



GRM20-48-35-ND-R-C-C4-SN-AW

Luminaire Description: White rectangular metal housing with diffuse plastic lens
Lamp: 112 White LEDs
Mounting: Pendant
Ballast/Driver: Signify North America / XI020C056V054BST2

Luminaire



Luminaire Characteristics

Luminous Length: 48.00 in.
Luminous Width: 2.000 in.
Luminous Height: 0.25 in.

Summary of Results

Integrating Sphere

Luminous Flux: 2046 Lumens
Efficacy: 99.6 lm/w
CCT: 3429 K
CRI (Ra): 93.5

Distribution

Total Luminaire Output: 1959 Lumens
Luminaire Efficacy: 95.5 lm/w
Maximum Candela: 521 Candela

Electrical Data at 120 VAC

Test Temperature: 24.6 °C
Voltage: 120.0 VAC
Current: 0.1719 A
Power: 20.54 W
Power Factor: 0.996
Frequency: 60 Hz
Current THD: 7.49 %



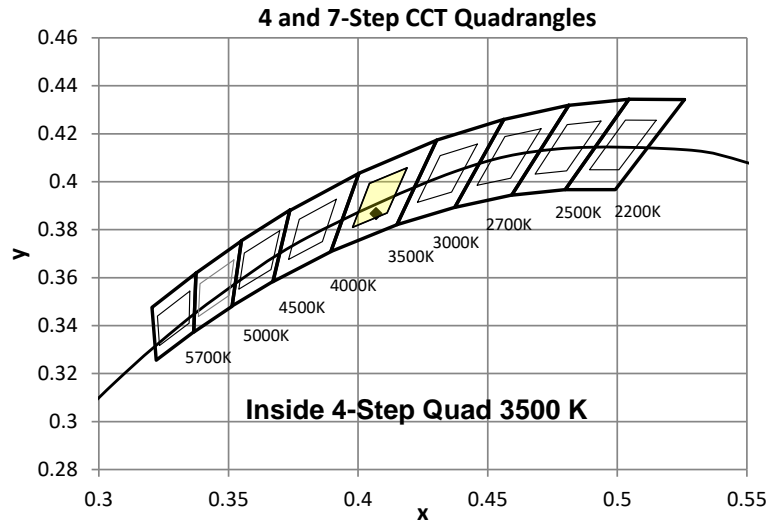
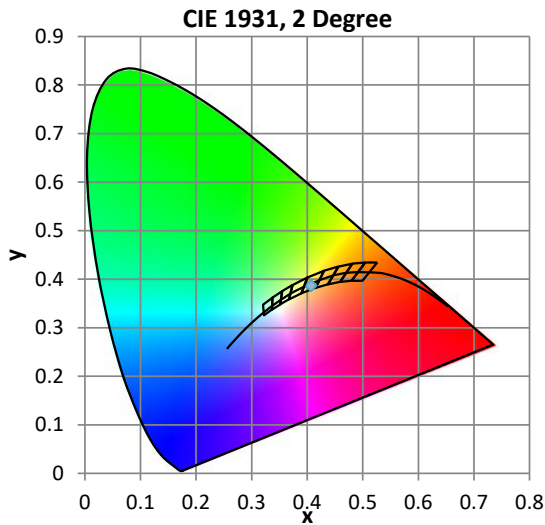
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.6 °C	120.0 VAC	0.1719 A	20.54 W	0.996	60 Hz	7.49 %

