

APPLICATION FOR CERTIFICATION
Class II Permissive Change
On Behalf of
Jean Co., Ltd.
LCD Monitor

Model : JT166Q

FCC ID : AMPL51B

Prepared for : Jean Co., Ltd.
5F, No. 167, Fu Hsing N. Rd.,
Taipei, Taiwan, R.O.C.

Prepared By : Taiwan Tokin EMC Eng. Corp.
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Date of Test : Feb. 21 ~ 23, 2000
Date of Report : Mar. 20, 2000

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TEST REPORT CERTIFICATION

(Class II Permissive Change)

Applicant : Jean Co., Ltd.
Manufacturer : Jean Co., Ltd.
FCC ID : AMPL51B
EUT Description : LCD Monitor
(A) MODEL NO. : JT166Q
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : 120V AC, 60Hz

Measurement Procedure Used :

FCC RULES AND CISPR 22 (DOCKET NO. 92-152, SEP. 1993) 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 CISPR 22 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 : Feb. 21 ~ 23, 2000

Prepared by : Monica Chang
(MONICA CHANG)

Test Engineer : Allen Wang
(ALLEN WANG)

Approve & Authorized Signer : Jackie Deng
(JACKIE DENG)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	LCD Monitor
Model Number	:	JT166Q
FCC ID	:	AMPL51B
Applicant	:	Jean Co., Ltd. 5F, No. 167, Fu Hsing N. Rd., Taipei, Taiwan, RO.C.
Manufacturer	:	Jean Co., Ltd. 5F, No. 167, Fu Hsing N. Rd., Taipei, Taiwan, RO.C.
LCD Panel	:	Chung Hwa, M/N CLAA150XA03
Data Cable	:	Shielded, Undetachable, 1.5m Bonded a ferrite core
Power Cord	:	Non-Shielded, Detachable, 1.8m
Date of Receipt of Sample	:	Feb. 16, 2000
Date of Test	:	Feb. 21 ~ 23, 2000

Remark :

This EUT is a modified version of original FCC ID AMPL51B.
The differences are to add a USB HUB and a data cable (Shielded, 1.5m, bonded a ferrite core)

1.2. Tested Supporting System Details

1.2.1. PERSONAL COMPUTER

Mother Board	:	ASUS, M/N P5A FCC ID. By DoC
CPU	:	AMD K6-2 266MHz
Case	:	Enlight, M/N EN7105C
S.P.S.	:	SPI, M/N FSP250-61GT S/N W13562615
Floppy Driver 3.5"	:	Mitsumi, M/N D353M3
Hard Disk Driver	:	Seagate, M/N ST34321A S/N VTH20835
VGA Card	:	Dataexpert, M/N CP765V2 FCC ID LUT-CP765
USB Data Cable	:	Non-Shielded, Detachable, 1.5m
Power Cord	:	Non-Shielded, Detachable, 1.8m

1.2.2. KEYBOARD

Model Number	:	5121
Serial Number	:	J83300813
FCC ID	:	E5XKBM104M10UC
Manufacturer	:	Behavior Tech Computer Corp.
Data Cable	:	Shielded, Undetachable, 1.0m

1.2.3. USB KEYBOARD #1

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

1.2.4. USB KEYBOARD #2

Model Number	:	KU-8933
Serial Number	:	8H17800106
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	:	980034396
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A
		Non-Shielded, Undetachable, 1.8m

1.2.7. MODEM #2

Model Number	:	DM-1414
Serial Number	:	980034395
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A
		Non-Shielded, Undetachable, 1.8m

1.2.8. MOUSE

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

1.2.9. USB MOUSE #1

Model Number	:	CREUBB
Serial Number	:	N/A
FCC ID	:	NHM-CREUBE
Manufacturer	:	CRE Technology Co., Ltd.
Data Cable	:	Shielded, Undetachable, 1.8m

1.2.10. USB MOUSE #2

Model Number	:	CREUBB
Serial Number	:	N/A
FCC ID	:	NHM-CREUBE
Manufacturer	:	CRE Technology Co., Ltd.
Data Cable	:	Shielded, Undetachable, 1.8m

