

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: P906842

Luminaire Tested: DFN2DIP-SQ4F0-100D160US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

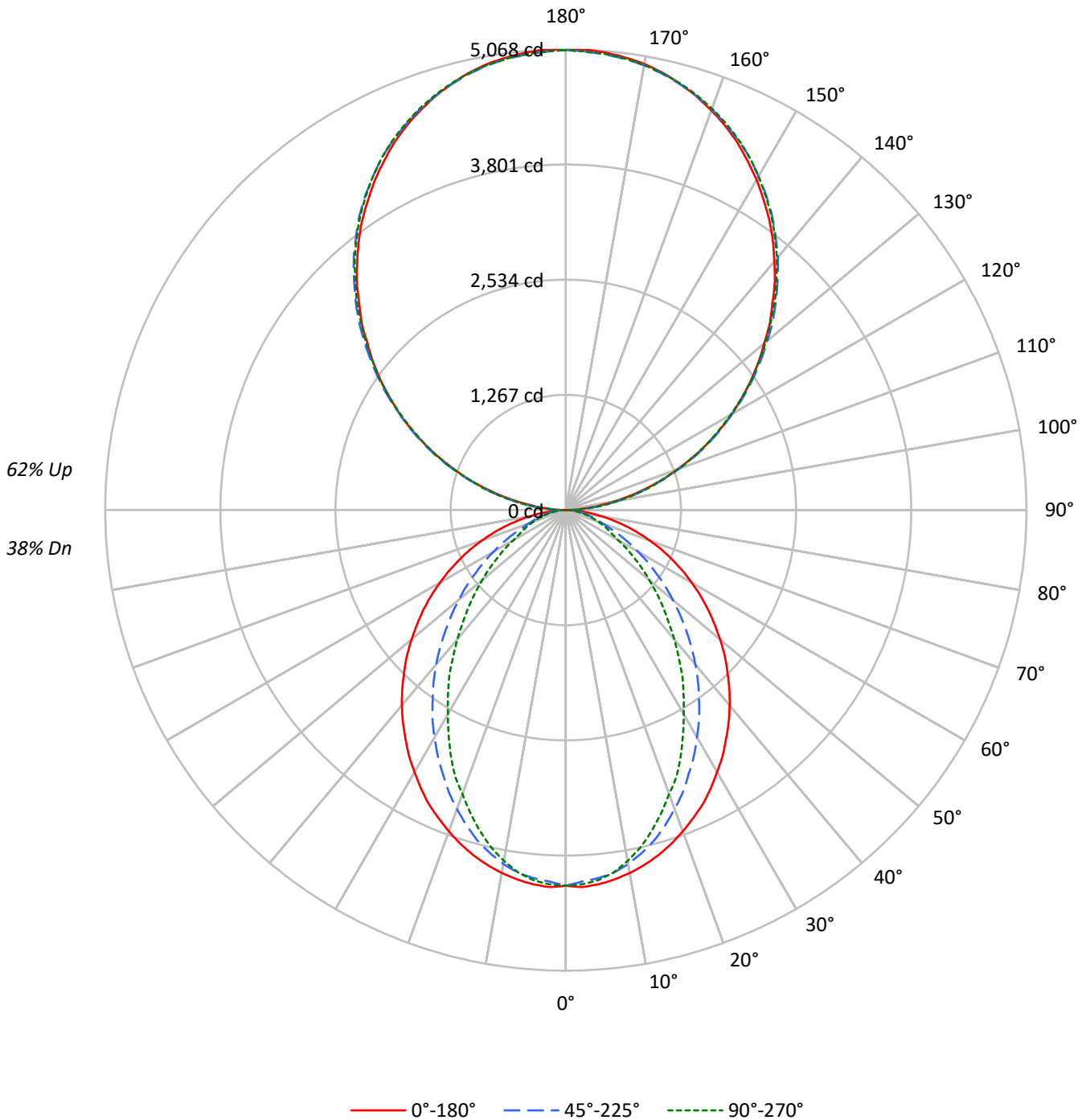
Test Method: LM-79-2019  
Report Number: P906842  
REPORT IS A COMBINATION OF REPORTS P900212 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-100D160US835-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 22661.0 lumens  
Efficiency: N/A  
Efficacy: 105.5 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): 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	104	104	104	104	95	95	95	95	76	76	76	60	60	60	45	45	45	38			38
1	95	91	88	84	86	83	80	77	67	65	63	53	52	50	40	39	38	32			32
2	87	80	74	69	79	73	68	64	59	56	53	47	45	43	36	34	33	28			28
3	80	71	64	58	72	64	58	54	53	48	45	42	39	37	32	30	28	24			24
4	73	63	55	49	66	57	51	46	47	42	39	38	34	32	29	27	25	21			21
5	67	56	48	42	61	51	44	39	42	37	33	34	30	28	26	24	22	18			18
6	62	50	42	37	56	46	39	34	38	33	29	31	27	24	24	21	19	16			16
7	57	45	38	32	52	42	35	30	35	30	26	28	24	22	22	19	17	15			15
8	53	41	34	29	48	38	31	27	32	27	23	26	22	19	20	18	16	13			13
9	49	38	30	26	45	35	28	24	29	24	21	24	20	17	19	16	14	12			12
10	46	35	28	23	42	32	26	21	27	22	19	22	18	16	17	15	13	11			11

