

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: P912296

Luminaire Tested: DFN2DIP-SQ4F0-100D160US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

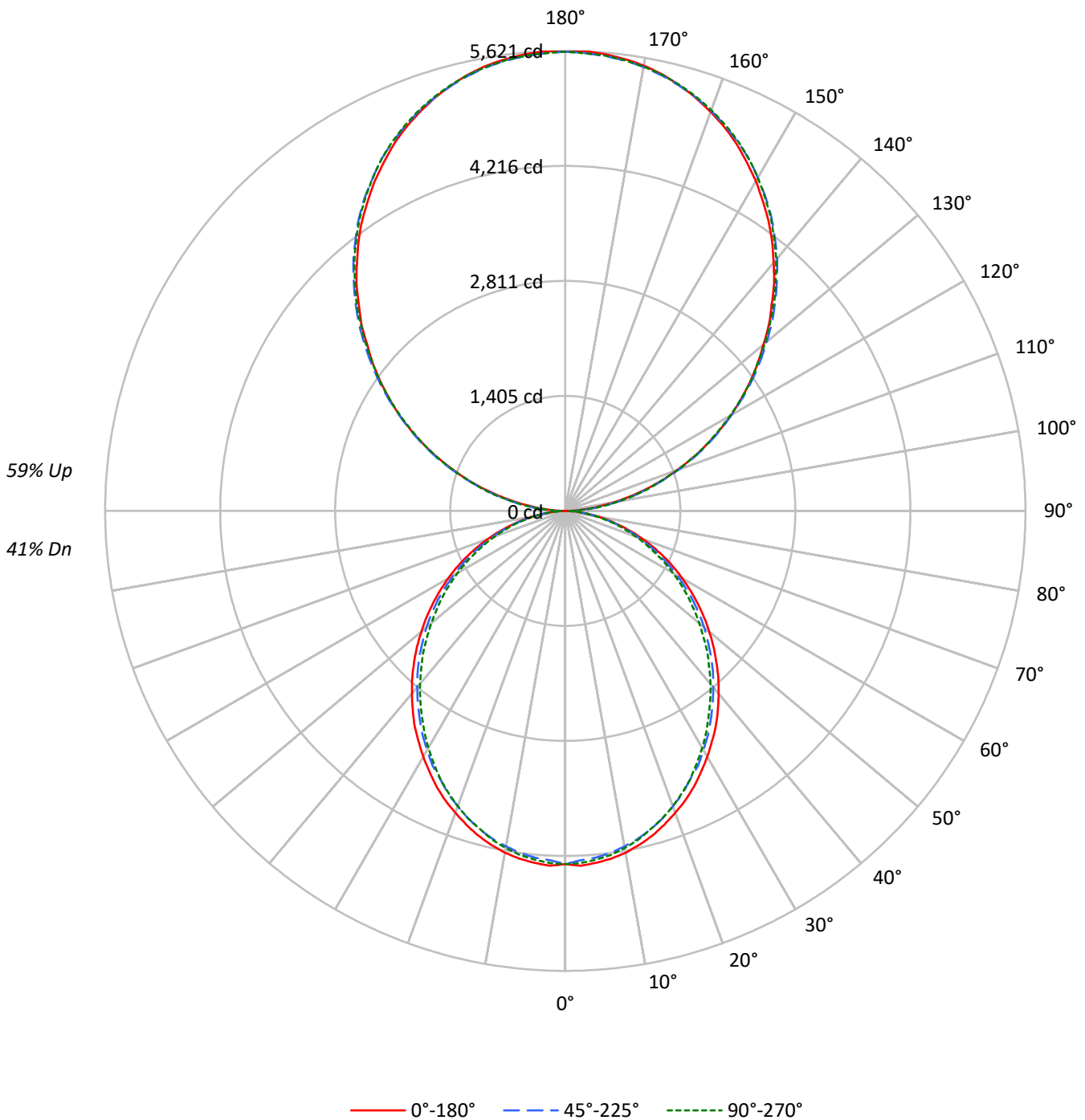
Test Method: LM-79-2019  
Report Number: P912296  
REPORT IS A COMBINATION OF REPORTS P900211 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-100D160US850-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 26683.6 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: General Diffuse  
  
Input Watts (W): 214.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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	105	105	105	105	96	96	96	96	78	78	78	63	63	63	48	48	48	48	48	48	41
1	96	92	88	84	87	84	80	77	69	66	64	55	53	52	42	41	41	41	41	41	35
2	87	80	74	69	79	73	68	63	60	56	53	48	46	43	37	36	34	34	34	34	29
3	80	70	63	57	72	64	58	53	53	48	45	43	39	37	33	31	29	29	29	29	25
4	73	62	54	48	66	57	50	45	47	42	38	38	34	31	30	27	25	25	25	25	21
5	67	55	47	41	61	51	44	38	42	37	33	34	30	27	27	24	22	22	22	22	18
6	61	50	42	36	56	46	38	33	38	33	29	31	27	24	24	21	19	19	19	19	16
7	57	45	37	31	52	41	34	29	34	29	25	28	24	21	22	19	17	17	17	17	14
8	53	40	33	28	48	37	31	26	31	26	22	26	22	19	20	17	15	15	15	15	13
9	49	37	30	25	45	34	27	23	29	23	20	24	20	17	19	16	14	14	14	14	12
10	46	34	27	22	42	31	25	21	26	21	18	22	18	15	17	15	13	13	13	13	10

