

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: P904117

Luminaire Tested: DFN2DIP-SQ4F0-110D060US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904117
REPORT IS A COMBINATION OF REPORTS P901589 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D060US830-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

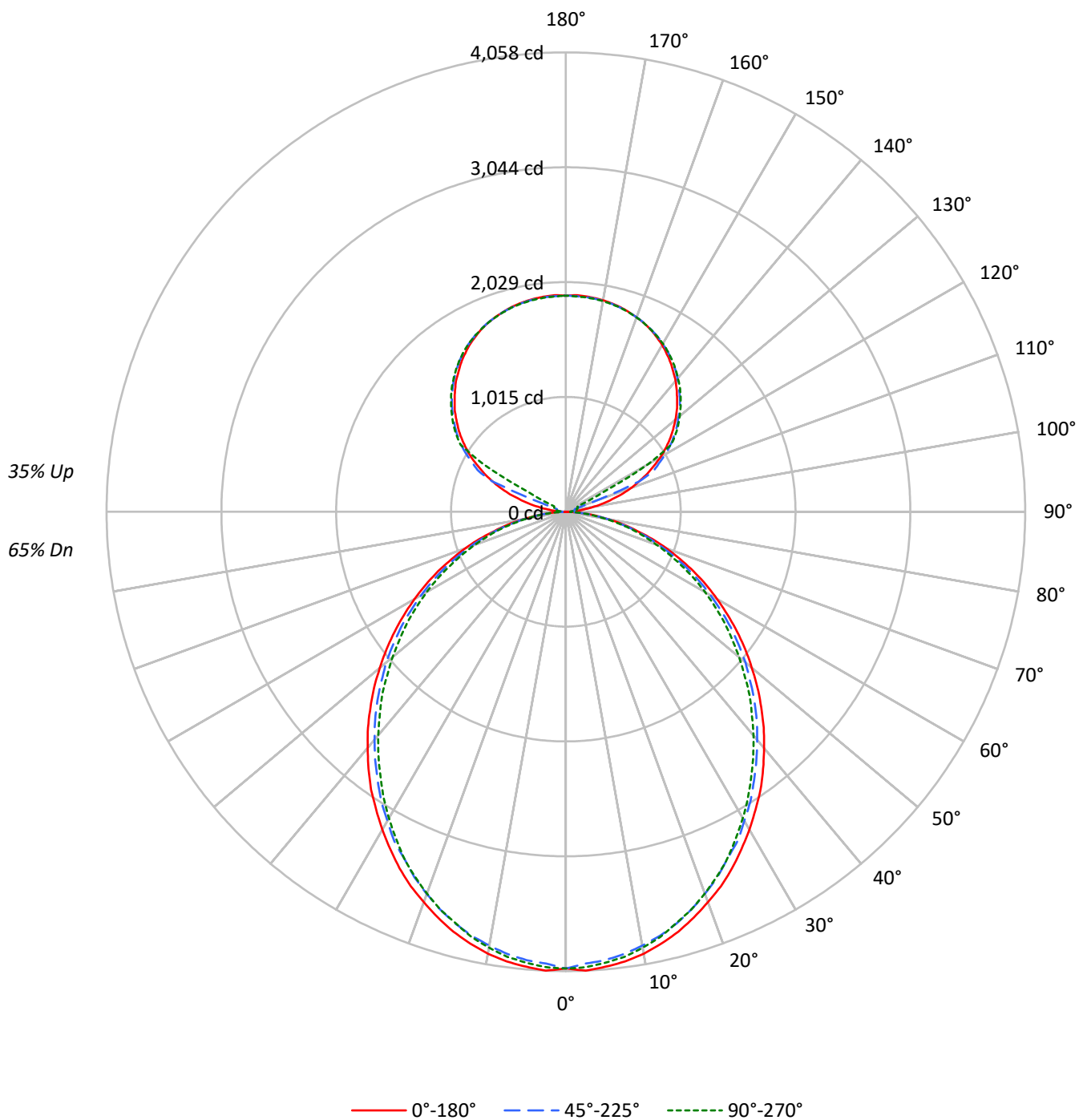
Lumens per Lamp: N/A
Luminaire Lumens: 15862.9 lumens
Efficiency: N/A
Efficacy: 105.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 150.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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	111	111	111	111	104	104	104	104	92	92	92	80	80	80	70	70	70
1	101	97	93	89	95	91	88	84	80	78	75	71	69	67	62	60	59
2	92	84	78	73	86	80	74	69	70	66	62	62	59	56	54	52	50
3	84	74	67	61	79	70	63	58	62	57	53	55	51	47	48	45	42
4	77	66	58	51	72	62	55	49	55	49	45	49	44	41	43	39	36
5	71	59	50	44	66	56	48	42	50	43	39	44	39	35	39	35	32
6	65	53	44	39	61	50	42	37	45	39	34	40	35	31	35	31	28
7	60	48	40	34	57	45	38	33	41	34	30	36	31	27	32	28	25
8	56	43	36	30	53	41	34	29	37	31	27	33	28	25	30	25	22
9	52	40	32	27	49	38	31	26	34	28	24	31	26	22	27	23	20
10	49	37	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2831	2831	2831
5°	2835	2792	2811
10°	2812	2755	2774
15°	2771	2710	2715
20°	2715	2648	2655
25°	2659	2573	2585
30°	2590	2503	2497
35°	2524	2421	2403
40°	2442	2338	2313
45°	2361	2255	2222
50°	2272	2168	2116
55°	2180	2067	2019
60°	2075	1947	1908
65°	1960	1823	1777
70°	1815	1672	1636
75°	1613	1492	1508
80°	1370	1262	1259
85°	990	863	846

