



EMC

TEST REPORT

REPORT NO. : F89122905
MODEL NO. : 9Glr, 9Klr
DATE OF TEST : Jan. 13, 2001
DATE OF RECEIPT : Dec. 29, 2000

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.

This test report consists of 15 pages in total. It may be duplicated completely for legal use with the allowance of the applicant. It shall not be reproduced except in full, without the written approval of our laboratory. It should not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. government. The test result in the report only applies to the tested sample.



TABLE OF CONTENTS

1. CERTIFICATION.....	3
2. GENERAL INFORMATION	4
2.1 GENERAL DESCRIPTION OF EUT	4
2.2 DESCRIPTION OF SUPPORT UNITS	5
2.3 TEST METHODOLOGY AND CONFIGURATION.....	5
3. TEST INSTRUMENTS	6
3.1 TEST INSTRUMENTS (EMISSION).....	6
3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION	7
4. TEST RESULTS (EMISSION)	8
4.1 RADIO DISTURBANCE	8
4.2 EUT OPERATION CONDITION	8
4.3 TEST DATA OF CONDUCTED EMISSION	9
4.4 TEST DATA OF RADIATED EMISSION.....	11
5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN	13
6. APPENDIX - INFORMATION OF THE TESTING LABORATORY	15



1. CERTIFICATION

Issue Date: Jan. 31, 2001

Product : COLOR MONITOR
Trade Name : AOC
Model No. : 9Glr, 9Klr
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 Jan. 13, 2001. 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 : Jun Wu , DATE: 1/17/2001
(Jun Wu)

CHECKED BY : Sharon Hsiung , DATE: 1/31/2001
(Sharon Hsiung)

APPROVED BY: Mike Su, DATE: 1/31/2001.
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

The logo for NVLAP Accredited Laboratory. It features the letters 'NVLAP' in a stylized, outlined font. The 'P' is unique, resembling a checkmark or a stylized 'Q'. A registered trademark symbol (®) is positioned to the upper right of the 'P'. Below the letters, the words 'Accredited Laboratory' are written in a smaller, standard font.



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product : COLOR MONITOR
Model No. : 9Glr, 9Klr
Power Supply Type : Switching
Power Cord : Nonshielded (1.8 m, 3-pin)
Data Cable : Shielded (1.8 m)

Note: The EUT is a 19" Color Monitor with resolution up to 1600x1200.

The EUT has two model names, which are identical to each other and are differentiated for marketing difference only:

- ◆ Model: 9Glr
- ◆ Model: 9Klr

From the above models, model: 9Glr was selected as the representative for the test and its data is 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.	Serial No.	FCC ID
1	PERSONAL COMPUTER	NTI	PI I-450T	P201141	FCC DoC APPROVED
2	PRINTER	HP	2225C+	3123S97230	DSI6XU2225
3	MODEM	ACEEX	1414	980020506	IFAXDM1414
4	PS/2 KEYBOARD	FORWARD	FDA-104GA	FDKB8110120	F4ZDA-104G
5	MOUSE	LOGITECH	M-S43	LZE00703197	DZL211106
6	VGA CARD	GAINWARD	CD-GX2A44T	GHF19516	ICUVGA-GW710

No.	Signal cable description
1	NA
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 foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.
5	1.5 m foil shielded wire, terminated with PS2 connector via drain wire, w/o core.
6	NA

Note: All power cords of the above support units are non shielded (1.8m).

