FCC ID: MLADL27

EMC

TEST REPORT

REPORT NO. : F87052901
MODEL NO. : DL27
DATE OF TEST : May. 30 ~ Jun. 28, 1998

MULTIPLE LISTING FOR: 1. DL27-X
GATEWAY 2000
2. AR27
PRINCETON GRAPHIC SYSTEMS

PREPARED FOR : DIVA LABORATORIES, LTD.

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1. CERTIFICATION

Issue Date: Jun. 8, 1998

Product	:	COLOR MONITOR
Trade Name	:	DIVA, GATWAY 2000, PRINCETON GRAPHIC
Model No.	:	DL27, DL27-X, AR27
Applicant	:	DIVA LABORATORIES LTD.
Standard	:	FCC Part 15, Subpart B, Class B ANSI C63.4-1992 CISPR 22: 1993 +A1+A2

We hereby certify that one sample of the designation has been tested in our facility on May 20, 1997. 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.

PREPARED BY: Sharon Hsiung , DATE: 6/8/98
(Sharon Hsiung)

TESTED BY: John Liao , DATE: 6/8/98
(John Liao)

APPROVED BY: Mike Su , DATE: 6/8/98
(Mike Su)

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	DL27, DL27-X, AR27
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (1.8m)
Data Cable	:	Shielded (3.0m)

Note: The EUT is a 32" color monitor with resolution upto 1024x768, and it has three model names which are identical to each other in all aspects except for the following:

Model: DL27 (Brand: DIVA)
Model: DL27-X (Brand: GATEWAY 2000)
Model: AR27 (Brand: PRINCETON GRAPHIC)

From the above model names, model: DL-27 was selected as representative model for the test, and its data is recorded in this report.

There are two ferrite cores 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 IC	I/O Cable
1	PERSONAL COMPUTER	HP	VL SERIES 4 5/100	B94VETRA500T	Nonshielded Power (1.8m) Shielded USB signal (2m)
2	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)
4	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.9m)
5	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.2m) Nonshielded Power (1.9m)
6	MOUSE	DEXIN	A2R800A	NIYA2R800A	Shielded Signal (1.5m)
7	VGA DISPLAY CARD	GORDIA	DSV-3365	LUT-DSV3365	N/A
8	SOUND CARD	YA SHIN	AUDIO 1869	FCC DoC	N/A

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

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP Spectrum Analyzer	8594A	3144A00308	Sept. 1, 1998
HP Preamplifier	8447D	2944A08119	Aug. 2, 1998
ROHDE & SCHWARZ TEST RECEIVER	ESVP	893496/030	July 17, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE Bilog Antenna	CBL6112	2086	Dec. 26, 1998
EMCO Turn Table	1060	1195	N/A
EMCO Tower	1051	1163	N/A
Open Field Test Site	Site 2	ADT-R02	Sept. 26, 1998

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMA's 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.

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESH3	893495/006	July 23, 1998
ROHDE & SCHWARZ Spectrum Monitor	EZM	893787/013	July 24, 1998
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	Aug. 1, 1998
EMCO-L.I.S.N.	3825/2	9204-1964	July 22, 1998
Shielded Room	Site 2	ADT-C02	N/A

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMA's 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

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
Above 1000	300	49.5	500	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

Frequency Range	:	0.15 - 30 MHz (Conducted Emission)
		30 - 1000 MHz (Radiated Emission)
Input Voltage	:	120 Vac, 60 Hz
Temperature	:	29 ℃
Humidity	:	60 %
Atmospheric Pressure	:	1060 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -6.0 dB at 0.150 & 0.185 MHz Minimum passing margin of radiated emission: -2.9 dB at 30.63 MHz

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

* 1024x768 mode (35.5 kHz),
* 800x600 mode (38 kHz),
* 640x480 mode (31.5 kHz)

The worst emission levels were found under 800x600 (38 kHz) and therefore the test data of only this mode is recorded.

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
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 audio messages to internal speaker.
7. PC sends "H" messages to printer, and the printer prints them on paper.
8. Repeat steps 3-8.

