

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: P916239

Luminaire Tested: DFN2DIP-HX3F0-060D050US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

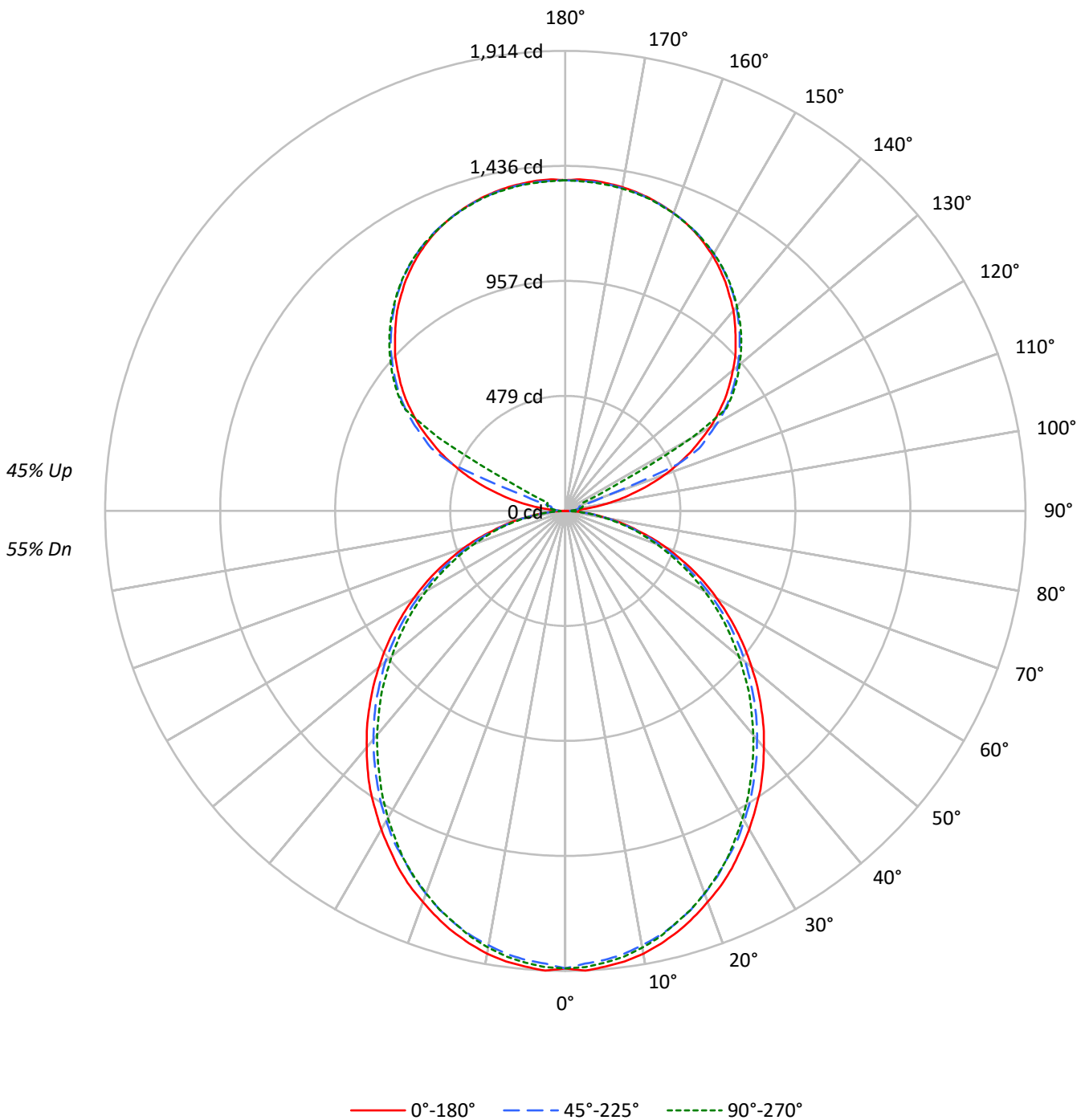
Test Method: LM-79-2019  
Report Number: P916239  
REPORT IS A COMBINATION OF REPORTS P900755 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-060D050US930-FLONL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8878.6 lumens  
Efficiency: N/A  
Efficacy: 95.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
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	108	108	108	108	100	100	100	100	86	86	86	73	73	73	60	60	60	60	60	60	55
1	99	94	91	87	92	88	84	81	75	73	71	64	62	60	53	52	51	51	51	51	46
2	90	82	76	71	83	77	71	67	66	62	58	56	53	51	47	45	43	43	43	43	39
3	82	73	65	59	76	68	61	56	58	53	49	50	46	43	42	39	37	37	37	37	33
4	75	64	56	50	69	60	53	47	52	46	42	44	40	37	37	34	32	32	32	32	28
5	69	57	49	43	64	53	46	41	46	41	36	40	35	32	34	30	27	27	27	27	24
6	64	51	43	37	59	48	41	35	42	36	32	36	31	28	30	27	24	24	24	24	21
7	59	46	38	33	54	43	36	31	38	32	28	33	28	25	28	24	22	22	22	22	19
8	55	42	34	29	51	40	33	28	35	29	25	30	25	22	26	22	19	19	19	19	17
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	17	17	17	17	15
10	48	35	28	23	44	33	27	22	29	24	20	25	21	18	22	18	16	16	16	16	14

