

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: P914280

Luminaire Tested: DFN2DIP-PN4F0-100D060US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

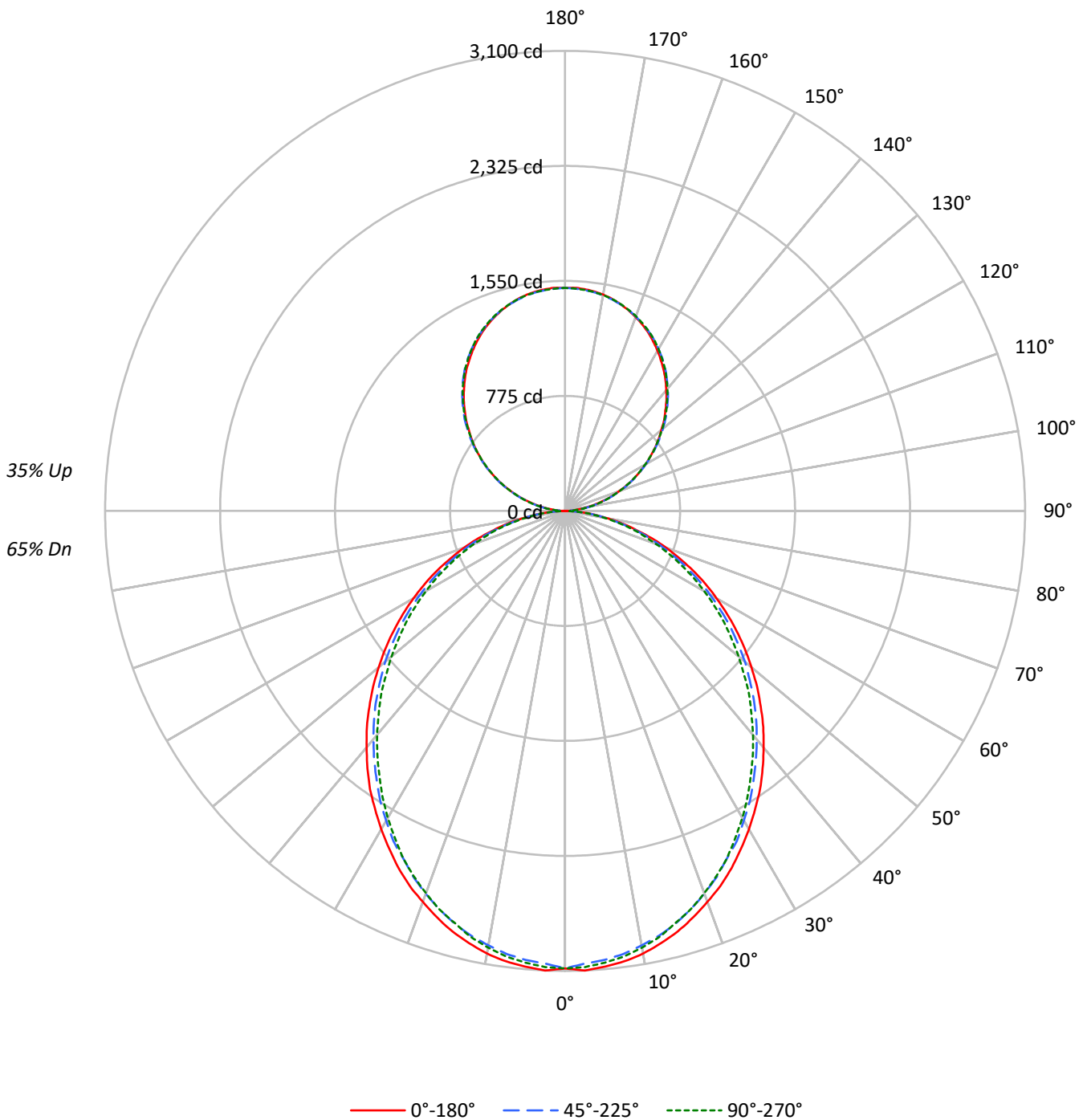
Test Method: LM-79-2019  
Report Number: P914280  
REPORT IS A COMBINATION OF REPORTS P899657 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-100D060US927-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12049.1 lumens  
Efficiency: N/A  
Efficacy: 82.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 146.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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	0
RCR																					
0	111	111	111	111	104	104	104	104	92	92	92	80	80	80	70	70	70	70	70	70	65
1	101	97	93	89	95	91	88	84	81	78	75	71	69	67	62	60	59	59	59	59	55
2	92	85	78	73	86	80	74	69	71	66	63	62	59	56	55	52	50	50	50	50	46
3	84	74	67	61	79	70	63	58	62	57	53	55	51	47	48	45	42	42	42	42	39
4	77	66	58	52	72	62	55	49	55	50	45	49	44	41	43	40	37	37	37	37	33
5	71	59	50	44	66	56	48	42	50	44	39	44	39	35	39	35	32	32	32	32	29
6	65	53	45	39	61	50	43	37	45	39	34	40	35	31	35	31	28	28	28	28	26
7	60	48	40	34	57	45	38	33	41	35	30	36	31	28	32	28	25	25	25	25	23
8	56	44	36	30	53	41	34	29	37	31	27	33	28	25	30	26	22	22	22	22	20
9	52	40	32	27	49	38	31	26	34	28	24	31	26	22	27	23	20	20	20	20	18
10	49	37	29	24	46	35	28	23	32	26	22	28	24	20	25	21	19	19	19	19	17

