

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: P903920

Luminaire Tested: DFN2DIP-SQ3F0-120D090US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

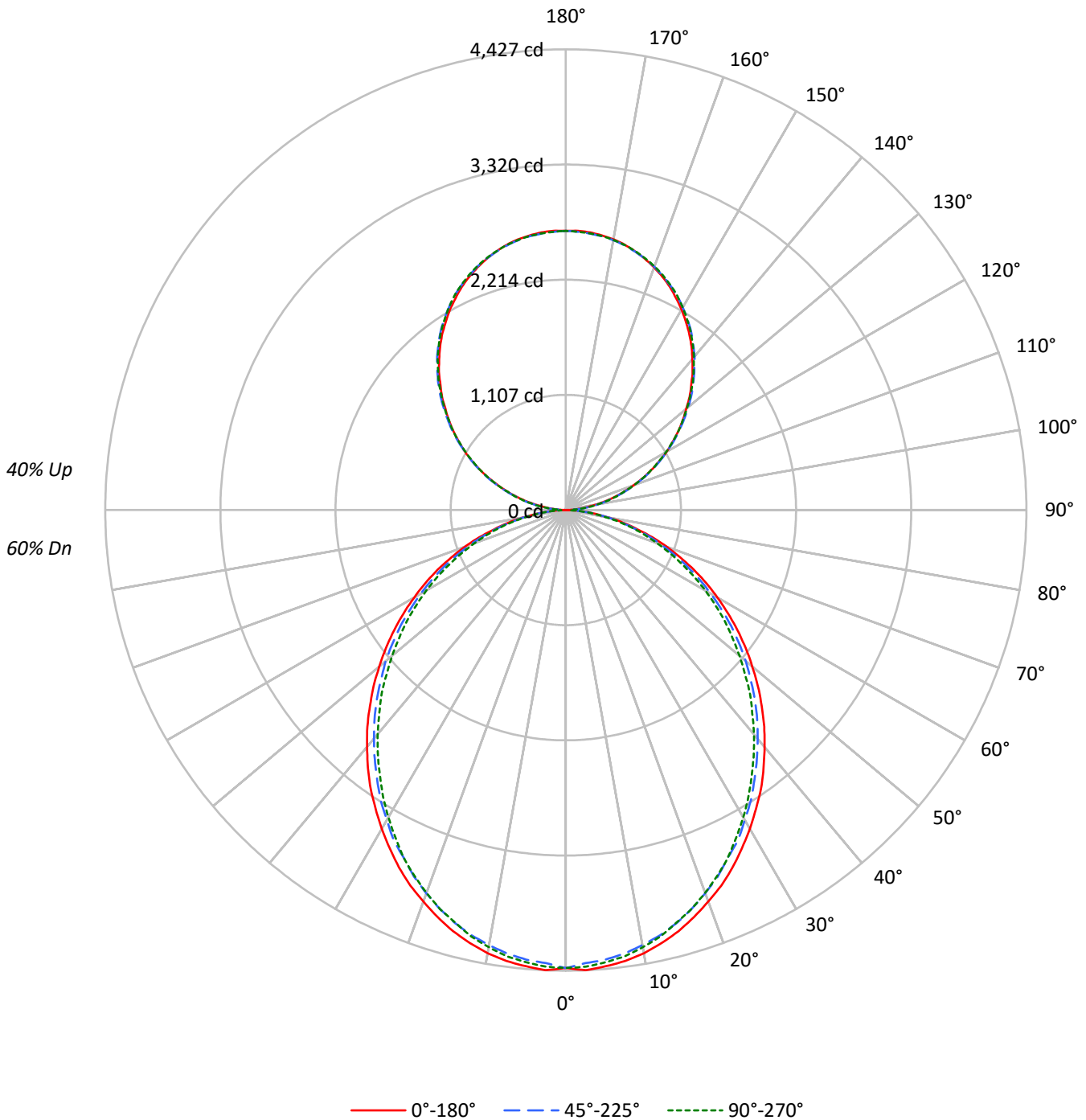
Test Method: LM-79-2019  
Report Number: P903920  
REPORT IS A COMBINATION OF REPORTS P899967 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D090US830-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18704.7 lumens  
Efficiency: N/A  
Efficacy: 96.3 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: General Diffuse  
  
Input Watts (W): 194.3  
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

TEST NUMBER: P903920  
CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US830-FLLFLL

### Luminous Intensity Polar Plot





TEST NUMBER: P903920

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US830-FLLFLL

**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
RCR																				
0	110	110	110	110	102	102	102	102	89	89	89	77	77	77	65	65	65	60		
1	100	96	92	88	93	89	86	83	78	75	73	67	66	64	58	56	55	50		
2	91	84	77	72	85	78	73	68	68	64	61	59	56	53	51	48	46	42		
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	45	42	40	36		
4	76	65	57	51	71	61	54	48	54	48	43	47	42	39	40	37	34	31		
5	70	58	50	44	65	55	47	42	48	42	38	42	37	34	36	33	30	27		
6	64	52	44	38	60	49	42	36	43	37	33	38	33	29	33	29	26	23		
7	60	47	39	33	56	44	37	32	39	33	29	35	30	26	30	26	23	21		
8	55	43	35	30	52	40	33	28	36	30	26	32	27	23	28	24	21	19		
9	52	39	32	26	48	37	30	25	33	27	23	29	24	21	26	22	19	17		
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	24	20	17	15		

