

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: P911554

Luminaire Tested: DFN2DIP-PN4F0-100D060US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

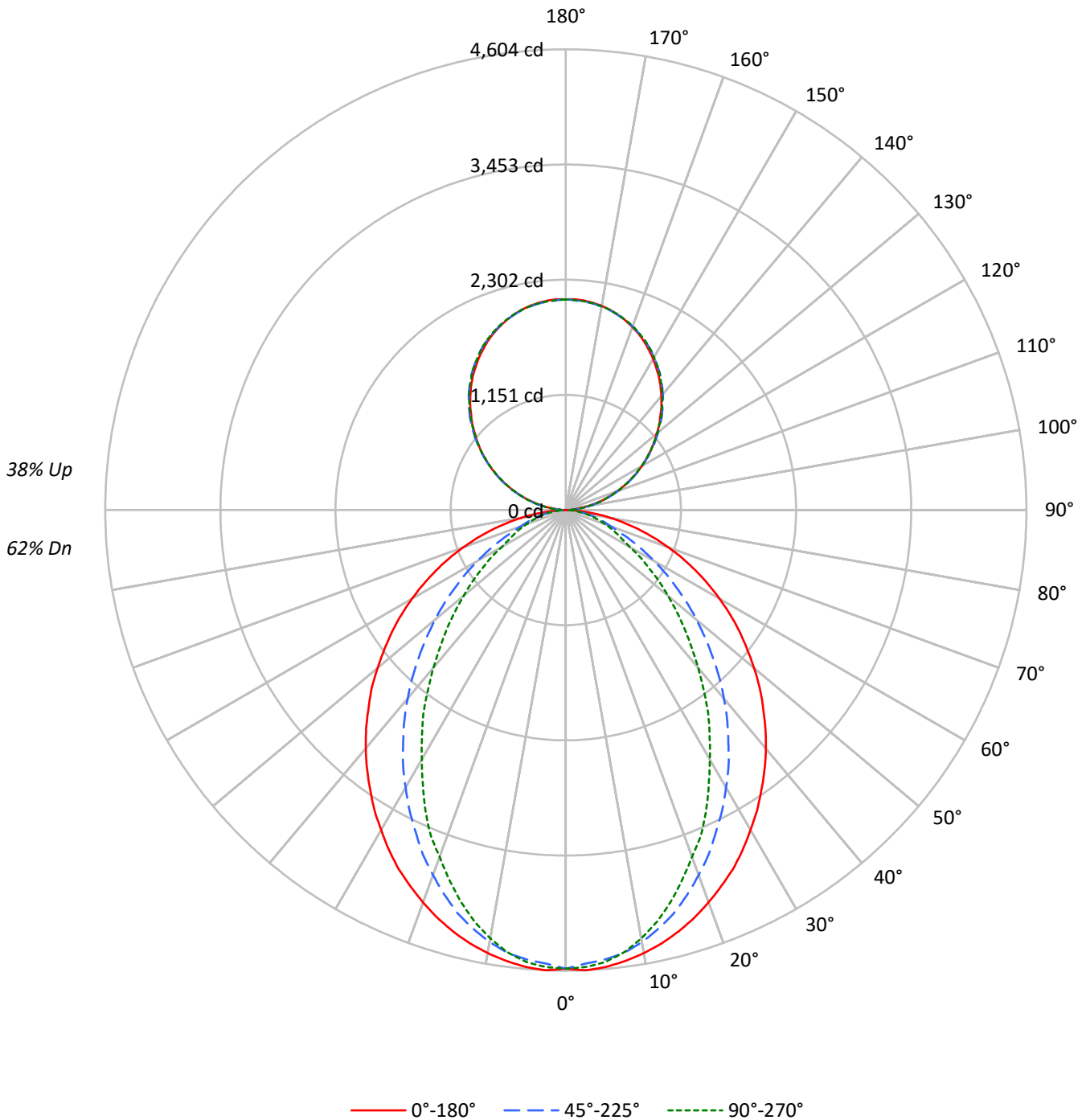
Test Method: LM-79-2019  
Report Number: P911554  
REPORT IS A COMBINATION OF REPORTS P899658 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-100D060US850-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15315.3 lumens  
Efficiency: N/A  
Efficacy: 104.8 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: Semi-Direct  
  
Input Watts (W): 146.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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	110	110	110	110	103	103	103	103	90	90	90	78	78	78	67	67	67	67	67	67	62
1	101	97	93	90	94	91	88	85	80	77	75	69	68	66	60	59	58	60	59	58	53
2	92	85	79	74	86	80	75	70	71	67	63	62	59	56	53	51	49	53	51	49	45
3	85	75	68	63	79	71	65	60	63	58	54	55	51	48	48	45	43	48	45	43	39
4	78	67	60	54	73	63	57	51	56	51	46	49	45	42	43	40	37	43	40	37	34
5	72	60	52	46	67	57	50	44	51	45	41	45	40	37	39	36	33	39	36	33	30
6	66	54	46	41	62	51	44	39	46	40	36	41	36	32	36	32	29	36	32	29	27
7	62	49	42	36	58	47	40	35	42	36	32	37	33	29	33	29	26	33	29	26	24
8	57	45	37	32	54	43	36	31	38	33	28	34	30	26	30	27	24	30	27	24	22
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22	28	24	22	20
10	50	38	31	26	47	36	30	25	33	27	23	29	25	22	26	22	20	26	22	20	18

