

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: P915554

Luminaire Tested: DFN2DIP-TR4F0-060D110US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915554  
REPORT IS A COMBINATION OF REPORTS P900499 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-060D110US927-FLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

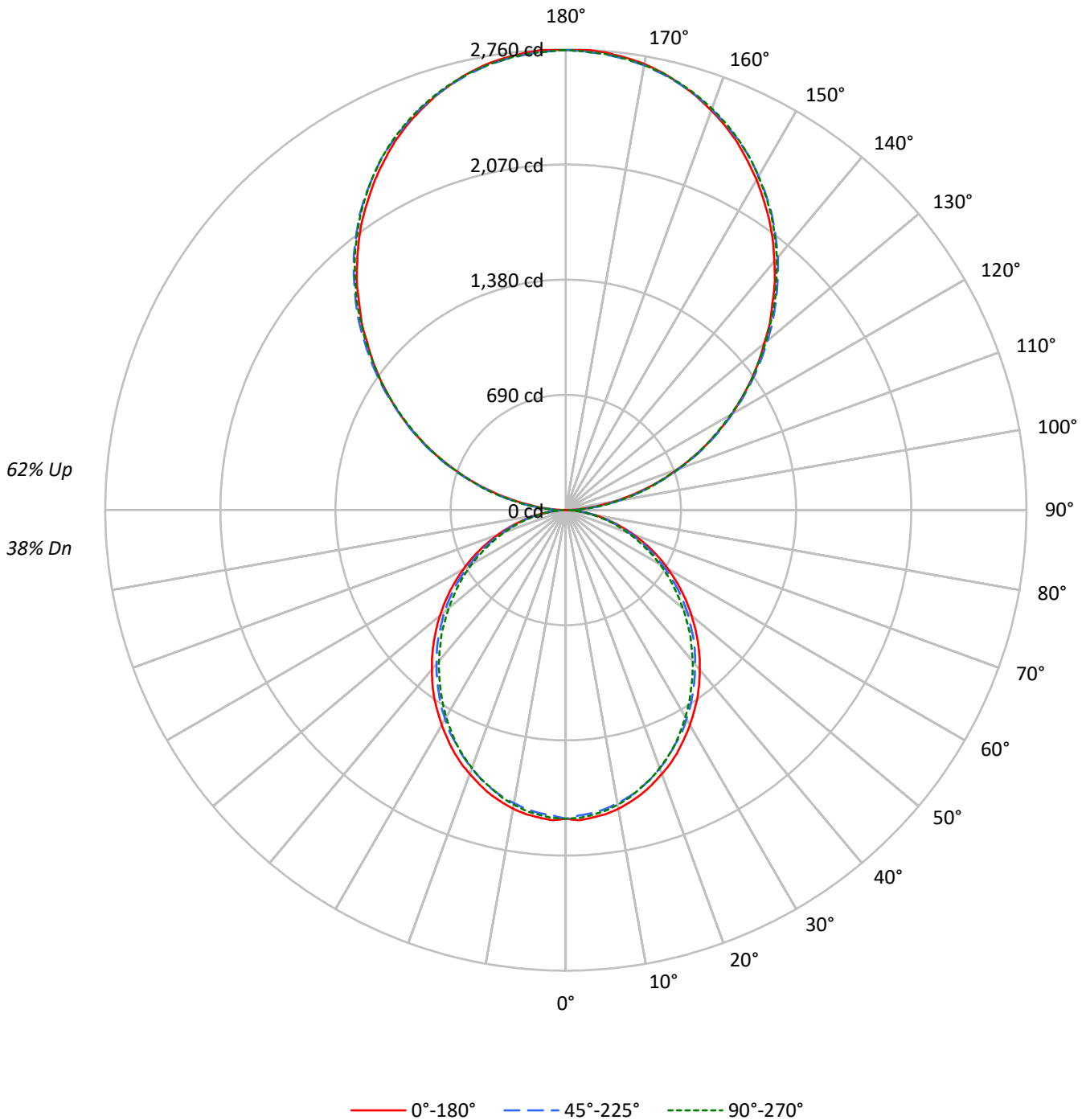
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12417.4 lumens  
Efficiency: N/A  
Efficacy: 89.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 138.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
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				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	104	104	104	104	95	95	95	95	77	77	77	60	60	60	45	45	45	38			38
1	95	91	87	84	86	83	79	76	67	65	63	53	51	50	40	39	38	32			32
2	87	79	73	68	78	72	67	63	59	55	52	46	44	42	35	33	32	27			27
3	79	70	62	57	71	63	57	52	52	47	44	41	38	35	31	29	27	23			23
4	72	62	54	48	65	56	49	44	46	41	37	37	33	30	28	25	23	19			19
5	66	55	47	41	60	50	43	38	41	36	32	33	29	26	25	22	20	17			17
6	61	49	41	35	55	45	38	33	37	32	28	30	26	23	23	20	18	15			15
7	56	44	36	31	51	41	34	29	33	28	24	27	23	20	21	18	16	13			13
8	52	40	32	27	47	37	30	25	30	25	22	25	21	18	19	16	14	12			12
9	48	37	29	24	44	34	27	23	28	23	19	23	19	16	17	15	13	11			11
10	45	33	26	22	41	31	24	20	26	21	17	21	17	14	16	14	12	10			10

