

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: P909492

Luminaire Tested: DFN2DIP-SQ4F0-080D140US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909492
REPORT IS A COMBINATION OF REPORTS P900189 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-080D140US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

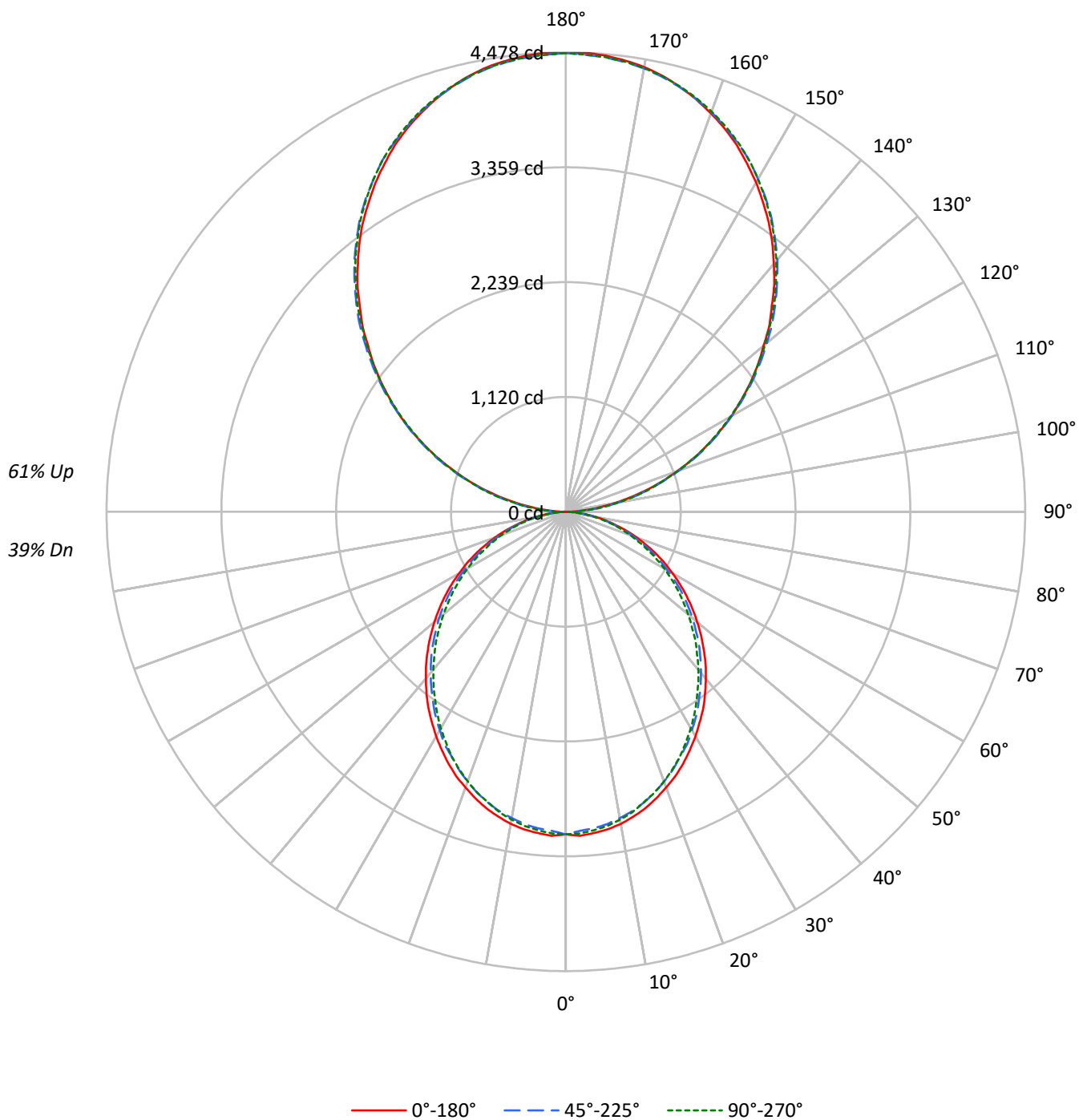
Lumens per Lamp: N/A
Luminaire Lumens: 20510.4 lumens
Efficiency: N/A
Efficacy: 115.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 177.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P909492

