



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

Test report file number : E00NR-056

Applicant : FAMMAX CO., LTD.

Address : #459-13, Seru 2-Dong, Kweonsun-Gu, Suwon-City, Kyunggi-Do, Korea

Manufacturer : FAMMAX CO., LTD.

Address : #459-13, Seru 2-Dong, Kweonsun-Gu, Suwon-City, Kyunggi-Do, Korea

Type of Equipment : 15.1" TFT LCD Monitor with TV

FCC ID. : PDIMT-1501A

Model / Type No. : MT-1501A

Serial number : N/A

Total page of Report : 16 pages (including this page)

Date of Incoming : October 11, 2000

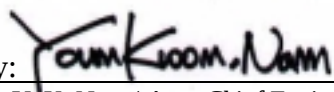
Date of issue : December 6, 2000

SUMMARY

The equipment complies with the regulation; FCC PART 15 SUBPART B SECTION 15.101.

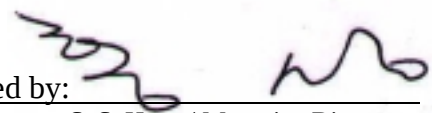
This test report contains only the result of a single test of the sample supplied for the examination. It is not a generally valid assessment of the features of the respective products of the mass-production.

Prepared by:



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1. VERIFICATION OF COMPLIANCE

APPLICANT : FAMMAX CO., LTD.
 ADDRESS : #459-13, Seru 2-Dong, Kweonsun-Gu, Suwon-City, Kyunggi-Do, Korea
 CONTACT PERSON : G. O. CHOI / Multimedia Dept
 TELEPHONE NO : 82-31-234-2446
 FCC ID : PDIMT-1501A
 MODEL NO/NAME : MT-1501A
 SERIAL NUMBER : N/A
 DATE : December 6, 2000

DEVICE TYPE	Peripheral Device for Class B Computing Device -UNINTENTIONAL RADIATOR
E.U.T. DESCRIPTION	15.1" TFT LCD Monitor with TV
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(CLASS B)
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 FAMMAX CO., LTD., Model MT-1501A (referred to as the EUT in this report) is a 15.1" TFT LCD Monitor with TV which is consist of the TV tuner, VCR input terminal, Audio input/output, and S-Video input terminal as well as basic PC monitor. Also, the EUT has 2 different AC/DC Adaptors. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic – Non coated
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	12.0 MHz, 14.318 MHz, 18.432 MHz, 24.576 MHz
RESOLUTION	1024 x 768, 85Hz
POWER REQUIREMENT	Input : 100-240Vac, 50/60Hz, 1.2A, Output : 12Vdc, 3.5A or 3.33A
USED AC/DC ADAPTER	F1650K manufactured by Ilan Electrics Ltd. LSE9802B1240 manufactured by Li Shin International Corp.
NUMBER OF LAYERS	Main Board: 4 Layers, Switch Board: 2 Layers DC/AC Inverter Board: 2 Layers, Tuner Board: 2 Layers
TV TUNER Type NO. / MFR	TCPN9082DA27C / Samsung Electro-Mechanics
EXTERNAL CONNECTORS	PC Video In, Tuner connector, Audio in/output, Video In, S-Video, PC Audio In

Model Differences:

-. None

2.2 Related Submittal(s) / Grant(s)

-. Original submittal only

document property name.

2.3 Test System Details

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

Model	Manufacturer	Description	FCC ID	Connected to
MT-1501A	FAMMAX CO., LTD.	15.1" TFT LCD Monitor with TV Tuner (EUT)	PDIMT-1501A	PC
TC-PA1000	TAEIL	PERSONAL COMPUTER	LIZ-TCPA1000	N/A
GHV-S9990	GOLDSTAR	VCR	N/A	EUT
5123W	BEHAVIOR TECH	KEYBOARD	E5XKBP104M10	PC
SMB-601	SEJIN ELEC	MOUSE	GJJB509A0	PC
2225C	HP	PRINTER	DSI6XU2225	PC
020-0470	CARDINAL	MODEM	GDE0196	PC
LSE9802B1240	Li Shin International	AC/DC ADAPTER	N/A	EUT
F1650K	ILAN ELECTRICS LTD		N/A	

