VISUAL COMFORT GROUP

TEST REPORT

SCOPE OF WORK
Electrical and Photometric tests as required to the IESNA test standard.

MODEL NUMBER
700TDALIGPWS-LED927

REPORT NUMBER
103982892CHI-031

ISSUE DATE
July 9, 2019

REVISION DATE
None

DOCUMENT CONTROL NUMBER
TBD

545 E. Algonquin Rd
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REPORT NO.: 103982892CHI-031

TEST REPORT **REPORT DATE: July 9, 2019**

TEST OF ONE LED PENDANT

MODEL NO. 700TDALIGPWS-LED927

RENDERED TO:

VISUAL COMFORT GROUP
7400 LINDER AVE.
SKOKIE, IL 60077

AUTHORIZATION
The testing performed was authorized by signed quote number Qu-00981438-0.

STANDARDS USED
IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting
ANSI NEMA ANSLG C78.377: 2015: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE
The client submitted one production sample of model number 700TDALIGPWS-LED927. The sample was received by Intertek on June 14, 2019 in undamaged condition and one sample was tested as received. The sample designation was AH06142019092403-31.

DATE OF TESTS
June 20, 2019 through July 3, 2019.

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TEST REPORT **REPORT DATE: July 9, 2019**

SUMMARY

MODEL NO:	700TDALIGPWS-LED927
DESCRIPTION:	LED pendant

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	759.8	724.4
Input Power (W) @ 120 (VAC)	10.36	10.33
Lumen Efficacy (lm/W)	73.3	70.1
Input Power Factor @ 120 (VAC)	0.974	0.979

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	19.08
Correlated Color Temperature (K)	2818
Color Rendering Index - Ra	93.1
Color Rendering - R9	61.7
DUV	0.0002
Chromaticity Coordinate (x)	0.451
Chromaticity Coordinate (y)	0.409
Chromaticity Coordinate (u')	0.257
Chromaticity Coordinate (v')	0.525

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EQUIPMENT LIST

EQUIPMENT USED	MODEL NO.	CONTROL NO.	LAST CAL DATE	CAL DUE DATE
Yokogawa Power Meter	WT210	146919	7/1/2019	7/1/2020
Omega Thermometer	DPI8-C24	146920	10/4/2018	10/4/2019
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Thermohygrometer	iServer	146957	12/11/2018	12/11/2019
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU
3 Meter Sphere	SPR600	CHI0088	VBU	VBU
Elgar AC Power Supply	CW1251	146112	VBU	VBU
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
Newport Humidity Recorder	iTHX-SD	146961	7/23/2018	7/23/2019
Yokogawa Power Meter	WT1600	146769	4/3/2019	4/3/2020
Extech K Temperature Meter	SD200	CHI0207	4/3/2019	4/3/2020

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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 Spectroradiometer and integrating 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. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a 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 Type C Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for the SSL sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniometer equipment. The SSL sample was operated on the client provided driver at rated input volts in its designated orientation. The SSL sample was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

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TEST REPORT

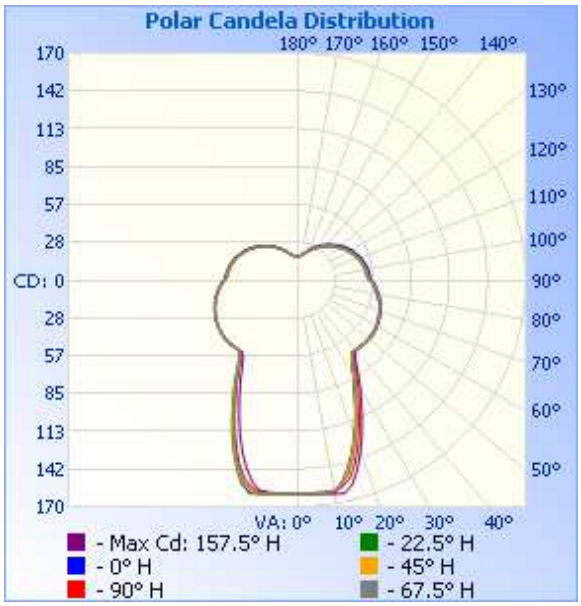
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR	LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)
AH06142019092403-31	Base Up	120.0	88.0	10.33	0.979	724.4	70.1

