

# Certification of Compliance

CFR 47 Part 15 Subpart B

**Test Report File No.** 05-IST-0142      **Date of Issue** March 29, 2005

<b>Model(s)</b>	DF-Q74D2N-JS	DAEWOO	Basic Model
	DVR-S06	DAEWOO	Buyer Model
	RV5000	CINE	Buyer Model
	VR2946	GOVIDEO	Buyer Model
	VR1950	GOVIDEO	Buyer Model
	VR1955	GOVIDEO	Buyer Model

**Kind of Product** DVDRW COMBO Recorder

**Applicant** Daewoo Electronics Corporation.

543, Dangjung-Dong, Kunpo-City, Kyounggi-DO, Korea

**Manufacturer** Daewoo Electronics Corporation.

295, Gondan-dong, Kumi-city, Kyungsangbuk-do, Korea.

**Test Result**

**Positive**

**Negative**

Reviewed By



S.J.Cho / EMC Group Manager

Approved By



J.H.LEE / Chief

- Investigations requested : Measurement to the relevant clauses of F.C.C rules and regulations Part 15 Subpart B - Unintentional Radiations
- The test report with appendix consists of 67 pages.
- The test result only responds to the tested sample.
- It is not allowed to copy this report even partly without the allowance of IST EMC Laboratory.
- This equipment as for has been shown to be capable of continued compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4 2003.



## TABLE OF CONTENTS

<b>Table of contents</b>	<b>2</b>
<b>Information of test laboratory, Environmental condition, Power used</b>	<b>3</b>
<b>Descriptions of test</b>	<b>4-6</b>
Conducted Emission	4
Radiated Emission	5
Output Signal level measurements	6
Output Terminal Conducted Spurious Emission	6
Transfer Switch Isolation Measurement	6
<b>Summary</b>	<b>7</b>

### **Test Conditions and Data - Emission**

Conducted Emission	0.15MHz - 30MHz
Test equipment / Data and Plots	8-32
Radiated Emission	30MHz - 1GHz
Test equipment / Data and Plots	33-36
Output Signal level measurements	
Test equipment / Data and Plots	37-51
Output Terminal Conducted Spurious Emission	30MHz - 1GHz
Test equipment / Data and Plots	52-59
Transfer Switch Isolation Measurement	30MHz - 1GHz
Test equipment / Data and Plots	60-67

## **Information OF TUNERS**

<b>Manufacture</b>	<b>Manufacture Name</b>
SAMSUNG Electric Co., Ltd.	TCMN0682PA20B4
LG Innotek Co., Ltd.	TADM-H201F
Korea ALPS	TMZH2-030A

## INFORMATIONS OF TEST LABORATORY

EMC LABORATORY of IST Co., Ltd. (*FCC Filing Lab*)

San 21-8, Goan-Ri, Baekam-Myun, Yongin-City

Kyonggi-Do, 449-860, Korea

TEL : +82 31 333 4093

FAX : +82 31 333 4094

## ENVIRONMENTAL CONDITIONS

Temperature	14
Humidity	48 %
Atmospheric pressure	1002 mbar

## POWER SUPPLY SYSTEM USED

Power supply system 120Vac , 60Hz

## PRODUCT INFORMATIONS

Power supply system	120Vac , 60Hz
Power consumption	Maximum: 25W (Power-OFF: 3.4W)
Signal type	NTSC COLOR
Antenna Input	Antenna or CATV input, 75
Recordable discs	DVD+R, DVD+RW, DVD-R, DVD-RW
Video recording format	Sampling frequency : 27MHz Compression format : MPEG 2
Audio recording format	Sampling frequency : 48KHz Compression format : MPEG 1 Layer 2
VCR Head system	4 Head Video, 2 Head Hi-Fi helical scan azimuth system Timer 12-hour display type with AM, PM Antenna : 75 (VHF/UHF) VHF output signal : Channel 3 or 4(Switchable)

- EMC suppression device is not used during the test.

- Please refer to user's manual.

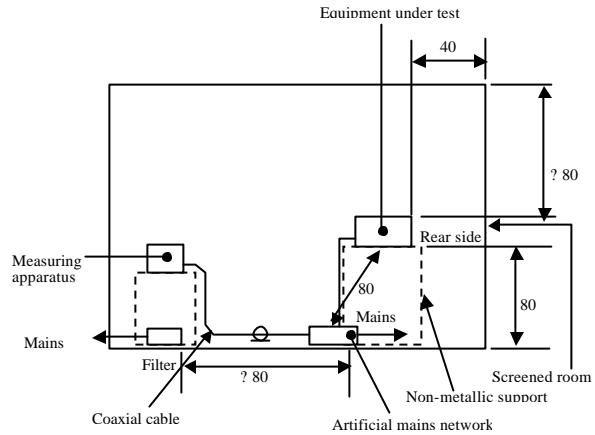
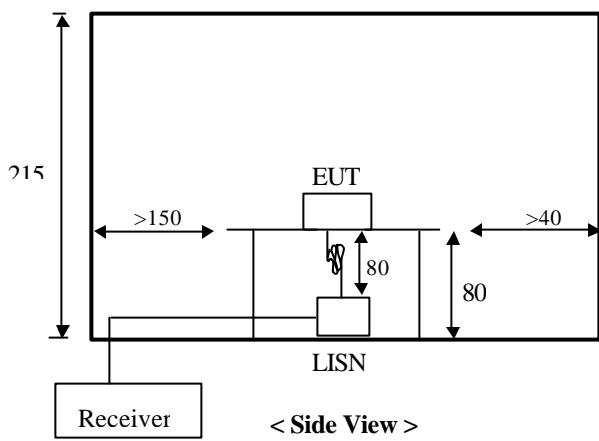
## DESCRIPTIONS OF TEST

### Conducted Emissions:

The measurement were performed over the frequency range of 0.45MHz to 30MHz using a 50 /50uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within an bandwidth of 10KHz or for "quasi-peak" within a bandwidth of 9KHz.

#### - Procedure of Test

The line-conducted facility is located inside a shielded room No.1. A 1m X 1.5m wooden table 80cm height is placed 40cm away from the vertical wall and 1.5m away from the other wall of the shielded room. The R/S ESH3-Z5 and EMCO 3825/2 LISN are bonded to bottom of the shielded room. The EUT is located on the wooden table with distance more than 80cm from the LISN and powered from the EMCO LISN .The peripheral equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner  $\varnothing$  1.2cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the EMCO LISN. All interconnecting cables more than 1m were shortened by non-inductive bundling to a 1m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating conditions. The RF output of the LISN was connected to the R/S receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using Quasi-Peak mode by manual measurement, after scanned by automatic Peak mode for frequency range from 0.45 to 30MHz. The bandwidth of the receiver was set to 10kHz. The EUT, peripheral equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.



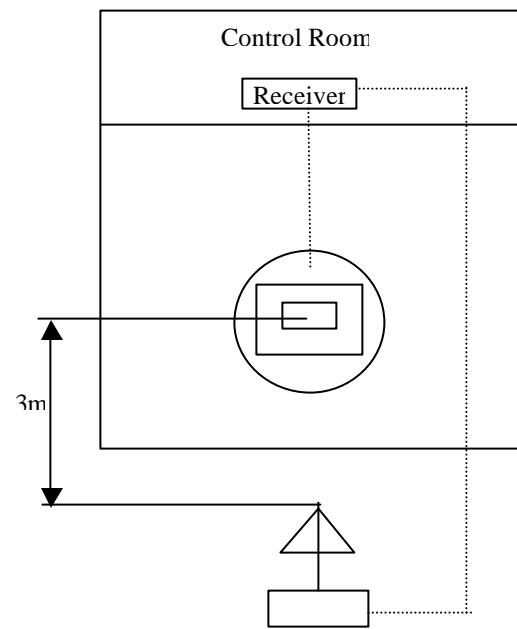
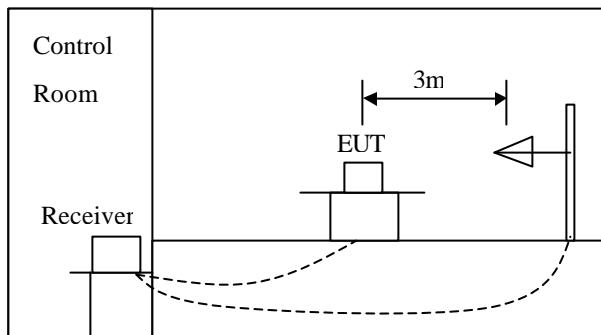
## DESCRIPTION OF TEST

### Radiated Emissions:

The measurement was performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurement was made with the detector set for "quasi-peak" within a bandwidth of 120KHz.

#### **- Procedure of Test**

Preliminary measurements were made at 3 meter using bi-conical and log-periodic antennas, and spectrum analyzer to determine the frequency producing the max. emission in anechoic chamber. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turn table azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 40MHz to 300MHz using S/B bi-conical antenna and 300 to 1000MHz using S/B log-periodic antenna. Above 1GHz, linearly polarized double ridge horn antennas were used. Final measurements were made at open site with 3-meters test distance using S/B bi-log antenna or horn antenna. The OATS have been verified in regular for its normalized site attenuations. The test equipment was placed on a wooden table. Sufficient time for the EUT, peripheral equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120kHz or 1MHz depending on the frequency of type of signal. The EUT, peripheral equipment and interconnecting cables were re-configured to the set-up producing the max. emission for the frequency and were placed on top of a 0.8-meter high nonmetallic 1 x 1.5 meter table. The EUT, peripheral equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or peripheral equipment and changing the polarity of the antenna, whichever determined the worst-case emission.



## DESCRIPTION OF TEST

### Output Signal level measurements :

The RF output of the TV interface device was fed to the TV receiver via coaxial cable. The signal level was measured by direct connection to the spectrum analyzer with 50/75 ohm matching transformer between the spectrum analyzer and the TV interface device. The RF output signal level measured RMS voltage was the highest RF level present at the output terminals during normal use of the device. Measurements were made of the levels of both the visual(61.25 MHz) and aural(71.25 MHz) of TV channel 3 and 4. The voltage corresponding to the peak envelope power of the video modulated signal during maximum amplitude peaks across a resistance( $R$  ohms) matching the rated output impedance of the device, must not exceed 346.4 times the square root of  $(R)[\mu V]$  for all other TV interface device. The voltage corresponding to peak envelope power of the audio modulated signal, if provided by the TV interface device, must not exceed 77.5 times the square root of  $(R)[\mu V]$  for all other TV interface device.(Sec 15.115 (b).(1).(ii))

### Output Terminal Conducted Spurious Emission :

The RF output signal was fed to the TV receiver with coaxial cable. The measurements were made by direct connection to the spectrum analyzer and TV interface device with 50/75 ohm matching transformer. The frequency range 30 to 1000MHz was investigated for significant emission. The maximum RMS voltage of any emission appearing on frequencies removed by than 4.6MHz below or 7.4MHz above the video carrier frequency on which the TV interface device is operated must not exceed 10.95 timed the square root of  $(R)[\mu V]$ (Sec 15.115 (b).(2).(ii)) This represents the 30dB attenuation.

### Transfer Switch Isolation Measurement :

The measurements were made of the maximum RMS voltage at the antenna terminals of the switch for all positions of the transfer switch. The maximum voltage corresponds to the peak envelope power of the video signal during maximum amplitude peaks. In either position of the receiver transfer switch, the maximum voltage at the receiving antenna input terminals of the switch when terminated with a resistance ( $R$  ohms) matching the rated impedance of the antenna input of the switch, must not exceed 0.346 times the square root of  $(R)[\mu V]$ . (Sec 15.115 (c).(1).(ii))

## SUMMARY

### Conducted Emission

The requirements are	MET	Not MET
Minimum limit margin	4.9 dB at 0.600 MHz	
Maximum limit exceeding		

**Remarks :** **With Neutral phase, for average detect mode**

**VCR Playback during DVD REC Mode (Tuner: TADM-H201F)**

### Radiated Emission

The requirements are	MET	Not MET
Minimum limit margin	3.3 dB at 593.97 MHz	
Maximum limit exceeding		

**Remarks :** **DVD Playback during VCR REC Mode (Tuner: TADM-H201F)**

### Output Signal Level Measurements

The requirements are	MET	Not MET
Minimum limit margin		
Maximum limit exceeding		

**Remarks :** **Limits are kept with more than 10dB margin**

### Output Terminal Conducted Spurious Emission

The requirements are	MET	Not MET
Minimum limit margin		
Maximum limit exceeding		

**Remarks :** **Limits are kept with more than 10dB margin**

### Transfer Switch Isolation Measurements

The requirements are	MET	Not MET
Minimum limit margin		
Maximum limit exceeding		

**Remarks :** **Limits are kept with more than 3dB margin**

Prepared By

Note :



- means the test is applicable,  is not applicable.

