

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: P927708

Luminaire Tested: DFN2DIP-HX4F0-090D060US840-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927708
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-HX4F0-090D060US840-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

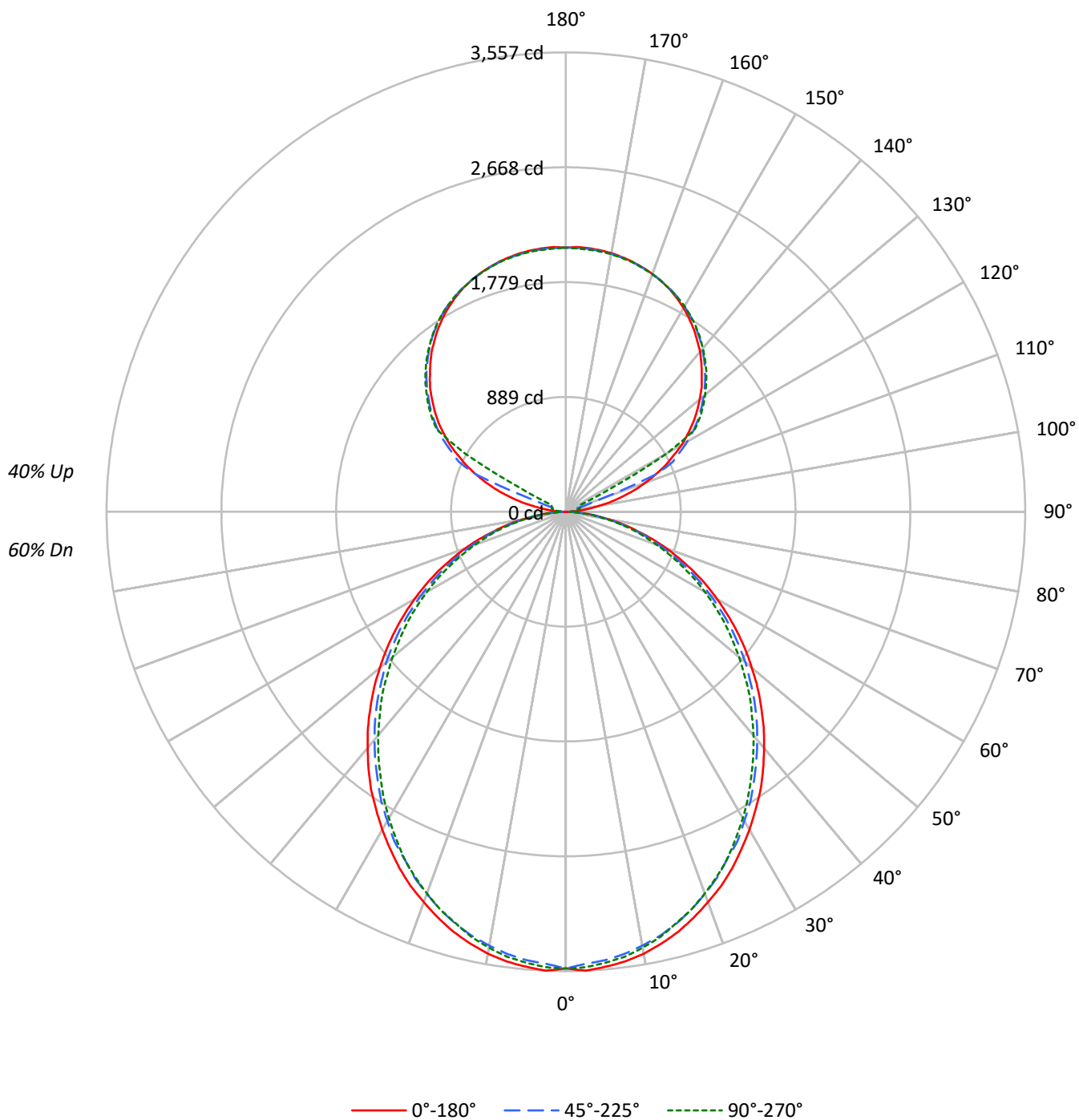
Lumens per Lamp: N/A
Luminaire Lumens: 14995.5 lumens
Efficiency: N/A
Efficacy: 113.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	110	110	110	110	102	102	102	102	89	89	89	77	77	77	65	65	65
1	100	96	92	88	93	90	86	83	78	75	73	67	66	64	58	56	55
2	91	84	77	72	85	78	73	68	68	64	61	59	56	53	51	49	47
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	45	42	40
4	76	65	57	51	71	61	54	48	54	48	44	47	42	39	40	37	34
5	70	58	50	44	65	55	47	42	48	42	38	42	37	34	36	33	30
6	64	52	44	38	60	49	42	36	43	37	33	38	33	30	33	29	26
7	60	47	39	33	56	44	37	32	39	33	29	35	30	26	30	26	23
8	55	43	35	30	52	40	33	28	36	30	26	32	27	23	28	24	21
9	52	39	32	26	48	37	30	25	33	27	23	29	24	21	26	22	19
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	24	20	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2629	2629	2629
5°	2634	2593	2610
10°	2613	2558	2575
15°	2575	2517	2520
20°	2523	2458	2464
25°	2471	2389	2398
30°	2407	2324	2315
35°	2346	2247	2228
40°	2271	2170	2144
45°	2196	2092	2059
50°	2113	2011	1960
55°	2028	1917	1869
60°	1931	1805	1765
65°	1825	1690	1642
70°	1690	1549	1510
75°	1503	1380	1388
80°	1279	1165	1155
85°	929	795	768

