

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0604P48720930FW1

PROJECT NUMBER

G104349704

REPORT NUMBER

104349704CHI-045

ISSUE DATE

11/16/2020

REVISED DATE

None

TEST DATES

11/05/2020 through 11/10/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104349704CHI-045

MODEL NUMBER(s)

ESSF0604P48720930FW1

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

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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH10292020032135	ESSF0604P48720930FW 1	ESSENCE 0604 P 800 930 FW	Production	10/29/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ESSF0604P48720930FW1	1

SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0604P48720930FW1
Product Description:	ESSENCE 0604 P 800 930 FW
LED Model No.:	P Series 800lm/ft
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	2819.7	2902.1
Input Power (W) @ 24 (Vdc)	27.84	29.03
Lumen Efficacy (lm/W)	101.3	100.0

Criteria	Results
Input ATHD (%) @ 24 (Vdc)	NA
Correlated Color Temperature (K)	3038
Color Rendering Index - Ra (l)	97.4
Color Rendering Index - R9 (l)	96.6
Duv (l)	-0.0019
Chromaticity Coordinate (x)	0.432
Chromaticity Coordinate (y)	0.398
Chromaticity Coordinate (u')	0.250
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	ESSF0604P48720930FW1	NA

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

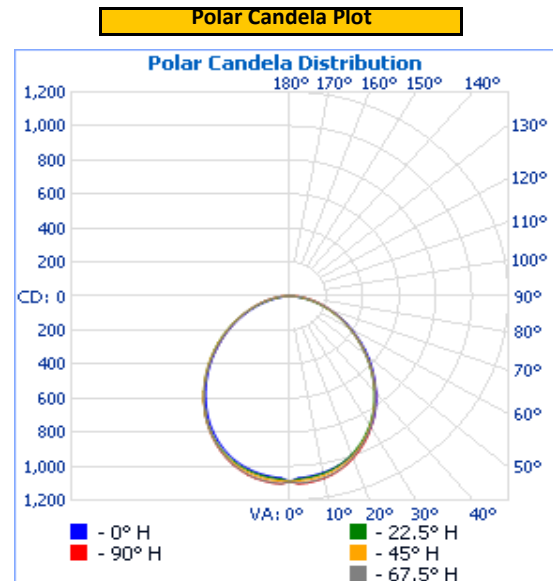
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	24.0	1159.5	27.84	NA

Light Output (lm)	Lumen Efficacy (lm/W)
2819.7	101.3

INTENSITY SUMMARY - CANDELA

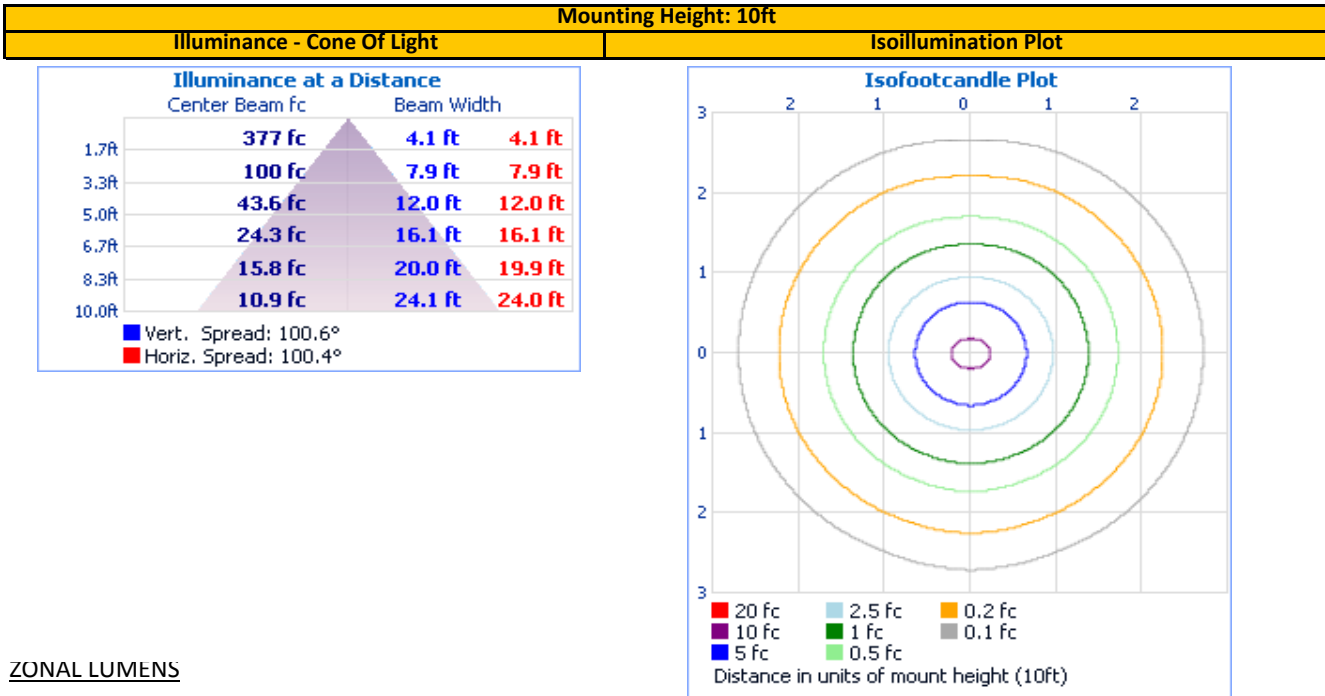
Angle	0	22.5	45	67.5	90
0	1089	1089	1089	1089	1089
5	1067	1072	1083	1098	1102
10	1053	1058	1071	1084	1088
15	1032	1031	1043	1055	1058
20	996	991	1001	1010	1015
25	948	939	948	953	958
30	887	877	883	887	891
35	818	803	808	811	816
40	735	722	726	727	733
45	650	636	640	639	645
50	565	550	552	551	556
55	477	463	466	465	468
60	394	380	383	383	386
65	314	301	303	306	308
70	235	224	229	234	237
75	162	153	163	169	173
80	95	90	103	112	116
85	39	39	55	65	69
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					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	834.8	29.6%	90-100	0.0	0.0%
0-40	1,341.7	47.6%	100-110	0.0	0.0%
0-60	2,259.6	80.1%	110-120	0.0	0.0%
60-90	546.1	19.4%	120-130	0.0	0.0%
70-100	248.2	8.8%	130-140	0.0	0.0%
90-120	10.0	0.4%	140-150	0.0	0.0%
0-90	2,805.7	99.5%	150-160	0.0	0.0%
90-180	13.9	0.5%	160-170	0.0	0.0%
0-180	2,819.7	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0604P48720930FW1	NA

