

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: P924626

Luminaire Tested: DFN2DIP-HX4F0-100D080US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

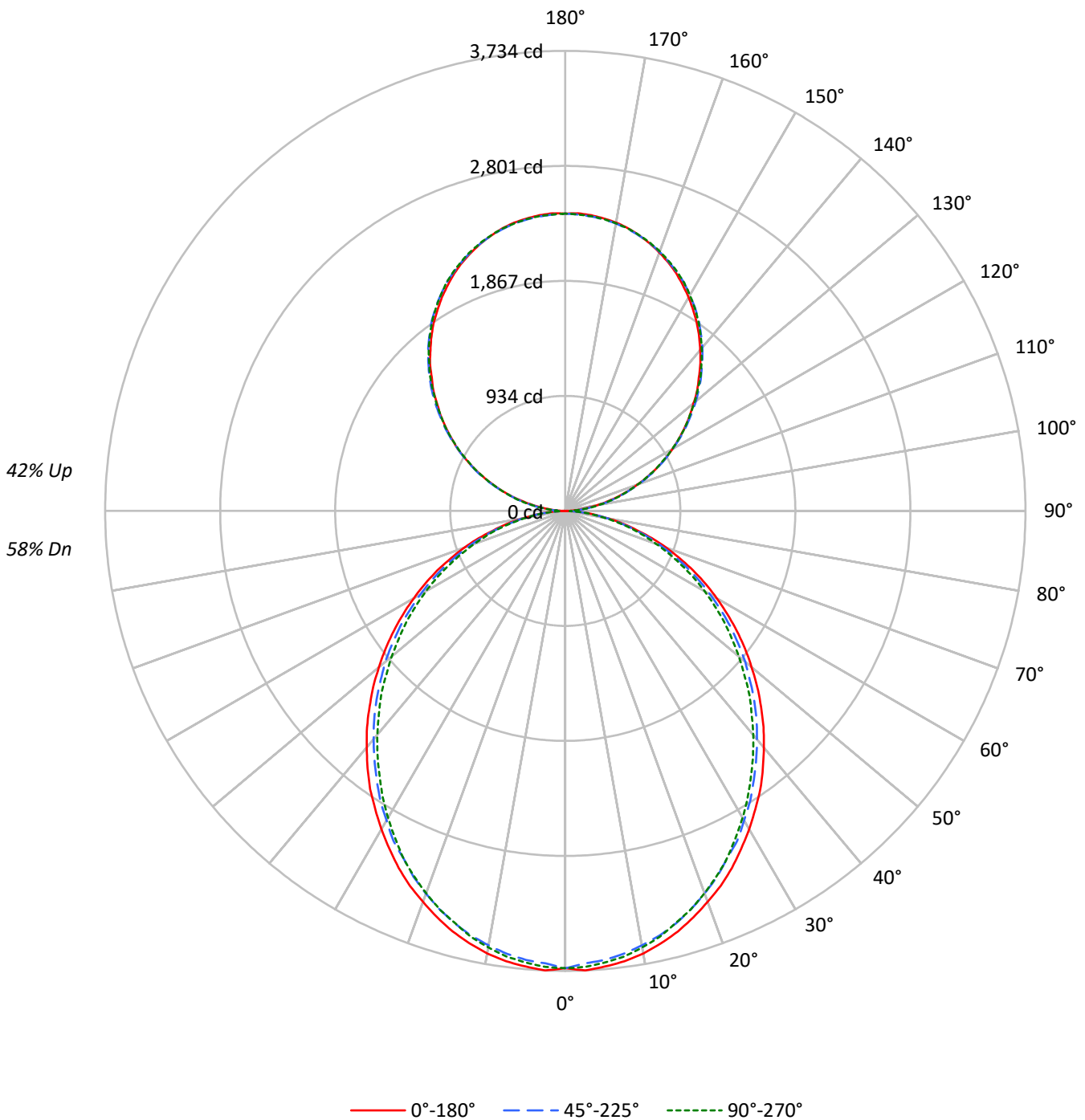
Test Method: LM-79-2019  
Report Number: P924626  
REPORT IS A COMBINATION OF REPORTS P899383 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-100D080US950-FLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16198.9 lumens  
Efficiency: N/A  
Efficacy: 111.9 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): 144.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
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	109	109	109	109	102	102	102	102	88	88	88	75	75	75	64	64	64	64	64	64	58
1	100	95	91	88	93	89	86	82	77	75	72	66	65	63	56	55	54	54	54	54	49
2	91	83	77	72	84	78	72	68	68	64	60	58	55	52	50	47	45	45	45	45	41
3	83	73	66	60	77	69	62	57	60	55	50	52	48	44	44	41	39	39	39	39	35
4	76	65	57	51	70	61	54	48	53	47	43	46	42	38	39	36	33	33	33	33	30
5	70	58	50	43	65	54	47	41	48	42	37	41	37	33	35	32	29	29	29	29	26
6	64	52	44	38	60	49	41	36	43	37	32	37	33	29	32	29	26	26	26	26	23
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	29	26	23	23	23	23	20
8	55	43	35	29	51	40	33	28	36	30	26	31	26	23	27	23	20	20	20	20	18
9	51	39	31	26	48	37	30	25	33	27	23	29	24	21	25	21	18	18	18	18	16
10	48	36	28	24	45	34	27	23	30	25	21	27	22	19	23	19	17	17	17	17	15

