

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: P915649

Luminaire Tested: DFN2DIP-TR4F0-090D070US927-RLONL

Issue Date: 11/21/2024

**Test Information**

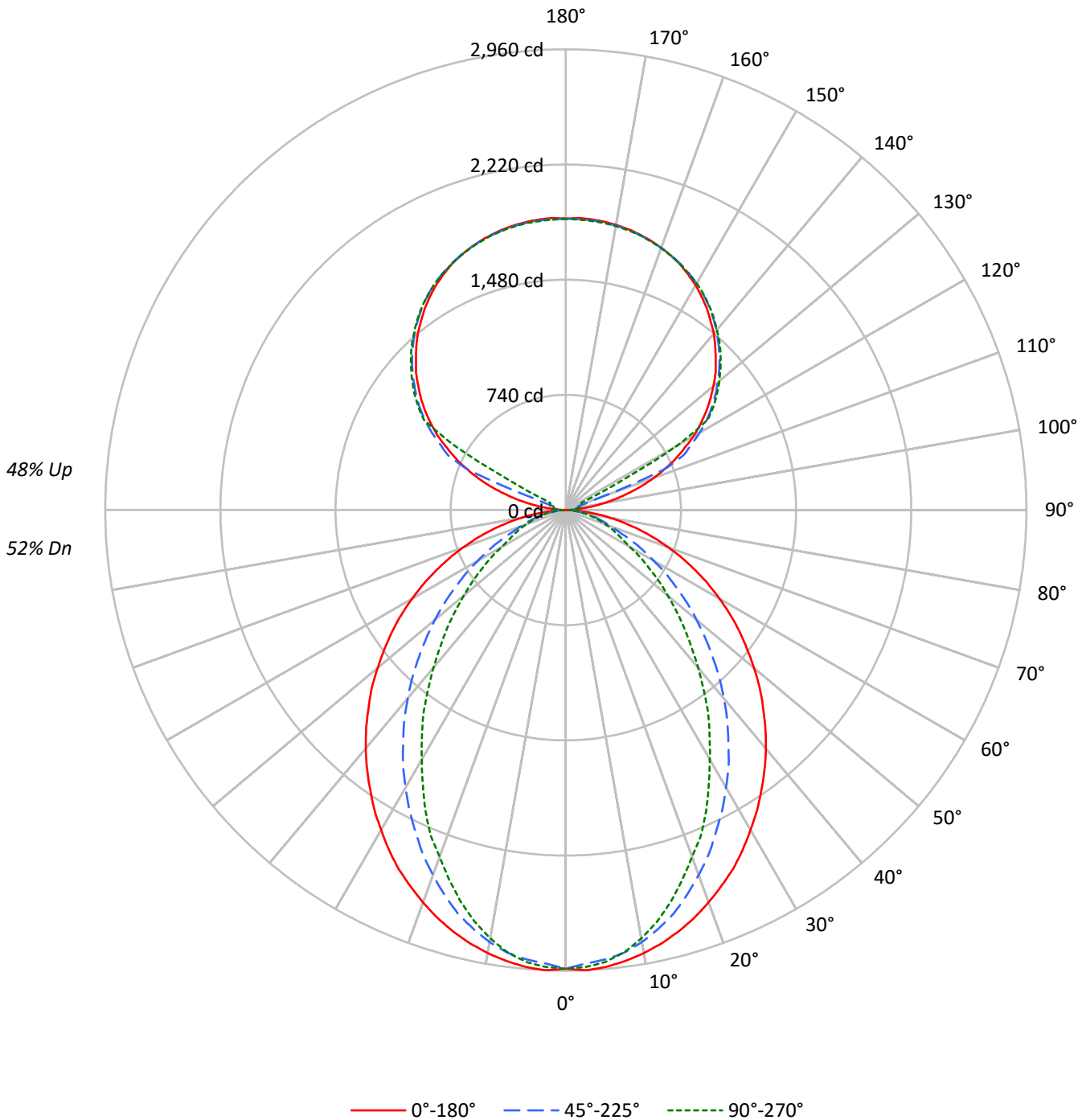
Test Method: LM-79-2019  
Report Number: P915649  
REPORT IS A COMBINATION OF REPORTS P901954 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-090D070US927-RLLONL  
Description: 4 foot, 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: 11550.0 lumens  
Efficiency: N/A  
Efficacy: 82.7 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): 139.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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	50	30	10	0
RCR																					
0	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58	58	58	58	52
1	99	95	91	88	91	88	85	82	75	73	71	63	62	60	52	51	50	52	51	50	45
2	90	83	77	72	84	77	72	68	66	63	59	56	53	51	47	45	43	47	45	43	39
3	83	74	67	61	76	69	62	57	59	54	50	50	47	44	42	39	37	42	39	37	33
4	76	66	58	52	70	61	54	49	53	48	43	45	41	38	38	35	33	38	35	33	29
5	70	59	51	45	65	55	48	43	47	42	38	41	36	33	34	31	29	34	31	29	26
6	65	53	45	39	60	49	42	37	43	37	33	37	33	29	31	28	26	31	28	26	23
7	60	48	40	35	55	45	38	33	39	34	30	34	29	26	29	25	23	29	25	23	20
8	56	44	36	31	52	41	34	29	36	30	26	31	27	24	26	23	21	26	23	21	18
9	52	40	33	28	48	38	31	26	33	28	24	29	24	21	25	21	19	25	21	19	17
10	49	37	30	25	45	35	28	24	30	25	22	27	22	19	23	20	17	23	20	17	15

