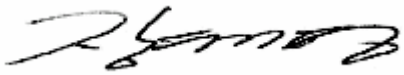
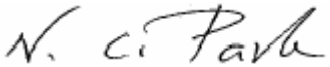
EMC Test Report

According to FCC Part 15 Subpart B

Project No.		**LBE040874**
Equipment under Test		
	Address	416 Maetan3-Dong,Yeongtong-Gu,Suwon-City,Gyeonggi-Do, Korea,443-742
	Product Name	**DLP PROJECTION TV**
	Model Name	**AT61L3**
	Manufacturer	SAMSUNG
	Brand Name	SAMSUNG
	FCC ID	A3LHLP6163W
	Variant Model	See Page 3
Date of Test		April 22 ~ 23 , 2004
Issued Date		April 26, 2004

	Name/Position	Signature
Tested by	Jang Tae Young Test Engineer	
Reviewed by	No Cheon, Park Manager of EMC Lab.	
Authorized by	Kyu Baek, Chung Chief of EMC Lab.	

1. This test reports does not constitute an endorsement by NIST/NVLAP or U.S Government.
2. This test report is to certify that the tested device properly complies with the requirements of FCC Rules and Regulations Part 15 Subpart B Unintentional Radiators.
   All tests necessary to show compliance to the requirements were and these results met the specifications requirement.

This laboratory is registered by the NIST/NVLAP, U.S.A.
The test reported herein have been performed in accordance with its terms of registration.

NVLAP LAB CODE 200623-0

Table of Contents

1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co. Ltd;
Model name	AT61L3
Applicant Address	Samsung Electronics Co. Ltd; 416 Maetan3- Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, Korea, 443-742
Contact Person	SEUNG CHEOL LEE
Kind of product	DLP PROJECTION TV
Valiant list	None
Manufacturer	Samsung Electronics Co.Ltd;

1.2 Detail Information related Product

Specification

Resolution	1280 * 720
Horizontal Frequency	60kHz
Vertical Frequency	75Hz

Operating Frequency

1.3 Operating Mode and Condition

The system was configured for testing in typical fashion use.

The mode of operation utilized for testing was selected to best simulate typical EUT use.

- PC Video Input
- PC DVI Input

1.4 Equipment Modifications

No equipment modifications were required.

