

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: P904814

Luminaire Tested: DFN2DIP-TR4F0-110D090US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904814
REPORT IS A COMBINATION OF REPORTS P900473 AND P897293
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-110D090US830-FLLFLL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

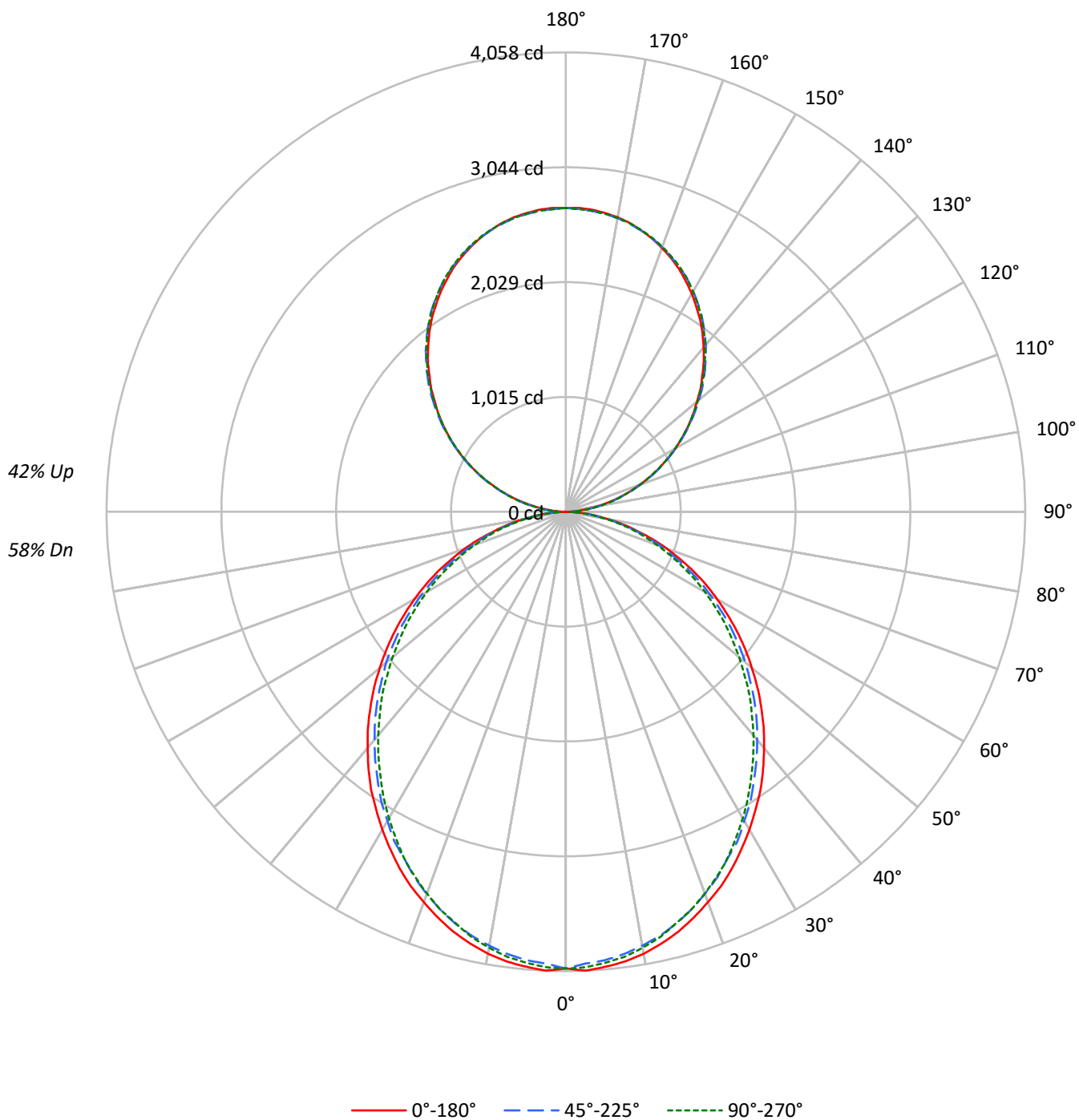
Lumens per Lamp: N/A
Luminaire Lumens: 17771.6 lumens
Efficiency: N/A
Efficacy: 98.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 180.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9613
Total Harmonic Distortion (THDi): 0.083
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P904814

