Certificate of Compliance

We, **ADVANCE DATA TECHNOLOGY CORP.**, hereby certify that:

The product : CPU BOARD

Trade Name : AAEON

Model No. : SBC-656

Applicant : AAEON TECHNOLOGY INC.

one sample of the designation has been tested in our facility on Oct. 6, 1999. The data, data evaluation, represented in our report No.: **F88100602**, are true and accurate representation of the measurements of the sample's emission characteristics under the conditions in following

Standards: FCC Part 15, Subpart B, Class A
CISPR 22: 1993+A1: 1995+A2: 1996, Class A
ANSI C63.4-1992

Mike Su

Mike Su / Project Manager

Issue Date: Oct. 14, 1999

ADVANCE DATA TECHNOLOGY CORP.

ADT CORP.

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

TEST REPORT

REPORT NO. : F88100602
MODEL NO. : SBC-656
DATE OF TEST : Oct. 6, 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

NVLAP
Accredited Laboratory

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

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1. CERTIFICATION

Issue Date: Oct. 14, 1999

Product	:	CPU BOARD
Trade Name	:	AAEON
Model No.	:	SBC-656
Applicant	:	AAEON TECHNOLOGY INC.
Standard	:	FCC Part 15, Subpart B, Class A ANSI C63.4-1992 CISPR 22:1993+A1:1995+A2:1996, Class A

We hereby certify that one sample of the designation has been tested in our facility on Oct. 6, 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 : Kenny Meng (Kenny Meng) . DATE: 10/14/99

CHECKED BY : (Yemmy Soong) . DATE: 10/14/99

APPROVED BY : (Mike Su) . DATE: 10/14/99

ADVANCE DATA TECHNOLOGY CORPORATION

NVLAP Accredited Laboratory

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	CPU BOARD
Model No.	:	SBC-656
Power Supply	:	Switching (from PC)

Note: During the test, the EUT was installed in a metal enclosure with a slot board to form an industrial PC.

The EUT was tested under the following configurations:

CPU	INTEL CELERON, 433MHz (66MHz x 6.5)
HDD	SEAGATE, ST34520A, 4.5GB
BACKPLANE	AAEON, BP-206S
CHASSIS	AAEON, AMPC-106
MEMORY	64MB SDRAM
SPS	ZIPPY, EPZ-4150F

The EUT has a resolution up to 1024x768, 256 color.

For more detailed features description, please refer to Manufacturer's Specification or User's Manual.

2.2 DESCRIPTION OF SUPPORT UNITS

The EUT was installed into a system and tested together with necessary accessories or support units during the test. 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	HP	D2846	FCC DoC Approved	Nonshielded Signal (1.5m) Shielded Power (1.8m)
2	PRINTER	HP	2225C+	DSI6XU2225	Nonshielded Signal (1.2m) Shielded Power (1.2m)
3	MODEM	ACEEX	1414	IFAXDM1414	Shielded signal (1.2m) Nonshielded Power (1.2m)
4	KEYBOARD	FORWARD	FDA-104Ga	P4ZDA-104G	Shielded Signal (1.4m)
5	MOUSE	LOGITECH	M-M30	DZL210569	Shielded signal (2.0m)
6	USB KEYBOARD	BTC	7932	E5XKBUCP10410	Shielded Signal (1.7m)
7	USB MOUSE	DEXIN	A2U800A	NTYA2U800A	Shielded Signal (1.5m)
8	PC	IBM	6587-T8T	AN06587F	Nonshielded power (10.0m) Shielded Signal (1.8m)
9	MONITOR	ADI	SM-5514A	ER8SM-5514AC	Nonshielded Signal (1.5m) Shielded Power (1.8m)
10	KEYBOARD	HP	C3757A	C1GB03614	Shielded Signal (1.2m)
11	MOUSE	DEXIN	A2P800A	NTYA2P800A	Shielded signal (1.5m)

Note: 1. Support unit 1~7 acted as SERVER PC and communicated with support unit 8-11 which acted as HOST PC and systems of communication partner via a UTP cable (10m).

