

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: P909456

Luminaire Tested: DFN2DIP-SQ4F0-070D140US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909456
REPORT IS A COMBINATION OF REPORTS P900187 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-070D140US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

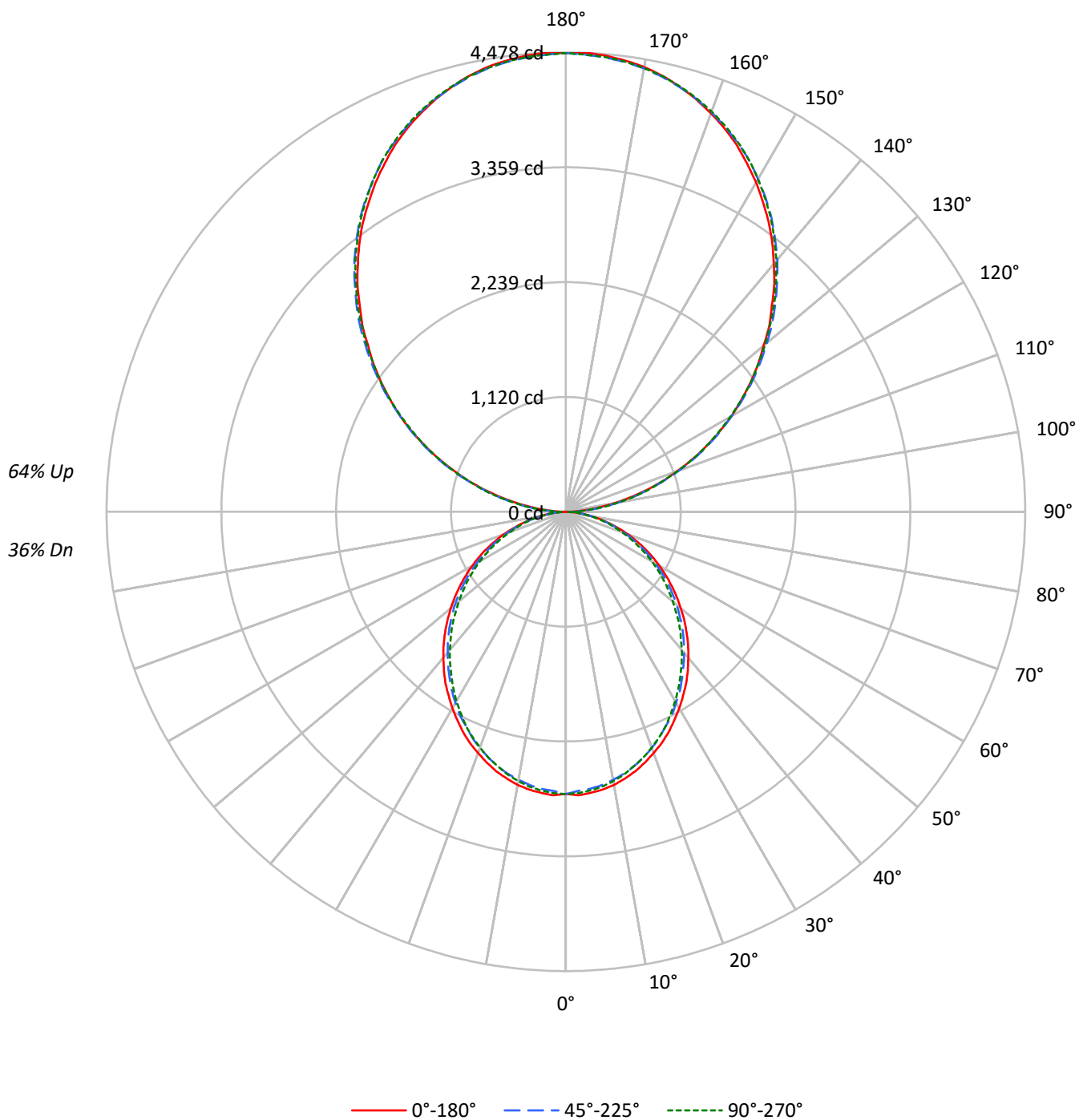
Lumens per Lamp: N/A
Luminaire Lumens: 19510.7 lumens
Efficiency: N/A
Efficacy: 116.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 167.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
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	76	76	76	59	59	59	43	43	43
1	95	90	87	83	85	82	79	76	66	64	62	52	50	49	38	37	36
2	86	79	73	68	78	72	66	62	58	54	51	45	43	41	34	32	31
3	79	69	62	56	71	63	57	52	51	47	43	40	37	34	30	28	26
4	72	61	54	48	65	56	49	44	45	40	37	36	32	29	27	24	22
5	66	54	47	41	59	50	43	38	40	35	31	32	28	25	24	22	20
6	61	49	41	35	55	45	38	33	36	31	27	29	25	22	22	19	17
7	56	44	36	31	50	40	33	28	33	28	24	26	22	20	20	17	15
8	52	40	32	27	47	36	30	25	30	25	21	24	20	17	18	16	14
9	48	36	29	24	44	33	27	22	27	22	19	22	18	16	17	14	12
10	45	33	26	21	41	30	24	20	25	20	17	20	17	14	16	13	11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1930	1930	1930
5°	1933	1904	1917
10°	1917	1878	1891
15°	1889	1848	1851
20°	1851	1805	1810
25°	1813	1754	1763
30°	1766	1707	1702
35°	1721	1651	1638
40°	1665	1594	1577
45°	1610	1538	1515
50°	1549	1478	1443
55°	1486	1409	1377
60°	1415	1328	1301
65°	1337	1243	1212
70°	1237	1140	1116
75°	1099	1017	1028
80°	934	860	859
85°	676	589	577

