FCC ID: IAWLT510C

EMC

TEST REPORT

REPORT NO. : F87052602
MODEL NO. : LT510
DATE OF TEST : May 30, 1998

PREPARED FOR: MAG TECHNOLOGY CO., LTD.

ADDRESS : 9F, 245, SEC. 1, TUNHWA S. RD.,
TAIPEI, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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12F, NO.1, SEC.4, NAN-KING EAST RD.,
TAIPEI, TAIWAN, R.O.C.

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1. CERTIFICATION

Issue date: July 23, 1998

Product	:	LCD MONITOR
Trade Name	:	MAG
Model No.	:	LT510
Applicant	:	MAG TECHNOLOGY 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 30, 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: John Liao , DATE: 7/23/98
(John Liao)

CHECKED BY: Sharon Hsiung , DATE: 7/23/98
(Sharon Hsiung)

APPROVED BY: Mike Su , DATE: 7/23/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2.5 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	LCD MONITOR
Model No.	:	LT510
Power Supply Type	:	12Vdc, 3A (from adapter)
Power Cord	:	Nonshielded (1.8m)
Data Cable	:	Shielded (3.0m)

Note: The EUT is a 15" LCD monitor with resolution up to 1024x768 (48 kHz)

There are two ferrite cores on the video cable outside the LCD monitor.

The EUT was tested with a VGA card, model: GA-TR02P4/PCI, which is sold together with EUT, and tested with a AMBIT power adapter, model: APA-38AA. Its rating is: Input: 100-240 Vac, 1A, 50-60Hz, Output: 12 Vdc, 3A. This power adapter is kept inside the EUT.

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	IBM	6587-T8T	90A54WX	Shielded USB cable (2.0m) Nonshielded Power (1.8m)
2.	MONITOR	OPTIQUEST	4500DC	KZQ4500DC	Shielded signal (1.5m) Nonshielded Power (1.9m)
3.	KEYBOARD	FORWARD	FDA-104GA	F4XDA-104G	Shielded signal (1.4m)
4.	PRINTER	HP	C2145A	B94C2145X	Shielded Signal (1.8m) Nonshielded Power (1.9m)
5.	MODEM	ACEEX	1414	IFAXDM1414	Shielded signal (1.5m) Nonshielded Power (1.9m)
6.	MOUSE	COMPAQ	M-S28	PZL210472	Shielded signal (1.8m)
7.	CCD CAMERA	COMPAQ	YC72-CPQ	EDUYC72-CPQ	Shielded signal (1.6m)
8.	SOUND CARD	D&B	ASOUNDOPL/LUX	MA5ASOUND-OPL	N/A

Note: 1. Support unit 7 was connected to the USB port of EUT.
2. Three USB cables (2.1m, 1.5m, and 1.7m) were connected to the three USB ports of EUT to form three open loop cables.
3. An audio cable (1.2m) was connected between EUT and monitor.

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 10m 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	July 3, 1999
EMCO Turn Table	1016	1722	N/A
EMCO Tower	1051	1825	N/A
Open Field Test Site	Site 4	ADT-R04	June 19, 1999

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 15, 1999
ROHDE & SCHWARZ Spectrum Monitor	EZM	893787/013	July 16, 1999
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	July 14, 1999
EMCO-L.I.S.N.	3825/2	9204-1964	July 14, 1999
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 (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 ℃
Humidity	:	61 %
Atmospheric Pressure	:	991 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -15.5 dB at 0.201 MHz Minimum passing margin of radiated emission: -2.7 dB at 651.48 MHz

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

* 1024x768 mode (48 kHz)
* 800x600 mode (38 kHz),
* 640x480 mode (31.5 kHz)

The worst emission levels were found under 1024x768 (48 kHz) and therefore the test data of only this mode is recorded.

4.2 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. CCD camera captures an image and sends it to PC.
5. PC sends "H" messages & picture messages to LCD monitor (EUT) and external monitor. Then, EUT and external monitor displays them on their screens.
6. PC sends "H" messages to modem.
7. PC sends "H" messages to printer, and the printer prints them on paper.
8. PC sends audio messages to internal speaker of EUT.
9. Repeat steps 3-9.

