

# **FCC TEST REPORT**

for

**CISPR PUB.22 CLASS B**

**EQUIPMENT : MR MODEM CARD**

**MODEL NO. : PT-3031**

**F C C I D : H52PT-3031**

**FILING TYPE : ORIGINAL CERTIFICATION**

**APPLICANT : PURETEK INDUSTRIAL CO., LTD.**  
4F, No. 12, LANE 235, PAO-CHIAO RD.  
HSIN TIEN CITY, TAIPEI, TAIWAN, R.O.C.

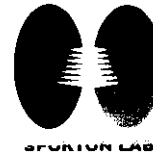
- The test result refers exclusively to the test presented test model / sample.
- Without the written authorization of the test lab., the Test Report may not be copied.
- Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any 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.

**TABLE OF CONTENT**

<b>SECTION TITLE</b>	<b>PAGE</b>
<b>CERTIFICATE OF COMPLIANCE .....</b>	<b>3</b>
<b>1. GENERAL DESCRIPTION OF EQUIPMENT UNDER TEST .....</b>	<b>4</b>
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
<b>2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST .....</b>	<b>5</b>
2.1. TEST MANNER.....	5
2.2. DESCRIPTION OF TEST SYSTEM.....	5
2.3. CONNECTION DIAGRAM OF TEST SYSTEM.....	8
<b>3. TEST SOFTWARE .....</b>	<b>9</b>
<b>4. GENERAL INFORMATION OF TEST .....</b>	<b>10</b>
4.1. TEST FACILITY.....	10
4.2. STANDARD FOR METHODS OF MEASUREMENT .....	10
4.3. TEST IN COMPLIANCE WITH .....	10
4.4. FREQUENCY RANGE INVESTIGATED.....	10
4.5. TEST DISTANCE .....	10
<b>5. TEST OF CONDUCTED POWERLINE .....</b>	<b>11</b>
5.1. MAJOR MEASURING INSTRUMENTS .....	11
5.2. TEST PROCEDURES .....	12
5.3. TYPICAL TEST SETUP LAYOUT OF CONDUCTED POWERLINE.....	13
5.4. TEST RESULT OF AC POWERLINE CONDUCTED EMISSION .....	14
5.5. PHOTOGRAPHS OF CONDUCTED POWERLINE TEST CONFIGURATION .....	15
<b>6. TEST OF RADIATED EMISSION .....</b>	<b>17</b>
6.1. MAJOR MEASURING INSTRUMENTS .....	17
6.2. TEST PROCEDURES .....	18
6.3. TYPICAL TEST SETUP LAYOUT OF RADIATED EMISSION .....	19
6.4. TEST RESULT OF RADIATED EMISSION .....	20
6.5. PHOTOGRAPHS OF RADIATED EMISSION TEST CONFIGURATION .....	21
<b>7. ANTENNA FACTOR AND CABLE LOSS .....</b>	<b>22</b>
<b>8. LIST OF MEASURING INSTRUMENTS USED .....</b>	<b>23</b>



## **CERTIFICATE OF COMPLIANCE**

for

**CISPR PUB.22 CLASS B**

**EQUIPMENT : MR MODEM CARD**

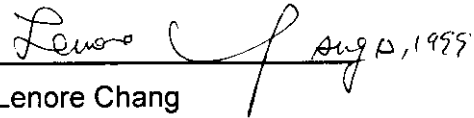
**MODEL NO. : PT-3031**

**F C C I D : H52PT-3031**

**APPLICANT : PURETEK INDUSTRIAL CO., LTD.**  
4F, No. 12, LANE 235, PAO-CHIAO RD.,  
HSIN TIEN CITY, TAIPEI, 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 **Aug. 03, 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**

**PURETEK INDUSTRIAL Co., LTD.**  
4F, No. 12, LANE 235, PAO-CHIAO RD.,  
HSIN TIEN CITY, TAIPEI, TAIWAN, R.O.C.

### **1.2. MANUFACTURER**

Same as 1.1.

