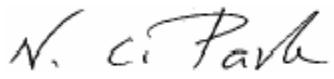


EMC Test Report

According to FCC Part 15 Subpart B

Project No.	LBE040960
Equipment under Test	
Address	416 Maetan3-Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, Korea, 443-742
Product Name	DVD Combo
Model Name	DVD-V4800
Manufacturer	SAMSUNG
Brand Name	SAMSUNG
Broadcasting System	NTSC-M
Variant Model	See Page 3
Date of Test	May 08, 2004
Issued Date	May 08, 2004

	Name/Position	Signature
Tested by	Tae Young, JANG 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

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1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co. Ltd;
Model name	DVD-V4800
Applicant Address	Samsung Electronics Co. Ltd; 416 Maetan3- Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, Korea, 443-742
Contact Person	WOOSUNG CHO
Kind of product	DVD Combo
Valiant list	
Manufacturer	Samsung Electronics Co.Ltd;

1.2 Detail Information related Product

Specification

Operating (RF Modulator) Frequency	CH. 3	Visual Carrier : 61.25 MHz
		Aural Carrier : 65.75 MHz
	CH. 4	Visual Carrier : 67.25 MHz
		Aural Carrier : 71.75 MHz
Type of RF Output Connector	Type "F" Connector 75 ohm(Unbalanced)	

1.3 Operating Mode and Condition

The EUT was tested in the following operating modes(at both channel 3 and 4) for the tests mention in this report :

1) Recording (NTSC Signal)

A NTSC signal(Color bar) was supplied at ch.5(77.25MHz) through the ant. Input connector

2) Recording (1V VITS Signal)

A 1V peak-to-peak VITS signal was supplied through the video input connector for recording.

3) Recording (5V VITS Signal)

A 5V peak-to-peak VITS signal was supplied through the video input connector for recording.

4) VCR Play

In this test mode, a video tape recorded with VITS signal was played on the EUT.

5) Play mode [DVD Play]

Note: The NTSC TV signal input record mode is not applicable to the antenna transfer switch test.

1.4 Equipment Modifications

No equipment modifications were required.

1.5 Test Configuration

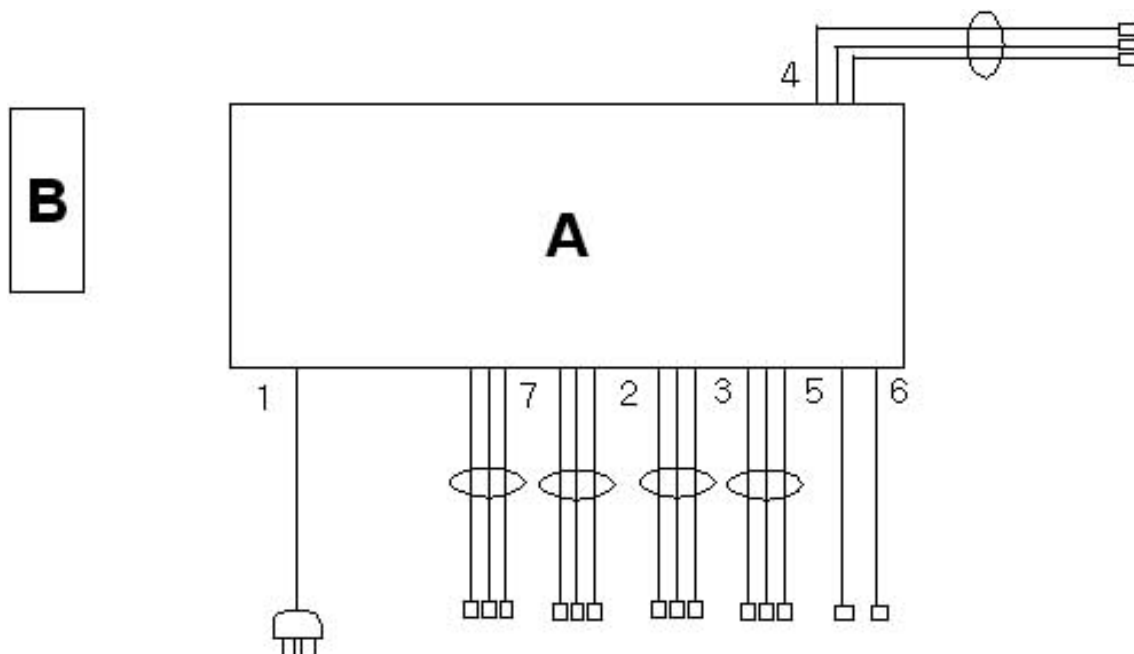
Used EUT and Peripherals

Mark	Item	Model No.	Serial No.	Manufacturer	Remark
A	DVD COMBO	DVD-V4800	-	SAMSUNG	EUT
B	Remote Controller	-	-	SAMSUNG	EUT

Used Cable Description

No.	Item	Length[m]	Shielded	Remark
1	AC Power Cable	1.5	N	to the mains
2	AV In Cable	1.2	N	Terminated video : 75 ohm Audio In : 1k ohm
3	AV Out Cable	1.2	N	Terminated video : 75 ohm Audio In : 10k ohm
4	Front AV In Cable	1.2	N	Terminated video : 75 ohm Audio In : 1k ohm
5	RF In Cable	1.5	Y	75 ohm Terminated
6	RF Out Cable	1.2	Y	75 ohm Terminated
7	Component	1.2	N	Terminated video : 75 ohm Audio In : 1k ohm

Block Diagram



1.6 Applied Standards

List

Applied Standards	Test Procedure
FCC Part15 Subpart B	ANSI 63.4 : 2000

1.7 Test Facility

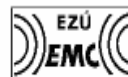
General Information

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
3.3	Output Signal Level	FCC Part15:2003-10-01 Class B	Complied
3.4	Output Terminal Conducted Spurious Emission	FCC Part15:2003-10-01 Class B	Complied
3.5	Ant. Transfer Switch	FCC Part15:2003-10-01 Class B	Complied

3. Description of Individual Tests

3.1 Conducted Emission

Test Information		
	Test Engineer	Tae Young JANG
	Test Date	May 04, 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
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..

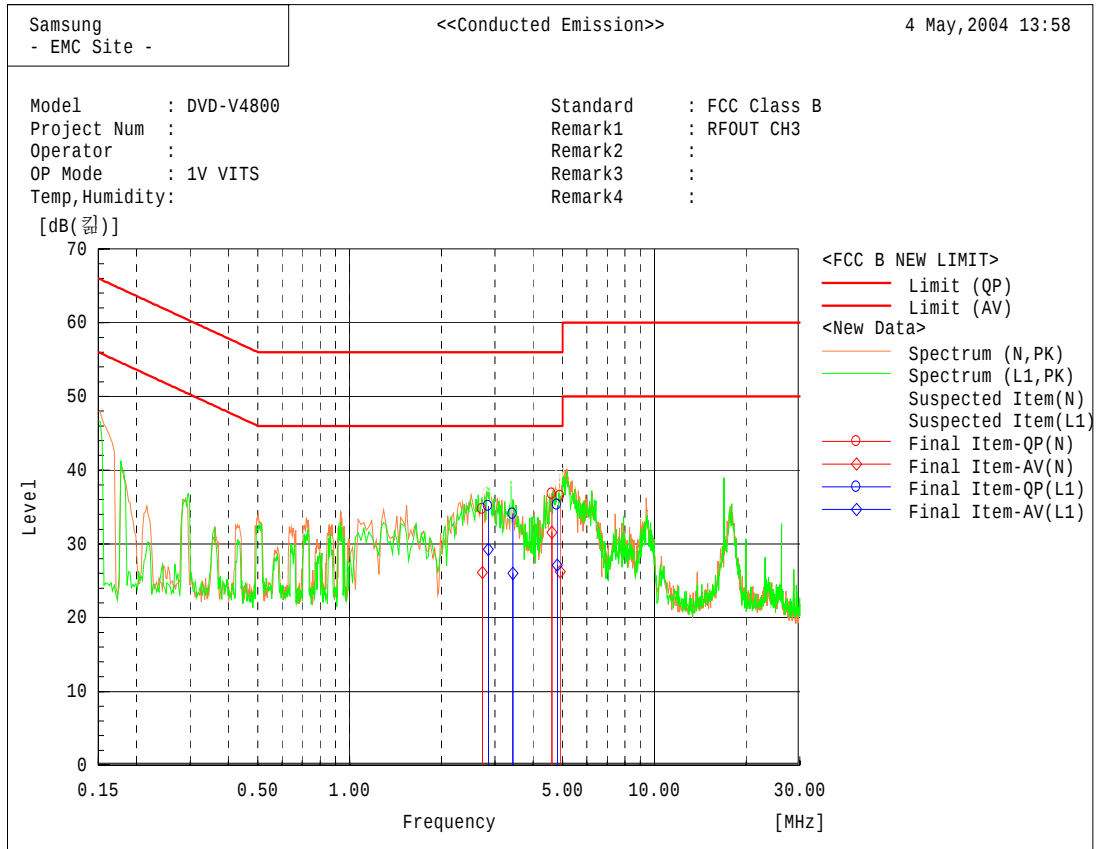
Test Result

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

Test Data

■ Operating Mode : 1V VITS_CH03

[Graph and Data]



Final Result

--- N Phase ---

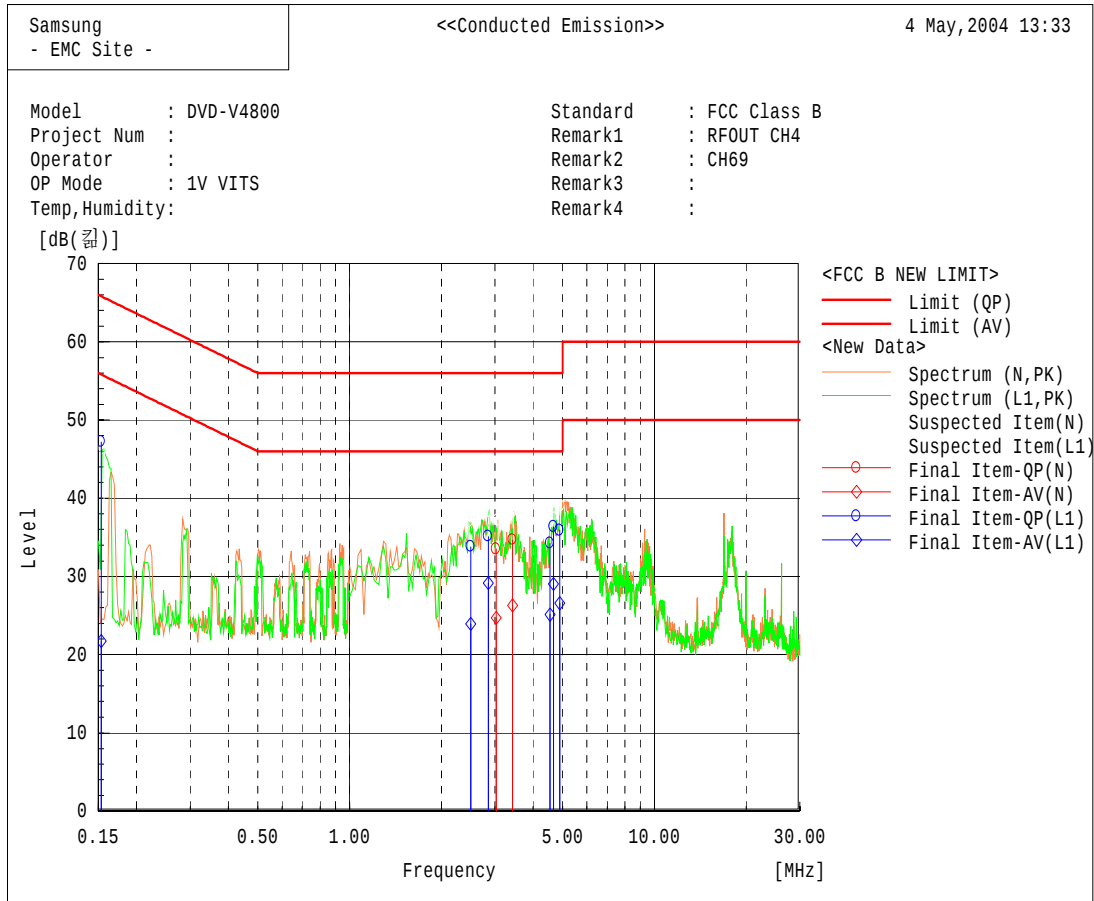
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	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.7246	34.6	26.0	0.1	34.7	26.1	56.0	46.0	21.3	19.9
2	4.6083	36.8	31.6	0.0	36.8	31.6	56.0	46.0	19.2	14.4
3	4.9092	36.5	26.2	0.0	36.5	26.2	56.0	46.0	19.5	19.8

