

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: P921343

Luminaire Tested: DFN2DIP-4P3F0-050D050US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921343
REPORT IS A COMBINATION OF REPORTS P900585 AND P897473
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P3F0-050D050US940-FLLONL
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

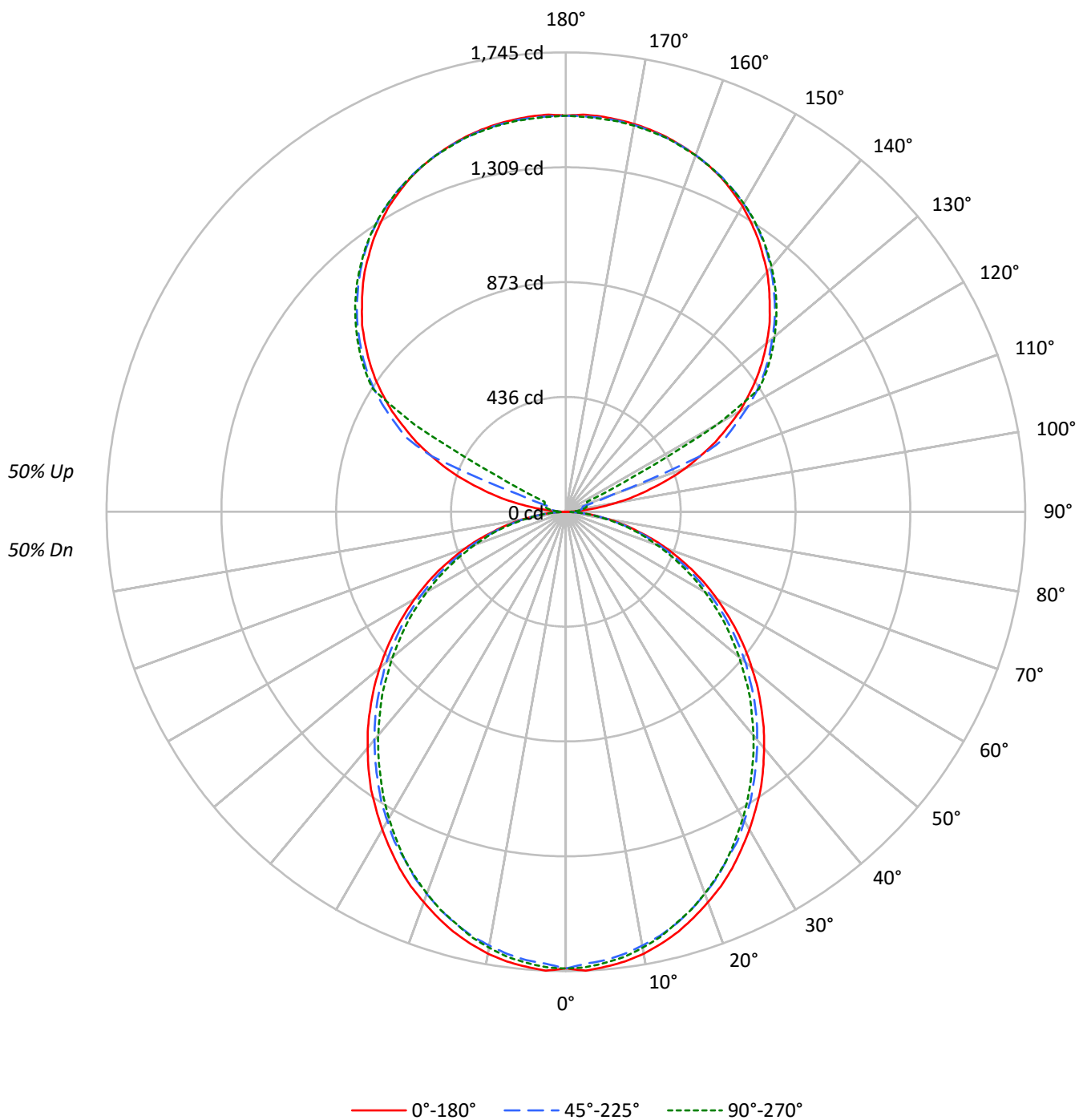
Lumens per Lamp: N/A
Luminaire Lumens: 8828.0 lumens
Efficiency: N/A
Efficacy: 101.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.07' x L: 3.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 87
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1977	1977	1977
5°	1979	1948	1962
10°	1962	1921	1935
15°	1931	1888	1893
20°	1891	1843	1850
25°	1851	1789	1800
30°	1801	1739	1737
35°	1754	1680	1670
40°	1696	1620	1607
45°	1638	1560	1541
50°	1574	1497	1466
55°	1508	1424	1397
60°	1432	1338	1317
65°	1350	1249	1224
70°	1245	1140	1123
75°	1100	1009	1029
80°	925	842	850
85°	651	558	557

