

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

Product Compliance Division, EMC Team  
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**CERTIFICATION**

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

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

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

**Date of Issue : MARCH 12, 2005**

**Test Report No.: HCT-F05-0302**

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

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

**FCC ID :**

**O5XHL-370B**

**MODEL :**

**HL-3710B**

<b>Rule Part(s):</b>	<b>Part 15 &amp; 2</b>
<b>Equipment Class:</b>	<b>FCC Class B Peripheral Device (JBP)</b>
<b>Standard(s):</b>	<b>FCC Class B: 2003</b>
<b>EUT Type:</b>	<b>LCD TV MONITOR</b>
<b>Max. Resolution(s):</b>	<b>1280×1024(@60Hz)</b>
<b>Model(s):</b>	<b>HL-3710B</b>
<b>Port/Connector(s)</b>	<b>POWER, COMPOSITE, RS-232C, COMPONENT, SPEAKER, DSUB DVI, S-VIDEO, ANTENNA</b>

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 C63.4-2001.

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



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# 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 : O5XHL-370B**
- **Equipment Class: FCC Class B Peripheral Device (JBP)**
- **EUT Type: LCD TV MONITOR**
- **Model(s): HL-3710B**
- **Max. Resolution: 1280×1024( @60Hz)**
- **Power Cord: Unshielded**
- **Rule Part(s): FCC Part 15 Subpart B**
- **Test Procedure(s): ANSI C63.4 (2001)**
- **Dates of Tests: March 08, 2005 ~ March 14, 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. LCD TV MONITOR FCC ID: O5XHL-370B**

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 : HL-3710B ) LCD TV MONITOR

