

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: P921853

Luminaire Tested: DFN2DIP-HX4F0-070D120US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921853
REPORT IS A COMBINATION OF REPORTS P899450 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-070D120US940-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

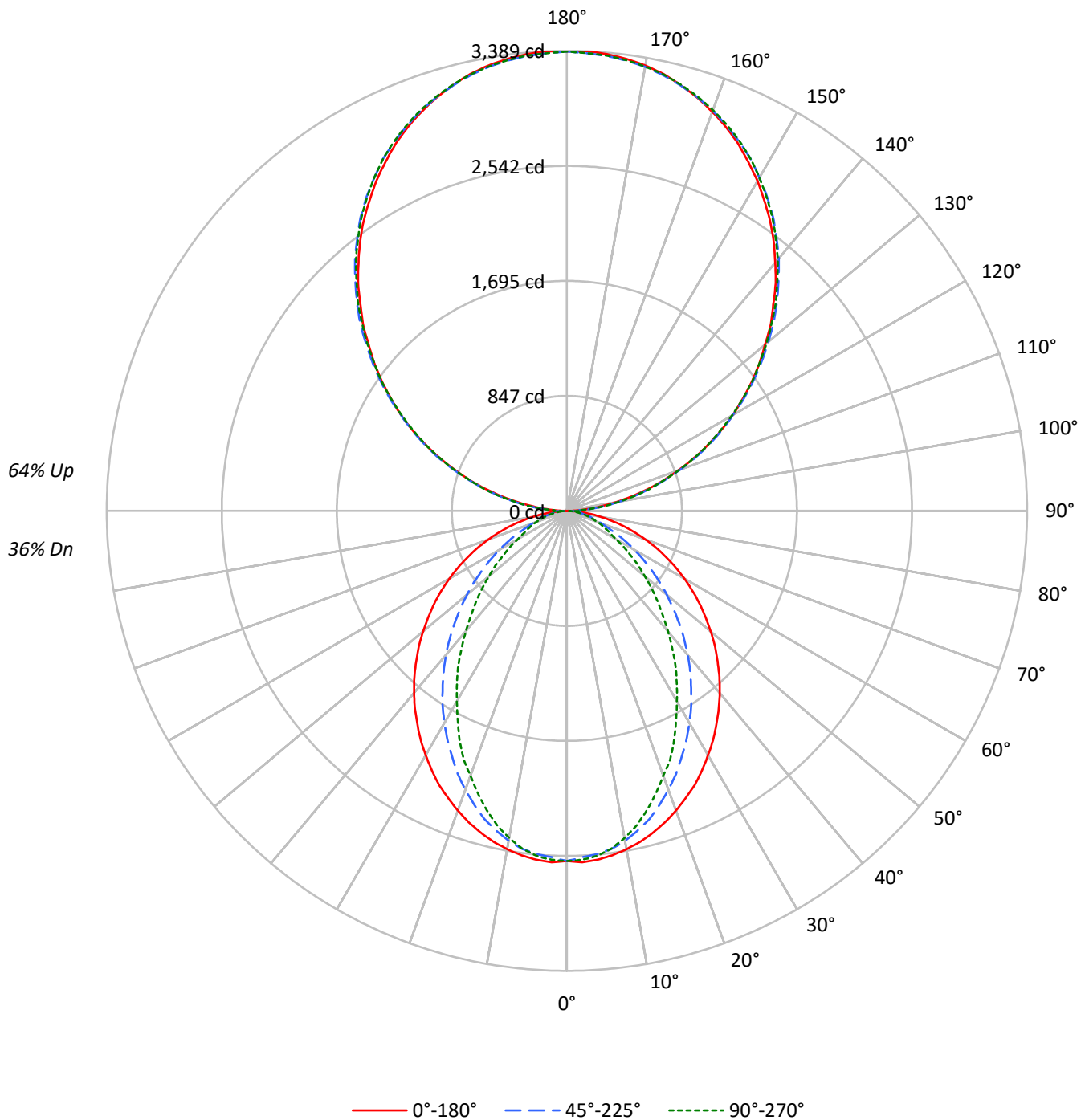
Lumens per Lamp: N/A
Luminaire Lumens: 14775.6 lumens
Efficiency: N/A
Efficacy: 105.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 139.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9972
Total Harmonic Distortion (THDi): 0.128
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	104	104	104	104	94	94	94	94	76	76	76	59	59	59	43	43	43
1	95	91	87	84	86	82	79	77	67	64	63	52	51	49	39	38	37
2	87	80	74	69	78	72	68	63	59	55	52	46	44	42	34	33	32
3	79	70	63	58	72	64	58	53	52	48	44	41	38	36	31	29	27
4	73	62	55	49	66	57	50	45	46	42	38	37	34	31	28	26	24
5	67	56	48	42	60	51	44	39	42	37	33	33	30	27	25	23	21
6	62	50	42	37	56	46	39	34	38	33	29	30	26	24	23	21	19
7	57	45	38	32	51	41	35	30	34	29	25	27	24	21	21	19	17
8	53	41	34	28	48	38	31	26	31	26	23	25	21	19	19	17	15
9	49	37	30	25	45	34	28	24	29	24	20	23	20	17	18	15	14
10	46	34	27	23	42	32	25	21	26	22	18	21	18	15	17	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1918	1918	1918
5°	1921	1888	1900
10°	1903	1851	1838
15°	1877	1790	1743
20°	1842	1706	1626
25°	1807	1612	1512
30°	1759	1515	1369
35°	1713	1411	1243
40°	1665	1303	1098
45°	1611	1183	967
50°	1554	1063	839
55°	1494	934	716
60°	1426	799	589
65°	1347	662	531
70°	1251	534	480
75°	1131	471	437
80°	957	396	379
85°	669	265	286

