



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number : E01NR-003

Applicant : IMRI CO., LTD.

Address : 270-2, Hunshin-Dong, Sangju-City, Kyungsangbuk-Do, Korea

Manufacturer : IMRI CO., LTD.

Address : 270-2, Hunshin-Dong, Sangju-City, Kyungsangbuk-Do, Korea

Type of Equipment : TFT LCD MONITOR (Class B Computing Device Peripheral)

FCC ID : OMNE151XA

Model / Type No. : E151XA,

Multiple Model/ Type No. : N/A

Serial number : N/A

Total page of Report : 13 pages (including this page)

Date of Incoming : September 21, 2001

Date of Issuing : November 05, 2001

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: G. W. Lee
G. W. Lee/ Assist. Chief Engineer

Reviewed by: Y. K. Kwon
Y. K. Kwon/ Chief Engineer

This report shall not be reproduced except in full without our written approval.

FCC-003 (Rev.0)

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea
(TEL: 82-31-746-8500 FAX: 82-31-746-8700)

EMC Testing Dept : 426-1 Daeangryong-Ri ChongMyun-Kwangju-City, Kyunggi-Do 464-860 Korea (TEL: 82-31-765-8289 FAX: 82-31-766-2904)



ONETECH

ONETECH Testing & Evaluation Lab.

Page 2 of 13

FCC ID. : **Error!**

File No. : **Error!**

Unknown document property name.

EMC & Telecom Div.
ONETECH Corp.

EMC & Telecom Div.
ONETECH Corp.



CONTENTS

	Page
1. VERIFICATION OF COMPLIANCE	4
2. GENERAL INFORMATION	5
2.1 PRODUCT DESCRIPTION	5
2.2 RELATED SUBMITTAL(S) / GRANT(S)	5
2.3 TEST SYSTEM DETAILS	6
2.4 TEST METHODOLOGY	6
2.5 TEST FACILITY	6
3. SYSTEM TEST CONFIGURATION.....	7
3.1 JUSTIFICATION	7
3.2 EUT EXERCISE SOFTWARE	7
3.3 CABLE DESCRIPTION	7
3.4 NOISE SUPPRESSION PARTS ON CABLE	8
3.5 EQUIPMENT MODIFICATIONS	8
3.6 CONFIGURATION OF TEST SYSTEM	8
4. PRELIMINARY TEST.....	9
4.1 AC POWER LINE CONDUCTED EMISSION TEST	9
4.2 RADIATED EMISSION TEST	9
5. FINAL RESULT OF MEASUREMENT	10
5.1 CONDUCTED EMISSION TEST.....	10
5.2 RADIATED EMISSION TEST	13
6. FIELD STRENGTH CALCULATION.....	15
7. LIST OF TEST EQUIPMENT	16



Unknown document property name.

1. VERIFICATION OF COMPLIANCE

- . APPLICANT : IMRI CO., LTD.
 - . ADDRESS : 270-2, Hunshin-Dong, Sangju-City, Kyungsangbuk-Do, Korea
 - . CONTACT PERSON : Mr. Tae-Moon, Choi / Manager
 - . TELEPHONE NO : +82-54-534-7943(ext.:710)
 - . MODEL NO/NAME : E151XA
 - . SERIAL NUMBER : N/A
 - . DATE : November 05, 2001

DEVICE TYPE	Peripheral Device for Class B Computing Device - Unintentional Radiator
E.U.T. DESCRIPTION	TFT LCD MONITOR
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	CISPR 22/1998, 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.

Unknown document property name.

2. GENERAL INFORMATION

2.1 Product Description

The IMRI CO., LTD., Model E151XA (referred to as the EUT in this report) is a TFT 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)	12 MHz, 14.318 MHz
INPUT FREQUENCY	HORIZONTAL: 30~60kHz / VERTICAL: 56~75 Hz
MAX RESOLUTION	SXGA 1024 x 768 @ 75Hz
NUMBER OF LAYERS	4 Layers (Main B'd), 2 Layers (Inverter B'd), 1 Layer (Key control B'd)
POWER REQUIREMENT	DC12V from AC/DC Adapter
EXTERNAL CONNECTOR	VGA INPUT (15pin D-SUB), DC In Jack

Model Differences:

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

2.2 Related Submittal(s) / Grant(s)

Original submittal only

Unknown document property name.

