

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: P918454

Luminaire Tested: DFN2DIP-TR4F0-110D090US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P918454
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-TR4F0-110D090US930-FLLFLL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

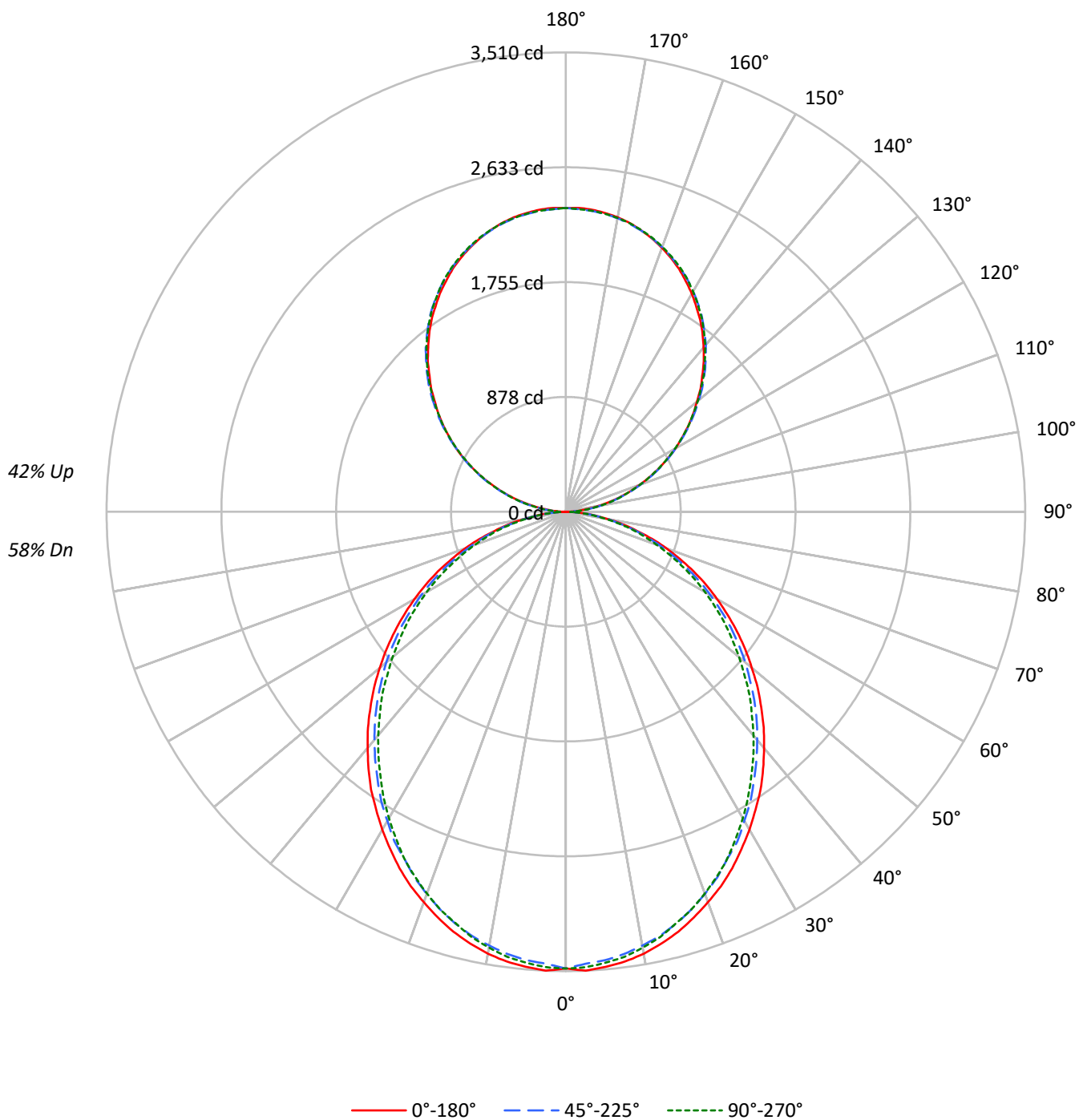
Lumens per Lamp: N/A
Luminaire Lumens: 15372.4 lumens
Efficiency: N/A
Efficacy: 85.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: General Diffuse

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

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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
RCR																	
0	109	109	109	109	102	102	102	102	88	88	88		75	75	75		63
1	100	95	91	88	93	89	85	82	77	74	72		66	64	62		56
2	91	83	77	72	84	78	72	68	67	63	60		58	55	52		49
3	83	73	66	60	77	68	62	56	59	54	50		51	47	44		44
4	76	65	57	51	70	61	53	48	53	47	43		46	41	38		39
5	70	58	49	43	65	54	47	41	47	42	37		41	36	33		35
6	64	52	44	38	60	49	41	36	43	37	32		37	32	29		32
7	59	47	39	33	55	44	37	32	39	33	29		34	29	26		29
8	55	43	35	29	51	40	33	28	35	30	25		31	26	23		27
9	51	39	31	26	48	37	30	25	32	27	23		29	24	21		25
10	48	36	28	24	45	34	27	23	30	24	21		26	22	19		23