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 6, 2001
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	July 9, 2001
ROHDE & SCHWARZ 4-wire ISN	ENY41	835154/007	Apr. 26, 2001
EMCO-L.I.S.N.	3825/2	9204-1964	July 9, 2001
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	8590L	3544A01042	April 6, 2001
HP Preamplifier	8447D	2944A08313	Mar. 20, 2001
HP Preamplifier	8449B	3008A01201	Dec. 13, 2001
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/008	Oct. 11, 2001
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2001
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Aug. 3, 2001
EMCO Double Ridged Guide Antenna	3115	9312-4192	March 29, 2001
CHASE BILOG Antenna	CBL6111A	1647	July 3, 2001
EMCO Turn Table	1016	1722	NA
EMCO Tower	1051	1825	NA
Open Field Test Site	Site 4	ADT-R04	June 9, 2001

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) *	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 : 16 Degree C
 Humidity : 65 %
 Atmospheric Pressure : 1000 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -11.44 dB at 4.877 MHz Minimum passing margin of radiated emission: -3.0 dB at 30.50 MHz

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

- * 1600x1200 mode (93.7 kHz)
- * 1280x1024 mode (91 kHz),
- * 640x480 mode (31.5 kHz)

The worst emission levels were found under 1600x1200 (93.7 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.



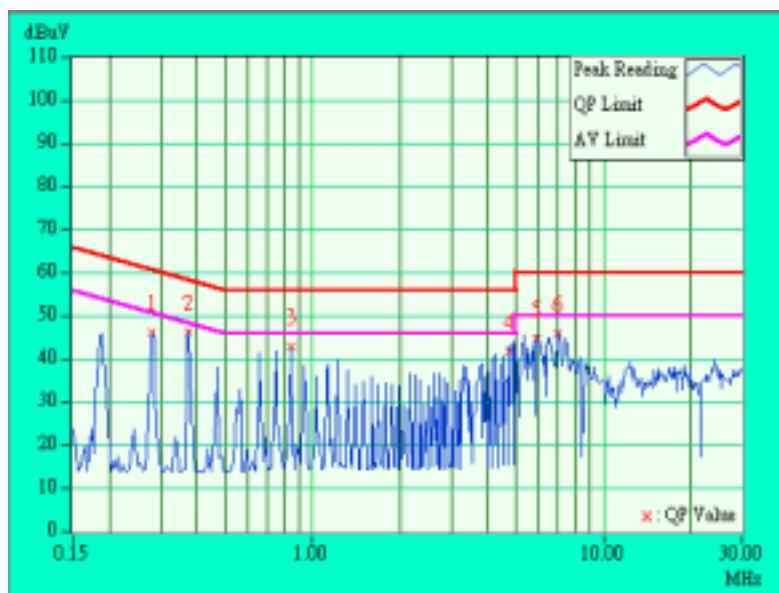
4.3 TEST DATA OF CONDUCTED EMISSION

EUT: **COLOR MONITOR**MODEL: **9Glr**MODE: **1600x1200 (93.7 kHz)**PHASE: **LINE (L)**6 dB Bandwidth: **10 kHz**

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			Factor	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.281	0.20	46.44	-	46.64	-	60.80	50.80	-14.16	-
2	0.376	0.20	46.43	-	46.63	-	58.37	48.37	-11.74	-
3	0.843	0.20	42.86	-	43.06	-	56.00	46.00	-12.94	-
4	4.782	0.44	41.80	-	42.24	-	56.00	46.00	-13.76	-
5	5.906	0.50	44.67	-	45.17	-	60.00	50.00	-14.83	-
6	6.938	0.55	45.75	-	46.30	-	60.00	50.00	-13.70	-

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. Emission Level = Correction Factor + Reading Value.