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2551 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	241.8	1.6
10°-20°	663.7	4.5
20°-30°	931.9	6.3
30°-40°	1015.8	6.9
40°-50°	933.6	6.3
50°-60°	733.2	5.0
60°-70°	477.3	3.2
70°-80°	245.7	1.7
80°-90°	72.3	0.5
90°-100°	209.4	1.4
100°-110°	665.4	4.5
110°-120°	1138.7	7.7
120°-130°	1497.5	10.1
130°-140°	1680.9	11.4
140°-150°	1648.3	11.2
150°-160°	1382.7	9.4
160°-170°	917.0	6.2
170°-180°	320.5	2.2
0°-30°	1837.4	12.4
0°-40°	2853.2	19.3
0°-60°	4520.0	30.6
0°-90°	5315.3	36.0
90°-120°	2013.4	13.6
90°-150°	6840.1	46.3
90°-180°	9460.0	64.0
0°-180°	14775.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2580	2580	2580	2580	2580	
5°	2580	2568	2538	2559	2552	245
15°	2454	2428	2349	2304	2281	691
25°	2227	2152	1998	1903	1868	1024
35°	1919	1800	1595	1448	1396	1201
45°	1569	1412	1167	1002	946	1212
55°	1193	1011	759	619	574	1066
65°	806	616	406	327	320	799
75°	430	266	187	170	168	454
85°	100	51	44	44	44	115
90°	3	37	100	94	97	15
95°	149	178	183	183	178	166
105°	614	622	628	634	634	648
115°	1143	1159	1154	1151	1143	1130
125°	1662	1688	1679	1670	1667	1485
135°	2150	2181	2188	2184	2176	1662
145°	2610	2630	2646	2650	2638	1631
155°	2984	2992	3002	3016	3007	1374
165°	3246	3243	3243	3264	3250	916
175°	3378	3370	3364	3384	3367	321
180°	3384	3384	3384	3384	3384	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2579.8	2579.8	2579.8	2579.8	2579.8
2.5°	2591.4	2579.8	2554.0	2577.6	2572.9
5°	2579.8	2568.1	2537.7	2558.8	2551.8
7.5°	2558.8	2544.9	2512.2	2521.3	2509.7
10°	2530.8	2514.4	2467.8	2460.7	2446.8
12.5°	2495.8	2474.8	2411.6	2397.7	2371.9
15°	2453.7	2427.9	2348.7	2304.4	2281.1
17.5°	2404.7	2367.3	2269.2	2217.9	2180.5
20°	2348.7	2301.9	2185.2	2127.0	2075.5
22.5°	2288.0	2234.3	2098.7	2019.5	1984.6
25°	2227.3	2152.5	1998.4	1902.8	1867.7
27.5°	2155.0	2075.5	1905.1	1795.4	1741.6
30°	2078.0	1989.0	1802.2	1683.4	1620.2
32.5°	2003.1	1895.7	1704.4	1564.2	1505.7
35°	1919.1	1800.0	1594.7	1447.6	1396.1
37.5°	1837.5	1708.9	1491.9	1330.6	1272.5
40°	1751.0	1611.1	1384.4	1218.7	1158.0
42.5°	1662.3	1513.0	1277.1	1104.2	1046.1
45°	1569.0	1412.4	1167.4	1001.5	945.5
47.5°	1480.2	1314.6	1062.4	896.4	845.2
50°	1382.2	1216.5	959.6	798.3	749.6
52.5°	1286.3	1111.2	861.5	707.4	663.1
55°	1192.9	1010.8	758.7	618.8	574.4
57.5°	1097.3	910.5	667.8	537.0	499.6
60°	999.3	812.4	571.9	453.1	415.6
62.5°	903.6	716.8	490.2	378.3	359.6
65°	805.5	616.3	406.3	327.0	319.8
67.5°	712.1	522.9	327.0	287.0	280.2
70°	614.0	431.9	270.7	247.4	238.0
72.5°	520.7	347.8	226.4	207.9	203.1
75°	429.5	266.0	186.7	170.4	168.2
77.5°	338.6	189.0	147.1	137.7	133.0
80°	254.4	135.5	112.0	102.8	102.8
82.5°	177.4	91.1	77.0	72.3	72.3
85°	100.3	51.3	44.3	44.3	44.3
87.5°	37.4	18.5	18.5	16.3	16.3
90°	3.0	36.7	100.0	93.9	96.9
92.5°	63.2	85.7	88.7	91.8	91.8
95°	148.9	177.5	182.6	182.6	177.5
97.5°	247.9	274.5	285.7	285.7	285.7
100°	362.2	385.7	393.8	393.8	390.7
102.5°	482.6	499.9	511.1	514.2	511.1
105°	614.2	622.3	628.5	633.6	633.6
107.5°	744.8	757.1	757.1	759.0	744.8
110°	871.3	887.6	887.6	887.6	879.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1008.0	1025.4	1022.3	1014.1	1008.0
115°	1142.6	1159.0	1153.9	1150.8	1142.6
117.5°	1276.3	1298.8	1284.5	1276.3	1268.2
120°	1411.0	1433.4	1411.0	1411.0	1401.9
122.5°	1533.5	1562.0	1547.7	1539.5	1533.5
125°	1662.0	1687.5	1679.4	1670.2	1667.1
127.5°	1787.5	1819.1	1807.9	1795.6	1787.5
130°	1904.8	1941.5	1936.4	1930.3	1919.0
132.5°	2036.4	2065.0	2067.0	2052.7	2044.6
135°	2149.6	2181.3	2187.5	2184.3	2176.2
137.5°	2276.2	2301.7	2306.8	2304.7	2292.5
140°	2387.4	2412.9	2427.1	2427.1	2415.9
142.5°	2501.7	2527.2	2535.3	2538.3	2527.2
145°	2609.8	2630.2	2646.5	2649.6	2638.4
147.5°	2706.7	2732.2	2744.5	2749.6	2738.4
150°	2806.7	2824.0	2835.3	2844.5	2835.3
152.5°	2895.5	2912.8	2927.1	2938.4	2927.1
155°	2984.2	2992.4	3001.6	3015.9	3006.7
157.5°	3060.8	3066.9	3071.9	3092.4	3078.1
160°	3129.1	3135.3	3138.3	3155.7	3143.4
162.5°	3192.3	3192.3	3195.4	3214.8	3200.5
165°	3246.4	3243.4	3243.4	3263.7	3249.5
167.5°	3295.4	3286.2	3286.2	3306.6	3292.4
170°	3332.1	3323.9	3320.9	3341.3	3323.9
172.5°	3357.6	3349.4	3346.4	3366.8	3349.4
175°	3378.1	3369.9	3363.8	3384.1	3366.8
177.5°	3389.3	3381.1	3374.9	3392.3	3374.9
180°	3384.1	3384.1	3384.1	3384.1	3384.1

