

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: P918443

Luminaire Tested: DFN2DIP-TR4F0-110D060US930-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P918443
REPORT IS A COMBINATION OF REPORTS P901939 AND P898849
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-110D060US930-FLLONL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

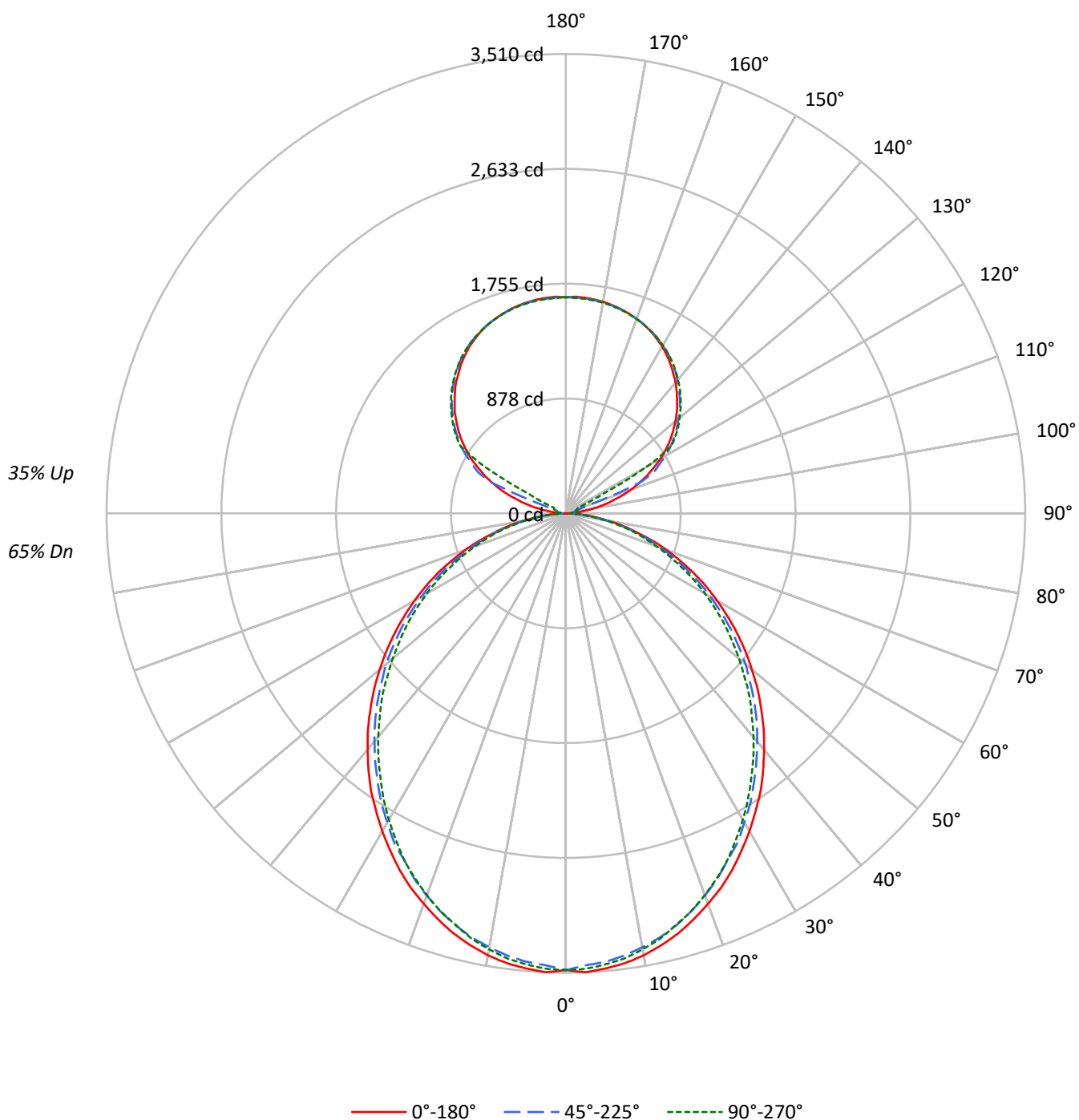
Lumens per Lamp: N/A
Luminaire Lumens: 13721.4 lumens
Efficiency: N/A
Efficacy: 87.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 157.4
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