J.H.Lee / EMC Engineer

## TEST CONDITIONS AND DATA

### Conducted Emissions

**[Applicable]**

#### Test Equipment Used

**The test equipment used is calibrated in regular for every year.**

Model Name	Manufacturer	Descriptions	Calibration Date	Serial Number
ESH3	Rohde & Schwarz	Test Receiver	Jul. 15, 2004	892108/018
ESH3-Z2	Rohde & Schwarz	Pulse Limiter	Jul. 15, 2004	357.8810.52
ESH3-Z5	Rohde & Schwarz	LISN	Jul. 15, 2004	862770/025
EZM	Rohde & Schwarz	Spectrum Monitor	-	-
PM5418	FLUKE	Pattern Generator	May. 10, 2004	LO 796009

#### Auxiliary Equipment Used

Model Name	Manufacturer	Descriptions
14C5NT	Daewoo Electronics.	Color TV Receiver

#### Accessories including cables

Name	Length	Port and Descriptions
RCA	1.5m	Video / Audio
S-Video	-	

#### Environmental Conditions

Temperature 14

Humidity 48 %

Atmosphere pressure 1002 mbar

Test Program RF Receiving during VCR REC

RF Receiving during DVD REC

VCR Playback during DVD REC

DVD Playback during VCR REC

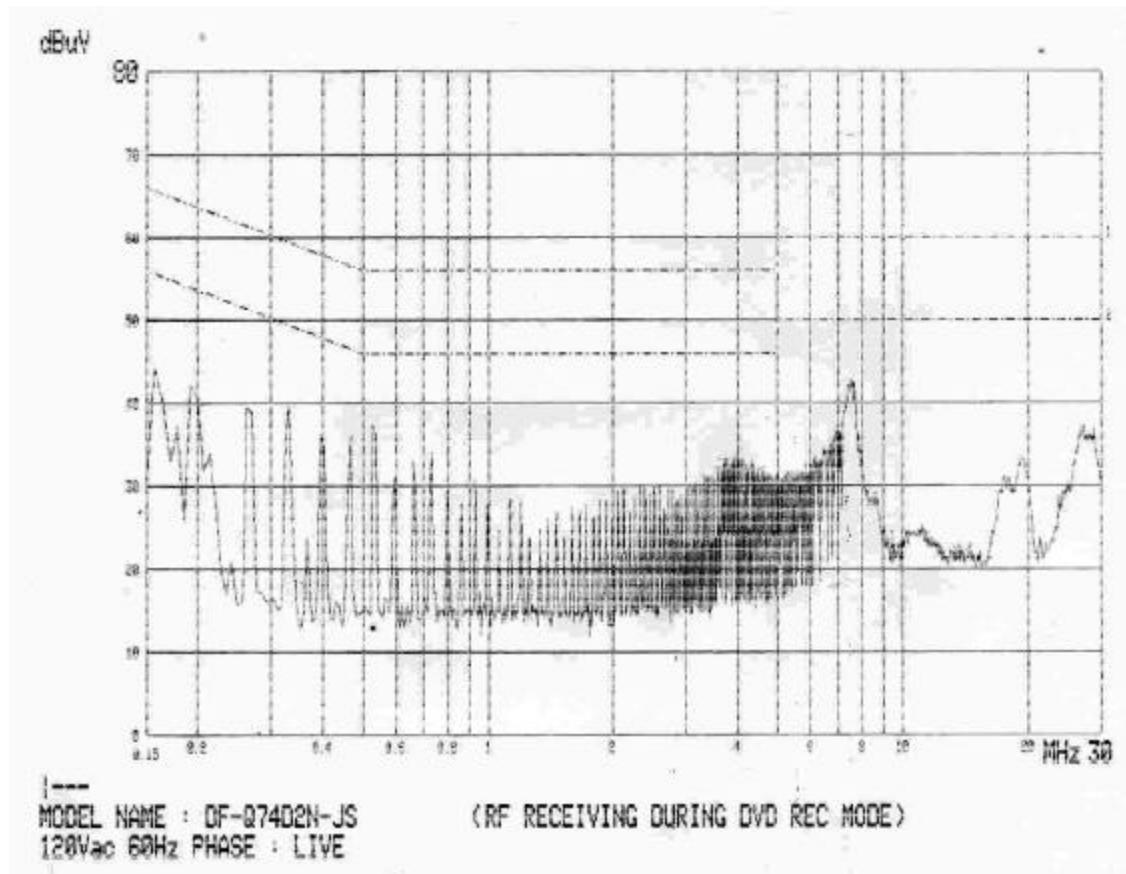
Test Area Conducted Room

Test Date March 03, 2005

**Note :**

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



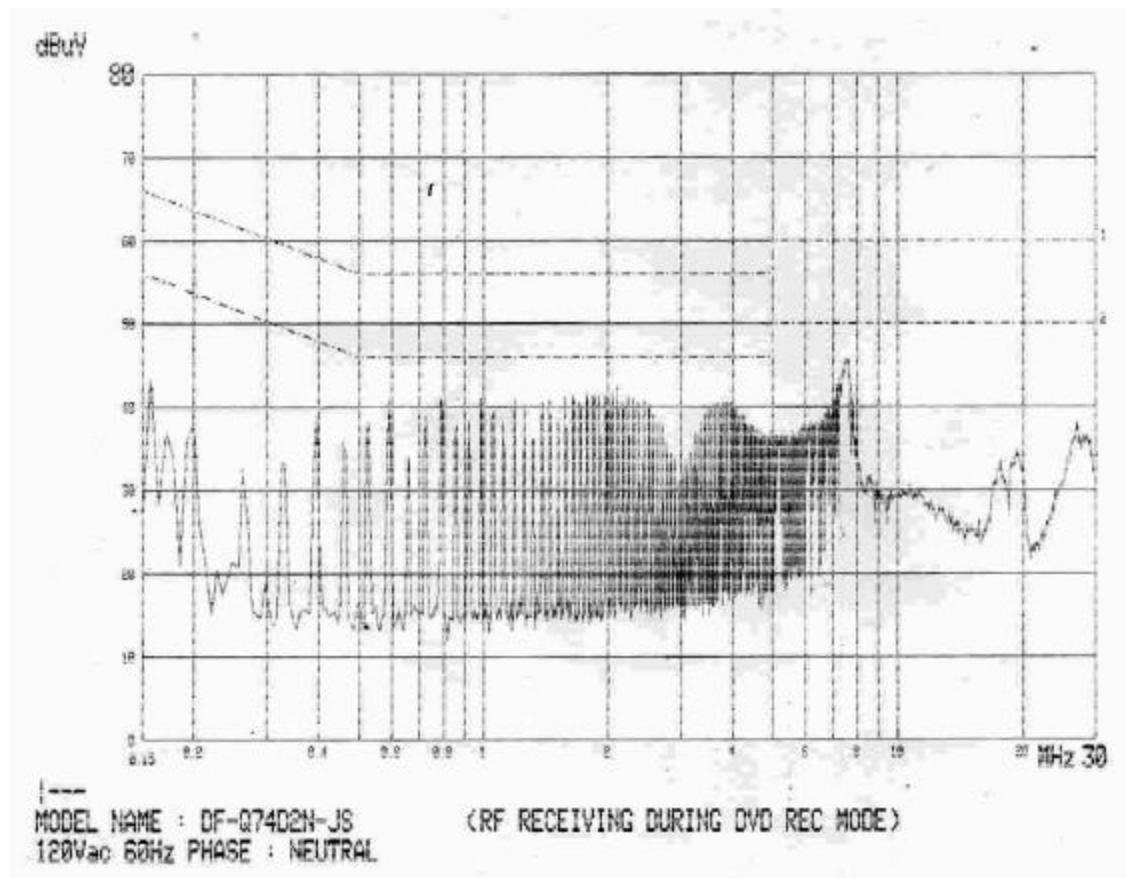
Tuner : TCMN0682PA20B4 (Samsung)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.151	44.1	11.6	66.0	56.0	21.9	44.4
0.329	39.1	38.7	59.5	49.5	20.4	10.8
7.503	41.3	35.7	60.0	50.0	18.7	14.3

*Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.*

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



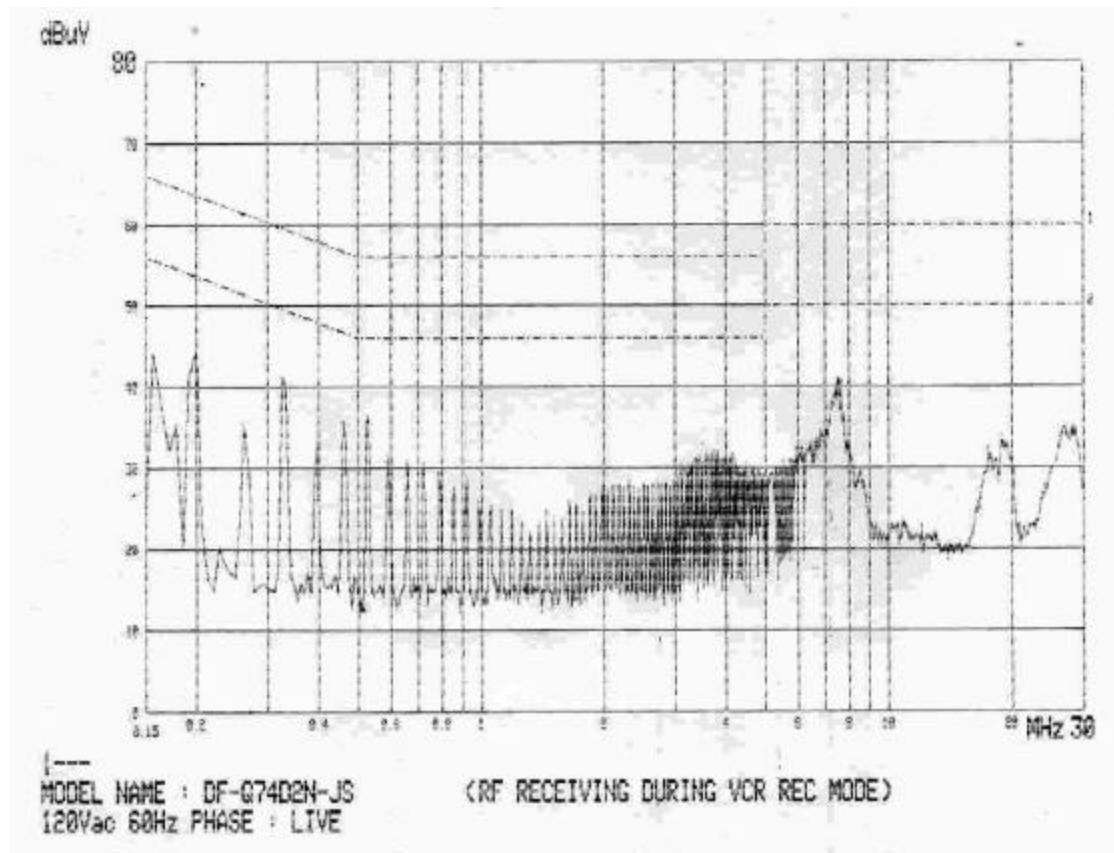
Tuner : TCMN0682PA20B4 (Samsung)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.153	43.1	11.1	65.8	55.8	22.7	44.7
0.591	41.3	40.5	56.0	46.0	14.7	5.5
2.100	41.7	39.3	56.0	46.0	14.3	6.7
3.873	39.9	38.2	56.0	46.0	16.1	7.8
7.547	43.7	37.9	60.0	50.0	16.3	12.1

