

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: P911976

Luminaire Tested: DFN2DIP-SQ3F0-090D040US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

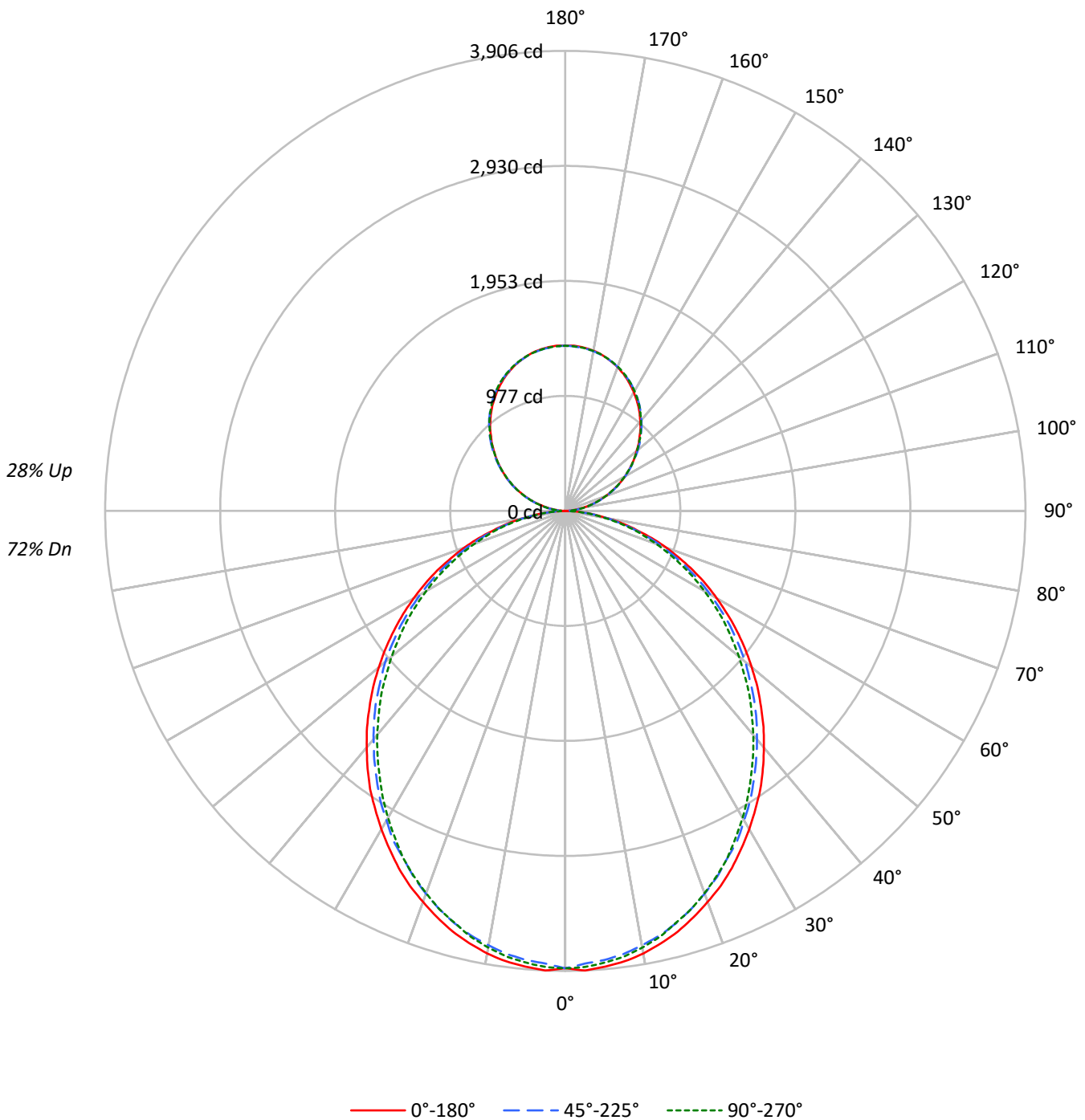
Test Method: LM-79-2019  
Report Number: P911976  
REPORT IS A COMBINATION OF REPORTS P899871 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-090D040US850-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13807.0 lumens  
Efficiency: N/A  
Efficacy: 116.9 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): 118.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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	112	112	112	112	106	106	106	106	95	95	95	85	85	85	76	76	76	76	76	76	72
1	103	98	94	91	97	93	90	86	84	81	79	75	73	71	67	66	64	64	64	64	60
2	93	86	79	74	88	81	76	71	73	69	65	66	63	59	59	56	54	54	54	54	51
3	85	75	68	62	81	72	65	59	65	59	55	58	54	50	52	49	46	46	46	46	43
4	78	67	59	52	74	64	56	51	58	52	47	52	47	43	47	43	40	40	40	40	37
5	72	60	51	45	68	57	49	44	52	45	41	47	42	38	42	38	35	35	35	35	32
6	66	54	45	39	63	51	44	38	47	40	35	42	37	33	38	34	31	31	31	31	28
7	61	49	40	35	58	47	39	34	42	36	31	39	33	29	35	31	27	27	27	27	25
8	57	44	36	31	54	42	35	30	39	33	28	35	30	26	32	28	24	24	24	24	22
9	53	41	33	28	50	39	32	27	36	30	25	33	27	24	30	25	22	22	22	22	20
10	50	37	30	25	47	36	29	24	33	27	23	30	25	21	28	23	20	20	20	20	18

