

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: P905552

Luminaire Tested: DFN2DIP-HX4F0-110D100US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

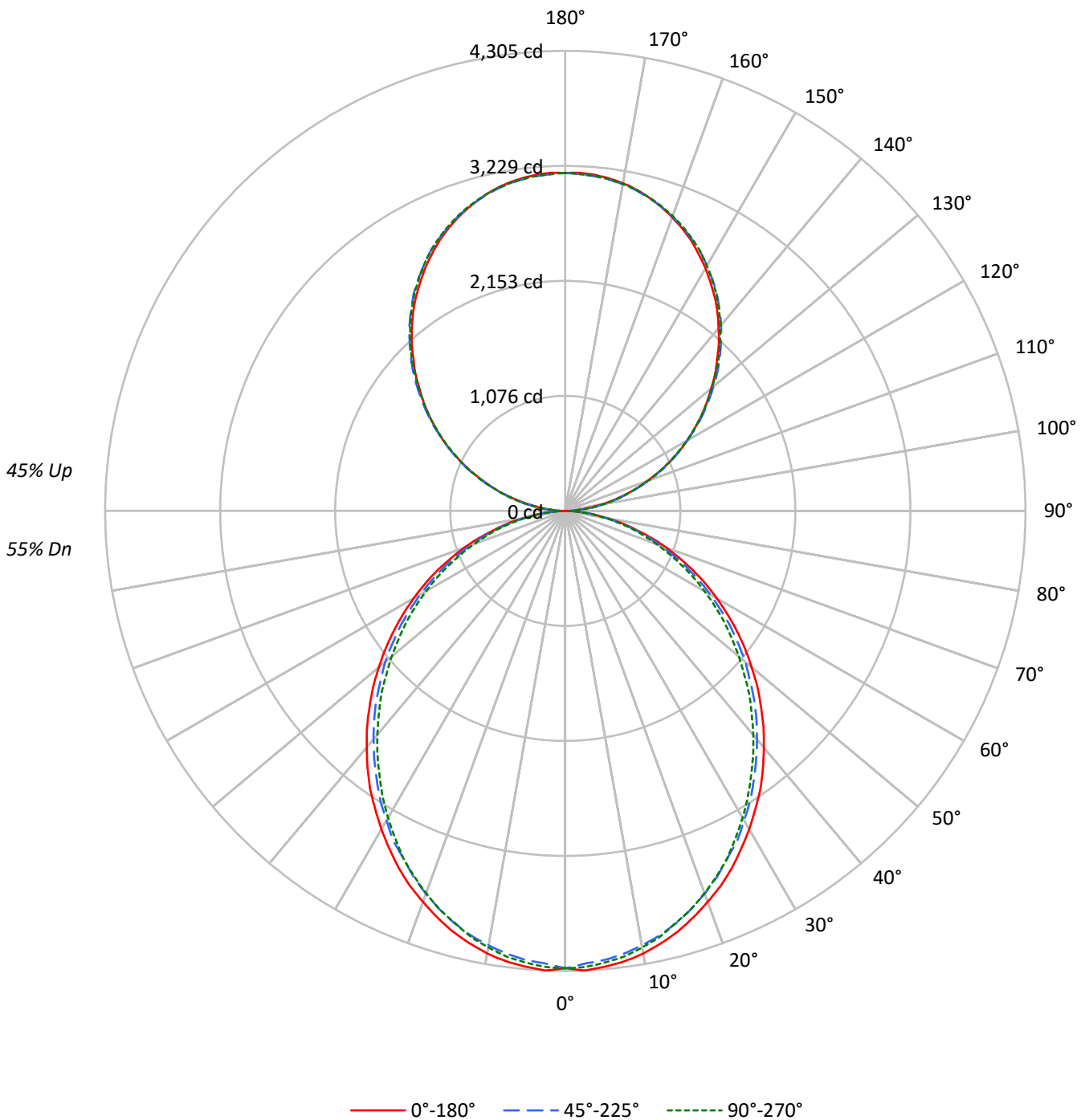
Test Method: LM-79-2019  
Report Number: P905552  
REPORT IS A COMBINATION OF REPORTS P899421 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-110D100US835-FLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19740.0 lumens  
Efficiency: N/A  
Efficacy: 116.1 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): 170  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
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	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61	55			55
1	99	95	91	87	92	88	85	82	76	73	71	64	63	61	54	53	51	46			46
2	90	83	76	71	83	77	72	67	66	62	59	56	53	51	47	45	43	39			39
3	82	73	65	59	76	68	61	56	58	53	49	50	46	43	42	39	37	33			33
4	75	64	56	50	70	60	53	47	52	46	42	45	40	37	38	34	32	28			28
5	69	57	49	43	64	54	46	41	47	41	36	40	36	32	34	30	28	25			25
6	64	51	43	37	59	48	41	36	42	36	32	36	32	28	31	27	24	22			22
7	59	47	38	33	55	44	36	31	38	32	28	33	28	25	28	24	22	19			19
8	55	42	34	29	51	40	33	28	35	29	25	30	26	22	26	22	19	17			17
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18	15			15
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16	14			14

