

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: P927060

Luminaire Tested: DFN2DIP-HX4F0-090D060US830-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927060
REPORT IS A COMBINATION OF REPORTS P900865 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D060US830-FLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

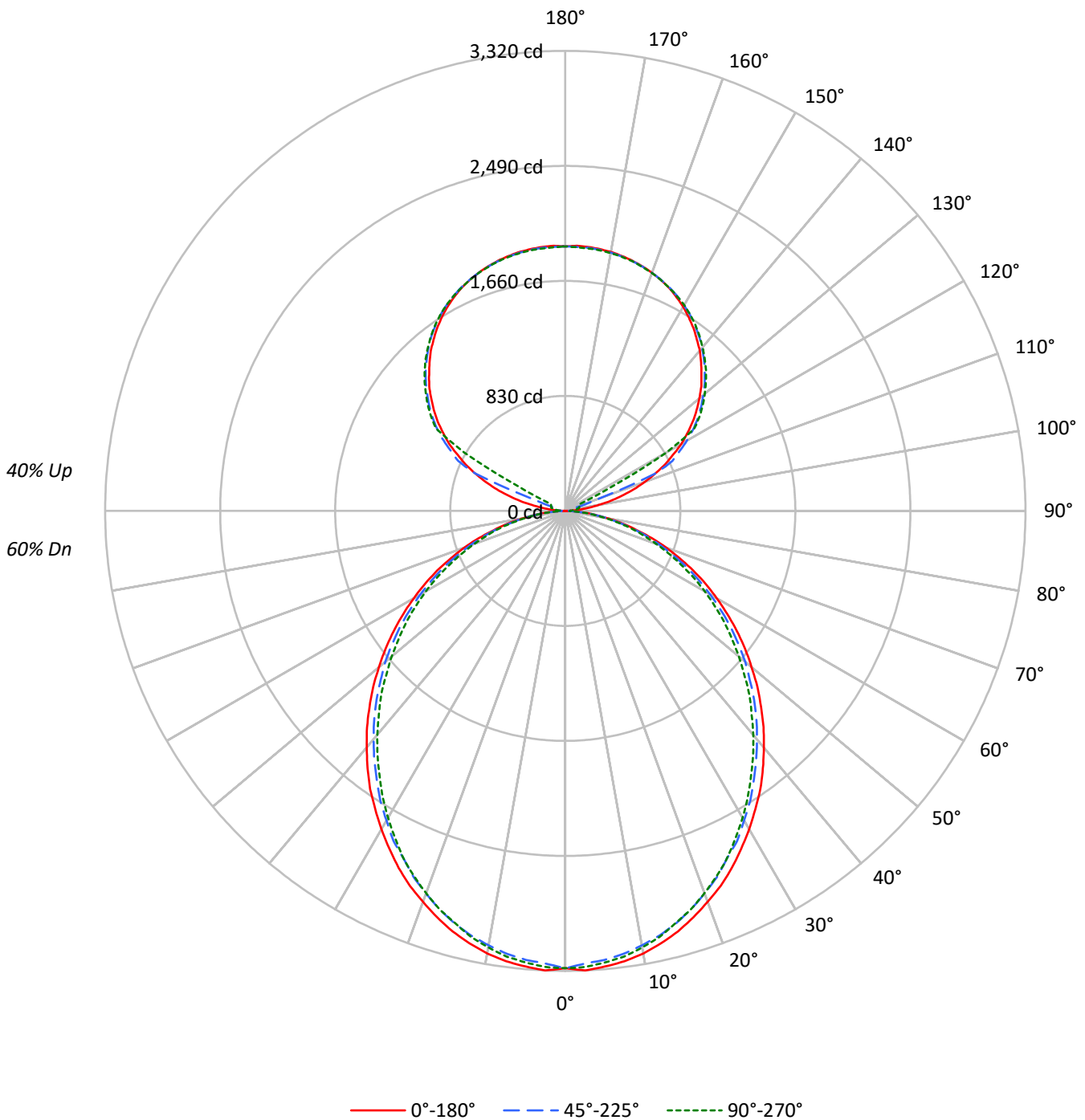
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13996.1 lumens
Efficiency: N/A
Efficacy: 105.5 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: Semi-Direct

