EMC Test Report

According to FCC Part 15 Subpart B

Project No.		**LBE040857**
Equipment under Test		
	Address	416 Maetan3-Dong,Yeongtong-Gu,Suwon-City,Gyeonggi-Do, Korea,443-742
	Product Name	**DLP PROJECTION TV**
	Model Name	**AT56L3**
	Manufacturer	SAMSUNG
	Brand Name	SAMSUNG
	Variant Model	See Page 3
Date of Test		April 30, 2004
Issued Date		May 03, 2004

	Name/Position	Signature
Tested by	Kyung Chul,Min 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	AT56L3
Applicant Address	Samsung Electronics Co. Ltd; 416 Maetan3- Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, Korea, 443-742
Contact Person	Kyung Chul,Min
Kind of product	DLP PROJECTION TV
Valiant list	None
Manufacturer	Samsung Electronics Co.Ltd;
New / Alternative / Permissive change Information	This report is original report #

1.2 Detail Information related Product

Specification

Item(s)	Description
Model Name	AT56L3
Product Name	DLP Projection TV
FCC ID	A3LHLP5663W
Resolution	1280 * 720
Horizontal Frequency	60 kHz
Vertical Frequency	75 Hz

1.3 Operating Mode and Condition

The system was configured for testing in typical fashion use. Cable were attached to each of the available I/O Ports. The mode of operation utilized for testing was selected to best simulate typical EUT use.

- Digital Video In
- PC Analog In

1.4 Equipment Modifications

No equipment modifications were required.

