

FCC TEST REPORT

for

Part 15, Subpart B Class B

Equipment : MOUSE

Model No. : U802 , NewScroll USB

FCC ID : FSUGMZG4

Filing Type : Original Grant

Applicant : **KYE Systems Corp.**
No. 492, Sec. 5, Chung Hsin Rd., San Chung,
Taipei Hsien, 241, Taiwan, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without the written authorization of the test lab., the Test Report may not be copied.

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

Table of Contents

CERTIFICATE OF COMPLIANCE	3
1. General Description of Equipment under Test	4
1.1. Applicant.....	4
1.2. Manufacturer.....	4
1.3. Basic Description of Equipment under Test.....	4
1.4. Feature of Equipment under Test.....	4
2. Test Configuration of Equipment under Test.....	5
2.1. Test Manner.....	5
2.2. Description of Test System	5
2.3. Connection Diagram of Test System.....	7
3. Test Software	8
4. General Information of Test	9
4.1. Test Facility.....	9
4.2. Standard for Methods of Measurement	9
4.3. Test in Compliance with.....	9
4.4. Frequency Range Investigated	9
4.5. Test Distance.....	9
5. Test of Conducted Powerline.....	10
5.1. Major Measuring Instruments.....	10
5.2. Test Procedures.....	11
5.3. Typical Test Setup Layout of Conducted Powerline	12
5.4. Test Result of AC Powerline Conducted Emission	13
5.5. Photographs of Couducted Powerline Test Configuration.....	14
6. Test of Radiated Emission	16
6.1. Major Measuring Instruments.....	16
6.2. Test Procedures.....	17
6.3. Typical Test Setup Layout of Radiated Emission.....	18
6.4. Test Result of Radiated Emission	19
6.5. Photographs of Radiated Emission Test Configuration.....	20
7. Antenna Factor & Cable Loss	21
8. List of Measuring Equipments Used	22



CERTIFICATE OF COMPLIANCE

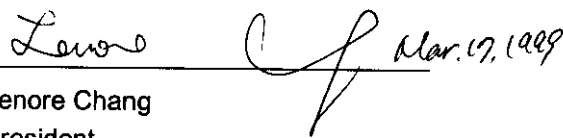
for

FCC Part 15, Subpart B Class B

Equipment : MOUSE
Model No. : U802, NewScroll USB
FCC ID : FSUGMZG4
Applicant : **KYE Systems Corp.**
No. 492, Sec. 5, Chung Hsin Rd., San Chung,
Taipei Hsien, 241, Taiwan, R.O.C.

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 1992** and the energy emitted by this equipment was **passed** both radiated and conducted emission class **B** limits. Testing was carried out on Mar. 1, 1999 at **SPORTON International Inc. LAB.** in Nei Hwu.



Lenore Chang
President

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

KYE Systems Corp.

No. 492, Sec. 5, Chung Hsin Rd., San Chung, Taipei Hsien, 241, Taiwan, R.O.C.

1.2. Manufacturer

Same as 1.1.

1.3. Basic Description of Equipment under Test

Equipment	: MOUSE
Model No.	: U802, NewScroll USB
FCC ID	: FSUGMZG4
Trade Name	: Genius
Data cable	: Non-Shielded, 1.05 m
Power Supply Type	: N/A
Power Cord	: N/A

1.4. Feature of Equipment under Test

Operating Voltage: 5V

Operating Current: 20mA

Port: USB

Resolution: 400DPI

2. Test Configuration of Equipment under Test

2.1. Test Manner

- a. The EUT has been associated with personal computer and peripherals pursuant to ANSI C63.4-1992 and configuration operated in a manner which tended to maximize its emission characteristics in a typical application.
- b. The SONY Monitor, DELL PS/2 Keyboard, HP Printer, ACEEX Modem and EUT were connected to the FIC PC for EMI test.
- c. Frequency range investigated: conduction 450 KHz to 30 MHz, radiation 30 MHz to 1,000 MHz.

