

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: P926952

Luminaire Tested: DFN2DIP-HX4F0-060D060US830-FLLONL

Issue Date: 12/12/2024

**Test Information**

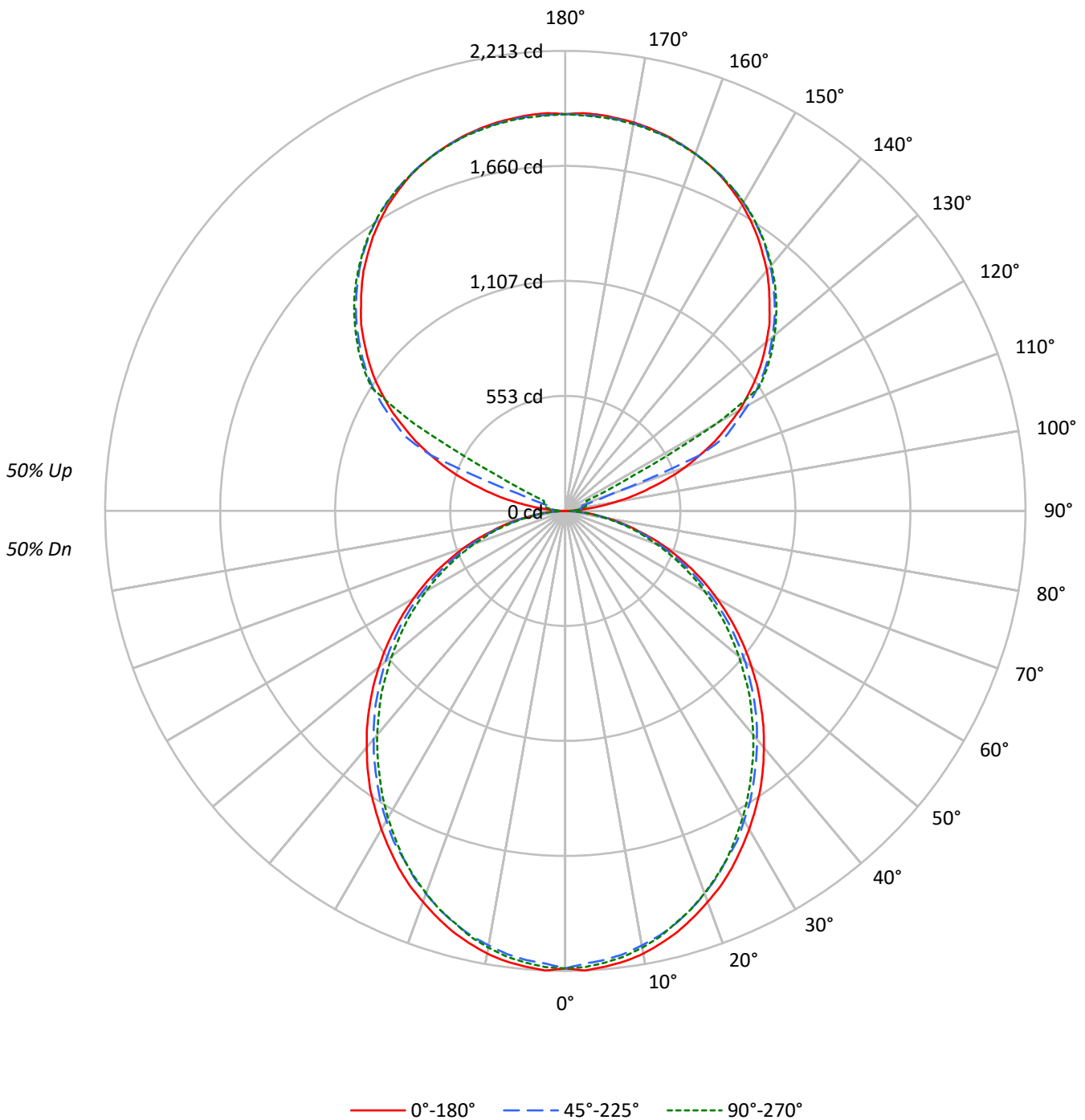
Test Method: LM-79-2019  
Report Number: P926952  
REPORT IS A COMBINATION OF REPORTS P900859 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-060D060US830-FLONL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11196.9 lumens  
Efficiency: N/A  
Efficacy: 114.0 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): 98.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	56	56	56	50
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47	47	47	47	42
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40	40	40	40	35
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34	34	34	34	30
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29	29	29	29	26
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26	26	26	26	22
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23	23	23	23	20
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20	20	20	20	17
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18	18	18	18	16
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16	16	16	16	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	15	15	15	13

