

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: P912344

Luminaire Tested: DFN2DIP-SQ4F0-120D080US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

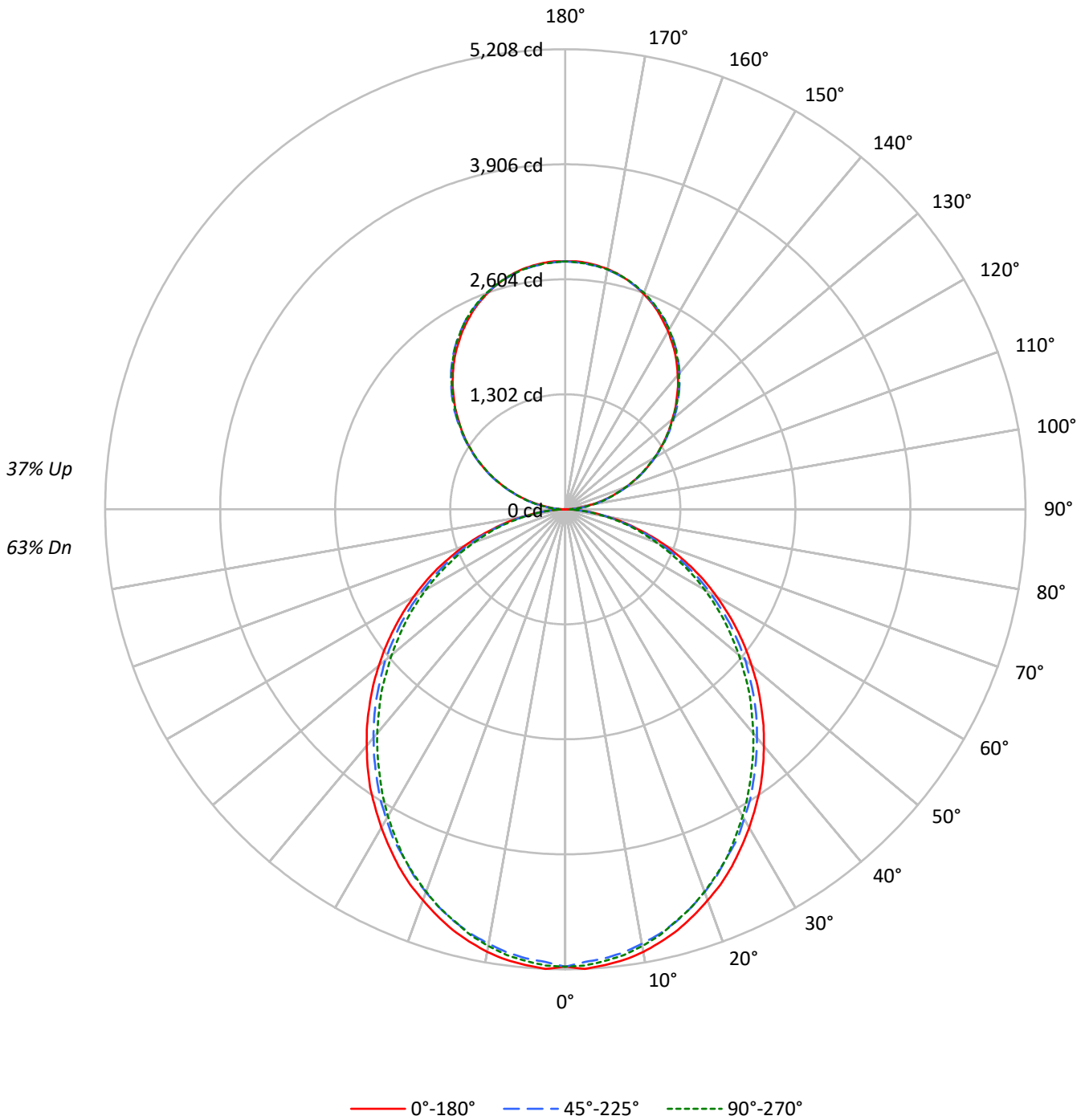
Test Method: LM-79-2019  
Report Number: P912344  
REPORT IS A COMBINATION OF REPORTS P900107 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-120D080US850-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 21026.6 lumens  
Efficiency: N/A  
Efficacy: 118.7 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-Direct  
  
Input Watts (W): 177.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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	50	30	10	50	30	10	50	30	10	0																
RCR																																														
0	110	110	110	110	103	103	103	103	90	90	90	79	79	79	68	68	68	63																												
1	101	96	92	89	94	90	87	84	79	77	74	69	67	66	60	59	57	53																												
2	92	84	78	72	86	79	73	69	70	65	62	61	58	55	53	50	48	44																												
3	84	74	66	60	78	70	63	58	61	56	52	54	50	46	47	44	41	37																												
4	77	66	57	51	71	62	54	49	55	49	44	48	43	40	42	38	35	32																												
5	70	58	50	44	66	55	48	42	49	43	38	43	38	35	38	34	31	28																												
6	65	53	44	38	61	50	42	37	44	38	33	39	34	30	34	30	27	25																												
7	60	48	39	34	56	45	38	32	40	34	30	36	31	27	31	27	24	22																												
8	56	43	35	30	52	41	34	29	37	31	26	33	28	24	29	25	22	20																												
9	52	40	32	27	49	38	30	26	34	28	24	30	25	22	27	23	20	18																												
10	49	36	29	24	46	35	28	23	31	25	21	28	23	20	25	21	18	16																												