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 12, 1999. (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
Main Board	FAMMAX CO., LTD.	N/A	N/A
LCD Module	LG PHILIPS	LM151X2	N/A
Tuner Board	FAMMAX CO., LTD.	N/A	N/A
DC/AC Inverter Board	FAMMAX CO., LTD.	N/A	N/A
Switch Board	FAMMAX CO., LTD.	N/A	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 1024 x 768, 85Hz.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
15.1" TFT LCD Monitor with TV (EUT)	N	Y	1.5(P), 1.2(D)
PERSONAL COMPUTER	N	Y	1.5(P), 1.2(D)
VCR	N	N	1.3(P), 1.0(D)
KEYBOARD	N/A	N	1.2(D)
MOUSE	N/A	N	1.2(D)
PRINTER	N	Y	1.5(P), 1.2(D)
MODEM	N	N	1.5(P), 1.2(D)
AC/DC ADAPTER	N	N	1.2(P)

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



document property name.

3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
15.1" TFT LCD Monitor with TV (EUT)	Y	BOTH END	Y	BOTH END
PERSONAL COMPUTER	N	N/A	-	-
VCR	N	N/A	Y	BOTH END
KEYBOARD	N	N/A	Y	EUT END
MOUSE	N	N/A	Y	EUT END
PRINTER	N	N/A	Y	BOTH END
MODEM	N	N/A	Y	BOTH END
AC/DC ADAPTER	Y	EUT END	Y	EUT 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.

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
Video Operation Mode	

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
Video Operation Mode	

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	: <u>48 %</u>	Temperature	: <u>18•</u>
Limits apply to	: <u>FCC CFR 47, PART 15, SUBPART B, SECTION 15.107</u>		
Type of Test	: <u>CLASS B</u>		
Result	: <u>PASSED BY -3.90 dB at 1.70 MHz (Result by adapter of model no is LSE9802B1240)</u>		

EUT	: 15.1" TFT LCD Monitor with TV	Date : November 27, 2000
Operating Condition	: Continuously displayed “H” characters on the screen of EUT, Resolution : 1024 X 768, 85Hz	
Detector	: CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)	
Used Adapter	: Model no : F1650K, MFR : Ilan Electronics Ltd.	

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)
0.73	27.20	HOT	48.00	-20.80
1.35	32.71	NEUTRAL	48.00	-15.29
2.26	41.89	NEUTRAL	48.00	-6.11
3.61	43.76	NEUTRAL	48.00	-4.24
7.66	41.05	NEUTRAL	48.00	-6.95
15.06	38.04	NEUTRAL	48.00	-9.96
21.78	31.00	NEUTRAL	48.00	-17.00
25.06	33.83	HOT	48.00	-14.17

Line Conducted Emission Tabulated Data

Foghorn

document property name.

Measuring by: Young-Min, Choi / Project Engineer



document property name.

Conducted Emission Test : continued

EUT : 15.1" TFT LCD Monitor with TV

Date : November 27, 2000

Operating Condition : Continuously displayed "H" characters on the screen of EUT, Resolution : 1024 X 768, 85Hz

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

Used Adapter : Model No : LSE9802B1240, MFR : Li Shin International Enterprises Corp.

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)
0.54	43.26	NEUTRAL	48.00	-4.74
0.66	40.82	NEUTRAL	48.00	-7.18
0.85	42.42	HOT	48.00	-5.58
1.70	44.10	HOT	48.00	-3.90
2.43	42.83	HOT	48.00	-5.17
6.94	37.57	NEUTRAL	48.00	-10.43
25.06	32.94	NEUTRAL	48.00	-15.06
28.06	33.87	NEUTRAL	48.00	-14.13

