

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: P910192

Luminaire Tested: DFN2DIP-TR4F0-090D070US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

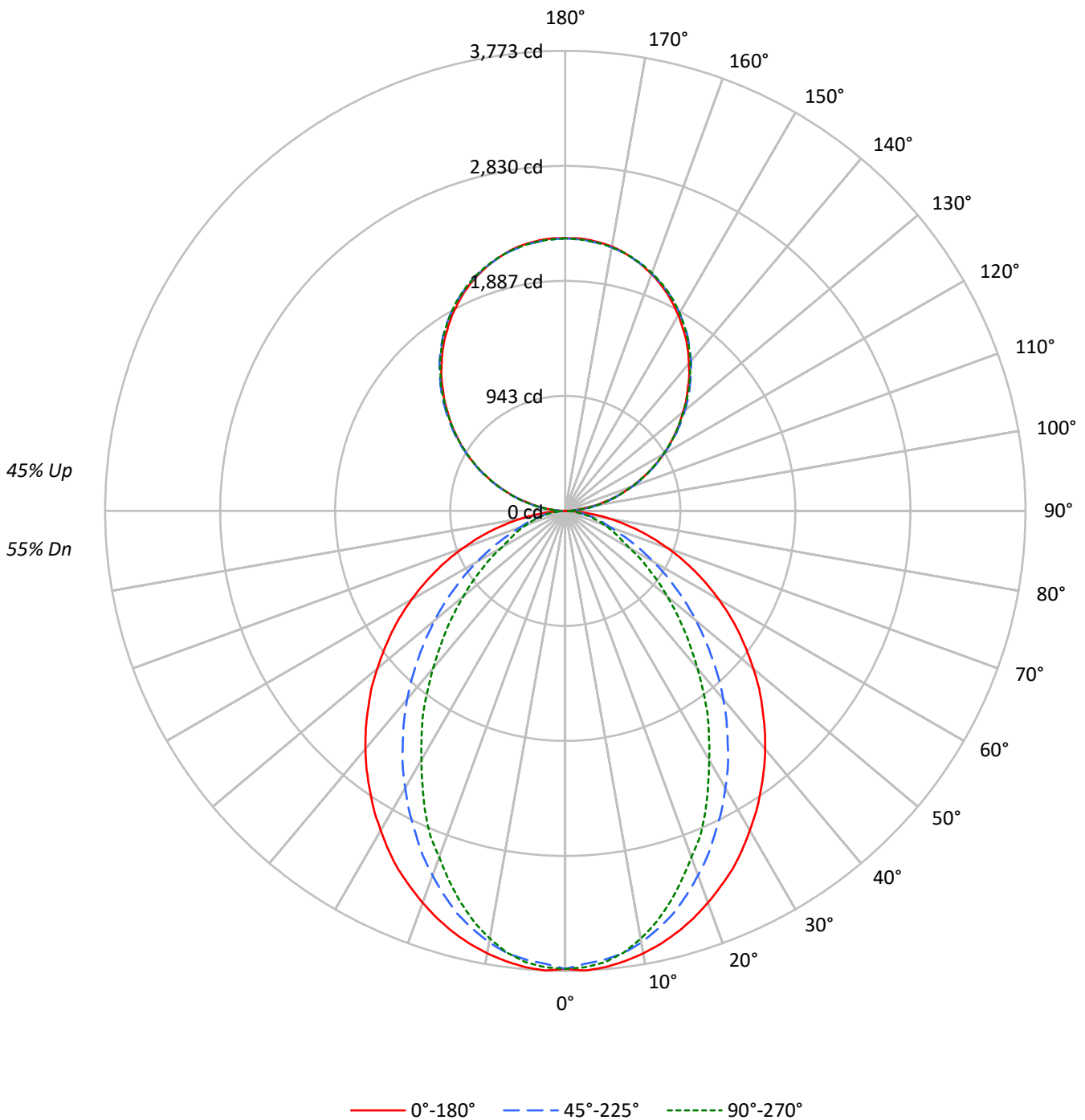
Test Method: LM-79-2019  
Report Number: P910192  
REPORT IS A COMBINATION OF REPORTS P900434 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-090D070US840-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13981.6 lumens  
Efficiency: N/A  
Efficacy: 100.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 139.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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
RCR																				
0	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61	55		
1	99	95	92	88	92	89	86	83	76	74	72	65	63	62	55	54	53	48		
2	91	84	78	73	84	78	73	69	68	64	60	58	55	53	49	47	45	41		
3	83	74	67	61	77	69	63	58	60	55	51	52	48	45	44	41	39	35		
4	77	66	58	52	71	62	55	50	54	49	44	46	42	39	39	36	34	31		
5	71	59	51	45	65	55	48	43	48	43	39	42	38	34	36	33	30	27		
6	65	53	45	40	60	50	43	38	44	38	34	38	34	30	33	29	27	24		
7	60	48	41	35	56	45	38	33	40	34	30	35	30	27	30	27	24	21		
8	56	44	36	31	52	41	35	30	37	31	27	32	28	24	28	24	22	19		
9	52	40	33	28	49	38	31	27	34	28	24	30	25	22	26	22	20	18		
10	49	37	30	25	46	35	29	24	31	26	22	27	23	20	24	20	18	16		

