

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: P904403

Luminaire Tested: DFN2DIP-TR3F0-040D070US830-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904403  
REPORT IS A COMBINATION OF REPORTS P901849 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-040D070US830-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

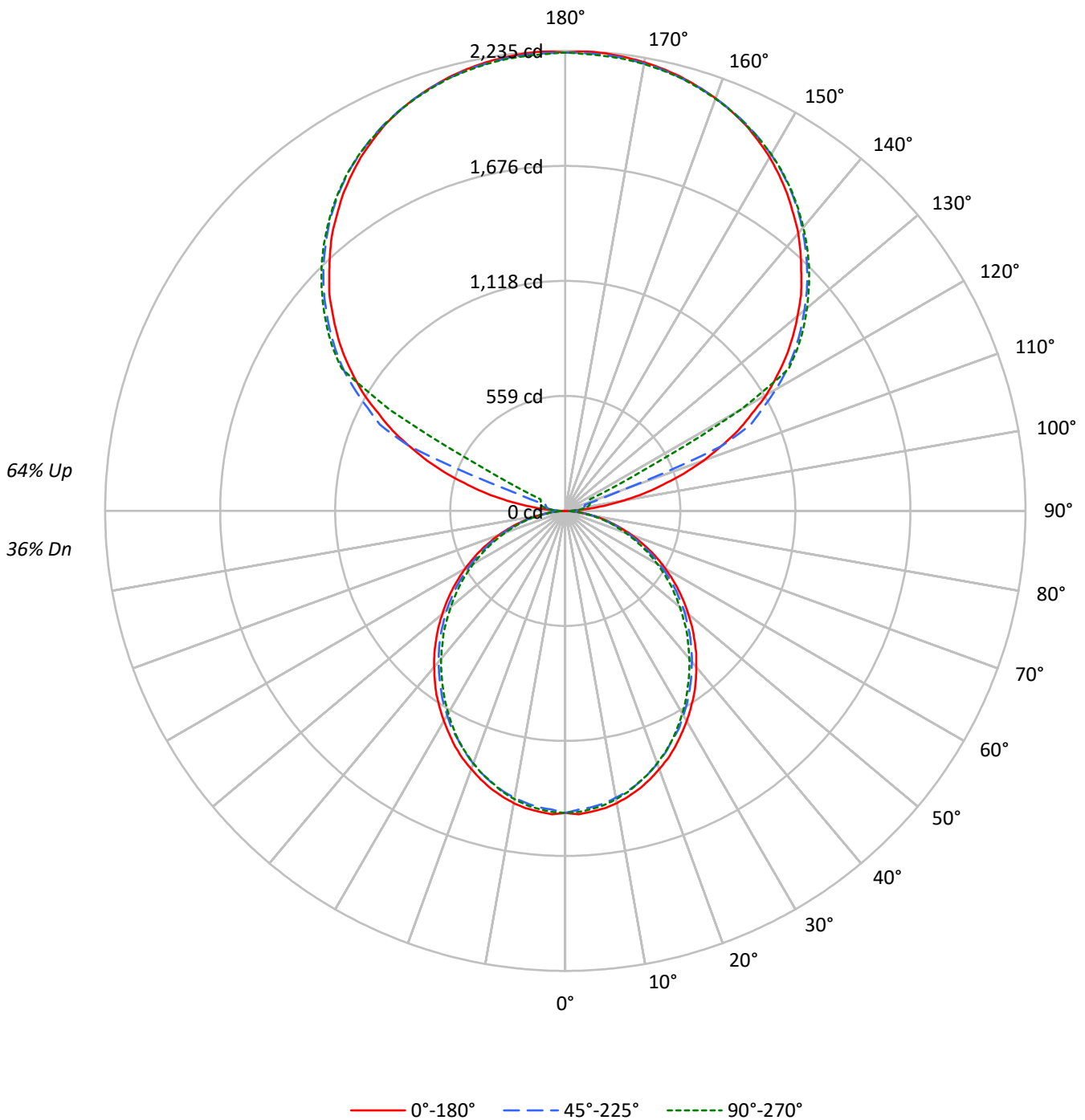
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10264.3 lumens  
Efficiency: N/A  
Efficacy: 116.4 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: Semi-Indirect

Input Watts (W): 88.2  
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	0
RCR																					
0	104	104	104	104	94	94	94	94	76	76	76	59	59	59	44	44	44	36			36
1	95	90	87	83	86	82	79	76	66	64	62	52	50	49	39	38	37	31			31
2	86	79	73	68	78	72	67	62	58	54	51	46	43	41	34	32	31	26			26
3	79	69	62	57	71	63	57	52	51	47	43	40	37	35	30	28	26	22			22
4	72	61	54	48	65	56	49	44	45	41	37	36	32	30	27	25	23	19			19
5	66	55	47	41	59	50	43	38	41	35	32	32	28	26	24	22	20	16			16
6	61	49	41	35	55	45	38	33	37	31	27	29	25	22	22	19	17	14			14
7	56	44	36	31	51	40	33	29	33	28	24	26	23	20	20	17	15	13			13
8	52	40	32	27	47	37	30	25	30	25	21	24	20	18	18	16	14	11			11
9	48	36	29	24	44	33	27	22	28	23	19	22	18	16	17	14	12	10			10
10	45	33	26	21	41	31	24	20	25	20	17	20	17	14	16	13	11	9			9

