FCC TEST REPORT

for

CISPR PUB.22 CLASS B

EQUIPMENT : MODEM CARD

MODEL NO. : PT-3517

F C C I D : H52PT-3517

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.

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CERTIFICATE OF COMPLIANCE

for

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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 **May 22, 1999** at **SPORTON INTERNATIONAL INC.** LAB.

Lenore Chang
President

May 31, 1999

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 : MODEM CARD

MODEL NO. : PT-3517

FCC ID : H52PT-3517

TRADE NAME : PURETEK

MICROPONE, EARPHONE, TELEPHONE DATA CABLE : Non-shielded

POWER SUPPLY TYPE : N/A

POWER CORD : N/A

1.4. FEATURE OF EQUIPMENT UNDER TEST

- I/O ports :
  - Phone : Phone jack
  - Line : Telephone line jack
  - MIC : Microphone jack
  - SPK : Speaker jack (for stereo only) jack
- Data
  - ITU-T V.90
  - Rockwell K56flex
  - ITU-T V.34, V.32bis, V.32, V.22bis, V.22
  - Bell 103 & 212A
  - V.42bis & MNP 5 (Data compression)
  - V.42 & MNP2-4 (Error correction)
  - V.80 (H.324 video conferencing interface)
- Fax
  - V.17 (14400bps FAX)
  - V.29 (96oobps FAX)
  - V.27ter (4800bps FAX)
- Voice
  - Voice/Audio mode
  - Full-Duplex speakerphone
  - ITU-T V.61 AudioSpan (Simultaneous Audio / Voice / Data; SAVD)
  - ITU-T V.70 DSVD

Support Device 2. --- MONITOR (HITACHI)

FCC ID	: N/A
Model No.	: CM753ET
Serial No.	: SP1011
Data Cable	: Shielded, 360 degree via metal backshells, 1.15m
Power Supply Type	: Switching
Power Cord	: Non-shielded

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

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

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, PS/2 DELL keyboard, PRIMAX PS/2 mouse, HP printer, ACEEX modem, KOKA microphone, UNO earphone, GERICO telephonex2 and EUT were connected to the F.I.C. P.C. for EMI test.

c. The phone jack and line jack were both connected to the GERICO telephone by telephone line.

d. 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 6. --- MODEM (ACEEX)

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 7. --- MICROPHONE (KOKA)

FCC ID	: N/A
Model No.	: SM04
Serial No.	: SP1057
Data Cable	: Non-shielded, 2.8m

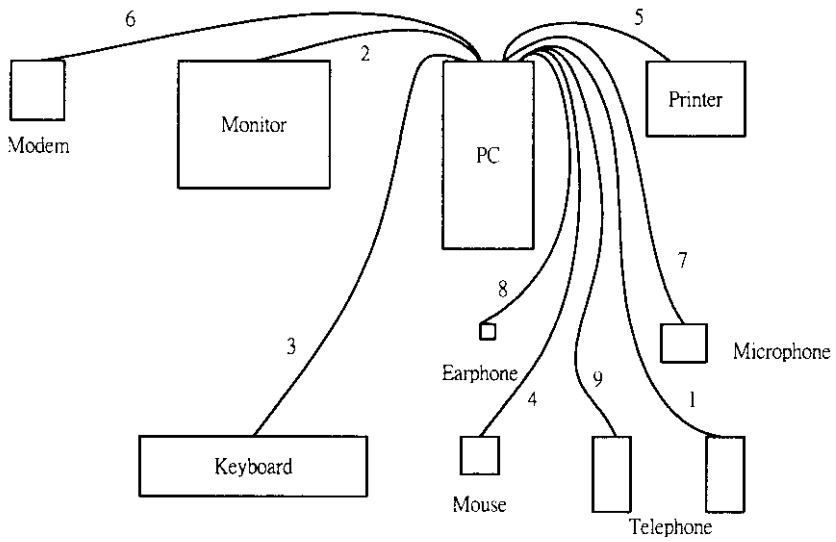
Support Device 8. --- EARPHONE (UNO)

FCC ID	: N/A
Model No.	: UNO-A214
Serial No.	: SP1047
Data Cable	: Non-shielded, 1.15m

Support Device 9. --- TELEPHONE (GERICO)

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

2.3. CONNECTION DIAGRAM OF TEST SYSTEM



1. The I/O cable is connected from the EUT to the support device 9.
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 EUT 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.
7. The I/O cable is connected from the support device 1 to the support device 7.
8. The I/O cable is connected from the EUT to the support device 8.
9. The I/O cable is connected from the EUT to the support device 9.

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.

