

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: P924183

Luminaire Tested: DFN2DIP-4P4F0-060D060US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

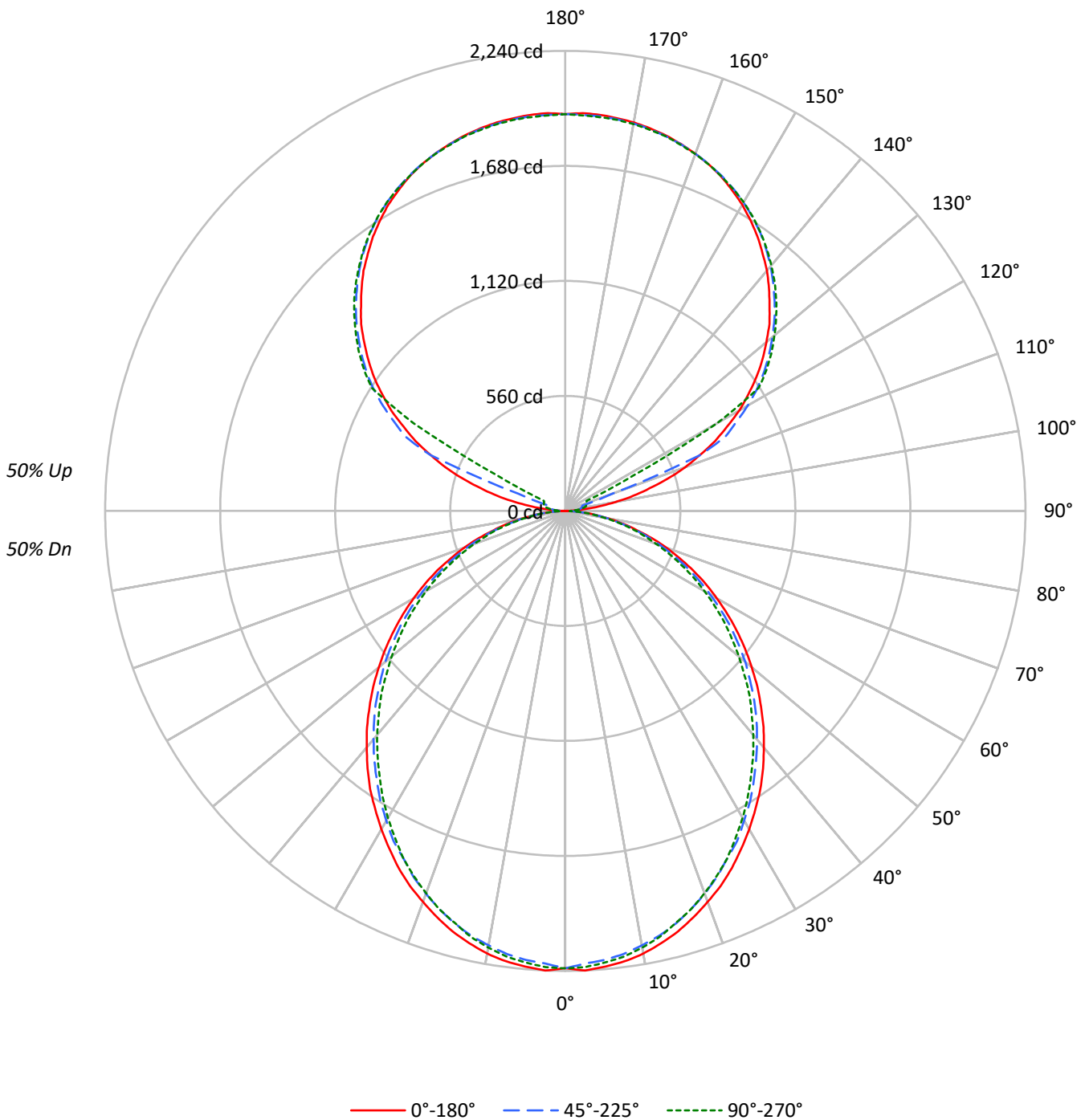
Test Method: LM-79-2019  
Report Number: P924183  
REPORT IS A COMBINATION OF REPORTS P900641 AND P897523  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-060D060US950-FLLONL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11333.5 lumens  
Efficiency: N/A  
Efficacy: 101.4 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: General Diffuse  
  
Input Watts (W): 111.8  
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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50		
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47	42		
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40	35		
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34	30		
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29	26		
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26	22		
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23	20		
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20	17		
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18	16		
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16	14		
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	13		

