



8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

Report No: L032313001



Report No: L032313001

Issue Date: 3/31/2023
Revision Date: 4/4/2023

Report Prepared For: Clarte Lighting
750 W Golden Grove Way, Covina, CA 91722

Model Number: PAR16 PAR16 - NNSP

Test: Photometric/Colorimetric/Electrical Test

Standards Used: Appropriate part or all test guidelines were used for test performed:

IESNA LM79: 2019 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products

ANSI NEMA ANSLG C78.377: 2017 Specification of the Chromaticity of Solid State Lighting Products

ANSI C82.77-10:2014: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Received in working and undamaged condition. No modifications were necessary.

Special Test Condition: Fixture is tested with no special conditions.

Date of Tests: 3/30/23

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S4	4/7/23
HP Power Supply	6032A	PS-DC05-S2	--
Fluke Digital Thermometer	52K/J	MT-TP05	1/11/2024
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

General Information

Manufacturer:	Clarte Lighting
Model Number:	PAR16 PAR16 - NNSP
Driver Model Number:	CUSTOM DRIVER

Test Summary

Total Lumens:	472.00
Efficacy:	26.40
Color Redering Index:	82.0
Correlated Color Temperature:	3156
Input Voltage (VAC/60Hz):	120.02
Input Current (Amp):	0.1498
Input Power (W):	17.88
Input Power Factor:	0.9947
Current ATHD (%):	3.4%

Test Condition

Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:40
Total Operating Time (Hours):	1:15

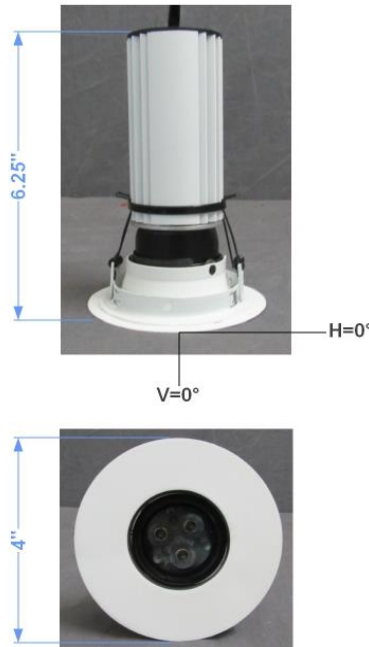
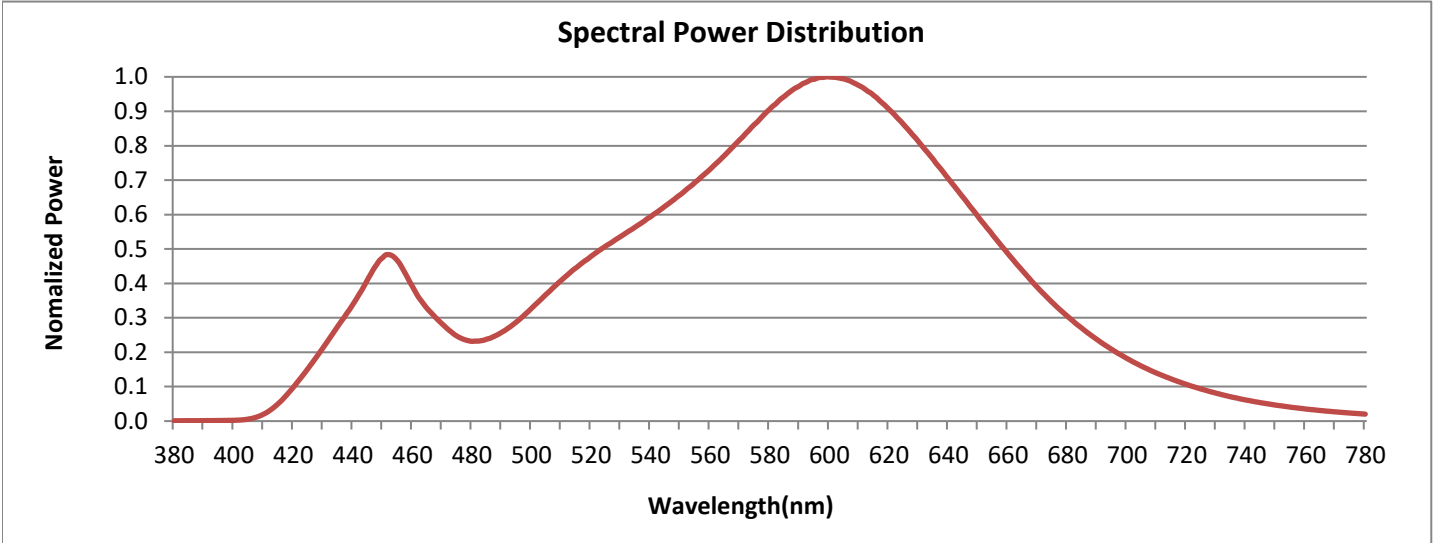


