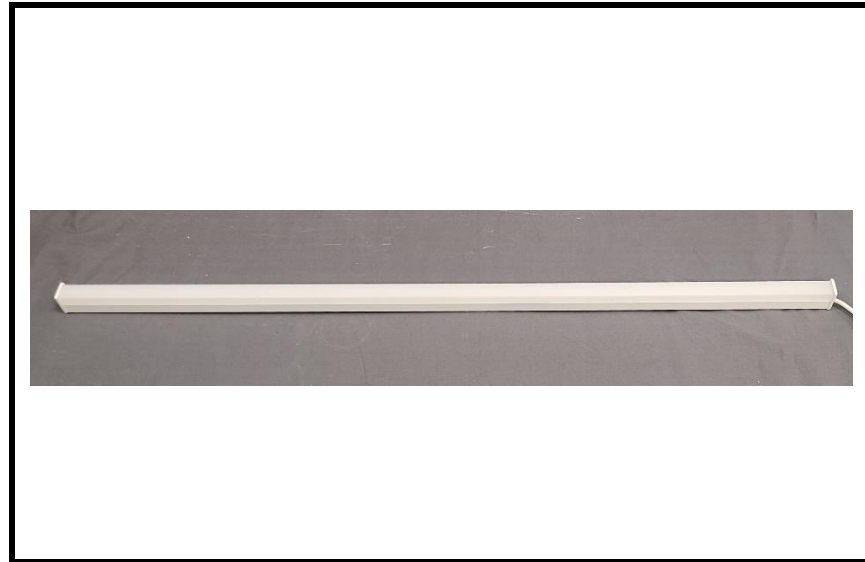




RAD10-4-35-120-ND-R-A-S1-AW

Luminaire Description: White rectangular metal housing with diffuse plastic lens
Lamp: 224 White LEDs
Mounting: Surface – Ceiling
Ballast/Driver: One (1) Starstone DR18W720mA 120V

Luminaire



Summary of Results

Integrating Sphere

Luminous Flux: 2268 Lumens
Efficacy: 116.99 lm/w
CCT: 3407 K
CRI (Ra): 92.0

Electrical Data at 120 VAC

Test Temperature: 24.1 °C
Voltage: 120.0 VAC
Current: 0.1662 A
Power: 19.39 W
Power Factor: 0.972
Frequency: 60 Hz
Current THD: 22.2 %

In-Situ

LED Temperature: 49.5 °C
Measured LED Current: 0.02600 A

Temperature is offset to an ambient temperature of 25°C as described in UL1598-2008.



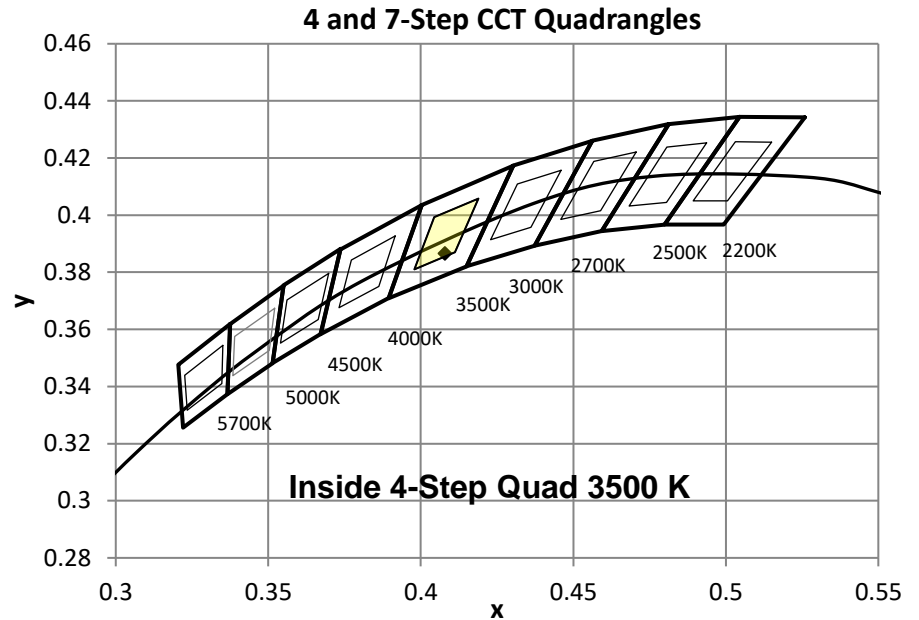
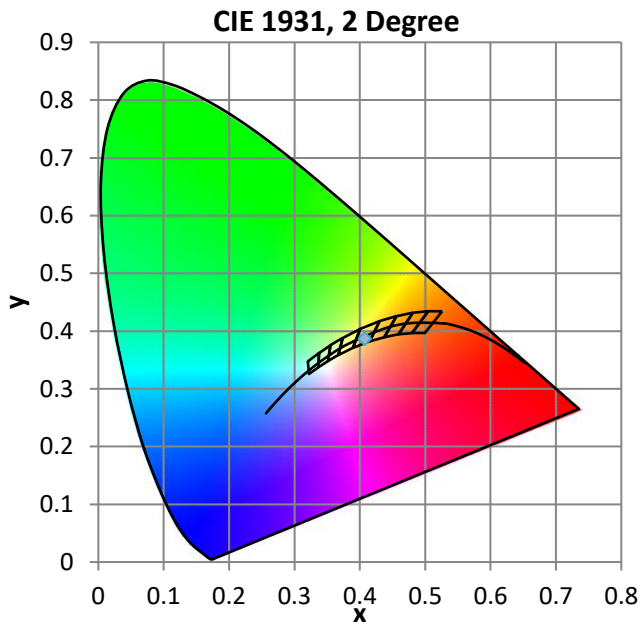
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.1 °C	120.0 VAC	0.1662 A	19.39 W	0.972	60 Hz	22.2 %

