



HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.

Product Compliance Division, EMC Team
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CERTIFICATION

Manufacture;
DVS KOREA CO., LTD

7TH & 8TH FL. KPS BLDG.
196 KUMGOK-DONG, BOONDONG-KU
SUNGNAM CITY, KYUNGKI-DO, KOREA

DVS KOREA FRN : 0010037380

Date of Issue: December 19, 2003

Test Report No.: HCT-F03-1204

**Test Site: HYUNDAI CALIBRATION & CERTIFICATION
TECHNOLOGIES CO., LTD.**
HCT FRN : 0005-8664-21

FCC ID :

MODEL / TYPE :

PGJVXM2200

VXM-2200 / DVD PLAYER

FCC PART 15 Subpart B & PART 15 Subpart C(2001)

Rule Part(s): CLASS B DVD Player & FM Transmitter

Equipment Class: Video Output / RCA Jack

Port/Connector(s) Audio Output / RCA Jack

S-Video Output / RCA Jack

Digital Output / RCA Jack

Component Output / RCA Jack

Remote Output / Jack

Car Pack/ Jack

VGA Output / DSUB

This equipment has been shown to be in compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-1992 (Grant Notes: #19, #28).

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Ki Soo Kim

Report prepared by : Ki-Soo Kim

Manager of EMC Tech. Part

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ATTACHMENT A: **FCC ID LABEL & LOCATION**

ATTACHMENT B: **EXTERNAL PHOTOGRAPHS**

ATTACHMENT C: **BLOCK DIAGRAM(S)**

ATTACHMENT D: **TEST SETUP PHOTOGRAPHS**

ATTACHMENT E: **USER'S MANUAL**

ATTACHMENT F: **INTERNAL PHOTOGRAPHS**

MEASUREMENT REPORT

1.1 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

| | |
|------------------------|--|
| Applicant Name: | DVS KOREA CO., LTD |
| Address: | 7 TH & 8 TH FL. KPS BLDG. 196 KUMGOK-DONG, BOONDONG-KU SUNGNAM CITY, KYUNGKI-DO, KOREA |

| | |
|---|---|
| • Equipment Class: | Digital Device |
| <input type="checkbox"/> • EUT Type: | DVD PLAYER |
| • Model(s): | VXM-2200 |
| • Signal System | PAL/MULTI, NTSC |
| • Output port | Video, Audio, S-Video, digital Out, Component, VGA, CAR Pack, |
| • Power | DC 12V ~ 24V, 1.5A |
| • Weight | 1.203g |
| • Operation temperature | -10°C~ 50°C |
| • Operation humidity | 10% ~ 80% |
| • External Dimensions | 178(W) x 212.2(D), x 43.0(H) |
| • FM Transmitter Frequency | 88.1 MHz ~ 88.9 MHz (88.1 MHz, 88.3 MHz, 88.5 MHz, 88.7 MHz, 88.9 MHz) |

KOREA

2.1 INTRODUCTION(Site Information)

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSIC63.4-1992) was used in determining radiated and conducted emissions emanating from **DVSKOREA CO., LTD. DVD PLAYER. FCC ID : PGJVXM2200**

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, MAEKOK-RI,HOBUP-MYUN,ICHON-SI,KYOUNGKI-DO, 467-701,KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 24,2000 (Registration Number: EA90661)

3.1 PRODUCT INFORMATION

3.1.1 Equipment Description

DVS KOREA'S DVD Player(VXM-2200) has two type

One is VGA type and another one is Component type. It's between under following and illustrate about different of type.

Difference point of two models.

The difference between VXM-2200 VGA type & VXM-2200 Component type are only output port .

| TWO MODELS | Output PORT |
|-------------------------|--|
| VXM-2200 VGA type | VGA, S-VIDEO / VIDEO, AUDIO, REMOTE CONTROL, CASSETTE TAPE ADAPTOR, DIGITAL OUT |
| VXM-2200 Component type | COMPONENT / VIDEO, AUDIO, REMOTE CONTROL, CASSETTE TAPE ADAPTOR, DIGITAL OUT |

Equipment Under Test (EUT) is **DVS KOREA.CO., LTD. DVD PLAYER.(FCC ID : PGJVXM2200)**

| | | |
|----------------------|---------------------------|---|
| General | System | DVD-Video, DVD-R/RW+R/+RW Super VCD/VCD/CD, CD-R/RW MP3 files/ Picture CD |
| | Power Supply | DC 12V-24V, 1.5A |
| | Power consumption | 1A, 12W |
| | Weight | 1.203g |
| | External Dimension | 178(W) x 212.2(D), x 43.0(H) |
| Signal System | NTSC, PAL/MULTI | |
| Video output | Output lever | 1.0Vp-p(75ohm) |
| | Jacks | RCA Jack |
| S-Video output | Y-Output lever | 1.0Vp-p(75ohm) |
| | C-Output lever | 0.286Vp-p(75ohm) |
| | Jacks | RCA Jack |
| Audio output | During audio output | 2Vrms(1kHz,0dB) |
| | Number of channels | 2 |
| | Jacks | RCA Jack |
| Audio Characteristic | Frequency Response | 4Hz to 44kHz(DVD is: 96kHz) |
| | S/N Milo | More than 85dB |
| | Dynamic Range | More than 85dB |
| | Total Harmonic distortion | 0.08% |
| Digital Output | Coaxial digital output | RCA Jack |

3.1.2 EMI Suppression Devices:

Modifications were made to the device.

