

FCC TEST REPORT

For
Dongguan City Kailin Lighting Co., Ltd.

Compact Flourescent Lamp
Model No.: SPST 11SM, SPST 13SM

Test Report Number : ESTSZ110701210F



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1 GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Dongguan City Kailin Lighting Co., Ltd.
Address of applicant: Foxin Industrial District, Dalang Town, Dongguan, Guangdong, China
Manufacturer: Supersun Technology (Jiangxi) Lighting Co., Ltd.
Address of manufacturer: Supersun Park, Wannian Industrial Zone, Jiangxi Province, China

General Description of E.U.T

EUT Description: Compact Flourescent Lamp
Trade Name: N/A
Model No.: SPST 11SM, SPST 13SM
Power Supply: AC 120V, 60Hz
Test Power Supply: AC 120V, 60Hz

Remark: *The models of EUT are identical except appearance and power of equipment. Unless otherwise specified, all tests were performed on model SPST 11SM & SPST 13SM.*

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

FCC Rules and Regulations Part 18

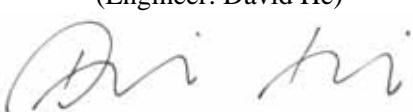
The objective of the manufacturer is to demonstrate compliance with the described above standards.

Date of Test : Jul. 13~19, 2011

Prepared by :


(Engineer: David He)

Reviewer :


(Project Manager: Ronnie Liu)

Approved & Authorized Signer :


(Manager: Alex Chen)

1.3 Test Summary

For the EUT described above. The standards used were FCC Part 18 for Emissions

Table 1 : Tests Carried Out Under FCC Part 18

Standard	Test Items	Status
FCC Part 18	Conduction Emission, 0.15MHz to 30MHz	✓
FCC Part 18	Radiation Emission, 30MHz to 1000MHz	✓

✓ Indicates that the test is applicable
 ✗ Indicates that the test is not applicable

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

The maximum emission levels emanating from the device are compared to the FCC Part 18 limits for radiation emissions and the measurement results contained in this test report show that EUT is to be technically compliant with FCC requirements.

Global United Technology Service Co., Ltd at 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, China

1.5 Test Facility

All measurement required was performed at laboratory of Global United Technology Service Co., Ltd at 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, China

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 600491

Global United Technology Service Co., Ltd has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 600491.

The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

1.6 Test Equipment List and Details

Test equipments list of Global United Technology Service Co., Ltd.

Equipment	Manufacturer	Model#	Serial #	Data of Cal.	Due Data
3m Semi-Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)*6.4(H)	GTS201	Mar. 30 2011	Mar. 30 2012
Control Room	ZhongYu Electron	6.2(L)*2.5(W)*2.4(H)	GTS202	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Sept. 10 2010	Sept. 10 2011
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Coaxial Cable	GTS	N/A	GTS400	Apr. 01 2011	Apr. 01 2012
Coaxial Cable	GTS	N/A	GTS401	Apr. 01 2011	Apr. 01 2012
Coaxial Cable	GTS	N/A	GTS402	Apr. 01 2011	Apr. 01 2012
Coaxial Cable	GTS	N/A	GTS407	Apr. 01 2011	Apr. 01 2012
Coaxial Cable	GTS	N/A	GTS408	Apr. 01 2011	Apr. 01 2012
BiConiLog Antenna (26-3000MHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS204	Feb. 26 2011	Feb. 26 2012
Pre-amplifier(0.1-3000MHz)	HP	8347A	GTS210	Aug. 03 2010	Aug. 03 2011
Double-ridged horn (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS205	Jun. 30 2011	Jun. 30 2012
Pre-amplifier(1-18GHz)	Rohde & Schwarz	8349B	GTS224	Aug. 03 2010	Aug. 03 2011
Humidity/Temperature Indicator	Shanghai	ZJ1-2B	GTS250	Oct. 28 2010	Oct. 28 2011
Barometer	ChangChun	DYM3	GTS251	Jul. 08 2011	Jul. 08 2012
Shielding Room	ZhongYu Electron	7.0(L)*3.0(W)*3.0(H)	GTS206	Apr. 10 2011	Apr. 10 2012
EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS208	Sept. 14 2010	Sept. 14 2011
10dB Pulse Limiter	Rohde & Schwarz	N/A	GTS209	Sept. 14 2010	Sept. 14 2011
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS207	Apr. 14 2011	Apr. 14 2012
Coaxial Cable	GTS	N/A	GTS406	Apr. 01 2011	Apr. 01 2012

