

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: P902293

Luminaire Tested: DFN2DIP-4P4F0-030D070US830-RLONL

Issue Date: 11/21/2024

**Test Information**

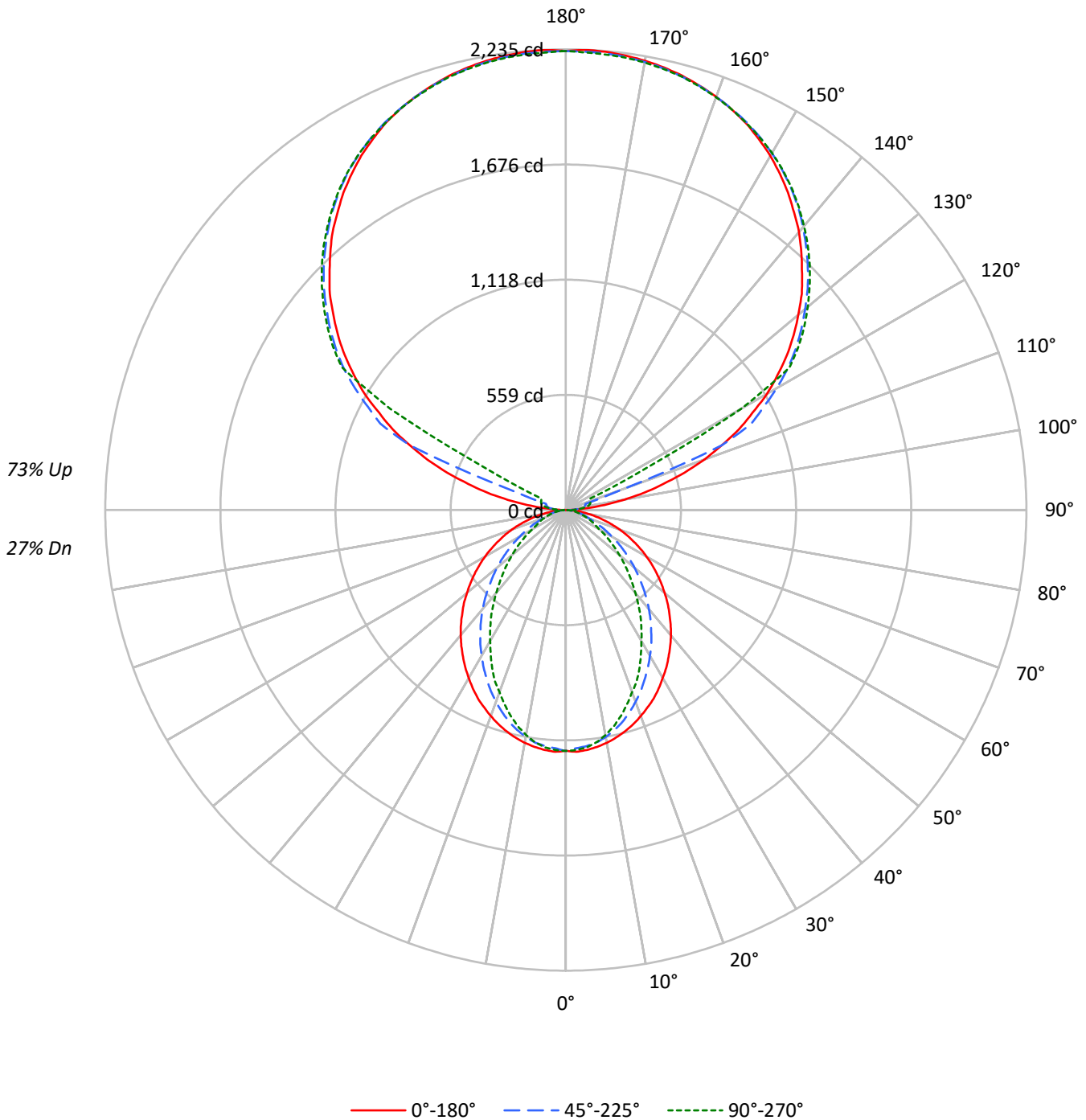
Test Method: LM-79-2019  
Report Number: P902293  
REPORT IS A COMBINATION OF REPORTS P900648 AND P897523  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-030D070US830-RLLONL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8935.3 lumens  
Efficiency: N/A  
Efficacy: 100.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 88.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
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	102	102	102	102	91	91	91	91	71	71	71	52	52	52	35	35	35				27
1	93	89	85	82	83	79	76	74	62	60	58	46	45	44	31	31	30				23
2	85	78	72	67	75	70	65	61	55	51	49	41	39	37	28	27	26				20
3	77	69	62	56	69	62	56	51	48	44	41	36	34	31	25	23	22				17
4	71	61	53	48	63	55	48	43	43	39	35	32	29	27	22	21	19				15
5	65	54	46	41	58	49	42	37	39	34	30	29	26	23	20	18	17				13
6	60	48	41	35	53	44	37	32	35	30	26	26	23	21	18	16	15				12
7	55	44	36	31	49	39	33	28	31	27	23	24	21	18	17	15	13				10
8	51	40	32	27	46	36	29	25	29	24	21	22	19	16	16	13	12				9
9	48	36	29	24	43	33	26	22	26	22	18	20	17	15	14	12	11				9
10	44	33	26	22	40	30	24	20	24	20	16	19	15	13	13	11	10				8