Refer to cover letter

4.1 Description of Tests (Conducted & Radiated)

4.1.1 Power line Conducted RFI (150kHz- 30MHz)

The power line conducted RFI measurements were performed according to CISPR 22. The EUT was placed on a non-conducting 1.0 by 1.5 meter table which is 0.8 meters in height and 0.40 meters away from the vertical wall of the shielded enclosure. Power to the EUT is provided through a Rohde & Schwarz 50 Ω / 50 uH Line Impedance Stabilization Network (LISN) and the support equipment through a separate Solar 50 Ω / 50 uH Line- Conducted Test Facility LISN. Sufficient time for the EUT, support equipment, and test equipment were allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME. The spectrum was scanned from 150kHz to 30 MHz. Each maximum EME was measured using an EMI receiver. The detector function of the receiver was set to CISPR quasi- peak and average mode with the bandwidth set to 9 kHz. Each emission was maximized consistent with the typical applications by varying the configuration of the test sample. Interface cables were connected to the available interface ports of the test unit. The effect of varying the position of cables was investigated to find the configuration that produces maximum Diagram emission. Excess cable lengths were bundled at the centre with 30- 40cm. in length. The worst-case configuration is noted in the test report and the photographs are attached. Each EME reported was calibrated using the Rohde & Schwarz SMX signal generator and are listed on Table 1. RFI Conducted FCC Class B

| RFI CONDUCTED | FCC CLASS B Limits dB(uV/m) | CISPR 22 CLASS B Limits dB(uV/m) | |
|-----------------|--------------------------------|-------------------------------------|---------------------|
| Freq. Range | FCC Class B Quasi-Peak | CISPR 22 Quasi-Peak | CISPR 22 Average |
| 150kHz - 0.5MHz | 48* | 66-56** | 56-46** |
| 0.5MHz - 5MHz | 48 | 56 | 46 |
| 5MHz - 30MHz | 48 | 60 | 50 |

*FCC Class B limits starts from 450kHz
 **Limits decreases linearly with the logarithm of frequency

Table 1. CISPR 22 CLASS B RFI Conducted Limits

4.1.2 Radiated Emissions

Preliminary measurements were made indoors at 1 meter using broadband antennas, broadband amplifier, and spectrum analyzer to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The spectrum was scanned from 30 to 300 MHz using biconical antenna, 300 to 1000 MHz using log- periodic antenna, and above 1 GHz using linearly polarized horn antennas. Final measurements were made outdoors at 10-meter test range using Dipole antennas and EMI receiver. For frequencies above 1 GHz, horn antennas were used. Sufficient time for the EUT, support equipment, and test equipment were allowed in order for them to warm up to their normal operating condition. The EMI receiver detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120 kHz. The EUT, support equipment, and interconnecting cables were arranged to the configuration that produces the maximum EME emission found during preliminary scan. 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. Horizontal and vertical antenna polarizations were checked. Each emission was maximized by: varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and/ or support equipment, and powering the monitor the computer aux AC outlet, if applicable; and changing the polarity of the antenna, whichever determined the worst-case emission.

| ITE Radiated Limits | | | |
|--|--|--|---|
| Frequency (MHz) | FCC Limit @ 3m. Quasi- Peak dB[μ V/m] | FCC Limit @ 10m.* Quasi – Peak dB [μ V/m] | CISPR Limit @ 10m. Quasi-Peak dB [μ V/m] |
| 30-88 | 40.0 | 29.5 | 30.0 |
| 88-216 | 43.5 | 33.0 | 30.0 |
| 216-230 | 46.0 | 35.6 | 30.0 |
| 230-960 | 46.0 | 35.6 | 37.0 |
| 960-1000 | 54.0 | 43.5 | 37.0 |
| > 1000 | 54.0 | 43.5 | No Specified Limit |
| | | | |
| | | | |
| | | | |
| | | | |
| * Limit extrapolated 20 dB/decade | | | |

Table 2. Radiated Class A limits @ 10-meters

4.1.3 Field strength of emissions according to § 15.239(b)

| Fundamental Frequency (MHz) | Field Strength of Fundamental at the 3m distance | |
|--------------------------------|--|------------|
| | µV/meter | dBµV/meter |
| 88 – 108 | 250 | 48 |

According to §15.239(b), the field strength of emissions from intentional radiators operated under These frequency bands shall not exceed the following :

The test was performed in the anechoic chamber at 3 meter test distance. The EUT was placed on the top of the 0.8 meter high, 1 x 1.5 meter non-metallic table. The biconical antenna was used. To fine the maximum radiation measuring antenna height was changed and the turntable was rotated 360. the antenna polarization was changed from vertical to horizontal.
 The EUT was operated in transmitting mode.

4.1.4 Emissions Band Measurement

4.1.4.1 Standard Applicable

According to 15.239(a), emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operating frequency. The 200kHz band shall lie wholly within the frequency range of 88-108 MHz

4.1.4.2 Measurement Procedure

The Measurement were performed at all channels.

the spectrum trace data around transmitter fundamental frequency was obtained with the spectrum analyzer in “Max Hold” mode. The bandwidth value was determined between two points 26 dB down from the center frequency. The measured results are less than 200kHz. The measured spectrum of the signal is shown in figure 1.

