

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: P908690

Luminaire Tested: DFN2DIP-PN4F0-060D080US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

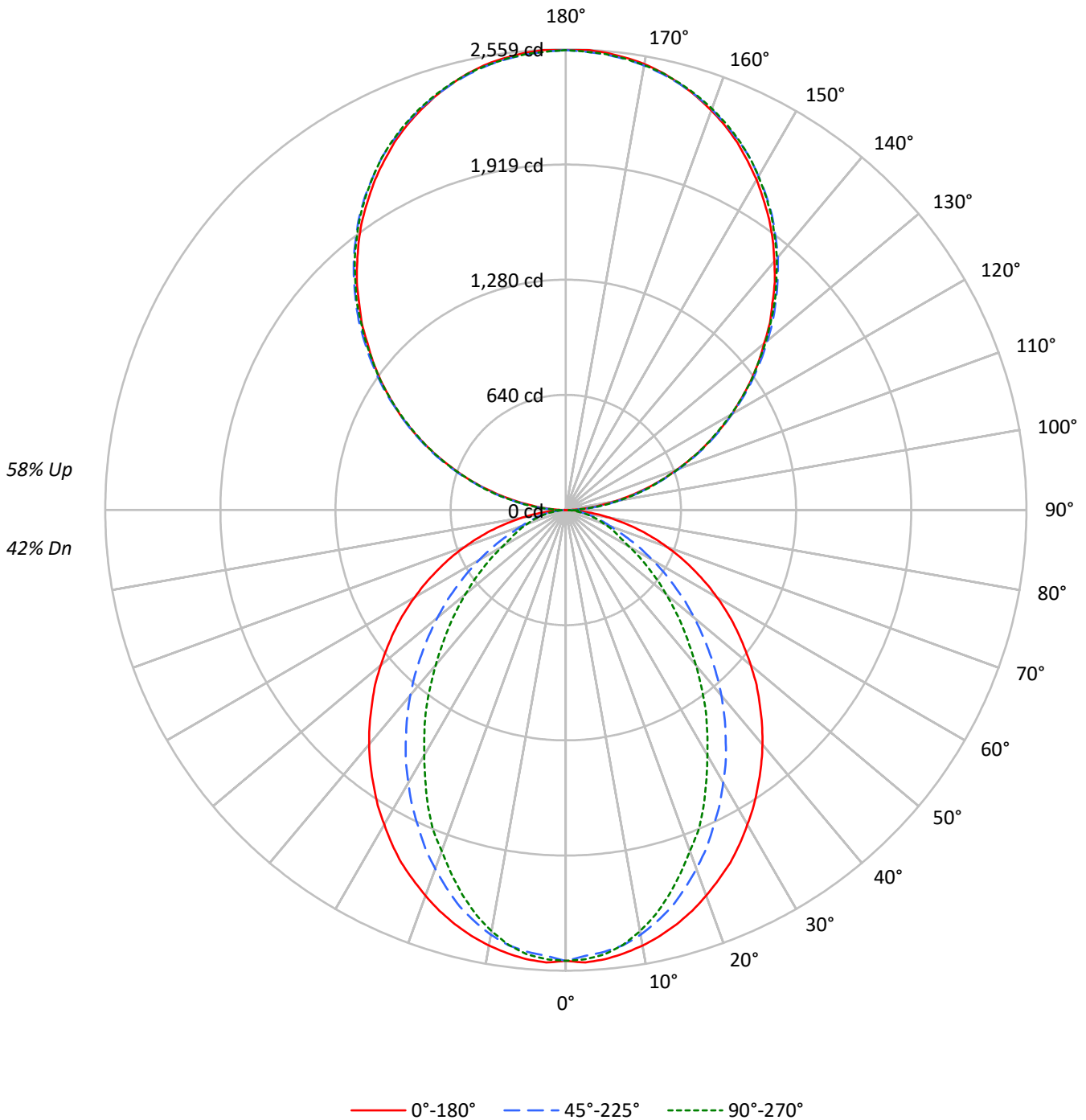
Test Method: LM-79-2019  
Report Number: P908690  
REPORT IS A COMBINATION OF REPORTS P899686 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-060D080US840-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12300.1 lumens  
Efficiency: N/A  
Efficacy: 109.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 112.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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	96	96	96	96	79	79	79	63	63	63	49	49	49	49	49	49	42
1	96	92	89	85	88	84	81	78	70	67	65	56	55	53	44	43	42	42	42	42	36
2	88	81	75	70	80	74	69	65	61	58	55	50	47	45	39	37	36	36	36	36	31
3	81	72	65	59	73	66	60	55	55	50	47	44	41	39	35	33	31	31	31	31	27
4	74	64	56	50	67	58	52	47	49	44	40	40	36	33	31	29	27	27	27	27	23
5	68	57	49	43	62	52	45	40	44	39	35	36	32	29	28	26	24	24	24	24	20
6	63	51	43	38	57	47	40	35	40	34	30	33	29	26	26	23	21	21	21	21	18
7	58	46	38	33	53	43	36	31	36	31	27	30	26	23	24	21	19	19	19	19	16
8	54	42	34	29	49	39	32	28	33	28	24	27	23	21	22	19	17	17	17	17	15
9	50	38	31	26	46	36	29	25	30	25	22	25	21	19	20	18	16	16	16	16	13
10	47	35	28	24	43	33	26	22	28	23	19	23	19	17	19	16	14	14	14	14	12