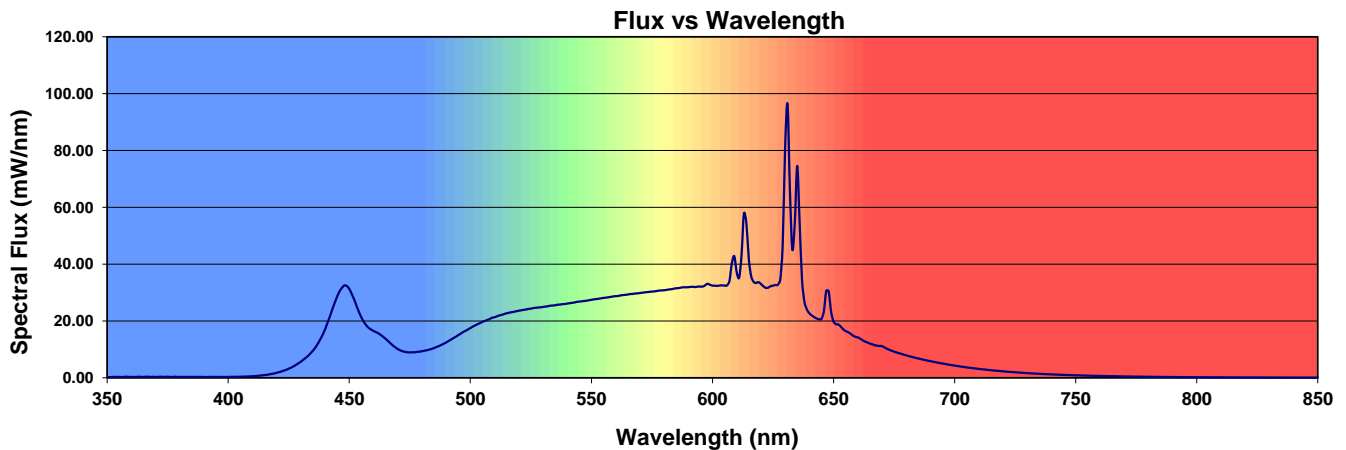
Summary of Results

Total Output:	2046 Lumens	Chromaticity (x):	0.4069
Efficacy:	99.6 lm/w	Chromaticity (y):	0.3867
CCT:	3429 K	Chromaticity (u'):	0.2384
CRI (Ra):	93.5	Chromaticity (v'):	0.5098
CRI (R9):	65.6	TM-30 Rf:	91
Peak Wavelength:	631 nm	TM-30 Rg:	102
Dominant Wavelength:	582 nm	TM-30 Rcs,h1:	-5%
S/P Ratio:	1.58	Duv:	-0.0021



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
93.5	95.5	95.7	94.1	94.3	94.8	94.4	93.1	86.4	65.6	88.2	94.5	81.3	95.4	95.8	92.5





Distribution - Goniophotometer

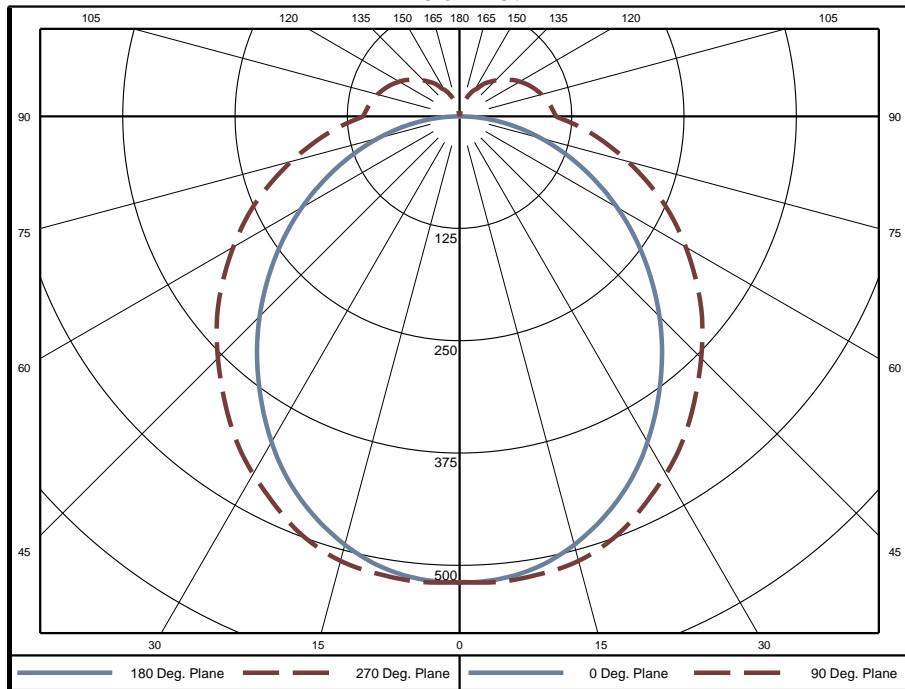
Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.3 °C	120.1 VAC	0.1715 A	20.52 W	0.996	60 Hz	7.51 %

