi Zeng / Assistant

Lake Wang
 Lake Wang / Supervisor

Reviewer :

Approved & Authorized Signer :



Name of the Representative of the Responsible Party :

Signature :

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description : Mini Rechargeable Wireless Optical Mouse

Model Number : MW-701

Applicant : SHARPER Innovations Ltd.
14/F., Block A, Chung Mei Centre, 15 Hing Yip
Street, Kwun Tong, Hong Kong

Manufacturer : SHARPER Electronic Factory
Daping District, Tangxia Town, Dongguan City,
Guangdong, China

Date of Test : Jun.02~07, 2005

1.2. Test Facility

Site Description

3m Anechoic Chamber

: Certificated by FCC, USA
Registration Number: 90454
Aug. 15, 2003

3m & 10m Anechoic Chamber

: Certificated by FCC, USA
Registration Number: 794232
Mar. 15, 2004

EMC Lab.

: Certificated by DATech, German
Registration Number: DAT-P-091/99-01
Feb. 02, 2004

Certificated by NVLAP, USA
NVLAP Code: 200372-0
Mar. 31, 2004

Certificated by Nemko, Norway
Aut. No.: ELA135
April. 22, 2004

Certificated by Industry Canada
Registration Number: IC 5183
Jul. 28, 2004

Name of Firm

: Audix Technology (Shenzhen) Co., Ltd.

Site Location

: No. 6, Ke Feng Rd., 52 Block,
Shenzhen Science & Industrial Park,
Nantou, Shenzhen, Guangdong, China

1.3. Measurement Uncertainty

No.	Item	Uncertainty	Remark
1.	Uncertainty for Conducted Emission Test	1.22dB	
2.	Uncertainty for Radiated Emission Test	3.14dB	3m Chamber
3.	Uncertainty for Radiated Emission Test	3.18dB	10m Chamber
4.	Uncertainty for Power Clamp Test	1.38dB	

2. POWER LINE CONDUCTED EMISSION TEST

According to Paragraph (f) of FCC Part 15 section 15.107, Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

3. RADIATED EMISSION TEST

3.1. Test Equipment

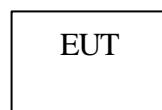
The following test equipments are used during the radiated emission test:

3.1.1. For Anechoic Chamber

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Spectrum	HP	85422E	3625A00181	May 16, 05	1 Year
2.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	May 16, 05	1 Year
3.	Amplifier	HP	8447D	2944A07794	Mar.15, 05	1/2 Year
4.	Bilog Antenna	Schaffner	CBL6111C	2598	Jan. 12, 05	1 Year
5.	PC	N/A	586ATX3	N/A	N/A	N/A
6.	Printer	HP	Laserjet6P	SGCF019673	N/A	N/A
7.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.1	Jan.30, 05	1/2 Year
8.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.2	Jan.30, 05	1/2 Year
9.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.3	Jan.30, 05	1/2 Year
10.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.4	Jan.30, 05	1/2 Year
11.	Coaxial Switch	Anritsu	MP59B	M73989	May 25,05	1/2 Year

