

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: P915991

Luminaire Tested: DFN2DIP-4P4F0-060D040US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

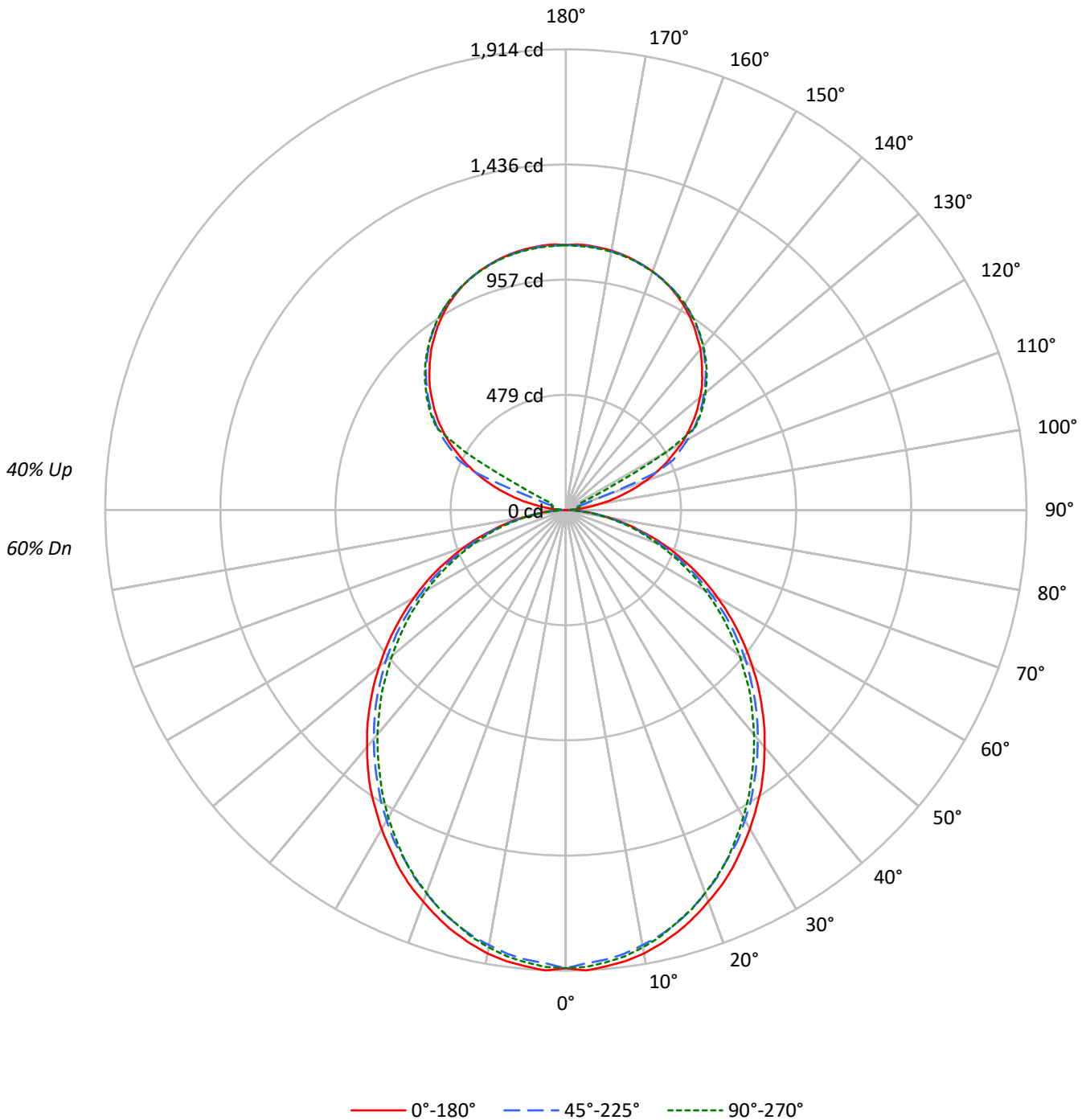
Test Method: LM-79-2019  
Report Number: P915991  
REPORT IS A COMBINATION OF REPORTS P900617 AND P897523  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-060D040US930-FLLONL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8071.4 lumens  
Efficiency: N/A  
Efficacy: 87.4 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: Semi-Direct  
  
Input Watts (W): 92.3  
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		0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	110	110	110	110	102	102	102	102	89	89	89	77	77	77	65	65	65	60		
1	100	96	92	88	93	90	86	83	78	75	73	67	66	64	58	56	55	51		
2	91	84	77	72	85	78	73	68	68	64	61	59	56	53	51	49	47	42		
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	45	42	40	36		
4	76	65	57	51	71	61	54	48	54	48	44	47	42	39	40	37	34	31		
5	70	58	50	44	65	55	47	42	48	42	38	42	37	34	36	33	30	27		
6	64	52	44	38	60	49	42	36	43	37	33	38	33	30	33	29	26	24		
7	60	47	39	33	56	44	37	32	39	33	29	35	30	26	30	26	23	21		
8	55	43	35	30	52	40	33	28	36	30	26	32	27	23	28	24	21	19		
9	52	39	32	26	48	37	30	25	33	27	23	29	24	21	26	22	19	17		
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	24	20	17	15		