2 TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacturer, can let the EUT being normal operation.

2.3 Special Accessories

As shown in section 2.5, interface cable used for compliance testing is shielded as normally supplied by **Dongguan City Kailin Lighting Co., Ltd.** and its respective support equipment manufacturers.

2.4 Equipment Modifications

The EUT tested was not modified by EST.

2.5 Basic Test Setup Block Diagram



3 DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.4 dB.

3.2 Limit of Disturbance Voltage at The Mains Terminals (FCC Part 18)

Frequency Range (MHz)	Limits	
	μ V	dB μ V
0.450 ~ 2.510	250	48
2.510 ~ 3.000	3000	69
3.000 ~ 30.00	250	48

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

3.3 EUT Setup

The setup of EUT is according with ANSI C63.4-2003 measurement procedure. The specification used was the FCC Rules and Regulations Part 18 limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

3.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....150 KHz to 30 MHz
 Detector.....Peak & Quasi-Peak & Average
 Sweep Speed.....Auto
 IF Band Width.....9 KHz

3.5 Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB μ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

3.6 Summary of Test Results

According to the data in section 3.6, the EUT complied with the FCC Part 18 Conducted margin, with the *worst* margin reading of:

3.7 Disturbance Voltage Test Data

Temperature ()	26
Humidity (%RH)	58
Barometric Pressure (mbar)	1001.1
EUT	Compact Flourescent Lamp
M/N	SPST 11SM, SPST 13SM
Operating Mode	ON

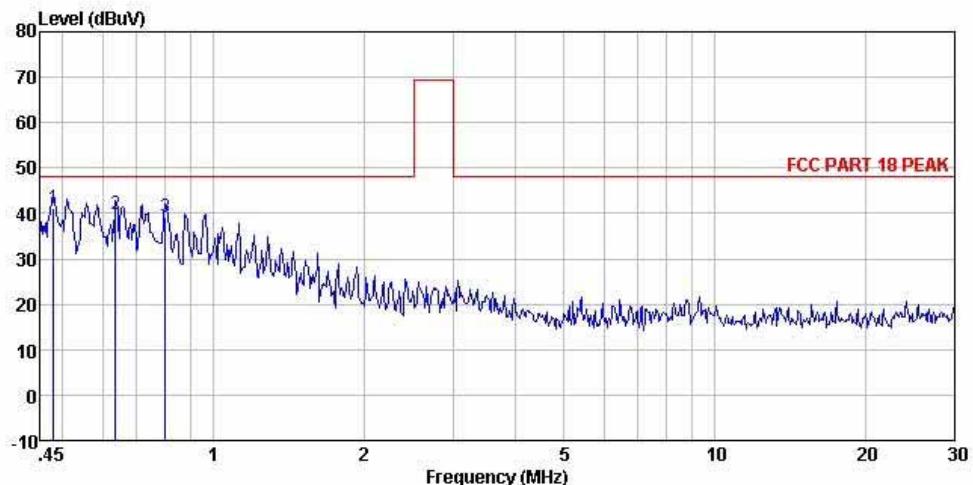
Test data see following pages.

Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

3.8 Test Result

Pass.

