



Report Number: REP-051921-01

LM-79-08 Luminaire Photometric Report

Device Under Test

Finelite
HP-2-P-D-4'-V-835-DAO-277V-X-X-X
HP Series

Report Date

5/19/2021

Goniophotometric Examination

KPL2008-3
5/18/2021

Examined By:
Brett Sorensen

Approved By:
Joe Guarino

Spectroradiometric Examination

CCT4634
05-17-2021

Examined By:
Brett Sorensen

Approved By:
Joe Guarino

Northern Lights Testing Laboratories certifies that the attached reports have been independently produced in accordance with IESNA LM-79-08, Approved Method: Electric and Photometric Measurement of Solid-State Lighting Products. Photometric measurements are taken using an Integrating Sphere system and Type C goniophotometer for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. Products tested are operated in the intended orientation in application. All test equipment is calibrated regularly with standards traceable to NIST, and in accordance with ISO17025-2005 procedures. Northern Lights Testing Laboratories is an Accredited Organization, accredited by the International Accreditation Service, Inc. (IAS) to ISO/IEC 17025-2005. IAS is an ILAC-MRA Signatory Testing, Calibration, Inspection. Northern Lights Testing Laboratories is an Approved Lab Partner and is on the LED Lighting Facts Approved Labs List.



IAS Accreditation No. TL-479



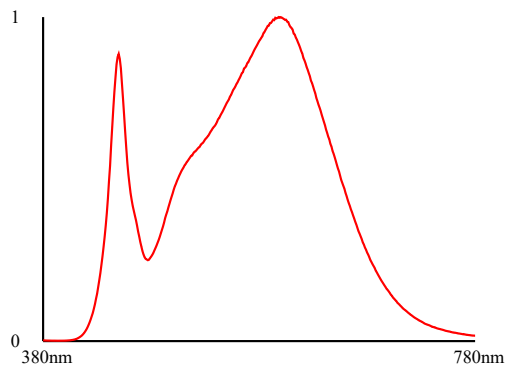


Spectral Results

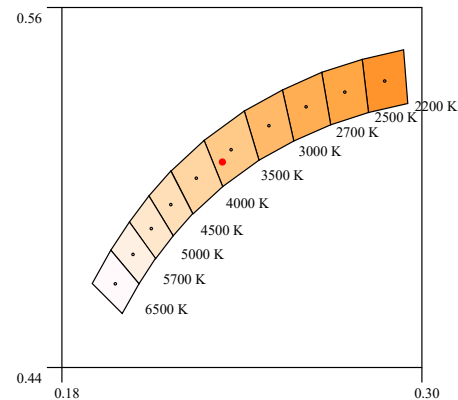
CCT: 3603 K
xy Coordinates: 0.3992 , 0.3864
u'v' Coordinates: 0.2335, 0.5085
Delta u'v': -0.00053

Luminous Flux: 3740.9 lm
Radiant Flux: 9.423097 W
Electrical Power: 35.61 W
Efficacy: 105.1 lm/W
Melanopic Flux: 2347 mel lm
Melanopic Ratio: 0.63

Spectral Power Distribution

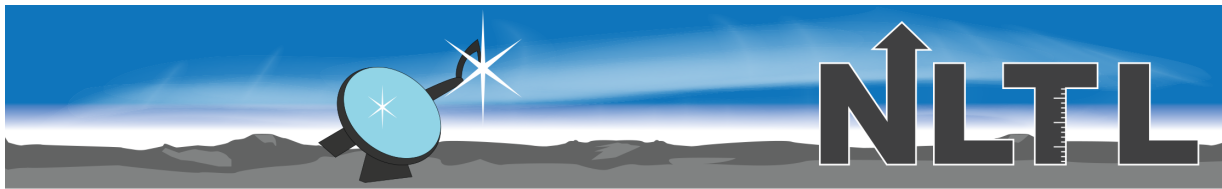


CIE u'v' (1976)



Color Rendering Index

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
84	83	91	96	83	83	87	86	65	14	78	83	69	85	98	76