FIG. 1 LUMINAIRE

Colorimetry Test Results

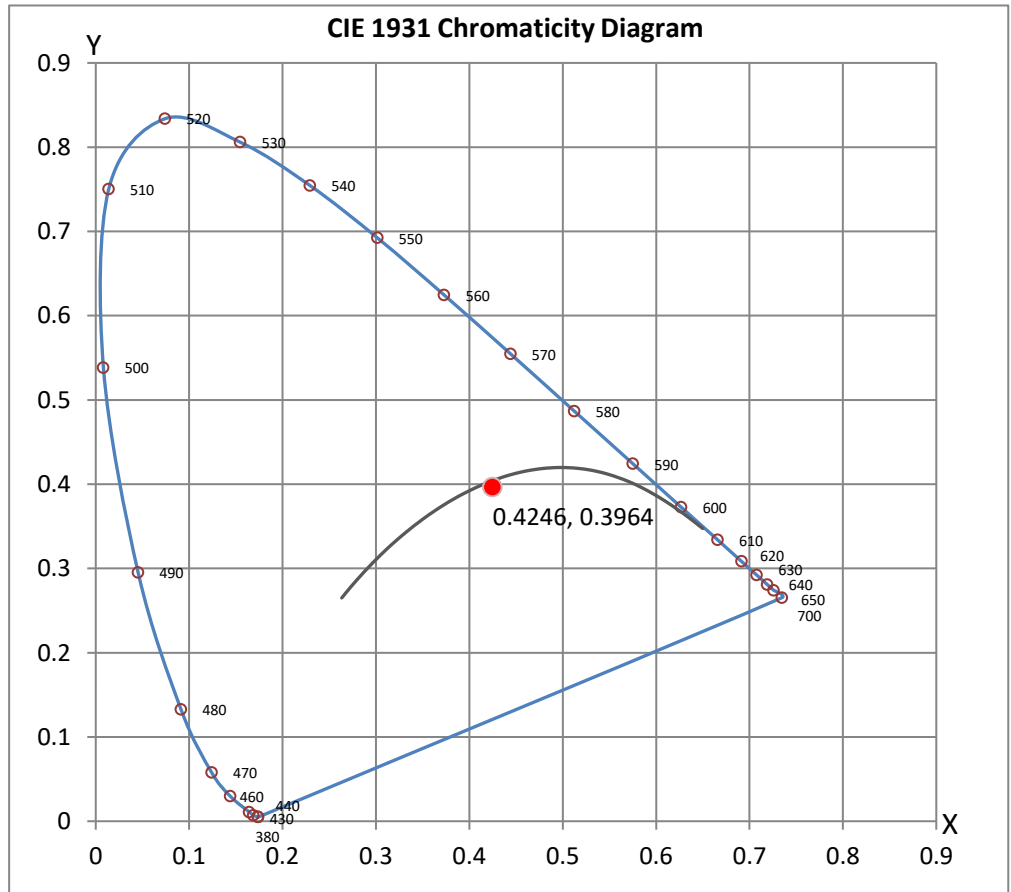


CRI & CCT

x	0.4246
y	0.3964
u'	0.2459
v'	0.5165
CRI	82.00
CCT	3156
Duv	-0.00128

R Values

R1	79.90
R2	89.67
R3	96.30
R4	79.90
R5	80.37
R6	87.12
R7	83.22
R8	59.86
R9	7.60
R10	76.08
R11	77.94
R12	73.03
R13	82.01
R14	98.06
R15	73.56



Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

The results related only to the samples as received and tested. This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government.