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

	0°	45°	90°
0°	1828	1828	1828
5°	1831	1799	1811
10°	1813	1764	1752
15°	1788	1706	1661
20°	1755	1626	1550
25°	1721	1536	1442
30°	1676	1444	1306
35°	1631	1345	1185
40°	1586	1242	1048
45°	1533	1128	923
50°	1479	1013	801
55°	1422	890	683
60°	1356	762	563
65°	1281	631	507
70°	1189	509	460
75°	1074	450	419
80°	907	378	364
85°	632	253	276

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2001 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	234.7	1.9
10°-20°	644.3	5.2
20°-30°	904.6	7.4
30°-40°	986.1	8.0
40°-50°	906.3	7.4
50°-60°	711.7	5.8
60°-70°	463.3	3.8
70°-80°	238.5	1.9
80°-90°	68.2	0.6
90°-100°	158.1	1.3
100°-110°	502.4	4.1
110°-120°	859.7	7.0
120°-130°	1130.6	9.2
130°-140°	1269.1	10.3
140°-150°	1244.5	10.1
150°-160°	1043.9	8.5
160°-170°	692.3	5.6
170°-180°	242.0	2.0
0°-30°	1783.6	14.5
0°-40°	2769.6	22.5
0°-60°	4387.7	35.7
0°-90°	5157.6	41.9
90°-120°	1520.1	12.4
90°-150°	5164.3	42.0
90°-180°	7143.0	58.1
0°-180°	12300.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2504	2504	2504	2504	2504	
5°	2504	2493	2463	2484	2477	237
15°	2382	2357	2280	2237	2214	671
25°	2162	2090	1940	1847	1813	994
35°	1863	1747	1548	1405	1355	1166
45°	1523	1371	1133	972	918	1176
55°	1158	981	736	601	558	1035
65°	782	598	394	317	310	775
75°	417	258	181	165	163	441
85°	97	50	43	43	43	112
90°	2	28	76	71	73	12
95°	112	134	138	138	134	125
105°	464	470	474	478	478	489
115°	863	875	871	869	863	853
125°	1255	1274	1268	1261	1259	1121
135°	1623	1647	1652	1649	1643	1254
145°	1970	1986	1998	2000	1992	1231
155°	2253	2259	2266	2277	2270	1037
165°	2451	2449	2449	2464	2453	691
175°	2550	2544	2540	2555	2542	242
180°	2555	2555	2555	2555	2555	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2504.3	2504.3	2504.3	2504.3	2504.3
2.5°	2515.6	2504.3	2479.2	2502.0	2497.5
5°	2504.3	2493.0	2463.4	2483.9	2477.1
7.5°	2483.9	2470.3	2438.6	2447.5	2436.2
10°	2456.6	2440.7	2395.6	2388.6	2375.1
12.5°	2422.8	2402.3	2341.0	2327.5	2302.5
15°	2381.9	2356.8	2279.9	2236.9	2214.2
17.5°	2334.3	2297.9	2202.7	2152.9	2116.7
20°	2279.9	2234.4	2121.2	2064.7	2014.7
22.5°	2221.0	2168.8	2037.3	1960.4	1926.4
25°	2162.1	2089.5	1940.0	1847.1	1813.0
27.5°	2091.9	2014.7	1849.3	1742.7	1690.6
30°	2017.1	1930.8	1749.5	1634.1	1572.8
32.5°	1944.5	1840.2	1654.6	1518.4	1461.7
35°	1863.0	1747.4	1548.0	1405.1	1355.1
37.5°	1783.6	1658.8	1448.2	1291.7	1235.2
40°	1699.7	1563.9	1343.8	1183.0	1124.1
42.5°	1613.7	1468.6	1239.7	1071.9	1015.4
45°	1523.0	1371.0	1133.3	972.1	917.8
47.5°	1436.9	1276.1	1031.3	870.2	820.4
50°	1341.7	1180.8	931.5	775.0	727.6
52.5°	1248.6	1078.6	836.3	686.7	643.7
55°	1158.0	981.3	736.5	600.7	557.5
57.5°	1065.2	883.8	648.2	521.3	484.9
60°	970.0	788.7	555.2	439.8	403.4
62.5°	877.2	695.9	475.8	367.2	349.1
65°	781.9	598.2	394.4	317.4	310.4
67.5°	691.3	507.6	317.4	278.7	272.0
70°	596.0	419.3	262.8	240.2	231.1
72.5°	505.4	337.6	219.7	201.8	197.1
75°	417.0	258.2	181.3	165.4	163.3
77.5°	328.7	183.5	142.8	133.7	129.2
80°	246.9	131.5	108.7	99.8	99.8
82.5°	172.2	88.5	74.7	70.2	70.2
85°	97.4	49.8	43.0	43.0	43.0
87.5°	36.4	18.1	18.1	15.9	15.9
90°	2.3	27.8	75.5	70.9	73.2
92.5°	47.8	64.7	67.1	69.3	69.3
95°	112.5	134.0	137.8	137.8	134.0
97.5°	187.2	207.2	215.7	215.7	215.7
100°	273.5	291.1	297.3	297.3	295.0
102.5°	364.4	377.5	385.9	388.2	385.9
105°	463.7	469.9	474.5	478.4	478.4
107.5°	562.3	571.6	571.6	573.1	562.3
110°	657.8	670.1	670.1	670.1	664.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	761.0	774.2	771.8	765.7	761.0
115°	862.7	875.0	871.2	868.9	862.7
117.5°	963.6	980.6	969.8	963.6	957.5
120°	1065.3	1082.3	1065.3	1065.3	1058.3
122.5°	1157.7	1179.3	1168.5	1162.4	1157.7
125°	1254.8	1274.0	1267.9	1260.9	1258.7
127.5°	1349.6	1373.4	1364.9	1355.7	1349.6
130°	1438.1	1465.8	1462.0	1457.4	1449.0
132.5°	1537.5	1559.0	1560.6	1549.8	1543.7
135°	1623.0	1646.9	1651.5	1649.2	1643.1
137.5°	1718.5	1737.8	1741.6	1740.1	1730.8
140°	1802.5	1821.7	1832.5	1832.5	1824.0
142.5°	1888.8	1908.0	1914.2	1916.5	1908.0
145°	1970.4	1985.8	1998.1	2000.4	1992.0
147.5°	2043.6	2062.9	2072.0	2076.0	2067.5
150°	2119.1	2132.1	2140.6	2147.6	2140.6
152.5°	2186.1	2199.2	2210.0	2218.5	2210.0
155°	2253.1	2259.3	2266.2	2276.9	2270.1
157.5°	2310.9	2315.5	2319.4	2334.7	2324.0
160°	2362.5	2367.1	2369.4	2382.5	2373.3
162.5°	2410.2	2410.2	2412.6	2427.2	2416.4
165°	2451.0	2448.7	2448.7	2464.2	2453.4
167.5°	2488.0	2481.1	2481.1	2496.5	2485.7
170°	2515.8	2509.6	2507.3	2522.7	2509.6
172.5°	2535.1	2528.9	2526.6	2541.9	2528.9
175°	2550.4	2544.3	2539.6	2555.1	2541.9
177.5°	2558.9	2552.7	2548.1	2561.2	2548.1
180°	2555.1	2555.1	2555.1	2555.1	2555.1



