

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: P912987

Luminaire Tested: DFN2DIP-TR4F0-110D060US850-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912987
REPORT IS A COMBINATION OF REPORTS P901939 AND P898849
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-110D060US850-FLLONL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

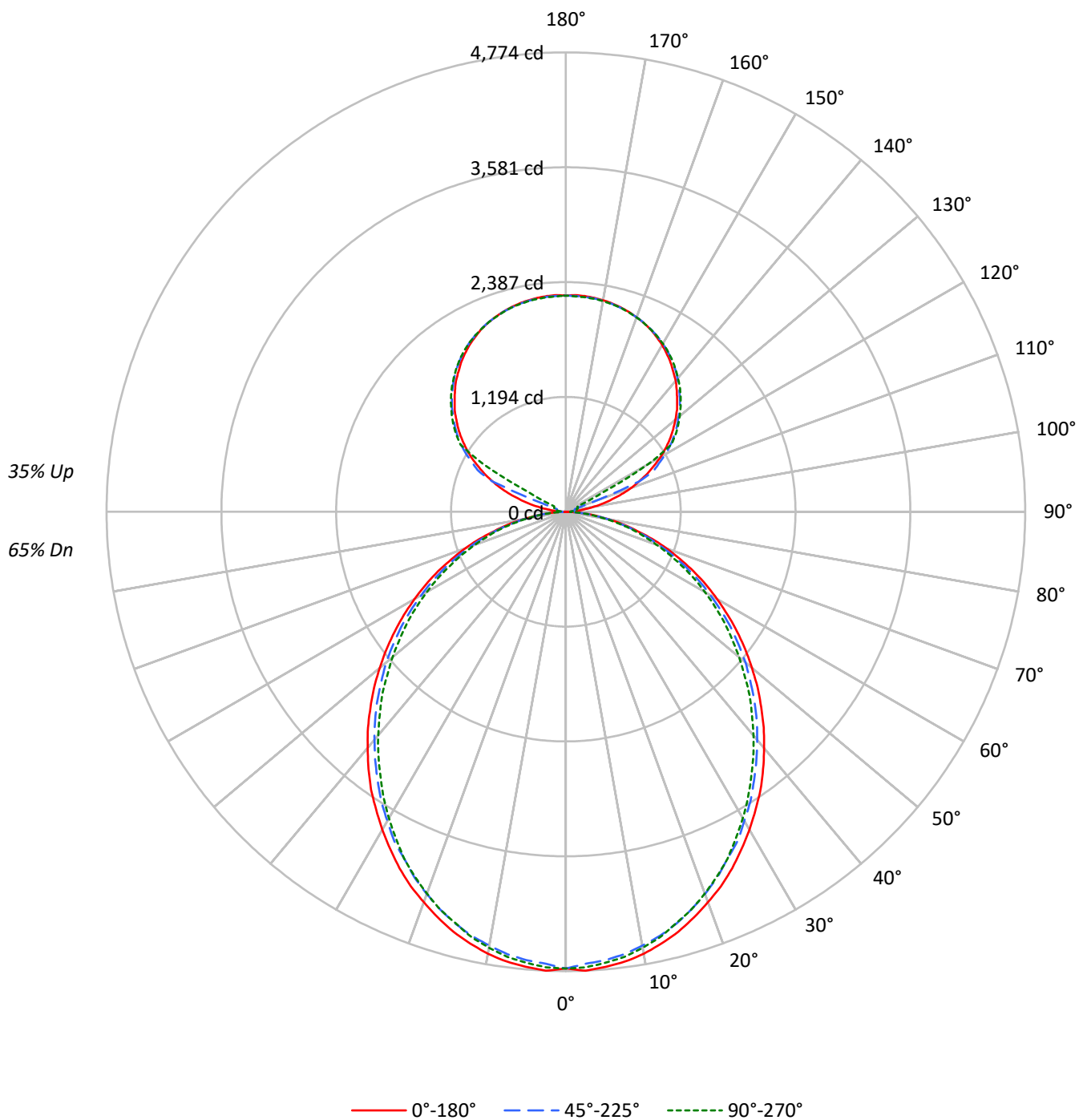
Lumens per Lamp: N/A
Luminaire Lumens: 18664.4 lumens
Efficiency: N/A
Efficacy: 118.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 157.4
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			0
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50	30	10	0
RCR																				
0	111	111	111	111	104	104	104	104	92	92	92		80	80	80		70	70	70	65
1	101	97	93	89	95	91	88	84	80	78	75		71	69	67		62	60	59	55
2	92	84	78	73	86	80	74	69	70	66	62		62	59	56		54	52	50	46
3	84	74	67	61	79	70	63	58	62	57	53		55	51	47		48	45	42	39
4	77	66	58	51	72	62	55	49	55	49	45		49	44	41		43	39	36	33
5	71	59	50	44	66	56	48	42	50	43	39		44	39	35		39	35	32	29
6	65	53	44	39	61	50	42	37	45	39	34		40	35	31		35	31	28	25
7	60	48	40	34	57	45	38	33	41	34	30		36	31	27		32	28	25	23
8	56	43	36	30	53	41	34	29	37	31	27		33	28	25		30	25	22	20
9	52	40	32	27	49	38	31	26	34	28	24		31	26	22		27	23	20	18
10	49	37	29	24	46	35	28	23	31	26	22		28	23	20		25	21	18	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3771	3771	3771
5°	3777	3718	3743
10°	3746	3668	3692
15°	3691	3608	3613
20°	3617	3524	3532
25°	3543	3424	3438
30°	3450	3330	3319
35°	3362	3220	3193
40°	3254	3109	3073
45°	3146	2997	2950
50°	3028	2880	2807
55°	2905	2745	2677
60°	2765	2584	2527
65°	2613	2417	2350
70°	2419	2214	2160
75°	2150	1971	1984
80°	1827	1662	1648
85°	1322	1128	1092