3.2. Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and simulators

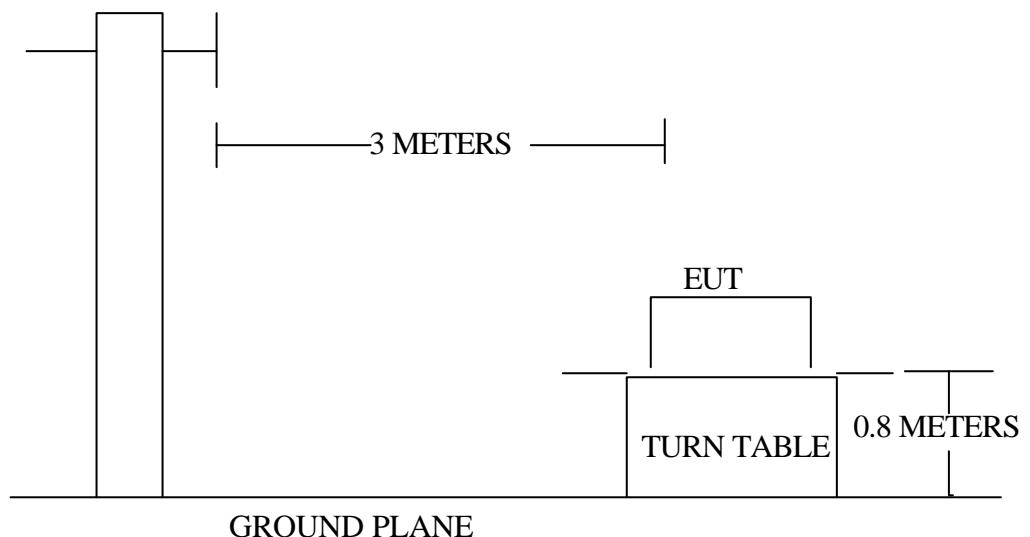


(EUT: Mini Rechargeable Wireless Optical Mouse)

3.2.2.In Anechoic Chamber

ANTENNA TOWER

ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS



3.3.Radiated Emission Limit: FCC 15.231

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		µV/m	dB(µV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Local Oscillator:	3	80.00 dB(µV)/m (Peak) 60.00 dB(µV)/m (Average)	
Harmonic :			

Remark :

- (1) Emission level (dB)µV = 20 log Emission level µV/m
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.4.EUT Configuration on Test

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

3.4.1.Mini Rechargeable Wireless Optical Mouse (EUT)

Model Number	:	MW-701
Serial Number	:	F2005062301
Manufacturer	:	SHARPER Electronic Factory

3.4.2.Support Equipment : As Tested Supporting System Detail, in Section 1.2.

3.5.Operating Condition of EUT

3.5.1.Setup the EUT as shown in Section 3.2..

3.5.2.Let the EUT work in test mode (Running) and test it.

3.6.Test Procedure

According to paragraph of FCC Part15 Section 15.231.

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it work normally, we use a keyboard test soft ware, let EUT working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 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 polarization of the antenna are set on test.

The bandwidth of the EMI test receiver (R&S ESVS20) is set at 120KHz.

The frequency range from 30MHz to 1000MHz and above 1000MHz are checked.

The test mode (Running) is tested in Anechoic Chamber, and all the scanning waveforms are attached in Appendix I.

3.7.Radiated Emission Test Result

PASS.

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

Please see the following pages.

Date of Test :	Jun.07, 2005	Temperature :	24
EUT :	Mini Rechargeable Wireless Optical Mouse	Humidity :	56%
Model No. :	MW-701	Test Mode :	Running
Test Engineer:	Thomax	Test Standard :	FCC Part15C 15.227/15.209

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dB μ V	Emission Level Horizontal dB μ V/m	Over Limits dB	Limits dB μ V/m
30.000	19.65	1.10	2.59	23.34	-16.67	40.00
114.390	11.55	2.21	8.19	21.95	-21.55	43.50
195.870	9.29	3.14	8.72	21.16	-22.34	43.50
231.760	10.96	3.35	7.28	21.58	-24.42	46.00

Remark: 1. All readings are Peak values.

2. Emission Level = Antenna Factor + Cable Loss + Meter Reading
3. The worst emission was detected at 30.000MHz with corrected signal level of 23.34dB μ V/m (Limit is 40.00dB μ V/m) when the antenna was at horizontal polarization and at 1.1m high and the turn table was at 0 °.
4. 0 ° was the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna.

