HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.

PRODUCT COMPLIANCE TEAM
SAN 136-1, AMI-RI , BUBAL-EUP, ICHEON-SI, KYOUNKI-DO, 467-701, KOREA
TEL : +82 31 639 8518 FAX : +82 31 639 8525 www.hctec.co.kr

CERTIFICATION (Permissive change class)

Manufacture;

IMAGEQUEST CO., LTD.
SAN 136-1, AMI-RI , BUBAL-EUP, ICHEON-SI,
KYOUNKI-DO, 467-701,KOREA

IMAGEQUEST FRN : 0005-8664-39

Date of Issue: AUGUST 6, 2002

Test Report No.: HCT-F02-0801

Test Site: HYUNDAI CALIBRATION & CERTIFICATION TECHNOLOGIES CO., LTD.
HCT FRN : 0005-8664-21

FCC ID : **PJILT15U**

MODEL / TYPE : **LT15u**

FCC Rule Part(s):	**Part 15 & 2; ET Docket 95-19**
Classification:	**FCC Class B Peripheral Device (JBP)**
Standard(s):	**FCC Class B: 1998 (CISPR 22)**
Equipment(EUT) Type:	**15” LCD Monitor**
Max Resolution:	**1024 X 768 (@60KHz/ 75Hz)**
Port/ Connector(s)	**15-pin D-sub VGA connector, USB 1 upstream port and 4 downstream ports**
LCD PANEL	**HannStar Display Corporation (HSD150MX12)**

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-1992.(See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HYUNDAI C-Tech. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse of 1988,21 U.S.C.853(a).

Ki Soo Kim

Report prepared by : Ki-Soo Kim
Manager of EMC Tech. Part

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1. GENERAL INFORMATION

1.1 Product Description

The ImageQuest CO., LTD. Model LT15u (referred to as the EUT in this report) is a 15" LCD Monitor HOR. Freq. 60KHz w/max. Resolution of 1024 X 768 . Product specification information described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	**PLASTIC**
LIST OF EACH OSC. OR XTAL. FREQ.(FREQ. 1MHz)	**12MHz , 20MHz , 30MHz**
POWER REQUIREMENT	**100-240V AC 1.2A 60 / 50 Hz**
NUMBER OF LAYERS	**MAIN BOARD 4 LAYER** **OSD BOARD 1 LAYER** **POWER BOARD 2 LAYER** **INVERTER BOARD 2 LAYER**
MAX. RESOLUTION	**1024 X 768 (@60KHz/ 75 Hz)**
H-SYNC FREQUENCY RANGE	**31.0KHz 60.0KHz**
V-SYNC FREQUENCY RANGE	**56Hz 75Hz**
LCD TYPE	**15" (LCD Type NO : HSD150MX12)**

1.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

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1.3 Tested System Details

The Model names for all equipment, plus descriptions used in the tested system (including inserted cards) are:

DEVICE TYPE	MANUFACTURER	MODEL NUMBER	FCC ID / DoC	CONNECTED TO
MONITOR (EUT)	IMAGEQUEST CO., LTD.	LT15u	PJILT15U	HOST
PC(HOST)	H/P	KR14111606	DoC	N/A
VIDEO CARD	NVIDIA	NVIDIA GeForce MX 200	DoC	HOST
KEY BOARD	H/P	5181	DoC	HOST
MOUSE	IntelliMouse	Optical USB and PS/2 Compatible	DoC	HOST
PRINTER	H/P	C6410A	DoC	HOST
MODEM	3COM CORPORATION	56K FAX MODEM	DoC	HOST
USB MOUSE	LOGITECH	M-BE55	DoC	EUT
USB MOUSE	IntelliMouse	Optical USB and PS/2 Compatible	DoC	EUT
USB FLASH DRIVE	Jung Myung Telecom Co.,Ltd	E-D900-00-4988	DoC	EUT
USB FLASH DRIVE	Jung Myung Telecom Co.,Ltd	E-D900-00-4988	DoC	EUT

1.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4/1992. Radiated testing was performed at an antenna to EUT distance of 10 meters.

