EMC TEST REPORT

Samsung Electronics Co., Ltd. 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si,Gyeonggi-Do, 443-742 Korea (Tel: 031 277 7752, Fax: 031 277 7753)	Project No. : LBE060823 Page (1)/(76)	KOREA LABORATORY ACCREDITATION SCHEME KOLAS TESTING NO. 124

1. Applicant

◦ Name of organization : Samsung Electronics Co., Ltd.

◦ Address : 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 443-742 Korea

◦ Date of application : 2006. 03. 15

2. Purpose for the report : Approval for EMC

3. Kind of product : DVD Recorder / Video Cassette Recorder (Model name : DVD-VR345)

4. Date of test : 2006. 04. 3 ~ 2006. 04. 13

5. Applied standard : FCC Part 15:2003 Subpart B

6. Test result : **PASS**

The equipment under test has found to be compliant with the applied standards.

(Refer to the attached test result for more detail.)

7. FCC ID : A3LDVDVR345

8. Broadcasting system : NTSC-M

Tested by	Reviewed by
Name : Young Jin, Kim	Name : No Cheon Park

This report is the test result about the sphere accredited by KOLAS which signed the Mutual Recognition Arrangement of International Laboratory Accreditation Cooperation.

2006. 04. 15

Samsung Electronics Co., Ltd.
Chief of CS Management Center

TEST RESULT

Test Report No.	:	LBE060823
Applicant / Address	:	Samsung Electronics Co., Ltd. 416 Maetan 3-Dong, Yeongtong-Gu,Suwon-Si,Gyeonggi-Do 443-742 Korea
Manufacture / Address	:	Samsung Electronics Co., Ltd. 416 Maetan 3-Dong, Yeongtong-Gu,Suwon-Si,Gyeonggi-Do 443-742 Korea
EUT	:	1. Product name : DVD Recorder / Video Casette Recorder 2. Model name : DVD-VR345 3. Brand name : Samsung 4. Variant model : None
Test Method	:	**ANSI C 63.4:2003**
Test Result	:	**PASS** The equipment under test has found to be compliant with the applied standards
Test Lab.	:	CS Management Center, Samsung Electronics Co., Ltd.
Tested by	:	Young Jin, Kim
Reviewed by	:	No Cheon Park
Date of Issue	:	2006. 04. 15

Table of contents

1. General information

1.1 Basic information related product

Applicant	Samsung Electronics Co., Ltd.
Model name	DVD-VR345
Applicant address	416 Maetan 3-Dong, Yeongtong-Gu,Suwon-Si,Gyeonggi-Do 443-742 Korea
Contact person	Woo Sung, Cho
Kind of product	DVD Recorder / Video Casette Recorder
Valiant model	None
Manufacturer	Samsung Electronics Co., Ltd. 416 Maetan 3-Dong, Yeongtong-Gu,Suwon-Si,Gyeonggi-Do 443-742 Korea
Rated power	AC 120 V, 60 Hz
New / Alternative / Permissive change information	New

1.2 Detail Information related product

1.2.1 Specification

General	Power requirements	120V AC, 60Hz
	Power consumption	28 Watts
	Weight	8.75 lb
	Dimensions	16.9 in(W) x 10.6 in(D) x 3.1 in(H)
	Operating temp.	+41°F to +95°F
	Other conditions	Keep level when operating. Less than 75% operating humidity
Input	Video	1.0 V p-p at 75Ωload, sync negative S-Video input (Y: 1.0Vp-p, C: 0.286Vp-p at 75Ωload)
	Max. Audio Input Level	2Vrms
	DV Input	IEEE 1394(4p) compatible jack
	Receivable Channels	Regular TV broadcasting: VHF (2~13), UHF (14~69) Cable TV broadcasting: 1~125
	Audio	Audio output jacks 1, 2 Optical/Coaxial digital audio output support Min. 100 dB signal-to-noise ratio Max. 0.005% total harmonic distortion (T.H.D) at average 1 KHz
	Video	Video output jacks 1 S-Video output 1 (Y:1.0Vp-p, C:0.286Vp-p at 75Ωload) Component output (Y: 1.0Vp-p, Pb: 0.70Vp-p, Pr: 0.70Vp-p at 75Ωload)
		HDMI output (480p, 720p, 1080i)
DVD	Picture Compression format	MPEG-II
	Audio Compression format	Dolby AC-3 256kbps
	Recording Quality	XP (about 8 Mbps), SP (about 4 Mbps), LP (about 2 Mbps), EP (about 1.2 Mbps)
	Video S/N Ratio	Min. 50dB at standard recording
	Audio S/N Ratio	Min. 75dB
	Audio frequency characteristics	20 Hz ~ 20 KHz

Audio Output
For DVD discs, audio signals recorded at 96kHz sampling frequency are converted into and output at 48kHz.

Disc Type	DVD	AUDIO CD(CD-DA)
Analog Audio Output	48 / 96KHz	44.1KHz
Digital Audio Output	48KHz	44.1KHz

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) DVD Play
2) DVD + VCR Recording (NTSC Signal)
A NTSC signal(Color bar) was supplied at ch.69(801.25 MHz) through the ant. Input connector
3) DVD + VCR Recording (1V VITS Signal)
A 1V peak-to-peak VITS signal was supplied through the video input connector for recording.
4) DVD + VCR Recording (5V VITS Signal)
A 5V peak-to-peak VITS signal was supplied through the video input connector for recording.
5) VCR Play
6) DVD Copy mode
7) VCR Copy mode

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 procedure

1.5.1 Conducted emission

EUT was placed on a platform nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The rear of tabletop was located 40 cm to the vertical conducting ground plane.
The rear of EUT, including peripherals was aligned and flush with rear of tabletop.
All other surfaces of tabletop was at least 80 cm from any other grounded conducting surface.
I/O cables and AC cables that were connected to the peripherals were bundled in center.
They were folded back and forth forming a bindle 30 cm to 40 cm long and were handed at a 40 cm height to the ground plane.
Each EUT current-carrying power lead, except the ground(safety) lead, were individually connected through a LISN to the input power source.
All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment.

Frequency Band [MHz]	Equipment	Detector	Resolution Bandwidth	Video Bandwidth
0.15 to 30	EMI Receiver	Quasi-Peak	9 kHz	-
		Average	9 kHz	-

1.5.2 Radiated emission

EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The rear of EUT, including peripherals was aligned and flush with rear of tabletop. The I/O cables that were connected to the peripherals were bundle in center.
They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged 40 cm height to the ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane and the trun table azimuth was varied to obtain the maximum signal strength

The system configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna were noted for each frequency found.
The spectrum was scanned from 30 to 1 000 MHz using biconiLog antenna.

Also, the EMI Receiver was scanned from 1 000 to 2 000 MHz using linearly polarization
Double ridge horn antennas were used. The explanation of measuring equipment setup when Respective function is used in any frequency band is as following;

Frequency Band [MHz]	Equipment	Detector	Resolution Bandwidth	Video Bandwidth
30 to 1 000	EMI Receiver	Quasi-Peak	120 kHz	-
Above 1 000	EMI Receiver	Peak	1 MHz	1 MHz

1.6 Test configuration

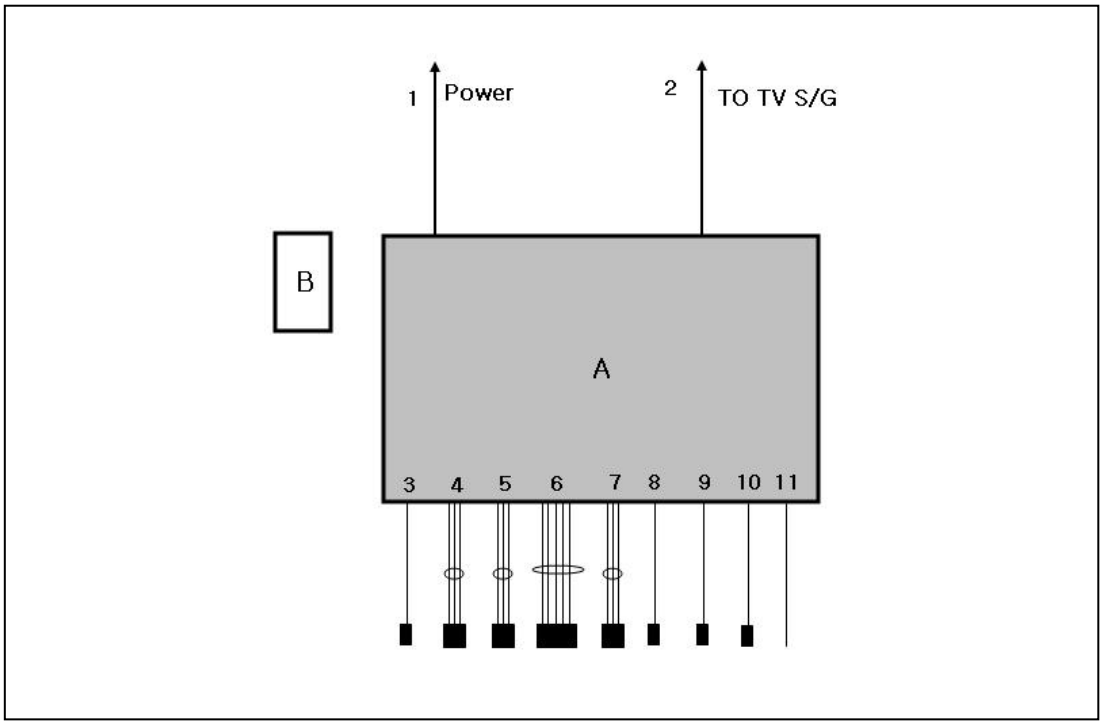
1.6.1 Used EUT and peripherals

Mark	Item	Model No.	Serial No.	Manufacturer	FCC ID/DoC
A	DVD Recorder / Video Casette Recorder	DVD-VR345	-	Samsung	A3LDVDVR345
B	Remote Controller	-	-	Samsung	-

1.6.2 Used cable description

No	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Power	1.5	No	For EUT
2	ANT in	1.5	No	To the SG
3	RF out	1.5	No	Termination
4	AV In 1	1.5	No	Termination
5	AV In 2	1.5	No	Termination
6	Component out	1.5	No	Termination
7	AV Out	1.5	No	Termination
8	S-Video Out	1.5	No	Termination
9	Digital Audio Out	1.5	No	Termination
10	S-Video In	1.5	No	Termination
11	HDMI Out	1.5	No	-

1.6.3 Block diagram



1.7 Applied Standards

Test standard	Test method
FCC Part 15:2003 Subpart B	ANSI C63.4:2003

1.8 Test Facility

1.8.1 General information

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

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.

1.8.2 Accreditation and listing

1.8.3 Measurement uncertainty

(According to CISPR 16-4 and Lab. 34)

Test item		Measurement uncertainty
Conducted emission		± 3.3 dB
Radiated emission	Horizontal	± 4.2 dB
	Vertical	± 4.8 dB

2. Summary of test results

Result : Complied

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

Section of the product standard		Applied standard	Test result
3.1	Conducted Emission	FCC Part 15:2003 Subpart B	Complied
3.2	Radiated Emission	FCC Part 15:2003 Subpart B	Complied
3.3	Output Signal Level	FCC Part 15:2003 Subpart B	Complied
3.4	Output Terminal Conducted Spurious Emission	FCC Part 15:2003 Subpart B	Complied
3.5	Antenna Transfer Switch	FCC Part 15:2003 Subpart B	Complied

3. Description of individual tests

3.1 Conducted emission

3.1.1 Test information

Test engineer	Young Jin, Kim
Test date	April 11, 2006
Climate condition	Ambient temperature : 22.0 ℃, Relative humidity : 34 % Atmospheric pressure 102.0 kPa
Test place	Shielded room # 1

3.1.2 Test equipment

Equipment	Model name	Manufacturer	Serial no.	Calibration	
				Next date	Interval (Month)
Test Software	EMC 32	R&S	None	N/A	N/A
Field strength meter	ESCI	R&S	100136	2006-04-17	12
L.I.S.N	ENV216	R&S	100116	2006-09-08	12
L.I.S.N	ENV216	R&S	100117	2006-08-18	12
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2006-10-10	12

EUT Test Setup

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

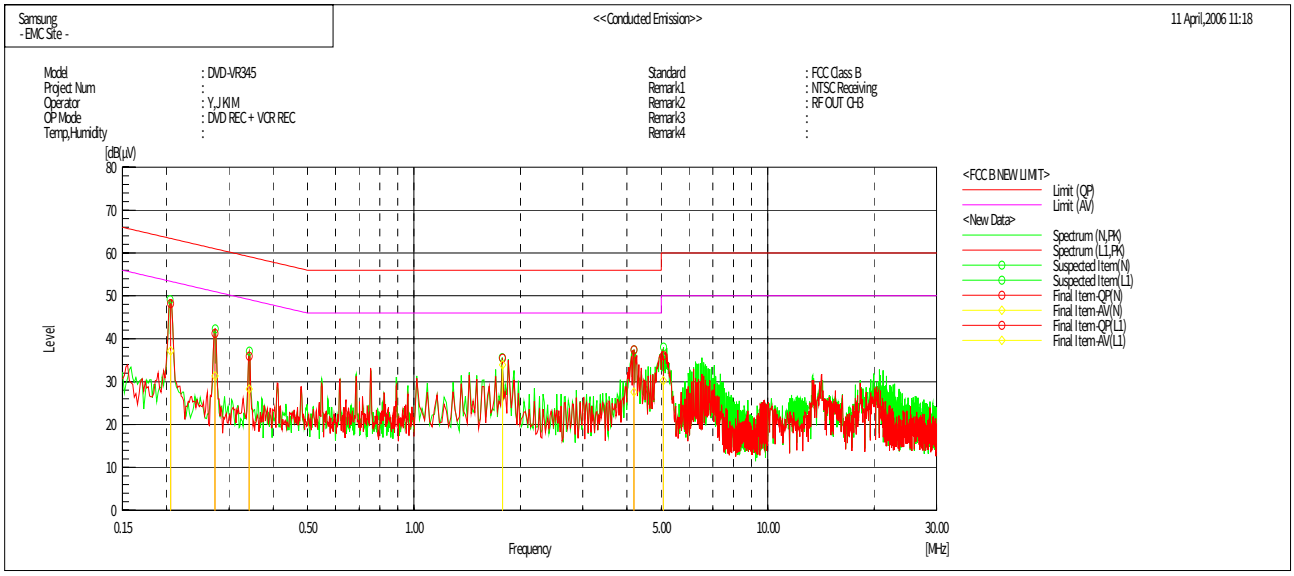
See photo.

Test Result

Measurement Results	Pass The measured emissions of the EUT have found to be below the specified limits.

Test Data

■ Operating Mode: DVD REC + VCR REC(NTSC Receiving) – RF out CH03



Final Result

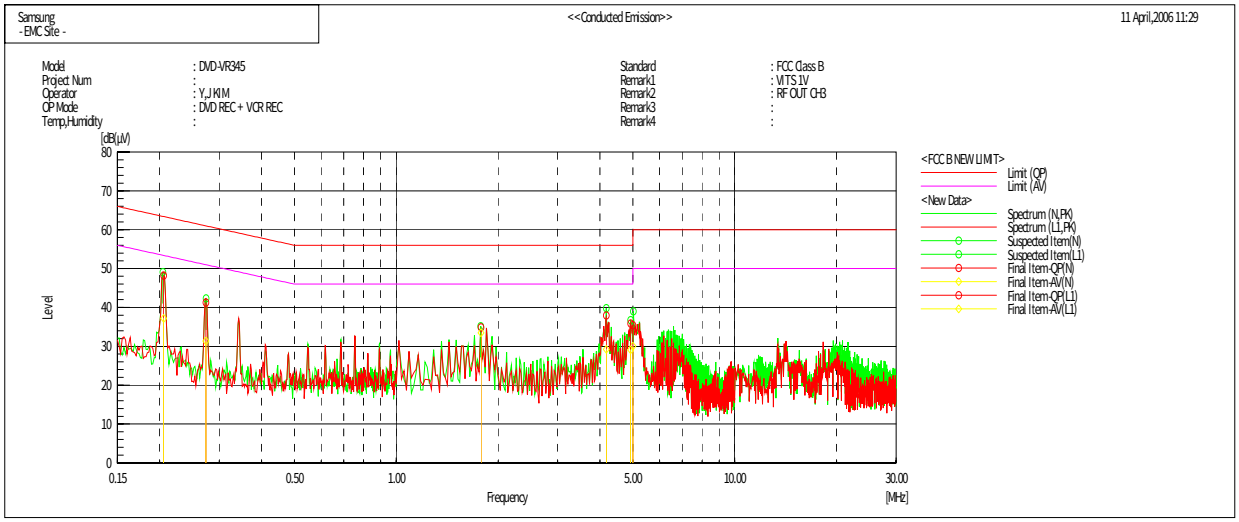
--- N Phase ---

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]	Remark
1	1.78023	25.9	24.3	9.6	35.5	33.9	56.0	46.0	20.5	12.1	
2	5.06535	26.4	20.5	9.7	36.1	30.2	60.0	50.0	23.9	19.8	

--- 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]	Remark
1	0.20533	38.7	27.7	9.5	48.2	37.2	63.4	53.4	15.2	16.2	
2	0.27386	31.8	21.8	9.5	41.3	31.3	61.0	51.0	19.7	19.7	
3	0.34232	26.4	18.8	9.5	35.9	28.3	59.1	49.1	23.2	20.8	
4	4.18537	27.8	18.0	9.6	37.4	27.6	56.0	46.0	18.6	18.4	

■ Operating Mode: DVD REC + VCR REC(VITS 1V) – RF out CH03



Final Result

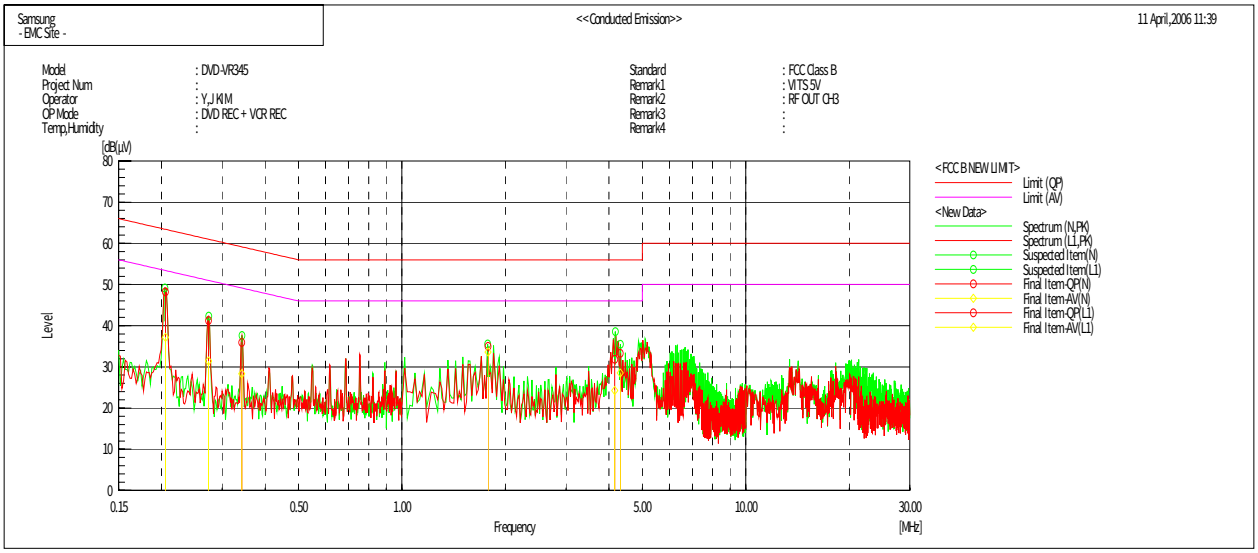
--- N Phase ---

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]	Remark
1	1.78023	25.3	23.9	9.6	34.9	33.5	56.0	46.0	21.1	12.5	
2	4.17471	28.3	19.6	9.6	37.9	29.2	56.0	46.0	18.1	16.8	
3	4.99792	25.7	20.3	9.7	35.4	30.0	56.0	46.0	20.6	16.0	

--- 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]	Remark
1	0.20539	38.7	27.7	9.5	48.2	37.2	63.4	53.4	15.2	16.2	
2	0.27382	31.7	21.9	9.5	41.2	31.4	61.0	51.0	19.8	19.6	
3	4.92988	26.2	19.5	9.6	35.8	29.1	56.0	46.0	20.2	16.9	