Reviewer :

Lake Wang

Date of Test :	Jun.07, 2005	Temperature :	24
EUT :	Mini Rechargeable Wireless Optical Mouse	Humidity :	56%
Model No. :	MW-701	Test Mode :	Running
Test Engineer:	Thomax	Test Standard :	FCC Part15C 15.227/15.209

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dB μ V	Emission Level Vertical dB μ V/m	Over Limits dB	Limits dB μ V/m
31.940	13.71	0.98	3.80	18.49	-21.51	40.00
62.980	6.34	1.72	9.89	17.95	-22.05	40.00
123.120	10.07	2.23	6.96	19.26	-24.24	43.50
297.720	12.91	3.88	4.75	21.54	-24.46	46.00

Remark: 1. All readings are Peak values.

2. Emission Level = Antenna Factor + Cable Loss + Meter Reading
3. The worst emission was detected at 31.940MHz with corrected signal level of 18.49dB μ V/m (Limit is 40.00dB μ V/m) when the antenna was at vertical polarization and at 1.3m high and the turn table was at 0 °.
4. 0 ° was the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna.

Reviewer :

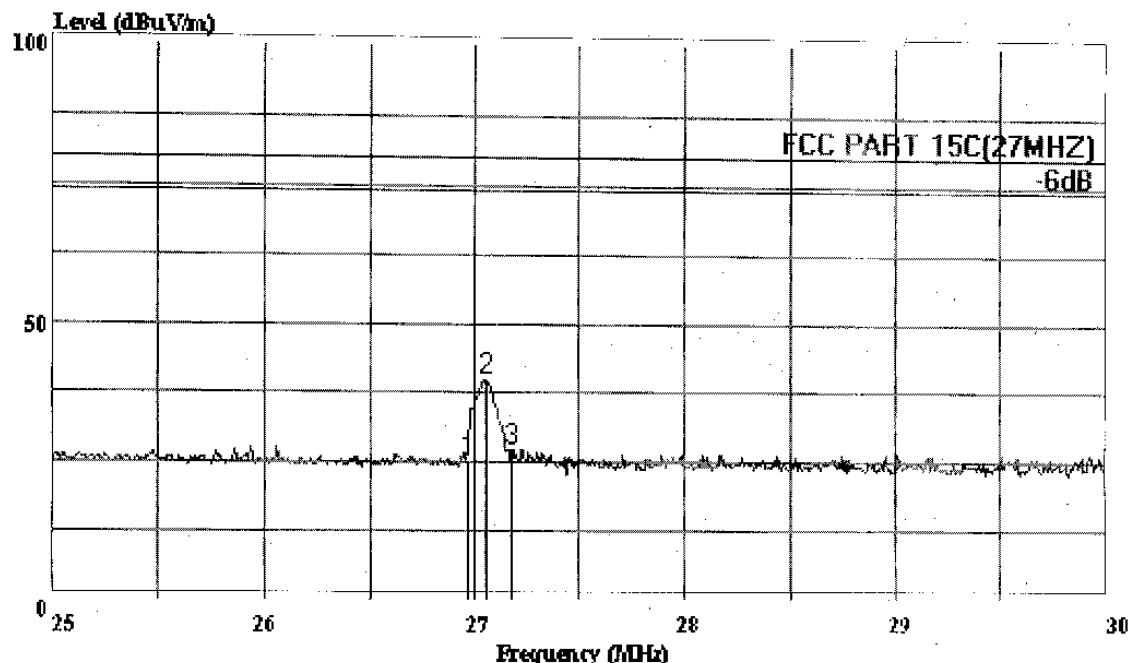
Lake Wang



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Data#: 16 File#: Sharper.EMI

Date: 2005-06-07 Time: 00:49:54



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: FCC PART 15C(27MHz) 3m 25-30MHz HORIZONTAL
 EUT : Mini Rechargeable Wireless
 : Optical Mouse
 M/N : MW-701
 Power : DC 3V
 Engineer : THOMAX
 Test Mode: RUNNING
 Memo : Temp:24'C Humi:56%

