



# EMC

## TEST REPORT

REPORT NO. : F89102710  
MODEL NO. : 7Elr+, 7Elr  
DATE OF TEST : Nov. 02, 2000  
DATE OF RECEIPT : Oct. 27, 2000

PREPARED FOR : TOP VICTORY ELECTRONICS CO., LTD.

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PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

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## 1.

**CERTIFICATION**

Issue Date: Nov. 27, 2000

Product : 17" COLOR MONITOR  
 Trade Name : AOC  
 Model No. : 7Elr+, 7Elr  
 Applicant : TOP VICTORY ELECTRONICS CO., LTD.  
 Standard : FCC Part 15, Subpart B, Class B  
                   CISPR 22: 1997, Class B  
                   ANSI C63.4-1992

We hereby certify that one sample of the designation has been tested in our facility on Nov. 02, 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 : Jun Wu , DATE: 11/27/2000  
                   ( Jun Wu )

CHECKED BY : Vickie Yu , DATE: 11/27/2000  
                   ( Vickie Yu )

APPROVED BY : Mike Su , DATE: 11/27/2000  
                   ( Mike Su )

**ADVANCE DATA TECHNOLOGY CORPORATION**

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## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Product	:	17" COLOR MONITOR
Model No.	:	7Elr+, 7Elr
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 two model names : 7Elr+ and 7Elr which are identical to each other in all aspects except for their model names only.

From the above models, model: 7Elr+ was selected as representative for the test, and therefore only 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
2	MODEM	ACEEX	1414	980020505	IFAXDM1414
3	PRINTER	HP	2225C	2923S47245	DSI6XU2225
4	PS/2 KEYBOARD	FORWARD	FDA-104GA	FDKB8110116	F4ZDA-104G
5	MOUSE	LOGITECH	M-S43	LZE00702998	DZL211106
6	VGA Card	GAINWARD	CD-GX2A44T	GHF19516	ICUVGA-GW710

No.	Signal cable description
1	NA
2	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
3	1.2m braid shielded wire, terminated with DB25 and Centronics 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 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. 14, 2000
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 - 1000 MHz (Radiated Emission)  
 Input Voltage : 120 Vac, 60 Hz  
 Temperature : 25 Degree C  
 Humidity : 70 %  
 Atmospheric Pressure : 1000 mbar

TEST RESULT	Remarks
<b>PASS</b>	Minimum passing margin of conducted emission: -12.49 dB at 18.957 MHz Minimum passing margin of radiated emission: -3.0 dB at 114.10 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 mode (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

EUT: 17"COLOR MONITOR

MODEL: 7Elr+

MODE: 1024 x 768 (69 kHz)

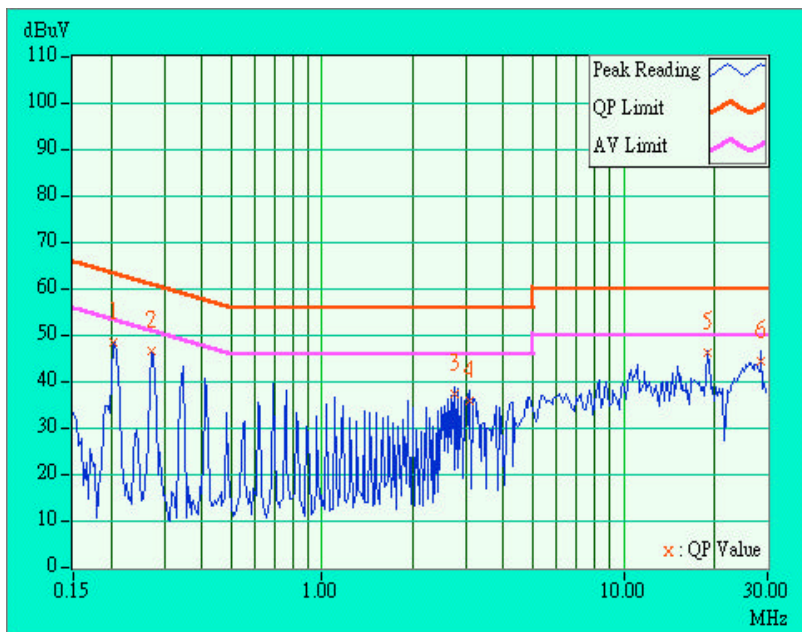
PHASE: LINE (L)

6 dB Bandwidth: 10 kHz

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.205	0.20	48.41	-	48.61	-	63.41	53.41	-14.80	-
2	0.274	0.20	46.68	-	46.88	-	60.99	50.99	-14.11	-
3	2.757	0.28	37.35	-	37.63	-	56.00	46.00	-18.37	-
4	3.099	0.31	35.76	-	36.07	-	56.00	46.00	-19.93	-
5	18.957	1.08	46.43	-	47.51	-	60.00	50.00	-12.49	-
6	28.469	1.54	44.42	-	45.96	-	60.00	50.00	-14.04	-

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: 17"COLOR MONITOR

MODEL: 7Elr+

MODE: 1024 x 768 (69 kHz)

