

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: P905518

Luminaire Tested: DFN2DIP-HX4F0-090D110US835-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P905518
REPORT IS A COMBINATION OF REPORTS P899435 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D110US835-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

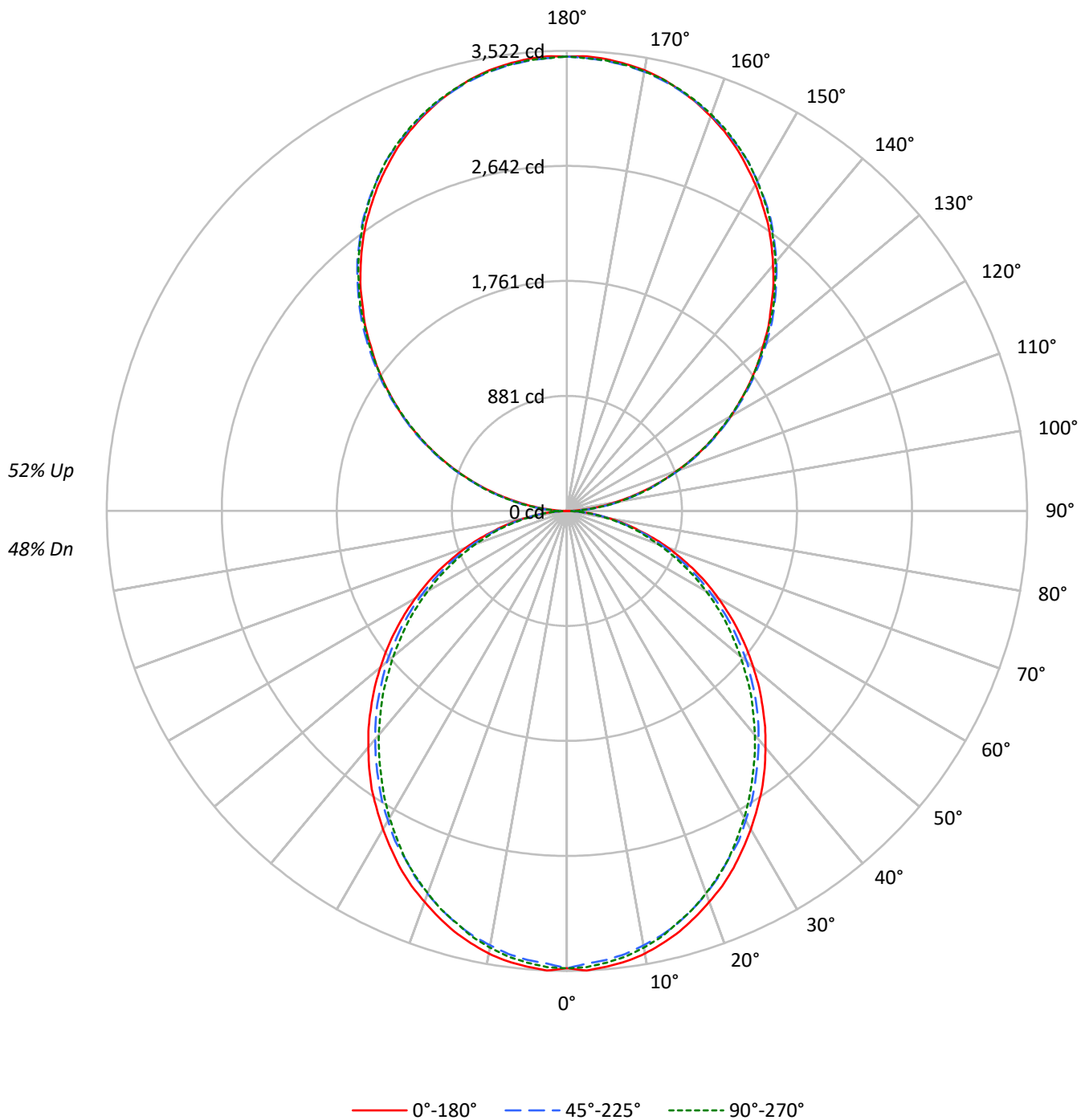
Lumens per Lamp: N/A
Luminaire Lumens: 18645.0 lumens
Efficiency: N/A
Efficacy: 121.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 153.9
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	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54
1	97	93	89	86	89	86	82	79	72	70	67	59	58	56	48	47	46
2	89	81	75	70	81	75	70	65	63	59	56	52	49	47	42	40	38
3	81	71	64	58	74	66	60	54	56	51	47	46	43	40	37	35	33
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	33	31	28
5	68	56	48	42	62	52	45	40	44	39	34	37	33	29	30	27	25
6	62	50	42	37	57	47	40	34	40	34	30	33	29	26	27	24	22
7	58	46	38	32	53	42	35	30	36	31	26	30	26	23	25	22	19
8	54	41	34	28	49	38	32	27	33	27	24	28	23	20	23	20	17
9	50	38	30	25	46	35	28	24	30	25	21	26	21	18	21	18	16
10	47	35	27	23	43	32	26	21	28	23	19	24	19	17	20	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2604	2604	2604
5°	2608	2568	2585
10°	2587	2534	2550
15°	2550	2492	2496
20°	2498	2434	2440
25°	2447	2365	2375
30°	2384	2301	2293
35°	2323	2225	2206
40°	2248	2149	2123
45°	2174	2072	2039
50°	2093	1992	1941
55°	2008	1898	1851
60°	1912	1788	1748
65°	1807	1673	1626
70°	1674	1534	1495
75°	1489	1367	1374
80°	1267	1154	1143
85°	919	787	760