5.1 List of Support Equipment

5.1.1 Support Equipment used

| DEVICE TYPE | MANUFACTURER | MODEL NUMBER | FCC ID / DoC | CONNECTED TO |
|--------------------------|--|--------------|--------------|--------------|
| DVD PLAYER (EUT) | DVS KOREA | VXM-2200 | PGJVXM2200 | N/A |
| TV | PANASONIC | TC-14S10R2 | DoC | EUT |
| Cassette tape adaptor | SAISONIC | BP-4700 | DoC | EUT |
| Termination | S-Video port 75Ω Component port 75Ω Digital Out port 75Ω Video port 75Ω <small>Audio port 20kΩ</small> | | | |

5.1.2 Cable Description

| | | Power Cord Shielded (Y/N) | I/O Cable Shielded (Y/N) | Length (M) |
|---------------------|-----------|------------------------------|-----------------------------|------------|
| DVD PLAYER (EUT) | Power | N | N/A | 1.8(P) |
| | Video | N/A | Y | 1.6(D) |
| | Audio | N/A | Y | 1.6(D) |
| | Component | N/A | Y | 1.6(D) |
| | D-sub | N/A | Y | 1.8(D) |
| | Remote | N/A | N | 3.0(D) |
| | CAR Pack | N/A | N | 0.6(D) |
| | S-video | N/A | Y | 1.5(D) |

The marked "(D)" means the Data Cable and "(P)" means the Power Cable.

5.1.3 Noise Suppression Parts on Cable (I/O CABLE)

| | | Ferrite Bead (Y/N) | Location | Metal Hood (Y/N) | Location |
|---------------------|-----------|-----------------------|----------|---------------------|----------|
| DVD PLAYER (EUT) | Video | N | N/A | Y | BOTH END |
| | Audio | N | N/A | Y | BOTH END |
| | Component | N | N/A | Y | BOTH END |
| | D-sub | Y | BOTH END | Y | BOTH END |
| | Remote | N | N/A | Y | EUT END |
| | CAR Pack | N | N/A | Y | EUT END |
| | S-video | N | N/A | Y | BOTH END |

6.1 PRELIMINARY TESTS

6.1.1 AC Power line Conducted Emission Tests

During Preliminary Tests, the following operating mode were investigated

| TYPE | DVD Player Mode | The worst operating condition |
|----------------|------------------|-------------------------------|
| VGA Type | VGA Mode | |
| | S-Video Mode | |
| | Video/Audio Mode | |
| Component Type | Component Mode | X |
| | Video/Audio Mode | |

6.1.2 Radiated Emission Tests

During Preliminary Tests, the following operating mode were investigated

| TYPE | DVD Player Mode | The worst operating condition |
|----------------|------------------|-------------------------------|
| VGA Type | VGA Mode | |
| | S-Video Mode | |
| | Video/Audio Mode | |
| Component Type | Component Mode | X |
| | Video/Audio Mode | |

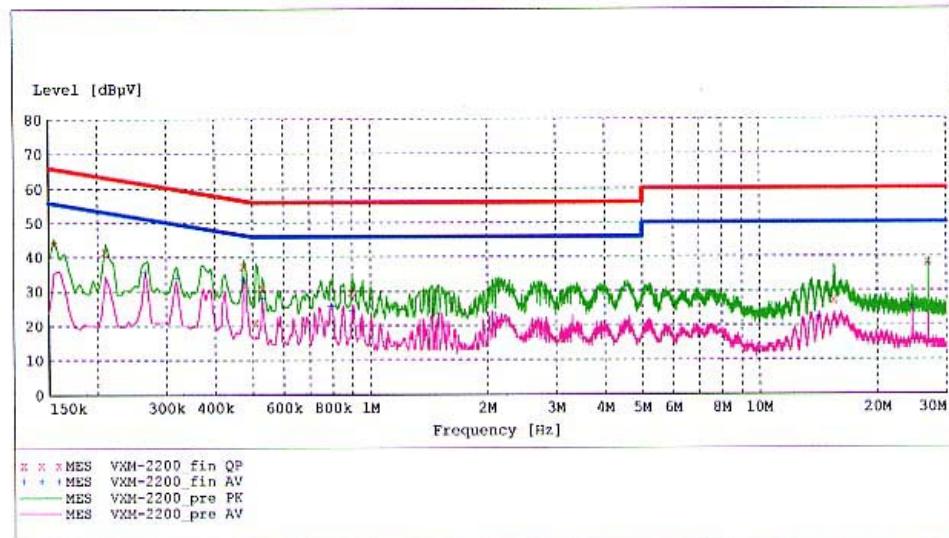
7.1 LINE-CONDUCTED TEST DATA

**HYUNDAI C-TECH.
 EMC Testing Laboratory**

EUT: VXM-2200
 Manufacturer: DVSKOREA
 Operating Condition: NORMAL
 Test Site: SHIELD ROOM
 Operator: JP-HONG
 Test Specification: CISPR 22 CLASS B
 Comment: H
 Start of Test: 12/1/03 / 8:57:12AM

SCAN TABLE: "CISPR 22 Voltage"