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	160	160	160	160	160
5	160	160	160	160	161
10	161	160	160	160	161
15	146	146	147	149	153
20	125	124	125	128	132
25	102	102	102	105	109
30	84	84	85	87	90
35	71	70	70	72	74
40	68	68	68	68	68
45	69	69	69	68	68
50	70	69	69	69	69
55	70	69	69	69	68
60	69	68	68	68	68
65	68	67	67	67	67
70	66	66	65	65	65
75	64	64	63	63	63
80	62	61	61	61	60
85	59	58	58	58	58
90	55	55	54	54	54
95	54	53	52	52	52
100	53	52	52	51	51
105	52	51	50	49	49
110	50	49	48	48	48
115	48	47	46	46	46
120	46	45	44	43	44
125	44	42	41	41	41
130	41	40	39	38	38
135	38	37	36	36	36
140	35	34	33	33	33
145	32	31	30	30	30
150	29	28	28	28	28
155	27	26	25	25	25
160	24	23	23	23	23
165	22	21	21	21	21
170	20	19	19	19	19
175	18	18	18	18	18
180	17	17	17	17	17



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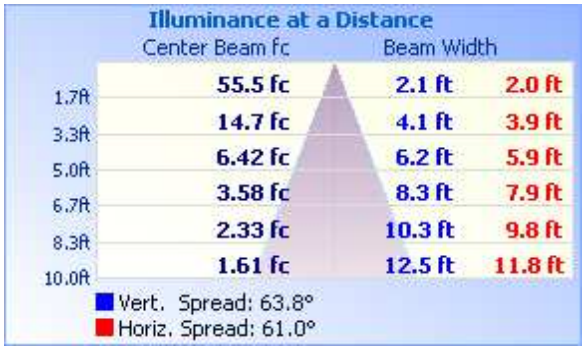
TEST REPORT

RESULTS OF TESTS

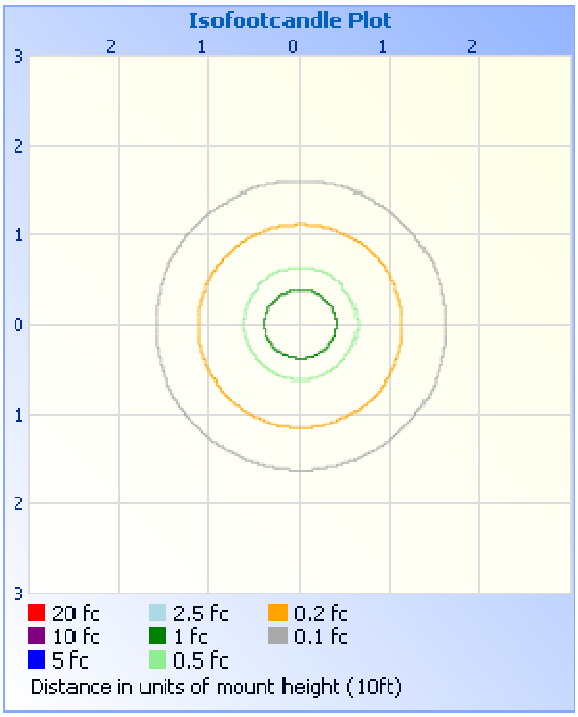
PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