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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
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	92	92	92	80	80	80	70	70	70
1	101	97	93	89	95	91	88	84	80	78	75	71	69	67	62	60	59
2	92	84	78	73	86	80	74	69	70	66	62	62	59	56	54	52	50
3	84	74	67	61	79	70	63	58	62	57	53	55	51	47	48	45	42
4	77	66	58	51	72	62	55	49	55	49	45	49	44	41	43	39	36
5	71	59	50	44	66	56	48	42	50	43	39	44	39	35	39	35	32
6	65	53	44	39	61	50	42	37	45	39	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	36	30	53	41	34	29	37	31	27	33	28	25	30	25	22
9	52	40	32	27	49	38	31	26	34	28	24	31	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°	2772	2772	2772
5°	2777	2734	2752
10°	2754	2697	2715
15°	2714	2652	2656
20°	2659	2591	2597
25°	2605	2517	2528
30°	2536	2448	2440
35°	2472	2367	2347
40°	2392	2285	2259
45°	2313	2203	2169
50°	2226	2117	2064
55°	2135	2018	1968
60°	2033	1899	1858
65°	1921	1777	1728
70°	1778	1628	1588
75°	1580	1449	1458
80°	1343	1222	1212
85°	972	829	803

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2313 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.4	2.4
10°-20°	924.1	6.7
20°-30°	1358.1	9.9
30°-40°	1577.3	11.5
40°-50°	1575.4	11.5
50°-60°	1373.7	10.0
60°-70°	1015.5	7.4
70°-80°	574.5	4.2
80°-90°	154.5	1.1
90°-100°	54.4	0.4
100°-110°	202.9	1.5
110°-120°	538.2	3.9
120°-130°	892.7	6.5
130°-140°	948.2	6.9
140°-150°	881.3	6.4
150°-160°	708.5	5.2
160°-170°	456.5	3.3
170°-180°	157.1	1.1
0°-30°	2610.6	19.0
0°-40°	4187.9	30.5
0°-60°	7137.0	52.0
0°-90°	8881.5	64.7
90°-120°	795.6	5.8
90°-150°	3517.8	25.6
90°-180°	4840.0	35.3
0°-180°	13721.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3490	3490	3490	3490	3490	
5°	3490	3476	3439	3466	3460	331
15°	3322	3302	3258	3272	3255	936
25°	3006	2980	2923	2929	2923	1383
35°	2594	2560	2507	2486	2470	1620
45°	2111	2087	2037	2000	1987	1629
55°	1597	1577	1537	1497	1480	1428
65°	1077	1057	1024	993	977	1065
75°	564	557	540	520	527	602
85°	138	134	131	121	118	153
90°	1	14	24	30	32	13
95°	78	38	47	53	51	92
105°	363	399	73	86	91	388
115°	687	707	737	184	98	676
125°	971	987	1009	1018	1021	866
135°	1202	1221	1232	1244	1241	928
145°	1394	1393	1413	1422	1416	872
155°	1535	1524	1539	1546	1536	707
165°	1618	1610	1614	1622	1614	457
175°	1654	1646	1648	1657	1645	157
180°	1651	1651	1651	1651	1651	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3489.6	3489.6	3489.6	3489.6	3489.6
2.5°	3509.9	3493.1	3456.1	3489.6	3483.2
5°	3489.6	3476.4	3439.4	3466.1	3459.7
7.5°	3466.1	3446.2	3409.2	3436.2	3429.5
10°	3429.5	3405.9	3365.7	3392.4	3382.4
12.5°	3378.9	3358.9	3318.8	3335.5	3328.7
15°	3321.9	3302.0	3258.2	3271.7	3255.0
17.5°	3251.4	3231.5	3187.7	3204.4	3187.7
20°	3174.2	3154.2	3107.3	3117.2	3104.1
22.5°	3097.3	3067.0	3023.2	3023.2	3016.4
25°	3006.5	2979.8	2922.8	2929.3	2922.8
27.5°	2905.7	2882.2	2838.8	2828.8	2812.1
30°	2805.4	2778.3	2728.1	2718.1	2704.6
32.5°	2697.8	2677.9	2624.1	2603.8	2590.3
35°	2593.9	2560.4	2506.6	2486.3	2469.6
37.5°	2476.4	2446.1	2392.4	2368.8	2352.1
40°	2355.7	2328.7	2274.9	2245.0	2231.5
42.5°	2238.2	2211.2	2157.8	2123.9	2104.0
45°	2110.8	2087.2	2036.7	2000.1	1986.6
47.5°	1986.6	1963.1	1909.3	1872.3	1852.3
50°	1855.5	1838.8	1791.8	1744.8	1728.1
52.5°	1728.1	1704.5	1661.2	1624.1	1600.6
55°	1597.4	1577.1	1536.9	1496.6	1479.9
57.5°	1466.4	1449.7	1405.9	1365.6	1352.1
60°	1335.4	1322.3	1275.2	1238.2	1228.2
62.5°	1207.9	1184.5	1151.0	1117.5	1104.0
65°	1077.3	1057.0	1023.5	993.3	976.6
67.5°	943.1	926.0	896.1	872.6	859.1
70°	818.8	805.3	775.0	751.5	738.3
72.5°	691.4	677.8	661.1	637.6	627.6
75°	563.5	557.2	540.1	520.2	526.9
77.5°	449.6	436.1	429.3	419.4	409.4
80°	335.7	332.2	325.4	315.4	308.7
82.5°	228.2	228.2	225.0	211.5	211.5
85°	137.5	134.2	131.0	120.7	117.5
87.5°	60.5	53.7	47.0	37.0	33.4
90°	1.1	14.3	23.8	29.9	32.2
92.5°	29.9	25.1	28.6	31.1	32.2
95°	77.6	38.2	46.6	52.7	51.4
97.5°	139.7	41.8	60.8	64.6	65.7
100°	211.5	47.8	68.1	77.6	80.0
102.5°	290.2	288.0	70.5	83.6	87.2
105°	363.1	399.0	72.9	85.9	90.8
107.5°	448.0	477.8	75.3	88.4	93.2
110°	529.3	554.2	209.1	89.7	94.3

