

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: P921769

Luminaire Tested: DFN2DIP-HX3F0-090D050US940-RLLONL

Issue Date: 11/21/2024

**Test Information**

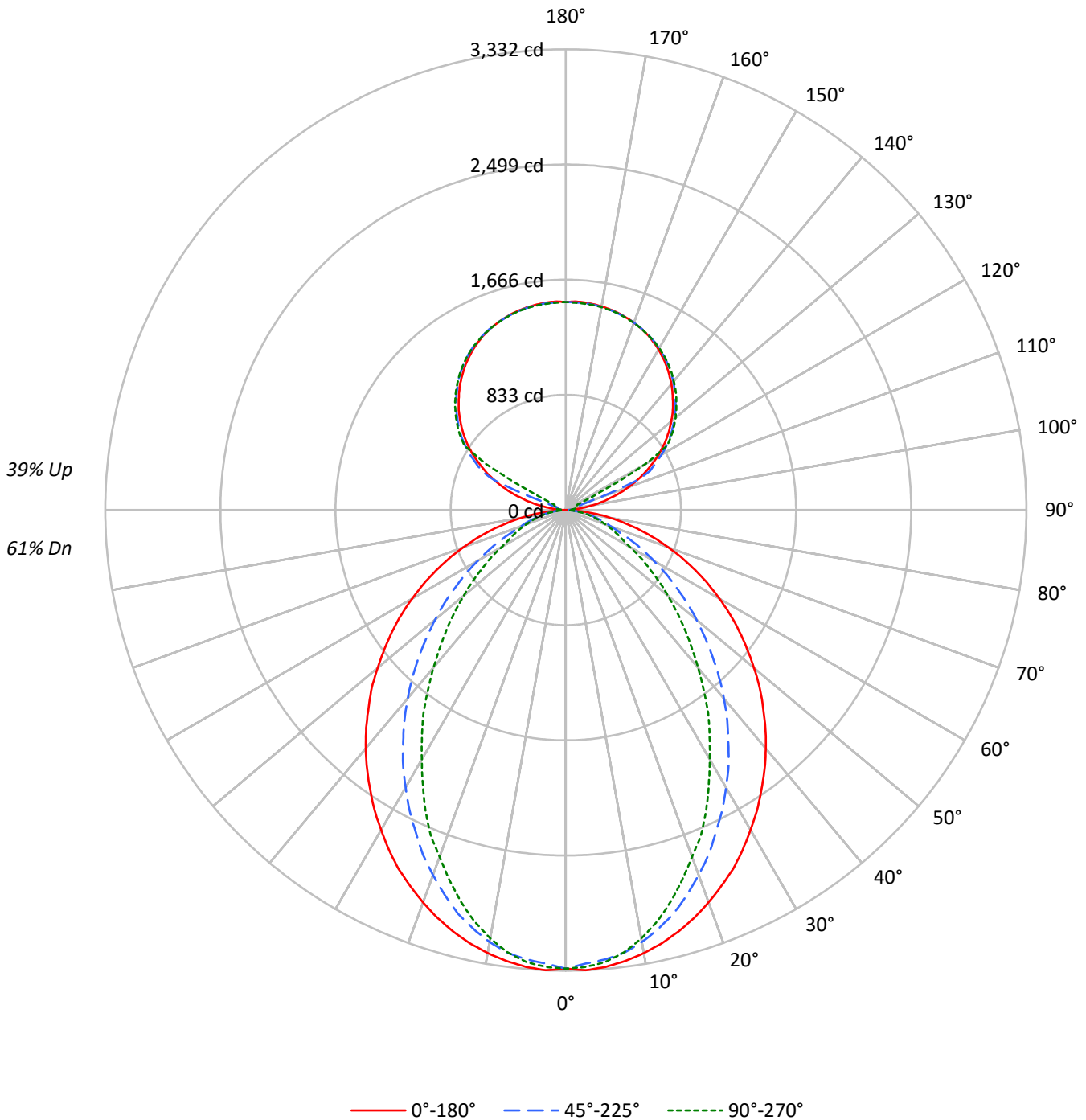
Test Method: LM-79-2019  
Report Number: P921769  
REPORT IS A COMBINATION OF REPORTS P900762 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-090D050US940-RLONL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11235.6 lumens  
Efficiency: N/A  
Efficacy: 86.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 129.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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	110	110	110	110	103	103	103	103	89	89	89	77	77	77	66	66	66	66	66	66	61
1	101	97	93	90	94	91	87	84	79	77	75	69	67	65	59	58	57	59	58	57	52
2	92	85	79	74	86	80	75	70	70	66	63	61	58	56	53	51	49	53	51	49	45
3	85	75	68	62	79	71	65	59	62	58	53	55	51	48	47	45	42	47	45	42	39
4	78	67	59	53	73	63	56	51	56	50	46	49	45	41	43	40	37	43	40	37	34
5	72	60	52	46	67	57	50	44	50	45	40	44	40	36	39	35	33	39	35	33	30
6	66	54	46	41	62	51	44	39	46	40	35	40	36	32	35	32	29	35	32	29	26
7	61	49	41	36	57	47	39	34	42	36	32	37	32	29	33	29	26	33	29	26	24
8	57	45	37	32	53	43	36	31	38	32	28	34	29	26	30	26	23	30	26	23	21
9	53	41	34	29	50	39	32	28	35	30	26	31	27	23	28	24	21	28	24	21	19
10	50	38	31	26	47	36	30	25	33	27	23	29	25	21	26	22	20	26	22	20	18