1.2.11. USB MOUSE #3

Model Number	:	CREUBB
Serial Number	:	N/A
FCC ID	:	NHM-CREUBE
Manufacturer	:	CRE Technology Co., Ltd.
Data Cable	:	Shielded, Undetachable, 1.8m

1.3. Description of Test Facility

Site Description (No. 1 Open Site)	:	Nov. 23, 1999 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

1.4. Measurement Uncertainty

- (1) Radiation Uncertainty $U_r = \pm 4.01\text{dB}$
- (2) Conduction Uncertainty $U_c = \pm 2.26\text{dB}$

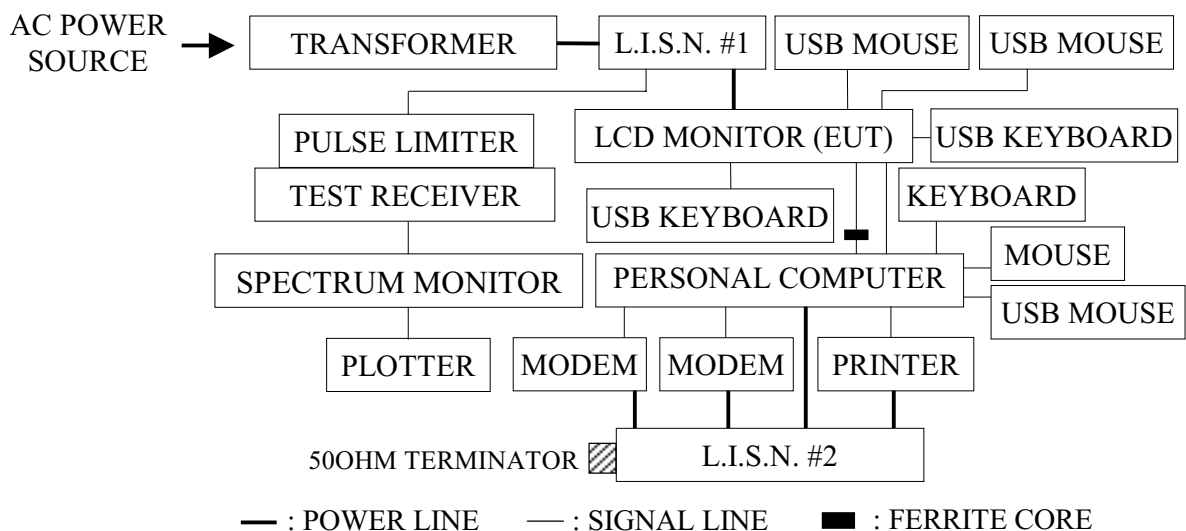
2. POWERLINE CONDUCTED TEST

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	886047/035	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 (CLSPR 22 CLASS B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150KHz ~ 500KHz	66 ~ 56 dB	56 ~ 46 dB
500KHz ~ 5MHz	56 dB	46 dB
5MHz ~ 30MHz	60 dB	50 dB

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	:	JT166Q
Serial Number	:	N/A
FCC ID	:	AMPL51B
Manufacturer	:	Jean Co., Ltd.
LCD Panel	:	Chung Hwa, M/N CLAA150XA03
Data Cable	:	Shielded, Undetachable, 1.5m 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 sent "H" characters to LCD monitor (EUT) and the screen of LCD monitor (EUT) displayed and filled with "H" patterns by EUT's resolution.
- 2.5.5. Personal Computer read data from floppy disk · Modem and then wrote the data into floppy disk · Modem.
- 2.5.6. 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 150KHz 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 150KHz to 30 MHz was investigated.
All emissions not reported below are too low against the prescribed limits.

