H.E. WILLIAMS, INC.

IES INDOOR REPORT
PHOTOMETRIC FILENAME : AP-24-L70-840-DIM-UNV_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] LLI-20113-2
[TESTLAB] LightLab International (www.LightLabInt.com)
[MANUFAC] WILLIAMS INDOOR
[OTHER] H.E. WILLIAMS, INC. - CARTHAGE, MO.
[LUMCAT] AP-24-L50-835-DIM-UNV
[LUMINAIRE] RECESSED 2 X 4 ARCHED CENTER LED LUMINAIRE
[MORE] White steel fabricated housing with frosted white concave lens.
[MORE] 360 LEDs with180 mounted along each long side of clear plastic sheet.
[MORE] One Osram Optotronic driver. Model: OTi 50/120-277/1A4 DIM-1 L G2
[MORE] Operating at 120v AC and 60 Hz.
[OTHER] Absolute test - lamp lumens value set to -1
[MORE] NA conventions used for C0 plane alignment and C-plane rotation direction.
[MORE] The sample was tested at a distance of 8m.
[MORE] This IES file created by LightLab/LSA Report program version 3.820a.
[DATE] This file created: Wednesday, April 22, 2020 2:42:14 PM
[ISSUEDATE] Wednesday, April 22, 2020 2:42:14 PM
[_SEARCH_SOURCETYPE] LED
[_SEARCH_APPLICATION] Indoor, Architectural, Direct-Indirect
[_SEARCH_MOUNTING] Recessed

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	7479
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	113
Total Luminaire Watts	66.1
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.26
Spacing Criterion (90-270)	1.28
Spacing Criterion (Diagonal)	1.38
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	3.92 m
Luminous Width (90-270)	1.94 m
Luminous Height	0.00 m

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LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	320	321	324
55	309	311	316
65	292	295	300
75	263	265	275
85	202	192	199

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CANDELA TABULATION

	0.0	22.5	45.0	67.5	90.0
0.0	2575.362	2575.362	2575.362	2575.362	2575.362
0.5	2579.249	2578.525	2576.145	2572.746	2568.696
1.0	2579.515	2577.830	2575.717	2572.450	2568.785
1.5	2578.924	2577.210	2575.155	2571.963	2567.647
2.0	2577.771	2576.530	2574.534	2570.884	2566.716
2.5	2576.958	2575.510	2573.337	2570.041	2565.991
3.0	2575.628	2574.460	2572.288	2569.154	2564.484
3.5	2574.460	2573.130	2570.603	2567.233	2563.331
4.0	2572.968	2571.475	2569.051	2565.740	2561.528
4.5	2570.573	2569.480	2566.893	2563.627	2559.429
5.0	2568.593	2567.277	2564.972	2561.690	2557.345
5.5	2565.991	2564.912	2562.607	2559.606	2555.157
6.0	2563.508	2562.341	2560.109	2557.049	2552.586
6.5	2560.331	2559.237	2557.256	2554.271	2549.881
7.0	2556.768	2555.956	2554.359	2551.359	2547.013
7.5	2553.399	2552.541	2550.945	2548.107	2543.806
8.0	2549.319	2548.758	2547.117	2544.560	2540.333
8.5	2545.698	2544.693	2543.407	2541.146	2536.549
9.0	2541.220	2540.451	2539.298	2537.288	2533.090
9.5	2536.933	2536.327	2535.145	2532.721	2528.745
10.0	2532.012	2531.539	2530.726	2528.686	2524.267
10.5	2527.193	2526.661	2525.464	2524.533	2520.276
11.0	2522.020	2521.754	2520.941	2519.670	2515.620
11.5	2516.492	2516.330	2515.443	2514.615	2510.358
12.0	2511.112	2510.684	2510.196	2509.383	2505.126
12.5	2505.230	2504.757	2504.831	2504.047	2499.702
13.0	2499.066	2499.081	2498.726	2498.741	2494.780
13.5	2492.829	2492.814	2492.785	2492.814	2488.838
14.0	2486.799	2486.340	2486.932	2486.710	2483.089
14.5	2480.118	2480.103	2480.221	2480.354	2476.778
15.0	2473.615	2473.260	2473.378	2473.836	2470.378
15.5	2466.195	2466.387	2466.476	2467.702	2463.993
16.0	2459.440	2459.041	2459.559	2460.534	2457.430
16.5	2451.636	2451.710	2452.065	2453.543	2450.690
17.0	2443.862	2443.965	2444.483	2446.256	2443.212
17.5	2436.575	2436.486	2437.137	2438.881	2435.807
18.0	2428.446	2428.283	2428.934	2431.033	2428.283
18.5	2420.066	2420.406	2421.189	2423.362	2420.154
19.0	2411.818	2412.040	2412.675	2414.907	2412.705
19.5	2403.349	2403.556	2404.384	2406.867	2404.339
20.0	2394.348	2394.643	2395.279	2398.294	2396.255
20.5	2385.613	2385.509	2386.692	2389.485	2387.652
21.0	2376.198	2376.419	2377.498	2380.691	2379.287
21.5	2366.842	2366.842	2368.142	2371.438	2370.108
22.0	2357.397	2357.456	2358.535	2362.083	2360.723
22.5	2347.583	2347.657	2349.091	2352.283	2351.736
23.0	2337.784	2337.887	2339.158	2343.016	2341.996
23.5	2327.290	2327.526	2329.063	2332.832	2332.374
24.0	2317.091	2317.224	2318.761	2322.870	2322.516
24.5	2306.509	2306.538	2308.400	2312.642	2312.672
25.0	2295.335	2295.719	2297.611	2302.030	2302.089
25.5	2284.989	2285.136	2286.940	2291.433	2291.950
26.0	2273.711	2273.829	2275.973	2280.554	2280.820
26.5	2262.759	2262.862	2264.961	2269.676	2270.267

