

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: P909534

Luminaire Tested: DFN2DIP-SQ4F0-090D160US840-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909534
REPORT IS A COMBINATION OF REPORTS P900210 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D160US840-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

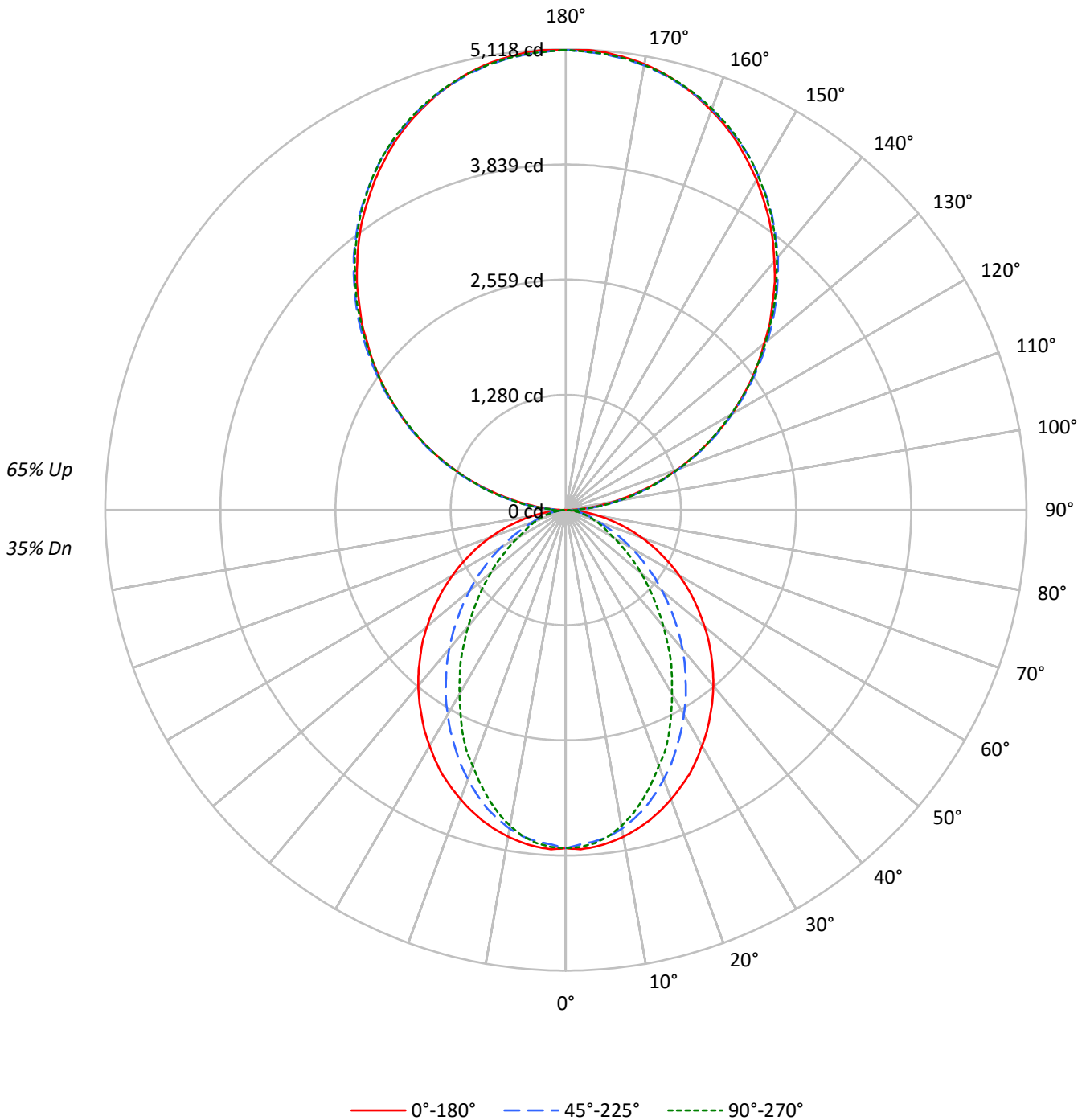
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 22026.2 lumens
Efficiency: N/A
Efficacy: 107.5 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				20	
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	104	104	104	104	94	94	94	94	75	75	75	58	58	58	42	42	42	35				35
1	95	91	87	84	86	82	79	76	66	64	62	52	50	49	38	37	36	30				30
2	87	80	74	69	78	72	67	63	58	55	52	46	43	41	34	32	31	26				26
3	79	70	63	58	71	64	58	53	52	48	44	41	38	35	30	28	27	22				22
4	73	62	55	49	65	57	50	45	46	41	38	36	33	31	27	25	23	19				19
5	67	56	48	42	60	51	44	39	41	36	33	33	29	27	25	22	21	17				17
6	61	50	42	37	55	46	39	34	37	32	29	30	26	23	23	20	18	15				15
7	57	45	37	32	51	41	35	30	34	29	25	27	23	21	21	18	16	14				14
8	53	41	33	28	48	37	31	26	31	26	22	25	21	19	19	17	15	12				12
9	49	37	30	25	44	34	28	24	28	23	20	23	19	17	18	15	13	11				11
10	46	34	27	23	41	31	25	21	26	21	18	21	18	15	16	14	12	10				10

