HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.

PRODUCT COMPLIANCE TEAM
SAN 136-1, AMI-RI , BUBAL-EUP, ICHEON-SI, KYOUNGKI-DO, 467-701, KOREA
TEL : +82 31 639 8518 FAX : +82 31 639 8525

CERTIFICATION

Manufacture;
CORNEA TECHNOLOGY CO ., Ltd.

Rm#402, Burim Bldg, 1602-9 Kwanyang-dong
Dongan-gu, Anyang-shi, Kyunggi-do, KOREA
CORNEA FRN : 0006-5809-55

Date of Issue: OCTOBER 2, 2002
Test Report No.: HCT-F02-1002

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

FCC ID : **PL4CT1904**

MODEL / TYPE : **CT1904**

FCC Rule Part(s):	**Part 15 & 2; ET Docket 95-19**
Classification:	**FCC Class B Peripheral Device (JBP)**
Standard(s):	**FCC Class B: 2001**
Equipment(EUT) Type:	**19" LCD Monitor**
Max Resolution:	**1280 X 1024 Non-interlaced (@80KHz/ 75Hz)**
Port/ Connector(s)	**15-pin D-sub VGA connector, 20-pin DVI-D (Digital RGB), AUDIO IN/OUT**

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

TABLE OF CONTENTS

PAGE

HYUNDAI CALIBRATION & CERTIFICATION TECHNOLOGIES CO., LTD.
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1. GENERAL INFORMATION

1.1 Product Description

The CORNEA TECHNOLOGY CO., LTD. Model CT1904 (referred to as the EUT in this report) is a 19"LCD Monitor with HOR. Freq. 80KHz (Max) and Resolution of 1280 X 1024 (Non-Interlaced). 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, 14.318MHz**
POWER REQUIREMENT	**AC 100-240V, 50/60 Hz Input 12V, 5A Max DC Output**
MAX. RESOLUTION	**1280 X 1024 NON-INTERLACED (@80KHz/ 75Hz)**
H-SYNC FREQUENCY RANGE	**31.5KHz □ 80KHz**
V-SYNC FREQUENCY RANGE	**56Hz □ 75Hz**
LCD TYPE	**19" (LCD Type :LTM190E1-L01)**

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)	CORNEA TECHNOLOGY CO., LTD.	CT1904	PL4CT1904	HOST
PC(HOST)	H/P	KR20803647	DoC	N/A
VIDEO CARD	ATI	ATI RADEON VE DDR	DoC	HOST
KEY BOARD	H/P	5181	DoC	HOST
MOUSE	MicroSoft	IntelliMouse	DoC	HOST
PRINTER	H/P	C6410A	DoC	HOST
MODEM	3COM CORPORATION	56K FAX MODEM	DoC	HOST
EAR PHONE	H/P	Tsound	-	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 3 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)

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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	CORNEA TECHNOLOGY CO., LTD.	1000000035
POWER BOARD	NEO ELECERONICS Inc.	1050000025
OSD BOARD	CORNEA TECHNOLOGY CO., LTD.	1050000024
INVERTOR BOARD	CORNEA TECHNOLOGY CO., LTD.	1070000020
LCD BOARD	SAMSUNG ELECTRONICS CO.,LTD.	LTM190E1-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.

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2.3 Cable Description

	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
MONITOR(EUT)	N	Y	1.8(P), 1.5(D)
PC(HOST)	N	N/A	1.8(P)
PRINTER	N	Y	2.0(P),1.8(D)
KEY BOARD	N/A	Y	2.0(D)
MODEM	N	Y	2.0(P),0.8(D)
MOUSE	N/A	Y	1.8(D)
AUDIO IN	N/A	N	1.5(D)
AUDIO OUT	N/A	N	3.0(D)

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

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

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
MONITOR(EUT)	Y	PC END	Y	PC END
PRINTER	N	N/A	Y	BOTH END
KEY BOARD	Y	PC END	Y	PC END
MODEM	N	N/A	Y	BOTH END
MOUSE	N	N/A	Y	PC END
AUDIO IN	N	PC END	Y	BOTH END
AUDIO OUT	N	EAR PHONE	Y	PC END