2. Support unit 6 & 7 were connected to the USB ports of EUT.

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 3/10 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	828765/002	Aug. 2, 2000
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	828075/003	July 21, 2000
EMCO-L.I.S.N.	3825/2	90031627	July 21, 2000
Shielded Room	Site 5	ADT-C05	NA

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMAS 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	8590L	3544A01176	April 22, 2000
HP Preamplifier	8447D	2944A08485	April 21, 2000
HP Preamplifier	8347A	3307A01088	Aug. 30, 2000
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Aug. 30, 2000
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 25, 1999
CHASE BILOG Antenna	CBL6112A	2221	Aug. 4, 2000
EMCO Turn Table	1060	1115	NA
SHOSHIN Tower	AP-4701	A6Y005	NA
Open Field Test Site	Site 5	ADT-R05	July 30, 2000

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMAS 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	:	28 ℃
Humidity	:	52 %
Atmospheric Pressure	:	997 mbar

TEST RESULT	Remarks
[redacted]	Minimum passing margin of conducted emission: -17.6 dB at 0.168 MHz
	Minimum passing margin of radiated emission: -5.4 dB at 66.83 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.
4. Industrial PC sends and receives messages to and from HOST PC via a UTP cable.
5. Industrial PC sends "H" messages to monitor and monitor display "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: SBC-656

6 dB Bandwidth: 10 kHz PHASE: LINE (L)

Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.168	0.2	59.5	-	59.7	-	79.0	69.0	-19.3	-
0.216	0.2	54.3	-	54.5	-	79.0	69.0	-24.5	-
0.264	0.2	44.7	-	44.9	-	79.0	69.0	-34.1	-
0.312	0.2	44.4	-	44.6	-	79.0	69.0	-34.4	-
13.697	1.0	43.5	-	44.5	-	73.0	63.0	-28.5	-
16.760	1.0	40.5	-	41.5	-	73.0	63.0	-31.5	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Emission Level 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
6. Emission Level = Correction Factor + Reading Value.

ADT CO. Shielded Room 5
CISPR 22 CLASS A

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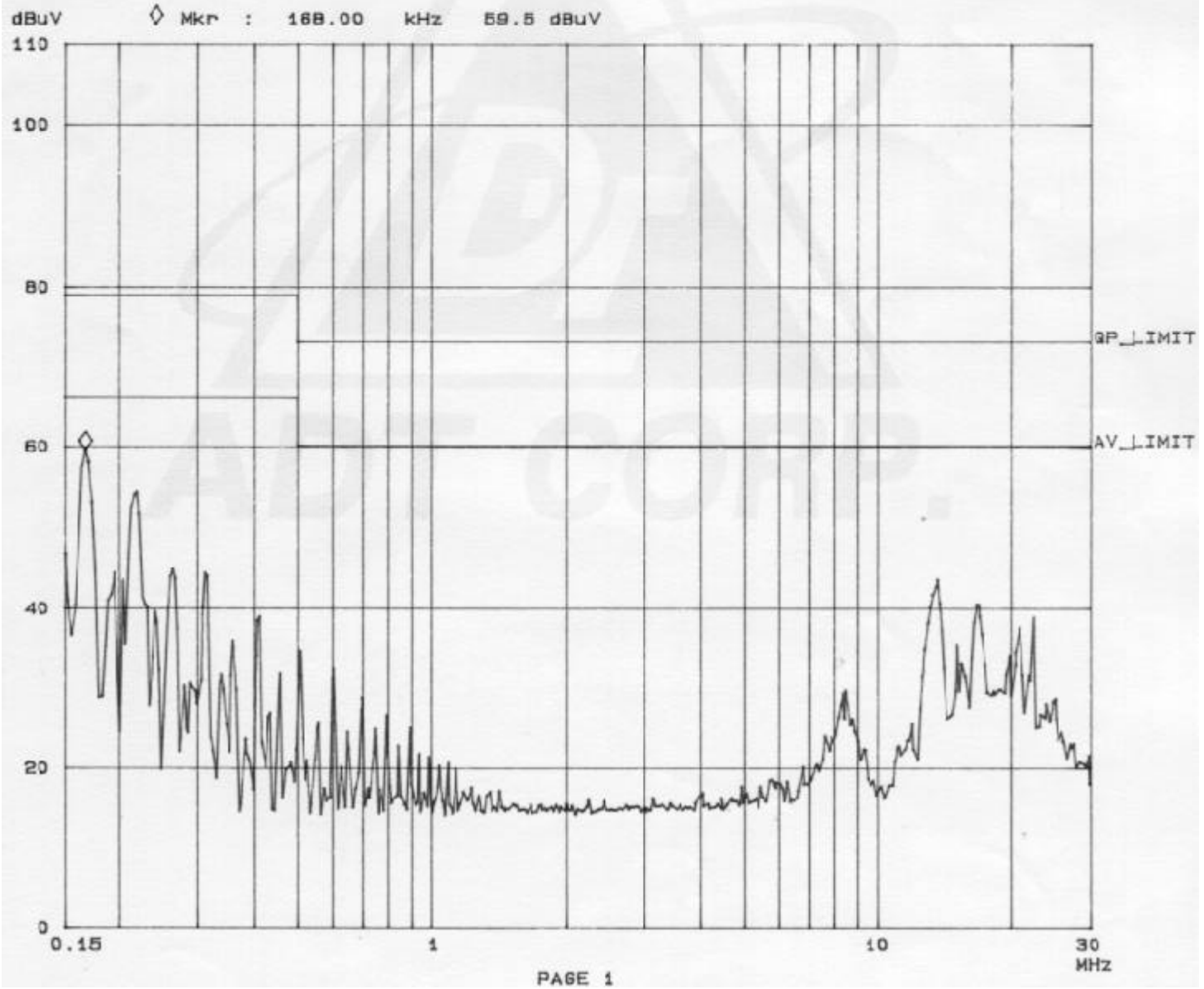
Tested by Kenny Meng