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

	0°	45°	90°
0°	2341	2341	2341
5°	2345	2304	2318
10°	2322	2259	2243
15°	2290	2184	2126
20°	2247	2081	1983
25°	2204	1966	1845
30°	2146	1847	1669
35°	2089	1720	1516
40°	2031	1589	1339
45°	1964	1443	1179
50°	1894	1295	1023
55°	1821	1138	872
60°	1737	973	718
65°	1640	806	646
70°	1523	650	585
75°	1376	572	532
80°	1163	480	461
85°	810	320	346

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1964 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	276.2	2.4
10°-20°	758.1	6.6
20°-30°	1064.4	9.2
30°-40°	1160.3	10.0
40°-50°	1066.4	9.2
50°-60°	837.5	7.3
60°-70°	545.1	4.7
70°-80°	280.6	2.4
80°-90°	74.9	0.6
90°-100°	61.7	0.5
100°-110°	230.0	2.0
110°-120°	610.1	5.3
120°-130°	1011.9	8.8
130°-140°	1074.9	9.3
140°-150°	999.0	8.6
150°-160°	803.2	7.0
160°-170°	517.5	4.5
170°-180°	178.1	1.5
0°-30°	2098.7	18.2
0°-40°	3258.9	28.2
0°-60°	5162.8	44.7
0°-90°	6063.5	52.5
90°-120°	901.9	7.8
90°-150°	3987.7	34.5
90°-180°	5487.0	47.5
0°-180°	11550.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2947	2947	2947	2947	2947	
5°	2947	2933	2899	2923	2915	279
15°	2803	2773	2683	2632	2606	790
25°	2544	2459	2283	2173	2133	1170
35°	2192	2056	1822	1653	1595	1372
45°	1792	1613	1333	1144	1080	1384
55°	1363	1155	867	707	656	1218
65°	920	704	464	373	365	912
75°	491	304	213	195	192	519
85°	114	58	51	51	51	132
90°	1	16	27	34	36	11
95°	88	43	53	60	58	104
105°	412	452	83	97	103	440
115°	779	802	836	209	111	767
125°	1101	1119	1144	1154	1158	982
135°	1362	1384	1396	1410	1407	1052
145°	1580	1579	1602	1612	1605	988
155°	1740	1728	1744	1752	1742	802
165°	1834	1826	1830	1839	1830	518
175°	1876	1866	1869	1878	1865	178
180°	1871	1871	1871	1871	1871	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2946.7	2946.7	2946.7	2946.7	2946.7
2.5°	2960.0	2946.7	2917.2	2944.1	2938.8
5°	2946.7	2933.4	2898.6	2922.6	2914.7
7.5°	2922.6	2906.8	2869.4	2879.9	2866.6
10°	2890.7	2872.0	2818.8	2810.6	2794.7
12.5°	2850.7	2826.7	2754.6	2738.7	2709.3
15°	2802.7	2773.3	2682.7	2632.0	2605.5
17.5°	2746.7	2704.0	2591.9	2533.3	2490.6
20°	2682.7	2629.2	2495.9	2429.5	2370.6
22.5°	2613.4	2552.0	2397.2	2306.7	2266.8
25°	2544.1	2458.6	2282.7	2173.4	2133.3
27.5°	2461.5	2370.6	2176.0	2050.6	1989.2
30°	2373.5	2271.9	2058.6	1922.8	1850.6
32.5°	2288.0	2165.2	1946.8	1786.7	1719.9
35°	2192.1	2056.0	1821.5	1653.4	1594.6
37.5°	2098.7	1951.9	1704.1	1519.9	1453.4
40°	2000.0	1840.2	1581.3	1392.0	1322.7
42.5°	1898.7	1728.1	1458.7	1261.3	1194.8
45°	1792.1	1613.3	1333.4	1143.8	1079.9
47.5°	1690.8	1501.5	1213.5	1023.9	965.4
50°	1578.7	1389.4	1096.1	911.9	856.1
52.5°	1469.3	1269.2	984.0	808.0	757.4
55°	1362.6	1154.6	866.6	706.8	656.1
57.5°	1253.4	1040.1	762.8	613.4	570.7
60°	1141.3	928.0	653.3	517.5	474.8
62.5°	1032.1	818.8	559.9	432.1	410.8
65°	920.0	703.9	464.0	373.4	365.3
67.5°	813.4	597.2	373.4	327.9	320.0
70°	701.4	493.4	309.3	282.7	271.9
72.5°	594.7	397.2	258.6	237.3	232.0
75°	490.6	303.9	213.3	194.6	192.1
77.5°	386.7	215.9	168.0	157.3	151.9
80°	290.6	154.8	127.9	117.4	117.4
82.5°	202.6	104.1	88.0	82.6	82.6
85°	114.5	58.5	50.6	50.6	50.6
87.5°	42.7	21.2	21.2	18.7	18.7
90°	1.3	16.2	27.0	33.9	36.5
92.5°	33.9	28.4	32.5	35.3	36.5
95°	87.9	43.3	52.8	59.7	58.2
97.5°	158.4	47.5	69.0	73.2	74.5
100°	239.8	54.2	77.2	87.9	90.7
102.5°	329.0	326.5	79.9	94.7	98.9
105°	411.7	452.3	82.6	97.4	102.9
107.5°	507.8	541.6	85.4	100.2	105.7
110°	600.0	628.3	237.0	101.6	106.9



