

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: P915984

Luminaire Tested: DFN2DIP-4P4F0-050D080US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

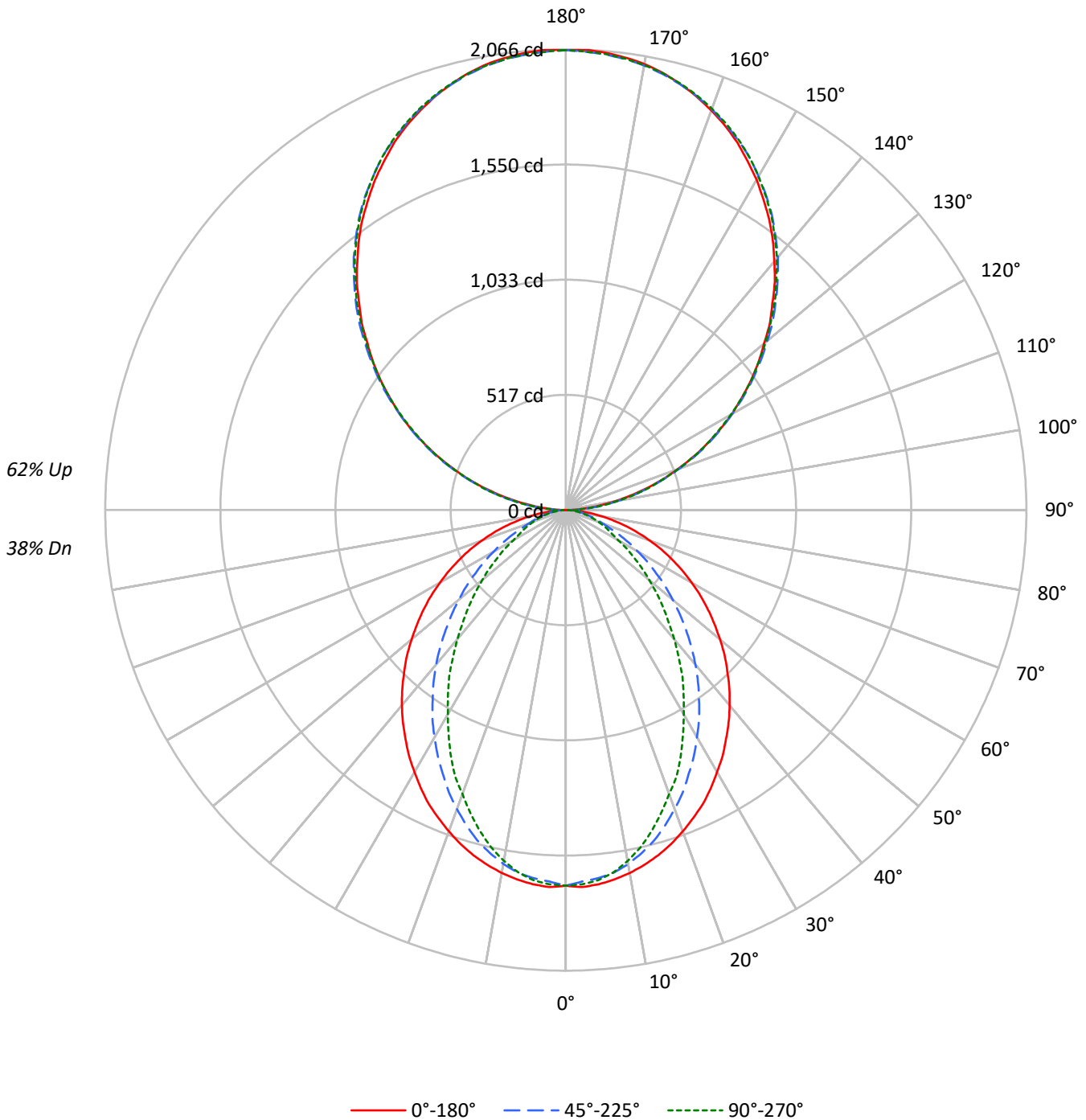
Test Method: LM-79-2019  
Report Number: P915984  
REPORT IS A COMBINATION OF REPORTS P899144 AND P895967  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-050D080US930-RLLFLL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9237.3 lumens  
Efficiency: N/A  
Efficacy: 74.7 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): 123.6  
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	104	104	104	104	95	95	95	95	76	76	76	60	60	60	45	45	45	38				38
1	95	91	88	84	86	83	80	77	67	65	63	53	52	50	40	39	38	32				32
2	87	80	74	69	79	73	68	64	59	56	53	47	45	43	36	34	33	28				28
3	80	71	64	58	72	64	58	54	53	48	45	42	39	37	32	30	28	24				24
4	73	63	55	49	66	57	51	46	47	42	39	38	34	32	29	27	25	21				21
5	67	56	48	42	61	51	44	39	42	37	33	34	30	28	26	24	22	18				18
6	62	50	42	37	56	46	39	34	38	33	29	31	27	24	24	21	19	16				16
7	57	45	38	32	52	42	35	30	35	30	26	28	24	22	22	19	17	15				15
8	53	41	34	29	48	38	31	27	32	27	23	26	22	19	20	18	16	13				13
9	49	38	30	26	45	35	28	24	29	24	21	24	20	17	19	16	14	12				12
10	46	35	28	23	42	32	26	21	27	22	19	22	18	16	17	15	13	11				11

