EMC

TEST REPORT

REPORT NO. : F88122005
MODEL NO. : AS1795
DATE OF TEST : Dec. 23, 1999

PREPARED FOR : A PLUS INFO CORPORATION

ADDRESS : 5FL, NO. 2, LANE 235, BAO CHIAO RD.,
HSIN TIEN, TAIPEI HSIEN, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

Accredited Laboratory

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

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1. CERTIFICATION

Issue Date: Dec. 27, 1999

Product	:	COLOR MONITOR
Trade Name	:	APLUS
Model No.	:	AS1795
Applicant	:	A PLUS INFO CORPORATION
Standard	:	FCC Part 15, Subpart B, Class B
		CISPR 22: 1993+A1: 1995+A2: 1996, Class B
		ANSI C63.4-1992

We hereby certify that one sample of the designation has been tested in our facility on Dec. 23, 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 B limits of conducted and radiated emission of applicable standards.

TESTED BY : Ken Liu , DATE: 12/27/99
(Ken Liu)

CHECKED BY : , DATE: 12/27/99
(Yemmy Soong)

APPROVED BY : Mike Su , DATE: 12/27/99.
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	AS1795
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (1.8m, 3-pin)
Data Cable	:	Shielded (1.2m)

Note: The EUT is a 17” color monitor with resolution up to 1600x1200.

The EUT was pre-tested under the following resolution & horizontal synchronization speed modes:

- 1600 x 1200 mode (93 kHz),
- 1280 x 1024 mode (91 kHz),
- 1024 x 768 mode (69 kHz),
- 640 x 480 mode (31.5 kHz)

For the final test, the worst emission levels were found under these two modes:
MODE 1 - 1600 x 1200 (93 kHz)
MODE 2 - 1024 x 768 (69 kHz)

Both modes are tested separately and recorded in this report.

There is a ferrite core on the video cable outside the monitor.

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.	PERSONAL COMPUTER	NTI	PII-150MT	FCC DoC Approved	Nonshielded Power (1.8m)
2.	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)
3.	MOUSE	DEXIN	A2P800A	NIYA2P800A	Shielded Signal (1.5m)
4.	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.8m)
5.	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.2m) Nonshielded Power (1.8m)
6.	VGA CARD	GAINWARD	S3d VIRGE GX2	ICUVGA-GW710	NA

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	828109/007	July 13, 2000
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	892107/003	July 13, 2000
EMCO L.I.S.N.	3825/2	9504-2359	July 13, 2000
Shielded Room	Site 3	ADT-C03	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	3544A00941	Dec. 05, 2000
HP Pre-Amplifier	8447D	2944A08312	Feb. 28, 2000
HP Preamplifier	8347A	3307A01088	Aug. 30, 2000
HP Preamplifier	8449B	3008A01201	Dec. 14, 2000
R&S Receiver	ESVS10	844594/010	Sept. 29, 2000
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2000
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Aug. 30, 2000
CHASE BILOG Antenna	CBL6111A	1500	Aug. 30, 2000
EMCO Double Ridged Guide Antenna	3115	9312-4192	April 5, 2000
EMCO Turn Table	1060-04	1196	NA
EMCO Tower	1051	1264	NA
Open Field Test Site	Site 1	ADT-R01	Aug. 27, 2000

Note: 1. The measurement uncertainty is less than +/- 3.0dB, 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	:	17 degree C
Humidity	:	61 %
Atmospheric Pressure	:	1012 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -12.7 dB at 23.061 MHz Minimum passing margin of radiated emission: -3.7 dB at 78.55 MHz

4.2 EUT OPERATION CONDITION

1. Turn on the power of all equipment.
2. PC runs a test program to enable all functions.
3. PC reads and writes messages from FDD and HDD.
4. PC sends “H” messages to monitor (EUT) and monitor displays “H” patterns on screen.
5. PC sends “H” messages to modem.
6. PC sends “H” messages to printer, and the printer prints them on paper.
7. Repeat steps 3-7.

4.3 TEST DATA OF CONDUCTED EMISSION (A)

EUT: **COLOR MONITOR** MODEL: **AS1795**

MODE: **1600x1200 (93 kHz)**

6 dB Band Width: 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.
0.186	0.1	50.1	-	50.2	-	64.2	54.2	-14.0	-
0.282	0.2	42.5	-	42.7	-	60.7	50.7	-18.0	-
0.843	0.3	25.4	-	25.7	-	56.0	46.0	-30.3	-
2.250	0.3	20.2	-	20.5	-	56.0	46.0	-35.5	-
15.374	1.0	38.3	-	39.3	-	60.0	50.0	-20.7	-
23.061	1.4	45.4	-	46.8	-	60.0	50.0	-13.2	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak emission level 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.

TEST DATA OF CONDUCTED EMISSION (A)

EUT: **COLOR MONITOR** MODEL: **AS1795**

MODE: **1600x1200 (93 kHz)**

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.
0.186	0.1	50.3	-	50.4	-	64.2	54.2	-13.8	-
0.282	0.2	33.9	-	34.1	-	60.7	50.7	-26.6	-
0.843	0.3	30.8	-	31.1	-	56.0	46.0	-24.9	-
2.250	0.3	22.7	-	23.0	-	56.0	46.0	-33.0	-
15.374	0.7	36.9	-	37.6	-	60.0	50.0	-22.4	-
23.061	1.0	46.3	-	47.3	-	60.0	50.0	-12.7	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak emission level 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.

