

## HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.

INT'L STANDARD CERTIFICATION TEAM  
SAN 136-1, AMI-RI, BUBAL-EUP, ICHEON-SI, KYOUNKI-DO, 467-701, KOREA  
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# CERTIFICATION

**Manufacture;**

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

**Date of Issue: NOVEMBER 7, 2001**

**Test Report No.: HCT-F01-1101**

**Test Site: HYUNDAI CALIBRATION & CERTIFICATION  
TECHNOLOGIES CO., LTD.**

**FCC ID :**

**MODEL / TYPE :**

**PJISLIMVIEW527B**  
**SlimView 527**

<b>FCC Rule Part(s):</b>	<b>Part 15 &amp; 2; ET Docket 95-19</b>
<b>Classification:</b>	<b>FCC Class B Peripheral Device (JBP)</b>
<b>Standard(s):</b>	<b>FCC Class B: 1998 (CISPR 22)</b>
<b>Equipment(EUT) Type:</b>	<b>15" LCD Monitor</b>
<b>Max Resolution:</b>	<b>1024X768 (@60KHz/ 75Hz)</b>
<b>Port/ Connector(s)</b>	<b>15-pin D-sub VGA connector</b>

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).



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



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<b>ATTACHMENT F .....</b>	<b>Internal Photos.</b>

# 1. GENERAL INFORMATION

## 1.1 Product Description

The ImageQuest CO., LTD. Model SlimView 527 (referred to as the EUT in this report) is a 15" LCD Monitor HOR. Freq. 60KHz w/max. Resolution of 1024X768 . 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
POWER REQUIREMENT	DC 12V/5V --- 2.0A/2.0A
NUMBER OF LAYERS	MAIN BOARD 4 LAYER OSD BOARD 1 LAYER POWER BOARD 1 LAYER INVERTER BOARD 4 LAYER
MAX. RESOLUTION	1024X768 (@60KHz/ 75 Hz)
H-SYNC FREQUENCY RANGE	31KHz 60KHz
V-SYNC FREQUENCY RANGE	56Hz 75Hz
LCD TYPE	15" ( LCD Type : LTM150XH-L01 )

## 1.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

### 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.	L50C	PJIL50C	HOST
PC(HOST)	H/P	DTPC-17	DoC	N/A
KEY BOARD	H/P	SK-2501-2D-K	GYUR385K	HOST
PRINTER	H/P	HP895C	DoC	HOST
MODEM	3COM CORPORATION	56K FAX MODEM	DoC	HOST
VIDEO CARD	DIAMOND	3D3000	DoC	HOST
MOUSE	H/P	INTELLIMOUSE	DZL211029	HOST

### 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.	3041001039
POWER BOARD	C&C TECH CO.,LTD.	3610200087
OSD BOARD	ImageQuest CO., Ltd.	3010700781
INVERTOR BOARD	ImageQuest CO., Ltd.	3610400244
LCD BOARD	SAMSUNG ELECTRONICS CO., LTD.	LTM150XH-L01

### 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)
<b>MONITOR(EUT)</b>	N	Y	1.8(P), 1.5(D)
<b>PC(HOST)</b>	N	N/A	1.8(P)
<b>PRINTER</b>	N	Y	2.0(P),1.8(D)
<b>KEY BOARD</b>	N/A	Y	2.0(D)
<b>MODEM</b>	N	Y	2.0(P),0.8(D)
<b>MOUSE</b>	N/A	Y	1.8(D)

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

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
<b>MONITOR(EUT)</b>	Y	BOTH END	Y	BOTH END
<b>PRINTER</b>	N	PC END	Y	BOTH END
<b>KEY BOARD</b>	Y	PC END	Y	PC END
<b>MODEM</b>	Y	PC END	Y	BOTH END
<b>MOUSE</b>	N	N/A	Y	PC END

