FCC TEST REPORT

for

CISPR PUB.22 CLASS B

Equipment : JOYSTICK

MODEL NO. : MaxFighter Force Feedback F-33

F C C I D : FSUGJ002

Filing Type : Original Certification

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.
- Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of the U.S Government.

SPORTON INTERNATIONAL INC.

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

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CERTIFICATE NO. : F971203

CERTIFICATE OF COMPLIANCE

for

CISPR PUB.22 CLASS B

Equipment : JOYSTICK

MODEL NO. : MaxFighter Force Feedback F-33

F C C I D : FSUGJ002

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 measurement shown in this report were made in accordance with the procedures given in **ANSI C63.4 -1992** and the energy emitted by this equipment was ***passed*** CISPR PUB.22 both radiated and conducted emissions class B limits. Testing was carried out on **Jul. 14, 1999** at **SPORTON INTERNATIONAL INC.** LAB.

_____

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 : JOYSTICK

MODEL NO. : MaxFighter Force Feedback F-33

FCC ID : FSUGJ002

TRADE NAME : **GENIUS**

USB DATA CABLE : Shielded, 2.1m

SERIAL DATA CABLE : Shielded, 1.9m

POWER SUPPLY TYPE : Linear

INPUT POWER CORD : N/A, 2pin

OUTPUT POWER CORD : Non-shielded, 1.9m, 2pin

1.4. FEATURE OF EQUIPMENT UNDER TEST

- Heavy force feedback
- 4 Axis Support (including throttle and rudder)
- 10 programmable buttons
- Easy control throttle
- Easy control Hat Switch
- Ergonomic grip and base
- Steady base

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, PRIMAX PS/2 mouse, HP printer, ACEEX modem and EUT were connected to the F.I.C. P.C. for EMI test.

c. Frequency range investigated: Conduction 150 KHz to 30 MHz, Radiation 30 MHz to 1000MHz.

2.2. DESCRIPTION OF TEST SYSTEM

Support Device 1. --- P.C. (FIC)

FCC ID	: N/A
Model No.	: P2L97
Serial No.	: SP1005
Data Cable	: Shielded
Power Cord	: Non-shielded
Power Supply Type	: Switching

(Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.)

Support Device 2. --- MONITOR (SONY)

FCC ID	: AK8GDM17SE2T
Model No.	: GDM-17SE2T
Serial No.	: SP1009
Data Cable	: Shielded, 360 degree via metal backshells, 1.15m
Power Supply Type	: Switching
Power Cord	: Non-shielded

Support Device 3. --- PS/2 KEYBOARD (DELL)

FCC ID	: GYUM92SK
Model No.	: AT101 (DE8M)
Serial No.	: SP1021
Data Cable	: Shielded, 360 degree via metal backshells, 1.9m

Support Device 4. --- PS/2 MOUSE (PRIMAX)

FCC ID	: EMJMUSJQ
Model No.	: MUS9J
Serial No.	: SP1025
Data Cable	: Shielded, 360 degree via metal backshells,1.7m

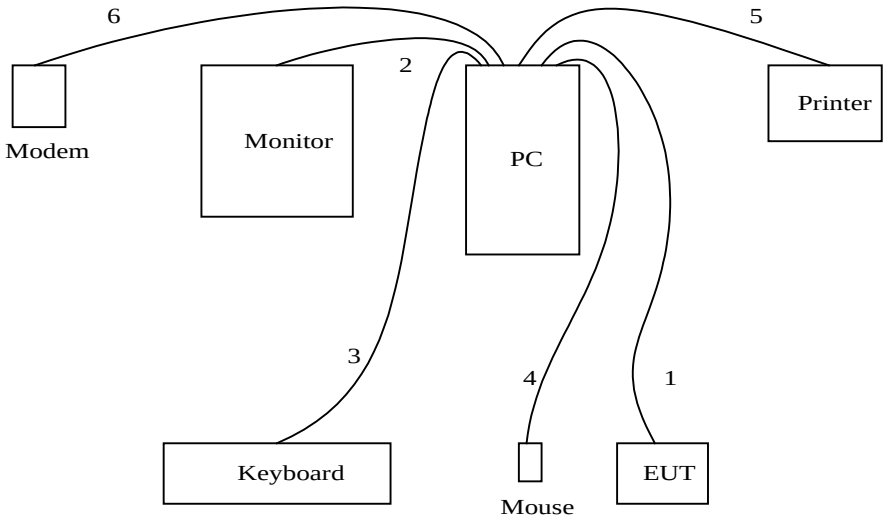
Support Device 5. --- PRINTER (HP)

