

VISUAL COMFORT & CO.

TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

E4PSLRD-9278-W

PROJECT NUMBER

G104206403

REPORT NUMBER

104206403CHI-122

ISSUE DATE

8/5/2020

REVISED DATE

None

TEST DATES

07/30/2020 through 08/04/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104206403CHI-122

MODEL NUMBER(s)

E4PSLRD-9278-W

REPORT RENDERED TO:

VISUAL COMFORT & CO.
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SKOKIE, IL, 60077
USA

STATEMENT OF LIMITATION

NVLAP Lab Code 600186-0. 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-01040682-1.

TEST STANDARDS

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

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

In Charge of Testing:



Ian Smith
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Reviewer:



Jeff Davis
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SAMPLE INFORMATION

REPORT NO. 104206403CHI-122

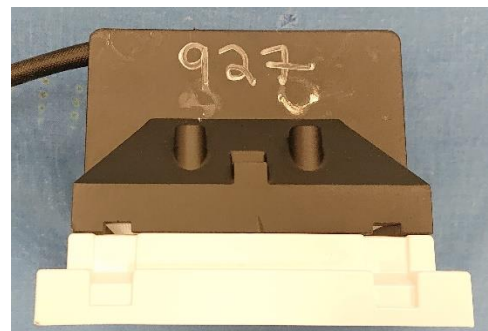
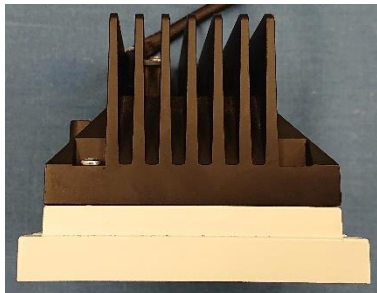
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH07242020122945-122	E4PSLRD-9278-W	E4PSL 85deg 700mA	Production	7/23/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	E4PSLRD-9278-W	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

REPORT NO. 104206403CHI-122

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	E4PSLRD-9278-W
Product Description:	E4PSL 85deg 700mA
LED Model No.:	Bridgelux BXRE-**E2000-C-83
Driver Model No.:	ERP 255ESS020W700
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	2045.1	2037.9
Input Power (W) @ 120 (Vac)	27.38	27.28
Lumen Efficacy (lm/W)	74.7	74.7
Input Power Factor (I) @ 120 (Vac)	0.984	0.983

Criteria	Results
Input ATHD (%) @ 120 (Vac)	12.71
Correlated Color Temperature (K)	2698
Color Rendering Index - Ra (I)	90.6
Color Rendering Index - R9 (I)	63.6
Duv (I)	0.0005
Chromaticity Coordinate (x)	0.461
Chromaticity Coordinate (y)	0.412
Chromaticity Coordinate (u')	0.262
Chromaticity Coordinate (v')	0.528

TEST METHODS

SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with IESNA LM-79.

INTEGRATING SPHERE TESTING

A spectroradiometer and integrating sphere were used to measure the spectral distribution for each EUT resulting in photometric and colorimetric data. 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 was measured at a position inside the sphere and stabilization procedures to LM-79 were followed.

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 was measured at a position near the EUT at equal height and stabilization procedures to LM-79 were followed.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 104206403CHI-122

Test Configuration	Tested Model No.	Pass/Fail/NA
1	E4PSLRD-9278-W	NA

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

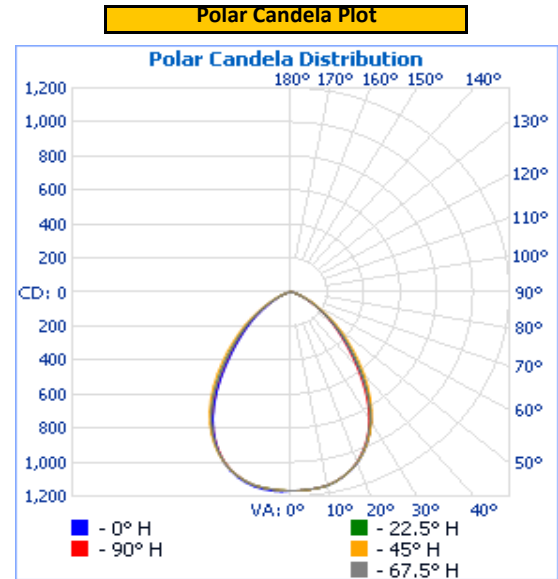
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.0	231.9	27.38	0.984