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	686.7	710.9	687.9	104.2	108.4
115°	778.6	801.6	835.5	208.6	111.1
117.5°	858.6	885.6	908.7	714.9	360.2
120°	947.9	968.2	992.7	1008.9	826.1
122.5°	1023.7	1045.4	1072.6	1080.6	1082.0
125°	1100.9	1118.6	1144.3	1153.8	1157.8
127.5°	1171.3	1190.3	1210.7	1224.2	1225.5
130°	1237.7	1259.4	1274.2	1289.2	1287.9
132.5°	1305.4	1323.1	1337.9	1350.1	1348.8
135°	1362.3	1384.0	1396.1	1409.8	1407.1
137.5°	1421.8	1438.1	1451.8	1465.3	1461.3
140°	1480.0	1491.0	1505.8	1518.0	1511.2
142.5°	1528.9	1538.4	1555.9	1566.7	1560.0
145°	1580.4	1579.0	1601.9	1611.5	1604.7
147.5°	1624.9	1621.0	1643.9	1650.7	1645.4
150°	1668.3	1658.9	1680.6	1688.6	1681.9
152.5°	1704.9	1694.1	1714.4	1722.5	1713.1
155°	1740.1	1728.0	1744.2	1752.3	1741.5
157.5°	1768.5	1757.8	1770.0	1779.5	1768.5
160°	1793.0	1784.8	1793.0	1801.0	1791.5
162.5°	1814.6	1806.5	1813.2	1822.7	1810.5
165°	1833.5	1825.5	1829.5	1839.0	1829.5
167.5°	1848.5	1840.2	1844.4	1853.9	1841.7
170°	1860.7	1852.5	1855.2	1864.7	1852.5
172.5°	1868.8	1860.7	1863.4	1872.9	1860.7
175°	1875.5	1866.0	1868.8	1878.2	1864.7
177.5°	1878.2	1868.8	1870.2	1879.7	1867.4
180°	1871.4	1871.4	1871.4	1871.4	1871.4



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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	10.33	11.18	11.27	12.13	13.37	6.30	7.15	7.24	8.11	9.34
	3H	12.01	12.77	12.96	13.73	14.99	7.49	8.25	8.45	9.22	10.48
	4H	12.62	13.34	13.58	14.30	15.57	7.94	8.66	8.91	9.63	10.90
	6H	13.04	13.70	14.02	14.67	15.96	8.27	8.93	9.25	9.90	11.18
	8H	13.17	13.79	14.15	14.78	16.06	8.36	8.99	9.34	9.98	11.26
	12H	13.23	13.83	14.22	14.81	16.11	8.40	9.00	9.39	9.99	11.29
4H	2H	10.35	11.07	11.32	12.04	13.31	6.90	7.62	7.87	8.59	9.86
	3H	12.18	12.78	13.16	13.77	15.06	8.25	8.85	9.24	9.85	11.13
	4H	12.87	13.42	13.86	14.41	15.72	8.80	9.35	9.79	10.34	11.65
	6H	13.39	13.86	14.39	14.87	16.18	9.22	9.69	10.23	10.71	12.01
	8H	13.56	14.00	14.57	15.01	16.33	9.35	9.79	10.36	10.80	12.12
	12H	13.66	14.05	14.68	15.08	16.40	9.42	9.81	10.44	10.84	12.16
8H	4H	12.84	13.28	13.85	14.29	15.61	9.08	9.52	10.09	10.53	11.85
	6H	13.41	13.77	14.44	14.82	16.14	9.60	9.96	10.63	11.01	12.33
	8H	13.63	13.94	14.66	14.98	16.32	9.80	10.11	10.83	11.15	12.49
	12H	13.76	14.04	14.80	15.07	16.46	9.92	10.20	10.96	11.23	12.61
12H	4H	12.80	13.19	13.82	14.21	15.54	9.09	9.48	10.11	10.51	11.83
	6H	13.38	13.70	14.42	14.74	16.08	9.65	9.97	10.69	11.01	12.34
	8H	13.61	13.89	14.65	14.92	16.30	9.86	10.15	10.90	11.17	12.56