FCC ID: ARSCM769R

EMC

TEST REPORT

REPORT NO. : F88111005
MODEL NO. : 7Vlr, 7Vlr+, 7VlrSA, 7VlrSA+
DATE OF TEST : Dec. 7, 1999

PREPARED FOR : TOP VICTORY ELECTRONICS CO., LTD.

ADDRESS : 18F, NO. 738, CHUNG-CHENG RD. CHUNG HO, 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. 9, 1999

Product	:	COLOR MONITOR
Trade Name	:	AOC
Model No.	:	7Vlr, 7Vlr+, 7VlrSA, 7VlrSA+
Applicant	:	TOP VICTORY ELECTRONICS CO., LTD.
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 two samples of the designation have been tested in our facility on Dec. 7, 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 : Jacko Liu , DATE: 12/9/99
(Jacko Liu)

CHECKED BY : Yemmy Soong , DATE: 12/9/99
(Yemmy Soong)

APPROVED BY : Mike Su , DATE: 12/9/99.
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	7Vlr, 7Vlr+, 7VlrSA, 7VlrSA+
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (1.8 m, 3-pin)
Data Cable	:	Shielded (1.8 m)

Note: The EUT is a 17” Color Monitor with resolution up to 1280x1024.

The EUT has four model names, which are identical to each other in all aspects except for the following:

- Model: 7Vlr - Using MPRII monitor
- Model: 7Vlr+ - Using TCO monitor
- Model: 7VlrSA - Using MPRII monitor with speaker at the base
- Model: 7VlrSA+ - Using TCO monitor with speaker at the base

From the above models, model: **7Vlr** and **7VlrSA** were selected as representative for the test, and therefore both data are recorded separately in this report.

There is a ferrite core on the video cable outside both monitors.

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-450T	FCC DoC Approved	Nonshielded Power (1.8 m)
2.	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded signal (1.4 m)
3.	MOUSE	DEXIN	A2P800A	NIYA2P800A	Shielded signal (1.5 m)
4.	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2 m) Nonshielded Power (1.2 m)
5.	MODEM	ACEEX	1414	IFAXDM1414	Shielded signal (1.2 m) Nonshielded Power (1.2 m)
6.	VGA CARD	GAINWARD	CD-GX2A44T	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. 15, 1999
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 +/- 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.

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	:	27 degree C
Humidity	:	60 %
Atmospheric Pressure	:	994 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -10.8 dB at 28.469 MHz Minimum passing margin of radiated emission: -3.0 dB at 66.40 MHz

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

* 1280x1024 mode (64 kHz)
* 1024x768 mode (69 kHz),
* 640x480 mode (31.5 kHz)

The worst emission levels were found under 1024x768 (69 kHz) and therefore the test data of only this mode is recorded.

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 then 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: **7Vlr**

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

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

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.
0.208	0.2	51.0	-	51.2	-	63.3	53.3	-12.1	-
0.275	0.2	42.6	-	42.8	-	61.0	51.0	-18.2	-
0.621	0.2	26.7	-	26.9	-	56.0	46.0	-29.1	-
3.723	0.5	32.1	-	32.6	-	56.0	46.0	-23.4	-
18.956	1.3	47.7	-	49.0	-	60.0	50.0	-11.0	-
28.469	1.7	44.8	-	46.5	-	60.0	50.0	-13.5	-

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: **7Vlr**

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

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

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.
0.208	0.2	48.4	-	48.6	-	63.3	53.3	-14.7	-
0.275	0.2	39.8	-	40.0	-	61.0	51.0	-21.0	-
0.621	0.2	25.4	-	25.6	-	56.0	46.0	-30.4	-
3.723	0.4	31.6	-	32.0	-	56.0	46.0	-24.0	-
18.956	0.9	46.8	-	47.7	-	60.0	50.0	-12.3	-
28.469	1.4	45.2	-	46.6	-	60.0	50.0	-13.4	-

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: **7VlrSA**

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

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

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.
0.206	0.2	48.5	-	48.7	-	63.3	53.3	-14.6	-
0.276	0.2	40.7	-	40.9	-	60.9	50.9	-20.0	-
0.897	0.2	24.0	-	24.2	-	56.0	46.0	-31.8	-
4.413	0.4	27.5	-	27.9	-	56.0	46.0	-28.1	-
18.957	1.0	41.6	-	42.6	-	60.0	50.0	-17.4	-
28.469	1.7	47.5	-	49.2	-	60.0	50.0	-10.8	-