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2.5 Equipment Modifications

N/A

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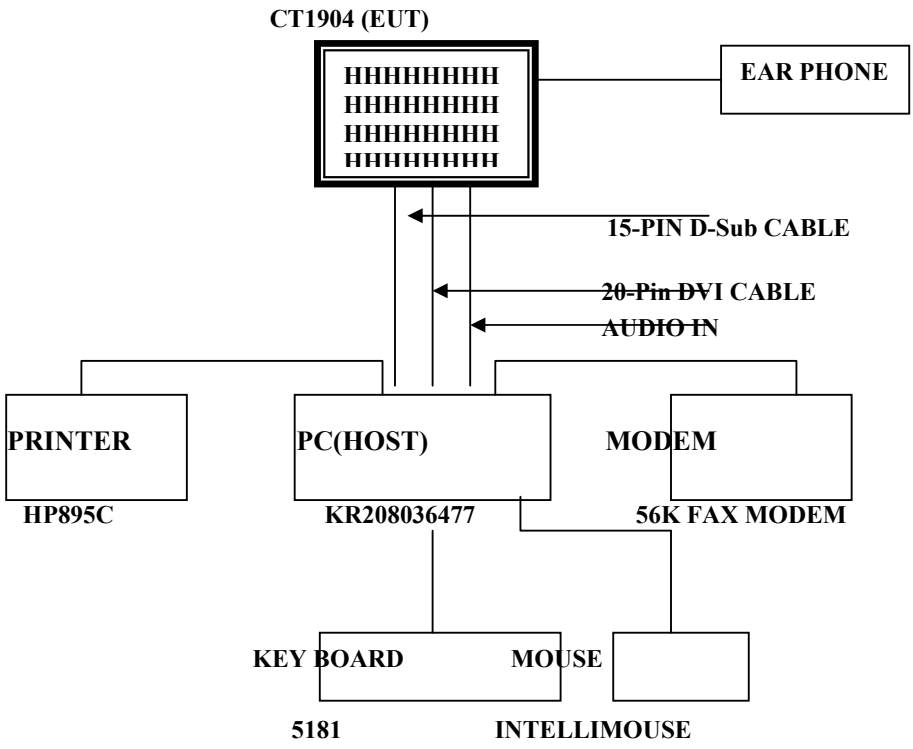
2.6 Configuration of Test system

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	1280 X 1024 Non-Interlaced (80KHz/75Hz)	X
	1024 x 768 Non-Interlaced (60KHz/75Hz)	
	1024 x 768 Non-Interlaced (56.6KHz/70Hz)	
	800 x 600 Non-Interlaced (46.9KHz/75Hz)	
	800 x 600 Non-Interlaced (37.9KHz/60Hz)	
	640 x 480 Non-Interlaced (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 1GHz	1280 X 1024 Non-Interlaced (80KHz/75Hz)	X
	1024 x 768 Non-Interlaced (60KHz/75Hz)	
	1024 x 768 Non-Interlaced (56.6KHz/70Hz)	
	800 x 600 Non-Interlaced (46.9KHz/75Hz)	
	800 x 600 Non-Interlaced (37.9KHz/60Hz)	
	640 x 480 Non-Interlaced (31.5KHz/60Hz)	

NOTE:

The monitor(EUT) has video interface ports(15-pin D-sub VGA connector and 20-pin DVI-D (Digital RGB), to support graphics.
So the test were performed with each video interface port. The final measurement was performed with VGA 15 pin D-sub video interface port that produce the worst case emission.

Measured by : Kyoung-Houn SEO / Engineer **Date : SEPTEMBER 22, 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 : 36% Temperature : 23 □
Limit apply to : FCC PART 15 SUBPART B
Type of Tests : CLASS B
Date : OCTOBER 1, 2002
Result : PASSED BY -9.6 dB

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EUT : 19" LCD MONITOR
Operating Condition : 1280 X 1024 Non-Interlaced (Hf : 80KHz, Vf : 75Hz)
Detector : Quasi-Peak (6 dB Bandwidth : 9 KHz)