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	605.7	627.1	606.8	91.9	95.6
115°	686.9	707.2	737.1	184.0	98.0
117.5°	757.3	781.2	801.6	630.7	317.7
120°	836.3	854.1	875.7	890.0	728.7
122.5°	903.0	922.2	946.2	953.2	954.6
125°	971.2	986.8	1009.4	1017.8	1021.3
127.5°	1033.3	1050.0	1068.0	1079.9	1081.1
130°	1091.8	1111.0	1124.1	1137.3	1136.1
132.5°	1151.6	1167.2	1180.2	1191.0	1189.8
135°	1201.8	1221.0	1231.6	1243.7	1241.2
137.5°	1254.3	1268.6	1280.7	1292.6	1289.1
140°	1305.6	1315.3	1328.4	1339.1	1333.2
142.5°	1348.7	1357.1	1372.6	1382.1	1376.1
145°	1394.2	1392.9	1413.2	1421.6	1415.6
147.5°	1433.5	1429.9	1450.2	1456.1	1451.5
150°	1471.8	1463.4	1482.5	1489.6	1483.7
152.5°	1504.0	1494.4	1512.3	1519.6	1511.2
155°	1535.0	1524.4	1538.7	1545.8	1536.3
157.5°	1560.2	1550.6	1561.4	1569.8	1560.2
160°	1581.7	1574.4	1581.7	1588.8	1580.5
162.5°	1600.7	1593.6	1599.5	1607.9	1597.2
165°	1617.5	1610.4	1613.9	1622.3	1613.9
167.5°	1630.6	1623.4	1627.1	1635.5	1624.6
170°	1641.4	1634.2	1636.6	1644.9	1634.2
172.5°	1648.5	1641.4	1643.8	1652.2	1641.4
175°	1654.5	1646.1	1648.5	1656.8	1644.9
177.5°	1656.8	1648.5	1649.8	1658.2	1647.4
180°	1650.9	1650.9	1650.9	1650.9	1650.9

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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	12.07	13.08	12.89	13.92	14.97	11.64	12.65	12.46	13.49	14.53
	3H	13.74	14.65	14.57	15.50	16.57	13.27	14.17	14.10	15.03	16.10
	4H	14.33	15.19	15.18	16.05	17.13	13.86	14.72	14.71	15.58	16.66
	6H	14.74	15.53	15.60	16.40	17.49	14.27	15.06	15.13	15.92	17.02
	8H	14.85	15.60	15.72	16.49	17.58	14.37	15.13	15.24	16.01	17.11
	12H	14.90	15.62	15.78	16.50	17.62	14.42	15.14	15.30	16.02	17.14
4H	2H	12.55	13.41	13.40	14.26	15.35	12.20	13.06	13.06	13.92	15.00
	3H	14.43	15.14	15.29	16.03	17.13	14.03	14.75	14.90	15.64	16.74
	4H	15.15	15.80	16.02	16.69	17.81	14.74	15.39	15.62	16.28	17.41
	6H	15.67	16.23	16.56	17.15	18.27	15.26	15.83	16.15	16.74	17.87
	8H	15.82	16.35	16.72	17.26	18.40	15.41	15.94	16.31	16.85	17.99
	12H	15.90	16.38	16.82	17.30	18.45	15.48	15.96	16.40	16.88	18.03
8H	4H	15.36	15.88	16.25	16.79	17.93	15.00	15.52	15.89	16.43	17.57
	6H	15.99	16.43	16.92	17.38	18.52	15.63	16.07	16.55	17.02	18.16
	8H	16.22	16.60	17.15	17.54	18.70	15.85	16.23	16.78	17.17	18.33
	12H	16.35	16.69	17.29	17.63	18.84	15.97	16.31	16.91	17.24	18.45
12H	4H	15.35	15.82	16.26	16.75	17.90	15.00	15.47	15.91	16.40	17.54
	6H	16.02	16.41	16.96	17.35	18.51	15.67	16.06	16.61	17.00	18.16
	8H	16.27	16.61	17.21	17.55	18.76	15.92	16.26	16.85	17.19	18.40