

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: P906135

Luminaire Tested: DFN2DIP-PN4F0-110D060US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

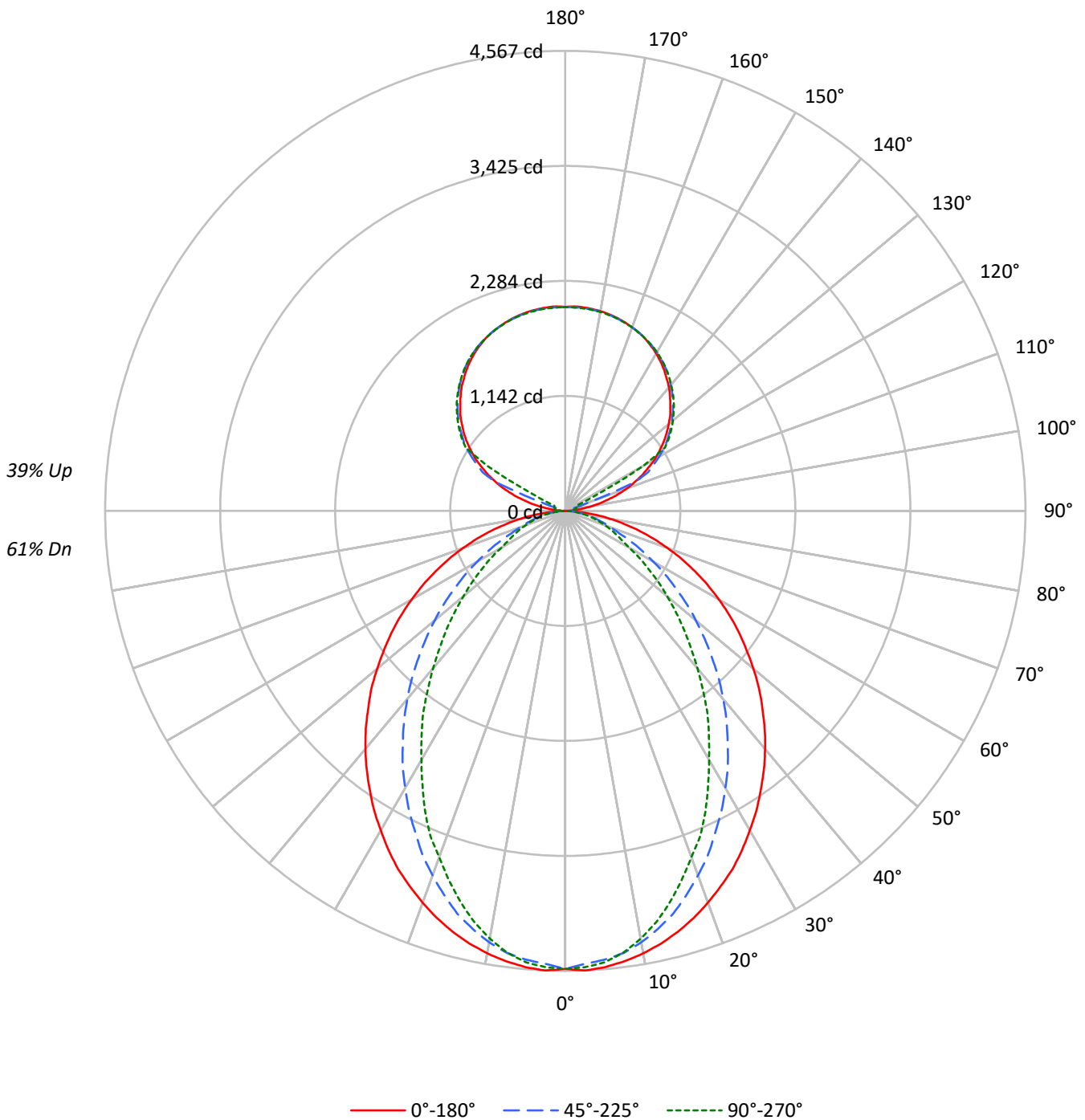
Test Method: LM-79-2019  
Report Number: P906135  
REPORT IS A COMBINATION OF REPORTS P901180 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-110D060US835-RLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15290.0 lumens  
Efficiency: N/A  
Efficacy: 95.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 159.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
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	110	110	110	110	103	103	103	103	90	90	90	77	77	77	66	66	66	66	66	66	61
1	101	97	93	90	94	91	87	85	79	77	75	69	67	66	60	58	57	60	58	57	53
2	92	85	79	74	86	80	75	70	70	66	63	61	58	56	53	51	49	53	51	49	45
3	85	75	68	63	79	71	65	60	63	58	54	55	51	48	48	45	43	48	45	43	39
4	78	67	59	54	73	63	56	51	56	51	46	49	45	42	43	40	37	43	40	37	34
5	72	60	52	46	67	57	50	44	51	45	40	45	40	37	39	36	33	39	36	33	30
6	66	54	46	41	62	51	44	39	46	40	36	41	36	32	36	32	29	36	32	29	27
7	61	49	41	36	58	47	40	35	42	36	32	37	32	29	33	29	26	33	29	26	24
8	57	45	37	32	54	43	36	31	38	33	28	34	29	26	30	26	24	30	26	24	21
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22	28	24	22	19
10	50	38	31	26	47	36	30	25	33	27	23	29	25	21	26	22	20	26	22	20	18