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

	0°	45°	90°
0°	2760	2760	2760
5°	2765	2722	2740
10°	2743	2686	2703
15°	2703	2642	2645
20°	2648	2580	2586
25°	2594	2507	2518
30°	2527	2439	2431
35°	2463	2359	2338
40°	2383	2278	2251
45°	2305	2196	2161
50°	2219	2111	2057
55°	2129	2012	1962
60°	2027	1895	1852
65°	1916	1774	1723
70°	1774	1626	1585
75°	1578	1449	1457
80°	1343	1223	1212
85°	975	834	806

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2305 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	349.4	2.2
10°-20°	983.0	6.1
20°-30°	1444.7	8.9
30°-40°	1677.9	10.4
40°-50°	1675.8	10.3
50°-60°	1461.2	9.0
60°-70°	1080.2	6.7
70°-80°	611.1	3.8
80°-90°	168.2	1.0
90°-100°	149.4	0.9
100°-110°	474.6	2.9
110°-120°	812.1	5.0
120°-130°	1068.1	6.6
130°-140°	1198.9	7.4
140°-150°	1175.6	7.3
150°-160°	986.2	6.1
160°-170°	654.0	4.0
170°-180°	228.6	1.4
0°-30°	2777.1	17.1
0°-40°	4454.9	27.5
0°-60°	7592.0	46.9
0°-90°	9451.5	58.3
90°-120°	1436.1	8.9
90°-150°	4878.6	30.1
90°-180°	6747.0	41.7
0°-180°	16198.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3712	3712	3712	3712	3712	
5°	3712	3698	3659	3687	3680	352
15°	3534	3512	3466	3480	3462	995
25°	3198	3170	3109	3116	3109	1472
35°	2759	2724	2666	2645	2627	1723
45°	2245	2220	2166	2128	2113	1733
55°	1699	1678	1635	1592	1574	1519
65°	1146	1124	1089	1057	1039	1133
75°	600	593	574	553	560	640
85°	146	143	139	128	125	163
90°	2	26	71	67	69	16
95°	106	127	130	130	127	118
105°	438	444	448	452	452	462
115°	815	827	823	821	815	806
125°	1185	1204	1198	1191	1189	1059
135°	1533	1556	1560	1558	1552	1185
145°	1861	1876	1888	1890	1882	1163
155°	2128	2134	2141	2151	2144	980
165°	2316	2313	2313	2328	2318	653
175°	2409	2404	2399	2414	2401	229
180°	2414	2414	2414	2414	2414	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3712.1	3712.1	3712.1	3712.1	3712.1
2.5°	3733.7	3715.8	3676.4	3712.1	3705.2
5°	3712.1	3698.1	3658.7	3687.1	3680.2
7.5°	3687.1	3665.8	3626.4	3655.3	3648.1
10°	3648.1	3623.1	3580.3	3608.7	3598.1
12.5°	3594.3	3573.1	3530.3	3548.1	3540.9
15°	3533.7	3512.5	3465.9	3480.3	3462.5
17.5°	3458.7	3437.5	3390.9	3408.7	3390.9
20°	3376.5	3355.3	3305.3	3315.9	3301.9
22.5°	3294.7	3262.6	3215.9	3215.9	3208.8
25°	3198.2	3169.8	3109.2	3116.0	3109.2
27.5°	3091.0	3066.0	3019.8	3009.2	2991.4
30°	2984.2	2955.4	2902.0	2891.4	2877.0
32.5°	2869.8	2848.6	2791.4	2769.8	2755.4
35°	2759.3	2723.7	2666.4	2644.9	2627.0
37.5°	2634.3	2602.0	2544.9	2519.9	2502.1
40°	2505.9	2477.1	2419.9	2388.1	2373.7
42.5°	2380.9	2352.1	2295.3	2259.4	2238.2
45°	2245.3	2220.3	2166.5	2127.5	2113.2
47.5°	2113.2	2088.2	2031.0	1991.6	1970.4
50°	1973.8	1956.0	1906.0	1856.0	1838.3
52.5°	1838.3	1813.3	1767.0	1727.7	1702.7
55°	1699.3	1677.7	1634.9	1592.0	1574.3
57.5°	1559.9	1542.0	1495.5	1452.8	1438.3
60°	1420.5	1406.5	1356.5	1317.1	1306.5
62.5°	1284.9	1259.9	1224.4	1188.8	1174.4
65°	1145.9	1124.4	1088.8	1056.6	1038.8
67.5°	1003.2	985.0	953.2	928.2	913.8
70°	871.0	856.6	824.4	799.5	785.4
72.5°	735.4	721.0	703.3	678.3	667.6
75°	599.5	592.7	574.5	553.3	560.5
77.5°	478.3	463.9	456.7	446.1	435.5
80°	357.1	353.4	346.1	335.5	328.4
82.5°	242.8	242.8	239.4	225.0	225.0
85°	146.2	142.8	139.4	128.4	125.0
87.5°	64.4	57.1	50.0	39.4	35.6
90°	2.2	26.2	71.4	67.0	69.2
92.5°	45.1	61.2	63.3	65.4	65.4
95°	106.3	126.6	130.2	130.2	126.6
97.5°	176.9	195.8	203.8	203.8	203.8
100°	258.3	275.0	280.9	280.9	278.7
102.5°	344.2	356.6	364.5	366.7	364.5
105°	438.1	443.9	448.3	451.9	451.9
107.5°	531.2	540.0	540.0	541.4	531.2
110°	621.4	633.1	633.1	633.1	627.3