1.5 Test Configuration

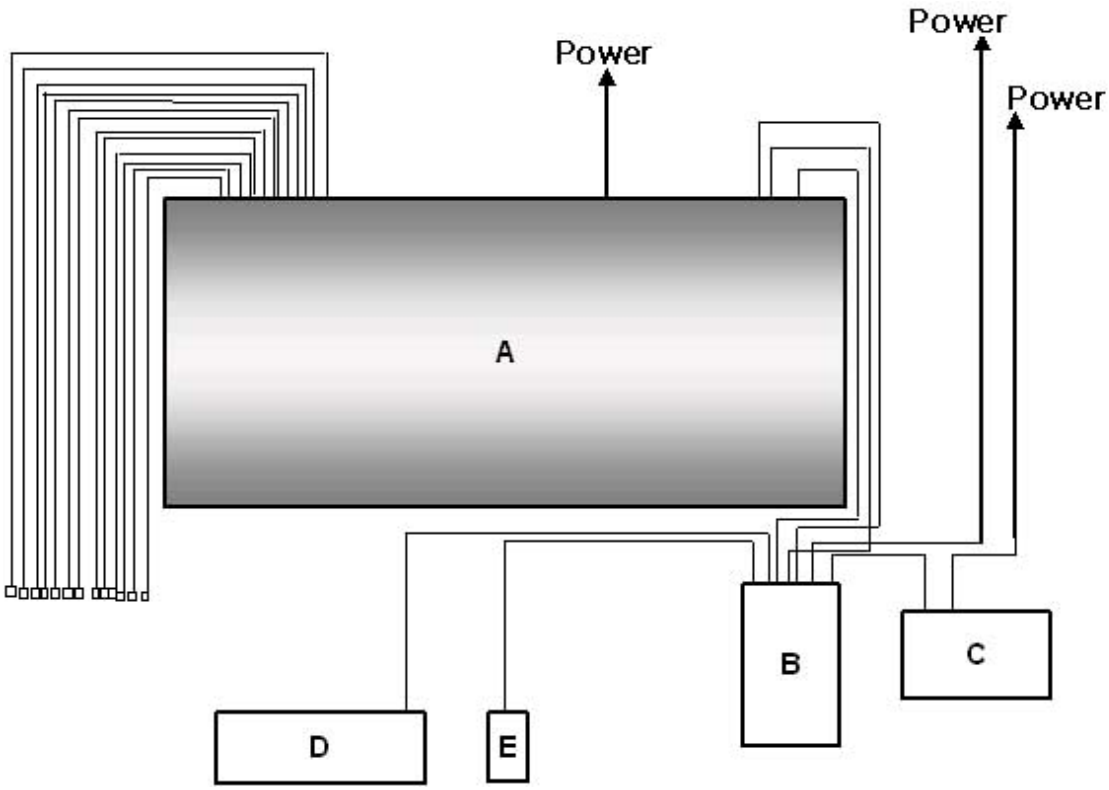
Used EUT and Peripherals

Seq	Device	Model Name	Serial #	Maker	Note
A	DLP Projection TV	AT61L3		-	
B	PC	M6320	625792GR301193	SAMSUNG	
C	Printer	LQ-580H	CG2Y016889	EPSON	
D	PS/2 Keyboard	SEM-DT35	3T013080	SAMSUNG	
E	PS/2 Mouse	P801	01007585	KYE SYSTEMS	

Used Cable Description

	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Parallel (Printer)	1.7	Yes	
2	Monitor	1.5	Yes	
3	DVI	1.5	Yes	
4	PS/2	1.5	Yes	
5	Component Video Out	1.5	No	
6	AV IN	1.5	No	
7	Component Audio Out	1.5	No	
8	S -Video Out	1.5	Yes	
9	AV Out	1.5	No	

Block Diagram



1.6 Applied Standards

List

Product or Generic Standards	Basic Standards
FCC Part15 Subpart B	ANSI 63.4 : 2000

1.7 Test Facility

General Information

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 22, 16-1, 16-2, 11.

This EMC Testing Lab. 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).

This Lab. is operated as testing laboratory in accordance with the requirements of ISO/IEC 17025:1998.

Accreditation and Listing

Uncertainty

(According to NAMAS Pub.NIS81)

Test Item	Expanded Uncertainty
Radiated Disturbance	5.09
Disturbance voltage at the mains terminals	1.64
Disturbance Power	2.46

2. Summary of Test Results

Result : PASS

The equipment under test(EUT) has been found to comply with the applied standards.

Test Name		Applied Standard	Result
Electromagnetic Emission Test			
3.1	Conducted Emission	FCC Part15 Subpart B	Complied
3.2	Radiated Emission	FCC Part15 Subpart B	Complied

3. Description of Individual Tests

3.1 Conducted Emission

Test Information		
	Test Engineer	Jang Tae Young
	Test Date	April 22, 2004
	Climate Condition	Ambient Temperature : 23℃ Relative Humidity : 37%
	Test Place	Shield Room #5

Test Equipments

Equipment	Modal Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Spectrum Analyzer	E7405A	Agilent	US4110272	2004-06-14	12
L.I.S.N	ESH3-Z5	R&S	100261	2004-07-16	12
Field strength meter	ESS	R&S	844661	2004-05-31	12
RF Relais Matrix	PSU	R&S	861206/024	N/A	12
L.I.S.N	ESH3-Z5	R&S	100260	2004-07-16	12
Test Software	EP5CE	TOYO	None	N/A	N/A

EUT Test Setup

The EUT was set up as per normal use on a wooden table 0.4m from a vertical ground reference plane, at least 0.8m from other conduction surfaces and 0.8m from the LISN.

See photo..