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



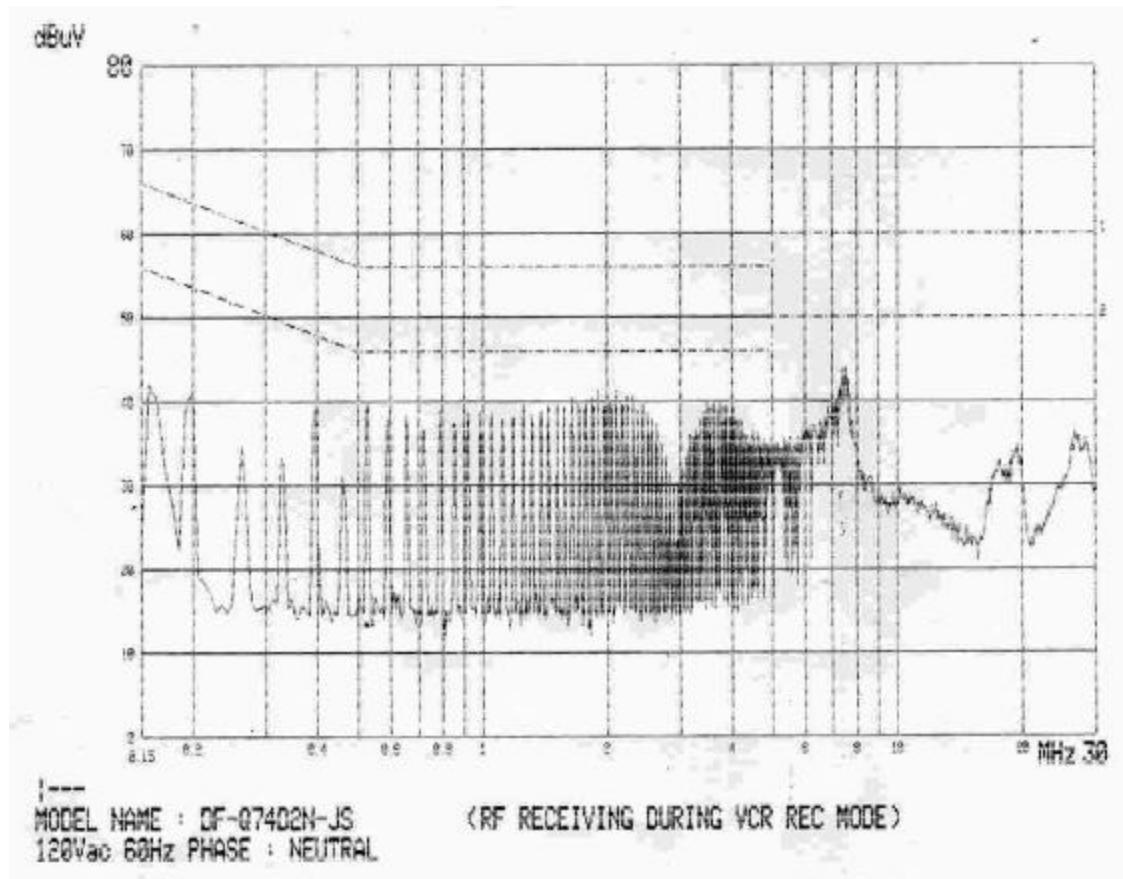
Tuner : TCMN0682PA20B4 (Samsung)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.197	43.3	38.5	63.7	53.7	20.4	15.2
0.328	41.5	40.8	59.5	49.5	18.0	8.7
7.493	38.8	30.2	60.0	50.0	21.2	19.8

*Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.*

Conducted Emissions

(Mains Terminal Disturbance Voltages)



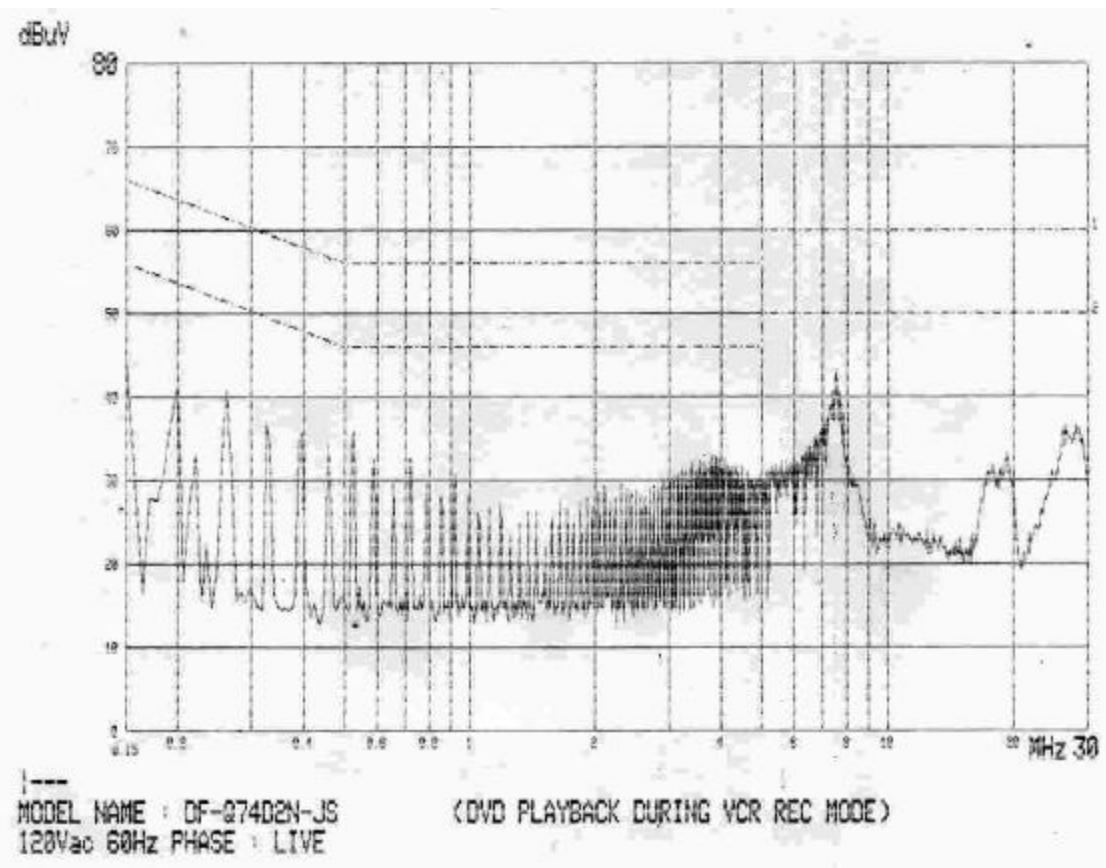
Tuner : TCMN0682PA20B4 (Samsung)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.157	41.4	10.9	65.6	55.6	24.2	44.7
0.526	38.6	38.7	56.0	46.0	17.4	7.3
1.907	40.7	38.8	56.0	46.0	15.3	7.2
3.748	38.9	33.9	56.0	46.0	17.1	12.1
7.430	42.0	33.3	60.0	50.0	18.0	16.7

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



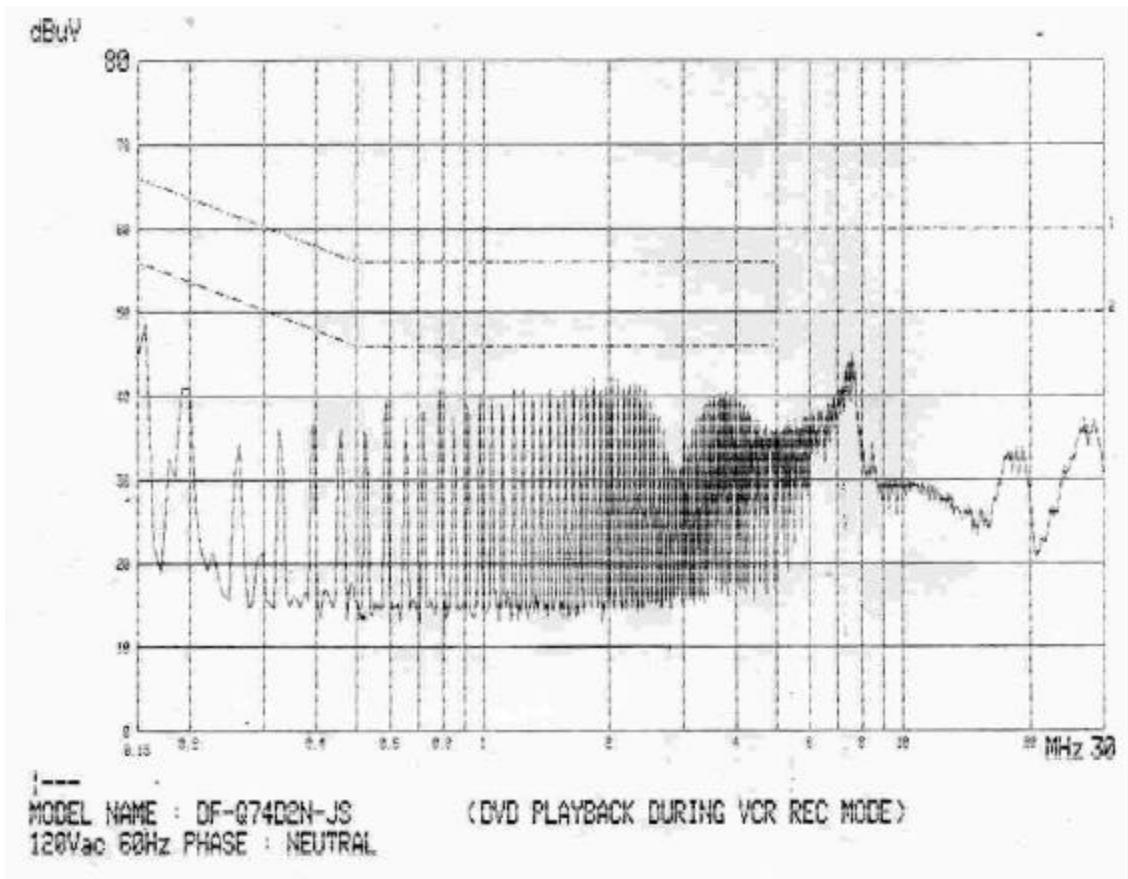
Tuner : TCMN0682PA20B4 (Samsung)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.161	44.6	11.1	65.4	55.4	20.8	44.3
0.262	41.0	39.4	61.4	51.4	20.4	12.0
7.534	41.0	34.8	60.0	50.0	19.0	15.2

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



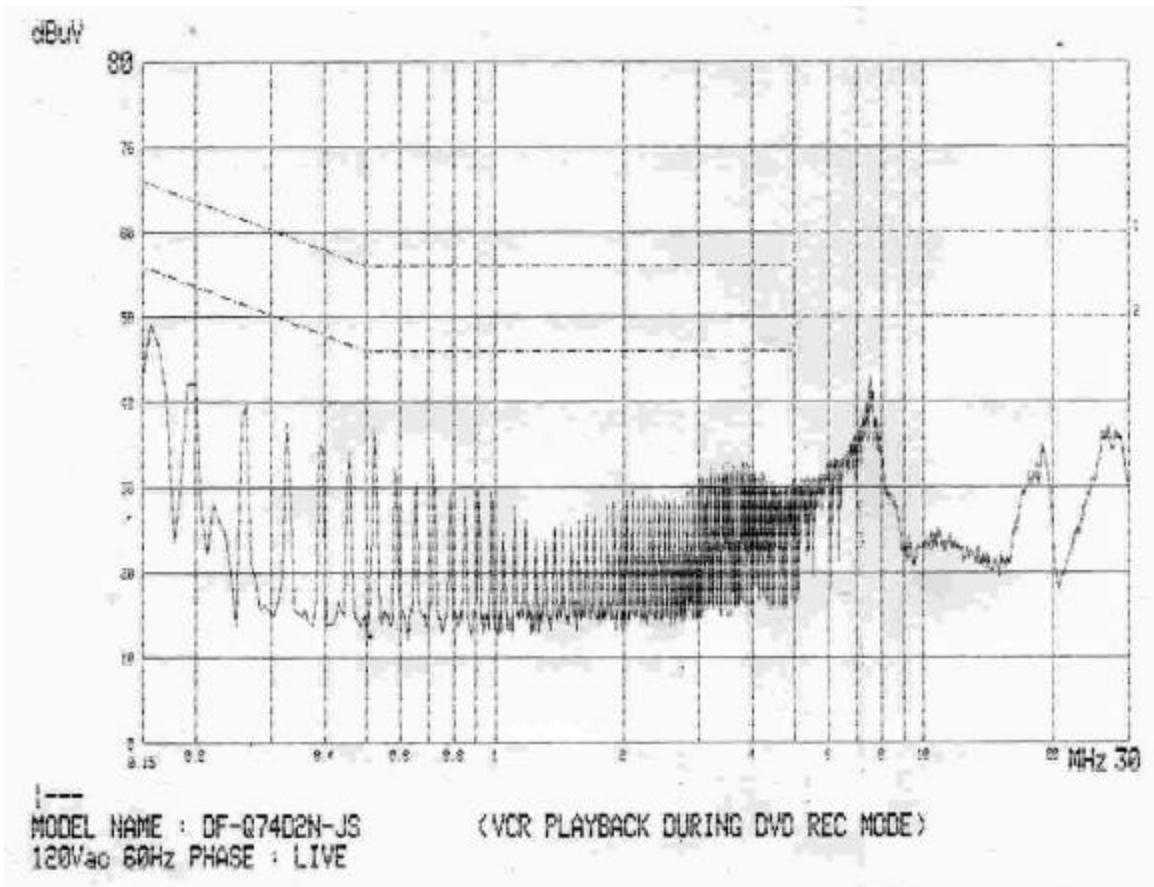
Tuner : TCMN0682PA20B4 (Samsung)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.162	45.2	10.9	65.4	55.4	20.2	44.5
0.785	40.9	39.9	56.0	46.0	15.1	6.1
1.832	41.8	40.1	56.0	46.0	14.2	5.9
3.793	39.5	37.2	56.0	46.0	16.5	8.8
7.523	43.7	38.1	60.0	50.0	16.3	11.9