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

	0°	45°	90°
0°	758	758	758
5°	759	746	751
10°	752	732	727
15°	742	708	689
20°	728	675	643
25°	714	638	599
30°	695	600	542
35°	677	559	492
40°	658	516	435
45°	637	469	384
50°	614	421	333
55°	591	370	284
60°	563	317	234
65°	532	263	211
70°	494	212	192
75°	447	188	175
80°	378	158	153
85°	264	107	117

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1150 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	109.5	1.2
10°-20°	300.7	3.4
20°-30°	422.1	4.7
30°-40°	460.2	5.1
40°-50°	422.9	4.7
50°-60°	332.2	3.7
60°-70°	216.2	2.4
70°-80°	111.3	1.2
80°-90°	32.3	0.4
90°-100°	73.4	0.8
100°-110°	273.7	3.1
110°-120°	725.9	8.1
120°-130°	1204.0	13.5
130°-140°	1278.9	14.3
140°-150°	1188.6	13.3
150°-160°	955.6	10.7
160°-170°	615.8	6.9
170°-180°	211.9	2.4
0°-30°	832.3	9.3
0°-40°	1292.5	14.5
0°-60°	2047.6	22.9
0°-90°	2407.4	26.9
90°-120°	1073.0	12.0
90°-150°	4744.6	53.1
90°-180°	6528.0	73.1
0°-180°	8935.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1169	1169	1169	1169	1169	
5°	1169	1163	1150	1159	1156	111
15°	1112	1100	1064	1044	1033	313
25°	1009	975	905	862	846	464
35°	869	815	722	656	632	544
45°	711	640	529	454	428	549
55°	540	458	344	280	260	483
65°	365	279	184	148	145	362
75°	194	121	85	77	76	206
85°	45	23	20	20	20	52
90°	2	19	32	40	44	8
95°	105	52	63	71	69	124
105°	490	538	98	116	122	523
115°	926	954	994	248	132	912
125°	1310	1331	1362	1373	1378	1168
135°	1621	1647	1661	1677	1674	1252
145°	1880	1879	1906	1917	1909	1176
155°	2070	2056	2075	2085	2072	954
165°	2182	2172	2177	2188	2177	616
175°	2232	2220	2224	2235	2219	212
180°	2227	2227	2227	2227	2227	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1168.7	1168.7	1168.7	1168.7	1168.7
2.5°	1173.9	1168.7	1157.0	1167.6	1165.5
5°	1168.7	1163.4	1149.6	1159.1	1155.9
7.5°	1159.1	1152.8	1138.0	1142.2	1136.9
10°	1146.4	1139.1	1117.9	1114.7	1108.4
12.5°	1130.6	1121.1	1092.5	1086.2	1074.5
15°	1111.5	1099.9	1063.9	1043.9	1033.3
17.5°	1089.3	1072.4	1027.9	1004.8	987.8
20°	1063.9	1042.7	989.9	963.6	940.2
22.5°	1036.5	1012.1	950.7	914.8	899.0
25°	1009.0	975.1	905.3	862.0	846.0
27.5°	976.2	940.2	863.0	813.3	788.9
30°	941.3	901.1	816.4	762.6	734.0
32.5°	907.4	858.8	772.1	708.6	682.1
35°	869.4	815.4	722.4	655.7	632.4
37.5°	832.4	774.1	675.8	602.8	576.5
40°	793.2	729.8	627.2	552.0	524.6
42.5°	753.0	685.4	578.5	500.2	473.8
45°	710.8	639.8	528.9	453.6	428.3
47.5°	670.5	595.5	481.3	406.0	382.9
50°	626.1	551.0	434.7	361.7	339.5
52.5°	582.7	503.4	390.3	320.5	300.4
55°	540.4	457.9	343.7	280.3	260.2
57.5°	497.1	412.5	302.6	243.3	226.3
60°	452.6	368.1	259.1	205.2	188.3
62.5°	409.3	324.7	222.1	171.4	163.0
65°	364.9	279.2	184.0	148.1	144.9
67.5°	322.6	236.9	148.1	130.1	126.9
70°	278.1	195.7	122.6	112.1	107.8
72.5°	235.8	157.5	102.5	94.2	92.0
75°	194.5	120.6	84.6	77.2	76.2
77.5°	153.4	85.6	66.6	62.4	60.2
80°	115.3	61.4	50.7	46.6	46.6
82.5°	80.3	41.3	34.9	32.8	32.8
85°	45.4	23.2	20.1	20.1	20.1
87.5°	17.0	8.4	8.4	7.4	7.4
90°	1.5	19.3	32.1	40.3	43.5
92.5°	40.3	33.8	38.6	41.9	43.5
95°	104.6	51.5	62.8	71.0	69.3
97.5°	188.4	56.5	82.1	87.1	88.6
100°	285.3	64.5	91.8	104.6	107.9
102.5°	391.4	388.4	95.1	112.7	117.6
105°	489.8	538.2	98.3	115.9	122.4
107.5°	604.2	644.4	101.6	119.2	125.7
110°	713.9	747.5	282.0	120.9	127.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	817.0	845.8	818.5	123.9	128.9
115°	926.4	953.8	994.1	248.2	132.2
117.5°	1021.5	1053.7	1081.2	850.6	428.6
120°	1127.8	1152.0	1181.1	1200.4	982.9
122.5°	1218.0	1243.8	1276.2	1285.7	1287.4
125°	1309.9	1330.9	1361.5	1372.8	1377.5
127.5°	1393.6	1416.2	1440.5	1456.6	1458.1
130°	1472.6	1498.5	1516.1	1533.9	1532.4
132.5°	1553.2	1574.2	1591.9	1606.4	1604.9
135°	1620.9	1646.7	1661.1	1677.3	1674.1
137.5°	1691.7	1711.1	1727.3	1743.4	1738.6
140°	1761.0	1774.0	1791.6	1806.1	1798.1
142.5°	1819.1	1830.4	1851.2	1864.1	1856.1
145°	1880.4	1878.7	1906.0	1917.3	1909.3
147.5°	1933.3	1928.6	1956.0	1964.0	1957.7
150°	1985.0	1973.8	1999.6	2009.1	2001.1
152.5°	2028.4	2015.6	2039.8	2049.5	2038.2
155°	2070.4	2056.0	2075.3	2084.9	2072.1
157.5°	2104.2	2091.4	2105.9	2117.2	2104.2
160°	2133.4	2123.5	2133.4	2142.9	2131.6
162.5°	2159.0	2149.4	2157.4	2168.7	2154.2
165°	2181.5	2172.0	2176.7	2188.0	2176.7
167.5°	2199.3	2189.5	2194.5	2205.8	2191.3
170°	2213.8	2204.1	2207.3	2218.7	2204.1
172.5°	2223.5	2213.8	2217.1	2228.4	2213.8
175°	2231.5	2220.2	2223.5	2234.7	2218.7
177.5°	2234.7	2223.5	2225.2	2236.5	2221.9
180°	2226.7	2226.7	2226.7	2226.7	2226.7