FCC ID	: B94C2642X
Model No.	: DESK JET 400
Serial No.	: SP1040
Data Cable	: Shielded, 360 degree via metal backshells, 1.35m
Power Supply Type	: Linear, Adapter
Power Cord	: Non-shielded

Support Device 6. --- MODEM (ACEEX)

FCC ID	: IFAXDM1414
Model No.	: DM1414
Power Supply Type	: Linear, AC Adapter
Power Cord	: Non-shielded
Serial No.	: SP1019
Data Cable	: Shielded, 360 degree via metal backshells, 1.15m

2.3. CONNECTION DIAGRAM OF TEST SYSTEM



1. The I/O cable is connected from the support device 1 to the EUT.
2. The I/O cable is connected from the support device 1 to the support device 2.
3. The I/O cable is connected from the support device 1 to the support device 3.
4. The I/O cable is connected from the support device 1 to the support device 4.
5. The I/O cable is connected from the support device 1 to the support device 5.
6. The I/O cable is connected from the support device 1 to the support device 6.

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.

At the same time, I-FORCE STADIO.EXE was used during testing.

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. 30-1, Lin 6, Diing-Fwu Tsuen, Lin-Kou-Hsiang, Taipei Hsien, Taiwan, R.O.C.

TEL : 886-2-2601-1640

FAX : 886-2-2601-1695

4.2. STANDARD FOR METHODS OF MEASUREMENT

ANSI C63.4-1992

4.3 .TEST IN COMPLIANCE WITH

CISPR PUB.22 CLASS B

4.4. FREQUENCY RANGE INVESTIGATED

a. Conduction : from 150 KHz to 30 MHz

b. Radiation : from 30 MHz to 1000 MHz.

4.5. TEST DISTANCE

The test distance of radiated emission from antenna to EUT is 10M.

5. TEST OF CONDUCTED POWERLINE

Conducted Emissions were measured from 150 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 Figure 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	0.15 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 and 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.

