

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: P923823

Luminaire Tested: DFN2DIP-TR4F0-090D050US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923823
REPORT IS A COMBINATION OF REPORTS P901917 AND P898849
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-090D050US940-FLLONL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

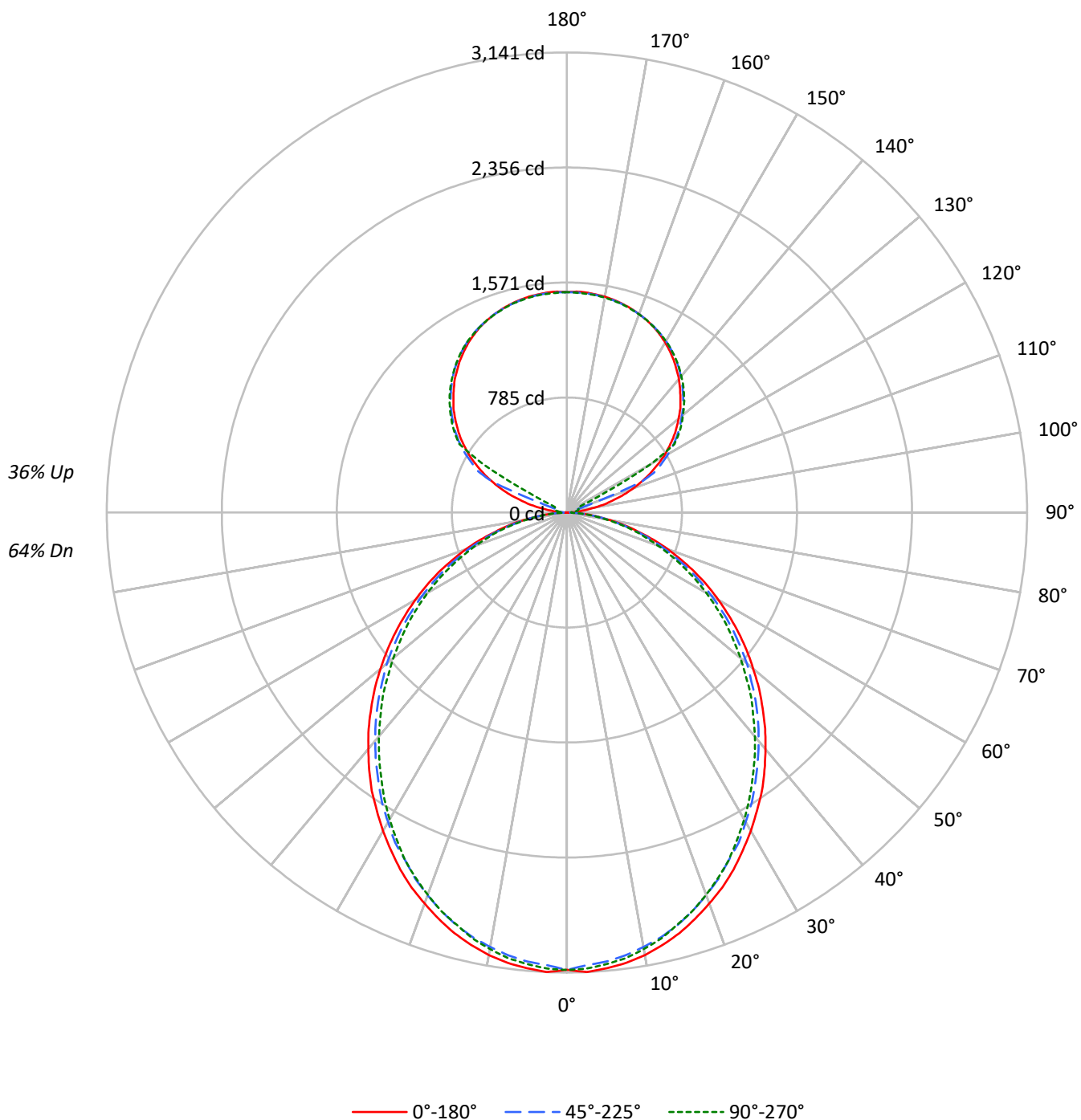
Lumens per Lamp: N/A
Luminaire Lumens: 12359.1 lumens
Efficiency: N/A
Efficacy: 98.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: Semi-Direct

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

TEST NUMBER: P923823

CATALOG NUMBER: DFN2DIP-TR4F0-090D050US940-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P923823