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3520 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	258.9	1.3
10°-20°	728.4	3.7
20°-30°	1070.5	5.5
30°-40°	1243.3	6.4
40°-50°	1241.7	6.4
50°-60°	1082.8	5.5
60°-70°	800.4	4.1
70°-80°	452.9	2.3
80°-90°	132.2	0.7
90°-100°	276.7	1.4
100°-110°	879.1	4.5
110°-120°	1504.5	7.7
120°-130°	1978.6	10.1
130°-140°	2220.9	11.4
140°-150°	2177.8	11.2
150°-160°	1826.9	9.4
160°-170°	1211.6	6.2
170°-180°	423.5	2.2
0°-30°	2057.8	10.5
0°-40°	3301.1	16.9
0°-60°	5625.6	28.8
0°-90°	7011.1	35.9
90°-120°	2660.3	13.6
90°-150°	9037.6	46.3
90°-180°	12500.0	64.1
0°-180°	19510.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2751	2751	2751	2751	2751	
5°	2751	2740	2711	2732	2727	261
15°	2618	2603	2568	2579	2566	737
25°	2370	2349	2304	2309	2304	1090
35°	2045	2018	1976	1960	1947	1277
45°	1664	1645	1605	1576	1566	1284
55°	1259	1243	1211	1180	1166	1126
65°	849	833	807	783	770	840
75°	444	439	426	410	415	474
85°	108	106	103	95	93	121
90°	4	49	132	124	128	19
95°	197	235	241	241	235	219
105°	812	822	830	837	837	856
115°	1510	1531	1525	1521	1510	1493
125°	2196	2230	2219	2207	2203	1962
135°	2840	2882	2890	2886	2875	2195
145°	3448	3475	3497	3501	3486	2154
155°	3943	3954	3966	3985	3973	1815
165°	4289	4285	4285	4312	4293	1210
175°	4463	4452	4444	4471	4448	424
180°	4471	4471	4471	4471	4471	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2750.6	2750.6	2750.6	2750.6	2750.6
2.5°	2766.6	2753.4	2724.2	2750.6	2745.5
5°	2750.6	2740.3	2711.1	2732.1	2727.0
7.5°	2732.1	2716.3	2687.2	2708.6	2703.2
10°	2703.2	2684.6	2652.9	2674.0	2666.1
12.5°	2663.3	2647.7	2616.0	2629.1	2623.7
15°	2618.5	2602.7	2568.2	2578.9	2565.7
17.5°	2562.8	2547.2	2512.6	2525.9	2512.6
20°	2501.9	2486.3	2449.2	2457.1	2446.7
22.5°	2441.3	2417.5	2383.0	2383.0	2377.6
25°	2369.9	2348.7	2303.9	2309.0	2303.9
27.5°	2290.4	2271.9	2237.7	2229.8	2216.6
30°	2211.3	2189.9	2150.4	2142.5	2131.8
32.5°	2126.5	2110.8	2068.4	2052.5	2041.7
35°	2044.6	2018.2	1975.8	1959.8	1946.6
37.5°	1952.0	1928.1	1885.7	1867.2	1854.0
40°	1856.8	1835.5	1793.1	1769.6	1758.9
42.5°	1764.2	1742.9	1700.8	1674.2	1658.4
45°	1663.8	1645.3	1605.4	1576.5	1565.8
47.5°	1565.8	1547.3	1504.9	1475.7	1460.1
50°	1462.6	1449.4	1412.3	1375.3	1362.1
52.5°	1362.1	1343.6	1309.4	1280.2	1261.6
55°	1259.1	1243.1	1211.4	1179.7	1166.5
57.5°	1155.9	1142.7	1108.1	1076.4	1065.8
60°	1052.6	1042.2	1005.2	976.0	968.2
62.5°	952.1	933.6	907.3	880.9	870.2
65°	849.2	833.1	806.8	782.9	769.7
67.5°	743.4	729.9	706.3	687.8	677.1
70°	645.4	634.8	610.9	592.4	582.0
72.5°	544.9	534.3	521.1	502.6	494.7
75°	444.2	439.2	425.7	410.0	415.4
77.5°	354.5	343.8	338.4	330.5	322.8
80°	264.6	261.9	256.5	248.6	243.3
82.5°	179.9	179.9	177.3	166.7	166.7
85°	108.4	105.8	103.3	95.1	92.6
87.5°	47.7	42.4	37.1	29.2	26.4
90°	4.0	48.6	132.1	124.0	128.1
92.5°	83.6	113.2	117.2	121.3	121.3
95°	196.8	234.6	241.3	241.3	234.6
97.5°	327.6	362.6	377.5	377.5	377.5
100°	478.6	509.6	520.3	520.3	516.2
102.5°	637.6	660.6	675.4	679.4	675.4
105°	811.5	822.3	830.4	837.1	837.1
107.5°	984.0	1000.3	1000.3	1002.9	984.0
110°	1151.2	1172.8	1172.8	1172.8	1162.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1331.8	1354.7	1350.7	1339.9	1331.8
115°	1509.7	1531.4	1524.6	1520.6	1509.7
117.5°	1686.4	1716.1	1697.2	1686.4	1675.6
120°	1864.3	1894.0	1864.3	1864.3	1852.2
122.5°	2026.1	2063.8	2045.0	2034.2	2026.1
125°	2196.0	2229.6	2218.8	2206.7	2202.6
127.5°	2361.7	2403.5	2388.6	2372.5	2361.7
130°	2516.7	2565.3	2558.5	2550.4	2535.6
132.5°	2690.6	2728.4	2731.1	2712.2	2701.4
135°	2840.2	2882.1	2890.1	2886.1	2875.3
137.5°	3007.4	3041.1	3047.9	3045.1	3029.0
140°	3154.3	3188.0	3206.9	3206.9	3192.1
142.5°	3305.3	3339.0	3349.8	3353.9	3339.0
145°	3448.2	3475.1	3496.8	3500.8	3486.0
147.5°	3576.2	3610.0	3626.1	3632.9	3618.0
150°	3708.3	3731.3	3746.1	3758.2	3746.1
152.5°	3825.7	3848.6	3867.5	3882.2	3867.5
155°	3942.9	3953.7	3965.8	3984.7	3972.6
157.5°	4044.0	4052.1	4058.9	4085.8	4066.9
160°	4134.4	4142.5	4146.5	4169.4	4153.2
162.5°	4217.9	4217.9	4221.9	4247.6	4228.7
165°	4289.4	4285.4	4285.4	4312.3	4293.4
167.5°	4354.0	4341.9	4341.9	4368.9	4350.0
170°	4402.6	4391.8	4387.8	4414.7	4391.8
172.5°	4436.3	4425.5	4421.5	4448.5	4425.5
175°	4463.3	4452.5	4444.4	4471.4	4448.5
177.5°	4478.0	4467.3	4459.3	4482.1	4459.3
180°	4471.4	4471.4	4471.4	4471.4	4471.4

