FCC TEST REPORT

REPORT NO.: F930609A07

MODEL NO.: LXM-L19**, LM9****, EN9****, TFT19******

RECEIVED: June 9, 2004

TESTED: June 10, 2004

APPLICANT: TOP VICTORY ELECTRONICS (TAIWAN) CO., LTD.

ADDRESS: 18F, No. 738, Chung Cheng Road, Chung Ho, Taipei Hsien, Taiwan 235

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 47 14th Lin, Chiapau Tsun, Linko, Taipei, Taiwan, R.O.C.

0528
ILAC MRA

Lab Code: 200102-0

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1 CERTIFICATION

PRODUCT:	19” LCD Monitor
BRAND NAME:	Lenovo, AOC
MODEL NO.:	LXM-L19**, LM9****, EN9****, TFT19****** (The "*" can be any alphanumeric character including blank, for marketing differences)
APPLICANT:	TOP VICTORY ELECTRONICS (TAIWAN) CO., LTD.
TESTED:	June 10, 2004
TEST ITEM:	ENGINEERING SAMPLE
STANDARDS:	FCC Part 15, Subpart B, Class B ANSI C63.4-2001 ICES-003: 2004, Class B

The above equipment (model: LXM-L19BH) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample’s EMC characteristics under the conditions specified in this report.

PREPARED BY: Jessica Cheng , **DATE:** June 16, 2004
(Jessica Cheng)

APPROVED BY: Mike Su , **DATE:** June 16, 2004
(Mike Su, Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Remarks
FCC Part 15, Subpart B, Class B ANSI C63.4- 2001 ICES-003: 2004	Conducted Test	PASS	Meets Class B Limit Minimum passing margin is -13.28 dB at 0.204 MHz
	Radiated Test	PASS	Meets Class B Limit Minimum passing margin is -4.59 dB at 130.05 MHz

Note: The information of measurement uncertainty is available upon the customer's request.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	19" LCD Monitor
MODEL NO.	LXM-L19**, LM9****, EN9****, TFT19******
POWER SUPPLY	Adapter: Brand: TPV Electronics (Fujian) Co., Ltd. Model: ADPC1260AB Input rating: 100-240Vac, 1.5A, 50/60Hz Output rating: 12Vdc, 5.0A AC Shielded, 3-pin (1.8m). DC Shielded (1.2m) with one ferrite core.
DATA CABLE SUPPLIED	VGA shielded cable, (1.5m) with two ferrite cores.

NOTE:

1. The EUT is 19" LCD Monitor with resolution up to 1280x1024.

2. The EUT has four model names, which are identical to each other except for the following:

Brand	Model	Description
Lenovo	LXM-L19BH	For marketing differentiation.
AOC	LM9****	
	EN9****	
	TFT19******	

3. The "*" can be any alphanumeric characters including blank for marketing differences only. For the test, **model: LXM-L19BH** was selected as the representative model and its data was recorded in this report.

4. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2 DESCRIPTION OF TEST MODES

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

- 1280 x 1024 (75Hz / 80kHz)
- 1024 x 768 (75Hz / 60kHz)
- 640 x 480 (60Hz / 31.5kHz)

The worst emission level was found when the EUT was tested under **1280 x 1024 (75Hz / 80kHz)** resolution. Therefore only the test data of this mode was recorded in this report.

3.3 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 were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PERSONAL COMPUTER	LEO	Persica 8620G	1A36I98A000211	FCC DoC Approved
2	PRINTER	EPSON	LQ-300+	DCGY017031	FCC DoC Approved
3	MODEM	ACEEX	1414	980020517	IFAXDM1414
4	PS/2 MOUSE	BTC	M851	M4-010354	E5XMSM860
5	PS2/KEYBOARD	HP	SK-2502C	M020303597	FCC DoC Approved
6	VGA DISPLAY CARD	ATI	RADEON VE	1612102364	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
4	1.5 m Non shielded wire, terminated with PS/2 connector via drain wire, w/o core.
5	1.8 m foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.
6	N/A

NOTE: 1. All power cords of the above support units are non-shielded (1.8m).
2. VGA card was installed in support unit 1.