EUT: SBC-656
Test Spec: LISN : L

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



TEST DATA OF CONDUCTED EMISSION

EUT: CPU BOARD MODEL: SBC-656

6 dB Bandwidth: 10 kHz PHASE: NEUTRAL (N)

Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.168	0.2	61.2	-	61.4	-	79.0	69.0	-17.6	-
0.216	0.2	57.7	-	57.9	-	79.0	69.0	-21.1	-
0.264	0.2	46.8	-	47.0	-	79.0	69.0	-32.0	-
0.312	0.2	47.7	-	47.9	-	79.0	69.0	-31.1	-
13.697	0.7	45.1	-	45.8	-	73.0	63.0	-27.2	-
16.760	0.7	40.6	-	41.3	-	73.0	63.0	-31.7	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Emission Level 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
6. Emission Level = Correction Factor + Reading Value.

ADT CO. Shielded Room 5

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CISPR 22 CLASS A

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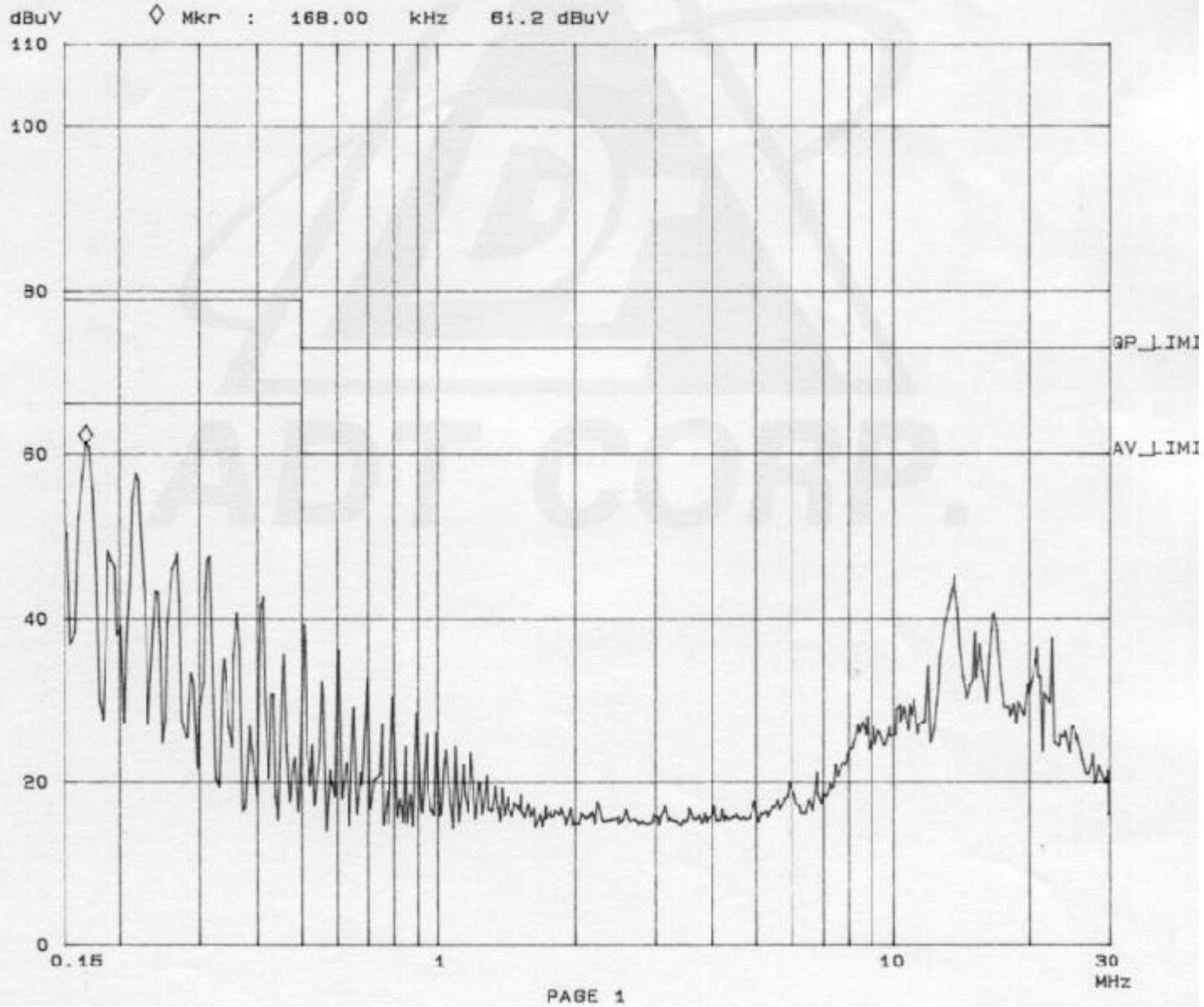
Tested by Kenny Meng