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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	7.94	8.67	9.01	9.74	11.20	3.91	4.64	4.99	5.71	7.17
	3H	9.61	10.26	10.69	11.34	12.82	5.09	5.74	6.18	6.82	8.30
	4H	10.21	10.83	11.31	11.91	13.40	5.54	6.16	6.63	7.24	8.72
	6H	10.63	11.20	11.73	12.28	13.78	5.86	6.42	6.96	7.51	9.01
	8H	10.75	11.29	11.86	12.39	13.88	5.95	6.49	7.05	7.59	9.08
	12H	10.81	11.32	11.92	12.42	13.93	5.99	6.50	7.10	7.59	9.11
4H	2H	7.94	8.56	9.05	9.64	11.13	4.49	5.11	5.60	6.19	7.68
	3H	9.76	10.28	10.87	11.39	12.88	5.84	6.35	6.94	7.46	8.96
	4H	10.45	10.92	11.57	12.02	13.54	6.38	6.85	7.49	7.95	9.47
	6H	10.96	11.37	12.08	12.49	14.00	6.80	7.20	7.92	8.32	9.83
	8H	11.14	11.51	12.26	12.63	14.15	6.93	7.30	8.04	8.42	9.94
	12H	11.23	11.57	12.36	12.70	14.23	6.99	7.33	8.12	8.45	9.99
8H	4H	10.41	10.79	11.53	11.90	13.43	6.66	7.03	7.77	8.15	9.67
	6H	10.98	11.29	12.12	12.44	13.97	7.17	7.48	8.31	8.64	10.16
	8H	11.19	11.47	12.34	12.60	14.15	7.36	7.64	8.51	8.77	10.32
	12H	11.33	11.57	12.48	12.70	14.28	7.48	7.72	8.63	8.85	10.43
12H	4H	10.36	10.70	11.50	11.83	13.36	6.66	7.00	7.79	8.12	9.65
	6H	10.95	11.22	12.10	12.36	13.90	7.22	7.49	8.37	8.63	10.17
	8H	11.17	11.41	12.32	12.54	14.12	7.43	7.67	8.58	8.80	10.38