



**IESNA  
SUSTAINING  
MEMBER**

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Test report of

## **IES LM-79-08**

**Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products**

Rendered to:

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For products:

Four-Foot Linear Replacement Lamps

Models No.:

542966XX(XX=41-50)

(Where XX denotes CCT and could be 41-50 which refers 4000K)

**Test Date:** Apr. 26, 2018  
**Test Item:** Total luminous flux, Luminous Efficacy, Electrical values, Luminous Intensity Distribution  
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**Template No.:** LC-RT-PL-004 Rev.1.0  
**Test Note:**

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**May. 11, 2018**

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**May. 11, 2018**

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## 1. General

### 1.1 Product Information

Brand Name	ETI
Product Type	T8 Four- Foot Linear Replacement Lamps-Internal Driver/Line Voltage Lamp - Style Retrofit Kits (UL Type B)
Model Number	542966XX(XX=41-50)
Rated Inputs	120-277VAC, 50/60Hz
Rated Power	15W
Rated Light output	2200lm
Declared CCT	4000K
Power Supply	Integrated in lamp
LED Package, Array or Module	67-21S Series (3000K), EVERLIGHT ELECTRONICS CO., LTD
Receipt Samples	1 unit
Sample Code of lab.	180427105011
Date of Receipt Samples	Apr. 27, 2018
Note	Two (2) lamps were installed in a reference troffer recommended by DLC ,Please refer to section 1.2 for detail reference troffer information



**1.2 Reference Troffer information**

Troffer Brand Name	Lithonia
Troffer Model	Lithonia 2GT8 lensed 2X4



Lithonia 2GT8 lensed 2x4



### 1.3 Standards or methods

The following standards are partly or totally used or referenced for test:

No.	Name
ANSI C82.77-2002	Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products

### 1.4 Equipment list

Instrument	ID	Model name	Cal. date	Next cal. Date
AC Power supply	LC-I-923	CHP-500	2018-01-10	2019-01-09
AC Power supply	LC-I-987	APW-110N	2018-01-10	2019-01-09
Power analyzer	LC-I-928	WT210	2018-01-05	2019-01-05
Power analyzer	LC-I-954	WT210	2018-01-10	2019-01-09
Multimeter	LC-I-972	Fluke 17B	2017-08-08	2018-08-07
Photometric colorimetric electric system (2 meter sphere)	LC-I-900	SPR3000	Before use	Before use
Standard lamp	LC-PL-I-011	D204C	2017-09-07	2018-09-06
Luminous Flux Standard Lamp	LC-PL-I-003	24V100W	2017-09-22	2018-09-21
Goniophotometer(with mirror)	LC-I-902	GMS2000	2018-05-07	2019-05-06
Wireless temperature transmitter	LC-I-978	DWRF-B	2018-02-10	2019-02-09
Wireless temperature transmitter	LC-I-979	DWRF-B	2018-02-10	2019-02-09

## 2. Test conducted and method

2 Lamps provided by the client were tested in the troffer

### 2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ ; the air flow around the sample(s) being tested did not affect the performance.

### 2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within  $\pm 0.2$  percent under load.

### 2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

### 2.4 Electrical Instrumentation

The calibration uncertainties of the instruments for AC voltage and current were less than 0.2 percent, and the calibration uncertainty of the AC power meter was less than 0.5 percent (95 % confidence interval,  $k=2$ ).

### 2.5 Color Measurement Method

The customer did not require this measurement.

### 2.6 Total Luminous Flux Measurement Method

Total luminous flux was measured by type C goniophotometer system.

Light intensity distribution was measured by a type C goniophotometer (with mirror) which can keep the sample in burn position when the tests conduct, and the total luminous flux was calculated from the intensity data by software automatically.

### 2.7 Luminous Intensity Distribution Measurement Method

Luminous intensity distribution was measured by a mirror-type goniophotometer (Type C) which can keep the sample in burn position when the tests conduct, and the kinds of graph were generated by software automatically.

### 2.8 Spatial Non-uniformity of Chromaticity

The customer did not require this measurement.



