

NORTHERN LIGHTS TESTING LABORATORIES

Report Number: REP-122321-01

LM-79-08 Luminaire Photometric Report

Device Under Test

Finelite, Inc.
HP-2-P-D-V-835-GRO-96LG-277-SC-FE-SW
HP-2 Series

Report Date

12/23/2021

Goniophotometric Examination

KPL2008-5
12/21/2021

Examined By:
Brett Sorensen

Approved By:
Joe Guarino

Spectroradiometric Examination

CCT4734
12-21-2021

Examined By:
Brett Sorensen

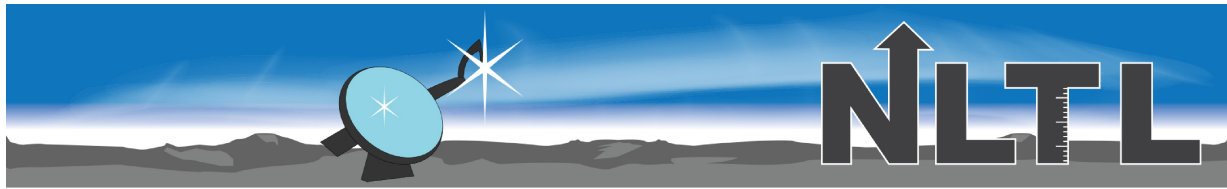
Approved By:
Joe Guarino

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. The test results relate to the specific model tested under the listed environmental conditions only. This report shall not be reproduced, except in full, without written permission from Northern Lights Testing Laboratories. 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 ISO17025-2017 procedures. Northern Lights Testing Laboratories is an Accredited Organization, accredited by the International Accreditation Service, Inc. (IAS) to ISO/IEC 17025-2017. 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





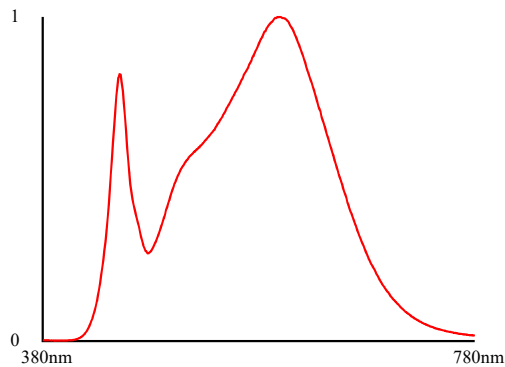
NORTHERN LIGHTS TESTING LABORATORIES

Spectral Results

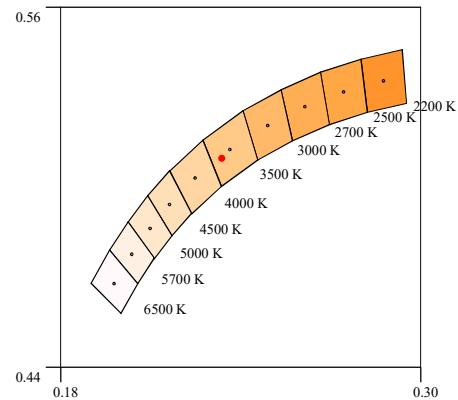
CCT: 3584 K
xy Coordinates: 0.4008 , 0.3886
u'v' Coordinates: 0.2337, 0.5097
Delta u'v': +0.00009

Luminous Flux: 2873.5 lm
Radiant Flux: 7.203039 W
Electrical Power: 35.61 W
Efficacy: 80.7 lm/W
Melanopic Flux: 1825 mel lm
Melanopic Ratio: 0.64

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
85	83	92	97	84	84	89	85	64	14	81	84	71	86	99	77