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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	8.10	8.85	9.17	9.92	11.38	7.66	8.41	8.73	9.48	10.94
	3H	9.76	10.43	10.84	11.51	12.99	9.27	9.94	10.35	11.02	12.50
	4H	10.35	10.98	11.44	12.06	13.55	9.85	10.49	10.94	11.57	13.05
	6H	10.74	11.33	11.84	12.41	13.91	10.24	10.83	11.34	11.91	13.41
	8H	10.85	11.40	11.95	12.50	13.99	10.34	10.90	11.45	12.00	13.49
	12H	10.89	11.42	12.00	12.52	14.03	10.38	10.91	11.49	12.01	13.52
4H	2H	8.55	9.19	9.65	10.27	11.75	8.20	8.83	9.29	9.91	11.40
	3H	10.41	10.94	11.52	12.05	13.55	10.00	10.54	11.11	11.64	13.14
	4H	11.13	11.61	12.23	12.71	14.23	10.70	11.19	11.81	12.29	13.80
	6H	11.64	12.06	12.75	13.18	14.69	11.21	11.62	12.32	12.75	14.25
	8H	11.79	12.18	12.90	13.29	14.82	11.35	11.74	12.47	12.85	14.38
	12H	11.86	12.21	12.99	13.34	14.87	11.41	11.76	12.54	12.89	14.42
8H	4H	11.31	11.70	12.43	12.82	14.34	10.94	11.33	12.05	12.44	13.97
	6H	11.94	12.27	13.08	13.42	14.94	11.56	11.88	12.70	13.04	14.56
	8H	12.17	12.45	13.31	13.59	15.13	11.77	12.06	12.92	13.19	14.73
	12H	12.30	12.54	13.44	13.68	15.26	11.89	12.13	13.03	13.27	14.84
12H	4H	11.29	11.65	12.43	12.77	14.30	10.93	11.28	12.06	12.40	13.94
	6H	11.97	12.26	13.12	13.39	14.93	11.60	11.88	12.74	13.02	14.56
	8H	12.21	12.46	13.36	13.59	15.17	11.83	12.08	12.98	13.21	14.79