# FCC TEST REPORT

for

**PART 15, SUBPART B CLASS B**

EQUIPMENT : MOUSE

MODEL NO. : EasyMouse+ USB

**F C C I D** : FSUGMZG3

**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, Hsin Tai Wu Rd., Sec. 1, Hsi Chih, Taipei Hsien, Taiwan, R.O.C.*

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CERTIFICATE NO. : F8N0406

# CERTIFICATE OF COMPLIANCE

for

## FCC PART 15, SUBPART B CLASS B

EQUIPMENT : MOUSE

MODEL NO. : EasyMouse+ USB

**F C C I D** : FSUGMZG3

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*** both radiated and conducted emissions ***Class B*** limits.
Testing was carried out on ***Nov. 05, 1998*** at **SPORTON International Inc.**

Lenore Chang
President

Nov. 23, 1998

***SPORTON INTERNATIONAL INC.***

*6F, No. 106, Hsin Tai Wu Rd., Sec. 1, 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. : EasyMouse+ USB
FCC ID : FSUGMZG3
TRADE NAME : Genius
DATA CABLE : Shielded
POWER SUPPLY TYPE : N/A
POWER CORD : N/A

## 1.4. FEATURE OF EQUIPMENT UNDER TEST

- The mouse device with its innovative shape will give you better comfort, qulity, and control over long of time. It has plug and play feature and is very easy to install.
- The mouse compatible with Windows 3.x / 95 / 98 environment.
- ***400 DPI :***
  ⇨ High resolution, three-button mouse version.
- ***Supports Plug and Play Function :***
  ❶ *Windows Shape Design :*
  1). For smooth cursor movement.
  2). Intelligent and innovative shape.
  ❷ *MouseMate :*
  ⇨ Friendly interface lets you personalize the mouse cursor.
  ❸ *Models :*
  ⇨ USB version.

# 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 keyboard, HP printer, ACEEX modem and EUT were connected to the FIC P.C.

c. Frequency range investigated: Conduction 450 KHz to 30 MHz, Radiation 30 MHz to 1000 MHz.

## 2.2. DESCRIPTION OF TEST SYSTEM

Support Device 1. --- MONITOR (SONY)

| | |
|---|---|
| FCC ID | : AK8GDM17SE2T |
| Model No. | : GDM-17SE2T |
| Serial No. | : SP1006 |
| Data Cable | : Shielded, 360 degree via metal backshells, 1.7m |
| Power Supply Type | : Switching |
| Power Cord | : Non-shielded |

Support Device 2. --- KEYBOARD (DELL)

| | |
|---|---|
| FCC ID | : GYUM92SK |
| Model No. | : AT101 (DE8M) |
| Serial No. | : SP1009 |
| Data Cable | : Shielded, 360 degree via metal backshells, 1.9m |

Support Device 3. --- PRINTER (HP)

| | |
|---|---|
| FCC ID | : B94C2642X |
| Model No. | : DESKJET 400 |
| Serial No. | : SP0037 |
| Data Cable | : Shielded, 360 degree via metal backshells, 1.35m |
| Power Supply Type | : Linear |
| Power Cord | : Non-shielded |

Support Device 4. -- MODEM (ACEEX)

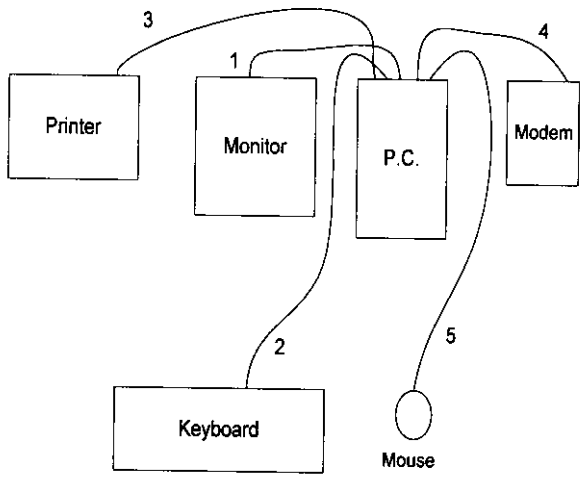
| | |
|---|---|
| FCC ID | : IFAXDM1414 |
| Model No. | : DM1414 |
| Power Supply Type | : Linear, AC Adapter |
| Power Cord | : Non-shielded |
| Serial No. | : SP1019 |
| Data Cable | : Shielded, 360 degree via metal backshells, 1.15m |

Support Device 5. --- 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.)

