

## EMC TEST REPORT For FCC



Test Report No. : CTK02-F092

Date of Issue : July 24, 2002

Model/Type No: : DT-15NT, FS500T

Kind of Product : LCD Monitor (15")

Applicant : GMS Technology Inc.

Applicant Address : 67-1, Sukwoo-Ri, Dongtan-Myeon, Hwasung-City, Kyonggi-Do,  
445-811, Korea

Manufacturer : GMS Technology Inc.

Manufacturer Address : 67-1, Sukwoo-Ri, Dongtan-Myeon, Hwasung-City, Kyonggi-Do,  
445-811, Korea

Contact Person : Byung sang, Lim

Telephone : +82-31-377-1907

Received Date : June 10, 2002

Test period : Start: June 11, 2002 End: July 16, 2002

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

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

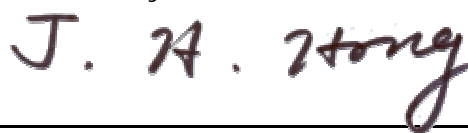
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Tested by



Michael Jang  
EMC Test Engineer  
Date: July 24, 2002

Reviewed by



James Hong  
EMC Technical Manager  
Date: July 24, 2002



CERTITEK

## CERTITEK Standards Laboratory Co., Ltd.

386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100

Tel: +82-31-339-9970 Fax: +82-31-339-9855

<http://www.certitek.com/>



### REPORT REVISION HISTORY

Date	Revision	Page No
July 24, 2002	Issued (CTK02-F092)	All

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## TABLE OF CONTENTS

1.0 General Product Description .....	4
1.1 Model Differences.....	4
1.2 Device Modifications .....	5
1.3 EUT Configuration(s) .....	7
1.4 Test Software .....	7
1.5 EUT Operating Mode(s) .....	7
1.6 Calibration Details of Equipment Used for Measurement .....	8
1.7 Test Facility .....	8
1.8 Measurement Procedure .....	8
1.9 Laboratory Accreditations and Listings .....	9
2.0 Emissions Test Regulations.....	10
2.1 Conducted Voltage Emissions .....	11
2.2 Radiated Electric Field Emissions .....	12
Configurations.....	13
APPENDIX A - TEST DATA.....	14
Conducted Voltage Emissions (Quasi-Peak reading) .....	14
Radiated Electric Field Emissions (Quasi-Peak reading) .....	16

## 1.0 General Product Description

### 1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model DT-15NT.
- ☒ Tests performed on Model DT-15NT were considered to be representative of Model(s) FS500T.

### 1.0.2 Equipment Size, Mobility and Identification

Dimensions: 375 by 350 by 27 ☒ mm ☐ in  
Mobility: ☐ Hand-Held ☒ Table-top ☐ Floor-standing  
☐ -  
Serial No.: Not applicable

### 1.0.3 Electrical Ratings

Input: Adaptor – AC 100-240V, 1.2A, 50-60Hz  
EUT – DC 12V, 3.5A  
Output: Adaptor – DC 12V, 3.5A  
EUT – Not applicable

### 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: AC 120V  
Frequency: 60Hz

### 1.0.5 Clock & Other Frequencies Utilized

AD Board : 14.31818MHz, 20.25MHz  
I/O Board : 18.432MHz

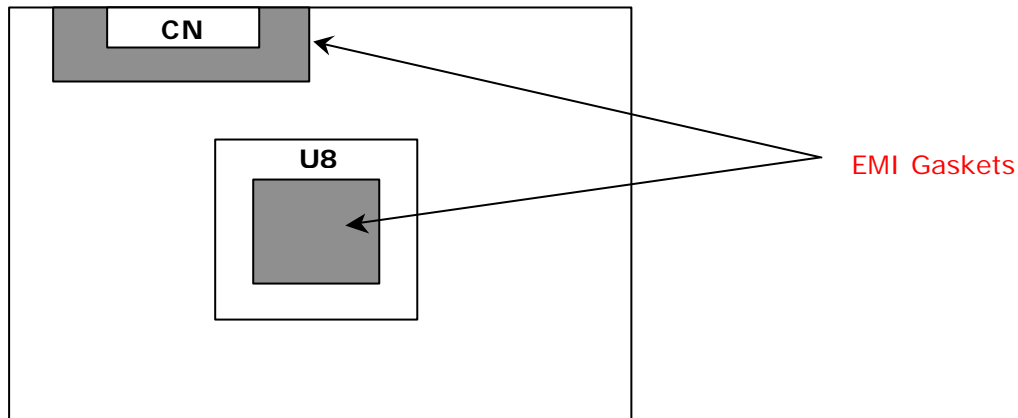
## 1.1 Model Differences

DT-15NT and FS500T are identical to each other only except for model designation for the marketing purpose.