Light Output (lm)	Lumen Efficacy (lm/W)
2045.1	74.7

INTENSITY SUMMARY - CANDELA

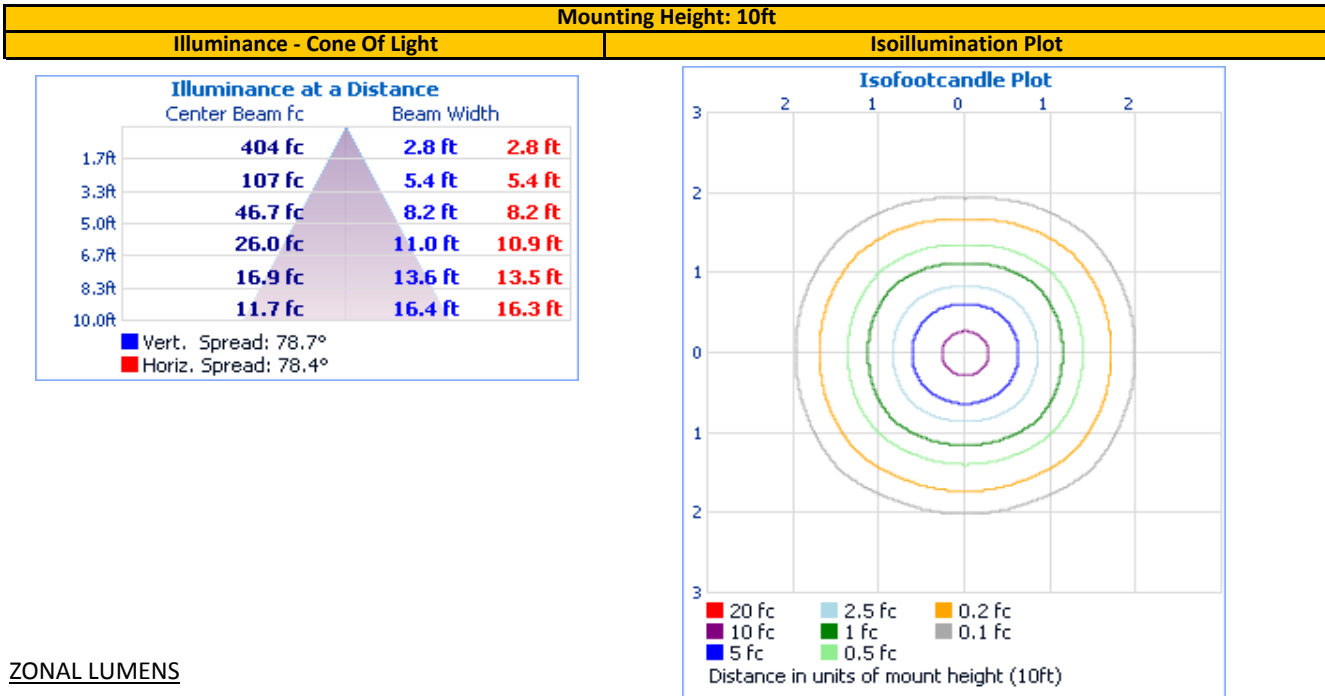
Angle	0	22.5	45	67.5	90
0	1168	1168	1168	1168	1168
5	1164	1165	1165	1164	1165
10	1154	1155	1154	1153	1153
15	1121	1120	1120	1119	1119
20	1068	1066	1067	1063	1063
25	986	984	986	979	976
30	881	876	885	870	860
35	740	742	760	734	715
40	581	591	621	584	560
45	441	452	486	449	424
50	327	337	367	336	314
55	235	238	259	238	222
60	156	156	172	157	145
65	96	96	110	95	89
70	57	54	56	54	52
75	31	29	29	28	26
80	17	16	15	14	14
85	10	8	7	7	6
90	0	0	0	0	0
95	0	0	0	0	0
100	0	0	0	0	0
105	0	0	0	0	0
110	0	0	0	0	0
115	0	0	0	0	0
120	0	0	0	0	0
125	0	0	0	0	0
130	0	0	0	0	0
135	0	0	0	0	0
140	0	0	0	0	0
145	0	0	0	0	0
150	0	0	0	0	0
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0

