

Global Unite Technology Co., Ltd.

环球众一科技有限公司

Telephone: +86 (0) 755 2779 8480 Fax: +86 (0) 755 2779 8960 Email: szsale@gtstest.com

Report No.: GTSE10050003601

Page: 1 of 9

FCC REPORT

Application No:	GTSE100500036RF			
Applicant:	Ergowerx International LLC			
Equipment Under Test (EUT)			
Name:	Wireless Optical Mouse			
Model No.	M3200			
Operation Frequency:	27.042MHz			
FCC ID:	YAE-M3200			
Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.227: 2008			
Date of Receipt:	10 May 2010			
Date of Test:	11 May to 14 May 2010			
Date of Issue:	14 May 2010			
Test Result :	PASS *			

^{*} In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo Laboratory Manager

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 and does not permit the use of the GTS product certification mark. 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 GTS International Electrical Approvals or testing done by GTS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by GTS International Electrical Approvals in writing.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."



Report No.: GTS1004000101 Page: 2 of 9

Page:

2 Contents

			Page
1	COV	/E OVER PAGE	1
2	CON	ITENTS	2
3	IES	T SUMMARY	3
4	GEN	IERAL INFORMATION	4
	4.1	CLIENT INFORMATION	4
	4.2	GENERAL DESCRIPTION OF E.U.T.	
	4.3	E.U.T OPERATION MODE	4
	4.4	TEST LOCATION	4
	4.5	OTHER INFORMATION REQUESTED BY THE CUSTOMER	4
	4.6	TEST INSTRUMENTS LIST	5
5	TES	T RESULTS AND MEASUREMENT DATA	6
	5.1	ANTENNA REQUIREMENT:	6
	5.2	RADIATED EMISSION	
	5.2.1		8
	5.2.2	2 Spurious Emissions	8
	53	2008 BANDWIDTH	Q



Report No.: GTS1004000101 Page: 3 of 9

3 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Passed
Field strength of the fundamental signal	15.227 (a)	Passed
Spurious emissions	15.227/15.209	Passed
20dB Bandwidth	15.227	Passed

Passed: The EUT complies with the essential requirements in the standard.



Page: 4 of 9

General Information

4.1 Client Information

Applicant:	Ergowerx International LLC
Address of Applicant:	39 Park Place Suite 201, Englewood, NJ 07631 USA
Manufacturer/Factory:	Dongguan Togran Electronic Technology Co. Ltd.
Address of Manufacturer/Factory:	No. 262 Shi Dan Road, Third Industrial Zone, Jiezhou, Shijie, Dongguan

4.2 General Description of E.U.T.

Product Name:	Wireless Optical Mouse
Trade Name:	Smartfish
Item No.:	M3200
Operation Frequency:	27.042MHz
Modulation type:	AM
Antenna Type:	Integral
Power supply:	2*1.5V("AA" size)=3.0V

4.3 E.U.T Operation mode

Operating Environment:	Operating Environment:					
Temperature:	24.0 °C					
Humidity:	52 % RH					
Atmospheric Pressure:	1008 mbar					
Test mode:						
Transmitting mode:	Keep the EUT in transmitting with interior modulation.					

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.5 Other Information Requested by the Customer

None.



Report No.: GTS1004000101 Page: 5 of 9

4.6 Test Instruments list

Radi	Radiated emissions									
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)				
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	16-06-2009	15-06-2010				
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	12-12-2008	11-12-2009				
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A				
4	Coaxial cable	SGS	N/A	SEL0028	18-06-2009	17-06-2010				
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0014	12-08-2009	11-08-2010				
6	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0005	12-08-2009	11-08-2010				
7	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	12-08-2009	11-08-2010				
8	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	18-06-2009	17-06-2010				
9	Pre-amplifier		AFS42-00101 800-25-S-42	SEL0081	18-06-2009	17-06-2010				
10	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	SEL0080	18-06-2009	17-06-2010				
11	Band filter	Amindeon	82346	SEL0094	18-06-2009	17-06-2010				