Short Description: CISPR 22 Voltage
 Start Frequency: 150.0 kHz Stop Frequency: 500.0 kHz Step Width: 5.0 kHz
 Detector: MaxPeak Meas. Time: 10.0 ms IF: 9 kHz Transducer: None
 Average
 Start Frequency: 500.0 kHz Stop Frequency: 5.0 MHz Step Width: 5.0 kHz
 Detector: MaxPeak Meas. Time: 10.0 ms IF: 9 kHz Transducer: None
 Average


MEASUREMENT RESULT: "VXM-2200_fin_QP"

12/1/03 9:00AM

| Frequency MHz | Level dBuV | Transad dB | Limit dBuV | Margin dB | Line | PE |
|------------------|---------------|---------------|---------------|--------------|------|-----|
| 0.155000 | 43.90 | 10.1 | 66 | 21.9 | --- | --- |
| 0.210000 | 41.60 | 10.1 | 63 | 21.6 | --- | --- |
| 0.475000 | 37.30 | 10.1 | 56 | 19.1 | --- | --- |
| 0.510000 | 21.00 | 10.1 | 56 | 35.0 | --- | --- |
| 0.530000 | 30.80 | 10.1 | 56 | 25.2 | --- | --- |
| 0.900000 | 29.60 | 10.2 | 56 | 26.4 | --- | --- |
| 15.510000 | 27.30 | 11.3 | 60 | 32.7 | --- | --- |
| 15.525000 | 27.30 | 11.3 | 60 | 32.7 | --- | --- |
| 27.000000 | 38.30 | 11.8 | 60 | 21.7 | --- | --- |

MEASUREMENT RESULT: "VXM-2200_fin AV"

12/1/03 9:00AM

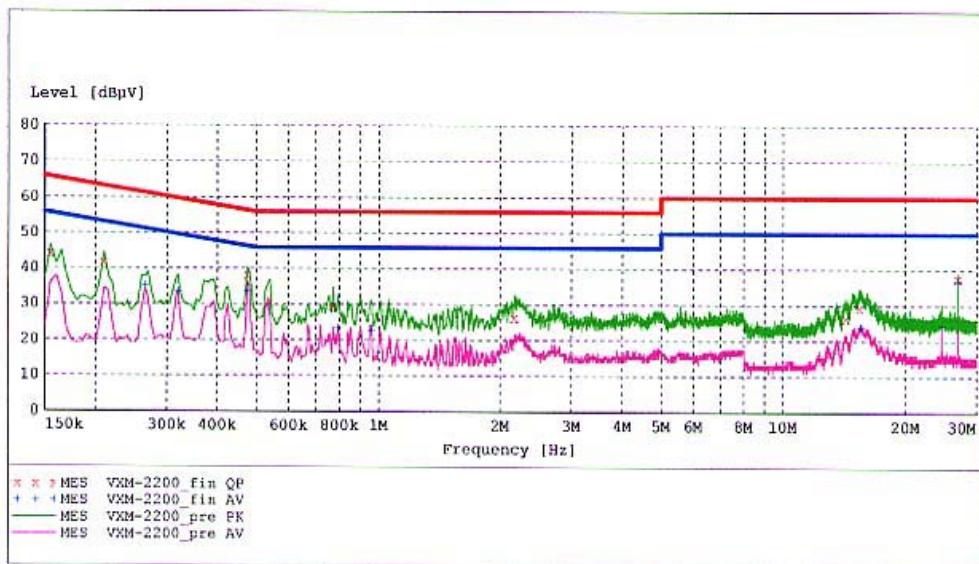
| Frequency MHz | Level dB μ V | Transd dB | Limit dB μ V | Margin dB | Line | PE |
|------------------|---------------------|--------------|---------------------|--------------|------|-----|
| 0.265000 | 35.60 | 10.1 | 51 | 15.7 | --- | --- |
| 0.320000 | 34.00 | 10.1 | 50 | 15.7 | --- | --- |
| 0.475000 | 33.60 | 10.1 | 46 | 12.8 | --- | --- |
| 0.530000 | 28.00 | 10.1 | 46 | 18.0 | --- | --- |
| 0.795000 | 25.60 | 10.2 | 46 | 20.4 | --- | --- |
| 0.900000 | 24.40 | 10.2 | 46 | 21.6 | --- | --- |
| 14.165000 | 22.50 | 11.1 | 50 | 27.5 | --- | --- |
| 24.575000 | 25.30 | 11.7 | 50 | 24.7 | --- | --- |
| 27.000000 | 37.80 | 11.8 | 50 | 12.2 | --- | --- |

**HYUNDAI C-TECH.
 EMC Testing Laboratory**

EUT: VXM-2200
 Manufacturer: DVSKOREA
 Operating Condition: NORMAL
 Test Site: SHIELD ROOM
 Operator: JP-HONG
 Test Specification: CISPR 22 CLASS B
 Comment: N
 Start of Test: 12/1/03 / 8:52:50AM

SCAN TABLE: "CISPR 22 Voltage"

| CISPR 22 Voltage | | | | | | |
|------------------|-----------|---------|----------|---------|-------|------------|
| Start | Stop | Step | Detector | Meas. | IF | Transducer |
| Frequency | Frequency | Width | | | | |
| 150.0 kHz | 500.0 kHz | 5.0 kHz | MaxPeak | 10.0 ms | 9 kHz | None |
| | | | Average | | | |
| 500.0 kHz | 5.0 MHz | 5.0 kHz | MaxPeak | 10.0 ms | 9 kHz | None |
| | | | Average | | | |


