

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: P904644

Luminaire Tested: DFN2DIP-TR4F0-060D110US830-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904644
REPORT IS A COMBINATION OF REPORTS P900500 AND P897293
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-060D110US830-RLLFLL
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

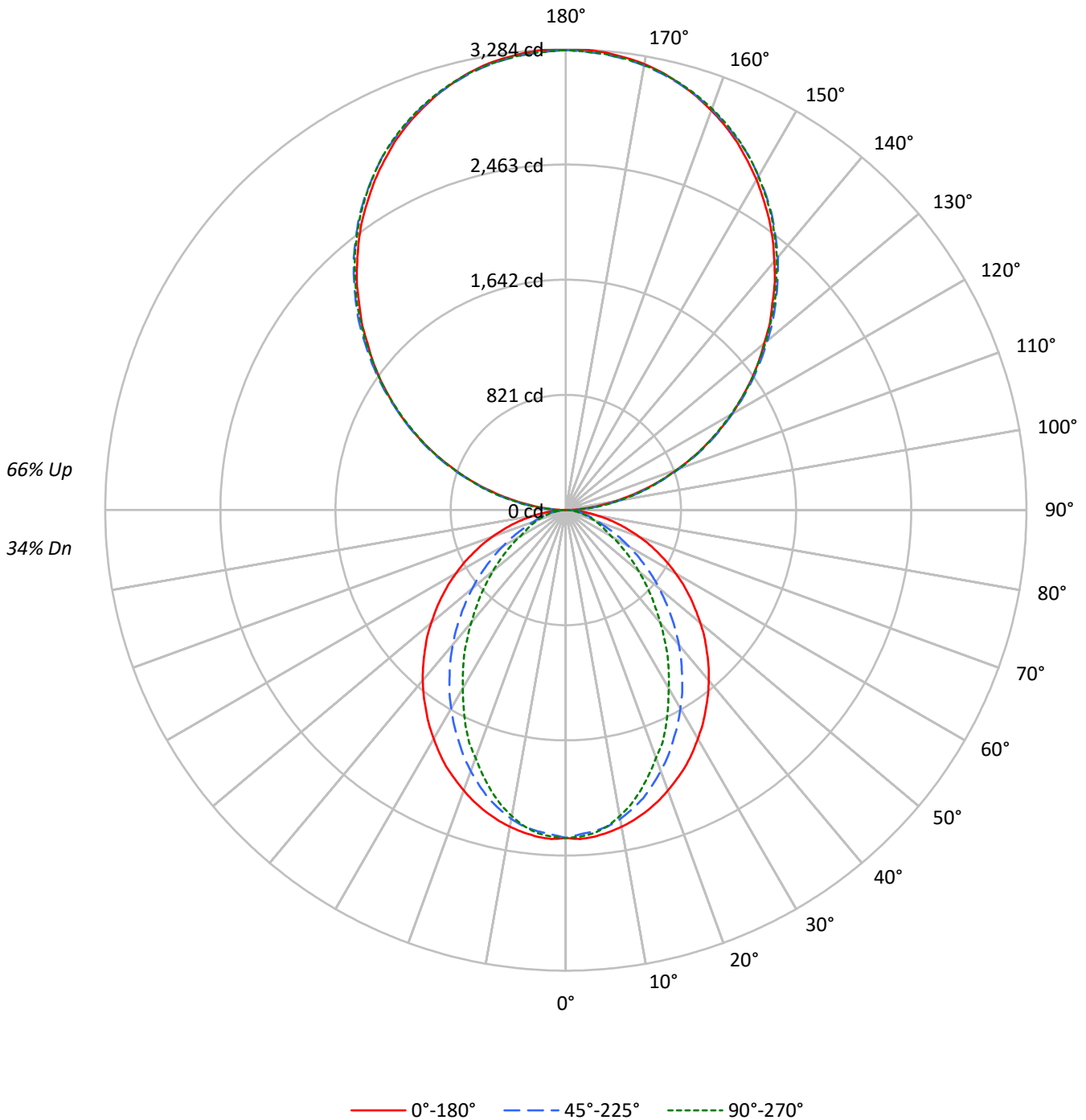
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13982.6 lumens
Efficiency: N/A
Efficacy: 101.2 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: Semi-Indirect

Input Watts (W): 138.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9781
Total Harmonic Distortion (THDi): 0.075
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	103	103	103	103	93	93	93	93	75	75	75	58	58	58	42	42	42	34				34
1	95	91	87	84	85	82	79	76	66	64	62	51	50	48	37	37	36	30				30
2	86	79	74	69	78	72	67	63	58	55	52	45	43	41	33	32	31	25				25
3	79	70	63	58	71	64	58	53	51	47	44	40	37	35	30	28	27	22				22
4	72	62	55	49	65	56	50	45	46	41	38	36	33	30	27	25	23	19				19
5	66	55	48	42	60	50	44	39	41	36	32	32	29	26	24	22	20	17				17
6	61	50	42	36	55	45	39	34	37	32	28	29	26	23	22	20	18	15				15
7	57	45	37	32	51	41	34	30	34	29	25	27	23	21	20	18	16	13				13
8	53	41	33	28	47	37	31	26	31	26	22	25	21	18	19	16	15	12				12
9	49	37	30	25	44	34	28	23	28	23	20	23	19	17	17	15	13	11				11
10	46	34	27	23	41	31	25	21	26	21	18	21	17	15	16	14	12	10				10

