

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: P909504

Luminaire Tested: DFN2DIP-SQ4F0-090D070US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909504
REPORT IS A COMBINATION OF REPORTS P900083 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D070US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

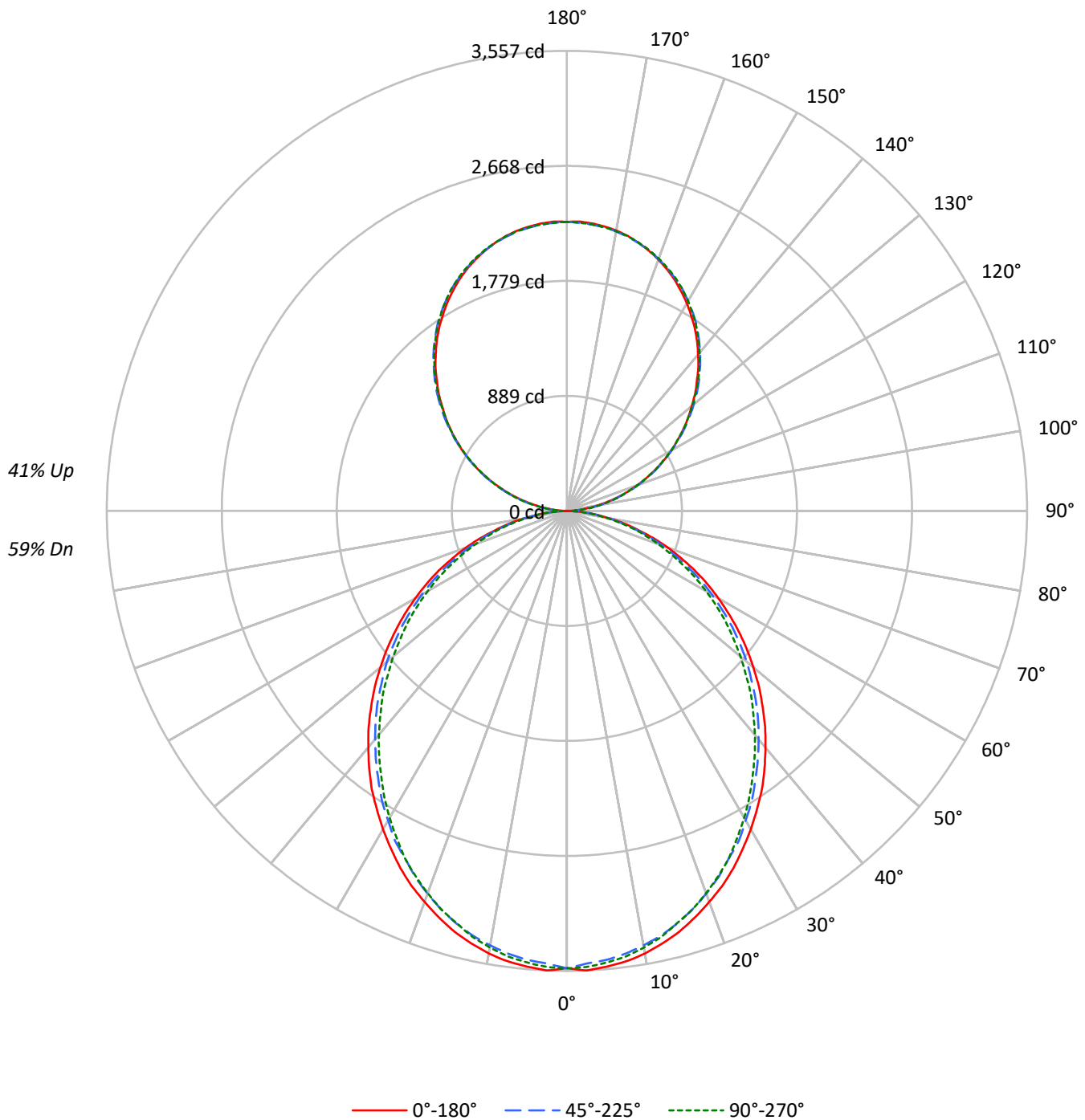
Lumens per Lamp: N/A
Luminaire Lumens: 15254.0 lumens
Efficiency: N/A
Efficacy: 113.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 134.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.983
Total Harmonic Distortion (THDi): 0.073
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	109	109	109	109		102	102	102	102		88	88	88		76	76	76		64	64	64
1	100	95	91	88		93	89	86	83		78	75	73		67	65	63		57	56	54
2	91	83	77	72		85	78	73	68		68	64	60		59	56	53		50	48	46
3	83	73	66	60		77	69	62	57		60	55	51		52	48	45		44	42	39
4	76	65	57	51		71	61	54	48		53	48	43		46	42	38		40	36	34
5	70	58	50	44		65	54	47	41		48	42	37		42	37	33		36	32	29
6	64	52	44	38		60	49	41	36		43	37	33		38	33	29		33	29	26
7	59	47	39	33		55	44	37	32		39	33	29		34	29	26		30	26	23
8	55	43	35	29		51	40	33	28		36	30	26		31	27	23		27	23	21
9	51	39	31	26		48	37	30	25		33	27	23		29	24	21		25	21	19
10	48	36	29	24		45	34	27	23		30	25	21		27	22	19		23	20	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2481	2481	2481
5°	2485	2447	2464
10°	2465	2415	2431
15°	2429	2376	2380
20°	2380	2321	2327
25°	2331	2255	2266
30°	2270	2194	2189
35°	2212	2122	2106
40°	2141	2050	2028
45°	2070	1977	1948
50°	1992	1900	1855
55°	1911	1812	1770
60°	1819	1707	1673
65°	1719	1598	1558
70°	1591	1466	1435
75°	1414	1308	1322
80°	1201	1106	1104
85°	868	757	742

