

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

700LDY18R-LED930

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CRT-006

ISSUE DATE

7/13/2022

REVISED DATE

None

TEST DATES

7/11/2022 through 7/13/2022

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104941221CRT-006

MODEL NUMBER(s)

700LDY18R-LED930

REPORT RENDERED TO:

VISUAL COMFORT AND COMPANY
7400 LINDER AVE
SKOKIE, IL 60077

STATEMENT OF LIMITATION

NVLAP Lab Code 100402-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION

The testing performed was authorized by signed quote number Qu-01236637-1.

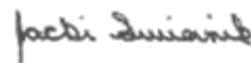
TEST STANDARDS

ANSI/IES LM-79-19: Optical and Electrical Measurements of Solid State Lighting Products

ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

In Charge of Testing:

Reviewer:



Melanie Brittain
Senior Associate Engineer
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Jacki Swiernik
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SAMPLE INFORMATION

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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2206301053-006	700LDY18R-LED930	Lody 18-Light Chandelier	Production	6/30/2022

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700LDY18R-LED930
Product Description:	Lody 18-Light Chandelier
LED Model No.:	Luminus MP-3030-1100-30-90
Driver Model No.:	700LDY18R-LED930
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	2562.6	2520.9
Input Power (W) @ 120 (Vac)	47.04	47.07
Luminous Efficacy (lm/W)	54.48	53.56
Input Power Factor (I) @ 120 (Vac)	0.980	0.977

Criteria	Results
Input ATHD (%) @ 120 (Vac)	10.30
Correlated Color Temperature (K)	2892
Color Rendering Index - Ra (I)	93.5
Color Rendering Index - R9 (I)	64.0
Duv (I)	-0.0017
Chromaticity Coordinate (x)	0.442
Chromaticity Coordinate (y)	0.402
Chromaticity Coordinate (u')	0.255
Chromaticity Coordinate (v')	0.521

TEST METHODS

SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with ANSI/IES LM-79-19

INTEGRATING SPHERE TESTING

A spectroradiometer and integrating sphere were used to measure the spectral power distribution for photometric and colorimetric data of the EUT. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature and relative humidity was measured at 25°C ± 1.2°C and 10-65% respectively at a position inside of the sphere within 1.5m and at equal height of the EUT. Stabilization procedures to LM-79-19 were followed. The EUT was mounted in a 4π configuration.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the EUT. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature and relative humidity was measured at 25°C ± 1.2°C and 10-65% respectively at a position within 1.5m and at equal height of the EUT. Stabilization procedures to LM-79-19 were followed. The test distance was ≥ 5x the longest luminous dimension of the EUT.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

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PHOTOMETRIC AND ELECTRICAL MEASUREMENTS

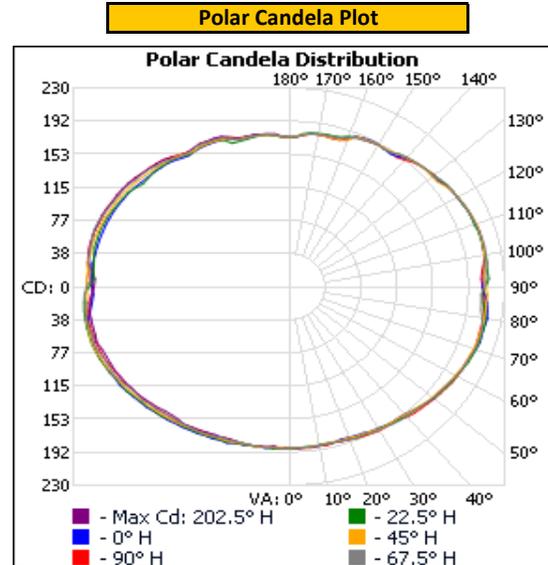
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.17	399.6	47.04	0.980

Light Output (lm)	Efficacy (lm/W)
2562.6	54.5

LUMINOUS INTENSITY SUMMARY (candela)

