EX

FCC TEST REPORT

for

CISPR PUB. 22 CLASS B

Equipment : NOTEBOOK PC

MODEL NO. : 8XXXX(X=0~9, A~Z)

F C C I D : L4PK8500CX15

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

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CERTIFICATE OF COMPLIANCE

for

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Prepared for : **KAPOK COMPUTER CO.**
No. 2-66, Sec. 2, Kwang-Fu Rd., Sun Chung City,
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*** **CISPR PUB. 22** in both radiated and conducted emissions **CLASS B** limits. Testing was carried out on **Feb. 10, 1999** at **SPORTON International Inc.** LAB.

Lenore Chang Feb. 22, 1999
Lenore Chang
President

SPORTON International Inc.

6F, No. 106, Sec. 1, Hsin Tai Wu Rd., 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. : 8XXXX(X=0~9, A~Z)

FCC ID : L4PK8500CX15

TRADE NAME : **KAPOK**

DATA CABLE : **Shielded**

AV-Video DATA CABLE : Non-Shielded, 1.7m

VGA DATA CABLE : Shielded, 1.2m

Microphone, Stereo Cassette Player, Speaker DATA CABLE : Non-shielded

POWER SUPPLY TYPE : Switching

INPUT POWER CORD : Non-shielded, 1.8M, 3PIN

OUTPUT POWER CORD : Shielded, 1.3M, 4PIN

1.4. FEATURE OF EQUIPMENT UNDER TEST

- Processor : Intel Celeron 333MHz (66.6MHz)
- Memory : Supports EDO/SDRAM DODIMM, 8MB expandable up to 384MB
- System BIOS : 256KB Flash ROM
- Display : 15.1" TFT XGA LCD panel, AGP 2X, Tri-view ™ for Dual displays : CRT and LCD
- Storage : 3.5" FDD, 2.5" hard disk drive (12.7 or 17mm high), DVD-ROM/CD-ROM(24X speed)
- Audio : Sound-Blaster Pro™ version 3.01 compatible, Built-in microphone, Built-in 2 watts speakers X 2.
- PC Card Sockets : Two Type II PC cards
- Input / Output : Built-in trackpad (PS/2), Dual USB ports, 120-pin expansion port, RCA jack for video input, External monitor (CRT) port, Serial port, Parallel port, Dual PS/2 type ports, Speaker-out jack, Line-in jack, Microphone-in jack, DC-in jack.
- Power : AC input : 100-240V, 47-63Hz

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, PRIMAX PS/2 mouse, WINIC USB mousex2, HP printer, ACEEX modem, KOKA microphone, AIWA stereo cassette player, JUSTER speaker and SYNCO video player were connected to the EUT for EMI test.

c. The KAPOK notebook personal computer, was tested in accordance with Intel Celeron 333MHz (PC running at 66MHz).

d. The following display resolution were investigated during the compliance test :

e. The following display resolution were investigated during the compliance test :

1. CRT display only (from 640x480 to 1280x1024, 80KHz)
2. CRT and PANEL (from 640x480 to 1024x768, 48KHz)

f. According to the above tests, we listed the following modes as the worst cases :

1. The EUT is installed with TFT color 15.1" LCD panel, CPU (Intel Celeron 333MHz) running at 333MHz while the CRT display only (1280x1024 non-interlaced, 80KHz).
2. The EUT is installed with TFT color 15.1" LCD panel, CPU (Intel Celeron 333MHz) running at 333MHz while triple display, CRT and PANEL (1024x768, 48KHz).

g. Frequency range investigated : Conduction 150 KHz to 30 MHz, Radiation 30 MHz to 2000 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, 1.2m
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. --- 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 4. -- USB MOUSE (WINIC)

FCC ID	: F4ZFDM-A50
Model No.	: FDM-A50
Serial No.	: SP1039
Data Cable	: Shielded, 1.5m

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.	: SP1045
Data Cable	: Shielded, 360 degree via metal backshells, 1.15m

Support Device 7. -- MICROPHONE (KOKA)

FCC ID	: N/A
Model No.	: DM510
Serial No.	: SP1056
Data Cable	: Non-shielded, 2.8m

Support Device 8. -- STEREO CASSETTE PLAYER (AIWA)

FCC ID	: N/A
Model No.	: HS-J36
Serial No.	: SP1063
Data Cable	: Non-shielded, 1.7m

