

Declaration of Conformity



We, Manufacturer/Importer

Mitac Technology Corp.

9th FL., No. 75, Ming Sheng East Road, Sec. 3,

Taipei, Taiwan, R.O.C.

declare that the product

Notebook PC

8640

Is in conformity with

(Reference to the specification under which conformity is declared)

in accordance with 89/336 EEC-EMC Directive

- | | | | |
|--|---|--|---|
| <input type="checkbox"/> EN55011 | Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) high frequency equipment | <input checked="" type="checkbox"/> EN61000-3-2 | Disturbances in supply systems caused by household appliances and similar electrical equipment "Harmonics" |
| <input type="checkbox"/> EN55013 | Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment | <input type="checkbox"/> EN60555-2 | |
| <input type="checkbox"/> EN55014 | Limits and methods of measurement of radio disturbance characteristics of household electrical appliances. Portable tools and similar electrical apparatus | <input checked="" type="checkbox"/> EN61000-3-3 | Disturbances in supply systems caused by household appliances and similar electrical equipment "Voltage fluctuations" |
| <input type="checkbox"/> EN55015 | Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaries | <input type="checkbox"/> EN60555-3 | |
| <input type="checkbox"/> EN55020 | Immunity from radio interference of broadcast receivers and associated equipment | <input checked="" type="checkbox"/> EN50081-1 | Generic emission standard Part1: Residential, commercial and light industry |
| <input checked="" type="checkbox"/> EN55022 | Limits and methods of measurement of radio disturbance characteristics of information technology equipment | <input type="checkbox"/> EN50082-1 | Generic immunity standard Part1: Residential, commercial and light industry |
| <input type="checkbox"/> EN50130-4 | Alarm systems – Part 4: Electromagnetic compatibility – Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. | <input type="checkbox"/> EN50081-2 | Generic immunity standard Part 2: Industrial environment |
| <input type="checkbox"/> EN50091-2 | EMC requirements for uninterruptible power systems (UPS) | <input type="checkbox"/> EN50082-2 | Generic immunity standard Part 2: Industrial environment |
| | | <input type="checkbox"/> EN55104 | Immunity requirements for household appliances tools and similar apparatus |
| | | <input type="checkbox"/> EN60601-1-2 | Medical Electrical Equipment |
| | | <input checked="" type="checkbox"/> EN55024 | Information technology equipment – Immunity characteristics – Limits and methods of measurement |

Manufacturer/Importer

Signature: _____

(stamp)

Date: _____

Name: _____

Test Report



(Declaration of Conformity)

for

Electromagnetic Interference

of

E.U.T.: **Notebook PC**

Trade Name: MTC; MSL

Model Number: 8640

Prepared for

Mitac Technology Corp.

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Verification of Compliance

Applicant: Mitac Technology Corp.
Manufacturer: Mitac Technology Corp.
EUT Description: Notebook PC
Model No.: 8640
Serial No.: N/A
Tested Power Supply: 230Vac, 50Hz
Date of Final Test: Sep. 9, 2002

Measurement Procedures and Standards Used :

Emission:

☒ EN 50081-1:1992
EN 55022:1998+A1: 2000
EN 61000-3-2:1995
A1+A2: 1998
A14: 2000
EN 61000-3-3:1995

Immunity:

EN 55024:1998+A1: 2001
☒ IEC 61000-4-2
☒ IEC 61000-4-3
☒ IEC 61000-4-4
☒ IEC 61000-4-5
☒ IEC 61000-4-6
☐ IEC 61000-4-8
☒ IEC 61000-4-11

☐ EN 50082-1:1997
☐ EN 61000-4-2
☐ EN 61000-4-3
☐ ENV 50204
☐ EN 61000-4-4
☐ EN 61000-4-5
☐ EN 61000-4-6
☐ EN 61000-4-8
☐ EN 61000-4-11

The device described above was tested by Interocean EMC Technology Corporation to determine the maximum emission levels emanated from the device and severity levels of the device endure and its performance criterion. The measurement results are contained in this test report and Interocean EMC Technology Corp assumes full responsibility for the accuracy and completeness of these measurements. This report shows the EUT is technically compliant with the EN 50081-1 and EN 55024 official requirements. This report applies to the above sample only and shall not be reproduced in part without written approval of Interocean EMC Technology Corporation.

Report Issued: 2002/9/9

Test Engineer: Jack Chen 0909 2002
Jack Chen

Checked: Jacky Yeh 0909 2002
Jacky Yeh

Approved: Mike Huang 2002 0909
Mike Huang

1 General Information

1.1 Description of Equipment Under Test

Equipment Under Test : Notebook PC

Model Number : 8640

Serial Number : N/A

Type of Sample Tested : ☒Proto-type ☐Pre-Production ☐Mass Production

Applicant : **Mitac Technology Corp.**
9th FL., No. 75, Ming Sheng East Road, Sec. 3,
Taipei, Taiwan, R.O.C.

Manufacturer : **Mitac Technology Corp.**
9th FL., No. 75, Ming Sheng East Road, Sec. 3,
Taipei, Taiwan, R.O.C.

Power Supply : Adapter
Manufacturer: FSP, M/N: FSP090-1ADC21
Input: 100-240Vac, 50-60Hz, 1.6A
Power cord: ☒Non-shielded ☒Detachable, 1.8m
Output: 19Vdc, 4.74A, 90W
Power cable: ☒Non-shielded ☒Non-detachable, 1.5m
 ☒With two ferrite cores
Manufacturer: Lite-on, M/N: PA-1900-06
Input: 100-240Vac, 50-60Hz, 1.5A
Power cord: ☒Non-shielded ☒Detachable, 1.8m
Output: 19Vdc, 4.74A, 90W
Power cable: ☒Non-shielded ☒Non-detachable, 1.8m
 ☒With a ferrite core

Product information : N/A

Date of Receipt of Sample : Aug. 7, 2002

Date of Test : Aug. 7~ Sep. 9, 2002

Description of E.U.T. : The Notebook PC has features description as following:

Configuration	Manufacturer	M/N
CPU	Intel	P4-M 1.8GHz
		P4 2.4GHz
		Celeron 1.7GHz
RAM	128MB	
14.1" LCD Panel	QDI	QD141X1LH03
	AUO	B141XN04-2
15.0" LCD Panel	Hannstar	HSD150PX11-B
HDD (40GB)	Fujitsu	MHR2040AT
	Hitachi	DK23DA-40F
DVD-ROM	MKE	SR-8177-B
DVD+CD-R/RW	QSI	SBW-161
	KME	UJDA730
FDD (External)	Mitsumi	D353FUE
Modem Card	Creatix	CTX708
LAN Card	On Board	
Wireless Module	Askey	WLL030M (WLAN 802.11b + Modem)
Battery	Panasonic	CGR-B/T19SE-MSL
	Panasonic	CGR-B/T19SE-SMP
Power Adapter	FSP	FSP090-1ADC21
	Lite-on	PA-1900-06
I/O Port	(1.) VGA Port * 1. (2.) S-Video Port * 1. (3.) Printer Port * 1. (4.) RJ11 Port * 1. (5.) RJ45 Port * 1. (6.) PS2 Port * 1. (7.) USB Port * 4. (8.) 1394 Port * 1. (9.) Line in Port *1 (10.) Line out Port *1 (11.) PCMCIA Port * 1 (12.) Memory Port * 1 (MS/SM)	

Configuration	#1	#2	#3
CPU	Celeron 1.7GHz	P4 2.4GHz	P4-M 1.8GHz
RAM	128MB	128MB	128MB
LCD Panel	14.1" QDI	14.1" AUO	15.0" Hannstar
HDD	Fujitsu	Hitachi	Hitachi
DVD-ROM	MKE	---	---
DVD+CD-R/RW	---	KME	QSI
FDD (External)	Mitsumi	Mitsumi	Mitsumi
Modem Card	Creatix	---	---
LAN Card	On Board	On Board	On Board
Wireless Module	---	Askey	Askey
Battery	Panasonic / CGR-B/T19SE-MSL	Panasonic / CGR-B/T19SE-SMP	Panasonic / CGR-B/T19SE-SMP
Power Adapter	FSP	FSP	Lite-on

1.2 Tested Supporting System Detail

1.2.1 Monitor

MT06

Model Number : GA587II
Serial Number : W016148132
EMC Approved : FCC DoC, CE, 檢磁 5872A010
Manufacturer : GENUINE
Data Cable : Shielded, Un-detachable, 1.2m

1.2.2 Mouse

MS01

Model Number : M-S34
Serial Number : LZB01100434
EMC Approved : FCC ID: DZL211029, CE, VCCI, C-Tick, 檢磁 4862A011
Manufacturer : ASUS
Data Cable : Non-shielded, Un-detachable, 1.85m

USB02

Model Number : AM-930-U
Serial Number : 0017993
EMC Approved : FCC DoC, CE, 檢磁 3892A419
Manufacturer : INTOPIC
Data Cable : Non-shielded, Un-detachable, 1.4m

USB03

Model Number : AM-930-U
Serial Number : 0017946
EMC Approved : FCC DoC, CE, 檢磁 3892A419
Manufacturer : INTOPIC
Data Cable : Non-shielded, Un-detachable, 1.4m

USB06

Model Number : AM-930-U
Serial Number : 0023920
EMC Approved : FCC DoC, CE, 檢磁 3892A419
Manufacturer : INTOPIC
Data Cable : Non-shielded, Un-detachable, 1.4m

1.2.3 Printer

PR04

Model Number : C20SX
Serial Number : DW4Y038113
EMC Approved : 檢磁 3902E004
Manufacturer : EPSON
Data Cable : Shielded, Detachable, 1.8m
Power Cord : Non-shielded, Un-detachable, 1.8m

1.2.4 Speaker

SPK01

Model Number : M-006
Serial Number : N/A
EMC Approved : CE
Manufacturer : J-S
Data Cable : Non-Shielded, Un-detachable, 1.0m

1.2.5 Microphone

MIC01

Model Number : EMC-M001
Serial Number : 01
EMC Approved : N/A
Manufacturer : INTOPIC
Data Cable : Shielded, Un-detachable, 1.8m

1.2.6 Television

TV01

Model Number : 218R3
Serial Number : 90275303
EMC Approved : N/A
Manufacturer : TOSHIBA
Data Cable : S-Video Cable:
Shielded, Detachable, 1.8m

1.2.7 Telephone Switch Board

Model Number : KX-TA308
Serial Number : N/A
EMC Approved : N/A
Manufacturer : PANASONIC
Data Line : RJ11 Cable:
Non-shielded, Detachable, 10m
Power Cord : Non-Shielded, Detachable, 1.8m

1.2.8 IBM Note Book

Model Number : 2655-GT1
Serial Number : 78-LRZR4
EMC Approved : FCC DoC, CE, VCCI, 檢磁 3902I050
Manufacturer : IBM
Data Cable : RJ11 Cable:
Non-Shielded, Detachable, 1.5m
RJ45 Cable:
Non-Shielded, Detachable, 10m

1.2.9 EASY DISK**2.5" IDE Hard Disk Drive**

Data Cable : 1394 Cable:
Shielded, Detachable, 1.8m

1.2.10 SD Card

Model Number : RP-SD32B
Serial Number : YPP200013
Manufacturer : Panasonic
Description : 32MB

1.2.11 Memory Stick Card

Model Number : MSA-8A
Serial Number : D329Y1E
Manufacturer : Sony
Description : 8MB

1.2.12 PCMCIA ATA Flash Card

Model Number : FMC-23XX
Manufacturer : N/A

1.3 Test Facility

- Site Description** : ☒OATS 1 ☐OATS 2
- Name of Firm** : Interocean EMC Technology Corp.
- Site Location** : No.5-2, Lin 1, Tin-Fu Tsun, Lin-Kou Hsiang,
Taipei County, Taiwan, R.O.C.
- Site Filing** :
 - Federal Communication Commissions – USA
Registration No.: 96399
 - Voluntary Control Council for Interference by Information
Technology Equipment (VCCI) – Japan
Registration No. (Conducted Room): C-1094
Registration No. (OATS 1): R-1040
Registration No. (OATS 2): R-1041
- Site Accreditation** :
 - Bureau of Standards and Metrology and Inspection
(BSMI) – Taiwan, R.O.C.
Accreditation No.:
SL2-IN-E-0026 for CNS13438 / CISPR22
SL2-R1-E-0026 for CNS13439 / CISPR13
SL2-R2-E-0026 for CNS13439 / CISPR13
SL2-A1-E-0026 for CNS13783-1 / CISPR14
SL2-L1-E-0026 for CNS14115 / CISPR15
 - National Voluntary Laboratory Accreditation Program
(NVLAP) - USA
Lab Code: 200458-0
 - Nemko AS
Authorization No.: ELA 181

1.3.1 Test Methodology

Both conducted and Radiated Emission Measurement was performed according to the procedures in EN 55022:1998. Radiated Emission Measurement was performed at 10 meters distance from antenna to EUT. All immunity tests were performed according to the procedures in EN 55024:1998.

1.3.2 Measurement Uncertainty

The uncertainty is calculated in accordance with NAMAS document NIS 81.

Conducted Uncertainty $U_c = \pm 2.96\text{dB}$.

Radiated Uncertainty $U_c = \pm 3.67\text{dB}$.

2 Power Line Conducted Emission Measurement

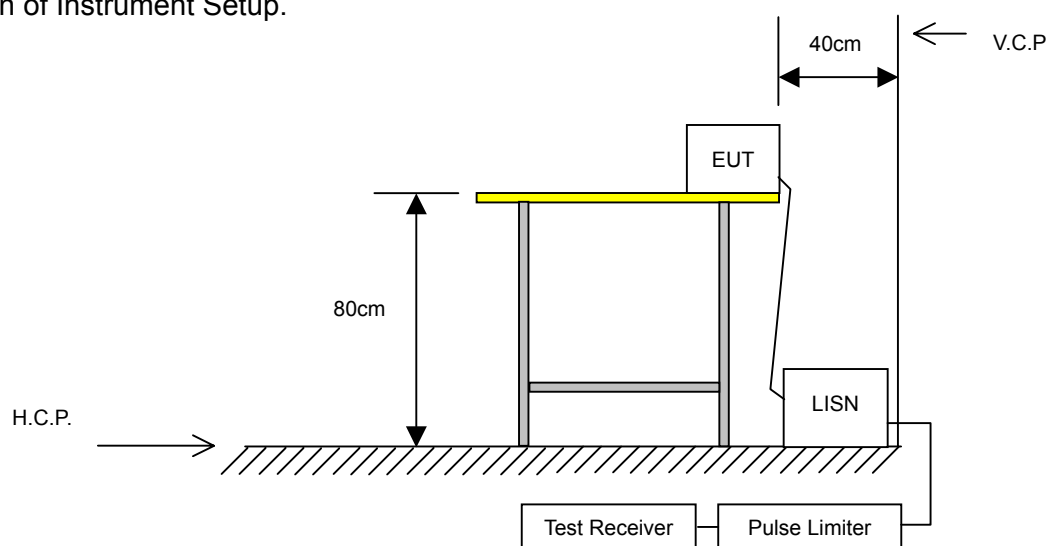
2.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100127	2002/05/07
L.I.S.N.	Schwarzbeck	NNLK8121	8121417	2002/07/26
L.I.S.N.	Rohde & Schwarz	ESH3-Z5	829996/016	2002/06/11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	830836/026	2002/07/15
RF Cable	IETC	CBL04	N/A	2001/10/20

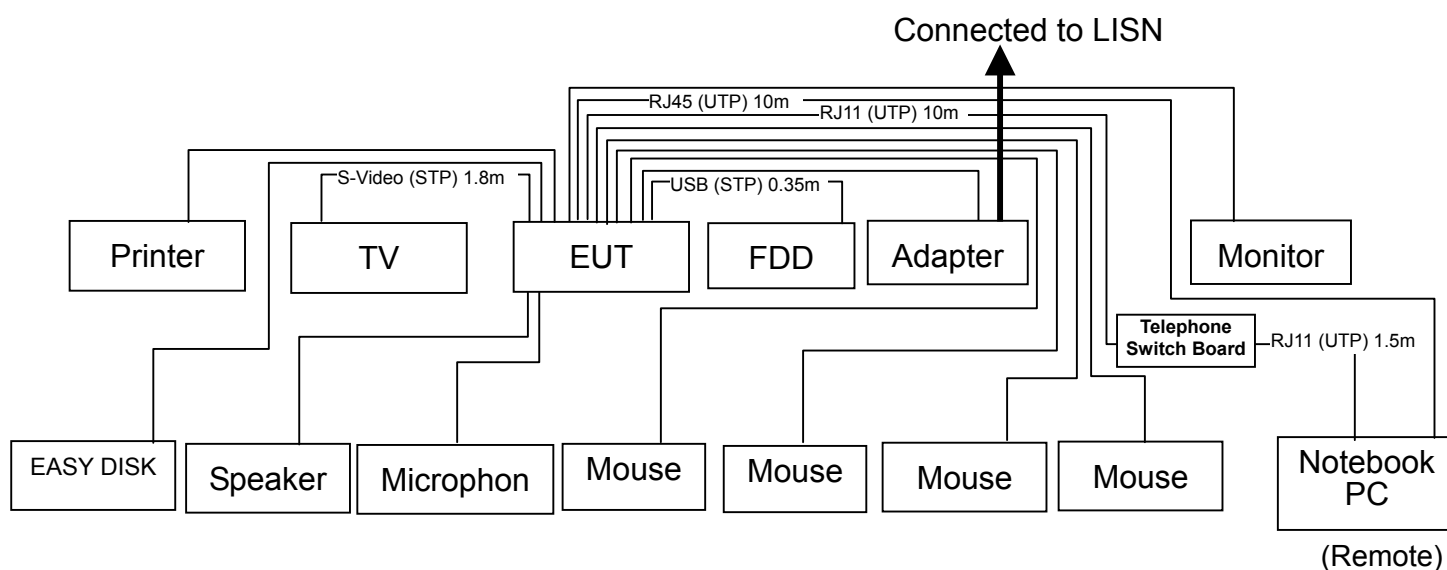
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

2.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



2.3 Conducted Limit

EN 55022

Frequency (MHz)	<input type="checkbox"/> Class A		<input checked="" type="checkbox"/> Class B	
	Q.P. (Quasi-Peak)	A.V. (Average)	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 ~ 0.50	79	66	66 to 56	56 to 46
0.50 ~ 5.0	73	60	56	46
5.0 ~ 30	73	60	60	50

2.4 Instrument configuration

- 2.4.1 The EMI test receiver frequency range set from 150 KHz to 30 MHz.
- 2.4.2 The EMI test receiver bandwidth set at 9kHz.
- 2.4.3 The EMI test receiver detector set as Quasi-Peak (Q.P.) and Average (AV).

2.5 Measured Mode

- 2.5.1 The test mode for preliminary test as following:
- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
 - Mode 2: (#1) 800 * 600 75Hz (LCD Panel) + CRT Monitor
 - Mode 3: (#1) 640 * 480 60Hz (LCD Panel) + CRT Monitor
 - Mode 4: (#1) 1024 * 768 75Hz (LCD Panel) + TV
 - Mode 5: (#1) CRT Monitor + TV
 - Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
 - Mode 7: (#2) 800 * 600 75Hz (LCD Panel) + CRT Monitor
 - Mode 8: (#2) 640 * 480 60Hz (LCD Panel) + CRT Monitor
 - Mode 9: (#2) 1024 * 768 75Hz (LCD Panel) + TV
 - Mode 10: (#2) CRT Monitor + TV
 - Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
 - Mode 12: (#3) 800 * 600 75Hz (LCD Panel) + CRT Monitor
 - Mode 13: (#3) 640 * 480 60Hz (LCD Panel) + CRT Monitor
 - Mode 14: (#3) 1024 * 768 75Hz (LCD Panel) + TV
 - Mode 15: (#3) CRT Monitor + TV
- 2.5.2 Selected the worst case mode when after preliminary test for final test, the mode as following:
- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

2.6 Configuration of Measurement

- 2.6.1 The EUT was place on a non-conductive table whose total height equaled 80cm and vertical conducting plane located 40cm to the rear of the EUT.
- 2.6.2 The EUT was connected to the main power through Line Impedance Stabilization Networks (LISN). This setup provided a 50ohm / 50μH coupling impedance for the

measuring equipment. The auxiliary equipment was also connected to the main power through a LISN that provided a 50ohm/50μH coupling impedance with 50ohm termination. (Refer to the block diagram of the test setup and photographs.)

- 2.6.3 The conducted disturbance was measured between the phase lead and the reference ground, and between the neutral lead and reference ground. The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.
- 2.6.4 The identification of the frequency of highest disturbance with respect to the limit was found by investigating disturbances at a number of significant frequencies. The probable frequency of maximum disturbance had been found and that the associated cable and EUT configuration and mode of operation had been identified.

2.7 Configuration of EUT

- 2.7.1 Setup the EUT and simulators as shown section 2.2.
- 2.7.2 Turn on the power of all equipment.
- 2.7.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.
- 2.7.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 2.7.5 According to the user's manual, change display resolution to find the worst-case mode.
- 2.7.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 2.7.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 2.7.8 RJ45 cable connect Internet website download data.
- 2.7.9 The notebook (EUT) and floppy are each other transmission data.
- 2.7.10 The notebook (EUT) and Easy disk are each other transmission data.
- 2.7.11 Play music program.
- 2.7.12 Measured the Line phase and record value.
- 2.7.13 Changed into Neutral phase and record value.

2.8 Test Result

PASS.

The final tests data are shown on following page. It is test waveform as shown on Appendix 1.

Power Line Conducted Test Data

Date of Tested : Aug. 21, 2002

Power Line : Line

Temperature : 25°C

Humidity : 48%

Tested Mode : Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)		Emission Level (dBuV)		Limits (dBuV)		Margin (dB)	
		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.150	0.18	48.07	42.02	48.25	42.20	66.00	56.00	-17.75	-13.80
0.173	0.18	39.31	24.14	39.49	24.32	65.33	55.33	-25.84	-31.01
0.517	0.16	32.54	30.94	32.70	31.10	56.00	46.00	-23.30	-14.90
1.779	0.15	38.80	37.54	38.95	37.69	56.00	46.00	-17.05	-8.31
3.115	0.16	41.08	37.22	41.24	37.38	56.00	46.00	-14.76	-8.62
4.525	0.15	41.51	35.37	41.66	35.52	56.00	46.00	-14.34	-10.48

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

Power Line Conducted Test Data

Date of Tested : Aug. 21, 2002

Power Line : Neutral

Temperature : 25°C

Humidity : 48%

Tested Mode : Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)		Emission Level (dBuV)		Limits (dBuV)		Margin (dB)	
		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.150	0.18	47.34	38.46	47.52	38.64	66.00	56.00	-18.48	-17.36
0.166	0.18	41.50	23.99	41.68	24.17	65.55	55.55	-23.87	-31.38
1.923	0.16	38.13	37.27	38.29	37.43	56.00	46.00	-17.71	-8.57
2.295	0.16	37.93	35.62	38.09	35.78	56.00	46.00	-17.91	-10.22
4.142	0.16	39.40	35.91	39.56	36.07	56.00	46.00	-16.44	-9.93
7.013	0.22	31.91	23.56	32.13	23.78	60.00	50.00	-27.87	-26.22

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

Power Line Conducted Test Data

Date of Tested : Aug. 21, 2002 Power Line : Line
 Temperature : 25°C Humidity : 48%
 Tested Mode : Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)		Emission Level (dBuV)		Limits (dBuV)		Margin (dB)	
		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.158	0.18	43.55	28.22	43.73	28.40	65.78	55.78	-22.05	-27.38
0.283	0.16	34.77	29.44	34.93	29.60	62.21	52.21	-27.28	-22.61
0.857	0.16	26.68	22.51	26.84	22.67	56.00	46.00	-29.16	-23.33
1.931	0.16	21.52	15.93	21.68	16.09	56.00	46.00	-34.32	-29.91
4.646	0.15	21.66	12.85	21.81	13.00	56.00	46.00	-34.19	-33.00
11.869	0.48	21.49	13.82	21.97	14.30	60.00	50.00	-38.03	-35.70

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

Power Line Conducted Test Data

Date of Tested : Aug. 21, 2002 Power Line : Neutral
 Temperature : 25°C Humidity : 48%
 Tested Mode : Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)		Emission Level (dBuV)		Limits (dBuV)		Margin (dB)	
		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.158	0.18	43.67	27.27	43.85	27.45	65.78	55.78	-21.93	-28.33
0.185	0.17	35.64	17.81	35.81	17.98	65.00	55.00	-29.19	-37.02
0.259	0.16	30.07	21.79	30.23	21.95	62.88	52.88	-32.65	-30.93
2.377	0.16	29.20	28.44	29.36	28.60	56.00	46.00	-26.64	-17.40
4.607	0.15	22.13	15.23	22.28	15.38	56.00	46.00	-33.72	-30.62
16.693	0.70	17.42	10.69	18.12	11.39	60.00	50.00	-41.88	-38.61

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

Power Line Conducted Test Data

Date of Tested : Aug. 21, 2002 Power Line : Line
 Temperature : 25°C Humidity : 48%
 Tested Mode : Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)		Emission Level (dBuV)		Limits (dBuV)		Margin (dB)	
		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.154	0.18	56.23	50.43	56.41	50.61	65.89	55.89	-9.48	-5.28
0.236	0.16	45.97	41.78	46.13	41.94	63.54	53.54	-17.41	-11.60
2.029	0.16	29.57	22.28	29.73	22.44	56.00	46.00	-26.27	-23.56
2.595	0.16	30.08	23.63	30.24	23.79	56.00	46.00	-25.76	-22.21
4.127	0.16	27.89	21.61	28.05	21.77	56.00	46.00	-27.95	-24.23
17.771	0.67	30.06	23.23	30.73	23.90	60.00	50.00	-29.27	-26.10

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

Power Line Conducted Test Data

Date of Tested : Aug. 21, 2002 Power Line : Neutral
 Temperature : 25°C Humidity : 48%
 Tested Mode : Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)		Emission Level (dBuV)		Limits (dBuV)		Margin (dB)	
		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.150	0.18	56.27	50.45	56.45	50.63	66.00	56.00	-9.55	-5.37
0.228	0.16	45.87	40.56	46.03	40.72	63.77	53.77	-17.74	-13.05
0.396	0.16	34.89	18.19	35.05	18.35	58.97	48.97	-23.92	-30.62
1.123	0.16	32.17	23.14	32.33	23.30	56.00	46.00	-23.67	-22.70
4.611	0.15	31.95	26.73	32.10	26.88	56.00	46.00	-23.90	-19.12
16.826	0.71	31.16	25.35	31.87	26.06	60.00	50.00	-28.13	-23.94

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

3 Radiated Emission Measurement

3.1 Instrument

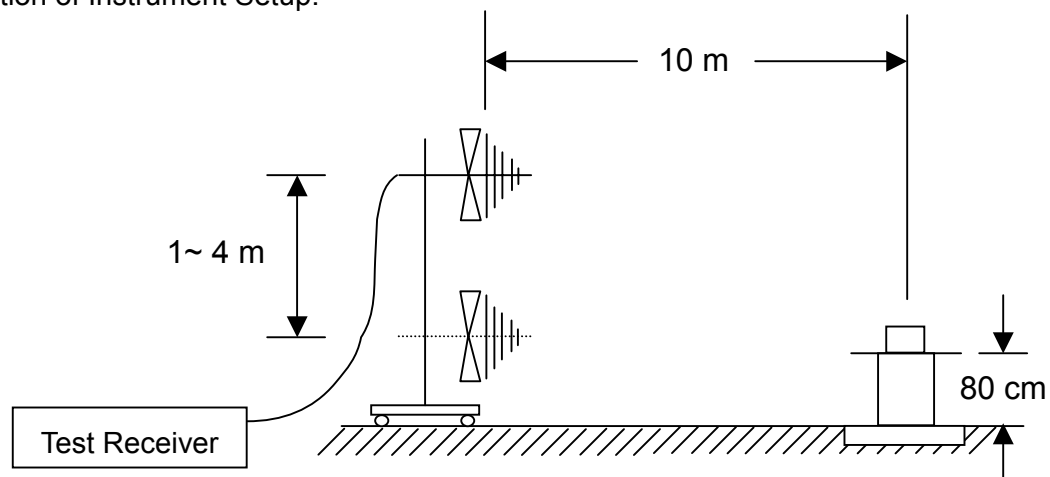
☒ OATS 1

Instrument	Manufacturer	Model	Serial No.	Last Calibration
EMI Test Receiver	Rohde & Schwarz	ESI 07	830154/002	2002/07/10
Antenna	Schaffner	CBL6112B	2609	2002/06/28
Pre-Amplifier	Schaffner	CPA9231A	3351	2001/10/17
RF Cable	IETC	CBL01	N/A	2001/09/15

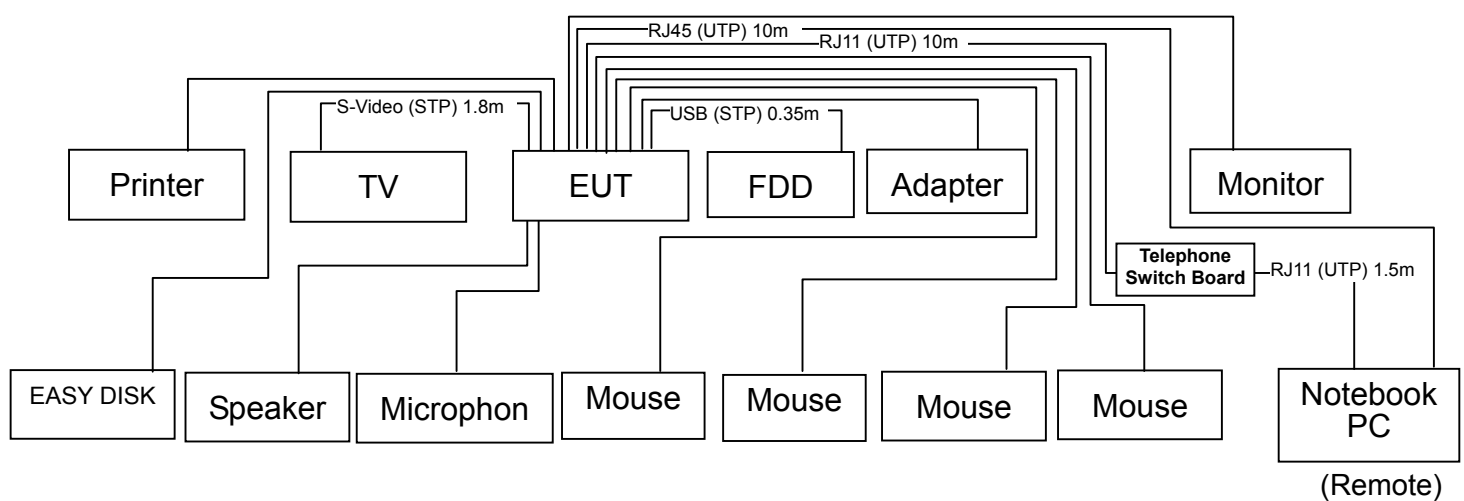
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

3.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



3.3 Radiated Limit

EN 55022

Frequency (MHz)	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> Class B
	Quasi-Peak (dBuV)	Quasi-Peak (dBuV)
30 ~ 230	40.0	30.0
230 ~ 1000	47.0	37.0

3.4 Instrument configuration

- 3.4.1 The EMI test receiver frequency range set from 30 MHz to 1000 MHz.
- 3.4.2 The EMI test receiver bandwidth set at 120 kHz.
- 3.4.3 The EMI test receiver detector set as Quasi-Peak (Q.P.).

3.5 Measured Mode

- 3.5.1 The test mode for preliminary test as following:
- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
 - Mode 2: (#1) 800 * 600 75Hz (LCD Panel) + CRT Monitor
 - Mode 3: (#1) 640 * 480 60Hz (LCD Panel) + CRT Monitor
 - Mode 4: (#1) 1024 * 768 75Hz (LCD Panel) + TV
 - Mode 5: (#1) CRT Monitor + TV
 - Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
 - Mode 7: (#2) 800 * 600 75Hz (LCD Panel) + CRT Monitor
 - Mode 8: (#2) 640 * 480 60Hz (LCD Panel) + CRT Monitor
 - Mode 9: (#2) 1024 * 768 75Hz (LCD Panel) + TV
 - Mode 10: (#2) CRT Monitor + TV
 - Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
 - Mode 12: (#3) 800 * 600 75Hz (LCD Panel) + CRT Monitor
 - Mode 13: (#3) 640 * 480 60Hz (LCD Panel) + CRT Monitor
 - Mode 14: (#3) 1024 * 768 75Hz (LCD Panel) + TV
 - Mode 15: (#3) CRT Monitor + TV
- 3.5.2 Selected the worst case mode when after preliminary test for final test, the mode as following:
- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

3.6 Configuration of Measurement

- 3.6.1 The EUT was place on a non-conductive table whose total height equaled 80cm. The turntable can rotate 360 degree to determine the position of the maximum emission level.
- 3.6.2 The EUT was set 10 meters away from the receiving antenna that was mounted on a

non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

- 3.6.3 The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.
- 3.6.4 The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

3.7 Configuration of EUT

- 3.7.1 Setup the EUT and simulators as shown section 3.2.
- 3.7.2 Turn on the power of all equipment.
- 3.7.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.
- 3.7.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 3.7.5 According to the user's manual, change display resolution to find the worst-case mode.
- 3.7.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 3.7.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 3.7.8 RJ45 cable connect Internet website download data.
- 3.7.9 The notebook (EUT) and floppy are each other transmission data.
- 3.7.10 The notebook (EUT) and Easy disk are each other transmission data.
- 3.7.11 Play music program.
- 3.7.12 Measured the horizontal polarization and record the value.
- 3.7.13 Changed into vertical polarization and record the value.

3.8 Test Result

PASS.

The final tests data are shown on following page. The other preliminary tests data as shown on Appendix 2.

Radiated Emission Measurement Data

Date of Tested : Aug. 7, 2002 Polarization : Horizontal
 Temperature : 28°C Humidity : 59%
 Tested Mode : Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)
135.691	-12.86	33.59	20.73	30.00	-9.27
193.287	-14.90	37.02	22.12	30.00	-7.88
194.890	-14.90	36.92	22.02	30.00	-7.98
200.000	-14.92	33.40	18.48	30.00	-11.52
227.255	-13.75	37.17	23.42	30.00	-6.58
243.687	-12.32	33.79	21.47	37.00	-15.53
633.254	-0.90	29.80	28.90	37.00	-8.10
682.202	-1.27	31.20	29.93	37.00	-7.07
747.163	-0.18	31.50	31.32	37.00	-5.68
813.700	0.09	28.00	28.09	37.00	-8.91

Remark:

1. All readings are Quasi-Peak values.
2. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Radiated Emission Measurement Data

Date of Tested : Aug. 7, 2002

Polarization : Vertical

Temperature : 28°C

Humidity : 59%

Tested Mode : Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)
135.287	-12.86	34.79	21.93	30.00	-8.07
171.795	-15.00	34.80	19.80	30.00	-10.20
194.838	-16.31	40.10	23.79	30.00	-6.21
200.000	-15.64	37.38	21.74	30.00	-8.26
225.539	-13.38	36.90	23.52	30.00	-6.48
227.418	-12.99	35.70	22.71	30.00	-7.29
244.052	-12.28	37.45	25.17	37.00	-11.83
248.861	-11.81	35.87	24.06	37.00	-12.94
633.253	-2.92	32.76	29.84	37.00	-7.16
682.000	-2.39	31.70	29.31	37.00	-7.69
747.150	-2.64	29.30	26.66	37.00	-10.34
813.707	-0.79	27.50	26.71	37.00	-10.29

Remark:

1. All readings are Quasi-Peak values.
2. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Radiated Emission Measurement Data

Date of Tested : Aug. 7, 2002

Polarization : Horizontal

Temperature : 28°C

Humidity : 59%

Tested Mode : Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)
110.581	-14.50	38.86	24.36	30.00	-5.64
120.537	-14.48	36.34	21.86	30.00	-8.14
135.102	-14.85	32.81	17.96	30.00	-12.04
165.523	-16.13	36.52	20.39	30.00	-9.61
194.838	-16.90	36.38	19.48	30.00	-10.52
200.000	-16.92	33.40	16.48	30.00	-13.52
226.453	-15.89	37.53	21.64	30.00	-8.36
228.056	-15.61	37.63	22.02	30.00	-7.98
240.080	-14.87	40.21	25.34	37.00	-11.66
265.531	-11.71	35.97	24.26	37.00	-12.74
300.000	-10.80	33.05	22.25	37.00	-14.75
401.002	-2.15	33.96	31.81	37.00	-5.19
502.004	-2.51	32.26	29.75	37.00	-7.25
595.992	-5.05	35.98	30.93	37.00	-6.07
715.230	-1.95	32.76	30.81	37.00	-6.19

Remark:

1. All readings are Quasi-Peak values.
2. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Radiated Emission Measurement Data

Date of Tested : Aug. 7, 2002	Polarization : Vertical
Temperature : 28°C	Humidity : 59%
Tested Mode : Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor	

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)
110.629	-14.16	38.98	24.82	30.00	-5.18
120.196	-15.81	40.37	24.56	30.00	-5.44
135.517	-14.84	35.66	20.82	30.00	-9.18
165.683	-16.77	36.11	19.34	30.00	-10.66
193.764	-18.44	38.71	20.27	30.00	-9.73
200.000	-17.63	39.40	21.77	30.00	-8.23
225.451	-15.40	41.19	25.79	30.00	-4.21
226.854	-15.15	41.05	25.90	30.00	-4.10
243.888	-14.30	37.64	23.34	37.00	-13.66
401.002	4.95	27.00	31.95	37.00	-5.05
500.601	-6.48	34.74	28.26	37.00	-8.74
595.992	-5.38	33.01	27.63	37.00	-9.37
642.285	-5.13	35.23	30.10	37.00	-6.90
715.230	-3.67	35.12	31.45	37.00	-5.55
732.064	-3.93	33.13	29.20	37.00	-7.80

Remark:

1. All readings are Quasi-Peak values.
2. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Radiated Emission Measurement Data

Date of Tested : Aug. 13, 2002 Polarization : Horizontal
 Temperature : 28°C Humidity : 59%
 Tested Mode : Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)
128.619	-14.78	31.84	17.06	30.00	-12.94
164.051	-16.15	37.43	21.28	30.00	-8.72
193.810	-16.90	38.41	21.51	30.00	-8.49
230.194	-15.25	33.40	18.15	37.00	-18.85
528.096	-4.56	33.11	28.55	37.00	-8.45
607.487	-4.53	32.05	27.52	37.00	-9.48
643.453	-3.26	33.30	30.04	37.00	-6.96

Remark:

1. All readings are Quasi-Peak values.
2. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Radiated Emission Measurement Data

Date of Tested : Aug. 13, 2002 Polarization : Vertical
Temperature : 28°C Humidity : 59%
Tested Mode : Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Frequency (MHz)	Factor (dB)	Meter Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)
129.982	-15.47	34.88	19.41	30.00	-10.59
166.032	-16.77	37.54	20.77	30.00	-9.23
193.786	-18.44	37.28	18.84	30.00	-11.16
230.367	-14.46	37.13	22.67	37.00	-14.33
528.082	-7.48	33.70	26.22	37.00	-10.78
607.517	-4.93	32.65	27.72	37.00	-9.28
643.455	-4.91	32.25	27.34	37.00	-9.66
799.399	-1.93	33.78	31.85	37.00	-5.15
977.615	0.07	30.40	30.47	37.00	-6.53

Remark:

1. All readings are Quasi-Peak values.
2. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

4 Harmonic Current Emission Measurement

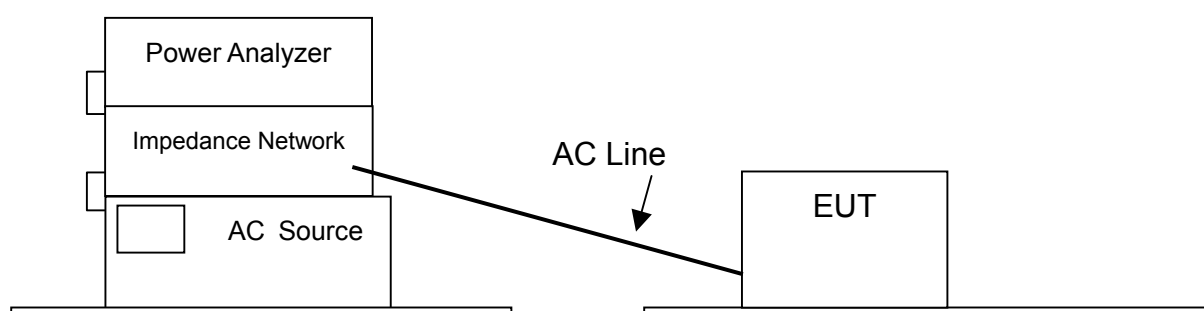
4.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
Programmable AC Source	Chroma	6530	3447	2002/01/02
Universal Power Analyzer	VOLTECH	PM3000A	AL50/4717	2002/05/15
Reference Impedance Network	VOLTECH	IEC STANDADARD 555	IB521/4862	2002/07/27

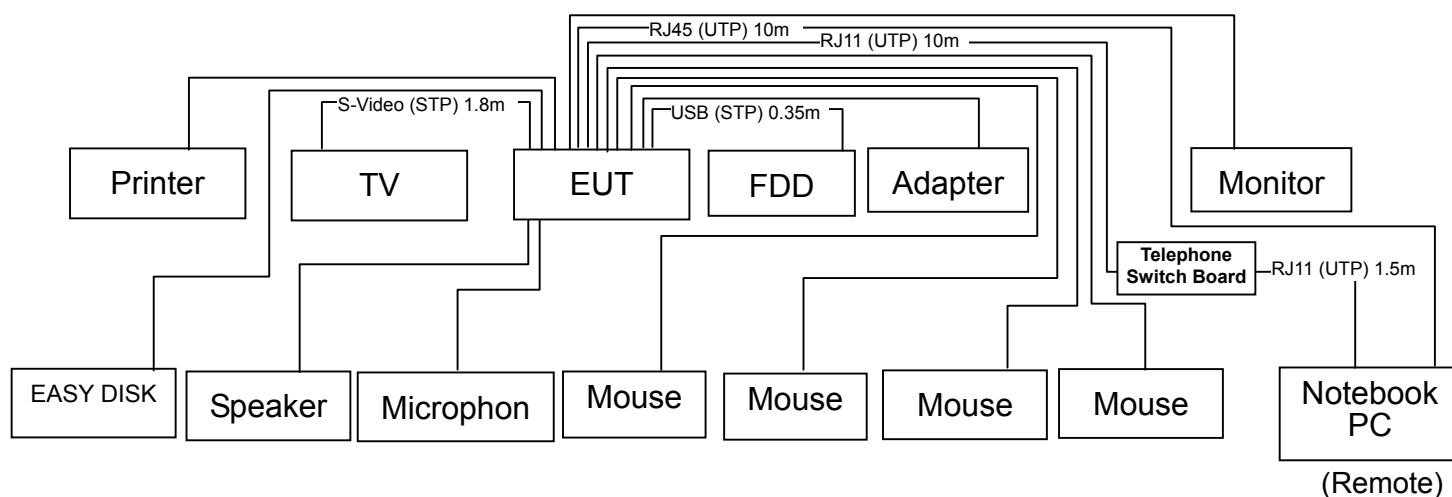
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

4.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



4.3 Test Limit

Class D Equipment

Harmonic order (n)	Maximum permissible harmonic current per watt (mA/W)	Maximum permissible harmonic current
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
$13 \leq n \leq 39$ (odd harmonics only)	$3.85 / n$	See table 1

4.4 Measured Mode

4.4.1 The test mode for measured as following:

- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

4.5 Configuration of Measurement

- 4.5.1 The EUT with power analyzer in series and supplied from a power source with the same nominal voltage and frequency as the rated supply voltage.
- 4.5.2 Set the output of the power analyzer to the rated voltage and frequency of EUT (230V, 50Hz).
- 4.5.3 The EUT classified by the "A/D Detect" function. The measurement was automatic performed by test software. The test result was collected and analyzed by the computer.

4.6 Configuration of EUT

- 4.6.1 Setup the EUT and simulators as shown section 4.2.
- 4.6.2 Turn on the power of all equipment.
- 4.6.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.
- 4.6.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 4.6.5 According to the user's manual, change display resolution to find the worst-case mode.
- 4.6.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 4.6.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 4.6.8 RJ45 cable connect Internet website download data.
- 4.6.9 The notebook (EUT) and floppy are each other transmission data.
- 4.6.10 The notebook (EUT) and Easy disk are each other transmission data.
- 4.6.11 Play music program.

4.7 Test Result

PASS.

The measured results are shown on following page.

