CERTiTEK

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EMC TEST REPORT For FCC

Test Report No.	:	CTK01-F131
Date of Issue	:	September 5, 2001
Model/Type No:	:	B15CF
Kind of Product	:	LCD Monitor
Applicant	:	Hansol Electronics Inc.
Applicant Address	:	27-29, Hanchon-Ri, Ducksan-Myun, Jinchon-Gun, Chungbuk, 365-840, Korea
Manufacturer	:	Hansol Electronics Inc.
Manufacturer Address	:	27-29, Hanchon-Ri, Ducksan-Myun, Jinchon-Gun, Chungbuk, 365-840, Korea
Contact Person	:	Mr. W. S. Lee
Telephone	:	+82-43-530-8503
Received Date	:	August 13, 2001
Test period	:	Start: August 13, 2001 End: August 31, 2001
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

The test results presented in this report relate only to the object tested.

CERTiTEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by

Michael Jang
EMC Test Engineer
Date: September 5, 2001

Reviewed by

Tony Kim
EMC Technical Manager
Date: September 5, 2001

REPORT REVISION HISTORY

Date	Revision	Page No
September 5, 2001	Issue	All

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1.0 General Product Description

The product is LCD Monitor which use one Adaptor.

1.0.1 Tested Equipment

☒ Unless otherwise indicated, all tests were conducted on Model B15CF.

☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions:	35.8 by 5.0 by 34.6	☒ cm ☐ in
Mobility:	☐ Hand-Held ☒ Table-top ☐ Floor-standing ☐	
Serial No.:	-	

1.0.3 Electrical Ratings

Input:	100-240VAC, 50/60Hz
Output:	12VDC, 3A, 36W

1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage:	120VAC
Frequency:	60Hz

1.0.5 Clock & Other Frequencies Utilized

14.318 MHz, 12MHz

1.1 Model Differences

Not applicable.

1.2 Device Modifications

The following modifications were necessary for compliance:

To keep the requirement of compliance

1. Will be used gasket on the shield chassis bottom side.
2. Core will be located at the end of Analog cable.
3. Core will be located at the end of Video cable.

1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID No.
PC	Hewlett Packard	DTPC-17	SG01501776	DOC
MOUSE1	SEJIN	SMB-200	5GCF008566	GJJS965M3
MOUSE2	SEJIN	SWB-400	4BDF030577	GJJS965C0
MOUSE3	Logitech	M-BB48	LZE93853176	DOC
MOUSE4	Logitech	M-BB48	LZE93853157	DOC
KEYBOARD	DIGITAL	60360403	RT4958TWKO	AQ6-MTN7Z15
DVD PLAYER	SAMSUNG	DVD-709	61KN400749	DOC
Game Pad	Microsoft	Sidewinder game pad	03426853	C3KMGP1
HEADSET	Hi-Sonic	-	-	-
PRINTER	Hewlett Packard	C4530A	US7A91703J	DOC

☒ Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	AC Power, Unshielded	No	1.8	Connect to AC Power from adaptor
2	AC Power, Unshielded	No	1.8	Connect to AC Power from PC
3	AC Power, Unshielded	No	1.8	Connect to AC Power from printer
4	AC Power, Unshielded	No	1.8	Connect to AC Power from DVD player
5	DC Power, Unshielded	Yes	1.8	For DC Power port
6	S-Video, Shielded	Yes	1.2	For S-Video port
7	Video, Unshielded	Yes	1.2	For Video port
8	Monitor cable, Shielded	Yes	1.8	Connect to PC
9	Printer cable, Shielded	No	1.8	Connect to PC
10	Mouse cable, Shielded	No	2.0	USB Type
11	Mouse cable, Shielded	No	2.0	USB Type
12	Mouse cable, Shielded	No	2.0	PS/2 Type
13	Mouse cable, Shielded	No	2.0	Serial Type
14	Keyboard cable, Shielded	No	2.0	-
15	Line in cable, Unshielded	No	2.0	-
16	Headset cable, Unshielded	No	2.0	-
17	Game Pad cable, Unshielded	No	2.0	-

n/a = not available

1.4 Test Software

☐ Pinging
☒ Name / Manufacturer / Version / Type of Pattern
- EMC Test / Compaq Computer / 1.0 / Scrolling 'H'

1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

☒ Test program (H-Pattern)
☐ Standby
☐ Practice operation
☒ With maximum resolution 1024 x 768 with 75 Hz.
☐ Test program (color bar)
☐ Test program (customer specific)

1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.7 Test Facility

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.8 Measurement Procedure

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 3 m). 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, 8.3.1.1, 8.3.1.2

