



EMC

TEST REPORT

REPORT NO. : F87050706

MODEL NO. : CD-1038

DATE OF TEST : May 15, 1998

PREPARED FOR : FAIR ELECTRONICS CO., LTD.

ADDRESS : NO. 9, WU-CHUN 7 RD., WU-KU IND. PARK,

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ADVANCE DATA TECHNOLOGY CORPORATION

PREPARED BY:



Accredited Laboratory

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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
4.1.1 EUT OPERATION CONDITION	8
4.2 TEST DATA OF CONDUCTED EMISSION	9
4.3 TEST DATA OF RADIATED EMISSION	10
5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN.....	12
6. ATTACHMENT I -TECHNICAL DESCRIPTION OF EUT	14



1.

CERTIFICATION

Issue Date: May 23, 1998

Product : COLOR MONITOR
Trade Name : FAIR
Model No. : CD-1038
Applicant : FAIR ELECTRONICS CO., 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 15, 1998. 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: Joey Chen, DATE: 5/23/98
(Joey Chen)

CHECKED BY: Sharon Hsiung, DATE: 5/23/98
(Sharon Hsiung)

APPROVED BY: Mike Su, DATE: 5/23/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION**NVLAP[®]**

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	CD-1038
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (0.8m)
Data Cable	:	Shielded (0.8 m)

Note: The EUT is a 10" color monitor with resolution up to 1024x768.

There is a ferrite core on the video cable outside the monitor.

For more detailed features description, please refer to ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT and 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	ADI	SE-386SX	BR8VM-9624	Nonshielded Power (1.8m)
2	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded signal (1.2m)
3	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.8m)
4	MODEM	DATATRO NICS	1200C+	E2O5OV1200CK	Shielded signal (1.2m) Nonshielded Power (1.8m)
5	MOUSE	COMPAQ	M-S28	DZL210472	Shielded signal (1.8m)
6	VGA CARD	GORDIA	DSV3365	LUT-DSV3365	N/A

Note: There is no ferrite core on the interface cable of all support units.

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)

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP Spectrum Analyzer	8590L	3544A01042	April 29, 1999
HP Preamplifier	8447D	2944A08313	Sept. 18, 1998
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/008	Oct. 5, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BILOG Antenna	CBL6111A	1647	Aug. 2, 1998
EMCO Turn Table	1016	1722	N/A
EMCO Tower	1051	1263	N/A
Open Field Test Site	Site 4	ADT-R04	Aug. 1, 1998

Note: 1. The measurement uncertainty is less than ± 3 dB, 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	ESHS30	828765/002	July 31, 1998
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	828075/003	July 28, 1998
EMCO-L.I.S.N.	3825/2	90031627	July 28, 1998
Shielded Room	Site 5	ADT-C05	N/A

Note: 1. The measurement uncertainty is less than ± 2.6 dB, 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)	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 - 1000 MHz (Radiated Emission)

Input Voltage : 120 Vac, 60 Hz

Temperature : 29 °C

Humidity : 45 %

Atmospheric Pressure : 1060 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -4.2 dB at 7.988 MHz Minimum passing margin of radiated emission: -2.5 dB at 34.06 MHz

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

- * 800x600 mode (38 kHz),
- * 1024x768 mode (35.5 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 display "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.



4.2 TEST DATA OF CONDUCTED EMISSION

EUT: **COLOR MONITOR**MODEL: **CD-1038**MODE: **800x600 (38 kHz)**

6 dB Bandwidth: 10 kHz

TEST PERSONNEL:

Joey Chen

Freq. [MHz]	L Level		N Level		Limit		Margin [dB (μV)]			
	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.150	52.10	-	49.60	-	66.00	56.00	-13.9	-	-16.4	-
0.191	49.20	-	45.30	-	63.99	53.99	-14.8	-	-18.7	-
0.378	39.70	-	32.60	-	58.32	48.32	-18.6	-	-25.7	-
0.872	33.60	-	26.70	-	56.00	46.00	-22.4	-	-29.3	-
7.988	53.00	45.80	52.80	45.50	60.00	50.00	-7.0	-4.2	-7.2	-4.5
10.410	42.30	-	34.60	-	60.00	50.00	-17.7	-	-25.4	-

- 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.