### **1.3. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST**

EQUIPMENT : MR MODEM CARD  
MODEL NO. : PT-3031  
FCC ID : H52PT-3031  
TRADE NAME : PURETEK  
TELEPHONE DATA CABLE : Non-shielded  
POWER SUPPLY TYPE : from PC  
POWER CORD : N/A

### **1.4. FEATURE OF EQUIPMENT UNDER TEST**

- Data
  - ITU-T : V.90, V.34, V.32bis, V.32, V.22bis, V.22, V.23, V.21
  - Bell 212A, Bell 103
  - Speed : 56000(downstream), 33600, 31200, 28800, 26400, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400, 1200 and 300bps
- Error Correction : V.42 & MNP 2-4
- Data Compression : V.42bis & MNP 5
- Fax
  - ITU-T : V.29, V.27ter, V.21, V.17; Class I
  - Speed : 14,400, 12,000, 9,600, 7,200, 4,800, 2,400, 300bps
- Video Phone Ready Modem: V.80 interface

# FCC TEST REPORT

REPORT NO. : F972805

## 2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST

### 2.1. TEST MANNER

- 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.
- The remote PC system, SONY monitor, PS/2 DELL keyboard, PS/2 PRIMAX mouse, HP printer, ACEEX modem, GERICO telephone and EUT were connected to the BIOSTAR P.C. for EMI test.
- The remote PC system includes DELL PC and ACEEX modem.
- The phone jack of the EUT was connected to the GERICO telephone by telephone line and line jack was connected to remote PC system by telephone line.
- Frequency range investigated : Conduction 150 KHz to 30 MHz, Radiation 30 MHz to 1000MHz.

### 2.2. DESCRIPTION OF TEST SYSTEM

Support Device 1. --- 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 2. --- 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 3. --- PS/2 MOUSE (PRIMAX)**

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

**Support Device 4. --- 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 5. --- MODEM (ACEEX) --- one for remote Modem**

FCC ID : IFAXDM1414  
Model No. : DM1414  
Power Supply Type : Linear, AC Adapter  
Power Cord : Non-shielded  
Serial No. : SP1045  
Data Cable : Shielded, 360 degree via metal backshells, 1.15m

**Support Device 6. --- TELEPHONE (GERICO)**

FCC ID : N/A  
Model No. : GT-266  
Serial No. : SP1069  
Data Cable : Non-shielded, 2.1m

**Support Device 7. --- P.C. (BIOSTAR)**

FCC ID : N/A  
Model No. : M6TWC  
Serial No. : SP1004  
Data Cable : Shielded  
Power Cord : Non-shielded  
Power Supply Type : Switching

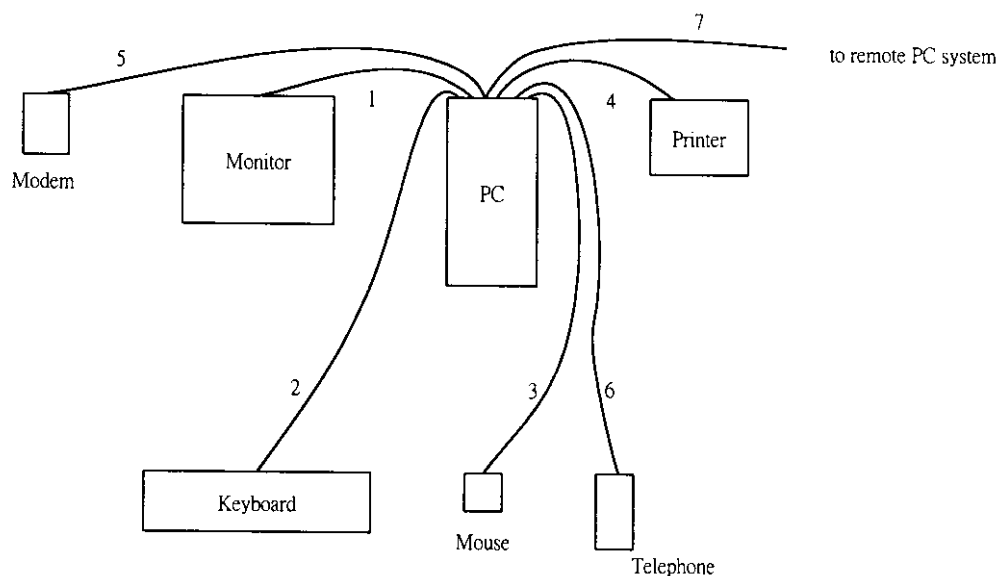
( Remark : This support device was tested to comply with FCC standards and  
authorized under a declaration of conformity.)