1.5 Test Configuration

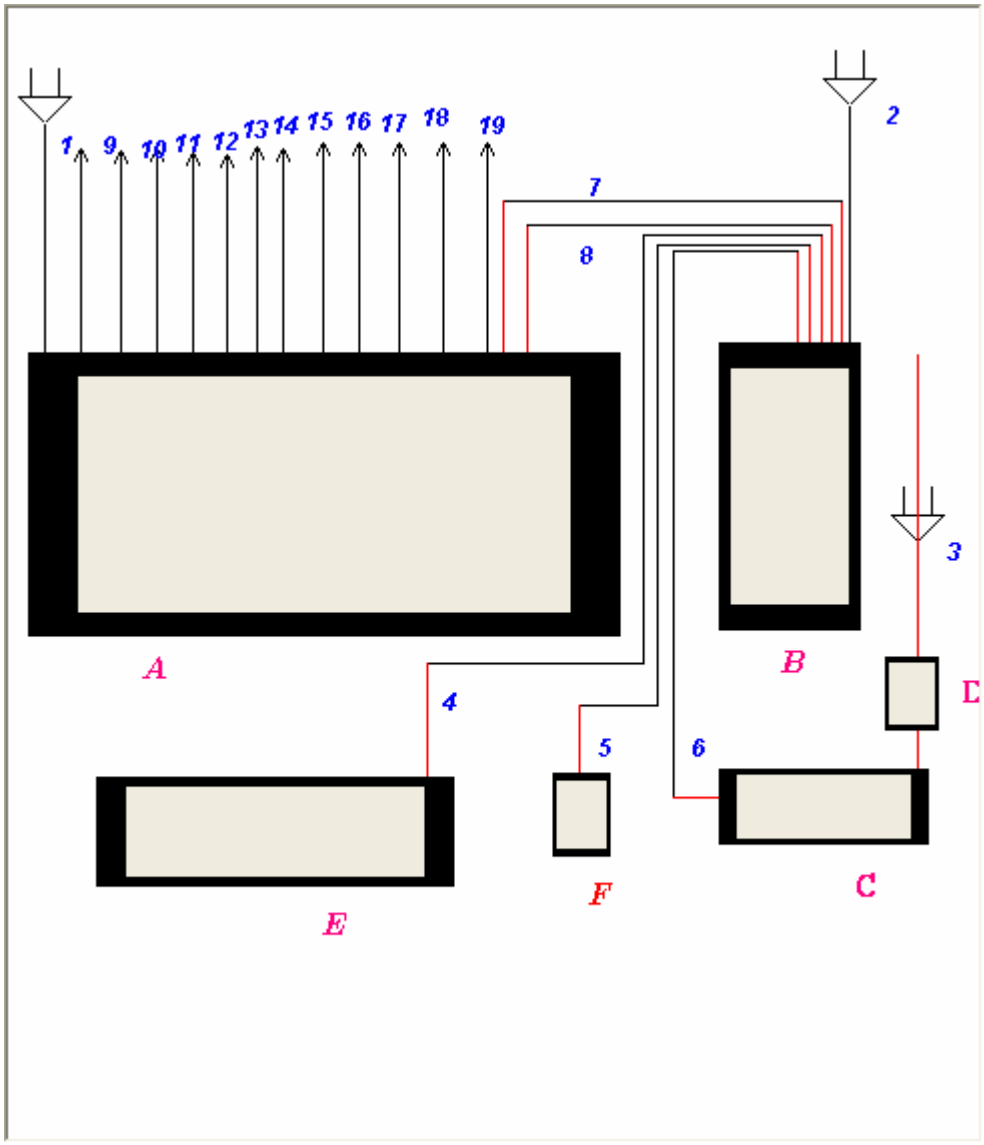
Used EUT and Peripherals

Seq	Device	Model Name	Serial #	Maker	Note
A	DLP Projection TV	AT56L3	-	SAMSUNG	EUT
B	Desktop PC	M6320	625792GR301193	SAMSUNG	
C	Printer	K10158	CLG001000275	Canon	
D	Adapter	K30088	CLG001000275	Canon	
E	PS/2 Keyboard	SKR-2283S	7EAEO22707	SEJIN	
F	PS/2 Moust	OMS3PB	OMS3PBGGDRT0204029666	SAMSUNG	

Used Cable Description

	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Power	1.7	No	For EUT
2	Power	1.5	No	For PC
3	Power	1.5	No	For Printer
4	PS/2	1.5	No	For Keyboard
5	PS/2	1.5	No	For Mouse
6	Parallel (Printer)	1.5	Yes	-
7	DVI	1.5	Yes	-
8	PC Analog In	1.5	Yes	-
9	RF In	1.5	Yes	-
10	AV1 In	1.5	No	-
11	AV2 In	1.5	No	-
12	AV Out	1.5	No	-
13	Component In1	1.5	No	-
14	Component In2	1.5	No	-
15	DVI Audio In	1.5	No	-
16	PC Audio In	1.5	No	-
17	S-Video In 2	1.5	No	-
18	AV3 In	1.5	No	-
19	S-Video In3	1.5	No	-
20				

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

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	Kyung Chul,Min
	Test Date	April 30, 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
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2004-09-20	12
Signal Generator	SMY01	R&S	840703/019	2004-11-06	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..

