

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: P922508

Luminaire Tested: DFN2DIP-PN4F0-110D080US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P922508
REPORT IS A COMBINATION OF REPORTS P899695 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-110D080US940-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

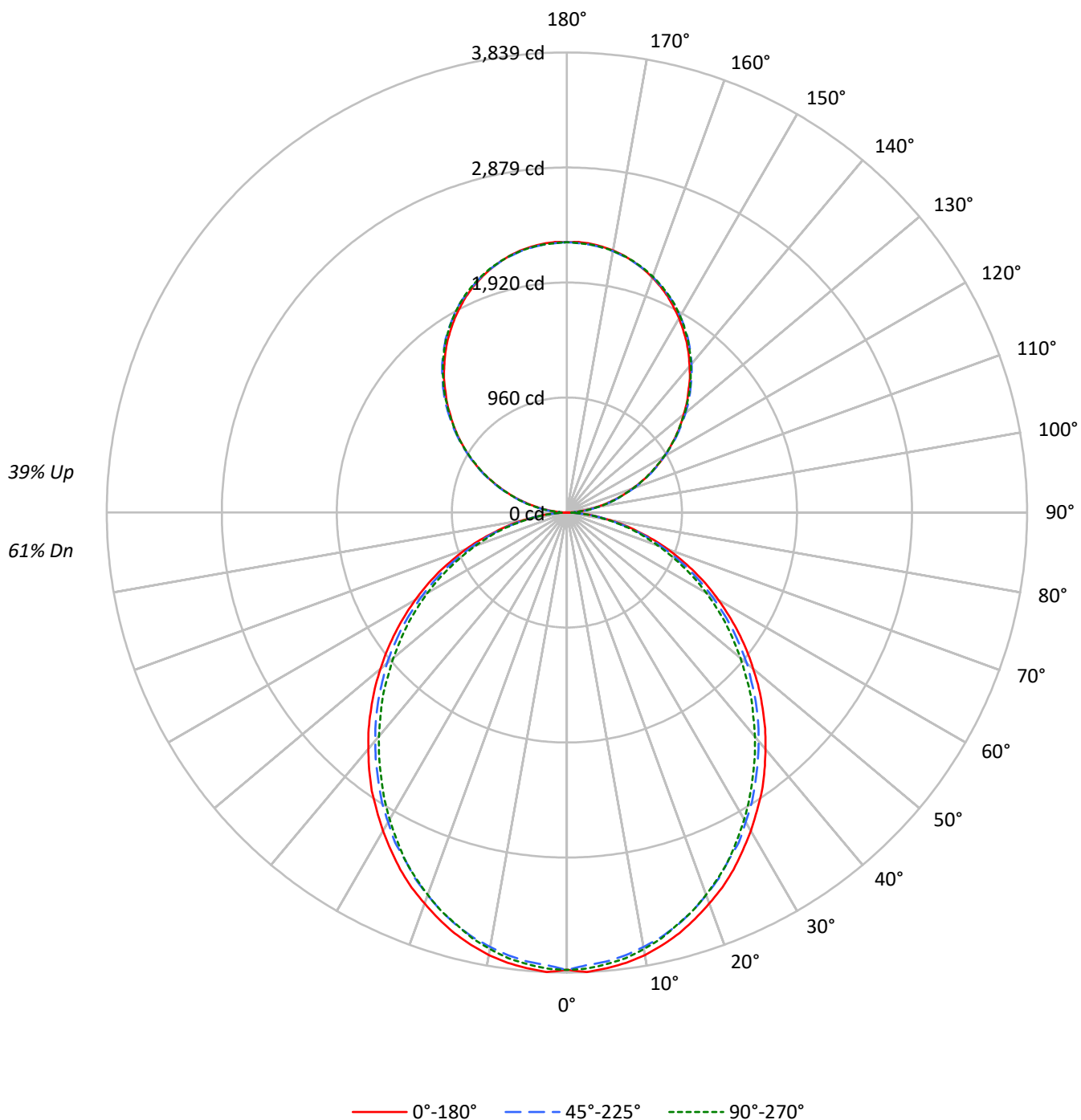
Lumens per Lamp: N/A
Luminaire Lumens: 16024.1 lumens
Efficiency: N/A
Efficacy: 93.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 172.2
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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	110	110	110	110	103	103	103	103	89	89	89	77	77	77	66	66	66
1	100	96	92	88	94	90	86	83	78	76	73	68	66	64	58	57	56
2	91	84	77	72	85	78	73	68	69	64	61	60	56	54	51	49	47
3	83	74	66	60	78	69	62	57	61	55	51	53	49	45	45	42	40
4	76	65	57	51	71	61	54	48	54	48	44	47	43	39	41	37	34
5	70	58	50	44	65	55	47	42	48	42	38	42	38	34	37	33	30
6	65	52	44	38	60	49	42	36	44	38	33	38	33	30	33	29	26
7	60	47	39	33	56	45	37	32	40	34	29	35	30	26	30	27	24
8	55	43	35	30	52	41	33	28	36	30	26	32	27	24	28	24	21
9	52	39	32	26	48	37	30	25	33	27	23	29	25	21	26	22	19
10	48	36	29	24	45	34	27	23	31	25	21	27	23	19	24	20	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2786	2786	2786
5°	2790	2748	2766
10°	2768	2711	2729
15°	2727	2667	2671
20°	2672	2605	2612
25°	2617	2531	2543
30°	2549	2463	2455
35°	2484	2382	2363
40°	2404	2300	2275
45°	2324	2218	2185
50°	2237	2132	2080
55°	2146	2032	1984
60°	2042	1914	1875
65°	1930	1792	1745
70°	1787	1643	1606
75°	1588	1465	1478
80°	1349	1238	1233
85°	976	845	825

