

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: P905536

Luminaire Tested: DFN2DIP-HX4F0-100D110US835-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P905536
REPORT IS A COMBINATION OF REPORTS P899437 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D110US835-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

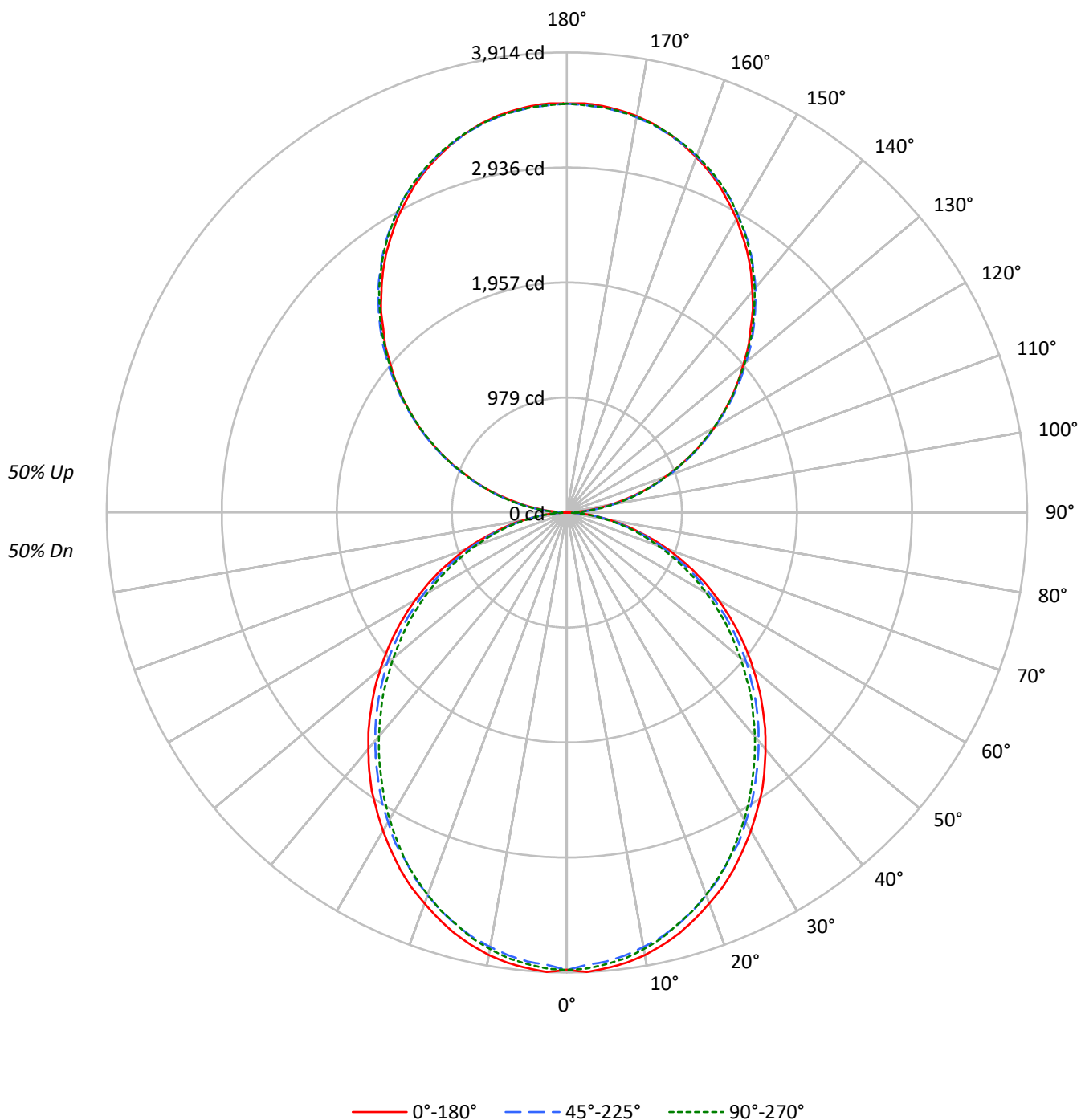
Lumens per Lamp: N/A
Luminaire Lumens: 19635.0 lumens
Efficiency: N/A
Efficacy: 119.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 164.6
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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CATALOG NUMBER: DFN2DIP-HX4F0-100D110US835-FLLFL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20					20					20					20
RC	80				70					50					30					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	107	107	107	107	99	99	99	99	84	84	84	69	69	69	57	57	57	57	57	57
1	98	94	90	86	90	86	83	80	73	71	69	61	59	58	50	49	48	48	48	42
2	89	82	76	70	82	76	70	66	64	60	57	54	51	48	44	42	40	40	40	36
3	81	72	64	59	75	67	60	55	57	52	48	47	44	41	39	36	34	34	34	30
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	30	30	30	26
5	68	57	49	42	63	53	45	40	45	39	35	38	34	30	31	28	26	26	26	23
6	63	51	43	37	58	47	40	35	41	35	31	34	30	27	29	25	23	23	23	20
7	58	46	38	32	54	43	36	31	37	31	27	31	27	24	26	23	20	20	20	18
8	54	42	34	29	50	39	32	27	34	28	24	29	24	21	24	21	18	18	18	16
9	50	38	31	25	46	36	29	24	31	25	22	26	22	19	22	19	16	16	16	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	15	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2893	2893	2893
5°	2898	2853	2872
10°	2875	2815	2834
15°	2833	2769	2773
20°	2776	2705	2711
25°	2719	2628	2639
30°	2648	2557	2548
35°	2581	2473	2451
40°	2498	2388	2359
45°	2416	2302	2265
50°	2326	2213	2156
55°	2231	2109	2056
60°	2124	1986	1942
65°	2008	1859	1806
70°	1860	1704	1661