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

	0°	45°	90°
0°	1636	1636	1636
5°	1639	1613	1624
10°	1626	1592	1602
15°	1602	1566	1568
20°	1570	1530	1533
25°	1538	1486	1492
30°	1498	1446	1441
35°	1460	1398	1386
40°	1413	1350	1334
45°	1366	1302	1281
50°	1315	1251	1219
55°	1262	1193	1163
60°	1201	1123	1098
65°	1136	1051	1021
70°	1052	964	939
75°	935	859	863
80°	796	725	718
85°	577	494	478

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1366 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	207.1	1.8
10°-20°	582.7	5.2
20°-30°	856.3	7.6
30°-40°	994.6	8.9
40°-50°	993.4	8.9
50°-60°	866.2	7.7
60°-70°	640.3	5.7
70°-80°	362.3	3.2
80°-90°	99.0	0.9
90°-100°	62.9	0.6
100°-110°	234.6	2.1
110°-120°	622.2	5.6
120°-130°	1031.9	9.2
130°-140°	1096.2	9.8
140°-150°	1018.8	9.1
150°-160°	819.1	7.3
160°-170°	527.8	4.7
170°-180°	181.7	1.6
0°-30°	1646.2	14.7
0°-40°	2640.7	23.6
0°-60°	4500.3	40.2
0°-90°	5601.8	50.0
90°-120°	919.7	8.2
90°-150°	4066.6	36.3
90°-180°	5595.0	50.0
0°-180°	11196.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2200	2200	2200	2200	2200	
5°	2200	2192	2169	2186	2182	209
15°	2095	2082	2054	2063	2052	590
25°	1896	1879	1843	1847	1843	872
35°	1636	1614	1581	1568	1557	1021
45°	1331	1316	1284	1261	1253	1027
55°	1007	994	969	944	933	901
65°	679	666	645	626	616	672
75°	355	351	340	328	332	379
85°	87	85	83	76	74	97
90°	1	17	28	35	37	10
95°	90	44	54	61	59	106
105°	420	461	84	99	105	449
115°	794	818	852	213	113	782
125°	1123	1141	1167	1177	1181	1001
135°	1389	1412	1424	1438	1435	1073
145°	1612	1610	1634	1643	1636	1008
155°	1774	1762	1779	1787	1776	818
165°	1870	1862	1866	1875	1866	528
175°	1913	1903	1906	1915	1902	182
180°	1908	1908	1908	1908	1908	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2200.4	2200.4	2200.4	2200.4	2200.4
2.5°	2213.2	2202.6	2179.2	2200.4	2196.3
5°	2200.4	2192.1	2168.7	2185.6	2181.5
7.5°	2185.6	2173.0	2149.7	2166.7	2162.5
10°	2162.5	2147.7	2122.2	2139.1	2132.8
12.5°	2130.6	2118.0	2092.6	2103.2	2098.9
15°	2094.6	2082.1	2054.5	2063.0	2052.5
17.5°	2050.2	2037.7	2010.1	2020.5	2010.1
20°	2001.5	1989.0	1959.3	1965.6	1957.3
22.5°	1953.0	1933.9	1906.3	1906.3	1902.1
25°	1895.7	1879.0	1843.0	1847.0	1843.0
27.5°	1832.2	1817.4	1790.0	1783.8	1773.2
30°	1769.0	1751.8	1720.3	1713.9	1705.4
32.5°	1701.1	1688.6	1654.7	1641.8	1633.4
35°	1635.6	1614.5	1580.6	1567.8	1557.2
37.5°	1561.5	1542.4	1508.6	1493.7	1483.1
40°	1485.4	1468.3	1434.5	1415.6	1407.1
42.5°	1411.3	1394.2	1360.6	1339.3	1326.7
45°	1331.0	1316.1	1284.3	1261.2	1252.6
47.5°	1252.6	1237.8	1203.9	1180.6	1167.9
50°	1170.0	1159.5	1129.9	1100.2	1089.6
52.5°	1089.6	1074.8	1047.4	1024.1	1009.3
55°	1007.2	994.4	969.1	943.7	933.2
57.5°	924.7	914.1	886.5	861.2	852.6
60°	842.0	833.7	804.1	780.8	774.5
62.5°	761.6	746.8	725.7	704.6	696.1
65°	679.3	666.5	645.4	626.3	615.7
67.5°	594.6	583.9	565.0	550.2	541.7
70°	516.3	507.8	488.7	473.9	465.6
72.5°	435.9	427.4	416.9	402.1	395.8
75°	355.3	351.4	340.5	328.0	332.2
77.5°	283.5	275.0	270.7	264.5	258.2
80°	211.7	209.4	205.2	198.9	194.6
82.5°	143.9	143.9	141.8	133.4	133.4
85°	86.6	84.6	82.6	76.1	74.1
87.5°	38.2	33.9	29.6	23.4	21.1
90°	1.3	16.6	27.5	34.6	37.2
92.5°	34.6	29.0	33.1	35.9	37.2
95°	89.7	44.1	53.8	60.9	59.4
97.5°	161.5	48.4	70.3	74.6	76.0
100°	244.5	55.2	78.7	89.7	92.5
102.5°	335.5	332.9	81.5	96.6	100.8
105°	419.8	461.3	84.3	99.3	105.0
107.5°	517.9	552.3	87.1	102.2	107.7
110°	611.9	640.7	241.8	103.7	109.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	700.2	725.0	701.5	106.2	110.6
115°	794.1	817.5	852.1	212.7	113.3
117.5°	875.5	903.1	926.7	729.1	367.3
120°	966.7	987.4	1012.3	1028.8	842.4
122.5°	1043.9	1066.1	1093.8	1102.0	1103.5
125°	1122.7	1140.7	1166.9	1176.6	1180.7
127.5°	1194.5	1213.8	1234.7	1248.4	1249.8
130°	1262.2	1284.3	1299.4	1314.7	1313.4
132.5°	1331.3	1349.3	1364.4	1376.8	1375.5
135°	1389.3	1411.5	1423.7	1437.7	1434.9
137.5°	1449.9	1466.5	1480.5	1494.2	1490.2
140°	1509.3	1520.5	1535.6	1548.1	1541.2
142.5°	1559.2	1568.9	1586.8	1597.7	1590.8
145°	1611.7	1610.2	1633.6	1643.3	1636.5
147.5°	1657.1	1653.0	1676.4	1683.3	1677.9
150°	1701.4	1691.7	1713.8	1722.0	1715.2
152.5°	1738.6	1727.6	1748.2	1756.6	1746.9
155°	1774.5	1762.2	1778.8	1787.0	1776.0
157.5°	1803.6	1792.5	1805.0	1814.7	1803.6
160°	1828.4	1820.1	1828.4	1836.6	1827.0
162.5°	1850.4	1842.2	1849.1	1858.8	1846.4
165°	1869.8	1861.6	1865.7	1875.4	1865.7
167.5°	1885.0	1876.7	1880.9	1890.7	1878.1
170°	1897.5	1889.1	1892.0	1901.6	1889.1
172.5°	1905.7	1897.5	1900.3	1910.0	1897.5
175°	1912.6	1902.9	1905.7	1915.3	1901.6
177.5°	1915.3	1905.7	1907.1	1916.9	1904.4
180°	1908.5	1908.5	1908.5	1908.5	1908.5



