ELECTROMAGNETIC EMISSION COMPLIANCE REPORT
FOR FCC CLASS B CERTIFICATION

Test report file number	**: E023R-001**
Applicant	**: ATEC SYSTEM CO., LTD.**
Address	**: #1451-78, Seocho-Dong, Seocho-Gu, Seoul, 137-867, Korea**
Manufacturer	**: ATEC SYSTEM CO., LTD.**
Address	**: #1451-78, Seocho-Dong, Seocho-Gu, Seoul, 137-867, Korea**
Type of Equipment	**: LCD MONITOR (Class B Computing Device Peripheral)**
FCC ID	**: PDLAL150**
Model / Type No.	**: AL150**
Multiple Model/ Type No.	**: N/A**
Serial number	**: N/A**
Total page of Report	**: 13 pages (including this page)**
Date of Incoming	**: November 28, 2001**
Date of Issuing	**: March 04, 2002**

SUMMARY

The equipment complies with the requirements of **FCC CFR 47 PART 15 SUBPART B, Class B**.

This test report contains only the results of a single test of the sample supplied for the examination.

It is not a general valid assessment of the features of the respective products of the mass-production.

Prepared by:

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1. VERIFICATION OF COMPLIANCE

-. APPLICANT : ATEC SYSTEM CO., LTD.

-. ADDRESS : #1451-78, Seocho-Dong, Seocho-Gu, Seoul, 137-867, Korea

-. CONTACT PERSON : Mr. Jeong-Hee, Oh / Engineer

-. TELEPHONE NO : +82-2-2190-5155

-. FCC ID : PDLAL150

-. MODEL NO/NAME : AL150

-. SERIAL NUMBER : N/A

-. DATE : March 04, 2002

DEVICE TYPE	Class B Computing Device Peripheral - Unintentional Radiator
E.U.T. DESCRIPTION	LCD MONITOR
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15, SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The ATEC SYSTEM CO., LTD., Model AL150 (referred to as the EUT in this report) is a 15.0" LCD MONITOR that is connected a personal computer. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	14.318 MHz, 12 MHz on Main B'D, 6 MHz on USB B'D
POWER REQUIREMENT	DC12V, 3.3A from AC/DC adapter
MAX RESOLUTION	XGA 1024 x 768 @ 75Hz
NUMBER OF LAYERS	4 Layers (MIB B'd), 2 Layers (Inverter B'D, USB B'd, OSD B'd)
EXTERNAL CONNECTOR	VGA INPUT (15pin D-SUB), Audio In/Out, DC IN, USB Up, USB Down x 4EA

Model Differences:

The difference(s) compared to the EUT is as follows: none

2.2 Related Submittal(s) / Grant(s)

Original submittal only

2.3 Test System Details

The model numbers for all the equipments that were used in the tested system is:

Model	Manufacturer	FCC ID.	Description	Connected to
AL150	ATEC SYSTEM CO., LTD.	PDLAL150	LCD MONITOR(EUT)	PC
FSP040-1AD101	Shenzhen Hulll Electronic Co., Ltd.	N/A	AC/DC Adapter	EUT
3500U	BTC	DoC	KEYBOARD (USB)	EUT
InterLock	VIPSECURE, LTD.	DoC	Security Key (USB)	EUT
PCA-3100	Prochips	MY8PCA3100	USB Camera	EUT
SMU100A	Diography Inc.	DoC	Smart Card Reader (USB)	EUT
SMS-015N	Sungil Precision Co., Ltd.	N/A	SPEAKER	EUT
DeskPro EXM	Compaq	DoC	PC	-
M-S34	Logitech	DoC	MOUSE	PC
BTC-5360	BTC	DoC	KEYBOARD (PS/2)	PC
2225C	HP	DSI6XU2225	PRINTER	PC
020-0470	CARDINAL	GDE0196	MODEM	PC

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2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on January 18, 2002. (Registration Number: 92819)