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2622 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	329.6	1.8
10°-20°	927.4	5.0
20°-30°	1362.9	7.3
30°-40°	1582.9	8.5
40°-50°	1580.9	8.5
50°-60°	1378.5	7.4
60°-70°	1019.0	5.5
70°-80°	576.6	3.1
80°-90°	162.1	0.9
90°-100°	215.3	1.2
100°-110°	684.0	3.7
110°-120°	1170.5	6.3
120°-130°	1539.4	8.3
130°-140°	1727.9	9.3
140°-150°	1694.4	9.1
150°-160°	1421.4	7.6
160°-170°	942.6	5.1
170°-180°	329.5	1.8
0°-30°	2619.9	14.1
0°-40°	4202.8	22.5
0°-60°	7162.3	38.4
0°-90°	8919.9	47.8
90°-120°	2069.8	11.1
90°-150°	7031.6	37.7
90°-180°	9725.0	52.2
0°-180°	18645.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3502	3502	3502	3502	3502	
5°	3502	3489	3452	3478	3472	332
15°	3334	3314	3270	3283	3266	939
25°	3017	2990	2933	2940	2933	1388
35°	2603	2570	2516	2495	2478	1626
45°	2118	2095	2044	2007	1994	1635
55°	1603	1583	1542	1502	1485	1433
65°	1081	1061	1027	997	980	1069
75°	566	559	542	522	529	604
85°	138	135	132	121	118	154
90°	3	38	103	96	100	18
95°	153	182	188	188	182	170
105°	631	640	646	651	651	666
115°	1175	1191	1186	1183	1175	1162
125°	1708	1735	1726	1717	1714	1527
135°	2210	2242	2249	2246	2237	1708
145°	2683	2704	2721	2724	2712	1676
155°	3068	3076	3086	3100	3091	1412
165°	3337	3334	3334	3355	3340	941
175°	3473	3464	3458	3479	3461	330
180°	3479	3479	3479	3479	3479	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3501.9	3501.9	3501.9	3501.9	3501.9
2.5°	3522.3	3505.5	3468.4	3501.9	3495.5
5°	3501.9	3488.7	3451.6	3478.4	3471.9
7.5°	3478.4	3458.4	3421.2	3448.4	3441.6
10°	3441.6	3418.0	3377.6	3404.4	3394.4
12.5°	3390.8	3370.8	3330.5	3347.2	3340.5
15°	3333.7	3313.7	3269.7	3283.3	3266.5
17.5°	3262.9	3242.9	3199.0	3215.8	3199.0
20°	3185.4	3165.4	3118.2	3128.2	3115.0
22.5°	3108.2	3077.9	3033.9	3033.9	3027.1
25°	3017.1	2990.3	2933.2	2939.6	2933.2
27.5°	2916.0	2892.4	2848.9	2838.9	2822.1
30°	2815.3	2788.1	2737.7	2727.7	2714.2
32.5°	2707.4	2687.4	2633.4	2613.1	2599.5
35°	2603.1	2569.5	2515.5	2495.2	2478.4
37.5°	2485.2	2454.8	2400.8	2377.3	2360.5
40°	2364.0	2336.9	2282.9	2252.9	2239.4
42.5°	2246.1	2219.0	2165.4	2131.5	2111.5
45°	2118.2	2094.7	2043.9	2007.1	1993.6
47.5°	1993.6	1970.0	1916.0	1878.9	1858.9
50°	1862.1	1845.3	1798.1	1751.0	1734.2
52.5°	1734.2	1710.6	1667.0	1629.9	1606.3
55°	1603.1	1582.7	1542.3	1502.0	1485.2
57.5°	1471.6	1454.8	1410.9	1370.5	1356.9
60°	1340.1	1326.9	1279.7	1242.6	1232.6
62.5°	1212.2	1188.6	1155.0	1121.5	1107.9
65°	1081.1	1060.7	1027.1	996.8	980.0
67.5°	946.4	929.3	899.2	875.7	862.1
70°	821.7	808.1	777.8	754.2	741.0
72.5°	693.8	680.2	663.4	639.9	629.9
75°	565.6	559.1	542.0	522.0	528.8
77.5°	451.2	437.7	430.9	420.9	410.9
80°	336.9	333.3	326.5	316.5	309.8
82.5°	229.0	229.0	225.8	212.2	212.2
85°	137.9	134.7	131.5	121.1	117.9
87.5°	60.7	53.9	47.2	37.2	33.6
90°	3.1	37.8	102.8	96.5	99.6
92.5°	65.0	88.1	91.2	94.4	94.4
95°	153.1	182.5	187.7	187.7	182.5
97.5°	254.9	282.1	293.7	293.7	293.7
100°	372.3	396.4	404.8	404.8	401.7
102.5°	496.1	513.9	525.5	528.6	525.5
105°	631.4	639.8	646.1	651.3	651.3
107.5°	765.6	778.2	778.2	780.3	765.6
110°	895.7	912.5	912.5	912.5	904.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1036.2	1054.0	1050.9	1042.5	1036.2
115°	1174.7	1191.4	1186.2	1183.1	1174.7
117.5°	1312.1	1335.1	1320.4	1312.1	1303.7
120°	1450.5	1473.6	1450.5	1450.5	1441.1
122.5°	1576.4	1605.7	1591.0	1582.6	1576.4
125°	1708.5	1734.7	1726.3	1716.9	1713.7
127.5°	1837.5	1870.0	1858.5	1845.9	1837.5
130°	1958.1	1995.9	1990.6	1984.3	1972.8
132.5°	2093.4	2122.8	2124.9	2110.2	2101.8
135°	2209.8	2242.3	2248.6	2245.5	2237.1
137.5°	2339.9	2366.1	2371.3	2369.2	2356.7
140°	2454.2	2480.4	2495.1	2495.1	2483.6
142.5°	2571.7	2597.9	2606.3	2609.4	2597.9
145°	2682.8	2703.8	2720.6	2723.7	2712.2
147.5°	2782.5	2808.7	2821.3	2826.5	2815.0
150°	2885.3	2903.1	2914.6	2924.1	2914.6
152.5°	2976.5	2994.3	3009.0	3020.6	3009.0
155°	3067.8	3076.1	3085.6	3100.3	3090.8
157.5°	3146.4	3152.7	3157.9	3178.9	3164.2
160°	3216.7	3223.0	3226.1	3244.0	3231.4
162.5°	3281.7	3281.7	3284.9	3304.8	3290.1
165°	3337.3	3334.1	3334.1	3355.1	3340.4
167.5°	3387.6	3378.2	3378.2	3399.2	3384.5
170°	3425.4	3417.0	3413.9	3434.8	3417.0
172.5°	3451.6	3443.2	3440.1	3461.1	3443.2
175°	3472.6	3464.2	3457.9	3478.9	3461.1
177.5°	3484.1	3475.7	3469.4	3487.3	3469.4
180°	3478.9	3478.9	3478.9	3478.9	3478.9