FCC ID: ZR50001

Conducted Emission Test Data (Model: SPST 11SM)

Condition : FCC PART 18 PEAK LISN(2011) LINE

EUT : Cmpact Flourescent Lamp

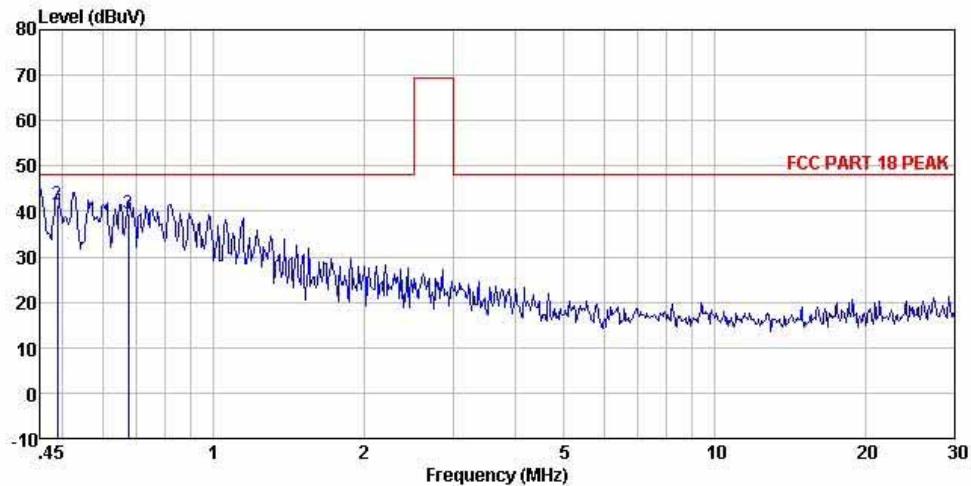
Model : SPST 11SM

Test mode: On mode

Power: : AC 120V/60Hz

Engineer: : David

Freq	Read	LISN	Cable	Limit Line	Over Limit	Remark
	MHz	dBuV	dB			
1	0.479	40.37	0.56	0.10	41.03	47.96 -6.93 QP
2	0.638	39.19	0.53	0.10	39.82	47.96 -8.14 QP
3	0.800	38.67	0.50	0.10	39.27	47.96 -8.69 QP

Conducted Emission Test Data (Model: SPST 11SM)

Condition : FCC PART 18 PEAK LISN(2011) NEUTRAL

EUT : Cmpact Flourescent Lamp

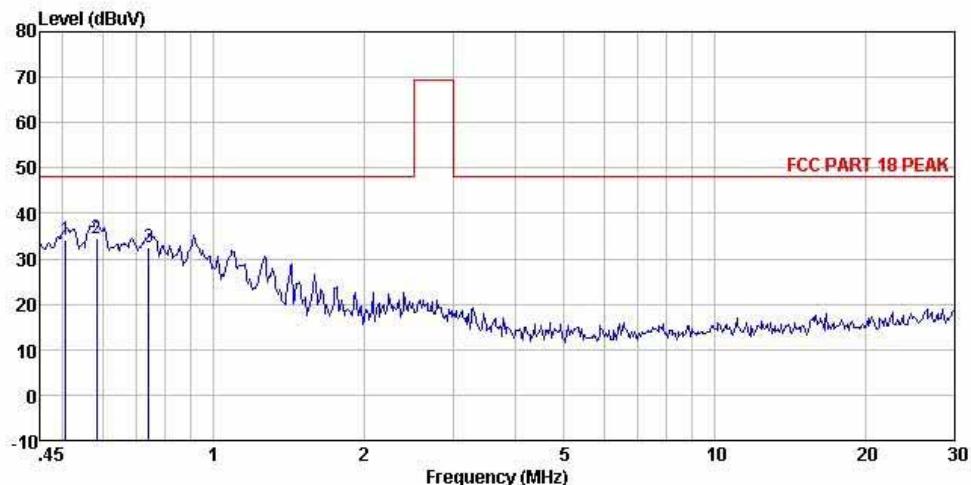
Model : SPST 11SM

Test mode: On mode

Power: : AC 120V/60Hz

Engineer: : David

Freq	Read	LISN	Cable	Limit	Over	Remark	
	Level	Factor	Loss				
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.450	41.89	0.57	0.10	42.56	47.96	-5.40 QP
2	0.487	40.69	0.56	0.10	41.35	47.96	-6.61 QP
3	0.676	38.71	0.52	0.10	39.33	47.96	-8.63 QP

Conducted Emission Test Data (Model: SPST 13SM)

