FCC TEST REPORT

for

47 CFR, Part 2, Part 15 and CISPR PUB. 22 Class A

Equipment	: Bandwidth Mangement Device
Model No.	: NMB-10 , NMB-100
FCC ID	: N/A
Filing Type	: Verification
Applicant	: **AAEON Technology Inc.** 5F, No.135, 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 U.S. government.**

SPORTON International Inc.

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

SPORTON INTERNATIONAL INC.

Certificate No. : F0N0710

CERTIFICATE OF COMPLIANCE

for

47 CFR, Part 2, Part 15 and CISPR PUB. 22 Class A

Equipment	:	Bandwidth Mangement Device
Model No.	:	NMB-10 , NMB-100
FCC ID	:	N/A
Applicant	:	**AAEON Technology Inc.** 5F, No.135, Lane 235, Pao Chiao Rd. Hsin-Tien City, Taipei, Taiwan, R.O.C.

I **HEREBY** CERTIFY THAT :

The measurements shown in this test 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 and FCC Part 15** in both radiated and conducted emission class A limits. Testing was carried out on Nov. 9, 2000 at **SPORTON International Inc.** LAB. in Lin Kou.

K. J. Lin Nov. 22, 2000

K. J. Lin
Manager

SPORTON International Inc.

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

Table of Contents

1. General Description of Equipment under Test

1.1. Applicant

AAEON Technology Inc.
5F, No.135, 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	: Bandwidth Mangement Device
Model No.	: NMB-10, NMB-100
FCC ID	: N/A
Trade Name	: AAEON
STP Cable	: Shielded, 10m
Power Supply Type	: Switching
Power Cord	: Non-Shielded, 1.8, 3 pin

1.4. Feature of Equipment under Test

- Bandkeeper is a transparent device and it does not change the network architecture.
- Control techniques
  Stateful TCP connection QoS control
- Two 10Base-T/ 100Base-TX RJ-45 ports (Inbound & Outbound)
- One console port for system configuration

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 remote workstation, SONY Monitor, DELL PS/2 Keyboard, PRIMAX PS/2 Mouse, HP Printer, ACEEX Modem and EUT were connected to the FIC PC for EMI test.
The remote workstation included DELL Personal Computer, SONY Monitor, DELL PS/2 Keyboard, PRIMAX PS/2 Mouse

c. Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 5000MHz.

2.2. Description of Test System

Support Unit 1. -- Personal Computer (FIC) – For local workstation

FCC ID	: N/A
Model No.	: P2L97
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0037
Data Cable	: Shielded
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. -- Monitor (SONY) – For local and remote workstation

FCC ID	: AK8GDM17SE2T
Model No.	: GDM-17SE2T
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0013
Data Cable	: Shielded, 1.15m

Support Unit 3. -- PS/2 Keyboard (DELL) – For local and remote workstation

FCC ID	: GYUM92SK
Model No.	: AT101(DE8M)
Serial No.	: SP0054
Data Cable	: Shielded, 1.9m

Support Unit 4. -- PS/2 Mouse (PRIMAX) – For local and remote workstation

FCC ID	: EMJMUSJQ
Model No.	: MUS9J
Serial No.	: SP0045
Data Cable	: Shielded, 1.7m

Support Unit 5. -- Printer (HP) – For local workstation

FCC ID	: B94C2642X
Model No.	: DeskJet 400
Power Supply Type	: Linear
Power Cord	: Non-Shielded
Serial No.	: SP0048
Data Cable	: Braided-Shielded, 1.35m

