

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0604P48275930WW1

PROJECT NUMBER

G104207161

REPORT NUMBER

104207161CRT-010

ISSUE DATE

9/29/2020

REVISED DATE

10/6/2020

TEST DATES

9/28/2020

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104207161CRT-010

MODEL NUMBER(s)

ESSF0604P48275930WW1

REPORT RENDERED TO:

GENERATION BRANDS, LLC
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-01040731-2.

TEST STANDARDS

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

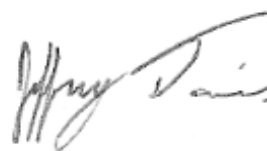
ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

In Charge of Testing:



Melanie Brittain
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Reviewer:



Jeff Davis
Technical Lead
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SAMPLE INFORMATION

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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2009221018-002A	ESSF0604P48275930WW 1	Surface 0.6" x 0.4"	Production	9/22/2020

SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0604P48275930WW1
Product Description:	Surface 0.6" x 0.4"
LED Model No.:	Valent X ~250 lm/ft
Driver Model No.:	N/A
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	789.7	779.2
Input Power (W) @ 24 (Vdc)	8.99	9.09
Lumen Efficacy (lm/W)	87.87	85.72
Input Power Factor (I) @ 24 (Vdc)	--	--

Criteria	Results
Input ATHD (%) @ 24 (Vdc)	---
Correlated Color Temperature (K)	2932
Color Rendering Index - Ra (I)	97.6
Color Rendering Index - R9 (I)	97.2
Duv (I)	0.0013
Chromaticity Coordinate (x)	0.440
Chromaticity Coordinate (y)	0.403
Chromaticity Coordinate (u')	0.253
Chromaticity Coordinate (v')	0.521

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

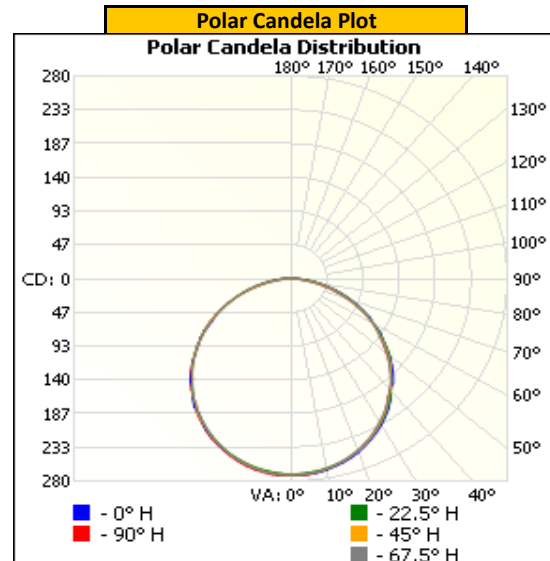
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	23.98	374.8	8.99	--

