EMC

TEST REPORT

REPORT NO. : F88031606
MODEL NO. : PCM-4894
DATE OF TEST : March 22, 1999

PREPARED FOR: AAEON TECHNOLOGY INC.

ADDRESS : 1F, NO. 6, ALLEY 6, LANE 45, PAO-HSIN RD.,
HSIN-TIEN CITY, TAIPEI, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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11F, NO.1, SEC.4, NAN-KING EAST RD.,
TAIPEI, TAIWAN, R.O.C.

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1. CERTIFICATION

Issue Date: March 26, 1999

Product	:	CPU BOARD
Trade Name	:	AAEON
Model No.	:	PCM-4894
Applicant	:	AAEON TECHNOLOGY INC.
Standard	:	FCC Part 15, Subpart B, Class A ANSI C63.4-1992 CISPR 22: 1993+A1: 1995+A2: 1996

We hereby certify that one sample of the designation has been tested in our facility on Mar. 22, 1999. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in this report is in compliance with the Class A limits of conducted and radiated emission of applicable standards.

TESTED BY : Jone Lin , DATE: 3/26/99
(Jone Lin)

CHECKED BY : Ariel Hsieh , DATE: 3/26/99
(Ariel Hsieh)

APPROVED BY : Mike Su , DATE: 3/26/99
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	CPU BOARD
Model No.	:	PCM-4894
Power Supply	:	Switching (DC from PC)
Data Cable	:	N/A

Note: The EUT, which is installed in the industrial PC, was tested with the following configuration:

ITEM	BRAND	MODEL	REMARK
CHASSIS	AAEON	AIPC-314	
CPU	AMD	DX5-133	486 MHz
HDD	QUANTUM	3.5 Series	
FDD	MITSUMI	D353M3	
BACKPLANE	ADVANTECH	PCA-6113	
POWER SUPPLY	EMACS	AX2-5250F	

The video resolution of 1024x768 was used during the test.

For more detailed features description, please refer to manufacturer's specification or User's Manual.

2.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories are used to form representative test configuration during the tests.

No	Product	Brand	Model No.	FCC ID	I/O Cable
1.	COLOR MONITOR	ADI	PD-959	FCC DoC Approved	Shielded Signal (1.2m) Nonshielded Power (1.8m)
2.	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.2m)
3.	MODEM x 3	ACEEX	1414	IFAXDM1414	Shielded Signal (1.2m) Nonshielded Power (1.2m)
4.	KEYBOARD	BTC	5121	E5XKBM104M10UC	Shielded Signal (1.2m)
5.	MOUSE	LOGITECH	M-M30	DZL210569	Shielded signal (1.4m)
6.	PC	IBM	6560-T7T	AN06260F	Nonshielded power (1.8m)
7.	MONITOR	ACER	7134T	JVP7314T	Shielded Signal (1.5m) Nonshielded Power (1.8m)
8.	KEYBOARD	HP	C3758A	CIGE03633	Shielded Signal (1.5m)
9.	MOUSE	DEIXN	A2P800A	NIYA2P800A	Shielded Signal (1.8m)
10.	LAN CARD	INTEL	S82555	EJMNPDSPD035	NA

Note: Support unit 1~5 acted as SERVER PC and communicated with support unit 6-10 which acted as WORKSTATION and systems of communication partner via a UTP cable (10m).

2.3 TEST METHODOLOGY AND CONFIGURATION

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4: 1992. Radiated testing was performed at an antenna to EUT distance of 10 m on an open area test site.

Please refer to the photos of test configuration in Item 5.

3. TEST INSTRUMENTS

3.1 TEST INSTRUMENTS (EMISSION)

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 22, 1999
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	892107/003	July 20, 1999
EMCO L.I.S.N.	3825/2	9504-2359	July 20, 1999
Shielded Room	Site 3	ADT-C03	NA

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP Spectrum Analyzer	8594E	3412A01132	Sept. 24, 1999
CHASE Preamplifier	CPA9231A/4	3215	Nov. 1, 1999
HP Preamplifier	8347A	3307A01088	Sept. 9, 1999
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/002	Jan. 11, 2000
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 25, 1999
CHASE BILOG Antenna	CBL6112	2074	Dec. 25, 1999
EMCO Double Ridged Guide Antenna	3115	9312-4192	April 3, 1999
CHANCE Turn Table & Tower Controller	ACS-I	NA	NA
Open Field Test Site	Site 6	ADT-R06	Dec. 24, 1999

