FCC TEST REPORT

for

PART 15, SUBPART B CLASS B

Equipment : NOTEBOOK PC

MODEL NO. : 1X00P(X=0~9, A~Z)

F C C I D : L4PK1100PX13

Filing Type : ORIGINAL CERTIFICATION

Prepared for : **KAPOK COMPUTER CO.**
No. 2-66, Sec. 2, Kwang-Fu Rd., Sun Chung City,
Taipei Hsien, 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, Taipei Hsien, Taiwan, R.O.C.

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CERTIFICATE OF COMPLIANCE

for

FCC PART 15, SUBPART B CLASS B

Equipment : NOTEBOOK PC

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F C C I D : L4PK1100PX13

Prepared for : **KAPOK COMPUTER CO.**
4F, No. 36, Wu-Chuan 7th Rd., Wu-Ku Ind Park,
Taipei Hsien, 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. 23, 1998** at **SPORTON International Inc.** LAB.

Lenore Dec.10,1998

Lenore Chang
President

SPORTON International Inc.

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

1. GENERAL DESCRIPTION OF EQUIPMENT UNDER TEST

1.1. APPLICANT

KAPOK COMPUTER CO.
No. 2-66, Sec. 2, Kwang-Fu Rd., Sun Chung City,
Taipei Hsien, Taiwan, R.O.C.

1.2. MANUFACTURER

Same as 1.1

1.3. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

EQUIPMENT : NOTEBOOK PC
MODEL NO. : 1X00P(X=0~9, A~Z)
FCC ID : L4PK1100PX13
TRADE NAME : **KAPOK**
DATA CABLE : Shielded
MICROPHONE, HEADPHONE DATA CABLE : Non-shielded
POWER SUPPLY TYPE : Switching
INPUT POWER CORD : Non-shielded
OUTPUT POWER CORD : Shielded

1.4. FEATURE OF EQUIPMENT UNDER TEST

- Processor : Mobile Pentium II processors (AGP) at 300MHz
- Memory : Two 144-pin SODIMM package
- System BIOS : 256KB flash ROM
- Display : 13.3" TFT XGA (1024x768 pixels) LCD panel available
- PC Card Sockets : One Type III PC card or two Type II PC cards
- Input / Output : Built-in trackpad (PS/2), USB port, S-video jack for TV output, External CRT monitor (CRT) port, Parallel port (LPT1), Serial port (COM1), PS/2 type port (External keyboard/Mouse), Microphone-in jack, Headphone jack, DC-in jack

2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST

2.1. TEST MANNER

a. The EUT has been associated with 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, GENIUS USB Mouse, HP Printer, ACEEX Modem, GALLANT microphone, J-S headphone and PANASONIC TV were connected to the EUT for EMI test.

c. The KAPOK notebook personal computer, was tested in accordance with Mobile Pentium II processors (AGP) at 300MHz (PC running at 66.6MHz).

d. The following display resolution were investigated during the compliance test :
   1. LCD display only (from 640x480 to 800x600 or resolution)
   2. CRT display only (from 640x480 to 1024x768, 69KHz)
   3. CRT and LCD and TV (from 640x480 to 800x600 or resolution)

e. According to the above tests, we listed the following modes as the worst cases :
   1. The EUT is installed with TFT color 13.3" LCD panel, CPU (Mobile Pentium II processors (AGP) at 300 MHz) running at 300MHz while the CRT display only (1024x768 non-interlaced, 69KHz).
   2. The EUT is installed with TFT color 13.3" LCD panel, CPU (Mobile Pentium II processors (AGP) at 300 MHz) running at 300MHz while triple display, CRT, LCD and TV (800x600 or resolution).

f. 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.	: SP1009
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.	: SP1021
Data Cable	: Shielded, 360 degree via metal backshells, 1.9m

Support Device 3. --- USB MOUSE (GENIUS)

FCC ID	: FSUGMZFG
Model No.	: NICHE USB
Serial No.	: SP1037
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)

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. --- MICROPHONE (GALLANT)

FCC ID	: N/A
Model No.	: DYNAMIC 600Ω
Serial No.	: SP1058
Data Cable	: Non-shielded, 2.9m