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

	0°	45°	90°
0°	3633	3633	3633
5°	3639	3584	3608
10°	3610	3536	3560
15°	3557	3478	3485
20°	3485	3398	3408
25°	3413	3302	3318
30°	3324	3213	3205
35°	3239	3108	3084
40°	3135	3001	2969
45°	3031	2894	2852
50°	2917	2783	2716
55°	2798	2653	2592
60°	2663	2499	2449
65°	2516	2340	2281
70°	2329	2146	2101
75°	2070	1915	1935
80°	1758	1620	1617
85°	1271	1108	1086

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3031 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	487.4	2.3
10°-20°	1371.3	6.5
20°-30°	2015.2	9.6
30°-40°	2340.6	11.1
40°-50°	2337.7	11.1
50°-60°	2038.4	9.7
60°-70°	1506.8	7.2
70°-80°	852.5	4.1
80°-90°	233.0	1.1
90°-100°	173.6	0.8
100°-110°	551.7	2.6
110°-120°	944.1	4.5
120°-130°	1241.6	5.9
130°-140°	1393.7	6.6
140°-150°	1366.6	6.5
150°-160°	1146.4	5.5
160°-170°	760.3	3.6
170°-180°	265.7	1.3
0°-30°	3873.9	18.4
0°-40°	6214.5	29.6
0°-60°	10590.5	50.4
0°-90°	13182.9	62.7
90°-120°	1669.4	7.9
90°-150°	5671.3	27.0
90°-180°	7844.0	37.3
0°-180°	21026.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	5178	5178	5178	5178	5178	
5°	5178	5159	5104	5143	5134	492
15°	4929	4900	4835	4855	4830	1388
25°	4461	4422	4337	4347	4337	2053
35°	3849	3799	3720	3690	3665	2404
45°	3132	3097	3022	2968	2948	2417
55°	2370	2340	2280	2221	2196	2119
65°	1599	1568	1519	1474	1449	1581
75°	836	827	801	772	782	893
85°	204	199	194	179	174	227
90°	3	30	83	78	80	20
95°	124	147	151	151	147	137
105°	509	516	521	525	525	537
115°	947	961	957	954	947	937
125°	1378	1399	1392	1385	1382	1231
135°	1782	1809	1814	1811	1804	1378
145°	2164	2181	2194	2197	2188	1352
155°	2474	2481	2489	2500	2493	1139
165°	2692	2689	2689	2706	2694	759
175°	2801	2794	2789	2806	2792	266
180°	2806	2806	2806	2806	2806	