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2324 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	359.2	2.2
10°-20°	1010.7	6.3
20°-30°	1485.4	9.3
30°-40°	1725.2	10.8
40°-50°	1723.0	10.8
50°-60°	1502.4	9.4
60°-70°	1110.6	6.9
70°-80°	628.4	3.9
80°-90°	172.3	1.1
90°-100°	139.6	0.9
100°-110°	443.6	2.8
110°-120°	759.1	4.7
120°-130°	998.3	6.2
130°-140°	1120.6	7.0
140°-150°	1098.9	6.9
150°-160°	921.8	5.8
160°-170°	611.3	3.8
170°-180°	213.7	1.3
0°-30°	2855.3	17.8
0°-40°	4580.5	28.6
0°-60°	7805.9	48.7
0°-90°	9717.2	60.6
90°-120°	1342.3	8.4
90°-150°	4560.1	28.5
90°-180°	6307.0	39.4
0°-180°	16024.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3817	3817	3817	3817	3817	
5°	3817	3802	3762	3791	3784	362
15°	3633	3611	3564	3578	3560	1023
25°	3288	3259	3197	3204	3197	1513
35°	2837	2800	2742	2719	2701	1772
45°	2309	2283	2228	2188	2173	1782
55°	1747	1725	1681	1637	1619	1562
65°	1178	1156	1120	1086	1068	1165
75°	616	609	591	569	576	658
85°	150	147	143	132	128	168
90°	2	24	67	63	65	15
95°	99	118	122	122	118	111
105°	410	415	419	422	422	432
115°	762	773	769	767	762	753
125°	1108	1125	1120	1113	1111	990
135°	1433	1454	1458	1456	1451	1108
145°	1740	1754	1764	1766	1759	1087
155°	1990	1995	2001	2010	2004	916
165°	2164	2162	2162	2176	2166	611
175°	2252	2247	2242	2256	2244	214
180°	2256	2256	2256	2256	2256	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3816.7	3816.7	3816.7	3816.7	3816.7
2.5°	3838.8	3820.5	3780.0	3816.7	3809.7
5°	3816.7	3802.3	3761.8	3790.9	3784.0
7.5°	3790.9	3769.2	3728.7	3758.3	3750.9
10°	3750.9	3725.1	3681.2	3710.3	3699.4
12.5°	3695.6	3673.8	3629.8	3648.1	3640.7
15°	3633.3	3611.4	3563.5	3578.3	3560.1
17.5°	3556.1	3534.4	3486.5	3504.8	3486.5
20°	3471.7	3449.8	3398.5	3409.4	3395.0
22.5°	3387.6	3354.4	3306.6	3306.6	3299.1
25°	3288.3	3259.1	3196.8	3203.8	3196.8
27.5°	3178.1	3152.4	3104.8	3094.0	3075.7
30°	3068.3	3038.7	2983.8	2972.9	2958.1
32.5°	2950.7	2928.9	2870.1	2847.9	2833.1
35°	2837.0	2800.4	2741.6	2719.4	2701.1
37.5°	2708.5	2675.4	2616.6	2590.9	2572.6
40°	2576.5	2546.9	2488.1	2455.4	2440.6
42.5°	2448.0	2418.4	2360.0	2323.0	2301.2
45°	2308.6	2282.9	2227.6	2187.5	2172.7
47.5°	2172.7	2147.1	2088.2	2047.7	2025.9
50°	2029.4	2011.2	1959.7	1908.3	1890.1
52.5°	1890.1	1864.3	1816.9	1776.3	1750.6
55°	1747.1	1724.9	1681.0	1636.9	1618.6
57.5°	1603.8	1585.6	1537.7	1493.6	1478.8
60°	1460.5	1446.2	1394.7	1354.2	1343.4
62.5°	1321.2	1295.5	1258.8	1222.3	1207.5
65°	1178.2	1156.0	1119.5	1086.4	1068.1
67.5°	1031.4	1012.8	980.1	954.4	939.6
70°	895.5	880.7	847.7	822.0	807.5
72.5°	756.2	741.4	723.1	697.4	686.4
75°	616.4	609.4	590.7	568.9	576.3
77.5°	491.8	477.0	469.6	458.7	447.8
80°	367.2	363.3	355.9	345.0	337.6
82.5°	249.6	249.6	246.1	231.3	231.3
85°	150.3	146.8	143.3	132.0	128.5
87.5°	66.2	58.8	51.4	40.5	36.6
90°	2.1	24.5	66.7	62.6	64.6
92.5°	42.2	57.2	59.2	61.2	61.2
95°	99.3	118.3	121.7	121.7	118.3
97.5°	165.3	183.0	190.5	190.5	190.5
100°	241.5	257.1	262.5	262.5	260.5
102.5°	321.7	333.3	340.7	342.8	340.7
105°	409.5	414.9	419.0	422.4	422.4
107.5°	496.5	504.7	504.7	506.0	496.5
110°	580.9	591.7	591.7	591.7	586.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	672.0	683.6	681.5	676.1	672.0
115°	761.8	772.7	769.3	767.2	761.8
117.5°	850.9	865.9	856.3	850.9	845.4
120°	940.7	955.6	940.7	940.7	934.5
122.5°	1022.3	1041.3	1031.8	1026.4	1022.3
125°	1108.0	1125.0	1119.5	1113.4	1111.4
127.5°	1191.7	1212.7	1205.2	1197.1	1191.7
130°	1269.9	1294.3	1290.9	1286.9	1279.4
132.5°	1357.6	1376.6	1378.0	1368.5	1363.1
135°	1433.1	1454.2	1458.3	1456.3	1450.8
137.5°	1517.4	1534.5	1537.8	1536.5	1528.3
140°	1591.6	1608.6	1618.1	1618.1	1610.6
142.5°	1667.8	1684.8	1690.2	1692.3	1684.8
145°	1739.9	1753.5	1764.3	1766.4	1758.9
147.5°	1804.5	1821.5	1829.6	1833.1	1825.6
150°	1871.2	1882.7	1890.2	1896.3	1890.2
152.5°	1930.3	1941.9	1951.4	1958.9	1951.4
155°	1989.5	1994.9	2001.1	2010.5	2004.5
157.5°	2040.5	2044.6	2048.0	2061.5	2052.1
160°	2086.1	2090.2	2092.2	2103.7	2095.6
162.5°	2128.2	2128.2	2130.3	2143.2	2133.7
165°	2164.3	2162.2	2162.2	2175.9	2166.3
167.5°	2196.9	2190.8	2190.8	2204.4	2194.9
170°	2221.4	2216.0	2213.9	2227.6	2216.0
172.5°	2238.5	2233.0	2231.0	2244.5	2233.0
175°	2252.0	2246.6	2242.5	2256.1	2244.5
177.5°	2259.5	2254.1	2250.0	2261.6	2250.0
180°	2256.1	2256.1	2256.1	2256.1	2256.1