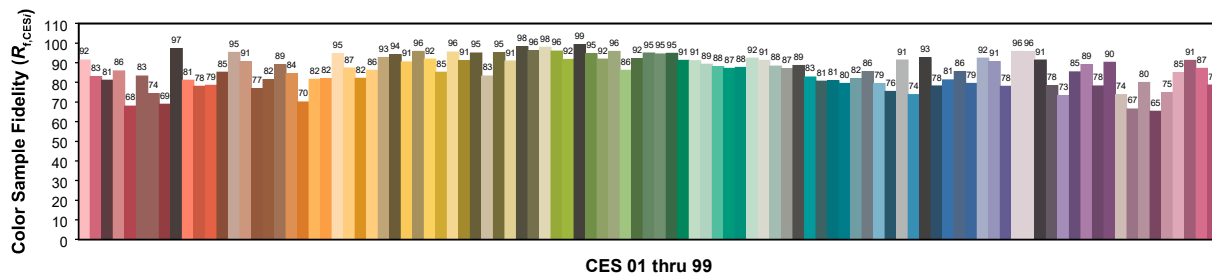
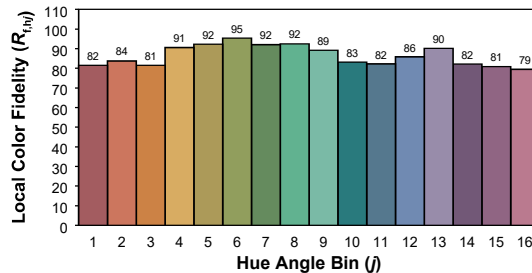
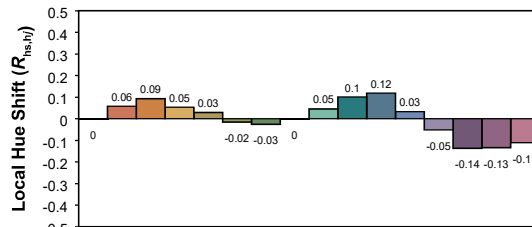
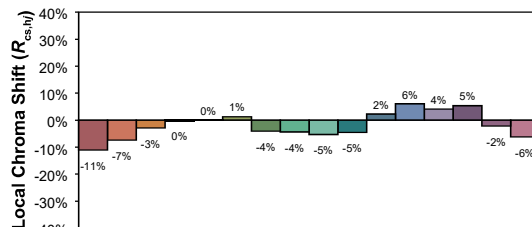
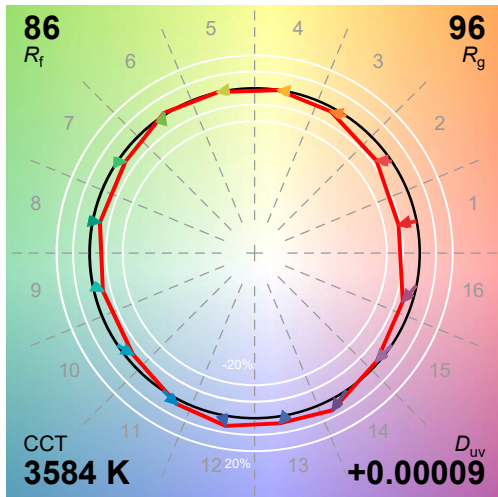
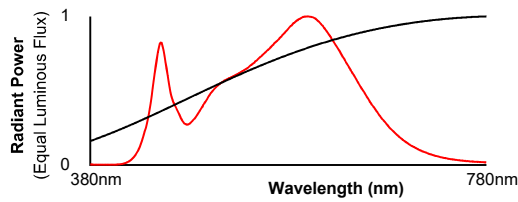
IES TM-30-18 Color Rendition Report

Source: HP-2-P-D-V-835-GRO-96LG-277-FE-SW

Manufacturer: Finelite, Inc.

Date: 12-21-2021

Model: HP-2 Series



CES 01 thru 99

x: 0.4008

CIE 13.3 1995

y: 0.3886

CRI Ra: 85

u': 0.2337

CRI R9: 14

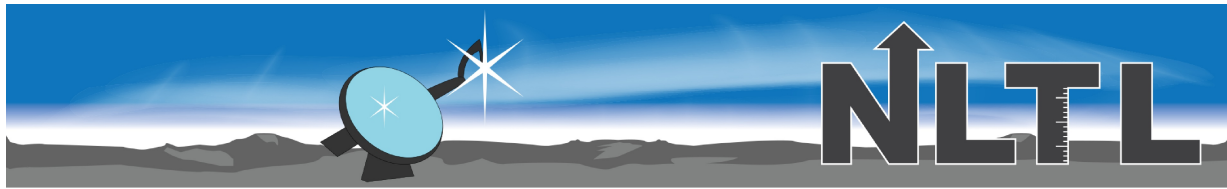
v': 0.5097

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10200 55th Street Kenosha, Wisconsin 53144