Angle (°)	0	22.5	45	67.5	90
0	187	187	187	187	187
5	187	186	187	187	187
10	187	186	187	186	187
15	186	186	186	186	187
20	186	187	186	188	188
25	187	189	187	189	190
30	189	190	191	192	192
35	192	192	192	194	192
40	192	195	193	196	196
45	197	197	196	198	199
50	201	201	199	200	202
55	203	204	202	203	204
60	206	206	205	207	207
65	209	210	208	209	208
70	212	212	210	211	211
75	213	213	210	212	210
80	215	213	211	209	210
85	212	208	211	206	209
90	206	210	210	208	207
95	208	212	209	211	207
100	211	213	211	213	211
105	213	212	213	213	212
110	212	210	213	212	212
115	210	210	210	210	210
120	207	208	208	207	207
125	204	205	203	206	205
130	200	201	199	201	202
135	198	198	198	199	198
140	194	195	195	196	192
145	188	190	190	190	189
150	190	190	190	190	190
155	190	188	189	187	188
160	183	185	180	184	182
165	179	181	178	180	178
170	179	180	179	179	179
175	177	178	177	177	176
180	173	173	173	173	173

Entire luminous intensity matrix found in .IES file



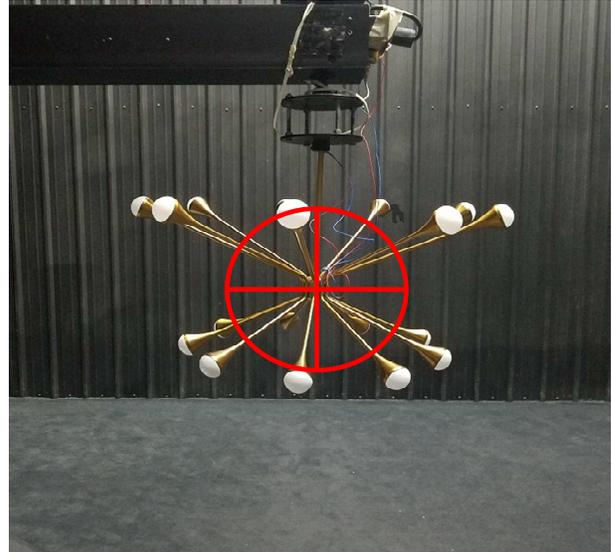
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ORIENTATION AND ALIGNMENT OF EUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
2.63	2.63	1.25
0°-180° H	90°-270° H	0°-180° V

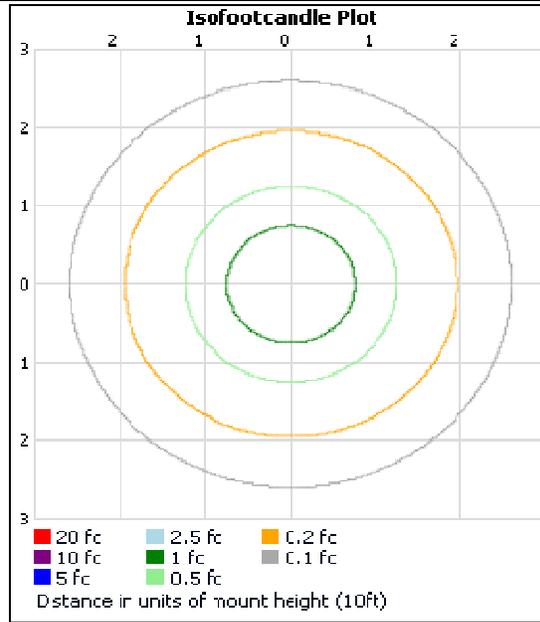
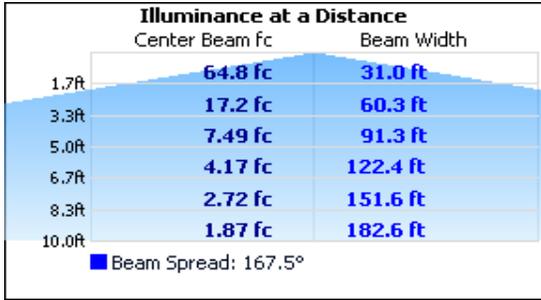
Test Distance (ft)
29.6

PHOTOMETRIC CENTER OF EUT



ILLUMINANCE SUMMARY

Mounting Height: 10ft



ZONAL LUMENS

Zonal Lumen Summary

Zone	Lumens	Luminaire
0-30	159.4	6.2%
0-40	281.6	11.0%
0-60	621.3	24.2%
60-90	667.6	26.1%
70-100	686.6	26.8%
90-120	663.1	25.9%
0-90	1,289.0	50.3%
90-180	1,273.7	49.7%
0-180	2,562.6	100.0%

