Measurement/Technical Test Report

Report Number: 09/18/98-97CA01074D

Fujian Joinluck Electronic Enterprise Co., Ltd.
Cang Shan Industrial Area
Cang Shan District
Fuzhou, FUJIAN 350

JLC7-18 20W and JLS-26W

FCC ID: N6AFJEEJL0898

September 18, 1998

This report concerns:	Test Data Only ____
	Original Grant X
	Class II Change ____
	Class I Change ____
Equipment type:	Fluorescent lampholder adaptor; self ballasted lamp

Report prepared by: Douglas M Smith Approved by: Daniel M. Hayes Tests Performed by: Douglas M Smith	Douglas M. Smith Underwriters Laboratories Inc. 2600 NW Lake Road Camas, WA 360-817-5660 (phone) 360-817-6058 (fax) smithd@ul.com

Table of Contents

Table of Contents - Continued

1 GENERAL INFORMATION

1.1 Product Description

- Series JL
- Product Type - Energy saving lamp (Fluorescent lampholder adaptors; self ballasted lamp).
- Product Components or Parts - The devices consist of an edison base male screw shell, for insertion into the standard incandescent edison base lampholder of a lighting fixture or portable lamp, thermalplastic housing; which contains a printed wiring board and circuitry for ballasting the integral fluorescent lamp.
- Product Function - Provides general lighting.
- Additional Description - Models JLC7-18 operates 3 “U” -shaped intergral fluorescent lamps, and JLS operates a single integral spiral shaped fluorescent lamp.

1.2 Related Submittal(s)/Grant(s)

There are no related grants as part of this report.

1.3 Tested System Details

The FCC ID's (where available) for all equipment other than the product being evaluated, including inserted or plug-in cards, which have grants, plus descriptions of all cables used in the tested system are as follows:

Manufacturer	Model & Serial Numbers	FCC ID (if any)	Description	Cable Reference #
Leviton	19062, N/A	N/A	Edison base lampholder	1

Cable Descriptions

Cable # (Referenced above)	Type/Description	Connector Type(s)	Shielding	Length
1	Power supply cord	120 V, 15 A attachment plug	No	1 meter

1.4 Test Methodology

Both conducted and radiated testing were performed according to:

FCC Part 18, Subpart B (1996) and FCC/OET MP-5 (1987)

1.5 Test Facility

The pre-compliance emissions chamber, open area test site and conducted measurement test station used to collect the data in this report is located on the first floor of:

Underwriters Laboratories Inc.
2600 N.W. Lake Road
Camas, WA 98607
Phone: 360-817-5500

This site has been fully described in a report dated March 6, 1997, submitted to your office, and accepted in a letter dated April 28, 1997 (31040/SIT).

1.6 Test Equipment

Test instruments:

[**X**] Hewlett Packard Model 8566B Spectrum Analyzer S/N 3638A08577, Hewlett Packard Model OPT Spectrum Analyzer Display S/N 3552A22023, Hewlett Packard Model 85650A Quasi-Peak Adapter S/N 3303A01830, and Hewlett Packard Model 85685A RF Preselector, S/N 3506A01533

Test accessories:

[**X**] Electro-Metrics Inc. Model EM-7600 Transient Limiter, S/N 563
[ ] Electro-Metrics Inc. Model EM-7820-1 LISN S/N 101
[**X**] Electro-Metrics Inc. Model EM-7820-1 LISN S/N 102
[ ] Electro-Metrics Inc. Model EM-7820-1 LISN S/N 103
[**X**] Electro-Metrics Inc. Model EM-7820-1 LISN S/N 104
[ ] Electro-Metrics Inc. Model EM-6912A Biconnical Antenna, S/N 121 (final)
[ ] Electro-Metrics Inc. Model EM-6950 Log Periodic Antenna, S/N 913 (final)
[ ] Electro-Metrics Inc. Model EM-6961 Horn Rigid Guide Antenna, S/N 6264 (final)
[**X**] EMC Test Systems Model 3141 BiConiLog Antenna, S/N 9611-1004 (preliminary)

1.7 Traceability of Measurements

Unless otherwise indicated calibration of equipment referenced within this Report is traceable to NIST.

2 PRODUCT LABELING AND USER INFORMATION

2.1 Label for Part 18 Compliance

In accordance with Paragraph 2.925(a)(a1) (b)(f) of CFR 47;(a) Each equipment covered in an application for equipment authorization shall bear a name plate or label listing the following: (a1) FCC Identifier consisting of the two elements in the exact order specified in 2.926. The FCC Identifier shall be preceded by the term FCC ID in capital letters on a single line, and shall be of a type size large enough to be legible without the aid of magnification. (b) Any device subject to more than one equipment authorization procedure may be assigned a single FCC Identifier. However, a single FCC Identifier is required to be assigned to any device consisting of two or more sections as assembled in a common enclosure, on a common chassis or circuit board, and with common frequency controlling circuits. Devices to which a single FCC Identifier has been assigned shall be identified pursuant to paragraph (a) of this section. (f) the term: "FCC ID:" and the coded identification assigned by the Commission shall be in a size of type large enough to be readily legible, consistent with the dimensions of the equipment and its nameplate. However, the type size for the FCC Identifier is not required to be larger than eight point.

The layout and size of the FCC ID below, are only for illustration purposes:

FCC ID: N6AFJEEJL0898

2.2 Location of Label on EUT

In accordance with Paragraph 2.925;(d)(d1)(d2)(e) of CFR 47;(d) The nameplate or label shall be permanently affixed to the equipment and shall be readily visible to the purchaser at the time of purchase. (d1) As used here, "permanently affixed" means that the required nameplate data is etched, engraved, stamped, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment enclosure. Alternatively, the required information may be permanently marked on a nameplate of metal, plastic, or other material fastened to the equipment enclosure by welding, riveting, etc., or with a permanent adhesive. Such a nameplate must be able to last the lifetime of the equipment in the environment in which the equipment will be operated and must not be readily detachable. (d2) As used here, 'readily visible" means that the nameplate or nameplate data must be visible from the outside of the equipment enclosure. It is preferable that it be visible at all times during normal installation or use, but is not a prerequisite for grant of equipment authorization. (e) Where it is shown that a permanently affixed nameplate is not desirable or is not feasible, an alternative method of positively identifying the equipment may be used if approved by the Commission. The proposed alternative method of identification and the justification for its use must be included with the application for equipment authorization.

2.3 Information to User

In accordance with Paragraph 18.213 of CFR 47; the user's manual or instruction manual for an unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

3 SYSTEM TEST CONFIGURATION

3.1 Justification

The following paragraph references are to FCC/OET MP-5 (1986) unless otherwise indicated.

In accordance with paragraph 5.2, the EUT was operated at the rated (nominal) operating voltage with the integral lamp providing the typical load and test conditions to simulate typical operation. There were no user adjustable controls to be adjusted. All necessary parts of the system were exercised and the test conditions have been documented in this report.

The device was operated continually while the emissions were measured, having reached normal operating conditions in accordance with paragraph 5.2.1.

The power supply cord was 1 m long. The power cord in excess of 80 cm was draped over the edge of the tabletop and bundled in the center in a serpentine fashion using 30 - 40 cm lengths. This method is described in paragraph 5.2.3 and for the conducted powerline test in paragraph 7.1.

The EUT was tested ungrounded in accordance with 5.2.4.

The device was mounted in an edison base lampholder with 1 meter long power supply cord for power connection. This is a typical application if lamp were to be installed in a portable lamp. It is considered to represent a more severe condition than if it were mounted in a permanently mounted lighting fixture (conduit connected or junction box mounted). The device was placed on a 0.8 m high table as allowed in paragraph 5.4. The device was placed 40 cm from the wall of the shielded enclosure and 80 cm from the LISN's during the conducted powerline measurements as allowed in paragraph 7.1.

All Models represented are identical except for the lamp load (shape and number of lamps) and the transistor rating. Testing the two lamp configurations, spiral and "U"-shaped, in the highest wattage's available was considered to represent the following Models:

Lamp Models: JLC7-18 7W, 9W, 10W, 11W, 13W, 15W and 20W.
Lamp Models: JLS 10W, 15W, 20W, 23W and 26W.

3.2 EUT Exercise Software

These devices are not programmable and do not use software.

3.3 Special Accessories

Special accessories or components were not needed to support compliance.

3.4 Equipment Modifications

To achieve compliance to Class B levels; capacitor C1 was replaced with a higher quality metal film capacitor of the same values. See photos in section 5, Fig 5.14 through 5.17.

3.5 Configuration of Tested System

To the best of our knowledge, the following test configuration represents the worse case configuration for emissions. The emissions measurements made in this configuration represent the worst case emissions for this system.

Since the configuration is very simple, the following photographs will be sufficient to represent the configuration.

Figure 3.1 Configuration of Tested System - Conducted

No additional photos or drawings were necessary. Refer to the Conducted and Radiated Measurement Photos in Part 5, Figs. 5.1 through 5.8.

Figure 3.2 Configuration of Tested System - Radiated

No additional photos or drawings were necessary. Refer to the Conducted and Radiated Measurement Photos in Part 5, Figs 5.3 through 5.13.

4 BLOCK DIAGRAM(S) OF MODEL JLC7-18 and JLS

Figure 4.1 Block Diagram and Description of Model JLC7-18 and JLS

Diagram # 1

Figure 4.2 Schematic Wiring Diagram of Model JLC7-18 and JLS (cont.)

Diagram #2

Figure 4.3 Foil Trace Diagram of Model JLC7-18 and JLS (cont.)