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

	0°	45°	90°
0°	3842	3842	3842
5°	3847	3779	3803
10°	3807	3702	3677
15°	3753	3577	3484
20°	3682	3406	3248
25°	3609	3214	3019
30°	3512	3018	2731
35°	3416	2808	2477
40°	3319	2590	2187
45°	3207	2349	1924
50°	3090	2107	1667
55°	2968	1847	1420
60°	2827	1577	1167
65°	2664	1302	1048
70°	2467	1045	945
75°	2219	916	855
80°	1860	760	735
85°	1270	495	540

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3207 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	310.9	2.8
10°-20°	853.4	7.6
20°-30°	1198.1	10.7
30°-40°	1306.0	11.6
40°-50°	1200.4	10.7
50°-60°	942.7	8.4
60°-70°	613.6	5.5
70°-80°	315.9	2.8
80°-90°	83.3	0.7
90°-100°	49.6	0.4
100°-110°	185.0	1.6
110°-120°	490.6	4.4
120°-130°	813.6	7.2
130°-140°	864.3	7.7
140°-150°	803.2	7.1
150°-160°	645.8	5.7
160°-170°	416.1	3.7
170°-180°	143.2	1.3
0°-30°	2362.4	21.0
0°-40°	3668.4	32.6
0°-60°	5811.5	51.7
0°-90°	6824.3	60.7
90°-120°	725.2	6.5
90°-150°	3206.2	28.5
90°-180°	4411.0	39.3
0°-180°	11235.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3317	3317	3317	3317	3317	
5°	3317	3302	3263	3290	3281	315
15°	3155	3122	3020	2963	2933	889
25°	2864	2768	2570	2446	2401	1317
35°	2468	2314	2050	1861	1795	1544
45°	2017	1816	1501	1288	1216	1558
55°	1534	1300	975	796	738	1371
65°	1036	792	522	420	411	1027
75°	552	342	240	219	216	584
85°	129	66	57	57	57	148
90°	1	13	22	27	29	11
95°	71	35	42	48	47	84
105°	331	364	66	78	83	354
115°	626	644	672	168	89	616
125°	885	899	920	928	931	789
135°	1095	1113	1122	1134	1131	846
145°	1271	1270	1288	1296	1290	795
155°	1399	1389	1402	1409	1400	645
165°	1474	1468	1471	1478	1471	416
175°	1508	1500	1502	1510	1499	144
180°	1505	1505	1505	1505	1505	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3316.9	3316.9	3316.9	3316.9	3316.9
2.5°	3331.9	3316.9	3283.7	3314.0	3308.0
5°	3316.9	3301.9	3262.8	3289.8	3280.9
7.5°	3289.8	3272.0	3230.0	3241.7	3226.7
10°	3253.9	3232.8	3173.0	3163.7	3145.9
12.5°	3208.9	3181.9	3100.7	3082.8	3049.6
15°	3154.8	3121.7	3019.8	2962.7	2932.8
17.5°	3091.7	3043.7	2917.5	2851.6	2803.5
20°	3019.8	2959.6	2809.5	2734.7	2668.4
22.5°	2941.8	2872.6	2698.4	2596.5	2551.6
25°	2863.7	2767.5	2569.5	2446.5	2401.3
27.5°	2770.7	2668.4	2449.4	2308.3	2239.2
30°	2671.7	2557.3	2317.2	2164.4	2083.1
32.5°	2575.4	2437.2	2191.4	2011.2	1936.0
35°	2467.5	2314.3	2050.3	1861.2	1794.9
37.5°	2362.4	2197.2	1918.2	1710.8	1636.0
40°	2251.3	2071.4	1779.9	1566.9	1488.9
42.5°	2137.3	1945.3	1642.0	1419.8	1344.9
45°	2017.2	1816.0	1500.9	1287.5	1215.6
47.5°	1903.2	1690.1	1365.9	1152.5	1086.6
50°	1777.1	1564.0	1233.8	1026.4	963.7
52.5°	1653.9	1428.7	1107.7	909.5	852.6
55°	1533.7	1299.7	975.4	795.6	738.5
57.5°	1410.9	1170.7	858.6	690.5	642.4
60°	1284.7	1044.5	735.4	582.5	534.4
62.5°	1161.8	921.7	630.3	486.3	462.4
65°	1035.6	792.4	522.3	420.4	411.2
67.5°	915.6	672.3	420.4	369.1	360.2
70°	789.5	555.4	348.1	318.2	306.0
72.5°	669.4	447.1	291.1	267.2	261.2
75°	552.2	342.1	240.1	219.1	216.2
77.5°	435.3	243.0	189.1	177.1	171.0
80°	327.1	174.2	143.9	132.2	132.2
82.5°	228.0	117.2	99.1	93.0	93.0
85°	128.9	65.9	57.0	57.0	57.0
87.5°	48.1	23.9	23.9	21.0	21.0
90°	1.1	13.0	21.8	27.3	29.3
92.5°	27.3	22.9	26.1	28.4	29.3
95°	70.7	34.8	42.4	48.0	46.8
97.5°	127.3	38.2	55.5	58.9	59.8
100°	192.8	43.6	62.1	70.7	72.9
102.5°	264.6	262.4	64.3	76.2	79.5
105°	331.0	363.7	66.4	78.4	82.8
107.5°	408.3	435.4	68.7	80.5	85.0
110°	482.4	505.2	190.6	81.7	86.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	552.1	571.6	553.1	83.8	87.1
115°	626.1	644.5	671.8	167.7	89.3
117.5°	690.3	712.0	730.7	574.8	289.6
120°	762.1	778.5	798.1	811.2	664.1
122.5°	823.0	840.5	862.4	868.9	870.0
125°	885.1	899.4	920.1	927.6	930.9
127.5°	941.7	957.0	973.5	984.3	985.3
130°	995.1	1012.6	1024.5	1036.5	1035.5
132.5°	1049.6	1063.8	1075.7	1085.6	1084.5
135°	1095.4	1112.9	1122.5	1133.5	1131.3
137.5°	1143.2	1156.3	1167.2	1178.1	1174.9
140°	1190.0	1198.8	1210.7	1220.5	1215.1
142.5°	1229.3	1237.0	1251.1	1259.7	1254.3
145°	1270.7	1269.5	1288.0	1295.7	1290.2
147.5°	1306.5	1303.2	1321.8	1327.2	1322.9
150°	1341.4	1333.8	1351.2	1357.7	1352.3
152.5°	1370.7	1362.1	1378.4	1385.0	1377.3
155°	1399.1	1389.4	1402.4	1408.9	1400.3
157.5°	1421.9	1413.3	1423.1	1430.7	1421.9
160°	1441.6	1435.0	1441.6	1448.0	1440.5
162.5°	1458.9	1452.5	1457.9	1465.5	1455.7
165°	1474.2	1467.8	1471.0	1478.5	1471.0
167.5°	1486.2	1479.6	1483.0	1490.6	1480.8
170°	1496.0	1489.4	1491.7	1499.2	1489.4
172.5°	1502.5	1496.0	1498.3	1505.8	1496.0
175°	1508.0	1500.3	1502.5	1510.1	1499.2
177.5°	1510.1	1502.5	1503.7	1511.3	1501.5
180°	1504.7	1504.7	1504.7	1504.7	1504.7