Light Output (lm)	Lumen Efficacy (lm/W)
789.7	87.9

INTENSITY SUMMARY - CANDELA

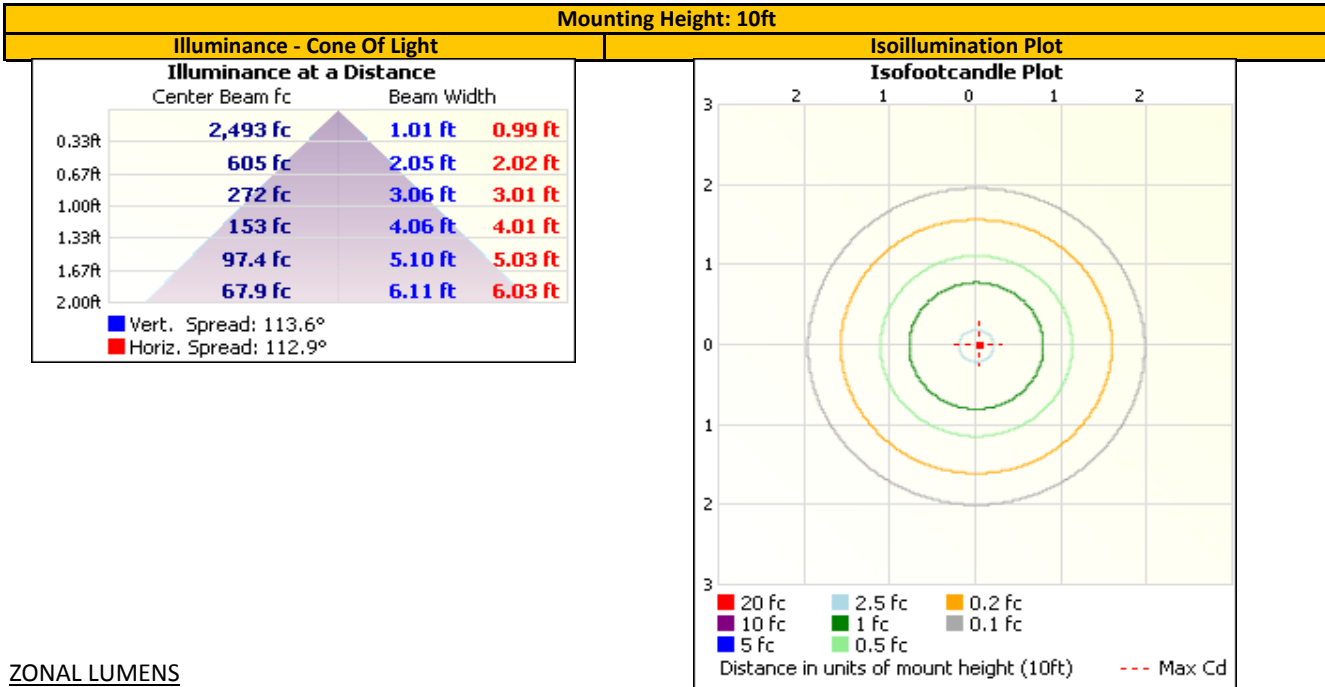
Angle	0	22.5	45	67.5	90
0	272	272	272	272	272
5	271	269	270	271	272
10	268	266	267	267	268
15	263	261	261	261	262
20	256	253	254	253	253
25	246	244	244	242	244
30	234	232	231	229	230
35	220	218	217	216	216
40	200	202	202	200	200
45	187	184	184	182	183
50	167	167	164	163	162
55	145	145	143	142	141
60	123	122	122	123	121
65	103	101	100	98	98
70	81	80	77	75	74
75	59	58	55	52	51
80	39	38	34	30	29
85	22	20	16	12	10
90	10	8	5	2	0
95	2	2	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					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	210.8	26.7%	90-100	2.1	0.3%
0-40	345.7	43.8%	100-110	0.1	0.0%
0-60	613.5	77.7%	110-120	0.0	0.0%
60-90	173.9	22.0%	120-130	0.0	0.0%
70-100	78.2	9.9%	130-140	0.0	0.0%
90-120	2.2	0.3%	140-150	0.0	0.0%
0-90	787.4	99.7%	150-160	0.0	0.0%
90-180	2.2	0.3%	160-170	0.0	0.0%
0-180	789.7	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