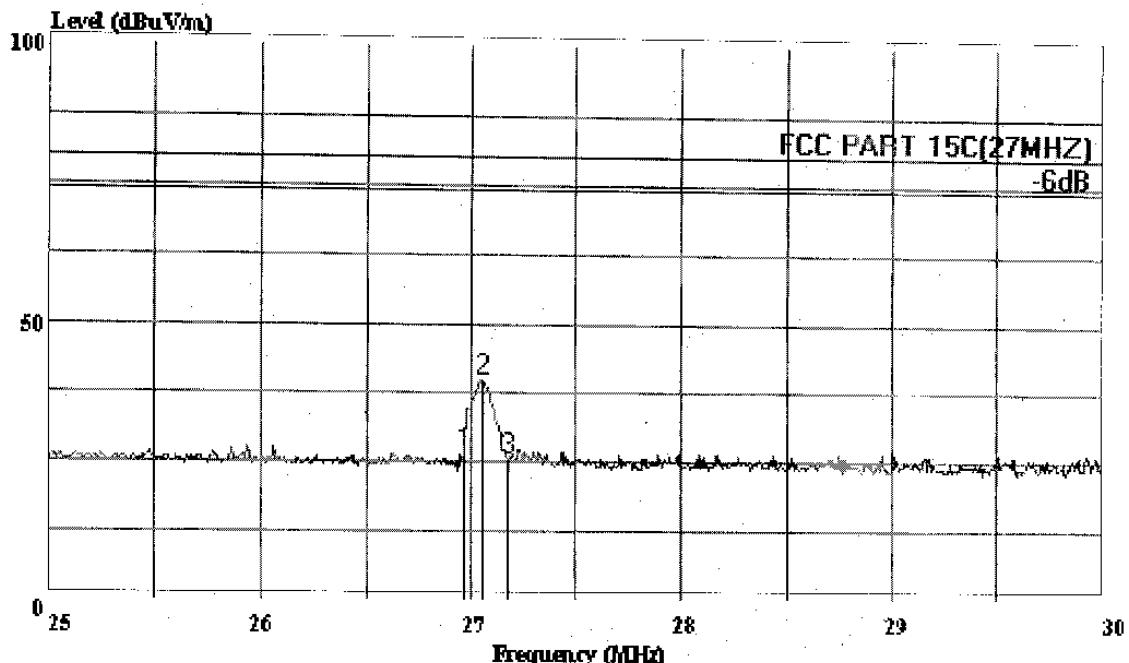
Page: 1

	Over	Limit	Read	Probe	Cable		
Freq	Level	Limit	Line	Level	Factor	Loss	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	
1	26.970	25.17	-54.83	80.00	27.73	20.78	0.78
2	27.055	39.62	-40.38	80.00	42.27	20.71	0.79
3	27.180	27.06	-52.94	80.00	29.80	20.63	0.79



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Data#: 17 File#: Sharper.EMI Date: 2005-06-07 Time: 00:50:59



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: FCC PART 15C(27MHz) 3m 25-30MHz VERTICAL
 EUT : Mini Rechargeable Wireless
 : Optical Mouse
 M/N : MW-701
 Power : DC 3V
 Engineer : THOMAX
 Test Mode: RUNNING
 Memo : Temp:24'C Humi:56%

Page: 1

	Over	Limit	Read	Probe	Cable		
Freq	Level	Limit	Line	Level	Factor	Loss	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	
1	26.965	26.45	-53.55	80.00	29.33	20.47	0.78
2	27.050	39.69	-40.31	80.00	42.61	20.44	0.79
3	27.175	25.72	-54.28	80.00	28.71	20.39	0.79