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



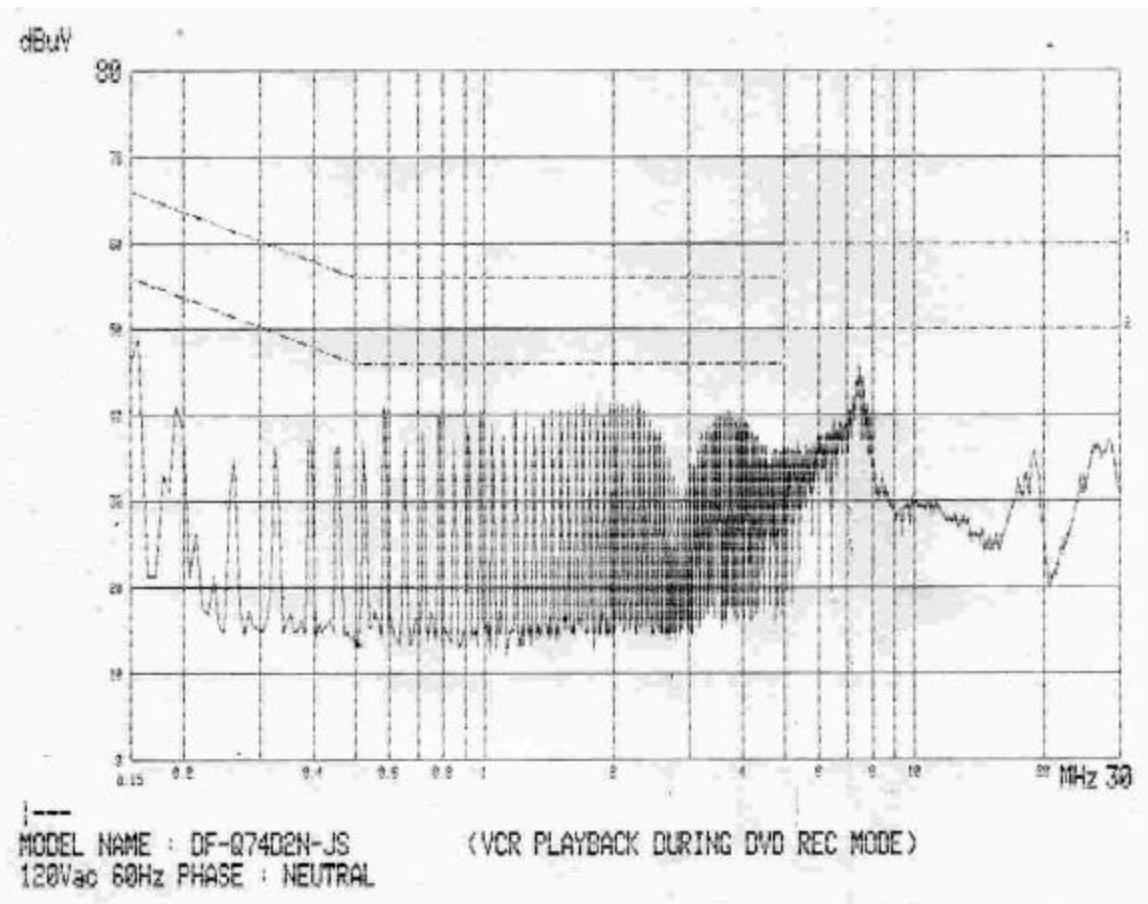
Tuner : TCMN0682PA20B4 (Samsung)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.161	43.8	11.0	65.4	55.4	21.6	44.4
0.522	36.1	35.6	56.0	46.0	19.9	10.4
7.510	40.8	35.6	60.0	50.0	19.2	14.4

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



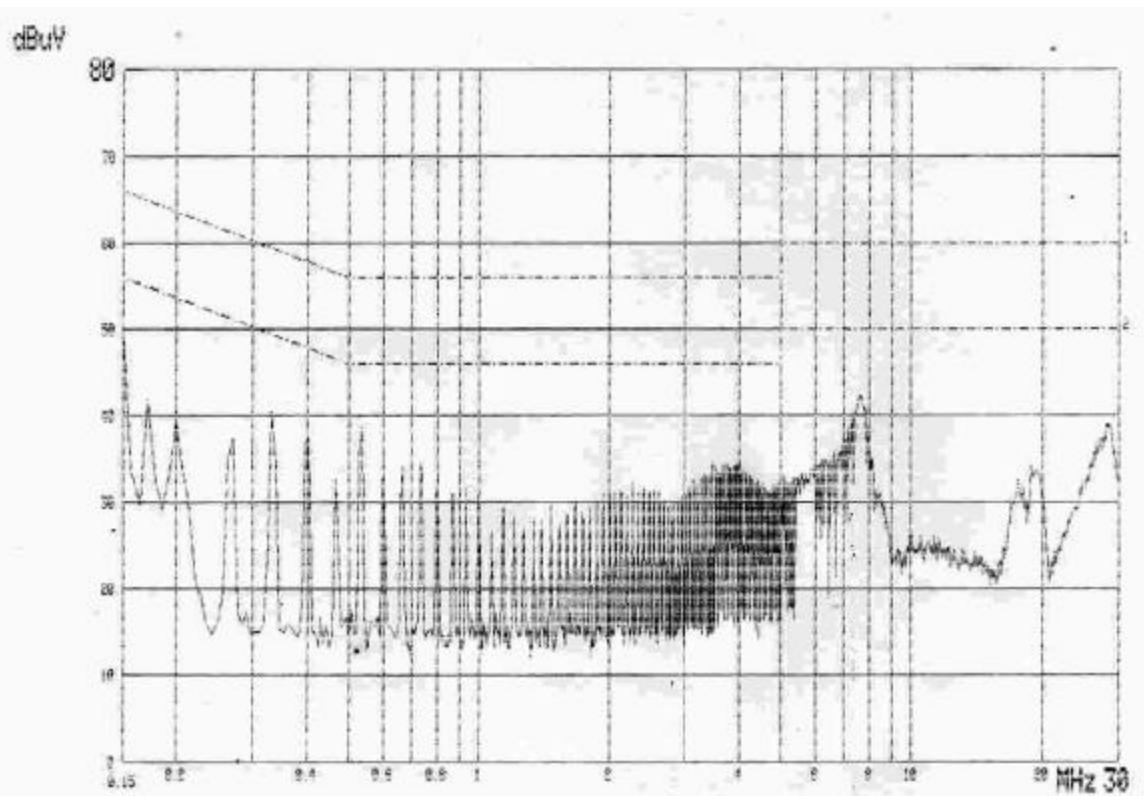
Tuner : TCMN0682PA20B4 (Samsung)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.163	44.9	11.0	65.3	55.3	20.4	44.3
0.588	40.6	39.4	56.0	46.0	15.4	6.6
1.829	41.5	40.2	56.0	46.0	14.5	5.8
3.723	39.2	37.3	56.0	46.0	16.8	8.7
7.447	43.2	37.9	60.0	50.0	16.8	12.1

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



---  
MODEL NAME : DF-Q74D2H-JS  
120Vac 60Hz PHASE : LIVE

(RF RECEIVING DURING DVD REC MODE)

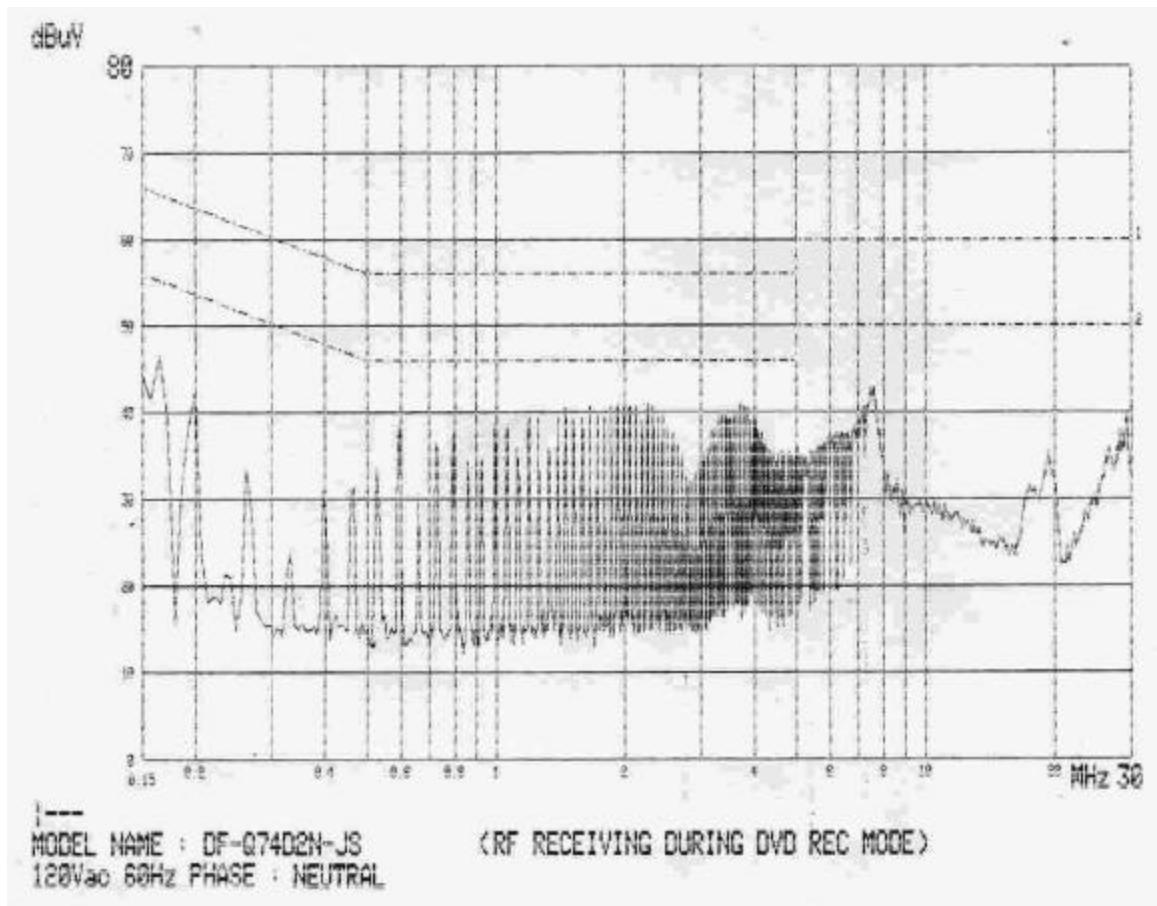
Tuner : TADM-H201F (LG)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	46.2	11.2	66.0	56.0	19.8	44.8
0.333	41.1	39.4	59.4	49.4	18.3	10.0
0.534	38.8	39.1	56.0	46.0	17.2	6.9
7.609	40.9	33.1	60.0	50.0	19.1	16.9

