

## HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.

Product Compliance Division, EMC Team  
SAN 136-1, AMI-RI, BUBAL-EUP, ICHEON-SI, KYOUNGI-DO, 467-701, KOREA  
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# TEST REPORT

Manufacture;  
**HARSPER CO.,LTD.**

**546-4. Ami-Ri Bubai-Eub, Ichon-City, Kyoungki-Do  
Korea**

**HARSPER FRN : 00007-9131-06**

**Date of Issue : September 23, 2005**

**Test Report No.: HCT-F05-0914**

**Test Site: HYUNDAI CALIBRATION & CERTIFICATION  
TECHNOLOGIES CO., LTD.**

**HCT FRN : 0005-8664-21**

**FCC ID :**

**O5XHP-425V**

**MODEL :**

**HP-4250V**

**Rule Part(s):** Part 15 & 2  
**Equipment Class:** FCC Class B Peripheral Device (JBP)  
**Standard(s):** FCC Class B: 2003  
**EUT Type:** PDP Monitor TV  
**Max. Resolution(s):** 1280×1024(@60Hz)  
**Model(s):** HP-4250V  
**Port/Connector(s):** DVI&D-Sub(PC)Sound,DVI,HDMI,RS-232C,D-Sub(PC),Component1,2,  
Component Sound1,2,VIDEO 1,VIDEO OUTPUT2,VIDEO 2,AV,  
SPDIF(optical),Phone Jack,S-VIDEO,S-VIEDO/AC Sound,D-TV Antenna,  
A-TV Antenna,Speak Cable,AC Power  
**LCD Panel :** SAMSUNG(42AX-YD01)

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.



Report prepared by : Ki-Soo Kim  
Manager of EMC Tech. Part



# TABLE OF CONTENTS

## PAGE

<b>REPORT COVER</b>	<b>1</b>
<b>TABLE OF CONTENTS</b>	<b>2</b>
<b>1.1 SCOPE</b>	<b>3</b>
<b>2.1 INTRODUCTION (SITE DESCRIPTION)</b>	<b>4</b>
<b>3.1 PRODUCTION INFORMATION</b>	<b>5-6</b>
<b>4.1 DESCRIPTION OF TESTS (CONDUCTED)</b>	<b>7</b>
<b>4.3 DESCRIPTION OF TESTS (RADIATED)</b>	<b>8</b>
<b>5.1 LIST OF SUPPORT EQUIPMENT</b>	<b>9-11</b>
<b>6.1 TEST DATA (CONDUCTED)</b>	<b>12-20</b>
<b>7.1 TEST DATA (RADIATED)</b>	<b>21-22</b>
<b>8.1 SAMPLE CALCULATIONS</b>	<b>23</b>
<b>9.1 TEST EQUIPMENT</b>	<b>24</b>
<b>10.1 TEST SOFTWARE USED</b>	<b>25</b>
<b>11.1 CONCLUSION</b>	<b>26</b>

<b>ATTACHMENT A:</b>	<b>FCC ID LABEL &amp; LOCATION</b>
<b>ATTACHMENT B:</b>	<b>EXTERNAL PHOTOGRAPHS</b>
<b>ATTACHMENT C:</b>	<b>BLOCK DIAGRAM</b>
<b>ATTACHMENT D:</b>	<b>TEST SETUP PHOTOGRAPHS</b>
<b>ATTACHMENT E:</b>	<b>USER'S MANUAL</b>
<b>ATTACHMENT F:</b>	<b>INTERNAL PHOTOGRAPHS</b>

## 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.

<b>Applicant Name:</b>	<b>HARSPER CO., LTD.</b>
<b>Address:</b>	<b>546-4. Ami-Ri, Bubai-Eub, Ichon-City, Kyoungki-Do Korea</b>

- **FCC ID : 05XHP-425V**
- **Equipment Class: FCC Class B Peripheral Device (JBP)**
- **EUT Type: PDP MONITOR TV**
- **Model(s): HP-4250V**
- **Max. Resolution: 1280×1024( @60Hz)**
- **Power Cord: Unshielded**
- **Rule Part(s): FCC Part 15 Subpart B**
- **Test Procedure(s): ANSI C63.4 (2003)**
- **Dates of Tests: September 08, 2005~ September 10, 2005**
- **Place of Tests: 254-1,MAEKOK-RI,HOBUP-MYUN,ICHON-SI,KYOUNGKI-DO,467-701,KOREA**