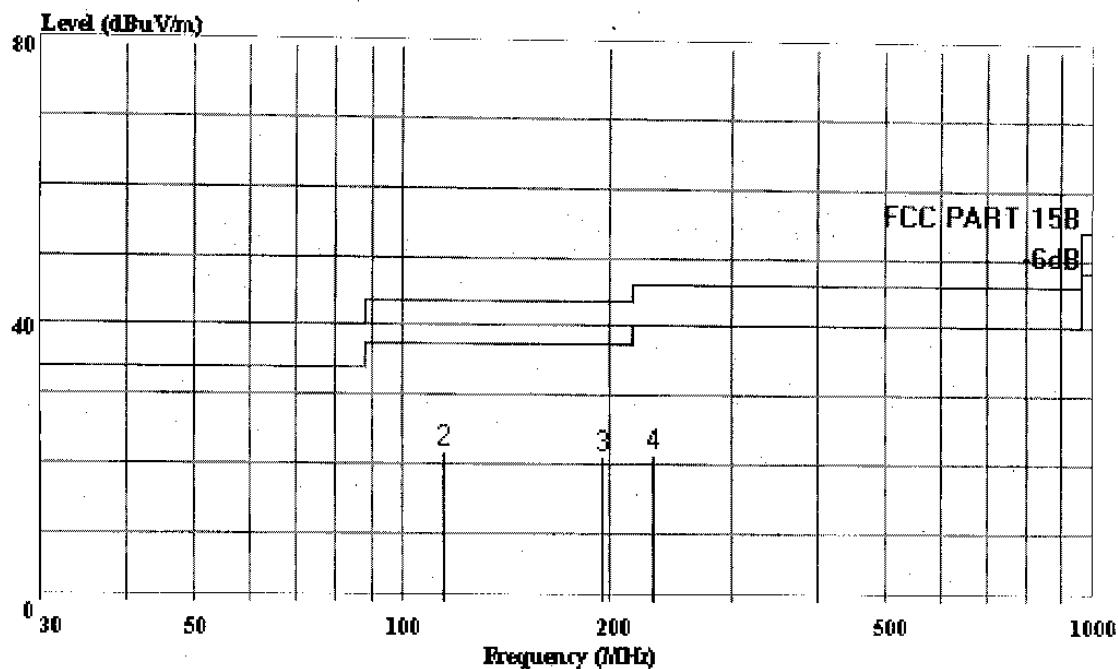


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Data#: 19 File#: Sharper.EMI

Date: 2005-06-07 Time: 00:53:48



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: FCC PART 15B 3m 2598FACTOR HORIZONTAL
 EUT : Mini Rechargeable Wireless
 : Optical Mouse
 M/N : MW-701
 Power : DC 3V
 Engineer : THOMAX
 Test Mode: RUNNING
 Memo : Temp:24'C Humi:56%
 : H:1.1m TablePos:0'

