



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

Test report file number : E013R-024

Applicant : TAEWON ELECTRONICS CO., LTD.

Address : #308, Jungang Induspia Bldg, 517-13, Sangdaewon-Dong, Jungwon-Gu, Sunnam-Si,
Kyunggi-Do, 462-120, Korea

Manufacturer : TAEWON ELECTRONICS CO., LTD.

Address : #308, Jungang Induspia Bldg, 517-13, Sangdaewon-Dong, Jungwon-Gu, Sunnam-Si,
Kyunggi-Do, 462-120, Korea

Type of Equipment : 15" TFT-LCD MONITOR

FCC ID : PH5TWEINFO151

Model / Type No. : INFOGATE1510U

Serial number : N/A

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

Date of Incoming : February 05, 2001

Date of issuing : March 13, 2001

SUMMARY

The equipment complies with the regulation; FCC PART 15 CFR 47 SUBPART B Section 15.101.

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:

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

Reviewed by:

S. S. Hong / Managing Director
EMC Dept.
ONETECH Corp.



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1. VERIFICATION OF COMPLIANCE

APPLICANT : TAEWON ELECTRONICS CO., LTD.
ADDRESS : #308, Jungang Induspia Bldg, 517-13, Sangdaewon-Dong, Jungwon-Gu, Sungnam-Si,
Kyunggi-Do, 462-120, Korea
CONTACT PERSON : E-Sun, You / Manager
TELEPHONE NO : +82-31-740-9009
FCC ID : PH5TWEINFO151
MODEL NO/NAME : INFOGATE-1510U
SERIAL NUMBER : N/A
DATE : March 13, 2001

DEVICE TYPE	Peripheral Device for Class B Computing Device -Unintentional Radiator
E.U.T. DESCRIPTION	15" 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
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.

2. GENERAL INFORMATION

2.1 Product Description

The TAEWON ELECTRONICS CO., LTD., Model INFOGATE-1510U (refer to the EUT in this report) is a 15" TFT-LCD MONITOR for PC. Also the EUT has 4 USB Hub terminal ports on the bottom side of the EUT. 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)		14.31818 MHz on the Main Board 12.0 MHz on the USB HUB Board
NUMBER OF LAYERS		4 Layers : Main Board, 2 Layers : USB HUB, Inverter B/D
LCD PANEL	TYPE	15" Color TFT-LCD Panel
	PIXEL PITCH	0.3 x 0.3 (H x V)mm
	VIEWING ANGLE	55 degree (L/R), 40 degree (U/D)
	NUMBER OF PIXELS	1024 x 768 (H x V) @ 75Hz
MAX. RESOLUTION		1024 X 768 @ 60, 70, 72, 75Hz
INPUT CONNECTOR		15 pin D-sub
POWER INPUT VOLTAGE & CONSUMPTION		DC 12V, 17W
VIDEO SIGNAL		Horizontal : 31 ~ 61KHz, Vertical : 56 ~ 75Hz
DISPLAY SIZE		307x230mm (H x V)
DIMENSION		378(W) x 161(L) x 390(H)
WEIGHT		5.5Kg

Model Differences: -. The following list consists of added model name and their difference. The basic and added models are identical except for following difference.

	Model	Model Differences
Basic Model	INFOGATE-1510U	-
Added Model	INFOGATE-1510	Without control board for USB HUB Terminal ports

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	FCC ID	Description	Connected to
INFOGATE-1510U	TAEWON ELECTRONICS CO., LTD.	PH5TWEINFO151	15" TFT-LCD MONITOR (EUT)	PC
DCM	DELL COMPUTER	DoC	PC	-
2225C	HP	DSI6XU2225	PRINTER	PC
020-0470	CARDINAL	GDE0196	MODEM	PC
5530	BTC	DoC	KEYBOARD	PC
OK-520	A4-TECH	DoC	MOUSE	PC
3500U	BTC	DoC	USB KEYBOARD	EUT
PCA-3100	PROCHIPS	MY8PCA3100	USB CAMERA	EUT
SMU100A	DIOGRAPHY INC.	DoC	USB SMART CARD READER	EUT
INTERLOCK	VIP SECURE	DoC	USB SECURITY KEY	EUT
F1670K	ILAN ELECTRONICS CO., LTD.	N/A	AC/DC ADAPTOR	EUT

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)

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 B/D	KZONE	TKV-1506	N/A
INVERTER B/D	GREEN C&C TECH.	GH001E	N/A
POWER B/D	ILAN ELECTRONICS CO., LTD.	F1670K	N/A
HUB B/D	NSP KOREA	NSP-1402	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. The series of H characters are displayed on the LCD monitor (EUT) until the screen is completely full. And for the USB HUB terminal ports, additional USB Keyboard, Camera, Smart Card Reader and Security key were connected.