Page 3 of 10



NORTHERN LIGHTS TESTING LABORATORIES

Performance Summary

Input

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

Output

Output Lumens	2873.5 lm
Efficiency	N/A %
Efficacy	80.69 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	0.42	0.48	0.50	0.50	0.50	0.50
Street Side CU	0.42	0.48	0.50	0.50	0.50	0.50

Spacing Criterion

Two luminaires, 0°-180° plane	1.11
Two luminaires, 90°-270° plane	0.99
Four luminaires, diagonal	1.11

Full Beam Angle

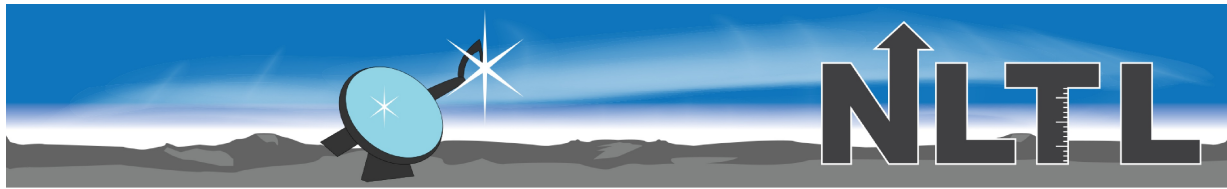
0°-180° plane	87.86°
90°-270° plane	71.83°

Roadway Summary

IESNA lateral classification	Type VS
IESNA vertical classification	Undefined (Very Short)
Cutoff classification	Full Cutoff
IESNA TM-15-11 BUG Rating	B2 U0 G1
Maximum Candela	1645.8 cd 15° horizontal 2.5° vertical
Street side total	50%
House side total	50%

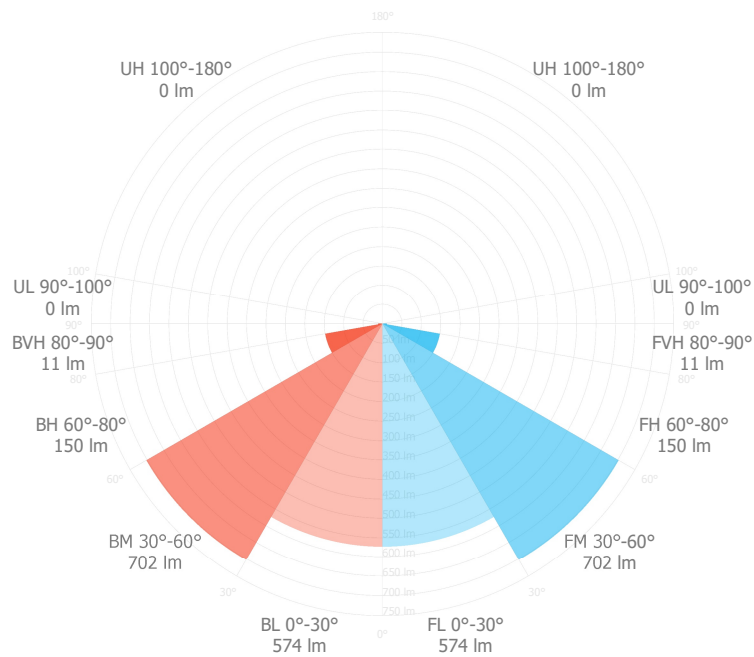
Luminaire Luminance

	0.00°	45.00°	90.00°
0.00°	25888	25888	25888
45.00°	17537	13790	12237
55.00°	10704	9608	8673
65.00°	8173	7224	7201
75.00°	6416	5702	5813
85.00°	3305	2979	3166