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



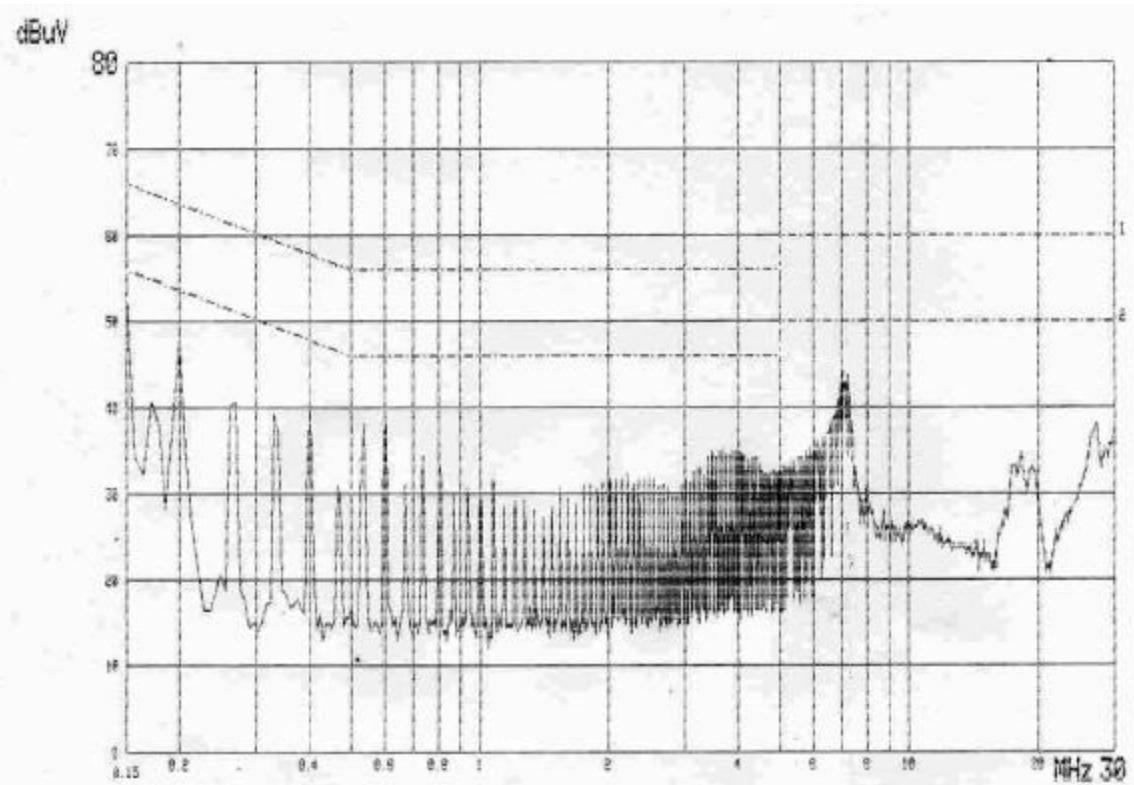
Tuner : TADM-H201F (LG)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	45.8	10.9	66.0	56.0	20.2	45.1
0.601	41.0	40.0	56.0	46.0	15.0	6.0
1.936	41.8	39.4	56.0	46.0	14.2	6.6
3.740	41.7	38.0	56.0	46.0	14.3	8.0
7.679	43.1	35.1	60.0	50.0	16.9	14.9

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



----  
**MODEL NAME : DF-Q74D2N-LS**  
**120Vac 60Hz PHASE : LIVE**

(RF RECEIVING DURING VCR REC MODE)

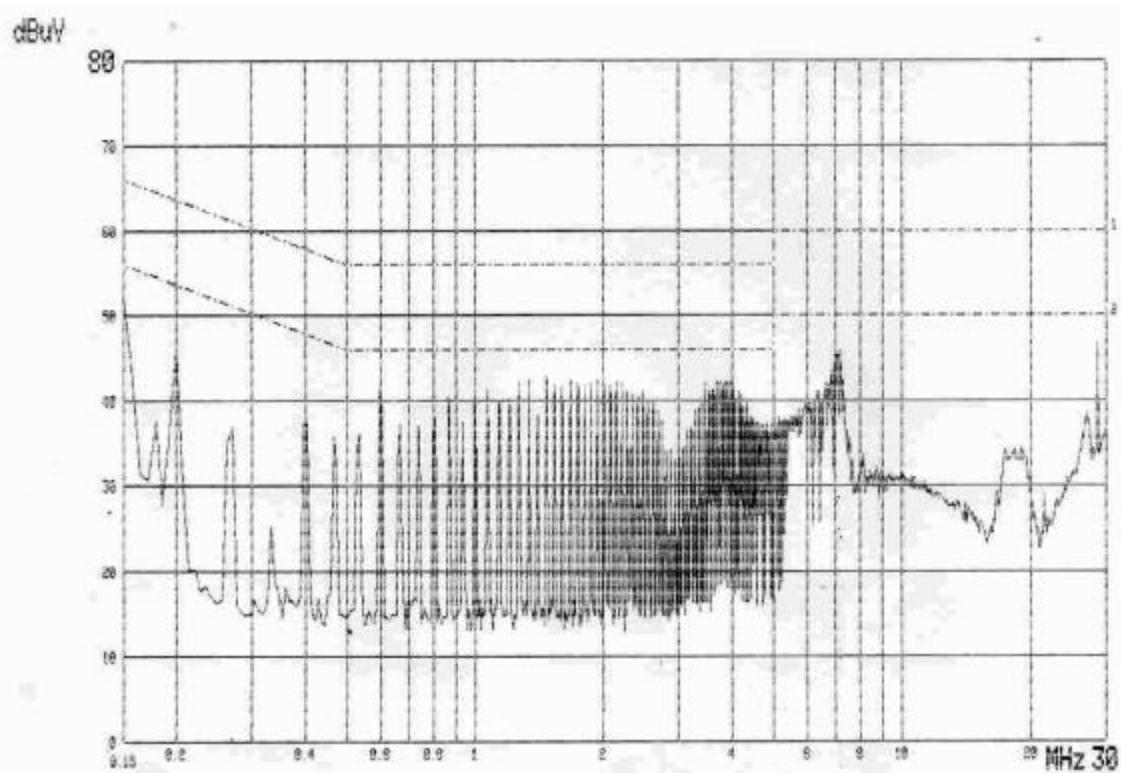
Tuner : TADM-H201F (LG)

Freq. [MHz]	Measurement [dB µV]		Limit [dB µV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	46.0	11.4	66.0	56.0	20.0	44.6
0.200	48.1	41.7	63.6	53.6	15.5	11.9
0.400	41.5	40.5	57.8	47.8	16.3	7.3
0.701	40.6	31.2	56.0	46.0	15.4	14.8

*Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.*

Conducted Emissions

(Mains Terminal Disturbance Voltages)



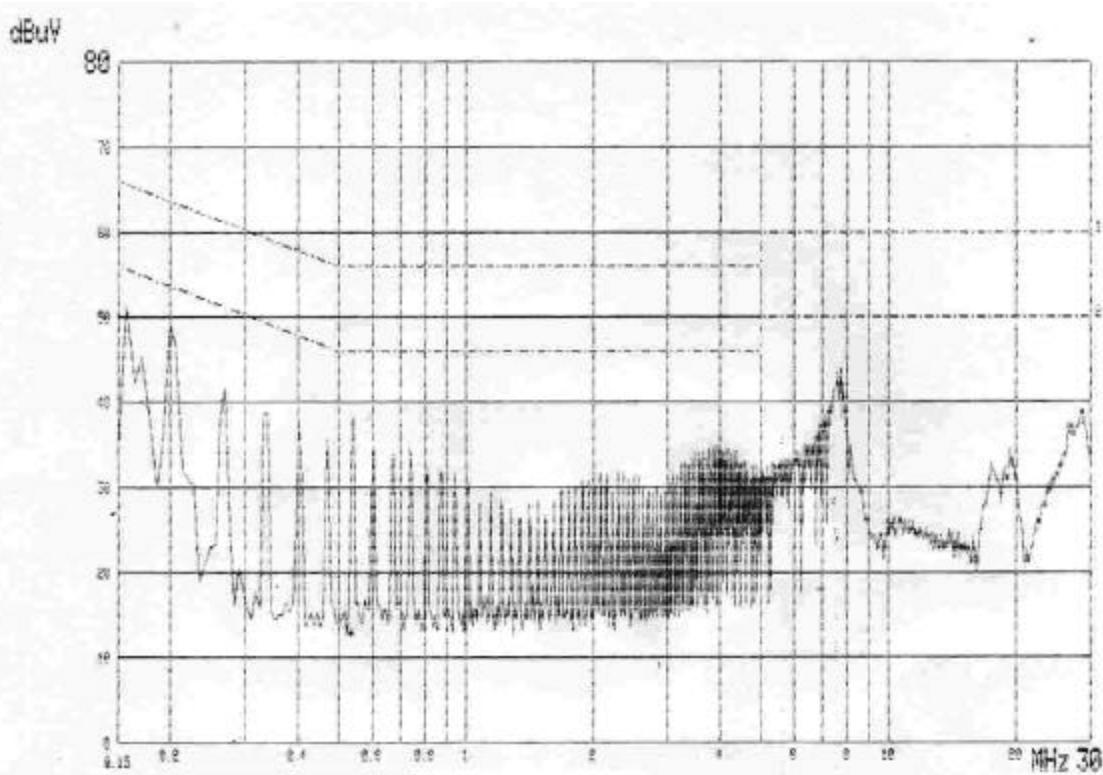
Tuner : TADM-H201F (LG)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	44.6	11.1	66.0	56.0	21.4	44.9
0.201	45.6	38.9	63.6	53.6	18.0	14.7
0.603	32.6	25.5	56.0	46.0	23.4	20.5
1.474	41.5	40.2	56.0	46.0	14.5	5.8
3.887	41.2	37.7	56.0	46.0	14.8	8.3
7.173	43.4	36.7	60.0	50.0	16.6	13.3

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



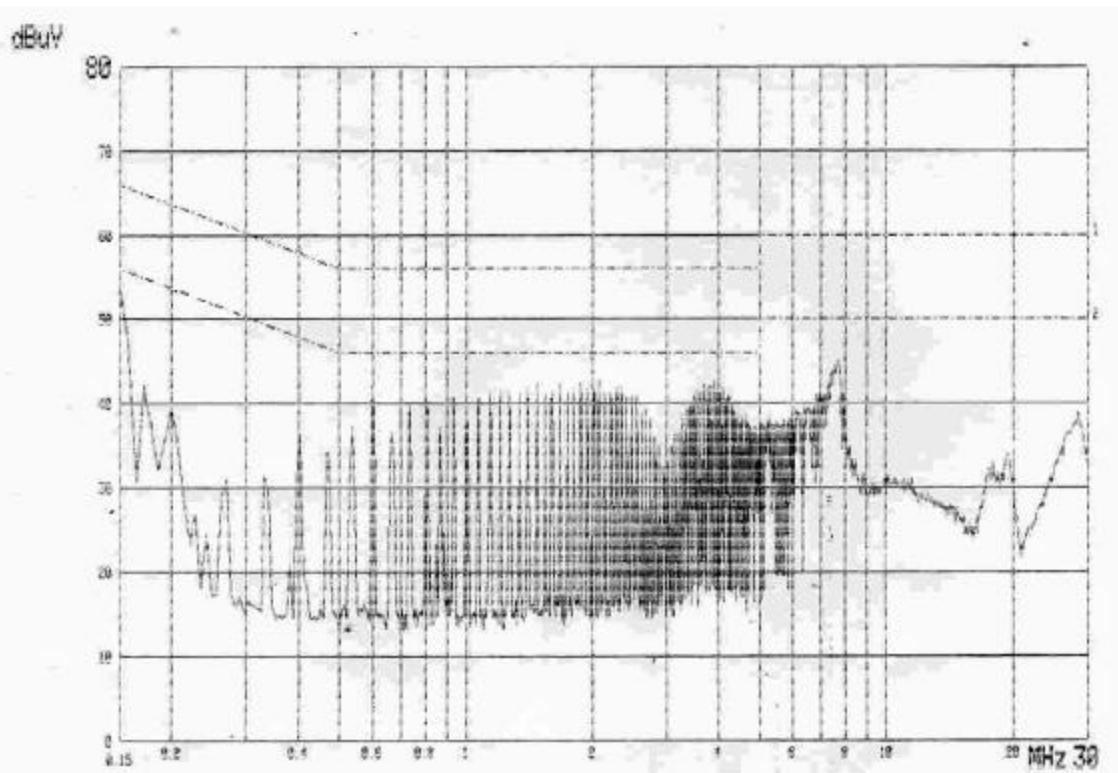
Tuner : TADM-H201F (LG)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	49.6	12.4	66.0	56.0	16.4	43.6
0.201	47.0	40.4	63.6	53.6	16.6	13.2
0.268	42.1	39.2	61.2	51.2	19.1	12.0
7.707	41.9	36.2	60.0	50.0	18.1	13.8

