QTK99-F031

Test Report

For

Applicant	**: Taiwan Fluorescent Lamp Co., Ltd.**
Equipment Type	**: Lamp Holder Fitting**
Model	**: FSL-20EXD, FSL-20EXL, FSL-15EXD, FSL-15EXL**
FCC ID	**: OQRTFC02**

Report No. : 999H021F

Test Report Certification

QuieTek Corporation

No.75-1, Wang-Yeh Valley, Yung-Hsing, Chiung-Lin,
Hsin-Chu County, Taiwan, R.O.C.
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Accredited by NIST(NVLAP), VCCI, BSMI, DNV, TUV

Applicant	: Taiwan Fluorescent Lamp Co., Ltd.
Address	: No.218, Kuang-Ming Rd., Chu Tung, Hsin Chu, Taiwan, R.O.C.
Equipment Type	: Lamp Holder Fitting
Model	: FSL-20EXD, FSL-20EXL, FSL-15EXD, FSL-15EXL
FCC ID.	: OQRTFC02
Measurement Standard	: FCC Part 18 Subpart C
Measurement Procedure	: ANSI C63.4 /1992
Operation Voltage	: 120VAC/60Hz
Test Result	: Complied
Test Date	: Sep. 15 , 1999
Report No.	: 999H021F

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The Test Results relate only to the samples tested.
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Documented by: Kim Hung	Test Engineer: Arthur Liu	Approved: Gene Chang

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1. General Information

1.1 EUT Description

Applicant	: Taiwan Fluorescent Lamp Co., Ltd.
Address	: No.218, Kuang-Ming Rd., Chu Tung, Hsin Chu, Taiwan, R.O.C.
Equipment Type	: Lamp Holder Fitting
Model	: FSL-20EXD, FSL-20EXL, FSL-15EXD, FSL-15EXL
FCC ID	: OQRTFC02
Operation Voltage	: 120VAC/60Hz

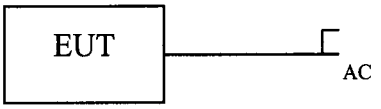
Remark : 1.The EUT is a Lamp Holder Fitting.
2. QuieTek had verified the construction and function in typical operation, then shown in this test report.

1.2 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

1.2.1 None

1.3 EUT Configuration



1.4 EUT Exercise Software

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

1.4.1 Setup the EUT as shown on 1.3

1.4.2 Turn on the power of EUT.

1.5 Test performed

Conducted emissions were invested over the frequency range from **0.45MHz to 30MHz** using a receiver bandwidth of 9kHz.

Radiated emissions were invested over the frequency range from **9kHz to 30MHz** using a receiver bandwidth of 120kHz. Radiated testing was performed at an antenna to EUT distance of 3 meters .

1.6 Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: November 3, 1998 File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Reference 31040/SIT1300F2

September 30, 1998 Accreditation on NVLAP
NVLAP Lab Code: 200347-0

February 23, 1999 Accreditation on DNV
Statement No. : 413-99-LAB11

December 8, 1998 Registration on VCCI
Registration No. for No.2 Shielded Room C-858
Registration No. for No.1 Open Area Test Site R-823
Registration No. for No.2 Open Area Test Site R-835

January 04, 1999 Accreditation on TUV Rheinland
Certificate No.: I9865712-9901

Name of firm : QuieTek Corporation

Site location : No.75-1, Wang-Yeh Valley, Yung-Hsing Tsuen,
Chiung-Lin, Hsin-Chu County, Taiwan, R.O.C.

2. Conducted Emission

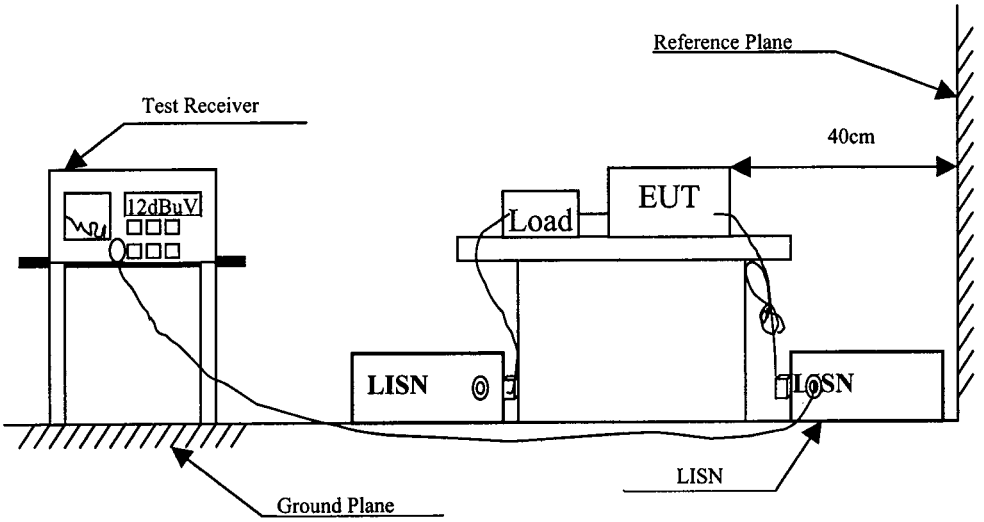
2.1 Test Equipment List

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal..	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 1999	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 1999	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 1999	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	N/A	
5	N0.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2 Test Setup