Condition : FCC PART 18 PEAK LISN(2011) LINE

EUT : Cmpact Flourescent Lamp

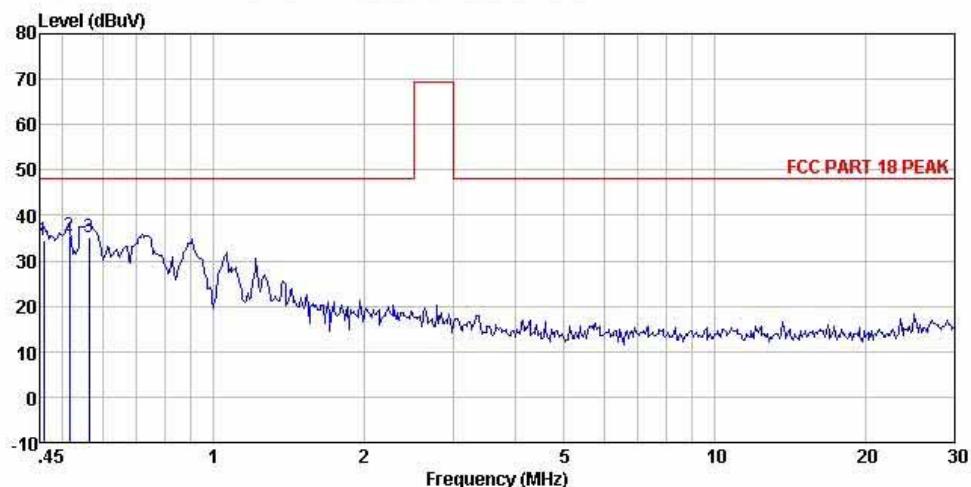
Model : SPST 13SM

Test mode: On mode

Power: : AC 120V/60Hz

Engineer: : David

Freq	Read	LISN	Cable	Limit	Over	Remark
	Level	Factor	Loss			
	MHz	dBuV	dB	dBuV	dBuV	dB
1	0.507	33.48	0.55	0.10	34.13	47.96 -13.83 QP
2	0.585	33.74	0.54	0.10	34.38	47.96 -13.58 QP
3	0.743	32.02	0.51	0.10	32.63	47.96 -15.33 QP

Conducted Emission Test Data (Model: SPST 13SM)

Condition : FCC PART 18 PEAK LISN(2011) NEUTRAL

EUT : Cmpact Flourescent Lamp

Model : SPST 13SM

Test mode: On mode

Power: : AC 120V/60Hz

Engineer: : David

Freq	Read	LISN	Cable	Limit	Over	Remark
	Level	Factor	Loss			
MHz	dBuV	dB	dB	dBuV	dBuV	dB
1	0.459	33.73	0.56	0.10	34.39	47.96 -13.57 QP
2	0.516	34.84	0.55	0.10	35.49	47.96 -12.47 QP
3	0.564	34.66	0.54	0.10	35.30	47.96 -12.66 QP

4 RADIATED DISTURBANCES

4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ± 4.0 dB.

4.2 Limit of Radiated Disturbances (FCC Part 18)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 88	3	40
88 ~216	3	43.5
216 ~ 1000	3	46

Note: (1) The tighter limit shall apply at the edge between two frequency bands.
 (2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.3 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 18 limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

4.4 Test Receiver Setup

According to FCC Part 18 rule, the frequency was investigated from 30 to 1000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting:

Detector.....Peak & Quasi-Peak
 IF Band Width.....120KHz
 Frequency Range.....30MHz to 1000MHz
 Turntable Rotated.....0 to 360 degrees

Antenna Position:

Height.....1m to 4m
 Polarity.....Horizontal and Vertical

4.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within $-10 \text{ dB}_{\mu}\text{V}$ of specification limits), and are distinguished with a "QP" in the data table.