■ Operating Mode: DVD REC + VCR REC(VITS 5V) – RF out CH03



Final Result

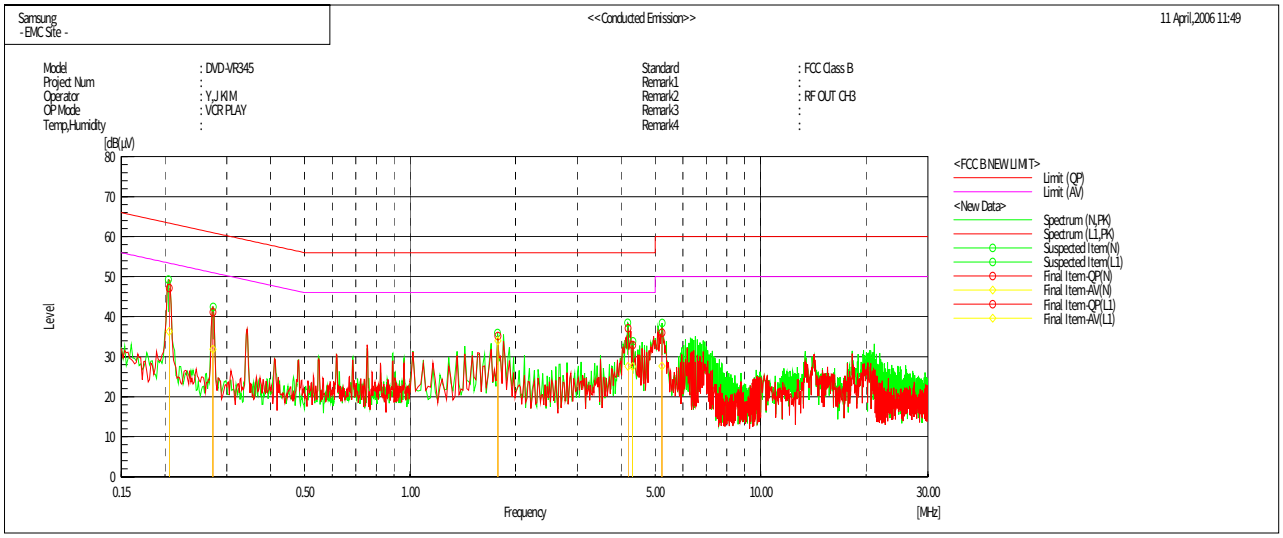
--- N Phase ---

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]	Remark
1	1.78005	25.4	24.0	9.6	35.0	33.6	56.0	46.0	21.0	12.4	
2	4.15851	22.2	14.7	9.6	31.8	24.3	56.0	46.0	24.2	21.7	
3	4.31324	23.7	18.9	9.6	33.3	28.5	56.0	46.0	22.7	17.5	

--- 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]	Remark
1	0.20533	38.7	27.6	9.5	48.2	37.1	63.4	53.4	15.2	16.3	
2	0.2738	31.8	21.9	9.5	41.3	31.4	61.0	51.0	19.7	19.6	
3	0.3423	26.4	18.8	9.5	35.9	28.3	59.1	49.1	23.2	20.8	

■ Operating Mode: VCR PLAY – RF out CH03



Final Result

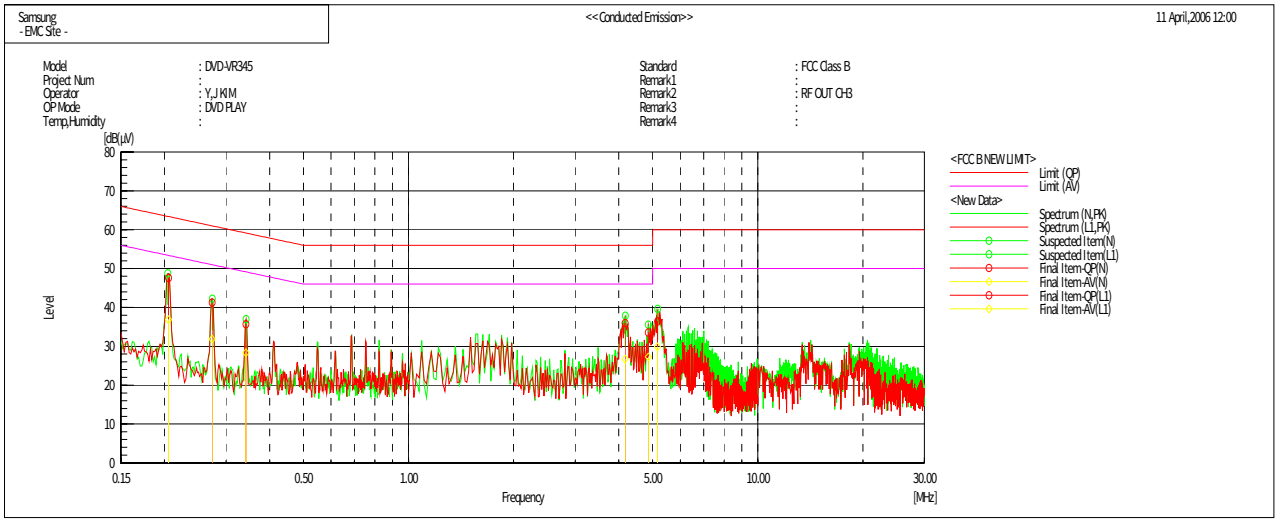
--- N Phase ---

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]	Remark
1	1.77987	25.6	24.4	9.6	35.2	34.0	56.0	46.0	20.8	12.0	
2	4.18389	27.5	18.0	9.6	37.1	27.6	56.0	46.0	18.9	18.4	
3	5.22696	26.3	18.0	9.7	36.0	27.7	60.0	50.0	24.0	22.3	

--- 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]	Remark
1	0.20538	37.6	26.8	9.5	47.1	36.3	63.4	53.4	16.3	17.1	
2	0.27386	31.7	22.4	9.5	41.2	31.9	61.0	51.0	19.8	19.1	
3	4.31324	23.3	17.9	9.6	32.9	27.5	56.0	46.0	23.1	18.5	

■ Operating Mode: DVD Play – RF out CH03



Final Result

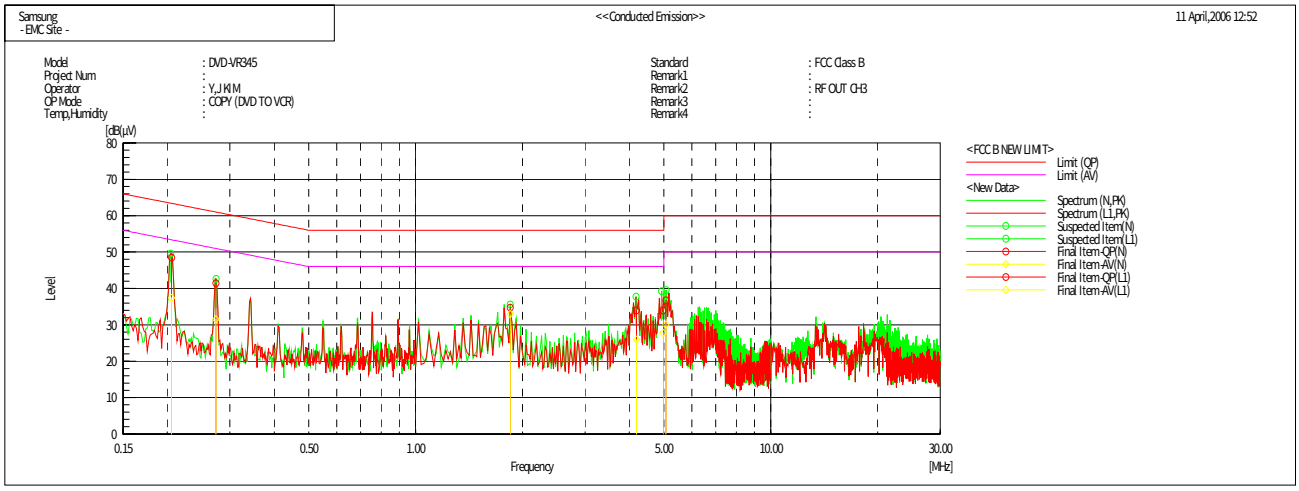
--- N Phase ---

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]	Remark
1	5.16039	26.7	20.1	9.7	36.4	29.8	60.0	50.0	23.6	20.2	

--- 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]	Remark
1	0.20543	38.1	27.4	9.5	47.6	36.9	63.4	53.4	15.8	16.5	
2	0.27389	31.8	22.3	9.5	41.3	31.8	61.0	51.0	19.7	19.2	
3	0.34233	26.2	18.8	9.5	35.7	28.3	59.1	49.1	23.4	20.8	
4	4.17003	26.4	17.1	9.6	36.0	26.7	56.0	46.0	20.0	19.3	
5	4.86098	23.9	17.7	9.6	33.5	27.3	56.0	46.0	22.5	18.7	

■ Operating Mode: DVD COPY _ RF OUT CH3



Final Result

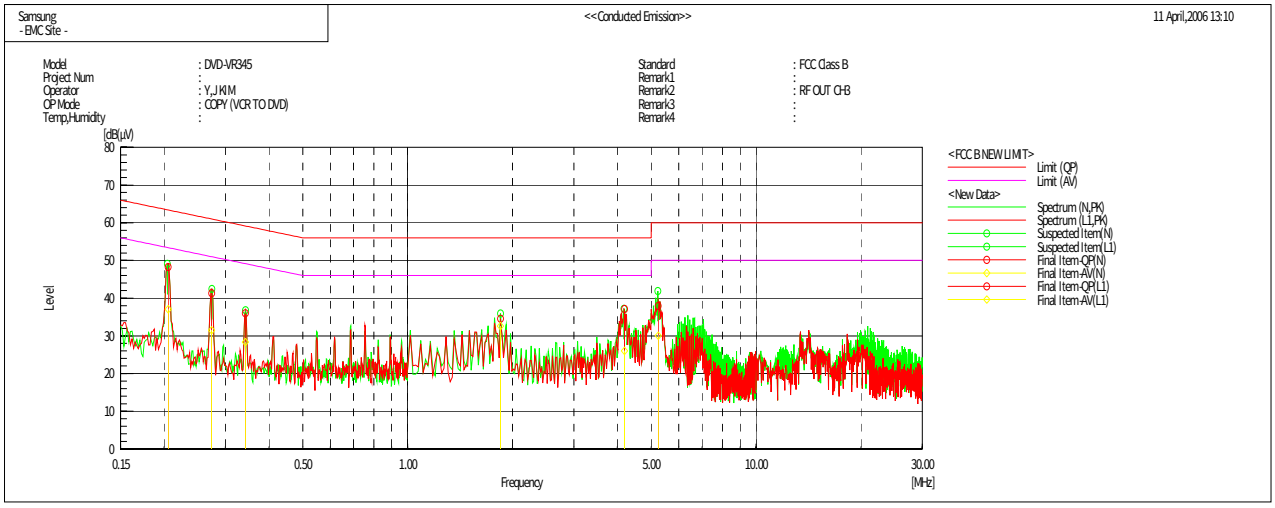
--- N Phase ---

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]	Remark
1	0.20541	39.0	27.9	9.5	48.5	37.4	63.4	53.4	14.9	16.0	
2	1.84823	25.1	23.3	9.6	34.7	32.9	56.0	46.0	21.3	13.1	
3	5.06607	27.0	20.4	9.7	36.7	30.1	60.0	50.0	23.3	19.9	

--- 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]	Remark
1	0.27387	31.9	22.0	9.5	41.4	31.5	61.0	51.0	19.6	19.5	
2	4.18623	24.4	16.4	9.6	34.0	26.0	56.0	46.0	22.0	20.0	
3	4.97686	24.3	18.1	9.6	33.9	27.7	56.0	46.0	22.1	18.3	

■ Operating Mode: VCR COPY – RF OUT CH03



Final Result

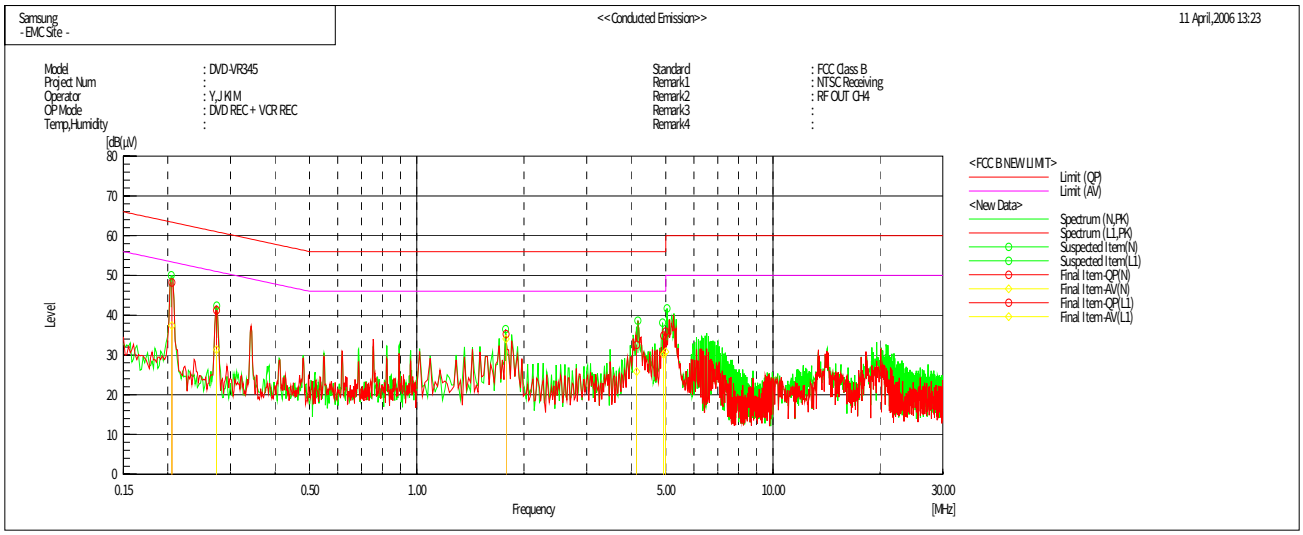
--- N Phase ---

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]	Remark
1	1.84842	25.0	23.0	9.6	34.6	32.6	56.0	46.0	21.4	13.4	
2	5.23736	28.2	20.4	9.7	37.9	30.1	60.0	50.0	22.1	19.9	

--- 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]	Remark
1	0.20543	38.8	27.5	9.5	48.3	37.0	63.4	53.4	15.1	16.4	
2	0.27384	31.8	22.0	9.5	41.3	31.5	61.0	51.0	19.7	19.5	
3	0.3423	26.5	18.8	9.5	36.0	28.3	59.1	49.1	23.1	20.8	
4	4.18947	27.5	16.4	9.6	37.1	26.0	56.0	46.0	18.9	20.0	

■ Operating Mode: DVD REC + VCR REC (NTSC Receiving) – RF out CH04



Final Result

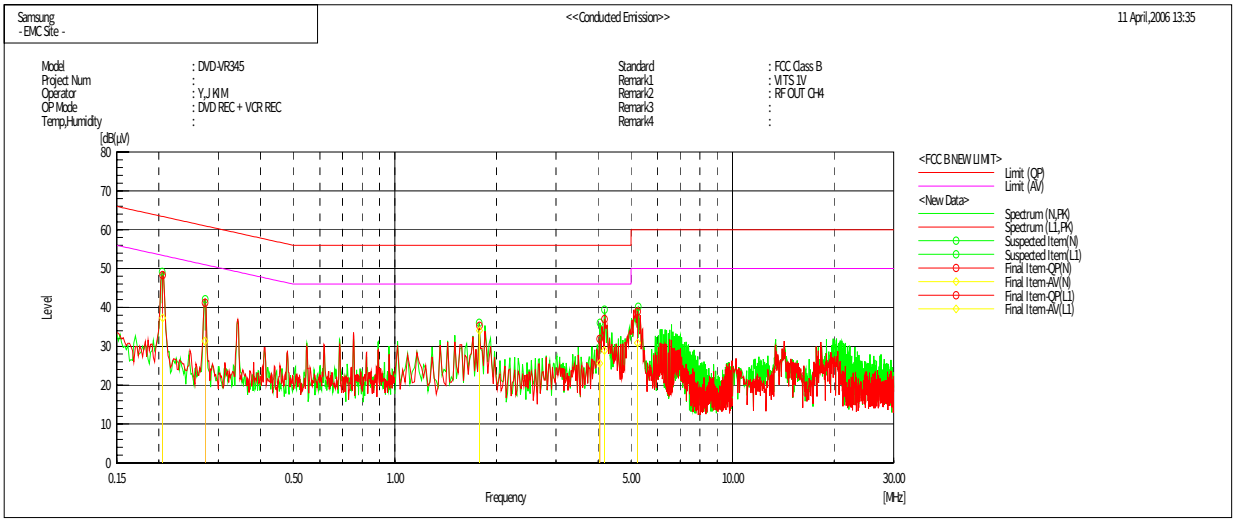
--- N Phase ---

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]	Remark
1	0.20531	38.7	27.9	9.5	48.2	37.4	63.4	53.4	15.2	16.0	
2	1.78005	25.6	24.4	9.6	35.2	34.0	56.0	46.0	20.8	12.0	
3	4.92873	25.1	20.5	9.7	34.8	30.2	56.0	46.0	21.2	15.8	
4	4.9976	26.2	21.1	9.7	35.9	30.8	56.0	46.0	20.1	15.2	

--- 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]	Remark
1	0.27382	31.7	21.9	9.5	41.2	31.4	61.0	51.0	19.8	19.6	
2	4.14249	22.9	16.3	9.6	32.5	25.9	56.0	46.0	23.5	20.1	

■ Operating Mode: DVD REC + VCR REC(VITS 1V) – RF out CH04



Final Result

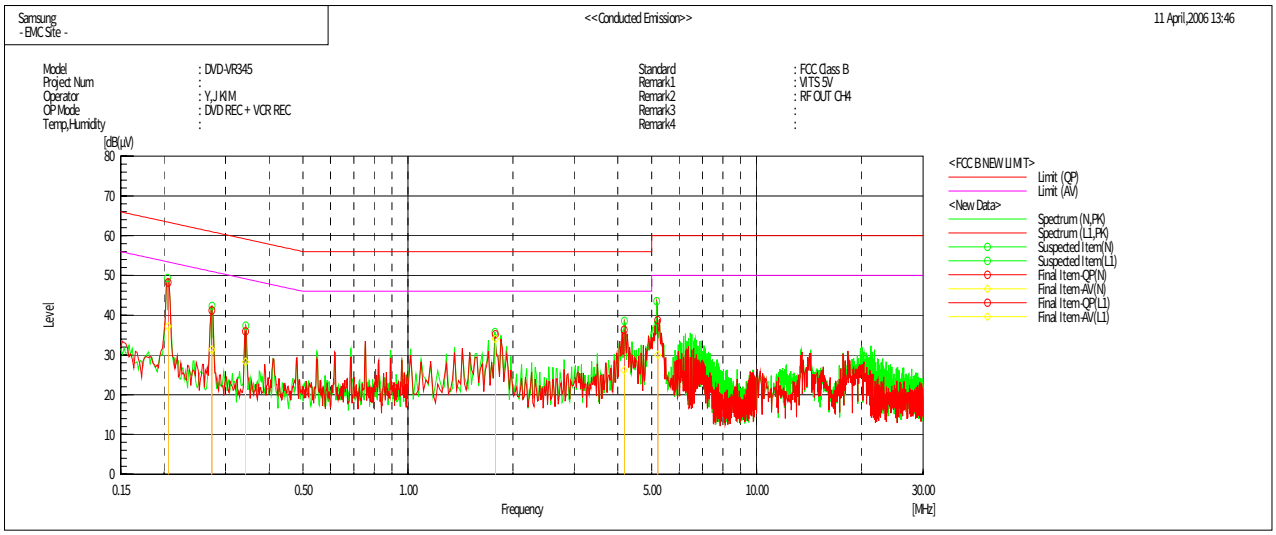
--- N Phase ---

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]	Remark
1	1.78005	25.7	24.5	9.6	35.3	34.1	56.0	46.0	20.7	11.9	
2	4.03874	22.3	16.0	9.6	31.9	25.6	56.0	46.0	24.1	20.4	
3	5.23329	29.2	21.1	9.7	38.9	30.8	60.0	50.0	21.1	19.2	

--- 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]	Remark
1	0.20533	38.8	27.8	9.5	48.3	37.3	63.4	53.4	15.1	16.1	
2	0.27379	31.7	21.9	9.5	41.2	31.4	61.0	51.0	19.8	19.6	
3	4.17579	27.4	19.3	9.6	37.0	28.9	56.0	46.0	19.0	17.1	