2.3 Limits

FCC Part 18 Subpart C (dBuV)		
Frequency band in which device operates (MHz)	Range of frequency measurements	
	Lowest frequency	Highest frequency
Below 1.705	Lowest frequency generated in the device, but not lower than 9kHz.	30 MHz
1.705 to 30	Lowest frequency generated in the device, but not lower than 9kHz.	400MHz
30 to 500	Lowest frequency generated in the device or 25MHz, whichever is lower.	Tenth harmonic or 1,000 MHz, whichever is higher.
500 to 1,000	Lowest frequency generated in the device or 100MHz, whichever is lower.	Tenth harmonic
Above 1,000	do	Tenth harmonic or highest detectable emission

RF lighting devices	
Frequency(MHz)	Maximum RF line voltage measured with a 50 μH/50 ohm LISN (μV)
Consumer equipment: 0.45 to 30	250 (48 dB μV)

Remark: 1.Regard to the operation frequency of the EUT is below 1.70 MHz, the highest Frequency of measure performed was 30 MHz. However, the radiated emission of the EUT was also verified regards to Class B devices and written in this report.

2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.RF Line Voltage (dBuV) = 20 log RF Line Voltage (uV)

2.4 Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 /1992 on conducted measurement.

The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

2.5 Test Results

The conducted emission from the EUT is measured and shown in attachment 1 of test report. The acceptance criterion was met and the EUT passed the test.

3. Radiated Emission

3.1 Test Equipment

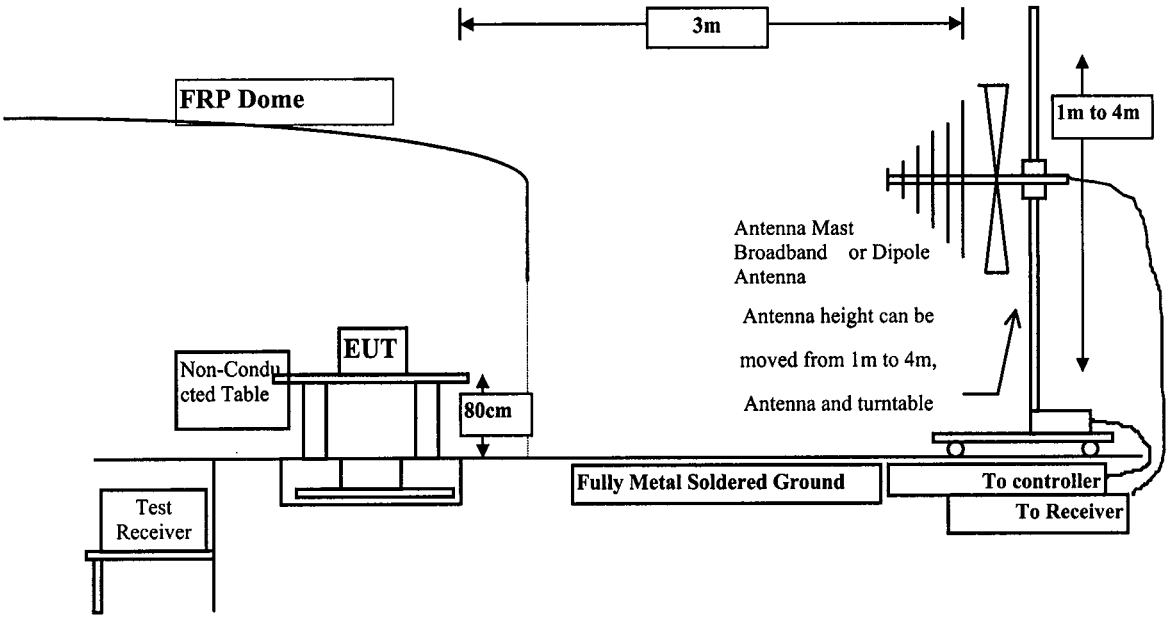
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 1	X	Test Receiver	R & S	ESCS 30 / 825442/14	May, 1999
		Spectrum Analyzer	Advantest	R3261C / 71720140	May, 1999
		Pre-Amplifier	HP	8447D/3307A01812	May, 1999
	X	Bilog Antenna	Chase	CBL6112B / 12452	Sep., 1999
	X	Horn Antenna	EM	EM6917 / 103325	May, 1999
Site # 2	X	Test Receiver	R & S	ESCS 30 / 825442/17	May, 1999
		Spectrum Analyzer	Advantest	R3261C / 71720609	May, 1999
		Pre-Amplifier	HP	8447D/3307A01814	May, 1999
	X	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 1999
	X	Horn Antenna	EM	EM6917 / 103325	May, 1999

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.

