

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ENCL3RF-L12/ENCL3RFD-WD31W-W

PROJECT NUMBER

G104349704

REPORT NUMBER

104349704CHI-033

ISSUE DATE

8/18/2020

REVISED DATE

9/17/2020

TEST DATES

08/15/2020 through 08/17/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104349704CHI-033

MODEL NUMBER(s)

ENCL3RF-L12/ENCL3RFD-WD31W-W

REPORT RENDERED TO:

GENERATION BRANDS, LLC
7400 LINDER AVE
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-01080748-3.

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
Engineer
Lighting Division

Reviewer:



Jeff Davis
NA Technical Lead
Lighting Division

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SAMPLE INFORMATION

REPORT NO. 104349704CHI-033

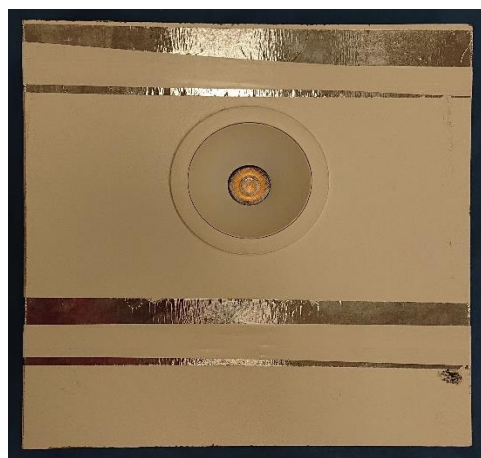
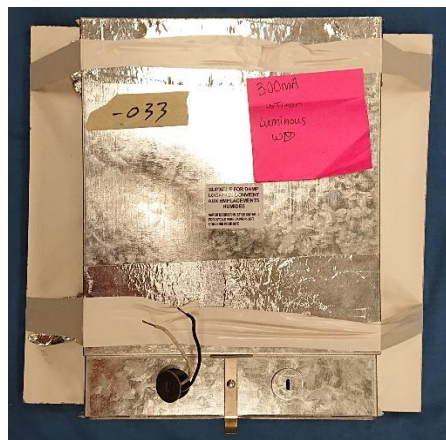
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH08122020093108-033	ENCL3RF-L12/ENCL3RFD-WD31W-W	ENTRA CL WARM DIM	Production	8/12/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ENCL3RF-L12/ENCL3RFD-WD31W-W	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ENCL3RF-L12/ENCL3RFD-WD31W-W
Product Description:	ENTRA CL WARM DIM
LED Model No.:	LUMINUS CDM-9-4027-90-36-DW0x
Driver Model No.:	TECH LIGHTING PTB015W-0300-38-VCC
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	759.7	746.1
Input Power (W) @ 120VAC (Vac)	12.49	12.50
Lumen Efficacy (lm/W)	60.8	59.7
Input Power Factor (I) @ 120VAC (Vac)	0.991	0.991

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	9.72
Correlated Color Temperature (K)	3065
Color Rendering Index - Ra (I)	95.9
Color Rendering Index - R9 (I)	75.6
Duv (I)	-0.0017
Chromaticity Coordinate (x)	0.430
Chromaticity Coordinate (y)	0.398
Chromaticity Coordinate (u')	0.249
Chromaticity Coordinate (v')	0.518

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

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ENCL3RF-L12/ENCL3RFD-WD31W-W	NA

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

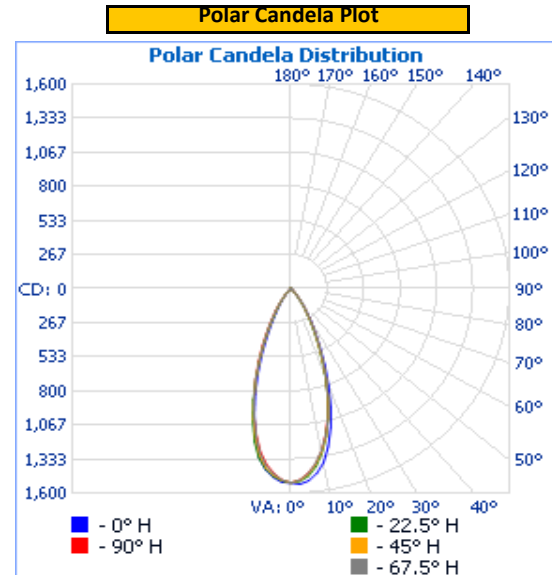
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.1	104.9	12.49	0.991

