

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P904079

Luminaire Tested: DFN2DIP-SQ4F0-090D160US830-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904079
REPORT IS A COMBINATION OF REPORTS P901730 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D160US830-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

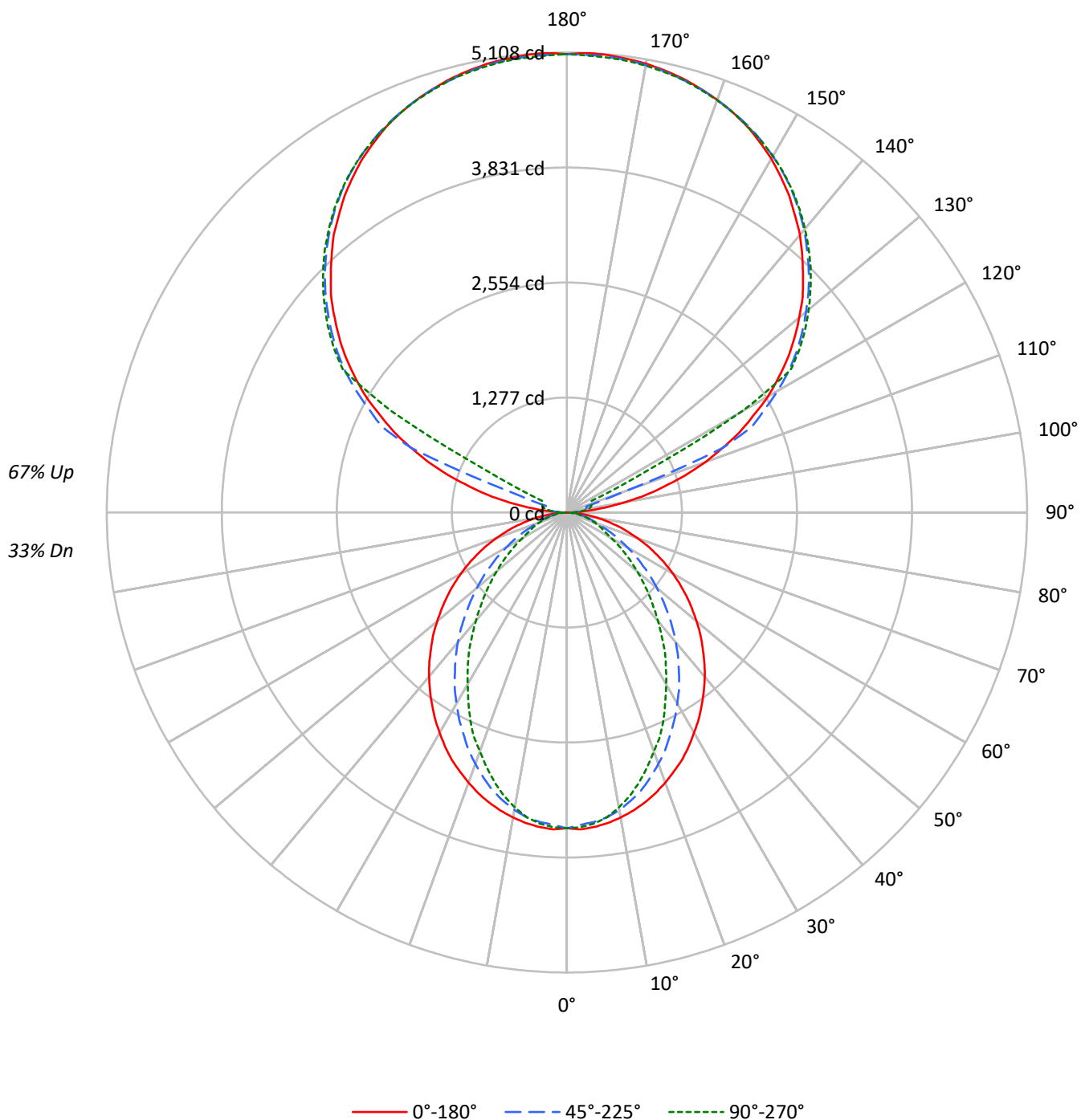
Lumens per Lamp: N/A
Luminaire Lumens: 22140.3 lumens
Efficiency: N/A
Efficacy: 108.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 204.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.983
Total Harmonic Distortion (THDi): 0.073
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Luminous Intensity Polar Plot



