

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: P909529

Luminaire Tested: DFN2DIP-SQ4F0-090D140US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909529
REPORT IS A COMBINATION OF REPORTS P901711 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D140US840-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

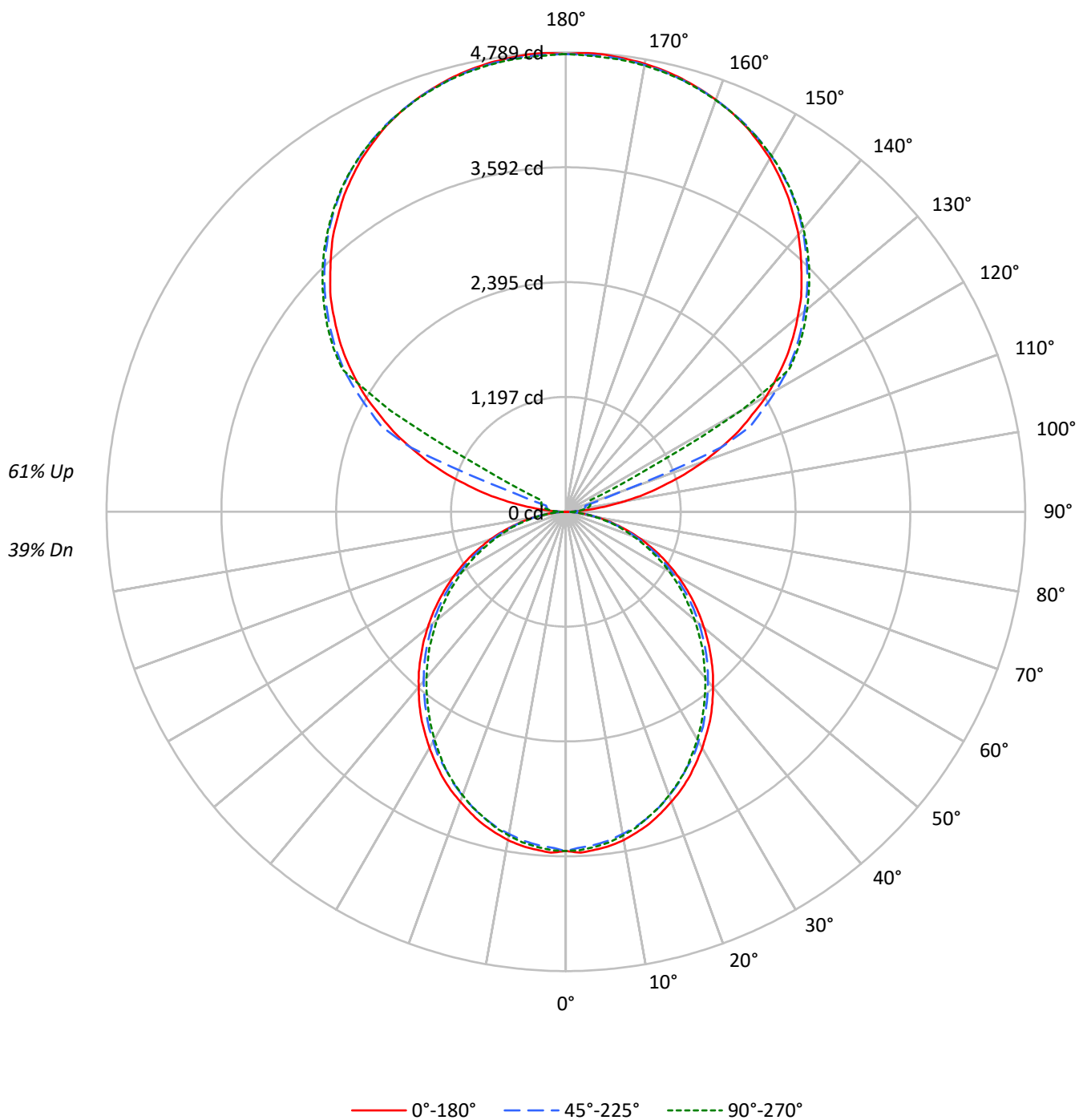
Lumens per Lamp: N/A
Luminaire Lumens: 22994.6 lumens
Efficiency: N/A
Efficacy: 122.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

