

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: P919106

Luminaire Tested: DFN2DIP-HX4F0-060D120US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P919106
REPORT IS A COMBINATION OF REPORTS P899447 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-060D120US935-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

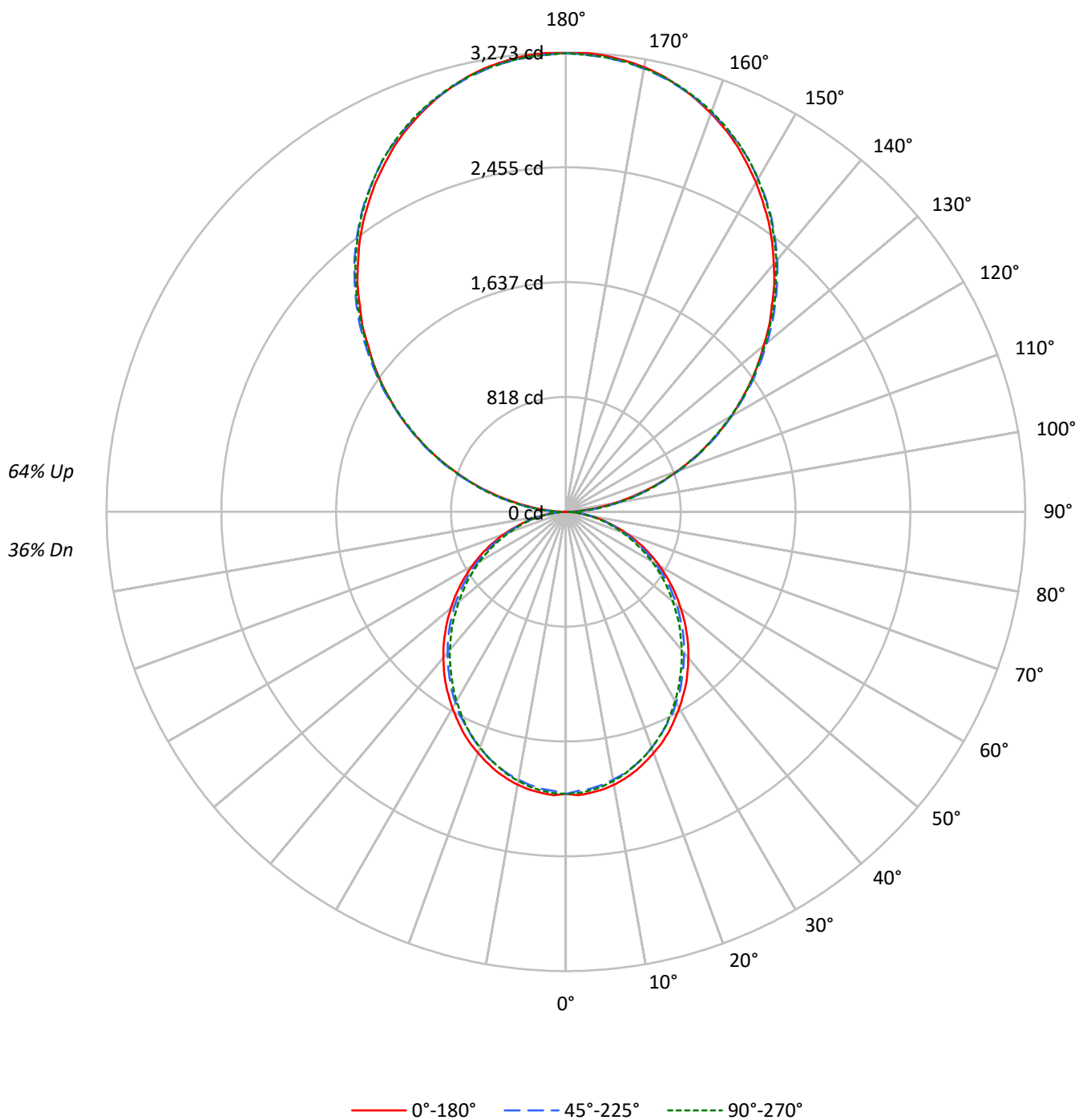
Lumens per Lamp: N/A
Luminaire Lumens: 14258.1 lumens
Efficiency: N/A
Efficacy: 111.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 127.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.099
Total Harmonic Distortion (THDi): 0.979
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-HX4F0-060D120US935-FLLFL

