

# VISUAL COMFORT GROUP TEST REPORT

## SCOPE OF WORK

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

**MODEL NUMBER**  
700VNRFL-LED830

**REPORT NUMBER**  
103982892CHI-011

**ISSUE DATE**  
June 27, 2019

**REVISION DATE**  
None

**DOCUMENT CONTROL NUMBER**  
TBD  
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**REPORT DATE: June 27, 2019**

**TEST REPORT**

**TEST OF ONE LED MIRROR**

MODEL NO. 700VNRFL-LED830  
LED MODEL NO. EDISON 2T01X1WW38000001 (3014)  
DRIVER MODEL NO. LTF DA18W400-3001-01

**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 700VNRFL-LED830. The sample was received by Intertek on June 14, 2019 in undamaged condition and one sample was tested as received. The sample designation was AH06142019092403-11.

**DATE OF TESTS**

June 21, 2019 through June 27, 2019.

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**SUMMARY**

<b>MODEL NO:</b>	700VNRFL-LED830
<b>DESCRIPTION:</b>	LED mirror

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	615.5	590.9
Input Power (W) @ 120 (VAC)	17.59	17.58
Lumen Efficacy (lm/W)	35.0	33.6
Input Power Factor @ 120 (VAC)	0.988	0.986

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	10.33
Correlated Color Temperature (K)	3331
Color Rendering Index - Ra	82.8
Color Rendering - R9	3.3
DUV	0.0015
Chromaticity Coordinate (x)	0.417
Chromaticity Coordinate (y)	0.400
Chromaticity Coordinate (u')	0.239
Chromaticity Coordinate (v')	0.517

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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	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

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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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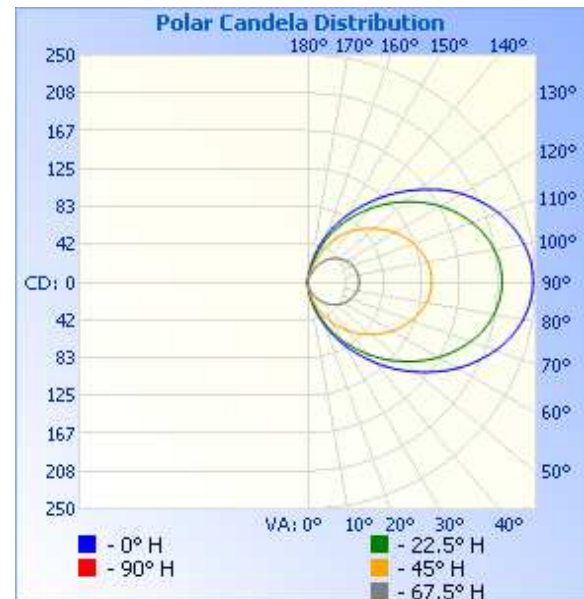
RESULTS OF TESTS

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)
AH06142019092403-11	Horizontal	120.1	148.4	17.58	0.986	590.9	33.6

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	0	0	0	0	0
5	5	5	3	1	0
10	16	15	10	3	0
15	30	28	18	7	1
20	46	42	28	11	1
25	62	57	39	16	1
30	80	73	49	20	1
35	97	88	60	25	1
40	116	104	70	30	1
45	135	120	80	35	1
50	154	136	90	39	1
55	172	151	99	42	1
60	190	166	107	46	1
65	205	179	115	49	1
70	220	191	122	51	1
75	231	200	128	54	1
80	240	207	132	55	1
85	245	212	135	56	1
90	247	213	136	56	1
95	246	212	136	56	1
100	241	208	133	56	1
105	233	201	129	54	1
110	223	192	124	53	1
115	210	181	117	50	1
120	195	168	110	48	1
125	177	153	101	44	1
130	158	138	92	41	1
135	140	122	83	37	1
140	120	106	73	32	1
145	102	89	62	26	1
150	84	74	51	20	1
155	66	57	36	14	1
160	49	39	23	8	1
165	31	21	11	5	0
170	14	8	6	3	0
175	4	3	3	2	0
180	0	0	0	0	0



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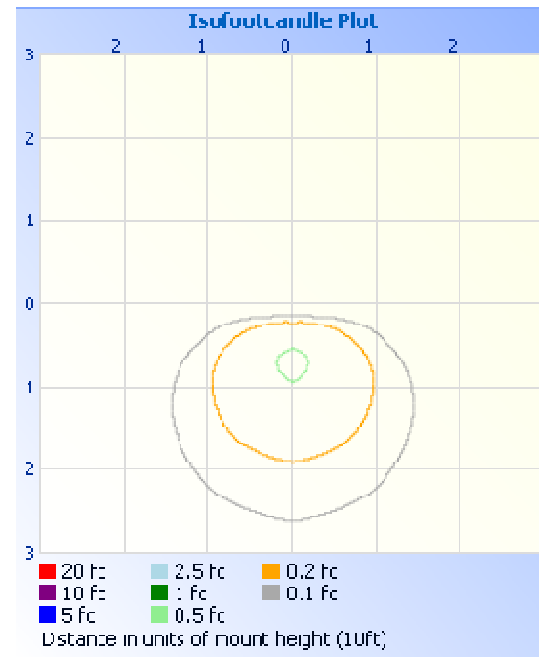
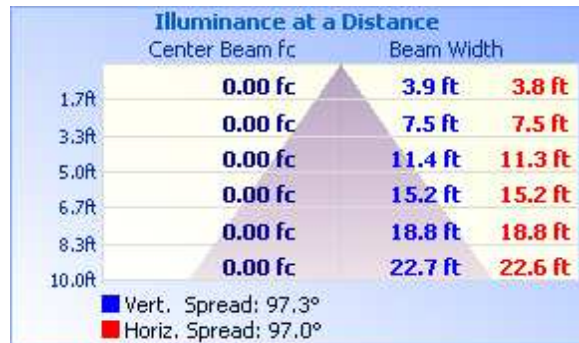
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RESULTS OF TESTS