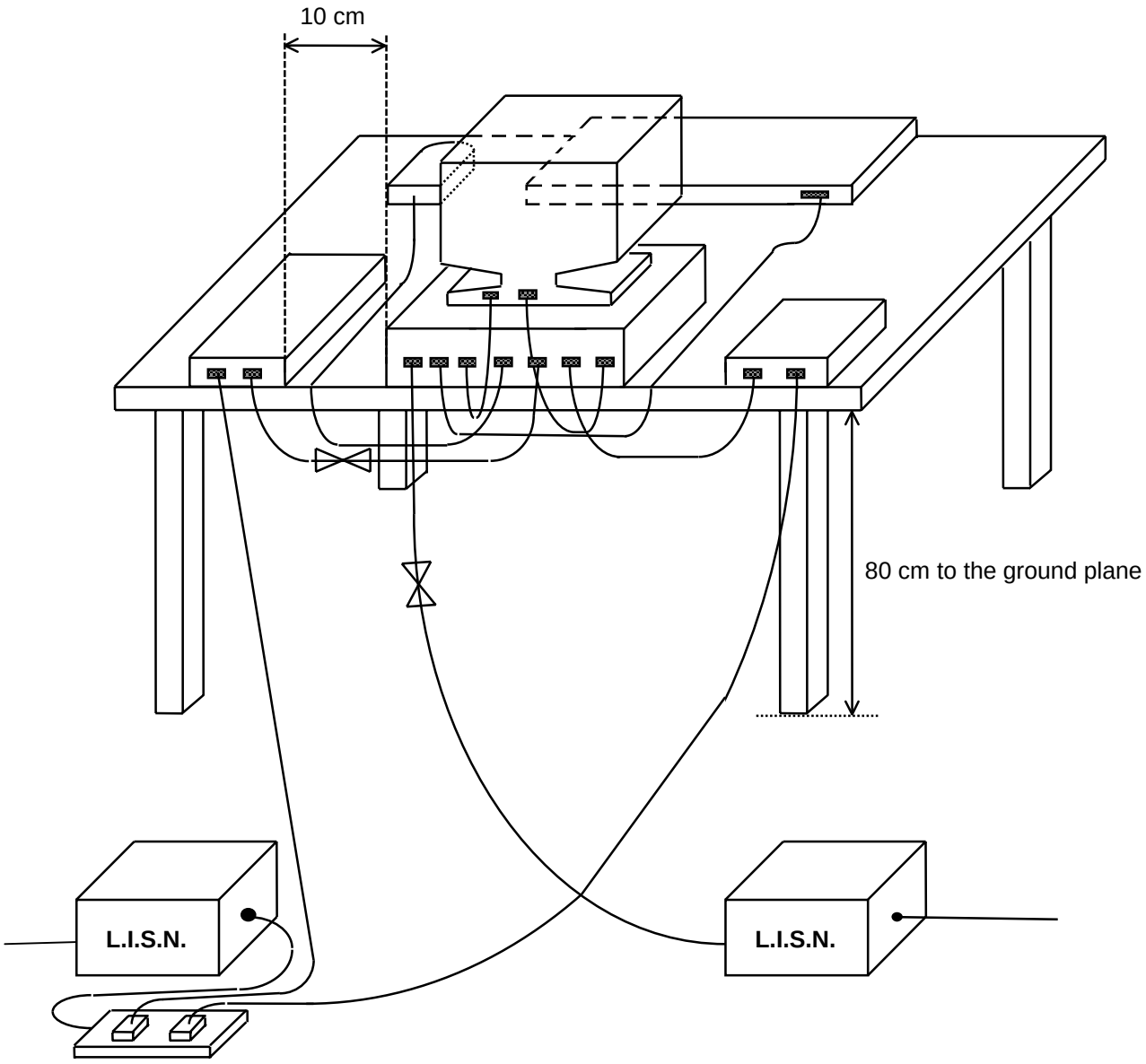
f. Both sides of AC line were checked for maximum conducted interference.

g. The frequency range from 150 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 on by one using the quasi-peak method and reported.

5.3. TYPICAL TEST SETUP LAYOUT OF CONDUCTED POWERLINE



5.4. TEST RESULT OF AC POWERLINE CONDUCTED EMISSION

- All emissions not reported here are more than 10 dB below the prescribed limit.
- Frequency Range of Test : from 0.15 MHz to 30 MHz
- Temperature : 29
- Relative Humidity : 51% RH
- Test Mode : USB MODE
- Test Date : Jul. 14, 1999

The Conducted Emission test was passed at Neutral 0.190 MHz / 56.30 dBuV.

Frequency	Line	Meter Reading				Limits				Margin	
	or	Q.P.	A.V.	Q.P.	A.V.	Q.P.	A.V.	Q.P.	A.V.	Q.P.	A.V.
(MHz)	Neutral	(dBuV)	(dBuV)	(uV)	(uV)	(dBuV)	(dBuV)	(uV)	(uV)	(dB)	(dB)
0.171	Line	56.80	26.10	691.83	20.18	64.94	54.94	1765.23	558.21	-8.14	-28.84
0.229	Line	52.70	22.50	431.52	13.34	62.49	52.49	1331.36	421.01	-9.79	-29.99
0.426	Line	47.40	18.00	234.42	7.94	57.33	47.33	735.39	232.55	-9.93	-29.33
0.190	Neutral	56.30	25.30	653.13	18.41	64.05	54.05	1593.99	504.06	-7.75	-28.75
0.304	Neutral	51.40	21.00	371.54	11.22	60.13	50.13	1015.41	321.10	-8.73	-29.13
0.418	Neutral	49.70	19.20	305.49	9.12	57.49	47.49	748.84	236.80	-7.79	-28.29

Test Engineer :

Kenny Chuang

5.4.1. TEST RESULT OF AC POWERLINE CONDUCTED EMISSION

- All emissions not reported here are more than 10 dB below the prescribed limit.
- Frequency Range of Test : from 0.15 MHz to 30 MHz
- Temperature : 29
- Relative Humidity : 51% RH
- Test Mode : SERIAL MODE
- Test Date : Jul. 14, 1999

The Conducted Emission test was passed at Neutral 0.164 MHz / 56.60 dBuV.