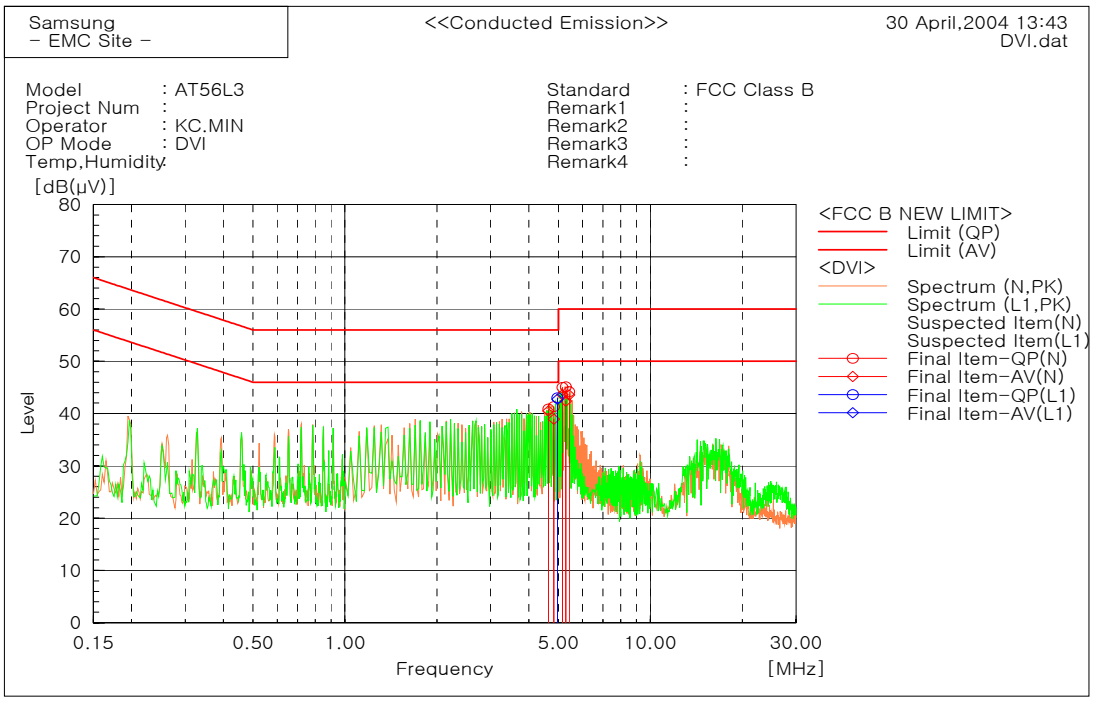
Test Result

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

Test Data

■ Operating Mode : Digital Video In

[Graph and Data]



Final Result

--- N Phase ---

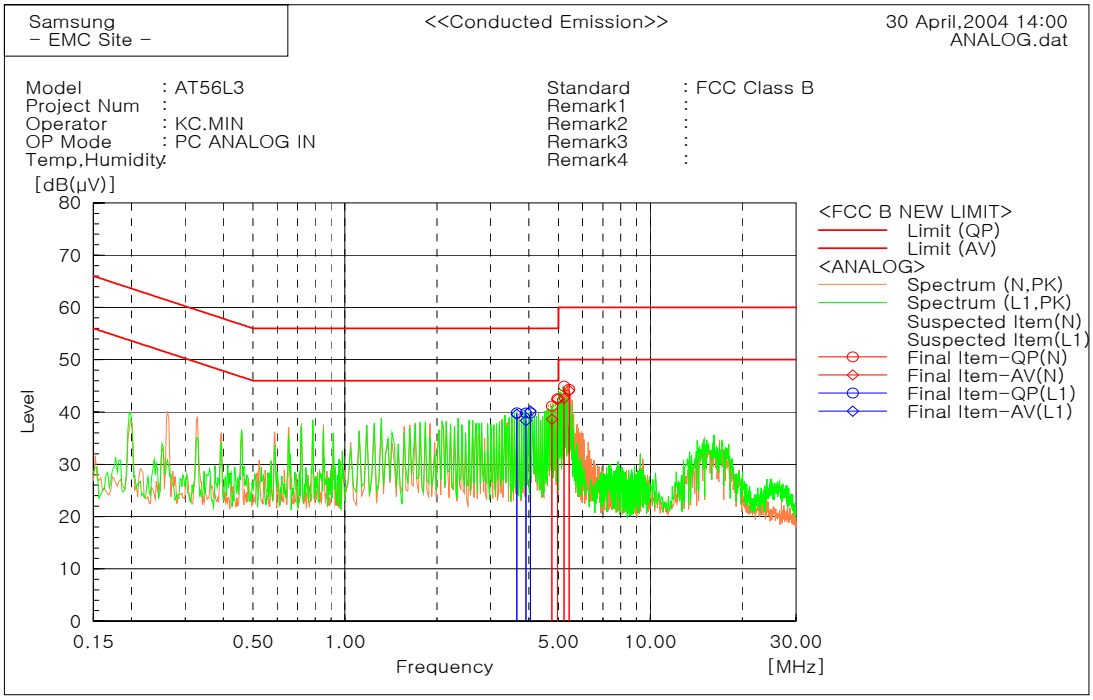
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	4.6338	40.9	40.5	0.0	40.9	40.5	56.0	46.0	15.1	5.5
2	4.8311	41.3	38.9	0.0	41.3	38.9	56.0	46.0	14.7	7.1
3	5.1578	45.0	43.6	0.0	45.0	43.6	60.0	50.0	15.0	6.4
4	5.2883	45.1	42.4	0.0	45.1	42.4	60.0	50.0	14.9	7.6
5	5.4174	44.2	43.5	0.0	44.2	43.5	60.0	50.0	15.8	6.5