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

	0°	45°	90°
0°	2205	2205	2205
5°	2207	2173	2188
10°	2188	2142	2157
15°	2155	2105	2109
20°	2111	2054	2061
25°	2067	1994	2005
30°	2011	1938	1934
35°	1959	1872	1859
40°	1894	1806	1788
45°	1830	1739	1715
50°	1760	1669	1630
55°	1686	1588	1552
60°	1603	1491	1463
65°	1512	1391	1357
70°	1395	1269	1244
75°	1235	1123	1137
80°	1041	937	936
85°	738	620	607

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1830 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	179.1	2.0
10°-20°	504.1	5.7
20°-30°	740.8	8.3
30°-40°	860.4	9.7
40°-50°	859.3	9.7
50°-60°	749.3	8.4
60°-70°	553.9	6.2
70°-80°	313.4	3.5
80°-90°	85.1	1.0
90°-100°	45.4	0.5
100°-110°	169.1	1.9
110°-120°	448.5	5.1
120°-130°	743.9	8.4
130°-140°	790.2	8.9
140°-150°	734.4	8.3
150°-160°	590.4	6.7
160°-170°	380.5	4.3
170°-180°	130.9	1.5
0°-30°	1424.0	16.0
0°-40°	2284.3	25.7
0°-60°	3892.9	43.8
0°-90°	4845.3	54.6
90°-120°	663.0	7.5
90°-150°	2931.5	33.0
90°-180°	4033.0	45.4
0°-180°	8878.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1903	1903	1903	1903	1903	
5°	1903	1896	1876	1891	1887	181
15°	1812	1801	1777	1785	1776	510
25°	1640	1625	1594	1598	1594	755
35°	1415	1397	1367	1356	1347	884
45°	1151	1138	1111	1091	1084	889
55°	871	860	838	816	807	779
65°	588	577	558	542	533	581
75°	307	304	295	284	287	328
85°	75	73	71	66	64	84
90°	1	12	20	25	27	8
95°	65	32	39	44	43	77
105°	303	333	61	72	76	323
115°	572	589	614	153	82	564
125°	809	822	841	848	851	722
135°	1002	1018	1026	1036	1034	774
145°	1162	1161	1178	1185	1180	727
155°	1279	1270	1282	1288	1280	589
165°	1348	1342	1345	1352	1345	381
175°	1379	1372	1374	1381	1371	131
180°	1376	1376	1376	1376	1376	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1903.4	1903.4	1903.4	1903.4	1903.4
2.5°	1914.5	1905.4	1885.1	1903.4	1899.9
5°	1903.4	1896.2	1876.0	1890.6	1887.1
7.5°	1890.6	1879.8	1859.5	1874.3	1870.6
10°	1870.6	1857.8	1835.8	1850.4	1844.9
12.5°	1843.1	1832.1	1810.2	1819.3	1815.7
15°	1811.9	1801.1	1777.2	1784.6	1775.5
17.5°	1773.5	1762.7	1738.8	1747.8	1738.8
20°	1731.4	1720.5	1694.8	1700.3	1693.1
22.5°	1689.5	1672.9	1649.0	1649.0	1645.4
25°	1639.9	1625.4	1594.2	1597.7	1594.2
27.5°	1584.9	1572.1	1548.4	1543.0	1533.9
30°	1530.2	1515.4	1488.1	1482.6	1475.2
32.5°	1471.5	1460.7	1431.3	1420.2	1412.9
35°	1414.9	1396.6	1367.3	1356.2	1347.0
37.5°	1350.8	1334.2	1305.0	1292.1	1283.0
40°	1284.9	1270.2	1240.9	1224.6	1217.2
42.5°	1220.8	1206.1	1177.0	1158.5	1147.6
45°	1151.4	1138.5	1110.9	1091.0	1083.5
47.5°	1083.5	1070.7	1041.5	1021.2	1010.3
50°	1012.1	1003.0	977.4	951.7	942.6
52.5°	942.6	929.8	906.0	885.9	873.1
55°	871.3	860.2	838.3	816.4	807.2
57.5°	799.9	790.8	766.9	744.9	737.5
60°	728.4	721.2	695.6	675.4	669.9
62.5°	658.8	646.0	627.8	609.5	602.2
65°	587.6	576.6	558.3	541.8	532.6
67.5°	514.4	505.1	488.8	476.0	468.6
70°	446.6	439.3	422.7	409.9	402.8
72.5°	377.1	369.7	360.6	347.8	342.3
75°	307.4	303.9	294.6	283.7	287.4
77.5°	245.2	237.9	234.2	228.8	223.3
80°	183.1	181.2	177.5	172.0	168.4
82.5°	124.5	124.5	122.7	115.4	115.4
85°	74.9	73.2	71.4	65.8	64.1
87.5°	33.0	29.4	25.6	20.2	18.3
90°	1.0	11.9	19.9	24.9	26.8
92.5°	24.9	21.0	23.9	25.9	26.8
95°	64.7	31.8	38.8	43.9	42.8
97.5°	116.4	34.9	50.7	53.8	54.7
100°	176.3	39.9	56.7	64.7	66.7
102.5°	241.9	239.9	58.8	69.6	72.7
105°	302.6	332.6	60.7	71.7	75.7
107.5°	373.3	398.1	62.8	73.6	77.7
110°	441.1	461.9	174.2	74.7	78.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	504.8	522.6	505.7	76.6	79.7
115°	572.4	589.3	614.2	153.4	81.7
117.5°	631.1	651.0	668.1	525.5	264.8
120°	696.8	711.8	729.7	741.7	607.2
122.5°	752.5	768.5	788.5	794.4	795.5
125°	809.3	822.3	841.2	848.2	851.2
127.5°	861.0	875.0	890.1	899.9	900.9
130°	909.9	925.9	936.7	947.7	946.8
132.5°	959.7	972.7	983.5	992.5	991.6
135°	1001.5	1017.5	1026.3	1036.4	1034.4
137.5°	1045.2	1057.2	1067.2	1077.2	1074.2
140°	1088.0	1096.1	1106.9	1115.9	1111.0
142.5°	1124.0	1131.0	1143.9	1151.8	1146.8
145°	1161.8	1160.7	1177.6	1184.6	1179.7
147.5°	1194.6	1191.6	1208.5	1213.5	1209.6
150°	1226.5	1219.5	1235.4	1241.4	1236.4
152.5°	1253.3	1245.4	1260.3	1266.3	1259.3
155°	1279.2	1270.3	1282.2	1288.2	1280.3
157.5°	1300.1	1292.2	1301.1	1308.1	1300.1
160°	1318.1	1312.1	1318.1	1324.0	1317.0
162.5°	1333.9	1328.0	1332.9	1339.9	1331.0
165°	1347.9	1342.0	1344.9	1351.8	1344.9
167.5°	1358.9	1352.8	1355.9	1362.9	1353.9
170°	1367.8	1361.8	1363.8	1370.8	1361.8
172.5°	1373.8	1367.8	1369.9	1376.8	1367.8
175°	1378.8	1371.7	1373.8	1380.7	1370.8
177.5°	1380.7	1373.8	1374.8	1381.8	1372.8
180°	1375.7	1375.7	1375.7	1375.7	1375.7