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

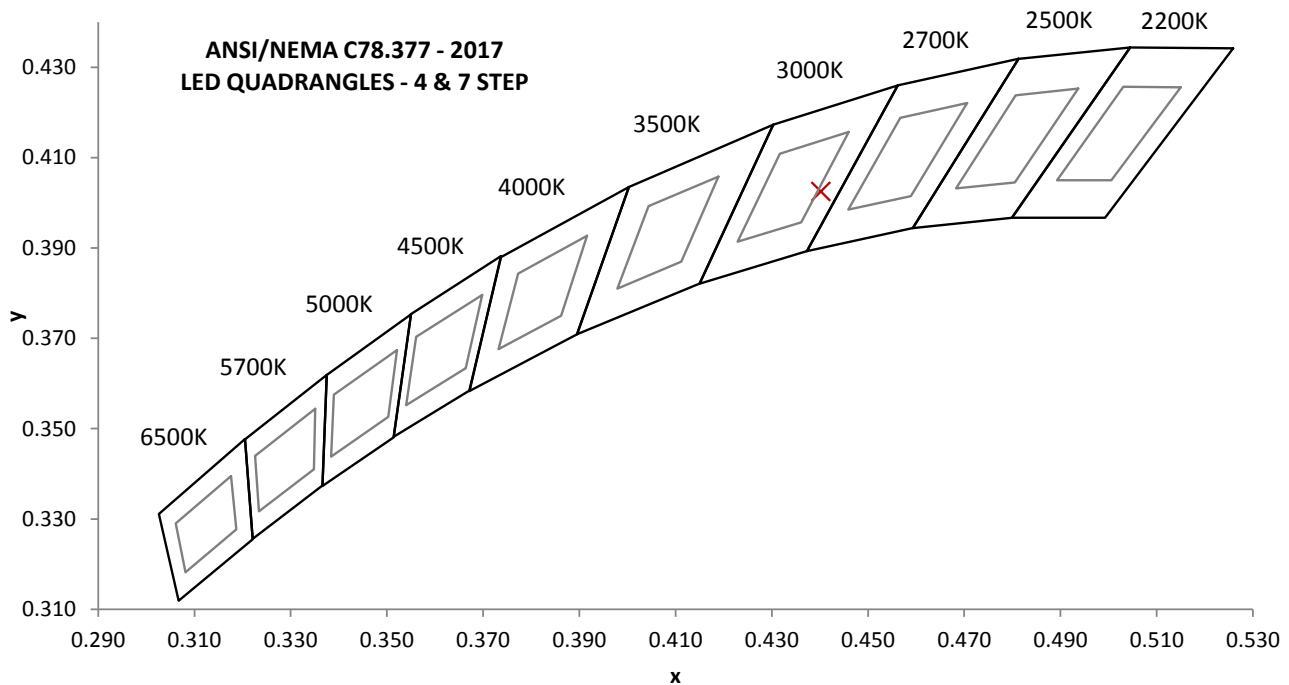
Base Orientation
Up

Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
24.00	378.9	9.09	--	---

Measured at 24(Vdc)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
779.2	85.7	2932	97.6	97.2

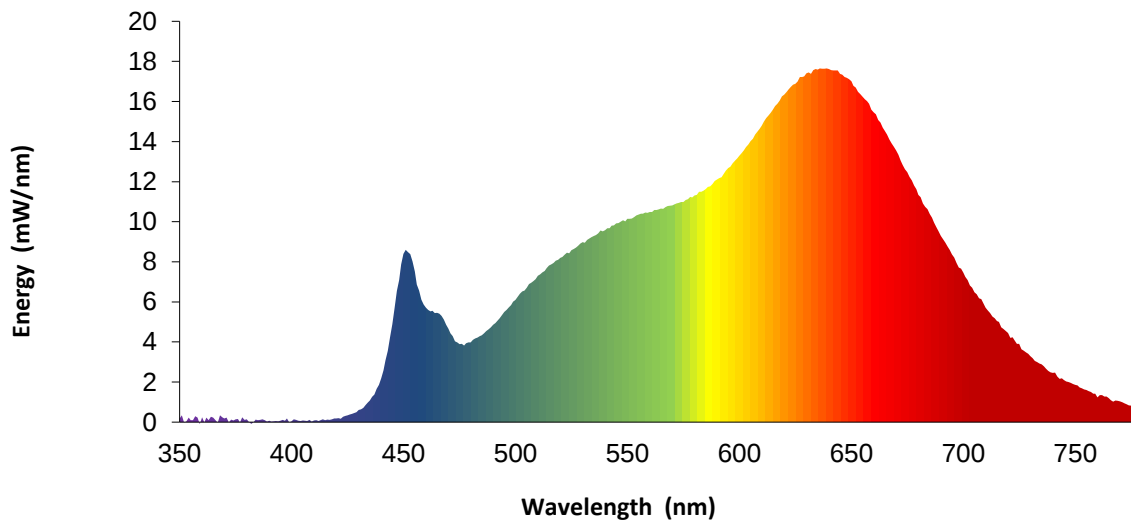
Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0013	0.440	0.403	0.253	0.521



