

## FCC EVALUATION REPORT FOR CERTIFICATION

*KOREA Standard Technology*

*Test report No.: KST-FCC0428*

**Applicant's Name :** LPS Device Co.,Ltd.

**Applicant's Address :** Rm 606 6F, Joongang Induspia2 Apt. Factory 144-5,  
Sangdaewon-dong, Sungnam-si, Kyunggi-Do , KOREA

**Manufacturer's Name :** LPS Device Co.,Ltd.

**Manufacturer's Address :** Rm 606 6F, Joongang Induspia2 Apt. Factory 144-5,  
Sangdaewon-dong, Sungnam-si, Kyunggi-Do , KOREA

**EUT's:**

**FCC ID** : QY6L170ND

**Product Name** : LCD Monitor

**Model Number(s)** : L170ND

**Product Options** : N/A

**Category** : FCC Part 15 subpart B

Class B Computing Digital Device

### Supplementary Information

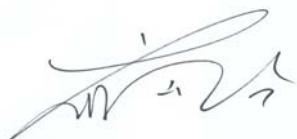
The device bearing the brand name and FCC ID specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with measurement procedures specified in ANSI C63.4-2000.

I attest to the accuracy of data and all measurements reported herein were performed by 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.

**Test Date : Oct 01, 2004.**

**Issued Date : Oct 04 , 2004**

**Tested by:**



Choi, Jae-Rak

**Approved by:**



Lee, Weon-Woo

# EMI TEST REPORT

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## 1. Description of Device

1) Kind of equipment: LCD Monitor

2) FCC ID: QY6L170ND

3) Model Name: L170ND

4) Serial No.: None

5) Type of Sample Tested: Pre-production

6) High Frequency Used: 24.576 MHz

7) Adapter  
Model name: LSE9901B1250  
Manufacturer: LI SHIN INTERNATIONAL  
ENTERPRISE CORP.  
Serial no: A20413027571  
1phase AC100-240V, 50/60Hz, 1.5A  
Output: DC 12V, 4.16A

8) Power Rating:  
1phase AC120V, 60Hz

9) Tested Power supply:  
1phase AC120V, 60Hz

10) Date of : October , 2004

11) Manufacture: LPS DEVICE CO.,LTD.

12) Description of Operating:  
Scroll All "H" Character  
Resolution 1024\*768 , Vertical Frequency: 75Hz

13) Dates of Test: October 1, 2004

14) Place of Tests: Korea Standard Technology EMC site

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## 2. Test Facility

The open field test site and conducted measurement facility are used for these testing, where are located following address and drawing. This site was fully described in a report dated November 14, 2002, that was submitted to the FCC.

Korea Standard Technology ( KOSTEC Co., Ltd)

Head office:

4F, 1503-2, Kwanyang-dong, Dongan-gu, Anyang-shi, Kyunggi-do, Korea  
Telephone No : 82-31-388-2051

Facsimile No: 82-31-388-2052

Test Lab

:180-254, Annyung-Ri, Taean-Yup, Hwasung-shi, Kyunggi-do, Korea  
Telephone No : 82-31-222-4251  
Facsimile No: 82-31-222-4252