Zone	Lumens	Total	Zone	Lumens	Total
0-10	17.9	0.7%	90-100	229.1	8.9%
10-20	53.3	2.1%	100-110	225.4	8.8%
20-30	88.3	3.4%	110-120	208.6	8.1%
30-40	122.2	4.8%	120-130	183.5	7.2%
40-50	154.8	6.0%	130-140	153.2	6.0%
50-60	184.9	7.2%	140-150	119.3	4.7%
60-70	210.1	8.2%	150-160	86.7	3.4%
70-80	227.2	8.9%	160-170	50.9	2.0%
80-90	230.3	9.0%	170-180	16.9	0.7%

INTEGRATING SPHERE TESTING

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PHOTOMETRIC, RADIOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS

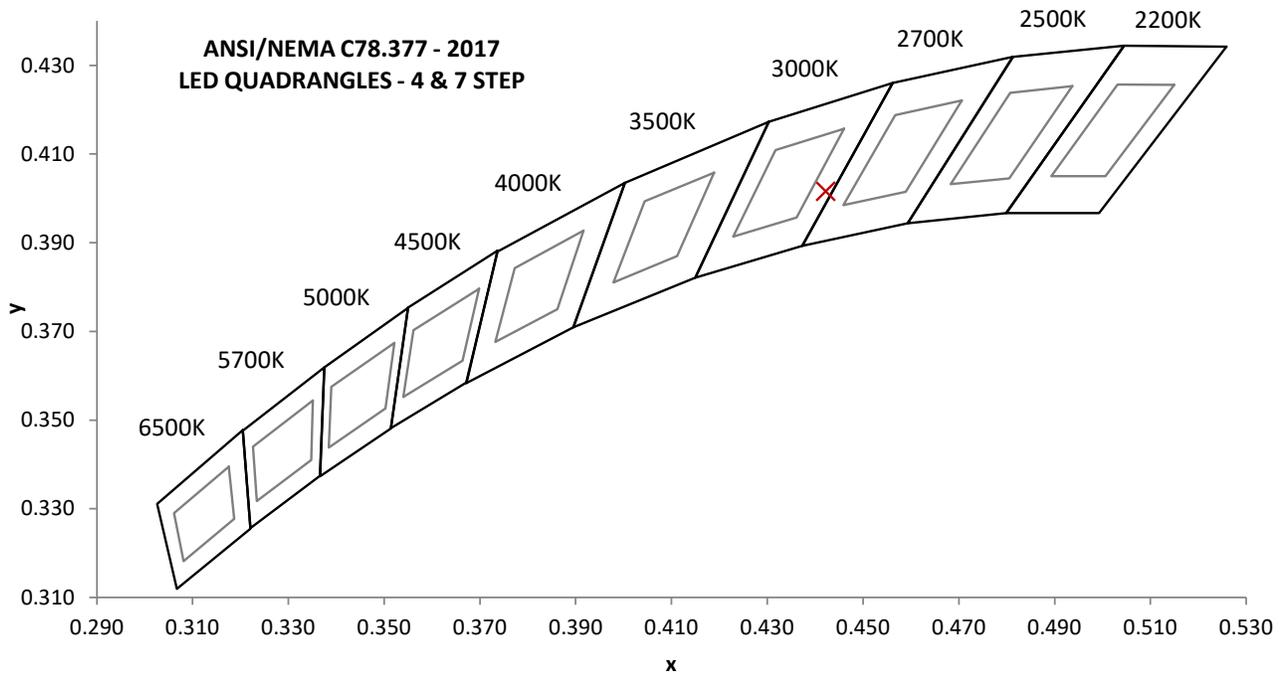
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
120.07	401.3	47.07	0.977	10.30

Measured at 120.07(Vac)

Light Output (lm)	Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
2520.9	53.6	2892	93.5	64.0