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

	0°	45°	90°
0°	3183	3183	3183
5°	3188	3139	3160
10°	3162	3097	3117
15°	3116	3046	3050
20°	3054	2975	2982
25°	2991	2891	2903
30°	2913	2812	2803
35°	2839	2720	2696
40°	2748	2626	2595
45°	2657	2533	2492
50°	2558	2434	2372
55°	2454	2320	2262
60°	2337	2185	2136
65°	2209	2045	1987
70°	2046	1875	1827
75°	1820	1671	1680
80°	1549	1411	1397
85°	1124	961	929

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2657 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	402.8	2.0
10°-20°	1133.5	5.7
20°-30°	1665.7	8.4
30°-40°	1934.7	9.8
40°-50°	1932.3	9.8
50°-60°	1684.9	8.5
60°-70°	1245.5	6.3
70°-80°	704.7	3.6
80°-90°	195.0	1.0
90°-100°	195.7	1.0
100°-110°	621.8	3.2
110°-120°	1064.1	5.4
120°-130°	1399.5	7.1
130°-140°	1570.9	8.0
140°-150°	1540.4	7.8
150°-160°	1292.2	6.5
160°-170°	856.9	4.3
170°-180°	299.5	1.5
0°-30°	3202.1	16.2
0°-40°	5136.7	26.0
0°-60°	8753.8	44.3
0°-90°	10899.0	55.2
90°-120°	1881.6	9.5
90°-150°	6392.4	32.4
90°-180°	8841.0	44.8
0°-180°	19740.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4280	4280	4280	4280	4280	
5°	4280	4264	4219	4251	4244	406
15°	4074	4050	3996	4013	3992	1148
25°	3688	3655	3585	3593	3585	1697
35°	3182	3140	3074	3050	3029	1987
45°	2589	2560	2498	2453	2437	1998
55°	1959	1934	1885	1836	1815	1752
65°	1321	1296	1255	1218	1198	1306
75°	691	683	662	638	646	738
85°	169	165	161	148	144	188
90°	3	34	93	88	91	19
95°	139	166	171	171	166	155
105°	574	582	587	592	592	606
115°	1068	1083	1078	1076	1068	1056
125°	1553	1577	1569	1561	1558	1388
135°	2009	2038	2044	2041	2034	1553
145°	2439	2458	2473	2476	2466	1524
155°	2789	2796	2805	2818	2810	1284
165°	3034	3031	3031	3050	3037	856
175°	3157	3149	3144	3163	3146	300
180°	3163	3163	3163	3163	3163	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4280.2	4280.2	4280.2	4280.2	4280.2
2.5°	4305.0	4284.5	4239.1	4280.2	4272.3
5°	4280.2	4264.0	4218.6	4251.3	4243.5
7.5°	4251.3	4226.9	4181.5	4214.7	4206.4
10°	4206.4	4177.5	4128.2	4160.9	4148.7
12.5°	4144.4	4119.9	4070.6	4091.1	4082.8
15°	4074.5	4050.0	3996.3	4012.9	3992.4
17.5°	3988.0	3963.6	3909.9	3930.4	3909.9
20°	3893.3	3868.8	3811.2	3823.4	3807.3
22.5°	3799.0	3761.8	3708.1	3708.1	3699.8
25°	3687.6	3654.9	3585.0	3592.9	3585.0
27.5°	3564.0	3535.2	3481.9	3469.7	3449.2
30°	3440.9	3407.7	3346.1	3333.9	3317.3
32.5°	3309.0	3284.6	3218.6	3193.7	3177.1
35°	3181.5	3140.5	3074.5	3049.6	3029.1
37.5°	3037.4	3000.3	2934.4	2905.5	2885.0
40°	2889.4	2856.2	2790.3	2753.6	2737.0
42.5°	2745.3	2712.1	2646.6	2605.1	2580.7
45°	2589.0	2560.1	2498.1	2453.2	2436.6
47.5°	2436.6	2407.8	2341.8	2296.4	2271.9
50°	2275.9	2255.4	2197.7	2140.1	2119.6
52.5°	2119.6	2090.7	2037.5	1992.0	1963.2
55°	1959.3	1934.4	1885.1	1835.7	1815.2
57.5°	1798.6	1778.1	1724.4	1675.0	1658.4
60°	1637.9	1621.8	1564.1	1518.7	1506.5
62.5°	1481.6	1452.8	1411.7	1370.7	1354.1
65°	1321.3	1296.4	1255.4	1218.3	1197.8
67.5°	1156.7	1135.8	1099.1	1070.3	1053.7
70°	1004.3	987.7	950.6	921.8	905.6
72.5°	848.0	831.4	810.9	782.1	769.8
75°	691.2	683.4	662.4	638.0	646.3
77.5°	551.5	534.9	526.6	514.4	502.2
80°	411.8	407.4	399.1	386.9	378.6
82.5°	279.9	279.9	276.0	259.4	259.4
85°	168.6	164.6	160.7	148.0	144.1
87.5°	74.2	65.9	57.6	45.4	41.0
90°	2.9	34.3	93.4	87.7	90.6
92.5°	59.1	80.1	83.0	85.8	85.8
95°	139.2	165.9	170.7	170.7	165.9
97.5°	231.7	256.5	267.0	267.0	267.0
100°	338.5	360.4	368.0	368.0	365.2
102.5°	451.0	467.2	477.7	480.5	477.7
105°	574.0	581.6	587.3	592.1	592.1
107.5°	696.0	707.5	707.5	709.4	696.0
110°	814.3	829.5	829.5	829.5	821.9