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF RADIATED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (at 10m) * dBuV/m	Class B (at 10m) * dBuV/m
30 - 230	40	30
230 - 1000	47	37

* Detector Function: Quasi-Peak

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	80.0	60.0	74.0	54.0

Note: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

LIMIT OF CONDUCTED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz
(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Frequency Range	:	0.15 - 30 MHz (Conducted Emission)
		30 - 2000 MHz (Radiated Emission)
Input Voltage	:	120 Vac, 60 Hz
Temperature	:	24 ℃
Humidity	:	65 %
Atmospheric Pressure	:	998 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -14.1 at 0.552 MHz Minimum passing margin of radiated emission: -3.6 dB at 72.08 MHz

4.2 EUT OPERATION CONDITION

1. Turn on the power of all equipment.
2. Industrial PC reads a test program to enable all functions.
3. Industrial PC reads and writes messages from HDD and FDD.
4. Industrial PC sends/receives messages to/from WORKSTATION via a UTP cable.
5. Industrial PC sends "H" messages to monitor and monitor displays "H" patterns on screen.
6. Industrial PC sends "H" messages to modem.
7. Industrial PC sends "H" messages to printer, and the printer prints them on paper.
8. Repeat steps 2-8.

4.3 TEST DATA OF CONDUCTED EMISSION

EUT: **CPU BOARD** MODEL: **PCM-4894**

6 dB Bandwidth: 10 kHz

PHASE: LINE (L)

Freq.	Meter Reading [dB (uV)]					Limit		Margin	
[MHz]	Corr.	Reading Data		Total		[dB (uV)]		[dB (uV)]	
	Factor	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.159	0.2	57.3	-	57.5	-	79.0	66.0	-21.5	-
0.324	0.2	48.5	-	48.7	-	79.0	66.0	-30.3	-
0.552	0.3	58.6	-	58.9	-	73.0	60.0	-14.1	-
0.627	0.3	50.9	-	51.2	-	73.0	60.0	-21.8	-
0.672	0.3	53.6	-	53.9	-	73.0	60.0	-19.1	-
6.416	0.8	51.7	-	52.5	-	73.0	60.0	-20.5	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 3
CISPR22 CLASS A

22. Mar 99 17:15

EUT: PCM-4894
Test Spec: LISN : L

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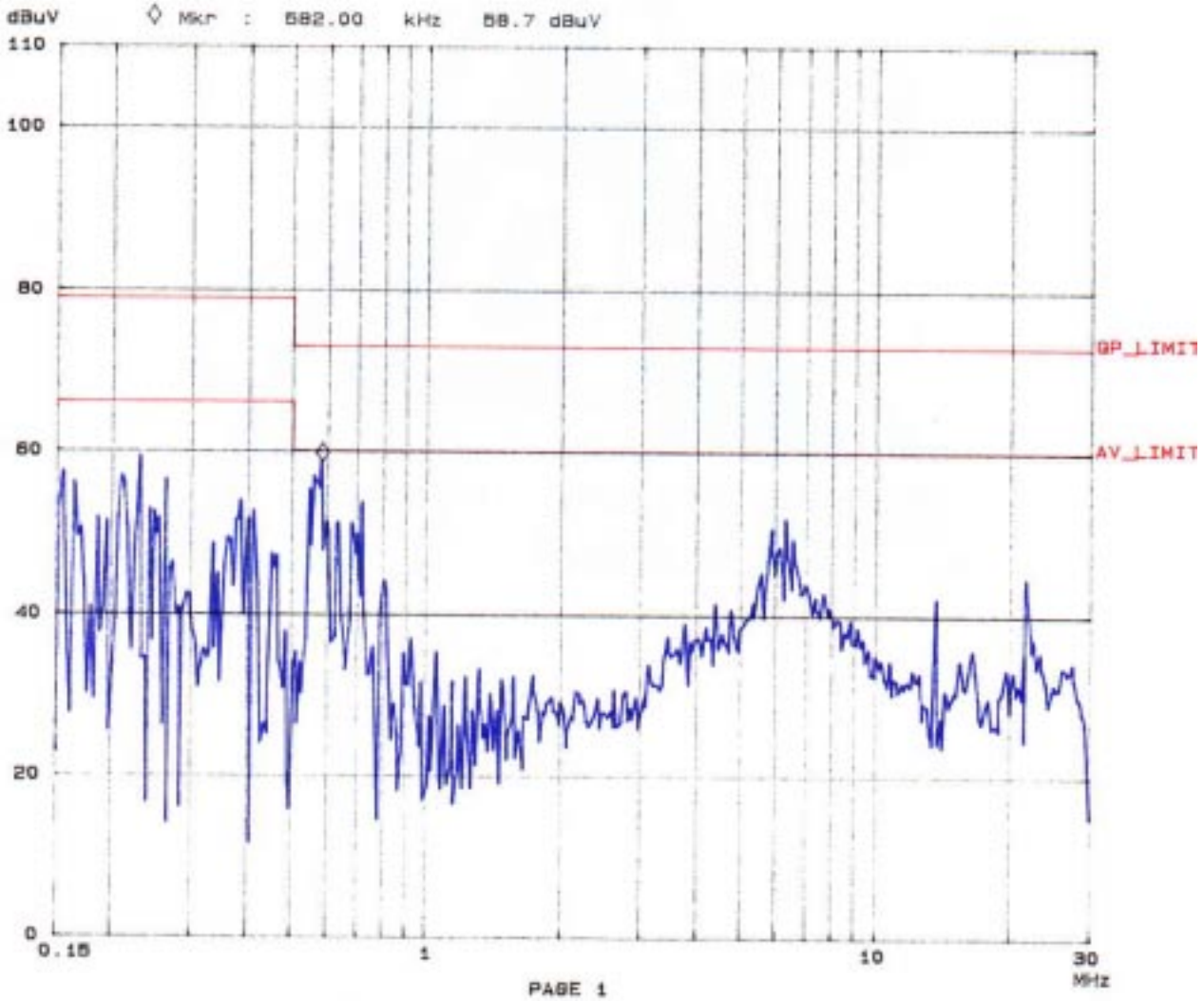
Tested by	Jane Lin