1.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1,MAEKOK-RI,HOBUP-MYUN,ICHON-SI,KYOUNGKI-DO, 467-701,KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 24,2000(Confirmation Number: EA90661)

2.SYSTEM TEST CONFIGURATION

2.1 Justification

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the following components and I/O cards inside the E.U.T were used.

DEVICE TYPE	MANUFACTURE	MODEL/PART NUMBER
MAIN BOARD	ImageQuest CO., Ltd.	3041001045
POWER BOARD	C&C TECH CO.,LTD.	3610200105
OSD BOARD	ImageQuest CO., Ltd.	3010700807
INVERTOR BOARD	ImageQuest CO., Ltd	3610400250
LCD BOARD	HannStar Display Corporation	HSD150MX12

2.2 EUT exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software, contained on a 3-1/2 inch disc, was inserted into drive A and is auto starting on power-up. Once loaded, the program sequentially exercises each system component in turn. The sequence used is :(1) Display test, (2) RS 232 test (3) Key board test,(4) Printer test,(5) FDD test,(6) HDD test. The complete cycle takes about 20 seconds and is repeated continuously. As the keyboard and mouse are strictly input devices, no data is transmitted to them during test. They are however, continuously scanned for data input activity. The video resolution modes setup and change program was used during the radiated and conducted emission testing.

2.3 Cable Description

The marked "(D)" means the Data Cable and "(P)" means the Power Cable.

	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
MONITOR(EUT)	N	Y	1.8(P), 1.5(D), 1.5(D)
PC(HOST)	N	N/A	1.8(P)
KEY BOARD	N/A	Y	2.0(D)
MOUSE	N/A	Y	1.8(D)
PRINTER	N	Y	2.0(P),1.8(D)
MODEM	N	Y	2.0(P),0.8(D)
UPLOAD	N/A	Y	1.8(D)
USB MOUSE	N/A	N/A	0.8(D)
USB MOUSE	N/A	Y	1.8(D)
USB FRESH DRIVE	N/A	N/A	N/A
USB FRESH DRIVE	N/A	N/A	N/A

2.4 Noise Suppression Parts on Cable. (I/O CABLE)

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
MONITOR(EUT)	Y	BOTH END	Y	BOTH END
PRINTER	Y	PC END	Y	BOTH END
KEY BOARD	Y	PC END	Y	PC END
MOUSE	N	N/A	Y	PC END
MODEM	Y	PC END	Y	BOTH END
UPLOAD	Y	BOTH END	Y	BOTH END
USB MOUSE	N	N/A	Y	EUT END
USB MOUSE	N	N/A	Y	EUT END
USB FRESH DRIVE	N	N/A	Y	EUT END
USB FRESH DRIVE	N	N/A	Y	EUT END