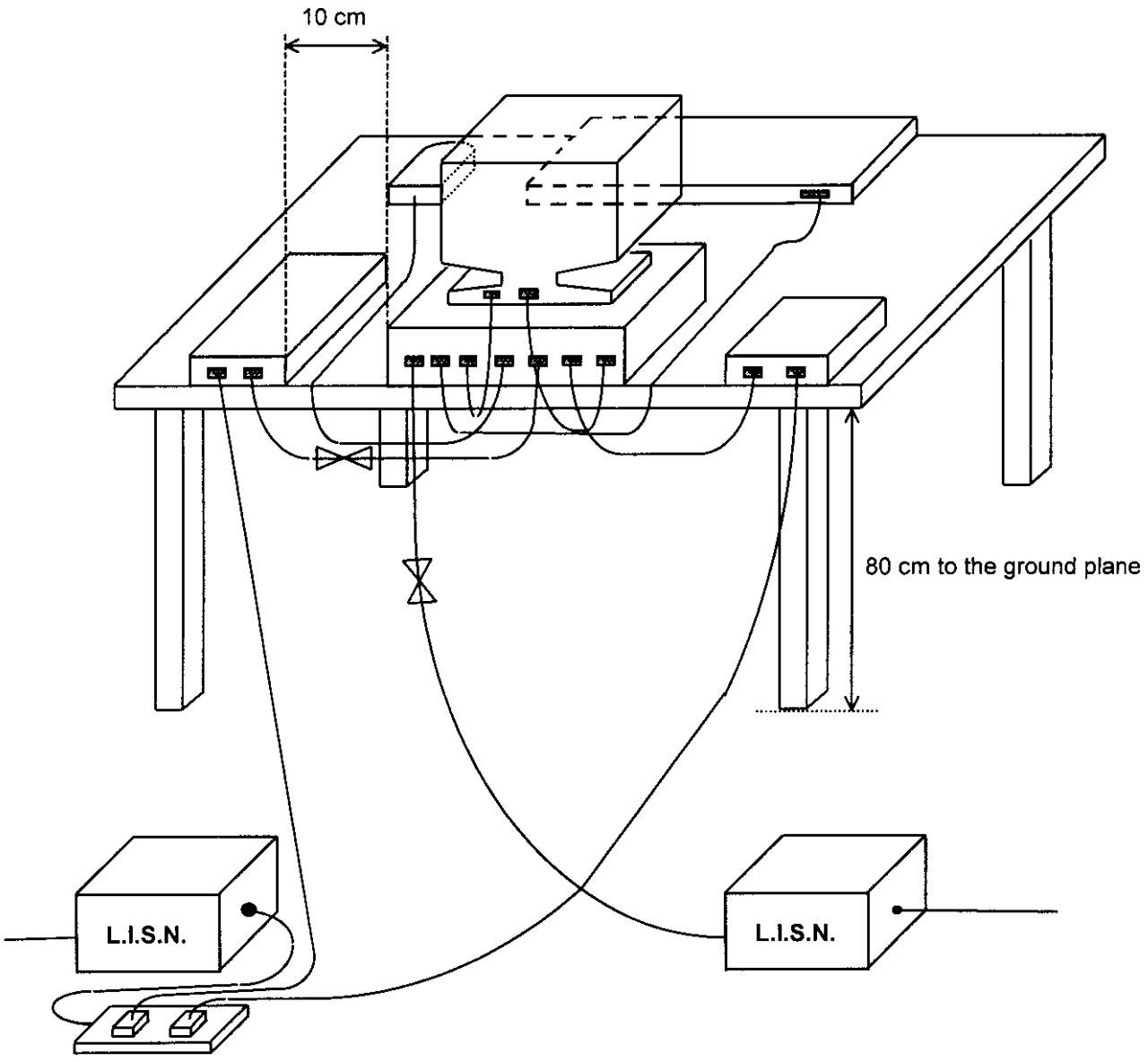
f. Both sides of AC line were checked for maximum conducted interference.

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 : 25℃
- Relative Humidity : 60% RH
- Test Date : May 22, 1999

The Conducted Emission test was passed at Line 20.97 MHz / 42.80 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)
0.20	Line	46.10	45.30	201.84	184.08	63.61	53.61	1515.40	479.21	-17.51	-8.31
0.31	Line	35.30	33.00	58.21	44.67	59.97	49.97	996.61	315.16	-24.67	-16.97
0.51	Line	31.20	26.80	36.31	21.88	56.00	46.00	630.96	199.53	-24.80	-19.20
20.97	Line	42.80	36.40	138.04	66.07	60.00	50.00	1000.00	316.23	-17.20	-13.60
0.20	Neutral	45.70	45.10	192.75	179.89	63.61	53.61	1515.40	479.21	-17.91	-8.51
20.98	Neutral	42.50	36.80	133.35	69.18	60.00	50.00	1000.00	316.23	-17.50	-13.20

Test Engineer : Alex Wu

Alex Wu

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	(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 2.6 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.