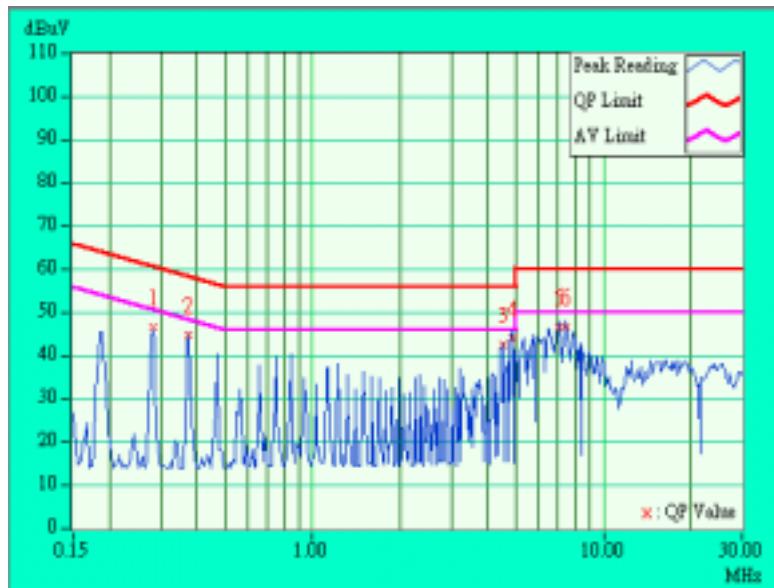
TEST DATA OF CONDUCTED EMISSION

EUT: **COLOR MONITOR**MODEL: **9Glr**MODE: **1600x1200 (93.7 kHz)**PHASE: **NEUTRAL (N)**6 dB Bandwidth: **10 kHz**

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin		
			Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
				[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.282	0.20	46.52	-	46.72	-	60.77	50.77	-14.05	-	
2	0.375	0.20	44.84	-	45.04	-	58.39	48.39	-13.35	-	
3	4.500	0.42	42.45	-	42.87	-	56.00	46.00	-13.13	-	
4	4.877	0.43	44.13	-	44.56	-	56.00	46.00	-11.44	-	
5	7.031	0.50	46.75	-	47.25	-	60.00	50.00	-12.75	-	
6	7.407	0.51	46.65	-	47.16	-	60.00	50.00	-12.84	-	

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. Emission Level = Correction Factor + Reading Value.





4.4 TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR**MODEL: **9Glr**MODE: **1600x1200 (93.7 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 MHzMEASURED DISTANCE: 10 MFREQUENCY RANGE: 1000-2000 MHzMEASURED DISTANCE: 3 M

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	50.70	22.5 QP	30.00	-7.50	4.02H	201	13.02	7.90	1.57	0.00	-9.48
2	108.14	23.1 QP	30.00	-6.90	4.02H	80	10.79	10.55	1.76	0.00	-12.31
3	169.18	17.7 QP	30.00	-12.30	4.02H	191	6.55	9.14	2.01	0.00	-11.15
4	202.80	18.9 QP	30.00	-11.10	4.02H	313	8.27	8.52	2.10	0.00	-10.63
5	219.81	16.7 QP	30.00	-13.30	4.02H	182	4.86	9.71	2.13	0.00	-11.84
6	405.10	25.4 QP	37.00	-11.60	4H	64	6.60	16.05	2.75	0.00	-18.80
7	647.29	28.1 QP	37.00	-8.90	1.64H	186	5.02	20.20	2.87	0.00	-23.08

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) – Correction Factor(dB)
2. Correction Factor(dB) = Pre-Amplifier Factor (dB) - Antenna Factor (dB) - Cable Factor (dB)
3. Pre-Amplifier Factor (dB) = 0, when the test receiver is used to read the value and because it did not use the Pre-Amplifier.
4. The other emission levels were very low against the limit.
5. Margin value = Emission level – Limit value.



TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR**MODEL: **9Glr**MODE: **1600x1200 (93.7 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**

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	30.50	27.0 QP	30.00	-3.00	1.00V	210	6.73	18.71	1.56	0.00	-20.27
2	33.70	26.8 QP	30.00	-3.20	1.00V	127	9.56	15.65	1.59	0.00	-17.24
3	50.66	26.9 QP	30.00	-3.10	1.00V	16	17.42	7.90	1.57	0.00	-9.48
4	84.37	25.7 QP	30.00	-4.30	1.00V	116	16.00	8.13	1.56	0.00	-9.70
5	108.10	25.1 QP	30.00	-4.90	1.00V	215	12.79	10.55	1.76	0.00	-12.31
6	169.21	23.6 QP	30.00	-6.40	1V	339	12.45	9.14	2.01	0.00	-11.15
7	185.55	22.5 QP	30.00	-7.50	1.00V	322	11.89	8.53	2.08	0.00	-10.61
8	202.75	20.1 QP	30.00	-9.90	1.00V	202	9.47	8.52	2.10	0.00	-10.63
9	219.56	21.5 QP	30.00	-8.50	1.00V	96	9.66	9.71	2.13	0.00	-11.84
10	646.00	28.4 QP	37.00	-8.60	3.11V	187	5.36	20.18	2.86	0.00	-23.04

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) – Correction Factor(dB)
2. Correction Factor(dB) = Pre-Amplifier Factor (dB) - Antenna Factor (dB) - Cable Factor (dB)
3. Pre-Amplifier Factor (dB) = 0, when the test receiver is used to read the value and because it did not use the Pre-Amplifier.
4. The other emission levels were very low against the limit.
5. Margin value = Emission level – Limit value.



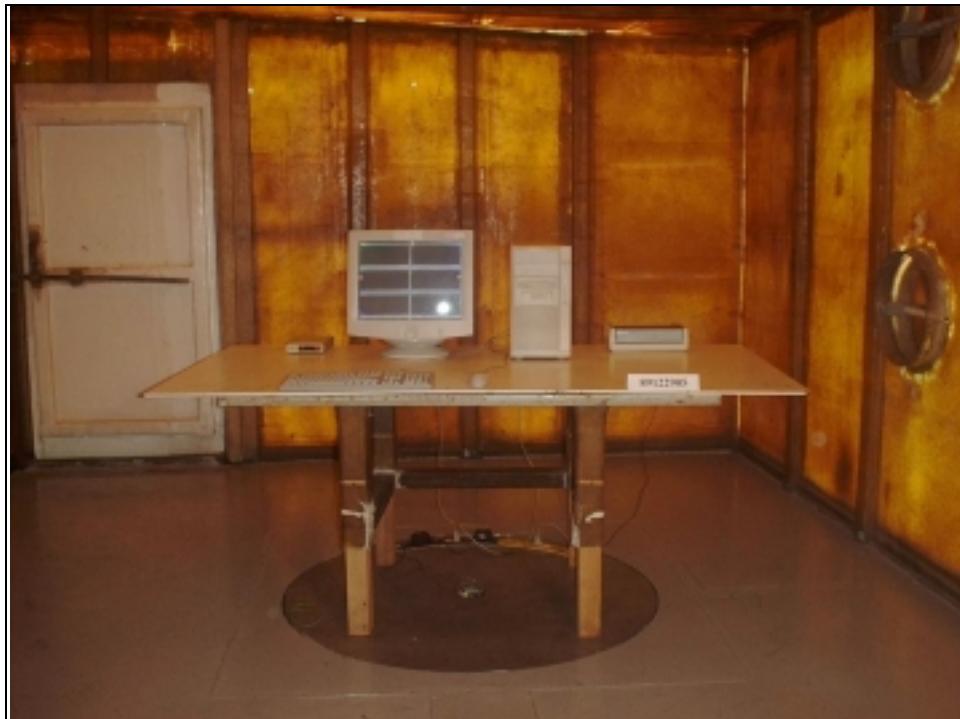
5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN

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, NVLAP
● Germany	TUV Rheinland
● Japan	VCCI
● New Zealand	RFS
● Norway	NEMKO, DNV
● U.K.	INCHCAPE
● R.O.C.	BSMI

Copies of accreditation certificates of our laboratory 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:

Lin Kou EMC Lab.:

Tel: 886-2-26052180
Fax: 886-2-26052943

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

Web Site: www.adt.com.tw