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

	0°	45°	90°
0°	1235	1235	1235
5°	1237	1218	1226
10°	1227	1202	1210
15°	1209	1183	1185
20°	1185	1155	1159
25°	1161	1123	1128
30°	1130	1093	1090
35°	1102	1057	1049
40°	1066	1021	1010
45°	1031	985	970
50°	992	947	924
55°	952	903	882
60°	907	851	834
65°	857	798	777
70°	794	732	716
75°	706	654	660
80°	600	554	552
85°	435	380	373

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1031 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	179.1	2.2
10°-20°	504.1	6.2
20°-30°	740.8	9.2
30°-40°	860.4	10.7
40°-50°	859.3	10.6
50°-60°	749.3	9.3
60°-70°	553.9	6.9
70°-80°	313.4	3.9
80°-90°	84.6	1.0
90°-100°	36.3	0.4
100°-110°	135.3	1.7
110°-120°	358.8	4.4
120°-130°	595.1	7.4
130°-140°	632.1	7.8
140°-150°	587.5	7.3
150°-160°	472.3	5.9
160°-170°	304.4	3.8
170°-180°	104.8	1.3
0°-30°	1424.0	17.6
0°-40°	2284.3	28.3
0°-60°	3892.9	48.2
0°-90°	4844.8	60.0
90°-120°	530.4	6.6
90°-150°	2345.2	29.1
90°-180°	3227.0	40.0
0°-180°	8071.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1903	1903	1903	1903	1903	
5°	1903	1896	1876	1891	1887	181
15°	1812	1801	1777	1785	1776	510
25°	1640	1625	1594	1598	1594	755
35°	1415	1397	1367	1356	1347	884
45°	1151	1138	1111	1091	1084	889
55°	871	860	838	816	807	779
65°	588	577	558	542	533	581
75°	307	304	295	284	287	328
85°	75	73	71	66	64	84
90°	1	10	16	20	21	7
95°	52	25	31	35	34	61
105°	242	266	49	57	60	259
115°	458	471	491	123	65	451
125°	647	658	673	679	681	577
135°	801	814	821	829	828	619
145°	929	929	942	948	944	581
155°	1023	1016	1026	1030	1024	472
165°	1078	1074	1076	1082	1076	305
175°	1103	1097	1099	1105	1097	105
180°	1101	1101	1101	1101	1101	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1903.4	1903.4	1903.4	1903.4	1903.4
2.5°	1914.5	1905.4	1885.1	1903.4	1899.9
5°	1903.4	1896.2	1876.0	1890.6	1887.1
7.5°	1890.6	1879.8	1859.5	1874.3	1870.6
10°	1870.6	1857.8	1835.8	1850.4	1844.9
12.5°	1843.1	1832.1	1810.2	1819.3	1815.7
15°	1811.9	1801.1	1777.2	1784.6	1775.5
17.5°	1773.5	1762.7	1738.8	1747.8	1738.8
20°	1731.4	1720.5	1694.8	1700.3	1693.1
22.5°	1689.5	1672.9	1649.0	1649.0	1645.4
25°	1639.9	1625.4	1594.2	1597.7	1594.2
27.5°	1584.9	1572.1	1548.4	1543.0	1533.9
30°	1530.2	1515.4	1488.1	1482.6	1475.2
32.5°	1471.5	1460.7	1431.3	1420.2	1412.9
35°	1414.9	1396.6	1367.3	1356.2	1347.0
37.5°	1350.8	1334.2	1305.0	1292.1	1283.0
40°	1284.9	1270.2	1240.9	1224.6	1217.2
42.5°	1220.8	1206.1	1177.0	1158.5	1147.6
45°	1151.4	1138.5	1110.9	1091.0	1083.5
47.5°	1083.5	1070.7	1041.5	1021.2	1010.3
50°	1012.1	1003.0	977.4	951.7	942.6
52.5°	942.6	929.8	906.0	885.9	873.1
55°	871.3	860.2	838.3	816.4	807.2
57.5°	799.9	790.8	766.9	744.9	737.5
60°	728.4	721.2	695.6	675.4	669.9
62.5°	658.8	646.0	627.8	609.5	602.2
65°	587.6	576.6	558.3	541.8	532.6
67.5°	514.4	505.1	488.8	476.0	468.6
70°	446.6	439.3	422.7	409.9	402.8
72.5°	377.1	369.7	360.6	347.8	342.3
75°	307.4	303.9	294.6	283.7	287.4
77.5°	245.2	237.9	234.2	228.8	223.3
80°	183.1	181.2	177.5	172.0	168.4
82.5°	124.5	124.5	122.7	115.4	115.4
85°	74.9	73.2	71.4	65.8	64.1
87.5°	33.0	29.4	25.6	20.2	18.3
90°	0.7	9.5	15.9	20.0	21.4
92.5°	20.0	16.7	19.1	20.7	21.4
95°	51.7	25.4	31.0	35.1	34.2
97.5°	93.2	27.9	40.6	43.0	43.8
100°	141.0	31.9	45.4	51.7	53.3
102.5°	193.5	192.0	47.0	55.7	58.1
105°	242.1	266.0	48.6	57.3	60.5
107.5°	298.6	318.5	50.2	58.9	62.1
110°	352.9	369.5	139.4	59.8	62.9