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.8509	35.0	29.2	0.1	35.1	29.3	56.0	46.0	20.9	16.8
2	3.4296	34.0	25.9	0.1	34.1	26.0	56.0	46.0	21.9	20.0
3	4.8003	35.3	27.1	0.0	35.3	27.1	56.0	46.0	20.7	18.9

■ Operating Mode : 1V VITS_CH04

[Graph and Data]



Final Result

--- N Phase ---

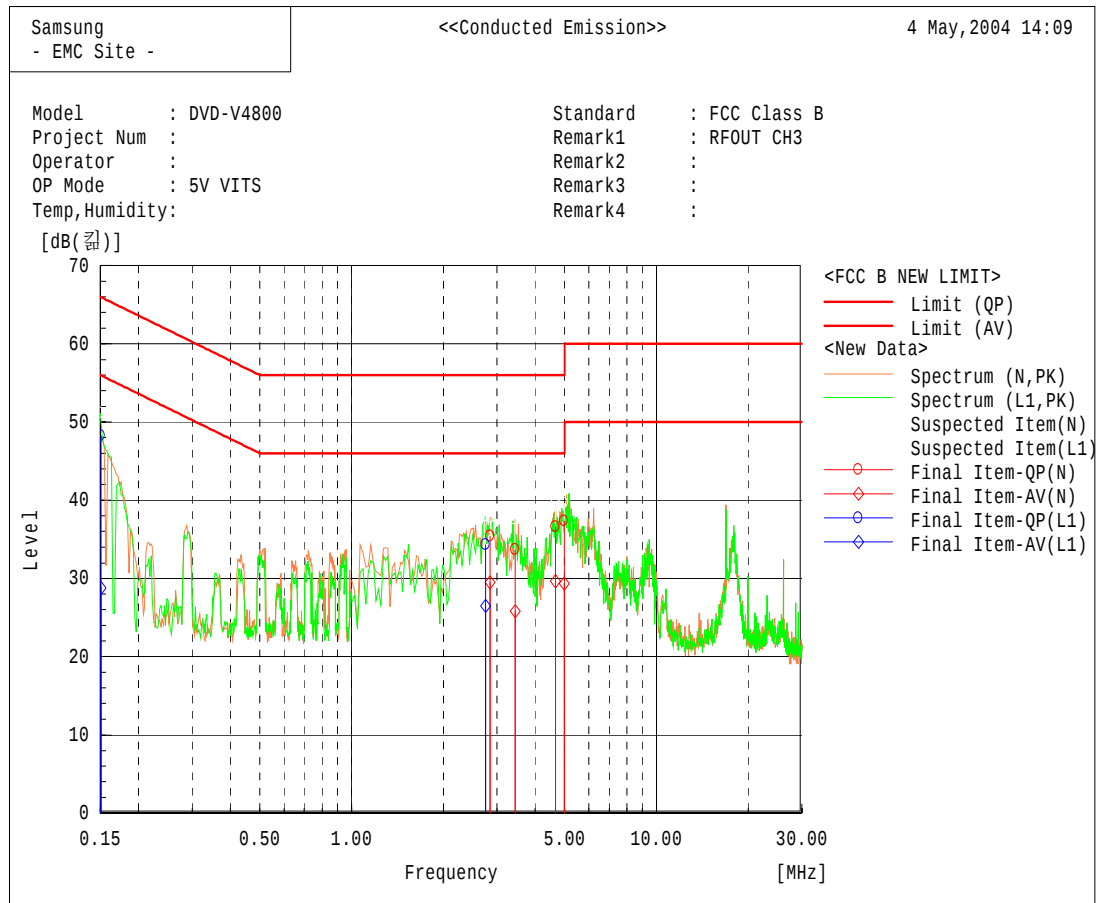
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	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	3.0284	33.4	24.6	0.1	33.5	24.7	56.0	46.0	22.5	21.3
2	3.4233	34.6	26.2	0.1	34.7	26.3	56.0	46.0	21.3	19.7

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.15308	47.1	21.6	0.1	47.2	21.7	65.8	55.8	18.6	34.1
2	2.4958	33.7	23.8	0.1	33.8	23.9	56.0	46.0	22.2	22.1
3	2.8536	35.0	29.1	0.1	35.1	29.2	56.0	46.0	20.9	16.9
4	4.5476	34.2	25.1	0.0	34.2	25.1	56.0	46.0	21.8	20.9
5	4.6686	36.4	29.0	0.0	36.4	29.0	56.0	46.0	19.6	17.0
6	4.8932	35.9	26.6	0.0	35.9	26.6	56.0	46.0	20.1	19.4

■ Operating Mode : 5V VITS_CH03

[Graph and Data]



Final Result

--- N Phase ---

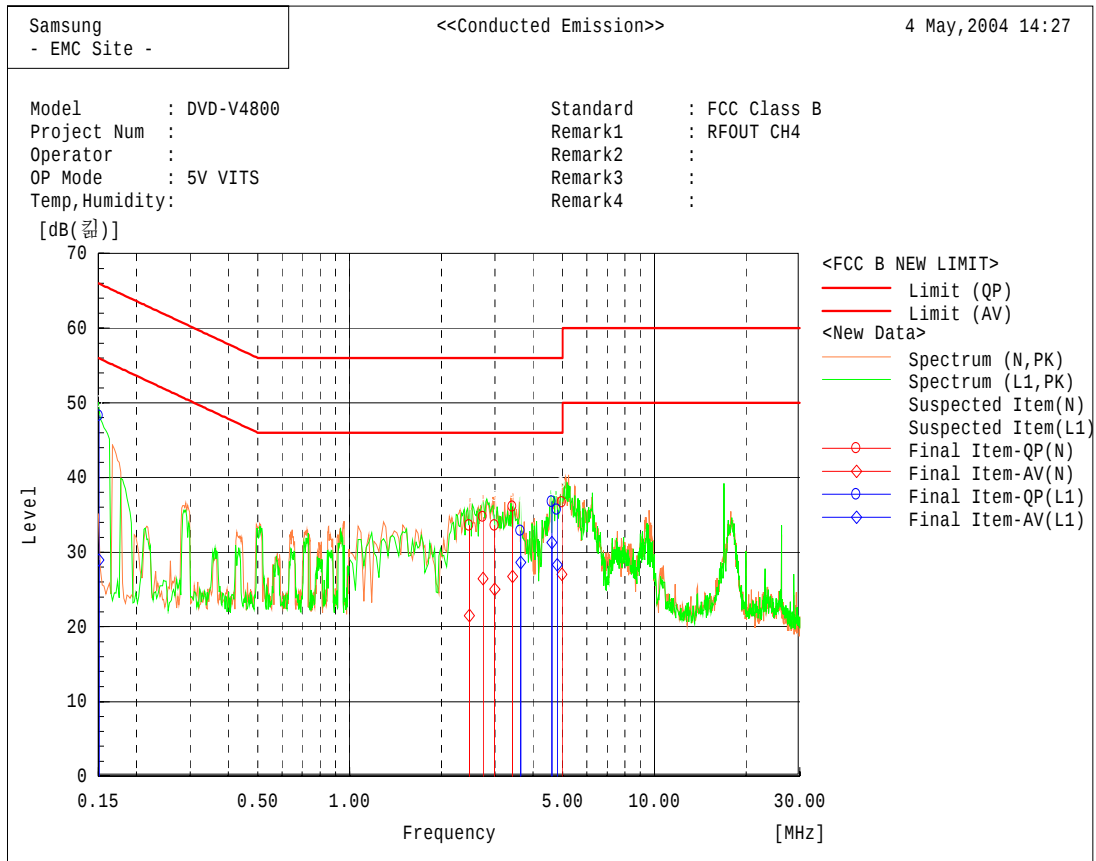
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.8488	35.3	29.4	0.1	35.4	29.5	56.0	46.0	20.6	16.5
2	3.4417	33.6	25.7	0.1	33.7	25.8	56.0	46.0	22.4	20.2
3	4.668	36.6	29.7	0.0	36.6	29.7	56.0	46.0	19.4	16.4
4	4.9879	37.3	29.3	0.0	37.3	29.3	56.0	46.0	18.7	16.7

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.15055	48.2	28.7	0.1	48.3	28.8	66.0	56.0	17.8	27.3
2	2.7534	34.2	26.4	0.1	34.3	26.5	56.0	46.0	21.7	19.5

■ Operating Mode : 5V VITS_CH04

[Graph and Data]