## 2.1 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 9kHz to 40GHz (ANSI C63.4-2001) was used in determining radiated and conducted emissions emanating from **HARSPER CO., LTD. PDP MONITOR TV FCC ID: 05XHP-425V**

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 23, 2003 (Confirmation Number: EA90661)

## 3.1 PRODUCT INFORMATION

### 3.2 Equipment Description

Equipment Under Test (EUT) is the HARSPER CO.,LTD. ( Model : HP-4250V ) PDP MONITOR TV

FCC ID: **O5XHP-425V**

Maximum Resolution(s): **1280×1024(@60Hz)**

Dimensions: **1246mm(W) x 702mm(H) x299mm(D)**

Power Supply: **AC 100-240V, 50/ 60Hz, 400W**

Connectivity: **TV 1,2Input: RF / CATV (ATSC)**

**Composite Input/Output: RCA ×4 Port (AV INPUT 1,2,3 / AV OUTPUT 1)**

**Component 1, 2 Input: RCA×2 Port (Y, Pb/Cb, Pr/Cr: 480i, 480p, 576i, 576p, 720p, 1080i)**

**S-video Input: Mini Din 4Pin × 1 Port**

**PC Input :Mini D-Sub 15pin × 1Port /HDTV**

**Input(480p,576p,720p(50/60Hz),1080i(50/60Hz))**

**DVI Input: Mini D-sub 29Pin ×1Port /HDTV**

**Input(480p,576p,720p(50/60Hz),1080i(50/60Hz)),HDCP(Factory Option)**

**Audio In/Output: RCA × 6Port**

**Speaker output : Cinch Type × 4Port(Stereo L/R),Head Phone Jack × 1Port**

**External Control ports : Mini D-Sub 9Pin × 1Port**

**HDMI Port : HDMI × 1Port**

**SPDIF Port : SPDIF(Optical) × 1Port(5.1Channel)**

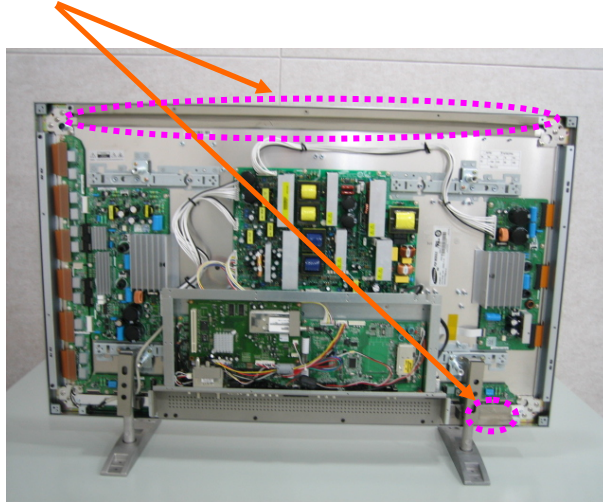
Power Consumption : **400Watts**

Weight (Net):**41.5Kg**

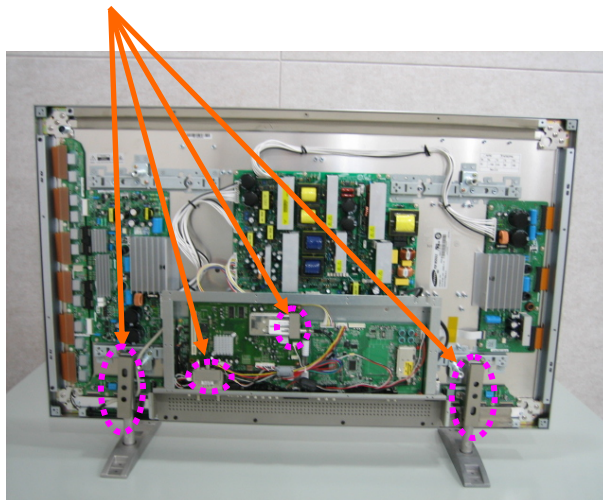
### EMI Suppression Devices:

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

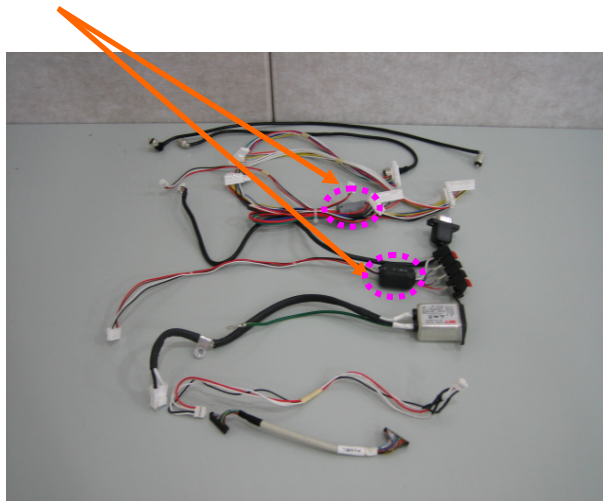
**1. Attach fabric tape on rear LCD panel.**



**2. Attach a gasket on TV Tuner and stand**



**1. Apply a ferrite Core to the Speaker cable and data cable**



## 4.1 Description of Tests(Conducted & Radiated)

### 4.2 Powerline Conducted Emission (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  $\Omega$  / 50 uH Line Impedance Stabilization Network (LISN) and the support equipment through a separate Solar 50  $\Omega$  / 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 Quasi-Peak	CISPR 22 Average
Freq. Range		
150kHz - 0.5MHz	66-56*	56-46*
0.5MHz - 5MHz	56	46
5MHz - 30MHz	60	50
*Limits decreases linearly with the logarithm of frequency		

Table 1. FCC CLASS B Conducted Emission Limits



## 4.3 Description of Tests(Radiated)

### 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[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	
* Limit extrapolated 20 dB/decade			

**Table 2. Radiated Class B limits @ 10-meters**



## 5.1 Support Equipment Used

DEVICE TYPE	MANUFACTURER	MODEL NUMBER	FCC ID / DoC	CONNECTED TO
MONITOR TV(EUT)	HARSPER CO., LTD.	HP-4250V	05XHP-425V	P.C
P.C	H.P	HP Pavilion 8921	DoC	EUT
MOUSE	Microsoft	IntelliMouse optical USB and PS/2 compatible	DoC	P.C
KEY BOARD	H.P	5181	DoC	P.C
PRINTER	H/P	C4569A	DoC	P.C
Head-set	HYUNDAI	JPC-914W	DoC	EUT
DVD	SAMSUNG	DVD-HD594	DoC	EUT

## 5.2 Cable Description

		Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
<b>PDP MONITOR TV (EUT)</b>	<b>Power</b>	N	N/A	<b>1.8(P)</b>
	<b>PC Audio in</b>	N/A	Y	<b>1.8(D)</b>
	<b>DVI</b>	N/A	Y	<b>1.8(D)</b>
	<b>HDMI</b>	N/A	Y	<b>1.9(D)</b>
	<b>D Sub</b>	N/A	Y	<b>1.8(D)</b>
	<b>RS-232C</b>	N/A	Y	<b>1.8(D)</b>
	<b>Component 1,2</b>	N/A	Y	<b>1.8(D)</b>
	<b>Speaker L,R</b>	N/A	N	<b>1.1(D)</b>
	<b>AV Output</b>	N/A	Y	<b>1.8(D)</b>
	<b>AV Input 1,2,3</b>	N/A	Y	<b>1.8(D)</b>
	<b>Antenna 1,2</b>	N/A	Y	<b>3.0(D)</b>
	<b>S-video</b>	N/A	Y	<b>1.8(D)</b>
	<b>Head-set</b>	N/A	Y	<b>2.7(D)</b>
<b>PC</b>		N	N/A	<b>1.8(P)</b>
<b>KEY BOARD</b>		N/A	Y	<b>1.8(D)</b>
<b>MOUSE</b>		N/A	Y	<b>1.8(D)</b>
<b>PRINTER</b>		N	Y	<b>1.8(P,D)</b>
<b>Head-set</b>		N/A	Y	<b>2.7(D)</b>