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	105	105	105	105	95	95	95	95	77	77	77	61	61	61	46	46	46
1	95	91	87	84	87	83	80	77	68	65	63	54	52	51	41	40	39
2	87	80	74	68	79	73	67	63	59	56	52	47	45	42	36	34	33
3	79	70	63	57	72	64	58	53	52	48	44	42	39	36	32	30	28
4	72	62	54	48	66	56	50	45	46	41	38	37	34	31	28	26	24
5	66	55	47	41	60	50	43	38	41	36	32	33	30	27	26	23	21
6	61	49	41	36	55	45	38	33	37	32	28	30	26	23	23	21	18
7	56	44	37	31	51	41	34	29	34	29	25	27	23	20	21	18	16
8	52	40	33	27	47	37	30	26	31	26	22	25	21	18	19	17	15
9	49	37	29	24	44	34	27	23	28	23	20	23	19	16	18	15	13
10	45	34	26	22	41	31	25	20	26	21	18	21	17	15	17	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2481	2481	2481
5°	2485	2447	2464
10°	2465	2415	2431
15°	2429	2376	2380
20°	2380	2321	2327
25°	2331	2255	2266
30°	2270	2194	2189
35°	2212	2122	2106
40°	2141	2050	2028
45°	2070	1977	1948
50°	1992	1900	1855
55°	1911	1812	1770
60°	1819	1707	1673
65°	1719	1598	1558
70°	1591	1466	1435
75°	1414	1308	1322
80°	1201	1106	1104
85°	868	757	742

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2559 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	332.9	1.4
10°-20°	936.5	4.1
20°-30°	1376.3	6.0
30°-40°	1598.5	7.0
40°-50°	1596.5	6.9
50°-60°	1392.1	6.1
60°-70°	1029.1	4.5
70°-80°	582.2	2.5
80°-90°	162.1	0.7
90°-100°	157.3	0.7
100°-110°	586.5	2.6
110°-120°	1555.5	6.8
120°-130°	2580.0	11.2
130°-140°	2740.5	11.9
140°-150°	2547.0	11.1
150°-160°	2047.7	8.9
160°-170°	1319.5	5.7
170°-180°	454.2	2.0
0°-30°	2645.7	11.5
0°-40°	4244.2	18.5
0°-60°	7232.9	31.5
0°-90°	9006.3	39.2
90°-120°	2299.4	10.0
90°-150°	10166.9	44.2
90°-180°	13988.0	60.8
0°-180°	22994.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3536	3536	3536	3536	3536	
5°	3536	3523	3486	3513	3506	336
15°	3367	3346	3302	3316	3299	948
25°	3047	3020	2962	2969	2962	1402
35°	2629	2595	2540	2520	2503	1642
45°	2139	2115	2064	2027	2013	1651
55°	1619	1598	1558	1517	1500	1447
65°	1092	1071	1037	1007	990	1079
75°	571	565	547	527	534	610
85°	139	136	133	122	119	155
90°	3	41	69	86	93	21
95°	224	110	134	152	148	266
105°	1050	1153	211	248	262	1121
115°	1985	2044	2130	532	283	1954
125°	2807	2852	2918	2942	2952	2503
135°	3473	3529	3560	3594	3587	2683
145°	4029	4026	4084	4108	4091	2520
155°	4436	4406	4447	4468	4440	2044
165°	4675	4654	4664	4689	4664	1321
175°	4782	4758	4764	4789	4754	455
180°	4771	4771	4771	4771	4771	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3536.4	3536.4	3536.4	3536.4	3536.4
2.5°	3557.0	3540.1	3502.6	3536.4	3530.0
5°	3536.4	3523.1	3485.7	3512.7	3506.2
7.5°	3512.7	3492.5	3455.0	3482.4	3475.6
10°	3475.6	3451.7	3410.9	3438.0	3427.9
12.5°	3424.3	3404.1	3363.4	3380.2	3373.5
15°	3366.6	3346.4	3302.0	3315.7	3298.7
17.5°	3295.1	3274.9	3230.6	3247.5	3230.6
20°	3216.8	3196.6	3149.0	3159.1	3145.7
22.5°	3138.9	3108.3	3063.8	3063.8	3057.0
25°	3046.9	3019.8	2962.1	2968.6	2962.1
27.5°	2944.8	2920.9	2877.0	2866.9	2849.9
30°	2843.1	2815.6	2764.7	2754.6	2741.0
32.5°	2734.1	2713.9	2659.4	2638.9	2625.1
35°	2628.8	2594.8	2540.3	2519.8	2502.9
37.5°	2509.7	2479.0	2424.5	2400.8	2383.8
40°	2387.3	2360.0	2305.4	2275.1	2261.5
42.5°	2268.3	2240.9	2186.8	2152.5	2132.3
45°	2139.1	2115.4	2064.1	2026.9	2013.3
47.5°	2013.3	1989.4	1934.9	1897.4	1877.2
50°	1880.5	1863.5	1815.8	1768.3	1751.3
52.5°	1751.3	1727.5	1683.4	1646.0	1622.1
55°	1618.9	1598.3	1557.5	1516.8	1499.9
57.5°	1486.1	1469.2	1424.8	1384.0	1370.3
60°	1353.3	1340.0	1292.3	1254.9	1244.8
62.5°	1224.2	1200.3	1166.4	1132.6	1118.8
65°	1091.8	1071.2	1037.2	1006.6	989.7
67.5°	955.7	938.5	908.1	884.3	870.6
70°	829.8	816.1	785.5	761.6	748.3
72.5°	700.6	686.9	669.9	646.2	636.1
75°	571.2	564.6	547.3	527.1	534.0
77.5°	455.7	442.0	435.2	425.1	415.0
80°	340.2	336.6	329.7	319.6	312.9
82.5°	231.3	231.3	228.0	214.3	214.3
85°	139.3	136.0	132.8	122.3	119.1
87.5°	61.3	54.4	47.7	37.6	33.9
90°	3.2	41.4	68.9	86.5	93.1
92.5°	86.5	72.6	82.8	89.8	93.1
95°	224.3	110.3	134.5	152.1	148.5
97.5°	403.8	121.0	175.9	186.5	189.9
100°	611.3	138.1	196.8	224.3	231.3
102.5°	838.8	832.2	203.8	241.5	252.2
105°	1049.6	1153.3	210.8	248.4	262.4
107.5°	1294.7	1380.8	217.7	255.4	269.3
110°	1529.6	1601.8	604.3	259.1	272.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1750.6	1812.5	1753.9	265.7	276.3
115°	1985.2	2043.8	2130.3	531.8	283.3
117.5°	2188.9	2257.8	2316.8	1822.8	918.4
120°	2416.9	2468.5	2530.8	2572.2	2106.1
122.5°	2610.0	2665.3	2734.6	2755.1	2758.9
125°	2806.8	2851.9	2917.5	2941.6	2951.9
127.5°	2986.4	3034.7	3086.8	3121.2	3124.5
130°	3155.6	3211.1	3248.7	3286.9	3283.6
132.5°	3328.3	3373.4	3411.1	3442.2	3439.0
135°	3473.4	3528.8	3559.5	3594.3	3587.3
137.5°	3625.1	3666.5	3701.4	3735.8	3725.6
140°	3773.6	3801.4	3839.1	3870.3	3853.0
142.5°	3898.2	3922.3	3967.1	3994.5	3977.3
145°	4029.4	4025.6	4084.3	4108.5	4091.3
147.5°	4143.0	4132.7	4191.3	4208.5	4195.0
150°	4253.7	4229.4	4284.8	4305.3	4288.1
152.5°	4346.7	4319.2	4370.9	4391.8	4367.6
155°	4436.4	4405.7	4447.1	4467.6	4440.2
157.5°	4509.0	4481.6	4512.8	4536.9	4509.0
160°	4571.4	4550.5	4571.4	4591.9	4567.7
162.5°	4626.3	4605.8	4623.1	4647.2	4616.1
165°	4674.7	4654.2	4664.5	4688.6	4664.5
167.5°	4712.8	4691.9	4702.5	4726.8	4695.6
170°	4743.9	4723.0	4730.0	4754.2	4723.0
172.5°	4764.4	4743.9	4750.9	4775.1	4743.9
175°	4781.7	4757.5	4764.4	4788.7	4754.2
177.5°	4788.7	4764.4	4768.2	4792.3	4761.2
180°	4771.4	4771.4	4771.4	4771.4	4771.4

