



# PEP Testing Laboratory

REPORT NO. : 990047

## RFI / EMI TEST REPORT

**APPLICANT** : INFORTREND TECHNOLOGY INC.

**E. U. T.** : DISK ARRAY CONTROLLER

**TRADE NAME** : N/A

**FCC ID** : LC83101U2G

**REGULATION** : CFR 47 , Part 15 Subpart B , Class B

**TEST SITE** : PEP Testing Laboratory

**TEST ENGINEER** : *Tony Wong*

**TEST DATE** : *(1/25/1999)*

**ISSUED DATE** : FEB. / 09 / 1999

**REPORT No.** : 990047

# FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road  
Columbia, MD 21046  
Telephone: 301-725-1585 (ext-218)  
Facsimile: 301-344-2050

November 25, 1996

IN REPLY REFER TO  
31040/SIT  
1300F2

PEP Testing Laboratory  
12-3 Fl., No. 27-1, Lane 169  
Kang-Ning St., Hsi-chi Town  
Taipei Hsien, Taiwan, R.O.C.

Attention: M. Y. Tsui

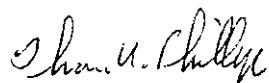
Re: Measurement facility located at above address  
(3 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is published periodically and is also available on the Laboratory's Public Access Link as described in the enclosed Public Notice.

Sincerely,



Thomas W. Phillips  
Electronics Engineer  
Customer Service Branch

Enclosure:  
PAL PN



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REPORT NO. : 990047

## VERIFICATION

### **WE HEREBY VERIFY THAT:**

The E. U. T. listed below has completed RFI testing by PEP Testing Laboratory and the interference emissions can pass **FCC Class B** limitations .

The tested configurations and the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4 - 1992 .

Any data in this RFI report is " **reference** " only .

**APPLICANT : INFORTREND TECHNOLOGY INC.\***

**PRODUCT : DISK ARRAY CONTROLLER\***

**FCC ID : LC83101U2G\***

**MODEL : IFT-3101U2G\***

M. Y. TSUI / Manager

### **PEP Testing Laboratory**

12-3FL., NO. 27-1, Lane 169, Kang-Ning St.,

Hsi-Chi, Taipei Hsien, Taiwan, R. O. C.

TEL : 886-2-6922097 FAX : 886-2-6956236



## TABLE OF CONTENTS

<b><u>1. GENERAL</u></b>	4
1.1 General Information	
1.2 Place of Measurement	
1.3 Labeling Requirements	
1.4 Information to User	
<b><u>2. CONDUCTED EMISSIONS TEST</u></b>	7
2.1 Setup of the Test Facilities	
2.2 Test Procedures	
<b><u>3. RADIATED EMISSIONS TEST</u></b>	9
3.1 Setup of the Test Facilities	
3.2 Test Procedures	
<b><u>4. DESCRIPTION FOR EUT TESTING CONFIGURATION</u></b>	11
<b><u>5. SUPPORTING DEVICES TO TEST</u></b>	12
<b><u>6. TEST CONFIGURATION</u></b>	15
** Conducted Emission Test Photo. and Data	
** Radiated Emission Test Photo. and Data	
<b><u>7. APPENDIX</u></b>	
A. Photos of EUT Appearance	22
B. List of Test Equipment	23



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## 1. GENERAL

### 1.1 GENERAL INFORMATION:

APPLICANT : INFORTREND TECHNOLOGY INC.

10F, NO. 33, SAN-MIN RD., SEC. 2,  
PAN-CHIAO CITY, TAIPEI HSIEN,  
TAIWAN, R. O. C.

MANUFACTURER : INFORTREND TECHNOLOGY INC.

10F, NO. 33, SAN-MIN RD., SEC. 2,  
PAN-CHIAO CITY, TAIPEI HSIEN,  
TAIWAN, R. O. C.

MEASUREMENT PROCEDURE : ANSI C63,4 - 1992

TESTED FOR COMPLIANCE WITH : Title 47 of CFR  
Part 15, Subpart B, Class B

### 1.2 PLACE OF MEASUREMENT PEP Testing Laboratory



## 1.3 LABELING REQUIREMENT

A FCC ID label shall be permanently attached and conspicuously located on the equipment :

**FCC ID : LC83101U2G**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

50 mm

30 mm



## 1.4 INFORMATION TO THE USER

The following FCC statement should be declared in a conspicuous location in the user's manual.

### Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

Warning : A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.

