

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: P916173

Luminaire Tested: DFN2DIP-HX3F0-030D060US930-RLONL

Issue Date: 11/21/2024

**Test Information**

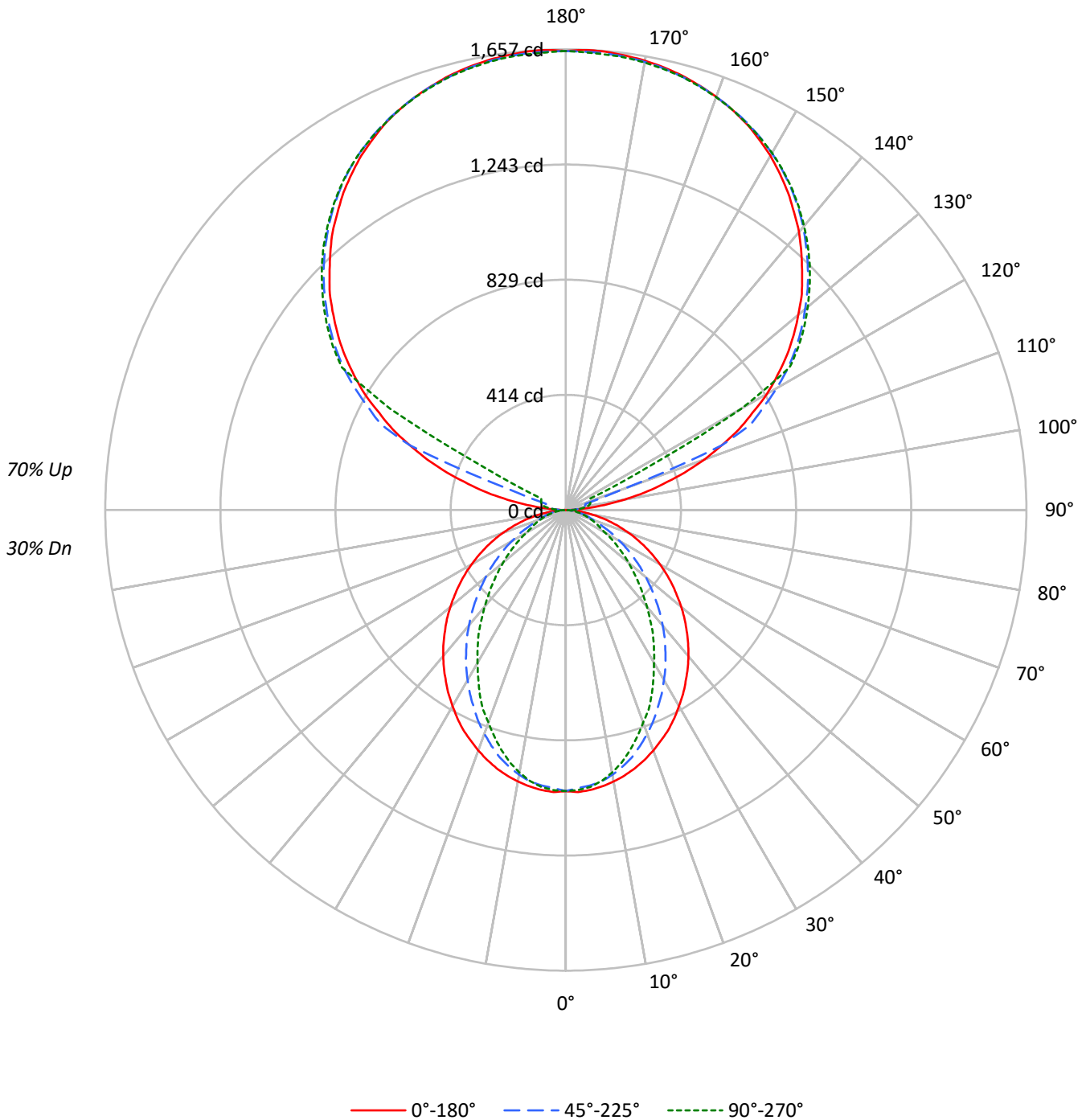
Test Method: LM-79-2019  
Report Number: P916173  
REPORT IS A COMBINATION OF REPORTS P900764 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-030D060US930-RLONL  
Description: 3 foot, 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: 6921.9 lumens  
Efficiency: N/A  
Efficacy: 100.3 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-Indirect  
  