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

	0°	45°	90°
0°	2984	2984	2984
5°	2989	2937	2956
10°	2959	2879	2859
15°	2919	2784	2711
20°	2865	2653	2528
25°	2810	2506	2352
30°	2736	2355	2128
35°	2663	2193	1932
40°	2589	2025	1707
45°	2503	1839	1503
50°	2415	1651	1304
55°	2322	1450	1112
60°	2215	1240	915
65°	2091	1027	824
70°	1942	828	745
75°	1754	730	678
80°	1482	612	588
85°	1032	408	441

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2503 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	352.1	2.5
10°-20°	966.5	6.9
20°-30°	1356.9	9.7
30°-40°	1479.1	10.6
40°-50°	1359.4	9.7
50°-60°	1067.6	7.6
60°-70°	694.9	5.0
70°-80°	357.7	2.6
80°-90°	97.7	0.7
90°-100°	138.3	1.0
100°-110°	439.6	3.1
110°-120°	752.2	5.4
120°-130°	989.3	7.1
130°-140°	1110.5	7.9
140°-150°	1088.9	7.8
150°-160°	913.5	6.5
160°-170°	605.8	4.3
170°-180°	211.7	1.5
0°-30°	2675.4	19.1
0°-40°	4154.5	29.7
0°-60°	6581.5	47.1
0°-90°	7731.8	55.3
90°-120°	1330.1	9.5
90°-150°	4518.8	32.3
90°-180°	6250.0	44.7
0°-180°	13981.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3756	3756	3756	3756	3756	
5°	3756	3739	3695	3726	3716	356
15°	3573	3535	3420	3355	3321	1007
25°	3243	3134	2910	2771	2720	1492
35°	2794	2621	2322	2108	2033	1749
45°	2284	2057	1700	1458	1377	1764
55°	1737	1472	1105	901	836	1552
65°	1173	897	592	476	466	1163
75°	625	387	272	248	245	661
85°	146	75	64	64	64	168
90°	2	24	66	62	64	14
95°	98	117	121	121	117	109
105°	406	411	415	419	419	428
115°	755	766	762	760	755	747
125°	1098	1115	1109	1103	1101	981
135°	1420	1441	1445	1443	1438	1098
145°	1724	1738	1748	1750	1743	1077
155°	1972	1977	1983	1992	1986	907
165°	2145	2143	2143	2156	2147	605
175°	2232	2226	2222	2236	2224	212
180°	2236	2236	2236	2236	2236	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3756.4	3756.4	3756.4	3756.4	3756.4
2.5°	3773.4	3756.4	3718.8	3753.2	3746.3
5°	3756.4	3739.4	3695.1	3725.7	3715.6
7.5°	3725.7	3705.5	3657.9	3671.3	3654.3
10°	3685.0	3661.2	3593.4	3582.9	3562.7
12.5°	3634.1	3603.5	3511.5	3491.3	3453.7
15°	3572.8	3535.3	3419.9	3355.3	3321.4
17.5°	3501.4	3447.0	3304.1	3229.4	3175.0
20°	3419.9	3351.7	3181.8	3097.1	3022.0
22.5°	3331.5	3253.3	3056.0	2940.5	2889.7
25°	3243.2	3134.2	2909.9	2770.7	2719.5
27.5°	3137.9	3022.0	2773.9	2614.1	2535.9
30°	3025.7	2896.2	2624.2	2451.1	2359.1
32.5°	2916.7	2760.2	2481.7	2277.7	2192.5
35°	2794.5	2621.0	2322.0	2107.8	2032.8
37.5°	2675.4	2488.3	2172.3	1937.5	1852.8
40°	2549.6	2345.8	2015.8	1774.5	1686.2
42.5°	2420.4	2203.0	1859.6	1607.9	1523.1
45°	2284.5	2056.6	1699.8	1458.1	1376.6
47.5°	2155.4	1914.1	1546.9	1305.3	1230.6
50°	2012.6	1771.2	1397.2	1162.5	1091.4
52.5°	1873.0	1618.0	1254.5	1030.1	965.5
55°	1737.0	1471.9	1104.7	901.0	836.4
57.5°	1597.8	1325.9	972.4	781.9	727.5
60°	1454.9	1183.0	832.8	659.6	605.2
62.5°	1315.8	1043.8	713.8	550.8	523.7
65°	1172.9	897.4	591.5	476.1	465.6
67.5°	1036.9	761.3	476.1	418.0	407.9
70°	894.1	629.0	394.3	360.3	346.6
72.5°	758.1	506.3	329.6	302.6	295.8
75°	625.4	387.4	272.0	248.1	244.9
77.5°	493.0	275.2	214.2	200.6	193.7
80°	370.4	197.3	163.0	149.7	149.7
82.5°	258.2	132.7	112.2	105.3	105.3
85°	146.0	74.6	64.5	64.5	64.5
87.5°	54.4	27.1	27.1	23.8	23.8
90°	2.0	24.2	66.0	62.0	64.0
92.5°	41.8	56.7	58.7	60.7	60.7
95°	98.4	117.2	120.7	120.7	117.2
97.5°	163.8	181.3	188.7	188.7	188.7
100°	239.2	254.8	260.1	260.1	258.1
102.5°	318.8	330.2	337.7	339.7	337.7
105°	405.8	411.1	415.2	418.6	418.6
107.5°	492.0	500.1	500.1	501.5	492.0
110°	575.6	586.4	586.4	586.4	581.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	665.9	677.4	675.4	669.9	665.9
115°	754.9	765.7	762.3	760.3	754.9
117.5°	843.1	858.0	848.6	843.1	837.8
120°	932.1	947.0	932.1	932.1	926.0
122.5°	1013.0	1031.9	1022.5	1017.0	1013.0
125°	1097.9	1114.8	1109.4	1103.4	1101.4
127.5°	1180.8	1201.7	1194.4	1186.3	1180.8
130°	1258.4	1282.6	1279.3	1275.3	1267.8
132.5°	1345.3	1364.2	1365.5	1356.1	1350.7
135°	1420.2	1441.0	1445.1	1443.0	1437.6
137.5°	1503.7	1520.6	1523.9	1522.6	1514.5
140°	1577.2	1594.1	1603.5	1603.5	1596.1
142.5°	1652.6	1669.5	1674.9	1676.9	1669.5
145°	1724.1	1737.6	1748.4	1750.4	1743.0
147.5°	1788.2	1805.0	1813.1	1816.4	1809.1
150°	1854.2	1865.6	1873.1	1879.2	1873.1
152.5°	1912.8	1924.3	1933.7	1941.2	1933.7
155°	1971.5	1976.8	1983.0	1992.4	1986.3
157.5°	2022.1	2026.1	2029.4	2043.0	2033.5
160°	2067.2	2071.2	2073.3	2084.7	2076.6
162.5°	2109.0	2109.0	2111.0	2123.7	2114.4
165°	2144.7	2142.6	2142.6	2156.2	2146.7
167.5°	2177.1	2171.0	2171.0	2184.4	2175.0
170°	2201.3	2196.0	2193.9	2207.4	2196.0
172.5°	2218.2	2212.7	2210.7	2224.2	2212.7
175°	2231.6	2226.2	2222.2	2235.6	2224.2
177.5°	2239.1	2233.6	2229.6	2241.1	2229.6
180°	2235.6	2235.6	2235.6	2235.6	2235.6