75°	1654	1519	1527
80°	1408	1282	1270
85°	1021	874	845

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°	366.2	1.9
10°-20°	1030.4	5.2
20°-30°	1514.3	7.7
30°-40°	1758.8	9.0
40°-50°	1756.6	8.9
50°-60°	1531.7	7.8
60°-70°	1132.3	5.8
70°-80°	640.6	3.3
80°-90°	179.0	0.9
90°-100°	215.3	1.1
100°-110°	684.0	3.5
110°-120°	1170.5	6.0
120°-130°	1539.4	7.8
130°-140°	1727.9	8.8
140°-150°	1694.4	8.6
150°-160°	1421.4	7.2
160°-170°	942.6	4.8
170°-180°	329.5	1.7
0°-30°	2911.0	14.8
0°-40°	4669.7	23.8
0°-60°	7958.0	40.5
0°-90°	9909.9	50.5
90°-120°	2069.8	10.5
90°-150°	7031.6	35.8
90°-180°	9725.0	49.5
0°-180°	19635.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3891	3891	3891	3891	3891	
5°	3891	3876	3835	3865	3858	369
15°	3704	3682	3633	3648	3630	1043
25°	3352	3323	3259	3266	3259	1543
35°	2892	2855	2795	2772	2754	1806
45°	2354	2327	2271	2230	2215	1816
55°	1781	1759	1714	1669	1650	1592
65°	1201	1179	1141	1108	1089	1188
75°	628	621	602	580	588	671
85°	153	150	146	135	131	171
90°	3	38	103	96	100	19
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°	3891.1	3891.1	3891.1	3891.1	3891.1
2.5°	3913.7	3895.0	3853.7	3891.1	3883.9
5°	3891.1	3876.4	3835.1	3864.9	3857.7
7.5°	3864.9	3842.6	3801.3	3831.5	3824.0
10°	3824.0	3797.8	3752.9	3782.7	3771.6
12.5°	3767.6	3745.4	3700.5	3719.2	3711.6
15°	3704.1	3681.9	3633.0	3648.1	3629.5
17.5°	3625.5	3603.3	3554.4	3573.1	3554.4
20°	3539.3	3517.1	3464.7	3475.8	3461.1
22.5°	3453.6	3419.9	3371.0	3371.0	3363.5
25°	3352.4	3322.6	3259.1	3266.2	3259.1
27.5°	3240.0	3213.8	3165.4	3154.3	3135.6
30°	3128.1	3097.9	3041.9	3030.8	3015.7
32.5°	3008.2	2986.0	2926.0	2903.4	2888.3
35°	2892.3	2855.0	2795.0	2772.4	2753.7
37.5°	2761.3	2727.5	2667.6	2641.4	2622.7
40°	2626.7	2596.5	2536.6	2503.3	2488.2
42.5°	2495.7	2465.5	2406.0	2368.3	2346.1
45°	2353.6	2327.4	2271.0	2230.1	2215.1
47.5°	2215.1	2188.9	2128.9	2087.6	2065.4