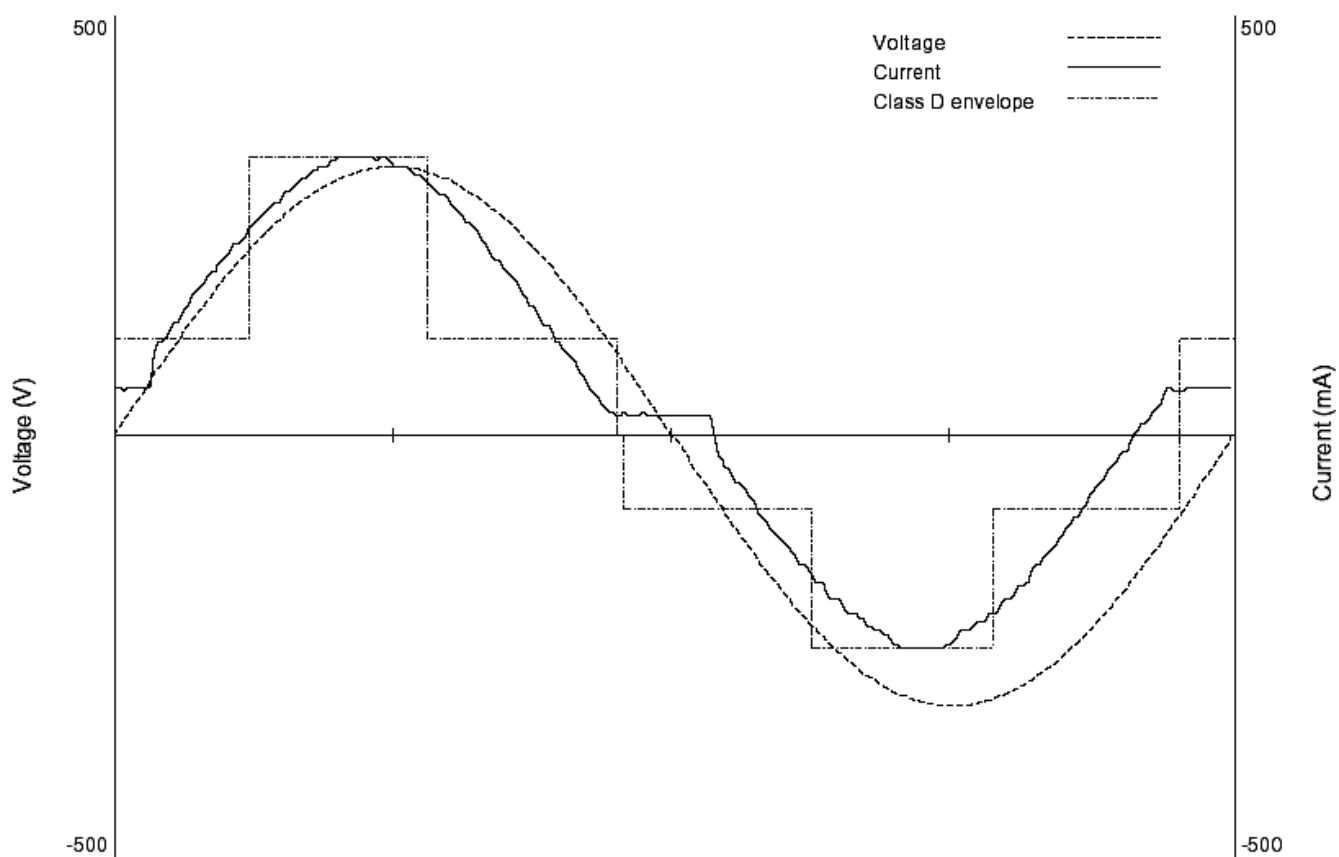
Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Product:	NOTEBOOK PC	2002 Sep 9 11:49am
Serial no:	M/N:8640	Page 1 of 1
Description:	Temperature:26'c Humidity:52%	
Voltech IEC1000-3 Windows Software 2.10		Test Date: 2002 Sep 9 11:39am
Result:	PASS	
Type of Test:	Steady State Harmonics Test - Table	
Power Analyzer:	Voltech PM3000A v2.16 s/n 4717	
AC Source:	Mains / Manual Source	
PASS		

Class	D
Class Multiplier	1
Power	81.7 W

Harmonic	Reading	Limit	Result	Harmonic	Reading	Limit	Result
2	0.21mA	None	N/A	3	60.16mA	278mA	Pass
4	0.12mA	None	N/A	5	19.75mA	155mA	Pass
6	0.01mA	None	N/A	7	13.63mA	82mA	Pass
8	0.02mA	None	N/A	9	7.81mA	41mA	Pass
10	0.19mA	None	N/A	11	3.14mA	29mA	N/A
12	0.29mA	None	N/A	13	1.46mA	24mA	N/A
14	0.07mA	None	N/A	15	2.75mA	21mA	N/A
16	0.06mA	None	N/A	17	3.18mA	19mA	N/A
18	0.08mA	None	N/A	19	2.89mA	17mA	N/A
20	0.05mA	None	N/A	21	2.07mA	15mA	N/A
22	0.10mA	None	N/A	23	1.31mA	14mA	N/A
24	0.21mA	None	N/A	25	1.34mA	13mA	N/A
26	0.02mA	None	N/A	27	1.63mA	12mA	N/A
28	0.05mA	None	N/A	29	1.82mA	11mA	N/A
30	0.02mA	None	N/A	31	1.54mA	10mA	N/A
32	0.06mA	None	N/A	33	1.17mA	10mA	N/A
34	0.08mA	None	N/A	35	1.04mA	9mA	N/A
36	0.06mA	None	N/A	37	1.23mA	9mA	N/A
38	0.04mA	None	N/A	39	1.18mA	8mA	N/A
40	0.01mA	None	N/A				

Product:	NOTEBOOK	2002 Sep 9 11:49am
Serial no:	M/N:8640	Page 1 of 1
Description:	Temperature:26'c Humidity:52%	
Voltech IEC1000-3 Windows Software 2.10		Test Date: 2002 Sep 9 11:41am
Result:	PASS	
Type of Test:	Waveform	
Power Analyzer:	Voltech PM3000A v2.16 s/n 4717	
AC Source:	Mains / Manual Source	
	Waveform is not Class D	



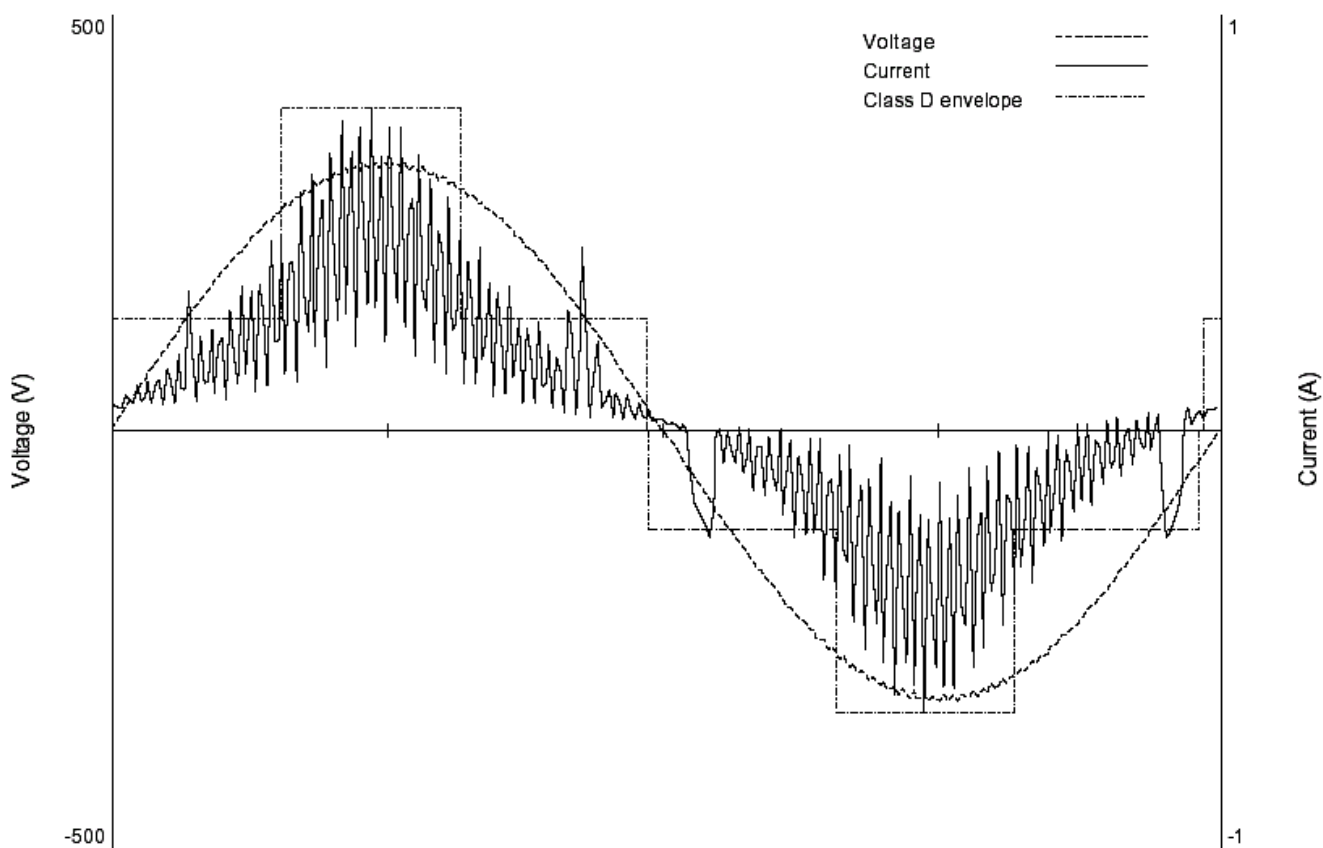
Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Product:	NOTEBOOK PC	2002 Sep 9 1:03pm
Serial no:	M/N:8640	Page 1 of 1
Description:	Temperature:26°C Humidity:51%	
Voltech IEC1000-3 Windows Software 2.10		Test Date: 2002 Sep 9 12:53pm
Result:	PASS	
Type of Test:	Steady State Harmonics Test - Table	
Power Analyzer:	Voltech PM3000A v2.16 s/n 4717	
AC Source:	Mains / Manual Source	
PASS		

Class	D
Class Multiplier	1
Power	108.2 W

Harmonic	Reading	Limit	Result	Harmonic	Reading	Limit	Result
2	21.86mA	None	N/A	3	91.54mA	368mA	Pass
4	16.74mA	None	N/A	5	72.98mA	206mA	Pass
6	15.39mA	None	N/A	7	17.81mA	108mA	Pass
8	1.96mA	None	N/A	9	18.23mA	54mA	Pass
10	17.58mA	None	N/A	11	1.60mA	38mA	N/A
12	30.62mA	None	N/A	13	6.37mA	32mA	Pass
14	32.22mA	None	N/A	15	9.94mA	28mA	Pass
16	21.83mA	None	N/A	17	11.33mA	25mA	Pass
18	9.38mA	None	N/A	19	14.39mA	22mA	Pass
20	12.24mA	None	N/A	21	16.97mA	20mA	Pass
22	16.86mA	None	N/A	23	14.56mA	18mA	Pass
24	17.03mA	None	N/A	25	5.96mA	17mA	Pass
26	14.13mA	None	N/A	27	5.67mA	15mA	Pass
28	8.30mA	None	N/A	29	12.22mA	14mA	Pass
30	2.53mA	None	N/A	31	12.60mA	13mA	Pass
32	3.83mA	None	N/A	33	8.86mA	13mA	Pass
34	5.60mA	None	N/A	35	6.49mA	12mA	Pass
36	5.92mA	None	N/A	37	4.95mA	11mA	N/A
38	5.35mA	None	N/A	39	3.62mA	11mA	N/A
40	3.67mA	None	N/A				

Product:	NOTEBOOK PC	2002 Sep 9 1:03pm
Serial no:	M/N:8640	Page 1 of 1
Description:	Temperature:26'c Humidity:51%	
Voltech IEC1000-3 Windows Software 2.10		Test Date: 2002 Sep 9 12:54pm
Result:	PASS	
Type of Test:	Waveform	
Power Analyzer:	Voltech PM3000A v2.16 s/n 4717	
AC Source:	Mains / Manual Source	
	Waveform is not Class D	



5 Voltage Fluctuations and Flicker Measurement

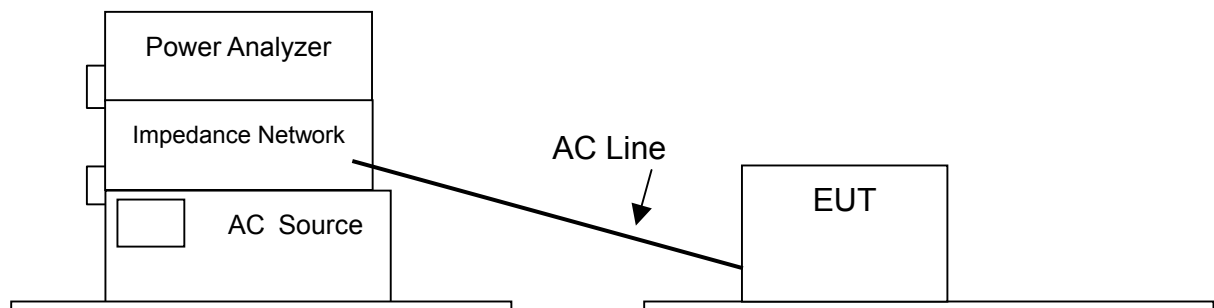
5.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
Programmable AC Source	Chroma	6530	3447	2002/01/02
Universal Power Analyzer	VOLTECH	PM3000A	AL50/4717	2002/05/15
Reference Impedance Network	VOLTECH	IEC STANDADARD 555	IB521/4862	2002/07/27

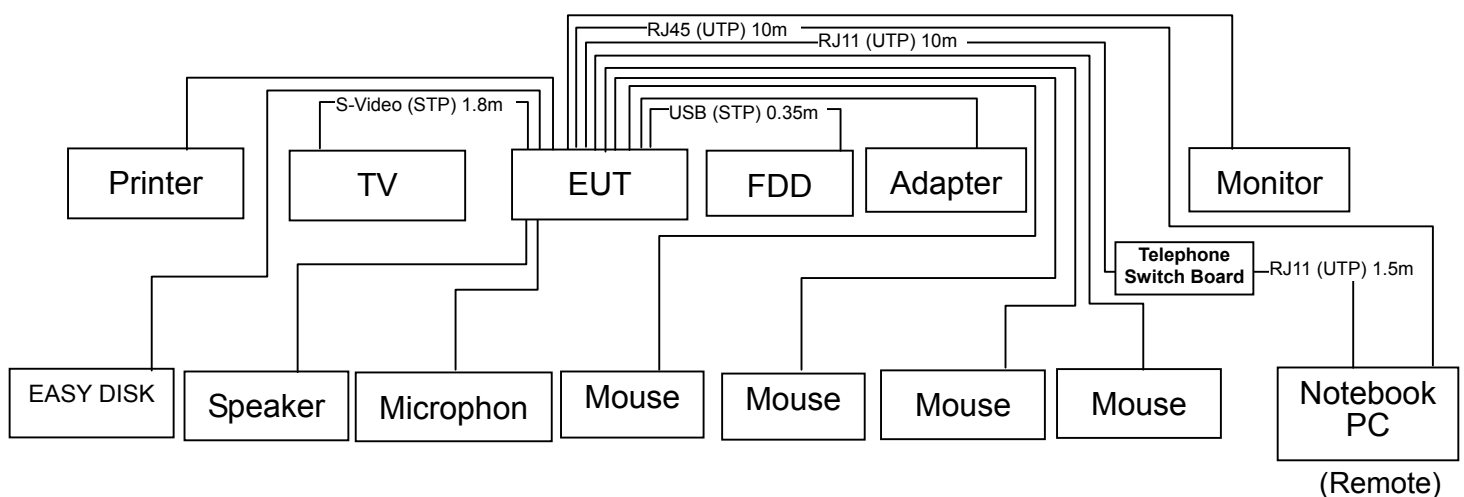
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

5.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



5.3 Test Limit

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{it} shall not be greater than 0.65;
- the relative steady-state voltage change, d_c , shall not exceed 3%;
- the maximum relative voltage change, d_{max} , shall not exceed 4%;
- the value of $d(t)$ during a voltage change shall not exceed 3% for more than 200 ms.

5.4 Measured Mode

5.4.1 The test mode for measured as following:

- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

5.5 Configuration of Measurement

- 5.5.1 The EUT with power analyzer in series and supplied from a power source with the same nominal voltage and frequency as the rated supply voltage.
- 5.5.2 Set the output of the power analyzer to the rated voltage and frequency of EUT (230V, 50Hz).
- 5.5.3 Select the test time of observation period for short-term ($T_p = 10$ min) and long-term ($T_p = 2$ hrs). The test result was collected and analyzed by the computer.

5.6 Configuration of EUT

- 5.6.1 Setup the EUT and simulators as shown section 5.2.
- 5.6.2 Turn on the power of all equipment.
- 5.6.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.
- 5.6.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 5.6.5 According to the user's manual, change display resolution to find the worst-case mode.
- 5.6.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 5.6.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 5.6.8 RJ45 cable connect Internet website download data.
- 5.6.9 The notebook (EUT) and floppy are each other transmission data.
- 5.6.10 The notebook (EUT) and Easy disk are each other transmission data.
- 5.6.11 Play music program.

5.7 Test Result

PASS.

The measured result is shown on following page.

Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Product:	NOTEBOOK PC	2002 Aug 23 4:50pm
Serial no:	M/N:8640	Page 1 of 1
Description:	Temperature:27°C Humidity:57%	
Voltech IEC1000-3 Windows Software 2.10		Test Date: 2002 Aug 23 4:41pm
Result:	PASS1	
Type of Test:	Flickermeter Test - Table	
Power Analyzer:	Voltech PM3000A v2.16 s/n 4717	
AC Source:	Mains / Manual Source	
PASS	Measurement method - Voltage	

	Pst	dc (%)	dmax (%)	d(t) > 3%(ms)
Limit	1.000	3.000	4.000	200
Reading 1	0.071	0.017	0.038	0

Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

Product:	NOTEBOOK PC	2002 Aug 23 4:39pm Page 1 of 1
Serial no:	M/N:8640	
Description:	Temperature:27°C Humidity:57%	
Voltech IEC1000-3 Windows Software 2.10		Test Date: 2002 Aug 23 4:32pm
Result:	PASS	
Type of Test:	Flickermeter Test - Table	
Power Analyzer:	Voltech PM3000A v2.16 s/n 4717	
AC Source:	Mains / Manual Source	
PASS	Measurement method - Voltage	

	Pst	dc (%)	dmax (%)	d(t) > 3%(ms)
Limit	1.000	3.000	4.000	200
Reading 1	0.071	0.017	0.038	0

6 Electrostatic Discharge Immunity Test

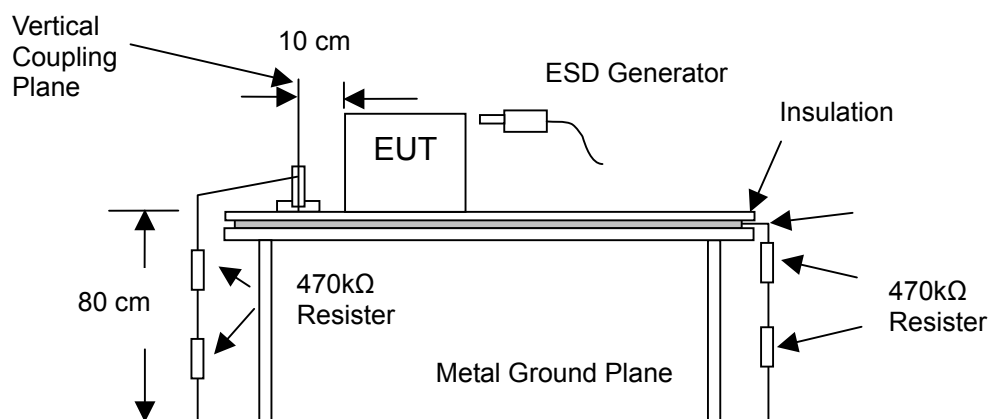
6.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
ESD Simulator	Keytek	MZ-15/EC	205245	2002/05/24

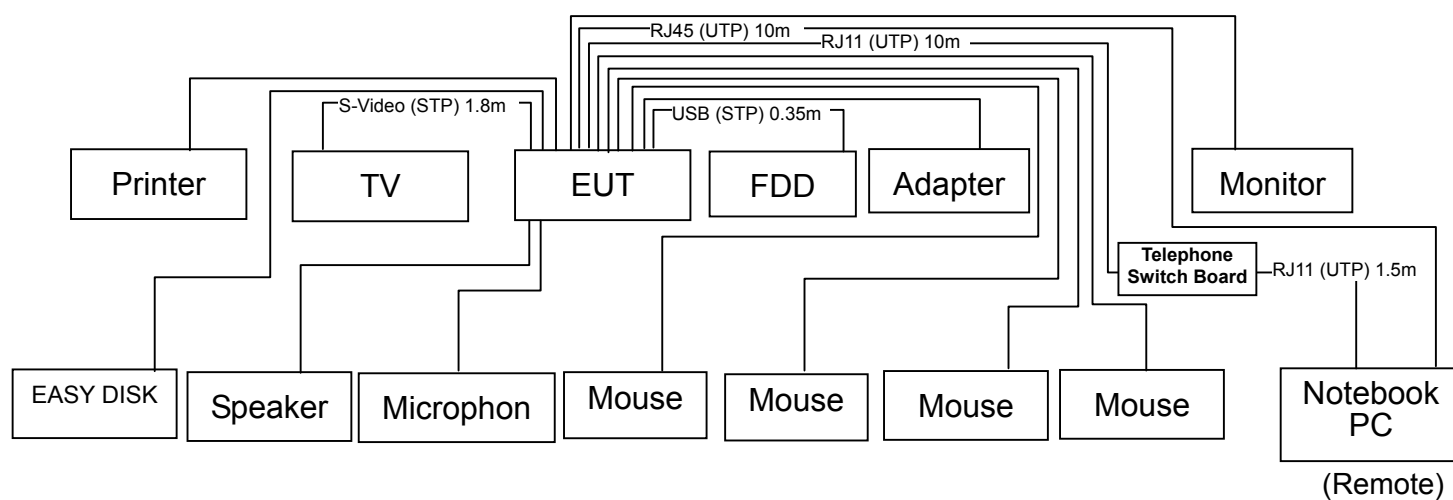
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

6.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



6.3 Test Levels & Performance Criterion

6.3.1 Test Levels

Level	Contact discharge (kV)	Air discharge (kV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

6.3.2 Performance Criterion

Criterion	Description
A	The equipment shall continue to operate as intended without operator intervention, degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.
B	After the test, the equipment shall continue to operate as intended without operator intervention, degradation of performance or loss of function is allowed.
C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of controls by the user in accordance with the manufacturer's instructions.

6.4 Test Require

6.4.1 Air discharge: 8 kV

6.4.2 Contact discharge: 4 kV

6.4.3 Performance criterion: B

6.5 Tested Mode

6.5.1 The tested mode as following:

- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

6.6 Configuration of Measurement

6.6.1 Contact discharges to the conductive surfaces and coupling planes:

During the test, the time interval between successive single discharges should be longer than one second. One of the test points subjected to at least 50 indirect discharges to the center of the front edge of the Horizontal Coupling Plane (HCP). There were at least 50 single discharges with positive or negative polarities at the other same selected point. There are also at least 200 indirect discharges to the Vertical Coupling Plane (VCP). In case of contact discharge, the tip of the discharge electrode was touched the EUT before the discharge switch was operated.

The HCP was placed under the EUT. The discharge gun should be held perpendicular to the HCP and at a distance of 0.1 meter from the edge of EUT. The tip of the discharge electrode was touched the coupling plane before the discharge switch was operated.

The coupling plane of dimensions 0.5×0.5 meters was placed parallel to the EUT. The distance between the coupling plane and the surface of EUT was 0.1 meter. The discharge electrode was touched the coupling plane before the discharge switch was operated.

6.6.2 Air discharge at insulating surfaces:

There were minimum of 10 single air discharges to the selected test point.

6.6.3 The selected points, performed with electrostatic discharge were marked with red labels on the EUT. The ESD generator (gun) was held perpendicular to the surface to which the discharge was applied.

6.7 Configuration of EUT

6.7.1 Setup the EUT and simulators as shown section 6.2.

6.7.2 Turn on the power of all equipment.

6.7.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.

6.7.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.

6.7.5 According to the user's manual, change display resolution to find the worst-case mode.

6.7.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.

6.7.7 RJ11 cable through auxiliary phone connect server IBM notebook.

6.7.8 RJ45 cable connect Internet website download data.

6.7.9 The notebook (EUT) and floppy are each other transmission data.

6.7.10 The notebook (EUT) and Easy disk are each other transmission data.

6.7.11 Play music program.

6.8 Test Result

The performance criterion after tested is:

Air discharge: ☒ A ☐ B ☐ C

Contact discharge: ☒ A ☐ B ☐ C

7 Radio-frequency, Electromagnetic field Immunity Test

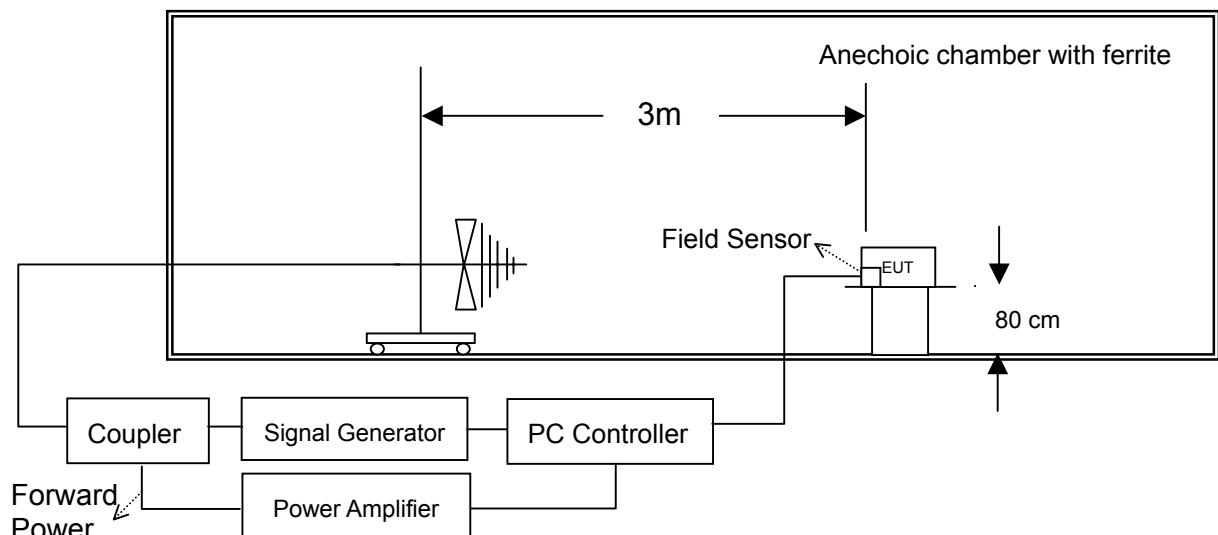
7.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
Signal Generator	ROHDE & SCHWARZ	SMY02	829846/013	2002/06/20
Power Amplifier	KALMUS	225LC 7100LC	8948-1 8948-1	2002/06/15
Field Probe	HOLADAY INDUSTRIES	HI-4422	101635	2002/02/22
Coupler	WERLATONE	C2630	8067	2002/06/15
Bilog Antenna	SCHWARZBECK	VULB9161	4023	2001/09/16

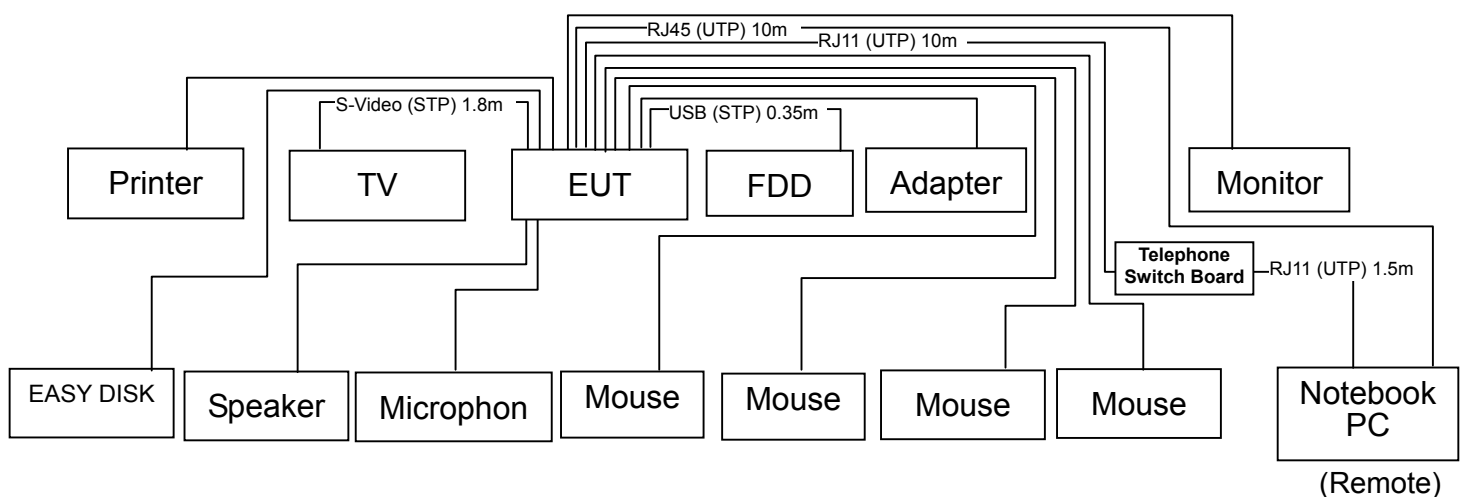
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

7.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



7.3 Test Levels & Performance Criterion

7.3.1 Test Levels

Level	Test field strength (V/m)
1	1
2	3
3	10
X	Special

7.3.2 Performance Criterion

Criterion	Description
A	The equipment shall continue to operate as intended without operator intervention, degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.
B	After the test, the equipment shall continue to operate as intended without operator intervention, degradation of performance or loss of function is allowed.
C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of controls by the user in accordance with the manufacturer's instructions.

7.4 Test Require

- 7.4.1 ☒ Frequency range: 80 to 1000 MHz, Field strength: 3 V/m (un-modulated, r.m.s.), 80% AM (1kHz), Performance criterion: A
- 7.4.2 ☐ Frequency range: 900 +/- 5 MHz, Field strength: 3 V/m (un-modulated, r.m.s.), 50% duty cycle, rep. Frequency 200Hz, Performance criterion: A

7.5 Tested Mode

7.5.1 The tested mode as following:

- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

7.6 Configuration of Measurement

- 7.6.1 Before testing, the intensity of the established field strength was checked by placing the field sensor at a calibration grid point, and with the field generating antenna and cables in the same positions as used for the calibration, the forward and reverse power were measured. The forward power needed to give the calibrated field was evaluated.
- 7.6.2 After the calibration had been verified, the test field was then generated using the values obtained from the calibration. The EUT and the auxiliary equipment were placed on a table with 0.8 meters height. The EUT was initially placed with one face coincidence with the calibration plane at a distance of 3 meters away from the illuminating antenna (the same as used for the field calibration). Both horizontal and vertical polarizations of the antenna and four sides of the EUT were set for the radiated field immunity test.
- 7.6.3 In order to survey the performance of the EUT, a CCD camera was used to monitor the EUT performance.

7.7 Configuration of EUT

- 7.7.1 Setup the EUT and simulators as shown section 7.2.
- 7.7.2 Turn on the power of all equipment.
- 7.7.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.
- 7.7.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 7.7.5 According to the user's manual, change display resolution to find the worst-case mode.
- 7.7.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 7.7.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 7.7.8 RJ45 cable connect Internet website download data.
- 7.7.9 The notebook (EUT) and floppy are each other transmission data.
- 7.7.10 The notebook (EUT) and Easy disk are each other transmission data.
- 7.7.11 Play music program.

7.8 Test Result

The performance criterion after tested as following:

☒ Frequency range: **80 to 1000** MHz, Field strength: **3** V/m (un-modulated, r.m.s.), 80% AM (1kHz),

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

☐ Frequency range: **900 +/- 5** MHz, Field strength: **3** V/m (un-modulated, r.m.s.), 50% duty cycle, rep. Frequency **200**Hz

Performance criterion: ☐ **A** ☐ **B** ☐ **C**

8 Electrical Fast Transient/Burst Immunity Test

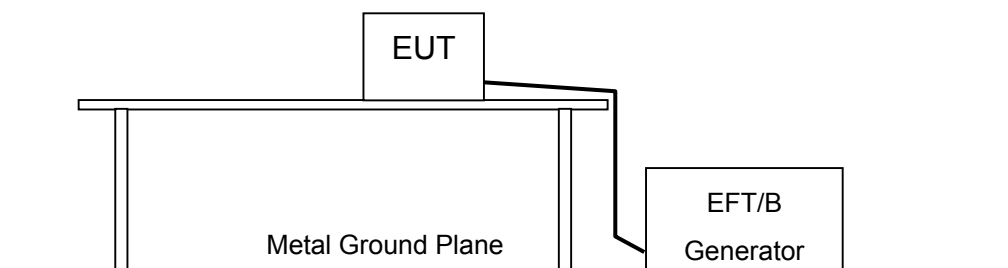
8.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
EMC Pro System	KeyTek	EMC Pro	0003231	2002/03/15

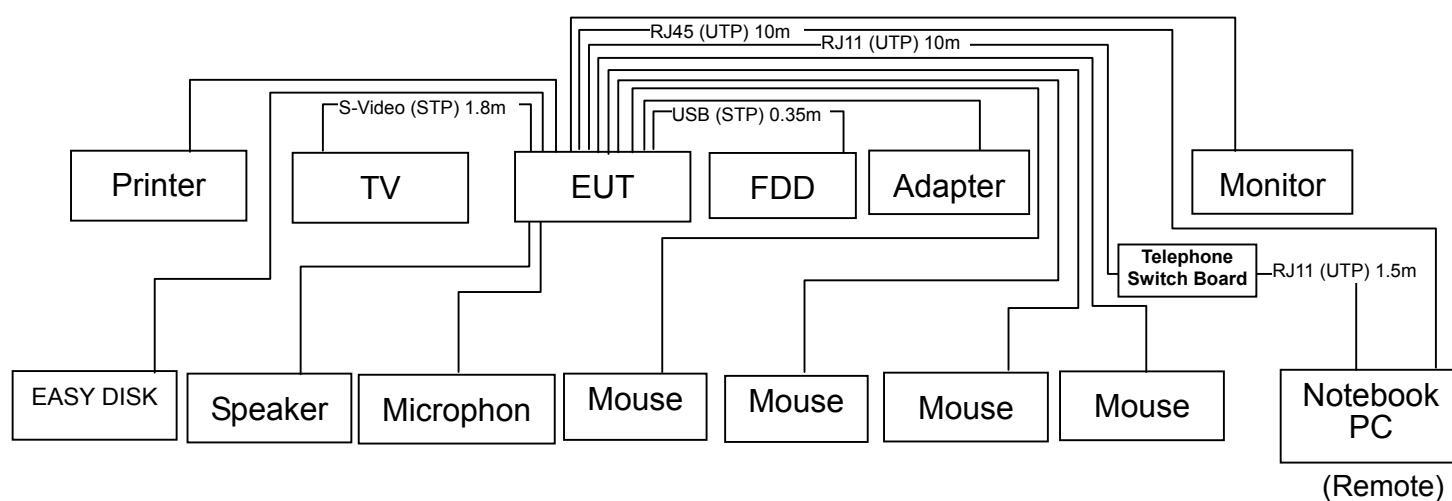
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

8.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



8.3 Test Levels & Performance Criterion

8.3.1 Test Levels

Level	On power supply port, PE		On I/O signal, data and control ports	
	Voltage Peak (kV)	Repetition rate (kHz)	Voltage Peak (kV)	Repetition rate (kHz)
1	0.5	5	0.25	5
2	1	5	0.5	5
3	2	5	1	5
4	4	2.5	2	5
X	Special	Special	Special	Special

8.3.2 Performance Criterion

Criterion	Description
A	The equipment shall continue to operate as intended without operator intervention, degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.
B	After the test, the equipment shall continue to operate as intended without operator intervention, degradation of performance or loss of function is allowed.
C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of controls by the user in accordance with the manufacturer's instructions.

8.4 Test Require

8.4.1 5 kHz Repetition frequency

8.4.2 Performance criterion: B

8.4.3 ☒ 1.0 kV input ac power ports.

☒ 0.5 kV for Signal, telecommunication,

☐ 0.5 kV input d.c power ports.

8.5 Tested Mode

8.5.1 The tested mode as following:

- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

8.6 Configuration of Measurement

8.6.1 The EUT and the auxiliary equipment were placed on a wooden table of 0.8 meters height. The size of ground plane is greater than 1m×1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth.

8.6.2 The EUT was connected to the power mains through a coupling device that directly couples the EFT interference signal. Each of the Line, Neutral and Protective Earth (PE) conductors was impressed with burst noise for 1 minute. Both the voltage polarities were applied for each test level. The length of power cord between the coupling device and the EUT was less than 1 meter.

8.7 Configuration of EUT

- 8.7.1 Setup the EUT and simulators as shown section 8.2.
- 8.7.2 Turn on the power of all equipment.
- 8.7.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.
- 8.7.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 8.7.5 According to the user's manual, change display resolution to find the worst-case mode.
- 8.7.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 8.7.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 8.7.8 RJ45 cable connect Internet website download data.
- 8.7.9 The notebook (EUT) and floppy are each other transmission data.
- 8.7.10 The notebook (EUT) and Easy disk are each other transmission data.
- 8.7.11 Play music program.

8.8 Test Result

The performance criterion after tested is:

☒ 1.0 kV input ac power ports,

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

☒ 0.5 kV for Signal, telecommunication,

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

☐ 0.5 kV input dc power ports,

Performance criterion: ☐ **A** ☐ **B** ☐ **C**

9 Surge Immunity Test

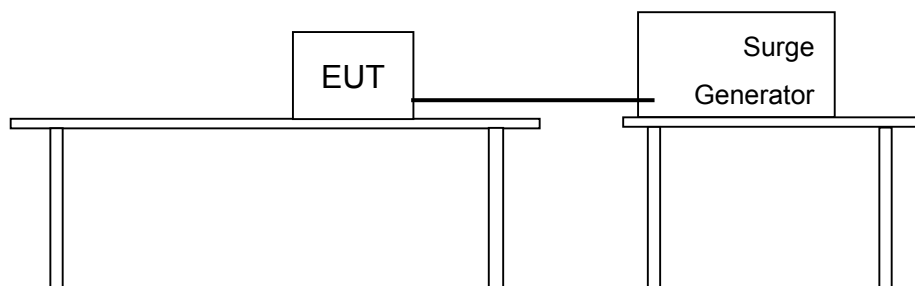
9.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
EMC Pro Systems	KeyTek	EMC Pro	0003234	2002/03/15

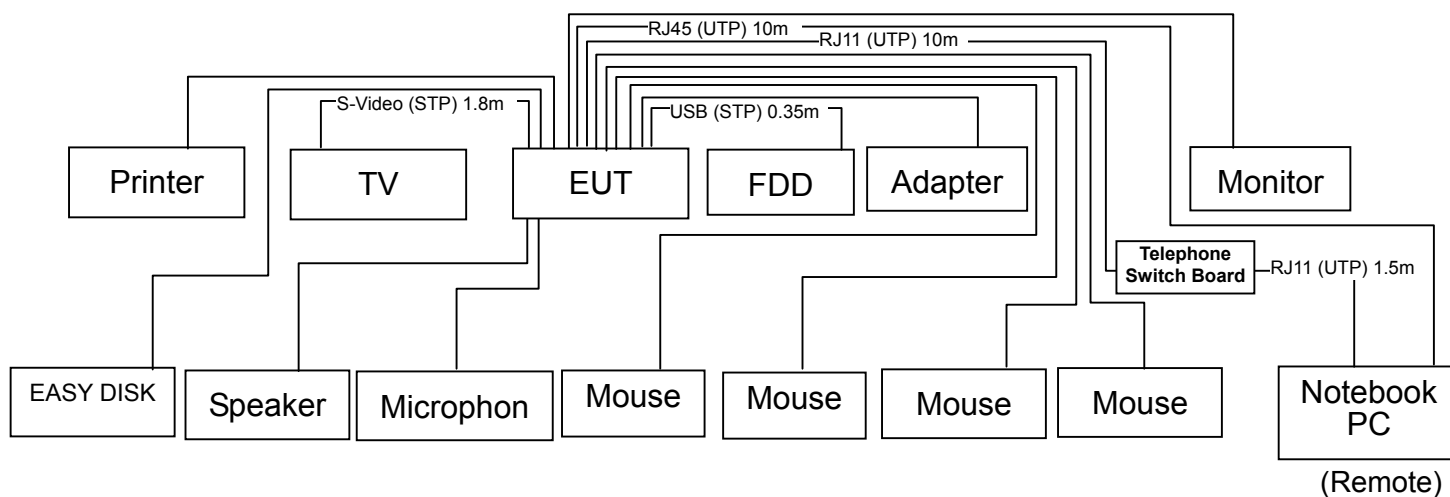
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

9.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



9.3 Test Levels & Performance Criterion

9.3.1 Test Levels

Level	Open-circuit test voltage (kV)
1	0.5
2	1.0
3	2.0
4	4.0
X	Special

9.3.2 Performance Criterion

Criterion	Description
A	The equipment shall continue to operate as intended without operator intervention, degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.
B	After the test, the equipment shall continue to operate as intended without operator intervention, degradation of performance or loss of function is allowed.
C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of controls by the user in accordance with the manufacturer's instructions.

9.4 Test Require

- 9.4.1 ☒ Input ac power ports: ☐ 0.5 kV (peak): line to line, 1.2/50 (8/20) Tr/Th us
☐ 1.0 kV (peak): line to earth, 1.2/50 (8/20) Tr/Th us
☒ Line to line: ± 1 kV (peak), 1.2/50 (8/20) Tr/Th us
☐ Line to earth (ground): ± 2 kV (peak), 1.2/50 (8/20) Tr/Th us
- 9.4.2 ☐ Input dc power ports: 0.5kV(peak): line to earth, 1.2/50 (8/20) Tr/Th us
☒ Signal and telecommunication ports: 1.0kV(peak): 1.2/50 (8/20) Tr/Th us
- 9.4.3 Performance criterion: **B**

9.5 Tested Mode

9.5.1 The tested mode as following:

- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

9.6 Configuration of Measurement

- 9.6.1 The EUT and the auxiliary equipment were placed on a table of 0.8m heights above a metal ground reference plane. The size of ground plane is greater than 1m×1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth. The length of power cord between the coupling device and the EUT was less than 2 meters (provided by the manufacturer).
- 9.6.2 The EUT was connected to the power mains through a coupling device that directly couples the Surge interference signal. The surge noise was applied synchronized to the

voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).

- 9.6.3 The surges were applied line to line and line(s) to earth. When testing line to earth the test voltage was applied successively between each of the lines and earth. Steps up to the test level specified increased the test voltage. All lower levels including the selected test level were tested. The polarity of each surge level included positive and negative test pulses.

9.7 Configuration of EUT

- 9.7.1 Setup the EUT and simulators as shown section 9.2.
- 9.7.2 Turn on the power of all equipment.
- 9.7.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.
- 9.7.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 9.7.5 According to the user's manual, change display resolution to find the worst-case mode.
- 9.7.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 9.7.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 9.7.8 RJ45 cable connect Internet website download data.
- 9.7.9 The notebook (EUT) and floppy are each other transmission data.
- 9.7.10 The notebook (EUT) and Easy disk are each other transmission data.
- 9.7.11 Play music program.

9.8 Test Result

The performance criterion after tested as following:

- ☐ 0.5 kV (peak): line to line
Performance criterion: ☐ A ☐ B ☐ C
- ☐ 1.0 kV (peak): line to earth
Performance criterion: ☐ A ☐ B ☐ C
- ☒ ±1kV(peak): Line to line
Performance criterion: ☒ A ☐ B ☐ C
- ☐ ±2kV(peak): Line to earth (ground)
Performance criterion: ☐ A ☐ B ☐ C
- ☐ Input dc power ports: 0.5kV(peak) line to earth
Performance criterion: ☐ A ☐ B ☐ C
- ☒ Signal and telecommunication ports: 1.0kV(peak)
Performance criterion: ☒ A ☐ B ☐ C

10 Radio-frequency, Conducted Disturbances Immunity Test

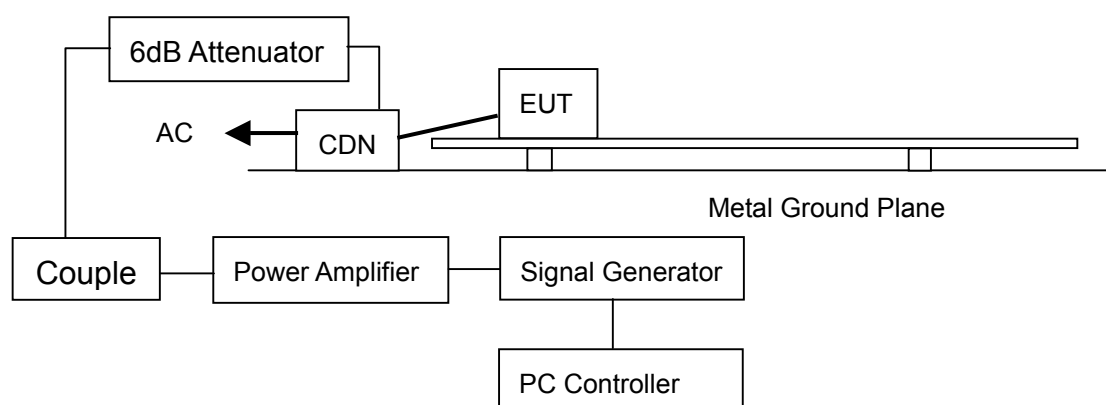
10.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
Signal Generator	ROHDE & SCHWARZ	SMY02	829846/013	2002/06/20
Power Amplifier	KALMUS	225LC 7100LC	8948-1 8948-1	2002/06/15
Coupler	WERLATONE	C2630	8067	2002/06/15
6dB Attenuator	BIRD Electronic Corp.	25-A-MFN-06	00026	2002/06/15
M2 C.D.N	SCHAFENER	M216	16394	2002/04/25
EM-CLAMP	SCHAFFNER	KEMZ 801	17037	2002/03/26

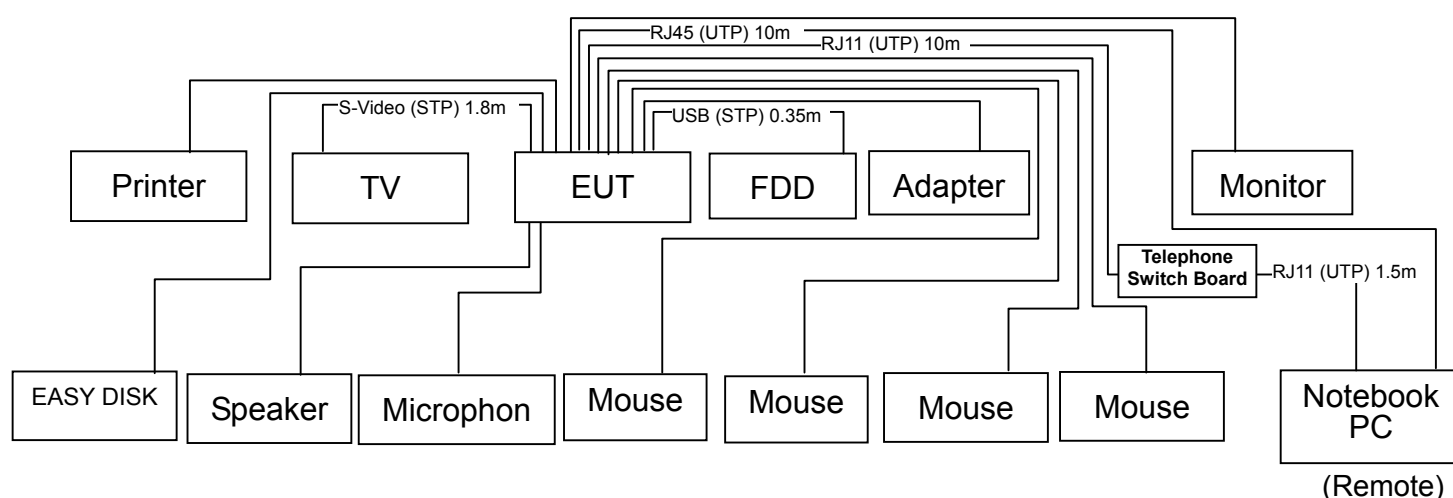
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

10.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



10.3 Test Levels

Level	Voltage Level (V)
1	1
2	3
3	10
X	Special

10.4 Test Require

10.4.1 Frequency Range is from 0.15 to 80MHz.

10.4.2 Field strength: 3 V/m (un-modulated, r.m.s.), 80% AM (1kHz)

☒ Input AC power port.

☒ Signal and telecommunication ports.

☐ Input DC power port.

10.4.3 Performance criterion: A

10.5 Tested Mode

10.5.1 The tested mode as following:

- Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
- Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

10.6 Configuration of Measurement

10.6.1 The EUT was placed on a table of is 0.8 m height. In Semi-Anechoic chamber A Ground reference plane was placed on the table and a 0.1 meter insulating support was inserted between the EUT and Ground reference plane.

10.6.2 The EUT was connected to the power mains through a Coupling and Decoupling Networks (CDN).

10.6.3 The test was performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF input ports of the coupling devices were terminated by a 50 Ω terminator.

10.6.4 The frequency range was swept from 150kHz to 80MHz.using the signal levels established during the setting process, and without the disturbance signal 80% amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or to switch coupling devices as necessary. The rate of sweep was less than 1.5×10^{-3} decades/s. And the step size of the frequency sweep was also less than 1% of the start and thereafter 1% of the preceding frequency value. The dwell time at each frequency was more than the time necessary for the EUT to be excited, and able to respond.

10.6.5 The EUT was fully excised during the testing and all the selected excise modes were fully interrogated for susceptibility.

10.7 Configuration of EUT

- 10.7.1 Setup the EUT and simulators as shown section 10.2.
- 10.7.2 Turn on the power of all equipment.
- 10.7.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.
- 10.7.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 10.7.5 According to the user's manual, change display resolution to find the worst-case mode.
- 10.7.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 10.7.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 10.7.8 RJ45 cable connect Internet website download data.
- 10.7.9 The notebook (EUT) and floppy are each other transmission data.
- 10.7.10 The notebook (EUT) and Easy disk are each other transmission data.
- 10.7.11 Play music program.

10.8 Test Result

The performance criterion after tested is:

Frequency range: **0.15** to **80** MHz, Field strength: **3** V/m (un-modulated, r.m.s.), 80% AM (1kHz),

☒ Input AC power port.

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

☒ Signal and telecommunication ports.

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

☐ Input DC power port.

Performance criterion: ☐ **A** ☐ **B** ☐ **C**

11 Power frequency magnetic field immunity test

Physically large products need not be completely submerged in the magnetic field, only the sensitive devices (such as CRT monitors if they are the only sensitive parts).

The EUT did not containing devices susceptible to magnetic fields; do not need perform this test.

12 Voltage Dips, Short Interruptions Immunity Test

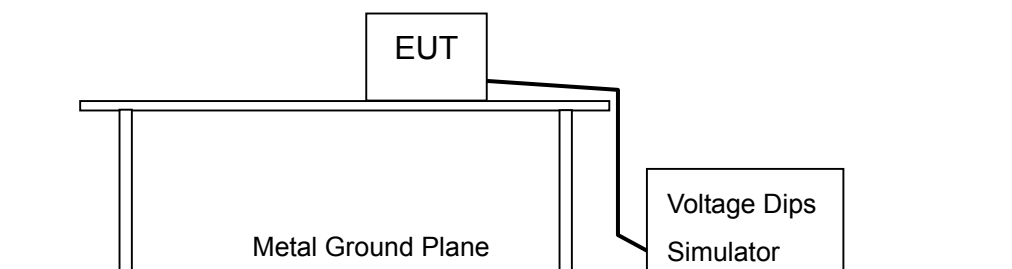
12.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Last Calibration
EMC Pro System	KeyTek	EMC Pro	0003231	2002/03/15

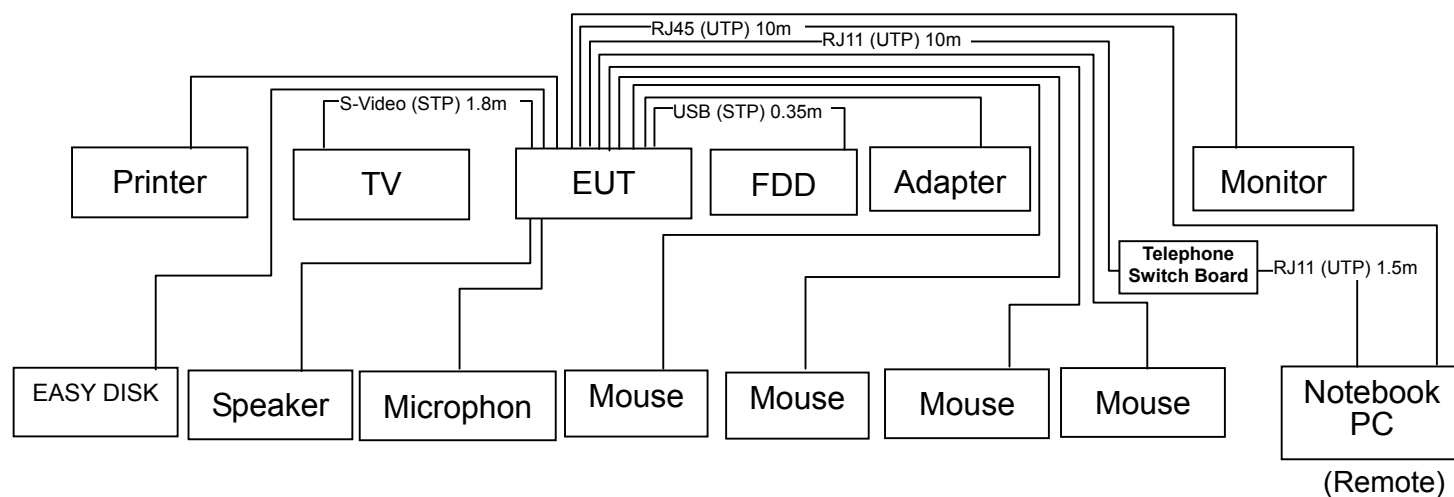
Note: All instrument upon which need to calibrated are with calibration period of 1 year.

12.2 Block Diagram of Test Configuration

Configuration of Instrument Setup.



Configuration of EUT Setup.



12.3 Test Levels

Level (% U_T)	Voltage dip & short interruptions (% U_T)
0	100
70	30

12.4 Test Require

- 12.4.1 > 95% reduction (Voltage Dips), 0.5 period, Performance criterion: B
- 12.4.2 30% reduction (Voltage Dips), 25 period, Performance criterion: C
- 12.4.3 > 95% reduction (Voltage Interruptions), 250 period, Performance criterion: C

12.5 Tested Mode

- 12.5.1 The tested mode as following:
 - Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor
 - Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

12.6 Configuration of Measurement

- 12.6.1 The power cord was used as supplied by the manufacturer. The EUT was connected to the line output of the Voltage Dips and Interruption Generator.
- 12.6.2 The EUT was tested for (I) 95% voltage dip of supplied voltage with duration of 10ms, (II) 30% voltage dip of supplied voltage and duration 500ms. Both of the dip tests were carried out for a sequence of three voltage dips with intervals of 10 seconds.
- 12.6.3 A 95% voltage interruption of supplied voltage with duration of 5000ms was followed, which was a sequence of three voltage interruptions with intervals of 10 seconds.
- 12.6.4 Voltage reduction was controlled at 0°, 90° and 270° of the voltage phase angle. The performance of the EUT was checked after the voltage dip or interruption.

12.7 Configuration of EUT

- 12.7.1 Setup the EUT and simulators as shown section 12.2.
- 12.7.2 Turn on the power of all equipment.
- 12.7.3 Boot up the PC from hard disk to Windows operation system, and set the EUT to appropriate video resolution.

- 12.7.4 Adjust the brightness and contrast to the maximum position to get the worst-case reading.
- 12.7.5 According to the user's manual, change display resolution to find the worst-case mode.
- 12.7.6 Run "EMCTEST" program, PC will display video pattern "H" on screen.
- 12.7.7 RJ11 cable through auxiliary phone connect server IBM notebook.
- 12.7.8 RJ45 cable connect Internet website download data.
- 12.7.9 The notebook (EUT) and floppy are each other transmission data.
- 12.7.10 The notebook (EUT) and Easy disk are each other transmission data.
- 12.7.11 Play music program.