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3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MID Board	ATEC SYSTEM CO., LTD.	MID150 LCD MNT REV. 1.0	N/A
USB Board	ATEC SYSTEM CO., LTD.	AL181 USB REV 1.0	N/A
LCD Connect Board	ATEC SYSTEM CO., LTD.	LCD Connect Board VER1.0	N/A
OSD Board	ATEC SYSTEM CO., LTD.	MIBKEY VER:1.0	N/A
Inverter Board	DS-Plus Inc.	DS-1005NA V3.0	N/A
LCD Panel	LG. PHILIPS LCD	LM150x05	N/A

3.2 EUT exercise Software

The windows program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. This program was included into HOST. Once loaded, this program sequentially exercises each system component in turn. The sequence used is: (1) series of H characters are printed on the monitor until the screen is completely full, (2) copy series of H characters to mass storage device (if one is used), (3) print series of H characters to printer. The complete cycle is repeated continuously.
The investigated resolution mode of the EUT was at 1024 x 768 at 75Hz.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
LCD MONITOR (EUT)	N	Y	1.5(P), 1.5(D)
AC/DC ADAPTER	N	N	1.5(P), 1.2(D)
KEYBOARD (USB)	N/A	Y	1.2(D)
Security Key (USB)	N/A	Y	1.2 (D)
USB Camera	N/A	Y	1.2(D)
Smart Card Reader (USB)	N/A	Y	1.2(D)
SPEAKER	N/A	N	1.2(D)
PC	N	-	1.5(P)
MOUSE	N/A	Y	1.2(D)
KEYBOARD (PS/2)	N/A	Y	1.2(D)
PRINTER	N	Y	1.5(P), 1.5(D)
MODEM	N	Y	1.5(P), 1.5(D)

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* The marked “(P)” means the Power Cable and “D” means the I/O Cable.

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3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
LCD MONITOR (EUT)	Y	BOTH END	Y	BOTH END
AC/DC ADAPTER	Y	EUT END	Y	EUT END
KEYBOARD (USB)	N	N/A	Y	EUT END
Security Key (USB)	N	N/A	Y	BOTH END
USB Camera	N	N/A	Y	EUT END
Smart Card Reader (USB)	N	N/A	Y	EUT END
SPEAKER	N	N/A	Y	BOTH END
PC	-	-	-	-
MOUSE	N	N/A	Y	PC END
KEYBOARD (PS/2)	N	N/A	Y	PC END
MODEM	N	N/A	Y	BOTH END
PRINTER	N	N/A	Y	BOTH END

3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by ONETECH Corp. during compliance testing:

"There was no Modified items during EMI test"

3.6 Configuration of Test System

Line Conducted Test : The EUT was connected to AC/DC adapter and the adapter was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary radiated emission test was conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.

The EUT has same 4 USB ports, so the 4 USB Ports were connected to the EUT to determine the effect these cables or wires have on emissions from the EUT in preliminary testing, but these additional cables does not significantly affect the emission level from EUT.

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4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Resolution: 640x480	
Resolution: 800x600	
Resolution: 1024x768	X

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Resolution: 640x480	
Resolution: 800x600	
Resolution: 1024x768	X

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5. FINAL RESULT OF MEASURMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Conducted Emission Test

Humidity Level : 49 % Temperature : 19 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107

Type of Test : CLASS B

Result : PASSED BY –8.79 dB at 24.48 MHz

EUT : LCD MONITOR Date: January 24, 2002

Operating Condition : Resolution 1024 x 768 mode

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Power Line Conducted Emission			**FCC CLASS B**	
Frequency (MHz)	**Amplitude (dBuV)**	**Conductor**	**Limit (dBuV)**	**Margin (dB)**
0.58	28.13	H	48.00	-19.87
1.16	26.82	N	48.00	-21.18
7.47	27.25	H	48.00	-20.75
18.36	37.68	H	48.00	-10.32
24.48	39.21	H	48.00	-8.79
27.54	38.90	H	48.00	-9.10