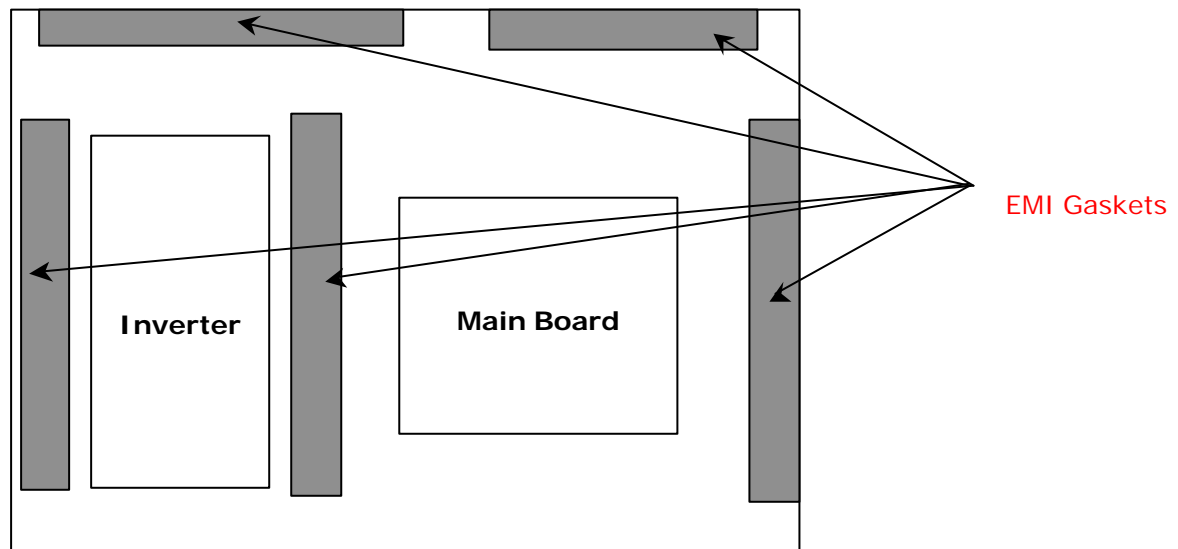
## 1.2 Device Modifications

The following modifications were necessary for compliance:

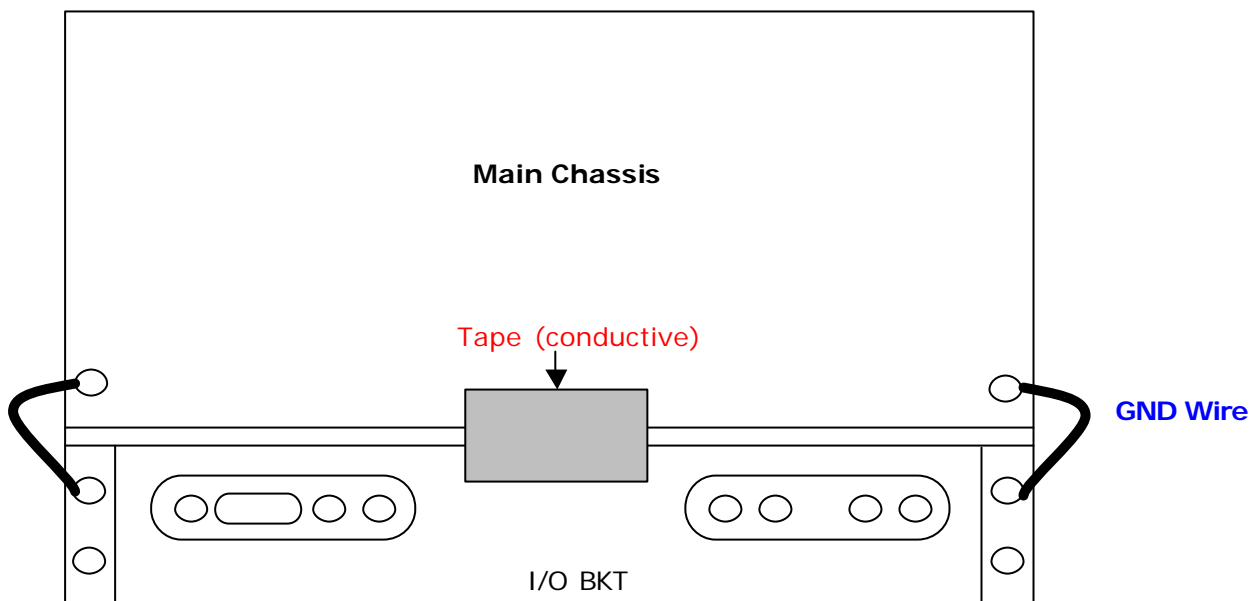
1. Gaskets will be used at the main-board as below points.



