

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: P923903

Luminaire Tested: DFN2DIP-TR4F0-110D070US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923903
REPORT IS A COMBINATION OF REPORTS P901957 AND P898849
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-110D070US940-FLLONL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

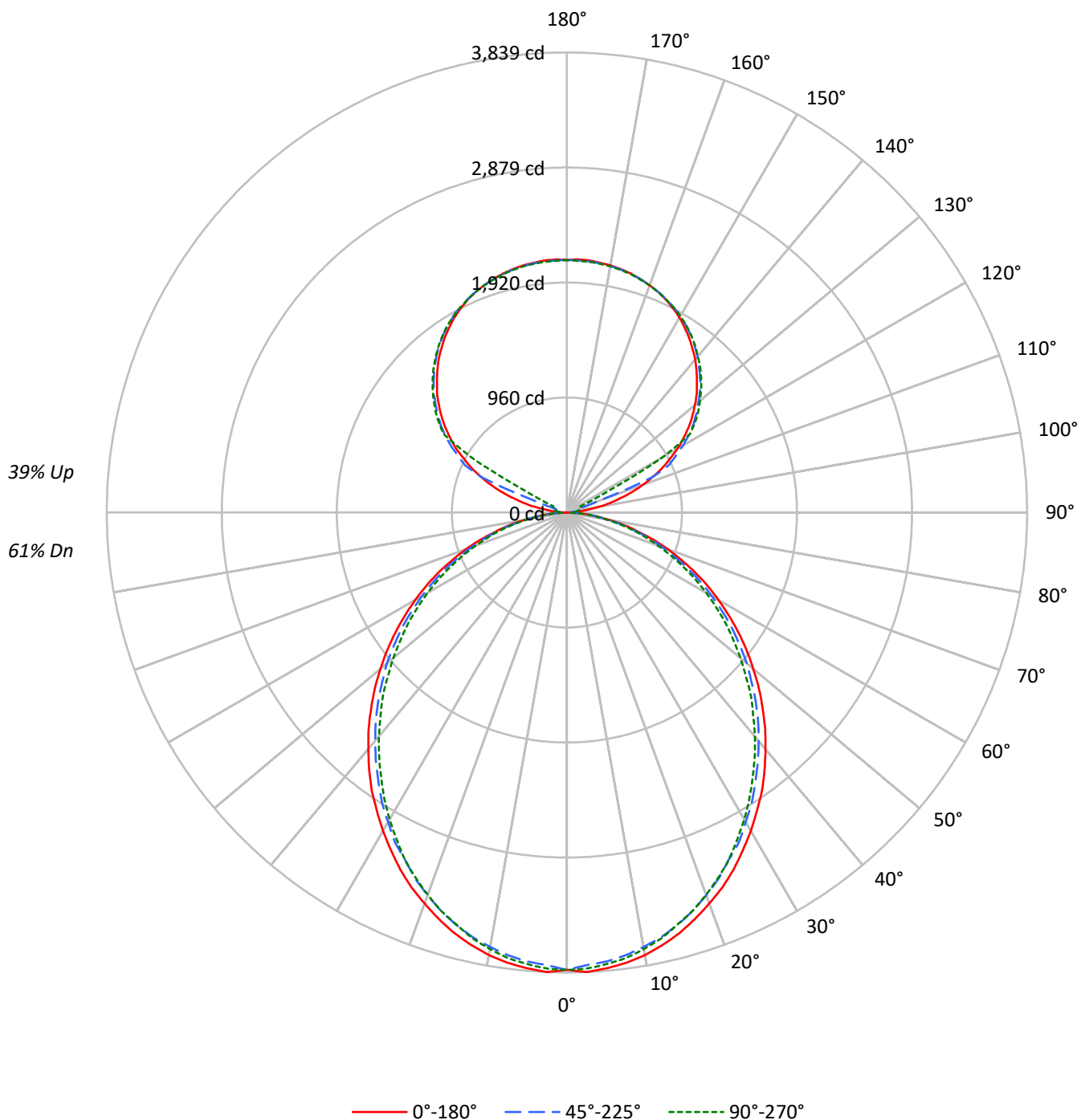
Lumens per Lamp: N/A
Luminaire Lumens: 15890.3 lumens
Efficiency: N/A
Efficacy: 96.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 164.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9613
Total Harmonic Distortion (THDi): 0.083
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
RCR																	
0	110	110	110	110	103	103	103	103	90	90	90		77	77	77		66
1	100	96	92	88	94	90	86	83	79	76	74		68	66	65		59
2	91	84	77	72	85	79	73	68	69	65	61		60	57	54		52
3	83	74	66	60	78	69	63	57	61	56	51		53	49	46		46
4	76	65	57	51	71	61	54	49	54	48	44		47	43	39		41
5	70	58	50	44	65	55	47	42	48	42	38		42	38	34		37
6	65	52	44	38	60	49	42	36	44	38	33		38	34	30		34
7	60	47	39	33	56	45	37	32	40	34	29		35	30	26		31
8	56	43	35	30	52	41	33	28	36	30	26		32	27	24		28
9	52	39	32	27	48	37	30	25	33	27	23		30	25	21		26
10	48	36	29	24	45	34	28	23	31	25	21		27	23	19		24

