EMC - Test Report

Model: E17DL

FCC ID	**MSA720A**		
Product type	**CRT Monitor**	**Serial No.**	**-**
Applicant	**Hansol Electronics Inc.**		
Address	**27-29, Hanchon-Ri, Ducksan-Myun, Jinchon-Gun, Chungbuk, 365-840, Korea.**		
Manufacturer	**Hansol Electronics Inc.**		
Address	**27-29, Hanchon-Ri, Ducksan-Myun, Jinchon-Gun, Chungbuk, 365-840, Korea.**		

Test specification (Standard) : **FCC Part15 Subpart B Class B**

Test Result : **In compliance**

Tested by
(Test engineer)

2000-12-29 Young Joon, Park
Date Name Signature

Reviewed by
(EMC Technical Manager)

2000-12-29 James, Hong
Date Name Signature

Definition ☒ : Applicable, ☐ : Not Applicable, **N/A** : Not Applicable, **-** : Not Applicable

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Table of contents

1. EUT description

Introduction

E17DL is a CRT type 17" color monitor. Include USB type PC Camera.

Identification

Receipt date : 2000-12-18

Model : E17DL

Manufacturer : Hansol Electronics Inc.

Address : 27-29, Hanchon-Ri, Ducksan-Myun, Jinchon-Gun, Chungbuk, 365-840, Korea.

Contact person : Sun-Pil, Yang

Telephone : +82 - 43 - 530 - 8503

Serial No : -

EUT size : 418mm(W) x 424.3mm(D) x 435mm(H)

Peripheral Device Ports

Port name	Description
VIDEO	Connect to PC Video port (for Monitor)
USB	Connect to PC USB port (for USB PC Camera)
POWER	Connect to AC Power

Electrical rating

Input : AC 100-240Volt (60/50Hz) / USB PC Camera - Power by PC USB port (5V)

