

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: P906963

Luminaire Tested: DFN2DIP-SQ4F0-160D080US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

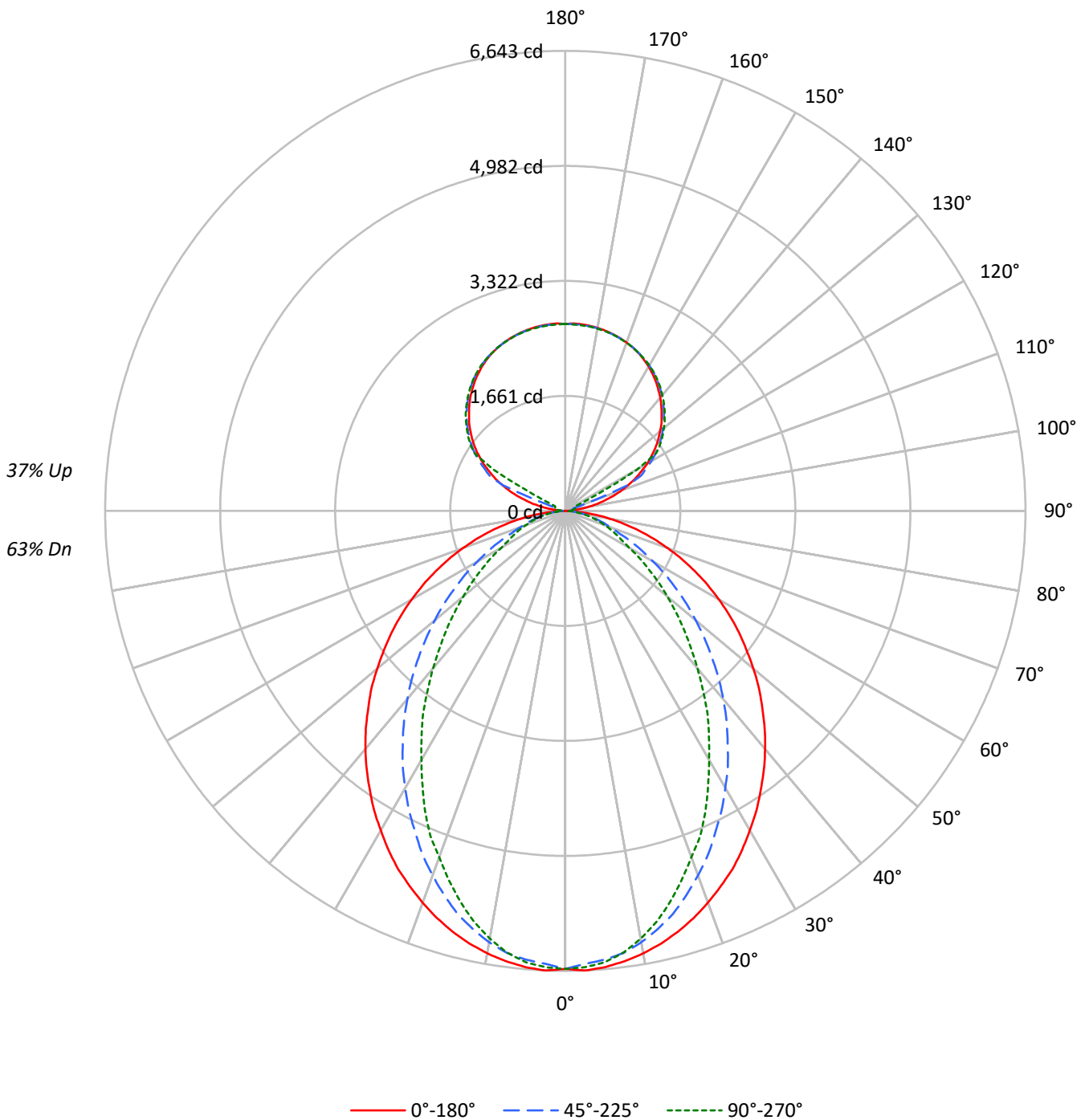
Test Method: LM-79-2019  
Report Number: P906963  
REPORT IS A COMBINATION OF REPORTS P901632 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-160D080US835-RLLONL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 21520.0 lumens  
Efficiency: N/A  
Efficacy: 95.1 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-Direct  
  
Input Watts (W): 226.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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
RCR																				
0	110	110	110	110	103	103	103	103	91	91	91	79	79	79	68	68	68	63		
1	101	97	93	90	95	91	88	85	80	78	76	71	69	67	61	60	59	54		
2	93	86	80	75	87	81	75	71	71	67	64	63	60	57	55	52	51	47		
3	85	76	69	63	80	72	65	60	63	58	54	56	52	49	49	46	44	40		
4	78	68	60	54	73	64	57	52	57	51	47	50	46	43	44	41	38	35		
5	72	61	53	47	67	57	50	45	51	45	41	46	41	37	40	37	34	31		
6	67	55	47	41	62	52	45	39	46	41	36	41	37	33	37	33	30	27		
7	62	50	42	36	58	47	40	35	42	36	32	38	33	30	34	30	27	25		
8	58	45	38	32	54	43	36	31	39	33	29	35	30	27	31	27	24	22		
9	54	42	34	29	51	40	33	28	36	30	26	32	27	24	29	25	22	20		
10	50	38	31	26	47	37	30	25	33	28	24	30	25	22	27	23	20	18		