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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	12.73	13.65	13.59	14.54	15.65	8.70	9.63	9.57	10.51	11.63
	3H	14.40	15.23	15.28	16.13	17.26	9.90	10.72	10.77	11.62	12.75
	4H	15.01	15.79	15.91	16.69	17.84	10.35	11.13	11.24	12.03	13.18
	6H	15.43	16.15	16.34	17.06	18.22	10.67	11.39	11.58	12.29	13.46
	8H	15.56	16.24	16.47	17.16	18.33	10.76	11.45	11.68	12.37	13.53
	12H	15.62	16.27	16.54	17.19	18.37	10.81	11.46	11.72	12.37	13.56
4H	2H	12.76	13.54	13.66	14.44	15.59	9.31	10.09	10.21	10.99	12.14
	3H	14.59	15.24	15.50	16.16	17.33	10.66	11.31	11.57	12.24	13.40
	4H	15.28	15.87	16.20	16.79	17.98	11.21	11.80	12.13	12.72	13.91
	6H	15.79	16.30	16.72	17.25	18.44	11.63	12.14	12.56	13.09	14.28
	8H	15.96	16.44	16.90	17.38	18.58	11.76	12.23	12.69	13.17	14.38
	12H	16.06	16.48	17.01	17.44	18.65	11.82	12.25	12.78	13.21	14.42
8H	4H	15.25	15.72	16.19	16.67	17.87	11.49	11.97	12.43	12.91	14.11
	6H	15.81	16.20	16.77	17.19	18.39	12.01	12.40	12.97	13.38	14.59
	8H	16.02	16.37	16.99	17.34	18.56	12.19	12.54	13.17	13.52	14.74
	12H	16.16	16.46	17.13	17.43	18.70	12.31	12.62	13.29	13.59	14.86
12H	4H	15.21	15.63	16.16	16.59	17.80	11.50	11.93	12.45	12.89	14.10
	6H	15.79	16.13	16.76	17.11	18.33	12.05	12.40	13.03	13.38	14.60
	8H	16.01	16.31	16.98	17.28	18.55	12.26	12.57	13.24	13.54	14.81