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CANDELA TABULATION - (Cont.)

27.0	2251.112	2251.349	2253.240	2258.221	2259.108
27.5	2239.805	2239.716	2241.860	2247.520	2248.112
28.0	2227.700	2228.070	2230.168	2235.430	2236.627
28.5	2215.477	2215.802	2218.211	2223.842	2225.202
29.0	2203.520	2203.830	2206.106	2211.974	2213.437
29.5	2190.809	2191.429	2193.824	2199.721	2201.214
30.0	2178.452	2178.822	2181.423	2187.439	2188.680
30.5	2165.830	2166.096	2168.431	2174.447	2176.516
31.0	2152.513	2153.459	2155.942	2162.135	2164.160
31.5	2139.506	2139.905	2142.832	2149.054	2151.153
32.0	2126.263	2127.046	2129.810	2136.121	2138.309
32.5	2112.946	2113.478	2116.700	2122.952	2125.332
33.0	2099.156	2099.747	2102.954	2109.354	2112.177
33.5	2085.647	2086.061	2089.297	2095.756	2099.141
34.0	2071.354	2072.167	2075.434	2082.099	2085.159
34.5	2057.224	2058.081	2061.348	2067.940	2071.266
35.0	2042.547	2043.538	2046.996	2053.825	2057.490
35.5	2028.654	2029.230	2032.866	2039.710	2043.419
36.0	2013.741	2014.347	2018.175	2025.225	2028.757
36.5	1999.359	2000.246	2004.000	2010.785	2014.790
37.0	1984.210	1985.229	1988.732	1995.871	2000.364
37.5	1969.178	1969.888	1973.701	1981.047	1985.333
38.0	1953.954	1954.664	1958.714	1966.074	1970.493
38.5	1938.391	1939.130	1943.061	1950.673	1955.521
39.0	1922.916	1923.729	1927.483	1935.390	1940.386
39.5	1906.968	1907.692	1911.831	1919.635	1924.926
40.0	1890.872	1892.054	1896.090	1904.012	1909.318
40.5	1875.072	1875.663	1879.905	1887.901	1893.739
41.0	1859.494	1860.233	1864.120	1872.574	1878.634
41.5	1842.895	1843.368	1847.610	1856.094	1862.184
42.0	1826.031	1827.036	1830.835	1839.732	1845.733
42.5	1809.507	1810.526	1814.961	1823.341	1829.711
43.0	1792.657	1793.529	1797.815	1806.802	1813.039
43.5	1775.896	1776.768	1780.833	1790.026	1796.633
44.0	1758.308	1759.520	1763.895	1772.881	1779.680
44.5	1741.414	1742.508	1747.134	1756.031	1763.185
45.0	1723.825	1724.904	1729.294	1738.694	1745.685
45.5	1706.857	1707.936	1712.430	1721.978	1729.190
46.0	1688.870	1690.082	1694.590	1704.123	1711.439
46.5	1671.060	1672.242	1676.972	1686.505	1694.294
47.0	1652.821	1654.580	1659.457	1668.798	1676.780
47.5	1634.744	1636.355	1641.115	1650.870	1658.999
48.0	1616.727	1618.264	1623.009	1633.192	1641.469
48.5	1597.942	1599.774	1604.873	1614.806	1623.038
49.0	1579.688	1581.417	1586.295	1596.818	1605.346
49.5	1561.153	1562.735	1567.878	1578.032	1586.901
50.0	1543.121	1544.526	1549.787	1560.001	1568.987
50.5	1523.922	1525.577	1530.869	1541.436	1550.423
51.0	1505.092	1506.629	1512.186	1522.473	1531.755
51.5	1485.582	1487.548	1493.401	1503.983	1512.851
52.0	1466.707	1468.392	1474.009	1485.035	1494.287
52.5	1447.183	1449.429	1455.075	1465.835	1475.487
53.0	1428.072	1429.860	1435.491	1446.414	1456.361
53.5	1409.049	1410.734	1416.307	1427.318	1437.768
54.0	1388.948	1390.751	1396.634	1407.808	1418.154
54.5	1369.823	1371.744	1377.686	1388.963	1399.147