## 2.3. CONNECTION DIAGRAM OF TEST SYSTEM




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

# 3. TEST SOFTWARE

At the same time, 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.

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

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 1000 MHz.

## 4.5. TEST DISTANCE

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

# 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 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 | 0.45 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 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.

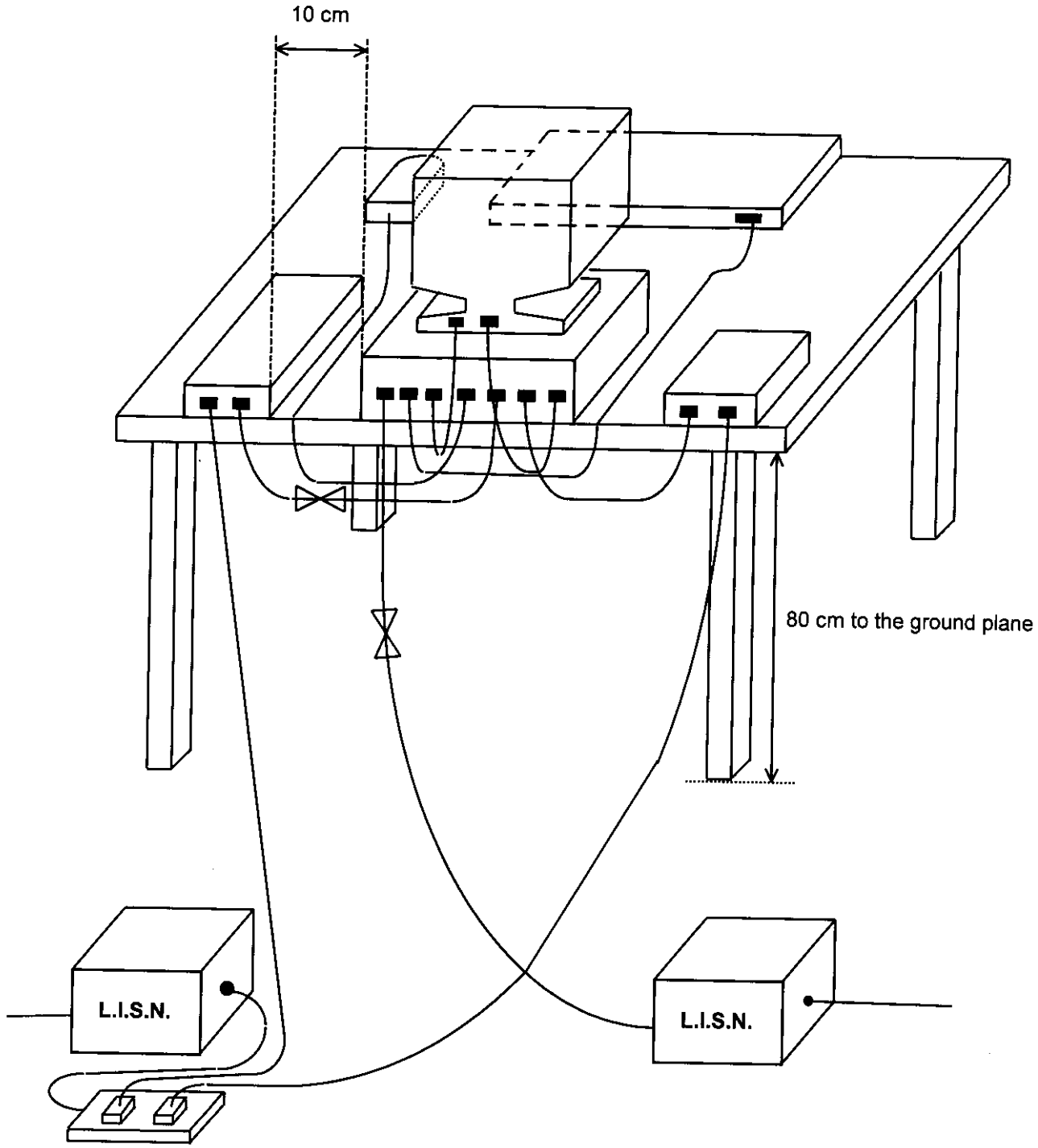
f. Both sides of AC line were checked for maximum conducted interference.