Line Conducted Emission Tabulated Data

Tested by: Sue-Yong, Lee / Test Engineer

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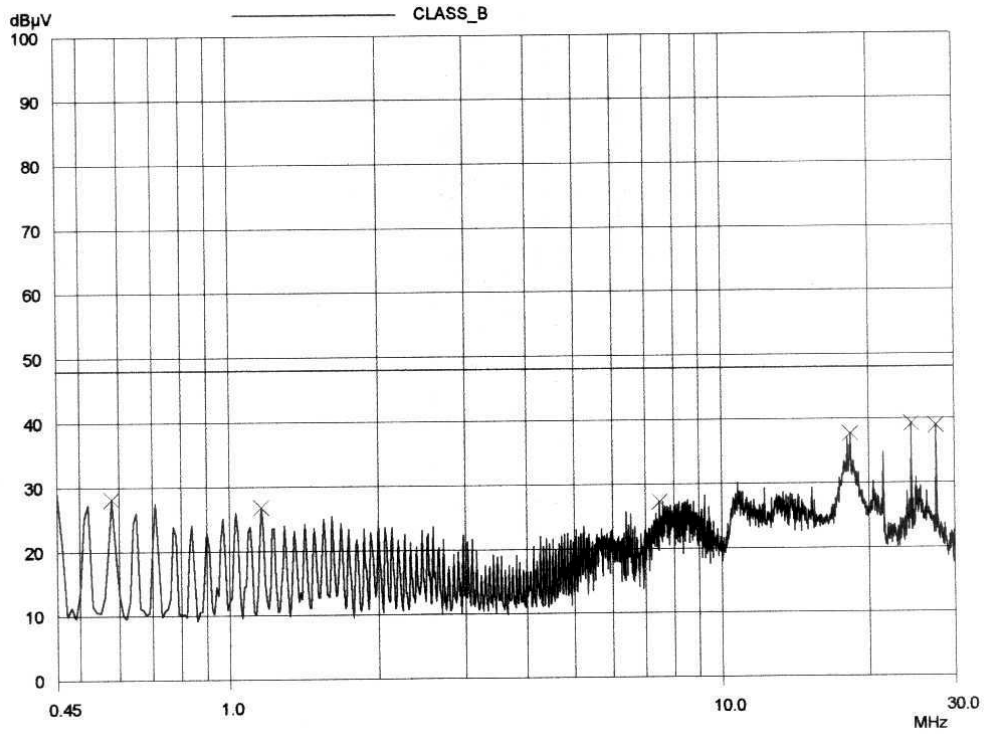
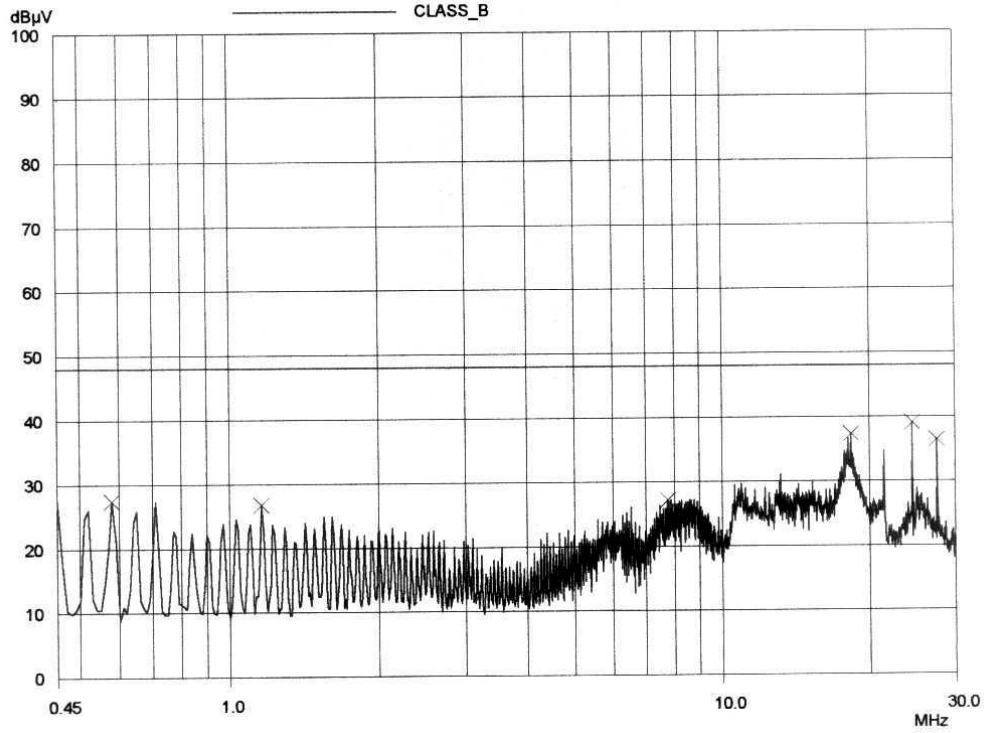