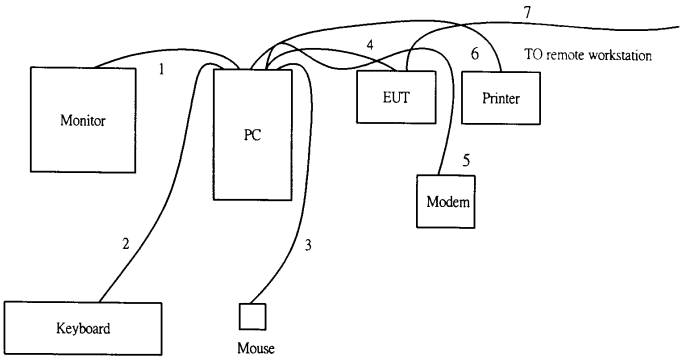
Support Unit 6. -- Modem (ACEEX) – For local workstation

FCC ID	: IFAXDM1414
Model No.	: DM1414
Power Supply Type	: Linear
Power Cord	: Non-Shielded
Serial No.	: SP0015
Data Cable	: Shielded, 1.15m

Support Unit 7. -- Personal Computer (DELL) -For remote workstation

FCC ID	: N/A
Model No.	: DCS
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0038
Data Cable	: Shielded
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 PC to the support unit 2.
2. The I/O cable is connected from PC to the support unit 3.
3. The I/O cable is connected from PC to the support unit 4.
4. The I/O cable is connected from PC to EUT
5. The I/O cable is connected from PC to the support unit 6.
6. The I/O cable is connected from PC to the support unit 5.
7. The I/O cable is connected from PC to the remote workstation.

3. Test Software

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.

At the same time, the following program was executed:

- Executed "Ping.EXE" to link with the remote workstation to receive and transmit data by STP Cable line.

4. General Information of Test

4.1. Test Facility

This test was carried out by SPORTON International Inc.

Test Site Location : No. 30-2, 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 and FCC Part 15

4.4. Frequency Range Investigated

a. Conduction: from 150 kHz to 30 MHz
b. Radiation : from 30 MHz to 5,000 MHz

4.5. Test Distance

a. The test distance of radiated emission from antenna to EUT is 10 M (from 30MHz~1000MHz).
b. The test distance of radiated emission from antenna to EUT is 3 M (from 1GHz~5GHz).

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 section 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

c. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.

d. Connect EUT to the power mains through a line impedance stabilization network (LISN).

e. All the support units are connect to the other LISN.

f. The LISN provides 50 ohm coupling impedance for the measuring instrument.

g. The FCC states that a 50 ohm, 50 microhenry LISN should be used.

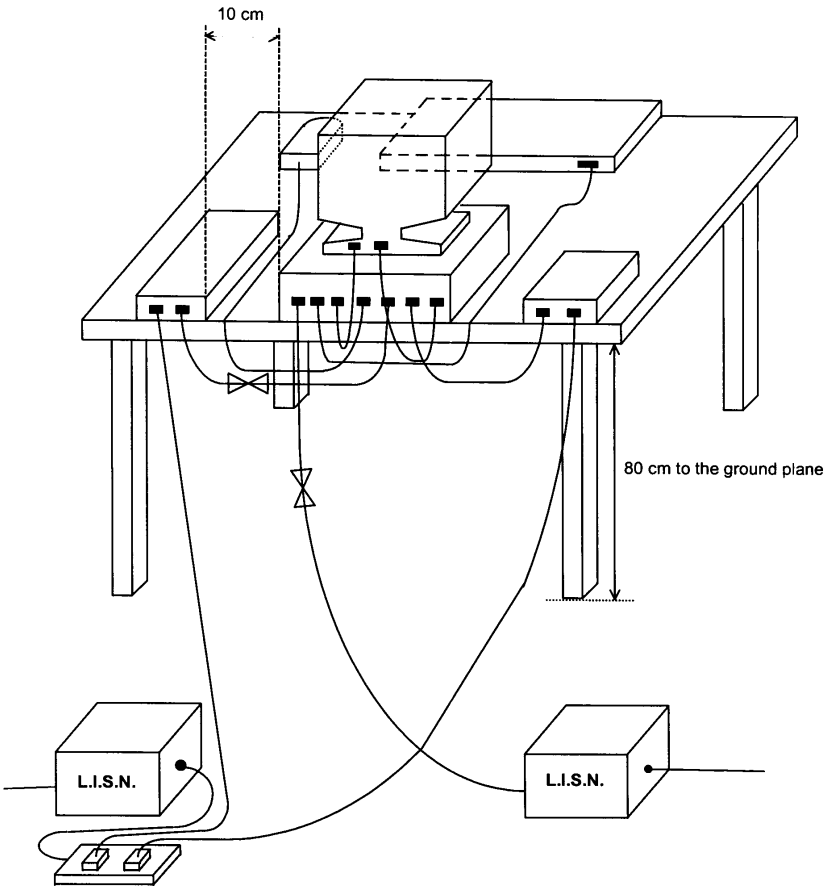
h. Both sides of AC line were checked for maximum conducted interference.