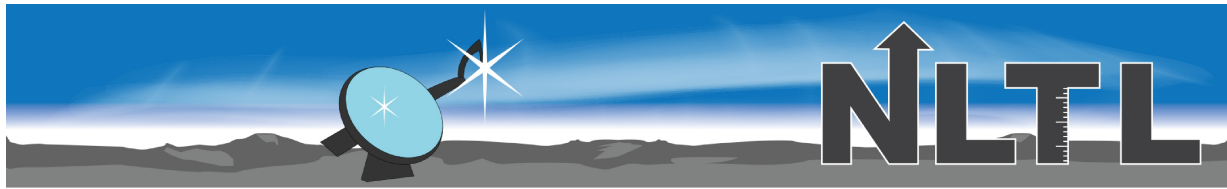
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IES TM-15-11 LCS Plot



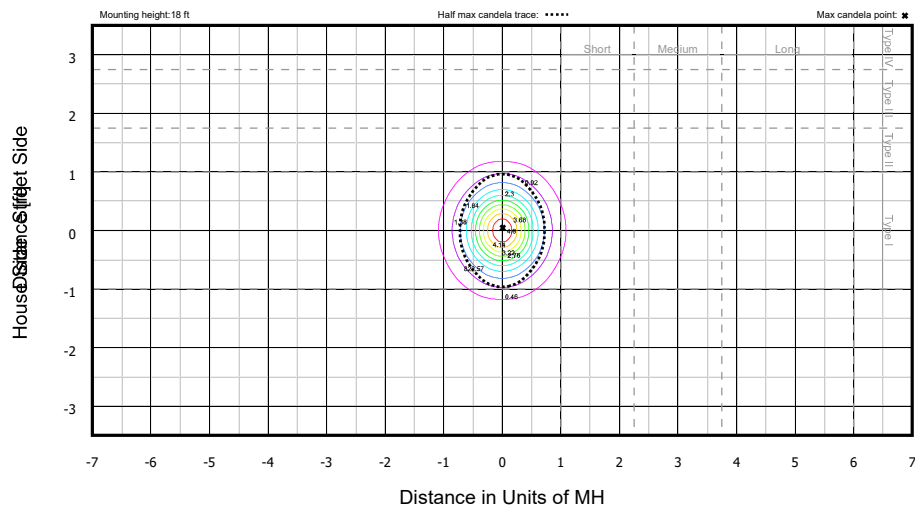
Zonal Lumen Summary

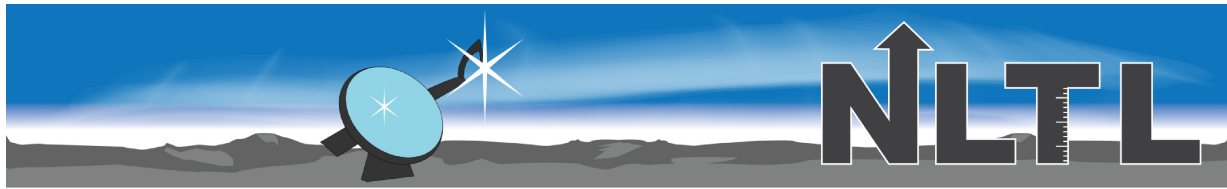
Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 20.00°	573	20%	60.00° - 80.00°	300	10%
0.00° - 30.00°	1147	40%	70.00° - 80.00°	101	4%
0.00° - 40.00°	1743	61%	80.00° - 90.00°	22	1%
0.00° - 60.00°	2552	89%	90.00° - 110.00°	0	0%
0.00° - 80.00°	2852	99%	90.00° - 120.00°	0	0%
0.00° - 90.00°	2873	100%	90.00° - 130.00°	0	0%
10.00° - 90.00°	2719	95%	90.00° - 150.00°	0	0%
20.00° - 40.00°	1171	41%	90.00° - 180.00°	0	0%
20.00° - 50.00°	1662	58%	110.00° - 180.00°	0	0%
40.00° - 70.00°	1008	35%	0.00° - 180.00°	2873	100%