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

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

		Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
<b>PDP MONITOR TV (EUT)</b>	<b>PC Audio Input</b>	<b>Y</b>	<b>PC END</b>	<b>Y</b>	<b>BOTH END</b>
	<b>DVI</b>	<b>Y</b>	<b>BOTH END</b>	<b>Y</b>	<b>BOTH END</b>
	<b>D Sub</b>	<b>Y</b>	<b>BOTH END</b>	<b>Y</b>	<b>BOTH END</b>
	<b>HDMI</b>	<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>BOTH END</b>
	<b>RS-232C</b>	<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>BOTH END</b>
	<b>Component 1,2</b>	<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>BOTH END</b>
	<b>AV Output</b>	<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>BOTH END</b>
	<b>AV Input 1,2,3</b>	<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>BOTH END</b>
	<b>Antenna 1,2</b>	<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>BOTH END</b>
	<b>S-video</b>	<b>Y</b>	<b>BOTH END</b>	<b>Y</b>	<b>BOTH END</b>
	<b>Head-set</b>	<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>EUT END</b>
<b>PC</b>		<b>N</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>KEYBOARD</b>		<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>PC END</b>
<b>MOUSE</b>		<b>Y</b>	<b>PC END</b>	<b>Y</b>	<b>PC END</b>
<b>PRINTER</b>		<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>BOTH END</b>
<b>Head-set</b>		<b>N</b>	<b>N/A</b>	<b>Y</b>	<b>EUT END</b>

## 6.1 CONDUCTED TEST DATA

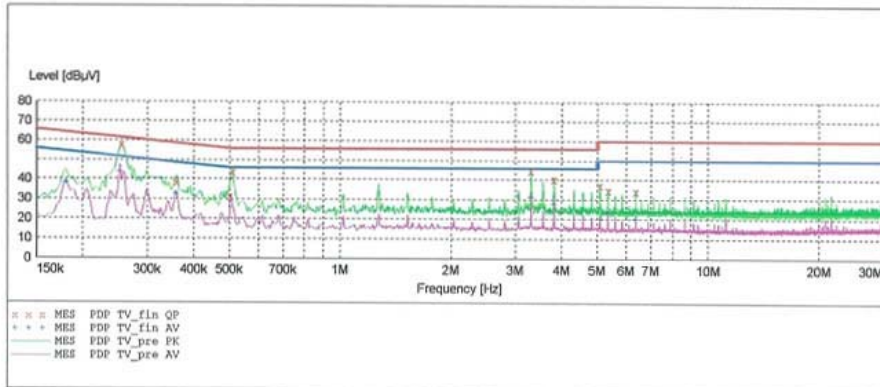
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EMC TEST LAB

EUT: HP-4250V  
Manufacturer: HARSPER  
Operating Condition: 1280 X 1024 60Hz (A)  
Test Site: SHIELD ROOM  
Operator: GS,KIM  
Test Specification: CISPR 22 CLASS B  
Comment: H

### SCAN TABLE: "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	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: "PDP TV\_fin QP"

9/8/2005 3:55PM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.255100	58.20	10.1	62	3.4	---	---
0.360100	38.70	10.1	59	20.0	---	---
0.500000	31.50	10.1	56	24.5	---	---
0.510000	44.00	10.1	56	12.0	---	---
3.305000	44.70	10.2	56	11.3	---	---
3.815000	40.40	10.3	56	15.6	---	---
5.085000	37.20	10.3	60	22.8	---	---
5.340000	34.80	10.3	60	25.2	---	---
6.355000	34.20	10.3	60	25.8	---	---

**MEASUREMENT RESULT: "PDP TV\_fin AV"**

9/8/2005 3:55PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.180100	38.50	10.1	55	16.0	---	---
0.252600	43.90	10.1	52	7.8	---	---
0.357600	32.90	10.1	49	15.9	---	---
0.505000	29.20	10.1	46	16.8	---	---
3.305000	31.60	10.2	46	14.4	---	---
3.815000	27.90	10.3	46	18.1	---	---
5.090000	20.60	10.3	50	29.4	---	---
5.340000	23.40	10.3	50	26.6	---	---
6.360000	20.30	10.3	50	29.7	---	---