4 EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

NOTES: (1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
(3) All emanations 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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS 30	828765/002	July 15, 2004
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	835239/001	Mar. 31, 2005
LISN With Adapter (for EUT)	AD10	C09Ada-001	Mar. 31, 2005
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	835239/002	Apr. 18, 2005
ROHDE & SCHWARZ 4-wire ISN	ENY41	935154/007	Apr. 20, 2005
ROHDE & SCHWARZ 2-wire ISN	ENY22	833823/026	Apr. 20, 2005
Software	ADT_Cond_V7.3.1	NA	NA
Software	ADT_ISN_V7.3.1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C09.01	May 9, 2005
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010789	May 17, 2005

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. "*": These equipment are used for conducted telecom port test only (if tested).
3. The test was performed in ADT Shielded Room No. 9.
4. The VCCI Site Registration No. C-1312.

4.1.3 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

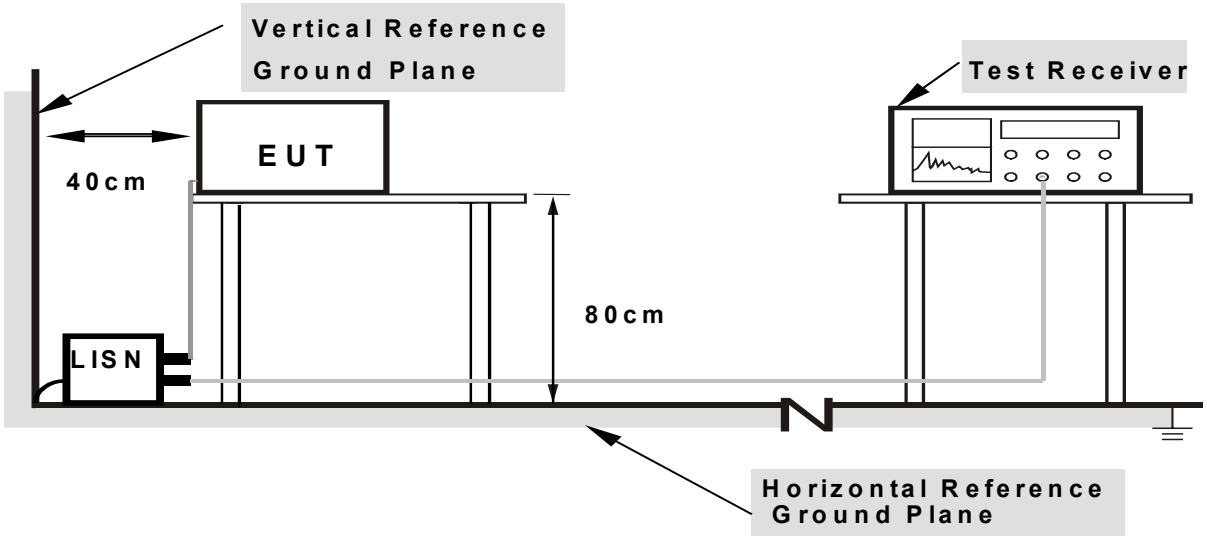
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