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

	0°	45°	90°
0°	2900	2900	2900
5°	2905	2855	2873
10°	2876	2799	2780
15°	2836	2707	2637
20°	2784	2580	2460
25°	2730	2438	2289
30°	2658	2292	2073
35°	2587	2134	1882
40°	2516	1972	1664
45°	2432	1791	1466
50°	2346	1609	1272
55°	2256	1414	1086
60°	2151	1210	895
65°	2031	1003	806
70°	1886	809	731
75°	1703	715	667
80°	1438	602	581
85°	1002	405	442

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 3982 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	387.3	1.7
10°-20°	1063.3	4.7
20°-30°	1492.9	6.6
30°-40°	1627.4	7.2
40°-50°	1495.7	6.6
50°-60°	1174.7	5.2
60°-70°	764.6	3.4
70°-80°	393.6	1.7
80°-90°	114.9	0.5
90°-100°	313.1	1.4
100°-110°	995.0	4.4
110°-120°	1702.7	7.5
120°-130°	2239.3	9.9
130°-140°	2513.5	11.1
140°-150°	2464.8	10.9
150°-160°	2067.6	9.1
160°-170°	1371.2	6.1
170°-180°	479.3	2.1
0°-30°	2943.6	13.0
0°-40°	4571.0	20.2
0°-60°	7241.3	32.0
0°-90°	8514.3	37.6
90°-120°	3010.8	13.3
90°-150°	10228.5	45.1
90°-180°	14147.0	62.4
0°-180°	22661.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4133	4133	4133	4133	4133	
5°	4133	4114	4066	4099	4088	392
15°	3931	3890	3763	3692	3654	1108
25°	3568	3448	3202	3048	2992	1641
35°	3075	2884	2555	2319	2236	1924
45°	2514	2263	1870	1604	1515	1941
55°	1911	1620	1216	991	920	1708
65°	1290	987	651	524	512	1279
75°	688	426	299	273	269	728
85°	161	82	71	71	71	184
90°	5	55	150	140	145	22
95°	223	266	273	273	266	248
105°	918	931	940	947	947	969
115°	1709	1733	1726	1721	1709	1690
125°	2485	2523	2511	2498	2493	2221
135°	3214	3262	3271	3266	3254	2485
145°	3903	3933	3958	3962	3945	2438
155°	4462	4475	4488	4510	4496	2054
165°	4855	4850	4850	4880	4859	1369
175°	5051	5039	5030	5061	5035	480
180°	5061	5061	5061	5061	5061	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4133.0	4133.0	4133.0	4133.0	4133.0
2.5°	4151.6	4133.0	4091.7	4129.4	4121.9
5°	4133.0	4114.3	4065.5	4099.3	4088.1
7.5°	4099.3	4077.0	4024.6	4039.3	4020.7
10°	4054.4	4028.2	3953.6	3942.1	3919.9
12.5°	3998.5	3964.7	3863.5	3841.3	3800.0
15°	3931.0	3889.7	3762.7	3691.7	3654.4
17.5°	3852.4	3792.5	3635.4	3553.2	3493.3
20°	3762.7	3687.7	3500.8	3407.6	3325.0
22.5°	3665.5	3579.4	3362.3	3235.4	3179.4
25°	3568.3	3448.5	3201.6	3048.4	2992.1
27.5°	3452.4	3325.0	3052.0	2876.2	2790.1
30°	3329.0	3186.5	2887.3	2696.9	2595.7
32.5°	3209.2	3036.9	2730.6	2506.0	2412.3
35°	3074.6	2883.8	2554.8	2319.1	2236.5
37.5°	2943.7	2737.7	2390.1	2131.8	2038.5
40°	2805.2	2581.0	2217.9	1952.4	1855.2
42.5°	2663.1	2423.8	2046.1	1769.1	1675.8
45°	2513.5	2262.7	1870.3	1604.4	1514.7
47.5°	2371.5	2106.0	1702.0	1436.1	1354.0
50°	2214.3	1948.8	1537.3	1279.0	1200.8
52.5°	2060.7	1780.2	1380.2	1133.3	1062.3
55°	1911.1	1619.5	1215.5	991.3	920.2
57.5°	1758.0	1458.7	1069.9	860.3	800.4
60°	1600.8	1301.6	916.3	725.8	665.9
62.5°	1447.6	1148.4	785.3	606.0	576.2
65°	1290.5	987.3	650.8	523.8	512.3
67.5°	1140.9	837.7	523.8	459.9	448.8
70°	983.7	692.1	433.7	396.4	381.4
72.5°	834.1	557.1	362.7	332.9	325.4
75°	688.1	426.2	299.2	273.0	269.4
77.5°	542.5	302.8	235.7	220.6	213.1
80°	407.5	217.1	179.4	164.7	164.7
82.5°	284.1	146.0	123.4	115.9	115.9
85°	160.7	82.1	71.0	71.0	71.0
87.5°	59.9	29.8	29.8	26.2	26.2
90°	4.6	54.9	149.5	140.4	144.9
92.5°	94.6	128.2	132.7	137.3	137.3
95°	222.7	265.5	273.1	273.1	265.5
97.5°	370.7	410.4	427.2	427.2	427.2
100°	541.6	576.7	588.9	588.9	584.3
102.5°	721.6	747.6	764.3	768.9	764.3
105°	918.4	930.6	939.8	947.4	947.4
107.5°	1113.7	1132.0	1132.0	1135.1	1113.7
110°	1302.9	1327.3	1327.3	1327.3	1315.1