Diagram #3

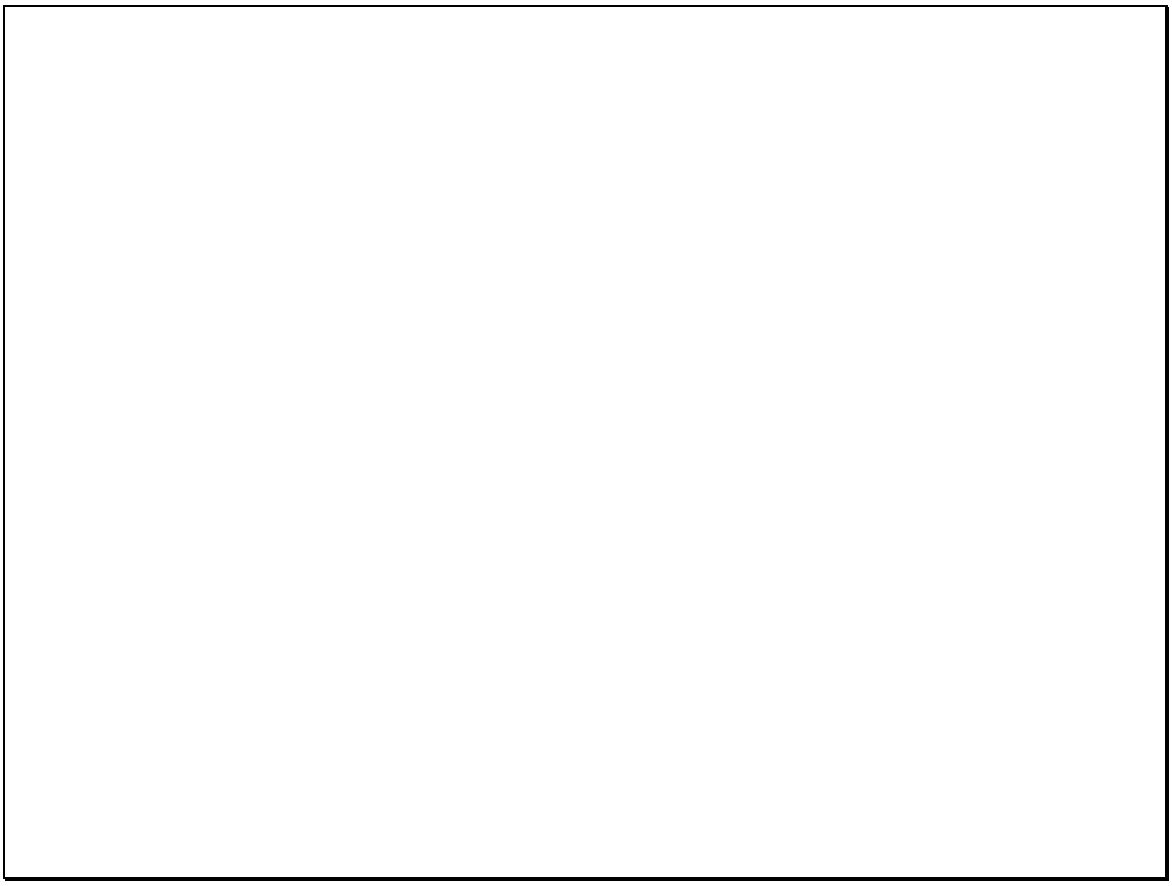
5 CONDUCTED AND RADIATED MEASUREMENT PHOTOS

5.1 Measurement Photo Index

OTHER PHOTOGRAPHS:

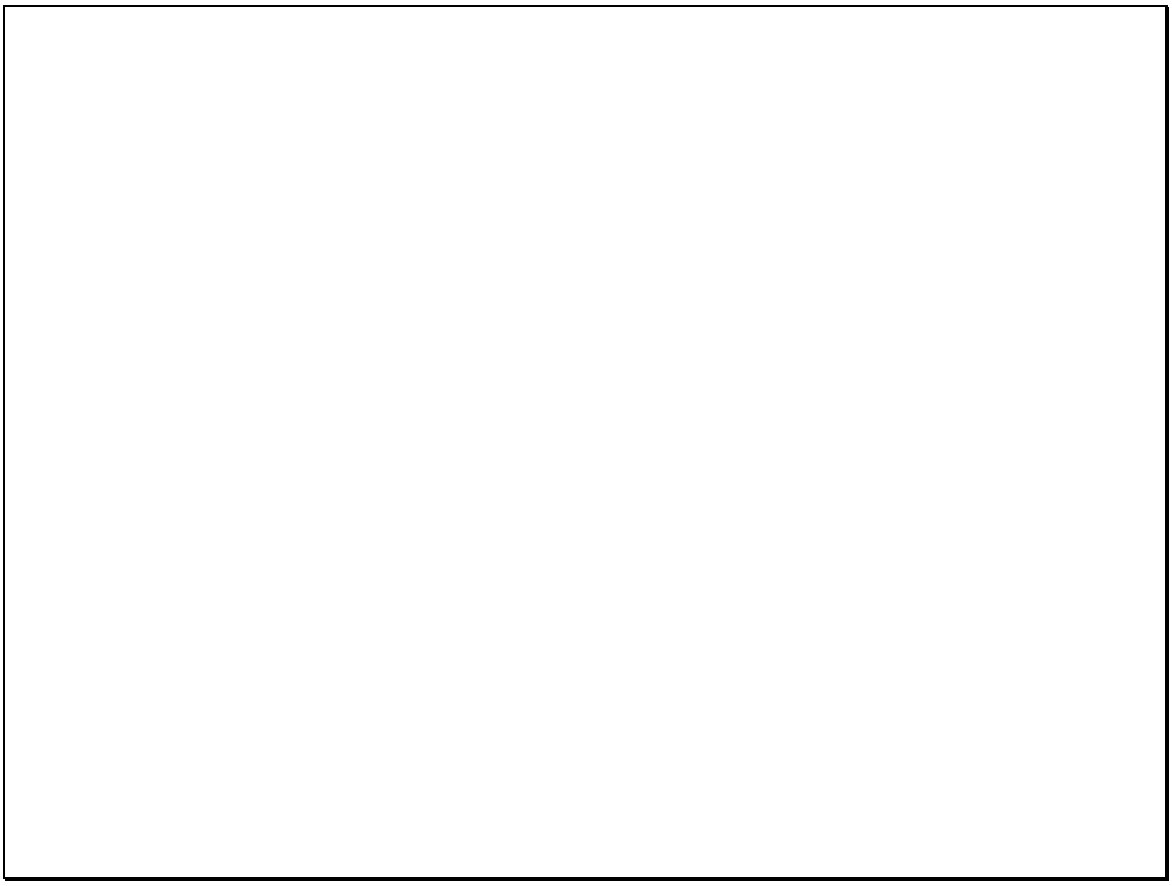
MODIFICATIONS

CONDUCTED VOLTAGE EMISSIONS MEASUREMENT CONFIGURATION
FIG. 5.1



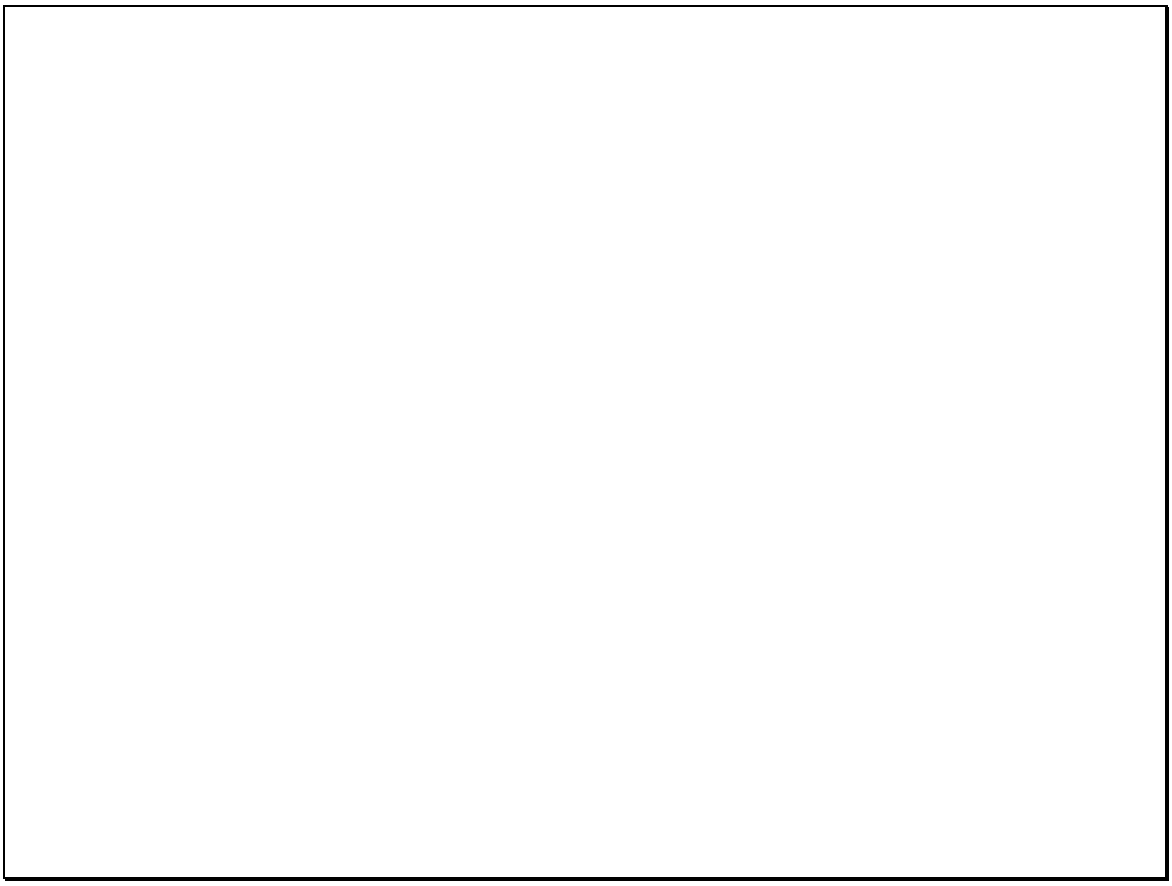
Model # JLC7-18 20W

CONDUCTED VOLTAGE EMISSIONS MEASUREMENT CONFIGURATION
FIG. 5.2



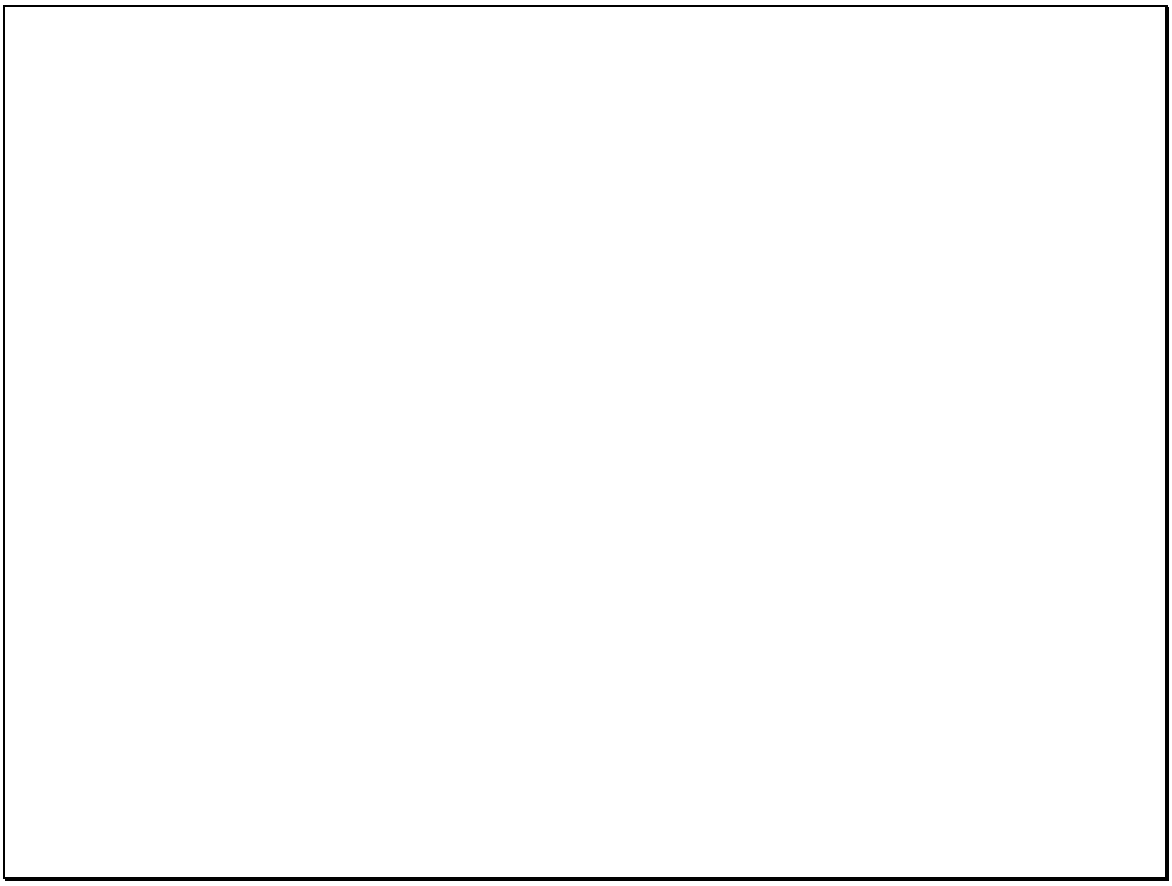
Model # JLC7-18 20W

CONDUCTED VOLTAGE EMISSIONS MEASUREMENT CONFIGURATION
FIG. 5.3



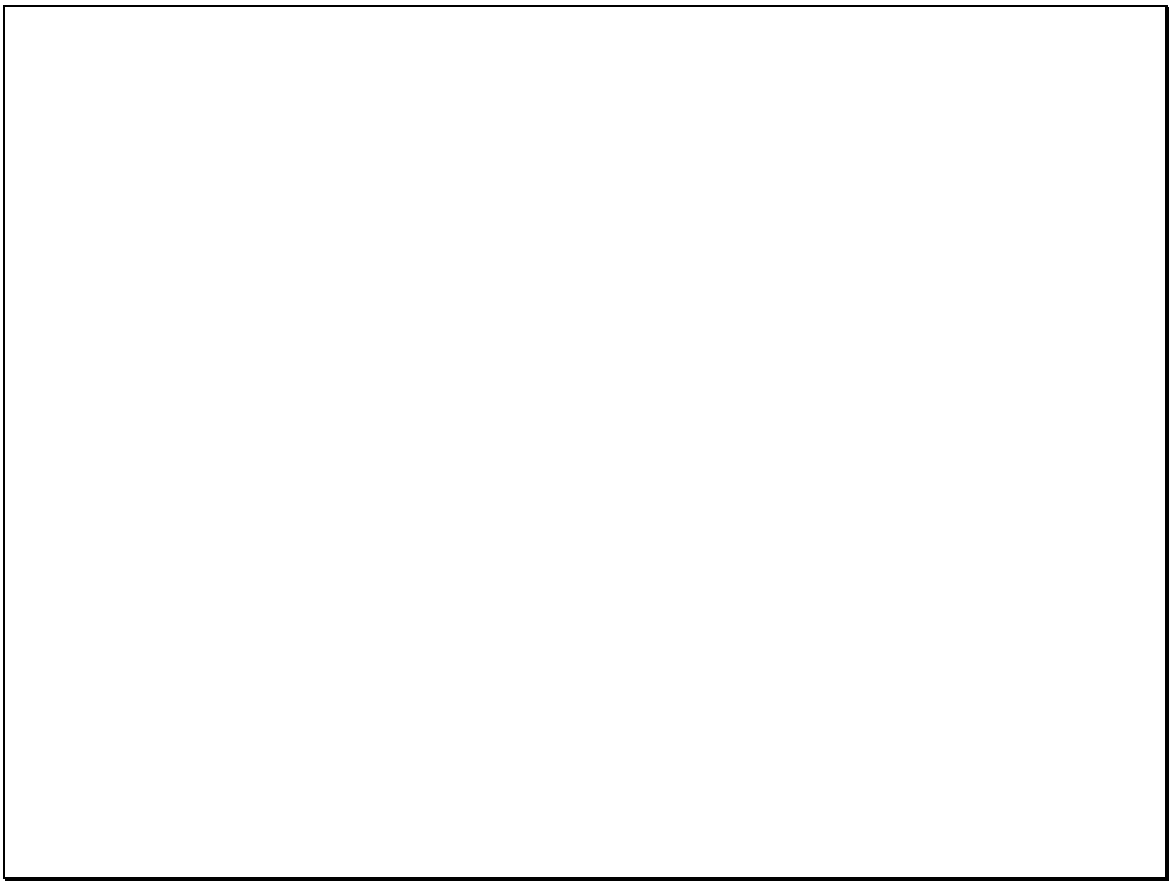
Model # JLC7-18 20W