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	90	87	83	85	82	79	76	66	64	62	52	50	49	38	37	36
2	86	79	73	68	78	72	66	62	58	54	51	45	43	41	34	32	31
3	79	69	62	56	71	63	57	52	51	47	43	40	37	34	30	28	26
4	72	61	54	48	65	56	49	44	45	40	37	36	32	29	27	24	22
5	66	54	47	41	59	50	43	38	40	35	31	32	28	25	24	22	20
6	61	49	41	35	55	45	38	33	36	31	27	29	25	22	22	19	17
7	56	44	36	31	50	40	33	28	33	28	24	26	22	20	20	17	15
8	52	40	32	27	47	36	30	25	30	25	21	24	20	17	18	16	14
9	48	36	29	24	44	33	27	22	27	22	19	22	18	16	17	14	12
10	45	33	26	21	41	30	24	20	25	20	17	20	17	14	16	13	11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1495	1495	1495
5°	1497	1474	1484
10°	1485	1454	1464
15°	1463	1430	1433
20°	1434	1397	1400
25°	1405	1358	1363
30°	1368	1321	1316
35°	1333	1277	1266
40°	1291	1233	1219
45°	1248	1189	1170
50°	1201	1143	1114
55°	1153	1090	1062
60°	1097	1026	1003
65°	1037	961	933
70°	961	880	858
75°	855	785	789
80°	727	662	656
85°	527	451	437

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2464 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	189.2	1.3
10°-20°	532.3	3.7
20°-30°	782.3	5.5
30°-40°	908.6	6.4
40°-50°	907.5	6.4
50°-60°	791.3	5.5
60°-70°	584.9	4.1
70°-80°	330.9	2.3
80°-90°	96.6	0.7
90°-100°	202.2	1.4
100°-110°	642.4	4.5
110°-120°	1099.4	7.7
120°-130°	1445.9	10.1
130°-140°	1623.0	11.4
140°-150°	1591.6	11.2
150°-160°	1335.1	9.4
160°-170°	885.4	6.2
170°-180°	309.5	2.2
0°-30°	1503.8	10.5
0°-40°	2412.4	16.9
0°-60°	4111.1	28.8
0°-90°	5123.6	35.9
90°-120°	1944.1	13.6
90°-150°	6604.6	46.3
90°-180°	9134.0	64.1
0°-180°	14258.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2010	2010	2010	2010	2010	
5°	2010	2002	1981	1997	1993	191
15°	1914	1902	1877	1885	1875	539
25°	1732	1716	1684	1687	1684	797
35°	1494	1475	1444	1432	1422	933
45°	1216	1202	1173	1152	1144	938
55°	920	908	885	862	852	823
65°	620	609	590	572	562	614
75°	325	321	311	300	304	347
85°	79	77	75	70	68	88
90°	3	36	96	91	94	14
95°	144	171	176	176	171	160
105°	593	601	607	612	612	626
115°	1103	1119	1114	1111	1103	1091
125°	1605	1629	1622	1613	1610	1434
135°	2076	2106	2112	2109	2101	1604
145°	2520	2540	2555	2558	2548	1574
155°	2881	2889	2898	2912	2903	1326
165°	3135	3132	3132	3151	3138	884
175°	3262	3254	3248	3268	3251	310
180°	3268	3268	3268	3268	3268	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2010.1	2010.1	2010.1	2010.1	2010.1
2.5°	2021.8	2012.2	1990.8	2010.1	2006.4
5°	2010.1	2002.5	1981.2	1996.6	1992.9
7.5°	1996.6	1985.1	1963.8	1979.3	1975.5
10°	1975.5	1962.0	1938.7	1954.1	1948.4
12.5°	1946.4	1934.8	1911.7	1921.3	1917.4
15°	1913.5	1902.0	1876.8	1884.6	1875.0
17.5°	1872.9	1861.5	1836.3	1845.8	1836.3
20°	1828.4	1817.0	1789.8	1795.6	1788.0
22.5°	1784.2	1766.7	1741.5	1741.5	1737.6
25°	1731.8	1716.5	1683.6	1687.3	1683.6
27.5°	1673.8	1660.3	1635.2	1629.5	1619.9
30°	1616.0	1600.3	1571.5	1565.7	1557.9
32.5°	1554.0	1542.6	1511.6	1499.9	1492.1
35°	1494.2	1474.9	1443.9	1432.2	1422.5
37.5°	1426.5	1409.0	1378.1	1364.5	1354.9
40°	1356.9	1341.3	1310.4	1293.2	1285.4
42.5°	1289.3	1273.7	1242.9	1223.5	1211.9
45°	1215.9	1202.3	1173.2	1152.1	1144.3
47.5°	1144.3	1130.7	1099.8	1078.5	1066.9
50°	1068.8	1059.2	1032.2	1005.0	995.4
52.5°	995.4	981.9	956.8	935.6	922.0
55°	920.1	908.4	885.3	862.1	852.5
57.5°	844.7	835.1	809.9	786.7	778.9
60°	769.2	761.6	734.6	713.3	707.5
62.5°	695.8	682.3	663.0	643.7	635.9
65°	620.5	608.9	589.6	572.1	562.5
67.5°	543.2	533.4	516.2	502.7	494.8
70°	471.7	463.9	446.4	432.9	425.3
72.5°	398.2	390.5	380.8	367.3	361.5
75°	324.6	321.0	311.1	299.6	303.5
77.5°	259.0	251.2	247.3	241.6	235.8
80°	193.4	191.3	187.4	181.7	177.8
82.5°	131.5	131.5	129.6	121.8	121.8
85°	79.1	77.3	75.4	69.5	67.7
87.5°	34.9	31.0	27.0	21.4	19.3
90°	2.9	35.5	96.5	90.7	93.6
92.5°	61.0	82.7	85.7	88.7	88.7
95°	143.8	171.4	176.3	176.3	171.4
97.5°	239.4	265.0	275.9	275.9	275.9
100°	349.7	372.4	380.2	380.2	377.3
102.5°	466.0	482.7	493.5	496.5	493.5
105°	593.1	600.9	606.8	611.7	611.7
107.5°	719.1	731.0	731.0	732.9	719.1
110°	841.3	857.0	857.0	857.0	849.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	973.3	990.1	987.0	979.2	973.3
115°	1103.3	1119.1	1114.1	1111.2	1103.3
117.5°	1232.3	1254.0	1240.3	1232.3	1224.5
120°	1362.4	1384.1	1362.4	1362.4	1353.6
122.5°	1480.7	1508.2	1494.4	1486.5	1480.7
125°	1604.7	1629.4	1621.5	1612.6	1609.6
127.5°	1726.0	1756.4	1745.6	1733.8	1726.0
130°	1839.2	1874.7	1869.7	1863.8	1853.0
132.5°	1966.3	1993.9	1995.8	1982.0	1974.2
135°	2075.6	2106.2	2112.1	2109.1	2101.3
137.5°	2197.8	2222.4	2227.3	2225.3	2213.5
140°	2305.1	2329.8	2343.6	2343.6	2332.7
142.5°	2415.5	2440.2	2448.0	2450.9	2440.2
145°	2519.9	2539.6	2555.4	2558.4	2547.5
147.5°	2613.5	2638.1	2650.0	2654.9	2644.0
150°	2710.1	2726.8	2737.6	2746.5	2737.6
152.5°	2795.7	2812.4	2826.3	2837.2	2826.3
155°	2881.4	2889.3	2898.2	2912.0	2903.1
157.5°	2955.4	2961.2	2966.1	2985.9	2972.1
160°	3021.3	3027.3	3030.2	3047.0	3035.1
162.5°	3082.4	3082.4	3085.4	3104.1	3090.3
165°	3134.6	3131.7	3131.7	3151.3	3137.6
167.5°	3181.9	3173.0	3173.0	3192.8	3179.0
170°	3217.4	3209.5	3206.5	3226.2	3209.5
172.5°	3242.0	3234.1	3231.2	3250.9	3234.1
175°	3261.7	3253.8	3247.9	3267.6	3250.9
177.5°	3272.6	3264.6	3258.7	3275.5	3258.7
180°	3267.6	3267.6	3267.6	3267.6	3267.6

