

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: P921920

Luminaire Tested: DFN2DIP-HX4F0-110D100US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921920
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-HX4F0-110D100US940-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

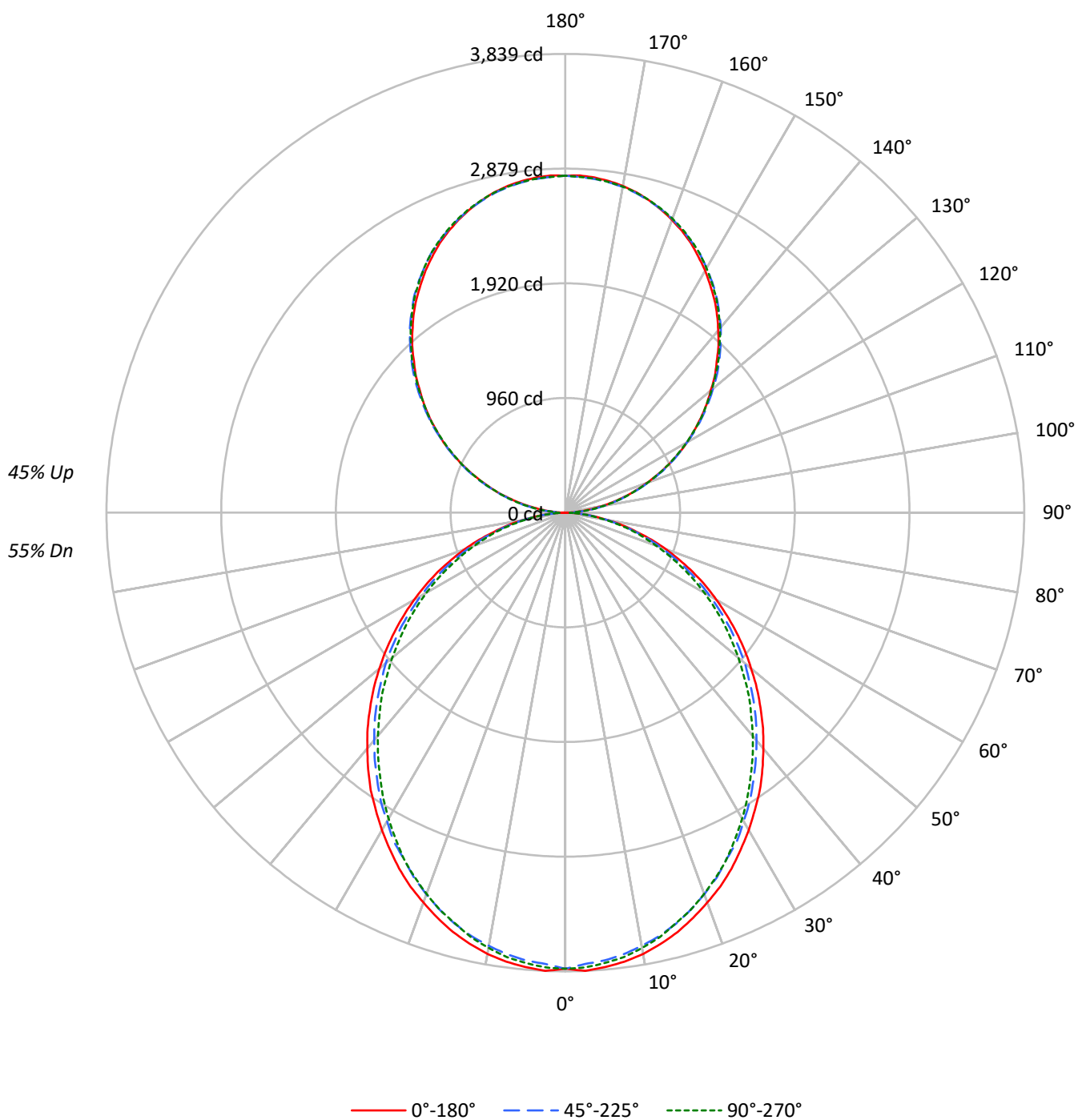
Lumens per Lamp: N/A
Luminaire Lumens: 17602.4 lumens
Efficiency: N/A
Efficacy: 103.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61
1	99	95	91	87	92	88	85	82	76	73	71	64	63	61	54	53	51
2	90	83	76	71	83	77	72	67	66	62	59	56	53	51	47	45	43
3	82	73	65	59	76	68	61	56	58	53	49	50	46	43	42	39	37
4	75	64	56	50	70	60	53	47	52	46	42	45	40	37	38	34	32
5	69	57	49	43	64	54	46	41	47	41	36	40	36	32	34	30	28
6	64	51	43	37	59	48	41	36	42	36	32	36	32	28	31	27	24
7	59	47	38	33	55	44	36	31	38	32	28	33	28	25	28	24	22
8	55	42	34	29	51	40	33	28	35	29	25	30	26	22	26	22	19
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2838	2838	2838
5°	2843	2799	2817
10°	2820	2761	2779
15°	2779	2716	2720
20°	2723	2653	2659
25°	2667	2578	2589
30°	2598	2508	2499
35°	2532	2425	2404
40°	2451	2342	2314
45°	2370	2258	2222
50°	2281	2171	2115
55°	2188	2069	2017
60°	2084	1948	1905
65°	1970	1824	1772
70°	1824	1672	1629
75°	1623	1490	1498
80°	1381	1258	1246
85°	1002	857	829