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3032	3032	3032
5°	3037	2990	3010
10°	3012	2950	2969
15°	2968	2901	2905
20°	2908	2833	2840
25°	2849	2753	2765
30°	2774	2678	2669
35°	2704	2589	2567
40°	2616	2500	2471
45°	2530	2410	2372
50°	2435	2316	2257
55°	2335	2207	2152
60°	2223	2077	2032
65°	2101	1944	1890
70°	1945	1781	1736
75°	1729	1585	1595
80°	1469	1336	1325
85°	1063	907	878

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2530 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	359.2	2.3
10°-20°	1010.7	6.4
20°-30°	1485.4	9.3
30°-40°	1725.2	10.9
40°-50°	1723.0	10.8
50°-60°	1502.4	9.5
60°-70°	1110.6	7.0
70°-80°	628.4	4.0
80°-90°	169.6	1.1
90°-100°	69.5	0.4
100°-110°	259.0	1.6
110°-120°	686.8	4.3
120°-130°	1139.1	7.2
130°-140°	1209.9	7.6
140°-150°	1124.5	7.1
150°-160°	904.1	5.7
160°-170°	582.6	3.7
170°-180°	200.5	1.3
0°-30°	2855.3	18.0
0°-40°	4580.5	28.8
0°-60°	7805.9	49.1
0°-90°	9714.5	61.1
90°-120°	1015.2	6.4
90°-150°	4488.7	28.2
90°-180°	6176.0	38.9
0°-180°	15890.3	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°	1	18	30	38	41	15
95°	99	49	59	67	66	117
105°	463	509	93	110	116	495
115°	876	902	940	235	125	863
125°	1239	1259	1288	1299	1303	1105
135°	1534	1558	1572	1587	1584	1185
145°	1779	1777	1803	1814	1806	1113
155°	1959	1945	1963	1972	1960	903
165°	2064	2055	2059	2070	2059	583
175°	2111	2100	2104	2114	2099	201
180°	2107	2107	2107	2107	2107	

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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°	1.4	18.3	30.4	38.2	41.1
92.5°	38.2	32.0	36.6	39.7	41.1
95°	99.0	48.7	59.4	67.1	65.5
97.5°	178.3	53.4	77.7	82.4	83.8
100°	269.9	61.0	86.9	99.0	102.1
102.5°	370.3	367.5	90.0	106.6	111.3
105°	463.4	509.2	93.0	109.7	115.8
107.5°	571.6	609.7	96.1	112.8	119.0
110°	675.4	707.2	266.8	114.4	120.4

