

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: P912096

Luminaire Tested: DFN2DIP-SQ3F0-120D070US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

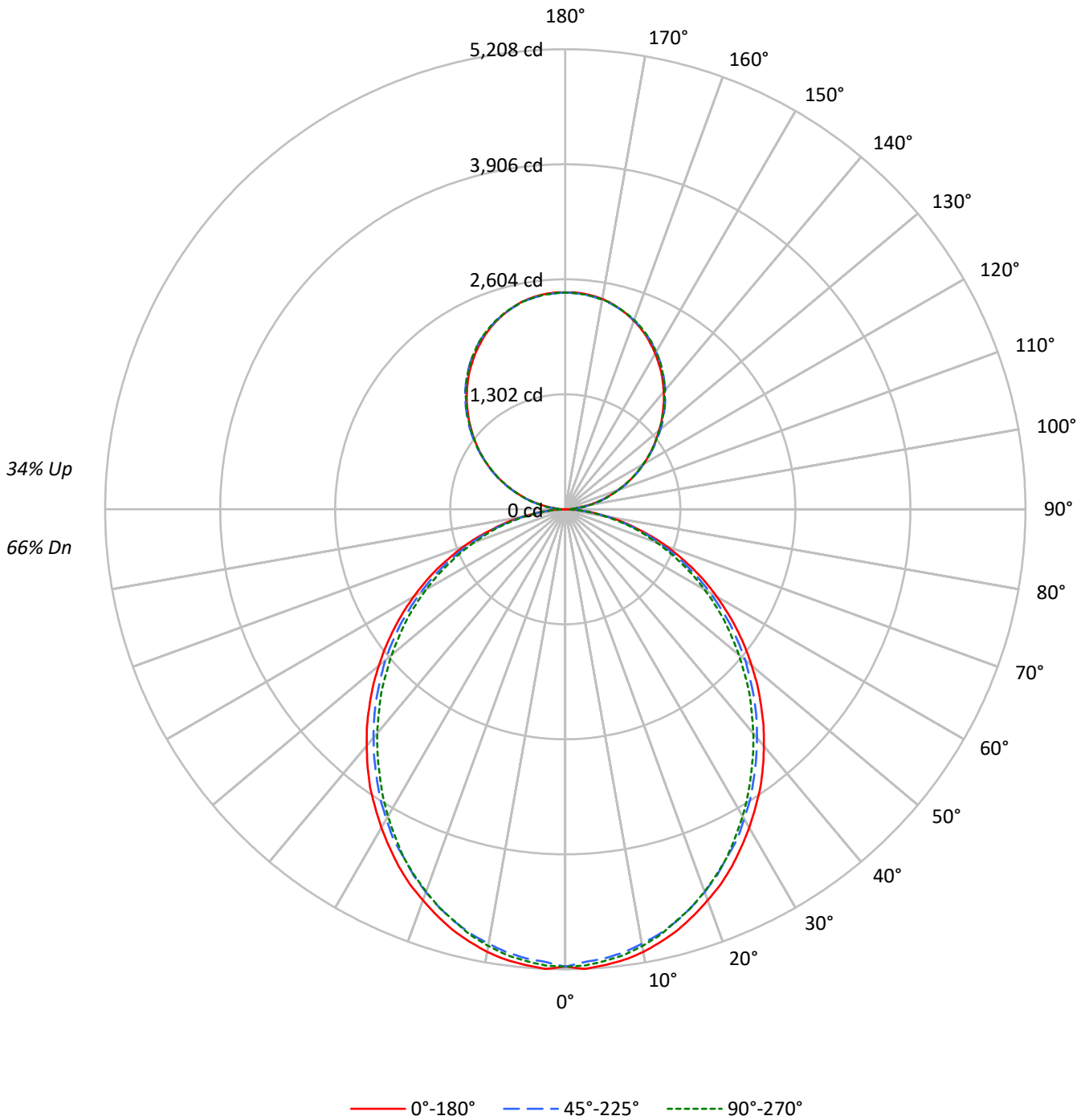
Test Method: LM-79-2019  
Report Number: P912096  
REPORT IS A COMBINATION OF REPORTS P899931 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D070US850-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20045.2 lumens  
Efficiency: N/A  
Efficacy: 112.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 178.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
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				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	111	111	111	111	104	104	104	104	92	92	92	81	81	81	71	71	71	66			
1	101	97	93	89	95	91	88	85	81	78	76	71	69	67	62	61	60	55			
2	92	85	78	73	87	80	74	70	71	67	63	63	59	56	55	52	50	46			
3	84	74	67	61	79	70	64	58	63	57	53	55	51	48	49	46	43	39			
4	77	66	58	52	72	62	55	49	56	50	45	49	45	41	44	40	37	34			
5	71	59	51	44	66	56	48	43	50	44	39	44	39	36	39	35	32	29			
6	65	53	45	39	61	50	43	37	45	39	34	40	35	31	36	32	28	26			
7	61	48	40	34	57	45	38	33	41	35	30	37	32	28	33	28	25	23			
8	56	44	36	30	53	41	34	29	37	31	27	34	28	25	30	26	23	20			
9	52	40	32	27	49	38	31	26	34	28	24	31	26	22	28	24	21	18			
10	49	37	29	24	46	35	28	24	32	26	22	29	24	20	26	22	19	17			