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2070 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	332.9	2.2
10°-20°	936.5	6.1
20°-30°	1376.3	9.0
30°-40°	1598.5	10.5
40°-50°	1596.5	10.5
50°-60°	1392.1	9.1
60°-70°	1029.1	6.7
70°-80°	582.2	3.8
80°-90°	160.0	1.0
90°-100°	138.3	0.9
100°-110°	439.6	2.9
110°-120°	752.2	4.9
120°-130°	989.3	6.5
130°-140°	1110.5	7.3
140°-150°	1088.9	7.1
150°-160°	913.5	6.0
160°-170°	605.8	4.0
170°-180°	211.7	1.4
0°-30°	2645.7	17.3
0°-40°	4244.2	27.8
0°-60°	7232.9	47.4
0°-90°	9004.3	59.0
90°-120°	1330.1	8.7
90°-150°	4518.8	29.6
90°-180°	6250.0	41.0
0°-180°	15254.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3536	3536	3536	3536	3536	
5°	3536	3523	3486	3513	3506	336
15°	3367	3346	3302	3316	3299	948
25°	3047	3020	2962	2969	2962	1402
35°	2629	2595	2540	2520	2503	1642
45°	2139	2115	2064	2027	2013	1651
55°	1619	1598	1558	1517	1500	1447
65°	1092	1071	1037	1007	990	1079
75°	571	565	547	527	534	610
85°	139	136	133	122	119	155
90°	2	24	66	62	64	15
95°	98	117	121	121	117	109
105°	406	411	415	419	419	428
115°	755	766	762	760	755	747
125°	1098	1115	1109	1103	1101	981
135°	1420	1441	1445	1443	1438	1098
145°	1724	1738	1748	1750	1743	1077
155°	1972	1977	1983	1992	1986	907
165°	2145	2143	2143	2156	2147	605
175°	2232	2226	2222	2236	2224	212
180°	2236	2236	2236	2236	2236	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3536.4	3536.4	3536.4	3536.4	3536.4
2.5°	3557.0	3540.1	3502.6	3536.4	3530.0
5°	3536.4	3523.1	3485.7	3512.7	3506.2
7.5°	3512.7	3492.5	3455.0	3482.4	3475.6
10°	3475.6	3451.7	3410.9	3438.0	3427.9
12.5°	3424.3	3404.1	3363.4	3380.2	3373.5
15°	3366.6	3346.4	3302.0	3315.7	3298.7
17.5°	3295.1	3274.9	3230.6	3247.5	3230.6
20°	3216.8	3196.6	3149.0	3159.1	3145.7
22.5°	3138.9	3108.3	3063.8	3063.8	3057.0
25°	3046.9	3019.8	2962.1	2968.6	2962.1
27.5°	2944.8	2920.9	2877.0	2866.9	2849.9
30°	2843.1	2815.6	2764.7	2754.6	2741.0
32.5°	2734.1	2713.9	2659.4	2638.9	2625.1
35°	2628.8	2594.8	2540.3	2519.8	2502.9
37.5°	2509.7	2479.0	2424.5	2400.8	2383.8
40°	2387.3	2360.0	2305.4	2275.1	2261.5
42.5°	2268.3	2240.9	2186.8	2152.5	2132.3
45°	2139.1	2115.4	2064.1	2026.9	2013.3
47.5°	2013.3	1989.4	1934.9	1897.4	1877.2
50°	1880.5	1863.5	1815.8	1768.3	1751.3
52.5°	1751.3	1727.5	1683.4	1646.0	1622.1
55°	1618.9	1598.3	1557.5	1516.8	1499.9
57.5°	1486.1	1469.2	1424.8	1384.0	1370.3
60°	1353.3	1340.0	1292.3	1254.9	1244.8
62.5°	1224.2	1200.3	1166.4	1132.6	1118.8
65°	1091.8	1071.2	1037.2	1006.6	989.7
67.5°	955.7	938.5	908.1	884.3	870.6
70°	829.8	816.1	785.5	761.6	748.3
72.5°	700.6	686.9	669.9	646.2	636.1
75°	571.2	564.6	547.3	527.1	534.0
77.5°	455.7	442.0	435.2	425.1	415.0
80°	340.2	336.6	329.7	319.6	312.9
82.5°	231.3	231.3	228.0	214.3	214.3
85°	139.3	136.0	132.8	122.3	119.1
87.5°	61.3	54.4	47.7	37.6	33.9
90°	2.0	24.2	66.0	62.0	64.0
92.5°	41.8	56.7	58.7	60.7	60.7
95°	98.4	117.2	120.7	120.7	117.2
97.5°	163.8	181.3	188.7	188.7	188.7
100°	239.2	254.8	260.1	260.1	258.1
102.5°	318.8	330.2	337.7	339.7	337.7
105°	405.8	411.1	415.2	418.6	418.6
107.5°	492.0	500.1	500.1	501.5	492.0
110°	575.6	586.4	586.4	586.4	581.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	665.9	677.4	675.4	669.9	665.9
115°	754.9	765.7	762.3	760.3	754.9
117.5°	843.1	858.0	848.6	843.1	837.8
120°	932.1	947.0	932.1	932.1	926.0
122.5°	1013.0	1031.9	1022.5	1017.0	1013.0
125°	1097.9	1114.8	1109.4	1103.4	1101.4
127.5°	1180.8	1201.7	1194.4	1186.3	1180.8
130°	1258.4	1282.6	1279.3	1275.3	1267.8
132.5°	1345.3	1364.2	1365.5	1356.1	1350.7
135°	1420.2	1441.0	1445.1	1443.0	1437.6
137.5°	1503.7	1520.6	1523.9	1522.6	1514.5
140°	1577.2	1594.1	1603.5	1603.5	1596.1
142.5°	1652.6	1669.5	1674.9	1676.9	1669.5
145°	1724.1	1737.6	1748.4	1750.4	1743.0
147.5°	1788.2	1805.0	1813.1	1816.4	1809.1
150°	1854.2	1865.6	1873.1	1879.2	1873.1
152.5°	1912.8	1924.3	1933.7	1941.2	1933.7
155°	1971.5	1976.8	1983.0	1992.4	1986.3
157.5°	2022.1	2026.1	2029.4	2043.0	2033.5
160°	2067.2	2071.2	2073.3	2084.7	2076.6
162.5°	2109.0	2109.0	2111.0	2123.7	2114.4
165°	2144.7	2142.6	2142.6	2156.2	2146.7
167.5°	2177.1	2171.0	2171.0	2184.4	2175.0
170°	2201.3	2196.0	2193.9	2207.4	2196.0
172.5°	2218.2	2212.7	2210.7	2224.2	2212.7
175°	2231.6	2226.2	2222.2	2235.6	2224.2
177.5°	2239.1	2233.6	2229.6	2241.1	2229.6
180°	2235.6	2235.6	2235.6	2235.6	2235.6