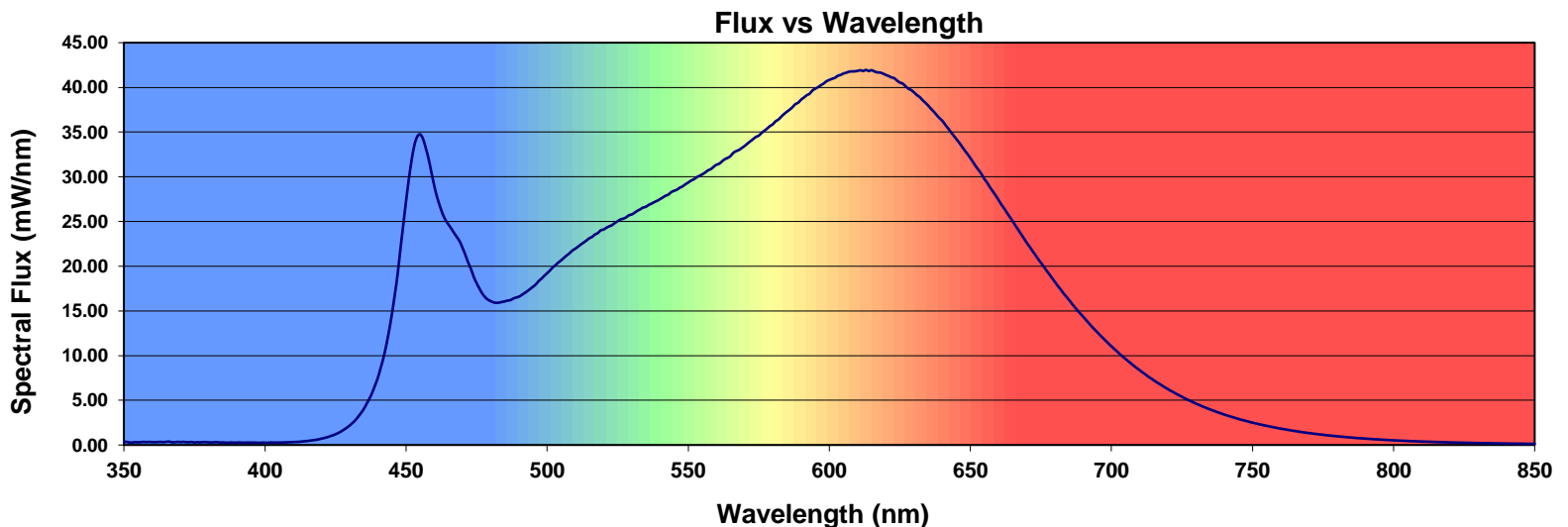
Summary of Results

Total Output:	2268 Lumens	Chromaticity (x):	0.4079
Efficacy:	117.0 lm/w	Chromaticity (y):	0.3866
CCT:	3407 K	Chromaticity (u'):	0.2391
CRI (Ra):	92.0	Chromaticity (v'):	0.5099
CRI (R9):	57.3	TM-30 Rf:	89
Peak Wavelength:	613 nm	TM-30 Rg:	97
Dominant Wavelength:	582 nm	TM-30 Rcs,h1:	-6%
S/P Ratio:	1.63	Duv:	-0.0024