MOUNTING HEIGHT: 10ft

ILLUMINANCE - CONE OF LIGHT



ISOILLUMINATION PLOT



ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	107.0	14.8
0-40	154.0	21.3
0-60	268.8	37.1
60-90	195.9	27.0
70-100	186.8	25.8
90-120	155.9	21.5
0-90	464.6	64.1
90-180	259.7	35.9
0-180	724.4	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	15.4	2.1
10-20	41.9	5.8
20-30	49.7	6.9
30-40	47.0	6.5
40-50	53.1	7.3
50-60	61.7	8.5
60-70	66.3	9.2
70-80	66.7	9.2
80-90	62.9	8.7
90-100	57.2	7.9
100-110	52.8	7.3
110-120	45.8	6.3
120-130	37.2	5.1
130-140	27.9	3.8
140-150	19.3	2.7
150-160	11.8	1.6
160-170	6.0	0.8
170-180	1.7	0.2

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TEST REPORT

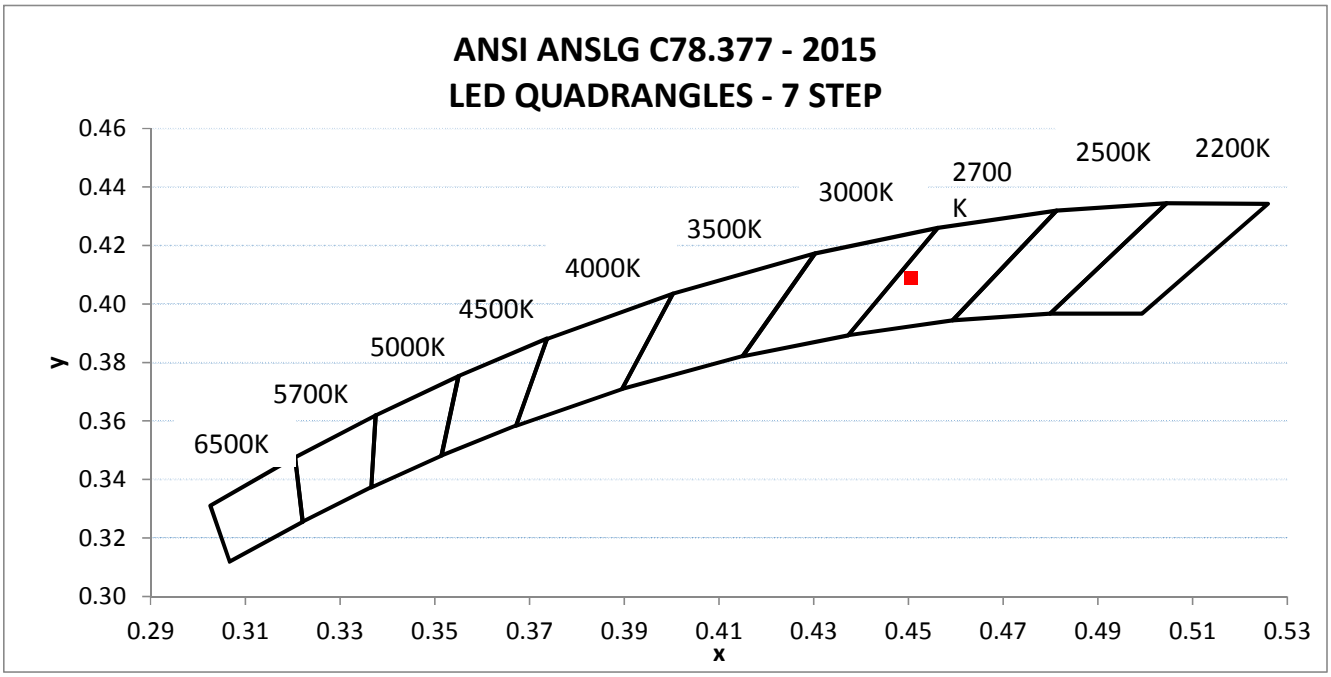
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR	INPUT CURRENT ATHD (%)
AH06142019092403-31	Base Up	119.99	88.65	10.36	0.974	19.08

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
759.8	73.3	2818	93.1	61.7	0.0002