CONDUCTED VOLTAGE EMISSIONS MEASUREMENT CONFIGURATION
FIG. 5.4



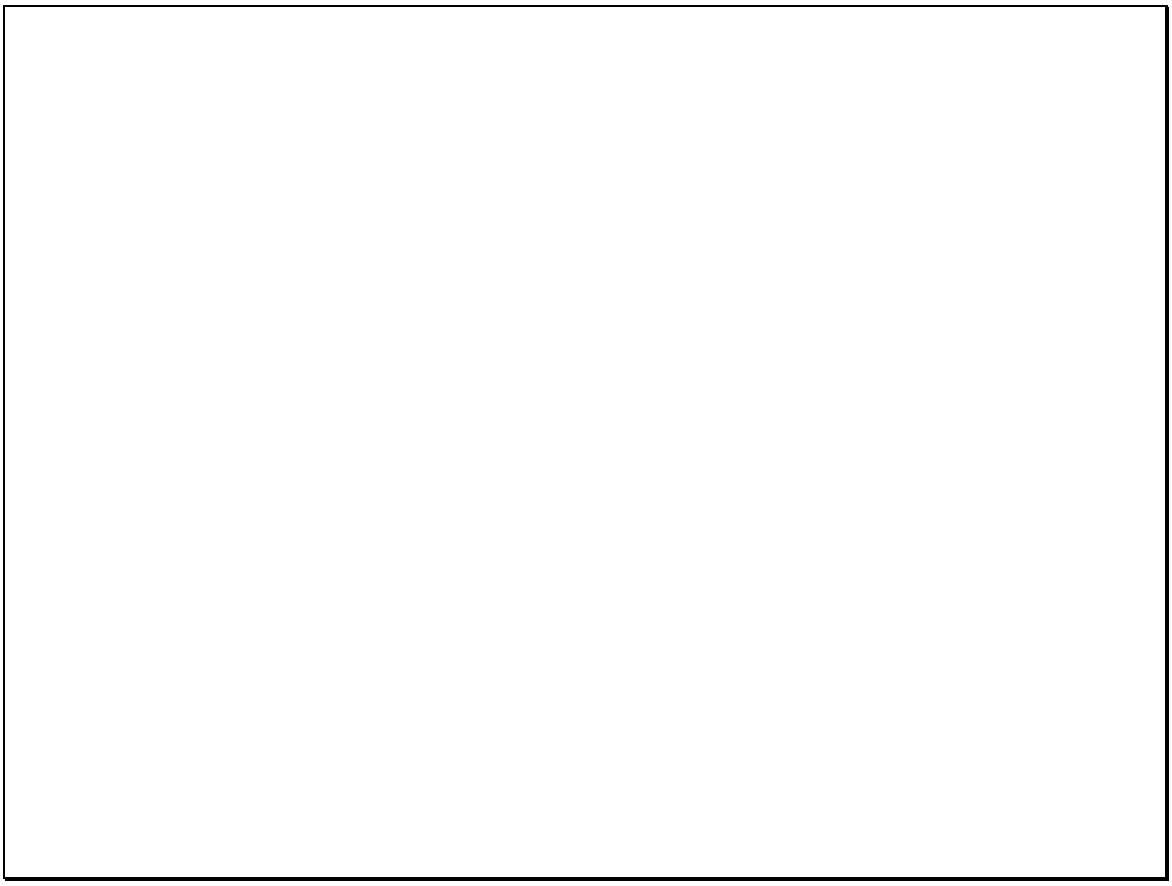
Model # JLC7-18 20W

CONDUCTED VOLTAGE EMISSIONS MEASUREMENT CONFIGURATION
FIG. 5.5



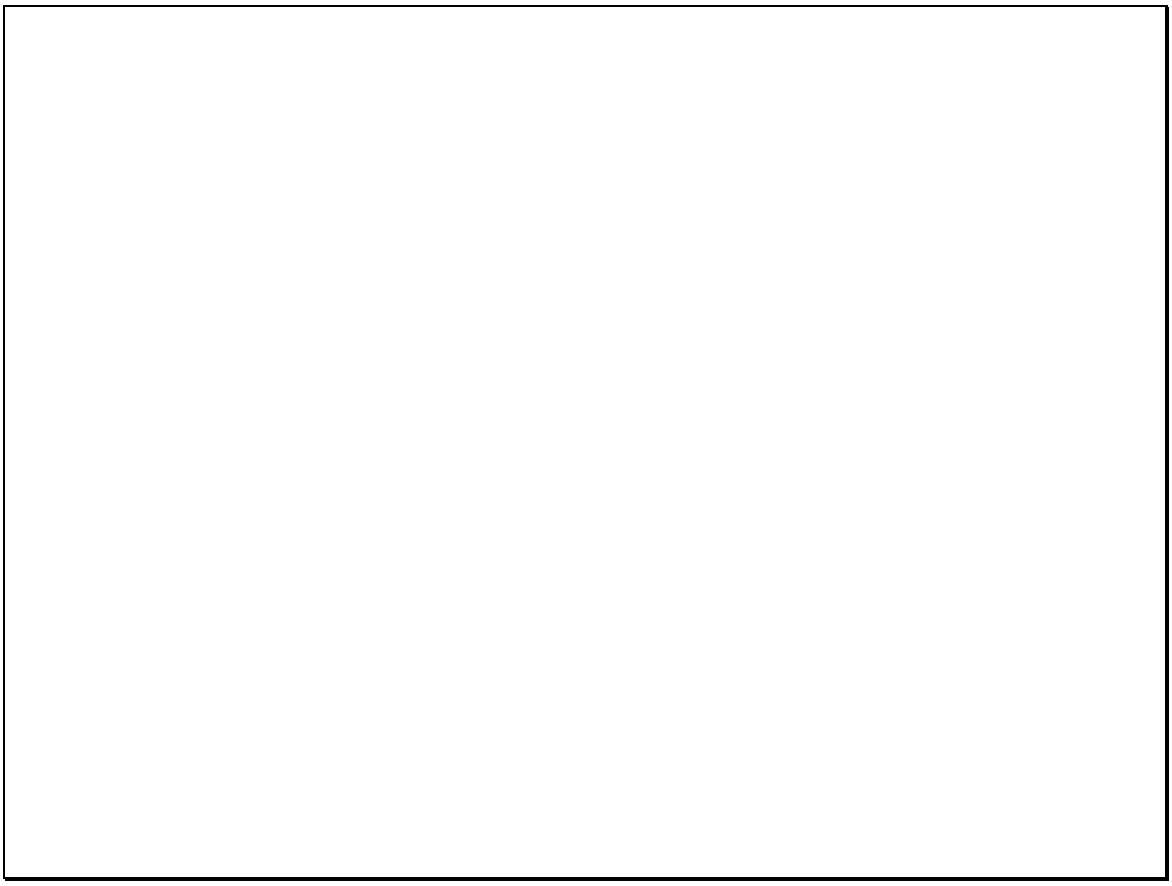
Model # JLS 26W

CONDUCTED VOLTAGE EMISSIONS MEASUREMENT CONFIGURATION
FIG. 5.6



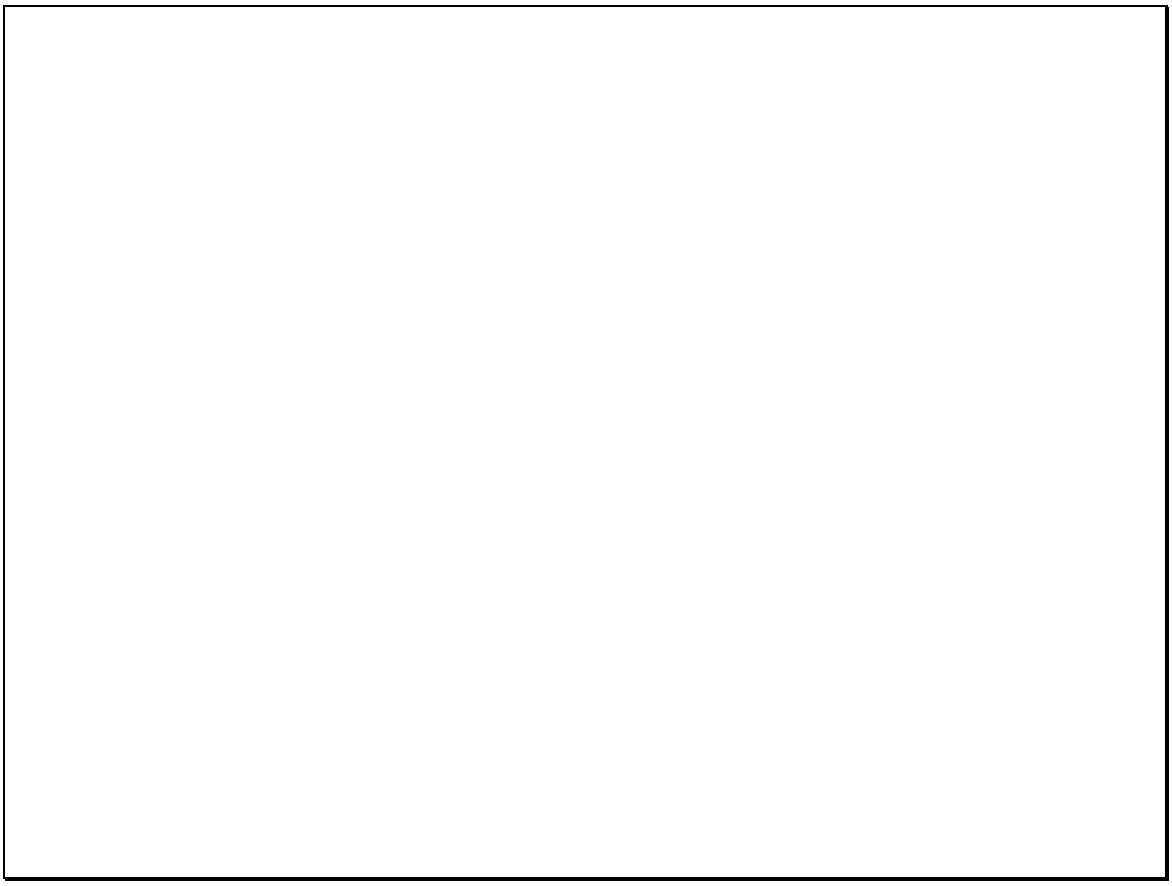
Model # JLS 26W

CONDUCTED VOLTAGE EMISSIONS MEASUREMENT CONFIGURATION
FIG. 5.7



