

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: P906733

Luminaire Tested: DFN2DIP-SQ4F0-070D160US835-FLLONL

Issue Date: 11/21/2024

**Test Information**

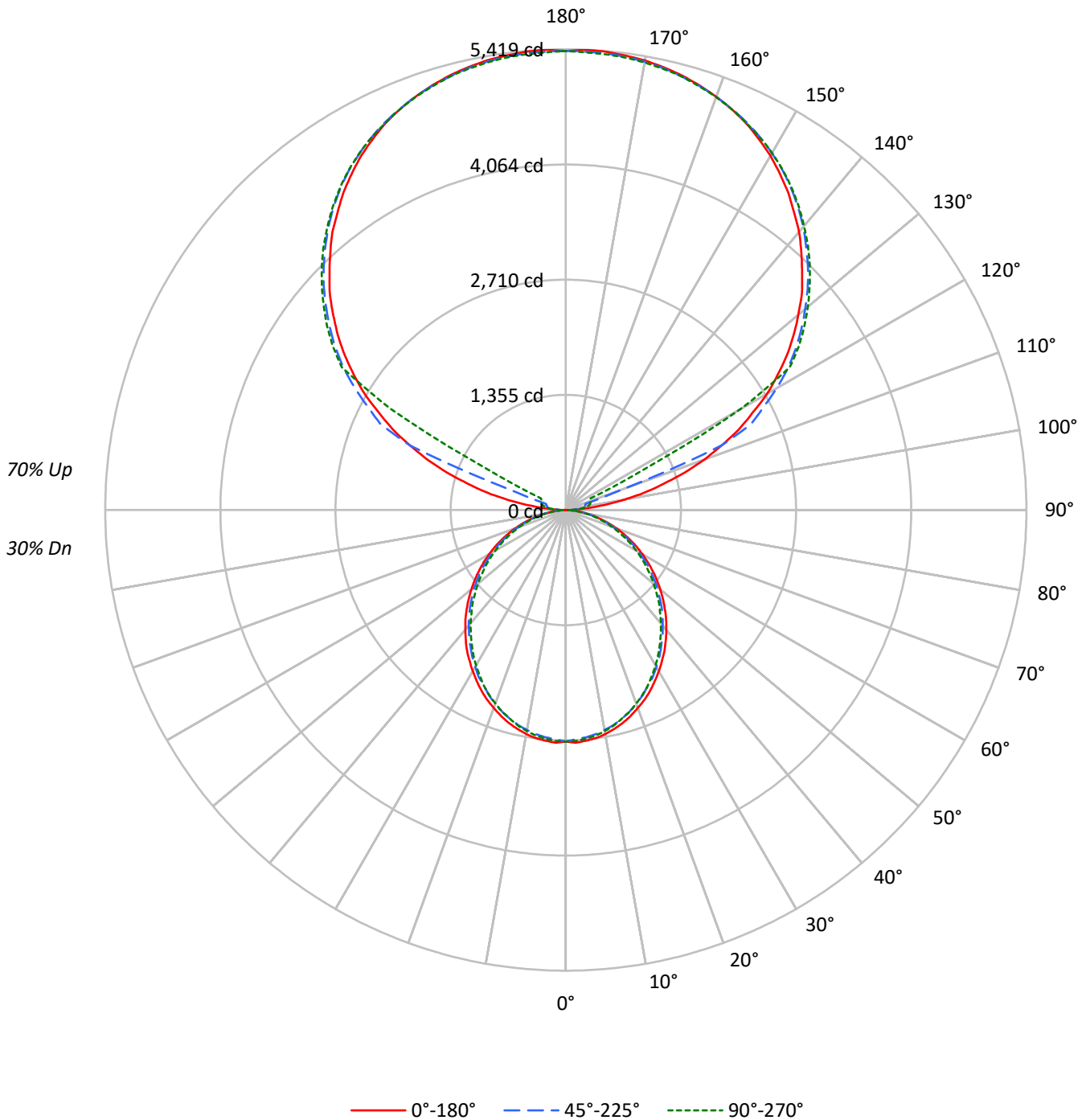
Test Method: LM-79-2019  
Report Number: P906733  
REPORT IS A COMBINATION OF REPORTS P901725 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-070D160US835-FLLONL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 22770.0 lumens  
Efficiency: N/A  
Efficacy: 124.2 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): 183.4  
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				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	102	102	102	102	92	92	92	92	72	72	72	55	55	55	38	38	38	30				30
1	93	89	85	82	84	80	77	74	63	61	59	48	47	45	34	33	32	26				26
2	85	78	72	67	76	70	65	61	56	52	49	42	40	38	30	28	27	21				21
3	78	68	61	56	69	62	56	51	49	45	41	37	34	32	26	25	23	18				18
4	71	60	53	47	63	55	48	43	43	39	35	33	30	27	23	21	20	16				16
5	65	54	46	40	58	49	42	37	39	34	30	30	26	24	21	19	17	14				14
6	60	48	40	35	53	43	37	32	35	30	26	27	23	21	19	17	15	12				12
7	55	43	36	30	49	39	32	28	31	26	23	24	21	18	17	15	13	11				11
8	51	39	32	27	46	36	29	24	29	24	20	22	19	16	16	14	12	9				9
9	47	36	28	23	43	32	26	22	26	21	18	20	17	14	15	12	11	9				9
10	44	33	26	21	40	30	23	19	24	19	16	19	15	13	14	11	10	8				8