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

	0°	45°	90°
0°	3319	3319	3319
5°	3324	3266	3287
10°	3291	3203	3181
15°	3246	3097	3016
20°	3186	2952	2814
25°	3124	2789	2618
30°	3042	2621	2370
35°	2961	2441	2152
40°	2879	2255	1902
45°	2784	2048	1675
50°	2685	1840	1454
55°	2582	1616	1241
60°	2462	1383	1022
65°	2325	1146	921
70°	2159	925	834
75°	1950	816	760
80°	1647	686	662
85°	1148	460	501

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2784 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	426.1	2.8
10°-20°	1169.7	7.7
20°-30°	1642.2	10.7
30°-40°	1790.1	11.7
40°-50°	1645.3	10.8
50°-60°	1292.1	8.5
60°-70°	841.1	5.5
70°-80°	432.9	2.8
80°-90°	114.1	0.7
90°-100°	66.8	0.4
100°-110°	248.9	1.6
110°-120°	660.2	4.3
120°-130°	1094.9	7.2
130°-140°	1163.0	7.6
140°-150°	1080.9	7.1
150°-160°	869.0	5.7
160°-170°	560.0	3.7
170°-180°	192.7	1.3
0°-30°	3238.0	21.2
0°-40°	5028.1	32.9
0°-60°	7965.5	52.1
0°-90°	9353.6	61.2
90°-120°	975.8	6.4
90°-150°	4314.7	28.2
90°-180°	5936.0	38.8
0°-180°	15290.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4546	4546	4546	4546	4546	
5°	4546	4526	4472	4509	4497	431
15°	4324	4279	4139	4061	4020	1218
25°	3925	3793	3522	3353	3291	1805
35°	3382	3172	2810	2551	2460	2117
45°	2765	2489	2057	1765	1666	2135
55°	2102	1781	1337	1090	1012	1879
65°	1420	1086	716	576	564	1407
75°	757	469	329	300	296	801
85°	177	90	78	78	78	203
90°	1	18	29	37	40	14
95°	95	47	57	65	63	113
105°	445	489	89	105	111	476
115°	842	867	904	226	120	829
125°	1191	1210	1238	1248	1253	1062
135°	1474	1498	1511	1525	1522	1139
145°	1710	1708	1733	1744	1736	1069
155°	1883	1870	1887	1896	1884	868
165°	1984	1975	1980	1990	1980	560
175°	2029	2019	2022	2032	2018	193
180°	2025	2025	2025	2025	2025	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4546.3	4546.3	4546.3	4546.3	4546.3
2.5°	4566.8	4546.3	4500.9	4542.4	4534.1
5°	4546.3	4525.8	4472.1	4509.2	4497.0
7.5°	4509.2	4484.7	4427.1	4443.3	4422.7
10°	4459.9	4431.0	4349.0	4336.3	4311.9
12.5°	4398.3	4361.2	4249.9	4225.4	4180.0
15°	4324.1	4278.7	4139.0	4060.9	4019.8
17.5°	4237.7	4171.8	3998.9	3908.5	3842.6
20°	4139.0	4056.5	3850.9	3748.3	3657.5
22.5°	4032.1	3937.3	3698.6	3558.9	3497.3
25°	3925.1	3793.3	3521.8	3353.3	3291.3
27.5°	3797.7	3657.5	3357.2	3163.8	3069.1
30°	3661.9	3505.2	3176.1	2966.5	2855.2
32.5°	3530.1	3340.6	3003.6	2756.6	2653.6
35°	3382.1	3172.1	2810.3	2551.0	2460.2
37.5°	3238.1	3011.5	2629.1	2344.9	2242.4
40°	3085.7	2839.1	2439.7	2147.6	2040.7
42.5°	2929.4	2666.2	2250.7	1946.0	1843.4
45°	2764.9	2489.0	2057.3	1764.8	1666.2
47.5°	2608.6	2316.6	1872.2	1579.7	1489.4
50°	2435.7	2143.7	1691.1	1406.9	1320.9
52.5°	2266.8	1958.2	1518.2	1246.7	1168.5
55°	2102.2	1781.4	1337.0	1090.4	1012.3
57.5°	1933.8	1604.6	1176.8	946.4	880.4
60°	1760.9	1431.8	1007.9	798.4	732.5
62.5°	1592.4	1263.3	863.9	666.6	633.8
65°	1419.5	1086.0	715.9	576.2	563.5
67.5°	1255.0	921.5	576.2	505.9	493.7
70°	1082.1	761.3	477.1	436.1	419.5
72.5°	917.5	612.9	399.0	366.2	357.9
75°	756.9	468.8	329.1	300.3	296.4
77.5°	596.7	333.1	259.3	242.7	234.4
80°	448.3	238.8	197.3	181.2	181.2
82.5°	312.5	160.6	135.8	127.5	127.5
85°	176.8	90.4	78.1	78.1	78.1
87.5°	65.9	32.7	32.7	28.8	28.8
90°	1.4	17.6	29.2	36.7	39.5
92.5°	36.7	30.8	35.1	38.1	39.5
95°	95.2	46.8	57.1	64.6	63.0
97.5°	171.4	51.3	74.6	79.2	80.6
100°	259.4	58.6	83.5	95.2	98.1
102.5°	356.0	353.2	86.5	102.5	107.0
105°	445.4	489.4	89.4	105.4	111.4
107.5°	549.5	586.0	92.4	108.4	114.3
110°	649.2	679.8	256.5	110.0	115.7



