

VISUAL COMFORT GROUP TEST REPORT

SCOPE OF WORK

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

MODEL NUMBER
700VGOOR-LED930

REPORT NUMBER
103982892CHI-021

ISSUE DATE
July 10, 2019

REVISION DATE
None

DOCUMENT CONTROL NUMBER
TBD
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REPORT DATE: July 10, 2019

TEST REPORT

TEST OF ONE LED PENDANT

MODEL NO. 700VGOOR-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 700VGOOR-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 AH06142019092403-21.

DATE OF TESTS

July 1, 2019 through July 10, 2019.

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SUMMARY

MODEL NO:	700VGOOR-LED930
DESCRIPTION:	LED pendant

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	4329.2	4147.6
Input Power (W) @ 120 (VAC)	53.82	53.74
Lumen Efficacy (lm/W)	80.4	77.2
Input Power Factor @ 120 (VAC)	0.956	0.980

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	22.76
Correlated Color Temperature (K)	3033
Color Rendering Index - Ra	92.3
Color Rendering - R9	59.8
DUV	0.0014
Chromaticity Coordinate (x)	0.433
Chromaticity Coordinate (y)	0.399
Chromaticity Coordinate (u')	0.250
Chromaticity Coordinate (v')	0.519

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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	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	146382	4/17/2019	4/17/2020
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.

TEST REPORT

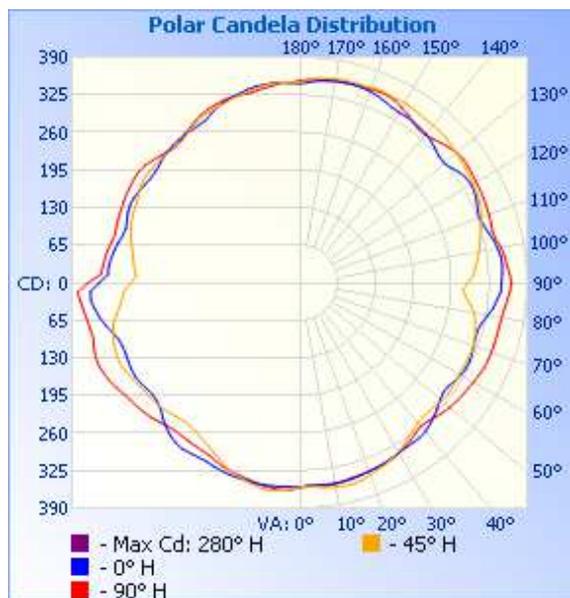
RESULTS OF TESTS

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)
AH06142019092403-21	Base Up	120.0	457.1	53.74	0.980	4147.6	77.2

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	354	354	354	354	354
5	351	353	354	353	353
10	352	356	358	357	354
15	351	357	360	356	349
20	347	352	354	350	347
25	344	342	347	344	346
30	340	329	338	337	340
35	338	323	326	330	332
40	336	325	316	322	323
45	326	330	314	315	328
50	314	330	318	310	336
55	312	328	319	308	340
60	319	327	316	308	344
65	322	325	317	314	349
70	317	320	317	317	350
75	316	314	312	314	350
80	327	318	303	306	352
85	340	322	286	292	357
90	346	342	289	295	364
95	349	342	302	316	357
100	345	332	312	322	351
105	335	327	321	328	342
110	328	330	331	337	345
115	335	339	340	344	348
120	340	349	343	345	349
125	334	358	346	349	352
130	322	363	350	348	351
135	328	366	355	344	342
140	336	360	355	342	334
145	340	354	357	348	339
150	340	350	359	355	350
155	346	353	360	353	357
160	352	358	360	353	357
165	355	358	359	355	356
170	354	357	358	357	354
175	350	354	355	354	353
180	344	345	347	348	350



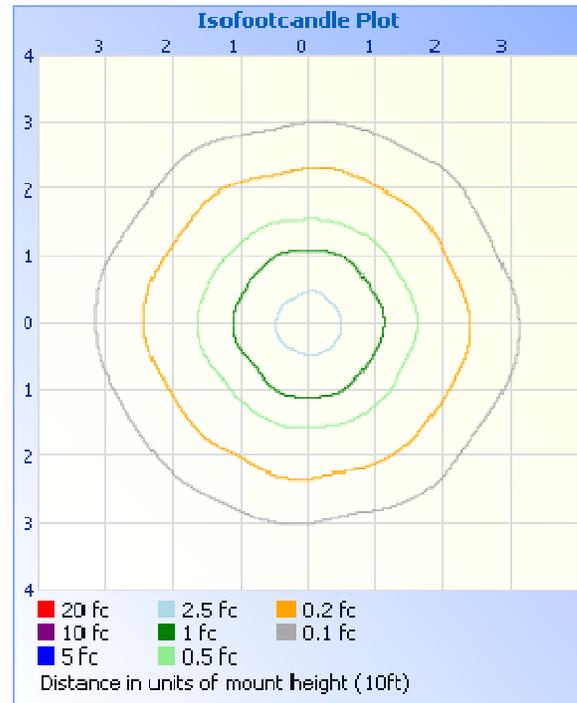
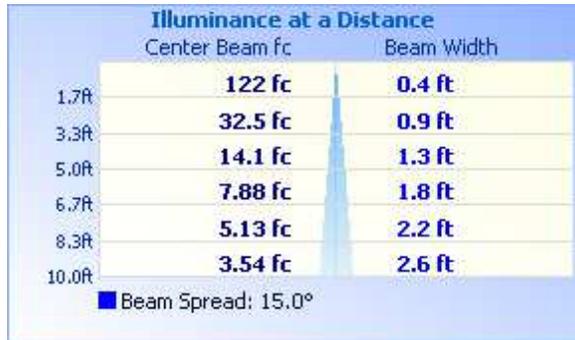
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RESULTS OF TESTS

