

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: P904532

Luminaire Tested: DFN2DIP-TR3F0-090D070US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

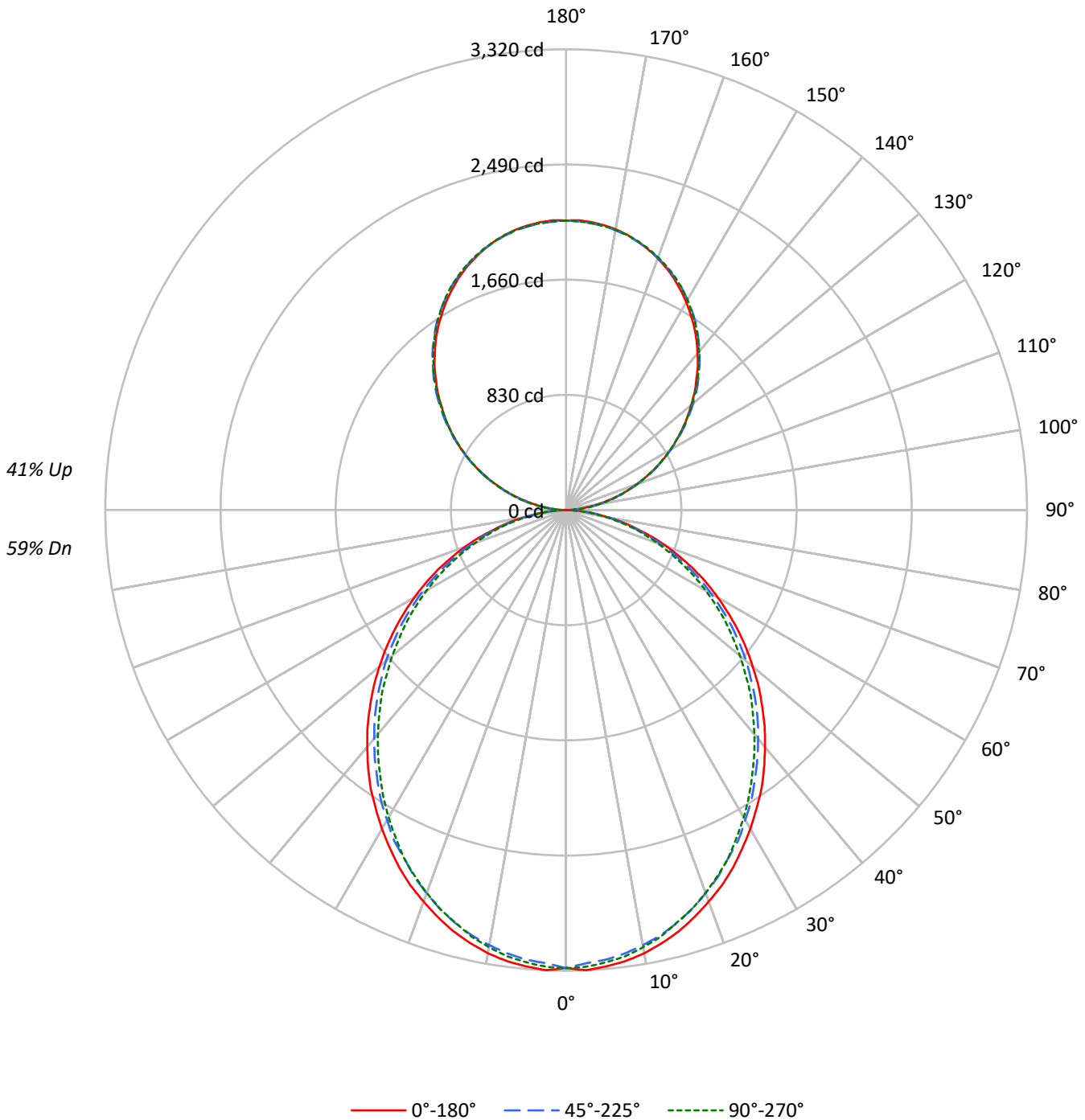
Test Method: LM-79-2019  
Report Number: P904532  
REPORT IS A COMBINATION OF REPORTS P900339 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-090D070US830-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14237.1 lumens  
Efficiency: N/A  
Efficacy: 96.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 148.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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	50	30	10	50	30	10	50	30	10	0																								
RCR																																																						
0	109	109	109	109	102	102	102	102	88	88	88	76	76	76	64	64	64	59																																				
1	100	95	91	88	93	89	86	83	78	75	73	67	65	63	57	56	54	50																																				
2	91	83	77	72	85	78	73	68	68	64	60	59	56	53	50	48	46	42																																				
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	44	42	39	35																																				
4	76	65	57	51	71	61	54	48	53	48	43	46	42	38	40	36	34	30																																				
5	70	58	50	44	65	54	47	41	48	42	37	42	37	33	36	32	29	26																																				
6	64	52	44	38	60	49	41	36	43	37	33	38	33	29	33	29	26	23																																				
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	30	26	23	21																																				
8	55	43	35	29	51	40	33	28	36	30	26	31	27	23	27	23	21	18																																				
9	51	39	31	26	48	37	30	25	33	27	23	29	24	21	25	21	19	17																																				
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	23	20	17	15																																				