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	2.1
10°-20°	924.1	6.0
20°-30°	1358.1	8.8
30°-40°	1577.3	10.3
40°-50°	1575.4	10.2
50°-60°	1373.7	8.9
60°-70°	1015.5	6.6
70°-80°	574.5	3.7
80°-90°	158.2	1.0
90°-100°	143.6	0.9
100°-110°	456.3	3.0
110°-120°	780.8	5.1
120°-130°	1026.9	6.7
130°-140°	1152.6	7.5
140°-150°	1130.3	7.4
150°-160°	948.2	6.2
160°-170°	628.8	4.1
170°-180°	219.8	1.4
0°-30°	2610.6	17.0
0°-40°	4187.9	27.2
0°-60°	7137.0	46.4
0°-90°	8885.2	57.8
90°-120°	1380.7	9.0
90°-150°	4690.5	30.5
90°-180°	6487.0	42.2
0°-180°	15372.4	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°	2	25	69	64	66	15
95°	102	122	125	125	122	114
105°	421	427	431	434	434	444
115°	784	795	791	789	784	775
125°	1140	1157	1152	1145	1143	1018
135°	1474	1496	1500	1498	1492	1139
145°	1790	1804	1815	1817	1809	1118
155°	2046	2052	2058	2068	2062	942
165°	2226	2224	2224	2238	2228	628
175°	2316	2311	2307	2321	2309	220
180°	2321	2321	2321	2321	2321	

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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°	2.1	25.2	68.6	64.3	66.4
92.5°	43.4	58.8	60.9	62.9	62.9
95°	102.2	121.7	125.2	125.2	121.7
97.5°	170.0	188.2	195.9	195.9	195.9
100°	248.3	264.5	270.0	270.0	268.0
102.5°	330.9	342.8	350.5	352.6	350.5
105°	421.2	426.7	431.0	434.5	434.5
107.5°	510.7	519.1	519.1	520.5	510.7
110°	597.5	608.7	608.7	608.7	603.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	691.2	703.1	701.0	695.4	691.2
115°	783.6	794.8	791.2	789.2	783.6
117.5°	875.2	890.6	880.8	875.2	869.6
120°	967.6	982.9	967.6	967.6	961.2
122.5°	1051.5	1071.1	1061.4	1055.7	1051.5
125°	1139.7	1157.2	1151.6	1145.2	1143.2
127.5°	1225.7	1247.4	1239.7	1231.3	1225.7
130°	1306.2	1331.4	1327.9	1323.6	1316.0
132.5°	1396.4	1416.0	1417.4	1407.6	1402.1
135°	1474.1	1495.7	1500.0	1497.9	1492.3
137.5°	1560.8	1578.3	1581.8	1580.5	1572.1
140°	1637.1	1654.6	1664.3	1664.3	1656.7
142.5°	1715.5	1732.9	1738.5	1740.7	1732.9
145°	1789.7	1803.6	1814.8	1816.9	1809.2
147.5°	1856.1	1873.6	1882.0	1885.5	1877.8
150°	1924.7	1936.6	1944.2	1950.5	1944.2
152.5°	1985.5	1997.4	2007.2	2014.9	2007.2
155°	2046.4	2051.9	2058.3	2068.1	2061.8
157.5°	2098.8	2103.1	2106.6	2120.5	2110.7
160°	2145.7	2149.9	2152.1	2163.9	2155.5
162.5°	2189.1	2189.1	2191.2	2204.5	2194.7
165°	2226.2	2224.1	2224.1	2238.1	2228.3
167.5°	2259.8	2253.5	2253.5	2267.4	2257.6
170°	2285.0	2279.3	2277.3	2291.2	2279.3
172.5°	2302.4	2296.9	2294.7	2308.8	2296.9
175°	2316.4	2310.8	2306.6	2320.7	2308.8
177.5°	2324.1	2318.5	2314.3	2326.2	2314.3
180°	2320.7	2320.7	2320.7	2320.7	2320.7

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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	11.50	12.43	12.39	13.34	14.50	11.07	12.00	11.95	12.91	14.07
	3H	13.16	14.00	14.06	14.92	16.10	12.69	13.53	13.59	14.45	15.63
	4H	13.76	14.55	14.67	15.47	16.66	13.28	14.08	14.20	15.00	16.19
	6H	14.16	14.89	15.08	15.82	17.02	13.68	14.42	14.61	15.34	16.55
	8H	14.27	14.96	15.20	15.91	17.11	13.79	14.49	14.72	15.43	16.64
	12H	14.32	14.98	15.26	15.92	17.15	13.84	14.50	14.78	15.44	16.67
4H	2H	11.97	12.76	12.89	13.69	14.88	11.62	12.42	12.54	13.34	14.53
	3H	13.84	14.51	14.77	15.46	16.66	13.45	14.11	14.38	15.07	16.27
	4H	14.56	15.16	15.50	16.11	17.34	14.15	14.76	15.09	15.71	16.94
	6H	15.08	15.60	16.03	16.57	17.80	14.67	15.19	15.62	16.16	17.39
	8H	15.23	15.72	16.19	16.68	17.93	14.82	15.31	15.77	16.27	17.52
	12H	15.31	15.75	16.28	16.73	17.98	14.88	15.33	15.86	16.31	17.56
8H	4H	14.76	15.25	15.72	16.22	17.46	14.40	14.89	15.36	15.86	17.10
	6H	15.40	15.80	16.38	16.81	18.05	15.03	15.44	16.02	16.45	17.69
	8H	15.62	15.97	16.61	16.97	18.23	15.25	15.61	16.24	16.60	17.86
	12H	15.75	16.07	16.75	17.06	18.36	15.37	15.68	16.36	16.67	17.98
12H	4H	14.75	15.19	15.73	16.17	17.42	14.40	14.84	15.37	15.82	17.07
	6H	15.43	15.78	16.42	16.78	18.04	15.08	15.43	16.07	16.43	17.69
	8H	15.67	15.99	16.67	16.98	18.28	15.32	15.63	16.31	16.62	17.93