

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: P920443

Luminaire Tested: DFN2DIP-SQ4F0-090D140US935-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920443
REPORT IS A COMBINATION OF REPORTS P901712 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D140US935-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

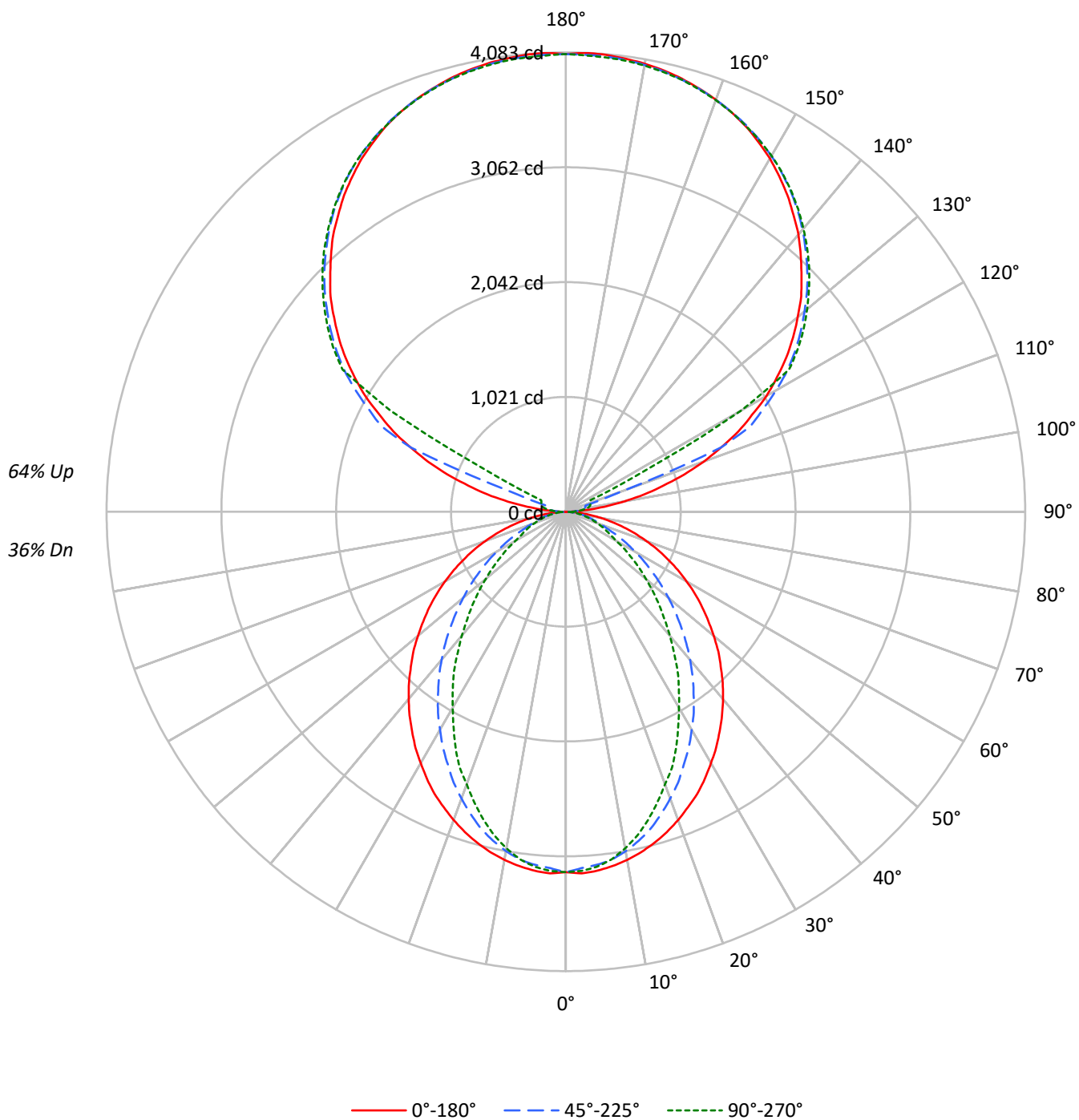
Lumens per Lamp: N/A
Luminaire Lumens: 18520.1 lumens
Efficiency: N/A
Efficacy: 98.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 188.5
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	104	104	104	104	94	94	94	94	75	75	75	58	58	58	43	43	43
1	95	91	87	84	86	82	79	76	66	64	62	52	50	49	38	38	37
2	87	80	74	69	78	72	67	63	59	55	52	46	44	42	34	33	32
3	79	70	63	58	71	64	58	53	52	48	44	41	38	36	31	29	27
4	73	62	55	49	66	57	50	45	46	42	38	37	33	31	28	25	24
5	67	56	48	42	60	51	44	39	42	37	33	33	30	27	25	23	21
6	61	50	42	37	56	46	39	34	37	32	29	30	26	24	23	20	19
7	57	45	37	32	51	41	35	30	34	29	25	27	24	21	21	18	17
8	53	41	34	28	48	38	31	26	31	26	23	25	21	19	19	17	15
9	49	37	30	25	44	34	28	24	28	24	20	23	19	17	18	15	14
10	46	34	27	23	42	31	25	21	26	21	18	21	18	15	17	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2247	2247	2247
5°	2251	2212	2226
10°	2229	2169	2155
15°	2198	2098	2043
20°	2157	1999	1906
25°	2116	1889	1774
30°	2060	1776	1606
35°	2005	1654	1458
40°	1949	1528	1289
45°	1885	1388	1136
50°	1818	1247	986
55°	1748	1096	842
60°	1667	938	693
65°	1574	777	625
70°	1461	627	566
75°	1320	554	517
80°	1115	466	450
85°	776	313	343