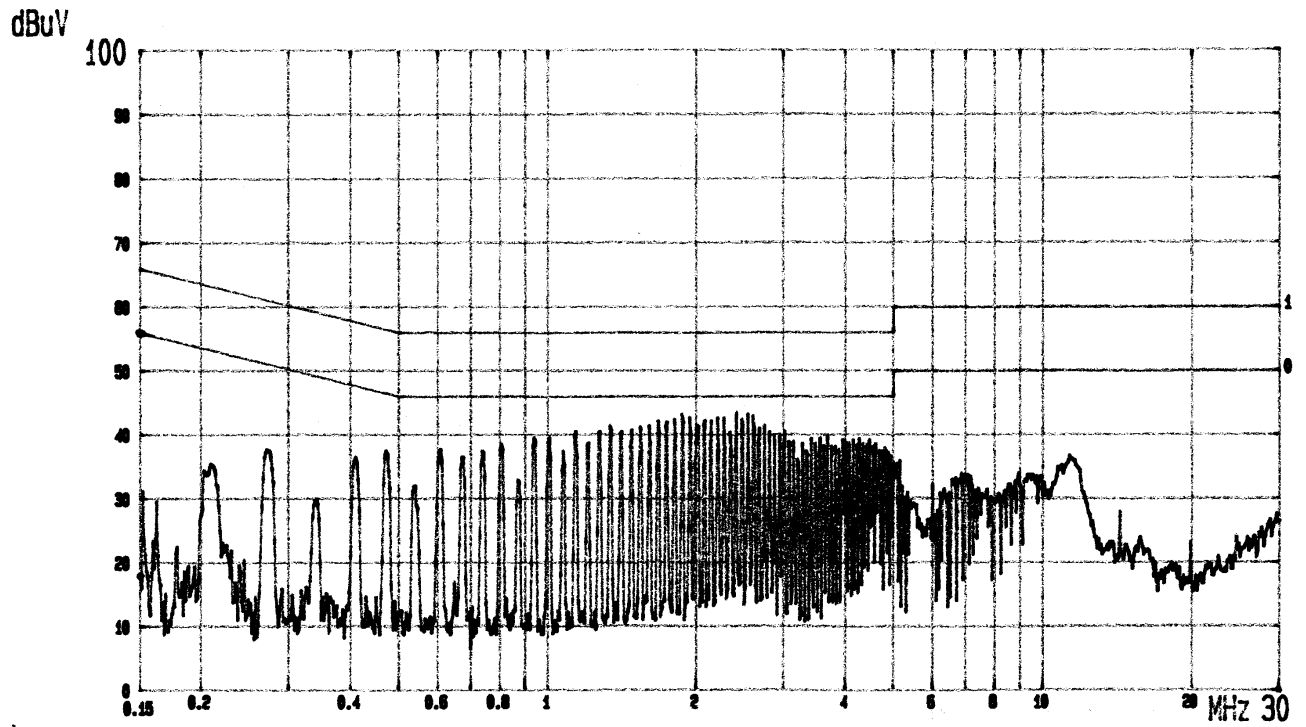
Date of Test : Feb. 23, 2000 Temperature : 17.6 °C