2. Gaskets will be used at the main-chassis as below points.



3. GND wire and Tape will be used between I/O BKT and Chassis as below.



### 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 or DoC
PC	HEWLETT PACKARD	DTPC-17	SG01501776	DoC
Keyboard	WORLD COM MART	KB120	-	D840902 MIC
MOUSE (PS/2)	PANWEST	Cyber Beetle	PM1F184045737	DoC
MOUSE (USB)	PANWEST	Cyber Beetle	PM1F154000055	DoC
MOUSE (Serial)	Microsoft	4476266-20000	BASM1	DoC
DVD	SAMSUNG	DVD-709	61KN400749	DoC
Adaptor	ILAN ELECTRONICS LTD.	F1650K	-	-
Headset	CAMAC	CMK-C3	-	-

☒ Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	AC power cable, Unshielded	No	1.8	Connect to AC power
2	AC power cable, Unshielded	No	1.8	Connect to AC power
3	AC power cable, Unshielded	No	1.8	Connect to AC power
4	Monitor cable, Shielded	Yes	1.0	Between the PC and EUT
5	Stereo In cable, Shielded	Yes	1.3	Between the PC and EUT
6	Stereo Out cable, Shielded	No	1.3	Between the PC and EUT
7	Keyboard cable, Shielded	No	1.5	Between the PC and keyboard
8	Mouse cable, Shielded	No	1.8	Between the PC and PS/2 mouse
9	Mouse cable, Shielded	No	1.8	Between the PC and Serial mouse
10	Mouse cable, Shielded	No	1.8	Between the PC and USB mouse
11	Video cable, Unshielded	No	1.5	Between the EUT and DVD
12	Audio In cable (L), Unshielded	No	1.5	Between the EUT and DVD
13	Audio In cable (R), Unshielded	No	1.5	Between the EUT and DVD
14	S-Video cable, Shielded	No	1.5	Between the EUT and DVD
15	Antenna cable, Shielded	No	2.0	-
16	Headset cable, Unshielded	No	1.8	-

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)

☐ Test program (color bar)

☐ Standby

☐ Test program (customer specific)

☒ Resolution / Refresh Rate - 1024 x 768 / 75Hz

## 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	EMI (CE, RE) EMS (ESD, Burst, RS, Surge, CS, Power-Frequency Susceptibility, Voltage Dips and Short Interruptions)	 No. 51, KR0025
International	KOLAS	EMC	 NO.119
Europe	GLAS	EMC EN 55011, EN 55022, EN 55024, EN 61326, EN 50130-4, EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2, EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, EN 61000-3-2, EN 61000-3-3	 No.13000796-02