**MIC**(Ministry of Information and Communication) No: **KR0042**

**FCC** Filing No. : **525762**

**VCCI** Membership Number : **2005**

**VCCI** Registration Number : **R-1657 / C-1763**

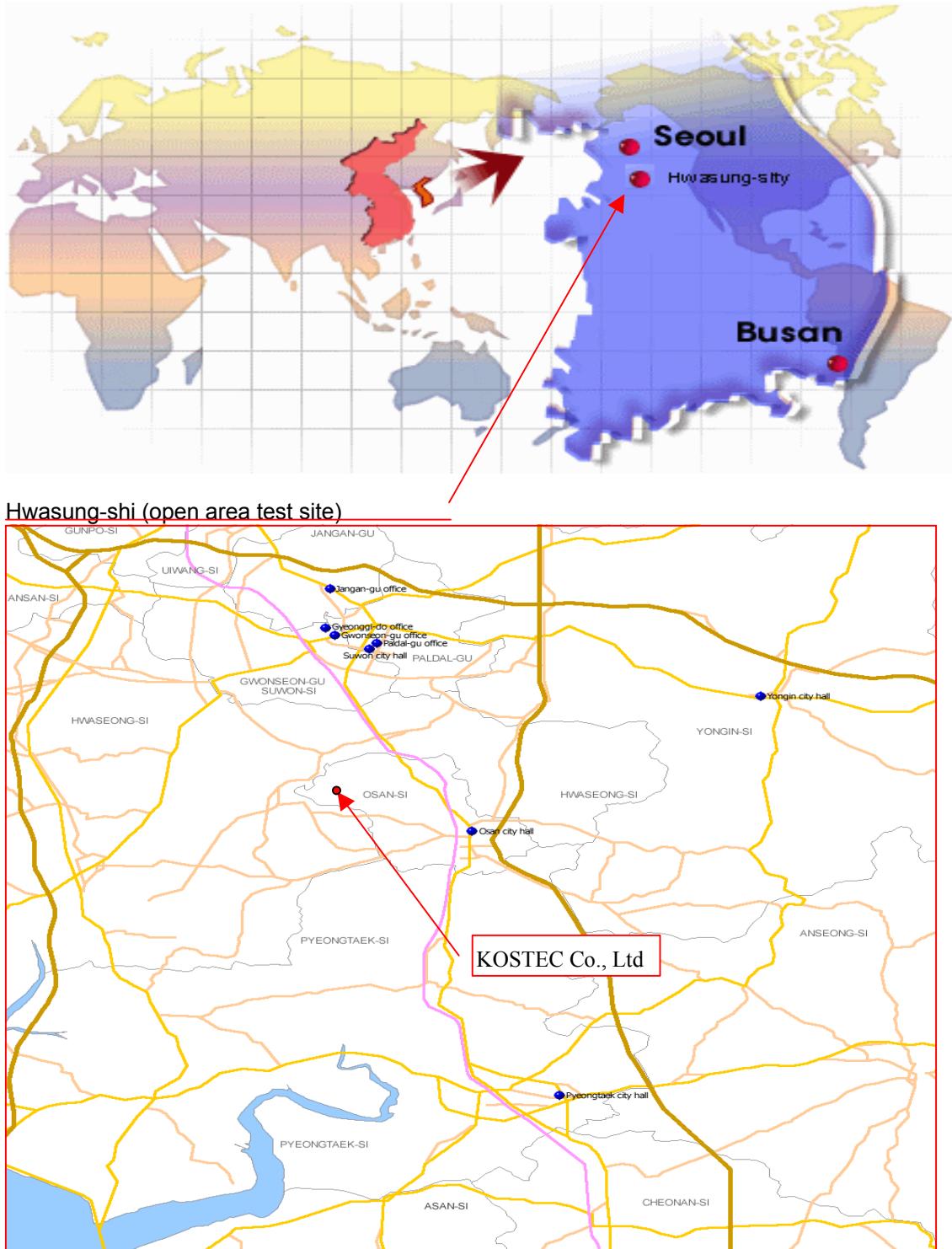
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## 3. MAP

Korea



## 4. Test System Configuration

### Operation Environment

	<u>Temperature</u> ( ° C )	<u>Humidity</u> ( % )	<u>Pressure</u> ( hPa )
Ambient			
10m Open Area site	24.9	49	998
Shielded room:	24	42	997

### Test site

These testing were performed following locations ;

Shielded room : Conducted Emission,

10m Open Area Site: Radiated Emission

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.

The factors contributing to uncertainties are test receiver, Cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, site imperfection, mismatch, and system repeatability.

Based on NIS 80.81, The measurement uncertainty level with a 95% confidence level were applied.

### sample calculation

#### Conducted emission

The field strength is calculated by adding the LISN factor, cable loss from the measured reading.

The sample calculation is as follows:

$$FS = MR + LF + CL$$

MR = Meter Reading

LF = LISN Factor

CL = Cable Loss

If MR is 30dB, LISN Factor 1dB, CL 1dB

The result (MR) is

$$30 + 1 + 1 = 32\text{dBuV}$$

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## 5. Description of E.U.T.

### Product Description

Manufactured By:	LPS Device Co.,Ltd.
Address:	Rm 606 6F, Joongang Induspia2 Apt. Factory 144-5, Sangdaewon-dong, Sungnam-si, Kyunggi-Do , KOREA
Model:	L170ND
Serial Number:	None

### Configuration of EUT

Description	Manufacturer	Model / Part #	Serial Number
LCD Panel	SAMSUNG	LTM179EU-L11	6E4D603166
Main Board	LPS Device Co.,Ltd.	-	-
Inverter	FRONTEK Co.Ltd	DI1924NN	20040329-0022
OSD Board	LPS Device Co.,Ltd.	-	-

### EUT Used cables

Cable Type	Shield	Length (m)	Ferrite	Connector	Connection Point 1	Connection Point 2
POWER	Y	1.5	Y	DC INLET	Ac/dc adapter	Main power source
VGA In	Y	1.5	Y	D-sub	EUT	Personal computer
DVI	Y	1.8	Y	D-sub	EUT	-
Audio Out	Y	2.0	-	Jack	EUT	Headset
Audio In	Y	1.5	-	Jack	EUT	Personal computer

### Operating conditions

The operating mode/system were as follows in details:

Operating: After Connected from personal computer to E.U.T by RGB cable(D-sub 15 pin). And Connected from Headset to E.U.T by Audio Out port. And Connected from personal computer to E.U.T by Audio In port. And then use to "H" pattern program for data transmission and continuously 'H' pattern displayed on the LCD Monitor.