4.3 TEST DATA OF CONDUCTED EMISSION

EUT: **LCD MONITOR** MODEL: **LT510**

6 dB Bandwidth: 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
0.201	47.80	-	48.00	-	63.55	53.55	-15.8	-	-15.5	-
0.333	36.10	-	35.60	-	59.36	49.36	-23.3	-	-23.8	-
1.796	28.20	-	26.10	-	56.00	46.00	-27.8	-	-29.9	-
4.191	32.00	-	31.70	-	56.00	46.00	-24.0	-	-24.3	-
8.316	34.70	-	38.00	-	60.00	50.00	-25.3	-	-22.0	-
16.062	37.40	-	37.10	-	60.00	50.00	-22.6	-	-22.9	-

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 levels of other frequencies were very low against the limit.

ADT CORP. OPEN SITE 2

30. May 98 09:19

CISPR 22 CLASS B

EUT: MODEL: LT510
Op Cond: 1024X768 48kHz
Test Spec: LISN : L
Comment: FULL SYSTEM

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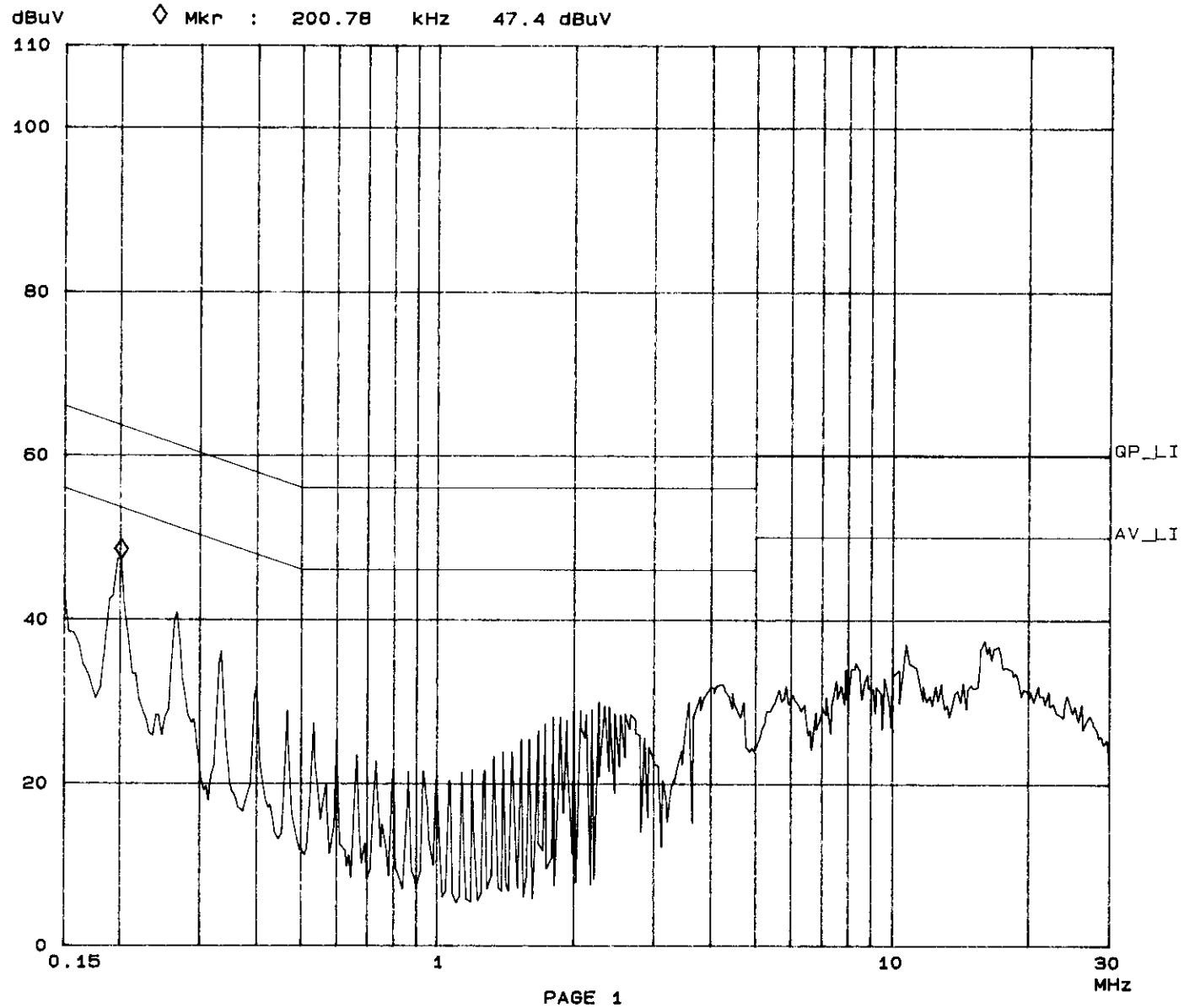
Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	1M	3.90625k	9k	PK	10ms	10dBLN	OFF
1M	10M	3.90625k	9k	PK	0.05ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.05ms	10dBLN	OFF



