

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: P912438

Luminaire Tested: DFN2DIP-SQ4F0-160D140US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

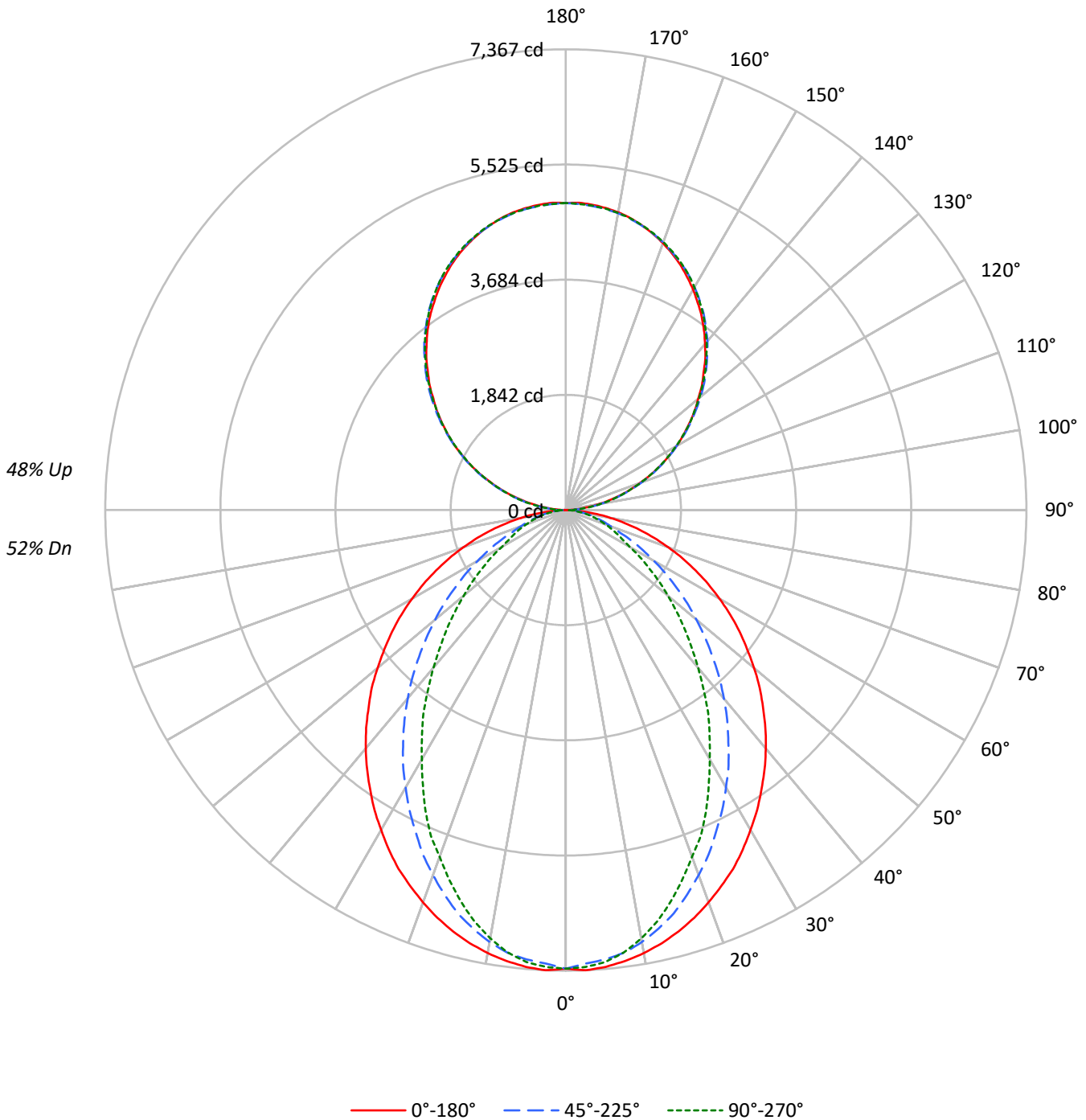
Test Method: LM-79-2019  
Report Number: P912438  
REPORT IS A COMBINATION OF REPORTS P900202 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-160D140US850-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 28822.9 lumens  
Efficiency: N/A  
Efficacy: 105.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 272.5  
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			0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58	58	58	58	52
1	99	95	91	88	91	88	85	82	75	73	71	63	62	60	52	51	50	52	51	50	45
2	90	83	77	72	83	77	72	68	66	63	59	56	53	51	47	45	43	47	45	43	39
3	83	74	67	61	76	69	62	57	59	54	50	50	47	44	42	39	37	42	39	37	33
4	76	66	58	52	70	61	54	49	53	48	43	45	41	38	38	35	33	38	35	33	29
5	70	59	51	45	65	55	48	43	47	42	38	41	36	33	34	31	29	34	31	29	26
6	65	53	45	39	60	49	42	37	43	37	33	37	33	29	31	28	25	31	28	25	23
7	60	48	40	35	55	45	38	33	39	34	30	34	29	26	29	25	23	29	25	23	20
8	56	44	36	31	52	41	34	29	36	30	26	31	27	23	26	23	21	26	23	21	18
9	52	40	33	28	48	38	31	26	33	28	24	29	24	21	24	21	19	24	21	19	17
10	49	37	30	25	45	35	28	24	30	25	22	26	22	19	23	20	17	23	20	17	15