2.2. Description of Test System

Support Unit 1. -- Personal Computer (FIC)

FCC ID	: N/A
Model No.	: P2L97
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0037
Data Cable	: Shielded, 360 degree via metal backshells
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. -- Monitor (SONY)

FCC ID	: AK8GDM17SE2T
Model No.	: GDM-17SE2T
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0043
Data Cable	: Double-Shielded, 360 degree via metal backshells, 1.75m

Support Unit 3. -- PS/2 Keyboard (DELL)

FCC ID	: GYUM90SK
Model No.	: AT101w
Serial No.	: SP0054
Data Cable	: Shielded, 360 degree via metal backshells, 2.0m

FCC TEST REPORT

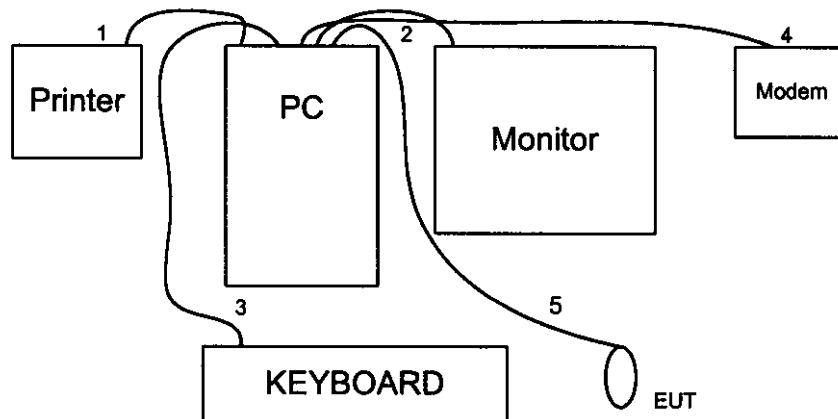
Report No. : F922504

Support Unit 4. -- Printer (HP)

FCC ID	: DSI6XU2225
Model No.	: 2225C
Power Supply Type	: Linear
Power Cord	: Non-Shielded
Serial No.	: SP0049
Data Cable	: Shielded, 360 degree via metal backshells, 1.2m

Support Unit 5. -- Modem (ACEEX)

FCC ID	: IFAXDM1414
Model No.	: DM1414
Power Supply Type	: Linear
Power Cord	: Non-Shielded
Serial No.	: SP0015
Data Cable	: Shielded, 360 degree via metal backshells, 1.2m

2.3. Connection Diagram of Test System

1. The I/O cable is connected from PC to the support unit 4.
2. The I/O cable is connected from PC to the support unit 2.
3. The I/O cable is connected from PC to the support unit 3.
4. The I/O cable is connected from PC to the support unit 5.
5. The I/O cable is connected from PC to the EUT.

3. Test Software

An executive program, EMITEST.EXE under WIN 98, which generates a complete line of continuously repeating " H " pattern was used as the test software.

The program was executed as follows :

- a. Turn on the power of all equipment.
- b. The PC reads the test program from the floppy disk drive and runs it.
- c. The PC sends " H " messages to the monitor, and the monitor displays " H " patterns on the screen.
- d. The PC sends " H " messages to the printer, then the printer prints them on the paper.
- e. The PC sends " H " messages to the modem.
- f. The PC sends " H " messages to the internal Hard Disk, and the Hard Disk reads and writes the message.
- g. Repeat the steps from b to f.

4. General Information of Test

4.1. Test Facility

This test was carried out by SPORTON International Inc. in an openarea test site.

Openarea Test Site Location : No. 3, Lane 238, Kang Lo Street, Nei Hwu District,

Taipei 11424, Taiwan, R.O.C.

TEL : 886-2-2631-9739

FAX : 886-2-2631-9740

4.2. Standard for Methods of Measurement

ANSI C63.4-1992

4.3. Test in Compliance with

FCC Part 15, Subpart B Class B

4.4. Frequency Range Investigated

- a. Conduction: from 450 kHz to 30 MHz
- b. Radiation : from 30 MHz to 1,000 MHz

4.5. Test Distance

The test distance of radiated emission from antenna to EUT is 3 M.

