



# EMC

## TEST REPORT

REPORT NO. : F89030203  
MODEL NO. : JD219E2  
DATE OF TEST : March 3, 2000

PREPARED FOR: JEAN CO., LTD.

ADDRESS : 7F, 2, REI KUANG ROAD, NEI HU,  
TAIPEI, 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.

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**1. CERTIFICATION**

Issue Date: April 11, 2000

Product : COLOR MONITOR  
Trade Name : JEAN  
Model No. : JD219E2  
Type No. : J12B  
Applicant : JEAN CO., LTD.  
Standard : FCC Part 15, Subpart B, Class B  
ANSI C63.4-1992  
CISPR 22: 1993+A1: 1995+A2: 1996, Class B

We hereby certify that one sample of the designation has been tested in our facility on March 3, 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 : Ken Liu , DATE: 4/11/2000  
( Ken Liu )

CHECKED BY : Yemmy Boong , DATE: 4/11/2000  
( Yemmy Boong )

APPROVED BY : Mike Su , DATE: 4/11/2000  
( Mike Su )

**ADVANCE DATA TECHNOLOGY CORPORATION**

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## **2. GENERAL INFORMATION**

### **2.1 GENERAL DESCRIPTION OF EUT**

Product	:	COLOR MONITOR
Model No.	:	JD219E2
Type No.	:	J12B
Power Supply Type	:	Switching
Power Cord	:	Nonshielded 3-pin (1.8 m)
Data Cable	:	Shielded (1.3 m)

Note: The EUT is a 21" Color Monitor with resolution up to 1600x1200.

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 ID	I/O Cable
1	PERSONAL COMPUTER	NTI	PII-233T	FCC DoC Approved	Nonshielded Power (1.8m)
2	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)
3	MOUSE	DEXIN	A2P800A	NIYA2P800A	Shielded Signal (1.5m)
4	PRINTER	HP	2225C	BS46XU2225C	Shielded Signal (1.2m) Nonshielded Power (1.8m)
5	MODEM	ACEEX	1414	IFAXDM1414	Shielded signal (1.2m) Nonshielded Power (1.8m)
6	VGA CARD	GAINWARD	CD-GX2A44T	ICUVGA-GW710	NA

## 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	ESCS 30	845552/004	Apr. 16, 2000
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	847265/023	Apr. 13, 2000
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	828075/003	Jul. 26, 2000
Shielded Room	Site 8	ADT-C08	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	E4411A	US37360881	Oct. 18, 2000
HP Preamplifier	8447F	3113A05767	Oct. 20, 2000
HP Preamplifier	8347A	3307A01088	Aug. 30, 2000
HP Preamplifier	8449B	3008A01201	Dec. 14, 2000
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	845552/004	Apr. 16, 2000
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2000
CHASE BILOG Antenna	CBL6112A	2331	Nov. 03, 2000
EMCO Double Ridged Guide Antenna	3115	9312-4192	March 29, 2001
Sunol Turn Table & Tower Controller	SC98V	112497-1	NA
Open Field Test Site	Site 8	ADT-R08	Nov. 01, 2000

Note: 1. The measurement uncertainty is less than +/- 3dB, 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

### 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 (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	:	21 degree C
Humidity	:	72 %
Atmospheric Pressure	:	1005 mbar

TEST RESULT	Remarks
<b>PASS</b>	Minimum passing margin of conducted emission: -11.6 dB at 0.188 MHz Minimum passing margin of radiated emission: -2.1 dB at 84.37 MHz

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

- \* 1600x1200 mode (94 kHz),
- \* 1280x1024 mode (91 kHz),
- \* 640x480 mode (31.5 kHz)

The worst emission levels were found under 1600x1200 (94 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 the Color Monitor displays "H" patterns on their 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 MONITORMODEL: JD219E2MODE: 1600x1200 (94 kHz)6 dB Bandwidth: 10 kHzPHASE: 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.
0.188	0.2	50.0	-	50.2	-	64.1	54.1	-13.9	-
0.372	0.2	41.1	-	41.3	-	58.8	48.8	-17.5	-
0.939	0.4	37.3	-	37.7	-	56.0	46.0	-18.3	-
2.625	0.5	38.3	-	38.8	-	56.0	46.0	-17.2	-
7.308	0.9	41.3	-	42.2	-	60.0	50.0	-17.8	-
14.152	1.4	41.5	-	42.9	-	60.0	50.0	-17.1	-

- Remarks:
1. "\*": Undetectable
  2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  3. "-": The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
  4. The emission levels 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: COLOR MONITORMODEL: JD219E2MODE: 1600x1200 (94 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.
0.188	0.2	52.3	-	52.5	-	64.1	54.1	-11.6	-
0.372	0.2	46.0	-	46.2	-	58.8	48.8	-12.6	-
0.939	0.4	38.9	-	39.3	-	56.0	46.0	-16.7	-
2.625	0.4	36.7	-	37.1	-	56.0	46.0	-18.9	-
7.308	0.8	40.8	-	41.6	-	60.0	50.0	-18.4	-
14.152	1.2	39.1	-	40.3	-	60.0	50.0	-19.7	-

