HCT
Hyundai
Calibration & Certification
Technologies Co., Ltd.

HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.

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TEST REPORT

Manufacture;
Aomni International

463-841) C-601 Inteli-G-2,Jeongja-Dong 24, Bundang-Gu
Seongnam-Si, Gyeonggi-Do, Korea

FRN: 0016269607

Date of Issue: July. 27. 2007

Test Report No.: HCT-F07-0711

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

FCC ID : **U6DAL320VA**

MODEL: **HL-3210V, AL320VA**

Rule Part(s):	**Part 15 & 2**
Equipment Class:	**FCC Class B Peripheral Device (JBP)**
Standard(s):	**FCC Class B: (CISPR 22)**
LCD Panel:	**LC320W01 / LG.PHILPS**
Port:	**TV Input, Composite Input(RCA X 4), S-VIDEO Input, PC Input, AUDIO Input/Output, Speaker Output, External Control Port, HDMI1,2 Input**

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 C63.4-2003

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.

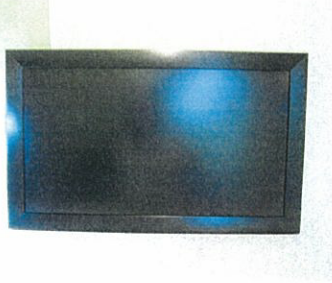

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TABLE OF CONTENTS

		PAGE
REPORT COVER		**1**
TABLE OF CONTENTS		**2**
1.	**SCOPE**	**3**
2.	**INTRODUCTION (SITE DESCRIPTION)**	**4**
3.	**PRODUCTION INFORMATION** 3.1 Equipment Description	**5**
4.	**DESCRIPTION OF TESTS (CONDUCTED)** 4.1 Powerline Conducted RFI	**7**
5.	**DESCRIPTION OF TESTS (RADIATED)**	**8**
6.	**LIST OF SUPPORT EQUIPMENT** 6.1 Cable Description 6.2 Noise Suppression Parts on Cable. (I/O CABLE)	**9 - 11**
7.	**TEST DATA (CONDUCTED)**	**12 - 16**
8.	**TEST DATA (RADIATED)**	**17**
9.	**SAMPLE CALCULATIONS** 9.1 Example 1 9.2 Example 2	**18**
10	**TEST EQUIPMENT**	**19**
11.	**TEST SOFTWARE USED**	**20**
12.	**CONCLUSION**	**21**

ATTACHMENT A:	**FCC ID LABEL & LOCATION**
ATTACHMENT B:	**EXTERNAL PHOTOGRAPHS**
ATTACHMENT C:	**BLOCK DIAGRAM**
ATTACHMENT D:	**TEST SETUP PHOTOGRAPHS**
ATTACHMENT E:	**USER'S MANUAL**
ATTACHMENT F:	**INTERNAL PHOTOGRAPHS**

MEASUREMENT REPORT

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:	**Aomni International**
Address:	**463-841) C-601 Inteli-G-2 Jeongja-Dong 24, Bundang-Gu Seongnam-Si, Gyeonggi-Do, Korea**

- **FCC ID :** U6DAL320VA
- **Equipment Class**: FCC Class B Peripheral Device (JBP)
- **EUT Type**: LCD Monitor
- **Model(s):** HL-3210V, AL320VA
- **Max input resolution:** 1280 X 1024 X 60 Hz
- **Input power:** AC 100 ~ 240V 50/60 Hz
- **Power consumption:** 150 W
- **Rule Part(s):** FCC Part 15 Subpart B
- **Test Procedure(s):** ANSI C63.4 (2003)
- **Dates of Tests:** July 23. 2007 ~ July. 24. 2007
- **Place of Tests:**
  254-1,MAEKOK-RI,HOBUP-MYUN,ICHON-SI,KYOUNGKI-DO,467-701,KOREA

2. INTRODUCTION

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 9 kHz to 40 GHz (ANSIC63.4-2003) was used in determining radiated and conducted emissions emanating from **Aomni International LCD Monitor FCC ID: U6DAL320VA**

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 C63.4and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 23, 2003 (Confirmation Number: EA90661)

3. PRODUCT INFORMATION

3.1 Equipment Description

Equipment Under Test (EUT) is **Aomni International LCD Monitor**
(FCC ID: U6DAL320VA)

