



IES INDOOR REPORT
PHOTOMETRIC FILENAME : HETG-AR22-L69-835-A-DIM-UNV.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] GEN FROM ORIG TEST
[TESTLAB] Intertek
[ISSUE DATE] 03/18/2019
[MANUFAC] WILLIAMS INDOOR
[OTHER] H.E. WILLIAMS, INC. - CARTHAGE, MO.
[LUMCAT] HETG-AR22-L69-835-A-DIM-UNV
[LUMINAIRE] 2x2 RECESSED GRID LUMINAIRE
[LAMP] LED
[LAMPCAT] HLM 80 CRI 3500K CCT
[_SEARCH_APPLICATION] INDOOR
[_SEARCH_SOURCETYPE] LED
[_SEARCH_MOUNTING] RECESSED

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	6626
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	124
Total Luminaire Watts	53.4
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.22
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.30
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	1.92 ft
Luminous Width (90-270)	1.92 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	6708	6437	6107
55	6194	5780	5165
65	4829	5136	4259
75	3065	3936	3419
85	1040	1964	2520

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CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>	<u>112.5</u>	<u>135.0</u>	<u>157.5</u>	<u>180.0</u>	<u>202.5</u>
0.0	2735.762	2735.762	2735.762	2735.762	2735.762	2735.762	2735.762	2735.762	2735.762	2735.762
2.5	2732.604	2742.078	2737.258	2728.117	2720.139	2728.283	2737.424	2741.912	2731.441	2741.912
5.0	2722.632	2730.610	2725.624	2717.812	2709.834	2717.646	2726.953	2731.109	2720.139	2731.109
7.5	2705.347	2712.493	2707.009	2698.864	2690.222	2698.532	2708.671	2711.995	2700.693	2711.995
10.0	2678.587	2686.233	2680.582	2671.274	2661.634	2670.609	2682.909	2686.233	2675.762	2686.233
12.5	2644.681	2651.496	2644.515	2634.542	2625.069	2633.878	2648.836	2653.324	2641.856	2653.324
15.0	2603.960	2609.944	2601.467	2591.163	2579.860	2588.836	2606.620	2612.603	2600.803	2612.603
17.5	2556.592	2560.747	2551.439	2538.143	2526.176	2535.483	2556.425	2563.738	2553.267	2563.738
20.0	2502.242	2504.403	2492.934	2478.474	2464.679	2474.319	2497.256	2507.228	2499.250	2507.228
22.5	2441.244	2441.244	2425.953	2410.163	2396.036	2405.676	2431.937	2444.402	2437.421	2444.402
25.0	2372.102	2369.443	2351.492	2333.542	2319.082	2329.553	2358.639	2374.263	2368.612	2374.263
27.5	2295.148	2291.824	2271.048	2251.104	2235.148	2246.117	2278.860	2297.641	2293.154	2297.641
30.0	2211.546	2207.724	2182.294	2161.020	2143.734	2156.200	2192.100	2213.375	2211.879	2213.375
32.5	2122.460	2117.473	2087.889	2064.453	2045.672	2059.301	2098.360	2123.124	2123.789	2123.124
35.0	2028.885	2021.905	1988.829	1962.236	1940.629	1957.250	1999.300	2026.891	2027.722	2026.891
37.5	1931.654	1921.848	1885.781	1855.033	1830.767	1849.548	1896.086	1926.336	1928.330	1926.336
40.0	1831.930	1818.966	1779.077	1743.342	1715.586	1738.024	1789.714	1821.958	1826.778	1821.958
42.5	1729.547	1714.755	1670.876	1629.324	1598.576	1623.840	1679.851	1715.752	1724.228	1715.752
45.0	1626.000	1609.712	1560.182	1513.644	1480.403	1507.162	1568.326	1608.548	1619.684	1608.548
47.5	1523.949	1504.171	1452.647	1401.289	1362.064	1386.663	1454.475	1500.514	1516.802	1500.514
50.0	1424.724	1403.449	1345.443	1286.107	1244.057	1271.481	1341.787	1390.984	1410.264	1390.984
52.5	1323.670	1300.900	1239.403	1172.921	1128.045	1157.630	1232.921	1286.274	1306.551	1286.274
55.0	1217.797	1198.849	1136.521	1063.224	1015.523	1046.604	1126.217	1182.062	1197.353	1182.062
57.5	1092.975	1092.144	1036.133	957.018	907.987	939.567	1023.168	1073.862	1070.371	1073.862
60.0	959.013	969.484	939.068	855.134	806.103	837.682	924.109	951.035	943.888	951.035
62.5	833.194	843.831	843.167	758.567	708.872	741.614	827.876	832.197	814.080	832.197
65.0	699.564	724.994	744.107	667.320	616.959	651.032	729.315	710.035	679.121	710.035
67.5	569.424	601.336	639.065	582.056	530.698	565.601	628.261	587.042	551.972	587.042
70.0	454.243	485.822	540.172	502.110	450.088	485.656	529.368	472.526	437.955	472.526
72.5	354.353	382.275	442.110	426.320	373.965	410.531	430.309	368.646	338.729	368.646
75.0	271.914	292.358	349.200	353.023	303.327	338.397	338.397	279.726	258.285	279.726
77.5	211.249	216.734	263.271	279.726	239.338	266.762	253.465	207.426	200.113	207.426
80.0	170.694	173.354	185.154	208.589	178.838	198.118	178.007	170.860	167.370	170.860
82.5	86.760	101.386	128.810	141.109	123.325	137.287	132.633	109.364	95.901	109.364
85.0	31.081	37.895	58.671	79.281	75.292	79.114	62.826	40.222	32.078	40.222
87.5	10.139	12.798	16.787	29.419	33.241	29.585	17.618	12.964	9.972	12.964
90.0	1.662	2.161	1.662	0.665	0.499	1.163	2.493	2.826	1.994	2.826
92.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
95.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
97.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
107.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
112.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
117.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
122.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
127.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
132.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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CANDELA TABULATION - (Cont.)