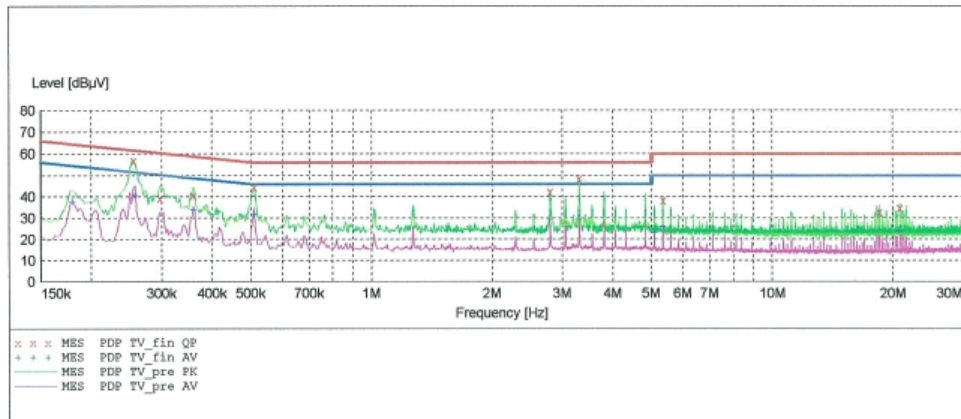
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**EMC TEST LAB**

EUT: HP-4250V  
Manufacturer: HARSPER  
Operating Condition: 1280 X 1024 60Hz (A)  
Test Site: SHIELD ROOM  
Operator: GS,KIM  
Test Specification: CISPR 22 CLASS B  
Comment: N

**SCAN TABLE: "CISPR 22 Voltage"**

Short Description:			CISPR 22 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
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: "PDP TV\_fin QP"**

9/8/2005 3:59PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.255100	56.90	10.1	62	4.7	---	---
0.297600	39.60	10.1	60	20.7	---	---
0.360100	41.00	10.1	59	17.7	---	---
0.510000	44.70	10.1	56	11.3	---	---
2.795000	42.50	10.2	56	13.5	---	---
3.305000	48.50	10.2	56	7.5	---	---
5.340000	38.40	10.3	60	21.6	---	---
18.560000	32.90	10.5	60	27.1	---	---
20.850000	35.00	10.5	60	25.0	---	---

**MEASUREMENT RESULT: "PDP TV\_fin AV"**

9/8/2005 3:59PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.180100	37.90	10.1	55	16.6	---	---
0.257600	40.80	10.1	52	10.7	---	---
0.360100	33.90	10.1	49	14.9	---	---
0.510000	31.70	10.1	46	14.3	---	---
2.795000	29.50	10.2	46	16.5	---	---
3.310000	29.90	10.2	46	16.1	---	---
5.085000	23.30	10.3	50	26.7	---	---
5.340000	26.20	10.3	50	23.8	---	---
20.845000	24.10	10.5	50	25.9	---	---



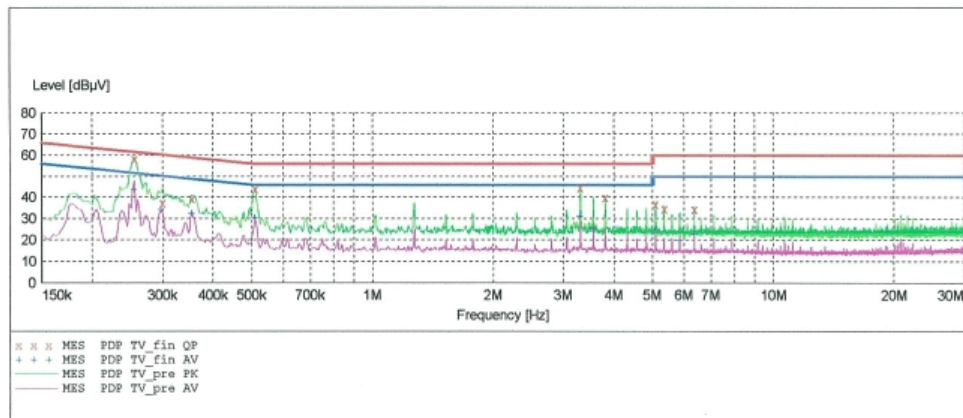
**HCT**

**EMC TEST LAB**

EUT: HP-4250V  
Manufacturer: HARSPER  
Operating Condition: 1280 X 1024 60Hz (D)  
Test Site: SHIELD ROOM  
Operator: GS,KIM  
Test Specification: CISPR 22 CLASS B  
Comment: H

**SCAN TABLE: "CISPR 22 Voltage"**

Short Description:			CISPR 22 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
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: "PDP TV\_fin QP"**