4.1 TEST DATA OF CONDUCTED EMISSION

EUT: **COLOR MONITOR** MODEL: **AR2.7**

MODE: 800x600 (38 kHz) 6 dB Band Width: 10 kHz

TEST PERSONNEL: John Liao

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.150	51.50	47.50	52.80	50.00	66.00	56.00	-14.5	-8.5	-13.2	-6.0
0.185	55.40	48.20	55.30	48.10	64.25	54.25	-8.9	-6.0	-9.0	-6.1
0.307	45.10	-	46.80	-	60.05	50.05	-14.9	-	-13.3	-
0.552	39.50	-	38.80	-	56.00	46.00	-16.5	-	-17.2	-
12.000	39.10	-	41.40	-	60.00	50.00	-20.9	-	-18.6	-
25.441	43.30	-	42.10	-	60.00	50.00	-16.7	-	-17.9	-

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.

4.3 TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR** MODEL: **AR2.7**

MODE: **800x600 (38 kHz)**

ANTENNA: CHASE BILOG CBL6112 POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

TEST PERSONNEL: John Liao

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
32.01	18.3	1.9	20.2	30.0	-9.8
45.43	12.8	10.5	23.3	30.0	-6.7
48.15	11.3	13.7	25.0	30.0	-5.0
63.99	8.0	16.2	24.2	30.0	-5.8
79.98	8.7	13.1	21.8	30.0	-8.2
127.98	14.7	5.7	20.4	30.0	-9.6
143.98	13.8	7.0	20.8	30.0	-9.2
159.99	12.4	10.5	22.9	30.0	-7.1
175.98	12.2	9.9	22.1	30.0	-7.9
192.01	12.8	13.1	25.9	30.0	-4.1
215.99	14.1	8.7	22.8	30.0	-7.2

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

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TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR** MODEL: **AR2.7**

MODE: **800x600 (38 kHz)**

ANTENNA: CHASE BILOG CBL6112 POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

TEST PERSONNEL: John Liao

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.63	19.2	7.9	27.1	30.0	-2.9
44.43	12.0	14.0	26.0	30.0	-4.0
63.57	7.6	15.9	23.5	30.0	-6.5
79.99	8.0	17.8	25.8	30.0	-4.2
111.99	13.7	7.7	21.4	30.0	-8.6
160.00	12.0	11.1	23.1	30.0	-6.9
175.98	12.5	10.7	23.2	30.0	-6.8
192.00	13.2	10.9	24.1	30.0	-5.9
216.24	14.2	12.3	26.5	30.0	-3.5

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

6. ATTACHMENT I - TECHNICAL DESCRIPTION OF EUT

SPECIFICATIONS:

*CRT Size	29" (27" viewable digonal)
*CRT Type	0.60mm stripe pitch at center, Microfilter. 108° diagonal deflection angle INVAR Shadow Mask
*Max. Resolution	800 x 600 (non-interlaced)
*Synchronization	
Horizontal	24KHz-40KHz
Vertical	50Hz-90Hz
*Display Size (H x V)	
Default	21.10" x 15.59" (536mm x 396mm)
Full Scan	21.50" x 16.38" (546mm x 416mm)
*Video Dot Clock	40MHZ
*Input Signal	
Computer	RGB Analog 0.7Vp-p/75Ohms
Sync	Separate Sync: TTL level
Horizontal sync	Positive/negative
Vertical sync	Positive/negative
*Audio	
- Output Power (RMS)	5W*2
- Input Signal Level	0.2~1.8 Vrms, >10Kohm.
- Total Harmonic Distortion (THD)	0.5%, 3W*2
*Power Input	Auto-switch, AC 90-240V, 50Hz/60Hz
*Power Consumption	160 Watts (Typical)
*Recommended Ambiance	
Operating Temp.	32°F to 104°F (0°C to + 40°C)
Storage Temp.	-40°F to + 140°F (-40°C to + 40°C)
Humidity	5% to 90%
*Dimensions (H x W x D)	22.5" x 29.1" x 19.5" (572mm x 739mm x 495mm)
*Weight	
Net	81 lb. (36.8kg)
Gross	100 lb. (45.5kg)
*Plug & Play	VESA® DDC1/2B