FCC ID: **O5XHL-370B**

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

Dimensions: **991.8mm(W) x 645.4mm(H) x 250mm(D)**

Power Supply: **AC 100-240V, 50/ 60Hz 150W**

Connectivity: **TV Input: RF / CATV (NTSC)**

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

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

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

**RGB Input: Mini D-sub 15Pin × 1Port (480p/576p, 720p, 1080i)**

**DVI Input: Mini D-sub 29Pin ×1Port (480p/576p, 720p, 1080i)**

**Audio In/Output: RCA × 5Port : Full support separated audio input**

**Speaker output : Cinch Type × 4Port(Stereo L/R)**

**Control ports : RS-232 D-sub 9Pin × 1Port**

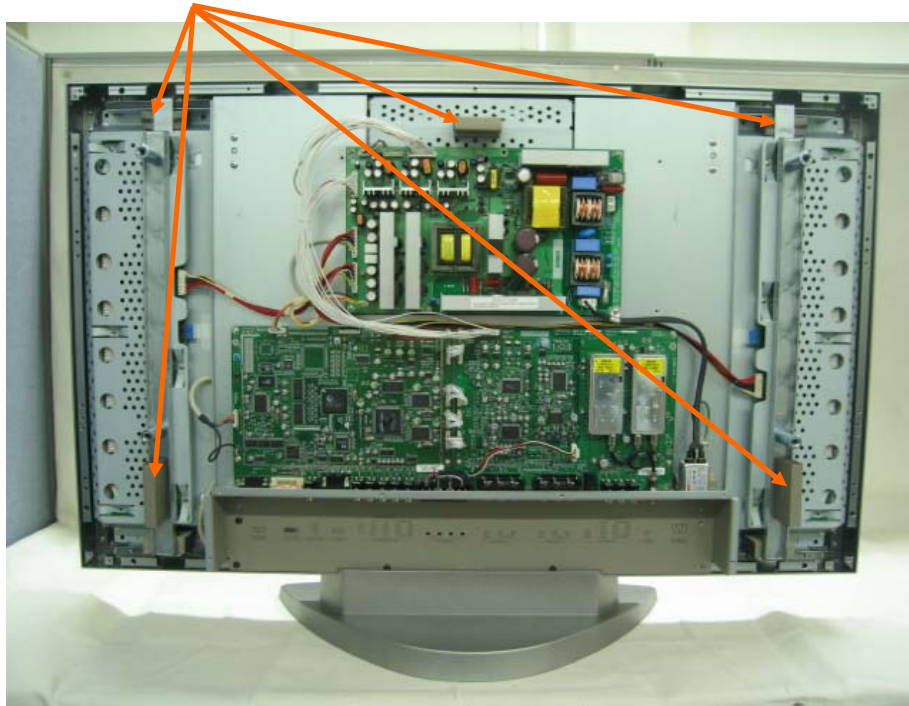
Power Consumption : **150Watts**

Weight (Net):**24Kg**

### EMI Suppression Devices:

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

**1. Attach a gasket on LCD panel back case**



**2. Apply a ferrite Core to the Speaker Cable and LVDS 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 (EUT)	HARSPER CO., LTD.	HL-3710B	O5XHL-370B	P.C
P.C	H.P	HP Pavilion 700	DoC	EUT
KEY BOARD	H.P	5181	DoC	P.C
MOUSE	Microsoft	IntelliMouse optical USB and PS/2 compatible	DoC	P.C
PRINTER	H/P	C4569A	DoC	P.C

Cable Termination	Component port 75Ω S-Video Port 75Ω Composite Video Port 75Ω Composite Audio Port 30 KΩ
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## 5.2 Cable Description

		Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
LCD TV Monitor (EUT)	Power	N	N/A	1.8(P)
	Video	N/A	Y	1.6(D)
	Audio	N/A	Y	1.6(D)
	RS-232C	N/A	Y	1.7(D)
	Component	N/A	Y	1.6(D)
	Speaker	N/A	Y	3.0(D)
	Dsub	N/A	Y	1.8(D)
	DVI	N/A	Y	1.8(D)
	S-video	N/A	Y	1.6(D)
	ANT	N/A	N	3.0(D)
PC		N	N/A	1.8(P)
KEY BOARD		N/A	N/A	1.8(D)
MOUSE		N/A	Y	1.8(D)
PRINTER		N	Y	1.8(P),1.8(D)

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
LCD TV MONITOR (EUT)	Video	N	N/A	Y	BOTH END
	Audio	N	N/A	Y	BOTH END
	RS-232C	N	N/A	Y	BOTH END
	Component	N	N/A	Y	BOTH END
	Speaker	Y	EUT END	N	N/A
	Dsub	Y	BOTH END	Y	BOTH END
	DVI	Y	BOTH END	Y	BOTH END
	S-video	N	N/A	Y	BOTH END
	ANT	N	N/A	Y	BOTH END
PC		N	N/A	N/A	N/A
KEYBOARD		N	N/A	Y	PC END
MOUSE		N	N/A	Y	PC END
PRINTER		Y	BOTH END	Y	BOTH END

## 6.1 CONDUCTED TEST DATA

EMC32

### Conducted Emission Report

#### Information

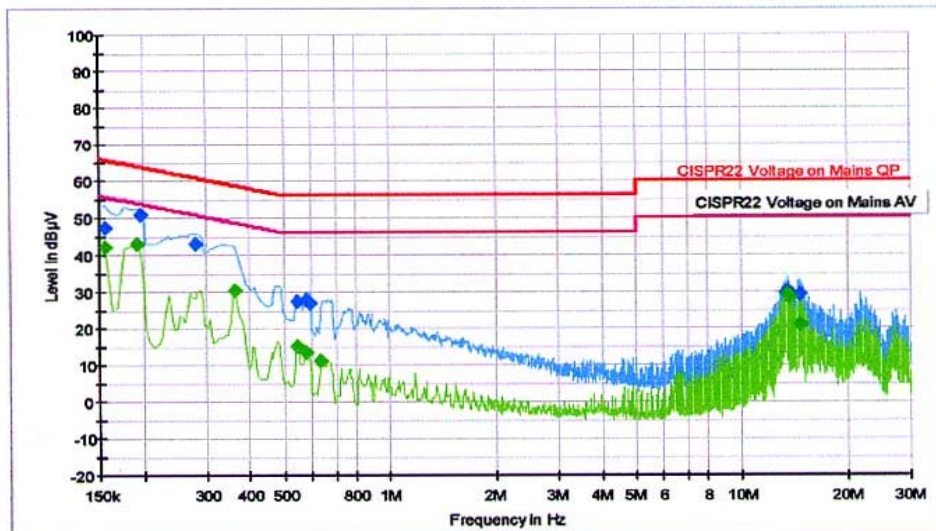
EUT Name: HL-3710B  
Serial Number:  
Test Description: CISPR22 CLASSB  
Operating Conditions: 1280 X1024 60Hz (A)  
Operator Name: BK,HAM  
Comment:

#### Scan Setup: Voltage with 2-Line-LISN fin [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN  
Level Unit: dB $\mu$ V

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
150kHz - 500kHz	QuasiPeak; Average	9kHz	0.1s	Receiver
500kHz - 5MHz	QuasiPeak; Average	9kHz	0.1s	Receiver
5MHz - 30MHz	QuasiPeak; Average	9kHz	0.1s	Receiver

#### CISPR22 CLASS B Neutral Line



Test

2

### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line
0.154500	48.0	100.000	9.000	GND	L1
0.195000	50.8	100.000	9.000	GND	L1
0.289500	43.2	100.000	9.000	GND	L1
0.545000	28.0	100.000	9.000	GND	L1
0.590000	28.2	100.000	9.000	GND	L1
0.666500	25.7	100.000	9.000	GND	L1
13.163000	30.0	100.000	9.000	GND	L1
13.352000	30.5	100.000	9.000	GND	L1
13.446500	30.7	100.000	9.000	GND	L1

(continuation of the "Final Measurement Detector 1" table from column 6 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154500	10.0	17.7	65.8	
0.195000	10.2	13.0	63.8	
0.289500	9.7	17.4	60.5	
0.545000	9.7	28.0	56.0	
0.590000	9.7	27.8	56.0	
0.666500	9.7	30.3	56.0	
13.163000	10.5	30.0	60.0	
13.352000	10.5	29.5	60.0	
13.446500	10.5	29.3	60.0	

### Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line
0.154500	42.8	100.000	9.000	GND	L1
0.190500	43.1	100.000	9.000	GND	L1
0.361500	29.6	100.000	9.000	GND	L1
0.545000	15.7	100.000	9.000	GND	L1
0.581000	13.1	100.000	9.000	GND	L1
0.635000	12.3	100.000	9.000	GND	L1
13.257500	28.9	100.000	9.000	GND	L1
13.352000	28.9	100.000	9.000	GND	L1
13.446500	28.8	100.000	9.000	GND	L1

(continuation of the "Final Measurement Detector 2" table from column 6 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154500	10.0	13.0	55.8	
0.190500	10.2	11.0	54.0	
0.361500	9.7	19.0	48.7	
0.545000	9.7	30.3	46.0	
0.581000	9.7	32.9	46.0	
0.635000	9.7	33.7	46.0	
13.257500	10.5	21.1	50.0	
13.352000	10.5	21.1	50.0	
13.446500	10.5	21.2	50.0	

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## Conducted Emission Report