■ Operating Mode: DVD REC + VCR REC(VITS 5V) – RF out CH04



Final Result

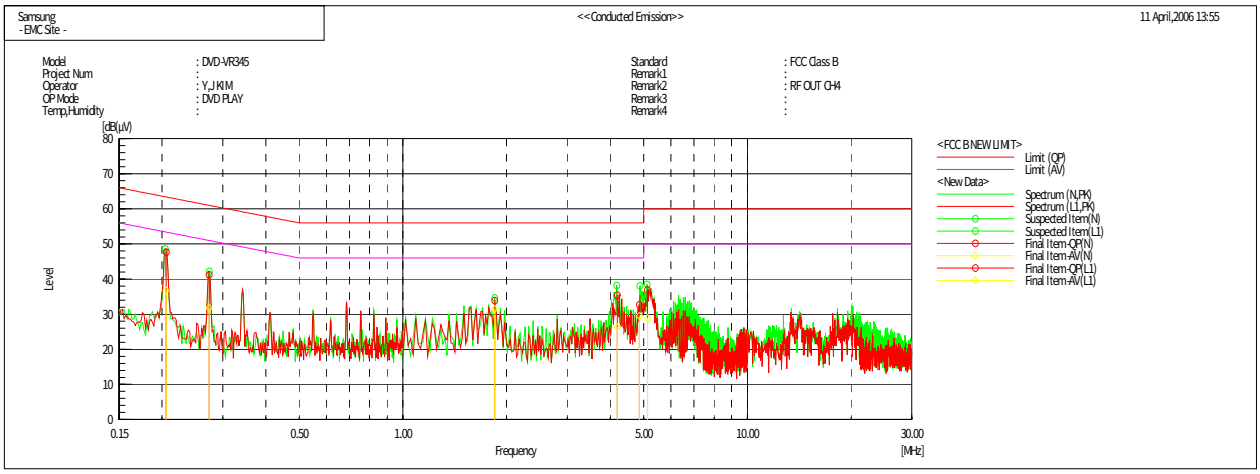
--- N Phase ---

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]	Remark
1	1.77987	25.5	24.4	9.6	35.1	34.0	56.0	46.0	20.9	12.0	

--- 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]	Remark
1	0.20536	38.7	27.7	9.5	48.2	37.2	63.4	53.4	15.2	16.2	
2	0.27379	31.7	21.9	9.5	41.2	31.4	61.0	51.0	19.8	19.6	
3	0.34225	26.4	18.7	9.5	35.9	28.2	59.1	49.1	23.2	20.9	
4	4.16877	26.7	16.5	9.6	36.3	26.1	56.0	46.0	19.7	19.9	
5	5.20197	29.2	20.4	9.6	38.8	30.0	60.0	50.0	21.2	20.0	

■ Operating Mode: DVD PLAY – RF out CH04



Final Result

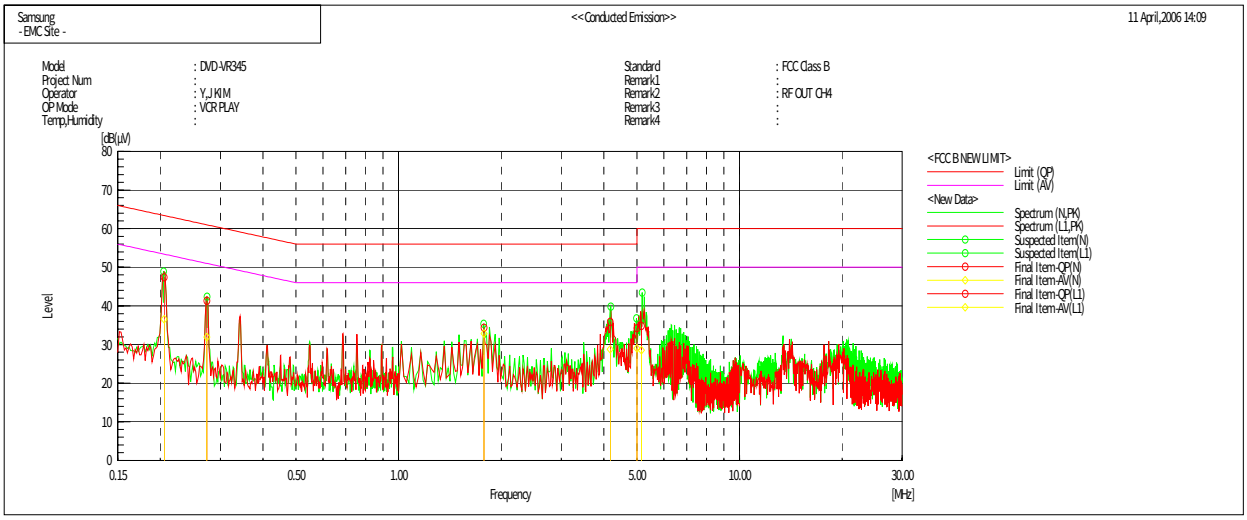
--- N Phase ---

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]	Remark
1	1.84842	24.3	21.9	9.6	33.9	31.5	56.0	46.0	22.1	14.5	
2	4.86048	23.0	19.8	9.7	32.7	29.5	56.0	46.0	23.3	16.5	
3	5.12933	27.1	19.2	9.7	36.8	28.9	60.0	50.0	23.2	21.1	

--- 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]	Remark
1	0.20539	38.1	27.2	9.5	47.6	36.7	63.4	53.4	15.8	16.7	
2	0.27391	31.7	22.2	9.5	41.2	31.7	61.0	51.0	19.8	19.3	
3	4.19001	25.8	16.7	9.6	35.4	26.3	56.0	46.0	20.6	19.7	

■ Operating Mode: VCR PLAY – RF out CH04



Final Result

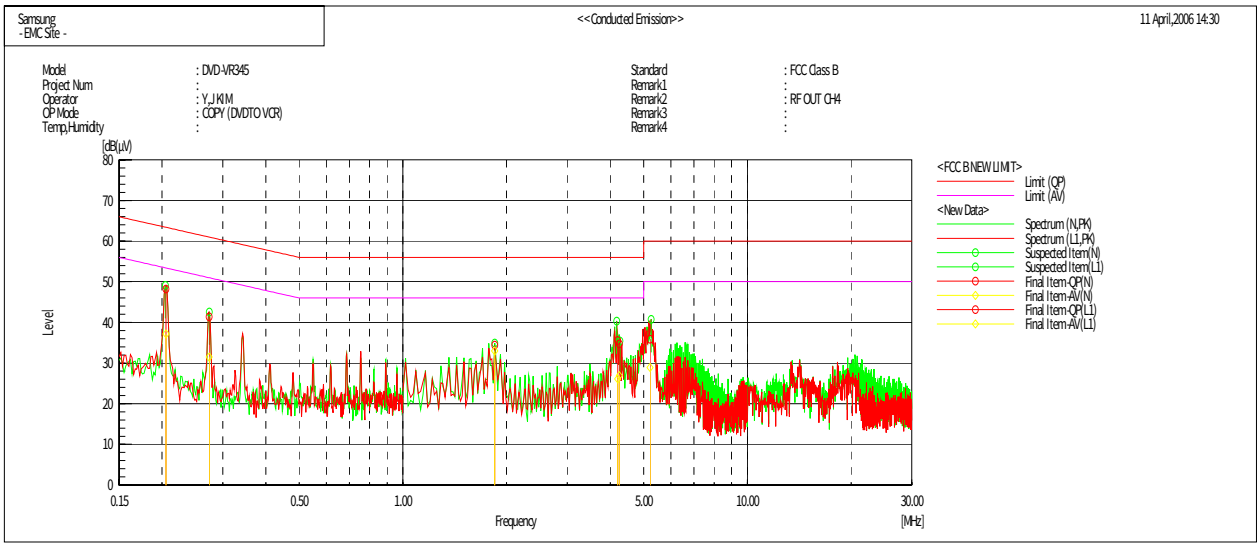
--- N Phase ---

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]	Remark
1	1.78023	24.8	23.2	9.6	34.4	32.8	56.0	46.0	21.6	13.2	
2	4.17654	26.3	19.2	9.6	35.9	28.8	56.0	46.0	20.1	17.2	
3	4.99821	24.5	19.3	9.7	34.2	29.0	56.0	46.0	21.8	17.0	
4	5.15557	25.1	18.8	9.7	34.8	28.5	60.0	50.0	25.2	21.5	

--- 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]	Remark
1	0.20531	37.9	27.0	9.5	47.4	36.5	63.4	53.4	16.0	16.9	
2	0.27377	31.8	22.4	9.5	41.3	31.9	61.0	51.0	19.7	19.1	

■ Operating Mode: DVD COPY – RF out CH04



Final Result

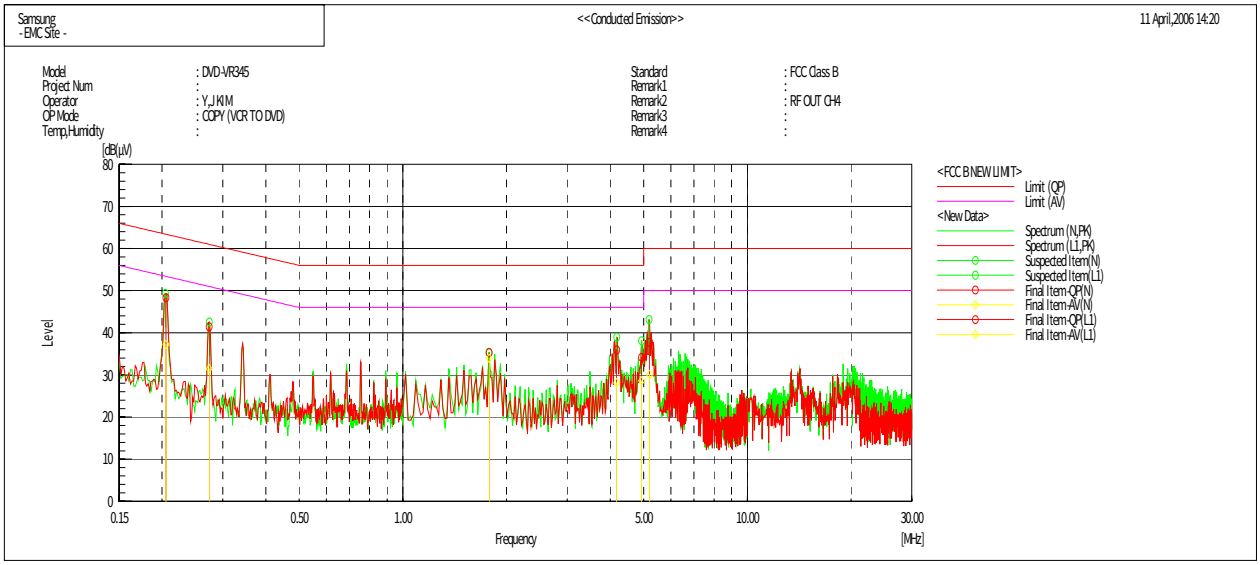
--- N Phase ---

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]	Remark
1	1.84823	24.8	23.4	9.6	34.4	33.0	56.0	46.0	21.6	13.0	

--- 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]	Remark
1	0.20534	38.7	27.7	9.5	48.2	37.2	63.4	53.4	15.2	16.2	
2	0.27384	31.9	22.0	9.5	41.4	31.5	61.0	51.0	19.6	19.5	
3	4.20243	25.9	16.5	9.6	35.5	26.1	56.0	46.0	20.5	19.9	
4	4.24509	25.2	17.3	9.6	34.8	26.9	56.0	46.0	21.2	19.1	
5	5.21529	26.3	19.3	9.6	35.9	28.9	60.0	50.0	24.1	21.1	

■ Operating Mode: VCR COPY – RF out CH04



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]	Remark
1	1.78005	25.7	24.3	9.6	35.3	33.9	56.0	46.0	20.7	12.1	

--- 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]	Remark
1	0.20534	38.8	27.8	9.5	48.3	37.3	63.4	53.4	15.1	16.1	
2	0.27379	31.9	22.0	9.5	41.4	31.5	61.0	51.0	19.6	19.5	
3	4.17543	26.3	18.5	9.6	35.9	28.1	56.0	46.0	20.1	17.9	
4	4.92934	24.6	19.0	9.6	34.2	28.6	56.0	46.0	21.8	17.4	
5	5.20327	28.1	20.5	9.6	37.7	30.1	60.0	50.0	22.3	19.9	

3.2 Radiated emission

3.2.1 Test information

Test engineer	Young Jin, Kim
Test date	April 3 ~ 4, 2006
Climate condition	Ambient temperature : 23 ℃, Relative humidity : 33 % Atmospheric pressure 101.5 kPa
Test place	3 m Semi-anechoic Chamber

3.2.2 Test equipment

Equipment	Model name	Manufacturer	Serial no.	Calibration	
				Next date	Interval (Month)
EMI Test Receiver	ESI-26	R&S	100290	2007-03-22	12
Ant. Mast	MA4000	inn-co	-	N/A	N/A
Mast Controller	CO2000	inn-co	-	N/A	N/A
Amplifier	310N	SONOMA	251673	2007-03-08	12
RF selector	NS4900	TOYO	-	N/A	N/A
Bi-log Antenna	CBL6141A	SCHAFFNER	4258	2006-05-24	12
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2006-10-10	12

EUT Test Setup

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

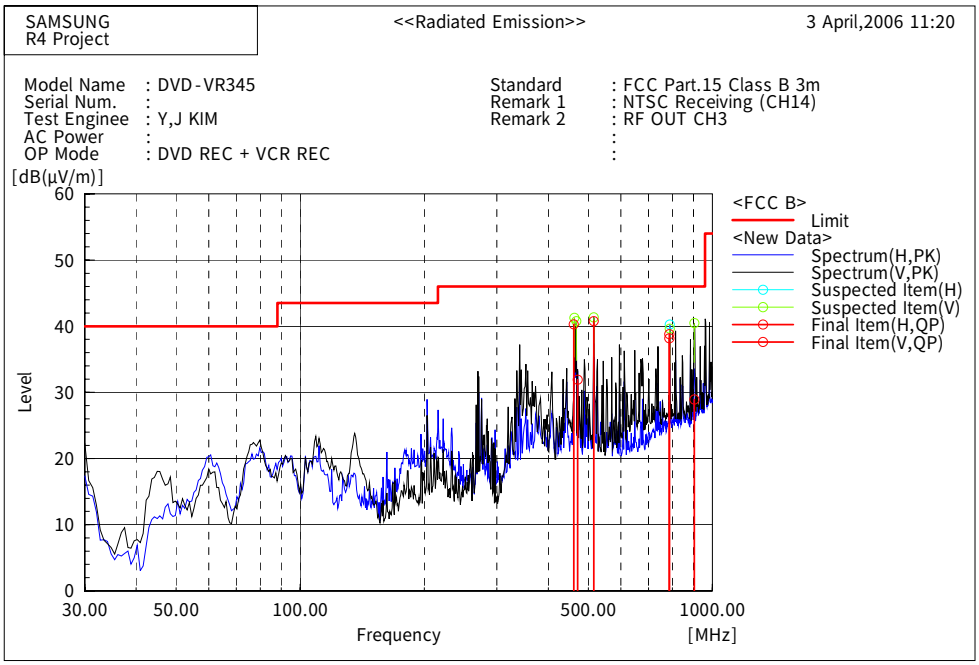
All ports terminated into characteristic loads.

Test Result

Measurement Results	Pass The measured emissions of the EUT have found to be below the specified limits.

Test Data

■ Operating Mode: DVD REC + VCR REC(NTSC Receiving) – RF Out CH03 [30 MHz ~ 1 GHz]



Final Result

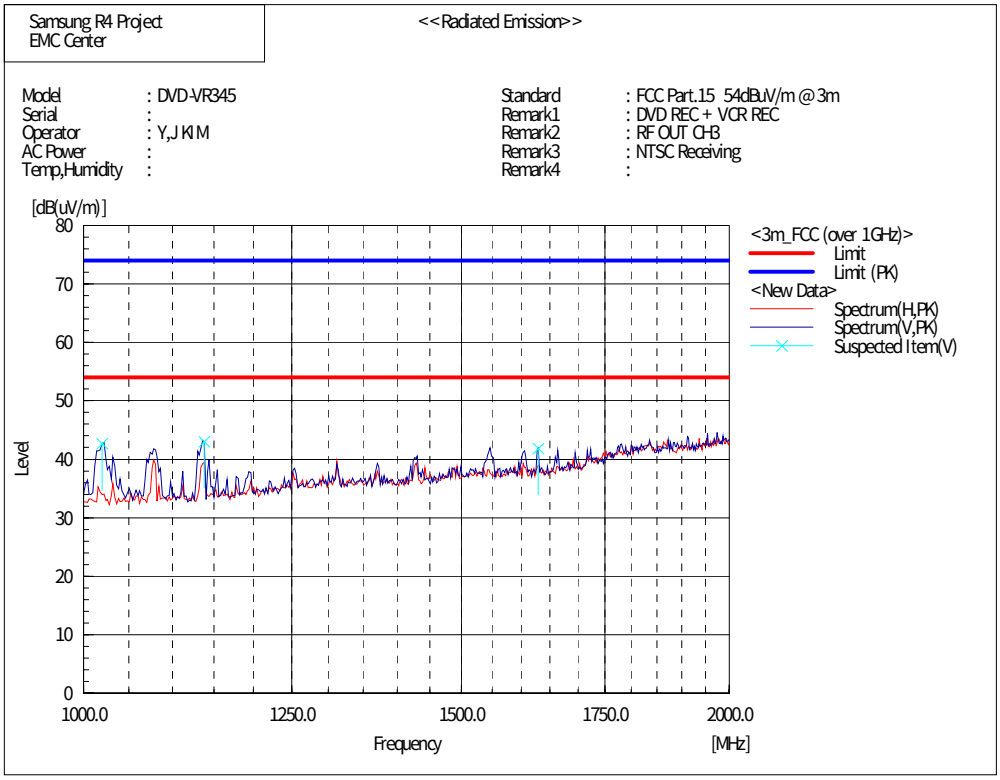
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	43.4	-4.6	38.8	46.0	7.2	

--- 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	461.190	52.1	-11.8	40.3	46.0	5.7	
2	471.260	43.5	-11.6	31.9	46.0	14.1	
3	515.480	51.5	-10.7	40.8	46.0	5.2	
4	786.290	41.5	-3.3	38.2	46.0	7.8	
5	904.150	30.6	-1.7	28.9	46.0	17.1	

■ Operating Mode: DVD REC + VCR REC(NTSC Receiving) – RF Out CH03 [1 GHz ~ 2 GHz]

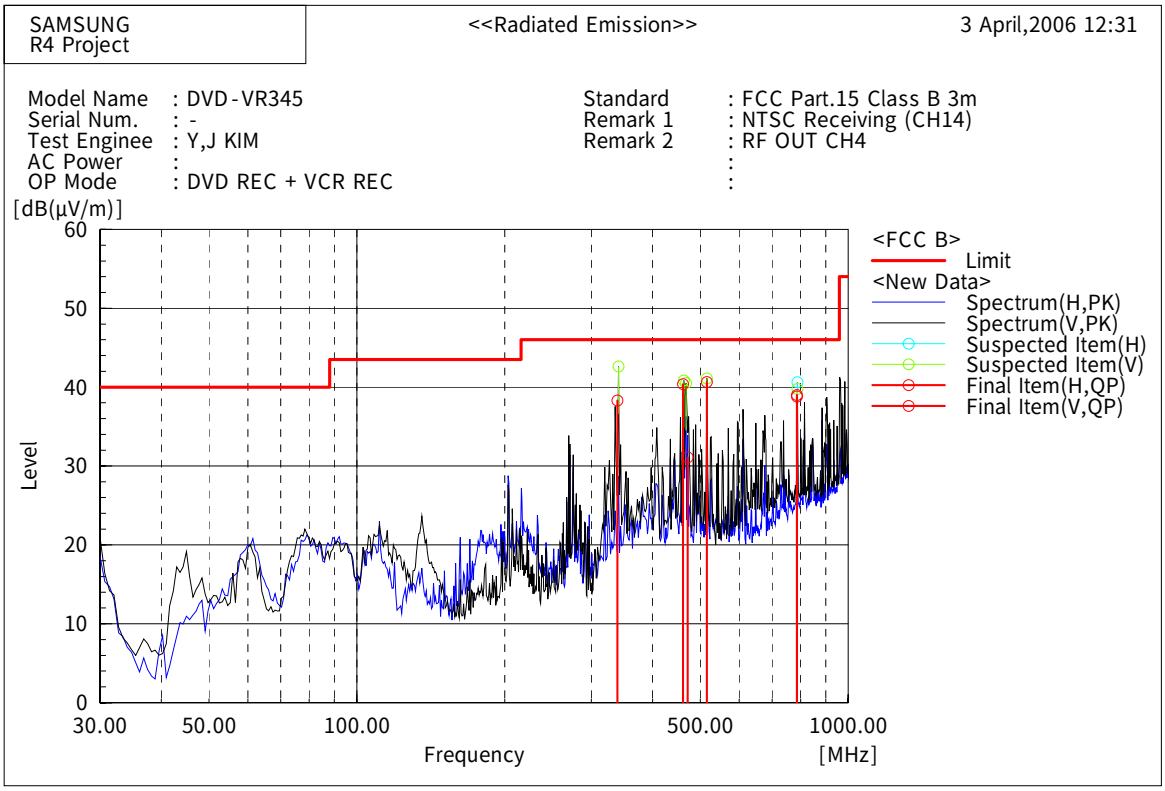


Spectrum Selection

--- Vertical Polarization ---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1020.040	59.7	-17.0	42.7	54.0	11.3
2	1138.277	59.4	-16.4	43.0	54.0	11.0
3	1629.259	53.5	-11.6	41.9	54.0	12.1