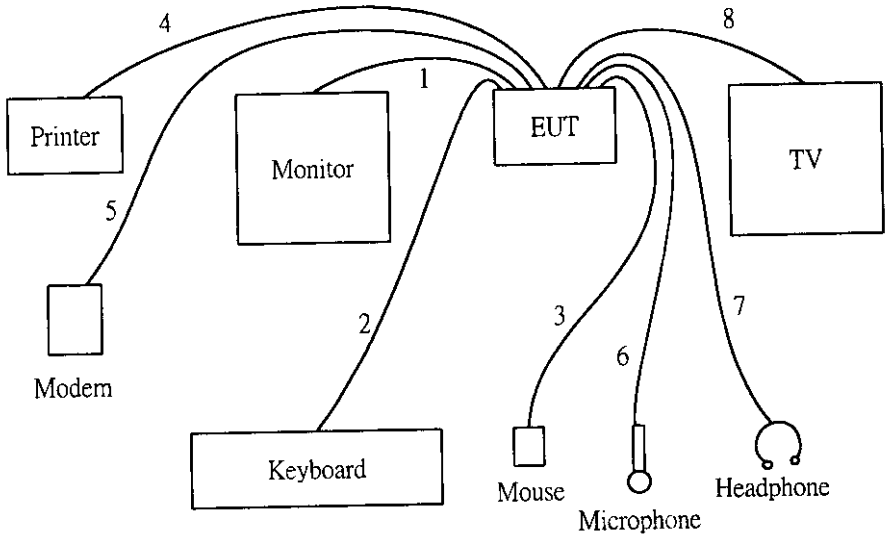
Support Device 7. --- HEADPHONE (J-S)

FCC ID	: N/A
Model No.	: H-201
Serial No.	: SP1046
Data Cable	: Non-shielded, 1.2m

Support Device 8. --- TELVEISION (PANASONIC)

FCC ID	: N/A
Model No.	: WV-CM1450
Serial No.	: SP1008
Data Cable	: Shielded, 360 degree via metal backshells, 1.5m

2.3. CONNECTION DIAGRAM OF TEST SYSTEM



1. The I/O cable is connected from the EUT to the support device 1.
2. The I/O cable is connected from the EUT to the support device 2.
3. The I/O cable is connected from the EUT 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 EUT 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 support device 7.
8. The I/O cable is connected from the EUT to the support device 8.

3. TEST SOFTWARE

Three executive programs, EMITEST.EXE, WINFCC.EXE, CD PLAYER 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. Set up the CD-ROM and play music.
c. The PC reads the test program from the floppy disk drive and runs it.
d. The PC sends " H " messages to the external monitor, and the external monitor displays " H " patterns on the screen.
e. The PC sends " H " messages to the LCD and TV, and the LCD and TV displays " H " patterns on the screen (for CRT+LCD+TV Mode only).
f. The PC sends " H " messages to the printer, then the printer prints them on the paper.
g. The PC sends " H " messages to the modem.
h. The PC sends " H " messages to the internal Hard Disk, and the Hard Disk reads and writes the message.
i. Repeat the steps from b to h.

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.

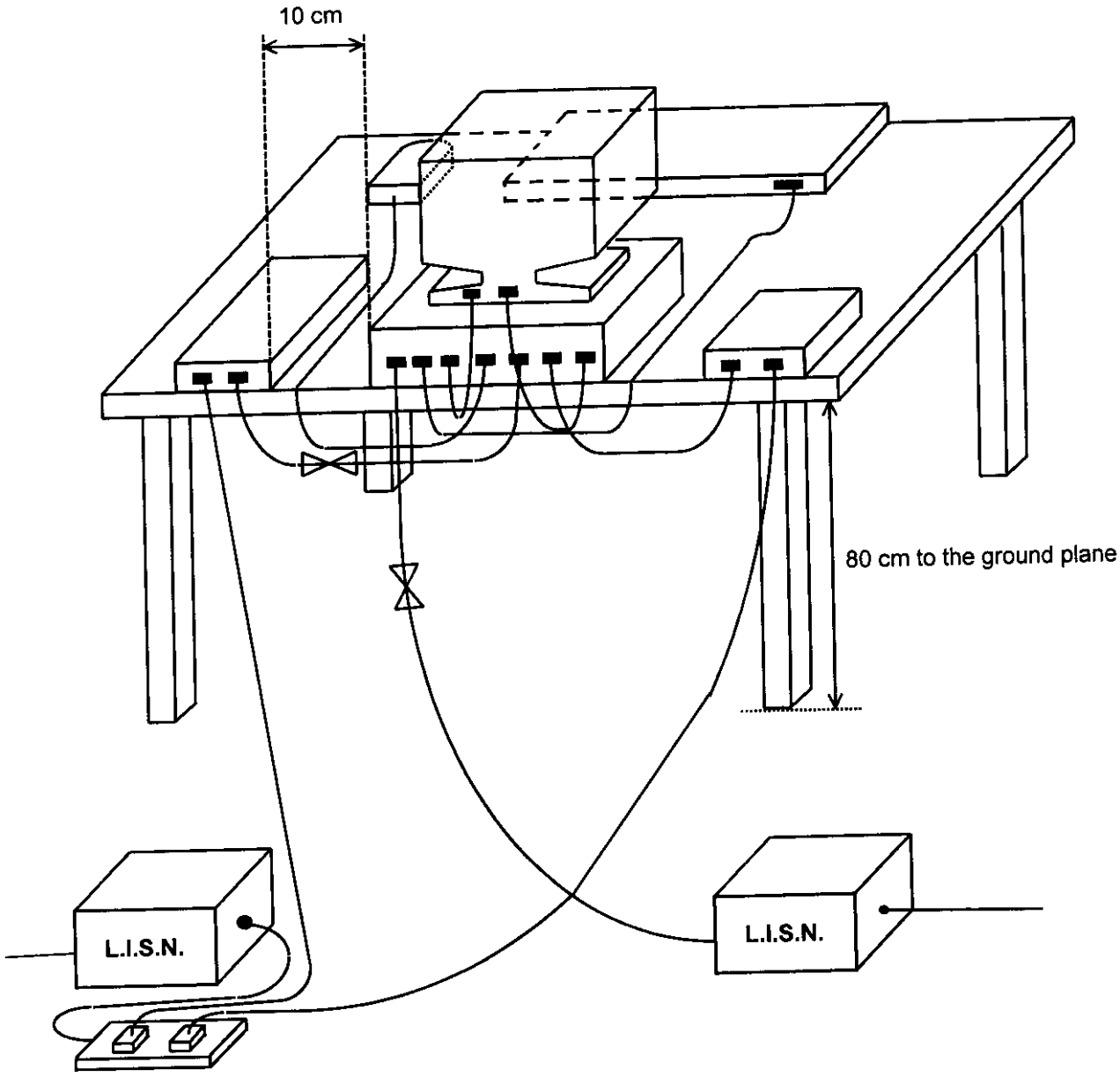
f. Both sides of AC line were checked for maximum conducted interference.