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## 7. TEST RESULTS

### 7.1 Conducted emission

#### Measurement procedure

##### Mains

The measurements were performed in a shielded room. EUT was placed on a non-metallic table height of 0.4m above the reference ground plane. They were folded back and forth forming a bundle 30cm to 40Cm long and were hanged at a 40cm height to the ground plane.

Each EUT power lead, except ground (safety) lead, were individually connected through a LISN to input power source.

Both lines of power cord, hot and neutral, were measured.

#### Used equipment

Equipment	Model no.	Serial no.	Makers	Next cal date	Used
Test receiver	ESPI3	100109	R&S	2005.3.15	●
L.I.S.N.	ESH2-Z5	100044	R&S	2005.4.23	●
	ESH2-Z5	100147	R&S	2005.4.23	●

#### Measurement uncertainty

Conducted Emission measurement :  $\pm 2.4$  (K=2)

#### Test data

FREQ. (MHz)	LEVEL(dB $\mu$ V)		LINE Pol	Loss (dB)	LIMIT(dB $\mu$ V)		MARGIN(dB $\mu$ V)	
	QP	AV			QP	AV	QP	AV
0.190	45.86	36.36	N	0.29	64.04	54.04	18.47	17.97
0.254	39.43	34.79	L	0.29	61.63	51.63	22.49	17.13
0.374	28.94	24.95	L	0.29	58.41	48.41	29.76	23.75
0.570	38.00	36.32	L	0.90	56.00	46.00	18.90	10.58
0.946	34.87	32.93	L	0.43	56.00	46.00	21.56	13.50
7.286	32.50	15.63	N	1.20	60.00	50.00	28.70	35.57
11.610	35.19	21.22	N	1.43	60.00	50.00	26.24	30.21
29.726	36.00	29.40	N	2.27	60.00	50.00	26.27	22.87