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2.5 Equipment Modifications

N/A

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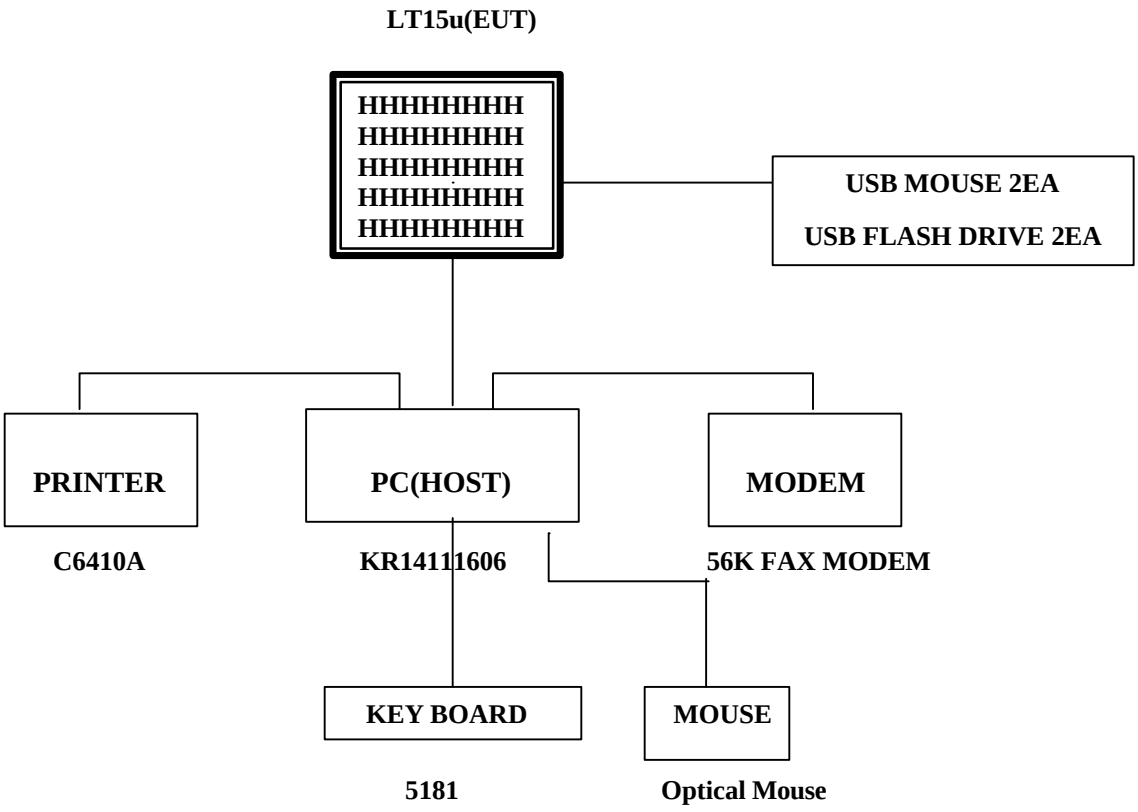
2.6 Configuration of Test system

Line Conducted Test : EUT was connected to LISN, all other supporting equipment were connected to another LISN.
Preliminary Power line Conducted Emission tests were performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary Radiated Emissions tests were conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating condition. Final Radiated Emission tests were conducted at 10 meter open area test site.

[Configuration of Tested System]



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3. PRELIMINARY TESTS

3.1 AC Power line Conducted Emission Tests

During Preliminary Tests, the following operating mode were investigated

Processor Speed (MHz)	Video Resolution (w/max)	The worst operating condition
Pentium 1GHz	1024X768 (60KHz/75Hz)	X
	1024X768 (56.5KHz/70Hz)	
	800X600 (37.9KHz/60Hz)	
	800X600 (35.2 KHz/56Hz)	
	640X480 (31.5KHz/70Hz)	

4.2 Radiated Emission Tests

During Preliminary Tests, the following operating mode were investigated

Processor Speed (MHz)	Video Resolution (w/max)	The worst operating condition
Pentium 1GHz	1024X768 (60KHz/75Hz)	X
	1024X768 (56.5KHz/70Hz)	
	800X600 (37.9KHz/60Hz)	
	800X600 (35.2 KHz/56Hz)	
	640X480 (31.5KHz/70Hz)	

Tested by Kyoung-Houn SEO / Engineer **Date : JULY 19, 2002**

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4. FINAL CONDUCETD AND RADIATED EMISSION TESTS SUMMARY

4.1 Conducted Emission Test

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

Humidity Level : 45 % **Temperature : 24**
Limit apply to : CISPR 22
Type of Tests : CLASS B
Date : JULY 25, 2002
Result : PASSED BY -10.3 dB
EUT : 15" LCD MONITOR

Operating Condition : 1024 X 768 (Hf : 60KHz, Vf : 75Hz)
Detector : CISPR Quasi-Peak (6 dB Bandwidth : 9 KHz)
CISPR Average(6 dB Bandwidth : 9 KHz)