### Information

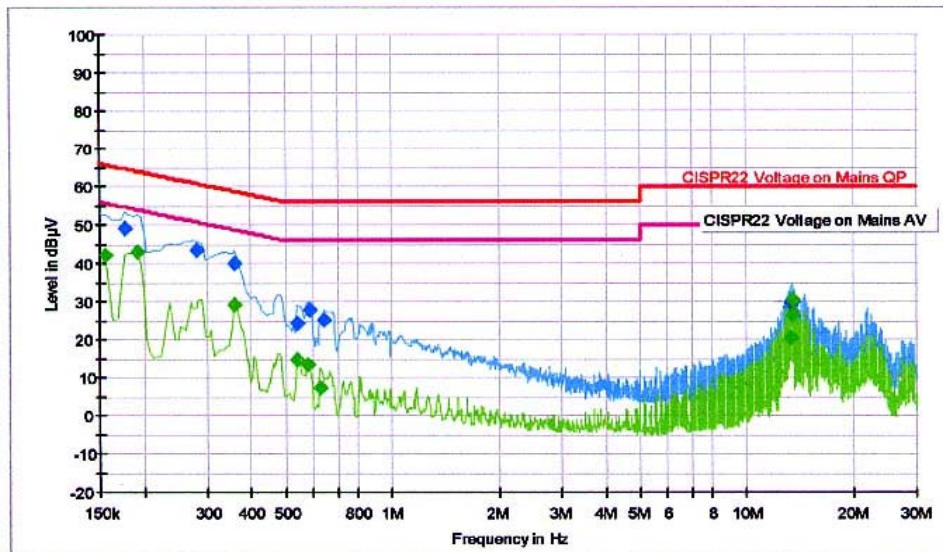
EUT Name: HL-3710B  
Serial Number:  
Test Description: CISPR22 CLASSB  
Operating Conditions: 1280 X 1024 60 Hz (A)  
Operator Name: BK,HAM  
Comment:

### Scan Setup: Voltage with 2-Line-LISN fin [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN  
Level Unit: dBμV

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
150kHz - 500kHz	QuasiPeak; Average	9kHz	0.1s	Receiver
500kHz - 5MHz	QuasiPeak; Average	9kHz	0.1s	Receiver
5MHz - 30MHz	QuasiPeak; Average	9kHz	0.1s	Receiver

### CISPR22 CLASS B Hot Line



EMC32

**Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line
0.177000	49.2	100.000	9.000	GND	L1
0.280500	43.4	100.000	9.000	GND	L1
0.357000	39.8	100.000	9.000	GND	L1
0.536000	24.4	100.000	9.000	GND	L1
0.585500	27.9	100.000	9.000	GND	L1
0.644000	25.2	100.000	9.000	GND	L1
13.248500	29.7	100.000	9.000	GND	L1
13.343000	29.6	100.000	9.000	GND	L1
13.437500	29.9	100.000	9.000	GND	L1

(continuation of the "Final Measurement Detector 1" table from column 6 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.177000	10.1	15.4	64.6	
0.280500	9.8	17.4	60.8	
0.357000	9.7	19.0	58.8	
0.536000	9.7	31.6	56.0	
0.585500	9.7	28.1	56.0	
0.644000	9.7	30.8	56.0	
13.248500	10.5	30.3	60.0	
13.343000	10.5	30.4	60.0	
13.437500	10.5	30.1	60.0	

**Final Measurement Detector 2**

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line
0.154500	42.0	100.000	9.000	GND	L1
0.190500	43.1	100.000	9.000	GND	L1
0.357000	29.2	100.000	9.000	GND	L1
0.540500	14.9	100.000	9.000	GND	L1
0.576500	13.4	100.000	9.000	GND	L1
0.626000	7.6	100.000	9.000	GND	L1
13.343000	20.3	100.000	9.000	GND	L1
13.437500	26.3	100.000	9.000	GND	L1
13.532000	30.4	100.000	9.000	GND	L1

(continuation of the "Final Measurement Detector 2" table from column 6 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154500	10.0	13.7	55.8	
0.190500	10.2	10.9	54.0	
0.357000	9.7	19.6	48.8	
0.540500	9.7	31.1	46.0	
0.576500	9.7	32.6	46.0	
0.626000	9.7	38.4	46.0	
13.343000	10.5	29.7	50.0	
13.437500	10.5	23.7	50.0	
13.532000	10.5	19.6	50.0	

