

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: P921451

Luminaire Tested: DFN2DIP-4P4F0-060D050US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921451
REPORT IS A COMBINATION OF REPORTS P900629 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-060D050US940-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

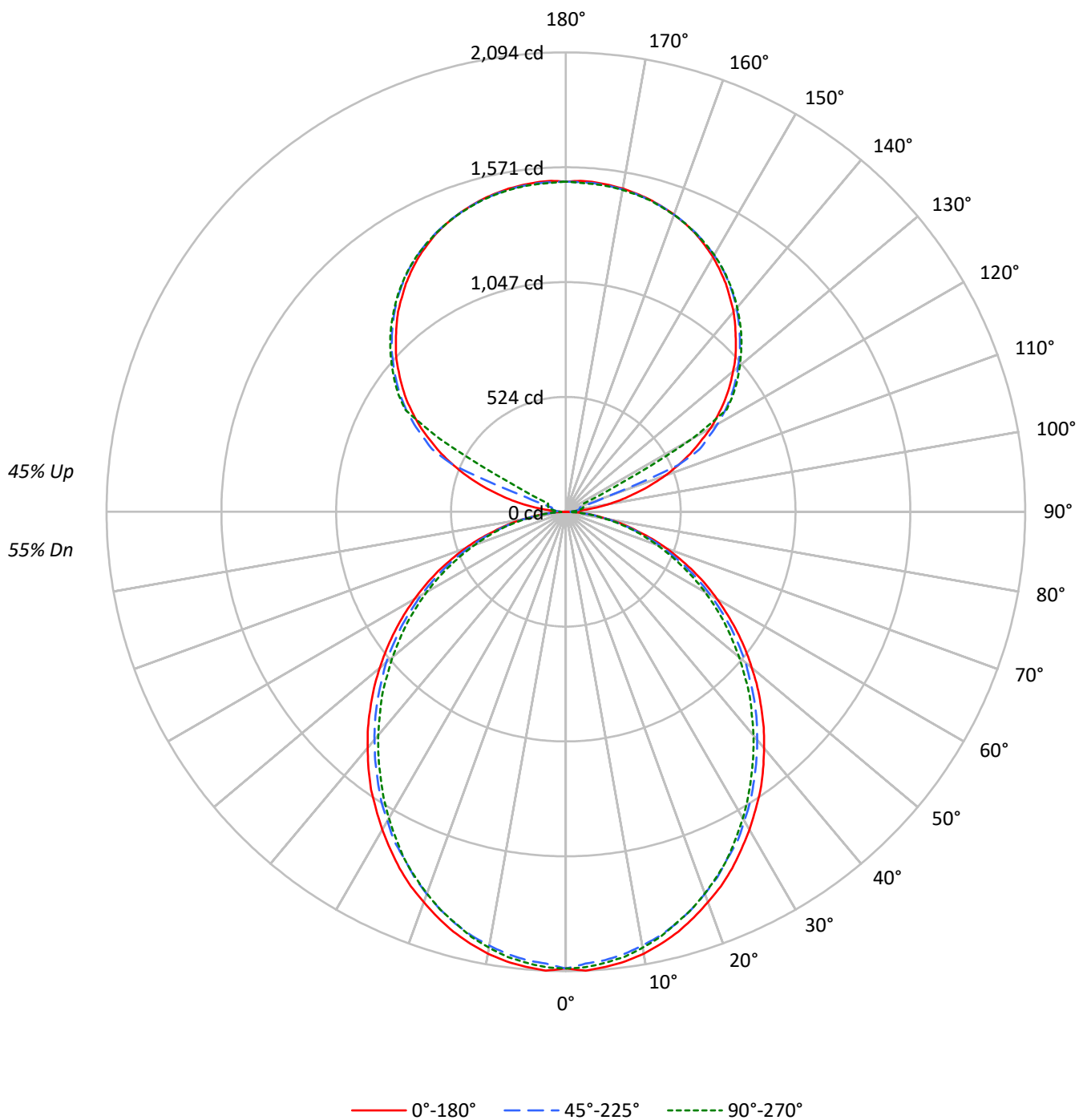
Lumens per Lamp: N/A
Luminaire Lumens: 9710.8 lumens
Efficiency: N/A
Efficacy: 95.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 101.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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	108	108	108	108		100	100	100	100		86	86	86		73	73	73		60	60	60
1	99	94	91	87		92	88	84	81		75	73	71		64	62	60		53	52	51
2	90	82	76	71		83	77	71	67		66	62	58		56	53	51		47	45	43
3	82	73	65	59		76	68	61	56		58	53	49		50	46	43		42	39	37
4	75	64	56	50		69	60	53	47		52	46	42		44	40	37		37	34	32
5	69	57	49	43		64	53	46	41		46	41	36		40	35	32		34	30	27
6	64	51	43	37		59	48	41	35		42	36	32		36	31	28		30	27	24
7	59	46	38	33		54	43	36	31		38	32	28		33	28	25		28	24	22
8	55	42	34	29		51	40	33	28		35	29	25		30	25	22		26	22	19
9	51	39	31	26		47	36	29	25		32	26	22		28	23	20		24	20	17
10	48	35	28	23		44	33	27	22		29	24	20		25	21	18		22	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1351	1351	1351
5°	1353	1332	1341
10°	1342	1315	1324
15°	1322	1293	1296
20°	1296	1264	1267
25°	1269	1228	1234
30°	1236	1195	1192
35°	1205	1156	1147
40°	1166	1117	1105
45°	1128	1077	1061
50°	1085	1036	1011
55°	1041	988	965
60°	992	931	912
65°	937	872	850
70°	868	801	783
75°	772	715	722
80°	657	606	604
85°	476	416	407

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1128 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	195.9	2.0