NORTHERN LIGHTS TESTING LABORATORIES

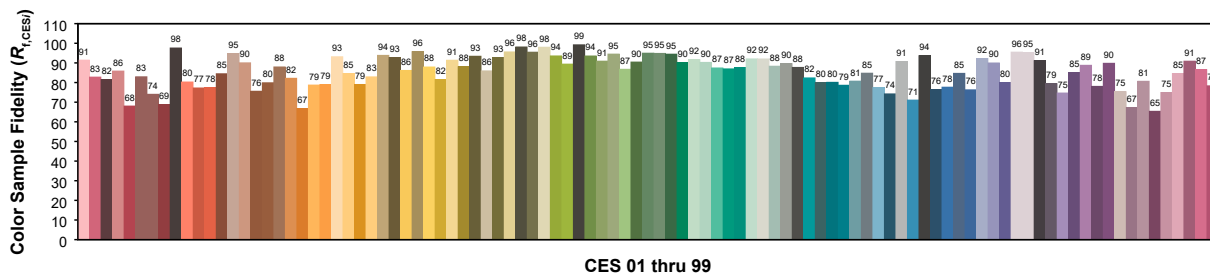
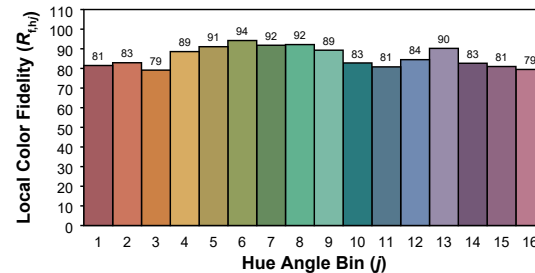
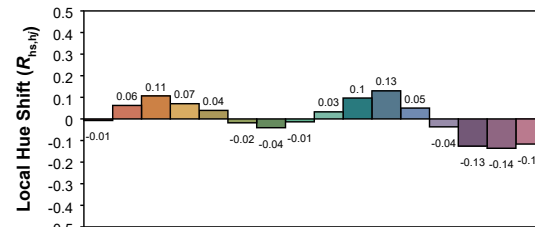
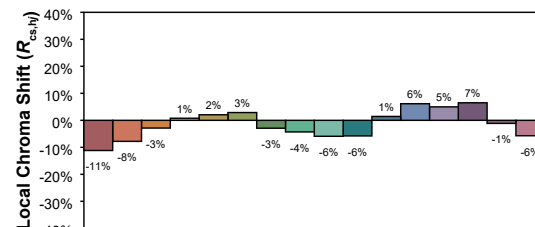
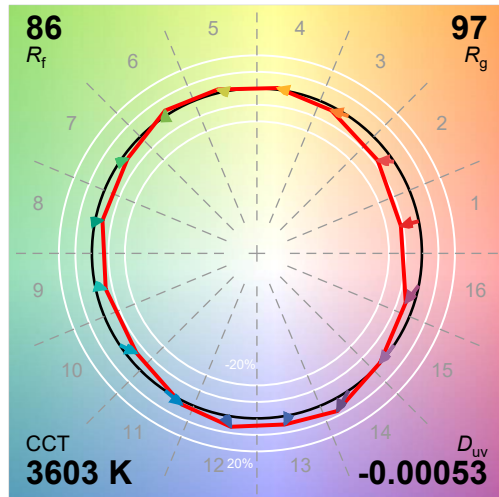
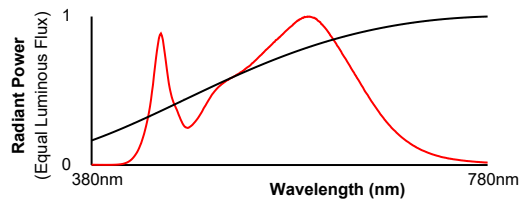
IES TM-30-18 Color Rendition Report

Source: HP-2-P-D-4"-835-DAO-277V-X-X-X

Date: 05-17-2021

Manufacturer: Finelite

Model: HP Series (REF 22097436)



CES 01 thru 99

x: 0.3992

y: 0.3864

u': 0.2335

v': 0.5085

CIE 13.3 1995

CRI Ra: 84

CRI R9: 14

Northern Lights Testing Laboratories

P: 262-891-9700

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Performance Summary

Input

Watts	35.61 W
Number of Lamps	160
Lumens per Lamp	N/A
Total Lamp Lumens	N/A

Output

Output Lumens	3740.9 lm
Efficiency	N/A %
Efficacy	105.05 lm/W

Luminous Dimensions

Length	4 ft
Width	0.17 ft
Height	0 ft

Roadway CU

Mounting Heights	1	2	4	6	8	10
House Side CU	0.31	0.38	0.40	0.41	0.41	0.41
Street Side CU	0.45	0.55	0.58	0.59	0.59	0.59