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
92.0	93.7	99.1	96.0	90.3	93.0	95.4	89.0	79.8	57.3	96.8	91.3	76.8	95.8	98.8	90.1





Distribution - Goniophotometer

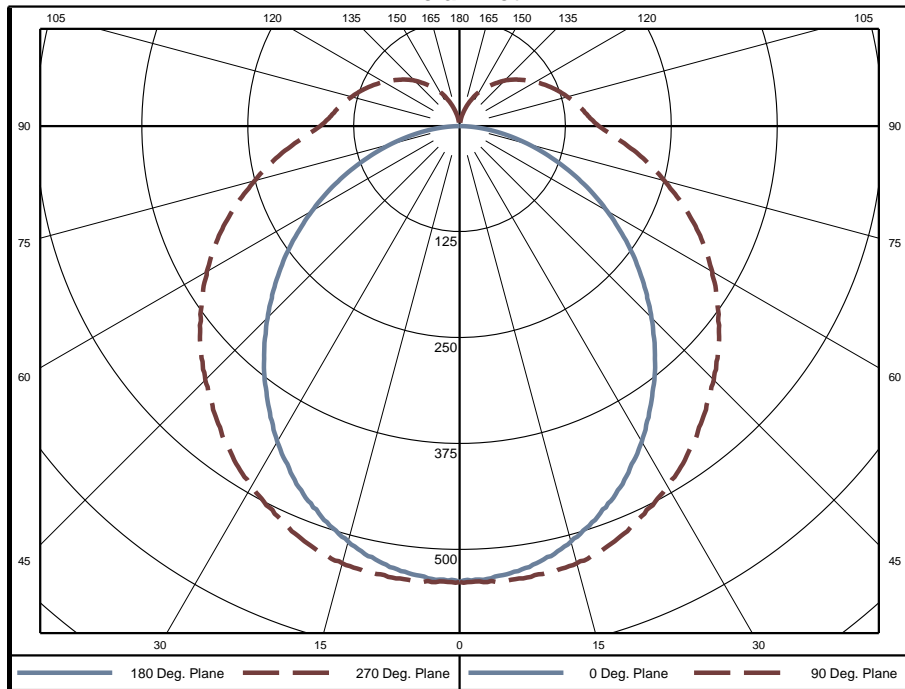
Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.2 °C	120.2 VAC	0.1720 A	20.11 W	0.973	60 Hz	21.9 %

Summary of Results

Spacing Criteria	Total Lumen Output:	2205 Lumens
0-180: 1.19	Luminaire Efficacy:	109.7 lm/w
90-270: 1.36	Maximum Candela:	540 Candela
Corrected UGR (Room Dimension: X=4H, Y=8H, Reflectances: 70/50/20%, S/H: 1)		
Crosswise: 21.8	Endwise: 23.4	

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	12.9	0.6%	60-65	129.5	5.9%	120-125	26.9	1.2%
5-10	38.3	1.7%	65-70	117.5	5.3%	125-130	22.8	1.0%
10-15	62.7	2.8%	70-75	103.2	4.7%	130-135	18.8	0.9%
15-20	85.1	3.9%	75-80	88.2	4.0%	135-140	14.8	0.7%
20-25	104.7	4.7%	80-85	73.0	3.3%	140-145	11.2	0.5%
25-30	120.8	5.5%	85-90	58.7	2.7%	145-150	8.1	0.4%
30-35	133.2	6.0%	90-95	50.2	2.3%	150-155	5.3	0.2%
35-40	141.8	6.4%	95-100	46.5	2.1%	155-160	3.0	0.1%
40-45	146.4	6.6%	100-105	43.0	2.0%	160-165	1.5	0.1%
45-50	147.4	6.7%	105-110	39.1	1.8%	165-170	0.5	0.0%
50-55	144.8	6.6%	110-115	35.1	1.6%	170-175	0.0	0.0%
55-60	138.6	6.3%	115-120	31.1	1.4%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	700	31.7%
0-60	1277	57.9%
0-90	1847	83.8%
90-180	358	16.2%