EUT : LCD Monitor Humidity : 69 %

Test Mode : 60kHz/1024*768, 75Hz

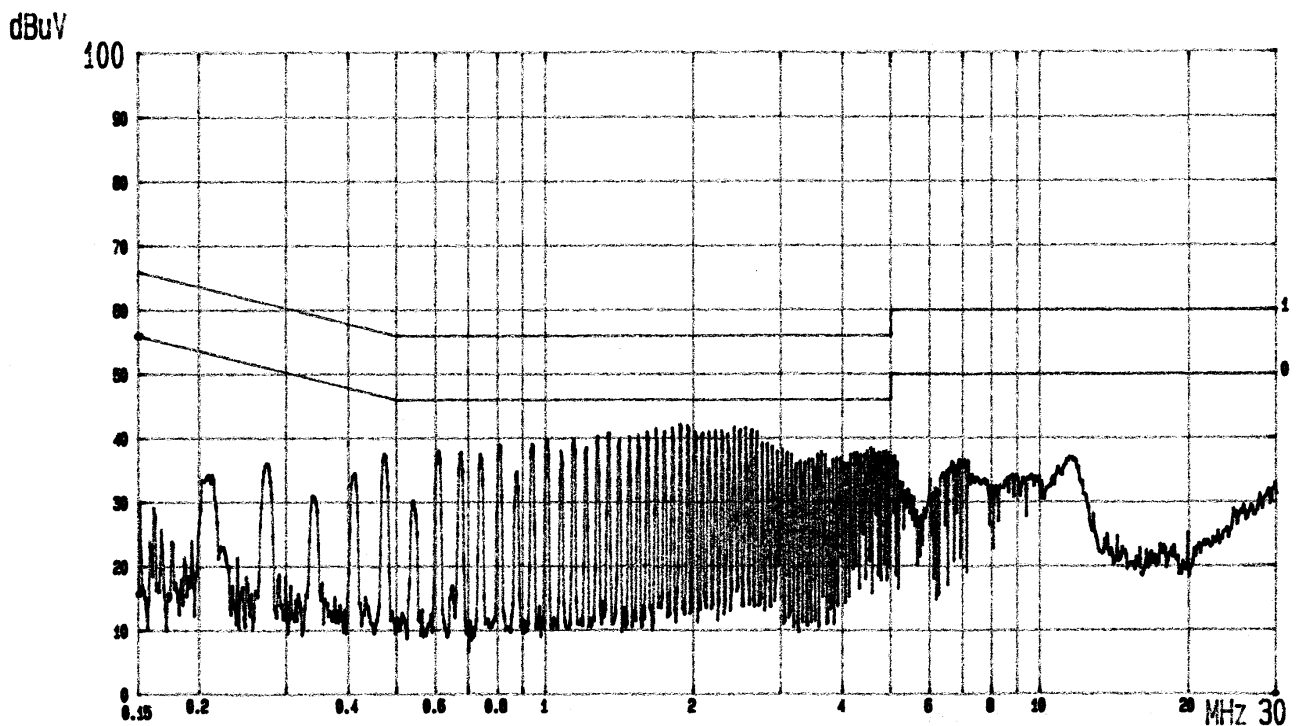
Frequency MHz	Factor dB	Reading (dBμV)				Measurement (dBμV)				Limits	
		Phase A Neutral		Phase B Line		Phase A Neutral		Phase B Line		(dBμV)	
		Q.P.	Average	Q.P.	Average	Q.P.	Average	Q.P.	Average	Q.P.	Average
0.1997	0.4	34.2	27.1	*	*	34.6	27.5	*	*	63.6	53.6
0.2000	0.4	*	*	33.9	24.4	*	*	34.3	24.8	63.6	53.6
0.2666	0.4	37.3	31.4	35.6	30.3	37.7	31.8	36.0	30.7	61.1	51.1
0.4667	0.5	37.1	30.5	36.8	31.5	37.6	31.0	37.3	32.0	56.6	46.6
0.8003	0.5	*	*	38.8	33.3	*	*	39.3	33.8	56.0	46.0
1.3336	0.5	41.0	33.6	*	*	41.5	34.1	*	*	56.0	46.0
1.3342	0.5	*	*	40.3	33.2	*	*	40.8	33.7	56.0	46.0
1.8674	0.5	42.4	35.0	*	*	42.9	35.5	*	*	56.0	46.0
1.8681	0.5	*	*	41.1	33.6	*	*	41.6	34.1	56.0	46.0
2.4011	0.5	42.7	35.8	*	*	43.2	36.3	*	*	56.0	46.0

Remark : 1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss
3. "*" means the emission level undetectable.



JEAM
LINE: VA. EUT: LCD MONITOR M/N: JT166Q
MEMO: 1024X768; 75Hz

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



JEAM
LINE: VB. EUT: LCD MONITOR M/N: JT166Q
MEMO: 1024X768; 75Hz

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

3. RADIATED EMISSION TEST

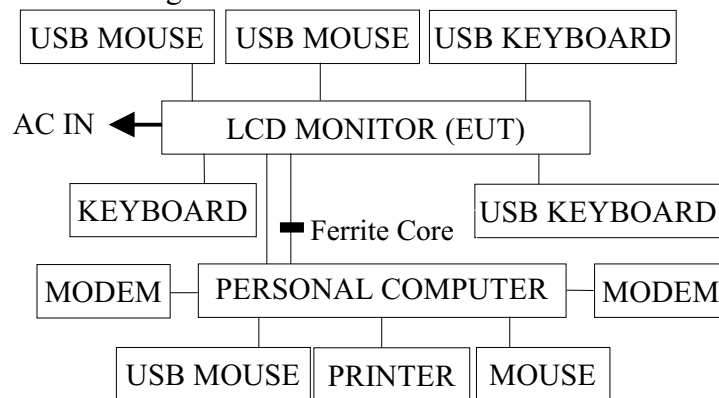
3.1. Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde&Schwarz	ESVP	893202/001	May 13, 99'	1 Year
2.	Broadband Antenna	Schwarzbeck	BBA9106	A1L	Feb.17, 00'	1 Year
3.	Broadband Antenna	Chase	UPA6109	1039	Feb.17, 00'	1 Year