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



MODEL NAME : DF-Q74D2N-JS  
120Vac 60Hz PHASE : NEUTRAL

(DVD PLAYBACK DURING VCR REC MODE)

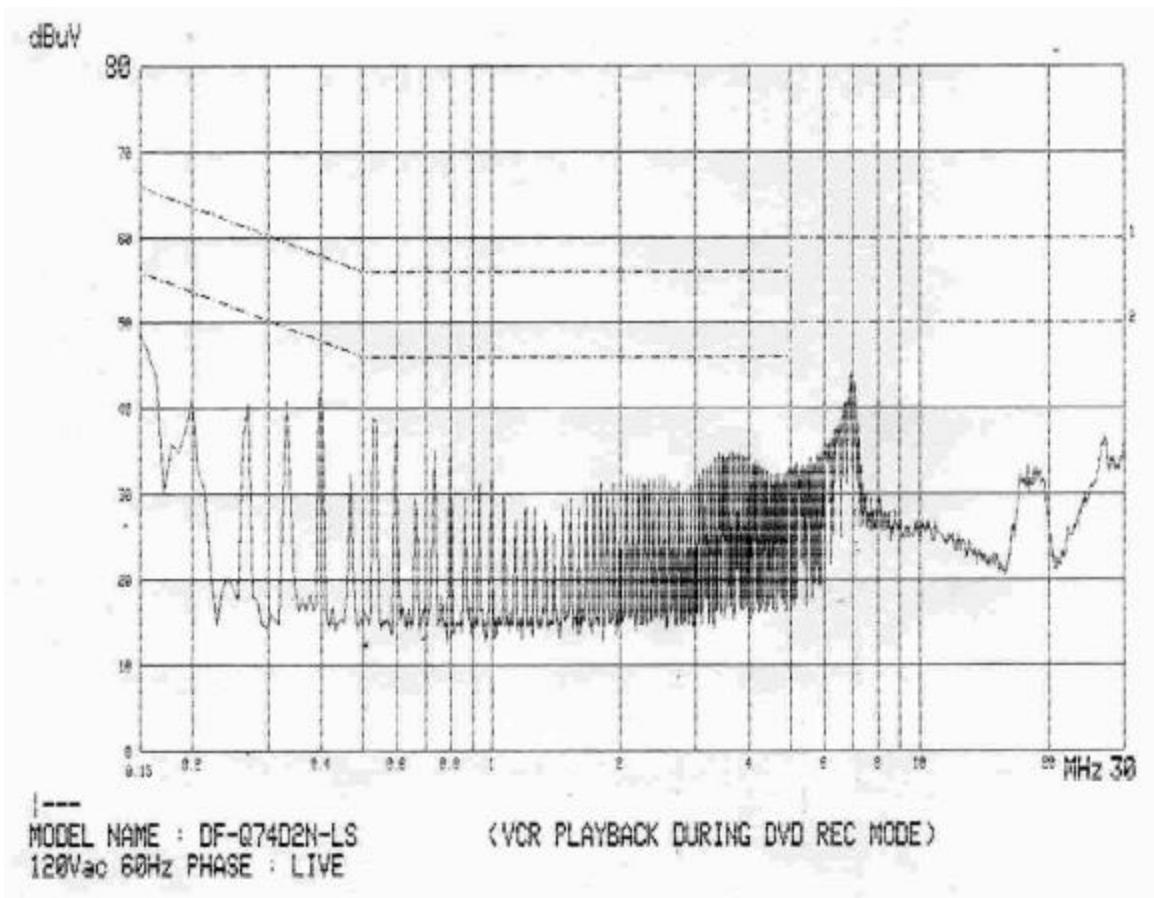
Tuner : TADM-H201F (LG)

Freq. [MHz]	Measurement [dB µV]		Limit [dB µV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.151	47.4	11.4	66.0	56.0	18.6	44.6
0.602	40.9	39.5	56.0	46.0	15.1	6.5
2.073	42.2	40.4	56.0	46.0	13.8	5.6
3.880	41.8	38.6	56.0	46.0	14.2	7.4
7.759	43.2	37.9	60.0	50.0	16.8	12.1

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



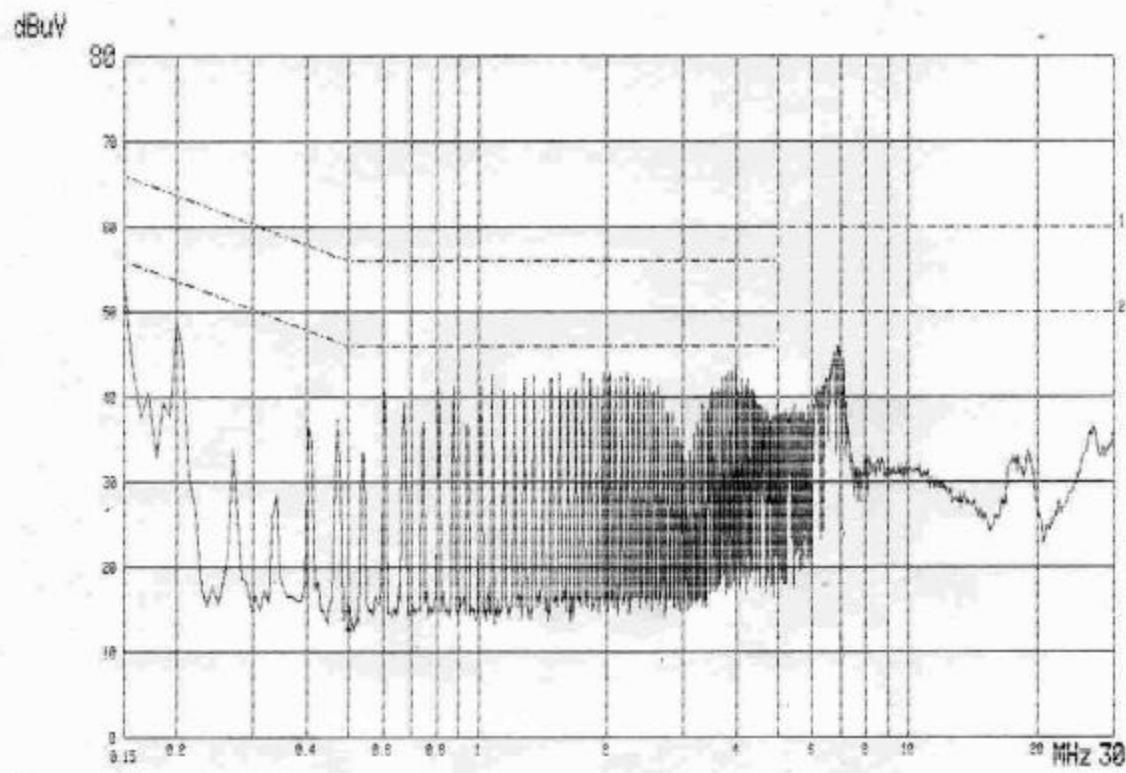
Tuner : TADM-H201F (LG)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	45.2	14.4	66.0	56.0	20.8	41.6
0.400	41.6	33.3	57.9	47.9	16.3	14.6
0.533	38.8	32.0	56.0	46.0	17.2	14.0
6.925	41.6	20.7	60.0	50.0	18.4	29.3

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



---  
MODEL NAME : DF-Q74D2N-LS  
120Vac 60Hz PHASE : NEUTRAL  
(VCR PLAYBACK DURING DVD REC MODE)

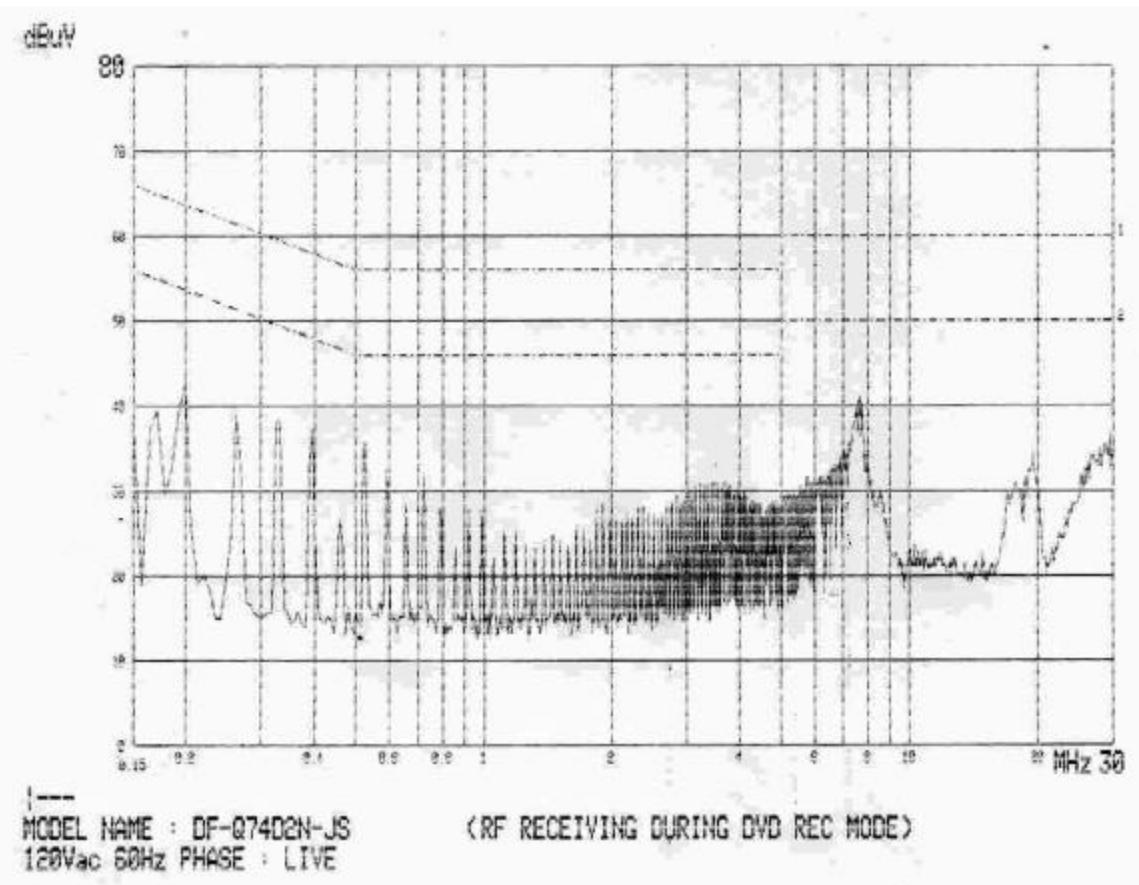
Tuner : TADM-H201F (LG)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	46.9	11.1	66.0	56.0	19.1	44.9
0.200	45.6	38.6	63.6	53.6	18.0	15.0
0.600	41.8	41.1	56.0	46.0	14.2	4.9
1.998	42.7	40.4	56.0	46.0	13.3	5.6
7.058	44.4	38.3	60.0	50.0	15.6	11.7