5. Test of Conducted Powerline

Conducted Emissions were measured from 450 kHz to 30 MHz with a bandwidth of 9 KHz on the 115 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-1992 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

5.1. Major Measuring Instruments

Test Receiver	HP 8591EM
Attenuation	0 dB
Start Frequency	0.45 MHz
Stop Frequency	30 MHz
Step MHz	0.007 MHz
IF Bandwidth	9 kHz

5.2. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connect to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 450 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- i. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be retested one by one using the quasi-peak method and reported.

5.4. Test Result of AC Powerline Conducted Emission

- Frequency Range of Test : from 0.45 MHz to 30 MHz
- Temperature : 20°C
- Relative Humidity : 55 %
- Test Date : Mar. 1, 1999

The Conducted Emission test was passed at minimum margin

LINE 0.520 MHz / 38.80 dBuV.

Freq. (MHz)	Line/ Neutral	Meter Reading		Limits		Margin
		(dBuV)	(uV)	(dBuV)	(uV)	(dB)
0.476	L	35.80	61.66	48.00	251.19	-12.20
0.520	L	38.80	87.10	48.00	251.19	-9.20
13.756	L	32.30	41.21	48.00	251.19	-15.70
0.476	N	36.50	66.83	48.00	251.19	-11.50
0.520	N	36.30	65.31	48.00	251.19	-11.70
13.756	N	31.20	36.31	48.00	251.19	-16.80

Test Engineer : *Louis Lin*
LOUIS LIN

6. Test of Radiated Emission

Radiated emissions from 30 MHz to 1,000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-1992. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

6.1. Major Measuring Instruments

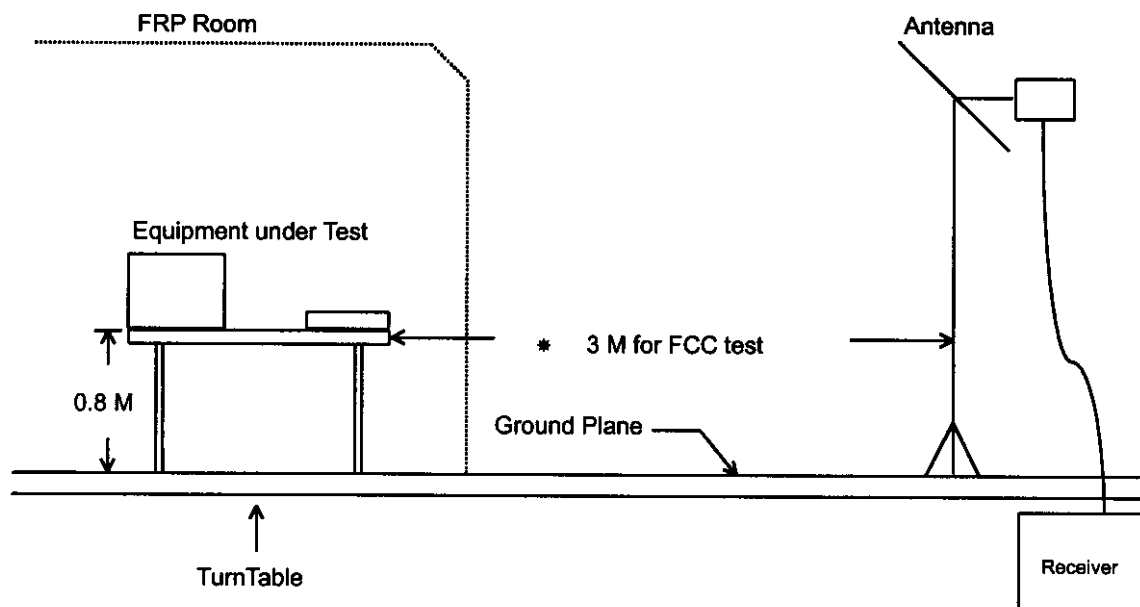
- RF Preselector (HP 85685A)
 - Attenuation 0 dB
 - RF Gain 20 dB
 - Signal Input 20 Hz to 1.5 GHz

- Spectrum Analyzer (ADVANTEST R3261C)
 - Attenuation 0 dB
 - Start Frequency 30 MHz
 - Stop Frequency 1000 MHz
 - Resolution Bandwidth 1 MHz
 - Video Bandwidth 1 MHz
 - Signal Input 100 Hz to 1.5 GHz

- Spectrum Analyzer (ADVANTEST R3261C)
 - Resolution Bandwidth 120 KHz
 - Frequency Band 30 MHz to 1 GHz
 - Quasi-Peak Detector ON for Quasi-Peak Mode
OFF for Peak Mode

6.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be repeated one by one using the quasi-peak method and reported.