**Support Device 8. --- P.C. (DELL) --- remote PC**

FCC ID : N/A  
Model No. : DCS  
Serial No. : SP1007  
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 is connected from the support device 7 to the support device 1.
2. The I/O cable is connected from the support device 7 to the support device 2.
3. The I/O cable is connected from the support device 7 to the support device 3.
4. The I/O cable is connected from the support device 7 to the support device 4.
5. The I/O cable is connected from the support device 7 to the support device 5.
6. The I/O cable is connected from the EUT to the support device 6.
7. The I/O cable is connected from the EUT to the remote PC system.



### **3. TEST SOFTWARE**

An executive program, EMITEST.EXE under WIN98, 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, HYPER TERMINAL under WIN98, was executed during testing as follows.

- a. Run the "HYPER TERMINAL" from the "Accessory" and get the modem linked with another PC.
- b. The PC keeps sending "H" messages to another PC through the modem.

## **4. GENERAL INFORMATION OF TEST**

### **4.1. TEST FACILITY**

This test was carried out by SPORTON INTERNATIONAL INC. in an openarea test site.

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.

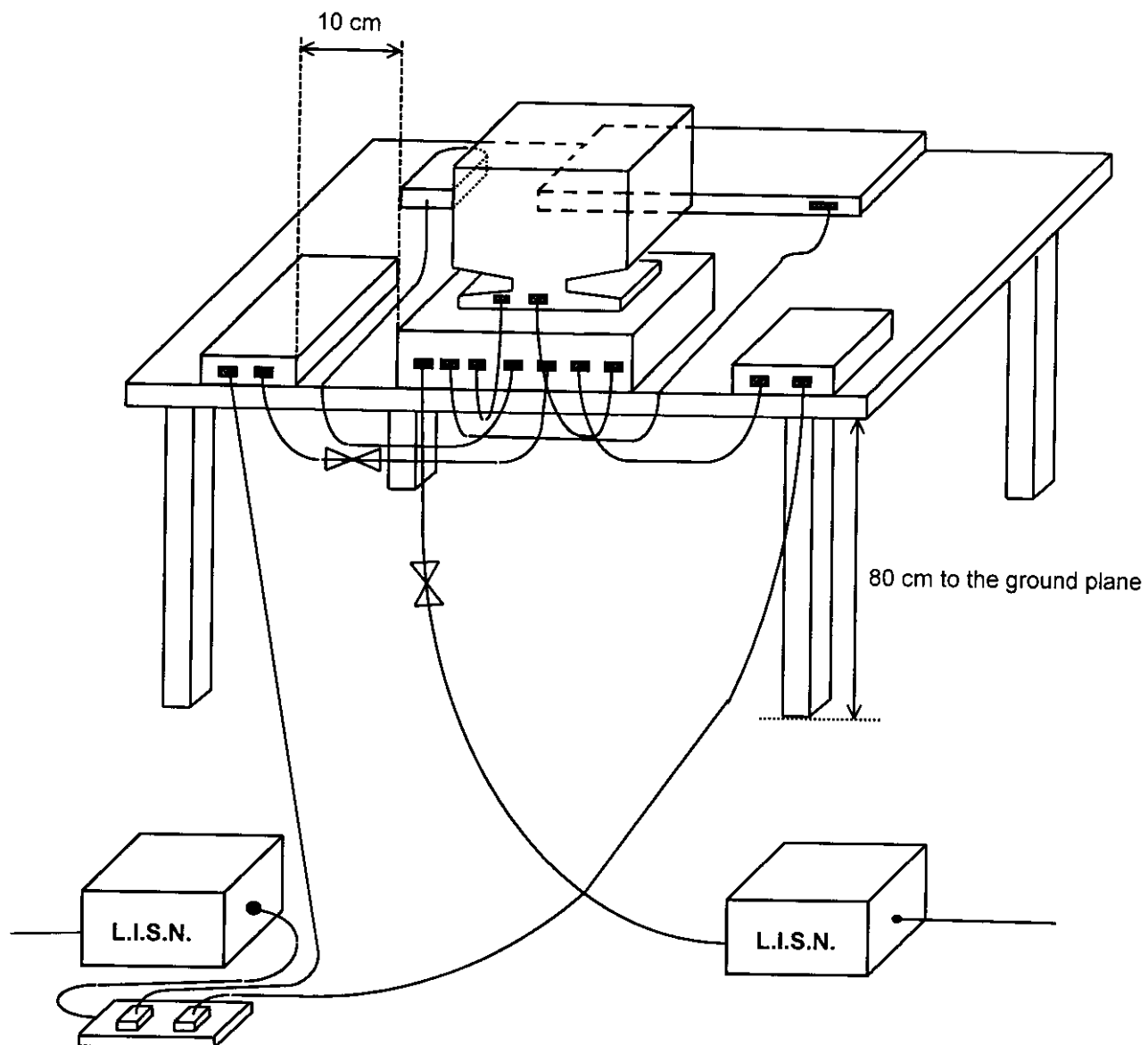
### **5.1. MAJOR MEASURING INSTRUMENTS**