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CANDELA TABULATION - (Cont.)

55.0	1349.751	1351.658	1357.821	1369.187	1379.607
55.5	1329.842	1331.645	1338.015	1349.647	1359.831
56.0	1310.110	1312.046	1318.402	1330.137	1340.232
56.5	1289.965	1291.679	1298.123	1310.110	1320.737
57.0	1269.996	1271.696	1278.037	1290.083	1300.695
57.5	1249.585	1251.492	1257.995	1269.775	1280.697
58.0	1229.262	1231.139	1237.805	1250.146	1261.128
58.5	1208.880	1210.727	1217.438	1229.750	1240.584
59.0	1188.720	1190.745	1197.691	1209.944	1221.059
59.5	1168.264	1170.008	1176.910	1189.503	1199.805
60.0	1147.512	1149.330	1156.528	1169.032	1178.861
60.5	1126.657	1128.963	1136.220	1148.902	1157.637
61.0	1106.098	1107.990	1115.335	1128.106	1136.338
61.5	1084.918	1087.253	1094.673	1106.999	1115.129
62.0	1064.092	1066.265	1073.803	1085.346	1093.313
62.5	1043.562	1045.573	1053.125	1063.708	1072.325
63.0	1022.279	1024.304	1032.315	1042.276	1050.805
63.5	1001.926	1004.173	1011.770	1021.451	1029.802
64.0	980.657	982.830	990.767	999.606	1008.725
64.5	959.610	961.547	969.720	978.012	986.806
65.0	938.489	940.810	949.161	956.669	965.729
65.5	917.028	919.438	927.877	934.868	944.342
66.0	896.292	898.597	907.081	913.614	922.305
66.5	874.638	877.255	885.605	891.680	901.125
67.0	853.769	856.001	864.780	870.042	879.457
67.5	832.175	834.776	843.142	848.448	858.173
68.0	811.541	814.069	821.814	827.637	836.904
68.5	790.376	792.859	799.880	805.925	815.636
69.0	769.004	771.590	777.901	784.405	794.115
69.5	747.838	750.499	756.677	763.047	772.847
70.0	726.836	729.200	734.654	741.335	751.504
70.5	705.744	708.286	713.149	720.244	730.398
71.0	684.254	687.032	691.392	698.576	708.744
71.5	663.753	666.074	669.991	677.662	687.476
72.0	642.514	645.086	648.323	656.141	666.133
72.5	621.999	624.172	627.615	635.464	645.662
73.0	601.026	603.716	606.140	614.254	624.586
73.5	579.949	582.624	585.019	593.133	603.435
74.0	559.552	562.124	563.839	572.263	582.772
74.5	538.638	541.166	542.658	551.334	561.607
75.0	518.153	520.828	521.936	530.568	540.811
75.5	497.283	500.062	501.022	509.728	519.616
76.0	477.093	479.798	480.167	489.139	499.219
76.5	456.563	459.253	459.490	468.166	477.950
77.0	436.979	439.329	439.255	448.079	457.657
77.5	416.612	419.258	419.243	427.594	436.891
78.0	396.526	398.713	398.831	406.813	415.903
78.5	377.104	378.361	378.878	386.372	395.328
79.0	357.018	357.831	358.939	365.753	374.355
79.5	337.567	337.863	339.370	345.238	353.574
80.0	317.983	317.894	319.387	324.826	332.276
80.5	298.577	298.059	299.744	304.282	311.288
81.0	279.554	278.416	279.894	283.589	290.403
81.5	260.887	259.394	260.562	263.828	269.844
82.0	242.249	240.372	241.259	243.431	249.314
82.5	223.301	221.069	221.645	223.212	228.828

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CANDELA TABULATION - (Cont.)