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## Conducted Emission Report

### Information

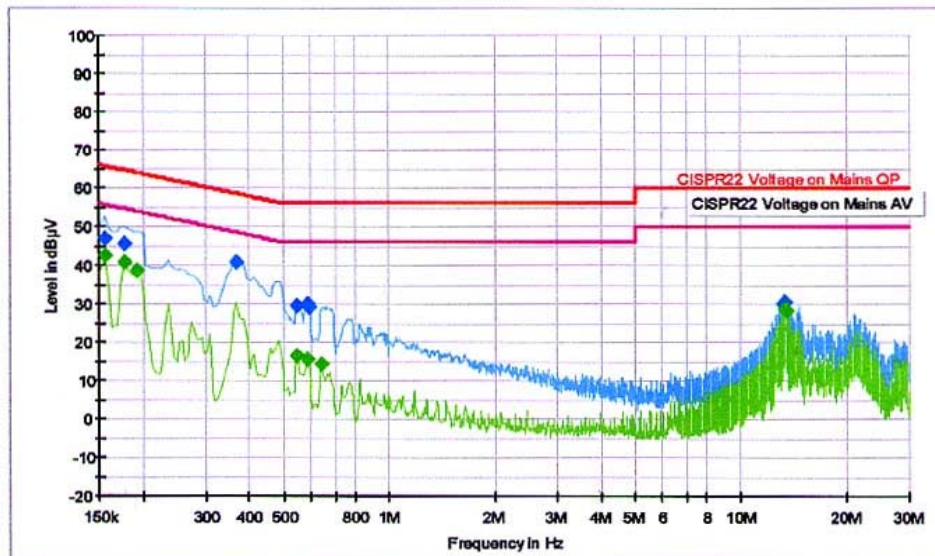
EUT Name: HL-3710B  
Serial Number:  
Test Description: CISPR22 CLASSB  
Operating Conditions: 1280 X 1024 60Hz (D)  
Operator Name: BK,HAM  
Comment:

### Scan Setup: Voltage with 2-Line-LISN fin [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN  
Level Unit: dBμV

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
150kHz - 500kHz	QuasiPeak; Average	9kHz	0.1s	Receiver
500kHz - 5MHz	QuasiPeak; Average	9kHz	0.1s	Receiver
5MHz - 30MHz	QuasiPeak; Average	9kHz	0.1s	Receiver

### CISPR22 CLASS B Neutral Line





## EMC32

### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line
0.154500	46.9	100.000	9.000	GND	N
0.177000	45.8	100.000	9.000	GND	N
0.366000	40.8	100.000	9.000	GND	N
0.545000	29.7	100.000	9.000	GND	N
0.581000	30.0	100.000	9.000	GND	N
0.590000	29.3	100.000	9.000	GND	N
13.163000	29.9	100.000	9.000	GND	N
13.257500	30.6	100.000	9.000	GND	N
13.352000	30.3	100.000	9.000	GND	N

(continuation of the "Final Measurement Detector 1" table from column 6 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154500	10.0	18.8	65.8	
0.177000	10.1	18.8	64.6	
0.366000	9.7	17.7	58.6	
0.545000	9.7	26.3	56.0	
0.581000	9.7	26.0	56.0	
0.590000	9.7	26.7	56.0	
13.163000	10.5	30.1	60.0	
13.257500	10.5	29.4	60.0	
13.352000	10.5	29.7	60.0	

### Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line
0.154500	42.4	100.000	9.000	GND	N
0.177000	40.7	100.000	9.000	GND	N
0.190500	38.6	100.000	9.000	GND	N
0.545000	16.6	100.000	9.000	GND	N
0.581000	15.6	100.000	9.000	GND	N
0.639500	14.2	100.000	9.000	GND	N
13.257500	28.6	100.000	9.000	GND	N
13.352000	28.6	100.000	9.000	GND	N
13.446500	28.4	100.000	9.000	GND	N

