



EMC

TEST REPORT

REPORT NO. : F89061608MODEL NO. : B0001, LA810EDATE OF TEST : June 21, 2000PREPARED FOR : MAG TECHNOLOGY CO., LTD.ADDRESS : 15F, NO. 287, SEC. 3, NANKING E. RD.
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Accredited Laboratory

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1.

CERTIFICATION

Issue Date : June 29, 2000

Product : LCD MONITOR
Trade Name : MAG
Model No. : B0001, LA810E
Applicant : MAG TECHNOLOGY 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 one sample of the designation has been tested in our facility on June 21, 2000. 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 : Henry Liao for , DATE: 6/29/2000
(John Liao)

CHECKED BY : Sharon Hsiung , DATE: 6/29/2000
(Sharon Hsiung)

APPROVED BY : Mike Su , DATE: 6/29/2000
(Mike Su)

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	LCD MONITOR
Model No.	:	B0001, LA810E
Power Supply Type	:	Switching
Power Cord	:	Nonshielded AC 3-pin (1.8 m) Nonshielded DC (1.8m)
Data Cable	:	Shielded (1.8 m)

Note: The EUT is a 18" LCD Monitor with resolution up to 1280x1024.

The EUT has two model names, which are identical to each other in all aspects, expect for their markets:

- Model: B0001
- Model: LA810E

From the above the two models, model: B0001 was chosen as representative model for the test.

The EUT is supplied with a power adapter and there are two brands of power adapters.

1. CINCON power adapter, model: TR70A12
Input: 100-240 Vac, 1.5A, 50-60 Hz
Output: 12Vdc, 5.5A
2. SYSTEM GENERAL power adapter, model: PNB60121T
Input: 100-240 Vac, 1.45A, 50-60Hz
Output: 12Vdc, 5A

Both above power adapters were pretested with the EUT and the worst emission level was found when using CINCON power adapter. Therefore, the data of EUT with CINCON power adapter are recorded in this report. There are two ferrite cores on the power cable of adapter.

There is ferrite core on the video cable of EUT.

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	GATEWAY	TBR2 400	FCC DoC Approved	Shielded Signal(1.8m) Nonshielded Power (1.8m)
2.	USB KEYBOARD	Silicon Graphics	SK-2502U	GYUR58SK	Shielded Signal (2.0m)
3.	USB MOUSE	DEXIN	A2U800A	NIYA2U800A	Shielded signal (1.5m)
4.	PRINTER	HP	2225C	BS46XU2225C	Nonshielded Power (2.1m) 3pin
5.	MODEM	ACEEX	1414	IFAXSM1414	Shielded signal (1.2m) NonshieldedPower(1.9m) 2pin
6.	VIDEO CARD	ATI	Vage 128PRO	FCC DoC Approved	NA

Note: 1. Support unit 2 & 3 were connected to the two USB ports of EUT.

2. Two USB cables (each 1.8 m) were connected to the two USB ports of EUT to form two open loop cables.

3. A USB cable (1.8 m) was connected from EUT to PC.

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 13, 2000
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	July 7, 2000
EMCO-L.I.S.N.	3825/2	9204-1964	July 7, 2000
Shielded Room	Site 2	ADT-C02	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	8594A	3144A00308	Aug. 19, 2000
HP Preamplifier	8447D	2944A08119	July 10, 2000
HP Preamplifier	8347A	3307A01088	Aug. 30, 2000
HP Preamplifier	8449B	3008A01201	Dec. 14, 2000
ROHDE & SCHWARZ TEST RECEIVER	ESVP	893496/030	July 13, 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	CBL6112A	2329	Sept. 19, 2000
EMCO Double Ridged Guide Antenna	3115	9312-4192	March 29, 2001
EMCO Turn Table	1060	1195	NA
EMCO Tower	1051	1163	NA
Open Field Test Site	Site 2	ADT-R02	Sept. 10, 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) *	Class B (at 10m) *
	dBuV/m	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	:	26 Degree C
Humidity	:	88 %
Atmospheric Pressure	:	989 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -12.6 dB at 3.534 MHz Minimum passing margin of radiated emission: -2.0 dB at 864.09 MHz

Note: The EUT was pretested under the following resolution & horizontal synchronization speed mode:

- 1280x1024 mode (64 kHz)
- 1024x768 mode (48 kHz)
- 640x480 mode (31.5 kHz)

The worst emission levels were found under 1280x1024 (64 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 Color Monitor (EUT) and Color 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

EUT: **LCD MONITOR**MODEL: **B0001**MODE: **1280x1024 (64 kHz)**6 dB Bandwidth: **10 kHz**PHASE: **LINE (L)**

Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.150	0.2	50.7	-	50.9	-	66.0	56.0	-15.1	-
0.351	0.2	38.0	-	38.2	-	58.9	48.9	-20.7	-
0.555	0.2	36.5	-	36.7	-	56.0	46.0	-19.3	-
3.534	0.4	43.0	-	43.4	-	56.0	46.0	-12.6	-
5.627	0.4	43.3		43.7		60.0	50.0	-16.3	
16.220	1.0	27.8	-	28.8	-	60.0	50.0	-31.2	-
27.356	1.3	34.6	-	35.9	-	60.0	50.0	-24.1	-

- 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 level 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

EUT: LCD MONITORMODEL: B0001MODE: 1280x1024 (64 kHz)6 dB Bandwidth: 10 kHzPHASE: NEUTRAL (N)

Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.150	0.2	50.6	-	50.8	-	66.0	56.0	-15.2	-
0.351	0.2	41.3	-	41.5	-	58.9	48.9	-17.4	-
0.555	0.2	39.9	-	40.1	-	56.0	46.0	-15.9	-
3.534	0.4	31.2	-	31.6	-	56.0	46.0	-24.4	-
5.627	0.4	30.0		30.4		60.0	50.0	-29.6	
16.220	0.8	25.6	-	26.4	-	60.0	50.0	-33.6	-
27.356	1.2	36.2	-	37.4	-	60.0	50.0	-22.6	-

- 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 level 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 RADIATED EMISSION

EUT: **LCD MONITOR**MODEL: **B0001**MODE: **1280x1024 (64 kHz)**ANT. POLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
54.00	7.4	14.5	21.9	30.0	-8.1	400	48
81.31	8.1	13.0	21.1	30.0	-8.9	400	325
108.00	11.8	10.5	22.3	30.0	-7.7	400	360
135.50	12.1	9.5	21.6	30.0	-8.4	400	360
192.01	10.9	10.9	21.8	30.0	-8.2	398	18
203.98	11.3	9.3	20.6	30.0	-9.4	400	358
210.70	11.7	5.6	17.3	30.0	-12.7	400	1
215.98	12.0	14.9	26.9	30.0	-3.1	400	27
226.67	12.6	11.8	24.4	30.0	-5.6	400	130
324.02	15.2	11.4	26.6	37.0	-10.4	257	266
378.04	17.0	11.6	28.6	37.0	-8.4	262	313
540.04	21.1	13.8	34.9	37.0	-2.1	262	6
756.10	22.4	9.0	31.4	37.0	-5.6	189	184
864.09	23.0	12.0	35.0	37.0	-2.0	117	238
972.13	24.0	9.0	33.0	37.0	-4.0	100	2

- 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: **LCD MONITOR**MODEL: **B0001**MODE: **1280x1024 (64 kHz)**ANT. POLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
43.19	11.1	14.8	25.9	30.0	-4.1	100	358
54.00	7.4	16.2	23.6	30.0	-6.4	100	12
64.85	6.1	19.2	25.3	30.0	-4.7	169	0
75.69	6.9	19.3	26.2	30.0	-3.8	198	346
81.33	8.1	17.9	26.0	30.0	-4.0	189	360
108.01	11.8	12.7	24.5	30.0	-5.5	100	329
144.00	11.8	15.1	26.9	30.0	-3.1	100	48
162.02	10.9	12.7	23.6	30.0	-6.4	100	6
192.02	10.9	9.6	20.5	30.0	-9.5	100	0
216.03	12.0	15.8	27.8	30.0	-2.2	100	352
226.68	12.6	13.1	25.7	30.0	-4.3	100	347
237.69	13.2	19.3	32.5	37.0	-4.5	100	349
248.32	13.8	18.0	31.8	37.0	-5.2	100	0
324.02	15.2	12.1	27.3	37.0	-9.7	100	351
378.04	17.0	14.2	31.2	37.0	-5.8	400	290
540.05	21.1	13.5	34.6	37.0	-2.4	400	319
756.10	22.4	10.9	33.3	37.0	-3.7	261	347
864.10	23.0	8.1	31.1	37.0	-5.9	278	350

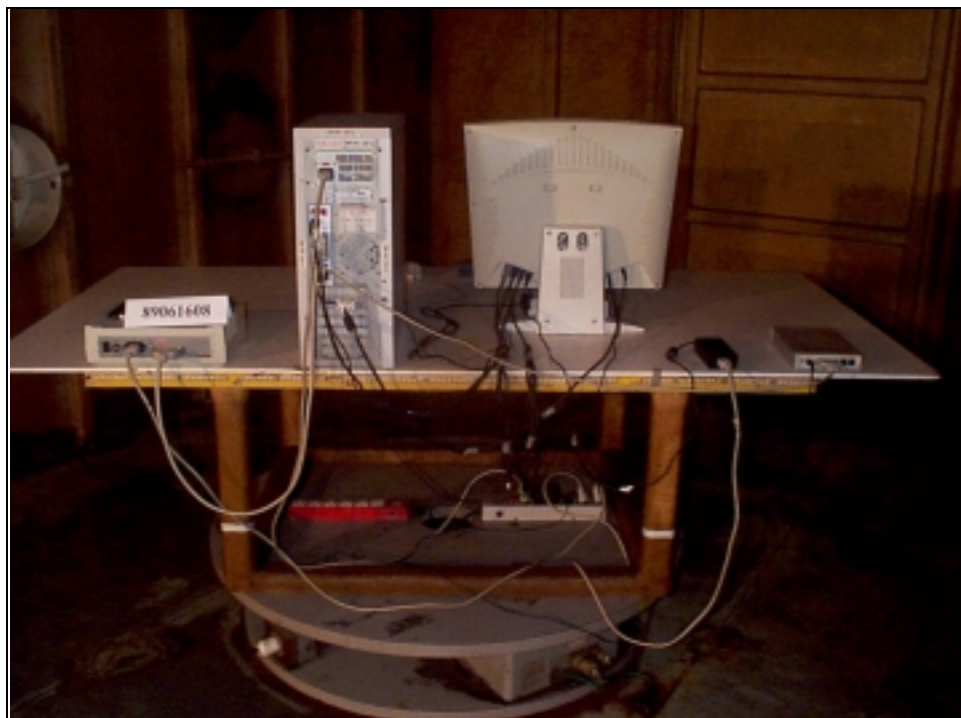
- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
 2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value

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., 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 |
| ● 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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