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	3k	10k	PK	0.05ms	10dB_N	OFF	60dB
450k	5M	3k	10k	PK	0.05ms	10dB_N	OFF	60dB
5M	30M	3k	10k	PK	0.05ms	10dB_N	OFF	60dB



TEST DATA OF CONDUCTED EMISSION

EUT: **CPU BOARD** MODEL: **PCM-4894**

6 dB Bandwidth: 10 kHz

PHASE: NEUTRAL (N)

Freq.	Meter Reading [dB (uV)]					Limit		Margin	
[MHz]	Corr.	Reading Data		Total		[dB (uV)]		[dB (uV)]	
	Factor	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.159	0.2	58.2	-	58.4	-	79.0	66.0	-20.6	-
0.324	0.2	52.1	-	52.3	-	79.0	66.0	-26.7	-
0.552	0.3	58.4	-	58.7	-	73.0	60.0	-14.3	-
0.627	0.3	56.8	-	57.1	-	73.0	60.0	-15.9	-
0.672	0.3	55.8	-	56.1	-	73.0	60.0	-16.9	-
6.416	0.6	49.3	-	49.9	-	73.0	60.0	-23.1	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 3
CISPR22 CLASS A

22. Mar 98 17:10

EUT: PCM-4894
Test Spec: LISN : N

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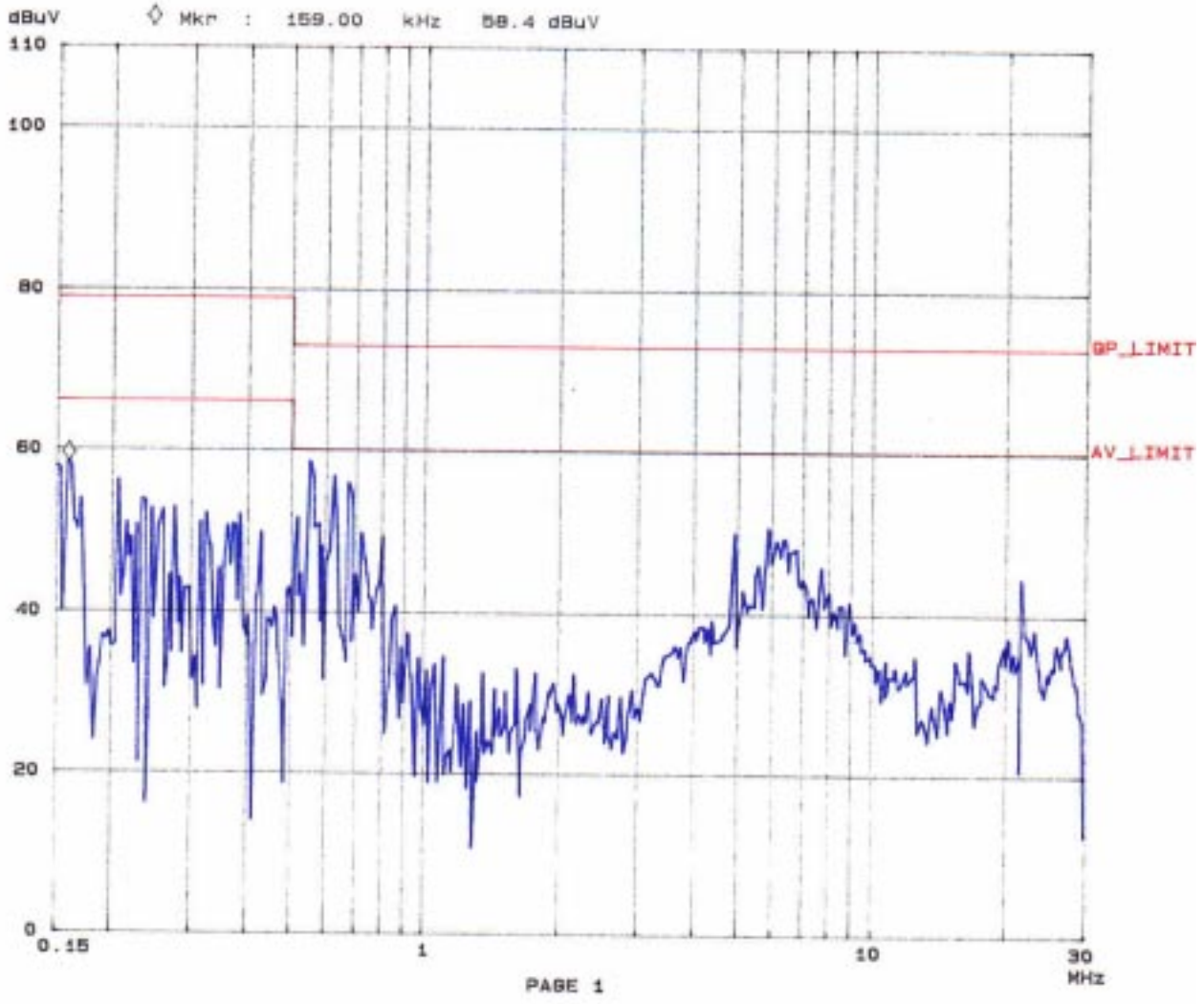
Tested by Jane Lin

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	3k	10k	PK	0.05ms	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	0.05ms	10dBLN	OFF	60dB
5M	30M	3k	10k	PK	0.05ms	10dBLN	OFF	60dB



4.4 TEST DATA OF RADIATED EMISSION

EUT: **CPU BOARD** MODEL: **PCM-4894**

ANT. POLARITY: Horizontal

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
63.77	7.4	16.9	24.3	40.0	-15.7
63.77	7.4	16.4	23.8	40.0	-16.2
68.67	7.3	15.2	22.5	40.0	-17.5
133.51	14.1	13.7	27.8	40.0	-12.2
146.29	12.9	14.0	26.9	40.0	-13.1
200.42	11.1	11.7	22.8	40.0	-17.2
233.68	14.3	15.9	30.2	40.0	-16.8

REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) +Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