Output : -

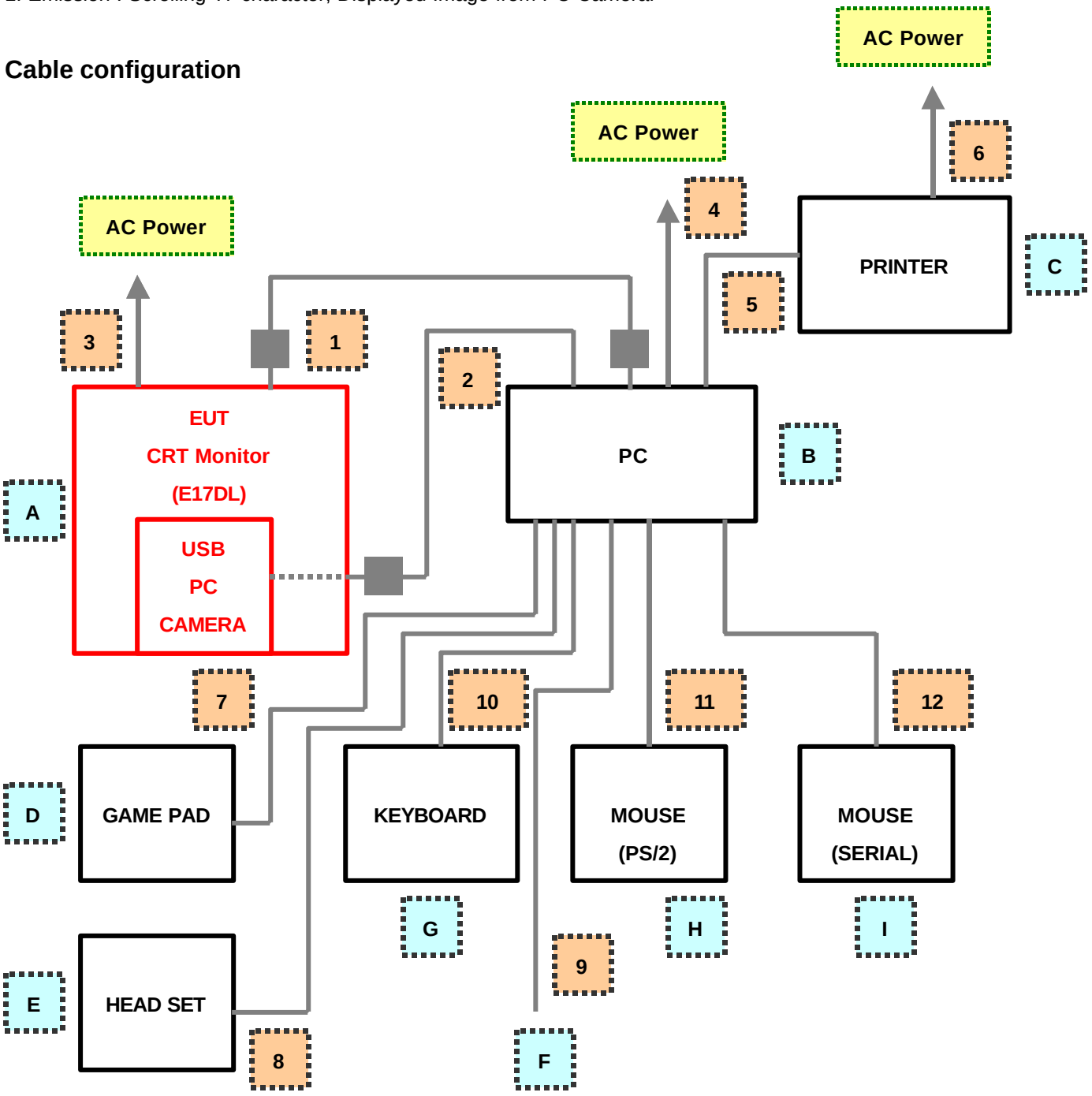
2. Test Set-up

Test Mode

- Normal operation mode : 1280 x 1024 @60Hz

1. Emission : Scrolling 'H' character, Displayed Image from PC Camera.

Cable configuration



Cable description

	Cable name	Type	Length (m)	Remark
1	Video Cable	Shielded	1.6	Ferrite core
2	USB Cable	Shielded	1.6	Ferrite core
3	EUT AC Power Cable	Unshielded	2.0	-
4	PC Power Cable	Unshielded	2.0	-
5	Parallel Cable	Shielded	2.0	-
6	Printer Power Cable	Unshielded	2.0	-
7	Game Pad Cable	Unshielded	2.0	-
8	Head Set Cable	Unshielded	2.0	-
9	Line In Cable	Unshielded	2.0	-
10	Keyboard Cable	Unshielded	2.0	-
11	Mouse (PS/2) Cable	Unshielded	2.0	-
12	Mouse (Serial) Cable	Unshielded	2.0	-

Auxiliary equipment

	Description	Model name	Serial No.	Manufacturer	FCC ID or DoC Info
A	CRT Monitor	E17DL	-	HANSOL	MSA720A
B	PC	DTPC-17	G1703009	HEWLETT PACKARD	DoC
C	Printer	C6455A	MY08Q1B09ZHP	HEWLETT PACKARD	DoC
D	Game pad	Side Winder	03421317	MICROSOFT	C3KMGP1
E	Headset	Hi-sonic	-	-	N/A
F	Line In Cable	-	-	-	N/A
G	Keyboard	SK-2502C	M000351491	HEWLETT PACKARD	DoC
H	Mouse (PS/2)	M-S48	LZA84601000	LOGITECH	JNZ201213
I	Mouse (Serial)	M-S48	LZA91153127	SOTEC	DZL211153

Test software

Software name	Manufacturer	Version	Description
HANSOL Viewer	HANSOL	1.0	Display Image
EMC Test	Compaq Computer	1.0	Scrolling 'H' character

Measurement Procedures

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested.
Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test) Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.
Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-1992 7.2.3, 7.2.4 and 8.3.1.1, 8.3.1.2

3. Test Result

Test summary

Test	Result	Remark
Emission test (EMI)		
Radiated emission	**Met**	
Conducted emission *(Monitor Power)*	**Met**	
Conducted emission *(PC Power)*	**Met**	

Measurement uncertainty (k=2)

150kHz~30MHz: ±2.68, 30MHz~300MHz: +4.58, -4.66, 300MHz ~ 1GHz: +3.78, -3.74

Uncertainty parameter was calculated according to ' NAMAS Publication NIS 80'

The tested E17DL fully meets the Requirements of ANSI C63.4-1992 , when operated as described in this report.

Radiated emission

Test result: **Met**

Date of testing : 2000-12-27

Ambient temperature: 6°C, Relative humidity: 32%, Atmospheric pressure: 1000hPa(mbar)

Test site type: Open area test site

Reference Standard: FCC Part15 Subpart B , Class B

Test and measurement equipment (Main equipment)

Model name	Manufacturer	Description	Serial No.
3146	EMCO	Biconical antenna	9607-4567
3110B	EMCO	Log-periodic antenna	9607-2564
ESVS30	Rohde Schwarz	Field strength meter	826638/008

Frequency Band 30MHz - 1000MHz

Instrument settings IF Band Width : 120KHz

Antenna distance 3m (From the EUT)

Test data sheet (Quasi-Peak reading)