i. The frequency range from 150 kHz to 30 MHz was searched.

j. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

k. 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 one 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

5.4.1. Test mode : CELERON-433MHz 10 Mbps

- Temperature : 26°C
- Relative Humidity : 48 %
- Test Date : Nov. 9, 2000

The Conducted Emission test was passed at minimum margin

NEUTRAL 0.804 MHz / 38.2 dBuV.

Freq.	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)
0.186	L	47.00	35.20	223.87	57.54	79.00	66.00	8912.51	1995.26	-32.0	-30.8
0.804	L	39.60	38.20	95.50	81.28	73.00	60.00	4466.84	1000.00	-33.4	-21.8
0.184	N	45.40	33.50	186.21	47.32	79.00	66.00	8912.51	1995.26	-33.6	-32.5
0.909	N	39.80	36.30	97.72	65.31	73.00	60.00	4466.84	1000.00	-33.2	-23.6
20.240	N	33.70	29.40	48.42	29.51	73.00	60.00	4466.84	1000.00	-39.3	-30.6
25.002	N	28.50	22.50	26.61	13.34	73.00	60.00	4466.84	1000.00	-44.5	-37.5

Test Engineer : Aldrich

Aldrich Hong

5.4.2. Test mode : PIII-700MHz 100 Mbps

- Temperature : 26°C
- Relative Humidity : 48 %
- Test Date : Nov. 9, 2000

The Conducted Emission test was passed at minimum margin

NEUTRAL 0.910 MHz / 36.10 dBuV.

Freq.	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)
0.150	L	54.10	40.40	506.99	104.71	79.00	66.00	8912.51	1995.26	-24.9	-25.6
0.911	L	29.50	25.70	29.85	19.28	73.00	60.00	4466.84	1000.00	-43.5	-34.3
28.361	L	28.70	23.10	27.23	14.29	73.00	60.00	4466.84	1000.00	-44.3	-36.9
0.151	N	53.10	39.70	451.86	96.61	79.00	66.00	8912.51	1995.26	-25.9	-26.3
0.910	N	39.70	36.10	96.61	63.83	73.00	60.00	4466.84	1000.00	-33.3	-23.9
20.055	N	33.50	28.70	47.32	27.23	73.00	60.00	4466.84	1000.00	-39.5	-31.3

