EMI TEST REPORT

FCC EVALUATION REPORT FOR CERIFICATION

KOREA Standard Technology

Test report No.: KST-FCC0548

Applicant's Name	**:**	**ALL IN ONE DISPLAY. INC.**
Applicant's Address	**:**	**3F, B-dong,. Micro office B/D 554-2, GaSan-Dong, GumChun-Ku, Seoul, Korea**
Manufacturer's Name	**:**	**ALL IN ONE DISPLAY. INC.**
Manufacturer's Address	**:**	**3F, B-dong,. Micro office B/D 554-2, GaSan-Dong, GumChun-Ku, Seoul, Korea**

EUT's:

FCC ID	**:**	**RF6172N**
Product Name	**:**	**LCD MONITOR**
Model Number(s)	**:**	**172N**
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 C63.4-2003.

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 : November 1, 2005	**Issued Date : November 4, 2005**
Tested by: 	**Approved by:** 
Jeong Seok Jin	**Lee, Weon-Woo**

Contents

1. Description of Device

1) Kind of equipment:	LCD MONITOR
2) FCC ID:	RF6172N
3) Model Name:	172N
4) Serial No.:	172N051031049
5) Type of Sample Tested:	Pre-production
6) High Frequency Used:	24.576MHz, 24.000MHz
7) Adapter	Model name : HDAD40W 101 Manufacturer : WUXI HARD ELECTRONICS CO., LTD Serial no : 050925
9) Power :	INPUT: 100-240 V, 50/60 Hz, 1.5 A OUTPUT: 12.0 V, 3.33 A
9) Tested Power supply:	1phase AC120 V, 60 Hz
12) Date of Manufacture:	October , 2005
13) Manufacture:	ALL IN ONE DISPLAY. INC.
14) Description of Operating:	Scroll All “H” Character Resolution 1024*768 Vertical Frequency: 75Hz
15) Dates of Test:	November 1, 2005
16) Place of Tests:	Korea Standard Technology EMC site
17) Test Report No:	KST-FCC0548

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 & Test Lab ;