## 2.5 Equipment Modifications

N/A

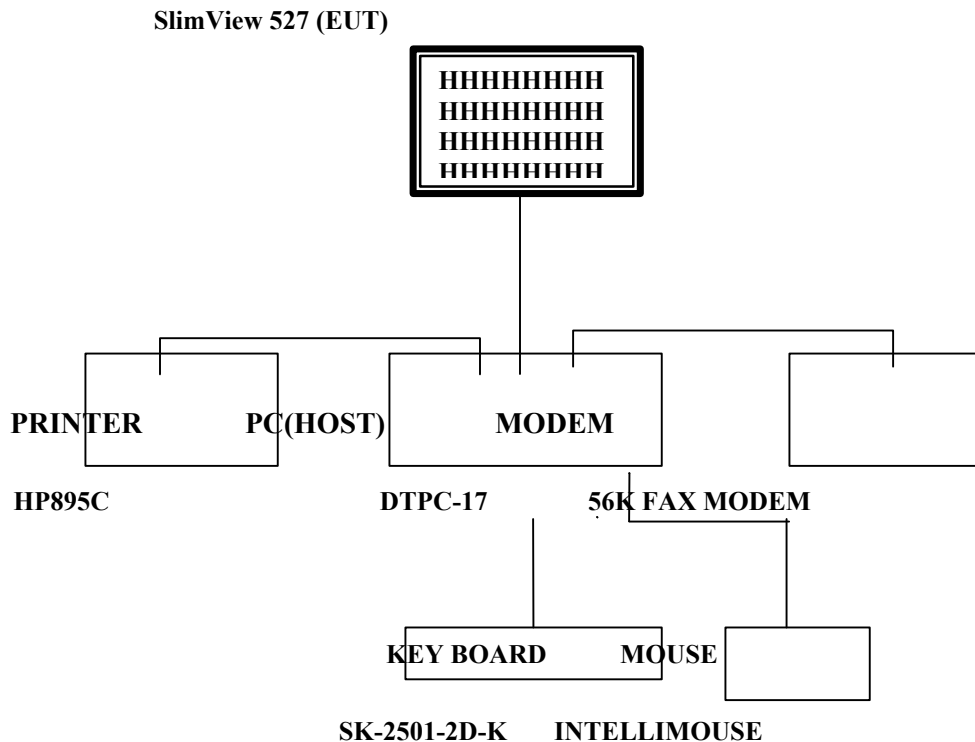
## 2.6 Configuration of Test system

**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]





### 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 350 MHz	1024X768 (60KHz/75Hz)	X
	1024X768 (48.4KHz/60Hz)	
	1024X768 (56.5KHz/70Hz)	
	720X400 (31.5KHz/70Hz)	
	800 x 600 (46.7 KHz/75Hz)	
	640 x 480 (31.5KHz/60Hz)	

#### 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 350 MHz	1024X768 (60KHz/75Hz)	X
	1024X768 (48.4KHz/60Hz)	
	1024X768 (56.5KHz/70Hz)	
	720X400 (31.5KHz/70Hz)	
	800 x 600 (46.7 KHz/75Hz)	
	640 x 480 (31.5KHz/60Hz)	

Tested by Kyoung-Houn SEO / Engineer

Date : OCTOBER 22, 2001

## 4. FINAL CONDUCTED 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 : 33%                      Temperature : 24  
 Limit apply to : CISPR 22  
 Type of Tests : CLASS B  
 Date : OCTOBER 29 , 2001  
 Result : PASSED BY 3.3dB  
 EUT : 15" LCD MONITOR

Operating Condition : 1024X768 (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
0.80	42.70	NEUTRAL	46.0	3.3	Average
0.80	42.70	HOT	46.0	3.3	Average
0.80	52.00	NEUTRAL	56.0	4.0	Quasi-Peak
0.89	42.10	HOT	46.0	3.9	Average

NOET:

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

Other video modes & resolution were tested and found to be in compliance.