Test Engineer : Aldrich

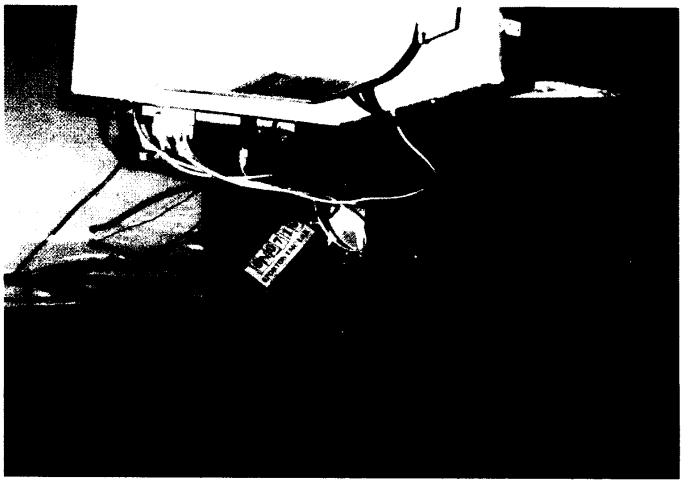
Aldrich Hong

5.5. Photographs of Conducted Powerline Test Configuration

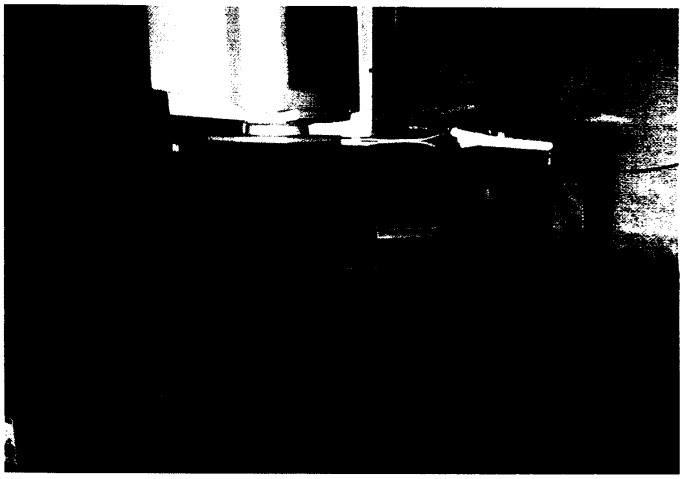
- The photographs show the configuration that generates the maximum emission.

FRONT VIEW

REAR VIEW



SIDE VIEW



6. Test of Radiated Emission

Radiated emissions from 30 MHz to 5000 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 section 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

6.1.1 from 30MHz to 1GHz

• 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

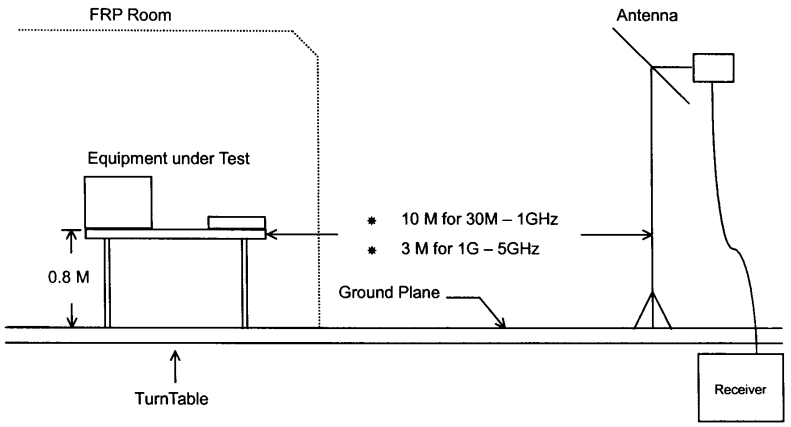
6.1.2 from 1GHz to 5GHz

Receiver	(HP 8546A)
Attenuation	0 dB
Start Frequency	1000 MHz
Stop Frequency	5000 MHz
Resolution Bandwidth	1 MHz
Video Bandwidth	1 MHz
Signal Input	9 KHz to 6.5 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 3/10 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

6.4.1. Test mode : CELERON-433MHz 10 Mbps

- Temperature : 26°C
- Relative Humidity : 69 %
- Test Date : Nov. 9, 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

200.650 MHz / 36.86 dBuV (HORIZONTAL) Antenna Height 1 Meter, Turntable Degree 286 °.

- Test Distance : 10M for 30MHz ~ 1GHz

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)
200.650	H	9.35	1.50	24.18	40.00	100.00	35.66	60.67	-4.34
42.654	V	13.98	0.50	20.49	40.00	100.00	34.97	56.04	-5.03
51.546	V	8.26	0.60	24.41	40.00	100.00	33.27	46.08	-6.73
61.977	V	6.40	0.64	29.13	40.00	100.00	36.17	64.34	-3.83
150.042	V	11.40	1.10	20.29	40.00	100.00	32.79	43.60	-7.21
200.660	V	9.35	1.50	26.01	40.00	100.00	36.86	69.66	-3.14

- Test Distance : 3M for 1GHz ~ 5GHz

Remark: Frequency from 1000MHz to 5000MHz, the emission emitted by the EUT is too low to be measured.

