

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: P904728

Luminaire Tested: DFN2DIP-TR4F0-090D050US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

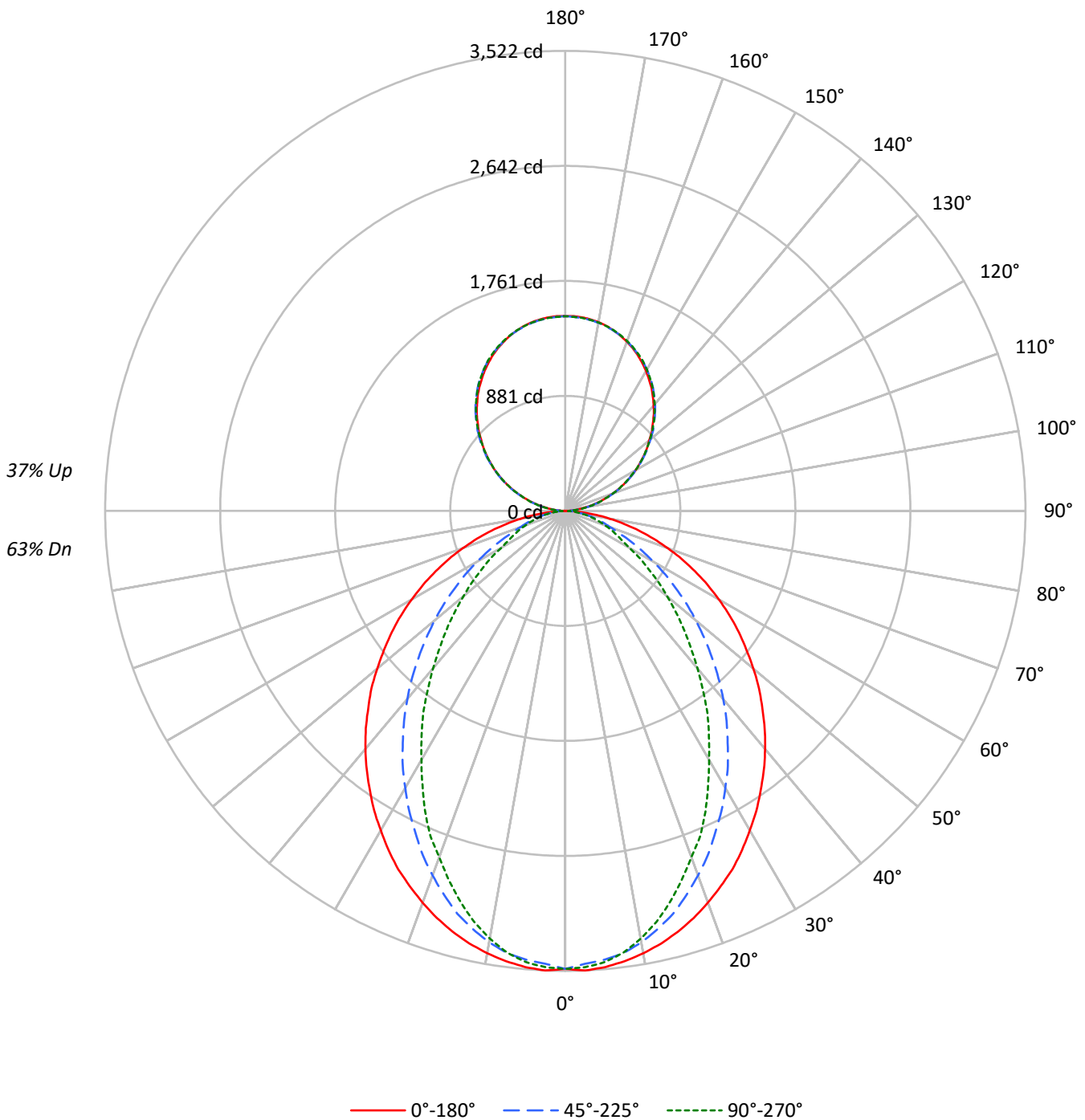
Test Method: LM-79-2019  
Report Number: P904728  
REPORT IS A COMBINATION OF REPORTS P900398 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-090D050US830-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11381.2 lumens  
Efficiency: N/A  
Efficacy: 90.8 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-Direct  
  
Input Watts (W): 125.3  
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	0
RCR																					
0	110	110	110	110	104	104	104	104	91	91	91	79	79	79	68	68	68	63	63	63	63
1	101	97	93	90	95	91	88	85	81	78	76	71	69	67	61	60	59	55	55	55	55
2	93	86	80	75	87	81	75	71	71	67	64	63	60	57	55	53	51	47	47	47	47
3	85	76	69	63	80	72	65	60	64	59	54	56	52	49	49	46	44	40	40	40	40
4	78	68	60	54	73	64	57	52	57	51	47	50	46	43	44	41	38	35	35	35	35
5	72	61	53	47	68	57	50	45	51	45	41	46	41	37	40	37	34	31	31	31	31
6	67	55	47	41	62	52	45	39	47	41	36	41	37	33	37	33	30	27	27	27	27
7	62	50	42	36	58	47	40	35	42	37	32	38	33	30	34	30	27	25	25	25	25
8	58	45	38	32	54	43	36	31	39	33	29	35	30	27	31	27	24	22	22	22	22
9	54	42	34	29	51	40	33	28	36	30	26	32	28	24	29	25	22	20	20	20	20
10	50	38	31	26	47	37	30	25	33	28	24	30	25	22	27	23	20	18	18	18	18