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3146 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	446.8	2.4
10°-20°	1257.0	6.7
20°-30°	1847.3	9.9
30°-40°	2145.5	11.5
40°-50°	2142.9	11.5
50°-60°	1868.5	10.0
60°-70°	1381.3	7.4
70°-80°	781.5	4.2
80°-90°	210.2	1.1
90°-100°	74.1	0.4
100°-110°	276.0	1.5
110°-120°	732.1	3.9
120°-130°	1214.2	6.5
130°-140°	1289.8	6.9
140°-150°	1198.7	6.4
150°-160°	963.8	5.2
160°-170°	621.0	3.3
170°-180°	213.7	1.1
0°-30°	3551.1	19.0
0°-40°	5696.6	30.5
0°-60°	9708.0	52.0
0°-90°	12081.0	64.7
90°-120°	1082.2	5.8
90°-150°	4785.0	25.6
90°-180°	6583.0	35.3
0°-180°	18664.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4747	4747	4747	4747	4747	
5°	4747	4729	4678	4715	4706	451
15°	4519	4491	4432	4450	4428	1273
25°	4090	4053	3976	3984	3976	1882
35°	3528	3483	3410	3382	3359	2203
45°	2871	2839	2770	2721	2702	2216
55°	2173	2145	2091	2036	2013	1943
65°	1465	1438	1392	1351	1328	1449
75°	766	758	735	708	717	818
85°	187	182	178	164	160	209
90°	2	20	32	41	44	17
95°	106	52	63	72	70	125
105°	494	543	99	117	124	528
115°	934	962	1003	250	133	920
125°	1321	1342	1373	1384	1389	1178
135°	1635	1661	1675	1692	1688	1263
145°	1896	1895	1922	1934	1926	1186
155°	2088	2074	2093	2103	2090	962
165°	2200	2190	2195	2207	2195	622
175°	2250	2239	2242	2254	2238	214
180°	2246	2246	2246	2246	2246	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4746.7	4746.7	4746.7	4746.7	4746.7
2.5°	4774.2	4751.5	4701.2	4746.7	4738.0
5°	4746.7	4728.8	4678.4	4714.7	4706.0
7.5°	4714.7	4687.6	4637.3	4674.1	4664.9
10°	4664.9	4632.8	4578.2	4614.4	4600.9
12.5°	4596.1	4569.0	4514.3	4537.0	4527.8
15°	4518.6	4491.4	4431.9	4450.3	4427.6
17.5°	4422.7	4395.6	4336.1	4358.8	4336.1
20°	4317.7	4290.5	4226.6	4240.2	4222.3
22.5°	4213.1	4171.8	4112.3	4112.3	4103.1
25°	4089.5	4053.3	3975.8	3984.5	3975.8
27.5°	3952.5	3920.5	3861.4	3847.9	3825.2
30°	3816.0	3779.1	3710.8	3697.3	3678.9
32.5°	3669.7	3642.6	3569.4	3541.8	3523.4
35°	3528.3	3482.8	3409.6	3382.0	3359.3
37.5°	3368.5	3327.3	3254.2	3222.2	3199.5
40°	3204.3	3167.5	3094.4	3053.7	3035.3
42.5°	3044.5	3007.7	2935.1	2889.1	2862.0
45°	2871.2	2839.2	2770.4	2720.6	2702.2
47.5°	2702.2	2670.3	2597.1	2546.7	2519.5
50°	2524.0	2501.2	2437.2	2373.4	2350.6
52.5°	2350.6	2318.6	2259.6	2209.1	2177.2
55°	2172.9	2145.2	2090.6	2035.8	2013.1
57.5°	1994.6	1971.9	1912.4	1857.6	1839.2
60°	1816.4	1798.6	1734.6	1684.2	1670.7
62.5°	1643.1	1611.2	1565.6	1520.1	1501.7
65°	1465.3	1437.7	1392.2	1351.1	1328.4
67.5°	1282.8	1259.6	1218.9	1187.0	1168.6
70°	1113.8	1095.4	1054.2	1022.3	1004.3
72.5°	940.4	922.0	899.3	867.3	853.7
75°	766.5	757.9	734.6	707.5	716.7
77.5°	611.6	593.2	584.0	570.5	556.9
80°	456.7	451.8	442.6	429.1	419.9
82.5°	310.4	310.4	306.1	287.7	287.7
85°	187.0	182.5	178.2	164.1	159.8
87.5°	82.3	73.1	63.9	50.3	45.5
90°	1.6	19.5	32.4	40.7	43.8
92.5°	40.7	34.2	38.9	42.3	43.8
95°	105.6	51.9	63.3	71.6	69.9
97.5°	190.1	56.9	82.7	87.8	89.4
100°	287.7	65.0	92.6	105.6	108.8
102.5°	394.8	391.7	95.9	113.7	118.7
105°	493.9	542.7	99.1	116.9	123.5
107.5°	609.4	649.9	102.5	120.2	126.8
110°	720.0	753.9	284.5	122.0	128.3

