

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: P921041

Luminaire Tested: DFN2DIP-TR4F0-070D090US935-RLONL

Issue Date: 11/21/2024

**Test Information**

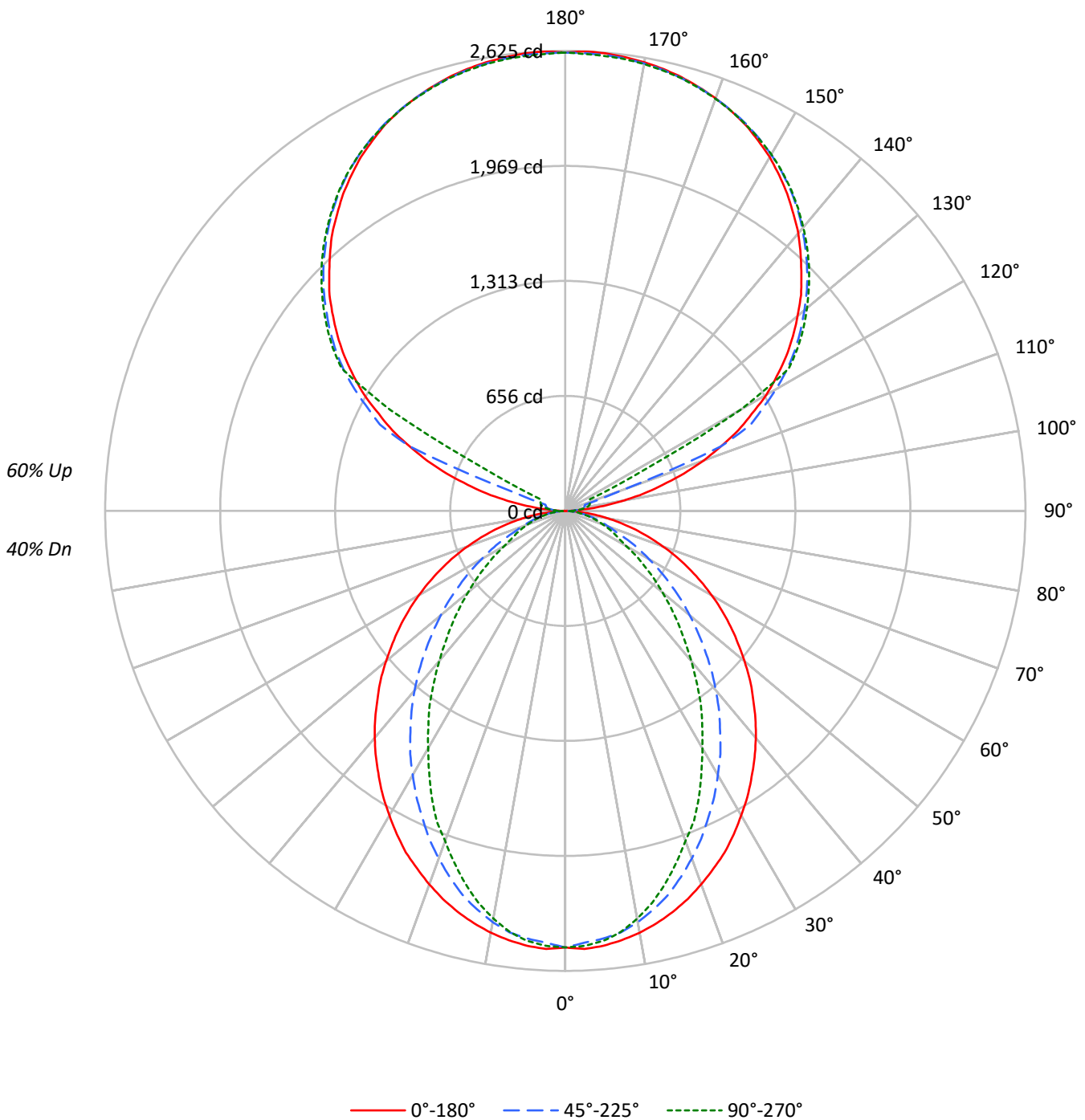
Test Method: LM-79-2019  
Report Number: P921041  
REPORT IS A COMBINATION OF REPORTS P901986 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-070D090US935-RLLONL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12794.4 lumens  
Efficiency: N/A  
Efficacy: 96.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
Total Harmonic Distortion (THDi): 0.049  
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				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	105	105	105	105	95	95	95	95	78	78	78	62	62	62	47	47	47	47	47	47	47	40
1	96	92	88	85	87	84	81	78	69	67	65	55	53	52	42	41	40	40	40	40	40	35
2	88	81	75	70	80	74	69	64	61	57	54	49	46	44	38	36	35	35	35	35	35	30
3	80	71	64	59	73	65	59	54	54	49	46	43	40	38	34	32	30	30	30	30	30	25
4	74	63	56	50	67	58	51	46	48	43	39	39	35	33	30	28	26	26	26	26	26	22
5	68	56	49	43	61	52	45	40	43	38	34	35	31	28	27	25	23	23	23	23	23	20
6	62	51	43	37	57	47	40	35	39	34	30	32	28	25	25	22	20	20	20	20	20	17
7	58	46	38	33	52	42	35	31	35	30	26	29	25	22	23	20	18	18	18	18	18	16
8	54	42	34	29	49	38	32	27	32	27	24	27	23	20	21	18	16	16	16	16	16	14
9	50	38	31	26	45	35	29	24	30	25	21	24	21	18	20	17	15	15	15	15	15	13
10	47	35	28	23	43	32	26	22	27	22	19	23	19	16	18	16	14	14	14	14	14	12