g. The frequency range from 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 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

- Frequency Range of Test : from 0.45 MHz to 30 MHz
- All emissions not reported here are more than 10 dB below the prescribed limit.
- Temperature : 22℃
- Relative Humidity : 53 % RH
- Test Date : Nov. 05, 1998

**The Conducted Emission test was passed at Line 11.77 MHz / 40.00 dBuV.**

| Frequency | Line / | Meter Reading | | Limits | | Margin |
|---|---|---|---|---|---|---|
| ( MHz ) | Neutral | ( dBuV ) | ( uV ) | ( dBuV ) | ( uV ) | ( dB ) |
| 11.77 | Line | 40.00 | 100.00 | 48.00 | 251.19 | -8.00 |
| 23.53 | Line | 38.20 | 81.28 | 48.00 | 251.19 | -9.80 |
| 0.53 | Neutral | 29.40 | 29.51 | 48.00 | 251.19 | -18.60 |
| 11.77 | Neutral | 39.00 | 89.13 | 48.00 | 251.19 | -9.00 |
| 19.61 | Neutral | 31.10 | 35.89 | 48.00 | 251.19 | -16.90 |
| 23.53 | Neutral | 39.00 | 89.13 | 48.00 | 251.19 | -9.00 |

Test Engineer : Kenny Chuang

*Kenny Chuang*

# 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 8447D ) |
| Attenuation | 0 dB |
| RF Gain | 25 dB |
| Signal Input | 0.1 MHz to 1.3 GHz |
| • Spectrum Analyzer | ( HP 8568B ) |
| 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 |
| • Quasi-Peak Adapter | ( HP 85650A ) |
| 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.

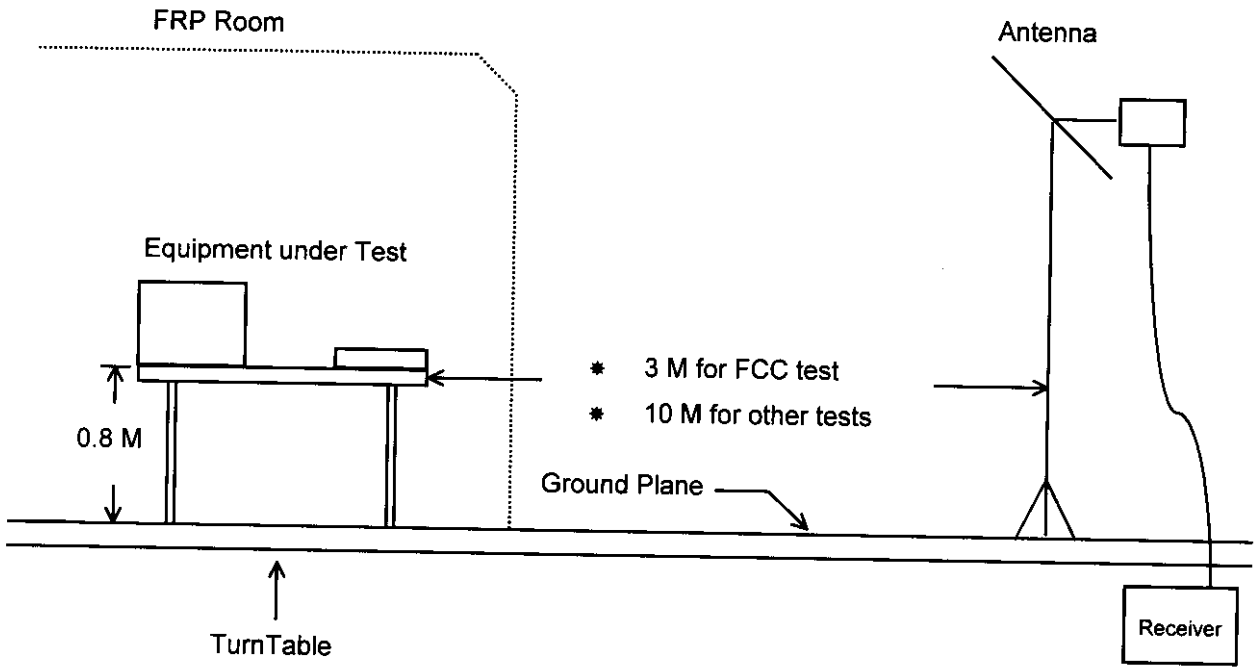
d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