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

	0°	45°	90°
0°	3028	3028	3028
5°	3033	2986	3007
10°	3008	2947	2967
15°	2964	2899	2904
20°	2904	2832	2840
25°	2845	2752	2765
30°	2770	2677	2670
35°	2699	2590	2570
40°	2612	2501	2475
45°	2526	2412	2377
50°	2431	2319	2264
55°	2332	2211	2160
60°	2219	2083	2041
65°	2097	1950	1901
70°	1941	1789	1750
75°	1725	1595	1613
80°	1465	1349	1347
85°	1059	923	906

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 4416 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	406.1	1.5
10°-20°	1142.7	4.3
20°-30°	1679.4	6.3
30°-40°	1950.5	7.3
40°-50°	1948.1	7.3
50°-60°	1698.7	6.4
60°-70°	1255.7	4.7
70°-80°	710.4	2.7
80°-90°	203.5	0.8
90°-100°	347.3	1.3
100°-110°	1103.4	4.1
110°-120°	1888.3	7.1
120°-130°	2483.4	9.3
130°-140°	2787.5	10.4
140°-150°	2733.5	10.2
150°-160°	2293.0	8.6
160°-170°	1520.7	5.7
170°-180°	531.5	2.0
0°-30°	3228.3	12.1
0°-40°	5178.7	19.4
0°-60°	8825.5	33.1
0°-90°	10995.0	41.2
90°-120°	3339.0	12.5
90°-150°	11343.4	42.5
90°-180°	15689.0	58.8
0°-180°	26683.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4315	4315	4315	4315	4315	
5°	4315	4299	4253	4286	4278	410
15°	4108	4083	4029	4046	4025	1157
25°	3718	3685	3614	3622	3614	1711
35°	3208	3166	3100	3075	3054	2003
45°	2610	2581	2518	2473	2456	2014
55°	1975	1950	1900	1851	1830	1766
65°	1332	1307	1266	1228	1208	1317
75°	697	689	668	643	652	744
85°	170	166	162	149	145	190
90°	5	61	166	156	161	26
95°	247	294	303	303	294	275
105°	1018	1032	1042	1051	1051	1075
115°	1895	1922	1914	1908	1895	1874
125°	2756	2798	2785	2770	2765	2463
135°	3565	3617	3628	3622	3609	2756
145°	4328	4362	4389	4394	4375	2704
155°	4949	4962	4978	5001	4986	2278
165°	5384	5379	5379	5412	5389	1519
175°	5602	5588	5578	5612	5583	532
180°	5612	5612	5612	5612	5612	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4315.2	4315.2	4315.2	4315.2	4315.2
2.5°	4340.3	4319.6	4273.8	4315.2	4307.2
5°	4315.2	4298.9	4253.1	4286.2	4278.2
7.5°	4286.2	4261.4	4215.6	4249.1	4240.8
10°	4240.8	4211.8	4162.0	4195.0	4182.7
12.5°	4178.3	4153.6	4103.9	4124.6	4116.2
15°	4107.8	4083.2	4029.0	4045.7	4025.1
17.5°	4020.7	3996.1	3941.8	3962.6	3941.8
20°	3925.1	3900.5	3842.4	3854.7	3838.4
22.5°	3830.0	3792.7	3738.4	3738.4	3730.1
25°	3717.8	3684.8	3614.3	3622.2	3614.3
27.5°	3593.2	3564.1	3510.4	3498.1	3477.4
30°	3469.1	3435.6	3373.5	3361.2	3344.4
32.5°	3336.1	3311.5	3244.9	3219.9	3203.1
35°	3207.6	3166.2	3099.7	3074.6	3053.9
37.5°	3062.3	3024.8	2958.4	2929.3	2908.6
40°	2913.0	2879.5	2813.1	2776.2	2759.4
42.5°	2767.7	2734.2	2668.3	2626.4	2601.8
45°	2610.1	2581.1	2518.5	2473.2	2456.5
47.5°	2456.5	2427.5	2361.0	2315.1	2290.5
50°	2294.5	2273.8	2215.7	2157.6	2136.9
52.5°	2136.9	2107.9	2054.1	2008.4	1979.3
55°	1975.4	1950.3	1900.5	1850.7	1830.1
57.5°	1813.3	1792.6	1738.5	1688.8	1672.0
60°	1651.3	1635.0	1576.9	1531.1	1518.8
62.5°	1493.7	1464.7	1423.3	1381.9	1365.2
65°	1332.1	1307.1	1265.7	1228.2	1207.6
67.5°	1166.2	1145.0	1108.1	1079.1	1062.3
70°	1012.5	995.8	958.4	929.3	913.0
72.5°	854.9	838.2	817.6	788.5	776.1
75°	696.9	689.0	667.8	643.2	651.5
77.5°	556.1	539.3	530.9	518.6	506.3
80°	415.1	410.8	402.3	390.0	381.7
82.5°	282.2	282.2	278.2	261.5	261.5
85°	169.9	166.0	162.0	149.3	145.3
87.5°	74.9	66.4	58.1	45.8	41.4
90°	5.1	60.9	165.8	155.7	160.7
92.5°	104.9	142.2	147.2	152.3	152.3
95°	247.0	294.4	302.9	302.9	294.4
97.5°	411.1	455.1	473.8	473.8	473.8
100°	600.6	639.6	653.1	653.1	648.0
102.5°	800.3	829.1	847.6	852.7	847.6
105°	1018.5	1032.0	1042.2	1050.7	1050.7
107.5°	1235.1	1255.4	1255.4	1258.8	1235.1
110°	1444.9	1472.0	1472.0	1472.0	1458.4