Light Output (lm)	Lumen Efficacy (lm/W)
759.7	60.8

INTENSITY SUMMARY - CANDELA

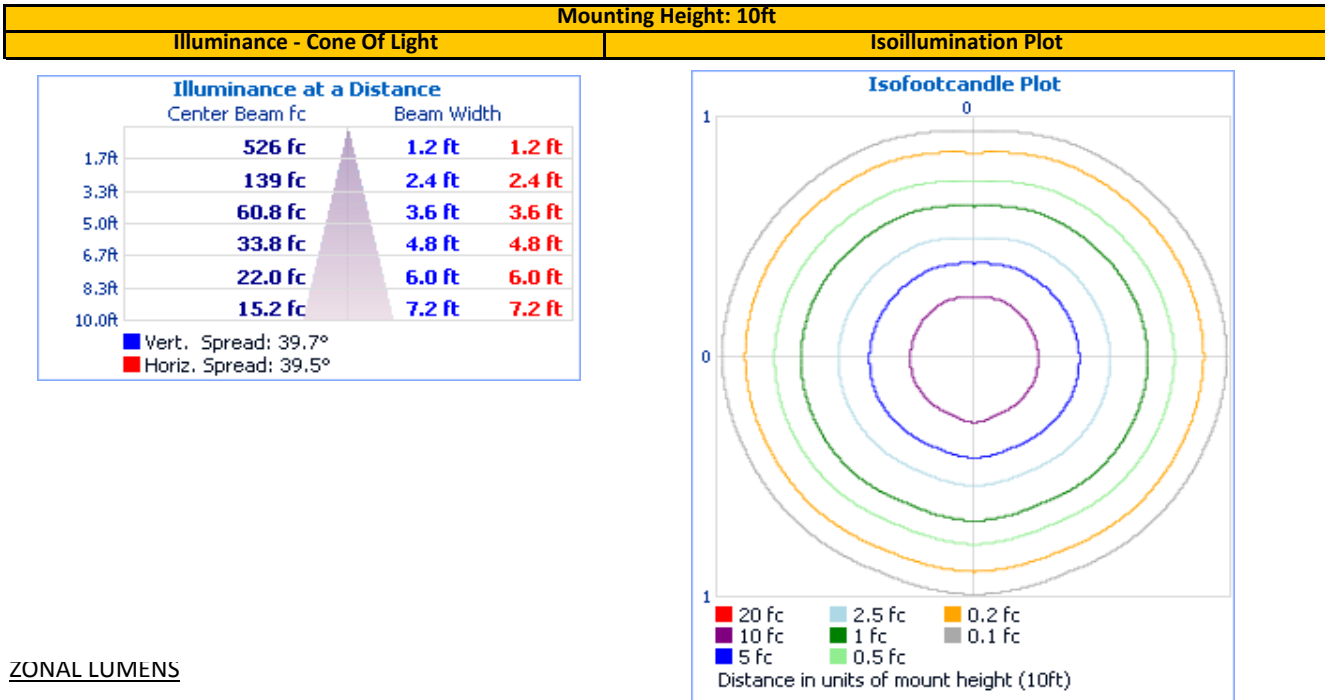
Angle	0	22.5	45	67.5	90
0	1519	1519	1519	1519	1519
5	1508	1472	1459	1452	1449
10	1381	1306	1298	1287	1292
15	1126	1053	1051	1055	1042
20	807	744	758	763	757
25	507	465	477	493	486
30	296	262	278	284	286
35	160	140	151	152	154
40	63	56	61	62	68
45	26	21	22	22	24
50	7	6	7	7	8
55	4	3	3	4	4
60	2	2	2	2	2
65	2	2	2	2	2
70	1	1	1	1	1
75	1	1	1	1	1
80	0	0	0	0	0
85	0	0	0	0	0
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