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2182 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	300.2	1.6
10°-20°	824.0	4.4
20°-30°	1156.9	6.2
30°-40°	1261.0	6.8
40°-50°	1159.0	6.3
50°-60°	910.3	4.9
60°-70°	592.5	3.2
70°-80°	305.0	1.6
80°-90°	85.0	0.5
90°-100°	134.2	0.7
100°-110°	500.0	2.7
110°-120°	1326.2	7.2
120°-130°	2199.7	11.9
130°-140°	2336.6	12.6
140°-150°	2171.6	11.7
150°-160°	1745.9	9.4
160°-170°	1125.0	6.1
170°-180°	387.2	2.1
0°-30°	2281.0	12.3
0°-40°	3542.0	19.1
0°-60°	5611.3	30.3
0°-90°	6593.8	35.6
90°-120°	1960.4	10.6
90°-150°	8668.2	46.8
90°-180°	11926.0	64.4
0°-180°	18520.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3203	3203	3203	3203	3203	
5°	3203	3188	3150	3176	3168	304
15°	3046	3014	2916	2861	2832	858
25°	2765	2672	2481	2362	2319	1272
35°	2383	2235	1980	1797	1733	1491
45°	1948	1753	1449	1243	1174	1504
55°	1481	1255	942	768	713	1323
65°	1000	765	504	406	397	991
75°	533	330	232	212	209	564
85°	124	64	55	55	55	143
90°	3	35	59	74	79	17
95°	191	94	115	130	127	226
105°	895	983	180	212	224	956
115°	1692	1742	1816	453	242	1666
125°	2393	2432	2487	2508	2517	2134
135°	2961	3009	3035	3064	3058	2288
145°	3435	3432	3482	3503	3488	2149
155°	3782	3756	3792	3809	3786	1743
165°	3986	3968	3977	3997	3977	1126
175°	4077	4056	4062	4083	4053	388
180°	4068	4068	4068	4068	4068	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3202.7	3202.7	3202.7	3202.7	3202.7
2.5°	3217.1	3202.7	3170.6	3199.9	3194.0
5°	3202.7	3188.2	3150.4	3176.5	3167.9
7.5°	3176.5	3159.3	3118.7	3130.1	3115.6
10°	3141.8	3121.5	3063.7	3054.7	3037.5
12.5°	3098.4	3072.3	2993.9	2976.6	2944.6
15°	3046.1	3014.2	2915.8	2860.7	2831.8
17.5°	2985.3	2938.8	2817.0	2753.4	2707.0
20°	2915.8	2857.7	2712.7	2640.5	2576.5
22.5°	2840.4	2773.7	2605.5	2507.1	2463.7
25°	2765.1	2672.2	2481.0	2362.2	2318.6
27.5°	2675.3	2576.5	2365.0	2228.8	2162.1
30°	2579.6	2469.3	2237.4	2089.8	2011.4
32.5°	2486.7	2353.3	2115.9	1941.9	1869.3
35°	2382.6	2234.6	1979.7	1797.1	1733.1
37.5°	2281.0	2121.5	1852.1	1651.9	1579.7
40°	2173.8	2000.0	1718.6	1512.9	1437.6
42.5°	2063.6	1878.3	1585.4	1370.9	1298.6
45°	1947.7	1753.4	1449.2	1243.2	1173.7
47.5°	1837.6	1631.9	1318.9	1112.8	1049.2
50°	1715.9	1510.1	1191.3	991.1	930.5
52.5°	1596.9	1379.5	1069.5	878.2	823.2
55°	1480.9	1254.9	941.8	768.2	713.1
57.5°	1362.3	1130.4	829.1	666.7	620.3
60°	1240.4	1008.6	710.1	562.4	516.0
62.5°	1121.8	889.9	608.6	469.6	446.5
65°	1000.0	765.1	504.3	405.9	397.0
67.5°	884.1	649.1	405.9	356.4	347.8
70°	762.3	536.3	336.1	307.2	295.5
72.5°	646.4	431.7	281.0	258.0	252.2
75°	533.2	330.3	231.9	211.5	208.8
77.5°	420.3	234.6	182.6	171.0	165.1
80°	315.8	168.2	139.0	127.6	127.6
82.5°	220.2	113.1	95.7	89.8	89.8
85°	124.5	63.6	55.0	55.0	55.0
87.5°	46.4	23.1	23.1	20.3	20.3
90°	2.8	35.3	58.7	73.8	79.4
92.5°	73.8	61.9	70.6	76.5	79.4
95°	191.2	94.0	114.7	129.7	126.6
97.5°	344.3	103.1	150.0	159.0	161.9
100°	521.2	117.8	167.8	191.2	197.2
102.5°	715.1	709.5	173.7	205.9	215.0
105°	894.8	983.3	179.7	211.8	223.7
107.5°	1103.9	1177.2	185.6	217.7	229.6
110°	1304.2	1365.7	515.2	220.9	232.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1492.5	1545.3	1495.4	226.5	235.6
115°	1692.5	1742.5	1816.3	453.4	241.5
117.5°	1866.2	1924.9	1975.3	1554.1	783.0
120°	2060.6	2104.6	2157.7	2193.0	1795.6
122.5°	2225.2	2272.4	2331.5	2349.0	2352.2
125°	2393.1	2431.5	2487.4	2508.0	2516.8
127.5°	2546.1	2587.4	2631.7	2661.1	2663.9
130°	2690.4	2737.7	2769.8	2802.4	2799.5
132.5°	2837.7	2876.1	2908.3	2934.8	2932.0
135°	2961.4	3008.6	3034.8	3064.5	3058.5
137.5°	3090.7	3126.0	3155.7	3185.1	3176.4
140°	3217.3	3241.1	3273.2	3299.8	3285.1
142.5°	3323.5	3344.1	3382.3	3405.7	3391.0
145°	3435.4	3432.2	3482.2	3502.9	3488.2
147.5°	3532.2	3523.5	3573.5	3588.1	3576.6
150°	3626.6	3605.9	3653.1	3670.6	3656.0
152.5°	3705.9	3682.5	3726.6	3744.4	3723.7
155°	3782.4	3756.3	3791.6	3809.1	3785.6
157.5°	3844.4	3820.9	3847.5	3868.1	3844.4
160°	3897.5	3879.7	3897.5	3915.0	3894.4
162.5°	3944.3	3926.8	3941.6	3962.1	3935.6
165°	3985.6	3968.1	3976.9	3997.4	3976.9
167.5°	4018.1	4000.3	4009.3	4030.0	4003.4
170°	4044.6	4026.8	4032.7	4053.4	4026.8
172.5°	4062.1	4044.6	4050.6	4071.2	4044.6
175°	4076.8	4056.2	4062.1	4082.8	4053.4
177.5°	4082.8	4062.1	4065.3	4085.9	4059.3
180°	4068.0	4068.0	4068.0	4068.0	4068.0