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

	0°	45°	90°
0°	3346	3346	3346
5°	3351	3293	3314
10°	3318	3229	3207
15°	3272	3123	3041
20°	3212	2976	2837
25°	3150	2811	2640
30°	3067	2643	2389
35°	2985	2461	2170
40°	2903	2274	1918
45°	2806	2065	1689
50°	2707	1855	1466
55°	2603	1630	1251
60°	2483	1395	1030
65°	2344	1155	928
70°	2176	932	841
75°	1966	823	766
80°	1660	692	667
85°	1157	464	505

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2806 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	429.6	2.8
10°-20°	1179.3	7.7
20°-30°	1655.6	10.8
30°-40°	1804.7	11.8
40°-50°	1658.8	10.8
50°-60°	1302.7	8.5
60°-70°	847.9	5.5
70°-80°	436.5	2.8
80°-90°	117.4	0.8
90°-100°	130.2	0.9
100°-110°	413.7	2.7
110°-120°	708.0	4.6
120°-130°	931.2	6.1
130°-140°	1045.3	6.8
140°-150°	1025.0	6.7
150°-160°	859.8	5.6
160°-170°	570.2	3.7
170°-180°	199.3	1.3
0°-30°	3264.5	21.3
0°-40°	5069.2	33.1
0°-60°	8030.6	52.4
0°-90°	9432.4	61.6
90°-120°	1252.0	8.2
90°-150°	4253.5	27.8
90°-180°	5883.0	38.4
0°-180°	15315.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4584	4584	4584	4584	4584	
5°	4584	4563	4509	4546	4534	435
15°	4360	4314	4173	4094	4053	1228
25°	3957	3824	3551	3381	3318	1820
35°	3410	3198	2833	2572	2480	2134
45°	2788	2509	2074	1779	1680	2153
55°	2119	1796	1348	1099	1020	1894
65°	1431	1095	722	581	568	1419
75°	763	473	332	303	299	807
85°	178	91	79	79	79	205
90°	2	23	62	58	60	15
95°	93	110	114	114	110	103
105°	382	387	391	394	394	403
115°	710	721	718	716	710	703
125°	1034	1049	1044	1039	1037	924
135°	1337	1356	1360	1358	1353	1033
145°	1623	1636	1646	1648	1641	1014
155°	1856	1861	1866	1875	1870	854
165°	2019	2017	2017	2030	2021	569
175°	2101	2096	2092	2104	2094	200
180°	2104	2104	2104	2104	2104	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4583.5	4583.5	4583.5	4583.5	4583.5
2.5°	4604.1	4583.5	4537.7	4579.5	4571.2
5°	4583.5	4562.8	4508.6	4546.1	4533.7
7.5°	4546.1	4521.4	4463.3	4479.6	4459.0
10°	4496.3	4467.3	4384.5	4371.8	4347.2
12.5°	4434.3	4396.9	4284.6	4260.0	4214.2
15°	4359.5	4313.7	4172.8	4094.1	4052.7
17.5°	4272.3	4205.9	4031.7	3940.5	3874.1
20°	4172.8	4089.7	3882.4	3779.0	3687.4
22.5°	4065.0	3969.6	3728.8	3588.1	3526.0
25°	3957.2	3824.4	3550.6	3380.7	3318.2
27.5°	3828.7	3687.4	3384.7	3189.7	3094.2
30°	3691.9	3533.8	3202.0	2990.9	2878.6
32.5°	3559.0	3367.9	3028.2	2779.2	2675.2
35°	3409.7	3198.1	2833.3	2571.9	2480.3
37.5°	3264.6	3036.1	2650.6	2364.2	2260.7
40°	3111.0	2862.3	2459.7	2165.2	2057.4
42.5°	2953.4	2688.0	2269.1	1961.9	1858.5
45°	2787.5	2509.3	2074.2	1779.3	1679.8
47.5°	2630.0	2335.6	1887.5	1592.6	1501.6
50°	2455.7	2161.2	1704.9	1418.4	1331.7
52.5°	2285.3	1974.2	1530.6	1256.8	1178.1
55°	2119.4	1796.0	1348.0	1099.4	1020.5
57.5°	1949.6	1617.7	1186.5	954.1	887.6
60°	1775.3	1443.5	1016.2	804.9	738.5
62.5°	1605.4	1273.6	870.9	672.1	639.0
65°	1431.2	1094.9	721.7	580.9	568.1
67.5°	1265.3	929.0	580.9	510.0	497.7
70°	1090.9	767.5	481.0	439.6	423.0
72.5°	925.0	617.8	402.2	369.2	360.9
75°	763.1	472.7	331.8	302.8	298.8
77.5°	601.6	335.8	261.4	244.6	236.3
80°	451.9	240.8	199.0	182.7	182.7
82.5°	315.1	161.9	136.9	128.5	128.5
85°	178.2	91.0	78.7	78.7	78.7
87.5°	66.4	33.0	33.0	29.1	29.1
90°	1.9	22.8	62.2	58.3	60.2
92.5°	39.4	53.3	55.2	57.1	57.1
95°	92.6	110.3	113.6	113.6	110.3
97.5°	154.2	170.7	177.7	177.7	177.7
100°	225.2	239.8	244.9	244.9	243.0
102.5°	300.1	310.9	317.8	319.7	317.8
105°	381.9	387.0	390.8	394.0	394.0
107.5°	463.1	470.8	470.8	472.0	463.1
110°	541.9	551.9	551.9	551.9	546.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	626.8	637.6	635.7	630.6	626.8
115°	710.5	720.7	717.5	715.6	710.5
117.5°	793.7	807.7	798.7	793.7	788.6
120°	877.4	891.4	877.4	877.4	871.7
122.5°	953.5	971.3	962.4	957.4	953.5
125°	1033.5	1049.3	1044.2	1038.6	1036.7
127.5°	1111.6	1131.2	1124.2	1116.7	1111.6
130°	1184.5	1207.4	1204.2	1200.4	1193.4
132.5°	1266.4	1284.1	1285.3	1276.5	1271.4
135°	1336.8	1356.4	1360.2	1358.3	1353.2
137.5°	1415.4	1431.3	1434.5	1433.2	1425.6
140°	1484.6	1500.5	1509.3	1509.3	1502.4
142.5°	1555.6	1571.5	1576.6	1578.4	1571.5
145°	1622.9	1635.6	1645.8	1647.6	1640.7
147.5°	1683.1	1699.0	1706.6	1709.7	1702.8
150°	1745.3	1756.1	1763.1	1768.7	1763.1
152.5°	1800.5	1811.3	1820.2	1827.2	1820.2
155°	1855.7	1860.8	1866.4	1875.4	1869.7
157.5°	1903.3	1907.1	1910.3	1923.0	1914.1
160°	1945.9	1949.6	1951.5	1962.3	1954.7
162.5°	1985.1	1985.1	1987.0	1999.1	1990.2
165°	2018.7	2016.8	2016.8	2029.6	2020.7
167.5°	2049.2	2043.6	2043.6	2056.2	2047.3
170°	2072.1	2067.0	2065.1	2077.7	2067.0
172.5°	2087.9	2082.8	2080.9	2093.6	2082.8
175°	2100.6	2095.6	2091.7	2104.4	2093.6
177.5°	2107.5	2102.6	2098.7	2109.4	2098.7
180°	2104.4	2104.4	2104.4	2104.4	2104.4



