

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: P909662

Luminaire Tested: DFN2DIP-SQ4F0-140D100US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

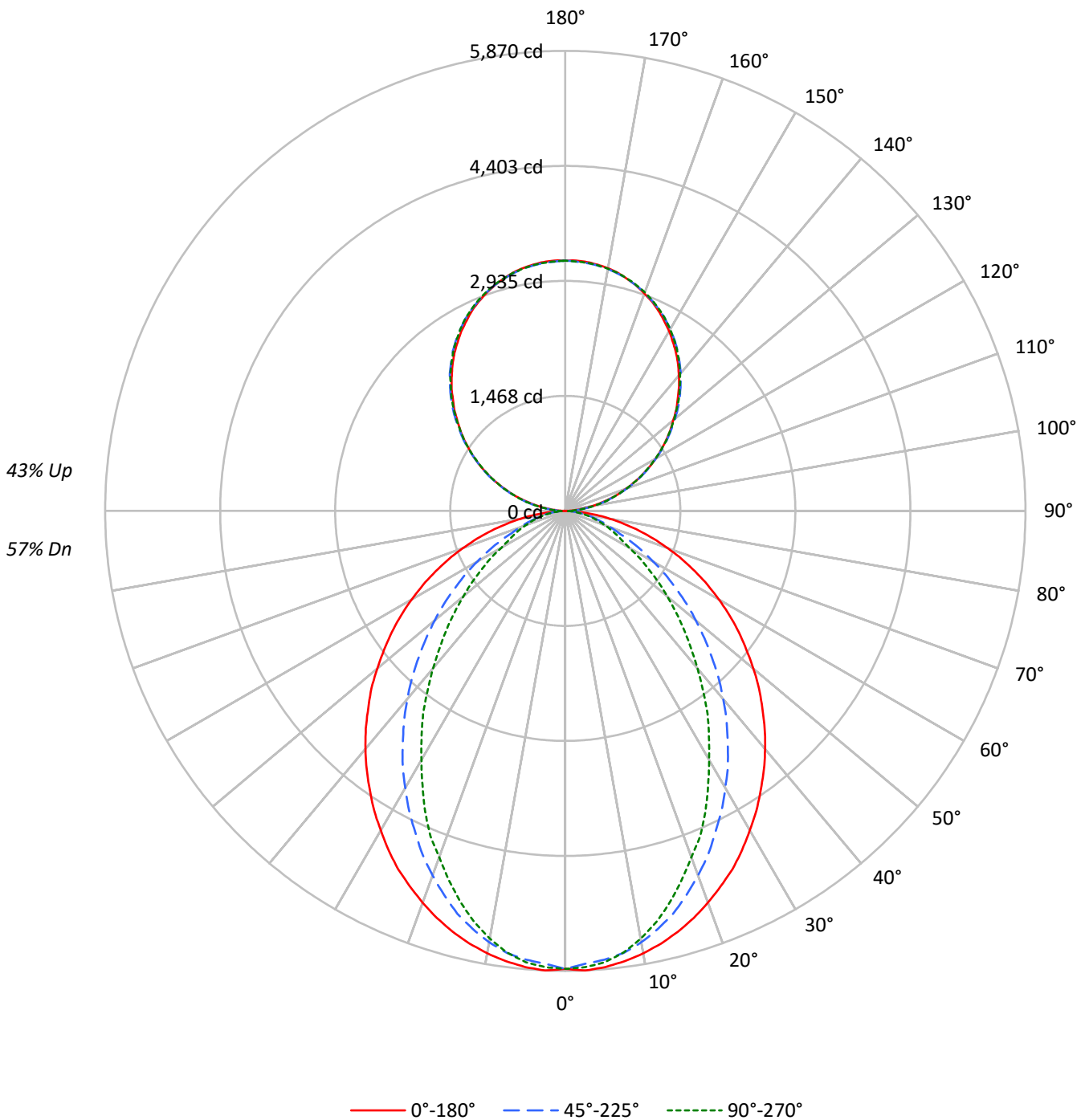
Test Method: LM-79-2019  
Report Number: P909662  
REPORT IS A COMBINATION OF REPORTS P900146 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-140D100US840-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20954.7 lumens  
Efficiency: N/A  
Efficacy: 95.9 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: General Diffuse  
  
Input Watts (W): 218.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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			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	109	109	109	109	101	101	101	101	87	87	87	75	75	75	63	63	63	57	57	57	57
1	100	96	92	89	93	89	86	83	78	75	73	67	65	63	56	55	54	49	49	49	49
2	92	84	78	73	85	79	74	69	69	65	61	59	56	54	50	48	47	42	42	42	42
3	84	75	68	62	78	70	64	59	61	56	52	53	49	46	45	42	40	36	36	36	36
4	77	66	59	53	72	62	56	50	55	49	45	47	43	40	41	38	35	32	32	32	32
5	71	60	52	46	66	56	49	44	49	44	39	43	39	35	37	34	31	28	28	28	28
6	66	54	46	40	61	51	43	38	45	39	35	39	34	31	34	30	28	25	25	25	25
7	61	49	41	35	57	46	39	34	41	35	31	36	31	28	31	27	25	22	22	22	22
8	57	44	37	32	53	42	35	30	37	32	28	33	28	25	29	25	22	20	20	20	20
9	53	41	33	28	49	38	32	27	34	29	25	30	26	23	26	23	20	18	18	18	18
10	49	37	30	26	46	35	29	25	32	26	23	28	24	21	25	21	19	17	17	17	17