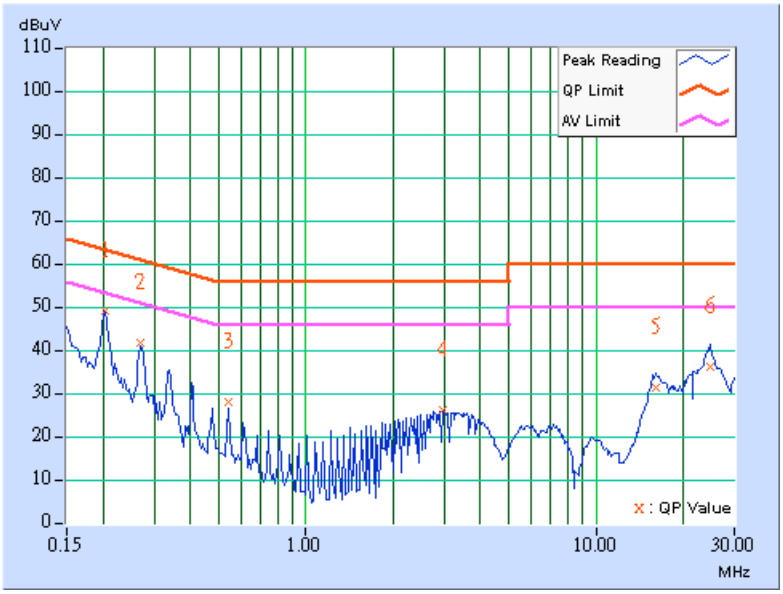
a. Turned on the power of all equipment.
b. PC ran a test program to enable all functions.
c. PC read and wrote messages from FDD and HDD.
d. PC sent "H" messages to LCD monitor (EUT) and it displayed "H" patterns on screen.
e. PC sent "H" messages to modem.
f. PC sent "H" messages to printer, and the printer printed out.
g. Steps c-g were repeated.

4.1.7 TEST RESULTS

EUT	19" LCD Monitor	MODEL NO.	LXM-L19BH
TEST MODE	1280 x 1024 (75Hz / 80kHz)	6dB BANDWIDTH	9kHz
INPUT POWER	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 78% RH, 1043hPa	TESTED BY: Michael Wang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.204	0.20	47.77	-	47.97	-	63.45	53.45	-15.48	-
2	0.270	0.20	40.49	-	40.69	-	61.11	51.11	-20.42	-
3	0.540	0.20	26.78	-	26.98	-	56.00	46.00	-29.02	-
4	2.967	0.25	24.88	-	25.13	-	56.00	46.00	-30.87	-
5	16.189	1.02	30.17	-	31.19	-	60.00	50.00	-28.81	-
6	24.866	1.39	34.85	-	36.24	-	60.00	50.00	-23.76	-

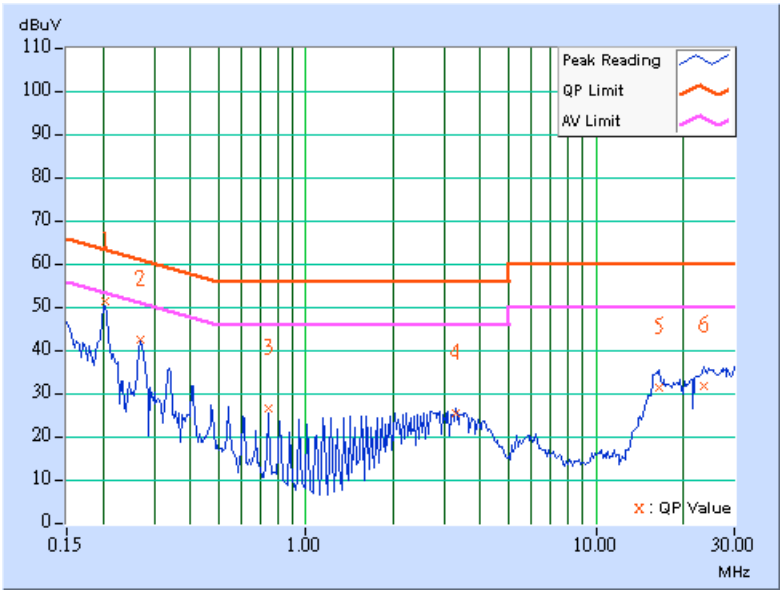
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



EUT	19" LCD Monitor	**MODEL NO.**	LXM-L19BH
TEST MODE	1280 x 1024 (75Hz / 80kHz)	**6dB BANDWIDTH**	9kHz
INPUT POWER	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 78% RH, 1043hPa	**TESTED BY:** Michael Wang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.204**	**0.20**	**49.96**	**-**	**50.16**	**-**	**63.44**	**53.44**	**-13.28**	**-**
2	0.270	0.20	41.02	-	41.22	-	61.11	51.11	-19.89	-
3	0.744	0.20	25.32	-	25.52	-	56.00	46.00	-30.48	-
4	3.307	0.30	24.28	-	24.58	-	56.00	46.00	-31.42	-
5	16.479	1.16	30.11	-	31.27	-	60.00	50.00	-28.73	-
6	23.628	1.45	30.58	-	32.03	-	60.00	50.00	-27.97	-

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT FOR FREQUENCY BELOW 1000 MHz

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

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.