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2370 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	359.2	2.0
10°-20°	1010.7	5.7
20°-30°	1485.4	8.4
30°-40°	1725.2	9.8
40°-50°	1723.0	9.8
50°-60°	1502.4	8.5
60°-70°	1110.6	6.3
70°-80°	628.4	3.6
80°-90°	173.9	1.0
90°-100°	174.5	1.0
100°-110°	554.5	3.2
110°-120°	948.9	5.4
120°-130°	1247.9	7.1
130°-140°	1400.8	8.0
140°-150°	1373.6	7.8
150°-160°	1152.3	6.5
160°-170°	764.1	4.3
170°-180°	267.1	1.5
0°-30°	2855.3	16.2
0°-40°	4580.5	26.0
0°-60°	7805.9	44.3
0°-90°	9718.8	55.2
90°-120°	1677.9	9.5
90°-150°	5700.1	32.4
90°-180°	7884.0	44.8
0°-180°	17602.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3817	3817	3817	3817	3817	
5°	3817	3802	3762	3791	3784	362
15°	3633	3611	3564	3578	3560	1023
25°	3288	3259	3197	3204	3197	1513
35°	2837	2800	2742	2719	2701	1772
45°	2309	2283	2228	2188	2173	1782
55°	1747	1725	1681	1637	1619	1562
65°	1178	1156	1120	1086	1068	1165
75°	616	609	591	569	576	658
85°	150	147	143	132	128	168
90°	3	31	83	78	81	17
95°	124	148	152	152	148	138
105°	512	519	524	528	528	540
115°	952	966	962	959	952	942
125°	1385	1406	1400	1392	1389	1238
135°	1791	1818	1823	1820	1814	1385
145°	2175	2192	2206	2208	2199	1359
155°	2487	2494	2501	2513	2506	1145
165°	2705	2703	2703	2720	2708	763
175°	2815	2808	2803	2820	2806	267
180°	2820	2820	2820	2820	2820	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3816.7	3816.7	3816.7	3816.7	3816.7
2.5°	3838.8	3820.5	3780.0	3816.7	3809.7
5°	3816.7	3802.3	3761.8	3790.9	3784.0
7.5°	3790.9	3769.2	3728.7	3758.3	3750.9
10°	3750.9	3725.1	3681.2	3710.3	3699.4
12.5°	3695.6	3673.8	3629.8	3648.1	3640.7
15°	3633.3	3611.4	3563.5	3578.3	3560.1
17.5°	3556.1	3534.4	3486.5	3504.8	3486.5
20°	3471.7	3449.8	3398.5	3409.4	3395.0
22.5°	3387.6	3354.4	3306.6	3306.6	3299.1
25°	3288.3	3259.1	3196.8	3203.8	3196.8
27.5°	3178.1	3152.4	3104.8	3094.0	3075.7
30°	3068.3	3038.7	2983.8	2972.9	2958.1
32.5°	2950.7	2928.9	2870.1	2847.9	2833.1
35°	2837.0	2800.4	2741.6	2719.4	2701.1
37.5°	2708.5	2675.4	2616.6	2590.9	2572.6
40°	2576.5	2546.9	2488.1	2455.4	2440.6
42.5°	2448.0	2418.4	2360.0	2323.0	2301.2
45°	2308.6	2282.9	2227.6	2187.5	2172.7
47.5°	2172.7	2147.1	2088.2	2047.7	2025.9
50°	2029.4	2011.2	1959.7	1908.3	1890.1
52.5°	1890.1	1864.3	1816.9	1776.3	1750.6
55°	1747.1	1724.9	1681.0	1636.9	1618.6
57.5°	1603.8	1585.6	1537.7	1493.6	1478.8
60°	1460.5	1446.2	1394.7	1354.2	1343.4
62.5°	1321.2	1295.5	1258.8	1222.3	1207.5
65°	1178.2	1156.0	1119.5	1086.4	1068.1
67.5°	1031.4	1012.8	980.1	954.4	939.6
70°	895.5	880.7	847.7	822.0	807.5
72.5°	756.2	741.4	723.1	697.4	686.4
75°	616.4	609.4	590.7	568.9	576.3
77.5°	491.8	477.0	469.6	458.7	447.8
80°	367.2	363.3	355.9	345.0	337.6
82.5°	249.6	249.6	246.1	231.3	231.3
85°	150.3	146.8	143.3	132.0	128.5
87.5°	66.2	58.8	51.4	40.5	36.6
90°	2.6	30.6	83.3	78.2	80.8
92.5°	52.7	71.4	74.0	76.5	76.5
95°	124.1	147.9	152.2	152.2	147.9
97.5°	206.6	228.7	238.1	238.1	238.1
100°	301.8	321.4	328.1	328.1	325.7
102.5°	402.2	416.6	426.0	428.5	426.0
105°	511.8	518.6	523.7	528.0	528.0
107.5°	620.6	630.9	630.9	632.6	620.6
110°	726.1	739.7	739.7	739.7	732.9