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.451	0.409	0.257	0.525



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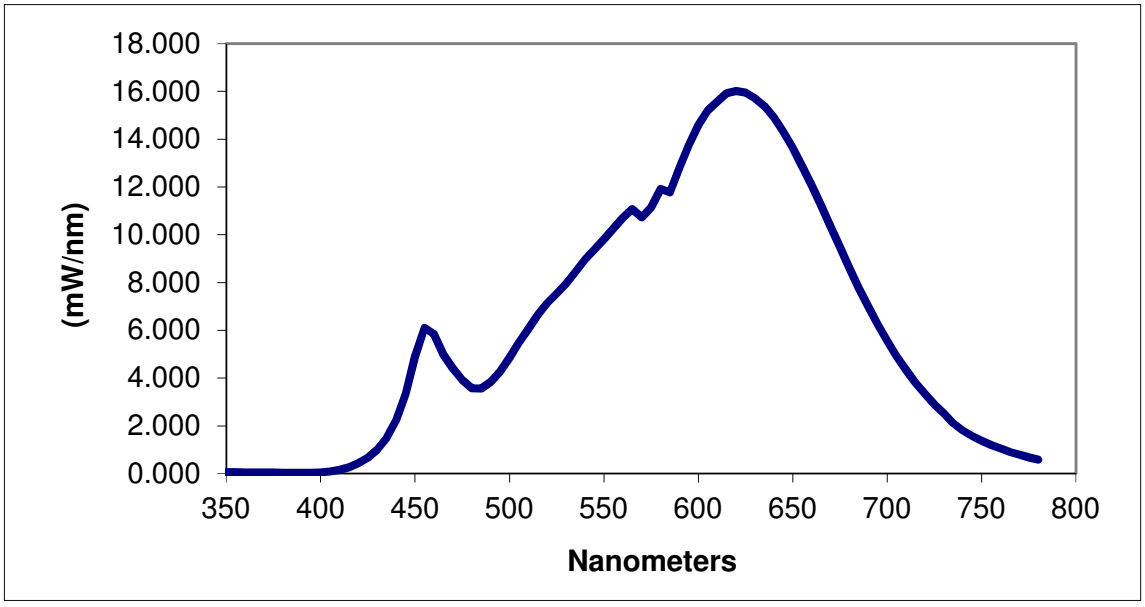
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

SPECTRAL DISTRIBUTION OVER VISIBLE WAVELENGTHS*							
nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.066	460	5.858	570	10.723	680	8.604
355	0.062	465	4.986	575	11.142	685	7.763
360	0.057	470	4.417	580	11.914	690	6.994
365	0.053	475	3.927	585	11.778	695	6.262
370	0.049	480	3.571	590	12.820	700	5.558
375	0.046	485	3.563	595	13.760	705	4.920
380	0.044	490	3.840	600	14.593	710	4.333
385	0.041	495	4.276	605	15.208	715	3.813
390	0.039	500	4.861	610	15.572	720	3.328
395	0.044	505	5.483	615	15.922	725	2.903
400	0.058	510	6.064	620	16.016	730	2.520
405	0.087	515	6.639	625	15.957	735	2.121
410	0.155	520	7.157	630	15.707	740	1.810
415	0.270	525	7.538	635	15.396	745	1.577
420	0.437	530	7.956	640	14.909	750	1.372
425	0.673	535	8.444	645	14.323	755	1.206
430	1.009	540	8.968	650	13.628	760	1.053
435	1.505	545	9.373	655	12.876	765	0.910
440	2.226	550	9.810	660	12.072	770	0.787
445	3.332	555	10.256	665	11.231	775	0.680
450	4.892	560	10.710	670	10.342	780	0.584
455	6.102	565	11.076	675	9.494		

*Without correction of sample absorption.



End Of Test Results

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TEST REPORT

PICTURES

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

Report Reviewed By:

Timothy Quigley
Project Engineer
Lighting Division

Attachments: IES File

REVISION HISTORY

JOB NUMBER	DATE OF REVISION	PROJECT HANDLER	REVIEWED BY	REVISION NOTE
None				