■ Operating Mode: DVD REC + VCR REC(NTSC Receiving) – RF Out CH04 [30 MHz ~ 1 GHz]



Final Result

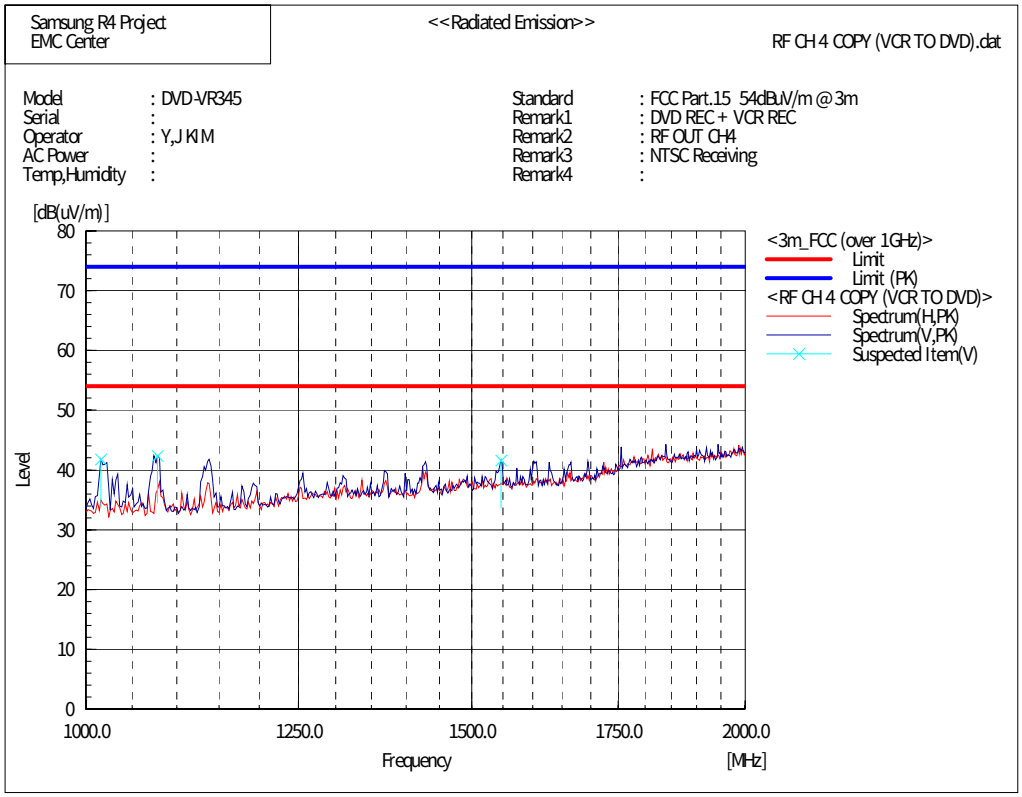
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	43.6	-4.6	39.0	46.0	7.0	

--- 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	339.130	52.7	-14.4	38.3	46.0	7.7	
2	461.230	52.2	-11.8	40.4	46.0	5.6	
3	471.260	42.7	-11.6	31.1	46.0	14.9	
4	515.500	51.3	-10.7	40.6	46.0	5.4	
5	786.290	42.1	-3.3	38.8	46.0	7.2	

■ Operating Mode: DVD REC + VCR REC(NTSC Receiving) – RF Out CH04 [1 GHz ~ 2 GHz]

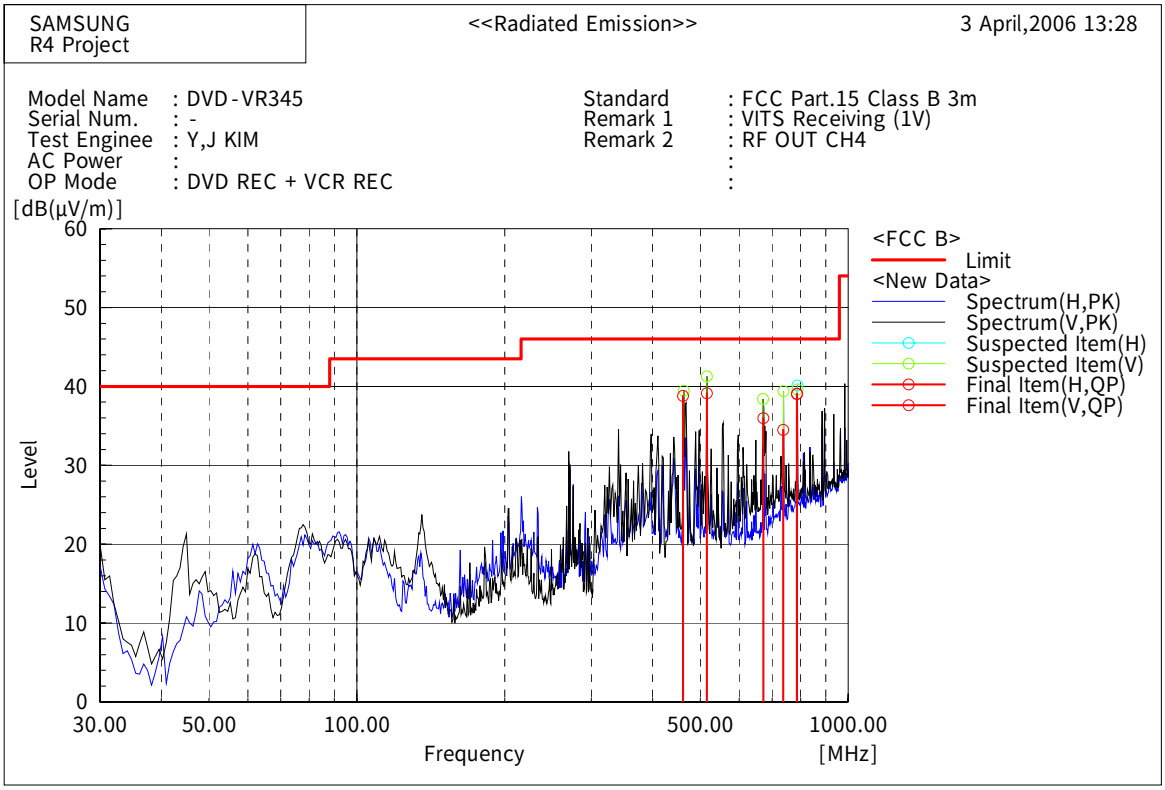


Spectrum Selection

--- Vertical Polarization ---

No.	Frequency	Reading	c.f	Result PK	Limit	Margin
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]
1	1016.032	58.9	-17.1	41.8	54.0	12.2
2	1078.156	59.2	-16.8	42.4	54.0	11.6
3	1547.094	53.5	-11.9	41.6	54.0	12.4

■ Operating Mode: DVD REC + VCR REC(VITS 1V) – RF Out CH04 [30 MHz ~ 1 GHz]



Final Result

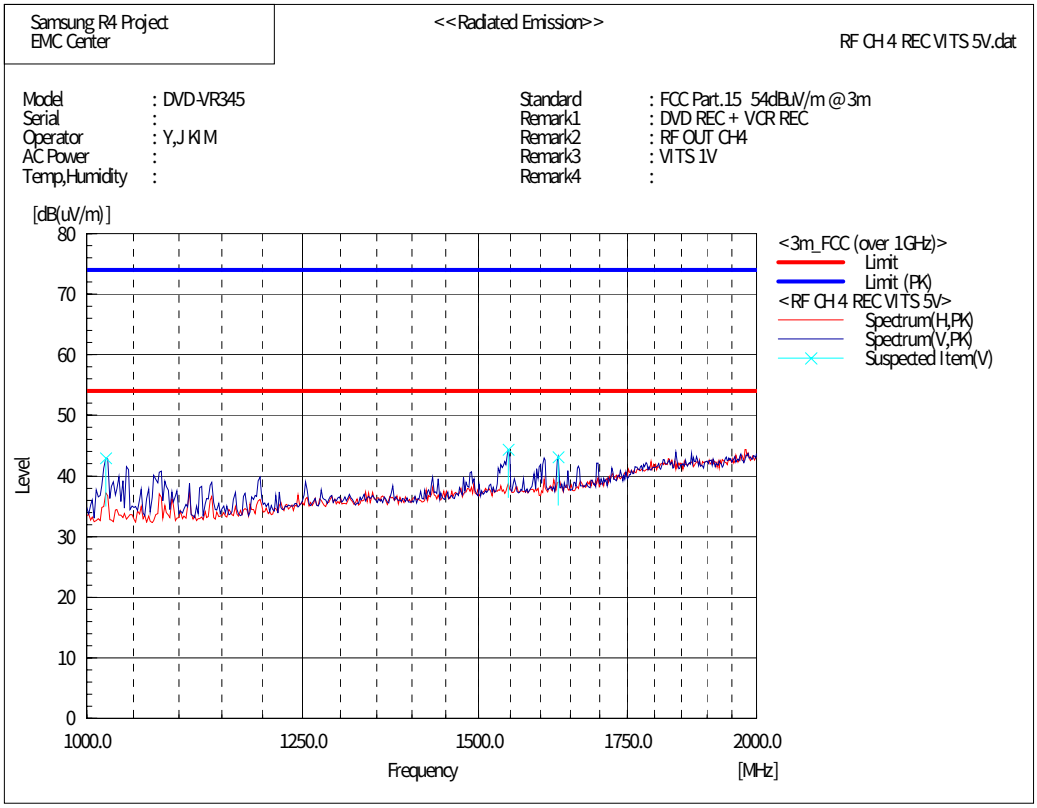
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	43.7	-4.6	39.1	46.0	7.0	

--- 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	461.250	50.6	-11.8	38.8	46.0	7.2	
2	515.510	49.8	-10.7	39.1	46.0	6.9	
3	671.280	41.6	-5.6	36.0	46.0	10.0	
4	737.330	38.4	-3.9	34.5	46.0	11.5	
5	786.290	42.4	-3.3	39.1	46.0	6.9	

■ Operating Mode: DVD REC + VCR REC(VITS 1V) – RF Out CH04 [1 GHz ~ 2 GHz]



Spectrum Selection

--- Vertical Polarization ---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1020.040	60.0	-17.0	43.0	54.0	11.0
2	1547.094	56.3	-11.9	44.4	54.0	9.6
3	1629.259	54.7	-11.6	43.1	54.0	10.9

■ Operating Mode: DVD REC + VCR REC(VITS 5V) – RF Out CH04 [30 MHz ~ 1 GHz]

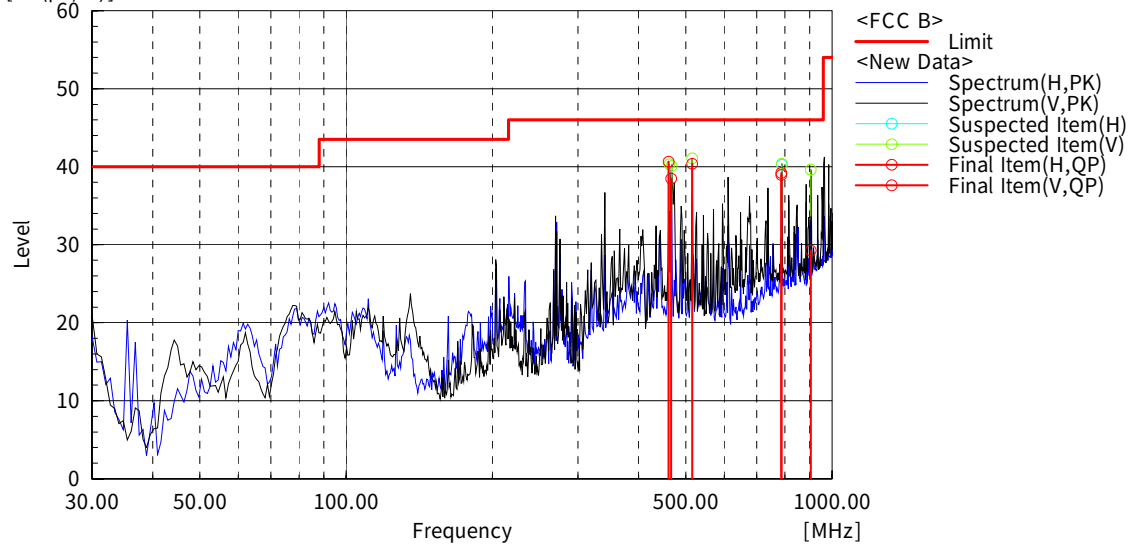
SAMSUNG
R4 Project

<<Radiated Emission>>

3 April,2006 14:17

Model Name : DVD-VR345
Serial Num. : -
Test Enginee :
AC Power :
OP Mode : DVD REC + VCR REC

Standard : FCC Part.15 Class B 3m
Remark 1 : VITS Receiving (5V)
Remark 2 : RF OUT CH4
:
:



Final Result

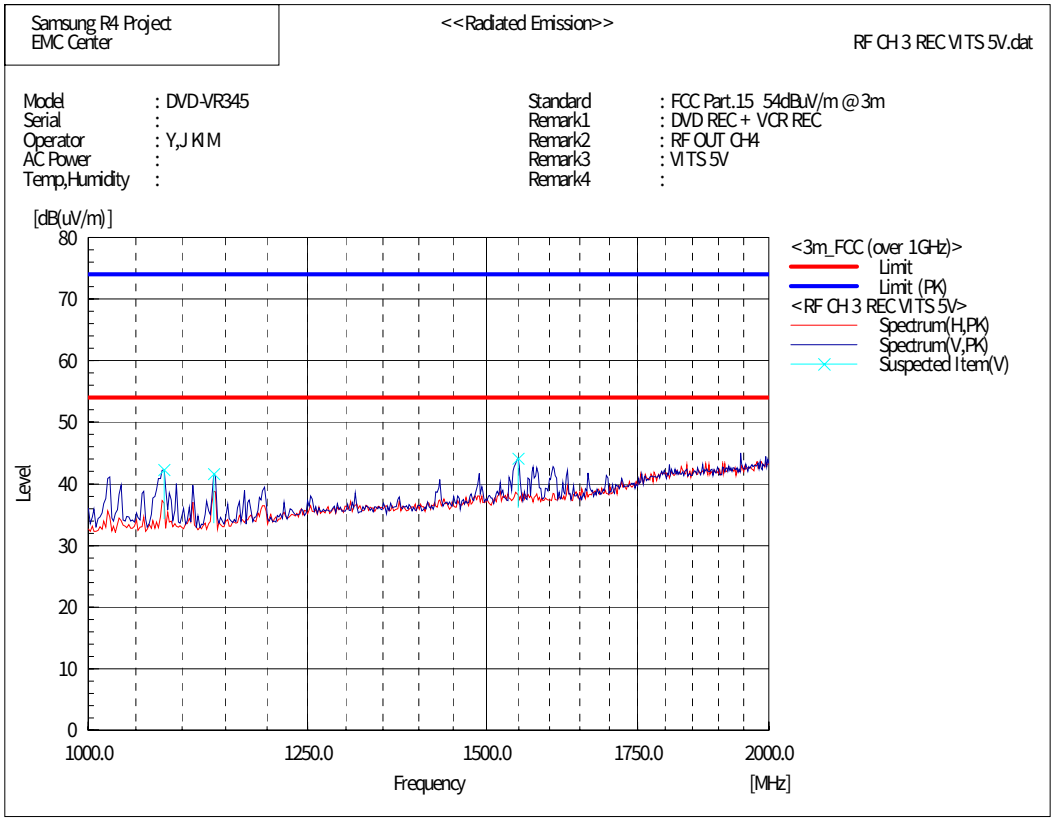
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	43.6	-4.6	39.0	46.0	7.1	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	461.230	52.4	-11.8	40.6	46.0	5.4	
2	466.550	50.2	-11.7	38.5	46.0	7.5	
3	515.500	51.1	-10.7	40.4	46.0	5.6	
4	786.290	42.5	-3.3	39.2	46.0	6.8	
5	904.380	31.0	-1.7	29.3	46.0	16.7	

■ Operating Mode: DVD REC + VCR REC(VITS 5V) – RF Out CH04 [1 GHz ~ 2 GHz]



Spectrum Selection

--- Vertical Polarization ---

No.	Frequency	Reading	c.f	Result PK	Limit	Margin
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]
1	1080.160	59.1	-16.8	42.3	54.0	11.7
2	1136.273	58.0	-16.4	41.6	54.0	12.4
3	1549.098	56.0	-11.9	44.1	54.0	9.9

■ Operating Mode: VCR COPY – RF Out CH04 [30 MHz ~ 1 GHz]

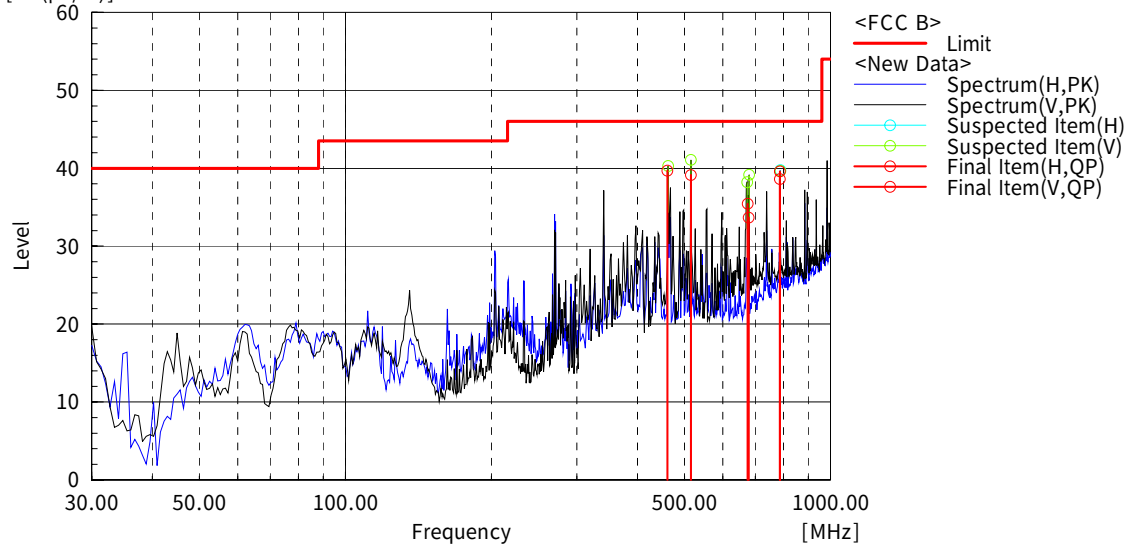
SAMSUNG
R4 Project

<<Radiated Emission>>

3 April,2006 15:04

Model Name : DVD-VR345
Serial Num. : -
Test Enginee : Y,J KIM
AC Power :
OP Mode : COPY (VCR TO DVD)

Standard : FCC Part.15 Class B 3m
Remark 1 : RF OUT CH4
Remark 2 :



