

# TEST REPORT

Product Name : Wireless Optical Mouse  
Product ID : M3306  
Applicant : HAHNTEK TECHNOLOGY CORP.  
Address of Applicant : No.263,Sec.1,Lung Shou Street, Lu-Chu Hsian 338,  
Taoyuan Hsien, Taiwan

Standards:

**FCC Part 15      subpart C**

In the configuration tested, the EUT complied with the standards specified above. The test data, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4(1992).

## Remarks:

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This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan E&E Services or testing done by SGS Taiwan E&E Services in connection with distribution or use of the product described in this report must be approved by SGS Taiwan E&E Services in writing.

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Tested by : Alex Hsieh      Date : Jun. 15, 2003

Approved by : Robert Chang      Date : Jun. 18, 2003

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# 1. General Information

## 1.1 Testing Laboratory

SGS Taiwan Ltd. ( FCC Registration number: 573967 )  
1F, No. 134, Wukung Road, Wuku industrial zone  
Taipei county , Taiwan , R.O.C.  
Telephone : +886-2-2299-3279  
Fax : +886-2-2298-2698  
Internet : <http://www.sgs.com.tw>

## 1.2 Details of Applicant

Name : HAHNTEK TECHNOLOGY CORP.  
Address : No. 263, Sec.1, Lung Shou Street, Lu-Chu Hsian 338,  
Taoyuan Hsien, Taiwan. R.O.C.  
Contact : Mr. Lin  
Telephone : +886-3-379-5396

## 1.3 Description of EUT(s)

1	Product name	Wireless Optical mouse
2	Product ID	M3306
3	Supply Voltage	DC 3.0V , AAA battery X 2
4	Carrier Frequency	27.045 Mhz
5	Modulation Method	FSK

## **1.4 Testing Procedure**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m chamber , then 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be retested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

### **NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

## **1.5 Testing Method**

The testing standard follows CFR 47, Part 15.247 , and ANSI C63.4 1992.

## 2.Summary of Results

subclause	Parameter to be measures	Verdict	Page
15.209	Radiated emission Limits, general requirement	<i>PASS</i>	7
15.227	Fundamental Strength Limit	<i>PASS</i>	9

### 3. Instruments List

<b>Instrument</b>	<b>Model</b>	<b>Serial number</b>	<b>Calibration date</b>
<b>Desktop PC</b>	<b>HP Pavillion 723D</b>	<b>N/A</b>	<b>N/A</b>
<b>Spectrum Analyzer</b>	<b>R&amp;S FSP 40</b>	<b>100034</b>	<b>Mar. 27, 2003</b>
<b>Antenna</b>	<b>Schwarzbeck VULB9163</b>	<b>152</b>	<b>July 01, 2002</b>
<b>EMC Analyzer</b>	<b>HP 8594EM</b>	<b>3624A00203</b>	<b>Dec. 13, 2002</b>
<b>EMI Test Receiver</b>	<b>R&amp;S ESCS 30</b>	<b>828985/004</b>	<b>Oct. 11, 2002</b>