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

	0°	45°	90°
0°	1828	1828	1828
5°	1830	1801	1813
10°	1814	1775	1788
15°	1786	1744	1748
20°	1749	1702	1708
25°	1712	1652	1661
30°	1666	1606	1602
35°	1623	1551	1540
40°	1569	1495	1481
45°	1516	1439	1420
50°	1457	1381	1349
55°	1396	1313	1285
60°	1326	1233	1210
65°	1250	1150	1123
70°	1154	1048	1028
75°	1020	927	938
80°	858	771	771
85°	607	507	498

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1516 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	138.1	1.3
10°-20°	388.5	3.8
20°-30°	570.9	5.6
30°-40°	663.1	6.5
40°-50°	662.3	6.5
50°-60°	577.5	5.6
60°-70°	426.9	4.2
70°-80°	241.5	2.4
80°-90°	67.7	0.7
90°-100°	73.4	0.7
100°-110°	273.7	2.7
110°-120°	725.9	7.1
120°-130°	1204.0	11.7
130°-140°	1278.9	12.5
140°-150°	1188.6	11.6
150°-160°	955.6	9.3
160°-170°	615.8	6.0
170°-180°	211.9	2.1
0°-30°	1097.5	10.7
0°-40°	1760.6	17.2
0°-60°	3000.3	29.2
0°-90°	3736.4	36.4
90°-120°	1073.0	10.5
90°-150°	4744.6	46.2
90°-180°	6528.0	63.6
0°-180°	10264.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1467	1467	1467	1467	1467	
5°	1467	1461	1446	1457	1454	139
15°	1396	1388	1370	1375	1368	393
25°	1264	1253	1229	1231	1229	582
35°	1090	1076	1054	1045	1038	681
45°	887	878	856	841	835	685
55°	672	663	646	629	622	600
65°	453	444	430	418	411	448
75°	237	234	227	219	222	253
85°	58	56	55	51	49	64
90°	2	19	32	40	44	9
95°	105	52	63	71	69	124
105°	490	538	98	116	122	523
115°	926	954	994	248	132	912
125°	1310	1331	1362	1373	1378	1168
135°	1621	1647	1661	1677	1674	1252
145°	1880	1879	1906	1917	1909	1176
155°	2070	2056	2075	2085	2072	954
165°	2182	2172	2177	2188	2177	616
175°	2232	2220	2224	2235	2219	212
180°	2227	2227	2227	2227	2227	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1467.0	1467.0	1467.0	1467.0	1467.0
2.5°	1475.5	1468.5	1452.9	1467.0	1464.3
5°	1467.0	1461.4	1445.9	1457.1	1454.4
7.5°	1457.1	1448.7	1433.1	1444.5	1441.7
10°	1441.7	1431.8	1414.9	1426.2	1421.9
12.5°	1420.4	1412.0	1395.2	1402.2	1399.3
15°	1396.5	1388.1	1369.7	1375.4	1368.4
17.5°	1366.9	1358.5	1340.1	1347.1	1340.1
20°	1334.4	1326.0	1306.3	1310.4	1304.9
22.5°	1302.0	1289.3	1270.9	1270.9	1268.1
25°	1263.9	1252.6	1228.7	1231.4	1228.7
27.5°	1221.5	1211.6	1193.4	1189.2	1182.2
30°	1179.3	1168.0	1146.9	1142.6	1137.0
32.5°	1134.2	1125.8	1103.2	1094.7	1088.9
35°	1090.4	1076.4	1053.8	1045.3	1038.2
37.5°	1041.0	1028.3	1005.7	995.9	988.8
40°	990.3	978.9	956.3	943.8	938.1
42.5°	940.9	929.5	907.1	892.9	884.5
45°	887.3	877.5	856.2	840.8	835.1
47.5°	835.1	825.2	802.7	787.1	778.7
50°	780.0	773.0	753.3	733.5	726.4
52.5°	726.4	716.6	698.3	682.8	672.9
55°	671.6	663.0	646.1	629.1	622.2
57.5°	616.4	609.4	591.0	574.1	568.4
60°	561.4	555.8	536.1	520.6	516.3
62.5°	507.8	497.9	483.9	469.8	464.1
65°	452.9	444.3	430.3	417.5	410.6
67.5°	396.4	389.3	376.7	366.8	361.2
70°	344.2	338.6	325.8	315.9	310.4
72.5°	290.7	284.9	278.0	268.1	263.8
75°	237.0	234.2	227.1	218.7	221.5
77.5°	189.0	183.3	180.5	176.3	172.1
80°	141.1	139.6	136.8	132.6	129.8
82.5°	96.0	96.0	94.6	88.9	88.9
85°	57.8	56.5	55.0	50.7	49.4
87.5°	25.4	22.6	19.8	15.6	14.0
90°	1.5	19.3	32.1	40.3	43.5
92.5°	40.3	33.8	38.6	41.9	43.5
95°	104.6	51.5	62.8	71.0	69.3
97.5°	188.4	56.5	82.1	87.1	88.6
100°	285.3	64.5	91.8	104.6	107.9
102.5°	391.4	388.4	95.1	112.7	117.6
105°	489.8	538.2	98.3	115.9	122.4
107.5°	604.2	644.4	101.6	119.2	125.7
110°	713.9	747.5	282.0	120.9	127.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	817.0	845.8	818.5	123.9	128.9
115°	926.4	953.8	994.1	248.2	132.2
117.5°	1021.5	1053.7	1081.2	850.6	428.6
120°	1127.8	1152.0	1181.1	1200.4	982.9
122.5°	1218.0	1243.8	1276.2	1285.7	1287.4
125°	1309.9	1330.9	1361.5	1372.8	1377.5
127.5°	1393.6	1416.2	1440.5	1456.6	1458.1
130°	1472.6	1498.5	1516.1	1533.9	1532.4
132.5°	1553.2	1574.2	1591.9	1606.4	1604.9
135°	1620.9	1646.7	1661.1	1677.3	1674.1
137.5°	1691.7	1711.1	1727.3	1743.4	1738.6
140°	1761.0	1774.0	1791.6	1806.1	1798.1
142.5°	1819.1	1830.4	1851.2	1864.1	1856.1
145°	1880.4	1878.7	1906.0	1917.3	1909.3
147.5°	1933.3	1928.6	1956.0	1964.0	1957.7
150°	1985.0	1973.8	1999.6	2009.1	2001.1
152.5°	2028.4	2015.6	2039.8	2049.5	2038.2
155°	2070.4	2056.0	2075.3	2084.9	2072.1
157.5°	2104.2	2091.4	2105.9	2117.2	2104.2
160°	2133.4	2123.5	2133.4	2142.9	2131.6
162.5°	2159.0	2149.4	2157.4	2168.7	2154.2
165°	2181.5	2172.0	2176.7	2188.0	2176.7
167.5°	2199.3	2189.5	2194.5	2205.8	2191.3
170°	2213.8	2204.1	2207.3	2218.7	2204.1
172.5°	2223.5	2213.8	2217.1	2228.4	2213.8
175°	2231.5	2220.2	2223.5	2234.7	2218.7
177.5°	2234.7	2223.5	2225.2	2236.5	2221.9
180°	2226.7	2226.7	2226.7	2226.7	2226.7