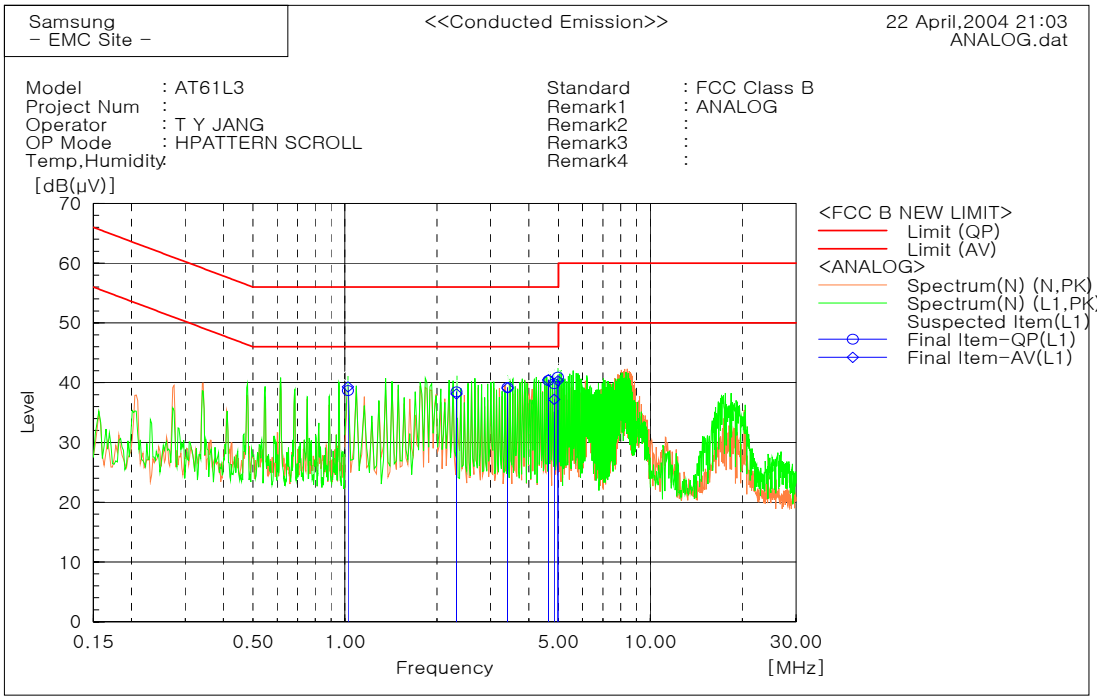
Test Result

Measurement Results	Pass No Operation errors were detected during or after the applied test.

Test Data

■ Operating Mode : Analog

[Graph and Data]



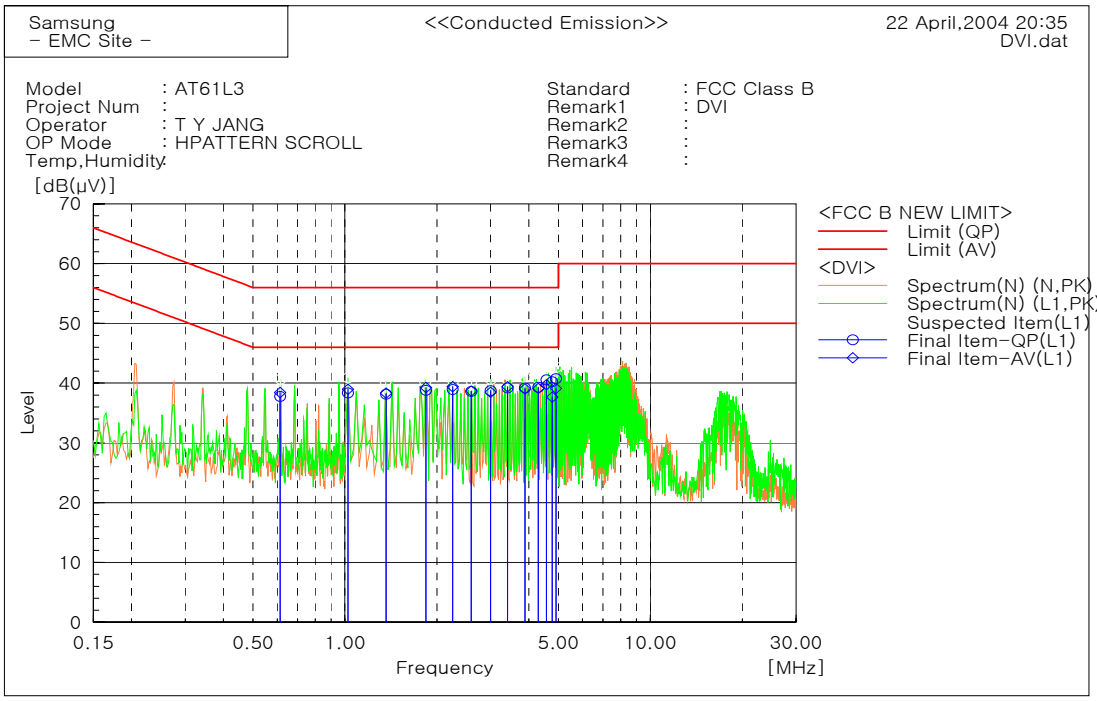
Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	1.0236	38.6	39.2	0.1	38.7	39.3	56.0	46.0	17.3	6.7
2	2.3194	38.4	38.0	0.1	38.5	38.1	56.0	46.0	17.5	7.9
3	3.4104	39.1	39.0	0.1	39.2	39.1	56.0	46.0	16.8	6.9
4	4.6387	40.4	40.5	0.0	40.4	40.5	56.0	46.0	15.6	5.5
5	4.8428	39.9	37.2	0.0	39.9	37.2	56.0	46.0	16.2	8.8
6	4.9791	40.9	40.3	0.0	40.9	40.3	56.0	46.0	15.1	5.7