Final Result

--- N Phase ---

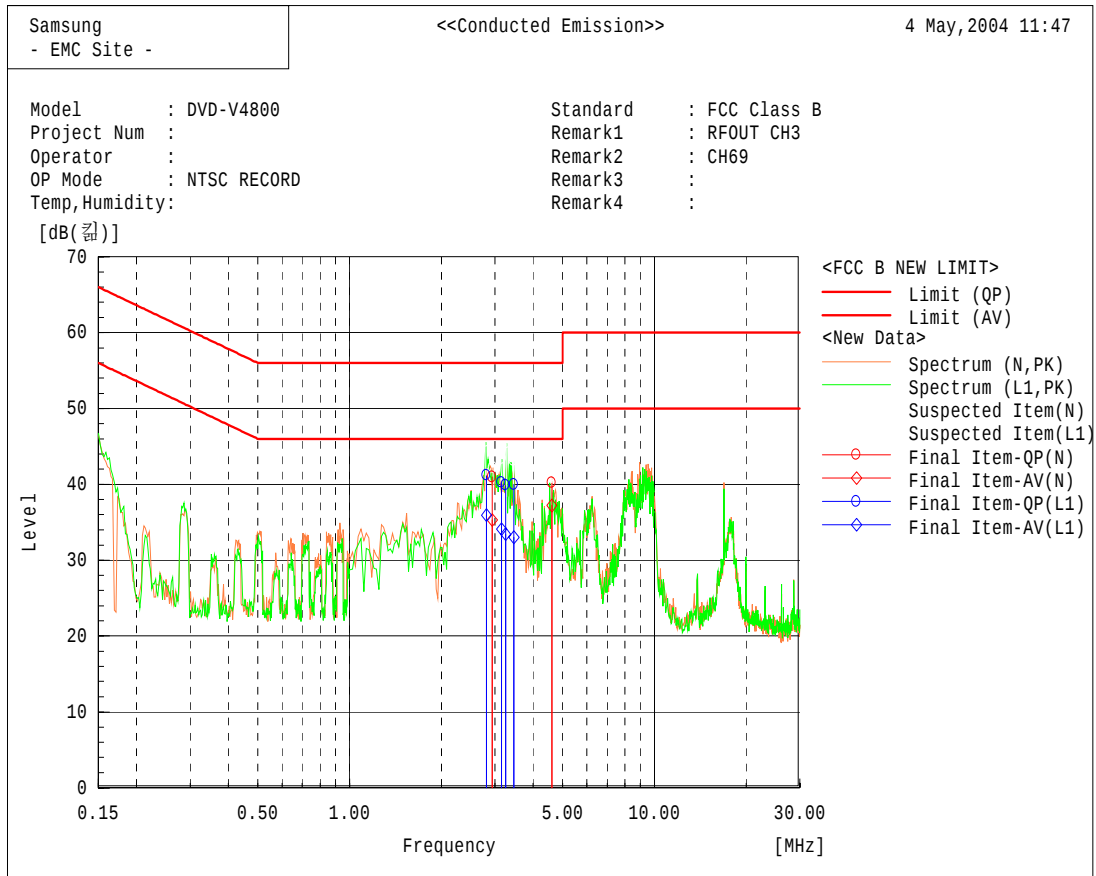
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	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.4706	33.5	21.4	0.1	33.6	21.5	56.0	46.0	22.4	24.5
2	2.7397	34.6	26.4	0.1	34.7	26.5	56.0	46.0	21.3	19.6
3	2.9953	33.5	24.9	0.1	33.6	25.0	56.0	46.0	22.4	21.0
4	3.4253	36.0	26.7	0.1	36.1	26.8	56.0	46.0	19.9	19.2
5	4.9733	36.6	27.1	0.0	36.6	27.1	56.0	46.0	19.4	19.0

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.15046	48.2	28.8	0.1	48.3	28.9	66.0	56.0	17.8	27.1
2	3.6442	32.7	28.5	0.1	32.8	28.6	56.0	46.0	23.2	17.4
3	4.6074	36.8	31.3	0.0	36.8	31.3	56.0	46.0	19.3	14.7
4	4.7958	35.6	28.3	0.0	35.6	28.3	56.0	46.0	20.4	17.7

■ Operating Mode : NTSC_CH03

[Graph and Data]



Final Result

--- N Phase ---

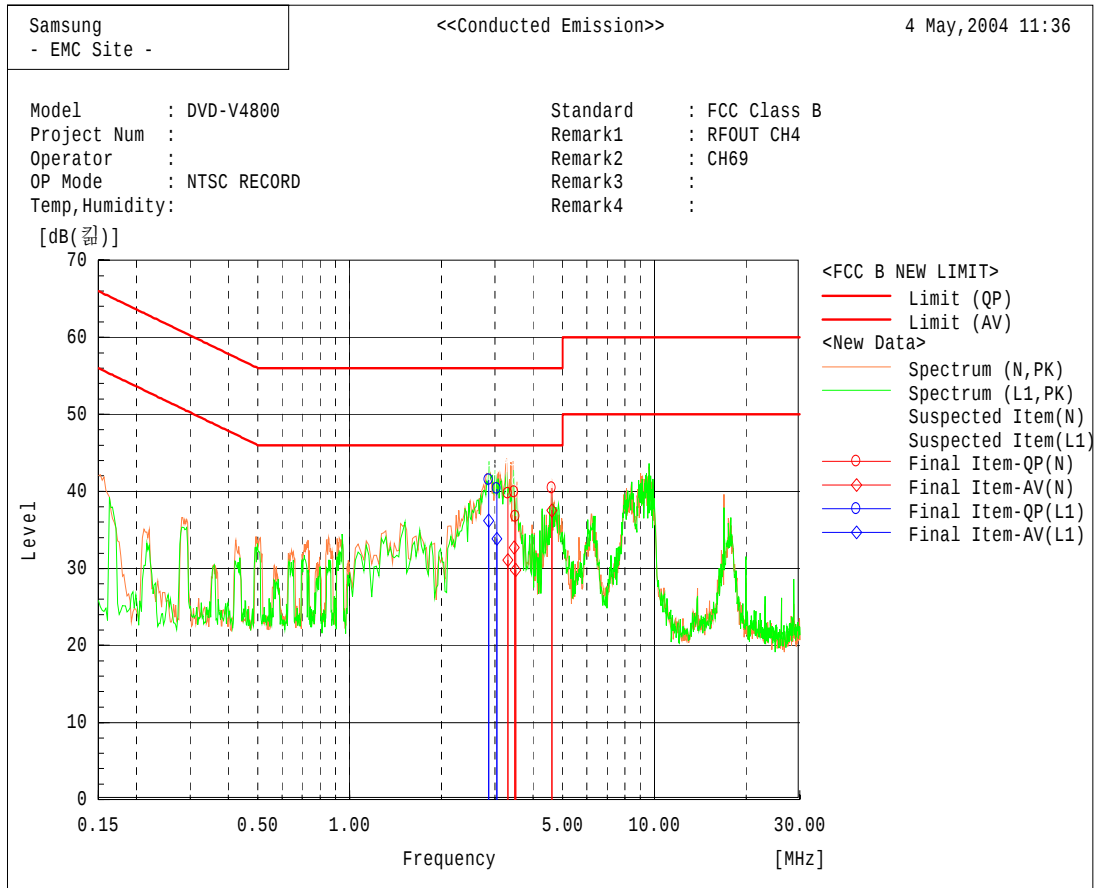
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.9359	40.9	35.2	0.1	41.0	35.3	56.0	46.0	15.0	10.7
2	4.6083	40.2	37.2	0.0	40.2	37.2	56.0	46.0	15.8	8.8

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.814	41.1	35.8	0.1	41.2	35.9	56.0	46.0	14.8	10.1
2	3.1483	40.1	34.0	0.1	40.2	34.1	56.0	46.0	15.8	11.9
3	3.2516	39.8	33.3	0.1	39.9	33.4	56.0	46.0	16.1	12.6
4	3.4642	39.9	32.9	0.1	40.0	33.0	56.0	46.0	16.0	13.0

■ Operating Mode : NTSC_CH04

[Graph and Data]



Final Result

--- N Phase ---

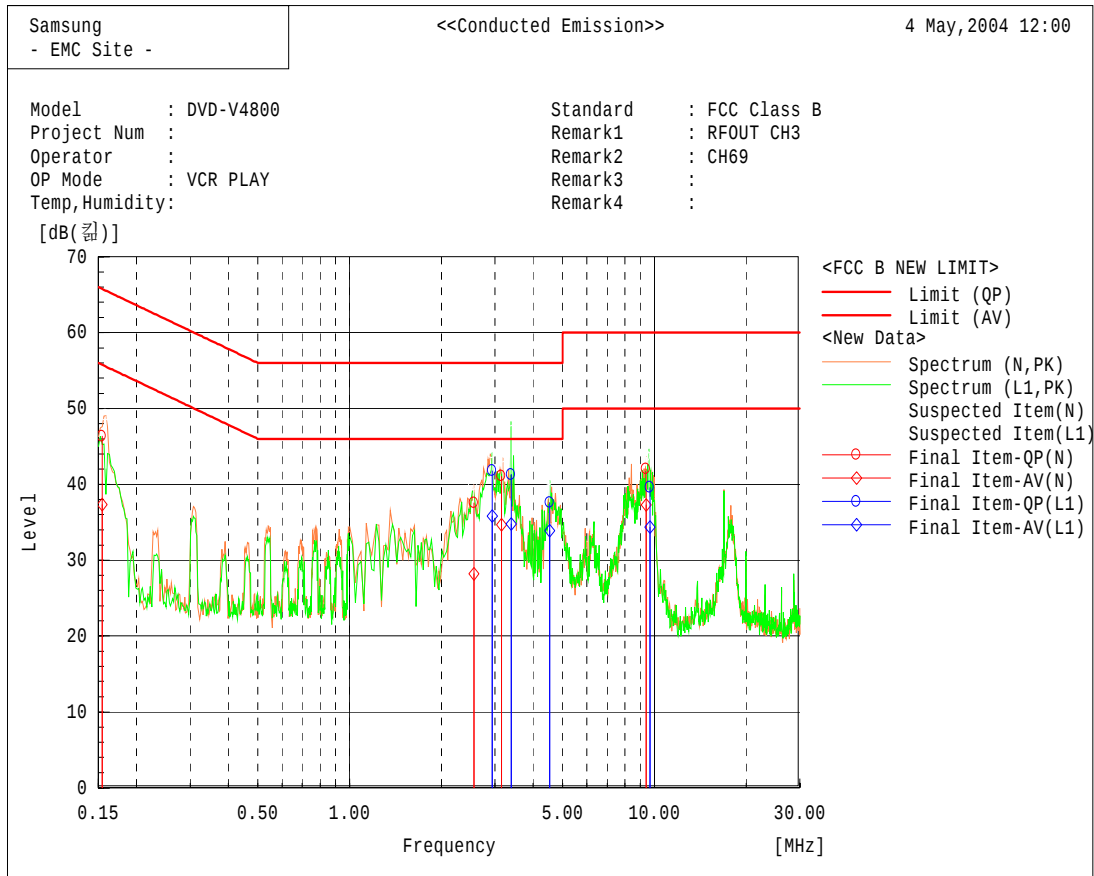
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	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	3.3087	39.6	31.0	0.1	39.7	31.1	56.0	46.0	16.3	14.9
2	3.4662	39.8	32.6	0.1	39.9	32.7	56.0	46.0	16.1	13.3
3	3.5052	36.7	29.7	0.1	36.8	29.8	56.0	46.0	19.3	16.2
4	4.6077	40.4	37.5	0.0	40.4	37.5	56.0	46.0	15.6	8.5

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.8612	41.4	36.1	0.1	41.5	36.2	56.0	46.0	14.5	9.8
2	3.0435	40.2	33.7	0.1	40.3	33.8	56.0	46.0	15.7	12.2

■ Operating Mode : VCR PLAY_CH03

[Graph and Data]