Test Engineer : Mark Chen

MARK CHEN

6.4.2. Test mode : PIII-700MHz 100 Mbps

- Temperature : 26°C
- Relative Humidity : 69 %
- Test Date : Nov. 9, 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

54.966 MHz / 36.27 dBuV (VERTICAL) Antenna Height 1.5 Meter, Turntable Degree 125 °.

- Test Distance : 10M for 30MHz ~ 1GHz

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)
300.000	H	14.40	1.80	26.50	47.00	223.87	42.70	136.46	-4.30
38.379	V	15.62	0.50	18.58	40.00	100.00	34.70	54.33	-5.30
43.338	V	13.61	0.50	21.59	40.00	100.00	35.70	60.95	-4.30
54.966	V	7.46	0.60	28.21	40.00	100.00	36.27	65.09	-3.73
66.594	V	6.40	0.74	27.64	40.00	100.00	34.78	54.83	-5.22
300.800	V	14.40	1.80	25.20	47.00	223.87	41.40	117.49	-5.60

- Test Distance : 3M for 1GHz ~ 5GHz

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)
1100.00	V	24.53	4.28	4.99	54.00	501	33.80	48.98	-20.20
1102.00	V	24.53	4.29	20.50	74.00	5012	49.32	292.42	-24.68
1100.00	H	24.53	4.28	8.79	54.00	501	37.60	75.86	-16.40
1104.00	H	24.53	4.29	24.71	74.00	5012	53.53	474.79	-20.47