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

	0°	45°	90°
0°	1093	1093	1093
5°	1095	1076	1083
10°	1084	1055	1048
15°	1069	1021	994
20°	1050	973	927
25°	1029	919	863
30°	1002	864	782
35°	976	805	710
40°	949	744	628
45°	918	676	553
50°	885	607	480
55°	851	534	410
60°	812	457	338
65°	767	379	305
70°	713	306	276
75°	644	271	252
80°	545	228	220
85°	381	154	168

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1562 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	157.9	1.7
10°-20°	433.5	4.7
20°-30°	608.6	6.6
30°-40°	663.4	7.2
40°-50°	609.7	6.6
50°-60°	478.8	5.2
60°-70°	311.7	3.4
70°-80°	160.4	1.7
80°-90°	46.8	0.5
90°-100°	127.6	1.4
100°-110°	405.6	4.4
110°-120°	694.1	7.5
120°-130°	912.8	9.9
130°-140°	1024.6	11.1
140°-150°	1004.7	10.9
150°-160°	842.8	9.1
160°-170°	558.9	6.1
170°-180°	195.4	2.1
0°-30°	1200.0	13.0
0°-40°	1863.4	20.2
0°-60°	2951.9	32.0
0°-90°	3470.9	37.6
90°-120°	1227.3	13.3
90°-150°	4169.4	45.1
90°-180°	5766.0	62.4
0°-180°	9237.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1685	1685	1685	1685	1685	
5°	1685	1677	1657	1671	1667	160
15°	1602	1586	1534	1505	1490	452
25°	1455	1406	1305	1243	1220	669
35°	1253	1176	1042	945	912	784
45°	1025	922	762	654	617	791
55°	779	660	496	404	375	696
65°	526	402	265	214	209	521
75°	280	174	122	111	110	297
85°	66	34	29	29	29	75
90°	2	22	61	57	59	9
95°	91	108	111	111	108	101
105°	374	379	383	386	386	395
115°	696	706	703	702	696	689
125°	1013	1029	1024	1018	1016	905
135°	1310	1330	1333	1332	1326	1013
145°	1591	1603	1613	1615	1608	994
155°	1819	1824	1830	1838	1833	837
165°	1979	1977	1977	1989	1981	558
175°	2059	2054	2050	2063	2052	196
180°	2063	2063	2063	2063	2063	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1684.8	1684.8	1684.8	1684.8	1684.8
2.5°	1692.4	1684.8	1668.0	1683.3	1680.2
5°	1684.8	1677.2	1657.3	1671.0	1666.6
7.5°	1671.0	1662.0	1640.6	1646.7	1639.0
10°	1652.8	1642.1	1611.7	1607.0	1597.9
12.5°	1629.9	1616.2	1575.0	1565.9	1549.1
15°	1602.5	1585.7	1533.9	1505.0	1489.7
17.5°	1570.4	1546.1	1482.0	1448.5	1424.0
20°	1533.9	1503.3	1427.1	1389.1	1355.4
22.5°	1494.3	1459.1	1370.7	1318.9	1296.1
25°	1454.6	1405.7	1305.1	1242.7	1219.7
27.5°	1407.4	1355.4	1244.1	1172.5	1137.4
30°	1357.1	1299.0	1177.0	1099.3	1058.1
32.5°	1308.2	1238.0	1113.1	1021.6	983.4
35°	1253.4	1175.6	1041.5	945.3	911.7
37.5°	1200.0	1116.1	974.4	869.0	831.0
40°	1143.5	1052.1	904.1	795.9	756.3
42.5°	1085.7	988.1	834.1	721.1	683.1
45°	1024.7	922.4	762.4	654.0	617.4
47.5°	966.7	858.5	693.8	585.5	552.0
50°	902.7	794.4	626.7	521.4	489.5
52.5°	840.1	725.7	562.6	462.0	433.1
55°	779.1	660.1	495.5	404.1	375.1
57.5°	716.6	594.7	436.1	350.7	326.3
60°	652.6	530.6	373.5	295.9	271.4
62.5°	590.1	468.1	320.2	247.0	234.9
65°	526.0	402.5	265.3	213.5	208.9
67.5°	465.0	341.5	213.5	187.5	183.0
70°	401.0	282.1	176.8	161.6	155.5
72.5°	340.1	227.1	147.9	135.7	132.6
75°	280.5	173.7	122.0	111.3	109.8
77.5°	221.1	123.4	96.1	89.9	86.8
80°	166.2	88.5	73.1	67.1	67.1
82.5°	115.9	59.5	50.3	47.2	47.2
85°	65.5	33.5	28.9	28.9	28.9
87.5°	24.5	12.1	12.1	10.7	10.7
90°	1.9	22.4	61.0	57.2	59.1
92.5°	38.6	52.3	54.1	55.9	55.9
95°	90.8	108.2	111.3	111.3	108.2
97.5°	151.2	167.3	174.1	174.1	174.1
100°	220.8	235.1	240.0	240.0	238.1
102.5°	294.2	304.8	311.5	313.4	311.5
105°	374.4	379.4	383.1	386.2	386.2
107.5°	454.0	461.5	461.5	462.7	454.0
110°	531.1	541.0	541.0	541.0	536.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	614.4	625.0	623.1	618.2	614.4
115°	696.5	706.5	703.4	701.5	696.5
117.5°	778.0	791.7	782.9	778.0	773.0
120°	860.1	873.8	860.1	860.1	854.4
122.5°	934.7	952.1	943.4	938.4	934.7
125°	1013.0	1028.6	1023.6	1018.0	1016.2
127.5°	1089.6	1108.8	1102.0	1094.5	1089.6
130°	1161.1	1183.4	1180.3	1176.6	1169.8
132.5°	1241.3	1258.7	1260.0	1251.2	1246.3
135°	1310.3	1329.6	1333.3	1331.5	1326.5
137.5°	1387.4	1403.0	1406.1	1404.8	1397.3
140°	1455.2	1470.7	1479.4	1479.4	1472.6
142.5°	1524.9	1540.4	1545.4	1547.3	1540.4
145°	1590.8	1603.2	1613.1	1615.0	1608.2
147.5°	1649.8	1665.4	1672.8	1676.0	1669.2
150°	1710.8	1721.3	1728.2	1733.8	1728.2
152.5°	1764.9	1775.5	1784.2	1791.0	1784.2
155°	1819.0	1824.0	1829.6	1838.3	1832.7
157.5°	1865.6	1869.4	1872.5	1884.9	1876.2
160°	1907.3	1911.1	1912.9	1923.5	1916.0
162.5°	1945.9	1945.9	1947.7	1959.6	1950.8
165°	1978.8	1976.9	1976.9	1989.4	1980.7
167.5°	2008.7	2003.1	2003.1	2015.5	2006.8
170°	2031.1	2026.1	2024.2	2036.7	2026.1
172.5°	2046.6	2041.7	2039.8	2052.2	2041.7
175°	2059.0	2054.1	2050.3	2062.8	2052.2
177.5°	2065.9	2060.9	2057.2	2067.8	2057.2
180°	2062.8	2062.8	2062.8	2062.8	2062.8