Final Result

--- N Phase ---

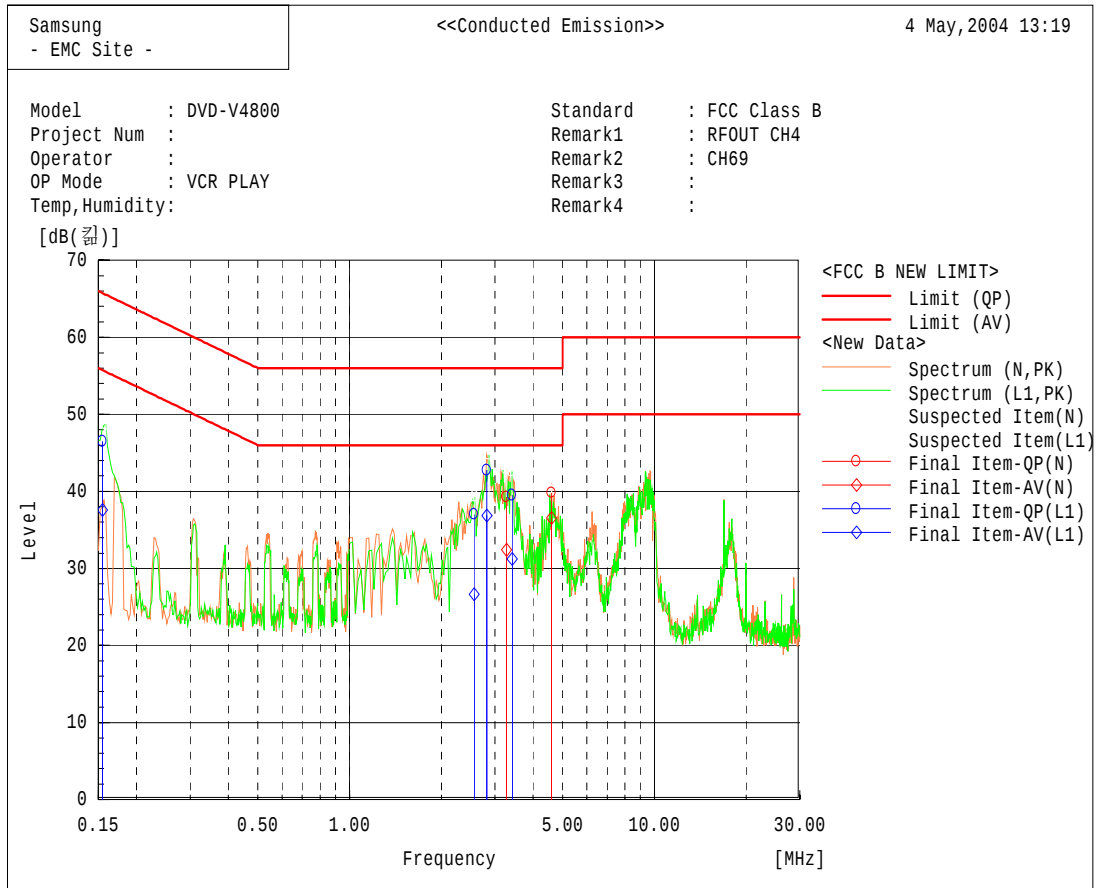
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.15436	46.3	37.2	0.1	46.4	37.3	65.8	55.8	19.4	18.5
2	2.5586	37.4	28.1	0.1	37.5	28.2	56.0	46.0	18.5	17.8
3	3.1479	40.9	34.6	0.1	41.0	34.7	56.0	46.0	15.0	11.3
4	9.404	41.9	37.2	0.1	42.0	37.3	60.0	50.0	18.0	12.7

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.940	41.7	35.7	0.1	41.8	35.8	56.0	46.0	14.2	10.2
2	3.3884	41.2	34.7	0.1	41.3	34.8	56.0	46.0	14.7	11.2
3	4.5393	37.6	33.9	0.0	37.6	33.9	56.0	46.0	18.4	12.1
4	9.6567	39.4	34.2	0.2	39.6	34.4	60.0	50.0	20.4	15.6

■ Operating Mode : VCR PLAY_CH04

[Graph and Data]



Final Result

--- N Phase ---

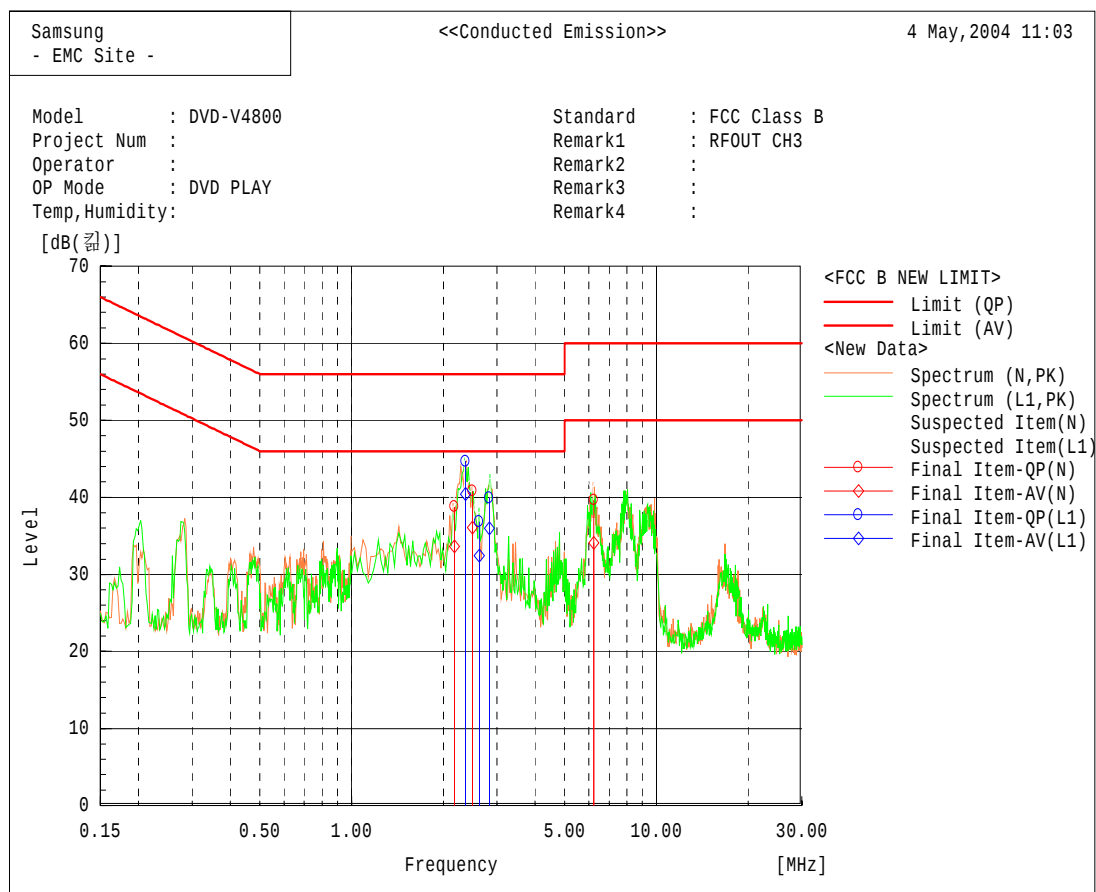
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	3.2743	39.2	32.3	0.1	39.3	32.4	56.0	46.0	16.7	13.6
2	4.6036	39.8	36.5	0.0	39.8	36.5	56.0	46.0	16.2	9.5

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.15491	46.4	37.5	0.1	46.5	37.6	65.7	55.7	19.2	18.1
2	2.5656	36.9	26.6	0.1	37.0	26.7	56.0	46.0	19.0	19.3
3	2.8239	42.7	36.8	0.1	42.8	36.9	56.0	46.0	13.3	9.1
4	3.4111	39.4	31.1	0.1	39.5	31.2	56.0	46.0	16.5	14.8

■ Operating Mode : DVD PLAY_CH03

[Graph and Data]



Final Result

--- N Phase ---

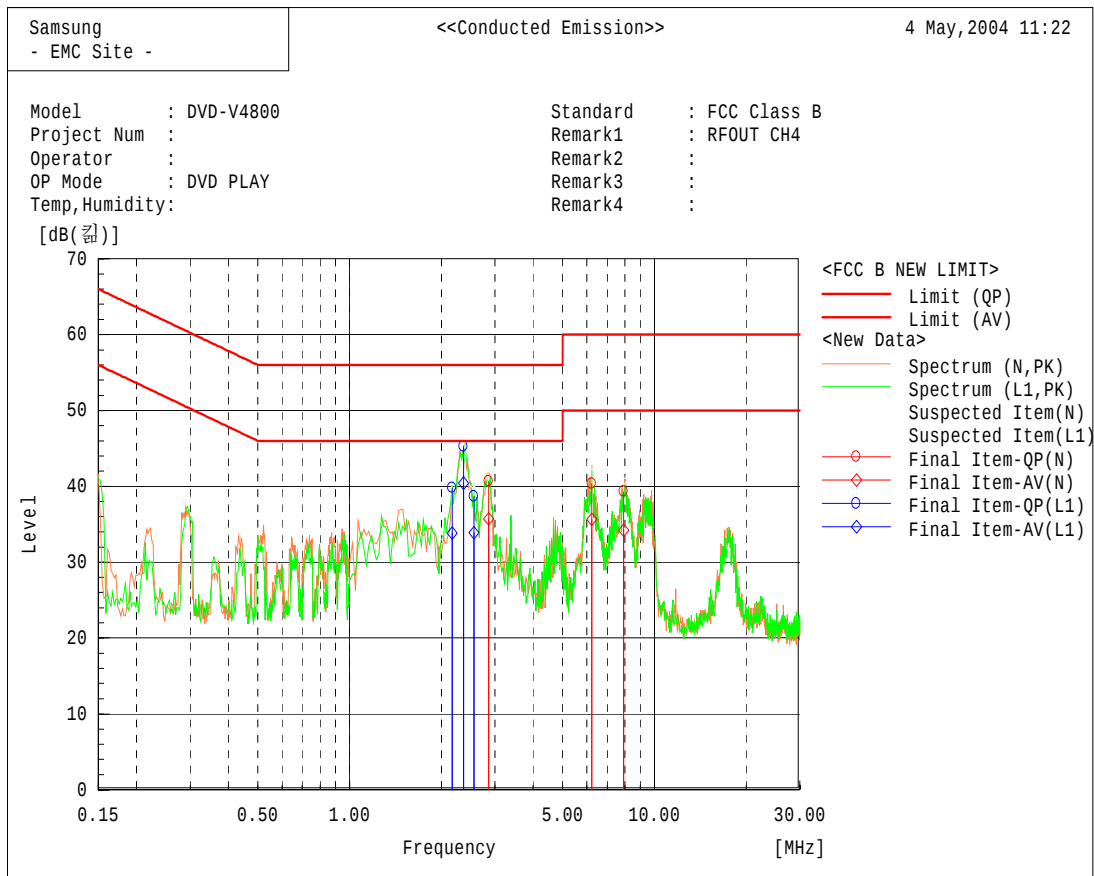
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.1745	38.6	33.5	0.1	38.7	33.6	56.0	46.0	17.3	12.4
2	2.4936	40.7	36.0	0.1	40.8	36.1	56.0	46.0	15.2	9.9
3	6.2315	39.5	34.0	0.1	39.6	34.1	60.0	50.0	20.4	15.9

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.3662	44.6	40.3	0.1	44.7	40.4	56.0	46.0	11.4	5.6
2	2.6218	36.7	32.3	0.1	36.8	32.4	56.0	46.0	19.2	13.6
3	2.8304	39.8	35.9	0.1	39.9	36.0	56.0	46.0	16.1	10.0

■ Operating Mode : DVD PLAY_CH04

[Graph and Data]



Final Result

--- N Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.8603	40.5	35.6	0.1	40.6	35.7	56.0	46.0	15.4	10.3
2	6.2331	40.3	35.6	0.1	40.4	35.7	60.0	50.0	19.6	14.3
3	7.9293	39.3	34.2	0.0	39.3	34.2	60.0	50.0	20.7	15.8

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	2.1738	39.7	33.7	0.1	39.8	33.8	56.0	46.0	16.2	12.2
2	2.3649	45.2	40.3	0.1	45.3	40.4	56.0	46.0	10.8	5.6
3	2.5572	38.6	33.8	0.1	38.7	33.9	56.0	46.0	17.3	12.1

3.2 Radiated Emission

Test Information		
	Test Engineer	Tae Young JANG
	Test Date	May 05, 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
Test Receiver	ESCS30	R&S	100010	2004-05-04	12
Turn Table	DT430	HD	430/691/01	N/A	N/A
Antenna Mast	MA240	HD	240/678 BJ:01	N/A	N/A
BILOG Antenna	CBL6112B	Schaffner	2804	2004-06-26	12
Controller	HD100	HD	100/723	N/A	N/A
Horn Antenna	HF906	R&S	100027	2003-08-19	12