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

	0°	45°	90°
0°	5043	5043	5043
5°	5048	4969	5004
10°	5003	4899	4935
15°	4927	4815	4827
20°	4824	4699	4717
25°	4722	4562	4590
30°	4594	4434	4430
35°	4474	4284	4259
40°	4325	4131	4097
45°	4177	3979	3931
50°	4015	3818	3739
55°	3845	3632	3562
60°	3653	3413	3360
65°	3443	3185	3121
70°	3175	2906	2863
75°	2805	2572	2622
80°	2358	2146	2168
85°	1659	1422	1419

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4177 cd/sqm



TEST NUMBER: P903920

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US830-FLLFLL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	414.2	2.2
10°-20°	1165.5	6.2
20°-30°	1712.8	9.2
30°-40°	1989.3	10.6
40°-50°	1986.8	10.6
50°-60°	1732.4	9.3
60°-70°	1280.6	6.8
70°-80°	724.6	3.9
80°-90°	198.9	1.1
90°-100°	166.0	0.9
100°-110°	527.5	2.8
110°-120°	902.7	4.8
120°-130°	1187.2	6.3
130°-140°	1332.5	7.1
140°-150°	1306.7	7.0
150°-160°	1096.1	5.9
160°-170°	726.9	3.9
170°-180°	254.1	1.4
0°-30°	3292.4	17.6
0°-40°	5281.7	28.2
0°-60°	9000.9	48.1
0°-90°	11205.0	59.9
90°-120°	1596.2	8.5
90°-150°	5422.6	29.0
90°-180°	7500.0	40.1
0°-180°	18704.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4401	4401	4401	4401	4401	
5°	4401	4384	4338	4371	4363	418
15°	4190	4164	4109	4126	4105	1180
25°	3792	3758	3686	3694	3686	1745
35°	3271	3229	3161	3136	3115	2043
45°	2662	2632	2569	2522	2505	2054
55°	2015	1989	1938	1888	1866	1801
65°	1359	1333	1291	1253	1232	1343
75°	711	703	681	656	664	759
85°	173	169	165	152	148	193
90°	2	29	79	74	77	18
95°	118	141	145	145	141	131
105°	487	493	498	502	502	514
115°	906	919	915	912	906	896
125°	1318	1338	1331	1324	1322	1177
135°	1704	1729	1734	1732	1725	1317
145°	2069	2085	2098	2100	2092	1293
155°	2366	2372	2380	2391	2384	1089
165°	2574	2571	2571	2587	2576	726
175°	2678	2671	2667	2683	2669	254
180°	2683	2683	2683	2683	2683	



TEST NUMBER: P903920

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US830-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4401.0	4401.0	4401.0	4401.0	4401.0
2.5°	4426.6	4405.4	4358.8	4401.0	4392.9
5°	4401.0	4384.3	4337.7	4371.3	4363.2
7.5°	4371.3	4346.2	4299.5	4333.6	4325.1
10°	4325.1	4295.4	4244.7	4278.4	4265.9
12.5°	4261.3	4236.2	4185.5	4206.6	4198.0
15°	4189.5	4164.3	4109.1	4126.2	4105.1
17.5°	4100.6	4075.5	4020.2	4041.3	4020.2
20°	4003.2	3978.0	3918.8	3931.3	3914.8
22.5°	3906.2	3868.0	3812.8	3812.8	3804.3
25°	3791.7	3758.0	3686.2	3694.3	3686.2
27.5°	3664.6	3635.0	3580.2	3567.6	3546.6
30°	3538.0	3503.9	3440.6	3428.0	3411.0
32.5°	3402.4	3377.3	3309.5	3283.9	3266.9
35°	3271.3	3229.1	3161.3	3135.7	3114.6
37.5°	3123.1	3085.0	3017.2	2987.6	2966.5
40°	2971.0	2936.9	2869.0	2831.3	2814.2
42.5°	2822.8	2788.7	2721.3	2678.7	2653.5
45°	2662.0	2632.4	2568.6	2522.4	2505.4
47.5°	2505.4	2475.7	2407.9	2361.3	2336.1
50°	2340.1	2319.0	2259.7	2200.5	2179.3
52.5°	2179.3	2149.8	2095.0	2048.2	2018.6
55°	2014.6	1989.0	1938.2	1887.5	1866.4
57.5°	1849.4	1828.2	1773.0	1722.3	1705.2
60°	1684.1	1667.5	1608.3	1561.6	1549.0
62.5°	1523.4	1493.7	1451.6	1409.4	1392.3
65°	1358.7	1333.0	1290.8	1252.6	1231.6
67.5°	1189.4	1167.8	1130.1	1100.5	1083.5
70°	1032.6	1015.6	977.4	947.8	931.2
72.5°	871.9	854.9	833.8	804.2	791.5
75°	710.8	702.7	681.1	656.0	664.5
77.5°	567.0	550.0	541.5	528.9	516.3
80°	423.4	418.9	410.4	397.8	389.3
82.5°	287.8	287.8	283.8	266.7	266.7
85°	173.3	169.3	165.2	152.2	148.2
87.5°	76.3	67.8	59.3	46.7	42.2
90°	2.5	29.1	79.3	74.4	76.8
92.5°	50.1	68.0	70.4	72.8	72.8
95°	118.1	140.7	144.8	144.8	140.7
97.5°	196.5	217.5	226.5	226.5	226.5
100°	287.1	305.8	312.2	312.2	309.8
102.5°	382.6	396.3	405.2	407.6	405.2
105°	486.9	493.3	498.2	502.3	502.3
107.5°	590.4	600.1	600.1	601.7	590.4
110°	690.7	703.7	703.7	703.7	697.2