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ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary																																																																																																			
<table><tr><th>Zone</th><th>Lumens</th><th>Luminaire</th></tr><tr><td>0-30</td><td>641.1</td><td>84.4%</td></tr><tr><td>0-40</td><td>733.5</td><td>96.5%</td></tr><tr><td>0-60</td><td>757.0</td><td>99.6%</td></tr><tr><td>60-90</td><td>2.8</td><td>0.4%</td></tr><tr><td>70-100</td><td>1.2</td><td>0.2%</td></tr><tr><td>90-120</td><td>0.0</td><td>0.0%</td></tr><tr><td>0-90</td><td>759.7</td><td>100.0%</td></tr><tr><td>90-180</td><td>0.0</td><td>0.0%</td></tr><tr><td>0-180</td><td>759.7</td><td>100.0%</td></tr></table>			Zone	Lumens	Luminaire	0-30	641.1	84.4%	0-40	733.5	96.5%	0-60	757.0	99.6%	60-90	2.8	0.4%	70-100	1.2	0.2%	90-120	0.0	0.0%	0-90	759.7	100.0%	90-180	0.0	0.0%	0-180	759.7	100.0%	<table><tr><th>Zone</th><th>Lumens</th><th>Total</th><th>Zone</th><th>Lumens</th><th>Total</th></tr><tr><td>0-10</td><td>134.9</td><td>17.8%</td><td>90-100</td><td>0.0</td><td>0.0%</td></tr><tr><td>10-20</td><td>288.1</td><td>37.9%</td><td>100-110</td><td>0.0</td><td>0.0%</td></tr><tr><td>20-30</td><td>218.1</td><td>28.7%</td><td>110-120</td><td>0.0</td><td>0.0%</td></tr><tr><td>30-40</td><td>92.5</td><td>12.2%</td><td>120-130</td><td>0.0</td><td>0.0%</td></tr><tr><td>40-50</td><td>20.0</td><td>2.6%</td><td>130-140</td><td>0.0</td><td>0.0%</td></tr><tr><td>50-60</td><td>3.4</td><td>0.5%</td><td>140-150</td><td>0.0</td><td>0.0%</td></tr><tr><td>60-70</td><td>1.6</td><td>0.2%</td><td>150-160</td><td>0.0</td><td>0.0%</td></tr><tr><td>70-80</td><td>0.9</td><td>0.1%</td><td>160-170</td><td>0.0</td><td>0.0%</td></tr><tr><td>80-90</td><td>0.3</td><td>0.0%</td><td>170-180</td><td>0.0</td><td>0.0%</td></tr></table>							Zone	Lumens	Total	Zone	Lumens	Total	0-10	134.9	17.8%	90-100	0.0	0.0%	10-20	288.1	37.9%	100-110	0.0	0.0%	20-30	218.1	28.7%	110-120	0.0	0.0%	30-40	92.5	12.2%	120-130	0.0	0.0%	40-50	20.0	2.6%	130-140	0.0	0.0%	50-60	3.4	0.5%	140-150	0.0	0.0%	60-70	1.6	0.2%	150-160	0.0	0.0%	70-80	0.9	0.1%	160-170	0.0	0.0%	80-90	0.3	0.0%	170-180	0.0	0.0%
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INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ENCL3RF-L12/ENCL3RFD-WD31W-W	NA

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

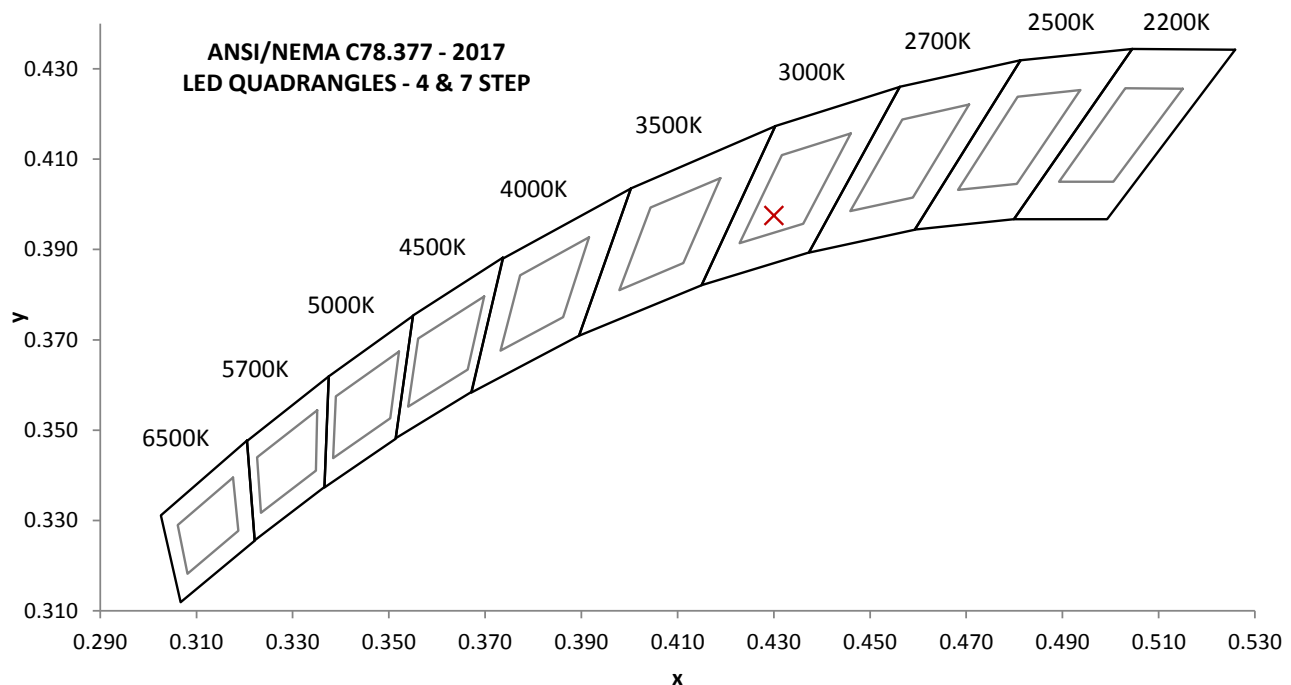
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.00	105.0	12.50	0.991	9.72

