

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: P912834

Luminaire Tested: DFN2DIP-TR4F0-070D040US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

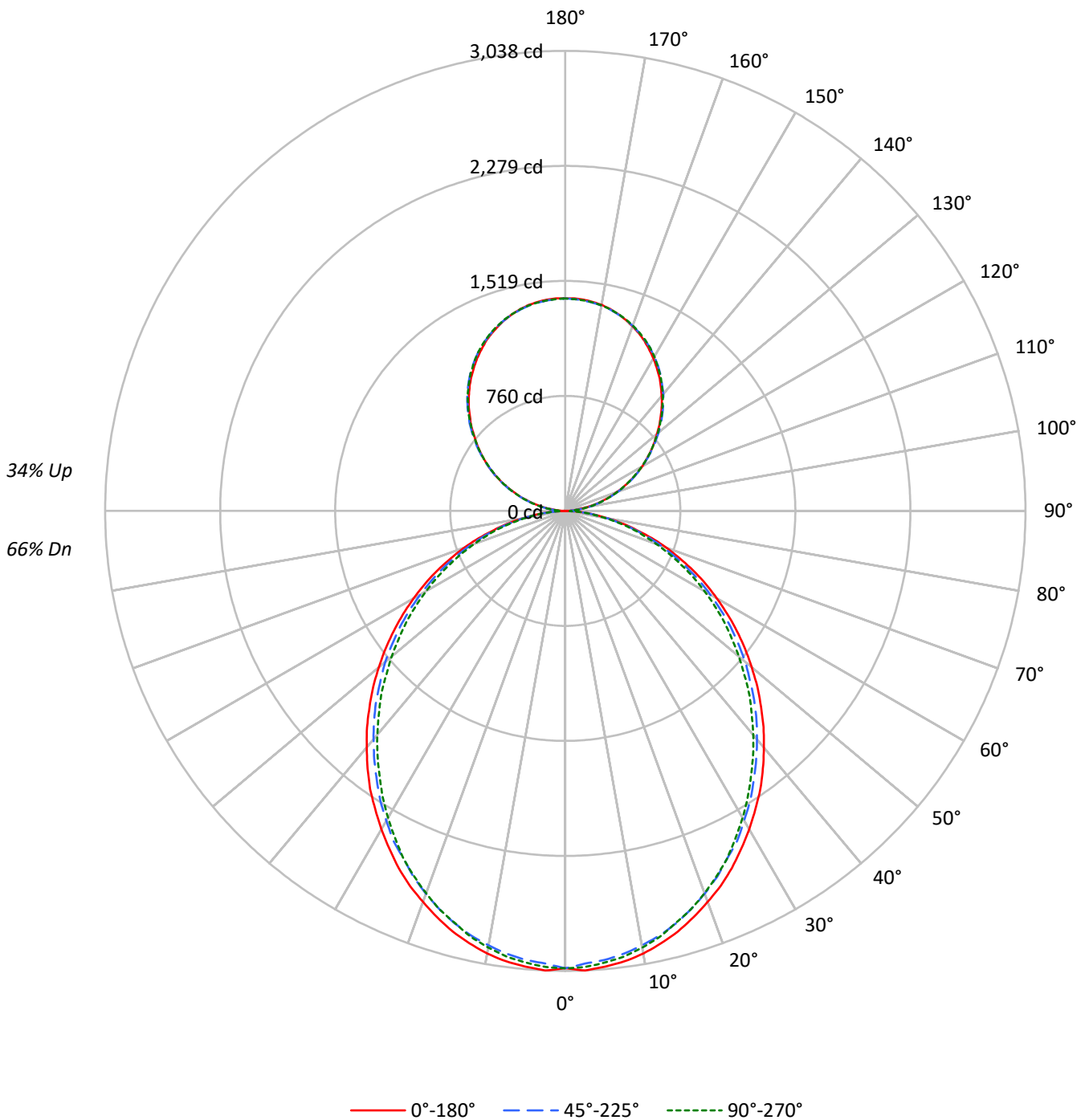
Test Method: LM-79-2019  
Report Number: P912834  
REPORT IS A COMBINATION OF REPORTS P900375 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-070D040US850-FLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11611.2 lumens  
Efficiency: N/A  
Efficacy: 121.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 95.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
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				66
1	101	97	93	89	95	91	88	85	81	78	76	72	70	68	63	61	60	56				56
2	92	85	78	73	87	80	74	70	71	67	63	63	60	57	55	53	51	47				47
3	84	75	67	61	79	70	64	58	63	57	53	56	51	48	49	46	43	40				40
4	77	66	58	52	72	63	55	50	56	50	45	50	45	41	44	40	37	34				34
5	71	59	51	44	67	56	48	43	50	44	39	45	40	36	40	36	32	30				30
6	65	53	45	39	61	50	43	37	45	39	34	40	35	31	36	32	29	26				26
7	61	48	40	34	57	46	38	33	41	35	30	37	32	28	33	29	25	23				23
8	56	44	36	30	53	42	34	29	38	31	27	34	29	25	30	26	23	21				21
9	53	40	32	27	49	38	31	26	34	28	24	31	26	22	28	24	21	19				19
10	49	37	29	24	46	35	28	24	32	26	22	29	24	20	26	22	19	17				17

