

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0604P48300930FW1

PROJECT NUMBER

G104349704

REPORT NUMBER

10434974CHI-023

ISSUE DATE

8/17/2020

REVISED DATE

8/26/2020

TEST DATES

08/14/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

10434974CHI-023

MODEL NUMBER(s)

ESSF0604P48300930FW1

REPORT RENDERED TO:

GENERATION BRANDS, LLC
7400 LINDER AVE
SKOKIE, IL 60077
COUNTRY

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:

Reviewer:

Signature on file

Signature on file

Ian Smith
Engineer
Lighting Division

Jeff Davis
NA Technical Lead
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SAMPLE INFORMATION

REPORT NO. 10434974CHI-023

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH08122020025613	ESSF0604P48300930FW 1	ESSENCE 0604 P 300 930 F W	Production	8/12/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ESSF0604P48300930FW1	1

SUMMARY

REPORT NO. 10434974CHI-023

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0604P48300930FW1
Product Description:	ESSENCE 0604 P 300 930 F W
LED Model No.:	P Series
Driver Model No.:	NA
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1809.2	1841.5
Input Power (W) @ 24VDC (Vdc)	17.77	18.08
Lumen Efficacy (lm/W)	101.8	101.9
Input Power Factor (I) @ 24VDC (Vdc)	NA	NA

Criteria	Results
Input ATHD (%) @ 24VDC (Vdc)	NA
Correlated Color Temperature (K)	3000
Color Rendering Index - Ra (I)	97.9
Color Rendering Index - R9 (I)	98.8
Duv (I)	-0.0012
Chromaticity Coordinate (x)	0.435
Chromaticity Coordinate (y)	0.400
Chromaticity Coordinate (u')	0.251
Chromaticity Coordinate (v')	0.520

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. 10434974CHI-023

Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0604P48300930FW1	NA

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

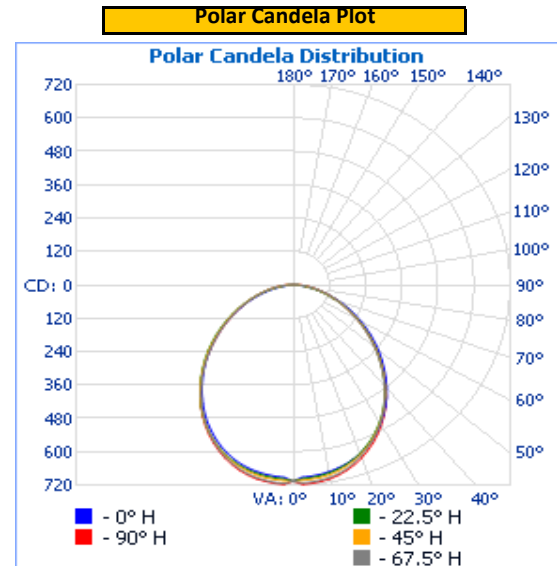
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	24.0	740.9	17.77	NA

Light Output (lm)	Lumen Efficacy (lm/W)
1809.2	101.8

INTENSITY SUMMARY - CANDELA

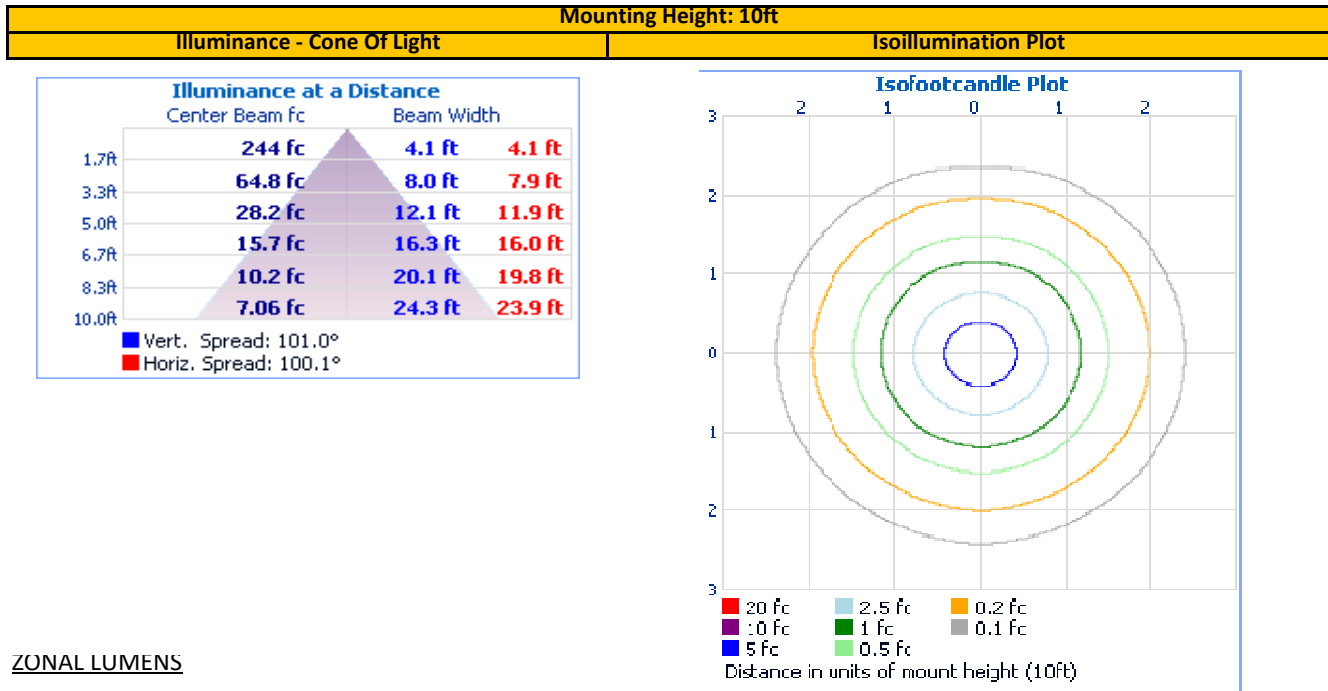
Angle	0	22.5	45	67.5	90
0	706	706	706	706	706
5	690	696	701	711	716
10	682	687	693	703	707
15	668	670	676	684	690
20	647	645	650	655	662
25	617	612	616	619	626
30	578	572	575	576	583
35	533	525	527	527	534
40	482	472	473	472	478
45	426	416	416	414	419
50	370	358	358	355	359
55	313	301	301	297	300
60	257	246	246	243	245
65	203	194	194	192	194
70	151	144	146	146	148
75	104	98	103	105	106
80	62	58	66	69	70
85	25	25	34	39	41
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. 10434974CHI-023