Measured at 120(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
746.1	59.7	3065	95.9	75.6

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0017	0.430	0.398	0.249	0.518

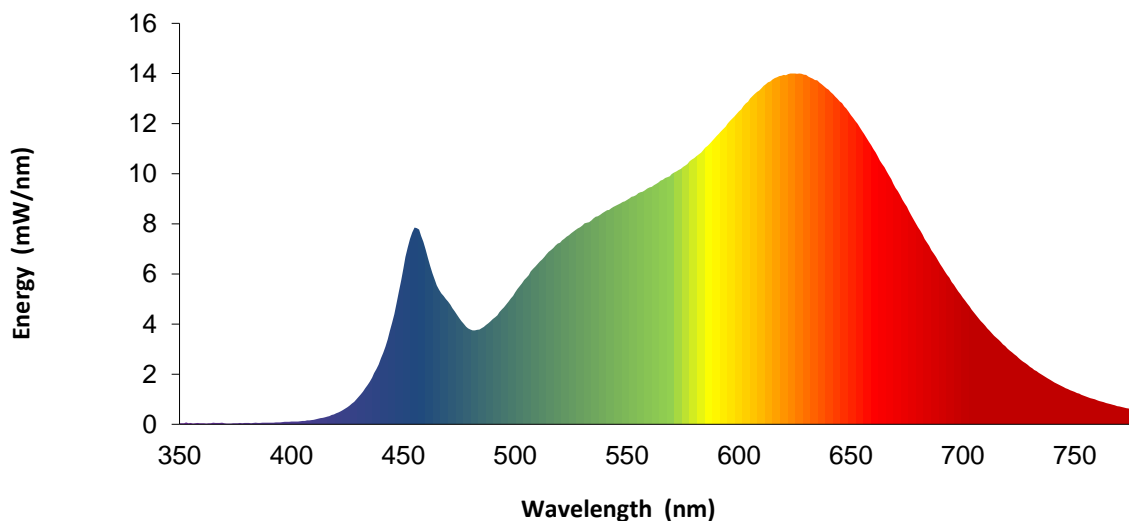


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.0		460	7.0		570	10.0		680	7.9
355	0.1		465	5.5		575	10.3		685	7.1
360	0.0		470	4.9		580	10.6		690	6.4
365	0.1		475	4.2		585	11.0		695	5.7
370	0.0		480	3.8		590	11.5		700	5.1
375	0.0		485	3.8		595	12.0		705	4.5
380	0.1		490	4.2		600	12.5		710	3.9
385	0.1		495	4.7		605	13.0		715	3.5
390	0.1		500	5.3		610	13.4		720	3.0
395	0.1		505	5.9		615	13.8		725	2.6
400	0.1		510	6.4		620	13.9		730	2.3
405	0.1		515	6.9		625	14.0		735	2.0
410	0.2		520	7.3		630	13.9		740	1.7
415	0.3		525	7.6		635	13.7		745	1.5
420	0.4		530	7.9		640	13.3		750	1.3
425	0.7		535	8.2		645	12.9		755	1.1
430	1.1		540	8.5		650	12.3		760	1.0
435	1.7		545	8.7		655	11.7		765	0.8
440	2.6		550	9.0		660	11.0		770	0.7
445	4.0		555	9.2		665	10.3		775	0.6
450	6.2		560	9.5		670	9.4		780	0.5
455	7.9		565	9.7		675	8.7		---	---

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

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#	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	VBU	VBU
4	Newport Thermohygrometer	iServer	146957	12/2/2019	12/2/2020
5	Pacific AC Power Supply	118-ACX	CHI0153	VBU	VBU
6	Multi Channel Spectroradiometer	OL770	CHI0092	VBU	VBU
7	Newport Humidity Recorder	iServer	CHI0456	10/11/2019	10/11/2020
8	Labsphere Spectroradiometer	CDS2600	CHI0539	VBU	VBU
9	3 Meter Sphere	SPR600	CHI0088	VBU	VBU
10	Elgar AC Power Supply	CW1251	146112	VBU	VBU
11	Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
12	Yokogawa Power Meter	WT1600	146769	4/6/2020	4/6/2021
13	Extech K Temperature Meter	421502	CHI0476	10/1/2019	10/1/2020
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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
---	9/2/2020	Ian Smith	Jeff Davis	Changed S's to R's in Model Number
---	9/17/2020	Ian Smith	JD Jeff Davis	Changed -L1 to -L12 in Model Number
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