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	103	103	103	103	93	93	93	93	74	74	74	56	56	56	40	40	40
1	94	90	86	83	85	81	78	75	65	63	61	50	49	47	36	35	34
2	86	79	73	68	77	71	67	62	57	54	51	44	42	40	32	31	29
3	79	70	63	57	71	63	57	52	51	47	43	39	36	34	29	27	25
4	72	62	54	49	65	56	50	45	45	41	37	35	32	29	26	24	22
5	66	55	47	42	59	50	43	38	41	36	32	32	28	26	23	21	19
6	61	49	42	36	55	45	38	33	37	32	28	29	25	23	21	19	17
7	56	45	37	32	51	41	34	29	33	28	25	26	23	20	19	17	15
8	52	40	33	28	47	37	30	26	30	25	22	24	20	18	18	16	14
9	49	37	30	25	44	34	27	23	28	23	20	22	19	16	17	14	13
10	45	34	27	22	41	31	25	21	25	21	18	20	17	15	15	13	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2460	2460	2460
5°	2464	2422	2437
10°	2440	2374	2359
15°	2406	2296	2237
20°	2361	2189	2087
25°	2316	2068	1942
30°	2255	1944	1758
35°	2195	1811	1597
40°	2134	1673	1411
45°	2063	1519	1243
50°	1990	1365	1079
55°	1913	1199	921
60°	1825	1027	759
65°	1723	851	684
70°	1600	687	620
75°	1445	606	566
80°	1220	510	493
85°	849	343	375

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2726 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.6	1.5
10°-20°	902.0	4.1
20°-30°	1266.4	5.7
30°-40°	1380.5	6.2
40°-50°	1268.8	5.7
50°-60°	996.5	4.5
60°-70°	648.6	2.9
70°-80°	333.9	1.5
80°-90°	94.2	0.4
90°-100°	167.8	0.8
100°-110°	625.6	2.8
110°-120°	1659.3	7.5
120°-130°	2752.0	12.4
130°-140°	2923.2	13.2
140°-150°	2716.8	12.3
150°-160°	2184.3	9.9
160°-170°	1407.5	6.4
170°-180°	484.4	2.2
0°-30°	2497.0	11.3
0°-40°	3877.5	17.5
0°-60°	6142.8	27.7
0°-90°	7219.4	32.6
90°-120°	2452.7	11.1
90°-150°	10844.8	49.0
90°-180°	14921.0	67.4
0°-180°	22140.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3506	3506	3506	3506	3506	
5°	3506	3490	3449	3477	3468	332
15°	3335	3300	3192	3132	3100	940
25°	3027	2925	2716	2586	2538	1392
35°	2608	2446	2167	1967	1897	1632
45°	2132	1920	1586	1361	1285	1647
55°	1621	1374	1031	841	781	1449
65°	1095	838	552	444	435	1085
75°	584	362	254	232	229	617
85°	136	70	60	60	60	156
90°	4	44	73	92	99	21
95°	239	118	144	162	158	283
105°	1120	1230	225	265	280	1196
115°	2118	2180	2272	567	302	2085
125°	2994	3042	3112	3138	3149	2670
135°	3705	3764	3797	3834	3826	2862
145°	4298	4294	4357	4382	4364	2688
155°	4732	4699	4744	4766	4736	2181
165°	4986	4964	4975	5001	4975	1409
175°	5100	5075	5082	5108	5071	485
180°	5090	5090	5090	5090	5090	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3506.0	3506.0	3506.0	3506.0	3506.0
2.5°	3521.8	3506.0	3470.9	3503.0	3496.5
5°	3506.0	3490.1	3448.8	3477.3	3467.9
7.5°	3477.3	3458.5	3414.1	3426.5	3410.7
10°	3439.3	3417.1	3353.8	3344.0	3325.2
12.5°	3391.8	3363.3	3277.4	3258.6	3223.5
15°	3334.6	3299.7	3191.9	3131.6	3100.0
17.5°	3268.0	3217.2	3083.8	3014.2	2963.4
20°	3191.9	3128.3	2969.7	2890.6	2820.6
22.5°	3109.4	3036.4	2852.2	2744.5	2697.1
25°	3027.0	2925.3	2715.9	2586.0	2538.2
27.5°	2928.7	2820.6	2589.0	2439.9	2366.8
30°	2824.0	2703.1	2449.3	2287.7	2201.9
32.5°	2722.3	2576.2	2316.3	2125.8	2046.4
35°	2608.2	2446.3	2167.2	1967.3	1897.2
37.5°	2497.1	2322.4	2027.5	1808.4	1729.3
40°	2379.6	2189.4	1881.4	1656.2	1573.8
42.5°	2259.1	2056.2	1735.6	1500.7	1421.5
45°	2132.2	1919.5	1586.5	1360.9	1284.9
47.5°	2011.7	1786.5	1443.8	1218.2	1148.6
50°	1878.4	1653.1	1304.1	1085.0	1018.6
52.5°	1748.1	1510.1	1170.8	961.4	901.2
55°	1621.2	1373.8	1031.0	840.9	780.6
57.5°	1491.3	1237.5	907.6	729.8	679.0
60°	1357.9	1104.1	777.3	615.7	564.9
62.5°	1228.0	974.2	666.2	514.1	488.8
65°	1094.7	837.5	552.0	444.3	434.6
67.5°	967.8	710.6	444.3	390.1	380.7
70°	834.5	587.1	368.0	336.3	323.5
72.5°	707.6	472.6	307.6	282.4	276.1
75°	583.7	361.6	253.8	231.6	228.6
77.5°	460.1	256.8	199.9	187.2	180.8
80°	345.7	184.2	152.1	139.7	139.7
82.5°	241.0	123.9	104.7	98.3	98.3
85°	136.3	69.7	60.2	60.2	60.2
87.5°	50.8	25.3	25.3	22.2	22.2
90°	3.5	44.2	73.4	92.3	99.2
92.5°	92.3	77.4	88.3	95.8	99.2
95°	239.2	117.6	143.5	162.2	158.3
97.5°	430.7	129.0	187.6	199.0	202.5
100°	652.1	147.4	209.9	239.2	246.7
102.5°	894.8	887.8	217.4	257.6	268.9
105°	1119.6	1230.2	224.8	265.0	279.8
107.5°	1381.0	1472.9	232.2	272.5	287.3
110°	1631.6	1708.6	644.6	276.4	290.8