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
E151XA	IMRI CO., LTD.	OMNE151XA	TFT LCD MONITOR (EUT)	PC
DTA-XGD02	D-TECH	N/A	AC/DC ADAPTER	EUT
DESKPRO EXM	COMPAQ	DoC	PC	-
KB-9963	COMPAQ	DoC	KEYBOARD	PC
M-S48a	LOGITECH	JNZ201213	MOUSE	PC
2225C	HP	DSI6XU2225	PRINTER	PC
020-0470	CARDINAL	GDE0196	MODEM	PC

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 10 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 12, 1999. (Registration Number: 92819)

Unknown document property name.

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
LCD PANEL	LG PHILIPS	LM151X05	N/A
MAIN LOGIC B'D	D-TECH	NEO151-LAP01x	N/A
INVERTER BOARD	PIS CORP.	N/A	N/A
KEY CONTROL BOARD	IMRI CO., LTD.	15XGA SS	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)
TFT LCD MONITOR (EUT)	N	N	1.0(P), 1.2(D)
AC/DC ADAPTER	N	N/A	1.5(P)
PC	N	-	1.5(P)
KEYBOARD	N/A	N	1.2(D)
MOUSE	N/A	N	1.2(D)
MODEM	N	Y	1.5(P), 1.5(D)
PRINTER	N	Y	1.5(P), 1.5(D)

* The marked "(P)" means the Power Cable.

Unknown document property name.

3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
TFT LCD MONITOR (EUT)	Y	EUT END	Y	BOTH END
AC/DC ADAPTER	Y	EUT END	Y	EUT END
PC	-	-	-	-
KEYBOARD	N	N/A	Y	PC END
MOUSE	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 10 meters open area test site.

Unknown document property name.

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

Unknown document property name.

5. FINAL RESULT OF MEASUREMENT

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 : 50 % Temperature : 19°C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107 (e)
 Type of Test : CLASS B
 Result : PASSED BY -3.20 dB at 13.82 MHz

EUT : TFT LCD MONITOR Date: October 19, 2001
 Operating Condition : Resolution 1024X768 mode
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
0.22	H	57.05	63.01	-5.96
0.34	H	49.30	59.33	-10.03
2.12	H	43.20	56.00	-12.80
4.32	N	43.85	56.00	-12.15
6.73	H	50.59	60.00	-9.41
13.82	N	56.80	60.00	-3.20
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
0.22	H	39.54	53.01	-13.47
0.33	N	38.52	49.45	-10.93
13.61	H	39.35	50.00	-10.65
13.82	N	42.58	50.00	-7.42

Line Conducted Emission Tabulated Data

This report shall not be reproduced except in full without our written approval.

FCC-003 (Rev.0)

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea
 (TEL: 82-31-746-8500 FAX: 82-31-746-8700)

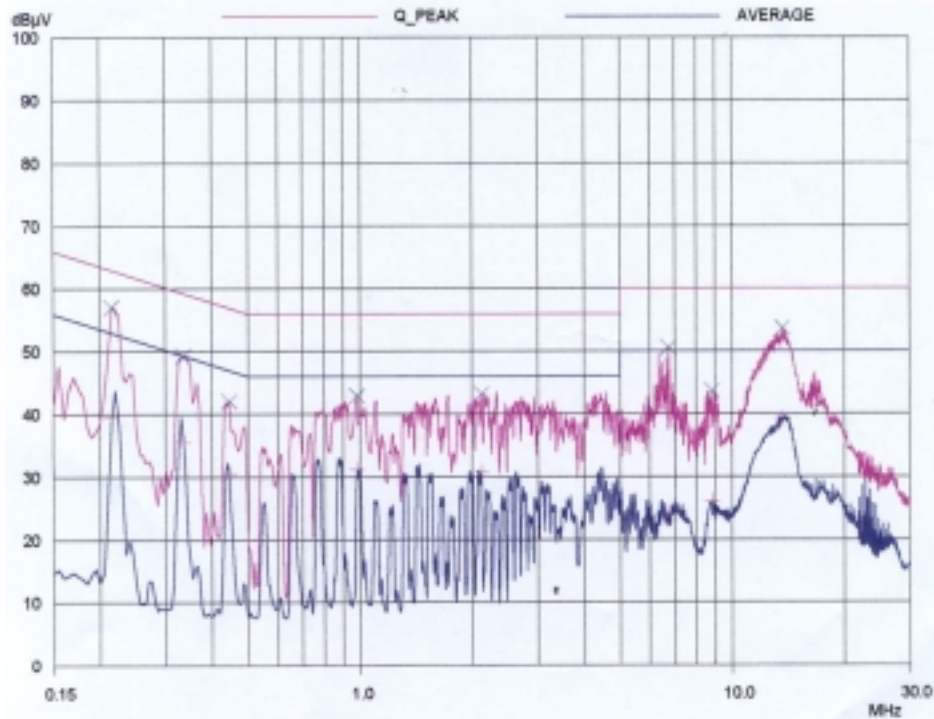
EMC Testing Dept : 426-1 Daeangyong-Ri Chwol-Myun Kwangju-City, Kyunggi-Do 464-860 Korea (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

Unknown document property name.

