

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: P916404

Luminaire Tested: DFN2DIP-HX4F0-080D070US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

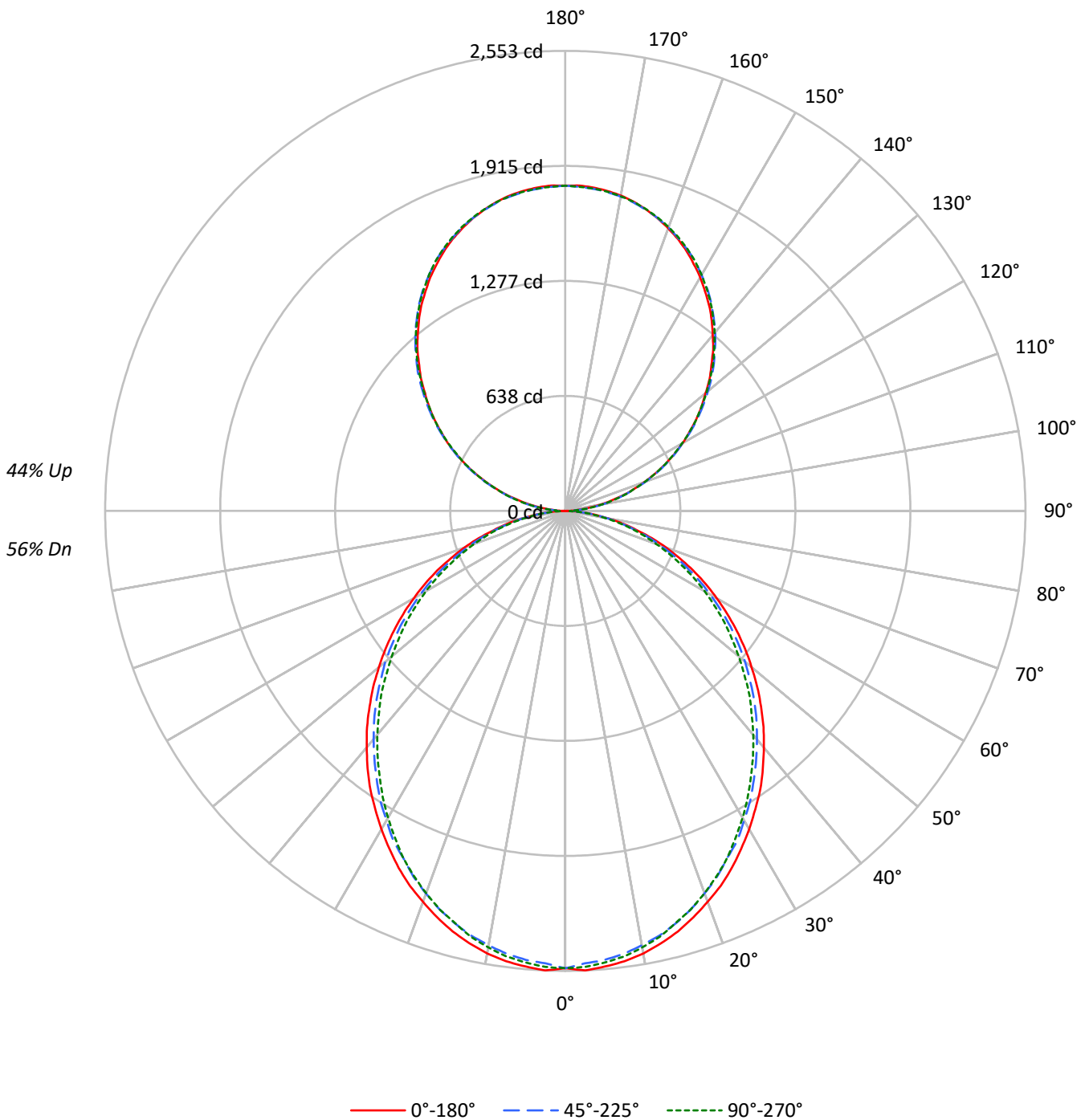
Test Method: LM-79-2019  
Report Number: P916404  
REPORT IS A COMBINATION OF REPORTS P899361 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-080D070US930-FLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11508.0 lumens  
Efficiency: N/A  
Efficacy: 99.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 116.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	62	62	62	56	56	56	56
1	99	95	91	87	92	88	85	82	76	74	71	65	63	61	55	53	52	47	47	47	47
2	90	83	77	71	84	77	72	67	67	63	59	57	54	51	48	46	44	40	40	40	40
3	82	73	65	59	76	68	61	56	59	54	50	50	47	43	43	40	37	34	34	34	34
4	75	64	56	50	70	60	53	48	52	47	42	45	41	37	38	35	32	29	29	29	29
5	69	57	49	43	64	54	46	41	47	41	37	40	36	32	34	31	28	25	25	25	25
6	64	52	43	38	59	48	41	36	42	36	32	37	32	28	31	28	25	22	22	22	22
7	59	47	39	33	55	44	37	31	38	32	28	33	29	25	28	25	22	20	20	20	20
8	55	42	35	29	51	40	33	28	35	29	25	30	26	22	26	23	20	17	17	17	17
9	51	39	31	26	47	36	30	25	32	26	23	28	23	20	24	21	18	16	16	16	16
10	48	36	28	23	44	34	27	22	30	24	20	26	21	18	22	19	16	14	14	14	14