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

	0°	45°	90°
0°	1911	1911	1911
5°	1914	1885	1898
10°	1899	1860	1873
15°	1871	1830	1833
20°	1833	1788	1792
25°	1795	1737	1746
30°	1748	1690	1686
35°	1704	1635	1622
40°	1649	1579	1562
45°	1594	1523	1500
50°	1534	1464	1429
55°	1472	1396	1363
60°	1401	1315	1288
65°	1324	1231	1200
70°	1225	1129	1105
75°	1089	1007	1018
80°	925	852	850
85°	669	583	571

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2894 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	256.4	1.1
10°-20°	721.3	3.2
20°-30°	1060.0	4.7
30°-40°	1231.1	5.4
40°-50°	1229.6	5.4
50°-60°	1072.2	4.7
60°-70°	792.6	3.5
70°-80°	448.4	2.0
80°-90°	127.9	0.6
90°-100°	178.0	0.8
100°-110°	663.8	2.9
110°-120°	1760.4	7.7
120°-130°	2919.7	12.8
130°-140°	3101.5	13.6
140°-150°	2882.5	12.7
150°-160°	2317.4	10.2
160°-170°	1493.3	6.6
170°-180°	514.0	2.3
0°-30°	2037.7	8.9
0°-40°	3268.8	14.4
0°-60°	5570.6	24.5
0°-90°	6939.5	30.5
90°-120°	2602.2	11.4
90°-150°	11505.9	50.5
90°-180°	15831.0	69.5
0°-180°	22770.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2724	2724	2724	2724	2724	
5°	2724	2714	2685	2705	2700	259
15°	2593	2577	2543	2554	2541	730
25°	2347	2326	2281	2286	2281	1080
35°	2025	1998	1956	1941	1928	1264
45°	1648	1629	1590	1561	1550	1271
55°	1247	1231	1200	1168	1155	1115
65°	841	825	799	775	762	831
75°	440	435	422	406	411	470
85°	107	105	102	94	92	120
90°	4	47	78	98	105	21
95°	254	125	152	172	168	301
105°	1188	1305	238	281	297	1269
115°	2247	2313	2411	602	321	2212
125°	3176	3227	3302	3329	3341	2833
135°	3931	3994	4028	4068	4060	3036
145°	4560	4556	4622	4650	4630	2852
155°	5021	4986	5033	5056	5025	2314
165°	5290	5267	5279	5306	5279	1495
175°	5411	5384	5392	5419	5380	515
180°	5400	5400	5400	5400	5400	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2723.7	2723.7	2723.7	2723.7	2723.7
2.5°	2739.6	2726.5	2697.6	2723.7	2718.7
5°	2723.7	2713.5	2684.6	2705.4	2700.4
7.5°	2705.4	2689.8	2660.9	2682.1	2676.8
10°	2676.8	2658.4	2627.0	2647.9	2640.1
12.5°	2637.3	2621.8	2590.4	2603.4	2598.1
15°	2592.9	2577.3	2543.1	2553.7	2540.6
17.5°	2537.8	2522.3	2488.1	2501.2	2488.1
20°	2477.5	2462.0	2425.3	2433.1	2422.8
22.5°	2417.5	2393.9	2359.7	2359.7	2354.4
25°	2346.7	2325.8	2281.4	2286.4	2281.4
27.5°	2268.0	2249.7	2215.8	2208.0	2194.9
30°	2189.7	2168.5	2129.4	2121.6	2111.0
32.5°	2105.7	2090.2	2048.2	2032.4	2021.8
35°	2024.6	1998.5	1956.5	1940.7	1927.6
37.5°	1932.9	1909.3	1867.3	1849.0	1835.9
40°	1838.7	1817.6	1775.6	1752.3	1741.7
42.5°	1747.0	1725.9	1684.2	1657.8	1642.2
45°	1647.5	1629.2	1589.7	1561.1	1550.5
47.5°	1550.5	1532.2	1490.2	1461.3	1445.8
50°	1448.3	1435.2	1398.5	1361.9	1348.8
52.5°	1348.8	1330.5	1296.6	1267.7	1249.3
55°	1246.8	1231.0	1199.6	1168.2	1155.1
57.5°	1144.6	1131.5	1097.3	1065.9	1055.4
60°	1042.3	1032.0	995.4	966.5	958.7
62.5°	942.8	924.5	898.4	872.3	861.7
65°	840.9	825.0	798.9	775.3	762.2
67.5°	736.1	722.8	699.4	681.1	670.5
70°	639.1	628.6	604.9	586.6	576.3
72.5°	539.6	529.1	516.0	497.7	489.9
75°	439.9	434.9	421.5	406.0	411.3
77.5°	351.0	340.4	335.1	327.3	319.6
80°	262.0	259.3	254.0	246.2	240.9
82.5°	178.1	178.1	175.6	165.1	165.1
85°	107.3	104.8	102.3	94.2	91.7
87.5°	47.2	42.0	36.7	28.9	26.1
90°	3.7	46.9	77.9	97.9	105.3
92.5°	97.9	82.1	93.7	101.6	105.3
95°	253.8	124.8	152.2	172.1	168.0
97.5°	457.0	136.9	199.0	211.1	214.8
100°	691.8	156.4	222.7	253.8	261.7
102.5°	949.3	941.9	230.6	273.3	285.3
105°	1187.8	1305.2	238.5	281.2	296.9
107.5°	1465.2	1562.7	246.4	289.1	304.8
110°	1731.1	1812.8	683.9	293.2	308.5