Summary of Results

Spacing Criteria	Total Lumen Output:	1959 Lumens
0-180: 1.20	Luminaire Efficacy:	95.5 lm/w
90-270: 1.31	Maximum Candela:	521 Candela
Corrected UGR (Room Dimension: X=4H, Y=8H, Reflectances: 70/50/20%, S/H: 1)	Endwise:	22.3
Crosswise: 21.6		

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	12.4	0.6%	60-65	116.3	5.9%	120-125	20.8	1.1%
5-10	37.0	1.9%	65-70	103.9	5.3%	125-130	17.7	0.9%
10-15	60.5	3.1%	70-75	89.4	4.6%	130-135	14.5	0.7%
15-20	82.0	4.2%	75-80	74.1	3.8%	135-140	11.4	0.6%
20-25	100.6	5.1%	80-85	58.7	3.0%	140-145	8.8	0.4%
25-30	115.5	5.9%	85-90	43.4	2.2%	145-150	6.2	0.3%
30-35	126.7	6.5%	90-95	35.4	1.8%	150-155	4.3	0.2%
35-40	134.0	6.8%	95-100	33.8	1.7%	155-160	2.7	0.1%
40-45	137.4	7.0%	100-105	31.9	1.6%	160-165	1.5	0.1%
45-50	137.2	7.0%	105-110	29.5	1.5%	165-170	0.6	0.0%
50-55	133.5	6.8%	110-115	26.8	1.4%	170-175	0.1	0.0%
55-60	126.2	6.4%	115-120	23.9	1.2%	175-180	0.0	0.0%

Zone	Lumens	% of Luminaire
0-40	669	34.1%
0-60	1203	61.4%
0-90	1689	86.2%
90-180	270	13.8%



