

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: P921697

Luminaire Tested: DFN2DIP-HX3F0-060D050US940-RLLONL

Issue Date: 11/21/2024

**Test Information**

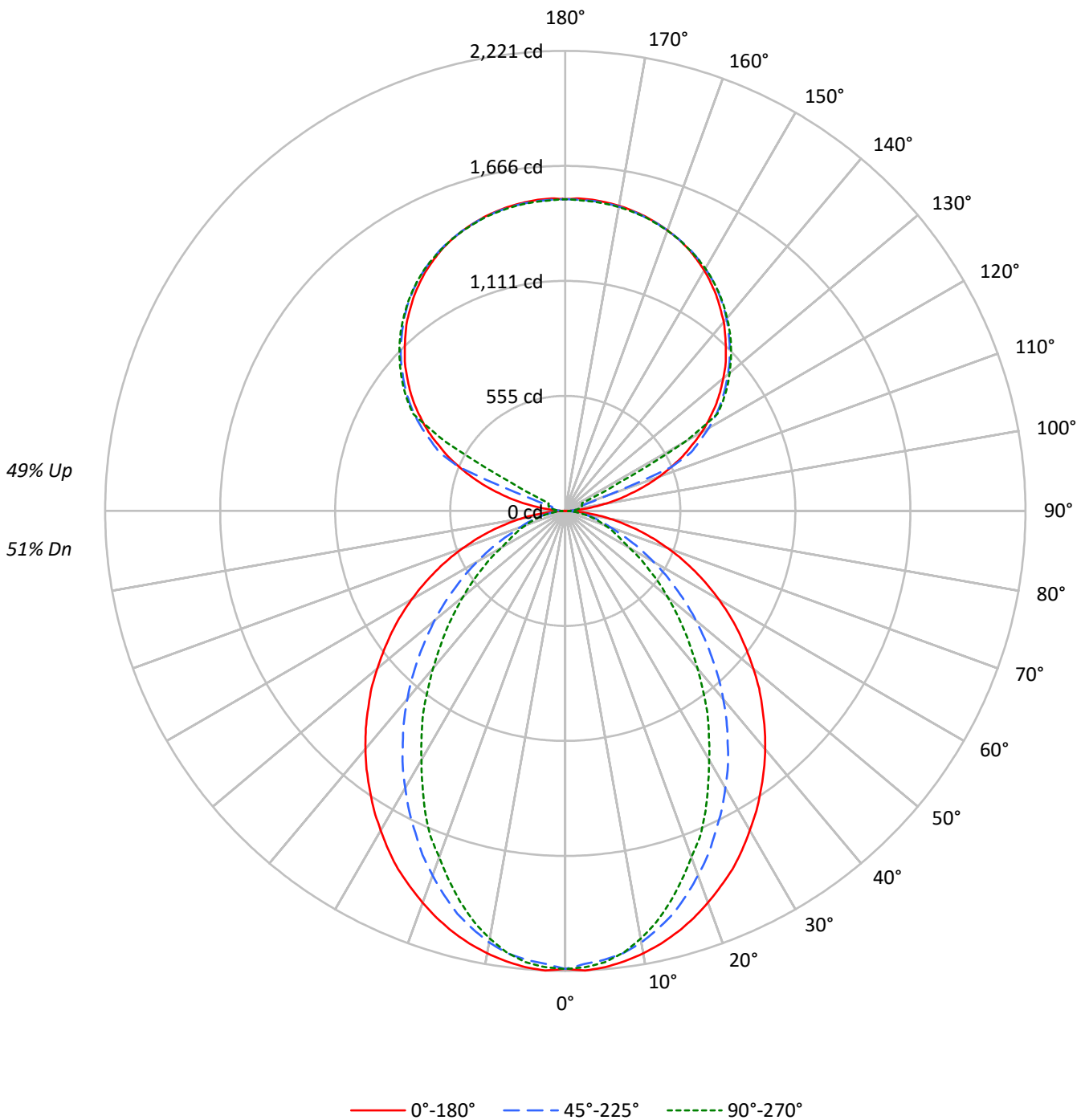
Test Method: LM-79-2019  
Report Number: P921697  
REPORT IS A COMBINATION OF REPORTS P900756 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-060D050US940-RLONL  
Description: 3 foot, 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: 8961.7 lumens  
Efficiency: N/A  
Efficacy: 96.1 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: General Diffuse  
  