ADT CORP. OPEN SITE 2

30. May 98 09:24

CISPR 22 CLASS B

EUT: MODEL: LT510
Op Cond: 1024X768 48kHz
Test Spec: LISN : N
Comment: FULL SYSTEM

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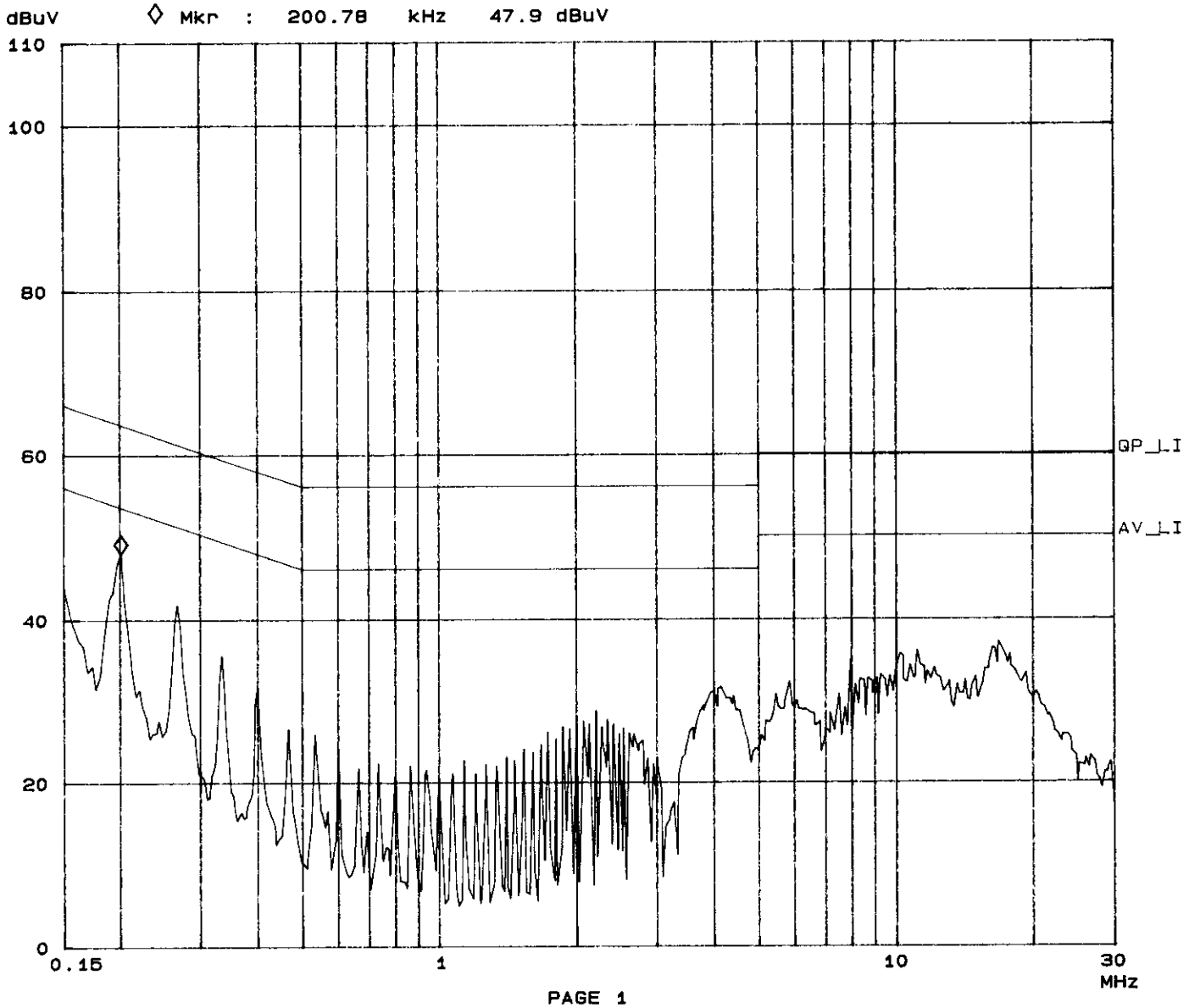
Tested by John Liao

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	1M	3.90625k	9k	PK	10ms	10dBLN	OFF
1M	10M	3.90625k	9k	PK	0.05ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.05ms	10dBLN	OFF



4.4 TEST DATA OF RADIATED EMISSION

EUT: **LCD MONITOR** MODEL: **LT510**

MODE: **1024x768 (48 kHz)**

ANTENNA: CHASE BILOG CBL6111A 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)
84.69	9.3	7.0	16.3	30.0	-13.7
117.28	14.2	6.8	21.0	30.0	-9.0
140.02	14.0	7.8	21.8	30.0	-8.2
162.87	11.4	6.4	17.8	30.0	-12.2
192.03	11.4	12.9	24.3	30.0	-5.7
195.44	11.5	12.0	23.5	30.0	-6.5
200.51	11.6	9.1	20.7	30.0	-9.3
228.02	13.1	12.0	25.1	30.0	-4.9
651.48	23.6	10.7	34.3	37.0	-2.7

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: **LCD MONITOR** MODEL: **LT510**

MODE: **1024x768 (48 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: John Liao

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
140.05	12.8	12.9	25.7	30.0	-4.3
143.34	12.6	14.0	26.6	30.0	-3.4
181.36	10.9	13.4	24.3	30.0	-5.7
192.03	11.0	15.1	26.1	30.0	-3.9
195.44	11.1	12.7	23.8	30.0	-6.2
205.20	11.6	14.5	26.1	30.0	-3.9
212.71	12.3	11.5	23.8	30.0	-6.2
216.03	12.6	14.1	26.7	30.0	-3.3
228.01	13.7	12.5	26.2	30.0	-3.8
299.13	15.1	17.3	32.4	37.0	-4.6
651.47	23.2	10.2	33.4	37.0	-3.6

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 1 - TECHNICAL DESCRIPTION OF EUT

Specifications:

*** Panel Part:**	
LCD:	15.0" 1024x768 TFT (Thin Film Transistor)
*** Monitor part:**	
Effective Display Size: (Diagonal)	15.0 inch (304 mm x 228 mm) – near 17" CRT>A4 size
Resolution & Display Colors:	XGA 1024x768 120 HZ/ a-si TFT 64/256K Color
Pixel pitch:	0.297 mm RGB Stripe
Brightness (Luminance)	Two Lamps (CCFT) for Monitor 200 cd/m2 Type.
Contrast ratio:	200:1
Response time:	50 ms Type
View angle:	Left/Right +/- 65 deg. (H), Up/Down +40/-60 deg. (V)
User controls:	
Front panel	POWER LED, POWER Key, Brightness (+/-), Volume (+/-)
Rear Cover	Digital Video In, DC In Jack (+12V/+6V), USB In/Out
PC interface:	Using a private PCI card (Trident 9385-1 chip)
4 MB EDO-DRAM on board	Build-in TMPS interface
Signal Cable:	2.8 mm Long 26 Pin SCSI type Cable
Signal Cable:	Locally (Self) powered pure Hub, supporting full speed USB 1 upstream (B Type Receptack), 4 downstream (A Type Dualport Receptack)
*** Power Supply:**	35 Watts Max. (ON), Power Down Mode < 8 Watts (SUSPEND/OFF)
AC/DC Adapter:	Input: 100-240 Vac, 1A, 50-60 Hz Output: 12 Vdc, 3A
*** Dimension & Weight:**	
Size:	Landscape: 380 x 376.5 x 170 mm (WxHxD)
Weight:	Gross: TBD Net: TBD