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	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1	519.1
5	516.8	516.4	519.3	520.8	520.0	520.8	519.3	516.4	516.8	516.4	519.3	520.8	520.0	520.8	519.3	516.4
10	508.7	510.1	515.3	518.3	517.3	518.3	515.3	510.1	508.7	510.1	515.3	518.3	517.3	518.3	515.3	510.1
15	493.7	498.2	506.3	511.8	512.2	511.8	506.3	498.2	493.7	498.2	506.3	511.8	512.2	511.8	506.3	498.2
20	473.4	480.9	492.4	499.3	499.9	499.3	492.4	480.9	473.4	480.9	492.4	499.3	499.9	499.3	492.4	480.9
25	448.8	459.2	471.9	479.7	480.7	479.7	471.9	459.2	448.8	459.2	471.9	479.7	480.7	479.7	471.9	459.2
30	418.7	432.4	447.5	457.4	459.5	457.4	447.5	432.4	418.7	432.4	447.5	457.4	459.5	457.4	447.5	432.4
35	385.4	402.2	420.9	432.9	435.8	432.9	420.9	402.2	385.4	402.2	420.9	432.9	435.8	432.9	420.9	402.2
40	350.9	370.7	391.7	404.6	408.1	404.6	391.7	370.7	350.9	370.7	391.7	404.6	408.1	404.6	391.7	370.7
45	315.0	337.4	361.1	376.4	380.3	376.4	361.1	337.4	315.0	337.4	361.1	376.4	380.3	376.4	361.1	337.4
50	277.8	303.0	329.3	347.5	352.5	347.5	329.3	303.0	277.8	303.0	329.3	347.5	352.5	347.5	329.3	303.0
55	240.5	267.8	295.9	315.8	322.1	315.8	295.9	267.8	240.5	267.8	295.9	315.8	322.1	315.8	295.9	267.8
60	202.8	232.0	262.5	283.8	290.8	283.8	262.5	232.0	202.8	232.0	262.5	283.8	290.8	283.8	262.5	232.0
65	165.1	196.1	228.7	252.3	259.7	252.3	228.7	196.1	165.1	196.1	228.7	252.3	259.7	252.3	228.7	196.1
70	128.8	160.5	194.5	219.1	226.6	219.1	194.5	160.5	128.8	160.5	194.5	219.1	226.6	219.1	194.5	160.5
75	93.9	126.5	160.6	186.5	194.1	186.5	160.6	126.5	93.9	126.5	160.6	186.5	194.1	186.5	160.6	126.5
80	61.2	94.7	129.4	155.6	163.6	155.6	129.4	94.7	61.2	94.7	129.4	155.6	163.6	155.6	129.4	94.7
85	30.6	64.5	100.2	126.3	134.6	126.3	100.2	64.5	30.6	64.5	100.2	126.3	134.6	126.3	100.2	64.5
90	3.3	37.9	73.4	99.3	107.9	99.3	73.4	37.9	3.3	37.9	73.4	99.3	107.9	99.3	73.4	37.9
95	2.4	35.5	70.2	95.0	103.3	95.0	70.2	35.5	2.4	35.5	70.2	95.0	103.3	95.0	70.2	35.5
100	1.9	34.4	67.7	91.6	99.4	91.6	67.7	34.4	1.9	34.4	67.7	91.6	99.4	91.6	67.7	34.4
105	1.6	32.5	64.7	87.2	94.6	87.2	64.7	32.5	1.6	32.5	64.7	87.2	94.6	87.2	64.7	32.5
110	1.3	30.4	61.2	82.4	89.4	82.4	61.2	30.4	1.3	30.4	61.2	82.4	89.4	82.4	61.2	30.4
115	1.0	27.7	56.5	77.2	83.8	77.2	56.5	27.7	1.0	27.7	56.5	77.2	83.8	77.2	56.5	27.7
120	0.8	25.4	52.8	71.1	77.7	71.1	52.8	25.4	0.8	25.4	52.8	71.1	77.7	71.1	52.8	25.4
125	0.7	22.3	48.5	65.4	70.9	65.4	48.5	22.3	0.7	22.3	48.5	65.4	70.9	65.4	48.5	22.3
130	0.5	19.7	40.6	59.7	64.1	59.7	40.6	19.7	0.5	19.7	40.6	59.7	64.1	59.7	40.6	19.7
135	0.4	16.9	35.1	52.6	56.9	52.6	35.1	16.9	0.4	16.9	35.1	52.6	56.9	52.6	35.1	16.9
140	0.3	13.9	29.9	45.0	49.8	45.0	29.9	13.9	0.3	13.9	29.9	45.0	49.8	45.0	29.9	13.9
145	0.2	11.9	25.1	36.4	42.3	36.4	25.1	11.9	0.2	11.9	25.1	36.4	42.3	36.4	25.1	11.9
150	0.1	9.4	20.5	28.2	34.6	28.2	20.5	9.4	0.1	9.4	20.5	28.2	34.6	28.2	20.5	9.4
155	0.0	7.1	16.1	22.3	28.4	22.3	16.1	7.1	0.0	7.1	16.1	22.3	28.4	22.3	16.1	7.1
160	0.0	5.3	12.1	15.2	20.5	15.2	12.1	5.3	0.0	5.3	12.1	15.2	20.5	15.2	12.1	5.3
165	0.0	3.6	7.5	9.8	14.8	9.8	7.5	3.6	0.0	3.6	7.5	9.8	14.8	9.8	7.5	3.6
170	0.0	1.9	4.4	5.0	2.1	5.0	4.4	1.9	0.0	1.9	4.4	5.0	2.1	5.0	4.4	1.9
175	0.0	0.4	1.1	1.4	0.1	1.4	1.1	0.4	0.0	0.4	1.1	1.4	0.1	1.4	1.1	0.4
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	8382	8382	8382
45	7156	7550	7719
55	6719	7362	7693
65	6239	7297	7824
75	5747	7454	8257
85	5345	9047	10270