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

	0°	45°	90°
0°	1469	1469	1469
5°	1472	1449	1459
10°	1460	1429	1439
15°	1438	1406	1408
20°	1409	1373	1376
25°	1380	1334	1340
30°	1344	1298	1293
35°	1310	1255	1244
40°	1268	1211	1197
45°	1226	1168	1149
50°	1180	1122	1094
55°	1132	1069	1043
60°	1077	1007	984
65°	1018	942	915
70°	943	863	841
75°	838	768	773
80°	712	648	642
85°	515	439	426

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2147 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	174.1	1.4
10°-20°	489.8	3.9
20°-30°	719.8	5.8
30°-40°	836.0	6.7
40°-50°	834.9	6.7
50°-60°	728.0	5.9
60°-70°	538.2	4.3
70°-80°	304.5	2.5
80°-90°	88.2	0.7
90°-100°	170.5	1.4
100°-110°	541.8	4.4
110°-120°	927.3	7.5
120°-130°	1219.5	9.8
130°-140°	1368.8	11.0
140°-150°	1342.3	10.8
150°-160°	1126.0	9.1
160°-170°	746.7	6.0
170°-180°	261.0	2.1
0°-30°	1383.6	11.1
0°-40°	2219.6	17.9
0°-60°	3782.5	30.5
0°-90°	4713.4	38.0
90°-120°	1639.7	13.2
90°-150°	5570.3	44.9
90°-180°	7704.0	62.0
0°-180°	12417.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1849	1849	1849	1849	1849	
5°	1849	1842	1823	1837	1834	176
15°	1760	1750	1727	1734	1725	496
25°	1593	1579	1549	1552	1549	733
35°	1375	1357	1328	1318	1309	858
45°	1119	1106	1079	1060	1053	863
55°	847	836	814	793	784	757
65°	571	560	542	526	518	564
75°	299	295	286	276	279	319
85°	73	71	69	64	62	81
90°	2	30	81	76	79	12
95°	121	145	149	149	145	135
105°	500	507	512	516	516	528
115°	931	944	940	937	931	920
125°	1353	1374	1368	1360	1358	1209
135°	1751	1776	1781	1779	1772	1353
145°	2125	2142	2155	2158	2149	1328
155°	2430	2437	2444	2456	2448	1119
165°	2644	2641	2641	2658	2646	746
175°	2751	2744	2739	2756	2742	261
180°	2756	2756	2756	2756	2756	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1849.4	1849.4	1849.4	1849.4	1849.4
2.5°	1860.2	1851.3	1831.7	1849.4	1846.0
5°	1849.4	1842.5	1822.8	1837.0	1833.6
7.5°	1837.0	1826.5	1806.8	1821.1	1817.6
10°	1817.6	1805.1	1783.8	1797.9	1792.6
12.5°	1790.8	1780.2	1758.9	1767.8	1764.2
15°	1760.5	1750.0	1726.8	1734.0	1725.1
17.5°	1723.2	1712.7	1689.5	1698.3	1689.5
20°	1682.3	1671.7	1646.8	1652.1	1645.1
22.5°	1641.6	1625.5	1602.3	1602.3	1598.7
25°	1593.4	1579.3	1549.0	1552.4	1549.0
27.5°	1540.0	1527.6	1504.5	1499.3	1490.4
30°	1486.8	1472.4	1445.9	1440.6	1433.4
32.5°	1429.8	1419.3	1390.8	1380.0	1372.8
35°	1374.8	1357.0	1328.5	1317.7	1308.8
37.5°	1312.5	1296.4	1268.0	1255.4	1246.6
40°	1248.5	1234.1	1205.7	1189.9	1182.6
42.5°	1186.2	1171.9	1143.6	1125.7	1115.1
45°	1118.7	1106.2	1079.4	1060.0	1052.8
47.5°	1052.8	1040.4	1011.9	992.3	981.7
50°	983.4	974.5	949.7	924.7	915.8
52.5°	915.8	903.4	880.4	860.8	848.3
55°	846.6	835.8	814.5	793.2	784.3
57.5°	777.2	768.3	745.1	723.8	716.6
60°	707.7	700.8	675.9	656.2	650.9
62.5°	640.2	627.7	610.0	592.2	585.1
65°	570.9	560.2	542.5	526.4	517.5
67.5°	499.8	490.8	474.9	462.5	455.3
70°	434.0	426.8	410.7	398.3	391.3
72.5°	366.4	359.3	350.4	337.9	332.6
75°	298.7	295.3	286.2	275.7	279.2
77.5°	238.3	231.2	227.5	222.3	217.0
80°	177.9	176.0	172.5	167.2	163.6
82.5°	121.0	121.0	119.2	112.1	112.1
85°	72.8	71.1	69.4	63.9	62.3
87.5°	32.1	28.5	24.9	19.6	17.7
90°	2.5	29.9	81.4	76.4	78.9
92.5°	51.5	69.8	72.2	74.8	74.8
95°	121.3	144.6	148.7	148.7	144.6
97.5°	201.9	223.5	232.7	232.7	232.7
100°	294.9	314.0	320.7	320.7	318.2
102.5°	393.0	407.1	416.3	418.7	416.3
105°	500.2	506.8	511.8	515.9	515.9
107.5°	606.5	616.5	616.5	618.1	606.5
110°	709.6	722.9	722.9	722.9	716.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	820.9	835.0	832.5	825.8	820.9
115°	930.6	943.8	939.7	937.2	930.6
117.5°	1039.4	1057.6	1046.0	1039.4	1032.8
120°	1149.1	1167.4	1149.1	1149.1	1141.6
122.5°	1248.8	1272.0	1260.4	1253.7	1248.8
125°	1353.4	1374.2	1367.5	1360.1	1357.6
127.5°	1455.6	1481.4	1472.3	1462.3	1455.6
130°	1551.2	1581.1	1576.9	1571.9	1562.8
132.5°	1658.4	1681.6	1683.3	1671.7	1665.0
135°	1750.6	1776.3	1781.3	1778.8	1772.2
137.5°	1853.6	1874.4	1878.5	1876.8	1866.9
140°	1944.2	1964.9	1976.6	1976.6	1967.5
142.5°	2037.3	2058.0	2064.7	2067.1	2058.0
145°	2125.3	2141.9	2155.2	2157.7	2148.6
147.5°	2204.2	2225.0	2235.0	2239.1	2230.0
150°	2285.7	2299.8	2308.9	2316.4	2308.9
152.5°	2357.9	2372.0	2383.7	2392.9	2383.7
155°	2430.3	2436.8	2444.4	2456.0	2448.5
157.5°	2492.5	2497.5	2501.6	2518.3	2506.6
160°	2548.2	2553.2	2555.7	2569.8	2559.9
162.5°	2599.7	2599.7	2602.2	2618.0	2606.4
165°	2643.7	2641.2	2641.2	2657.8	2646.2
167.5°	2683.6	2676.1	2676.1	2692.8	2681.1
170°	2713.5	2706.9	2704.4	2721.0	2706.9
172.5°	2734.3	2727.6	2725.2	2741.8	2727.6
175°	2750.9	2744.3	2739.3	2755.9	2741.8
177.5°	2760.0	2753.4	2748.4	2762.6	2748.4
180°	2755.9	2755.9	2755.9	2755.9	2755.9