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Iso-Illuminance





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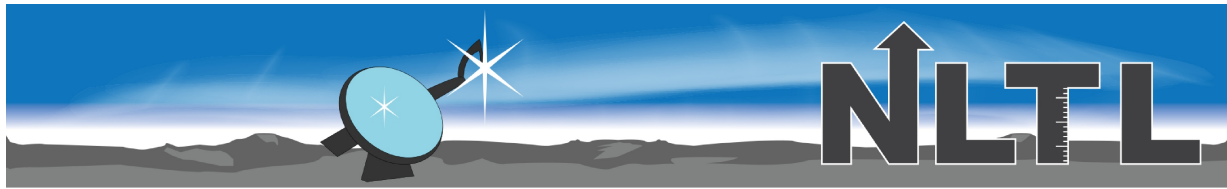
	0.00°	5.00°	10.00°	15.00°	20.00°	25.00°	30.00°	35.00°	40.00°	45.00°	50.00°	55.00°	60.00°	65.00°	70.00°	75.00°	80.00°
0.00°	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46	1635.46
2.50°	1628.46	1633.93	1645.19	1645.80	1639.97	1634.34	1630.18	1626.88	1624.80	1625.62	1628.46	1629.47	1627.95	1625.92	1623.59	1625.01	1625.01
5.00°	1620.14	1625.06	1636.06	1635.96	1629.98	1623.43	1619.78	1616.23	1611.87	1612.33	1614.66	1615.57	1613.34	1610.50	1607.91	1608.88	1611.87
7.50°	1604.82	1609.69	1619.68	1618.52	1612.78	1604.57	1600.71	1595.49	1590.57	1590.72	1591.48	1590.72	1587.98	1584.43	1581.34	1580.88	1587.98
10.00°	1583.22	1588.08	1597.52	1596.30	1589.61	1578.75	1575.51	1567.75	1562.37	1561.20	1559.83	1557.45	1553.60	1549.74	1545.43	1546.50	1557.45
12.50°	1556.44	1561.15	1569.93	1567.44	1560.24	1549.28	1542.54	1533.71	1529.76	1524.33	1522.76	1520.02	1516.01	1511.30	1508.00	1507.44	1520.02
15.00°	1521.85	1527.37	1536.81	1533.06	1524.53	1513.33	1503.13	1492.89	1487.05	1483.25	1482.84	1478.08	1474.88	1472.09	1463.06	1463.22	1482.84
17.50°	1482.79	1487.86	1495.57	1490.81	1475.95	1466.72	1457.13	1448.56	1441.71	1438.62	1436.44	1430.40	1423.30	1414.43	1406.16	1403.42	1448.56
20.00°	1437.15	1442.02	1447.80	1442.27	1429.69	1416.15	1406.87	1396.52	1390.13	1392.52	1380.04	1370.45	1359.75	1350.37	1343.12	1338.30	1396.52
22.50°	1385.62	1388.91	1392.92	1384.45	1372.48	1357.37	1348.90	1339.97	1331.30	1322.07	1312.58	1301.07	1288.95	1277.39	1268.66	1263.59	1339.97
25.00°	1327.39	1332.26	1333.48	1318.67	1308.98	1297.12	1289.10	1275.31	1261.76	1252.13	1240.01	1227.38	1217.08	1201.66	1193.45	1186.04	1275.31
27.50°	1269.47	1273.18	1273.18	1262.42	1248.68	1234.63	1221.34	1207.70	1192.99	1180.06	1177.62	1152.77	1138.42	1123.91	1114.02	1106.01	1192.99
30.00°	1203.84	1207.60	1204.45	1194.21	1181.98	1169.86	1152.62	1131.57	1116.31	1103.07	1088.16	1071.47	1058.13	1042.66	1032.06	1025.47	1103.07
32.50°	1140.65	1143.84	1135.12	1126.85	1112.65	1099.16	1078.42	1057.57	1042.56	1026.03	1007.97	991.89	979.21	964.05	953.55	946.25	1007.97
35.00°	1075.12	1078.32	1073.40	1060.41	1046.01	1027.55	1003.76	983.37	965.11	945.74	929.87	927.79	900.30	884.93	874.18	868.80	929.87