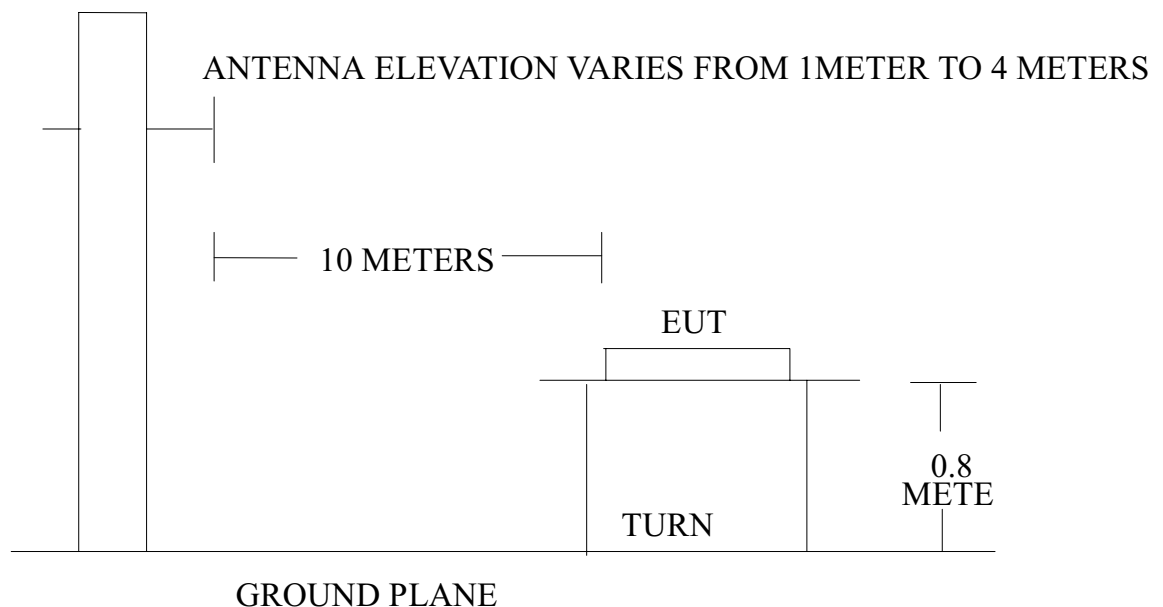
3.2. Block Diagram of Test Setup

3.2.1. Block Diagram of connection between EUT and simulators



3.2.2. Open Field Test Site (10m) Setup Diagram

ANTENNA TOWER



3.3. Radiation Limit (CLSPR 22 CLASS B)

All emanations from a class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBuV/m)
30 ~ 230	10	30
230 ~ 1000	10	37

- Note :
- (1) The tighter limit shall apply at the edge between two frequency bands.
 - (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the E.U.T.

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 10 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. All the test results are listed in the following pages.

3.8. Radiated Emission Measurement Results

The frequency spectrum from 30 MHz to 1000MHz is investigated. All the emissions not report below are too low against the CISPR 22 Class B limit.

Date of Test :	Feb. 21, 2000	Temperature :	16 °C
EUT :	LCD Monitor	Humidity :	88 %
Test Mode :	60kHz/1024*768, 75Hz		