● 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**



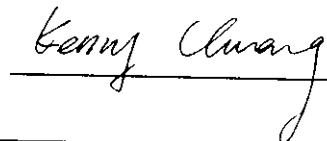
## 5.4. TEST RESULT OF AC POWERLINE CONDUCTED EMISSION

- 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 : 28°C
- Relative Humidity : 62% RH
- Test Date : Aug. 03, 1999

The Conducted Emission test was passed at Line 8.004 MHz / 47.90 dBuV.

Frequency ( MHz )	Line or Neutral	Meter Reading				Limits				Margin	
		Q.P. ( dBuV )	A.V. ( dBuV )	Q.P. ( uV )	A.V. ( uV )	Q.P. ( dBuV )	A.V. ( dBuV )	Q.P. ( uV )	A.V. ( uV )	Q.P. ( dB )	A.V. ( dB )
0.211	Line	49.40	46.30	295.12	206.54	63.17	53.17	1439.77	455.30	-13.77	-6.87
0.636	Line	39.20	38.50	91.20	84.14	56.00	46.00	630.96	199.53	-16.80	-7.50
1.907	Line	39.10	38.70	90.16	86.10	56.00	46.00	630.96	199.53	-16.90	-7.30
8.004	Line	47.90	46.80	248.31	218.78	60.00	50.00	1000.00	316.23	-12.10	-3.20
0.211	Neutral	47.00	45.80	223.87	194.98	63.17	53.17	1439.77	455.30	-16.17	-7.37
8.002	Neutral	46.30	44.90	206.54	175.79	60.00	50.00	1000.00	316.23	-13.70	-5.10

Test Engineer :