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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	8.46	9.18	9.54	10.26	11.72	4.42	5.14	5.50	6.22	7.68
	3H	10.13	10.78	11.22	11.86	13.35	5.60	6.25	6.69	7.33	8.81
	4H	10.74	11.35	11.84	12.44	13.93	6.05	6.66	7.14	7.74	9.23
	6H	11.16	11.72	12.26	12.81	14.31	6.36	6.93	7.47	8.02	9.52
	8H	11.28	11.82	12.39	12.92	14.42	6.45	6.99	7.56	8.09	9.59
	12H	11.34	11.85	12.46	12.95	14.47	6.49	7.00	7.60	8.10	9.62
4H	2H	8.46	9.08	9.57	10.16	11.65	5.00	5.62	6.11	6.70	8.19
	3H	10.29	10.80	11.40	11.91	13.41	6.35	6.86	7.46	7.97	9.47
	4H	10.98	11.45	12.09	12.55	14.07	6.89	7.36	8.00	8.46	9.98
	6H	11.49	11.89	12.61	13.02	14.53	7.30	7.71	8.43	8.83	10.34
	8H	11.67	12.04	12.79	13.16	14.69	7.43	7.81	8.55	8.92	10.45
	12H	11.76	12.10	12.90	13.23	14.76	7.49	7.83	8.63	8.96	10.50
8H	4H	10.94	11.31	12.06	12.43	13.96	7.16	7.54	8.29	8.66	10.19
	6H	11.51	11.82	12.65	12.97	14.50	7.68	7.99	8.82	9.15	10.68
	8H	11.73	12.00	12.87	13.13	14.68	7.87	8.14	9.02	9.28	10.83
	12H	11.86	12.10	13.01	13.23	14.82	7.99	8.22	9.14	9.36	10.94
12H	4H	10.89	11.23	12.02	12.35	13.89	7.17	7.50	8.30	8.63	10.17
	6H	11.48	11.75	12.63	12.89	14.44	7.73	8.00	8.88	9.14	10.69
	8H	11.70	11.94	12.85	13.07	14.66	7.94	8.18	9.09	9.31	10.89