Input Watts (W): 132.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
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	102	102	102	102	89	89	89	77	77	77	65	65	65	65	65	65	60
1	100	96	92	88	93	90	86	83	78	75	73	67	66	64	58	56	55	55	55	55	51
2	91	84	77	72	85	78	73	68	68	64	61	59	56	53	51	49	47	47	47	47	42
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	45	42	40	40	40	40	36
4	76	65	57	51	71	61	54	48	54	48	44	47	42	39	40	37	34	34	34	34	31
5	70	58	50	44	65	55	47	42	48	42	38	42	37	34	36	33	30	30	30	30	27
6	64	52	44	38	60	49	42	36	43	37	33	38	33	30	33	29	26	26	26	26	24
7	60	47	39	33	56	44	37	32	39	33	29	35	30	26	30	26	23	23	23	23	21
8	55	43	35	30	52	40	33	28	36	30	26	32	27	23	28	24	21	21	21	21	19
9	52	39	32	26	48	37	30	25	33	27	23	29	24	21	26	22	19	19	19	19	17
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	24	20	17	17	17	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2454	2454	2454
5°	2458	2420	2436
10°	2439	2388	2404
15°	2403	2349	2352
20°	2355	2294	2299
25°	2307	2229	2239
30°	2246	2169	2161
35°	2190	2097	2079
40°	2119	2025	2001
45°	2049	1953	1922
50°	1973	1877	1829
55°	1893	1789	1744
60°	1802	1685	1647
65°	1703	1577	1532
70°	1578	1446	1409
75°	1403	1288	1295
80°	1194	1088	1078
85°	867	741	717