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8591E	3230A00704	Nov. 4, 2004
CHASE Preamplifier	CPA9231A	3230	Nov. 13, 2004
* HP Preamplifier	8449B	3008A01924	Oct. 12, 2004
* HP Preamplifier	8449B	3008A01638	Oct. 17, 2004
* ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	100292	Dec. 11, 2004
SCHWARZBECK Tunable Dipole Antenna SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	NA 977	Nov. 15, 2004
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 12, 2005
* CHASE BILOG Antenna	CBL6112B	2695	Jan. 17, 2005
* EMCO Horn Antenna	3115	6714	Nov. 26, 2004
* EMCO Horn Antenna	3115	9312-4192	Feb. 28, 2005
* CHANCE Turn Table	CM-TT15	CM-T009	NA
* CHANCE Tower	CM-AT40	CM-A009	NA
* Software	ADT_Radiated_V 5.14	NA	NA
* ANRITSU RF Switches	MP59B	6200265066	Dec. 26, 2004
* TIMES RF cable	LMR-600	CABLE-ST9-01	Dec. 26, 2004

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. "*" = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. 9.
5. The VCCI Site Registration No. R-1248.
6. The Industry Canada Reference No. IC 3789-9.

4.2.3 TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

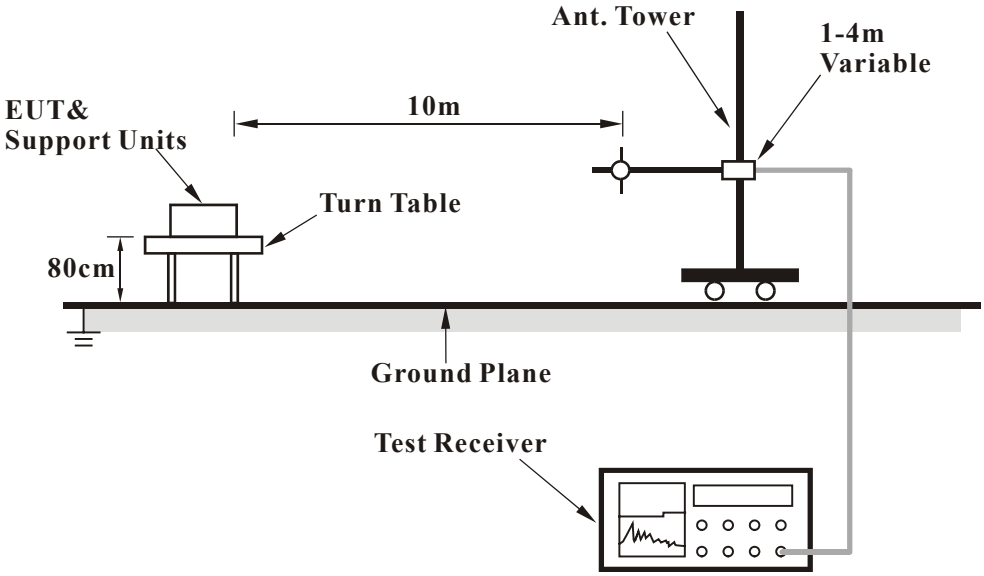
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the interference antenna.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

