

VISUAL COMFORT GROUP TEST REPORT

SCOPE OF WORK

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

MODEL NUMBER

700TDZVOW-LED930

REPORT NUMBER

103982892CHI-025

ISSUE DATE

June 27, 2019

REVISION DATE

None

DOCUMENT CONTROL NUMBER

TBD

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REPORT NO.: 103982892CHI-025

REPORT DATE: June 27, 2019

TEST REPORT

TEST OF ONE LED PENDANT

MODEL NO. 700TDZVOW-LED930

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 700TDZVOW-LED930. The sample was received by Intertek on June 14, 2019 in undamaged condition and one sample was tested as received. The sample designation was AH06142019092403-25.

DATE OF TESTS

June 19, 2019 through June 27, 2019.

REPORT NO.: 103982892CHI-025

REPORT DATE: June 27, 2019

TEST REPORT

SUMMARY

MODEL NO:	700TDZVOW-LED930
DESCRIPTION:	LED pendant

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	781.1	752.7
Input Power (W) @ 120 (VAC)	8.86	8.84
Lumen Efficacy (lm/W)	88.2	85.2
Input Power Factor @ 120 (VAC)	0.929	0.934

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	24.40
Correlated Color Temperature (K)	3041
Color Rendering Index - Ra	92.5
Color Rendering - R9	58.4
DUV	0.0014
Chromaticity Coordinate (x)	0.432
Chromaticity Coordinate (y)	0.399
Chromaticity Coordinate (u')	0.250
Chromaticity Coordinate (v')	0.519

REPORT NO.: 103982892CHI-025

REPORT DATE: June 27, 2019

TEST REPORT

EQUIPMENT LIST

EQUIPMENT USED	MODEL NO.	CONTROL NO.	LAST CAL DATE	CAL DUE DATE
Yokogawa Power Meter	WT210	146919	7/9/2018	7/9/2019
Omega Newport Thermometer	DPI8-C24	146920	10/4/2018	10/4/2019
LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
Newport Thermohygrometer	iServer	146957	12/11/2018	12/11/2019
Pacific, AC power supply	118-ACX	CHI0358	VBV	VBV
Labsphere Spectroradiometer	CDS1100	CHI0091	VBV	VBV
3 Meter Sphere	SPR600	CHI0088	VBV	VBV
Elgar AC Power Supply	CW1251	146112	VBV	VBV
Sorenson DC Power Supply	XFR150-8	146846	VBV	VBV
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

REPORT NO.: 103982892CHI-025

REPORT DATE: June 27, 2019

TEST REPORT

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.

REPORT NO.: 103982892CHI-025

REPORT DATE: June 27, 2019

TEST REPORT

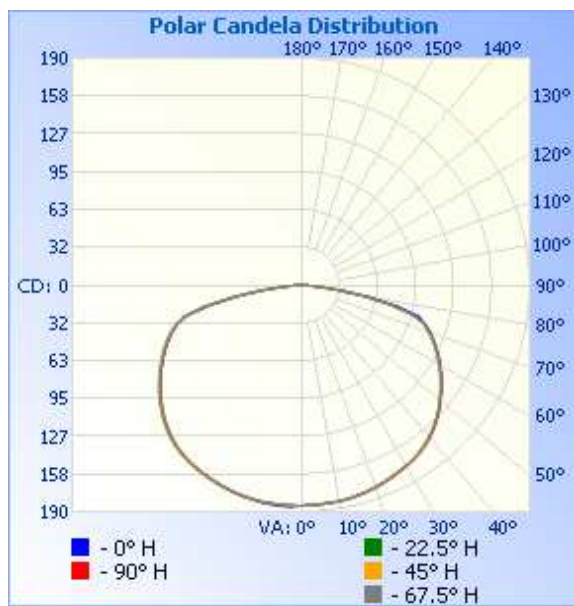
RESULTS OF TESTS

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)
AH06142019092403-25	Base Up	120.0	78.9	8.84	0.934	752.7	85.2

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	185	185	185	185	185
5	184	184	184	184	184
10	184	184	184	184	184
15	182	182	182	182	183
20	180	180	180	180	181
25	177	177	178	178	178
30	175	174	175	175	175
35	171	171	171	172	172
40	166	165	166	166	167
45	159	158	159	159	160
50	151	150	150	151	151
55	142	141	142	142	143
60	134	132	132	133	134
65	124	123	123	124	124
70	114	112	112	113	114
75	102	95	96	96	97
80	59	52	52	54	55
85	16	12	12	13	14
90	1	1	1	1	2