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2196 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	332.8	2.2
10°-20°	936.5	6.2
20°-30°	1376.2	9.2
30°-40°	1598.4	10.7
40°-50°	1596.4	10.6
50°-60°	1392.0	9.3
60°-70°	1029.0	6.9
70°-80°	582.2	3.9
80°-90°	157.3	1.0
90°-100°	67.4	0.4
100°-110°	251.3	1.7
110°-120°	666.6	4.4
120°-130°	1105.6	7.4
130°-140°	1174.4	7.8
140°-150°	1091.5	7.3
150°-160°	877.5	5.9
160°-170°	565.5	3.8
170°-180°	194.6	1.3
0°-30°	2645.5	17.6
0°-40°	4244.0	28.3
0°-60°	7232.4	48.2
0°-90°	9000.9	60.0
90°-120°	985.4	6.6
90°-150°	4357.0	29.1
90°-180°	5995.0	40.0
0°-180°	14995.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3536	3536	3536	3536	3536	
5°	3536	3523	3485	3512	3506	336
15°	3366	3346	3302	3316	3298	948
25°	3047	3020	2962	2968	2962	1402
35°	2629	2595	2540	2520	2503	1641
45°	2139	2115	2064	2027	2013	1651
55°	1619	1598	1557	1517	1500	1447
65°	1092	1071	1037	1007	990	1079
75°	571	565	547	527	534	610
85°	139	136	133	122	119	155
90°	1	18	30	37	40	14
95°	96	47	58	65	64	114
105°	450	494	90	106	112	481
115°	851	876	913	228	121	838
125°	1203	1222	1250	1261	1265	1073
135°	1488	1512	1525	1540	1537	1150
145°	1727	1725	1750	1761	1753	1080
155°	1901	1888	1906	1915	1903	876
165°	2003	1995	1999	2009	1999	566
175°	2049	2039	2042	2052	2037	195
180°	2045	2045	2045	2045	2045	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3536.2	3536.2	3536.2	3536.2	3536.2
2.5°	3556.8	3539.9	3502.4	3536.2	3529.8
5°	3536.2	3522.9	3485.4	3512.5	3505.9
7.5°	3512.5	3492.3	3454.7	3482.2	3475.3
10°	3475.3	3451.5	3410.7	3437.8	3427.7
12.5°	3424.0	3403.8	3363.1	3380.0	3373.2
15°	3366.4	3346.2	3301.7	3315.5	3298.5
17.5°	3294.9	3274.7	3230.4	3247.3	3230.4
20°	3216.6	3196.4	3148.8	3158.9	3145.5
22.5°	3138.7	3108.1	3063.6	3063.6	3056.8
25°	3046.7	3019.6	2961.9	2968.4	2961.9
27.5°	2944.6	2920.7	2876.8	2866.7	2849.8
30°	2842.9	2815.4	2764.5	2754.4	2740.8
32.5°	2733.9	2713.7	2659.2	2638.7	2625.0
35°	2628.6	2594.7	2540.2	2519.7	2502.7
37.5°	2509.6	2478.9	2424.3	2400.6	2383.6
40°	2387.2	2359.8	2305.3	2275.0	2261.3
42.5°	2268.1	2240.7	2186.6	2152.4	2132.2
45°	2139.0	2115.2	2063.9	2026.8	2013.1
47.5°	2013.1	1989.3	1934.8	1897.3	1877.1
50°	1880.3	1863.4	1815.7	1768.2	1751.2
52.5°	1751.2	1727.4	1683.3	1645.9	1622.0
55°	1618.8	1598.2	1557.4	1516.7	1499.8
57.5°	1486.0	1469.1	1424.7	1383.9	1370.2
60°	1353.2	1339.9	1292.2	1254.8	1244.7
62.5°	1224.1	1200.2	1166.3	1132.5	1118.8
65°	1091.7	1071.1	1037.2	1006.6	989.6
67.5°	955.7	938.4	908.0	884.3	870.5
70°	829.8	816.0	785.4	761.6	748.3
72.5°	700.6	686.9	669.9	646.2	636.1
75°	571.1	564.6	547.3	527.1	534.0
77.5°	455.6	442.0	435.1	425.0	414.9
80°	340.2	336.6	329.7	319.6	312.8
82.5°	231.2	231.2	228.0	214.3	214.3
85°	139.3	136.0	132.8	122.3	119.1
87.5°	61.3	54.4	47.7	37.6	33.9
90°	1.4	17.8	29.5	37.1	39.9
92.5°	37.1	31.1	35.4	38.5	39.9
95°	96.1	47.3	57.7	65.2	63.6
97.5°	173.1	51.8	75.3	80.0	81.4
100°	261.9	59.2	84.3	96.1	99.1
102.5°	359.5	356.7	87.3	103.5	108.0
105°	449.8	494.2	90.3	106.4	112.5
107.5°	554.9	591.7	93.3	109.5	115.4
110°	655.6	686.5	259.0	111.1	116.8