## 2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> EN 50081-1:1992                                       |   |   |
| <input type="checkbox"/> EN 55011:1998 +A1:1999                                | <input type="checkbox"/> Group 1                          | <input type="checkbox"/> Group 2            |
|  | <input type="checkbox"/> Class A                          | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 55013:1990 +A12:1994 +A13:1996 +A14:1999           |   |   |
| <input type="checkbox"/> EN 55013:2001   |   |   |
| <input type="checkbox"/> EN 55014-1:1993 +A1:1997 +A2:1999                     | <input type="checkbox"/> Household appliances and similar |   |
|  | <input type="checkbox"/> Portable tools                   |   |
|  | <input type="checkbox"/> Semiconductor devices            |   |
| <input type="checkbox"/> EN 55014-1:2000                                       |   |   |
| <input type="checkbox"/> EN 55014-2:1997                                       |   |   |
| <input type="checkbox"/> EN 55015:1996 +A1:1997 +A2:1999                       |   |   |
| <input type="checkbox"/> EN 55015:2000   |   |   |
| <input type="checkbox"/> EN 55020:1994 +A11:1996 +A13:1999 +A14:1999           |   |   |
| <input type="checkbox"/> EN 55020:1994 +A11:1996 +A12:1999 +A13:1999 +A14:1999 |   |   |
| <input type="checkbox"/> EN 55022:1994 +A1:1995 +A2:1997                       | <input type="checkbox"/> Class A                          | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 55022:1998 +A1:2000                                | <input type="checkbox"/> Class A                          | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 61000-3-2:1995 +A1:1998 +A2:1998                   |   |   |
| <input type="checkbox"/> EN 61000-3-2:1995 +A1:1998 +A2:1998 +A14:2000         |   |   |
| <input type="checkbox"/> EN 61000-3-2:2000                                     |   |   |
| <input type="checkbox"/> EN 61000-3-3:1995                                     |   |   |
| <input type="checkbox"/> VCCI V-3/99.05 : 1999                                 | <input type="checkbox"/> Class A                          | <input type="checkbox"/> Class B            |
| <input checked="" type="checkbox"/> FCC Part 15 SUBPART B                      | <input type="checkbox"/> Class A                          | <input checked="" type="checkbox"/> Class B |
| <input type="checkbox"/> AS 3548 (1992)  | <input type="checkbox"/> Class A                          | <input type="checkbox"/> Class B            |

## 2.1 Conducted Voltage Emissions

### Test Date

July 9, 2002

### Test Location

EMI-CE: Shielded Room

### Test Instruments

<input checked="" type="checkbox"/> Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002
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### Test Accessories

<input type="checkbox"/> LISN	EMCO	3825/2	9206-1971
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9607-2574
<input checked="" type="checkbox"/> 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:

<input checked="" type="checkbox"/> MET	minimum margin is 10.3 dBuV at 4.31 MHz
<input type="checkbox"/> NOT MET	limit exceeded by maximum of ____ dBuV at ____ MHz
<input type="checkbox"/> NOT APPLICABLE	

### Remarks

See Appendix A for test data.

## 2.2 Radiated Electric Field Emissions

### Test Date

July 16, 2002

### 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

<input checked="" type="checkbox"/> ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014
<input type="checkbox"/> Biconical Antenna	Schwarzbeck	BBA9106	41-00201
<input type="checkbox"/> Biconical Antenna	EMCO	3110B	9607-2564
<input type="checkbox"/> 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