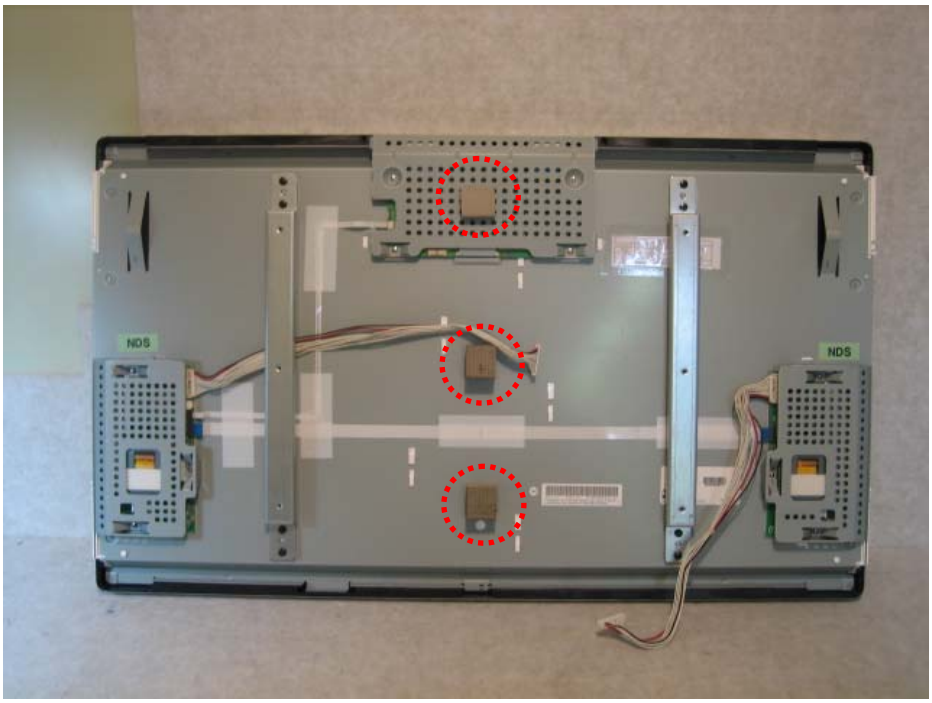
32" LCD TV	
Function and Display Specification	
Display Size	32-Inch 16 : 9 Diagonal Screen
Display Mode	Variable 5 Modes (4:3 Mode / 16:9 X 4 Modes)
Pixel Format	1366 X 768 Physical Pixel
Contrast Ratio	3000 : 1
Brightness	500 cd/m²
Max Input Resolution	1280 X 1024 / 60Hz
PIP	Advanced multi-windows viewing PIP (picture in picture) with four selectable window positions on Video mode
Input Compatible Video	Multiple input compatible Advanced motion digital/Motion-Adaptive De-interlace process, Digital progressive line scaling.
Tuner Module	TV/CATV (PAL/SECAM)
Programming	Favorite channel programming, Time Set, Set the Sleep timer, TTX
HDTV Input	480i/p (60Hz), 576i/p (50Hz), 720p (50/60Hz), 1080i (50/60Hz)
Color Temperature	Selectable 5 Mode (Warm1, 2, Normal, Cool1, 2)
Dimension/Weight	
Main Only	812mm (W) X 560mm (H) X 106mm (D)
With Stand	812mm (W) X 617mm (H) X 245mm (D)
With Stand and Speaker	812mm (W) X 617mm (H) X 245mm (D)
Miscellaneous	
Audio	Built-in amplifier and two speaker (7Watt/Typ.) systems (optional), Selectable fixed/variable audio output (optional)
External Control	Front OSD Key Control, Remote Control, RS232C Control
Power Consumption	
Input Power	AC 100 ~ 240V 50/60Hz
Power Consumption	150 Watt (Max)
Connectivity	
TV Input	RF/CATV (PAL/SECAM)
COMPOSITE Input	RCA X 3Port (AV Input 1, 2, 3)
COMPONENT Input	RCA X 1Port
S-VIDEO Input	Mini Din 4Pin X 1Port
PC Input	Mini D-Sub 15Pin X 1Port / HDTV Input (480p, 576p, 720p (50/60Hz), 1080i (50/60Hz))
AUDIO Input/Output	RCA X 3Port
Speaker Output	Cinch Type X 4Port (Stereo L/R), Head Phone Jack X 1Port
External Control Port	Mini D-Sub 9Pin X 1Port
HDMI1, 2 Input	HDMI X 2Port

EMI Suppression Devices:

Modifications were made to the device. Please refer to the next page.