Candela Tabulation
Horizontal Angle (Degrees)

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4	538.4
5	533.0	535.0	537.5	539.1	540.1	539.1	537.5	535.0	533.0	535.0	537.5	539.1	540.1	539.1	537.5	535.0
10	524.1	527.5	533.9	537.9	537.5	537.9	533.9	527.5	524.1	527.5	533.9	537.9	537.5	537.9	533.9	527.5
15	508.0	515.1	525.9	532.0	534.6	532.0	525.9	515.1	508.0	515.1	525.9	532.0	534.6	532.0	525.9	515.1
20	486.3	497.0	512.0	521.0	524.6	521.0	512.0	497.0	486.3	497.0	512.0	521.0	524.6	521.0	512.0	497.0
25	460.8	475.2	492.3	504.7	508.5	504.7	492.3	475.2	460.8	475.2	492.3	504.7	508.5	504.7	492.3	475.2
30	430.5	447.4	468.9	484.9	491.7	484.9	468.9	447.4	430.5	447.4	468.9	484.9	491.7	484.9	468.9	447.4
35	395.5	416.9	444.4	464.3	470.9	464.3	444.4	416.9	395.5	416.9	444.4	464.3	470.9	464.3	444.4	416.9
40	359.0	384.3	415.6	438.4	448.0	438.4	415.6	384.3	359.0	384.3	415.6	438.4	448.0	438.4	415.6	384.3
45	320.6	349.3	386.1	413.4	424.6	413.4	386.1	349.3	320.6	349.3	386.1	413.4	424.6	413.4	386.1	349.3
50	282.1	313.8	355.2	386.7	399.8	386.7	355.2	313.8	282.1	313.8	355.2	386.7	399.8	386.7	355.2	313.8
55	242.4	278.1	323.5	358.7	372.2	358.7	323.5	278.1	242.4	278.1	323.5	358.7	372.2	358.7	323.5	278.1
60	201.8	240.7	290.3	329.1	344.9	329.1	290.3	240.7	201.8	240.7	290.3	329.1	344.9	329.1	290.3	240.7
65	162.2	203.3	257.1	299.0	315.0	299.0	257.1	203.3	162.2	203.3	257.1	299.0	315.0	299.0	257.1	203.3
70	122.9	167.1	222.2	266.5	283.3	266.5	222.2	167.1	122.9	167.1	222.2	266.5	283.3	266.5	222.2	167.1
75	86.0	131.9	188.5	234.2	250.8	234.2	188.5	131.9	86.0	131.9	188.5	234.2	250.8	234.2	188.5	131.9
80	52.4	100.2	158.0	203.4	220.4	203.4	158.0	100.2	52.4	100.2	158.0	203.4	220.4	203.4	158.0	100.2
85	23.4	71.3	128.4	173.0	189.2	173.0	128.4	71.3	23.4	71.3	128.4	173.0	189.2	173.0	128.4	71.3
90	0.3	49.7	105.6	148.2	164.3	148.2	105.6	49.7	0.3	49.7	105.6	148.2	164.3	148.2	105.6	49.7
95	0.0	44.2	96.7	136.2	151.5	136.2	96.7	44.2	0.0	44.2	96.7	136.2	151.5	136.2	96.7	44.2
100	0.0	41.4	91.0	128.4	142.0	128.4	91.0	41.4	0.0	41.4	91.0	128.4	142.0	128.4	91.0	41.4
105	0.0	38.7	85.4	119.9	132.2	119.9	85.4	38.7	0.0	38.7	85.4	119.9	132.2	119.9	85.4	38.7
110	0.0	36.0	79.5	111.6	122.9	111.6	79.5	36.0	0.0	36.0	79.5	111.6	122.9	111.6	79.5	36.0
115	0.0	33.1	73.8	102.9	113.3	102.9	73.8	33.1	0.0	33.1	73.8	102.9	113.3	102.9	73.8	33.1
120	0.0	30.4	67.9	94.4	103.6	94.4	67.9	30.4	0.0	30.4	67.9	94.4	103.6	94.4	67.9	30.4
125	0.0	27.2	61.0	85.9	94.2	85.9	61.0	27.2	0.0	27.2	61.0	85.9	94.2	85.9	61.0	27.2
130	0.0	23.3	54.9	77.6	85.2	77.6	54.9	23.3	0.0	23.3	54.9	77.6	85.2	77.6	54.9	23.3
135	0.0	19.3	47.9	68.2	75.8	68.2	47.9	19.3	0.0	19.3	47.9	68.2	75.8	68.2	47.9	19.3
140	0.0	15.0	39.2	60.0	65.6	60.0	39.2	15.0	0.0	15.0	39.2	60.0	65.6	60.0	39.2	15.0
145	0.0	12.0	31.5	51.2	55.6	51.2	31.5	12.0	0.0	12.0	31.5	51.2	55.6	51.2	31.5	12.0
150	0.0	9.7	24.9	39.0	46.6	39.0	24.9	9.7	0.0	9.7	24.9	39.0	46.6	39.0	24.9	9.7
155	0.0	5.8	18.1	28.2	35.6	28.2	18.1	5.8	0.0	5.8	18.1	28.2	35.6	28.2	18.1	5.8
160	0.0	1.0	13.7	18.5	25.7	18.5	13.7	1.0	0.0	1.0	13.7	18.5	25.7	18.5	13.7	1.0
165	0.0	0.0	7.7	10.8	15.6	10.8	7.7	0.0	0.0	0.0	7.7	10.8	15.6	10.8	7.7	0.0
170	0.0	0.0	0.0	2.8	3.6	2.8	0.0	0.0	0.0	0.0	0.0	2.8	3.6	2.8	0.0	0.0
175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Average Luminance (cd/m²)
Horizontal Angle (Degrees)