CATALOG NUMBER: DFN2DIP-TR4F0-110D090US830-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P904814

CATALOG NUMBER: DFN2DIP-TR4F0-110D090US830-FLLFLL

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	109	109	109	109	102	102	102	102	88	88	88	75	75	75	63	63	63
1	100	95	91	88	93	89	85	82	77	74	72	66	64	62	56	55	53
2	91	83	77	72	84	78	72	68	67	63	60	58	55	52	49	47	45
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	44	41	38
4	76	65	57	51	70	61	53	48	53	47	43	46	41	38	39	36	33
5	70	58	49	43	65	54	47	41	47	42	37	41	36	33	35	32	29
6	64	52	44	38	60	49	41	36	43	37	32	37	32	29	32	28	25
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	29	25	23
8	55	43	35	29	51	40	33	28	35	30	25	31	26	23	27	23	20
9	51	39	31	26	48	37	30	25	32	27	23	29	24	21	25	21	18
10	48	36	28	24	45	34	27	23	30	24	21	26	22	19	23	19	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3205	3205	3205
5°	3210	3160	3182
10°	3184	3118	3138
15°	3137	3066	3071
20°	3074	2995	3002
25°	3011	2910	2922
30°	2932	2830	2821
35°	2858	2737	2713
40°	2766	2642	2611
45°	2674	2547	2507
50°	2574	2448	2386
55°	2469	2333	2275
60°	2350	2196	2147
65°	2221	2055	1997
70°	2056	1882	1836
75°	1827	1675	1686
80°	1553	1413	1401
85°	1124	959	928

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2674 cd/sqm

TEST NUMBER: P904814

CATALOG NUMBER: DFN2DIP-TR4F0-110D090US830-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.7	2.1
10°-20°	1068.3	6.0
20°-30°	1570.0	8.8
30°-40°	1823.5	10.3
40°-50°	1821.2	10.2
50°-60°	1588.0	8.9
60°-70°	1173.9	6.6
70°-80°	664.2	3.7
80°-90°	182.9	1.0
90°-100°	166.0	0.9
100°-110°	527.5	3.0
110°-120°	902.7	5.1
120°-130°	1187.2	6.7
130°-140°	1332.5	7.5
140°-150°	1306.7	7.4
150°-160°	1096.1	6.2
160°-170°	726.9	4.1
170°-180°	254.1	1.4
0°-30°	3018.1	17.0
0°-40°	4841.6	27.2
0°-60°	8250.9	46.4
0°-90°	10271.9	57.8
90°-120°	1596.2	9.0
90°-150°	5422.6	30.5
90°-180°	7500.0	42.2
0°-180°	17771.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4034	4034	4034	4034	4034	
5°	4034	4019	3976	4007	4000	383
15°	3840	3817	3767	3782	3763	1082
25°	3476	3445	3379	3386	3379	1599
35°	2999	2960	2898	2874	2855	1873
45°	2440	2413	2355	2312	2297	1883
55°	1847	1823	1777	1730	1711	1651
65°	1245	1222	1183	1148	1129	1231
75°	652	644	624	601	609	696
85°	159	155	152	140	136	177
90°	2	29	79	74	77	17
95°	118	141	145	145	141	131
105°	487	493	498	502	502	514
115°	906	919	915	912	906	896
125°	1318	1338	1331	1324	1322	1177
135°	1704	1729	1734	1732	1725	1317
145°	2069	2085	2098	2100	2092	1293
155°	2366	2372	2380	2391	2384	1089
165°	2574	2571	2571	2587	2576	726
175°	2678	2671	2667	2683	2669	254
180°	2683	2683	2683	2683	2683	