1. Attached the Coret

2. Attached the Gasket



4. Description of Tests(Conducted)

4.1 Powerline Conducted RFI (150 kHz- 30 MHz)

The power line conducted RFI measurements were performed according to **ANSI C63.4 (2003)**.
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 150 kHz to 30 MHz. Each maximum EME was remeasured 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 center 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 SMT signal generator and are listed on Table 1. RFI Conducted FCC Class B.

RFI CONDUCTED	**FCC CLASS B Limits dB(uV)**	
Freq. Range	**Quasi-Peak**	**Average**
150 kHz - 0.5 MHz	**66-56****	**56-46****
0.5 MHz – 5 MHz	**56**	**46**
5 MHz – 30 MHz	**60**	**50**
****Limits decreases linearly with the logarithm of frequency**		

Table 1. RFI Conducted Limits

5. Description of Tests (Radiated)

Radiated Emissions

Preliminary measurements were made indoors at 3 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 1000 MHz using Tri-log antenna, and above 1 GHz using linearly polarized horn antennas. 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[μV / m]**	**FCC Limit @ 10m.* Quasi – Peak dB [μV / m]**	**CISPR Limit @ 10m. Quasi-Peak dB [μV / 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 B limits @ 10-meters

6. Support Equipment Used

DEVICE TYPE	MANUFACTURER	MODEL NUMBER	FCC ID / DoC	CONNECTED TO
LCD Monitor	Aomni International	HL-3210V, AL320VA	U6DAL320VA	PC
PC	DELL	OPTIPLEXGX620	DoC	EUT END
Mouse	DELL	MO56U0	DoC	PC END
Serial Mouse	LOGITECH	M-M28	DoC	PC END
Key Board	DELL	SK-8115	DoC	PC END
Printer	H.P	C4569A	DoC	PC END

6.1 Cable Description

		Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
LCD Monitor (EUT)	DTV & Service Port	N/A	N	(D)1.5
	PC Audio	N/A	Y	(D)1.5
	HDMI 1	N/A	Y	(D)1.5
	D-Sub	N/A	Y	(D)1.8
	Serial	N/A	Y	(D)1.5
	Component	N/A	Y	(D)1.5
	Audio	N/A	Y	(D)1.5
	S-Video	N/A	Y	(D)1.5
	AV Input 1	N/A	Y	(D)1.5
	AV Input 2	N/A	Y	(D)1.5
	AV Input 3	N/A	Y	(D)1.5
	Line Out	N/A	N	(D)1.5
	AC IN	N	N/A	(P)1.8
PC	USB	N/A	Y	(D)1.8
	USB	N/A	Y	(D)1.8
	Serial	N/A	Y	(D)1.8
	Parallel	N/A	Y	(D)1.8
	AC In	N	N/A	(P)1.8
Monitor	AC In	N	N/A	(P)1.8
Printer	AC In	N	N/A	(P)1.8

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

6.2 Noise Suppression Parts on Cable. (I/O CABLE)

		Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
LCD Monitor (EUT)	DTV & Service Port	Y	Both End	N	N/A
	PC Audio	N	N/A	Y	Both END
	HDMI 1	N	N/A	N	N/A
	D-Sub	Y	Both End	Y	Both END
	Component Out	Y	Both End	Y	Both END
	Audio	N	N/A	Y	Both END
	S-Video	N	N/A	Y	Both END
	AV Input 1	N	N/A	Y	Both END
	AV Input 2	N	N/A	Y	Both END
	AV Input 3	N	N/A	Y	Both END
	Line Out	Y	Both End	N	N/A
PC	USB	N	N/A	Y	PC END
	USB	N	N/A	Y	PC END
	Serial	N	N/A	Y	PC END
	Parallel	Y	Both End	Y	Both END