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

- All emissions not reported here are more than 10 dB below the prescribed limit.
- Frequency Range of Test : from 0.45 MHz to 30 MHz
- Temperature : 23℃
- Relative Humidity : 79% RH
- Test Mode : CRT and LCD and TV (800x600, 60Hz, 57.4KHz)
- Test Date : Nov. 23, 1998

The Conducted Emission test was passed at minimum margin

LINE 6.67MHz / 44.00dBuV.

Frequency (MHz)	Line / Neutral	Meter Reading (dBuV)	(uV)	Limits (dBuV)	(uV)	Margin (dB)
2.23	L	43.00	141.25	48.00	251.19	-5.00
4.45	L	39.50	94.41	48.00	251.19	-8.50
6.67	L	44.00	158.49	48.00	251.19	-4.00
2.23	N	42.60	134.90	48.00	251.19	-5.40
4.45	N	40.00	100.00	48.00	251.19	-8.00
6.67	N	44.00	158.49	48.00	251.19	-4.00

Test Engineer : Kenny Chuang

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 0.45 MHz to 30 MHz
- Temperature : 23℃
- Relative Humidity : 79% RH
- Test Mode : CRT only (1024x768, 60Hz, 56KHz)
- Test Date : Nov. 23, 1998

The Conducted Emission test was passed at minimum margin

LINE 6.47MHz / 44.30dBuV.

Frequency (MHz)	Line / Neutral	Meter Reading (dBuV)	(uV)	Limits (dBuV)	(uV)	Margin (dB)
0.73	L	41.90	124.45	48.00	251.19	-6.10
4.31	L	44.20	162.18	48.00	251.19	-3.80
6.47	L	44.30	164.06	48.00	251.19	-3.70
0.61	N	41.00	112.20	48.00	251.19	-7.00
4.31	N	44.00	158.49	48.00	251.19	-4.00
6.47	N	44.20	162.18	48.00	251.19	-3.80

Test Engineer : Kenny Chuang

Kenny Chuang

6. TEST OF RADIATED EMISSION

Radiated emissions from 30 MHz to 1000MHz 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 Adapte	(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.