- Remarks:
1. "\*": Undetectable
  2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  3. "-": The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
  4. The emission levels 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: COLOR MONITORMODEL: JD219E2MODE: 1600x1200 (94 kHz)ANT. POLARITY: HorizontalDETECTOR 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

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
50.69	9.3	16.3	25.6	30.0	-4.4	400	272
67.61	6.7	14.0	20.7	30.0	-9.3	400	11
84.33	9.8	14.5	24.3	30.0	-5.3	400	250
101.35	12.6	11.8	24.4	37.0	-5.6	400	45
118.05	13.4	13.2	26.6	30.0	-3.4	400	225
135.02	12.8	9.3	22.1	30.0	-7.9	400	65
168.70	11.4	7.4	18.8	30.0	-11.2	400	342
203.03	10.9	16.6	27.5	30.0	-2.5	400	262
219.22	12.0	13.3	25.3	30.0	-4.7	400	48
236.17	13.1	20.4	33.5	37.0	-3.5	400	290
253.45	14.4	13.7	28.1	37.0	-8.9	400	25
320.54	16.1	4.8	20.9	37.0	-16.1	400	308

- 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: **COLOR MONITOR**MODEL: **JD219E2**MODE: **1600x1200 (94 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 MHzMEASURED DISTANCE: 10 MFREQUENCY RANGE: 1000-2000 MHzMEASURED DISTANCE: 3 M

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
33.69	18.6	8.5	27.1	30.0	-2.9	100	115
39.39	13.8	13.1	26.9	30.0	-3.1	217	4
50.65	9.3	15.2	24.5	30.0	-5.5	100	106
59.70	7.3	20.2	27.5	30.0	-2.5	146	354
67.42	6.7	16.4	23.1	30.0	-6.9	189	44
76.18	8.3	17.3	25.6	30.0	-4.4	195	304
84.37	9.8	18.1	27.9	30.0	-2.1	201	10
101.35	12.6	14.0	26.6	30.0	-3.4	130	36
118.32	13.4	12.1	25.5	30.0	-4.5	100	311
135.00	12.8	12.4	25.2	30.0	-4.8	100	16
151.97	12.0	9.8	21.8	30.0	-8.2	100	310
202.91	10.9	12.8	23.7	30.0	-6.3	100	119
219.70	12.0	13.0	25.0	30.0	-5.0	100	4
236.19	13.1	18.8	31.9	37.0	-5.1	100	117
287.23	15.4	13.5	28.9	37.0	-8.1	100	352
320.54	16.1	13.5	29.7	37.0	-7.3	100	4

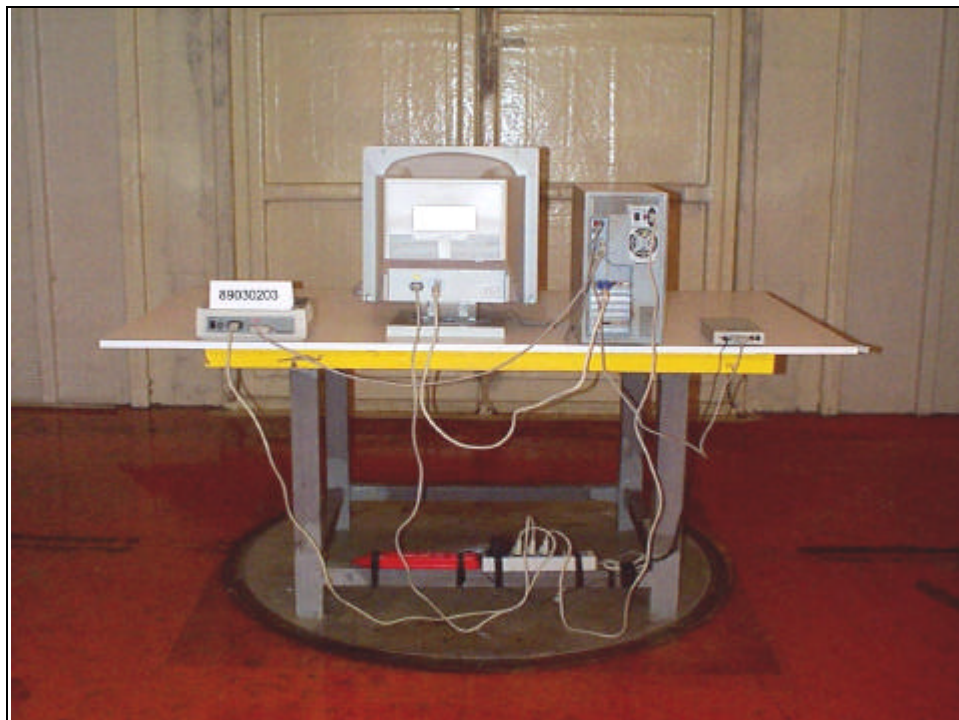
- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB)  
+ Reading value (dBuV).
  2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level - Limit value

## **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., 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, UL, NVLAP                       |
| ● Germany     | TUV Rheinland<br>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:

**Lin Kou EMC Lab.:**

Tel: 886-2-26032180

Fax: 886-2-26022943

**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](mailto:service@mail.adt.com.tw)<http://www.adt.com.tw>