



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

Report No: L032210803



**Report No:** L032210803

**Issue Date:** 5/6/2022

**Report Prepared For:** Bartco Lighting, Inc.  
5761 Research Drive, Huntington Beach, CA 92649

**Model Number:** RAD10-4-35-120-ND-R-A-C4-SN-AW

**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:** 5/3/22

**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	3/17/23
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**

<b>Manufacturer:</b>	Bartco Lighting, Inc.
<b>Model Number:</b>	RAD10-4-35-120-ND-R-A-C4-SN-AW
<b>Driver Model Number:</b>	CUSTOM DRIVER

**Test Summary**

<b>Total Lumens:</b>	2422.00
<b>Efficacy:</b>	124.70
<b>Color Redering Index:</b>	94.2
<b>Correlated Color Temperature:</b>	3418
<b>Input Voltage (VAC/60Hz):</b>	119.98
<b>Input Current (Amp):</b>	0.1648
<b>Input Power (W):</b>	19.42
<b>Input Power Factor:</b>	0.9823
<b>Current ATHD (%):</b>	9.2%

**Test Condition**

<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:35
<b>Total Operating Time (Hours):</b>	1:15

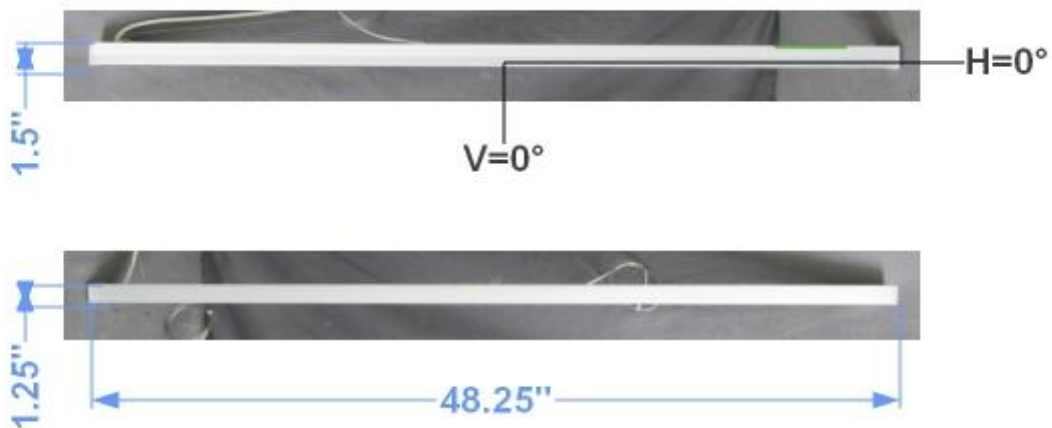
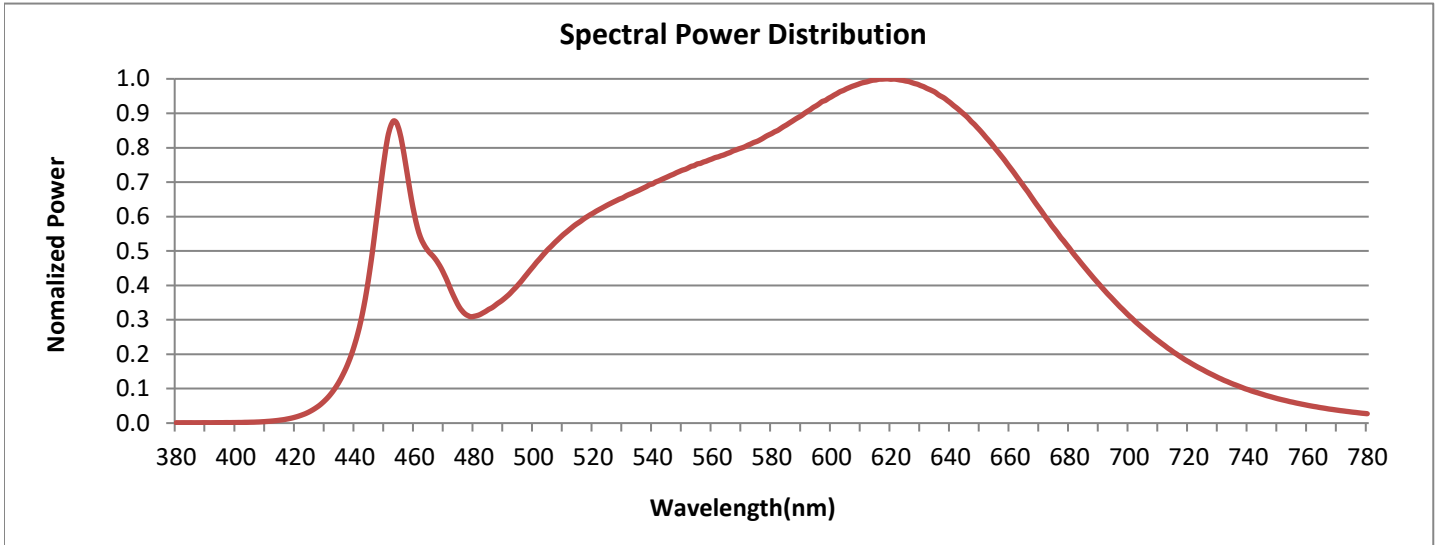