9/8/2005 3:50PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.255100	58.30	10.1	62	3.3	---	---
0.300100	37.50	10.1	60	22.7	---	---
0.355100	39.30	10.1	59	19.5	---	---
0.510000	44.10	10.1	56	11.9	---	---
3.305000	44.90	10.2	56	11.1	---	---
3.815000	40.10	10.3	56	15.9	---	---
5.085000	37.00	10.3	60	23.0	---	---
5.340000	34.70	10.3	60	25.3	---	---
6.355000	34.50	10.3	60	25.5	---	---

## MEASUREMENT RESULT: "PDP TV\_fin AV"

9/8/2005 3:50PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.255100	43.80	10.1	52	7.8	---	---
0.297600	34.20	10.1	50	16.2	---	---
0.355100	32.70	10.1	49	16.1	---	---
0.510000	30.50	10.1	46	15.5	---	---
3.305000	31.20	10.2	46	14.8	---	---
3.560000	25.40	10.2	46	20.6	---	---
5.085000	24.50	10.3	50	25.5	---	---
5.850000	19.80	10.3	50	30.2	---	---
6.355000	22.70	10.3	50	27.3	---	---

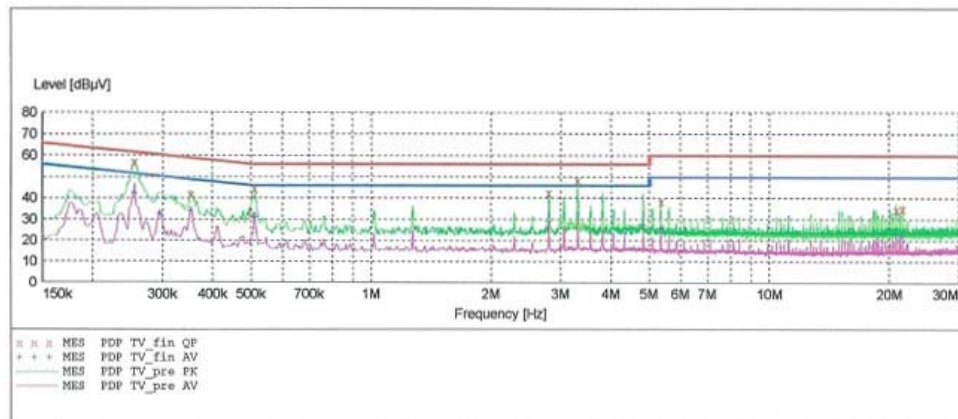
HCT

EMC TEST LAB

EUT: HP-4250V  
Manufacturer: HARSPER  
Operating Condition: 1280 X 1024 60Hz (D)  
Test Site: SHIELD ROOM  
Operator: GS, KIM  
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	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: "PDP TV\_fin QF"

9/8/2005 3:46PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.255100	56.90	10.1	62	4.7	---	---
0.352600	41.80	10.1	59	17.1	---	---
0.500000	32.20	10.1	56	23.8	---	---
0.510000	44.60	10.1	56	11.4	---	---
2.795000	42.70	10.2	56	13.3	---	---
3.305000	48.40	10.2	56	7.6	---	---
5.340000	38.60	10.3	60	21.4	---	---
20.850000	34.90	10.5	60	25.1	---	---
21.610000	35.40	10.6	60	24.6	---	---

**MEASUREMENT RESULT: "PDP TV\_fin AV"**

9/8/2005 3:46PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.255100	42.80	10.1	52	8.8	---	---
0.295100	33.00	10.1	50	17.3	---	---
0.352600	34.30	10.1	49	14.6	---	---
0.510000	31.20	10.1	46	14.8	---	---
2.795000	29.20	10.2	46	16.8	---	---
4.830000	27.70	10.3	46	18.3	---	---
5.340000	25.90	10.3	50	24.1	---	---
20.850000	23.20	10.5	50	26.8	---	---
21.610000	22.70	10.6	50	27.3	---	---

**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

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\*\* Measurements using CISPR quasi-peak mode.