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

	0°	45°	90°
0°	1887	1887	1887
5°	1890	1861	1873
10°	1875	1836	1848
15°	1848	1806	1809
20°	1811	1764	1768
25°	1774	1714	1721
30°	1727	1668	1662
35°	1683	1613	1599
40°	1630	1557	1539
45°	1576	1502	1478
50°	1517	1443	1407
55°	1455	1376	1341
60°	1386	1296	1266
65°	1310	1213	1178
70°	1213	1112	1083
75°	1079	991	996
80°	918	837	829
85°	667	570	551

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1576 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	238.9	2.1
10°-20°	672.1	5.8
20°-30°	987.7	8.6
30°-40°	1147.1	10.0
40°-50°	1145.7	10.0
50°-60°	999.0	8.7
60°-70°	738.5	6.4
70°-80°	417.8	3.6
80°-90°	115.4	1.0
90°-100°	111.7	1.0
100°-110°	354.9	3.1
110°-120°	607.3	5.3
120°-130°	798.7	6.9
130°-140°	896.5	7.8
140°-150°	879.1	7.6
150°-160°	737.5	6.4
160°-170°	489.1	4.2
170°-180°	170.9	1.5
0°-30°	1898.6	16.5
0°-40°	3045.8	26.5
0°-60°	5190.5	45.1
0°-90°	6462.3	56.2
90°-120°	1073.9	9.3
90°-150°	3648.2	31.7
90°-180°	5046.0	43.8
0°-180°	11508.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2538	2538	2538	2538	2538	
5°	2538	2528	2501	2521	2516	241
15°	2416	2402	2370	2379	2367	680
25°	2186	2167	2126	2130	2126	1006
35°	1886	1862	1823	1808	1796	1178
45°	1535	1518	1481	1455	1445	1185
55°	1162	1147	1118	1088	1076	1039
65°	784	769	744	722	710	775
75°	410	405	393	378	383	438
85°	100	98	95	88	85	112
90°	2	20	53	50	52	11
95°	79	95	97	97	95	88
105°	328	332	335	338	338	346
115°	609	618	616	614	609	603
125°	886	900	896	891	889	792
135°	1147	1163	1167	1165	1161	886
145°	1392	1403	1412	1413	1407	870
155°	1592	1596	1601	1608	1604	733
165°	1731	1730	1730	1741	1733	488
175°	1802	1797	1794	1805	1796	171
180°	1805	1805	1805	1805	1805	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2537.9	2537.9	2537.9	2537.9	2537.9
2.5°	2552.6	2540.5	2513.6	2537.9	2533.2
5°	2537.9	2528.3	2501.4	2520.8	2516.2
7.5°	2520.8	2506.3	2479.4	2499.1	2494.2
10°	2494.2	2477.0	2447.8	2467.2	2460.0
12.5°	2457.4	2442.9	2413.6	2425.8	2420.9
15°	2416.0	2401.5	2369.6	2379.4	2367.3
17.5°	2364.7	2350.2	2318.3	2330.5	2318.3
20°	2308.5	2294.0	2259.8	2267.1	2257.5
22.5°	2252.6	2230.6	2198.7	2198.7	2193.8
25°	2186.5	2167.1	2125.7	2130.4	2125.7
27.5°	2113.3	2096.2	2064.6	2057.3	2045.2
30°	2040.3	2020.6	1984.1	1976.9	1967.0
32.5°	1962.1	1947.6	1908.5	1893.7	1883.9
35°	1886.4	1862.1	1823.0	1808.2	1796.1
37.5°	1801.0	1779.0	1739.9	1722.8	1710.7
40°	1713.3	1693.5	1654.5	1632.7	1622.9
42.5°	1627.8	1608.1	1569.3	1544.7	1530.2
45°	1535.1	1518.0	1481.2	1454.6	1444.8
47.5°	1444.8	1427.7	1388.5	1361.6	1347.1
50°	1349.5	1337.3	1303.1	1268.9	1256.8
52.5°	1256.8	1239.7	1208.1	1181.2	1164.1
55°	1161.7	1147.0	1117.8	1088.5	1076.3
57.5°	1066.5	1054.3	1022.5	993.2	983.3
60°	971.2	961.6	927.4	900.5	893.2
62.5°	878.5	861.4	837.1	812.8	802.9
65°	783.5	768.7	744.4	722.4	710.2
67.5°	685.8	673.4	651.7	634.6	624.8
70°	595.5	585.6	563.7	546.6	537.0
72.5°	502.8	493.0	480.8	463.7	456.5
75°	409.9	405.2	392.8	378.3	383.2
77.5°	327.0	317.2	312.3	305.0	297.7
80°	244.2	241.6	236.7	229.4	224.5
82.5°	166.0	166.0	163.6	153.8	153.8
85°	100.0	97.6	95.3	87.8	85.4
87.5°	44.0	39.1	34.2	26.9	24.4
90°	1.6	19.6	53.3	50.1	51.7
92.5°	33.8	45.7	47.4	49.0	49.0
95°	79.4	94.7	97.4	97.4	94.7
97.5°	132.2	146.3	152.4	152.4	152.4
100°	193.1	205.7	210.0	210.0	208.4
102.5°	257.4	266.6	272.6	274.3	272.6
105°	327.6	331.9	335.2	337.9	337.9
107.5°	397.2	403.7	403.7	404.9	397.2
110°	464.7	473.4	473.4	473.4	469.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	537.6	546.9	545.3	540.9	537.6
115°	609.4	618.2	615.5	613.8	609.4
117.5°	680.7	692.7	685.1	680.7	676.4
120°	752.5	764.5	752.5	752.5	747.6
122.5°	817.8	833.1	825.5	821.1	817.8
125°	886.4	900.0	895.7	890.8	889.2
127.5°	953.3	970.2	964.3	957.7	953.3
130°	1015.9	1035.5	1032.8	1029.6	1023.5
132.5°	1086.1	1101.4	1102.4	1094.9	1090.5
135°	1146.6	1163.3	1166.7	1165.0	1160.7
137.5°	1214.0	1227.6	1230.3	1229.2	1222.7
140°	1273.3	1286.9	1294.5	1294.5	1288.6
142.5°	1334.2	1347.9	1352.2	1353.8	1347.9
145°	1392.0	1402.8	1411.5	1413.2	1407.2
147.5°	1443.6	1457.3	1463.8	1466.5	1460.5
150°	1497.0	1506.2	1512.2	1517.1	1512.2
152.5°	1544.3	1553.6	1561.1	1567.2	1561.1
155°	1591.6	1595.9	1600.9	1608.5	1603.6
157.5°	1632.5	1635.7	1638.4	1649.3	1641.7
160°	1668.9	1672.2	1673.8	1683.0	1676.5
162.5°	1702.7	1702.7	1704.3	1714.6	1707.0
165°	1731.4	1729.8	1729.8	1740.7	1733.1
167.5°	1757.6	1752.7	1752.7	1763.6	1756.0
170°	1777.2	1772.9	1771.2	1782.1	1772.9
172.5°	1790.8	1786.4	1784.8	1795.7	1786.4
175°	1801.6	1797.3	1794.1	1804.9	1795.7
177.5°	1807.7	1803.3	1800.0	1809.3	1800.0
180°	1804.9	1804.9	1804.9	1804.9	1804.9