Input Watts (W): 69  
Input Voltage (V):  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
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	102	102	102	102	92	92	92	92	72	72	72	54	54	54	38	38	38	38	38	38	38	30
1	94	90	86	83	84	81	77	75	64	62	60	48	47	46	34	33	32	34	33	32	26	
2	85	78	73	68	76	71	66	62	56	53	50	43	40	39	30	29	28	30	29	28	22	
3	78	69	62	57	70	62	57	52	50	46	42	38	35	33	27	25	24	27	25	24	19	
4	71	61	54	48	64	55	49	44	44	40	36	34	31	28	24	22	21	24	22	21	17	
5	66	55	47	41	59	49	43	38	40	35	31	30	27	25	22	20	18	22	20	18	15	
6	60	49	41	36	54	44	38	33	36	31	27	28	24	22	20	18	16	20	18	16	13	
7	56	44	37	31	50	40	34	29	32	28	24	25	22	19	18	16	15	18	16	15	12	
8	52	40	33	28	46	36	30	25	29	25	21	23	20	17	17	15	13	17	15	13	11	
9	48	37	29	25	43	33	27	23	27	22	19	21	18	15	16	13	12	16	13	12	10	
10	45	33	27	22	40	30	24	20	25	20	17	20	16	14	14	12	11	14	12	11	9	

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

	0°	45°	90°
0°	1171	1171	1171
5°	1172	1152	1159
10°	1160	1128	1121
15°	1144	1090	1062
20°	1122	1038	990
25°	1100	980	920
30°	1070	920	832
35°	1041	856	755
40°	1012	790	666
45°	977	716	586
50°	942	642	508
55°	904	563	433
60°	861	480	356
65°	812	397	319
70°	752	319	288
75°	676	279	261
80°	567	232	224
85°	387	151	165

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1058 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	94.7	1.4
10°-20°	260.1	3.8
20°-30°	365.1	5.3
30°-40°	398.0	5.8
40°-50°	365.8	5.3
50°-60°	287.3	4.2
60°-70°	187.0	2.7
70°-80°	96.3	1.4
80°-90°	27.5	0.4
90°-100°	54.4	0.8
100°-110°	202.9	2.9
110°-120°	538.2	7.8
120°-130°	892.7	12.9
130°-140°	948.2	13.7
140°-150°	881.3	12.7
150°-160°	708.5	10.2
160°-170°	456.5	6.6
170°-180°	157.1	2.3
0°-30°	720.0	10.4
0°-40°	1118.0	16.2
0°-60°	1771.2	25.6
0°-90°	2081.9	30.1
90°-120°	795.6	11.5
90°-150°	3517.8	50.8
90°-180°	4840.0	69.9
0°-180°	6921.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1011	1011	1011	1011	1011	
5°	1011	1006	994	1003	1000	96
15°	962	951	920	903	894	271
25°	873	843	783	746	732	401
35°	752	705	625	567	547	471
45°	615	553	458	392	370	475
55°	467	396	297	242	225	418
65°	316	242	159	128	125	313
75°	168	104	73	67	66	178
85°	39	20	17	17	17	45
90°	1	14	24	30	32	6
95°	78	38	47	53	51	92
105°	363	399	73	86	91	388
115°	687	707	737	184	98	676
125°	971	987	1009	1018	1021	866
135°	1202	1221	1232	1244	1241	928
145°	1394	1393	1413	1422	1416	872
155°	1535	1524	1539	1546	1536	707
165°	1618	1610	1614	1622	1614	457
175°	1654	1646	1648	1657	1645	157
180°	1651	1651	1651	1651	1651	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1010.9	1010.9	1010.9	1010.9	1010.9
2.5°	1015.5	1010.9	1000.8	1010.0	1008.2
5°	1010.9	1006.3	994.4	1002.7	999.9
7.5°	1002.7	997.2	984.4	988.0	983.4
10°	991.6	985.3	967.0	964.2	958.8
12.5°	978.0	969.7	945.0	939.5	929.4
15°	961.5	951.4	920.3	902.9	893.8
17.5°	942.2	927.6	889.2	869.1	854.4
20°	920.3	902.0	856.2	833.5	813.3
22.5°	896.6	875.5	822.4	791.3	777.6
25°	872.8	843.4	783.1	745.6	731.8
27.5°	844.4	813.3	746.5	703.5	682.4
30°	814.2	779.4	706.2	659.7	634.9
32.5°	784.9	742.8	667.9	612.9	590.0
35°	752.0	705.3	624.8	567.2	547.1
37.5°	720.0	669.6	584.6	521.4	498.6
40°	686.2	631.3	542.5	477.5	453.8
42.5°	651.3	592.9	500.4	432.7	409.9
45°	614.8	553.4	457.5	392.4	370.5
47.5°	580.0	515.1	416.3	351.2	331.2
50°	541.6	476.6	376.0	312.8	293.7
52.5°	504.0	435.5	337.6	277.2	259.8
55°	467.4	396.1	297.3	242.5	225.1
57.5°	430.0	356.8	261.7	210.4	195.8
60°	391.5	318.4	224.1	177.5	162.9
62.5°	354.1	280.9	192.1	148.2	141.0
65°	315.6	241.5	159.1	128.1	125.3
67.5°	279.1	204.9	128.1	112.5	109.7
70°	240.6	169.3	106.1	96.9	93.3
72.5°	204.0	136.2	88.7	81.4	79.6
75°	168.3	104.3	73.2	66.8	65.9
77.5°	132.6	74.0	57.6	54.0	52.1
80°	99.7	53.1	43.9	40.3	40.3
82.5°	69.5	35.7	30.2	28.4	28.4
85°	39.3	20.1	17.4	17.4	17.4
87.5°	14.7	7.3	7.3	6.4	6.4
90°	1.1	14.3	23.8	29.9	32.2
92.5°	29.9	25.1	28.6	31.1	32.2
95°	77.6	38.2	46.6	52.7	51.4
97.5°	139.7	41.8	60.8	64.6	65.7
100°	211.5	47.8	68.1	77.6	80.0
102.5°	290.2	288.0	70.5	83.6	87.2
105°	363.1	399.0	72.9	85.9	90.8
107.5°	448.0	477.8	75.3	88.4	93.2
110°	529.3	554.2	209.1	89.7	94.3



