

Measurement Report

FCC ID: TUDDA0126-01This report concerns (check one) : ☒ Original Grant ☐ Class II Change

Issued Date : Dec. 19, 2005
Project No. : 0512009
Equipment : Ballast
Model No. : DA0126-01
Applicant : FAIRWAY ELECTRONIC CO., LTD.
3FI-2, No. 502, Yuanshan Rd.,
Chung Ho City, Taipei Hsien,
Taiwan, R.O.C.

Tested by :
Neutron Engineering Inc. EMC Laboratory
FCC Registration Number : 95335

Date of Test :
Dec. 05, 2005 ~ Dec. 09, 2005

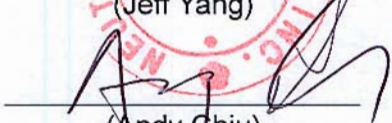
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Declaration

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1. General Information**1.1 Applicant**

Name FAIRWAY ELECTRONIC CO., LTD.
Address 3FI-2, No. 502, Yuanshan Rd., Chung Ho City, Taipei Hsien, Taiwan, R.O.C.

1.2 Manufacturer

Name N/A
Address N/A

1.3 Equipment Under Tested

Name: Ballast
Trade Name: FAIRWAY
Model No.: DA0126-01

1.4 OEM Brand/Model (if applicable)

OEM Brand(s)/Model(s) except the basic model in sub-clause 1.3 is(are) the follow(s):
OEM Brand: N/A
Model No.: N/A

1.5 Product Descriptions(Application/Features/Specification)

ISM Equipment Category: Ballast
Nominal Operating Frequency: 39 +/- 1 KHz
Electrical Power: 115V-230V AC input
Power Cord: non-shielded type wire
More details of EUT technical specification, please refer to the User's Manual.

1.6 Products Covered (if applicable)

The sample tested including the following sub-system/module/accessory :

Sub-system/ Module/ Accessory	Model/Type No.	Int. Inst./ Ext. Cont.
N/A	N/A	N/A

1.7 Model Difference (Series, Versions, if any)

Except the basic model no. (model designation of the sample tested in this test report),
additional model no. covered is(are) :

N/A

1.8 EUT Modifications (if applicable)

Please refer to the Attachment – **A**.

1.9 Photos of EUT

Please refer to the Attachment – **C**.

2. RFI Emissions Measurement

2.1 Test Facility

The test facilities used to collect the test data in this report located at No.132-1, Lane 329, Sec. 2, Palain Road, Shijr City, Taipei, Taiwan. A description of this test facilities is already on file with the FCC as registration number of 95335.

2.2 Standard Compliance

The test Standard contained in this report relate only to the item(s) listed below :
FCC Part 18 , Section 18.305(C) and 18.307(C) , Consumer Equipment Limits

2.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (1992) / MP-5 (1986).

Radiated testing was performed at an antenna to EUT distance 3 meter by loop antenna used.

Test procedures according to the technical standards of :
FCC Rules Part 18, Subpart C.

2.4 Deviations from Standard Test Method

FCC Part 18, Section 18.305(b) Radiated Emission Limits ; “Any Non-ISM frequency” is adopted

2.5 Sample(s) Tested

The representative sample tested in this reports is(are): DA0126-01

Test results in this test report relate only to the sample(s) tested.

2.6 Measurement Instruments

Valid measurement instruments used in this report refer to **Table-1** enclosed.

2.7 Environmental Condition

Temperature 20 °C

Relative Humidity 69 %

2.8 Tested System Set-Up/Configuration Details

The system was configured for testing in a typical fashion (as a user would normally use) or in-accordance with the operating configuration specified in the user's manual. A Block Diagram(please refer to the Diagram - 1) and Photos(please refer to the attachment - **B**) showing the set-up/configuration of system tested. In addition, **Table-2** and **Table-3** provide a detail of all equipment items and cables information used in the system tested.