Final Result

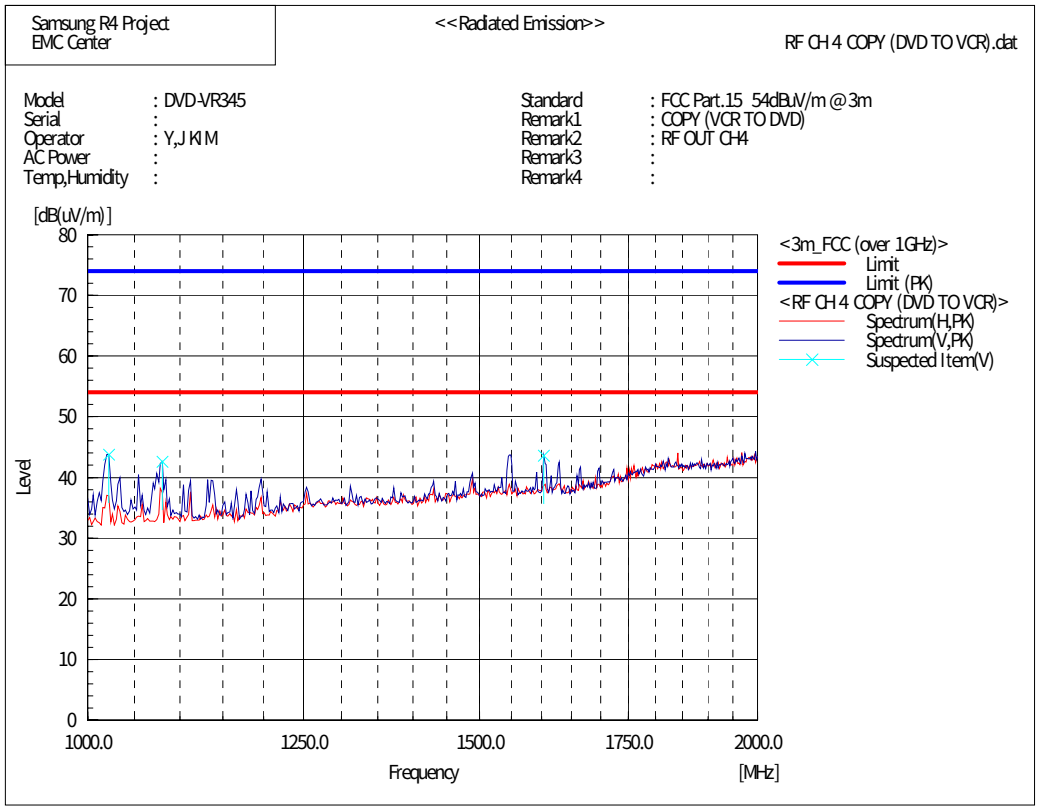
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(µV)]	c.f [dB(1/m)]	Result [dB(µV/m)]	Limit [dB(µV/m)]	Margin [dB]	Remark
1	786.290	43.2	-4.6	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	461.250	51.5	-11.8	39.7	46.0	6.3	
2	515.510	49.8	-10.7	39.1	46.0	6.9	
3	675.030	41.0	-5.5	35.5	46.0	10.5	
4	678.320	39.1	-5.4	33.7	46.0	12.3	
5	786.290	42.9	-3.3	39.6	46.0	6.4	

■ Operating Mode: VCR COPY – RF Out CH04 [1 GHz ~ 2 GHz]

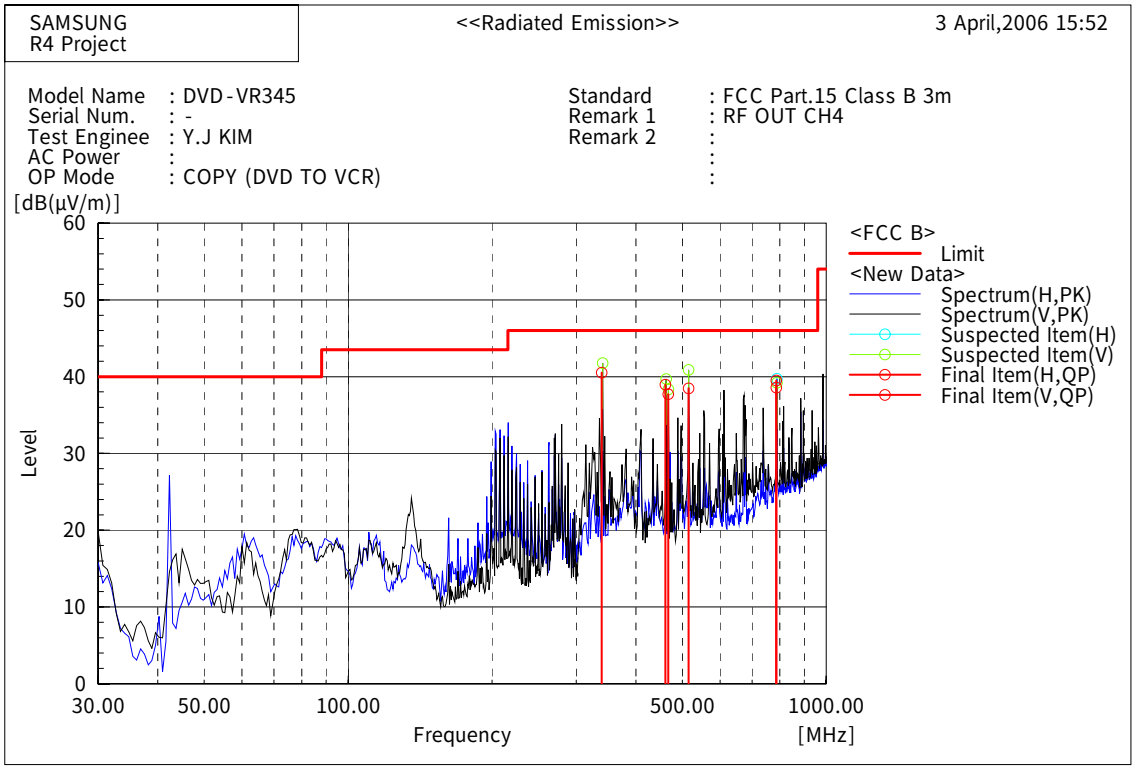


Spectrum Selection

--- Vertical Polarization ---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1022.044	60.8	-17.0	43.8	54.0	10.2
2	1080.160	59.4	-16.8	42.6	54.0	11.4
3	1603.206	55.3	-11.7	43.6	54.0	10.4

■ Operating Mode: DVD COPY – RF Out CH04 [30 MHz ~ 1 GHz]



Final Result

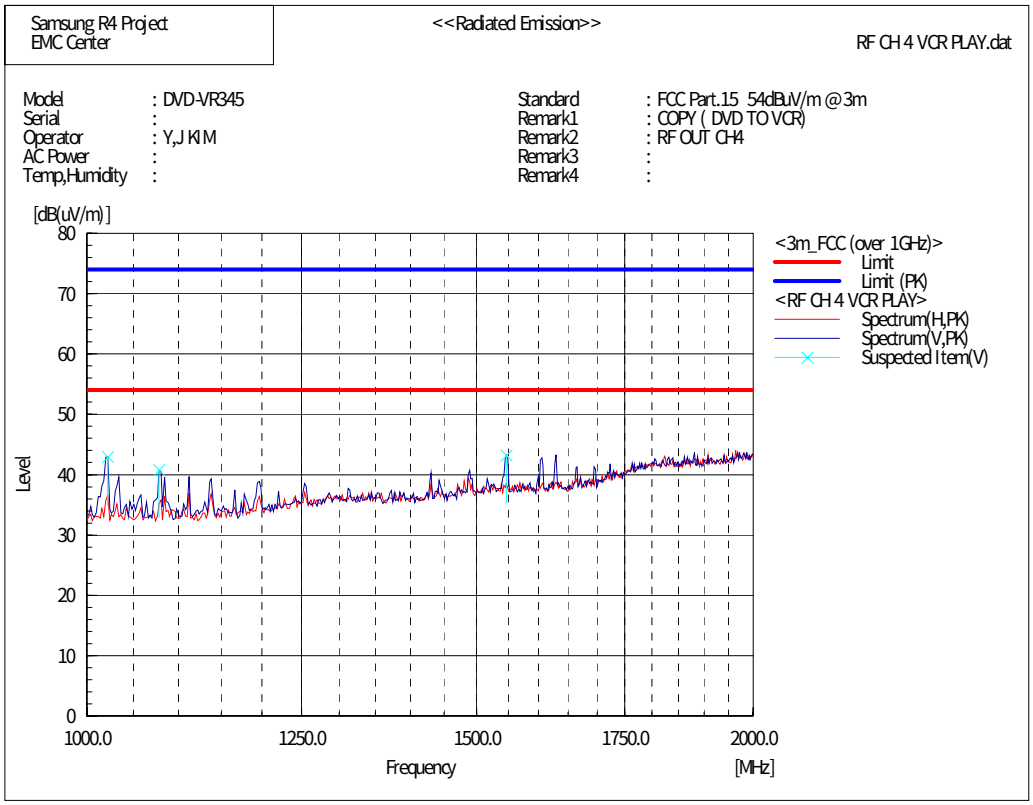
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	43.2	-4.6	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	339.150	54.9	-14.4	40.5	46.0	5.5	
2	461.250	50.8	-11.8	39.0	46.0	7.0	
3	466.970	49.4	-11.7	37.7	46.0	8.3	
4	515.510	49.2	-10.7	38.5	46.0	7.5	
5	786.290	42.8	-3.3	39.5	46.0	6.5	

■ Operating Mode: DVD COPY – RF Out CH04 [1 GHz ~ 2 GHz]

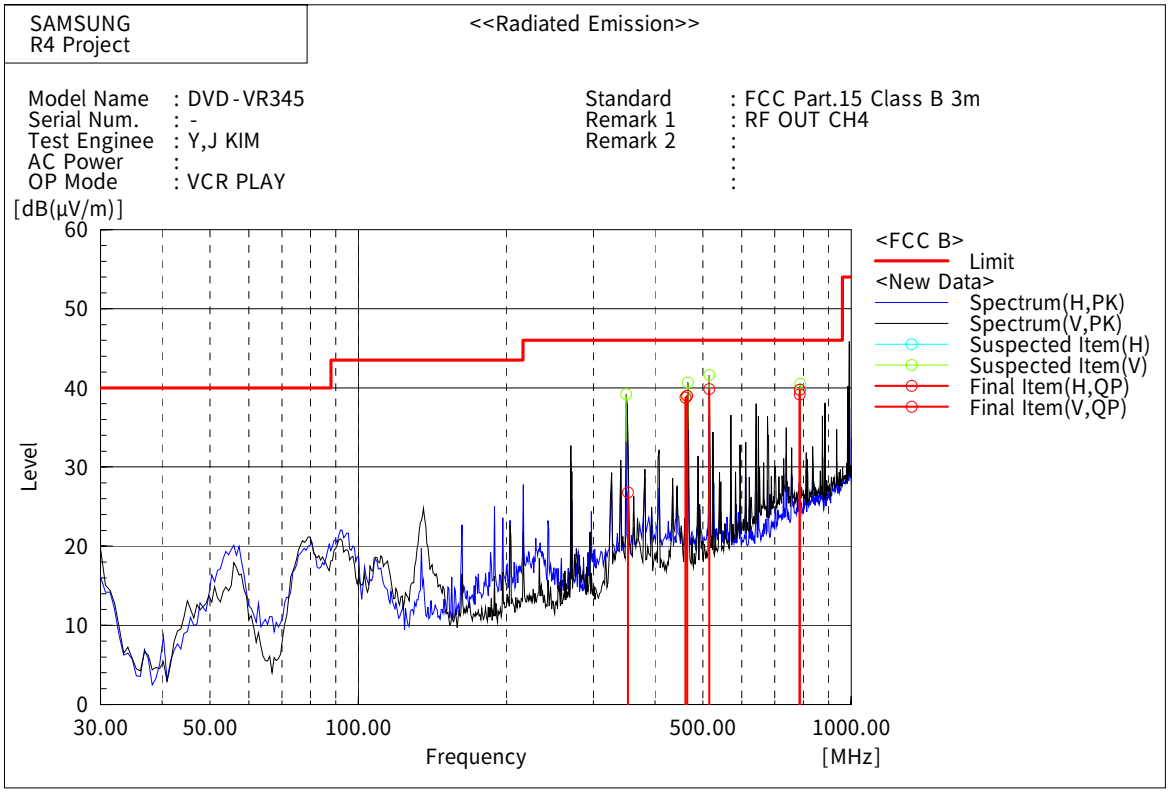


Spectrum Selection

--- Vertical Polarization ---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1022.044	60.0	-17.0	43.0	54.0	11.0
2	1078.156	57.6	-16.8	40.8	54.0	13.2
3	1547.094	55.1	-11.9	43.2	54.0	10.8

■ Operating Mode: VCR PLAY – RF Out CH04 [30 MHz ~ 1 GHz]



Final Result

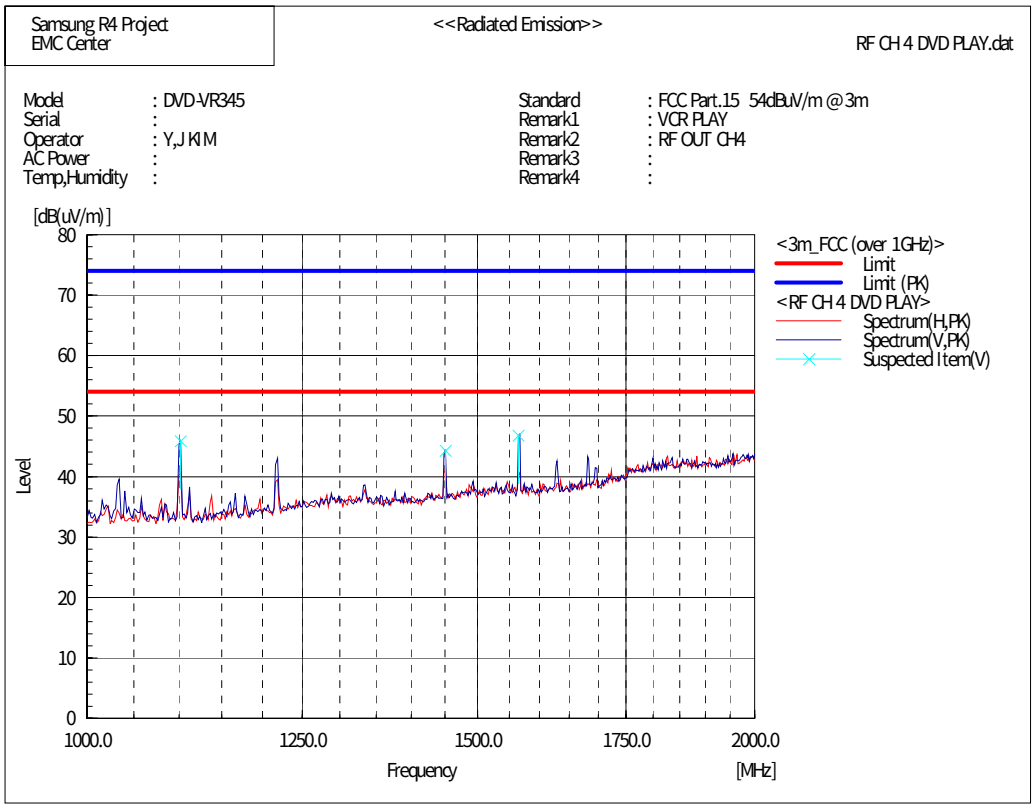
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	43.8	-4.6	39.2	46.0	6.8	

--- 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	352.730	40.9	-14.1	26.8	46.0	19.2	
2	461.230	50.6	-11.8	38.8	46.0	7.2	
3	465.050	50.7	-11.7	39.0	46.0	7.0	
4	515.500	50.6	-10.7	39.9	46.0	6.1	
5	786.290	43.1	-3.3	39.8	46.0	6.3	

■ Operating Mode: VCR PLAY – RF Out CH04 [1 GHz ~ 2 GHz]



Spectrum Selection

--- Vertical Polarization ---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1102.204	62.6	-16.7	45.9	54.0	8.1
2	1450.902	57.2	-13.0	44.2	54.0	9.8
3	1565.130	58.7	-11.9	46.8	54.0	7.2

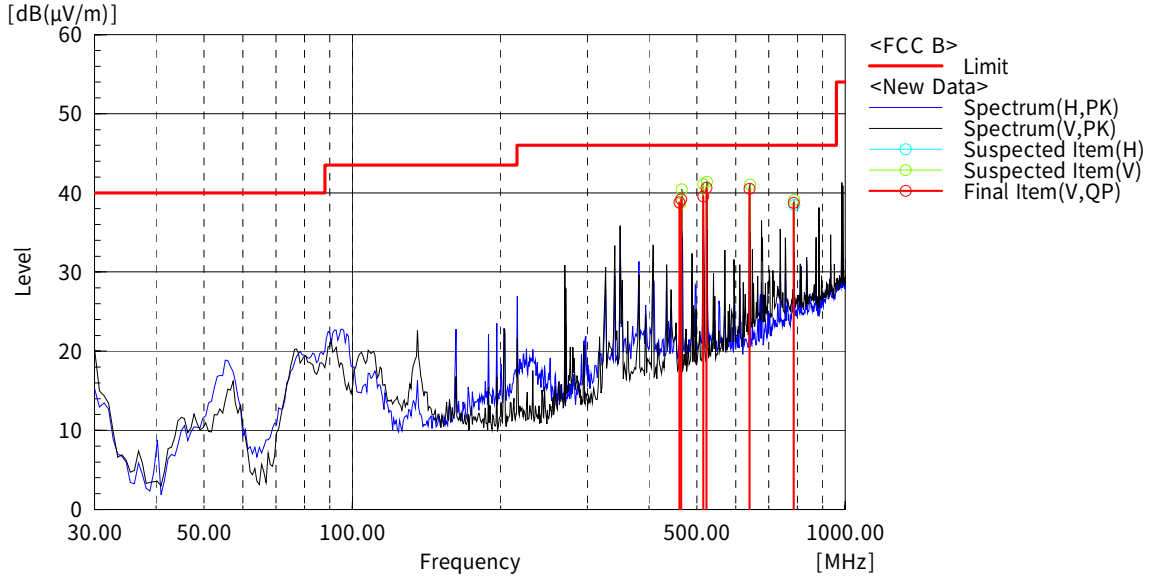
■ Operating Mode: DVD PLAY – RF Out CH04 [30 MHz ~ 1 GHz]

SAMSUNG
R4 Project

<<Radiated Emission>>

Model Name : DVD-VR345
Serial Num. : -
Test Enginee : Y,J KIM
AC Power :
OP Mode : DVD PLAY

Standard : FCC Part.15 Class B 3m
Remark 1 : RF OUT CH4
Remark 2 :

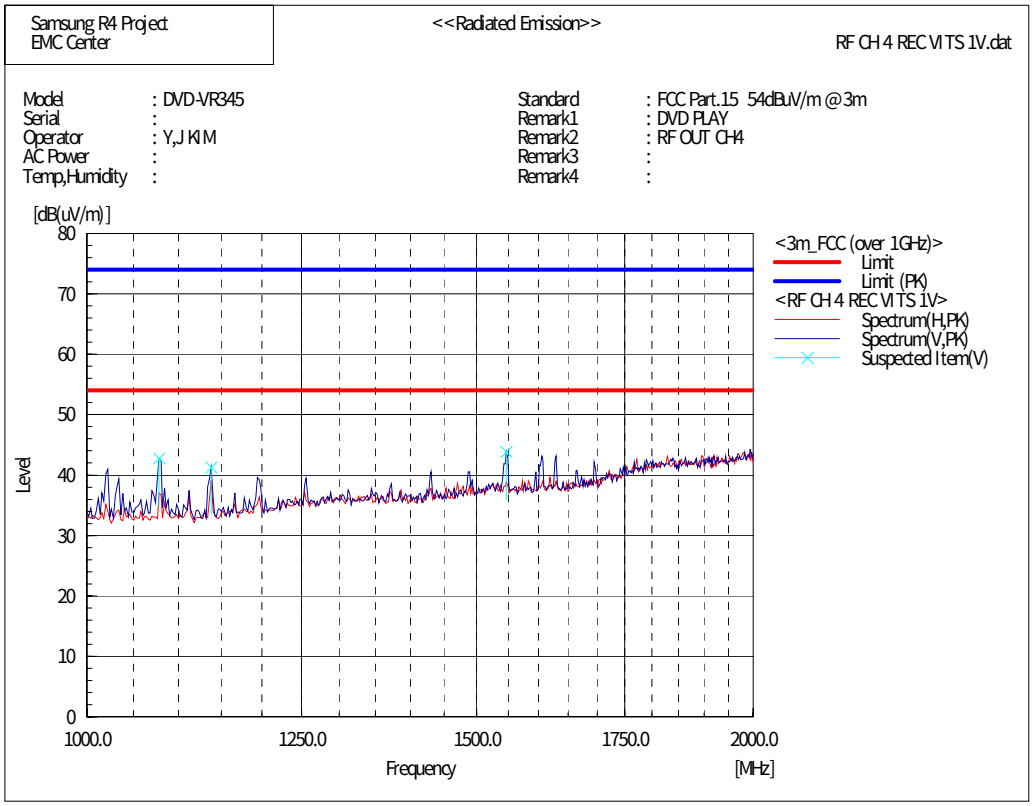


Final Result

--- 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	461.250	50.6	-11.8	38.8	46.0	7.2	
2	465.010	50.9	-11.7	39.2	46.0	6.8	
3	515.510	50.3	-10.7	39.6	46.0	6.4	
4	523.200	51.0	-10.4	40.6	46.0	5.4	
5	639.530	47.1	-6.6	40.5	46.0	5.5	
6	786.290	42.0	-3.3	38.7	46.0	7.3	

■ Operating Mode: DVD PLAY – RF Out CH04 [1 GHz ~ 2 GHz]



Spectrum Selection

--- Vertical Polarization ---

No.	Frequency	Reading	c.f	Result PK	Limit	Margin
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]
1	1078.156	59.6	-16.8	42.8	54.0	11.2
2	1138.277	57.7	-16.4	41.3	54.0	12.7
3	1547.094	55.8	-11.9	43.9	54.0	10.1