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

	0°	45°	90°
0°	1445	1445	1445
5°	1447	1425	1435
10°	1436	1406	1416
15°	1415	1384	1386
20°	1386	1352	1356
25°	1358	1314	1320
30°	1323	1279	1275
35°	1289	1237	1227
40°	1248	1195	1182
45°	1206	1153	1135
50°	1161	1108	1081
55°	1114	1057	1032
60°	1061	996	976
65°	1003	933	909
70°	929	856	837
75°	826	765	772
80°	703	648	646
85°	510	445	436

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1206 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	209.6	1.8
10°-20°	589.8	5.2
20°-30°	866.8	7.6
30°-40°	1006.7	8.9
40°-50°	1005.5	8.9
50°-60°	876.7	7.7
60°-70°	648.1	5.7
70°-80°	366.7	3.2
80°-90°	100.2	0.9
90°-100°	63.7	0.6
100°-110°	237.5	2.1
110°-120°	629.8	5.6
120°-130°	1044.5	9.2
130°-140°	1109.5	9.8
140°-150°	1031.2	9.1
150°-160°	829.1	7.3
160°-170°	534.2	4.7
170°-180°	183.9	1.6
0°-30°	1666.2	14.7
0°-40°	2673.0	23.6
0°-60°	4555.2	40.2
0°-90°	5670.2	50.0
90°-120°	930.9	8.2
90°-150°	4116.2	36.3
90°-180°	5663.0	50.0
0°-180°	11333.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2227	2227	2227	2227	2227	
5°	2227	2219	2195	2212	2208	211
15°	2120	2108	2080	2088	2078	597
25°	1919	1902	1866	1870	1866	883
35°	1656	1634	1600	1587	1576	1034
45°	1347	1332	1300	1276	1268	1040
55°	1020	1007	981	955	945	912
65°	688	675	653	634	623	680
75°	360	356	345	332	336	384
85°	88	86	84	77	75	98
90°	1	17	28	35	38	10
95°	91	45	54	62	60	108
105°	425	467	85	101	106	454
115°	804	828	862	215	115	791
125°	1136	1155	1181	1191	1195	1014
135°	1406	1429	1441	1455	1452	1086
145°	1631	1630	1654	1663	1656	1020
155°	1796	1784	1800	1809	1798	828
165°	1893	1884	1888	1898	1888	535
175°	1936	1926	1929	1939	1925	184
180°	1932	1932	1932	1932	1932	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2227.2	2227.2	2227.2	2227.2	2227.2
2.5°	2240.2	2229.5	2205.8	2227.2	2223.1
5°	2227.2	2218.8	2195.2	2212.2	2208.1
7.5°	2212.2	2199.5	2175.9	2193.2	2188.9
10°	2188.9	2173.9	2148.1	2165.2	2158.8
12.5°	2156.6	2143.8	2118.2	2128.9	2124.6
15°	2120.2	2107.5	2079.5	2088.2	2077.5
17.5°	2075.2	2062.5	2034.6	2045.2	2034.6
20°	2025.9	2013.2	1983.2	1989.6	1981.2
22.5°	1976.9	1957.5	1929.6	1929.6	1925.3
25°	1918.9	1901.9	1865.5	1869.6	1865.5
27.5°	1854.6	1839.6	1811.8	1805.5	1794.9
30°	1790.6	1773.2	1741.2	1734.8	1726.2
32.5°	1721.9	1709.2	1674.8	1661.9	1653.3
35°	1655.6	1634.2	1599.9	1586.9	1576.2
37.5°	1580.6	1561.2	1527.0	1511.9	1501.2
40°	1503.5	1486.2	1452.0	1432.9	1424.2
42.5°	1428.5	1411.3	1377.2	1355.6	1342.9
45°	1347.2	1332.2	1299.9	1276.5	1267.9
47.5°	1267.9	1252.9	1218.6	1195.0	1182.2
50°	1184.3	1173.6	1143.7	1113.6	1102.9
52.5°	1102.9	1087.9	1060.2	1036.6	1021.6
55°	1019.5	1006.6	980.9	955.2	944.6
57.5°	936.0	925.3	897.3	871.7	863.0
60°	852.3	843.9	814.0	790.3	783.9
62.5°	770.9	755.9	734.6	713.2	704.6
65°	687.5	674.7	653.3	633.9	623.2
67.5°	601.9	591.0	571.9	556.9	548.3
70°	522.6	514.0	494.6	479.7	471.3
72.5°	441.2	432.6	422.0	407.0	400.6
75°	359.7	355.7	344.7	332.0	336.3
77.5°	287.0	278.4	274.0	267.7	261.3
80°	214.3	212.0	207.7	201.3	197.0
82.5°	145.7	145.7	143.6	135.0	135.0
85°	87.7	85.7	83.6	77.0	75.0
87.5°	38.6	34.3	30.0	23.7	21.4
90°	1.3	16.8	27.9	35.0	37.7
92.5°	35.0	29.4	33.5	36.3	37.7
95°	90.8	44.6	54.5	61.6	60.1
97.5°	163.5	48.9	71.2	75.6	76.9
100°	247.5	55.9	79.7	90.8	93.6
102.5°	339.6	337.0	82.5	97.8	102.1
105°	424.9	466.9	85.3	100.6	106.3
107.5°	524.2	559.0	88.1	103.4	109.0
110°	619.3	648.5	244.7	104.9	110.4