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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	8.99	9.85	9.94	10.82	12.09	8.55	9.42	9.51	10.39	11.66
	3H	10.65	11.42	11.62	12.40	13.69	10.17	10.95	11.14	11.93	13.22
	4H	11.24	11.97	12.22	12.95	14.25	10.76	11.49	11.74	12.48	13.78
	6H	11.64	12.31	12.63	13.30	14.62	11.16	11.83	12.15	12.83	14.14
	8H	11.74	12.38	12.74	13.39	14.70	11.27	11.91	12.27	12.92	14.23
	12H	11.79	12.40	12.79	13.40	14.74	11.31	11.92	12.31	12.92	14.26
4H	2H	9.45	10.18	10.44	11.17	12.47	9.10	9.84	10.09	10.82	12.12
	3H	11.32	11.93	12.31	12.94	14.26	10.92	11.53	11.92	12.55	13.86
	4H	12.03	12.59	13.04	13.60	14.94	11.63	12.18	12.63	13.19	14.53
	6H	12.55	13.03	13.56	14.06	15.39	12.14	12.62	13.15	13.65	14.99
	8H	12.70	13.15	13.72	14.17	15.52	12.29	12.73	13.30	13.76	15.11
	12H	12.77	13.18	13.81	14.22	15.57	12.35	12.75	13.39	13.79	15.15
8H	4H	12.23	12.68	13.25	13.70	15.05	11.87	12.32	12.89	13.34	14.69
	6H	12.86	13.23	13.90	14.30	15.65	12.50	12.87	13.54	13.94	15.28
	8H	13.08	13.41	14.13	14.46	15.83	12.71	13.04	13.76	14.09	15.46
	12H	13.21	13.50	14.27	14.55	15.96	12.83	13.12	13.88	14.16	15.57
12H	4H	12.21	12.62	13.25	13.66	15.02	11.86	12.27	12.90	13.31	14.66
	6H	12.89	13.22	13.94	14.27	15.64	12.54	12.87	13.59	13.92	15.29
	8H	13.13	13.42	14.19	14.47	15.88	12.78	13.06	13.83	14.11	15.52