

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: P906073

Luminaire Tested: DFN2DIP-PN4F0-090D090US835-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906073
REPORT IS A COMBINATION OF REPORTS P901229 AND P898053
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-090D090US835-FLLONL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

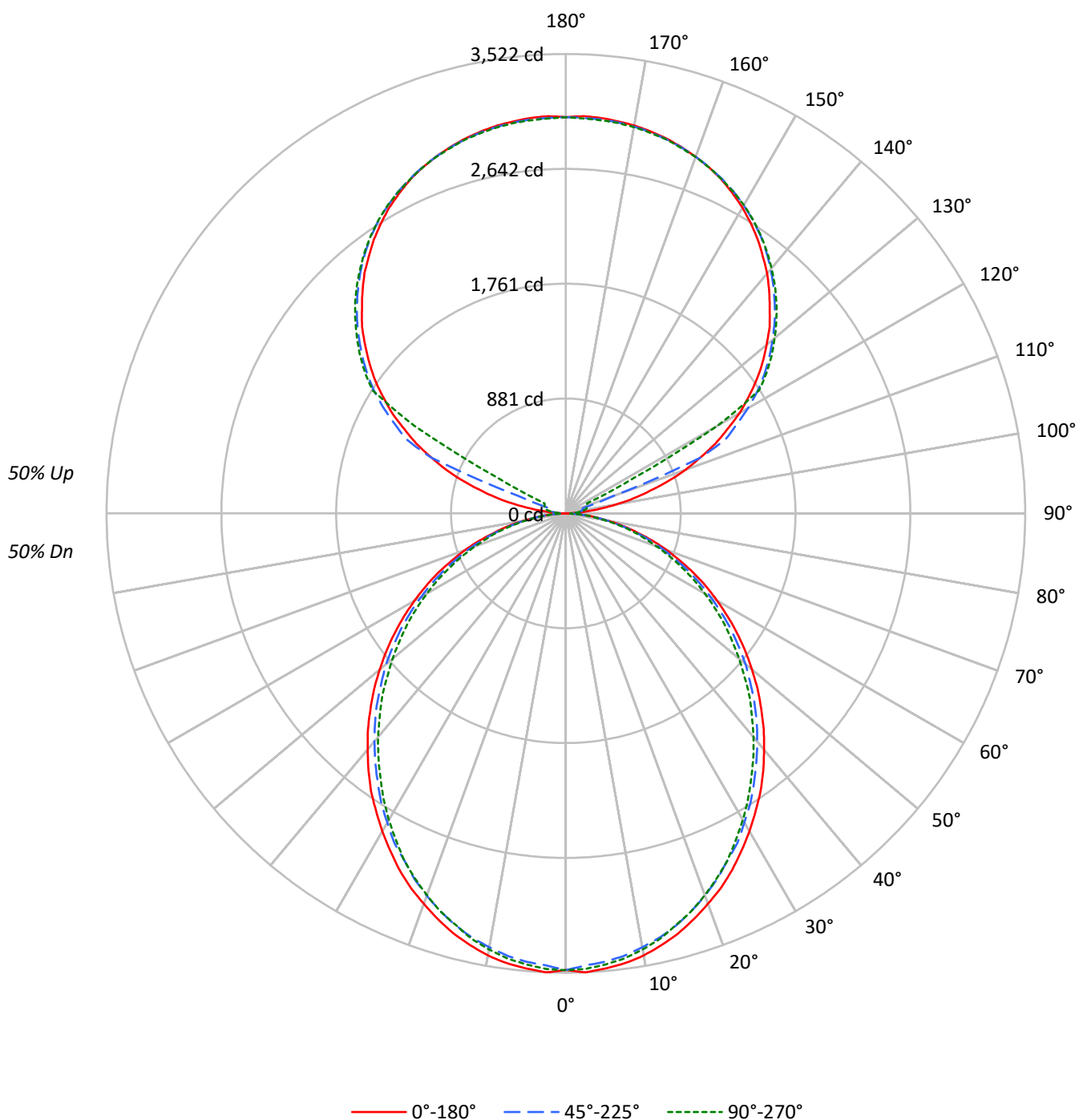
Lumens per Lamp: N/A
Luminaire Lumens: 17820.0 lumens
Efficiency: N/A
Efficacy: 115.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 155
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9963
Total Harmonic Distortion (THDi): 0.065
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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2556	2556	2556
5°	2560	2521	2538
10°	2540	2487	2504
15°	2502	2447	2451
20°	2452	2390	2396
25°	2402	2323	2333
30°	2339	2260	2253
35°	2279	2185	2168
40°	2206	2110	2087
45°	2132	2035	2005
50°	2053	1956	1909
55°	1969	1865	1821
60°	1874	1756	1720
65°	1771	1644	1601
70°	1639	1507	1473
75°	1457	1344	1356
80°	1238	1135	1131
85°	895	775	757