Test Engineer : Mark Chen

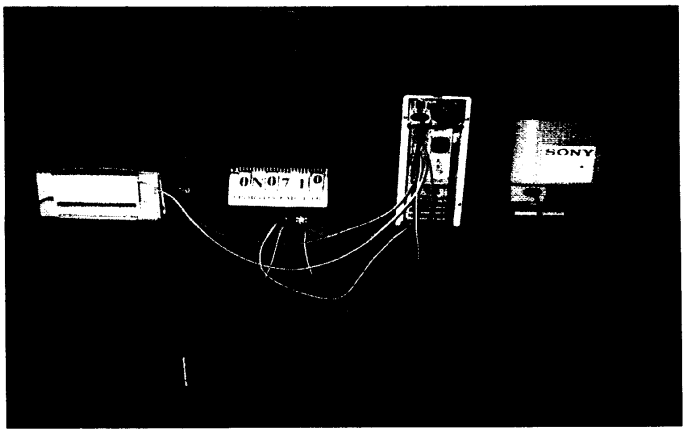
MARK CHEN

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 & Cable Loss

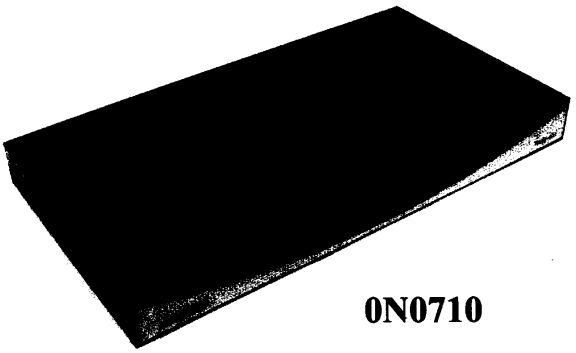
Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Test Distance
30	17.0	0.5	10m
35	16.3	0.5	10m
40	15.3	0.5	10m
45	12.8	0.5	10m
50	8.6	0.6	10m
55	7.5	0.6	10m
60	6.4	0.6	10m
65	6.4	0.7	10m
70	6.4	0.8	10m
75	6.8	0.8	10m
80	7.1	0.7	10m
85	7.5	0.9	10m
90	7.8	0.9	10m
95	9.3	0.8	10m
100	10.7	0.9	10m
110	11.9	1.0	10m
120	12.9	1.0	10m
130	12.6	1.0	10m
140	12.2	0.9	10m
150	11.4	1.1	10m
160	9.5	1.1	10m
170	9.8	1.2	10m
180	9.7	1.4	10m
190	9.5	1.4	10m
200	9.3	1.5	10m
220	10.7	1.6	10m
240	12.1	1.5	10m
260	13.1	1.6	10m
280	13.7	1.7	10m
300	14.4	1.8	10m
320	14.9	1.9	10m
340	15.4	2.0	10m
360	15.9	2.1	10m
380	16.3	2.2	10m
400	16.7	2.3	10m
450	17.0	2.6	10m
500	17.3	2.7	10m
550	18.6	2.8	10m
600	19.7	3.1	10m
650	19.2	3.2	10m
700	18.7	3.4	10m
750	19.3	3.9	10m
800	19.9	3.9	10m
850	21.2	4.4	10m
900	22.4	4.0	10m
950	21.6	4.3	10m
1000	20.9	4.5	10m
1000	24.3	4.1	3m
2000	28.1	5.8	3m
3000	30.3	7.2	3m
4000	32.8	8.6	3m
5000	33.6	10.0	3m

LKOP3

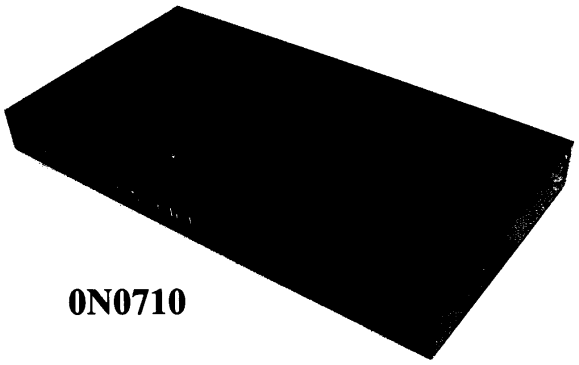
8. List of Measuring Equipment Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver (site 2)	HP	8591EM	3710A00187	9 KHz – 1.8 GHz	Sep. 16. 2000	Conduction
LISN (Support Unit) (site 2)	Telemeter	NNB-2/16Z	98009	50 ohm / 50 uH	Dec. 06, 1999	Conduction
LISN (EUT) (site 2)	Telemeter	NNB-2/16Z	98087	50 ohm / 50 uH	Dec. 06. 1999	Conduction
Spectrum Analyzer (site 3)	HP	8568B	2732A04100	100Hz – 1.5GHz	Aug. 03, 2000	Radiation
Quasi-peak Adapter (site 3)	HP	85650A	2811A01116	9KHz -1GHz	Aug. 03, 2000	Radiation
Amplifier (Site 3)	HP	8447D	2944A09068	0.1MHz -1.3GHz	Sep. 08, 2000	Radiation
Bilog Antenna (Site 3)	CHASE	CBL6112A	2322	30MHz -2GHz	Jan. 18. 2000	Radiation
Half-wave dipole antenna (Site 3)	EMCO	3121C	9705-1285	28M - 1GHz	May 17, 2000	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
Turn Table	EMCO	2080	9508-1805	0 ~ 360 degree	N/A	Radiation
Antenna Mast	EMCO	2075	9804-2151	1 m - 4 m	N/A	Radiation
Receiver	HP	8546A	3325A00108	9KHz~6.5GHz	Dec.15, 1999	Radiation
Horn Antenna	EMCO	3115	4976	1GHz~18GHz	Jun. 22, 1999	Radiation

APPENDIX A. Photographs of EUT



0N0710-01.jpg



0N0710-02.jpg