



# REPORT

545 E. Algonquin Rd., Arlington Heights, IL 60005

Project No. G102748333

Date: December 20, 2016

REPORT NO. 102748333CHI-015

TEST OF ONE T8 LED TUBE

MODEL NO. T8-NW18F

LED MODEL NO. HONGLI OPTO-ELECTRONIC / HL-A-2835HW-S1-08L-HR3

DRIVER MODEL NO. BYMEA / T08J01\_R0

RENDERED TO

SUPER BRIGHT LEDS, INC.  
4400 EARTH CITY EXPRESSWAY  
SAINT LOUIS, MO 63045

TEST: Electrical and Photometric tests as required to the IESNA test standard.

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-00723537-3.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2012: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number T8-NW18F. The sample was received by Intertek on December 16, 2016, in undamaged condition and one sample was tested as received. The sample designation was 12162016023157.

DATES OF TESTS: December 19, 2016 through December 20, 2016.

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## SUMMARY

Model No.:	T8-NW18F
Description:	T8 LED Tube

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1918	1987
Total Power (W)	18.46	18.22
Luminaire Efficacy (LPW)	103.9	109.1

Criteria	Result
Power Factor at 120Vac	0.604
Power Factor at 277Vac	0.635
Current ATHD % at 120Vac	34.27
Current ATHD % at 277Vac	15.73
Correlated Color Temperature (CCT - K)	4116
Color Rendering Index (CRI - Ra)	83.3
Color Rendering Index (CRI - R9)	9.1
DUV	0.001
Chromaticity Coordinate (x)	0.376
Chromaticity Coordinate (y)	0.378
Chromaticity Coordinate (u')	0.222
Chromaticity Coordinate (v')	0.501

## EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Yokogawa Power Meter	WT210	146919	07/11/16	07/11/17	12/20/16
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	12/20/16
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	12/20/16
Newport Thermohygrometer	iServer	146956	01/04/16	01/04/17	12/20/16
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	12/20/16
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	12/19/16
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	12/19/16
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	12/19/16
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	12/19/16
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	12/19/16
Yokogawa Power Meter	WT1600	146768	01/14/16	01/14/17	12/19/16
Omega Temperature Meter	MDSi8	146139	03/21/16	03/21/17	12/19/16

## TEST METHODS

### Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

### Photometric and Electrical Measurements – Integrating Sphere Method

A Labsphere Model CDS 1100 CCD Array Spectroradiometer and Two Meter or Ten Foot Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

### Photometric and Electrical Measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

## RESULTS OF TEST

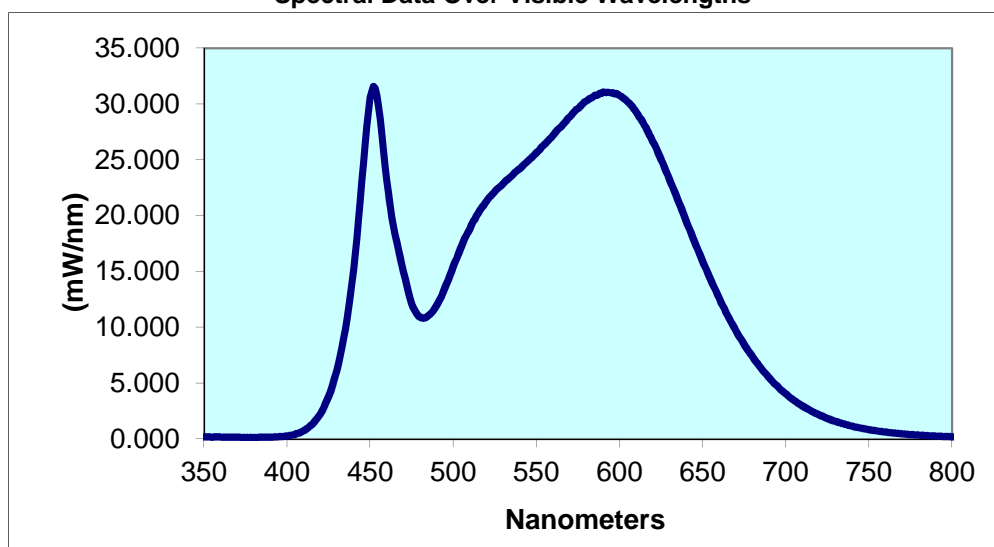
### Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
12162016023157	Up	120.0	254.7	18.46	0.604	34.27	1918	103.9
		277.0	106.3	18.70	0.635	15.73		
Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')	
4116	83.3	9.1	0.001	0.376	0.378	0.222	0.501	

### Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.165	440	15.16	530	22.90	620	26.68	710	2.953
355	0.158	445	23.00	535	23.54	625	25.03	715	2.525
360	0.167	450	30.53	540	24.21	630	23.27	720	2.163
365	0.160	455	29.88	545	24.91	635	21.45	725	1.841
370	0.145	460	23.19	550	25.63	640	19.56	730	1.575
375	0.132	465	18.33	555	26.40	645	17.72	735	1.343
380	0.129	470	14.99	560	27.20	650	15.91	740	1.146
385	0.134	475	12.11	565	27.99	655	14.22	745	0.976
390	0.153	480	10.92	570	28.84	660	12.62	750	0.832
395	0.195	485	11.05	575	29.59	665	11.08	755	0.716
400	0.266	490	11.96	580	30.27	670	9.704	760	0.617
405	0.424	495	13.54	585	30.76	675	8.462	765	0.527
410	0.744	500	15.44	590	31.05	680	7.359	770	0.453
415	1.302	505	17.26	595	31.00	685	6.369	775	0.390
420	2.240	510	18.81	600	30.76	690	5.477	780	0.335
425	3.812	515	20.20	605	30.21	695	4.724		
430	6.210	520	21.30	610	29.31	700	4.043		
435	9.820	525	22.17	615	28.09	705	3.458		

**Spectral Data Over Visible Wavelengths**



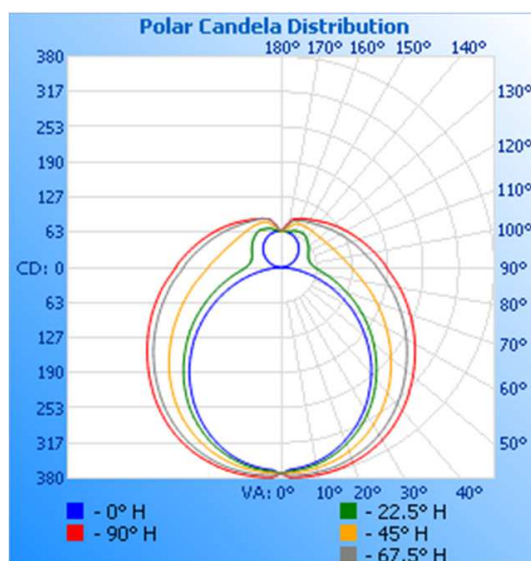
# RESULTS OF TEST (cont'd)

## Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (LPW)
12162016023157	Up	120.1	175.1	18.22	0.867	1987	109.1

## Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	372	372	372	372	372
5	363	366	370	376	380
10	356	361	367	374	380
15	346	352	361	372	378
20	332	339	353	366	374
25	316	324	342	359	368
30	296	307	328	349	360
35	274	286	313	336	349
40	250	264	295	322	336
45	225	240	276	307	322
50	197	216	256	290	306
55	170	191	236	274	291
60	142	167	216	258	275
65	113	143	198	242	260
70	85	121	180	226	245
75	59	101	164	211	230
80	34	84	149	196	215
85	13	70	136	183	201
90	1	61	125	171	188
95	3	55	116	160	178
100	7	52	110	150	167
105	13	51	103	142	157
110	18	52	99	134	148
115	24	54	94	127	140
120	29	56	91	121	133
125	35	60	89	115	126
130	40	63	87	110	120
135	44	66	86	105	114
140	49	70	86	101	108
145	53	73	86	97	104
150	56	73	85	95	100
155	59	71	85	93	97
160	62	70	85	90	94
165	63	68	79	87	91
170	65	66	74	79	83
175	66	66	67	70	73
180	67	67	67	67	67

