

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: P921010

Luminaire Tested: DFN2DIP-TR4F0-060D110US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921010
REPORT IS A COMBINATION OF REPORTS P900499 AND P897293
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-060D110US935-FLLFLL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

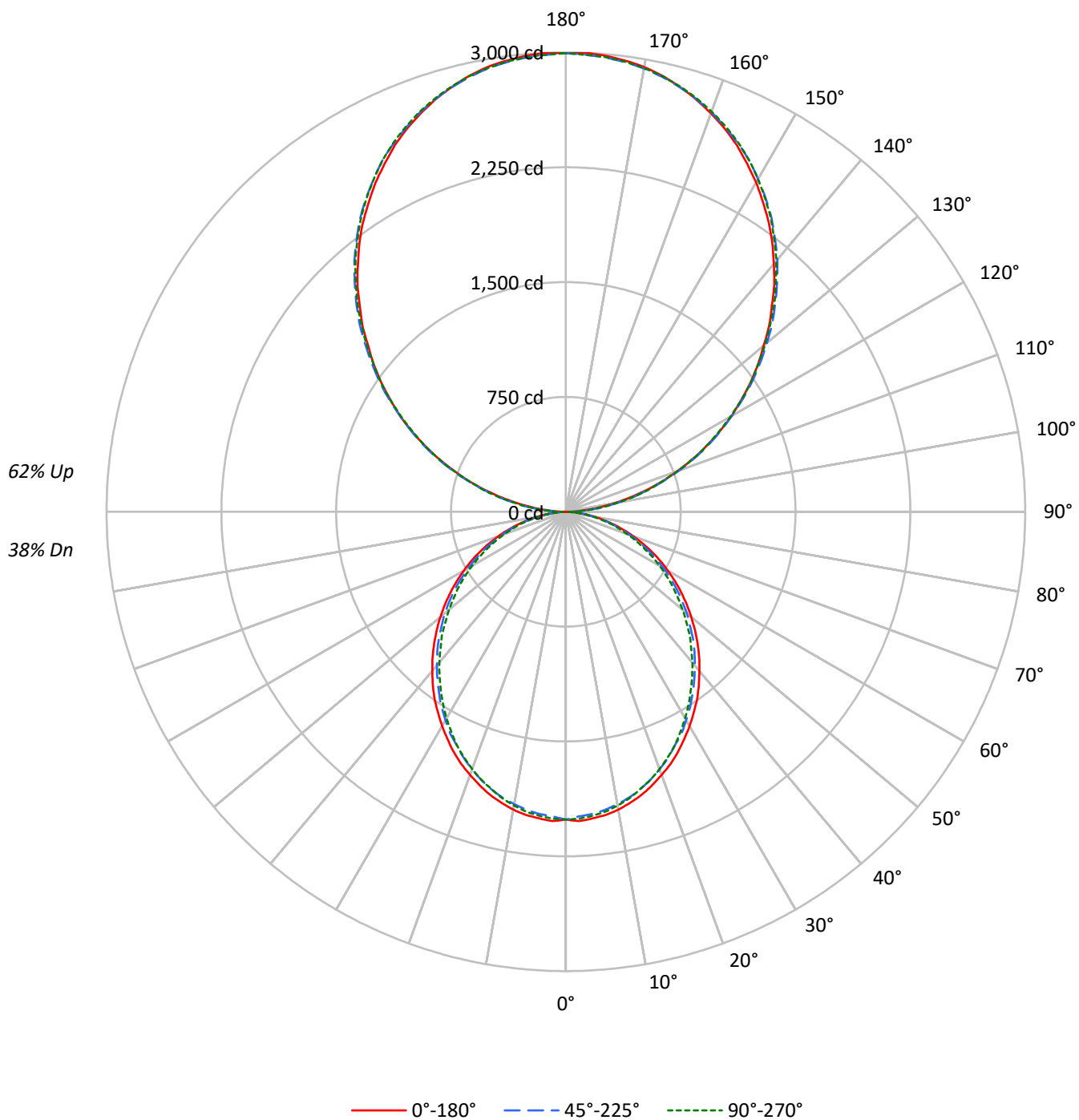
Lumens per Lamp: N/A
Luminaire Lumens: 13496.1 lumens
Efficiency: N/A
Efficacy: 97.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 138.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9781
Total Harmonic Distortion (THDi): 0.075
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	104	104	104	104	95	95	95	95	77	77	77	60	60	60	45	45	45
1	95	91	87	84	86	83	79	76	67	65	63	53	51	50	40	39	38
2	87	79	73	68	78	72	67	63	59	55	52	46	44	42	35	33	32
3	79	70	62	57	71	63	57	52	52	47	44	41	38	35	31	29	27
4	72	62	54	48	65	56	49	44	46	41	37	37	33	30	28	25	23
5	66	55	47	41	60	50	43	38	41	36	32	33	29	26	25	22	20
6	61	49	41	35	55	45	38	33	37	32	28	30	26	23	23	20	18
7	56	44	36	31	51	41	34	29	33	28	24	27	23	20	21	18	16
8	52	40	32	27	47	37	30	25	30	25	22	25	21	18	19	16	14
9	48	37	29	24	44	34	27	23	28	23	19	23	19	16	17	15	13
10	45	33	26	22	41	31	24	20	26	21	17	21	17	14	16	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1597	1597	1597
5°	1599	1575	1585
10°	1587	1553	1564
15°	1563	1528	1530
20°	1532	1492	1496
25°	1500	1450	1456
30°	1461	1410	1405
35°	1424	1364	1352
40°	1378	1316	1301
45°	1332	1269	1249
50°	1282	1220	1189
55°	1230	1162	1134
60°	1171	1094	1070
65°	1106	1024	995
70°	1024	938	915
75°	910	835	840
80°	774	704	698
85°	559	477	463