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	718.9	731.3	729.1	723.3	718.9
115°	815.0	826.6	823.0	820.8	815.0
117.5°	910.3	926.3	916.1	910.3	904.5
120°	1006.4	1022.4	1006.4	1006.4	999.8
122.5°	1093.7	1114.1	1103.9	1098.1	1093.7
125°	1185.3	1203.6	1197.7	1191.2	1189.1
127.5°	1274.9	1297.4	1289.4	1280.7	1274.9
130°	1358.6	1384.7	1381.1	1376.8	1368.8
132.5°	1452.5	1472.8	1474.3	1464.1	1458.3
135°	1533.2	1555.8	1560.2	1558.0	1552.2
137.5°	1623.4	1641.6	1645.3	1643.8	1635.1
140°	1702.8	1720.9	1731.1	1731.1	1723.1
142.5°	1784.3	1802.5	1808.3	1810.5	1802.5
145°	1861.4	1875.9	1887.6	1889.8	1881.8
147.5°	1930.5	1948.7	1957.4	1961.1	1953.1
150°	2001.9	2014.2	2022.2	2028.8	2022.2
152.5°	2065.1	2077.5	2087.7	2095.7	2087.7
155°	2128.5	2134.3	2140.9	2151.0	2144.5
157.5°	2183.0	2187.4	2191.1	2205.6	2195.4
160°	2231.8	2236.2	2238.4	2250.7	2242.0
162.5°	2276.9	2276.9	2279.1	2292.9	2282.7
165°	2315.5	2313.3	2313.3	2327.9	2317.6
167.5°	2350.4	2343.9	2343.9	2358.4	2348.2
170°	2376.6	2370.8	2368.6	2383.2	2370.8
172.5°	2394.8	2389.0	2386.8	2401.3	2389.0
175°	2409.3	2403.5	2399.1	2413.7	2401.3
177.5°	2417.3	2411.5	2407.1	2419.5	2407.1
180°	2413.7	2413.7	2413.7	2413.7	2413.7



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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	11.54	12.48	12.42	13.38	14.53	11.10	12.05	11.99	12.95	14.10
	3H	13.20	14.05	14.10	14.96	16.13	12.73	13.58	13.62	14.49	15.66
	4H	13.79	14.59	14.70	15.51	16.69	13.32	14.12	14.23	15.04	16.22
	6H	14.20	14.94	15.12	15.86	17.06	13.72	14.46	14.65	15.38	16.58
	8H	14.31	15.01	15.24	15.95	17.14	13.83	14.53	14.76	15.48	16.67
	12H	14.36	15.03	15.29	15.96	17.18	13.88	14.55	14.81	15.48	16.70
4H	2H	12.01	12.81	12.92	13.72	14.91	11.66	12.46	12.58	13.38	14.56
	3H	13.88	14.55	14.81	15.50	16.69	13.49	14.16	14.41	15.10	16.30
	4H	14.60	15.21	15.54	16.15	17.37	14.19	14.80	15.13	15.75	16.97
	6H	15.12	15.65	16.07	16.61	17.84	14.71	15.24	15.66	16.20	17.43
	8H	15.27	15.76	16.23	16.73	17.96	14.86	15.35	15.81	16.31	17.55
	12H	15.35	15.79	16.32	16.77	18.01	14.93	15.37	15.90	16.35	17.59
8H	4H	14.80	15.30	15.76	16.26	17.49	14.44	14.93	15.40	15.90	17.13
	6H	15.44	15.85	16.42	16.85	18.08	15.08	15.48	16.05	16.49	17.72
	8H	15.66	16.02	16.65	17.01	18.27	15.29	15.65	16.28	16.64	17.90
	12H	15.80	16.12	16.79	17.10	18.40	15.41	15.73	16.40	16.72	18.02
12H	4H	14.79	15.24	15.76	16.22	17.46	14.44	14.88	15.41	15.86	17.10
	6H	15.47	15.83	16.46	16.82	18.08	15.12	15.48	16.11	16.47	17.72
	8H	15.72	16.03	16.71	17.02	18.32	15.36	15.68	16.35	16.66	17.96