(continuation of the "Final Measurement Detector 2" table from column 6 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154500	10.0	13.3	55.8	
0.177000	10.1	13.9	54.6	
0.190500	10.2	15.4	54.0	
0.545000	9.7	29.4	46.0	
0.581000	9.7	30.4	46.0	
0.639500	9.7	31.8	46.0	
13.257500	10.5	21.4	50.0	
13.352000	10.5	21.4	50.0	
13.446500	10.5	21.6	50.0	



Test

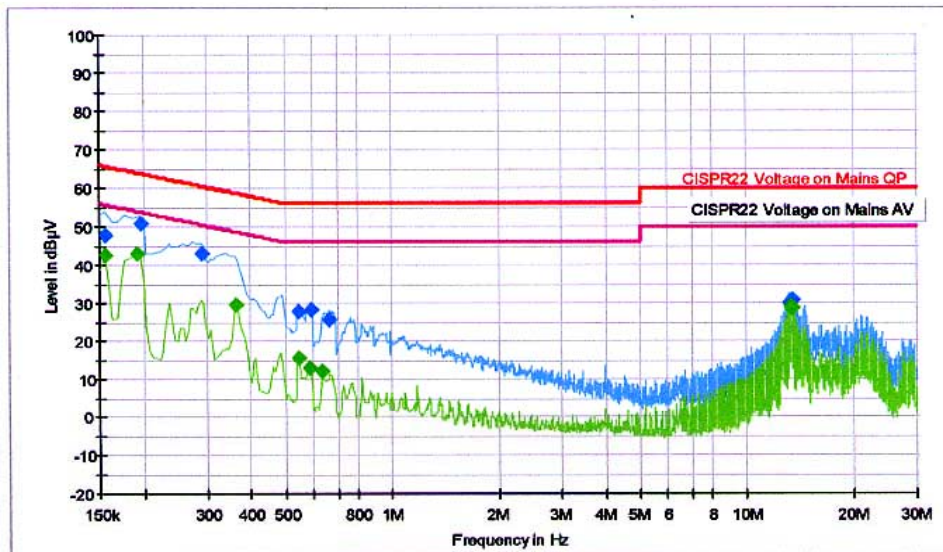
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## Conducted Emission Report

### Test Information

EUT Name: HL-3710B  
Serial Number:  
Test Description: CISPR22 CLASSB  
Operating Conditions: 1280 X 1024 60Hz (D)  
Operator Name: BK,HAM  
Comment:

### CISPR22 CLASS B Hot Line



2005-03-08

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## EMC32

**Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line
0.154500	47.3	100.000	9.000	GND	N
0.195000	50.7	100.000	9.000	GND	N
0.280500	43.2	100.000	9.000	GND	N
0.545000	27.3	100.000	9.000	GND	N
0.576500	27.7	100.000	9.000	GND	N
0.590000	27.1	100.000	9.000	GND	N
13.248500	29.6	100.000	9.000	GND	N
13.437500	29.8	100.000	9.000	GND	N
14.576000	28.9	100.000	9.000	GND	N

(continuation of the "Final Measurement Detector 1" table from column 6 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154500	10.0	18.4	65.8	
0.195000	10.2	13.2	63.8	
0.280500	9.8	17.6	60.8	
0.545000	9.7	28.7	56.0	
0.576500	9.7	28.3	56.0	
0.590000	9.7	28.9	56.0	
13.248500	10.5	30.4	60.0	
13.437500	10.5	30.2	60.0	
14.576000	10.5	31.1	60.0	

**Final Measurement Detector 2**

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line
0.154500	42.1	100.000	9.000	GND	N
0.190500	42.9	100.000	9.000	GND	N
0.361500	30.3	100.000	9.000	GND	N
0.545000	15.1	100.000	9.000	GND	N
0.576500	13.3	100.000	9.000	GND	N
0.635000	11.5	100.000	9.000	GND	N
13.446500	29.1	100.000	9.000	GND	N
13.635500	28.5	100.000	9.000	GND	N
14.576000	21.0	100.000	9.000	GND	N