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	403.8	418.1	404.6	61.3	63.8
115°	457.9	471.4	491.4	122.6	65.4
117.5°	504.9	520.8	534.4	420.4	211.8
120°	557.5	569.4	583.8	593.4	485.8
122.5°	602.0	614.8	630.8	635.5	636.3
125°	647.4	657.9	672.9	678.6	680.9
127.5°	688.8	700.0	712.0	720.0	720.7
130°	727.9	740.7	749.3	758.1	757.4
132.5°	767.7	778.1	786.8	794.0	793.3
135°	801.2	814.0	821.1	829.1	827.5
137.5°	836.2	845.7	853.8	861.7	859.3
140°	870.4	876.9	885.6	892.8	888.8
142.5°	899.2	904.7	915.1	921.4	917.5
145°	929.4	928.6	942.1	947.7	943.7
147.5°	955.6	953.2	966.8	970.8	967.7
150°	981.1	975.6	988.4	993.1	989.1
152.5°	1002.7	996.3	1008.2	1013.0	1007.5
155°	1023.4	1016.3	1025.8	1030.5	1024.2
157.5°	1040.1	1033.7	1041.0	1046.5	1040.1
160°	1054.4	1049.6	1054.4	1059.2	1053.6
162.5°	1067.1	1062.4	1066.4	1072.0	1064.8
165°	1078.3	1073.6	1075.9	1081.5	1075.9
167.5°	1087.1	1082.2	1084.8	1090.3	1083.1
170°	1094.3	1089.5	1091.0	1096.7	1089.5
172.5°	1099.0	1094.3	1095.9	1101.5	1094.3
175°	1102.9	1097.4	1099.0	1104.6	1096.7
177.5°	1104.6	1099.0	1099.8	1105.5	1098.3
180°	1100.7	1100.7	1100.7	1100.7	1100.7



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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	8.90	9.86	9.77	10.75	11.87	8.46	9.42	9.32	10.30	11.42
	3H	10.57	11.44	11.45	12.33	13.48	10.08	10.94	10.96	11.84	12.99
	4H	11.17	11.98	12.06	12.89	14.04	10.68	11.49	11.57	12.39	13.55
	6H	11.58	12.33	12.49	13.24	14.41	11.08	11.83	11.98	12.74	13.91
	8H	11.69	12.40	12.60	13.33	14.50	11.19	11.90	12.10	12.83	14.00
	12H	11.74	12.42	12.66	13.34	14.54	11.23	11.91	12.15	12.84	14.03
4H	2H	9.37	10.19	10.27	11.09	12.25	9.02	9.83	9.92	10.74	11.89
	3H	11.26	11.94	12.17	12.87	14.04	10.85	11.53	11.76	12.46	13.63
	4H	11.98	12.60	12.90	13.53	14.72	11.55	12.17	12.48	13.10	14.30
	6H	12.50	13.04	13.44	13.99	15.19	12.07	12.61	13.01	13.56	14.76
	8H	12.66	13.16	13.60	14.11	15.32	12.22	12.72	13.16	13.67	14.88
	12H	12.74	13.19	13.70	14.16	15.37	12.29	12.74	13.25	13.71	14.92
8H	4H	12.18	12.68	13.12	13.63	14.84	11.81	12.31	12.74	13.25	14.47
	6H	12.83	13.24	13.79	14.23	15.44	12.44	12.86	13.41	13.85	15.06
	8H	13.05	13.42	14.02	14.40	15.62	12.66	13.02	13.63	14.00	15.23
	12H	13.19	13.51	14.17	14.49	15.76	12.78	13.10	13.76	14.07	15.35
12H	4H	12.17	12.63	13.13	13.59	14.81	11.81	12.26	12.76	13.22	14.44
	6H	12.86	13.22	13.83	14.20	15.43	12.49	12.85	13.46	13.83	15.06
	8H	13.11	13.43	14.08	14.40	15.68	12.73	13.05	13.70	14.02	15.30