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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	7.21	7.95	8.27	9.02	10.48	6.77	7.52	7.84	8.59	10.05
	3H	8.86	9.53	9.94	10.61	12.08	8.38	9.05	9.46	10.13	11.61
	4H	9.44	10.08	10.53	11.16	12.64	8.97	9.60	10.06	10.68	12.17
	6H	9.84	10.42	10.93	11.50	13.00	9.36	9.94	10.46	11.03	12.52
	8H	9.94	10.49	11.04	11.59	13.08	9.46	10.02	10.56	11.12	12.61
	12H	9.98	10.51	11.09	11.60	13.12	9.50	10.03	10.61	11.12	12.64
4H	2H	7.65	8.29	8.75	9.37	10.85	7.31	7.94	8.41	9.03	10.51
	3H	9.51	10.04	10.61	11.15	12.64	9.12	9.65	10.22	10.76	12.25
	4H	10.22	10.71	11.33	11.81	13.32	9.81	10.30	10.92	11.40	12.92
	6H	10.73	11.15	11.85	12.27	13.78	10.32	10.74	11.44	11.86	13.37
	8H	10.88	11.27	11.99	12.38	13.91	10.46	10.86	11.58	11.97	13.49
	12H	10.95	11.30	12.08	12.42	13.96	10.52	10.88	11.66	12.00	13.53
8H	4H	10.41	10.80	11.52	11.91	13.44	10.05	10.44	11.16	11.55	13.08
	6H	11.04	11.36	12.17	12.51	14.04	10.67	11.00	11.81	12.15	13.67
	8H	11.26	11.54	12.40	12.67	14.22	10.89	11.17	12.03	12.30	13.85
	12H	11.38	11.63	12.53	12.76	14.34	11.00	11.25	12.15	12.38	13.96
12H	4H	10.39	10.74	11.52	11.87	13.40	10.04	10.39	11.17	11.52	13.05
	6H	11.07	11.35	12.21	12.48	14.03	10.71	11.00	11.86	12.13	13.67
	8H	11.30	11.55	12.45	12.68	14.26	10.95	11.19	12.09	12.33	13.90