MEASUREMENT / TECHNICAL REPORT

HYUNDAI ELECTRONICS INDUSTRIES CO.,LTD.

MODEL : F790D

This report concerns(check one) : Original grant_X_Class change

Equipment type : CRT MONITOR

Deferred grant requested per 47 CFR 0.457(d)(1)( ) ? yes___no_X

If yes, defer until:

____ agrees to notify the Commission by

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by : Ki-Soo Kim Manager of QA Office

Company : HYUNDAI ELECTRONICS INDUSTRIES CO., LTD.
Address : SAN 136-1, AMI-RI, BUBAL-EUP, ICHEON-SI, KYOUNGKI-DO, KOREA
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1. GENERAL INFORMATION

HYUNDAI ELECTORONICS INDUSTRIES CO., LTD. CORP QA OFFICE /QUALITY MANAGEMENT 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

1.1 Product Description

The Hyundai Electronics Industries Co., Ltd. Model F790D (referred to as the EUT in this report) is a 17"COLOR CRT Monitor HOR. Freq. 93.8 KHz w/max. Resolution of 1600X1200 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)	**12 MHz**
CHIPSET BRAND AND PART NO.	**WELTREND : 3205001327** **NATIONAL SEMICO: ULM431ACZT** **TOSHIBA: 3331100041** **FAIRCHILD KOREA: ULM358N** **MICRO CHIO: 3203000753** **FAIRCHILD KOREA: UKA3842B** **PFILIPS KOREA: 3200001408** **FAIRCHILD KOREA: ULM7805CT**
POWER REQUIREMENT	**100 - 240 VAC 50/60Hz 2.5A**
NUMBER OF LAYERS	**MAIN BOARD 1 LAYER** **CRT BOARD 1 LAYER**
MAX. RESOLUTION	**1600 X 1200 NON-INTERLACED (@93.8 KHz/75 Hz)**
H-SYNC FREQUENCY RANGE	**30KHz 96KHz**
V-SYNC FREQUENCY RANGE	**50 Hz 150Hz**
CRT SIZE	**17" (CRT Type :SAMSUNG M41QCJ761X171)**

1.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

1.3 Tested System Details

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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)	HYUNDAI	F790D	CKLC17F06090	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	M-S34	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

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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	HYUNDAI	3040100863
CRT BOARD	HYUNDAI	304910086301

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)
PC(HOST)	N	N/A	1.8(P)
MONITOR(EUT)	N	Y	1.8(P), 1.5(D)
PRINTER	N	Y	2.0(P),1.5(D)
KEY BOARD	N/A	Y	2.0(D)
MODEM	N	Y	2.0(P),1.5(D)
MOUSE	N/A	Y	1.8(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	BOTH END	Y	BOTH END
PRINTER	N	N/A	Y	BOTH END
KEY BOARD	Y	PC END	N	N/A
MODEM	N	N/A	Y	BOTH END
MOUSE	N	N/A	N	N/A

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2.5 Equipment Modifications

N/A

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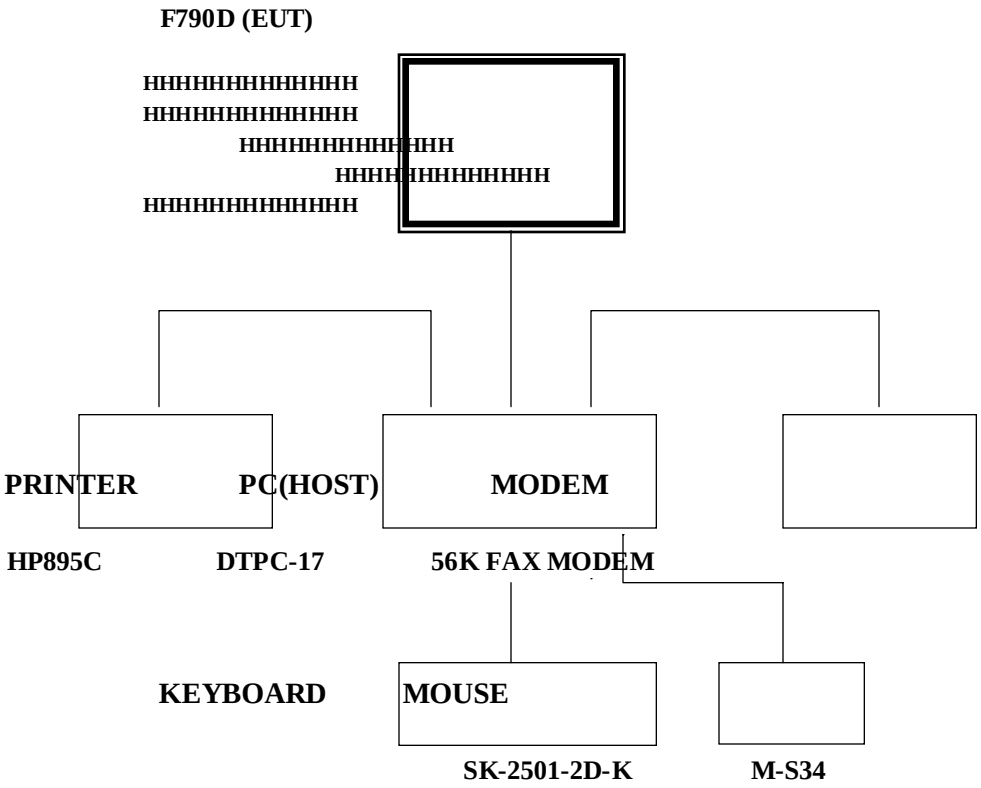
2.6 Configuration of Test system