ADT CO. SITE 5
CISPR 22 CLASS B

15. May 98 19:39

EUT: CD-1038
Manuf: 800X600 38KHz
Test Spec: LISN: L
Comment: 110V AC / 60Hz

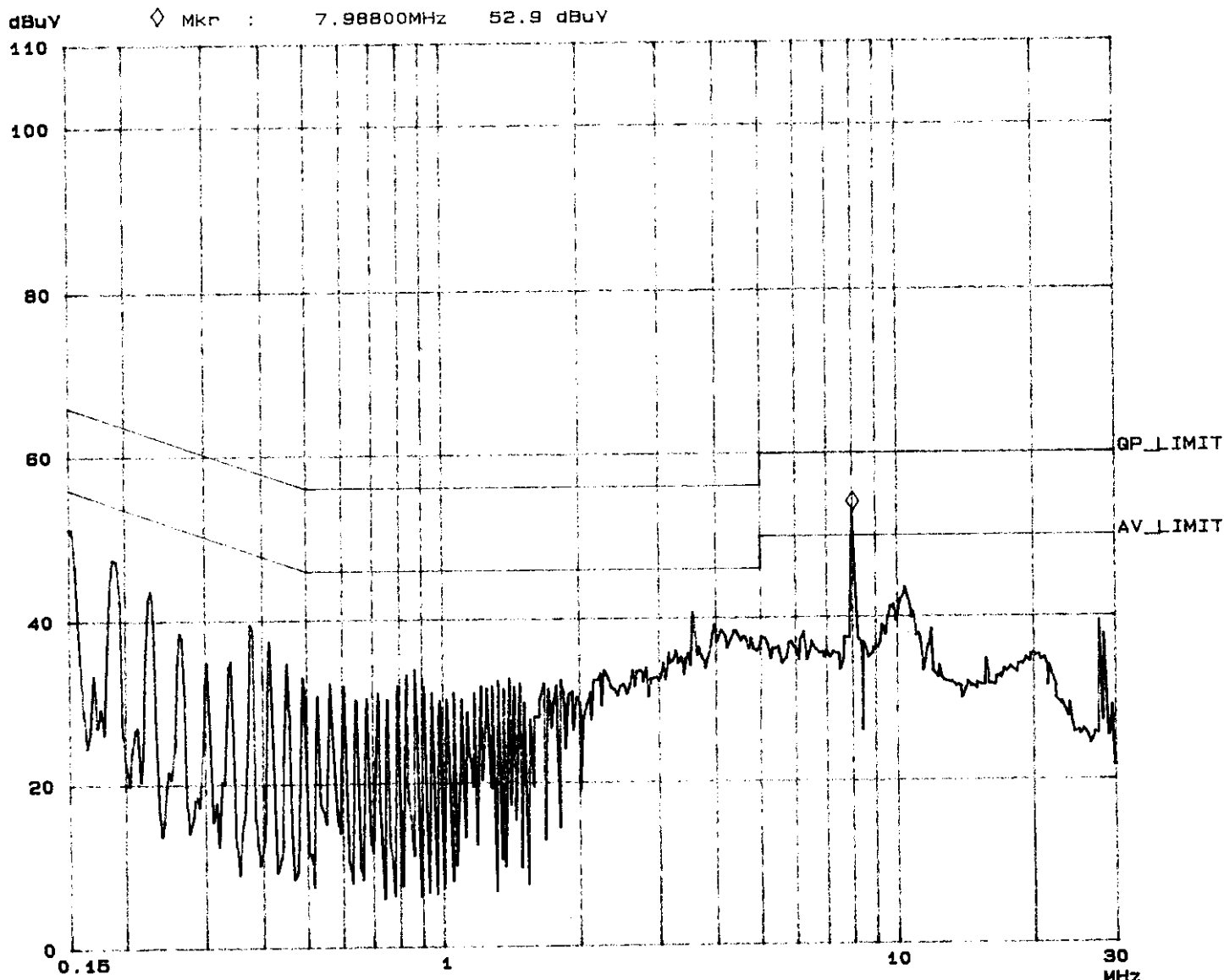
Report No. F87050706

Page 9-1

Tested by Joey Chen

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings						
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpAmp	
150k	450k	3k	10k	PK	1ms	10dB	BLN OFF	80dB	
450k	5M	3k	10k	PK	1ms	10dB	BLN OFF	80dB	
5M	30M	3k	10k	PK	1ms	10dB	BLN OFF	80dB	