4.6 Radiated Emissions Test Result

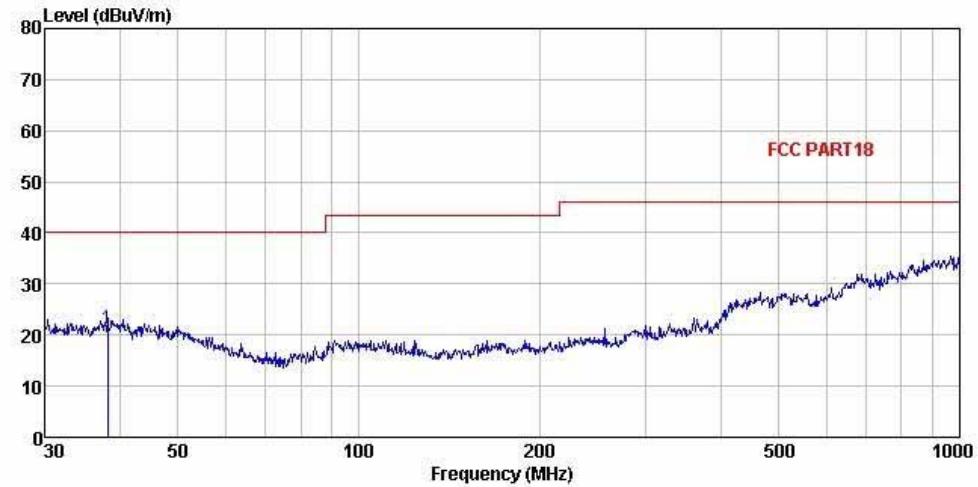
Temperature ()	26
Humidity (%RH)	56
Barometric Pressure (mbar)	1001.1
EUT	Compact Flourescent Lamp
M/N	SPST 11SM, SPST 13SM
Operating Mode	ON

Test data see following pages.

Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

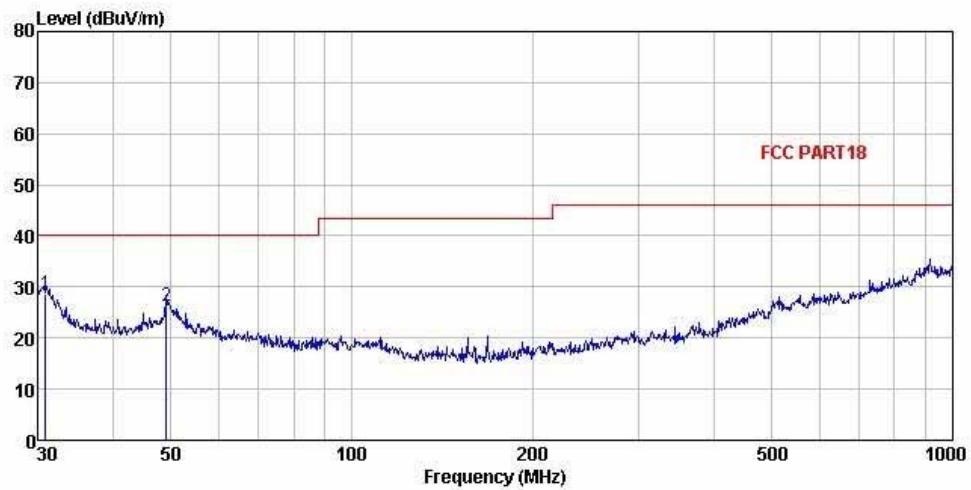
4.7 Test Result

Pass.

Radiated Emission Test Data (Model: SPST 11SM)