MEASUREMENT RESULT: "VXM-2200_fin_QP"

12/1/03 8:55AM

| Frequency MHz | Level dBpV | Transd dB | Limit dBpV | Margin dB | Line | PE |
|------------------|---------------|--------------|---------------|--------------|------|-----|
| 0.155000 | 44.30 | 10.1 | 66 | 21.4 | --- | --- |
| 0.210000 | 41.70 | 10.1 | 63 | 21.5 | --- | --- |
| 0.475000 | 38.00 | 10.1 | 56 | 18.4 | --- | --- |
| 0.540000 | 30.70 | 10.1 | 56 | 25.3 | --- | --- |
| 0.775000 | 29.40 | 10.1 | 56 | 26.6 | --- | --- |
| 2.170000 | 26.30 | 10.3 | 56 | 29.7 | --- | --- |
| 14.300000 | 26.50 | 11.2 | 60 | 33.5 | --- | --- |
| 15.460000 | 29.20 | 11.3 | 60 | 30.8 | --- | --- |
| 27.000000 | 37.60 | 11.8 | 60 | 22.4 | --- | --- |

MEASUREMENT RESULT: "VXM-2200_fin AV"

12/1/03 8:56AM

| Frequency MHz | Level dB _µ V | Transd dB | Limit dB _µ V | Margin dB | Line | PE |
|------------------|----------------------------|--------------|----------------------------|--------------|------|-----|
| 0.265000 | 35.40 | 10.1 | 51 | 15.9 | --- | --- |
| 0.320000 | 33.60 | 10.1 | 50 | 16.1 | --- | --- |
| 0.475000 | 33.80 | 10.1 | 46 | 12.6 | --- | --- |
| 0.535000 | 28.80 | 10.1 | 46 | 17.2 | --- | --- |
| 0.795000 | 23.50 | 10.2 | 46 | 22.5 | --- | --- |
| 0.960000 | 22.90 | 10.2 | 46 | 23.1 | --- | --- |
| 15.570000 | 24.00 | 11.3 | 50 | 26.0 | --- | --- |
| 24.575000 | 24.40 | 11.7 | 50 | 25.6 | --- | --- |
| 27.000000 | 37.10 | 11.8 | 50 | 12.9 | --- | --- |

NOTES:

1. All modes of operation were investigated and the worst-case emissions are reported.
2. The CISPR RFI conducted limits are listed on Table 1 (Page 4).
3. Line A = Phase Line B = Neutral
4. Deviations to the Specifications: **None**

** Measurements using CISPR quasi-peak mode.

8.1 Radiated Emissions

| Frequency MHz | Reading dBuV | Ant. Factor dB/m | Cable Loss dB | ANT POL (H/V) | Total dBuV/m | Limit dBuV/m | Margin dB |
|------------------|-----------------|---------------------|------------------|------------------|-----------------|-----------------|--------------|
| 49.1 | 21.3 | 11.5 | 1.5 | V | 34.3 | 40 | -5.7 |
| 135.0 | 18.5 | 14.1 | 2.6 | V | 35.2 | 43.5 | -8.3 |
| 135.0 | 17.0 | 14.1 | 2.6 | H | 33.7 | 43.5 | -9.8 |
| 276.4 | 13.8 | 18.2 | 3.8 | H | 35.8 | 46 | -10.2 |
| 350.9 | 14.3 | 16.4 | 4.3 | H | 35.0 | 46 | -11.0 |
| 377.7 | 15.6 | 16.7 | 4.5 | V | 36.8 | 46 | -9.2 |
| 499.4 | 12.2 | 19.1 | 5.1 | V | 36.4 | 46 | -9.6 |
| 566.9 | 13.3 | 20.5 | 5.4 | H | 39.2 | 46 | -6.8 |

Radiated Measurements at 3-meters.

NOTES:

1. All modes of operation were investigated, and the worst-case emissions are reported(Page 24).
2. The radiated limits are listed on Table 2 (Page 7).

*** Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used using a resolution bandwidth of 1MHz and a video bandwidth of 3MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized horn antenna and low-loss microwave cable.

8.1.1 Field strength of emissions according to § 15.239(b)

| Frequency MHz | Reading dBuV | Ant. Factor dB/m | Cable Loss dB | ANT POL (H/V) | Total dBuV/m | Limit dBuV/m | Margin dB |
|------------------|-----------------|---------------------|------------------|------------------|-----------------|-----------------|--------------|
| 88.1 | 31.5 | 8.5 | 2.1 | V | 42.1 Av | 48 | -5.9 |
| 88.1 | 33.5 | 8.5 | 2.1 | V | 44.1 Pk | 68 | -23.9 |
| 88.3 | 31.9 | 8.5 | 2.1 | V | 42.5 Av | 48 | -5.5 |
| 88.3 | 33.3 | 8.5 | 2.1 | V | 43.9 Pk | 68 | -24.1 |
| 88.5 | 32.9 | 8.5 | 2.1 | V | 43.5 Av | 48 | -4.5 |
| 88.5 | 34.3 | 8.5 | 2.1 | V | 44.9 Pk | 68 | -23.1 |
| 88.7 | 32.9 | 8.5 | 2.1 | V | 43.5 Av | 48 | -4.5 |
| 88.7 | 34.5 | 8.5 | 2.1 | V | 45.1 Pk | 68 | -22.9 |
| 88.9 | 32.2 | 8.5 | 2.1 | V | 42.8 Av | 48 | -5.2 |
| 88.9 | 34.2 | 8.5 | 2.1 | V | 44.8 Pk | 68 | -23.2 |

Radiated Measurements at 3-meters.