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

	0°	45°	90°
0°	1979	1979	1979
5°	1982	1947	1960
10°	1962	1909	1896
15°	1935	1846	1797
20°	1900	1759	1676
25°	1863	1662	1560
30°	1814	1562	1411
35°	1766	1454	1281
40°	1717	1343	1132
45°	1660	1219	997
50°	1601	1095	864
55°	1540	962	738
60°	1469	822	607
65°	1387	681	546
70°	1288	549	494
75°	1163	484	450
80°	983	406	390
85°	685	271	293

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1660 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	233.5	1.8
10°-20°	640.9	5.0
20°-30°	899.8	7.0
30°-40°	980.8	7.7
40°-50°	901.5	7.0
50°-60°	708.0	5.5
60°-70°	460.8	3.6
70°-80°	237.2	1.9
80°-90°	65.2	0.5
90°-100°	86.2	0.7
100°-110°	321.5	2.5
110°-120°	852.6	6.7
120°-130°	1414.1	11.1
130°-140°	1502.1	11.7
140°-150°	1396.0	10.9
150°-160°	1122.4	8.8
160°-170°	723.2	5.7
170°-180°	248.9	1.9
0°-30°	1774.1	13.9
0°-40°	2754.9	21.5
0°-60°	4364.3	34.1
0°-90°	5127.5	40.1
90°-120°	1260.3	9.9
90°-150°	5572.4	43.6
90°-180°	7667.0	59.9
0°-180°	12794.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2491	2491	2491	2491	2491	
5°	2491	2480	2450	2471	2464	236
15°	2369	2344	2268	2225	2202	668
25°	2151	2078	1930	1837	1803	989
35°	1853	1738	1540	1398	1348	1160
45°	1515	1364	1127	967	913	1170
55°	1152	976	732	597	555	1029
65°	778	595	392	316	309	771
75°	415	257	180	164	162	439
85°	97	50	43	43	43	111
90°	2	23	38	47	51	12
95°	123	60	74	83	81	146
105°	575	632	116	136	144	615
115°	1088	1120	1168	291	155	1071
125°	1538	1563	1599	1612	1618	1372
135°	1904	1934	1951	1970	1966	1471
145°	2208	2206	2239	2252	2242	1381
155°	2432	2415	2437	2449	2434	1121
165°	2562	2551	2557	2570	2557	724
175°	2621	2608	2611	2625	2606	249
180°	2615	2615	2615	2615	2615	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2491.0	2491.0	2491.0	2491.0	2491.0
2.5°	2502.1	2491.0	2466.1	2488.8	2484.2
5°	2491.0	2479.7	2450.3	2470.6	2463.9
7.5°	2470.6	2457.2	2425.7	2434.5	2423.3
10°	2443.6	2427.8	2382.8	2375.9	2362.5
12.5°	2409.8	2389.5	2328.6	2315.1	2290.3
15°	2369.2	2344.3	2267.8	2225.0	2202.5
17.5°	2321.9	2285.8	2191.1	2141.5	2105.4
20°	2267.8	2222.6	2110.0	2053.7	2004.0
22.5°	2209.2	2157.3	2026.4	1949.9	1916.2
25°	2150.6	2078.4	1929.6	1837.3	1803.4
27.5°	2080.8	2004.0	1839.4	1733.5	1681.6
30°	2006.4	1920.5	1740.2	1625.4	1564.4
32.5°	1934.1	1830.4	1645.7	1510.4	1453.9
35°	1853.0	1738.0	1539.8	1397.7	1348.0
37.5°	1774.2	1650.0	1440.5	1284.8	1228.6
40°	1690.7	1555.6	1336.7	1176.7	1118.1
42.5°	1605.1	1460.9	1233.1	1066.2	1010.0
45°	1514.9	1363.7	1127.2	967.0	912.9
47.5°	1429.3	1269.3	1025.8	865.6	816.1
50°	1334.5	1174.6	926.5	770.9	723.8
52.5°	1242.0	1072.9	831.8	683.0	640.2
55°	1151.8	976.0	732.5	597.4	554.7
57.5°	1059.5	879.2	644.8	518.5	482.4
60°	964.8	784.5	552.2	437.5	401.3
62.5°	872.4	692.2	473.3	365.2	347.2
65°	777.7	595.0	392.3	315.7	308.8
67.5°	687.6	504.9	315.7	277.2	270.5
70°	592.9	417.1	261.4	238.9	229.8
72.5°	502.7	335.8	218.6	200.7	196.1
75°	414.7	256.8	180.3	164.5	162.4
77.5°	326.9	182.4	142.1	132.9	128.5
80°	245.6	130.8	108.1	99.3	99.3
82.5°	171.3	88.0	74.4	69.8	69.8
85°	96.9	49.5	42.8	42.8	42.8
87.5°	36.1	17.9	17.9	15.8	15.8
90°	1.8	22.7	37.7	47.4	51.0
92.5°	47.4	39.8	45.4	49.2	51.0
95°	123.0	60.4	73.7	83.3	81.4
97.5°	221.4	66.3	96.4	102.2	104.0
100°	335.0	75.8	107.9	123.0	126.7
102.5°	459.8	456.2	111.7	132.3	138.2
105°	575.2	632.1	115.5	136.2	143.8
107.5°	709.6	756.8	119.3	140.0	147.7
110°	838.4	878.0	331.2	142.0	149.5