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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	10.39	11.24	11.37	12.22	13.53	9.96	10.80	10.94	11.79	13.09
	3H	12.05	12.81	13.04	13.81	15.13	11.58	12.34	12.57	13.33	14.66
	4H	12.64	13.36	13.64	14.36	15.69	12.17	12.88	13.17	13.88	15.21
	6H	13.04	13.70	14.05	14.70	16.05	12.56	13.22	13.57	14.23	15.57
	8H	13.14	13.77	14.16	14.79	16.13	12.67	13.30	13.69	14.32	15.66
	12H	13.19	13.79	14.21	14.81	16.17	12.71	13.31	13.73	14.32	15.69
4H	2H	10.85	11.57	11.86	12.57	13.90	10.51	11.22	11.51	12.22	13.56
	3H	12.72	13.32	13.73	14.35	15.69	12.33	12.92	13.34	13.95	15.30
	4H	13.43	13.98	14.45	15.00	16.37	13.03	13.57	14.05	14.60	15.96
	6H	13.95	14.42	14.98	15.46	16.83	13.54	14.01	14.57	15.05	16.42
	8H	14.10	14.54	15.13	15.58	16.96	13.68	14.12	14.72	15.16	16.54
	12H	14.17	14.57	15.22	15.62	17.01	13.75	14.14	14.80	15.20	16.58
8H	4H	13.63	14.07	14.66	15.11	16.49	13.27	13.71	14.30	14.75	16.13
	6H	14.26	14.62	15.32	15.70	17.08	13.90	14.26	14.96	15.34	16.72
	8H	14.48	14.80	15.55	15.87	17.26	14.11	14.43	15.18	15.50	16.89
	12H	14.61	14.89	15.68	15.95	17.39	14.23	14.51	15.30	15.57	17.01
12H	4H	13.61	14.01	14.67	15.06	16.45	13.26	13.66	14.31	14.71	16.10
	6H	14.29	14.61	15.36	15.68	17.07	13.94	14.26	15.00	15.32	16.72
	8H	14.53	14.81	15.60	15.87	17.31	14.17	14.46	15.24	15.52	16.95