REPORT NO.: 103982892CHI-025

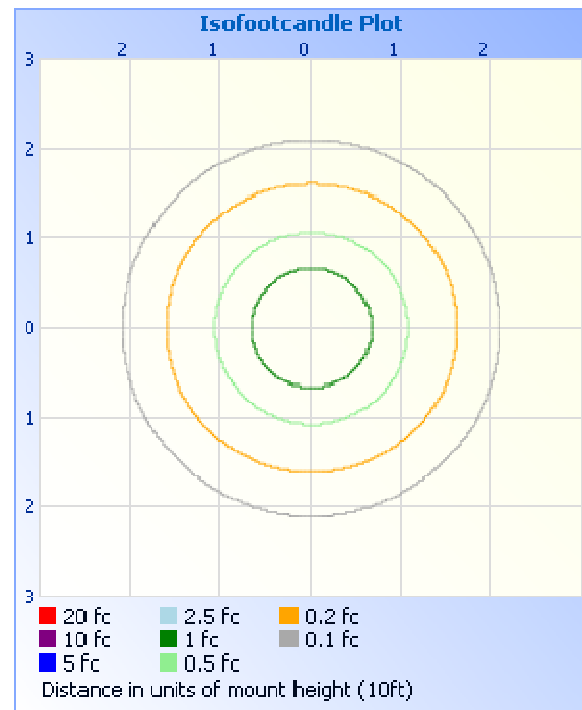
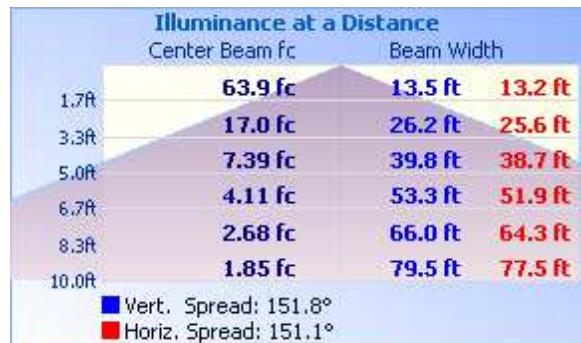
REPORT DATE: June 27, 2019

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	151.7	20.2
0-40	259.4	34.5
0-60	510.6	67.8
60-90	241.9	32.1
70-100	119.2	15.8
90-120	0.2	0.0
0-90	752.6	100.0
90-180	0.2	0.0
0-180	752.7	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	17.6	2.3
10-20	51.7	6.9
20-30	82.4	10.9
30-40	107.7	14.3
40-50	123.4	16.4
50-60	127.8	17.0
60-70	122.9	16.3
70-80	97.5	12.9
80-90	21.6	2.9
90-100	0.2	0.0