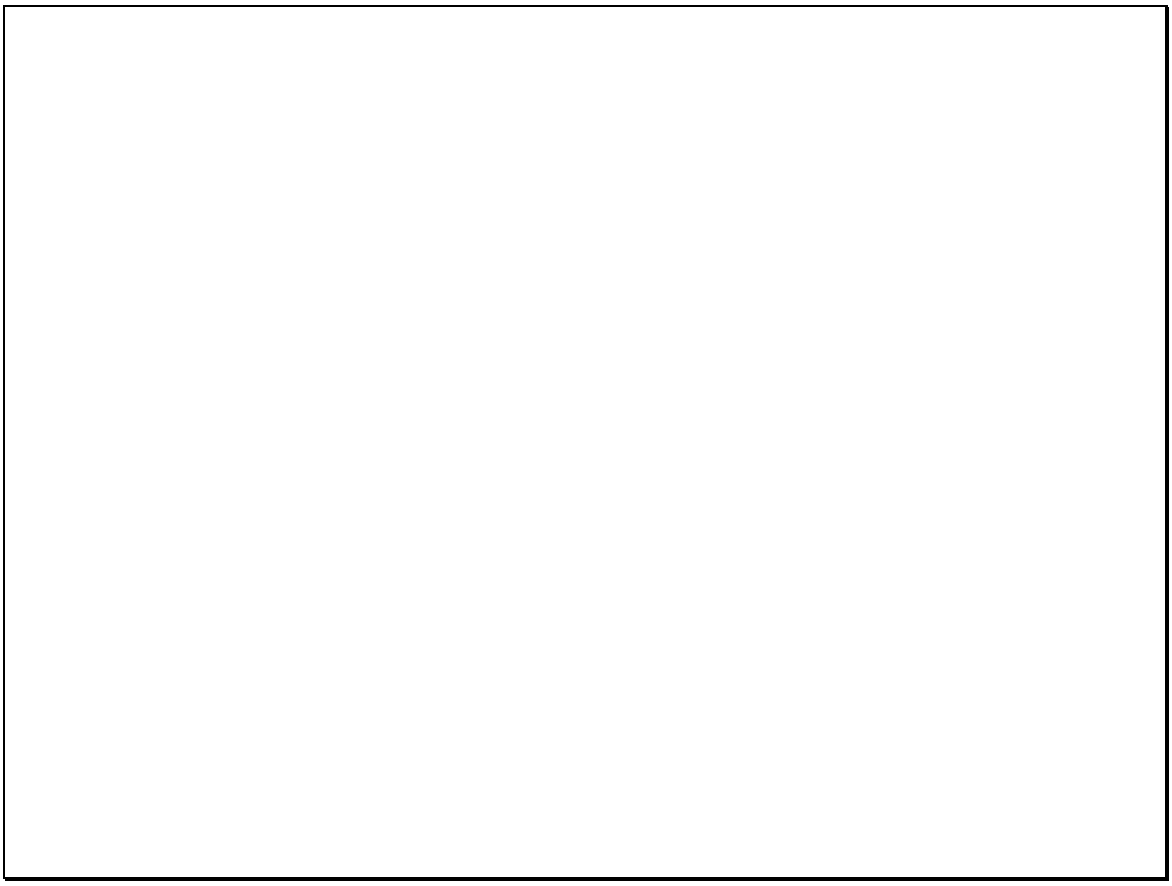
Model # JLS 26W

CONDUCTED VOLTAGE EMISSIONS MEASUREMENT CONFIGURATION
FIG. 5.8



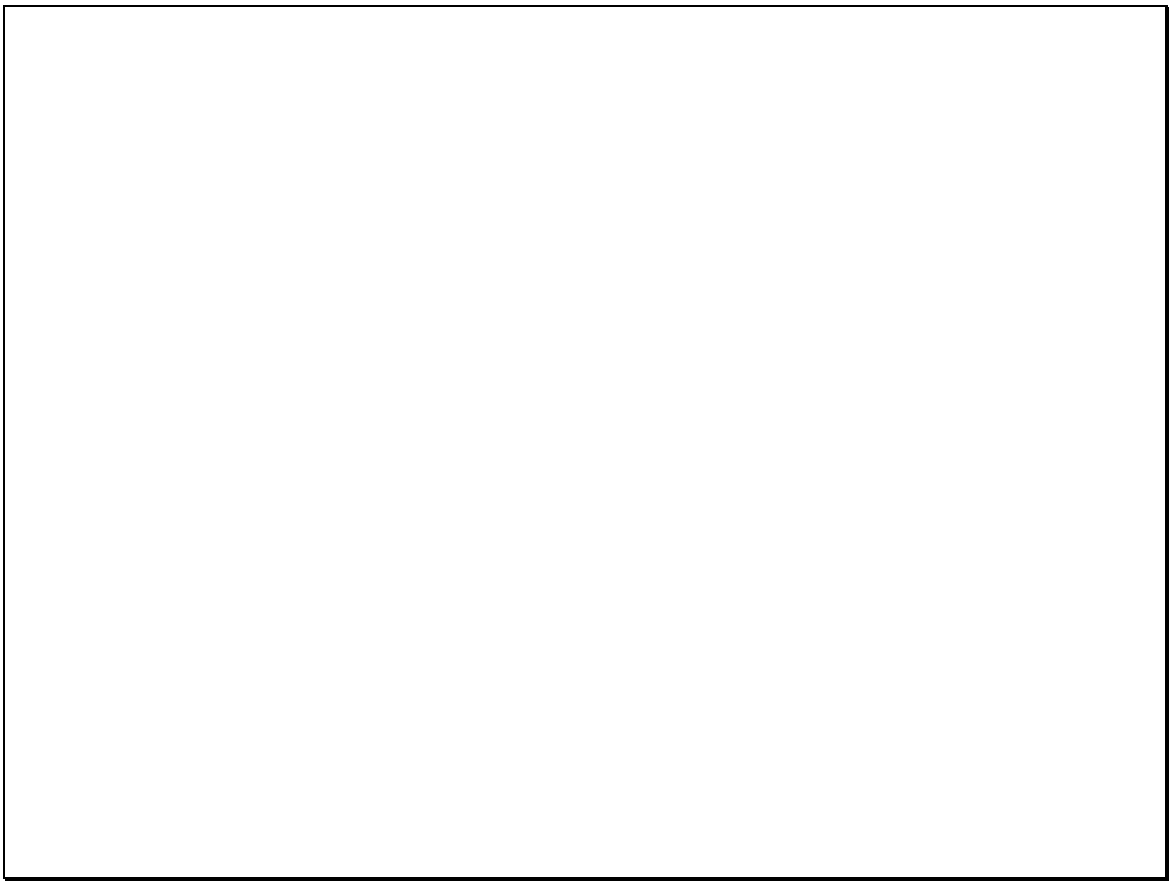
Model # JLS 26W

RADIATED EMISSIONS, PRECOMPLIANCE, 3M CHAMBER
FIG. 5.9



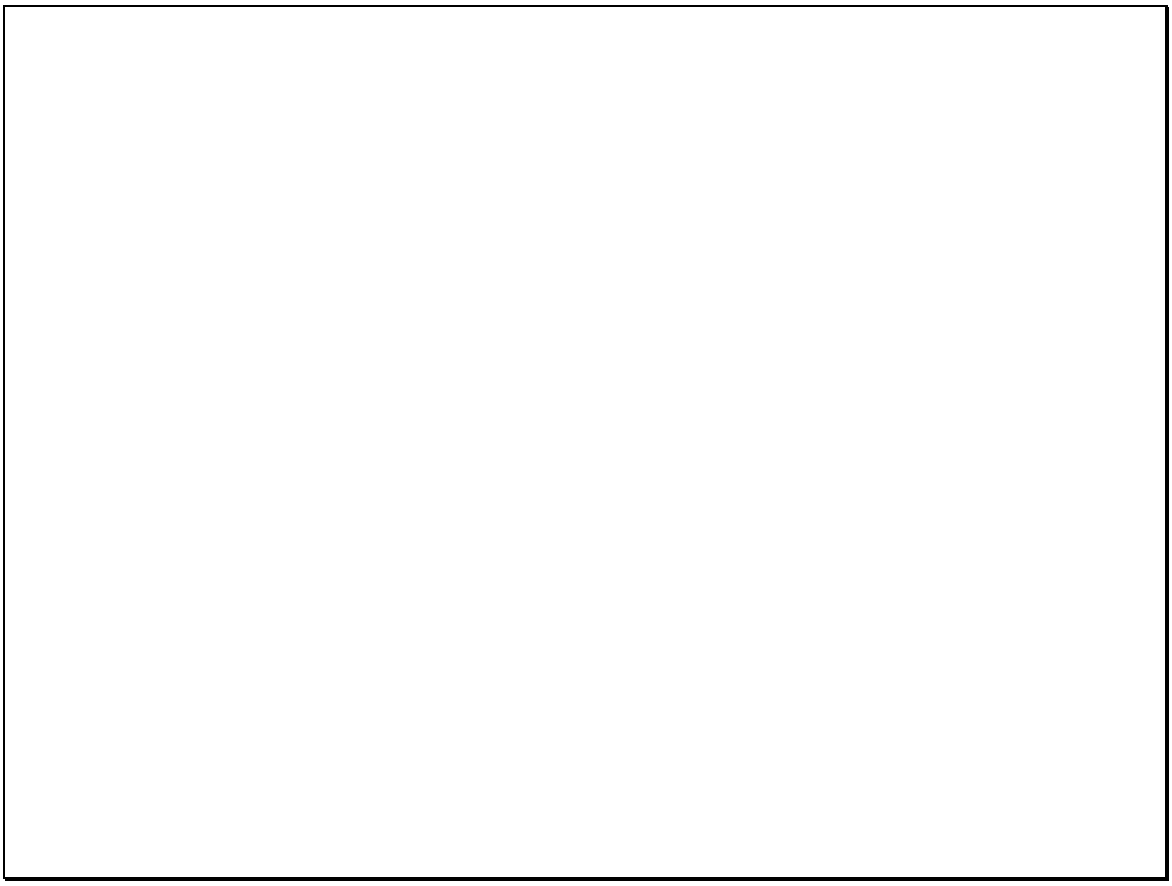
Model # JLC7-18 20W

RADIATED EMISSIONS, PRECOMPLIANCE, 3M CHAMBER
FIG. 5.10



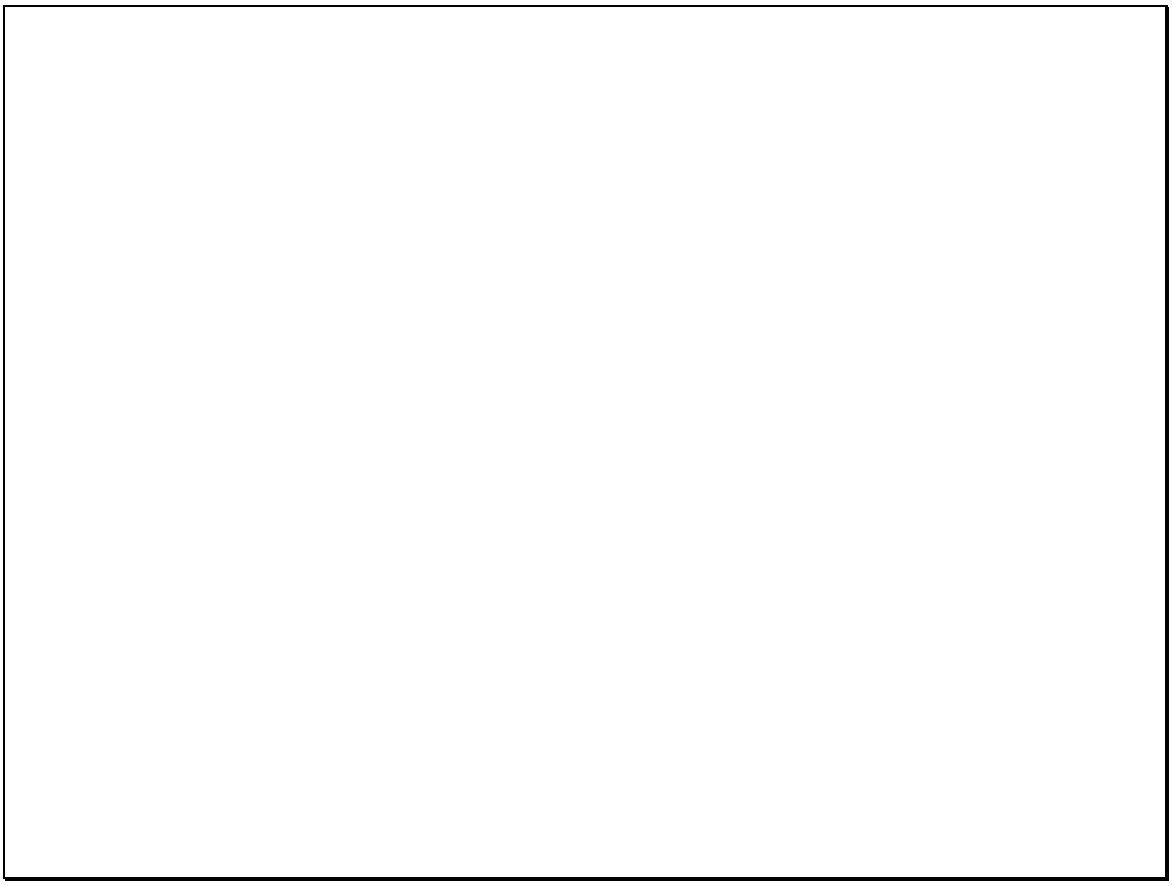
Model # JLC7-18 20W

RADIATED EMISSIONS, PRECOMPLIANCE, 3M CHAMBER