Line Conducted Emission Tabulated Data

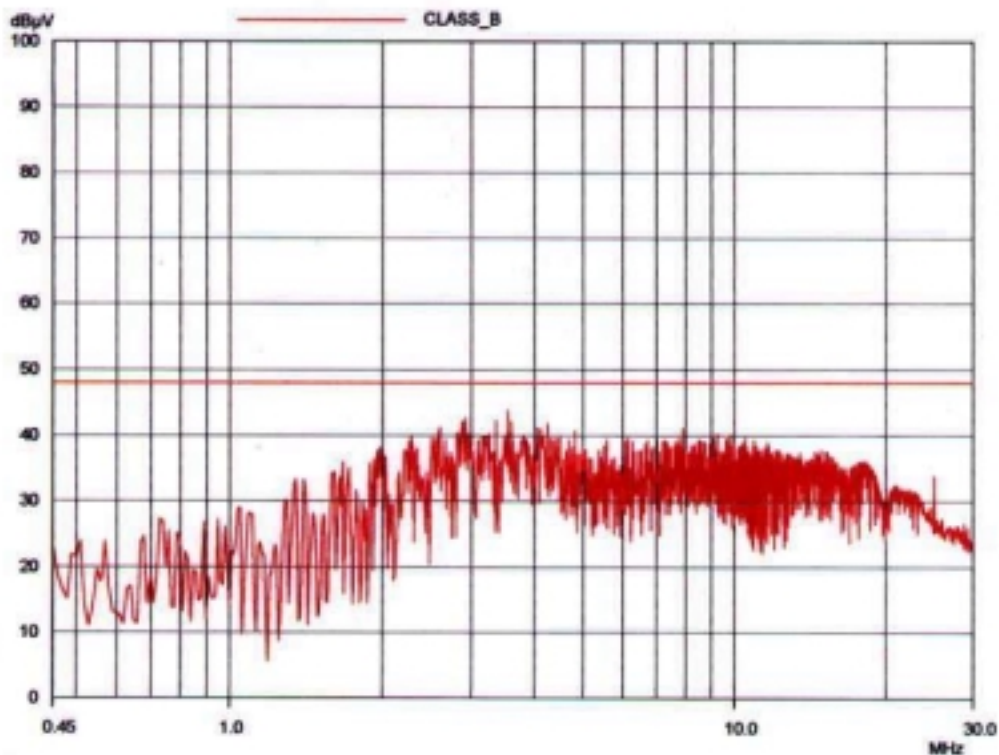
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Measuring by: Young-Min, Choi / Project Engineer

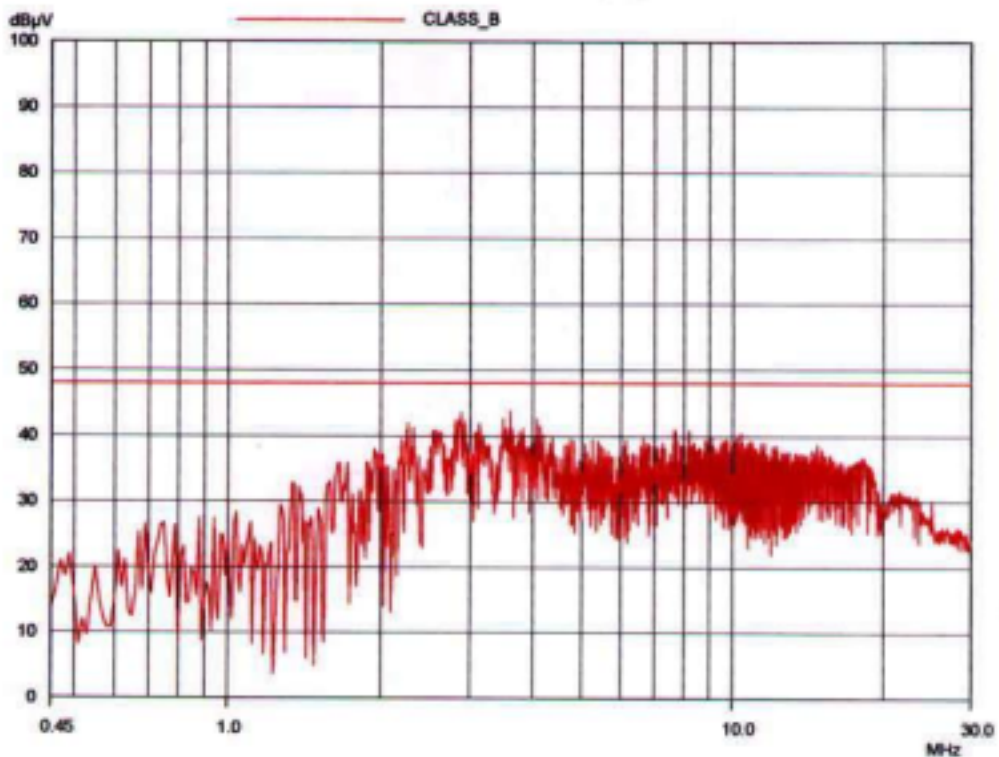


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Remark : AC/DC Adapter Model no : F1650K, MFR : Ilan Electronics Ltd.