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary								
Zone 1			Zone 2					
Zone	Lumens	Luminaire	Zone	Lumens	Total	Zone	Lumens	Total
0-30	542.6	30.0%	0-10	66.9	3.7%	90-100	0.0	0.0%
0-40	873.3	48.3%	10-20	191.1	10.6%	100-110	0.0	0.0%
0-60	1,467.7	81.1%	20-30	284.6	15.7%	110-120	0.0	0.0%
60-90	341.4	18.9%	30-40	330.6	18.3%	120-130	0.0	0.0%
70-100	147.0	8.1%	40-50	323.0	17.9%	130-140	0.0	0.0%
90-120	0.0	0.0%	50-60	271.5	15.0%	140-150	0.0	0.0%
0-90	1,809.2	100.0%	60-70	194.5	10.7%	150-160	0.0	0.0%
90-180	0.0	0.0%	70-80	110.4	6.1%	160-170	0.0	0.0%
0-180	1,809.2	100.0%	80-90	36.6	2.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

REPORT NO. 10434974CHI-023

Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0604P48300930FW1	NA

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

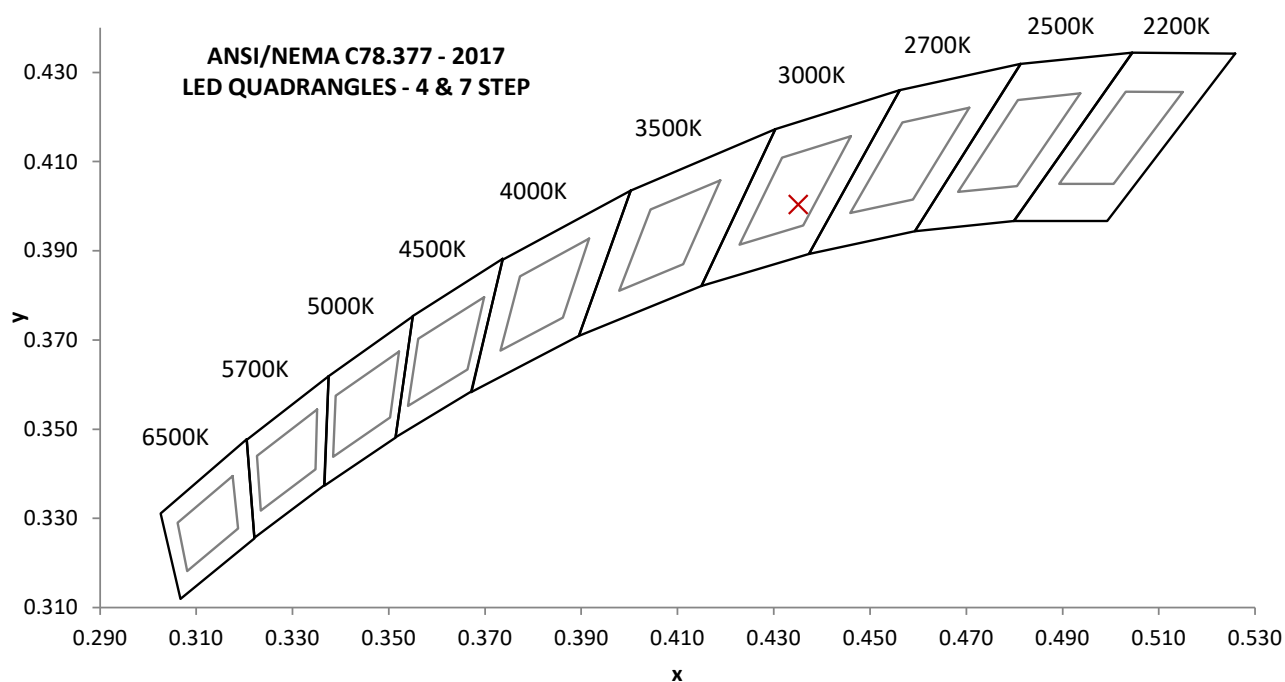
Base Orientation
Up

Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor (I)	Input ATHD (%)
24.01	753.0	18.08	NA	NA