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2132 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	329.6	1.8
10°-20°	927.4	5.2
20°-30°	1362.9	7.6
30°-40°	1582.9	8.9
40°-50°	1580.9	8.9
50°-60°	1378.5	7.7
60°-70°	1019.0	5.7
70°-80°	576.6	3.2
80°-90°	157.5	0.9
90°-100°	100.2	0.6
100°-110°	373.4	2.1
110°-120°	990.2	5.6
120°-130°	1642.4	9.2
130°-140°	1744.6	9.8
140°-150°	1621.4	9.1
150°-160°	1303.5	7.3
160°-170°	840.0	4.7
170°-180°	289.1	1.6
0°-30°	2619.9	14.7
0°-40°	4202.8	23.6
0°-60°	7162.3	40.2
0°-90°	8915.4	50.0
90°-120°	1463.7	8.2
90°-150°	6472.0	36.3
90°-180°	8905.0	50.0
0°-180°	17820.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3502	3502	3502	3502	3502	
5°	3502	3489	3452	3478	3472	332
15°	3334	3314	3270	3283	3266	939
25°	3017	2990	2933	2940	2933	1388
35°	2603	2570	2516	2495	2478	1626
45°	2118	2095	2044	2007	1994	1635
55°	1603	1583	1542	1502	1485	1433
65°	1081	1061	1027	997	980	1069
75°	566	559	542	522	529	604
85°	138	135	132	121	118	154
90°	2	26	44	55	59	16
95°	143	70	86	97	94	169
105°	668	734	134	158	167	714
115°	1264	1301	1356	338	180	1244
125°	1787	1815	1857	1873	1879	1594
135°	2211	2246	2266	2288	2284	1708
145°	2565	2563	2600	2615	2604	1604
155°	2824	2805	2831	2844	2826	1301
165°	2976	2963	2969	2985	2969	841
175°	3044	3028	3033	3048	3026	290
180°	3037	3037	3037	3037	3037	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3501.9	3501.9	3501.9	3501.9	3501.9
2.5°	3522.3	3505.5	3468.4	3501.9	3495.5
5°	3501.9	3488.7	3451.6	3478.4	3471.9
7.5°	3478.4	3458.4	3421.2	3448.4	3441.6
10°	3441.6	3418.0	3377.6	3404.4	3394.4
12.5°	3390.8	3370.8	3330.5	3347.2	3340.5
15°	3333.7	3313.7	3269.7	3283.3	3266.5
17.5°	3262.9	3242.9	3199.0	3215.8	3199.0
20°	3185.4	3165.4	3118.2	3128.2	3115.0
22.5°	3108.2	3077.9	3033.9	3033.9	3027.1
25°	3017.1	2990.3	2933.2	2939.6	2933.2
27.5°	2916.0	2892.4	2848.9	2838.9	2822.1
30°	2815.3	2788.1	2737.7	2727.7	2714.2
32.5°	2707.4	2687.4	2633.4	2613.1	2599.5
35°	2603.1	2569.5	2515.5	2495.2	2478.4
37.5°	2485.2	2454.8	2400.8	2377.3	2360.5
40°	2364.0	2336.9	2282.9	2252.9	2239.4
42.5°	2246.1	2219.0	2165.4	2131.5	2111.5
45°	2118.2	2094.7	2043.9	2007.1	1993.6
47.5°	1993.6	1970.0	1916.0	1878.9	1858.9
50°	1862.1	1845.3	1798.1	1751.0	1734.2
52.5°	1734.2	1710.6	1667.0	1629.9	1606.3
55°	1603.1	1582.7	1542.3	1502.0	1485.2
57.5°	1471.6	1454.8	1410.9	1370.5	1356.9
60°	1340.1	1326.9	1279.7	1242.6	1232.6
62.5°	1212.2	1188.6	1155.0	1121.5	1107.9
65°	1081.1	1060.7	1027.1	996.8	980.0
67.5°	946.4	929.3	899.2	875.7	862.1
70°	821.7	808.1	777.8	754.2	741.0
72.5°	693.8	680.2	663.4	639.9	629.9
75°	565.6	559.1	542.0	522.0	528.8
77.5°	451.2	437.7	430.9	420.9	410.9
80°	336.9	333.3	326.5	316.5	309.8
82.5°	229.0	229.0	225.8	212.2	212.2
85°	137.9	134.7	131.5	121.1	117.9
87.5°	60.7	53.9	47.2	37.2	33.6
90°	2.1	26.4	43.8	55.1	59.2
92.5°	55.1	46.2	52.7	57.2	59.2
95°	142.8	70.2	85.6	96.8	94.5
97.5°	257.1	77.0	112.0	118.7	120.8
100°	389.1	88.0	125.3	142.8	147.2
102.5°	534.0	529.8	129.7	153.7	160.5
105°	668.1	734.2	134.1	158.2	167.0
107.5°	824.2	879.0	138.6	162.6	171.5
110°	973.7	1019.7	384.7	164.9	173.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1114.4	1153.8	1116.5	169.1	175.9
115°	1263.7	1301.0	1356.1	338.5	180.3
117.5°	1393.4	1437.3	1474.8	1160.4	584.6
120°	1538.5	1571.4	1611.1	1637.4	1340.7
122.5°	1661.5	1696.7	1740.8	1753.8	1756.2
125°	1786.7	1815.4	1857.2	1872.6	1879.1
127.5°	1901.0	1931.8	1965.0	1986.9	1989.0
130°	2008.8	2044.1	2068.1	2092.3	2090.3
132.5°	2118.7	2147.4	2171.4	2191.3	2189.2
135°	2211.1	2246.3	2265.9	2288.1	2283.7
137.5°	2307.7	2334.0	2356.2	2378.1	2371.6
140°	2402.1	2419.9	2443.9	2463.7	2452.8
142.5°	2481.5	2496.9	2525.3	2542.8	2531.9
145°	2565.0	2562.6	2600.0	2615.4	2604.4
147.5°	2637.3	2630.8	2668.1	2679.1	2670.4
150°	2707.8	2692.4	2727.6	2740.6	2729.7
152.5°	2767.0	2749.5	2782.4	2795.7	2780.3
155°	2824.2	2804.6	2830.9	2844.0	2826.5
157.5°	2870.4	2852.9	2872.7	2888.1	2870.4
160°	2910.0	2896.7	2910.0	2923.1	2907.7
162.5°	2945.0	2931.9	2942.9	2958.3	2938.5
165°	2975.8	2962.7	2969.3	2984.7	2969.3
167.5°	3000.1	2986.8	2993.5	3008.9	2989.1
170°	3019.9	3006.6	3011.0	3026.4	3006.6
172.5°	3033.0	3019.9	3024.3	3039.7	3019.9
175°	3043.9	3028.5	3033.0	3048.3	3026.4
177.5°	3048.3	3033.0	3035.3	3050.7	3030.9
180°	3037.4	3037.4	3037.4	3037.4	3037.4