--- 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	4.9609	43.0	42.7	0.0	43.0	42.7	56.0	46.0	13.0	3.3

■ Operating Mode : PC Analog In

[Graph and Data]



Final Result

--- N 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	4.7656	41.1	38.6	0.0	41.1	38.6	56.0	46.0	14.9	7.4
2	4.9625	42.5	42.5	0.0	42.5	42.5	56.0	46.0	13.5	3.5
3	5.2239	44.9	42.6	0.0	44.9	42.6	60.0	50.0	15.1	7.4
4	5.419	44.3	44.1	0.0	44.3	44.1	60.0	50.0	15.7	5.9

--- 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	3.657	39.7	39.4	0.1	39.8	39.5	56.0	46.0	16.2	6.5
2	3.9171	39.7	38.2	0.1	39.8	38.3	56.0	46.0	16.2	7.7
3	4.0483	39.7	40.1	0.1	39.8	40.2	56.0	46.0	16.2	5.9

3.2 Radiated Emission

Test Information		
	Test Engineer	Kyung Chul,Min
	Test Date	April 30, 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
EMI Receiver	ESI26	R&S	100067	2005-01-09	12
Test Software	EP5RE	TOYO	None	N/A	12
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2004-09-20	12
Signal Generator	SMY01	R&S	840703/019	2004-11-06	12
Biconilog Antenna	6112B	SCHAFFNER	2766	2004-06-03	12
Spectrum Analyzer	E7405A	Agilent	MY42000109	2004-11-27	12

EUT Test Setup

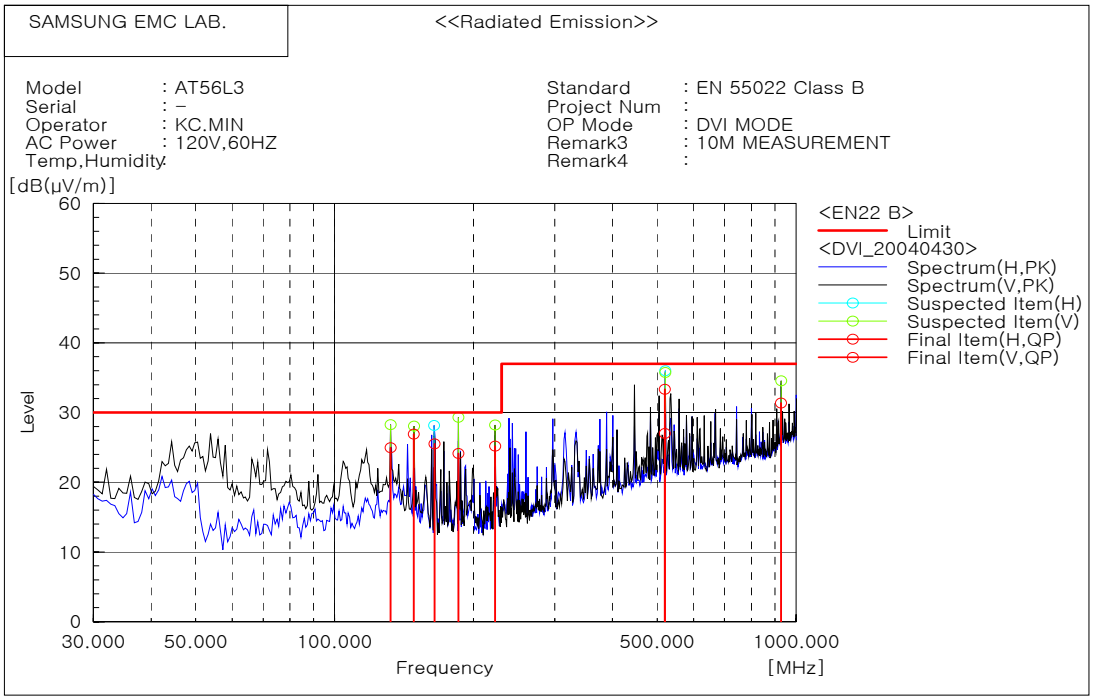
EUT set up in semi-anechoic chamber. EUT positioned at 3m from antenna in center of table.
All ports terminated into characteristic loads.