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

	0°	45°	90°
0°	4113	4113	4113
5°	4117	4052	4080
10°	4082	3994	4022
15°	4020	3925	3933
20°	3936	3830	3842
25°	3853	3718	3738
30°	3750	3612	3605
35°	3651	3489	3465
40°	3531	3364	3331
45°	3410	3239	3195
50°	3279	3107	3037
55°	3141	2955	2890
60°	2984	2774	2723
65°	2814	2587	2526
70°	2596	2358	2312
75°	2295	2084	2111
80°	1932	1734	1736
85°	1365	1142	1120

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3410 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	310.7	2.2
10°-20°	874.1	6.1
20°-30°	1284.6	9.0
30°-40°	1492.0	10.5
40°-50°	1490.1	10.5
50°-60°	1299.3	9.1
60°-70°	960.5	6.7
70°-80°	543.4	3.8
80°-90°	149.3	1.0
90°-100°	129.1	0.9
100°-110°	410.3	2.9
110°-120°	702.1	4.9
120°-130°	923.3	6.5
130°-140°	1036.4	7.3
140°-150°	1016.3	7.1
150°-160°	852.6	6.0
160°-170°	565.4	4.0
170°-180°	197.6	1.4
0°-30°	2469.3	17.3
0°-40°	3961.3	27.8
0°-60°	6750.7	47.4
0°-90°	8404.0	59.0
90°-120°	1241.5	8.7
90°-150°	4217.6	29.6
90°-180°	5833.0	41.0
0°-180°	14237.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3301	3301	3301	3301	3301	
5°	3301	3288	3253	3278	3272	313
15°	3142	3123	3082	3095	3079	885
25°	2844	2818	2765	2771	2765	1309
35°	2454	2422	2371	2352	2336	1532
45°	1996	1974	1926	1892	1879	1541
55°	1511	1492	1454	1416	1400	1351
65°	1019	1000	968	940	924	1007
75°	533	527	511	492	498	569
85°	130	127	124	114	111	145
90°	2	23	62	58	60	14
95°	92	109	113	113	109	102
105°	379	384	388	391	391	400
115°	705	715	712	710	705	697
125°	1025	1040	1036	1030	1028	916
135°	1326	1345	1349	1347	1342	1025
145°	1609	1622	1632	1634	1627	1005
155°	1840	1845	1851	1860	1854	847
165°	2002	2000	2000	2012	2004	565
175°	2083	2078	2074	2087	2076	198
180°	2087	2087	2087	2087	2087	



