

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: P904189

Luminaire Tested: DFN2DIP-SQ4F0-140D060US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904189
REPORT IS A COMBINATION OF REPORTS P901593 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D060US830-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

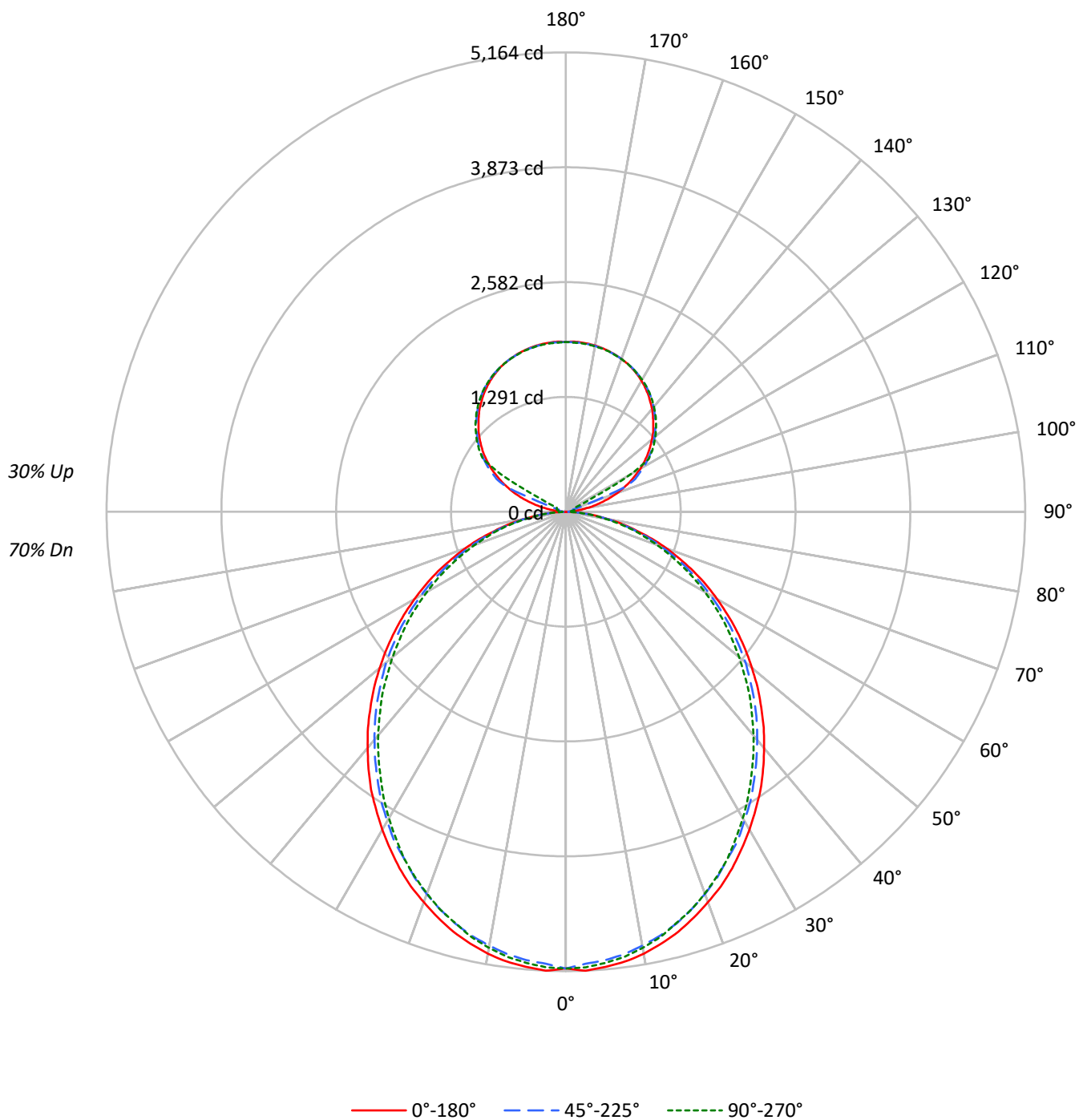
Lumens per Lamp: N/A
Luminaire Lumens: 18662.3 lumens
Efficiency: N/A
Efficacy: 98.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 189
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
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	112	112	112	112	106	106	106	106	94	94	94	84	84	84	75	75	75
1	102	98	94	90	97	93	89	86	83	80	78	74	72	70	66	64	63
2	93	85	79	74	88	81	75	71	73	68	64	65	62	59	58	55	53
3	85	75	68	62	80	71	65	59	64	59	54	58	53	50	51	48	45
4	78	67	58	52	73	63	56	50	57	51	46	51	47	43	46	42	39
5	72	60	51	45	67	57	49	43	51	45	40	46	41	37	41	37	34
6	66	54	45	39	62	51	43	38	46	40	35	42	37	33	38	33	30
7	61	48	40	34	58	46	39	33	42	36	31	38	33	29	34	30	27
8	57	44	36	31	54	42	35	30	38	32	28	35	30	26	32	27	24
9	53	40	33	27	50	39	32	27	35	29	25	32	27	23	29	25	22
10	50	37	30	25	47	36	29	24	33	27	23	30	25	21	27	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3603	3603	3603
5°	3608	3553	3578
10°	3579	3506	3530
15°	3526	3449	3455
20°	3455	3370	3379
25°	3385	3274	3290
30°	3296	3186	3177
35°	3212	3081	3058
40°	3108	2976	2944
45°	3005	2870	2828
50°	2892	2759	2694
55°	2774	2631	2570
60°	2641	2478	2429
65°	2495	2321	2262
70°	2310	2128	2083
75°	2052	1899	1919
80°	1744	1606	1603
85°	1260	1098	1078

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 3005 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	483.3	2.6
10°-20°	1359.7	7.3
20°-30°	1998.2	10.7
30°-40°	2320.8	12.4
