

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: P903208

Luminaire Tested: DFN2DIP-PN4F0-050D110US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

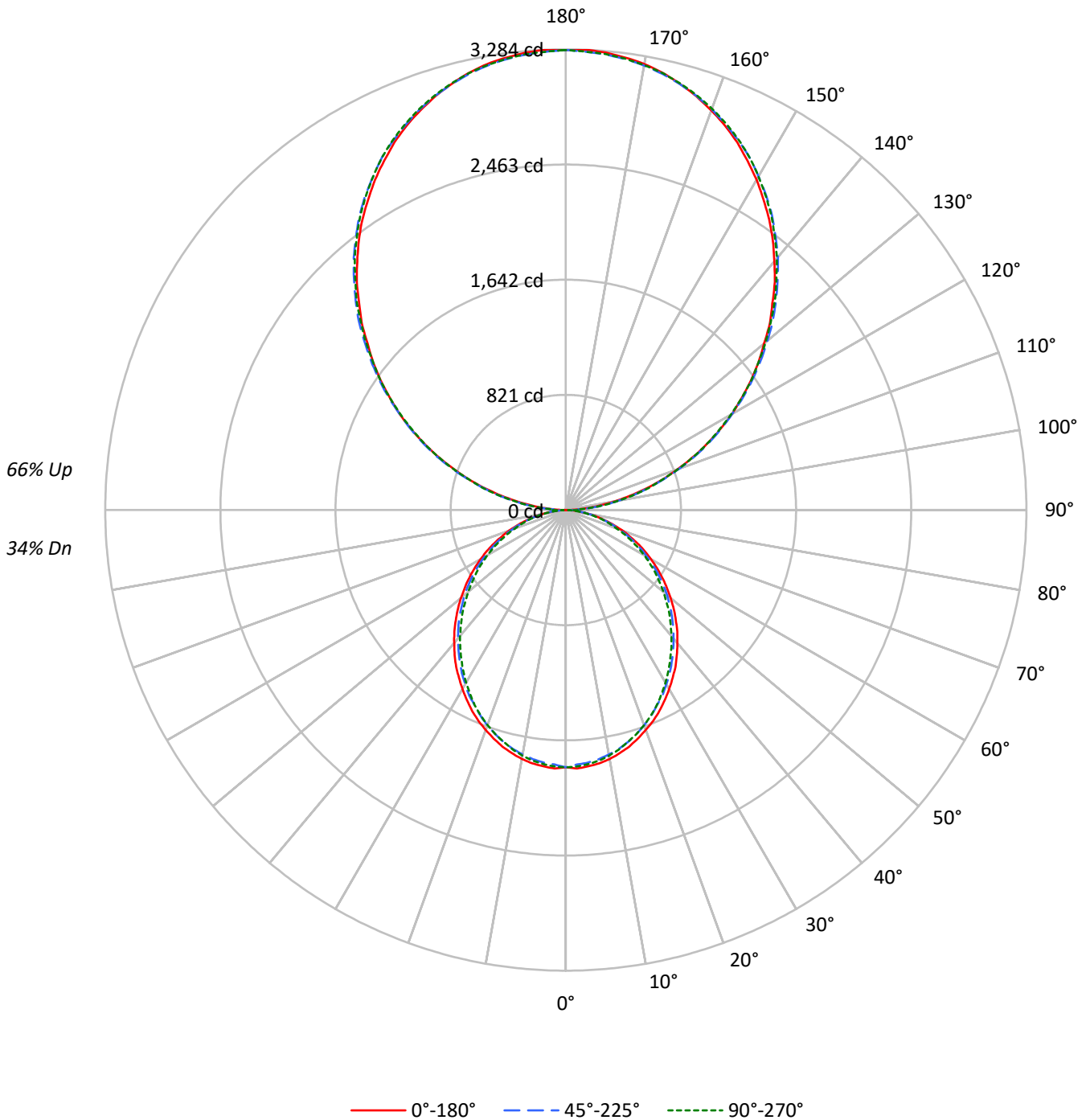
Test Method: LM-79-2019  
Report Number: P903208  
REPORT IS A COMBINATION OF REPORTS P899737 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-050D110US830-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13841.2 lumens  
Efficiency: N/A  
Efficacy: 102.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 135.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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	103	103	103	103	93	93	93	93	74	74	74	57	57	57	41	41	41	34				34
1	94	90	86	83	85	81	78	75	65	63	61	50	49	47	36	36	35	28				28
2	86	78	73	67	77	71	66	62	57	53	50	44	42	40	32	31	29	24				24
3	78	69	62	56	70	62	56	51	50	46	42	39	36	33	28	26	25	20				20
4	71	61	53	47	64	55	49	44	45	40	36	35	31	29	25	23	21	17				17
5	65	54	46	40	59	49	42	37	40	35	31	31	27	25	23	20	19	15				15
6	60	48	41	35	54	44	37	32	36	31	27	28	24	22	21	18	16	13				13
7	56	44	36	31	50	40	33	28	32	27	24	25	22	19	19	16	15	12				12
8	52	40	32	27	46	36	29	25	29	24	21	23	20	17	17	15	13	10				10
9	48	36	29	24	43	33	26	22	27	22	19	21	18	15	16	14	12	9				9
10	45	33	26	21	40	30	24	20	25	20	17	20	16	14	15	12	11	9				9