■ Operating Mode : DVI

[Graph and Data]



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.61372	37.7	38.3	0.1	37.8	38.4	56.0	46.0	18.2	7.6
2	1.0234	38.3	38.9	0.1	38.4	39.0	56.0	46.0	17.6	7.0
3	1.3645	38.0	38.2	0.1	38.1	38.3	56.0	46.0	17.9	7.7
4	1.842	38.7	39.2	0.1	38.8	39.3	56.0	46.0	17.2	6.8
5	2.2512	38.8	39.3	0.1	38.9	39.4	56.0	46.0	17.1	6.6
6	2.5919	38.5	38.6	0.1	38.6	38.7	56.0	46.0	17.4	7.3
7	3.0012	38.7	38.4	0.1	38.8	38.5	56.0	46.0	17.2	7.6
8	3.4107	39.1	39.3	0.1	39.2	39.4	56.0	46.0	16.8	6.6
9	3.8886	39.1	38.9	0.1	39.2	39.0	56.0	46.0	16.8	7.0
10	4.2974	39.3	39.1	0.0	39.3	39.1	56.0	46.0	16.7	6.9
11	4.5699	40.6	39.7	0.0	40.6	39.7	56.0	46.0	15.5	6.3
12	4.7748	40.3	37.7	0.0	40.3	37.7	56.0	46.0	15.8	8.3
13	4.9101	40.7	39.1	0.0	40.7	39.1	56.0	46.0	15.3	6.9

3.2 Radiated Emission

Test Information		
	Test Engineer	Jang Tae Young
	Test Date	April 22, 2004
	Climate Condition	Ambient Temperature : 23℃ Relative Humidity : 37%
	Test Place	10m Semi-anechoic chamber

Test Equipments

Equipment	Modal Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Field strength meter	ESCS	R&S	100104	2004-10-17	12
RF Selector	NS4900	TOYO	0303-015	N/A	N/A
Biconilog Antenna	6112B	SCHAFFNER	2767	2004-06-03	12
Mast Controller	HD2000	HD	HD20000902027	N/A	N/A
Test Software	EP5RE	TOYO	None	N/A	12
Spectrum Analyzer	E7405A	Agilent	MY42000109	2004-11-27	12

EUT Test Setup

EUT set up in semi-anechoic chamber. EUT positioned at 3m from antenna in center of table.