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

	0°	45°	90°
0°	4640	4640	4640
5°	4647	4567	4597
10°	4601	4479	4449
15°	4538	4331	4219
20°	4454	4128	3936
25°	4368	3900	3663
30°	4253	3667	3316
35°	4140	3415	3011
40°	4025	3155	2662
45°	3891	2866	2345
50°	3753	2574	2035
55°	3609	2262	1738
60°	3442	1936	1432
65°	3250	1605	1290
70°	3017	1295	1170
75°	2725	1144	1067
80°	2302	963	930
85°	1602	648	709

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3891 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	619.8	2.9
10°-20°	1701.4	7.9
20°-30°	2388.6	11.1
30°-40°	2603.8	12.1
40°-50°	2393.2	11.1
50°-60°	1879.5	8.7
60°-70°	1223.3	5.7
70°-80°	629.7	2.9
80°-90°	165.5	0.8
90°-100°	89.0	0.4
100°-110°	331.9	1.5
110°-120°	880.2	4.1
120°-130°	1459.9	6.8
130°-140°	1550.7	7.2
140°-150°	1441.2	6.7
150°-160°	1158.7	5.4
160°-170°	746.6	3.5
170°-180°	257.0	1.2
0°-30°	4709.8	21.9
0°-40°	7313.5	34.0
0°-60°	11586.2	53.8
0°-90°	13604.7	63.2
90°-120°	1301.1	6.0
90°-150°	5752.9	26.7
90°-180°	7915.0	36.8
0°-180°	21520.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	6613	6613	6613	6613	6613	
5°	6613	6583	6505	6559	6541	627
15°	6290	6224	6020	5907	5847	1772
25°	5709	5518	5123	4878	4787	2626
35°	4919	4614	4088	3710	3578	3079
45°	4022	3620	2992	2567	2424	3106
55°	3058	2591	1945	1586	1472	2732
65°	2065	1580	1041	838	820	2047
75°	1101	682	479	437	431	1164
85°	257	131	114	114	114	295
90°	2	23	39	49	53	20
95°	127	62	76	86	84	150
105°	594	653	119	141	148	635
115°	1123	1156	1205	301	160	1106
125°	1588	1614	1651	1664	1670	1416
135°	1965	1997	2014	2034	2030	1518
145°	2280	2278	2311	2325	2315	1426
155°	2510	2493	2516	2528	2512	1157
165°	2645	2634	2639	2653	2639	747
175°	2706	2692	2696	2710	2690	258
180°	2700	2700	2700	2700	2700	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	6612.8	6612.8	6612.8	6612.8	6612.8
2.5°	6642.6	6612.8	6546.7	6607.1	6595.0
5°	6612.8	6582.9	6504.8	6558.8	6541.0
7.5°	6558.8	6523.2	6439.4	6462.9	6433.1
10°	6487.1	6445.2	6325.8	6307.4	6271.8
12.5°	6397.5	6343.6	6181.7	6146.1	6080.1
15°	6289.6	6223.6	6020.4	5906.7	5847.0
17.5°	6163.9	6068.0	5816.6	5685.1	5589.3
20°	6020.4	5900.4	5601.3	5452.1	5320.1
22.5°	5864.8	5727.0	5379.7	5176.6	5087.0
25°	5709.3	5517.5	5122.6	4877.5	4787.4
27.5°	5523.9	5320.1	4883.2	4602.0	4464.2
30°	5326.4	5098.5	4619.7	4315.0	4153.1
32.5°	5134.7	4859.1	4368.9	4009.6	3859.7
35°	4919.4	4614.0	4087.7	3710.5	3578.5
37.5°	4709.9	4380.4	3824.2	3410.8	3261.6
40°	4488.3	4129.6	3548.6	3123.8	2968.3
42.5°	4261.0	3878.1	3273.7	2830.5	2681.3
45°	4021.6	3620.4	2992.4	2567.0	2423.5
47.5°	3794.3	3369.6	2723.2	2297.8	2166.4
50°	3542.9	3118.1	2459.7	2046.4	1921.3
52.5°	3297.2	2848.3	2208.3	1813.4	1699.7
55°	3057.8	2591.1	1944.8	1586.0	1472.4
57.5°	2812.7	2334.0	1711.8	1376.5	1280.6
60°	2561.3	2082.6	1466.0	1161.3	1065.4
62.5°	2316.2	1837.5	1256.5	969.5	921.9
65°	2064.8	1579.7	1041.3	838.1	819.7
67.5°	1825.4	1340.3	838.1	735.9	718.1
70°	1574.0	1107.3	694.0	634.3	610.2
72.5°	1334.6	891.4	580.3	532.7	520.6
75°	1101.0	681.9	478.7	436.8	431.1
77.5°	867.9	484.4	377.1	353.0	341.0
80°	652.1	347.3	287.0	263.5	263.5
82.5°	454.6	233.7	197.5	185.4	185.4
85°	257.1	131.4	113.7	113.7	113.7
87.5°	95.9	47.6	47.6	41.9	41.9
90°	1.9	23.4	39.0	48.9	52.7
92.5°	48.9	41.1	46.9	50.8	52.7
95°	126.9	62.4	76.1	86.1	84.0
97.5°	228.5	68.4	99.5	105.6	107.4
100°	345.9	78.2	111.4	126.9	130.8
102.5°	474.7	470.9	115.3	136.6	142.7
105°	593.9	652.6	119.2	140.6	148.5
107.5°	732.6	781.3	123.2	144.5	152.4
110°	865.6	906.4	342.0	146.6	154.3