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

	0°	45°	90°
0°	1339	1339	1339
5°	1341	1320	1329
10°	1330	1303	1311
15°	1310	1281	1283
20°	1284	1252	1255
25°	1258	1216	1222
30°	1225	1183	1180
35°	1193	1144	1135
40°	1155	1105	1093
45°	1117	1066	1050
50°	1075	1024	999
55°	1031	976	953
60°	981	920	901
65°	927	861	838
70°	858	789	771
75°	763	704	710
80°	648	595	592
85°	469	405	396

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2567 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	172.6	1.2
10°-20°	485.6	3.5
20°-30°	713.7	5.2
30°-40°	828.9	6.0
40°-50°	827.8	6.0
50°-60°	721.8	5.2
60°-70°	533.6	3.9
70°-80°	301.9	2.2
80°-90°	89.0	0.6
90°-100°	202.9	1.5
100°-110°	644.7	4.7
110°-120°	1103.3	8.0
120°-130°	1451.0	10.5
130°-140°	1628.6	11.8
140°-150°	1597.1	11.5
150°-160°	1339.7	9.7
160°-170°	888.5	6.4
170°-180°	310.5	2.2
0°-30°	1371.9	9.9
0°-40°	2200.7	15.9
0°-60°	3750.4	27.1
0°-90°	4674.9	33.8
90°-120°	1950.9	14.1
90°-150°	6627.6	47.9
90°-180°	9166.0	66.2
0°-180°	13841.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1834	1834	1834	1834	1834	
5°	1834	1827	1807	1821	1818	174
15°	1746	1735	1712	1719	1710	492
25°	1580	1566	1536	1539	1536	727
35°	1363	1346	1317	1307	1298	851
45°	1109	1097	1070	1051	1044	856
55°	839	829	808	786	778	750
65°	566	555	538	522	513	560
75°	296	293	284	273	277	316
85°	72	70	69	63	62	81
90°	3	36	97	91	94	14
95°	144	172	177	177	172	161
105°	595	603	609	614	614	628
115°	1107	1123	1118	1115	1107	1095
125°	1610	1635	1627	1618	1615	1439
135°	2083	2114	2119	2116	2109	1610
145°	2529	2548	2564	2567	2556	1580
155°	2892	2899	2908	2922	2913	1331
165°	3146	3142	3142	3162	3148	887
175°	3273	3265	3259	3279	3262	311
180°	3279	3279	3279	3279	3279	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1833.7	1833.7	1833.7	1833.7	1833.7
2.5°	1844.4	1835.6	1816.2	1833.7	1830.4
5°	1833.7	1826.8	1807.3	1821.4	1818.1
7.5°	1821.4	1810.9	1791.5	1805.7	1802.1
10°	1802.1	1789.8	1768.7	1782.6	1777.4
12.5°	1775.6	1765.1	1744.0	1752.8	1749.2
15°	1745.6	1735.1	1712.1	1719.3	1710.4
17.5°	1708.5	1698.1	1675.1	1683.9	1675.1
20°	1668.0	1657.6	1632.9	1638.0	1631.2
22.5°	1627.6	1611.7	1588.7	1588.7	1585.1
25°	1579.9	1565.8	1535.9	1539.3	1535.9
27.5°	1526.9	1514.6	1491.8	1486.5	1477.7
30°	1474.1	1460.0	1433.6	1428.3	1421.3
32.5°	1417.7	1407.2	1378.9	1368.3	1361.2
35°	1363.0	1345.5	1317.2	1306.6	1297.8
37.5°	1301.3	1285.4	1257.2	1244.8	1236.0
40°	1237.9	1223.7	1195.4	1179.7	1172.6
42.5°	1176.2	1162.0	1133.9	1116.1	1105.6
45°	1109.2	1096.8	1070.3	1051.0	1043.9
47.5°	1043.9	1031.5	1003.3	983.8	973.4
50°	975.1	966.3	941.6	916.9	908.0
52.5°	908.0	895.7	872.9	853.5	841.1
55°	839.4	828.8	807.6	786.5	777.7
57.5°	770.5	761.8	738.8	717.7	710.5
60°	701.7	694.8	670.1	650.6	645.5
62.5°	634.8	622.5	604.8	587.2	580.1
65°	566.1	555.4	537.8	522.0	513.1
67.5°	495.6	486.6	470.9	458.5	451.4
70°	430.3	423.2	407.3	394.9	388.0
72.5°	363.4	356.2	347.4	335.1	329.8
75°	296.1	292.8	283.8	273.3	276.9
77.5°	236.3	229.1	225.6	220.4	215.2
80°	176.4	174.6	171.0	165.8	162.2
82.5°	119.9	119.9	118.2	111.1	111.1
85°	72.2	70.5	68.8	63.4	61.7
87.5°	31.8	28.3	24.7	19.4	17.6
90°	2.9	35.6	96.9	91.0	93.9
92.5°	61.3	83.0	86.0	89.0	89.0
95°	144.3	172.0	176.9	176.9	172.0
97.5°	240.3	265.9	276.8	276.8	276.8
100°	350.9	373.6	381.5	381.5	378.6
102.5°	467.6	484.4	495.3	498.2	495.3
105°	595.1	603.0	609.0	613.9	613.9
107.5°	721.6	733.5	733.5	735.5	721.6
110°	844.2	860.1	860.1	860.1	852.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	976.7	993.4	990.5	982.6	976.7
115°	1107.2	1122.9	1118.0	1115.1	1107.2
117.5°	1236.7	1258.4	1244.5	1236.7	1228.8
120°	1367.2	1388.9	1367.2	1367.2	1358.3
122.5°	1485.8	1513.4	1499.6	1491.7	1485.8
125°	1610.3	1635.0	1627.1	1618.3	1615.2
127.5°	1731.9	1762.6	1751.7	1739.8	1731.9
130°	1845.6	1881.2	1876.2	1870.3	1859.4
132.5°	1973.1	2000.8	2002.8	1989.0	1981.0
135°	2082.8	2113.5	2119.4	2116.5	2108.6
137.5°	2205.5	2230.1	2235.1	2233.1	2221.3
140°	2313.2	2337.9	2351.7	2351.7	2340.9
142.5°	2423.9	2448.6	2456.5	2459.5	2448.6
145°	2528.7	2548.4	2564.3	2567.2	2556.4
147.5°	2622.6	2647.3	2659.2	2664.1	2653.3
150°	2719.5	2736.3	2747.1	2756.1	2747.1
152.5°	2805.5	2822.3	2836.1	2847.0	2836.1
155°	2891.5	2899.4	2908.3	2922.2	2913.2
157.5°	2965.6	2971.6	2976.5	2996.2	2982.4
160°	3031.9	3037.8	3040.7	3057.6	3045.7
162.5°	3093.1	3093.1	3096.2	3114.9	3101.1
165°	3145.5	3142.5	3142.5	3162.3	3148.5
167.5°	3193.0	3184.1	3184.1	3203.9	3190.0
170°	3228.6	3220.7	3217.7	3237.4	3220.7
172.5°	3253.3	3245.4	3242.4	3262.2	3245.4
175°	3273.1	3265.2	3259.2	3279.0	3262.2
177.5°	3283.9	3276.0	3270.1	3286.9	3270.1
180°	3279.0	3279.0	3279.0	3279.0	3279.0