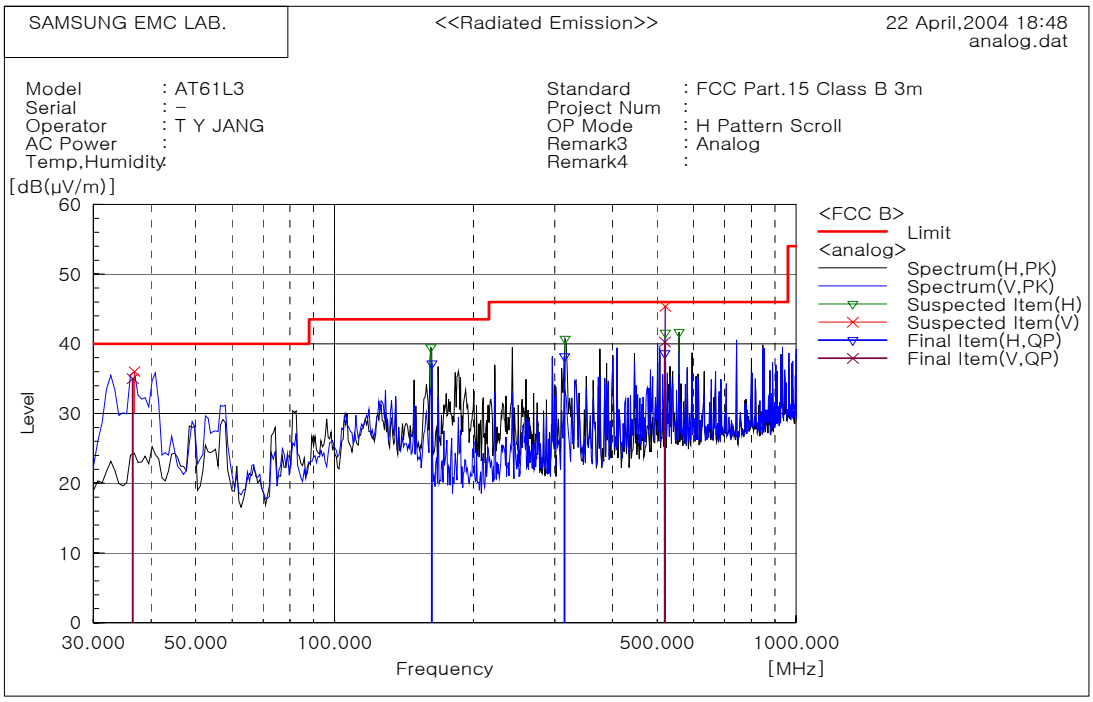
All ports terminated into characteristic loads.

Test Result

Measurement Results	Pass No Operation errors were detected during or after the applied test.

Test Data (Other Frequency)

■ Operating Mode : Analog Low_1G



Final Result

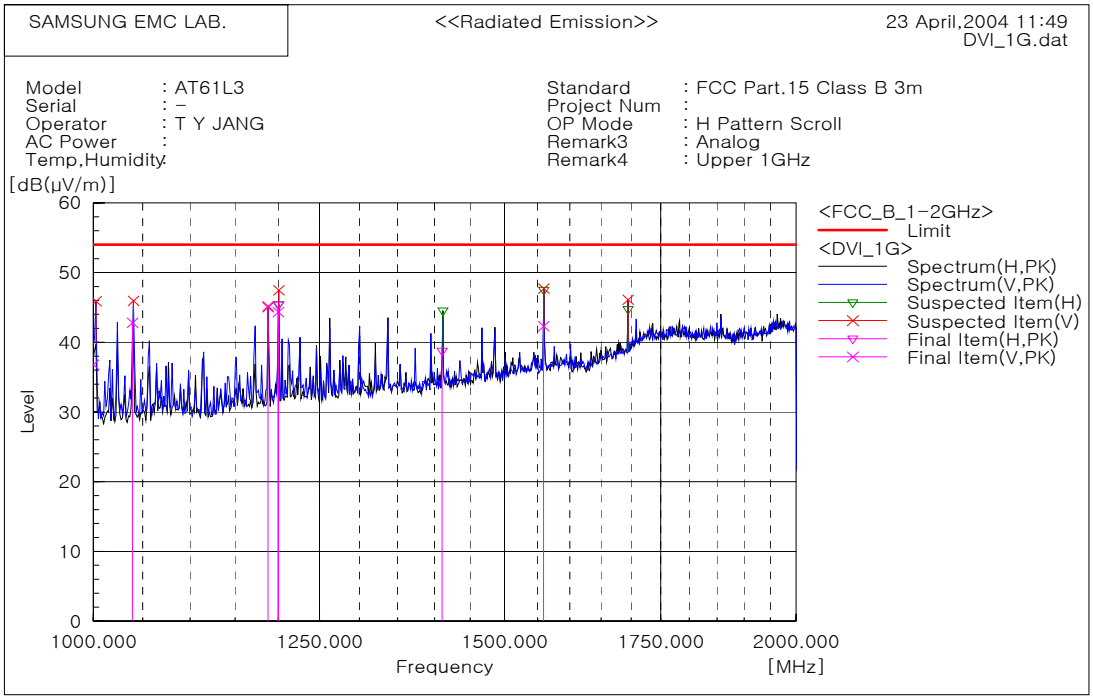
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	162.496	53.0	-15.8	37.2	43.5	6.3	
2	315.000	47.7	-9.5	38.2	46.0	7.8	
3	519.330	43.3	-4.7	38.6	46.0	7.4	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	36.514	47.2	-12.2	35.0	40.0	5.0	
2	519.330	45.0	-4.7	40.3	46.0	5.7	