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	4100	4100	4100
5°	4107	4036	4062
10°	4066	3957	3931
15°	4010	3827	3728
20°	3936	3648	3478
25°	3860	3446	3237
30°	3758	3240	2930
35°	3658	3018	2661
40°	3557	2788	2352
45°	3439	2532	2072
50°	3316	2275	1799
55°	3189	1999	1536
60°	3042	1711	1265
65°	2872	1418	1140
70°	2666	1144	1034
75°	2408	1011	943
80°	2034	851	822
85°	1416	572	626

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3439 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	547.6	2.6
10°-20°	1503.4	7.2
20°-30°	2110.7	10.1
30°-40°	2300.8	11.0
40°-50°	2114.7	10.1
50°-60°	1660.7	7.9
60°-70°	1081.0	5.2
70°-80°	556.5	2.7
80°-90°	151.1	0.7
90°-100°	197.6	0.9
100°-110°	627.9	3.0
110°-120°	1074.6	5.1
120°-130°	1413.3	6.7
130°-140°	1586.4	7.6
140°-150°	1555.6	7.4
150°-160°	1304.9	6.2
160°-170°	865.4	4.1
170°-180°	302.5	1.4
0°-30°	4161.7	19.9
0°-40°	6462.5	30.8
0°-60°	10237.9	48.9
0°-90°	12026.5	57.4
90°-120°	1900.2	9.1
90°-150°	6455.4	30.8
90°-180°	8928.0	42.6
0°-180°	20954.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	5843	5843	5843	5843	5843	
5°	5843	5817	5748	5796	5780	554
15°	5558	5499	5320	5219	5167	1566
25°	5045	4875	4526	4310	4230	2320
35°	4347	4077	3612	3279	3162	2721
45°	3554	3199	2644	2268	2142	2744
55°	2702	2290	1718	1402	1301	2414
65°	1824	1396	920	740	724	1809
75°	973	603	423	386	381	1029
85°	227	116	100	100	100	261
90°	3	35	94	89	92	21
95°	141	168	172	172	168	156
105°	580	587	593	598	598	612
115°	1078	1094	1089	1086	1078	1067
125°	1568	1593	1585	1576	1573	1402
135°	2029	2059	2064	2062	2054	1568
145°	2463	2482	2498	2500	2490	1539
155°	2816	2824	2833	2846	2838	1296
165°	3064	3061	3061	3080	3067	864
175°	3188	3180	3175	3194	3177	303
180°	3194	3194	3194	3194	3194	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	5843.3	5843.3	5843.3	5843.3	5843.3
2.5°	5869.6	5843.3	5784.9	5838.2	5827.5
5°	5843.3	5816.9	5747.9	5795.6	5779.9
7.5°	5795.6	5764.1	5690.1	5710.9	5684.5
10°	5732.2	5695.1	5589.7	5573.3	5541.9
12.5°	5653.0	5605.4	5462.3	5430.9	5372.6
15°	5557.7	5499.3	5319.8	5219.4	5166.7
17.5°	5446.6	5361.9	5139.7	5023.6	4938.8
20°	5319.8	5213.7	4949.6	4817.7	4701.0
22.5°	5182.3	5060.6	4753.7	4574.2	4495.1
25°	5044.9	4875.4	4526.5	4309.9	4230.2
27.5°	4881.1	4701.0	4315.0	4066.4	3944.7
30°	4706.6	4505.2	4082.2	3812.8	3669.8
32.5°	4537.1	4293.6	3860.5	3543.0	3410.6
35°	4347.0	4077.1	3612.0	3278.7	3162.0
37.5°	4161.9	3870.6	3379.1	3013.9	2882.1
40°	3966.0	3649.0	3135.6	2760.4	2622.9
42.5°	3765.2	3426.9	2892.8	2501.1	2369.2
45°	3553.6	3199.1	2644.2	2268.3	2141.5
47.5°	3352.8	2977.5	2406.3	2030.4	1914.3
50°	3130.6	2755.3	2173.4	1808.3	1697.7
52.5°	2913.5	2516.8	1951.3	1602.4	1501.9
55°	2702.0	2289.6	1718.5	1401.5	1301.0
57.5°	2485.4	2062.3	1512.6	1216.4	1131.7
60°	2263.2	1840.2	1295.5	1026.1	941.4
62.5°	2046.7	1623.7	1110.3	856.7	814.7
65°	1824.5	1395.8	920.1	740.5	724.3
67.5°	1613.0	1184.4	740.5	650.3	634.5
70°	1390.8	978.5	613.2	560.5	539.2
72.5°	1179.3	787.7	512.8	470.7	460.1
75°	972.8	602.6	423.0	386.0	380.9
77.5°	767.0	428.1	333.3	311.9	301.2
80°	576.2	306.9	253.6	232.9	232.9
82.5°	401.7	206.4	174.5	163.8	163.8
85°	227.2	116.1	100.4	100.4	100.4
87.5°	84.7	42.1	42.1	37.1	37.1
90°	2.9	34.6	94.3	88.6	91.5
92.5°	59.7	80.9	83.8	86.6	86.6
95°	140.6	167.5	172.4	172.4	167.5
97.5°	234.0	259.0	269.6	269.6	269.6
100°	341.8	364.0	371.6	371.6	368.8
102.5°	455.4	471.8	482.4	485.2	482.4
105°	579.7	587.3	593.1	597.9	597.9
107.5°	702.9	714.5	714.5	716.4	702.9
110°	822.3	837.7	837.7	837.7	830.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	951.3	967.7	964.8	957.0	951.3
115°	1078.4	1093.8	1089.0	1086.1	1078.4
117.5°	1204.6	1225.8	1212.2	1204.6	1196.8
120°	1331.6	1352.8	1331.6	1331.6	1323.0
122.5°	1447.1	1474.1	1460.7	1453.0	1447.1
125°	1568.5	1592.6	1584.9	1576.2	1573.4
127.5°	1687.0	1716.8	1706.2	1694.7	1687.0
130°	1797.7	1832.3	1827.6	1821.7	1811.2
132.5°	1921.9	1948.8	1950.8	1937.3	1929.6
135°	2028.7	2058.6	2064.4	2061.5	2053.8
137.5°	2148.2	2172.2	2177.1	2175.1	2163.5
140°	2253.1	2277.1	2290.7	2290.7	2280.1
142.5°	2361.0	2385.0	2392.7	2395.6	2385.0
145°	2463.0	2482.2	2497.7	2500.5	2489.9
147.5°	2554.5	2578.6	2590.1	2595.0	2584.3
150°	2648.9	2665.2	2675.8	2684.4	2675.8
152.5°	2732.6	2749.0	2762.5	2773.1	2762.5
155°	2816.4	2824.1	2832.8	2846.2	2837.5
157.5°	2888.6	2894.4	2899.2	2918.4	2905.0
160°	2953.1	2958.9	2961.7	2978.1	2966.6
162.5°	3012.8	3012.8	3015.7	3033.9	3020.5
165°	3063.8	3060.9	3060.9	3080.2	3066.8
167.5°	3110.1	3101.4	3101.4	3120.7	3107.2
170°	3144.7	3137.0	3134.1	3153.4	3137.0
172.5°	3168.8	3161.1	3158.2	3177.4	3161.1
175°	3188.0	3180.4	3174.6	3193.8	3177.4
177.5°	3198.6	3191.0	3185.1	3201.5	3185.1
180°	3193.8	3193.8	3193.8	3193.8	3193.8