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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	11.42	12.30	12.34	13.23	14.42	7.39	8.27	8.31	9.20	10.40
	3H	13.10	13.88	14.03	14.82	16.05	8.59	9.37	9.52	10.31	11.53
	4H	13.71	14.45	14.66	15.40	16.63	9.04	9.78	9.98	10.72	11.95
	6H	14.14	14.82	15.09	15.77	17.01	9.36	10.05	10.32	11.00	12.24
	8H	14.26	14.91	15.23	15.88	17.12	9.46	10.10	10.42	11.07	12.31
	12H	14.33	14.94	15.29	15.90	17.17	9.50	10.12	10.47	11.08	12.34
4H	2H	11.44	12.18	12.39	13.13	14.36	7.99	8.73	8.94	9.68	10.91
	3H	13.28	13.89	14.24	14.87	16.11	9.35	9.96	10.31	10.94	12.18
	4H	13.97	14.53	14.94	15.50	16.77	9.90	10.46	10.87	11.43	12.70
	6H	14.49	14.97	15.47	15.96	17.23	10.32	10.81	11.30	11.80	13.07
	8H	14.67	15.12	15.65	16.10	17.38	10.45	10.90	11.44	11.89	13.17
	12H	14.76	15.17	15.76	16.17	17.46	10.52	10.93	11.52	11.93	13.22
8H	4H	13.94	14.39	14.93	15.38	16.66	10.18	10.63	11.17	11.62	12.90
	6H	14.51	14.88	15.52	15.91	17.19	10.71	11.08	11.71	12.11	13.38
	8H	14.73	15.05	15.74	16.07	17.37	10.90	11.22	11.91	12.24	13.54
	12H	14.87	15.16	15.89	16.17	17.51	11.02	11.31	12.04	12.32	13.66
12H	4H	13.90	14.30	14.90	15.31	16.59	10.19	10.60	11.19	11.60	12.89
	6H	14.49	14.81	15.50	15.83	17.13	10.75	11.08	11.77	12.10	13.40
	8H	14.71	15.00	15.73	16.01	17.35	10.97	11.26	11.99	12.27	13.61