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

- Equipment meets the technical specifications of 15.109
- Frequency Range of Test : from 30 MHz to 1000 MHz
- Test Distance : 3 M
- Temperature : 25℃
- Relative Humidity : 65 % RH
- Test Date : Nov. 05, 1998

- Emission level ( dBuV/m ) = 20 log Emission level ( uV/m )
- Sample Calculation at 47.40 MHz
  Corrected Reading = 1.82 + 1.00 + 27.13 = 29.95 (dBuV/m )

**The Radiated Emission test was passed at minimum margin**

**Vertical 452.00 MHz / 40.32 dBuV**

**Antenna Height 2.0 Meter , Turntable Degree 177°.**

| Frequency ( MHz ) | Polarity | Antenna Factor ( dB ) | Cable Loss ( dB ) | Reading ( dBuV ) | Limits ( dBuV ) | Limits ( uV ) | Emission ( dBuV ) | Level ( uV ) | Margin ( dB ) |
|---|---|---|---|---|---|---|---|---|---|
| 47.40 | H | 1.82 | 1.00 | 27.13 | 40.00 | 100 | 29.95 | 31.44 | -10.05 |
| 432.80 | H | 22.36 | 3.73 | 14.00 | 46.00 | 200 | 40.09 | 101.04 | -5.91 |
| 48.10 | V | 1.98 | 1.00 | 29.17 | 40.00 | 100 | 32.15 | 40.50 | -7.85 |
| 63.00 | V | 4.84 | 1.20 | 26.69 | 40.00 | 100 | 32.73 | 43.30 | -7.27 |
| 312.00 | V | 18.06 | 3.10 | 18.65 | 46.00 | 200 | 39.81 | 97.84 | -6.19 |
| 452.00 | V | 22.40 | 3.81 | 14.11 | 46.00 | 200 | 40.32 | 103.75 | -5.68 |

Test Engineer : William Lee

*William Lee*

# 8. LIST OF MEASURING EQUIPMENT USED

**[ CE-EMI ]**

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---|---|---|---|---|---|---|
| EMC Receiver (site 2) | HP | 8591EM | 3710A01187 | 9 KHz - 18 GHz | Sep. 15, 1998 | Conduction |
| LISN (EUT) (site 2) | Telemeter | NNB-2/16Z | 98009 | 50 ohm / 50 uH | Jan. 29, 1998 | Conduction |
| LISN (Support Unit) (site 2) | EMCO | 3810/2NM | 9703-1839 | 50 ohm / 50 uH | Jul. 06, 1998 | Conduction |
| Quasi-peak Adapter (site 3) | HP | 85650A | 2811A01116 | 9KHz -1 GHz | Jul. 19, 1998 | Radiation |
| Amplifier (Site 3) | HP | 8447D | 2944A09068 | 0.1MHz -1.3GHz | Aug. 27, 1998 | Radiation |
| Spectrum Analyzer (site 3) | HP | 8568B | 2732A04100 | 100Hz – 1.5GHz | July 19, 1998 | Radiation |
| Bilog Antenna (Site 3) | CHASE | CBL6112A | 2320 | 30MHz -2GHz | Sep. 11, 1998 | Radiation |
| Half-wave dipole antenna (Site 3) | EMCO | 3121C | 9705-1285 | 28 M - 1GHz | May 19, 1998 | Radiation |
| Turn Table (site 3) | EMCO | 2080 | 9711-2022 | 0 ~ 360 degree | N/A | Radiation |
| Antenna Mast (site 3) | EMCO | 2075 | 9710-2101 | 1 m- 4 m | N/A | Radiation |

