

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: P920597

Luminaire Tested: DFN2DIP-SQ4F0-160D070US935-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920597
REPORT IS A COMBINATION OF REPORTS P901613 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D070US935-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

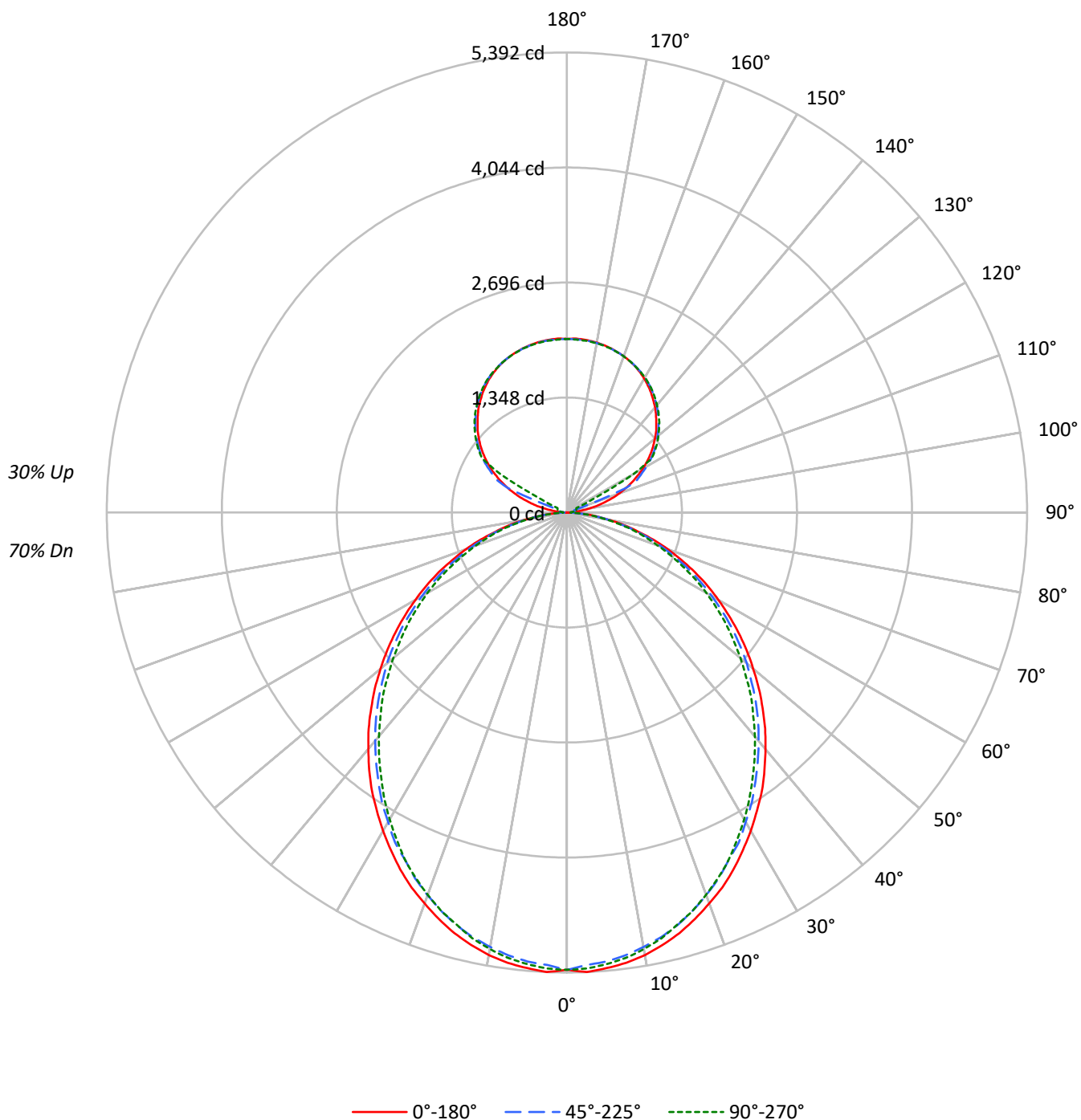
Lumens per Lamp: N/A
Luminaire Lumens: 19604.9 lumens
Efficiency: N/A
Efficacy: 89.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 218.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	74	74	74
1	102	98	94	90	96	93	89	86	83	80	78	74	72	70	66	64	63
2	93	85	79	74	88	81	75	70	73	68	64	65	61	58	58	55	53
3	85	75	68	61	80	71	64	59	64	59	54	57	53	49	51	48	45
4	78	67	58	52	73	63	56	50	57	51	46	51	46	42	46	42	39
5	72	59	51	45	67	57	49	43	51	45	40	46	41	37	41	37	34
6	66	53	45	39	62	51	43	38	46	40	35	42	36	32	37	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	31	27	24
9	53	40	33	27	50	39	31	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°	3761	3761	3761
5°	3767	3710	3735
10°	3736	3660	3685
15°	3682	3601	3607
20°	3607	3518	3528
25°	3533	3418	3435
30°	3441	3326	3317
35°	3353	3217	3192
40°	3245	3107	3074
45°	3137	2996	2953
50°	3019	2881	2812
55°	2896	2746	2683
60°	2757	2587	2535
65°	2605	2423	2361
70°	2411	2222	2174
75°	2143	1982	2003
80°	1820	1676	1674
85°	1316	1147	1125