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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	7.37	8.14	8.43	9.19	10.63	6.94	7.70	8.00	8.76	10.20
	3H	9.03	9.71	10.09	10.78	12.23	8.55	9.24	9.62	10.30	11.76
	4H	9.61	10.26	10.68	11.33	12.78	9.14	9.78	10.21	10.85	12.31
	6H	10.00	10.60	11.09	11.67	13.14	9.53	10.12	10.61	11.20	12.67
	8H	10.11	10.67	11.19	11.76	13.23	9.63	10.20	10.72	11.29	12.75
	12H	10.15	10.69	11.24	11.77	13.26	9.67	10.21	10.76	11.29	12.78
4H	2H	7.82	8.47	8.90	9.54	11.00	7.48	8.13	8.56	9.20	10.65
	3H	9.68	10.22	10.77	11.32	12.79	9.29	9.83	10.38	10.92	12.40
	4H	10.39	10.89	11.48	11.97	13.47	9.98	10.48	11.08	11.57	13.06
	6H	10.90	11.33	12.00	12.43	13.92	10.49	10.92	11.59	12.03	13.51
	8H	11.05	11.44	12.15	12.55	14.05	10.63	11.03	11.74	12.13	13.64
	12H	11.11	11.48	12.23	12.59	14.10	10.69	11.05	11.81	12.17	13.67
8H	4H	10.58	10.98	11.68	12.08	13.58	10.22	10.62	11.32	11.72	13.22
	6H	11.21	11.53	12.33	12.68	14.18	10.84	11.17	11.97	12.32	13.81
	8H	11.43	11.71	12.56	12.84	14.36	11.06	11.34	12.19	12.47	13.99
	12H	11.55	11.81	12.69	12.93	14.48	11.17	11.42	12.30	12.54	14.10
12H	4H	10.56	10.92	11.68	12.03	13.54	10.21	10.57	11.33	11.68	13.19
	6H	11.23	11.52	12.37	12.65	14.17	10.88	11.17	12.01	12.30	13.81
	8H	11.47	11.73	12.61	12.85	14.40	11.11	11.37	12.25	12.49	14.04