	0	45	90
0	17390	17390	17390
45	14490	12950	12930
55	13450	12020	12220
65	12120	11070	11620
75	10330	10020	10920
85	7760	9282	10440

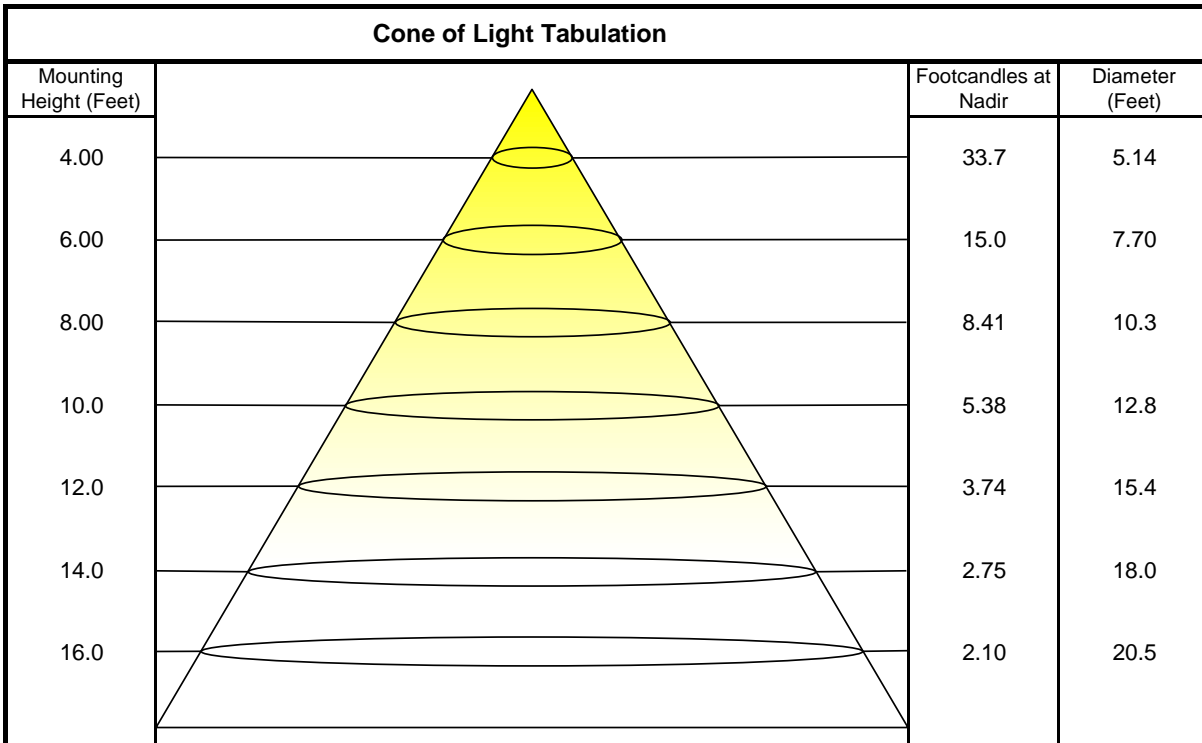


Coefficients of Utilization - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%

Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as percent of total lumen output delivered to the task surface **																	
0	115	115	115	115	111	111	111	111	102	102	102	94	94	94	87	87	87	84
1	103	97	92	88	98	93	89	85	86	82	79	79	76	74	73	71	69	65
2	93	84	76	70	88	80	73	67	74	68	63	68	64	60	63	59	56	53
3	84	73	64	57	80	70	62	55	64	58	52	60	54	49	55	50	47	44
4	77	64	55	48	73	62	53	46	57	50	44	53	47	42	49	44	39	37
5	70	57	48	41	67	55	46	40	51	43	38	47	41	36	44	38	34	31
6	65	51	42	35	62	49	41	34	46	38	33	42	36	31	39	34	30	27
7	60	46	37	31	57	44	36	30	41	34	29	39	32	28	36	30	26	24
8	56	42	33	27	53	40	32	27	38	31	26	35	29	24	33	27	23	21
9	52	38	30	24	50	37	29	24	35	28	23	33	26	22	30	25	21	19
10	49	35	27	22	47	34	27	22	32	25	21	30	24	20	28	23	19	17

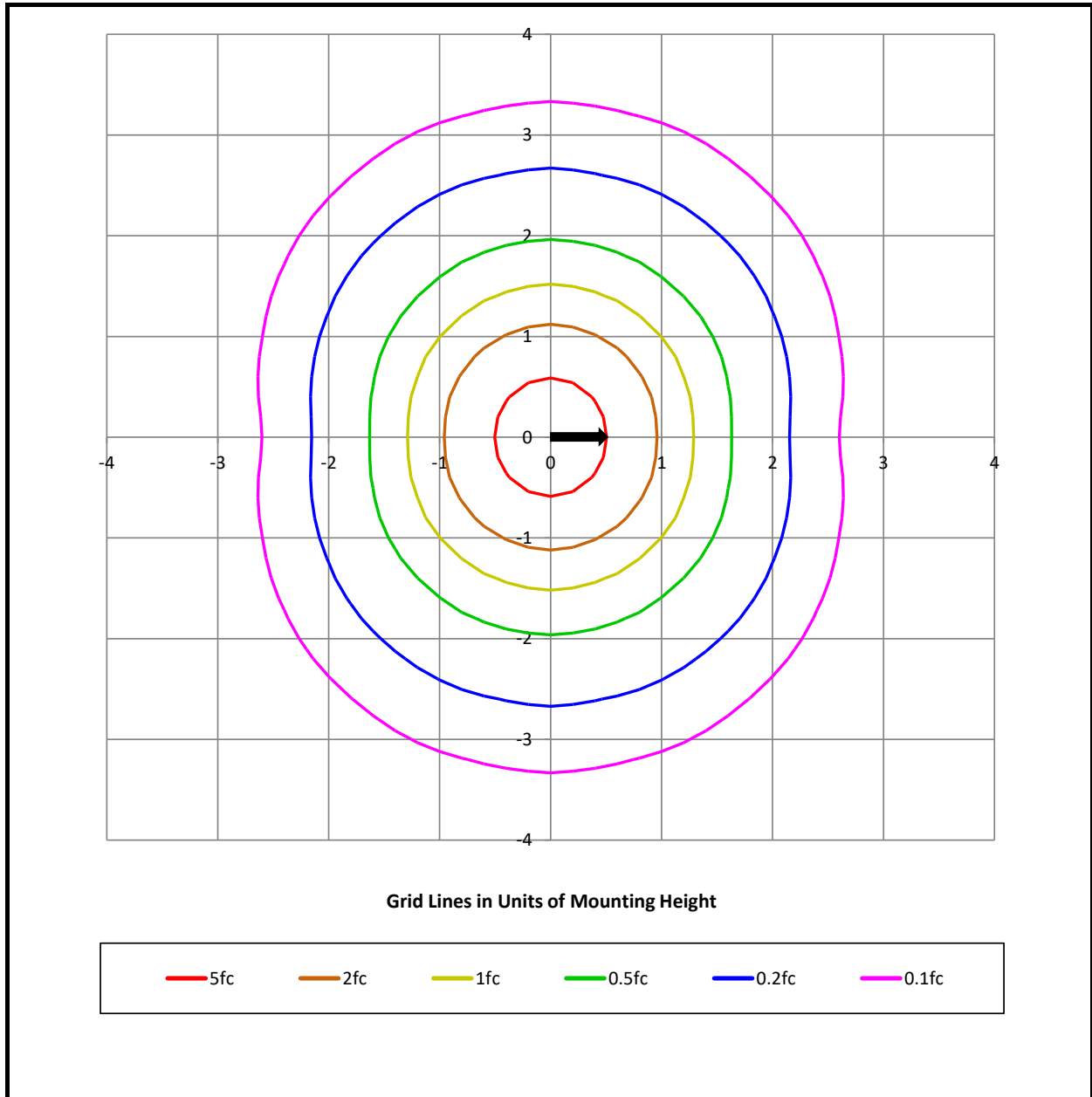
Beam and Field Information	
CIE Type:	Semi-Direct
Center Beam Intensity:	538.4 Candela
Central Cone Intensity:	538 Candela
Beam Flux:	1371.0 Lumens
Beam Angle (0-180):	103.2 Degrees
Beam Angle (90-270):	144.3 Degrees
Field Angle (0-180):	159.5 Degrees
Field Angle (90-270):	292.2 Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet





In-Situ Test

In-Situ Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
21.0 °C	120.0 VAC	N/A	N/A	N/A	60 Hz	N/A

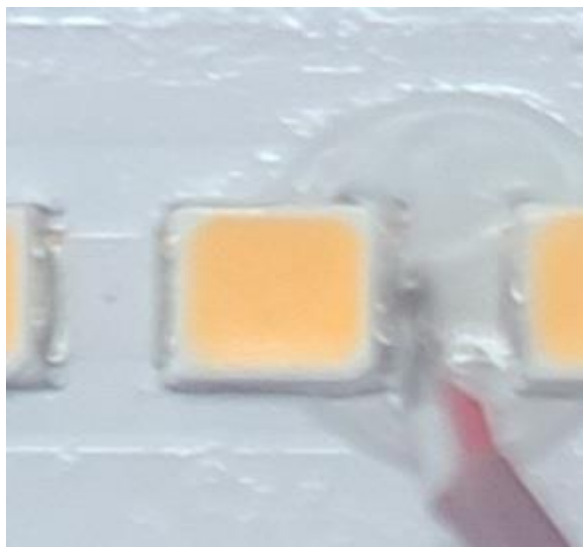
Summary of Results

LED Temperature: 49.5 °C

Measured LED Current: 0.02600 A

Temperatures are offset to an ambient temperature of 25°C as described in UL1598-2008