Frequency	Line	Meter Reading				Limits				Margin	
	or	Q.P.	A.V.	Q.P.	A.V.	Q.P.	A.V.	Q.P.	A.V.	Q.P.	A.V.
(MHz)	Neutral	(dBuV)	(dBuV)	(uV)	(uV)	(dBuV)	(dBuV)	(uV)	(uV)	(dB)	(dB)
0.162	Line	56.30	25.20	653.13	18.20	65.36	55.36	1853.70	586.19	-9.06	-30.16
0.252	Line	51.30	21.10	367.28	11.35	61.69	51.69	1214.92	384.19	-10.39	-30.59
0.425	Line	46.90	17.80	221.31	7.76	57.35	47.35	737.37	233.18	-10.45	-29.55
0.164	Neutral	56.60	25.70	676.08	19.28	65.26	55.26	1832.07	579.35	-8.66	-29.56
0.273	Neutral	51.50	21.10	375.84	11.35	61.03	51.03	1125.40	355.88	-9.53	-29.93
0.440	Neutral	48.30	17.80	260.02	7.76	57.07	47.07	713.62	225.67	-8.77	-29.27

Test Engineer :

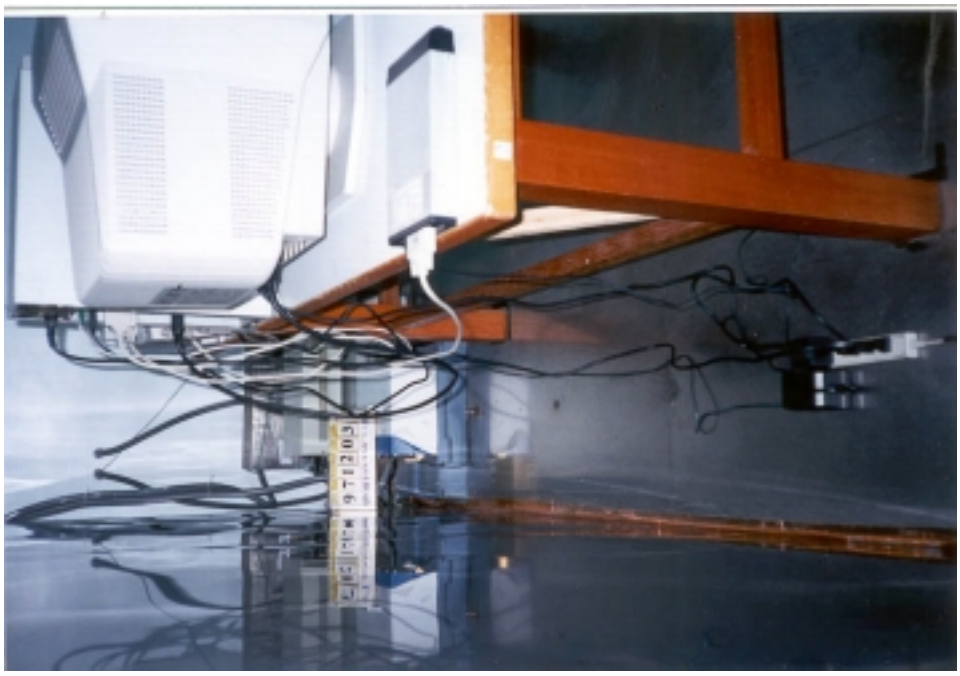
Kenny Chuang

5.5. PHOTOGRAPHS OF CONDUCTED POWERLINE TEST CONFIGURATION

- The photographs show the configuration that generates the maximum emission.
- Test Mode : USB MODE

FRONT VIEW

REAR VIEW



REAR VIEW

5.5.1. PHOTOGRAPHS OF CONDUCTED POWERLINE TEST CONFIGURATION

- The photographs show the configuration that generates the maximum emission.
- Test Mode : SERIAL MODE

FRONT VIEW

REAR VIEW

REAR VIEW

6. TEST OF RADIATED EMISSION

Radiated emissions from 30 MHz to 1000 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 Figure 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

- Amplifier (HP 87405A)

Attenuation	0 dB
RF Gain	20 dB
Signal Input	10 MHz to 3.0 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	9 KHz to 2.9 GHz

6.2. TEST PROCEDURES

a. The EUT was placed on a rotatable table top 0.8 meter above ground.

b. The EUT was set 10 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.