ADT CO. SITE 5
CISPR 22 CLASS B

15. May 98 19:46

EUT: CD-1038
Manuf: 800X800 38KHz
Test Spec: LISN : N
Comment: 110V AC / 60Hz

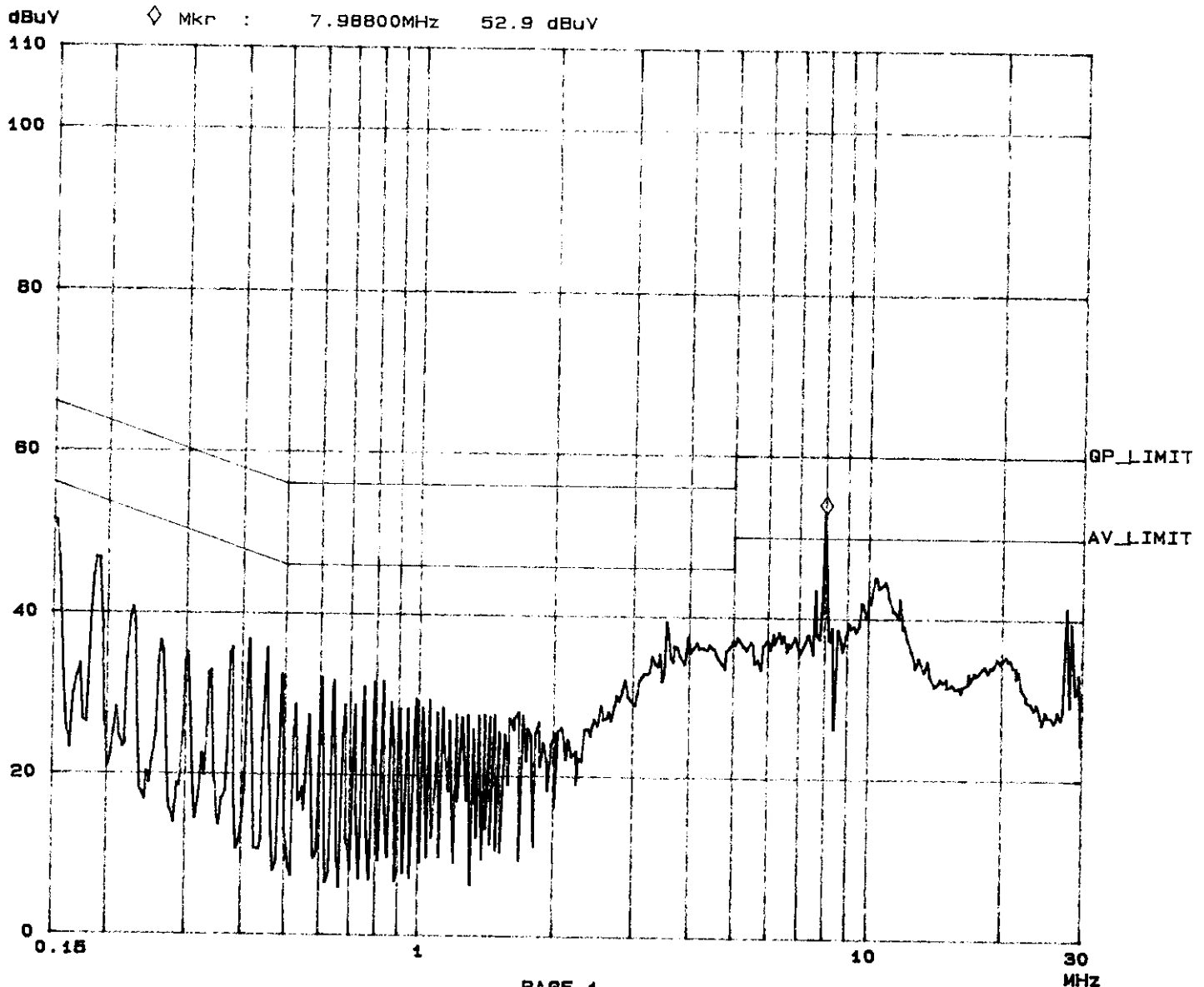
Report No. F87650706

Page 9-2

Tested by Joey Chen

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpAmp
150k	450k	3k	10k	PK	1ms	10dB	OFF	80dB
450k	5M	3k	10k	PK	1ms	10dB	OFF	80dB
5M	30M	3k	10k	PK	1ms	10dB	OFF	80dB





4.3 TEST DATA OF RADIATED EMISSION

EUT: COLOR MONITORMODEL: CD-1038MODE: 800x600 (38 kHz)ANTENNA: CHASE BILOG CBL6111APOLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

TEST PERSONNEL:

Joey Chen

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
31.99	18.5	6.3	24.8	30.0	-5.2
51.99	9.9	15.2	25.1	30.0	-4.9
71.99	7.8	8.6	16.4	30.0	-13.6
150.01	12.8	5.8	18.6	30.0	-11.4
167.95	11.4	4.7	16.1	30.0	-13.9
192.00	11.4	6.8	18.2	30.0	-11.8
216.00	12.4	8.5	20.9	30.0	-9.1

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.



TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR**MODEL: **CD-1038**MODE: **800x600 (38 kHz)**ANTENNA: **CHASE BILOG CBL6111A**POLARITY: **Vertical**DETECTOR FUNCTION: **Quasi-peak**6 dB BANDWIDTH: **120 kHz**FREQUENCY RANGE: **30-1000 MHz**MEASURED DISTANCE: **10 M**

TEST PERSONNEL:

Joey Chen

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.99	20.7	6.4	27.1	30.0	-2.9
34.06	19.5	8.0	27.5	30.0	-2.5