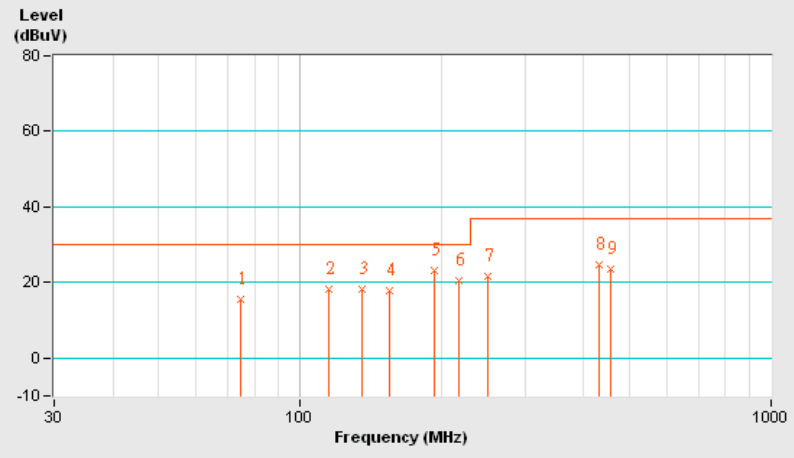
Same as item 4.1.6.

4.2.7 TEST RESULTS

EUT	19" LCD Monitor	MODEL NO.	LXM-L19BH
TEST MODE	1280 x 1024 (75Hz / 80kHz)	INPUT POWER	120Vac, 60Hz
FREQUENCY RANGE	30 ~ 1000MHz	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 62% RH, 1043hPa	TESTED BY: Michael Wang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	74.63	15.67 QP	30.00	-14.33	4.00 H	169	8.68	6.99
2	115.11	18.32 QP	30.00	-11.68	4.00 H	3	5.48	12.84
3	135.02	18.10 QP	30.00	-11.90	4.00 H	360	5.61	12.49
4	154.86	17.96 QP	30.00	-12.04	4.00 H	228	7.00	10.96
5	193.24	23.14 QP	30.00	-6.86	4.00 H	187	12.65	10.49
6	217.68	20.39 QP	30.00	-9.61	4.00 H	204	8.66	11.73
7	249.68	21.61 QP	37.00	-15.39	3.78 H	148	7.92	13.69
8	432.20	24.63 QP	37.00	-12.37	2.38 H	108	5.69	18.94
9	457.12	23.68 QP	37.00	-13.32	2.02 H	196	4.29	19.39

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

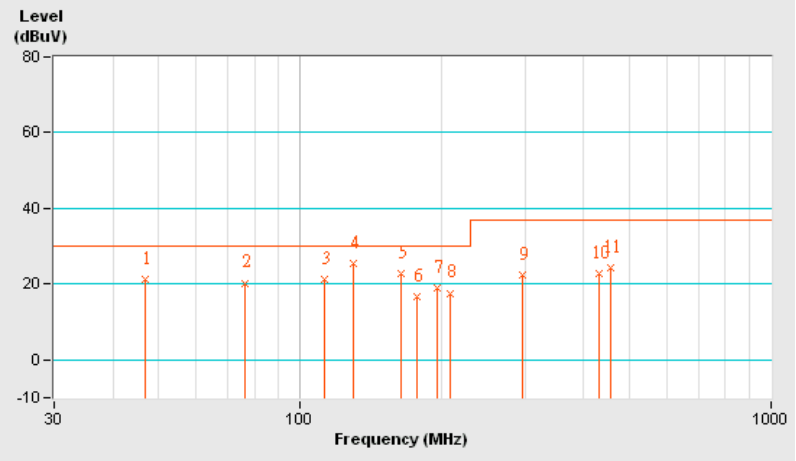


EUT	19" LCD Monitor	**MODEL NO.**	LXM-L19BH
TEST MODE	1280 x 1024 (75Hz / 80kHz)	**INPUT POWER**	120Vac, 60Hz
FREQUENCY RANGE	30 ~ 1000MHz	**DETECTOR FUNCTION & BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 62% RH, 1043hPa	**TESTED BY:** Michael Wang	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M