Input Watts (W): 93.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	51	51	51	51
1	98	94	91	87	91	87	84	81	74	72	70	62	61	59	51	50	49	44	44	44	44
2	90	83	77	72	83	77	72	67	66	62	59	55	52	50	45	44	42	37	37	37	37
3	82	73	66	61	76	68	62	57	58	54	50	49	46	43	41	38	36	32	32	32	32
4	76	65	58	52	70	61	54	49	52	47	43	44	40	37	37	34	32	28	28	28	28
5	70	58	50	45	64	54	47	42	47	41	37	40	36	33	33	30	28	25	25	25	25
6	64	53	45	39	59	49	42	37	42	37	33	36	32	29	30	27	25	22	22	22	22
7	60	48	40	34	55	45	38	33	39	33	29	33	29	26	28	25	22	20	20	20	20
8	55	43	36	31	51	41	34	29	35	30	26	30	26	23	26	23	20	18	18	18	18
9	52	40	32	27	48	37	31	26	32	27	23	28	24	21	24	21	18	16	16	16	16
10	48	36	29	25	45	34	28	24	30	25	21	26	22	19	22	19	17	15	15	15	15

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

	0°	45°	90°
0°	2561	2561	2561
5°	2564	2519	2536
10°	2538	2468	2452
15°	2502	2384	2323
20°	2454	2270	2165
25°	2406	2143	2013
30°	2341	2012	1820
35°	2277	1872	1651
40°	2213	1727	1458
45°	2138	1566	1282
50°	2060	1404	1111
55°	1979	1231	947
60°	1885	1051	778
65°	1776	868	698
70°	1645	697	630
75°	1479	611	570
80°	1240	506	490
85°	847	330	360