Entire luminous intensity matrix found in .IES file



REPORT NO. 104206403CHI-122

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	876.1	42.8%	90-100	0.0	0.0%
0-40	1,335.8	65.3%	100-110	0.0	0.0%
0-60	1,905.5	93.2%	110-120	0.0	0.0%
60-90	139.6	6.8%	120-130	0.0	0.0%
70-100	40.4	2.0%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	2,045.1	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	2,045.1	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

REPORT NO. 104206403CHI-122

Test Configuration	Tested Model No.	Pass/Fail/NA
1	E4PSLRD-9278-W	NA

PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)

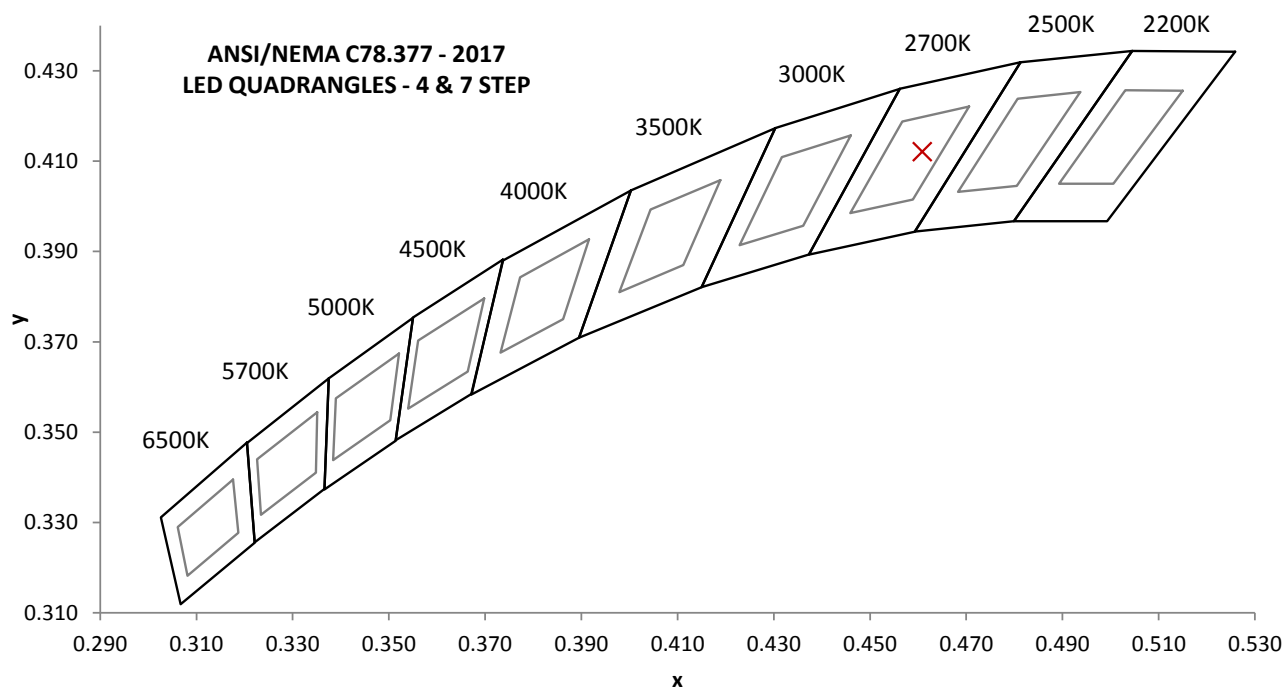
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
119.99	231.2	27.28	0.983	12.71

Measured at 119.99(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
2037.9	74.7	2698	90.6	63.6

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0005	0.461	0.412	0.262	0.528