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2335 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	189.2	1.4
10°-20°	532.3	3.9
20°-30°	782.3	5.8
30°-40°	908.6	6.7
40°-50°	907.5	6.7
50°-60°	791.3	5.9
60°-70°	584.9	4.3
70°-80°	330.9	2.5
80°-90°	95.9	0.7
90°-100°	185.3	1.4
100°-110°	588.9	4.4
110°-120°	1007.8	7.5
120°-130°	1325.4	9.8
130°-140°	1487.7	11.0
140°-150°	1458.9	10.8
150°-160°	1223.8	9.1
160°-170°	811.6	6.0
170°-180°	283.7	2.1
0°-30°	1503.8	11.1
0°-40°	2412.4	17.9
0°-60°	4111.1	30.5
0°-90°	5122.8	38.0
90°-120°	1782.1	13.2
90°-150°	6054.2	44.9
90°-180°	8373.0	62.0
0°-180°	13496.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2010	2010	2010	2010	2010	
5°	2010	2002	1981	1997	1993	191
15°	1914	1902	1877	1885	1875	539
25°	1732	1716	1684	1687	1684	797
35°	1494	1475	1444	1432	1422	933
45°	1216	1202	1173	1152	1144	938
55°	920	908	885	862	852	823
65°	620	609	590	572	562	614
75°	325	321	311	300	304	347
85°	79	77	75	70	68	88
90°	3	32	88	83	86	13
95°	132	157	162	162	157	147
105°	544	551	556	561	561	574
115°	1011	1026	1021	1019	1011	1000
125°	1471	1494	1486	1478	1476	1315
135°	1903	1931	1936	1933	1926	1471
145°	2310	2328	2342	2345	2335	1443
155°	2641	2648	2657	2669	2661	1216
165°	2873	2871	2871	2889	2876	811
175°	2990	2983	2977	2995	2980	284
180°	2995	2995	2995	2995	2995	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2010.1	2010.1	2010.1	2010.1	2010.1
2.5°	2021.8	2012.2	1990.8	2010.1	2006.4
5°	2010.1	2002.5	1981.2	1996.6	1992.9
7.5°	1996.6	1985.1	1963.8	1979.3	1975.5
10°	1975.5	1962.0	1938.7	1954.1	1948.4
12.5°	1946.4	1934.8	1911.7	1921.3	1917.4
15°	1913.5	1902.0	1876.8	1884.6	1875.0
17.5°	1872.9	1861.5	1836.3	1845.8	1836.3
20°	1828.4	1817.0	1789.8	1795.6	1788.0
22.5°	1784.2	1766.7	1741.5	1741.5	1737.6
25°	1731.8	1716.5	1683.6	1687.3	1683.6
27.5°	1673.8	1660.3	1635.2	1629.5	1619.9
30°	1616.0	1600.3	1571.5	1565.7	1557.9
32.5°	1554.0	1542.6	1511.6	1499.9	1492.1
35°	1494.2	1474.9	1443.9	1432.2	1422.5
37.5°	1426.5	1409.0	1378.1	1364.5	1354.9
40°	1356.9	1341.3	1310.4	1293.2	1285.4
42.5°	1289.3	1273.7	1242.9	1223.5	1211.9
45°	1215.9	1202.3	1173.2	1152.1	1144.3
47.5°	1144.3	1130.7	1099.8	1078.5	1066.9
50°	1068.8	1059.2	1032.2	1005.0	995.4
52.5°	995.4	981.9	956.8	935.6	922.0
55°	920.1	908.4	885.3	862.1	852.5
57.5°	844.7	835.1	809.9	786.7	778.9
60°	769.2	761.6	734.6	713.3	707.5
62.5°	695.8	682.3	663.0	643.7	635.9
65°	620.5	608.9	589.6	572.1	562.5
67.5°	543.2	533.4	516.2	502.7	494.8
70°	471.7	463.9	446.4	432.9	425.3
72.5°	398.2	390.5	380.8	367.3	361.5
75°	324.6	321.0	311.1	299.6	303.5
77.5°	259.0	251.2	247.3	241.6	235.8
80°	193.4	191.3	187.4	181.7	177.8
82.5°	131.5	131.5	129.6	121.8	121.8
85°	79.1	77.3	75.4	69.5	67.7
87.5°	34.9	31.0	27.0	21.4	19.3
90°	2.7	32.5	88.5	83.1	85.8
92.5°	56.0	75.9	78.5	81.3	81.3
95°	131.8	157.1	161.6	161.6	157.1
97.5°	219.5	242.9	252.9	252.9	252.9
100°	320.5	341.3	348.5	348.5	345.9
102.5°	427.1	442.5	452.5	455.1	452.5
105°	543.6	550.9	556.3	560.8	560.8
107.5°	659.2	670.0	670.0	671.8	659.2
110°	771.2	785.7	785.7	785.7	778.4