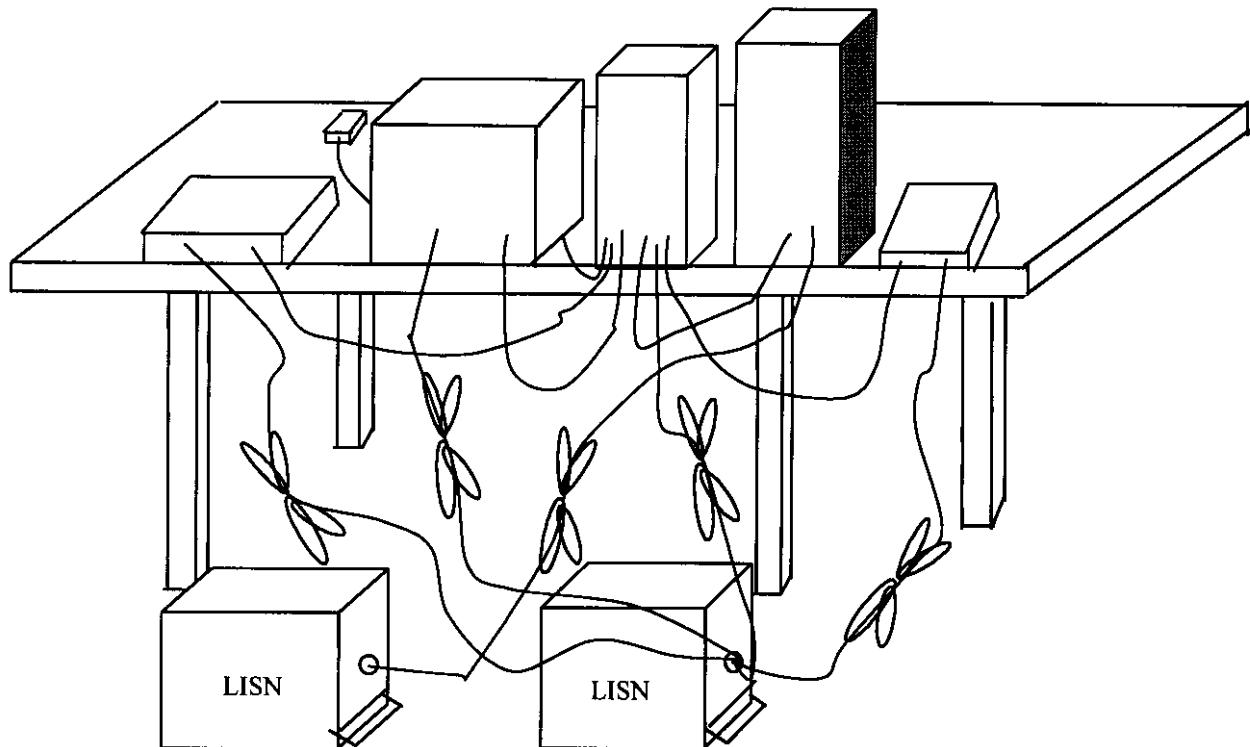
Use only shielded cables to connect I/O devices to this equipment.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.



## 2. CONDUCTION EMISSIONS TEST

### 2.1 GENERAL SETUP OF THE TEST FACILITIES





## 2.2 TEST PROCEDURES

The system was setup as described above, with the EMI diagnostic software .

Both the line of power cord, hot and neutral, were run with the EMI tests software .