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: **7VlrSA**

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

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

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.
0.206	0.2	47.8	-	48.0	-	63.3	53.3	-15.3	-
0.276	0.2	39.6	-	39.8	-	60.9	50.9	-21.1	-
0.897	0.2	23.2	-	23.4	-	56.0	46.0	-32.6	-
4.413	0.4	26.4	-	26.8	-	56.0	46.0	-29.2	-
18.957	0.9	40.8	-	41.7	-	60.0	50.0	-18.3	-
28.469	1.5	46.9	-	48.4	-	60.0	50.0	-11.6	-

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.

4.5 TEST DATA OF RADIATED EMISSION (A)

EUT: **COLOR MONITOR** MODEL: **7Vlr**

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)
47.44	10.2	12.1	22.3	30.0	-7.7	400	182
66.39	6.4	16.1	22.5	30.0	-7.5	400	82
75.90	7.7	15.7	23.4	30.0	-6.6	348	87
133.65	13.0	5.3	18.3	30.0	-11.7	400	247
160.01	11.7	5.1	16.8	30.0	-13.2	400	175
218.25	11.3	10.1	21.4	30.0	-8.6	400	67
237.23	12.7	15.0	27.7	37.0	-9.3	400	171
265.67	14.2	15.8	30.0	37.0	-7.0	400	169
284.08	14.6	10.1	24.7	37.0	-12.3	400	195

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: **7Vlr**

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)
47.44	10.2	15.5	25.7	30.0	-4.3	100	62
66.40	6.4	20.6	27.0	30.0	-3.0	100	76
75.90	7.7	18.8	26.5	30.0	-3.5	100	27
133.65	13.0	10.3	23.3	30.0	-6.7	100	19
160.03	11.7	8.2	19.9	30.0	-10.1	100	0
208.09	10.5	7.9	18.4	30.0	-11.6	100	15
218.09	11.2	10.9	22.1	30.0	-7.9	100	138
237.05	12.7	12.4	25.1	37.0	-11.9	100	121
265.55	14.2	13.9	28.1	37.0	-8.9	100	164
284.08	14.6	11.4	26.0	37.0	-11.0	100	145

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: **7VlrSA**

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)
50.21	8.9	14.1	23.0	30.0	-7.0	400	140
76.11	7.7	12.2	19.9	30.0	-10.1	400	24
161.30	11.6	4.7	16.3	30.0	-13.7	400	130
170.78	11.1	8.5	19.6	30.0	-10.4	400	183
189.71	10.3	9.3	19.6	30.0	-10.4	400	356
208.70	10.5	11.3	21.8	30.0	-8.2	400	214
218.24	11.3	6.7	18.0	30.0	-12.0	400	140
237.25	12.7	7.7	20.4	37.0	-16.6	400	192