Kenny Chuang

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : H52PT-3031

PAGE NUMBER : 14 OF 23

ISSUED DATE : Aug. 11, 1999

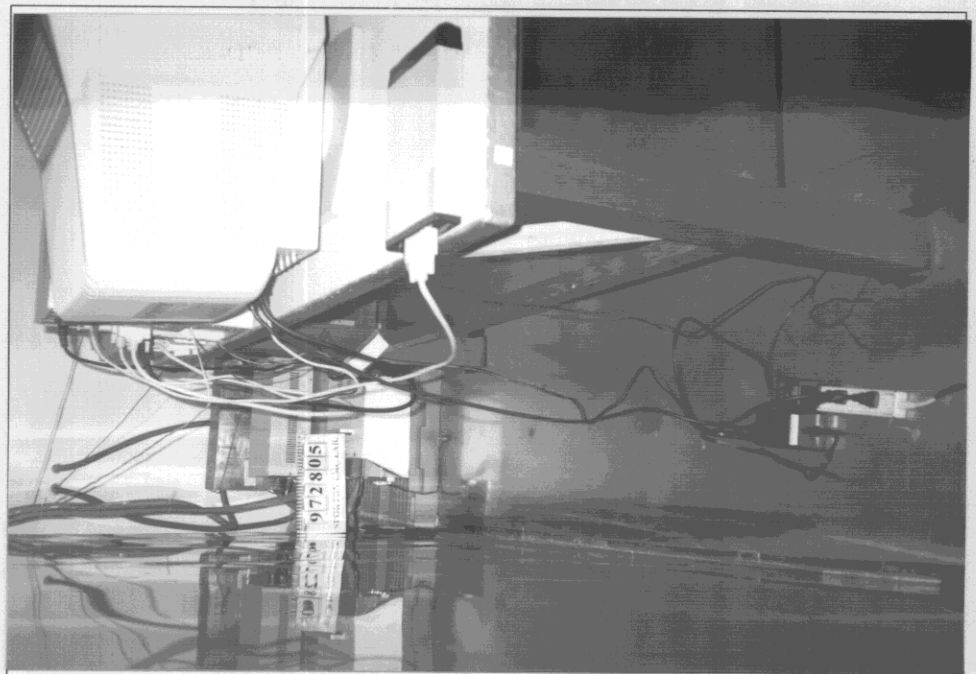
**5.5. PHOTOGRAPHS OF CONDUCTED POWERLINE TEST CONFIGURATION**

- The photographs show the configuration that generates the maximum emission.