Spacing Criterion

Two luminaires, 0°-180° plane	1.47
Two luminaires, 90°-270° plane	1.18
Four luminaires, diagonal	1.34

Full Beam Angle

0°-180° plane	87.35°
90°-270° plane	87.75°

Roadway Summary

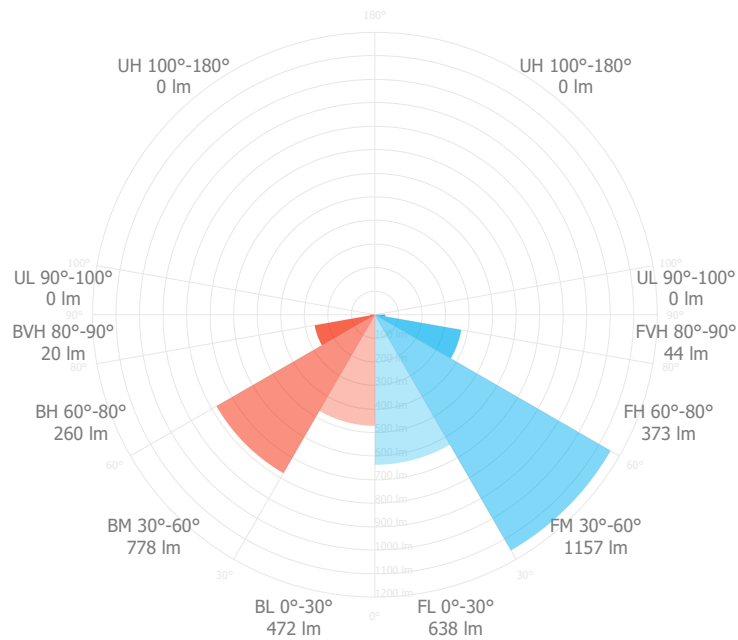
IESNA lateral classification	Type II
IESNA vertical classification	Undefined (Very Short)
Cutoff classification	Full Cutoff
IESNA TM-15-11 BUG Rating	B1 U0 G1
Maximum Candela	1678.07 cd 0° horizontal 17.5° vertical
Street side total	59.1%
House side total	40.9%

Luminaire Luminance

	0.00°	45.00°	90.00°
0.00°	22509	22509	22509
45.00°	24223	25199	18230
55.00°	20558	22878	16261
65.00°	16974	19927	14376
75.00°	14159	16832	12065
85.00°	14130	16771	10035