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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	7.91	8.66	8.97	9.73	11.18	7.48	8.23	8.55	9.30	10.75
	3H	9.55	10.22	10.63	11.30	12.77	9.08	9.76	10.16	10.83	12.30
	4H	10.13	10.77	11.21	11.85	13.32	9.66	10.30	10.75	11.38	12.85
	6H	10.52	11.10	11.61	12.18	13.67	10.05	10.63	11.14	11.72	13.20
	8H	10.61	11.17	11.71	12.27	13.75	10.14	10.70	11.24	11.80	13.29
	12H	10.65	11.19	11.76	12.28	13.78	10.18	10.71	11.28	11.80	13.31
4H	2H	8.35	8.99	9.45	10.07	11.55	8.01	8.65	9.10	9.73	11.21
	3H	10.20	10.73	11.30	11.84	13.33	9.81	10.34	10.91	11.45	12.94
	4H	10.90	11.39	12.01	12.49	14.00	10.50	10.99	11.61	12.08	13.60
	6H	11.40	11.82	12.51	12.94	14.44	11.00	11.42	12.11	12.54	14.04
	8H	11.54	11.94	12.66	13.05	14.57	11.14	11.53	12.25	12.64	14.16
	12H	11.61	11.96	12.74	13.09	14.61	11.19	11.55	12.32	12.67	14.20
8H	4H	11.09	11.48	12.20	12.59	14.11	10.73	11.12	11.84	12.23	13.75
	6H	11.70	12.02	12.83	13.18	14.69	11.34	11.67	12.48	12.82	14.34
	8H	11.91	12.20	13.05	13.33	14.87	11.55	11.83	12.69	12.97	14.50
	12H	12.03	12.28	13.18	13.41	14.99	11.66	11.91	12.80	13.03	14.61
12H	4H	11.06	11.42	12.19	12.54	14.07	10.72	11.07	11.85	12.19	13.72
	6H	11.73	12.01	12.87	13.14	14.68	11.38	11.66	12.52	12.80	14.33
	8H	11.96	12.21	13.10	13.34	14.91	11.61	11.85	12.75	12.98	14.56