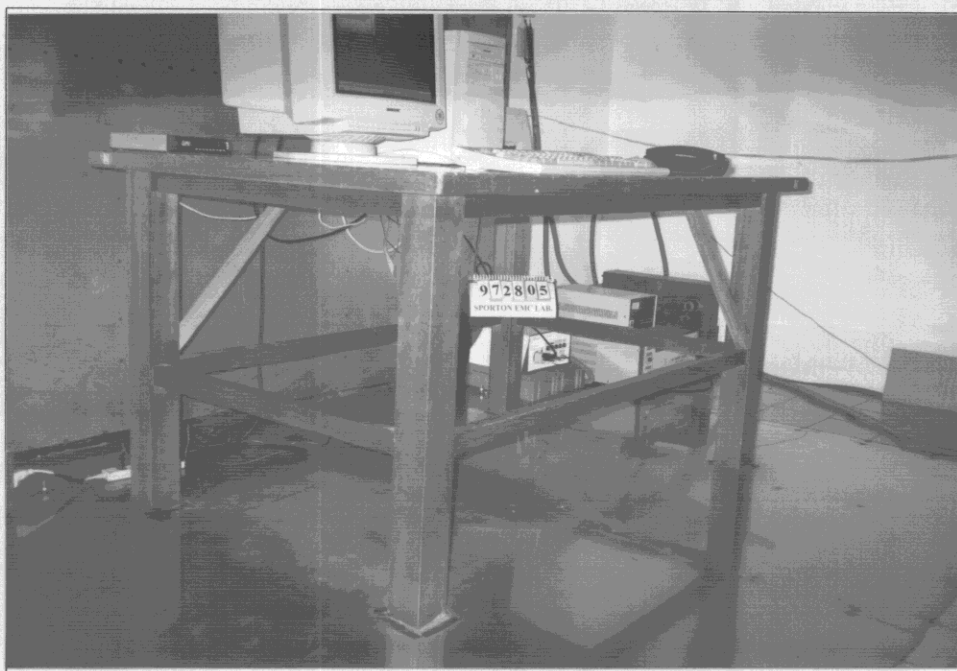
**FRONT VIEW**



**REAR VIEW**



**SIDE 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.

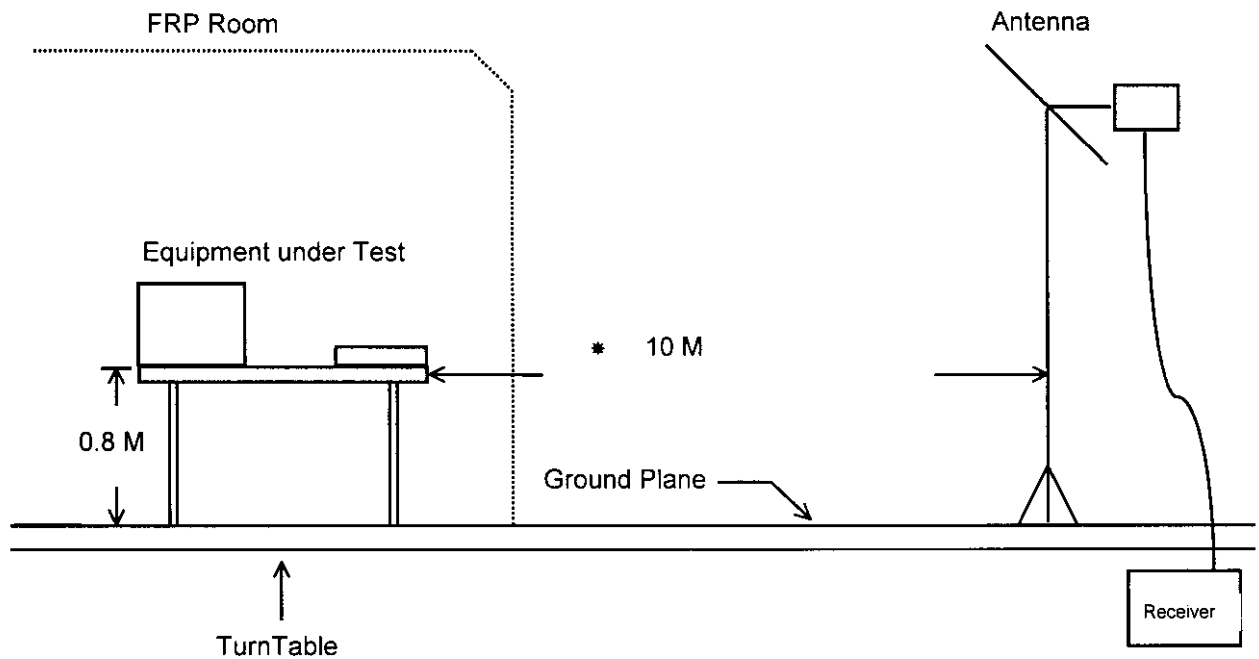
### **6.1. MAJOR MEASURING INSTRUMENTS**

- Amplifier ( HP 8447D )
  - Attenuation 0 dB
  - RF Gain 25 dB
  - Signal Input 0.1 MHz to 1.3 GHz
  
- Spectrum Analyzer ( HP 8560E )
  - Attenuation 0 dB
  - Start Frequency 30 MHz
  - Stop Frequency 1000 MHz
  - Resolution Bandwidth 1 MHz
  - Video Bandwidth 1 MHz
  - Signal Input 30 Hz to 2.9 GHz
  
- Test Receiver ( R&S ESVP )
  - 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 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 : 32°C
- Relative Humidity : 62 % RH
- Test Date : Aug. 02, 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