6.3. Typical Test Setup Layout of Radiated Emission

6.4. Test Result of Radiated Emission

- Frequency Range of Test : from 30 MHz to 1,000 MHz
- Test Distance : 3 M
- Temperature : 22°C
- Relative Humidity : 60 %
- Test Date : Mar. 1, 1999
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin

200.000 MHz / 33.55 dBuV (VERTICAL) Antenna Height 1 Meter, Turntable Degree 120 °.

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits		Emission (dBuV/m)	Level (uV/m)	Margin (dB)
					(dBuV/m)	(uV/m)			
135.900	H	10.56	1.20	20.16	43.50	149.62	31.92	39.45	-11.58
334.400	H	13.86	2.47	17.82	46.00	199.53	34.15	50.99	-11.85
133.700	V	10.65	1.20	19.76	43.50	149.62	31.61	38.06	-11.89
200.000	V	9.20	1.70	22.65	43.50	149.62	33.55	47.59	-9.95
200.000	V	9.20	1.70	21.75	43.50	149.62	32.65	42.90	-10.85
334.400	V	13.86	2.47	15.92	46.00	199.53	32.25	40.97	-13.75

Test Engineer : Louis Lin
LOUIS LIN

7. Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	17.7	.9
35	15.1	.8
40	12.3	.8
45	9.0	.8
50	7.4	.8
55	5.9	.9
60	5.0	1.0
65	4.8	1.1
70	5.1	1.2
75	5.7	1.3
80	6.6	1.4
85	7.6	1.5
90	8.5	1.5
95	9.3	1.6
100	10.1	1.8
110	10.7	1.7
120	11.2	1.5
130	10.8	1.2
140	10.4	1.2
150	9.9	1.6
160	9.4	1.7
170	9.0	1.8
180	8.6	2.3
190	8.5	1.8
200	9.2	1.7
220	9.9	2.1
240	11.2	1.9
260	12.2	2.0
280	12.5	2.3
300	12.9	2.5
320	13.5	2.4
340	14.0	2.5
360	14.6	2.7
380	15.1	3.1
400	15.6	3.2
450	16.3	3.0
500	17.0	3.1
550	18.5	3.4
600	18.5	3.1
650	18.9	3.0
700	18.9	2.9
750	19.6	3.5
800	19.9	3.7
850	20.2	4.1
900	20.6	4.0
950	20.8	3.3
1000	21.4	3.9

NHOP1

8. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Test Receiver	R&S	ESH3	893495/013	9 KHz - 30MHz	April. 13, 1998	Conduction
LISN	TELEMETER	NNB-2/16Z	98007	50 ohm / 50 μ H	Jan. 29, 1998	Conduction
LISN	KYORITSU	KNW-407	8-1010-15	50 ohm / 50 μ H	Nov. 17, 1998	Conduction
EMI Filter	CORCOM	MRI-2030	N/A	480VAC / 30A	N/A	Conduction
Spectrum Monitor	R&S	EZM	894987/001	N/A	April 13, 1998	Conduction
RF Preselector (Site 1)	HP	8447D	2944A07523	20MHz -1.5GHz	Jan. 20, 1999	Radiation
Spectrum Analyzer (site 1)	ADVANTEST	R3261C	81720147	9KHz -2.6GHz	Mar. 31, 1998	Radiation
Bilog Antenna (1)	CHASE	CBL6112A	2302	30MHz - 2GHz	Jan. 27, 1999	Radiation
Half-wave dipole antenna (1)	EMCO	3121C	8912-496	20MHz - 1GHz	Aug. 8, 1998	Radiation
Turn Table	EMCO	1060-1.211	9507-1805	0 ~360 degree	N/A	Radiation
Antenna Mast	EMCO	1051-1.2	9502-1868	1 m - 4 m	N/A	Radiation