1.9 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	**FCC**	3 and 10 meter Open Area Test Sites to perform FCC Part 15/18 measurements.	93250
JAPAN	**VCCI**	10 meter Open Area Test Site and one conducted site.	R-948, C-986
KOREA	**MIC**	10 meter Open Area Test Site and EMS (ESD, RS, EFT/Burst, Surge)	No. 51, KR0025
International	**KOLAS**	EMC	

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

☐ EN 50081-1 /1992

☐ EN 55011 /1998 ☐ Group 1 ☐ Group 2
☐ Class A ☐ Class B

☐ EN 55013 /A12:1994

☐ EN 55014 /1987 ☐ Household appliances and similar
☐ Portable tools
☐ Semiconductor devices

☐ EN 55014 /A2:1990

☐ EN 55014 /1993 ☐ Household appliances and similar
☐ Portable tools
☐ Semiconductor devices

☐ EN 55015 /1987
☐ EN 55015 /A1:1990
☐ EN 55015 /1993

☐ EN 55022 /A1:1995 ☐ Class A ☐ Class B

☐ EN 55022 /1998 ☐ Class A ☐ Class B

☐ EN 61000-3-2 /1995 (EN 60555 Part 2 /4.87)
☐ EN 61000-3-3 /1995 (EN 60555 Part 3 /4.87)

☐ BS

☐ VCCI V-3/99.05 : 1999 ☐ Class A ☐ Class B

☒ FCC Part 15 SUBPART B ☐ Class A ☒ Class B

☐ AS 3548 (1992) ☐ Class A ☐ Class B

☐ CISPR 11 (1990) ☐ Group 1 ☐ Group 2
☐ Class A ☐ Class B

☐ CISPR 22 (1993) ☐ Class A ☐ Class B

2.1 Conducted Voltage Emissions

Test Date
August 24, 2001

Test Location
EMI-CE: Shielded Room

Test Instruments

☒ Field Strength Meter	Rohde Schwarz	ESHS30	828144/002

Test Accessories

☒ LISN	EMCO	3825/2	9206-1971
☒ LISN	EMCO	3825/2	9409-2246
☐ LISN	EMCO	3825/2	9607-2574
☒ Control PC	HP	Vectra 500	SG72000192

Frequency Range of Measurement
☐ 150 kHz to 30 MHz
☒ 450 kHz to 30 MHz
☐ _____

Instrument Settings
IF Band Width: 9 kHz

Test Results
The requirements are:

☒ MET minimum margin is 11.9 dBµV at 3.29 MHz
☐ NOT MET limit exceeded by maximum of ___ dBµV at _____ MHz
☐ NOT APPLICABLE

Remarks
See Appendix B for test data.

2.2 Radiated Electric Field Emissions

Test Date
August 29, 2001

Test Location
☐ EMI-OATS: Testing was performed at a test distance of 10 m
☒ EMI-OATS: Testing was performed at a test distance of 3 m

Test Instruments

☒ Field Strength Meter	Rohde Schwarz	ESVS30	826638/008

Test Accessories

☐ Biconical Antenna	Schwarzbeck	BBA9106	41-00201
☒ Biconical Antenna	EMCO	3110B	9607-2564
☒ Log-periodic Antenna	EMCO	3146	9607-4567