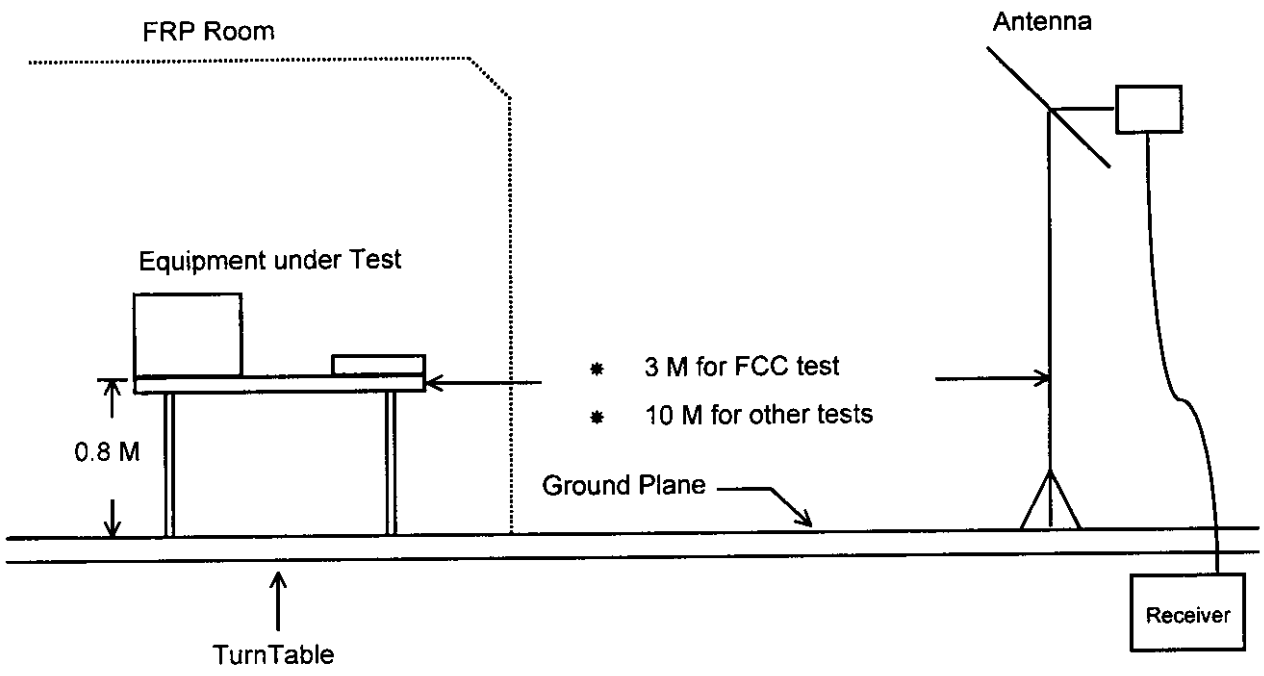
d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

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 : 22℃
- Relative Humidity : 72 % RH
- Test Mode : CRT and LCD and TV (800x600, 60Hz, 57.4KHz)
- Test Date : Nov. 17, 1998

- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Sample Calculation at 264.80MHz
  Corrected Reading = 17.20+ 2.63+ 22.73= 42.57(dBuV/m)

The Radiated Emission test was passed at minimum margin

Vertical 264.80MHz / 42.57dBuV

Antenna Height 1.5Meter , Turntable Degree 120°

Frequency	Polarity	Antenna Factor	Cable Loss	Reading	Limits		Emission Level		Margin
(MHz)		(dB)	(dB)	(dBuV)	(dBuV)	(uV)	(dBuV)	(uV)	(dB)
264.80	V	17.20	2.63	22.73	46.00	200	42.57	134.43	-3.43
401.60	V	22.29	3.61	16.55	46.00	200	42.45	132.59	-3.55
46.07	V	1.53	1.00	33.93	40.00	100	36.46	66.53	-3.54
324.47	H	18.33	3.12	21.06	46.00	200	42.51	133.51	-3.49
614.39	H	24.33	4.72	13.45	46.00	200	42.49	133.20	-3.51
614.39	H	24.33	4.72	13.43	46.00	200	42.47	132.89	-3.53

Test Engineer : William Lee

William Lee

6.4.1. 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 : 22℃
- Relative Humidity : 72 % RH
- Test Mode : CRT only (1024x768, 60Hz, 56KHz)
- Test Date : Nov. 17, 1998

- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Sample Calculation at 69.80MHz
  Corrected Reading = 5.57+ 1.20+ 29.67= 36.44(dBuV/m)

The Radiated Emission test was passed at minimum margin

Horizontal 614.40MHz / 42.49dBuV

Antenna Height 1.0Meter , Turntable Degree 112°

Frequency	Polarity	Antenna Factor	Cable Loss	Reading	Limits		Emission Level		Margin
(MHz)		(dB)	(dB)	(dBuV)	(dBuV)	(uV)	(dBuV)	(uV)	(dB)
69.80	H	5.57	1.20	29.67	40.00	100	36.44	66.37	-3.56
614.40	H	24.33	4.72	13.45	46.00	200	42.49	133.20	-3.51
733.60	H	26.34	5.44	10.68	46.00	200	42.46	132.74	-3.54
64.90	V	5.13	1.20	30.03	40.00	100	36.36	65.77	-3.64
566.40	V	23.68	4.47	14.30	46.00	200	42.45	132.59	-3.55
383.20	V	21.89	3.43	17.16	46.00	200	42.48	133.05	-3.52

Test Engineer : William Lee

William Lee

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

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. 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	Jul. 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

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