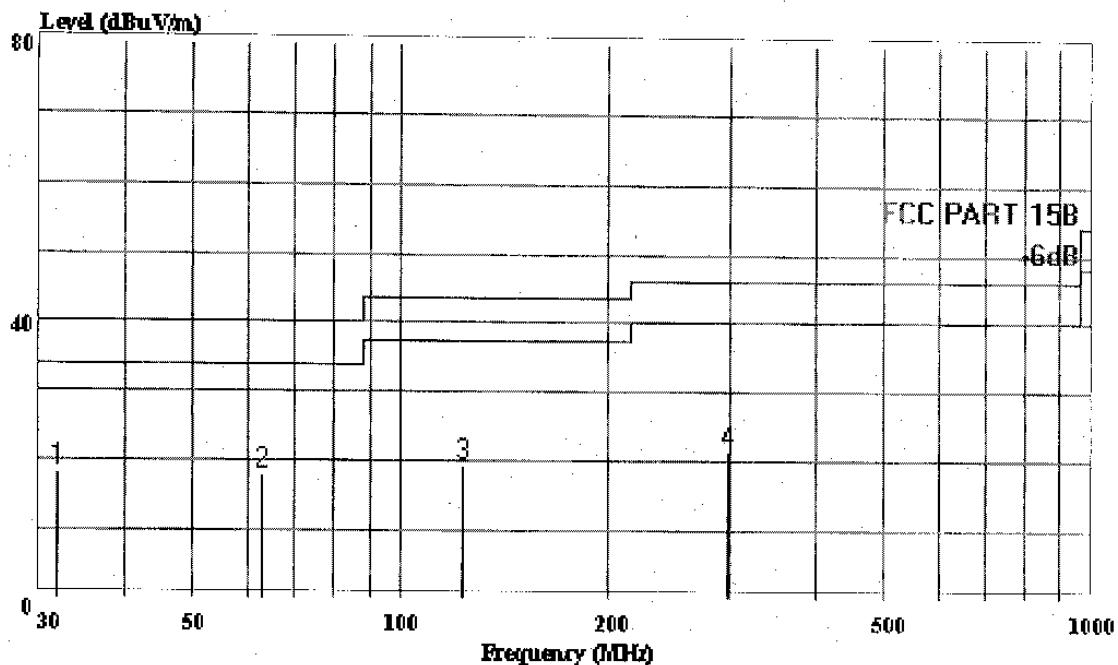
Page: 1

Freq	Level	Over Limit	Read Line	Probe		Cable Loss	
				MHz	dBuV/m		
					dB		
1	30.000	23.34	-16.67	40.00	2.59	19.65	1.10
2	114.390	21.95	-21.55	43.50	8.19	11.55	2.21
3	195.870	21.16	-22.34	43.50	8.72	9.29	3.14
4	231.760	21.58	-24.42	46.00	7.28	10.96	3.35



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Data#: 18 File#: Sharper.EMI Date: 2005-06-07 Time: 00:53:26



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: FCC PART 15B 3m 2598FACTOR VERTICAL
 EUT : Mini Rechargeable Wireless
 : Optical Mouse
 M/N : MW-701
 Power : DC 3V
 Engineer : THOMAX
 Test Mode: RUNNING
 Memo : Temp:24'C Humi:56%
 : H:1.3m TablePos:0'

Page: 1

Freq	Level	Over	Limit	Read	Probe	Cable	
		Line	Line	Level	Factor	Loss	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	
1	31.940	18.49	-21.51	40.00	3.80	13.71	0.98
2	62.980	17.95	-22.05	40.00	9.89	6.34	1.72
3	123.120	19.26	-24.24	43.50	6.96	10.07	2.23
4	297.720	21.54	-24.46	46.00	4.75	12.91	3.88

4. DEVIATION TO TEST SPECIFICATIONS

[None.]