\* Level = test receiver reading value

\* Loss = LISN insertion Loss + Cable Loss

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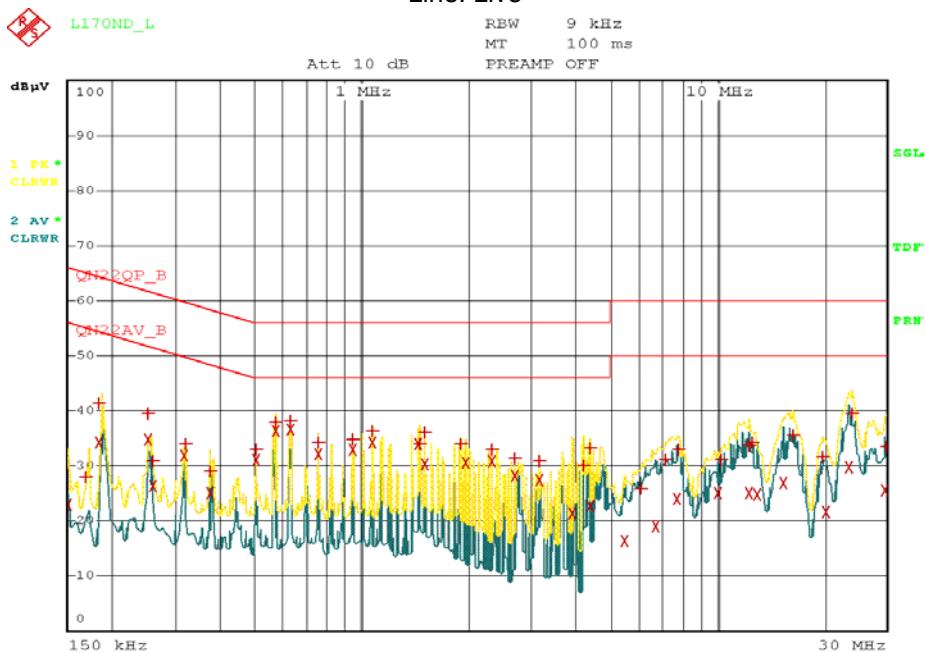
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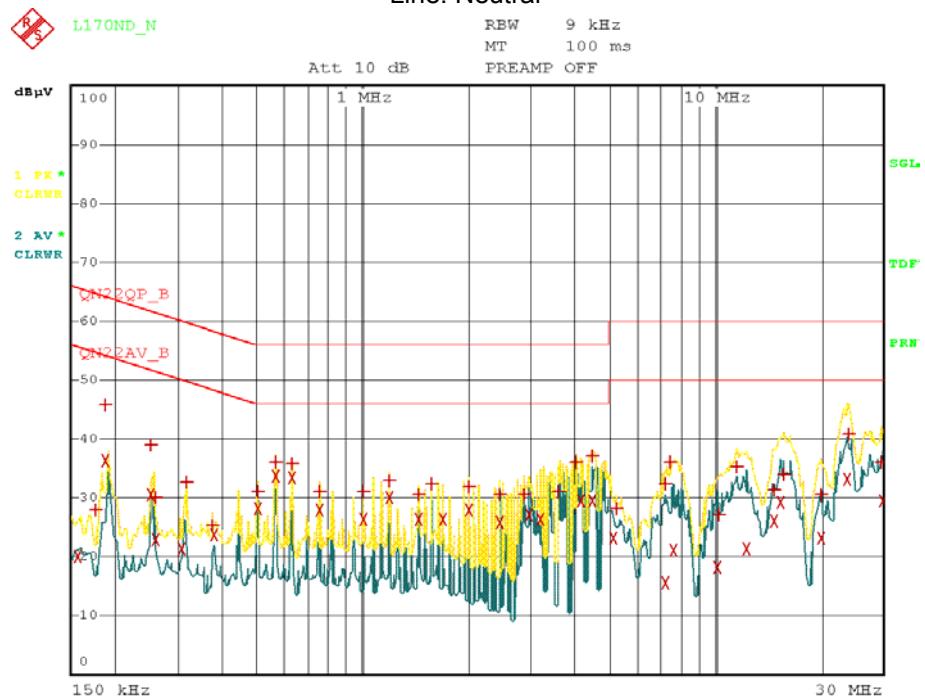
## Conducted emission test graph

### Line. Live



Date: 1.OCT.2004 14:44:12

### Line. Neutral



Date: 1.OCT.2004 14:46:55

KOSTEC Co.,Ltd.

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## 7.2 Radiated Emission

### Measurement procedure

A pretest was performed at 3m distances in a semi-anechoic chamber for searching correct frequency. The final test was done at a 10m open area test site with a quasi-peak detector. EUT was placed on a non-metallic table height of 0.8m above the reference ground plane. Cables connected to EUT were fixed to cause maximum emission. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

### Used equipment

Equipment	Model no.	Serial no.	Makers	Next cal date
Test receiver	ESCS30	100111	R&S	2005.3.17
Ultra broadband antenna	HL562	100075	R&S	2005.3.16
Matching network	RAM	358.5414.02	R&S	-
Antenna Mast	AT14	none	Daeil EMC	-
Turn Table	TT15	none	Daeil EMC	-
10m Open area site	none	none	KOSTEC Lab	-
chamber(3m)	none	none	FRANCONIA	-

### Measurement uncertainty

Radiated Emission measurement :

30-300MHz +3.96dB / -4.04dB  
300-1000MHz +3.04dB / -3.00dB

### Test data

Freq (MHz)	Reading (dBuV/m)	P (H/V)	H (m)	A (.)	Antenna (dB)	Cable Loss (dB)	Result (dBuV/m)	Limit (dB)	Margin (dB)
49.15	19.10	V	1.60	150	8.27	2.70	24.80	40.0	15.20
73.73	13.83	H	1.70	180	7.23	3.04	24.10	40.0	15.90
147.46	13.93	H	1.70	170	7.60	4.17	25.70	43.5	17.80
196.61	18.24	H	3.50	280	7.22	4.94	30.40	43.5	13.10
214.39	7.60	V	1.80	160	7.84	4.96	20.40	43.5	23.10
344.07	11.98	H	3.40	180	12.24	6.98	31.20	46.0	14.80
434.44	8.84	H	2.60	150	14.22	7.74	30.80	46.0	15.20
565.26	14.13	H	2.20	160	16.50	9.17	39.80	46.0	6.20

Reading = Test receiver reading / P= antenna Polarization / H=antenna H

A=turn table Angle / Antenna = antenna factor / Cable loss = used cable loss

Result = reading + antenna + loss / Margin = Limit - result

\* Receiving Antenna Mode: Horizontal, Vertical / \* Test site: 3m Open area site

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