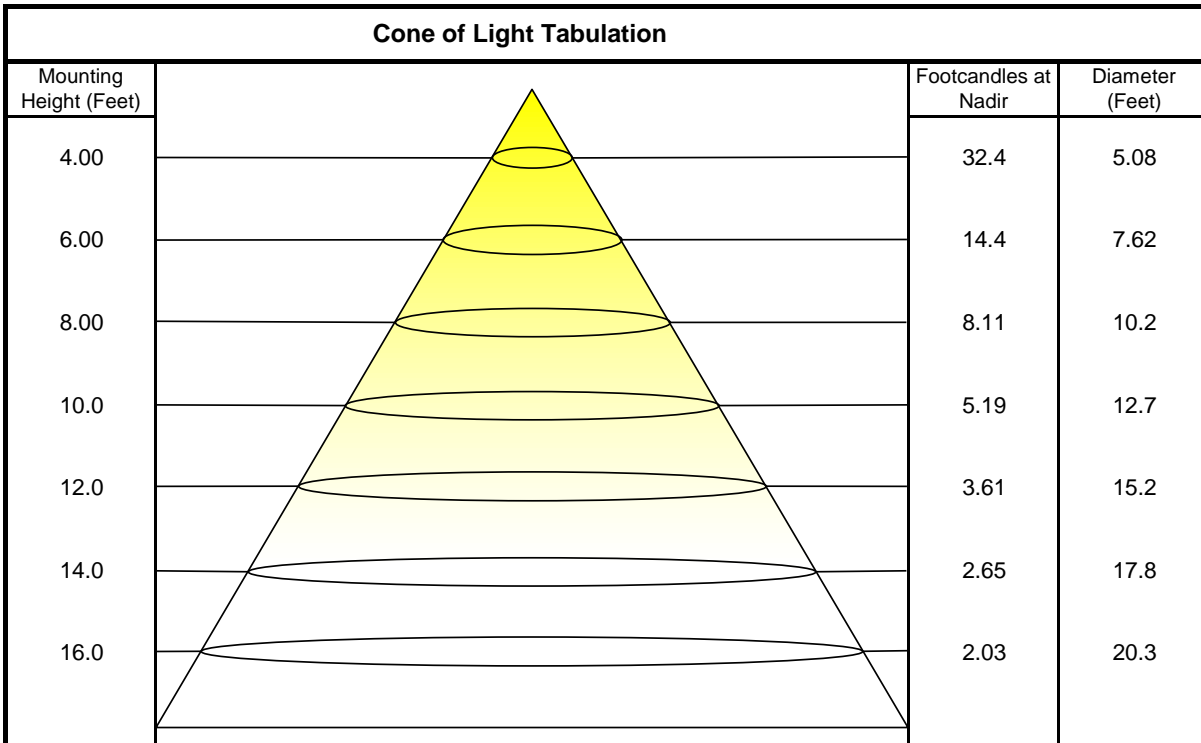


Coefficients of Utilization - Zonal Cavity Method

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	116	116	116	116	111	111	111	111	103	103	103	96	96	96	89	89	89	86
1	104	98	93	89	100	95	90	86	88	84	81	82	79	76	76	73	71	68
2	94	85	77	71	90	82	75	69	76	70	65	70	66	62	65	62	59	56
3	85	74	65	58	81	71	63	57	66	60	54	62	56	52	57	53	49	46
4	78	65	56	49	74	63	54	48	59	51	46	55	49	44	51	46	42	39
5	71	58	49	42	68	56	47	41	52	45	39	49	43	38	46	40	36	33
6	66	52	43	36	63	50	42	36	47	40	34	44	38	33	41	36	31	29
7	61	47	38	32	58	46	37	31	43	35	30	40	34	29	38	32	28	26
8	57	43	34	28	54	42	33	28	39	32	27	37	30	26	35	29	25	23
9	53	39	31	25	51	38	30	25	36	29	24	34	28	23	32	26	22	20
10	49	36	28	23	47	35	28	23	33	26	22	31	25	21	30	24	20	18