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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	10.54	11.40	11.50	12.38	13.65	10.10	10.96	11.06	11.94	13.21
	3H	12.21	12.98	13.17	13.96	15.25	11.72	12.49	12.69	13.48	14.77
	4H	12.80	13.53	13.78	14.51	15.81	12.31	13.04	13.29	14.03	15.33
	6H	13.20	13.87	14.19	14.86	16.18	12.71	13.38	13.70	14.37	15.68
	8H	13.30	13.95	14.30	14.95	16.26	12.81	13.45	13.81	14.46	15.77
	12H	13.35	13.96	14.36	14.96	16.30	12.85	13.46	13.86	14.46	15.80
4H	2H	11.00	11.74	11.99	12.72	14.02	10.65	11.38	11.64	12.37	13.67
	3H	12.87	13.48	13.87	14.50	15.81	12.47	13.08	13.47	14.10	15.41
	4H	13.59	14.15	14.60	15.16	16.49	13.17	13.73	14.18	14.74	16.08
	6H	14.11	14.59	15.12	15.62	16.96	13.68	14.16	14.70	15.20	16.53
	8H	14.26	14.71	15.28	15.73	17.08	13.83	14.28	14.85	15.30	16.65
	12H	14.33	14.74	15.37	15.78	17.13	13.89	14.30	14.93	15.34	16.70
8H	4H	13.79	14.24	14.80	15.26	16.61	13.42	13.87	14.43	14.89	16.24
	6H	14.42	14.79	15.46	15.86	17.21	14.05	14.42	15.09	15.48	16.83
	8H	14.64	14.97	15.69	16.02	17.39	14.26	14.59	15.31	15.64	17.01
	12H	14.78	15.07	15.83	16.11	17.52	14.38	14.66	15.43	15.71	17.12
12H	4H	13.77	14.18	14.81	15.22	16.57	13.41	13.82	14.45	14.86	16.21
	6H	14.45	14.78	15.50	15.83	17.20	14.09	14.41	15.14	15.47	16.83
	8H	14.70	14.98	15.75	16.03	17.44	14.32	14.61	15.38	15.66	17.07