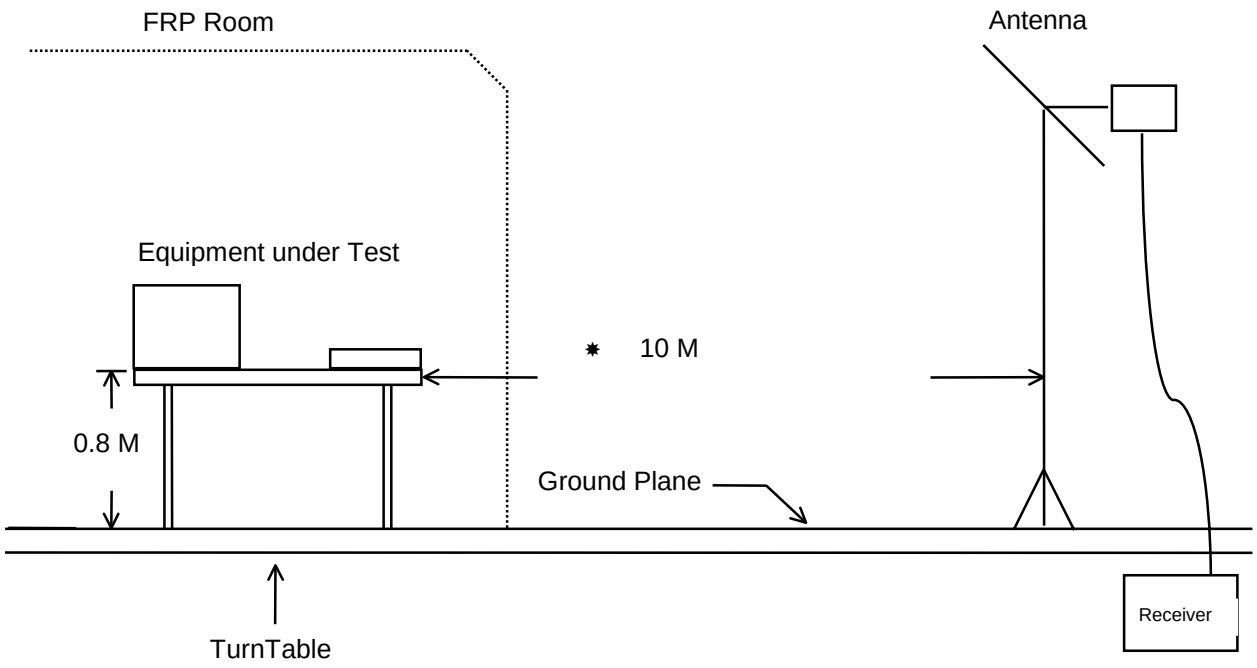
d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

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

- Equipment meets the technical specifications of CISPR PUB.22
- Frequency Range of Test : from 30 MHz to 1000 MHz
- Test Distance : 10 M
- Temperature : 31
- Relative Humidity : 75 % RH
- Test Mode : USB MODE
- Test Date : Jul. 09, 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

Vertical 72.00 MHz / 26.83 dBuV

Antenna Height 1.0 Meter , Turntable Degree 217°

Frequency	Polarity	Antenna Factor	Cable Loss	Reading	Limits		Emission Level		Margin
(MHz)		(dB/m)	(dB)	(dBuV)	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)	(dB)
32.10	V	16.59	0.64	7.87	30.00	32	25.10	17.99	-4.90
48.00	V	9.18	0.65	16.61	30.00	32	26.44	20.99	-3.56
72.00	V	5.96	0.82	20.05	30.00	32	26.83	21.95	-3.17
144.00	V	10.99	1.09	13.68	30.00	32	25.76	19.41	-4.24
156.00	V	10.01	1.09	14.33	30.00	32	25.43	18.69	-4.57
168.00	V	9.05	1.14	14.98	30.00	32	25.17	18.13	-4.83

Test Engineer :