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2361 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.7	2.4
10°-20°	1068.3	6.7
20°-30°	1570.0	9.9
30°-40°	1823.5	11.5
40°-50°	1821.2	11.5
50°-60°	1588.0	10.0
60°-70°	1173.9	7.4
70°-80°	664.2	4.2
80°-90°	178.6	1.1
90°-100°	62.9	0.4
100°-110°	234.6	1.5
110°-120°	622.2	3.9
120°-130°	1032.0	6.5
130°-140°	1096.2	6.9
140°-150°	1018.8	6.4
150°-160°	819.1	5.2
160°-170°	527.8	3.3
170°-180°	181.7	1.1
0°-30°	3018.1	19.0
0°-40°	4841.6	30.5
0°-60°	8250.9	52.0
0°-90°	10267.6	64.7
90°-120°	919.8	5.8
90°-150°	4066.8	25.6
90°-180°	5595.0	35.3
0°-180°	15862.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4034	4034	4034	4034	4034	
5°	4034	4019	3976	4007	4000	383
15°	3840	3817	3767	3782	3763	1082
25°	3476	3445	3379	3386	3379	1599
35°	2999	2960	2898	2874	2855	1873
45°	2440	2413	2355	2312	2297	1883
55°	1847	1823	1777	1730	1711	1651
65°	1245	1222	1183	1148	1129	1231
75°	652	644	624	601	609	696
85°	159	155	152	140	136	177
90°	1	17	28	35	37	15
95°	90	44	54	61	59	106
105°	420	461	84	99	105	449
115°	794	818	852	213	113	782
125°	1123	1141	1167	1177	1181	1001
135°	1389	1412	1424	1438	1435	1073
145°	1612	1610	1634	1643	1636	1008
155°	1775	1762	1779	1787	1776	818
165°	1870	1862	1866	1876	1866	528
175°	1913	1903	1906	1915	1902	182
180°	1909	1909	1909	1909	1909	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4034.3	4034.3	4034.3	4034.3	4034.3
2.5°	4057.6	4038.3	3995.5	4034.3	4026.8
5°	4034.3	4019.0	3976.2	4007.0	3999.7
7.5°	4007.0	3984.0	3941.2	3972.5	3964.7
10°	3964.7	3937.5	3891.0	3921.8	3910.3
12.5°	3906.3	3883.2	3836.7	3856.0	3848.2
15°	3840.4	3817.3	3766.7	3782.3	3763.0
17.5°	3758.9	3735.9	3685.2	3704.6	3685.2
20°	3669.6	3646.5	3592.2	3603.7	3588.5
22.5°	3580.7	3545.7	3495.0	3495.0	3487.2
25°	3475.7	3444.9	3379.0	3386.5	3379.0
27.5°	3359.2	3332.1	3281.8	3270.3	3251.0
30°	3243.2	3211.9	3153.8	3142.3	3126.7
32.5°	3118.9	3095.9	3033.7	3010.2	2994.6
35°	2998.7	2960.1	2897.8	2874.4	2855.1
37.5°	2862.9	2827.9	2765.8	2738.6	2719.2
40°	2723.4	2692.1	2630.0	2595.4	2579.7
42.5°	2587.6	2556.3	2494.5	2455.4	2432.4
45°	2440.2	2413.0	2354.6	2312.2	2296.6
47.5°	2296.6	2269.5	2207.2	2164.5	2141.4
50°	2145.1	2125.8	2071.4	2017.1	1997.8
52.5°	1997.8	1970.6	1920.4	1877.5	1850.4
55°	1846.7	1823.3	1776.8	1730.2	1710.9
57.5°	1695.3	1675.9	1625.3	1578.8	1563.1
60°	1543.8	1528.6	1474.2	1431.4	1419.9
62.5°	1396.5	1369.3	1330.6	1291.9	1276.3
65°	1245.4	1221.9	1183.3	1148.3	1129.0
67.5°	1090.2	1070.5	1035.9	1008.8	993.2
70°	946.6	930.9	896.0	868.8	853.6
72.5°	799.3	783.6	764.3	737.2	725.6
75°	651.5	644.1	624.3	601.3	609.2
77.5°	519.8	504.2	496.3	484.8	473.3
80°	388.1	384.0	376.2	364.7	356.8
82.5°	263.8	263.8	260.1	244.5	244.5
85°	158.9	155.1	151.5	139.5	135.8
87.5°	69.9	62.1	54.3	42.8	38.6
90°	1.3	16.6	27.5	34.6	37.2
92.5°	34.6	29.0	33.1	35.9	37.2
95°	89.7	44.1	53.8	60.9	59.4
97.5°	161.6	48.4	70.3	74.6	76.0
100°	244.5	55.2	78.7	89.7	92.5
102.5°	335.5	332.9	81.5	96.6	100.9
105°	419.8	461.3	84.3	99.3	105.0
107.5°	517.9	552.3	87.1	102.2	107.7
110°	611.9	640.7	241.8	103.7	109.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	700.2	725.0	701.5	106.2	110.6
115°	794.1	817.6	852.2	212.7	113.3
117.5°	875.5	903.1	926.7	729.2	367.3
120°	966.8	987.4	1012.4	1028.9	842.4
122.5°	1044.0	1066.1	1093.8	1102.0	1103.5
125°	1122.8	1140.8	1167.0	1176.7	1180.7
127.5°	1194.6	1213.9	1234.7	1248.5	1249.8
130°	1262.3	1284.4	1299.5	1314.8	1313.4
132.5°	1331.3	1349.3	1364.4	1376.9	1375.5
135°	1389.4	1411.6	1423.8	1437.8	1434.9
137.5°	1450.0	1466.6	1480.5	1494.3	1490.3
140°	1509.4	1520.6	1535.7	1548.1	1541.2
142.5°	1559.2	1569.0	1586.9	1597.8	1590.9
145°	1611.7	1610.2	1633.7	1643.4	1636.5
147.5°	1657.2	1653.0	1676.5	1683.4	1678.0
150°	1701.5	1691.8	1713.9	1722.1	1715.2
152.5°	1738.7	1727.7	1748.3	1756.7	1747.0
155°	1774.6	1762.3	1778.9	1787.1	1776.0
157.5°	1803.6	1792.6	1805.1	1814.8	1803.6
160°	1828.5	1820.1	1828.5	1836.7	1827.1
162.5°	1850.5	1842.3	1849.2	1858.9	1846.4
165°	1869.9	1861.7	1865.8	1875.5	1865.8
167.5°	1885.1	1876.8	1881.0	1890.7	1878.2
170°	1897.6	1889.2	1892.1	1901.7	1889.2
172.5°	1905.8	1897.6	1900.4	1910.1	1897.6
175°	1912.7	1903.0	1905.8	1915.4	1901.7
177.5°	1915.4	1905.8	1907.2	1916.9	1904.5
180°	1908.6	1908.6	1908.6	1908.6	1908.6