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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	6.57	7.30	7.65	8.38	9.87	6.13	6.86	7.21	7.94	9.43
	3H	8.22	8.88	9.31	9.97	11.47	7.74	8.39	8.83	9.48	10.99
	4H	8.80	9.43	9.91	10.52	12.03	8.32	8.94	9.42	10.03	11.54
	6H	9.20	9.77	10.31	10.87	12.39	8.71	9.28	9.82	10.38	11.90
	8H	9.30	9.85	10.42	10.96	12.47	8.81	9.35	9.93	10.47	11.98
	12H	9.35	9.86	10.47	10.97	12.51	8.85	9.36	9.97	10.47	12.01
4H	2H	7.01	7.63	8.12	8.73	10.24	6.66	7.28	7.77	8.38	9.89
	3H	8.87	9.39	9.99	10.51	12.03	8.47	8.99	9.58	10.11	11.63
	4H	9.58	10.06	10.70	11.17	12.71	9.16	9.64	10.28	10.75	12.29
	6H	10.09	10.50	11.22	11.63	13.17	9.67	10.08	10.80	11.21	12.74
	8H	10.24	10.62	11.37	11.75	13.30	9.81	10.19	10.94	11.32	12.87
	12H	10.31	10.65	11.45	11.79	13.35	9.87	10.21	11.01	11.35	12.91
8H	4H	9.77	10.15	10.90	11.27	12.82	9.40	9.78	10.52	10.90	12.45
	6H	10.40	10.71	11.55	11.88	13.43	10.02	10.34	11.17	11.50	13.05
	8H	10.62	10.89	11.77	12.04	13.61	10.23	10.51	11.39	11.66	13.22
	12H	10.74	10.99	11.90	12.13	13.73	10.34	10.59	11.50	11.73	13.33
12H	4H	9.75	10.09	10.89	11.23	12.79	9.38	9.73	10.53	10.87	12.42
	6H	10.42	10.70	11.58	11.85	13.42	10.06	10.34	11.22	11.48	13.05
	8H	10.66	10.91	11.82	12.05	13.65	10.29	10.53	11.45	11.68	13.28