# 4. Measurements

## 4.1 Radiated emission Limits, general requirement SUBCLAUSE 15.209

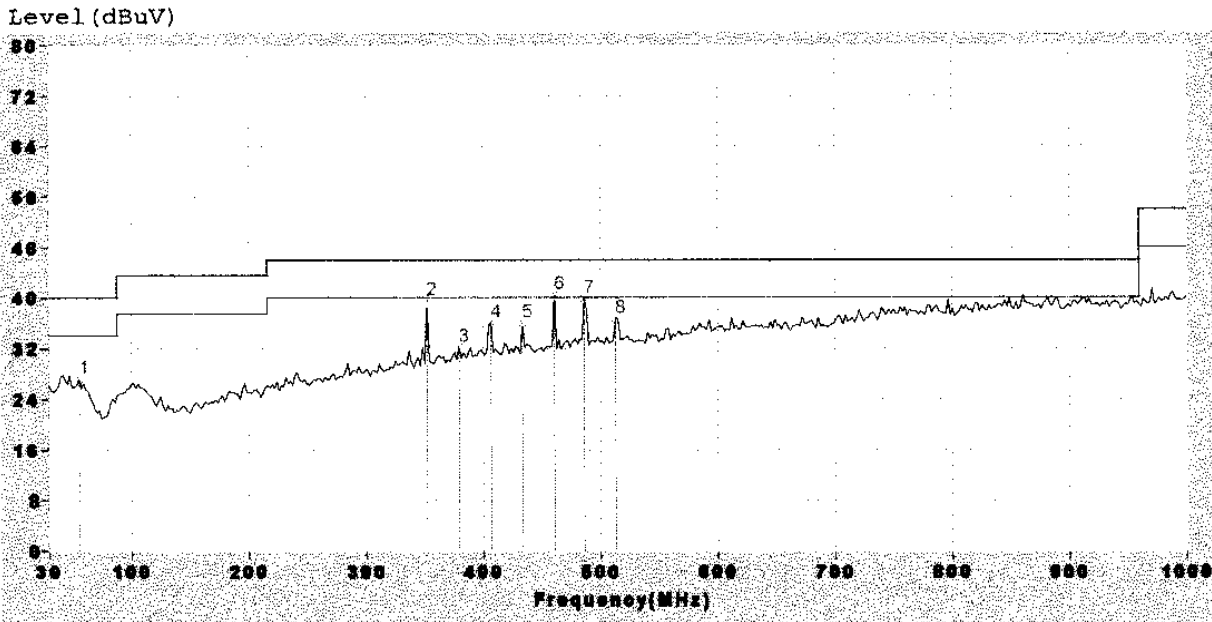
RBW=120Khz , VBW=120Khz

Vertical

### SGS EMC Lab. Site 2 EMI TESTING REPORT

Customer:  
Model :  
Spec. :  
Ser. No.:Optical mouse  
Limit :FCC B

Date:2003-06-18 Time:16:49  
Polar. :Vertical- 3M  
Report No.:  
File :-1  
Tester :Alex  
Tmp. (C) :22.0 Humid. (%) :59



MEMO:

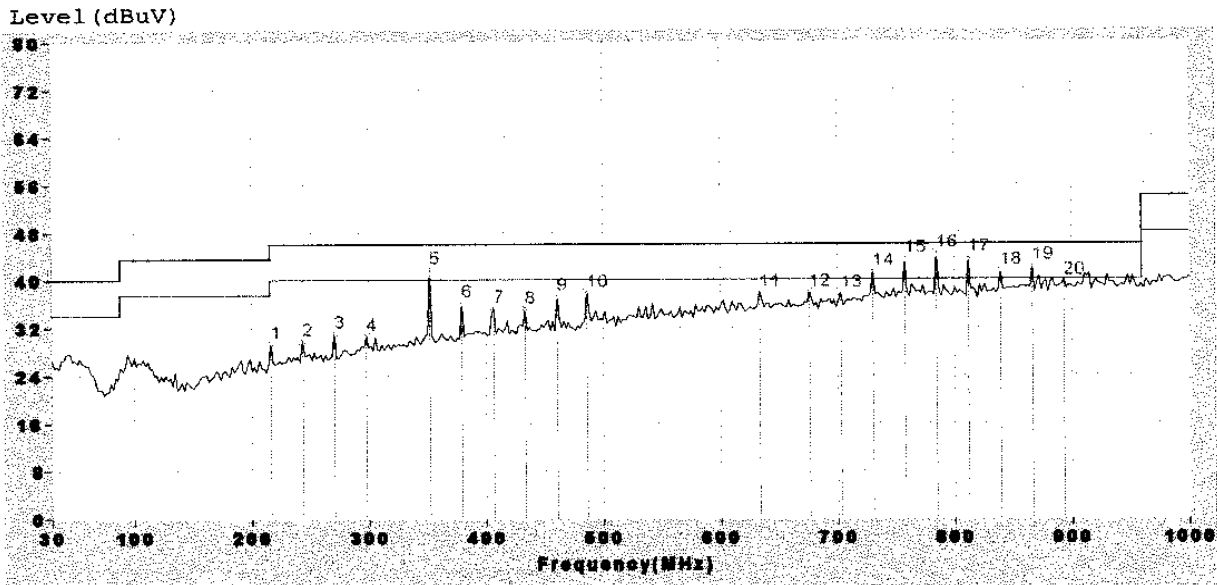
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Factor	Other Factor	
	MHz	dB	dB	dB	dB	dB	dB	dB	
1	55.22	27.27	-12.73	40.00	14.97	11.75	0.55	0.00	
2	352.04	39.61	-6.39	46.00	23.42	14.76	1.43	0.00	
3	379.20	32.24	-13.76	46.00	15.61	15.10	1.53	0.00	
4	406.36	36.12	-9.88	46.00	18.73	15.77	1.62	0.00	
5	433.52	36.03	-9.97	46.00	18.18	16.17	1.68	0.00	
!	6	460.68	40.50	-5.50	46.00	22.45	16.30	1.75	0.00
	7	485.90	39.84	-6.16	46.00	21.07	16.95	1.81	0.00
	8	513.06	36.77	-9.23	46.00	17.44	17.44	1.88	0.00