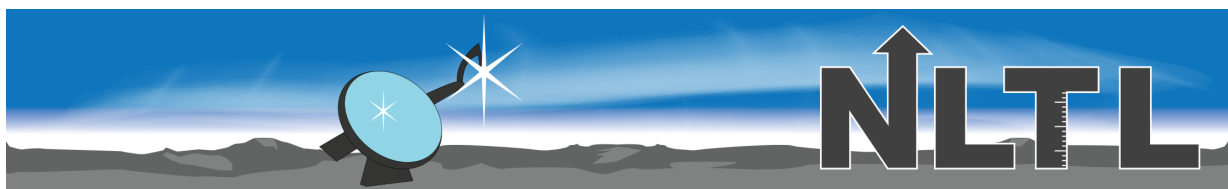


IES TM-15-11 LCS Plot



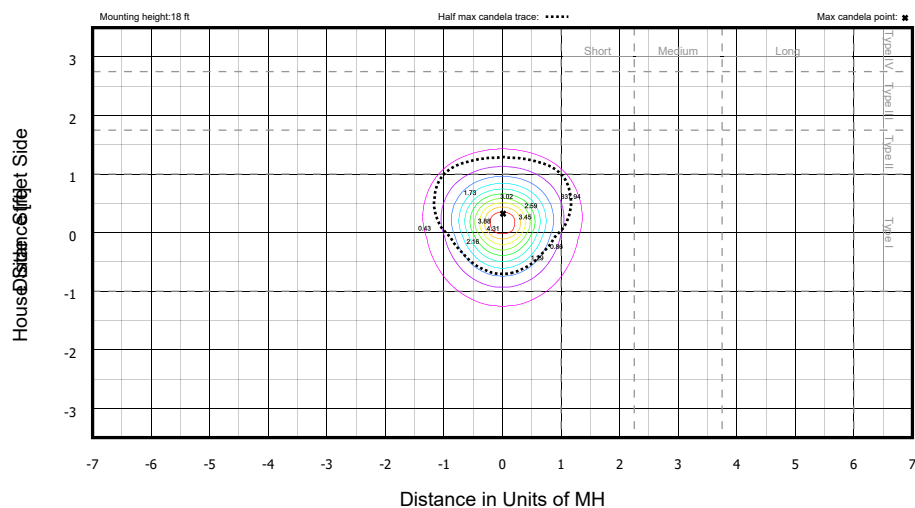
Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 20.00°	525	14%	60.00° - 80.00°	633	17%
0.00° - 30.00°	1110	30%	70.00° - 80.00°	225	6%
0.00° - 40.00°	1795	48%	80.00° - 90.00°	64	2%
0.00° - 60.00°	3044	81%	90.00° - 110.00°	0	0%
0.00° - 80.00°	3677	98%	90.00° - 120.00°	0	0%
0.00° - 90.00°	3741	100%	90.00° - 130.00°	0	0%
10.00° - 90.00°	3604	96%	90.00° - 150.00°	0	0%
20.00° - 40.00°	1270	34%	90.00° - 180.00°	0	0%
20.00° - 50.00°	1947	52%	110.00° - 180.00°	0	0%
40.00° - 70.00°	1657	44%	0.00° - 180.00°	3741	100%



