

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: P927716

Luminaire Tested: DFN2DIP-HX4F0-090D080US840-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927716
REPORT IS A COMBINATION OF REPORTS P900901 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D080US840-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

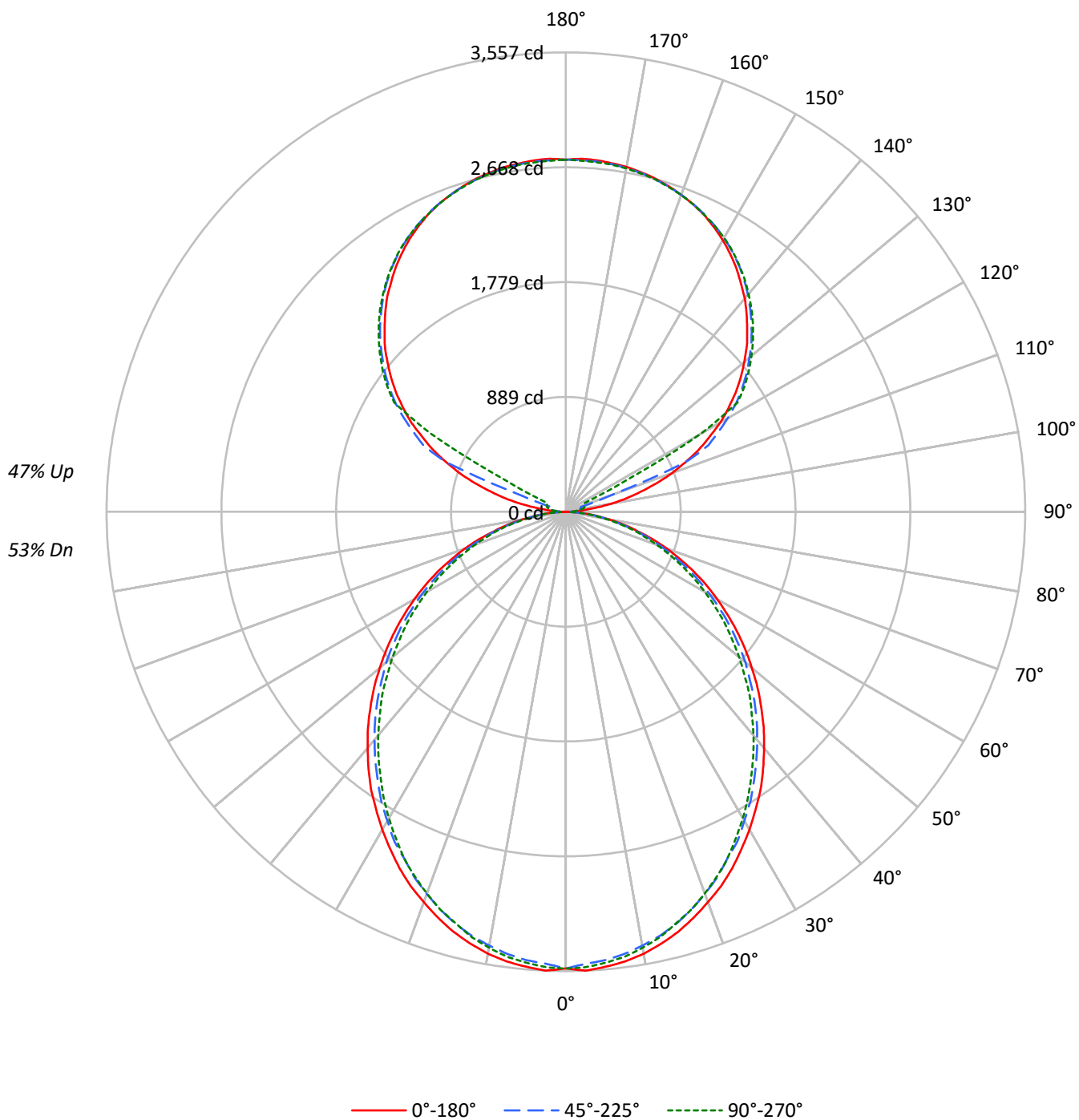
Lumens per Lamp: N/A
Luminaire Lumens: 16995.0 lumens
Efficiency: N/A
Efficacy: 115.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 147
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	59	59	59
1	98	94	90	87	91	87	84	81	75	72	70	63	61	59	52	51	50
2	90	82	76	71	83	76	71	66	65	61	58	55	52	50	46	44	42
3	82	72	65	59	75	67	61	55	58	53	49	49	45	42	41	38	36
4	75	64	56	50	69	60	53	47	51	46	41	43	39	36	36	33	31
5	69	57	49	43	63	53	46	40	46	40	36	39	35	31	33	29	27
6	63	51	43	37	58	48	40	35	41	36	31	35	31	27	30	26	24
7	59	46	38	33	54	43	36	31	37	32	28	32	28	24	27	24	21
8	54	42	34	29	50	39	32	27	34	29	24	29	25	22	25	21	19
9	51	38	31	26	47	36	29	24	31	26	22	27	23	19	23	20	17
10	47	35	28	23	44	33	26	22	29	24	20	25	21	18	21	18	15