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

MOUNTING HEIGHT: 10ft

ILLUMINANCE - CONE OF LIGHT	ISOILLUMINATION PLOT
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ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	290.0	7.0
0-40	498.2	12.0
0-60	1040.9	25.1
60-90	1036.5	25.0
70-100	1071.8	25.8
90-120	1021.1	24.6
0-90	2077.4	50.1
90-180	2070.1	49.9
0-180	4147.6	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	33.8	0.8
10-20	98.7	2.4
20-30	157.4	3.8
30-40	208.2	5.0
40-50	251.8	6.1
50-60	290.8	7.0
60-70	322.7	7.8
70-80	347.6	8.4
80-90	366.2	8.8
90-100	358.0	8.6
100-110	340.8	8.2
110-120	322.3	7.8
120-130	295.8	7.1
130-140	254.6	6.1
140-150	208.9	5.0
150-160	158.2	3.8
160-170	98.3	2.4
170-180	33.3	0.8

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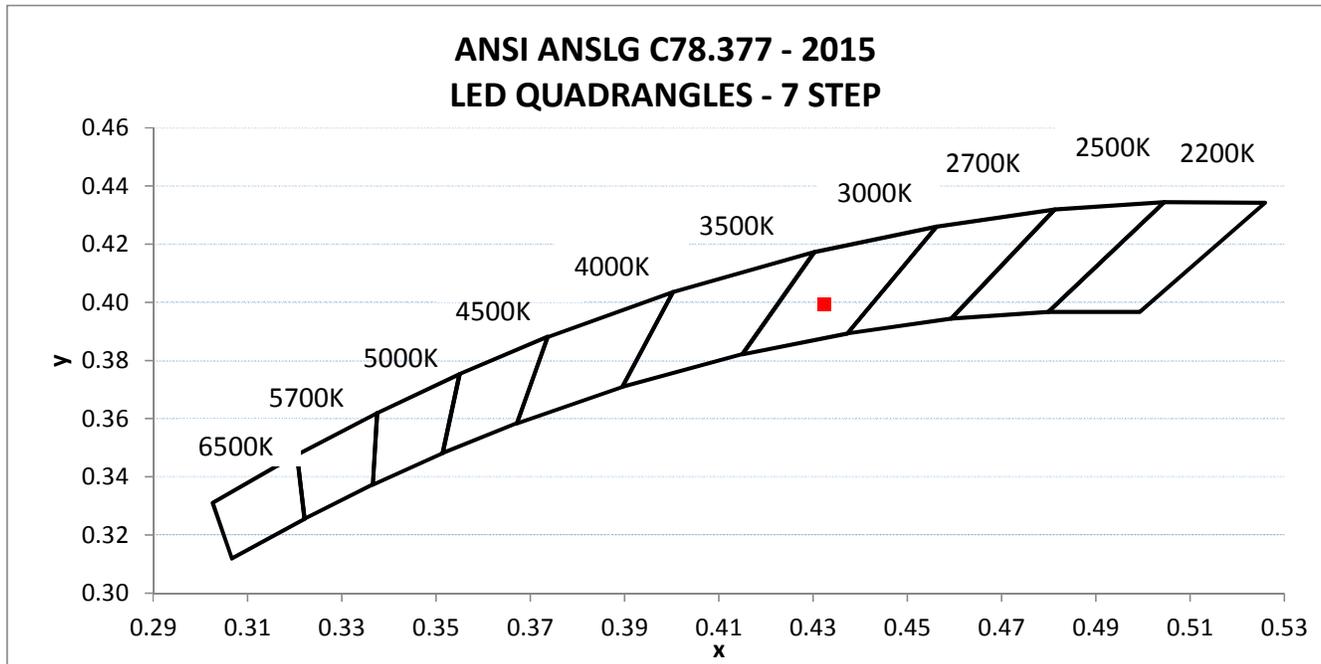
RESULTS OF TESTS

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 (%)
AH06142019092403-21	Base Up	120.00	469.30	53.82	0.956	22.76

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
4329.2	80.4	3033	92.3	59.8	0.0014

