

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: P921028

Luminaire Tested: DFN2DIP-TR4F0-070D060US935-RLLFLL

Issue Date: 11/21/2024

**Test Information**

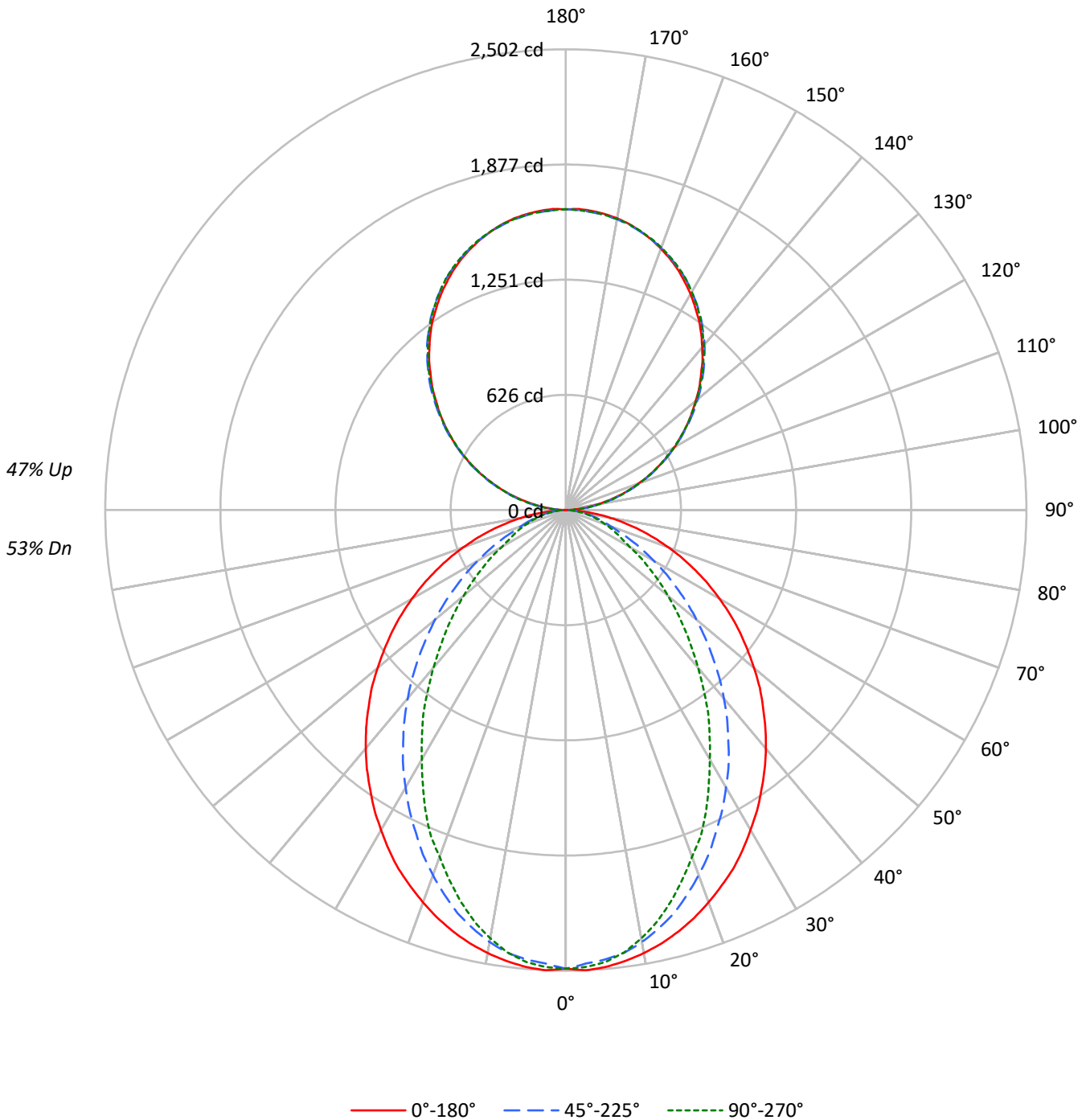
Test Method: LM-79-2019  
Report Number: P921028  
REPORT IS A COMBINATION OF REPORTS P900412 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-070D060US935-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9694.8 lumens  
Efficiency: N/A  
Efficacy: 87.9 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): 110.3  
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				
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	59	59	59	59	59	59	53
1	99	95	91	88	92	88	85	82	75	73	71	64	62	60	53	52	51	53	52	51	46
2	91	83	77	72	84	78	72	68	67	63	59	56	54	51	47	45	43	47	45	43	39
3	83	74	67	61	77	69	62	57	59	54	51	50	47	44	42	40	38	42	40	38	34
4	76	66	58	52	70	61	54	49	53	48	44	45	41	38	38	35	33	38	35	33	29
5	70	59	51	45	65	55	48	43	48	42	38	41	37	33	34	31	29	34	31	29	26
6	65	53	45	39	60	50	42	37	43	38	33	37	33	30	31	28	26	31	28	26	23
7	60	48	40	35	56	45	38	33	39	34	30	34	30	26	29	26	23	29	26	23	21
8	56	44	36	31	52	41	34	29	36	30	27	31	27	24	27	23	21	27	23	21	19
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	31	25	22	27	22	19	23	20	17	23	20	17	15