83.0	205.180	202.564	202.490	203.761	208.831
83.5	186.749	184.000	182.995	184.310	188.863
84.0	168.939	165.909	164.283	165.391	169.663
84.5	150.951	147.773	145.630	146.473	150.582
85.0	133.806	130.185	127.524	128.559	131.958
85.5	116.203	112.434	109.744	110.335	113.202
86.0	99.516	95.658	93.116	93.278	95.643
86.5	82.829	78.720	76.532	76.118	77.656
87.0	66.112	62.609	60.540	59.210	59.964
87.5	49.839	48.051	45.553	42.700	42.878
88.0	34.704	34.231	30.876	26.427	24.905
88.5	23.737	21.727	17.234	8.159	5.631
89.0	14.440	11.085	6.311	4.523	3.858
89.5	6.932	5.291	3.843	3.074	2.808
90.0	0.000	0.000	0.000	0.000	0.000

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	941.71	N.A.	12.60
0-30	2001.19	N.A.	26.80
0-40	3282.77	N.A.	43.90
0-60	5834.37	N.A.	78.00
0-80	7329.11	N.A.	98.00
0-90	7478.88	N.A.	100.00
10-90	7235.2	N.A.	96.70
20-40	2341.07	N.A.	31.30
20-50	3676.83	N.A.	49.20
40-70	3490.74	N.A.	46.70
60-80	1494.75	N.A.	20.00
70-80	555.61	N.A.	7.40
80-90	149.77	N.A.	2.00
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	7478.88	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	243.68
10-20	698.03
20-30	1059.48
30-40	1281.58
40-50	1335.77
50-60	1215.83
60-70	939.14
70-80	555.61
80-90	149.77
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

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	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	104	99	95	106	101	97	94	97	94	91	93	91	88	90	87	85	83
2	99	90	83	77	96	88	82	76	85	79	75	81	77	73	78	75	71	69
3	90	79	71	64	87	77	70	63	74	68	62	72	66	61	69	64	60	58
4	82	70	61	54	80	69	60	54	66	59	53	64	57	52	61	56	52	49
5	75	62	53	46	73	61	53	46	59	51	46	57	50	45	55	49	45	43
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37
7	64	51	42	36	63	50	42	36	48	41	35	47	40	35	46	39	35	33
8	60	46	38	32	58	46	37	32	44	37	32	43	36	31	42	36	31	29
9	56	42	34	29	55	42	34	29	41	33	28	40	33	28	39	33	28	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	25	24

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UGR TABLE - CORRECTED

Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	8.1	9.7	8.5	10.1	10.4	8.2	9.9	8.6	10.2	10.5
	3H	9.9	11.5	10.3	11.8	12.1	10.1	11.6	10.5	11.9	12.3
	4H	10.7	12.1	11.1	12.4	12.8	10.8	12.2	11.2	12.6	13.0
	6H	11.2	12.5	11.6	12.9	13.3	11.4	12.7	11.8	13.1	13.4
	8H	11.4	12.6	11.8	13.0	13.4	11.6	12.8	12.0	13.2	13.6
	12H	11.5	12.7	11.9	13.1	13.5	11.7	12.9	12.1	13.2	13.7
4H	2H	8.8	10.2	9.2	10.5	10.9	8.8	10.3	9.2	10.6	11.0
	3H	10.8	12.0	11.3	12.4	12.8	11.0	12.1	11.4	12.5	12.9
	4H	11.7	12.8	12.1	13.2	13.6	11.8	12.9	12.2	13.3	13.7
	6H	12.3	13.3	12.8	13.7	14.2	12.5	13.4	13.0	13.9	14.3
	8H	12.6	13.5	13.0	13.9	14.4	12.7	13.6	13.2	14.1	14.5
	12H	12.7	13.5	13.2	14.0	14.5	12.9	13.7	13.4	14.2	14.6
8H	4H	12.0	12.9	12.5	13.4	13.8	12.2	13.0	12.6	13.5	13.9
	6H	12.8	13.6	13.3	14.0	14.5	13.0	13.7	13.5	14.2	14.7
	8H	13.1	13.8	13.6	14.3	14.8	13.3	13.9	13.8	14.4	14.9
	12H	13.4	13.9	13.9	14.4	15.0	13.5	14.1	14.0	14.5	15.1
12H	4H	12.1	12.9	12.6	13.3	13.8	12.2	13.0	12.7	13.4	13.9
	6H	12.9	13.6	13.4	14.0	14.6	13.0	13.7	13.5	14.2	14.7
	8H	13.2	13.8	13.8	14.3	14.9	13.4	14.0	13.9	14.4	15.0

Maximum UGR = 15.1

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Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

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POLAR GRAPH

Maximum Candela = 2579.515 Located At Horizontal Angle = 0, Vertical Angle = 1
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (1) (Through Max. Cd.)