50°	2069.0	2050.3	1997.9	1945.5	1926.9
52.5°	1926.9	1900.7	1852.2	1811.0	1784.8
55°	1781.2	1758.6	1713.7	1668.8	1650.2
57.5°	1635.1	1616.4	1567.6	1522.8	1507.7
60°	1489.0	1474.3	1421.9	1380.6	1369.5
62.5°	1346.9	1320.7	1283.4	1246.1	1231.0
65°	1201.2	1178.6	1141.3	1107.5	1088.9
67.5°	1051.6	1032.5	999.2	973.0	957.9
70°	913.0	897.9	864.2	838.0	823.3
72.5°	770.9	755.8	737.2	711.0	699.8
75°	628.4	621.3	602.2	580.0	587.5
77.5°	501.4	486.3	478.7	467.6	456.5
80°	374.3	370.4	362.8	351.7	344.2
82.5°	254.5	254.5	250.9	235.8	235.8
85°	153.2	149.7	146.1	134.6	131.0
87.5°	67.5	59.9	52.4	41.3	37.3
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	11.01	11.87	11.96	12.84	14.10	10.57	11.44	11.53	12.41	13.67
	3H	12.67	13.44	13.63	14.42	15.71	12.19	12.97	13.16	13.95	15.24
	4H	13.26	13.99	14.23	14.97	16.27	12.78	13.52	13.76	14.50	15.79
	6H	13.66	14.33	14.65	15.32	16.63	13.18	13.86	14.17	14.85	16.15
	8H	13.76	14.41	14.76	15.41	16.72	13.29	13.93	14.28	14.94	16.24
	12H	13.81	14.42	14.81	15.42	16.75	13.33	13.94	14.33	14.94	16.27
4H	2H	11.47	12.20	12.45	13.19	14.48	11.12	11.86	12.11	12.84	14.14
	3H	13.34	13.95	14.33	14.96	16.27	12.94	13.56	13.94	14.57	15.88
	4H	14.05	14.61	15.05	15.62	16.95	13.65	14.21	14.65	15.21	16.54
	6H	14.57	15.05	15.58	16.08	17.41	14.16	14.64	15.17	15.67	17.00
	8H	14.72	15.17	15.73	16.19	17.54	14.31	14.76	15.32	15.78	17.12
	12H	14.79	15.20	15.83	16.24	17.59	14.37	14.78	15.40	15.81	17.16
8H	4H	14.25	14.70	15.26	15.72	17.07	13.89	14.34	14.90	15.36	16.71
	6H	14.88	15.26	15.92	16.32	17.66	14.52	14.89	15.56	15.95	17.30
	8H	15.10	15.43	16.15	16.48	17.84	14.73	15.06	15.78	16.11	17.47
	12H	15.24	15.53	16.29	16.57	17.97	14.85	15.14	15.90	16.18	17.59
12H	4H	14.24	14.64	15.27	15.68	17.03	13.88	14.29	14.92	15.33	16.68
	6H	14.91	15.24	15.96	16.29	17.65	14.56	14.89	15.61	15.94	17.30
	8H	15.16	15.45	16.21	16.49	17.89	14.80	15.09	15.85	16.13	17.53