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	840.0	854.4	851.9	845.1	840.0
115°	952.3	965.8	961.6	959.0	952.3
117.5°	1063.6	1082.4	1070.4	1063.6	1056.8
120°	1175.8	1194.5	1175.8	1175.8	1168.2
122.5°	1277.8	1301.6	1289.8	1283.0	1277.8
125°	1385.0	1406.2	1399.5	1391.8	1389.3
127.5°	1489.6	1515.9	1506.5	1496.4	1489.6
130°	1587.3	1617.9	1613.7	1608.6	1599.3
132.5°	1697.0	1720.8	1722.5	1710.7	1703.8
135°	1791.4	1817.8	1822.8	1820.3	1813.5
137.5°	1896.8	1918.1	1922.3	1920.7	1910.4
140°	1989.5	2010.7	2022.7	2022.7	2013.3
142.5°	2084.7	2106.0	2112.7	2115.3	2106.0
145°	2174.8	2191.8	2205.5	2208.0	2198.6
147.5°	2255.6	2276.9	2287.1	2291.3	2282.0
150°	2339.0	2353.4	2362.8	2370.3	2362.8
152.5°	2412.9	2427.3	2439.3	2448.6	2439.3
155°	2486.9	2493.7	2501.3	2513.2	2505.5
157.5°	2550.6	2555.7	2560.0	2577.0	2565.1
160°	2607.6	2612.7	2615.2	2629.7	2619.5
162.5°	2660.3	2660.3	2662.8	2679.0	2667.1
165°	2705.4	2702.8	2702.8	2719.8	2707.9
167.5°	2746.2	2738.5	2738.5	2755.6	2743.6
170°	2776.8	2770.0	2767.4	2784.5	2770.0
172.5°	2798.0	2791.2	2788.6	2805.7	2791.2
175°	2815.0	2808.3	2803.2	2820.1	2805.7
177.5°	2824.4	2817.6	2812.5	2826.9	2812.5
180°	2820.1	2820.1	2820.1	2820.1	2820.1

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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	11.36	12.27	12.27	13.20	14.40	10.93	11.84	11.84	12.77	13.97
	3H	13.03	13.85	13.95	14.78	16.00	12.56	13.37	13.48	14.31	15.53
	4H	13.62	14.39	14.56	15.34	16.56	13.15	13.92	14.08	14.86	16.09
	6H	14.02	14.73	14.97	15.68	16.93	13.55	14.26	14.50	15.21	16.45
	8H	14.13	14.81	15.09	15.77	17.01	13.65	14.33	14.61	15.30	16.54
	12H	14.18	14.82	15.14	15.79	17.05	13.70	14.34	14.66	15.30	16.57
4H	2H	11.83	12.60	12.78	13.55	14.78	11.49	12.26	12.43	13.20	14.43
	3H	13.70	14.35	14.66	15.32	16.57	13.31	13.96	14.26	14.93	16.17
	4H	14.42	15.01	15.38	15.98	17.25	14.01	14.60	14.98	15.57	16.84
	6H	14.94	15.45	15.92	16.44	17.71	14.53	15.04	15.51	16.03	17.30
	8H	15.09	15.57	16.07	16.55	17.83	14.68	15.15	15.66	16.14	17.42
	12H	15.17	15.60	16.16	16.60	17.88	14.74	15.17	15.74	16.18	17.46
8H	4H	14.62	15.10	15.60	16.08	17.36	14.26	14.74	15.24	15.72	17.00
	6H	15.26	15.65	16.26	16.68	17.96	14.89	15.29	15.90	16.31	17.59
	8H	15.48	15.83	16.49	16.84	18.14	15.11	15.46	16.12	16.47	17.77
	12H	15.61	15.92	16.63	16.93	18.27	15.23	15.53	16.24	16.54	17.89
12H	4H	14.61	15.04	15.61	16.04	17.33	14.26	14.69	15.25	15.69	16.97
	6H	15.29	15.63	16.30	16.65	17.95	14.94	15.28	15.95	16.30	17.59
	8H	15.53	15.84	16.55	16.85	18.19	15.18	15.48	16.19	16.49	17.83