Test Result

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

Test Data (Other Frequency)

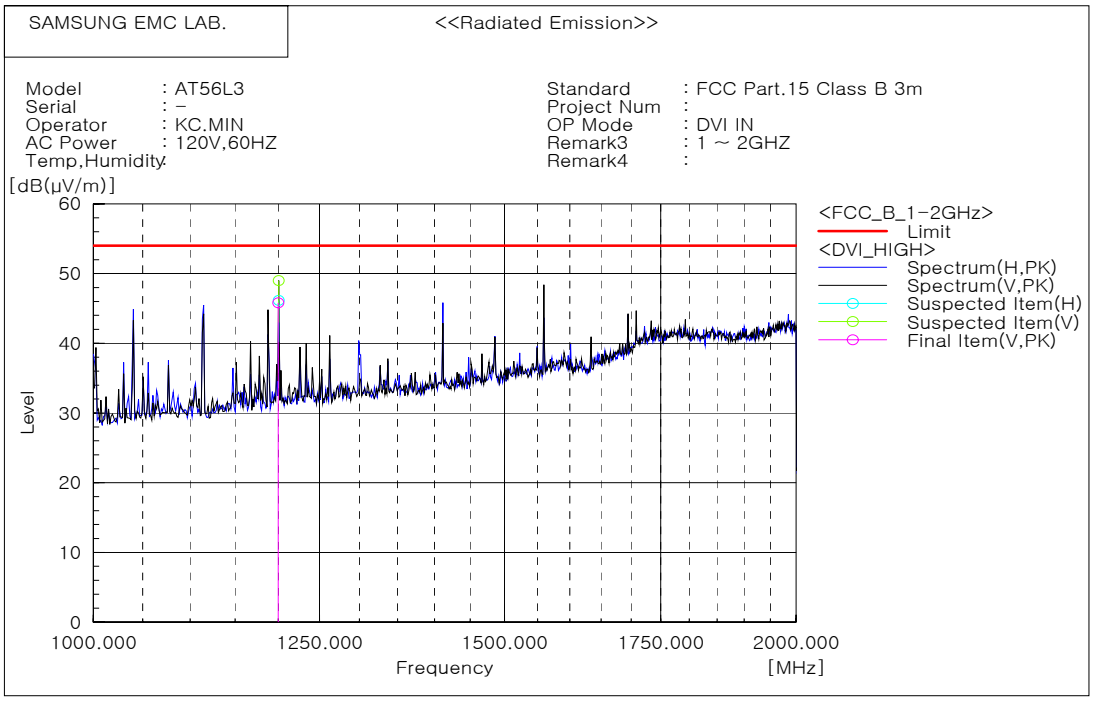
■ Operating Mode : Digital Video In(30 ~1000 MHz)