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

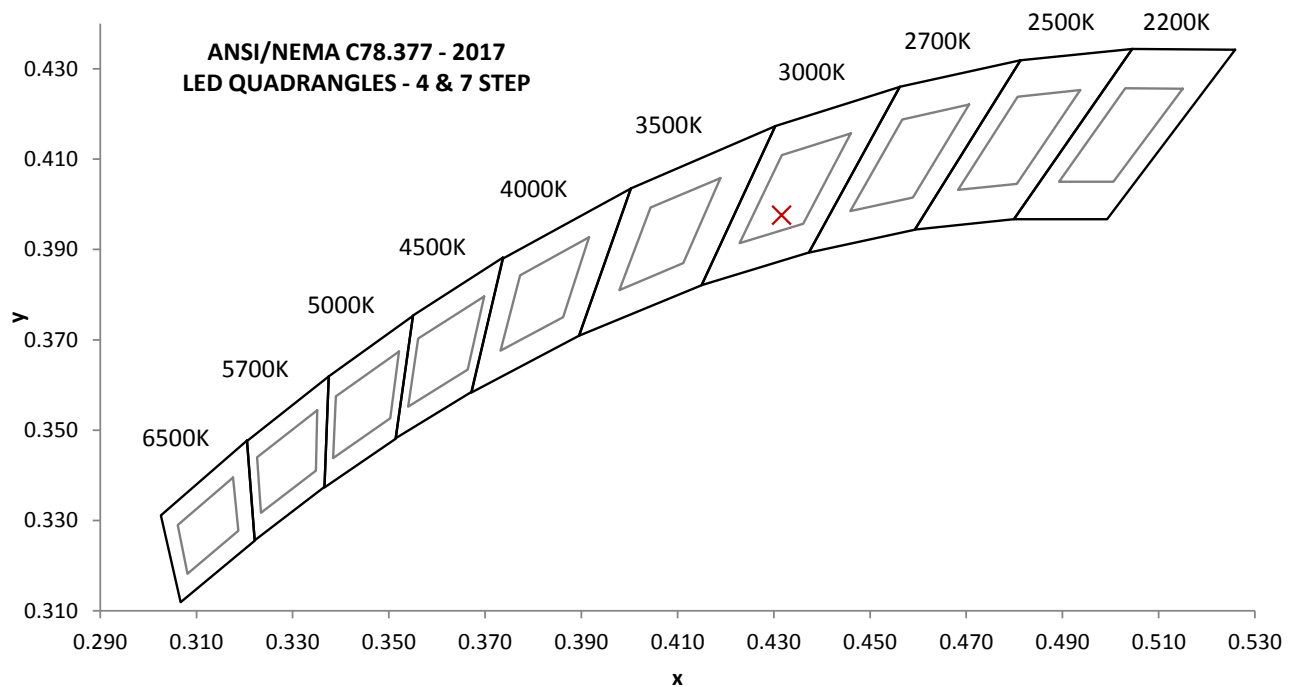
Base Orientation
Up

Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
23.98	1210.3	29.03	NA	NA

Measured at 23.98(Vdc)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
2902.1	100.0	3038	97.4	96.6