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

	0°	45°	90°
0°	2250	2250	2250
5°	2254	2219	2234
10°	2235	2189	2204
15°	2202	2154	2157
20°	2158	2104	2109
25°	2114	2044	2054
30°	2058	1989	1983
35°	2006	1923	1908
40°	1941	1857	1837
45°	1877	1791	1764
50°	1807	1722	1680
55°	1733	1641	1603
60°	1650	1546	1514
65°	1559	1447	1409
70°	1443	1327	1297
75°	1282	1183	1194
80°	1089	999	996
85°	788	682	666

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1877 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	290.1	2.4
10°-20°	816.3	6.8
20°-30°	1199.6	10.0
30°-40°	1393.3	11.6
40°-50°	1391.5	11.5
50°-60°	1213.4	10.1
60°-70°	897.0	7.4
70°-80°	507.5	4.2
80°-90°	138.2	1.1
90°-100°	93.0	0.8
100°-110°	295.6	2.5
110°-120°	505.8	4.2
120°-130°	665.2	5.5
130°-140°	746.6	6.2
140°-150°	732.2	6.1
150°-160°	614.2	5.1
160°-170°	407.3	3.4
170°-180°	142.4	1.2
0°-30°	2306.0	19.1
0°-40°	3699.3	30.7
0°-60°	6304.2	52.3
0°-90°	7846.8	65.1
90°-120°	894.4	7.4
90°-150°	3038.4	25.2
90°-180°	4202.0	34.9
0°-180°	12049.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3082	3082	3082	3082	3082	
5°	3082	3071	3038	3062	3056	293
15°	2934	2917	2878	2890	2875	826
25°	2656	2632	2582	2587	2582	1222
35°	2291	2262	2214	2196	2181	1431
45°	1864	1844	1799	1767	1755	1439
55°	1411	1393	1358	1322	1307	1262
65°	952	934	904	877	863	941
75°	498	492	477	460	465	531
85°	121	119	116	107	104	135
90°	1	16	44	42	43	12
95°	66	79	81	81	79	74
105°	273	276	279	282	282	288
115°	508	515	512	511	508	502
125°	738	750	746	742	740	660
135°	955	969	972	970	967	738
145°	1159	1168	1176	1177	1172	724
155°	1326	1329	1333	1340	1336	610
165°	1442	1441	1441	1450	1443	407
175°	1500	1497	1494	1503	1496	143
180°	1503	1503	1503	1503	1503	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3082.5	3082.5	3082.5	3082.5	3082.5
2.5°	3100.4	3085.5	3052.8	3082.5	3076.8
5°	3082.5	3070.8	3038.1	3061.7	3056.0
7.5°	3061.7	3044.0	3011.3	3035.2	3029.3
10°	3029.3	3008.5	2973.0	2996.6	2987.8
12.5°	2984.6	2967.0	2931.5	2946.3	2940.3
15°	2934.3	2916.7	2878.0	2890.0	2875.2
17.5°	2872.1	2854.5	2815.7	2830.5	2815.7
20°	2803.8	2786.2	2744.7	2753.5	2741.8
22.5°	2735.9	2709.2	2670.4	2670.4	2664.5
25°	2655.7	2632.1	2581.8	2587.4	2581.8
27.5°	2566.7	2545.9	2507.6	2498.8	2484.0
30°	2478.0	2454.1	2409.7	2400.9	2389.0
32.5°	2383.0	2365.5	2317.9	2300.0	2288.1
35°	2291.2	2261.7	2214.1	2196.2	2181.4
37.5°	2187.4	2160.7	2113.2	2092.5	2077.7
40°	2080.8	2056.9	2009.4	1983.1	1971.1
42.5°	1977.0	1953.1	1906.0	1876.1	1858.5
45°	1864.5	1843.7	1799.0	1766.6	1754.8
47.5°	1754.8	1734.0	1686.5	1653.8	1636.2
50°	1639.0	1624.2	1582.7	1541.2	1526.5
52.5°	1526.5	1505.7	1467.3	1434.6	1413.9
55°	1411.0	1393.1	1357.6	1322.0	1307.3
57.5°	1295.3	1280.5	1241.8	1206.3	1194.4
60°	1179.6	1167.9	1126.4	1093.7	1084.9
62.5°	1067.0	1046.2	1016.7	987.1	975.2
65°	951.6	933.7	904.1	877.3	862.6
67.5°	833.1	817.9	791.5	770.8	758.8
70°	723.3	711.3	684.6	663.8	652.2
72.5°	610.7	598.7	584.0	563.2	554.4
75°	497.8	492.2	477.1	459.5	465.4
77.5°	397.2	385.2	379.2	370.4	361.6
80°	296.5	293.4	287.4	278.6	272.7
82.5°	201.6	201.6	198.8	186.8	186.8
85°	121.4	118.6	115.7	106.6	103.8
87.5°	53.5	47.5	41.5	32.7	29.5
90°	1.3	16.3	44.4	41.7	43.0
92.5°	28.1	38.1	39.5	40.8	40.8
95°	66.1	78.8	81.1	81.1	78.8
97.5°	110.1	121.9	126.9	126.9	126.9
100°	160.9	171.3	174.9	174.9	173.6
102.5°	214.4	222.0	227.0	228.4	227.0
105°	272.8	276.5	279.2	281.5	281.5
107.5°	330.8	336.3	336.3	337.2	330.8
110°	387.1	394.3	394.3	394.3	390.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	447.7	455.4	454.1	450.4	447.7
115°	507.6	514.8	512.5	511.2	507.6
117.5°	567.0	576.9	570.5	567.0	563.3
120°	626.8	636.8	626.8	626.8	622.7
122.5°	681.1	693.8	687.5	683.9	681.1
125°	738.2	749.6	745.9	741.9	740.5
127.5°	794.0	808.0	803.0	797.6	794.0
130°	846.1	862.4	860.2	857.5	852.5
132.5°	904.6	917.3	918.1	911.8	908.2
135°	954.9	968.9	971.6	970.3	966.6
137.5°	1011.1	1022.4	1024.7	1023.7	1018.3
140°	1060.5	1071.8	1078.2	1078.2	1073.2
142.5°	1111.2	1122.5	1126.2	1127.5	1122.5
145°	1159.3	1168.3	1175.6	1176.9	1172.0
147.5°	1202.3	1213.6	1219.1	1221.3	1216.3
150°	1246.7	1254.4	1259.4	1263.4	1259.4
152.5°	1286.1	1293.9	1300.2	1305.2	1300.2
155°	1325.6	1329.2	1333.2	1339.7	1335.5
157.5°	1359.5	1362.3	1364.5	1373.6	1367.3
160°	1390.0	1392.7	1394.0	1401.7	1396.3
162.5°	1418.0	1418.0	1419.4	1428.0	1421.6
165°	1442.0	1440.7	1440.7	1449.8	1443.4
167.5°	1463.8	1459.8	1459.8	1468.8	1462.4
170°	1480.1	1476.5	1475.1	1484.2	1476.5
172.5°	1491.4	1487.8	1486.4	1495.5	1487.8
175°	1500.5	1496.9	1494.1	1503.2	1495.5
177.5°	1505.5	1501.9	1499.1	1506.8	1499.1
180°	1503.2	1503.2	1503.2	1503.2	1503.2