TEST NUMBER: P903920

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US830-FLLFLL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	799.1	812.8	810.4	804.0	799.1
115°	905.9	918.8	914.7	912.4	905.9
117.5°	1011.8	1029.6	1018.3	1011.8	1005.3
120°	1118.6	1136.3	1118.6	1118.6	1111.3
122.5°	1215.6	1238.3	1227.0	1220.5	1215.6
125°	1317.6	1337.8	1331.3	1324.0	1321.6
127.5°	1417.0	1442.1	1433.2	1423.5	1417.0
130°	1510.0	1539.2	1535.1	1530.2	1521.4
132.5°	1614.4	1637.0	1638.6	1627.3	1620.9
135°	1704.1	1729.2	1734.1	1731.6	1725.2
137.5°	1804.4	1824.7	1828.7	1827.1	1817.4
140°	1892.6	1912.8	1924.1	1924.1	1915.2
142.5°	1983.2	2003.4	2009.9	2012.3	2003.4
145°	2069.0	2085.1	2098.0	2100.5	2091.6
147.5°	2145.8	2166.0	2175.7	2179.7	2170.9
150°	2225.1	2238.8	2247.7	2254.9	2247.7
152.5°	2295.4	2309.1	2320.4	2329.4	2320.4
155°	2365.8	2372.2	2379.5	2390.9	2383.6
157.5°	2426.4	2431.3	2435.3	2451.5	2440.1
160°	2480.6	2485.5	2487.9	2501.6	2491.9
162.5°	2530.7	2530.7	2533.2	2548.5	2537.2
165°	2573.6	2571.2	2571.2	2587.4	2576.1
167.5°	2612.4	2605.2	2605.2	2621.3	2610.0
170°	2641.6	2635.1	2632.7	2648.8	2635.1
172.5°	2661.7	2655.3	2652.9	2669.1	2655.3
175°	2678.0	2671.4	2666.6	2682.9	2669.1
177.5°	2686.8	2680.4	2675.5	2689.3	2675.5
180°	2682.9	2682.9	2682.9	2682.9	2682.9



TEST NUMBER: P903920  
 CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US830-FLLFLL

**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	13.72	14.68	14.59	15.57	16.69	13.28	14.24	14.15	15.13	16.25
	3H	15.39	16.25	16.27	17.15	18.29	14.90	15.76	15.78	16.66	17.80
	4H	15.98	16.79	16.87	17.69	18.85	15.48	16.30	16.38	17.20	18.36
	6H	16.38	17.13	17.29	18.04	19.21	15.88	16.63	16.79	17.54	18.71
	8H	16.48	17.20	17.40	18.13	19.30	15.98	16.70	16.90	17.62	18.80
	12H	16.53	17.21	17.45	18.14	19.33	16.02	16.70	16.95	17.63	18.82
4H	2H	14.19	15.01	15.09	15.91	17.07	13.84	14.65	14.74	15.56	16.71
	3H	16.06	16.74	16.97	17.68	18.85	15.66	16.33	16.57	17.27	18.44
	4H	16.78	17.40	17.70	18.33	19.53	16.35	16.97	17.28	17.90	19.10
	6H	17.29	17.83	18.23	18.78	19.98	16.86	17.40	17.80	18.35	19.55
	8H	17.44	17.94	18.38	18.89	20.10	17.01	17.51	17.94	18.45	19.67
	12H	17.52	17.97	18.48	18.94	20.15	17.07	17.52	18.03	18.49	19.71
8H	4H	16.98	17.48	17.92	18.43	19.64	16.60	17.10	17.54	18.05	19.26
	6H	17.61	18.02	18.57	19.01	20.22	17.22	17.64	18.19	18.63	19.84
	8H	17.82	18.19	18.80	19.17	20.40	17.43	17.80	18.41	18.78	20.01
	12H	17.96	18.28	18.94	19.25	20.53	17.55	17.87	18.52	18.84	20.12
12H	4H	16.97	17.42	17.92	18.38	19.60	16.60	17.05	17.56	18.02	19.23
	6H	17.64	18.00	18.61	18.98	20.21	17.26	17.63	18.24	18.61	19.84
	8H	17.88	18.20	18.86	19.17	20.45	17.50	17.82	18.48	18.79	20.07