:180-254, Annyung-Ri, Taean-Yup, Hwasung-shi, Kyunggi-do, Korea

Telephone Number : 82-31-222-4251
Facsimile Number: 82-31-222-4252

MIC(Ministry of Information and Communication) Number: **KR0041**

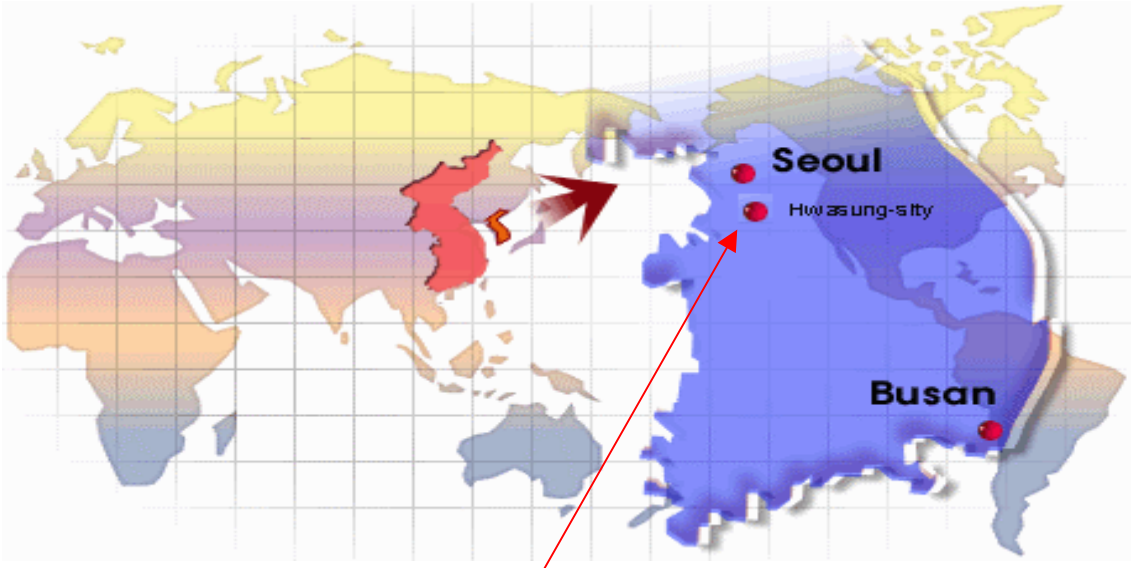
FCC Filing Number. : **525762**

VCCI Membership Number : **2005**

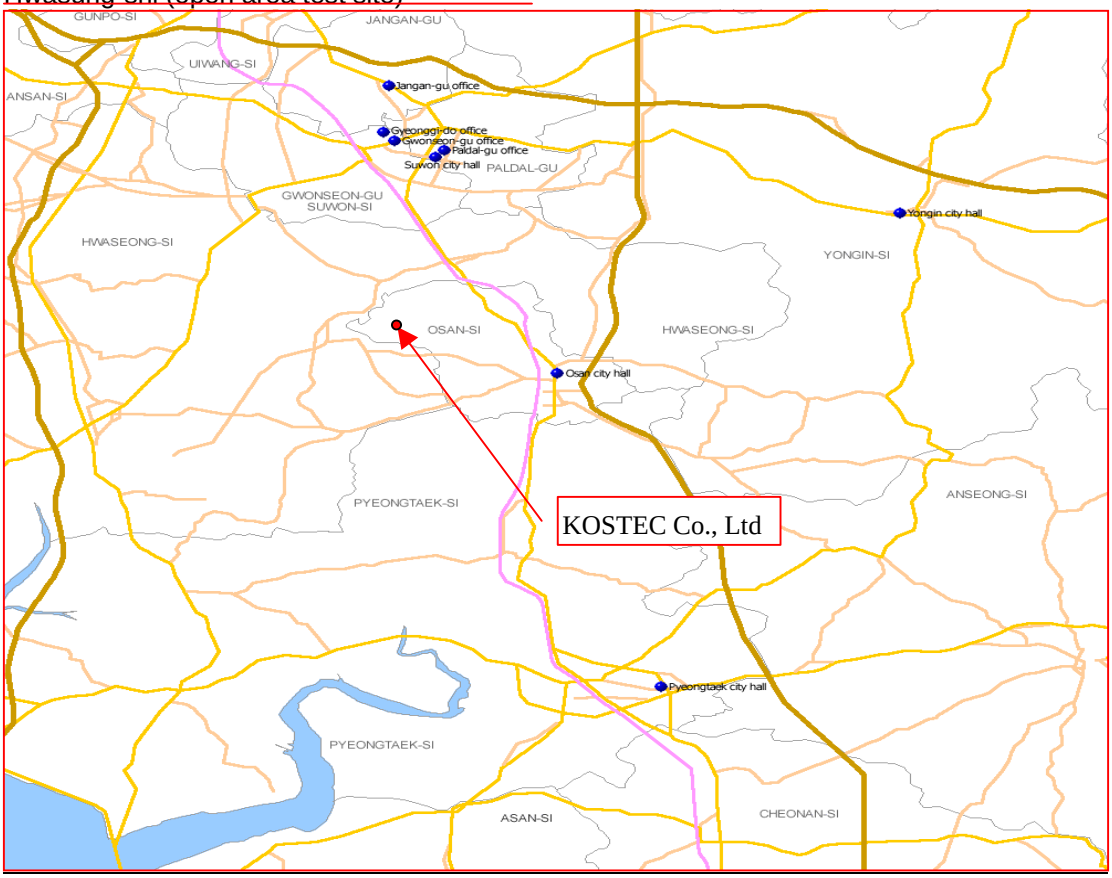
VCCI Registration Number : **R-1657 / C-1763**

3. Route Map of Measurement Facility

Korea



Hwasung-shi (open area test site)



4. Test System Configuration

Operation Environment

Ambient	Temperature (℃)	Humidity (%)	Pressure (hPa)
10 m Open Area site	19	43	1017
Shielded room:	19	44	1017

Test site
These testing were performed following locations ;

Shielded room : Conducted Emission,

10 m 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 30 dB, LISN Factor 1 dB, CL 1 dB
The result (MR) is
30 + 1 + 1 = 32 dBuV

5. Description of E.U.T.

Product Description

Manufactured By:	ALL IN ONE DISPLAY.INC.
Address:	3F, B-dong,. Micro office B/D 554-2, GaSan-Dong, GumChun-Ku, Seoul, Korea
Model:	172N
Serial Number:	172N051031049

Configuration of EUT

Description	Manufacturer	Model/Part #	Serial Number
LCD Panel	SamSung	LTM170EX-L21	6Z5JC1406H
AD Board	ALL IN ONE DISPLAY.INC.	NST_RTD1.0	170D5JC00922
Inverter Board	FRONTEK CO., LTD	P1742E39	FA051007CB
OSD Board	ALL IN ONE DISPLAY.INC.	CCNF A01_KEY5	None