FIG. 1 LUMINAIRE

**Colorimetry Test Results**

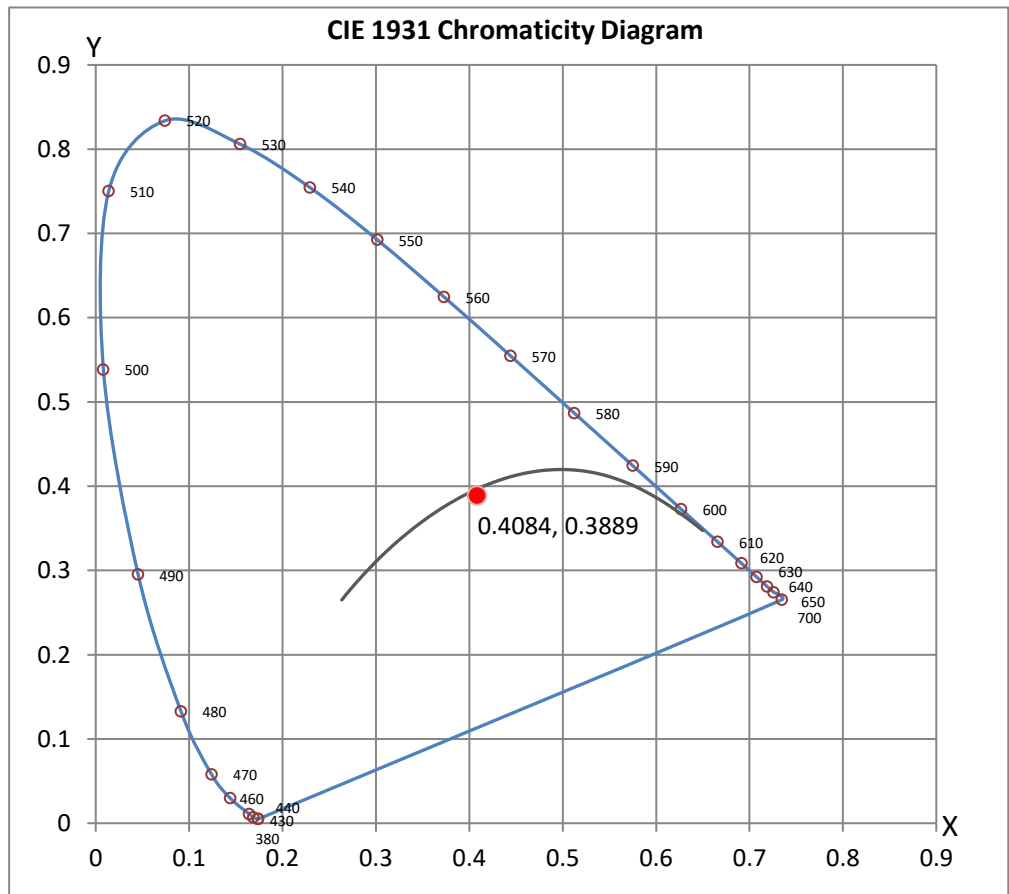


**CRI & CCT**

x	0.4084
y	0.3889
u'	0.2385
v'	0.5110
CRI	94.20
CCT	3418
Duv	-0.00147

**R Values**

R1	94.96
R2	97.43
R3	97.50
R4	94.14
R5	94.26
R6	95.29
R7	93.54
R8	86.48
R9	69.34
R10	92.41
R11	94.47
R12	76.13
R13	95.95
R14	98.02
R15	92.49



## 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.*



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# Photometric Test Report

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L032210803.IES**

## DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L032210803  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUEDATE] 5/2/2022  
[MANUFAC] Bartco Lighting, Inc.  
[LUMCAT] RAD10-4-35-120-ND-R-A-C4-SN-AW  
[LUMINAIRE] 1-1/4 Wide Extruded Aluminum Housing LED Fixture  
[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	2422
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	125
Total Luminaire Watts	19.42
Ballast Factor	1.00
CIE Type	Semi-Direct
Spacing Criterion (0-180)	1.18
Spacing Criterion (90-270)	1.32
Spacing Criterion (Diagonal)	1.40
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	4.00 ft
Luminous Width (90-270)	0.08 ft
Luminous Height	0.06 ft

## LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	15639	12399	11949
55	16463	11172	10863
65	16487	10013	9755
75	15124	8473	8784
85	16457	7139	7814

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	215.60	N.A.	8.90
0-30	456.30	N.A.	18.80
0-40	746.37	N.A.	30.80
0-60	1355.21	N.A.	56.00
0-80	1829.38	N.A.	75.50
0-90	1973.36	N.A.	81.50
10-90	1917.46	N.A.	79.20
20-40	530.77	N.A.	21.90
20-50	838.48	N.A.	34.60
40-70	876.19	N.A.	36.20
60-80	474.17	N.A.	19.60
70-80	206.81	N.A.	8.50
80-90	143.98	N.A.	5.90
90-110	214.94	N.A.	8.90
90-120	301.92	N.A.	12.50
90-130	366.03	N.A.	15.10
90-150	430.51	N.A.	17.80
90-180	448.18	N.A.	18.50
110-180	233.24	N.A.	9.60
0-180	2421.54	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	55.91
10-20	159.70
20-30	240.70
30-40	290.08
40-50	307.71
50-60	301.12
60-70	267.36
70-80	206.81
80-90	143.98
90-100	112.95
100-110	101.98
110-120	86.98
120-130	64.12
130-140	40.18
140-150	24.30
150-160	13.16
160-170	4.51
170-180	0.00

**IES INDOOR REPORT**  
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**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	115	115	115	115	110	110	110	110	101	101	101	93	93	93	85	85	85	81
1	102	97	92	87	98	93	88	84	85	81	78	78	75	72	71	69	67	63
2	92	83	76	69	88	80	73	67	73	67	63	67	62	58	61	58	54	51
3	84	72	64	57	79	69	61	55	64	57	52	58	53	48	54	49	45	42
4	76	64	54	47	72	61	53	46	56	49	43	52	46	41	47	42	38	36
5	70	57	47	40	66	54	46	39	50	43	37	46	40	35	42	37	33	30
6	64	51	42	35	61	49	40	34	45	38	32	42	35	31	38	33	29	26
7	60	46	37	31	57	44	36	30	41	34	28	38	32	27	35	30	26	23
8	55	42	33	27	53	40	32	27	37	30	25	35	29	24	32	27	23	21
9	52	38	30	24	49	37	29	24	34	27	23	32	26	22	30	24	21	19
10	48	35	27	22	46	34	26	21	32	25	20	30	24	20	28	22	19	17