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2049 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	310.7	2.2
10°-20°	874.1	6.2
20°-30°	1284.5	9.2
30°-40°	1491.9	10.7
40°-50°	1490.0	10.6
50°-60°	1299.3	9.3
60°-70°	960.4	6.9
70°-80°	543.4	3.9
80°-90°	146.8	1.0
90°-100°	62.9	0.4
100°-110°	234.6	1.7
110°-120°	622.2	4.4
120°-130°	1031.9	7.4
130°-140°	1096.2	7.8
140°-150°	1018.8	7.3
150°-160°	819.1	5.9
160°-170°	527.8	3.8
170°-180°	181.7	1.3
0°-30°	2469.2	17.6
0°-40°	3961.1	28.3
0°-60°	6750.4	48.2
0°-90°	8401.0	60.0
90°-120°	919.7	6.6
90°-150°	4066.6	29.1
90°-180°	5595.0	40.0
0°-180°	13996.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3300	3300	3300	3300	3300	
5°	3300	3288	3253	3278	3272	313
15°	3142	3123	3082	3094	3079	885
25°	2844	2818	2764	2771	2764	1308
35°	2453	2422	2371	2352	2336	1532
45°	1996	1974	1926	1892	1879	1541
55°	1511	1492	1454	1416	1400	1351
65°	1019	1000	968	940	924	1007
75°	533	527	511	492	498	569
85°	130	127	124	114	111	145
90°	1	17	28	35	37	13
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°	3300.5	3300.5	3300.5	3300.5	3300.5
2.5°	3319.8	3303.9	3269.0	3300.5	3294.5
5°	3300.5	3288.1	3253.1	3278.4	3272.3
7.5°	3278.4	3259.5	3224.5	3250.1	3243.7
10°	3243.7	3221.5	3183.4	3208.6	3199.2
12.5°	3195.8	3177.0	3139.0	3154.7	3148.4
15°	3142.0	3123.2	3081.7	3094.5	3078.7
17.5°	3075.3	3056.4	3015.1	3030.9	3015.1
20°	3002.2	2983.4	2938.9	2948.3	2935.9
22.5°	2929.5	2900.9	2859.5	2859.5	2853.0
25°	2843.6	2818.4	2764.5	2770.6	2764.5
27.5°	2748.3	2726.1	2685.1	2675.7	2659.8
30°	2653.4	2627.8	2580.3	2570.9	2558.1
32.5°	2551.7	2532.9	2482.0	2462.8	2450.0
35°	2453.4	2421.8	2370.9	2351.7	2335.9
37.5°	2342.3	2313.6	2262.8	2240.6	2224.8
40°	2228.1	2202.5	2151.6	2123.4	2110.6
42.5°	2116.9	2091.4	2040.9	2008.9	1990.1
45°	1996.4	1974.3	1926.4	1891.7	1879.0
47.5°	1879.0	1856.7	1805.8	1770.9	1752.0
50°	1755.0	1739.2	1694.7	1650.3	1634.5
52.5°	1634.5	1612.2	1571.1	1536.2	1513.9
55°	1510.9	1491.7	1453.6	1415.6	1399.8
57.5°	1387.0	1371.1	1329.8	1291.7	1278.9
60°	1263.0	1250.6	1206.1	1171.2	1161.7
62.5°	1142.5	1120.3	1088.6	1057.0	1044.2
65°	1018.9	999.7	968.0	939.5	923.6
67.5°	892.0	875.9	847.5	825.3	812.5
70°	774.5	761.6	733.1	710.8	698.4
72.5°	653.9	641.1	625.3	603.1	593.7
75°	533.1	527.0	510.8	492.0	498.4
77.5°	425.3	412.5	406.1	396.7	387.3
80°	317.5	314.1	307.7	298.3	292.0
82.5°	215.8	215.8	212.8	200.0	200.0
85°	130.0	127.0	123.9	114.1	111.1
87.5°	57.2	50.8	44.5	35.1	31.7
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	11.27	12.23	12.13	13.12	14.24	10.84	11.80	11.70	12.68	13.80
	3H	12.94	13.80	13.82	14.70	15.84	12.46	13.33	13.34	14.22	15.37
	4H	13.53	14.34	14.42	15.25	16.40	13.06	13.87	13.95	14.77	15.93
	6H	13.94	14.69	14.84	15.60	16.77	13.46	14.21	14.37	15.12	16.29
	8H	14.04	14.76	14.96	15.69	16.85	13.57	14.28	14.48	15.21	16.38
	12H	14.10	14.78	15.02	15.70	16.89	13.61	14.30	14.53	15.22	16.41
4H	2H	11.74	12.56	12.64	13.46	14.62	11.40	12.21	12.30	13.11	14.27
	3H	13.62	14.30	14.53	15.23	16.40	13.23	13.91	14.14	14.84	16.01
	4H	14.34	14.96	15.26	15.89	17.08	13.93	14.55	14.85	15.48	16.68
	6H	14.86	15.39	15.79	16.35	17.55	14.45	14.99	15.39	15.94	17.14
	8H	15.01	15.51	15.95	16.46	17.67	14.60	15.10	15.54	16.05	17.26
	12H	15.09	15.54	16.05	16.51	17.72	14.67	15.12	15.63	16.08	17.30
8H	4H	14.54	15.04	15.48	15.99	17.20	14.18	14.68	15.12	15.63	16.84
	6H	15.18	15.59	16.14	16.58	17.79	14.82	15.23	15.78	16.22	17.43
	8H	15.40	15.77	16.38	16.75	17.98	15.03	15.40	16.01	16.38	17.61
	12H	15.54	15.86	16.52	16.83	18.11	15.15	15.48	16.13	16.45	17.73
12H	4H	14.53	14.98	15.49	15.95	17.17	14.18	14.63	15.14	15.60	16.81
	6H	15.21	15.58	16.18	16.56	17.78	14.86	15.23	15.83	16.20	17.43
	8H	15.46	15.78	16.43	16.75	18.03	15.10	15.42	16.08	16.40	17.67