12.8 Test Result

The performance criterion after tested is:

☒ > 95% reduction (Voltage Dips), 0.5 period

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

☒ 30% reduction (Voltage Dips), 25 period

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

☒ > 95% reduction (Voltage Interruptions), 250 period

Performance criterion: ☐ **A** ☐ **B** ☒ **C**

13 Photographs of Test

13.1 Power Line Conducted Test



Front View

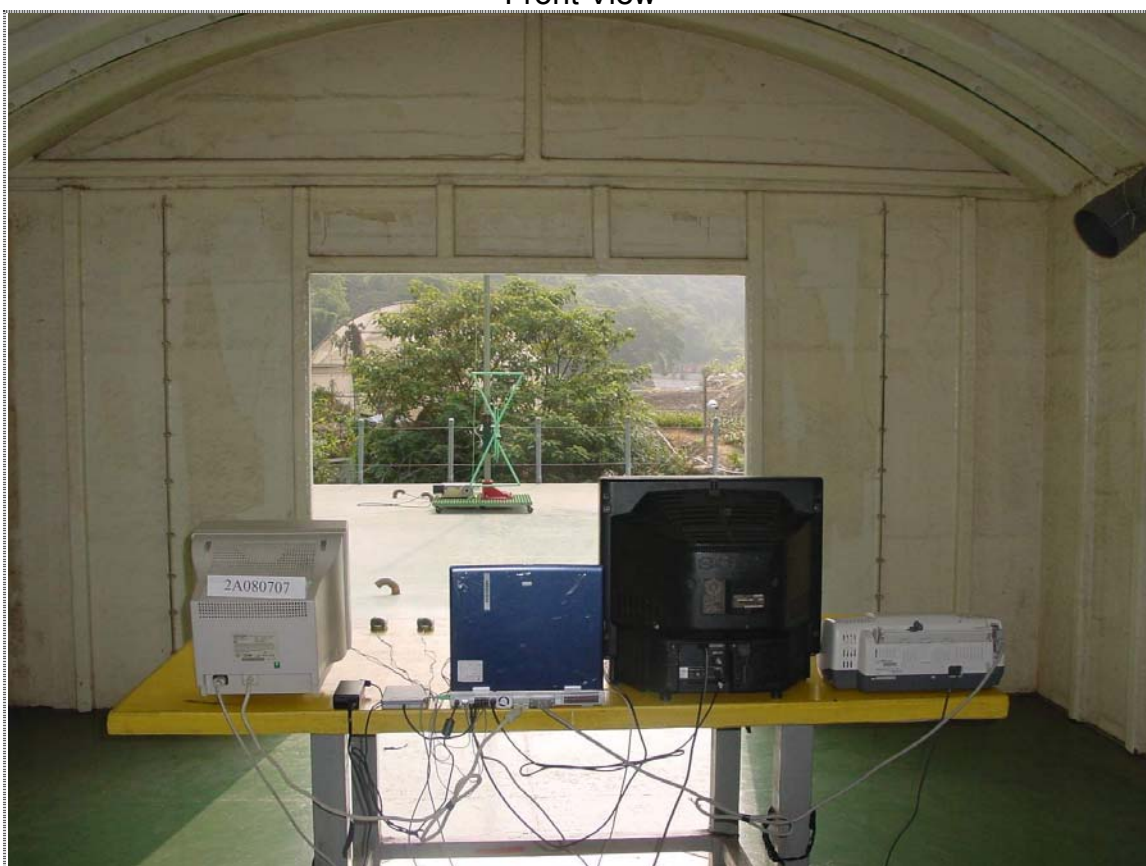


Rear View

13.2 Radiated Emission Measurement



Front View



Rear View

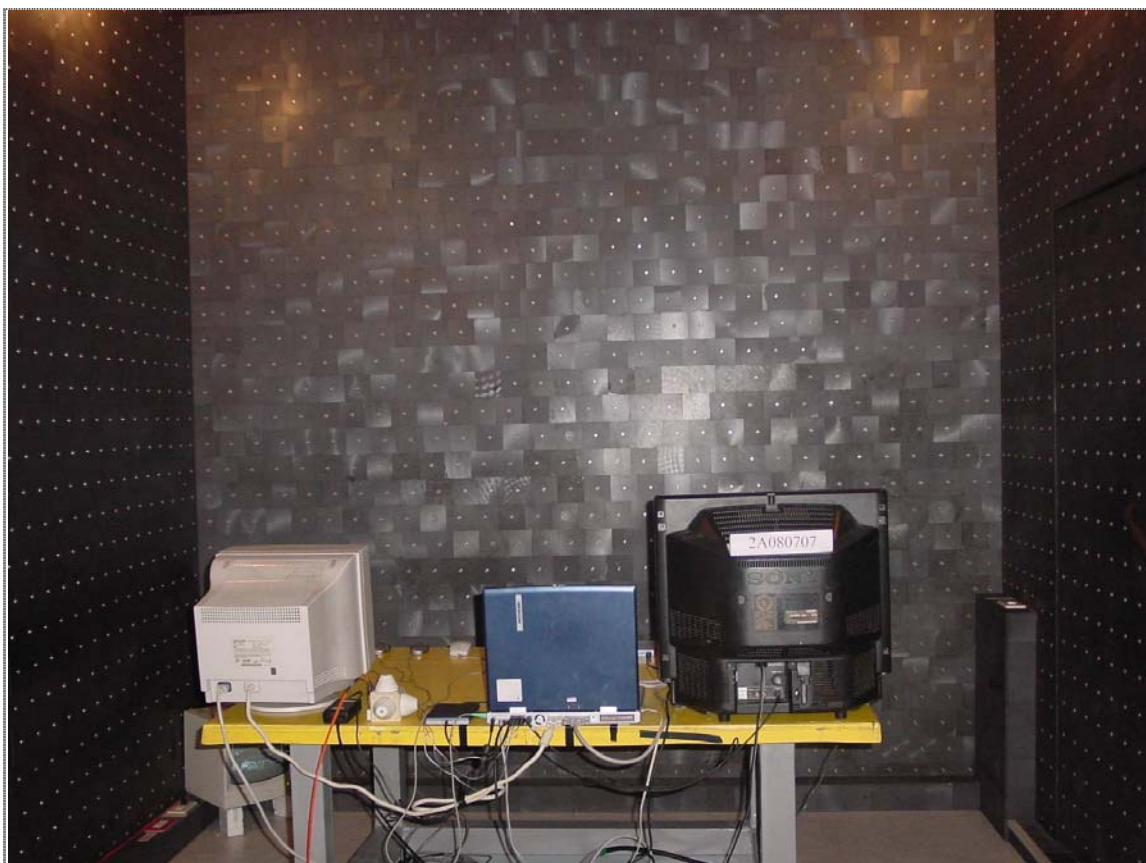
13.3 Harmonic current & Voltage Fluctuations and Flicker Measurement