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	942.0	958.2	955.4	947.7	942.0
115°	1067.9	1083.1	1078.4	1075.5	1067.9
117.5°	1192.8	1213.8	1200.4	1192.8	1185.1
120°	1318.6	1339.6	1318.6	1318.6	1310.1
122.5°	1433.0	1459.7	1446.4	1438.8	1433.0
125°	1553.2	1577.0	1569.4	1560.8	1558.0
127.5°	1670.5	1700.0	1689.5	1678.1	1670.5
130°	1780.1	1814.4	1809.7	1803.9	1793.5
132.5°	1903.1	1929.8	1931.7	1918.4	1910.7
135°	2008.9	2038.5	2044.2	2041.4	2033.7
137.5°	2127.2	2151.0	2155.8	2153.9	2142.4
140°	2231.1	2254.9	2268.3	2268.3	2257.8
142.5°	2337.9	2361.7	2369.3	2372.2	2361.7
145°	2438.9	2458.0	2473.3	2476.1	2465.6
147.5°	2529.5	2553.4	2564.8	2569.6	2559.1
150°	2623.0	2639.2	2649.7	2658.2	2649.7
152.5°	2705.9	2722.1	2735.5	2746.0	2735.5
155°	2788.9	2796.5	2805.1	2818.4	2809.8
157.5°	2860.4	2866.1	2870.9	2889.9	2876.6
160°	2924.3	2930.0	2932.8	2949.0	2937.6
162.5°	2983.4	2983.4	2986.2	3004.3	2991.0
165°	3033.9	3031.0	3031.0	3050.1	3036.8
167.5°	3079.7	3071.1	3071.1	3090.2	3076.8
170°	3114.0	3106.4	3103.5	3122.6	3106.4
172.5°	3137.8	3130.2	3127.3	3146.4	3130.2
175°	3156.9	3149.3	3143.6	3162.6	3146.4
177.5°	3167.4	3159.8	3154.0	3170.2	3154.0
180°	3162.6	3162.6	3162.6	3162.6	3162.6



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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	11.76	12.67	12.67	13.60	14.80	11.33	12.24	12.24	13.17	14.37
	3H	13.43	14.24	14.35	15.18	16.40	12.95	13.77	13.88	14.71	15.93
	4H	14.02	14.79	14.96	15.73	16.96	13.54	14.32	14.48	15.26	16.49
	6H	14.42	15.13	15.37	16.08	17.32	13.94	14.66	14.89	15.61	16.85
	8H	14.53	15.21	15.48	16.17	17.41	14.05	14.73	15.01	15.70	16.94
	12H	14.58	15.22	15.54	16.18	17.45	14.10	14.74	15.06	15.70	16.97
4H	2H	12.23	13.00	13.17	13.95	15.18	11.89	12.66	12.83	13.60	14.83
	3H	14.10	14.75	15.06	15.72	16.96	13.71	14.35	14.66	15.33	16.57
	4H	14.82	15.41	15.78	16.38	17.64	14.41	15.00	15.38	15.97	17.24
	6H	15.34	15.85	16.31	16.84	18.10	14.93	15.44	15.90	16.43	17.69
	8H	15.49	15.96	16.47	16.95	18.23	15.08	15.55	16.05	16.54	17.82
	12H	15.57	15.99	16.56	17.00	18.28	15.14	15.57	16.14	16.57	17.86
8H	4H	15.02	15.49	16.00	16.48	17.76	14.66	15.13	15.64	16.12	17.40
	6H	15.65	16.05	16.66	17.08	18.35	15.29	15.68	16.29	16.71	17.99
	8H	15.88	16.22	16.89	17.24	18.54	15.51	15.85	16.52	16.87	18.17
	12H	16.01	16.32	17.03	17.33	18.67	15.63	15.93	16.64	16.94	18.28
12H	4H	15.01	15.44	16.00	16.44	17.73	14.66	15.08	15.65	16.09	17.37
	6H	15.69	16.03	16.70	17.05	18.34	15.33	15.68	16.34	16.70	17.99
	8H	15.93	16.24	16.95	17.25	18.59	15.57	15.88	16.59	16.89	18.23