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1671.6	1700.4	1695.3	1681.8	1671.6
115°	1894.9	1922.0	1913.6	1908.5	1894.9
117.5°	2116.6	2153.8	2130.2	2116.6	2103.1
120°	2340.0	2377.1	2340.0	2340.0	2324.7
122.5°	2542.9	2590.4	2566.7	2553.1	2542.9
125°	2756.2	2798.5	2784.9	2769.7	2764.6
127.5°	2964.2	3016.7	2998.1	2977.8	2964.2
130°	3158.9	3219.8	3211.3	3201.1	3182.5
132.5°	3377.1	3424.5	3427.8	3404.2	3390.7
135°	3564.9	3617.3	3627.5	3622.4	3608.9
137.5°	3774.7	3817.0	3825.5	3822.1	3801.8
140°	3959.1	4001.4	4025.1	4025.1	4006.5
142.5°	4148.7	4190.9	4204.4	4209.5	4190.9
145°	4328.0	4361.8	4388.9	4394.0	4375.3
147.5°	4488.7	4531.0	4551.3	4559.8	4541.1
150°	4654.5	4683.3	4701.9	4717.1	4701.9
152.5°	4801.7	4830.5	4854.2	4872.7	4854.2
155°	4948.9	4962.4	4977.6	5001.4	4986.2
157.5°	5075.8	5086.0	5094.4	5128.2	5104.6
160°	5189.1	5199.3	5204.4	5233.1	5212.9
162.5°	5294.0	5294.0	5299.1	5331.3	5307.6
165°	5383.8	5378.6	5378.6	5412.5	5388.9
167.5°	5464.9	5449.7	5449.7	5483.6	5459.8
170°	5525.8	5512.3	5507.3	5541.1	5512.3
172.5°	5568.2	5554.6	5549.5	5583.4	5554.6
175°	5602.0	5588.5	5578.3	5612.2	5583.4
177.5°	5620.6	5607.1	5596.9	5625.7	5596.9
180°	5612.2	5612.2	5612.2	5612.2	5612.2



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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	10.26	11.05	11.29	12.08	13.48	9.82	10.60	10.84	11.64	13.03
	3H	11.92	12.62	12.96	13.67	15.08	11.43	12.13	12.47	13.18	14.59
	4H	12.51	13.18	13.56	14.22	15.64	12.01	12.68	13.06	13.73	15.15
	6H	12.91	13.52	13.97	14.57	16.00	12.41	13.02	13.47	14.07	15.50
	8H	13.01	13.60	14.08	14.66	16.09	12.51	13.09	13.57	14.16	15.59
	12H	13.06	13.61	14.13	14.68	16.13	12.55	13.11	13.62	14.17	15.62
4H	2H	10.71	11.38	11.77	12.43	13.85	10.36	11.03	11.42	12.07	13.49
	3H	12.58	13.13	13.64	14.21	15.64	12.17	12.73	13.23	13.80	15.23
	4H	13.29	13.80	14.36	14.87	16.32	12.87	13.38	13.94	14.45	15.90
	6H	13.81	14.25	14.89	15.34	16.78	13.37	13.81	14.45	14.90	16.35
	8H	13.96	14.37	15.04	15.45	16.91	13.52	13.93	14.60	15.01	16.47
	12H	14.03	14.40	15.13	15.50	16.96	13.58	13.95	14.68	15.05	16.51
8H	4H	13.48	13.89	14.56	14.97	16.44	13.11	13.52	14.19	14.60	16.06
	6H	14.11	14.45	15.22	15.58	17.04	13.73	14.07	14.83	15.19	16.65
	8H	14.34	14.64	15.45	15.74	17.22	13.95	14.24	15.06	15.35	16.83
	12H	14.47	14.73	15.58	15.83	17.35	14.06	14.32	15.17	15.42	16.94
12H	4H	13.46	13.84	14.56	14.93	16.40	13.10	13.47	14.19	14.56	16.03
	6H	14.14	14.44	15.25	15.55	17.03	13.77	14.07	14.88	15.18	16.66
	8H	14.39	14.65	15.50	15.75	17.27	14.01	14.27	15.12	15.37	16.89