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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.2		460	5.7		570	10.8		680	11.3
355	0.1		465	5.5		575	11.0		685	10.4
360	0.2		470	4.7		580	11.3		690	9.3
365	0.2		475	3.9		585	11.6		695	8.4
370	0.2		480	4.0		590	12.1		700	7.5
375	0.1		485	4.3		595	12.7		705	6.5
380	0.1		490	4.9		600	13.3		710	5.7
385	0.1		495	5.5		605	14.0		715	5.0
390	0.1		500	6.1		610	14.8		720	4.4
395	0.1		505	6.7		615	15.6		725	3.9
400	0.0		510	7.3		620	16.3		730	3.3
405	0.1		515	7.8		625	16.9		735	2.9
410	0.1		520	8.2		630	17.4		740	2.5
415	0.1		525	8.6		635	17.6		745	2.1
420	0.2		530	9.0		640	17.6		750	1.9
425	0.3		535	9.3		645	17.4		755	1.6
430	0.6		540	9.6		650	17.0		760	1.2
435	1.1		545	9.9		655	16.2		765	1.2
440	2.2		550	10.1		660	15.5		770	1.0
445	4.9		555	10.4		665	14.5		775	0.8
450	8.4		560	10.5		670	13.6		780	0.8
455	7.5		565	10.7		675	12.5		---	---



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	LSI High Speed Mirror Goniometer	6440	---	9/21/2020	10/21/2020
2	Elgar AC Power Supply	CW1251	---	VBV	VBV
3	Yokogawa Power Analyzer	WT210	E464	5/11/2020	5/11/2021
4	Traceable Hygrothermometer	4800	L203	2/17/2020	2/17/2021
5	M-D Building Products Digital Level	Smart Tool	307-L112	5/14/2020	5/14/2021
6	NIST Luminous Intensity Standard Source	NBS10322	N1427	2/11/2019	2/11/2021
7	NIST Luminous Intensity Standard Source	NBS10332	N1435	2/11/2019	2/11/2021
8	NIST Luminous Intensity Standard Source	NBS10265	N1437	2/11/2019	2/11/2021
9	NIST Luminous Flux Standard Source	NBS10428	N1424	1/3/2019	1/3/2021
10	Sorenson DC Power Supply	XG 150-10	---	VBV	VBV
11	Omega Thermometer	DPI8-C24	M263	2/27/2020	2/27/2021
12	2M Integrating Sphere Spectrometer System	CDS 600	W/N308	9/1/2020	10/1/2020
13	Yokogawa Power Analyzer	WT1600	E475	8/10/2020	8/10/2021
14	Digital Thermometer	Fluke 53 II	307-D587	1/23/2020	1/23/2021
15	Xantrex DC Power Supply	XTR 150-5.6	---	VBV	VBV
16	Elgar AC Power Supply	CW1251	---	VBV	VBV
17	Secondary Spectral Intensity Standard Source	BS5186	RF5186	11/21/2019	11/21/2020
18	Secondary Flux Standard Source	6836	---	2/11/2020	2/11/2021
19	Secondary Flux Standard Source	4116	---	2/11/2020	2/11/2021
20	Secondary Flux Standard Source	3616	---	2/11/2020	2/11/2021
21	Fisher Scientific Digital Stopwatch	130471471	307-N1404	3/19/2020	3/19/2021

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
1	10/6/2020	Melanie Brittain	Jeff Davis	Report revised to correct luminaire model number.
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