13.4 Electrostatic Discharge Immunity Test



13.5 Radio-frequency, Electromagnetic field Immunity Test



13.6 Electrical Fast Transient/Burst Immunity Test



Data Line



Power Line

13.7 Surge immunity Test



Data Line



Power Line

13.8 Radio-frequency, Conducted Disturbances Immunity Test



Data Line



Power Line

13.9 Voltage Dips, Short Interruptions Immunity Test



14 Photographs of EUT (#1)



Front View of Appearance



Rear View of Appearance



Open View of EUT



Inside View of EUT --- 1



Inside View of EUT --- 2



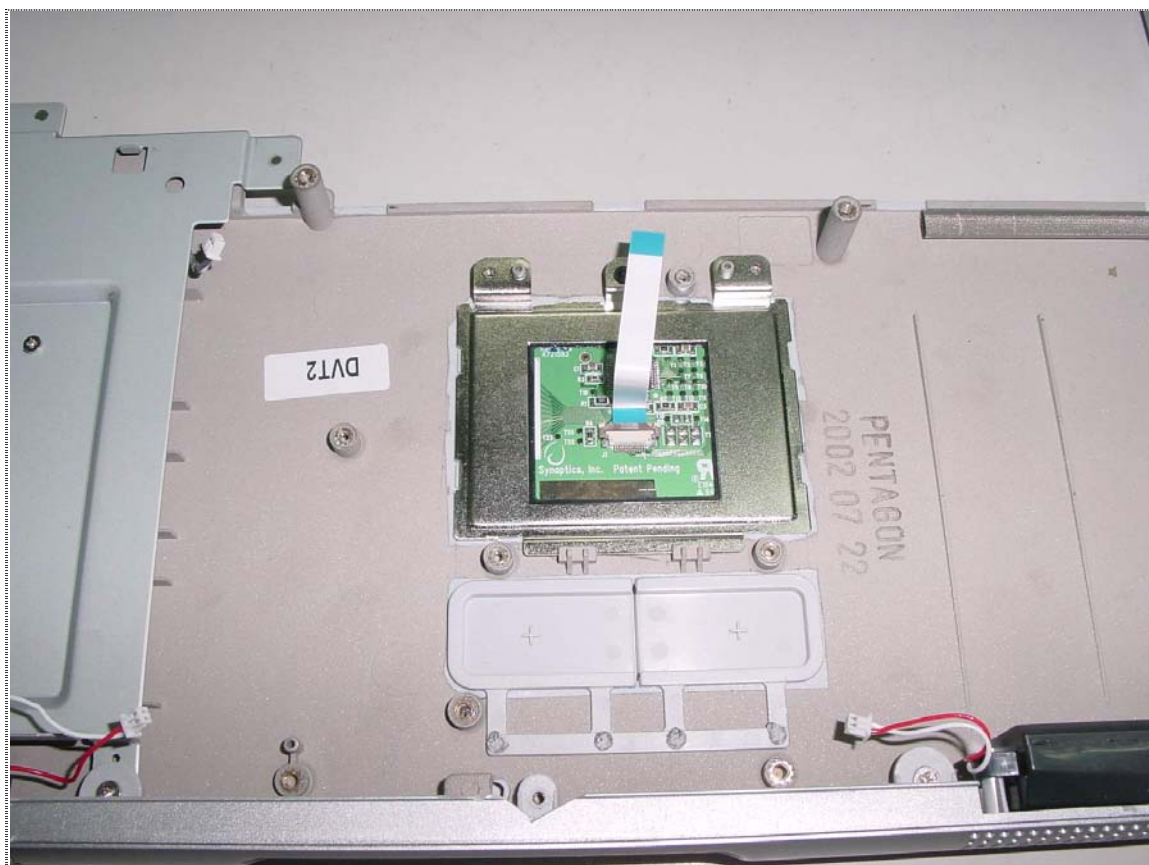
Inside View of EUT --- 3



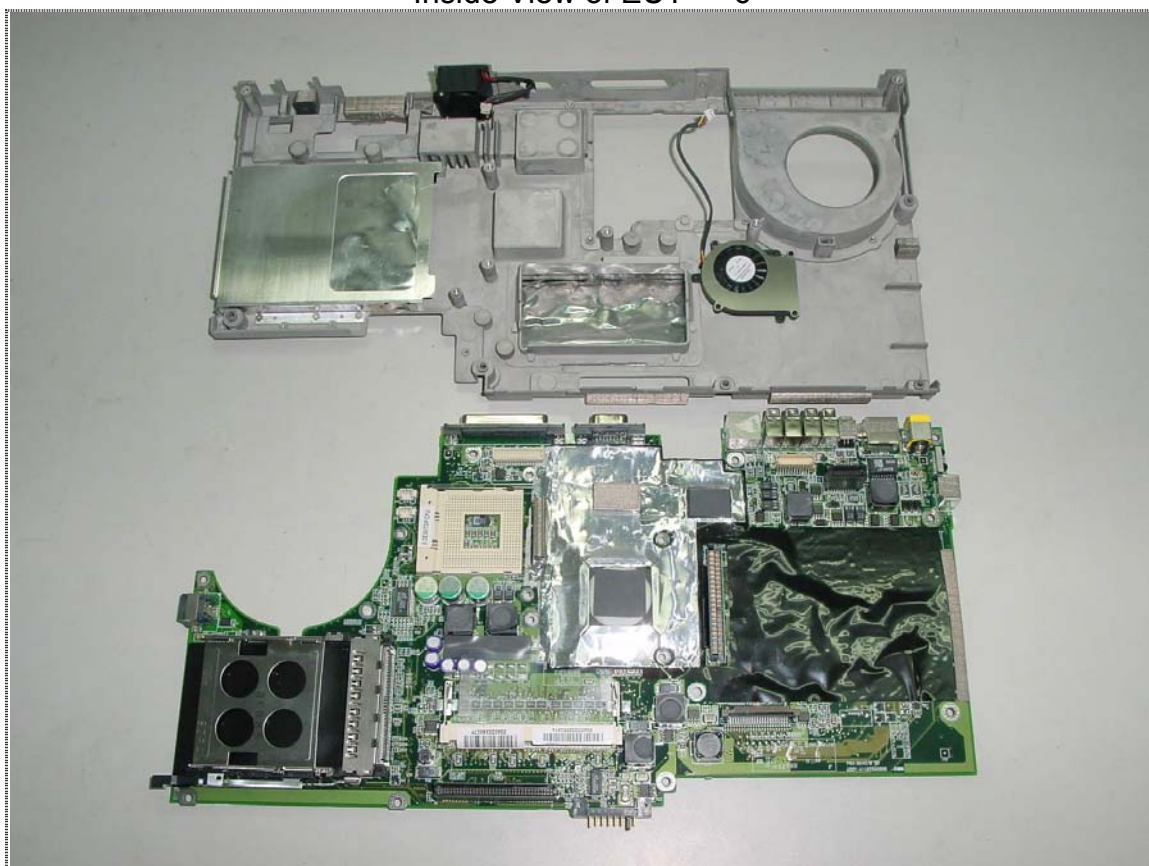
Inside View of EUT --- 4



Inside View of EUT --- 5



Inside View of EUT --- 6



Inside View of EUT --- 7



Inside View of EUT --- 8



Inside View of EUT --- 9



Inside View of EUT --- 10



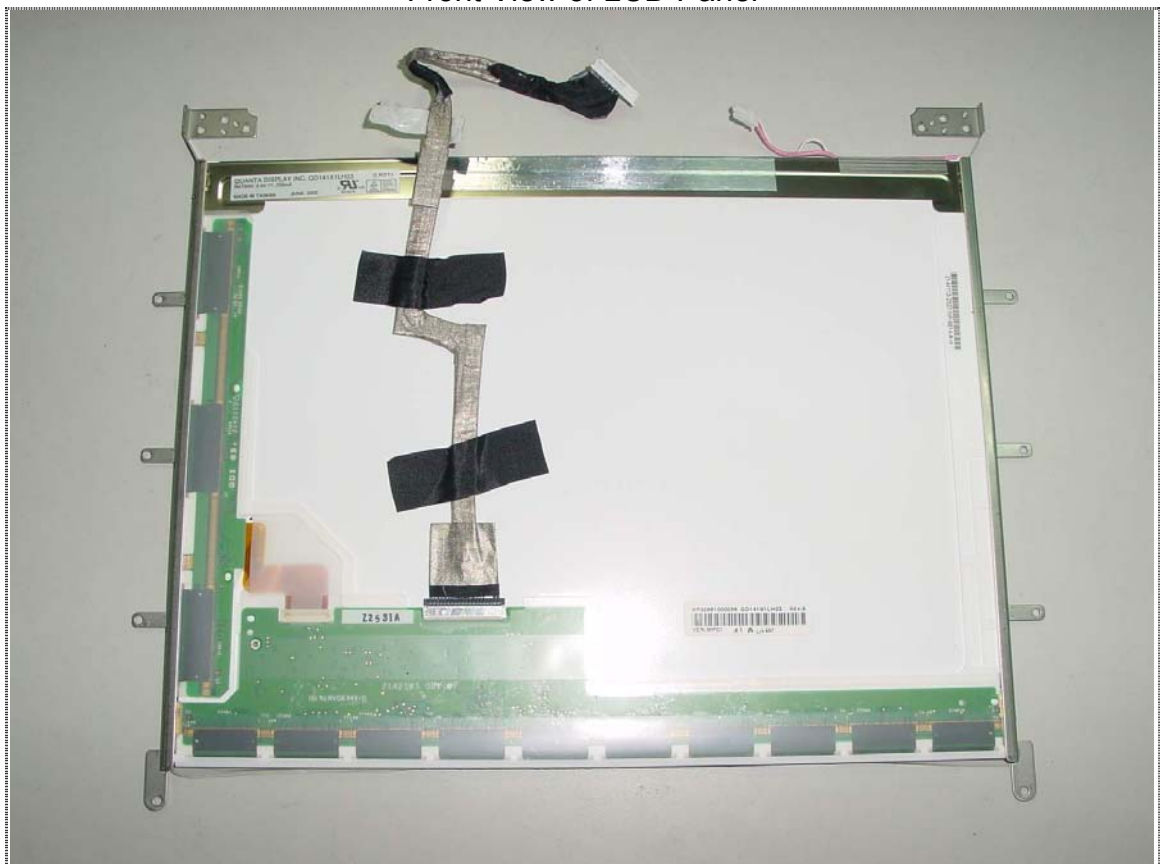
Front View of HDD



Rear View of HDD



Front View of LCD Panel



Rear View of LCD Panel



Component Side View of Main board



Solder Side View of Main board



Component Side View of Touchpad board



Component Side View of Touchpad board



Solder Side View of Touchpad Board



Solder Side View of Touchpad Board



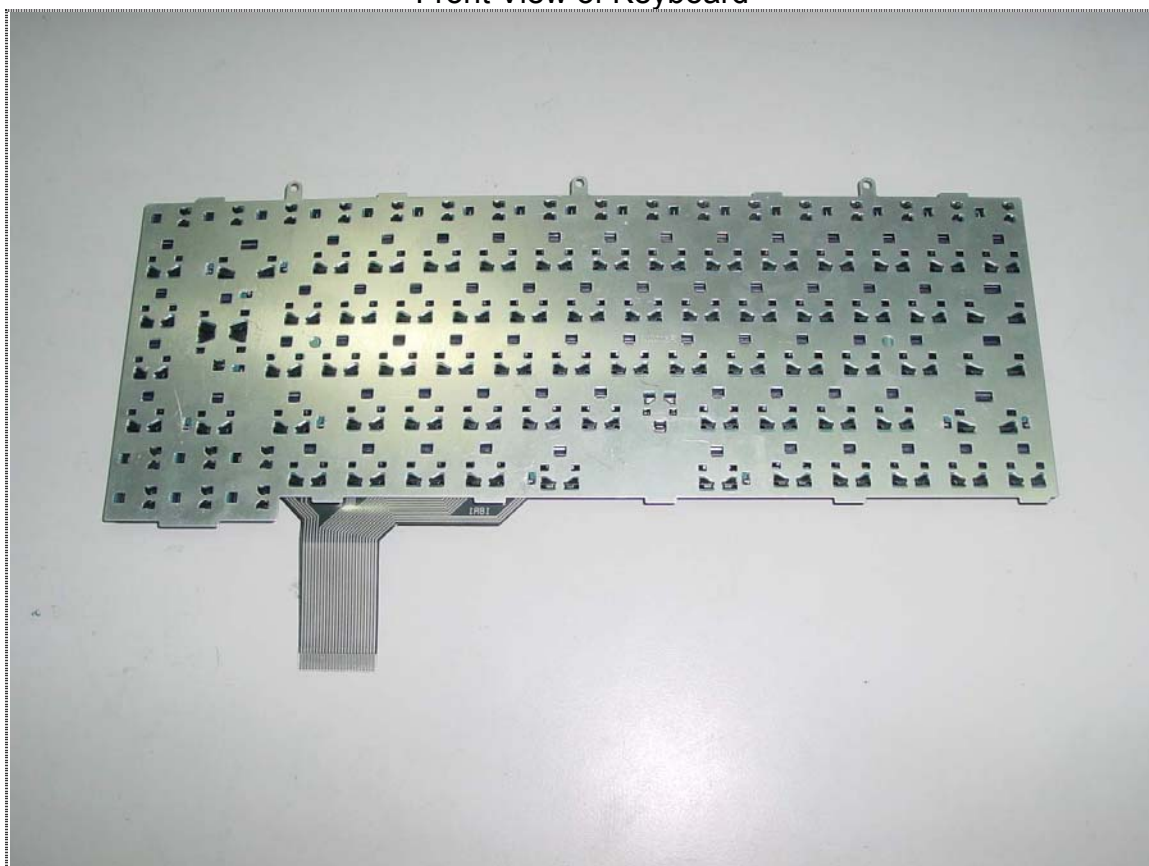
Component Side View of Inverter Board



Solder Side View of Inverter Board



Front View of Keyboard



Rear View of Keyboard



Front View of Pad



Rear View of Pad



Front View of Fan



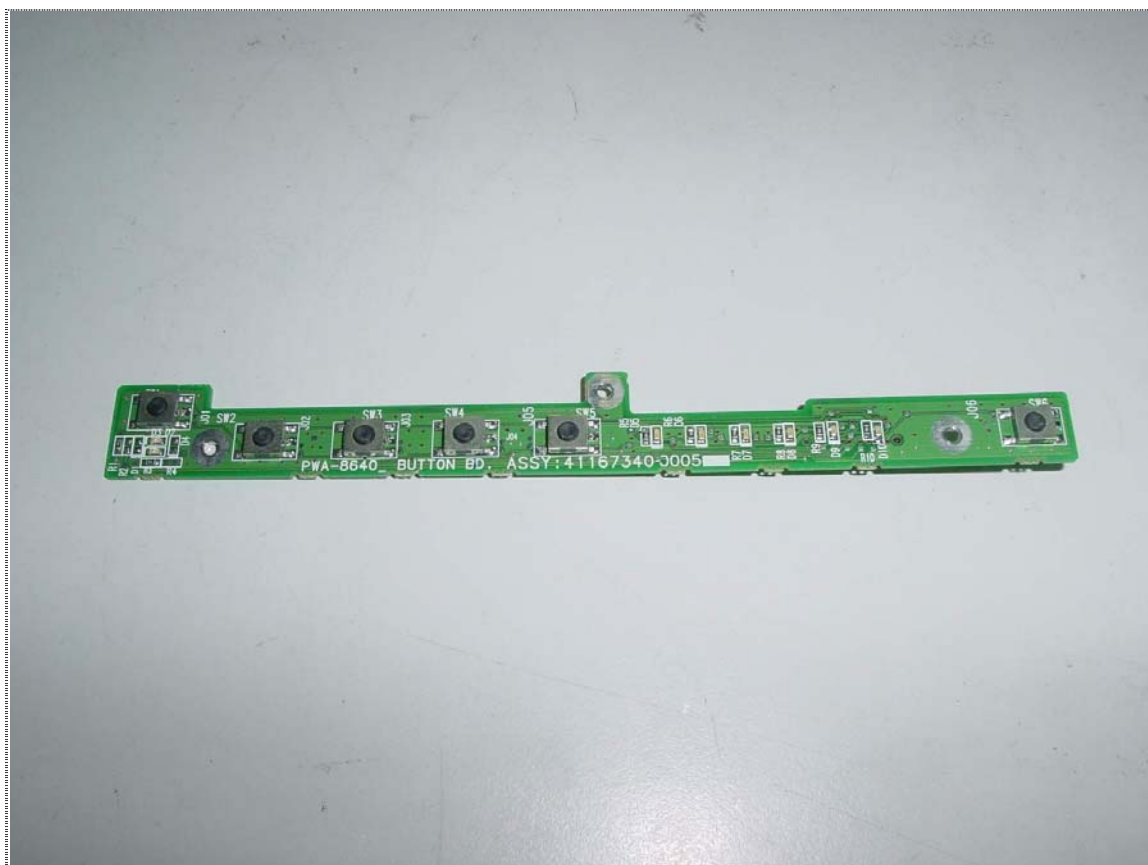
Rear View of Fan



Front View of heat sink



Rear View of heat sink



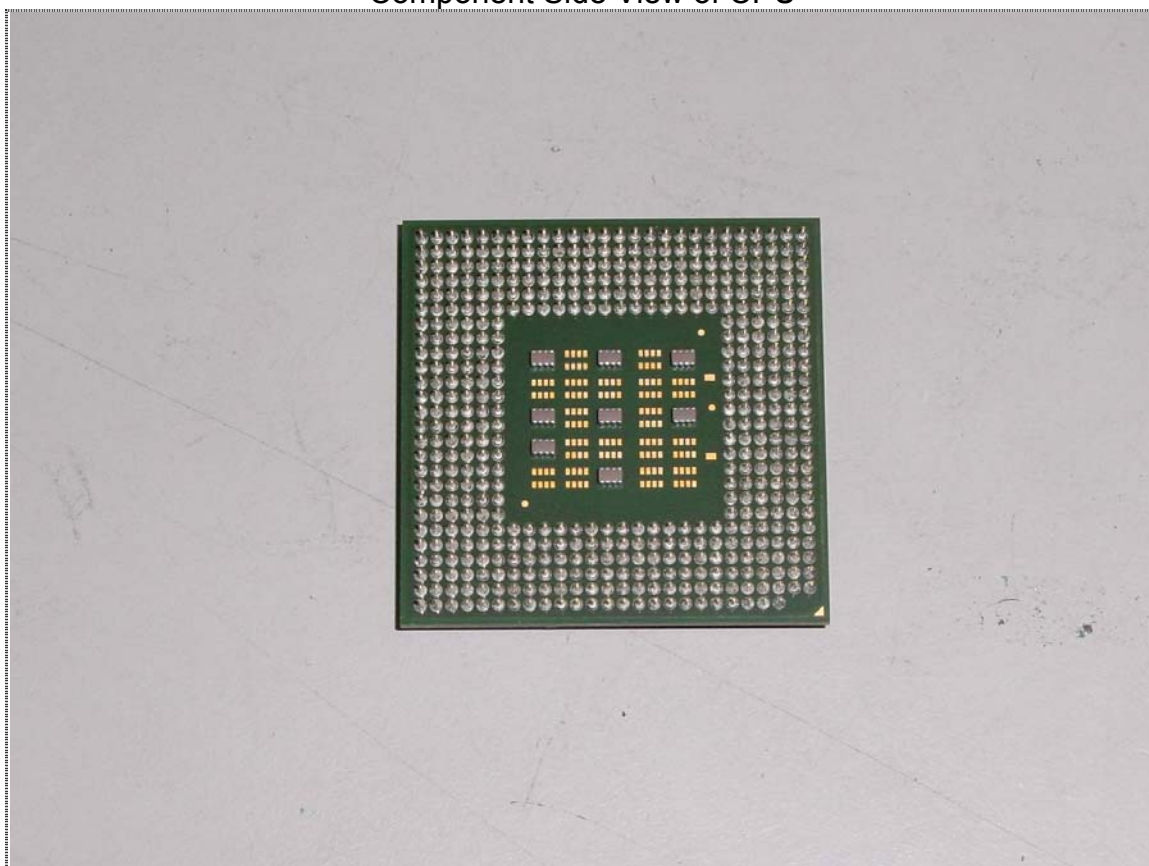
Component Side View of Control Board



Solder Side View of Control Board



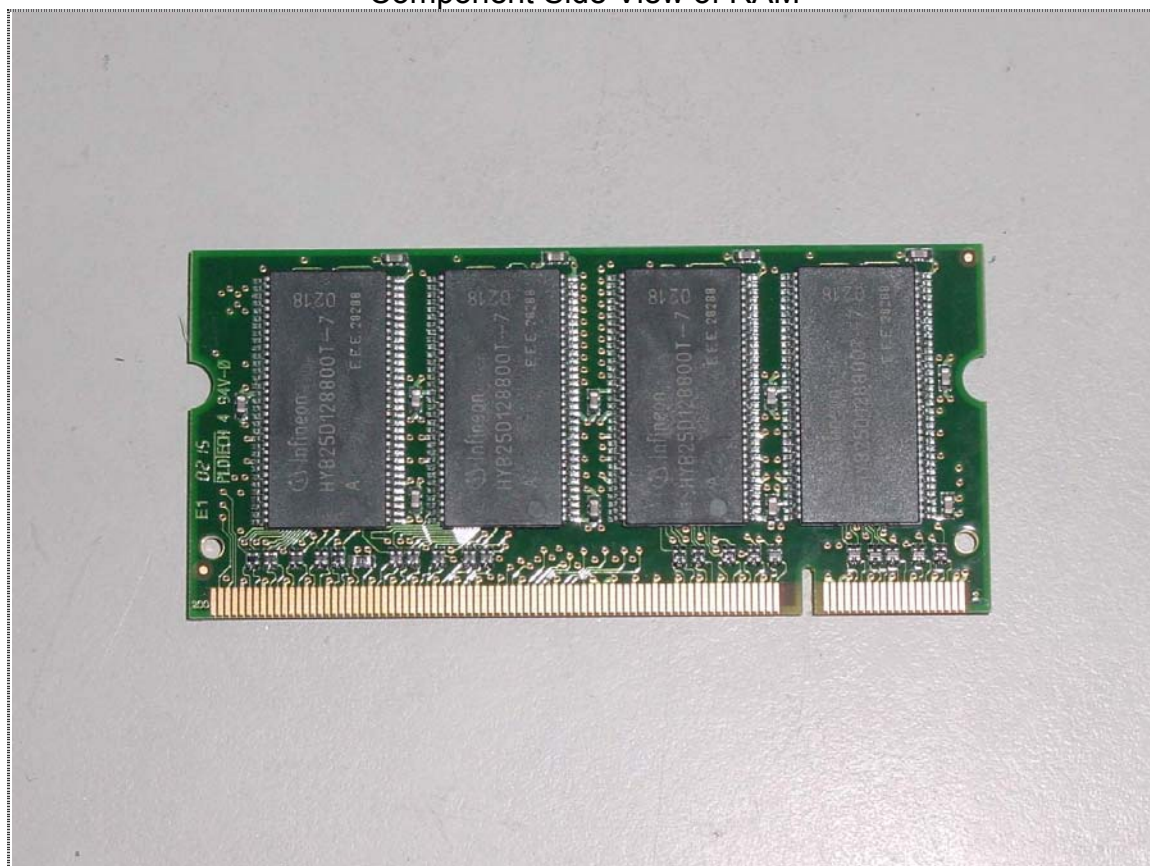
Component Side View of CPU



Solder Side View of CPU



Component Side View of RAM



Solder Side View of RAM



Front View of Modem Card



Rear View of Modem Card



Front View of battery



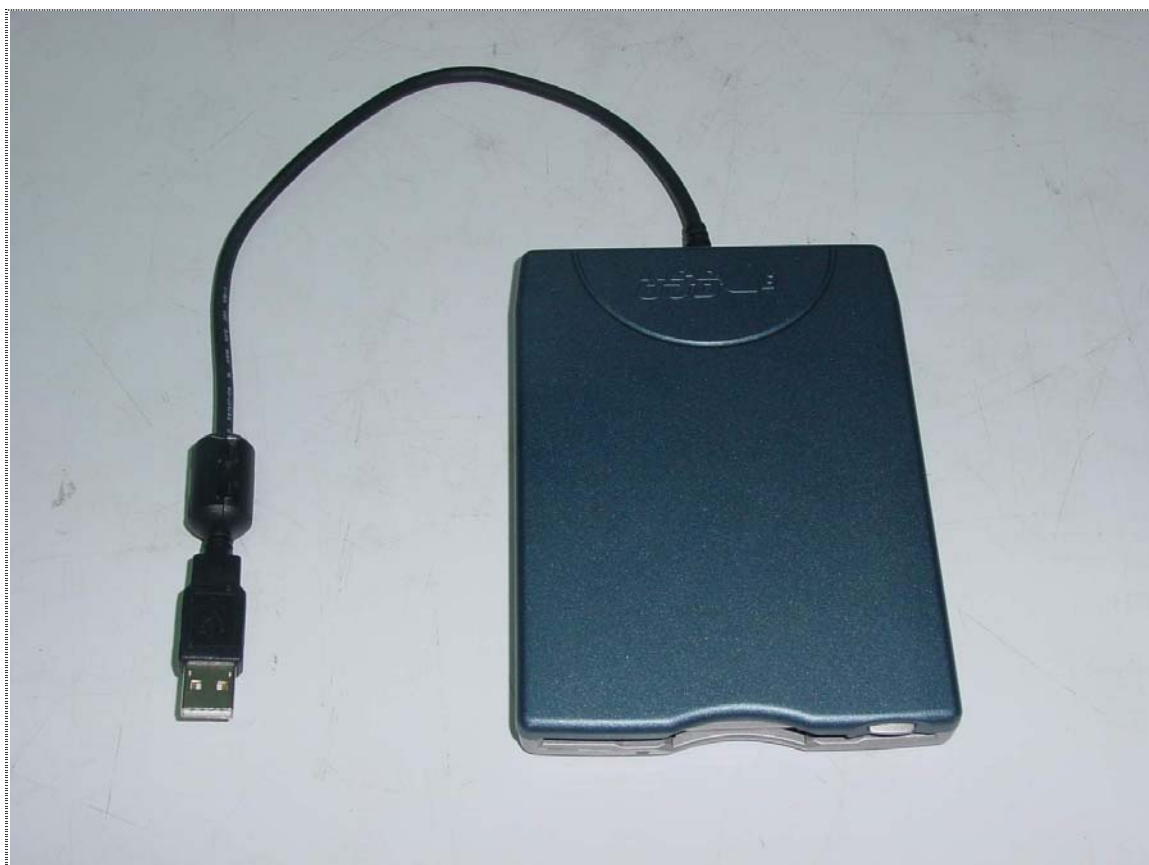
Rear View of battery



Front View of DVD-ROM



Rear View of DVD-ROM



Front View of FDD



Rear View of FDD



Front View of Power Adapter



Rear View of Power Adapter

15 Photographs of EUT (#2)



Front View of Appearance



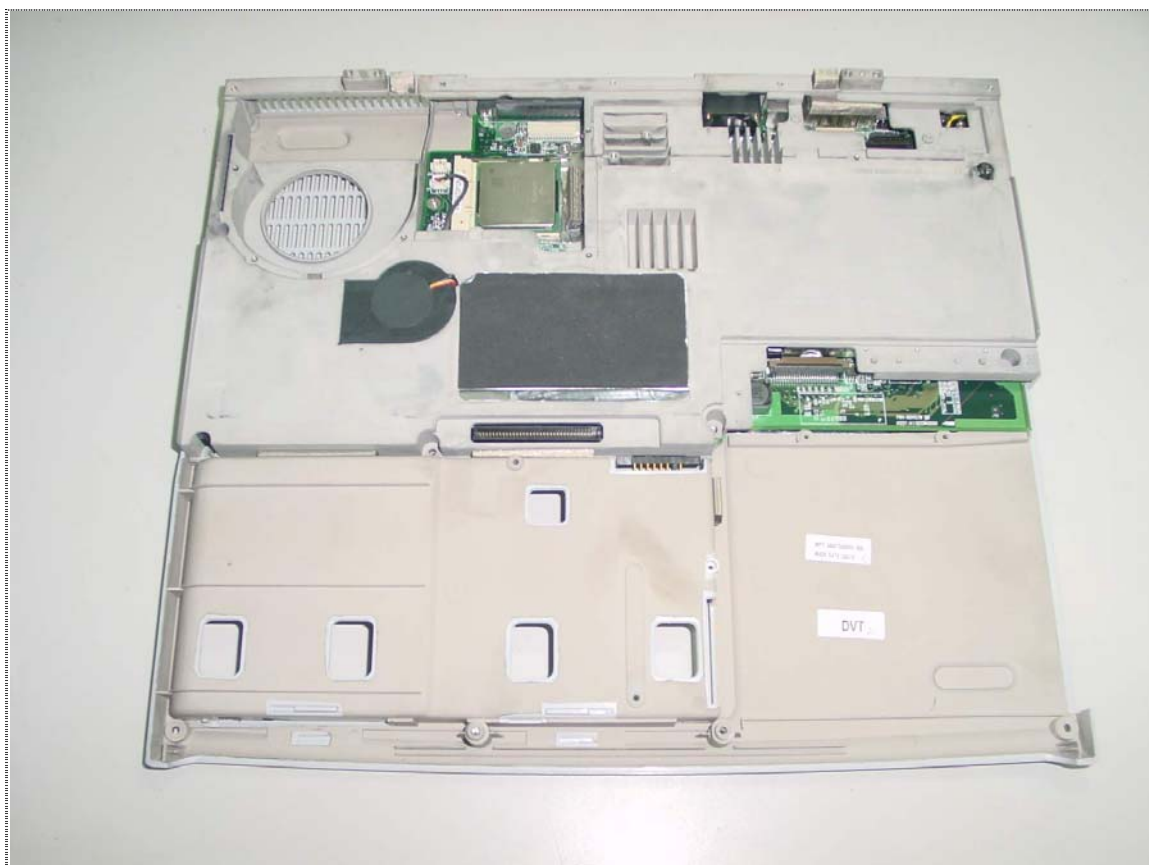
Rear View of Appearance



Open View of EUT



Inside View of EUT --- 1



Inside View of EUT --- 2



Inside View of EUT --- 3



Inside View of EUT --- 4



Inside View of EUT --- 5



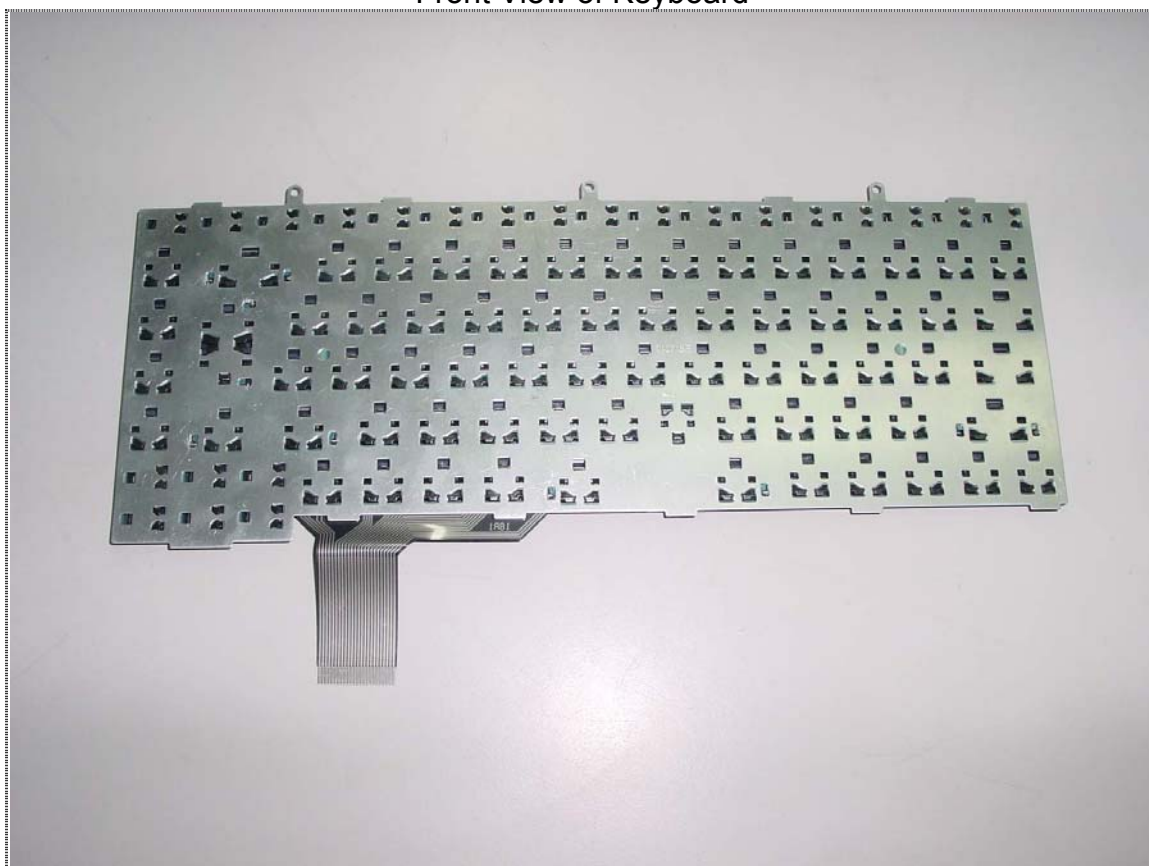
Inside View of EUT --- 6



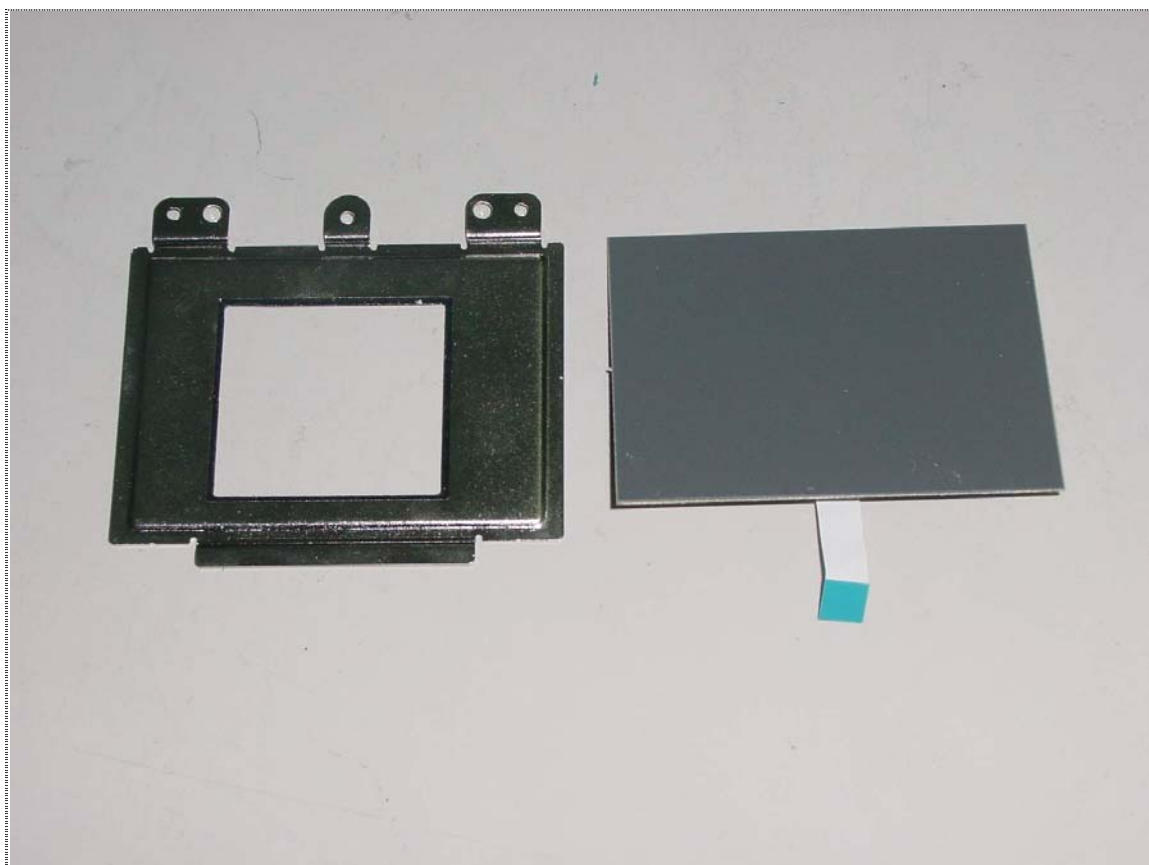
Inside View of EUT --- 7



Front View of Keyboard



Rear View of Keyboard



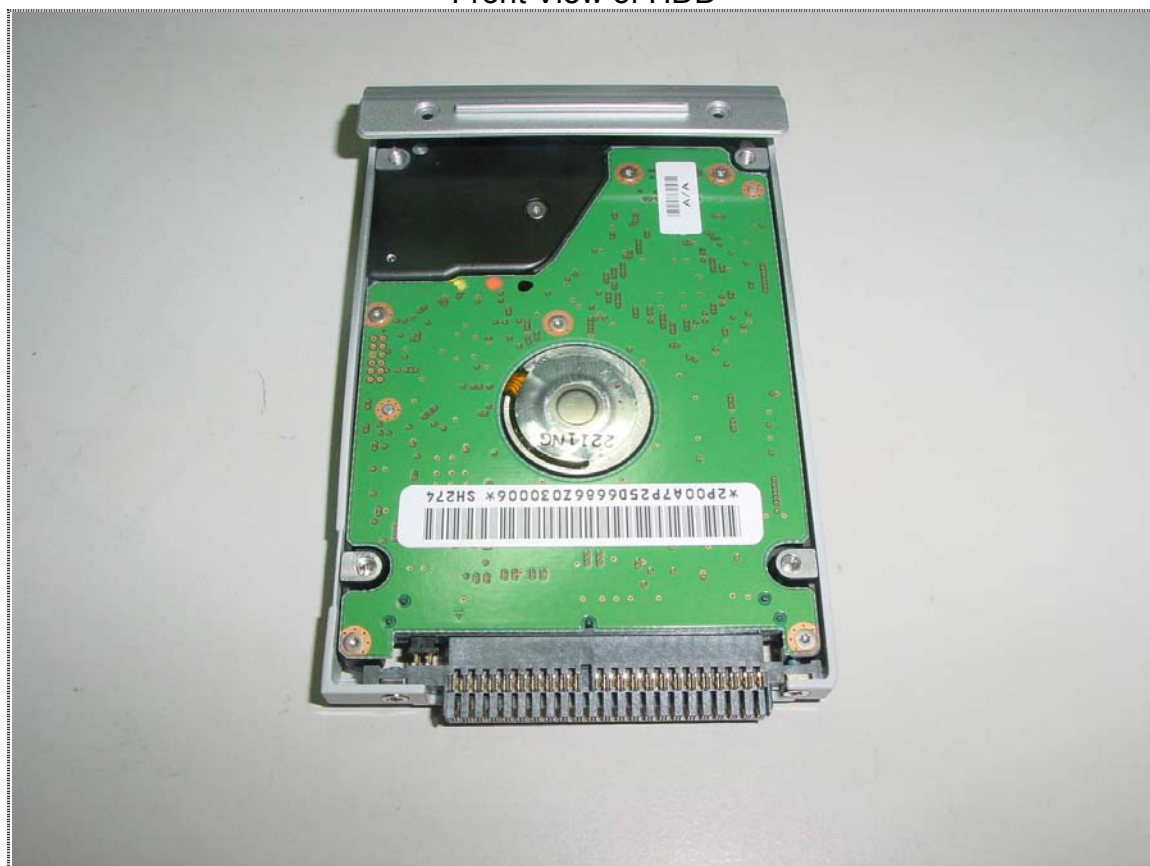
Front View of Pad



Rear View of Pad



Front View of HDD



Rear View of HDD



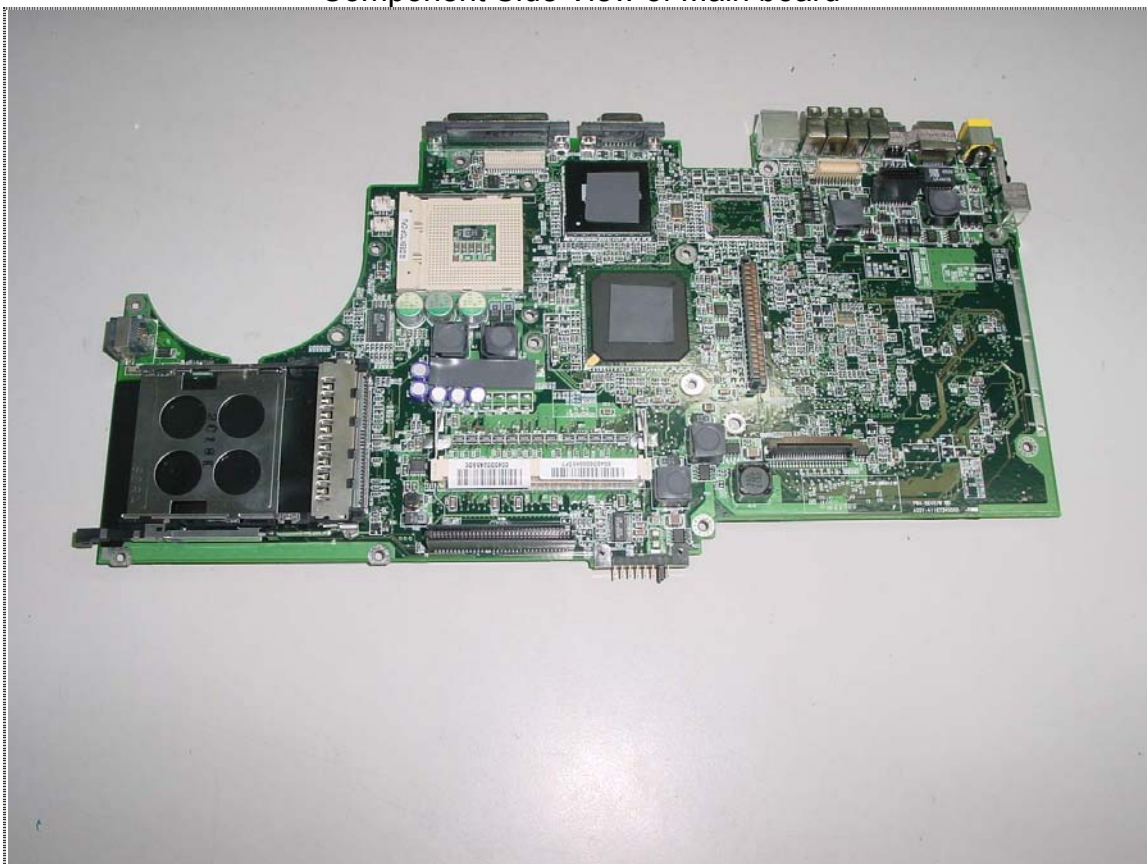
Front View of LCD Panel



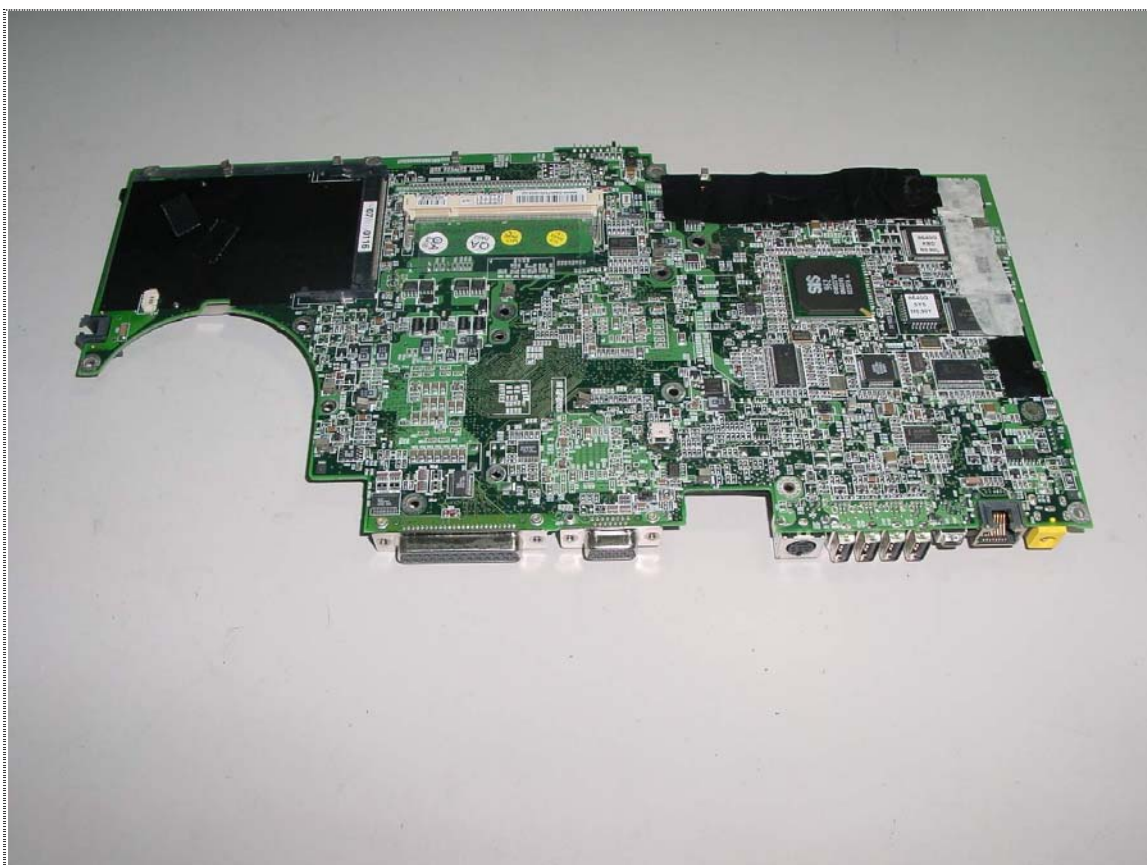
Rear View of LCD Panel



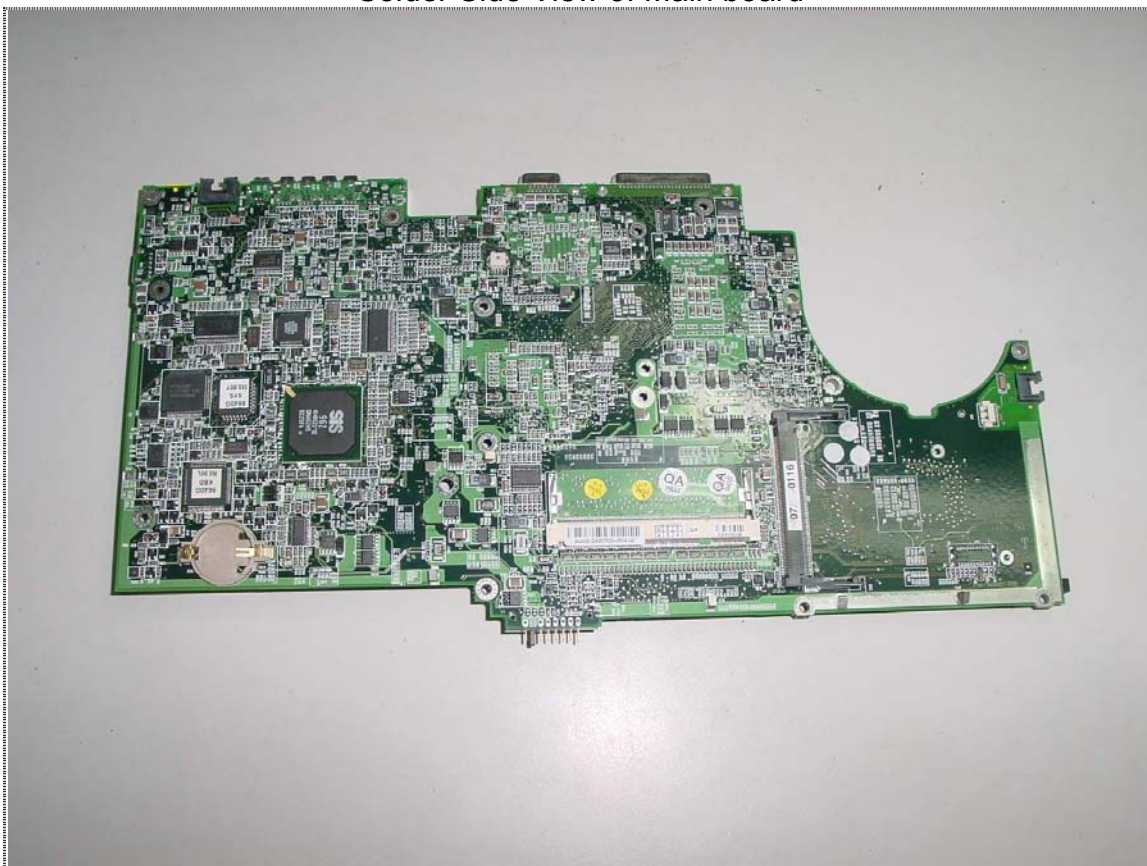
Component Side View of Main board



Component Side View of Main board



Solder Side View of Main board



Solder Side View of Main board



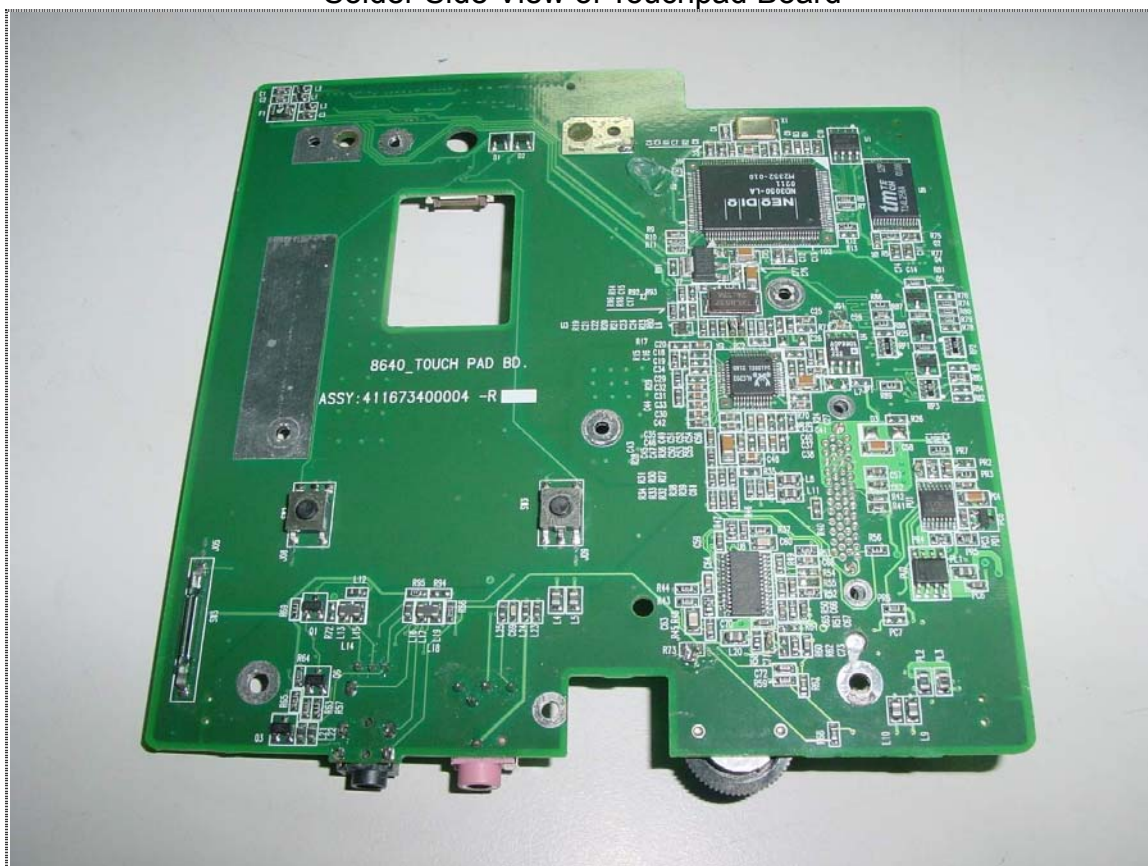
Component Side View of Touchpad board



Component Side View of Touchpad board



Solder Side View of Touchpad Board



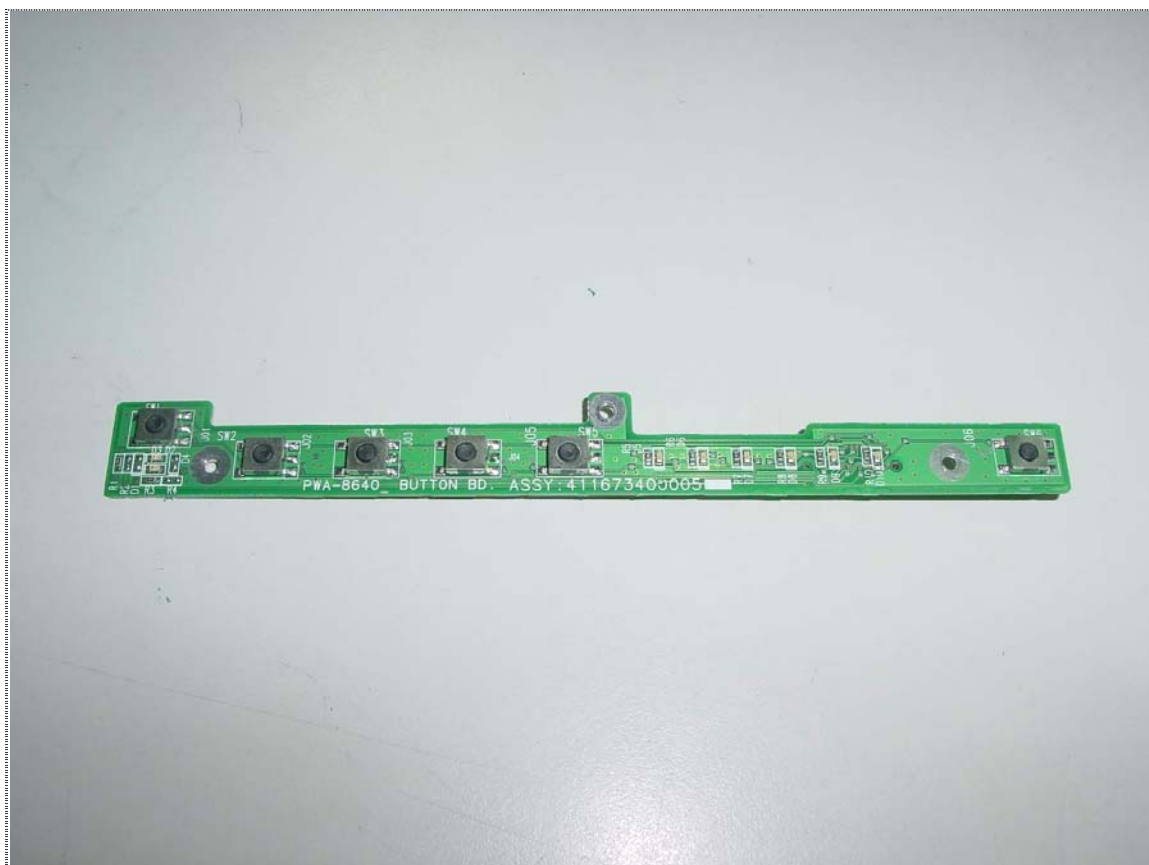
Solder Side View of Touchpad Board



Component Side View of Inverter Board



Solder Side View of Inverter Board



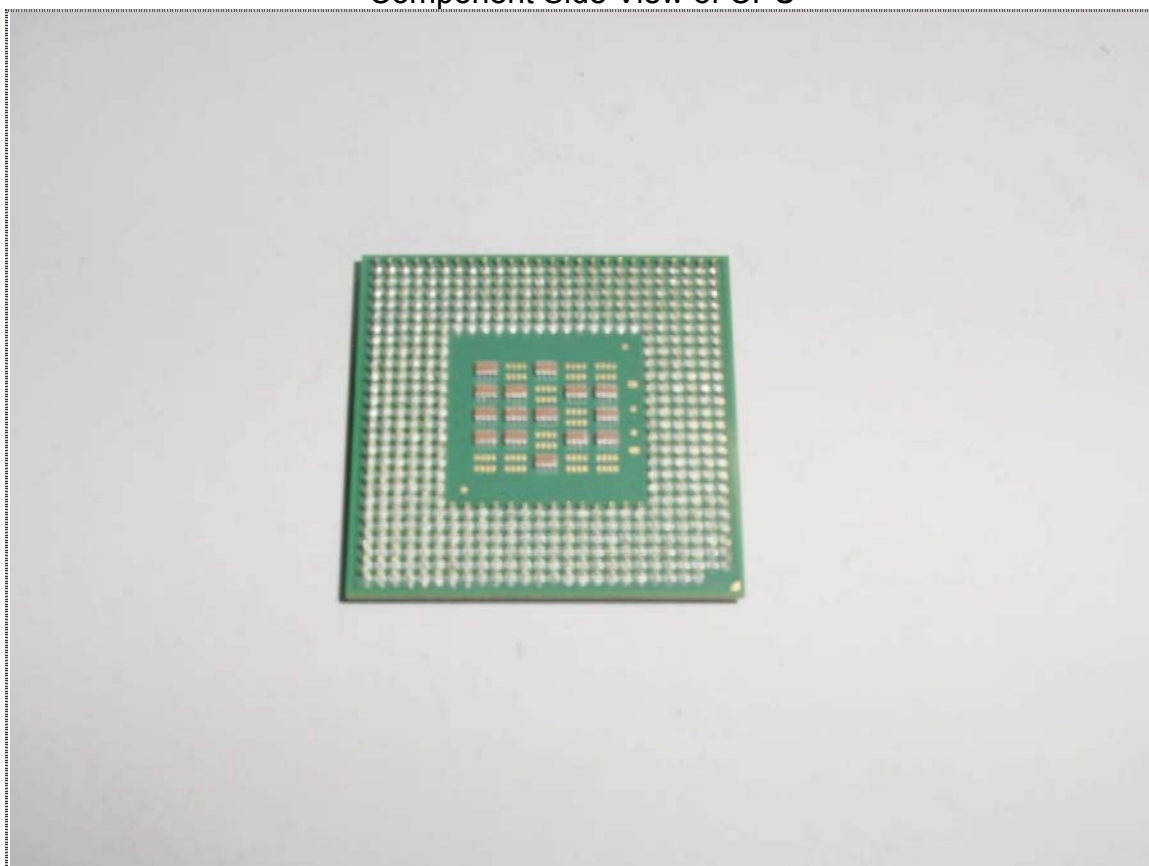
Component Side View of Control Board



Solder Side View of Control Board



Component Side View of CPU



Solder Side View of CPU



Component Side View of RAM



Solder Side View of RAM



Component Side View of Memory



Solder Side View of Memory



Front View of Wireless Module