■ Operating Mode : Analog_Upper 1GHz



Final Result

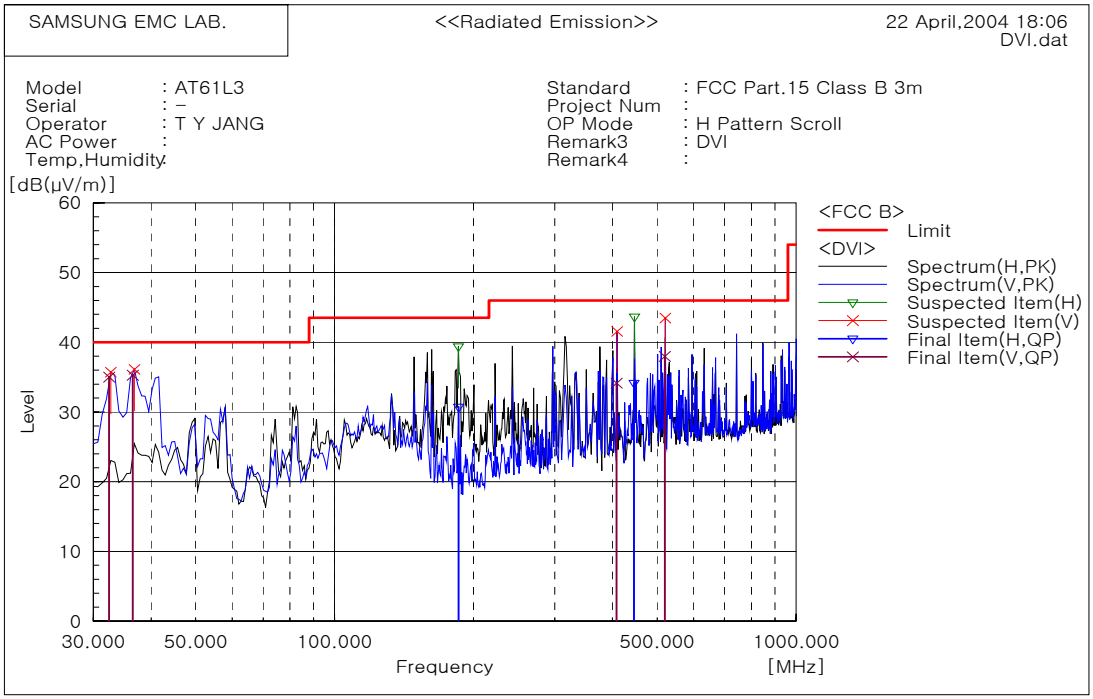
--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	1200.000	39.4	6.0	45.4	54.0	8.6	
2	1410.650	29.6	9.2	38.8	54.0	15.2	

--- Vertical Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	1000.000	33.4	3.4	36.8	54.0	17.2	
2	1039.430	39.5	3.3	42.8	54.0	11.2	
3	1187.910	39.5	5.7	45.2	54.0	8.8	
4	1200.000	38.3	6.0	44.3	54.0	9.7	
5	1559.140	30.1	12.2	42.3	54.0	11.7	