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

	0°	45°	90°
0°	4450	4450	4450
5°	4454	4385	4416
10°	4415	4323	4355
15°	4348	4249	4260
20°	4257	4147	4163
25°	4167	4026	4051
30°	4054	3913	3909
35°	3948	3780	3759
40°	3817	3646	3616
45°	3686	3511	3469
50°	3543	3369	3300
55°	3393	3206	3144
60°	3224	3012	2965
65°	3038	2810	2754
70°	2802	2565	2527
75°	2476	2270	2314
80°	2080	1894	1913
85°	1464	1255	1252

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3686 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	365.5	2.6
10°-20°	1028.5	7.4
20°-30°	1511.4	10.9
30°-40°	1755.4	12.7
40°-50°	1753.3	12.7
50°-60°	1528.8	11.1
60°-70°	1130.1	8.2
70°-80°	639.4	4.6
80°-90°	172.7	1.3
90°-100°	86.8	0.6
100°-110°	275.8	2.0
110°-120°	472.0	3.4
120°-130°	620.8	4.5
130°-140°	696.8	5.0
140°-150°	683.3	4.9
150°-160°	573.2	4.2
160°-170°	380.1	2.8
170°-180°	132.9	1.0
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0°-30°	2905.4	21.0
0°-40°	4660.9	33.8
0°-60°	7942.9	57.5
0°-90°	9885.2	71.6
90°-120°	834.7	6.0
90°-150°	2835.6	20.5
90°-180°	3922.0	28.4
0°-180°	13807.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3884	3884	3884	3884	3884	
5°	3884	3869	3828	3858	3850	369
15°	3697	3675	3626	3641	3622	1041
25°	3346	3316	3253	3260	3253	1540
35°	2887	2850	2790	2767	2748	1803
45°	2349	2323	2267	2226	2211	1813
55°	1778	1755	1710	1666	1647	1589
65°	1199	1176	1139	1106	1087	1185
75°	627	620	601	579	586	670
85°	153	149	146	134	131	171
90°	1	15	42	39	40	13
95°	62	74	76	76	74	69
105°	255	258	260	263	263	269
115°	474	480	478	477	474	469
125°	689	700	696	692	691	616
135°	891	904	907	906	902	689
145°	1082	1090	1097	1098	1094	676
155°	1237	1240	1244	1250	1246	569
165°	1346	1345	1345	1353	1347	380
175°	1400	1397	1394	1403	1396	133
180°	1403	1403	1403	1403	1403	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3883.6	3883.6	3883.6	3883.6	3883.6
2.5°	3906.2	3887.6	3846.5	3883.6	3876.5
5°	3883.6	3869.0	3827.8	3857.5	3850.3
7.5°	3857.5	3835.4	3794.1	3824.3	3816.7
10°	3816.7	3790.6	3745.8	3775.5	3764.4
12.5°	3760.4	3738.2	3693.5	3712.0	3704.6
15°	3697.1	3674.9	3626.1	3641.2	3622.5
17.5°	3618.6	3596.4	3547.7	3566.3	3547.7
20°	3532.6	3510.4	3458.1	3469.2	3454.5
22.5°	3447.0	3413.4	3364.6	3364.6	3357.1
25°	3346.0	3316.2	3252.9	3260.0	3252.9
27.5°	3233.8	3207.7	3159.4	3148.3	3129.7
30°	3122.2	3092.0	3036.1	3025.0	3010.0
32.5°	3002.5	2980.3	2920.4	2897.9	2882.8
35°	2886.8	2849.6	2789.7	2767.2	2748.5
37.5°	2756.1	2722.4	2662.5	2636.4	2617.8
40°	2621.7	2591.6	2531.7	2498.5	2483.5
42.5°	2490.9	2460.9	2401.4	2363.8	2341.7
45°	2349.1	2323.0	2266.7	2225.9	2210.9
47.5°	2210.9	2184.7	2124.8	2083.7	2061.5
50°	2065.1	2046.4	1994.1	1941.9	1923.2
52.5°	1923.2	1897.1	1848.7	1807.6	1781.4
55°	1777.8	1755.2	1710.4	1665.7	1647.1
57.5°	1632.0	1613.4	1564.7	1519.9	1504.8
60°	1486.2	1471.5	1419.2	1378.0	1367.0
62.5°	1344.3	1318.2	1280.9	1243.7	1228.7
65°	1198.9	1176.3	1139.1	1105.5	1086.8
67.5°	1049.6	1030.6	997.2	971.2	956.1
70°	911.3	896.2	862.6	836.4	821.8
72.5°	769.4	754.3	735.7	709.6	698.6
75°	627.3	620.0	601.1	578.9	586.4
77.5°	500.4	485.4	477.9	466.8	455.7
80°	373.6	369.6	362.1	351.0	343.6
82.5°	254.0	254.0	250.4	235.3	235.3
85°	152.9	149.4	145.8	134.3	130.8
87.5°	67.3	59.8	52.3	41.3	37.3
90°	1.2	15.2	41.5	38.9	40.1
92.5°	26.2	35.5	36.8	38.0	38.0
95°	61.8	73.6	75.7	75.7	73.6
97.5°	102.8	113.8	118.4	118.4	118.4
100°	150.2	159.9	163.2	163.2	162.0
102.5°	200.1	207.3	211.9	213.1	211.9
105°	254.6	258.0	260.5	262.6	262.6
107.5°	308.7	313.8	313.8	314.6	308.7
110°	361.2	368.0	368.0	368.0	364.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	417.9	425.1	423.7	420.4	417.9
115°	473.7	480.5	478.3	477.1	473.7
117.5°	529.1	538.4	532.5	529.1	525.8
120°	585.0	594.2	585.0	585.0	581.1
122.5°	635.7	647.5	641.7	638.2	635.7
125°	689.0	699.6	696.2	692.3	691.1
127.5°	741.0	754.1	749.5	744.4	741.0
130°	789.6	804.9	802.8	800.3	795.6
132.5°	844.2	856.0	856.9	850.9	847.6
135°	891.2	904.3	906.8	905.5	902.2
137.5°	943.6	954.2	956.3	955.4	950.4
140°	989.7	1000.3	1006.2	1006.2	1001.5
142.5°	1037.1	1047.7	1051.0	1052.3	1047.7
145°	1081.9	1090.4	1097.1	1098.5	1093.8
147.5°	1122.1	1132.6	1137.7	1139.8	1135.2
150°	1163.6	1170.8	1175.4	1179.2	1175.4
152.5°	1200.4	1207.5	1213.5	1218.1	1213.5
155°	1237.1	1240.5	1244.3	1250.3	1246.4
157.5°	1268.9	1271.4	1273.5	1282.0	1276.0
160°	1297.2	1299.7	1301.0	1308.2	1303.1
162.5°	1323.4	1323.4	1324.7	1332.7	1326.8
165°	1345.9	1344.6	1344.6	1353.0	1347.1
167.5°	1366.2	1362.3	1362.3	1370.8	1364.8
170°	1381.4	1377.9	1376.7	1385.1	1377.9
172.5°	1391.9	1388.6	1387.2	1395.8	1388.6
175°	1400.4	1397.0	1394.5	1402.9	1395.8
177.5°	1405.1	1401.7	1399.1	1406.3	1399.1
180°	1402.9	1402.9	1402.9	1402.9	1402.9