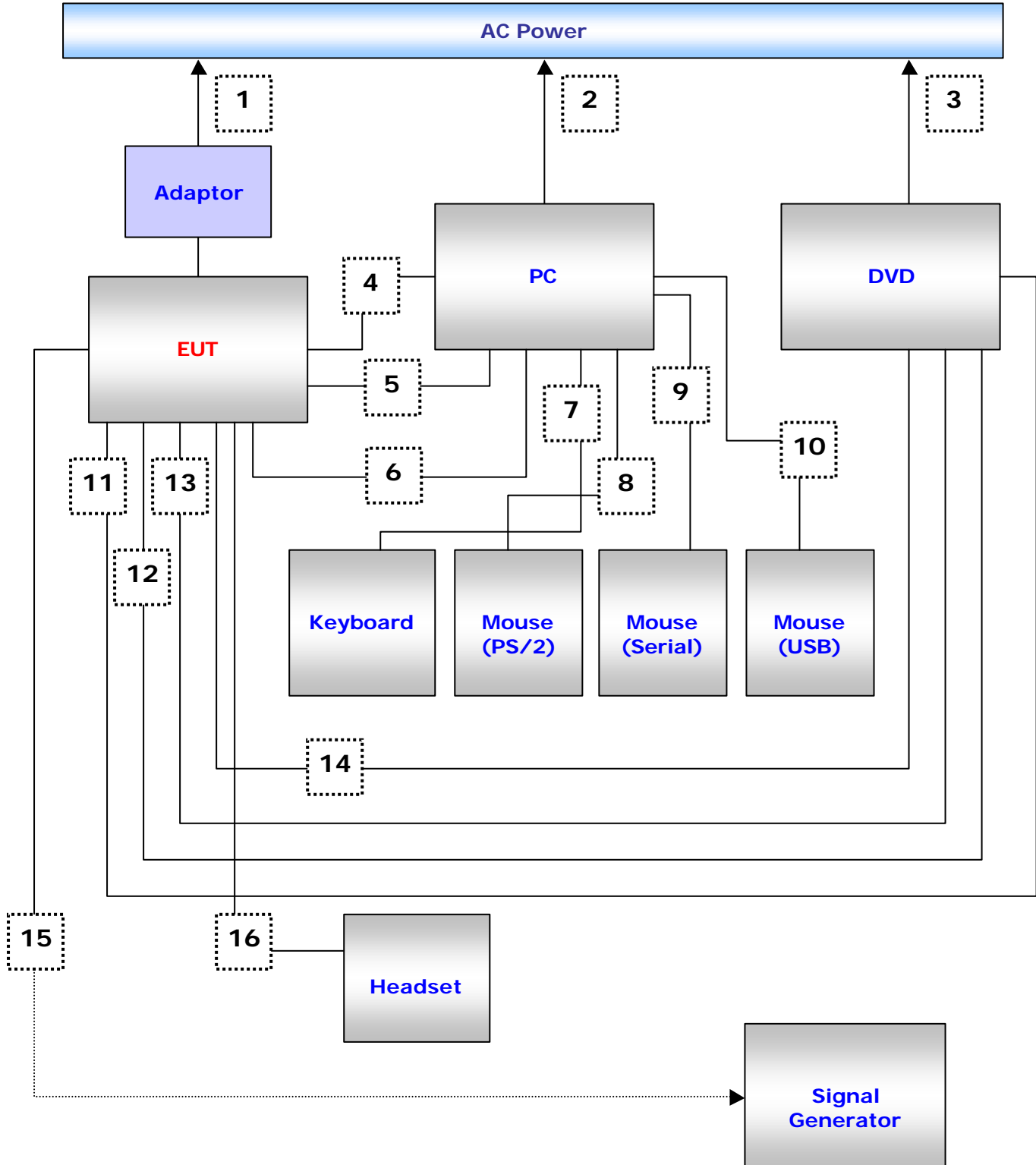
The requirements are:

- ☒ MET minimum margin is 3.0 dB (uV/m) at 94.80 MHz  
☐ NOT MET limit exceeded by maximum of \_\_\_\_ dB(uV/m) at \_\_\_\_ MHz  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data