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2636	2636	2636
5°	2640	2594	2611
10°	2614	2544	2527
15°	2578	2461	2396
20°	2530	2345	2236
25°	2481	2216	2081
30°	2416	2083	1884
35°	2352	1940	1711
40°	2286	1792	1512
45°	2211	1628	1332
50°	2132	1462	1156
55°	2050	1285	987
60°	1955	1100	813
65°	1846	911	733
70°	1714	736	664
75°	1548	650	606
80°	1307	547	528
85°	910	368	402

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 4021 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	352.1	1.6
10°-20°	966.5	4.4
20°-30°	1356.9	6.2
30°-40°	1479.1	6.7
40°-50°	1359.4	6.2
50°-60°	1067.6	4.8
60°-70°	694.9	3.2
70°-80°	357.7	1.6
80°-90°	105.8	0.5
90°-100°	316.2	1.4
100°-110°	1004.8	4.6
110°-120°	1719.5	7.8
120°-130°	2261.4	10.3
130°-140°	2538.3	11.5
140°-150°	2489.1	11.3
150°-160°	2088.0	9.5
160°-170°	1384.7	6.3
170°-180°	484.0	2.2
0°-30°	2675.4	12.1
0°-40°	4154.5	18.9
0°-60°	6581.5	29.9
0°-90°	7740.0	35.1
90°-120°	3040.5	13.8
90°-150°	10329.4	46.9
90°-180°	14286.0	64.9
0°-180°	22026.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3756	3756	3756	3756	3756	
5°	3756	3739	3695	3726	3716	356
15°	3573	3535	3420	3355	3321	1007
25°	3243	3134	2910	2771	2720	1492
35°	2794	2621	2322	2108	2033	1749
45°	2284	2057	1700	1458	1377	1764
55°	1737	1472	1105	901	836	1552
65°	1173	897	592	476	466	1163
75°	625	387	272	248	245	661
85°	146	75	64	64	64	168
90°	5	55	151	142	146	22
95°	225	268	276	276	268	250
105°	928	940	949	957	957	979
115°	1726	1750	1742	1738	1726	1707
125°	2510	2548	2536	2522	2518	2243
135°	3246	3294	3303	3299	3286	2509
145°	3941	3972	3996	4001	3984	2462
155°	4506	4519	4533	4554	4540	2074
165°	4902	4898	4898	4929	4907	1383
175°	5101	5089	5080	5110	5084	485
180°	5110	5110	5110	5110	5110	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3756.4	3756.4	3756.4	3756.4	3756.4
2.5°	3773.4	3756.4	3718.8	3753.2	3746.3
5°	3756.4	3739.4	3695.1	3725.7	3715.6
7.5°	3725.7	3705.5	3657.9	3671.3	3654.3
10°	3685.0	3661.2	3593.4	3582.9	3562.7
12.5°	3634.1	3603.5	3511.5	3491.3	3453.7
15°	3572.8	3535.3	3419.9	3355.3	3321.4
17.5°	3501.4	3447.0	3304.1	3229.4	3175.0
20°	3419.9	3351.7	3181.8	3097.1	3022.0
22.5°	3331.5	3253.3	3056.0	2940.5	2889.7
25°	3243.2	3134.2	2909.9	2770.7	2719.5
27.5°	3137.9	3022.0	2773.9	2614.1	2535.9
30°	3025.7	2896.2	2624.2	2451.1	2359.1
32.5°	2916.7	2760.2	2481.7	2277.7	2192.5
35°	2794.5	2621.0	2322.0	2107.8	2032.8
37.5°	2675.4	2488.3	2172.3	1937.5	1852.8
40°	2549.6	2345.8	2015.8	1774.5	1686.2
42.5°	2420.4	2203.0	1859.6	1607.9	1523.1
45°	2284.5	2056.6	1699.8	1458.1	1376.6
47.5°	2155.4	1914.1	1546.9	1305.3	1230.6
50°	2012.6	1771.2	1397.2	1162.5	1091.4
52.5°	1873.0	1618.0	1254.5	1030.1	965.5
55°	1737.0	1471.9	1104.7	901.0	836.4
57.5°	1597.8	1325.9	972.4	781.9	727.5
60°	1454.9	1183.0	832.8	659.6	605.2
62.5°	1315.8	1043.8	713.8	550.8	523.7
65°	1172.9	897.4	591.5	476.1	465.6
67.5°	1036.9	761.3	476.1	418.0	407.9
70°	894.1	629.0	394.3	360.3	346.6
72.5°	758.1	506.3	329.6	302.6	295.8
75°	625.4	387.4	272.0	248.1	244.9
77.5°	493.0	275.2	214.2	200.6	193.7
80°	370.4	197.3	163.0	149.7	149.7
82.5°	258.2	132.7	112.2	105.3	105.3
85°	146.0	74.6	64.5	64.5	64.5
87.5°	54.4	27.1	27.1	23.8	23.8
90°	4.6	55.4	151.0	141.8	146.3
92.5°	95.5	129.5	134.0	138.7	138.7
95°	224.9	268.1	275.8	275.8	268.1
97.5°	374.4	414.4	431.4	431.4	431.4
100°	546.9	582.4	594.7	594.7	590.1
102.5°	728.7	755.0	771.8	776.5	771.8
105°	927.5	939.8	949.1	956.7	956.7
107.5°	1124.7	1143.2	1143.2	1146.3	1124.7
110°	1315.8	1340.4	1340.4	1340.4	1328.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1522.2	1548.4	1543.8	1531.5	1522.2
115°	1725.6	1750.2	1742.5	1737.9	1725.6
117.5°	1927.4	1961.3	1939.7	1927.4	1915.1
120°	2130.8	2164.6	2130.8	2130.8	2116.9
122.5°	2315.6	2358.8	2337.2	2324.9	2315.6
125°	2509.8	2548.3	2536.0	2522.1	2517.5
127.5°	2699.3	2747.0	2730.1	2711.6	2699.3
130°	2876.5	2931.9	2924.3	2915.0	2898.0
132.5°	3075.2	3118.4	3121.4	3099.9	3087.6
135°	3246.2	3294.0	3303.3	3298.6	3286.3
137.5°	3437.3	3475.8	3483.5	3480.4	3461.9
140°	3605.2	3643.7	3665.3	3665.3	3648.3
142.5°	3777.8	3816.3	3828.6	3833.2	3816.3
145°	3941.1	3971.9	3996.5	4001.2	3984.2
147.5°	4087.4	4126.0	4144.5	4152.2	4135.2
150°	4238.4	4264.7	4281.6	4295.5	4281.6
152.5°	4372.5	4398.7	4420.3	4437.1	4420.3
155°	4506.5	4518.8	4532.7	4554.3	4540.5
157.5°	4622.1	4631.3	4639.0	4669.8	4648.3
160°	4725.3	4734.6	4739.2	4765.4	4746.9
162.5°	4820.8	4820.8	4825.4	4854.7	4833.1
165°	4902.5	4897.8	4897.8	4928.6	4907.1
167.5°	4976.4	4962.6	4962.6	4993.4	4971.8
170°	5031.9	5019.5	5015.0	5045.8	5019.5
172.5°	5070.4	5058.1	5053.5	5084.3	5058.1
175°	5101.2	5088.9	5079.6	5110.5	5084.3
177.5°	5118.2	5105.9	5096.6	5122.8	5096.6
180°	5110.5	5110.5	5110.5	5110.5	5110.5