Line Conducted Emission Tabulated Data

Power Line Conducted Emissions			FCC CLASS B		
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)	Detector Mode
3.285	38.4	HOT	48.0	9.6	QUASI-PEAK
3.415	38.2	NEUTRAL	48.0	9.8	QUASI-PEAK
3.540	37.2	HOT	48.0	10.8	QUASI-PEAK
3.745	36.7	NEUTRAL	48.0	11.3	QUASI-PEAK

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 1, 2002**

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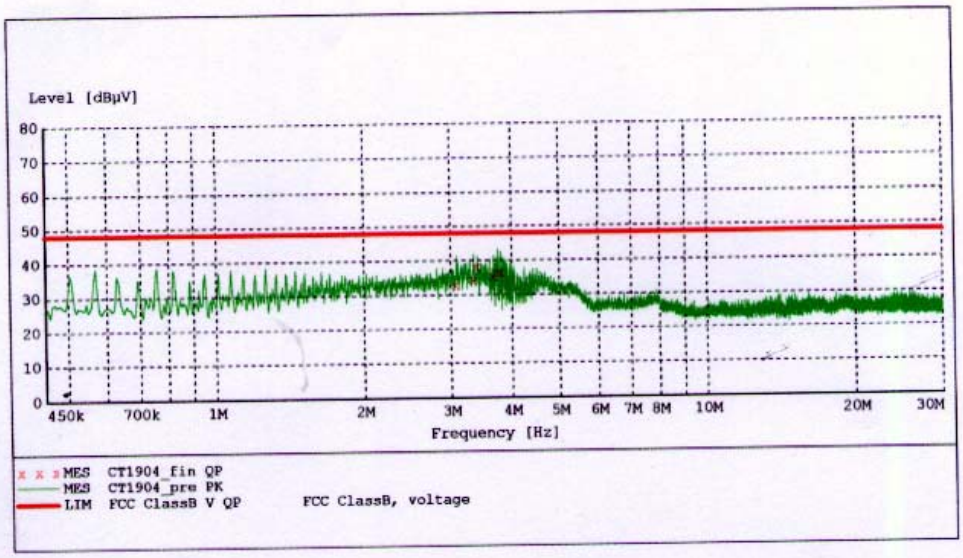
HYUNDAI C-TECH
EMC Testing Laboratory

EUT:	CT1904
Manufacturer:	CORNEA
Operating Condition:	1280 X 1024 75Hz
Test Site:	SHIELD ROOM
Operator:	KH-SEO
Test Specification:	FCC CLASS B
Comment:	N
Start of Test:	10/1/02 / 6:51:32PM

SCAN TABLE: "FCC ClassB Voltage"

Short Description: FCC ClassB Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
450.0 kHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	CABLE LOSS (NEW)



MEASUREMENT RESULT: "CT1904_fin QP"

10/1/02 6:53PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
3.095000	32.80	10.6	48	15.2	1	---
3.355000	34.40	10.7	48	13.6	1	---
3.415000	38.20	10.7	48	9.8	1	---
3.680000	35.40	10.7	48	12.6	1	---
3.745000	36.70	10.7	48	11.3	1	---
3.805000	36.50	10.7	48	11.5	1	---