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	823.9	853.0	825.4	125.0	130.1
115°	934.3	961.9	1002.6	250.3	133.3
117.5°	1030.2	1062.6	1090.4	857.9	432.2
120°	1137.5	1161.8	1191.2	1210.6	991.2
122.5°	1228.3	1254.4	1287.0	1296.6	1298.4
125°	1321.0	1342.2	1373.1	1384.5	1389.2
127.5°	1405.5	1428.3	1452.8	1469.0	1470.5
130°	1485.2	1511.2	1529.0	1546.9	1545.4
132.5°	1566.5	1587.6	1605.4	1620.0	1618.5
135°	1634.8	1660.8	1675.3	1691.7	1688.3
137.5°	1706.1	1725.6	1742.0	1758.2	1753.4
140°	1776.0	1789.1	1806.9	1821.5	1813.4
142.5°	1834.6	1846.0	1867.1	1880.0	1871.9
145°	1896.4	1894.6	1922.2	1933.7	1925.6
147.5°	1949.8	1945.0	1972.6	1980.7	1974.4
150°	2002.0	1990.5	2016.6	2026.3	2018.2
152.5°	2045.8	2032.8	2057.1	2067.0	2055.5
155°	2088.0	2073.5	2093.0	2102.7	2089.7
157.5°	2122.2	2109.2	2123.8	2135.3	2122.2
160°	2151.5	2141.6	2151.5	2161.1	2149.8
162.5°	2177.3	2167.7	2175.7	2187.2	2172.5
165°	2200.1	2190.5	2195.3	2206.7	2195.3
167.5°	2218.0	2208.2	2213.2	2224.7	2209.9
170°	2232.7	2222.9	2226.2	2237.5	2222.9
172.5°	2242.4	2232.7	2236.0	2247.4	2232.7
175°	2250.5	2239.1	2242.4	2253.7	2237.5
177.5°	2253.7	2242.4	2244.1	2255.5	2240.8
180°	2245.6	2245.6	2245.6	2245.6	2245.6

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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	13.14	14.15	13.96	14.99	16.03	12.71	13.72	13.52	14.56	15.60
	3H	14.81	15.72	15.64	16.57	17.64	14.34	15.24	15.17	16.10	17.17
	4H	15.40	16.26	16.25	17.12	18.20	14.93	15.79	15.78	16.65	17.73
	6H	15.81	16.60	16.67	17.47	18.56	15.33	16.13	16.20	16.99	18.09
	8H	15.92	16.67	16.79	17.56	18.65	15.44	16.20	16.31	17.08	18.18
	12H	15.97	16.69	16.85	17.57	18.69	15.49	16.21	16.37	17.09	18.21
4H	2H	13.62	14.47	14.47	15.33	16.42	13.27	14.13	14.13	14.99	16.07
	3H	15.50	16.21	16.36	17.10	18.20	15.10	15.82	15.97	16.71	17.81
	4H	16.22	16.87	17.09	17.76	18.88	15.81	16.46	16.69	17.35	18.48
	6H	16.74	17.30	17.63	18.22	19.34	16.33	16.89	17.22	17.81	18.93
	8H	16.89	17.42	17.79	18.33	19.47	16.48	17.01	17.38	17.92	19.06
	12H	16.97	17.45	17.89	18.37	19.52	16.55	17.03	17.47	17.95	19.10
8H	4H	16.42	16.95	17.32	17.86	19.00	16.06	16.59	16.96	17.50	18.64
	6H	17.06	17.50	17.98	18.45	19.59	16.70	17.14	17.62	18.09	19.23
	8H	17.28	17.67	18.22	18.61	19.77	16.92	17.30	17.85	18.24	19.40
	12H	17.42	17.76	18.36	18.70	19.90	17.04	17.38	17.97	18.31	19.52
12H	4H	16.42	16.89	17.33	17.82	18.96	16.07	16.54	16.98	17.47	18.61
	6H	17.09	17.48	18.03	18.42	19.58	16.74	17.13	17.67	18.07	19.23
	8H	17.34	17.68	18.28	18.62	19.82	16.99	17.33	17.92	18.26	19.47