RF	RF conducted											
Item	Test Equipment	Test Equipment Manufacturer Model No. Inve		Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)						
1	Spectrum Analyzer	Rohde & Schwarz	10336/030	EMC0040	16-06-2009	15-06-2010						
2	Coaxial cable	SGS	N/A	SEL0029	18-06-2009	17-06-2010						



Page: 6 of 9

Test results and Measurement Data 5

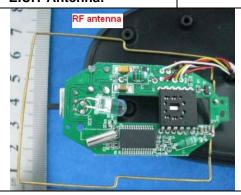
5.1 Antenna requirement:

Standard requirement: FCC Part15 C Section 15.203

15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

E.U.T Antenna:





Report No.: GTS1004000101 Page: 7 of 9

Page:

5.2 Radiated Emission

0.2	Radiated Ellission							
	Test Requirement:	FCC Part15 C Section 15.22	27 and 15.209					
	Test Method:	ANSI C63.4: 2003						
	Test Frequency Range:	25MHz to 1000MHz						
	Test site:	Measurement Distance: 3m	(Semi-Anechoic Chambe	r)				
	Receiver setup:	RBW=100KHz, VBW=300KH	Hz					
	Limit:							
	(Field strength of the	Frequency	Limit (dBuV/m @3m) 80.00	Remark				
	fundamental signal)	26.96MHz-27.28MHz	100.00	Average Value Peak Value				
	Limit:							
	(Spurious Emissions)	Frequency	Limit (dBuV/m @3m)	Remark				
	,	30MHz-88MHz	40.0	Quasi-peak Value				
		88MHz-216MHz 216MHz-960MHz	43.5 46.0	Quasi-peak Value Quasi-peak Value				
		960MHz-1GHz	54.0	Quasi-peak Value				
	Test Procedure:	 1>. The E.U.T and its simulators are placed on a turn table which is 0.8meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. 2>. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interfacables must be manipulated according to ANSI C63.4:2003 on radiate measurement. 						
	Test setup:	Below 1GHz						
		EUT 4m Turn 0.8m In Table A	n R	Search Antenna RF Test Receiver				
	Test Instruments:	Refer to section 4.7 for detai	ls					
	Test mode:	Transmitting mode						
	Test results:	Passed						

Measurement Data



Page: 8 of 9

5.2.1 Field Strength Of The Fundamental Signal

Peak value:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
27.042	0.78	8.47	28.11	96.47	77.61	100.00	-22.39	Horizontal
27.042	0.78	8.47	28.11	86.75	67.89	100.00	-32.11	Vertical

Average value:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
27.042	0.78	8.47	28.11	86.59	67.73	80.00	-12.27	Horizontal
27.042	0.78	8.47	28.11	78.42	59.56	80.00	-20.44	Vertical

5.2.2 Spurious Emissions

Frequency	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	polarization
(MHz)	(dB)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	•
98.87	1.19	9.06	27.89	48.52	30.88	43.50	-12.62	Horizontal
148.34	1.32	8.86	27.47	41.62	24.33	43.50	-19.17	Horizontal
198.78	1.40	10.19	27.16	38.70	23.13	43.50	-20.37	Horizontal
347.19	2.05	15.34	27.07	32.16	22.48	46.00	-23.52	Horizontal
397.63	2.20	16.27	27.39	33.35	24.43	46.00	-21.57	Horizontal
97.90	1.18	9.02	27.89	38.16	20.47	43.50	-23.03	Vertical
148.34	1.32	8.86	27.47	34.26	16.97	43.50	-26.53	Vertical
198.78	1.40	10.19	27.16	32.76	17.19	43.50	-26.31	Vertical
347.19	2.05	15.34	27.07	30.01	20.33	46.00	-25.67	Vertical
444.19	2.39	16.77	27.55	28.70	20.31	46.00	-25.69	Vertical

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor



Page: 9 of 9

5.3 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.227
Test Method:	ANSI C63.4:2003
Receiver setup:	RBW=10KHz, VBW=30KHz, detector: Peak
Limit:	26.96MHz~27.28MHz
Test Procedure:	According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.
	2. Set the EUT to proper test channel.
	3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points.
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test Instruments:	Refer to section 4.7 for details
Test mode:	Transmitting mode
Test results:	Passed

Test plot as follows:

