

***EXHIBIT 4***

***Test Report***

***Test Report***

***TTEMC-F99093***

APPLICATION FOR CERTIFICATION  
On Behalf of  
Acer Peripherals, Inc.  
LCD Monitor

Model : Belinea 10 15 20

FCC ID : JVPFP501

Prepared for : Acer Peripherals, Inc.  
157 Shan-Ying Road, Kweishan,  
Taoyuan, Taiwan, R.O.C.

Prepared By : Taiwan Tokin EMC Eng. Corp.  
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File Number : ATM-G99251  
Report Number : TTEMC-F99093  
Date of Test : Jun. 21 / 23, 1999  
Date of Report : Jun. 29, 1999

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Tok 79-0009

## TEST REPORT CERTIFICATION

Applicant : Acer Peripherals, Inc.  
 Manufacturer : Acer Peripherals, Inc.  
 FCC ID : JVPFP501  
 EUT Description : LCD Monitor  
 (A) MODEL NO. : Belinea 10 15 20  
 (B) SERIAL NO. : N/A  
 (C) POWER SUPPLY : AC 120V / 60Hz

## Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 1996  
 AND FCC / ANSI C63.4-1992

The device described above was tested by TAIWAN TOKIN EMC ENG. CORP. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15B Class B limits both radiated and conducted emissions.

The measurement results are contained in this test report and TAIWAN TOKIN EMC ENG. CORP. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Taiwan Tokin EMC Eng. corp.

Date of Test : Jun. 21 / 23, 1999

Prepared by : Julie Hsu 7/2 '99  
 (JULIE HSU)

Test Engineer : Allen Wang 7/2, '99  
 (ALLEN WANG)

Approve & Authorized Signer : Jackie Deng 7/2 '99  
 (JACKIE DENG)

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

Description	:	LCD Monitor
Model Number	:	Belinea 10 15 20
FCC ID	:	JVPFP501
Applicant	:	Acer Peripherals, Inc. 157 Shan-Ying Road, Kweishan, Taoyuan, Taiwan, R.O.C.
Manufacturer	:	Acer Peripherals, Inc. 157 Shan-Ying Road, Kweishan, Taoyuan, Taiwan, R.O.C.
LCD Panel	:	LG, M/N LM151X2
Data Cable (20-Pin DFP)	:	Shielded, Undetachable, 1.4m Bonded a ferrite core
Power Adapter	:	Lien Electronics Inc. M/N LE-9401B36W1P Cable: Non-Shielded, Undetachable, 1.2m Bonded a ferrite core
Power Cord	:	Non-Shielded, Detachable, 1.8m
Data of Receipt of Sample	:	May 24, 1999
Date of Test	:	Jun. 21 / 23, 1999

## 1.2. Tested Supporting System Details

### 1.2.1. PERSONAL COMPUTER

Mother Board	:	ASUS, M/N P5A FCC by DoC
CPU	:	AMD K6-2 266MHz
Case	:	Enlight, M/N EN7105C
S.P.S.	:	SPI, M/N FSP250-61GT S/N W13562644
Floppy Driver 3.5"	:	Mitsumi, M/N D353M3
Hard Disk Driver	:	Seagate, M/N ST34321A S/N VTH85652
VGA Card	:	Ati Technologies Inc. P/N 1024720800530119 FCC by Doc
Power Cord	:	Non-shielded, Detachable, 1.8m

### 1.2.2. MONITOR

Model Number	:	PM36B
Serial Number	:	W821111451
FCC ID	:	IIBTC1
Manufacturer	:	Funai Electric Company of Taiwan
Data Cable	:	Shielded, Undetachable, 1.2m
Power Cord	:	Non-Shielded, Detachable, 1.5m

### 1.2.3. KEYBOARD #1

Model Number	:	5121
Serial Number	:	J83300813
FCC ID	:	E5XKBM104M10UC
Manufacturer	:	BTC
Data Cable	:	Shielded, Undetachable, 1m

### 1.2.4. KEYBOARD (USB) #2

Model Number	:	KU-8933
Serial Number	:	8H17800114
FCC ID	:	by DoC
Manufacturer	:	Chicony Electronics Co., Ltd.
Data Cable	:	Shielded, Undetachable, 1.8m

### 1.2.5. PRINTER

Model Number	:	2225C
Serial Number	:	2615S40752
FCC ID	:	BS46XU2225C
Manufacturer	:	Hewlett Packard
Power Cord	:	Non-Shielded, Undetachable, 1.8m
Data Cable	:	Shielded, Detachable, 1.2m

## 1.2.6. MODEM #1

Model Number : DM-1414  
 Serial Number : 980034392  
 FCC ID : IFAXDM1414  
 Manufacturer : Accex  
 Data Cable : Shielded, Detachable, 1.2m  
 Power Adapter : Amigo, M/N AM-91000A  
 Non-Shielded, Undetachable, 1.8m

## 1.2.7. MODEM #2

Model Number : DM-1414  
 Serial Number : 980034391  
 FCC ID : IFAXDM1414  
 Manufacturer : Accex  
 Data Cable : Shielded, Detachable, 1.2m  
 Power Adapter : Amigo, M/N AM-91000A  
 Non-Shielded, Undetachable, 1.8m

## 1.2.8. MOUSE #1

Model Number : M-S35  
 Serial Number : LZA82103160  
 FCC ID : DZL211029  
 Manufacturer : Logitech  
 Data Cable : Non-Shielded, Undetachable, 1.8m

## 1.2.9. MOUSE (USB) #2

Model Number : M-UB48  
 Serial Number : LZB81900209  
 FCC ID : DZL211137  
 Manufacturer : Logitech  
 Data Cable : Shielded, Undetachable, 1.8m

## 1.3. Description of Test Facility

Site Description (No. 2 Open Site) : Jul. 15, 1996 Re-file on  
 Federal Communication Commission  
 FCC Engineering Laboratory  
 7435 Oakland Mills Road  
 Columbia, MD 21046, U.S.A.

Name of Firm : Taiwan Tokin EMC Eng. Corp.

Site Location : No. 53-11, Tin-Fu Tsun, Lin-Kou,  
 Taipei Hsien, Taiwan, R.O.C

NVLAP Lab Code : 200077-0

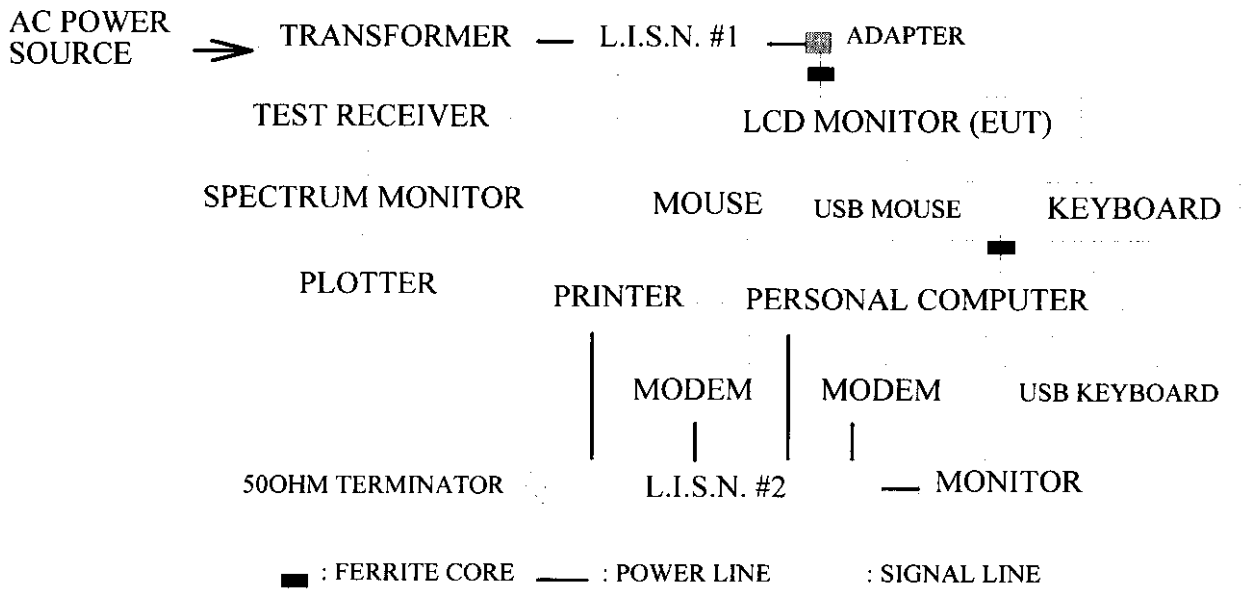
## 2. POWERLINE CONDUCTED TEST

### 2.1. Test Equipment

The following test equipments are used during the power line conducted tests :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESH3	880647/035	Jun.19, 99'	1 Year
2.	L.I.S.N. # 1	Kyoritsu	KNW-407	8-881-13	Apr.21, 99'	1 Year
3.	L.I.S.N. # 2	Kyoritsu	KNW-407	8-855-9	Apr.21, 99'	1 Year

### 2.2. Block Diagram of Test Setup



### 2.3. Powerline Conducted Emission Limit (CLASS B)

Frequency	Maximum RF Line Voltage	
	uV	dBuV
0.45MHz ~ 30MHz	250	48

REMARKS : RF LINE VOLTAGE (dBuV) = 20 log RF LINE VOLTAGE (uV)



## 2.4. EUT's Configuration during Compliance Measurement

The following equipments were installed on RF LINE VOLTAGE measurement to meet the Commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

### 2.4.1. LCD Monitor (EUT)

Model Number	:	Belinea 10 15 20
FCC ID	:	JVPFP501
Manufacturer	:	Acer Peripherals, Inc.
LCD Panel	:	LG, M/N LM151X2
Data Cable (20-Pin DFP)	:	Shielded, Undetachable, 1.4m Bonded a ferrite core
Power Adapter	:	Lien Electronics Inc. M/N LE-9401B36W1P Cable: Non-Shielded, Undetachable, 1.2m Bonded a ferrite core
Power Cord	:	Non-Shielded, Detachable, 1.8m

2.4.2. Supporting System : As in section 1.2

## 2.5. Operating Condition of EUT

2.5.1. Setup the EUT and simulator as shown on 2.2.

2.5.2. Turned on the power of all equipments.

2.5.3. Personal Computer read data from disk.

2.5.4. Personal Computer running the self-test program "EMI Test" by MS-DOS to send "H" character to LCD monitor (EUT) & monitor at the same time, and the screen display and filled with "H" pattern by EUT's resolution 1024\*768/60Hz.

2.5.5. The other peripheral devices were driven and operated in turn during all testing.

## 2.6. Test Procedure

The EUT was connected to the power mains through a line impedance stabilization network (L.I.S.N. #1) and the other peripheral devices power cord were connected to the power mains through a line impedance stabilization network (L.I.S.N. #2) This provided a 50 ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to FCC ANSI C63.4-1992 on conducted measurement.

The bandwidth of the R&S Test Receiver ESH3 was set at 10KHz.

The frequency range from 450KHz to 30MHz was checked.

## 2.7. Test Results

**PASSED.** Please refer to the following pages.

## 2.8. Line Conducted RF Voltage Measurement Results

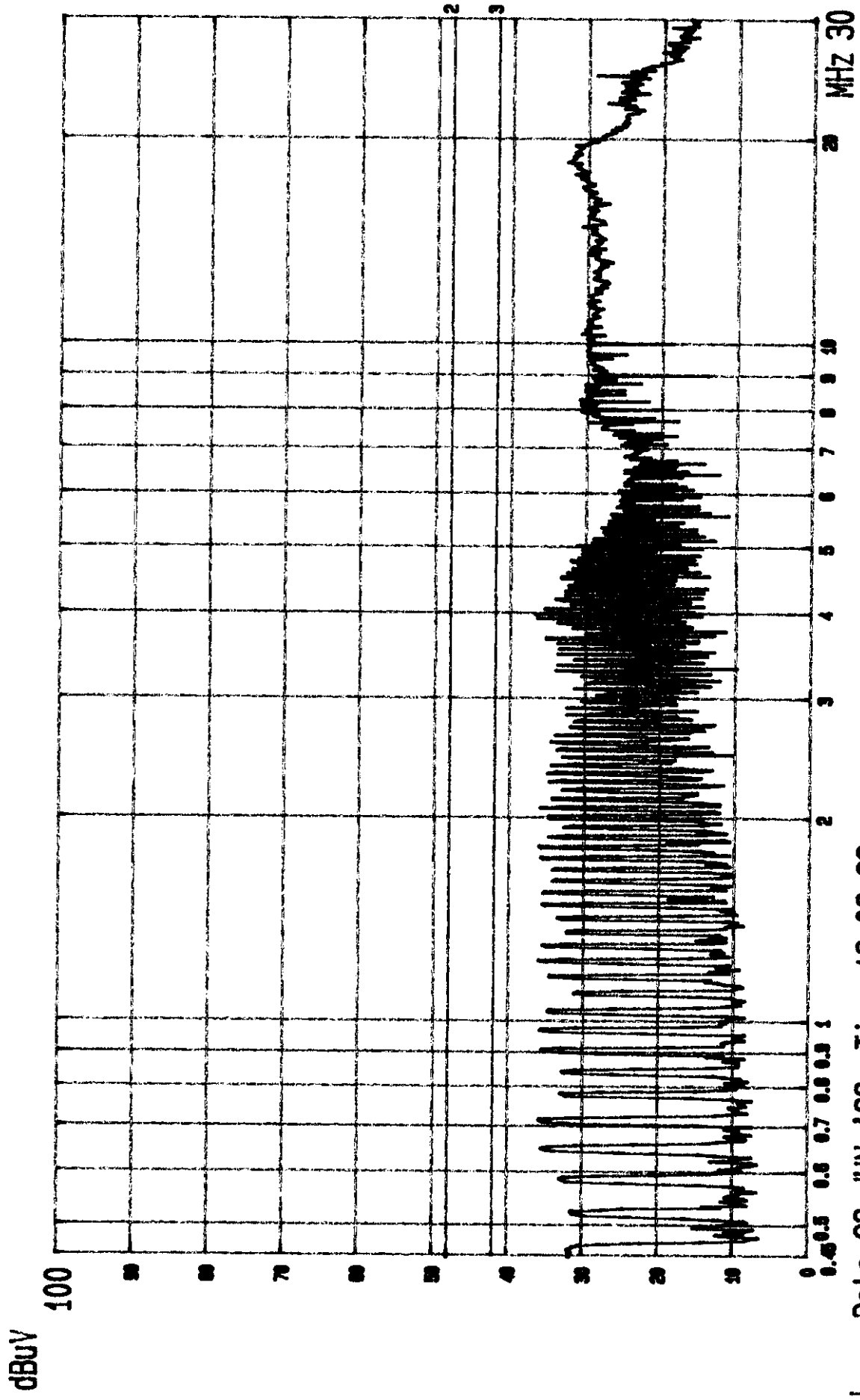
The frequency range from 450KHz to 30 MHz was investigated.  
All emissions not report below are too low against the prescribed limits.

Date of Test : Jun. 23, 1999 Temperature : 26 °C

EUT : LCD Monitor Humidity : 48 %

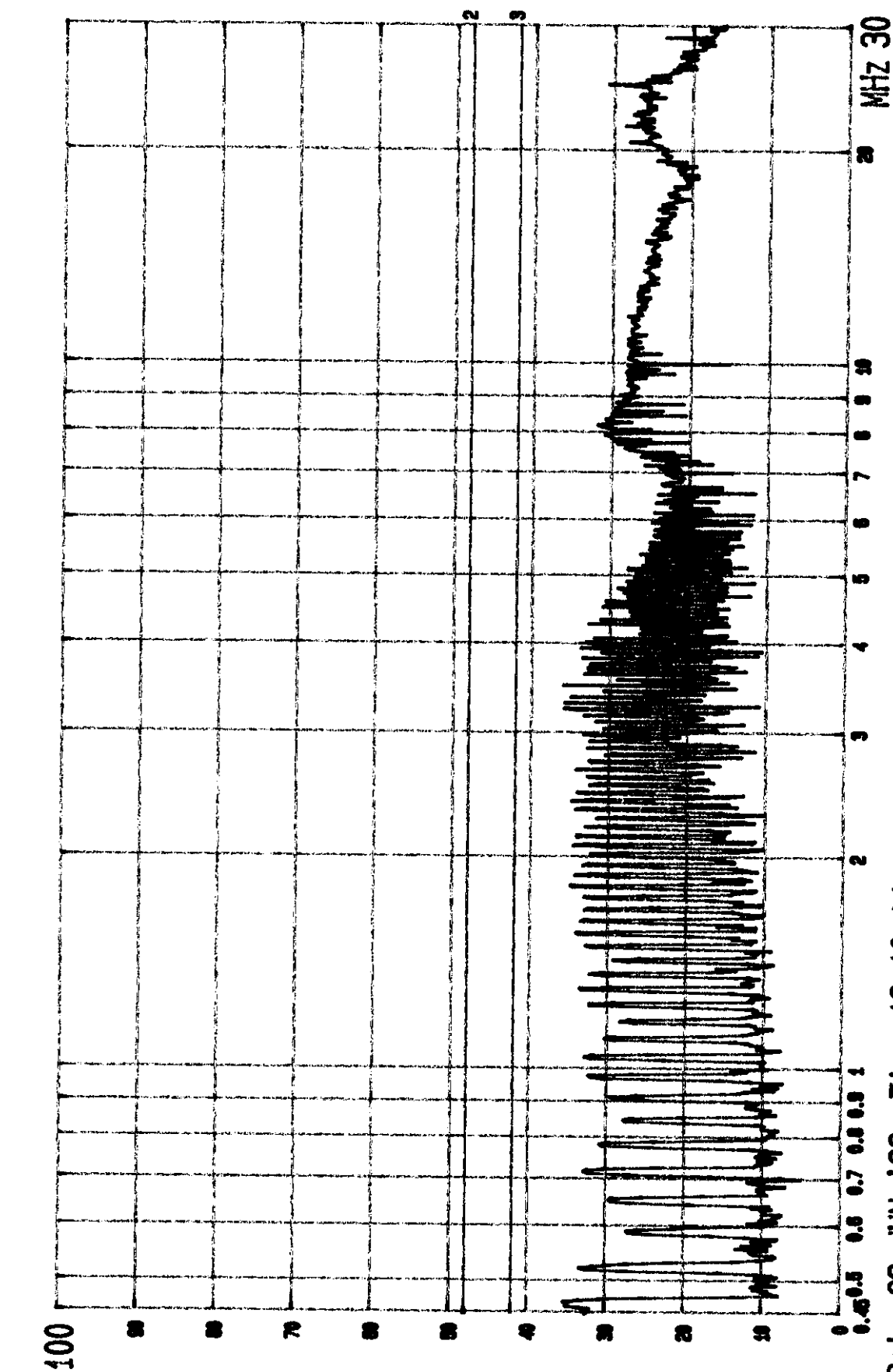
Frequency (MHz)	Factor dB	Measurement (dBuV)		Reading (dBuV)		Limits (dBuV)	Margin (dBuV)	
		VA	VB	VA	VB		VA	VB
0.4500	0.5	*	35.1	*	35.6	48.0	*	12.4
0.7063	0.5	*	32.0	*	32.5	48.0	*	15.5
0.7089	0.5	35.4	*	35.9	*	48.0	12.1	*
0.9667	0.5	35.3	*	35.8	*	48.0	12.2	*
1.7987	0.5	*	33.6	*	34.1	48.0	*	13.9
1.8052	0.5	35.4	*	35.9	*	48.0	12.1	*
3.2773	0.5	*	34.1	*	34.6	48.0	*	13.4
<b>3.9981</b>	<b>0.5</b>	<b>35.8</b>	*	<b>36.3</b>	*	<b>48.0</b>	<b>11.7</b>	*
8.2586	0.8	*	26.9	*	27.7	48.0	*	20.3
8.8373	0.8	28.9	*	29.7	*	48.0	18.3	*
18.4534	1.0	31.8	*	32.8	*	48.0	15.2	*
24.7753	1.1	*	31.9	*	33.0	48.0	*	15.0

- Remark :
1. All readings are Quasi-Peak values.
  2. Factor = Insertion Loss + Cable Loss
  3. The worst emission was detected at 3.9981MHz with corrected signal level of 36.3dBuV (limit is 48dBuV) when the VA side of the EUT was connected to L.I.S.N.



--- Date 23.JUN.'99 Time 18:08:23  
ACER EUT: LCD MONITOR M/N: BELINEA 10 15 20  
LINE: VA. MEMO: 1024X768 60HZ

120V/60HZ PAGE: 02.  
(PEAK VALUE) TTEMC.



!---- Date 23.JUN.'99 Time 18:10:14  
ACER EUT: LCD MONITOR M/N: BELINEA 10 15 20  
LINE: VB. MEMO: 1024X768 60HZ

120V/60HZ PAGE: 01.  
(PEAK VALUE) TTEMC.

### 3. RADIATED EMISSION TEST

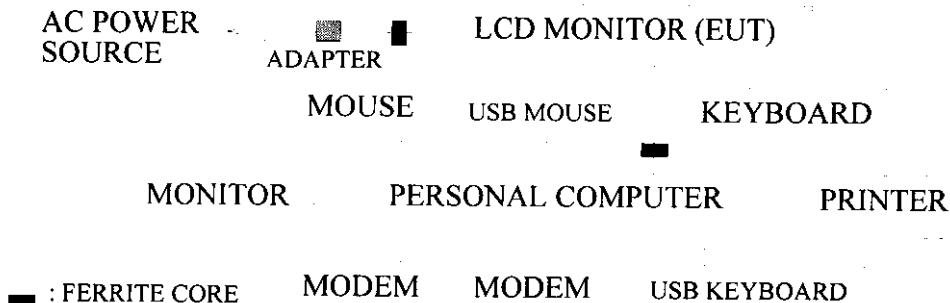
#### 3.1. Test Equipment

The following test equipments were used during the radiated emission tests :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESVP	861190/011	Dec.21, 99'	1 Year
2.	Broadband Antenna	Chase	VBA6106A	1258	Jan.14, 99'	1 Year
3.	Broadband Antenna	Chase	UPA6109	1048	Jan.14, 99'	1 Year

#### 3.2. Block Diagram of Test Setup

##### 3.2.1. Block Diagram of connection between EUT and simulators



##### 3.2.2. Open Field Test Site Setup Diagram

ANTENNA TOWER

ANTENNA ELEVATION VARIES FROM 1METER TO 4 METERS

3 METERS

EUT

0.8  
METER

TURN TABLE

GROUND PLANE

### 3.3. Radiation Limit (CLASS B)

FREQUENCY	DISTANCE	FIELD STRENGTHS LIMITS	
		uV/M	dBuV/M
MHz	Meters		
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

- Remark :
- (1) Emission level (dBuV/M) = 20 log Emission level (uV/M)
  - (2) The tighter limit applies at the edge between two frequency bands.
  - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 3.4. EUT's Configuration during Compliance Measurement

The configuration of EUT and its simulators were same as those used in conducted measurement. Please refer to 2.4.

### 3.5. Operating Condition of EUT

Same as conducted measurement which is listed in 2.5.

### 3.6. Test Procedure

The EUT and its simulators were placed on a turn table which is 0.8 meter above ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT is set 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) and dipole antenna were used as receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-1992 on radiated measurement.

The bandwidth of the R&S Test Receiver ESVP was set at 120KHz.

The frequency range from 30MHz to 1000MHz was checked.

### 3.7. Test Results

**PASSED.** Please refer to the following pages.

### 3.8. Radiated Emission Measurement Results

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All the emissions not reported below are too low against the FCC CLASS B limit..

Date of Test : Jun. 21, 1999 Temperature : 22 °C  
 EUT : LCD Monitor Humidity : 70 %

Frequency MHz	Antenna Cable		Meter Reading		Emission Level		Margin dB
	Factor dB/m	Loss dB	Horizontal dBuV	Horizontal dBuV/m	Limits dBuV/m		
66.047	11.63	2.64	7.29	21.56	40.00	18.44	
86.076	15.56	3.13	13.60	32.29	40.00	7.71	
132.073	20.33	3.95	3.80	28.08	43.50	15.42	
165.165	21.45	4.46	9.90	35.81	43.50	7.69	
171.822	21.67	4.65	- 1.20	25.12	43.50	18.38	
* 198.199	22.53	4.90	10.40	37.83	43.50	5.67	
231.232	22.41	5.35	7.40	35.16	46.00	10.84	
257.732	23.82	5.71	- 0.80	28.73	46.00	17.27	
264.263	23.95	5.74	4.40	34.09	46.00	11.91	
297.297	26.55	6.08	2.50	35.13	46.00	10.87	
330.331	14.80	6.52	9.80	31.12	46.00	14.88	
369.969	15.68	6.99	4.50	27.17	46.00	18.83	
396.399	16.05	7.20	8.70	31.95	46.00	14.05	
422.823	16.34	7.58	5.70	29.62	46.00	16.38	
436.031	16.36	7.69	6.70	30.75	46.00	15.25	
462.467	16.72	7.98	6.01	30.71	46.00	15.29	
528.528	18.31	8.72	- 0.40	26.63	46.00	19.37	
561.559	19.04	8.90	0.80	28.74	46.00	17.26	

- Remark :
1. All readings are Quasi-Peak values.
  2. The worst emission was detected at 198.199MHz with corrected signal level of 37.83dBuV/m (limit is 43.5dBuV/m) when the antenna was at horizontal polarization and was at 1m high and the turn table was at 240° .
  3. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.



Date of Test : Jun. 21, 1999 Temperature : 22 °C  
 EUT : LCD Monitor Humidity : 70 %

Frequency MHz	Antenna		Cable Meter Reading		Emission Level		Margin dB
	Factor dB/m	Loss dB	Vertical dBuV	Vertical dBuV/m	Limits dBuV/m		
46.241	16.42	2.14	6.30	24.86	40.00	15.14	
49.019	14.91	2.23	15.40	32.54	40.00	7.46	
66.066	12.76	2.64	10.10	25.50	40.00	14.50	
84.992	14.99	3.02	11.30	29.31	40.00	10.69	
132.126	19.55	3.95	6.00	29.50	43.50	14.00	
145.366	21.05	4.16	- 0.20	25.01	43.50	18.49	
165.155	21.43	4.46	6.50	32.39	43.50	11.11	
* 198.199	21.09	4.90	11.00	36.99	43.50	6.51	
224.614	24.46	5.20	1.40	31.06	46.00	14.94	
231.191	24.52	5.35	6.90	36.77	46.00	9.23	
264.255	22.66	5.74	5.10	33.50	46.00	12.50	
330.333	15.33	6.43	9.91	31.67	46.00	14.33	
356.755	14.93	6.72	6.80	28.45	46.00	17.55	
363.363	15.02	6.90	10.60	32.52	46.00	13.48	
369.969	14.98	6.99	7.30	29.27	46.00	16.73	
396.399	15.59	7.20	15.50	38.29	46.00	7.71	
422.825	16.02	7.58	8.00	31.60	46.00	14.40	
462.464	17.16	7.98	3.00	28.14	46.00	17.86	
495.494	18.07	8.24	1.40	27.71	46.00	18.29	
561.561	19.37	8.90	9.70	37.97	46.00	8.03	
568.156	19.59	8.99	10.30	38.88	46.00	7.12	

- Remark :
1. All readings are Quasi-Peak values.
  2. The worst emission was detected at 198.199MHz with corrected signal level of 36.99dBuV/m (limit is 43.5dBuV/m) when the antenna was at vertical polarization and was at 1m high and the turn table was at 215 ° .
  3. 0 ° was the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna.

#### **4. DEVIATION TO TEST SPECIFICATIONS**

**【 NONE 】**