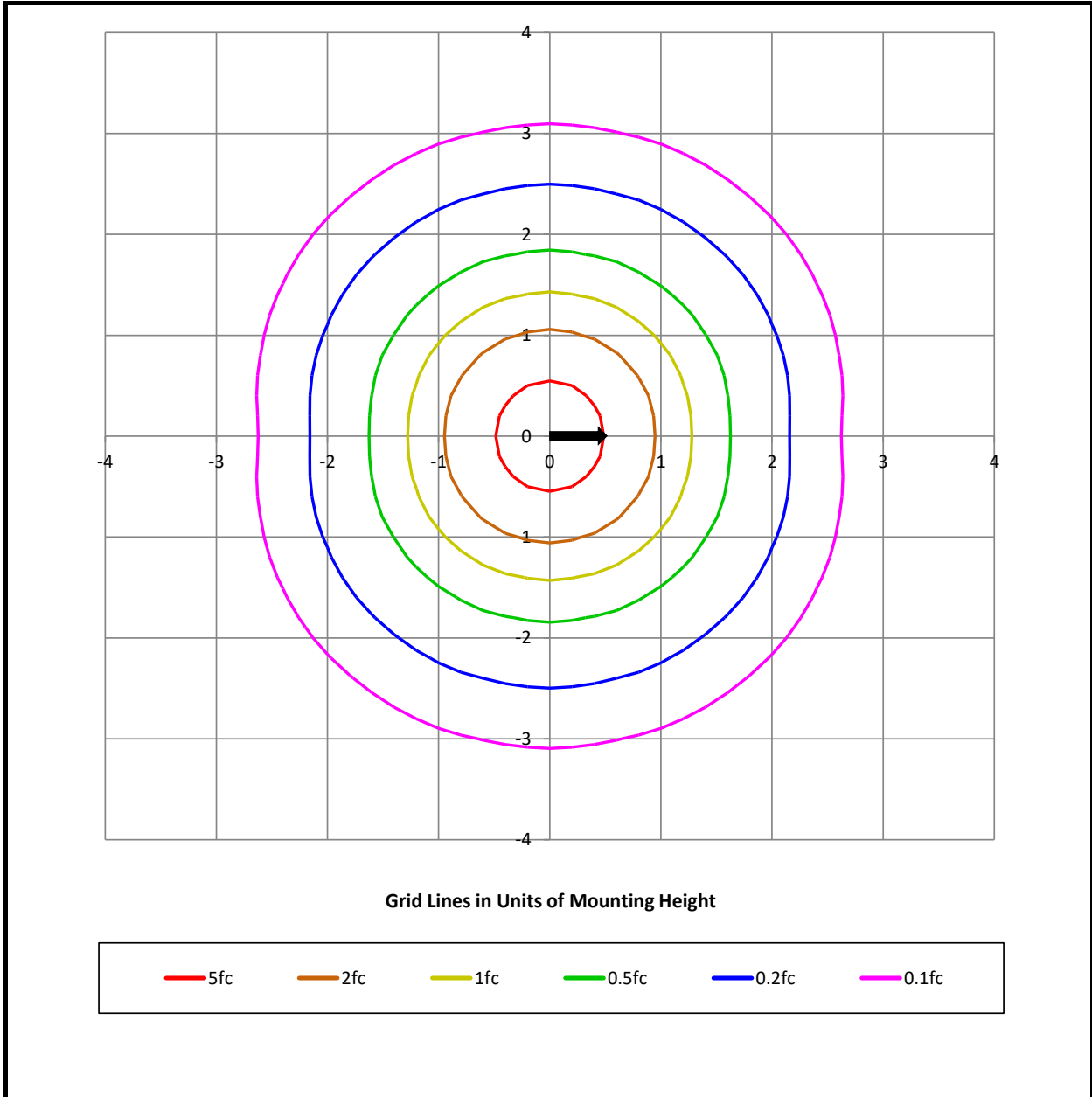
Beam and Field Information	
CIE Type:	Semi-Direct
Center Beam Intensity:	519.1 Candela
Central Cone Intensity:	519 Candela
Beam Flux:	1206.0 Lumens
Beam Angle (0-180):	104.9 Degrees
Beam Angle (90-270):	130.0 Degrees
Field Angle (0-180):	162.9 Degrees
Field Angle (90-270):	276.8 Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



