

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: P919173

Luminaire Tested: DFN2DIP-HX4F0-100D090US935-RLLFLL

Issue Date: 11/21/2024

**Test Information**

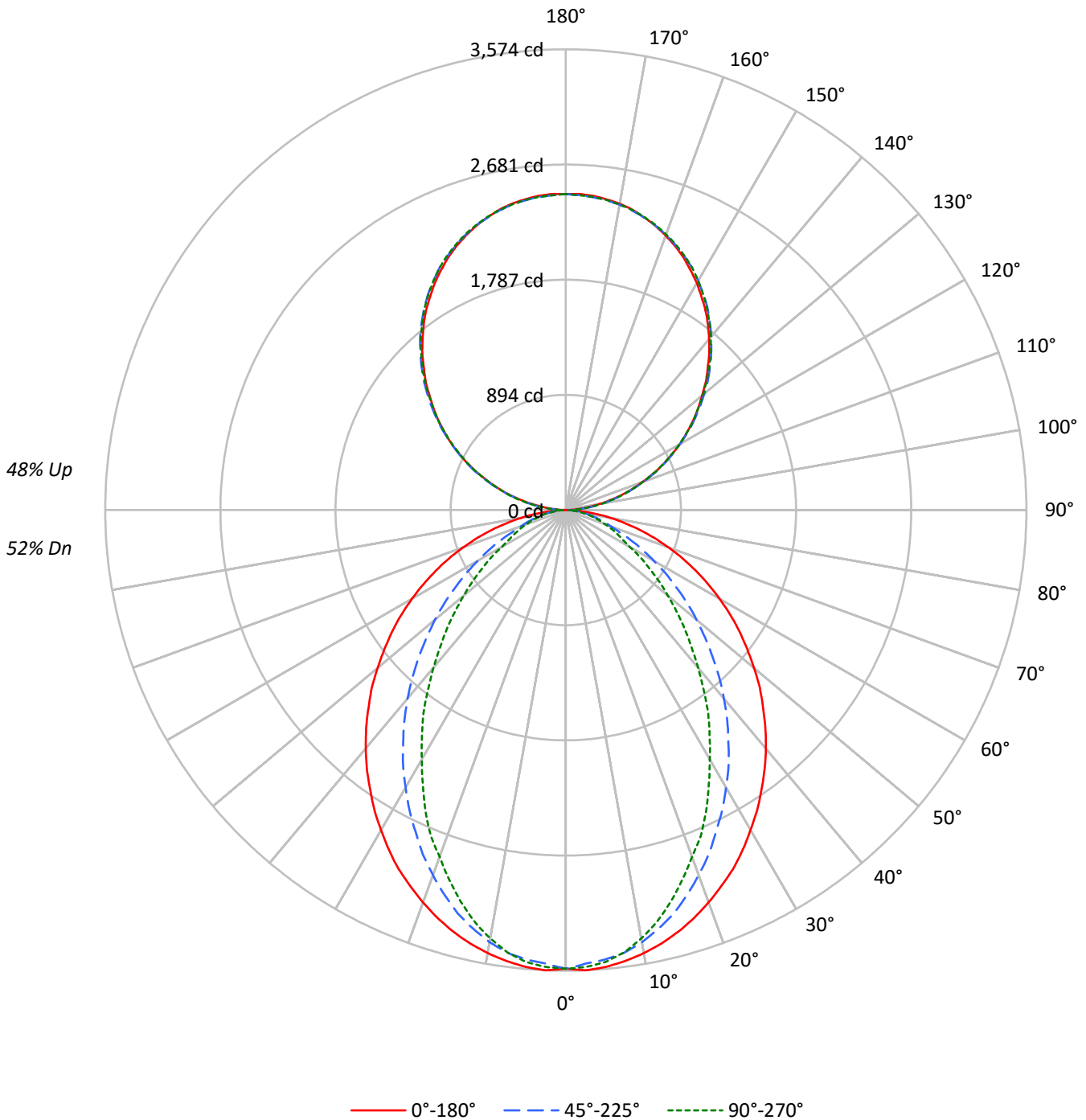
Test Method: LM-79-2019  
Report Number: P919173  
REPORT IS A COMBINATION OF REPORTS P899402 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-100D090US935-RLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14176.3 lumens  
Efficiency: N/A  
Efficacy: 94.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 150.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
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	108	108	108	108	99	99	99	99	84	84	84	70	70	70	58	58	58	52	52	52	52
1	99	94	91	87	91	88	84	82	75	72	70	63	61	60	52	51	50	45	45	45	45
2	90	83	77	72	83	77	72	68	66	62	59	56	53	51	46	44	43	38	38	38	38
3	83	73	66	61	76	68	62	57	59	54	50	50	46	43	41	39	37	33	33	33	33
4	76	65	58	52	70	61	54	49	52	47	43	45	41	38	37	34	32	29	29	29	29
5	70	59	51	45	64	55	48	42	47	42	38	40	36	33	34	31	28	25	25	25	25
6	64	53	45	39	60	49	42	37	43	37	33	37	32	29	31	28	25	22	22	22	22
7	60	48	40	35	55	45	38	33	39	33	29	33	29	26	28	25	23	20	20	20	20
8	56	43	36	31	51	41	34	29	36	30	26	31	26	23	26	23	20	18	18	18	18
9	52	40	32	28	48	37	31	26	33	27	24	28	24	21	24	21	19	16	16	16	16
10	48	37	30	25	45	34	28	24	30	25	21	26	22	19	23	19	17	15	15	15	15