Measured by : Kyoung-Houn SEO / Engineer

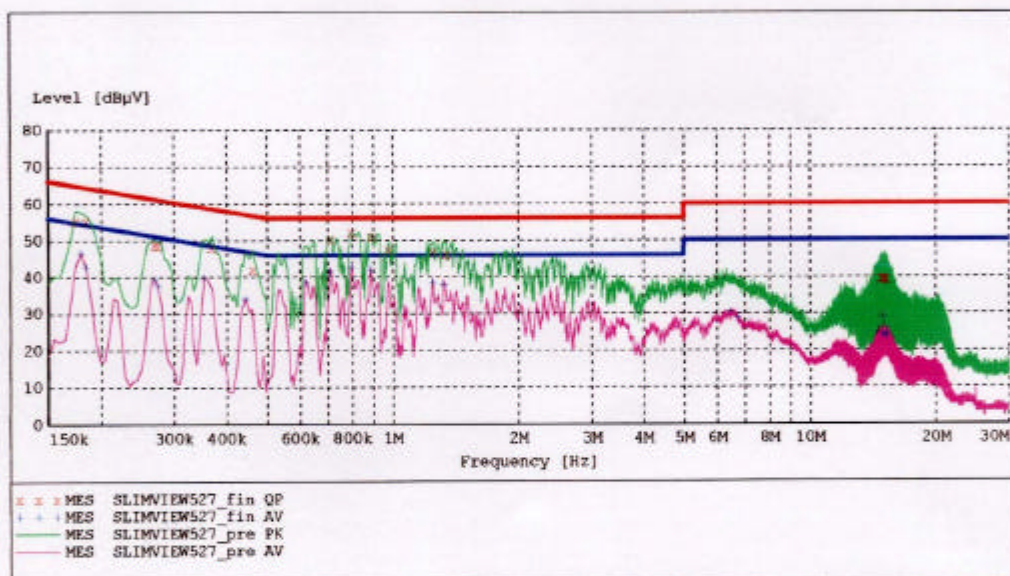
Date : OCTOBER 29, 2001

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

EUT: SLIMVIEW527  
 Manufacturer: IMAGEQUEST  
 Operating Condition:  
 Test Site: Shield Room  
 Operator:  
 Test Specification:  
 Comment: N  
 Start of Test: 10/29/01 / 2:13:11PM

**SCAN TABLE:**

Short Description:			EN 55022 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	500.0 kHz	5.0 kHz	MaxPeak	100.0 ms	9 kHz	CABLE LOSS (NEW)
			Average			
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	CABLE LOSS (NEW)
			Average			


**MEASUREMENT RESULT: "SLIMVIEW527\_fin QP"**

10/29/01 2:17PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.175000	55.30	0.5	65	9.4	1	---
0.185000	55.30	0.5	64	8.9	1	---
0.270000	48.70	0.5	61	12.4	1	---
0.275000	48.60	0.5	61	12.3	1	---
0.370000	48.00	0.5	59	10.5	1	---
0.465000	42.10	0.5	57	14.5	1	---
0.715000	50.20	0.5	56	5.8	1	---
0.800000	52.00	0.5	56	4.0	1	---
0.895000	51.10	0.5	56	4.9	1	---
0.985000	47.50	0.5	56	8.5	1	---
1.255000	46.90	0.5	56	9.1	1	---
1.350000	46.10	0.5	56	9.9	1	---
14.865000	39.50	1.5	60	20.5	1	---
15.060000	39.60	1.5	60	20.4	1	---

**MEASUREMENT RESULT: "SLIMVIEW527\_fin QP"**

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
15.070000	39.40	1.5	60	20.6	1	---
15.175000	39.60	1.5	60	20.4	1	---
15.235000	39.40	1.5	60	20.6	1	---
15.390000	38.90	1.5	60	21.1	1	---

**MEASUREMENT RESULT: "SLIMVIEW527\_fin AV"**

10/29/01 2:17PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.180000	46.60	0.5	55	7.9	1	---
0.185000	42.80	0.5	54	11.4	1	---
0.270000	39.30	0.5	51	11.8	1	---
0.275000	37.40	0.5	51	13.6	1	---
0.355000	39.90	0.5	49	8.9	1	---
0.445000	34.10	0.5	47	12.8	1	---
0.620000	38.60	0.5	46	7.4	1	---
0.710000	41.30	0.5	46	4.7	1	---
0.800000	42.70	0.5	46	3.3	1	---
0.890000	41.90	0.5	46	4.1	1	---
1.250000	38.50	0.5	46	7.5	1	---
1.330000	37.80	0.5	46	8.2	1	---
6.460000	30.40	1.0	50	19.6	1	---
6.745000	28.80	1.1	50	21.2	1	---
15.000000	29.00	1.5	50	21.0	1	---
15.020000	24.10	1.5	50	25.9	1	---
15.225000	24.10	1.5	50	25.9	1	---
15.235000	24.00	1.5	50	26.0	1	---