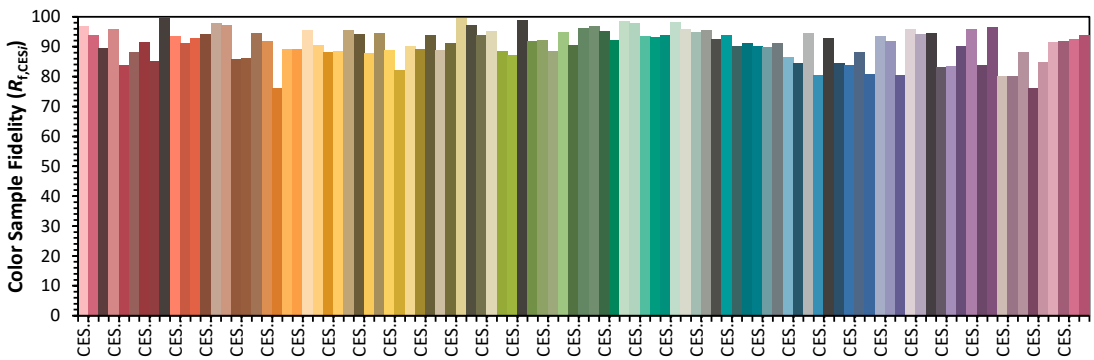
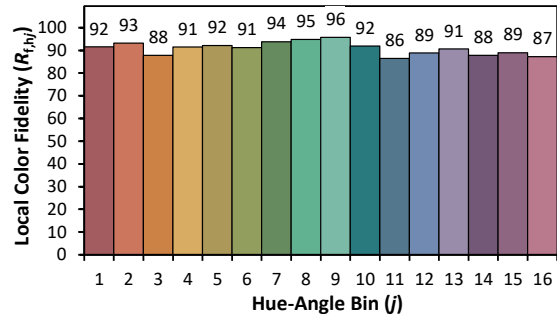
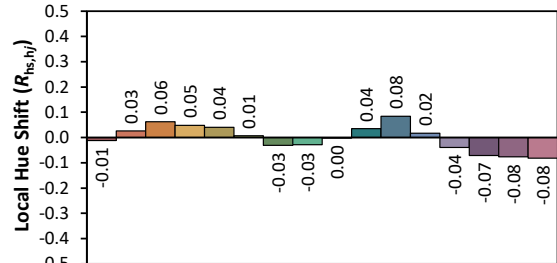
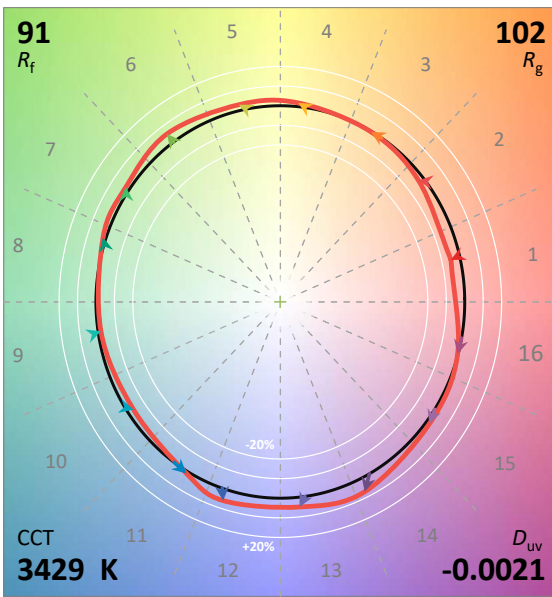
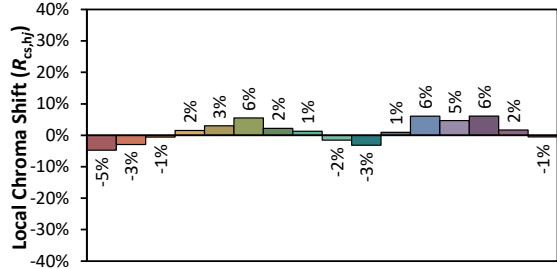
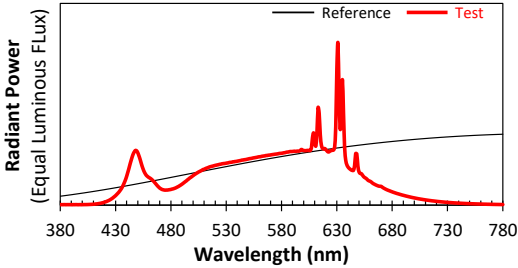
ANSI/IES TM-30-18 Color Rendition Report

Source: Test Number: 13542729.02

Manufacturer: BARTCO LIGHTING INC

Date: 2020-10-15

Model: GRM30-45-35-ND-1-NA-R-NA-C-C4-S



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

x 0.4069
y 0.3867
u' 0.2384
v' 0.5098

CIE 13.3-1995 (CRI)	
R _a	94
R _g	66

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