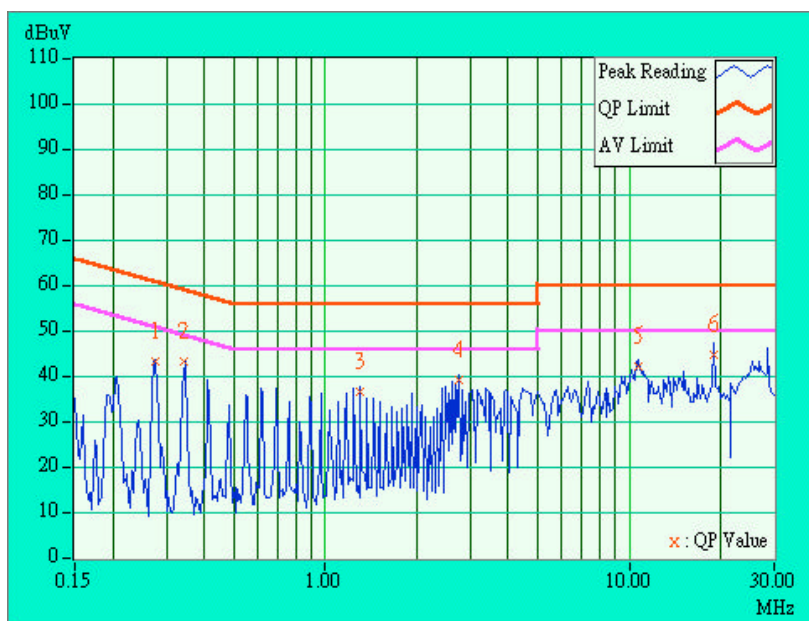
PHASE: NEUTRAL (N)

6 dB Bandwidth: 10 kHz

No	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.
	1	0.275	0.20	43.16	-	43.36	-	60.98	50.98	-17.62
2	0.343	0.20	43.49	-	43.69	-	59.13	49.13	-15.44	-
3	1.308	0.20	36.73	-	36.93	-	56.00	46.00	-19.07	-
4	2.756	0.28	39.15	-	39.43	-	56.00	46.00	-16.57	-
5	10.686	0.64	42.08	-	42.72	-	60.00	50.00	-17.28	-
6	18.956	0.98	44.66	-	45.64	-	60.00	50.00	-14.36	-

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: 17" COLOR MONITOR

MODEL: 7Elr+

MODE: 1024 x 768 (69 kHz)

ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED 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)
120.10	13.1	7.1	20.2	30.0	-9.8	400	75
123.34	13.2	8.4	21.6	30.0	-8.4	400	23
184.31	10.6	8.2	18.8	30.0	-11.2	400	137
189.58	10.6	7.3	17.9	30.0	-12.1	400	48
196.18	10.5	10.6	21.1	30.0	-8.9	400	298
208.75	11.1	13.6	24.7	30.0	-5.3	400	222
218.29	11.8	14.5	26.3	30.0	-3.7	400	342
227.75	12.5	8.4	20.9	30.0	-9.1	400	293

- 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: 17" COLOR MONITORMODEL: 7Elr+MODE: 1024 x 768 (69 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)
33.64	17.9	4.4	22.3	30.0	-7.7	100	333
66.40	7.1	16.6	23.7	30.0	-6.3	157	57
111.14	12.5	10.9	23.4	30.0	-6.6	100	70
114.10	12.7	14.3	27.0	30.0	-3.0	100	323
119.21	13.1	10.7	23.8	30.0	-6.2	100	86
123.12	13.2	12.1	25.3	30.0	-4.7	100	108
208.80	11.1	12.0	23.1	30.0	-6.9	100	181
218.28	11.8	14.3	26.1	30.0	-3.9	100	279

- 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**

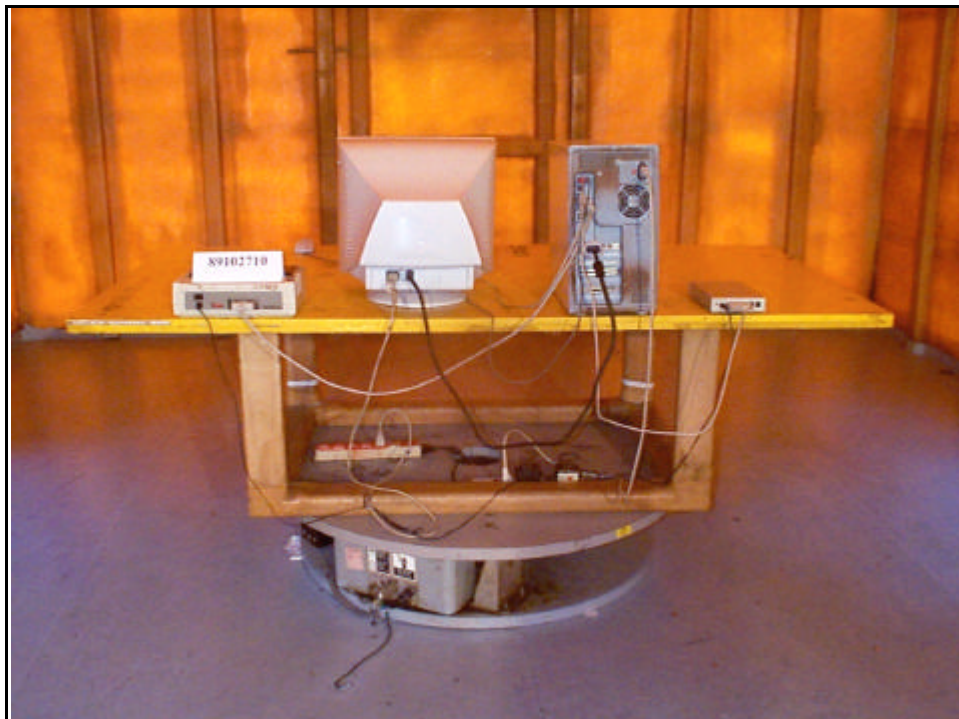
**CONDUCTED EMISSION TEST**







## 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

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](http://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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