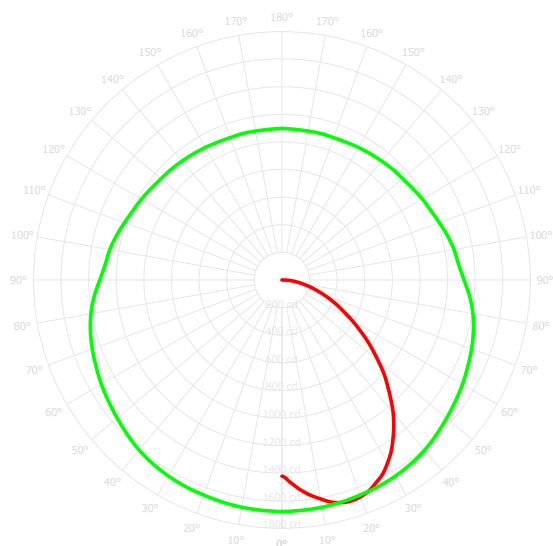
NORTHERN LIGHTS TESTING LABORATORIES

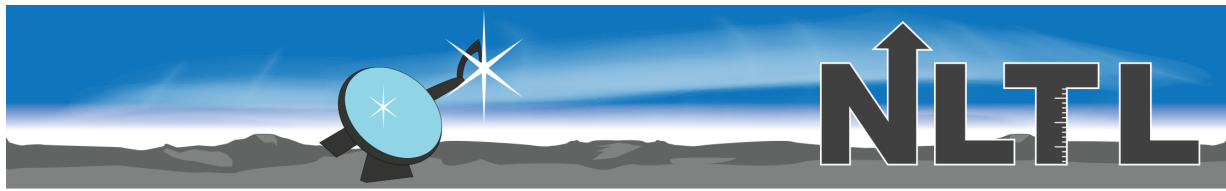
Iso-Illuminance



Peak Intensity Plane and Cone

Maximum Candela = 1678.07 cd at 0° horizontal & 17.5° vertical





NORTHERN LIGHTS TESTING LABORATORIES

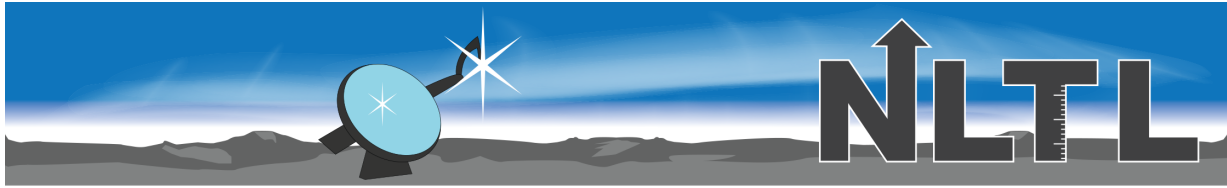
	0.00°	5.00°	10.00°	15.00°	20.00°	25.00°	30.00°	35.00°	40.00°	45.00°	50.00°	55.00°	60.00°	65.00°	70.00°	75.00°	80.
0.00°	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	1421.99	142
2.50°	1470.40	1469.46	1468.00	1465.07	1460.99	1464.23	1465.07	1463.92	1460.89	1455.45	1452.31	1451.37	1451.37	1452.73	1454.09	1456.18	145
5.00°	1525.61	1521.43	1520.80	1518.50	1512.96	1512.75	1511.18	1505.64	1499.26	1491.11	1484.10	1478.98	1474.90	1470.72	1467.37	1465.70	145
7.50°	1572.25	1569.32	1567.96	1563.05	1556.46	1554.79	1551.96	1528.33	1535.02	1522.27	1510.35	1501.67	1493.41	1484.83	1476.89	1469.98	145
10.00°	1610.94	1608.74	1607.91	1599.75	1595.25	1591.38	1584.80	1575.07	1562.63	1545.59	1531.15	1518.61	1506.69	1493.93	1481.70	1469.25	145
12.50°	1648.58	1646.28	1643.56	1635.20	1626.83	1622.86	1613.34	1600.59	1585.42	1563.88	1545.48	1529.69	1514.11	1497.17	1480.86	1463.82	144
15.00°	1669.91	1667.40	1664.58	1658.20	1649.52	1644.19	1633.84	1619.30	1594.31	1577.48	1554.16	1534.50	1515.47	1494.66	1474.90	1453.36	142
17.50°	1678.07	1675.14	1672.11	1665.94	1657.99	1651.93	1641.58	1627.56	1609.06	1583.86	1557.61	1533.56	1510.56	1485.77	1462.35	1436.42	140
20.00°	1670.75	1668.34	1665.42	1660.19	1653.18	1647.95	1638.23	1624.22	1605.50	1580.09	1553.53	1527.39	1500.00	1471.76	1444.37	1415.40	138
22.50°	1651.72	1649.00	1646.49	1642.20	1636.03	1631.64	1622.13	1609.89	1591.70	1571.73	1539.31	1512.75	1485.04	1451.06	1419.27	1387.17	134
25.00°	1618.68	1617.42	1616.58	1611.04	1609.16	1604.35	1596.93	1585.11	1569.01	1544.54	1516.52	1489.33	1461.93	1427.43	1391.56	1355.38	131
27.50°	1583.12	1576.85	1575.07	1576.12	1569.53	1567.13	1561.17	1551.02	1535.44	1516.20	1488.28	1460.36	1433.07	1396.27	1357.89	1320.25	127
30.00°	1530.84	1526.87	1524.78	1527.29	1523.31	1520.80	1517.04	1508.26	1496.13	1475.63	1448.13	1422.30	1394.28	1359.15	1317.95	1278.00	123
32.50°	1473.12	1467.16	1469.36	1471.45	1469.25	1469.88	1466.74	1461.31	1452.63	1432.86	1407.56	1379.22	1351.30	1316.69	1275.28	1233.25	118
35.00°	1403.69	1404.11	1407.35	1405.05	1405.99	1410.70	1413.41	1408.50	1400.13	1381.52	1355.59	1327.36	1301.42	1269.01	1229.06	1184.83	113