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	708.7	733.8	710.1	107.5	111.9
115°	803.7	827.5	862.5	215.3	114.7
117.5°	886.2	914.1	938.0	738.0	371.8
120°	978.5	999.4	1024.7	1041.4	852.7
122.5°	1056.7	1079.1	1107.1	1115.4	1116.9
125°	1136.4	1154.6	1181.1	1191.0	1195.1
127.5°	1209.1	1228.7	1249.7	1263.7	1265.0
130°	1277.6	1300.0	1315.3	1330.7	1329.4
132.5°	1347.5	1365.7	1381.0	1393.6	1392.3
135°	1406.3	1428.7	1441.1	1455.2	1452.4
137.5°	1467.6	1484.4	1498.5	1512.5	1508.4
140°	1527.7	1539.1	1554.4	1566.9	1560.0
142.5°	1578.2	1588.0	1606.2	1617.2	1610.3
145°	1631.3	1629.8	1653.6	1663.4	1656.4
147.5°	1677.3	1673.1	1696.9	1703.8	1698.4
150°	1722.2	1712.3	1734.8	1743.1	1736.1
152.5°	1759.8	1748.7	1769.6	1778.1	1768.2
155°	1796.2	1783.7	1800.5	1808.8	1797.6
157.5°	1825.6	1814.4	1827.0	1836.8	1825.6
160°	1850.8	1842.3	1850.8	1859.1	1849.3
162.5°	1873.0	1864.7	1871.7	1881.5	1868.9
165°	1892.6	1884.3	1888.4	1898.3	1888.4
167.5°	1908.0	1899.6	1903.9	1913.7	1901.0
170°	1920.7	1912.2	1915.1	1924.8	1912.2
172.5°	1929.0	1920.7	1923.5	1933.3	1920.7
175°	1936.0	1926.1	1929.0	1938.7	1924.8
177.5°	1938.7	1929.0	1930.4	1940.2	1927.7
180°	1931.8	1931.8	1931.8	1931.8	1931.8



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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	8.57	9.43	9.53	10.41	11.68	8.13	8.99	9.09	9.96	11.23
	3H	10.24	11.01	11.21	11.99	13.29	9.75	10.52	10.72	11.50	12.80
	4H	10.83	11.56	11.81	12.55	13.85	10.34	11.07	11.32	12.05	13.35
	6H	11.23	11.91	12.23	12.90	14.21	10.73	11.41	11.73	12.40	13.71
	8H	11.34	11.98	12.34	12.99	14.30	10.84	11.48	11.84	12.49	13.80
	12H	11.39	12.00	12.40	13.00	14.34	10.88	11.49	11.89	12.49	13.83
4H	2H	9.04	9.77	10.02	10.75	12.05	8.68	9.41	9.67	10.40	11.70
	3H	10.91	11.52	11.90	12.53	13.85	10.50	11.11	11.50	12.12	13.44
	4H	11.63	12.18	12.63	13.19	14.53	11.20	11.76	12.21	12.77	14.11
	6H	12.15	12.63	13.16	13.66	14.99	11.71	12.20	12.73	13.23	14.56
	8H	12.30	12.75	13.32	13.77	15.12	11.86	12.31	12.88	13.33	14.69
	12H	12.38	12.78	13.41	13.82	15.18	11.93	12.33	12.96	13.37	14.73
8H	4H	11.82	12.27	12.84	13.30	14.65	11.45	11.90	12.47	12.92	14.27
	6H	12.46	12.83	13.50	13.90	15.25	12.08	12.45	13.12	13.51	14.86
	8H	12.69	13.01	13.74	14.06	15.43	12.29	12.62	13.34	13.67	15.04
	12H	12.82	13.11	13.88	14.16	15.57	12.41	12.70	13.46	13.74	15.15
12H	4H	11.81	12.22	12.85	13.25	14.61	11.44	11.85	12.48	12.89	14.24
	6H	12.49	12.82	13.54	13.87	15.24	12.12	12.45	13.17	13.50	14.87
	8H	12.74	13.03	13.79	14.07	15.48	12.36	12.65	13.41	13.69	15.10