

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: P909528

Luminaire Tested: DFN2DIP-SQ4F0-090D140US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909528
REPORT IS A COMBINATION OF REPORTS P900191 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D140US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

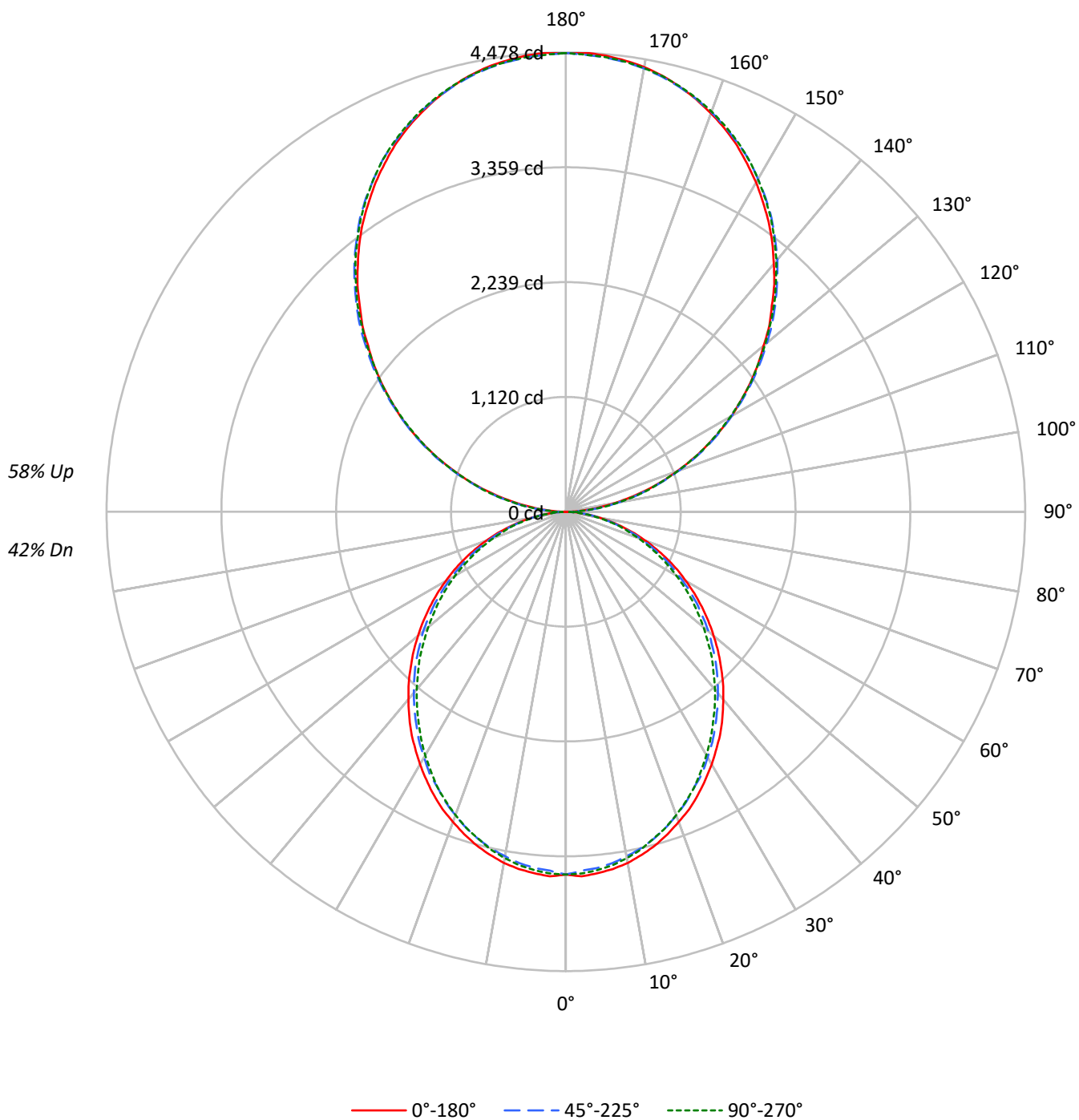
Lumens per Lamp: N/A
Luminaire Lumens: 21510.2 lumens
Efficiency: N/A
Efficacy: 114.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 188.5
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	105	105	105	105	96	96	96	96	79	79	79	63	63	63	49	49	49
1	96	92	88	84	87	84	81	78	69	67	65	55	54	52	43	42	41
2	87	80	74	69	79	73	68	64	60	57	53	49	46	44	38	36	35
3	80	70	63	57	72	64	58	53	53	49	45	43	40	37	34	31	29
4	73	62	54	48	66	57	50	45	47	42	38	38	35	32	30	27	25
5	67	55	47	41	61	51	44	39	42	37	33	34	31	27	27	24	22
6	62	50	42	36	56	46	39	33	38	33	29	31	27	24	24	22	19
7	57	45	37	31	52	41	34	29	35	29	25	28	24	21	22	19	17
8	53	41	33	28	48	37	31	26	31	26	22	26	22	19	21	18	15
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	19	16	14
10	46	34	27	22	42	31	25	21	26	21	18	22	18	15	18	15	13