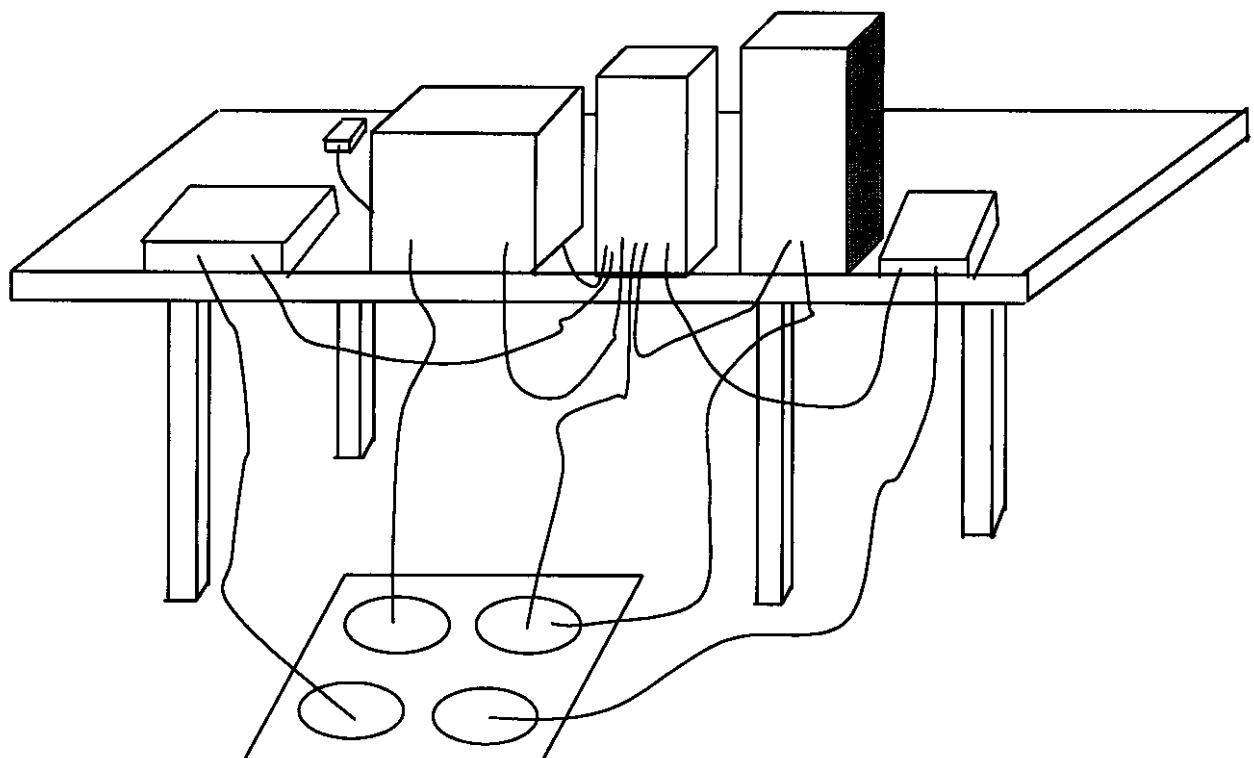
To get the maximum power line conducted emission, we changed the configuration by varying the monitor power cord fed from floor outlet and from the outlet on the power supply of this computer .

The highest emissions were recorded in the RFI test report .



## 3. RADIATED EMISSIONS TEST

### 3.1 GENERAL SETUP OF THE FACILITIES





## 3.2 TEST PROCEDURES

Radiated emissions test was carried out by **PEP Testing Laboratory** at the open field test site authorized by FCC.

The EUT and supporting equipments were setup with the EMI diagnostic software .

- a. setting up the EUT under normally position , and scanning it from 30 MHz to 1000 MHz , then recording those narrow band noises which cannot be 6 dBuV below lower bound . Both horizontal and vertical antenna are measured from 1 meter height to 4.0 meter height , and turntable rotate 360 degrees .
- b. fixing the EUT rear face to antenna and antenna 1.0 meter height . We adjusted I/O cables to find the highest coupling noise and moved the height of antenna from 1 to 4 meters , then rotated the turntable simultaneously .
- c. checking following step b. all points which were recorded in step a.
- d. changing the peripherals position , and routine steps a. b. c.

The highest emissions were recorded in the RFI test report .



#### 4. DESCRIPTION FOR EUT TESTING CONFIGURATION

##### **\*\* TEST PROCESURE ----**

- (A) The EUT is disk array controller , FCC ID: LC83101U2G , which may control eight HDD at most , for more detail information about the EUT , please refer user's manual .
- (B) As tested , the EUT inserted into a disk array system and the controller kept enable by file copy between the HDD in disk array system and HDD inside PC d case during test . The worst case testing data provided in this RFI report .
- (C) After the EUT was set up , we did the conducted emission test in the shielded room and the worst case placement finding as the ANSI C63.4 requirement ; similarly , the radiated emission test was done at the open field site .
- (D) If the peak value of the noise can't under Non-consumer equipment limit 3 dBuV more , we'll change Biconical antenna or Log-periodic antenna for Dipole antenna and record its Quasi-Peak value , making sure it can under 6 dBuV at least .
- (E) In the RFI test report , we provided the worst conducted emission testing data in page C-1.\*  
For the radiated emission test , the worst data recorded in the page R-1.\*



## 5. SUPPORTING DEVICES TO TEST

### **SUPPORT UNIT 1. ---- PERSONAL COMPUTER**

Manufacturer : ASUS Inc.  
Model Number : P2L97  
Power Supply Type : Switching  
Power Cord : Shielded, Detachable, 1.2m  
Data Cable : Shielded, Detachable, 1.2m  
FCC ID : N/A