**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	2.4
10°-20°	640.9	6.6
20°-30°	899.8	9.3
30°-40°	980.8	10.1
40°-50°	901.5	9.3
50°-60°	708.0	7.3
60°-70°	460.8	4.8
70°-80°	237.2	2.4
80°-90°	65.2	0.7
90°-100°	101.1	1.0
100°-110°	321.2	3.3
110°-120°	549.7	5.7
120°-130°	723.0	7.5
130°-140°	811.5	8.4
140°-150°	795.8	8.2
150°-160°	667.5	6.9
160°-170°	442.7	4.6
170°-180°	154.7	1.6
0°-30°	1774.1	18.3
0°-40°	2754.9	28.4
0°-60°	4364.3	45.0
0°-90°	5127.5	52.9
90°-120°	972.0	10.0
90°-150°	3302.3	34.1
90°-180°	4567.0	47.1
0°-180°	9694.8	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	18	48	45	47	10
95°	72	86	88	88	86	80
105°	296	300	303	306	306	313
115°	552	560	557	556	552	546
125°	802	815	811	806	805	717
135°	1038	1053	1056	1055	1051	802
145°	1260	1270	1278	1279	1274	787
155°	1441	1445	1449	1456	1452	663
165°	1567	1566	1566	1576	1569	442
175°	1631	1627	1624	1634	1625	155
180°	1634	1634	1634	1634	1634	



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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°	1.5	17.7	48.3	45.3	46.8
92.5°	30.6	41.4	42.9	44.3	44.3
95°	71.9	85.7	88.2	88.2	85.7
97.5°	119.7	132.5	137.9	137.9	137.9
100°	174.9	186.1	190.1	190.1	188.6
102.5°	233.0	241.3	246.8	248.2	246.8
105°	296.5	300.5	303.4	305.9	305.9
107.5°	359.6	365.5	365.5	366.4	359.6
110°	420.7	428.5	428.5	428.5	424.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	486.6	495.0	493.5	489.6	486.6
115°	551.6	559.6	557.1	555.6	551.6
117.5°	616.2	627.1	620.1	616.2	612.3
120°	681.2	692.1	681.2	681.2	676.7
122.5°	740.3	754.1	747.2	743.3	740.3
125°	802.4	814.7	810.7	806.3	804.9
127.5°	863.0	878.2	872.8	866.9	863.0
130°	919.6	937.4	934.9	931.9	926.5
132.5°	983.2	996.9	997.9	991.0	987.0
135°	1037.8	1053.1	1056.0	1054.6	1050.6
137.5°	1098.9	1111.2	1113.7	1112.7	1106.8
140°	1152.6	1164.9	1171.8	1171.8	1166.4
142.5°	1207.7	1220.0	1224.0	1225.5	1220.0
145°	1260.0	1269.8	1277.7	1279.2	1273.8
147.5°	1306.7	1319.0	1325.0	1327.4	1322.0
150°	1355.0	1363.4	1368.8	1373.2	1368.8
152.5°	1397.8	1406.3	1413.2	1418.6	1413.2
155°	1440.7	1444.7	1449.1	1456.0	1451.6
157.5°	1477.6	1480.7	1483.1	1493.0	1486.1
160°	1510.7	1513.6	1515.1	1523.4	1517.6
162.5°	1541.2	1541.2	1542.6	1552.0	1545.1
165°	1567.3	1565.8	1565.8	1575.7	1568.8
167.5°	1591.0	1586.6	1586.6	1596.4	1589.5
170°	1608.7	1604.7	1603.3	1613.1	1604.7
172.5°	1621.0	1617.0	1615.6	1625.4	1617.0
175°	1630.8	1626.9	1623.9	1633.8	1625.4
177.5°	1636.2	1632.4	1629.4	1637.7	1629.4
180°	1633.8	1633.8	1633.8	1633.8	1633.8



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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	9.78	10.63	10.72	11.58	12.82	5.75	6.61	6.69	7.56	8.79
	3H	11.46	12.22	12.41	13.18	14.44	6.94	7.71	7.89	8.67	9.92
	4H	12.07	12.79	13.03	13.75	15.02	7.40	8.12	8.36	9.08	10.35
	6H	12.49	13.15	13.46	14.12	15.40	7.72	8.38	8.69	9.35	10.63
	8H	12.62	13.25	13.60	14.24	15.51	7.81	8.44	8.79	9.43	10.70
	12H	12.68	13.28	13.67	14.26	15.56	7.85	8.46	8.84	9.44	10.73
4H	2H	9.80	10.52	10.77	11.49	12.75	6.35	7.07	7.32	8.04	9.30
	3H	11.63	12.23	12.61	13.23	14.50	7.70	8.30	8.68	9.30	10.58
	4H	12.32	12.87	13.31	13.86	15.16	8.25	8.80	9.24	9.79	11.09
	6H	12.84	13.31	13.84	14.32	15.62	8.67	9.15	9.67	10.16	11.46
	8H	13.02	13.45	14.02	14.46	15.77	8.80	9.24	9.81	10.25	11.56
	12H	13.11	13.51	14.13	14.53	15.85	8.87	9.27	9.89	10.29	11.61
8H	4H	12.29	12.73	13.29	13.74	15.05	8.53	8.97	9.54	9.98	11.29
	6H	12.86	13.22	13.89	14.27	15.58	9.06	9.42	10.08	10.46	11.78
	8H	13.08	13.40	14.11	14.43	15.76	9.25	9.57	10.28	10.60	11.93
	12H	13.22	13.50	14.25	14.52	15.90	9.37	9.65	10.40	10.68	12.05
12H	4H	12.25	12.64	13.27	13.66	14.98	8.54	8.94	9.56	9.96	11.28
	6H	12.84	13.16	13.87	14.19	15.52	9.10	9.42	10.14	10.46	11.79
	8H	13.06	13.34	14.09	14.37	15.74	9.32	9.60	10.35	10.62	12.00