37.50°	1331.54	1329.97	1332.48	1335.62	1338.13	1341.05	1348.79	1344.19	1338.34	1324.43	1300.90	1297.03	1246.11	1213.38	1173.85	1132.24	108
40.00°	1253.74	1250.29	1256.25	1258.24	1262.94	1272.15	1278.42	1278.21	1274.66	1264.09	1242.55	1216.94	1190.06	1157.12	1120.32	1075.88	102
42.50°	1166.74	1166.01	1173.12	1176.26	1185.46	1194.25	1205.33	1205.96	1202.40	1194.98	1176.15	1151.27	1127.01	1095.53	1061.76	1020.46	975
45.00°	1082.05	1083.82	1086.86	1096.48	1104.63	1115.19	1123.66	1130.04	1130.88	1125.65	1110.17	1086.44	1089.68	1034.26	998.60	958.97	911
47.50°	1001.74	998.50	1001.84	1015.12	1019.83	1031.33	1044.51	1056.11	1056.74	1058.41	1041.47	1021.19	995.88	968.91	935.44	895.71	853
50.00°	910.56	907.73	911.29	923.21	933.98	948.83	961.17	971.00	975.91	979.47	970.58	947.99	925.30	897.59	866.85	831.19	791
52.50°	826.28	826.38	830.36	842.59	853.67	864.44	877.83	894.14	903.55	904.49	897.70	877.93	854.09	828.89	801.18	768.04	731
55.00°	744.93	742.94	749.32	756.22	770.54	784.14	802.86	817.49	826.70	829.00	824.08	809.34	786.86	760.51	735.41	704.88	671
57.50°	662.11	662.84	671.21	678.32	689.82	703.52	723.59	736.87	748.06	748.80	745.76	736.14	713.35	692.64	669.43	641.82	610
60.00°	588.29	589.02	594.77	604.08	613.07	630.64	642.87	658.66	670.27	674.76	672.88	663.68	645.48	623.42	602.51	576.58	553
62.50°	514.25	521.57	524.61	529.00	544.37	554.09	570.20	582.54	596.76	600.31	599.37	591.84	576.99	558.48	538.41	517.81	494
65.00°	453.19	452.25	456.85	466.68	474.62	486.02	498.47	509.34	521.36	532.03	531.72	523.67	513.42	495.43	474.62	458.21	436
67.50°	392.33	393.17	393.38	404.46	413.14	422.03	430.81	444.72	453.29	463.85	464.48	457.58	447.96	433.11	415.13	397.04	383
70.00°	335.66	334.92	337.96	346.01	352.18	361.69	371.21	381.25	392.43	399.02	399.96	391.91	388.36	374.45	358.56	344.02	329
72.50°	279.82	282.33	281.39	288.39	295.19	303.03	308.36	318.30	329.49	333.15	336.81	329.59	323.63	314.32	303.03	290.38	282
75.00°	231.51	232.34	234.23	238.41	244.37	249.29	258.17	265.07	271.14	275.22	276.99	275.01	269.57	262.46	250.54	240.08	229
77.50°	184.66	186.65	189.47	189.68	195.85	201.39	208.61	214.05	218.96	220.32	222.83	220.01	217.29	211.64	202.96	195.54	186
80.00°	144.72	146.39	147.54	149.42	152.88	157.16	161.66	165.95	168.04	170.55	170.65	169.40	166.16	163.02	157.79	149.95	146
82.50°	108.12	109.48	109.59	111.78	113.77	115.54	118.89	122.13	124.75	126.11	126.21	126.21	123.49	120.04	118.37	115.86	113
85.00°	77.80	77.01	76.73	79.64	79.70	81.13	90.97	91.88	91.35	92.34	92.51	91.19	90.20	88.81	86.99	79.26	72