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 3137 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	504.5	2.6
10°-20°	1419.5	7.2
20°-30°	2086.1	10.6
30°-40°	2422.9	12.4
40°-50°	2419.9	12.3
50°-60°	2110.1	10.8
60°-70°	1559.8	8.0
70°-80°	882.5	4.5
80°-90°	236.5	1.2
90°-100°	67.1	0.3
100°-110°	250.0	1.3
110°-120°	663.1	3.4
120°-130°	1099.8	5.6
130°-140°	1168.3	6.0
140°-150°	1085.8	5.5
150°-160°	872.9	4.5
160°-170°	562.5	2.9
170°-180°	193.6	1.0
0°-30°	4010.1	20.5
0°-40°	6433.0	32.8
0°-60°	10963.0	55.9
0°-90°	13641.8	69.6
90°-120°	980.2	5.0
90°-150°	4334.1	22.1
90°-180°	5963.0	30.4
0°-180°	19604.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5360	5360	5360	5360	5360	
5°	5360	5340	5283	5324	5314	509
15°	5103	5072	5005	5026	5000	1437
25°	4618	4577	4490	4500	4490	2125
35°	3984	3933	3850	3819	3794	2488
45°	3242	3206	3129	3072	3052	2502
55°	2454	2423	2361	2299	2273	2194
65°	1655	1624	1572	1526	1500	1636
75°	866	856	830	799	809	924
85°	211	206	201	185	180	235
90°	1	18	29	37	40	18
95°	96	47	57	65	63	113
105°	448	492	90	106	112	478
115°	846	871	908	227	121	833
125°	1196	1216	1244	1254	1258	1067
135°	1481	1504	1517	1532	1529	1144
145°	1718	1716	1741	1751	1744	1074
155°	1891	1878	1896	1904	1893	872
165°	1993	1984	1988	1999	1988	563
175°	2038	2028	2031	2041	2027	194
180°	2034	2034	2034	2034	2034	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5360.3	5360.3	5360.3	5360.3	5360.3
2.5°	5391.5	5365.7	5308.9	5360.3	5350.4
5°	5360.3	5340.1	5283.2	5324.2	5314.3
7.5°	5324.2	5293.6	5236.7	5278.3	5267.8
10°	5267.8	5231.8	5170.0	5211.0	5195.7
12.5°	5190.3	5159.6	5097.8	5123.5	5113.1
15°	5102.7	5072.1	5004.8	5025.6	4999.9
17.5°	4994.5	4963.8	4896.6	4922.2	4896.6
20°	4875.7	4845.2	4772.9	4788.3	4768.0
22.5°	4757.7	4711.2	4643.9	4643.9	4633.5
25°	4618.2	4577.2	4489.7	4499.6	4489.7
27.5°	4463.4	4427.3	4360.6	4345.4	4319.6
30°	4309.2	4267.7	4190.6	4175.2	4154.5
32.5°	4144.1	4113.5	4030.8	3999.7	3978.9
35°	3984.4	3933.0	3850.4	3819.2	3793.6
37.5°	3804.0	3757.5	3674.9	3638.7	3613.1
40°	3618.5	3577.0	3494.4	3448.5	3427.7
42.5°	3438.1	3396.6	3314.5	3262.6	3231.9
45°	3242.3	3206.2	3128.6	3072.2	3051.5
47.5°	3051.5	3015.4	2932.8	2875.9	2845.3
50°	2850.2	2824.5	2752.4	2680.1	2654.5
52.5°	2654.5	2618.4	2551.7	2494.7	2458.7
55°	2453.8	2422.6	2360.8	2299.0	2273.3
57.5°	2252.5	2226.8	2159.6	2097.7	2077.0
60°	2051.2	2031.0	1958.9	1901.9	1886.6
62.5°	1855.5	1819.4	1768.0	1716.6	1695.8
65°	1654.8	1623.6	1572.2	1525.8	1500.0
67.5°	1448.6	1422.4	1376.5	1340.3	1319.6
70°	1257.7	1237.0	1190.5	1154.4	1134.2
72.5°	1062.0	1041.2	1015.5	979.4	964.1
75°	865.6	855.8	829.6	798.9	809.3
77.5°	690.7	669.9	659.5	644.2	628.9
80°	515.7	510.2	499.8	484.5	474.2
82.5°	350.5	350.5	345.6	324.9	324.9
85°	211.1	206.1	201.2	185.4	180.5
87.5°	93.0	82.6	72.2	56.9	51.4
90°	1.4	17.7	29.4	36.9	39.7
92.5°	36.9	30.9	35.3	38.3	39.7
95°	95.6	47.0	57.3	64.8	63.3
97.5°	172.1	51.6	75.0	79.6	80.9
100°	260.6	58.9	83.9	95.6	98.6
102.5°	357.6	354.8	86.9	103.0	107.5
105°	447.5	491.6	89.8	105.9	111.8
107.5°	551.9	588.7	92.8	108.9	114.9
110°	652.1	682.9	257.6	110.5	116.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	746.3	772.7	747.7	113.2	117.8
115°	846.3	871.2	908.1	226.7	120.8
117.5°	933.1	962.5	987.7	777.1	391.5
120°	1030.3	1052.3	1078.9	1096.6	897.8
122.5°	1112.6	1136.2	1165.8	1174.5	1176.0
125°	1196.5	1215.7	1243.7	1254.0	1258.3
127.5°	1273.1	1293.6	1315.9	1330.6	1332.0
130°	1345.2	1368.8	1384.9	1401.2	1399.8
132.5°	1418.8	1438.0	1454.1	1467.4	1466.0
135°	1480.7	1504.2	1517.4	1532.2	1529.3
137.5°	1545.3	1563.1	1577.9	1592.6	1588.2
140°	1608.6	1620.5	1636.6	1649.8	1642.5
142.5°	1661.7	1672.1	1691.1	1702.8	1695.5
145°	1717.7	1716.1	1741.1	1751.4	1744.1
147.5°	1766.1	1761.8	1786.7	1794.1	1788.3
150°	1813.3	1803.0	1826.6	1835.3	1828.0
152.5°	1853.0	1841.2	1863.3	1872.2	1861.9
155°	1891.3	1878.1	1895.7	1904.5	1892.8
157.5°	1922.2	1910.5	1923.7	1934.1	1922.2
160°	1948.8	1939.8	1948.8	1957.5	1947.1
162.5°	1972.2	1963.4	1970.7	1981.1	1967.8
165°	1992.8	1984.1	1988.4	1998.7	1988.4
167.5°	2009.1	2000.1	2004.7	2015.0	2001.7
170°	2022.3	2013.4	2016.4	2026.7	2013.4
172.5°	2031.1	2022.3	2025.3	2035.6	2022.3
175°	2038.4	2028.1	2031.1	2041.3	2026.7
177.5°	2041.3	2031.1	2032.6	2043.0	2029.6
180°	2034.0	2034.0	2034.0	2034.0	2034.0