NOTES:

1. The radiated limits are listed on Table 2 (Page 8).

2. Av = Average detection mode, Pk = Peak detection mode.

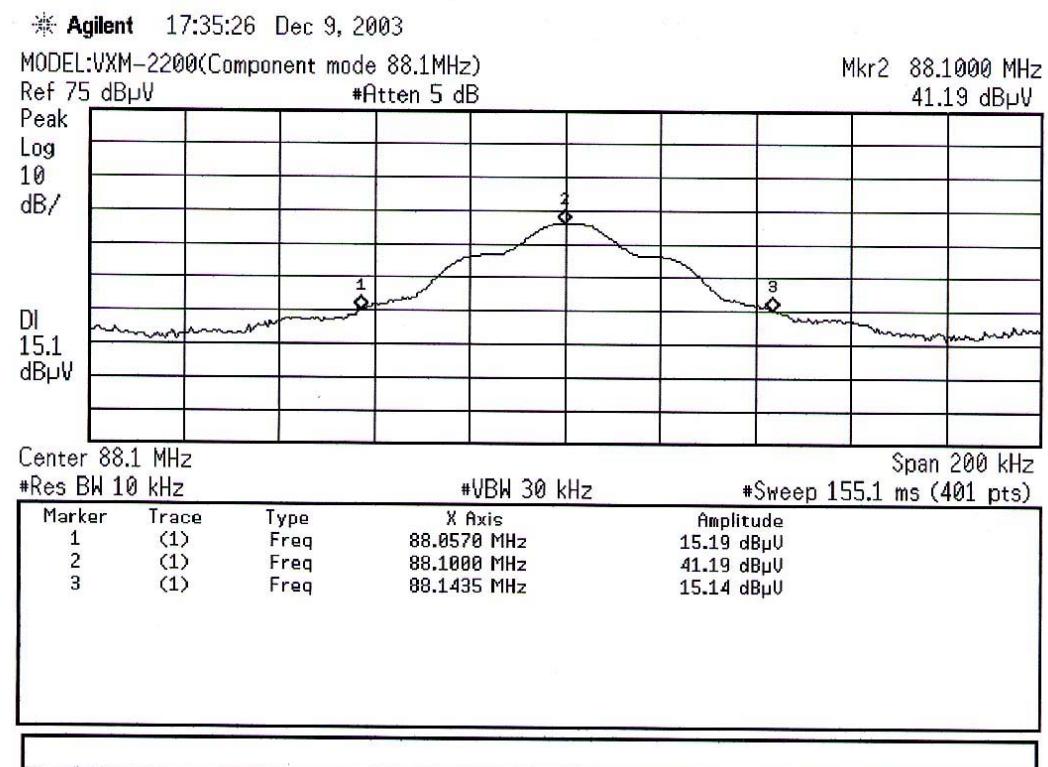
| Center Frequency (MHz) | Measured occupied bandwidth (KHz) | Pass/Fail |
|---------------------------|--------------------------------------|-----------|
| 88.1 | 43.5 | Pass |
| 88.3 | 47.5 | Pass |
| 88.5 | 45.5 | Pass |
| 88.7 | 45.0 | Pass |
| 88.9 | 45.0 | Pass |

8.1.2 Emissions Band Measurement

NOTES:

1. All modes of operation were investigated, and the worst-case emissions are reported(Page 24).
2. The radiated limits are listed on Table 2 (Page 8).