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	5146	5146	5146
5°	5154	5065	5098
10°	5103	4967	4934
15°	5033	4804	4678
20°	4940	4578	4365
25°	4844	4325	4062
30°	4716	4066	3678
35°	4591	3787	3340
40°	4464	3499	2952
45°	4316	3178	2601
50°	4162	2855	2257
55°	4003	2509	1927
60°	3817	2147	1588
65°	3605	1780	1431
70°	3346	1436	1297
75°	3022	1268	1183
80°	2553	1068	1031
85°	1777	719	786

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4316 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	687.3	2.4
10°-20°	1886.8	6.5
20°-30°	2649.0	9.2
30°-40°	2887.6	10.0
40°-50°	2654.0	9.2
50°-60°	2084.3	7.2
60°-70°	1356.7	4.7
70°-80°	698.4	2.4
80°-90°	192.3	0.7
90°-100°	303.8	1.1
100°-110°	965.4	3.3
110°-120°	1652.1	5.7
120°-130°	2172.8	7.5
130°-140°	2438.9	8.5
140°-150°	2391.6	8.3
150°-160°	2006.2	7.0
160°-170°	1330.5	4.6
170°-180°	465.0	1.6
0°-30°	5223.1	18.1
0°-40°	8110.7	28.1
0°-60°	12849.0	44.6
0°-90°	15096.4	52.4
90°-120°	2921.4	10.1
90°-150°	9924.8	34.4
90°-180°	13727.0	47.6
0°-180°	28822.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	7334	7334	7334	7334	7334	
5°	7334	7300	7214	7274	7254	695
15°	6975	6902	6677	6550	6484	1966
25°	6332	6119	5681	5409	5309	2912
35°	5456	5117	4533	4115	3969	3415
45°	4460	4015	3319	2847	2688	3444
55°	3391	2874	2157	1759	1633	3030
65°	2290	1752	1155	930	909	2270
75°	1221	756	531	484	478	1291
85°	285	146	126	126	126	327
90°	4	53	145	136	141	28
95°	216	258	265	265	258	241
105°	891	903	912	919	919	940
115°	1658	1682	1674	1670	1658	1640
125°	2412	2448	2437	2423	2419	2155
135°	3119	3165	3174	3169	3158	2411
145°	3787	3816	3840	3844	3828	2366
155°	4330	4342	4355	4376	4363	1993
165°	4710	4706	4706	4736	4715	1329
175°	4901	4890	4881	4910	4885	466
180°	4910	4910	4910	4910	4910	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	7333.6	7333.6	7333.6	7333.6	7333.6
2.5°	7366.6	7333.6	7260.3	7327.3	7313.9
5°	7333.6	7300.4	7213.8	7273.7	7254.0
7.5°	7273.7	7234.2	7141.3	7167.4	7134.3
10°	7194.2	7147.7	7015.3	6994.9	6955.4
12.5°	7094.8	7035.1	6855.5	6816.0	6742.8
15°	6975.2	6902.0	6676.6	6550.5	6484.3
17.5°	6835.8	6729.4	6450.6	6304.8	6198.5
20°	6676.6	6543.5	6211.8	6046.4	5900.0
22.5°	6504.1	6351.2	5966.1	5740.8	5641.5
25°	6331.6	6118.9	5681.0	5409.1	5309.2
27.5°	6126.0	5900.0	5415.5	5103.6	4950.8
30°	5907.0	5654.2	5123.2	4785.3	4605.8
32.5°	5694.4	5388.7	4845.1	4446.6	4280.4
35°	5455.6	5116.9	4533.3	4114.9	3968.6
37.5°	5223.3	4857.9	4241.0	3782.6	3617.1
40°	4977.5	4579.7	3935.4	3464.3	3291.8
42.5°	4725.4	4300.8	3630.5	3139.0	2973.6
45°	4460.0	4015.0	3318.6	2846.8	2687.7
47.5°	4207.9	3736.9	3020.0	2548.3	2402.5
50°	3929.1	3458.0	2727.8	2269.5	2130.7
52.5°	3656.6	3158.8	2449.0	2011.1	1885.0
55°	3391.1	2873.5	2156.8	1758.9	1632.9
57.5°	3119.3	2588.4	1898.4	1526.5	1420.2
60°	2840.5	2309.6	1625.8	1287.9	1181.5
62.5°	2568.7	2037.8	1393.5	1075.2	1022.4
65°	2289.9	1751.9	1154.8	929.5	909.0
67.5°	2024.4	1486.4	929.5	816.1	796.4
70°	1745.6	1228.0	769.6	703.4	676.7
72.5°	1480.1	988.6	643.6	590.8	577.3
75°	1221.0	756.2	530.9	484.4	478.1
77.5°	962.5	537.2	418.2	391.5	378.2
80°	723.2	385.2	318.3	292.2	292.2
82.5°	504.2	259.2	219.0	205.6	205.6
85°	285.1	145.7	126.1	126.1	126.1
87.5°	106.4	52.8	52.8	46.5	46.5
90°	4.4	53.3	145.1	136.2	140.6
92.5°	91.8	124.3	128.8	133.2	133.2
95°	216.1	257.6	264.9	264.9	257.6
97.5°	359.8	398.2	414.5	414.5	414.5
100°	525.6	559.6	571.4	571.4	566.9
102.5°	700.2	725.4	741.7	746.1	741.7
105°	891.2	903.1	911.9	919.3	919.3
107.5°	1080.6	1098.5	1098.5	1101.3	1080.6
110°	1264.3	1287.9	1287.9	1287.9	1276.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1462.5	1487.7	1483.3	1471.4	1462.5
115°	1658.0	1681.7	1674.3	1669.8	1658.0
117.5°	1851.9	1884.5	1863.8	1851.9	1840.1
120°	2047.3	2079.9	2047.3	2047.3	2034.0
122.5°	2225.0	2266.4	2245.7	2233.9	2225.0
125°	2411.5	2448.5	2436.6	2423.3	2418.8
127.5°	2593.5	2639.4	2623.1	2605.4	2593.5
130°	2763.7	2817.1	2809.7	2800.8	2784.5
132.5°	2954.7	2996.2	2999.2	2978.4	2966.6
135°	3119.1	3165.0	3173.8	3169.4	3157.5
137.5°	3302.6	3339.6	3347.1	3344.1	3326.3
140°	3464.0	3501.0	3521.7	3521.7	3505.4
142.5°	3629.8	3666.8	3678.7	3683.1	3666.8
145°	3786.7	3816.3	3840.0	3844.5	3828.2
147.5°	3927.3	3964.3	3982.1	3989.5	3973.2
150°	4072.4	4097.5	4113.8	4127.1	4113.8
152.5°	4201.2	4226.4	4247.1	4263.3	4247.1
155°	4330.0	4341.8	4355.2	4375.9	4362.6
157.5°	4441.0	4449.9	4457.3	4486.9	4466.2
160°	4540.2	4549.1	4553.6	4578.7	4560.9
162.5°	4632.0	4632.0	4636.4	4664.6	4643.8
165°	4710.5	4706.0	4706.0	4735.7	4714.9
167.5°	4781.5	4768.1	4768.1	4797.8	4777.0
170°	4834.8	4822.9	4818.5	4848.1	4822.9
172.5°	4871.8	4860.0	4855.5	4885.1	4860.0
175°	4901.4	4889.6	4880.7	4910.3	4885.1
177.5°	4917.6	4905.9	4897.0	4922.1	4897.0
180°	4910.3	4910.3	4910.3	4910.3	4910.3



