

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: P921424

Luminaire Tested: DFN2DIP-4P4F0-050D040US940-RLLFLL

Issue Date: 11/21/2024

**Test Information**

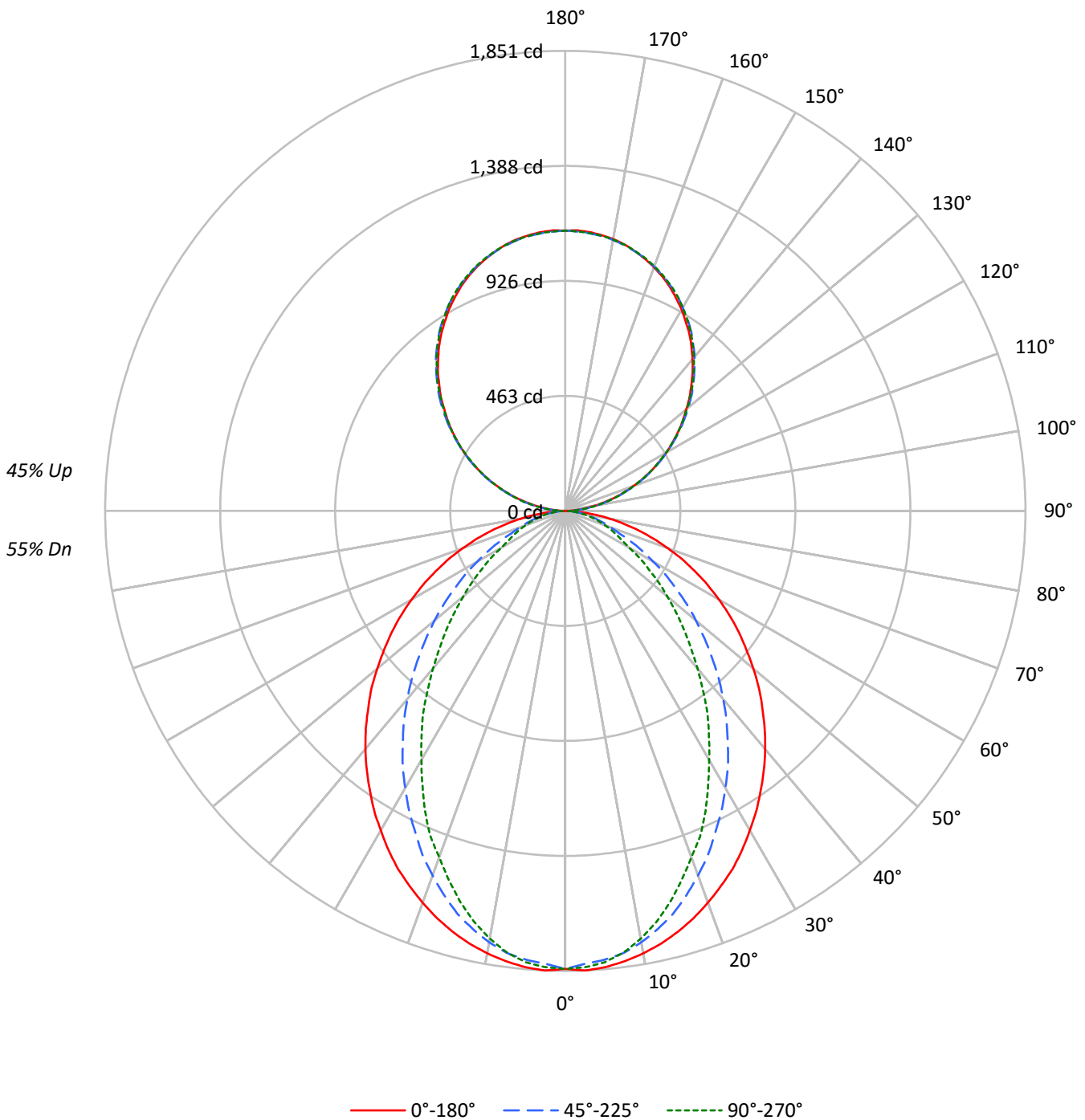
Test Method: LM-79-2019  
Report Number: P921424  
REPORT IS A COMBINATION OF REPORTS P899096 AND P895967  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-050D040US940-RLLFLL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6946.5 lumens  
Efficiency: N/A  
Efficacy: 85.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 80.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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		0	
RW	70	50	30	10	70	50	30	10	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	55		
1	99	95	91	88	92	89	85	82	76	74	72	65	63	62	54	53	52	47		
2	91	84	78	73	84	78	73	69	67	63	60	57	55	52	48	46	45	40		
3	83	74	67	61	77	69	63	58	60	55	51	51	48	45	43	41	39	35		
4	76	66	58	52	71	62	55	50	54	48	44	46	42	39	39	36	34	30		
5	70	59	51	45	65	55	48	43	48	43	38	42	37	34	35	32	30	27		
6	65	53	45	40	60	50	43	38	44	38	34	38	33	30	32	29	26	24		
7	60	48	40	35	56	45	38	33	40	34	30	35	30	27	30	26	24	21		
8	56	44	36	31	52	41	34	30	36	31	27	32	27	24	27	24	21	19		
9	52	40	33	28	49	38	31	27	34	28	24	29	25	22	25	22	19	17		
10	49	37	30	25	46	35	28	24	31	26	22	27	23	20	24	20	18	16		