FIG. 5.11



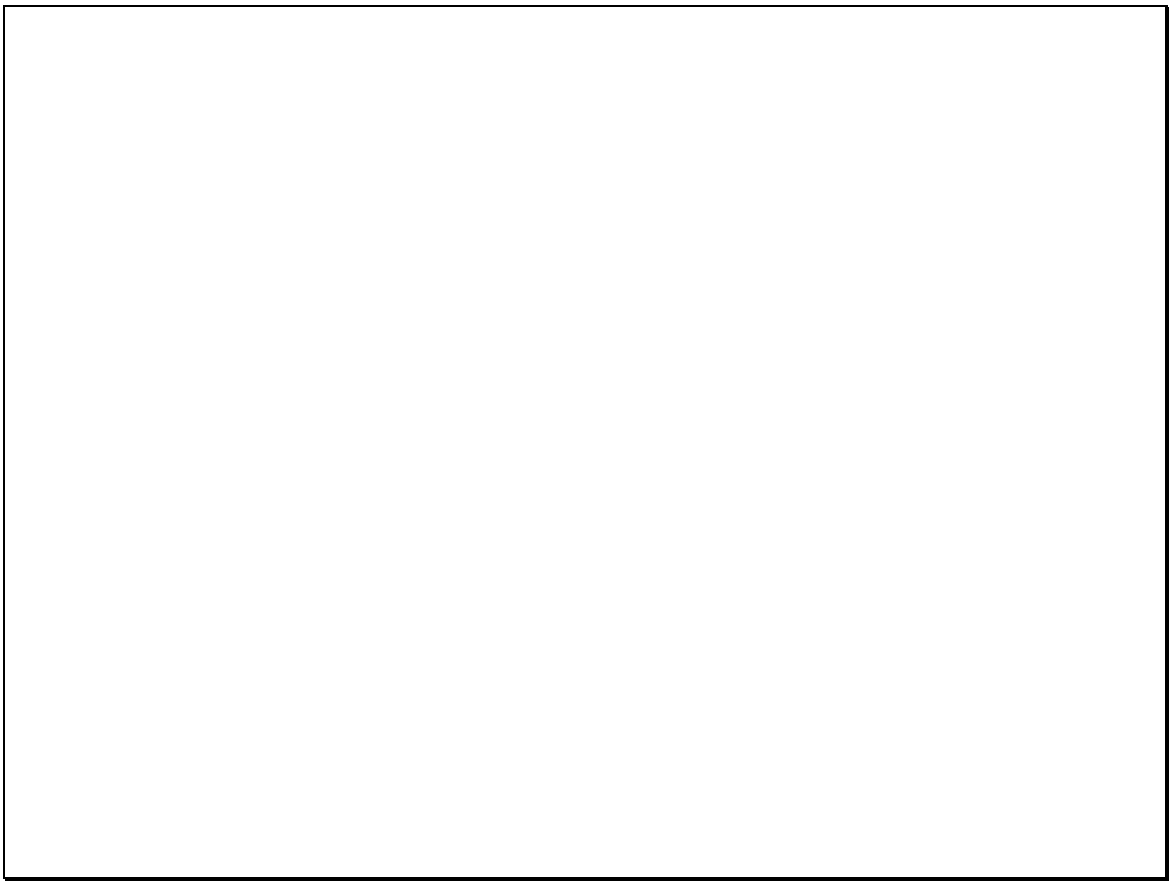
Model # JLC7-18 20W

RADIATED EMISSIONS, PRECOMPLIANCE, 3M CHAMBER
FIG. 5.12



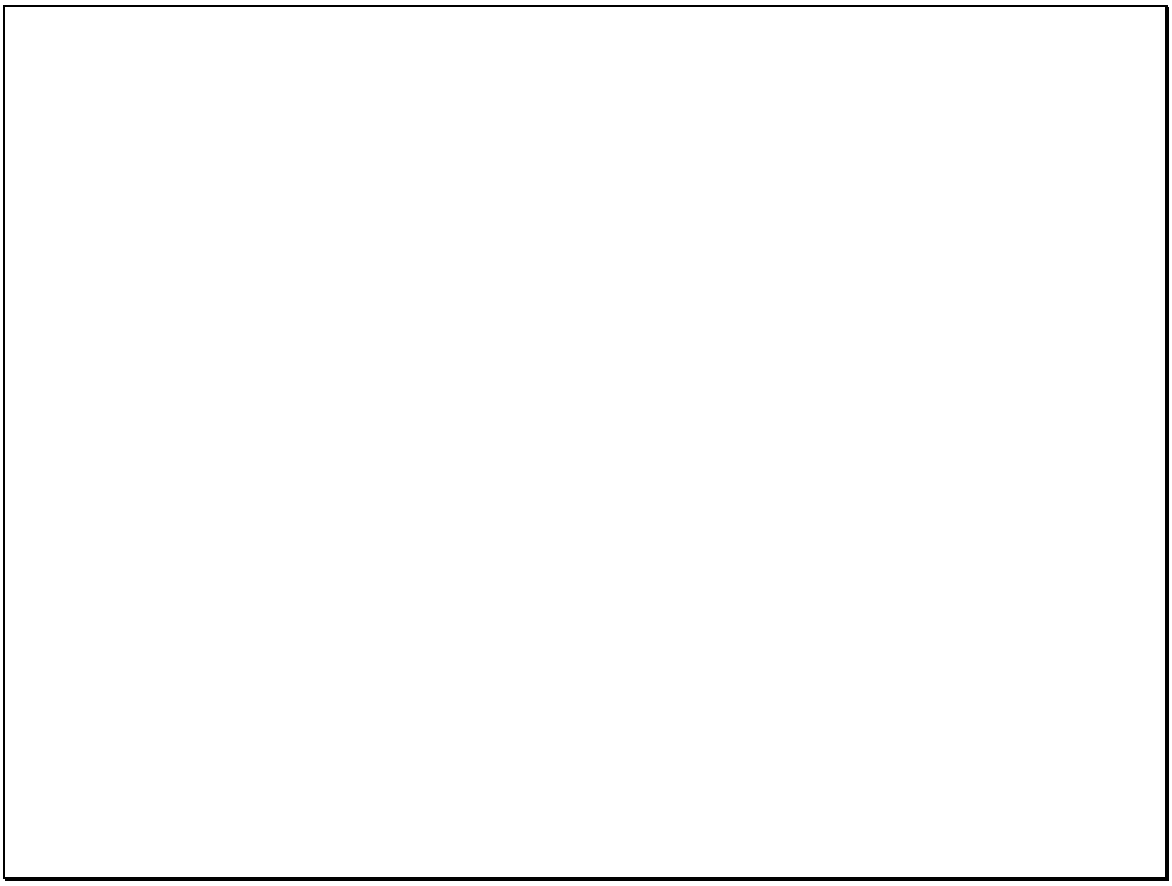
Model # JLS 26W

RADIATED EMISSIONS, PRECOMPLIANCE, 3M CHAMBER
FIG. 5.13



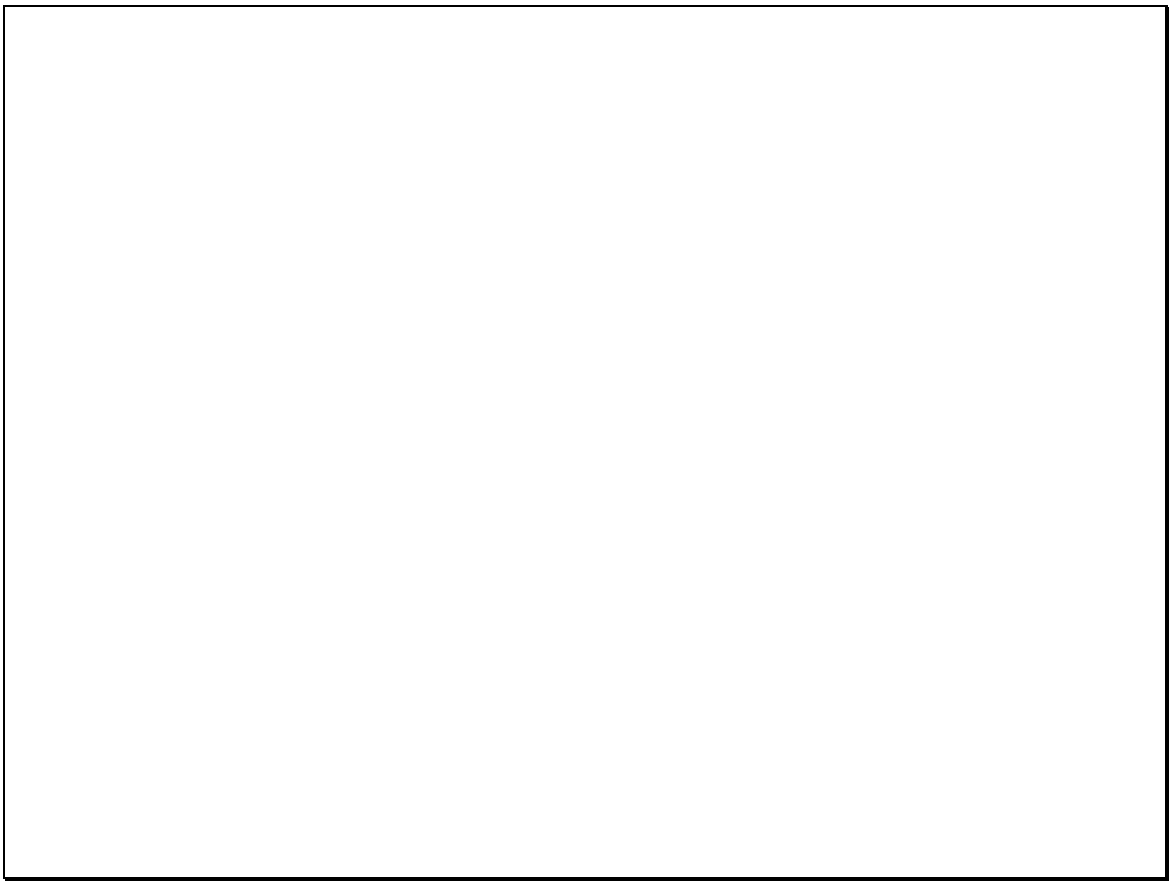
Model # JLS 26W

MODIFICATIONS TO THE DEVICE
FIG. 5.14



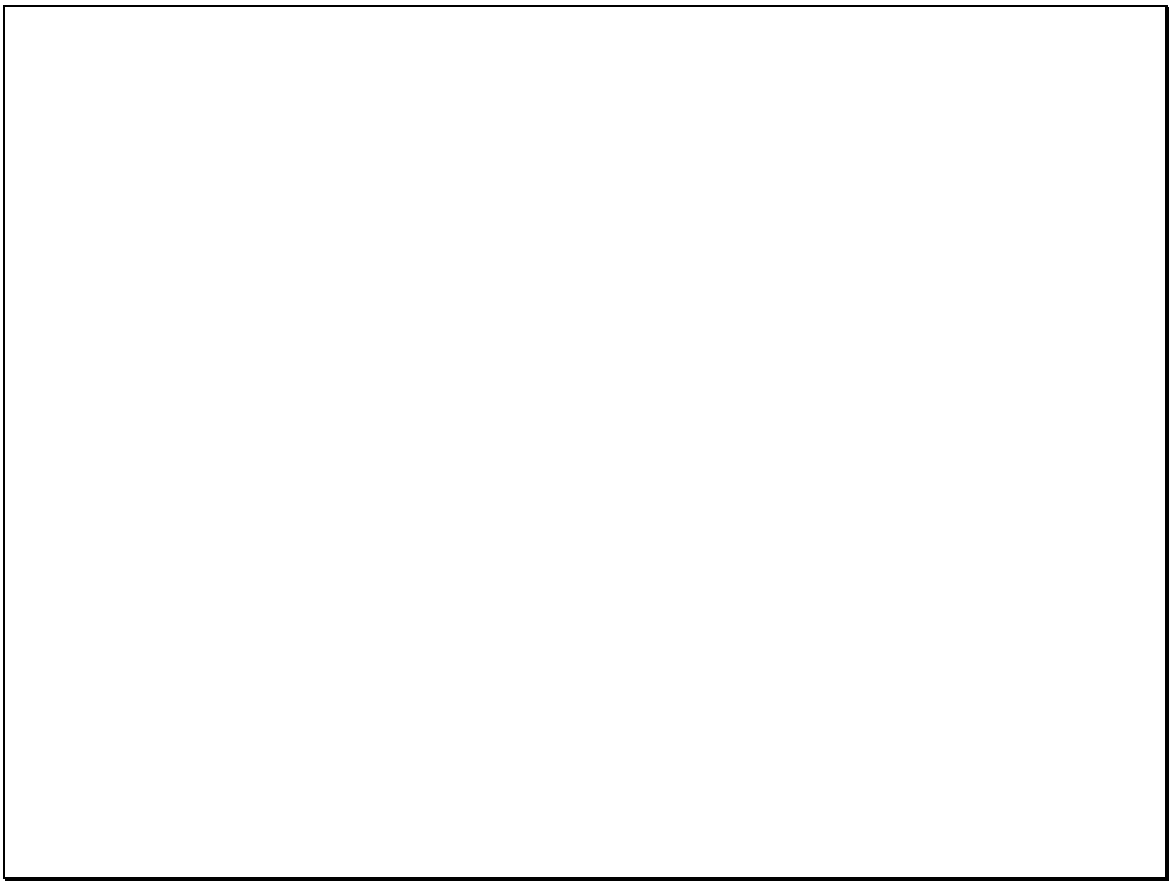
New capacitor C1 shown in side view.