Jones Jan

6.4.1. TEST RESULT OF RADIATED EMISSION

- Equipment meets the technical specifications of CISPR PUB.22
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- Corrected Reading = Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin

Vertical 32.10 MHz / 25.92 dBuV

Antenna Height 1.0 Meter , Turntable Degree 321°

Frequency	Polarity	Antenna Factor	Cable Loss	Reading	Limits		Emission Level		Margin
(MHz)		(dB/m)	(dB)	(dBuV)	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)	(dB)
32.10	H	16.59	0.64	8.33	30.00	32	25.56	18.97	-4.44
48.00	H	9.18	0.65	15.01	30.00	32	24.84	17.46	-5.16
72.00	H	5.96	0.82	18.65	30.00	32	25.43	18.69	-4.57
32.10	V	16.59	0.64	8.69	30.00	32	25.92	19.77	-4.08
72.00	V	5.96	0.82	17.85	30.00	32	24.63	17.04	-5.37
168.00	V	9.05	1.14	15.58	30.00	32	25.77	19.43	-4.23

Test Engineer :

Jones Jan

6.5. PHOTOGRAPHS OF RADIATED EMISSION TEST CONFIGURATION

- The photographs show the configuration that generates the maximum emission.
- Test Mode : USB MODE

FRONT VIEW

REAR VIEW

6.5.1. PHOTOGRAPHS OF RADIATED EMISSION TEST CONFIGURATION

- The photographs show the configuration that generates the maximum emission.
- Test Mode : SERIAL MODE

FRONT VIEW

REAR VIEW

7. ANTENNA FACTOR AND CABLE LOSS

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	17.3	0.6
35	15.5	0.7
40	13.9	0.6
45	10.4	0.7
50	8.3	0.6
55	7.4	0.7
60	6.4	0.8
65	6.1	0.8
70	5.8	0.8
75	6.2	0.8
80	6.8	0.8
85	7.7	0.9
90	8.6	1.0
95	10.0	1.0
100	11.3	1.0
110	11.8	1.0
120	12.3	1.0
130	11.7	1.1
140	11.3	1.1
150	10.6	1.1
160	9.6	1.1
170	8.8	1.2
180	9.1	1.3
190	9.0	1.5
200	8.9	1.3
220	10.4	1.2
240	11.7	1.8
260	12.8	1.4
280	13.5	1.5
300	14.2	1.6
320	14.3	1.8
340	14.4	1.8
360	14.6	1.5
380	15.1	1.9
400	15.5	2.1
450	16.3	1.9
500	16.6	2.8
550	17.7	2.8
600	17.9	2.4
650	17.8	2.4
700	16.9	2.9
750	17.4	2.6
800	18.2	3.7
850	18.6	3.2
900	20.1	3.1
950	19.8	3.4
1000	19.3	3.3
2000	31.57	6.2

8. LIST OF MEASURING INSTRUMENTS USED

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver (site 2)	HP	8591EM	3710A01187	9 KHz - 18 GHz	Sep. 18. 1998	Conduction
LISN (EUT) (site 2)	Telemeter	NNB-2/16Z	98009	50 ohm / 50 uH	Jan. 21, 1999	Conduction
LISN (Support Unit) (site 2)	EMCO	3810/2NM	9703-1839	50 ohm / 50 uH	Jul. 05, 1999	Conduction
Spectrum Analyzer (Site 6)	ADVANTEST	R3261A	71720760	9 KHz to 2.6 GHz	Mar. 05, 1999	Radiation
Amplifier (Site 6)	HP	8447D	2944A08290	0.1MHz -1.3GHz	Nov. 13, 1998	Radiation
Bilog Antenna (Site 6)	CHASE	CBL6112A	2322	30MHz -2GHz	Jan. 17, 1999	Radiation
Half-wave dipole antenna (Site 6)	EMCO	3121C	9705-1285	28 M - 1GHz	May 18, 1999	Radiation
Turn Table (site 6)	EMCO	2080	9711-2021	0 ~ 360 degree	N/A	Radiation
Antenna Mast (site 6)	EMCO	2075	9711-2115	1 m- 4 m	N/A	Radiation

The column of Remark indicates that the instruments used for conduction (“C”) or radiation (“R”) test.