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

	0°	45°	90°
0°	2646	2646	2646
5°	2650	2604	2621
10°	2624	2553	2536
15°	2588	2469	2404
20°	2541	2353	2242
25°	2492	2223	2086
30°	2427	2090	1888
35°	2362	1946	1714
40°	2297	1797	1515
45°	2221	1632	1334
50°	2143	1466	1157
55°	2061	1288	987
60°	1966	1102	813
65°	1857	913	732
70°	1725	736	663
75°	1560	650	603
80°	1320	546	523
85°	923	366	394

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2221 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	333.5	2.4
10°-20°	915.5	6.5
20°-30°	1285.4	9.1
30°-40°	1401.2	9.9
40°-50°	1287.8	9.1
50°-60°	1011.4	7.1
60°-70°	658.3	4.6
70°-80°	338.9	2.4
80°-90°	93.5	0.7
90°-100°	151.6	1.1
100°-110°	481.8	3.4
110°-120°	824.6	5.8
120°-130°	1084.4	7.6
130°-140°	1217.2	8.6
140°-150°	1193.6	8.4
150°-160°	1001.3	7.1
160°-170°	664.0	4.7
170°-180°	232.1	1.6
0°-30°	2534.4	17.9
0°-40°	3935.6	27.8
0°-60°	6234.8	44.0
0°-90°	7325.4	51.7
90°-120°	1458.0	10.3
90°-150°	4953.4	34.9
90°-180°	6851.0	48.3
0°-180°	14176.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3558	3558	3558	3558	3558	
5°	3558	3542	3500	3530	3520	337
15°	3385	3349	3240	3178	3146	954
25°	3072	2969	2757	2625	2576	1413
35°	2647	2483	2200	1997	1926	1657
45°	2164	1948	1610	1381	1304	1671
55°	1646	1394	1046	854	792	1470
65°	1111	850	560	451	441	1102
75°	592	367	258	235	232	627
85°	138	71	61	61	61	159
90°	2	27	72	68	70	14
95°	108	128	132	132	128	120
105°	445	451	455	459	459	469
115°	828	839	836	833	828	818
125°	1204	1222	1216	1209	1207	1076
135°	1557	1580	1584	1582	1576	1203
145°	1890	1905	1916	1919	1911	1181
155°	2161	2167	2174	2184	2177	995
165°	2351	2349	2349	2364	2353	663
175°	2446	2440	2436	2451	2438	232
180°	2451	2451	2451	2451	2451	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3558.5	3558.5	3558.5	3558.5	3558.5
2.5°	3574.5	3558.5	3522.9	3555.4	3548.9
5°	3558.5	3542.4	3500.4	3529.5	3519.8
7.5°	3529.5	3510.3	3465.2	3477.8	3461.8
10°	3490.8	3468.3	3404.0	3394.1	3375.0
12.5°	3442.7	3413.6	3326.5	3307.4	3271.8
15°	3384.6	3349.0	3239.7	3178.5	3146.4
17.5°	3316.9	3265.3	3130.1	3059.3	3007.7
20°	3239.7	3175.1	3014.2	2933.9	2862.8
22.5°	3156.0	3081.9	2894.9	2785.7	2737.5
25°	3072.3	2969.2	2756.6	2624.7	2576.2
27.5°	2972.5	2862.8	2627.8	2476.4	2402.3
30°	2866.3	2743.6	2486.0	2322.0	2234.9
32.5°	2763.1	2614.8	2351.0	2157.7	2077.0
35°	2647.2	2482.9	2199.7	1996.7	1925.6
37.5°	2534.5	2357.2	2057.9	1835.5	1755.1
40°	2415.3	2222.2	1909.6	1681.0	1597.3
42.5°	2292.9	2086.9	1761.7	1523.2	1442.9
45°	2164.1	1948.2	1610.3	1381.4	1304.2
47.5°	2041.9	1813.3	1465.4	1236.5	1165.8
50°	1906.5	1677.9	1323.6	1101.2	1033.9
52.5°	1774.3	1532.7	1188.3	975.8	914.6
55°	1645.5	1394.4	1046.5	853.5	792.3
57.5°	1513.6	1255.9	921.2	740.7	689.1
60°	1378.3	1120.7	788.9	624.9	573.3
62.5°	1246.4	988.8	676.1	521.8	496.1
65°	1111.1	850.1	560.3	451.0	441.1
67.5°	982.3	721.3	451.0	396.0	386.4
70°	847.0	595.9	373.4	341.3	328.4
72.5°	718.2	479.7	312.3	286.6	280.2
75°	592.5	367.0	257.6	235.1	232.0
77.5°	467.1	260.7	202.9	189.9	183.5
80°	350.9	186.9	154.5	141.8	141.8
82.5°	244.6	125.7	106.2	99.8	99.8
85°	138.4	70.7	61.1	61.1	61.1
87.5°	51.6	25.7	25.7	22.6	22.6
90°	2.2	26.6	72.4	67.9	70.2
92.5°	45.8	62.1	64.3	66.5	66.5
95°	107.9	128.5	132.2	132.2	128.5
97.5°	179.5	198.7	206.9	206.9	206.9
100°	262.3	279.3	285.2	285.2	283.0
102.5°	349.5	362.0	370.1	372.4	370.1
105°	444.8	450.6	455.1	458.8	458.8
107.5°	539.3	548.2	548.2	549.7	539.3
110°	630.9	642.8	642.8	642.8	636.9