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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	12.37	13.30	13.23	14.18	15.27	8.33	9.27	9.19	10.14	11.24
	3H	14.06	14.89	14.93	15.78	16.90	9.53	10.37	10.40	11.25	12.37
	4H	14.67	15.46	15.56	16.35	17.49	9.99	10.77	10.87	11.66	12.80
	6H	15.10	15.83	16.00	16.72	17.87	10.31	11.04	11.21	11.94	13.08
	8H	15.23	15.92	16.14	16.84	17.98	10.41	11.10	11.31	12.01	13.16
	12H	15.30	15.95	16.21	16.86	18.04	10.45	11.11	11.36	12.02	13.19
4H	2H	12.40	13.19	13.29	14.08	15.21	8.94	9.73	9.83	10.62	11.76
	3H	14.24	14.90	15.14	15.82	16.97	10.30	10.96	11.20	11.88	13.03
	4H	14.94	15.53	15.85	16.45	17.63	10.86	11.45	11.77	12.37	13.55
	6H	15.46	15.98	16.39	16.92	18.10	11.28	11.79	12.21	12.74	13.91
	8H	15.64	16.12	16.57	17.06	18.25	11.41	11.89	12.34	12.83	14.02
	12H	15.74	16.17	16.69	17.13	18.32	11.48	11.91	12.43	12.87	14.06
8H	4H	14.91	15.39	15.84	16.33	17.52	11.14	11.62	12.07	12.56	13.75
	6H	15.49	15.88	16.44	16.86	18.05	11.67	12.06	12.62	13.04	14.23
	8H	15.71	16.06	16.67	17.02	18.23	11.86	12.21	12.83	13.18	14.39
	12H	15.85	16.16	16.82	17.12	18.38	11.98	12.29	12.95	13.25	14.51
12H	4H	14.87	15.30	15.82	16.26	17.45	11.15	11.59	12.10	12.54	13.74
	6H	15.46	15.81	16.43	16.78	17.99	11.72	12.07	12.68	13.04	14.25
	8H	15.69	16.00	16.66	16.96	18.22	11.93	12.24	12.90	13.20	14.46