4.4 TEST DATA OF CONDUCTED EMISSION (B)

EUT: **COLOR MONITOR** MODEL: **AS1795**

MODE: **1024x768 (69 kHz)**

6 dB Band Width: 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.
0.180	0.1	43.9	-	44.0	-	64.5	54.5	-20.5	-
0.240	0.2	35.4	-	35.6	-	62.1	52.1	-26.5	-
0.720	0.3	22.3	-	22.6	-	56.0	46.0	-33.4	-
1.380	0.3	17.8	-	18.1	-	56.0	46.0	-37.9	-
14.465	1.0	31.7	-	32.7	-	60.0	50.0	-27.3	-
23.108	1.3	34.1	-	35.4	-	60.0	50.0	-24.6	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak emission level 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.

TEST DATA OF CONDUCTED EMISSION (B)

EUT: **COLOR MONITOR** MODEL: **AS1795**

MODE: **1024x768 (69 kHz)**

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.
0.180	0.1	42.7	-	42.8	-	64.5	54.5	-21.7	-
0.240	0.2	36.3	-	36.5	-	62.1	52.1	-25.6	-
0.720	0.3	25.9	-	26.2	-	56.0	46.0	-29.8	-
1.380	0.3	20.7	-	21.0	-	56.0	46.0	-35.0	-
14.465	0.7	32.3	-	33.0	-	60.0	50.0	-27.0	-
23.108	1.0	35.3	-	36.3	-	60.0	50.0	-23.7	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak emission level 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.

4.5 TEST DATA OF RADIATED EMISSION (A)

EUT: **COLOR MONITOR** MODEL: **AS1795**

MODE: **1600x1200 (93 kHz)** 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)
50.33	8.9	14.2	23.1	30.0	-6.9	361	180
118.48	12.6	12.5	25.1	30.0	-4.9	400	99
185.55	10.4	11.1	21.5	30.0	-8.5	400	215
202.79	10.1	15.0	25.1	30.0	-4.9	400	118
253.13	13.8	11.8	25.6	37.0	-11.4	400	84
269.91	14.3	15.1	29.4	37.0	-7.6	400	203
286.86	14.7	11.9	26.6	37.0	-10.4	400	105
303.50	15.0	10.5	25.5	37.0	-11.5	100	282
522.98	21.6	7.9	29.5	37.0	-7.5	180	69
539.90	22.5	6.6	29.1	37.0	-7.9	154	63
590.47	22.5	10.4	32.9	37.0	-4.1	125	43

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 (A)

EUT: **COLOR MONITOR** MODEL: **AS1795**

MODE: **1600x1200 (93 kHz)** 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)
45.50	11.2	14.4	25.6	30.0	-4.4	155	293
57.83	7.4	17.8	25.2	30.0	-4.8	125	49
74.15	7.2	18.2	25.4	30.0	-4.6	166	77
87.00	9.2	15.6	24.8	30.0	-5.2	178	304
115.40	12.6	11.9	24.5	30.0	-5.5	100	21
152.04	12.3	11.9	24.2	30.0	-5.8	100	10
185.59	10.4	9.4	19.8	30.0	-10.2	100	278
202.81	10.1	11.9	22.0	30.0	-8.0	100	104
219.34	11.3	12.3	23.6	30.0	-6.4	100	99
269.92	14.3	12.9	27.2	37.0	-9.8	100	173
337.50	16.0	16.1	32.1	37.0	-4.9	100	67
354.21	16.6	15.8	32.4	37.0	-4.6	100	54

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

4.6 TEST DATA OF RADIATED EMISSION (B)

EUT: **COLOR MONITOR** MODEL: **AS1795**

MODE: **1024x768 (69 kHz)** 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)
50.25	8.9	11.7	20.6	30.0	-9.4	377	187
121.00	12.7	10.9	23.6	30.0	-6.4	400	51
178.88	10.7	13.1	23.8	30.0	-6.2	400	255
190.64	10.2	11.6	21.8	30.0	-8.2	400	90
229.23	12.1	10.7	22.8	30.0	-7.2	400	107
245.04	13.3	9.8	23.1	37.0	-13.9	400	70
268.79	14.3	9.0	23.3	37.0	-13.7	400	239

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 (B)

EUT: **COLOR MONITOR** MODEL: **AS1795**

MODE: **1024x768 (69 kHz)** 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