	Antenna	Cable	Meter Reading	Emission Level		Margin	
	Frequency	Factor	Loss	Horizontal	Horizontal		Limits
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
*	55.472	15.03	1.87	7.90	24.80	30.00	5.20
	62.381	12.96	1.99	8.10	23.05	30.00	6.95
	86.800	14.36	2.18	7.49	24.03	30.00	5.97
	124.713	19.29	2.52	3.46	25.27	30.00	4.73
	152.368	20.60	2.79	2.71	26.10	30.00	3.90
	159.389	21.06	2.91	2.90	26.87	30.00	3.13
	173.151	21.05	3.15	-0.60	23.60	30.00	6.40
	235.264	23.13	3.62	-2.90	23.85	37.00	13.15
	332.200	14.27	4.42	3.00	21.69	37.00	15.31
	383.985	14.96	4.71	3.00	22.67	37.00	14.33
	408.163	15.63	4.91	3.30	23.84	37.00	13.16
	456.552	16.74	5.15	2.40	24.29	37.00	12.71
	480.464	16.98	5.42	2.59	24.99	37.00	12.01
	524.292	17.54	5.64	-2.50	20.68	37.00	16.32
	639.515	20.27	6.07	-2.80	23.54	37.00	13.46

- Remark :
1. All reading are Quasi-Peak values.
 2. The worst emission was detected at 159.389MHz with corrected signal level of 26.87dBuV/m (limit was 30dBuV/m) when the antenna was at horizontal polarization and was at 4m high and the turn table was at 40° .
 3. 0° is the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

Date of Test : Feb. 21, 2000 Temperature : 16 °C

EUT : LCD Monitor Humidity : 88 %

Test Mode : 60kHz/1024*768, 75Hz

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level		Margin dB
			Vertical dBuV		Vertical dBuV/m	Limits dBuV/m	
41.551	18.74	1.69	3.30		23.73	30.00	6.27
55.472	15.76	1.87	8.30		25.93	30.00	4.07
83.090	13.45	2.18	8.70		24.33	30.00	5.67
124.747	17.70	2.52	6.00		26.22	30.00	3.78
145.467	20.63	2.75	3.00		26.38	30.00	3.62
152.368	20.86	2.79	1.80		25.45	30.00	4.55
* 159.392	21.86	2.91	1.80		26.57	30.00	3.43
332.198	13.30	4.42	4.00		21.72	37.00	15.28
383.993	15.34	4.71	3.60		23.65	37.00	13.35
408.163	15.42	4.91	4.01		24.34	37.00	12.66
456.506	16.83	5.15	-3.40		18.58	37.00	18.42
480.464	17.21	5.42	1.37		24.00	37.00	13.00
524.292	18.08	5.64	-3.80		19.92	37.00	17.08
639.515	19.32	6.07	-2.90		22.49	37.00	14.51

- Remark :
1. All reading are Quasi-Peak values.
 2. The worst emission was detected at 159.392MHz with corrected signal level of 26.57dBuV/m (limit was 30dBuV/m) when the antenna was at vertical polarization and was at 1m high and the turn table was at 210° .
 3. 0° is the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

4. MODIFICATION TO EUT

1. Added copper foil on the metal chassis next the power board.
2. Added a ferrite core on the P804 cable.
3. Added two ferrite cores on the P005 & P006 cables.
4. Added conductive fabric tapes on the signal cable of the LCD Panel.
5. Added a metal cover on the USB HUB.