40°-50°	2318.0	12.4
50°-60°	2021.2	10.8
60°-70°	1494.1	8.0
70°-80°	845.3	4.5
80°-90°	226.5	1.2
90°-100°	62.9	0.3
100°-110°	234.6	1.3
110°-120°	622.2	3.3
120°-130°	1032.0	5.5
130°-140°	1096.2	5.9
140°-150°	1018.8	5.5
150°-160°	819.1	4.4
160°-170°	527.8	2.8
170°-180°	181.7	1.0
0°-30°	3841.2	20.6
0°-40°	6162.0	33.0
0°-60°	10501.1	56.3
0°-90°	13067.0	70.0
90°-120°	919.8	4.9
90°-150°	4066.8	21.8
90°-180°	5595.0	30.0
0°-180°	18662.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5134	5134	5134	5134	5134	
5°	5134	5115	5061	5100	5090	487
15°	4888	4858	4794	4814	4789	1377
25°	4424	4384	4300	4310	4300	2036
35°	3816	3767	3688	3658	3634	2383
45°	3106	3071	2997	2943	2923	2397
55°	2350	2320	2261	2202	2178	2101
65°	1585	1555	1506	1461	1437	1567
75°	829	820	795	765	775	885
85°	202	198	193	178	173	226
90°	1	17	28	35	37	17
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°	5134.5	5134.5	5134.5	5134.5	5134.5
2.5°	5164.3	5139.7	5085.2	5134.5	5125.1
5°	5134.5	5115.1	5060.6	5099.9	5090.5
7.5°	5099.9	5070.6	5016.1	5055.9	5045.9
10°	5045.9	5011.4	4952.2	4991.5	4976.8
12.5°	4971.5	4942.2	4883.0	4907.6	4897.7
15°	4887.7	4858.4	4794.0	4813.9	4789.2
17.5°	4784.1	4754.7	4690.3	4714.9	4690.3
20°	4670.4	4641.1	4571.9	4586.6	4567.2
22.5°	4557.2	4512.7	4448.2	4448.2	4438.3
25°	4423.6	4384.3	4300.5	4310.0	4300.5
27.5°	4275.4	4240.9	4177.0	4162.3	4137.7
30°	4127.7	4087.9	4014.0	3999.4	3979.4
32.5°	3969.5	3940.2	3861.0	3831.2	3811.3
35°	3816.5	3767.3	3688.2	3658.4	3633.7
37.5°	3643.7	3599.2	3520.0	3485.5	3460.8
40°	3466.1	3426.3	3347.2	3303.2	3283.3
42.5°	3293.2	3253.5	3174.9	3125.1	3095.8
45°	3105.7	3071.2	2996.8	2942.8	2922.9
47.5°	2922.9	2888.3	2809.2	2754.8	2725.5
50°	2730.2	2705.6	2636.4	2567.2	2542.6
52.5°	2542.6	2508.0	2444.1	2389.6	2355.1
55°	2350.4	2320.5	2261.3	2202.2	2177.6