EUT: SBC-656

Test Spec: LISN : N

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: SBC-656

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)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
66.86	6.6	26.7	33.3	40.0	-6.7	400	0
160.00	11.7	16.2	27.9	40.0	-12.1	400	2
191.80	10.4	19.8	30.2	40.0	-9.8	400	2
200.01	10.2	16.0	26.2	40.0	-13.8	400	0
250.04	13.7	22.4	36.1	47.0	-10.9	172	75
434.35	18.4	10.5	28.9	47.0	-18.1	215	292
935.49	23.9	10.5	34.4	47.0	-12.6	100	133
1080.60	27.8	16.7	44.5	74.0	-29.5	100	363
1299.50	29.3	15.2	44.5	74.0	-29.5	100	363
1619.30	31.3	13.8	45.1	74.0	-28.9	100	363

REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
2. Correction Factor (dB) = Ant. Factor (dB)+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: SBC-656

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

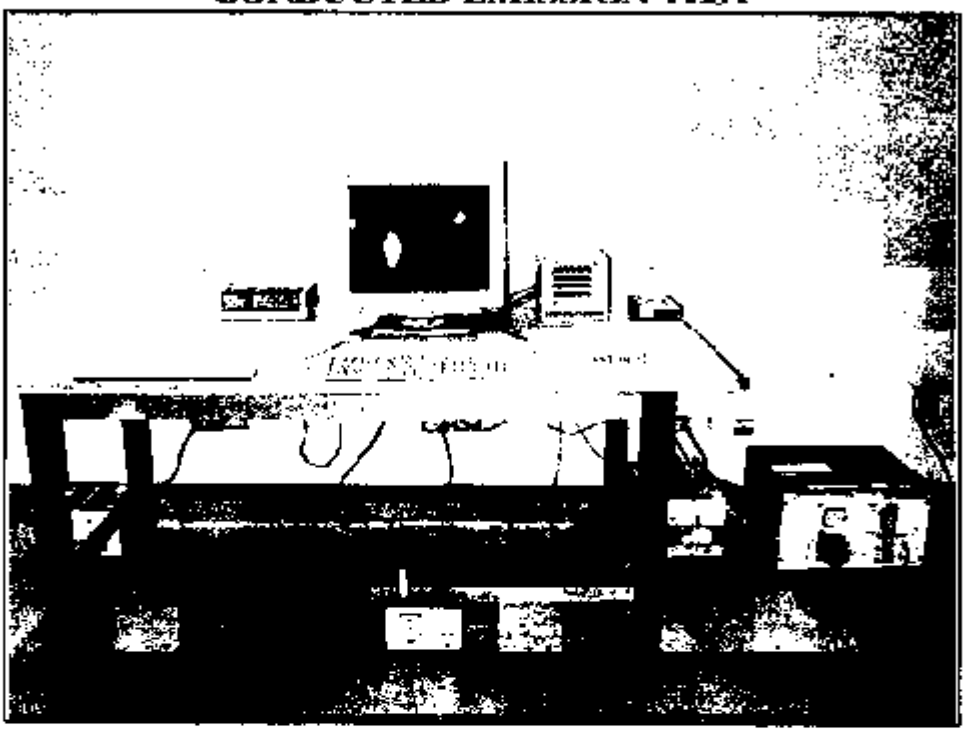
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
66.83	6.6	28.0	34.6	40.0	-5.4	182	100
133.66	12.7	19.2	31.9	40.0	-8.1	100	132
144.03	12.4	16.6	29.0	40.0	-11.0	100	344
150.01	12.1	20.8	32.9	40.0	-7.1	100	235
160.01	11.7	18.0	29.7	40.0	-10.3	100	113
181.95	10.7	15.6	26.3	40.0	-13.7	100	255
190.01	10.5	20.8	31.3	40.0	-8.7	100	190
200.01	10.2	20.9	31.1	40.0	-8.9	100	133
250.04	13.7	25.5	39.2	47.0	-7.8	144	300
935.51	23.9	17.4	41.3	47.0	-5.7	186	73
1153.50	28.3	21.3	49.6	74.0	-24.4	100	157
1299.60	29.3	19.1	48.4	74.0	-25.6	100	207
1396.60	30.1	16.7	46.8	74.0	-27.2	100	247