5. DEVIATION TO TEST SPECIFICATIONS

【NONE】

6. PHOTOGRAPHS

6.1. Photos of Powerline Conducted Measurement

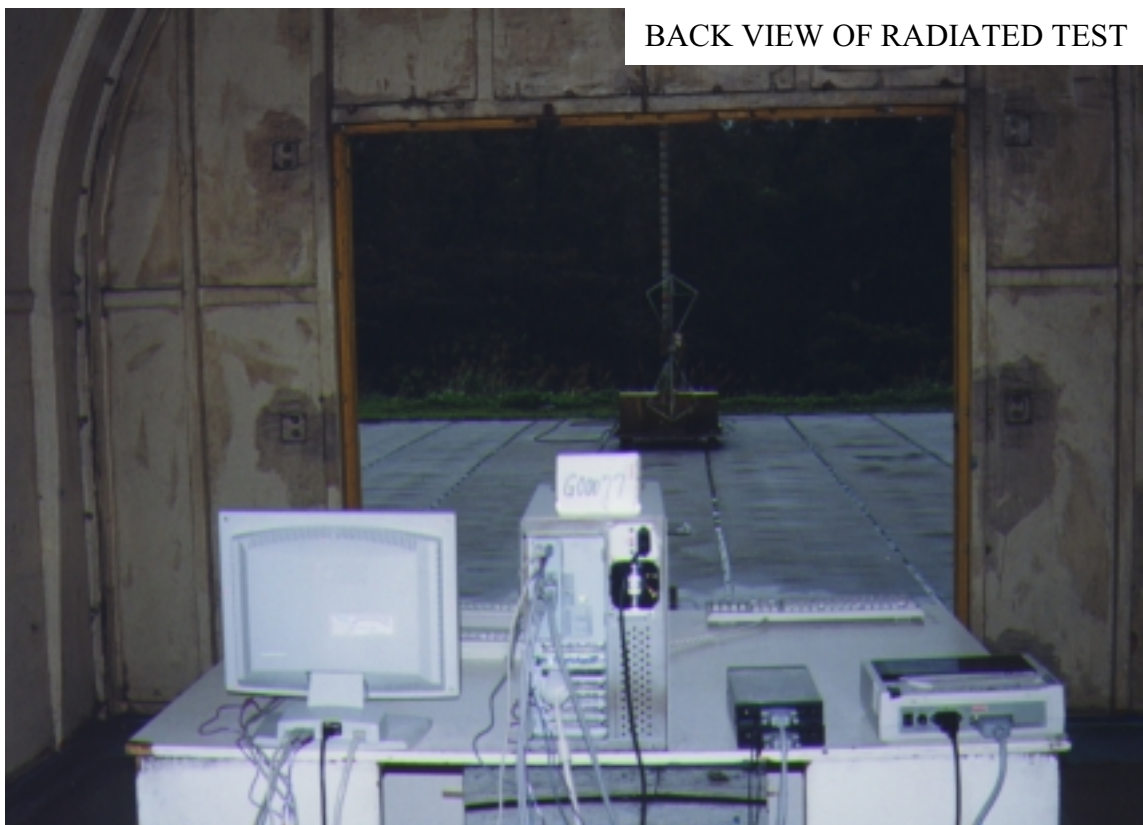
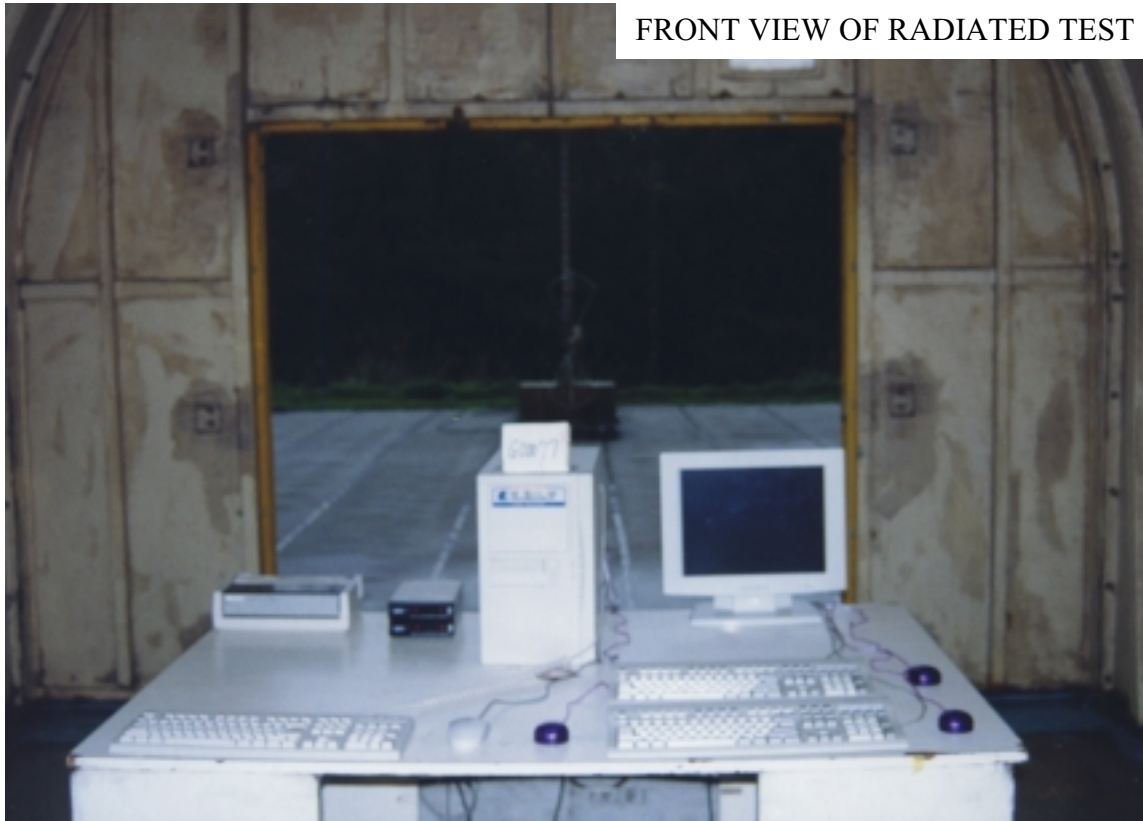
FRONT VIEW OF CONDUCTED TEST