Rear View of Wireless Module



Front View of battery



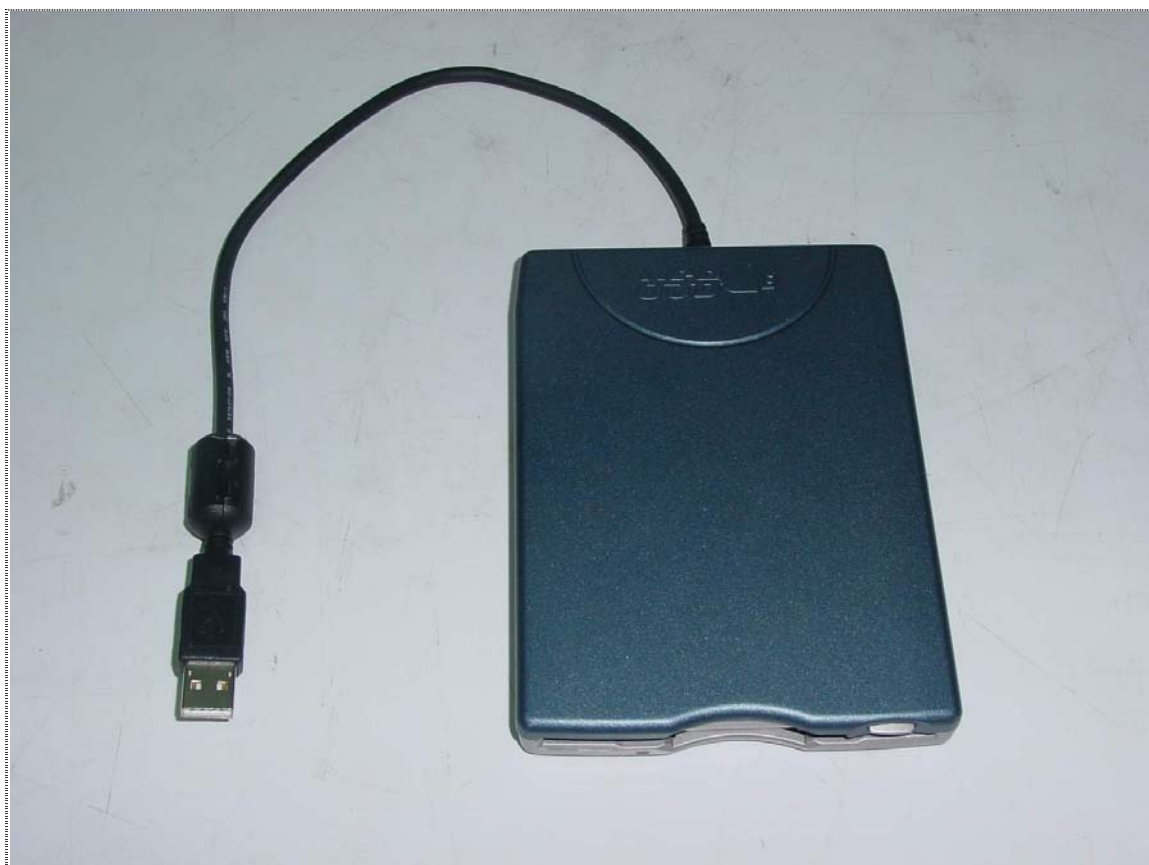
Rear View of battery



Front View of DVD+CD-R/RW



Rear View of DVD+CD-R/RW



Front View of FDD



Rear View of FDD



Front View of Power Adapter



Rear View of Power Adapter

16 Photographs of EUT (#3)



Front View of Appearance



Rear View of Appearance



Open View of EUT



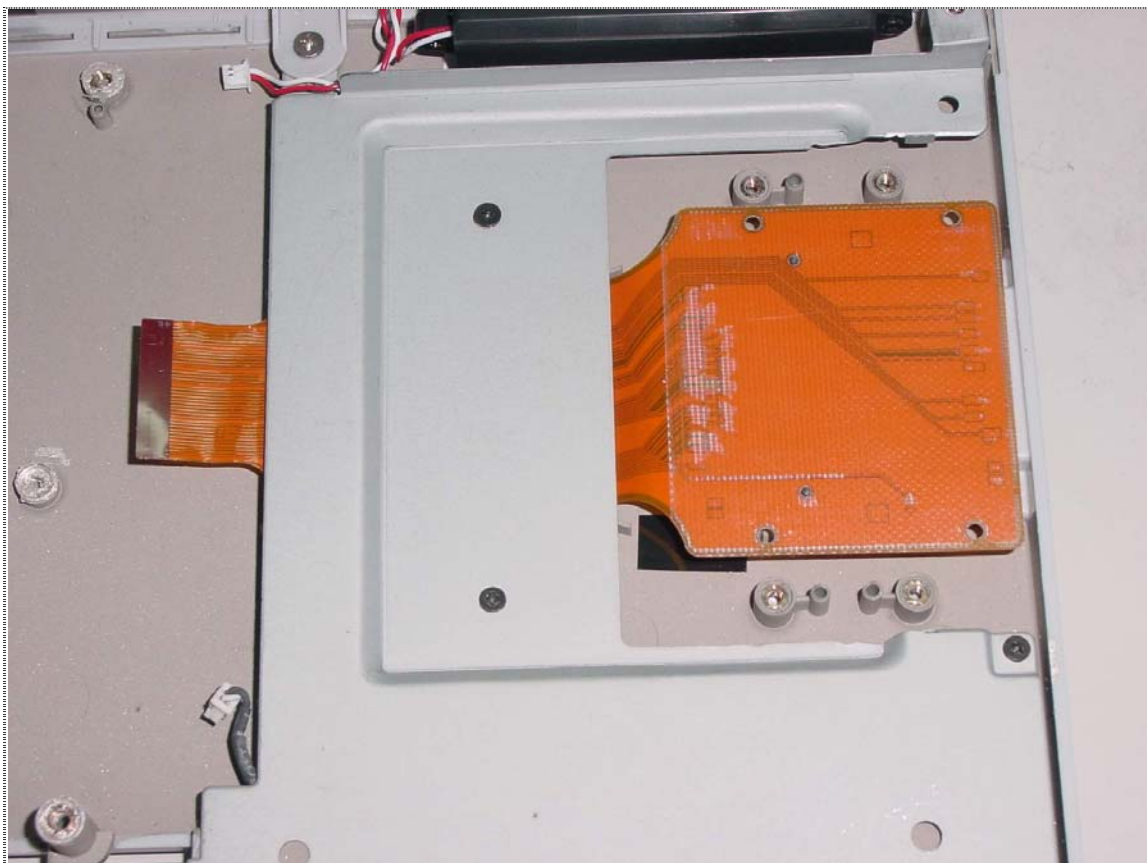
Inside View of EUT --- 1



Inside View of EUT --- 2



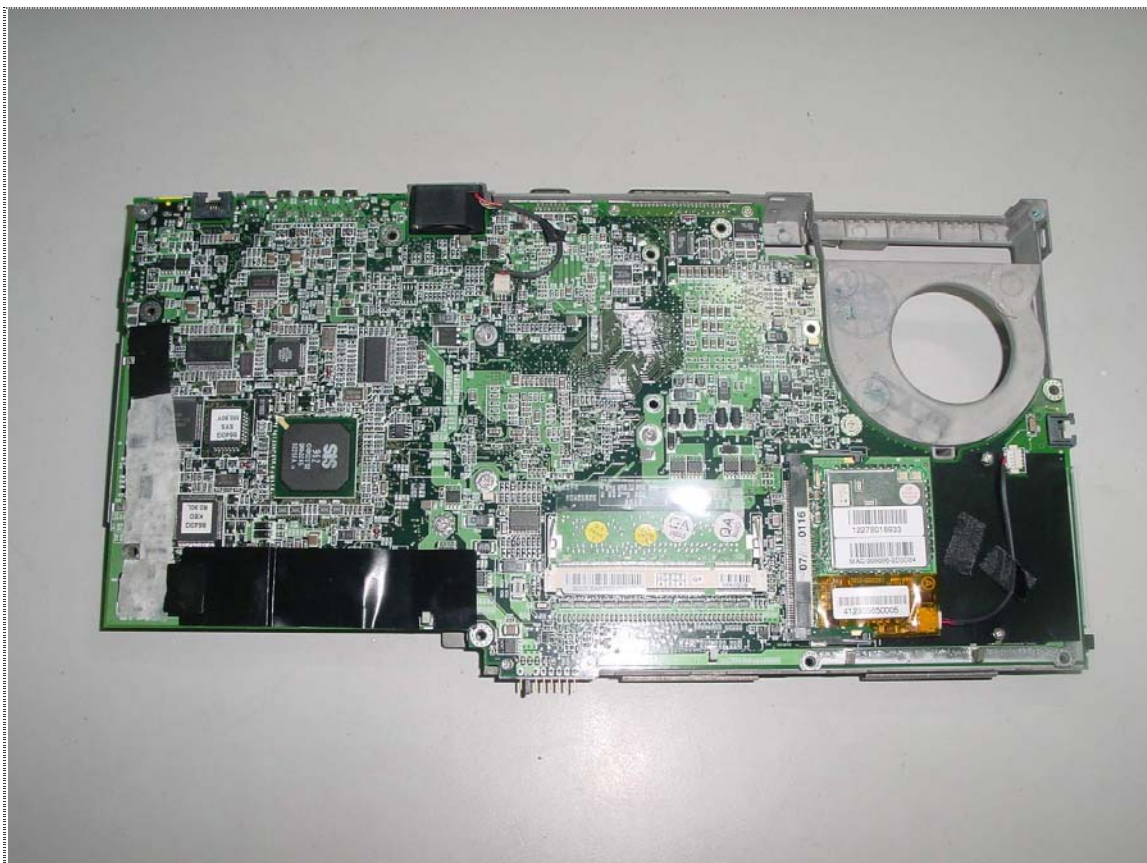
Inside View of EUT --- 3



Inside View of EUT --- 4



Inside View of EUT --- 5



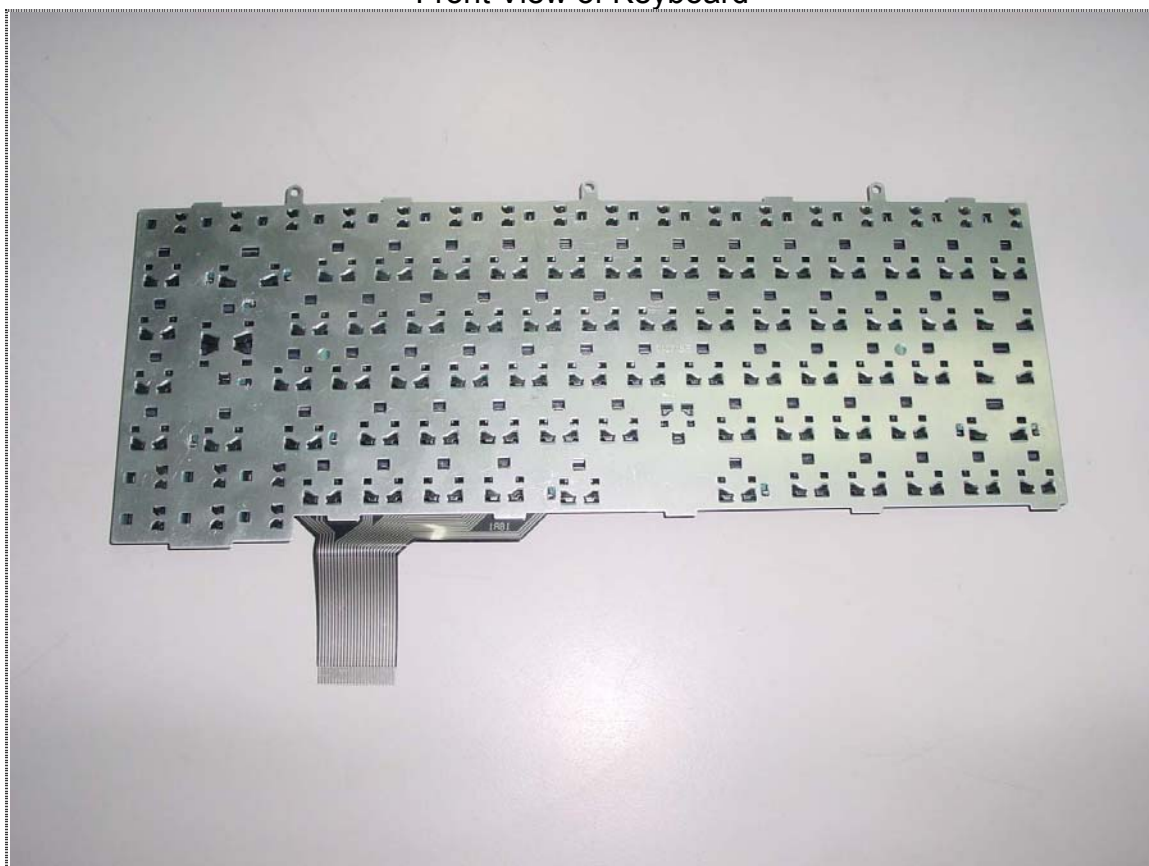
Inside View of EUT --- 6



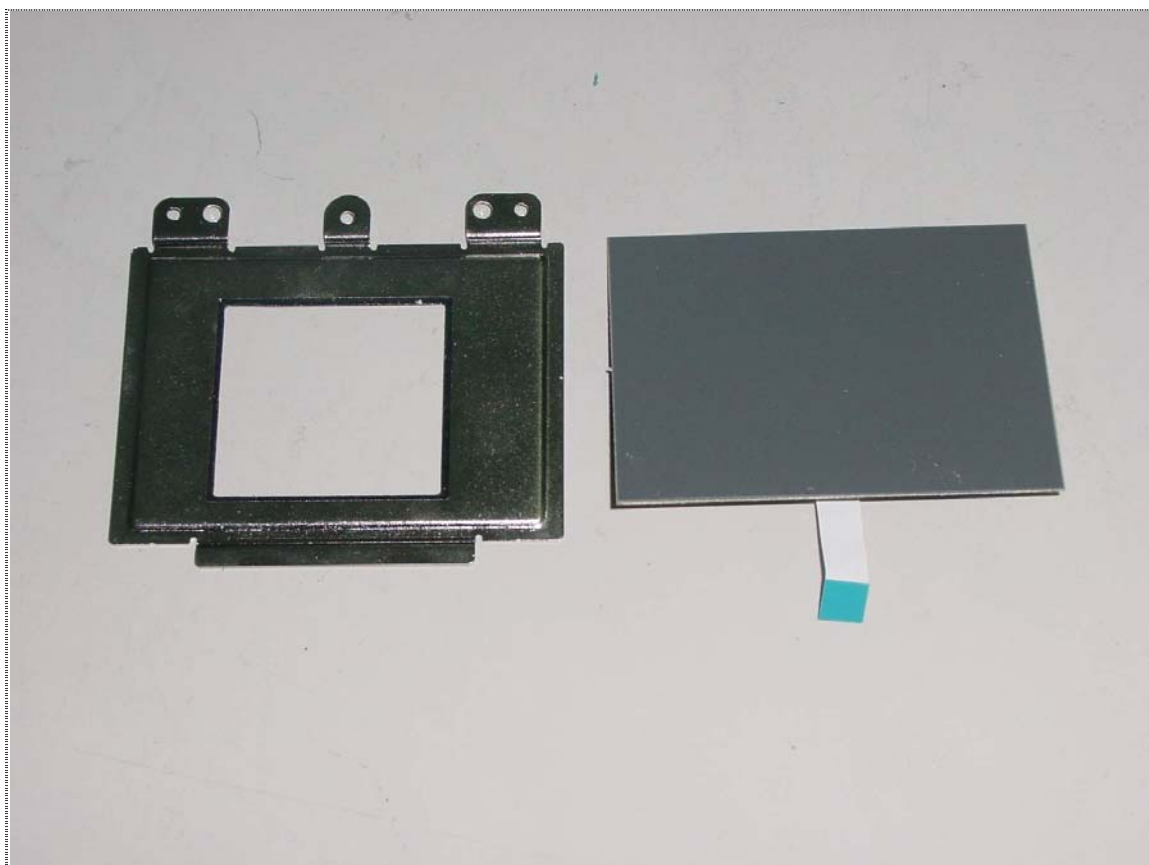
Inside View of EUT --- 7



Front View of Keyboard



Rear View of Keyboard



Front View of Pad



Rear View of Pad



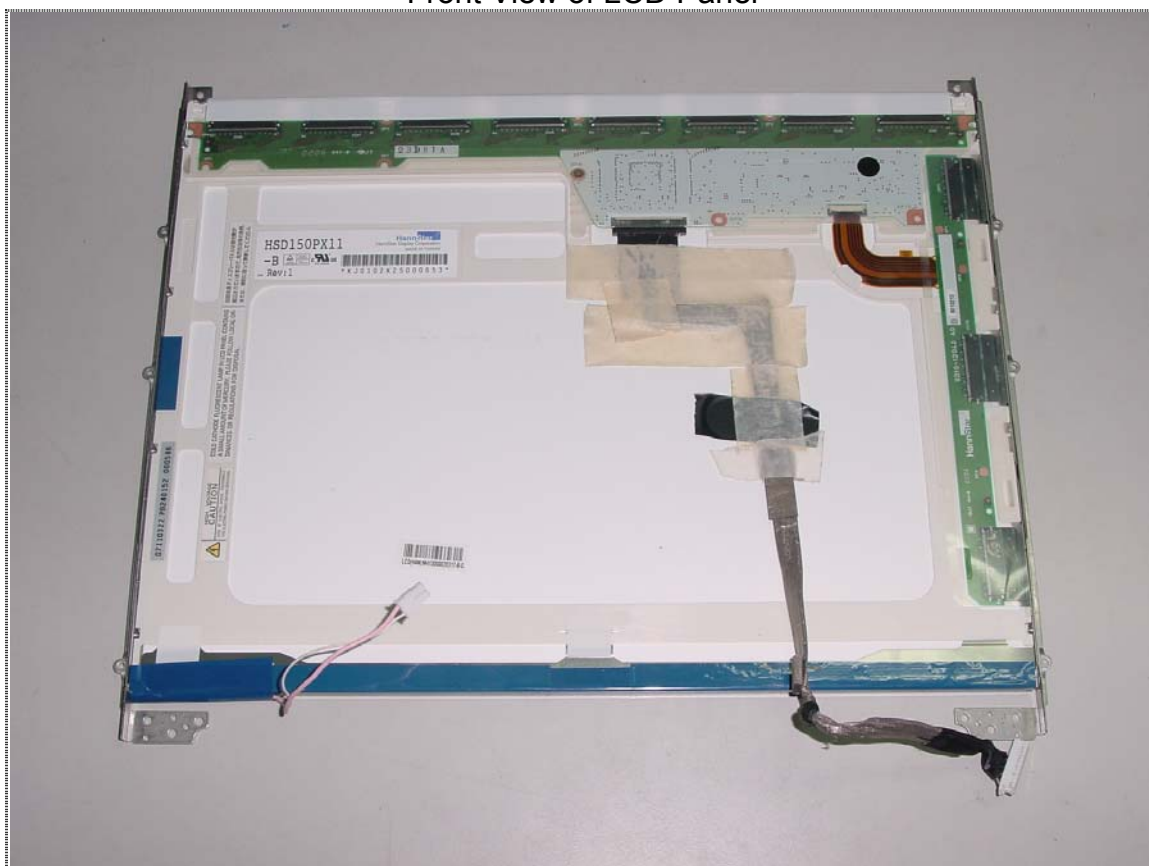
Front View of HDD



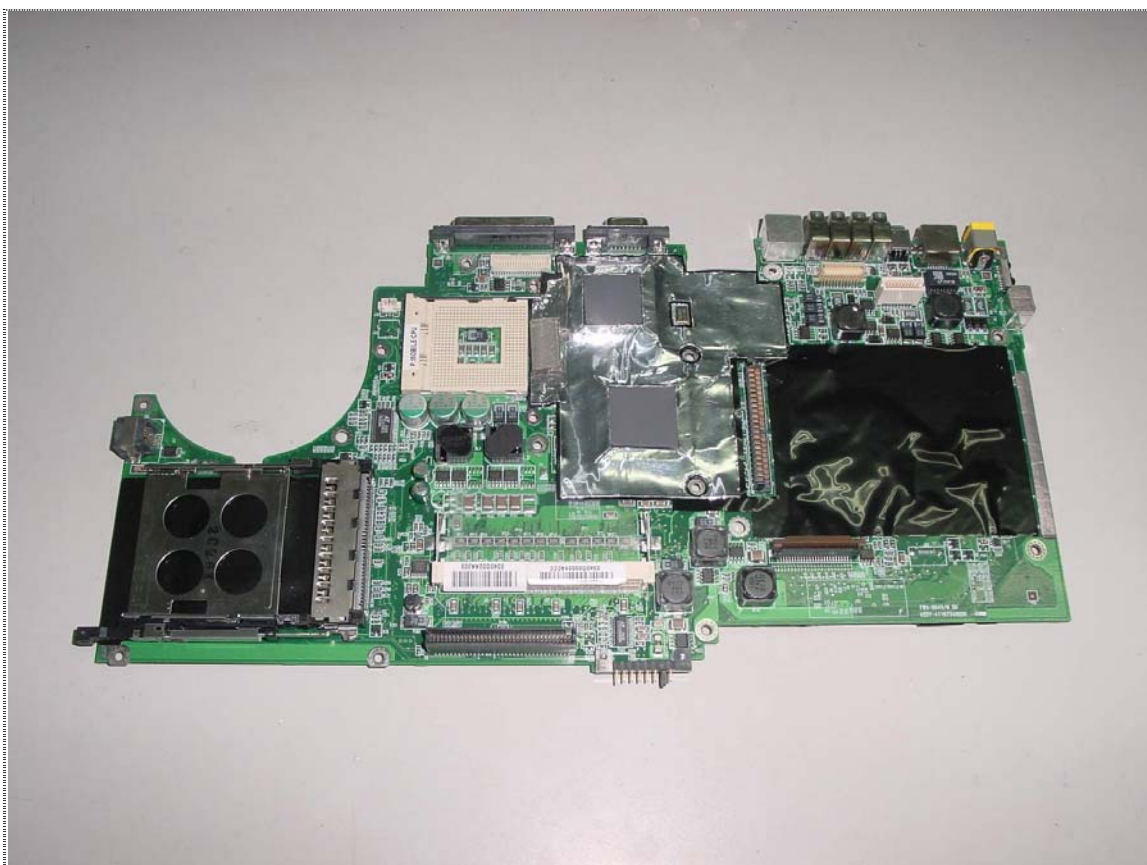
Rear View of HDD



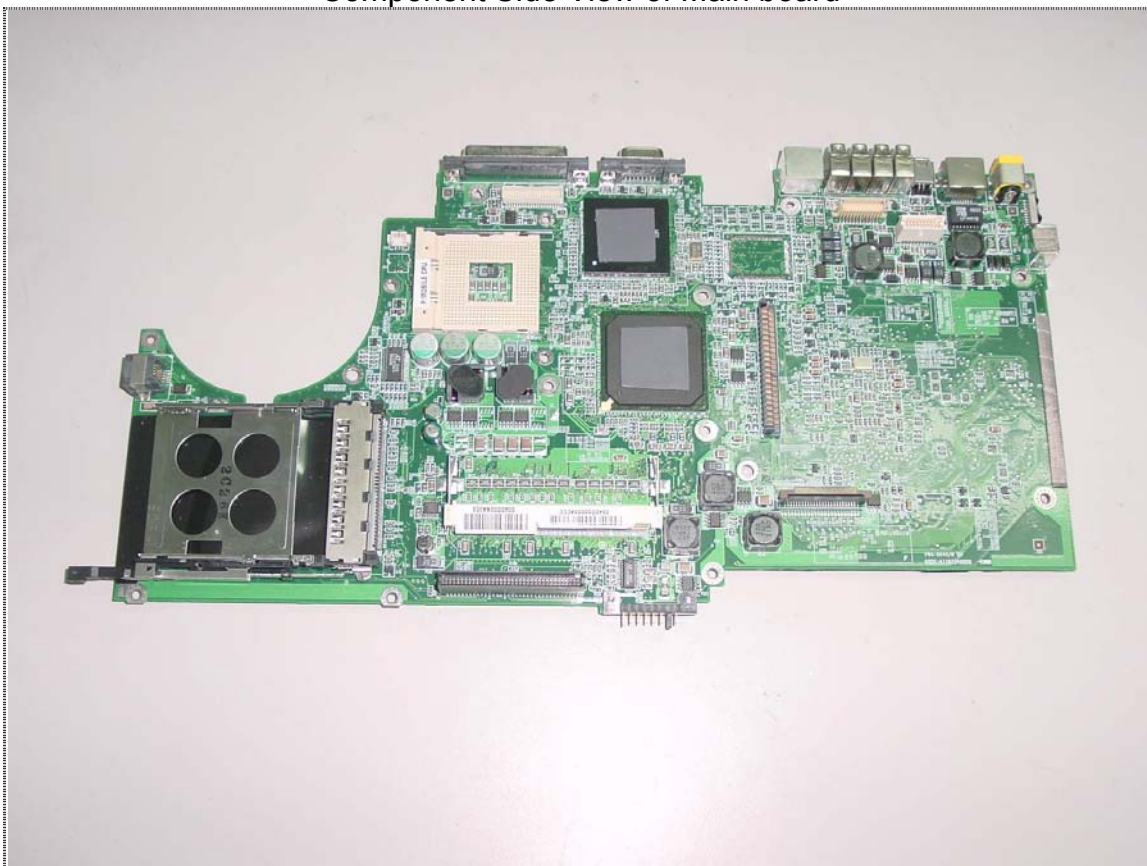
Front View of LCD Panel



Rear View of LCD Panel



Component Side View of Main board



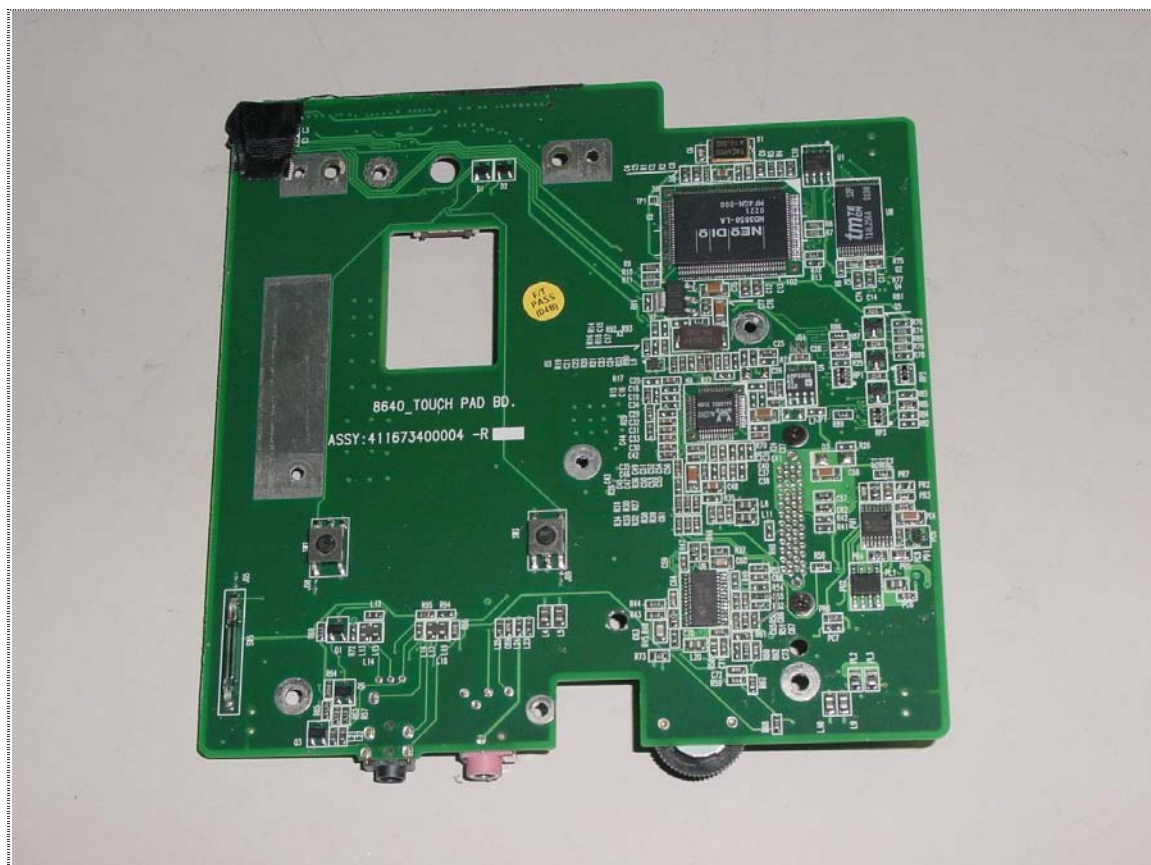
Component Side View of Main board



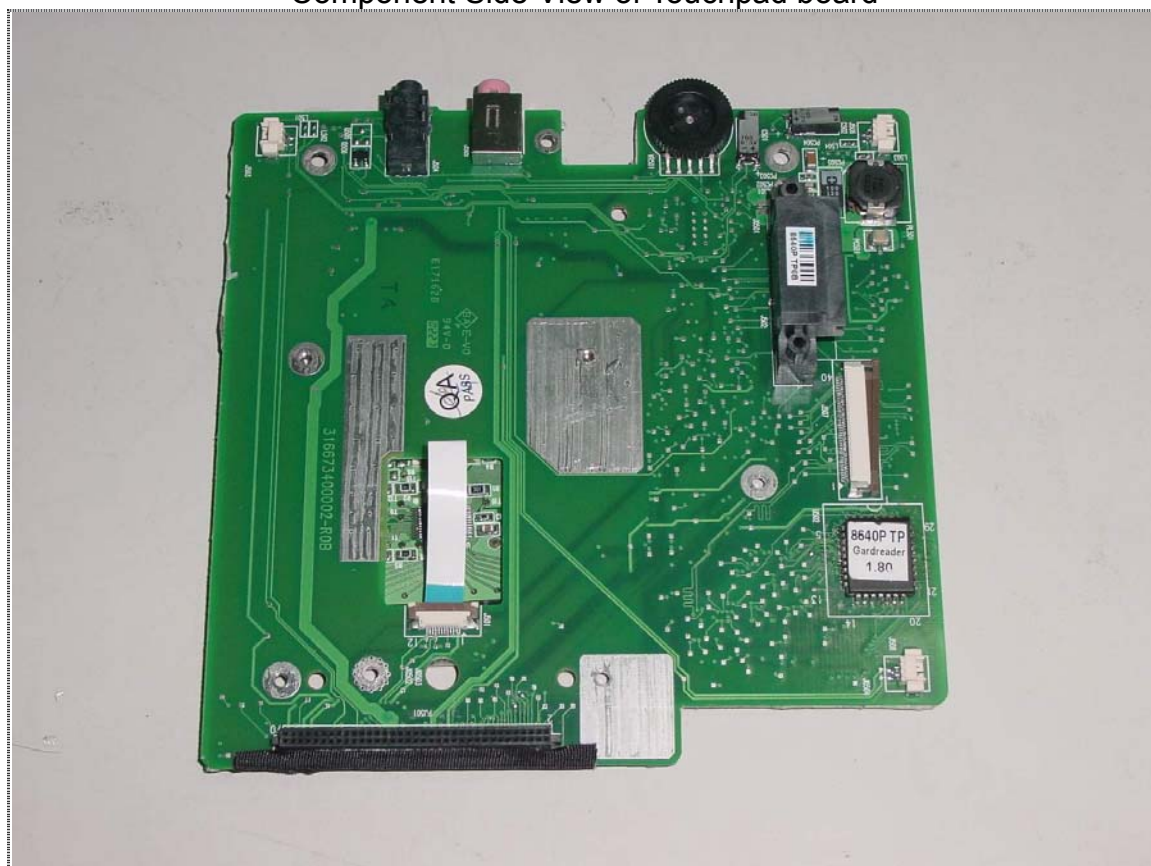
Solder Side View of Main board



Solder Side View of Main board



Component Side View of Touchpad board



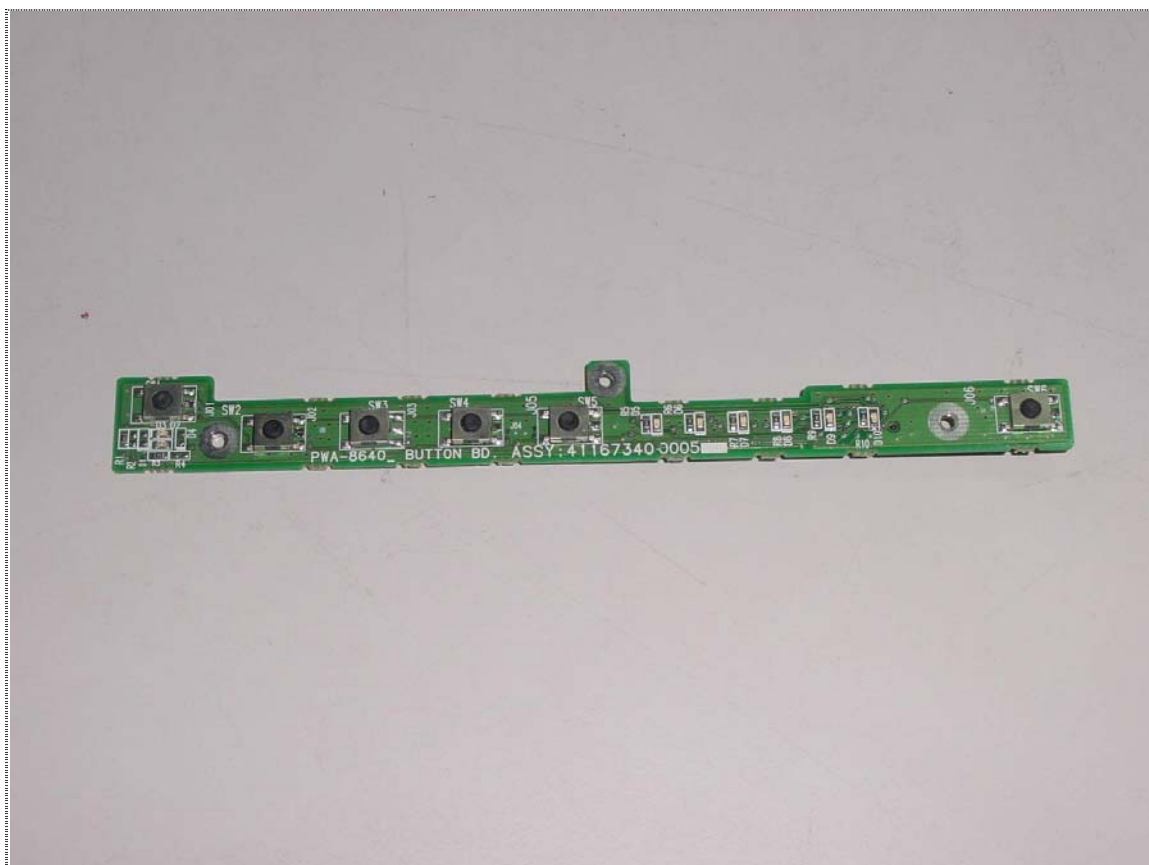
Solder Side View of Touchpad Board



Component Side View of Inverter Board



Solder Side View of Inverter Board



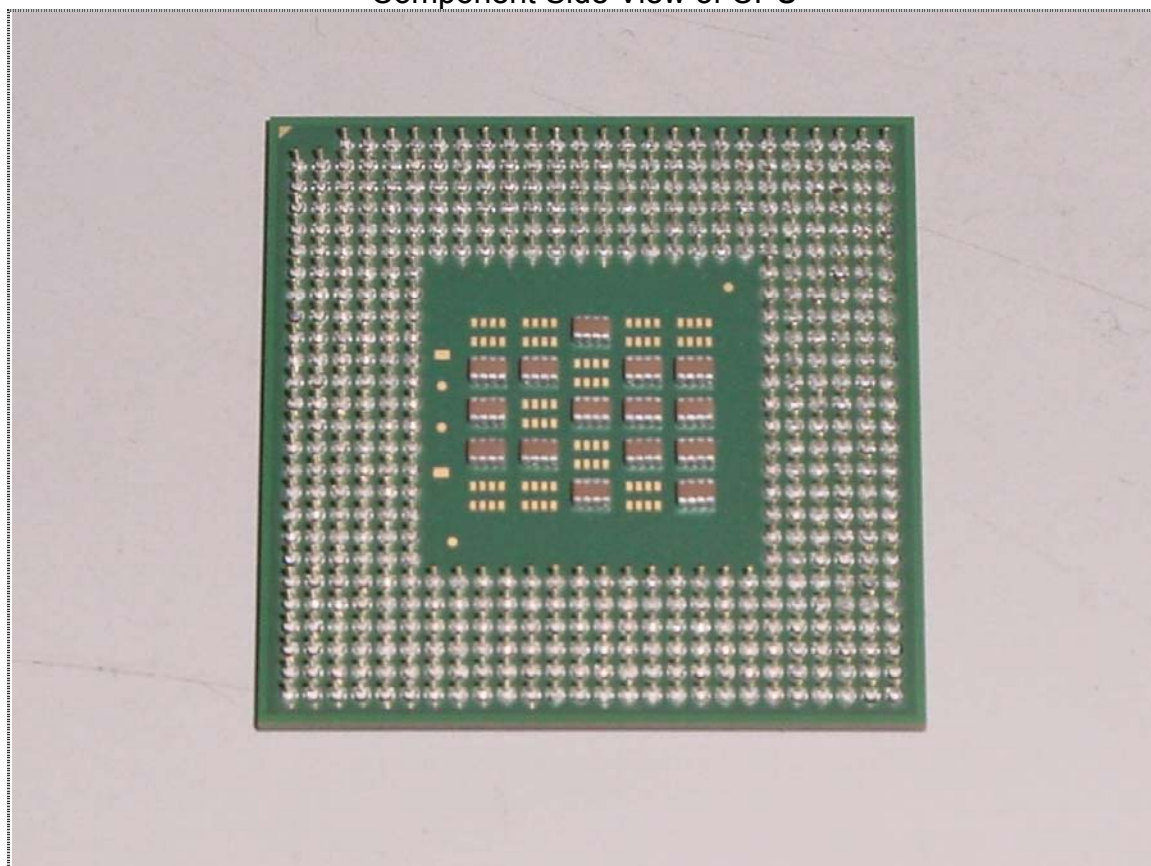
Component Side View of Control Board



Solder Side View of Control Board



Component Side View of CPU



Solder Side View of CPU



Component Side View of RAM



Solder Side View of RAM



Component Side View of Memory



Solder Side View of Memory



Front View of Wireless Module



Rear View of Wireless Module



Front View of battery



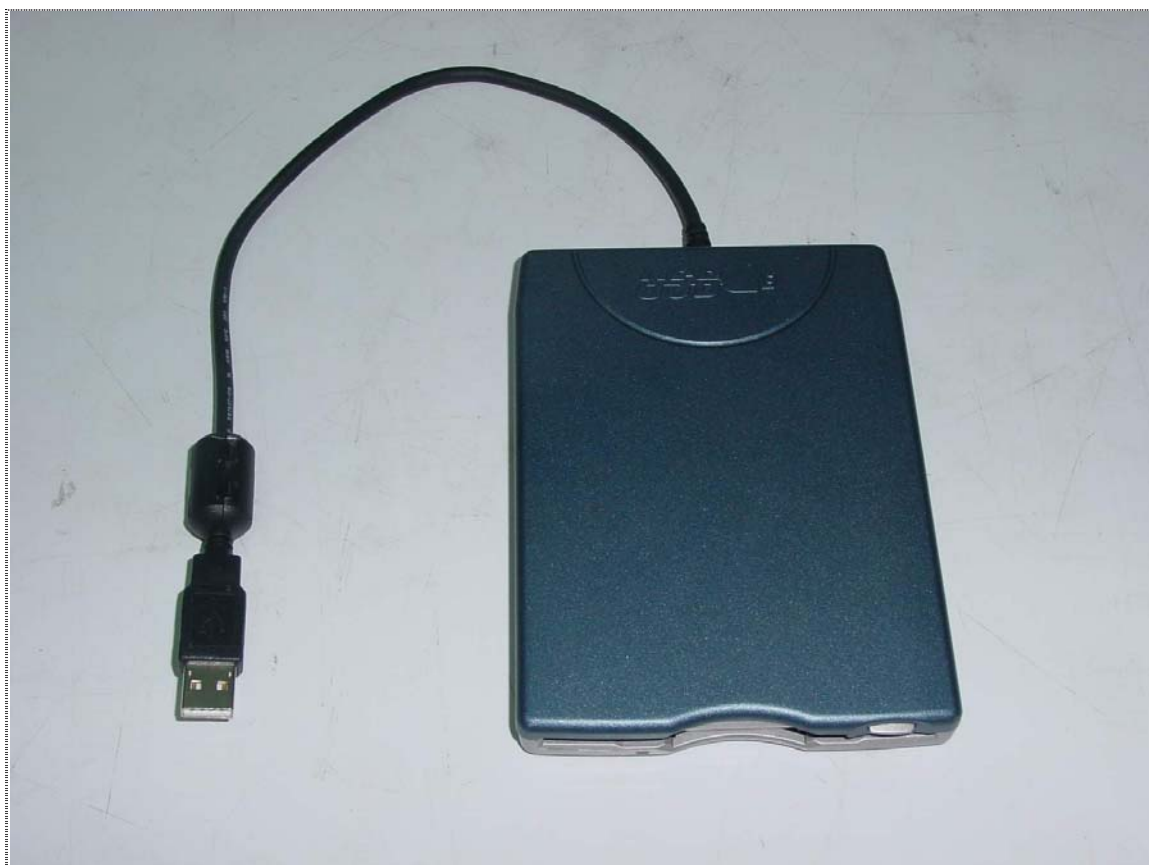
Rear View of battery



Front View of DVD+CD-R/RW



Rear View of DVD+CD-R/RW



Front View of FDD



Rear View of FDD



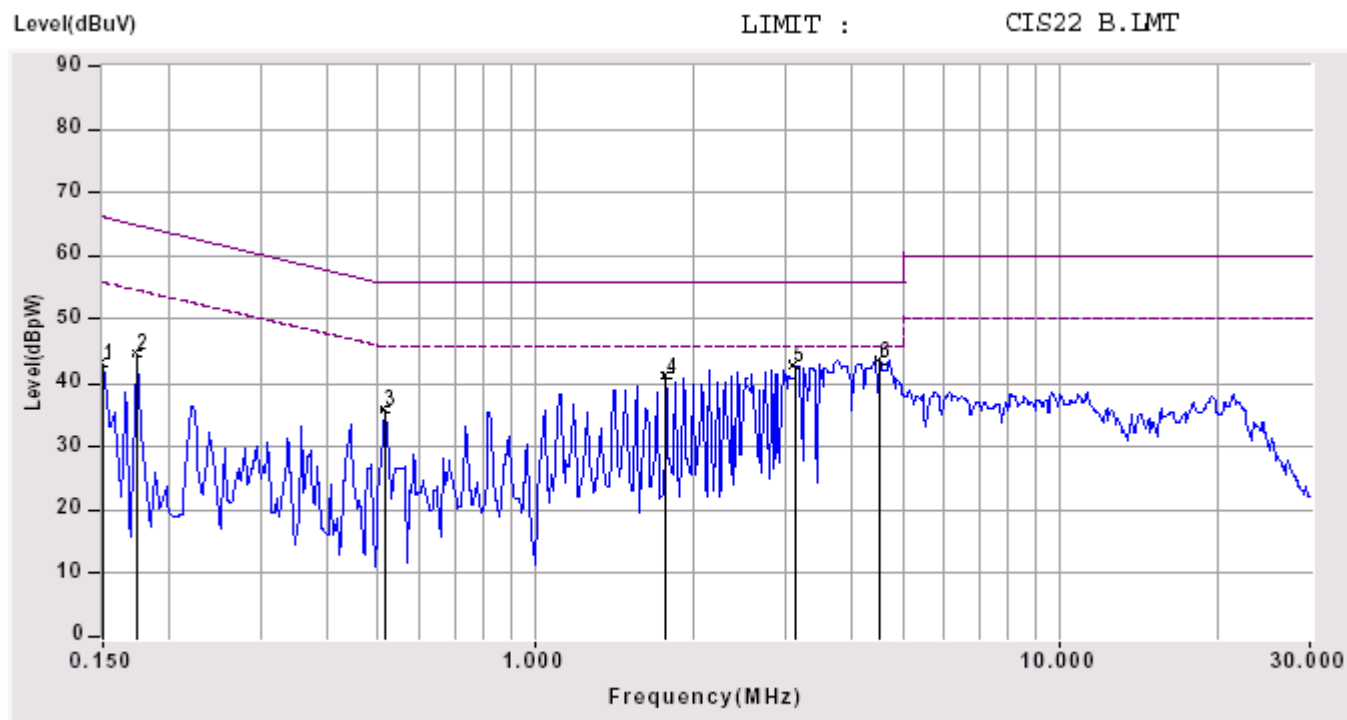
Front View of Power Adapter



Rear View of Power Adapter

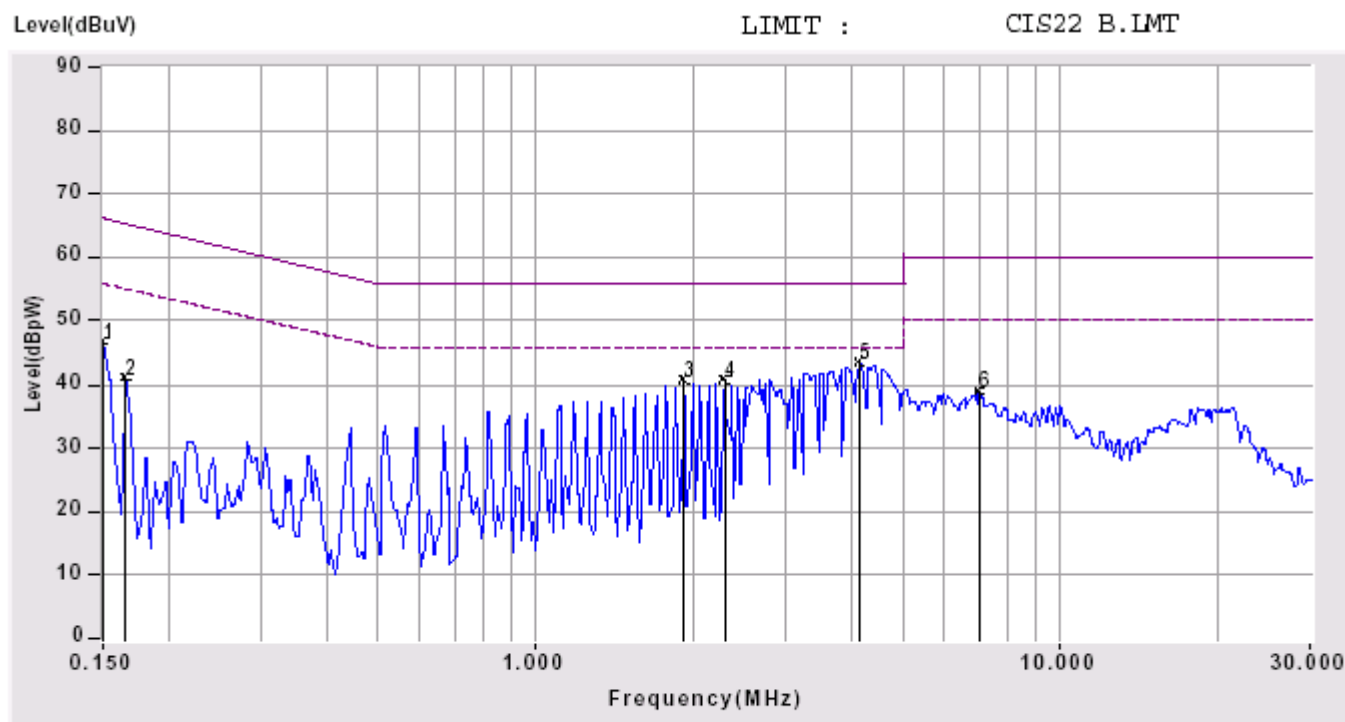
Appendix 1 – Power Line Conducted Test Waveform

A1.1 Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor



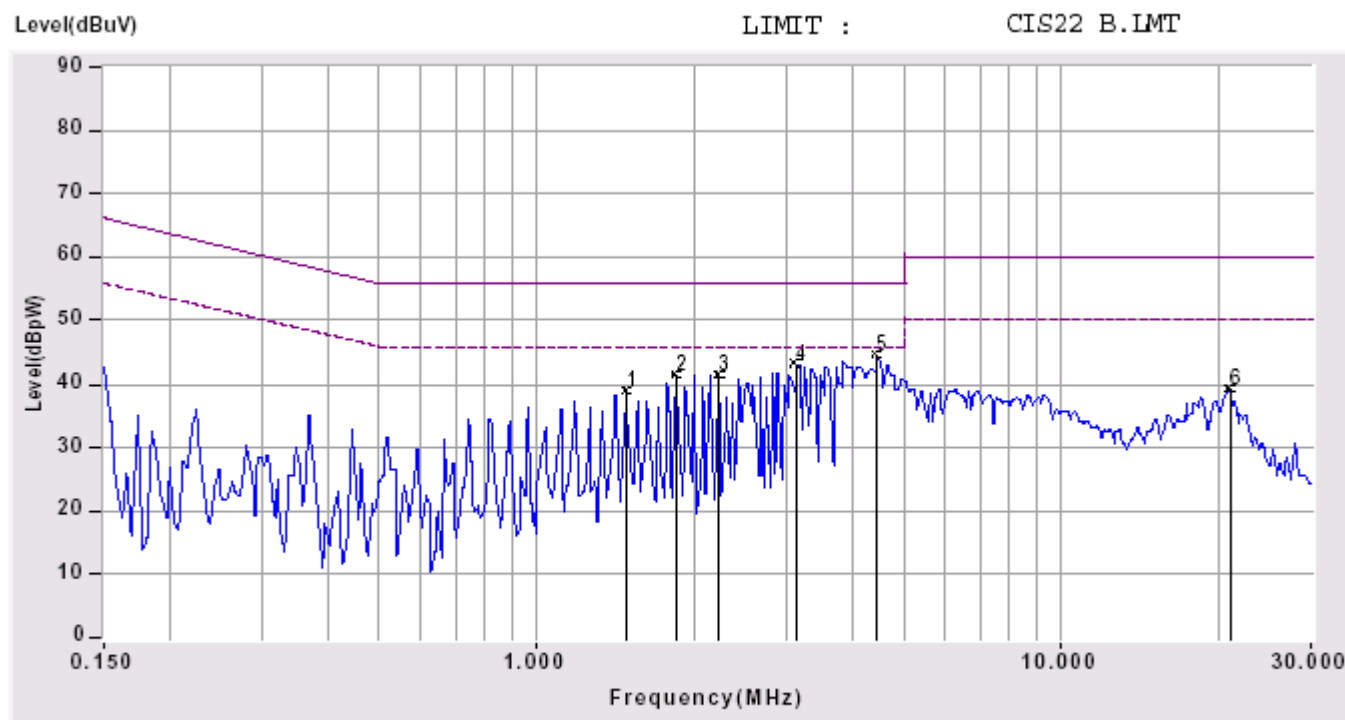
COMMENT: FULL SYSTEM
1024*768 (#1)

Line



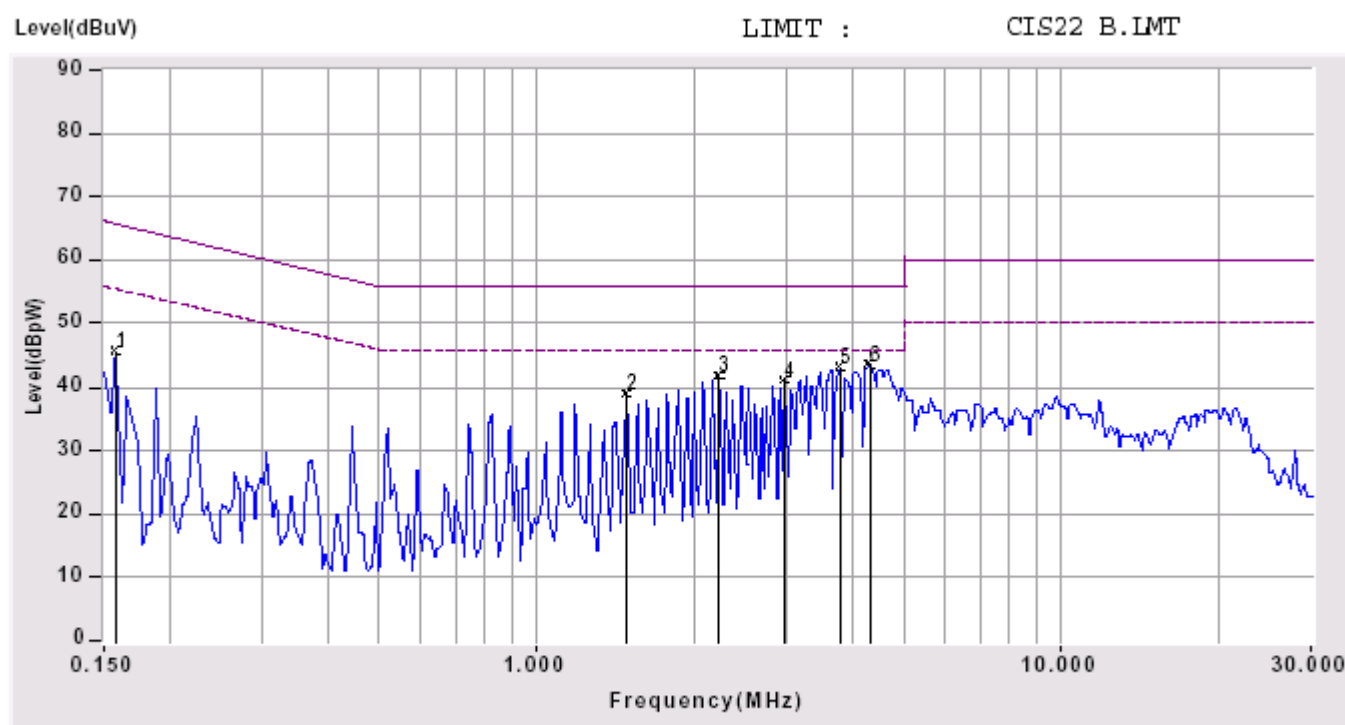
COMMENT: FULL SYSTEM
1024*768 (#1)

Neutral

A1.2 Mode 2: (#1) 800 * 600 75Hz (LCD Panel) + CRT Monitor

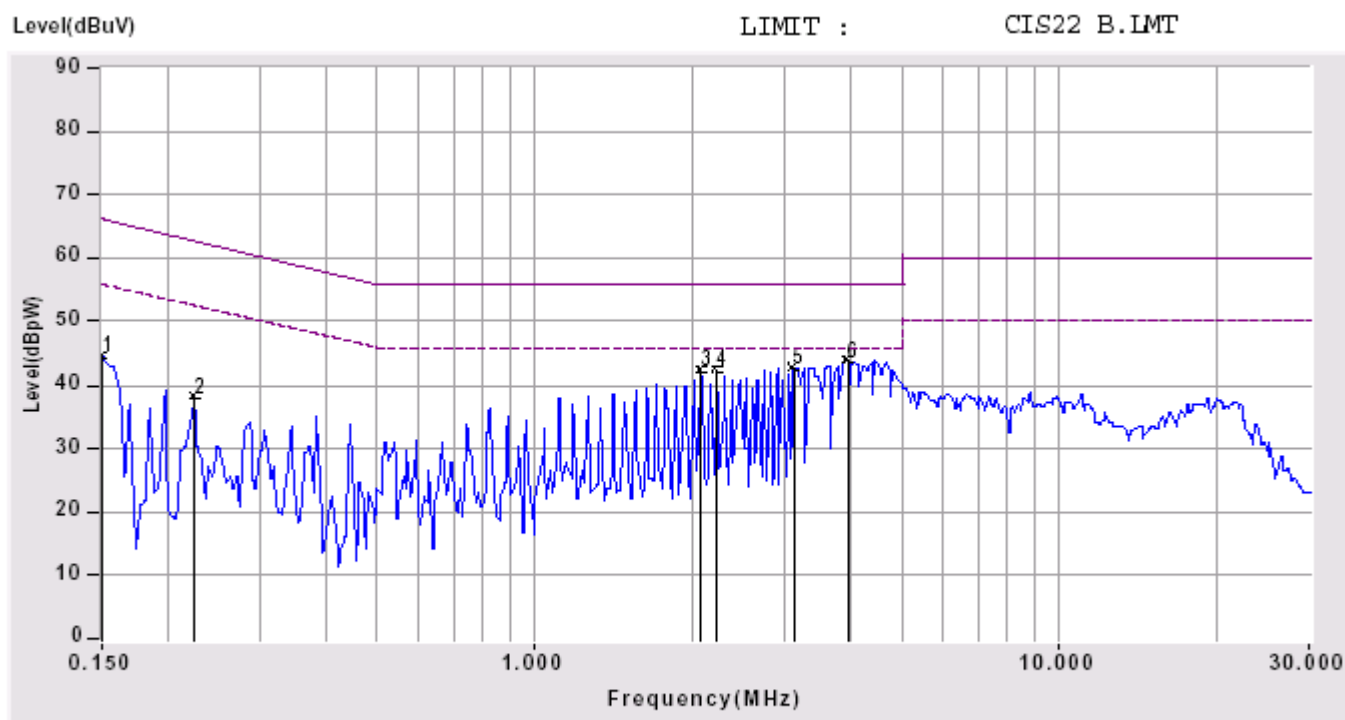
COMMENT: FULL SYSTEM
800*600 (#1)

Line



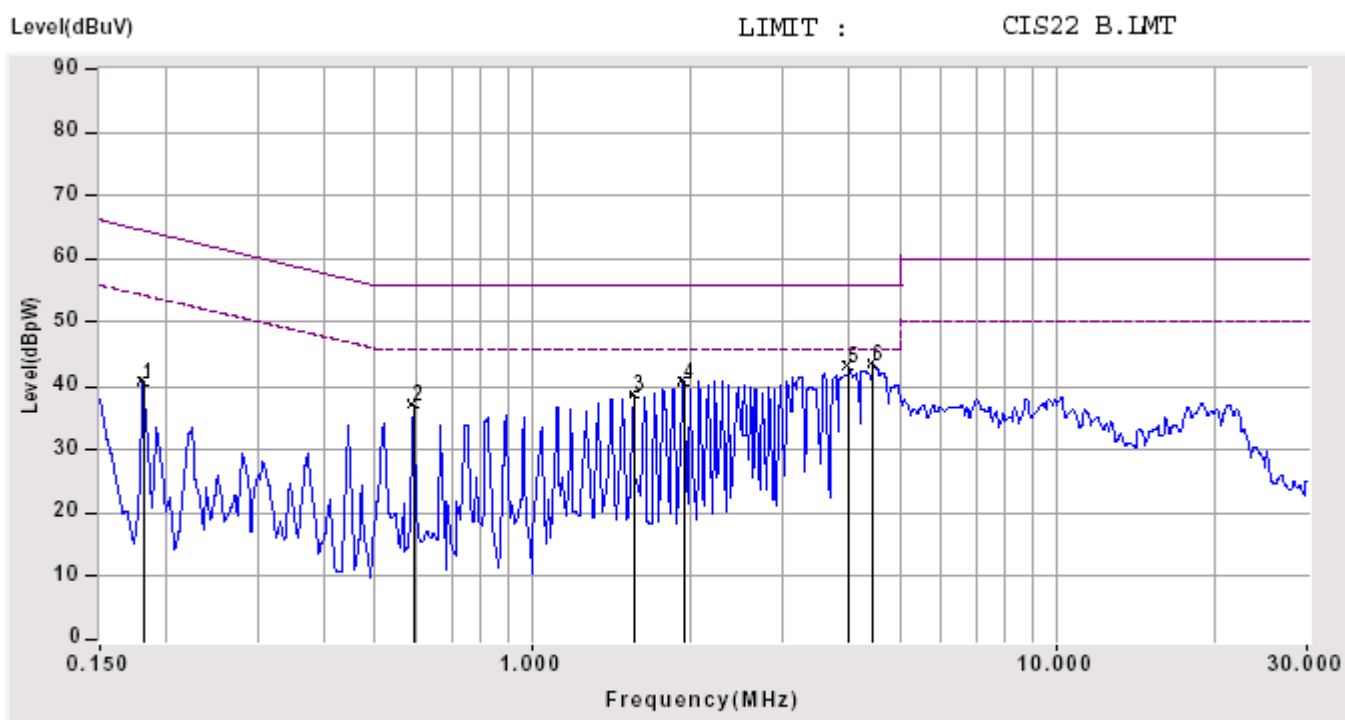
COMMENT: FULL SYSTEM
800*600 (#1)

Neutral

A1.3 Mode 3: (#1) 640 * 480 60Hz (LCD Panel) + CRT Monitor

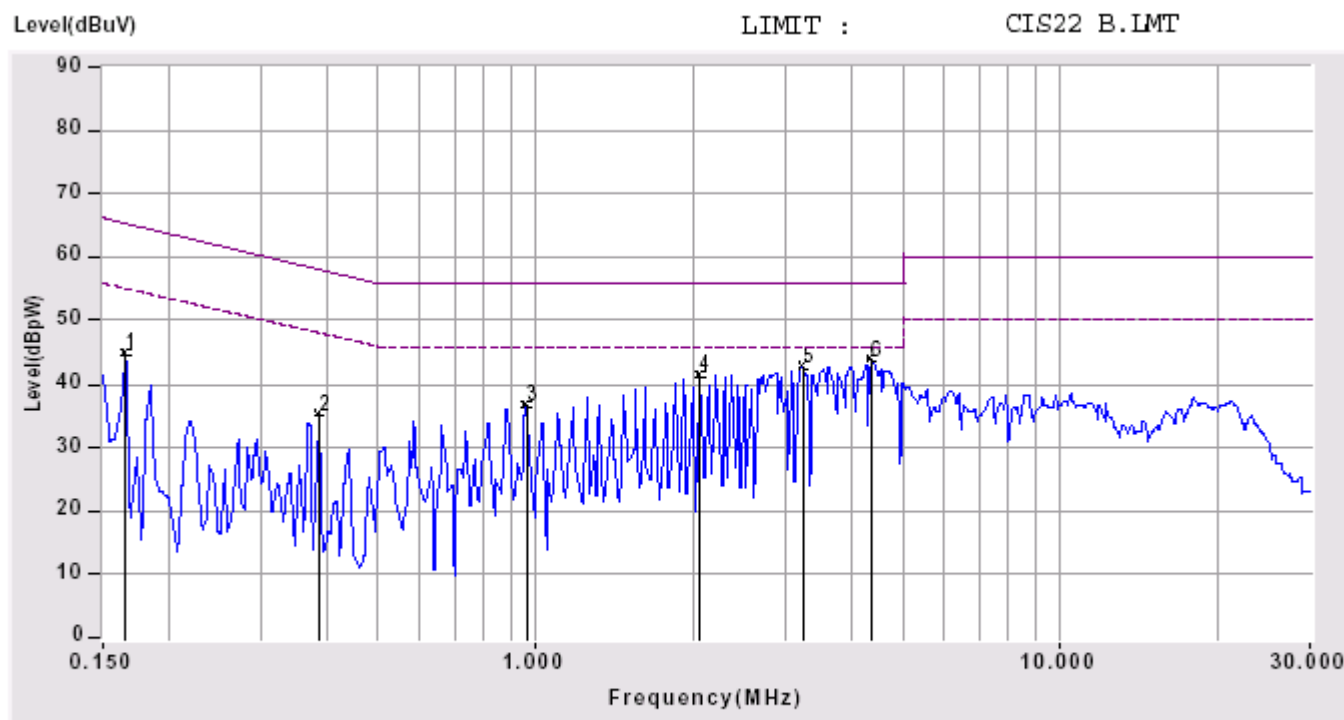
COMMENT: FULL SYSTEM
640*480 (#1)

Line



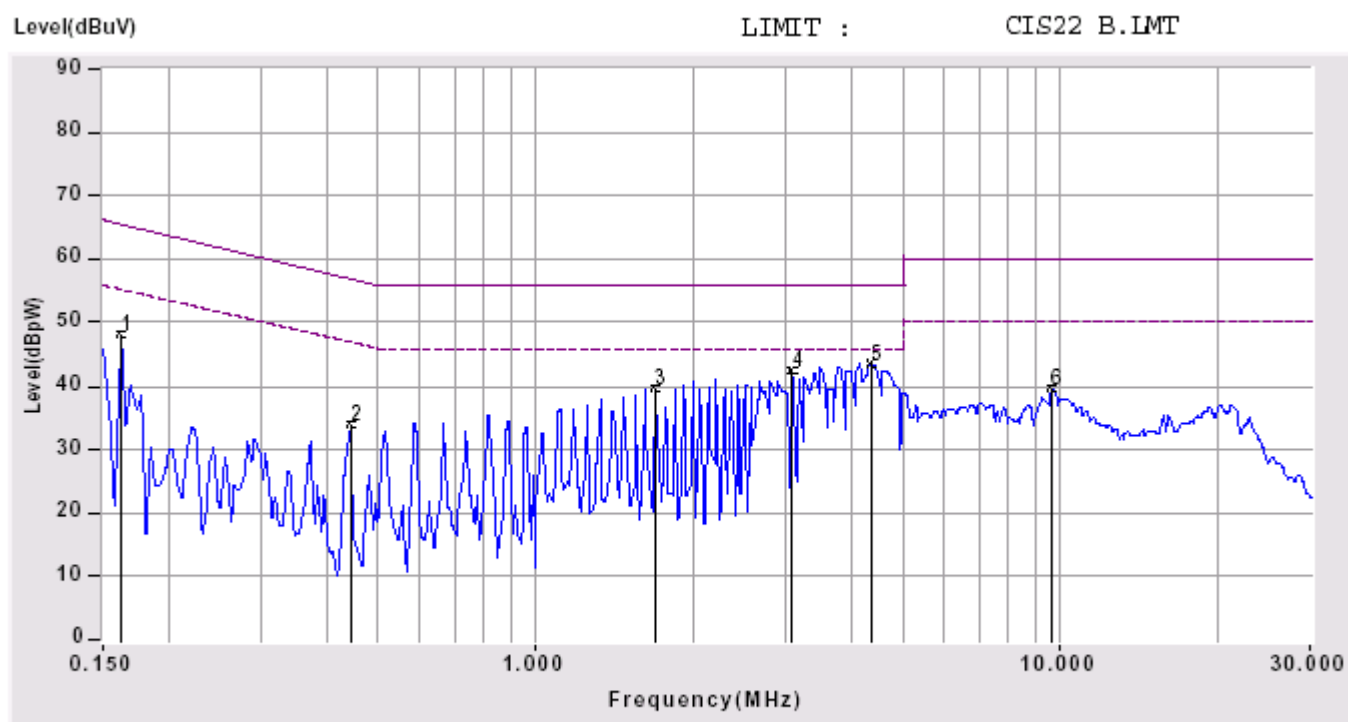
COMMENT: FULL SYSTEM
640*480 (#1)

Neutral

A1.4 Mode 4: (#1) 1024 * 768 75Hz (LCD Panel) + TV

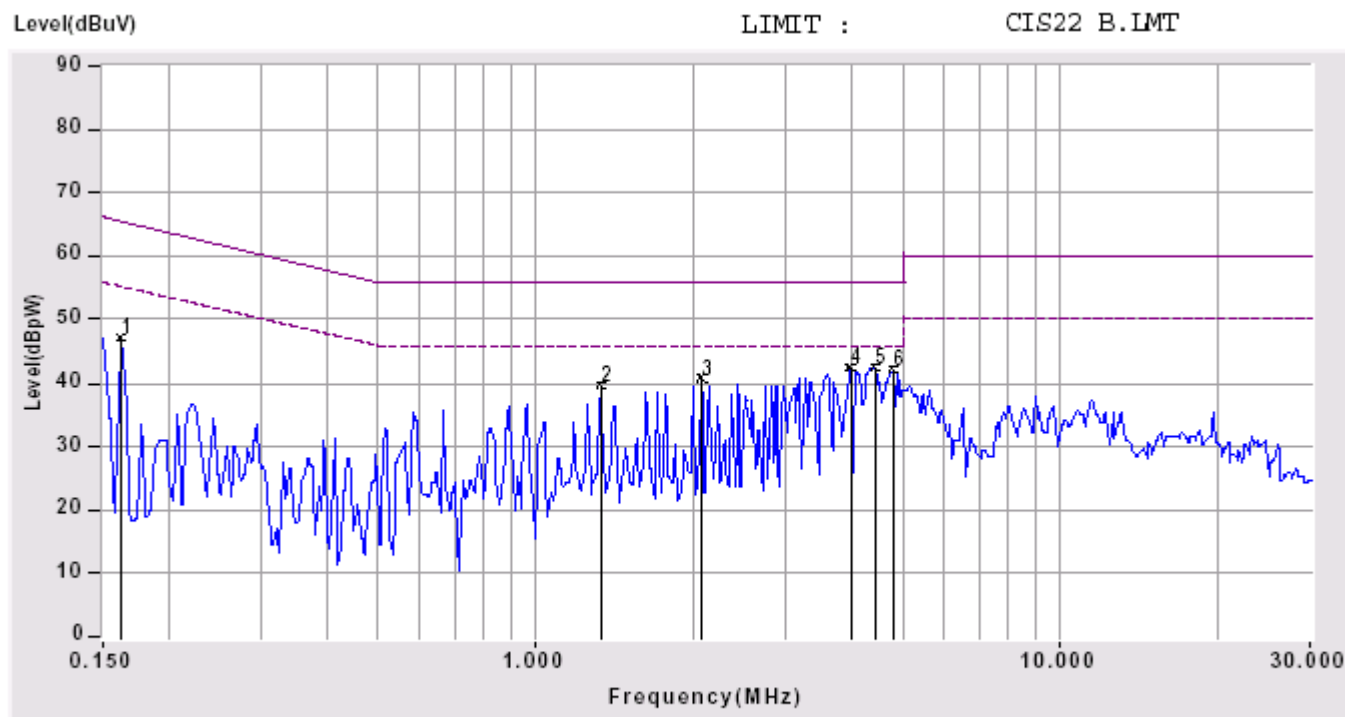
COMMENT: FULL SYSTEM
TV MODE(#1)

Line



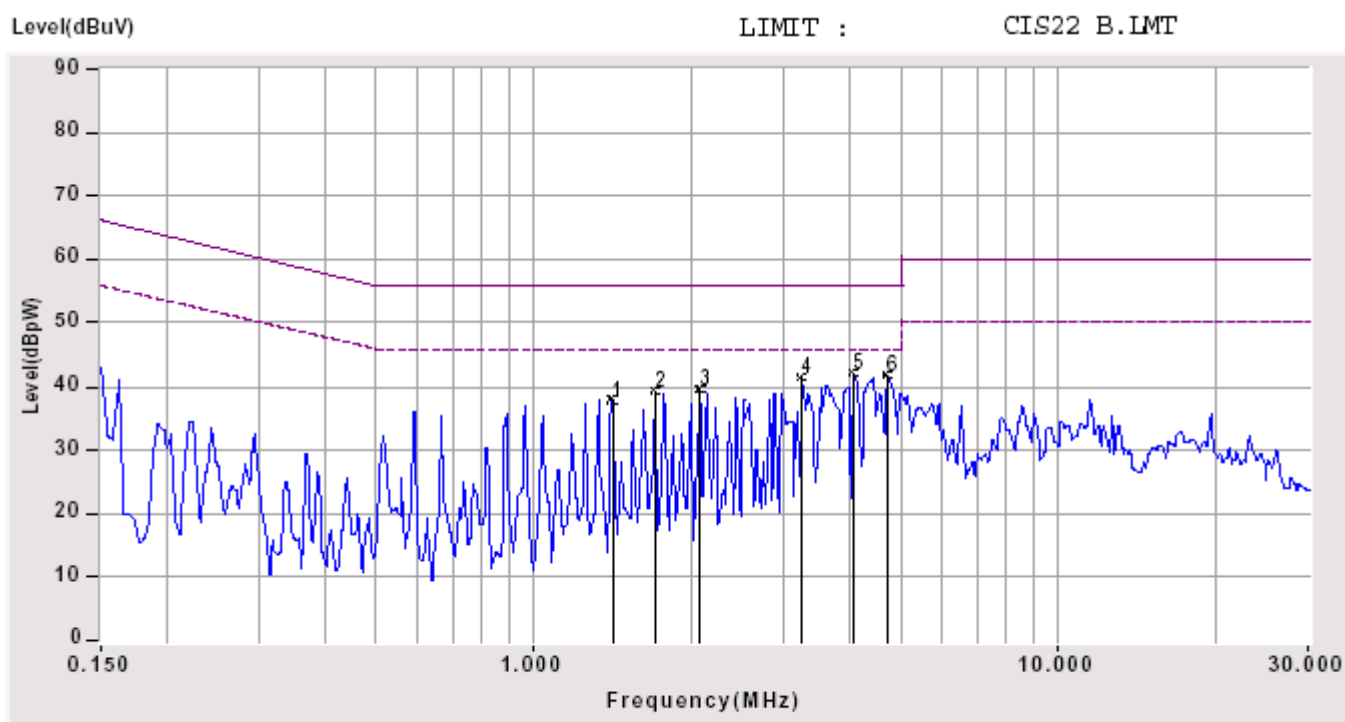
COMMENT: FULL SYSTEM
TV MODE(#1)

Neutral

A1.5 Mode 5: (#1) CRT Monitor + TV

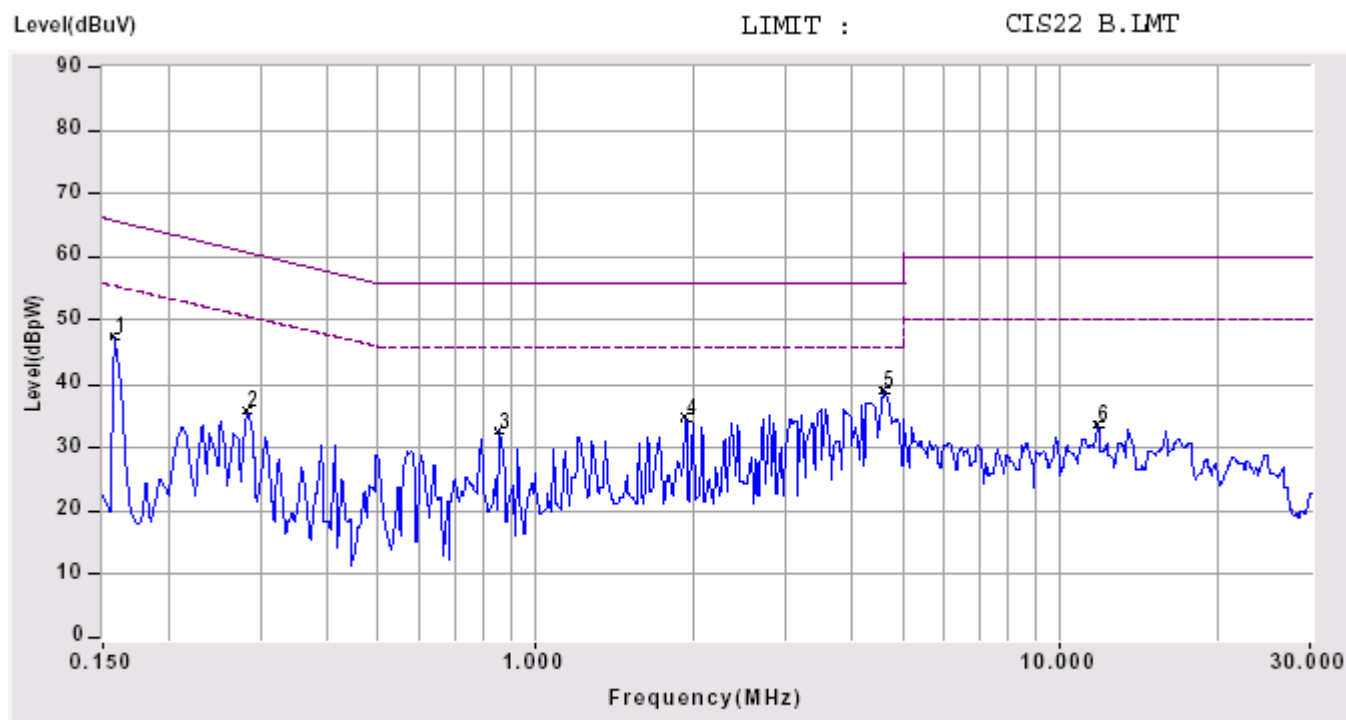
COMMENT: FULL SYSTEM
TV+VGA (#1)

Line



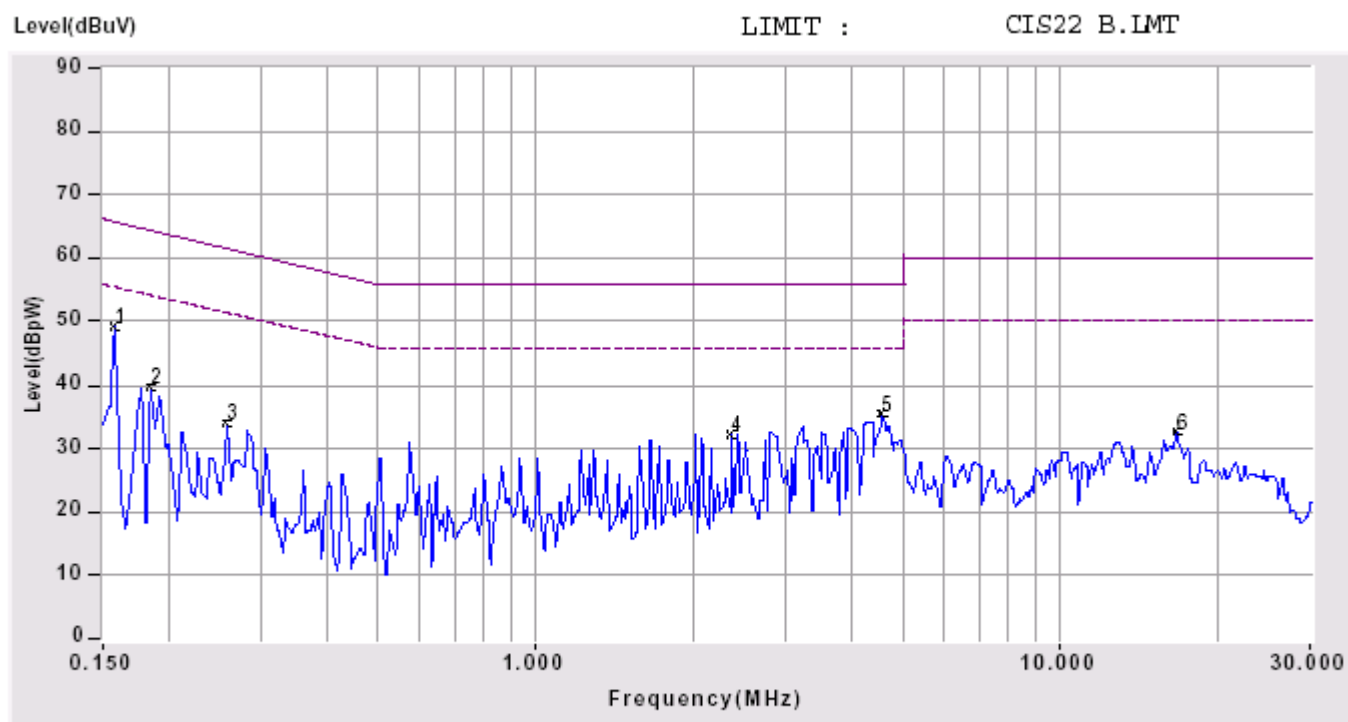
COMMENT: FULL SYSTEM
TV+VGA (#1)

Neutral

A1.6 Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

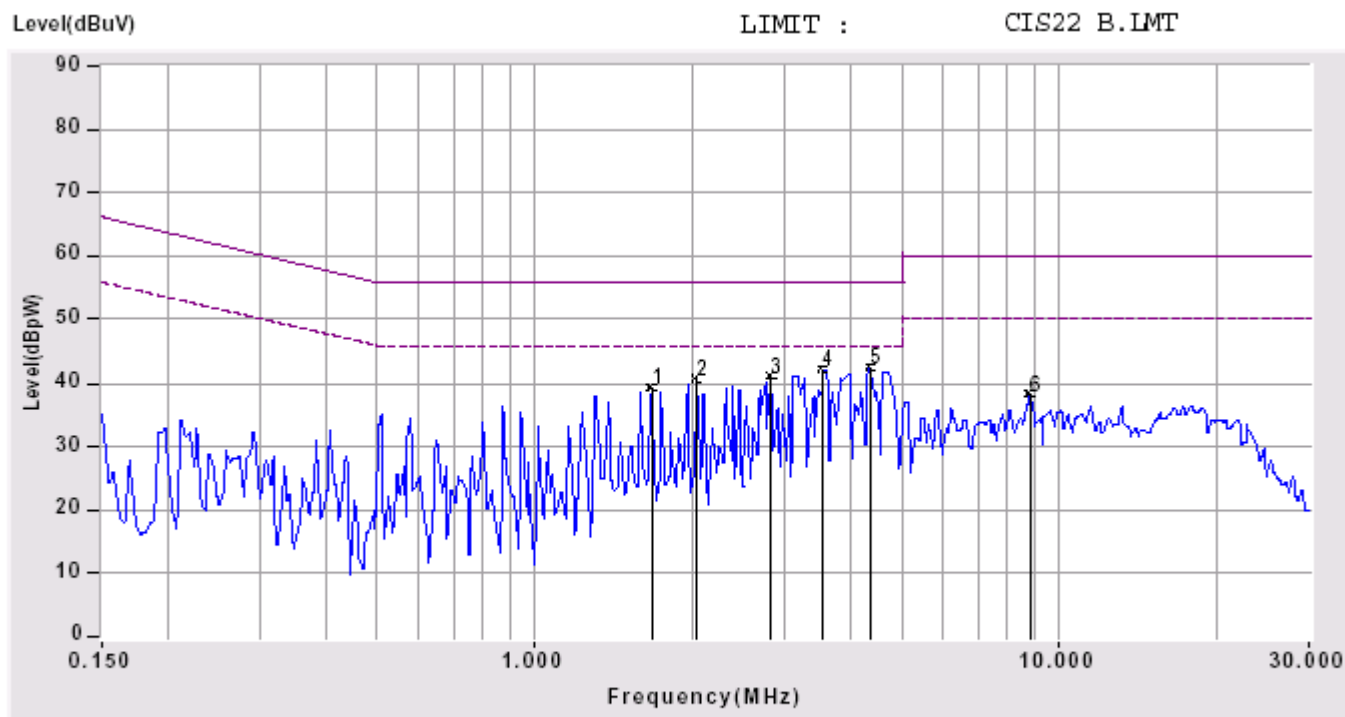
COMMENT: FULL SYSTEM
1024*768 (#2)

Line



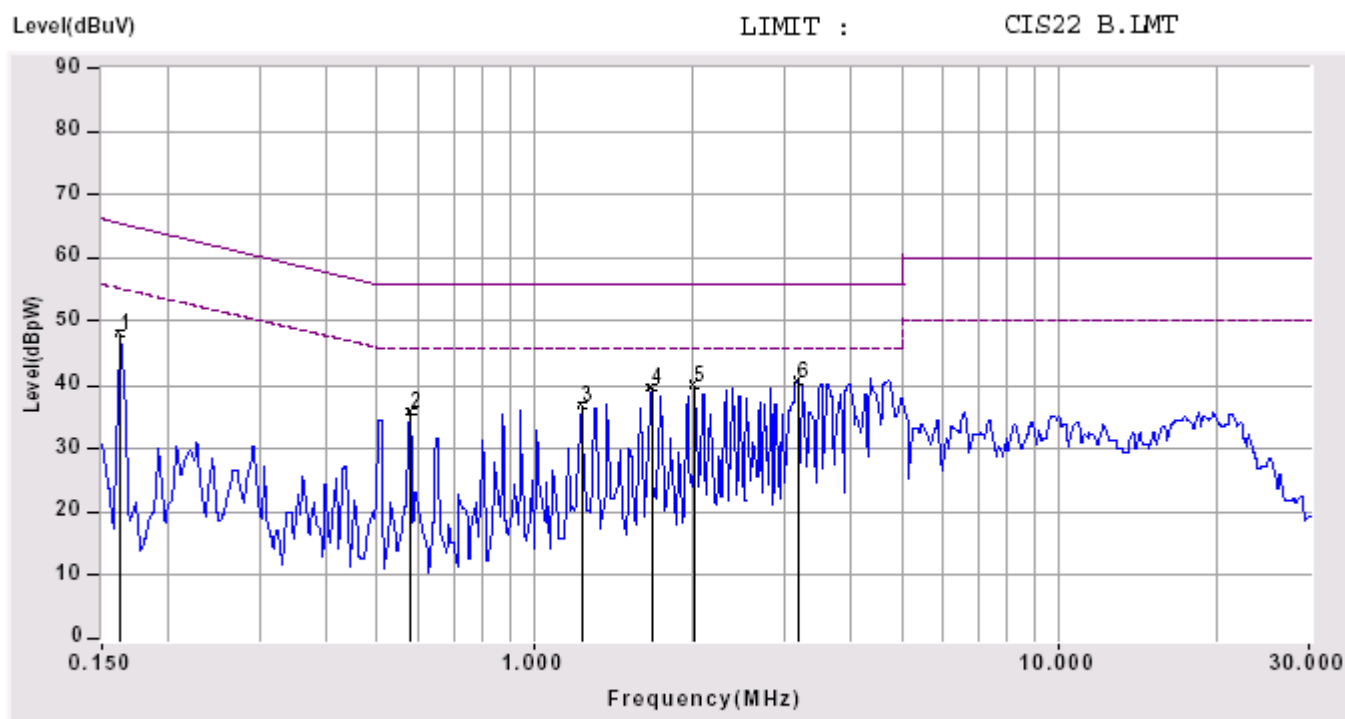
COMMENT: FULL SYSTEM
1024*768 (#2)

Neutral

A1.7 Mode 7: (#2) 800 * 600 75Hz (LCD Panel) + CRT Monitor

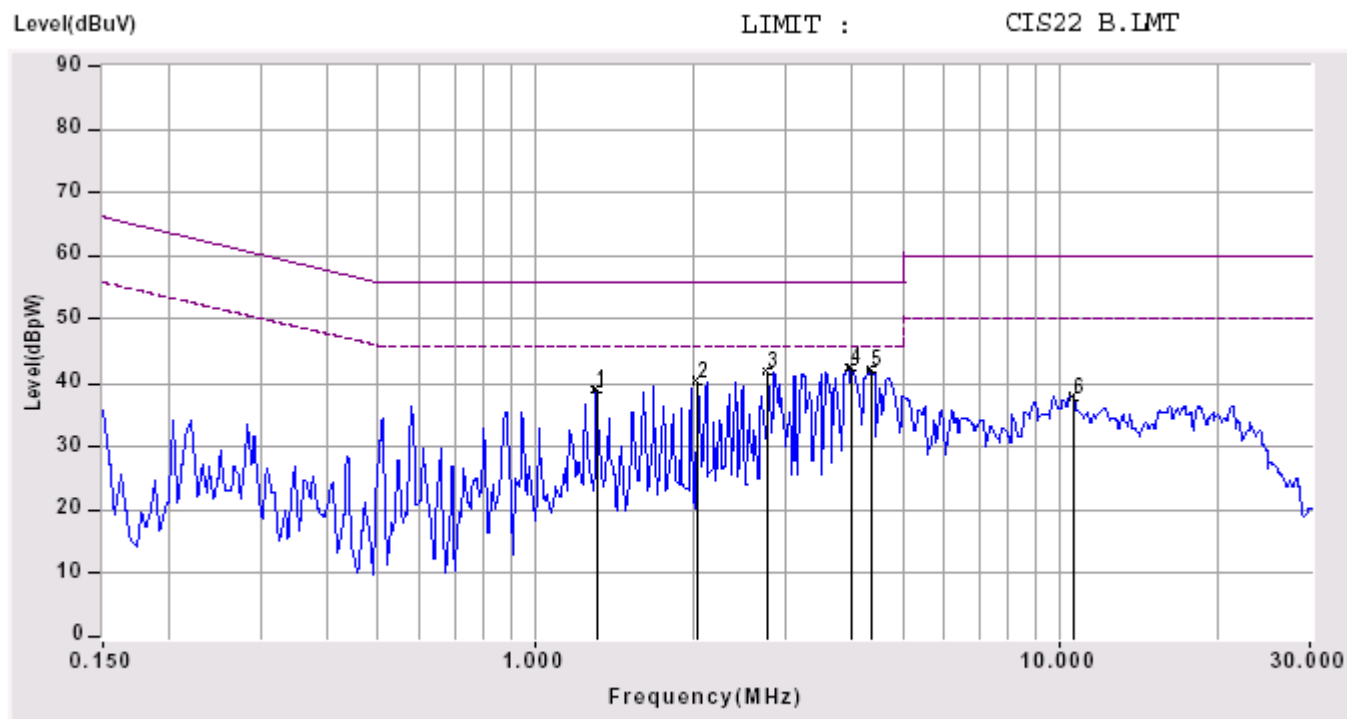
COMMENT: FULL SYSTEM
800*600 (#2)