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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	14.21	15.31	14.96	16.08	17.00	13.77	14.87	14.52	15.63	16.56
	3H	15.89	16.87	16.65	17.65	18.61	15.40	16.38	16.16	17.16	18.12
	4H	16.48	17.41	17.26	18.20	19.17	15.99	16.92	16.77	17.71	18.67
	6H	16.89	17.75	17.68	18.55	19.53	16.39	17.25	17.18	18.05	19.03
	8H	17.00	17.82	17.80	18.63	19.62	16.50	17.32	17.30	18.13	19.12
	12H	17.06	17.84	17.86	18.64	19.65	16.55	17.33	17.35	18.13	19.14
4H	2H	14.70	15.63	15.48	16.42	17.38	14.34	15.27	15.13	16.06	17.03
	3H	16.58	17.36	17.38	18.18	19.16	16.17	16.95	16.97	17.77	18.76
	4H	17.30	18.01	18.11	18.83	19.84	16.88	17.58	17.69	18.40	19.42
	6H	17.82	18.44	18.65	19.28	20.30	17.39	18.00	18.22	18.85	19.87
	8H	17.98	18.55	18.81	19.39	20.42	17.54	18.11	18.37	18.95	19.98
	12H	18.06	18.57	18.91	19.44	20.47	17.61	18.13	18.46	18.99	20.02
8H	4H	17.51	18.08	18.34	18.92	19.96	17.14	17.71	17.96	18.55	19.58
	6H	18.15	18.62	19.00	19.50	20.54	17.76	18.24	18.62	19.12	20.15
	8H	18.37	18.79	19.24	19.67	20.71	17.97	18.39	18.84	19.27	20.32
	12H	18.51	18.88	19.38	19.75	20.85	18.10	18.47	18.97	19.34	20.44
12H	4H	17.51	18.02	18.36	18.89	19.92	17.14	17.65	17.99	18.52	19.55
	6H	18.18	18.60	19.05	19.48	20.53	17.80	18.23	18.67	19.11	20.15
	8H	18.43	18.80	19.30	19.67	20.77	18.05	18.42	18.92	19.29	20.39