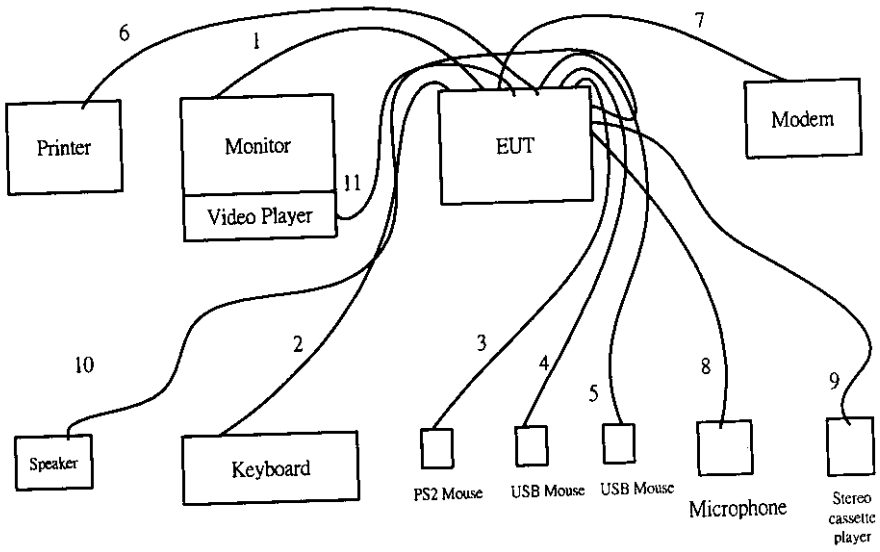
Support Device 9. -- SPEAKER (JUSTER)

FCC ID	: N/A
Model No.	: SP-480
Serial No.	: SP1053
Data Cable	: Non-shielded, 1.2m

Support Device 10. --- VIDEO PLAYER (SYNCO)

FCC ID	: N/A
Model No.	: SVP-200
Serial No.	: SP1069
Data Cable	: Non-shielded, 1.7m

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 4.
6. The I/O cable is connected from the EUT to the support device 5.
7. The I/O cable is connected from the EUT to the support device 6.
8. The I/O cable is connected from the EUT to the support device 7.
9. The I/O cable is connected from the EUT to the support device 8.
10. The I/O cable is connected from the EUT to the support device 9.
11. The I/O cable is connected from the EUT to the support device 10.

3. TEST SOFTWARE

Two executive programs, EMITEST.EXE, WINFCC.EXE under WIN 98, which generate a complete line of continuously repeating " H " pattern were used as the test software.

The programs were 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 LCD Panel), and the monitor (and LCD Panel) 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, "CD PLAY" and "ATI VIDEO PLAYER" were executed during testing.

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

CISPR PUB. 22

4.4. FREQUENCY RANGE INVESTIGATED

a. Conduction : from 150 KHz to 30 MHz

b. Radiation : from 30 MHz to 2000 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.

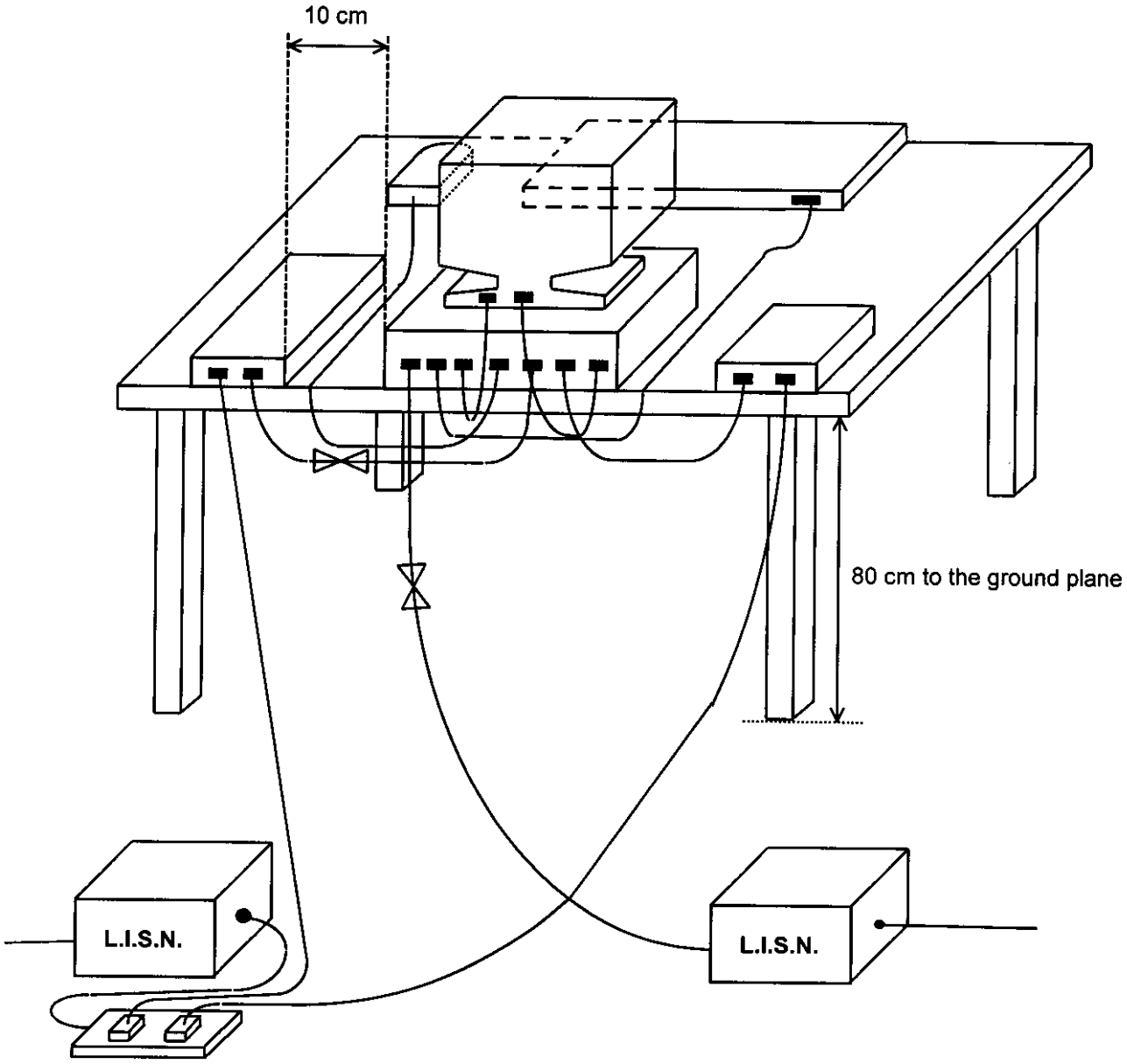
f. Both sides of AC line were checked for maximum conducted interference.