MODIFICATIONS TO THE DEVICE
FIG. 5.15



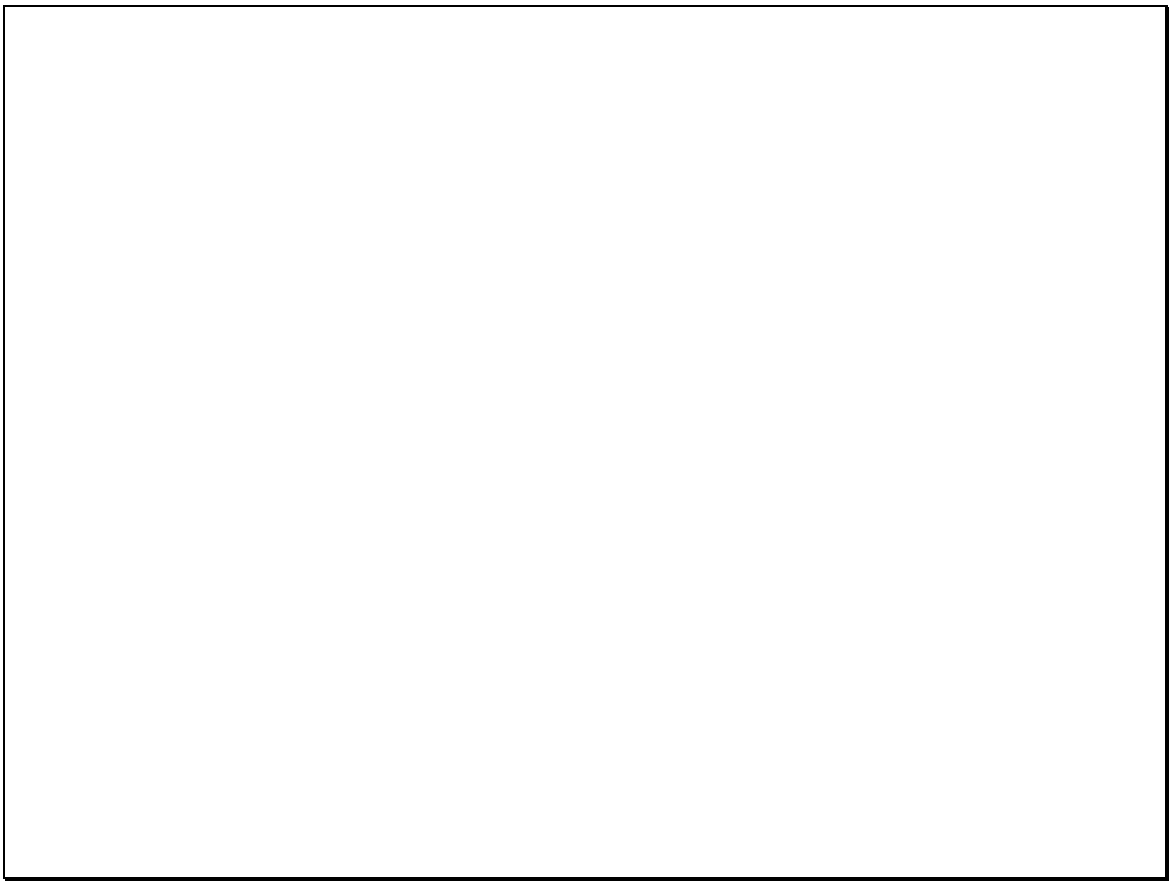
New capacitor C1 installed in Model JLC7-18, top view.

MODIFICATIONS TO THE DEVICE
FIG. 5.16



New capacitor C1 installed in Model JLS, top view.

MODIFICATIONS TO THE DEVICE
FIG. 5.17



6 CONDUCTED EMISSIONS DATA

6.1 Conducted Emissions Test Procedure

This test procedure was performed in accordance with the Conducted Voltage Emissions Test Procedure SOP-0179, in accordance with FCC/OET MP-5 (1986).

The conducted emissions were measured using two steps:

The initial, qualitative, survey of conducted emissions was performed using a spectrum analyzer scanning with peak detection. For this step, the frequency range was divided into four sub-ranges, and a separate scan was taken for each. For each sub-range scan, the spectrum analyzer was swept four times in max-hold mode to capture time varying emissions. The scans for each line were plotted and all the indicated emissions were marked.

The final, quantitative, measurement was made on the configuration and mode of operation that produced the highest emission relative to the limit, on the emissions recorded as "marked traces." These were exported to a spot frequency table which was used to automatically perform a quasi-peak measurement on each frequency. A 9 kHz bandwidth was used.

6.2 Conducted Emissions Test Results

The emissions measurements made in this configuration are deemed to represent the worst case emissions for this system. The preliminary peak scans for each line are provided on the following pages. Emissions requiring quasi-peak measurements are marked numerically. Additional emissions may also be marked.

The final quasi-peak compliance data for both lines is provided on a separate pages following the preliminary peak scans.

6.3 Conducted Emissions Test Data

MEASUREMENT OF
CONDUCTED VOLTAGE EMISSIONS

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLC7-18 20W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard / Class	**:**	CFR Title 47, Pt. 18 / Class B
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	200 Hz for measurements 9 kHz to 150 kHz 9kHz for measurements 150 kHz to 30 MHz
Line	**:**	L1

MEASUREMENT OF
CONDUCTED VOLTAGE EMISSIONS

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLS 26W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard / Class	**:**	CFR Title 47, Pt. 18 / Class B
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	200 Hz for measurements 9 kHz to 150 kHz 9kHz for measurements 150 kHz to 30 MHz
Line	**:**	L1

MEASUREMENT OF CONDUCTED VOLTAGE EMISSIONS

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT**)**	**:**	Model JLC7-18 20W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard / Class	**:**	CFR Title 47, Pt. 18 / Class B
Detection Mode	**:**	Quasi-peak (qpk) or Peak (pk)
Bandwidth	**:**	200 Hz for measurements 9 kHz to 150 kHz 9kHz for measurements 150 kHz to 30 MHz
Line	**:**	L1

Frequency **MHz**	**Meter Reading** **dB(µV)**	**Cable Loss** **dB**	**Trans-ducer Factor** **dB**	**Measured Intensity** **dB(µV)**	**Quasi-Peak Limit** **dB(µV)**	**Margin** **dB(µV)**
0.45365	43.40 pk	.10	0.10	43.60*	48.00	-4.4
0.50298	44.90 pk	.10	0.00	45.00*	48.00	-3
0.55962	42.90 pk	.10	0.00	43.00*	48.00	-5
0.5000	**41.77 qpk**	**.10**	**0.10**	**41.97***	**48.00**	**-6.03**
0.5003	**41.73 qpk**	**.10**	**0.00**	**41.83***	**48.00**	**-6.17**
0.5558	**40.67 qpk**	**.10**	**0.00**	**40.77***	**48.00**	**-7.23**

(*) Measurement data using peak or quasi-peak detection is under the quasi-peak lmit.
(**) Measurement data using quasi-peak detection is under the quasi-peak limit and data using average detection is under the average limit.

MEASUREMENT OF CONDUCTED VOLTAGE EMISSIONS

Temp./Humidity/Atm. Pressure : 23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer : Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT) : Model JLS 26W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode : Energized with lamp on.
Basic Standard / Class : CFR Title 47, Pt. 18 / Class B
Detection Mode : Quasi-peak (qpk) or Peak (pk)
Bandwidth : 200 Hz for measurements 9 kHz to 150 kHz
9kHz for measurements 150 kHz to 30 MHz
Line : L1

Frequency MHz	Meter Reading dB(µV)	Cable Loss dB	Trans-ducer Factor dB	Measured Intensity dB(µV)	Quasi-Peak Limit dB(µV)	Margin dB(µV)
.47010	48.00 pk	.10	.10	48.20	48.00	0.2
.53769	46.70 pk	.10	0.00	46.80*	48.00	-1.2
.57606	43.90 pk	.10	0.00	44.00*	48.00	-4
.60529	43.10 pk	.10	0.00	43.20*	48.00	-4.8
.64183	44.20 pk	.10	0.00	44.30*	48.00	-3.7
.70760	42.30 pk	.20	0.00	42.50*	48.00	-5.5
.4551	**45.14 qpk**	**.10**	**.10**	**45.34***	**48.00**	**-2.66**
.5204	**44.57 qpk**	**.10**	**0.00**	**44.67***	**48.00**	**-3.33**
.5842	**42.83 qpk**	**.10**	**0.00**	**42.93***	**48.00**	**-5.07**
.5844	**42.85 qpk**	**.10**	**0.00**	**42.95***	**48.00**	**-5.05**
.6480	**39.20 qpk**	**.10**	**0.00**	**39.30***	**48.00**	**-8.7**
.6831	**38.89 qpk**	**.20**	**0.00**	**39.09***	**48.00**	**-8.91**

(*) Measurement data using peak or quasi-peak detection is under the quasi-peak limit.
(**) Measurement data using quasi-peak detection is under the quasi-peak limit and data using average detection is under the average limit.

MEASUREMENT OF
CONDUCTED VOLTAGE EMISSIONS

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLC7-18 20W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard / Class	**:**	CFR Title 47, Pt. 18 / Class B
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	200 Hz for measurements 9 kHz to 150 kHz 9kHz for measurements 150 kHz to 30 MHz
Line	**:**	L2

MEASUREMENT OF
CONDUCTED VOLTAGE EMISSIONS

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.9 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLS 26W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard / Class	**:**	CFR Title 47, Pt. 18 / Class B
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	200 Hz for measurements 9 kHz to 150 kHz 9kHz for measurements 150 kHz to 30 MHz
Line	**:**	L2

MEASUREMENT OF CONDUCTED VOLTAGE EMISSIONS

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.9 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLC7-18 20W Fluorescent lampholder adaptor; self ballasted lamp .45731
Operating Mode	**:**	Energized with lamp on.
Basic Standard / Class	**:**	CFR Title 47, Pt. 18 / Class B
Detection Mode	**:**	Quasi-peak (qpk) or Peak (pk)
Bandwidth	**:**	200 Hz for measurements 9 kHz to 150 kHz 9kHz for measurements 150 kHz to 30 MHz
Line	**:**	L2

Frequency **MHz**	**Meter Reading** **dB(µV)**	**Cable Loss** **dB**	**Trans-ducer Factor** **dB**	**Measured Intensity** **dB(µV)**	**Quasi-Peak Limit** **dB(µV)**	**Margin** **dB(µV)**
.45731	45.30 pk	.10	0.10	45.50*	48.00	-2.5
.51394	43.40 pk	.10	0.00	43.50*	48.00	-4.5
.54866	46.60 pk	.10	0.00	46.70*	48.00	-1.3
.60346	44.40 pk	.10	0.00	44.50*	48.00	-3.5
.66558	40.90 pk	.20	0.00	41.10*	48.00	-6.9
.72039	42.30 pk	.20	0.00	42.50*	48.00	-5.5
.4981	**42.15 qpk**	**.10**	**0.10**	**42.35***	**48.00**	**-5.65**
.4981	**43.24 qpk**	**.10**	**0.10**	**43.44***	**48.00**	**-4.56**
.5266	**39.55 qpk**	**.10**	**0.00**	**39.65***	**48.00**	**-8.35**
.5841	**40.26 qpk**	**.10**	**0.00**	**40.36***	**48.00**	**-7.64**
.6697	**37.68 qpk**	**.20**	**0.00**	**37.88***	**48.00**	**-10.12**
.7047	**38.17 qpk**	**.20**	**0.00**	**38.37***	**48.00**	**-9.63**

(*) Measurement data using peak or quasi-peak detection is under the quasi-peak limit.
(**) Measurement data using quasi-peak detection is under the quasi-peak limit and data using average detection is under the average limit.