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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	3.53	4.21	4.67	5.33	6.90	0.00	0.17	0.63	1.29	2.86
	3H	5.20	5.81	6.35	6.94	8.52	0.67	1.27	1.82	2.41	3.99
	4H	5.81	6.38	6.96	7.51	9.10	1.12	1.69	2.27	2.82	4.41
	6H	6.23	6.75	7.39	7.89	9.49	1.43	1.96	2.59	3.09	4.69
	8H	6.35	6.85	7.52	8.00	9.59	1.52	2.02	2.68	3.17	4.76
	12H	6.41	6.88	7.58	8.03	9.64	1.56	2.03	2.73	3.17	4.79
4H	2H	3.53	4.10	4.69	5.24	6.83	0.07	0.64	1.24	1.78	3.37
	3H	5.35	5.83	6.52	6.99	8.59	1.41	1.89	2.58	3.04	4.65
	4H	6.04	6.48	7.21	7.63	9.25	1.95	2.39	3.12	3.54	5.16
	6H	6.56	6.93	7.73	8.10	9.71	2.37	2.74	3.54	3.91	5.52
	8H	6.73	7.08	7.90	8.24	9.87	2.49	2.84	3.67	4.00	5.63
	12H	6.82	7.14	8.01	8.31	9.94	2.55	2.87	3.74	4.04	5.67
8H	4H	6.00	6.35	7.17	7.51	9.14	2.23	2.57	3.40	3.74	5.36
	6H	6.57	6.85	7.76	8.06	9.68	2.74	3.03	3.93	4.23	5.86
	8H	6.79	7.04	7.98	8.22	9.86	2.93	3.18	4.13	4.37	6.01
	12H	6.92	7.14	8.12	8.32	10.00	3.05	3.27	4.25	4.45	6.12
12H	4H	5.94	6.26	7.13	7.43	9.06	2.22	2.54	3.41	3.71	5.34
	6H	6.54	6.79	7.74	7.97	9.62	2.79	3.04	3.99	4.22	5.87
	8H	6.76	6.98	7.96	8.16	9.83	3.00	3.22	4.20	4.40	6.07