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 : 22℃
- Relative Humidity : 57% RH
- Test Mode : CRT ONLY (1280x1024, 80K, 75Hz)
- Test Date : Feb. 10, 1999

The Conducted Emission test was passed at minimum margin

LINE 0.53MHz / 47.40dBuV.

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)
0.41	L	46.80	43.80	218.78	154.88	58.57	48.57	848.34	268.27	-11.77	-4.77
0.53	L	47.40	41.60	234.42	120.23	56.00	46.00	630.96	199.53	-8.60	-4.40
1.16	L	42.50	39.10	133.35	90.16	56.00	46.00	630.96	199.53	-13.50	-6.90
0.41	N	47.70	44.50	242.66	167.88	58.63	48.63	853.94	270.04	-10.93	-4.13
0.53	N	47.20	41.10	229.09	113.50	56.00	46.00	630.96	199.53	-8.80	-4.90
1.16	N	41.20	35.90	114.82	62.37	56.00	46.00	630.96	199.53	-14.80	-10.10

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 0.15 MHz to 30 MHz
- Temperature : 22℃
- Relative Humidity : 57% RH
- Test Mode : CRT+PANEL (1024x768, 48K, 60Hz)
- Test Date : Feb. 10, 1999

The Conducted Emission test was passed at minimum margin

NEUTRAL 0.53MHz / 47.10dBuV.

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)
0.18	L	49.20	46.10	288.40	201.84	65.29	55.29	1837.75	581.15	-16.09	-9.19
0.52	L	45.10	40.40	179.89	104.71	56.00	46.00	630.96	199.53	-10.90	-5.60
0.70	L	44.10	41.30	160.32	116.14	56.00	46.00	630.96	199.53	-11.90	-4.70
0.18	N	49.00	44.50	281.84	167.88	65.26	55.26	1831.71	579.24	-16.26	-10.76
0.41	N	47.70	41.70	242.66	121.62	58.63	48.63	853.94	270.04	-10.93	-6.93
0.53	N	47.10	42.20	226.46	128.82	56.00	46.00	630.96	199.53	-8.90	-3.80

Test Engineer : Kenny Chuang

Kenny Chuang

6. TEST OF RADIATED EMISSION

Radiated emissions from 30 MHz to 2000MHz 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 GHz

- Spectrum Analyzer (HP 8594A)
  - Attenuation 0 dB
  - Start Frequency 30 MHz
  - Stop Frequency 2000 MHz
  - Resolution Bandwidth 1 MHz
  - Video Bandwidth 1 MHz
  - Signal Input 9 KHz to 2.9 GHz

- Quasi-Peak Adapter (HP 8594A)
  - 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.