Frequency Range of Measurement
30 MHz to 1 GHz

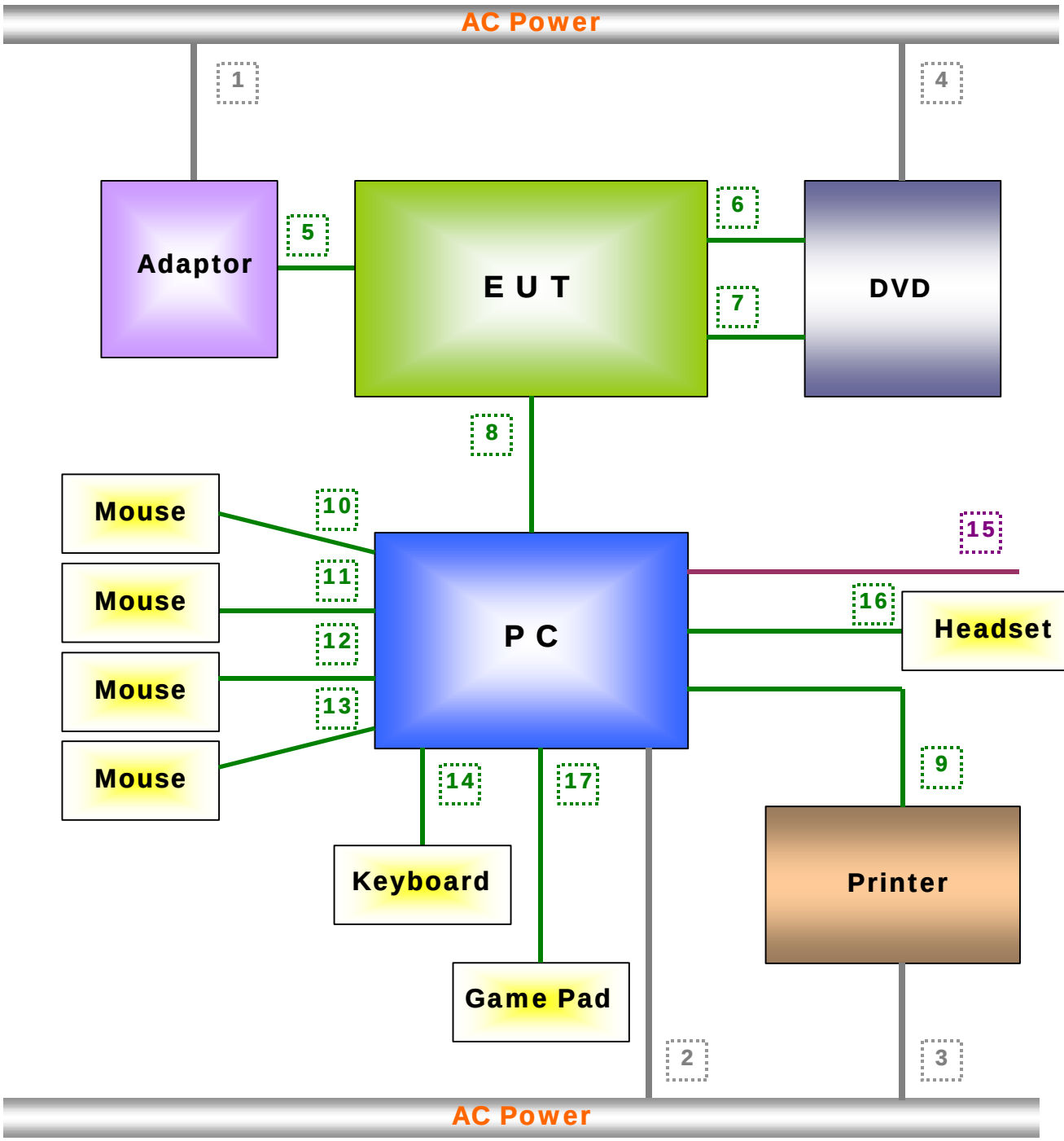
Instrument Settings
IF Band Width: 120 kHz

Test Results
The requirements are:

☒ MET	minimum margin is 5.98 dB (μV/m) at 408.068 MHz
☐ NOT MET	limit exceeded by maximum of ____ dB(μV/m) at _____ MHz
☐ NOT APPLICABLE	