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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	11.24	12.18	12.11	13.08	14.22	10.79	11.74	11.67	12.64	13.77
	3H	12.91	13.76	13.79	14.66	15.83	12.42	13.27	13.30	14.17	15.34
	4H	13.50	14.31	14.40	15.22	16.39	13.01	13.81	13.91	14.72	15.89
	6H	13.91	14.65	14.82	15.57	16.75	13.41	14.15	14.32	15.07	16.25
	8H	14.02	14.72	14.94	15.66	16.84	13.52	14.22	14.44	15.16	16.34
	12H	14.07	14.74	15.00	15.67	16.88	13.56	14.23	14.49	15.16	16.37
4H	2H	11.71	12.51	12.62	13.42	14.60	11.35	12.16	12.26	13.07	14.24
	3H	13.59	14.26	14.50	15.20	16.39	13.18	13.85	14.10	14.79	15.98
	4H	14.31	14.92	15.24	15.86	17.07	13.88	14.50	14.81	15.43	16.65
	6H	14.83	15.36	15.77	16.32	17.53	14.40	14.93	15.34	15.89	17.10
	8H	14.99	15.48	15.93	16.44	17.66	14.55	15.04	15.49	16.00	17.22
	12H	15.06	15.51	16.03	16.48	17.72	14.62	15.06	15.58	16.03	17.27
8H	4H	14.51	15.01	15.46	15.96	17.19	14.13	14.63	15.08	15.58	16.81
	6H	15.15	15.56	16.12	16.56	17.78	14.77	15.18	15.74	16.17	17.40
	8H	15.38	15.74	16.36	16.72	17.97	14.98	15.34	15.96	16.33	17.57
	12H	15.51	15.83	16.50	16.81	18.10	15.10	15.42	16.09	16.40	17.69
12H	4H	14.50	14.95	15.47	15.92	17.15	14.13	14.58	15.10	15.55	16.78
	6H	15.18	15.54	16.16	16.53	17.77	14.81	15.17	15.79	16.16	17.40
	8H	15.43	15.75	16.42	16.73	18.02	15.05	15.37	16.04	16.35	17.64