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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	13.07	13.92	14.01	14.87	16.11	9.03	9.88	9.97	10.84	12.07
	3H	14.75	15.51	15.71	16.48	17.74	10.22	10.98	11.18	11.95	13.21
	4H	15.37	16.08	16.33	17.05	18.32	10.67	11.39	11.64	12.36	13.63
	6H	15.79	16.45	16.77	17.43	18.71	11.00	11.66	11.97	12.63	13.91
	8H	15.92	16.55	16.91	17.54	18.82	11.09	11.72	12.07	12.71	13.99
	12H	15.99	16.58	16.98	17.57	18.87	11.13	11.73	12.12	12.71	14.02
4H	2H	13.09	13.81	14.06	14.78	16.05	9.63	10.35	10.61	11.32	12.59
	3H	14.93	15.52	15.91	16.52	17.81	10.98	11.58	11.97	12.58	13.86
	4H	15.62	16.17	16.61	17.16	18.47	11.53	12.08	12.53	13.07	14.38
	6H	16.14	16.61	17.15	17.63	18.93	11.95	12.42	12.96	13.44	14.75
	8H	16.32	16.76	17.33	17.77	19.09	12.08	12.52	13.09	13.53	14.85
	12H	16.42	16.81	17.44	17.84	19.16	12.15	12.54	13.17	13.57	14.90
8H	4H	15.59	16.03	16.60	17.04	18.36	11.82	12.25	12.82	13.26	14.58
	6H	16.16	16.52	17.19	17.57	18.89	12.34	12.70	13.37	13.75	15.07
	8H	16.38	16.70	17.42	17.74	19.08	12.53	12.85	13.57	13.88	15.22
	12H	16.53	16.81	17.57	17.84	19.22	12.65	12.93	13.69	13.96	15.34
12H	4H	15.54	15.94	16.57	16.96	18.29	11.82	12.22	12.85	13.24	14.57
	6H	16.14	16.46	17.18	17.49	18.83	12.39	12.71	13.43	13.74	15.08
	8H	16.36	16.64	17.40	17.67	19.06	12.60	12.88	13.64	13.91	15.29