37.50°	1013.25	1012.23	1003.00	991.13	975.21	951.83	927.63	905.47	885.54	868.95	850.09	835.48	820.52	805.15	790.49	784.81	850.09
40.00°	945.08	940.62	933.26	921.75	902.58	876.97	851.35	828.18	807.08	787.91	768.73	752.30	736.02	722.38	713.96	706.45	768.73
42.50°	875.50	870.47	858.66	847.09	825.59	798.45	769.34	746.32	724.10	703.66	684.95	667.70	669.38	641.79	635.45	628.40	703.66
45.00°	783.39	781.77	768.89	760.11	733.89	707.82	681.85	659.18	637.63	616.02	600.15	584.98	572.46	564.59	558.30	554.25	600.15
47.50°	651.83	662.23	655.84	653.05	637.48	611.51	592.59	573.47	554.65	535.79	519.10	505.10	495.62	487.00	486.03	484.00	519.10
50.00°	533.25	535.08	541.82	542.23	535.18	520.72	501.96	487.10	475.08	461.79	445.30	432.73	419.83	422.51	416.26	413.66	445.30
52.50°	445.41	446.52	455.65	458.69	448.65	434.40	407.68	403.24	401.14	397.95	389.67	378.27	369.81	366.04	366.87	367.52	389.67
55.00°	387.85	385.85	394.10	393.34	385.84	371.19	360.57	354.57	350.54	348.15	342.91	334.06	326.61	324.60	323.65	322.29	342.91
57.50°	344.39	340.63	342.01	339.95	334.58	322.65	312.89	306.10	301.36	301.04	299.37	295.26	290.82	286.52	284.74	281.79	299.37
60.00°	301.91	294.99	291.89	288.65	287.94	283.53	275.48	269.24	262.82	259.58	259.55	260.13	256.82	252.63	248.75	247.77	259.55
62.50°	257.88	251.71	246.26	243.86	245.82	247.92	242.23	236.72	228.96	222.50	222.36	224.25	223.08	221.61	218.24	216.45	222.36
65.00°	218.22	212.51	208.36	206.89	209.17	210.85	209.29	203.44	198.79	192.88	190.02	192.20	192.91	192.73	190.58	187.93	190.02
67.50°	185.23	181.08	178.07	177.51	177.44	176.87	175.71	171.74	169.03	165.20	163.06	164.27	165.84	165.48	163.65	161.88	163.06
70.00°	156.31	153.87	152.62	151.05	149.21	148.20	146.53	143.41	141.92	140.25	138.37	138.36	139.71	140.16	138.90	138.49	138.37
72.50°	128.76	127.17	125.97	124.42	122.12	121.38	119.43	116.62	115.28	115.32	114.36	114.38	114.54	114.75	114.53	114.74	114.36
75.00°	104.91	104.00	103.54	102.60	99.50	97.67	97.10	96.00	93.64	93.23	91.99	92.58	93.73	94.28	94.00	93.94	91.99
77.50°	77.18	75.20	74.29	72.82	71.60	71.70	71.21	70.55	69.88	70.00	69.55	69.49	69.92	70.18	70.44	70.05	69.55
80.00°	54.59	52.98	51.70	50.88	49.98	50.15	50.01	50.66	49.71	49.39	49.37	49.57	49.75	49.72	49.81	49.92	49.37
82.50°	34.28	32.58	32.11	32.00	31.73	31.44	31.50	31.71	31.58	31.43	31.77	31.34	31.50	32.14	32.28	32.25	31.77
85.00°	18.20	17.05	16.45	16.81	16.73	16.32	16.41	16.51	16.54	16.40	16.88	16.78	17.13	17.25	17.19	17.25	16.88