Page 1/1 10/1/02 6:53PM CT1904

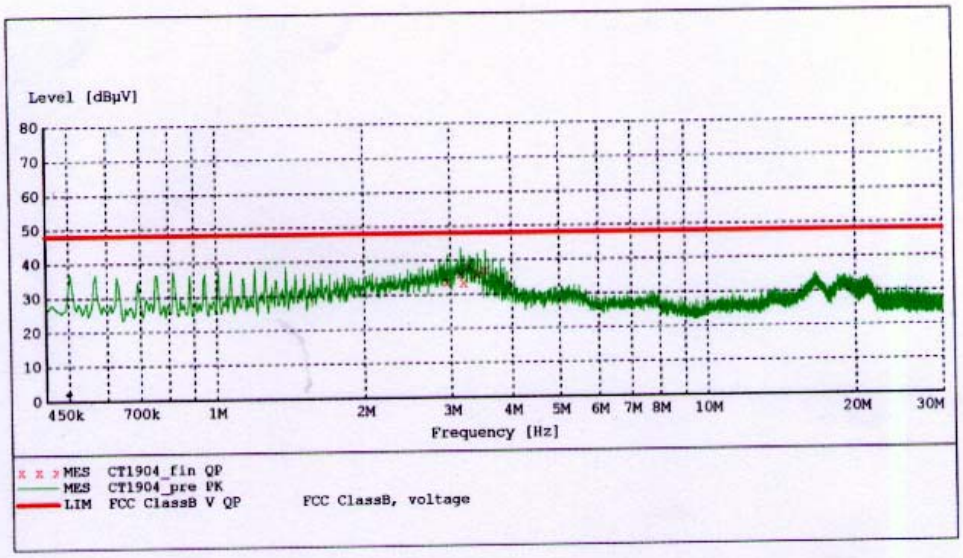
HYUNDAI C-TECH
EMC Testing Laboratory

EUT:	CT1904
Manufacturer:	CORNEA
Operating Condition:	1280 X 1024 75Hz
Test Site:	SHIELD ROOM
Operator:	KH-SEO
Test Specification:	FCC CLASS B
Comment:	H
Start of Test:	10/1/02 / 6:54:35PM

SCAN TABLE: "FCC ClassB Voltage"

Short Description: FCC ClassB Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
450.0 kHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	CABLE LOSS (NEW)



MEASUREMENT RESULT: "CT1904_fin QP"

10/1/02 6:56PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
2.970000	33.70	10.6	48	14.3	1	---
3.160000	36.00	10.6	48	12.0	1	---
3.200000	33.50	10.6	48	14.5	1	---
3.285000	38.40	10.7	48	9.6	1	---
3.415000	36.10	10.7	48	11.9	1	---
3.540000	37.20	10.7	48	10.8	1	---

Page 1/1 10/1/02 6:56PM CT1904

4.3 Radiated Emissions Tests

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

Humidity Level : 37 % **Temperature : 25 □**
Limit apply to : FCC PART 15 SUBPART B
Type of Tests : CLASS B
Date : SEPTEMBER 30, 2002
Result : PASSED BY -3.0 dB

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EUT : 19" LCD MONITOR
Operating Condition : 1280 X 1024 Non-Interlaced (Hf :80 kHz, Vf : 75 Hz)
Detector : Quasi-Peak (6 dB Bandwidth : 120 KHz)

Frequency	Reading	Ant. Factor	Cable Loss	ANT POL	Total	Limit	Margin
MHz	dBuV	dB	dB	(H/V)	dBuV/m	dBuV/m	dB
109.7	23.12	11.60	1.18	V	35.9	43.5	-7.6
146.8	20.25	14.67	1.18	V	36.1	43.5	-7.4
165.0	20.74	14.86	1.40	V	37.0	43.5	-6.5
183.2	16.79	15.21	1.40	H	33.4	43.5	-10.1
201.5	17.11	15.83	1.56	V	34.5	43.5	-9.0
219.7	18.63	16.71	1.56	V	36.9	46.0	-9.1
329.8	25.24	16.06	1.80	V	43.1	46.0	-2.9
366.5	22.43	16.57	1.80	H	40.8	46.0	-5.2
440.0	23.00	17.15	2.25	V	42.4	46.0	-3.6
545.0	20.80	19.15	2.55	V	42.5	46.0	-3.5
616.8	18.22	21.08	2.80	V	42.1	46.0	-3.9
767.3	18.18	22.72	3.00	H	43.9	46.0	-2.1

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

Measured by : Kyoung-Houn SEO / Engineer **Date : SEPTEMBER 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	2002.7.16
EMI Test Receiver	Rohde & Schwarz	ESVP	2002.7.16
EMI Test Receiver	Rohde & Schwarz	ESI40	2001.11.5
EMI Test Receiver	Rohde & Schwarz	ESVS30	2002.7.16
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	2002.9.1
LISN	EMCO	3825/2	2002.2.7
LISN	Rohde & Schwarz	ESH2-Z5	2002.8.12
Amplifier	Hewlett-Packard	8447E	2002.9.1
Dipole Antennas	Rohde & Schwarz	VHAP	2002.7.16
Dipole Antennas	Rohde & Schwarz	UHAP	2002.7.16
Biconical Antenna	Rohde & Schwarz	BBA-9106	2002.7.12
Log-Periodic Antenna	Rohde & Schwarz	UHALP-9107	2002.7.12
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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