Report Prepared by : Kunjan Modi

Test Report Reviewed by:



Steve Kang
Quality Assurance

**Attached are photometric data reports.*



8165 E. Kaiser Blvd. Anaheim, CA 92808
 www.lightlaboratory.com

Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032313001.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L032313001
 [TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
 [ISSUEDATE] 3/31/2023
 [MANUFAC] Clarte Lighting
 [LUMCAT] PAR16 PAR16 - NNSP
 [LUMINAIRE] PAR16 Scale Optic - Narrow Narrow Spot
 [BALLASTCAT] CUSTOM DRIVER
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [INPUT] 120VAC
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	472
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	26
Total Luminaire Watts	17.88
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.16
Spacing Criterion (90-270)	0.16
Spacing Criterion (Diagonal)	0.18
Basic Luminous Shape	Circular
Luminous Length (0-180)	0.17 ft (Diameter)
Luminous Width (90-270)	0.17 ft (Diameter)
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	2680	2680	2680
55	1652	1652	1652
65	0	0	0
75	0	0	0
85	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032313001.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	440.17	N.A.	93.20
0-30	460.41	N.A.	97.50
0-40	467.35	N.A.	99.00
0-60	472.17	N.A.	100.00
0-80	472.17	N.A.	100.00
0-90	472.17	N.A.	100.00
10-90	128.94	N.A.	27.30
20-40	27.18	N.A.	5.80
20-50	30.45	N.A.	6.40
40-70	4.82	N.A.	1.00
60-80	0.00	N.A.	0.00
70-80	0.00	N.A.	0.00
80-90	0.00	N.A.	0.00
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	472.17	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	343.23
10-20	96.94
20-30	20.24
30-40	6.94
40-50	3.27
50-60	1.55
60-70	0.00
70-80	0.00
80-90	0.00
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032313001.IES