EUT Test Setup

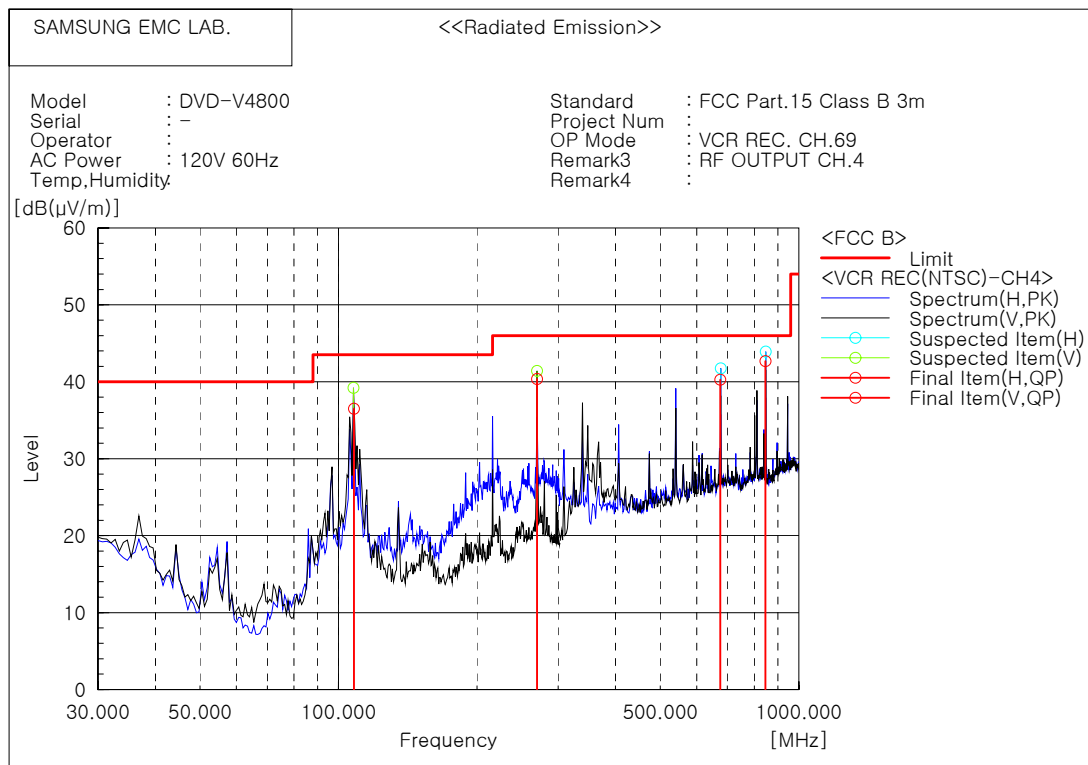
EUT set up in semi-anechoic chamber. EUT positioned at 3m from antenna in center of table.
All ports terminated into characteristic loads.

Test Result

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

Test Data

■ Operating Mode : NTSC_CH03



Final Result

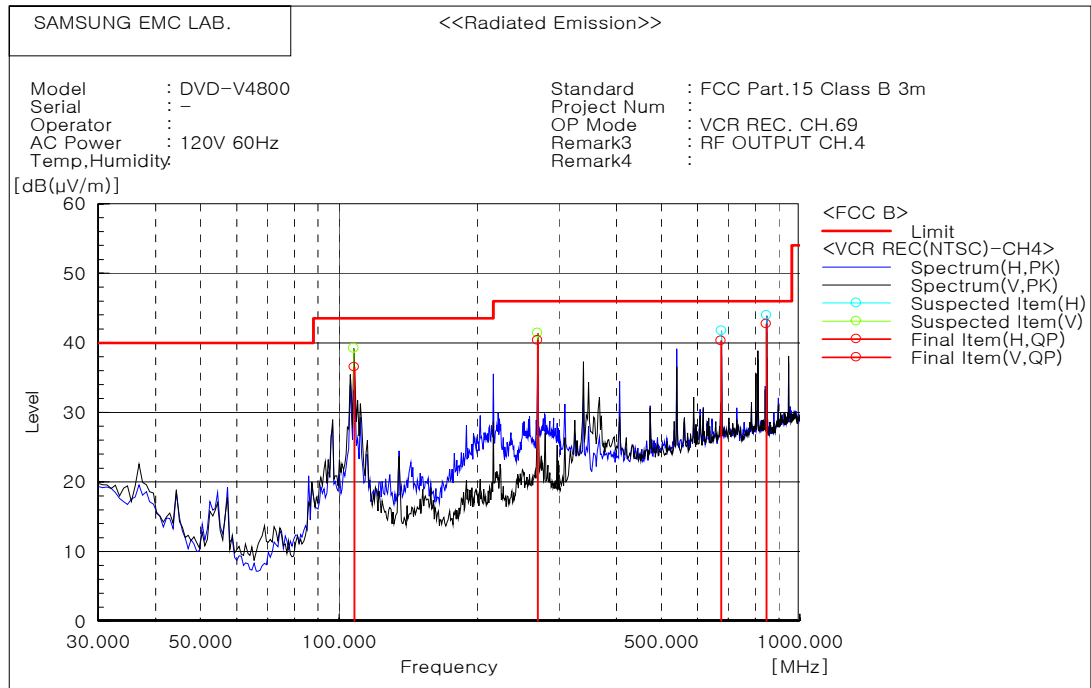
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	42.6	-2.3	40.3	46.0	5.7
2	846.960	43.3	-0.6	42.7	46.0	3.3

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	107.996	50.8	-14.3	36.5	43.5	7.0
2	269.996	51.0	-10.6	40.4	46.0	5.6

■ Operating Mode : NTSC_CH04



Final Result

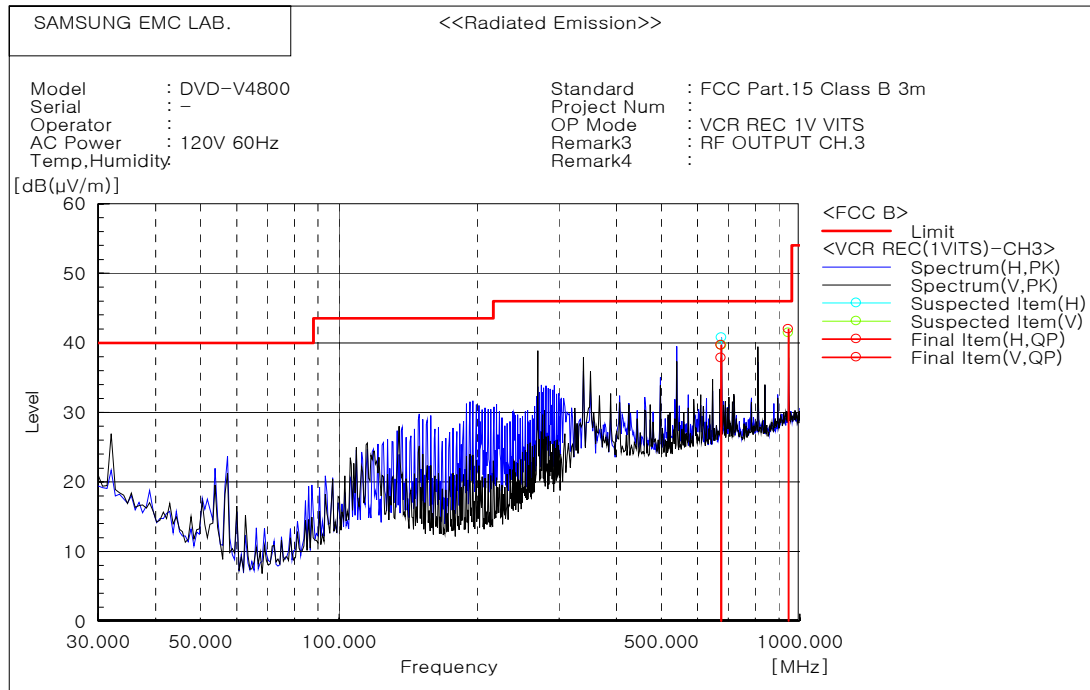
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	42.6	-2.3	40.3	46.0	5.7
2	846.960	43.3	-0.6	42.7	46.0	3.3

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	107.996	50.8	-14.3	36.5	43.5	7.0
2	269.996	51.0	-10.6	40.4	46.0	5.6

■ Operating Mode : 1V VITS_CH03



Final Result

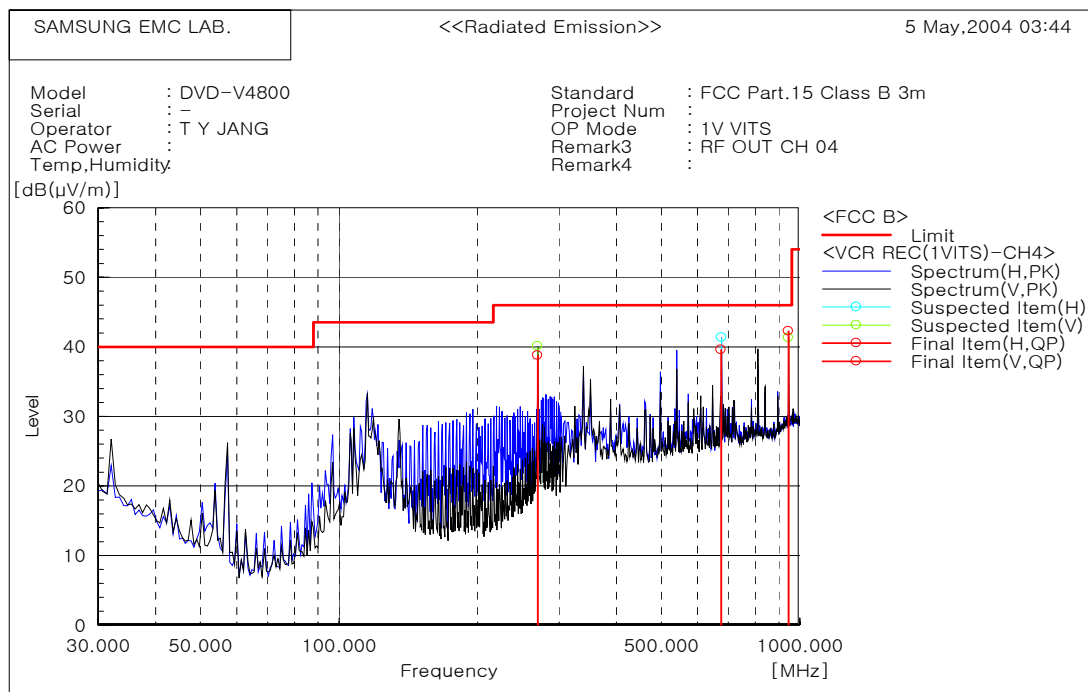
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	41.9	-2.3	39.6	46.0	6.4

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	40.1	-2.3	37.8	46.0	8.2
2	945.000	40.1	1.8	41.9	46.0	4.1