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	772.9	800.2	774.4	117.3	122.0
115°	876.5	902.3	940.5	234.8	125.1
117.5°	966.4	996.8	1022.9	804.8	405.5
120°	1067.0	1089.8	1117.4	1135.7	929.9
122.5°	1152.3	1176.7	1207.4	1216.4	1218.0
125°	1239.2	1259.1	1288.1	1298.8	1303.2
127.5°	1318.5	1339.8	1362.8	1378.0	1379.5
130°	1393.2	1417.6	1434.3	1451.2	1449.7
132.5°	1469.4	1489.3	1506.0	1519.7	1518.3
135°	1533.5	1557.9	1571.6	1586.9	1583.9
137.5°	1600.4	1618.8	1634.1	1649.4	1644.8
140°	1666.0	1678.3	1695.0	1708.7	1701.1
142.5°	1721.0	1731.7	1751.4	1763.5	1756.0
145°	1779.0	1777.4	1803.2	1813.9	1806.3
147.5°	1829.1	1824.6	1850.5	1858.1	1852.1
150°	1877.9	1867.3	1891.8	1900.8	1893.2
152.5°	1919.0	1906.9	1929.8	1938.9	1928.3
155°	1958.7	1945.1	1963.4	1972.5	1960.3
157.5°	1990.7	1978.6	1992.3	2003.0	1990.7
160°	2018.3	2009.0	2018.3	2027.3	2016.6
162.5°	2042.6	2033.5	2041.0	2051.7	2038.0
165°	2063.9	2054.9	2059.3	2070.0	2059.3
167.5°	2080.7	2071.4	2076.2	2086.9	2073.1
170°	2094.4	2085.3	2088.3	2099.0	2085.3
172.5°	2103.5	2094.4	2097.6	2108.2	2094.4
175°	2111.1	2100.4	2103.5	2114.2	2099.0
177.5°	2114.2	2103.5	2105.1	2115.9	2102.0
180°	2106.6	2106.6	2106.6	2106.6	2106.6

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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	12.09	13.06	12.94	13.94	15.04	11.66	12.63	12.51	13.51	14.61
	3H	13.76	14.63	14.62	15.52	16.64	13.28	14.16	14.15	15.04	16.17
	4H	14.35	15.17	15.23	16.07	17.21	13.88	14.70	14.76	15.59	16.73
	6H	14.76	15.51	15.65	16.41	17.57	14.28	15.04	15.18	15.94	17.09
	8H	14.86	15.59	15.77	16.50	17.66	14.39	15.11	15.29	16.03	17.18
	12H	14.91	15.60	15.82	16.52	17.69	14.43	15.12	15.34	16.03	17.21
4H	2H	12.56	13.39	13.45	14.28	15.42	12.22	13.04	13.11	13.94	15.08
	3H	14.44	15.13	15.34	16.05	17.21	14.05	14.73	14.95	15.66	16.81
	4H	15.16	15.79	16.07	16.71	17.89	14.75	15.38	15.66	16.30	17.48
	6H	15.68	16.22	16.60	17.17	18.35	15.27	15.81	16.20	16.76	17.94
	8H	15.83	16.34	16.76	17.28	18.47	15.42	15.93	16.35	16.86	18.06
	12H	15.91	16.37	16.86	17.32	18.52	15.49	15.95	16.44	16.90	18.10
8H	4H	15.36	15.87	16.29	16.81	18.00	15.00	15.51	15.93	16.45	17.64
	6H	16.00	16.42	16.95	17.40	18.59	15.64	16.06	16.59	17.04	18.23
	8H	16.22	16.59	17.19	17.56	18.77	15.85	16.22	16.82	17.19	18.41
	12H	16.36	16.68	17.33	17.65	18.91	15.97	16.30	16.94	17.26	18.52
12H	4H	15.35	15.81	16.30	16.77	17.97	15.00	15.46	15.95	16.42	17.62
	6H	16.03	16.40	16.99	17.37	18.58	15.68	16.05	16.64	17.02	18.23
	8H	16.28	16.60	17.25	17.57	18.83	15.92	16.25	16.89	17.21	18.47