### **SUPPORT UNIT 2. ---- MONITOR**

Manufacturer : Acer Peripherals Inc.  
Model Number : 7134T  
Power Supply Type : Switching  
Power Cord : Shielded, Detachable, 1.2m  
Data Cable : Shielded, Undetachable, 1m  
FCC ID : JVP7134T

### **SUPPORT UNIT 3. ---- PRINTER**

Manufacturer : Hewlett-Packard Singapore Pte Ltd.  
Model Number : C2642A  
Power Supply Type : Linear  
Power Cord : Non-Shielded, Detachable, 1.2m  
Data Cable : Shielded, Detachable, 1m. 2464  
FCC ID : N/A



## **SUPPORT UNIT 4. ---- MODEM**

Manufacturer : ACEEX

Model Number : 1414

Power Supply Type : Linear

Power Cord : Non-Shielded, Detachable, 1.2m

Data Cable : Shielded, Detachable, 1m

FCC ID : IFAXDM1414

## **SUPPORT UNIT 5. ---- KEYBOARD**

Manufacturer : Acer Peripherals Inc.

Model Number : 6311-KW

Power Supply Type : N/A

Power Cord : N/A

Data Cable : Shielded, Undetachable, 1.2m

FCC ID : JVPKBS-WIN

## **SUPPORT UNIT 6. ---- MOUSE**

Manufacturer : ACER

Model Number : M-S34

Power Supply Type : N/A

Power Cord : N/A

Data Cable : Shielded, Undetachable, 1m

FCC ID : DZL211029



**EQUIPMENT UNDER TEST ---- DISK ARRAY CONTROLLER**

**Manufacturer : INFORTREND TECHNOLOGY INC.**

**Model Number : IFT-3101U2G**

**Data Cable : Shielded, Undetachable, 1.2m**

**FCC ID : LC83101U2G**



## 6. TEST CONFIGURATION

Radiated emission detector function :

(1) 30MHZ~1GHZ : Quasi-Peak Value  
Resolution BW : 120KHZ Video BW : 300KHZ

(2) above 1GHZ : Quasi-Peak value and Average Value  
Resolution BW : 1MHZ Video BW : 1MHZ  
\* either Q. P. or average value will be recorded  
in the report

Conducted emission detector function :

(1) 450KHZ~30MHZ : Quasi-Peak Value  
Resolution BW : 9KHZ Video BW : 30KHZ

The else descriptions : N/A

Conducted Emission Test Photo. : Page 16

Test Data : Hot 17

Neutral 18

Radiated Emission Test Photo. : Page 19

Test Data : Horizontal 20

Vertical 21



# PEP Testing Laboratory

REPORT NO. : 990047

## CONDUCTED EMISSIONS TEST DATA

### Note : HOT LINE TEST

Freq. (MHz)	Level (dB)	Over Limit (dB)	Limit Line (dB)	Read Level (dB)	Probe Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)
0.180	45.04	- 2.96	48.00	23.21	0.10	1.73	-20.00
2.105	44.69	- 3.31	48.00	22.80	0.10	1.78	-20.00
2.903	40.35	- 7.65	48.00	18.40	0.15	1.80	-20.00
6.478	38.41	- 9.59	48.00	16.20	0.36	1.85	-20.00
11.206	40.59	- 7.41	48.00	18.20	0.56	1.83	-20.00
12.802	39.67	- 8.33	48.00	17.20	0.62	1.85	-20.00
15.402	39.81	- 8.19	48.00	17.20	0.71	1.90	-20.00
20.544	43.05	- 4.95	48.00	20.20	0.81	2.04	-20.00
21.135	43.88	- 4.12	48.00	21.00	0.82	2.05	-20.00
22.317	42.92	- 5.08	48.00	20.00	0.85	2.07	-20.00

Note :

1. Level = Read Level + Probe Factor + Cable Loss - Preamp Factor
2. Over Limit = Level - Limit Line



# PEP Testing Laboratory

REPORT NO. : 990047

## CONDUCTED EMISSIONS TEST DATA

### Note : NEUTRAL LINE TEST

Freq. (MHz)	Level (dB)	Over Limit (dB)	Limit Line (dB)	Read Level (dB)	Probe Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)
0.450	44.03	- 3.97	48.00	22.20	0.10	1.73	-20.00
1.868	43.08	- 4.92	48.00	21.20	0.10	1.78	-20.00
6.271	39.20	- 8.80	48.00	17.00	0.35	1.85	-20.00
7.601	39.46	- 8.54	48.00	17.20	0.41	1.85	-20.00
10.586	39.15	- 8.85	48.00	16.80	0.53	1.82	-20.00
13.334	39.70	- 8.30	48.00	17.20	0.64	1.86	-20.00
17.973	39.71	- 8.29	48.00	17.00	0.76	1.95	-20.00
21.874	45.51	- 2.49	48.00	22.60	0.84	2.07	-20.00
22.583	44.33	- 3.67	48.00	21.40	0.86	2.07	-20.00
24.326	41.62	- 6.38	48.00	18.60	0.89	2.13	-20.00