The investigated resolution mode of the EUT was set at 1024 x 768, 75Hz.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
15" TFT-LCD MONITOR (EUT)	N	Y	1.5(P), 1.5(D)
PC	N	-	1.5(P)
PRINTER	N	Y	1.5(P), 1.5(D)
MODEM	N	Y	1.5(P), 1.5(D)
KEYBOARD	N/A	N	1.5(D)
MOUSE	N/A	N	1.5(D)
USB KEYBOARD	N/A	Y	1.5(D)
USB CAMERA	N/A	Y	1.5(D)
USB SMART CARD READER	N/A	Y	1.5(D)
USB SECURITY KEY	N/A	Y	1.5(D)
AC/DC ADAPTOR	N	N	1.5(P), 1.2 (D)

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

3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
15" TFT-LCD MONITOR (EUT)	Y	BOTH END	Y	BOTH END
PC	-	-	-	-
PRINTER	N	N/A	Y	BOTH END
MODEM	N	N/A	Y	BOTH END
KEYBOARD	N	N/A	Y	PC END
MOUSE	N	N/A	Y	PC END
USB KEYBOARD	N	N/A	Y	EUT END
CAMERA	N	N/A	Y	EUT END
SMART CARD READER	N	N/A	Y	EUT END
SECURITY KEY	N	N/A	Y	EUT END
AC/DC ADAPTOR	Y	EUT END	Y	EUT END

3.5 Equipment Modifications

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

- 1) Added capacitor (39PF) between L11 and board ground on the controller board of the USB Hub.
- 2) Added capacitor (39PF) between L12 and board ground on the controller board of the USB Hub.
- 3) Added capacitor (12PF) between L11 and L12 on the controller board of the USB Hub.

3.6 Configuration of Test System

Line Conducted Test: The AC/DC Adapter power cable for the EUT was connected to LISN, all supporting equipment 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 Conducted Emission Test**

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
640 X 480 at 75 Hz	
800 X 600 at 75Hz	
1024 X 768 at 75Hz	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)
640 X 480 at 75 Hz	
800 X 600 at 75Hz	
1024 X 768 at 75Hz	X

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 : 43 % Temperature : 20
 Limits apply to : FCC CFR 47, PART 15, SUBPART B
 Type of Test : CLASS B
 Result : PASSED BY -4.00 dB at 4.49 MHz

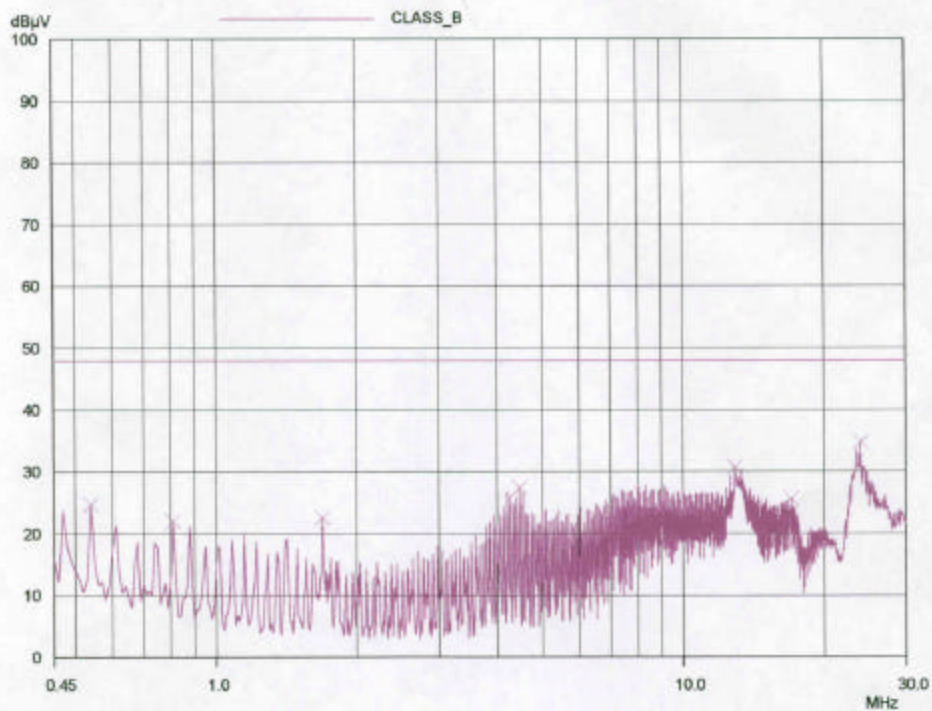
EUT : 15" TFT-LCD MONITOR Date: February 06, 2001
 Operating Condition : Continuously displayed "H" character
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)
1.09	35.39	NEUTRAL	48.00	-12.61
1.43	37.15	NEUTRAL	48.00	-10.85
1.70	38.10	NEUTRAL	48.00	-9.90
4.49	44.00	NEUTRAL	48.00	-4.00
13.05	37.11	NEUTRAL	48.00	-10.89
24.00	34.77	HOT	48.00	-13.23