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0019	0.432	0.398	0.250	0.518

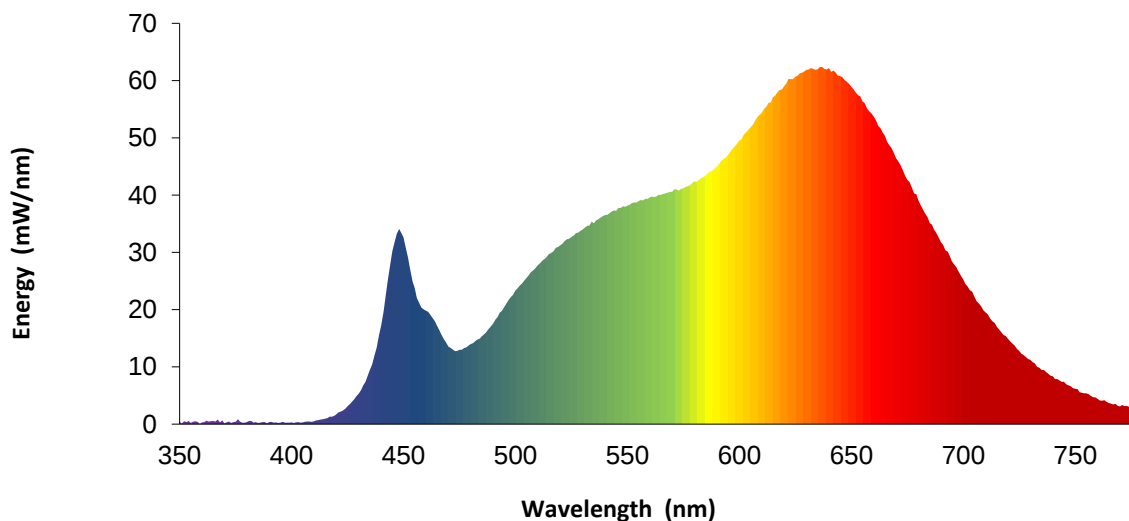


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.4		460	19.8		570	40.6		680	39.1
355	0.2		465	17.2		575	41.2		685	35.1
360	0.3		470	13.6		580	42.4		690	31.8
365	0.6		475	13.0		585	43.5		695	28.4
370	0.2		480	14.0		590	45.0		700	25.2
375	0.4		485	15.3		595	47.0		705	22.3
380	0.3		490	17.6		600	49.5		710	19.5
385	0.2		495	20.4		605	51.8		715	17.0
390	0.3		500	23.3		610	54.3		720	14.9
395	0.3		505	25.6		615	57.1		725	12.8
400	0.3		510	27.8		620	59.0		730	11.3
405	0.3		515	29.7		625	60.7		735	9.5
410	0.5		520	31.2		630	61.9		740	8.4
415	1.0		525	32.7		635	62.0		745	7.4
420	1.7		530	34.0		640	62.2		750	6.2
425	3.1		535	35.1		645	60.8		755	5.4
430	5.3		540	36.5		650	58.9		760	4.5
435	9.5		545	37.3		655	56.4		765	3.7
440	17.3		550	38.2		660	53.7		770	3.1
445	30.2		555	39.0		665	50.4		775	2.8
450	32.6		560	39.6		670	46.4		780	2.3
455	23.7		565	40.0		675	42.7		---	---

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	10/1/2020	10/1/2021
3	LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
4	Newport Thermohygrometer	iServer	146957	12/2/2019	12/2/2020
5	Sorenson DC Power Supply	XHR 150-7	146922	VBV	VBV
6	Labsphere Spectroradiometer	CDS-600	146923	VBV	VBV
7	2M Rotating Sphere	7660-ROT	146923	VBV	VBV
8	Omega thermometer	USB TC08	EQA002615	4/7/2020	4/7/2021
9	Ametek DC Power Supply	XFR150-8	1468464	VBV	VBV
10	Yokogawa Power Meter	WT210	146880	10/1/2020	10/1/2021
11	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
---	None	---	---	---
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ANNEX A - TM-30 CALCULATIONS