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	892.2	907.5	904.8	897.6	892.2
115°	1011.4	1025.8	1021.3	1018.6	1011.4
117.5°	1129.7	1149.5	1136.9	1129.7	1122.5
120°	1248.9	1268.8	1248.9	1248.9	1240.8
122.5°	1357.3	1382.5	1369.8	1362.6	1357.3
125°	1471.0	1493.6	1486.3	1478.2	1475.5
127.5°	1582.1	1610.1	1600.2	1589.3	1582.1
130°	1685.9	1718.5	1713.9	1708.5	1698.6
132.5°	1802.4	1827.7	1829.5	1816.9	1809.6
135°	1902.6	1930.6	1936.0	1933.4	1926.1
137.5°	2014.6	2037.2	2041.7	2039.9	2029.1
140°	2113.1	2135.6	2148.3	2148.3	2138.4
142.5°	2214.2	2236.8	2244.0	2246.7	2236.8
145°	2309.9	2328.0	2342.4	2345.1	2335.2
147.5°	2395.7	2418.3	2429.1	2433.6	2423.7
150°	2484.2	2499.6	2509.5	2517.6	2509.5
152.5°	2562.8	2578.1	2590.7	2600.7	2590.7
155°	2641.4	2648.5	2656.7	2669.4	2661.2
157.5°	2709.0	2714.5	2718.9	2737.0	2724.4
160°	2769.6	2775.0	2777.7	2793.1	2782.2
162.5°	2825.5	2825.5	2828.3	2845.4	2832.8
165°	2873.4	2870.7	2870.7	2888.7	2876.1
167.5°	2916.7	2908.6	2908.6	2926.7	2914.0
170°	2949.3	2942.0	2939.4	2957.4	2942.0
172.5°	2971.8	2964.6	2961.9	2980.0	2964.6
175°	2989.9	2982.7	2977.2	2995.3	2980.0
177.5°	2999.8	2992.6	2987.1	3002.6	2987.1
180°	2995.3	2995.3	2995.3	2995.3	2995.3

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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	7.66	8.43	8.72	9.48	10.92	7.23	7.99	8.29	9.05	10.49
	3H	9.32	10.00	10.38	11.07	12.52	8.84	9.53	9.91	10.59	12.05
	4H	9.90	10.55	10.97	11.62	13.07	9.43	10.07	10.50	11.14	12.60
	6H	10.29	10.89	11.38	11.96	13.43	9.82	10.41	10.90	11.49	12.96
	8H	10.39	10.96	11.48	12.05	13.52	9.92	10.49	11.01	11.58	13.04
	12H	10.44	10.98	11.53	12.06	13.55	9.96	10.50	11.05	11.58	13.07
4H	2H	8.11	8.76	9.19	9.83	11.29	7.77	8.42	8.85	9.49	10.94
	3H	9.97	10.51	11.06	11.61	13.08	9.58	10.12	10.67	11.21	12.68
	4H	10.68	11.18	11.77	12.26	13.75	10.27	10.77	11.37	11.86	13.35
	6H	11.19	11.61	12.29	12.72	14.21	10.78	11.21	11.88	12.31	13.80
	8H	11.34	11.73	12.44	12.84	14.34	10.92	11.32	12.03	12.42	13.93
	12H	11.40	11.76	12.52	12.88	14.39	10.98	11.34	12.10	12.46	13.96
8H	4H	10.87	11.27	11.97	12.37	13.87	10.51	10.91	11.61	12.01	13.51
	6H	11.49	11.82	12.62	12.97	14.47	11.13	11.46	12.26	12.60	14.10
	8H	11.71	12.00	12.85	13.13	14.65	11.35	11.63	12.48	12.76	14.28
	12H	11.84	12.09	12.98	13.22	14.77	11.46	11.71	12.59	12.83	14.39
12H	4H	10.85	11.21	11.97	12.32	13.83	10.50	10.86	11.62	11.97	13.48
	6H	11.52	11.81	12.65	12.94	14.46	11.17	11.46	12.30	12.59	14.10
	8H	11.76	12.01	12.90	13.14	14.69	11.40	11.66	12.54	12.78	14.33