Horizontal 300.64 MHz / 33.89 dBuV

Antenna Height 4.0 Meter , Turntable Degree 200°

Frequency ( MHz )	Polarity	Antenna Factor (dB/m)	Cable Loss ( dB )	Reading ( dBuV )	Limits (dBuV/m) (uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin ( dB )
123.07	V	11.60	1.30	13.15	30.00 32	26.05	20.07	-3.95
301.03	V	13.06	2.18	17.64	37.00 71	32.88	44.06	-4.12
416.60	V	16.64	2.55	12.91	37.00 71	32.10	40.27	-4.90
501.88	V	17.49	2.85	11.40	37.00 71	31.74	38.64	-5.26
534.55	V	18.24	2.95	10.36	37.00 71	31.55	37.80	-5.45
300.64	H	13.06	2.18	18.65	37.00 71	33.89	49.49	-3.11

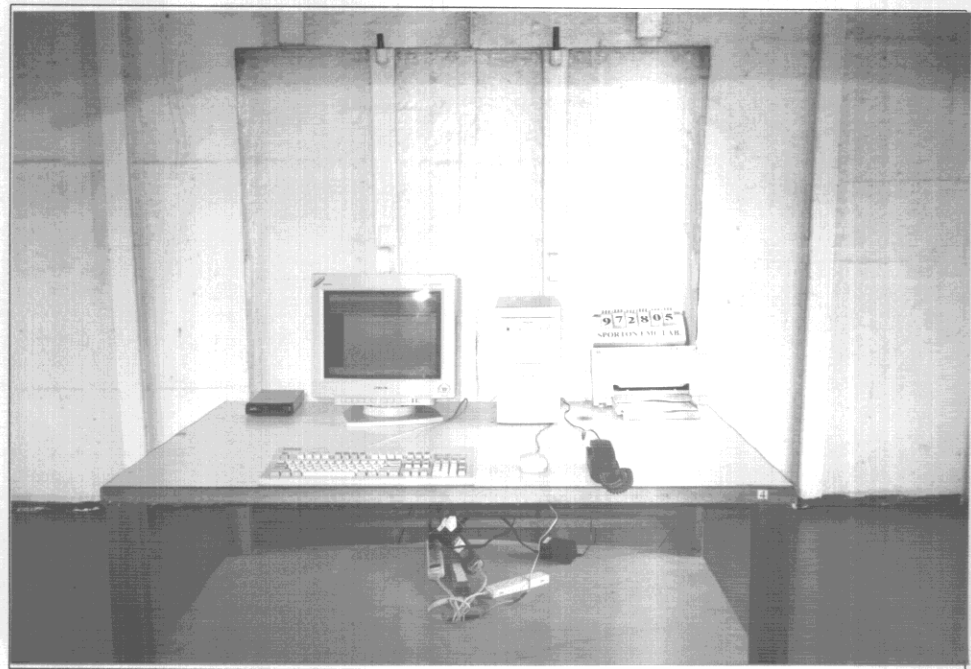
Test Engineer : Jack Deng

Jack Deng

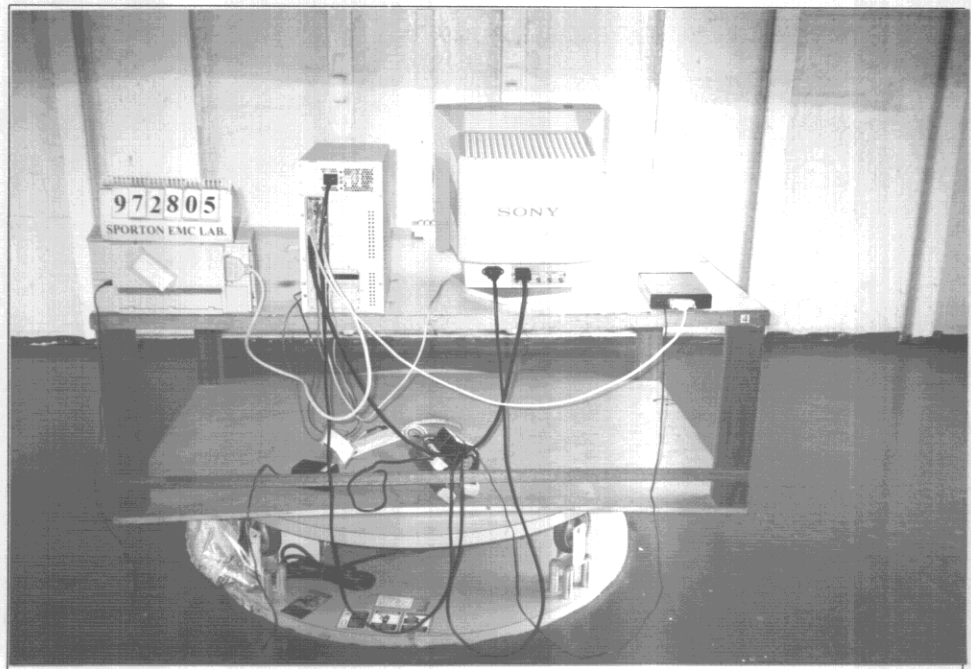
**6.5. PHOTOGRAPHS OF RADIATED EMISSION TEST CONFIGURATION**

- The photographs show the configuration that generates the maximum emission.

**FRONT VIEW**



**REAR VIEW**



## 7. ANTENNA FACTOR AND CABLE LOSS

Frequency ( MHz )	Antenna Factor ( dB )	Cable Loss ( dB )
30	17.8	0.5
35	14.8	0.8
40	12.6	0.9
45	9.4	0.7
50	7.7	1.0
55	5.8	1.0
60	5.1	0.8
65	4.9	0.6
70	5.1	1.0
75	6.0	1.0
80	6.7	1.5
85	7.9	1.0
90	8.9	1.1
95	9.6	1.0
100	10.2	1.2
110	11.3	1.3
120	11.6	1.6