Figure 1 : Occupied bandwidth measurement results

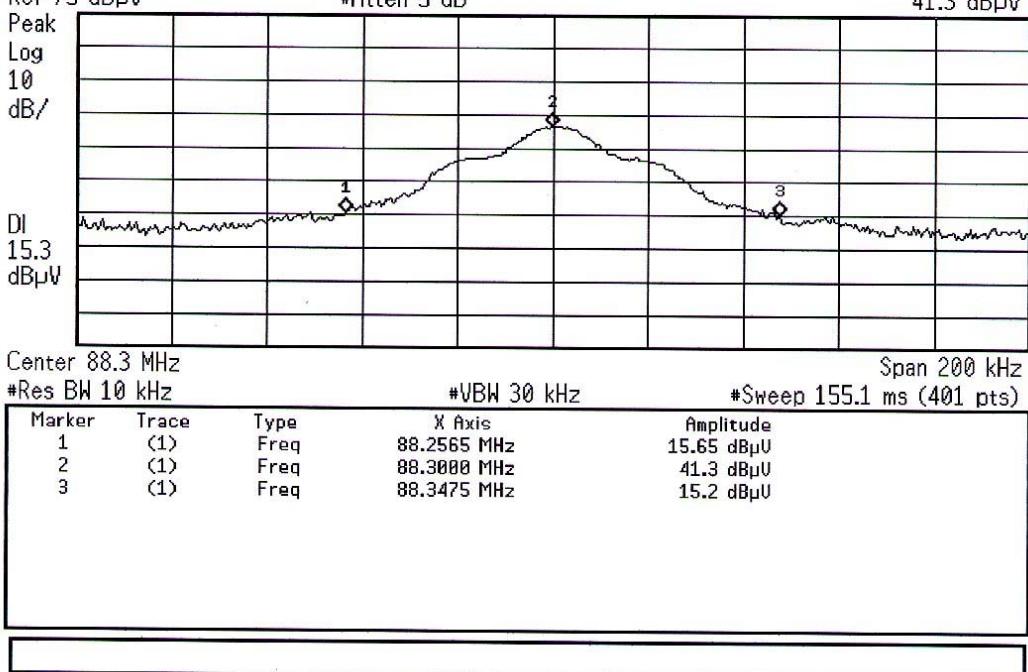


* Agilent 17:47:24 Dec 9, 2003

MODEL:VXM-2200(Component mode 88.3MHz)

 Ref 75 dB μ V #Atten 5 dB

Mkr2 88.3000 MHz

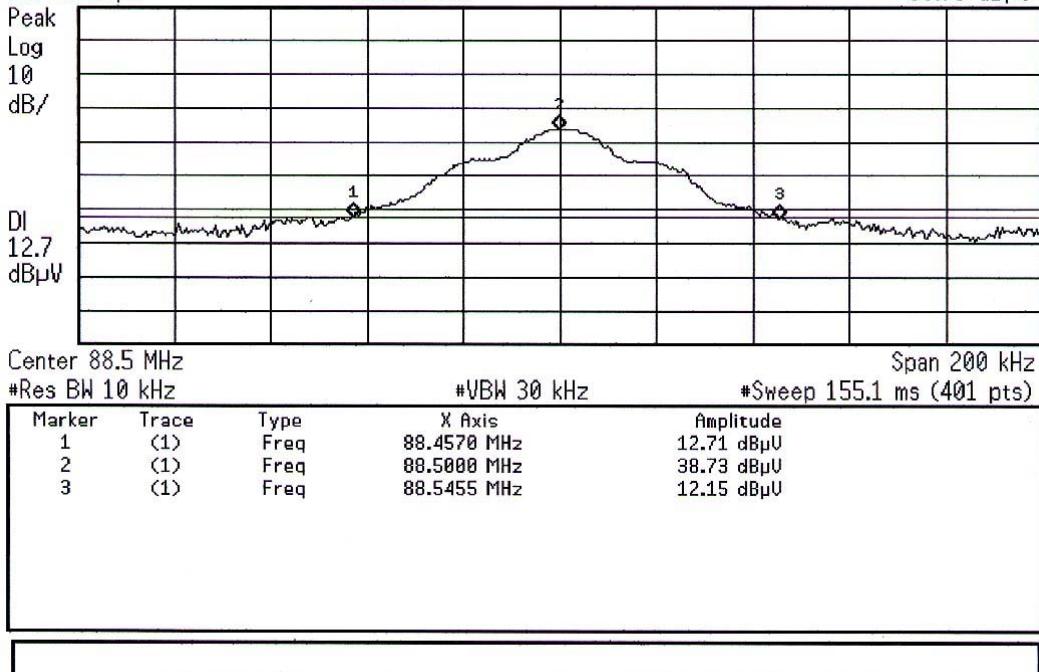
 41.3 dB μ V


* Agilent 17:49:33 Dec 9, 2003

MODEL:VXM-2200(Component mode 88.5 MHz)

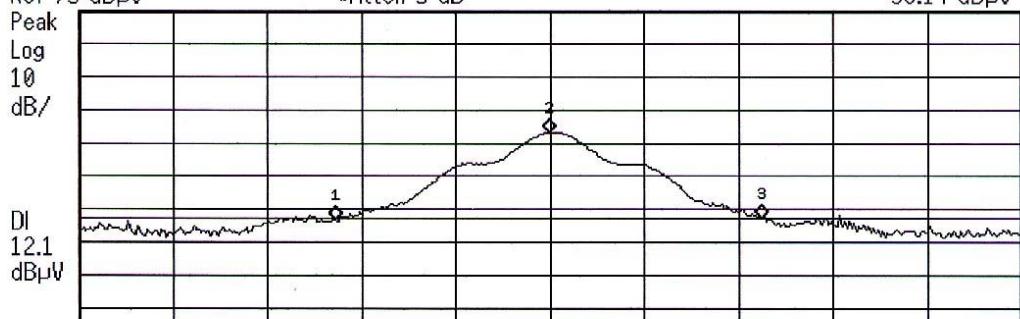
 Ref 75 dB μ V #Atten 5 dB

Mkr2 88.5000 MHz

 38.73 dB μ V


* Agilent 17:54:51 Dec 9, 2003

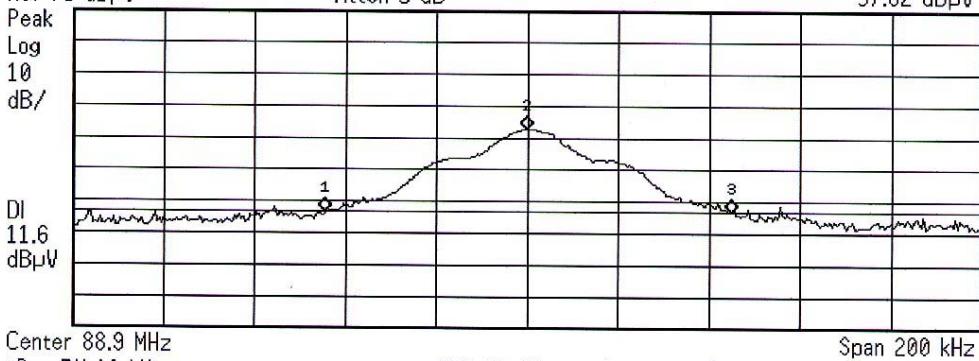
 MODEL:VXM-2200(Component mode 88.7 MHz)
 Ref 75 dB μ V *Atten 5 dB