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



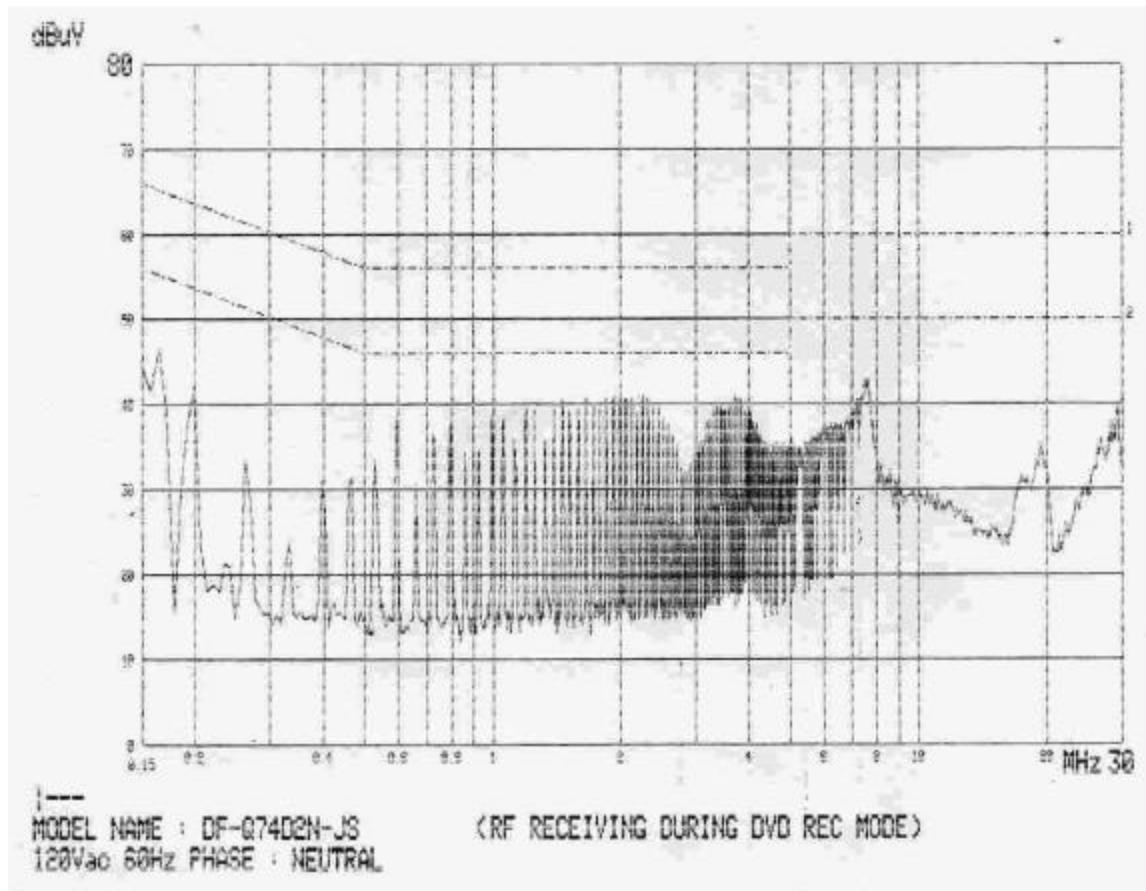
Tuner : TMZH2-030A (ALPS)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.199	43.2	39.0	63.6	53.6	20.4	14.6
0.329	38.0	37.8	59.5	49.5	21.5	11.7
7.631	38.0	30.9	60.0	50.0	22.0	19.1

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



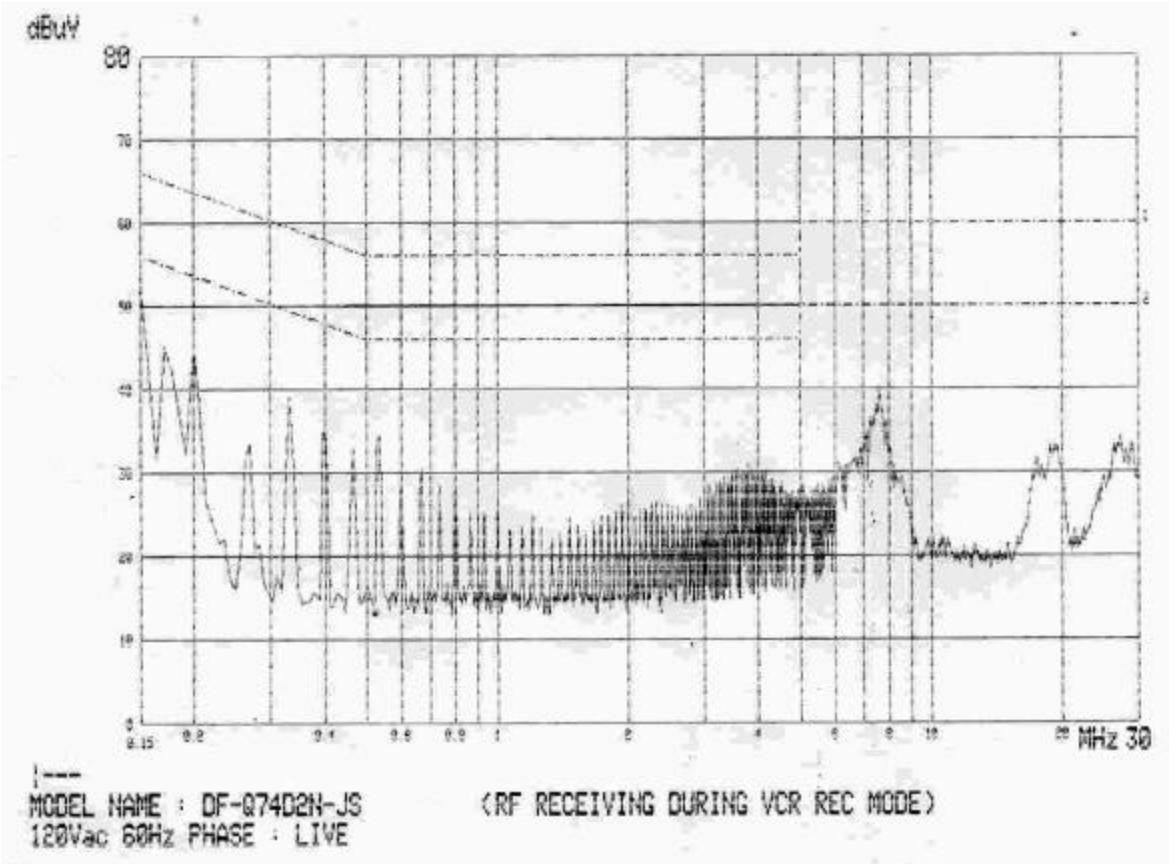
Tuner : TMZH2-030A (ALPS)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.164	40.1	10.9	65.3	55.3	25.2	44.4
0.198	41.9	36.5	63.7	53.7	21.8	17.2
0.593	37.5	37.9	56.0	46.0	18.5	8.1
2.042	40.9	39.3	56.0	46.0	15.1	6.7
3.557	39.5	37.6	56.0	46.0	16.5	8.4
7.508	41.4	34.0	60.0	50.0	18.6	16.0

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



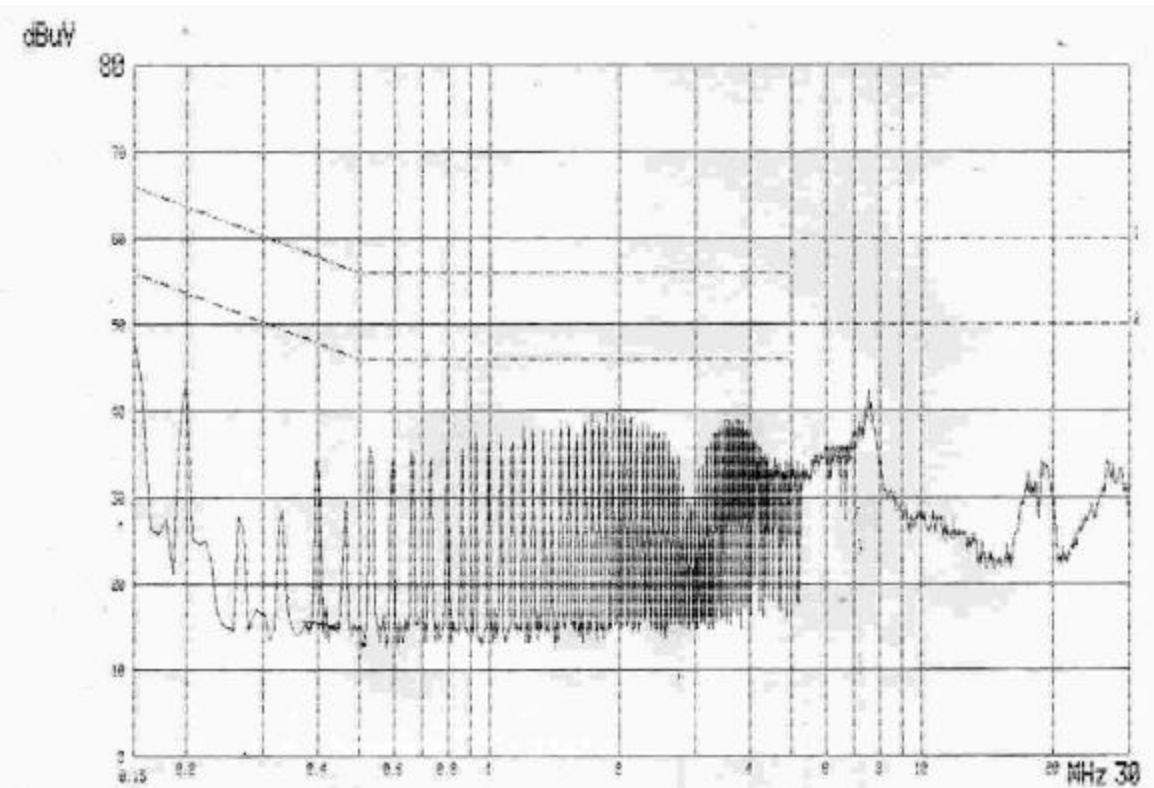
Tuner : TMZH2-030A (ALPS)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	41.7	11.2	66.0	56.0	24.3	44.8
0.199	45.4	40.3	63.7	53.7	18.3	13.4
7.562	37.1	28.5	60.0	50.0	22.9	21.5

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



---  
MODEL NAME : DF-074D2N-JS (RF RECEIVING DURING VCR REC MODE)  
120Vac 60Hz PHASE : NEUTRAL

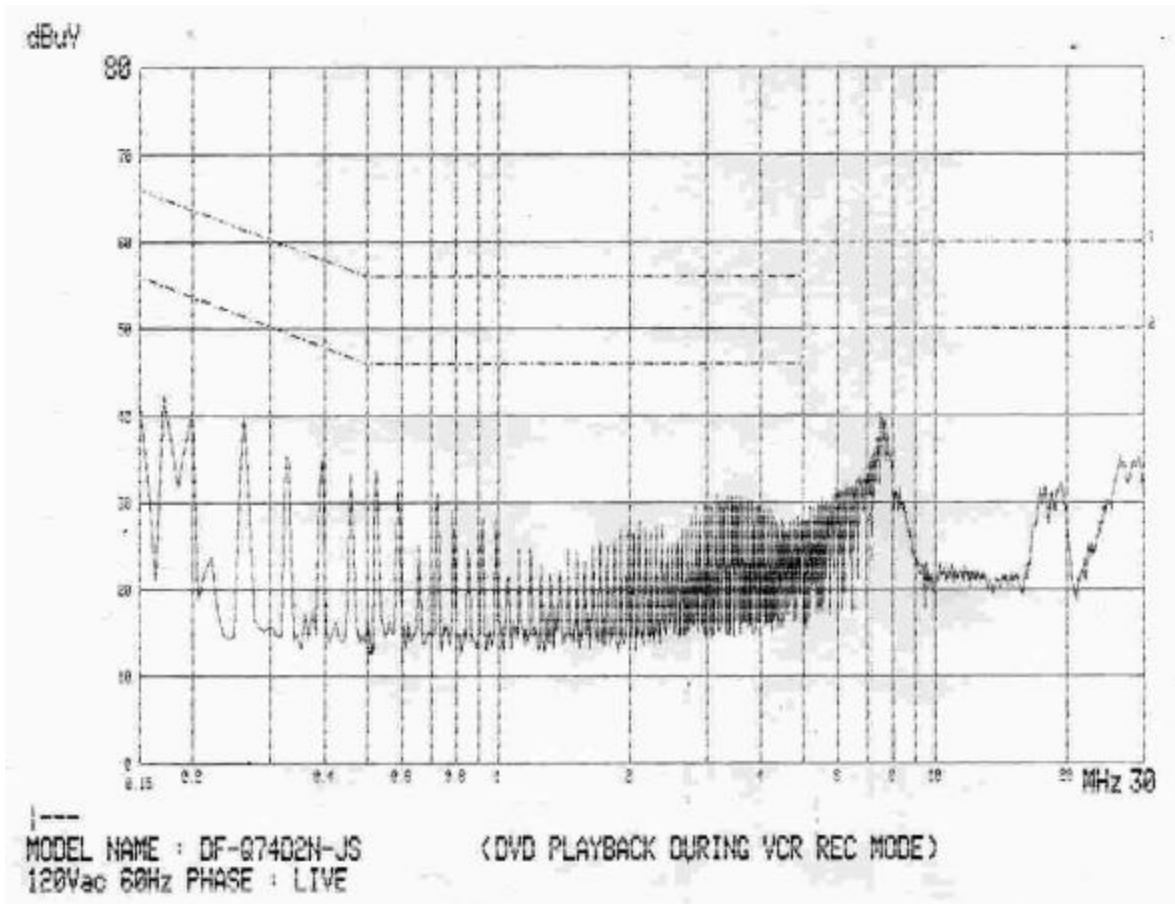
Tuner : TMZH2-030A (ALPS)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.150	38.6	10.3	66.0	56.0	27.4	45.7
0.200	41.8	35.0	63.6	53.6	21.8	18.6
1.855	38.8	37.1	56.0	46.0	17.2	8.9
3.576	38.2	33.0	56.0	46.0	17.8	13.0
7.545	39.4	31.2	60.0	50.0	20.6	18.8