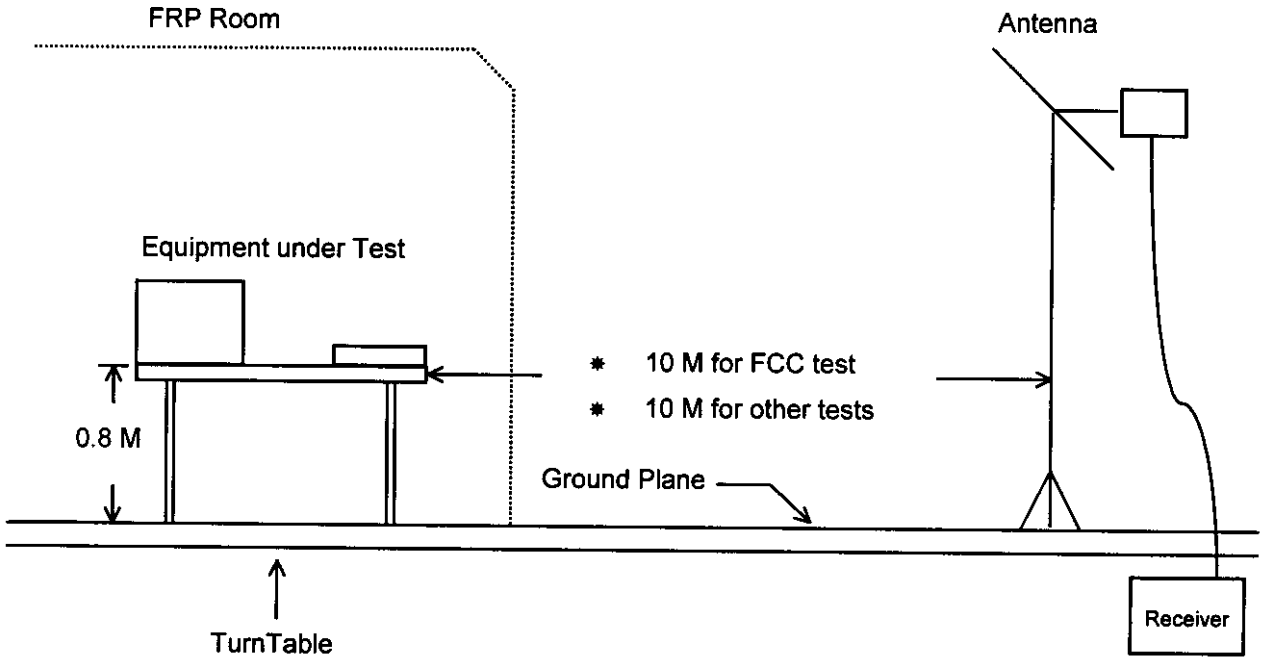
d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

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 15.109
- Frequency Range of Test : from 30 MHz to 2000 MHz
- Test Distance : 10 M
- Temperature : 14℃
- Relative Humidity : 71 % RH
- Test Mode : CRT ONLY (1280x1024, 80K, 75Hz)
- Test Date : Feb. 08, 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 200.05MHz / 26.98dBuV

Antenna Height 3.0Meter , Turntable Degree 149°

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)
168.26	V	9.88	2.06	14.95	30.00	32	26.89	22.11	-3.11
206.40	V	9.20	2.35	15.31	30.00	32	26.86	22.03	-3.14
236.01	V	10.51	2.54	20.86	37.00	71	33.92	49.66	-3.08
600.12	V	20.00	4.10	9.87	37.00	71	33.97	49.95	-3.03
200.05	H	9.10	2.30	15.58	30.00	32	26.98	22.34	-3.02
236.00	H	10.51	2.54	20.83	37.00	71	33.89	49.49	-3.11

Test Engineer : Terry Chang

Terry Chang

6.4.1. TEST RESULT OF RADIATED EMISSION

- Equipment meets the technical specifications of 15.109
- Frequency Range of Test : from 30 MHz to 2000 MHz
- Test Distance : 10 M
- Temperature : 14℃
- Relative Humidity : 71 % RH
- Test Mode : CRT+PANEL (1024x768, 48K, 60Hz)
- Test Date : Feb. 4, 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 57.26MHz / 26.92dBuV

Antenna Height 1.3Meter , Turntable Degree 241°

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)
32.60	V	16.61	1.00	9.18	30.00	32	26.79	21.85	-3.21
57.26	V	6.26	1.20	19.46	30.00	32	26.92	22.18	-3.08
228.01	V	9.78	2.51	14.60	30.00	32	26.89	22.11	-3.11
501.60	V	17.76	3.71	12.23	37.00	71	33.69	48.36	-3.31
228.00	H	9.78	2.51	14.54	30.00	32	26.83	21.95	-3.17
235.20	H	10.44	2.54	20.59	37.00	71	33.57	47.70	-3.43

Test Engineer : Terry Chang

Terry Chang

6.5. PHOTOGRAPHS OF RADIATED EMISSION TEST CONFIGURATION

- Test Mode : CRT ONLY (1280x1024, 80K, 75Hz)

FRONT VIEW

REAR VIEW