135.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
137.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
142.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
147.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
152.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
157.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
162.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
167.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
172.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
177.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Vert. Angles **Horizontal Angles**

	<u>225.0</u>	<u>247.5</u>	<u>270.0</u>	<u>292.5</u>	<u>315.0</u>	<u>337.5</u>	<u>360.0</u>
0.0	2735.762	2735.762	2735.762	2735.762	2735.762	2735.762	2735.762
2.5	2737.424	2728.283	2720.139	2728.117	2737.258	2742.078	2732.604
5.0	2726.953	2717.646	2709.834	2717.812	2725.624	2730.610	2722.632
7.5	2708.671	2698.532	2690.222	2698.864	2707.009	2712.493	2705.347
10.0	2682.909	2670.609	2661.634	2671.274	2680.582	2686.233	2678.587
12.5	2648.836	2633.878	2625.069	2634.542	2644.515	2651.496	2644.681
15.0	2606.620	2588.836	2579.860	2591.163	2601.467	2609.944	2603.960
17.5	2556.425	2535.483	2526.176	2538.143	2551.439	2560.747	2556.592
20.0	2497.256	2474.319	2464.679	2478.474	2492.934	2504.403	2502.242
22.5	2431.937	2405.676	2396.036	2410.163	2425.953	2441.244	2441.244
25.0	2358.639	2329.553	2319.082	2333.542	2351.492	2369.443	2372.102
27.5	2278.860	2246.117	2235.148	2251.104	2271.048	2291.824	2295.148
30.0	2192.100	2156.200	2143.734	2161.020	2182.294	2207.724	2211.546
32.5	2098.360	2059.301	2045.672	2064.453	2087.889	2117.473	2122.460
35.0	1999.300	1957.250	1940.629	1962.236	1988.829	2021.905	2028.885
37.5	1896.086	1849.548	1830.767	1855.033	1885.781	1921.848	1931.654
40.0	1789.714	1738.024	1715.586	1743.342	1779.077	1818.966	1831.930
42.5	1679.851	1623.840	1598.576	1629.324	1670.876	1714.755	1729.547
45.0	1568.326	1507.162	1480.403	1513.644	1560.182	1609.712	1626.000
47.5	1454.475	1386.663	1362.064	1401.289	1452.647	1504.171	1523.949
50.0	1341.787	1271.481	1244.057	1286.107	1345.443	1403.449	1424.724
52.5	1232.921	1157.630	1128.045	1172.921	1239.403	1300.900	1323.670
55.0	1126.217	1046.604	1015.523	1063.224	1136.521	1198.849	1217.797
57.5	1023.168	939.567	907.987	957.018	1036.133	1092.144	1092.975
60.0	924.109	837.682	806.103	855.134	939.068	969.484	959.013
62.5	827.876	741.614	708.872	758.567	843.167	843.831	833.194
65.0	729.315	651.032	616.959	667.320	744.107	724.994	699.564
67.5	628.261	565.601	530.698	582.056	639.065	601.336	569.424
70.0	529.368	485.656	450.088	502.110	540.172	485.822	454.243
72.5	430.309	410.531	373.965	426.320	442.110	382.275	354.353
75.0	338.397	338.397	303.327	353.023	349.200	292.358	271.914
77.5	253.465	266.762	239.338	279.726	263.271	216.734	211.249
80.0	178.007	198.118	178.838	208.589	185.154	173.354	170.694