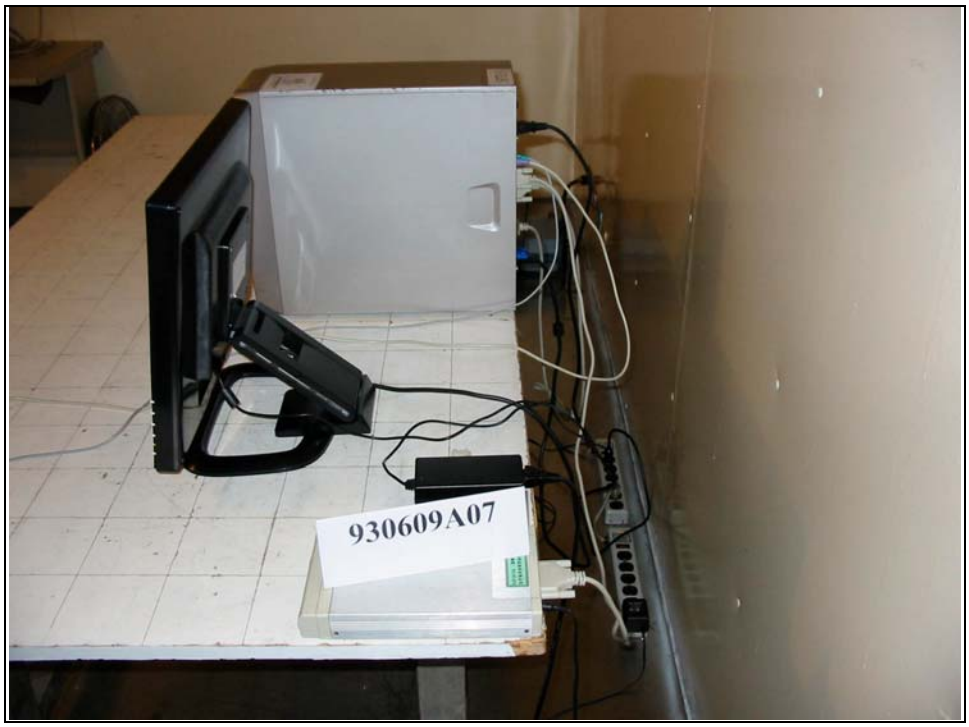
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	46.95	21.33 QP	30.00	-8.67	1.00 V	332	11.53	9.80
2	76.21	20.30 QP	30.00	-9.70	1.21 V	35	13.05	7.25
3	112.38	21.26 QP	30.00	-8.74	1.00 V	11	8.64	12.62
4	**130.05**	**25.41 QP**	**30.00**	**-4.59**	**1.00 V**	**263**	**12.67**	**12.74**
5	163.96	22.85 QP	30.00	-7.15	1.00 V	207	12.39	10.46
6	176.93	16.78 QP	30.00	-13.22	1.00 V	188	6.53	10.25
7	195.46	18.97 QP	30.00	-11.03	1.00 V	137	8.43	10.54
8	207.83	17.62 QP	30.00	-12.38	1.00 V	313	6.50	11.12
9	296.56	22.41 QP	37.00	-14.59	1.00 V	1	6.71	15.70
10	432.52	22.80 QP	37.00	-14.20	4.00 V	166	3.86	18.94
11	457.11	24.17 QP	37.00	-12.83	3.32 V	108	4.78	19.39