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	730.0	742.5	740.3	734.4	730.0
115°	827.5	839.3	835.6	833.4	827.5
117.5°	924.3	940.6	930.2	924.3	918.3
120°	1021.8	1038.0	1021.8	1021.8	1015.1
122.5°	1110.4	1131.2	1120.8	1114.9	1110.4
125°	1203.6	1222.0	1216.2	1209.4	1207.3
127.5°	1294.4	1317.3	1309.2	1300.4	1294.4
130°	1379.4	1406.0	1402.3	1397.8	1389.7
132.5°	1474.7	1495.4	1496.8	1486.5	1480.7
135°	1556.7	1579.6	1584.1	1581.8	1576.0
137.5°	1648.3	1666.8	1670.5	1669.0	1660.2
140°	1728.9	1747.3	1757.6	1757.6	1749.5
142.5°	1811.6	1830.1	1836.0	1838.2	1830.1
145°	1890.0	1904.7	1916.5	1918.7	1910.6
147.5°	1960.1	1978.6	1987.4	1991.1	1983.1
150°	2032.6	2045.1	2053.2	2059.9	2053.2
152.5°	2096.8	2109.4	2119.7	2127.9	2119.7
155°	2161.1	2167.0	2173.7	2184.0	2177.4
157.5°	2216.5	2220.9	2224.6	2239.4	2229.0
160°	2266.0	2270.5	2272.7	2285.2	2276.3
162.5°	2311.8	2311.8	2314.0	2328.1	2317.7
165°	2351.0	2348.7	2348.7	2363.5	2353.2
167.5°	2386.4	2379.8	2379.8	2394.5	2384.2
170°	2413.0	2407.1	2404.9	2419.7	2407.1
172.5°	2431.5	2425.6	2423.4	2438.2	2425.6
175°	2446.3	2440.3	2435.9	2450.7	2438.2
177.5°	2454.4	2448.5	2444.0	2456.6	2444.0
180°	2450.7	2450.7	2450.7	2450.7	2450.7



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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	10.68	11.53	11.63	12.49	13.74	6.66	7.50	7.60	8.46	9.71
	3H	12.36	13.12	13.32	14.09	15.36	7.85	8.60	8.81	9.57	10.84
	4H	12.97	13.69	13.95	14.66	15.94	8.30	9.01	9.27	9.99	11.27
	6H	13.40	14.05	14.38	15.03	16.32	8.62	9.28	9.61	10.26	11.55
	8H	13.52	14.15	14.51	15.14	16.43	8.71	9.34	9.71	10.34	11.63
	12H	13.58	14.18	14.58	15.17	16.48	8.76	9.35	9.76	10.34	11.66
4H	2H	10.70	11.42	11.68	12.39	13.67	7.25	7.97	8.23	8.94	10.22
	3H	12.53	13.13	13.52	14.13	15.43	8.61	9.20	9.60	10.20	11.50
	4H	13.23	13.77	14.23	14.77	16.09	9.16	9.70	10.15	10.69	12.01
	6H	13.74	14.21	14.75	15.23	16.55	9.58	10.04	10.59	11.06	12.38
	8H	13.92	14.36	14.93	15.37	16.70	9.71	10.14	10.72	11.16	12.49
	12H	14.02	14.41	15.05	15.44	16.77	9.78	10.17	10.80	11.20	12.53
8H	4H	13.20	13.63	14.21	14.64	15.98	9.44	9.87	10.45	10.89	12.22
	6H	13.77	14.12	14.80	15.18	16.51	9.96	10.32	10.99	11.37	12.70
	8H	13.98	14.30	15.03	15.34	16.69	10.15	10.47	11.20	11.51	12.86
	12H	14.12	14.40	15.17	15.44	16.83	10.27	10.55	11.32	11.59	12.98
12H	4H	13.15	13.54	14.18	14.57	15.91	9.44	9.84	10.47	10.86	12.20
	6H	13.74	14.06	14.78	15.10	16.45	10.01	10.33	11.05	11.37	12.71
	8H	13.96	14.24	15.01	15.28	16.67	10.22	10.50	11.27	11.54	12.93