# 7. ANTENNA FACTOR AND CABLE LOSS

| Frequency ( MHz ) | Antenna Factor ( dB ) | Cable Loss ( dB ) |
|---|---|---|
| 30 | 16.7 | 1.0 |
| 35 | 15.5 | 1.2 |
| 40 | 14.2 | 1.2 |
| 45 | 11.3 | 1.3 |
| 50 | 8.4 | 1.2 |
| 55 | 6.8 | 1.3 |
| 60 | 5.1 | 1.5 |
| 65 | 5.6 | 1.3 |
| 70 | 6.1 | 1.5 |
| 75 | 6.6 | 1.5 |
| 80 | 7.2 | 1.7 |
| 85 | 8.2 | 1.5 |
| 90 | 9.2 | 1.7 |
| 95 | 10.0 | 1.7 |
| 100 | 10.8 | 1.7 |
| 110 | 11.7 | 2.0 |
| 120 | 12.4 | 2.0 |
| 130 | 11.8 | 2.0 |
| 140 | 10.8 | 2.2 |
| 150 | 10.8 | 2.2 |
| 160 | 10.5 | 2.3 |
| 170 | 10.1 | 2.2 |
| 180 | 9.7 | 2.3 |
| 190 | 9.4 | 2.5 |
| 200 | 9.0 | 2.5 |
| 220 | 10.0 | 2.6 |
| 240 | 11.0 | 2.7 |
| 260 | 11.8 | 2.7 |
| 280 | 12.3 | 2.9 |
| 300 | 12.9 | 3.2 |
| 320 | 13.8 | 3.3 |
| 340 | 14.8 | 3.3 |
| 360 | 15.6 | 3.3 |
| 380 | 16.1 | 3.4 |
| 400 | 16.6 | 3.5 |
| 450 | 16.7 | 3.8 |
| 500 | 17.7 | 4.2 |
| 550 | 19.0 | 4.3 |
| 600 | 19.0 | 4.5 |
| 650 | 18.7 | 4.7 |
| 700 | 18.7 | 4.8 |
| 750 | 19.9 | 5.2 |
| 800 | 21.3 | 5.3 |
| 850 | 21.4 | 5.7 |
| 900 | 21.2 | 5.7 |
| 950 | 22.4 | 6.0 |
| 1000 | 23.0 | 6.2 |

## 6.4. TEST RESULT OF RADIATED EMISSION

- Equipment meets the technical specifications of 15.109
- Frequency Range of Test : from 30 MHz to 1000 MHz
- Test Distance : 3 M
- Temperature : 25℃
- Relative Humidity : 65 % RH
- Test Date : Nov. 05, 1998

- Emission level ( dBuV/m ) = 20 log Emission level ( uV/m )
- Sample Calculation at 47.40 MHz
  Corrected Reading = 1.82 + 1.00 + 27.13 = 29.95 (dBuV/m )

**The Radiated Emission test was passed at minimum margin**

**Vertical 452.00 MHz / 40.32 dBuV**

**Antenna Height 2.0 Meter , Turntable Degree 177°.**

| Frequency | | Antenna | Cable | Reading | Limits | | Emission | Level | Margin |
|---|---|---|---|---|---|---|---|---|---|
| ( MHz ) | Polarity | Factor ( dB ) | Loss ( dB ) | ( dBuV ) | ( dBuV ) | ( uV ) | ( dBuV ) | ( uV ) | ( dB ) |
| 47.40 | H | 1.82 | 1.00 | 27.13 | 40.00 | 100 | 29.95 | 31.44 | -10.05 |
| 432.80 | H | 22.36 | 3.73 | 14.00 | 46.00 | 200 | 40.09 | 101.04 | -5.91 |
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Test Engineer : William Lee

*William Lee*