Line Conducted Emission Tabulated Data

Power Line Conducted Emissions			CISPR 22		
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)	Detector Mode
0.240	51.8	NEUTRAL	62.0	-10.3	Quasi-Peak
0.237	41.0	HOT	52.0	-11.2	Average
0.243	50.1	HOT	62.0	-11.9	Quasi-Peak
0.237	40.1	NEUTRAL	52.0	-12.1	Average

Measured by : Kyoung-Houn SEO / Engineer **Date : JULY 25, 2002**

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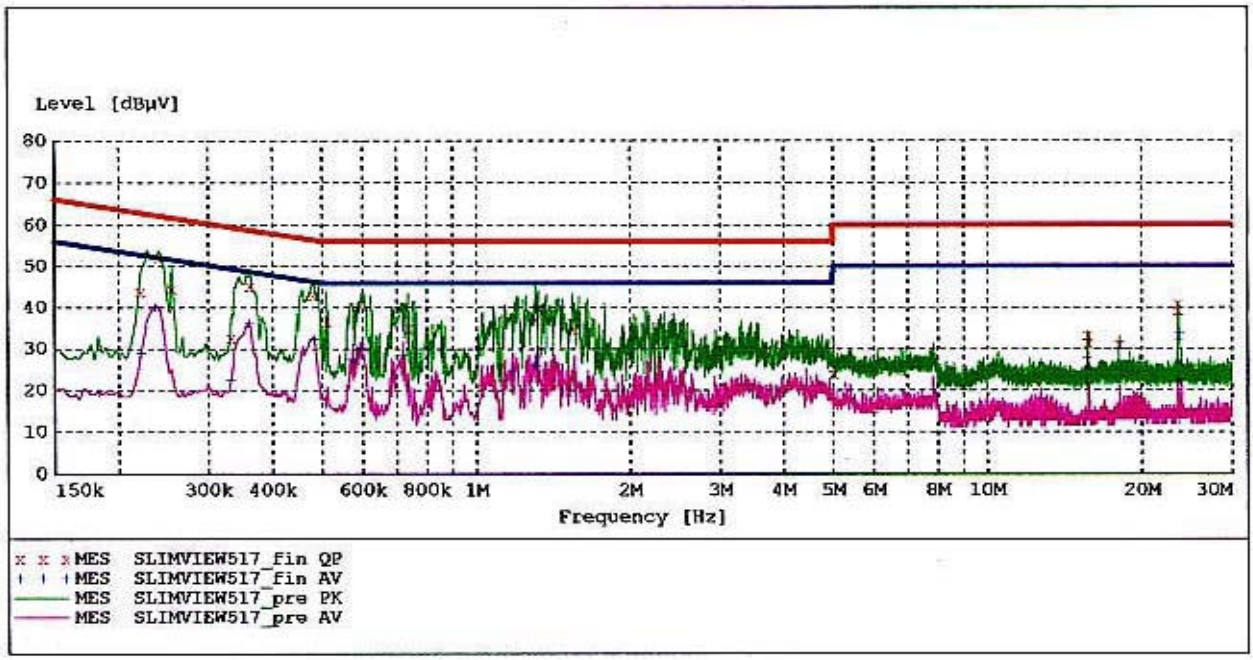
HYUNDAI C-TECH. CO., LTD.
EMC TEST LAB.