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

	0°	45°	90°
0°	5933	5933	5933
5°	5939	5847	5888
10°	5887	5764	5806
15°	5797	5665	5680
20°	5676	5529	5550
25°	5556	5368	5401
30°	5406	5217	5212
35°	5264	5040	5012
40°	5089	4861	4821
45°	4915	4681	4626
50°	4724	4492	4400
55°	4524	4274	4192
60°	4298	4015	3953
65°	4051	3747	3672
70°	3736	3419	3369
75°	3300	3027	3085
80°	2774	2526	2550
85°	1952	1673	1669

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4915 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	487.4	2.4
10°-20°	1371.3	6.8
20°-30°	2015.2	10.1
30°-40°	2340.6	11.7
40°-50°	2337.7	11.7
50°-60°	2038.4	10.2
60°-70°	1506.8	7.5
70°-80°	852.5	4.3
80°-90°	232.0	1.2
90°-100°	151.9	0.8
100°-110°	482.7	2.4
110°-120°	826.1	4.1
120°-130°	1086.4	5.4
130°-140°	1219.5	6.1
140°-150°	1195.8	6.0
150°-160°	1003.1	5.0
160°-170°	665.3	3.3
170°-180°	232.5	1.2
0°-30°	3873.9	19.3
0°-40°	6214.5	31.0
0°-60°	10590.5	52.8
0°-90°	13181.9	65.8
90°-120°	1460.7	7.3
90°-150°	4962.4	24.8
90°-180°	6863.0	34.2
0°-180°	20045.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	5178	5178	5178	5178	5178	
5°	5178	5159	5104	5143	5134	492
15°	4929	4900	4835	4855	4830	1388
25°	4461	4422	4337	4347	4337	2053
35°	3849	3799	3720	3690	3665	2404
45°	3132	3097	3022	2968	2948	2417
55°	2370	2340	2280	2221	2196	2119
65°	1599	1568	1519	1474	1449	1581
75°	836	827	801	772	782	893
85°	204	199	194	179	174	227
90°	2	27	72	68	70	19
95°	108	129	132	132	129	120
105°	446	452	456	460	460	470
115°	829	841	837	835	829	820
125°	1206	1224	1218	1212	1210	1077
135°	1560	1582	1587	1585	1579	1205
145°	1893	1908	1920	1922	1914	1183
155°	2165	2171	2178	2188	2181	997
165°	2355	2353	2353	2368	2357	664
175°	2451	2445	2440	2455	2443	233
180°	2455	2455	2455	2455	2455	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	5178.3	5178.3	5178.3	5178.3	5178.3
2.5°	5208.3	5183.5	5128.6	5178.3	5168.7
5°	5178.3	5158.6	5103.7	5143.3	5133.8
7.5°	5143.3	5113.7	5058.8	5099.0	5089.0
10°	5089.0	5054.0	4994.4	5034.0	5019.2
12.5°	5013.9	4984.3	4924.6	4949.5	4939.4
15°	4929.4	4899.8	4834.8	4854.9	4830.0
17.5°	4824.8	4795.2	4730.2	4755.1	4730.2
20°	4710.1	4680.5	4610.9	4625.6	4606.1
22.5°	4596.0	4551.1	4486.1	4486.1	4476.1
25°	4461.3	4421.7	4337.2	4346.7	4337.2
27.5°	4311.8	4277.0	4212.5	4197.7	4172.9
30°	4162.9	4122.7	4048.2	4033.4	4013.4
32.5°	4003.3	3973.8	3893.9	3863.9	3843.8
35°	3849.0	3799.4	3719.6	3689.5	3664.7
37.5°	3674.7	3629.9	3550.0	3515.2	3490.4
40°	3495.7	3455.5	3375.7	3331.3	3311.3
42.5°	3321.3	3281.2	3201.9	3151.8	3122.2
45°	3132.1	3097.3	3022.2	2967.9	2947.8
47.5°	2947.8	2912.9	2833.2	2778.3	2748.7
50°	2753.4	2728.6	2658.8	2589.1	2564.2
52.5°	2564.2	2529.4	2465.0	2410.0	2375.1
55°	2370.4	2340.3	2280.5	2220.9	2196.0
57.5°	2176.0	2151.1	2086.1	2026.5	2006.4
60°	1981.6	1962.0	1892.3	1837.4	1822.5
62.5°	1792.5	1757.5	1708.0	1658.3	1638.2
65°	1598.6	1568.5	1518.8	1473.9	1449.1
67.5°	1399.4	1374.1	1329.7	1294.9	1274.8
70°	1215.0	1194.9	1150.0	1115.2	1095.7
72.5°	1025.9	1005.9	981.0	946.2	931.3
75°	836.3	826.8	801.4	771.9	781.8
77.5°	667.2	647.1	637.1	622.3	607.5
80°	498.2	492.8	482.9	468.1	458.0
82.5°	338.6	338.6	333.9	313.8	313.8
85°	203.9	199.2	194.4	179.1	174.3
87.5°	89.8	79.7	69.8	54.9	49.7
90°	2.2	26.6	72.5	68.1	70.3
92.5°	45.9	62.2	64.4	66.7	66.7
95°	108.0	128.8	132.5	132.5	128.8
97.5°	179.9	199.1	207.3	207.3	207.3
100°	262.7	279.8	285.7	285.7	283.5
102.5°	350.1	362.6	370.8	373.1	370.8
105°	445.6	451.5	455.9	459.7	459.7
107.5°	540.3	549.2	549.2	550.7	540.3
110°	632.1	644.0	644.0	644.0	638.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	731.3	743.9	741.7	735.7	731.3
115°	829.0	840.8	837.2	835.0	829.0
117.5°	925.9	942.2	931.9	925.9	920.0
120°	1023.6	1039.9	1023.6	1023.6	1017.0
122.5°	1112.4	1133.2	1122.9	1116.9	1112.4
125°	1205.7	1224.2	1218.3	1211.7	1209.5
127.5°	1296.8	1319.7	1311.6	1302.7	1296.8
130°	1381.9	1408.5	1404.9	1400.4	1392.2
132.5°	1477.4	1498.1	1499.6	1489.3	1483.3
135°	1559.6	1582.4	1587.0	1584.7	1578.8
137.5°	1651.3	1669.8	1673.5	1672.0	1663.2
140°	1732.0	1750.6	1760.9	1760.9	1752.8
142.5°	1814.9	1833.4	1839.3	1841.5	1833.4
145°	1893.4	1908.1	1920.0	1922.2	1914.1
147.5°	1963.7	1982.2	1991.1	1994.8	1986.7
150°	2036.2	2048.8	2057.0	2063.6	2057.0
152.5°	2100.6	2113.2	2123.5	2131.7	2123.5
155°	2165.0	2170.9	2177.6	2187.9	2181.3
157.5°	2220.6	2225.0	2228.6	2243.5	2233.1
160°	2270.1	2274.6	2276.8	2289.3	2280.4
162.5°	2316.0	2316.0	2318.3	2332.2	2321.9
165°	2355.2	2353.0	2353.0	2367.8	2357.4
167.5°	2390.8	2384.1	2384.1	2398.9	2388.6
170°	2417.4	2411.5	2409.3	2424.1	2411.5
172.5°	2435.9	2429.9	2427.7	2442.6	2429.9
175°	2450.7	2444.8	2440.4	2455.1	2442.6
177.5°	2458.9	2452.9	2448.5	2461.1	2448.5
180°	2455.1	2455.1	2455.1	2455.1	2455.1