Frequency	Reading	Pol.	Height	Correction Factor		Limits	Result	Margin
[MHz]	[dBuV/m]		[m]	Antenna	Cable	[dBuV/m]	[dBuV/m]	[dB]
48.25	23.7	V	1.0	10.28	0.60	40.0	34.62	5.38
84.02	19.8	H	3.0	9.35	0.90	40.0	30.01	9.99
119.88	22.0	H	4.0	11.30	1.10	43.5	34.44	9.06
144.12	19.7	V	1.0	12.30	1.40	43.5	33.36	10.14
210.20	14.8	H	4.0	15.90	1.80	43.5	32.49	11.01
212.90	14.2	V	1.0	16.10	1.80	43.5	32.09	11.41
384.02	18.1	H	2.0	15.40	2.70	46.0	36.20	9.80
457.55	18.7	V	1.0	16.94	3.30	46.0	38.98	7.02
529.30	20.6	H	2.0	18.14	3.50	46.0	42.26	3.74
552.01	18.4	H	2.1	18.30	3.50	46.0	40.20	5.80
601.02	17.7	H	2.0	19.00	3.70	46.0	40.43	5.57
648.35	15.9	V	1.0	20.20	3.80	46.0	39.93	6.07

Comment: -

Conducted emission (Monitor Power)

Test result: **Met**

Date of testing : 2000-12-27

Ambient temperature: 20°C, Relative humidity: 40%, Atmospheric pressure: 1005hPa(mbar)

Test site type: Shielded room

Reference Standard: FCC Part15 Subpart B , Class B

Test and measurement equipment (Main equipment)

Model name	Manufacturer	Description	Serial No.
3825/2	EMCO	LISN	9206-1971
ESHS30	Rohde Schwarz	Field strength meter	828144/002
-	-	-	-

Frequency Band 450KHz - 30MHz

Instrument settings IF Band Width : 9KHz

Test data sheet (Quasi-Peak reading)

Frequency	Correction Factor		Line	Quasi-peak				Average			
				Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
10.85	0.2	0.2	N	48.0	41.3	41.7	6.3				
10.92	0.2	0.2	N	48.0	42.5	42.9	5.1				
10.99	0.2	0.2	N	48.0	42.9	43.3	4.7				
11.06	0.2	0.2	N	48.0	43.0	43.4	4.6				
11.13	0.2	0.2	N	48.0	41.9	42.3	5.7				
11.33	0.2	0.2	N	48.0	42.7	43.1	4.9				
11.40	0.2	0.2	N	48.0	43.5	43.9	4.1				
11.47	0.2	0.2	N	48.0	43.4	43.8	4.2				
11.54	0.3	0.3	N	48.0	43.3	43.9	4.1				
11.61	0.3	0.3	N	48.0	43.1	43.7	4.3				
11.68	0.3	0.3	N	48.0	41.7	42.3	5.7				
11.95	0.3	0.3	N	48.0	40.6	41.2	6.8				

Comment: -

Conducted emission (PC Power)

Test result: **Met**

Date of testing : 2000-12-27

Ambient temperature: 20°C, Relative humidity: 40%, Atmospheric pressure: 1005hPa(mbar)

Test site type: Shielded room

Reference Standard: FCC Part15 Subpart B , Class B

Test and measurement equipment (Main equipment)

Model name	Manufacturer	Description	Serial No.
3825/2	EMCO	LISN	9206-1971
ESHS30	Rohde Schwarz	Field strength meter	828144/002
-	-	-	-

Frequency Band 450KHz - 30MHz

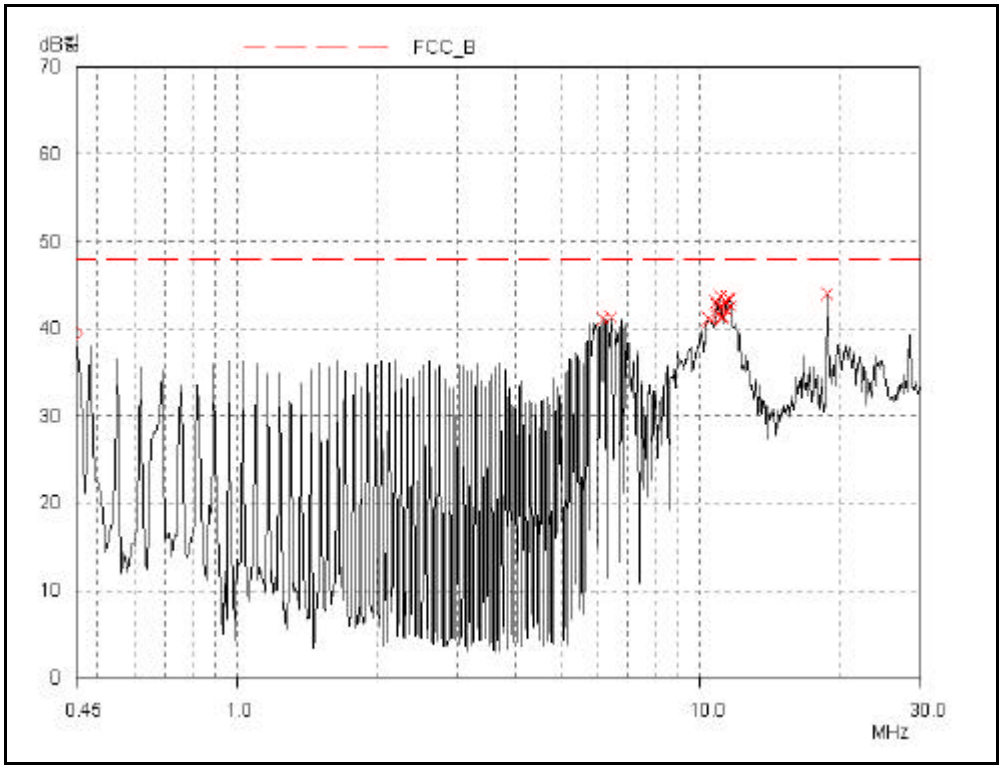
Instrument settings IF Band Width : 9KHz