CATALOG NUMBER: DFN2DIP-TR4F0-090D050US940-FLONL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	111	111	111	111	104	104	104	104	91	91	91	80	80	80	69	69	69
1	101	97	93	89	95	91	87	84	80	78	75	70	68	67	61	60	59
2	92	84	78	73	86	79	74	69	70	66	62	62	59	56	54	51	49
3	84	74	67	61	79	70	63	58	62	57	52	55	51	47	48	45	42
4	77	66	58	51	72	62	55	49	55	49	45	49	44	40	43	39	36
5	71	59	50	44	66	55	48	42	49	43	39	44	39	35	39	35	32
6	65	53	44	38	61	50	42	37	45	38	34	40	35	31	35	31	28
7	60	48	40	34	57	45	38	33	41	34	30	36	31	27	32	28	25
8	56	43	35	30	53	41	34	29	37	31	27	33	28	24	29	25	22
9	52	40	32	27	49	38	31	26	34	28	24	30	26	22	27	23	20
10	49	37	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2481	2481	2481
5°	2485	2446	2463
10°	2465	2413	2429
15°	2428	2373	2377
20°	2380	2318	2324
25°	2331	2252	2262
30°	2270	2191	2183
35°	2212	2118	2100
40°	2141	2045	2021
45°	2070	1972	1941
50°	1992	1895	1847
55°	1911	1806	1761
60°	1819	1700	1662
65°	1719	1590	1546
70°	1591	1457	1421
75°	1415	1297	1305
80°	1202	1093	1085
85°	870	742	718

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2070 cd/sqm

TEST NUMBER: P923823

CATALOG NUMBER: DFN2DIP-TR4F0-090D050US940-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	293.9	2.4
10°-20°	827.0	6.7
20°-30°	1215.3	9.8
30°-40°	1411.5	11.4
40°-50°	1409.7	11.4
50°-60°	1229.3	9.9
60°-70°	908.7	7.4
70°-80°	514.1	4.2
80°-90°	138.3	1.1
90°-100°	49.6	0.4
100°-110°	185.0	1.5
110°-120°	490.6	4.0
120°-130°	813.6	6.6
130°-140°	864.3	7.0
140°-150°	803.2	6.5
150°-160°	645.8	5.2
160°-170°	416.1	3.4
170°-180°	143.2	1.2
0°-30°	2336.2	18.9
0°-40°	3747.7	30.3
0°-60°	6386.7	51.7
0°-90°	7947.8	64.3
90°-120°	725.2	5.9
90°-150°	3206.2	25.9
90°-180°	4411.0	35.7
0°-180°	12359.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3123	3123	3123	3123	3123	
5°	3123	3111	3078	3102	3096	296
15°	2973	2955	2916	2928	2913	837
25°	2690	2666	2616	2621	2616	1238
35°	2321	2291	2243	2225	2210	1449
45°	1889	1868	1823	1790	1778	1458
55°	1430	1411	1375	1339	1324	1278
65°	964	946	916	889	874	953
75°	504	499	483	466	472	538
85°	123	120	117	108	105	137
90°	1	13	22	27	29	11
95°	71	35	42	48	47	84
105°	331	364	66	78	83	354
115°	626	644	672	168	89	616
125°	885	899	920	928	931	789
135°	1095	1113	1122	1134	1131	846
145°	1271	1270	1288	1296	1290	795
155°	1399	1389	1402	1409	1400	645
165°	1474	1468	1471	1478	1471	416
175°	1508	1500	1502	1510	1499	144
180°	1505	1505	1505	1505	1505	

TEST NUMBER: P923823

CATALOG NUMBER: DFN2DIP-TR4F0-090D050US940-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3122.7	3122.7	3122.7	3122.7	3122.7
2.5°	3140.9	3125.9	3092.8	3122.7	3117.0
5°	3122.7	3110.9	3077.8	3101.7	3095.9
7.5°	3101.7	3083.9	3050.7	3075.0	3068.9
10°	3068.9	3047.9	3011.8	3035.7	3026.8
12.5°	3023.6	3005.8	2969.8	2984.7	2978.8
15°	2972.7	2954.9	2915.6	2927.8	2912.8
17.5°	2909.6	2891.7	2852.6	2867.6	2852.6
20°	2840.5	2822.6	2780.5	2789.4	2777.7
22.5°	2771.6	2744.6	2705.4	2705.4	2699.3
25°	2690.4	2666.5	2615.6	2621.3	2615.6
27.5°	2600.2	2579.2	2540.4	2531.5	2516.5
30°	2510.4	2486.2	2441.2	2432.3	2420.3
32.5°	2414.2	2396.4	2348.2	2330.1	2318.0
35°	2321.2	2291.2	2243.1	2225.0	2210.0
37.5°	2216.1	2189.0	2140.8	2119.9	2104.9
40°	2108.0	2083.8	2035.7	2008.9	1996.9
42.5°	2002.9	1978.7	1930.9	1900.7	1882.8
45°	1888.8	1867.9	1822.6	1789.8	1777.7
47.5°	1777.7	1756.7	1708.5	1675.4	1657.6
50°	1660.5	1645.5	1603.4	1561.4	1546.4
52.5°	1546.4	1525.4	1486.5	1453.4	1432.4
55°	1429.5	1411.3	1375.3	1339.3	1324.4
57.5°	1312.2	1297.3	1258.1	1222.1	1210.0
60°	1195.0	1183.2	1141.1	1108.0	1099.1
62.5°	1080.9	1059.9	1029.9	1000.1	987.9
65°	964.0	945.8	915.9	888.9	873.9
67.5°	843.9	828.7	801.8	780.9	768.7
70°	732.7	720.6	693.6	672.5	660.8
72.5°	618.7	606.5	591.6	570.6	561.7
75°	504.4	498.6	483.3	465.5	471.5
77.5°	402.3	390.3	384.2	375.3	366.4
80°	300.4	297.2	291.1	282.2	276.3
82.5°	204.2	204.2	201.3	189.2	189.2
85°	123.0	120.1	117.3	108.0	105.1
87.5°	54.1	48.1	42.1	33.2	30.0
90°	1.1	13.0	21.8	27.3	29.3
92.5°	27.3	22.9	26.1	28.4	29.3
95°	70.7	34.8	42.4	48.0	46.8
97.5°	127.3	38.2	55.5	58.9	59.8
100°	192.8	43.6	62.1	70.7	72.9
102.5°	264.6	262.4	64.3	76.2	79.5
105°	331.0	363.7	66.4	78.4	82.8
107.5°	408.3	435.4	68.7	80.5	85.0
110°	482.4	505.2	190.6	81.7	86.0