MEASUREMENT OF CONDUCTED VOLTAGE EMISSIONS

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLS 26W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard / Class	**:**	CFR Title 47, Pt. 18 / Class B
Detection Mode	**:**	Quasi-peak (qpk) or Peak (pk)
Bandwidth	**:**	200 Hz for measurements 9 kHz to 150 kHz 9kHz for measurements 150 kHz to 30 MHz
Line	**:**	L2

Frequency **MHz**	**Meter Reading** **dB(µV)**	**Cable Loss** **dB**	**Trans-ducer Factor** **dB**	**Measured Intensity** **dB(µV)**	**Quasi-Peak Limit** **dB(µV)**	**Margin** **dB(µV)**
.45731	46.30 pk	.10	.10	46.50*	48.00	-1.5
.51942	47.20 pk	.10	0.00	47.30*	48.00	-0.7
.58337	47.20 pk	.10	0.00	47.30*	48.00	-0.7
.74779	42.00 pk	.20	0.00	42.20*	48.00	-5.8
.4546	**43.87 qpk**	**.10**	**.10**	**44.07***	**48.00**	**-3.93**
.5199	**44.24 qpk**	**.10**	**0.00**	**44.34***	**48.00**	**-3.66**
.5832	**44.79 qpk**	**.10**	**0.00**	**44.89***	**48.00**	**-3.11**
.7471	**38.73 qpk**	**.20**	**0.00**	**38.93***	**48.00**	**-9.07**

(*) Measurement data using peak or quasi-peak detection is under the quasi-peak limit.
(**) Measurement data using quasi-peak detection is under the quasi-peak limit and data using average detection is under the average limit.

7 RADIATED EMISSIONS DATA

7.1 Radiated Emissions Test Procedure

This test procedure was conducted in accordance with the Radiated Emissions Test Procedure SOP-0152, in accordance with FCC/OET MP-5 (1986).

The radiated emissions were measured using two steps:

Preliminary measurements were performed with a spectrum analyzer scanning with peak detection and the appropriate receiver bandwidths for the frequency ranges covered. These initial, qualitative, surveys of emissions were performed in a shielded semi-anechoic chamber. For this step, the frequency range was divided into sub-ranges, and a separate scan was taken for each. These measurements were performed for the horizontal and vertical receiving antenna polarities. Measurements were made while the EUT was rotated about it's vertical axis through a 360 degree azimuth, each frequency range was continuously swept, and the maximum emission levels recorded.

The scans for each polarity and frequency range were plotted. Any peak signal that approached the limit was further investigated in the chamber to determine if measurements would be needed in the open area test site (OATS). All signals were identified as either being ambient signals getting into the chamber or were transients. Since the emissions identified was more than 6 dB below the normalized 3 meter limit at the worst case azimuth, radiated measurements in the OATS were not considered necessary.

7.2 Field Strength Calculations

7.2.1 The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain, if any, from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF -AG, where

FS = Field Strength	RA = Receiver Amplitude
AF = Antenna Factor	CF = Cable Attenuation Factor
AG = Amplifier Gain	

Assume a logarithmic reading of 52.5 dB(μV) is obtained. The Antenna Factor of 7.4 and a Cable Factor of 1.1 is added. The Amplifier Gain of 29 dB is subtracted, giving a field strength of 32 dB(μV)/m. The 32 dB(μV)/m was mathematically converted to it's corresponding linear level in μV/m:

FS = 52.5 + 7.4 + 1.1 - 29 = 32 dB(μV)/m

Level in μV/m = Common Antilogarithm [(32 dB(μV)/m)/20] = 39.8 μV/m

7.3 Radiated Emissions Test Results

The emissions measurements made in this configuration represent the worst case emissions for this system. The preliminary peak scans for each frequency span and antenna orientation are provided on the following pages. Emissions thought to require quasi-peak measurements are marked numerically. Other emissions may also be marked.

Since all the marked signals were verified as ambients, no OATS measurements were considered necessary, final quasi-peak compliance data for each marked trace frequency is not provided. The peak measurements that were marked on the traces are, however, provided on separate sheets following the peak scans. The test date the data was recorded is provided on each scan.

7.4 Radiated Emissions Test Data

MEASUREMENT OF RADIATED EMISSIONS - ELECTRIC FIELD PRECOMPLIANCE, 3M CHAMBER SCAN

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLC7-18 20W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard/Class	**:**	CFR Title 47, PT. 18 / Class B
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	100 kHz for measurements from 30 to 1000 MHz
Compliance Measurement Distance	**:**	3 meters.

MEASUREMENT OF RADIATED EMISSIONS - ELECTRIC FIELD PRECOMPLIANCE, 3M CHAMBER SCAN

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLC7-18 20W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard/Class	**:**	CFR Title 47, PT. 18 / Class B
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	100 kHz for measurements from 30 to 1000 MHz
Compliance Measurement Distance	**:**	3 meters.

MEASUREMENT OF
RADIATED EMISSIONS - ELECTRIC FIELD

Temp./Humidity/Atm. Pressure : 23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer : Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT) : Model JLC7-18 20W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode : Energized with lamp on.
Basic Standard/Class : CFR Title 47, PT. 18 / Class B
Detection Mode : Peak (pk)
Bandwidth : 100 kHz for measurements from 30 to 1000 MHz
Compliance Measurement Distance : 3 meters.

Frequency MHz	Meter Reading dBµV/m	Cable Loss dB	Antenna Factor dB	Measured Intensity dBµV/m	3 meter Limit dBµV/m	Margin	Antenna Type
32.05790	30.40 pk	1.20	4.70	36.30 A	40.00	-3.7	BcnLg-V
59.76090	23.80 pk	1.60	6.30	31.70 A	40.00	-8.3	BcnLg-V
103.30300	10.70 pk	2.10	10.30	23.10 A	43.50	-20.4	BcnLg-V
181.44260	12.10 pk	2.70	10.40	25.20 A	43.50	-18.3	BcnLg-H
185.83970	8.70 pk	2.80	10.60	22.10 A	43.50	-21.4	BcnLg-V
193.31480	9.00 pk	2.90	10.90	22.80 A	43.50	-20.7	BcnLg-V
531.72260	16.40 pk	5.10	19.40	40.90 A	46.00	-5.1	BcnLg-H
614.10120	11.70 pk	5.60	21.20	38.50 A	46.00	-7.5	BcnLg-H
681.78750	18.00 pk	5.80	21.80	45.60 A	46.00	-0.4	BcnLg-H

Notes:

H -..... Horizontal antenna polarity
V -..... Vertical antenna polarity
Bcn - ..... Biconnical antenna
Lgp - ..... Log periodic antenna
BcnLg - ..... Biconilog antenna
A - ..... Marked traces are verified ambients signals

MEASUREMENT OF RADIATED EMISSIONS - ELECTRIC FIELD PRECOMPLIANCE, 3M CHAMBER SCAN

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLS 26W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard/Class	**:**	CFR Title 47, PT. 18 / Class B
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	100 kHz for measurements from 30 to 1000 MHz
Compliance Measurement Distance	**:**	3 meters.

MEASUREMENT OF RADIATED EMISSIONS - ELECTRIC FIELD PRECOMPLIANCE, 3M CHAMBER SCAN

Temp./Humidity/Atm. Pressure	**:**	23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer	**:**	Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT)	**:**	Model JLS 26W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode	**:**	Energized with lamp on.
Basic Standard/Class	**:**	CFR Title 47, PT. 18 / Class B
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	100 kHz for measurements from 30 to 1000 MHz
Compliance Measurement Distance	**:**	3 meters.

MEASUREMENT OF
RADIATED EMISSIONS - ELECTRIC FIELD

Temp./Humidity/Atm. Pressure : 23 °C/ 58 %RH/ 29.5 in Hg
Manufacturer : Fujian Joinluck Electronic Enterprise Co., Ltd.
Equipment Under Test (EUT) : Model JLS 26W Fluorescent lampholder adaptor; self ballasted lamp
Operating Mode : Energized with lamp on.
Basic Standard/Class : CFR Title 47, PT. 18 / Class B
Detection Mode : Quasi-peak (qpk) or Peak (pk)
Bandwidth : 100 kHz for measurements from 30 to 1000 MHz
Compliance Measurement Distance : 3 meters.

Frequency MHz	Meter Reading dBµV/m	Cable Loss dB	Antenna Factor dB	Measured Intensity dBµV/m	3 meter Limit dBµV/m	Margin	Antenna Type
31.37190	24.40 pk	1.20	8.10	33.70 A	40.00	-6.3	BcnLg-H
32.05790	34.10 pk	1.20	4.70	40.00 A	40.00	0.0	BcnLg-V
36.61480	15.60 pk	1.30	4.10	21.00 A	40.00	-19	BcnLg-V
59.66820	16.10 pk	1.60	6.30	24.00 A	40.00	-16	BcnLg-V
101.13160	8.90 pk	2.00	10.20	21.10 A	43.50	-22.4	BcnLg-V
181.22280	13.10 pk	2.70	10.40	26.20 A	43.50	-17.3	BcnLg-V
215.19440	12.60 pk	3.10	11.40	27.10 A	43.50	-16.4	BcnLg-V
531.72260	18.40 pk	5.10	19.10	42.60 A	46.00	-3.4	BcnLg-V
614.10120	14.20 pk	5.60	20.00	39.80 A	46.00	-6.2	BcnLg-V
681.78750	20.30 pk	5.80	21.80	47.90 A	46.00	1.9	BcnLg-H

Notes:

H -..... Horizontal antenna polarity
V -..... Vertical antenna polarity
Bcn - ..... Biconnical antenna
Lgp - ..... Log periodic antenna
BcnLg - ..... Biconilog antenna
A -..... Marked traces are verified ambients signals

8 PHOTOS OF TESTED EQUIPMENT

All of the photos are provided in Section 5, Conducted and Radiated Measurement Photos.

9 ADDITIONAL PRODUCT INFORMATION

9.1 User Manual

When installing please hold the plastic case of the lamp and then screw the lamps cap into a socket. Before installing, please turn off the swithc. This device is not suitable for use with a dimmer switch.