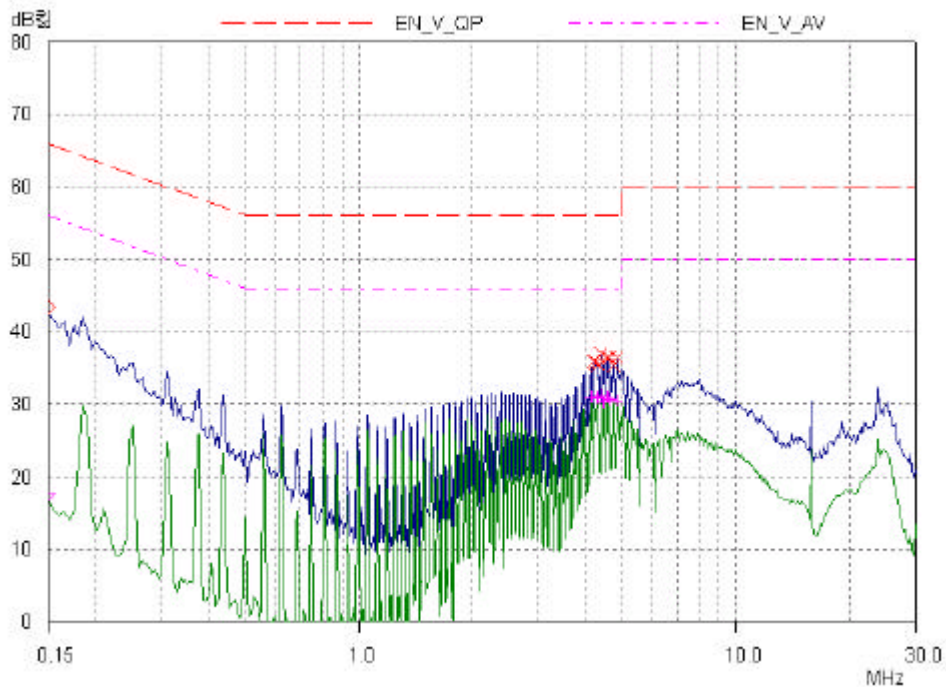
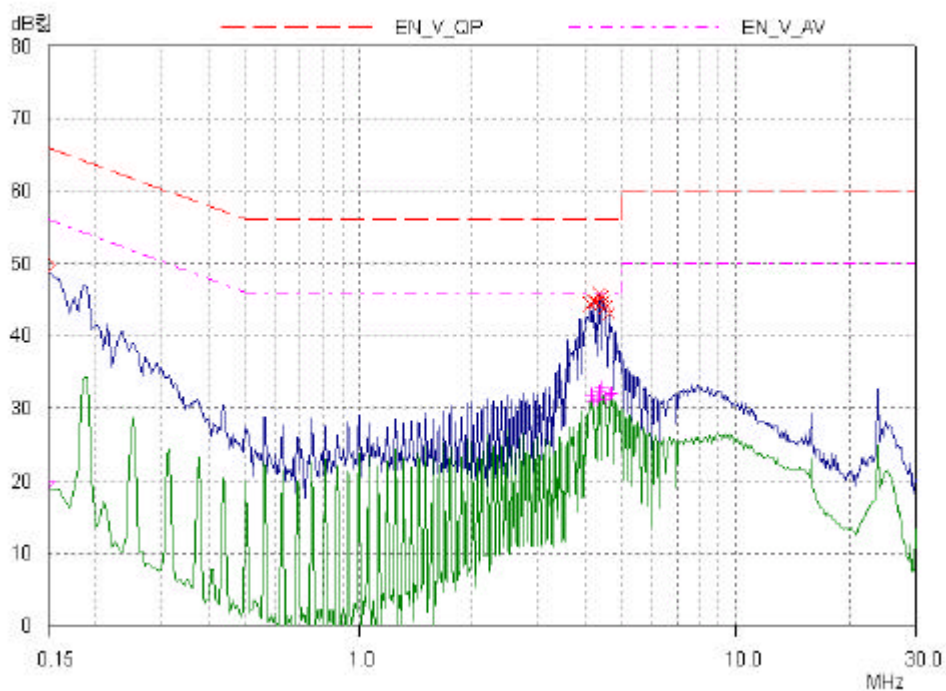
## Configuration



## APPENDIX A – TEST DATA

### Conducted Voltage Emissions (Quasi-Peak reading)

Frequency  [MHz]	Correction Factor		Line	Quasi-peak				Average			
				Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
4.06	0.3	0.1	L	56.0	44.0	44.4	11.6				
4.18	0.3	0.1	L	56.0	44.3	44.7	11.4				
4.25	0.3	0.1	L	56.0	44.1	44.5	11.5	46.0	30.7	31.1	14.9
4.31	0.3	0.1	L	56.0	45.3	45.7	10.3	46.0	31.8	32.2	13.8
4.37	0.3	0.1	L	56.0	45.0	45.4	10.6	46.0	32.5	32.9	13.1
4.43	0.3	0.1	L	56.0	44.2	44.6	11.4				
4.50	0.3	0.1	L	56.0	43.5	43.9	12.1	46.0	31.0	31.4	14.6
4.56	0.3	0.1	L	56.0	42.6	43.0	13.0	46.0	31.5	31.9	14.1
</											





## 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			
94.80	16.3	V	1.2	8.90	1.80	30.0	27.00	3.00
102.20	14.3	V	1.0	9.35	1.90	30.0	25.53	4.47
134.00	14.7	H	4.0	8.40	2.30	30.0	25.43	4.57
141.40	15.2	H	3.8	7.90	2.40	30.0	25.49	4.51
159.60	15.1	V	1.0	7.30	2.60	30.0	24.99	5.01
185.90	17.4	H	4.0	6.80	2.60	30.0	26.78	3.22
245.30	15.4	H	4.0	9.20	3.10	37.0	27.70	9.30
294.60	11.5	V	1.0	10.80	3.60	37.0	25.90	11.10
319.00	15.1	V	1.0	11.60	3.80	37.0	30.45	6.55
599.00	6.6	H	4.0	17.00	5.20	37.0	28.81	8.19
708.00	6.9	V	1.1	18.50	5.70	37.0	31.07	5.93