LED Temperature Location



Thermocouple Reference



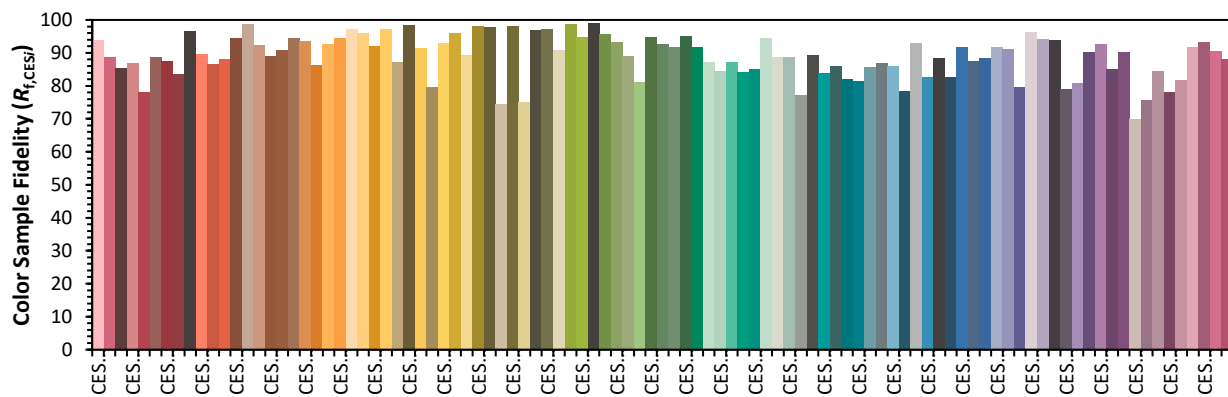
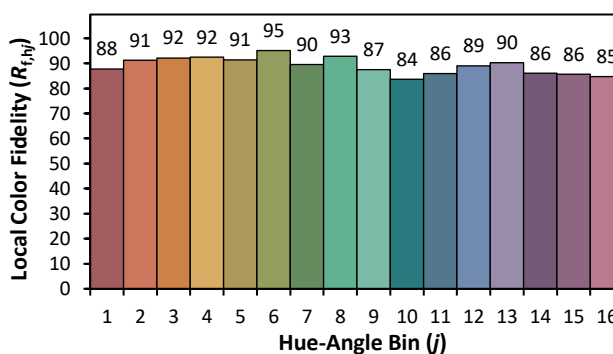
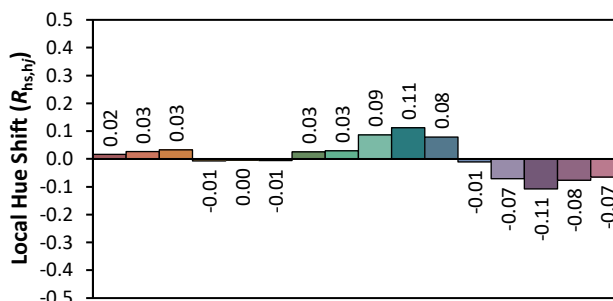
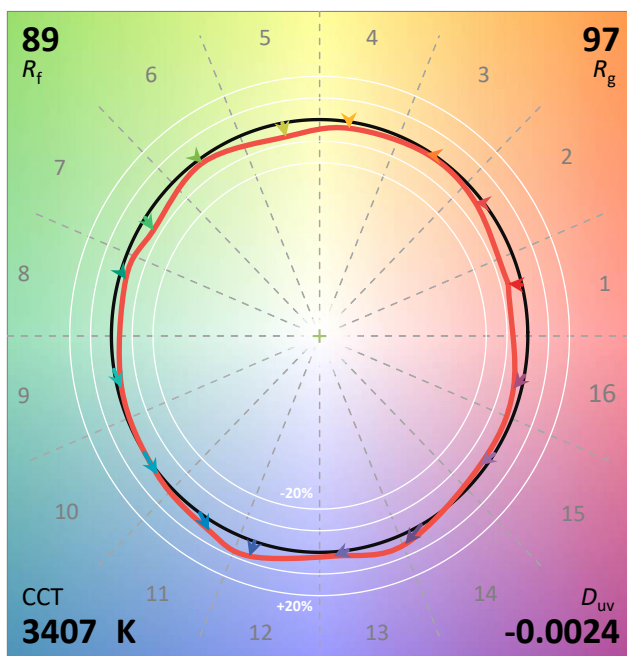
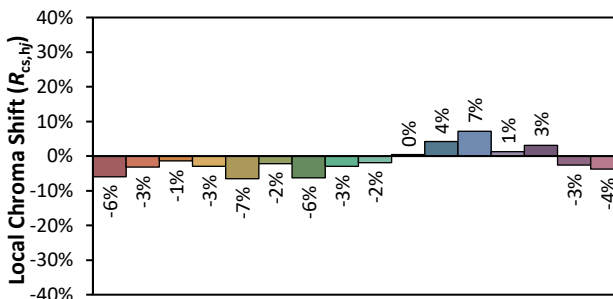
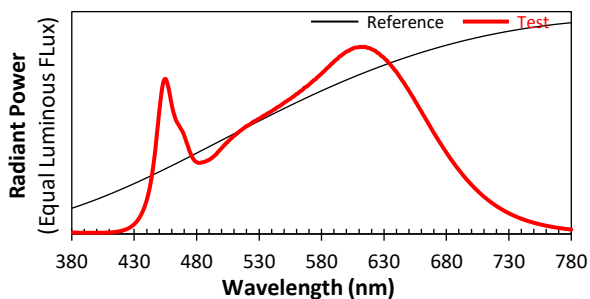
ANSI/IES TM-30-18 Color Rendition Report

Source: Test Number: 13461150.02B

Manufacturer: BARTCO LIGHTING INC

Date: 2020-08-17

Model: SK35-4-35-R-120-TM-SN-AW



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

x 0.4079
 y 0.3866
 u' 0.2391
 v' 0.5099

CIE 13.3-1995 (CRI)
 R_a 92
 R_g 57

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