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: 90°

Vertical Angle: 90°

Luminance: 3520 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	332.9	1.5
10°-20°	936.5	4.4
20°-30°	1376.3	6.4
30°-40°	1598.5	7.4
40°-50°	1596.5	7.4
50°-60°	1392.1	6.5
60°-70°	1029.1	4.8
70°-80°	582.2	2.7
80°-90°	166.4	0.8
90°-100°	276.7	1.3
100°-110°	879.1	4.1
110°-120°	1504.5	7.0
120°-130°	1978.6	9.2
130°-140°	2220.9	10.3
140°-150°	2177.8	10.1
150°-160°	1826.9	8.5
160°-170°	1211.6	5.6
170°-180°	423.5	2.0
0°-30°	2645.7	12.3
0°-40°	4244.2	19.7
0°-60°	7232.9	33.6
0°-90°	9010.6	41.9
90°-120°	2660.3	12.4
90°-150°	9037.6	42.0
90°-180°	12500.0	58.1
0°-180°	21510.2	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°	4	49	132	124	128	21
95°	197	235	241	241	235	219
105°	812	822	830	837	837	856
115°	1510	1531	1525	1521	1510	1493
125°	2196	2230	2219	2207	2203	1962
135°	2840	2882	2890	2886	2875	2195
145°	3448	3475	3497	3501	3486	2154
155°	3943	3954	3966	3985	3973	1815
165°	4289	4285	4285	4312	4293	1210
175°	4463	4452	4444	4471	4448	424
180°	4471	4471	4471	4471	4471	

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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°	4.0	48.6	132.1	124.0	128.1
92.5°	83.6	113.2	117.2	121.3	121.3
95°	196.8	234.6	241.3	241.3	234.6
97.5°	327.6	362.6	377.5	377.5	377.5
100°	478.6	509.6	520.3	520.3	516.2
102.5°	637.6	660.6	675.4	679.4	675.4
105°	811.5	822.3	830.4	837.1	837.1
107.5°	984.0	1000.3	1000.3	1002.9	984.0
110°	1151.2	1172.8	1172.8	1172.8	1162.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1331.8	1354.7	1350.7	1339.9	1331.8
115°	1509.7	1531.4	1524.6	1520.6	1509.7
117.5°	1686.4	1716.1	1697.2	1686.4	1675.6
120°	1864.3	1894.0	1864.3	1864.3	1852.2
122.5°	2026.1	2063.8	2045.0	2034.2	2026.1
125°	2196.0	2229.6	2218.8	2206.7	2202.6
127.5°	2361.7	2403.5	2388.6	2372.5	2361.7
130°	2516.7	2565.3	2558.5	2550.4	2535.6
132.5°	2690.6	2728.4	2731.1	2712.2	2701.4
135°	2840.2	2882.1	2890.1	2886.1	2875.3
137.5°	3007.4	3041.1	3047.9	3045.1	3029.0
140°	3154.3	3188.0	3206.9	3206.9	3192.1
142.5°	3305.3	3339.0	3349.8	3353.9	3339.0
145°	3448.2	3475.1	3496.8	3500.8	3486.0
147.5°	3576.2	3610.0	3626.1	3632.9	3618.0
150°	3708.3	3731.3	3746.1	3758.2	3746.1
152.5°	3825.7	3848.6	3867.5	3882.2	3867.5
155°	3942.9	3953.7	3965.8	3984.7	3972.6
157.5°	4044.0	4052.1	4058.9	4085.8	4066.9
160°	4134.4	4142.5	4146.5	4169.4	4153.2
162.5°	4217.9	4217.9	4221.9	4247.6	4228.7
165°	4289.4	4285.4	4285.4	4312.3	4293.4
167.5°	4354.0	4341.9	4341.9	4368.9	4350.0
170°	4402.6	4391.8	4387.8	4414.7	4391.8
172.5°	4436.3	4425.5	4421.5	4448.5	4425.5
175°	4463.3	4452.5	4444.4	4471.4	4448.5
177.5°	4478.0	4467.3	4459.3	4482.1	4459.3
180°	4471.4	4471.4	4471.4	4471.4	4471.4

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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	9.64	10.43	10.66	11.47	12.85	9.20	9.99	10.22	11.02	12.40
	3H	11.30	12.01	12.33	13.05	14.45	10.81	11.52	11.84	12.56	13.96
	4H	11.89	12.56	12.93	13.60	15.01	11.39	12.07	12.44	13.11	14.52
	6H	12.29	12.91	13.34	13.96	15.38	11.79	12.41	12.84	13.45	14.88
	8H	12.39	12.98	13.45	14.05	15.46	11.89	12.48	12.95	13.54	14.96
	12H	12.44	13.00	13.51	14.06	15.50	11.93	12.49	13.00	13.55	14.99
4H	2H	10.09	10.77	11.15	11.81	13.22	9.74	10.41	10.79	11.46	12.87
	3H	11.96	12.52	13.02	13.59	15.01	11.55	12.11	12.61	13.18	14.61
	4H	12.67	13.19	13.74	14.25	15.70	12.25	12.76	13.32	13.83	15.27
	6H	13.19	13.63	14.26	14.72	16.16	12.76	13.20	13.83	14.28	15.72
	8H	13.34	13.75	14.42	14.83	16.28	12.90	13.32	13.98	14.39	15.85
	12H	13.41	13.79	14.51	14.88	16.34	12.96	13.34	14.06	14.43	15.89
8H	4H	12.86	13.28	13.94	14.36	15.81	12.49	12.90	13.56	13.98	15.43
	6H	13.50	13.84	14.60	14.96	16.41	13.11	13.46	14.21	14.58	16.03
	8H	13.72	14.02	14.83	15.12	16.59	13.33	13.63	14.43	14.73	16.20
	12H	13.85	14.12	14.96	15.21	16.72	13.44	13.71	14.55	14.80	16.31
12H	4H	12.85	13.22	13.94	14.31	15.77	12.48	12.85	13.57	13.94	15.40
	6H	13.53	13.83	14.63	14.93	16.40	13.16	13.46	14.26	14.56	16.03
	8H	13.77	14.03	14.88	15.13	16.64	13.39	13.65	14.50	14.75	16.26