Line



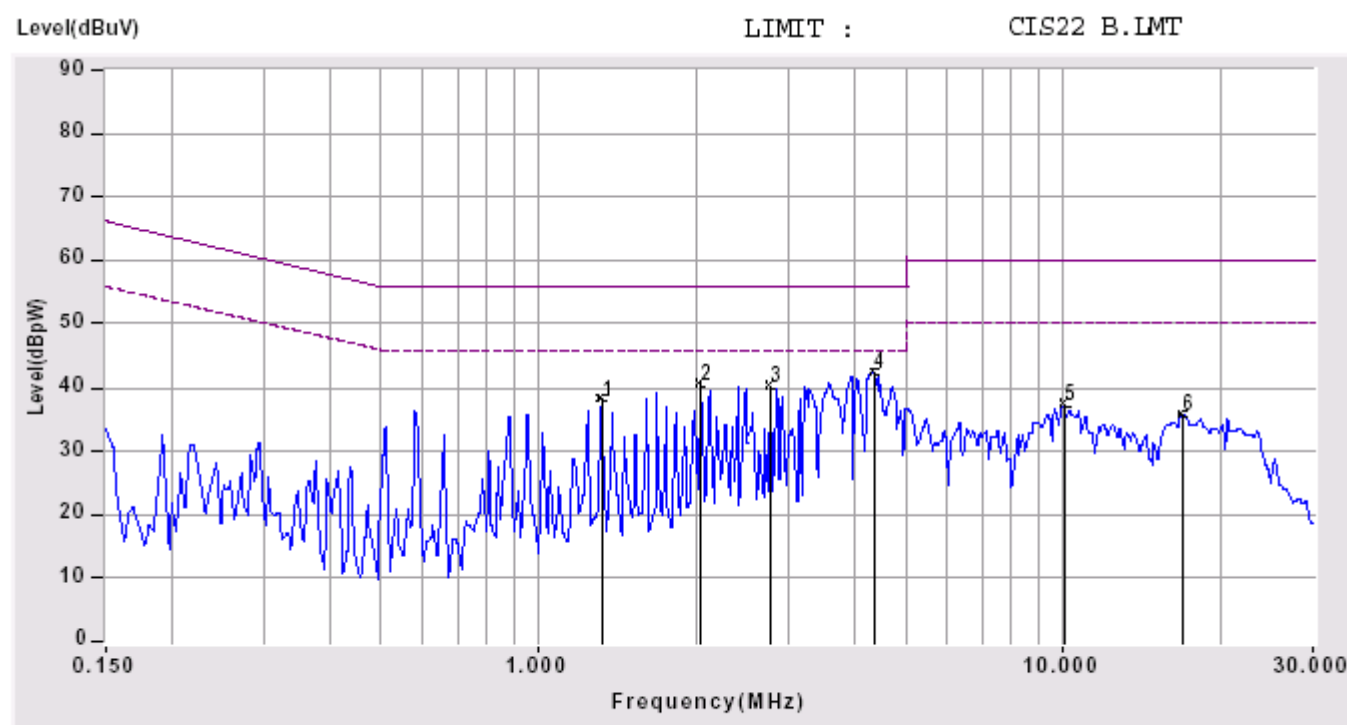
COMMENT: FULL SYSTEM
800*600 (#2)

Neutral

A1.8 Mode 8: (#2) 640 * 480 60Hz (LCD Panel) + CRT Monitor

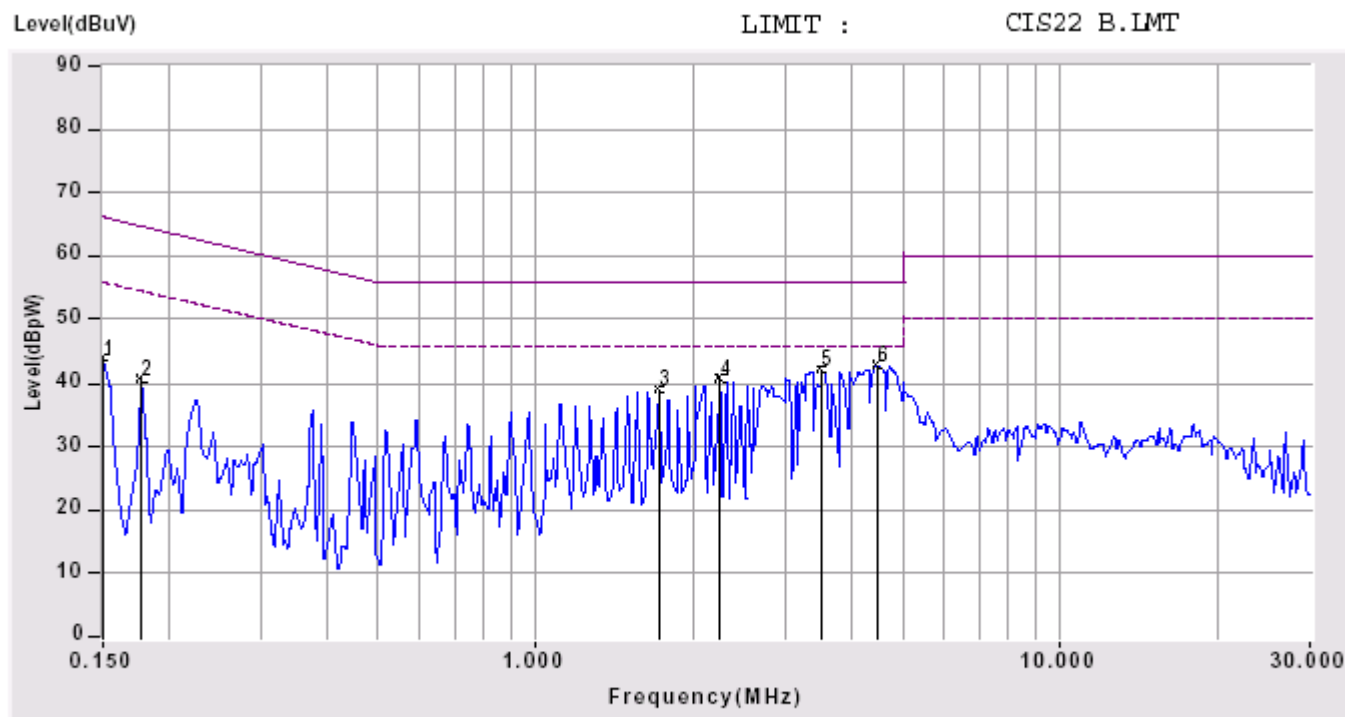
COMMENT: FULL SYSTEM
640*480 (#2)

Line



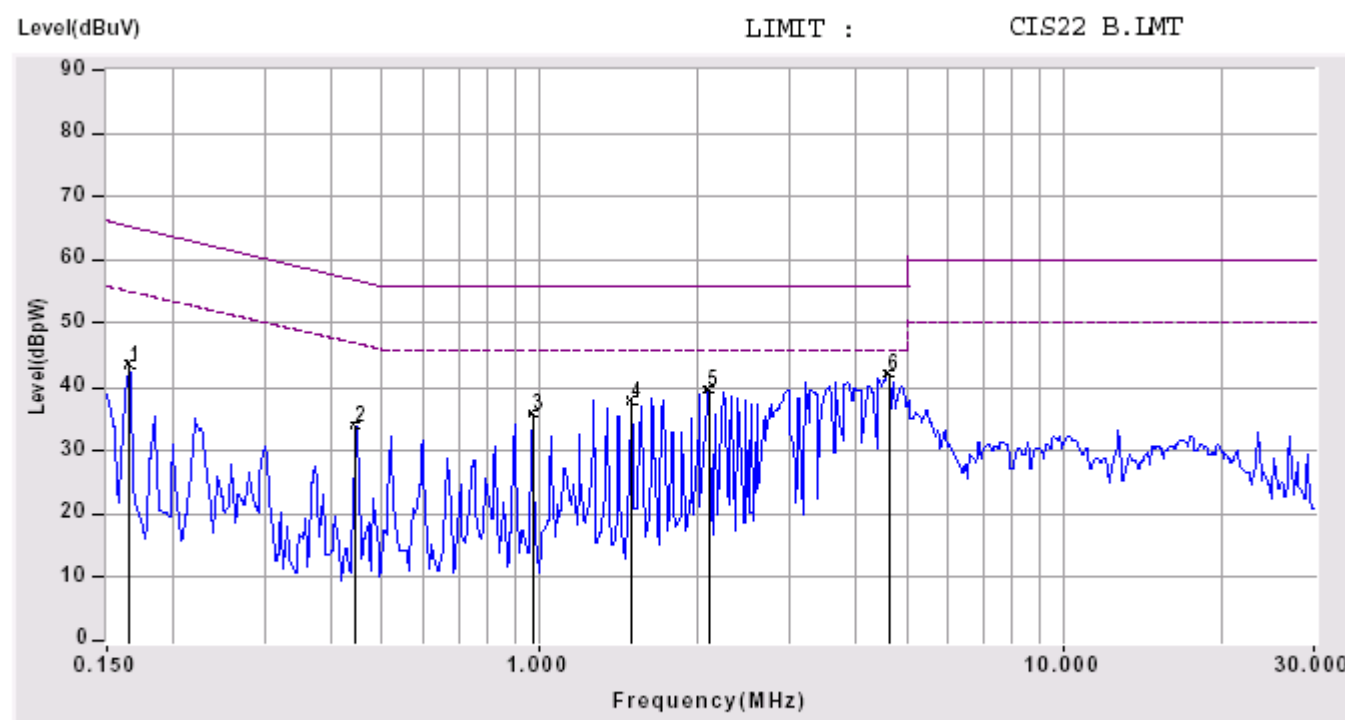
COMMENT: FULL SYSTEM
640*480 (#2)

Neutral

A1.9 Mode 9: (#2) 1024 * 768 75Hz (LCD Panel) + TV

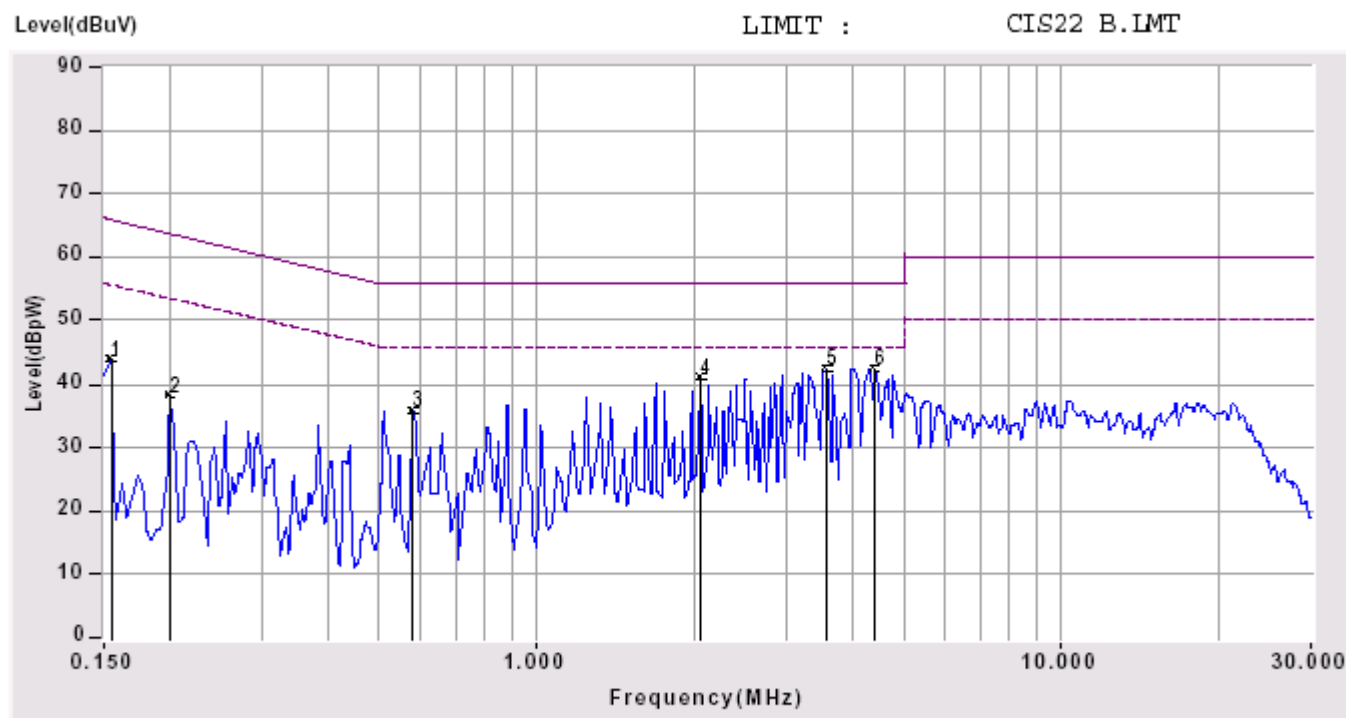
COMMENT: FULL SYSTEM
TV+PANEL (#2)

Line



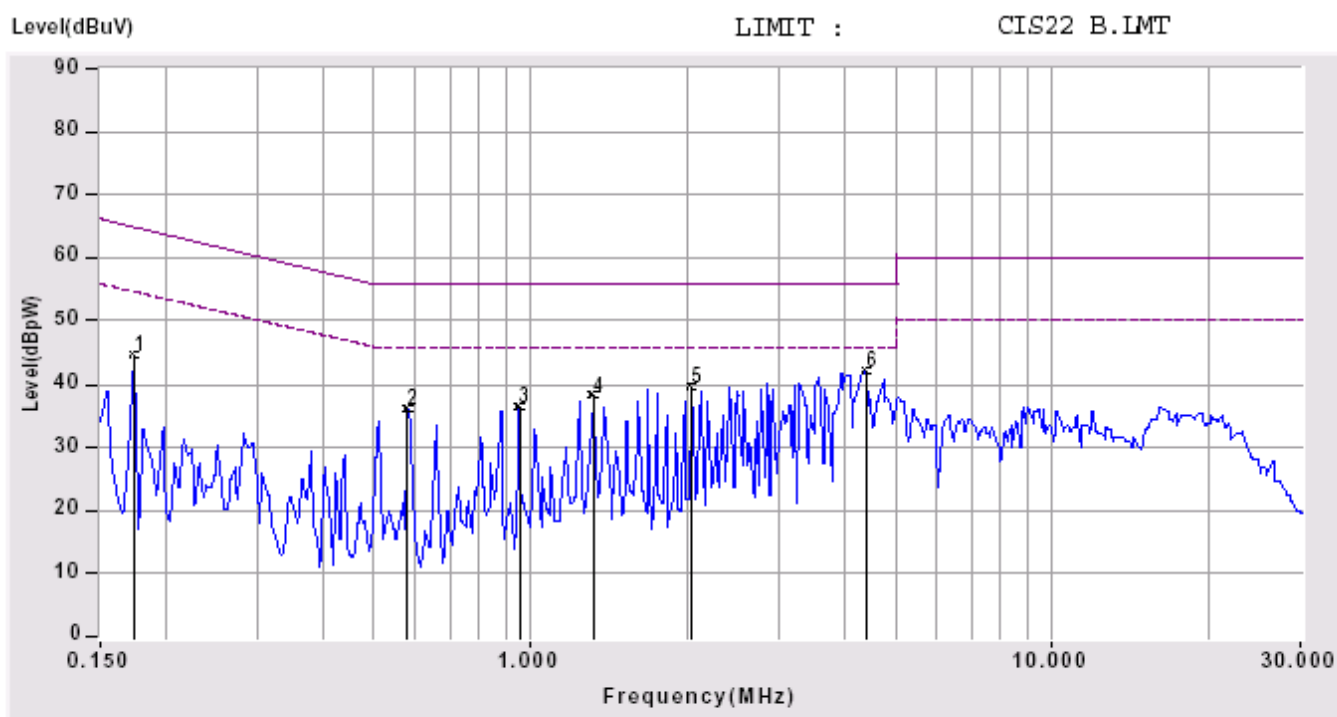
COMMENT: FULL SYSTEM
TV+PANEL (#2)

Neutral

A1.10 Mode 10: (#2) CRT Monitor + TV

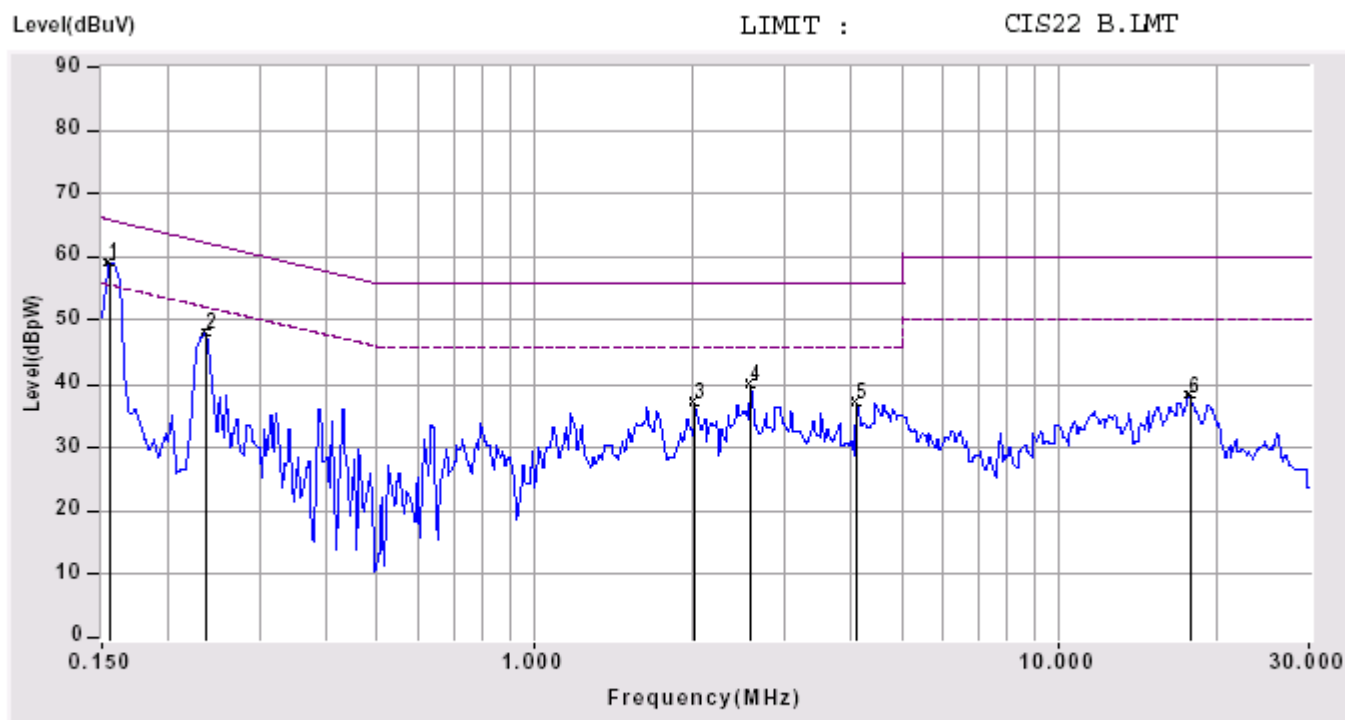
COMMENT: FULL SYSTEM
TV MODE(#2)

Line



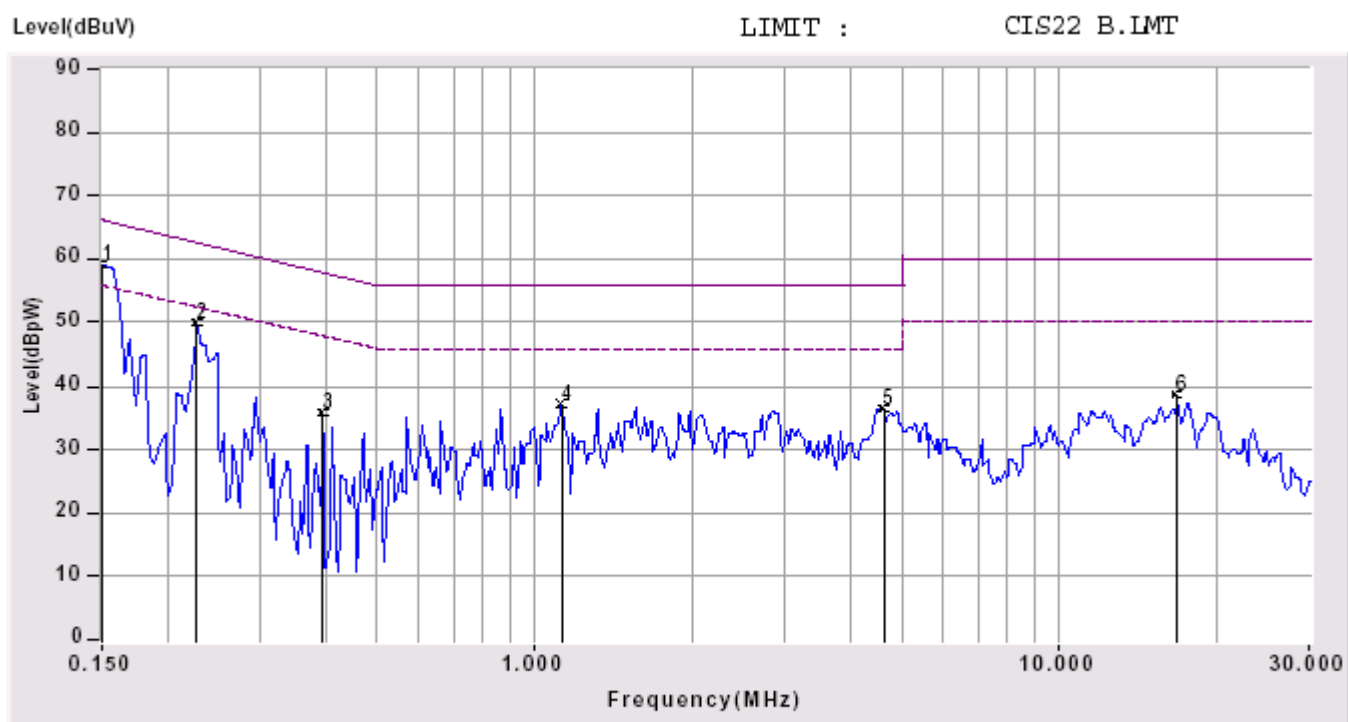
COMMENT: FULL SYSTEM
TV MODE(#2)

Neutral

A1.11 Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

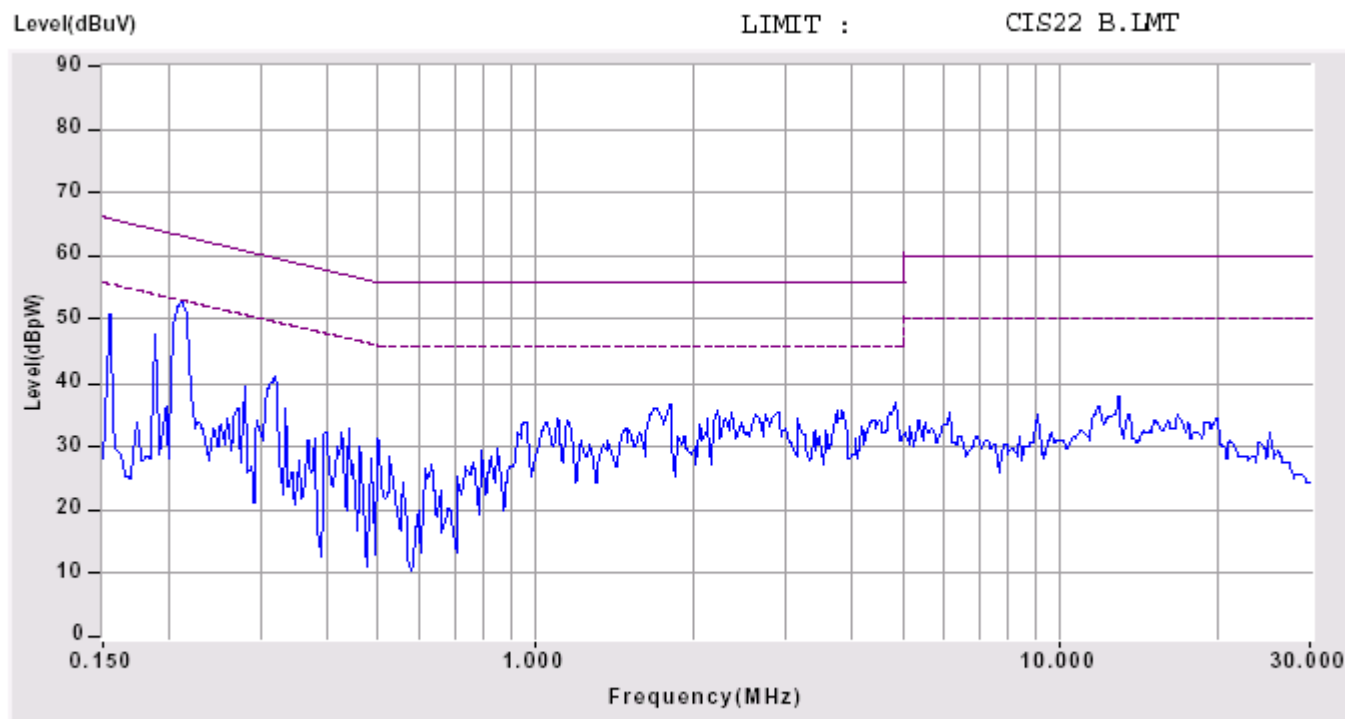
COMMENT: FULL SYSTEM
1024*768 (#3)

Line

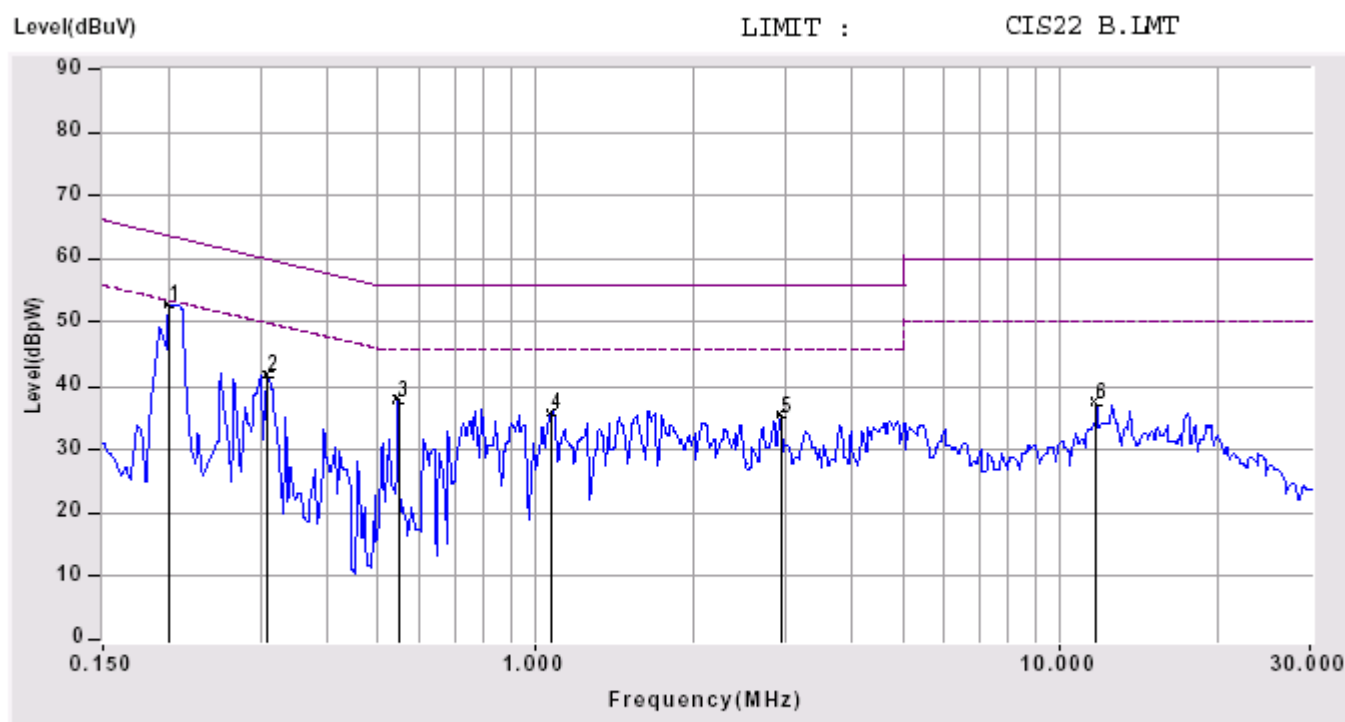


COMMENT: FULL SYSTEM
1024*768 (#3)

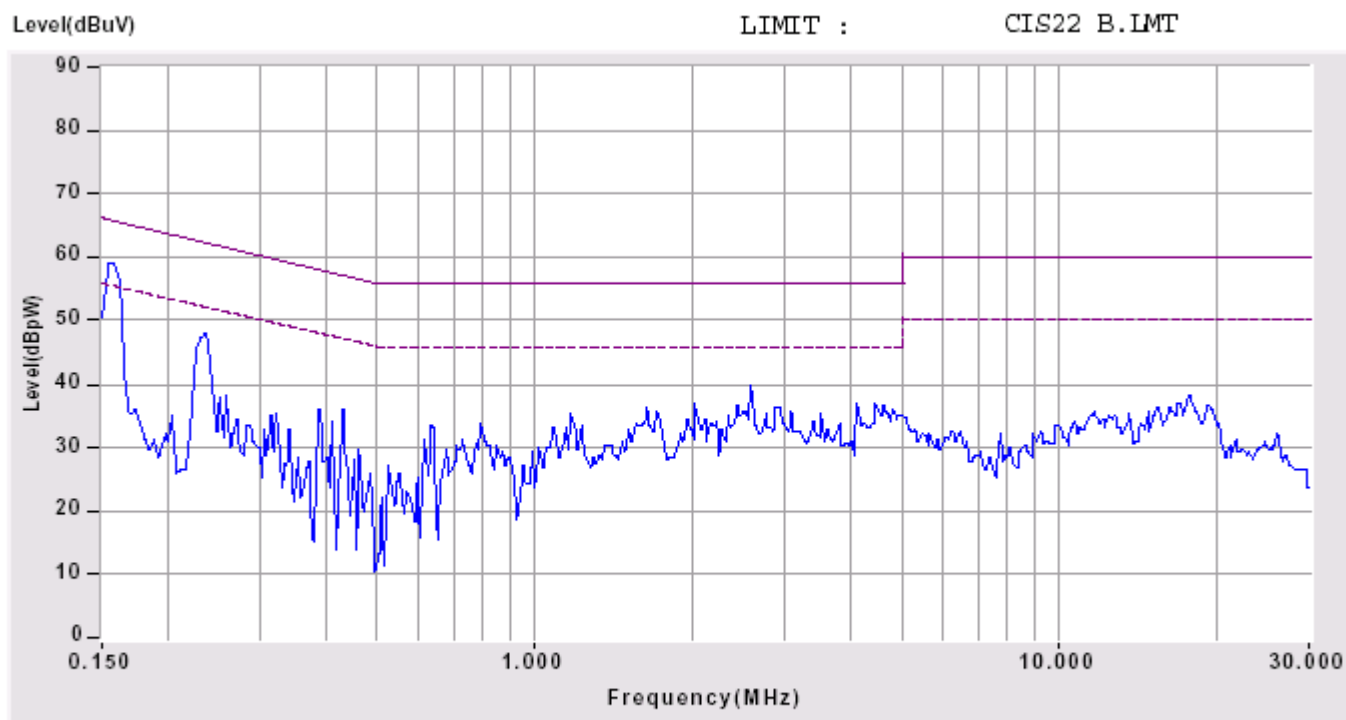
Neutral

A1.12 Mode 12: (#3) 800 * 600 75Hz (LCD Panel) + CRT Monitor

Line

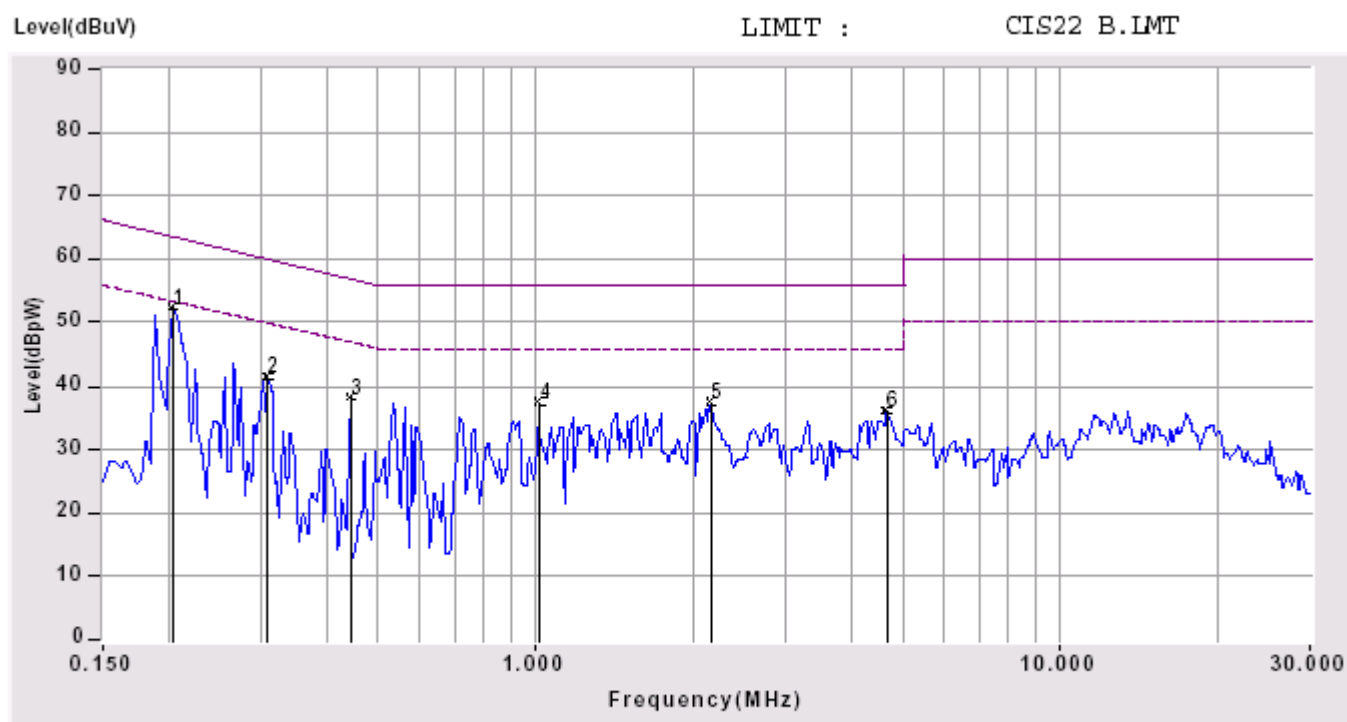


Neutral

A1.13 Mode 13: (#3) 640 * 480 60Hz (LCD Panel) + CRT Monitor

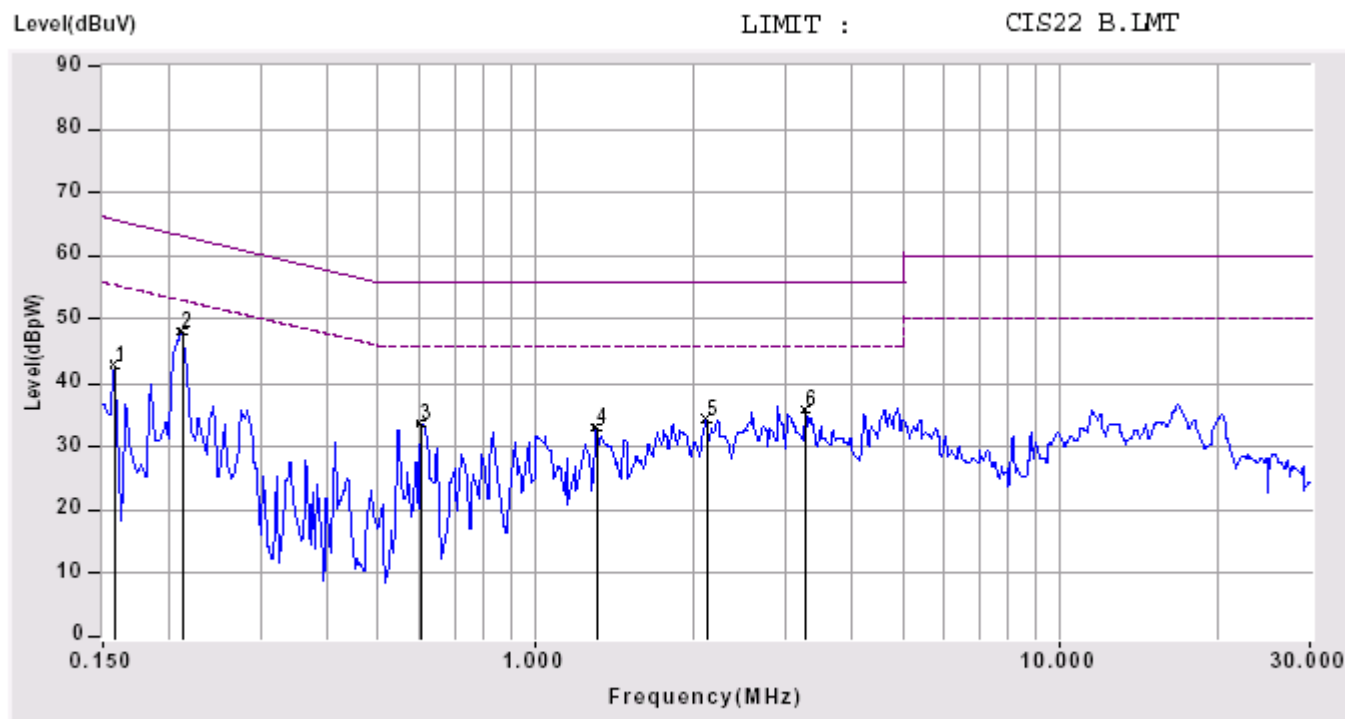
COMMENT: FULL SYSTEM
640*480 (#3)

Line



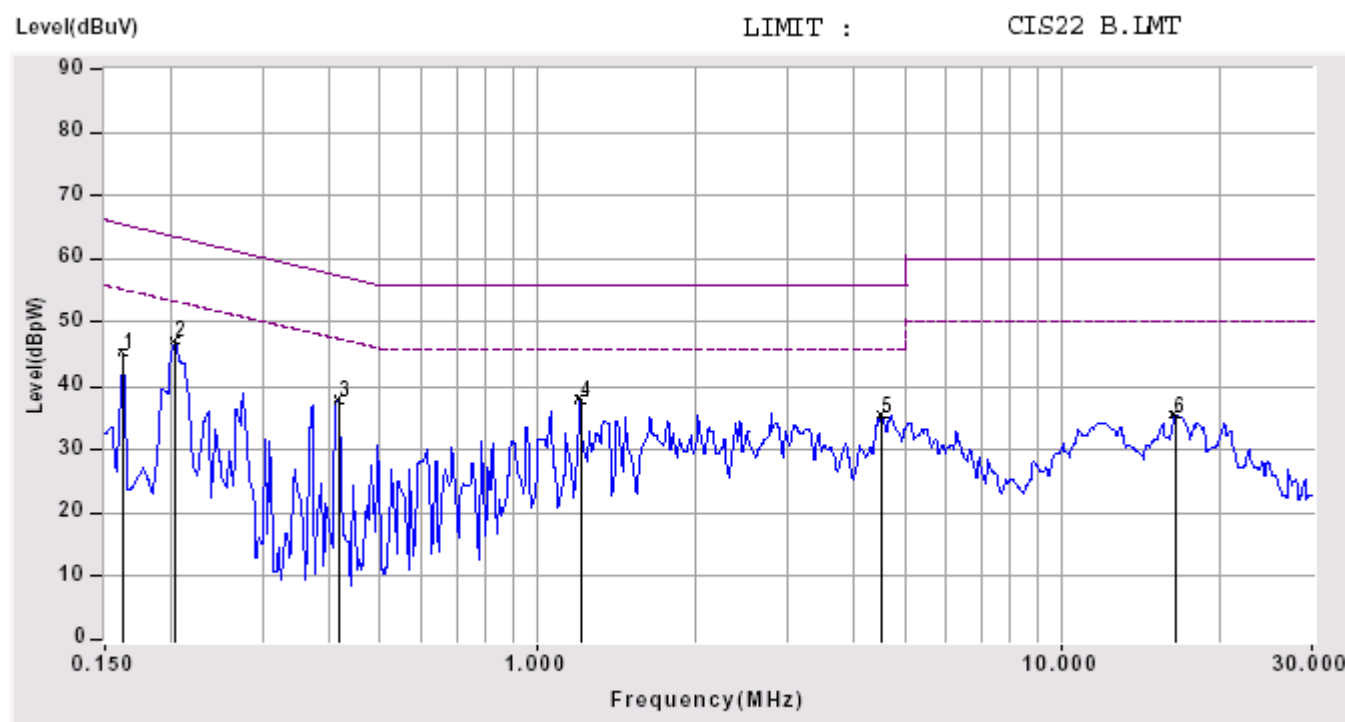
COMMENT: FULL SYSTEM
640*480 (#3)

Neutral

A1.14 Mode 14: (#3) 1024 * 768 75Hz (LCD Panel) + TV

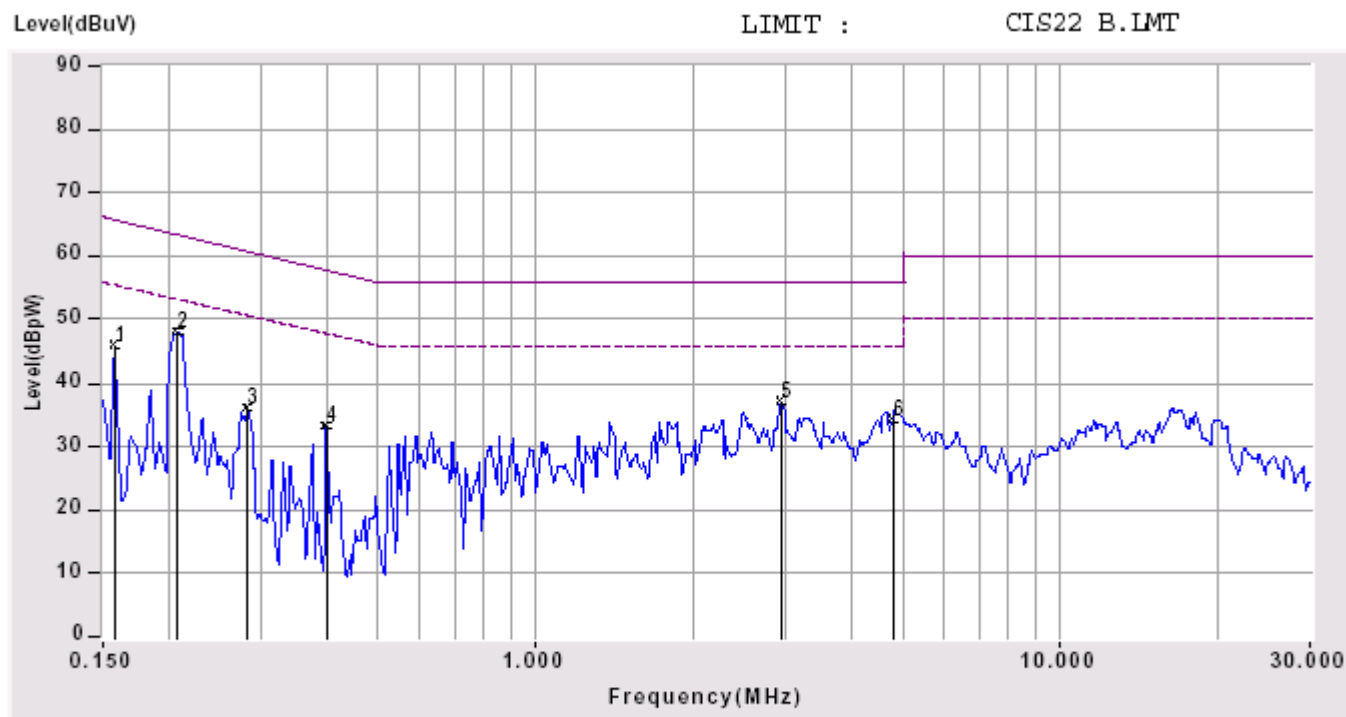
COMMENT: FULL SYSTEM
TV+PANEL (#3)

Line



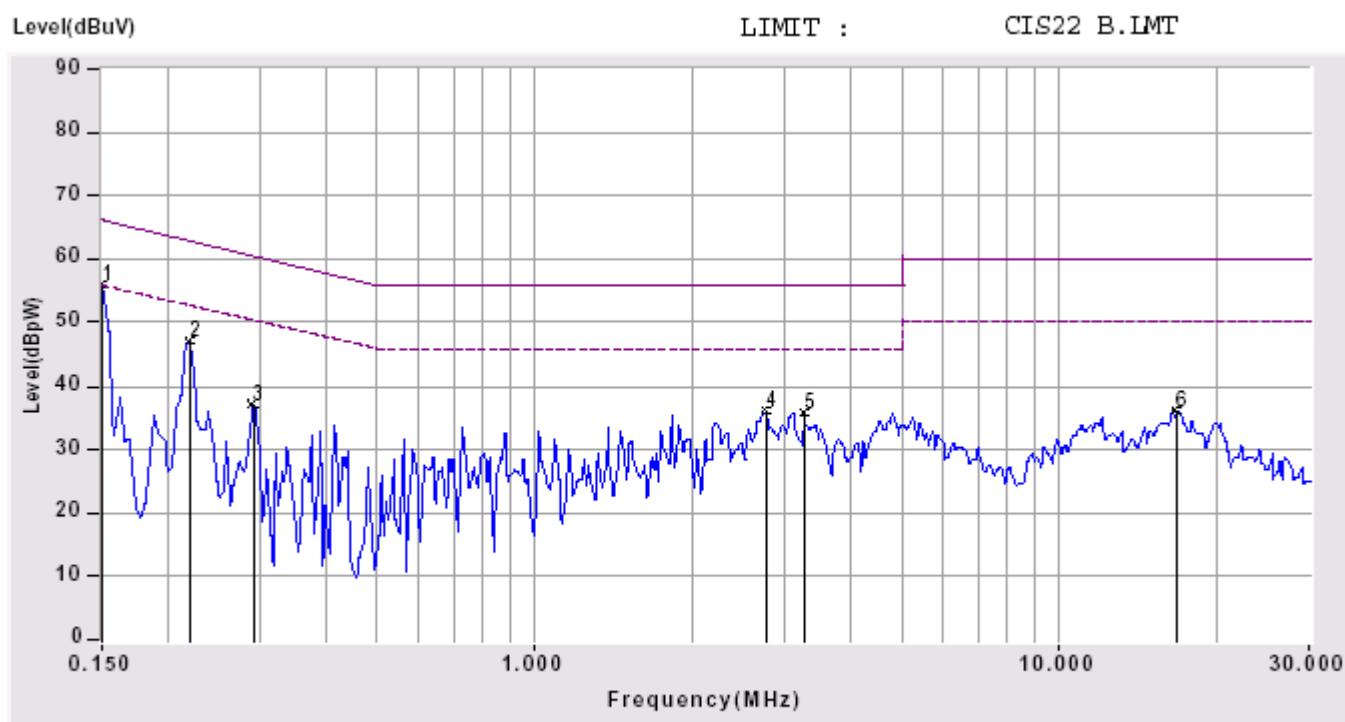
COMMENT: FULL SYSTEM
TV+VGA (#3)

Neutral

A1.15 Mode 15: (#3) CRT Monitor + TV

COMMENT: FULL SYSTEM
TV+VGA (#3)

Line

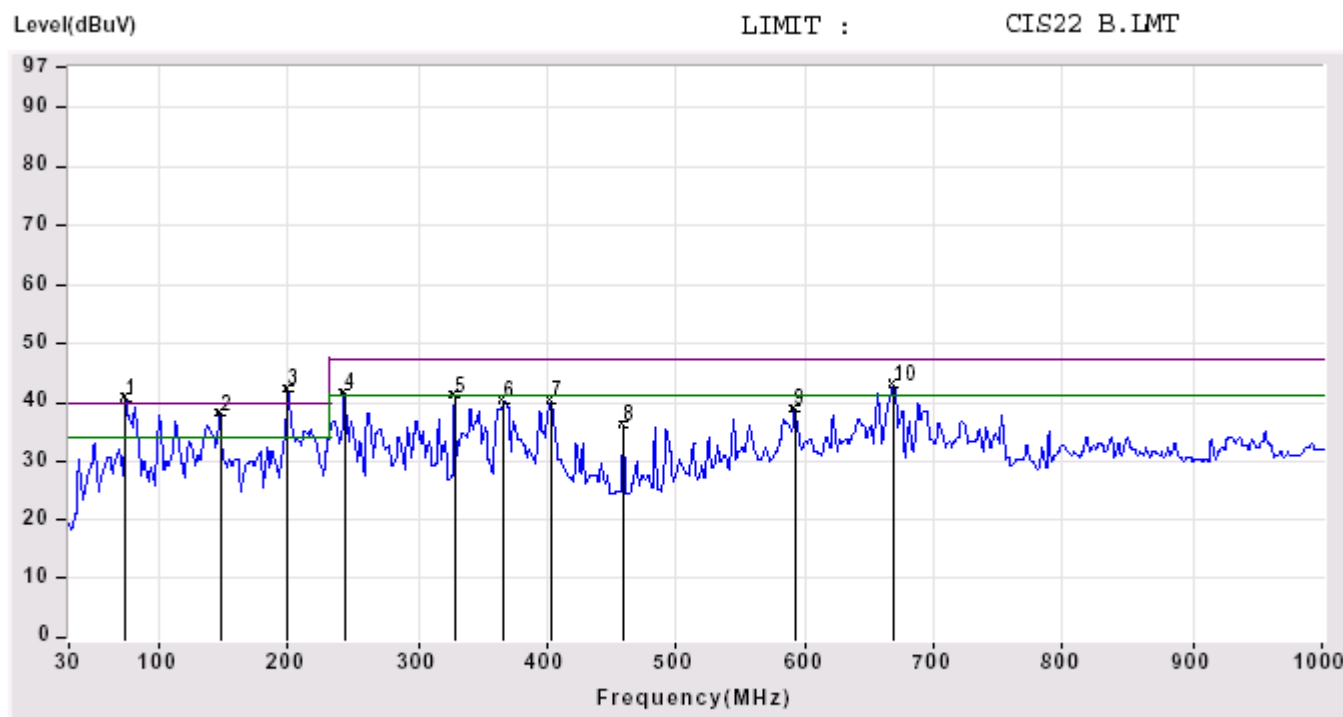


COMMENT: FULL SYSTEM
TV+PANEL (#3)