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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	10.03	10.95	10.93	11.87	13.05	9.60	10.52	10.50	11.44	12.62
	3H	11.69	12.52	12.61	13.45	14.65	11.22	12.05	12.13	12.98	14.18
	4H	12.28	13.06	13.21	14.00	15.22	11.81	12.59	12.74	13.53	14.74
	6H	12.69	13.41	13.63	14.35	15.58	12.21	12.93	13.15	13.87	15.10
	8H	12.79	13.48	13.74	14.44	15.67	12.32	13.00	13.27	13.96	15.19
	12H	12.85	13.50	13.80	14.45	15.70	12.36	13.02	13.32	13.97	15.22
4H	2H	10.50	11.28	11.43	12.21	13.43	10.15	10.93	11.09	11.87	13.08
	3H	12.37	13.02	13.31	13.99	15.22	11.98	12.63	12.92	13.59	14.82
	4H	13.09	13.68	14.04	14.64	15.90	12.68	13.28	13.64	14.24	15.49
	6H	13.61	14.12	14.57	15.10	16.36	13.20	13.71	14.16	14.69	15.95
	8H	13.76	14.24	14.73	15.22	16.48	13.35	13.83	14.32	14.80	16.07
	12H	13.83	14.27	14.82	15.26	16.54	13.41	13.84	14.40	14.84	16.11
8H	4H	13.29	13.77	14.26	14.75	16.01	12.93	13.41	13.90	14.39	15.65
	6H	13.92	14.32	14.92	15.34	16.61	13.56	13.96	14.56	14.98	16.24
	8H	14.15	14.50	15.15	15.51	16.79	13.78	14.13	14.78	15.14	16.42
	12H	14.28	14.59	15.29	15.59	16.92	13.90	14.20	14.90	15.21	16.54
12H	4H	13.28	13.71	14.27	14.71	15.98	12.93	13.36	13.91	14.35	15.63
	6H	13.95	14.31	14.96	15.31	16.60	13.60	13.95	14.61	14.96	16.25
	8H	14.20	14.51	15.21	15.51	16.84	13.84	14.15	14.85	15.15	16.48