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	990.6	1025.6	992.5	150.3	156.4
115°	1123.3	1156.5	1205.4	300.9	160.3
117.5°	1238.6	1277.6	1311.0	1031.4	519.7
120°	1367.6	1396.8	1432.1	1455.5	1191.7
122.5°	1476.8	1508.2	1547.4	1559.0	1561.1
125°	1588.2	1613.7	1650.8	1664.5	1670.3
127.5°	1689.8	1717.2	1746.7	1766.1	1768.0
130°	1785.6	1816.9	1838.3	1859.9	1858.0
132.5°	1883.3	1908.8	1930.2	1947.8	1945.9
135°	1965.4	1996.7	2014.1	2033.9	2029.9
137.5°	2051.3	2074.7	2094.4	2113.9	2108.1
140°	2135.2	2151.0	2172.4	2190.0	2180.2
142.5°	2205.8	2219.4	2244.7	2260.3	2250.5
145°	2280.0	2277.9	2311.1	2324.8	2315.0
147.5°	2344.3	2338.5	2371.6	2381.4	2373.7
150°	2406.9	2393.2	2424.5	2436.1	2426.4
152.5°	2459.6	2444.0	2473.2	2485.1	2471.4
155°	2510.4	2493.0	2516.4	2528.0	2512.5
157.5°	2551.4	2535.9	2553.5	2567.2	2551.4
160°	2586.7	2574.9	2586.7	2598.3	2584.6
162.5°	2617.8	2606.2	2615.9	2629.6	2612.0
165°	2645.2	2633.6	2639.4	2653.0	2639.4
167.5°	2666.7	2654.9	2660.9	2674.6	2657.0
170°	2684.4	2672.5	2676.5	2690.2	2672.5
172.5°	2696.0	2684.4	2688.3	2702.0	2684.4
175°	2705.7	2692.0	2696.0	2709.6	2690.2
177.5°	2709.6	2696.0	2698.0	2711.7	2694.1
180°	2699.9	2699.9	2699.9	2699.9	2699.9



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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	13.64	14.60	14.49	15.45	16.53	9.60	10.56	10.45	11.41	12.49
	3H	15.34	16.19	16.19	17.05	18.15	10.80	11.65	11.66	12.52	13.62
	4H	15.95	16.75	16.82	17.63	18.74	11.26	12.06	12.13	12.94	14.05
	6H	16.38	17.12	17.27	18.01	19.13	11.59	12.33	12.47	13.21	14.33
	8H	16.52	17.22	17.41	18.12	19.24	11.68	12.38	12.57	13.28	14.41
	12H	16.58	17.25	17.48	18.15	19.29	11.73	12.40	12.63	13.29	14.44
4H	2H	13.68	14.48	14.55	15.35	16.46	10.22	11.02	11.09	11.89	13.01
	3H	15.52	16.19	16.41	17.10	18.22	11.58	12.25	12.47	13.15	14.28
	4H	16.22	16.83	17.12	17.73	18.88	12.13	12.74	13.03	13.64	14.79
	6H	16.75	17.27	17.66	18.20	19.35	12.56	13.08	13.47	14.01	15.16
	8H	16.93	17.42	17.84	18.34	19.50	12.69	13.18	13.61	14.10	15.27
	12H	17.03	17.47	17.97	18.41	19.58	12.76	13.20	13.70	14.14	15.31
8H	4H	16.20	16.69	17.11	17.61	18.78	12.42	12.91	13.34	13.83	15.00
	6H	16.77	17.18	17.72	18.14	19.31	12.95	13.35	13.89	14.32	15.48
	8H	16.99	17.35	17.95	18.31	19.49	13.14	13.50	14.09	14.45	15.64
	12H	17.14	17.46	18.10	18.40	19.64	13.27	13.58	14.22	14.53	15.76
12H	4H	16.16	16.60	17.09	17.54	18.71	12.44	12.87	13.37	13.81	14.99
	6H	16.75	17.11	17.70	18.06	19.25	13.00	13.36	13.95	14.31	15.49
	8H	16.98	17.29	17.93	18.24	19.47	13.22	13.53	14.17	14.48	15.71