EUT:
Manufacturer: IMAGEQUEST
Operating Condition: 1024 X 768 75Hz
Test Site: Shield Room
Operator: KH-SEO
Test Specification: CLASS B
Comment: N
Start of Test:

SCAN TABLE: "EN 55022 V (PKH)"

Short Description: EN 55022 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	3.0 kHz	MaxPeak Average	10.0 ms	9 kHz	CABLE LOSS (NEW)
500.0 kHz	5.0 MHz	3.0 kHz	MaxPeak Average	5.0 ms	9 kHz	CABLE LOSS (NEW)



MEASUREMENT RESULT: "fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.222000	43.80	0.5	63	19.0	1	---
0.240000	51.80	0.5	62	10.3	1	---
0.255000	44.40	0.5	62	17.2	1	---
0.333000	32.70	0.5	59	26.7	1	---
0.363000	45.10	0.5	59	13.6	1	---
0.483000	43.00	0.5	56	13.3	1	---
0.512000	36.70	0.5	56	19.3	1	---
0.599000	40.50	0.5	56	15.5	1	---
0.740000	35.00	0.5	56	21.0	1	---
1.310000	37.10	0.5	56	18.9	1	---
1.331000	39.80	0.5	56	16.2	1	---
1.550000	34.90	0.5	56	21.1	1	---
5.027000	24.00	0.9	60	36.0	1	---
15.728000	33.30	1.5	60	26.7	1	---

MEASUREMENT RESULT: "fin QP"
(continued)

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
15.788000	31.40	1.6	60	28.6	1	---
18.146000	31.10	1.7	60	28.9	1	---
23.594000	39.20	2.0	60	20.8	1	---
23.654000	40.90	2.0	60	19.1	1	---

MEASUREMENT RESULT: " fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.183000	19.50	0.5	54	34.9	1	---
0.222000	28.90	0.5	53	23.9	1	---
0.237000	40.10	0.5	52	12.1	1	---
0.333000	22.80	0.5	49	26.6	1	---
0.360000	36.20	0.5	49	12.5	1	---
0.483000	32.40	0.5	46	13.9	1	---
0.575000	27.60	0.5	46	18.4	1	---
0.599000	30.30	0.5	46	15.7	1	---
0.722000	28.50	0.5	46	17.5	1	---
1.184000	24.80	0.5	46	21.2	1	---
1.319000	26.20	0.5	46	19.8	1	---
1.325000	28.20	0.5	46	17.8	1	---
15.728000	27.80	1.5	50	22.2	1	---
15.788000	25.60	1.6	50	24.4	1	---
18.146000	30.10	1.7	50	19.9	1	---
23.597000	32.40	2.0	50	17.6	1	---
23.657000	33.70	2.0	50	16.3	1	---
24.029000	26.40	2.0	50	23.6	1	---

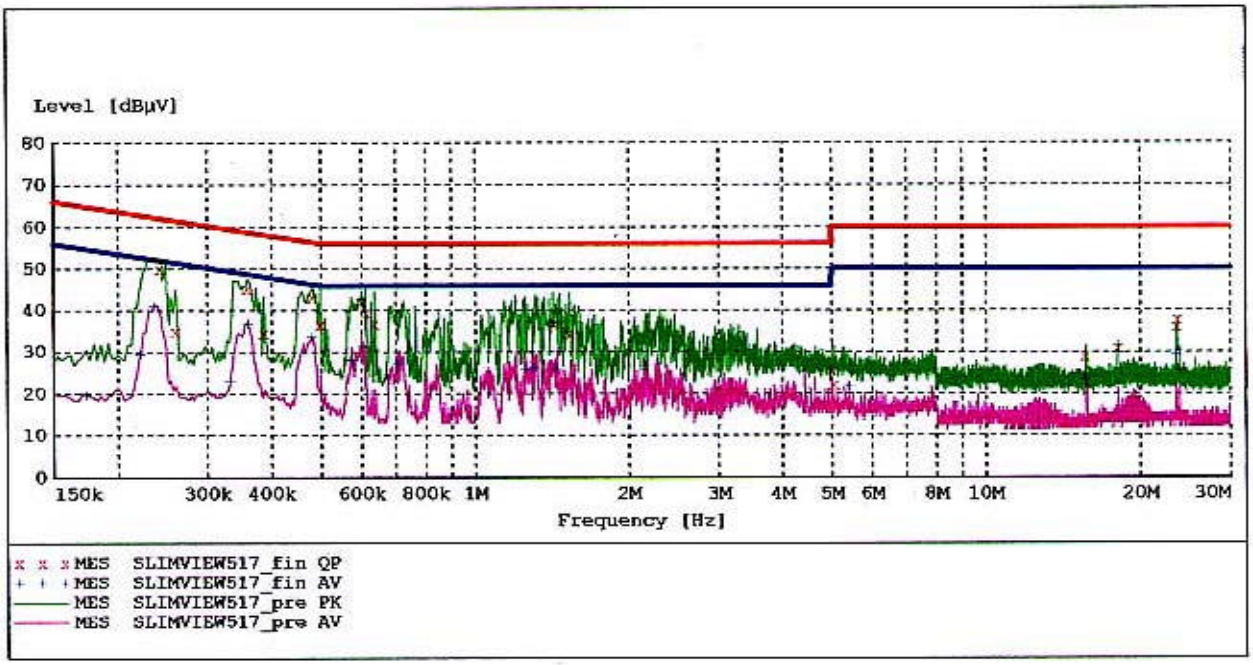
HYUNDAI C-TECH. CO., LTD.
EMC TEST LAB.