#### Note :

1. Level = Read Level + Probe Factor + Cable Loss - Preamp Factor
2. Over Limit = Level - Limit Line



## RADIATED EMISSIONS TEST DATA

Antenna polarization : HORIZONTAL; Test distance : 3 m;

Freq. (MHz)	Level (dB)	Over Limit (dB)	Limit Line (dB)	Read Level (dB)	Probe Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)
60.001	20.49	- 9.51	40.00	30.59	9.10	0.80	20.00
120.000	18.49	-11.51	43.50	26.03	11.30	1.16	20.00
165.007	20.66	- 9.34	43.50	26.33	12.88	1.53	20.00
180.005	23.03	- 6.97	43.50	27.83	13.60	1.60	20.00
231.007	19.93	-17.07	46.00	21.95	15.92	2.06	20.00
363.012	30.80	- 6.20	46.00	32.97	15.07	2.77	20.00
396.012	27.14	- 9.86	46.00	28.11	16.23	2.80	20.00
429.016	27.30	- 9.70	46.00	27.07	17.30	2.93	20.00
462.016	25.09	-11.91	46.00	25.09	16.94	3.06	20.00
495.016	21.59	-15.41	46.00	21.23	17.18	3.18	20.00

Note :

1. Level = Read Level + Probe Factor + Cable Loss - Preamp Factor
2. Over Limit = Level - Limit Line



# PEP Testing Laboratory

REPORT NO. : 990047

## RADIATED EMISSIONS TEST DATA

Antenna polarization : VERTICAL ; Test distance : 3 m ;

Freq. (MHz)	Level (dB)	Over Limit (dB)	Limit Line (dB)	Read Level (dB)	Probe Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)
132.017	18.02	-11.98	43.50	24.85	11.88	1.29	20.00
165.005	25.86	- 4.14	43.50	31.53	12.80	1.53	20.00
231.004	22.67	-14.33	46.00	24.69	15.92	2.06	20.00
240.034	25.34	-11.66	46.00	26.91	16.30	2.13	20.00
264.005	27.40	- 9.60	46.00	27.43	17.63	2.35	20.00
330.011	33.10	- 3.90	46.00	26.47	13.89	2.73	20.00
363.011	27.52	- 9.48	46.00	29.69	15.07	2.77	20.00
396.011	21.32	-15.68	46.00	22.29	16.23	2.80	20.00
462.018	26.81	-10.19	46.00	26.81	16.94	3.06	20.00
495.018	22.81	-14.19	46.00	22.45	17.18	3.18	20.00

Note :

1. Level = Read Level + Probe Factor + Cable Loss - Preamp Factor
2. Over Limit = Level - Limit Line



# PEP Testing Laboratory

REPORT NO. : 990047

## List of Test Equipment

Instrument	Model No.	Cal. Due Date	S/N
R&S Receiver	ESVS30(30M~1GHZ)	Apr. 21, 1999	863342/012
R&S Receiver	ESBI (20~5GHZ)	Feb. 12, 1999	845658/003
Spectrum Analyzer	HP8591A(9K~1.8GHZ)	Apr. 15, 1999	3225A03039
Spectrum Analyzer	R3261A (9K~2.6GHZ)	Dec. 03 1999	91720076
EMCO L.I.S.N.	3825/2 (10K~30MHZ)	Apr. 15, 1999	9311-2150
L.I.S.N.	KNW-242(10K~30MHZ)	Jan. 31, 1999	8-837-7
R & S L.I.S.N.	ESH3-Z5(9K~30MHZ)	Jul. 09, 1999	844982/039
Anritsu Pre-Amp.	MH648A(100K~1.4GHZ)	Sep. 20, 1999	M40076
R & S Pre-Amp.	ESMI-Z7(20M~7GHZ)	Feb. 12, 1999	6/2278/011
COM-Power Horn Antenna	AH-118 (1G~18GHZ)		10056
EMCO Dipole Antenna	3121C (20M~1GHZ)	May. 22, 1999	9611-1230
EMCO Biconical Antenna	3110B (30M~300M)	Mar. 10, 1999	2932
EMCO Log-Periodic Antenna	3146A (300M~1GHZ)	Apr. 14, 1999	1384