EUT Used cables

Cable Type	Shield	Length (m)	Ferrite	Connector	Connection Point 1	Connection Point 2
POWER	Yes	1.2	-	DC INLET	Ac/dc adapter	Main power source
VGA In	Yes	1.5	Y	D-sub	EUT	PC
DVI	Yes	1.5	Y	D-sub	EUT	-
Audio(IN)	Yes	1.5	-	Jack	EUT	PC
PS/2	Yes	1.2	-	Din	PC	Keyboard
PS/2	Yes	1.5	-	Din	PC	Mouse
Parallel	Yes	1.5	Y	D-sub	PC	Printer

Operating conditions

The operating mode/system were as follows in details:

Operating: . After Connected from personal computer to E.U.T by RGB(D-sub 15 pin) & Jack cable. And then use to “H” pattern program for data transmission and continuously ‘H’ pattern displayed on the LCD Monitor.

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 0.4 m above the reference ground plane. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm 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	2006.3.15	●
L.I.S.N.	ESH2-Z5	100044	R&S	2006.4.23	●
	ESH3-Z5	100147	R&S	2006.8.12	●

Measurement uncertainty

Conducted Emission measurement : ± 2.4 (K=2)

Test data

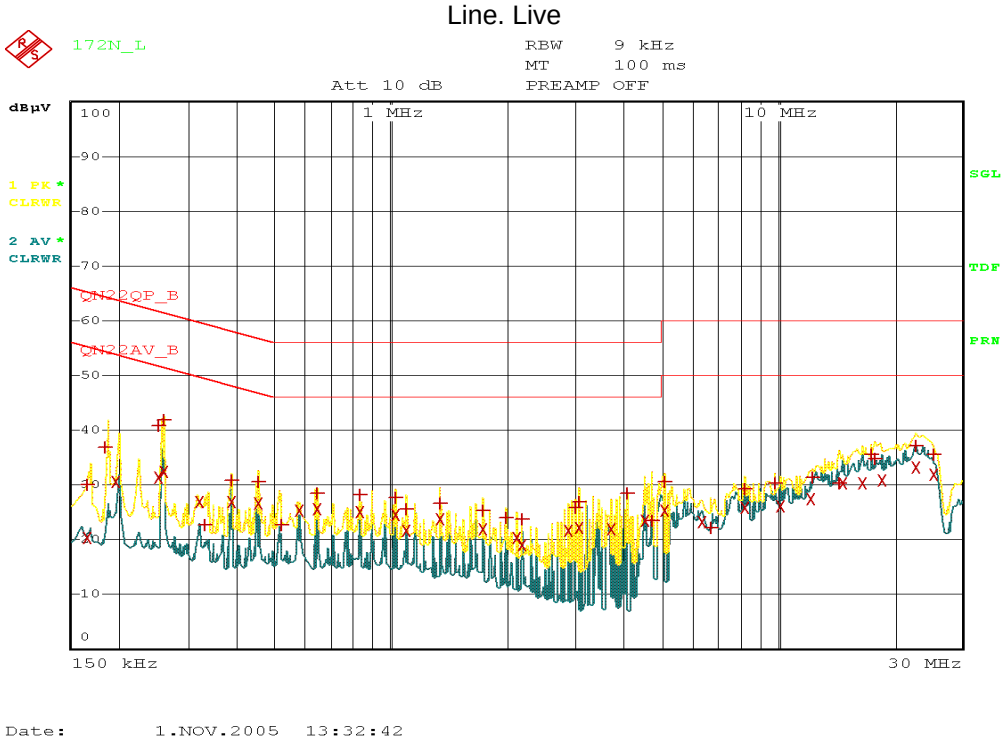
< Class B >

FREQ.	LEVEL(dBμV)		LINE	Loss	LIMIT(dBμV)		MARGIN(dB)	
(MHz)	QP	AV	Pol	(dB)	QP	AV	QP	AV
0.190	46.39	36.70	N	0.29	64.04	54.04	17.94	17.63
0.258	41.88	32.42	L	0.29	61.50	51.50	19.91	19.37
0.642	28.53	25.59	L	0.90	56.00	46.00	28.37	21.31
4.358	30.51	21.36	N	0.68	56.00	46.00	26.17	25.32
17.442	35.68	30.22	L	1.77	60.00	50.00	26.09	21.55
22.826	37.11	33.24	L	1.94	60.00	50.00	24.83	18.70
25.198	35.57	32.01	L	2.32	60.00	50.00	26.75	20.31