■ Operating Mode : 1V VITS_CH04



Final Result

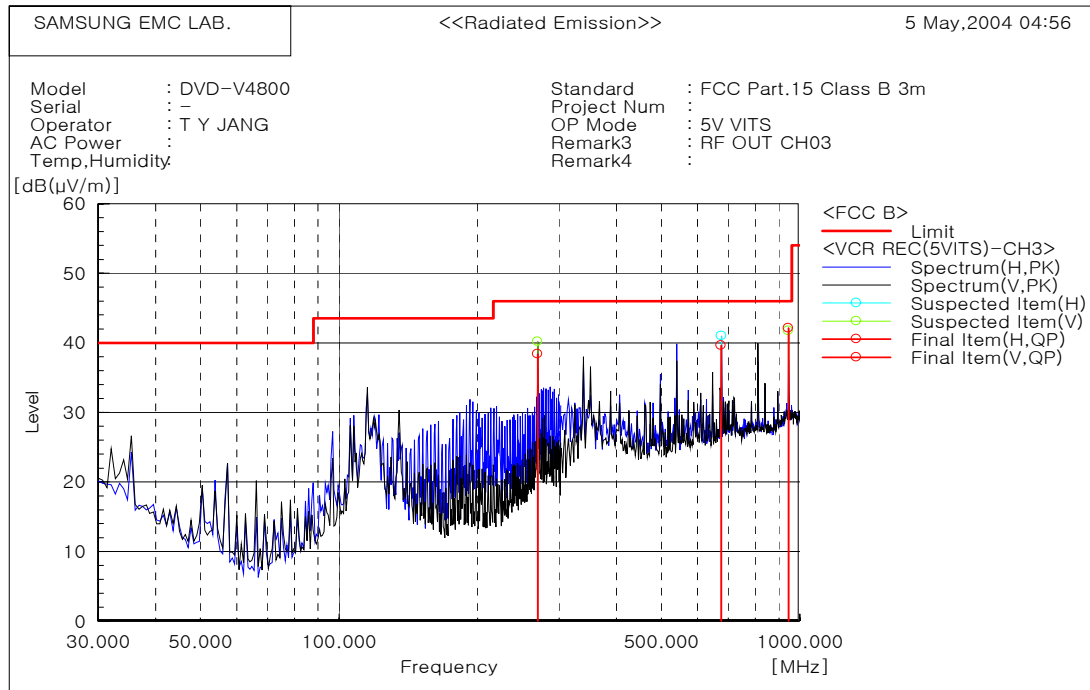
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	41.9	-2.3	39.6	46.0	6.4

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	269.996	49.4	-10.6	38.8	46.0	7.3
2	945.000	40.4	1.8	42.2	46.0	3.8

■ Operating Mode : 5V VITS_CH03



Final Result

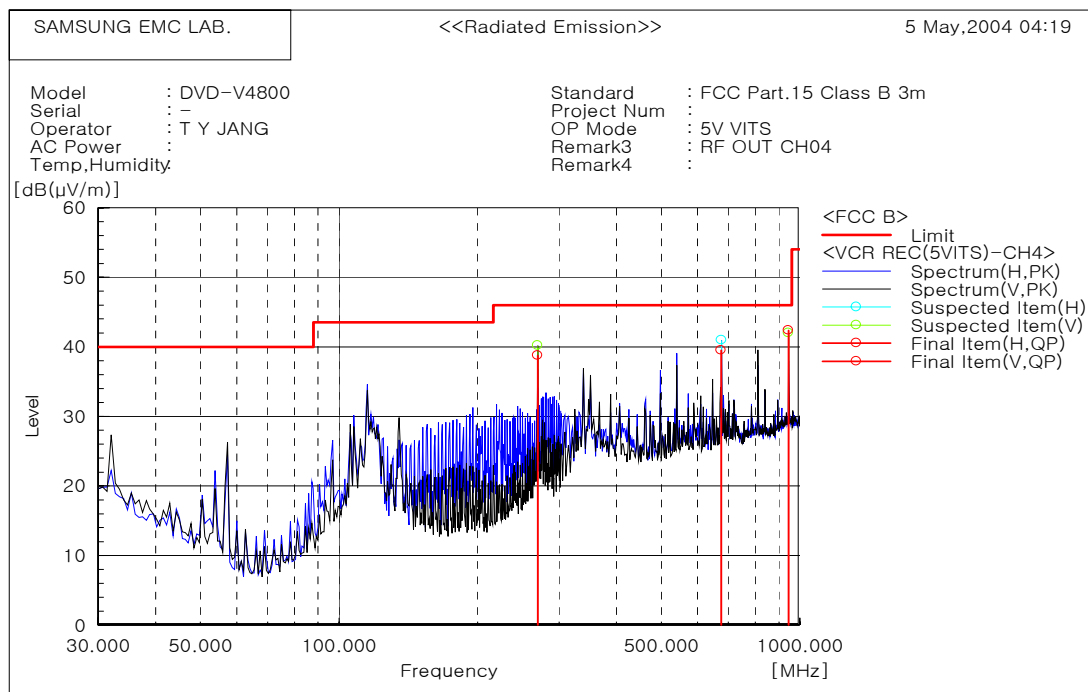
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	41.9	-2.3	39.6	46.0	6.4

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	269.996	49.0	-10.6	38.4	46.0	7.7
2	945.000	40.3	1.8	42.1	46.0	3.9

■ Operating Mode : 5V VITS_CH04



Final Result

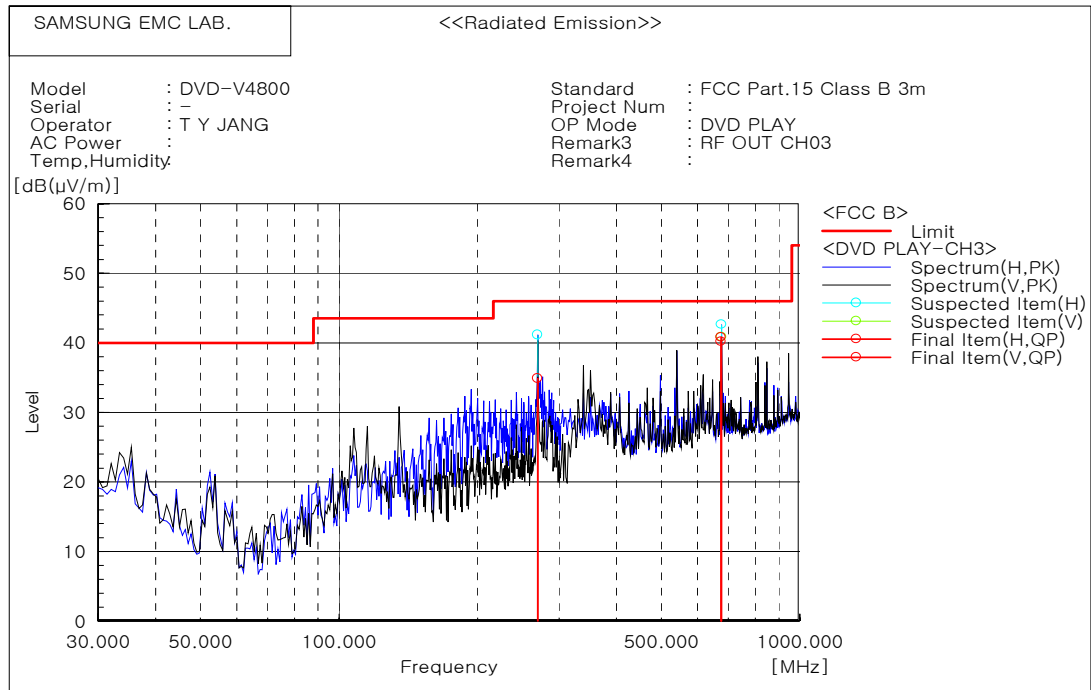
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	41.8	-2.3	39.5	46.0	6.5

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	269.996	49.4	-10.6	38.8	46.0	7.3
2	945.000	40.6	1.8	42.4	46.0	3.6

■ Operating Mode : DVD PLAY_CH03



Final Result

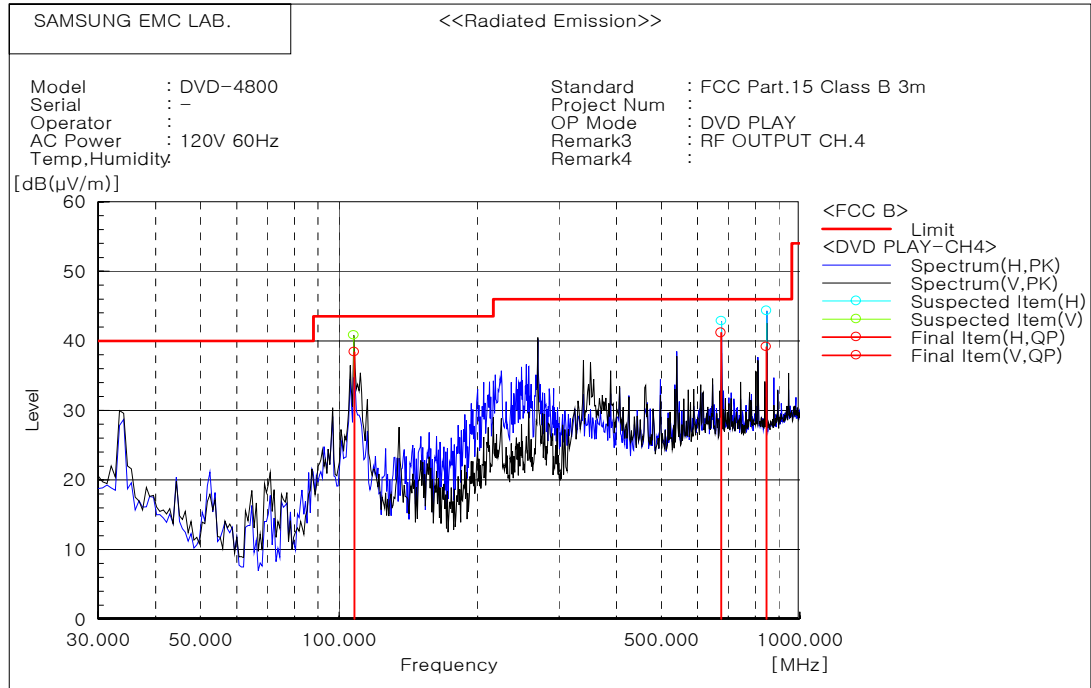
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	43.1	-2.3	40.8	46.0	5.2
2	269.996	45.5	-10.6	34.9	46.0	11.1

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	42.4	-2.3	40.1	46.0	5.9

■ Operating Mode : DVD PLAY_CH04



Final Result

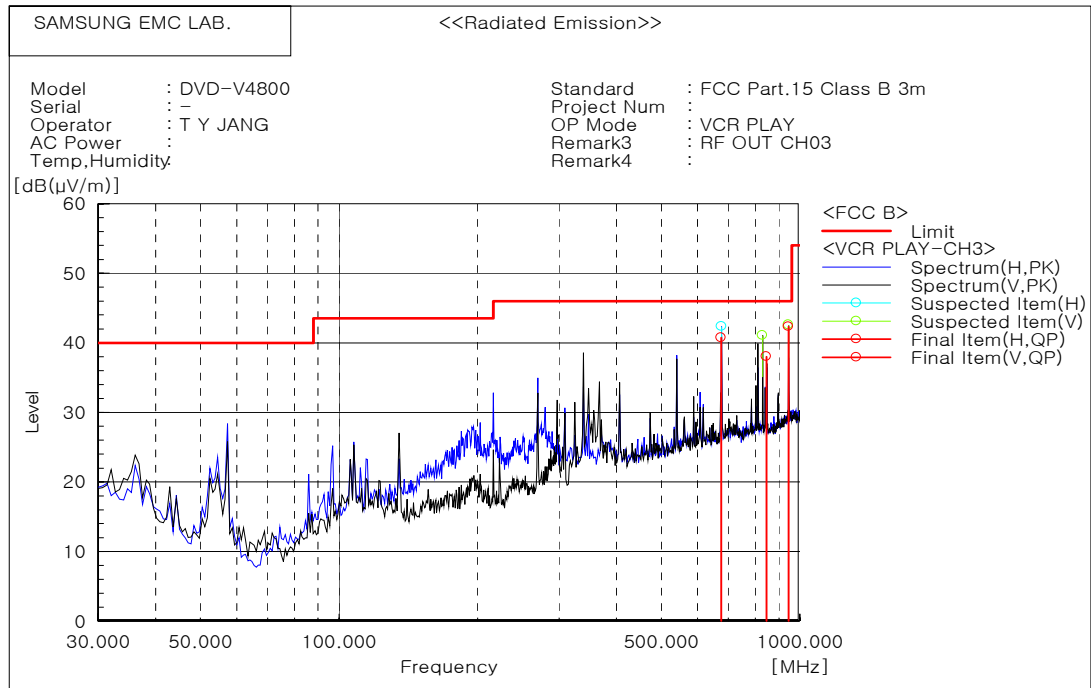
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	43.4	-2.3	41.1	46.0	4.9
2	846.950	39.7	-0.6	39.1	46.0	6.9