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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	11.77	12.73	12.63	13.61	14.72	11.33	12.29	12.19	13.17	14.28
	3H	13.44	14.30	14.31	15.19	16.33	12.95	13.82	13.82	14.71	15.85
	4H	14.03	14.85	14.92	15.75	16.89	13.54	14.36	14.43	15.26	16.41
	6H	14.44	15.19	15.34	16.10	17.26	13.95	14.70	14.85	15.61	16.77
	8H	14.55	15.27	15.46	16.19	17.35	14.05	14.77	14.96	15.70	16.86
	12H	14.60	15.29	15.51	16.20	17.39	14.10	14.79	15.01	15.70	16.89
4H	2H	12.24	13.06	13.13	13.96	15.10	11.89	12.71	12.78	13.61	14.75
	3H	14.12	14.80	15.02	15.73	16.89	13.72	14.40	14.62	15.33	16.49
	4H	14.84	15.46	15.75	16.39	17.58	14.42	15.05	15.34	15.97	17.16
	6H	15.36	15.90	16.29	16.85	18.04	14.94	15.48	15.87	16.43	17.61
	8H	15.52	16.02	16.45	16.96	18.17	15.09	15.59	16.02	16.53	17.74
	12H	15.60	16.05	16.55	17.01	18.22	15.16	15.61	16.11	16.57	17.78
8H	4H	15.04	15.55	15.98	16.49	17.69	14.67	15.18	15.61	16.12	17.32
	6H	15.68	16.10	16.64	17.08	18.29	15.31	15.72	16.27	16.71	17.91
	8H	15.91	16.28	16.87	17.25	18.47	15.52	15.89	16.49	16.87	18.08
	12H	16.05	16.37	17.02	17.34	18.61	15.64	15.97	16.61	16.94	18.20
12H	4H	15.04	15.49	15.99	16.45	17.66	14.67	15.13	15.62	16.09	17.30
	6H	15.71	16.08	16.68	17.06	18.28	15.35	15.72	16.32	16.69	17.91
	8H	15.96	16.29	16.93	17.26	18.52	15.59	15.92	16.56	16.88	18.15