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

	0°	45°	90°
0°	2400	2400	2400
5°	2404	2366	2382
10°	2384	2334	2350
15°	2349	2296	2299
20°	2302	2242	2248
25°	2255	2179	2188
30°	2196	2119	2112
35°	2140	2049	2032
40°	2071	1978	1955
45°	2002	1907	1877
50°	1927	1833	1787
55°	1848	1747	1703
60°	1760	1644	1608
65°	1663	1538	1495
70°	1539	1409	1374
75°	1368	1254	1262
80°	1163	1058	1049
85°	842	718	695

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2002 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	284.3	2.4
10°-20°	799.9	6.9
20°-30°	1175.6	10.1
30°-40°	1365.3	11.8
40°-50°	1363.6	11.7
50°-60°	1189.1	10.2
60°-70°	879.0	7.6
70°-80°	497.3	4.3
80°-90°	135.3	1.2
90°-100°	86.8	0.7
100°-110°	275.8	2.4
110°-120°	472.0	4.1
120°-130°	620.8	5.3
130°-140°	696.8	6.0
140°-150°	683.3	5.9
150°-160°	573.2	4.9
160°-170°	380.1	3.3
170°-180°	132.9	1.1
0°-30°	2259.8	19.5
0°-40°	3625.1	31.2
0°-60°	6177.8	53.2
0°-90°	7689.4	66.2
90°-120°	834.7	7.2
90°-150°	2835.6	24.4
90°-180°	3922.0	33.8
0°-180°	11611.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3021	3021	3021	3021	3021	
5°	3021	3009	2977	3000	2995	287
15°	2876	2858	2820	2832	2818	810
25°	2602	2579	2530	2536	2530	1198
35°	2245	2216	2170	2152	2138	1402
45°	1827	1807	1763	1731	1720	1410
55°	1383	1365	1330	1296	1281	1236
65°	933	915	886	860	845	922
75°	488	482	467	450	456	521
85°	119	116	114	104	102	133
90°	1	15	42	39	40	11
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°	3020.6	3020.6	3020.6	3020.6	3020.6
2.5°	3038.2	3023.7	2991.6	3020.6	3015.0
5°	3020.6	3009.3	2977.2	3000.3	2994.7
7.5°	3000.3	2983.0	2950.9	2974.4	2968.6
10°	2968.6	2948.2	2913.3	2936.5	2927.9
12.5°	2924.8	2907.6	2872.8	2887.2	2881.3
15°	2875.5	2858.2	2820.3	2832.1	2817.5
17.5°	2814.4	2797.2	2759.3	2773.8	2759.3
20°	2747.5	2730.4	2689.7	2698.3	2686.9
22.5°	2681.0	2654.8	2616.9	2616.9	2611.0
25°	2602.5	2579.3	2530.1	2535.6	2530.1
27.5°	2515.2	2494.9	2457.3	2448.7	2434.1
30°	2428.4	2404.9	2361.5	2352.9	2341.1
32.5°	2335.2	2318.0	2271.5	2253.9	2242.2
35°	2245.3	2216.3	2169.8	2152.2	2137.7