HOT LINE



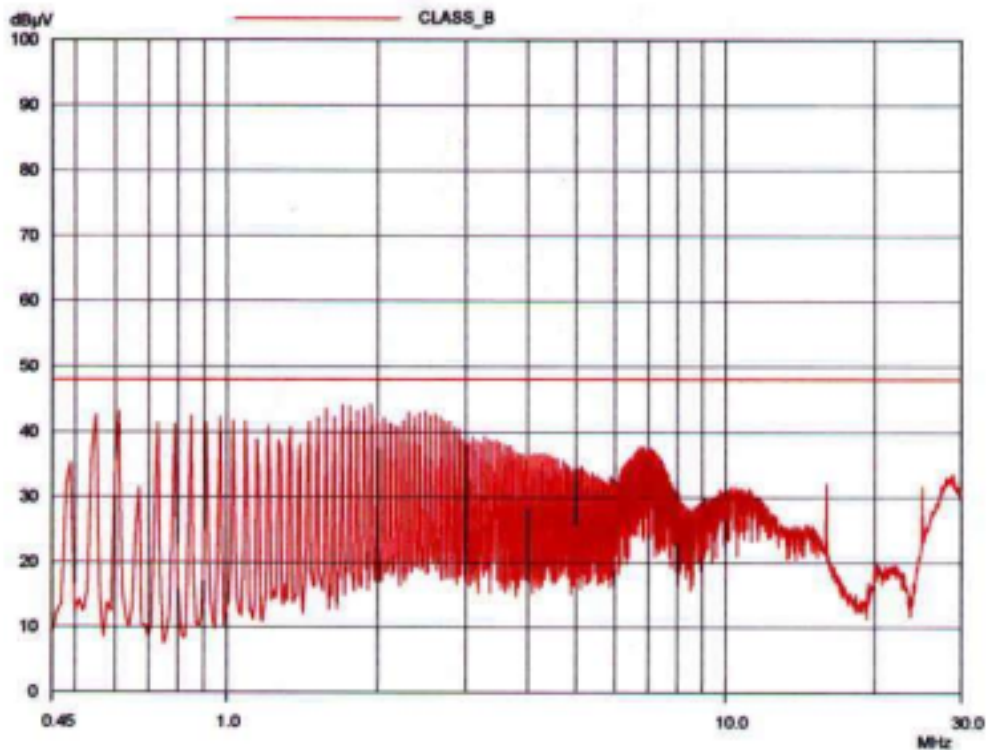
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NEUTRAL LINE

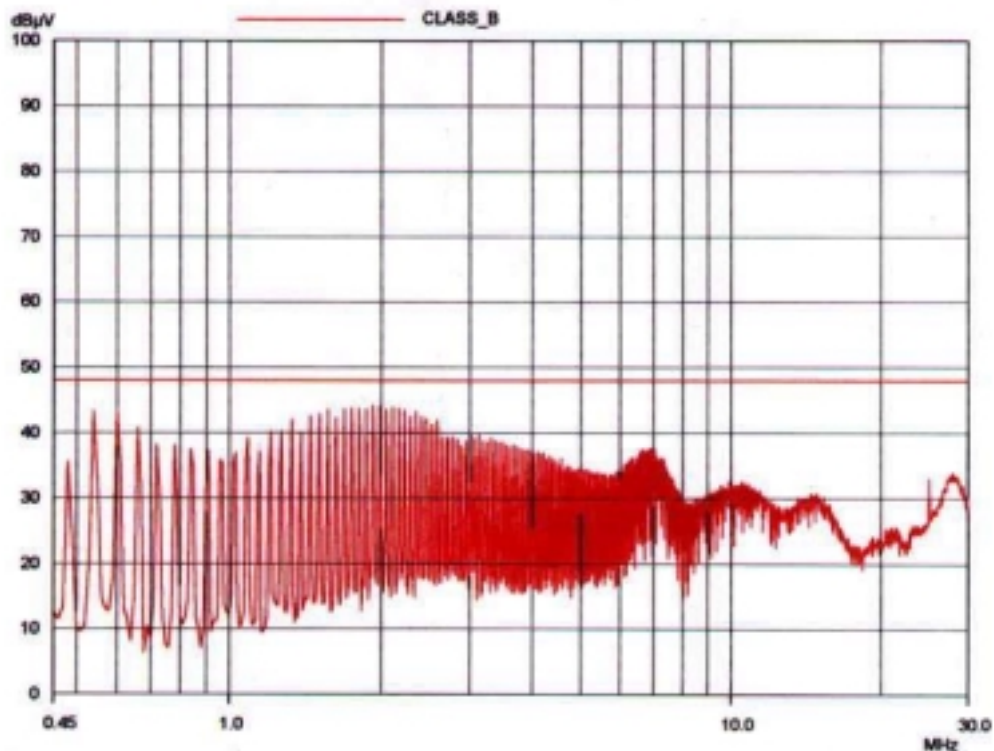


document property name.