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



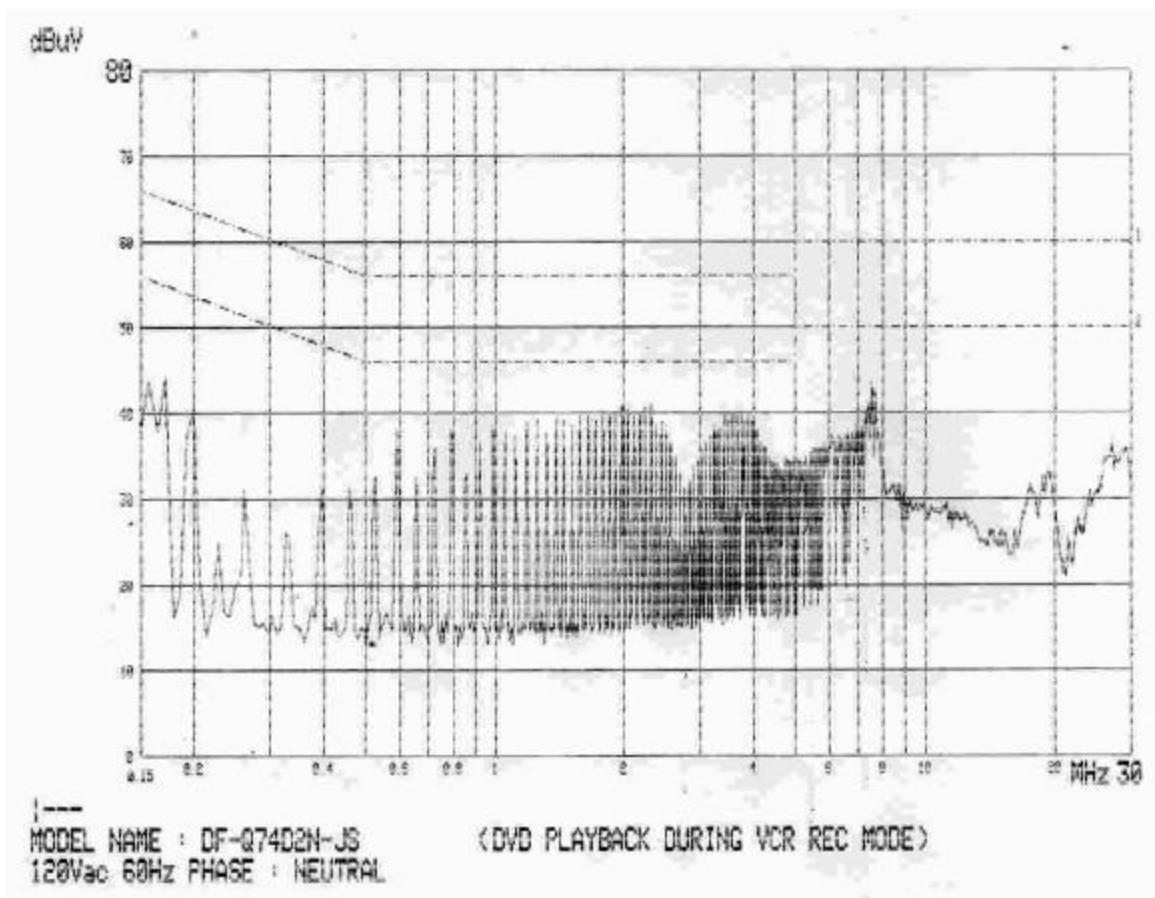
Tuner : TMZH2-030A (ALPS)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.170	40.4	10.9	65.0	55.0	24.6	44.1
0.262	38.6	37.5	61.4	51.4	22.8	13.9
7.423	37.1	33.4	60.0	50.0	22.9	16.6

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



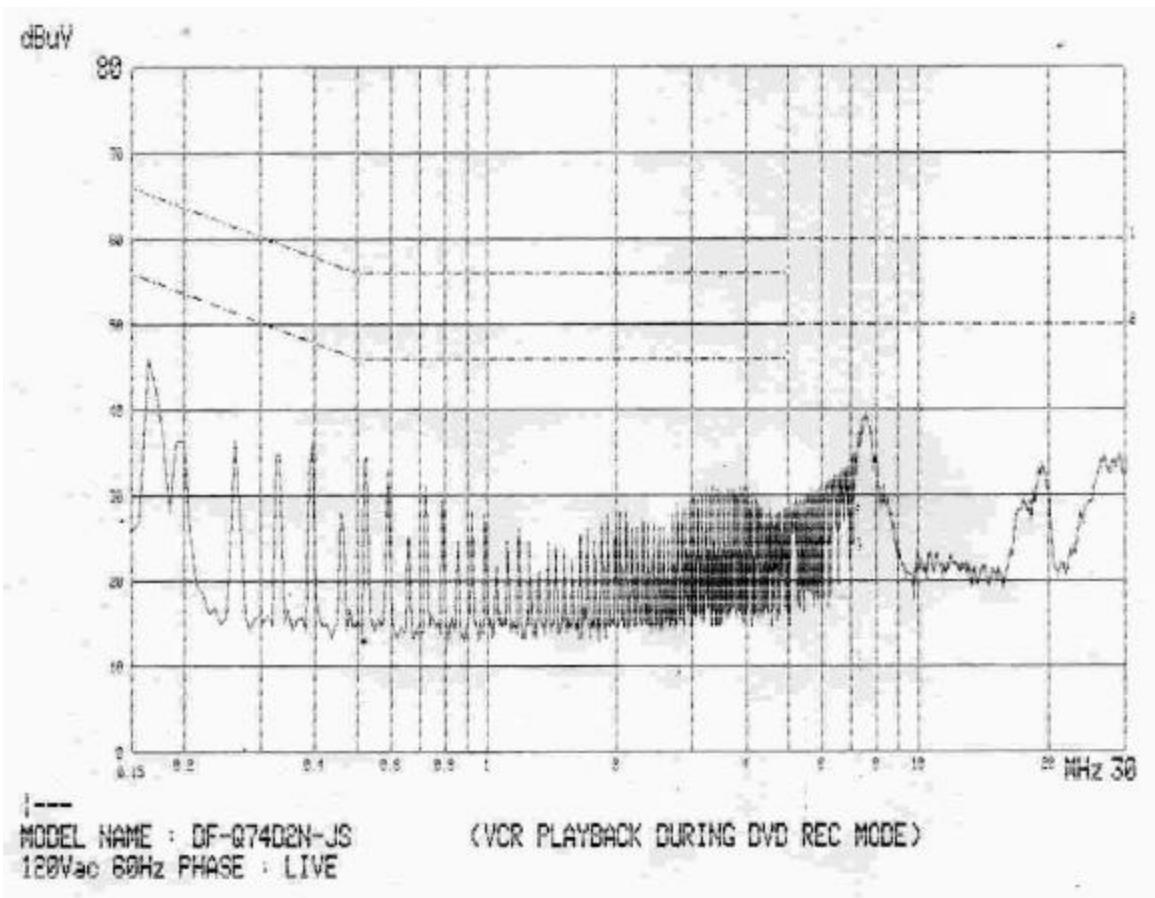
Tuner : TMZH2-030A (ALPS)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.168	40.4	10.4	65.1	55.1	24.7	44.7
2.037	40.9	39.5	56.0	46.0	15.1	6.5
3.679	39.3	38.0	56.0	46.0	16.7	8.0
7.426	41.3	36.6	60.0	50.0	18.7	13.4

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



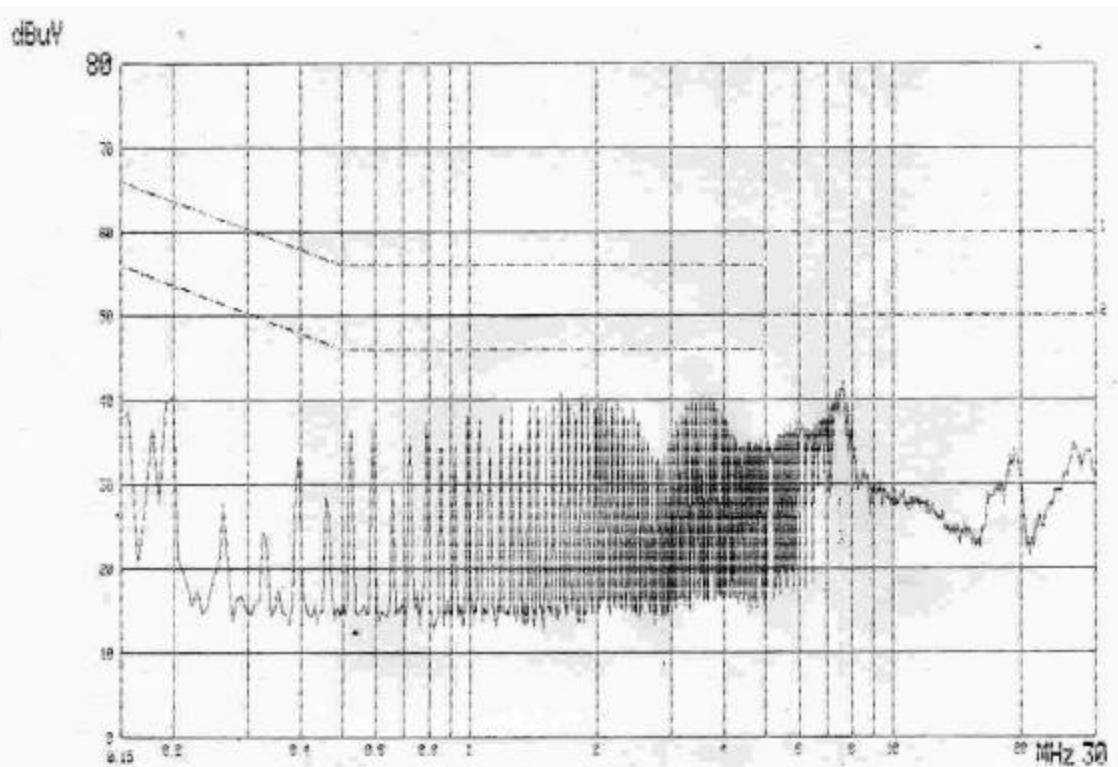
Tuner : TMZH2-030A (ALPS)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.171	40.2	12.3	64.9	54.9	24.7	42.6
0.394	36.5	36.5	58.0	48.0	21.5	11.5
7.495	37.0	39.2	60.0	50.0	23.0	10.8

Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.

**Conducted Emissions**

(Mains Terminal Disturbance Voltages)



Tuner : TMZH2-030A (ALPS)

Freq. [MHz]	Measurement [dB $\mu$ V]		Limit [dB $\mu$ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	Q-peak	Average
0.197	39.7	33.6	63.7	53.7	24.0	20.1
1.643	40.6	39.4	56.0	46.0	15.4	6.6
3.550	39.3	37.7	56.0	46.0	16.7	8.3
7.627	40.0	32.3	60.0	50.0	20.0	17.7

*Note : The insertion loss, 0.8dB, is negligible compare with the margin evaluated.*