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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	8.95	9.68	10.03	10.75	12.22	4.91	5.64	5.99	6.71	8.18
	3H	10.63	11.27	11.72	12.36	13.85	6.10	6.74	7.18	7.83	9.31
	4H	11.23	11.85	12.33	12.93	14.43	6.54	7.15	7.64	8.24	9.73
	6H	11.65	12.22	12.76	13.31	14.81	6.86	7.42	7.97	8.51	10.02
	8H	11.78	12.31	12.89	13.42	14.92	6.95	7.48	8.06	8.59	10.09
	12H	11.84	12.35	12.96	13.45	14.97	6.99	7.49	8.10	8.59	10.12
4H	2H	8.96	9.57	10.07	10.66	12.15	5.50	6.11	6.61	7.20	8.69
	3H	10.78	11.29	11.90	12.41	13.91	6.84	7.35	7.95	8.46	9.97
	4H	11.47	11.94	12.59	13.04	14.57	7.38	7.85	8.50	8.96	10.48
	6H	11.99	12.39	13.11	13.51	15.03	7.80	8.20	8.92	9.33	10.85
	8H	12.16	12.54	13.29	13.66	15.19	7.93	8.30	9.05	9.42	10.95
	12H	12.26	12.59	13.40	13.72	15.27	7.99	8.32	9.13	9.46	11.00
8H	4H	11.43	11.81	12.56	12.93	14.46	7.66	8.03	8.78	9.15	10.69
	6H	12.00	12.31	13.15	13.47	15.00	8.18	8.48	9.32	9.64	11.18
	8H	12.22	12.49	13.37	13.63	15.18	8.37	8.64	9.52	9.78	11.33
	12H	12.36	12.59	13.51	13.73	15.32	8.48	8.72	9.64	9.86	11.44
12H	4H	11.38	11.72	12.52	12.85	14.39	7.66	8.00	8.80	9.13	10.67
	6H	11.98	12.25	13.13	13.39	14.94	8.23	8.49	9.38	9.64	11.19
	8H	12.19	12.43	13.35	13.57	15.16	8.43	8.67	9.59	9.81	11.39