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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	12.16	13.17	12.98	14.01	15.06	11.71	12.72	12.53	13.57	14.61
	3H	13.83	14.74	14.67	15.59	16.67	13.34	14.25	14.18	15.10	16.18
	4H	14.43	15.29	15.28	16.15	17.23	13.94	14.79	14.79	15.65	16.74
	6H	14.84	15.63	15.70	16.50	17.60	14.34	15.13	15.20	16.00	17.10
	8H	14.95	15.71	15.82	16.59	17.69	14.45	15.21	15.32	16.09	17.19
	12H	15.01	15.73	15.88	16.60	17.73	14.50	15.22	15.37	16.10	17.22
4H	2H	12.64	13.50	13.49	14.35	15.44	12.28	13.14	13.14	14.00	15.08
	3H	14.52	15.24	15.39	16.13	17.23	14.11	14.83	14.98	15.72	16.82
	4H	15.25	15.90	16.12	16.79	17.91	14.82	15.47	15.70	16.36	17.49
	6H	15.77	16.34	16.67	17.25	18.38	15.34	15.91	16.23	16.82	17.94
	8H	15.93	16.46	16.82	17.36	18.50	15.49	16.02	16.39	16.93	18.07
	12H	16.01	16.49	16.93	17.41	18.56	15.56	16.04	16.48	16.96	18.11
8H	4H	15.45	15.98	16.35	16.89	18.03	15.08	15.61	15.97	16.51	17.65
	6H	16.10	16.53	17.02	17.48	18.62	15.71	16.15	16.64	17.10	18.24
	8H	16.32	16.71	17.25	17.65	18.81	15.93	16.32	16.86	17.26	18.41
	12H	16.46	16.80	17.40	17.74	18.95	16.05	16.39	16.99	17.33	18.53
12H	4H	15.45	15.92	16.36	16.85	17.99	15.08	15.55	15.99	16.48	17.63
	6H	16.13	16.52	17.06	17.46	18.61	15.76	16.14	16.69	17.08	18.24
	8H	16.38	16.72	17.32	17.65	18.86	16.00	16.34	16.94	17.27	18.48