TEST NUMBER: P923823

CATALOG NUMBER: DFN2DIP-TR4F0-090D050US940-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	552.1	571.6	553.1	83.8	87.1
115°	626.1	644.5	671.8	167.7	89.3
117.5°	690.3	712.0	730.7	574.8	289.6
120°	762.1	778.5	798.1	811.2	664.1
122.5°	823.0	840.5	862.4	868.9	870.0
125°	885.1	899.4	920.1	927.6	930.9
127.5°	941.7	957.0	973.5	984.3	985.3
130°	995.1	1012.6	1024.5	1036.5	1035.5
132.5°	1049.6	1063.8	1075.7	1085.6	1084.5
135°	1095.4	1112.9	1122.5	1133.5	1131.3
137.5°	1143.2	1156.3	1167.2	1178.1	1174.9
140°	1190.0	1198.8	1210.7	1220.5	1215.1
142.5°	1229.3	1237.0	1251.1	1259.7	1254.3
145°	1270.7	1269.5	1288.0	1295.7	1290.2
147.5°	1306.5	1303.2	1321.8	1327.2	1322.9
150°	1341.4	1333.8	1351.2	1357.7	1352.3
152.5°	1370.7	1362.1	1378.4	1385.0	1377.3
155°	1399.1	1389.4	1402.4	1408.9	1400.3
157.5°	1421.9	1413.3	1423.1	1430.7	1421.9
160°	1441.6	1435.0	1441.6	1448.0	1440.5
162.5°	1458.9	1452.5	1457.9	1465.5	1455.7
165°	1474.2	1467.8	1471.0	1478.5	1471.0
167.5°	1486.2	1479.6	1483.0	1490.6	1480.8
170°	1496.0	1489.4	1491.7	1499.2	1489.4
172.5°	1502.5	1496.0	1498.3	1505.8	1496.0
175°	1508.0	1500.3	1502.5	1510.1	1499.2
177.5°	1510.1	1502.5	1503.7	1511.3	1501.5
180°	1504.7	1504.7	1504.7	1504.7	1504.7

TEST NUMBER: P923823

CATALOG NUMBER: DFN2DIP-TR4F0-090D050US940-FLLONL

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	11.65	12.65	12.47	13.50	14.55	11.22	12.22	12.04	13.07	14.12
	3H	13.32	14.22	14.16	15.08	16.16	12.85	13.75	13.68	14.61	15.69
	4H	13.91	14.77	14.77	15.63	16.72	13.44	14.29	14.29	15.16	16.25
	6H	14.32	15.11	15.19	15.98	17.08	13.85	14.63	14.71	15.50	16.61
	8H	14.43	15.18	15.30	16.07	17.17	13.95	14.71	14.83	15.59	16.70
	12H	14.48	15.20	15.36	16.08	17.21	14.00	14.72	14.88	15.60	16.73
4H	2H	12.13	12.98	12.99	13.84	14.93	11.78	12.64	12.64	13.50	14.59
	3H	14.01	14.72	14.88	15.61	16.72	13.61	14.33	14.48	15.22	16.33
	4H	14.73	15.38	15.61	16.27	17.40	14.32	14.97	15.20	15.86	16.99
	6H	15.25	15.81	16.15	16.73	17.86	14.84	15.40	15.74	16.32	17.45
	8H	15.40	15.93	16.30	16.84	17.99	14.99	15.52	15.89	16.43	17.57
	12H	15.48	15.96	16.40	16.89	18.04	15.06	15.53	15.98	16.46	17.62
8H	4H	14.93	15.46	15.83	16.37	17.52	14.57	15.10	15.47	16.01	17.16
	6H	15.57	16.01	16.50	16.96	18.11	15.21	15.64	16.14	16.60	17.74
	8H	15.79	16.18	16.73	17.12	18.29	15.43	15.81	16.36	16.75	17.92
	12H	15.93	16.27	16.87	17.21	18.42	15.55	15.89	16.49	16.82	18.04
12H	4H	14.93	15.40	15.85	16.33	17.48	14.58	15.05	15.49	15.98	17.13
	6H	15.60	15.99	16.54	16.93	18.10	15.25	15.64	16.19	16.58	17.75
	8H	15.85	16.19	16.79	17.13	18.34	15.50	15.83	16.43	16.77	17.99