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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	6.19	6.93	7.25	7.99	9.43	2.15	2.89	3.21	3.95	5.39
	3H	7.87	8.53	8.94	9.60	11.05	3.33	3.99	4.41	5.06	6.52
	4H	8.47	9.10	9.56	10.17	11.64	3.78	4.41	4.86	5.48	6.94
	6H	8.90	9.47	9.99	10.55	12.02	4.10	4.67	5.19	5.75	7.23
	8H	9.02	9.57	10.12	10.66	12.13	4.19	4.73	5.28	5.82	7.30
	12H	9.08	9.60	10.18	10.69	12.18	4.23	4.75	5.33	5.83	7.33
4H	2H	6.20	6.82	7.29	7.89	9.36	2.74	3.36	3.83	4.43	5.90
	3H	8.02	8.54	9.12	9.64	11.12	4.08	4.60	5.18	5.70	7.18
	4H	8.72	9.19	9.82	10.28	11.78	4.63	5.10	5.73	6.19	7.69
	6H	9.23	9.64	10.34	10.75	12.25	5.04	5.45	6.15	6.56	8.06
	8H	9.41	9.79	10.52	10.89	12.40	5.17	5.55	6.28	6.66	8.16
	12H	9.50	9.85	10.63	10.97	12.48	5.23	5.58	6.36	6.69	8.21
8H	4H	8.68	9.06	9.79	10.16	11.67	4.90	5.29	6.01	6.39	7.90
	6H	9.25	9.56	10.38	10.71	12.21	5.42	5.74	6.55	6.88	8.39
	8H	9.47	9.74	10.60	10.87	12.39	5.61	5.89	6.75	7.02	8.54
	12H	9.61	9.85	10.75	10.97	12.53	5.73	5.97	6.87	7.10	8.66
12H	4H	8.63	8.97	9.75	10.09	11.60	4.91	5.25	6.03	6.37	7.88
	6H	9.22	9.50	10.36	10.63	12.15	5.47	5.75	6.61	6.87	8.40
	8H	9.44	9.68	10.58	10.81	12.37	5.68	5.92	6.82	7.05	8.61