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

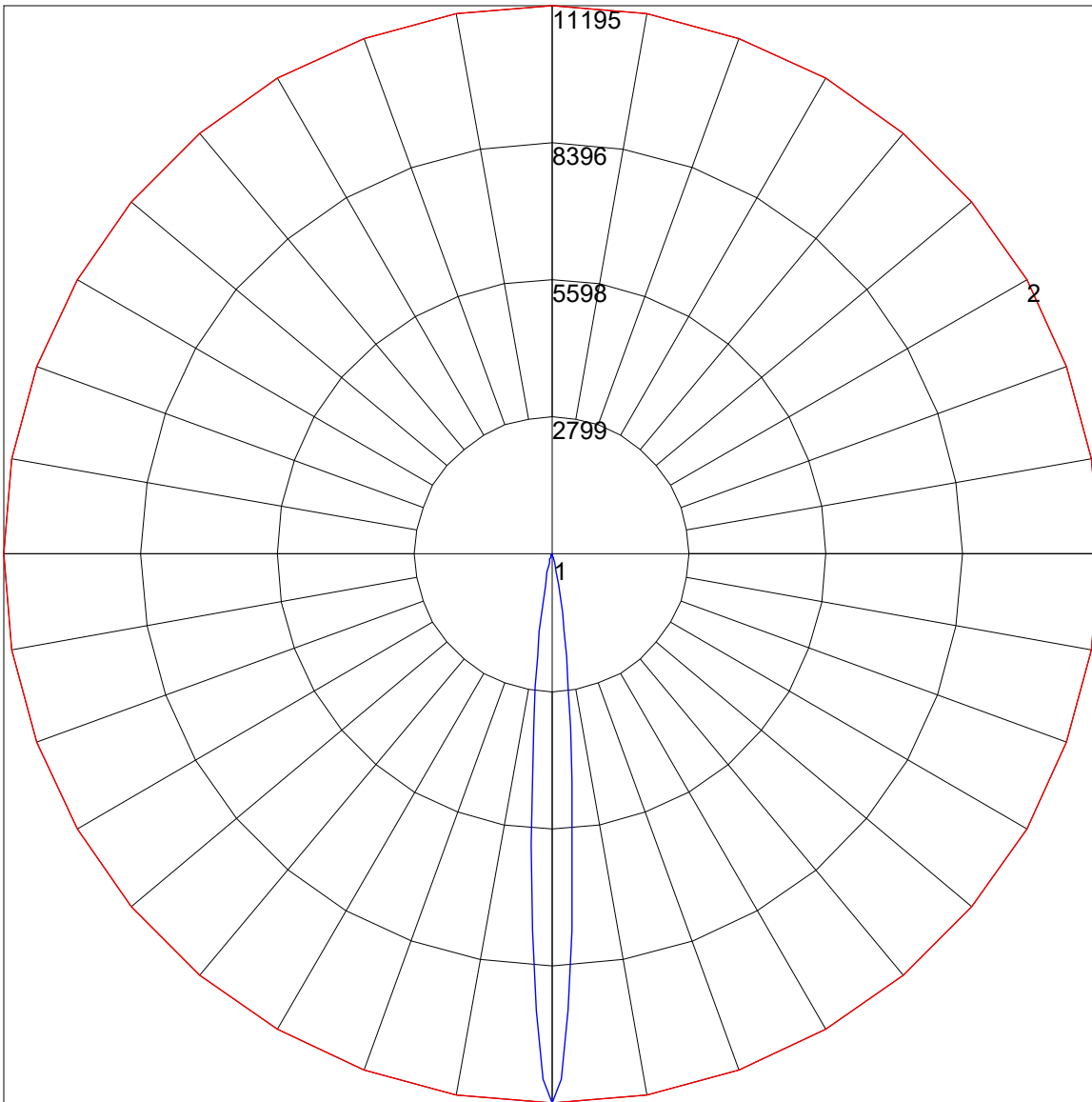
RC	80				70				50			30			10			0	
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100
1	116	114	113	111	114	112	111	110	108	107	106	105	104	103	101	101	100	99	99
2	113	110	108	106	111	109	107	105	106	104	103	103	102	101	100	99	99	97	97
3	111	107	105	102	109	106	104	102	104	102	100	102	100	99	99	98	97	96	96
4	109	105	102	99	107	104	101	99	102	100	98	100	98	97	99	97	96	95	95
5	107	103	99	97	106	102	99	97	100	98	96	99	97	95	98	96	95	94	94
6	105	101	98	95	104	100	97	95	99	96	95	98	96	94	97	95	93	93	93
7	103	99	96	94	103	98	96	94	97	95	93	96	94	93	96	94	92	92	92
8	102	97	95	93	101	97	94	92	96	94	92	95	93	92	95	93	91	91	91
9	101	96	93	91	100	96	93	91	95	93	91	94	92	91	94	92	91	90	90
10	99	95	92	90	99	95	92	90	94	92	90	93	91	90	93	91	90	89	89

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032313001.IES

UGR TABLE - CORRECTED

Unable to calculate UGR - Zero luminous area (point source)

POLAR GRAPH



Maximum Candela = 11195 Located At Horizontal Angle = 0, Vertical Angle = 0
 # 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
 # 2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

Illuminance at a Distance		
	Center Beam fc	Beam Width
3.3ft	1,028 fc	0.5 ft
6.7ft	249 fc	1.0 ft
10.0ft	112 fc	1.5 ft
13.3ft	63.3 fc	2.0 ft
16.7ft	40.1 fc	2.5 ft
20.0ft	28.0 fc	3.0 ft

■ Beam Spread: 8.5°

Illuminance at a Distance		
	Center Beam fc	Beam Width
6.7ft	249 fc	1.0 ft
13.3ft	63.3 fc	2.0 ft
20.0ft	28.0 fc	3.0 ft
26.7ft	15.7 fc	4.0 ft
33.3ft	10.1 fc	5.0 ft
40.0ft	7.00 fc	6.0 ft

■ Beam Spread: 8.5°