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1857	1857	1857
5°	1860	1827	1839
10°	1841	1792	1779
15°	1816	1732	1687
20°	1783	1651	1573
25°	1748	1559	1463
30°	1702	1465	1324
35°	1657	1364	1202
40°	1611	1260	1062
45°	1558	1144	935
50°	1502	1027	811
55°	1445	902	692
60°	1378	772	569
65°	1301	639	512
70°	1208	515	464
75°	1092	454	422
80°	922	381	365
85°	643	254	275

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 2556 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	219.1	1.6
10°-20°	601.3	4.3
20°-30°	844.3	6.0
30°-40°	920.3	6.6
40°-50°	845.9	6.0
50°-60°	664.3	4.8
60°-70°	432.4	3.1
70°-80°	222.6	1.6
80°-90°	66.1	0.5
90°-100°	202.9	1.5
100°-110°	644.7	4.6
110°-120°	1103.3	7.9
120°-130°	1451.0	10.4
130°-140°	1628.6	11.6
140°-150°	1597.1	11.4
150°-160°	1339.7	9.6
160°-170°	888.5	6.4
170°-180°	310.5	2.2
0°-30°	1664.7	11.9
0°-40°	2585.0	18.5
0°-60°	4095.1	29.3
0°-90°	4816.3	34.4
90°-120°	1950.9	14.0
90°-150°	6627.6	47.4
90°-180°	9166.0	65.6
0°-180°	13982.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2337	2337	2337	2337	2337	
5°	2337	2327	2299	2318	2312	222
15°	2223	2200	2128	2088	2067	626
25°	2018	1950	1811	1724	1692	928
35°	1739	1631	1445	1312	1265	1088
45°	1421	1280	1058	907	857	1098
55°	1081	916	687	561	520	966
65°	730	558	368	296	290	724
75°	389	241	169	154	152	412
85°	91	46	40	40	40	104
90°	3	36	97	91	94	14
95°	144	172	177	177	172	161
105°	595	603	609	614	614	628
115°	1107	1123	1118	1115	1107	1095
125°	1610	1635	1627	1618	1615	1439
135°	2083	2114	2119	2116	2109	1610
145°	2529	2548	2564	2567	2556	1580
155°	2892	2899	2908	2922	2913	1331
165°	3146	3142	3142	3162	3148	887
175°	3273	3265	3259	3279	3262	311
180°	3279	3279	3279	3279	3279	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2337.3	2337.3	2337.3	2337.3	2337.3
2.5°	2347.9	2337.3	2313.9	2335.2	2331.0
5°	2337.3	2326.8	2299.1	2318.3	2312.0
7.5°	2318.3	2305.6	2276.1	2284.3	2273.8
10°	2292.8	2278.0	2235.9	2229.4	2216.8
12.5°	2261.3	2242.1	2184.9	2172.4	2149.0
15°	2223.1	2199.7	2127.9	2087.7	2066.6
17.5°	2178.7	2144.8	2055.9	2009.4	1975.6
20°	2127.9	2085.5	1979.8	1927.0	1880.4
22.5°	2072.9	2024.2	1901.5	1829.7	1798.0
25°	2018.0	1950.2	1810.6	1724.0	1692.1
27.5°	1952.5	1880.4	1726.0	1626.5	1577.9
30°	1882.6	1802.0	1632.9	1525.1	1467.9
32.5°	1814.9	1717.5	1544.3	1417.2	1364.2
35°	1738.8	1630.9	1444.8	1311.5	1264.8
37.5°	1664.7	1548.2	1351.7	1205.6	1152.8
40°	1586.4	1459.6	1254.2	1104.1	1049.1
42.5°	1506.1	1370.7	1157.1	1000.4	947.7
45°	1421.4	1279.6	1057.7	907.3	856.6
47.5°	1341.1	1191.0	962.5	812.2	765.7
50°	1252.3	1102.1	869.4	723.3	679.1
52.5°	1165.4	1006.7	780.5	640.9	600.8
55°	1080.8	915.9	687.4	560.6	520.4
57.5°	994.2	824.9	605.0	486.5	452.6
60°	905.3	736.1	518.2	410.5	376.5
62.5°	818.7	649.5	444.1	342.7	325.8
65°	729.8	558.4	368.1	296.2	289.7
67.5°	645.2	473.7	296.2	260.1	253.8
70°	556.3	391.3	245.2	224.2	215.7
72.5°	471.7	315.1	205.1	188.3	184.0
75°	389.2	241.0	169.2	154.4	152.4
77.5°	306.8	171.3	133.3	124.8	120.6
80°	230.5	122.7	101.4	93.1	93.1
82.5°	160.7	82.6	69.7	65.5	65.5
85°	90.9	46.5	40.2	40.2	40.2
87.5°	33.9	16.9	16.9	14.8	14.8
90°	2.9	35.6	96.9	91.0	93.9
92.5°	61.3	83.0	86.0	89.0	89.0
95°	144.3	172.0	176.9	176.9	172.0
97.5°	240.3	265.9	276.8	276.8	276.8
100°	350.9	373.6	381.5	381.5	378.6
102.5°	467.6	484.4	495.3	498.2	495.3
105°	595.1	603.0	609.0	613.9	613.9
107.5°	721.6	733.5	733.5	735.5	721.6
110°	844.2	860.1	860.1	860.1	852.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	976.7	993.4	990.5	982.6	976.7
115°	1107.2	1122.9	1118.0	1115.1	1107.2
117.5°	1236.7	1258.4	1244.5	1236.7	1228.8
120°	1367.2	1388.9	1367.2	1367.2	1358.3
122.5°	1485.8	1513.4	1499.6	1491.7	1485.8
125°	1610.3	1635.0	1627.1	1618.3	1615.2
127.5°	1731.9	1762.6	1751.7	1739.8	1731.9
130°	1845.6	1881.2	1876.2	1870.3	1859.4
132.5°	1973.1	2000.8	2002.8	1989.0	1981.0
135°	2082.8	2113.5	2119.4	2116.5	2108.6
137.5°	2205.5	2230.1	2235.1	2233.1	2221.3
140°	2313.2	2337.9	2351.7	2351.7	2340.9
142.5°	2423.9	2448.6	2456.5	2459.5	2448.6
145°	2528.7	2548.4	2564.3	2567.2	2556.4
147.5°	2622.6	2647.3	2659.2	2664.1	2653.3
150°	2719.5	2736.3	2747.1	2756.1	2747.1
152.5°	2805.5	2822.3	2836.1	2847.0	2836.1
155°	2891.5	2899.4	2908.3	2922.2	2913.2
157.5°	2965.6	2971.6	2976.5	2996.2	2982.4
160°	3031.9	3037.8	3040.7	3057.6	3045.7
162.5°	3093.1	3093.1	3096.2	3114.9	3101.1
165°	3145.5	3142.5	3142.5	3162.3	3148.5
167.5°	3193.0	3184.1	3184.1	3203.9	3190.0
170°	3228.6	3220.7	3217.7	3237.4	3220.7
172.5°	3253.3	3245.4	3242.4	3262.2	3245.4
175°	3273.1	3265.2	3259.2	3279.0	3262.2
177.5°	3283.9	3276.0	3270.1	3286.9	3270.1
180°	3279.0	3279.0	3279.0	3279.0	3279.0



