

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: P926975

Luminaire Tested: DFN2DIP-HX4F0-060D120US830-FLLFLL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P926975
REPORT IS A COMBINATION OF REPORTS P899447 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-060D120US830-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

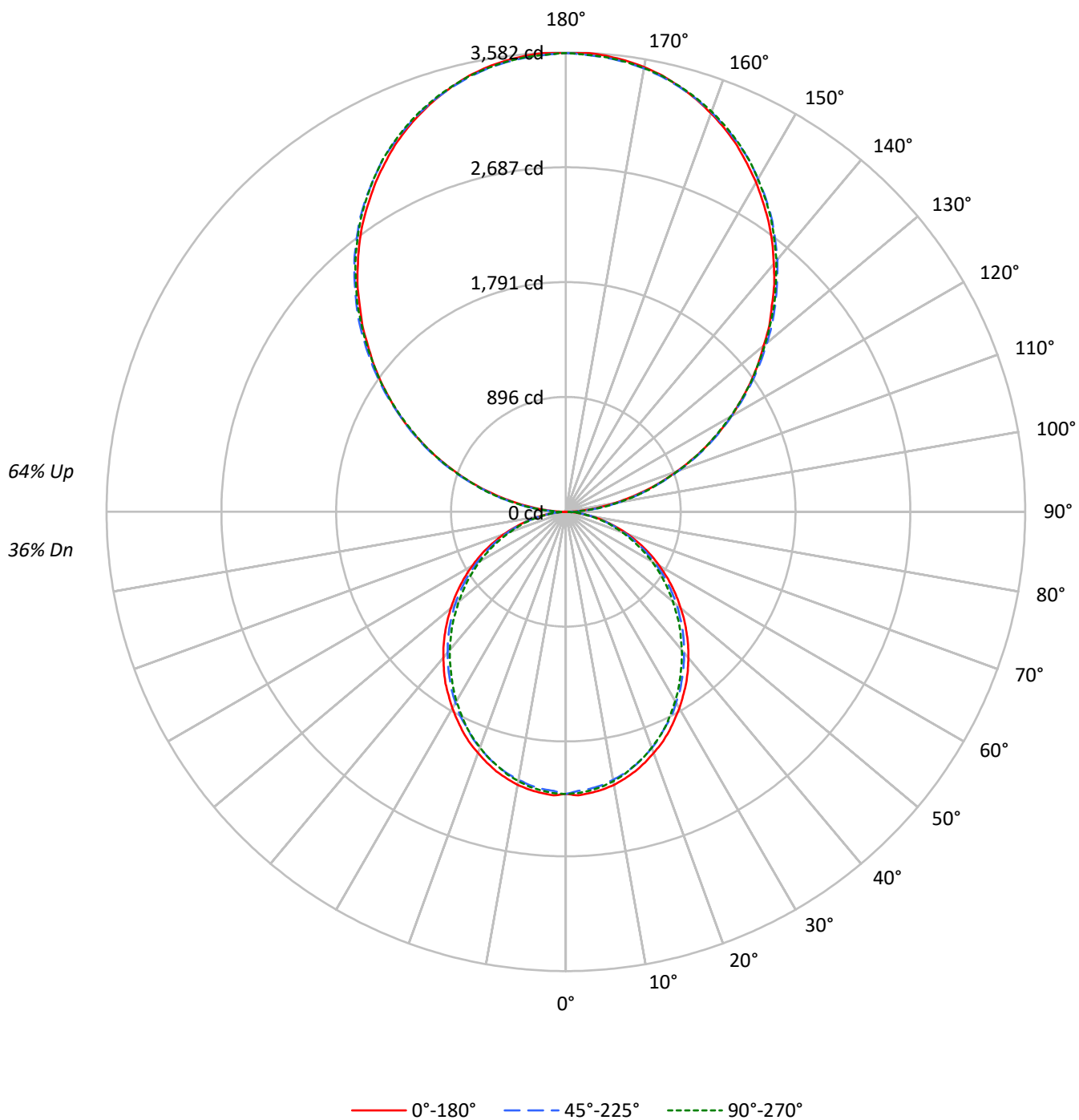
Lumens per Lamp: N/A
Luminaire Lumens: 15607.8 lumens
Efficiency: N/A
Efficacy: 104.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 150.1
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
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	104	104	104	104	94	94	94	94	76	76	76	59	59	59	43	43	43
1	95	90	87	83	85	82	79	76	66	64	62	52	50	49	38	37	36
2	86	79	73	68	78	72	66	62	58	54	51	45	43	41	34	32	31
3	79	69	62	56	71	63	57	52	51	47	43	40	37	34	30	28	26
4	72	61	54	48	65	56	49	44	45	40	37	36	32	29	27	24	22
5	66	54	47	41	59	50	43	38	40	35	31	32	28	25	24	22	20
6	61	49	41	35	55	45	38	33	36	31	27	29	25	22	22	19	17
7	56	44	36	31	50	40	33	28	33	28	24	26	22	20	20	17	15
8	52	40	32	27	47	36	30	25	30	25	21	24	20	17	18	16	14
9	48	36	29	24	44	33	27	22	27	22	19	22	18	16	17	14	12
10	45	33	26	21	41	30	24	20	25	20	17	20	17	14	16	13	11