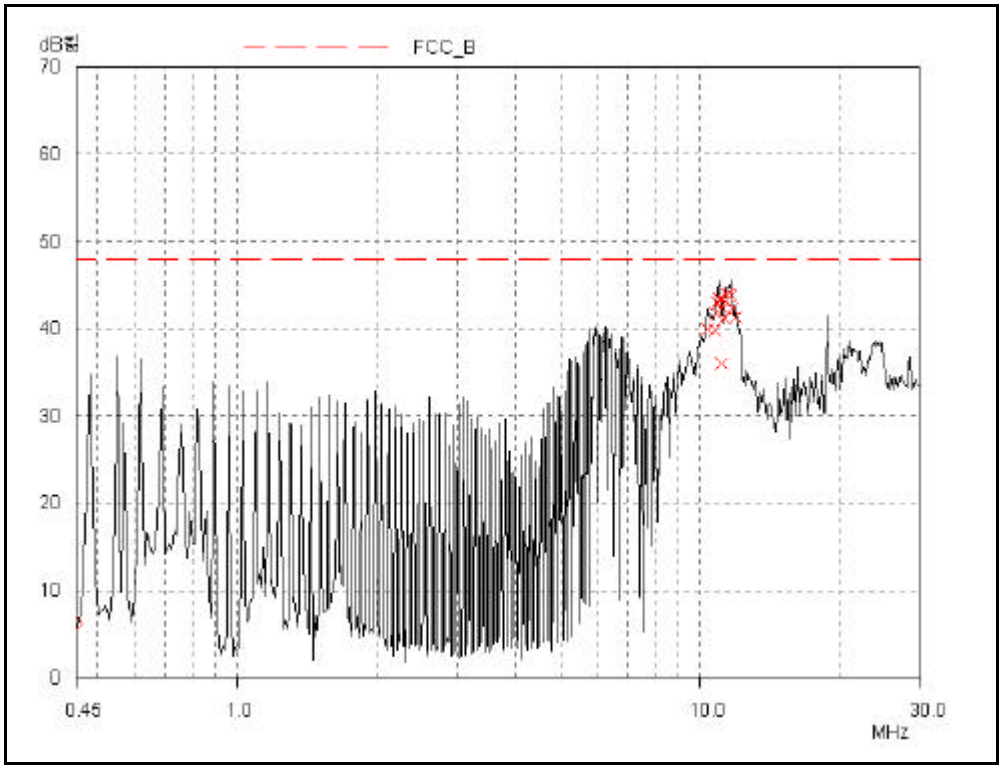
Test data sheet (Quasi-Peak reading)

Frequency	Correction Factor		Line	Quasi-peak				Average			
				Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
0.49	0.3	0.1	H	48.0	37.8	38.2	9.8				
0.59	0.2	0.1	H	48.0	36.2	36.5	11.5				
0.78	0.2	0.1	H	48.0	36.3	36.6	11.4				
0.88	0.2	0.1	H	48.0	37.4	37.7	10.3				
12.71	0.2	0.2	N	48.0	35.5	35.9	12.1				
12.91	0.2	0.2	N	48.0	36.7	37.1	10.9				
13.69	0.2	0.2	N	48.0	33.2	33.6	14.4				
13.79	0.2	0.2	N	48.0	33.3	33.7	14.3				
13.89	0.2	0.2	N	48.0	33.3	33.7	14.3				
14.18	0.2	0.2	N	48.0	33.3	33.7	14.3				
14.57	0.3	0.2	N	48.0	33.0	33.5	14.5				
14.67	0.3	0.2	N	48.0	33.1	33.6	14.4				

Comment: -

Test data graphic (Monitor Power)





Test data graphic (PC Power)