HOT LINE



NEUTRAL LINE

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5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 50 % Temperature : 16 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109

Type of Test : CLASS B

Result : PASSED BY –3.65 dB at 551.60 MHz

EUT : LCD MONITOR Date: November 28, 2001

Operating Condition : Resolution 1024 x 768 mode

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)

Distance : 3 Meter

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
40.55	20.10	V	10.46	0.83	31.39	40.00	-8.61
60.19	17.20	V	9.91	0.98	28.09	40.00	-11.91
66.80	18.10	V	8.40	1.00	27.50	40.00	-12.50
74.60	20.00	H	7.07	1.00	28.07	40.00	-11.93
80.27	27.10	H	6.42	1.01	34.53	40.00	-5.47
85.25	19.90	V	7.38	1.10	28.38	40.00	-11.62
90.95	18.90	V	8.62	1.11	28.63	43.50	-14.87
100.16	22.30	V	11.77	1.15	35.22	43.50	-8.28
118.75	18.90	V	13.29	1.23	33.42	43.50	-10.08
131.69	20.50	V	13.14	1.27	34.91	43.50	-8.59
146.90	17.80	V	13.59	1.34	32.73	43.50	-10.77
202.40	22.60	H	11.24	1.58	35.42	43.50	-8.08
233.60	27.30	H	11.07	1.74	40.11	46.00	-5.89
267.40	21.40	H	12.64	1.87	35.91	46.00	-10.09
300.80	14.90	H	14.58	2.00	31.48	46.00	-14.52
365.80	16.80	H	14.73	2.35	33.88	46.00	-12.12
429.20	15.20	H	16.02	2.49	33.71	46.00	-12.29
501.40	21.60	V	17.65	2.68	41.93	46.00	-4.07
551.60	21.40	H	18.17	2.78	42.35	46.00	-3.65
568.40	20.10	H	18.45	2.84	41.39	46.00	-4.61
600.40	9.80	H	18.82	2.90	31.52	46.00	-14.48
835.20	11.70	H	22.01	3.79	37.50	46.00	-8.50

Radiated Emissions Tabulated Data

Remark: “H”: Horizontal, “V”: Vertical

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Tested by: Sue-Yong, Lee / Test Engineer

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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading (dBuV)

+ Cable Loss (dB)

+ Antenna Factor (Loss) (dB/meter)

= Corrected Reading (dBuV/meter)

- Specification Limit (dBuV/meter)

= dB Relative to Spec (+/- dB)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	OCT/01	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	APR/01	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3109A05456	APR/01	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	APR/01	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	APR/01	12MONTH	■
6.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	APR/01	12MONTH	■
7.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	APR/01	12MONTH	■
8.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUL/01	12MONTH	■
9.	Computer System Hard disk drive	HP	98581C 9153C	98543A CMC762Z9153	N/A N/A	N/A N/A	■ ■
10.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
11.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
12.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■

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