### 3. Test Result Summary

#### 3.1 Electrical data

Criteria Item	Result(Goniophotometer)
Input Voltage & Frequency	119.98 V~60Hz
Input Current(A)	0.258
Total Power(W)	30.40
Power Factor	0.981

#### 3.2 Photometric data

Criteria Item	Result(Goniophotometer)
Total Lumens(lm)	3335.09
Luminaire Efficacy(Lm/W)	109.71
Spacing Criteria(0-180°)	1.22
Spacing Criteria(90-270°)	1.32
Zone Lumens between 0-60 °	84.17%



### 4. Test Data

#### 4.1 Goniometry Test Data

CIE Type	Direct	Basic Luminous Shape	Rectangular
Spacing Criteria (0-180)	1.22	Luminous Length	1.15 m
Spacing Criteria (90-270)	1.32	Luminous Width	0.54 m
Spacing Criteria (Diagonal)	1.36	Luminous Height	0.00 m
Test Distance	29.79 m		

#### 4.2 Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	486.53	14.60	14.60
0-30	1033.66	31.00	31.00
0-40	1686.11	50.60	50.60
0-60	2807.02	84.20	84.20
0-80	3257.24	97.70	97.70
0-90	3321.62	99.60	99.60
10-90	3195.94	95.80	95.80
20-40	1199.58	36.00	36.00
20-50	1838.53	55.10	55.10
40-70	1408.29	42.20	42.20
60-80	450.21	13.50	13.50
70-80	162.84	4.90	4.90
80-90	64.38	1.90	1.90
90-110	4.22	0.10	0.10
90-120	5.79	0.20	0.20
90-130	7.32	0.20	0.20
90-150	10.32	0.30	0.30
90-180	13.48	0.40	0.40
110-180	9.25	0.30	0.30
0-180	3335.09	100.00	100.00

Total Luminaire Efficiency = 100.00%

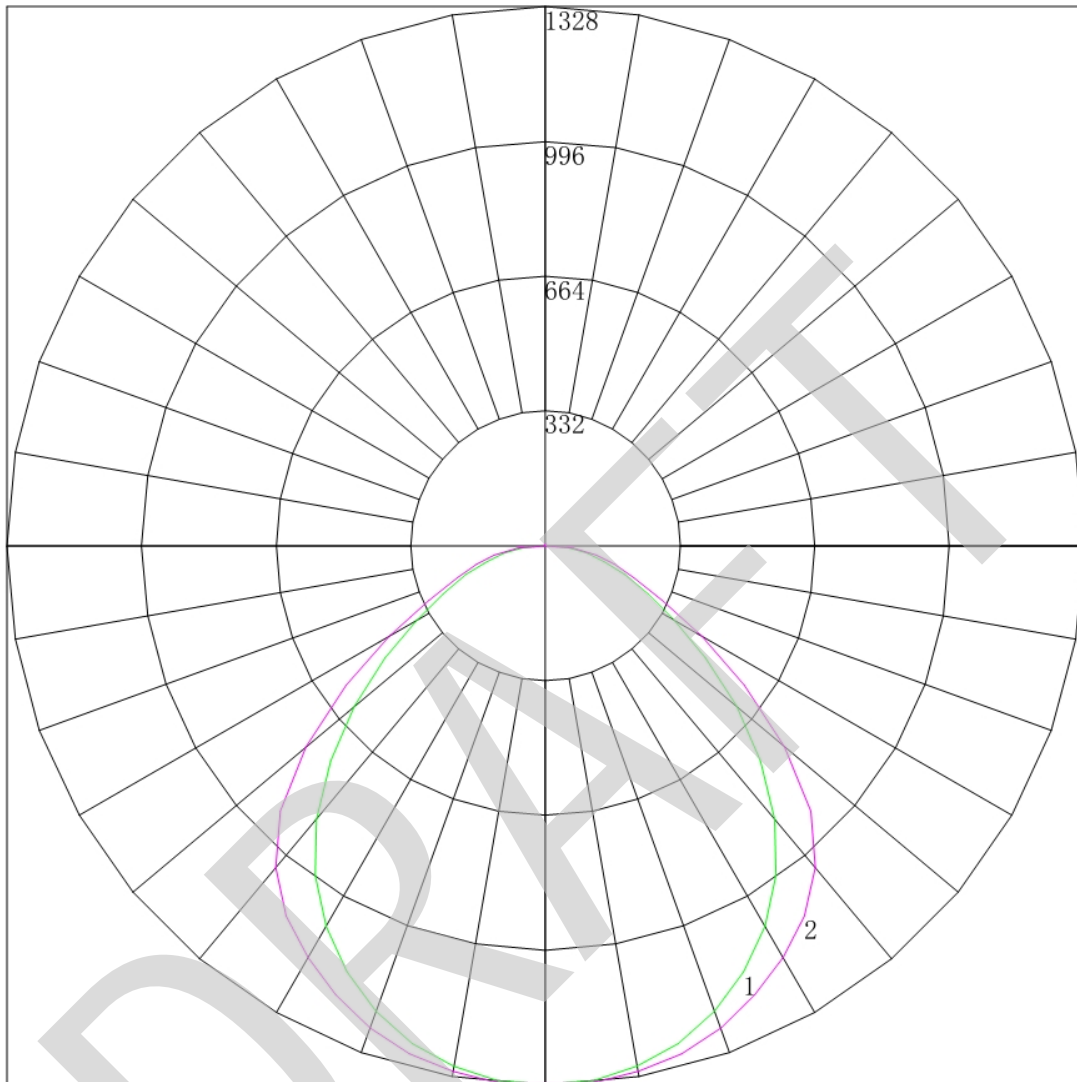
#### ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	125.68
10-20	360.85
20-30	547.13
30-40	652.45
40-50	638.96
50-60	481.96
60-70	287.37
70-80	162.84
80-90	64.38
90-100	2.47
100-110	1.76
110-120	1.57
120-130	1.52
130-140	1.41
140-150	1.59
150-160	1.57
160-170	1.15
170-180	0.44