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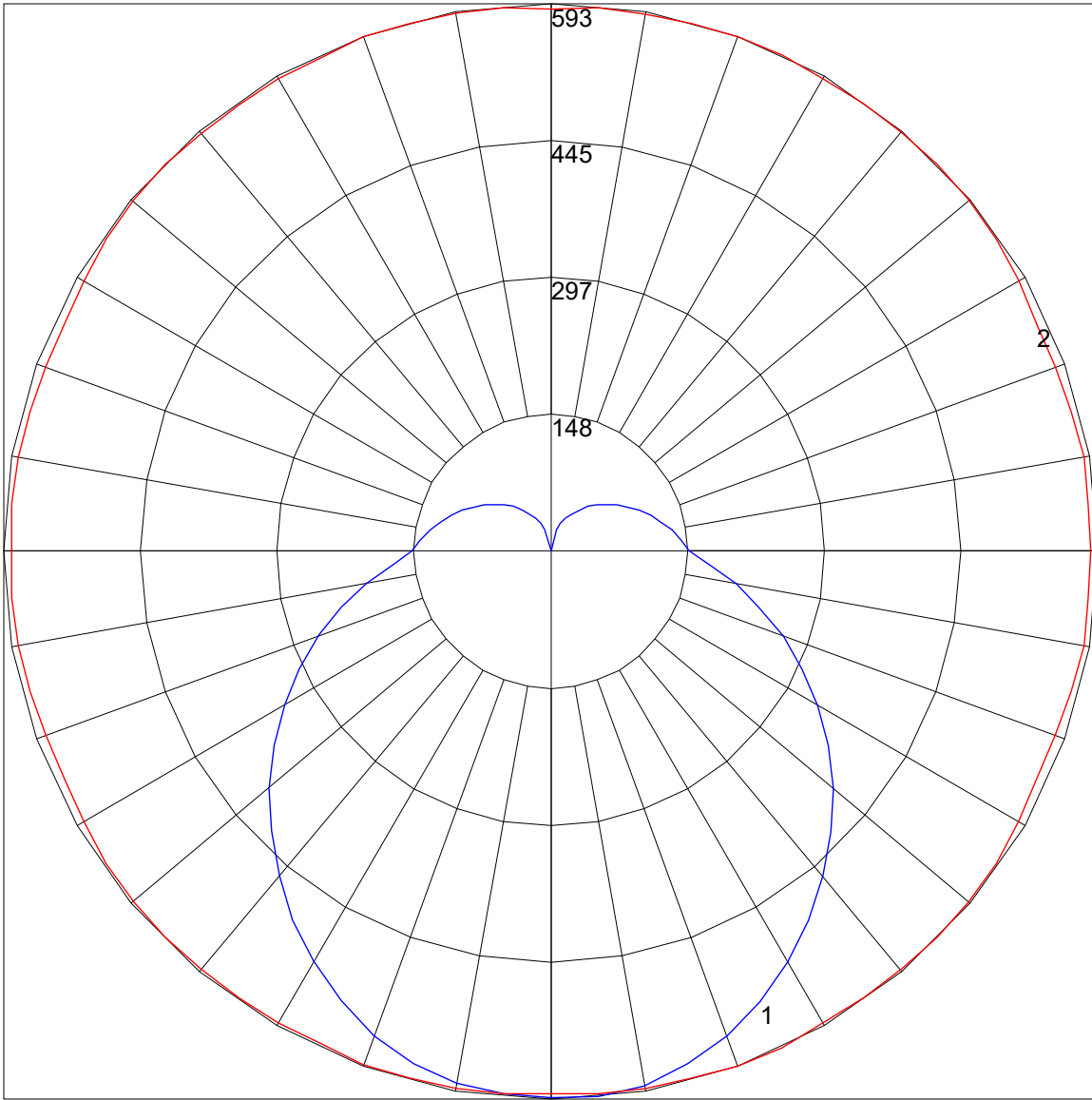
**UGR TABLE - CORRECTED**

Reflectances											
Ceiling Cavity	70	70	50	50	30	70	70	50	50	30	
Walls	50	30	50	30	30	50	30	50	30	30	
Floor Cavity	20	20	20	20	20	20	20	20	20	20	
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	17.8	19.1	18.4	19.8	20.5	20.8	22.2	21.4	22.8	23.5
	3H	19.4	20.7	20.1	21.3	22.1	23.6	24.8	24.2	25.4	26.2
	4H	19.9	21.1	20.6	21.8	22.5	24.9	26.1	25.5	26.7	27.5
	6H	20.3	21.4	20.9	22.0	22.8	26.3	27.4	27.0	28.1	28.9
	8H	20.4	21.4	21.1	22.1	22.9	27.0	28.1	27.7	28.8	29.6
	12H	20.5	21.5	21.1	22.1	23.0	27.9	28.9	28.6	29.6	30.4
4H	2H	18.8	20.0	19.4	20.6	21.4	21.1	22.3	21.8	23.0	23.7
	3H	20.6	21.6	21.3	22.3	23.1	24.1	25.1	24.7	25.7	26.5
	4H	21.3	22.2	22.0	22.9	23.7	25.5	26.5	26.2	27.2	28.0
	6H	21.8	22.6	22.5	23.3	24.1	27.1	28.0	27.8	28.7	29.5
	8H	21.9	22.7	22.6	23.4	24.3	28.0	28.8	28.7	29.5	30.3
	12H	22.0	22.7	22.8	23.5	24.3	28.9	29.6	29.7	30.4	31.2
8H	4H	22.0	22.8	22.7	23.5	24.4	25.7	26.5	26.4	27.2	28.0
	6H	22.7	23.3	23.4	24.1	24.9	27.4	28.1	28.2	28.8	29.7
	8H	22.9	23.5	23.7	24.3	25.1	28.4	29.0	29.1	29.7	30.6
	12H	23.1	23.7	23.9	24.4	25.3	29.5	30.0	30.2	30.8	31.7
12H	4H	22.2	22.9	23.0	23.7	24.5	25.7	26.4	26.4	27.1	28.0
	6H	23.0	23.6	23.7	24.3	25.2	27.4	28.0	28.2	28.8	29.7
	8H	23.3	23.9	24.1	24.6	25.5	28.5	29.0	29.2	29.7	30.7

Maximum UGR = 31.7



POLAR GRAPH



Maximum Candela = 593 Located At Horizontal Angle = 65, Vertical Angle = 5  
# 1 - Vertical Plane Through Horizontal Angles (65 - 245) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)