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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	9.35	10.12	10.39	11.17	12.59	8.91	9.68	9.95	10.73	12.15
	3H	11.01	11.70	12.06	12.76	14.20	10.52	11.21	11.57	12.27	13.70
	4H	11.59	12.25	12.66	13.31	14.75	11.10	11.76	12.17	12.82	14.26
	6H	11.99	12.60	13.07	13.66	15.12	11.49	12.10	12.57	13.16	14.62
	8H	12.10	12.67	13.18	13.75	15.20	11.59	12.17	12.68	13.25	14.70
	12H	12.14	12.69	13.23	13.76	15.24	11.63	12.18	12.72	13.25	14.73
4H	2H	9.80	10.46	10.87	11.52	12.96	9.45	10.10	10.52	11.16	12.61
	3H	11.66	12.21	12.74	13.30	14.75	11.26	11.80	12.34	12.89	14.35
	4H	12.38	12.88	13.46	13.96	15.44	11.95	12.45	13.04	13.53	15.01
	6H	12.89	13.32	13.99	14.42	15.90	12.46	12.89	13.55	13.99	15.46
	8H	13.04	13.44	14.14	14.54	16.02	12.60	13.01	13.70	14.10	15.59
	12H	13.11	13.48	14.22	14.58	16.08	12.66	13.03	13.77	14.13	15.63
8H	4H	12.57	12.97	13.66	14.06	15.55	12.19	12.59	13.28	13.69	15.17
	6H	13.20	13.53	14.32	14.67	16.15	12.82	13.15	13.93	14.28	15.77
	8H	13.42	13.71	14.54	14.83	16.33	13.03	13.32	14.15	14.44	15.94
	12H	13.55	13.81	14.68	14.92	16.46	13.14	13.40	14.27	14.51	16.05
12H	4H	12.55	12.91	13.66	14.02	15.51	12.18	12.54	13.29	13.65	15.14
	6H	13.23	13.52	14.35	14.64	16.14	12.86	13.15	13.98	14.27	15.77
	8H	13.47	13.73	14.60	14.84	16.38	13.09	13.35	14.22	14.46	16.00