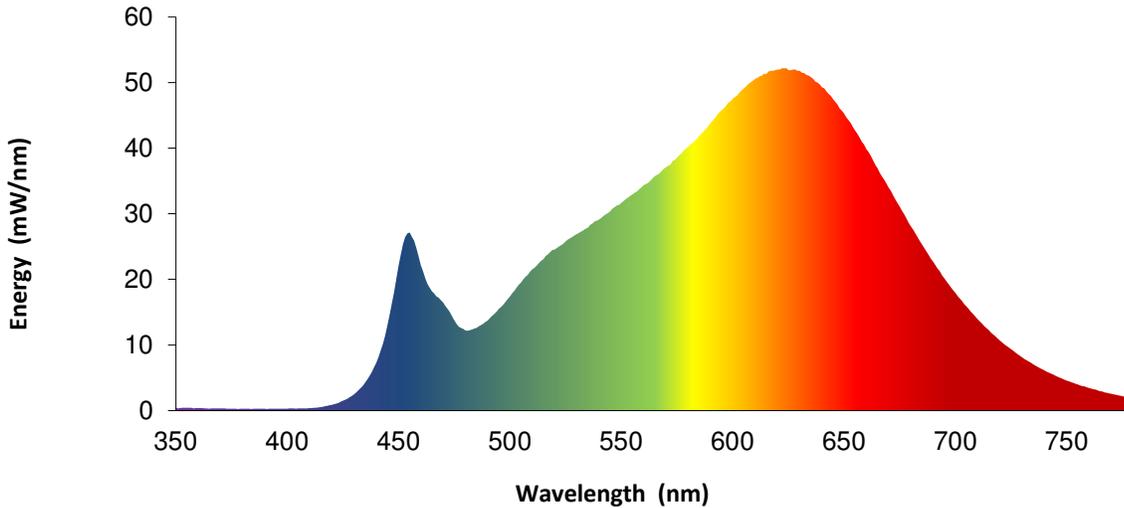
Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0017	0.442	0.402	0.255	0.521



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SPECTRAL POWER DISTRIBUTION

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.4	460	22.2	570	37.1	680	28.1
355	0.4	465	18.2	575	38.6	685	25.3
360	0.4	470	16.5	580	40.2	690	22.7
365	0.3	475	13.8	585	41.9	695	20.1
370	0.3	480	12.2	590	43.8	700	17.9
375	0.3	485	12.6	595	45.8	705	15.8
380	0.3	490	13.7	600	47.5	710	13.9
385	0.3	495	15.5	605	49.1	715	12.2
390	0.3	500	17.4	610	50.5	720	10.7
395	0.3	505	19.5	615	51.3	725	9.3
400	0.3	510	21.5	620	52.0	730	8.1
405	0.3	515	23.1	625	51.9	735	7.0
410	0.4	520	24.5	630	51.8	740	6.1
415	0.5	525	25.8	635	50.8	745	5.3
420	0.9	530	26.9	640	49.3	750	4.6
425	1.5	535	27.9	645	47.5	755	4.0
430	2.5	540	29.1	650	45.3	760	3.4
435	4.3	545	30.4	655	42.7	765	3.0
440	7.3	550	31.7	660	39.8	770	2.5
445	13.0	555	33.0	665	37.0	775	2.2
450	22.0	560	34.4	670	34.0	780	1.9
455	27.1	565	35.7	675	31.1	---	---



Portrayed color in graphic is estimated by wavelength (nm) and may not be exact - it is a visual representation only

EQUIPMENT LIST

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#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Elgar AC Power Supply	CW1251	---	VBU	VBU
2	Sorenson DC Power Supply	XFR 150-8	---	VBU	VBU
3	Traceable Hygrothermometer	200110913	L206	2/21/2022	2/21/2023
4	Yokogawa Power Analyzer	WT1600	E462	5/21/2022	5/21/2023
5	Fluke Thermometer	53 II	D588	6/13/2022	6/13/2023
6	Fluke Multimeter	87V	M145	3/25/2022	3/25/2023
7	Current Monitor	411	A197	8/26/2021	8/26/2024
8	3M Integrating Sphere Spectrometer System	CDS 2600	L231	7/1/2022	10/1/2022
9	Fisher Scientific Stopwatch	14-649-9	N1132	3/24/2022	3/24/2023
10	LSI High Speed Mirror Goniophotometer	6440	---	6/30/2022	9/30/2022
11	Elgar AC Power Supply	CW1251	---	VBU	VBU
12	Yokogawa Power Analyzer	WT210	307-E464	6/21/2022	6/21/2023
13	Traceable Hygrothermometer	4800	L204	2/21/2022	2/21/2023
14	Sorenson DC Power Supply	XG 150-10	---	VBU	VBU
15	Omega Thermometer	DPI8-C24	M263	3/1/2022	3/1/2023
16	Bosch Distance Laser	Pro GLM 20	L210	3/21/2022	3/15/2023
17	Tape Measure	Crescent	---	9/21/2021	9/21/2024

The AC power supplies used for testing have a crest factor capable of 0-3.5

REVISION HISTORY

#	Revision Date	Updated By	Reviewed By	Description of Change
---	None	---	---	---
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ANNEX A - TM-30 CALCULATIONS

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TM-30 REPORT