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	1195	1195	1195
5°	1197	1177	1184
10°	1186	1154	1146
15°	1169	1116	1087
20°	1148	1064	1014
25°	1126	1005	944
30°	1096	945	855
35°	1067	881	776
40°	1038	814	686
45°	1004	739	605
50°	968	664	525
55°	931	584	448
60°	888	500	370
65°	839	415	333
70°	779	335	302
75°	704	296	276
80°	596	250	241
85°	417	169	184

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1004 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	172.7	2.5
10°-20°	474.1	6.8
20°-30°	665.6	9.6
30°-40°	725.6	10.4
40°-50°	666.9	9.6
50°-60°	523.7	7.5
60°-70°	340.9	4.9
70°-80°	175.5	2.5
80°-90°	48.0	0.7
90°-100°	69.8	1.0
100°-110°	221.8	3.2
110°-120°	379.5	5.5
120°-130°	499.2	7.2
130°-140°	560.3	8.1
140°-150°	549.4	7.9
150°-160°	460.9	6.6
160°-170°	305.7	4.4
170°-180°	106.8	1.5
0°-30°	1312.4	18.9
0°-40°	2038.0	29.3
0°-60°	3228.6	46.5
0°-90°	3793.0	54.6
90°-120°	671.2	9.7
90°-150°	2280.1	32.8
90°-180°	3153.0	45.4
0°-180°	6946.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1843	1843	1843	1843	1843	
5°	1843	1834	1813	1828	1823	175
15°	1753	1734	1678	1646	1629	494
25°	1591	1538	1427	1359	1334	732
35°	1371	1286	1139	1034	997	858
45°	1121	1009	834	715	675	865
55°	852	722	542	442	410	761
65°	575	440	290	234	228	570
75°	307	190	133	122	120	324
85°	72	37	32	32	32	82
90°	1	12	33	31	32	7
95°	50	59	61	61	59	55
105°	205	207	210	211	211	216
115°	381	386	385	384	381	377
125°	554	562	560	557	556	495
135°	717	727	729	728	725	554
145°	870	877	882	883	880	544
155°	995	998	1000	1005	1002	458
165°	1082	1081	1081	1088	1083	305
175°	1126	1123	1121	1128	1122	107
180°	1128	1128	1128	1128	1128	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1842.7	1842.7	1842.7	1842.7	1842.7
2.5°	1851.0	1842.7	1824.4	1841.1	1837.7
5°	1842.7	1834.4	1812.7	1827.6	1822.7
7.5°	1827.6	1817.8	1794.4	1801.0	1792.6
10°	1807.7	1796.0	1762.7	1757.7	1747.7
12.5°	1782.7	1767.7	1722.6	1712.7	1694.2
15°	1752.7	1734.3	1677.7	1646.0	1629.3
17.5°	1717.6	1691.0	1620.9	1584.2	1557.5
20°	1677.7	1644.2	1560.8	1519.3	1482.5
22.5°	1634.3	1595.9	1499.1	1442.5	1417.6
25°	1590.9	1537.5	1427.4	1359.1	1334.0
27.5°	1539.3	1482.5	1360.8	1282.4	1244.0
30°	1484.3	1420.8	1287.4	1202.4	1157.3
32.5°	1430.8	1354.1	1217.5	1117.3	1075.6
35°	1370.8	1285.8	1139.1	1033.9	997.2
37.5°	1312.4	1220.7	1065.7	950.5	908.9
40°	1250.7	1150.8	988.8	870.5	827.2
42.5°	1187.4	1080.7	912.2	788.7	747.2
45°	1120.7	1008.9	833.8	715.3	675.3
47.5°	1057.3	939.0	758.8	640.3	603.7
50°	987.3	868.9	685.5	570.2	535.4
52.5°	918.8	793.7	615.4	505.3	473.7
55°	852.1	722.0	541.9	441.9	410.3
57.5°	783.8	650.4	477.0	383.6	356.9
60°	713.7	580.3	408.5	323.6	296.9
62.5°	645.4	512.0	350.2	270.2	256.9
65°	575.3	440.2	290.2	233.5	228.5
67.5°	508.6	373.5	233.5	205.1	200.1
70°	438.6	308.5	193.4	176.7	170.0
72.5°	371.9	248.4	161.8	148.5	145.1
75°	306.8	190.0	133.4	121.7	120.1
77.5°	241.8	135.0	105.1	98.4	95.0
80°	181.7	96.8	80.0	73.4	73.4
82.5°	126.7	65.1	55.0	51.6	51.6
85°	71.7	36.6	31.7	31.7	31.7
87.5°	26.8	13.3	13.3	11.7	11.7
90°	1.0	12.2	33.3	31.3	32.3
92.5°	21.0	28.5	29.6	30.6	30.6
95°	49.7	59.2	60.9	60.9	59.2
97.5°	82.7	91.5	95.2	95.2	95.2
100°	120.7	128.6	131.3	131.3	130.3
102.5°	160.9	166.7	170.4	171.4	170.4
105°	204.7	207.4	209.5	211.2	211.2
107.5°	248.3	252.4	252.4	253.0	248.3
110°	290.4	295.9	295.9	295.9	293.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	336.0	341.8	340.7	338.0	336.0
115°	380.8	386.4	384.6	383.6	380.8
117.5°	425.4	432.9	428.2	425.4	422.8
120°	470.4	477.8	470.4	470.4	467.3
122.5°	511.1	520.7	515.9	513.2	511.1
125°	554.0	562.5	559.8	556.7	555.7
127.5°	595.8	606.4	602.6	598.5	595.8
130°	634.9	647.2	645.5	643.5	639.7
132.5°	678.8	688.3	689.0	684.2	681.5
135°	716.6	727.1	729.2	728.1	725.4
137.5°	758.8	767.2	768.9	768.2	764.2
140°	795.8	804.3	809.0	809.0	805.3
142.5°	833.9	842.4	845.1	846.1	842.4
145°	870.0	876.7	882.2	883.2	879.5
147.5°	902.2	910.7	914.8	916.5	912.8
150°	935.6	941.4	945.1	948.2	945.1
152.5°	965.2	970.9	975.7	979.5	975.7
155°	994.7	997.5	1000.5	1005.3	1002.2
157.5°	1020.3	1022.3	1024.0	1030.8	1026.0
160°	1043.0	1045.1	1046.1	1051.9	1047.8
162.5°	1064.1	1064.1	1065.1	1071.6	1066.8
165°	1082.2	1081.1	1081.1	1087.9	1083.2
167.5°	1098.5	1095.4	1095.4	1102.2	1097.4
170°	1110.7	1108.0	1107.0	1113.7	1108.0
172.5°	1119.2	1116.5	1115.4	1122.3	1116.5
175°	1126.1	1123.3	1121.2	1128.0	1122.3
177.5°	1129.8	1127.0	1125.0	1130.8	1125.0
180°	1128.0	1128.0	1128.0	1128.0	1128.0