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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	13.52	14.59	14.29	15.39	16.35	13.08	14.15	13.85	14.94	15.90
	3H	15.20	16.17	15.99	16.97	17.96	14.71	15.68	15.50	16.48	17.47
	4H	15.80	16.71	16.60	17.52	18.52	15.31	16.22	16.11	17.03	18.03
	6H	16.22	17.06	17.03	17.87	18.89	15.72	16.56	16.53	17.37	18.39
	8H	16.33	17.13	17.15	17.97	18.98	15.83	16.63	16.65	17.46	18.48
	12H	16.39	17.15	17.22	17.98	19.02	15.88	16.64	16.71	17.47	18.51
4H	2H	14.01	14.92	14.81	15.73	16.73	13.66	14.56	14.46	15.37	16.38
	3H	15.90	16.66	16.72	17.50	18.52	15.49	16.25	16.31	17.09	18.11
	4H	16.63	17.32	17.46	18.16	19.20	16.20	16.89	17.03	17.73	18.78
	6H	17.16	17.75	18.00	18.62	19.67	16.72	17.32	17.57	18.19	19.24
	8H	17.31	17.87	18.16	18.73	19.80	16.88	17.43	17.73	18.30	19.36
	12H	17.40	17.90	18.27	18.78	19.85	16.95	17.45	17.82	18.33	19.40
8H	4H	16.84	17.40	17.69	18.26	19.32	16.46	17.02	17.31	17.88	18.95
	6H	17.48	17.95	18.36	18.85	19.91	17.10	17.56	17.98	18.47	19.53
	8H	17.71	18.12	18.60	19.02	20.10	17.32	17.73	18.21	18.63	19.71
	12H	17.85	18.22	18.75	19.11	20.24	17.44	17.81	18.33	18.69	19.83
12H	4H	16.84	17.34	17.70	18.22	19.29	16.47	16.97	17.34	17.85	18.92
	6H	17.52	17.93	18.40	18.83	19.91	17.14	17.56	18.03	18.45	19.53
	8H	17.77	18.13	18.66	19.02	20.16	17.39	17.75	18.28	18.64	19.78