(continuation of the "Final Measurement Detector 2" table from column 6 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154500	10.0	13.6	55.8	
0.190500	10.2	11.1	54.0	
0.361500	9.7	18.4	48.7	
0.545000	9.7	30.9	46.0	
0.576500	9.7	32.7	46.0	
0.635000	9.7	34.5	46.0	
13.446500	10.5	20.9	50.0	
13.635500	10.5	21.5	50.0	
14.576000	10.5	29.0	50.0	

**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/m	Cable Loss Db	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
43.8	8.8	11.9	1.4	V	22.1	30	7.9
120.8	7.7	11.5	2.4	V	21.6	30	8.4
201.4	10.8	9.6	3.2	H	23.6	30	6.4
251.8	15.8	11.3	3.6	V	30.7	37	6.3
281.9	15.4	12.4	3.8	V	31.6	37	5.4
322.2	14.8	13.4	4.1	V	32.3	37	4.7
402.2	13.0	15.1	4.6	H	32.7	37	4.3
433.0	10.4	16.3	4.8	H	31.5	37	5.5
563.9	9.3	18.5	5.4	V	33.2	37	3.8
725.0	5.9	21.3	6.2	V	33.4	37	3.6

### 1280 X 1024, 60Hz DSUB Mode

Frequency MHz	Reading dBuV	Ant. Factor dB/m	Cable Loss Db	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
42.7	9.1	11.8	1.4	V	22.3	30	7.7
120.8	7.6	11.5	2.4	V	21.5	30	8.5
201.4	10.7	9.6	3.2	H	23.5	30	6.5
251.1	15.2	11.3	3.6	V	30.1	37	6.9
281.9	14.5	12.4	3.8	H	30.7	37	6.3
322.2	15.0	13.4	4.1	H	32.5	37	4.5
402.7	12.6	15.1	4.6	H	32.3	37	4.7
563.8	7.8	18.5	5.4	V	31.7	37	5.3
724.9	4.0	21.3	6.2	V	31.5	37	5.5
805.4	4.8	22.4	6.4	V	33.6	37	3.4

### 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

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

$$\text{dB } \square = \text{dBm} + 107$$

### 8.2 Example 1:

**@ 195.00 KHz**

Class B limit	= 63.8 dB $\square$
Reading	= 50.8 dB $\square$ (calibrated level)

Margin	= 63.8 - 50.8 = - 13.1 dB $\square$
	= <b>13.0 dB below limit</b>

### 8.3 Example 2:

**@ 805.4 MHz**

Class B limit	= 37 dB $\square$ /m
Reading	= 4.8 dB $\square$ /m (calibrated level)
Antenna Factor + Cable Loss	= 28.8 dB
Total	= 33.6 dB $\square$ /m

Margin	= 33.6 - 37 = - 3.4 dB $\square$ /m
	= <b>3.4 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	ESI40	2005.11.16
EMI Test Receiver	Rohde & Schwarz	ESVS30	2005.07.15
EMI Test Receiver	Rohde & Schwarz	ESCI	2005.09.13
LISN	Rohde & Schwarz	ESH2-Z5	2005.07.28
LISN	EMCO	3825/2SH	2005.11.29
Tri-Log Antennas	Schwarzbeck	VULB9160	2005.04.06
Antenna Position Tower	HD	MA240	N/A
Turn Table	EMCO	1050	N/A
Reference Network Impedance	Voltech	IEC 555	N/A
AC Power Source	PACIFIC	Magnetic Module	N/A
AC Power Source	PACIFIC	360AMX	2005.11.25
Controller	HD GmbH	HD 100	N/A
SlideBar	HD GmbH	KMS 560	N/A



## 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: O5XHL-370B** complies with §15.107 and §15.109 of the FCC Rules.