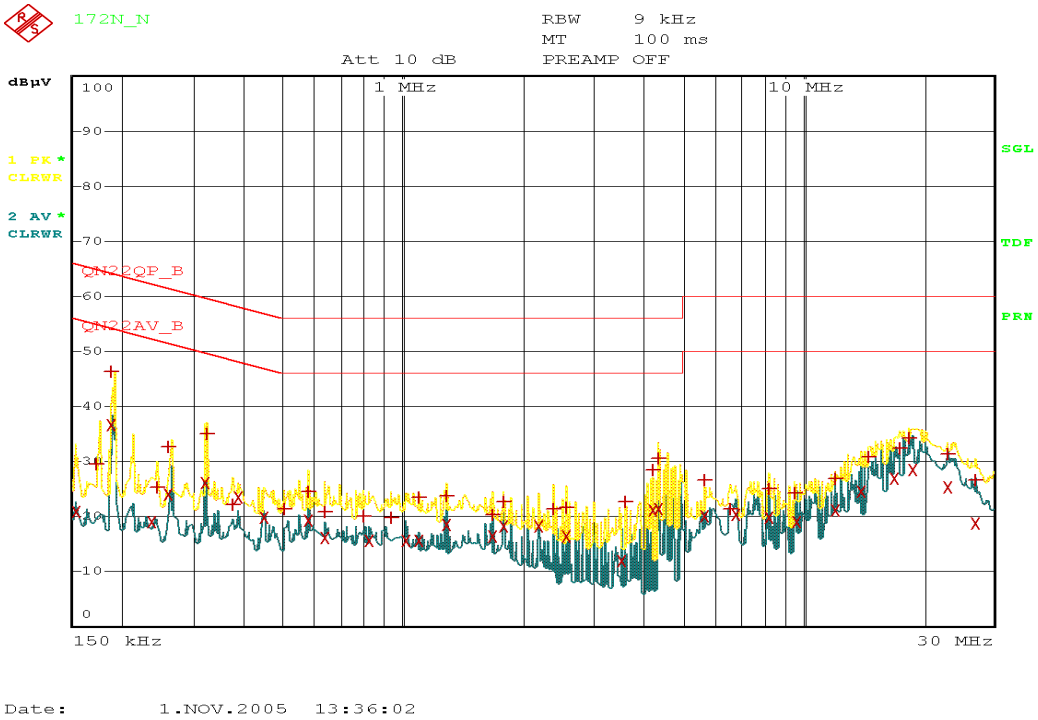
* Level = test receiver reading value
* Loss = LISN insertion Loss + Cable Loss

Conducted emission test graph

Line. Live



Line. Neutral



7.2 Radiated Emission

Measurement procedure

A pretest was performed at 3 m distances in a semi-anechoic chamber for searching correct frequency.
The final test was done at a 10 m open area test site with a quasi-peak detector.
EUT was placed on a non-metallic table height of 0.8 m 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	2006.3.17
Ultra broadband antenna	HL562	100075	R&S	2006.3.16
Matching network	RAM	358.5414.02	R&S	-
Antenna Mast	AT14	none	Daeil EMC	-
Turn Table	TT15	none	Daeil EMC	-
10 m Open area site	none	none	KOSTEC Lab	-
chamber(3 m)	none	none	FRANCONIA	-

Measurement uncertainty

Radiated Emission measurement :

30-300 MHz +3.96 dB / -4.04 dB

300-1000 MHz +3.04 dB / -3.00 dB

Test data

< Class B >

Freq (MHz)	Reading (dBuV/m)	P (H/V)	H (m)	A (.)	Antenna (dB)	Cable Loss (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
81.00	15.95	V	1.50	240	8.25	3.40	27.60	40.0	12.40
168.00	25.36	V	1.50	320	7.40	4.34	37.10	43.5	6.40
194.91	15.84	H	3.00	270	7.20	4.86	27.90	43.5	15.60
216.00	18.80	V	1.50	240	7.96	4.94	31.70	46.0	14.30
305.99	10.40	V	2.00	90	11.15	6.55	28.10	46.0	17.90
458.98	7.08	V	2.30	240	14.76	7.86	29.70	46.0	16.30
509.98	11.55	H	1.80	90	15.68	7.87	35.10	46.0	10.90
560.98	16.25	H	1.80	90	16.40	9.15	41.80	46.0	4.20

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