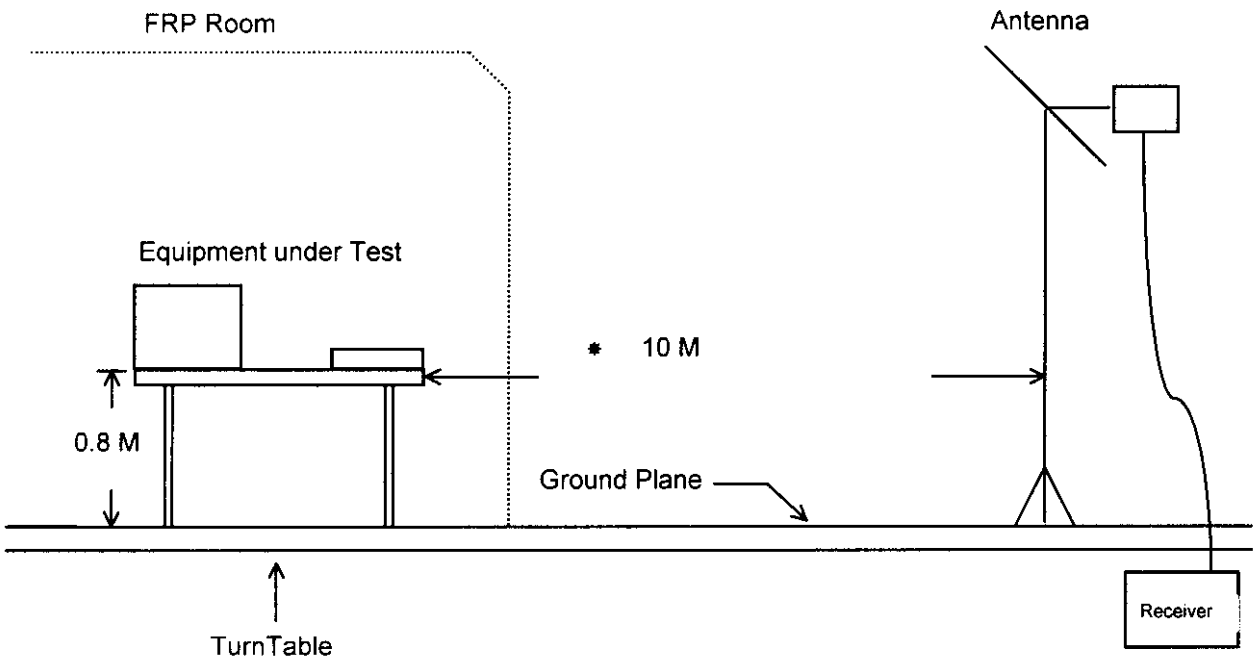
d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

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 : 22℃
- Relative Humidity : 74 % RH
- Test Date : May 19, 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 508.50 MHz / 31.80 dBuV

Antenna Height 2.3 Meter , Turntable Degree 172°

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)
199.90	H	8.70	1.70	12.90	30.00	32	23.30	14.62	-6.70
669.00	H	19.10	3.14	7.20	37.00	71	29.44	29.65	-7.56
199.90	V	8.70	1.70	12.10	30.00	32	22.50	13.34	-7.50
206.40	V	9.17	1.73	10.11	30.00	32	21.01	11.23	-8.99
508.50	V	17.38	2.64	11.78	37.00	71	31.80	38.90	-5.20
667.80	V	19.10	3.14	8.80	37.00	71	31.04	35.65	-5.96

Test Engineer : Jones Jan

Jones Jan

7. ANTENNA FACTOR AND CABLE LOSS

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	16.1	0.8
35	15.6	0.9
40	12.6	0.9
45	10.5	0.8
50	7.0	0.8
55	6.3	1.0
60	5.5	1.0
65	5.4	1.1
70	5.3	1.1
75	6.1	1.1
80	7.1	1.1
85	8.1	1.3
90	9.0	1.3
95	9.9	1.4
100	10.8	1.1
110	11.1	1.4
120	11.4	1.4
130	11.8	1.5
140	11.1	1.5
150	10.5	1.6
160	10.7	1.5
170	9.6	1.5
180	9.4	1.7
190	9.1	1.7
200	8.7	1.7
220	10.1	1.8
240	11.5	1.9
260	12.5	1.9
280	13.1	1.8
300	13.6	2.0
320	14.2	2.1
340	14.7	2.3
360	15.2	2.4
380	15.5	2.3
400	15.9	2.3
450	16.6	2.6
500	17.2	2.6
550	18.2	2.9
600	18.3	3.0
650	19.1	3.1
700	19.1	3.2
750	19.5	3.2
800	18.6	3.5
850	19.5	3.8
900	20.2	3.8
950	19.8	3.8
1000	20.1	3.7

8. LIST OF MEASURING INSTRUMENTS USED

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver (site 1)	HP	8591EM	3536A00673	9 kHz – 1.8 GHz	Aug. 27, 1998	Conduction
LISN (site 1)	EMCO	3850/2	9510-1035	50 ohm / 50 uH	Oct. 23, 1998	Conduction
LISN (site 1)	KYORITSU	KNW-47	8-693-10	50 ohm / 50 uH	Oct. 23, 1998	Conduction
EMI Filter (site 1)	CORCOM	MRI-2030	N/A	480 VAC / 30 A	N/A	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 17, 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.