TEST NUMBER: P904814

CATALOG NUMBER: DFN2DIP-TR4F0-110D090US830-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4034.3	4034.3	4034.3	4034.3	4034.3
2.5°	4057.6	4038.3	3995.5	4034.3	4026.8
5°	4034.3	4019.0	3976.2	4007.0	3999.7
7.5°	4007.0	3984.0	3941.2	3972.5	3964.7
10°	3964.7	3937.5	3891.0	3921.8	3910.3
12.5°	3906.3	3883.2	3836.7	3856.0	3848.2
15°	3840.4	3817.3	3766.7	3782.3	3763.0
17.5°	3758.9	3735.9	3685.2	3704.6	3685.2
20°	3669.6	3646.5	3592.2	3603.7	3588.5
22.5°	3580.7	3545.7	3495.0	3495.0	3487.2
25°	3475.7	3444.9	3379.0	3386.5	3379.0
27.5°	3359.2	3332.1	3281.8	3270.3	3251.0
30°	3243.2	3211.9	3153.8	3142.3	3126.7
32.5°	3118.9	3095.9	3033.7	3010.2	2994.6
35°	2998.7	2960.1	2897.8	2874.4	2855.1
37.5°	2862.9	2827.9	2765.8	2738.6	2719.2
40°	2723.4	2692.1	2630.0	2595.4	2579.7
42.5°	2587.6	2556.3	2494.5	2455.4	2432.4
45°	2440.2	2413.0	2354.6	2312.2	2296.6
47.5°	2296.6	2269.5	2207.2	2164.5	2141.4
50°	2145.1	2125.8	2071.4	2017.1	1997.8
52.5°	1997.8	1970.6	1920.4	1877.5	1850.4
55°	1846.7	1823.3	1776.8	1730.2	1710.9
57.5°	1695.3	1675.9	1625.3	1578.8	1563.1
60°	1543.8	1528.6	1474.2	1431.4	1419.9
62.5°	1396.5	1369.3	1330.6	1291.9	1276.3
65°	1245.4	1221.9	1183.3	1148.3	1129.0
67.5°	1090.2	1070.5	1035.9	1008.8	993.2
70°	946.6	930.9	896.0	868.8	853.6
72.5°	799.3	783.6	764.3	737.2	725.6
75°	651.5	644.1	624.3	601.3	609.2
77.5°	519.8	504.2	496.3	484.8	473.3
80°	388.1	384.0	376.2	364.7	356.8
82.5°	263.8	263.8	260.1	244.5	244.5
85°	158.9	155.1	151.5	139.5	135.8
87.5°	69.9	62.1	54.3	42.8	38.6
90°	2.5	29.1	79.3	74.4	76.8
92.5°	50.1	68.0	70.4	72.8	72.8
95°	118.1	140.7	144.8	144.8	140.7
97.5°	196.5	217.5	226.5	226.5	226.5
100°	287.1	305.8	312.2	312.2	309.8
102.5°	382.6	396.3	405.2	407.6	405.2
105°	486.9	493.3	498.2	502.3	502.3
107.5°	590.4	600.1	600.1	601.7	590.4
110°	690.7	703.7	703.7	703.7	697.2