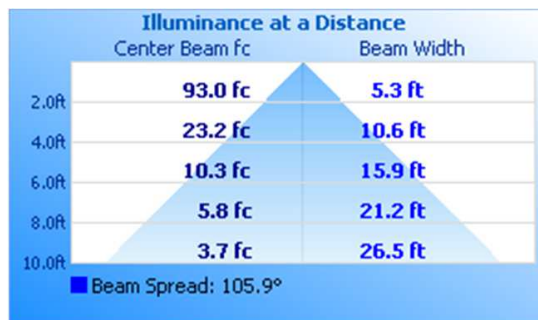


## RESULTS OF TEST (cont'd)

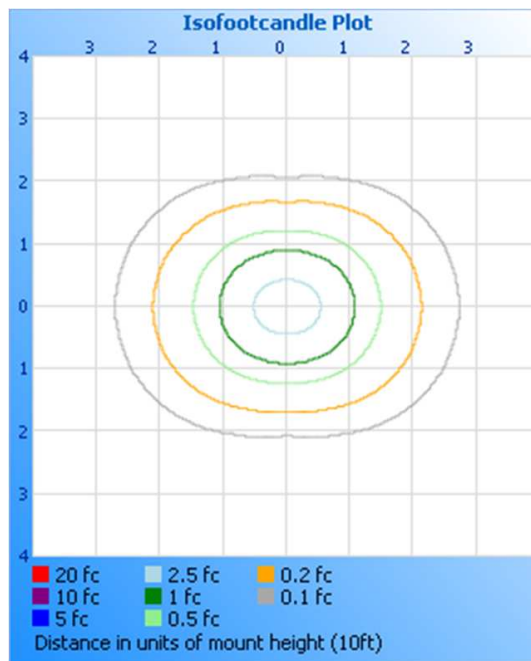
### Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



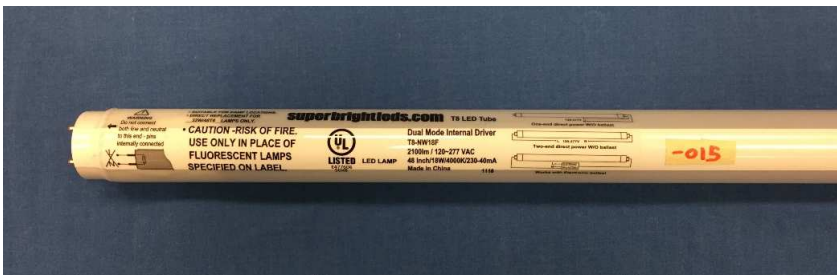
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	295.9	14.9
0-40	492.1	24.8
0-60	915.5	46.1
60-90	496.1	25.0
0-90	1412	71.0
90-180	575.4	29.0
0-180	1987	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	35.3	1.8
10-20	102.4	5.2
20-30	158.2	8.0
30-40	196.2	9.9
40-50	213.0	10.7
50-60	210.4	10.6
60-70	192.6	9.7
70-80	166.1	8.4
80-90	137.4	6.9
90-100	117.1	5.9
100-110	102.5	5.2
110-120	90.2	4.5
120-130	78.4	3.9
130-140	66.2	3.3
140-150	53.2	2.7
150-160	38.5	1.9
160-170	22.5	1.1
170-180	6.8	0.3

PICTURES (not to scale)



CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

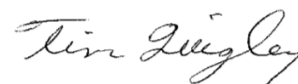
In Charge Of Tests:



Hector Huitron  
Associate Engineer  
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley  
Engineer  
Lighting Division