47.98	10.7	15.2	25.9	30.0	-4.1
52.00	9.1	17.7	26.8	30.0	-3.2
150.01	12.1	9.2	21.3	30.0	-8.7
167.95	11.2	6.6	17.8	30.0	-12.2
171.93	11.1	8.3	19.4	30.0	-10.6
187.93	11.0	6.3	17.3	30.0	-12.7
211.90	12.2	8.2	20.4	30.0	-9.6

- 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:

* Picture Tube	10" Diagonal Tinted glass non-glare Medium short persistence phosphor 0.28 mm
* Input Signal	
Video	Analog, 0.7 Vpp/75 ohm positive
Sync.	TTL, separate, positive or negative
* Resolution	1024 x 768 Interlaced 800 x 600 640 x 480
* Scanning Frequency	Horizontal: 31.5/ 35.2/ 35.5/ 38 KHz Vertical : 50-90 Hz
* Video Bandwidth	45 MHz
* Power Saving	VESA DPMS
* Display Color	Unlimited (Depending on the VGA card)
* Display Sizs	170 +/- 3 mm x 125 +/- 2 mm The display size can vary depending on the different video graphic card installation.
* Power Input	Full Range 110 - 120 Vac, 60 Hz, 1.0 A 220 - 240 Vac, 50 Hz, 0.5 A
* Power Consumption	60 Watts maximum 50 Watts typical 30 Watts maximum Power-saving states
* Dimension	
Packing	L x W x H, 370 x 325 x 330 mm 14.6 x 12.8 x 13.0 inch
Physical	L x W x H, 304 x 264 x 285 mm 12.0 x 10.4 x 11.2 inch
* Weight	7 Kg (15.4 lb), net 9 Kg (19.8 lb), gross
* Environments	Operating Temperature: +5 ~ + 40 C Humidity : 30 ~ 80 % Storage Temperature : -20 ~ +60 C Humidity : 10~ 90 %