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

MOUNTING HEIGHT: 10ft	
ILLUMINANCE - CONE OF LIGHT	ISOILLUMINATION PLOT



ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	11.3	1.9
0-40	29.0	4.9
0-60	101.1	17.1
60-90	192.7	32.6
70-100	209.1	35.4
90-120	194.4	32.9
0-90	293.8	49.7
90-180	297.2	50.3
0-180	590.9	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	0.3	0.0
10-20	2.6	0.4
20-30	8.5	1.4
30-40	17.6	3.0
40-50	29.5	5.0
50-60	42.6	7.2
60-70	55.4	9.4
70-80	65.7	11.1
80-90	71.6	12.1
90-100	71.8	12.1
100-110	66.3	11.2
110-120	56.3	9.5
120-130	43.6	7.4
130-140	30.3	5.1
140-150	18.2	3.1
150-160	8.4	1.4
160-170	2.1	0.4
170-180	0.2	0.0

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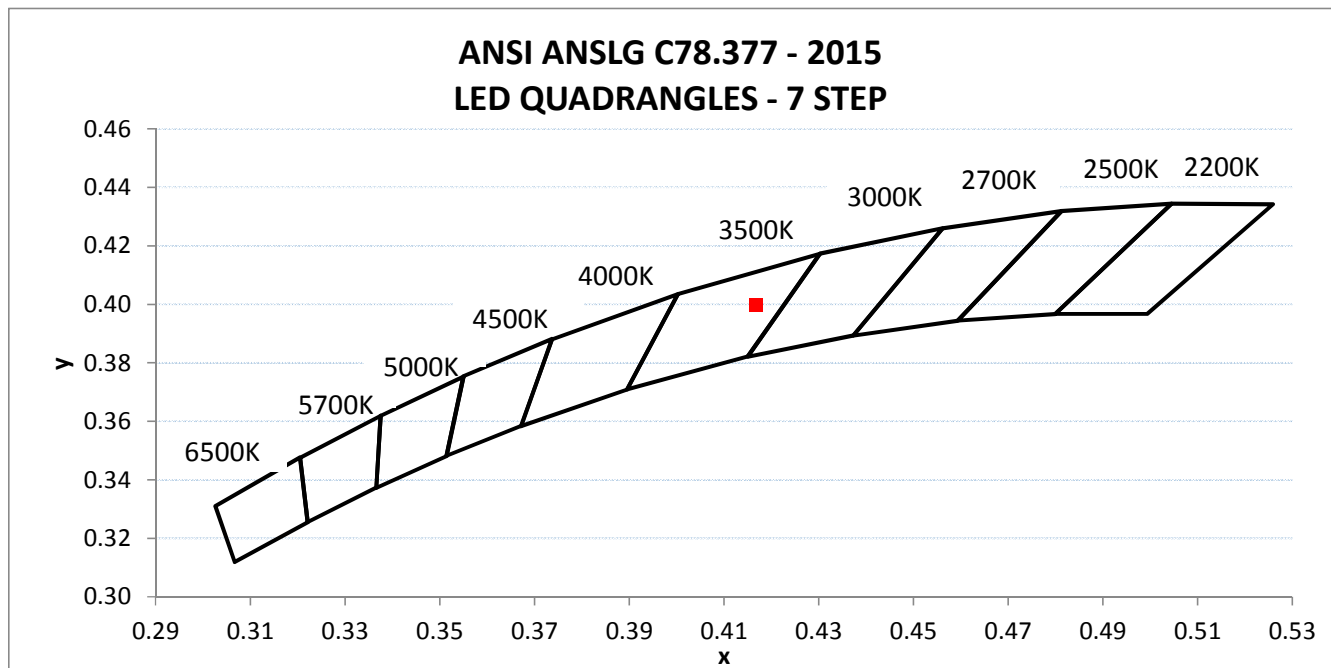
RESULTS OF TESTS

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 (%)
AH06142019092403-11	Horizontal	119.99	148.42	17.59	0.988	10.33

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
615.5	35.0	3331	82.8	3.3	0.0015