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Page 7 of 10



NORTHERN LIGHTS TESTING LABORATORIES

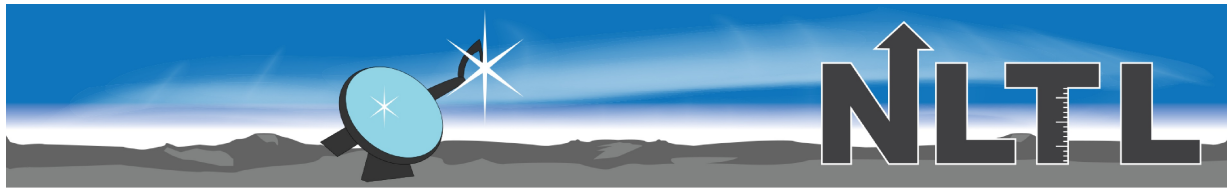
Coefficients of Utilization – Zonal Cavity Method

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	3421	3421	3421	3341	3341	3341	3193	3193	3057	3057	3057	2932	2932	2932	2873
	1.00	3182	3069	2967	3107	3005	2913	2885	2810	2775	2714	2631	2673	2625	2580	2523
	2.00	2943	2743	2579	2872	2691	2540	2592	2466	2501	2397	2263	2417	2331	2254	2198
	3.00	2723	2464	2264	2657	2420	2235	2338	2180	2263	2128	1966	2192	2079	1983	1926
	4.00	2524	2225	2007	2463	2189	1985	2121	1944	2057	1904	1727	1998	1866	1758	1702
RCR	5.00	2346	2022	1795	2290	1991	1778	1933	1746	1879	1715	1532	1829	1686	1571	1516
	6.00	2187	1846	1618	2136	1820	1605	1771	1579	1726	1555	1371	1683	1532	1414	1360
	7.00	2043	1695	1469	1997	1673	1458	1631	1438	1592	1418	1236	1555	1399	1281	1229
	8.00	1915	1563	1341	1873	1544	1333	1508	1316	1474	1301	1122	1443	1285	1167	1117
	9.00	1799	1448	1232	1761	1431	1225	1400	1212	1371	1198	1025	1343	1186	1070	1022
	10.00	1695	1346	1137	1660	1332	1132	1305	1120	1280	1109	941	1256	1099	986	939

Cone of Light

Mounting Height	Beam Center Light Level	0°-180° Beam Width	90°-270° Beam Width
8 ft	26 fc	14 ft	14 ft
10 ft	16 fc	17 ft	17 ft
12 ft	11 fc	20 ft	20 ft
14 ft	8 fc	24 ft	24 ft
20 ft	4 fc	34 ft	34 ft
25 ft	3 fc	42 ft	42 ft
30 ft	2 fc	51 ft	51 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: 01/03/2022

Sphere Test:

Output Test: HP-2-P-D-V-835-GRO-96LG-277-SC-FE-SW

24.5°C, 24RH%

277.05Vac, 35.61W

Base up orientation

Stable per LM-79 Standard

Test Info

Model: HP-2 Series

Sample: HP-2-P-D-V-835-GRO-96LG-277-FE-SW

Manufacturer: Finelite, Inc.

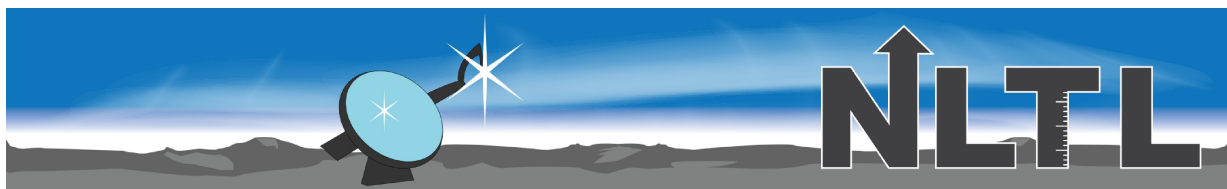
Test Date: 12-21-2021

Temperature: 24.5° C

Humidity: 24%

Spectrum Range: 380 - 780 nm

Scan Step: 1 nm



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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: 2/12/2022

Goniometer Test:

Distribution Test: HP-2-P-D-V-835-GRO-96LG-277-SC-FE-SW

24.8°C, 22RH%

277Vac, 35.61W

Base up orientation

Stable per LM-79 Standard