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	605.7	627.1	606.8	91.9	95.6
115°	686.9	707.2	737.1	184.0	98.0
117.5°	757.3	781.2	801.6	630.7	317.7
120°	836.3	854.1	875.7	890.0	728.7
122.5°	903.0	922.2	946.2	953.2	954.6
125°	971.2	986.8	1009.4	1017.8	1021.3
127.5°	1033.3	1050.0	1068.0	1079.9	1081.1
130°	1091.8	1111.0	1124.1	1137.3	1136.1
132.5°	1151.6	1167.2	1180.2	1191.0	1189.8
135°	1201.8	1221.0	1231.6	1243.7	1241.2
137.5°	1254.3	1268.6	1280.7	1292.6	1289.1
140°	1305.6	1315.3	1328.4	1339.1	1333.2
142.5°	1348.7	1357.1	1372.6	1382.1	1376.1
145°	1394.2	1392.9	1413.2	1421.6	1415.6
147.5°	1433.5	1429.9	1450.2	1456.1	1451.5
150°	1471.8	1463.4	1482.5	1489.6	1483.7
152.5°	1504.0	1494.4	1512.3	1519.6	1511.2
155°	1535.0	1524.4	1538.7	1545.8	1536.3
157.5°	1560.2	1550.6	1561.4	1569.8	1560.2
160°	1581.7	1574.4	1581.7	1588.8	1580.5
162.5°	1600.7	1593.6	1599.5	1607.9	1597.2
165°	1617.5	1610.4	1613.9	1622.3	1613.9
167.5°	1630.6	1623.4	1627.1	1635.5	1624.6
170°	1641.4	1634.2	1636.6	1644.9	1634.2
172.5°	1648.5	1641.4	1643.8	1652.2	1641.4
175°	1654.5	1646.1	1648.5	1656.8	1644.9
177.5°	1656.8	1648.5	1649.8	1658.2	1647.4
180°	1650.9	1650.9	1650.9	1650.9	1650.9



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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	5.43	6.12	6.55	7.23	8.76	1.41	2.10	2.52	3.20	4.74
	3H	7.09	7.71	8.21	8.82	10.37	2.58	3.20	3.70	4.31	5.86
	4H	7.69	8.27	8.82	9.39	10.94	3.02	3.61	4.15	4.72	6.28
	6H	8.09	8.63	9.24	9.75	11.32	3.33	3.87	4.47	4.99	6.55
	8H	8.21	8.73	9.36	9.86	11.42	3.42	3.93	4.56	5.06	6.62
	12H	8.27	8.75	9.42	9.88	11.46	3.45	3.94	4.60	5.07	6.65
4H	2H	5.43	6.02	6.57	7.13	8.69	1.98	2.57	3.12	3.68	5.24
	3H	7.24	7.73	8.38	8.87	10.43	3.31	3.80	4.46	4.94	6.51
	4H	7.92	8.37	9.07	9.50	11.08	3.85	4.30	5.00	5.43	7.02
	6H	8.42	8.80	9.57	9.96	11.53	4.26	4.64	5.41	5.79	7.37
	8H	8.59	8.94	9.74	10.09	11.68	4.38	4.74	5.54	5.88	7.48
	12H	8.67	8.99	9.84	10.15	11.75	4.44	4.76	5.61	5.92	7.52
8H	4H	7.88	8.23	9.03	9.38	10.97	4.12	4.47	5.27	5.62	7.21
	6H	8.43	8.72	9.60	9.91	11.50	4.62	4.92	5.80	6.11	7.70
	8H	8.64	8.90	9.82	10.06	11.67	4.81	5.07	5.99	6.23	7.84
	12H	8.77	8.99	9.95	10.15	11.80	4.92	5.15	6.10	6.31	7.95
12H	4H	7.82	8.14	8.99	9.30	10.90	4.11	4.44	5.28	5.59	7.19
	6H	8.40	8.66	9.58	9.83	11.44	4.67	4.93	5.85	6.09	7.70
	8H	8.61	8.84	9.79	10.00	11.64	4.87	5.10	6.05	6.26	7.90