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1638 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	163.3	1.8
10°-20°	459.4	5.2
20°-30°	675.2	7.6
30°-40°	784.2	8.9
40°-50°	783.2	8.9
50°-60°	682.9	7.7
60°-70°	504.8	5.7
70°-80°	285.6	3.2
80°-90°	78.0	0.9
90°-100°	49.6	0.6
100°-110°	185.0	2.1
110°-120°	490.6	5.6
120°-130°	813.6	9.2
130°-140°	864.3	9.8
140°-150°	803.2	9.1
150°-160°	645.8	7.3
160°-170°	416.1	4.7
170°-180°	143.2	1.6
0°-30°	1297.9	14.7
0°-40°	2082.0	23.6
0°-60°	3548.1	40.2
0°-90°	4416.6	50.0
90°-120°	725.2	8.2
90°-150°	3206.2	36.3
90°-180°	4411.0	50.0
0°-180°	8828.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1735	1735	1735	1735	1735	
5°	1735	1728	1710	1723	1720	165
15°	1651	1642	1620	1627	1618	465
25°	1495	1481	1453	1456	1453	688
35°	1290	1273	1246	1236	1228	805
45°	1049	1038	1012	994	988	810
55°	794	784	764	744	736	710
65°	536	526	509	494	485	530
75°	280	277	268	259	262	299
85°	68	67	65	60	58	76
90°	1	13	22	27	29	8
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	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1734.8	1734.8	1734.8	1734.8	1734.8
2.5°	1744.9	1736.6	1718.2	1734.8	1731.7
5°	1734.8	1728.3	1709.9	1723.1	1720.0
7.5°	1723.1	1713.2	1694.9	1708.3	1705.0
10°	1705.0	1693.3	1673.3	1686.5	1681.6
12.5°	1679.8	1669.9	1649.9	1658.2	1654.8
15°	1651.4	1641.5	1619.8	1626.6	1618.2
17.5°	1616.4	1606.5	1584.7	1593.0	1584.7
20°	1578.1	1568.2	1544.8	1549.7	1543.2
22.5°	1539.8	1524.7	1503.0	1503.0	1499.6
25°	1494.7	1481.4	1453.0	1456.3	1453.0
27.5°	1444.6	1432.9	1411.3	1406.3	1398.0
30°	1394.6	1381.3	1356.3	1351.3	1344.6
32.5°	1341.2	1331.3	1304.6	1294.5	1287.8
35°	1289.5	1272.9	1246.2	1236.1	1227.8
37.5°	1231.1	1216.1	1189.4	1177.7	1169.4
40°	1171.2	1157.7	1131.0	1116.1	1109.4
42.5°	1112.8	1099.3	1072.7	1055.9	1046.0
45°	1049.4	1037.7	1012.5	994.3	987.6
47.5°	987.6	975.9	949.2	930.8	920.9
50°	922.5	914.2	890.8	867.5	859.1
52.5°	859.1	847.4	825.8	807.4	795.8
55°	794.2	784.1	764.0	744.0	735.8
57.5°	729.0	720.7	698.9	678.9	672.2
60°	663.9	657.4	634.0	615.5	610.6
62.5°	600.6	588.9	572.2	555.5	548.8
65°	535.6	525.5	508.8	493.8	485.4
67.5°	468.9	460.4	445.5	433.8	427.0
70°	407.1	400.4	385.3	373.6	367.1
72.5°	343.8	337.0	328.7	317.0	312.0
75°	280.2	277.0	268.5	258.6	262.0
77.5°	223.6	216.8	213.5	208.5	203.6
80°	166.9	165.1	161.8	156.9	153.5
82.5°	113.4	113.4	111.8	105.1	105.1
85°	68.3	66.7	65.1	60.0	58.4
87.5°	30.1	26.8	23.4	18.4	16.7
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

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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

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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	9.61	10.47	10.57	11.44	12.71	9.16	10.03	10.12	11.00	12.27
	3H	11.27	12.04	12.23	13.02	14.31	10.78	11.55	11.74	12.53	13.82
	4H	11.85	12.58	12.83	13.57	14.87	11.36	12.09	12.34	13.07	14.37
	6H	12.25	12.92	13.24	13.91	15.23	11.75	12.42	12.74	13.41	14.73
	8H	12.35	12.99	13.35	14.00	15.31	11.85	12.49	12.85	13.50	14.81
	12H	12.40	13.01	13.40	14.01	15.34	11.89	12.50	12.89	13.50	14.83
4H	2H	10.07	10.80	11.05	11.78	13.09	9.71	10.44	10.70	11.43	12.73
	3H	11.93	12.54	12.92	13.55	14.87	11.52	12.13	12.52	13.14	14.46
	4H	12.64	13.20	13.64	14.20	15.54	12.21	12.77	13.22	13.78	15.12
	6H	13.15	13.63	14.17	14.66	16.00	12.72	13.20	13.73	14.23	15.56
	8H	13.30	13.75	14.31	14.77	16.12	12.86	13.31	13.88	14.33	15.68
	12H	13.37	13.77	14.40	14.81	16.17	12.92	13.32	13.95	14.36	15.72
8H	4H	12.83	13.28	13.85	14.30	15.65	12.45	12.90	13.47	13.93	15.28
	6H	13.46	13.83	14.50	14.89	16.24	13.07	13.44	14.11	14.51	15.86
	8H	13.67	14.00	14.72	15.05	16.42	13.28	13.61	14.33	14.66	16.03
	12H	13.80	14.09	14.86	15.14	16.55	13.39	13.68	14.44	14.72	16.14
12H	4H	12.82	13.22	13.85	14.26	15.62	12.45	12.85	13.48	13.89	15.25
	6H	13.48	13.81	14.53	14.86	16.23	13.11	13.44	14.16	14.49	15.86
	8H	13.72	14.01	14.78	15.06	16.47	13.34	13.63	14.40	14.68	16.09