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CATALOG NUMBER: DFN2DIP-SQ4F0-100D160US835-RLFL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1507.3	1533.3	1528.7	1516.5	1507.3
115°	1708.7	1733.1	1725.5	1720.9	1708.7
117.5°	1908.6	1942.1	1920.8	1908.6	1896.4
120°	2110.0	2143.5	2110.0	2110.0	2096.2
122.5°	2293.0	2335.8	2314.4	2302.2	2293.0
125°	2485.3	2523.4	2511.2	2497.5	2492.9
127.5°	2672.9	2720.2	2703.4	2685.1	2672.9
130°	2848.4	2903.3	2895.7	2886.5	2869.7
132.5°	3045.2	3087.9	3090.9	3069.6	3057.4
135°	3214.5	3261.8	3271.0	3266.4	3254.2
137.5°	3403.7	3441.8	3449.5	3446.4	3428.1
140°	3570.0	3608.1	3629.5	3629.5	3612.7
142.5°	3740.9	3779.0	3791.2	3795.8	3779.0
145°	3902.6	3933.1	3957.5	3962.1	3945.3
147.5°	4047.5	4085.7	4104.0	4111.6	4094.8
150°	4197.0	4223.0	4239.8	4253.5	4239.8
152.5°	4329.8	4355.7	4377.1	4393.8	4377.1
155°	4462.5	4474.7	4488.4	4509.8	4496.1
157.5°	4576.9	4586.1	4593.7	4624.2	4602.9
160°	4679.1	4688.3	4692.9	4718.8	4700.5
162.5°	4773.7	4773.7	4778.3	4807.3	4785.9
165°	4854.6	4850.0	4850.0	4880.5	4859.2
167.5°	4927.8	4914.1	4914.1	4944.6	4923.2
170°	4982.7	4970.5	4966.0	4996.5	4970.5
172.5°	5020.9	5008.7	5004.1	5034.6	5008.7
175°	5051.4	5039.2	5030.0	5060.6	5034.6
177.5°	5068.2	5056.0	5046.8	5072.8	5046.8
180°	5060.6	5060.6	5060.6	5060.6	5060.6



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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	9.57	10.31	10.64	11.37	12.81	5.53	6.27	6.60	7.33	8.77
	3H	11.25	11.91	12.32	12.98	14.44	6.72	7.38	7.79	8.45	9.90
	4H	11.85	12.48	12.94	13.55	15.02	7.16	7.79	8.25	8.86	10.33
	6H	12.28	12.85	13.37	13.93	15.40	7.48	8.05	8.57	9.13	10.61
	8H	12.40	12.95	13.50	14.04	15.51	7.57	8.11	8.66	9.21	10.68
	12H	12.46	12.98	13.56	14.07	15.56	7.61	8.13	8.71	9.21	10.71
4H	2H	9.58	10.21	10.67	11.28	12.74	6.12	6.75	7.21	7.82	9.28
	3H	11.41	11.93	12.50	13.02	14.50	7.46	7.98	8.56	9.08	10.56
	4H	12.10	12.57	13.20	13.66	15.16	8.01	8.48	9.11	9.57	11.07
	6H	12.61	13.02	13.72	14.13	15.63	8.42	8.83	9.53	9.94	11.44
	8H	12.79	13.17	13.90	14.27	15.78	8.55	8.93	9.66	10.04	11.54
	12H	12.88	13.23	14.01	14.34	15.86	8.61	8.96	9.74	10.07	11.59
8H	4H	12.06	12.44	13.17	13.54	15.05	8.28	8.66	9.39	9.77	11.28
	6H	12.63	12.94	13.76	14.09	15.59	8.80	9.11	9.93	10.26	11.77
	8H	12.84	13.12	13.98	14.25	15.77	8.99	9.27	10.13	10.39	11.92
	12H	12.98	13.22	14.12	14.35	15.91	9.11	9.35	10.25	10.47	12.03
12H	4H	12.01	12.35	13.13	13.47	14.98	8.28	8.63	9.41	9.75	11.26
	6H	12.60	12.88	13.74	14.00	15.53	8.85	9.13	9.99	10.25	11.78
	8H	12.82	13.06	13.96	14.19	15.75	9.06	9.30	10.20	10.42	11.99