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	2.0
10°-20°	936.5	5.5
20°-30°	1376.2	8.1
30°-40°	1598.4	9.4
40°-50°	1596.4	9.4
50°-60°	1392.0	8.2
60°-70°	1029.0	6.1
70°-80°	582.2	3.4
80°-90°	158.5	0.9
90°-100°	89.9	0.5
100°-110°	335.1	2.0
110°-120°	888.8	5.2
120°-130°	1474.2	8.7
130°-140°	1565.9	9.2
140°-150°	1455.3	8.6
150°-160°	1170.1	6.9
160°-170°	754.0	4.4
170°-180°	259.5	1.5
0°-30°	2645.5	15.6
0°-40°	4244.0	25.0
0°-60°	7232.4	42.6
0°-90°	9002.1	53.0
90°-120°	1313.9	7.7
90°-150°	5809.3	34.2
90°-180°	7993.0	47.0
0°-180°	16995.0	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°	2	24	39	49	53	16
95°	128	63	77	87	85	152
105°	600	659	120	142	150	641
115°	1134	1168	1217	304	162	1117
125°	1604	1630	1667	1681	1687	1430
135°	1985	2016	2034	2054	2050	1533
145°	2302	2300	2334	2348	2338	1440
155°	2535	2517	2541	2553	2537	1168
165°	2671	2659	2665	2679	2665	755
175°	2732	2718	2722	2736	2717	260
180°	2726	2726	2726	2726	2726	

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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°	1.9	23.6	39.4	49.4	53.2
92.5°	49.4	41.5	47.4	51.3	53.2
95°	128.1	63.0	76.8	86.9	84.8
97.5°	230.7	69.1	100.5	106.6	108.5
100°	349.3	79.0	112.5	128.1	132.1
102.5°	479.4	475.5	116.4	137.9	144.1
105°	599.7	659.0	120.4	142.0	150.0
107.5°	739.8	789.0	124.4	145.9	153.9
110°	874.1	915.3	345.4	148.0	155.8

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1000.3	1035.7	1002.2	151.8	157.9
115°	1134.3	1167.8	1217.2	303.8	161.9
117.5°	1250.7	1290.1	1323.8	1041.5	524.8
120°	1381.0	1410.5	1446.1	1469.8	1203.4
122.5°	1491.3	1523.0	1562.6	1574.3	1576.4
125°	1603.8	1629.5	1667.0	1680.8	1686.7
127.5°	1706.4	1734.0	1763.8	1783.4	1785.3
130°	1803.1	1834.7	1856.3	1878.1	1876.2
132.5°	1901.8	1927.5	1949.1	1966.9	1965.0
135°	1984.7	2016.3	2033.8	2053.8	2049.8
137.5°	2071.4	2095.0	2114.9	2134.6	2128.8
140°	2156.1	2172.1	2193.7	2211.5	2201.6
142.5°	2227.4	2241.2	2266.7	2282.5	2272.6
145°	2302.3	2300.2	2333.7	2347.6	2337.7
147.5°	2367.3	2361.4	2394.8	2404.7	2397.0
150°	2430.5	2416.7	2448.3	2460.0	2450.2
152.5°	2483.7	2468.0	2497.4	2509.5	2495.6
155°	2535.0	2517.4	2541.1	2552.8	2537.1
157.5°	2576.4	2560.8	2578.5	2592.4	2576.4
160°	2612.0	2600.1	2612.0	2623.8	2609.9
162.5°	2643.5	2631.7	2641.5	2655.4	2637.6
165°	2671.1	2659.4	2665.3	2679.0	2665.3
167.5°	2692.8	2680.9	2687.0	2700.8	2683.0
170°	2710.7	2698.7	2702.7	2716.6	2698.7
172.5°	2722.4	2710.7	2714.6	2728.5	2710.7
175°	2732.2	2718.4	2722.4	2736.2	2716.6
177.5°	2736.2	2722.4	2724.4	2738.3	2720.5
180°	2726.4	2726.4	2726.4	2726.4	2726.4

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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	10.90	11.79	11.83	12.74	13.97	10.47	11.36	11.40	12.31	13.54
	3H	12.57	13.36	13.51	14.32	15.57	12.09	12.89	13.04	13.85	15.10
	4H	13.16	13.91	14.11	14.87	16.13	12.68	13.44	13.64	14.40	15.66
	6H	13.56	14.25	14.53	15.22	16.49	13.08	13.78	14.05	14.74	16.02
	8H	13.66	14.32	14.64	15.31	16.58	13.19	13.85	14.16	14.83	16.11
	12H	13.71	14.34	14.69	15.32	16.62	13.23	13.86	14.21	14.84	16.14
4H	2H	11.37	12.12	12.33	13.08	14.35	11.02	11.78	11.99	12.74	14.00
	3H	13.24	13.87	14.21	14.86	16.13	12.84	13.47	13.82	14.47	15.74
	4H	13.95	14.53	14.94	15.51	16.81	13.55	14.12	14.53	15.11	16.41
	6H	14.47	14.97	15.47	15.98	17.27	14.06	14.56	15.06	15.57	16.86
	8H	14.62	15.09	15.62	16.09	17.40	14.21	14.67	15.21	15.68	16.99
	12H	14.70	15.12	15.71	16.13	17.45	14.27	14.69	15.29	15.71	17.03
8H	4H	14.15	14.62	15.15	15.62	16.93	13.79	14.26	14.79	15.26	16.57
	6H	14.79	15.17	15.81	16.21	17.52	14.42	14.81	15.44	15.85	17.16
	8H	15.01	15.35	16.04	16.38	17.71	14.64	14.98	15.67	16.01	17.34
	12H	15.14	15.44	16.17	16.47	17.84	14.76	15.05	15.79	16.08	17.45
12H	4H	14.14	14.56	15.15	15.58	16.89	13.79	14.21	14.80	15.23	16.54
	6H	14.82	15.16	15.85	16.19	17.51	14.47	14.80	15.49	15.83	17.16
	8H	15.06	15.36	16.09	16.38	17.76	14.70	15.00	15.74	16.03	17.40