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	959.5	993.4	961.3	145.6	151.4
115°	1088.0	1120.2	1167.6	291.4	155.2
117.5°	1199.7	1237.5	1269.8	999.1	503.3
120°	1324.6	1353.0	1387.2	1409.8	1154.3
122.5°	1430.5	1460.9	1498.8	1510.0	1512.1
125°	1538.3	1563.1	1599.0	1612.3	1617.9
127.5°	1636.8	1663.3	1691.9	1710.7	1712.5
130°	1729.6	1760.0	1780.6	1801.5	1799.7
132.5°	1824.2	1848.9	1869.6	1886.7	1884.9
135°	1903.8	1934.1	1950.9	1970.0	1966.3
137.5°	1986.9	2009.6	2028.7	2047.5	2041.9
140°	2068.2	2083.5	2104.2	2121.2	2111.9
142.5°	2136.6	2149.8	2174.3	2189.3	2180.0
145°	2208.5	2206.4	2238.6	2251.9	2242.4
147.5°	2270.7	2265.1	2297.2	2306.7	2299.2
150°	2331.4	2318.2	2348.5	2359.7	2350.3
152.5°	2382.4	2367.3	2395.6	2407.1	2393.8
155°	2431.6	2414.8	2437.4	2448.7	2433.6
157.5°	2471.4	2456.3	2473.4	2486.6	2471.4
160°	2505.5	2494.1	2505.5	2516.8	2503.5
162.5°	2535.6	2524.4	2533.8	2547.1	2530.0
165°	2562.2	2550.9	2556.6	2569.8	2556.6
167.5°	2583.1	2571.6	2577.4	2590.7	2573.6
170°	2600.1	2588.7	2592.5	2605.7	2588.7
172.5°	2611.4	2600.1	2603.9	2617.2	2600.1
175°	2620.8	2607.5	2611.4	2624.6	2605.7
177.5°	2624.6	2611.4	2613.4	2626.6	2609.6
180°	2615.2	2615.2	2615.2	2615.2	2615.2



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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	8.51	9.27	9.55	10.31	11.72	4.48	5.24	5.53	6.28	7.69
	3H	10.18	10.86	11.24	11.91	13.34	5.67	6.34	6.72	7.40	8.83
	4H	10.79	11.43	11.85	12.48	13.92	6.12	6.75	7.18	7.81	9.25
	6H	11.20	11.79	12.28	12.85	14.30	6.43	7.02	7.51	8.08	9.53
	8H	11.33	11.89	12.41	12.96	14.41	6.52	7.08	7.60	8.16	9.60
	12H	11.39	11.92	12.47	12.99	14.45	6.56	7.10	7.65	8.16	9.63
4H	2H	8.52	9.16	9.59	10.22	11.65	5.07	5.71	6.14	6.77	8.20
	3H	10.34	10.87	11.42	11.96	13.41	6.41	6.95	7.49	8.03	9.48
	4H	11.03	11.52	12.12	12.59	14.06	6.96	7.45	8.04	8.52	9.99
	6H	11.54	11.96	12.63	13.06	14.52	7.38	7.79	8.47	8.89	10.35
	8H	11.72	12.11	12.81	13.20	14.67	7.50	7.89	8.60	8.98	10.46
	12H	11.81	12.16	12.92	13.26	14.75	7.57	7.92	8.68	9.02	10.51
8H	4H	10.99	11.38	12.09	12.47	13.95	7.23	7.62	8.33	8.71	10.19
	6H	11.56	11.88	12.67	13.01	14.49	7.75	8.07	8.87	9.21	10.68
	8H	11.77	12.05	12.89	13.17	14.66	7.94	8.22	9.06	9.34	10.83
	12H	11.91	12.16	13.03	13.27	14.80	8.06	8.31	9.18	9.42	10.95
12H	4H	10.94	11.29	12.05	12.40	13.88	7.24	7.59	8.35	8.69	10.17
	6H	11.53	11.81	12.65	12.93	14.42	7.80	8.08	8.92	9.20	10.69
	8H	11.75	12.00	12.87	13.11	14.64	8.01	8.26	9.13	9.37	10.90