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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	10.39	11.29	11.31	12.23	13.43	9.96	10.86	10.88	11.80	13.00
	3H	12.04	12.86	12.97	13.80	15.03	11.57	12.39	12.50	13.33	14.56
	4H	12.63	13.40	13.57	14.35	15.58	12.16	12.93	13.10	13.88	15.11
	6H	13.02	13.73	13.98	14.69	15.94	12.55	13.26	13.51	14.22	15.47
	8H	13.13	13.80	14.09	14.77	16.02	12.66	13.33	13.62	14.30	15.55
	12H	13.17	13.81	14.14	14.78	16.05	12.70	13.34	13.67	14.31	15.58
4H	2H	10.85	11.62	11.80	12.57	13.81	10.51	11.28	11.46	12.23	13.46
	3H	12.71	13.35	13.67	14.33	15.58	12.32	12.96	13.28	13.94	15.19
	4H	13.42	14.01	14.39	14.98	16.26	13.02	13.61	13.99	14.58	15.86
	6H	13.93	14.44	14.91	15.43	16.71	13.53	14.03	14.51	15.03	16.30
	8H	14.08	14.55	15.06	15.54	16.83	13.67	14.14	14.66	15.13	16.42
	12H	14.15	14.58	15.15	15.58	16.88	13.74	14.16	14.74	15.17	16.46
8H	4H	13.62	14.09	14.60	15.08	16.37	13.26	13.73	14.24	14.72	16.01
	6H	14.24	14.63	15.25	15.67	16.95	13.88	14.27	14.89	15.31	16.59
	8H	14.46	14.80	15.48	15.82	17.13	14.09	14.44	15.11	15.46	16.76
	12H	14.59	14.89	15.61	15.90	17.26	14.21	14.51	15.23	15.53	16.88
12H	4H	13.61	14.03	14.61	15.04	16.33	13.26	13.68	14.26	14.69	15.98
	6H	14.27	14.62	15.29	15.64	16.94	13.92	14.27	14.94	15.29	16.59
	8H	14.51	14.81	15.53	15.83	17.18	14.16	14.46	15.18	15.47	16.82