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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	8.20	9.07	9.13	10.01	11.22	4.17	5.04	5.09	5.97	7.18
	3H	9.89	10.67	10.83	11.61	12.85	5.36	6.14	6.29	7.08	8.31
	4H	10.51	11.24	11.46	12.19	13.43	5.81	6.55	6.76	7.50	8.74
	6H	10.93	11.61	11.89	12.57	13.82	6.14	6.81	7.10	7.77	9.02
	8H	11.06	11.71	12.03	12.68	13.93	6.23	6.87	7.20	7.85	9.10
	12H	11.13	11.74	12.10	12.71	13.98	6.27	6.89	7.25	7.85	9.13
4H	2H	8.23	8.96	9.18	9.91	11.15	4.77	5.50	5.73	6.45	7.69
	3H	10.07	10.68	11.03	11.66	12.91	6.13	6.74	7.09	7.72	8.97
	4H	10.77	11.32	11.74	12.30	13.58	6.68	7.23	7.65	8.21	9.49
	6H	11.29	11.77	12.27	12.76	14.04	7.10	7.58	8.09	8.58	9.85
	8H	11.47	11.91	12.46	12.91	14.20	7.23	7.68	8.22	8.67	9.96
	12H	11.57	11.97	12.57	12.98	14.27	7.30	7.70	8.30	8.71	10.00
8H	4H	10.74	11.18	11.72	12.17	13.47	6.96	7.41	7.95	8.40	9.69
	6H	11.31	11.68	12.32	12.71	14.00	7.48	7.85	8.50	8.89	10.18
	8H	11.53	11.86	12.55	12.88	14.18	7.68	8.00	8.70	9.02	10.33
	12H	11.67	11.96	12.70	12.98	14.33	7.80	8.09	8.82	9.10	10.45
12H	4H	10.69	11.09	11.70	12.10	13.40	6.97	7.37	7.98	8.38	9.68
	6H	11.29	11.61	12.31	12.63	13.94	7.54	7.86	8.56	8.88	10.19
	8H	11.51	11.80	12.54	12.81	14.17	7.75	8.04	8.77	9.05	10.40