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

	0°	45°	90°
0°	2785	2785	2785
5°	2790	2741	2758
10°	2762	2687	2669
15°	2724	2598	2530
20°	2674	2476	2360
25°	2622	2339	2195
30°	2553	2198	1986
35°	2485	2047	1803
40°	2417	1890	1593
45°	2336	1716	1403
50°	2254	1541	1217
55°	2167	1354	1038
60°	2067	1158	854
65°	1952	958	769
70°	1812	773	696
75°	1637	681	633
80°	1383	571	548
85°	964	381	411

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2336 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	328.6	2.9
10°-20°	902.0	7.9
20°-30°	1266.4	11.1
30°-40°	1380.5	12.1
40°-50°	1268.8	11.1
50°-60°	996.5	8.8
60°-70°	648.6	5.7
70°-80°	333.9	2.9
80°-90°	89.5	0.8
90°-100°	92.2	0.8
100°-110°	293.0	2.6
110°-120°	501.5	4.4
120°-130°	659.5	5.8
130°-140°	740.3	6.5
140°-150°	725.9	6.4
150°-160°	609.0	5.4
160°-170°	403.9	3.5
170°-180°	141.2	1.2
0°-30°	2497.0	21.9
0°-40°	3877.5	34.1
0°-60°	6142.8	54.0
0°-90°	7214.7	63.4
90°-120°	886.7	7.8
90°-150°	3012.5	26.5
90°-180°	4167.0	36.6
0°-180°	11381.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3506	3506	3506	3506	3506	
5°	3506	3490	3449	3477	3468	332
15°	3335	3300	3192	3132	3100	940
25°	3027	2925	2716	2586	2538	1392
35°	2608	2446	2167	1967	1897	1632
45°	2132	1920	1586	1361	1285	1647
55°	1621	1374	1031	841	781	1449
65°	1095	838	552	444	435	1085
75°	584	362	254	232	229	617
85°	136	70	60	60	60	156
90°	1	16	44	41	43	11
95°	66	78	80	80	78	73
105°	270	274	277	279	279	285
115°	503	510	508	507	503	498
125°	732	743	740	736	734	654
135°	947	961	963	962	958	732
145°	1149	1158	1166	1167	1162	718
155°	1314	1318	1322	1328	1324	605
165°	1430	1428	1428	1438	1431	403
175°	1488	1484	1482	1490	1483	141
180°	1490	1490	1490	1490	1490	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3506.0	3506.0	3506.0	3506.0	3506.0
2.5°	3521.8	3506.0	3470.9	3503.0	3496.5
5°	3506.0	3490.1	3448.8	3477.3	3467.9
7.5°	3477.3	3458.5	3414.1	3426.5	3410.7
10°	3439.3	3417.1	3353.8	3344.0	3325.2
12.5°	3391.8	3363.3	3277.4	3258.6	3223.5
15°	3334.6	3299.7	3191.9	3131.6	3100.0
17.5°	3268.0	3217.2	3083.8	3014.2	2963.4
20°	3191.9	3128.3	2969.7	2890.6	2820.6
22.5°	3109.4	3036.4	2852.2	2744.5	2697.1
25°	3027.0	2925.3	2715.9	2586.0	2538.2
27.5°	2928.7	2820.6	2589.0	2439.9	2366.8
30°	2824.0	2703.1	2449.3	2287.7	2201.9
32.5°	2722.3	2576.2	2316.3	2125.8	2046.4
35°	2608.2	2446.3	2167.2	1967.3	1897.2
37.5°	2497.1	2322.4	2027.5	1808.4	1729.3
40°	2379.6	2189.4	1881.4	1656.2	1573.8
42.5°	2259.1	2056.2	1735.6	1500.7	1421.5
45°	2132.2	1919.5	1586.5	1360.9	1284.9
47.5°	2011.7	1786.5	1443.8	1218.2	1148.6
50°	1878.4	1653.1	1304.1	1085.0	1018.6
52.5°	1748.1	1510.1	1170.8	961.4	901.2
55°	1621.2	1373.8	1031.0	840.9	780.6
57.5°	1491.3	1237.5	907.6	729.8	679.0
60°	1357.9	1104.1	777.3	615.7	564.9
62.5°	1228.0	974.2	666.2	514.1	488.8
65°	1094.7	837.5	552.0	444.3	434.6
67.5°	967.8	710.6	444.3	390.1	380.7
70°	834.5	587.1	368.0	336.3	323.5
72.5°	707.6	472.6	307.6	282.4	276.1
75°	583.7	361.6	253.8	231.6	228.6
77.5°	460.1	256.8	199.9	187.2	180.8
80°	345.7	184.2	152.1	139.7	139.7
82.5°	241.0	123.9	104.7	98.3	98.3
85°	136.3	69.7	60.2	60.2	60.2
87.5°	50.8	25.3	25.3	22.2	22.2
90°	1.3	16.2	44.0	41.4	42.7
92.5°	27.9	37.7	39.1	40.4	40.4
95°	65.6	78.2	80.4	80.4	78.2
97.5°	109.1	120.8	125.8	125.8	125.8
100°	159.5	169.8	173.4	173.4	172.1
102.5°	212.5	220.2	225.1	226.5	225.1
105°	270.5	274.1	276.8	279.0	279.0
107.5°	328.0	333.4	333.4	334.3	328.0
110°	383.7	391.0	391.0	391.0	387.3