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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	11.39	12.40	12.20	13.24	14.28	10.95	11.96	11.76	12.80	13.84
	3H	13.06	13.97	13.89	14.82	15.89	12.58	13.49	13.40	14.34	15.40
	4H	13.66	14.52	14.50	15.37	16.45	13.17	14.03	14.01	14.89	15.96
	6H	14.07	14.86	14.92	15.72	16.81	13.57	14.37	14.43	15.23	16.32
	8H	14.18	14.93	15.04	15.82	16.91	13.68	14.44	14.55	15.32	16.41
	12H	14.23	14.95	15.10	15.83	16.94	13.73	14.45	14.60	15.33	16.44
4H	2H	11.87	12.73	12.71	13.58	14.66	11.51	12.38	12.36	13.23	14.31
	3H	13.75	14.47	14.61	15.36	16.45	13.35	14.07	14.21	14.95	16.04
	4H	14.47	15.13	15.34	16.01	17.13	14.05	14.71	14.93	15.59	16.71
	6H	15.00	15.56	15.89	16.47	17.59	14.57	15.14	15.46	16.05	17.17
	8H	15.15	15.68	16.04	16.59	17.72	14.72	15.25	15.62	16.16	17.29
	12H	15.23	15.71	16.15	16.63	17.77	14.79	15.27	15.71	16.19	17.33
8H	4H	14.68	15.21	15.57	16.11	17.25	14.31	14.84	15.20	15.74	16.88
	6H	15.32	15.76	16.24	16.71	17.84	14.94	15.38	15.86	16.33	17.46
	8H	15.55	15.93	16.47	16.87	18.02	15.16	15.55	16.09	16.49	17.64
	12H	15.69	16.03	16.62	16.96	18.16	15.28	15.63	16.22	16.56	17.76
12H	4H	14.67	15.15	15.59	16.07	17.21	14.31	14.79	15.22	15.71	16.85
	6H	15.35	15.74	16.28	16.68	17.83	14.99	15.38	15.92	16.31	17.47
	8H	15.60	15.95	16.54	16.88	18.08	15.23	15.57	16.16	16.50	17.71