TEST NUMBER: P904814

CATALOG NUMBER: DFN2DIP-TR4F0-110D090US830-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	799.1	812.8	810.4	804.0	799.1
115°	905.9	918.8	914.7	912.4	905.9
117.5°	1011.8	1029.6	1018.3	1011.8	1005.3
120°	1118.6	1136.3	1118.6	1118.6	1111.3
122.5°	1215.6	1238.3	1227.0	1220.5	1215.6
125°	1317.6	1337.8	1331.3	1324.0	1321.6
127.5°	1417.0	1442.1	1433.2	1423.5	1417.0
130°	1510.0	1539.2	1535.1	1530.2	1521.4
132.5°	1614.4	1637.0	1638.6	1627.3	1620.9
135°	1704.1	1729.2	1734.1	1731.6	1725.2
137.5°	1804.4	1824.7	1828.7	1827.1	1817.4
140°	1892.6	1912.8	1924.1	1924.1	1915.2
142.5°	1983.2	2003.4	2009.9	2012.3	2003.4
145°	2069.0	2085.1	2098.0	2100.5	2091.6
147.5°	2145.8	2166.0	2175.7	2179.7	2170.9
150°	2225.1	2238.8	2247.7	2254.9	2247.7
152.5°	2295.4	2309.1	2320.4	2329.4	2320.4
155°	2365.8	2372.2	2379.5	2390.9	2383.6
157.5°	2426.4	2431.3	2435.3	2451.5	2440.1
160°	2480.6	2485.5	2487.9	2501.6	2491.9
162.5°	2530.7	2530.7	2533.2	2548.5	2537.2
165°	2573.6	2571.2	2571.2	2587.4	2576.1
167.5°	2612.4	2605.2	2605.2	2621.3	2610.0
170°	2641.6	2635.1	2632.7	2648.8	2635.1
172.5°	2661.7	2655.3	2652.9	2669.1	2655.3
175°	2678.0	2671.4	2666.6	2682.9	2669.1
177.5°	2686.8	2680.4	2675.5	2689.3	2675.5
180°	2682.9	2682.9	2682.9	2682.9	2682.9

TEST NUMBER: P904814

CATALOG NUMBER: DFN2DIP-TR4F0-110D090US830-FLLFLL

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	12.00	12.94	12.89	13.85	15.00	11.57	12.51	12.46	13.41	14.57
	3H	13.67	14.51	14.57	15.43	16.61	13.20	14.04	14.09	14.95	16.13
	4H	14.26	15.05	15.17	15.98	17.17	13.79	14.58	14.70	15.50	16.69
	6H	14.66	15.39	15.59	16.32	17.53	14.19	14.92	15.11	15.85	17.05
	8H	14.77	15.47	15.70	16.41	17.61	14.29	14.99	15.23	15.94	17.14
	12H	14.82	15.48	15.76	16.42	17.65	14.34	15.00	15.28	15.94	17.17
4H	2H	12.47	13.27	13.39	14.19	15.38	12.13	12.92	13.05	13.85	15.04
	3H	14.35	15.01	15.28	15.96	17.17	13.95	14.62	14.88	15.57	16.77
	4H	15.06	15.67	16.00	16.62	17.85	14.66	15.26	15.60	16.21	17.44
	6H	15.58	16.10	16.54	17.08	18.31	15.17	15.70	16.13	16.67	17.90
	8H	15.73	16.22	16.69	17.19	18.43	15.32	15.81	16.28	16.78	18.02
	12H	15.81	16.25	16.79	17.23	18.48	15.39	15.83	16.36	16.81	18.06
8H	4H	15.27	15.75	16.22	16.72	17.96	14.91	15.39	15.86	16.36	17.60
	6H	15.90	16.30	16.88	17.31	18.55	15.54	15.94	16.52	16.95	18.19
	8H	16.12	16.48	17.11	17.47	18.73	15.75	16.11	16.74	17.11	18.37
	12H	16.26	16.57	17.25	17.56	18.87	15.87	16.19	16.87	17.18	18.48
12H	4H	15.26	15.70	16.23	16.68	17.93	14.90	15.34	15.88	16.33	17.58
	6H	15.93	16.29	16.92	17.28	18.54	15.58	15.94	16.57	16.93	18.19
	8H	16.18	16.49	17.17	17.48	18.79	15.82	16.13	16.81	17.12	18.43