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CANDELA TABULATION - (Cont.)

82.5	132.633	137.287	123.325	141.109	128.810	101.386	86.760
85.0	62.826	79.114	75.292	79.281	58.671	37.895	31.081
87.5	17.618	29.585	33.241	29.419	16.787	12.798	10.139
90.0	2.493	1.163	0.499	0.665	1.662	2.161	1.662
92.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
95.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
97.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
107.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
112.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
117.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
122.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
127.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
132.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
135.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
137.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
142.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
147.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
152.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
157.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
162.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
167.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
172.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
177.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	990.83	N.A.	15.00
0-30	2072.4	N.A.	31.30
0-40	3315.84	N.A.	50.00
0-60	5520.84	N.A.	83.30
0-80	6546.19	N.A.	98.80
0-90	6625.39	N.A.	100.00
10-90	6366.95	N.A.	96.10
20-40	2325.01	N.A.	35.10
20-50	3527.53	N.A.	53.20
40-70	2890.39	N.A.	43.60
60-80	1025.35	N.A.	15.50
70-80	339.96	N.A.	5.10
80-90	79.20	N.A.	1.20
90-110	0.23	N.A.	0.00
90-120	0.23	N.A.	0.00
90-130	0.23	N.A.	0.00
90-150	0.23	N.A.	0.00
90-180	0.23	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	6625.62	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	258.44
10-20	732.40
20-30	1081.57
30-40	1243.44
40-50	1202.52
50-60	1002.48
60-70	685.39
70-80	339.96
80-90	79.20
90-100	0.23
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