Final Result

No.	Frequency [MHz]	(P)	S.C	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
1	132.337	V	S	40.6	-15.6	25.0	30.0	5.0	107.0	180.0
2	148.490	V	S	43.2	-16.3	26.9	30.0	3.1	106.0	304.0
3	164.642	H	S	42.6	-17.1	25.5	30.0	4.5	396.0	327.0
4	185.588	V	S	41.2	-17.1	24.1	30.0	5.9	109.0	299.0
5	222.733	V	S	41.2	-16.0	25.2	30.0	4.8	130.0	356.0
6	519.710	H	S	33.6	-6.6	27.0	37.0	10.0	348.0	324.0
7	519.710	V	S	40.0	-6.6	33.4	37.0	3.7	349.0	5.0
8	928.060	V	S	32.8	-1.4	31.4	37.0	5.6	142.0	342.0

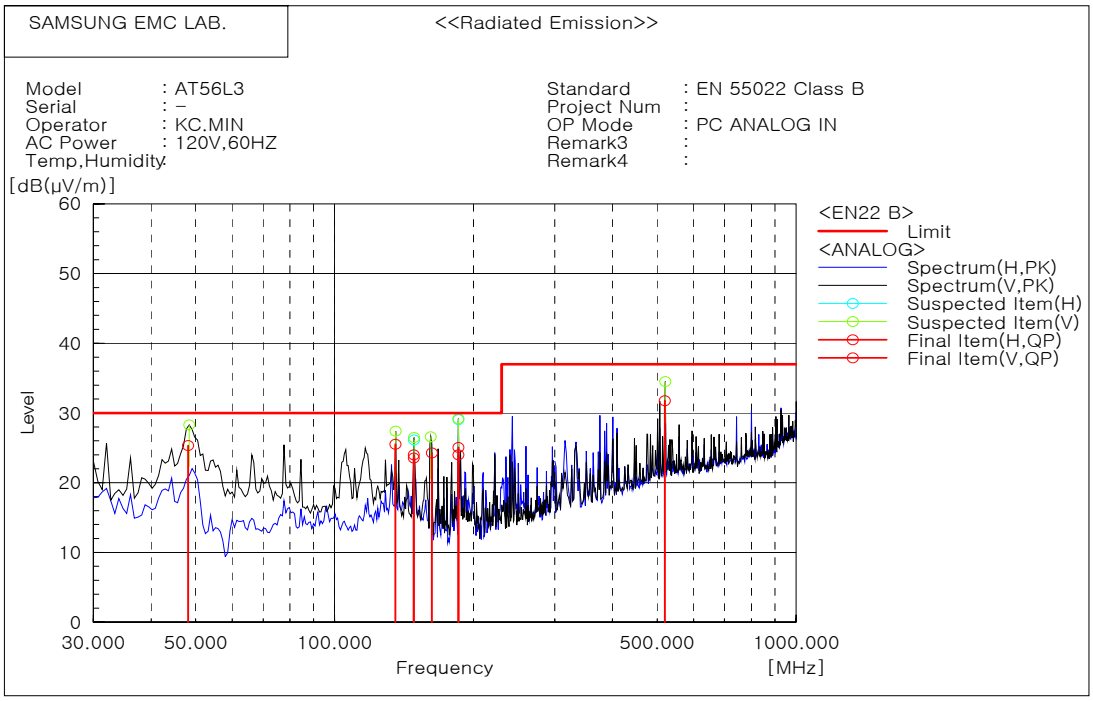
■ Operating Mode : Digital Video In(1 ~ 2GHz)



Final Result

No.	Frequency	(P)	S.C	Reading PK	c.f	Result PK	Limit	Margin PK	Height	Angle
	[MHz]			[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[°]
1	1200.000	V	S	39.8	6.0	45.8	54.0	8.2	105.0	339.0