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 350 MHz	1024 x 768 Non-Interlaced (68.7KHz/85Hz)	
Pentium 350 MHz	800 x 600 Non-Interlaced (53.7 KHz/85Hz)	
Pentium 350 MHz	640 x 480 Non-Interlaced (50.6 KHz/100Hz)	
Pentium 350 MHz	1280x1024 Non-Interlaced (91.9 KHz/85Hz)	
Pentium 350 MHz	1600x1200 Non-Interlaced (93.8KHz/75Hz)	X

4.2 Radiated Emission Tests

Processor Speed (MHz)	Video Resolution (w/max)	The worst operating condition
Pentium 350 MHz	1024 x 768 Non-Interlaced (68.7KHz/85Hz)	
Pentium 350 MHz	800 x 600 Non-Interlaced (53.7 KHz/85Hz)	
Pentium 350 MHz	640 x 480 Non-Interlaced (50.6 KHz/100Hz)	
Pentium 350 MHz	1280x1024 Non-Interlaced (91.9 KHz/85Hz)	
Pentium 350 MHz	1600x1200 Non-Interlaced (93.8KHz/75Hz)	X

Tested by KEUN HO, PARK / Engineer **Date : SEP. 1, 2000**

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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 : 34% Temperature : 24
Limit apply to : CISPR 22
Type of Tests : CLASS B
Date : SEP. 2, 2000
Result : PASSED BY –3.3 dB
EUT : 17" CRT MONITOR

Operating Condition : 1600 X1200 Non-Interlaced (Hf : 93.8 KHz, 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
0.190	57.0	N	64	-7.0	Quasi-peak
0.190	49.50	N	54	-4.6	Average
0.185	59.5	H	64	-4.5	Quasi-peak
0.190	50.7	H	54	-3.3	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 : KEUN HO, PARK / Engineer Date : SEP. 2, 2000

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HYUNDAI CALIBRATION & CERTIFICATION TECH. LTD. EMC LAB
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EUT: F790D(#1)
Manufacturer: HYUNDAI ELECTRONICS INS.CO.,LTD.
Operating Condition: 1600 x 1200 Vf : 75Hz
Test Site: shield room
Operator: K.H. PARK

Comment: N
Start of Test: w/o PFC

SCAN TABLE: "EN 55022 V SJ" EN 55022 Voltage
Short Description:

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	C/E FACTOR

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MEASUREMENT RESULT: "F790D_fin QP"

9/2/00 11:19AM

Frequency MHz	Level dBµV	Trenad dB	Limit dBµV	Margin dB	Line	PE
0.190000	57.00	1.0	64	7.0	1	---
0.280000	51.30	1.0	61	9.6	1	---
16.685000	51.10	2.1	60	8.9	1	---

MEASUREMENT RESULT: "F790D_fin AV"

9/2/00 11:19AM

Frequency MHz	Level dBµV	Trenad dB	Limit dBµV	Margin dB	Line	PE
0.190000	49.50	1.0	54	4.6	1	---
0.280000	42.80	1.0	51	8.0	1	---
16.705000	31.00	2.1	50	19.0	1	---

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EUT: F790D(#1)
Manufacturer: HYUNDAI ELECTRONICS INS.CO.,LTD.
Operating Condition: 1600 x 1200 Vf : 75Hz
Test Site: shield room
Operator: K.H. PARK

Comment: H
Start of Test: w/o PFC

SCAN TABLE: "EN 55022 V SJ" EN 55022 Voltage
Short Description:

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	C/E FACTOR

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MEASUREMENT RESULT: "F790D_fin QP"

9/2/00 11:58AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.185000	59.80	1.0	64	4.5	1	---
0.280000	49.40	1.0	61	11.5	1	---
0.375000	47.40	1.0	58	11.0	1	---

MEASUREMENT RESULT: "F790D_fin AV"

9/2/00 11:58AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.190000	50.80	1.0	54	3.3	1	---
0.280000	45.00	1.0	51	5.8	1	---
0.375000	42.60	1.0	48	5.8	1	---

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4.2 Radiated Emissions Tests

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

Humidity Level : 32 % Temperature : 27
Limit apply to : CISPR 22
Type of Tests : CLASS B
Date : SEP. 8, 2000
Result : PASSED BY -4.0 dB

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EUT : 17" CRT MONITOR
Operating Condition : 1600 X 1200 Non-Interlaced (Hf :93.8 kHz, Vf : 75 Hz)
Detector : CISPR Quasi-Peak (6 dB Bandwidth : 120 KHz)

Frequency MHz	Reading dBuV	Ant. Factor dB	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dB	Margin dB
40.4	8.84	15.26	1.30	V	25.4	30.0	-4.6
55.7	15.17	9.23	1.60	V	26.0	30.0	-4.0
60.6	16.92	7.18	1.70	V	25.8	30.0	-4.2
445.0	7.09	17.21	4.60	V	28.9	37.0	-8.1
445.0	6.59	17.21	4.60	V	28.4	37.0	-8.6
465.6	7.49	17.91	4.80	V	30.2	37.0	-6.8
465.6	5.19	17.91	4.80	V	27.9	37.0	-9.1
505.7	5.14	18.66	4.90	V	28.7	37.0	-8.3
505.7	4.44	18.66	4.90	H	28.0	37.0	-9.0

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.
3. The EUT was test up to 2GHz and no significant emission was found.

Measured by : KEUN HO, PARK / Engineer Date : SEP. 8, 2000

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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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