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.433	0.399	0.250	0.519



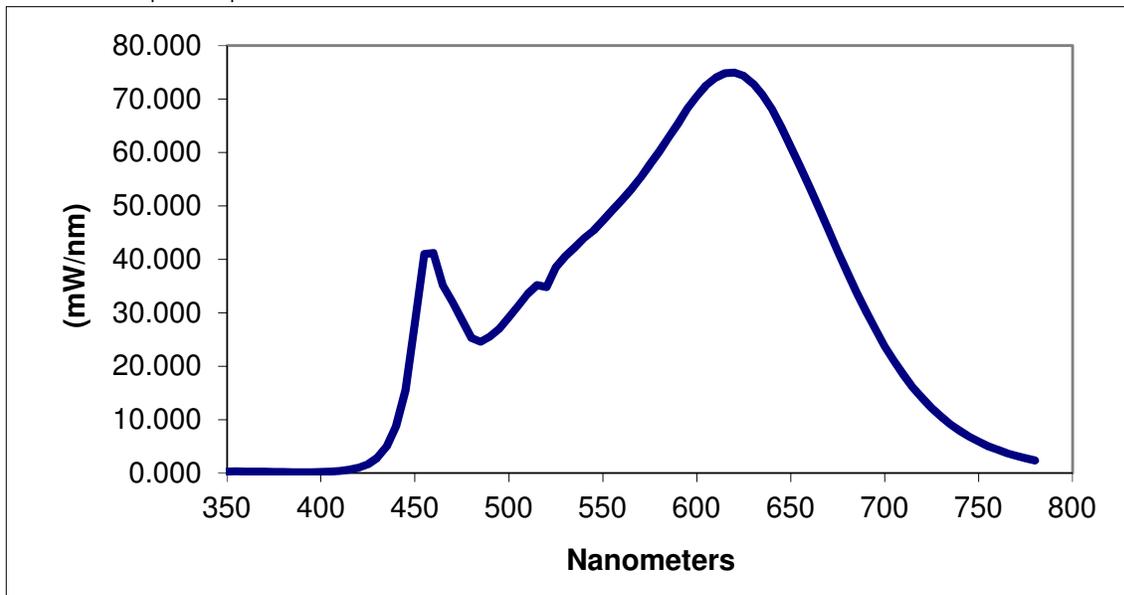
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RESULTS OF TESTS

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	0.276	460	41.212	570	55.301	680	37.601
355	0.323	465	35.044	575	57.756	685	33.840
360	0.306	470	32.064	580	60.155	690	30.283
365	0.292	475	28.677	585	62.828	695	27.055
370	0.260	480	25.298	590	65.441	700	23.763
375	0.246	485	24.595	595	68.232	705	20.978
380	0.217	490	25.571	600	70.551	710	18.379
385	0.196	495	27.021	605	72.568	715	16.057
390	0.187	500	29.178	610	73.991	720	14.039
395	0.197	505	31.322	615	74.843	725	12.214
400	0.220	510	33.545	620	74.955	730	10.588
405	0.278	515	35.193	625	74.326	735	9.164
410	0.403	520	34.798	630	72.850	740	7.916
415	0.622	525	38.526	635	70.791	745	6.829
420	0.998	530	40.594	640	68.099	750	5.897
425	1.666	535	42.219	645	64.786	755	5.075
430	2.856	540	43.985	650	61.002	760	4.380
435	4.983	545	45.382	655	57.407	765	3.756
440	8.727	550	47.265	660	53.527	770	3.225
445	15.539	555	49.143	665	49.666	775	2.774
450	27.887	560	51.065	670	45.521	780	2.388
455	40.993	565	53.039	675	41.574		

*Without correction of sample absorption.

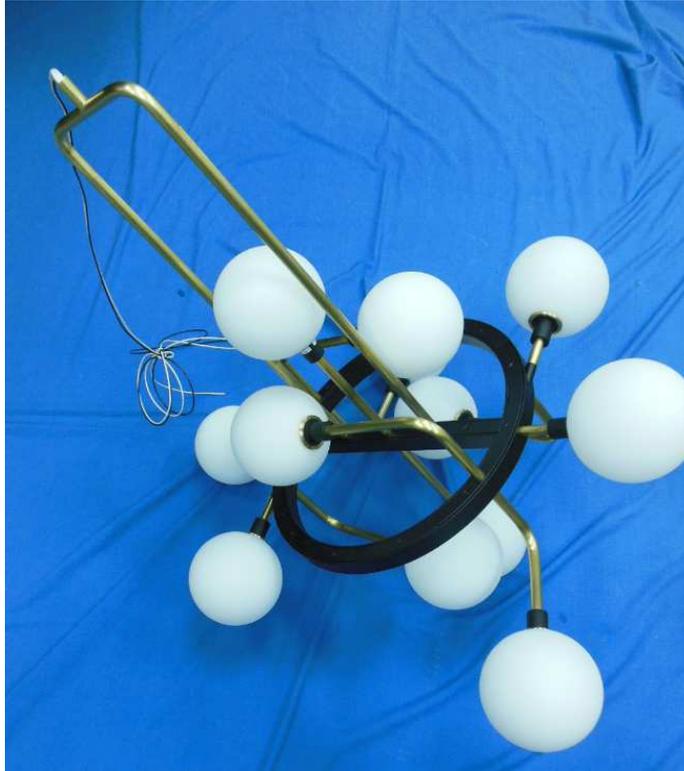


End Of Test Results

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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				