Remark : AC/DC Adapter Model no : LSE9802B1240, MFR : Li Shin International Enterprises Corp.



HOT LINE



document property name.

NEUTRAL LINE



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 : 45 % Temperature : 18 •
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109
 Type of Test : CLASS B
 Result : PASSED BY -12.66 dB at 296.22MHz (Result by adapter of model no is LSE9802B1240)

EUT : 15.1" TFT LCD Monitor with TV Date: November 27, 2000
 Operating Condition : Continuously displayed "H" characters on the screen of EUT, Resolution : 1024 X 768, 85Hz
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
 Distance : 3 Meter
 Remark : AC/DC Adapter Model no : F1650K, MFR : Ilan Electrics Ltd.

Radiated Emission		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)
64.98	15.60	V	8.58	1.00	25.18	40.00	-14.82
78.01	14.20	V	6.32	1.00	21.52	40.00	-18.48
84.52	18.01	H	7.20	1.09	26.30	40.00	-13.70
110.35	11.20	V	12.63	1.20	25.03	43.50	-18.47
116.90	9.20	V	13.11	1.22	23.53	43.50	-19.97
123.60	7.20	V	13.22	1.24	21.66	43.50	-21.84
130.05	9.60	V	13.00	1.26	23.86	43.50	-19.64
136.55	9.00	V	12.78	1.30	23.08	43.50	-20.42
236.80	16.80	H	12.15	1.76	30.71	46.00	-15.29
256.40	15.60	H	12.82	1.85	30.27	46.00	-15.73
260.00	14.50	H	13.07	1.85	29.42	46.00	-16.58
296.20	14.80	H	15.05	1.98	31.83	46.00	-14.17
395.20	14.10	H	15.76	2.42	32.28	46.00	-13.72

Radiated Emission Tabulated Data

document property name.

Measuring by: Young-Min, Choi / Project Engineer



document property name.

Radiated Emission Test : continued

EUT : 15.1" TFT LCD Monitor with TV

Date: November 27, 2000

Operating Condition : Continuously displayed "H" characters on the screen of EUT, Resolution : 1024 X 768, 85Hz

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

Distance : 3 Meter

Remark : AC/DC Adapter Model no : LSE9802B1240, MFR : Li Shin International Enterprises Corp.

Radiated Emission		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)
64.94	14.90	V	8.59	1.00	24.49	40.00	-15.51
78.12	15.10	V	6.32	1.00	22.42	40.00	-17.58
84.58	17.70	H	7.21	1.09	26.00	40.00	-14.00
110.42	12.30	V	12.63	1.20	26.13	43.50	-17.37
116.84	10.40	V	13.11	1.22	24.73	43.50	-18.77
123.53	8.30	V	13.22	1.24	22.76	43.50	-20.74
130.21	10.20	V	12.99	1.26	24.45	43.50	-19.05
136.62	11.30	V	12.77	1.30	25.37	43.50	-18.13
236.79	15.80	H	12.15	1.76	29.71	46.00	-16.29
256.32	15.80	H	12.81	1.85	30.46	46.00	-15.54
260.08	15.00	H	13.08	1.85	29.93	46.00	-16.07
296.22	16.30	H	15.06	1.98	33.34	46.00	-12.66
395.14	12.90	H	15.76	2.42	31.08	46.00	-14.92

Radiated Emission Tabulated Data

document property name.

Measuring by: Young-Min, Choi / Project Engineer

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)

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	SEP/00	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	APR/00	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3026A0226	SEP/00	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	SEP/00	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	SEP/00	12MONTH	■
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/00	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/00	12MONTH	■
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	MAR/00	12MONTH	■
9.	Conical Log spiral Antenna	EATON	93491-2	340	FEB/00	12MONTH	
10.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUN/00	12MONTH	■
11.	RF Amplifier	HP	8447F	3113A04554	SEP/00	12MONTH	■
12.	Spectrum Analyzer	ADVANTEST	R4131BN	91520070	FEB/00	12MONTH	
13.	Computer System	HP	98581C	98543A	N/A	N/A	■
	Hard disk drive		9153C	CMC762Z9153	N/A	N/A	■
14.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
15.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
16.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
17.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■