10°-20°	551.3	5.7
20°-30°	810.2	8.3
30°-40°	941.0	9.7
40°-50°	939.8	9.7
50°-60°	819.5	8.4
60°-70°	605.8	6.2
70°-80°	342.7	3.5
80°-90°	93.1	1.0
90°-100°	49.6	0.5
100°-110°	185.0	1.9
110°-120°	490.6	5.1
120°-130°	813.6	8.4
130°-140°	864.3	8.9
140°-150°	803.2	8.3
150°-160°	645.8	6.6
160°-170°	416.1	4.3
170°-180°	143.2	1.5
0°-30°	1557.4	16.0
0°-40°	2498.4	25.7
0°-60°	4257.8	43.8
0°-90°	5299.4	54.6
90°-120°	725.2	7.5
90°-150°	3206.2	33.0
90°-180°	4411.0	45.4
0°-180°	9710.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2082	2082	2082	2082	2082	
5°	2082	2074	2052	2068	2064	198
15°	1982	1970	1944	1952	1942	558
25°	1794	1778	1744	1748	1744	825
35°	1548	1528	1495	1483	1473	966
45°	1259	1245	1215	1193	1185	972
55°	953	941	917	893	883	852
65°	643	631	611	592	583	635
75°	336	332	322	310	314	359
85°	82	80	78	72	70	91
90°	1	13	22	27	29	9
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°	2081.8	2081.8	2081.8	2081.8	2081.8
2.5°	2093.9	2083.9	2061.8	2081.8	2078.0
5°	2081.8	2073.9	2051.8	2067.8	2064.0
7.5°	2067.8	2055.9	2033.8	2050.0	2045.9
10°	2045.9	2031.9	2007.9	2023.8	2017.9
12.5°	2015.8	2003.9	1979.9	1989.9	1985.8
15°	1981.7	1969.9	1943.8	1951.9	1941.9
17.5°	1939.7	1927.9	1901.8	1911.6	1901.8
20°	1893.6	1881.8	1853.7	1859.7	1851.8
22.5°	1847.8	1829.7	1803.6	1803.6	1799.6
25°	1793.6	1777.7	1743.7	1747.5	1743.7
27.5°	1733.5	1719.5	1693.5	1687.7	1677.7
30°	1673.7	1657.4	1627.5	1621.6	1613.5
32.5°	1609.4	1597.6	1565.5	1553.4	1545.3
35°	1547.5	1527.5	1495.4	1483.3	1473.3
37.5°	1477.4	1459.3	1427.3	1413.2	1403.2
40°	1405.3	1389.2	1357.2	1339.3	1331.2
42.5°	1335.2	1319.1	1287.3	1267.1	1255.2
45°	1259.3	1245.2	1215.0	1193.2	1185.1
47.5°	1185.1	1171.1	1139.1	1117.0	1105.0
50°	1107.0	1097.0	1069.0	1040.9	1030.9
52.5°	1030.9	1016.9	991.0	968.9	954.9