TEST NUMBER: P904532

CATALOG NUMBER: DFN2DIP-TR3F0-090D070US830-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3300.7	3300.7	3300.7	3300.7	3300.7
2.5°	3319.9	3304.1	3269.1	3300.7	3294.7
5°	3300.7	3288.2	3253.3	3278.5	3272.4
7.5°	3278.5	3259.7	3224.6	3250.3	3243.9
10°	3243.9	3221.6	3183.5	3208.8	3199.4
12.5°	3196.0	3177.1	3139.1	3154.9	3148.6
15°	3142.2	3123.3	3081.8	3094.6	3078.8
17.5°	3075.4	3056.6	3015.2	3031.0	3015.2
20°	3002.4	2983.5	2939.0	2948.5	2936.0
22.5°	2929.6	2901.1	2859.6	2859.6	2853.2
25°	2843.7	2818.5	2764.7	2770.7	2764.7
27.5°	2748.5	2726.2	2685.2	2675.8	2659.9
30°	2653.5	2627.9	2580.4	2571.0	2558.2
32.5°	2551.8	2533.0	2482.1	2463.0	2450.1
35°	2453.5	2421.9	2371.0	2351.8	2336.0
37.5°	2342.4	2313.8	2262.9	2240.7	2224.9
40°	2228.2	2202.6	2151.7	2123.5	2110.7
42.5°	2117.0	2091.5	2041.0	2009.0	1990.2
45°	1996.5	1974.3	1926.5	1891.8	1879.1
47.5°	1879.1	1856.8	1805.9	1770.9	1752.1
50°	1755.1	1739.3	1694.8	1650.4	1634.6
52.5°	1634.6	1612.3	1571.2	1536.2	1514.0
55°	1511.0	1491.8	1453.7	1415.7	1399.9
57.5°	1387.0	1371.2	1329.8	1291.8	1278.9
60°	1263.1	1250.7	1206.2	1171.2	1161.8
62.5°	1142.5	1120.3	1088.6	1057.1	1044.2
65°	1019.0	999.8	968.1	939.5	923.7
67.5°	892.0	875.9	847.5	825.4	812.6
70°	774.5	761.7	733.1	710.9	698.4
72.5°	653.9	641.1	625.3	603.1	593.7
75°	533.1	527.0	510.9	492.0	498.4
77.5°	425.3	412.6	406.1	396.7	387.3
80°	317.5	314.1	307.7	298.3	292.0
82.5°	215.8	215.8	212.8	200.0	200.0
85°	130.0	127.0	123.9	114.1	111.1
87.5°	57.2	50.8	44.5	35.1	31.7
90°	1.9	22.6	61.6	57.9	59.8
92.5°	39.0	52.9	54.8	56.6	56.6
95°	91.8	109.4	112.6	112.6	109.4
97.5°	152.9	169.2	176.2	176.2	176.2
100°	223.3	237.8	242.8	242.8	240.9
102.5°	297.6	308.2	315.2	317.1	315.2
105°	378.7	383.7	387.5	390.7	390.7
107.5°	459.2	466.7	466.7	468.1	459.2
110°	537.2	547.3	547.3	547.3	542.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	621.5	632.3	630.4	625.3	621.5
115°	704.6	714.6	711.5	709.6	704.6
117.5°	786.9	800.8	792.0	786.9	781.9
120°	870.0	883.8	870.0	870.0	864.3
122.5°	945.5	963.1	954.3	949.2	945.5
125°	1024.7	1040.5	1035.5	1029.8	1027.9
127.5°	1102.1	1121.6	1114.7	1107.2	1102.1
130°	1174.5	1197.1	1194.0	1190.2	1183.3
132.5°	1255.7	1273.3	1274.5	1265.7	1260.7
135°	1325.5	1344.9	1348.8	1346.8	1341.8
137.5°	1403.4	1419.2	1422.3	1421.1	1413.5
140°	1472.1	1487.8	1496.6	1496.6	1489.7
142.5°	1542.5	1558.2	1563.2	1565.1	1558.2
145°	1609.2	1621.7	1631.8	1633.7	1626.8
147.5°	1669.0	1684.7	1692.2	1695.4	1688.5
150°	1730.6	1741.3	1748.2	1753.9	1748.2
152.5°	1785.3	1796.0	1804.8	1811.8	1804.8
155°	1840.0	1845.0	1850.8	1859.5	1853.9
157.5°	1887.3	1891.0	1894.1	1906.8	1897.9
160°	1929.4	1933.2	1935.0	1945.7	1938.1
162.5°	1968.4	1968.4	1970.3	1982.2	1973.4
165°	2001.7	1999.8	1999.8	2012.4	2003.6
167.5°	2031.9	2026.3	2026.3	2038.8	2030.0
170°	2054.6	2049.6	2047.7	2060.2	2049.6
172.5°	2070.3	2065.2	2063.3	2075.9	2065.2
175°	2082.8	2077.8	2074.1	2086.6	2075.9
177.5°	2089.8	2084.7	2080.9	2091.7	2080.9
180°	2086.6	2086.6	2086.6	2086.6	2086.6



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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	12.93	13.87	13.80	14.77	15.91	12.50	13.45	13.37	14.34	15.48
	3H	14.58	15.44	15.47	16.34	17.50	14.12	14.97	15.00	15.87	17.04
	4H	15.17	15.97	16.07	16.89	18.06	14.70	15.51	15.60	16.42	17.59
	6H	15.57	16.31	16.48	17.23	18.41	15.10	15.84	16.01	16.76	17.94
	8H	15.67	16.38	16.59	17.31	18.50	15.20	15.91	16.12	16.84	18.03
	12H	15.72	16.39	16.65	17.32	18.53	15.24	15.92	16.17	16.85	18.06
4H	2H	13.39	14.20	14.30	15.11	16.28	13.05	13.86	13.96	14.77	15.94
	3H	15.26	15.93	16.18	16.87	18.06	14.87	15.54	15.79	16.48	17.67
	4H	15.97	16.58	16.90	17.52	18.73	15.57	16.18	16.50	17.12	18.33
	6H	16.48	17.01	17.42	17.97	19.18	16.08	16.61	17.02	17.57	18.78
	8H	16.63	17.12	17.57	18.08	19.30	16.22	16.72	17.17	17.67	18.90
	12H	16.70	17.15	17.66	18.12	19.35	16.28	16.73	17.25	17.70	18.94
8H	4H	16.17	16.66	17.11	17.62	18.84	15.81	16.31	16.76	17.26	18.49
	6H	16.79	17.20	17.76	18.20	19.42	16.43	16.84	17.41	17.84	19.07
	8H	17.01	17.37	17.99	18.36	19.60	16.64	17.01	17.62	17.99	19.24
	12H	17.14	17.46	18.12	18.44	19.73	16.76	17.08	17.74	18.06	19.35
12H	4H	16.16	16.60	17.12	17.58	18.81	15.81	16.25	16.77	17.23	18.46
	6H	16.82	17.18	17.80	18.17	19.41	16.47	16.84	17.45	17.82	19.07
	8H	17.06	17.38	18.04	18.36	19.65	16.71	17.03	17.69	18.01	19.30