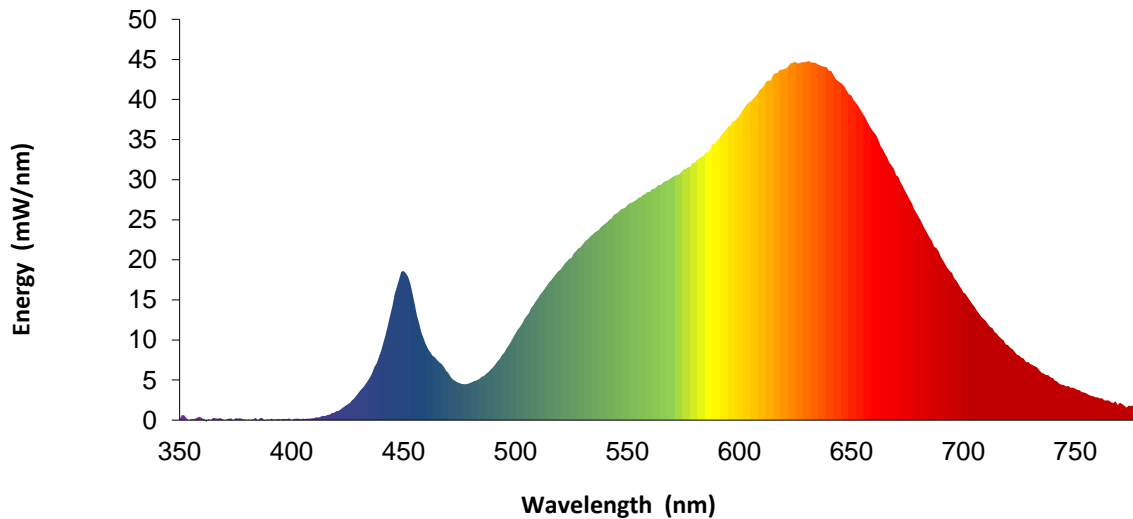


REPORT NO. 104206403CHI-122

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	9.4		570	30.3		680	25.4
355	0.1		465	7.5		575	31.3		685	22.7
360	0.2		470	5.9		580	32.1		690	20.4
365	0.3		475	4.6		585	33.4		695	18.4
370	0.0		480	4.7		590	34.9		700	15.9
375	0.2		485	5.4		595	36.6		705	14.1
380	0.1		490	6.6		600	38.0		710	12.4
385	0.0		495	8.4		605	39.7		715	10.8
390	0.0		500	10.8		610	41.4		720	9.4
395	0.1		505	13.0		615	43.0		725	8.1
400	0.0		510	15.2		620	43.8		730	7.0
405	0.2		515	17.2		625	44.7		735	5.9
410	0.3		520	18.8		630	44.7		740	5.2
415	0.5		525	20.3		635	44.4		745	4.4
420	1.1		530	21.9		640	43.6		750	3.9
425	2.0		535	23.3		645	42.1		755	3.3
430	3.4		540	24.5		650	40.5		760	2.9
435	5.3		545	25.8		655	38.3		765	2.5
440	8.7		550	26.8		660	35.9		770	2.2
445	14.2		555	27.7		665	33.3		775	1.8
450	18.6		560	28.4		670	30.6		780	1.6
455	14.4		565	29.4		675	28.1		---	---

Without correction of sample absorption.



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

EQUIPMENT LIST

REPORT NO. 104206403CHI-122

#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Yokogawa Power Meter	WT210	146919	7/1/2020	7/1/2021
2	Omega Thermometer	DPI8-C24	146920	10/3/2019	10/3/2020
3	LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
4	Newport Thermohygrometer	iServer	146957	12/2/2019	12/2/2020
5	Pacific AC Power Supply	118-ACX	CHI0153	VBV	VBV
6	Newport Humidity Recorder	iTHX-SD	146961	7/26/2019	7/26/2020
7	Labsphere Spectroradiometer	CDS-600	146923	VBV	VBV
8	2M Rotating Sphere	7660-ROT	146923	VBV	VBV
9	Omega thermometer	USB TC08	EQAH002615	4/7/2020	4/7/2021
10	Ametek DC Power Supply	XFR150-8	1468464	VBV	VBV
11	Yokogawa Power Meter	WT210	146880	10/2/2019	10/2/2020
12	Chroma Power Supply	61604	CHI0371	VBV	VBV
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Note: Standard sources listed above are traceable to NIST: National Institute of Standards and Technology

REVISION HISTORY

#	Revision Date	Updated By	Reviewed By	Description of Change
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