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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	8.44	9.21	9.47	10.25	11.63	4.41	5.18	5.44	6.21	7.60
	3H	10.12	10.81	11.16	11.85	13.25	5.59	6.28	6.63	7.32	8.73
	4H	10.73	11.38	11.78	12.42	13.83	6.04	6.69	7.09	7.74	9.15
	6H	11.15	11.75	12.21	12.80	14.22	6.36	6.96	7.42	8.01	9.43
	8H	11.28	11.84	12.34	12.91	14.33	6.45	7.02	7.52	8.08	9.50
	12H	11.34	11.88	12.41	12.93	14.38	6.49	7.03	7.56	8.09	9.53
4H	2H	8.46	9.11	9.51	10.15	11.56	5.00	5.65	6.06	6.69	8.11
	3H	10.28	10.82	11.35	11.90	13.32	6.35	6.89	7.41	7.96	9.38
	4H	10.97	11.47	12.05	12.53	13.98	6.89	7.39	7.96	8.45	9.90
	6H	11.49	11.91	12.57	13.00	14.44	7.31	7.73	8.39	8.82	10.26
	8H	11.66	12.06	12.75	13.14	14.60	7.44	7.83	8.52	8.91	10.37
	12H	11.76	12.12	12.86	13.21	14.67	7.50	7.86	8.60	8.95	10.41
8H	4H	10.94	11.33	12.02	12.41	13.87	7.17	7.57	8.25	8.64	10.10
	6H	11.50	11.83	12.61	12.95	14.41	7.69	8.01	8.79	9.13	10.59
	8H	11.72	12.01	12.83	13.11	14.59	7.88	8.16	8.99	9.27	10.74
	12H	11.86	12.11	12.97	13.21	14.72	7.99	8.25	9.11	9.35	10.86
12H	4H	10.89	11.25	11.98	12.34	13.80	7.17	7.53	8.27	8.62	10.08
	6H	11.48	11.77	12.59	12.87	14.34	7.74	8.02	8.85	9.13	10.60
	8H	11.70	11.95	12.81	13.05	14.56	7.94	8.20	9.06	9.30	10.81