■ Operating Mode : DVI_Lower 1GHz



Final Result

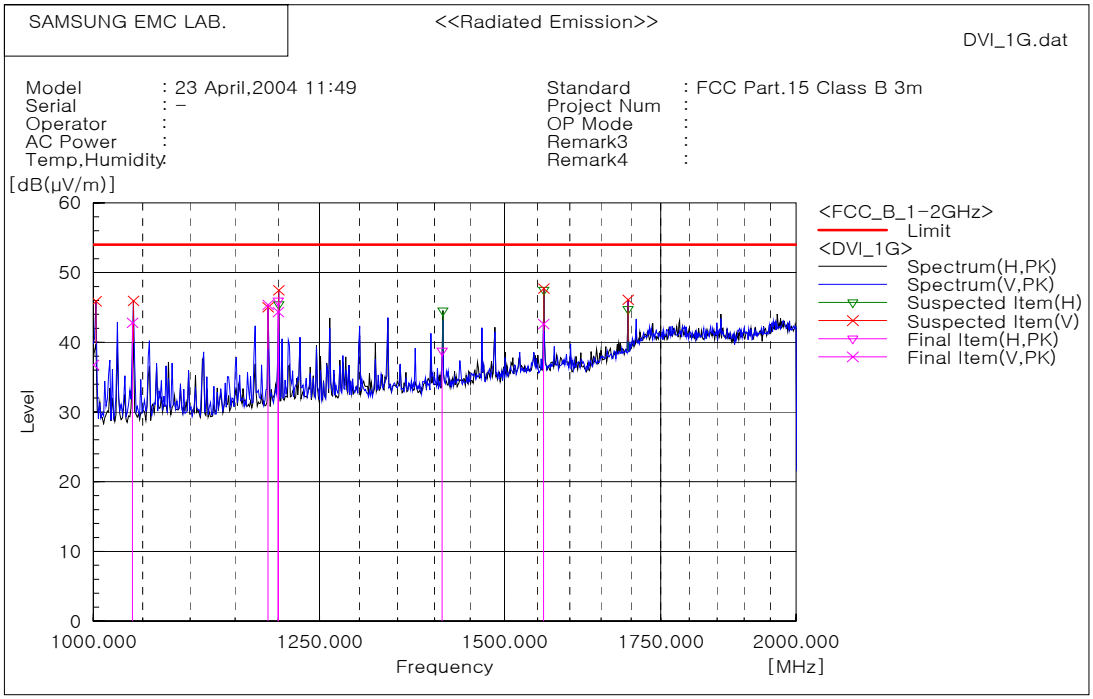
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	185.621	46.6	-15.8	30.8	43.5	12.8	
2	445.480	40.8	-6.6	34.2	46.0	11.8	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	32.471	45.1	-10.1	35.0	40.0	5.0	
2	36.527	47.5	-12.2	35.3	40.0	4.7	
3	408.360	41.2	-7.1	34.1	46.0	11.9	
4	519.710	42.7	-4.7	38.0	46.0	8.0	