■ Operating Mode: VCR COPY – RF Out CH03 [30 MHz ~ 1 GHz]

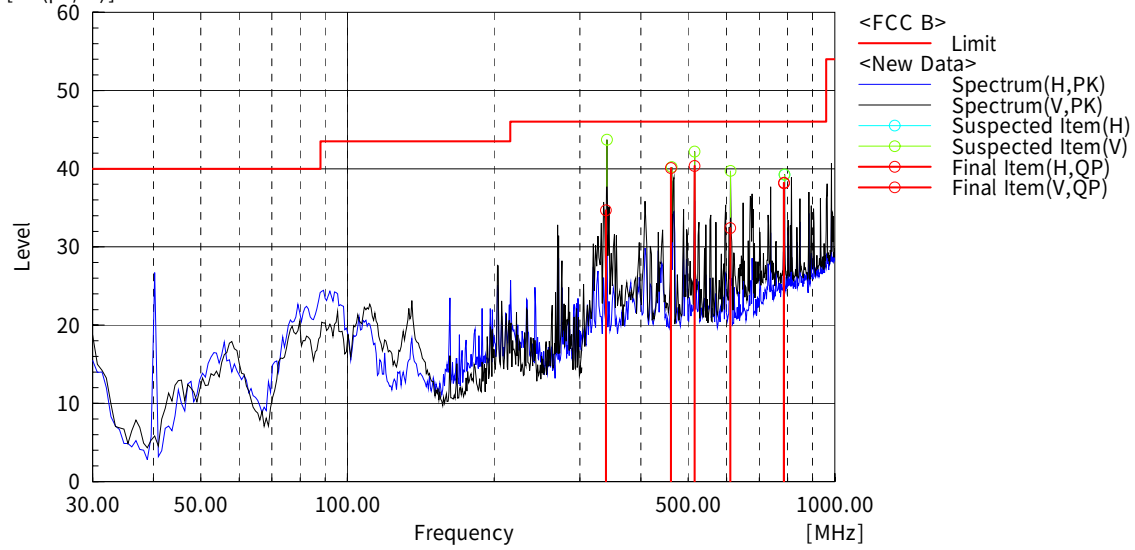
SAMSUNG
R4 Project

<<Radiated Emission>>

4 April,2006 11:38

Model Name : DVD-VR345
Serial Num. : -
Test Enginee : Y,J KIM
AC Power :
OP Mode : COPY (VCR TO DVD)

Standard : FCC Part.15 Class B 3m
Remark 1 : RF OUT CH3
Remark 2 :



Final Result

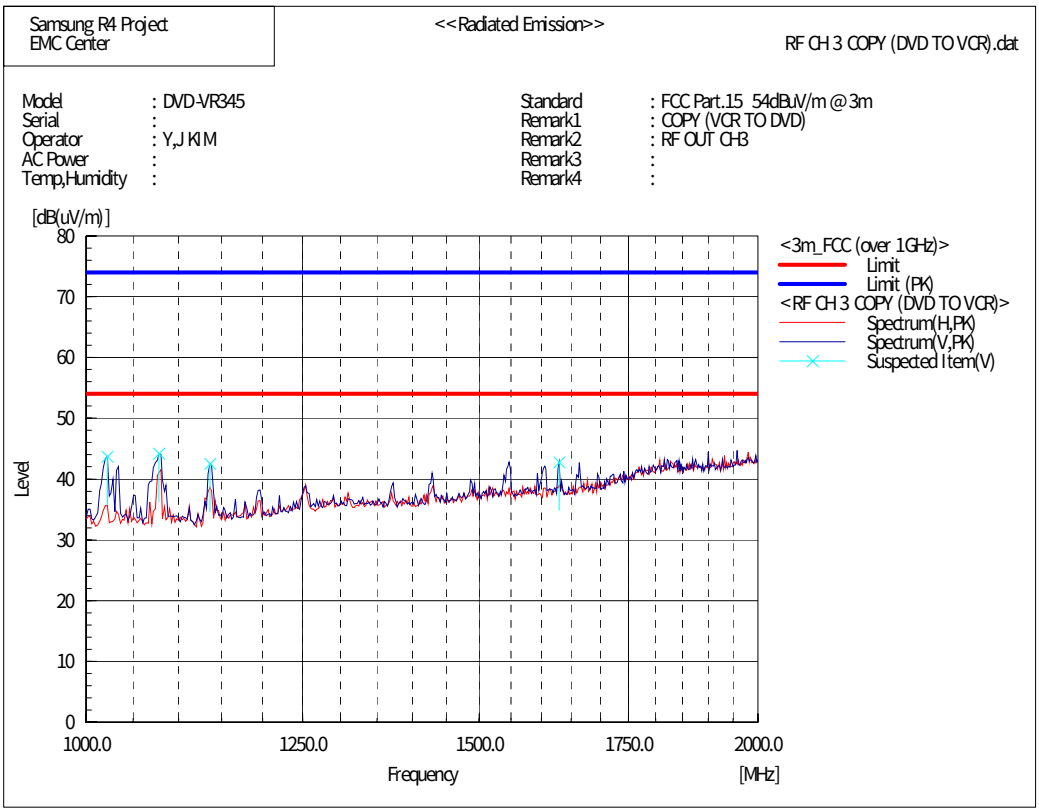
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	42.8	-4.6	38.2	46.0	7.8	

--- 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	339.150	49.1	-14.4	34.7	46.0	11.3	
2	461.250	51.9	-11.8	40.1	46.0	5.9	
3	515.510	51.0	-10.7	40.3	46.0	5.7	
4	610.490	39.8	-7.4	32.4	46.0	13.6	
5	786.290	41.4	-3.3	38.1	46.0	7.9	

■ Operating Mode: VCR COPY – RF Out CH03 [1 GHz ~ 2 GHz]

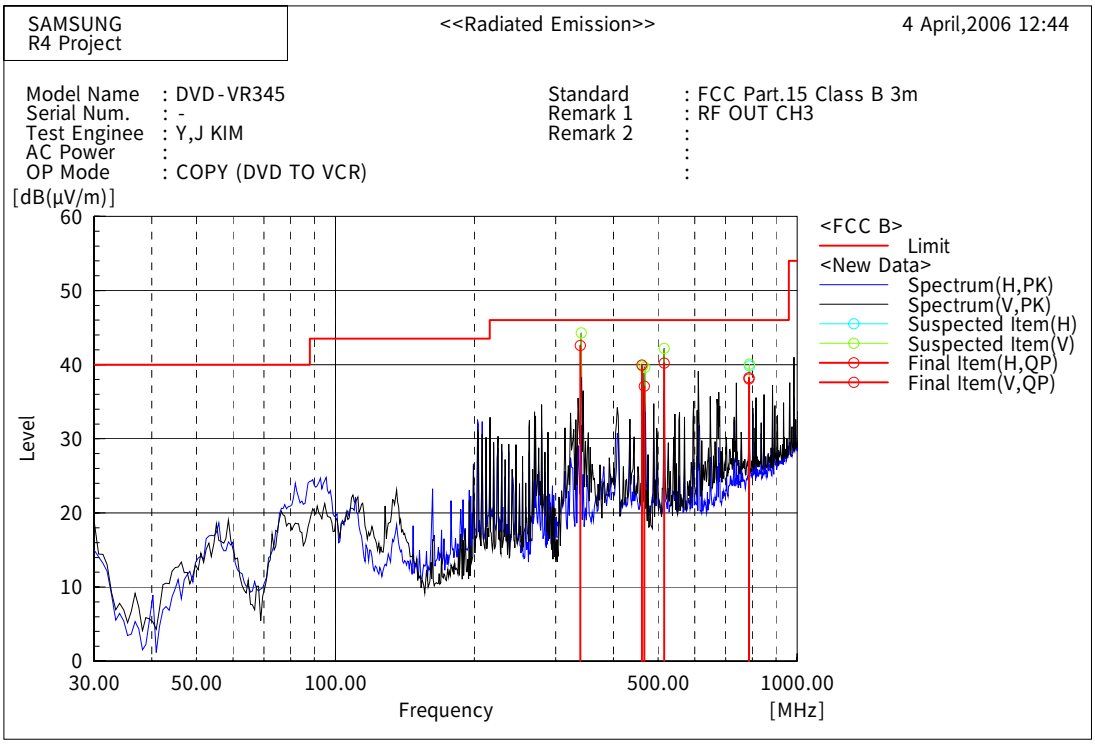


Spectrum Selection

--- Vertical Polarization ---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1022.044	60.7	-17.0	43.7	54.0	10.3
2	1078.156	61.0	-16.8	44.2	54.0	9.8
3	1136.273	58.9	-16.4	42.5	54.0	11.5
4	1629.259	54.4	-11.6	42.8	54.0	11.2

■ Operating Mode: DVD COPY – RF Out CH03 [30 MHz ~ 1 GHz]



Final Result

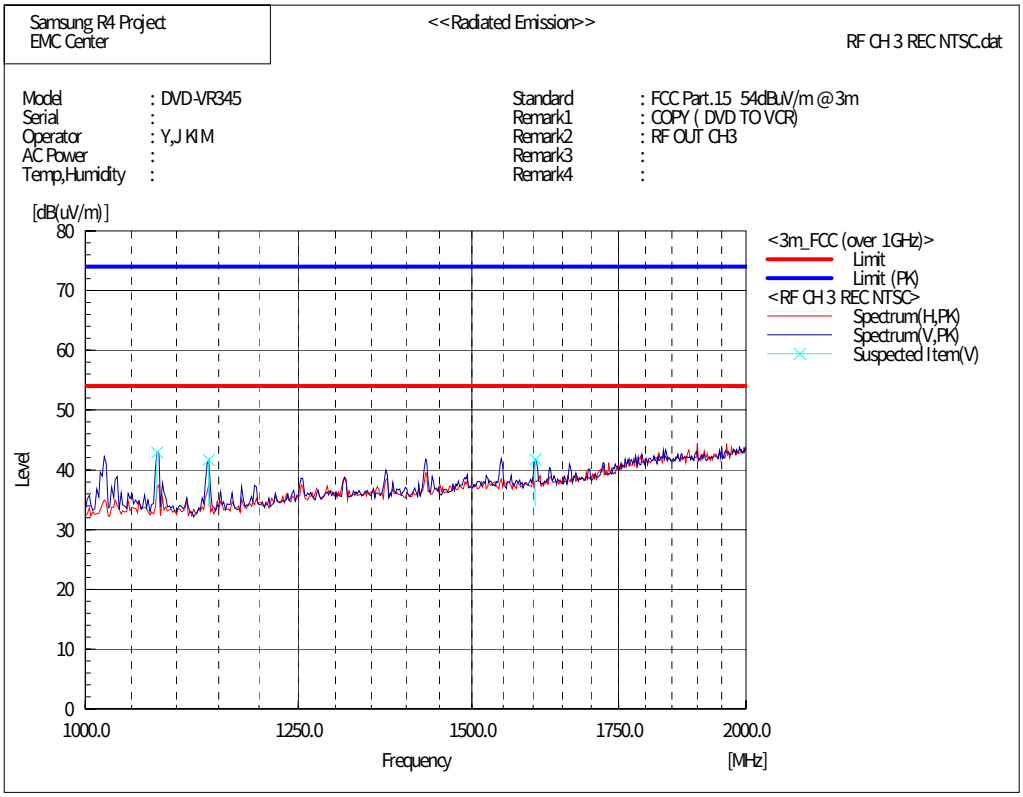
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	42.7	-4.6	38.1	46.0	7.9	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	339.150	57.0	-14.4	42.6	46.0	3.4	
2	461.250	51.7	-11.8	39.9	46.0	6.1	
3	466.830	48.8	-11.7	37.1	46.0	8.9	
4	515.510	50.9	-10.7	40.2	46.0	5.8	
5	786.290	41.5	-3.3	38.2	46.0	7.8	

■ Operating Mode: DVD COPY – RF Out CH03 [1 GHz ~ 2 GHz]

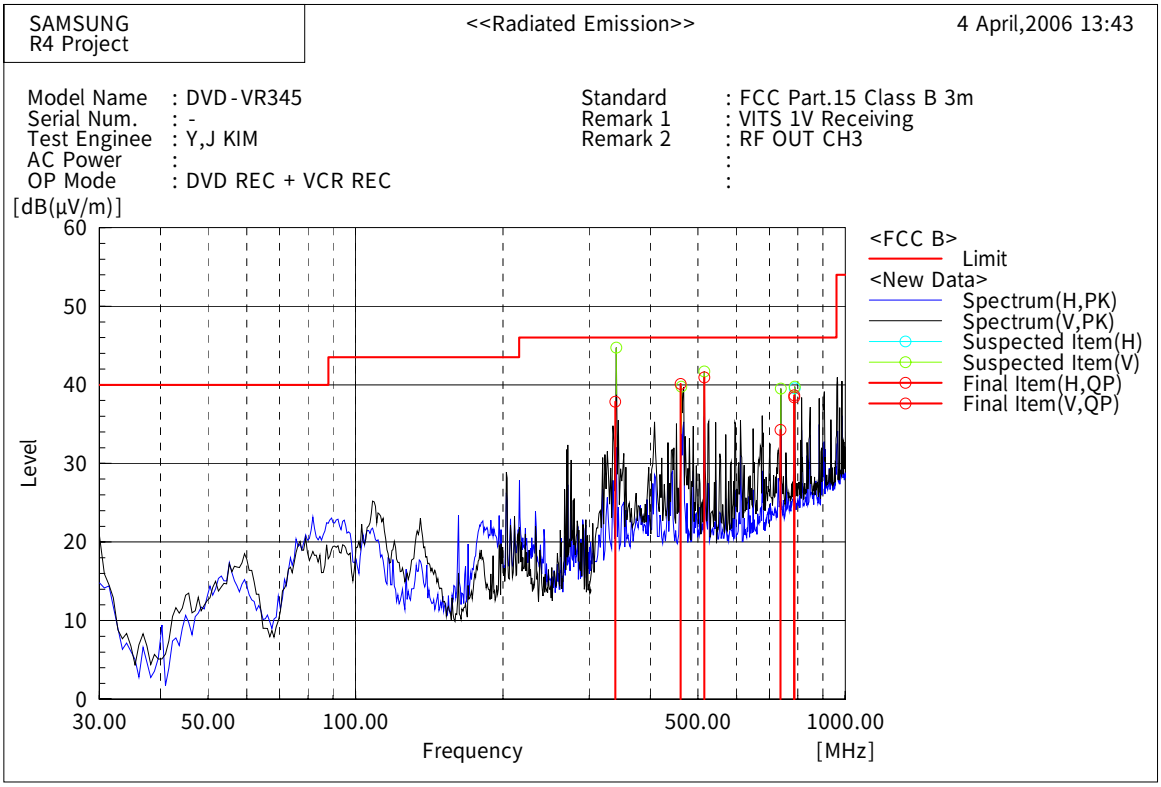


Spectrum Selection

--- Vertical Polarization ---

No.	Frequency	Reading	c.f	Result PK	Limit	Margin
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]
1	1078.156	59.7	-16.8	42.9	54.0	11.1
2	1138.277	58.1	-16.4	41.7	54.0	12.3
3	1603.206	53.5	-11.7	41.8	54.0	12.2

■ Operating Mode: DVD REC + VCR REC(VITS 1V) – RF Out CH03 [30 MHz ~ 1 GHz]



Final Result

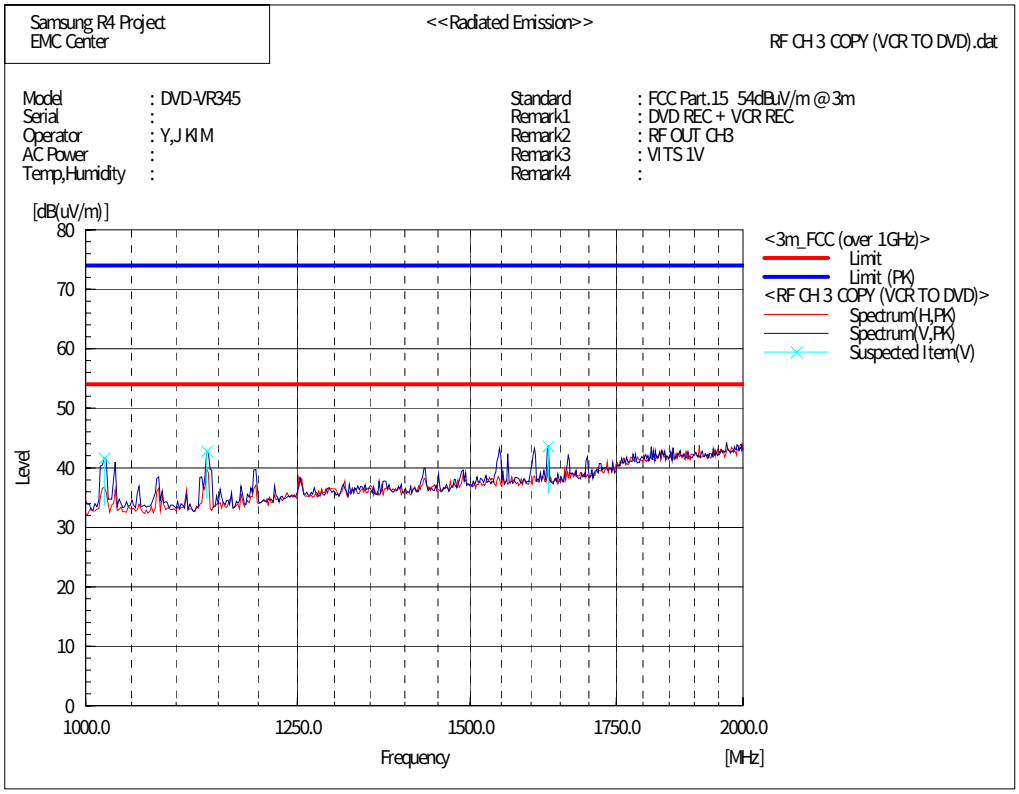
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	43.3	-4.6	38.7	46.0	7.3	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	339.150	52.3	-14.4	37.9	46.0	8.1	
2	461.250	51.9	-11.8	40.1	46.0	5.9	
3	515.510	51.6	-10.7	40.9	46.0	5.1	
4	737.330	38.2	-3.9	34.3	46.0	11.7	
5	786.290	41.7	-3.3	38.4	46.0	7.6	

■ Operating Mode: DVD REC + VCR REC(VITS 1V) – RF Out CH03 [1 GHz ~ 2 GHz]

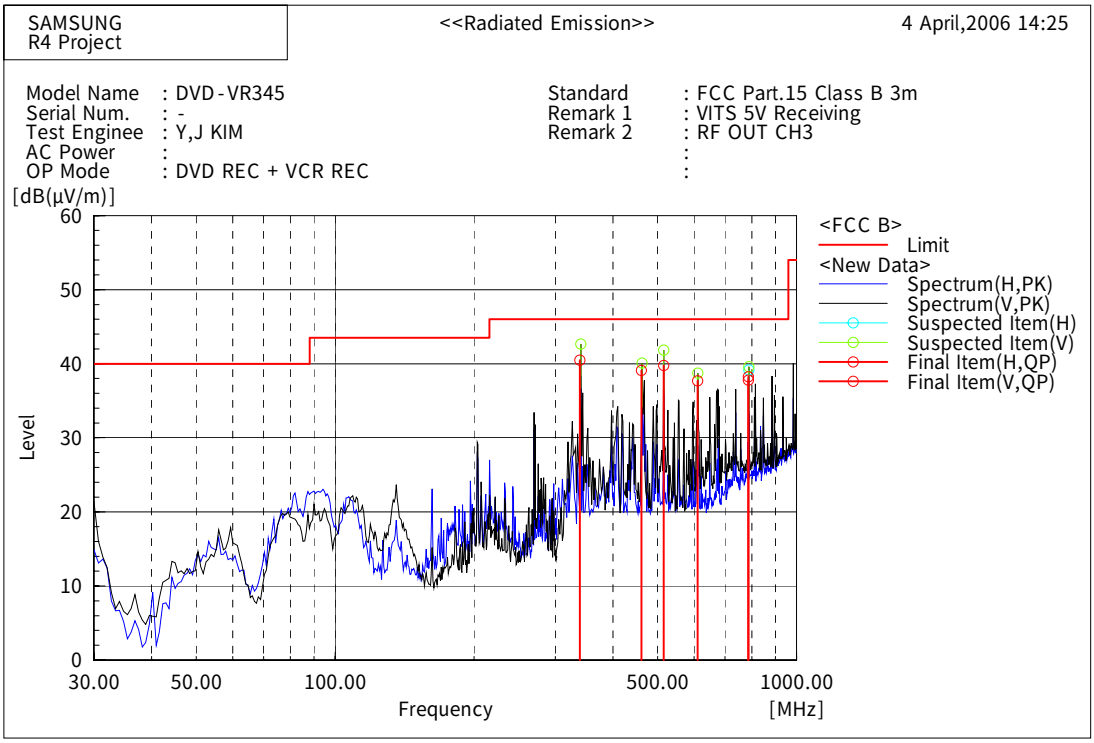


Spectrum Selection

--- Vertical Polarization ---

No.	Frequency	Reading	c.f	Result PK	Limit	Margin
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]
1	1020.040	58.6	-17.0	41.6	54.0	12.4
2	1136.273	59.2	-16.4	42.8	54.0	11.2
3	1629.259	55.2	-11.6	43.6	54.0	10.4