CATALOG NUMBER: DFN2DIP-SQ4F0-080D140US840-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P909492

CATALOG NUMBER: DFN2DIP-SQ4F0-080D140US840-FLLFL

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	95	95	95	95	77	77	77	61	61	61	46	46	46
1	95	91	87	84	86	83	80	77	68	65	63	54	52	51	41	40	39
2	87	79	73	68	79	72	67	63	59	56	52	47	45	42	36	34	33
3	79	70	63	57	72	64	58	53	52	48	44	42	38	36	32	30	28
4	72	62	54	48	65	56	50	44	46	41	37	37	33	31	28	26	24
5	66	55	47	41	60	50	43	38	41	36	32	33	29	27	26	23	21
6	61	49	41	36	55	45	38	33	37	32	28	30	26	23	23	20	18
7	56	44	37	31	51	41	34	29	34	28	25	27	23	20	21	18	16
8	52	40	33	27	47	37	30	26	31	26	22	25	21	18	19	17	15
9	49	37	29	24	44	34	27	23	28	23	19	23	19	16	18	15	13
10	45	34	26	22	41	31	25	20	26	21	18	21	17	15	17	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2206	2206	2206
5°	2209	2176	2190
10°	2191	2147	2161
15°	2159	2112	2116
20°	2115	2063	2069
25°	2072	2005	2015
30°	2018	1951	1945
35°	1966	1887	1872
40°	1903	1822	1803
45°	1840	1757	1732
50°	1771	1689	1649
55°	1698	1611	1573
60°	1617	1517	1487
65°	1528	1421	1385
70°	1414	1303	1275
75°	1257	1163	1175
80°	1068	983	981
85°	772	673	659

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3520 cd/sqm

TEST NUMBER: P909492

CATALOG NUMBER: DFN2DIP-SQ4F0-080D140US840-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	295.9	1.4
10°-20°	832.5	4.1
20°-30°	1223.4	6.0
30°-40°	1420.9	6.9
40°-50°	1419.1	6.9
50°-60°	1237.5	6.0
60°-70°	914.7	4.5
70°-80°	517.6	2.5
80°-90°	149.3	0.7
90°-100°	276.7	1.3
100°-110°	879.1	4.3
110°-120°	1504.5	7.3
120°-130°	1978.6	9.6
130°-140°	2220.9	10.8
140°-150°	2177.8	10.6
150°-160°	1826.9	8.9
160°-170°	1211.6	5.9
170°-180°	423.5	2.1
0°-30°	2351.8	11.5
0°-40°	3772.7	18.4
0°-60°	6429.3	31.3
0°-90°	8010.9	39.1
90°-120°	2660.3	13.0
90°-150°	9037.6	44.1
90°-180°	12500.0	60.9
0°-180°	20510.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3144	3144	3144	3144	3144	
5°	3144	3132	3098	3122	3117	298
15°	2992	2975	2935	2947	2932	843
25°	2708	2684	2633	2639	2633	1246
35°	2337	2306	2258	2240	2225	1459
45°	1902	1880	1835	1802	1790	1467
55°	1439	1421	1384	1348	1333	1287
65°	970	952	922	895	880	959
75°	508	502	487	469	475	542
85°	124	121	118	109	106	138
90°	4	49	132	124	128	20
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	