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CATALOG NUMBER: DFN2DIP-TR4F0-090D050US830-RLLFLL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	443.9	451.6	450.3	446.7	443.9
115°	503.2	510.5	508.2	506.9	503.2
117.5°	562.1	572.0	565.7	562.1	558.6
120°	621.4	631.3	621.4	621.4	617.4
122.5°	675.3	688.0	681.6	678.1	675.3
125°	732.0	743.2	739.6	735.6	734.2
127.5°	787.2	801.2	796.3	790.8	787.2
130°	839.0	855.1	852.8	850.2	845.2
132.5°	896.9	909.5	910.4	904.1	900.5
135°	946.8	960.6	963.4	962.1	958.5
137.5°	1002.5	1013.7	1016.0	1015.0	1009.7
140°	1051.4	1062.7	1068.9	1068.9	1064.0
142.5°	1101.7	1113.0	1116.6	1117.9	1113.0
145°	1149.4	1158.4	1165.5	1167.0	1162.0
147.5°	1192.1	1203.3	1208.7	1211.0	1206.0
150°	1236.1	1243.8	1248.7	1252.7	1248.7
152.5°	1275.3	1282.9	1289.1	1294.1	1289.1
155°	1314.3	1317.9	1321.9	1328.2	1324.2
157.5°	1348.0	1350.7	1352.9	1362.0	1355.7
160°	1378.1	1380.8	1382.1	1389.8	1384.4
162.5°	1406.0	1406.0	1407.3	1415.9	1409.6
165°	1429.8	1428.4	1428.4	1437.5	1431.2
167.5°	1451.3	1447.3	1447.3	1456.3	1450.0
170°	1467.5	1464.0	1462.6	1471.6	1464.0
172.5°	1478.8	1475.2	1473.9	1482.8	1475.2
175°	1487.8	1484.1	1481.5	1490.4	1482.8
177.5°	1492.7	1489.1	1486.4	1494.0	1486.4
180°	1490.4	1490.4	1490.4	1490.4	1490.4



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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	11.87	12.82	12.71	13.68	14.75	7.84	8.79	8.68	9.65	10.72
	3H	13.55	14.41	14.41	15.27	16.37	9.04	9.89	9.89	10.76	11.85
	4H	14.17	14.97	15.04	15.84	16.95	9.50	10.30	10.37	11.17	12.28
	6H	14.59	15.33	15.48	16.22	17.34	9.82	10.56	10.71	11.44	12.56
	8H	14.72	15.43	15.61	16.33	17.45	9.92	10.62	10.81	11.52	12.64
	12H	14.79	15.46	15.68	16.35	17.50	9.97	10.64	10.86	11.53	12.67
4H	2H	11.90	12.70	12.77	13.58	14.68	8.45	9.25	9.32	10.13	11.23
	3H	13.74	14.41	14.63	15.31	16.44	9.81	10.48	10.70	11.39	12.51
	4H	14.44	15.04	15.33	15.95	17.10	10.37	10.97	11.26	11.88	13.02
	6H	14.96	15.48	15.87	16.41	17.56	10.79	11.32	11.70	12.24	13.39
	8H	15.14	15.62	16.05	16.54	17.71	10.92	11.41	11.84	12.33	13.50
	12H	15.24	15.68	16.17	16.61	17.78	11.00	11.44	11.93	12.37	13.54
8H	4H	14.41	14.90	15.33	15.82	16.99	10.65	11.14	11.57	12.06	13.23
	6H	14.98	15.39	15.92	16.35	17.51	11.18	11.58	12.12	12.54	13.71
	8H	15.20	15.56	16.15	16.51	17.69	11.37	11.73	12.32	12.68	13.86
	12H	15.34	15.66	16.30	16.61	17.84	11.50	11.81	12.45	12.76	13.99
12H	4H	14.37	14.81	15.30	15.75	16.92	10.67	11.10	11.60	12.04	13.21
	6H	14.96	15.32	15.91	16.27	17.45	11.23	11.59	12.18	12.54	13.72
	8H	15.19	15.50	16.14	16.45	17.68	11.45	11.76	12.40	12.71	13.94