## 7.1 RADIATED TEST DATA

Frequency MHz	Reading dBuV	Ant. Factor dB	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
85.7	11.5	7.7	2.1	V	21.3	30.0	8.7
129.6	5.4	12.1	2.6	V	20.1	30.0	9.9
167.1	3.1	12.3	2.9	V	18.3	30.0	11.7
183.6	8.3	10.9	3.0	V	22.2	30.0	7.8
194.3	8.1	10.1	3.1	H	21.3	30.0	8.7
215.9	7.0	10.1	3.3	V	20.4	30.0	9.6
240.0	9.3	11.0	3.5	H	23.8	37.0	13.2
248.3	9.8	11.2	3.6	V	24.6	37.0	12.4
297.6	11.9	12.9	4.0	V	28.8	37.0	8.2
302.3	12.9	13.1	4.0	H	30.0	37.0	7.0
339.4	13.2	13.7	4.2	H	31.1	37.0	5.9

### 1280 X 1024, 60Hz DSUB Mode

Frequency MHz	Reading dBuV	Ant. Factor dB	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
81.1	10.3	7.8	2.0	V	20.1	30.0	9.9
129.6	8.1	12.1	2.6	V	22.8	30.0	7.2
164.5	2.7	12.6	2.9	V	18.2	30.0	11.8
182.1	5.3	11.0	3.0	H	19.3	30.0	10.7
194.3	8.4	10.1	3.1	V	21.6	30.0	8.4
210.7	9.4	9.9	3.3	V	22.6	30.0	7.4
237.6	6.9	10.9	3.5	V	21.3	37.0	15.7
248.3	13.9	11.2	3.6	H	28.7	37.0	8.3
302.3	10.5	13.1	4.0	H	27.6	37.0	9.4
334.7	8.6	13.6	4.2	V	26.4	37.0	10.6
345.5	12.1	13.8	4.3	H	30.2	37.0	6.8

### 1280 X 1024, 60Hz DVI Mode

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).**
- 3. We performed the test up to 2GHz, but not found noise above 1GHz.**

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\*\* AFCL = Antenna Factor (Roberts dipole) and Cable Loss .

\*\*\* 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 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized horn antenna and low-loss microwave cable.



## 8.1 Sample Calculations

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

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

### 8.2 Example 1:

@ 255.1 KHz

Class B limit	= 62 dB $\mu V$
Reading	= 58.3 dB $\mu V$ (calibrated level)

Margin	= 58.3 - 62 = - 3.3 dB $\mu V$
	= <b>3.3 dB below limit</b>

### 8.3 Example 2:

@ 302.3 MHz

Class B limit	= 37 dB $\mu V/m$
Reading	= 13.2 dB $\mu V/m$ (calibrated level)
Antenna Factor + Cable Loss	= 17.9 dB
Total	= 31.1 dB $\mu V/m$

Margin	= 31.1 - 37 = - 5.9 dB $\mu V/m$
	= <b>5.9 dB below limit</b>

## 9.1 Test Equipment

<u>Type</u>	<u>Manufacture</u>	<u>Model Number</u>	<u>CAL Due Date</u>
EMI Test Receiver	Rohde & Schwarz	ESCI40	2005.11.16
EMI Test Receiver	Rohde & Schwarz	ESVS30	2006.07.01
EMI Test Receiver	Rohde & Schwarz	ESCI	2006.09.13
LISN	Rohde & Schwarz	ESH2-Z5	2006.04.26
Attenuator	Rohde & Schwarz	ESH3-Z2	2005.11.16
TRILOG Antenna	Schwarzbeck	9160	2006.03.31
Antenna Position Tower	HD	MA240	N/A
Turn Table	EMCO	1050	N/A
Power Analyzer	Voltech	PM 3300	2006.03.22
Reference Network Impedance	Voltech	IEC 555	N/A
AC Power Source	PACIFIC	Magnetic Module	N/A
AC Power Source	PACIFIC	360-AMX	2005.11.25
Controller	HD GmbH	HD 100	N/A
SlideBar	HD GmbH	KMS 560	N/A
PULSE LIMITER	Rohde & Schwarz	ESH3-Z2	2005.11.16

## 10.1 Test Software Used

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software, contained on a 3-1/2 inch disc, was inserted into drive A and is auto starting on power-up. Once loaded, the program sequentially exercises each system component in turn. The sequence used is : (1) Display test, (2) RS 232 test (3) Key board test, (4) Printer test, (5) FDD test, (6) HDD test. The complete cycle takes about 20 seconds and is repeated continuously. As the keyboard and mouse are strictly input devices, no data is transmitted to them during test. They are however, continuously scanned for data input activity. The video resolution modes setup and change program was used during the radiated and conducted emission 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.

## 11.1 Conclusion

The data collected shows that the HARSPER CO., LTD. LCD TV MONITOR **FCC ID: 05XHP-425V** complies with §15.107 and §15.109 of the FCC Rules.