55°	953.0	940.8	916.9	892.9	882.9
57.5°	874.9	864.9	838.7	814.8	806.6
60°	796.7	788.8	760.8	738.7	732.7
62.5°	720.6	706.6	686.6	666.6	658.6
65°	642.7	630.6	610.6	592.5	582.6
67.5°	562.6	552.4	534.6	520.6	512.5
70°	488.5	480.5	462.4	448.4	440.5
72.5°	412.4	404.4	394.4	380.4	374.4
75°	336.2	332.4	322.2	310.3	314.3
77.5°	268.2	260.2	256.1	250.2	244.2
80°	200.3	198.1	194.1	188.2	184.1
82.5°	136.2	136.2	134.2	126.2	126.2
85°	81.9	80.1	78.1	72.0	70.1
87.5°	36.1	32.1	28.0	22.1	20.0
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	8.75	9.65	9.66	10.59	11.79	8.30	9.21	9.22	10.14	11.35
	3H	10.42	11.23	11.35	12.17	13.40	9.93	10.74	10.86	11.68	12.91
	4H	11.01	11.78	11.95	12.73	13.96	10.52	11.28	11.46	12.23	13.47
	6H	11.42	12.12	12.37	13.08	14.33	10.92	11.62	11.87	12.58	13.83
	8H	11.53	12.20	12.49	13.17	14.42	11.02	11.70	11.98	12.67	13.92
	12H	11.58	12.22	12.54	13.18	14.46	11.07	11.71	12.03	12.67	13.95
4H	2H	9.22	9.98	10.16	10.93	12.17	8.86	9.63	9.81	10.58	11.81
	3H	11.09	11.73	12.05	12.71	13.96	10.68	11.32	11.64	12.30	13.56
	4H	11.81	12.40	12.78	13.37	14.65	11.39	11.97	12.36	12.95	14.22
	6H	12.33	12.84	13.32	13.84	15.11	11.90	12.41	12.88	13.40	14.68
	8H	12.49	12.96	13.47	13.95	15.24	12.05	12.52	13.03	13.51	14.80
	12H	12.57	12.99	13.57	14.00	15.29	12.12	12.54	13.12	13.55	14.84
8H	4H	12.01	12.48	13.00	13.47	14.76	11.64	12.11	12.62	13.10	14.39
	6H	12.65	13.04	13.66	14.07	15.36	12.27	12.66	13.28	13.69	14.98
	8H	12.88	13.22	13.89	14.24	15.55	12.48	12.83	13.50	13.85	15.15
	12H	13.01	13.32	14.03	14.33	15.68	12.60	12.91	13.62	13.92	15.27
12H	4H	12.00	12.43	13.00	13.43	14.73	11.63	12.06	12.63	13.07	14.36
	6H	12.68	13.03	13.70	14.05	15.35	12.31	12.66	13.33	13.68	14.98
	8H	12.93	13.23	13.95	14.25	15.60	12.55	12.85	13.57	13.87	15.22