57.5°	2157.6	2133.0	2068.6	2009.4	1989.4
60°	1964.8	1945.5	1876.3	1821.8	1807.1
62.5°	1777.4	1742.8	1693.5	1644.3	1624.4
65°	1585.1	1555.2	1506.0	1461.4	1436.8
67.5°	1387.6	1362.4	1318.4	1283.8	1263.9
70°	1204.8	1184.9	1140.4	1105.8	1086.4
72.5°	1017.3	997.3	972.7	938.2	923.5
75°	829.2	819.8	794.7	765.3	775.2
77.5°	661.6	641.7	631.7	617.1	602.4
80°	494.0	488.7	478.8	464.1	454.1
82.5°	335.7	335.7	331.0	311.1	311.1
85°	202.2	197.5	192.7	177.6	172.9
87.5°	89.1	79.1	69.2	54.5	49.2
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	13.41	14.48	14.17	15.27	16.22	12.96	14.04	13.73	14.83	15.78
	3H	15.09	16.05	15.87	16.85	17.83	14.60	15.56	15.38	16.36	17.34
	4H	15.69	16.60	16.48	17.41	18.40	15.19	16.11	15.99	16.91	17.91
	6H	16.10	16.95	16.91	17.76	18.77	15.60	16.44	16.41	17.26	18.27
	8H	16.22	17.02	17.03	17.85	18.86	15.71	16.52	16.53	17.35	18.36
	12H	16.27	17.04	17.10	17.86	18.90	15.76	16.53	16.59	17.35	18.39
4H	2H	13.90	14.81	14.69	15.61	16.61	13.54	14.45	14.34	15.26	16.25
	3H	15.78	16.55	16.60	17.39	18.40	15.38	16.14	16.19	16.98	17.99
	4H	16.51	17.20	17.34	18.04	19.08	16.09	16.78	16.91	17.62	18.66
	6H	17.04	17.64	17.88	18.50	19.55	16.61	17.21	17.45	18.07	19.12
	8H	17.20	17.76	18.04	18.62	19.67	16.76	17.32	17.61	18.18	19.24
	12H	17.29	17.79	18.15	18.67	19.73	16.84	17.34	17.70	18.22	19.28
8H	4H	16.73	17.29	17.57	18.14	19.20	16.35	16.91	17.19	17.77	18.82
	6H	17.37	17.84	18.24	18.73	19.79	16.99	17.45	17.86	18.35	19.41
	8H	17.60	18.01	18.48	18.90	19.98	17.20	17.62	18.09	18.51	19.58
	12H	17.74	18.10	18.63	18.99	20.12	17.33	17.69	18.22	18.58	19.71
12H	4H	16.72	17.23	17.59	18.10	19.17	16.35	16.86	17.22	17.74	18.80
	6H	17.40	17.82	18.29	18.71	19.78	17.03	17.44	17.91	18.34	19.41
	8H	17.66	18.02	18.54	18.91	20.03	17.28	17.64	18.16	18.53	19.65