37.5°	2143.6	2117.4	2070.8	2050.5	2036.0
40°	2039.1	2015.7	1969.1	1943.3	1931.5
42.5°	1937.4	1914.0	1867.8	1838.5	1821.2
45°	1827.1	1806.8	1763.0	1731.3	1719.5
47.5°	1719.5	1699.2	1652.6	1620.6	1603.4
50°	1606.2	1591.6	1550.9	1510.3	1495.8
52.5°	1495.8	1475.5	1437.9	1405.9	1385.5
55°	1382.7	1365.2	1330.4	1295.5	1281.0
57.5°	1269.4	1254.8	1216.9	1182.1	1170.4
60°	1155.9	1144.5	1103.9	1071.8	1063.2
62.5°	1045.6	1025.3	996.3	967.4	955.6
65°	932.6	914.9	886.0	859.8	845.3
67.5°	816.3	801.6	775.6	755.3	743.6
70°	708.8	697.1	670.8	650.5	639.1
72.5°	598.4	586.8	572.2	551.9	543.3
75°	487.8	482.3	467.4	450.3	456.1
77.5°	389.3	377.5	371.6	363.0	354.4
80°	290.6	287.6	281.7	273.0	267.2
82.5°	197.5	197.5	194.7	183.1	183.1
85°	119.0	116.2	113.5	104.5	101.7
87.5°	52.3	46.6	40.7	32.1	28.9
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	11.68	12.71	12.49	13.54	14.56	11.25	12.28	12.06	13.11	14.13
	3H	13.36	14.28	14.17	15.12	16.16	12.88	13.81	13.70	14.64	15.69
	4H	13.95	14.82	14.79	15.67	16.73	13.48	14.35	14.31	15.19	16.25
	6H	14.36	15.16	15.21	16.02	17.09	13.88	14.69	14.73	15.54	16.61
	8H	14.47	15.24	15.32	16.11	17.18	13.99	14.76	14.85	15.63	16.70
	12H	14.52	15.25	15.38	16.12	17.22	14.04	14.77	14.90	15.64	16.74
4H	2H	12.17	13.04	13.00	13.88	14.94	11.82	12.69	12.66	13.54	14.60
	3H	14.05	14.78	14.90	15.65	16.73	13.65	14.38	14.50	15.26	16.33
	4H	14.77	15.43	15.63	16.31	17.41	14.36	15.03	15.22	15.90	17.00
	6H	15.29	15.87	16.17	16.76	17.87	14.88	15.46	15.76	16.36	17.46
	8H	15.45	15.98	16.33	16.88	17.99	15.03	15.57	15.92	16.46	17.58
	12H	15.53	16.01	16.43	16.92	18.05	15.10	15.59	16.01	16.50	17.62
8H	4H	14.98	15.51	15.86	16.41	17.52	14.62	15.15	15.50	16.05	17.16
	6H	15.62	16.06	16.52	17.00	18.11	15.25	15.70	16.16	16.63	17.75
	8H	15.84	16.23	16.76	17.16	18.29	15.47	15.86	16.39	16.79	17.93
	12H	15.98	16.32	16.90	17.24	18.43	15.59	15.94	16.52	16.86	18.05
12H	4H	14.97	15.45	15.87	16.37	17.49	14.62	15.10	15.52	16.02	17.14
	6H	15.65	16.04	16.57	16.97	18.10	15.30	15.69	16.21	16.62	17.75
	8H	15.90	16.24	16.82	17.16	18.35	15.54	15.89	16.46	16.81	17.99