Neutral

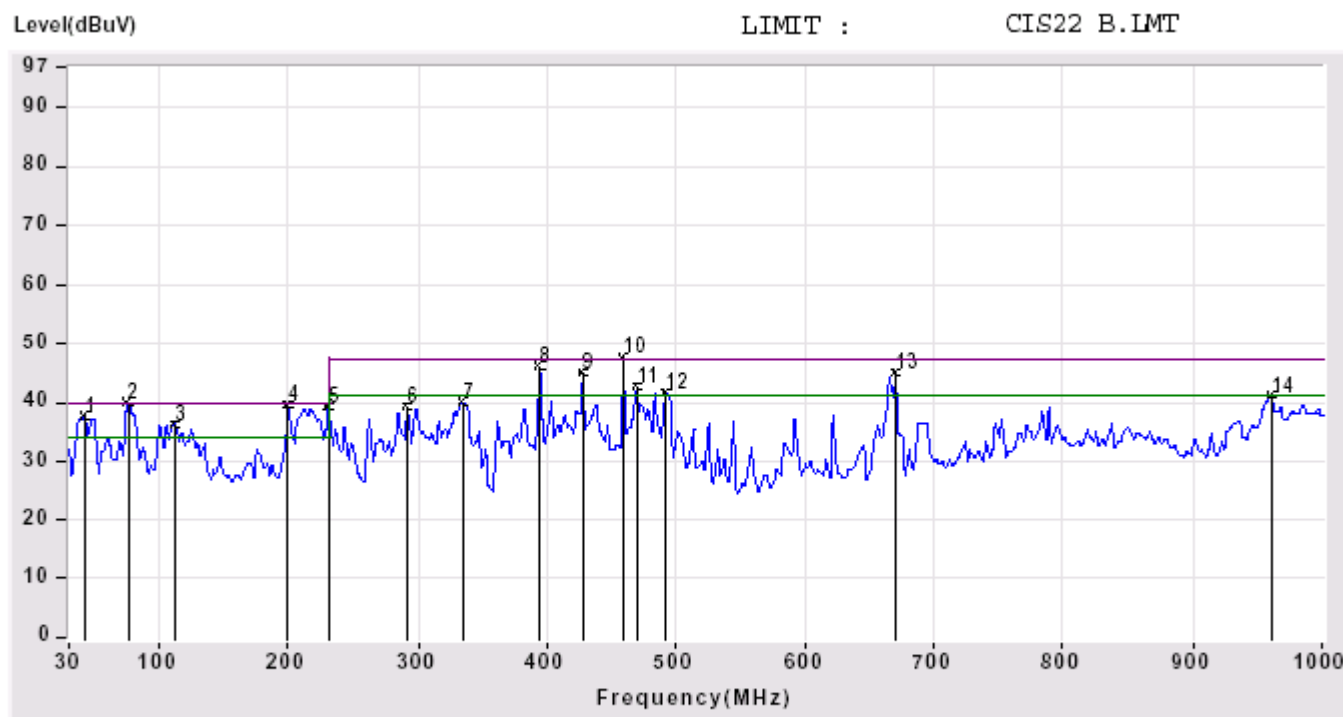
Appendix 2 – Radiated Emission Measurement Data

A2.1 Mode 1: (#1) 1024 * 768 75Hz (LCD Panel) + CRT Monitor



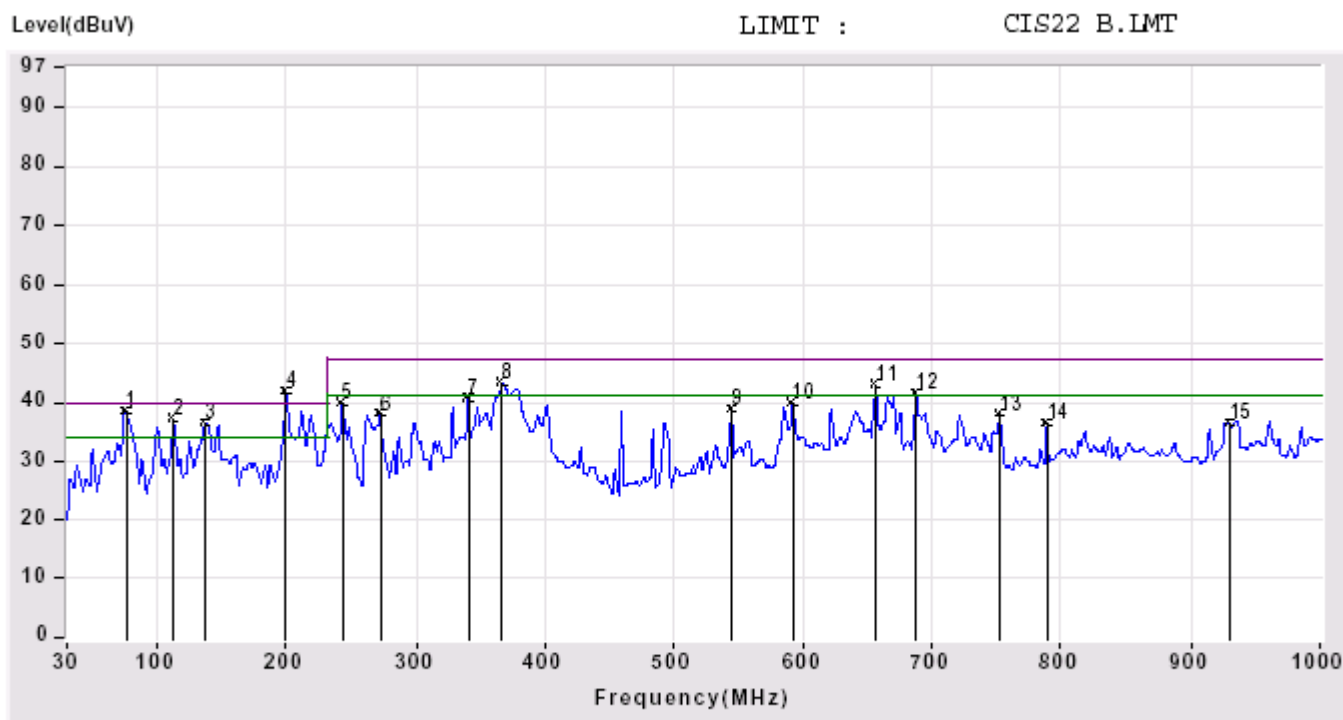
COMMENT: FULL SYSTEM
1024*768 (#1)

Horizontal



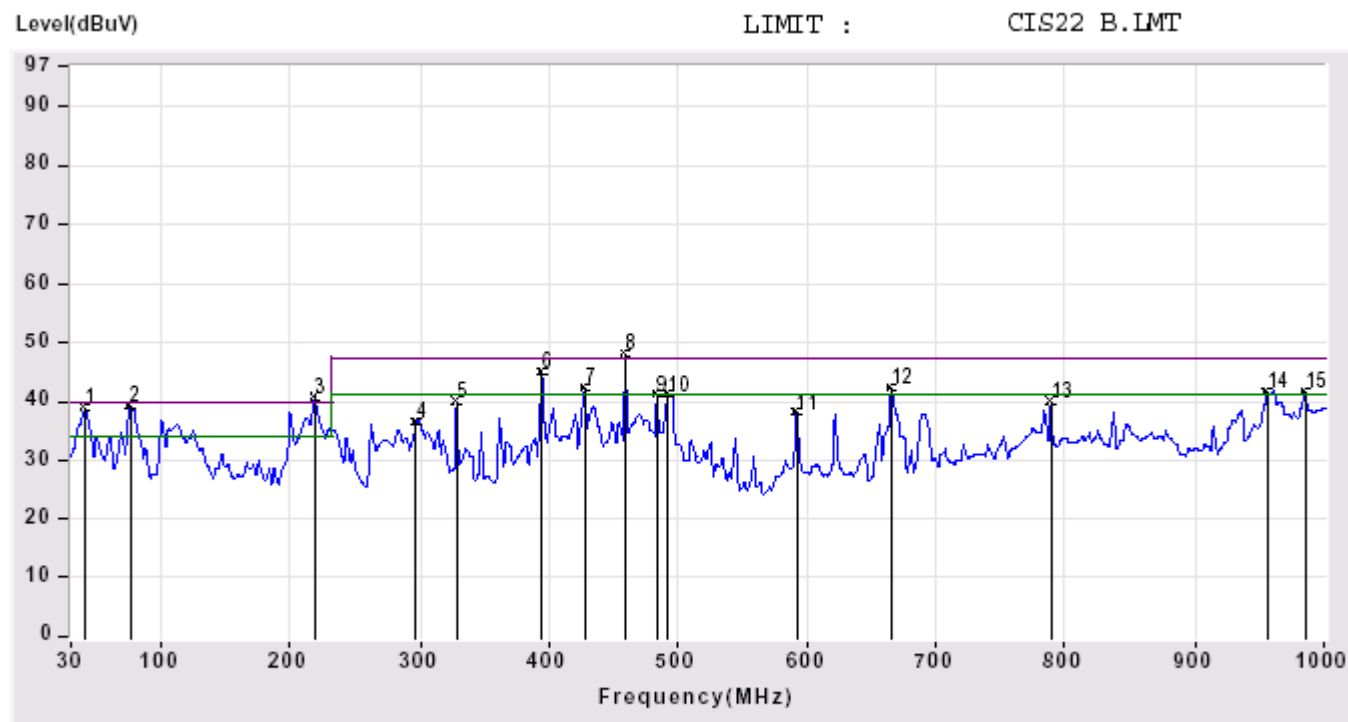
COMMENT: FULL SYSTEM
1024*768 (#1)

Vertical

A2.2 Mode 2: (#1) 800 * 600 75Hz (LCD Panel) + CRT Monitor

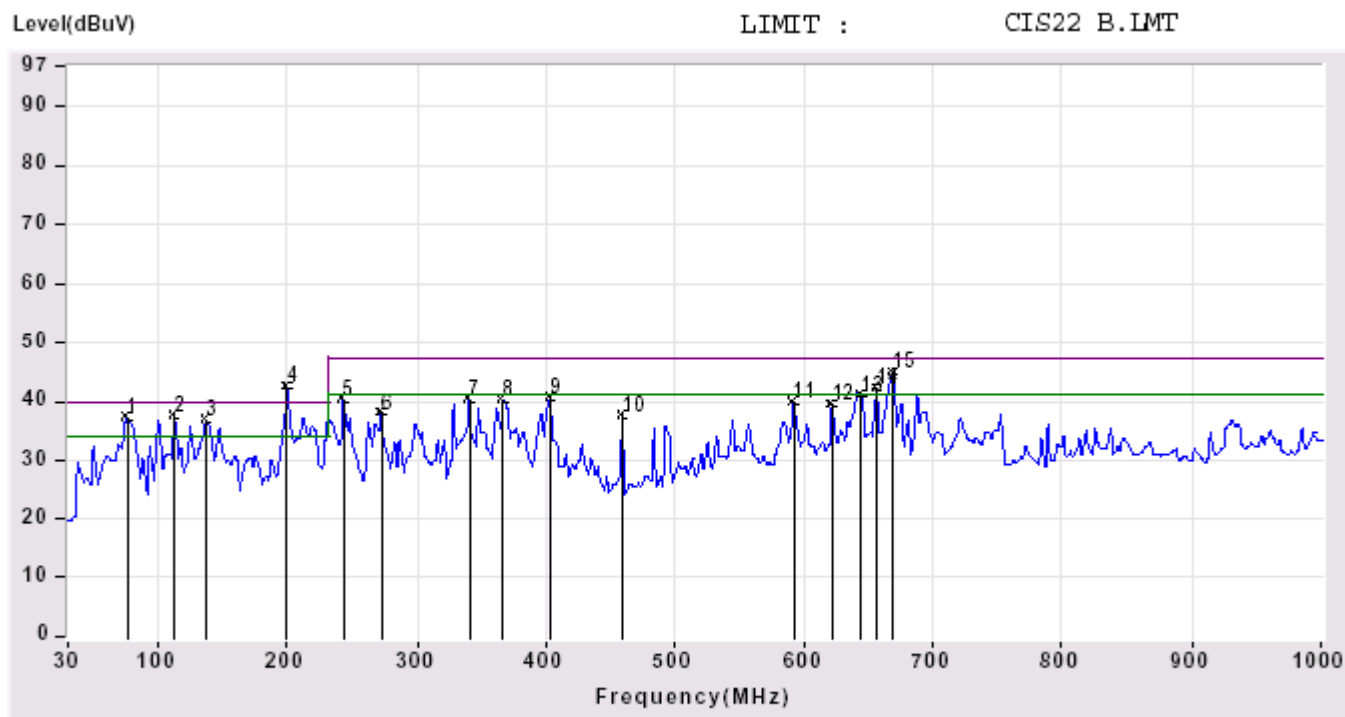
COMMENT: FULL SYSTEM
800*600 (#1)

Horizontal



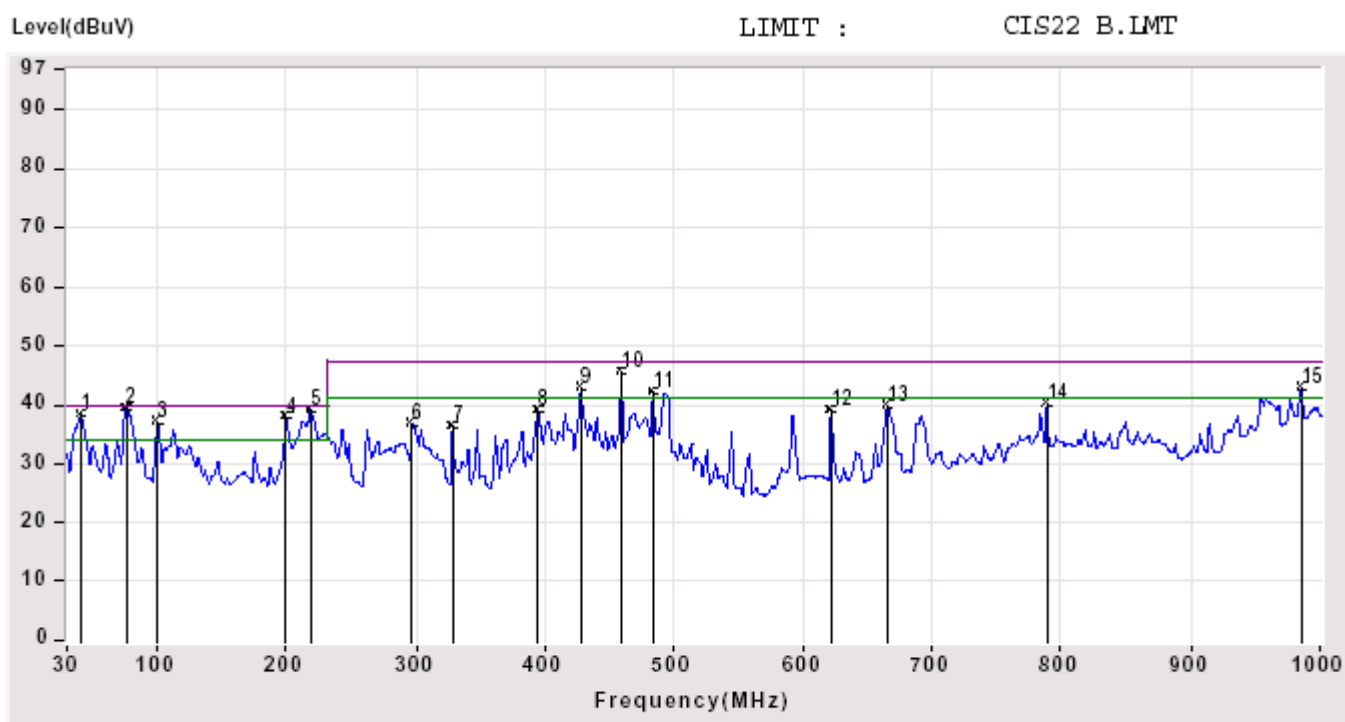
COMMENT: FULL SYSTEM
800*600 (#1)

Vertical

A2.3 Mode 3: (#1) 640 * 480 60Hz (LCD Panel) + CRT Monitor

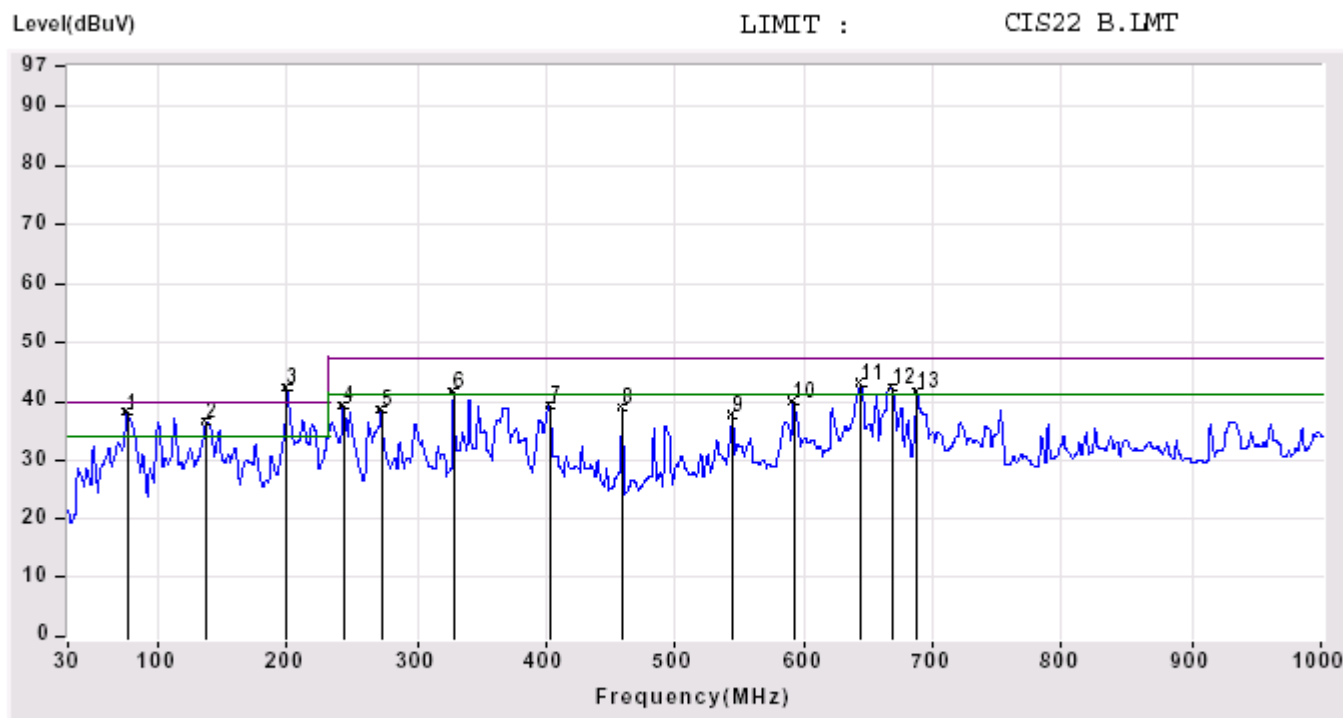
COMMENT: FULL SYSTEM
640*480 (#1)

Horizontal



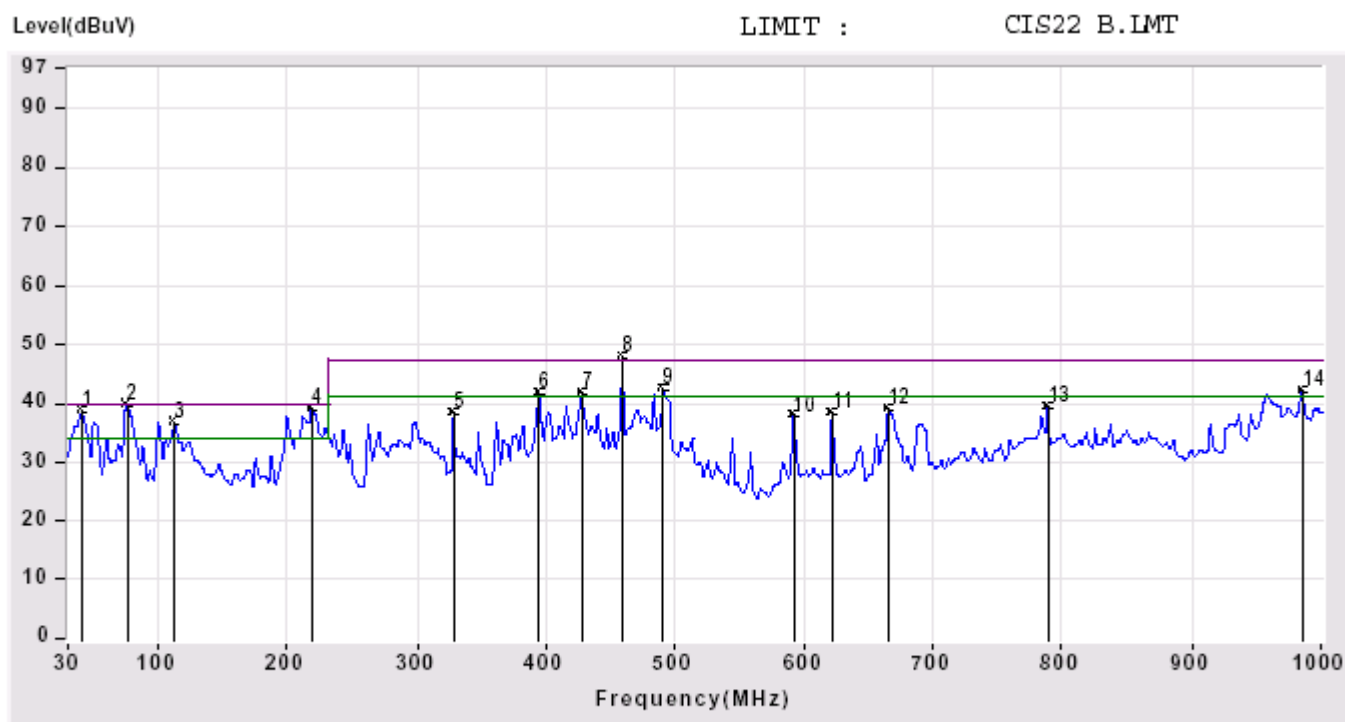
COMMENT: FULL SYSTEM
640*480 (#1)

Vertical

A2.4 Mode 4: (#1) 1024 * 768 75Hz (LCD Panel) + TV

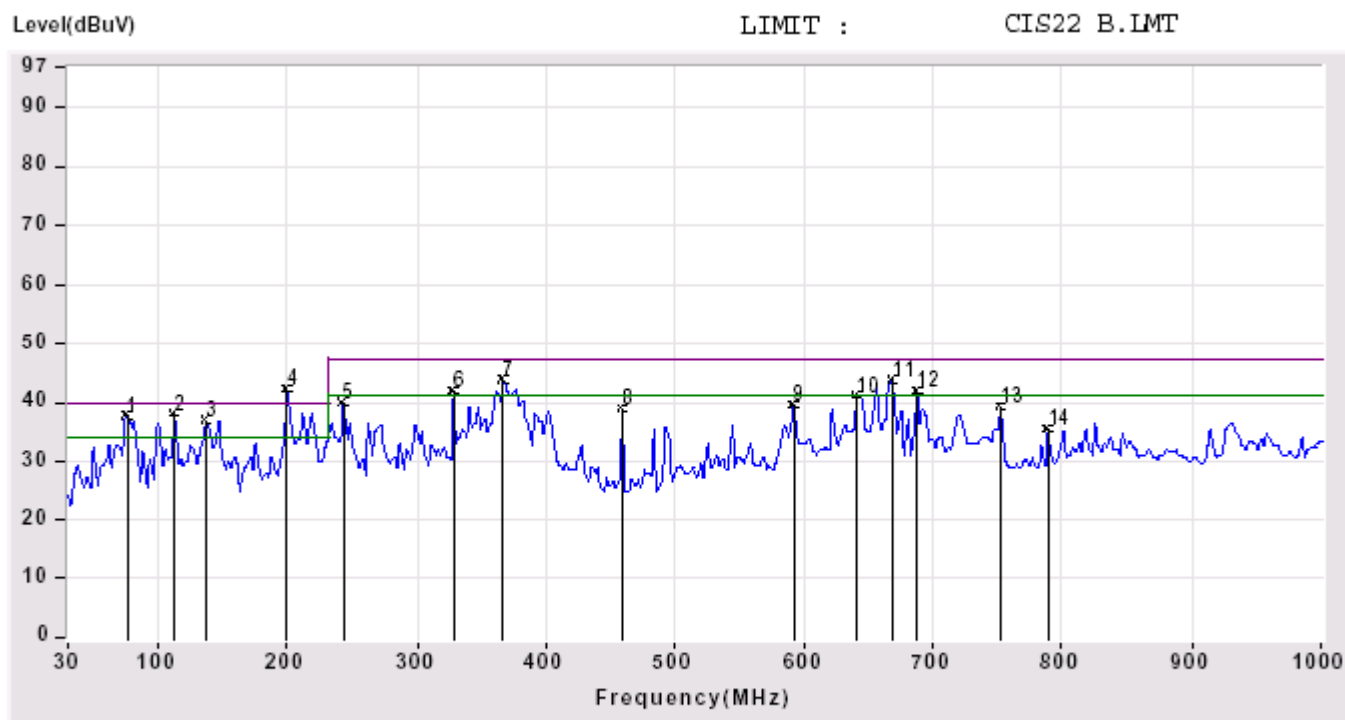
COMMENT: FULL SYSTEM
TV+PANEL (#1)

Horizontal

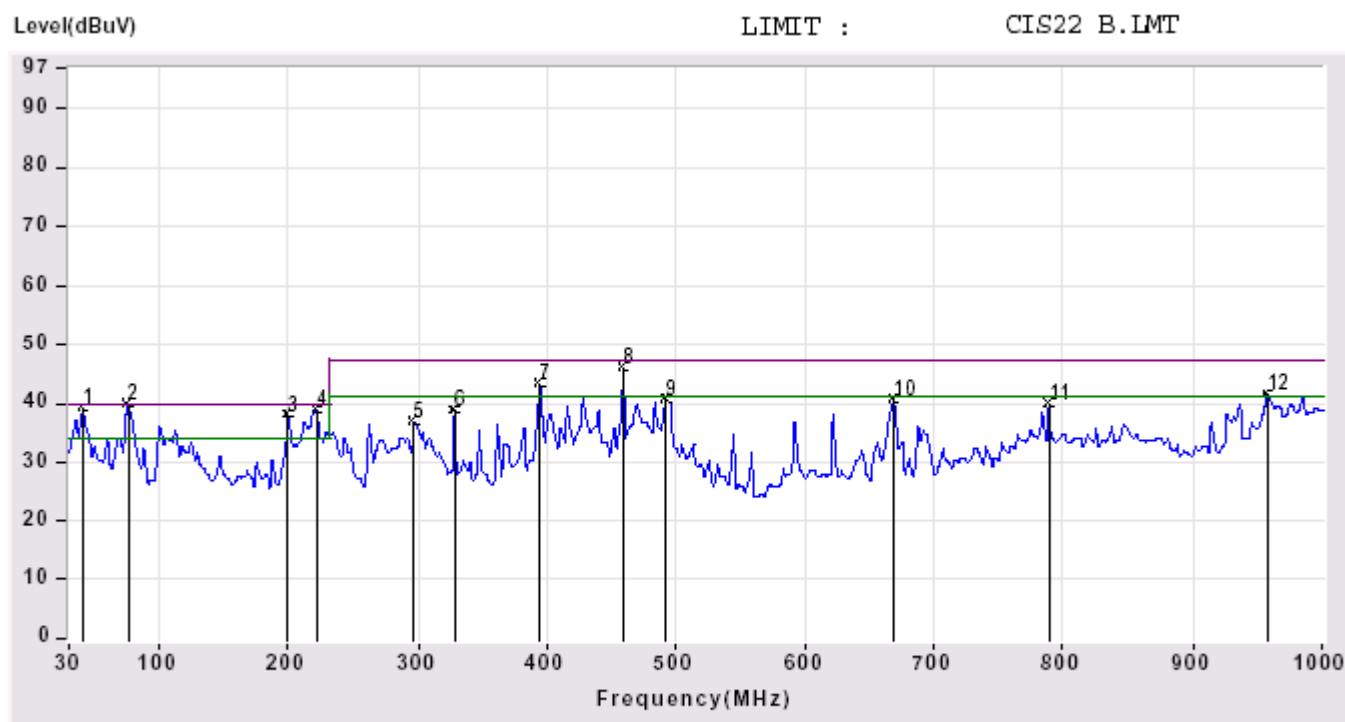


COMMENT: FULL SYSTEM
TV+PANEL (#1)

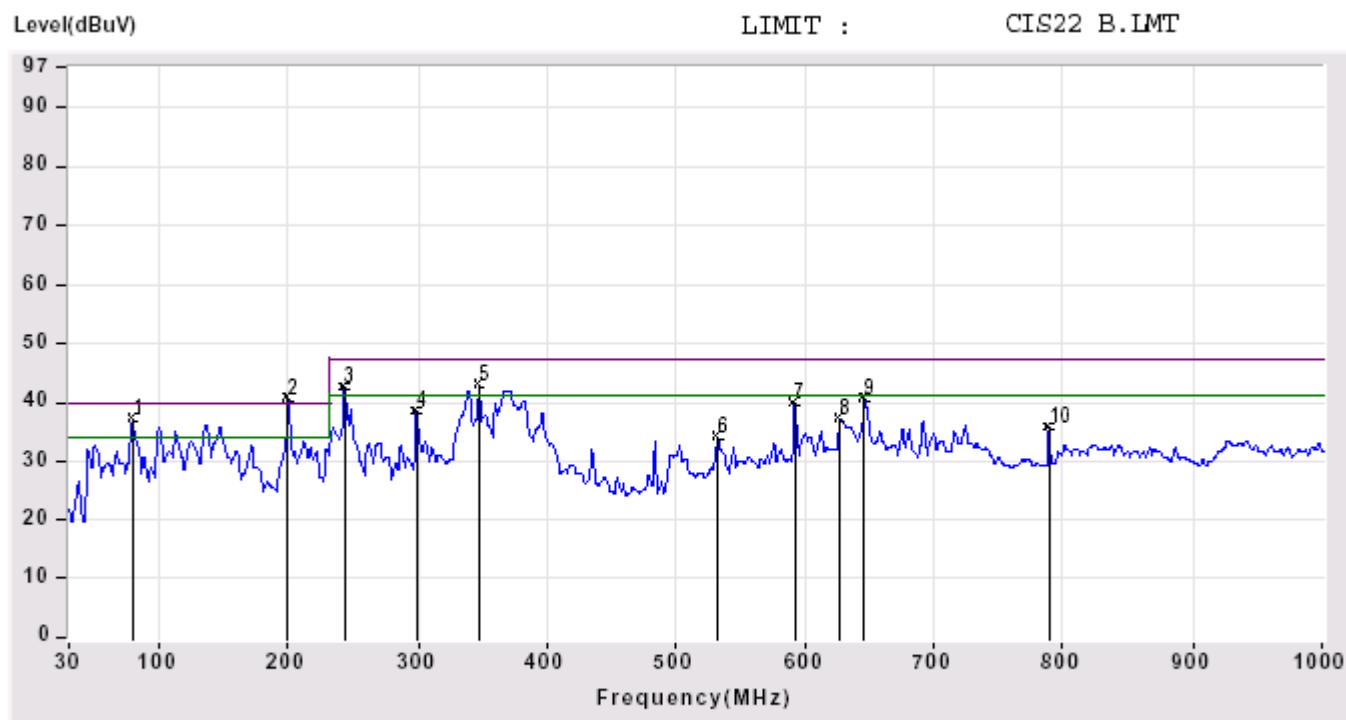
Vertical

A2.5 Mode 5: (#1) CRT Monitor + TV

Horizontal

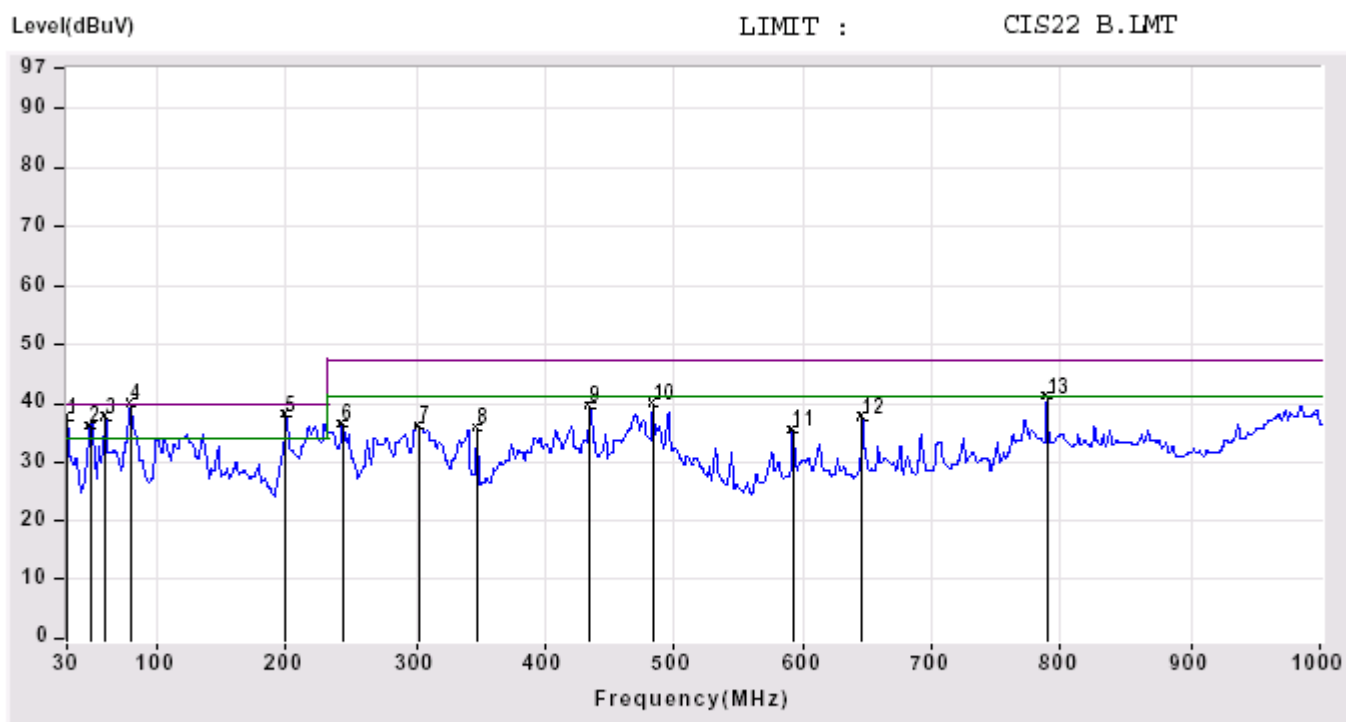


Vertical

A2.6 Mode 6: (#2) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

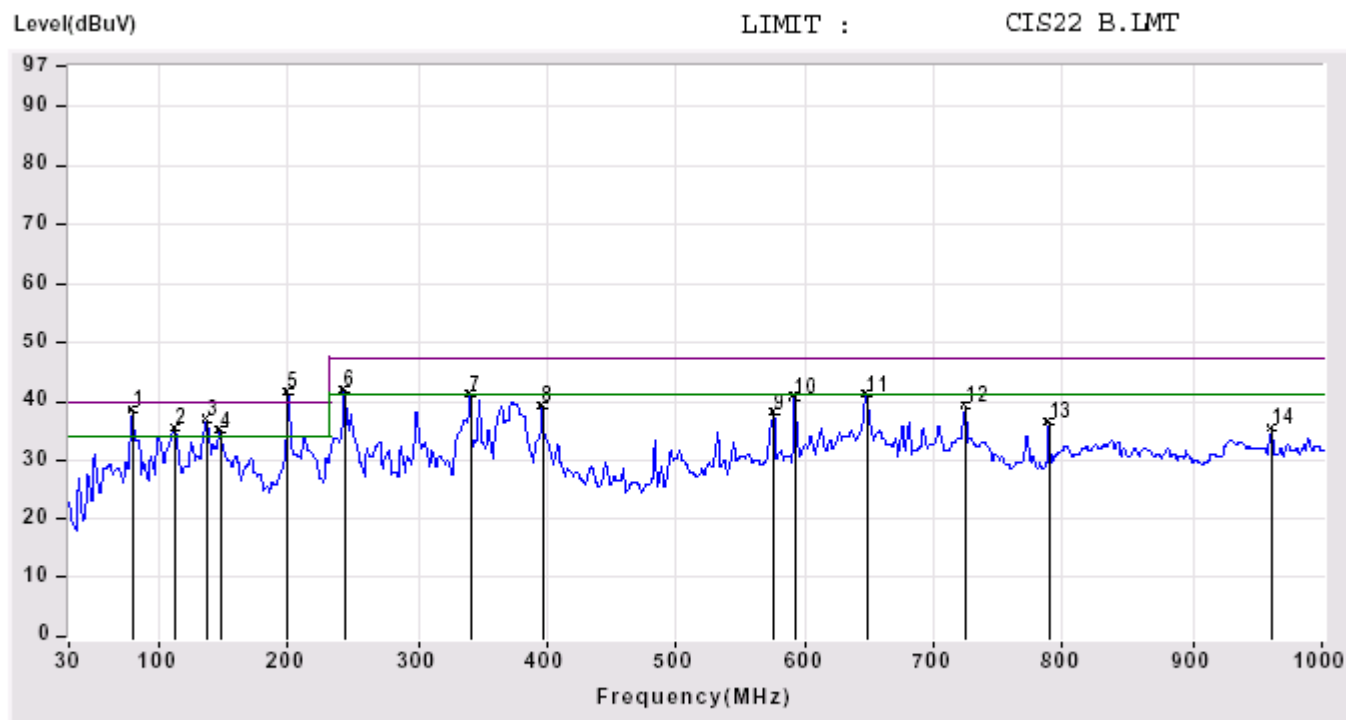
COMMENT: FULL SYSTEM
1024*768 (#2)

Horizontal



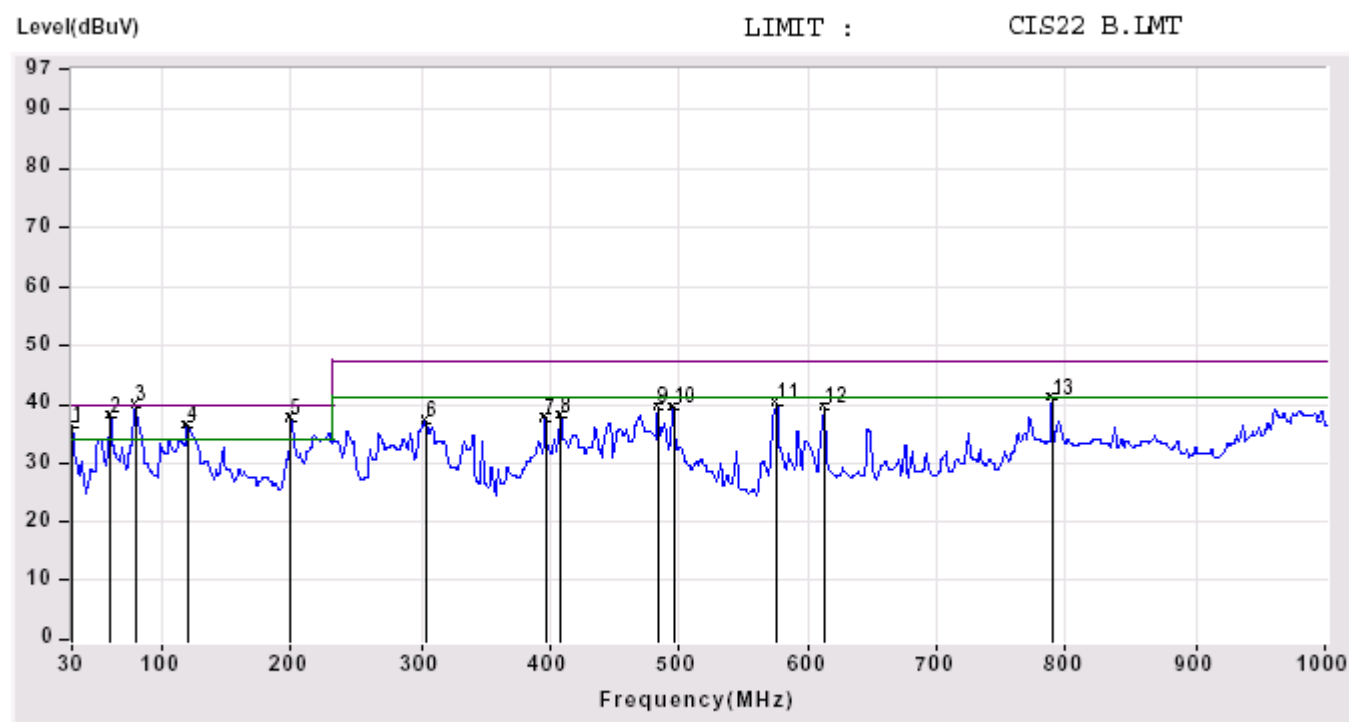
COMMENT: FULL SYSTEM
1024*768 (#2)

Vertical

A2.7 Mode 7: (#2) 800 * 600 75Hz (LCD Panel) + CRT Monitor

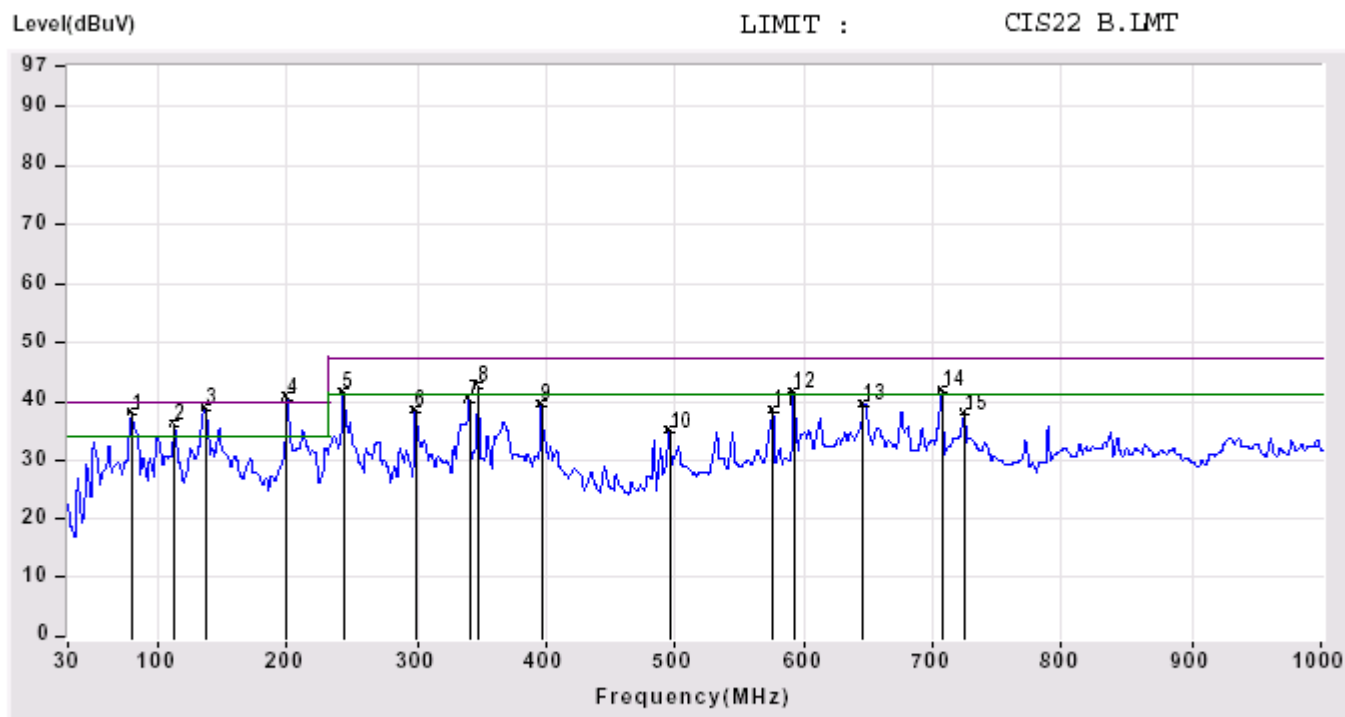
COMMENT: FULL SYSTEM
800*600 (#2)

Horizontal



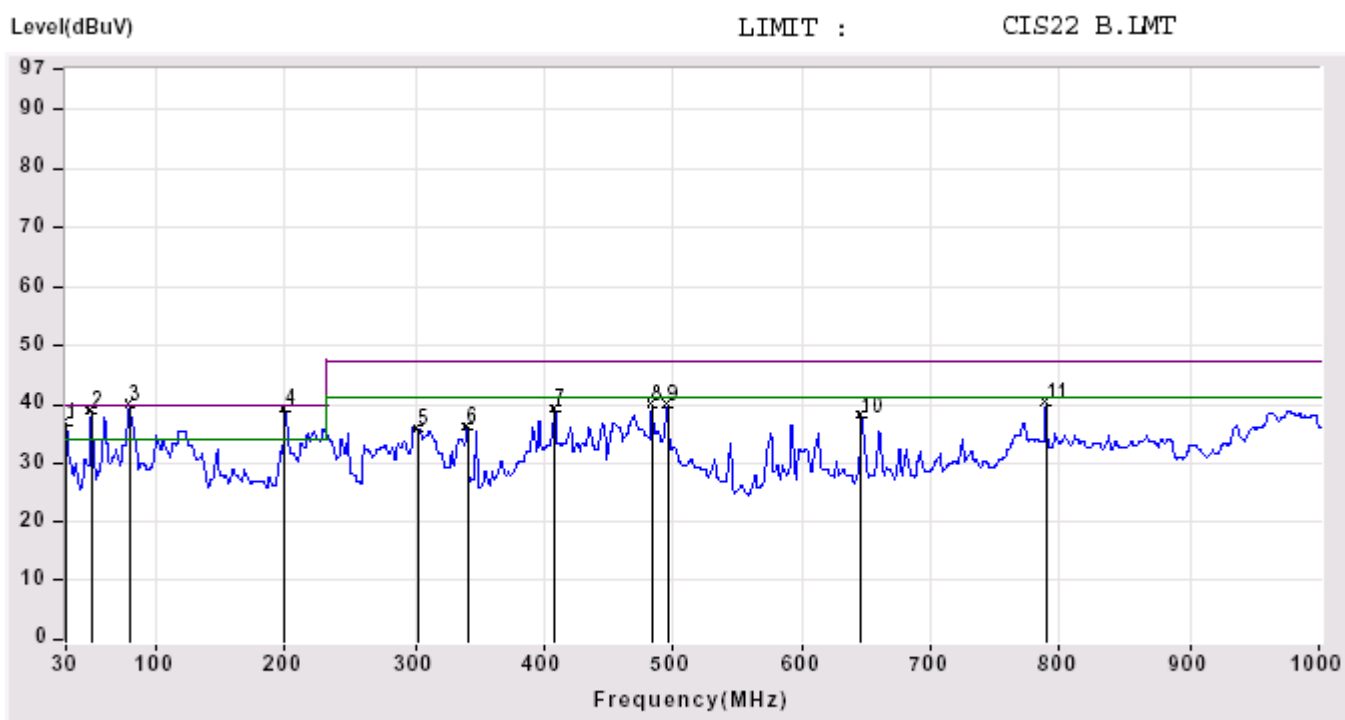
COMMENT: FULL SYSTEM
800*600 (#2)

Vertical

A2.8 Mode 8: (#2) 640 * 480 60Hz (LCD Panel) + CRT Monitor

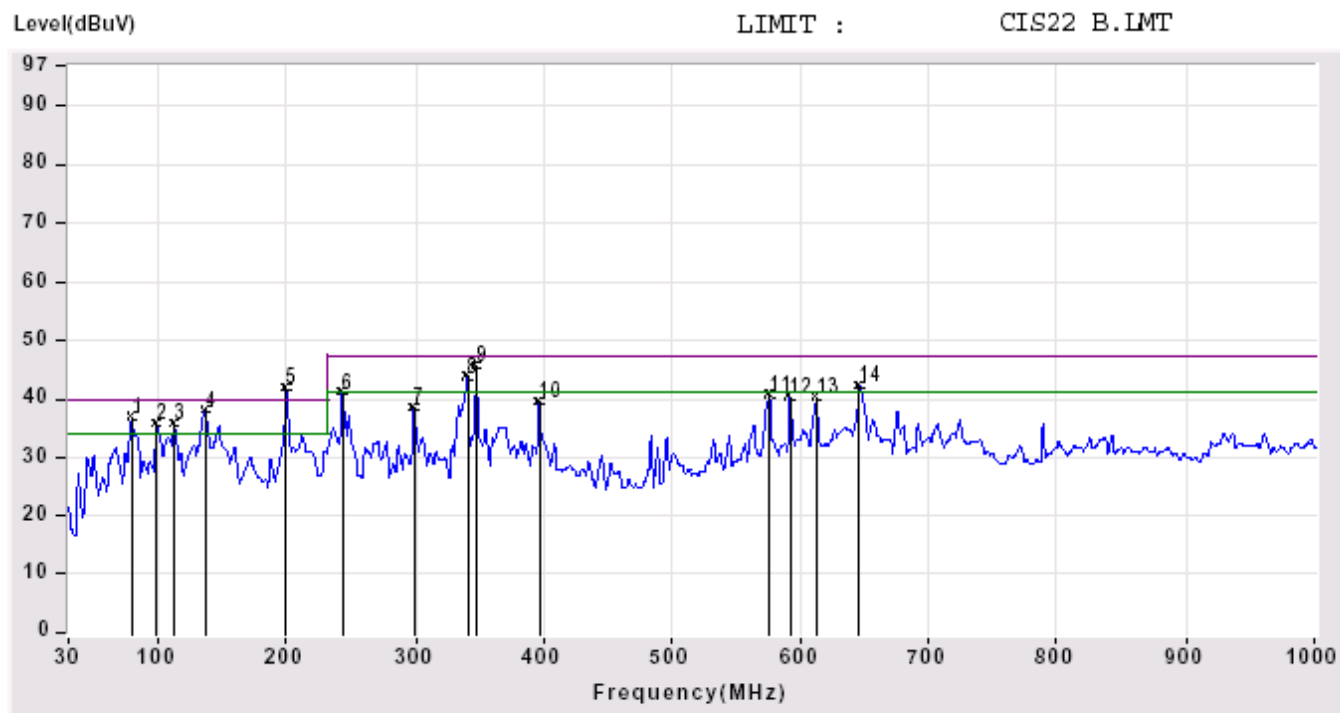
COMMENT: FULL SYSTEM
640*480 (#2)