TEST NUMBER: P909492

CATALOG NUMBER: DFN2DIP-SQ4F0-080D140US840-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3143.5	3143.5	3143.5	3143.5	3143.5
2.5°	3161.8	3146.7	3113.4	3143.5	3137.8
5°	3143.5	3131.7	3098.4	3122.4	3116.6
7.5°	3122.4	3104.4	3071.1	3095.4	3089.4
10°	3089.4	3068.2	3031.9	3056.0	3047.1
12.5°	3043.8	3025.9	2989.6	3004.7	2998.6
15°	2992.5	2974.6	2935.1	2947.3	2932.2
17.5°	2929.0	2911.0	2871.6	2886.7	2871.6
20°	2859.4	2841.5	2799.1	2808.1	2796.2
22.5°	2790.2	2762.9	2723.4	2723.4	2717.3
25°	2708.4	2684.3	2633.0	2638.8	2633.0
27.5°	2617.6	2596.5	2557.3	2548.3	2533.2
30°	2527.2	2502.7	2457.6	2448.6	2436.4
32.5°	2430.3	2412.4	2363.9	2345.6	2333.5
35°	2336.6	2306.5	2258.1	2239.8	2224.7
37.5°	2230.8	2203.5	2155.2	2133.9	2118.9
40°	2122.1	2097.7	2049.3	2022.4	2010.1
42.5°	2016.3	1991.9	1943.8	1913.3	1895.4
45°	1901.5	1880.3	1834.7	1801.7	1789.6
47.5°	1789.6	1768.4	1719.9	1686.6	1668.6
50°	1671.5	1656.5	1614.1	1571.8	1556.7
52.5°	1556.7	1535.5	1496.4	1463.1	1441.9
55°	1439.0	1420.7	1384.5	1348.3	1333.1
57.5°	1321.0	1306.0	1266.5	1230.2	1218.0
60°	1203.0	1191.1	1148.7	1115.4	1106.4
62.5°	1088.1	1067.0	1036.8	1006.7	994.5
65°	970.5	952.2	922.0	894.7	879.7
67.5°	849.5	834.1	807.2	786.1	773.9
70°	737.6	725.4	698.2	677.0	665.1
72.5°	622.8	610.7	595.5	574.4	565.4
75°	507.7	501.9	486.6	468.6	474.6
77.5°	405.1	392.8	386.8	377.8	368.8
80°	302.5	299.2	293.2	284.2	278.0
82.5°	205.6	205.6	202.7	190.5	190.5
85°	123.8	120.9	118.1	108.8	105.8
87.5°	54.5	48.5	42.3	33.3	30.2
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

TEST NUMBER: P909492

CATALOG NUMBER: DFN2DIP-SQ4F0-080D140US840-FLLFLL

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	8.93	9.70	9.97	10.75	12.17	8.48	9.25	9.53	10.30	11.72
	3H	10.58	11.27	11.64	12.33	13.77	10.09	10.78	11.15	11.84	13.28
	4H	11.17	11.83	12.24	12.89	14.33	10.68	11.33	11.74	12.39	13.84
	6H	11.57	12.17	12.65	13.24	14.69	11.07	11.67	12.14	12.74	14.19
	8H	11.67	12.25	12.75	13.33	14.78	11.17	11.74	12.25	12.83	14.28
	12H	11.72	12.27	12.81	13.34	14.82	11.21	11.76	12.30	12.83	14.31
4H	2H	9.38	10.03	10.45	11.09	12.54	9.02	9.68	10.10	10.74	12.18
	3H	11.24	11.79	12.32	12.87	14.33	10.83	11.38	11.91	12.47	13.92
	4H	11.95	12.45	13.04	13.53	15.01	11.53	12.03	12.62	13.11	14.59
	6H	12.47	12.90	13.56	14.00	15.47	12.03	12.47	13.13	13.57	15.04
	8H	12.62	13.02	13.71	14.11	15.60	12.18	12.58	13.27	13.68	15.17
	12H	12.69	13.05	13.80	14.16	15.65	12.24	12.60	13.35	13.71	15.20
8H	4H	12.14	12.54	13.24	13.64	15.13	11.77	12.17	12.86	13.26	14.75
	6H	12.77	13.11	13.89	14.24	15.73	12.39	12.72	13.51	13.86	15.35
	8H	13.00	13.29	14.12	14.41	15.91	12.60	12.90	13.73	14.01	15.52
	12H	13.13	13.38	14.26	14.50	16.04	12.72	12.97	13.84	14.09	15.63
12H	4H	12.12	12.49	13.24	13.60	15.09	11.76	12.12	12.87	13.23	14.72
	6H	12.80	13.10	13.93	14.21	15.72	12.43	12.72	13.56	13.84	15.35
	8H	13.05	13.30	14.17	14.42	15.96	12.66	12.92	13.79	14.04	15.58