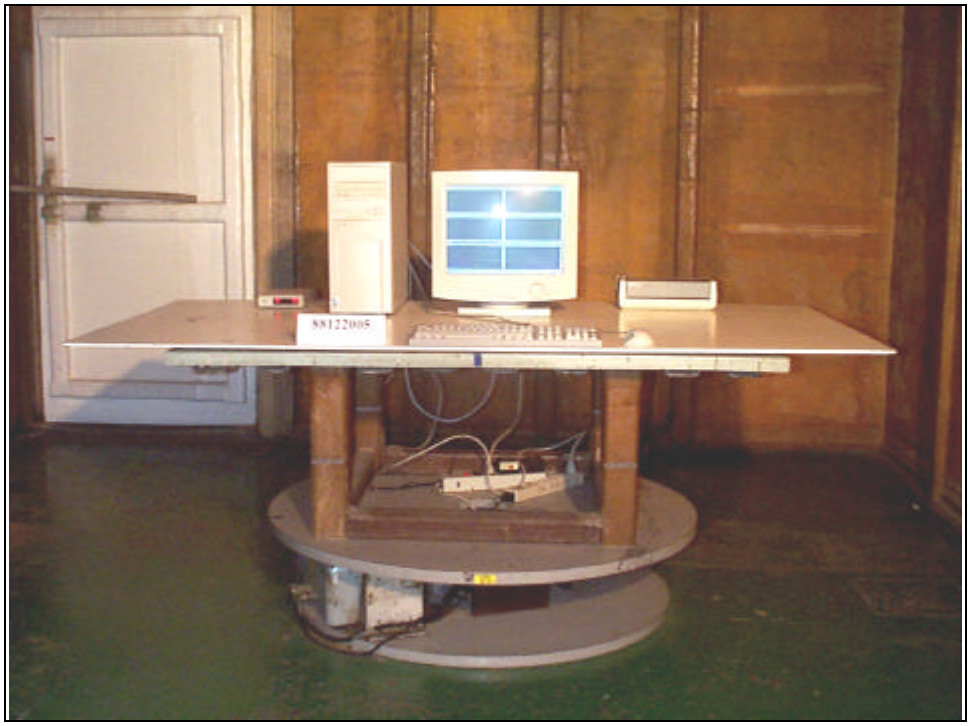
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
78.55	8.3	18.0	26.3	30.0	-3.7	100	215
86.81	9.2	13.5	22.7	30.0	-7.3	152	15
121.84	12.7	12.4	25.1	30.0	-4.9	100	161
163.91	11.5	11.1	22.6	30.0	-7.4	100	13
189.63	10.3	6.6	16.9	30.0	-13.1	100	213
205.41	10.3	7.7	18.0	30.0	-12.0	100	50
229.24	12.1	14.1	26.2	30.0	-3.8	100	60
244.85	13.2	11.6	24.8	37.0	-12.2	100	342
268.59	14.3	5.8	20.1	37.0	-16.9	100	168

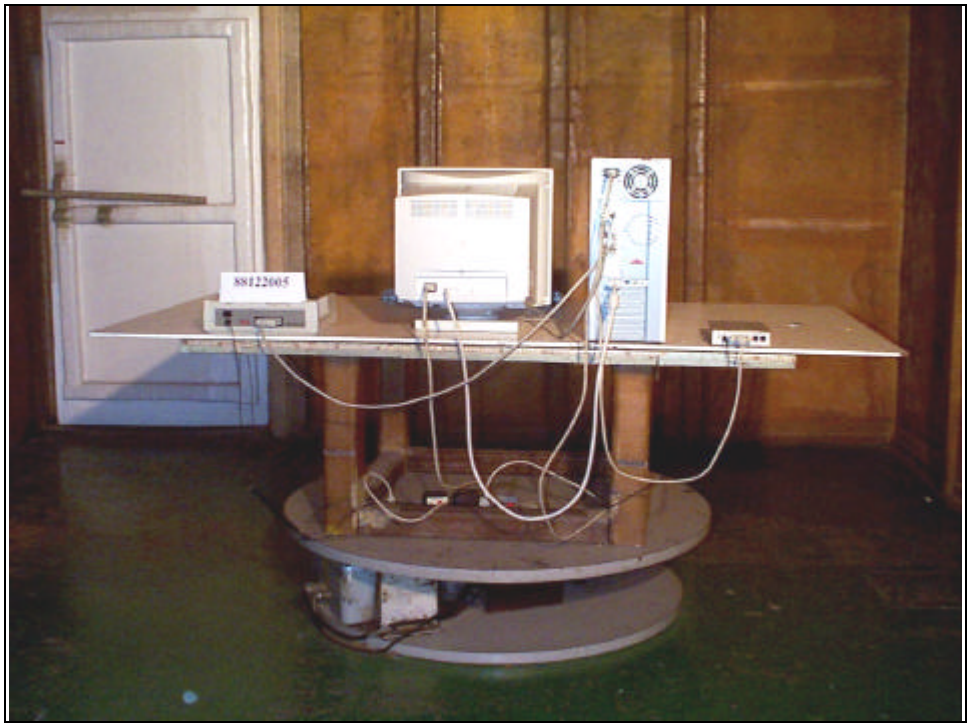
REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

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

Lin Kou Safety Lab.:
Tel: 886-2-26093195
Fax: 886-2-26093184

Design Center:
Tel: 886-2-26093195
Fax: 886-2-26093184

E-mail: **service@mail.adt.com.tw**
http://www.adt.com.tw