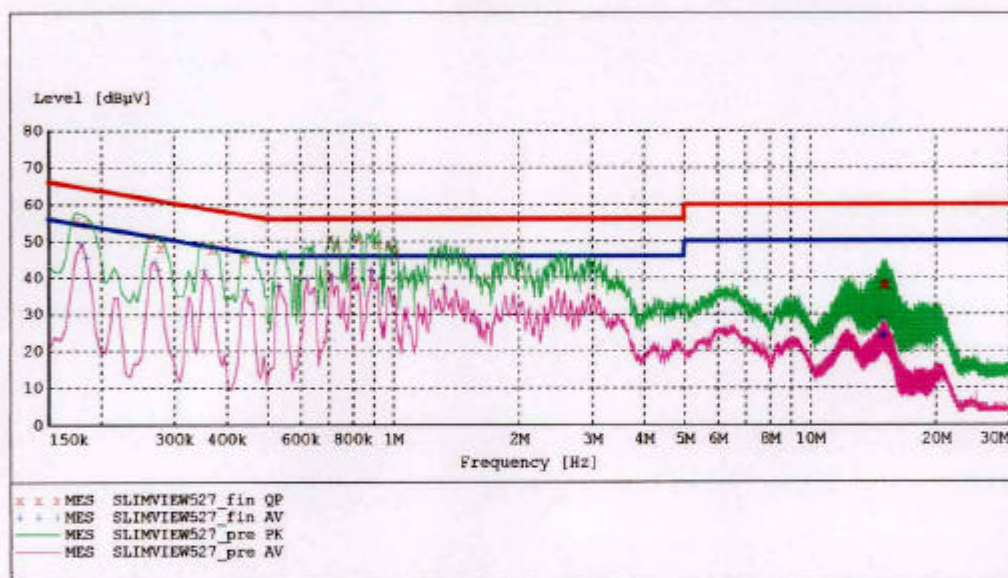


**HYUNDAI C-TECH. CO., LTD.**  
**EMC TEST LAB.**

EUT: SLIMVIEW527  
 Manufacturer: IMAGEQUEST  
 Operating Condition:  
 Test Site: Shield Room  
 Operator:  
 Test Specification:  
 Comment: H  
 Start of Test: 10/29/01 / 2:06:37PM

**SCAN TABLE:**

Short Description:			EN 55022 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	5.0 kHz	MaxPeak	100.0 ms	9 kHz	CABLE LOSS (NEW)
			Average			
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	CABLE LOSS (NEW)
			Average			


**MEASUREMENT RESULT: "SLIMVIEW527\_fin QP"**

10/29/01 2:10PM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.175000	55.50	0.5	65	9.2	1	---
0.185000	54.90	0.5	64	9.4	1	---
0.265000	51.10	0.5	61	10.2	1	---
0.280000	48.20	0.5	61	12.6	1	---
0.370000	47.80	0.5	59	10.7	1	---
0.445000	45.10	0.5	57	11.9	1	---
0.710000	50.80	0.5	56	5.2	1	---
0.740000	48.90	0.5	56	7.1	1	---
0.830000	50.60	0.5	56	5.4	1	---
0.930000	49.00	0.5	56	7.0	1	---
0.980000	48.90	0.5	56	7.1	1	---
1.020000	47.10	0.5	56	8.9	1	---
14.865000	37.80	1.5	60	22.2	1	---
15.020000	38.20	1.5	60	21.8	1	---

**MEASUREMENT RESULT: "SLIMVIEW527\_fin QP"**  
 (continued)

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
15.040000	38.40	1.5	60	21.6	1	---
15.215000	38.30	1.5	60	21.7	1	---
15.225000	38.40	1.5	60	21.6	1	---
15.340000	38.00	1.5	60	22.0	1	---