7. CONDUCTED TEST DATA

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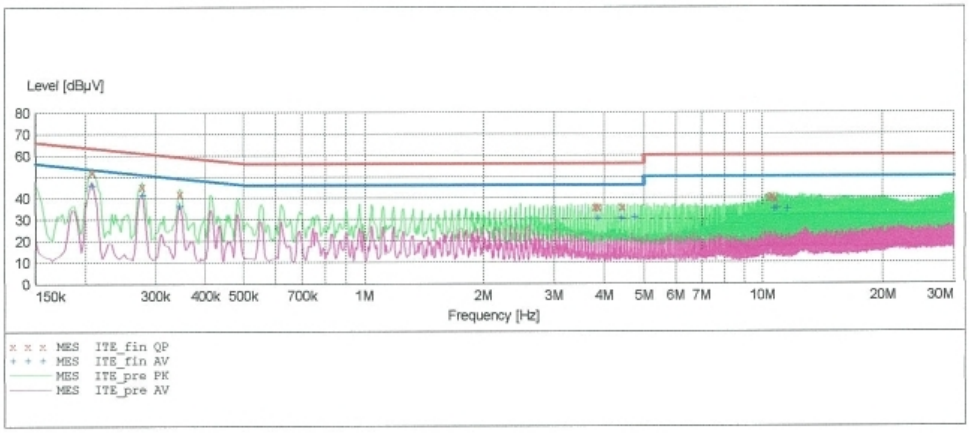
EMC TEST LAB.

```
EUT:                  HL-3210V
Manufacturer:         Aomni International
Operating Condition:  1280 X 1024 60Hz
Test Site:            SHIELD ROOM
Operator:             KH-SEO
Test Specification:   CISPR 22 CLASS B
Comment:              H
```

SCAN TABLE: "CISPR 22 Voltage"

```
Short Description:                    CISPR 22 Voltage
Start       Stop        Step        Detector   Meas.     IF       Transducer
Frequency   Frequency   Width                  Time      Bandw.
150.1 kHz   500.0 kHz   2.5 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
5.0 MHz     30.0 MHz    5.0 kHz     MaxPeak    10.0 ms   9 kHz    None
                                    Average
```



MEASUREMENT RESULT: "ITE_fin QP"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.207600	52.20	10.0	63	11.1	---	---
0.277600	45.50	10.0	61	15.4	---	---
0.345100	41.90	10.0	59	17.2	---	---
3.785000	35.80	10.5	56	20.2	---	---
3.855000	35.80	10.5	56	20.2	---	---
4.405000	35.70	10.6	56	20.3	---	---
10.395000	40.10	11.2	60	19.9	---	---
10.600000	40.60	11.2	60	19.4	---	---
10.740000	39.60	11.2	60	20.4	---	---

MEASUREMENT RESULT: "ITE_fin AV"

7/23/2007 2:40PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.207600	45.90	10.0	53	7.4	---	---
0.277600	41.50	10.0	51	9.4	---	---
0.345100	36.50	10.0	49	12.5	---	---
3.855000	30.50	10.5	46	15.5	---	---
4.405000	30.50	10.6	46	15.5	---	---
4.750000	30.90	10.6	46	15.1	---	---
10.740000	35.00	11.2	50	15.0	---	---
10.875000	35.30	11.3	50	14.7	---	---
11.565000	34.90	11.4	50	15.1	---	---

Page 2/2 7/23/2007 2:41PM HCT EMC LAB

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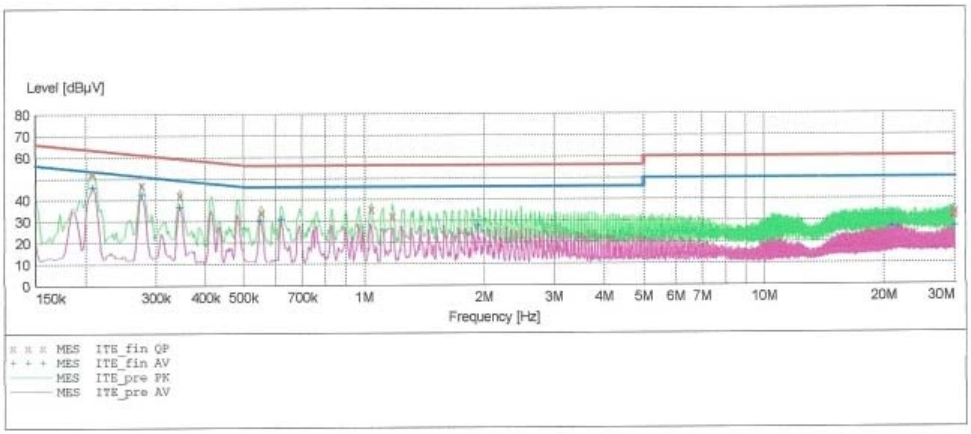
EMC TEST LAB.