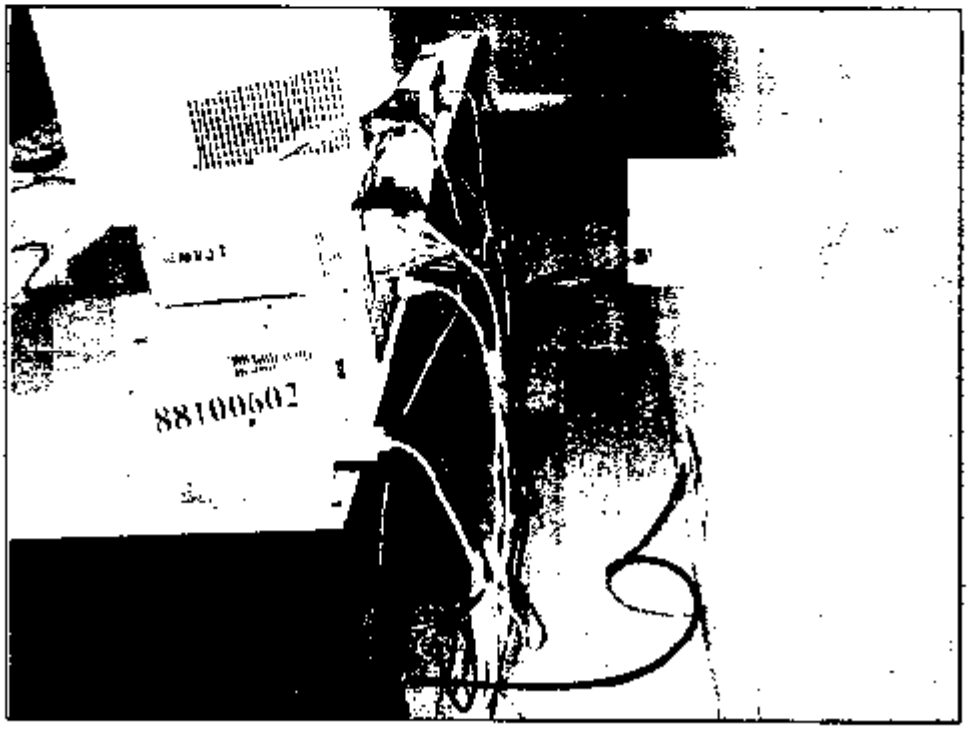
REMARKS: 1. Emission level (dBuV/m) − Correction Factor (dB)
+ Reading value (dBuV).
2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH

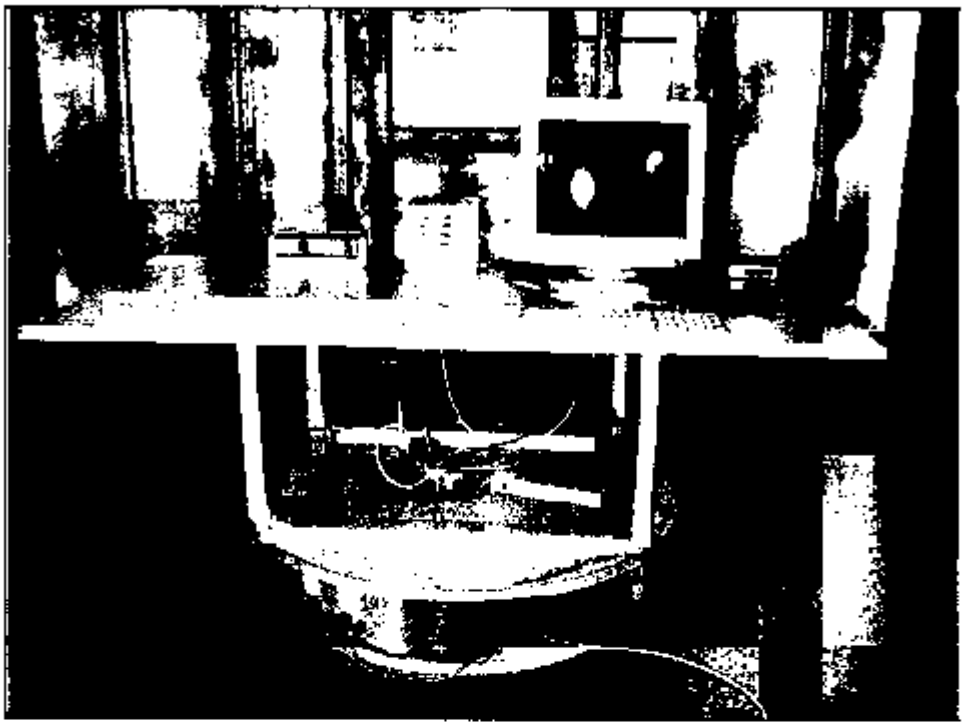
MINIMUM MARGIN

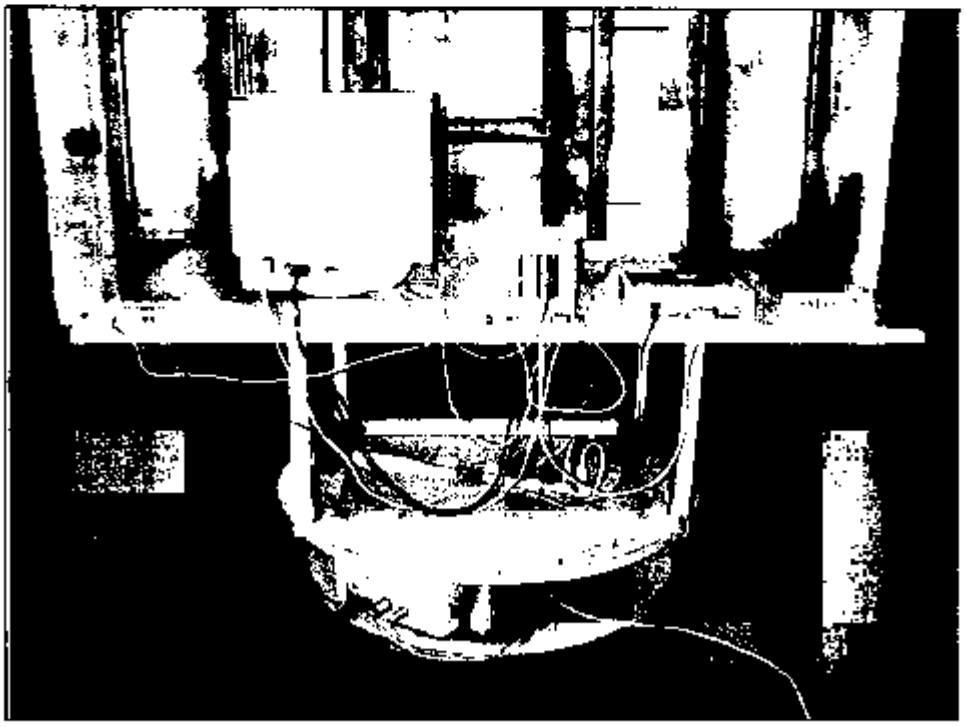
CONDUCTED EMISSION TEST





RADIATED EMISSION TEST





6. APPENDIX - INFORMATION OF THE TESTING LABORATORY

Information of the testing laboratory

We, ADT Corp., are 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
• 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:

Lin Kou EMC Lab.:
Tel: 886-2-26032180
Fax: 886-2-26022943

Hsin Chu EMC Lab:
Tel: 886-35-935343
Fax: 886-35-935342

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