Measured at 24.01(Vdc)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (I)	CRI - R9 (I)
1841.5	101.9	3000	97.9	98.8

Duv (I)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0012	0.435	0.400	0.251	0.520

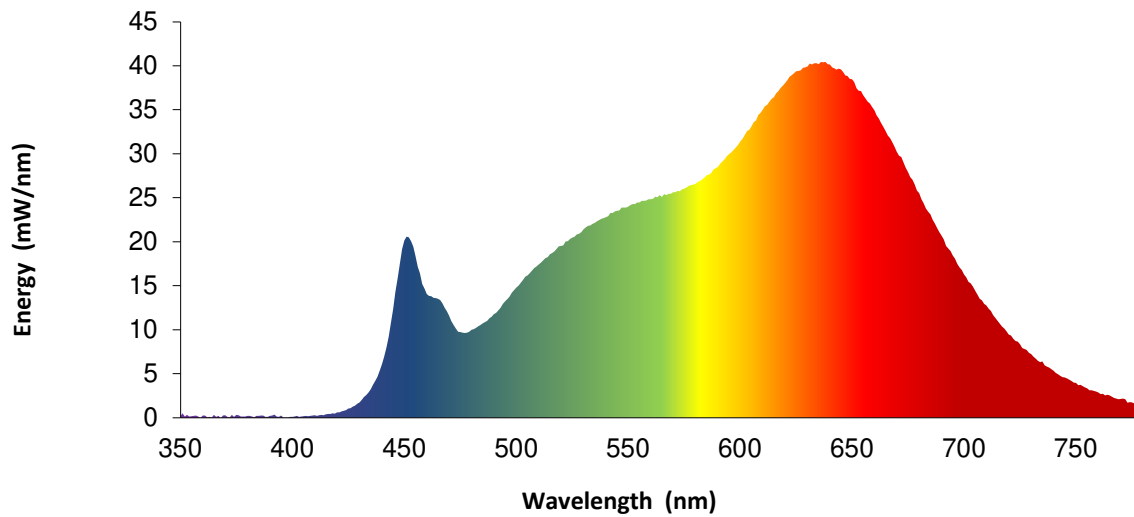


REPORT NO. 10434974CHI-023

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.2		460	14.1		570	25.6		680	25.5
355	0.2		465	13.5		575	26.0		685	23.1
360	0.2		470	11.6		580	26.6		690	20.7
365	0.3		475	9.7		585	27.5		695	18.4
370	0.3		480	10.0		590	28.5		700	16.3
375	0.3		485	10.7		595	30.0		705	14.4
380	0.2		490	11.8		600	31.4		710	12.7
385	0.2		495	13.2		605	33.1		715	11.0
390	0.2		500	14.8		610	35.0		720	9.4
395	0.2		505	16.2		615	36.5		725	8.4
400	0.1		510	17.4		620	38.0		730	7.2
405	0.2		515	18.6		625	39.4		735	6.4
410	0.3		520	19.5		630	39.9		740	5.3
415	0.4		525	20.5		635	40.2		745	4.6
420	0.6		530	21.4		640	40.1		750	4.0
425	1.0		535	22.1		645	39.6		755	3.3
430	1.8		540	22.8		650	38.5		760	2.9
435	3.2		545	23.5		655	36.7		765	2.6
440	6.1		550	24.0		660	34.9		770	2.1
445	12.3		555	24.5		665	32.6		775	1.7
450	20.1		560	24.8		670	30.2		780	1.5
455	18.3		565	25.1		675	27.9		---	---

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. 10434974CHI-023

#	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	Sorenson DC Power Supply	XHR 150-7	146922	VBU	VBU
6	Newport Humidity Recorder	iServer	CHI0456	10/11/2019	10/11/2020
7	Labsphere Spectroradiometer	CDS-600	146923	VBU	VBU
8	2M Rotating Sphere	7660-ROT	146923	VBU	VBU
9	Omega thermometer	USB TC08	EQA002615	4/7/2020	4/7/2021
10	Ametek DC Power Supply	XFR150-8	1468464	VBU	VBU
11	Yokogawa Power Meter	WT210	146880	10/2/2019	10/2/2020
12	Chroma Power Supply	61604	CHI0371	VBU	VBU
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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
---	None	Ian Smith	Jeff Davis	Corrected Product Name, Description, LED Model
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