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1867.4	1933.4	1870.9	283.4	294.7
115°	2117.5	2180.0	2272.3	567.2	302.2
117.5°	2334.9	2408.3	2471.3	1944.4	979.6
120°	2578.0	2633.1	2699.5	2743.7	2246.5
122.5°	2784.0	2843.0	2916.9	2938.8	2942.7
125°	2993.9	3042.0	3112.0	3137.8	3148.8
127.5°	3185.4	3237.1	3292.6	3329.3	3332.8
130°	3366.1	3425.1	3465.4	3506.0	3502.5
132.5°	3550.2	3598.2	3638.5	3671.8	3668.3
135°	3704.9	3764.0	3796.8	3834.0	3826.5
137.5°	3866.8	3911.0	3948.1	3984.9	3973.9
140°	4025.1	4054.8	4095.1	4128.3	4110.0
142.5°	4158.0	4183.9	4231.5	4260.9	4242.5
145°	4298.0	4294.0	4356.6	4382.4	4364.1
147.5°	4419.1	4408.2	4470.8	4489.1	4474.6
150°	4537.2	4511.4	4570.5	4592.3	4574.0
152.5°	4636.5	4607.1	4662.3	4684.6	4658.8
155°	4732.2	4699.4	4743.6	4765.5	4736.2
157.5°	4809.7	4780.4	4813.6	4839.4	4809.7
160°	4876.1	4853.8	4876.1	4898.0	4872.2
162.5°	4934.8	4912.9	4931.2	4957.0	4923.8
165°	4986.3	4964.5	4975.4	5001.2	4975.4
167.5°	5027.0	5004.7	5016.1	5041.8	5008.7
170°	5060.2	5038.0	5045.3	5071.2	5038.0
172.5°	5082.1	5060.2	5067.7	5093.5	5060.2
175°	5100.5	5074.6	5082.1	5107.9	5071.2
177.5°	5107.9	5082.1	5086.1	5111.9	5078.6
180°	5089.5	5089.5	5089.5	5089.5	5089.5

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CIE UGR TABLE:

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	8.40	9.11	9.50	10.20	11.70	4.36	5.07	5.46	6.16	7.66
	3H	10.07	10.70	11.18	11.81	13.32	5.54	6.17	6.65	7.27	8.79
	4H	10.68	11.28	11.80	12.38	13.90	5.99	6.59	7.10	7.69	9.21
	6H	11.10	11.65	12.22	12.75	14.29	6.30	6.85	7.43	7.96	9.49
	8H	11.22	11.75	12.35	12.87	14.40	6.39	6.91	7.52	8.03	9.56
	12H	11.28	11.78	12.42	12.89	14.45	6.43	6.93	7.56	8.04	9.59
4H	2H	8.40	9.00	9.53	10.10	11.63	4.94	5.54	6.07	6.64	8.17
	3H	10.23	10.72	11.36	11.85	13.39	6.28	6.78	7.41	7.91	9.45
	4H	10.92	11.37	12.05	12.49	14.05	6.83	7.29	7.96	8.40	9.96
	6H	11.43	11.82	12.57	12.96	14.51	7.24	7.63	8.38	8.77	10.32
	8H	11.61	11.97	12.75	13.10	14.67	7.37	7.73	8.51	8.87	10.43
	12H	11.70	12.03	12.85	13.17	14.74	7.43	7.76	8.58	8.90	10.47
8H	4H	10.88	11.24	12.02	12.37	13.94	7.10	7.47	8.24	8.60	10.16
	6H	11.44	11.74	12.60	12.92	14.48	7.62	7.92	8.78	9.09	10.65
	8H	11.66	11.92	12.83	13.08	14.66	7.81	8.07	8.97	9.23	10.81
	12H	11.80	12.03	12.97	13.18	14.80	7.92	8.15	9.09	9.30	10.92
12H	4H	10.82	11.15	11.98	12.30	13.87	7.10	7.43	8.26	8.58	10.15
	6H	11.42	11.68	12.58	12.83	14.42	7.67	7.93	8.83	9.08	10.67
	8H	11.64	11.87	12.80	13.02	14.63	7.87	8.10	9.04	9.25	10.87