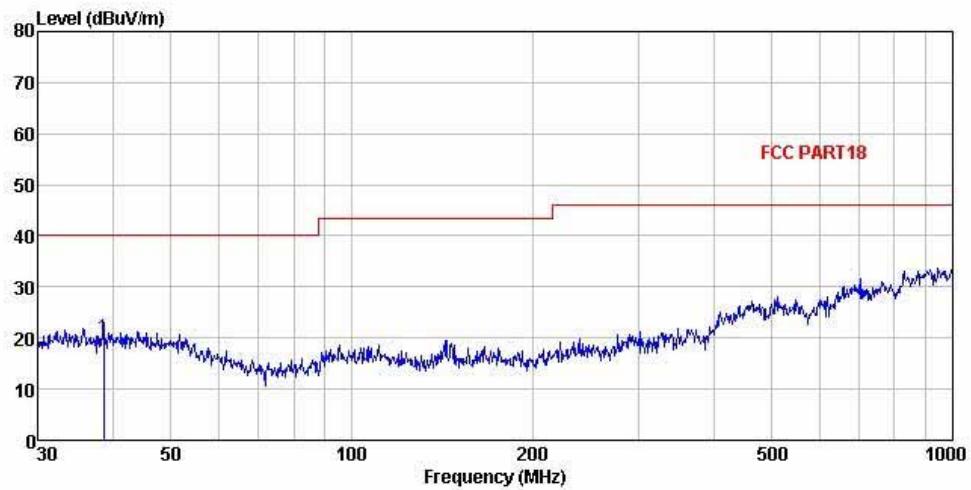
Site : 3m chamber
Condition : FCC PART18 3m VULB9163(NEW) HORIZONTAL
EUT : Compact Flourescent Lamp
Model : SPST 11SM
Test Mode : On mode
Power Rating : AC 120V/60Hz
Test Engineer: David

	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	38.21	37.28	15.64	0.63	32.16	21.39	40.00	-18.61 QP

Radiated Emission Test Data (Model: SPST 11SM)

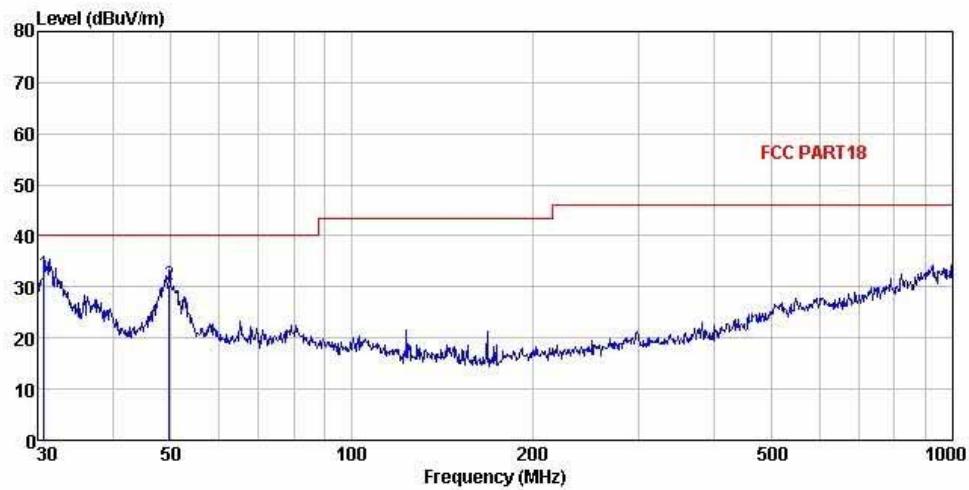
Site : 3m chamber
Condition : FCC PART18 3m VULB9163(NEW) VERTICAL
EUT : Compact Flourescent Lamp
Model : SPST 11SM
Test Mode : On mode
Power Rating : AC 120W/60Hz
Test Engineer: David

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	30.96	46.02	14.40	0.60	32.27	28.75	40.00 -11.25 QP
2	49.19	40.97	16.65	0.67	32.05	26.24	40.00 -13.76 QP

Radiated Emission Test Data (Model: SPST 13SM)

Site : 3m chamber
Condition : FCC PART18 3m VULB9163(NEW) HORIZONTAL
EUT : Compact Flourescent Lamp
Model : SPST 13SM
Test Mode : On mode
Power Rating : AC 120V/60Hz
Test Engineer: David

	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	38.62	35.85	15.64	0.64	32.16	19.97	40.00	-20.03 QP

Radiated Emission Test Data (Model: SPST 13SM)

Site : 3m chamber
Condition : FCC PART18 3m VULB9163(NEW) VERTICAL
EUT : Compact Flourescent Lamp
Model : SPST 13SM
Test Mode : On mode
Power Rating : AC 120V/60Hz
Test Engineer: David

	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.75	49.79	14.37	0.60	32.27	32.49	40.00	-7.51 QP
2	49.71	45.32	16.40	0.67	32.01	30.38	40.00	-9.62 QP