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1981.2	2051.3	1984.9	300.7	312.7
115°	2246.6	2312.9	2410.8	601.8	320.6
117.5°	2477.2	2555.1	2622.0	2062.9	1039.3
120°	2735.2	2793.6	2864.1	2911.0	2383.5
122.5°	2953.7	3016.3	3094.7	3117.9	3122.1
125°	3176.4	3227.4	3301.7	3329.1	3340.7
127.5°	3379.6	3434.4	3493.3	3532.3	3536.0
130°	3571.3	3633.9	3676.6	3719.7	3716.0
132.5°	3766.6	3817.6	3860.3	3895.6	3891.9
135°	3930.8	3993.5	4028.3	4067.7	4059.8
137.5°	4102.5	4149.4	4188.8	4227.8	4216.2
140°	4270.5	4302.0	4344.7	4380.0	4360.5
142.5°	4411.5	4438.9	4489.5	4520.6	4501.1
145°	4560.0	4555.8	4622.2	4649.5	4630.1
147.5°	4688.5	4676.9	4743.3	4762.8	4747.4
150°	4813.8	4786.4	4849.1	4872.3	4852.8
152.5°	4919.1	4888.0	4946.5	4970.2	4942.8
155°	5020.7	4985.9	5032.8	5056.0	5024.9
157.5°	5102.9	5071.8	5107.0	5134.4	5102.9
160°	5173.4	5149.7	5173.4	5196.6	5169.2
162.5°	5235.6	5212.4	5231.8	5259.2	5224.0
165°	5290.3	5267.1	5278.7	5306.1	5278.7
167.5°	5333.5	5309.8	5321.9	5349.2	5314.0
170°	5368.7	5345.1	5352.9	5380.3	5345.1
172.5°	5391.9	5368.7	5376.6	5404.0	5368.7
175°	5411.4	5384.0	5391.9	5419.3	5380.3
177.5°	5419.3	5391.9	5396.1	5423.5	5388.2
180°	5399.8	5399.8	5399.8	5399.8	5399.8



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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	7.39	8.10	8.49	9.20	10.72	6.94	7.65	8.05	8.75	10.28
	3H	9.04	9.67	10.16	10.79	12.33	8.55	9.18	9.67	10.30	11.84
	4H	9.62	10.23	10.75	11.34	12.89	9.13	9.73	10.26	10.84	12.39
	6H	10.02	10.57	11.15	11.69	13.25	9.52	10.07	10.65	11.19	12.75
	8H	10.12	10.65	11.26	11.78	13.33	9.62	10.15	10.76	11.28	12.83
	12H	10.16	10.67	11.31	11.79	13.37	9.66	10.16	10.80	11.28	12.86
4H	2H	7.83	8.43	8.96	9.55	11.09	7.47	8.08	8.61	9.19	10.74
	3H	9.69	10.19	10.83	11.33	12.89	9.28	9.78	10.42	10.92	12.48
	4H	10.40	10.86	11.54	11.99	13.57	9.97	10.44	11.12	11.56	13.14
	6H	10.91	11.30	12.06	12.46	14.03	10.48	10.87	11.62	12.02	13.59
	8H	11.06	11.43	12.20	12.57	14.16	10.62	10.99	11.77	12.13	13.72
	12H	11.12	11.46	12.29	12.61	14.21	10.67	11.01	11.84	12.16	13.76
8H	4H	10.58	10.95	11.73	12.09	13.68	10.20	10.58	11.35	11.72	13.31
	6H	11.21	11.52	12.38	12.70	14.29	10.83	11.13	12.00	12.32	13.90
	8H	11.43	11.70	12.61	12.86	14.47	11.04	11.31	12.22	12.47	14.08
	12H	11.56	11.80	12.74	12.96	14.59	11.15	11.38	12.33	12.55	14.18
12H	4H	10.56	10.90	11.73	12.05	13.64	10.19	10.53	11.36	11.68	13.27
	6H	11.24	11.51	12.41	12.67	14.28	10.87	11.14	12.04	12.30	13.90
	8H	11.48	11.71	12.66	12.87	14.51	11.10	11.33	12.28	12.49	14.13