 Mkr2 88.7000 MHz
 38.14 dB μ V


| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-------------|------------------|
| 1 | (1) | Freq | 88.6545 MHz | 12.07 dB μ V |
| 2 | (1) | Freq | 88.7000 MHz | 38.14 dB μ V |
| 3 | (1) | Freq | 88.7450 MHz | 12.33 dB μ V |

* Agilent 17:56:34 Dec 9, 2003

 MODEL:VXM-2200(Component mode 88.9 MHz)
 Ref 75 dB μ V *Atten 5 dB

 Mkr2 88.9000 MHz
 37.62 dB μ V


| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-------------|------------------|
| 1 | (1) | Freq | 88.8555 MHz | 11.91 dB μ V |
| 2 | (1) | Freq | 88.9000 MHz | 37.62 dB μ V |
| 3 | (1) | Freq | 88.9450 MHz | 11.81 dB μ V |

9.1 Sample Calculations

$$\text{dB } \mu\text{V} = 20 \log_{10} \mu\text{V}$$

$$\text{dB } \mu\text{V} = \text{dBm} + 107$$

8.1.2 Example 1:

@ 20.3 MHz

| | |
|-----------------------|----------------------------------|
| Class B limit | = 250 μ V = 47.96 dB μ V |
| Reading | = -67.8 dBm (calibrated level) |
| Convert to dB μ V | = -67.8 + 107 = 39.2 dB μ V |
| 10 $(39.2/20)$ | = 91.2 μ V |

$$\begin{aligned}
 \text{Margin} &= 39.2 - 47.96 = -8.76 \\
 &= \mathbf{8.8 \text{ dB below limit}}
 \end{aligned}$$

8.1.3 Example 2:

@ 66.7 MHz

$$\begin{aligned}
 \text{Class B limit} &= 100 \mu\text{V/m} = 40.0 \text{ dB}\mu\text{V/m} \\
 \text{Reading} &= -76.0 \text{ dBm (calibrated level)} \\
 \text{Convert to dB}\mu\text{V/m} &= -76.0 + 107 = 31.0 \text{ dB}\mu\text{V/m} \\
 \text{Antenna Factor + Cable Loss} &= 5.8 \text{ dB} \\
 \text{Total} &= 36.8 \text{ dB}\mu\text{V/m} \\
 \\
 \text{Margin} &= 36.8 - 40.0 = -3.2 \\
 &= \mathbf{3.2 \text{ dB below limit}}
 \end{aligned}$$

10.1 Test Equipment

| Type | Manufacture | Model Number | CAL Date |
|-------------------|--------------------|---------------------|-----------------|
| EMI Test Receiver | Rohed & Schwarz | ESI40 | 2003.11.16 |
| EMI Test Receiver | Rohed & Schwarz | ESVS30 | 2003.07.16 |
| LISN | Rohed & Schwarz | ESH2-Z5 | 2003.08.21 |
| LISN | EMCO | 3825/2 | 2003.02.24 |
| Amplifier | Hewlett-Packard | 8447E | 2003.08.23 |
| Aborbing Clamp | Rohed & Schwarz | MDS-21 | 2003.04.24 |
| Dipole Antennas | Schwarzbeck | VHAP | 2003.07.24 |
| Dipole Antennas | Schwarzbeck | UHAP | 2003.07.24 |
| Biconical Antenna | Schwarzbeck | VHA9103 | 2003.07.23 |

| | | | |
|-----------------------------|-------------|-----------------|------------|
| Log-Periodic Antenna | Schwarzbeck | UHALP9107 | 2003.07.23 |
| Antenna Position Tower | HD | MA240 | N/A |
| Turn Table | EMCO | 1050 | N/A |
| Power Analyzer | Voltech | PM 3300 | 2003.02.15 |
| Reference Network Impedance | Voltech | IEC 555 | N/A |
| AC Power Source | PACIFIC | Magnetic Module | N/A |
| AC Power Source | PACIFIC | 360AMX | 2003.11.25 |
| Controller | HD GmbH | HD 100 | N/A |
| SlideBar | HD GmbH | KMS 560 | N/A |

11.1 Test Software Used

The EUT was acted standby mode during radiated and conducted testing.

NOTE: This is a sample of the basic program used during the test. However, during testing, a different software program may be used; whichever determines the worst-case condition. In addition, the program used also depends on the number and type of devices being tested.

The device under test was operated during the measurement under following conditions:

- 100/0/75/0 Colour bars
- 1000 Hz Audio signal
- DVD Play mode
- MP-3 mode

12.1 Conclusion

The data collected shows that **DVS KOREA.CO., LTD. DVD PLAYER.(FCC ID : PGJVXM2200)**

complies with §15.107, §15.109, §15.239(a) and §15.239(b) of the FCC Rules.