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: 90°

Vertical Angle: 90°

Luminance: 2696 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	207.1	1.3
10°-20°	582.7	3.7
20°-30°	856.3	5.5
30°-40°	994.6	6.4
40°-50°	993.4	6.4
50°-60°	866.2	5.5
60°-70°	640.3	4.1
70°-80°	362.3	2.3
80°-90°	105.8	0.7
90°-100°	221.3	1.4
100°-110°	703.3	4.5
110°-120°	1203.5	7.7
120°-130°	1582.8	10.1
130°-140°	1776.6	11.4
140°-150°	1742.2	11.2
150°-160°	1461.5	9.4
160°-170°	969.2	6.2
170°-180°	338.8	2.2
0°-30°	1646.2	10.5
0°-40°	2640.7	16.9
0°-60°	4500.3	28.8
0°-90°	5608.6	35.9
90°-120°	2128.1	13.6
90°-150°	7229.8	46.3
90°-180°	9999.0	64.1
0°-180°	15607.8	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°	3	39	106	99	102	15
95°	157	188	193	193	188	175
105°	649	658	664	670	670	685
115°	1208	1225	1220	1216	1208	1195
125°	1757	1784	1775	1765	1762	1570
135°	2272	2306	2312	2309	2300	1756
145°	2758	2780	2797	2800	2789	1724
155°	3154	3163	3172	3188	3178	1452
165°	3431	3428	3428	3450	3435	968
175°	3570	3562	3555	3577	3559	339
180°	3577	3577	3577	3577	3577	

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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°	3.2	38.8	105.7	99.2	102.4
92.5°	66.8	90.6	93.8	97.1	97.1
95°	157.4	187.7	193.0	193.0	187.7
97.5°	262.0	290.1	302.0	302.0	302.0
100°	382.8	407.6	416.2	416.2	413.0
102.5°	510.1	528.4	540.2	543.5	540.2
105°	649.2	657.8	664.3	669.6	669.6
107.5°	787.2	800.2	800.2	802.3	787.2
110°	920.9	938.2	938.2	938.2	929.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1065.4	1083.8	1080.5	1071.9	1065.4
115°	1207.7	1225.1	1219.6	1216.4	1207.7
117.5°	1349.0	1372.8	1357.7	1349.0	1340.4
120°	1491.4	1515.1	1491.4	1491.4	1481.7
122.5°	1620.8	1651.0	1635.9	1627.2	1620.8
125°	1756.6	1783.6	1775.0	1765.3	1762.0
127.5°	1889.3	1922.7	1910.8	1897.9	1889.3
130°	2013.3	2052.1	2046.7	2040.2	2028.4
132.5°	2152.4	2182.6	2184.7	2169.6	2161.1
135°	2272.1	2305.5	2312.0	2308.7	2300.2
137.5°	2405.8	2432.8	2438.2	2436.0	2423.1
140°	2523.4	2550.3	2565.4	2565.4	2553.5
142.5°	2644.2	2671.1	2679.7	2682.9	2671.1
145°	2758.4	2780.0	2797.2	2800.5	2788.7
147.5°	2860.9	2887.8	2900.8	2906.2	2894.3
150°	2966.6	2984.9	2996.8	3006.5	2996.8
152.5°	3060.4	3078.7	3093.9	3105.7	3093.9
155°	3154.2	3162.8	3172.5	3187.6	3177.9
157.5°	3235.1	3241.5	3246.9	3268.5	3253.4
160°	3307.3	3313.8	3317.0	3335.4	3322.4
162.5°	3374.2	3374.2	3377.4	3397.9	3382.8
165°	3431.4	3428.2	3428.2	3449.6	3434.6
167.5°	3483.1	3473.4	3473.4	3495.0	3479.9
170°	3521.9	3513.3	3510.1	3531.6	3513.3
172.5°	3548.9	3540.2	3537.0	3558.6	3540.2
175°	3570.5	3561.8	3555.4	3576.9	3558.6
177.5°	3582.3	3573.7	3567.2	3585.6	3567.2
180°	3576.9	3576.9	3576.9	3576.9	3576.9

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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	7.52	8.27	8.59	9.34	10.80	7.09	7.84	8.16	8.91	10.37
	3H	9.17	9.84	10.25	10.92	12.40	8.70	9.37	9.78	10.45	11.93
	4H	9.75	10.39	10.84	11.47	12.95	9.28	9.92	10.37	11.00	12.48
	6H	10.15	10.73	11.25	11.82	13.31	9.67	10.26	10.77	11.34	12.84
	8H	10.25	10.81	11.35	11.91	13.40	9.78	10.33	10.88	11.43	12.92
	12H	10.30	10.82	11.40	11.92	13.43	9.82	10.34	10.92	11.44	12.95
4H	2H	7.97	8.60	9.06	9.68	11.17	7.62	8.26	8.72	9.34	10.82
	3H	9.82	10.35	10.93	11.46	12.96	9.43	9.96	10.53	11.07	12.57
	4H	10.53	11.02	11.64	12.12	13.64	10.13	10.62	11.24	11.71	13.23
	6H	11.04	11.46	12.16	12.58	14.09	10.63	11.05	11.75	12.17	13.68
	8H	11.19	11.58	12.31	12.69	14.22	10.78	11.17	11.89	12.28	13.81
	12H	11.26	11.61	12.39	12.74	14.27	10.84	11.19	11.97	12.32	13.85
8H	4H	10.72	11.11	11.84	12.23	13.75	10.36	10.75	11.48	11.87	13.39
	6H	11.35	11.67	12.49	12.83	14.35	10.99	11.31	12.12	12.47	13.99
	8H	11.57	11.85	12.71	12.99	14.53	11.20	11.48	12.34	12.62	14.16
	12H	11.70	11.95	12.84	13.08	14.66	11.31	11.56	12.46	12.69	14.27
12H	4H	10.70	11.06	11.84	12.18	13.71	10.35	10.70	11.48	11.83	13.36
	6H	11.38	11.66	12.52	12.80	14.34	11.03	11.31	12.17	12.45	13.99
	8H	11.62	11.87	12.76	13.00	14.58	11.26	11.51	12.41	12.64	14.22