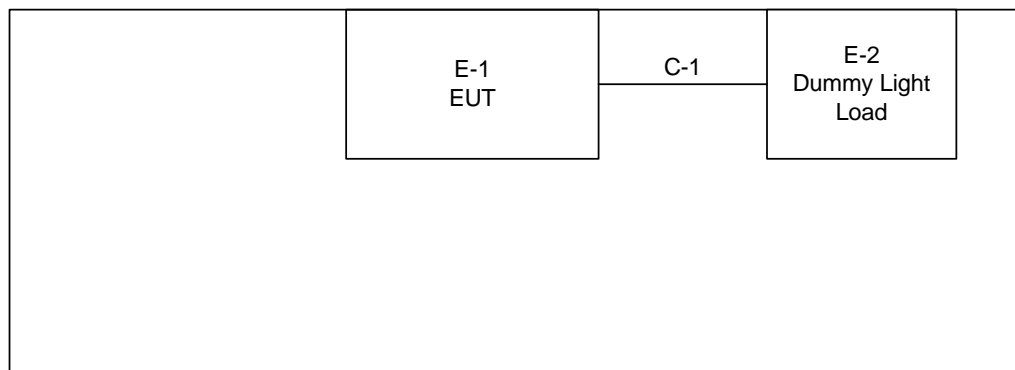
Table -1 Measurement Instruments List

Item	Instruments	Mfr/Brand	Model/Type No.	Serial No.	Calibrated Date	Next Cali. Date	Note
1	LISN	EMCO	3825/2	9605-2539	2005-10-03	2006-10-02	✓
2	LISN	Rolf Heine	NNB-2/16Z	98083	2005-08-02	2006-08-01	
3	LISN	Rolf Heine	NNB-2/16Z	98053	2004-12-24	2005-12-23	
4	4L-V-LISN	Rolf Heine	NNB-4/63TL	02/10040	2005-04-08	2006-04-07	
5	LISN	EMCO	3816/2	00042991	2005-01-12	2006-01-11	
6	LISN	EMCO	3816/2	00042990	2005-01-12	2006-01-11	
7	LISN	EMCO	4825/2	00028234	2005-10-13	2006-10-12	
8	ISN	SCHAFFNER	ISN T400	16017	2005-04-01	2007-03-31	
9	Pulse Limiter	Electro-Metrics	EM-7600	112644	2005-11-30	2006-11-29	✓
10	50 Ω Terminator	N/A	N/A	N/A	2005-05-12	2007-05-11	✓
11	Test Cable	N/A	C01	N/A	2005-11-30	2006-11-29	✓
12	Test Cable	N/A	CISPR 14	N/A	2005-10-03	2006-10-02	
13	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3058	2005-11-30	2006-11-29	
14	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3177	2005-02-07	2007-02-06	
15	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9161	4022	2005-08-17	2006-08-16	
16	Test Cable	N/A	10M_OS01	N/A	2005-11-30	2006-11-29	
17	Test Cable	N/A	OS01-1/-2	N/A	2005-11-30	2006-11-29	
18	Test Cable	N/A	10M_OS02	N/A	2005-11-30	2006-11-29	✓
19	Test Cable	N/A	OS02-1/-2/-3	N/A	2005-11-30	2006-11-29	✓
20	RF Switch	Anritsu	MP59B	M65982	2005-11-30	2006-11-29	
21	Pre-Amplifier	Anritsu	MH648A	M09961	2005-11-30	2006-11-29	
22	Spectrum Analyzer	ADVAN TEST	R3261C	81720298	2005-09-15	2006-09-14	
23	Spectrum Analyzer	ADVAN TEST	R3132	81700025	2005-02-23	2006-02-22	
24	Spectrum Analyzer	HP	8591EM	3536A00681010	2005-06-30	2006-06-29	
25	EMI Test Receiver	R&S	ESCI	100082	2005-02-02	2007-02-01	✓
26	EMI Test Receiver	R&S	ESCI	100080	2005-01-10	2007-01-09	
27	Test Receiver	MEB	SMV41	130	2005-11-23	2006-11-22	
28	Test Receiver	PMM	PMM 9000	4310J01002	2005-02-25	2006-02-24	
29	Horn Antenna	EMCO	3115	9605-4803	2005-06-10	2006-06-09	
30	Absorbing Clamp	Schwarzbeck	MDS-21	03195	2005-06-17	2006-06-16	
31	Voltage Probe	R&S	ESH2-Z3	841.800/023	2005-09-13	2006-09-12	
32	Antenna Mast	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
33	Turn Table	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
34	Loop Ant	EMCO	6502	00042960	2005-01-14	2008-01-13	✓

Remark :

(1)" ✓" indicates the instrument used in Test Report.

(2)" N/A" denotes No Model No. / Serial No. and No Calibration specified.

Diagram – 1**Block diagram showing the configuration of system tested**

C-1 Power Cable

Table - 2 Equipments Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Ballast	FAIRWAY	DA0126-01	TUDDA0126-01	N/A	EUT
E-2	Dummy Light Load	N/A	N/A	N/A	N/A	

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment.
- (2) Unless otherwise marked as ※ in 『Remark』 column, Neutron consigns the support equipment to the tested system.
- (3) The support equipment E-2 is a fluorescent lamp used as the load for EUT.