Remarks
See Appendix B for test data

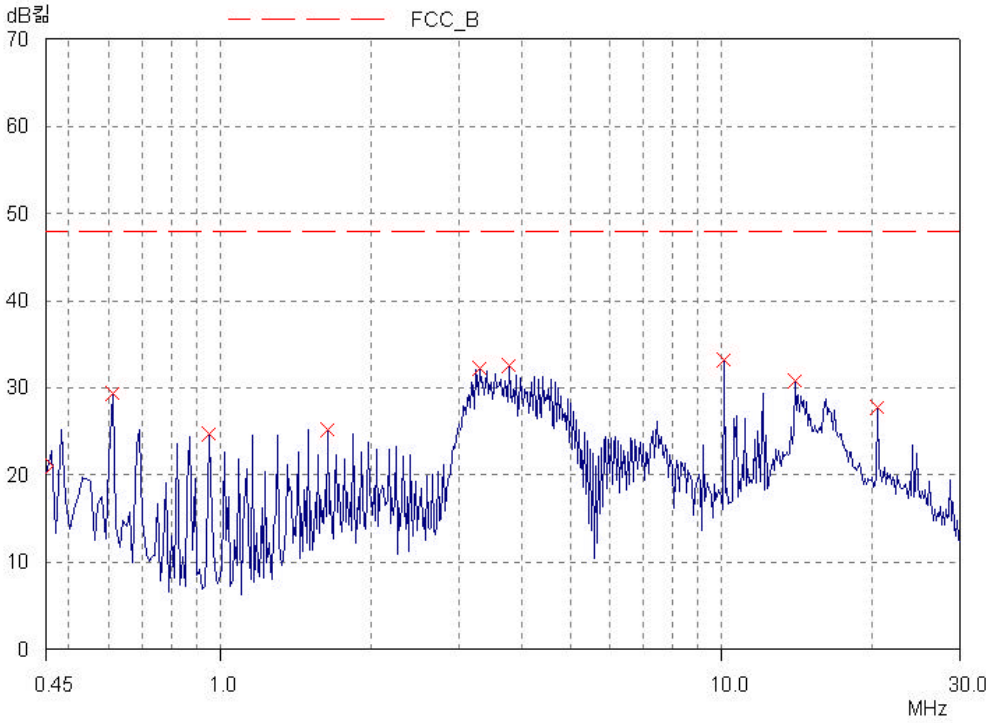
Configuration

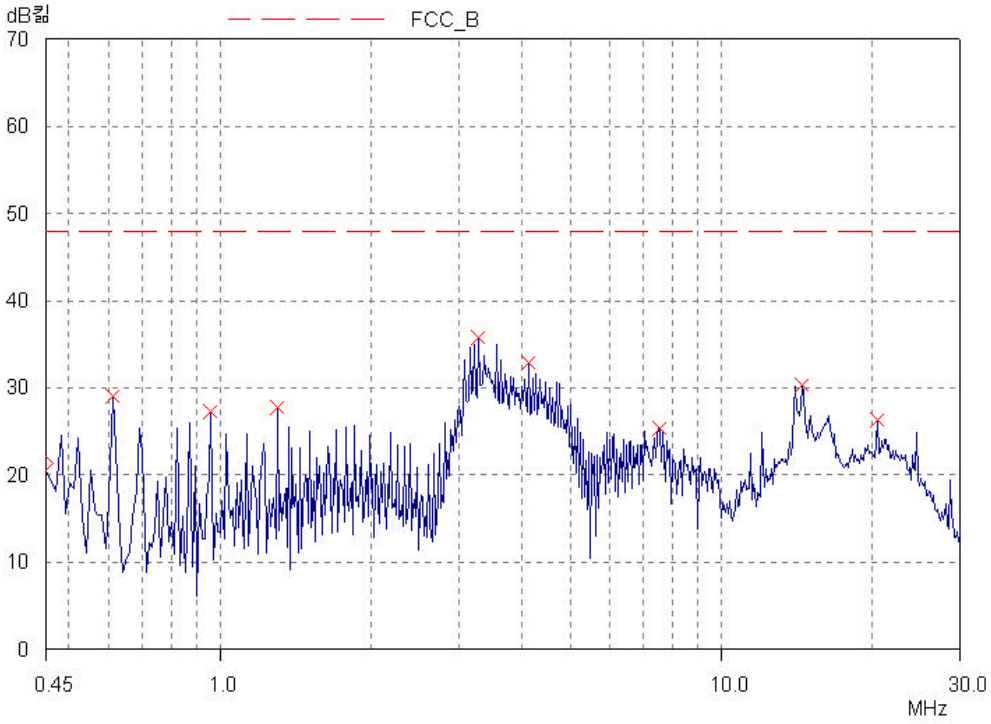


APPENDIX A – TEST DATA

Conducted Voltage Emissions (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]
0.61	0.2	0.1	H	48.0	29.3	29.6	18.4				
0.96	0.2	0.1	N	48.0	27.2	27.5	20.5				
1.30	0.2	0.1	N	48.0	27.8	28.1	19.9				
3.29	0.2	0.1	N	48.0	35.8	36.1	11.9				
3.75	0.3	0.1	H	48.0	32.6	33.0	15.0				
4.11	0.3	0.1	N	48.0	32.9	33.3	14.7				
10.07	0.3	0.2	H	48.0	33.2	33.7	14.3				
13.99	0.2	0.2	H	48.0	30.7	31.1	16.9				
20.43	0.5	0.3	H	48.0	27.7	28.5	19.5				





Radiated Electric Field Emissions (Quasi-Peak reading)

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
136.02	20.1	V	1.2	12.00	1.30	43.5	33.40	10.10
157.51	10.0	V	1.0	12.63	1.50	43.5	24.13	19.37
212.62	8.7	V	1.0	16.10	1.80	43.5	26.60	16.90
340.06	14.9	V	1.3	15.14	2.60	46.0	32.64	13.36
394.45	15.8	V	1.4	15.50	2.70	46.0	34.00	12.00
408.07	21.4	V	1.5	15.82	2.80	46.0	40.02	5.98
708.80	11.3	V	1.3	21.52	4.00	46.0	36.82	9.18
945.06	11.4	V	1.4	23.00	4.90	46.0	39.30	6.70
952.16	10.4	V	1.3	23.00	4.90	46.0	38.30	7.70