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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	12.72	13.62	13.62	14.53	15.70	8.69	9.58	9.58	10.49	11.66
	3H	14.41	15.21	15.32	16.13	17.32	9.88	10.68	10.79	11.60	12.79
	4H	15.03	15.78	15.95	16.71	17.91	10.33	11.09	11.26	12.02	13.22
	6H	15.45	16.15	16.39	17.08	18.30	10.66	11.35	11.59	12.29	13.50
	8H	15.58	16.25	16.53	17.20	18.41	10.75	11.41	11.70	12.36	13.57
	12H	15.65	16.28	16.60	17.22	18.46	10.80	11.43	11.75	12.37	13.61
4H	2H	12.75	13.51	13.68	14.43	15.63	9.29	10.05	10.22	10.97	12.17
	3H	14.59	15.22	15.53	16.18	17.39	10.65	11.28	11.59	12.23	13.45
	4H	15.29	15.86	16.24	16.81	18.05	11.20	11.77	12.15	12.72	13.96
	6H	15.81	16.30	16.78	17.28	18.52	11.62	12.11	12.59	13.09	14.33
	8H	15.99	16.45	16.96	17.42	18.67	11.75	12.21	12.72	13.18	14.44
	12H	16.09	16.50	17.07	17.49	18.75	11.82	12.24	12.81	13.22	14.48
8H	4H	15.26	15.72	16.23	16.69	17.94	11.49	11.95	12.45	12.92	14.17
	6H	15.83	16.21	16.83	17.23	18.48	12.01	12.39	13.00	13.40	14.65
	8H	16.05	16.39	17.05	17.39	18.66	12.20	12.54	13.20	13.54	14.81
	12H	16.20	16.49	17.20	17.49	18.80	12.32	12.62	13.33	13.61	14.93
12H	4H	15.22	15.63	16.20	16.62	17.87	11.50	11.91	12.48	12.90	14.15
	6H	15.81	16.15	16.81	17.15	18.41	12.06	12.39	13.06	13.40	14.66
	8H	16.04	16.33	17.04	17.33	18.64	12.27	12.57	13.28	13.56	14.88