TEST NUMBER: P912344

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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	5178.3	5178.3	5178.3	5178.3	5178.3
2.5°	5208.3	5183.5	5128.6	5178.3	5168.7
5°	5178.3	5158.6	5103.7	5143.3	5133.8
7.5°	5143.3	5113.7	5058.8	5099.0	5089.0
10°	5089.0	5054.0	4994.4	5034.0	5019.2
12.5°	5013.9	4984.3	4924.6	4949.5	4939.4
15°	4929.4	4899.8	4834.8	4854.9	4830.0
17.5°	4824.8	4795.2	4730.2	4755.1	4730.2
20°	4710.1	4680.5	4610.9	4625.6	4606.1
22.5°	4596.0	4551.1	4486.1	4486.1	4476.1
25°	4461.3	4421.7	4337.2	4346.7	4337.2
27.5°	4311.8	4277.0	4212.5	4197.7	4172.9
30°	4162.9	4122.7	4048.2	4033.4	4013.4
32.5°	4003.3	3973.8	3893.9	3863.9	3843.8
35°	3849.0	3799.4	3719.6	3689.5	3664.7
37.5°	3674.7	3629.9	3550.0	3515.2	3490.4
40°	3495.7	3455.5	3375.7	3331.3	3311.3
42.5°	3321.3	3281.2	3201.9	3151.8	3122.2
45°	3132.1	3097.3	3022.2	2967.9	2947.8
47.5°	2947.8	2912.9	2833.2	2778.3	2748.7
50°	2753.4	2728.6	2658.8	2589.1	2564.2
52.5°	2564.2	2529.4	2465.0	2410.0	2375.1
55°	2370.4	2340.3	2280.5	2220.9	2196.0
57.5°	2176.0	2151.1	2086.1	2026.5	2006.4
60°	1981.6	1962.0	1892.3	1837.4	1822.5
62.5°	1792.5	1757.5	1708.0	1658.3	1638.2
65°	1598.6	1568.5	1518.8	1473.9	1449.1
67.5°	1399.4	1374.1	1329.7	1294.9	1274.8
70°	1215.0	1194.9	1150.0	1115.2	1095.7
72.5°	1025.9	1005.9	981.0	946.2	931.3
75°	836.3	826.8	801.4	771.9	781.8
77.5°	667.2	647.1	637.1	622.3	607.5
80°	498.2	492.8	482.9	468.1	458.0
82.5°	338.6	338.6	333.9	313.8	313.8
85°	203.9	199.2	194.4	179.1	174.3
87.5°	89.8	79.7	69.8	54.9	49.7
90°	2.6	30.5	83.0	77.9	80.4
92.5°	52.5	71.1	73.6	76.1	76.1
95°	123.5	147.2	151.4	151.4	147.2
97.5°	205.6	227.6	236.9	236.9	236.9
100°	300.3	319.7	326.5	326.5	323.9
102.5°	400.1	414.5	423.7	426.3	423.7
105°	509.3	516.0	521.1	525.3	525.3
107.5°	617.5	627.7	627.7	629.4	617.5
110°	722.4	735.9	735.9	735.9	729.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	835.7	850.2	847.6	840.8	835.7
115°	947.4	960.9	956.7	954.2	947.4
117.5°	1058.2	1076.8	1065.0	1058.2	1051.4
120°	1169.9	1188.5	1169.9	1169.9	1162.2
122.5°	1271.4	1295.1	1283.2	1276.5	1271.4
125°	1377.9	1399.1	1392.3	1384.7	1382.3
127.5°	1482.1	1508.2	1498.9	1488.8	1482.1
130°	1579.3	1609.7	1605.5	1600.5	1591.2
132.5°	1688.5	1712.1	1713.8	1702.0	1695.2
135°	1782.3	1808.6	1813.7	1811.1	1804.3
137.5°	1887.2	1908.4	1912.6	1910.9	1900.7
140°	1979.5	2000.5	2012.4	2012.4	2003.1
142.5°	2074.2	2095.3	2102.1	2104.7	2095.3
145°	2163.9	2180.7	2194.3	2196.8	2187.5
147.5°	2244.2	2265.4	2275.4	2279.8	2270.5
150°	2327.1	2341.4	2350.7	2358.4	2350.7
152.5°	2400.7	2415.1	2426.9	2436.3	2426.9
155°	2474.3	2481.1	2488.7	2500.5	2492.9
157.5°	2537.7	2542.8	2547.0	2563.9	2552.1
160°	2594.4	2599.5	2602.0	2616.4	2606.3
162.5°	2646.9	2646.9	2649.4	2665.5	2653.6
165°	2691.7	2689.1	2689.1	2706.1	2694.2
167.5°	2732.2	2724.7	2724.7	2741.6	2729.7
170°	2762.7	2756.0	2753.4	2770.4	2756.0
172.5°	2783.9	2777.2	2774.6	2791.5	2777.2
175°	2800.8	2794.0	2788.9	2805.9	2791.5
177.5°	2810.1	2803.3	2798.2	2812.6	2798.2
180°	2805.9	2805.9	2805.9	2805.9	2805.9



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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	12.86	13.85	13.70	14.71	15.79	12.42	13.41	13.26	14.27	15.35
	3H	14.54	15.42	15.39	16.29	17.40	14.05	14.93	14.90	15.80	16.91
	4H	15.13	15.97	16.00	16.85	17.96	14.64	15.48	15.51	16.35	17.47
	6H	15.54	16.32	16.42	17.20	18.33	15.04	15.81	15.92	16.70	17.83
	8H	15.65	16.39	16.54	17.29	18.42	15.15	15.89	16.04	16.79	17.92
	12H	15.71	16.41	16.60	17.31	18.46	15.20	15.90	16.09	16.80	17.95
4H	2H	13.34	14.18	14.21	15.05	16.17	12.98	13.82	13.86	14.70	15.82
	3H	15.22	15.92	16.10	16.83	17.96	14.81	15.51	15.70	16.42	17.55
	4H	15.94	16.58	16.84	17.49	18.64	15.52	16.16	16.42	17.06	18.22
	6H	16.47	17.02	17.38	17.95	19.11	16.04	16.59	16.95	17.52	18.68
	8H	16.62	17.14	17.54	18.06	19.24	16.19	16.70	17.10	17.63	18.80
	12H	16.71	17.17	17.64	18.11	19.29	16.26	16.72	17.19	17.66	18.84
8H	4H	16.15	16.67	17.06	17.59	18.76	15.77	16.29	16.69	17.21	18.39
	6H	16.79	17.22	17.73	18.19	19.36	16.41	16.84	17.35	17.80	18.97
	8H	17.02	17.39	17.97	18.35	19.54	16.62	17.00	17.57	17.96	19.15
	12H	17.16	17.49	18.11	18.44	19.68	16.75	17.08	17.70	18.03	19.27
12H	4H	16.14	16.61	17.08	17.55	18.73	15.77	16.24	16.71	17.18	18.36
	6H	16.82	17.20	17.77	18.16	19.35	16.45	16.83	17.40	17.79	18.98
	8H	17.07	17.41	18.03	18.36	19.60	16.69	17.03	17.65	17.98	19.22