Table - 3 Information of Interface Cable

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	YES	80cm	

Note:

- (1) Unless otherwise marked as ※ in 『Remark』 column, Neutron consigns the support equipment to the tested system.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.9 Max.(Worst Case) RF Emission Evaluation

- (a) Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (1992) and the FCC Measurement Procedure MP-5 (1986).
- (b) The system was configured for testing in a typical fashion (as a customer would normally use it).The lamp was connected to EUT as a customer would normally use it as possible to comply with the Rules or Standards requirement.
- (c) To investigate the maximum EMI emission characteristics, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively and used to collect the included data.

2.10 EUT Operation

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively and used to collect the included data.

3. Justification

3.1 Frequency Range of Measurement

3.1.1 Power Line Conducted Emission

150KHz-30MHz

3.1.2 Radiated Emission

Frequency Band in which Device Operates (MHz)	Range of Frequency Measurements	
	Lowest Frequency	Highest Frequency
Below 1.705	Lowest freq. generated In the device, but not lower than 9KHz	30MHz
1.705 to 30	Lowest freq. generated In the device, but not lower than 9KHz	400MHz
30 to 500	Lowest freq. generated In the device or 25MHz, whichever is lower.	Tenth harmonic or 1000MHz, whichever is higher.
500 to 1000	Lowest freq. generated In the device or 100MHz, whichever is lower.	Tenth harmonic
Above 1000	Didtto	Tenth harmonic or highest detectable emission

3.2 Limitations

3.2.1 Power Line Conducted Emission (Frequency Range 150KHz-30MHz)

Frequency Range (MHz)	Non-consumer Equipment		Frequency Range (MHz)	Consumer Equipment	
	dBuV	uV		dBuV	uV
0.45 - 1.60	60.00	1000	0.45 - 2.51	48	250
1.60 - 30.0	69.50	3000	2.51 - 3.00	69.5	3000
			3.00 - 30.0	48	250

Notes : The tighter limit applies at the band edges.

3.3 Measurement Justification

3.3.1 Conducted Emission

The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and these signals are then Quasi Peak detector mode re-measured.

Data of **Table - 4.** lists the significant emission frequencies, measured levels, limits and safe margins. All readings are Peak Mode measured unless otherwise stated as QP in column of "Remark".

If the Peak Mode measured value lower than both QP Mode Limit, EUT shall be deemed to compliance with both QP Limits and then no additional QP Mode measurement performed.

3.4 Measurement Data

Table - 4. Conducted Emission Data

Table 4 Conducted Emission Data

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Judgment : Passed by -2.69 dB at 27.06 MHz, Peak Mode, Consumer Equipment , Neutral

Freq. (MHz)	Terminal L/N	Measured (dBuV)	Limits		Safe Margins		Remark C
			(dBuV)	(uV)	(dBuV)	Note	
0.51	Line	36.01	48.00	250	-11.99		
0.67	Line	37.27	48.00	250	-10.73		
0.83	Line	36.01	48.00	250	-11.99		
14.88	Line	38.51	48.00	250	-9.49		
24.00	Line	42.34	48.00	250	-5.66		
27.00	Line	43.79	48.00	250	-4.21		
0.51	Neutral	43.65	48.00	250	-4.35		
0.59	Neutral	42.73	48.00	250	-5.27		
0.67	Neutral	41.26	48.00	250	-6.74		
14.94	Neutral	37.01	48.00	250	-10.99		
23.69	Neutral	43.07	48.00	250	-4.93		
27.06	Neutral	45.31	48.00	250	-2.69		

Remark :

- (1) Reading was measured by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, SWP Time = 0.3 sec./ MHz ◦
- (2) All readings are QP Mode value unless otherwise stated Peak in column of 『 Note 』 .
- (3) Measuring frequency range from 450KHz to 30MHz ◦
- (4) Remark C denotes the Consumer Equipment limitation used for judgment.
- (5) Remark NC denotes the Non-Consumer Equipment limitation used for judgment.

Attachment

Table Contents

- A. EUT Modification Description
- B. EUT Test Photos
- C. EUT Photos

Attachment - A.

EUT Modification Description

No any modification required for the EUT to comply with the standards.

Attachment - B.

EUT Test Photos

1. Conducted Measurement Photos

Attachment – C

EUT Photos

- 1. Photo # 1 Front View**
- 2. Photo # 2 Unit Partially Disassembled**
- 3. Photo # 3 Unit Partially Disassembled**
- 4. Photo # 4 Unit Partially Disassembled**

Attachment – D

User's Manual

Attachment - E

Product Labeling