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

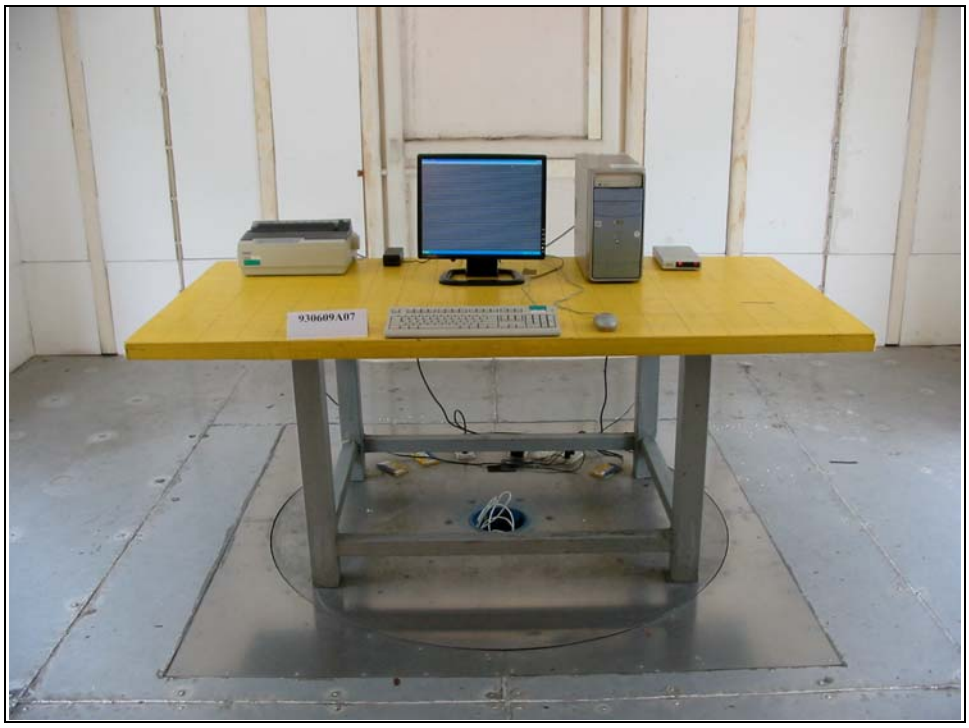


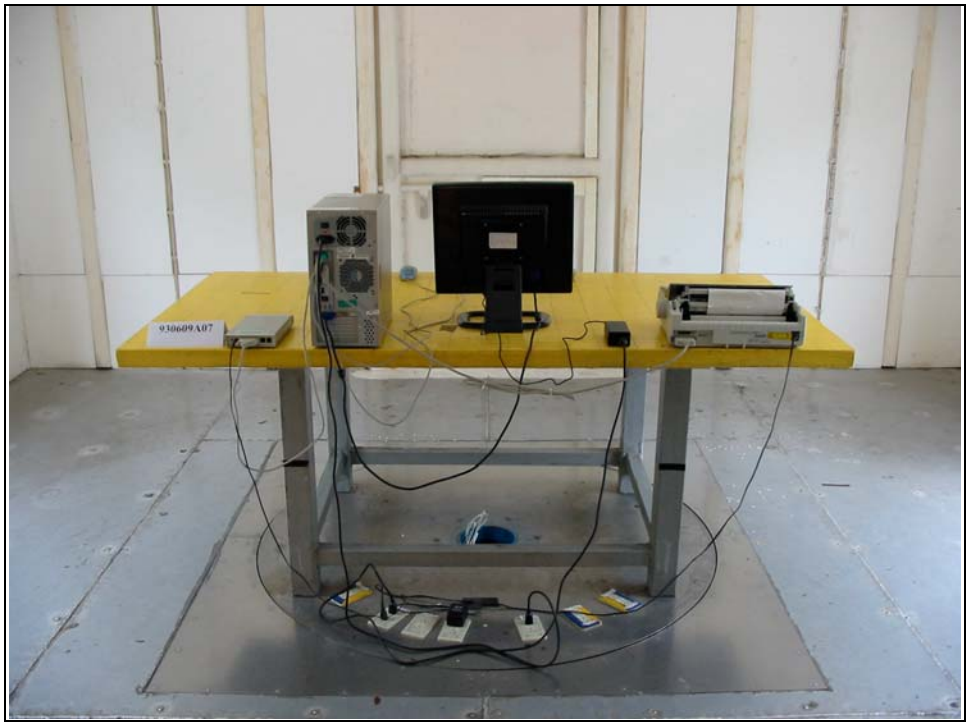
5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



RADIATED EMISSION TEST





6 APPENDIX - INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

USA	FCC, NVLAP, UL
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
If you have any comments, please feel free to contact us at the following:

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Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Linko RF Lab.
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Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

Report Format Version 1.0