**MEASUREMENT RESULT: "SLIMVIEW527\_fin AV"**  
 10/29/01 2:10PM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.180000	49.20	0.5	55	5.2	1	---
0.185000	45.30	0.5	54	8.9	1	---
0.270000	44.40	0.5	51	6.7	1	---
0.275000	42.30	0.5	51	8.6	1	---
0.355000	41.90	0.5	49	6.9	1	---
0.445000	36.70	0.5	47	10.2	1	---
0.535000	37.80	0.5	46	8.2	1	---
0.625000	39.60	0.5	46	6.4	1	---
0.715000	40.60	0.5	46	5.4	1	---
0.800000	42.70	0.5	46	3.3	1	---
0.890000	42.10	0.5	46	3.9	1	---
1.330000	37.20	0.5	46	8.8	1	---
14.875000	23.80	1.5	50	26.2	1	---
14.970000	24.20	1.5	50	25.8	1	---
15.000000	28.80	1.5	50	21.2	1	---
15.020000	24.30	1.5	50	25.7	1	---
15.040000	24.10	1.5	50	25.9	1	---
15.060000	24.10	1.5	50	25.9	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 : 33 %                      Temperature : 29

Limit apply to : CISPR 22

Type of Tests : CLASS B

Date : OCTOBER 31, 2001

Result : PASSED BY 3.0dB

EUT : 15" LCD MONITOR

Operating Condition : 1024X768 (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
40.8	6.54	15.26	1.30	V	23.1	30.0	-6.9
96.2	13.25	9.55	2.00	H	24.8	30.0	-5.2
140.7	9.43	14.57	2.50	V	26.5	30.0	-3.5
200.0	8.12	15.78	3.00	H	26.9	30.0	-3.1
210.9	7.60	16.20	3.20	H	27.0	30.0	-3.0
251.4	11.19	17.71	3.50	H	32.4	37.0	-4.6
401.5	12.90	16.50	4.20	H	33.6	37.0	-3.4
420.8	9.71	16.89	4.30	H	30.9	37.0	-6.1
545.0	7.85	19.15	5.30	H	32.3	37.0	-4.7
560.8	8.95	19.75	5.30	V	34.0	37.0	-3.0
699.0	3.13	22.37	6.20	H	31.7	37.0	-5.3
832.0	3.28	23.12	6.90	V	33.3	37.0	-3.7

### NOTE:

- 1.All video modes and resolutions were investigated and the worst-case emissions are reported.
- 2.Other video modes & resolution were tested and found to be in compliance.

Measured by Kyoung-Houn Seo / Engineer

Date : OCTOBER 31 , 2001

## 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.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dBuV/m}$$

$$\text{Level in uV/m} = \text{Common Antilogarithm} [(30 \text{ dBuV/m})/20] = 31.6 \text{ uV/m}$$



## 6. LIST OF TEST EQUIPMENT

<u>TYPE</u>	<u>MANUFACTURE</u>		<u>MODEL</u>
<u>CAL. DATE</u>			
EMI Test Receiver	Rohde & Schwarz	ESH3	2001.6.29
EMI Test Receiver	Rohde & Schwarz	ESVP	2001.2.14
EMI Test Receiver	Rohde & Schwarz	ESI40	2001.1.18
EMI Test Receiver	Rohde & Schwarz	ESVS30	2001.6.26 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	2001.7.11
LISN	EMCO	3825/2	2001.7.13
LISN	Rohde & Schwarz	ESH2-Z5	2001.7.14
Amplifier	Hewlett-Packard	8447E	2001.3.2
Dipole Antennas	Rohde & Schwarz	VHAP	2001.6.28
Dipole Antennas	Rohde & Schwarz	UHAP	2001.6.28
Biconical Antenna	Rohde & Schwarz	BBA-9106	2001.6.28
Log-Periodic Antenna	Rohde & Schwarz	UHALP-9107	2001.6.26
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	2001.2.20
Reference Network Impedance	Voltech	IEC 555	N.A
AC Power Source	PACIFIC	Magnetic Module	N.A
AC Power Source	PACIFIC	360AMX	N.A