EUT:
Manufacturer: IMAGEQUEST
Operating Condition: 1024 X 768 75Hz
Test Site: Shield Room
Operator: KH-SEO
Test Specification: CLASS B
Comment: H
Start of Test:

SCAN TABLE: "EN 55022 V (PKH)"

Short Description: EN 55022 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	3.0 kHz	MaxPeak Average	10.0 ms	9 kHz	CABLE LOSS (NEW)
500.0 kHz	5.0 MHz	3.0 kHz	MaxPeak Average	5.0 ms	9 kHz	CABLE LOSS (NEW)



MEASUREMENT RESULT: "fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.243000	50.10	0.5	62	11.9	1	---
0.261000	34.90	0.5	61	26.5	1	---
0.360000	45.10	0.5	59	13.6	1	---
0.387000	34.60	0.5	58	23.5	1	---
0.483000	43.10	0.5	56	13.2	1	---
0.498000	36.30	0.5	56	19.7	1	---
0.500000	36.50	0.5	56	19.5	1	---
0.602000	42.00	0.5	56	14.0	1	---
0.614000	39.30	0.5	56	16.7	1	---
0.638000	36.70	0.5	56	19.3	1	---
1.427000	36.70	0.5	56	19.3	1	---
1.538000	34.10	0.5	56	21.9	1	---
5.021000	25.70	0.9	60	34.3	1	---
5.075000	22.20	0.9	60	37.8	1	---

MEASUREMENT RESULT: "fin QP"
(continued)

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
15.731000	28.90	1.5	60	31.1	1	---
18.146000	30.80	1.7	60	29.2	1	---
23.594000	35.90	2.0	60	24.1	1	---
23.654000	37.60	2.0	60	22.4	1	---

MEASUREMENT RESULT: "fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.174000	19.80	0.5	55	34.9	1	---
0.222000	29.50	0.5	53	23.2	1	---
0.237000	41.00	0.5	52	11.2	1	---
0.333000	23.20	0.5	49	26.2	1	---
0.360000	36.90	0.5	49	11.8	1	---
0.480000	33.60	0.5	46	12.7	1	---
0.575000	28.10	0.5	46	17.9	1	---
0.602000	31.40	0.5	46	14.6	1	---
0.710000	27.40	0.5	46	18.6	1	---
1.262000	26.00	0.5	46	20.0	1	---
1.307000	26.30	0.5	46	19.7	1	---
1.454000	26.20	0.5	46	19.8	1	---
5.402000	21.90	0.9	50	28.1	1	---
15.728000	23.60	1.5	50	26.4	1	---
18.146000	29.80	1.7	50	20.2	1	---
23.597000	29.20	2.0	50	20.8	1	---
23.657000	30.50	2.0	50	19.5	1	---
24.029000	25.50	2.0	50	24.5	1	---