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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	7.63	8.35	8.72	9.43	10.91	3.61	4.33	4.69	5.41	6.89
	3H	9.30	9.94	10.40	11.03	12.53	4.79	5.43	5.88	6.52	8.02
	4H	9.91	10.51	11.01	11.61	13.11	5.23	5.84	6.34	6.93	8.44
	6H	10.32	10.88	11.43	11.98	13.49	5.55	6.11	6.66	7.20	8.72
	8H	10.44	10.98	11.56	12.09	13.59	5.64	6.17	6.76	7.28	8.79
	12H	10.50	11.01	11.62	12.11	13.64	5.68	6.18	6.80	7.29	8.82
4H	2H	7.64	8.25	8.75	9.34	10.84	4.19	4.80	5.30	5.89	7.39
	3H	9.46	9.96	10.57	11.08	12.60	5.53	6.04	6.65	7.15	8.67
	4H	10.14	10.61	11.27	11.72	13.25	6.07	6.54	7.20	7.65	9.18
	6H	10.65	11.05	11.78	12.18	13.71	6.49	6.89	7.62	8.02	9.54
	8H	10.83	11.20	11.95	12.32	13.86	6.62	6.99	7.74	8.11	9.65
	12H	10.92	11.25	12.06	12.39	13.94	6.68	7.01	7.82	8.15	9.70
8H	4H	10.10	10.48	11.23	11.60	13.14	6.35	6.72	7.47	7.84	9.38
	6H	10.67	10.97	11.82	12.14	13.68	6.86	7.17	8.01	8.33	9.87
	8H	10.88	11.15	12.04	12.29	13.86	7.05	7.32	8.21	8.46	10.03
	12H	11.02	11.25	12.17	12.39	13.99	7.17	7.40	8.33	8.54	10.14
12H	4H	10.05	10.39	11.20	11.52	13.07	6.35	6.68	7.49	7.82	9.36
	6H	10.64	10.91	11.80	12.05	13.61	6.91	7.18	8.06	8.32	9.88
	8H	10.86	11.09	12.02	12.23	13.83	7.12	7.35	8.27	8.49	10.09