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.417	0.400	0.239	0.517





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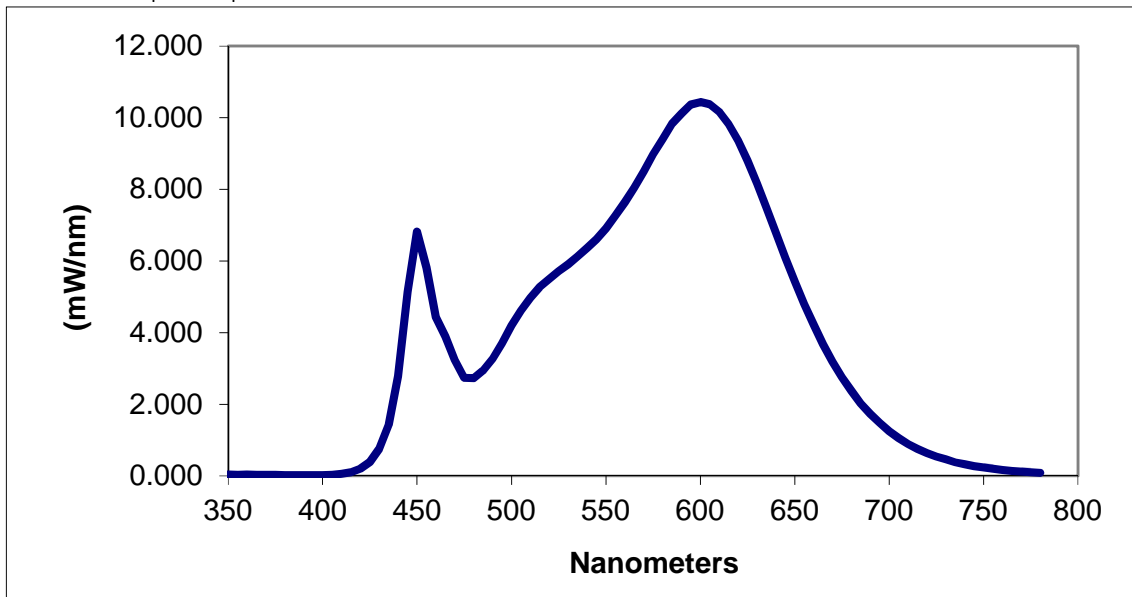
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## RESULTS OF TESTS

### 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	0.046	460	4.434	570	8.500	680	2.371
355	0.038	465	3.891	575	8.970	685	2.028
360	0.040	470	3.238	580	9.399	690	1.732
365	0.038	475	2.737	585	9.828	695	1.477
370	0.036	480	2.728	590	10.117	700	1.251
375	0.035	485	2.945	595	10.366	705	1.058
380	0.028	490	3.272	600	10.436	710	0.896
385	0.028	495	3.708	605	10.371	715	0.759
390	0.027	500	4.193	610	10.160	720	0.642
395	0.026	505	4.613	615	9.824	725	0.541
400	0.030	510	4.974	620	9.355	730	0.459
405	0.037	515	5.278	625	8.807	735	0.385
410	0.059	520	5.503	630	8.157	740	0.329
415	0.105	525	5.714	635	7.487	745	0.275
420	0.202	530	5.915	640	6.784	750	0.236
425	0.392	535	6.126	645	6.096	755	0.200
430	0.759	540	6.367	650	5.431	760	0.171
435	1.433	545	6.607	655	4.799	765	0.145
440	2.781	550	6.913	660	4.218	770	0.123
445	5.140	555	7.260	665	3.677	775	0.106
450	6.822	560	7.645	670	3.189	780	0.089
455	5.814	565	8.049	675	2.760		

\*Without correction of sample absorption.



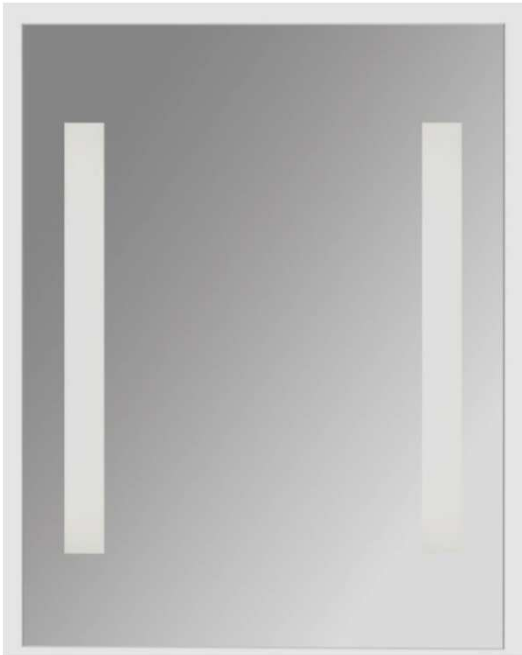
End Of Test Results

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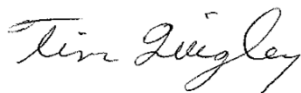
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**PICTURES**



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:



Timothy Quigley  
Project Engineer  
Lighting Division

Report Reviewed By:



Hector Huitron  
Associate Engineer  
Lighting Division

Attachments: IES File

**REVISION HISTORY**

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