■ Operating Mode: DVD REC + VCR REC(VITS 5V) – RF Out CH03 [30 MHz ~ 1 GHz]



Final Result

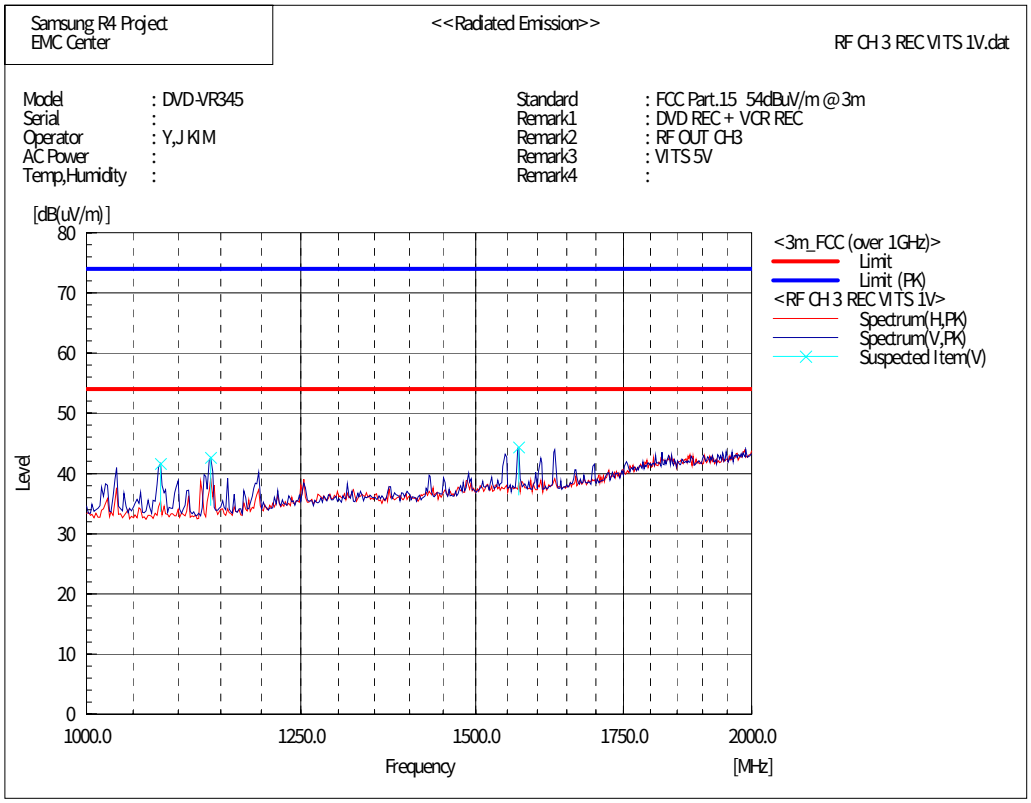
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	42.4	-4.6	37.8	46.0	8.2	

--- 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	339.170	54.9	-14.4	40.5	46.0	5.5	
2	461.260	50.9	-11.8	39.1	46.0	6.9	
3	515.530	50.5	-10.7	39.8	46.0	6.2	
4	610.490	45.1	-7.4	37.7	46.0	8.3	
5	786.290	41.5	-3.3	38.2	46.0	7.8	

■ Operating Mode: DVD REC + VCR REC(VITS 5V) – RF Out CH03 [1 GHz ~ 2 GHz]

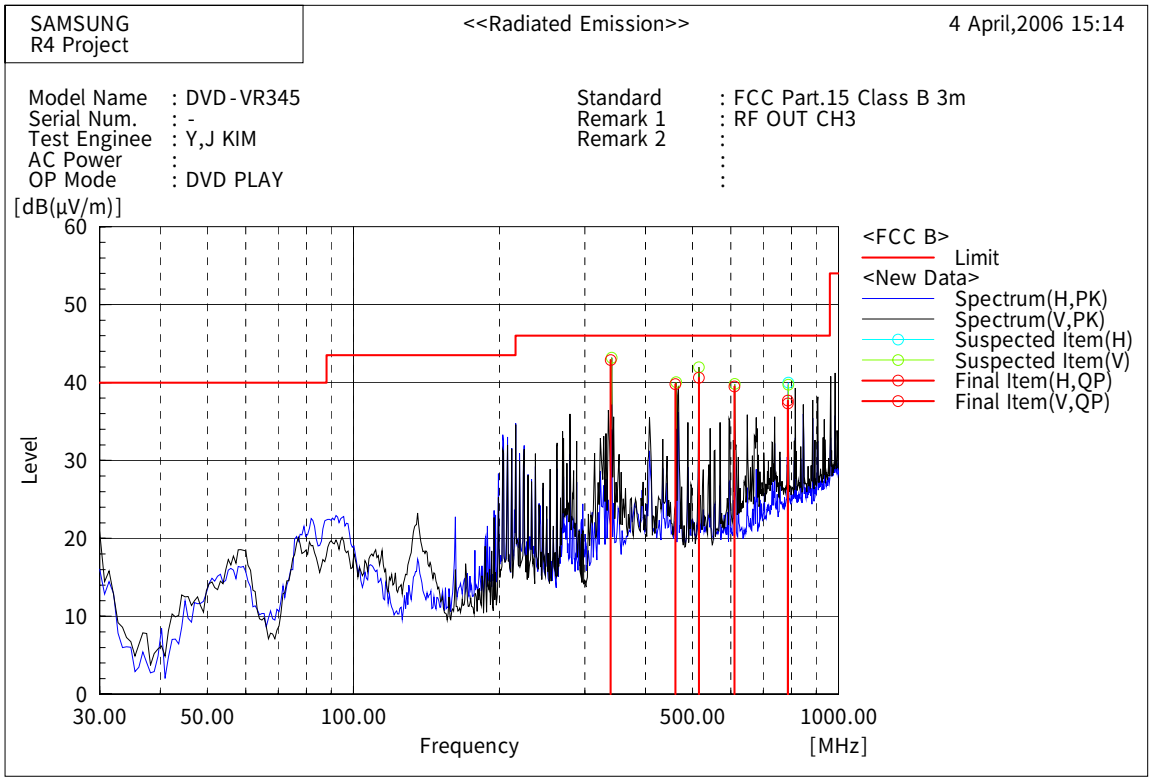


Spectrum Selection

--- Vertical Polarization ---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1080.160	58.4	-16.8	41.6	54.0	12.4
2	1138.277	59.0	-16.4	42.6	54.0	11.4
3	1569.138	56.3	-11.9	44.4	54.0	9.6

■ Operating Mode: DVD PLAY – RF Out CH03 [30 MHz ~ 1 GHz]



Final Result

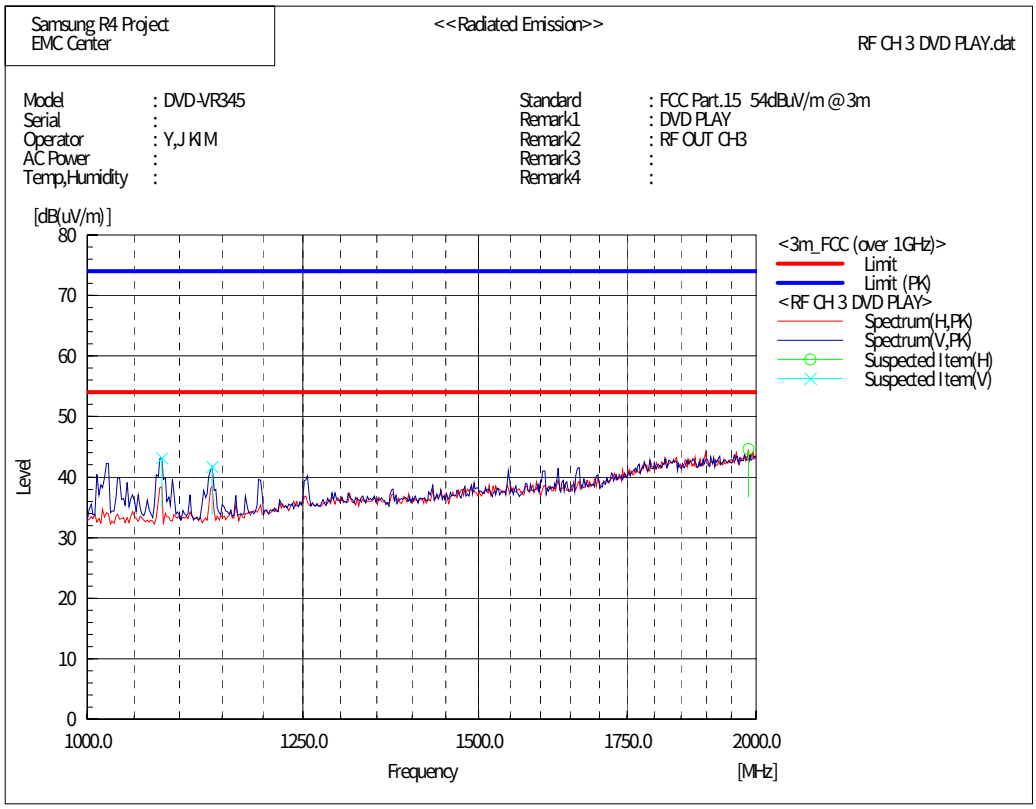
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	42.3	-4.6	37.7	46.0	8.3	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	339.150	57.3	-14.4	42.9	46.0	3.1	
2	461.250	51.6	-11.8	39.8	46.0	6.2	
3	515.510	51.3	-10.7	40.6	46.0	5.4	
4	610.470	46.9	-7.4	39.5	46.0	6.5	
5	786.290	40.6	-3.3	37.3	46.0	8.7	

■ Operating Mode: DVD PLAY – RF Out CH03 [1 GHz ~ 2 GHz]



Spectrum Selection

--- Horizontal Polarization ---

No.	Frequency	Reading	c.f	Result PK	Limit	Margin
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]
1	1983.968	50.4	-5.8	44.6	54.0	9.4

--- Vertical Polarization ---

No.	Frequency	Reading	c.f	Result PK	Limit	Margin
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]
1	1080.160	59.9	-16.8	43.1	54.0	10.9
2	1138.277	58.1	-16.4	41.7	54.0	12.3

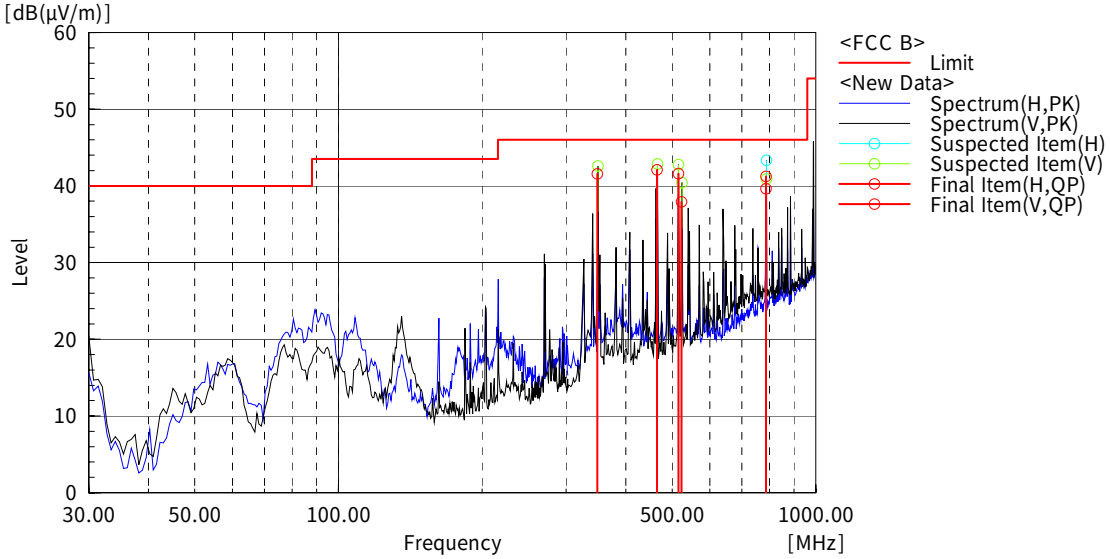
■ Operating Mode: VCR PLAY – RF Out CH03 [30 MHz ~ 1 GHz]

SAMSUNG
R4 Project

<<Radiated Emission>>

Model Name : DVD-VR345
Serial Num. : -
Test Enginee : Y,J KIM
AC Power :
OP Mode : VCR PLAY

Standard : FCC Part.15 Class B 3m
Remark 1 : RF OUT CH3
Remark 2 :



Final Result

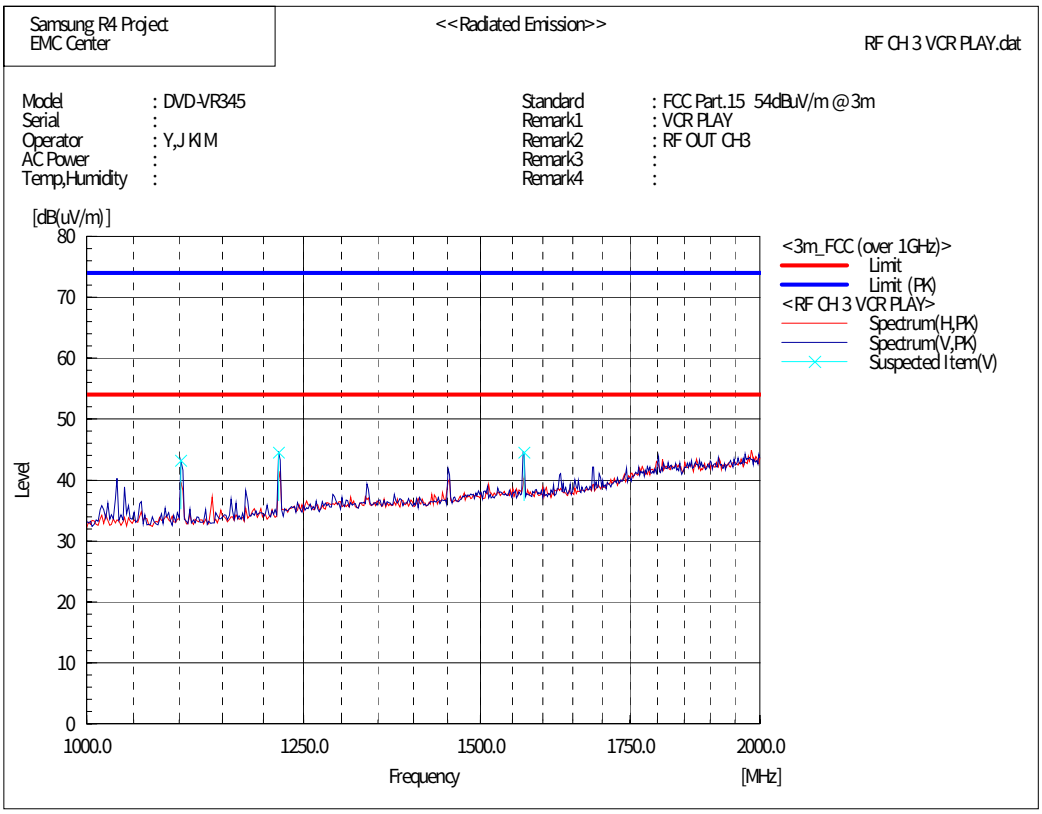
--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.290	45.8	-4.6	41.2	46.0	4.8	

--- 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	348.580	55.8	-14.2	41.6	46.0	4.4	
2	464.820	53.8	-11.7	42.1	46.0	3.9	
3	515.530	52.3	-10.7	41.6	46.0	4.4	
4	523.040	48.3	-10.4	37.9	46.0	8.1	
5	786.290	42.9	-3.3	39.6	46.0	6.4	

■ Operating Mode: VCR PLAY – RF Out CH03 [1 GHz ~ 2 GHz]



Spectrum Selection

--- Vertical Polarization ---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1102.204	59.9	-16.7	43.2	54.0	10.8
2	1218.437	59.7	-15.2	44.5	54.0	9.5
3	1569.138	56.4	-11.9	44.5	54.0	9.5

3.3 Output Signal Level

3.3.1 Test information

Test engineer	Young Jin, Kim
Test date	April 13, 2006
Climate condition	Ambient temperature : 22.5 ℃, Relative humidity : 38 % Atmospheric pressure 101.8 kPa
Test place	Shield room # 1

3.3.2 Test equipment

Equipment	Model name	Manufacturer	Serial no.	Calibration	
				Next date	Interval (Month)
Field strength meter	ESCI	R&S	100136	2006-04-17	12
Amplifier	8447D	Agilent	2994A10430	2006-09-10	12
Matching Pad	RAM	R&S	834188/009	2006-06-09	12
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2006-10-10	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 The measured emissions of the EUT have found to be below the specified limits.

■ Operating Mode: DVD Play - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
56.755	71.2	-20.2	51.0	56.5	5.5
61.254	85.3	-20.2	65.1	69.5	4.4
65.753	70.0	-20.2	49.8	56.5	6.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(NTSC) - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
56.756	71.2	-20.2	51.0	56.5	5.5
61.254	85.8	-20.2	65.6	69.5	3.9
65.745	70.0	-20.2	49.8	56.5	6.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(1V VITS) - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
56.752	71.3	-20.2	51.1	56.5	5.4
61.252	85.3	-20.2	65.1	69.5	4.4
65.751	70.0	-20.2	49.8	56.5	6.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(5V VITS) - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
56.752	71.3	-20.2	51.1	56.5	5.4
61.246	85.2	-20.2	65.0	69.5	4.5
65.755	70.0	-20.2	49.8	56.5	6.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR Play - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
56.762	71.2	-20.2	51.0	56.5	5.5
61.252	85.8	-20.2	65.6	69.5	3.9
65.741	69.9	-20.2	49.7	56.5	6.8

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD COPY - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
56.759	71.2	-20.2	51.0	56.5	5.5
61.254	85.8	-20.2	65.6	69.5	3.9
65.765	69.9	-20.2	49.7	56.5	6.8

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR COPY - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
56.765	71.2	-20.2	51.0	56.5	5.5
61.254	85.8	-20.2	65.6	69.5	3.9
65.749	69.9	-20.2	49.7	56.5	6.8

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD Play - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
62.749	70.4	-20.2	50.2	56.5	6.3
67.240	84.9	-20.2	64.7	69.5	4.8
71.737	69.1	-20.2	48.9	56.5	7.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(NTSC) - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
62.740	70.4	-20.2	50.2	56.5	6.3
67.238	84.9	-20.2	64.7	69.5	4.8
71.733	69.1	-20.2	48.9	56.5	7.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 1V) - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
62.740	70.4	-20.2	50.2	56.5	6.3
67.237	84.5	-20.2	64.3	69.5	5.2
71.743	69.1	-20.2	48.9	56.5	7.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 5V) - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
62.736	70.4	-20.2	50.2	56.5	6.3
67.244	84.4	-20.2	64.2	69.5	5.3
71.741	69.2	-20.2	49.0	56.5	7.5

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR Play - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
62.728	70.4	-20.2	50.2	56.5	6.3
67.238	84.9	-20.2	64.7	69.5	4.8
71.729	69.1	-20.2	48.9	56.5	7.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD COPY - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
62.758	70.3	-20.2	50.1	56.5	6.4
67.244	84.9	-20.2	64.7	69.5	4.8
71.725	69.1	-20.2	48.9	56.5	7.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR COPY - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
62.742	70.4	-20.2	50.2	56.5	6.3
67.238	84.9	-20.2	64.7	69.5	4.8
71.731	69.1	-20.2	48.9	56.5	7.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

3.4 Output Terminal Conducted Spurious Emission

3.4.1 Test information

Test engineer	Young Jin, Kim
Test date	April 13, 2006
Climate condition	Ambient temperature : 22.5 ℃, Relative humidity : 38 % Atmospheric pressure 101.8 kPa
Test place	Shield room # 1

3.4.2 Test equipment

Equipment	Model name	Manufacturer	Serial no.	Calibration	
				Next date	Interva (Month)
Field strength meter	ESCI	R&S	100136	2006-04-17	12
Amplifier	8447D	Agilent	2994A10430	2006-09-10	12
Matching Pad	RAM	R&S	834188/009	2006-06-09	12
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2006-10-10	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).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 The measured emissions of the EUT have found to be below the specified limits.