130	11.4	1.3
140	10.8	1.5
150	10.2	1.7
160	9.2	1.5
170	9.1	1.7
180	8.2	1.7
190	8.4	1.7
200	8.9	1.7
220	8.7	1.8
240	10.9	1.8
260	13.3	1.8
280	12.5	2.2
300	13.0	2.2
320	13.6	2.3
340	13.9	2.4
360	14.5	2.6
380	14.9	2.6
400	16.0	2.5
450	16.5	2.7
500	17.5	2.8
550	18.7	3.0
600	18.6	3.3
650	18.9	3.5
700	19.1	3.7
750	19.8	3.3
800	19.9	3.7
850	20.5	4.0
900	20.4	4.5
950	21.0	4.2
1000	21.2	4.3

## 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. 22, 1999	Conduction
LISN (Support Unit) (site 2)	Telemeter	NNB-2/16Z	98089	50 ohm / 50 uH	Dec. 01, 1998	Conduction
Spectrum Analyzer (Site 4)	HP	8560E	3728A03185	30Hz - 2.9GHz	Sep. 09, 1998	Radiation
Amplifier (Site 4)	HP	8447D	2944A09072	0.1MHz -1.3GHz	Sep. 04, 1998	Radiation
Test Receiver (Site 4)	R&S	ESVP	893610/003	20MHz - 1.3GHz	Apr. 12, 1999	Radiation
Bilog Antenna (Site 4)	CHASE	CBL6112B	2445	30MHz -2GHz	Apr. 01, 1999	Radiation
Half-wave dipole antenna (Site 4)	EMCO	3121C	9705-1285	28 M - 1GHz	May 18, 1999	Radiation
Turn Table (site 4)	EMCO	2080	9711-1090	0 ~ 360 degree	N/A	Radiation
Antenna Mast (site 4)	EMCO	2075	9711-2114	1 m- 4 m	N/A	Radiation

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