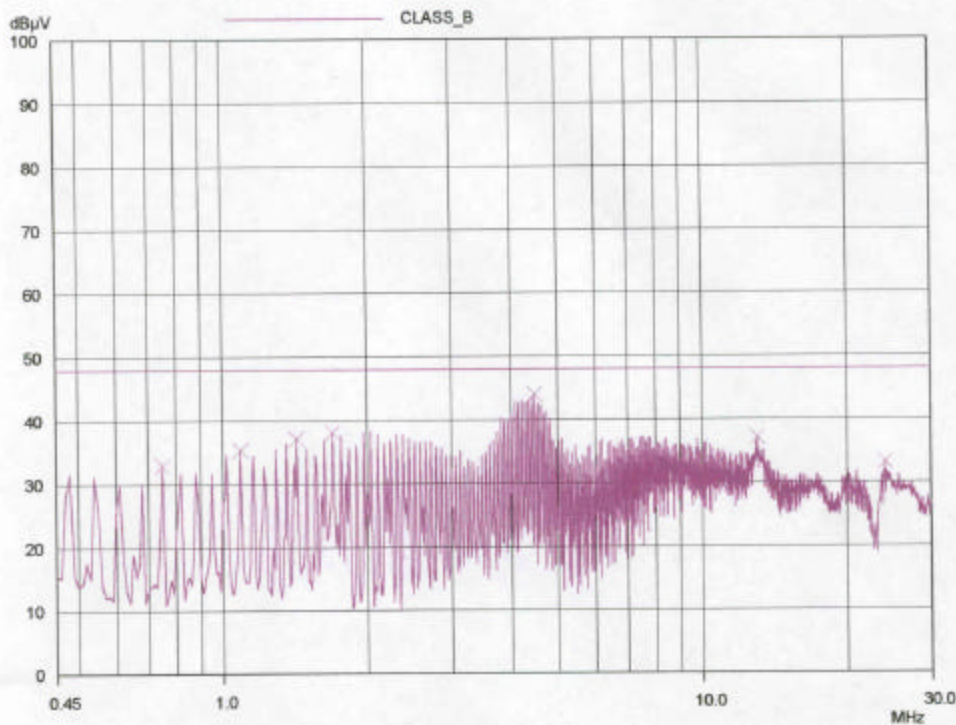
Line Conducted Emission Tabulated Data



Measuring by: Young Min, Choi / Project Engineer



HOT LINE



NEUTRAL LINE

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FCC-004 (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 DaessangryungRi, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)



5.2 Radiated Emission Test

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

Humidity Level : 38% Temperature : 17
Limits apply to : FCC CFR 47, PART 15, SUBPART B
Type of Test : CLASS B
Result : PASSED BY -2.95 dB at 455.80 MHz

EUT : 15" TFT-LCD MONITOR Date: February 13, 2001
Operating Condition : Continuously displayed "H" character
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Ant. Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
48.00	23.00	H	11.25	0.91	35.16	40.00	-4.84
72.00	26.50	H	6.90	1.00	34.40	40.00	-5.60
81.00	25.30	H	6.52	1.02	32.84	40.00	-7.16
84.00	25.30	V	7.10	1.08	33.48	40.00	-6.52
202.00	23.70	H	11.56	1.58	36.84	43.50	-6.66
215.60	22.50	H	11.79	1.65	35.94	43.50	-7.56
239.80	27.00	H	12.20	1.78	40.98	46.00	-5.02
264.00	22.20	H	13.36	1.86	37.42	46.00	-8.58
360.40	21.60	H	15.32	2.33	39.25	46.00	-6.75
371.60	21.50	V	15.47	2.38	39.35	46.00	-6.65
431.60	19.70	H	16.53	2.50	38.73	46.00	-7.27
455.80	23.40	H	17.09	2.56	43.05	46.00	-2.95
506.40	17.30	V	18.32	2.69	38.31	46.00	-7.69
552.40	18.60	V	18.56	2.78	39.94	46.00	-6.06

Radiated Emission Tabulated Data

Measuring by: Young Min, Choi / Project 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)

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	ESHS10	834467/007	APRIL/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.	LISN	EMCO	3825/2	9109-1867 9109-1869	FEB/00	12MONTH	■
10.	RF Amplifier	HP	8447F	3113A04554	JUN/00	N/A	
11.	Spectrum Analyzer	HP	8591A	3131A02312	APR/00	12MONTH	
12.	Computer System	HP	98581C	98543A	N/A	N/A	■
	Hard disk drive		9153C	CMC762Z9153	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	■