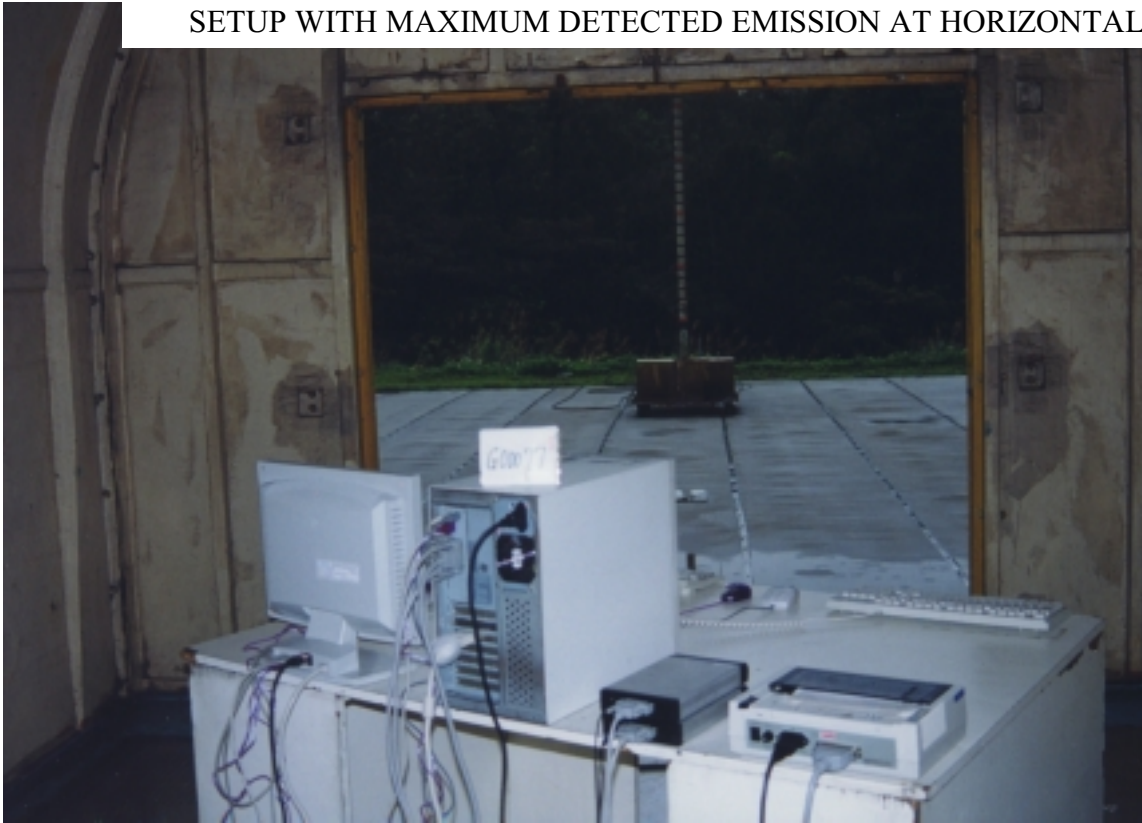
REAR VIEW OF CONDUCTED TEST



6.2. Photos of Radiated Measurement at Open Field Test Site



SETUP WITH MAXIMUM DETECTED EMISSION AT HORIZONTAL



SETUP WITH MAXIMUM DETECTED EMISSION AT VERTICAL