TEST DATA OF RADIATED EMISSION

EUT: **CPU BOARD** MODEL: **PCM-4894**

ANT. POLARITY: Vertical

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

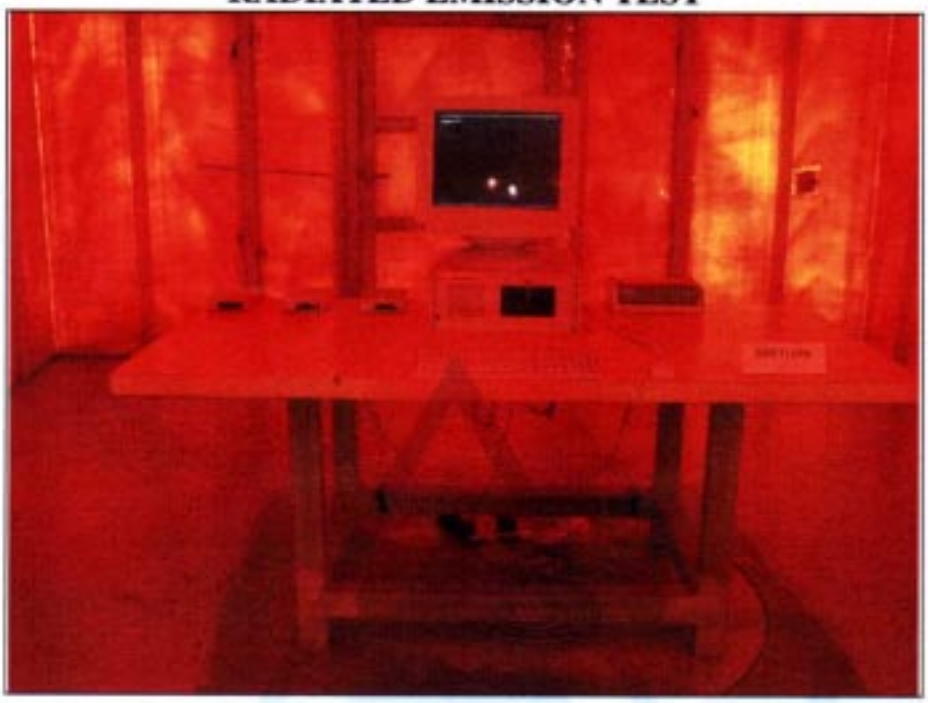
Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
63.77	7.4	20.3	27.7	40.0	-12.3
66.77	7.5	20.3	27.8	40.0	-12.2
68.76	7.6	24.1	31.7	40.0	-8.3
72.08	7.8	28.6	36.4	40.0	-3.6
73.61	8.0	27.0	35.0	40.0	-5.0
133.61	13.2	23.2	36.4	40.0	-3.6
317.50	17.5	20.3	37.8	40.0	-9.2

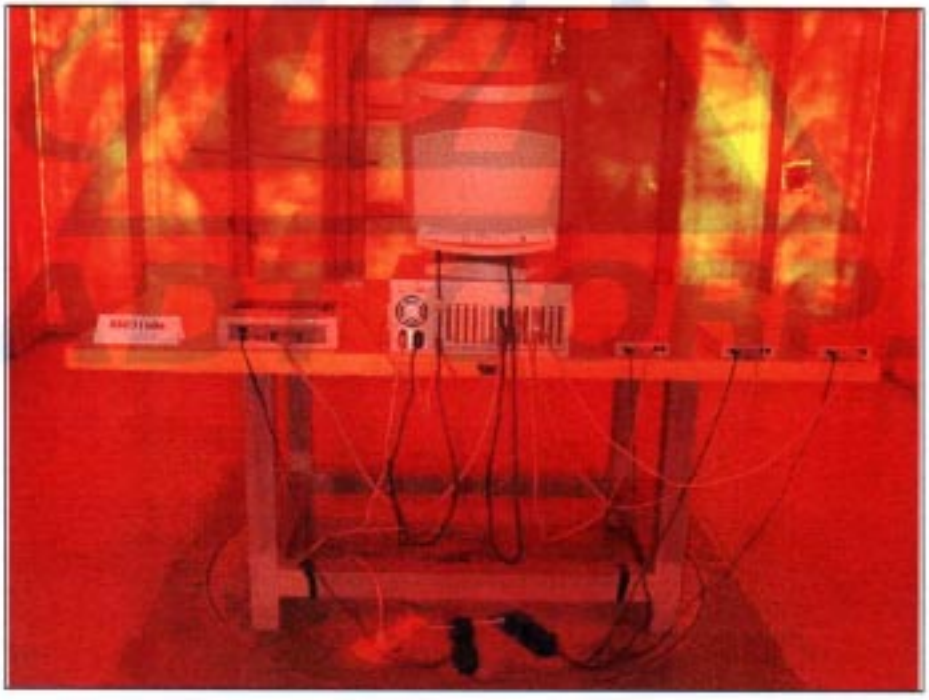
REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) +Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN

CONDUCTED EMISSION TEST

RADIATED EMISSION TEST





6. APPENDIX - INFORMATION OF THE TESTING LABORATORY

Information of the testing laboratory

We, ADT Corp., is founded in 1988, to provide our best service in EMC and Safety consultation. Our laboratory is accredited by the following approval agencies according to ISO/IEC Guide 25 or EN 45001:

• USA	FCC, UL, NVLAP
• Germany	TUV Rheinland
	TUV Product Service
• Japan	VCCI
• New Zealand	RFS
• Norway	NEMKO, DNV
• U.K.	INCHCAPE, SGS
• R.O.C.	BSMI

Enclosed please find some certificates of our laboratory obtained from approval agencies. If you have any comments, please feel free to contact us with the following:

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