2.. Mark "X" test instruments are used to measure the final test results.

3.2 Test Setup



3.3 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The EUT was positioned such that the distance from antenna to the EUT was 3 meters .
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4 /1992 on radiated measurement.
The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 120 kHz.

3.4 Test Results

The radiated emission from the EUT is measured and shown in attachment 1 of test report.
The acceptance criterion was met and the EUT passed the test.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.

5. Attachment

Attachment 1: Summary of Test Results	Number of Pages: 5
Attachment 2: EUT Test Photographs	Number of Pages: 2
Attachment 3: EUT detail photographic	Number of Pages: 3

Attachment 1 : Summary of Test Results

The test results in the emission was performed according to the requirements of measurement standard and process. QuieTek Corporation is assumed full responsibility for the accuracy and completeness of these measurements. The test data of the emission is listed as the attached data.

All the tests were carried out with the EUT in normal operation, which was defined as:

Mode 1 : Normal Operation

The EUT passed all the tests.

The uncertainty is calculated in accordance with NAMAS NIS 81, The total uncertainty for this test is as follows:

➢ **Emission Test**

- Uncertainty in the Conducted Emission Test: $< \pm 2.0$ dB
- Uncertainty in the field strength measured: $< \pm 4.0$ dB

CONDUCTED EMISSION DATA

Date of Test	:	Sep. 15,1999	EUT	:	LAMP HOLDER FITTIMG
Test Mode	:	Mode 1	Detect Mode	:	Quasi-Peak

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level Line1 dBuV	Measurement Level Line1 dBuV	Limits dBuV
*0.471	0.06	0.10	39.48	39.64	48.00
0.601	0.07	0.10	36.45	36.62	48.00
0.759	0.09	0.10	28.38	28.57	48.00
0.883	0.09	0.10	21.65	21.84	48.00
1.816	0.14	0.13	23.35	23.61	48.00
5.171	0.20	0.17	6.65	7.02	48.00

Remarks :

1. " * " means that this data is the worst emission level.

CONDUCTED EMISSION DATA

Date of Test	:	Sep. 15,1999	EUT	:	LAMP HOLDER FITTIMG
Test Mode	:	Mode 1	Detect Mode	:	Quasi-Peak

Frequency	Cable Loss	LISN Factor	Reading Level Line2	Measurement Level Line2	Limits
MHz	dB	dB	dBuV	dBuV	dBuV
0.490	0.06	0.10	23.54	23.70	48.00
0.548	0.07	0.10	30.46	30.63	48.00
*0.687	0.08	0.10	32.64	32.82	48.00
0.809	0.09	0.10	30.41	30.60	48.00
3.020	0.17	0.15	12.58	12.90	48.00
14.474	0.32	0.33	18.57	19.22	48.00

Remarks :

1. " * " means that this data is the worst emission level.

RADIATED EMISSION DATA

Date of Test	:	Sep. 15,1999	EUT	:	LAMP HOLDER FITTIMG
Test Mode	:	Mode 1	Test Site	:	No.1 Open Test Site

Freq.	Cable Loss	Probe Factor	PreAMP	Reading Level	Measurement Horizontal	Margin	Limit	Ant	Turn
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	cm	deg
109.780	1.92	12.43	0.00	5.90	20.25	23.25	43.50	394	74
494.630	4.77	17.96	0.00	3.60	26.32	19.68	46.00	241	94
573.200	5.17	18.78	0.00	4.20	28.15	17.85	46.00	182	78
767.200	6.18	20.26	0.00	3.60	30.04	15.96	46.00	157	42
844.800	6.59	20.79	0.00	3.90	31.29	14.71	46.00	116	54
*909.790	6.93	21.00	0.00	3.40	31.33	14.67	46.00	100	164

Remarks:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + Antenna Factor + Cable loss

RADIATED EMISSION DATA

Date of Test	:	Sep. 15,1999	EUT	:	LAMP HOLDER FITTIMG
Test Mode	:	Mode 1	Test Site	:	No.1 Open Test Site

Freq.	Cable Loss	Probe Factor	PreAMP	Reading Level	Measurement Vertical	Margin	Limit	Ant	Turn
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	cm	deg
55.230	1.39	8.10	0.00	8.20	17.70	22.30	40.00	99	124
87.230	1.70	9.87	0.00	5.10	16.67	23.33	40.00	99	45
465.530	4.61	17.07	0.00	6.20	27.89	18.11	46.00	99	68
551.860	5.06	18.75	0.00	5.30	29.11	16.89	46.00	326	87
652.740	5.59	19.37	0.00	5.30	30.26	15.74	46.00	248	48
*676.990	5.72	19.43	0.00	5.60	30.75	15.25	46.00	245	31

Remarks:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + Antenna Factor + Cable loss