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NORTHERN LIGHTS TESTING LABORATORIES

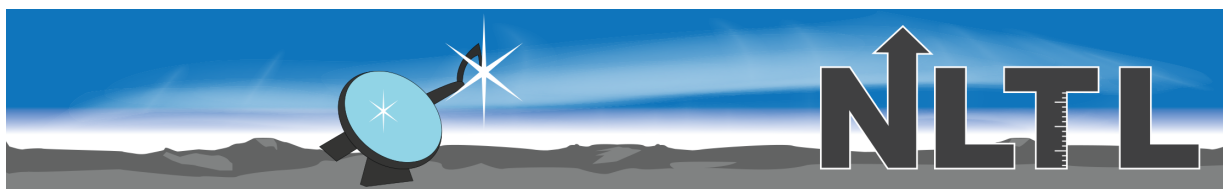
Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

	pfc	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	0.00%
	pcc	80.00%	80.00%	80.00%	70.00%	70.00%	70.00%	50.00%	50.00%	30.00%	30.00%	30.00%	10.00%	10.00%	10.00%	0.00%
	pw	70.00%	50.00%	30.00%	70.00%	50.00%	30.00%	50.00%	30.00%	50.00%	30.00%	0.00%	50.00%	30.00%	10.00%	0.00%
	0.00	4453	4453	4453	4350	4350	4350	4157	4157	3980	3980	3980	3817	3817	3817	3741
	1.00	4083	3910	3756	3982	3826	3685	3667	3551	3521	3427	3298	3387	3311	3240	3163
	2.00	3725	3426	3178	3627	3355	3128	3223	3032	3101	2941	2738	2988	2856	2739	2659
	3.00	3406	3022	2725	3314	2963	2687	2852	2616	2749	2548	2305	2654	2484	2339	2259
	4.00	3125	2687	2366	3040	2638	2338	2544	2284	2458	2232	1970	2377	2182	2021	1942
RCR	5.00	2879	2408	2079	2801	2366	2057	2288	2015	2214	1974	1706	2146	1936	1767	1689
	6.00	2663	2174	1845	2592	2138	1828	2071	1794	2009	1762	1496	1950	1731	1560	1484
	7.00	2473	1975	1653	2409	1945	1639	1888	1612	1834	1586	1324	1784	1561	1390	1317
	8.00	2304	1806	1492	2246	1780	1481	1731	1459	1685	1437	1184	1641	1417	1249	1179
	9.00	2155	1660	1356	2102	1637	1347	1595	1329	1555	1311	1066	1517	1294	1131	1063
	10.00	2022	1533	1241	1974	1514	1233	1477	1218	1442	1203	968	1409	1189	1030	965

Cone of Light

Mounting Height	Beam Center Light Level	0°-180° Beam Width	90°-270° Beam Width
8 ft	22 fc	18 ft	13 ft
10 ft	14 fc	22 ft	17 ft
12 ft	10 fc	27 ft	20 ft
14 ft	7 fc	31 ft	23 ft
20 ft	4 fc	45 ft	33 ft
25 ft	2 fc	56 ft	42 ft
30 ft	2 fc	67 ft	50 ft



NORTHERN LIGHTS TESTING LABORATORIES

Integrating Sphere Information:

Sphere Equipment:

SL-300 Integrating Sphere

Yokogawa WT210, Power Meter

Thermo Recorder TR-71W

Chroma 6408, AC power source

Calibration Due: 5/31/2021

Sphere Test:

Output Test: HP-2-P-D-4'-V-835-DAO-277V-X-X-X

25.3°C, 31RH%

277.04Vac, 35.61W, 0.92PF, 0.319THD(V), 15.136THD(A)

Base up orientation

Stable per LM-79 Standard

Test Info

Model: HP Series (REF 22097436)

Sample: HP-2-P-D-4"-835-DAO-277V-X-X-X

Manufacturer: Finelite

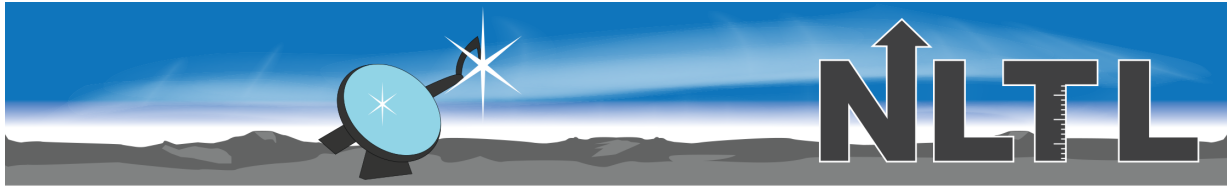
Test Date: 05-17-2021

Temperature: 25.3° C

Humidity: 31.0%

Spectrum Range: 380 - 780 nm

Scan Step: 1 nm



NORTHERN LIGHTS TESTING LABORATORIES

Goniometry Information:

Goniometer Equipment:

GMS2000 Type C Goniophotometer

Yokogawa WT210, Power Meter

(x3) J Type Thermocouples/Agilent 34970A data acquisition unit

AllPower APW-100N, AC power source

Calibration Due: 8/6/2021

Goniometer Test:

Distribution Test: HP-2-P-D-4'-V-835-DAO-277V-X-X-X

24.63°C, 22RH%

277Vac, 35.61W, 0.92PF, 0.319THD(V), 15.136THD(A)

Base up orientation

Stable per LM-79 Standard