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: **7VlrSA**

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

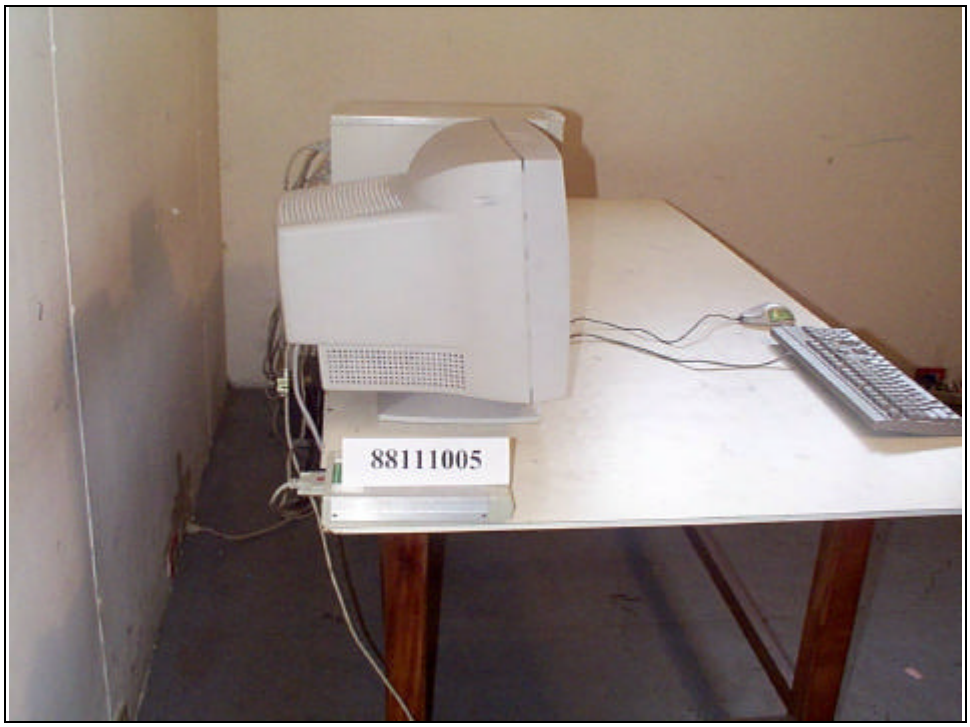
FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
44.41	11.7	14.8	26.5	30.0	-3.5	100	219
47.43	10.2	16.5	26.7	30.0	-3.3	100	219
131.66	13.0	7.1	20.1	30.0	-9.9	100	157
137.28	13.1	11.3	24.4	30.0	-5.6	100	259
161.22	11.6	9.3	20.9	30.0	-9.1	100	97
170.71	11.1	8.7	19.8	30.0	-10.2	100	84
208.76	10.5	16.4	26.9	30.0	-3.1	100	291
218.26	11.3	15.3	26.6	30.0	-3.4	100	81
227.76	12.0	10.7	22.7	30.0	-7.3	100	81
237.23	12.7	11.1	23.8	37.0	-13.2	100	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

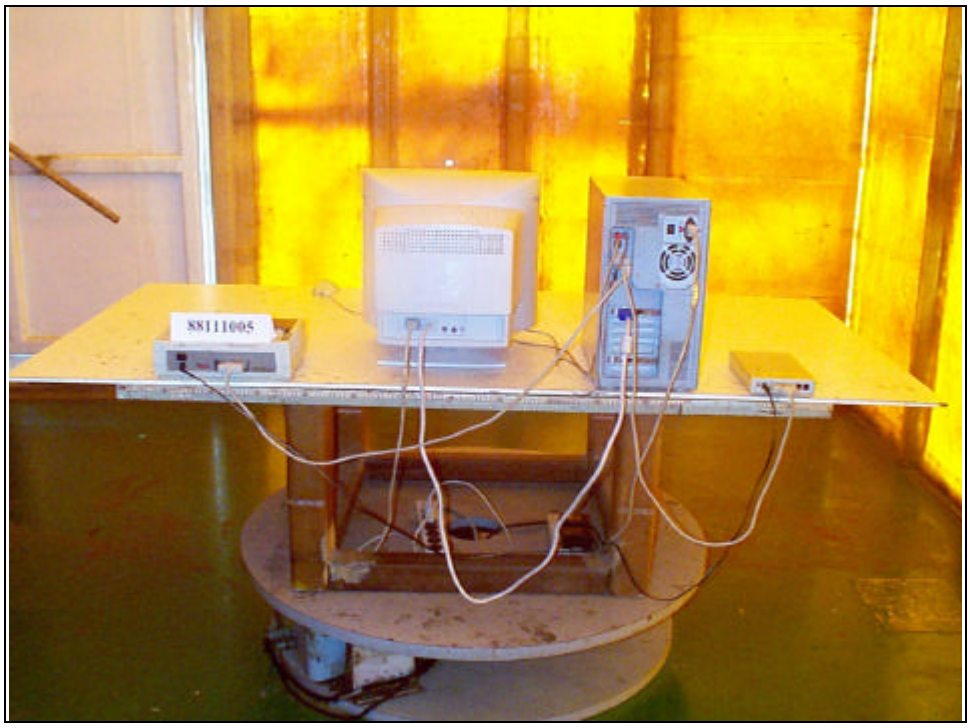
5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN

CONDUCTED EMISSION TEST (Model: 7Vlr)