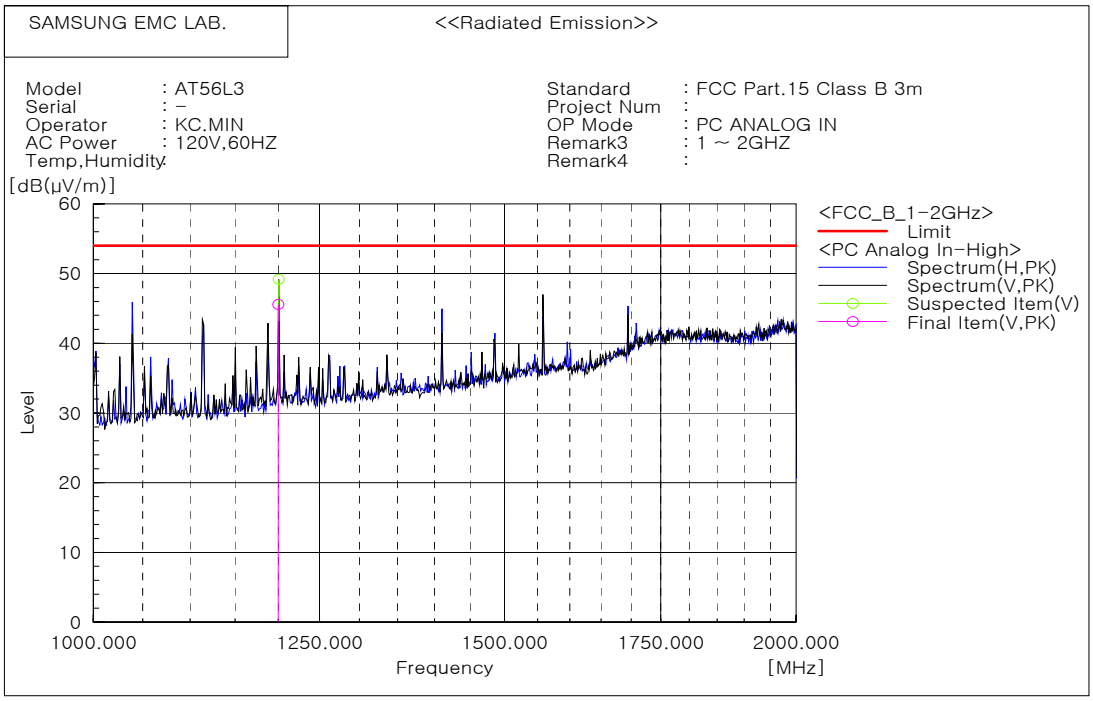
■ Operating Mode : PC Analog In(30 ~1000MHz)



Final Result

No.	Frequency [MHz]	(P)	S.C	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
1	48.110	V	S	44.0	-18.7	25.3	30.0	4.7	104.0	75.0
2	135.469	V	S	41.2	-15.7	25.5	30.0	4.5	114.0	185.0
3	148.490	V	S	39.8	-16.3	23.5	30.0	6.5	105.0	303.0
4	148.375	H	S	40.3	-16.3	24.0	30.0	6.0	391.0	331.0
5	162.496	V	S	41.3	-17.0	24.3	30.0	5.7	109.0	325.0
6	185.466	V	S	42.2	-17.1	25.1	30.0	5.0	104.0	309.0
7	185.466	H	S	41.1	-17.1	24.0	30.0	6.0	297.0	42.0
8	519.330	V	S	38.4	-6.6	31.8	37.0	5.3	291.0	11.0

■ Operating Mode : PC Analog In(1 ~ 2GHz)



Final Result

No.	Frequency	(P)	S.C	Reading PK	c.f	Result PK	Limit	Margin PK	Height	Angle
	[MHz]			[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[°]
1	1200.000	V	S	39.6	6.0	45.6	54.0	8.4	126.0	351.0

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)