■ Operating Mode: DVD PLAY - RF Out CH03 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
42.398	34.2	-20.3	13.9	39.5	25.6
47.737	34.3	-20.3	14.0	39.5	25.5
56.495	28.5	-20.2	8.3	39.5	31.2

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD PLAY - RF Out CH03 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
786.285	53.3	-19.4	33.9	39.5	5.6
801.265	52.8	-19.3	33.5	39.5	6.0
805.775	42.5	-19.3	23.2	39.5	16.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD PLAY - RF Out CH04 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[Db]	[dBuV]	[dBuV]	[dB]
42.390	34.0	-20.3	13.7	39.5	25.8
46.630	28.3	-20.3	8.0	39.5	31.5
53.718	33.7	-20.2	13.5	39.5	26.0

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD PLAY - RF Out CH04 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
786.285	53.2	-19.4	33.8	39.5	5.7
801.265	52.8	-19.3	33.5	39.5	6.0
805.775	42.5	-19.3	23.2	39.5	16.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(NTSC) - RF Out CH03 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
47.781	34.2	-20.3	13.9	39.5	25.6
54.157	29.9	-20.2	9.7	39.5	29.8
56.552	31.3	-20.2	11.1	39.5	28.4

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(NTSC) - RF Out CH03 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
317.935	41.6	-19.1	22.5	39.5	17.0
786.285	53.3	-19.4	33.9	39.5	5.6
801.265	52.9	-19.3	33.6	39.5	5.9

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(NTSC) - RF Out CH04 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
53.710	33.7	-20.2	13.5	39.5	26.0
60.129	29.7	-20.2	9.5	39.5	30.0
62.590	38.3	-20.2	18.1	39.5	21.4

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: : DVD REC + VCR REC(NTSC) - RF Out CH04 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
317.833	29.8	-19.1	10.7	39.5	28.8
786.285	53.2	-19.4	33.8	39.5	5.7
801.265	52.9	-19.3	33.6	39.5	5.9

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 1V) - RF Out CH03 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
42.954	29.1	-20.3	8.8	39.5	30.7
47.753	34.4	-20.3	14.1	39.5	25.4
56.549	30.1	-20.2	9.9	39.5	29.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 1V) - RF Out CH03 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
786.285	53.3	-19.4	33.9	39.5	5.6
801.265	52.7	-19.3	33.4	39.5	6.1
805.775	42.5	-19.3	23.2	39.5	16.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 1V) - RF Out CH04 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
42.953	29.2	-20.3	8.9	39.5	30.6
53.738	34.0	-20.2	13.8	39.5	25.7
62.616	46.0	-20.2	25.8	39.5	13.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 1V) - RF Out CH04 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
322.124	30.7	-19.1	11.6	39.5	27.9
786.285	53.3	-19.4	33.9	39.5	5.6
801.265	52.7	-19.3	33.4	39.5	6.1

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 5V) - RF Out CH03 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
47.752	34.5	-20.3	14.2	39.5	25.3
52.251	28.0	-20.3	7.7	39.5	31.8
56.376	27.9	-20.2	7.7	39.5	31.8

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 5V) - RF Out CH03 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
319.280	36.5	-19.1	17.4	39.5	22.1
786.285	53.3	-19.4	33.9	39.5	5.6
801.265	52.7	-19.3	33.4	39.5	6.1

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 5V) - RF Out CH04 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
42.955	29.3	-20.3	9.0	39.5	30.5
53.739	34.1	-20.2	13.9	39.5	25.6
62.362	27.3	-20.2	7.1	39.5	32.4

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(VITS 5V) - RF Out CH04 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
319.121	34.5	-19.1	15.4	39.5	24.1
786.285	53.2	-19.4	33.8	39.5	5.7
801.265	52.8	-19.3	33.5	39.5	6.0

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR PLAY - RF Out CH03 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
47.810	33.9	-20.3	13.6	39.5	25.9
54.156	29.4	-20.2	9.2	39.5	30.3
56.453	29.5	-20.2	9.3	39.5	30.2

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR PLAY - RF Out CH03 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
786.285	53.1	-19.4	33.7	39.5	5.8
801.265	52.8	-19.3	33.5	39.5	6.0
805.755	42.4	-19.3	23.1	39.5	16.4

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode VCR PLAY - RF Out CH04 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
42.956	28.8	-20.3	8.5	39.5	31.0
45.248	24.4	-20.3	4.1	39.5	35.4
53.739	34.0	-20.2	13.8	39.5	25.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR PLAY - RF Out CH04 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
786.285	53.1	-19.4	33.7	39.5	5.8
801.265	52.9	-19.3	33.6	39.5	5.9
805.775	42.5	-19.3	23.2	39.5	16.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD COPY - RF Out CH03 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
42.388	34.3	-20.3	14.0	39.5	25.5
47.782	34.1	-20.3	13.8	39.5	25.7
56.276	29.6	-20.2	9.4	39.5	30.1

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD COPY - RF Out CH03 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
319.237	39.2	-19.1	20.1	39.5	19.4
786.285	53.3	-19.4	33.9	39.5	5.6
801.265	52.6	-19.3	33.3	39.5	6.2

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode DVD COPY - RF Out CH04 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
42.392	34.1	-20.3	13.8	39.5	25.7
46.630	28.5	-20.3	8.2	39.5	31.3
53.740	34.0	-20.2	13.8	39.5	25.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD COPY - RF Out CH04 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
786.285	53.2	-19.4	33.8	39.5	5.7
801.265	52.8	-19.3	33.5	39.5	6.0
805.775	42.5	-19.3	23.2	39.5	16.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR COPY - RF Out CH03 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
42.953	28.8	-20.3	8.5	39.5	31.0
47.753	34.5	-20.3	14.2	39.5	25.3
56.290	28.8	-20.2	8.6	39.5	30.9

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR COPY - RF Out CH03 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
319.280	37.1	-19.1	18.0	39.5	21.5
786.285	53.4	-19.4	34.0	39.5	5.5
801.265	52.8	-19.3	33.5	39.5	6.0

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode VCR COPY - RF Out CH04 [Spurious Low]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
53.704	33.7	-20.2	13.5	39.5	26.0
60.093	29.1	-20.2	8.9	39.5	30.6
62.580	35.8	-20.2	15.6	39.5	23.9

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR COPY - RF Out CH04 [Spurious High]

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
786.285	53.3	-19.4	33.9	39.5	5.6
801.265	52.8	-19.3	33.5	39.5	6.0
805.775	42.5	-19.3	23.2	39.5	16.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

3.5 Antenna Transfer Switch

3.5.1 Test information

Test engineer	Young Jin, Kim
Test date	April 13, 2006
Climate condition	Ambient temperature : 22.5 ℃, Relative humidity : 38 % Atmospheric pressure 101.8 kPa
Test place	Shield room # 1

3.5.2 Test equipment

Equipment	Model name	Manufacturer	Serial no.	Calibration	
				Next date	Interval (Month)
Field strength meter	ESCI	R&S	100136	2006-04-17	12
Amplifier	8447D	Agilent	2994A10430	2006-09-10	12
Matching Pad	RAM	R&S	834188/009	2006-06-09	12
TV Signal Generator	PM5418-TDSI	PHILIPS	LO612437	2006-10-10	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 The measured emissions of the EUT have found to be below the specified limits.

■ Operating Mode: DVD PLAY - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
61.249	24.1	-20.2	3.9	9.5	5.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD PLAY - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
67.214	24.8	-20.2	4.6	9.5	4.9

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC (1V VITS) - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
61.248	24.4	-20.2	4.2	9.5	5.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC (1V VITS) - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
67.214	25.0	-20.2	4.8	9.5	4.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(5V VITS) - RF Out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
61.252	24.4	-20.2	4.2	9.5	5.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD REC + VCR REC(5V VITS) - RF Out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
67.218	25.0	-20.2	4.8	9.5	4.7

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR PLAY - RF out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
61.249	24.1	-20.2	3.9	9.5	5.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR PLAY - RF out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
67.214	24.6	-20.2	4.4	9.5	5.1

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD COPY - RF out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
61.252	24.4	-20.2	4.2	9.5	5.3

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: DVD COPY - RF out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
67.216	24.7	-20.2	4.5	9.5	5.0

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

■ Operating Mode: VCR COPY - RF out CH03

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
61.249	24.1	-20.2	3.9	9.5	5.6

* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

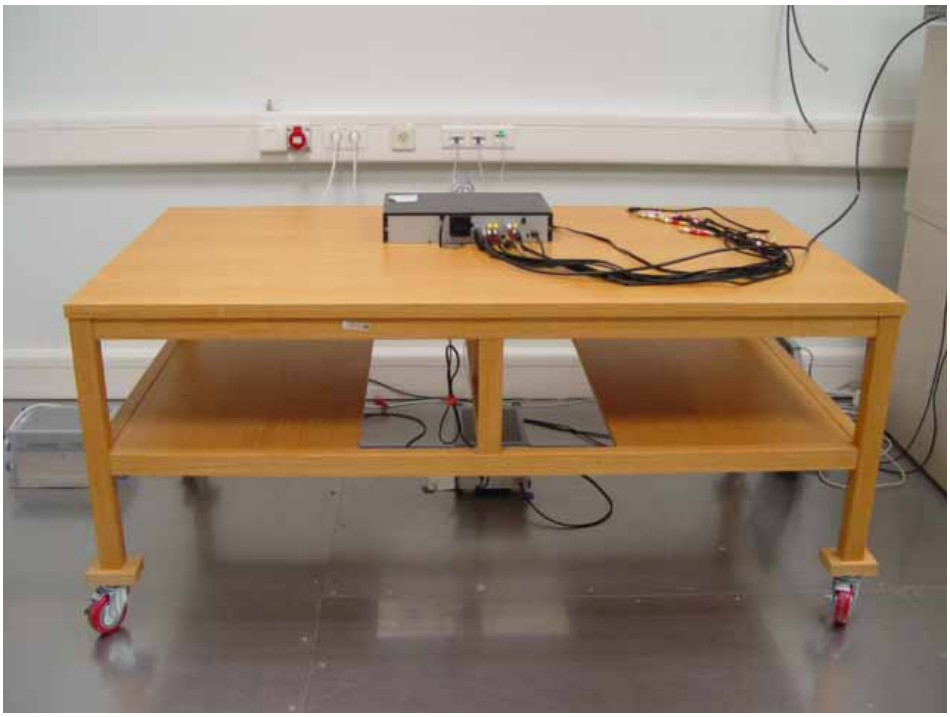
■ Operating Mode: VCR COPY - RF out CH04

Frequency	Reading	Factor	Level	Limit	Margin
[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
67.214	24.7	-20.2	4.5	9.5	5.0

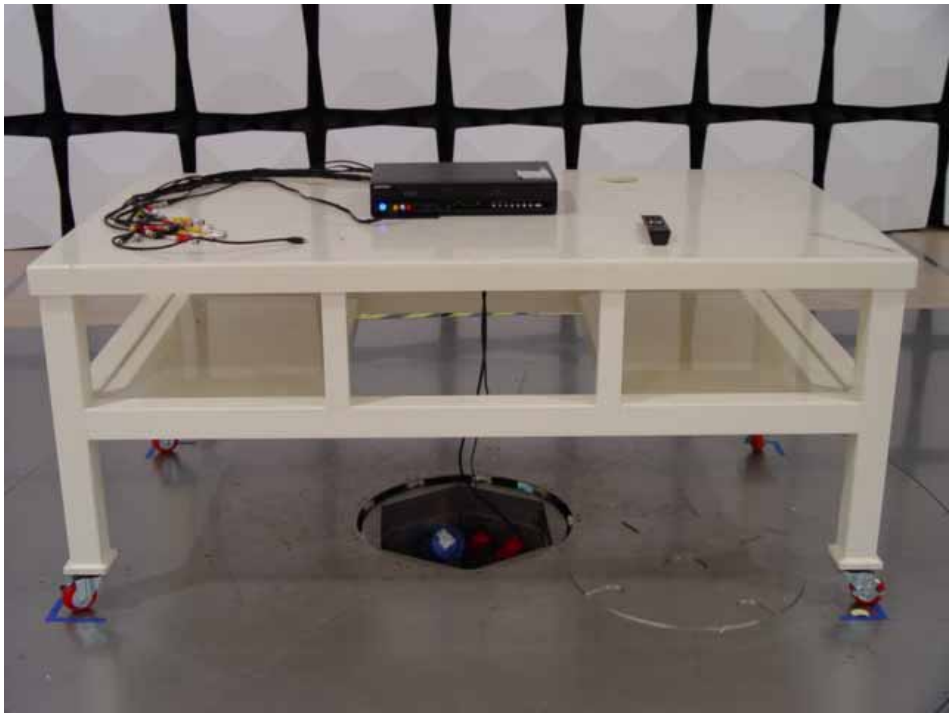
* Factor = Preamp Gain + Matching Pad Loss + Cable Loss

4. Appendix

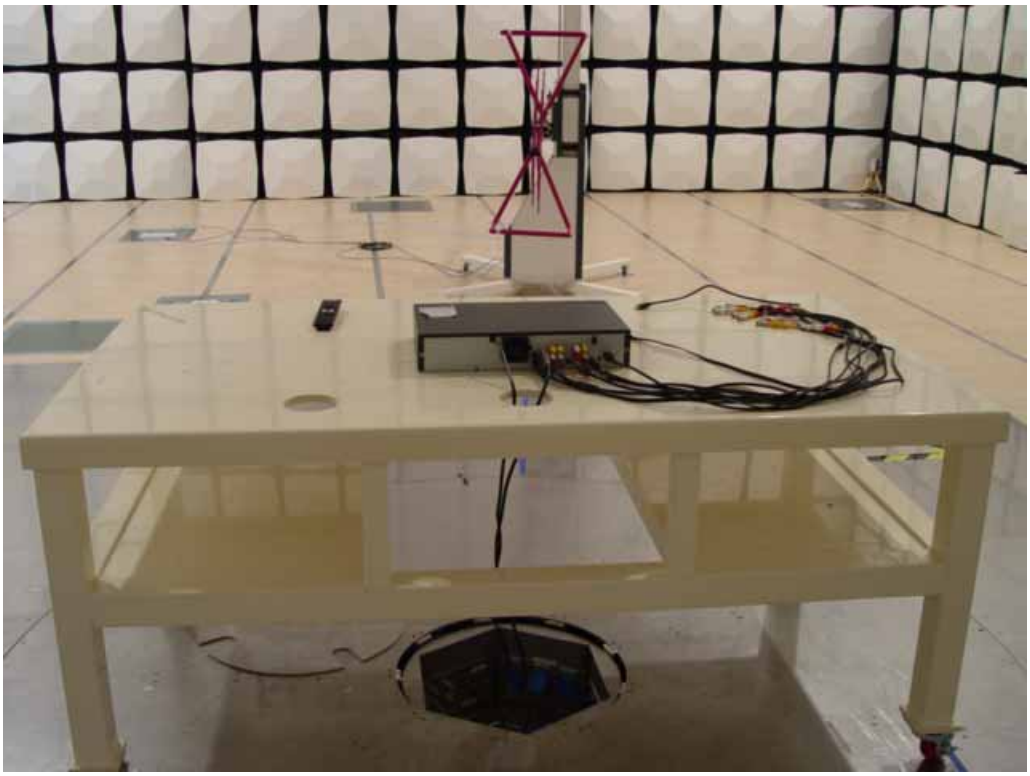
4.1 Test photography



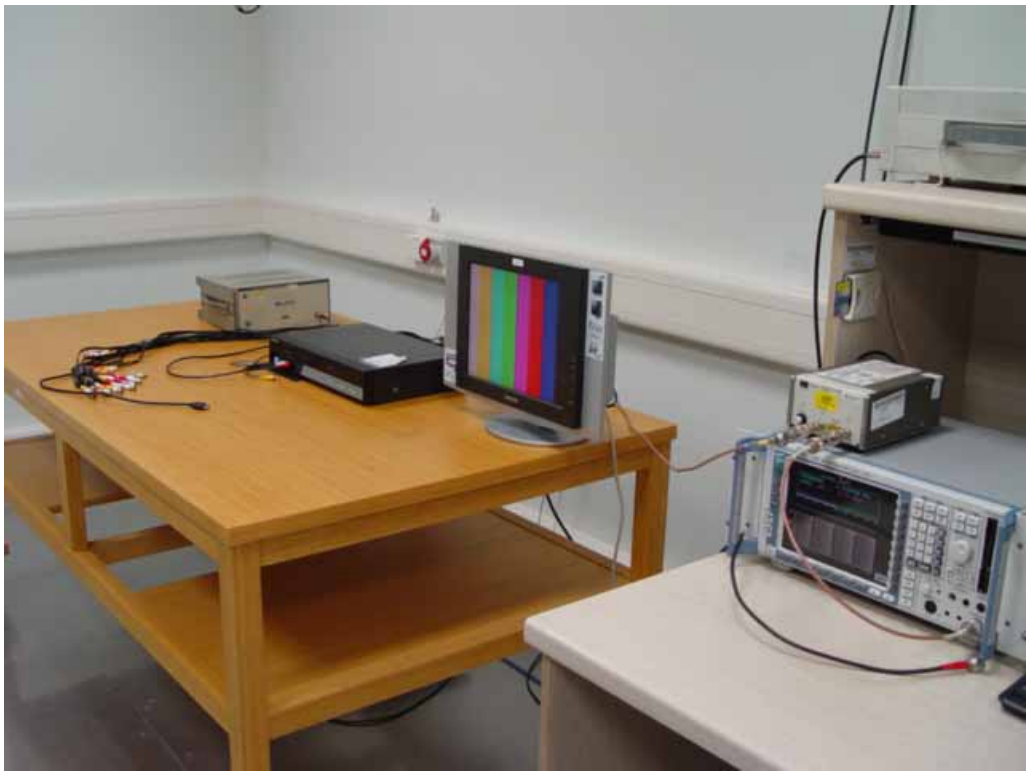
Picture 1. Conducted emission



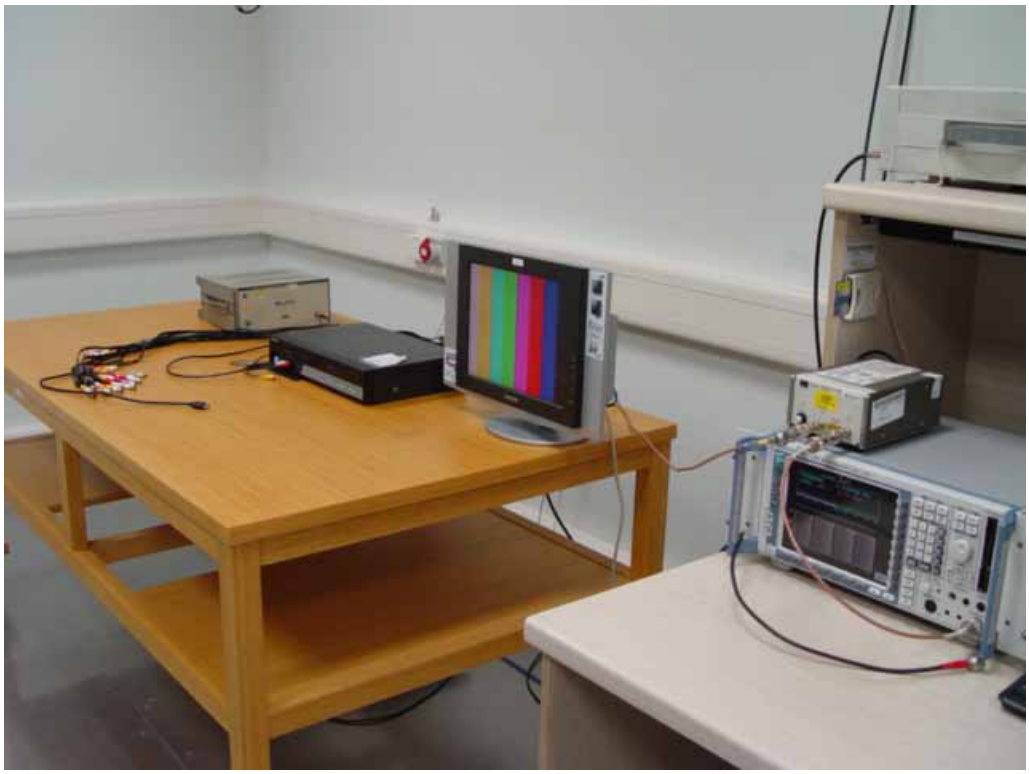
Picture 2. Radiated emission (Front)



Picture 3. Radiated emission (Rear)



Picture 4. Output Signal Level



Picture 5. Output Terminal Conducted Spurious Emission

Picture 6. Antenna Transfer Swithch

4.2 EUT photography

Picture 7. EUT (Front)

Picture 8. EUT (Rear)