ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number	**: E022R-049**
Applicant	**: TAEWON Electronics Co., Ltd.**
Address	**: #308, Junang Induspia B/D, 517-13 Sangdaewon-Dong, Jungwon-Gu, Sungnam-City, Kyungki-Do, Korea**
Manufacturer	**: TAEWON Electronics Co., Ltd.**
Address	**: #308, Junang Induspia B/D, 517-13 Sangdaewon-Dong, Jungwon-Gu, Sungnam-City, Kyungki-Do, Korea**
Type of Equipment	**: TFT LCD Monitor**
FCC ID.	**: PH5INFO151010**
Model / Type No.	**: Infogate1510-10**
Serial number	**: N/A**
Total page of Report	**: 13 pages (including this page)**
Date of Incoming	**: January 7, 2002**
Date of issue	**: February 22, 2002**

SUMMARY

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

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:
Y. K. Nam / Asst. Chief Engineer
EMC Dept.
ONETECH Corp.

Approved by:
Y. K. Kwon / Chief Engineer
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1. VERIFICATION OF COMPLIANCE

APPLICANT	: TAEWON Electronics Co., Ltd.
ADDRESS	: #308, Junang Induspia B/D, 517-13 Sangdaewon-Dong, Jungwon-Gu, Sungnam-City, Kyungki-Do, Korea
CONTACT PERSON	: Seoung-Min, Joung / Chief
TELEPHONE NO	: +82-31-740-9009
FCC ID	: PH5INFO151010
MODEL NO/NAME	: Infogate1510-10
SERIAL NUMBER	: N/A
DATE	: February 22, 2002

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	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 TAEWON Electronics Co., Ltd., Model Infogate1510-10 (referred to as the EUT in this report) is a TFT LCD Monitor. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic – Non coated
LIST OF EA CH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	12.0 MHz, 14.31818 MHz on the main board
LCD PANEL SPEC.	LM151X4(A3) / LG Philips
DISPLAY AREA	307.2 (H) x 230.4 (V) mm, 15.1 inch
DISPLAY COLORS	262,144
NEMBER OF PIXELS	1024 x 768 pixel, 75Hz
PIXEL ARRANGEMENT	RGB Vertical Stripe
PIXEL PITCH	0.300 (H) x 0.300 (V) mm
DISPLAY MODE	Normally White
DISPLAY RESOLUTION	Maximum : 1024 x 768, 75Hz
FREQUENCY	Horizontal : 30 ~ 62 KHz Vertical : 43 ~ 75 Hz
POWER REQUIREMENT	AC/DC Adaptor Used (Input: 100-240Vac, 50-60Hz, 1.2A // Output: 12Vdc, 3.5A)
USED AC/DC ADAPTERS	F1650K manufactured by ILAN Elec. Ltd.
NUMBER OF LAYERS	Main Board : 4 Layers OSD Board & Inverter Board : 2 Layers
EXTERNAL CONNECTORS	DC Inlet, D-Sub 15pin Connector

Model Differences:

-. None

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2.2 Related Submittal(s) / Grant(s)

-. Original submittal only

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
Infogate1510-10	TAEWON Electronics Co., Ltd.	TFT LCD Monitor (EUT)	PH5INFO151010	PC
F1650K	ILAN Elec. Ltd.	AC/DC ADAPTER	N/A	EUT
Deskpro EXM	COMPAQ	PC	DoC	EUT
KB-9963	COMPAQ	KEYBOARD	DoC	PC
M-S48a	LOGITECH	MOUSE	JNZ201213	PC
2225C	HP	PRINTER	DSI6XU2225	PC
020-0470	CARDINAL	MODEM	GDE0196	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 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, Kyounggi-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
Main Board	TAEWON Electronics Co., Ltd.	INFOGATE 1510-10	N/A
Inverter Board	N/A	N/A	N/A
OSD Board	TAEWON Electronics Co., Ltd.	N/A	N/A
LCD Panel	LG Philips	LM151X4(A3)	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 test was performed about each resolution from minimum resolution to maximum resolution for getting maximum noise level and the investigated maximum resolution mode of the EUT was 1024 x 768, 75Hz.

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3.3 Cable Description

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

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

3.4 Noise Suppression Parts on Cable

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

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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.