REPORT NO.: 103982892CHI-025

REPORT DATE: June 27, 2019

TEST REPORT

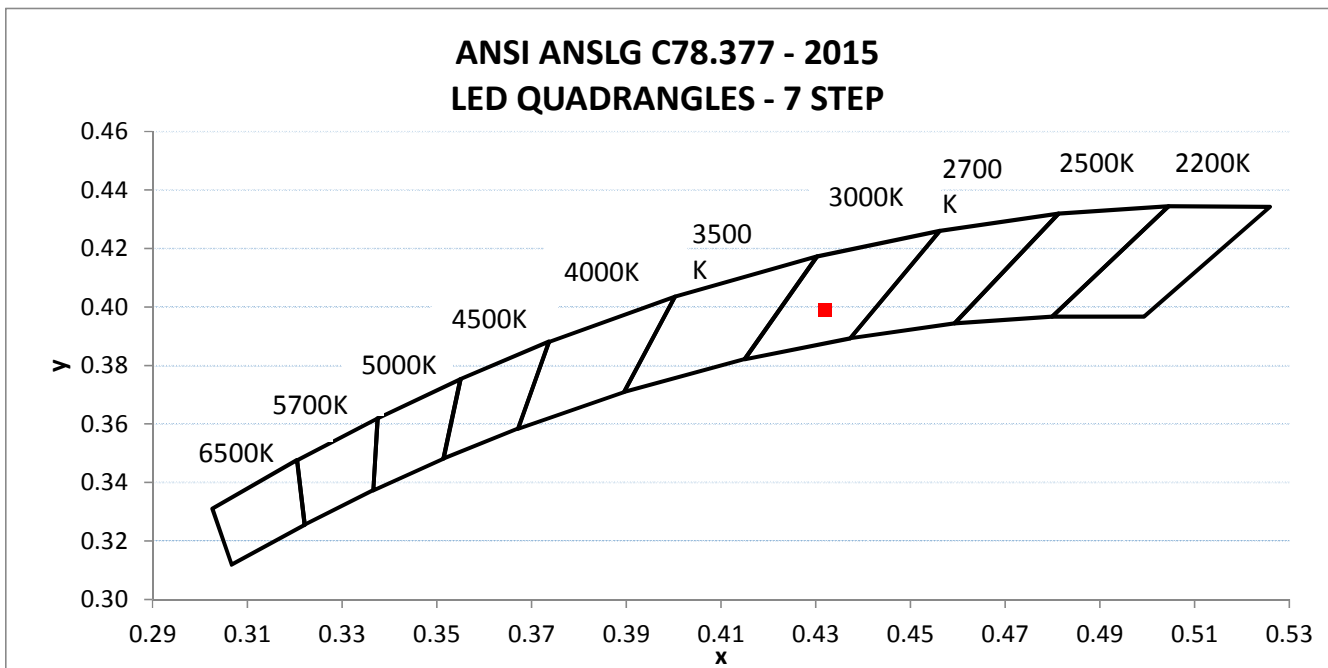
RESULTS OF TESTS

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 (%)
AH06142019092403-25	Base Up	119.99	79.44	8.86	0.929	24.40

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
781.1	88.2	3041	92.5	58.4	0.0014

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.432	0.399	0.250	0.519



REPORT NO.: 103982892CHI-025

REPORT DATE: June 27, 2019

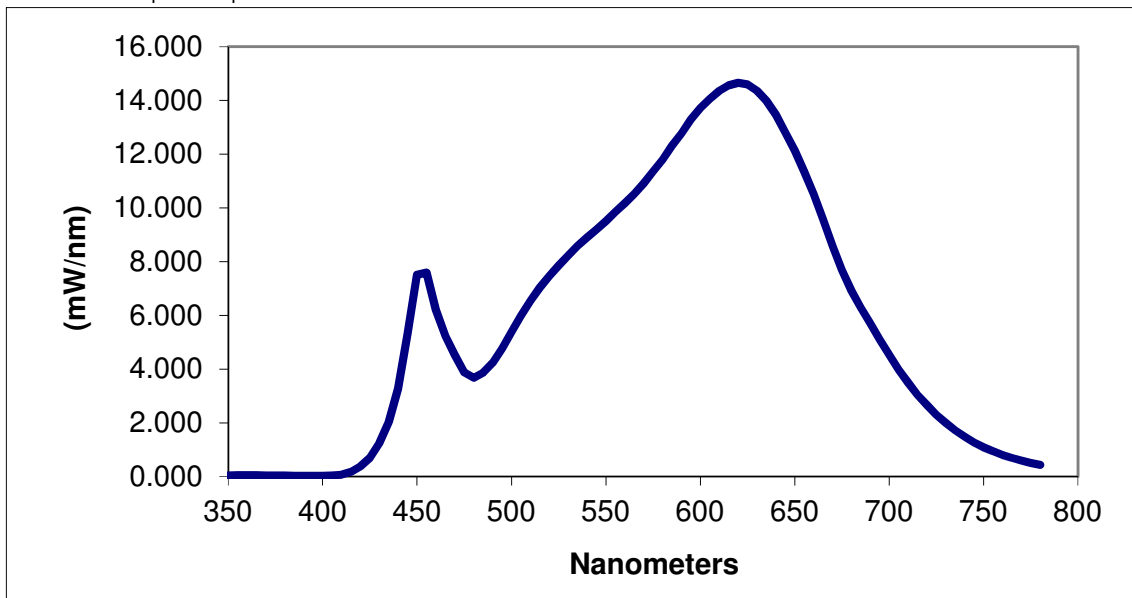
TEST REPORT

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	0.052	460	6.211	570	10.913	680	6.921
355	0.063	465	5.235	575	11.353	685	6.287
360	0.059	470	4.535	580	11.796	690	5.706
365	0.059	475	3.885	585	12.312	695	5.110
370	0.051	480	3.679	590	12.774	700	4.538
375	0.048	485	3.863	595	13.290	705	3.991
380	0.042	490	4.238	600	13.711	710	3.500
385	0.039	495	4.757	605	14.054	715	3.052
390	0.036	500	5.387	610	14.353	720	2.661
395	0.037	505	5.984	615	14.557	725	2.308
400	0.039	510	6.543	620	14.656	730	1.999
405	0.047	515	7.038	625	14.600	735	1.724
410	0.075	520	7.458	630	14.353	740	1.482
415	0.173	525	7.856	635	13.994	745	1.277
420	0.376	530	8.231	640	13.463	750	1.099
425	0.702	535	8.578	645	12.824	755	0.946
430	1.233	540	8.905	650	12.134	760	0.812
435	2.038	545	9.188	655	11.360	765	0.696
440	3.272	550	9.517	660	10.512	770	0.596
445	5.328	555	9.840	665	9.589	775	0.510
450	7.513	560	10.184	670	8.585	780	0.438
455	7.600	565	10.511	675	7.688		

*Without correction of sample absorption.



End Of Test Results

REPORT NO.: 103982892CHI-025

REPORT DATE: June 27, 2019

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				