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2138 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	207.2	2.3
10°-20°	568.9	6.3
20°-30°	798.7	8.9
30°-40°	870.7	9.7
40°-50°	800.3	8.9
50°-60°	628.5	7.0
60°-70°	409.1	4.6
70°-80°	210.6	2.3
80°-90°	56.4	0.6
90°-100°	49.6	0.6
100°-110°	185.0	2.1
110°-120°	490.6	5.5
120°-130°	813.6	9.1
130°-140°	864.3	9.6
140°-150°	803.2	9.0
150°-160°	645.8	7.2
160°-170°	416.1	4.6
170°-180°	143.2	1.6
0°-30°	1574.9	17.6
0°-40°	2445.6	27.3
0°-60°	3874.3	43.2
0°-90°	4550.4	50.8
90°-120°	725.2	8.1
90°-150°	3206.2	35.8
90°-180°	4411.0	49.2
0°-180°	8961.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2211	2211	2211	2211	2211	
5°	2211	2201	2175	2193	2187	210
15°	2103	2081	2013	1975	1955	593
25°	1909	1845	1713	1631	1601	878
35°	1645	1543	1367	1241	1197	1030
45°	1345	1211	1001	858	810	1039
55°	1022	866	650	530	492	914
65°	690	528	348	280	274	685
75°	368	228	160	146	144	389
85°	86	44	38	38	38	99
90°	1	13	22	27	29	8
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°	2211.3	2211.3	2211.3	2211.3	2211.3
2.5°	2221.3	2211.3	2189.1	2209.3	2205.3
5°	2211.3	2201.3	2175.1	2193.3	2187.3
7.5°	2193.3	2181.3	2153.3	2161.1	2151.2
10°	2169.2	2155.2	2115.3	2109.2	2097.2
12.5°	2139.3	2121.2	2067.1	2055.2	2033.1
15°	2103.2	2081.1	2013.1	1975.1	1955.2
17.5°	2061.2	2029.1	1945.0	1901.0	1869.0
20°	2013.1	1973.0	1873.0	1823.1	1779.0
22.5°	1961.1	1915.0	1798.9	1731.0	1701.0
25°	1909.2	1845.0	1713.0	1631.0	1600.9
27.5°	1847.2	1779.0	1632.9	1538.8	1492.8
30°	1781.1	1704.9	1544.8	1442.9	1388.7
32.5°	1717.0	1624.9	1461.0	1340.8	1290.7
35°	1645.0	1542.9	1366.9	1240.7	1196.6
37.5°	1574.9	1464.7	1278.8	1140.6	1090.7
40°	1500.8	1380.9	1186.6	1044.5	992.6
42.5°	1424.9	1296.8	1094.7	946.5	896.6
45°	1344.8	1210.6	1000.7	858.4	810.4
47.5°	1268.8	1126.8	910.6	768.4	724.4
50°	1184.7	1042.7	822.5	684.3	642.5
52.5°	1102.5	952.4	738.4	606.4	568.4
55°	1022.5	866.5	650.3	530.4	492.3
57.5°	940.6	780.4	572.4	460.3	428.2
60°	856.5	696.4	490.3	388.3	356.2
62.5°	774.5	614.5	420.2	324.2	308.3
65°	690.5	528.2	348.2	280.3	274.1
67.5°	610.4	448.2	280.3	246.1	240.1
70°	526.3	370.2	232.0	212.1	204.0
72.5°	446.3	298.1	194.0	178.2	174.1
75°	368.2	228.0	160.1	146.1	144.2
77.5°	290.3	162.0	126.1	118.1	114.0
80°	218.0	116.1	95.9	88.1	88.1
82.5°	152.0	78.1	66.0	62.0	62.0
85°	86.0	44.0	38.0	38.0	38.0
87.5°	32.1	16.0	16.0	14.0	14.0
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	10.44	11.28	11.40	12.25	13.51	6.42	7.26	7.38	8.22	9.49
	3H	12.11	12.86	13.08	13.84	15.12	7.60	8.35	8.57	9.33	10.62
	4H	12.72	13.42	13.70	14.41	15.70	8.05	8.76	9.04	9.74	11.03
	6H	13.13	13.78	14.13	14.77	16.08	8.37	9.02	9.36	10.01	11.31
	8H	13.26	13.88	14.26	14.88	16.18	8.46	9.08	9.46	10.08	11.38
	12H	13.31	13.90	14.32	14.90	16.23	8.50	9.09	9.50	10.09	11.41
4H	2H	10.46	11.17	11.45	12.15	13.44	7.01	7.72	8.00	8.70	9.99
	3H	12.28	12.87	13.28	13.88	15.19	8.36	8.94	9.35	9.96	11.26
	4H	12.97	13.51	13.97	14.51	15.84	8.90	9.44	9.91	10.44	11.77
	6H	13.48	13.94	14.49	14.97	16.29	9.32	9.78	10.33	10.80	12.13
	8H	13.65	14.08	14.67	15.10	16.44	9.44	9.87	10.46	10.89	12.24
	12H	13.74	14.13	14.77	15.16	16.51	9.51	9.89	10.54	10.93	12.28
8H	4H	12.94	13.37	13.95	14.39	15.73	9.18	9.61	10.20	10.63	11.97
	6H	13.49	13.85	14.54	14.91	16.25	9.69	10.05	10.73	11.11	12.45
	8H	13.71	14.02	14.76	15.07	16.43	9.88	10.19	10.93	11.24	12.60
	12H	13.84	14.11	14.89	15.16	16.56	9.99	10.27	11.05	11.31	12.71
12H	4H	12.89	13.28	13.92	14.31	15.66	9.18	9.57	10.22	10.61	11.95
	6H	13.47	13.78	14.52	14.83	16.19	9.74	10.05	10.79	11.10	12.46
	8H	13.68	13.96	14.74	15.00	16.40	9.94	10.22	11.00	11.26	12.66