Horizontal

SGS EMC Lab. Site 2  
EMI TESTING REPORT

Customer:  
Model :  
Spec. :  
Ser. No.:Optical mouse  
Limit :FCC B

Date:2003-06-18 Time:16:48  
Polar. :Horizontal- 3M  
Report No.:  
File :-1  
Tester :Alex  
Tmp. (C):22.0 Humid. (%):59



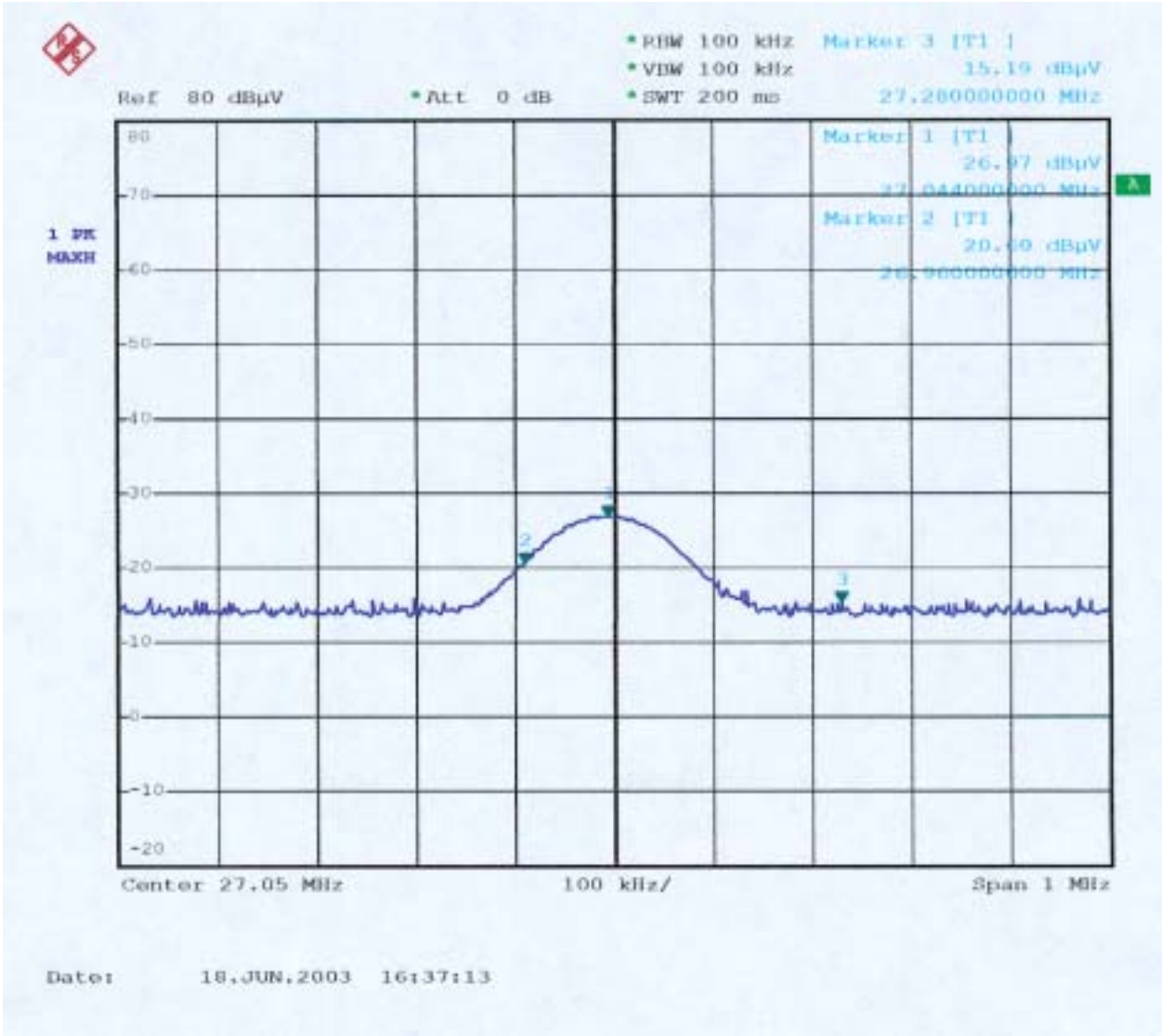
MEMO:

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Factor	Other Factor
	MHz	dB	dB	dB	dB	dB	dB	dB
1	216.24	29.52	-16.48	46.00	17.63	10.86	1.03	0.00
2	243.40	29.90	-16.10	46.00	16.66	12.14	1.10	0.00
3	270.56	31.22	-14.78	46.00	17.59	12.46	1.17	0.00
4	297.72	30.74	-15.26	46.00	16.20	13.31	1.23	0.00
!	5	352.04	-4.11	46.00	25.70	14.76	1.43	0.00
6	379.20	36.34	-9.66	46.00	19.71	15.10	1.53	0.00
7	406.36	35.41	-10.59	46.00	18.02	15.77	1.62	0.00
8	433.52	35.23	-10.77	46.00	17.38	16.17	1.68	0.00
9	460.68	37.37	-8.63	46.00	19.32	16.30	1.75	0.00
10	485.90	37.95	-8.05	46.00	19.19	16.95	1.81	0.00
11	633.34	37.91	-8.09	46.00	16.26	19.52	2.13	0.00
12	676.02	37.95	-8.05	46.00	16.03	19.73	2.19	0.00
13	703.18	37.76	-8.24	46.00	15.71	19.83	2.23	0.00
!	14	730.34	-4.55	46.00	18.59	20.57	2.29	0.00
!	15	757.50	-2.45	46.00	20.31	20.89	2.35	0.00
!	16	784.66	-1.59	46.00	20.98	21.02	2.41	0.00
!	17	811.82	-2.29	46.00	20.09	21.16	2.46	0.00
!	18	838.98	-4.49	46.00	17.55	21.47	2.49	0.00
!	19	866.14	-3.66	46.00	17.89	21.92	2.53	0.00
20	893.30	39.77	-6.23	46.00	15.06	22.15	2.56	0.00



4.2 Fundamental strength limit

SUBCLAUSE 15.227



Frequency (Mhz)	Read value (dB µ V)	Ant factor (dB)	Cable loss (dB)	Real value (dB µ V)	Strength limit at 3 meter (dB µ V/m)
27.044	26.97	11.35	0.24	38.56	80
26.96	20.60	11.35	0.24	32.19	50
27.28	15.19	11.35	0.24	26.78	50

**APPENDIX: Photographs of Test Setup**

<Photos are saved separately>

**APPENDIX : Photographs of EUT**

**Internal Photo**

<Photos are saved separately>

**External Photo**

<Photos are saved separately>