■ Operating Mode : DVI_ Upper 1GHz



Final Result

--- Horizontal Polarization (PK)---

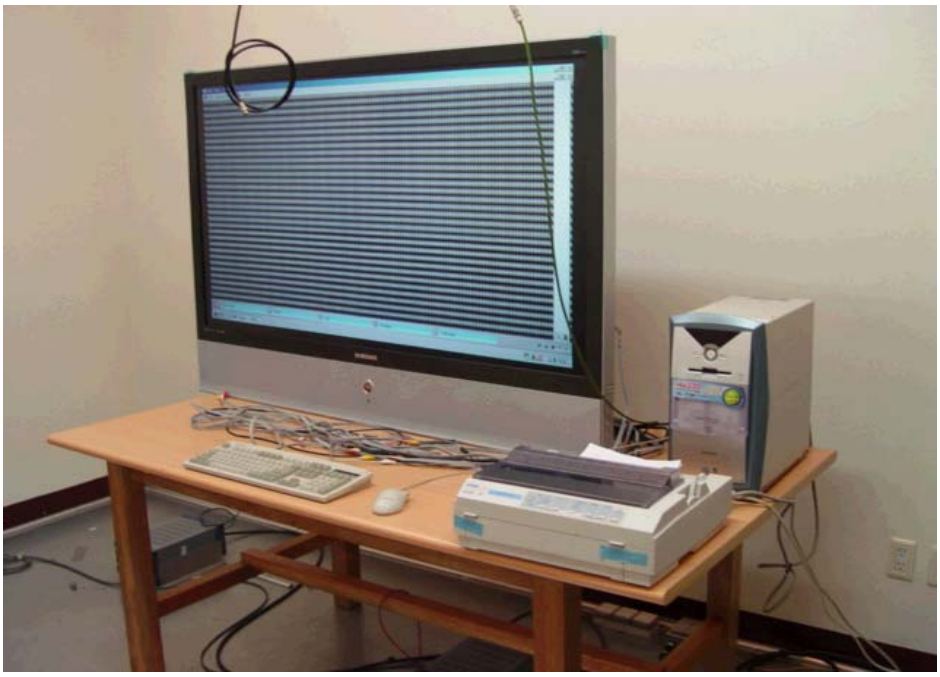
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	1200.000	40.0	6.0	46.0	54.0	8.0	
2	1410.650	29.6	9.2	38.8	54.0	15.2	

--- Vertical Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	1000.000	33.7	3.1	36.8	54.0	17.2	
2	1039.430	39.5	3.3	42.8	54.0	11.2	
3	1187.910	39.7	5.7	45.4	54.0	8.6	
4	1200.000	38.3	6.0	44.3	54.0	9.7	
5	1559.140	30.4	12.2	42.6	54.0	11.4	

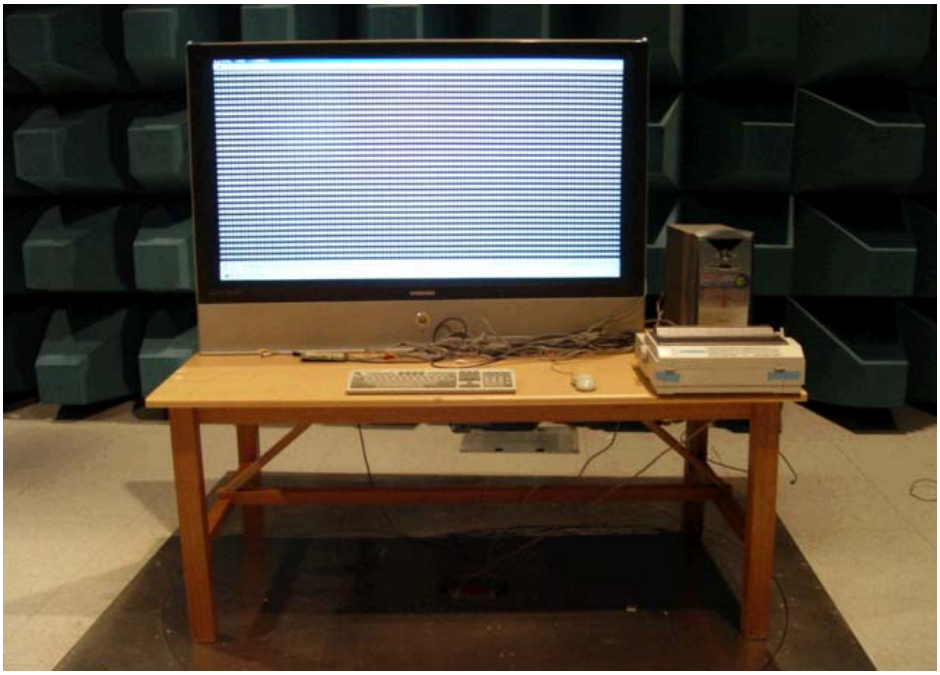
4. Appendix A

4.1 Test Photography



Picture 1. Conducted Emission (Front)

Picture 2. Conducted Emission (Rear)



Picture 3. Radiated Emission (Front)

Picture 4. Radiated Emission (Rear)

4.2 EUT Photography

Picture 5. EUT (Front)

Picture 6. EUT (Rear)

Pic. 7 EUT (Label)