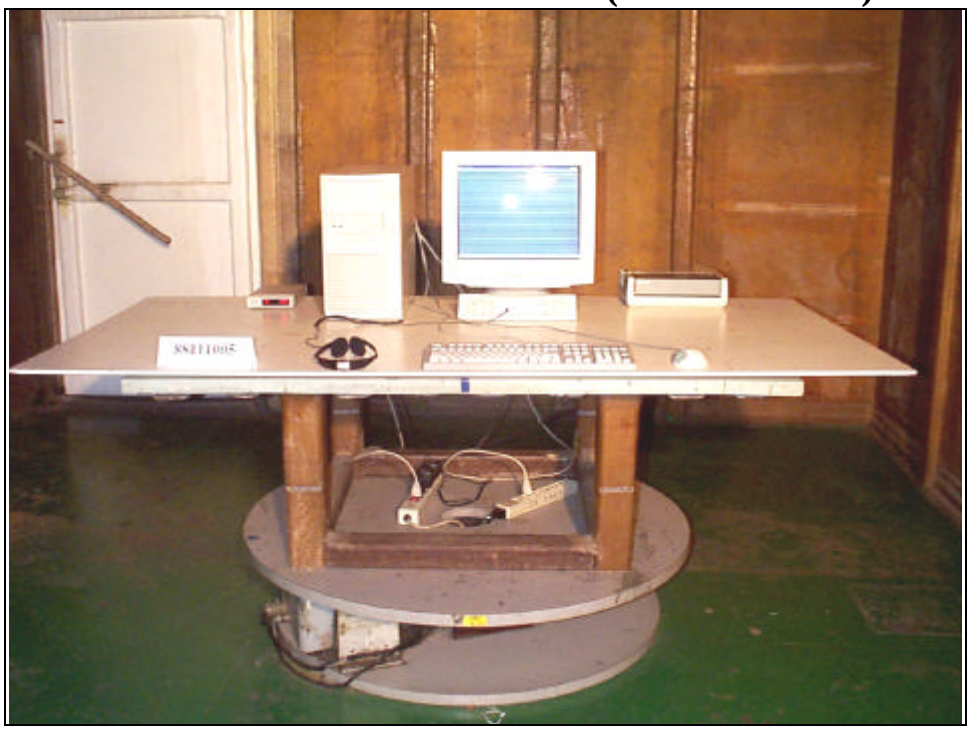


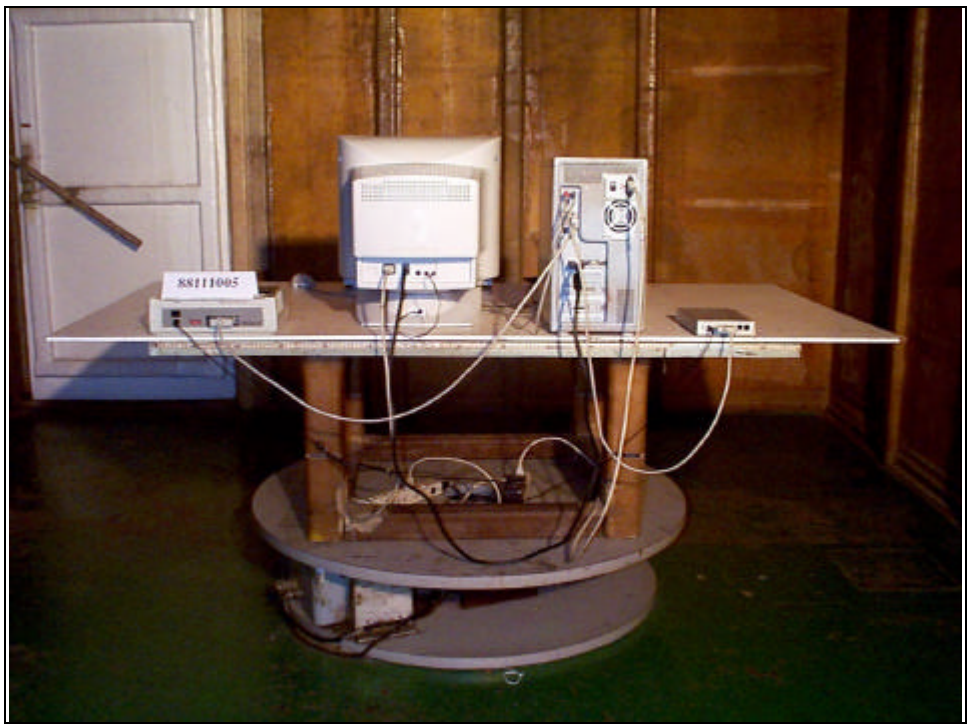
CONDUCTED EMISSION TEST (Model: 7VlrSA)

RADIATED EMISSION TEST (Model: 7Vlr)



RADIATED EMISSION TEST (Model: 7VlrSA)





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.:
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