4.2 Radiated Emissions Tests

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

Humidity Level : 52 % **Temperature : 28**
Limit apply to : CISPR 22
Type of Tests : CLASS B
Date : JULY 30, 2002
Result : PASSED BY -3.0dB

==========

EUT : 15" LCD MONITOR
Operating Condition : 1024 X 768 (Hf :60 kHz, Vf : 75 Hz)
Detector : CISPR Quasi-Peak (6 dB Bandwidth : 120 KHz)

Frequency MHz	Reading dBuV/m	Ant. Factor dB	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
72.5	18.92	5.78	1.80	V	26.5	30.0	-3.5
84.0	14.33	7.17	1.90	V	23.4	30.0	-6.6
91.4	11.09	8.71	2.00	H	21.8	30.0	-8.2
120.5	9.69	13.41	2.40	V	25.5	30.0	-4.5
126.5	8.74	13.76	2.40	H	24.9	30.0	-5.1
160.7	9.52	14.78	2.70	V	27.0	30.0	-3.0
336.8	11.37	16.13	3.90	H	31.4	37.0	-5.6
378.8	12.85	16.55	4.10	V	33.5	37.0	-3.5
441.8	8.74	17.16	4.60	H	30.5	37.0	-6.5
511.8	9.14	18.76	5.00	H	32.9	37.0	-4.1
546.8	5.24	19.16	5.30	V	29.7	37.0	-7.3
581.8	5.32	20.08	5.60	V	31.0	37.0	-6.0

NOTE:
1.All video modes and resolutions were investigated and the worst-case emissions are reported.

Measured by Kyoung-Houn SEO / Engineer **Date : JULY 30, 2002**

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5. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor.
The basic equation with a sample calculation is as follows:

FS = RA + AF + CF

where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dBuV is obtained. The Antenna Factor of 7.4 and a Cable Factor of 1.1 is added. The 30 dBuV/m value was mathematically converted to its corresponding level in uV/m.

FS = 21.5 + 7.4 + 1.1 = 30 dBuV/m

Level in uV/m = Common Antilogarithm [(30 dBuV/m)/20] = 31.6 uV/m

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6. LIST OF TEST EQUIPMENT

TYPE	MANUFACTURE	MODEL	CAL. DATE
EMI Test Receiver	Rohde & Schwarz	ESH3	2002.6.29
EMI Test Receiver	Rohde & Schwarz	ESVP	2002.2.14
EMI Test Receiver	Rohde & Schwarz	ESI40	2001.11.5
EMI Test Receiver	Rohde & Schwarz	ESVS30	2002.3.6
Spectrum Monitor	Rohde & Schwarz	EZM	N.A
Graphic Plotter	Rohde & Schwarz	DOP2	N.A
Printer	Rohde & Schwarz	PDN	N.A
Spectrum Analyzer	H.P	8591EM	2002.7.11
LISN	EMCO	3825/2	2002.2.7
LISN	Rohde & Schwarz	ESH2-Z5	2001.8.12
Amplifier	Hewlett-Packard	8447E	2002.3.2
Dipole Antennas	Rohde & Schwarz	VHAP	2002.6.28
Dipole Antennas	Rohde & Schwarz	UHAP	2002.6.28
Biconical Antenna	Rohde & Schwarz	BBA-9106	2002.6.28
Log-Periodic Antenna	Rohde & Schwarz	UHALP-9107	2002.6.26
Antenna Position Tower	EMCO	1051-12	N.A
Turn Table	EMCO	1060-06	N.A
Line Filter	KEENE	ULW 2X30-60	N.A
Power Analyzer	Voltech	PM 3300	2002.2.20
Reference Network Impedance	Voltech	IEC 555	N.A
AC Power Source	PACIFIC	Magnetic Module	N.A
AC Power Source	PACIFIC	360AMX	N.A

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