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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	14.76	15.79	15.57	16.62	17.65	14.32	15.34	15.13	16.17	17.20
	3H	16.43	17.35	17.25	18.19	19.25	15.94	16.86	16.76	17.70	18.76
	4H	17.02	17.89	17.86	18.74	19.81	16.53	17.40	17.37	18.25	19.31
	6H	17.43	18.23	18.28	19.09	20.16	16.93	17.73	17.78	18.58	19.66
	8H	17.54	18.30	18.40	19.17	20.25	17.03	17.80	17.89	18.67	19.75
	12H	17.59	18.31	18.45	19.18	20.29	17.08	17.81	17.94	18.67	19.78
4H	2H	15.24	16.11	16.08	16.96	18.02	14.89	15.75	15.73	16.60	17.67
	3H	17.11	17.84	17.97	18.72	19.80	16.71	17.43	17.56	18.31	19.40
	4H	17.83	18.49	18.70	19.37	20.48	17.41	18.07	18.28	18.95	20.06
	6H	18.35	18.92	19.23	19.83	20.94	17.92	18.49	18.80	19.39	20.51
	8H	18.50	19.04	19.39	19.93	21.06	18.07	18.60	18.95	19.50	20.62
	12H	18.58	19.06	19.49	19.98	21.11	18.13	18.61	19.04	19.53	20.66
8H	4H	18.04	18.57	18.92	19.47	20.59	17.66	18.19	18.55	19.09	20.22
	6H	18.67	19.11	19.58	20.05	21.18	18.29	18.73	19.20	19.67	20.79
	8H	18.89	19.28	19.81	20.21	21.35	18.50	18.89	19.42	19.82	20.96
	12H	19.02	19.37	19.95	20.29	21.49	18.61	18.96	19.54	19.88	21.08
12H	4H	18.03	18.51	18.94	19.43	20.56	17.66	18.14	18.57	19.06	20.19
	6H	18.70	19.09	19.62	20.02	21.16	18.33	18.72	19.25	19.65	20.79
	8H	18.94	19.29	19.87	20.21	21.41	18.56	18.91	19.49	19.83	21.03