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	107.996	52.7	-14.3	38.4	43.5	5.1

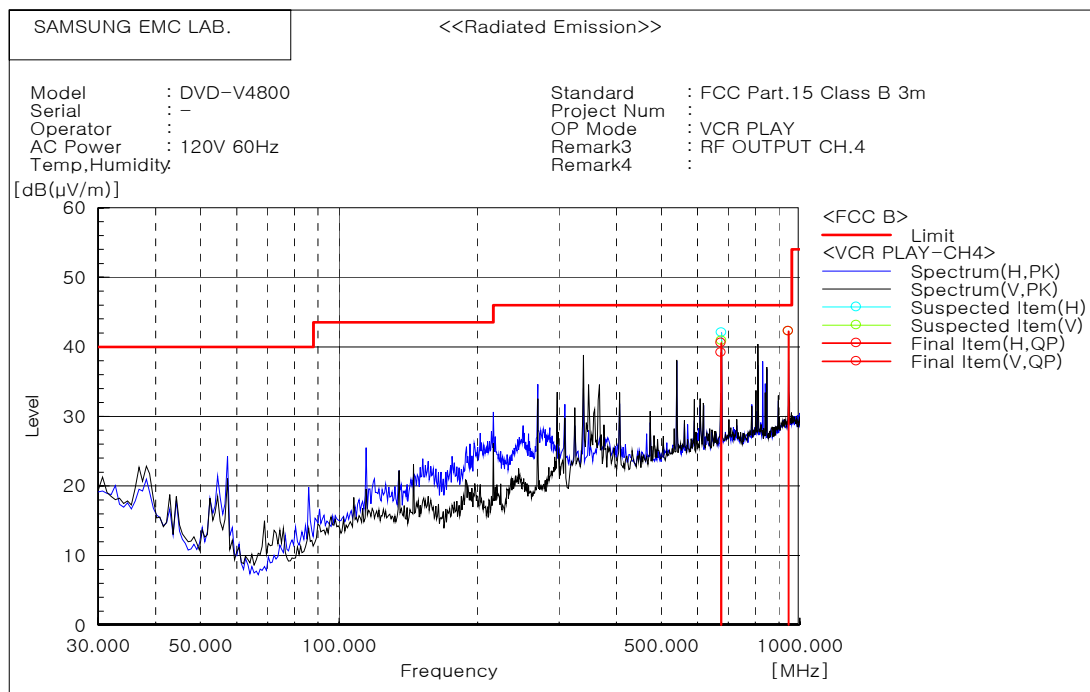
■ Operating Mode : VCR PLAY_CH03



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]
1	674.990	43.0	-2.3	40.7	46.0	5.3
--- Vertical Polarization (QP)---						
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	846.890	38.6	-0.6	38.0	46.0	8.0
2	945.000	40.5	1.8	42.3	46.0	3.7

■ Operating Mode : VCR PLAY_CH04



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]
1	674.990	42.8	-2.3	40.5	46.0	5.5

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	674.990	41.4	-2.3	39.1	46.0	6.9
2	945.000	40.4	1.8	42.2	46.0	3.8

3.3 Output Signal Level

Test Information		
	Test Engineer	Tae Young JANG
	Test Date	May 08, 2004
	Climate Condition	Ambient Temperature : 23℃ Relative Humidity : 37%
	Test Place	Shield Room #5

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2004-09-20	12
Pre-Amplifier	310N	SONOMA	185861	2004-09-20	12
Test Receiver	ESS	R&S	844861/005	2005-01-05	12
Matching Pad	RAM	R&S	834188/009	2005-01-08	12
Spectrum Analyzer	E7405A	Agilent	US41110272	2004-07-12	12
RF Matrix	PSU	R&S	861206/024	N/A	12

EUT Test Setup

The RF output terminal was connected to the test receiver through the matching pad(75-50 ohm) with a cable. Then, the RF output signal level was measured under the EUT Operating mode(s).

Test Result

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

Test Data

* Operating Mode : Recording(NTSC Signal)

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
56.768	76.5	-25.1	51.4	56.5	5.1
61.253	90.6	-25.1	65.5	69.5	4
65.74	75.1	-25.1	50	56.5	6.5

* Operating Mode : Recording(1V VITS Signal)

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
56.765	76.4	-25.1	51.3	56.5	5.3
61.255	90.5	-25.1	65.4	69.5	4.1
65.75	75.1	-25.1	50	56.5	6.5

* Operating Mode : Recording(5V VITS Signal)

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
56.768	76.4	-25.1	51.3	56.5	5.3
61.255	90.5	-25.1	65.4	69.5	4.1
65.753	75.2	-25.1	50.1	56.5	6.4

* Operating Mode : VCR Play

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
56.755	76.4	-25.1	51.3	56.5	5.2
61.253	90.5	-25.1	65.4	69.5	4.1
65.753	75.2	-25.1	50.1	56.5	6.4

* Operating Mode : DVD Play

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
56.748	76.1	-25.1	51	56.5	5.5
61.255	90.6	-25.1	65.5	69.5	4
65.75	75	-25.1	49.9	56.5	6.6

* Operating Mode : Recording(NTSC Signal)

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
62.758	75.7	-25.1	50.6	56.5	5.9
67.243	90	-25.1	64.9	69.5	4.6
71.728	74.5	-25.1	49.4	56.5	7.2

* Operating Mode : Recording(1V VITS Signal)

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
62.753	75.7	-25.1	50.6	56.5	5.9
67.243	89.8	-25.1	64.7	69.5	4.8
71.735	74.4	-25.1	49.3	56.5	7.2

* Operating Mode : Recording(5V VITS Signal)

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
62.748	75.7	-25.1	50.6	56.5	5.9
67.25	90	-25.1	64.9	69.5	4.6
71.735	74.4	-25.1	49.3	56.5	7.2

* Operating Mode : VCR Play

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
62.74	75.7	-25.1	50.6	56.5	5.9
67.243	89.8	-25.1	64.7	69.5	4.8
71.74	74.5	-25.1	49.4	56.5	7.1

* Operating Mode : DVD Play

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
62.743	75.7	-25.1	50.6	56.5	5.9
67.238	89.9	-25.1	64.8	69.5	4.7
71.735	74.4	-25.1	49.3	56.5	7.2

3.4 Output Terminal Conducted Spurious

Test Information		
	Test Engineer	Tae Young, JANG
	Test Date	May 08, 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
Pre-Amplifier	310N	SONOMA	185861	2004-09-20	12
RF Matrix	PSU	R&S	861206/024	N/A	12
Spectrum Analyzer	E7405A	Agilent	US41110272	2004-07-12	12
COLOR TV PATTERN GENERATOR	PM5418-TDSI	PHILIPS	LO612437	9/20/2004	

EUT Test Setup

The RF output terminal was connected to the test receiver through the matching pad(75-50 ohm) with a cable. Then, the RF output signal level was measured under the EUT Operating mode(s).

Tested frequency range were from 30MHz to more than 4.6MHz below the visual carrier frequency, and from more than 7.4MHz above the visual carrier frequency to 1000MHz

Test Result

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

Test Data

* Operating Mode : Recording(NTSC Signal)

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
45.6949	36.4	-25.1	11.3	39.5	28.2
47.7189	39.9	-25.1	14.8	39.5	24.7
54.1269	36.8	-25.1	11.7	39.5	27.9
796.75	46.4	-24.2	22.2	39.5	17.3
801.26013	57.5	-24.2	33.3	39.5	6.2
846.96	54.9	-24	30.9	39.5	8.6

* Operating Mode : Recording(1V VITS Signal)

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
53.1069	38.6	-25.1	13.5	39.5	26
54.0316	37.3	-25.1	12.2	39.5	27.3
55.4434	39	-25.1	13.9	39.5	25.6
796.75	46.4	-24.2	22.2	39.5	17.3
801.26013	57.5	-24.2	33.3	39.5	6.2
846.97988	54.9	-24	30.9	39.5	8.6

* Operating Mode : Recording(5V VITS Signal)

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
46.9407	37.6	-25.1	12.5	39.5	27
49.4092	36.7	-25.1	11.6	39.5	27.9
56.175	36.6	-25.1	11.5	39.5	28
796.75	46.4	-24.2	22.2	39.5	17.3
801.26013	57.5	-24.2	33.3	39.5	6.2
846.97988	54.9	-24	30.9	39.5	8.6

* Operating Mode : VCR Play

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
45.7442	32.5	-25.1	7.4	39.5	32.1
47.7542	39.9	-25.1	14.8	39.5	24.7
55.2422	32	-25.1	6.9	39.5	32.6
122.52	41.5	-25	16.5	39.5	23
807.88	42.8	-24.2	18.6	39.5	20.9
908.86013	38.3	-23.3	15	39.5	24.5

* Operating Mode : DVD Play

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
47.7549	40	-25.1	14.9	39.5	24.6
55.6353	49.7	-25.1	24.6	39.5	14.9
55.9798	50.9	-25.1	25.8	39.5	13.7
796.75	46.5	-24.2	22.3	39.5	17.2
801.26013	57.5	-24.2	33.3	39.5	6.2
846.96	55	-24	31	39.5	8.5

* Operating Mode : Recording(NTSC Signal)

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
42.9555	36.1	-25.1	11	39.5	28.5
53.7635	41.2	-25.1	16.1	39.5	23.4
57.2758	39.2	-25.1	14.1	39.5	25.4
796.78013	46.4	-24.2	22.2	39.5	17.3
801.26013	57.5	-24.2	33.3	39.5	6.2
846.96	54.9	-24	30.9	39.5	8.6

* Operating Mode : Recording(1V VITS Signal)

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
53.7366	40.1	-25.1	15	39.5	24.6
57.2758	39.6	-25.1	14.5	39.5	25
60.109	37.9	-25.1	12.8	39.5	26.7
796.75	46.4	-24.2	22.2	39.5	17.3
801.26013	57.4	-24.2	33.2	39.5	6.3
846.99	54.9	-24	30.9	39.5	8.6

* Operating Mode : Recording(5V VITS Signal)

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
52.9179	37	-25.1	11.9	39.5	27.6
53.7464	40.3	-25.1	15.2	39.5	24.3
57.275	39.4	-25.1	14.3	39.5	25.2
796.75	46.4	-24.2	22.2	39.5	17.3
801.26013	57.5	-24.2	33.3	39.5	6.2
846.97988	54.9	-24	30.9	39.5	8.6