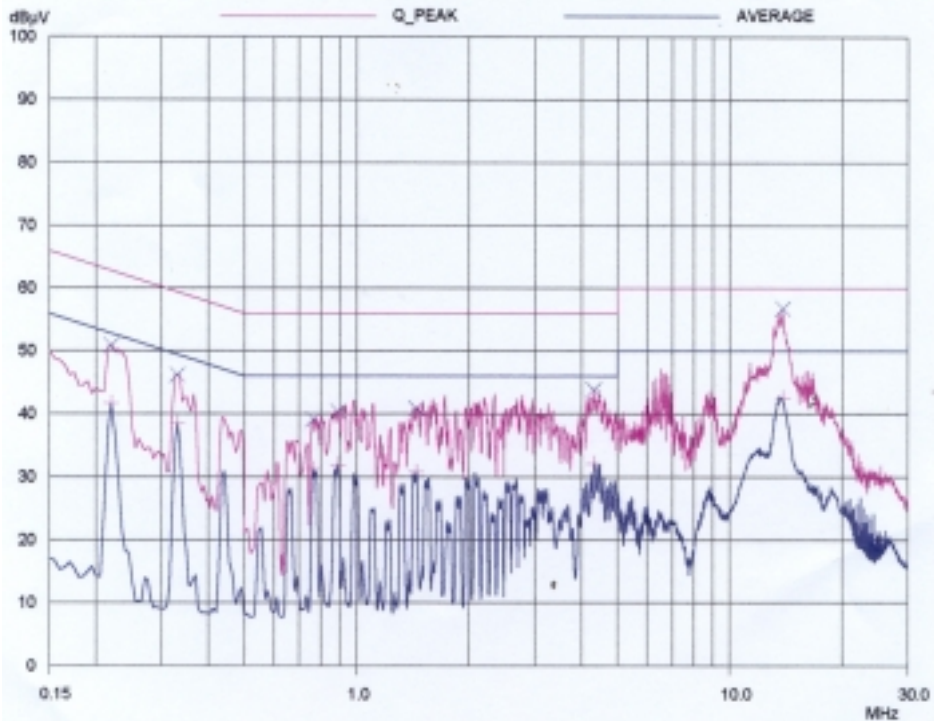
Tested by: Young-Min Choi / Project Engineer



Unknown document property name.



HOT LINE



NEUTRAL LINE



Unknown document property name.

5.2 Radiated Emission Test

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

Humidity Level : 51 % Temperature : 17 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (g)
Type of Test : CLASS B
Result : PASSED BY -2.84 dB at 315.20 MHz

EUT : TFT LCD MONITOR Date: October 25, 2001
Operating Condition : Resolution 1024X768 mode
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 3 Meter

Radiated Emissions		Ant	Correction Factors		Total	CICPR 22 CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
67.08	19.10	V	8.33	1.00	28.43	40.00	-11.57
120.73	14.60	V	13.22	1.23	29.05	40.00	-10.95
200.40	22.30	H	11.29	1.57	35.16	40.00	-4.84
214.40	16.80	H	10.94	1.64	29.38	40.00	-10.62
268.20	17.60	V	12.68	1.87	32.15	47.00	-14.85
315.20	27.70	H	14.37	2.09	44.16	47.00	-2.84
322.20	16.50	H	14.27	2.13	32.90	47.00	-14.10
335.60	23.10	V	14.39	2.21	39.70	47.00	-7.30
394.20	16.00	V	15.29	2.42	33.71	47.00	-13.29
402.00	22.60	V	15.48	2.43	40.51	47.00	-6.49
435.60	17.20	V	16.17	2.51	35.88	47.00	-11.12
469.40	22.50	H	16.93	2.59	42.02	47.00	-4.98

Radiated Emissions Tabulated Data

Unknown document property name.

Tested by: Young-Min Choi / Project Engineer

Unknown document property name.

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)



Unknown document property name.

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	HP	98581C	98543A	N/A	N/A	■
	Hard disk drive		9153C	CMC762Z9153	N/A	N/A	■
10.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
11.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
12.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
13.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■