EUT:	HL-3210V
Manufacturer:	Aomni International
Operating Condition:	1280 X 1024 60Hz
Test Site:	SHIELD ROOM
Operator:	KH-SEO
Test Specification:	CISPR 22 CLASS B
Comment:	N

SCAN TABLE: "CISPR 22 Voltage"

Short Description: CISPR 22 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "ITE_fin QP"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.207600	52.30	10.0	63	11.0	---	---
0.275100	46.90	10.0	61	14.1	---	---
0.345100	42.30	10.0	59	16.8	---	---
0.555000	34.00	10.1	56	22.0	---	---
1.040000	35.50	10.1	56	20.5	---	---
1.175000	32.30	10.2	56	23.7	---	---
29.755000	33.20	12.8	60	26.8	---	---
29.820000	32.30	12.8	60	27.7	---	---
29.960000	33.80	12.8	60	26.2	---	---

MEASUREMENT RESULT: "ITE_fin AV"

7/23/2007 2:24PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.207600	46.00	10.0	53	7.3	---	---
0.275100	42.80	10.0	51	8.2	---	---
0.345100	36.90	10.0	49	12.2	---	---
0.550000	30.70	10.1	46	15.3	---	---
0.620000	30.90	10.1	46	15.1	---	---
1.930000	28.00	10.3	46	18.0	---	---
20.940000	26.90	12.3	50	23.1	---	---
21.560000	26.80	12.4	50	23.2	---	---
29.960000	27.00	12.8	50	23.0	---	---

Page 2/2 7/23/2007 2:24PM HCT EMC LAB

NOTES:

1. **All modes of operation were investigated, and the worst-case emissions are reported.**
2. **The conducted limits are listed on Table 1 (Page 7).**
3. **Line H = Hot Line N = Neutral**

** Measurements using CISPR quasi-peak mode.

8. RADIATED TEST DATA

[D-Sub]

Frequency MHz	Reading dBuV	Ant. Factor dB / m	Cable Loss dB	ANT POL (H / V)	Total dBuV / m	Limit dBuV / m	Margin dB
65.8	11.5	10.7	1.9	V	**24.1**	30.0	−5.9
96.0	11.7	8.8	2.3	V	**22.8**	30.0	−7.2
121.0	10.7	11.2	2.6	H	**24.5**	30.0	−5.5
178.2	11.5	10.9	3.2	V	**25.6**	30.0	−4.4
356.2	12.9	14.0	4.5	V	**31.4**	37.0	−5.6
393.7	13.7	14.8	4.7	V	**33.2**	37.0	−3.8
472.4	11.2	16.5	5.1	H	**32.8**	37.0	−4.2
597.3	9.0	18.8	5.7	V	**33.5**	37.0	−3.5

Radiated Measurements at 10-meters.

NOTES:

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

*** Measurements using CISPR quasi-peak mode.

9. Sample Calculations

$$dB\ \mu V = \mathbf{20\ log_{10}(\mu V)}$$

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

9.1 Example 1:

@ 0.2076 MHz

Class B limit	=	53.0 dB μV
Reading	=	46.0 dB μV (calibrated level)
Margin	=	46.0 – 53.3 = - 7.3 dB μV
	=	**7.3 dB below limit**

9.2 Example 2:

@ 597.3 MHz

Class B limit	=	37.0 dB μV/ m
Reading	=	9.0 dB μV /m (calibrated level)
Antenna Factor + Cable Loss	=	24.5 dB
Total	=	33.5dB μV/ m
Margin	=	33.5 – 37.0 = - 3.5 dB μV/ m
	=	**3.5 dB below limit**

10. Test Equipment

Type	Manufacture	Model Number	CAL Due Date
Conducted Emission			
EMI Test Receiver	**Rohde & Schwarz**	**ESCI**	**2007.08.24**
LISN	**Rohde & Schwarz**	**ESH2-Z5**	**2008.04.20**
LISN	**EMCO**	**3816/2SH**	**2008.02.03**
PULSE LIMITER	**Rohde & Schwarz**	**ESH3-Z2**	**2007.10.30**
Radiated Emission			
EMI Test Receiver	**Rohde & Schwarz**	**ESCI40**	**2007.11.06**
TRILOG Antenna	**Schwarzbeck**	**9168**	**2008.03.19**
Antenna Position Tower	**HD**	**MA240**	**N/A**
Turn Table	**EMCO**	**1050**	**N/A**
Controller	**HD GmbH**	**HD 100**	**N/A**
Slide Bar	**HD GmbH**	**KMS 560**	**N/A**

11. 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.

12. Conclusion

The data collected shows that **Aomni International LCD Monitor (FCC ID: U6DAL320VA)** complies with §15.107 and §15.109 of the FCC Rules.