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	750.2	776.7	751.6	113.8	118.4
115°	850.8	875.9	913.0	227.9	121.4
117.5°	938.0	967.6	992.8	781.2	393.5
120°	1035.8	1057.9	1084.6	1102.3	902.6
122.5°	1118.5	1142.2	1171.9	1180.7	1182.3
125°	1202.9	1222.2	1250.2	1260.6	1265.0
127.5°	1279.8	1300.5	1322.8	1337.6	1339.0
130°	1352.3	1376.1	1392.2	1408.6	1407.2
132.5°	1426.3	1445.6	1461.8	1475.1	1473.7
135°	1488.5	1512.3	1525.4	1540.3	1537.3
137.5°	1553.5	1571.2	1586.2	1600.9	1596.6
140°	1617.1	1629.1	1645.3	1658.6	1651.2
142.5°	1670.5	1680.9	1700.1	1711.8	1704.4
145°	1726.8	1725.1	1750.3	1760.7	1753.3
147.5°	1775.4	1771.0	1796.1	1803.5	1797.7
150°	1822.9	1812.5	1836.2	1845.0	1837.6
152.5°	1862.8	1851.0	1873.1	1882.1	1871.7
155°	1901.3	1888.0	1905.8	1914.6	1902.8
157.5°	1932.4	1920.5	1933.9	1944.3	1932.4
160°	1959.0	1950.0	1959.0	1967.8	1957.5
162.5°	1982.5	1973.8	1981.1	1991.5	1978.2
165°	2003.3	1994.6	1998.9	2009.3	1998.9
167.5°	2019.6	2010.7	2015.3	2025.7	2012.2
170°	2033.0	2024.0	2027.1	2037.4	2024.0
172.5°	2041.8	2033.0	2036.0	2046.4	2033.0
175°	2049.2	2038.8	2041.8	2052.1	2037.4
177.5°	2052.1	2041.8	2043.3	2053.7	2040.4
180°	2044.7	2044.7	2044.7	2044.7	2044.7

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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	11.51	12.47	12.37	13.36	14.48	11.08	12.04	11.94	12.92	14.04
	3H	13.18	14.04	14.06	14.93	16.08	12.70	13.57	13.58	14.46	15.61
	4H	13.77	14.58	14.66	15.49	16.64	13.30	14.11	14.19	15.01	16.17
	6H	14.18	14.93	15.08	15.84	17.01	13.70	14.45	14.61	15.36	16.53
	8H	14.28	15.00	15.20	15.93	17.09	13.81	14.52	14.72	15.45	16.62
	12H	14.34	15.02	15.25	15.94	17.13	13.85	14.53	14.77	15.46	16.65
4H	2H	11.98	12.80	12.88	13.70	14.86	11.64	12.45	12.54	13.35	14.51
	3H	13.86	14.54	14.77	15.47	16.64	13.47	14.14	14.38	15.08	16.25
	4H	14.58	15.20	15.50	16.13	17.32	14.17	14.79	15.09	15.72	16.92
	6H	15.10	15.63	16.03	16.59	17.79	14.69	15.22	15.62	16.18	17.38
	8H	15.25	15.75	16.19	16.70	17.91	14.84	15.34	15.78	16.29	17.50
	12H	15.33	15.78	16.29	16.75	17.96	14.91	15.36	15.86	16.32	17.54
8H	4H	14.78	15.28	15.72	16.23	17.44	14.42	14.92	15.36	15.87	17.08
	6H	15.42	15.83	16.38	16.82	18.03	15.06	15.47	16.02	16.46	17.67
	8H	15.64	16.01	16.62	16.99	18.22	15.27	15.64	16.25	16.62	17.85
	12H	15.78	16.10	16.76	17.07	18.35	15.39	15.72	16.37	16.69	17.97
12H	4H	14.77	15.22	15.73	16.19	17.41	14.42	14.87	15.38	15.84	17.05
	6H	15.45	15.82	16.42	16.80	18.02	15.10	15.47	16.07	16.44	17.67
	8H	15.70	16.02	16.67	16.99	18.27	15.34	15.66	16.32	16.64	17.91