Horizontal



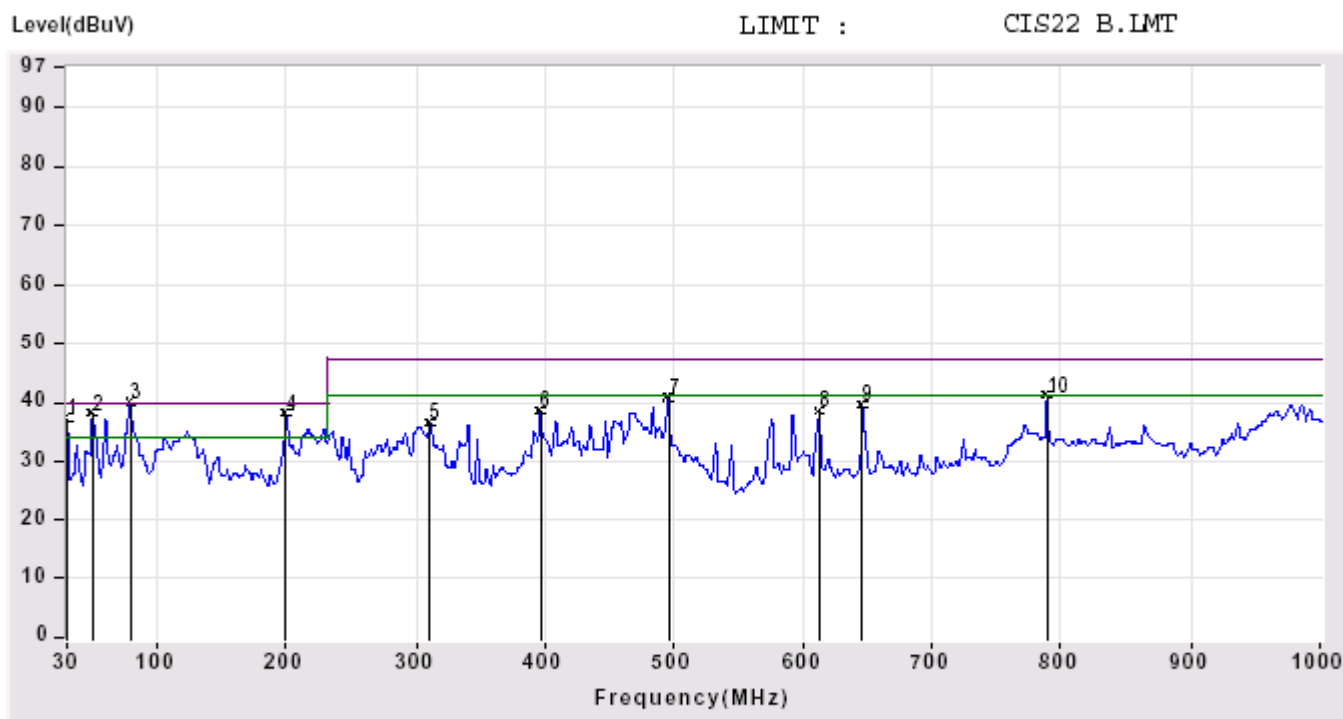
COMMENT: FULL SYSTEM
640*480 (#2)

Vertical

A2.9 Mode 9: (#2) 1024 * 768 75Hz (LCD Panel) + TV

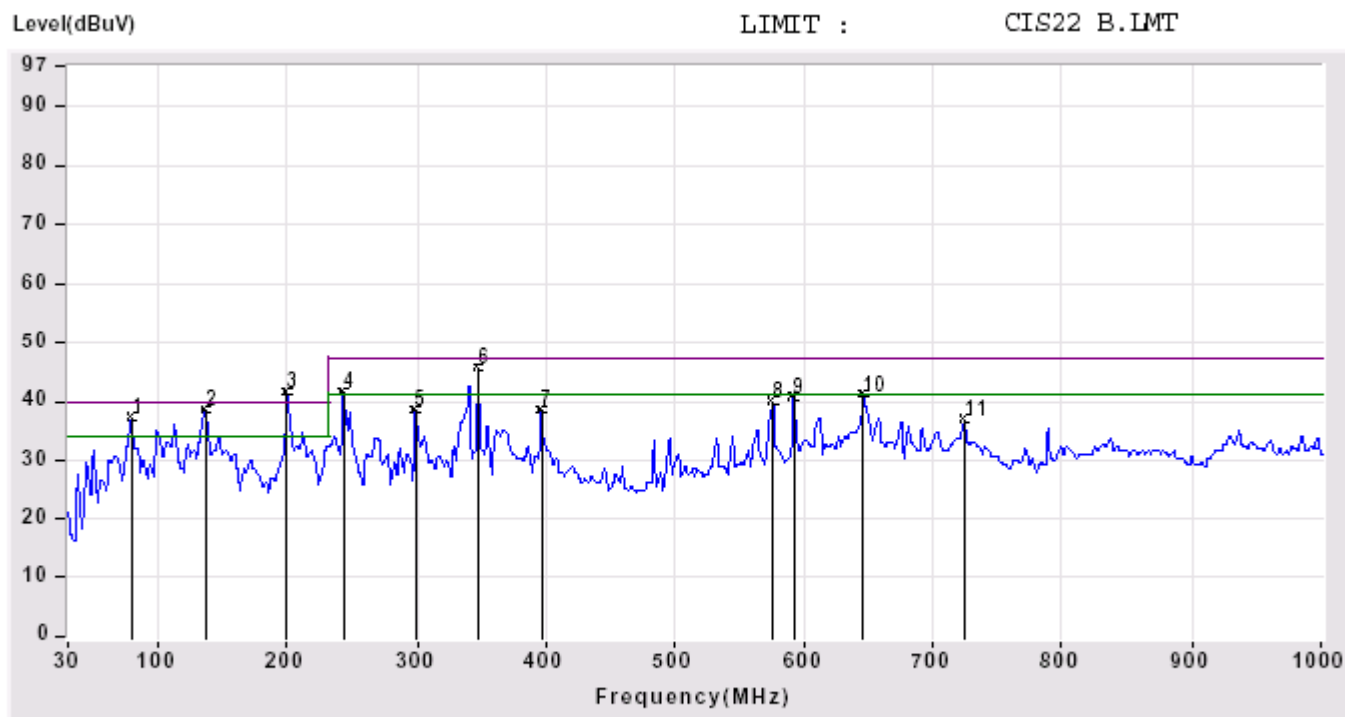
COMMENT: FULL SYSTEM
TV+PANEL (#2)

Horizontal



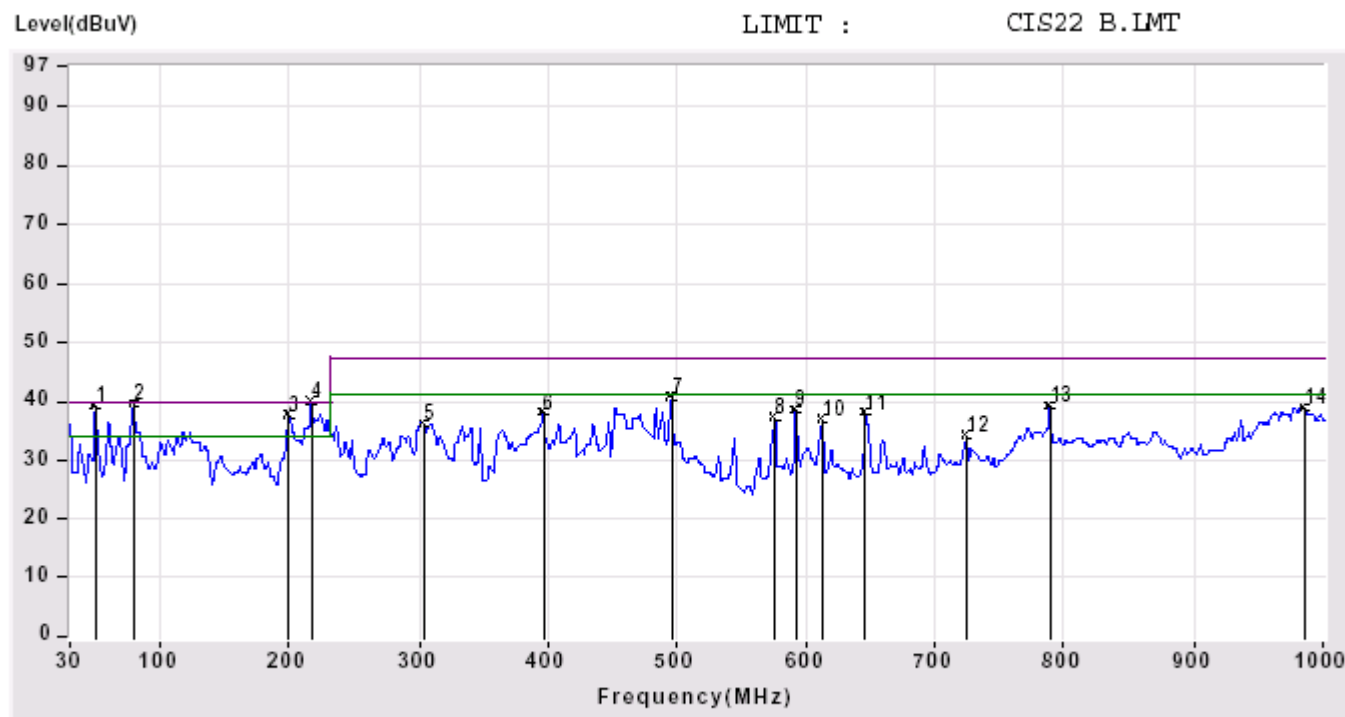
COMMENT: FULL SYSTEM
TV+PANEL (#2)

Vertical

A2.10 Mode 10: (#2) CRT Monitor + TV

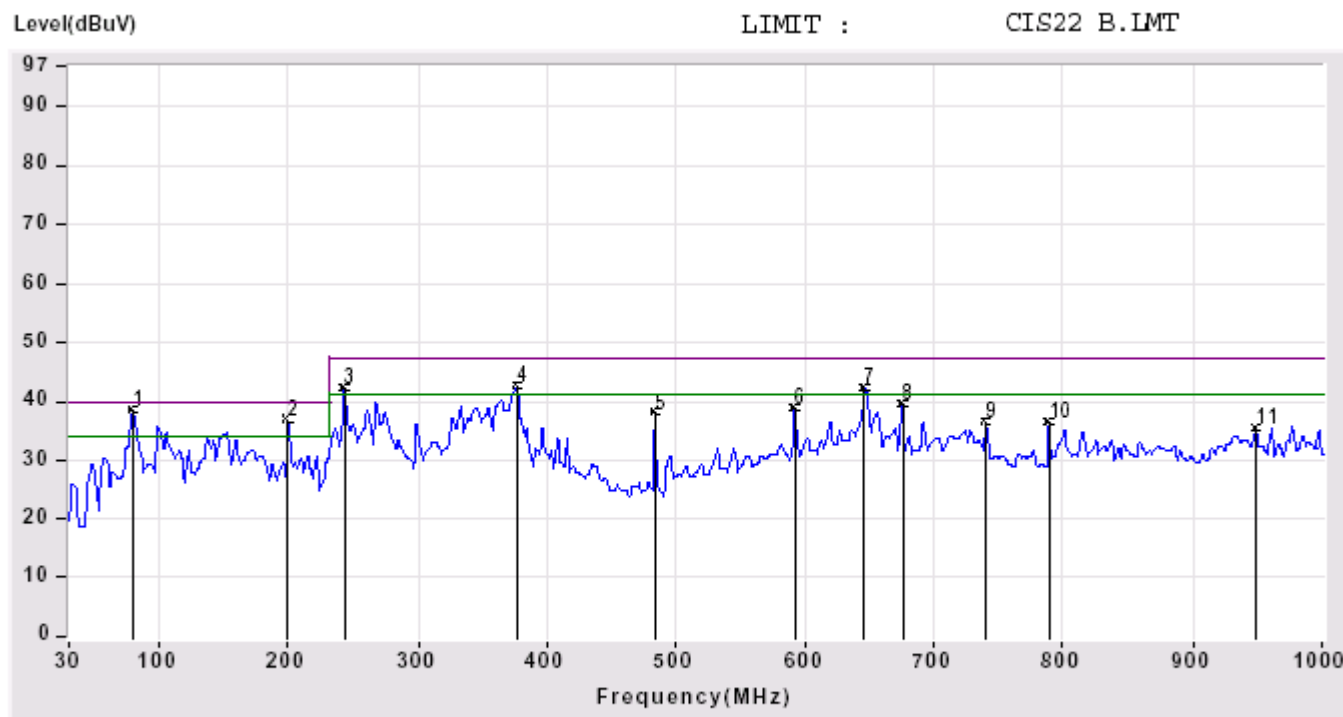
COMMENT: FULL SYSTEM
TV+VGA (#2)

Horizontal



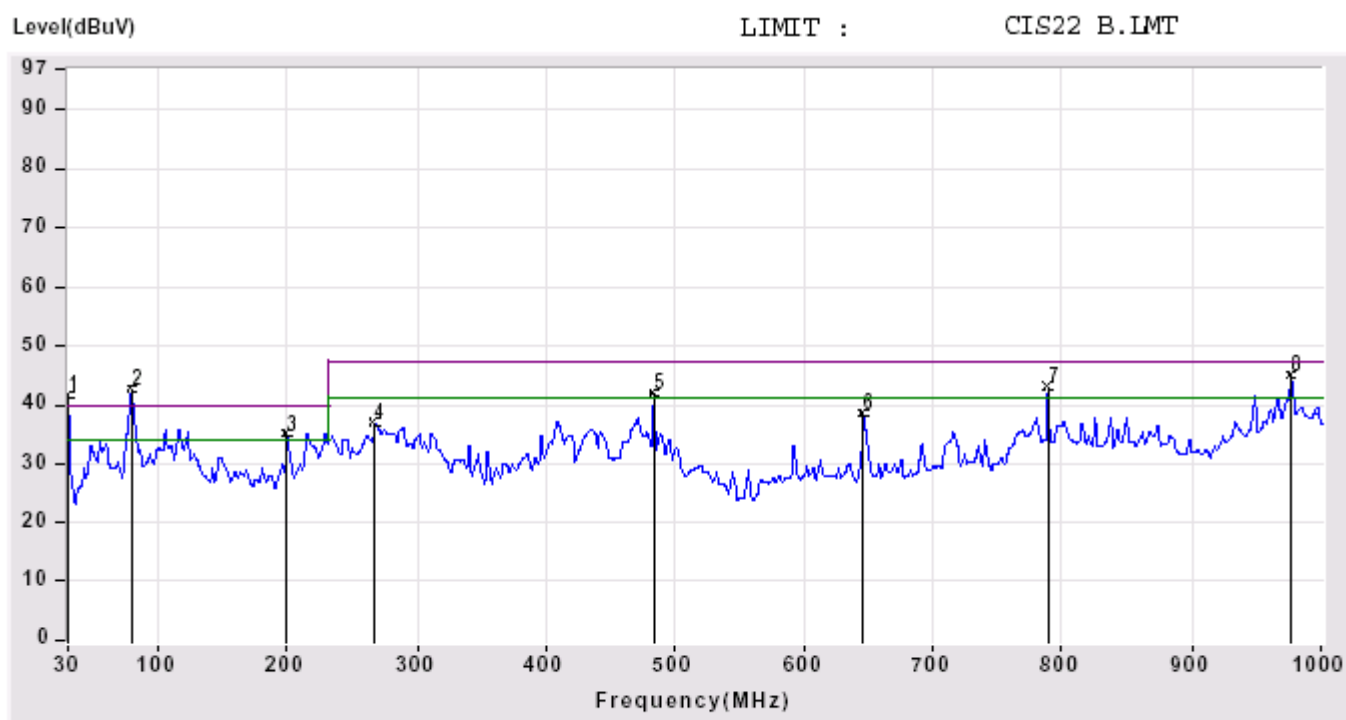
COMMENT: FULL SYSTEM
TV+VGA (#2)

Vertical

A2.11 Mode 11: (#3) 1024 * 768 75Hz (LCD Panel) + CRT Monitor

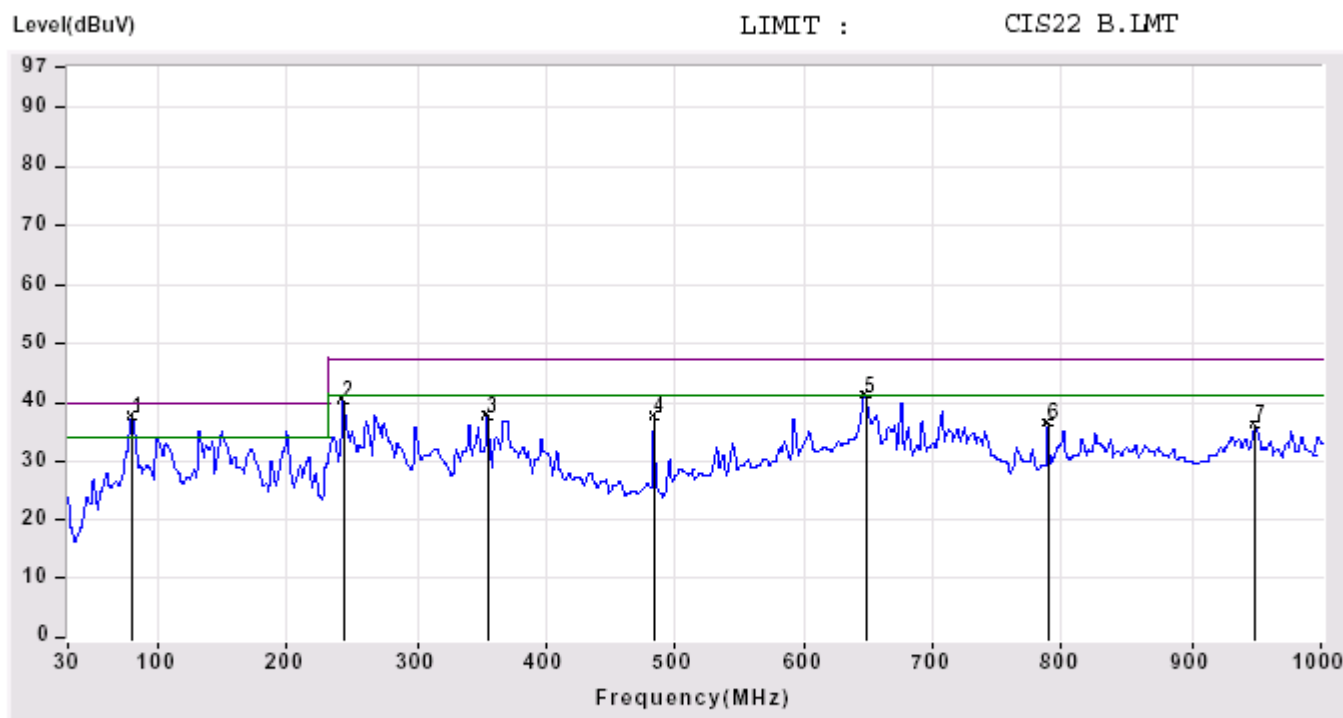
COMMENT: FULL SYSTEM
1024*768 (#3)

Horizontal



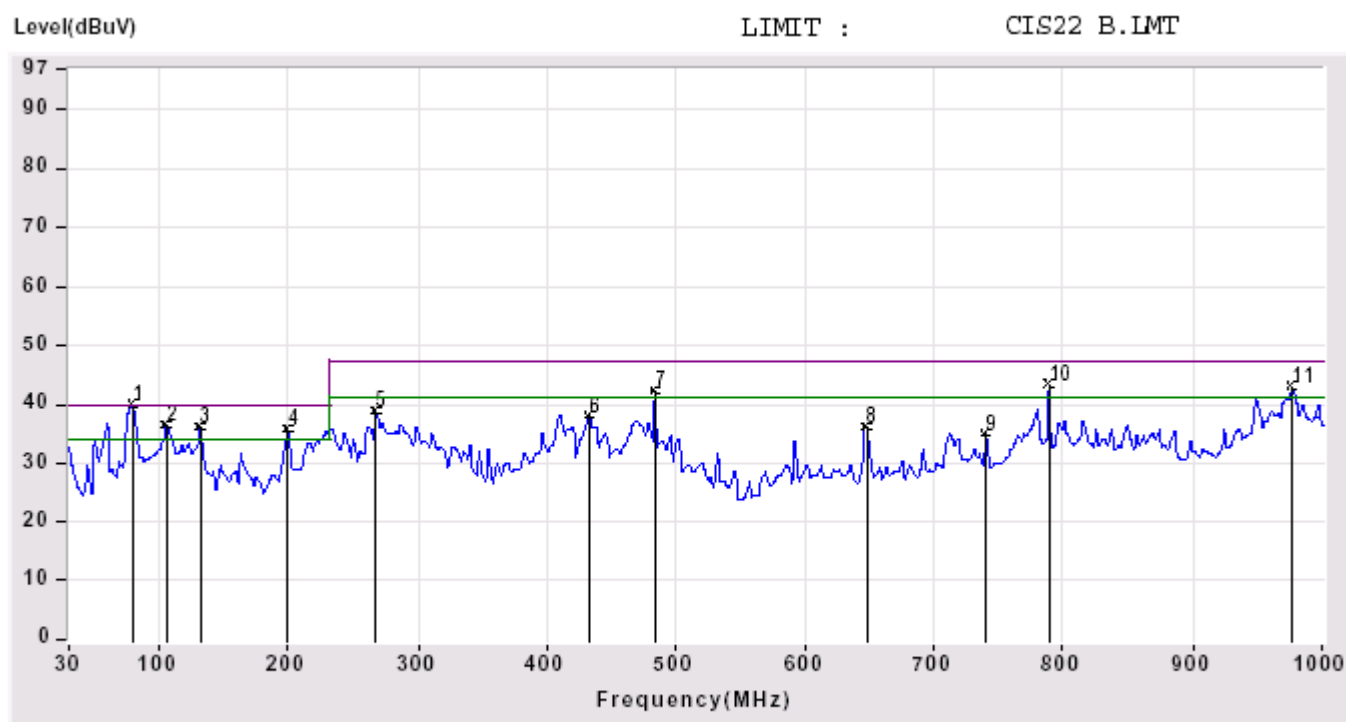
COMMENT: FULL SYSTEM
1024*768 (#3)

Vertical

A2.12 Mode 12: (#3) 800 * 600 75Hz (LCD Panel) + CRT Monitor

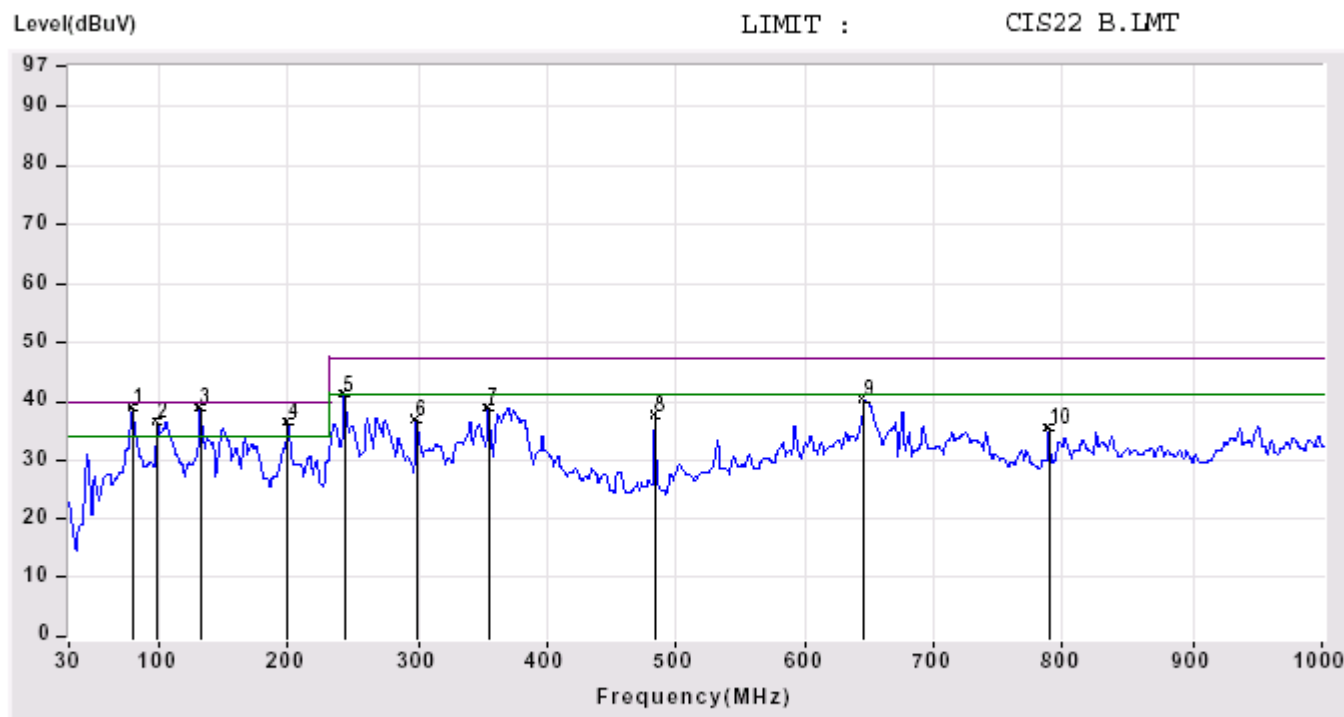
COMMENT: FULL SYSTEM
800*600 (#3)

Horizontal



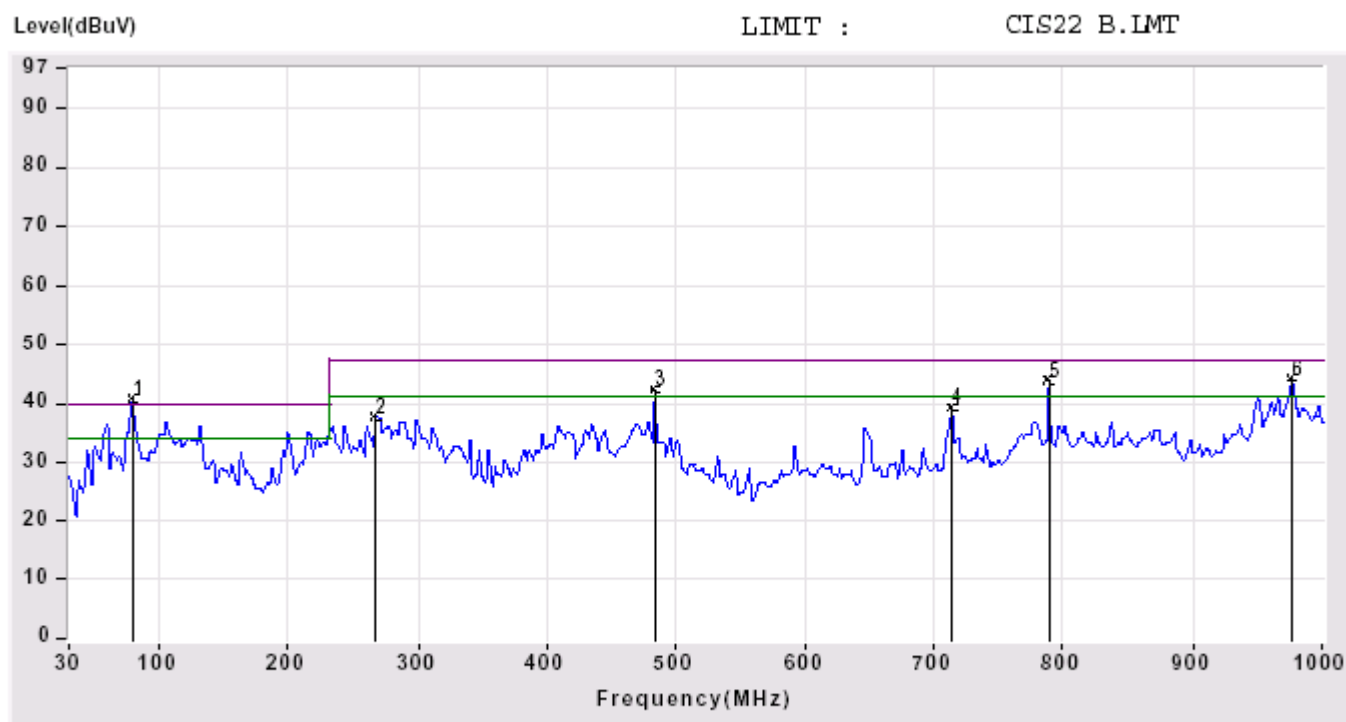
COMMENT: FULL SYSTEM
800*600 (#3)

Vertical

A2.13 Mode 13: (#3) 640 * 480 60Hz (LCD Panel) + CRT Monitor

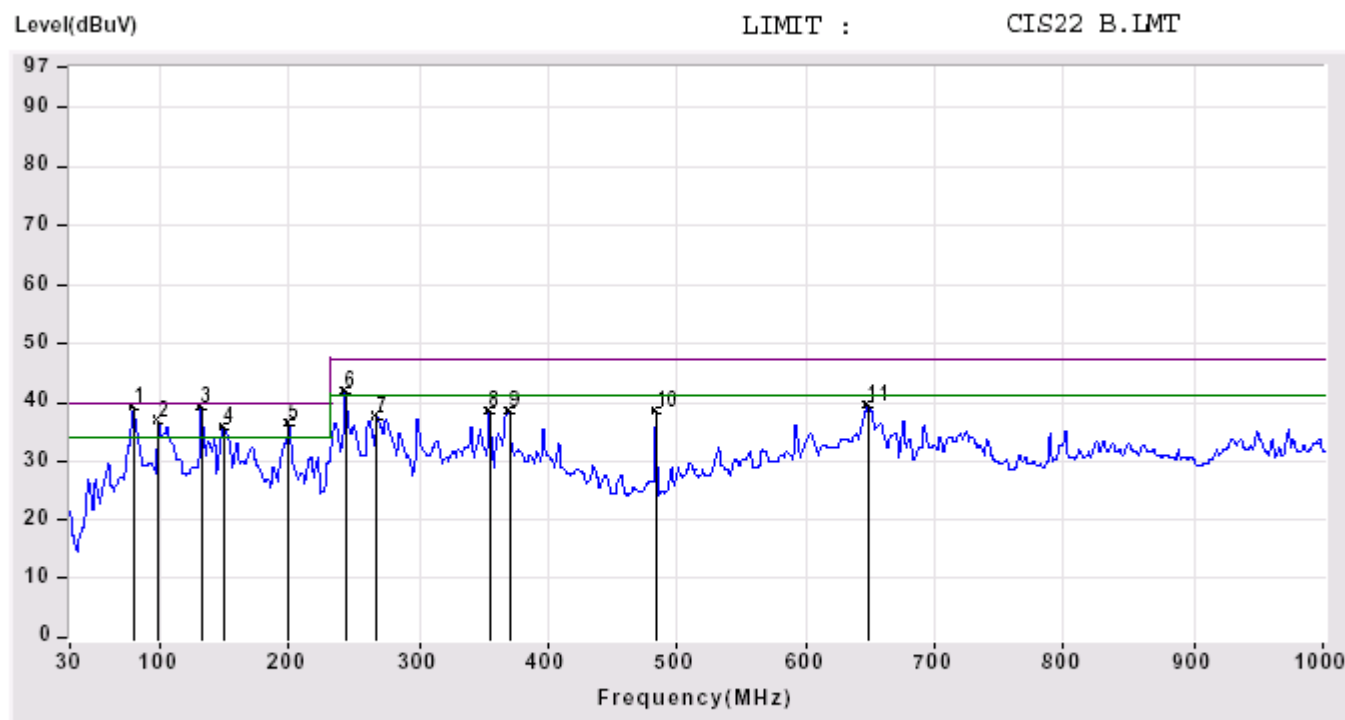
COMMENT: FULL SYSTEM
640*480 (#3)

Horizontal



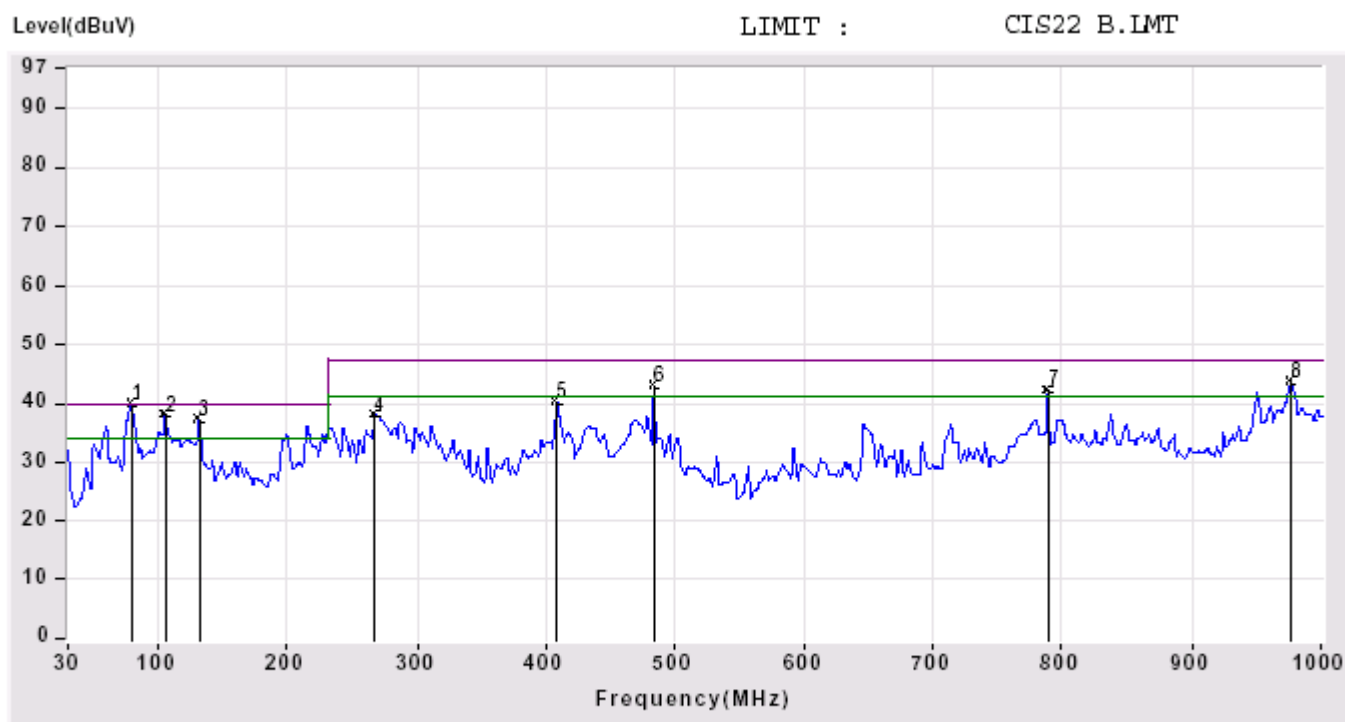
COMMENT: FULL SYSTEM
640*480 (#3)

Vertical

A2.14 Mode 14: (#3) 1024 * 768 75Hz (LCD Panel) + TV

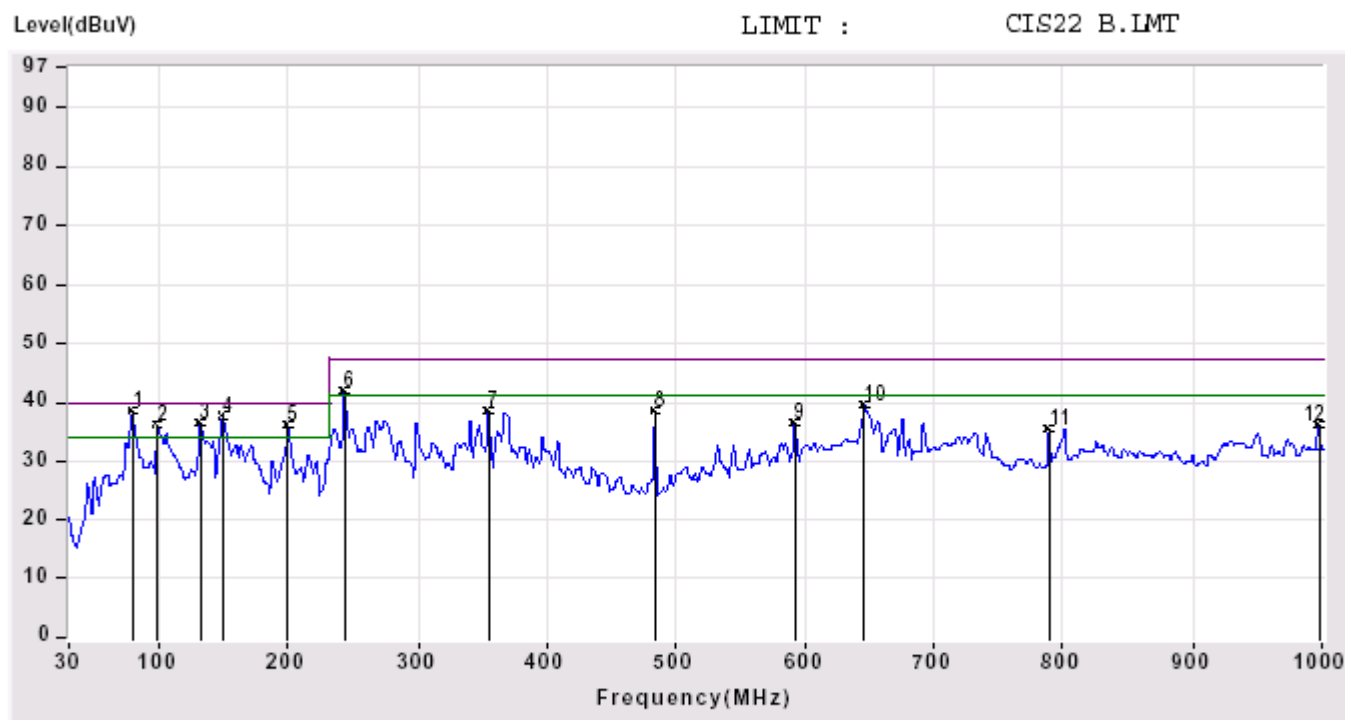
COMMENT: FULL SYSTEM
TV+PANEL (#3)

Horizontal



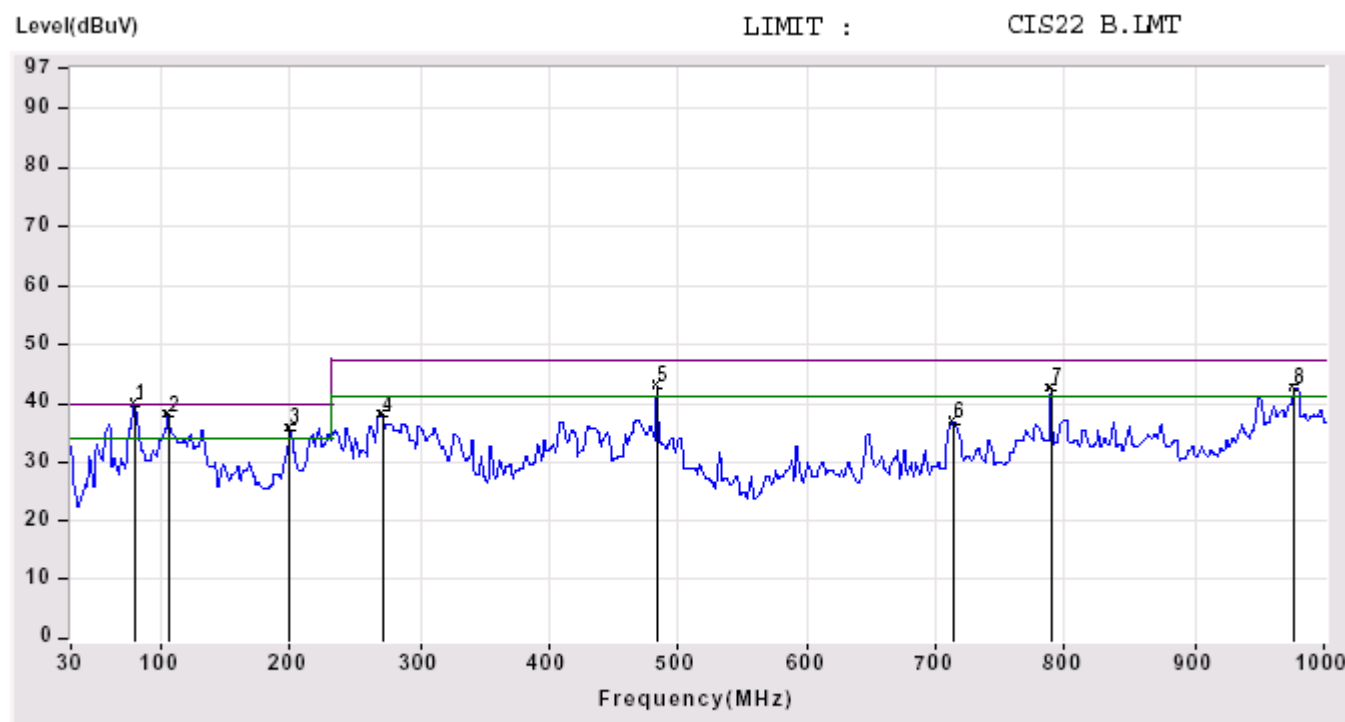
COMMENT: FULL SYSTEM
TV+PANEL (#3)

Vertical

A2.15 Mode 15: (#3) CRT Monitor + TV

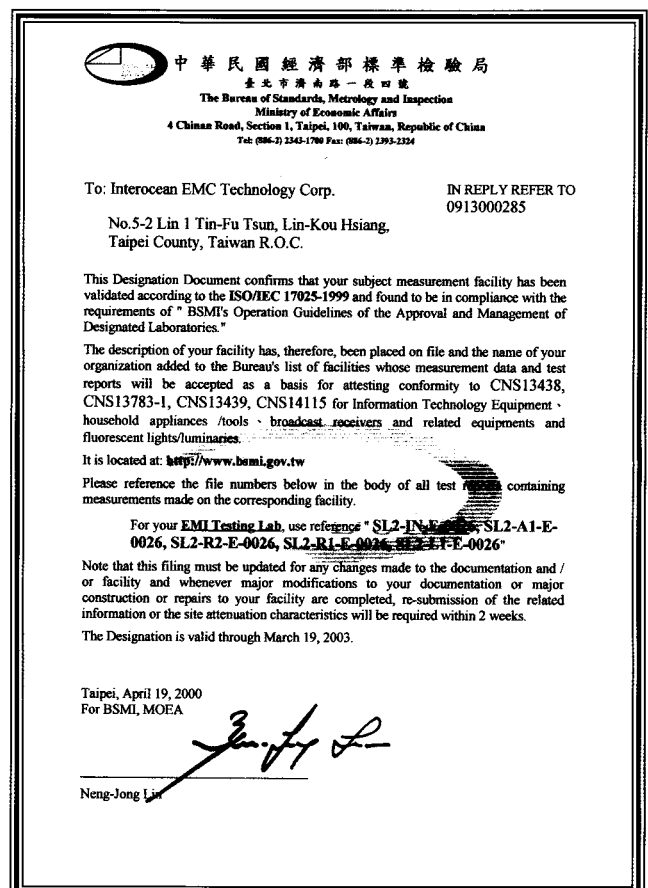
COMMENT: FULL SYSTEM
TV+VGA (#3)

Horizontal



COMMENT: FULL SYSTEM
TV+VGA (#3)

Vertical



United States Department of Commerce
National Institute of Standards and Technology

NVLAP[®]

Certificate of Accreditation

ISO/IEC GUIDE 25:1990
ISO 9002:1987

INTEROCEAN EMC TECHNOLOGY CORP.
TAIPEI COUNTY 24443
TAIWAN

is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

March 31, 2003
Effective through

David F. Alderman
For the National Institute of Standards and Technology
NVLAP Lab Code: 200458-0

NVLAP-015 (11-95)

National Institute of Standards and Technology **NVLAP**[®] National Voluntary Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990
ISO 9002:1987

Scope of Accreditation

Page: 1 of 2

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS NVLAP LAB CODE 200458-0

INTEROCEAN EMC TECHNOLOGY CORP.
No. 5-2, Lin 1, Tin-Fu Tsun, Lin-Kou
Hsiang
Taipei County 24443
TAIWAN
Mr. Kent Hsu
Phone: 886-2-26006861 Fax: 886-2-946775361
E-Mail: email@kent.423.net
URL: http://www.ietc.com.tw

NVLAP Code Designation / Description

Emissions Test Methods:

12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
12/CIS22b	CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/F01	FCC Method - 47 CFR Part 15 - Digital Devices
12/F01a	Conducted Emissions, Power Lines, 450 KHz to 30 MHz

March 31, 2003
Effective through

David F. Alderman
For the National Institute of Standards and Technology

NVLAP-015 (11-95)

National Institute of Standards and Technology **NVLAP**[®] National Voluntary Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990
ISO 9002:1987

Scope of Accreditation

Page: 2 of 2

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS NVLAP LAB CODE 200458-0

INTEROCEAN EMC TECHNOLOGY CORP.

NVLAP Code Designation / Description

12/F01b	Radiated Emissions
12/T51	AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment

March 31, 2003
Effective through

David F. Alderman
For the National Institute of Standards and Technology

NVLAP-015 (11-95)

FEDERAL COMMUNICATIONS COMMISSION
Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

December 29, 1999

Registration Number: 96399

InterOcean EMC Technology Corp.
No. 5-2, Lin 1, Tin-Fu Tsun
Lin-Kou Hsiang, Taipei County 244
Taiwan, R.O.C.
Attention: Kent Hsu

Re: Measurement facility located at Lin-Kou, OATS 1 & 2
3 & 10 meter sites
Date of Listing: December 29, 1999

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, E-Filing, OET Equipment Authorization Electronic Filing.

Sincerely,
Thomas W Phillips
Thomas W Phillips
Electronics Engineer



**EMC Laboratory
Authorisation
Aut. No.: ELA 181**

EMC Laboratory: **Interocean EMC Technology Corp.
No. 5-2, Lin 1, Tin-Fu Tsun, Lin-Kou Hsiang,
Taipei County
TAIWAN R.O.C.**

Scope of
Authorization: **All CENELEC standards [ENs] for EMC that are listed on the
accompanying page, and, all of the corresponding CISPR,
IEC, and ISO EMC standards that are listed on the
accompanying page.**

Nemko has assessed the testing facilities, qualifications and testing practices and the relevant part of the organization. The above-mentioned EMC Laboratory has been validated against **EN 45001** and **ISO 17025** and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document **ELA-INFO-10**. During Nemko's visit it was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page(s).

Accordingly, Nemko will accept test reports from the laboratory as a basis for attesting conformity to these EMC Standards under either the **European Union EMC Directive (89/336/EEC)** or, when applicable, the national standards of countries Nemko has been authorised to attest conformity with.

In order to maintain the Authorisation, the information given in the pertinent **ELA-INFO-10** must be carefully followed. Nemko is to be promptly notified about any changes in the situation at the EMC Laboratory, which may affect the basis for this Authorisation. The Authorisation may be withdrawn at any time if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through 31 December 2004.

Oslo, 30 May 2002

For Nemko AS:


Kjell Bergh, Nemko Group EMC Co-ordinator

ELA-EMC ED1-2002

Nemko AS Gjøttedalsveien 30 P.O.Box 73 Blindern N-0314 Oslo Norway T +47 22 96 03 30 F +47 22 96 05 50 Enterprise number NO974404532



**EMC Laboratory
Authorisation
Aut. No.: ELA 181**

SCOPE OF AUTHORIZATION

GENERIC & PRODUCT-FAMILY STANDARDS

EN 50081-1:1992 EN 61000-6-3:2001 IEC 61000-6-3:1996 (mod) EN 50081-2:1993 EN 61000-6-4:2001 IEC 61000-6-4:1997 (mod)	EN 50082-1:1992 + 1997 EN 50082-1:1997 EN 61000-6-1:2001 IEC 61000-6-1:1997 (mod)	EN 61000-6-2:1999 IEC 61000-6-2:1999 EN 61000-6-2:2001 IEC 61000-6-2:1999 (mod)
EN 55011:1998 + CISPR 11:97	EN 55013:90 + A12:94 + A13:96 CISPR 13:75 + A1:83	EN 55014-1:1993 + A1:97 CISPR 14:1993 + A1:96
EN 55014-2:1997 CISPR 14-2:1997 EN 55104:1995	EN 55015:1993, CISPR 15:1992 EN 55015:1996 + A1:97 CISPR 15:96 + A1:97	EN 55022:1994 + A1:95 + A2:97 CISPR 22:1993 + A1:95 + A2:96 EN 55022:1996, CISPR 22:1997
EN 55024:1998 CISPR 24:1997	EN 61000-3-2:1995 + A1:1998 + A2:1998 + A14:2000 IEC 61000-3-2:1995 + A1:1997 + A2:1998 EN 61000-3-2:2000 IEC 61000-3-2:2000 (mod) + A1:2001	EN 61000-3-3:1995 + A1:2001 IEC 61000-3-3:1994 + A1:2001
EN 61547:1995, IEC 61547:1995	EN 50091-2:1995	EN 50130-4:1995 + A1:98

BASIC STANDARDS

EN 61000-4-2:1995 + A1:98 IEC 61000-4-2:1995 + A1:98 EN 60801-1:1993 IEC 801 2:1991 IEC 801 2:1984	EN 61000-4-3:1995 + A1:98 IEC 61000-4-3:1995 + A1:98 HD 481.3, IEC 801 3:1984 ENV 50140:1993 + ENV 50204:1995	EN 61000-4-4:1995 IEC 61000-4-4:1995 IEC 801 4:1990
EN 61000-4-5:1995 IEC 61000-4-5:1995 ENV 50142:1994	EN 61000-4-6:1996 IEC 61000-4-6:1996 ENV 50141:1993	EN 61000-4-8:1993 IEC 61000-4-8:1993
EN 61000-4-11:1994 IEC 61000-4-11:1994	EN 61000-4-12:1995 IEC 61000-4-12:1995	

Oslo, 30 May 2002

Kjell Bergh, Nemko Group EMC Co-ordinator

2(2)

Nemko AS Gjøttedalsveien 30 P.O.Box 73 Blindern N-0314 Oslo Norway T +47 22 96 03 30 F +47 22 96 05 50 Enterprise number NO974404532