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	742.9	769.2	744.3	112.7	117.3
115°	842.5	867.4	904.1	225.7	120.2
117.5°	928.9	958.2	983.2	773.6	389.7
120°	1025.7	1047.6	1074.1	1091.6	893.8
122.5°	1107.6	1131.1	1160.5	1169.2	1170.8
125°	1191.2	1210.3	1238.1	1248.4	1252.7
127.5°	1267.4	1287.9	1310.0	1324.6	1326.0
130°	1339.2	1362.7	1378.7	1394.9	1393.5
132.5°	1412.5	1431.6	1447.6	1460.8	1459.4
135°	1474.1	1497.6	1510.6	1525.4	1522.4
137.5°	1538.4	1556.0	1570.8	1585.4	1581.1
140°	1601.4	1613.3	1629.3	1642.5	1635.2
142.5°	1654.3	1664.6	1683.6	1695.2	1687.9
145°	1710.0	1708.4	1733.3	1743.6	1736.3
147.5°	1758.2	1753.8	1778.7	1786.0	1780.3
150°	1805.2	1794.9	1818.4	1827.1	1819.8
152.5°	1844.7	1833.0	1854.9	1863.8	1853.5
155°	1882.8	1869.7	1887.3	1896.0	1884.3
157.5°	1913.6	1901.9	1915.1	1925.4	1913.6
160°	1940.0	1931.1	1940.0	1948.7	1938.5
162.5°	1963.3	1954.6	1961.9	1972.2	1959.0
165°	1983.9	1975.2	1979.5	1989.8	1979.5
167.5°	2000.0	1991.2	1995.7	2006.0	1992.7
170°	2013.3	2004.4	2007.4	2017.6	2004.4
172.5°	2022.0	2013.3	2016.2	2026.5	2013.3
175°	2029.3	2019.0	2022.0	2032.2	2017.6
177.5°	2032.2	2022.0	2023.5	2033.8	2020.6
180°	2024.9	2024.9	2024.9	2024.9	2024.9



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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	12.31	13.24	13.17	14.11	15.22	8.27	9.20	9.13	10.08	11.18
	3H	13.99	14.83	14.87	15.71	16.85	9.47	10.30	10.34	11.19	12.32
	4H	14.61	15.39	15.50	16.29	17.43	9.92	10.71	10.81	11.60	12.74
	6H	15.04	15.76	15.94	16.66	17.82	10.25	10.97	11.15	11.87	13.03
	8H	15.17	15.86	16.08	16.77	17.93	10.34	11.03	11.25	11.95	13.10
	12H	15.23	15.89	16.15	16.80	17.98	10.39	11.05	11.31	11.96	13.14
4H	2H	12.34	13.12	13.23	14.02	15.16	8.88	9.67	9.78	10.56	11.70
	3H	14.18	14.83	15.08	15.76	16.91	10.24	10.89	11.15	11.82	12.97
	4H	14.88	15.47	15.79	16.39	17.57	10.79	11.39	11.71	12.31	13.49
	6H	15.40	15.91	16.33	16.86	18.04	11.22	11.73	12.15	12.68	13.86
	8H	15.58	16.06	16.51	17.00	18.19	11.35	11.83	12.28	12.77	13.96
	12H	15.68	16.11	16.63	17.07	18.27	11.42	11.85	12.37	12.81	14.01
8H	4H	14.85	15.33	15.78	16.27	17.47	11.08	11.56	12.02	12.50	13.70
	6H	15.42	15.82	16.38	16.80	18.00	11.61	12.00	12.57	12.98	14.18
	8H	15.64	15.99	16.61	16.96	18.18	11.80	12.15	12.77	13.12	14.33
	12H	15.79	16.10	16.76	17.06	18.32	11.92	12.23	12.89	13.19	14.46
12H	4H	14.81	15.24	15.76	16.20	17.40	11.09	11.52	12.04	12.48	13.68
	6H	15.40	15.75	16.37	16.72	17.93	11.66	12.00	12.62	12.98	14.19
	8H	15.63	15.93	16.60	16.90	18.16	11.87	12.18	12.84	13.14	14.41