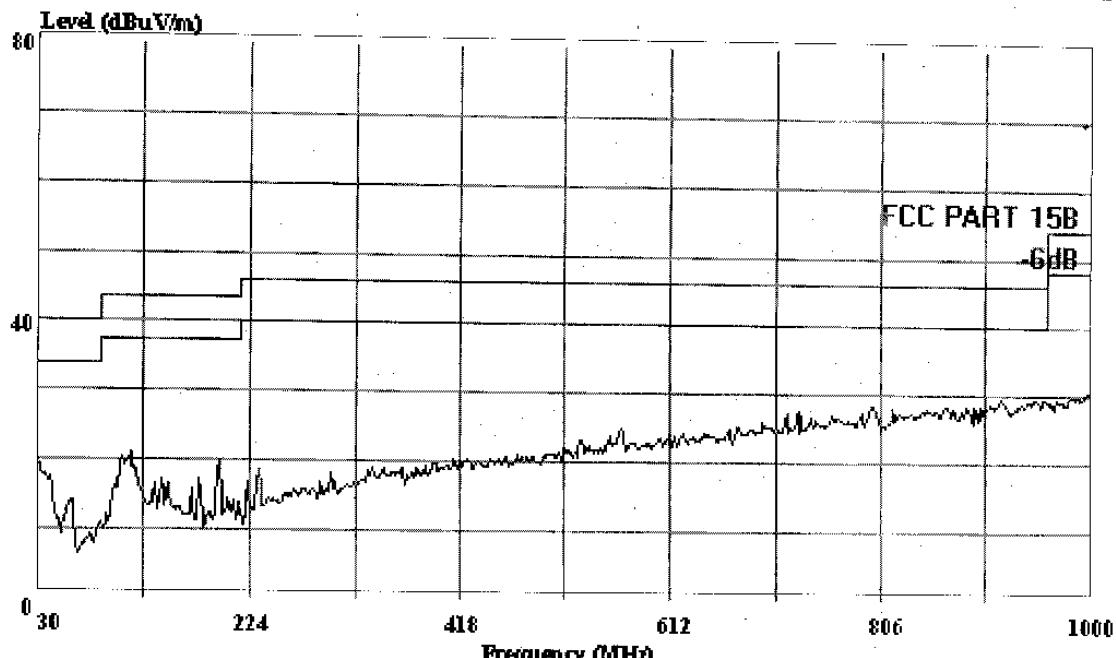
APPENDIX I



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Data#: 13 File#: Sharper.EMI

Date: 2005-06-02 Time: 11:07:41



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

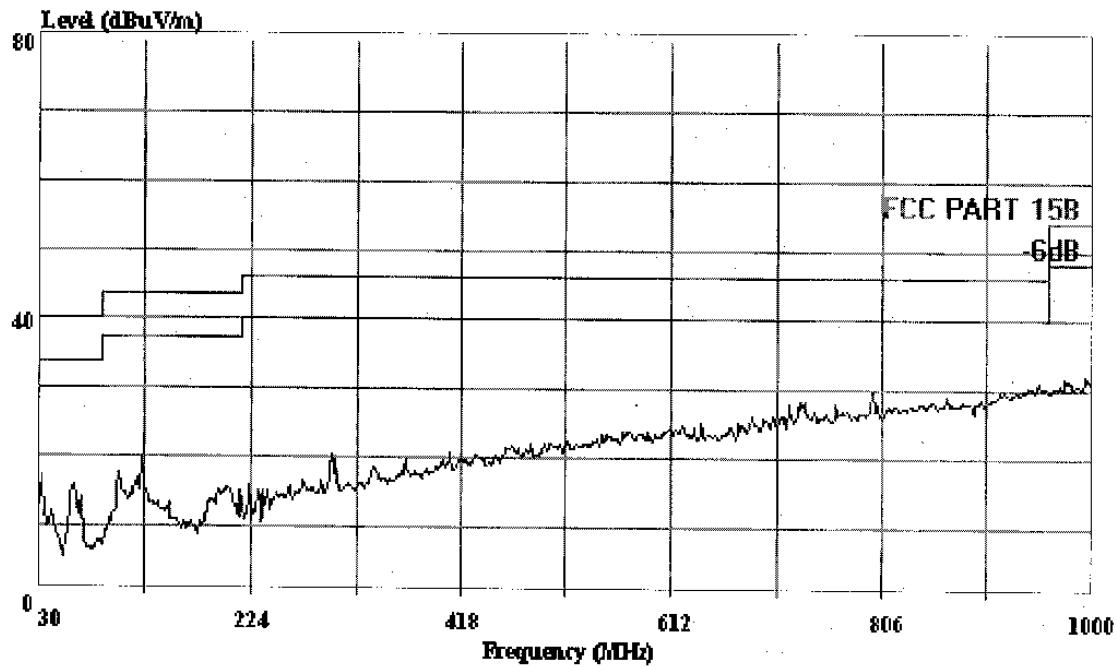
Condition: FCC PART 15B 3m 2598 FACTOR HORIZONTAL
 EUT : Mini Rechargeable Wireless
 : Optical Mouse
 M/N : MW-701
 Power : DC 3V
 Engineer : THOMAX
 Test Mode: RUNNING
 Memo : Temp:24'C Humi:56%



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Data#: 12 File#: Sharper.EMI

Date: 2005-06-02 Time: 11:05:48



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: FCC PART 15B 3m 2598FACTOR VERTICAL
 EUT : Mini Rechargeable Wireless
 : Optical Mouse
 M/N : MW-701
 Power : DC 3V
 Engineer : THOMAX
 Test Mode: RUNNTNG
 Memo : Temp:24'C Humi:56%