4.3 Polar Curves



Maximum Candela = 1327.826 Located At Horizontal Angle = 90, Vertical Angle = 5  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180)  
# 2 - Vertical Plane Through Horizontal Angles (90 - 270)



4.4 Candela Tabulation

	<u>0</u>	<u>15</u>	<u>30</u>	<u>45</u>	<u>60</u>	<u>75</u>	<u>90</u>
0	1327.419	1327.419	1327.419	1327.419	1327.419	1327.419	1327.419
5	1322.561	1320.861	1321.136	1322.443	1322.034	1321.751	1327.826
10	1301.659	1301.040	1302.703	1305.184	1308.342	1308.135	1314.568
15	1268.322	1267.289	1271.516	1277.901	1284.285	1287.746	1295.720
20	1220.054	1221.671	1230.512	1239.271	1250.347	1256.696	1264.198
25	1157.971	1162.483	1174.519	1188.714	1201.151	1212.359	1221.227
30	1082.963	1085.558	1101.737	1122.318	1142.247	1158.036	1170.507
35	990.350	990.613	1013.714	1042.704	1073.334	1096.366	1113.847
40	878.439	888.470	914.383	951.046	987.957	1017.317	1035.073
45	748.969	762.706	792.044	833.289	875.634	906.452	924.775
50	614.284	624.076	654.883	693.471	724.489	751.109	769.806
55	482.317	488.824	508.733	539.539	557.458	580.424	599.212
60	366.796	365.521	370.814	394.670	411.485	427.040	444.835
65	278.462	264.575	260.357	271.549	290.694	305.155	317.785
70	208.490	194.116	184.518	181.488	208.758	227.022	230.936
75	149.526	146.188	134.892	134.034	159.238	172.989	176.131
80	104.156	103.835	100.267	104.609	113.730	126.171	128.018
85	51.788	54.506	56.469	58.776	64.907	71.561	68.147
90	1.827	2.334	2.578	3.480	4.831	5.513	3.854
95	1.604	1.711	1.954	1.971	1.949	1.793	1.819
100	1.515	1.556	1.755	1.861	1.772	1.771	1.908
105	1.471	1.600	1.622	1.684	1.750	1.727	1.775
110	1.426	1.422	1.511	1.573	1.639	1.682	1.730
115	1.426	1.422	1.444	1.507	1.573	1.704	1.685
120	1.649	1.622	1.688	1.684	1.728	1.793	1.773
125	1.604	1.644	1.733	1.750	1.750	1.837	1.860
130	1.515	1.533	1.599	1.595	1.639	1.682	1.683
135	1.738	1.778	1.777	1.728	1.839	1.771	1.772
140	2.184	2.111	2.155	2.215	2.171	2.191	2.170
145	2.451	2.466	2.443	2.503	2.548	2.590	2.657
150	2.897	2.889	2.932	2.924	2.991	3.033	3.011
155	3.343	3.355	3.398	3.500	3.500	3.409	3.542
160	3.655	3.689	3.798	3.855	3.921	3.874	3.897
165	4.056	4.066	3.998	4.010	4.098	4.117	4.075
170	4.323	4.422	4.376	4.319	4.342	4.361	4.429
175	4.635	4.577	4.687	4.674	4.718	4.737	4.741
180	4.811	4.811	4.811	4.811	4.811	4.811	4.811



**Appendix 1 Product Photo**



Picture 1



Picture 2

\*\*\*\*End of test report\*\*\*\*