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0604P48720930FW1	NA

TM-30 REPORT

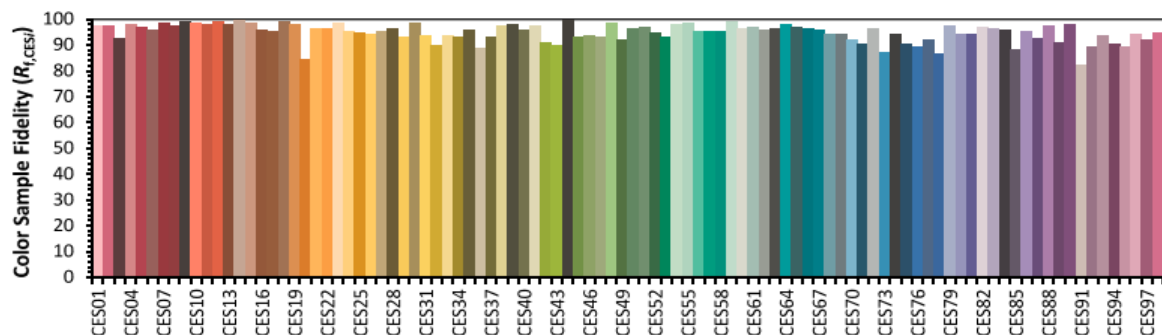
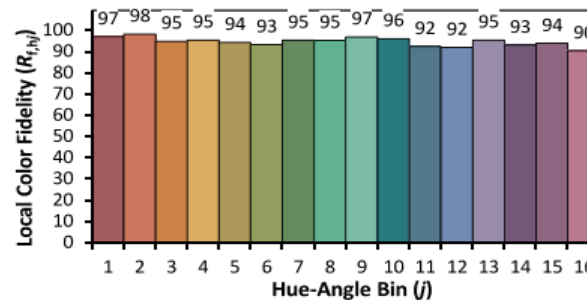
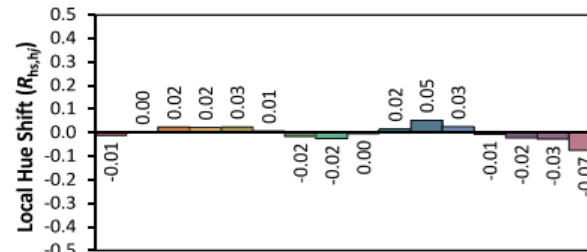
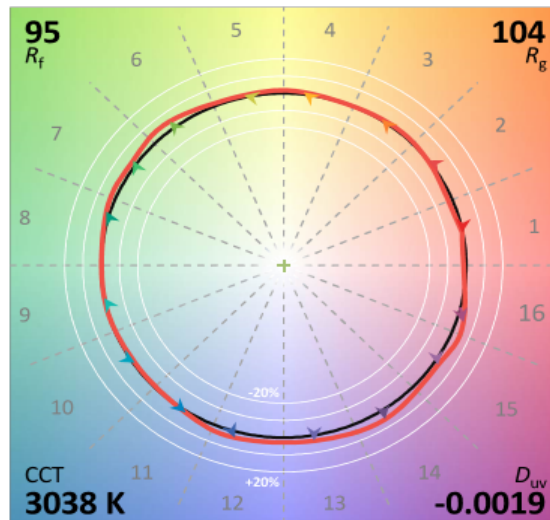
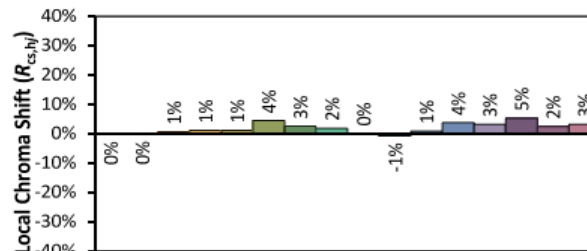
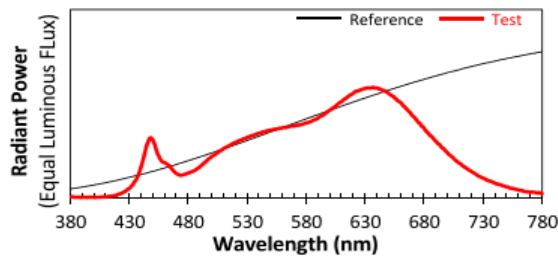
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Generation Brands, LLC

Date: 11/5/2020

Model: ESSF0604P48720930FW1



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4316
 y 0.3975
 u' 0.2500
 v' 0.5180

Colors are for visual orientation purposes only. Created with the IES TM-30-18 Calculator Version 2.00.