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: 640 x 480	
Resolution: 800 x 600	
Resolution: 1024 x 768	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: 640 x 480	
Resolution: 800 x 600	
Resolution: 1024 x 768	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 : 42 % Temperature : 20°C

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

Type of Test : CLASS B

Result : PASSED BY –7.30 dB at 4.13 MHz

EUT : TFT LCD Monitor Date : January 24, 2002

Operating Condition : Continuously displayed "H" characters on the screen of EUT

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

Resolution : 1024 x 768, 75Hz

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	**Amplitude (dBuV)**	**Conductor**	**Limit (dBuV)**	**Margin (dB)**
0.46	37.19	HOT	48.00	-10.81
0.92	31.71	HOT	48.00	-16.29
1.90	32.70	HOT	48.00	-15.30
4.13	40.70	HOT	48.00	-7.30
6.24	32.74	NEUTRAL	48.00	-15.26
13.27	32.32	NEUTRAL	48.00	-15.68
15.29	33.93	HOT	48.00	-14.07
24.64	29.44	NEUTRAL	48.00	-18.56

Line Conducted Emission Tabulated Data

Tested by : Seung-Hyun, Nam / Test Engineer

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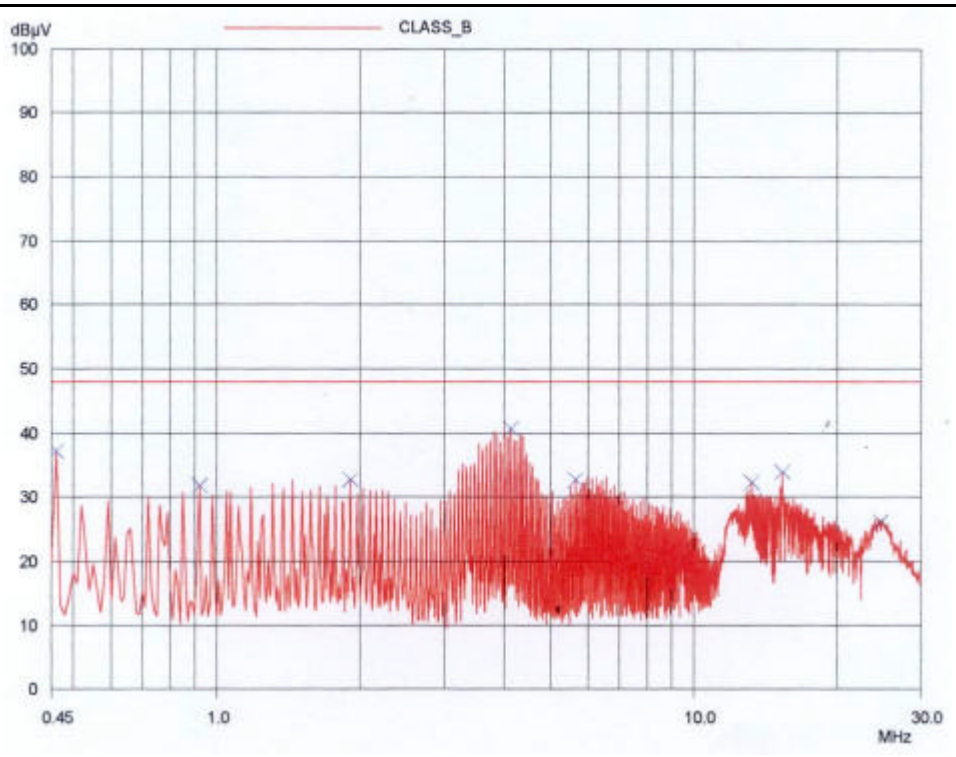
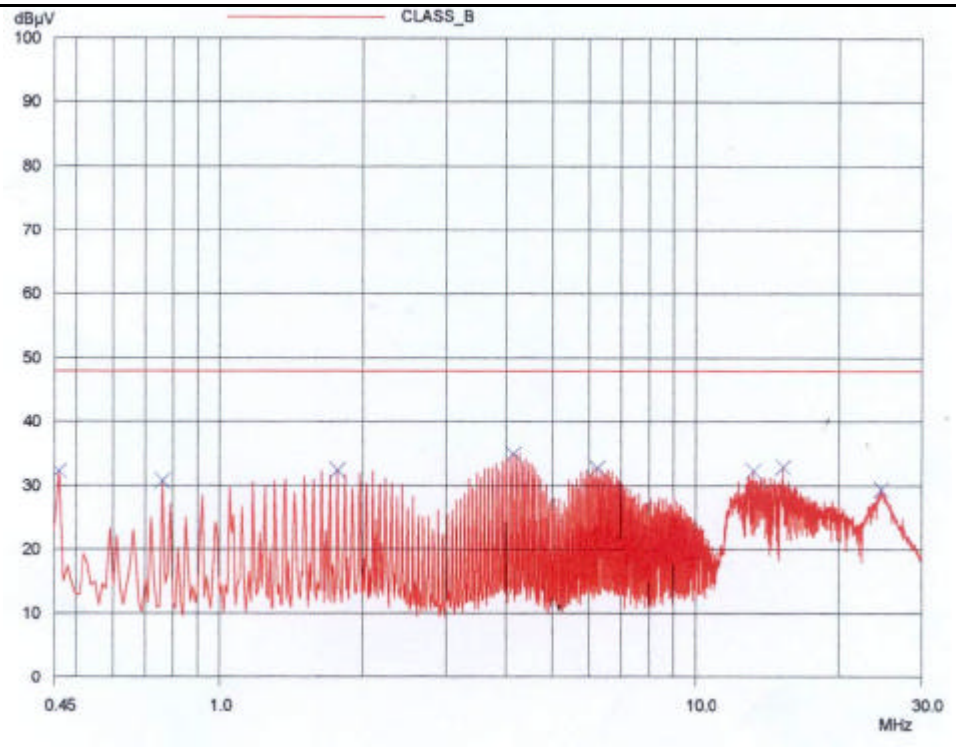