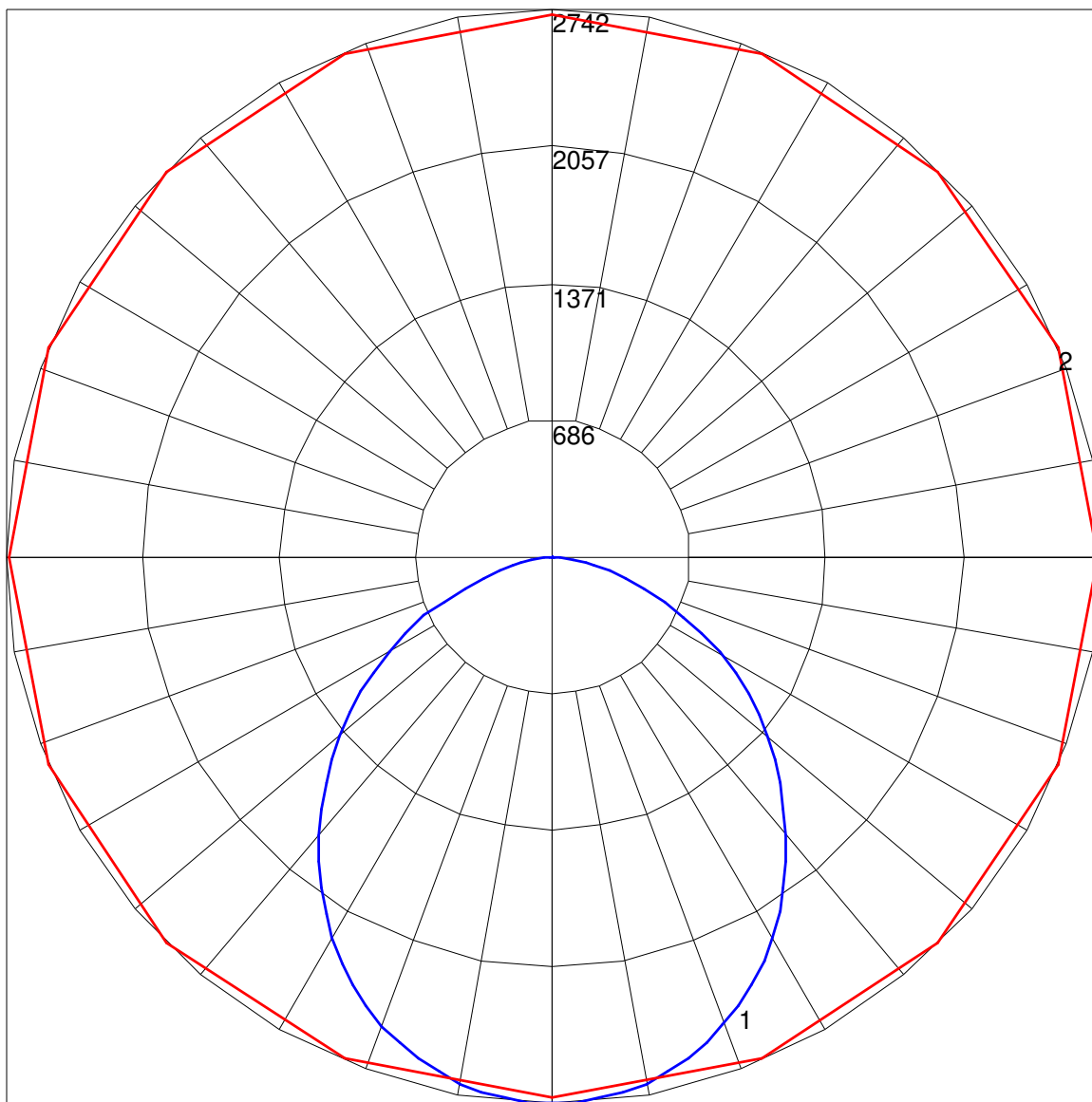
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	110	105	101	98	107	103	99	96	99	96	93	95	92	90	91	89	88	85
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	78	74	72
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62
4	84	73	65	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53
5	78	65	57	50	76	64	56	50	62	55	50	60	54	49	59	53	49	47
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	48	43	41
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	37
8	62	49	41	35	61	49	41	35	47	40	35	46	40	35	45	39	35	33
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31	30
10	55	42	34	29	54	41	34	29	40	34	29	40	33	29	39	33	29	27

POLAR GRAPH



Maximum Candela = 2742.078 Located At Horizontal Angle = 22.5, Vertical Angle = 2.5
1 - Vertical Plane Through Horizontal Angles (22.5 - 202.5) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (2.5) (Through Max. Cd.)