* Operating Mode : VCR Play

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
42.9563	39.1	-25.1	14	39.5	25.5
53.7415	39.4	-25.1	14.3	39.5	25.2
57.275	38.4	-25.1	13.3	39.5	26.3
796.75	46.4	-24.2	22.2	39.5	17.3
801.26013	57.4	-24.2	33.2	39.5	6.3
846.95	54.9	-24	30.9	39.5	8.6

* Operating Mode :DVD Play

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
53.7406	39.2	-25.1	14.1	39.5	25.4
60.6004	41.6	-25.1	16.5	39.5	23
62.5341	52.8	-25.1	27.7	39.5	11.8
796.79	46.3	-24.2	22.1	39.5	17.4
801.26013	57.5	-24.2	33.3	39.5	6.2
846.96	54.9	-24	30.9	39.5	8.6

3.5 Antenna Transfer Switch Measurement

Test Information		
	Test Engineer	Tae Young JANG
	Test Date	May 08, 2004
	Climate Condition	Ambient Temperature : 23℃ Relative Humidity : 37%
	Test Place	Shield Room #5

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2004-09-20	12
Pre-Amplifier	310N	SONOMA	185861	2004-09-20	12
Matching Pad	RAM	R&S	834188/009	2005-01-08	12
RF Matrix	PSU	R&S	861206/024	N/A	12
Spectrum Analyzer	E7405A	Agilent	US4110272	2004-07-12	12
Test Receiver	ESS	R&S	844861/005	2005-01-05	12

EUT Test Setup

The Antenna input terminal is connected to the test receiver through the matching pad (75 – 50 ohm) with a calibrated cable. Then, the RF output leakage level is measured under the EUT operating mode(s).

Test Result

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

* Operating Mode : Recording(1V VITS Signal)

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
61.4432	25.3	-25.1	0.2	9.5	9.3

* Operating Mode : Recording(5V VITS Signal)

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
61.44285	25.3	-25.1	0.2	9.5	9.3

* Operating Mode : VCR Play

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
61.4422	25.1	-25.1	0	9.5	9.5

* Operating Mode : DVD Play

RF Out Ch. : CH 3

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
61.25015	24.4	-25.1	-0.7	9.5	10.2

* Operating Mode : Recording(1V VITS Signal)

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
61.44225	25.4	-25.1	0.3	9.5	9.2

* Operating Mode : Recording(5V VITS Signal)

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
61.4409	25.4	-25.1	0.3	9.5	9.2

* Operating Mode : VCR Play

RF Out Ch. : CH 4

Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
61.44045	25.2	-25.1	0.1	9.5	9.4

* Operating Mode : DVD Play

RF Out Ch. : CH 4

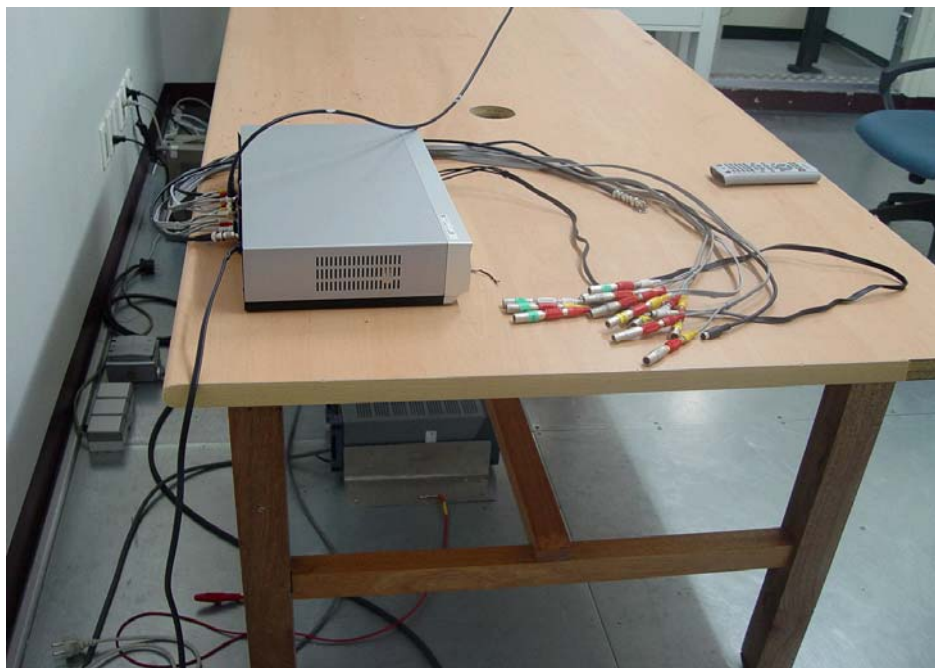
Frequency [MHz]	Reading [dB(μV)]	Factor [dB]	Level [dB(μV)]	Limit [dB(μV)]	Margin [dB]
62.19125	23.7	-25.1	-1.4	9.5	10.9

4. Appendix A

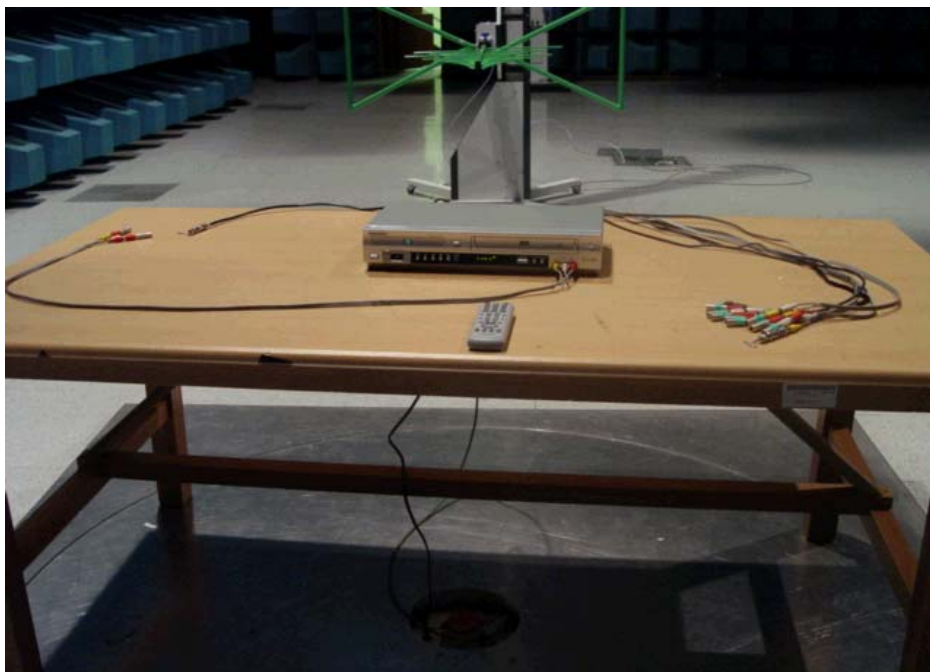
4.1 Test Photography



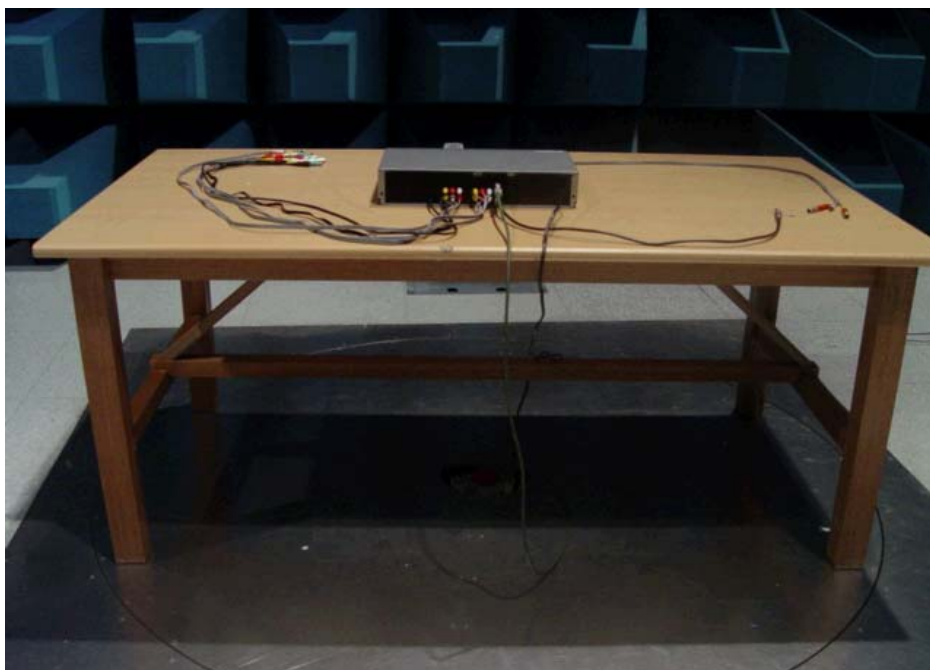
Picture 1. Conducted Emission (Front)



Picture 2. Conducted Emission (Rear)



Picture 3. Radiated Emission (Front)



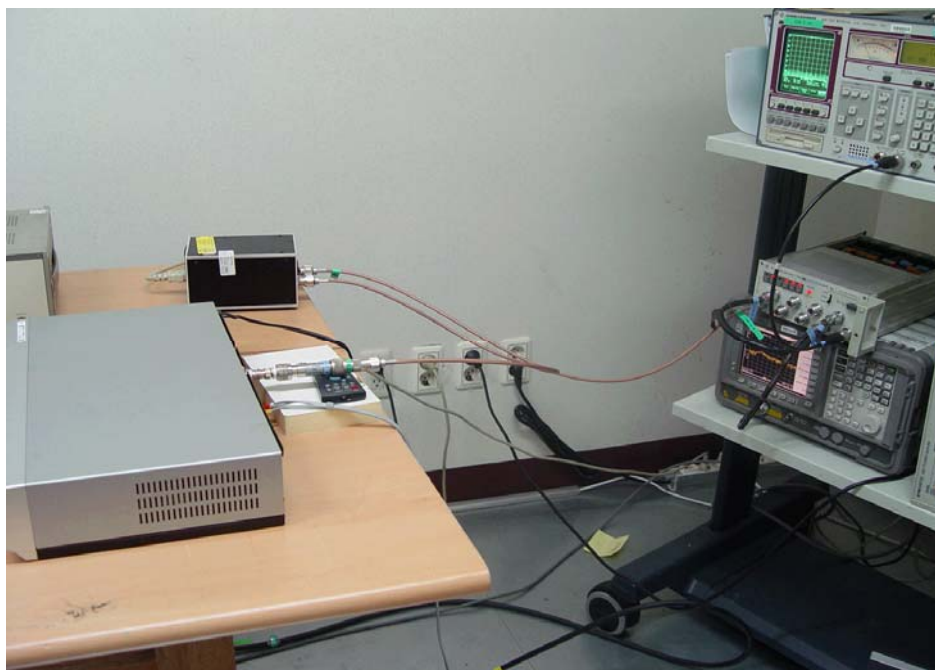
Picture 4. Radiated Emission (Rear)



Picture 5. Output Signal Level



Picture 6. Output Terminal Conducted Spurious Emission



Picture 7. Ant. Transfer Switch

4.2 EUT Photography



Picture 8. EUT (Front)



Picture 9. EUT (Rear)