HOT LINE



NEUTRAL LINE

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5.2 Radiated Emission Test for Digital mode

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

Humidity Level : 36 % Temperature : 15°C

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

Type of Test : CLASS B

Result : PASSED BY –4.95 dB at 551.6 MHz

EUT : TFT LCD Monitor Date: January 25, 2002

Operating Condition : Continuously displayed "H" characters on the screen of EUT

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

Distance : 3 Meter

Resolution : 1024 x 768, 75Hz

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)
78.77	18.90	V	6.53	1.00	26.43	40.00	-13.57
80.64	20.40	H	6.49	1.01	27.90	40.00	-12.10
94.55	20.10	V	9.86	1.13	31.09	43.50	-12.41
120.95	18.50	V	13.22	1.23	32.95	43.50	-10.55
147.90	18.30	V	13.70	1.34	33.34	43.50	-10.16
154.45	18.80	H	14.42	1.37	34.59	43.50	-8.91
201.20	20.10	H	11.27	1.58	32.95	43.50	-10.55
236.00	27.80	H	11.18	1.76	40.74	46.00	-5.26
402.00	20.30	V	15.48	2.43	38.21	46.00	-7.79
472.40	19.20	H	17.00	2.59	38.79	46.00	-7.21
551.60	20.10	V	18.17	2.78	41.05	46.00	-4.95
604.00	17.10	V	18.86	2.92	38.88	46.00	-7.12
708.40	16.20	H	20.84	3.36	40.40	46.00	-5.60

Radiated Emission Tabulated Data

Tested by: Seung-Hyun, Nam / 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	ESHS10	834467/007	APR/01	12MONTH	
3.	Spectrum analyzer	HP	8568B	3026A0226	APR/01	12MONTH	
4.	RF preselector	HP	85685A	3107A01264	APR/01	12MONTH	
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	APR/01	12MONTH	
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/01	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/01	12MONTH	
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	JUN/01	12MONTH	
9.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUN/01	12MONTH	
10.	RF Amplifier	HP	8447F	3113A04554	JUN/01	N/A	
11.	Spectrum Analyzer	HP	8591A	3131A02312	APR/01	12MONTH	
12.	Computer System Hard disk drive	HP	98581C 9153C	98543A CMC762Z9153	N/A N/A	N/A N/A	
13.	Plotter	HP	7475A	30052 22986	N/A	N/A	
14.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	
15.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	
16.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	

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